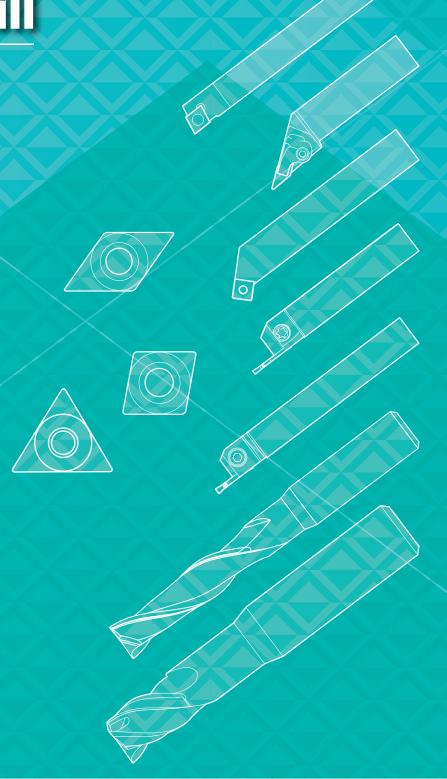


Global Support, Global Solutions.

# Small Lathe Tools Sumi Small



### **Notice**

- This catalogue introduces cutting tools for small lathe/autolathe.
  - In addition to this catalogue, we have various other catalogues and product brochures such as "Igetalloy News", "SUMIBORON/SUMIDIA Product Guide", "Technical Guidance" and "General Catalogue" etc., please feel free to
- Please note that as a result of our ongoing research, products may reflect enhancements in quality, performance, and specifications not listed in this catalogue.
- To order IGETALLOY/SUMIBORON/SUMIDIA products, contact your nearest Sumitomo Electric Hardmetal dealer or distributor. For inquiries or other requests, feel free to contact our nearest sales office.

#### **Stock Markings**

- The following symbols indicate whether products are in stock.
- mark: Standard stocked item
  - mark: To be replaced with the new item featured on the same page
  - ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).
- \* mark: Semi-standard stock (please confirm stock availability)
- O mark: Stock or planned stock (please confirm stock availability)
- mark: Not available

Blank: Made-to-order item

#### **Meaning of Icons**

Endmills

Coating type (Example):



Grade

Drill

ISO classification of work material:

Example:











Holders Example:





3D







Shape:











No. of flutes:











**SUMIDIA** 

Application (Example):





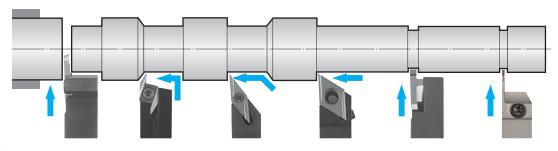






### **Small Lathe Tools Selection Guide**

#### **External Turning (1)**























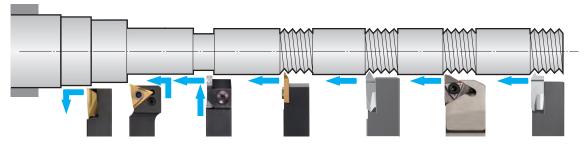








#### **External Turning (2)**





























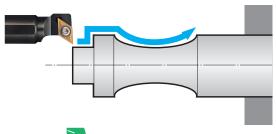






#### **External Turning (3)**

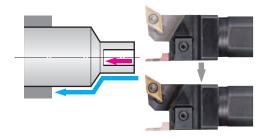
External turning made possible with holder sleeves.





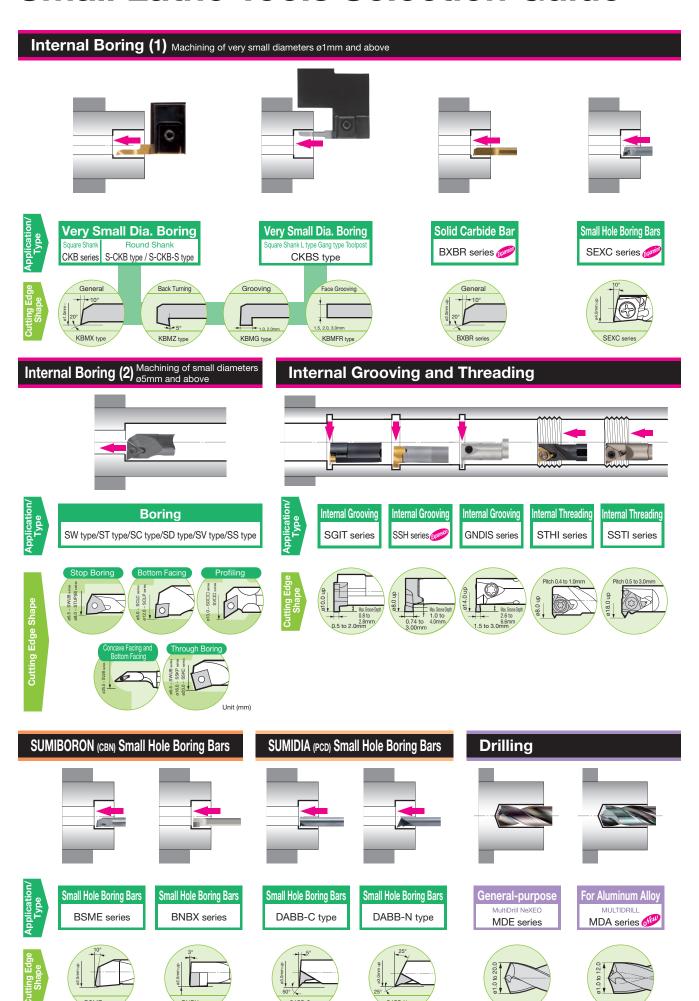
#### **Multi-functional Tool**

A single holder capable of performing two operations.





### **Small Lathe Tools Selection Guide**



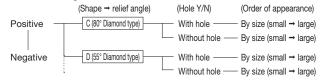
## Indexable Inserts for Turning

Positive / Negative 1-1 to 1-206



- (1) Turning insert listing order is positive type inserts followed by negative type inserts.
- (2) The order of listing in each type group is as follows: C (80° Diamond type) → D (55° Diamond type) → R (Round type) → S (Square type) → T (Triangular type) → V (35° Diamond type) → W (Trigon type).
- (3) Listings of inserts with the same relief angle starts with those with holes and then those without holes.
- (4) Inserts are grouped by shape and then further divided by size (small to large according to cutting edge length and thickness).

#### Structure Diagram



#### Symbols in Insert Diagrams

\*Symbols conform to ISO13399.

L: Cutting edge length, IC: Inscribed circle, S: Thickness, RE: Corner radius, D1: Hole diameter (For SUMIBORON and SUMIDIA, L indicates side length.)

#### Handed Inserts

\*Typically, photos show right-handed inserts.

#### Insert Grades

- (1) For IGETALLOY, the grades listed include Coated Carbide (CVD/PVD), Cermet, Cemented Carbide, and Ceramic.
- (2) SUMIBORON and SUMIDIA are described only in SUMIBORON section, and SUMIDIA section.
  - mark: Standard stocked item
  - mark: To be replaced with the new item featured on the same page
  - mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)
- \* mark: Semi-standard stock (please confirm stock availability)
- O mark: Stock or planned stock (please confirm stock availability)
  Blank: Made-to-order item
- mark: Not available

**Grade Selection Guide for Turning** 

**Positive Inserts** 

**Negative Inserts** 

(Positive/Negative Inserts) .....1-2
Grade & Chipbreaker Selection Guide for Turning
(Positive Type Inserts) .....1-3

Indexable Insert Identification Code .....1-4

Chipbreaker Selection -----1-58

C / 80° Diamond type (With Hole) ·····1-61

D / 55° Diamond type (With Hole) -----1-69

S / Square type (With Hole) -----1-77

T / Triangular type (With Hole) -----1-83

V / 35° Diamond type (With Hole) ·····1-92

W / Trigon type (With Hole) -----1-95

SUMIBORON Insert Identification Code .....1-100

Chipbreaker Selection -----1-102

SUMIBORON BREAK MASTER FV type/LV type/SV type ...1-103

SUMIBORON Cutting Edge Specifications .....1-104

SUMIBORON Inserts -----1-106

SUMIDIA Insert Identification Code .....1-187

SUMIDIA BREAK MASTER LD type/GD type ....1-188

SUMIDIA BREAK MASTER DM type .....1-189

SUMIDIA Inserts -----1-190

SUMIDIA/SUMIDIA BINDERLESS Inserts .....1-206

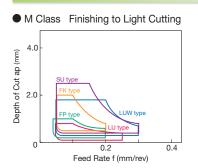
### **Grade Selection Guide for Turning (Positive/Negative Inserts)**

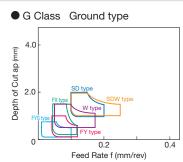


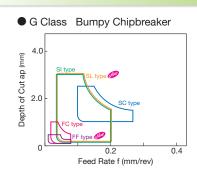
Work Material	P General Steel (Carbon Steel, Alloy Steel), Mild Steel	M Stainless Steel	K Cast Iron
Classification	Wear Resistance Fracture Resistance  - P01 P10 P20 P30 P40	Wear Resistance Fracture Resistance  M01 M10 M20 M30 M40	Wear Resistance ← Fracture Resistance ← K01 K10 K20 K30
Coated Carbide	AC8015P AC8020P AC8025P AC8035P AC810P AC820P AC830P	AC6030M AC6040M AC630M	AC4010K AC4015K AC420K AC8025P
For Small Lathes	AC1030U AC530U	AC1030U/ AC530U/	AC1030U AC530U
Coated Cermet	T1500Z		
Cermet	T1000A T1500A T2500A	/T1000A/	T1000A
Cemented Carbide	ST10P/ST20E/A30/		G10E
Ceramic			NB90S
Uncoated CBN Coated CBN			BNC500 Dedicated for Ductile Cast Iron)
Work Material	S Exotic Alloy	H Hardened Steel	Work Material Non-Ferrous Metal
Classification	Wear Resistance         Fracture Resistance           —         S01         S10         S20         S30	Wear Resistance Fracture Resistance  − H01 H10 H20 H30	Classification   Wear Resistance   Fracture Resistance   N01 N10 N20 N30
Coated Carbide	AC5005S AC5015S AC510U AC520U	AC5005S  AC5003U	Carbide H1  PCD DA150  DA1000
Cemented Carbide	EH510 EH520		Work Material Powdered Metal  Wear Resistance ← → Fracture Resistance
Ceramic	WX120	NB100C	Classification — 01 10 20 30
		BNC2105 BNC2115	Coated Carbide AC5005S  Cermet T1000A
Coated CBN		BNC2125  BNC2010  BNC20207	Uncoated CBN BN7115  Work Material Cemented Carbides and Hard Brittle Materials
Uncoated CBN	NCB100 New BN7125 BNS8125	BN1000 BN2000 BN350	Classification

Negative Positive

#### **Chipbreakers**







### **Recommended Cutting Conditions**

(Red text: 1st Recommendation Blue text: 2nd Recommendation)

Work Material	PFree-C	utting Steel	P Carbo	on Steel	M Stainle	ess Steel	S Heat-Re	esistant Alloy	H Harde	ned Steel	N Alumir	num Alloy	N B	rass
Insert Grade	vc (m/min)	f (mm/rev)	vc (m/min)	f (mm/rev)	vc (m/min)	f (mm/rev)	vc (m/min)	f (mm/rev)						
ACZ150	50 to 200	0.02 to 0.10	50 to 150	0.01 to 0.08	50 to 150	0.01 to 0.05					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
AC5015S	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 200	0.02 to 0.10	30 to 100	0.02 to 0.10					70 to 300	0.05 to 0.20
AC5025S	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 200	0.02 to 0.10	30 to 100	0.02 to 0.10					70 to 300	0.05 to 0.20
AC530U	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 200	0.02 to 0.10							70 to 300	0.05 to 0.20
AC1030U	50 to 200	0.02 to 0.15	50 to 150	0.02 to 0.10	50 to 150	0.02 to 0.10							70 to 300	0.05 to 0.20
T1000A	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 150	0.02 to 0.10					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
T1500A	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 150	0.02 to 0.10					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
T1500Z	50 to 200	0.02 to 0.15	50 to 200	0.02 to 0.10	50 to 150	0.02 to 0.10					70 to 300	0.05 to 0.20	70 to 300	0.05 to 0.20
BN1000									120 to 300	0.03 to 0.15				
BN2000									50 to 200	0.03 to 0.20				
BN7125							50 to 200	0.05 to 0.25						
DA1000											70 to 300	0.02 to 0.10	70 to 300	0.02 to 0.10

Positive Negative







### **Indexable Insert Identification Code**



Table 1: (1	I) Insert Shape
Cymbol	Innert Chan

Symbol	Insert	Shape	Apex Angle
С			80°
D		Diamond	55°
Е		Diamond	75°
F		type	50°
V			35°
R	0	Round type	-
S		Square type	90°
Т	Δ	Triangular type	60°
W		Trigon type	80°
Α		Dorollologram	85°
В		Parallelogram	82°
K		type	55°
Н	$\bigcirc$	Hexagonal type	120°
0	0	Octagonal type	135°
Р	$\bigcirc$	Pentagonal type	108°
L		Rectangular type	90°
М	$\Diamond$	Diamond type	86°

Table 2: (2) Relief Angle

3°
,
i° 🔽
)°
j° 🔽
)°
)°
• 🗸
_

that are sometimes used with a 10° relief angle.

Table 3: (3) Tolerance

(mm)

Symbol	Corner Height	Inscribed Circle	Thickness
Α	± 0.005	± 0.025	± 0.025
F	± 0.005	± 0.013	± 0.025
С	± 0.013	± 0.025	± 0.025
Н	± 0.013	± 0.013	± 0.025
E	± 0.025	± 0.025	± 0.025
G	± 0.025	± 0.025	± 0.13
J*	± 0.005	± 0.05 to ± 0.15	± 0.025
K*	± 0.013	± 0.05 to ± 0.15	± 0.025
L*	± 0.025	± 0.05 to ± 0.15	± 0.025
M*	± 0.08 to ± 0.2	± 0.05 to ± 0.15	± 0.13
N*	± 0.08 to ± 0.2	± 0.05 to ± 0.15	± 0.025
U*	± 0.13 to ± 0.38	$\pm 0.08$ to $\pm 0.25$	± 0.13
I			

★ mark indicates inserts that generally have sintered side surfaces. Refer to the table below (reference) for details on M class precision.

#### Table 4: (4) Insert Hole

	Insert	Hole		0 0 1 1		Insert	Hole		0 0 11 1
Symbol	Hole	Style	Chipbreaker	Shape (Cross Section)	Symbol	Hole	Style	Chipbreaker	Shape (Cross Section)
N			No		Α			No	
R	No	No	One Face		М	Yes	es Cylindrical	One Face	
F			Double-sided		G			Double-sided	
W	Vaa	Straight hole	No		В	Yes	Straight hole	No	
Т	Yes	Single chamfer (40° to 60°)	One Face		Н	162	Single chamfer (70° to 90°)	One Face	
Q	Vaa	Straight hole	No		С	Vaa	Straight hole	No	
U	Yes	Double chamfer (40° to 60°)	Double-sided		J	Yes	Double chamfer (70° to 90°)	Double-sided	
					Χ	-	-	-	Special

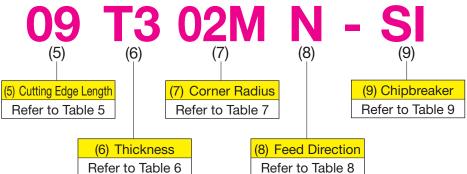
(Reference) Breakdown of M-Class Tolerance by Shape and Size Corner Height Tolerance

Inscribed Circle	Triangular type	Square type	80° Diamond type	55° Diamond type	35° Diamond type	Round type
6.35	± 0.08	± 0.08	± 0.08	± 0.11	± 0.16	-
9.525	± 0.08	± 0.08	± 0.08	± 0.11	± 0.16	-
12.70	± 0.13	± 0.13	± 0.13	± 0.15	-	-
15.875	± 0.15	± 0.15	± 0.15	± 0.18	-	-
19.05	± 0.15	± 0.15	± 0.15	± 0.18	-	-
25.40	± 0.18	± 0.18	± 0.18	-	-	-
31.75	-	± 0.20	-	-	-	-

#### ■ Inscribed Circle Tolerance

(mm)

						_ ' '
Inscribed Circle	Triangular type	Square type	80° Diamond type	55° Diamond type	35° Diamond type	Round type
6.35	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	-
9.525	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05
12.70	± 0.08	± 0.08	± 0.08	± 0.08	-	± 0.08
15.875	± 0.10	± 0.10	± 0.10	± 0.10	-	± 0.10
19.05	± 0.10	± 0.10	± 0.10	± 0.10	-	± 0.10
25.40	± 0.13	± 0.13	± 0.13	-	-	± 0.13
31.75	-	± 0.15	-	-	-	± 0.15



Picture of insert shown as example

Table 5: (5) Cutting Edge Length (Typical Examples)

Note:	Note: Cutting edge length indicated is measured without corner radii.								(mm)				
Shape	Symbol	Cutting Edge Length	Inscribed Circle	Shape	Symbol	Cutting Edge Length	Inscribed Circle	Shape	Symbol			Inscribe Negative	
	03	3.55	3.50		07	7.7	6.35		03	3.8		5.56	
	04	4.37	4.30	D	09	9.7	7.94		04	4.3		6.35	
	06	6.4	6.35	55° Diamond	11	11.6	9.525	<b>W</b> Trigon	05	5.4		7.94	
<b>C</b>	08	8.0	7.94	type	15	15.5	12.70	type	06	6.5	3.2	9.525	3.97
Diamond	09	9.7	9.525		19	19.4	15.875		08	8.7	4.6	12.70	4.76
type	12	12.9	12.70	4-				4	10	10.9		15.875	
///	16	16.1	15.875	V	08	8.3	4.76		11		4.3		6.35
-	19	19.3	19.05	35°	09	9.7	5.56		16		6.5		9.525
	25	25.8	25.4	Diamond type	11	11.1	6.35		08	8.	0	8.	0
				турс	16	16.6	9.525		10	10.	0	10.	0
				4	22	22.1	12.7		12	12.	0	12.	0
	06	6.35	6.35		06	6.9	3.97		12	12.	70	12.	70
	S7	7.14	7.14		08	8.2	4.76	<b>R</b> Round	15	15.	875	15.	875
s	07	7.94	7.94	Т	09	9.6	5.56	type	16	16.	0	16.	0
Square type	09	9.525	9.525	Triangular type	11	11.0	6.35		19	19.	05	19.	05
Турс	12	12.70	12.70	type	13	13.7	7.94		20	20.	0	20.	0
	15	15.875	15.875		16	16.5	9.525		24	24.	0	24.	0
-	19	19.05	19.05	-	22	22.0	12.70		25	25.	0	25.	0
	25	25.40	25.40		27	27.5	15.875		25	25.	40	25.	40
	31	31.75	31.75		33	33.0	19.05		32	32.	0	32.	0

Table 6: (6) Thickness

Symbol	Thickness (mm)				
X1	*				
01	1.59				
02	2.38				
T2	2.78				
03	3.18				
Т3	3.97				
04	4.76				
05	5.56				
06	6.35				
07	7.94				
09	9.52				

CC□T03X1 Insert Thickness: 1.40 CC□T04X1 Insert Thickness: 1.80

Table 7: (7) Corner Radius

Į		
	00	Sharp Edged
	003	0.03
	008	0.08
	01	0.1
	015	0.15
	018	0.18
	02	0.2
	035	0.35
	04	0.4
	08	0.8
	10	1.0
	12	1.2
)	16	1.6
	20	2.0
	24	2.4
	32	3.2

Symbol Corner Radius (mm)

"M" after the corner radius code indicates a negative tolerance.

Round type (Metric) Round type (Inch) Round Insert (Imperial)

M0

Table 6: (6) I dea Bildette												
Symbol	Feed Direction											
R	Right-Hand											
L	Left-Hand											
N	Neutral											

Table 8: (8) Feed Direction Table 9: (9) Chipbreaker

Symbol	Applications	3D type (Bumpy type)	Standard	Handed type
F□	Fine Finishing to Finishing	FA, FL, FE, FF, FB, FC, FK, FP		FT, FX, FZ FYS,FY, FW
S□ L□	Light Cutting	SE, SEW, SI, SC, SF, SS, SU, SX LU, LUW, LB		SD SDW ST
G□ U□	General Machining	GE, GU, GUW UG, UP US, UX	GZ UZ	UM
М□	Roughing	MP, MU, MX, ME	МС	MM HM
Н□	Heavy Cutting	HG, HP, HF	HU HW	

Other Sp	pecials
Wide Chipbreaker	W
Double Positive Chipbreaker	GX
For Chamfering	С
For Round type Inserts	RD, RP, RX, RH
For Exotic Alloy Turning	EF, EG, EX, EM
For Aluminum Alloy Turning	AW, AG, AX, AY, LD, GD
For Hardened Steel Turning	FV, LV, GH
For Carburised Layer Removal	SV
For Stainless Steel Turning	EF, EG, EM

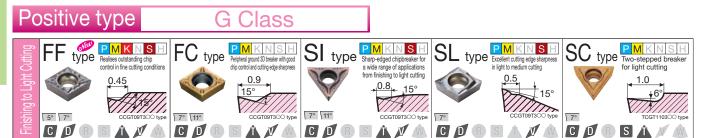
**Positive** 

Negative

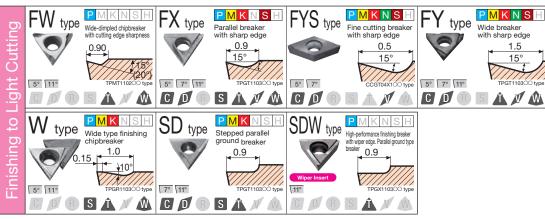
C,

R

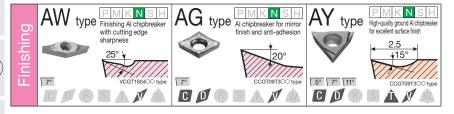
### **Chipbreaker Selection**



### Positive type G Class (Ground type)



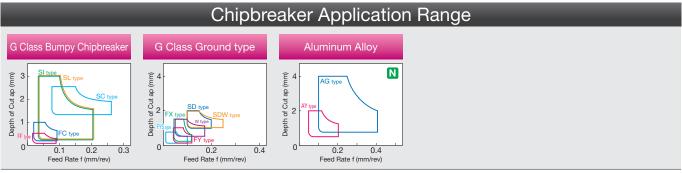
### Positive type Aluminum Alloy Cutting





BREAK MASTER (CBN/PCD) For Chamfering

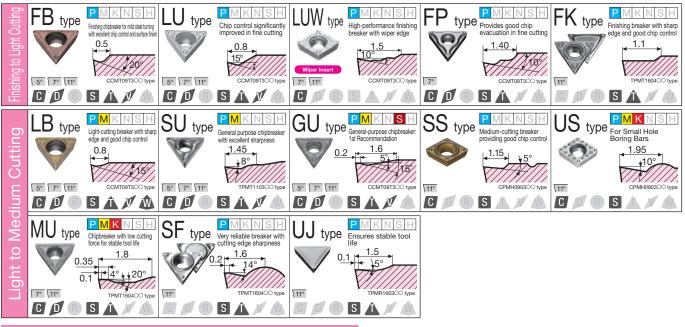
Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel



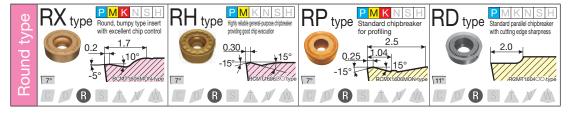
Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.).

### **Chipbreaker Selection**

### Positive type M Class (Finishing to Medium Cutting)

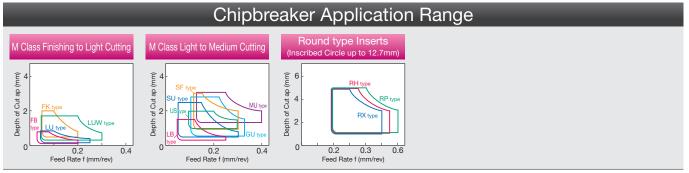


### Positive type Round type Inserts





Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel



Positive Negative

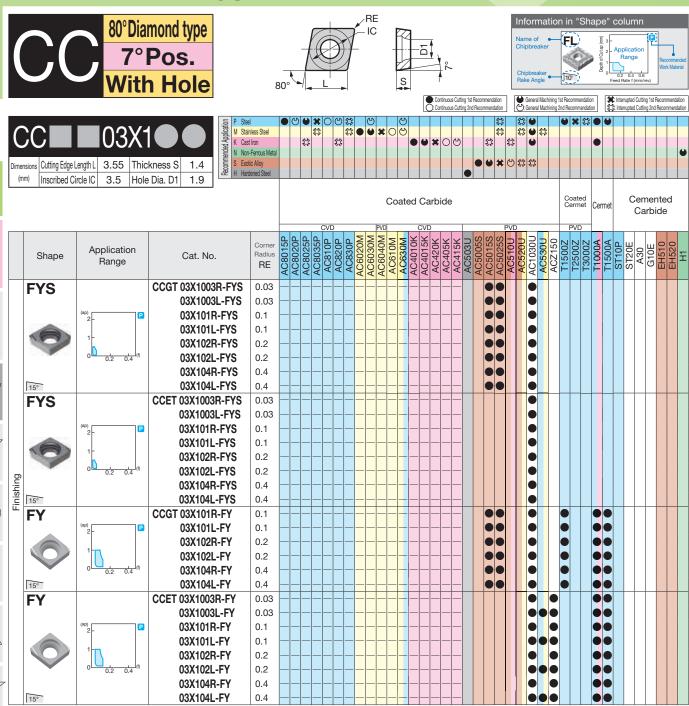
Positive

Negative

R

S

### 80° Diamond type Positive Inserts



15°

### 80° Diamond type Positive Inserts

04X102L-FY

04X104R-FY

04X104L-FY

0.2

0.4

Indexable Inserts

Insert

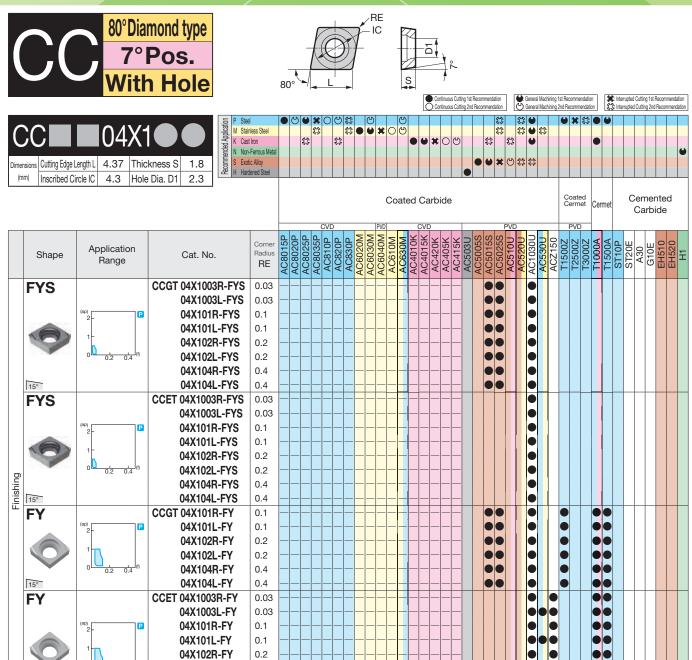
**Positive** 

Negative

C

R

S





**Positive** 

Negative

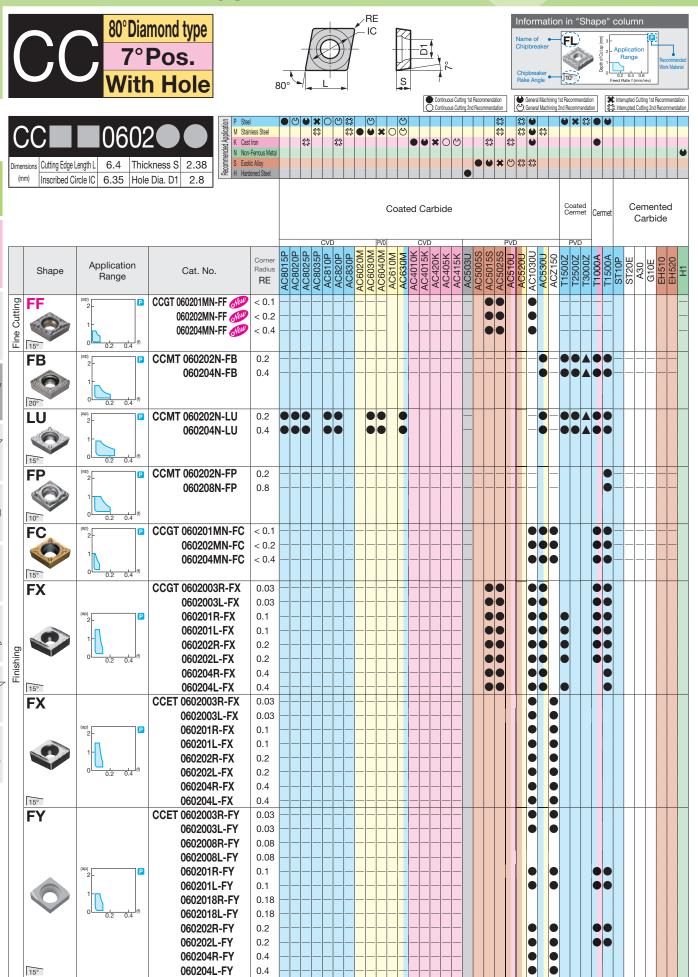
R

S

 $\langle w \rangle$ 

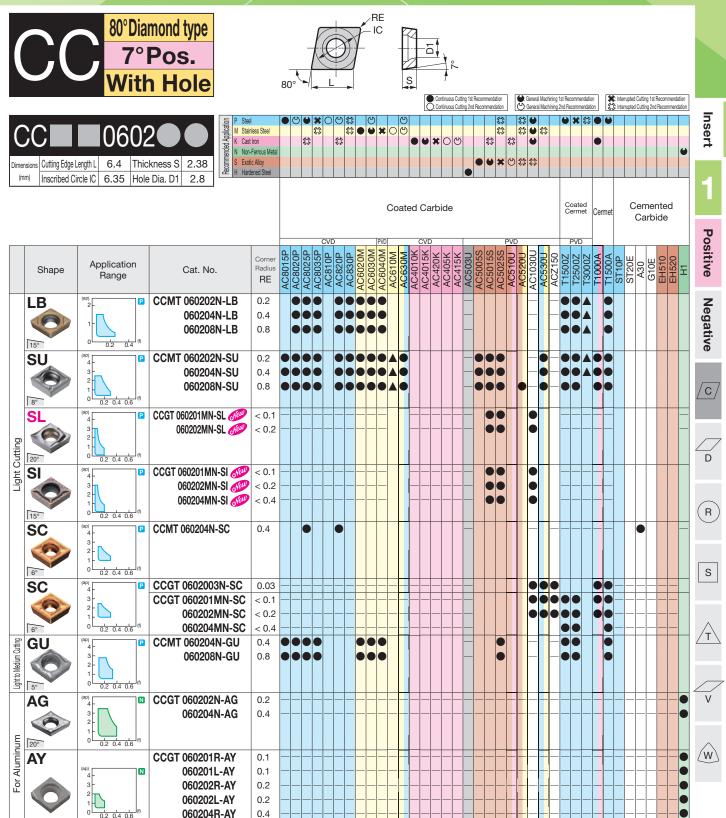
### 80° Diamond type Positive Inserts

#### Indexable Inserts



A "<" next to the corner radius RE indicates a negative tolerance.

Indexable Inserts



A "<" next to the corner radius RE indicates a negative tolerance.

15°

060204L-AY

Insert

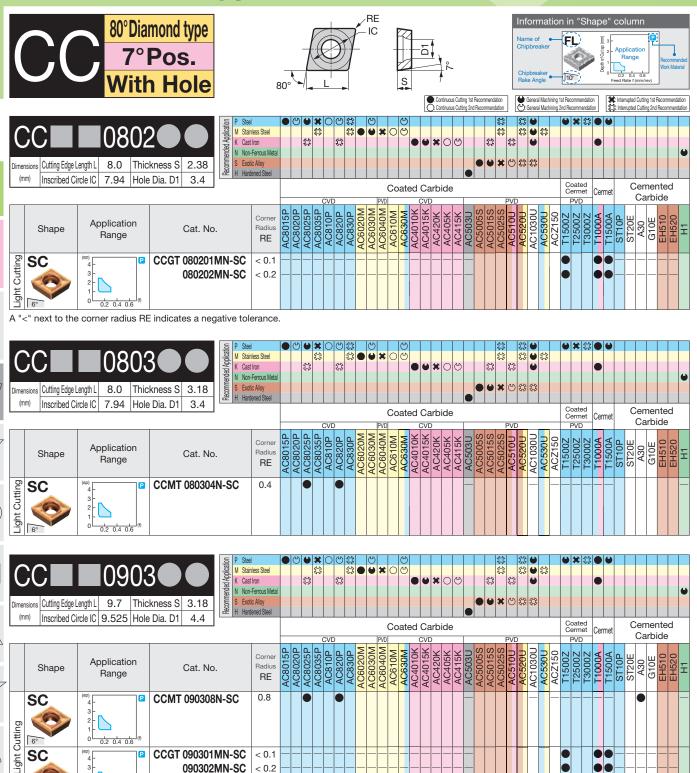
Negative Positive

С

R

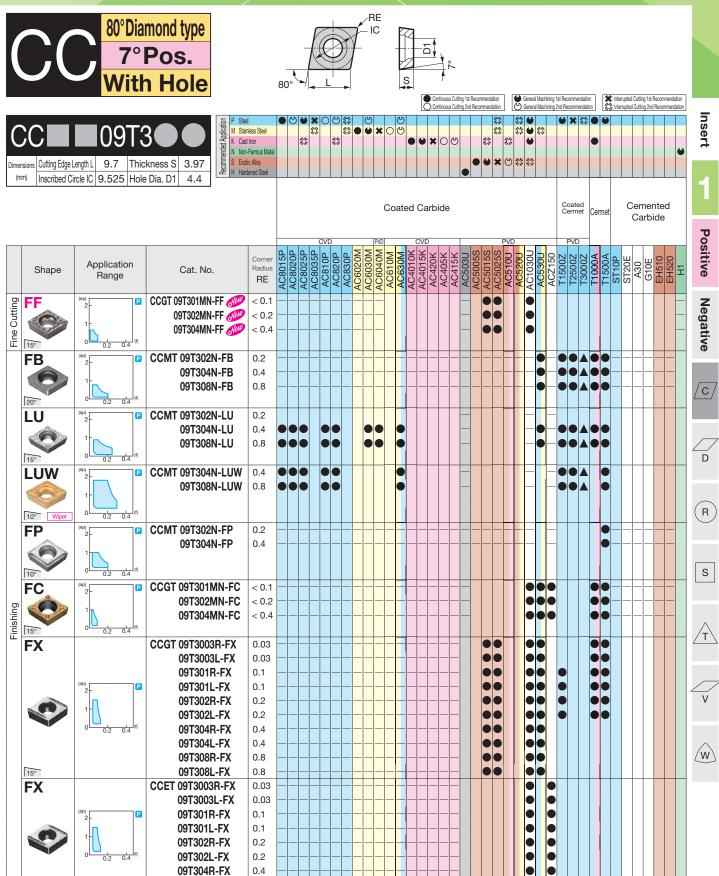
S

### 80° Diamond type Positive Inserts



A "<" next to the corner radius RE indicates a negative tolerance.

Indexable Inserts



A "<" next to the corner radius RE indicates a negative tolerance.

15°

09T304L-FX

0.4

**Positive** 

Negative

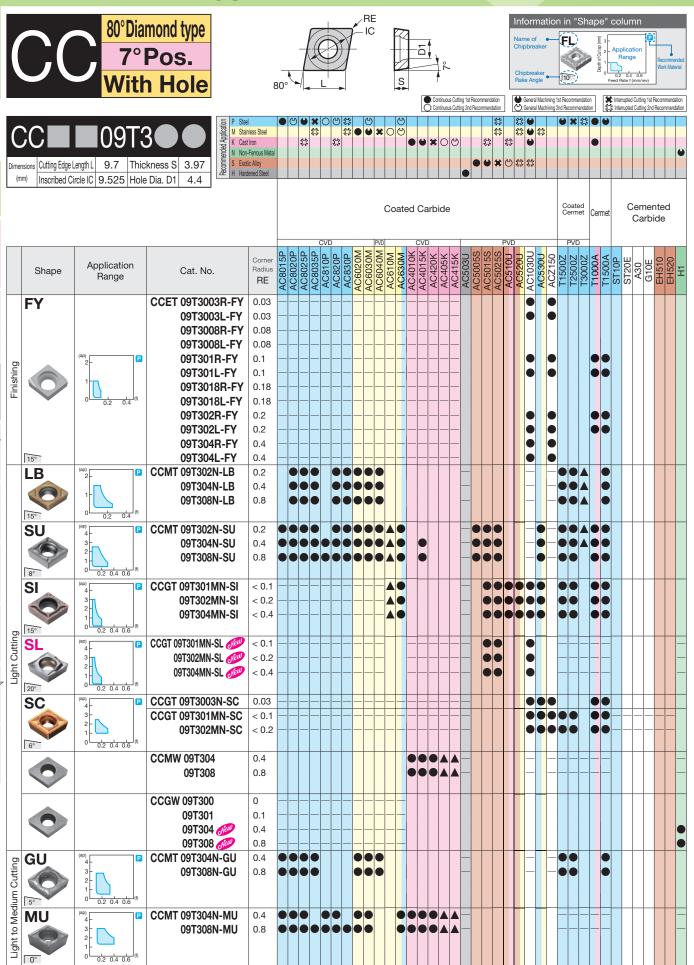
R

S

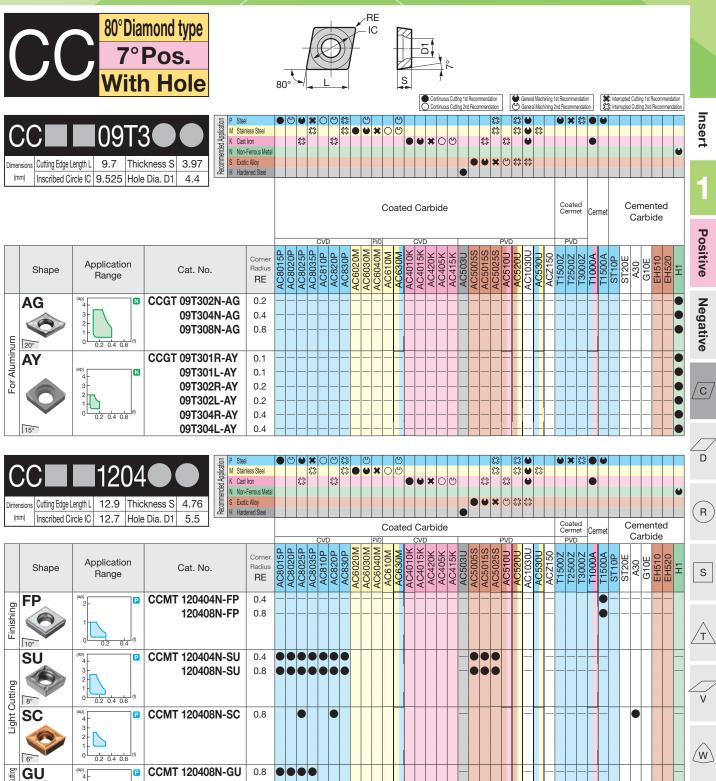
(w)

### 80° Diamond type Positive Inserts

#### Indexable Inserts



A "<" next to the corner radius RE indicates a negative tolerance.



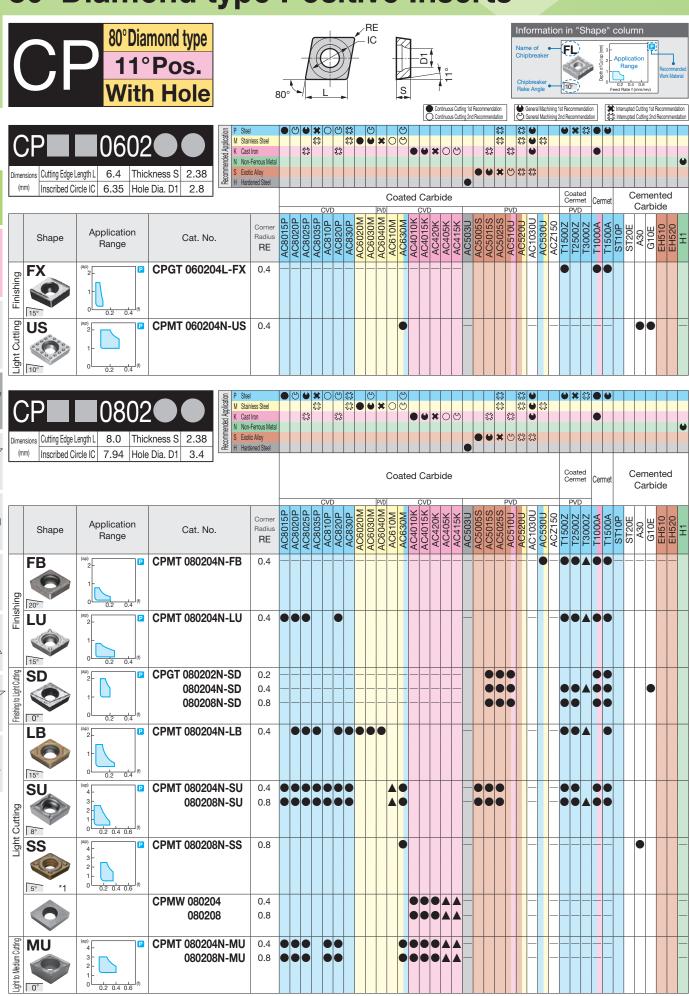
Insert

Negative Positive

R

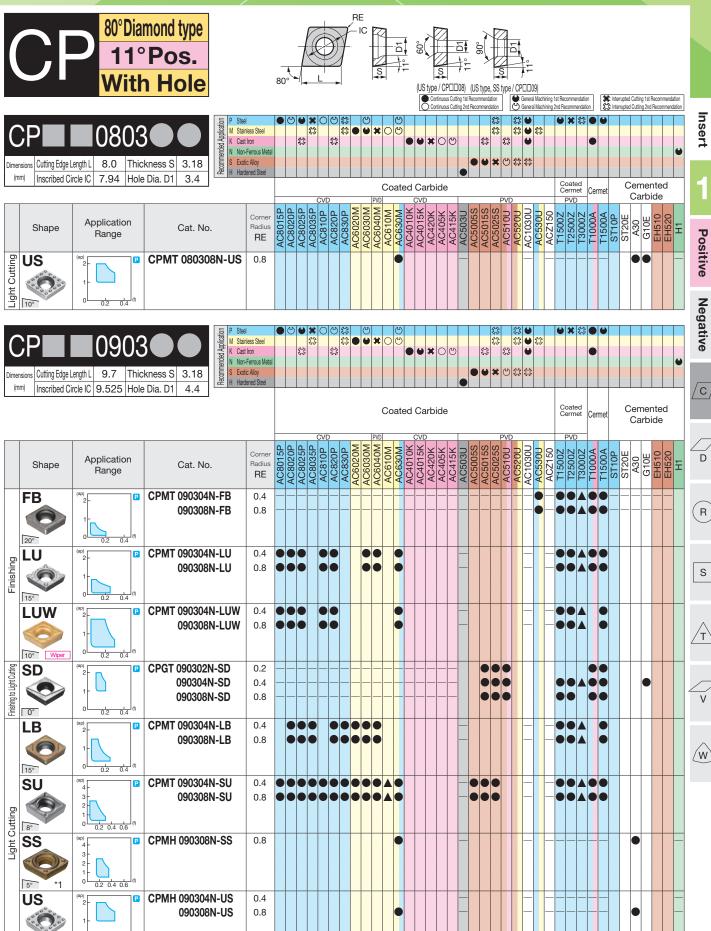
S

### 80° Diamond type Positive Inserts



<sup>\*1:</sup> Hole Dia. D1=4.8.

Indexable Inserts



<sup>\*1:</sup> Hole Dia. D1=4.8.

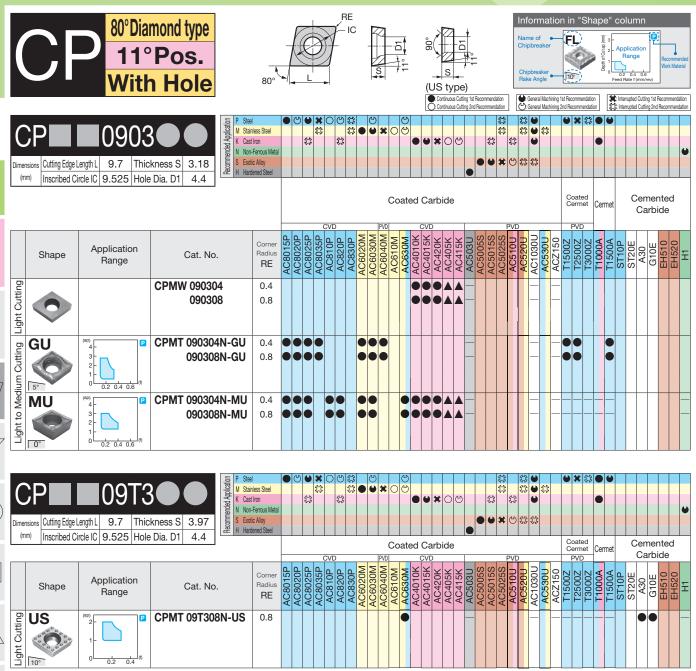
10°

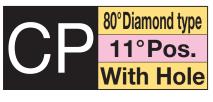
Insert

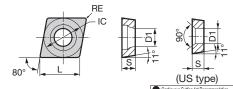
Negative Positive

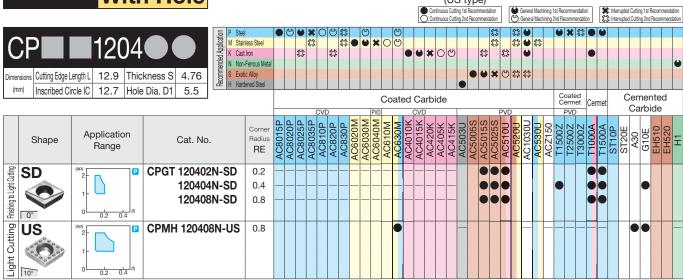
R

### 80° Diamond type Positive Inserts















Positive

Negative

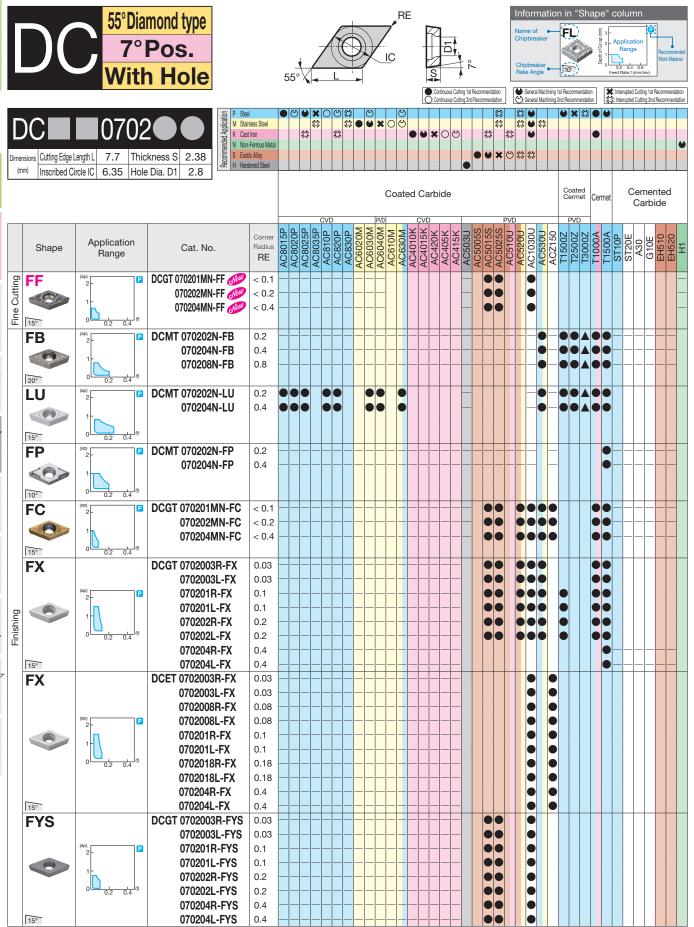
C

R

S

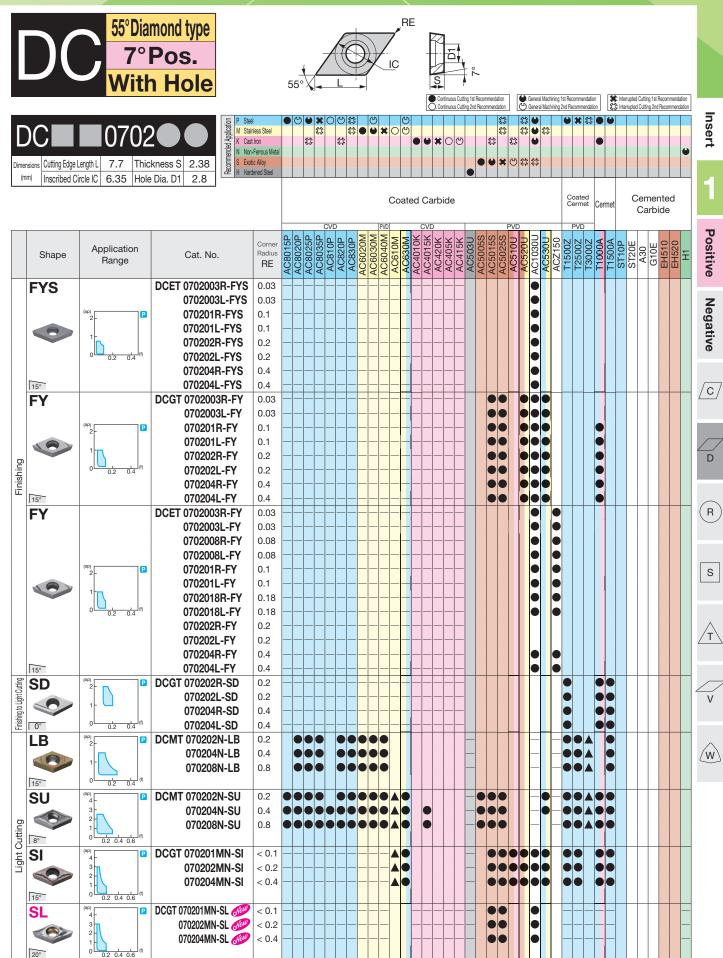
### 55° Diamond type Positive Inserts

#### Indexable Inserts

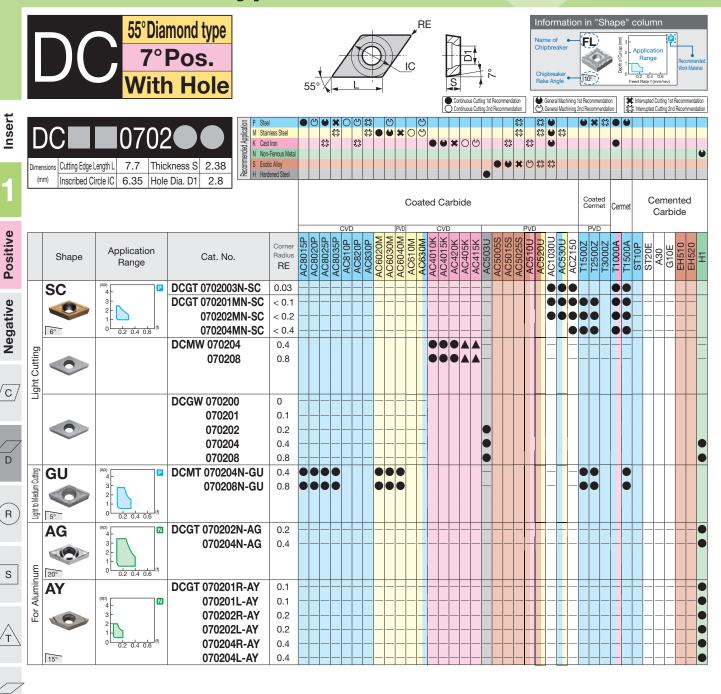


A "<" next to the corner radius RE indicates a negative tolerance.

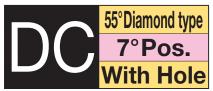
Indexable Inserts

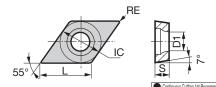


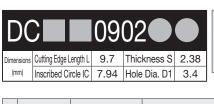
A "<" next to the corner radius RE indicates a negative tolerance.

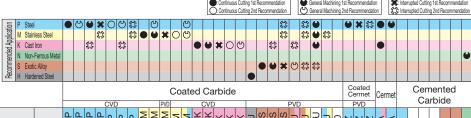


#### Indexable Inserts



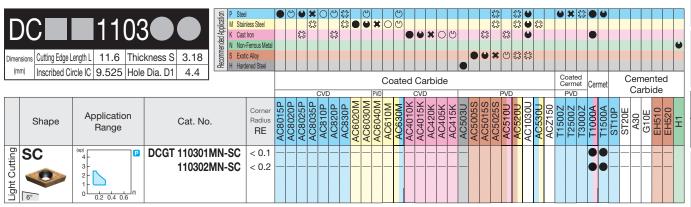






								CVE	)			PVD		(	CVD						PVD					PVD	)				∪ar	DIG	Э	
	Shape	Application Range	Cat. No.	Corner Radius RE	AC8015P	AC8020P	ACS025P	AC810P	AC820P	AC830P	AC6030M	AC6040M	AC630M	AC4010K	AC4015K	AC420K	AC415K	AC503U	AC5005S	AC5025S	AC510U	AC520U	AC10300	AC2150	T1500Z	T2500Z	T3000Z	T1000A	ST10P	ST20E	A30	G10E FH510	EH520	Ξ
	SC SC	(ap) P	DCGT 090201MN-SC	< 0.1			-	$\vdash$		-			-		$\vdash$		-										(	9		Н	-		F	
	Ħ	3-	090202MN-SC	< 0.2		-	-	╢		-	-	- -	+		-	-	-										(			H	- -	-	$\vdash$	
	te l	1-																																
	ig 6°	0.2 0.4 0.6 <sup>(f)</sup>																																
Δ	"<" next to the	e corner radius RF	indicates a negative tol	erance																														

next to the corner radius RE indicates a negative tolerance.



A "<" next to the corner radius RE indicates a negative tolerance.



R

Insert

Positive Negative

C/

D







Positive

Negative

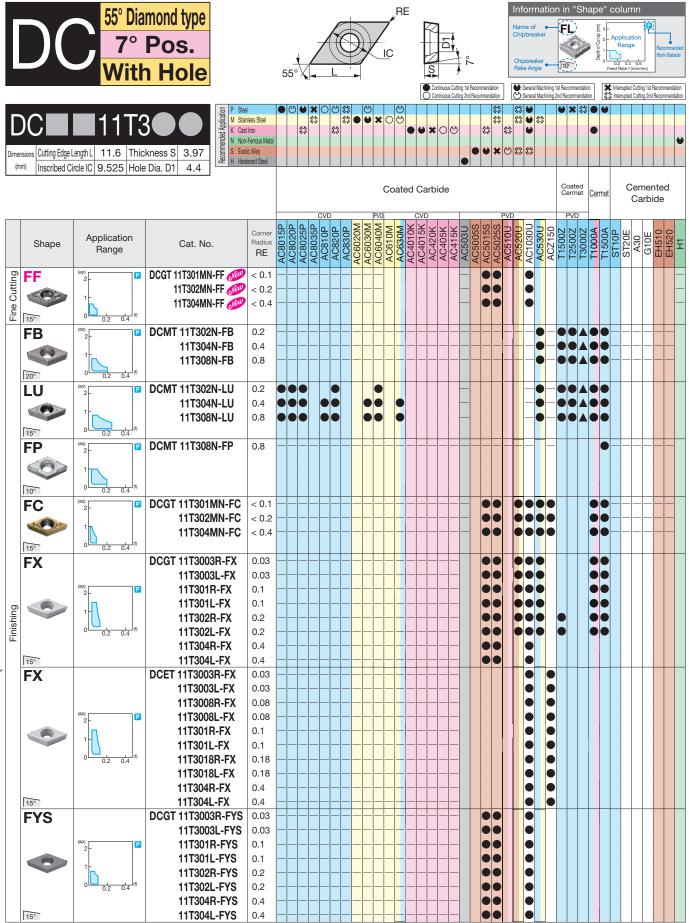
C

R

S

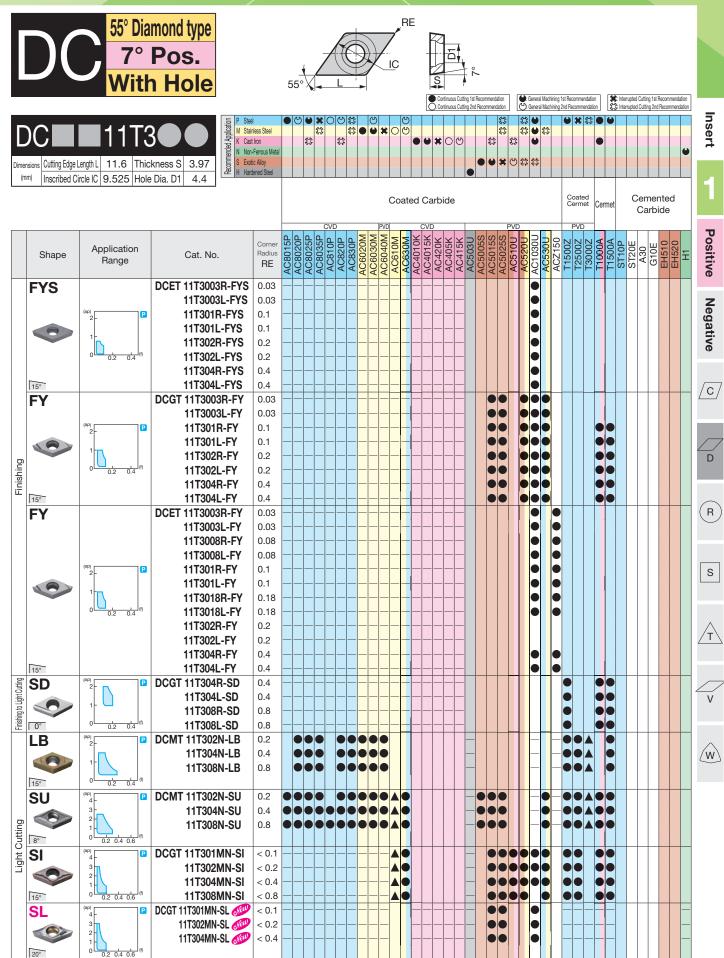
### 55° Diamond type Positive Inserts

#### Indexable Inserts

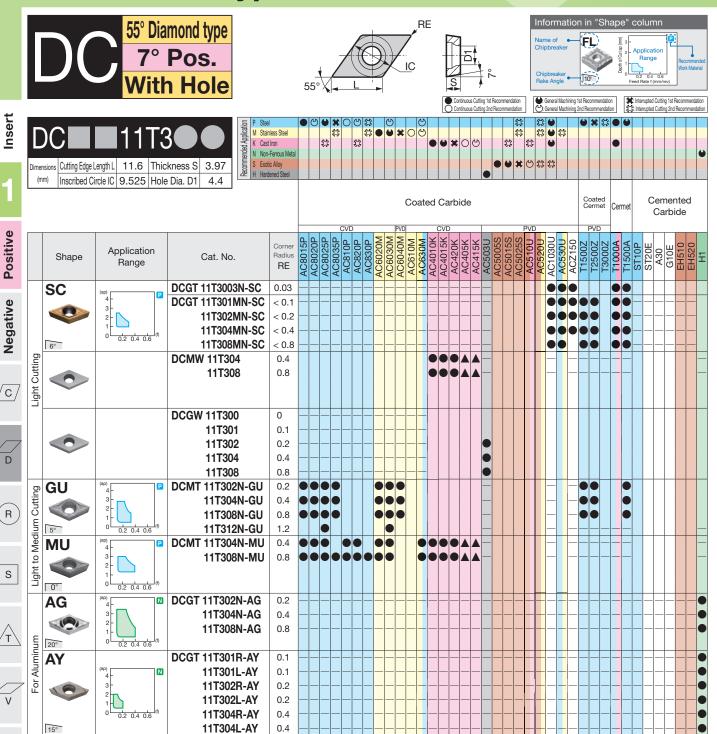


A "<" next to the corner radius RE indicates a negative tolerance.

Indexable Inserts



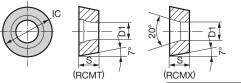
A "<" next to the corner radius RE indicates a negative tolerance.

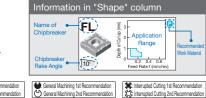


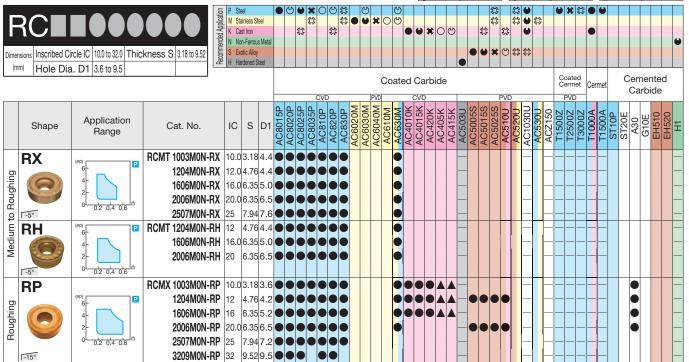
### **Round type Positive Inserts**

#### Indexable Inserts









Insert

Positive

Negative







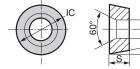




#### Indexable Inserts

### **Round type Positive Inserts**





Ţ	
ē	
S	
_	

Negative Positive







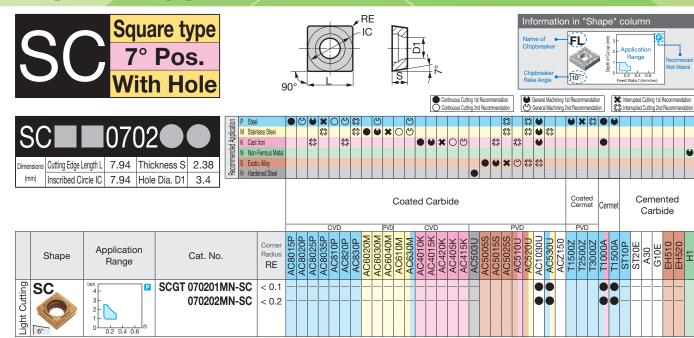




		<b>VVIT</b>	1 Hole													1																			
																			ous Cutti ous Cutti					: Gen : Gen	eral Mac eral Mac	thining 1 chining 2	1st Reco	ommenda commend	ition Jation	<b>‡</b>	Interrupte Interrupte	d Cutting ad Cuttin	j 1st Reco	mmenda commend	tion ation
	sions Inscribed Cir	rcle IC 8.0 to 24.0 Thic	700	P St M St K Co N No	ainless S ast Iron on-Ferror cotic Allo ardened	ıs Metal		<b>⊕</b>			(C)		9	**	99		<b>U</b> 1	*C	9		\$		## (O)				•	# 8		)					•
ę	"   Tiole Dia	. D1 0.0 to 1.0												C	oate			bid	Э								Ce	oated ermet		ermet			nent rbid		
_				_						CVD				VD			VD				_		PVD	_			F	PVD	1	_	_		_	_	
	Shape	Application Range	Cat. No.	IC	S	D1	AC8015P	AC8020P	AC8035P	AC810P	AC820P	AC6020M	AC6030M	AC6040M	AC630M	AC4010K	AC4015K	AC420K	AC415K	AC503U	AC5005S	AC5025S	AC510U	AC5200	AC530U	ACZ150	T1500Z	T2500Z	T1000A	T1500A	ST10F ST20E	A30	G10E FH510	EH520	壬
			RPGW 0803M0	8	3.18	3.3			-								1						•									П	•	П	
<u>"</u>			1004M0	10	4.76	3.8			_ _	_			<u> </u>															_ _		4_					
5			1204M0		4.76	1			_																			_ _							
			1604M0		4.76																														
5			2004M0		4.76	1																													
			2406M0		6.35	1																													
1	RD		RPGT 0803M0N-RD	_	3.18	-											#				+		Ħ		Ħ			#	Ħ	H			+	+	
	שח	(ap)	1004M0N-RD		4.76	1												_												Ш					
ກ 		6	1204M0N-RD		1																														
3		2	1604M0N-RD							Ш																			4						
2		0 0,2 0,4 0,6	2004M0N-RD			1																							1						
	0°	0.2 0.4 0.0	2406M0N-RD		1																								4						

### Square type Positive Inserts

#### Indexable Inserts

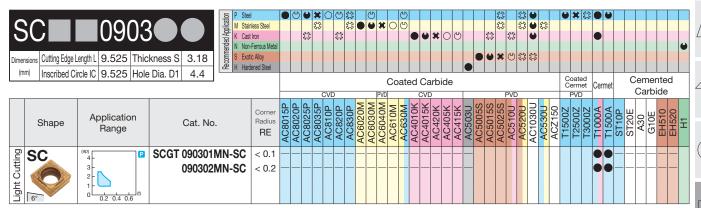


A "<" next to the corner radius RE indicates a negative tolerance.

0.2 0.4 0.6

070202MN-SC

< 0.2



A "<" next to the corner radius RE indicates a negative tolerance.

Insert

Positive

Negative

C

D

R







Insert

Positive

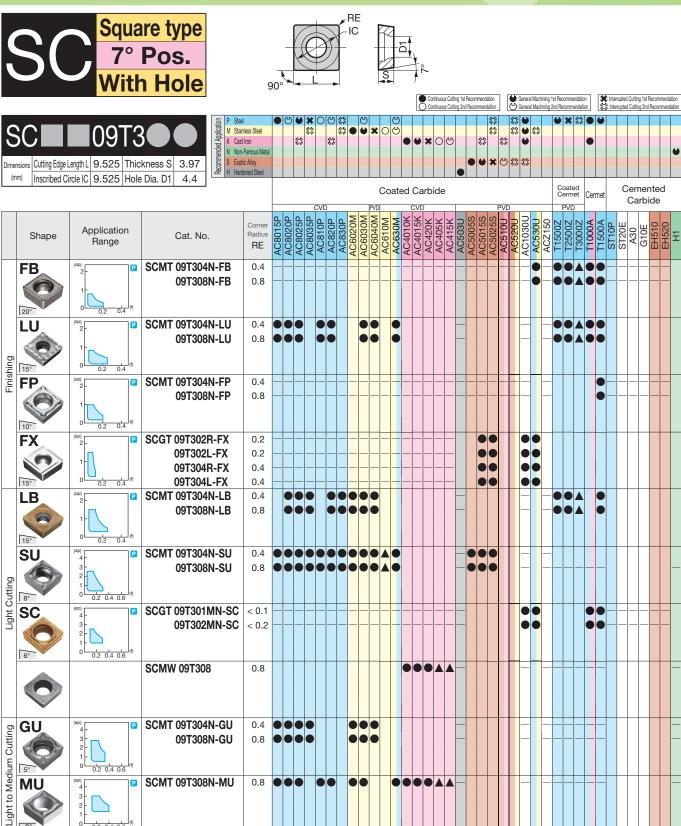
Negative

С,

R

S

### **Square type Positive Inserts**



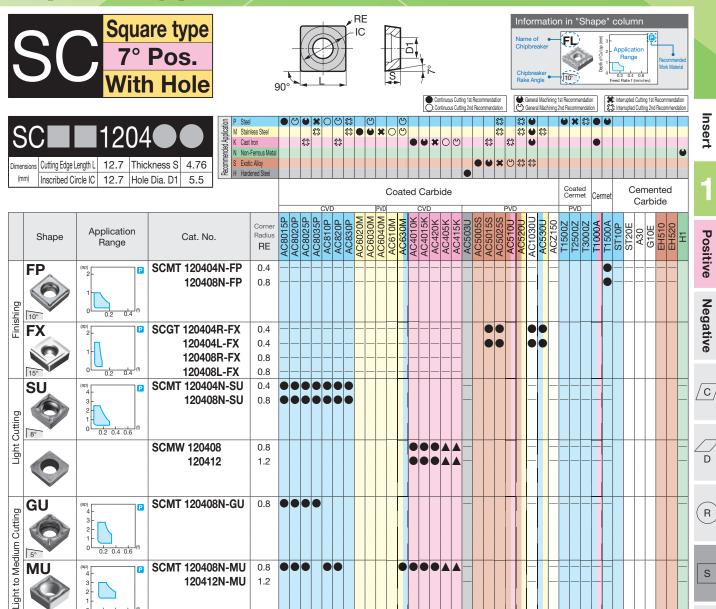
A "<" next to the corner radius RE indicates a negative tolerance.

SCMT 09T308N-MU

0.8

0.2 0.4 0.6

## **Square type Positive Inserts**









Insert

Negative Positive

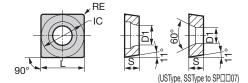
/c/

R

## **Square type Positive Inserts**

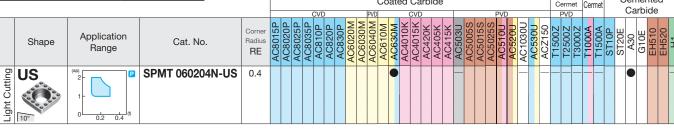
Indexable Inserts

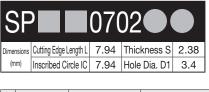


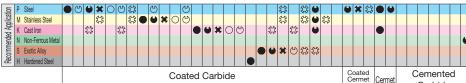


SPI 0602 Cutting Edge Length L 6.35 Thickness S 2.38 (mm) Inscribed Circle IC 6.35 Hole Dia. D1 2.8

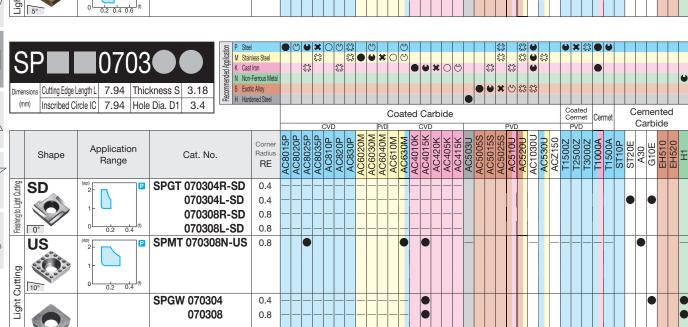
Confinus Culting 1st Recommendation
Confinus Culting 2st Recommend



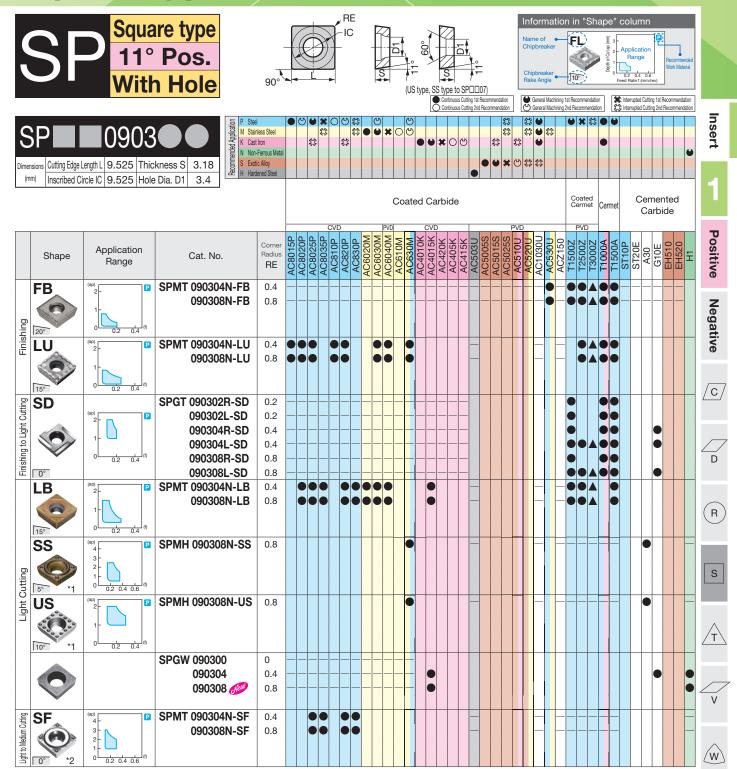




							CVI	)		PVE		C	VD				PVD				PVD		L		Gai	DIU	e	
	Shape	Application Range	Cat. No.	Corner Radius RE	AC8015P	AC8025P	AC8035P AC810P	AC820P	AC6020M	AC6030M AC6040M	AC610M	AC4010K	AC420K AC420K	AC415K	AC5005S AC5005S	AC5015S AC5025S	AC510U	AC1030U	AC530U	T15007	T2500Z	T3000Z	T1500A	ST10P ST20F	A30	G10E FH510	EH520	Ē
Light Cutting	SS 5°	(ap) 4 3 2 1 0.2 0.4 0.6 (f)	SPMT 070208N-SS	0.8																								



## Square type Positive Inserts



<sup>\*1:</sup> Hole Dia. D1=4.4.

<sup>\*2:</sup> Hole Dia. D1=3.3.

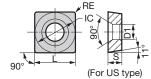
Insert

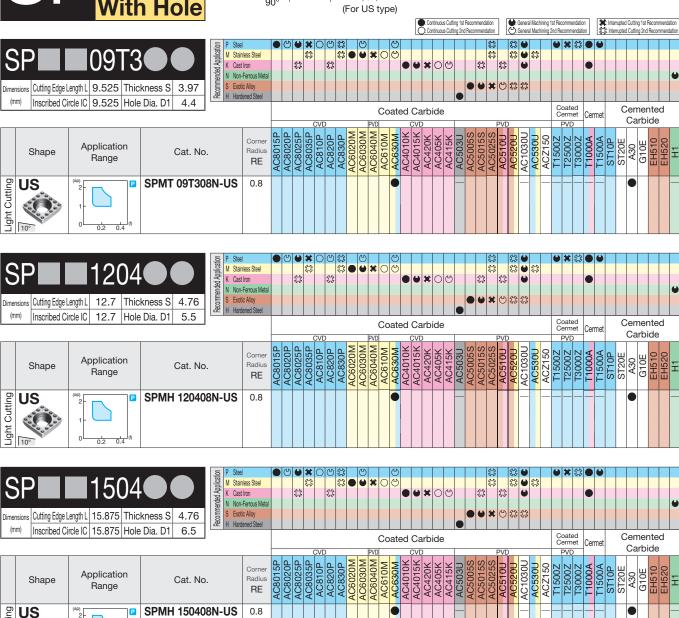
Negative Positive

C

R

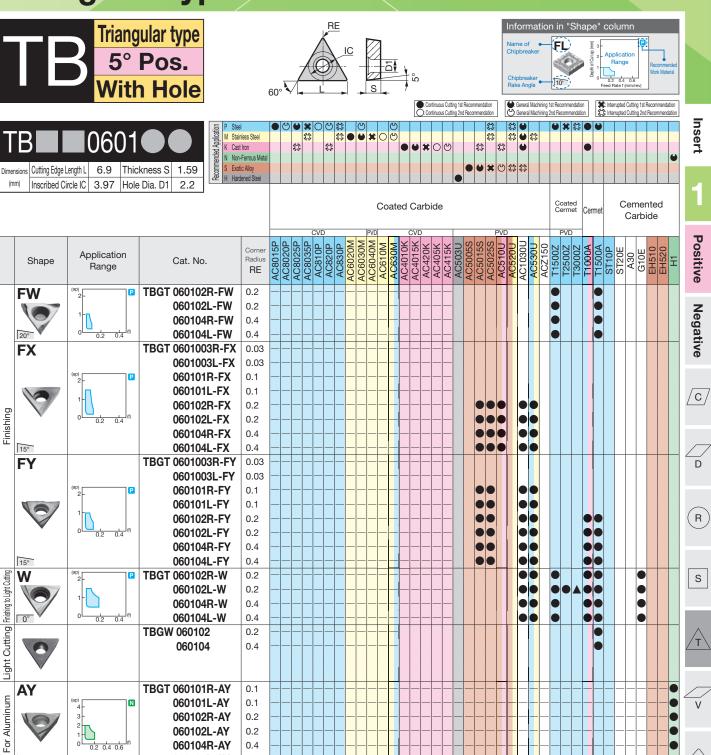






## Triangular type Positive Inserts

060104L-AY





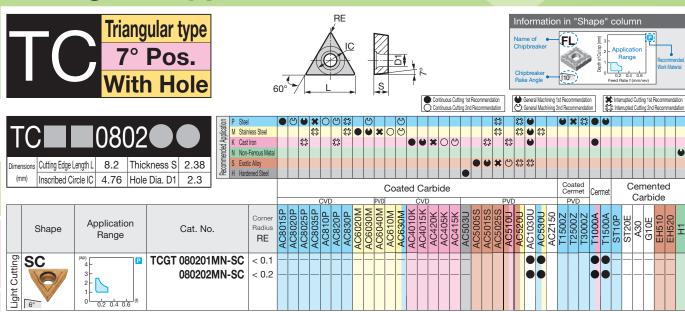
Negative Positive

′c,

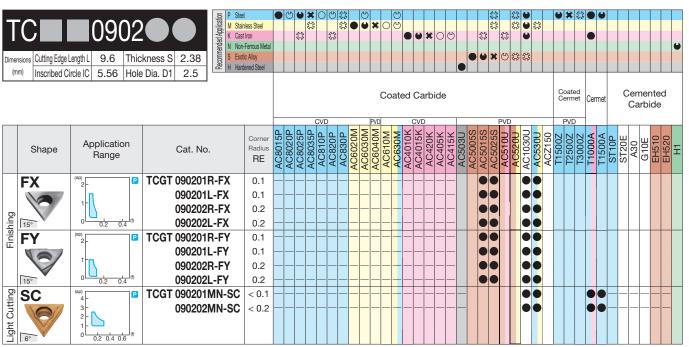
R

S

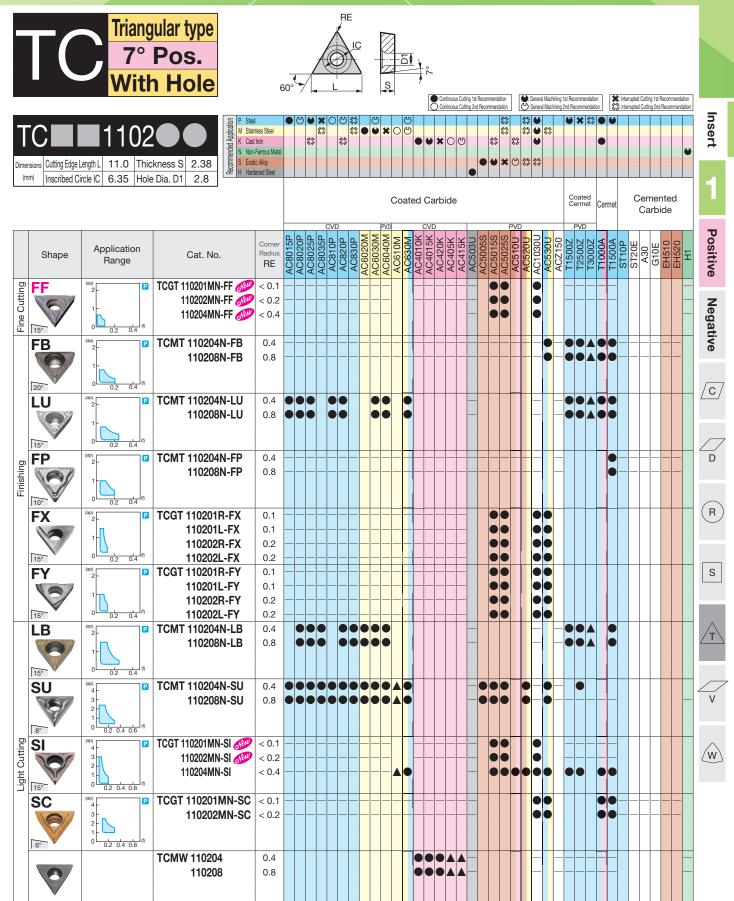
### **Triangular type Positive Inserts**



A "<" next to the corner radius RE indicates a negative tolerance.



A "<" next to the corner radius RE indicates a negative tolerance.

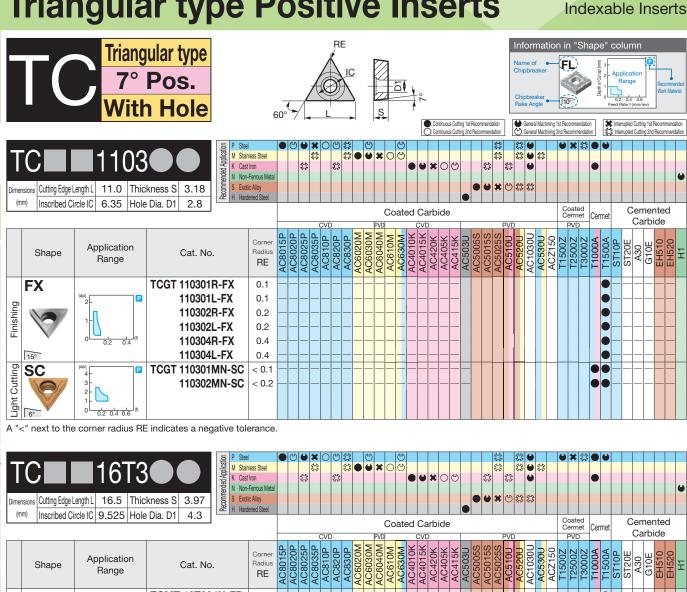


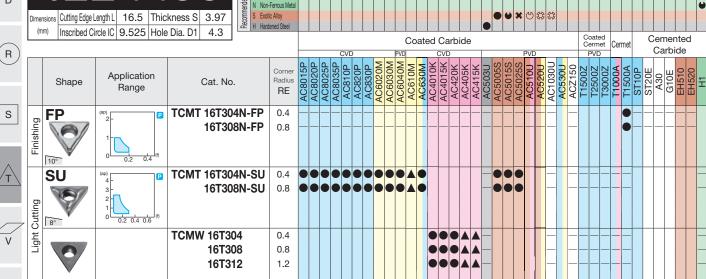
A "<" next to the corner radius RE indicates a negative tolerance.

Negative Positive

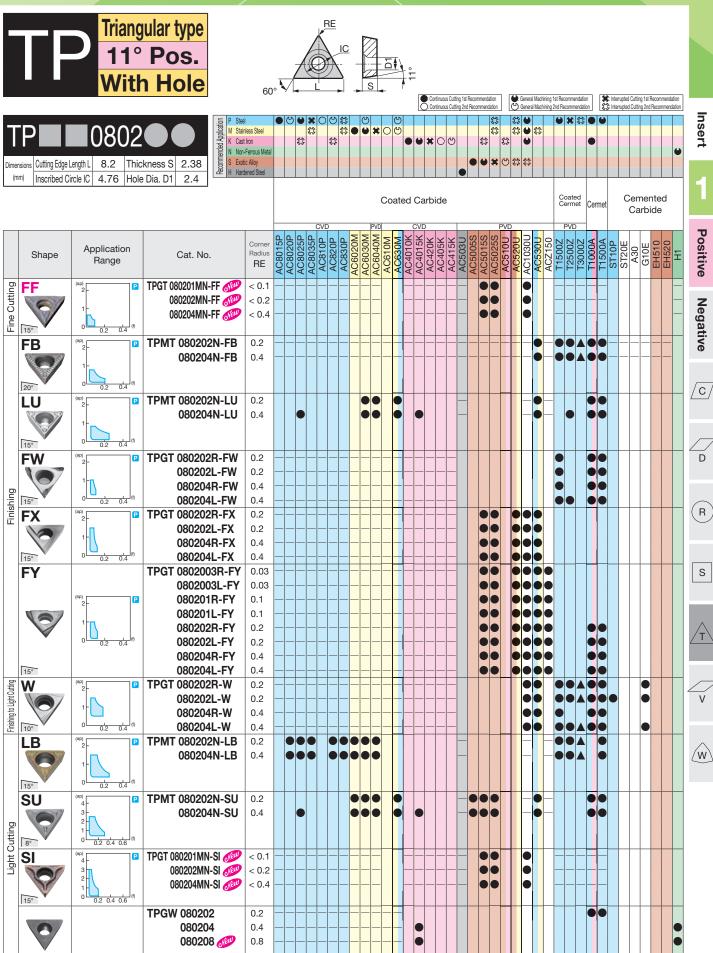
C

### **Triangular type Positive Inserts**





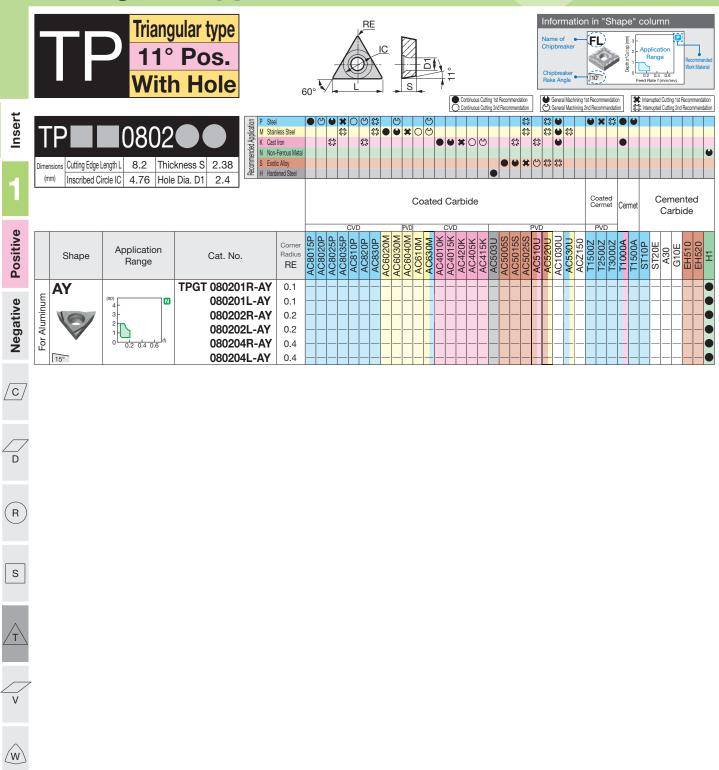
## **Triangular type Positive Inserts**



0.2 0.4 0.6

080204L-AY

### **Triangular type Positive Inserts**



<sup>0.2 0.4 0.6</sup> AY For Aluminum

O90208	_
TDCT 000004D AV	_

090202R-AY

090202L-AY

090204R-AY

090204L-AY

090204R-FY

090204L-FY

090204N-LB

TPMT 090202N-LB

TPMT 090204N-SU

0.4

0.4

0.2

0.4

0.4

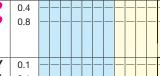
0.2

0.2

0.4







•

(w)

R

S

15°

LB

15°

SU

<sup>\*1:</sup> Hole Dia. D1=2.5.

Positive

Negative

R

S

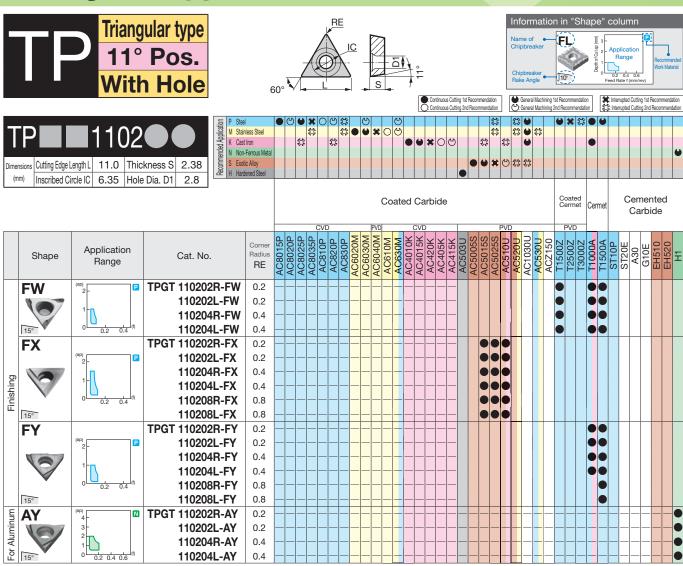
0.2 0.4 0.6

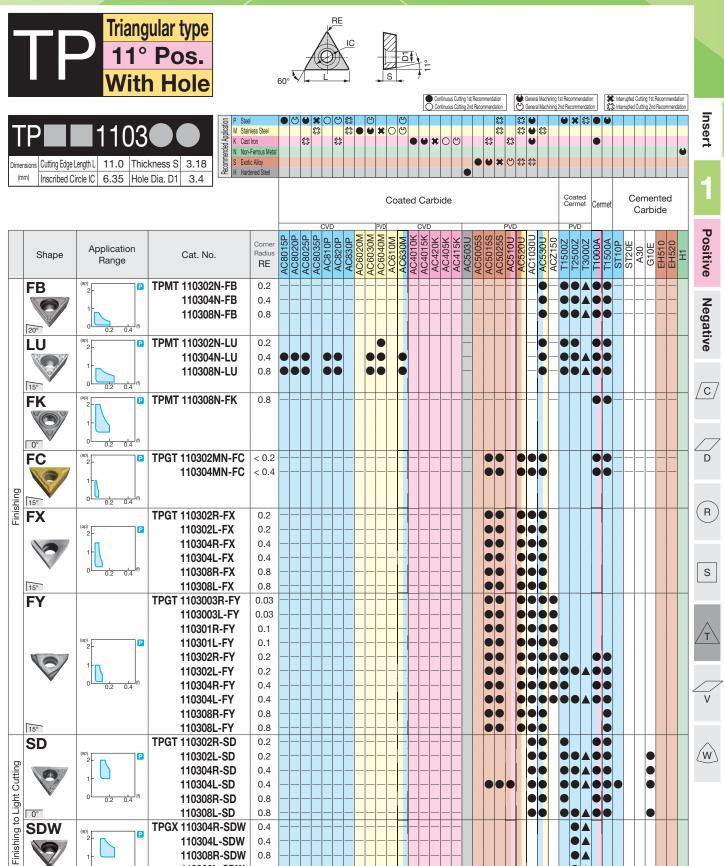
### **Triangular type Positive Inserts**

0.4

0.4

110204L-AY





A "<" next to the corner radius RE indicates a negative tolerance.

**SDW** 

TPGX 110304R-SDW

110304L-SDW

110308R-SDW

110308L-SDW

0.4

0.4

0.8

8.0

Positive

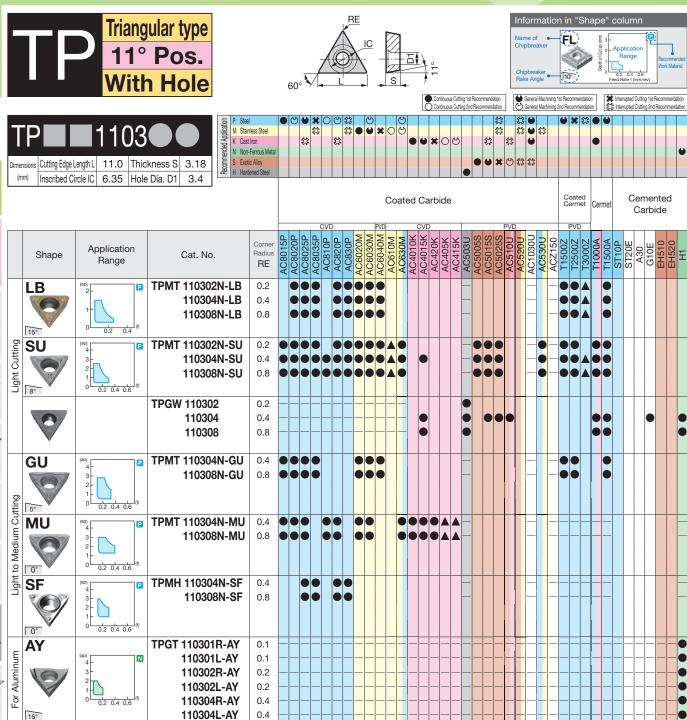
Negative

С<sub>/</sub>

R

S

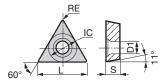
## **Triangular type Positive Inserts**

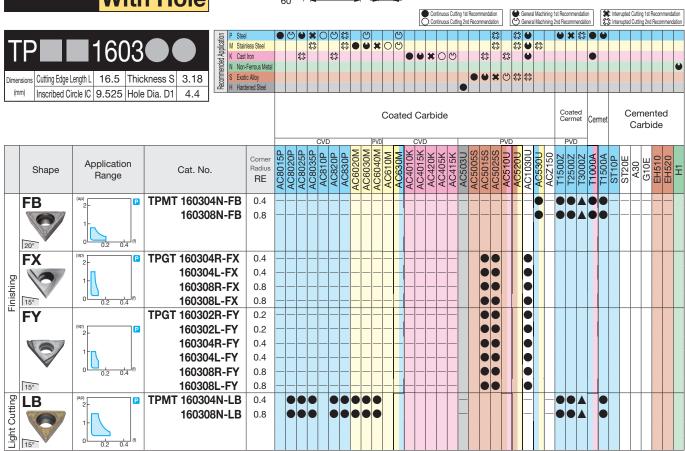


## Triangular type Positive Inserts

#### Indexable Inserts









R

Insert

Positive

Negative

C/







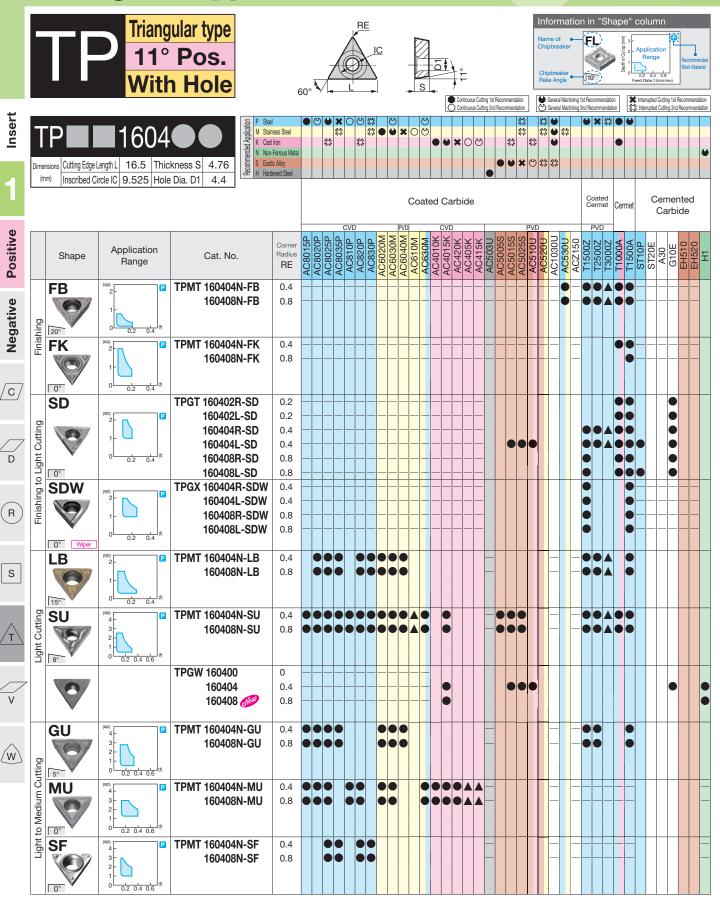
**Positive** 

Negative

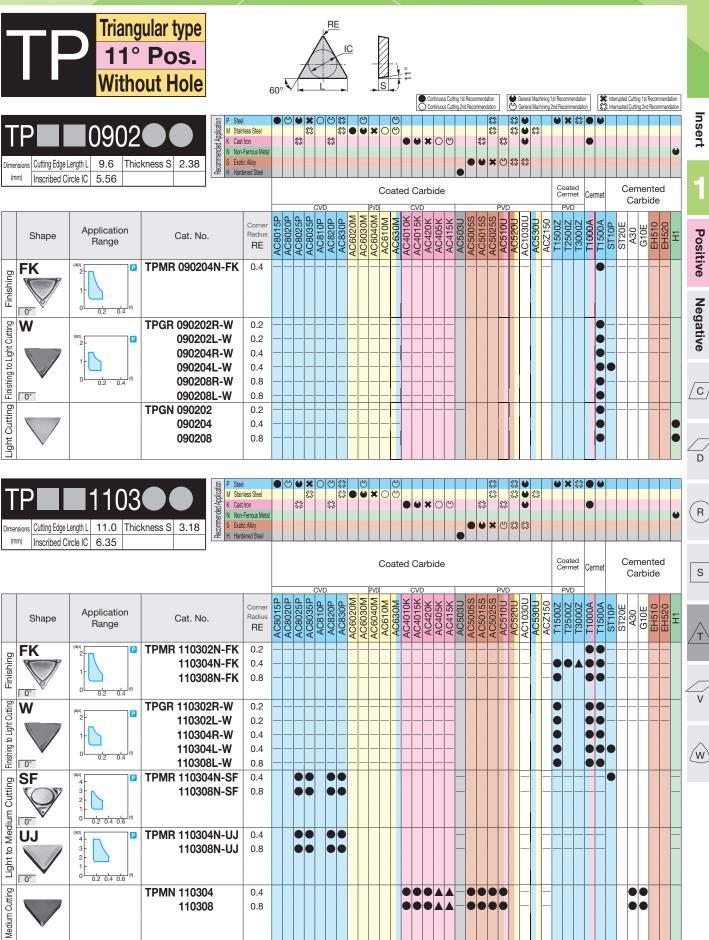
R

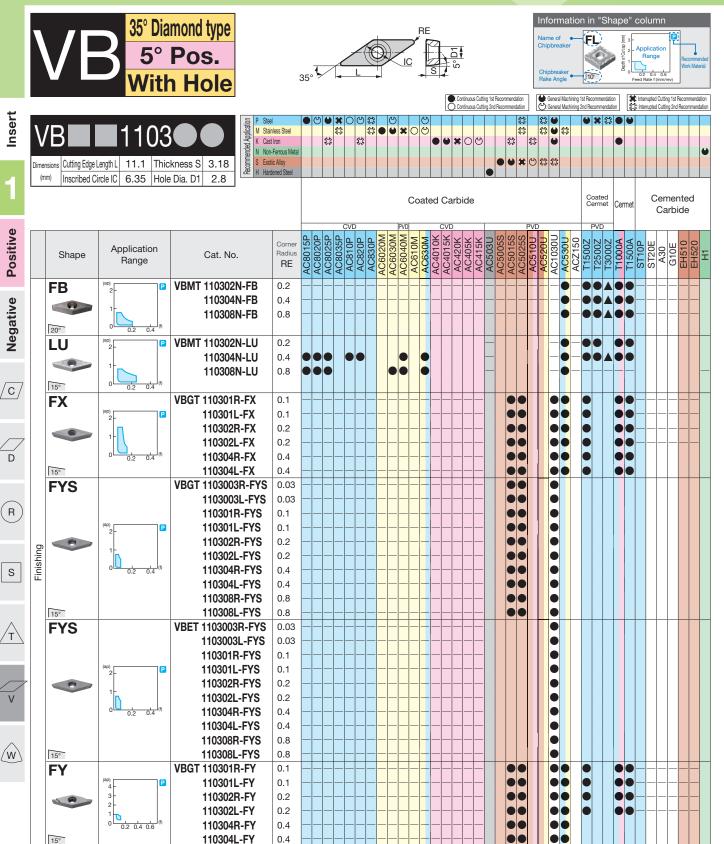
S

### **Triangular type Positive Inserts**



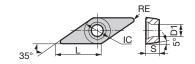
## Triangular type Positive Inserts





Indexable Inserts





Dim	/B Cutting Edge L Inscribed Ci		kness S 3.18	nless Steel		***	\$	**		Coa	arbic		\$	###		000	Machining :		t ted	Cermet		Cen	mente		
	Shape	Application Range	Cat. No.	Corner Radius RE	AC8015P AC8020P	AC8025P AC8035P	AC810P S	AC830P	AC6030M AC6040M		AC420K	AC405K AC415K	AC5005S		AC520U &	AC1030U	AC530U ACZ150	T1500Z		T1000A T1500A	ST10P	S120E A30	G10E FH510	EH520	Ē
	LB 15°	(ap) 1 1 0 0.2 0.4	VBMT 110302N-LB 110304N-LB 110308N-LB	0.2 0.4 0.8	•	000000000000000000000000000000000000000	•													•					
Liaht Cuttina	SU	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f)	VBMT 110302N-SU 110304N-SU 110308N-SU	0.2 0.4 0.8	•	•						_				— — —	• — • —							-	_
	SI 15°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f)	VBGT 110301MN-SI 110302MN-SI 110304MN-SI 110308MN-SI	< 0.1 < 0.2 < 0.4 < 0.8												•									
Light to Medium Outting	GU 5°	(ap) 4  P  P  1  P	VBMT 110304N-GU 110308N-GU	0.4	•••							_	_			_				•					
For Aluminum	<b>AY</b>	(ap) 4 3 - 1 0 0.2 0.4 0.6 (f)	VBGT 110301R-AY 110301L-AY 110302R-AY 110302L-AY 110304R-AY 110304L-AY	0.1 0.1 0.2 0.2 0.4 0.4																					

A "<" next to the corner radius RE indicates a negative tolerance.

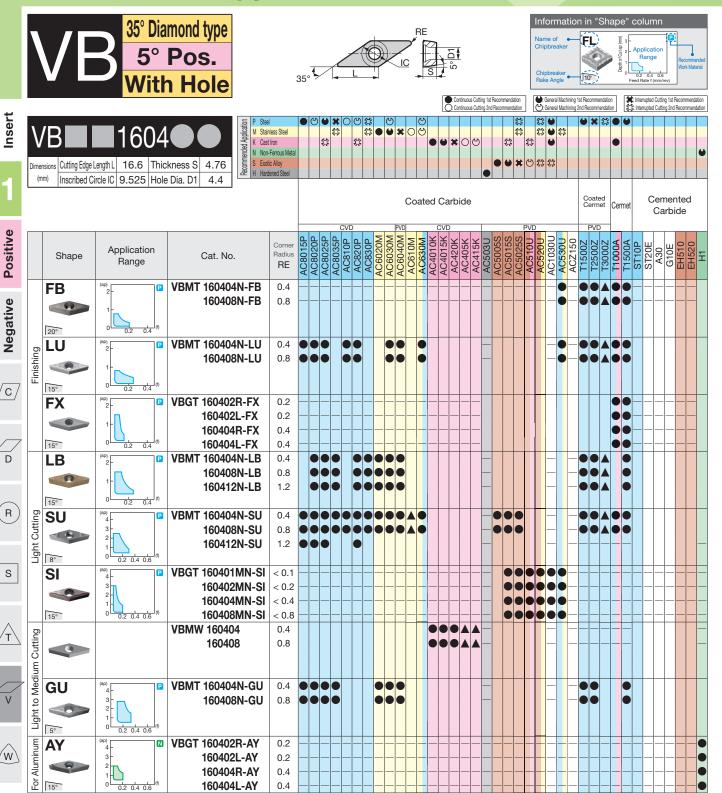


Insert

Positive Negative C







A "<" next to the corner radius RE indicates a negative tolerance.

Indexable Inserts

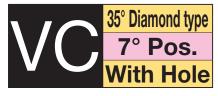
Insert

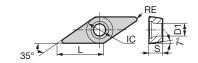
**Positive** 

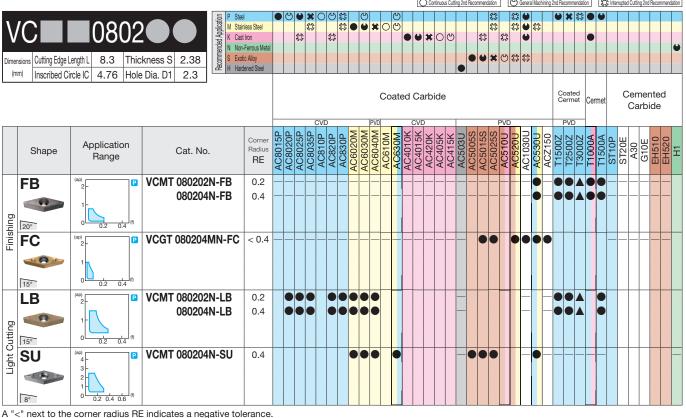
Negative

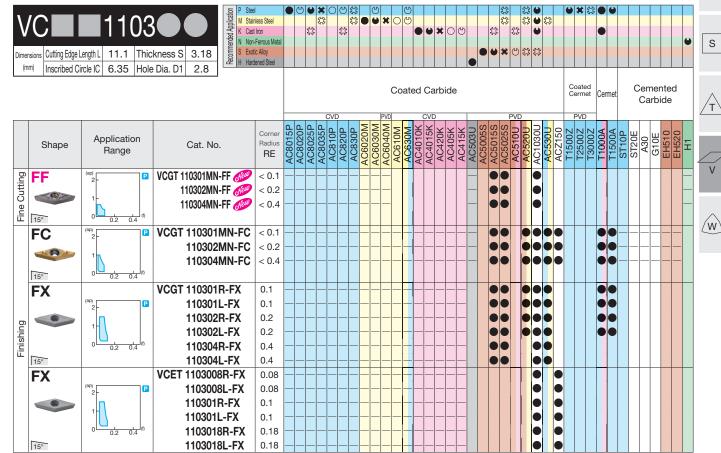
C

R









A "<" next to the corner radius RE indicates a negative tolerance.

Positive

Negative

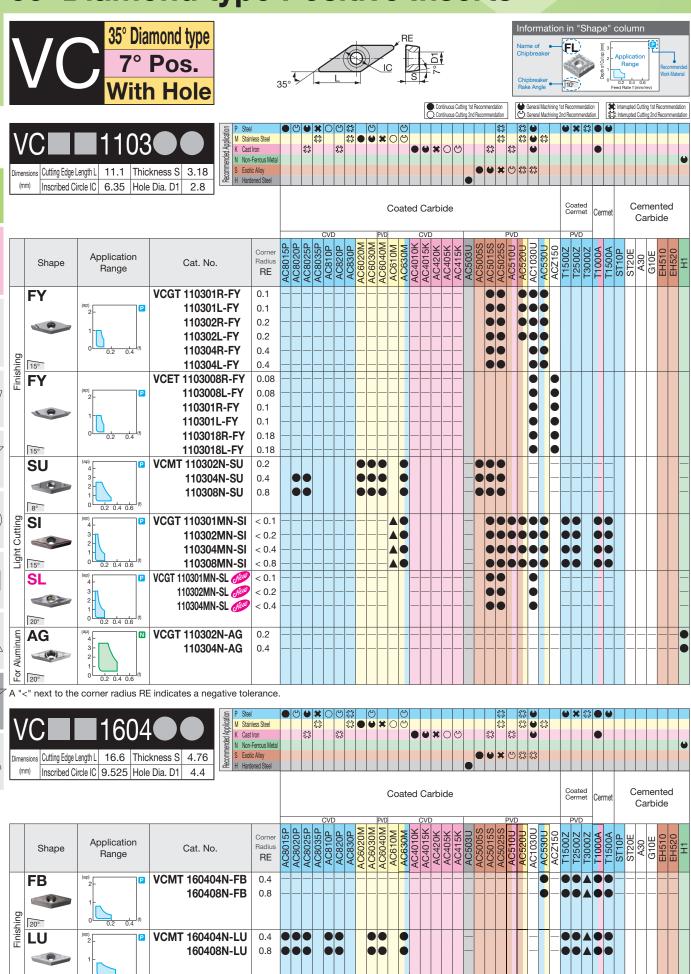
C

R

S

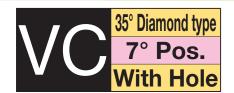
## 35° Diamond type Positive Inserts

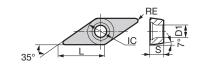
### Indexable Inserts

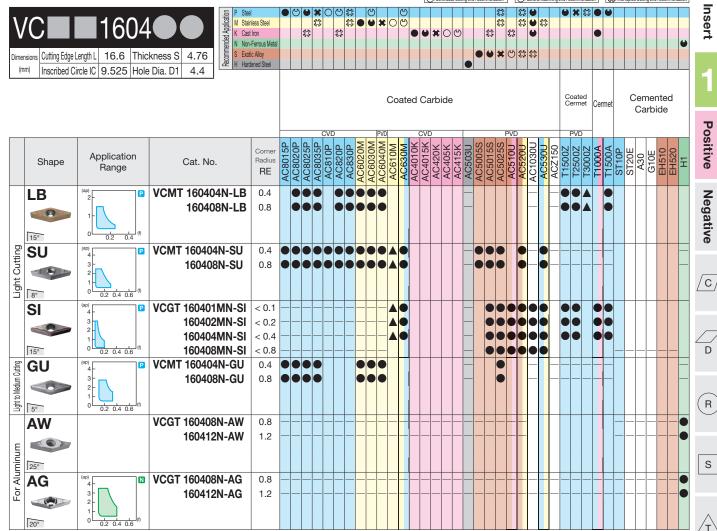


15°

Indexable Inserts



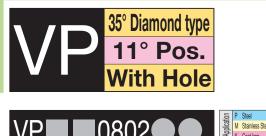


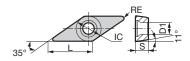


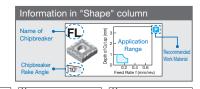
A "<" next to the corner radius RE indicates a negative tolerance.

	Cutting Edge Linguisions Cutting Edge Linguisions		kness S 5.56	를 K Cast	less Steel Iron Ferrous Metal			13	######################################		<b>4</b>	0 2	<b>*</b>	00		#	(;)				**							•	_
("	nm) Inscribed Ci	ircle IC   12.7  Hole	e Dia. D1   5.5					CVD			PVD		Carbi	de	ı		PVI	)			Coate	net C	Cermet	t		ment arbid			_
	Shape	Application Range	Cat. No	١.	Corner Radius RE	AC8015P	AC8025P		AC820P	AC6020M	AC6030M AC6040M			AC405K AC415K	AC503U	AC5015S			AC530U	ACZ150	$\overline{}$	T3000Z	T1500A	ST10P	ST20E A30	G10E	EH510 EH520	H1	
	AW		VCGT 22051		1.0											П					F	П	F						
E				N-AW	1.6																				_ _				
min	25°			ON-AW	3.0		-  -	-		_	_		_ _			-		_				П		-	_ _	-		•	
For Aluminum	AG	(ap) 4 3 2 1 0 0.2 0.4 0.6	VCGT 22053	ON-AG	3.0																								

### Indexable Inserts







VF		080	)2	
Dimensions	Cutting Edge Length L	8.3	Thickness S	2.38
(mm)	Inscribed Circle IC	4.76	Hole Dia. D1	2.4

P Steel
No. Stainless Steel
Coated Carbide

Contend Carbide

Contend No. Cutting 1s Recommendation
Continuous Cutting 1s Recommendation
Continuous Cutting 1s Recommendation
Continuous Cutting 2nd Recommendation
Continuous Cutting 2nd Recommendation
Continuous Cutting 2nd Recommendation
Continuous Cutting 2nd Recommendation
Continuous Cutting 1s Recommendation
Continuous Cutting 2nd Recommendation
Continuous Cutting 2nd Recommendation
Continuous Cutting 1s Recommendation
Continuous Cutting 2nd Recommendation
Continuous Cutting 1s Recommendation
Continuous Cutti

							С	VD.			PVI			CVI	D					PVD				F	PVD				C	arbi	ue	
	Shape	Application Range	Cat. No.	Corner Radius RE	AC8015P	88	AC8035P	AC810P AC820P	AC830P	AC6020M	AC6030M AC6040M	AC610M	AC630M	AC4015K	AC420K	AC405K AC415K	AC503U	AC5005S AC5015S	AC5025S	AC510U	AC5200	AC530U	ACZ150	T1500Z	T2500Z	T1000A	T1500A	ST10P	S120E A30	G10E	EH510	EH520 H1
	FX		VPET 0802008R-FX	0.08		-		-		H		-	-		-	- -																
		(ap)	0802008L-FX	0.08		-	-	- -			- -	-	- -	- -		- -							•									
	-		0802015R-FX	0.15		-		-		-	- -	-	-	- -	-  -	- -																
		1	0802015L-FX	0.15		-		- -			- -	H	- -	- -	-	- -							•									
_		0.2 0.4 (f)	0802018R-FX	0.18		╟	-	- -			- -	H	-	- -		- -				ľ			•									
hiń	15°		0802018L-FX	0.18		-		-			_	-	-	Ł	H	- -																
Finishing	FY		VPET 0802008R-FY	0.08		$\vdash$	H	-			-		-	-	H	-					•	)										
"		(ap) 2	0802008L-FY	0.08		-		-		-	- -	$\vdash$		-	-	- -					•											
	1 A		0802015R-FY	0.15		-		-			- -	-		-	-	- -					•											
		'	0802015L-FY	0.15		-		-			- -	-		-	-	- -					•											
		0.2 0.4	0802018R-FY	0.18		-	$\vdash$	-			-	-	+	-	-	- -																
	15°		0802018L-FY	0.18		-		_			_		-			-																



O Negative Positive

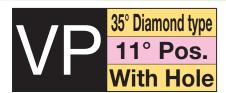


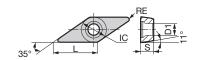


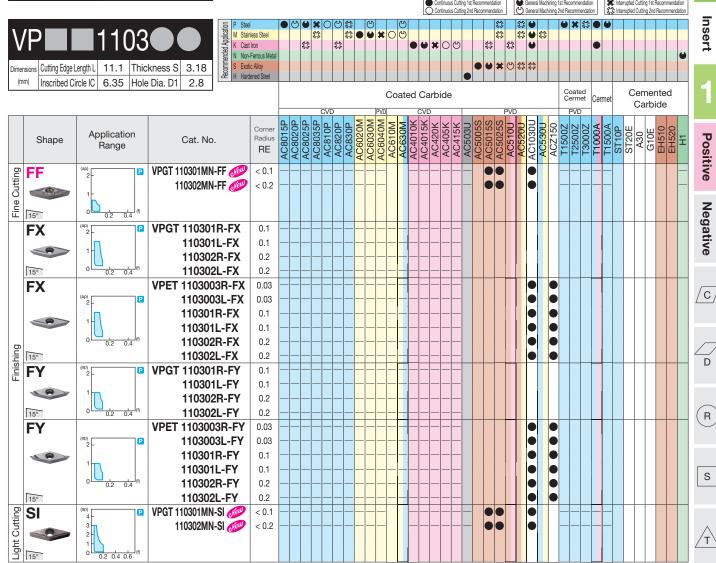


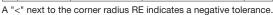














**Positive** 

Negative

С

R

S

### **Trigon type Positive Inserts**

080201L-FY

080202R-FY

080202L-FY

080204R-FY

080204L-FY

0.1

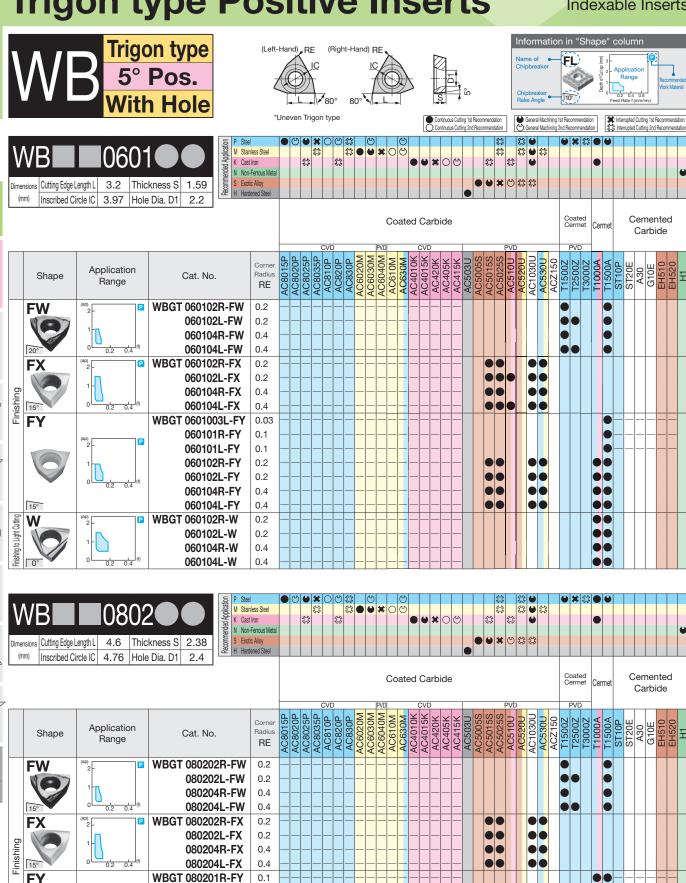
0.2

0.2

0.4

0.4

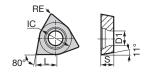
### Indexable Inserts

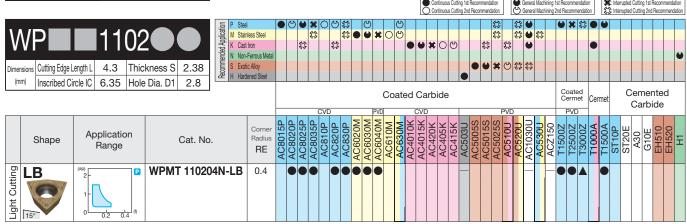


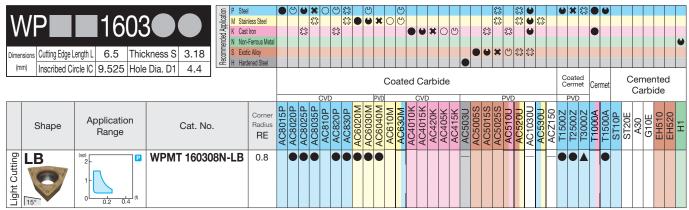
15°

## **Trigon type Positive Inserts**











Insert















**Positive** 

C

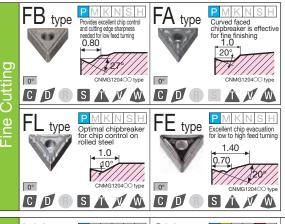
R

S

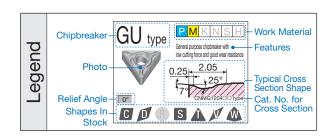
0°

### **Chipbreaker Selection**

### Negative type Finishing to Medium Cutting



**+**15°

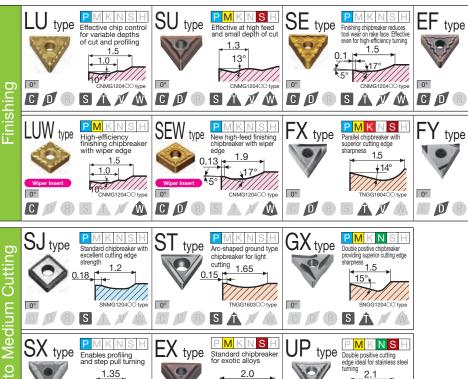


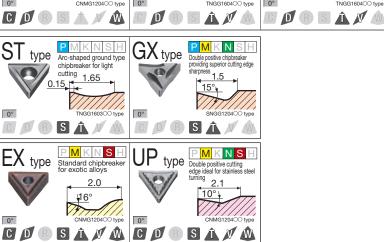
20°

 $FT_{\, \text{type}}$ 

0°

Y type

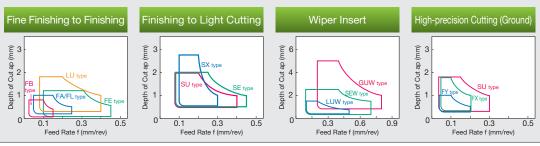






Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

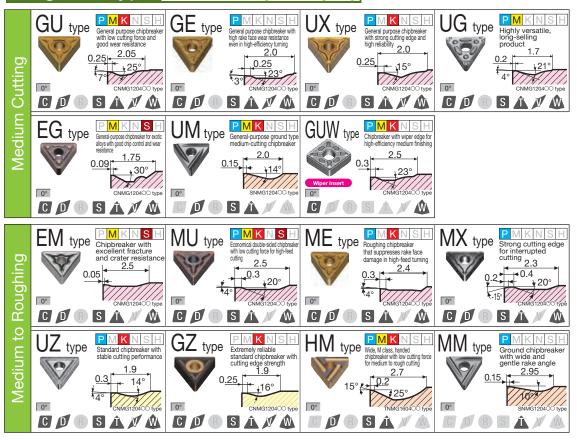




Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.).

## **Chipbreaker Selection**

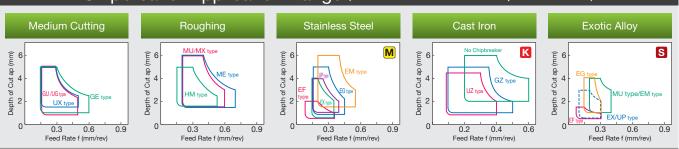
### Negative type Medium Cutting to Roughing





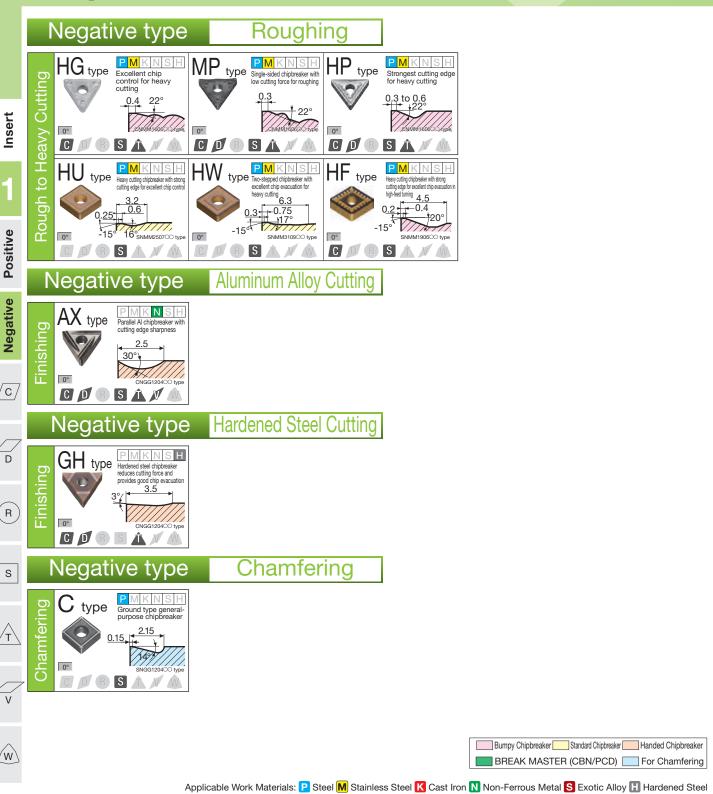
Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy 🖫 Hardened Steel

### Chipbreaker Application Range (Inscribed Circle of Insert up to ø12.7mm)



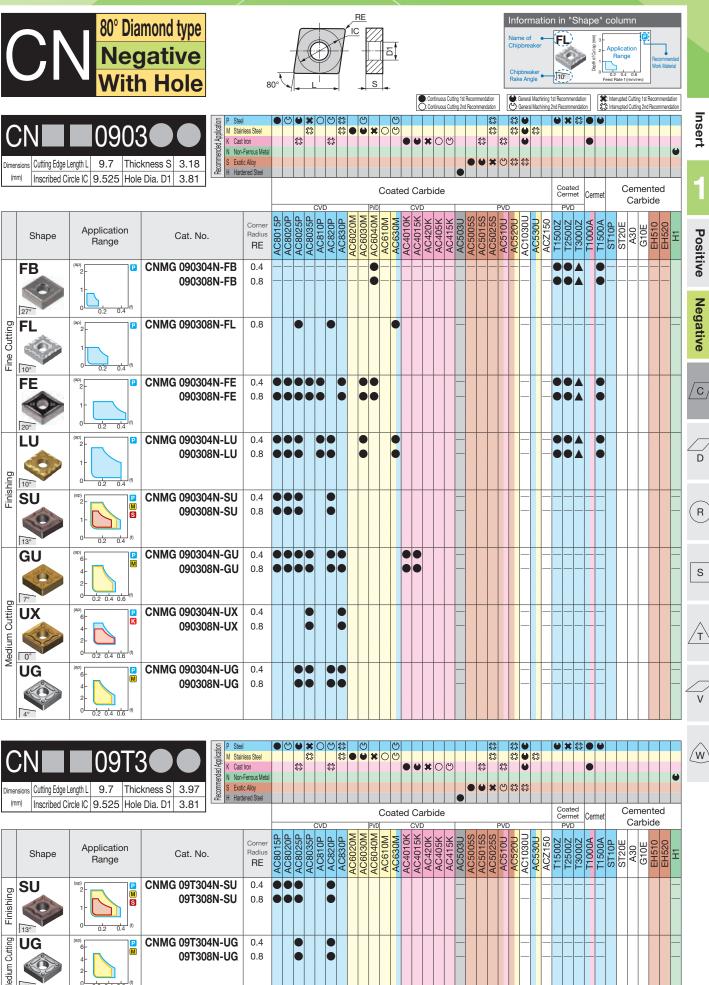
Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.).

### **Chipbreaker Selection**

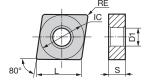


Chipbreaker Application Range Aluminum Alloy Hardened Steel N Ê 30 Ē15 £ 15 Depth of Cut ap (r Depth of Cut ap ( Oct ap ab of Cut ap of Cut 2 Depth 10 Depth The maximum depth of cut of SNGG is 3.5m 0.1 0.3 0.5 Feed Rate f (mm/rev) Feed Rate f (mm/rev) Feed Rate f (mm/rev) Feed Rate f (mm/rev)

Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.).

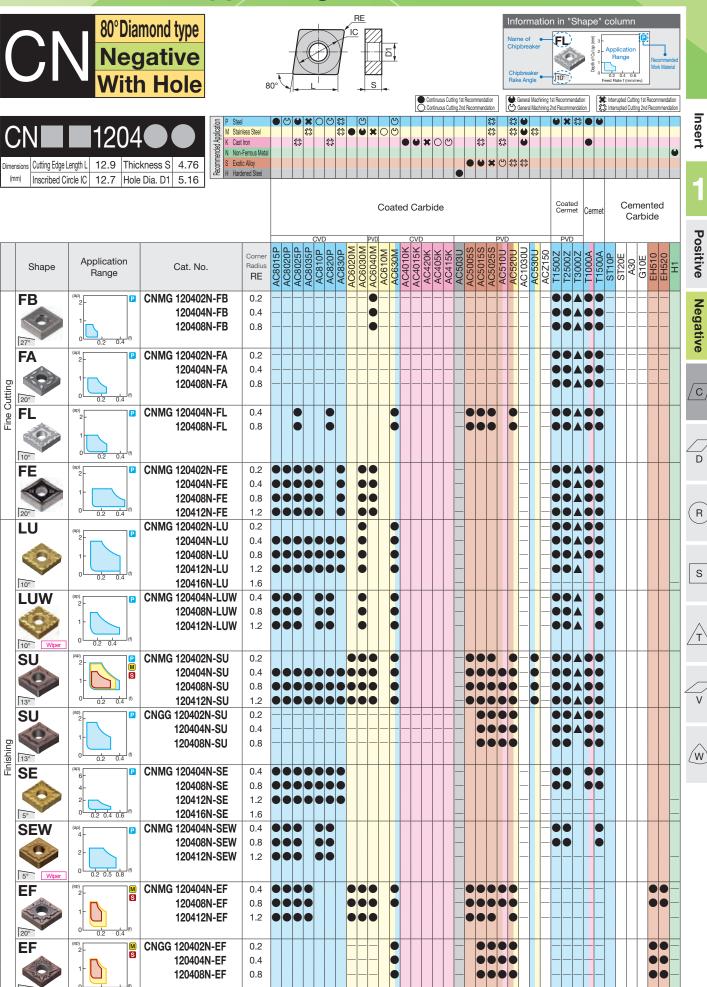






			With	n Hole	80	J.	1			4					L																						
			AAICI	THOIC	00	•	<b>∀</b>   <del>-</del> -			-		-		-			: Ca ): Ca	ntinuou: ntinuou	s Cutting s Cutting	1st Rei 2nd Re	commen	dation idation	] [	<b>\</b> .(0	Genera Genera	Machinir I Machinir	ig 1st ng 2n	Recomm d Recomm	nendati mendat	ion tion	<b>第</b>	: Inter 3: Inte	rupted (	Cutting Cutting	1st Rec 2nd Re	commenc	dation ndation
	_	nsions Cutting Edge L	,	kness S 4.76	inless Steel st Iron n-Ferrous Metal		<b>3</b>	**		(C) (E)			#	0	9	9	*	0	<b>9</b>		ti O		#	**	•	#		<b>D</b> #	<b>(</b>	•	•						•
L	(III)	iii)  Inscribed G	ircle IC   9.525   Hole	Dia. D1 3.81										Со	atec			ide										Coat	net	Cei	met			em Car			
		Shape	Application Range	Cat. No.	Corner Radius RE	AC8015P	AC8020P		AC810P	AC820P	ACSOUN	AC6020M	AC6040M	AC610M	AC630M	AC4015K S		AC405K	AC415K	ACSUSU	AC5015S		AC510U ≧		AC1030U	AC530U	AUZ 130	11500Z	T3000Z	T1000A	T1500A	ST10P	ST20E	A30	GIUE	EH510	H
	Fine Cutting	FB 27°	(ap) 2 1 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	CNMG 090404N-FB 090408N-FB	0.4 0.8								•	_													-				•						-
	Fine C	FE 20°	(ap) 2 1 0 0.2 0.4 (f)	CNMG 090404N-FE 090408N-FE	0.4				•				•						-								-		<b>A</b>		•						
		SU	(ap) 2 P M S S O (f)	CNMG 090404N-SU 090408N-SU 090412N-SU	0.4 0.8 1.2				• • •										-								_			•							
	Finishing	SEW 5° Wiper	(ap) 4 2 0 0.2 0.5 0.8	CNMG 090404N-SEW 090408N-SEW	0.4				•										-								-				_						
		EF 20°	(ap) 2 1 0 0.2 0.4 (f)	CNMG 090404N-EF 090408N-EF	0.4 0.8								•						-			•															
	g	GU T°	(ap) 6 4 2 0 0.2 0.4 0.8 7)	CNMG 090404N-GU 090408N-GU 090412N-GU	0.4 0.8 1.2				• • •							•											- -			• • •							
	Medium Cutting	UG 4°	(ap) 6 M 2 O.2 0.4 0.6 (f)	CNMG 090404N-UG 090408N-UG	0.4 0.8					•																											
~	2	EG	(ap) 6 4 2 0 0.2 0.4 0.6	CNMG 090408N-EG 090412N-EG	0.8								•						-			•															
	n to Roughing	GZ	(ap) 6 4 2 2 1	CNMG 090408N-GZ 090412N-GZ	0.8 1.2											•	•	<b>A</b>	<b>A</b>								-										

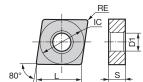
S D C Negative Positive



### Indexable Inserts

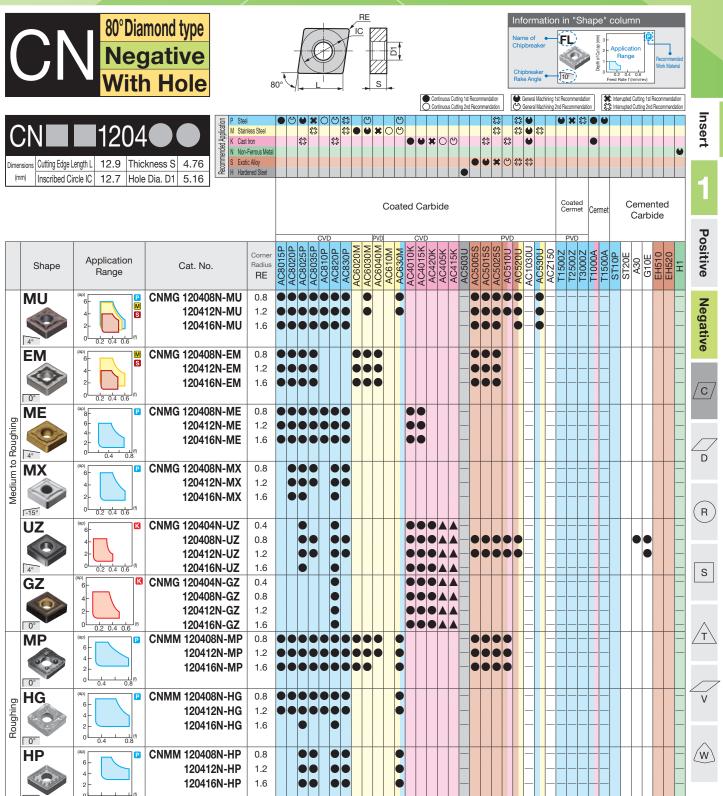
## 80° Diamond type Negative Inserts





			Neg	gative n Hole	Ŧ	1			7	Z	4	<b>ნ</b> ↓											
			VVILI	Поје	80° \	<b>\</b>	L	•	-	- 8	S  -	•		ious Cutting 1st P ious Cutting 2nd		on (	: Gener	ral Machining ral Machining	1st Recommenda 2nd Recommend	ation	: Interrupted Cutt	ing 1st Rec ing 2nd Re	ommendation commendation
		nsions Cutting Edge Inscribed Ci	-	P Steel   M Stainess Steel   M Stainess Steel   M Stainess Steel   K Cast Iron   N Non-Ferrous N N Non-Ferrous N   E Dia. D1   5.16	Metal	(4)		\$	#		**	0 0	<b>4</b>	) <sub>©</sub>	#	€							u
										ŀ		Coated		е		2) (0			Coated Cermet	Cermet		ment arbid	
		Shape	Application Range	Cat. No. Radii	ius 5	AC8020P		AC810P	AC830P		AC6040M &		AC420K	AC415K AC503U	AC5005S AC5015S	AC5025S AC510U	AC520U AC1030U	ACZ150		T1000A T1500A	ST10P ST20E A30	G10E	EH520 H1
	ıtting	SX	2 1 0 0.2 0.4	CNMG 120404N-SX	8													-					
	Light to Medium Cutting	EX 16°	(ap) 3 2 1 0 0.2 0.4	CNMG 120404N-EX 0.4 120408N-EX 0.8 120412N-EX 1.2 120416N-EX 1.6	B 2					•••							•						
	Light t	UP 10°	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f)	CNMG 120404N-UP 0.4 120408N-UP 0.8 120412N-UP 1.2	4 8						•						• -					•	
		GU	(ap) 6 P M 2 O.2 0.4 0.6 (f)	CNMG 120404N-GU 0.4 120408N-GU 0.8 120412N-GU 1.2 120416N-GU 1.6	8 2 6								•				• -						
		GE 3°	(ap) (b) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	CNMG 120404N-GE 0.8 120408N-GE 0.8 120412N-GE 1.2 120416N-GE 1.6	B •																		
		GUW 0° Wiper	(ap) 6 4 2 0 0.2 0.4 0.6	CNMG 120408N-GUW 0.8 120412N-GUW 1.2																			
	Medium Cutting	UX	(ap) 6 K	CNMG 120404N-UX 0.8 120408N-UX 0.8 120412N-UX 1.2 120416N-UX 1.6	B •																		
	Medir	UG 4°	(ap) P M 2 M	CNMG 120404N-UG 0.8 120408N-UG 0.8 120412N-UG 1.2 120416N-UG 1.6	3 2 3													-					
		EG	(ap) 6 4 2 0 0.2 0.4 0.6 (f)	CNMG 120404N-EG 0.8 120408N-EG 0.8 120412N-EG 1.2	2							•					•						
		0		CNMA 120404 0.4 120408 0.8 120412 1.2 120416 1.6	B 2 6																		
		0		CNGA 120402 0.2 120404 0.4																			

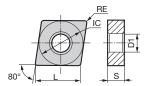
120408



Negative Positive

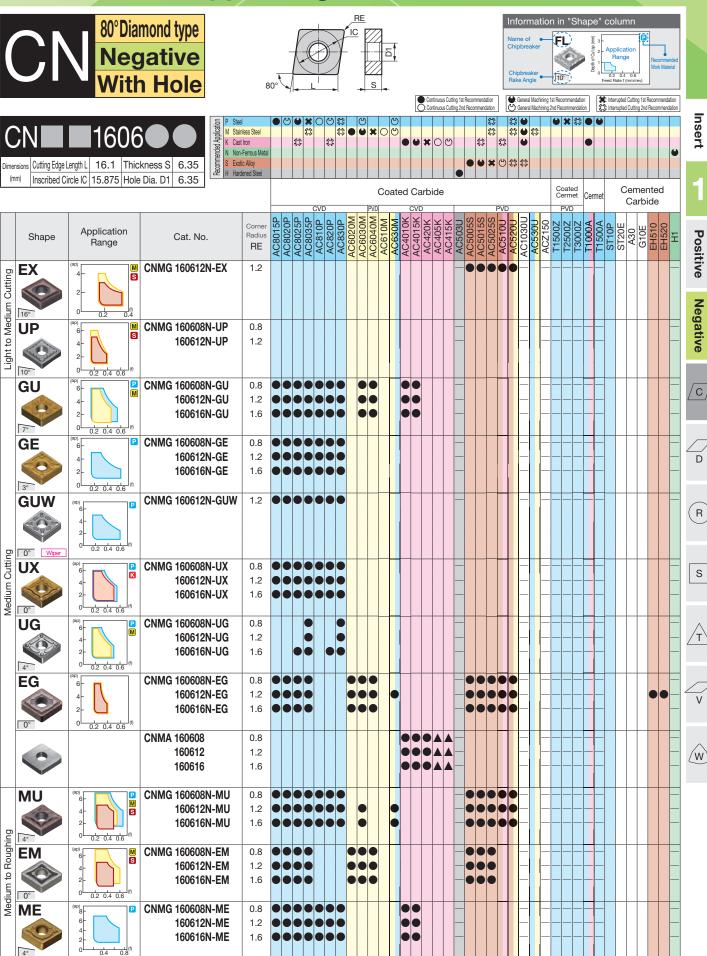
## 80° Diamond type Negative Inserts





ľ	UI'	With	n Hole	80						S	`` <b>□</b> ↓	-																		
														: Continu ): Continu	us Cuttin ius Cuttin	g 1st Rec g 2nd Re	commend commend	ation lation		: Gener ): Gene	al Machir ral Machir	ning 1st ning 2n	Recomm d Recomi	nendation mendatio	n (	inte C: Inte	errupted ( errupted (	Jutting 1s Cutting 2r	(Recomn ad Recom	mendation nmendation
	mensions Cutting Edge L (mm) Inscribed Ci		kness S 4.76	nless Steel		***		## ##		<b>*</b>	0 (	9 9	•	* 0	ප		##		C) (				9 #	\$	•					•
							CVI	D.		PVD		atec	CVD	rbid	Э				PVD				Coat	net	Cerme	ŧ		eme Carb		b
	Shape	Application Range	Cat. No.	Corner Radius RE	AC8020P	AC8025P		AC820P	AC6020M	AC6030M AC6040M		AC630M		AC405K	AC415K	AC503U	AC5015S		AC510U	AC1030U	AC530U	ACZ150			T1500A	ST10P	ST20E	A30	EH510	EH520 H1
	AX		CNGG 120402R-AX	0.2			-	H		=			H	+	H		F		Ŧ			-	Ŧ			Ŧ	Ħ	Ŧ	Ħ	-
	5	(ap) 4	120402L-AX	0.2		-	-	$\vdash$				-	-	- -	H	-	╁	_	+	-	-	+	+	-	- -	+	-	-	-	
1		3-	120404R-AX	0.4				$\vdash$				-	-	_	$\vdash$		╁	_	+	_			+	-	+	Н		- -	-	
		1	120404L-AX	0.4									$\Box$		П				T						╫			-	-	
_   6	_	0.2 0.4 0.6	120408R-AX	0.8											П				T											
	30°	(ap)	120408L-AX	0.8			Ŧ	H		==	H		$\Box$	4	$\exists$		+		Ŧ			4	+	H		Ŧ	H	#		
7	GH	(ap) 4 3	CNGG 120402N-GH 120404N-GH	0.2																										
		2-	120404N-GH	0.4																								- [		

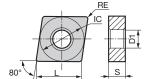
## 80° Diamond type Negative Inserts



#### Indexable Inserts

# 80° Diamond type Negative Inserts





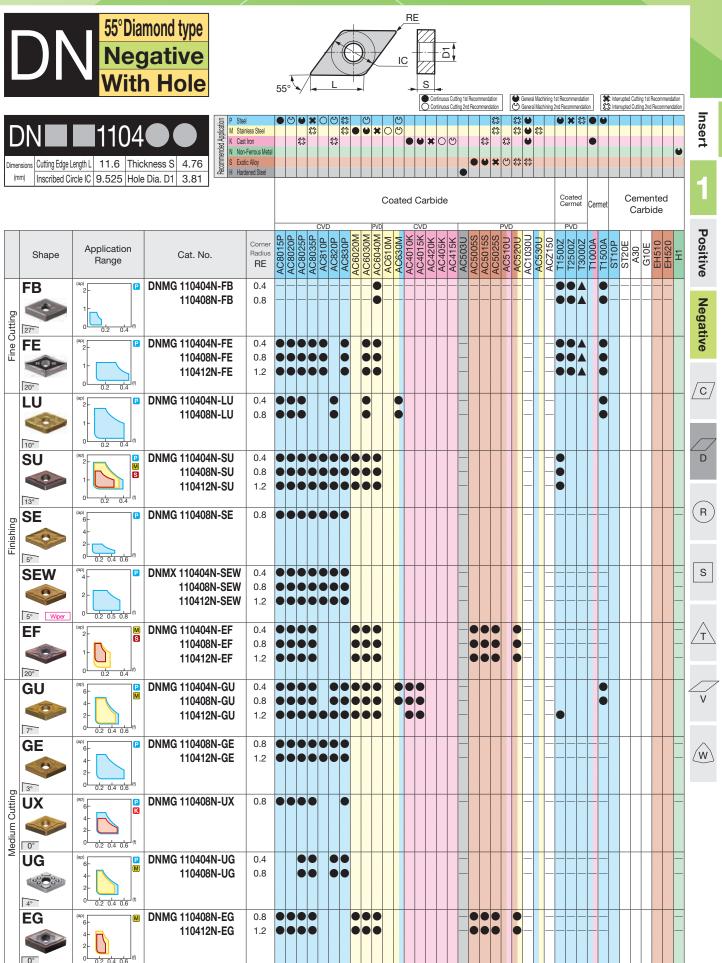
			ار	With	n Hole	80		<u> </u>			-	/// S	-		Coni	finunus Ci	ffinn 1st	Rernmmen	ristion	<b>74</b>	Genera	I Machinin	n 1st Ren	ommendati	in 1	Inter	munted Cu	tting 1st R	Jecommen	rlation
	Insert		nsions Cutting Edge I	1606 Length L 16.1 Thic	ckness S 6.35	el inless Steel it Iron in-Ferrous Metal tic Alloy dened Steel		##	# C	##		<b>9</b>			Con	tinuous Ci	utting 2nd		ndation		): Genera		g 2nd Rec	* Commenda		\$ Inter	rrupted Cui	ting 2nd F	lecommer	dation
	1	(n	nm) Inscribed Ci	ircle IC 15.875 Hole	e Dia. D1 6.35	delled Steel			CV			PV		ted C	Carbi	de			F	PVD			Ce	oated ermet	Cerme	t		men arbi		
	Positive		Shape	Application Range	Cat. No.	Corner Radius RE	AC8015P	되죠	AC8035P AC810P	AC820P AC830P	AC6020M	AC6030M AC6040M	AC610M	AC4010K	AC4015K AC420K	AC405K	AC503U	AC5005S AC5015S	AC5025S	AC510U	AC1030U	AC530U	T1500Z	T2500Z	T1000A	ST10P	ST20E	G10E	EH510 EH520	H
		6	MX	(ap) 6 - 4 - 2 -	CNMG 160608N-MX 160612N-MX 160616N-MX	0.8 1.2 1.6			•	•																-				
	Negative	Medium to Roughing	UZ	(ap) (ap) (b) (ap) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	CNMG 160608N-UZ 160612N-UZ 160616N-UZ	0.8 1.2 1.6		•		• •				•							  -  -	-				-				
۷	<u>/c/</u>	Mec	GZ 0°	(ap) 10 5 0 0.5 1.0(f)	CNMG 160608N-GZ 160612N-GZ 160616N-GZ	0.8 1.2 1.6								0							_					-				
4	D	Roughing	MP 0°	(ap) 10 5 0 0.5 1.0 <sup>(f)</sup>	CNMM 160608N-MP 160612N-MP 160616N-MP	0.8 1.2 1.6														•	_	-				-				
(	R	Cutting	HG	(ap) 10 5 0 0.5 1.0	CNMM 160612N-HG 160616N-HG	1.2 1.6																				-				
	S	Heavy	HP	(ap) 10 P	CNMM 160608N-HP 160612N-HP	0.8 1.2		•	•	00																-				



160616N-HP

1.6

# 55° Diamond type Negative Inserts



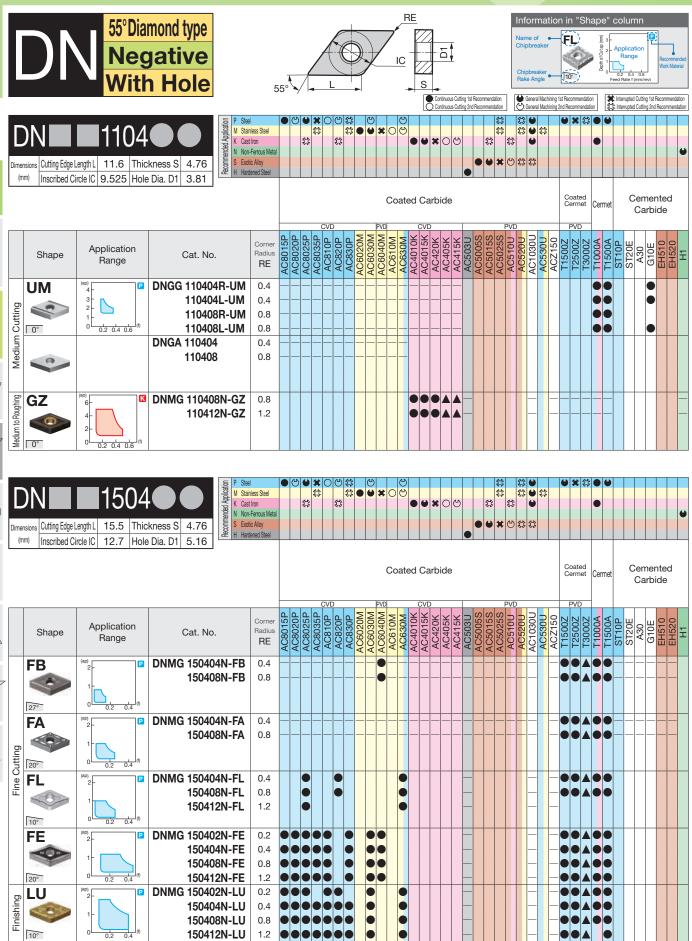
Negative

C,

R

S

# 55° Diamond type Negative Inserts



GU

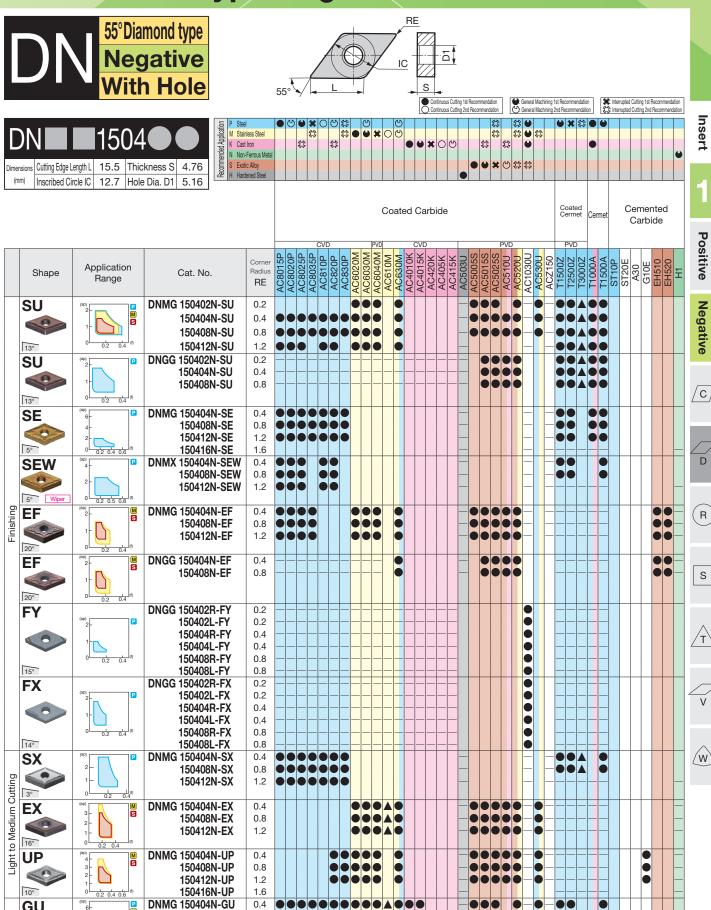
7°

**GE** 

Medium

## 55° Diamond type Negative Inserts

#### Indexable Inserts



0.4

1.2

1.6

0.4

8.0

1.2

1.6

150408N-GU 150412N-GU

150416N-GU

150408N-GE

150412N-GE

150416N-GE

DNMG 150404N-GE

Negative

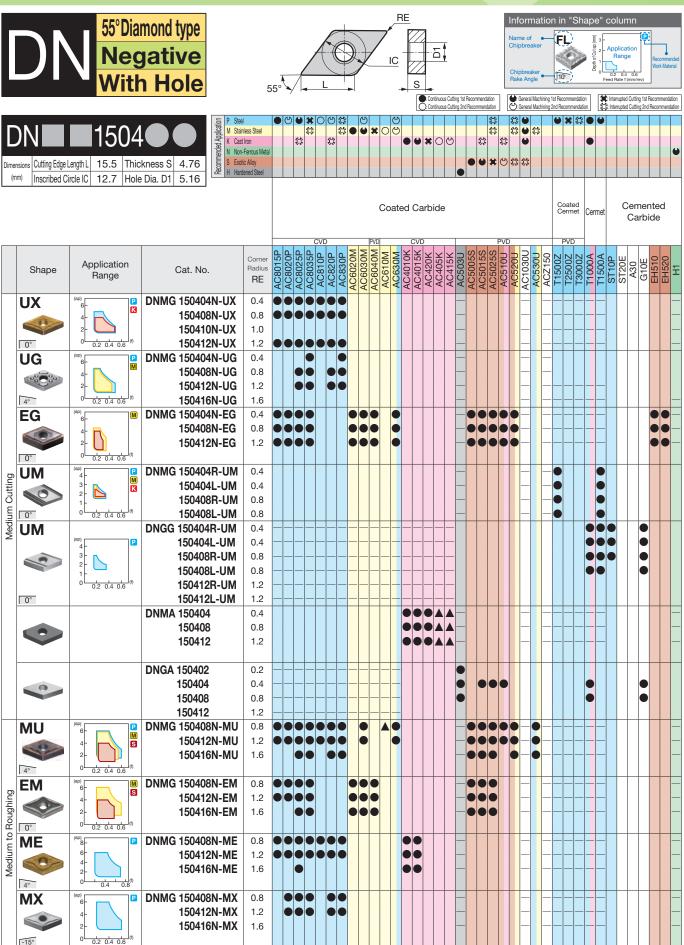
C

R

S

(w)

## 55° Diamond type Negative Inserts



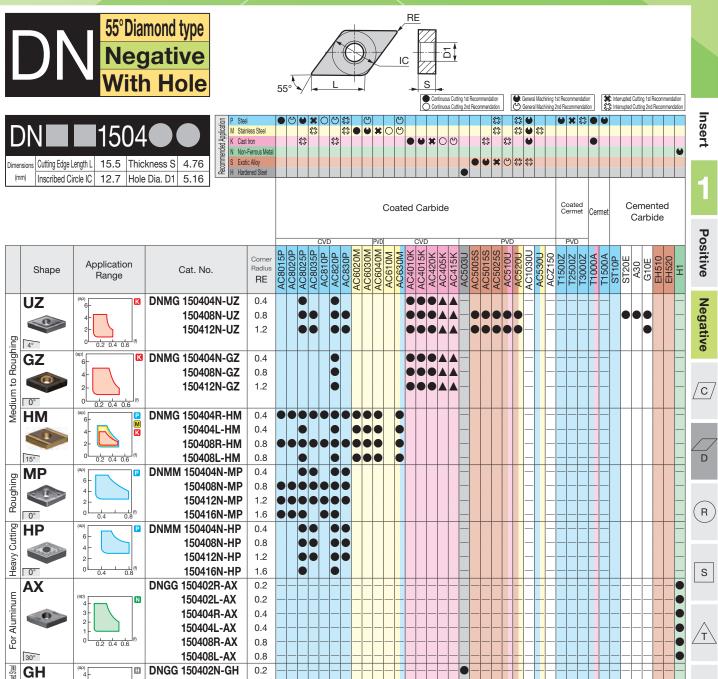
# 55° Diamond type Negative Inserts

150404N-GH

150408N-GH

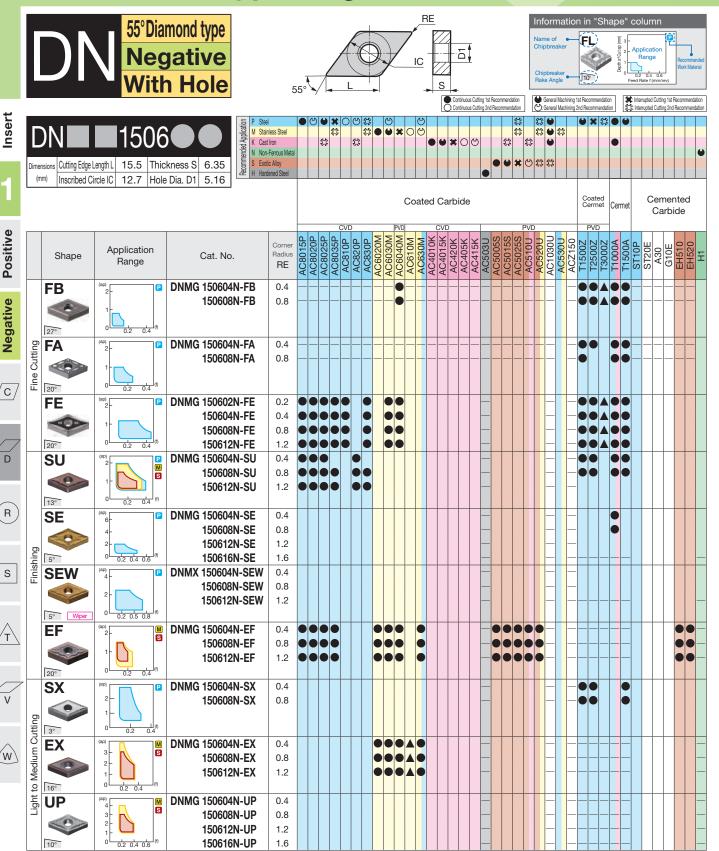
0.4

8.0





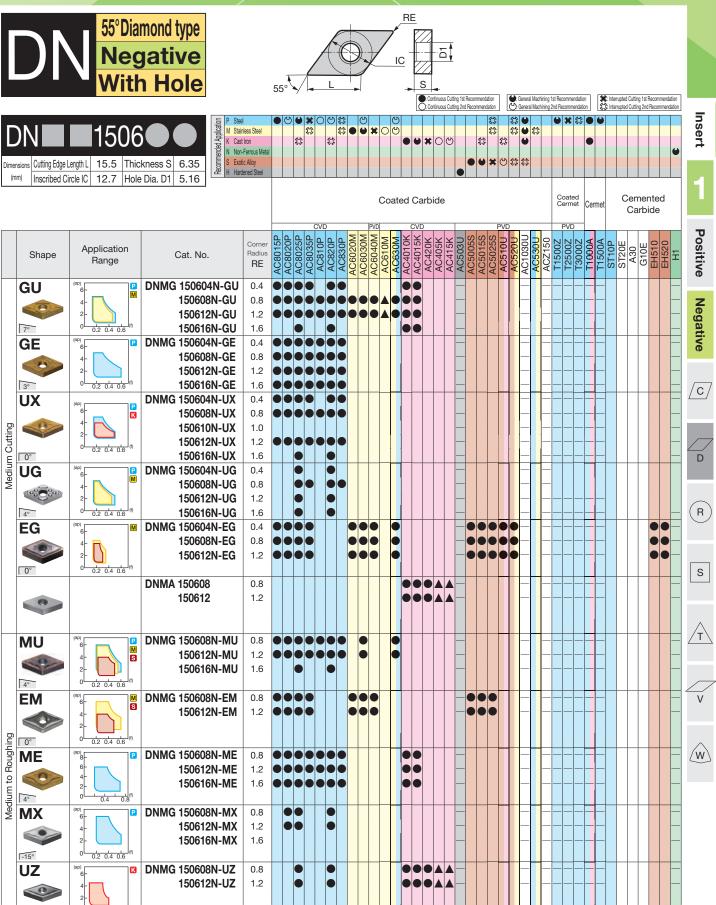
# 55° Diamond type Negative Inserts



4°

0.2 0.4 0.6

## 55° Diamond type Negative Inserts



Insert

Negative Positive

S T V

# 55° Diamond type Negative Inserts

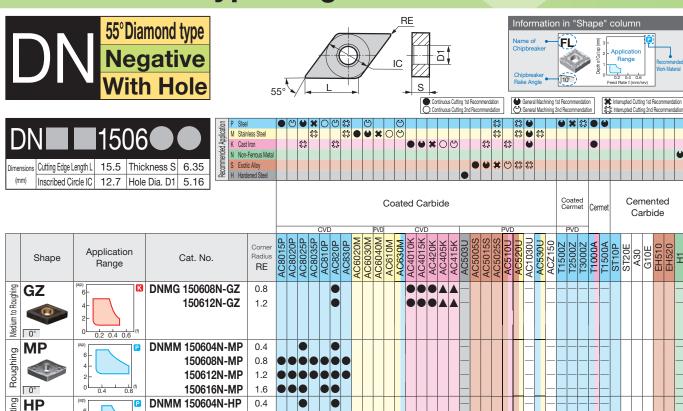
150608N-HP

150612N-HP

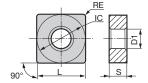
150616N-HP

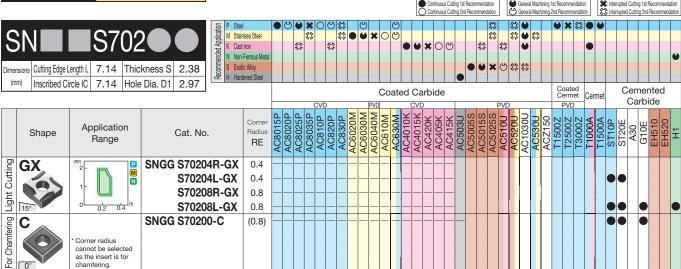
8.0

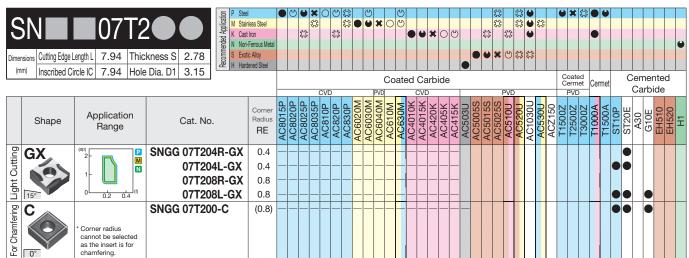
1.2











Insert

1

Positive

Negative

<u>C</u>

D

R

S

T



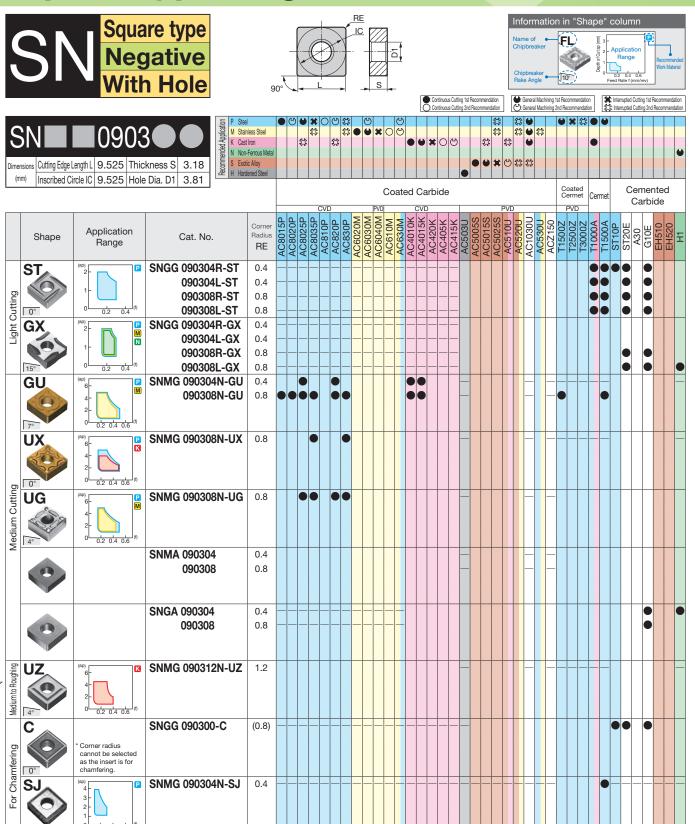


Negative Positive

/c

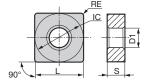
R

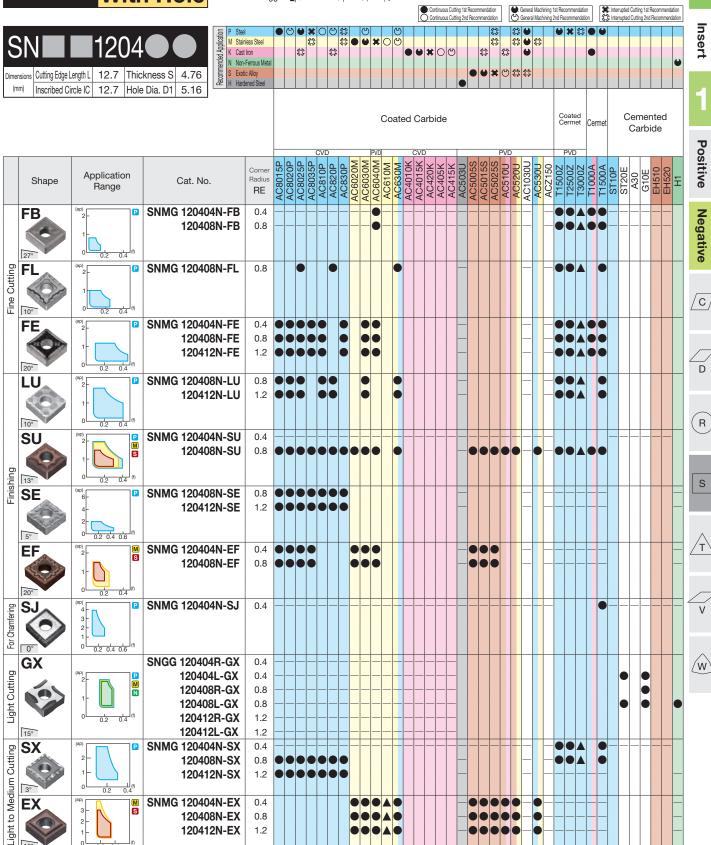
### **Square type Negative Inserts**



## Square type Negative Inserts







Negative

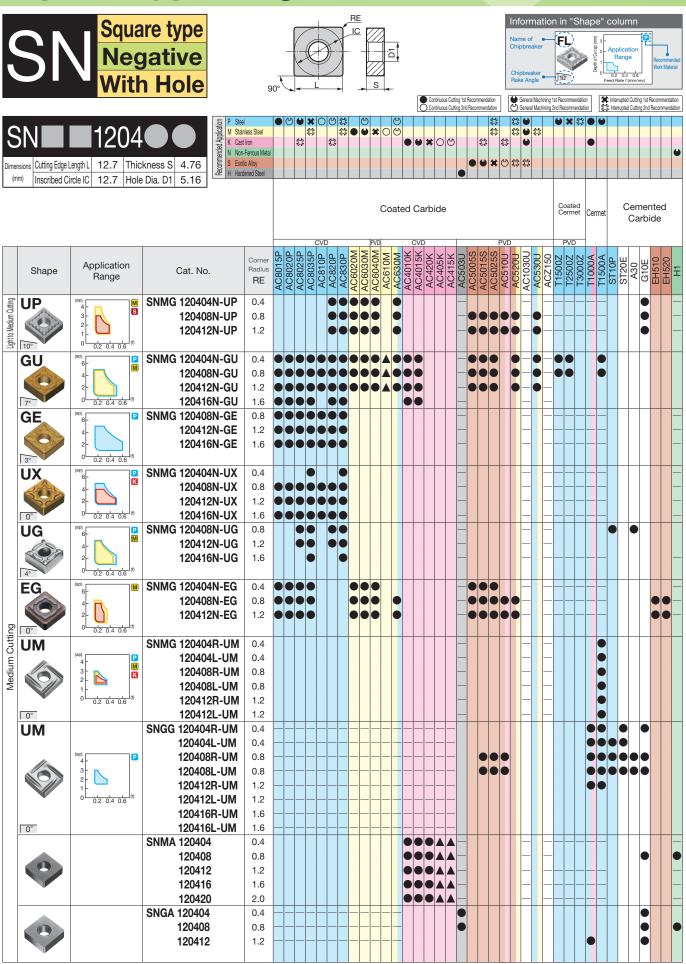
C

R

S

(w)

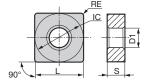
### **Square type Negative Inserts**

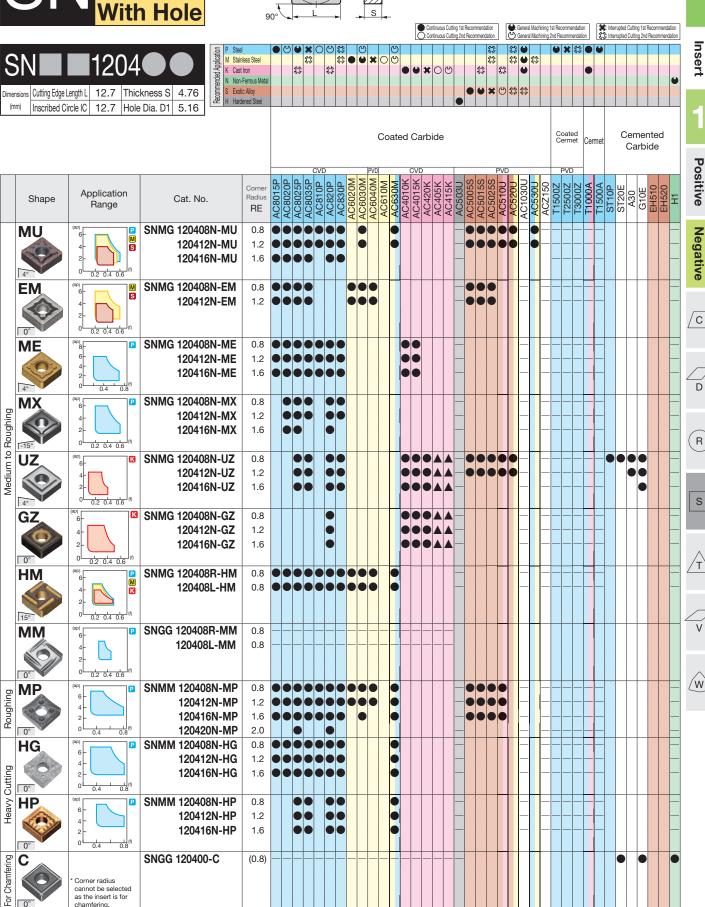


## Square type Negative Inserts

Indexable Inserts







′С,

R

S



Insert

Positive

O Negative

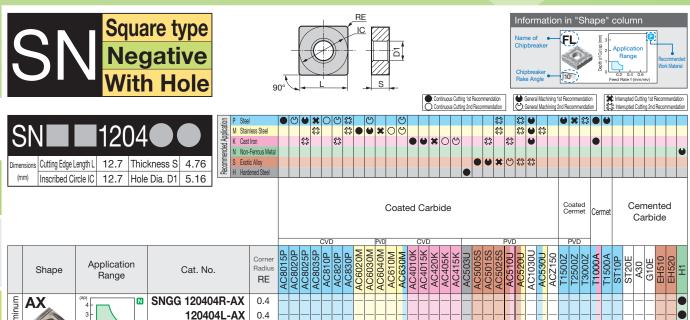
### **Square type Negative Inserts**

120408R-AX

120408L-AX

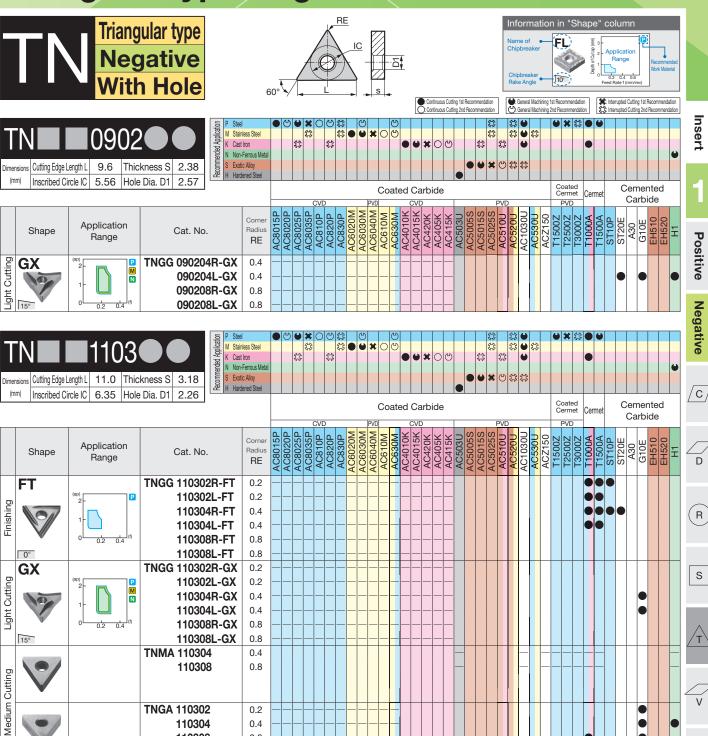
0.8

8.0



110308

0.8



Negative

C

R

S

 $\langle w \rangle$ 

SX

### **Triangular type Negative Inserts**

160304L-ST

160308R-ST

160308L-ST

160308N-SX

TNMG 160304N-SX

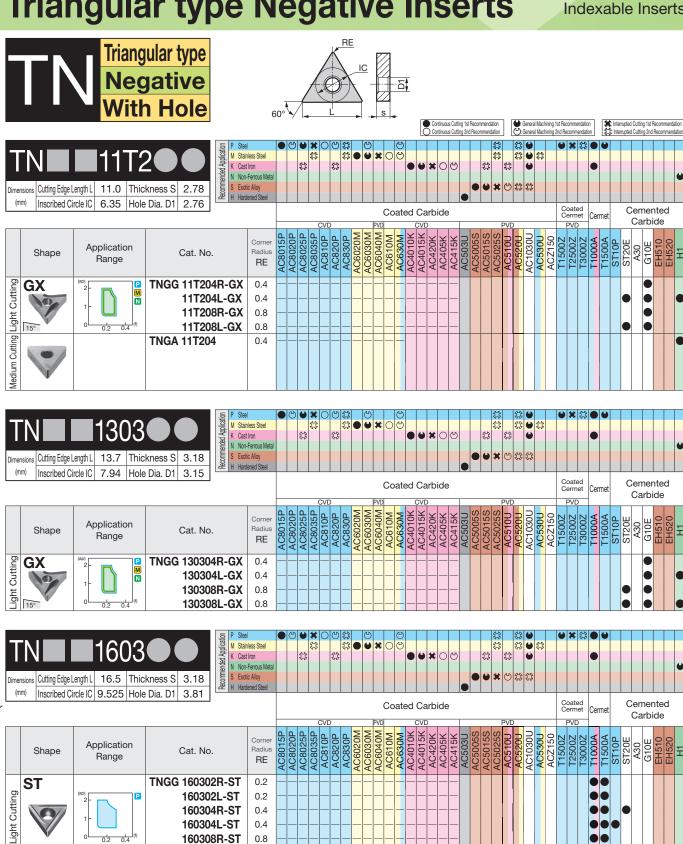
0.4

8.0

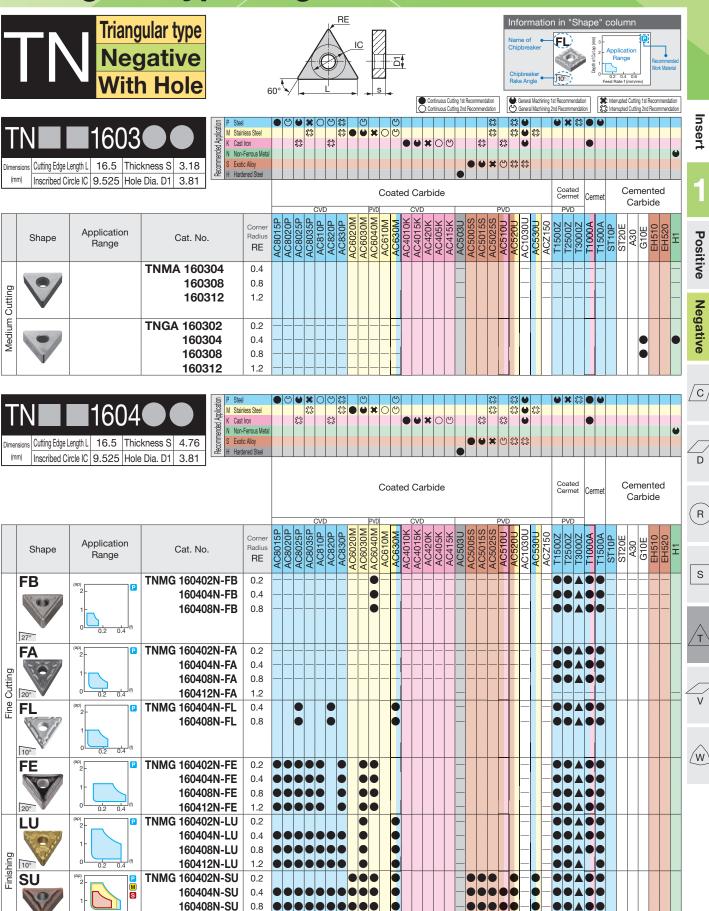
8.0

0.4

8.0



#### Indexable Inserts



160412N-SU

Negative

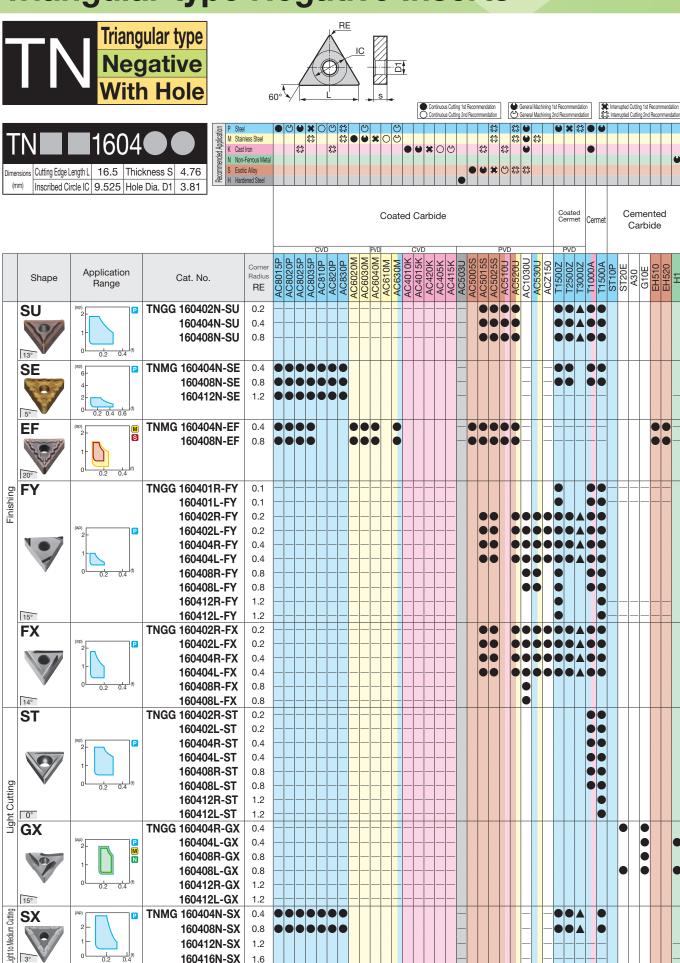
C

R

S

 $\langle w \rangle$ 

### **Triangular type Negative Inserts**



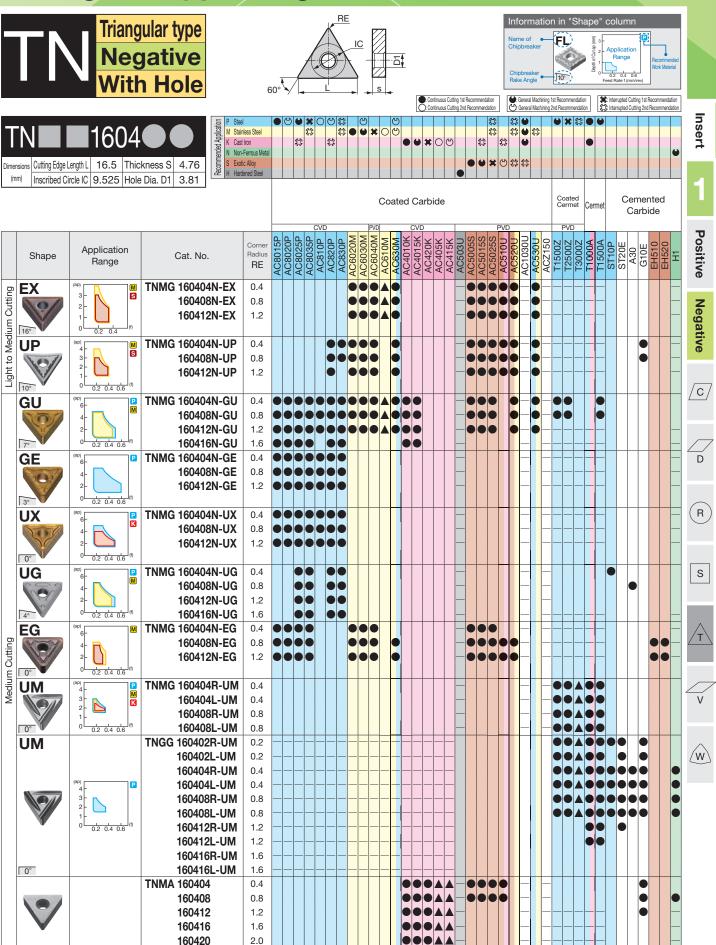
8.0

1.2

160408N-SX

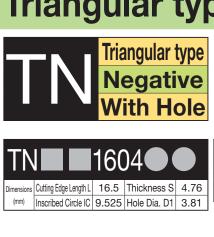
160412N-SX

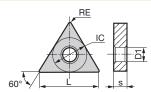
160416N-SX



Negative Positive

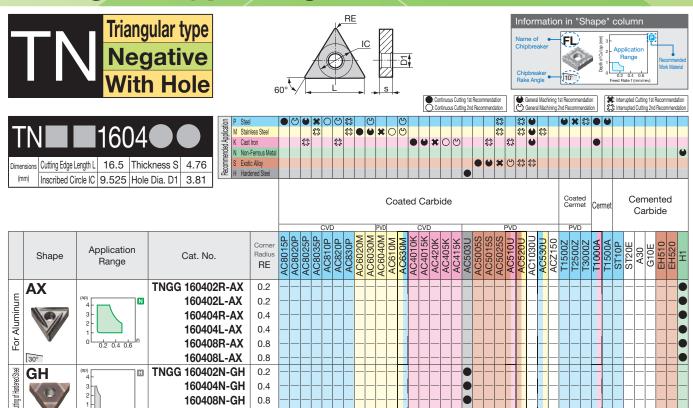
## **Triangular type Negative Inserts**





		With	n Hole	6	500									- A-		
			C D Ctool				<u> </u>	(4)	Continuous Cutting Continuous Cutting		Gener	al Machining 2n	Recommendation	n (\$\$\r	terrupted Cutting 1: terrupted Cutting 2	st Recommendation and Recommendation
Dim	ensions Cutting Edge Innm) Cutting Edge Committee Commit		kness S 4.76 P. State M. State S. C. Cast in Non-Fe State S. Dick. D. 1 3.81	on errous Metal Alloy	#######################################				<b>*</b> • •	######################################		*				•
	,	,				OVD.		Coated (						Cermet	Ceme Cart	
	Shape	Application Range		Corner Radius RE	AC8015P AC8020P AC8025P AC8035P	AC820P	AC6020M AC6030M AC6040M		AC4015K AC420K AC405K AC405K AC415K	AC5005S AC5005S AC5015S AC5025S	AC520U & AC520U AC1030U	AC530U ACZ150	T2500Z = T3000Z	T1500A T1500A ST10P	ST20E A30	EH520 H1
Medium Cutting			TNGA 160402 160404 160408 160412 160416	0.2 0.4 0.8 1.2 1.6							•					
	MU 4°	(ap) 6 M S 2 0.4 0.6 (f)	TNMG 160408N-MU 160412N-MU	0.8 1.2					-							
	EM 0°	(ap) (b) (b) (c) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	TNMG 160408N-EM 160412N-EM	0.8 1.2					-							
	ME 4°	(ap) 8 6 4 2 0 0.4 0.8	TNMG 160408N-ME 160412N-ME	0.8 1.2												
Roughing	<b>MX</b>	(ap) 6 4 2 0 0.2 0.4 0.6 (f)	TNMG 160408N-MX 160412N-MX	0.8 1.2					-							
Medium to Roughing	4°	(ap) 6 4 2 0.2 0.4 0.6 (f)	TNMG 160404N-UZ 160408N-UZ 160412N-UZ 160416N-UZ 160420N-UZ	0.4 0.8 1.2 1.6 2.0												
-	GZ 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f)	TNMG 160404N-GZ 160408N-GZ 160412N-GZ	0.4 0.8 1.2												
	HM 15°	(ap) P M K	TNMG 160404R-HM 160404L-HM 160408R-HM 160408L-HM TNGG 160404R-MM	0.4 0.4 0.8 0.8					-							
	MM 10°	6-4-2-0-0.2 0.4 0.6 (f)	160404L-MM 160408R-MM 160408L-MM TNMM 160404N-MP	0.4 0.4 0.8 0.8												
Heavy Cutting	MP O* HP	6 4 2 0 0.4 0.8	160408N-MP 160412N-MP 160416N-MP TNMM 160408N-HP	0.4 0.8 1.2 1.6					-							
Heav	HP O	6 4 2 0 0.4 0.8	160412N-HP	1.2					-							

#### Indexable Inserts



Insert

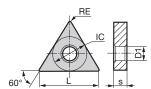
Positive Negative

C/







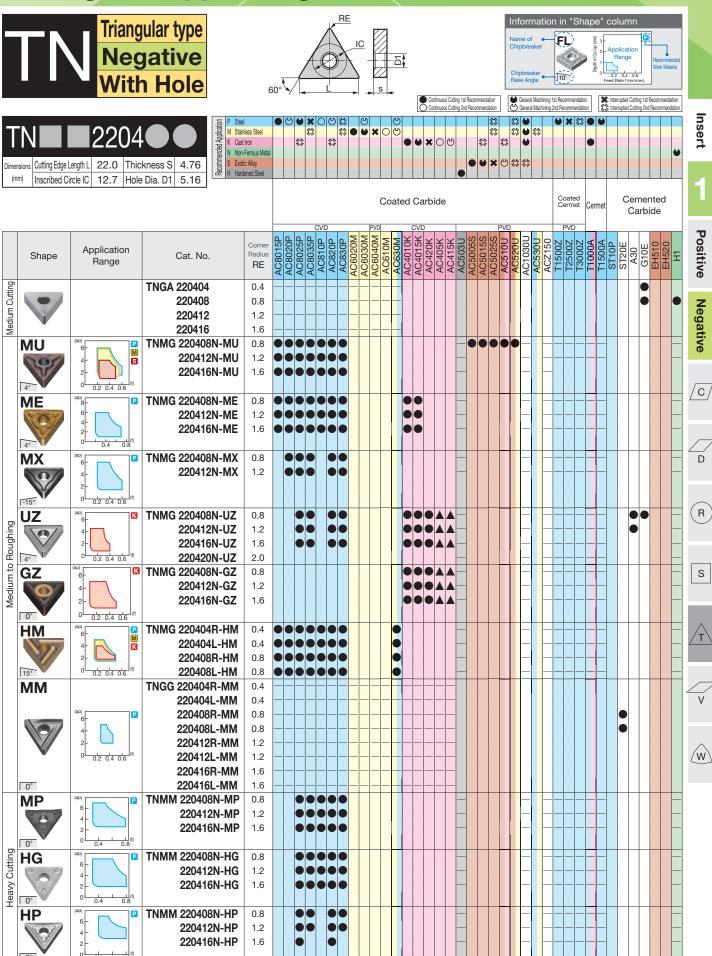


		Neg With	gative n Hole	6	50°	/_			IC -	s	<u>- 5</u>				mmendation		• Genera	al Machining	ı 1st Recom	mendation	] <b>[</b>	Interrupted	Cutting 1st	Recomme	endation
Insert	TN  Dimensions Cutting Edge	2204 ELength L 22.0 Thic	N Non	inless Steel			<b>;</b> O C		(b)			O: Conti	O C	ing 2nd Rec	the state of the s	‡ ‡	## <b>U</b>	al Machining		nmendation		Interrupted	Cutting 2nd	Recomm	endation
1	(mm) Inscribed (	-	© Dia. D1 5.16	dened Steel						Co	ated	Carbio	de						Coa	ited met (	Cermet		eme		ı
Positive	Shape	Application Range	Cat. No.	Corner Radius RE	AC8015P	AC8025P	AC810P AC820P	AC830P	AC6030M AC6030M	AC610M S		AC4015K AC420K	AC405K AC415K	AC5005S	AC5015S	AC510U d		AC530U AC7150	T1500Z		T1500A	ST10P ST20E	A30 G10E	EH510	EH520 H1
Negative	SE SE	(ap) 6 - 2 - 2 - (f)	TNMG 220404N-SE 220408N-SE 220412N-SE	0.4 0.8 1.2																					
\( \text{C} \)	Cight Cutting	(ap) P M N N O.2 0.4 (f)	TNGG 220408R-GX 220408L-GX	0.8																			•		
	Medium Cutting  Medium Cutting  Medium Cutting	(ap) P 1 O.2 O.4	TNMG 220404N-SX 220408N-SX 220412N-SX	0.4 0.8 1.2	•																				
D	Light to Med	(ap) 4 3 2 1 0 0.2 0.4 0.6 (f)	TNMG 220408N-UP 220412N-UP	0.8													•						•		
R	GU	(ap) 6 P M M 2 P M M 1 P M M M M M M M M M M M M M M M	TNMG 220404N-GU 220408N-GU 220412N-GU	0.4 0.8 1.2				•			•	•													
S	GE	(ap) 6 4 2 0 0.2 0.4 0.6 (f)	TNMG 220408N-GE 220412N-GE	0.8																-					
T	UX	(ap) 6- 4- 2-	TNMG 220408N-UX 220412N-UX	0.8	•																				
V	Medium Cutting	0 0.2 0.4 0.6 (0) (ap) 6 4 2 - (6)	TNMG 220408N-UG 220412N-UG 220416N-UG	0.8 1.2 1.6		00													-						
w	UM	0 0.2 0.4 0.6 (b) (ap) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	TNMG 220404R-UM 220404L-UM 220408R-UM	0.4 0.4 0.8															-		•				
	UM	(ap) 4 3 2 1 1 (ap) (ap) (ap) (ap) (ap) (ap) (ap) (ap)	220408L-UM TNGG 220404R-UM 220404L-UM 220408R-UM	0.8 0.4 0.4 0.8															-				•		
	0.	0 0.2 0.4 0.6	220408L-UM TNMA 220404 220408 220412	0.8 0.4 0.8 1.2							•								-				•		

1.6

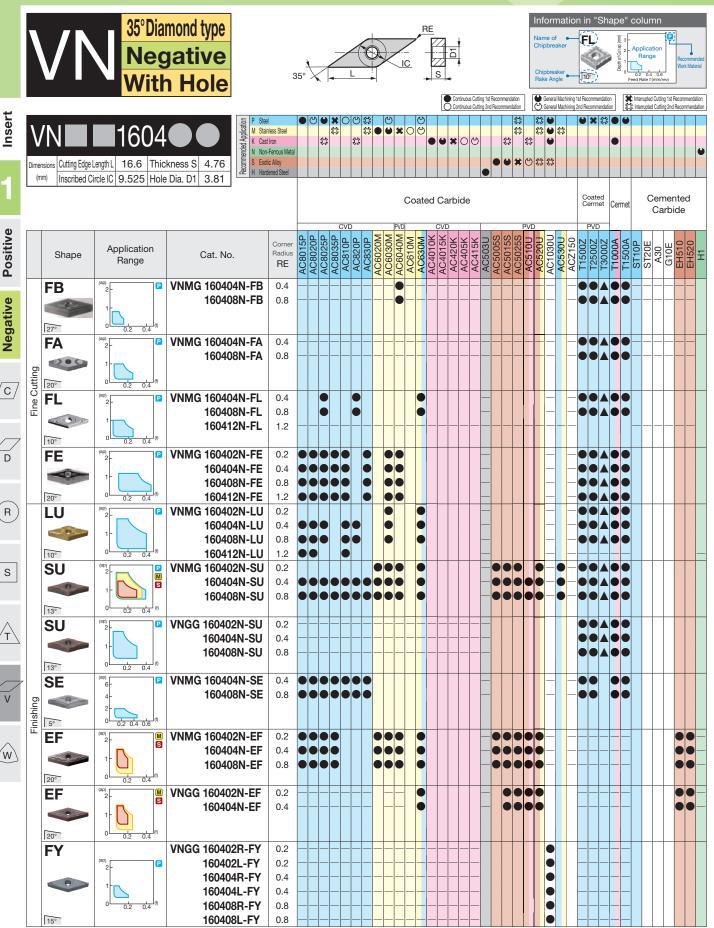
220416

220420



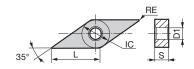
S

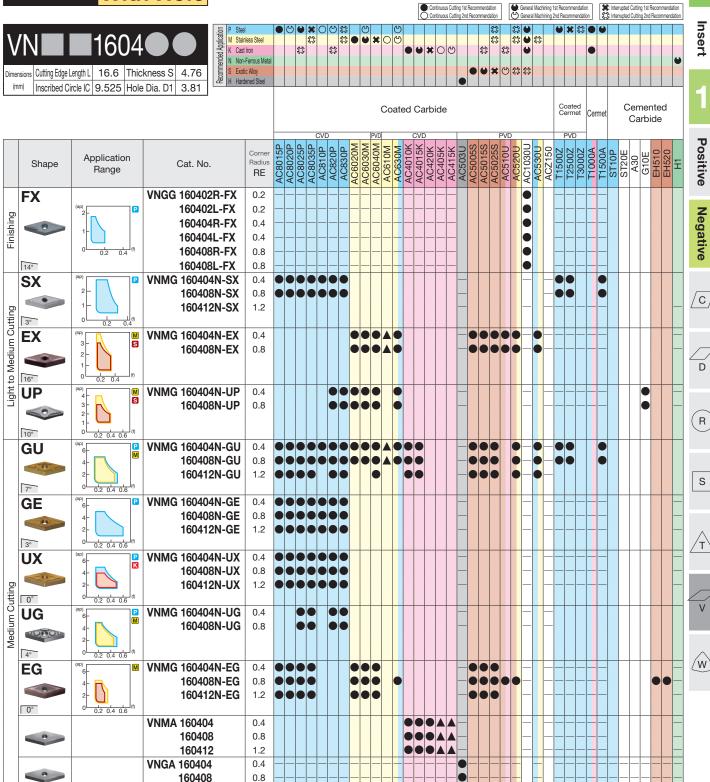
# 35° Diamond type Negative Inserts



# 35° Diamond type Negative Inserts



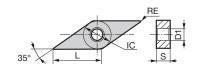


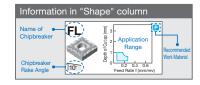


# 35° Diamond type Negative Inserts

#### Indexable Inserts







Negative Positive

۷N		160	)4	
Dimensions	Cutting Edge Length L	16.6	Thickness S	4.76
(mm)	Inscribed Circle IC	9.525	Hole Dia. D1	3.81

: Interrupted Cutting 1st Recor P Steel

M Stainless Steel

K Cast Iron

Page

N Non-Ferrous Metal

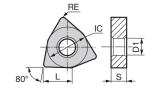
S Exotic Alloy

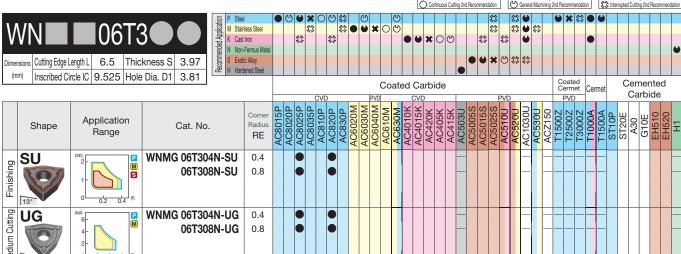
H Hardened Steel ### • • # O ® **\$**\$

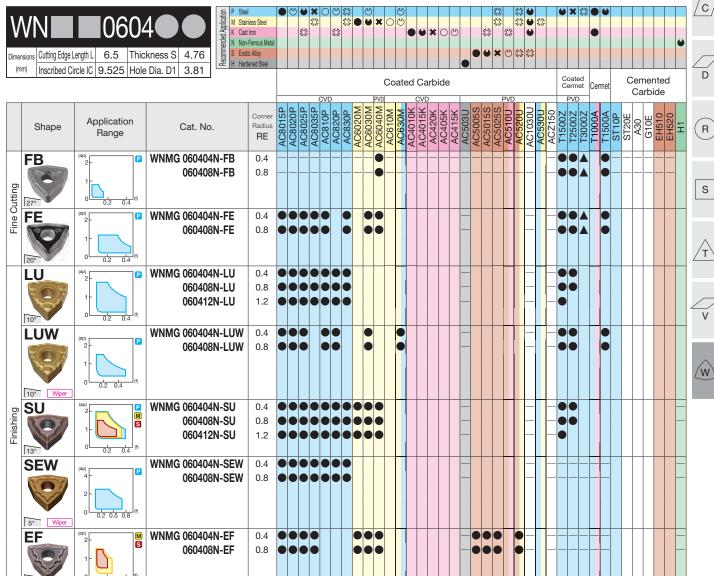
													Co	ate	ed (	Car	bid	е									(	Coate Cerm		Cerm	net	(	Cen Ca	nen ırbic		I
								CVD	)			PV	D		С	CVD						F	PVD				士	PVD	5							
	Shape	Application Range	Cat. No.	Corner Radius RE	C801	AC8020P	AC8035P	AC810P	AC820P	AC830P	ACGUZUM	AC6030IVI	AC610M		AC4010K	AC4015K	AC420K	AC415K	AC503U	AC5005S	AC5015S	AC5025S	AC510U	AC520U	AC1030U	AC530U	AC2150 T15007	T2500Z	T3000ET	T1000A	1150UA	ST20F	A30	G10E	EH510	EH320 H1
	UZ	(ap)	VNMG 160404N-UZ	0.4														\A						•	-1	-	- -	- -		-	-		<b>)</b>			
D D	0_		160408N-UZ	0.8														NA.	_					9-	_	-	_ _	_		Щ.	_		,			
] ilg			160412N-UZ	1.2													۹,	Ì٨			ĭ															
Roughing	4°	0.2 0.4 0.6	10041214-02	1.2													ĺ		•																	
유	GZ	(ap)	VNMG 160404N-GZ	0.4												0		NA.	_					-		T-		-			7		П			
Medium to	<b>~</b> _	4-	160408N-GZ	0.8														lacksquare	_						_		- -	-	Ы	-	4					
edi	0		160412N-GZ	1.2													٠,																			
Σ	0°	0 0.2 0.4 0.6	10041211-02	1.2													1		`																	
	AX		VNGG 160402R-AX	0.2		#	1				#	1			_	#	#	1					_					=			#		$\Box$		#	
ΙĘ	~~	(ap) N	160402L-AX	0.2			_						_	Ш		_ _		_	_	_								_		Ш.	_ _	4	Ш		_ _	
].⊒		4 3																																		
Aluminum	0	2	160404R-AX	0.4																														П		
₹		1	160404L-AX	0.4			1			_	- -	_	1		7	- -	1	1		-					7	-	-	+			- -	-	$\Box$			
Ρ̈́		0.2 0.4 0.6	160408R-AX	0.8	-	-	- -		-	- -	- -	- -	-		-		- -	-	-	-		-			-	-	- -	-	-			-	+		-	-
	30°		160408L-AX	0.8	-		- -		-	-	- -	- -	-	-	-	-	-	-	-	-		-	-	-	-	-	- -	-	H	-	-	-	-		4	-

## Trigon type Negative Inserts









Positive

Negative

R







Negative

C/

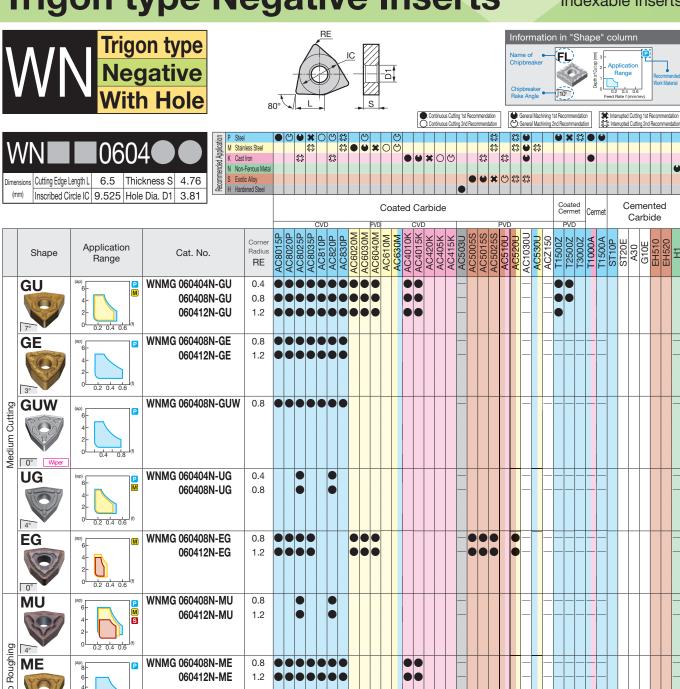
R

S

GZ

## **Trigon type Negative Inserts**

#### Indexable Inserts



WNMG 060408N-GZ

0.2 0.4 0.6

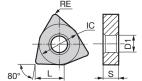
060412N-GZ

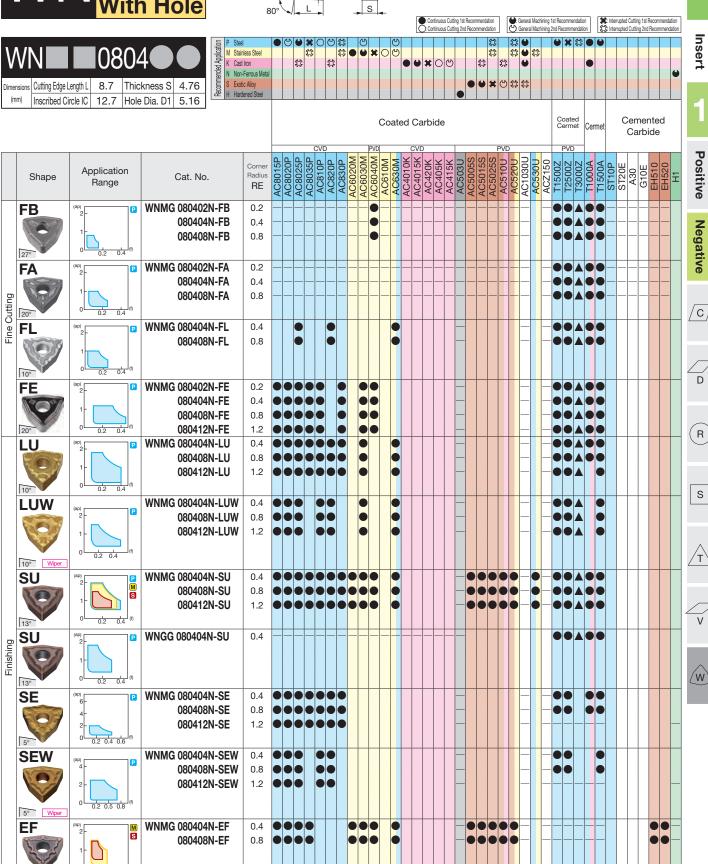
0.8

1.2

### **Trigon type Negative Inserts**







Negative

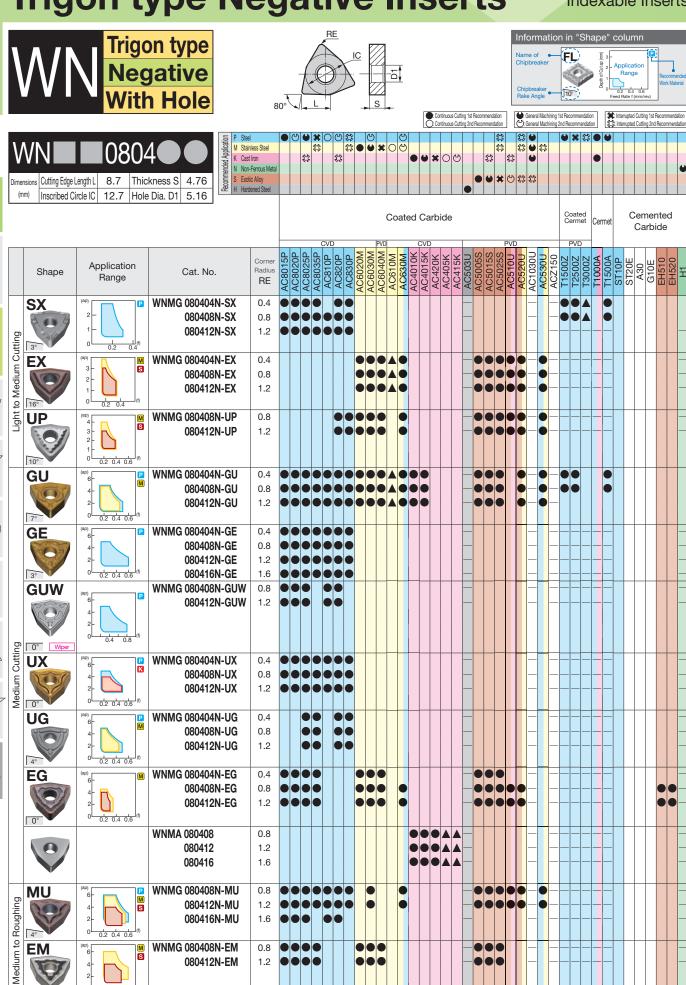
C

R

S

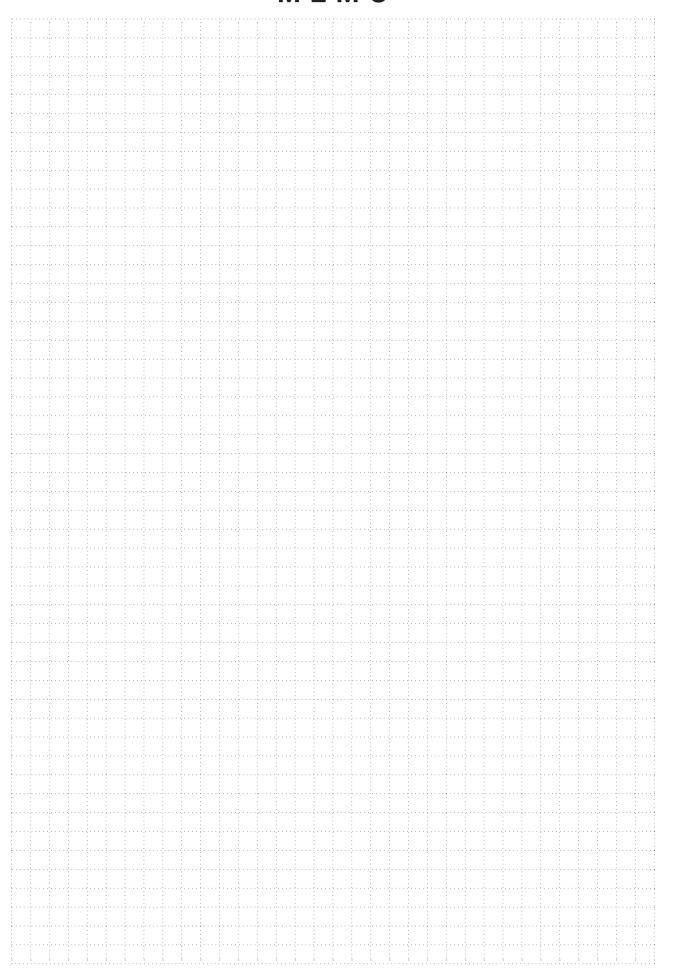
### **Trigon type Negative Inserts**

#### Indexable Inserts



0.2 0.4 0.6

### **MEMO**



### **Insert Identification Code**

Regrindable type

Example (1) Insert Shape (3) Tolerance Refer to Table 3 Refer to Table 1 (2) Relief Angle (4) Insert Hole Refer to Table 2 Refer to Table 4

Positive

Negative







One-use type (Disposable)

#### Table 1: (1) Insert Shape

Symbol	Insert	Shape	Apex Angle
O			80°
D		Diamond type	55°
V			35°
R	0	Round type	_
S		Square type	90°
Т	Δ	Triangular type	60°
W	Δ	Trigon type	80°

Example

(9) No. of Cutting Edges

Refer to Table 9

Table 2: (2) Relief Angle

(10) Type Code

Refer to Table 10

Symbol	Relief Angle
В	5° 🛴
С	7°
N	0°
Р	11° 🛴

Table 3: (3) Tolerance

(2) Relief Angle

Refer to Table 2

(1) Insert Shape

Refer to Table 1

Symbol	Tolerance of Corner Height (mm)	Inscribed Circle (mm)	Thickness (mm)
Е	± 0.025	± 0.025	± 0.025
G	± 0.025	± 0.025	± 0.13
M*	±0.08 to ±0.2	±0.05 to ±0.15	± 0.13
★ Generally,	these inserts	have ungroun	d side faces

(3) Tolerance

Refer to Table 3

(4) Insert Hole

Refer to Table 4

Table 4: (4) Insert Hole

Symbol	Insert Hole	Hole Style	Chipbreaker	Sh (Cross	ape Section)	Symbol	Insert Hole	Hole Style	Chipbreaker	Shape (Cross Section)
N	No	No	No			Α			No	
W	Yes	Straight hole +	No			М	Yes	Straight hole	One Face	
Т		Single chamfer (40° to 60°)	One Face			G			Double- sided	
						Х	_	-	1	Special

Table 10: (10) Type Code (One-Use type)

	( ) )	, , , , , , , , , , , , , , , , , , ,
Symbol	Type	Grade
NC	Coated SUMIBORON	BNC2115,BNC2125,BNC2010,BNC2020, BNC100,BNC160,BNC200,BNC300,BNC500
NU	Uncoated SUMIBORON	BNX10,BNX20,BN1000,BN2000,BN350, BN500,BN7000,BN700,BN7115,BN7500
	SUMIBORON BINDERLESS	NCB100
NS	Uncoated SUMIBORON	BNX25

<sup>\*</sup>The NS type is a one-use insert for the BNX25 grade, using the latest brazing technique.

#### Table 9: (9) No. of Cutting Edges

Symbol	No. of Cutting Edges	Type
No	1	1-Cornered type
2	2	
3	3	Multi-Cornered
4	4	type
6	6	

The shape is the same as the NU type.

<sup>\*</sup>Cat. numbers that begin with a "T-" are 10-piece packs

### **Insert Identification Code**

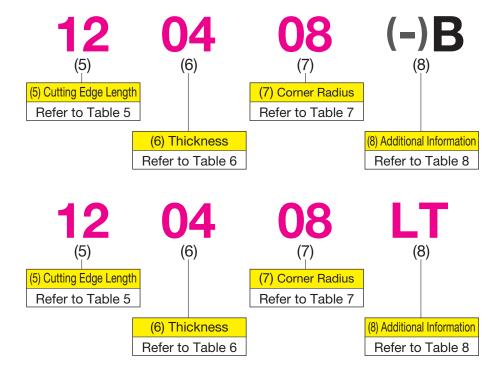


Table 5: (5) Cutting Edge Length (Side Length) (Typical Examples) Note: Cutting edge length indicated is measured without corner radii. (mm)

	able 5.	(5) Gu	ung Eage	Lengin (5	ide relié	Jui) (1 y	picai exam	ipies) Not	e: Cutting ed	ge length in	dicated is m	easured wit	hout comer	radii. (mm)
	Shape	Symbol	Cutting Edge Length (Side Length)	Inscribed Circle	Shape	Symbol	Cutting Edge Length (Side Length)	Inscribed Circle	Shape	Symbol	0 0	0 1 07	Inscribe	
ŀ			(Jue Leilgill)	Circle			(Sluc Length)	Circle			Negative	Positive	inegative	Positive
		04	4.37	4.30	ຸຣ	09	9.525	9.525	_W	06		3.2		3.97
	С	06	6.4	6.35	Square type	12	12.70	12.70	Trigon type	08	8.7	4.6	12.70	4.76
	80° Diamond	08	8.0	7.94										
	type	09	9.7	9.525	4				Tan					
		12	12.9	12.70		06	6.9	3.97						
					Т	08	8.2	4.76						
	D	07	7.7	6.35	Triangular type	09	9.6	5.56						
	55° Diamond	11	11.6	9.525	$\wedge$	11	11.0	6.35						
	type	15	15.5	12.70		16	16.5	9.525						
	-					22	22.0	12.70						
	R	09	9.525	9.525	V	08	8.3	4.76						
	Round type	12	12.70	12.70	35° Diamond	11	11.1	6.35	Eor:	tha O	ne-Use	a tupo	outti	20
					type	16	16.6	9.525			th indi			•
	<b>\</b>				-				leng	th of t	he CE	3N tip		

Table 8 (8) Additional Information

Table 6 (a) Additional information							
Symbol	Old symbol	Code Description		Symbol	Code Description		
		Uncoated	Coated	Cyrribor	Oode Description		
No	No	Standard Cutting Edge		WG			
(-) <b>B</b>	(-)B	Full-top CBN type		WH	Wiper Insert type		
-BSTN	-BSN	Full-top CBN type (emphasis on edge sharpness)		W			
LF	F	Sharp Edge type		LFW	Wiper Sharp Edge type		
LE				N-FV	Chipbreaker type		
LT	S	Emphasis on Edge Sharpness		N-LV			
LS	М	General-purpose type for Continuous Cutting	Emphasis on Edge Sharpness	N-SV	1,700		
ES	_	-	High-efficiency type				
HT	Т	Strong Edged					
HS	l						
US	_	Strong Edged					

Table 6: (6) Thickness Table 7: (7) Corner Radius

Symbol	Thickness (mm)	
X1	*	
01	1.59	
02	2.38	
03	3.18	
T3	3.97	
04	4.76	
06	6.35	
*)		

(\*)
CC□T03X1 Insert Thickness: 1.40
CC□T04X1 Insert Thickness: 1.80

Symbol	Corner Radius (mm)	
00	Sharp Edged	
01	0.1	
02	0.2	
04	0.4	
08	0.8	
12	1.2	
16	1.6	
20	2.0	
24	2.4	

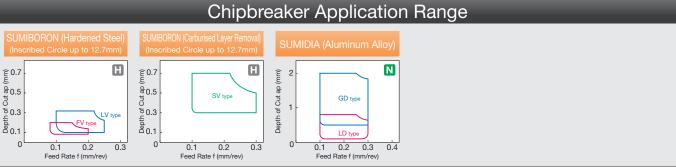




Negative Positive

### **Chipbreaker Selection**

SUMIBORON Insert CBN LV type CD C D R S SV type 0.15 -35° C D R S GD type DM type PMKNSH PMKNSH C D R Bumpy Chipbreaker Standard Chipbreaker Handed Chipbreaker BREAK MASTER (CBN/PCD) For Chamfering Applicable Work Materials: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel Chipbreaker Application Range



Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number (size, class, etc.).

# FV type/LV type/SV type

SUMIBORON

Positive

Negative

/c/

D

^





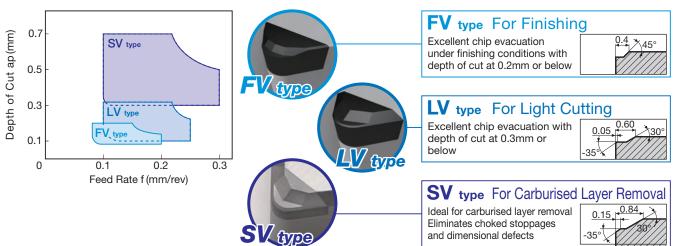




### ■ Features

- One-use SUMIBORON insert with chipbreaker.
   SV type is ideal for carburised layer removal, while FV and LV types are ideal for hardened steel machining.
- Chipbreaker incorporated on the CBN cutting edge to maintain chip control capabilities throughout the machining process.
- Unique chipbreaker design can be applied to both hardened and non-hardened parts with effective chip control.

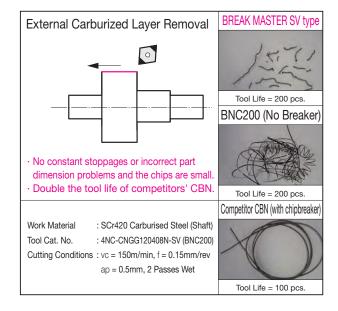
### ■ Application Range

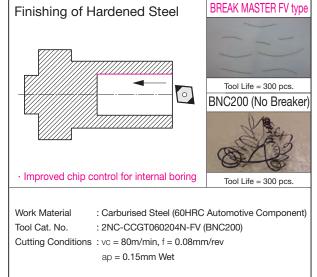


### ■ FV type / LV type / SV type Cutting Edge Specifications

Type	Series	Notation	Cutting Edge Specification Identification Code	α	W	Honing	Cutting edge specification identification code S 0 5 3 5
	<b>FV</b> type	N-FV	_	0°	0	Yes	Outling eage specification dentification code 3
With Chipbreaker	<b>LV</b> type	N-LV	S00535	35°	0.05	Yes	Negative Land Width W Rake Face Negative land Width W Angle
	<b>SV</b> type	N-SV	S01235	35°	0.12	Yes	Negative Land Angle a CBN Cutting Edge Shape T: Negative Land S: Negative Land + Honin
							Flank Honing Example: S00535  35. Negative Land + Honing  Example: S00535  35.0.05mm Negative Land with Honing

### ■ Application Examples





# **SUMIBORON Insert Edge Specifications**

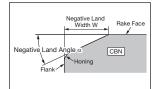
### SUMIBORON Insert Edge Treatment

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 heavy loads generated during the machining of high-hardness materials such as hardened steel. As the pioneer of CBN tools, SUMIBORON's vast selection of grades and edge treatment combinations is our trump card for hardened steel machining.

## Rake Face Negative Land CBN Layer Cutting Edge

Corner Radius

## Section A-A'



### ■ SUMIBORON Insert Edge Specification Overview

	Work		Neg		Stand	lard		Low Cut	ting Force L	/ High-	efficiency	type <b>E</b>		Strong E	dged H	/ <b>U</b>	
Series	Material	Grade	Pos.	Cutting Edge Specification Identification Code	α	W	Honing	Notation	Cutting Edge Specification Identification Code	α	W	Honing	Notation	Cutting Edge Specification Identification Code	α	W	Honing
		BNX10	Negative/Positive	T01225	25°	0.12	No	_	_	_	_	_	_	_	_	_	_
		BNX20	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215°	15°	0.12	No	_	_	_	_	_
	l	BNX25	Negative/Positive	S01725	25°	0.17	Yes	_	_	_	_	_	_	_	_	_	_
	Hardened Steel	BN1000	Negative/Positive	S01225	25°	0.12	Yes	_	_	_	_	_	_	_	_	_	_
	Oteel	BN2000	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215	15°	0.12	No	HS	S01235	35°	0.12	Yes
		BN350	Negative	T01225	25°	0.12	No						HT	T01235	35°	0.12	No
		BN350	Positive	T01235	35°	0.12	No	_	_	_		_	_	_		_	_
		BN500	Negative/Positive	T01215	15°	0.12	No	_	_	_	_	_	_	_	_	_	
Uncoated		BN7125	Negative/ Positive	T01215	15°	0.12	No	LF LE		0° 0°	0	No Yes	HS	S01225	25°	0.12	Yes
1 2 2		BN7000	Negative/Positive	T01215	15°	0.12	No	LF	_	0°	0	No	HS	S01225	25°	0.12	Yes
	Cast Iron	BN700	Negative/Positive	T01215	15°	0.12	No	LF	_	0°	0	No	HS	S01225	25°	0.12	Yes
	Sintered		Negative/					LF	_	0°	0	No	HS	S00525	25°	0.05	Yes
	Alloy Exotic Alloy	BN7115	Positive	T01215	15°	0.12	No	LE LS	S00715	0° 15°	0 0.07	Yes Yes	US	S01225 —	25°	0.12	Yes —
		BN7500	Negative/ Positive	T01215	15°	0.12	No	LF LE LS	  S00715	0° 0° 15°	0 0 0.07	No Yes Yes	HS	S00525	25°	0.05	Yes
		BNS8125	Negative	T02020	20°	0.2	No	LF	_	_	_	No	_	_	-		
		BNC2105	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	_	_	_	_	_
		BNC2115	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01730	30°	0.17	Yes
		BNC2125	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S02735	35°	0.27	Yes
		BNC2010	Negative/Positive	S01225	25°	0.12	Yes	LE	_	0°	0	Yes	HS	S01730	30°	0.17	Yes
Coated	Hardened Steel	BNC2020	Negative/ Positive	S01225	25°	0.12	Yes	LT ES	T00515 S00535	15° 35°	0.05 0.05	No Yes	HS	S02735	35°	0.27	Yes
		BNC100	Negative/Positive	S01225	25°	0.12	Yes	LS	S01715	15°	0.17	Yes	_	_	_	_	_
SUN		BNC160	Negative/Positive	S01225	25°	0.12	Yes	LS	S01020	20°	0.10	Yes	HS	S01730	30°	0.17	Yes
		<b>BNC200</b>	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	LS	S00515	15°	0.05	Yes	HS	S01735	35°	0.17	Yes
	Cast Iron	BNC500	Negative/Positive	S01215	15°	0.12	Yes		_	_	_	_	HS	S01225	25°	0.12	Yes
	Cast Iron/Hardened Steel	BNC8115	Negative	S02020	20°	0.2	Yes		_	_	_	_			_	_	_
SUMIBORON BINDERLESS	Cast Iron / Exotic Alloy Cemented Carbide / Hard Brittle Material	NCB100	Negative/ Positive	T01215	15°	0.12	No	_	_	_	_	_	_	_	_	_	_

\*BNX20 inserts with an inscribed circle of less than ø4.76 will have an identification code of T00715.

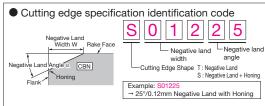
### ■ Insert Edge Specification with Wiper/Chipbreaker

		Cutting					oated BORON		Со	ate	d S	UN	1IB(	ORG	ON	
Туре		Edge Specification Identification Code	α	W	Honing	BN2000	BNS8125	BNC2115	BNC2125	BNC2010	BNC2020	BNC100	BNC160	BNC200	<b>BNC500</b>	BNC8115
	WG	S01215	15°	0.12	Yes											
	WH	S01215	15°	0.12	Yes					•						
Wiper		S01215	15°	0.12	Yes											
	w	S01715	15°	0.17	Yes											
	VV	S02020	20°	0.20	Yes											lacksquare
		T02020	20°	0.20	No											
Wiper Sharp Edge	LFW	_	0°	0	No											
\\/;+b	N-FV	_	0°	0	Yes					•						
With Chipbreaker	N-LV	S00535	35°	0.05	Yes					•						
Chippheaker	N-SV	S01235	35°	0.12	Yes											

■ mark: Standard stocked item ☐ mark: Made-to-order item

### ■ Edge Specification Identification Code

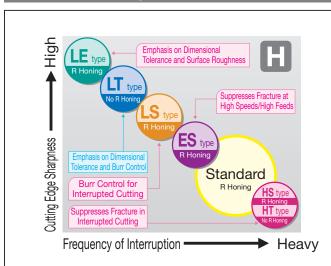
	Edg	ge Trea	atment	Notation								
No	Standard C	Cutting	Edge									
L	Low Cutting Force		F	Sharp Edge								
Е	High Efficiency		Е	Honing								
Н	Strong Edged	+	Т	Negative Land								
U	Strong Edged		S	Negative Land + Honing								
WG/WH/W	Wiper											
N-FV/N-LV/ N-SV	With Chipbreaker											

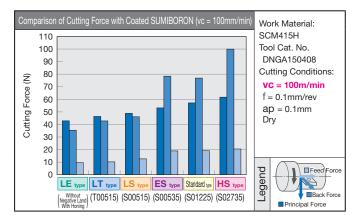


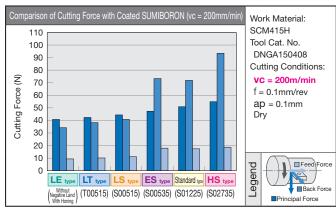
# SUMIBORON Insert Edge Specifications

### ■ Edge Treatment Performance

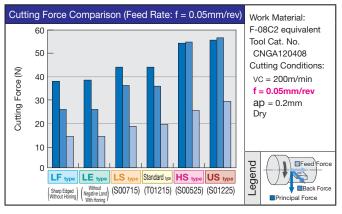
### Machining of Hardened Steel

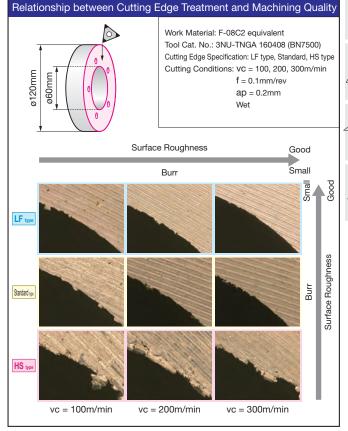






## 





SUMIBORO

1

Positive

Negative

R

S

T

V

w

Negative Positive









CC	EWOS	3X1(	Uncoa	ated
Dimensions	Inscribed Circle	3.5	Hole Dia.	1.9
(mm)	Thickness	1.4		

(Legend) Continuous Cutting General machining K Cast Iron 0 × **u** • Recommended S Exotic Alloy H Hardened Steel # Application 耸 **Uncoated SUMIBORON** 

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	BNX10		BNX25	DN1000	NZUC NISE	BNISOO	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	NU-CCEW 03X102LF 03X104LF	1	1	0.2 0.4	1.2	_	_	_ -	_ -	_   -	-   -	-			•			_
	L Low Resistance T Negative Land	NU-CCEW 03X102LT 03X104LT	1	1	0.2 0.4	1.2 1.1		•	_  -		-				_	_			_ _

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

CC	EW03	3X1(	Coat	ted
Dimensions	Inscribed Circle	3.5	Hole Dia.	1.9
(mm)	Thickness	1.4		

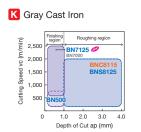
	K	Cast Iron								•	#
Recommended	S	Exotic Alloy									
Application	Н	Hardened Steel	0	•	•	0	G	#			
	Sint	ered Components									

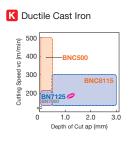
Coated SUMIBORON

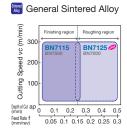
### One-Use type / 7° Positive (With Hole)

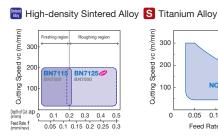
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	NC2	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	NC2	BNC500	<b>IC81</b>	
	L Low Resistance E With Honing	NC-CCEW 03X102LE 03X104LE	1	1	0.2 0.4	1.2			_		_	_	_	_	_	_	_	
•	L Low Resistance T Negative Land	NC-CCEW 03X102LT 03X104LT	1	1	0.2 0.4	1.2	_	_	_	_		_	_	_	_	_	_	

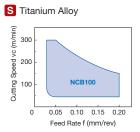
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











### Indexable Inserts



Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative Positive	T01225	S01225	S01725	S01225	T01225 T01235	S01225	S01225	S01225	S01225	S01225
FOSILIVE				BN7000						]
	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101213	101213	_	_	101213	

CC	EW0 <sup>2</sup>	IX10	Uncoa	ated
Dimensions	Inscribed Circle	4.3	Hole Dia.	2.3
(mm)	Thickness	1.8		

(Legen	d) (û	ortinuous Cutting	1st Reco 2nd Reco	mmenda ommenda	ation G	eneral ma	chining	<b>●</b> : 1: <sup>1</sup> : 2:	st Reco	mmenda mmenda	tion In	terrupted	Cutting	<b>‡:</b> 1s ‡: 2r	t Recomn d Recomi	nendation mendation
	K	Cast Iron							0	•					×	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																SSS

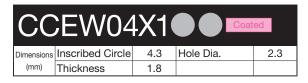
**Uncoated SUMIBORON** 

Coated SUMIBORON

### One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	Š	BNX25	BN2000	リラ	ラ	BN7125	BN7000	BN700	BN7115	BN7500	NCB100
	L Low Resistance F Sharp Edge	NU-CCEW 04X102LF 04X104LF	1	1	0.2 0.4	2.0 1.9	_	_	_ -	-   -	-			•			-	
	L Low Resistance T Negative Land	NU-CCEW 04X102LT 04X104LT	1	1	0.2	2.0	_	•		-	_	_	_	_	_			

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.



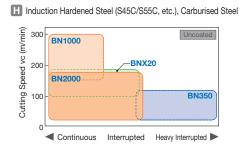
	K	Cast Iron								•	#
Recommended	S	Exotic Alloy									
Application	Н	Hardened Steel	0	•	•	0	9	#			
	Sint	ered Components									

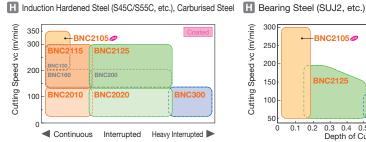
### One-Use type / 7° Positive (With Hole)

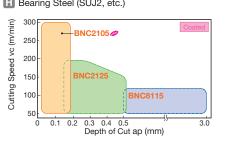
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2020	BNC300	BNC100	BNC160	NC2(	1050	BNC8115	
	L Low Resistance  With Honing	NC-CCEW 04X102LE 04X104LE	1	1	0.2 0.4	2.0 1.9	_	_	_	-		_	_	_ -	_ _	_	
	L Low Resistance T Negative Land	NC-CCEW 04X102LT 04X104LT	1	1	0.2 0.4	2.0 1.9	_			-		_	_		_		

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

## SUMIBORON Application Range Map



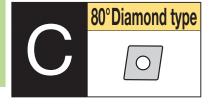




Positive Negative

R





CC	G <b>=</b> 06	602	Unc.	oated
Dimensions	Inscribed Circle	6.35	Hole Dia.	2.8
(mm)	Thickness	2.38		

(Legend) Continuous Cutting General machining K Cast Iron 0 × **u** • Recommended S Exotic Alloy Application Hardened Steel # 耸 Uncoated SUMIBORON

### One-Use type / 7° Positive (With Hole)

00 000 1,70															"				
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NOBIOO
		NU-CCGW 060202			0.2	2.5			•									-	
		060204	1	1	0.4	2.5*												-	D
4	Standard	060208			0.8	2.4				•							-	-	
	Standard	T-NU-CCGW 060202			0.2	2.5				•							-	-[-	-
		060204	10	1	0.4	2.5				•							-	- -	-
		060208			0.8	2.4											-	- -	-
		NU-CCGW 060202LT			0.2	2.5	_	-	- -		-	$\left -\right $	_	$\perp$	-	-			-
	L Low Resistance T Negative Land	060204LT	1	1	0.4	2.5	_	-	- -	•	-	_	-	-	-	_		- -	-
		060208LT			0.8	2.4		-	- -		-	-	_	-	_	-		_	-
	H Strong Edge	NU-CCGW 060202HS			0.2	2.5	_	- -	- -	•	-	_					-	- -	-
	s Negative Land With Honing	060204HS	1	1	0.4	2.5	_	_ -		•	_	_					-		_
O 111 1 1 1	1 1100 1	ala Danandian and Alaman alama and Alfa	4.5					· ·					•						

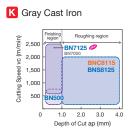
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-CCGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less. \*NCB100 cutting edge length is 2.3.

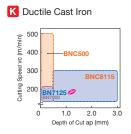
### Multi-Cornered One-Use type / 7° Positive (With Hole)

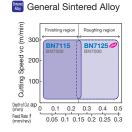
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	ž	BNX20	BNX25	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
<b>(</b>	Standard	2NU-CCGW 060202 @ 060204	1	2	0.2 0.4	2.5 2.5							•	•		•	•		
<b>(</b>	Finishing Chipbreaker	2NU-CCGT 060204N-FV	1	2	0.4	2.3		-						_	_				

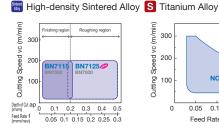
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use 2NS type (2NS-CCGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

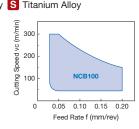
### SUMIBORON Application Range Map











Negative Positive

### Indexable Inserts



Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative Positive	T01225	S01225	S01725	S01225	T01225 T01235	S01225	S01225	S01225	S01225	S01225
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101213	101215	_	_	101213	

CC	G <b>■</b> 06	602		ated
Dimensions	Inscribed Circle	6.35	Hole Dia.	2.8
(mm)	Thickness	2.38		

(Legen	d) (û	ortinuous Cutting ::	1st Reco 2nd Reco	mmenda ommenda	ation G	eneral ma	chining	<b>●</b> : 1: <b>○</b> : 2:	st Recor nd Reco	mmenda mmend	ation In	terrupted	Cutting	: 1st Recommendation: 2nd Recommendation:
	K	Cast Iron										•	×	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

### Coated SUMIBORON

### Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
		2NC-CCGW 060202			0.2	2.4	•	•		•	•				•	•	-	
	Standard	060204	1	2	0.4	2.3	•	•		•	•				•	•	-	
		060208			0.8	2.3		•								•	-	
	Finishing Chipbreaker	2NC-CCGT 060204N-FV	1	2	0.4	2.3		•	•	•	•		_	•	•		_	
•	L Low Resistance E With Honing	2NC-CCGW 060202LE 060204LE	1	2	0.2 0.4	2.4 2.3	_	_	_	•	_	_	_	_	_	_	_	
•	L Low Resistance T Negative Land	2NC-CCGW 060202LT 060204LT	1	2	0.2 0.4	2.4 2.3	_	_	_	_	•	_	_	_	_	_	_	
•	L Low Resistance Negative Land With Honing	2NC-CCGW 060202LS 060204LS 060208LS	1	2	0.2 0.4 0.8	2.4 2.3 2.3		•	•	_	_				•	_ _ _	_ _ _	

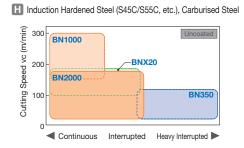
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

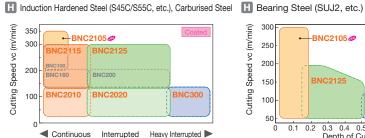


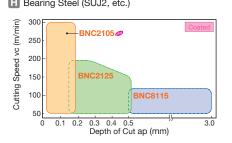




### SUMIBORON Application Range Map







Positive Negative





S

R

	80° Diamond type
C	

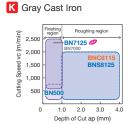
CC	G <b>=</b> 09	9T3	Unc	oated
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	3.97		

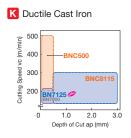
General machining : 1st Recom (Legend) Continuous Cutting K Cast Iron 0 × S Exotic Alloy **u** • Recommended H Hardened Steel 9 Application # **Uncoated SUMIBORON** 

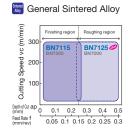
One-Use type / 7° Positive (With Hole)

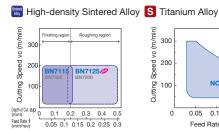
00 000 1)		- ()																	"
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN11000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	Nobloo
		NU-CCGW 09T302			0.2	2.5											-	-	
		09T304	1	1	0.4	2.5								•				-	
100	Standard	09T308			0.8	2.4											-	-	
	Standard	T-NU-CCGW 09T302			0.2	2.5											-	-[-	
		09T304	10	1	0.4	2.5											-	- -	-
		09T308			0.8	2.4											-	- -	-
		NU-CCGW 09T302LT			0.2	2.5	_	-	- -	-	-	-	-	+	-	-		-	-
	L Low Resistance T Negative Land	09T304LT	1	1	0.4	2.5	_	-	- -	-	-	-	-	+	-	-	-	- -	-
		09T308LT			0.8	2.4	—	-	- -	-	<u> </u>	_	_	_	-	_		- -	
	H Strong Edge	NU-CCGW 09T302HS			0.2	2.5	_	- -	- -	-	-	-					-	- -	-
	Negative Land	09T304HS	1	1	0.4	2.5	_	- -	- -	-	-	-					-	- -	
	With Honing	09T308HS			0.8	2.4	_	_	- -	-	-	-						-	
O	1 1100 1	ala in a called a called a called a called	4.0														**		

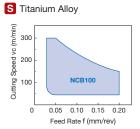
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-CCGW) for BNX25.











<sup>\*</sup>Depth of cut for one-use types is 0.5mm or less.

	80° Diamond type
C	

Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	C0100E	S01725	S01225	T01225	C0100E	C0100E	S01225	C0100E	S01225
Positive	101225	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101213	101215	101215	_	_	101213	

CC	G <b>=</b> 09	9T3	Unc	oated
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	3.97		

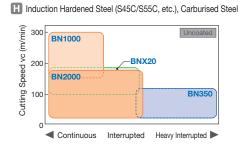
(Legen	d) [û	ortinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	ieneral ma	chining	<b>₩</b> :19	st Recor nd Reco	mmenda mmend	ation In	terrupted	Cutting	<b>‡:</b> 1s ‡:2r	t Recomr d Recom	nendation mendation
	K	Cast Iron							0	•					Ħ	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	Ð	#	•	•	#								
	Sint	ered Components								•			•			
																ળz

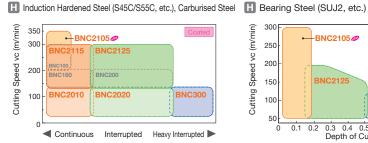
Uncoated SUMIBORON

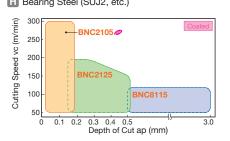
Multi-Cornered One-Use type / 7° Positive (With Hole)

ividiti Odifici	ca one osc	type / / Fositive (With Fit	310)																m or
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN350	BN500	BN7125 BN7000	RNZOO	BN7115	BN7500	BNS8125	NCB100
		2NU-CCGW 09T302 @			0.2	2.5							•					-	
	Standard	09T304	1	2	0.4	2.5										•	•	-	
		09T308			0.8	2.4										•	•	-	
		2NU-CCGW 09T304WG			0.4	2.4			_		•							-	
	Low Feed Wiper Insert	09T308WG	1	2	0.8	2.4					•							-	
		2NU-CCGW 09T304WH			0.4	2.4					•							=	
0	High Feed Wiper Insert	09T308WH	1	2	0.8	2.3			_		•							_	
		2NU-CCGT 09T304N-FV			0.4	2.4	_	_			•	_	_ -	1		_	_	-	
	Finishing Chipbreaker	09T308N-FV	1	2	0.8	2.3	_	_	_		•	_ -	_ -		-		_	_	
		2NU-CCGT 09T304N-LV			0.4	2.4	_	_			•		_ -	#	-	_	_	-	
	Light Cutting Chipbreaker	09T308N-LV	1	2	0.8	2.3	_	_	_		•	_ -	_ -		-	- -	_	_	
		2NU-CCGW 09T302LF			0.2	2.5	_	_		-	_ -	-	-						
	L Low Resistance F Sharp Edge	09T304LF 🐠	1	2	0.4	2.5	_	_		-	- -	- -	-					-	
		09T308LF 🐠			0.8	2.4	_	_		_	_[-		-						
		2NU-CCGW 09T302LE			0.2	2.5	_	-		-	-[-		-			-			
	L Low Resistance  E With Honing	09T304LE 🐠	1	2	0.4	2.5	_	_	_	-	-[-	- -	-	<b>D</b> -	-[-	-			
	_	09T308LE 🐠			0.8	2.4	_	_	_	-	-[-	- -	-		-	-			

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-CCGW) for BNX25.







<sup>\*</sup>Depth of cut for one-use types is 0.5mm or less.

Negative Positive













CC	G <b>■</b> 09	9T3		pated
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	3.97		

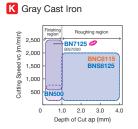
80° Diamond type

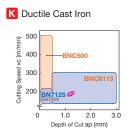
(Legend) Cortinuous Cutting General machining : 1st Recon nterrupted Cutting : 1st Recommendation K Cast Iron S Exotic Alloy Recommended Application H Hardened Steel 9 #

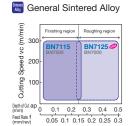
Coated SUMIBORON

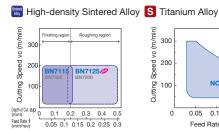
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC 100	BNC200	BNC500	BNC8115	
		2NC-CCGW 09T302			0.2	2.5		•		•	•				•		
	Standard	09T304	1	2	0.4	2.5	•	•							•	-	
		09T308			0.8	2.4	•								•	_	
		2NC-CCGW 09T304WG			0.4	2.4		•								-	
	Low Feed Wiper Insert	09T308WG	1	2	0.8	2.4		•	•	•	•					-	
	15.1.5	2NC-CCGW 09T304WH			0.4	2.4		•	•	•	•			•	,		
	High Feed Wiper Insert	09T308WH	1	2	0.8	2.3		•	•	•	•					_	
		2NC-CCGT 09T304N-FV			0.4	2.4		•	•	•	•	- -	-	•			
	Finishing Chipbreaker	09T308N-FV	1	2	0.8	2.3		•	•	•		- -	-			-	
		2NC-CCGT 09T304N-LV			0.4	2.4		•	•	•	•	- -	-	•	,		
	Light Cutting Chipbreaker	09T308N-LV	1	2	0.8	2.3		•	•	•	•	- -	-			_	
		2NC-CCGW 09T302LE			0.2	2.5	_	_	_	•	_	-	-				
	L Low Resistance  E With Honing	09T304LE	1	2	0.4	2.5	_	_	-	•	- -	- -	- -	- -	-		
		09T308LE			0.8	2.4	_	_	_	•	_ .	_ -	_ _	- -	_		

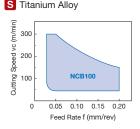
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











	80° Diamond type
C	

Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101213	101213	_	_	101213	

CC	G <b>=</b> 09	9T3		Coa	ated
Dimensions	Inscribed Circle	9.525	Hole Dia.		4.4
(mm)	Thickness	3.97			

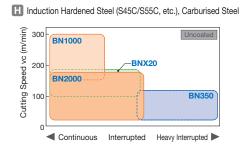
(Legen	d) [û	ortinuous Cutting :	1st Reco 2nd Reco	ommend ommend	ation G	eneral ma	chining	<b>●</b> : 1: <b>○</b> : 2:	st Reco	mmenda mmend	ation In	terrupted	Cutting	: 1st Recommendation: 2nd Recommendation:
	K	Cast Iron										•	Ħ	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

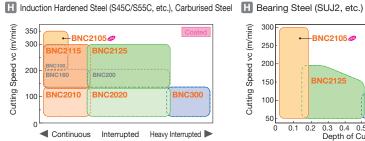
Coated SUMIBORON

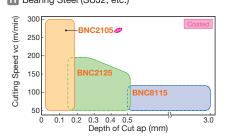
### Multi-Cornered One-Use type / 7° Positive (With Hole)

									_	_						
Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	S C S	JC21	1C21	\C2	Z CZ		3 5	S	VC5	C8-	
	2NC-CCGW 09T302LT			0.2	2.5	_		-	-	•	- -	-[-	- -	-	-	
	09T304LT	1	2	0.4	2.5	-	$\left  - \right $	-	- •	•	- -	- -	- -	-	-	Ì
	09T308LT			0.8	2.4	_	_	-	_	•	_  -	- -	-	_	_	
L Low Resistance	2NC-CCGW 09T302LS			0.2	2.5			•	- -	-				-	-	Ì
Negative Land	09T304LS	1	2	0.4	2.5	•		•	- -	- •				-	-	Ì
With Horning	09T308LS			0.8	2.4	•		•	- -	- 0				<u> </u>	-	
H Strong Edge	2NC-CCGW 09T304HS			0.4	2.5	-				•	•	-			-	Ì
s Negative Land With Honing	09T308HS	1	2	0.8	2.4	_					-					l
	L Low Resistance T Negative Land L Low Resistance Negative Land With Honing H Strong Edge Negative Land	Low Resistance	Cat. No.   Pack	Cutting Edge   Specification   Cat. No.   Pcs/ Pack   Cutting Edges	Cutting Edge   Specification   Pcs/ Pack   Cutting Edges   Cat. No.   Pcs/ Pack   Cutting Edges   Corner Radius	Cutting Edge   Specification   Pack   Cutting Edges   Edge   Length	Cutting Edge Specification         Cat. No.         Pcs/Pack         Cutting Edges         Corner Radius         Edge Length         Stage Length         Corner Radius         Edge Length         Stage Length         Stage Length         Corner Radius         Edge Length         Corner Radius         Edge Length         Stage	Cutting Edge Specification         Cat. No.         Pcs/Pack         Cutting Edges         Corner Radius         Edge Length         Corner Radius         Edge Length         Corner Radius         Edge Length         Corner Radius         Edge Length         Corner Radius         Corner Radius	Cat. No.   Pest Pack   Cutting Edges   Cat. No.   Cat. No.   Cutting Edges   Cat. No.   Cutting Edges   Cat. No.   Cutting Edges   Cat. No.   Cutting Edges   Cat. No.   Cat. No.   Cutting Edges   Cat. No.   Cat	Cutting Edge Specification         Cat. No.         Pcs/Pack         Cutting Edges         Corner Radius         Edge Length         Corner Radius         Edge Length         Corner Radius         Edge Length         Corner Radius         Corner Radi	Cutting Edge Specification         Cat. No.         Pcs/Pack         Cutting Edges         Corner Radius         Edge Length         Cover Radius           Low Resistance Negative Land With Honing         2NC-CCGW 09T302LS         0.2         2.5	Cutting Edge Specification         Cat. No.         Pcs/Pack         Cutting Edges         Corner Radius         Edge Length         No.         No.	Cutting Edge Specification         Cat. No.         Pcs/Pack         Cutting Edge Specification         Corner Radius         Edge Length         No.         No.         No.         Pcs/Pack         Cutting Edge Specification         Corner Radius         Edge Length         No.         No.	Cutting Edge Specification         Cat. No.         Pcs/Pack         Cutting Edges         Corner Radius         Edge Length         Coverage Radius         Corner Radius         Edge Length         Coverage Radius         Corner Radius         Edge Length         Coverage Radius         Coverage Radius	Cutting Edge Specification         Cat. No.         Pcs/ Pack         Cutting Edges         Corner Radius         Edge Length         No.         No.	Cutting Edge Specification         Cat. No.         Pcs/Pack         Cutting Edge         Corner Radius         Edge Length         Coverage Edge         Corner Radius         Edge Length         Coverage Edge         Coverage E

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.







R





Standard cutting edge specification BN1000 BN2000 BNX10 BNX20 BNX25 Negative T01225 S01225 S01725 S01225

BN350 BNC2105 BNC2115 BNC2125 T01225 S01225 S01225 S01225 S01225 S01225 Positive T01235 BNC500 BN500 BN7125 BN7115 BN7500 BNC8115 BNS8125 NCB100 Negative S02020 T02020 S01215 T01215 T01215 T01215 T01215 T01215 T01215 Positive

CP	'GW08	302	Unco	ated
Dimensions	Inscribed Circle	7.94	Hole Dia.	3.4
(mm)	Thickness	2.38		

(Legend) Cortinuous Cutting General machining K Cast Iron 0 × Recommended S Exotic Alloy **u** Application H Hardened Steel 0 9 耸

Uncoated SUMIBORON

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edae	$ \times $	BNX20	BNX25	BN2000	BN350	=======================================	BN/000	BN700	BN7500	BNS8125	NCB100
		NU-CPGW 080202			0.2	2.5				•						H	
	Standard	080204	1	1	0.4	2.5											
		080208			0.8	2.4				•							
6	L Low Resistance T Negative Land	NU-CPGW 080204LT	1	1	0.4	2.5	_	-	_ _	•	_						
6	H Strong Edge Negative Land	NU-CPGW 080202HS 080204HS	1	1	0.2 0.4	2.5 2.5	_	_  -	- - - -	•	_						_
	With Honing	080208HS			0.8	2.4		_ -	- -	•	-						

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-CPGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

CP	'GW08	302		Coa	ted
Dimensions	Inscribed Circle	7.94	Hole Dia.		3.4
(mm)	Thickness	2.38			

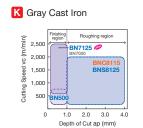
	K	Cast Iron								•	#
Recommended	S	Exotic Alloy									
Application	Н	Hardened Steel	0	•	•	0	9	#			
	Sint	ered Components									

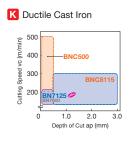
Coated SUMIBORON

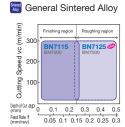
### Multi-Cornered One-Use type / 11° Positive (With Hole)

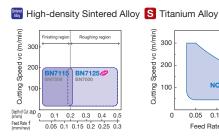
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC500	BNC8115	
		2NC-CPGW 080202			0.2	2.5			•	•					+	
	Standard	080204	1	2	0.4	2.5			•	•					_	l

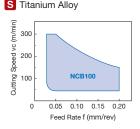
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











# **SUMIBORON Inserts**





### (Legend) Continuous Outling : 1st Recomm K Cast Iron 0 × • Recommended S Exotic Alloy H Hardened Steel \$\$ • Application **Uncoated SUMIBORON**

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20 BNX25	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
		NU-CPGW 090302			0.2	2.5			•	•							_	
	Standard	090304	1	1	0.4	2.5			•	•							_	
		090308			0.8	2.4			•	•							-	
		NU-CPGW 090302LT			0.2	2.5		-	-	•	_	_	-	-	-	-	_	
	L Low Resistance T Negative Land	090304LT	1	1	0.4	2.5		-	-	•	_	_	+	- -	- -	-	_	
		090308LT			0.8	2.4		-	-	•	_	_	+	-	-	-		_
	H Strong Edge	NU-CPGW 090302HS			0.2	2.5		-[-		•							+	
	Negative Land	090304HS	1	1	0.4	2.5		- -	- -	•	-	_					-	-
	With Honing	090308HS			0.8	2.4		_ -	- -	•		_					_	_

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-CPGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

CP	GW09	903		oated
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	3.18		

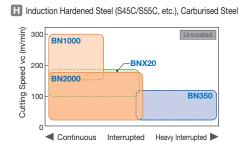
	K	Cast Iron								•	#
Recommended	S	Exotic Alloy									
Application	Н	Hardened Steel	0	•	•	0	9	#			
	Sint	ered Components									

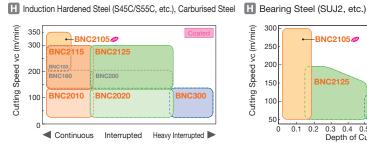
Multi-Cornered One-Use type / 11° Positive (With Hole)

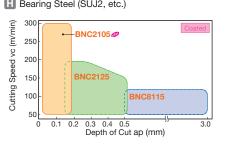
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2125	BNC2010	BNC2020	BNC100	BNC160	BNC200	BNC500	BNC8115	
•	Standard	2NC-CPGW 090302 090304	1	2	0.2 0.4	2.5 2.5		•						_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

## SUMIBORON Application Range Map







Coated SUMIBORON

Positive Negative









	80° Diamond type
C	$\bigcirc$

Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101215	101215	101215	_	_	101215	

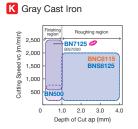
CN	<b>1 1 1 2</b>	204		Uncoated
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

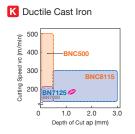
(Le	gen	d) (d	intinuous Cutting	1st Reco 2nd Reco	mmenda ommend	ation G	eneral ma	chining	<b>●</b> :1s <b>□</b> :2r	st Recor	mmend mmend	ation In	terrupted	Cutting	#:1s	t Recomn nd Recomn	nendation mendation
		K	Cast Iron							0	•					*	
Recommend	ded	S	Exotic Alloy								•					•	
Applicatio	n	Н	Hardened Steel	0	9	₿	•	•	#								
		Sint	ered Components								•			•			
																	w z

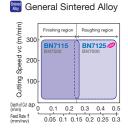
Uncoated SUMIBORON

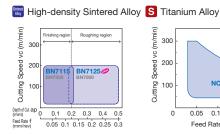
,	One-Use typ	e / Negative	(With Hole)							Oi	100	aico	00	/IVII	ьо	110	/1 N		Š	SUMB
	Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
İ			NU-CNMA 120402			0.2	2.5				-	•							-	
		Standard	120404	1	1	0.4	2.5	•	•	-		•	•		•	▲			-	-
		Standard	120408	'	'	0.8	2.4	•	•	$\left -\right $					•				-	-
			120412			1.2	2.3	•	•			•	•		•					_
			T-NU-CNMA 120402			0.2	2.5			-									-	_
		Standard	120404	10	1	0.4	2.5	•	•	-		•	•						-	-
		Otandard	120408	10	'	0.8	2.4	•	•	-		•	•						-	-
			120412			1.2	2.3	•	•			•	•							
			NS-CNMA 120404			0.4	2.5	_	-		- -	- -	-	-	-	-			-1	-
		Standard	120408	1	1	0.8	2.4	_	_		- -	- -	-	-	-					-
			120412			1.2	2.3	_	_		_	_ -	1-	_	-					
			T-NS-CNMA 120404			0.4	2.5	_	_		- -	- -	-	-	-					-
		Standard	120408	10	1	0.8	2.4	_	_		- -	- -	-	-	-					-
			120412			1.2	2.3	_	_		_	_ -	_	H						
			NU-CNGA 120404			0.4	2.5	_	_		_ -	-[-	-	-	-				-	•
		Standard	120408	1	1	0.8	2.4	_	_		- -	- -	-	-	-					•
- 1	4		100110	1																

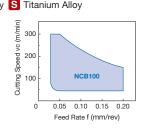
120412 2.3 Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.











# 80° Diamond type

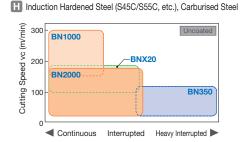
CN	I <b>II I</b> 12	204	Unc.	oated
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

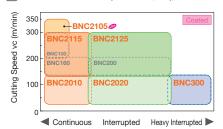
(Legen	d) [û	ordinuous Cutting	1st Reco	ommend ommend	ation G	eneral ma	chining	<b>₩</b> :19	st Recor nd Reco	mmenda mmend	ation In	terrupted	Cutting	<b>‡:</b> 1s	t Recomn nd Recomn	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MII	во	RO	N			DERLESS AIBORON

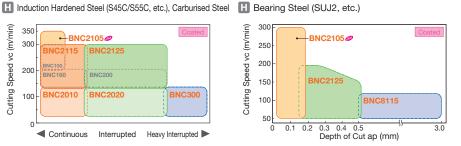
### Multi-Cornered One-Use type / Negative (With Hole)

		type, regaine (rimine	-,																	
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN350	BN500	BN7125	BN7000	$\sim$ 1.	BN7115	BN/500	NCB100	
		2NU-CNGA 120404			0.4	2.5			-	•	•	•		•	•	<b>A</b>	•		-	
	Standard	120408	1	2	0.8	2.4			-	•	•	•		•	•	<b>A</b>			-]	
- A		120412			1.2	2.3			_	•	•	•		•	•	<b>A</b>			-	
		T-2NU-CNGA 120404			0.4	2.5			-		•								- -	-
	Standard	120408	10	2	0.8	2.4			-		•	•		•	•	<b>A</b>			- -	-
		120412			1.2	2.3			-		•								-	-
		2NS-CNGA 120404			0.4	2.5	_	$\left  - \right $		-	-	-	_	-	- -	- -	- -		- -	-
	Standard	120408	1	2	0.8	2.4	_	$\left  - \right $		-	-	-	_	-	+ -	- -	- -		- -	-
- A N		120412			1.2	2.3	_	-		-	_	_	_	-			_ -			-
		T-2NS-CNGA 120404			0.4	2.5	_	-		-[	-	-	_	+		-[-	-[-		- -	
	Standard	120408	10	2	0.8	2.4	_			-	_	_	_	-	-	- -	- -		- -	-
		120412			1.2	2.3	_	_		-	_	_	_	-	-	-	_ -		-	-
		ala Danamitan alautan adalah dalah bira																: !-		

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.









Standard cutt	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101215	101215	101215	_	_	101215	

CN		204	Unc	oated
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

Multi-Cornered One-Use type / Negative (With Hole)

(Legen	d) (i	ortinuous Cutting	1st Reco	mmenda ommend	ation G	eneral ma	chining	<b>⊕</b> :1: <b>⊕</b> :2:	st Reco	nmenda mmenda	ation In	terrupted	Cutting	#:1s	t Recomr nd Recom	nendatio mendatio
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																ΩZ

**Uncoated SUMIBORON** 

	Shape	Specification	Cat. No.	Pcs/ Pack	Cutting Edges	Corner Radius	Edge Length	BNX1	BNXZ	BN10(	BN20(	BN35	BN50	BN70	BN70	BN71	BN75(	NCB1
			2NU-CNGA 120404WG			0.4	2.4								П		-	
		Low Feed Wiper Insert	120408WG	1	2	0.8	2.4		-	-							-	-
	- 8		120412WG			1.2	2.3		-	-							-	-
			2NU-CNGA 120404WH			0.4	2.4				•						-	-
	•	High Feed Wiper Insert	120408WH	1	2	0.8	2.3		-								-	-
			120412WH			1.2	2.2		-								-	-
			2NU-CNGM 120404N-LV			0.4	2.5	_		-			-[-	-	-	-	-	- -
	(- <b>6</b> %)	Light Cutting Chipbreaker	120408N-LV	1	2	0.8	2.4	- -	- -			$\left  - \right $	- -	- -	-	- -	- -	- -
			120412N-LV			1.2	2.3	-	- -			$\left  - \right $	- -	- -	-	- -	- -	- -
			2NU-CNGA 120404LF			0.4	2.5	_	- -	-	_	-	_				•	- -
	(- <b>(</b> )	L Low Resistance F Sharp Edge	120408LF	1	2	0.8	2.4	- -	- -	-	_	-	-				•	- -
			120412LF			1.2	2.3	- -	- -	-	-	$\left  - \right $	-				-	- -
			2NU-CNGA 120404LE			0.4	2.5	_	- -	-	_	-	-	-	-		•	- -
,	- N	L Low Resistance E With Honing	120408LE	1	2	0.8	2.4	_	- -	-			-			•	•	- -
			2NU-CNGA 120404LT			0.4	2.5	-	-		•		- -	-		-	-	_
	(-0 b)	L Low Resistance T Negative Land	120408LT	1	2	0.8	2.4	-	-	-	•	-	- -	- -	-	- -	-	- -
			120412LT			1.2	2.3	-	-	-	•	$\left  - \right $	- -		-	-	-	- -
		L Low Resistance	2NU-CNGA 120404LS			0.4	2.5		- -	-	_	-		-	-	•	•	
Ι.	4	LOW Hesistance	4004001.0															

No. of

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

1

2

2

8.0

0.4

8.0

1.2

2.4

2.5

2.4

2.3

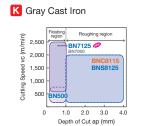
### SUMIBORON Application Range Map

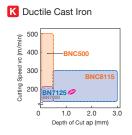
Negative Land

With Honing

H Strong Edge

T Negative Land



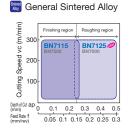


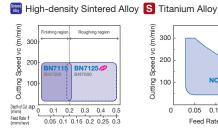
120408LS

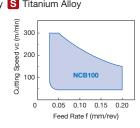
120408HT

120412HT

2NU-CNGA 120404HT







# **SUMIBORON Inserts**





(Legen	d) [û	ortinuous Cutting	1st Reco 2nd Rec	ommend ommend	ation G	eneral ma	chining	<b>●</b> : 1: <b>○</b> : 2:	st Reco	mmenda mmend	ation In	terrupted	Cutting	<b>‡</b> :19	t Recomm nd Recom	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MII	во	RO	N			JERLESS AIBORON

### Multi-Cornered One-Use type / Negative (With Hole)

		• •														_		- 1	
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	×	BNX20	CZXNA	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
	H Strong Edge	2NU-CNGA 120404HS			0.4	2.5		- -	- -	-			•	•	<b>A</b>				_
(- <b>6</b> 10)	Negative Land	120408HS	1	2	0.8	2.4	$\left -\right $	- -	- -	-		_	•	•	<b>A</b>				_
	With Honing	120412HS			1.2	2.3		- -	_ -	-	<u> </u>	_	•	•					
- N	U Strong Edge Negative Land With Honing	2NU-CNGA 120404US	1	2	0.4	2.5										•			

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

### Negative type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20 RNX25	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7500	BNS8125	NCB100
		CNMA 120404			0.4	4.6	- (	•		•		•					-	-
	Standard	120408	1	1	0.8	4.5	-	•		•		•		•	<b>A</b>		-	-
		120412			1.2	4.4	-	•		•		•		•	<b>A</b>		_	

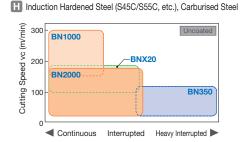
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

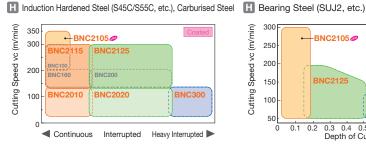
### Solid type / Negative (With Hole)

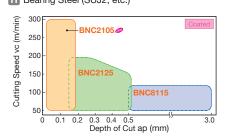
71	٠ (	•																	
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN350	BN500	BNZDDD	BN700	BN7115	BN7500	BNS8125	NCB100
		CNGA 120408			0.8	12.9	_	-	_	_	-	-	- -	- -	- -	-	-	• -	-
	Standard	120412	1	4	1.2	12.9	_	_	_	_	-	_	- -	- -	-	-	_	• -	_   ~

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

### SUMIBORON Application Range Map







Positive

Negative



















Standard cutt	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	C0100E	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01015	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101215	101215	101215	_	_	101215	

CN	IG <b>=</b> 12	204	Coa	ted
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

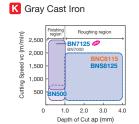
(Legend) Continuous Cutting : 1st Recomm General machining : 1st Recomm Interrupted Cutting : 1st Recommendation K Cast Iron S Exotic Alloy Recommended Application H Hardened Steel 0 G • #

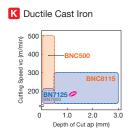
### Coated SUMIBORON

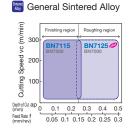
### Multi-Cornered One-Use type / Negative (With Hole)

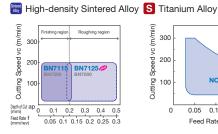
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
		2NC-CNGA 120404			0.4	2.5												
		120408			0.8	2.4												
10	Standard	120412	1	2	1.2	2.3												
	Standard	120416*	'		1.6	3.3												
		120420*			2.0	3.2												
		120424*			2.4	3.1						•		•				
		4NC-CNGA 120402			0.2	2.5												
		120404			0.4	2.5												
		120408			0.8	2.4												
10	Standard	120412	1	4	1.2	2.3	•						•					
		120416*			1.6	3.3												
		120420*			2.0	3.2												
		120424*			2.4	3.1						•		•				
	Low Feed	4NC-CNGA 120404WG			0.4	2.4												
10	Wiper Insert	120408WG	1	4	0.8	2.4												
		120412WG			1.2	2.3												
	High Feed	4NC-CNGA 120404WH			0.4	2.4												
	Wiper Insert	120408WH	1	4	0.8	2.3												
		120412WH			1.2	2.2		•					_	•				
		4NC-CNGA 120404W			0.4	2.5												
	Wiper Insert	120408W	1	4	0.8	2.4												
		120412W			1.2	2.3		_	_		_			Ļ				
(- (N)	Finishing	4NC-CNGG 120404N-FV			0.4	2.5						_	-	•				
	Chipbreaker	120408N-FV	1	4	0.8	2.4						_	_					
•		120412N-FV			1.2	2.3						_						
- N	Light Cutting	4NC-CNGG 120404N-LV			0.4	2.5						_	_					
	Chipbreaker	120408N-LV	1	4	0.8	2.4							_					
·		120412N-LV			1.2	2.3							_					
- N	Carburised Layer Removal	4NC-CNGG 120404N-SV			0.4	2.5						_	_					
	Chipbreaker	120408N-SV	1	4	0.8	2.4		H	H						H			
	1 1:00	120412N-SV	<u>.</u>		1.2	2.3						_	_					

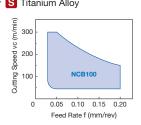
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*For use with the SUMIBORON Special Holders for High-Efficiency Machining.



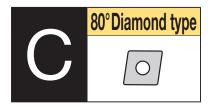








# **SUMIBORON Inserts**





(Legen	d) [û	ordinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>●</b> : 1: <sup>(1</sup> ) : 2:	st Recor nd Reco	mmend:	ation In	terrupted	Cutting	: 1st Recommendation
	K	Cast Iron										•	Ħ	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

Coated SUMIBORON

### Multi-Cornered One-Use type / Negative (With Hole)

10111 0011101		type / riegative (vitil riek	-,														
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
		2NC-CNGA 120404LE			0.4	2.5	_		-		-	-	-	_	-	_	
-010	L Low Resistance  E With Honing	120408LE	1	2	0.8	2.4	_	$\left  - \right $	-	<b>)</b>	- -	-	-	_	-	_	
		120412LE			1.2	2.3	_	$\left  - \right $	-	<b>)</b>	- -	-	-	_	-	_	
		2NC-CNGA 120402LT			0.2	2.5	_		- -	-	)  -	-	-	_	-	-	
- 010	L Low Resistance	120404LT	1	2	0.4	2.5	_	$\left  - \right $	- -	-	-	-	-	_	-	_	
	T Negative Land	120408LT	'	2	0.8	2.4		$\left  - \right $	- -	-	-	-	-	_	-	-	
		120412LT			1.2	2.3	_	$\left  - \right $	- -	-		-	-	_	-	_	
		2NC-CNGA 120402LS			0.2	2.5			•	- -	-				-	_	
- (10)	L Low Resistance Negative Land	120404LS	1	2	0.4	2.5			• -	- -	-				-	-	
	With Honing	120408LS	'	2	0.8	2.4			• -	- -	-				-	-	
		120412LS			1.2	2.3			•	- -	•				-	_	
	L Low Resistance	4NC-CNGA 120404LS			0.4	2.5	_	$\left  - \right $	- -	- -	-			•	-	-	
-010	Negative Land	120408LS	1	4	0.8	2.4	_	$\left  - \right $	- -	- -	-			•	-	-	
	With Honing	120412LS			1.2	2.3	_	_	_ -	- -	-				_	_	
	H Strong Edge	4NC-CNGA 120404HS			0.4	2.5	_					-		•	•	-	
	Negative Land	120408HS	1	4	0.8	2.4	-					-		•	•	-	
	With Honing	120412HS			1.2	2.3	_		•		•				•	-	
	E High Efficiency	4NC-CNGA 120404ES			0.4	2.5	_	$\left  - \right $	-[-	-			-	-	-	-	
-010	Negative Land	120408ES	1	4	0.8	2.4	-		- -	-	-	-	_	_	-	_	
	With Honing	120412ES			1.2	2.3	_	_	_ -	-	<u> </u>			_	-	-	

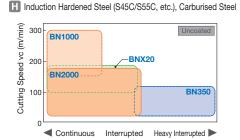
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

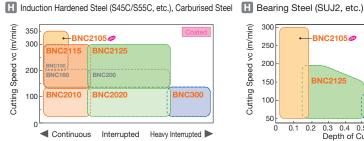
### Solid type / Negative (With Hole)

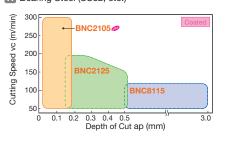
Cond type / 1	regative (vvii	11 1 1010)																 _
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	V
		CNGA 120408			0.8	12.9	_	_	_	_	_	-	-				•	6.
	Standard	120412	1	4	1.2	12.9	_	_	_	_	_	-		_			•	<u>(</u> W

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

## SUMIBORON Application Range Map







Positive Negative



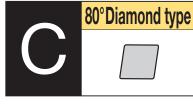












Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101213	101213	101215	_	_	101213	

CN	IG <b>=</b> 12	204		ncoated
Dimensions	Inscribed Circle	12.7	Hole Dia.	-
(mm)	Thickness	4.76		

(Legen	<b>d)</b>	intinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	General ma	chining	<b>₩</b> :1: <b>₩</b> :2:	st Recor nd Reco	mmend mmend	ation In	terrupted	Cutting	<b>‡:</b> 1s <b>;:</b> 2:2	t Recomn nd Recomn	nendati mendati
	K	Cast Iron							0	•					*	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																ESS

Uncoated SUMIBORON

Coated SUMIBORON

Solid type / Negative (Dimple Lock)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	05ENB	BN500	BN7000	BN700	BN7115	BN/500	BNS8125	NCB100
		CNGX 120408			0.8	12.7	_ -	- -	- -	- -	- -	- -	- -	-	- -	_	-	-
	Standard	120412	1	4	1.2	12.6	-	- -	- -	- -	- -	- -	- -	-	- -	-	•	-
		120416			1.6	12.5	-	_ -	- -	-	_ -	_ -	-[-	_	- -	-	•	_

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

CN	IG <b>■</b> 12	204		Coat	ted
Dimensions	Inscribed Circle	12.7	Hole Dia.		-
(mm)	Thickness	4.76			

	K	Cast Iron								#
Recommended	S	Exotic Alloy								
Application	Н	Hardened Steel	0	•	0	9	#			
	Sint	ered Components								
	Sint	ered Components								

### Solid type / Negative (Dimple Lock)

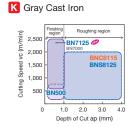
SI	hape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	NC50(	BNC8115	
			CNGX 120408			0.8	12.7	_	-	_	-	_	-	_	_	-	_		1
		Standard	120412	1	4	1.2	12.6	_	-	-	-	-	-	-	-	-	_	•	
			120416			1.6	12.5	_	_	_	_	_	_	_	_	_	_	•	

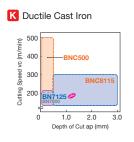
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

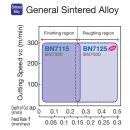


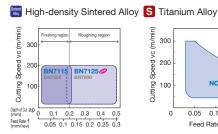


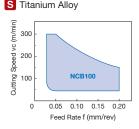
## SUMIBORON Application Range Map











# Negative

	55° Diamond type
D	

Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	201225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101213	101213	_	_	101213	

DC	G <b>=</b> 07	702	Unco	ated
Dimensions	Inscribed Circle	6.35	Hole Dia.	2.8
(mm)	Thickness	2.38		

(Legen	d) [0	ortinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>₩</b> : 1: <b>'</b> '' : 2:	st Recor nd Reco	mmenda mmend	ation In	terrupted	Cutting	<b>‡:</b> 1s ‡:2r	t Recomm nd Recomi	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					u	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																SS

Uncoated SUMIBORON

### One-Use type / 7° Positive (With Hole)

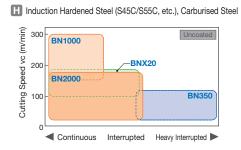
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
		NU-DCGW 070202			0.2	2.7			•								+	
		070204	1	1	0.4	2.5			•						1		-	
	Standard	070208			0.8	2.1				•								
	Standard	T-NU-DCGW 070202			0.2	2.7				•							-	-
		070204	10	1	0.4	2.5				•							-	
		070208			0.8	2.1												
		NU-DCGW 070202LT			0.2	2.7		-	-		_	-	-  -	-	-		-	
	L Low Resistance T Negative Land	070204LT	1	1	0.4	2.5	-	-	- -	•	_	-	-  -	-	- -	-	-	
		070208LT			0.8	2.1	_	-	- -		_	_	- -	-				
	H Strong Edge	NU-DCGW 070202HS			0.2	2.7	-	-[-	-[-	•	_	-					+	
	s Negative Land With Honing	070204HS	1	1	0.4	2.5		_   -		•	_	_						

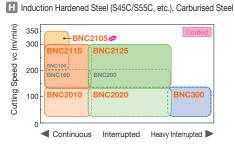
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-DCGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

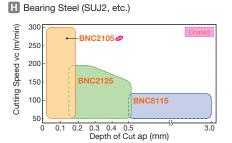
### Multi-Cornered One-Use type / 7° Positive (With Hole)

manti Common	04 0110 000	typo / / Toolavo (Walin	0.0)																
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	×	2	BNX25	BN2000	<del>     </del>	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NODION
		2NU-DCGW 070202 @			0.2	2.7							•					-	1
	Standard	070204	1	2	0.4	2.5							•	•		•	•	-	
		070208			0.8	2.1								•					
		2NU-DCGT 070204N-FV			0.4	2.4	-	-	-		-	_	-	-	-	-	-	- -	
	Finishing Chipbreaker		1	2															

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use 2NS type (2NS-DCGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.







Negative Positive

C/



R









Dimensions Inscribed Circle 6.35 Hole Dia. 2.8 Thickness 2.38

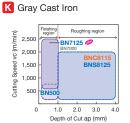
nterrupted Cutting : 1st Recommendatio (Legend) Continuous Cutting : 1st Recom General machining : 1st Recom K Cast Iron **•** # S Exotic Alloy Recommended Application H Hardened Steel 0 G #

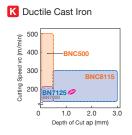
Coated SUMIBORON

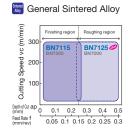
### Multi-Cornered One-Use type / 7° Positive (With Hole)

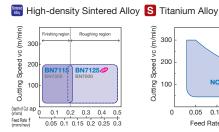
Multi-Corner	ed One-Ose	type / / Fositive (with hi	oie)															
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius		BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
		2NC-DCGW 070202			0.2	2.6	•	•	•	•	•				•		_	
	Standard	070204	1	2	0.4	2.5	•	•	•	•					•	•	-	
		070208			0.8	2.1		•	•	•							_	
	Finishing Chipbreaker	2NC-DCGT 070204N-FV	1	2	0.4	2.4		•	•	•	•	_		•	•		_	
		2NC-DCGW 070202LT			0.2	2.6	_	_	-	-[	•	-	_	-	_	-	_	
	L Low Resistance T Negative Land	070204LT	1	2	0.4	2.5	_	_	-	_	•	-	_	_	_	_	_	
	L Low Resistance	2NC-DCGW 070202LS			0.2	2.6		•	•	-	-				•	_	_	
	Negative Land	070204LS	1	2	0.4	2.5		•	•	-	-				•	-	-	
	With Honing	070208LS			0.8	2.1		•	•	-	-					_		

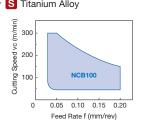
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











### Indexable Inserts



Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	\$01225	S01225	S01225
Positive	101223	001223	001723	001223	T01235	001223	001223	001223	001220	001223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101213	101213	_	_	101213	

DC	G <b>■</b> 11	T3(	Uncoa	ated
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	3.97		

(Legen	d) (û	ortinuous Cutting	1st Reco 2nd Reco	ommenda ommenda	ation G	'eneral ma	chining	<b>₩</b> :19 <b>₩</b> :2r	st Recor nd Reco	mmend: mmend	ation In	terrupted	Cutting	<b>‡:</b> 1s ‡:2r	t Recomn d Recomi	nendation mendation
	K	Cast Iron							0	•					×	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																SSS

Uncoated SUMIBORON

One-Use type / 7°	Positive	(With	Hole)
-------------------	----------	-------	-------

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BNS8125	NCB100
		NU-DCGW 11T302			0.2	2.7								•	<b>A</b>			-
		11T304	1	1	0.4	2.5			-					•	<b>A</b>			
		11T308	'	'	0.8	2.1												•
0	Standard	11T312			1.2	2.0												-
	Standard	T-NU-DCGW 11T302			0.2	2.7												- -
		11T304	10	1	0.4	2.5												- -
		11T308	10	'	0.8	2.1												- -
		11T312			1.2	2.0												
	I I am Desistance	NU-DCGW 11T302LF			0.2	2.7	_	$\left -\right $	- -	- -	- -	-		•	<b>A</b>			- -
	L Low Resistance F Sharp Edge	11T304LF	1	1	0.4	2.5	_	$\left  - \right $	- -	- -	- -	-		•	<b>A</b>			- -
		11T308LF			0.8	2.1	_		- -	- -	- -	_						
		NU-DCGW 11T302LT			0.2	2.7	_		- -	-		-	-	+	- -	- -		- -
	Low Resistance	11T304LT	1	1	0.4	2.5	_		- -	-		-	_		- -	- -		-
	■ Negative Land	11T308LT	'	'	0.8	2.1	_		- -	-		-	_		- -	- -		-
		11T312LT			1.2	2.0	_		_	-		_	-	-		_		-
	H Strong Edge	NU-DCGW 11T302HS			0.2	2.7			-]	-		-						-
	Negative Land	11T304HS	1	1	0.4	2.5	-		- -	-		-						-[-
	With Honing	11T308HS			0.8	2.1	_		- -	-	<b>)</b> –	-					H	-

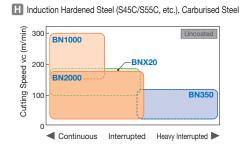
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-DCGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

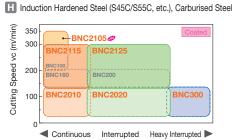
# V

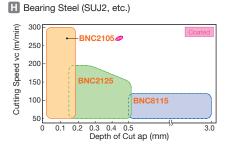
S

Positive Negative

## Ŵ







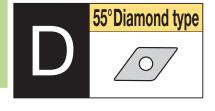
**Positive** Negative











DC	G <b>■</b> 11	T3(	Uncoa	ated
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	3.97		

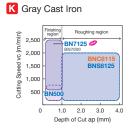
(Legend) Continuous Cutting : 1st Recomm General machining : 1st Recomm K Cast Iron 0 × S Exotic Alloy **u** • Recommended Application H Hardened Steel \$ ● 9 #

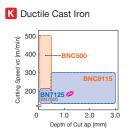
Multi-Cornered One-Use type / 7° Positive (With Hole)

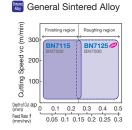
Uncoated	SUMIBORON

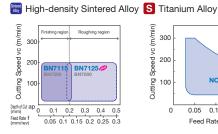
		type / / testave (vitari)																_
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN/500	NCB100
		2NU-DCGW 11T302			0.2	2.7							•	•		•	<b>)</b>	-
		11T304	1	2	0.4	2.5							•	•			-	-
	Standard	11T308			0.8	2.1							•	•			-	
	Standard	T-2NU-DCGW 11T302			0.2	2.7											-	- -
		11T304	10	2	0.4	2.5											-	-]-
		11T308			0.8	2.1											-	
		2NU-DCGW 11T304WG*			0.4	2.3		-	-	•	4						-	-
	Low Feed Wiper Insert	11T308WG*	1	2	0.8	2.1		-	-	•							-	-
		2NU-DCGW 11T304WH*			0.4	2.1		-	- -	•	,						-	-
	High Feed Wiper Insert	11T308WH*	1	2	0.8	1.8		-	-	•							-	-
		2NU-DCGT 11T304N-FV			0.4	2.4	_	_ -	-	•	1	_	-	-	-	_ -	_	-
	Finishing Chipbreaker	11T308N-FV	1	2	0.8	2.0	_	- -	-	•		_	-	-	-	_ -	_ -	- -
		2NU-DCGT 11T304N-LV			0.4	2.4	_		_	•			4	=	-	_ -	_	
	Light Cutting Chipbreaker	11T308N-LV	1	2	0.8	2.0	_	- -	-	•		_	-	-	-	- -	_ -	- -
		2NU-DCGW 11T302LF			0.2	2.7	_	_ -	- -	-		_	•	•		•	<b>)</b>	
	L Low Resistance F Sharp Edge	11T304LF	1	2	0.4	2.5	_	- -	- -	-	-	_	•	•		•	-	- -
	Sharp Lage	11T308LF			0.8	2.1	_	- -	- -	-		_	•	•		•	-	- -
		2NU-DCGW 11T302LE			0.2	2.7	_	- -	- -	-		-	•	-	-	•	<b>D</b>	
	L Low Resistance  E With Honing	11T304LE	1	2	0.4	2.5	_	- -	- -	-		_		-[	-	•	-	- -
		11T308LE			0.8	2.1	_		- -	-					_	•	-	
	L Low Resistance	2NU-DCGW 11T302LS			0.2	2.7	_	-[-	-  -			_	$\exists \llbracket$	$\exists$	-[	•	-	-[-
	Negative Land	11T304LS	1	2	0.4	2.5	_	- -	- -	-		_	-	-	-	•	-	- -
	With Honing	11T308LS			0.8	2.1	_	- -	- -	-		_	-	-	-	•	-	- -

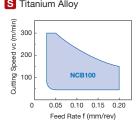
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use 2NS type (2NS-DCGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.











<sup>\*</sup>Use a holder with a cutting edge angle of 93°.

### Indexable Inserts



Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	201225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101215	101215	_		101213	

DC	G <b>■</b> 11	T3(		Coat	ed
Dimensions	Inscribed Circle	9.525	Hole Dia.		4.4
(mm)	Thickness	3.97			

(Legen	d) [û	artinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>●</b> :19	st Recor nd Reco	mmend: mmend	ation In	terrupted	Cutting	: 1st Recommendation
	K	Cast Iron										•	#	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

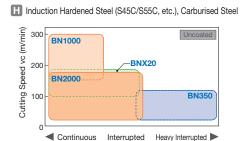
### Coated SUMIBORON

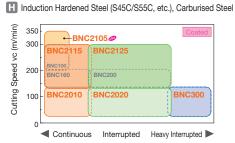
Multi-Cornered One-Use type	/ 7° Positive (With Hole)	
Widiti Odificioa Offic Ode type	/ / I OSILIVO (VVILITITOIO)	

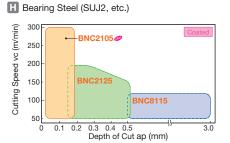
Multi-Corne	red One-Use	type / 7° Positive (With H	ole)															
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	DNICOUG	2	
		2NC-DCGW 11T302			0.2	2.7		•	•		•				•	) -	-	
	Standard	11T304	1	2	0.4	2.5	•	•	•	•	•	•		•	•	-	-	(
		11T308			0.8	2.1	•	•	•	•	•	•			•	-	-	
_		2NC-DCGW 11T304WG*			0.4	2.3		•	•		•			•	•	-		
	Low Feed Wiper Insert	11T308WG*	1	2	0.8	2.1		•	•	•	•			•	•	-	-	/
		2NC-DCGW 11T304WH*			0.4	2.1		•	•		•			•	•	+		
	High Feed Wiper Insert	11T308WH*	1	2	0.8	1.8		•	•	•	•			•	•	_	-	i
		2NC-DCGT 11T304N-FV			0.4	2.4		•	•	•	•	_		•	•	-		
	Finishing Chipbreaker	11T308N-FV	1	2	0.8	2.0		•	•	•	•	_	_	•	•	-		
		2NC-DCGT 11T304N-LV			0.4	2.4		•	•	•	•	_		•	•	-		
	Light Cutting Chipbreaker	11T308N-LV	1	2	0.8	2.0		•	•	•	•	_	_	•	•	-		
	<b>T</b> I. D.::	2NC-DCGW 11T302LE			0.2	2.7	-	_	-	•	_	_				-  -		[
	L Low Resistance  E With Honing	11T304LE	1	2	0.4	2.5	_	_	_		-	_	_	- -	- -	-   -	-	L
	_ °	11T308LE			0.8	2.1	_	_	_		_	_		_		-   -		
	L Low Resistance	2NC-DCGW 11T302LT			0.2	2.7	_	_	_	_		_	-	- -	- -	-   -		
	T Negative Land	11T304LT	1	2	0.4	2.5	_	_	_	-		_	-	- -	-[-	-[-		/
		11T308LT			0.8	2.1	_	_	-	_		=	-			- -		_
	L Low Resistance				0.2	2.7		•			-			•	•	-[-		
	s Negative Land With Honing	11T304LS	1	2	0.4	2.5		•		-	-			•	• -	-[-		_
	With Honling	11T308LS			0.8	2.1		•		_	_	•			• -	- -		
	H Strong Edge	2NC-DCGW 11T304HS			0.4	2.5	_									-		
	s Negative Land With Honing	11T308HS	1	2	0.8	2.1	_					•						/
1		•					_	_	_					_		_		1

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use a holder with a cutting edge angle of 93°.

### SUMIBORON Application Range Map







Positive Negative





Standard cutting edge specification

	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	201225	S01725	201225	T01225	S01225	201225	201225	201225	201225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01015	T01215	T01015	T01015	T01015	S02020	T02020	T01215	
Positive	301213	101215	101215	101215	101215	101213	_	_	101213	

DΝ	IGA11	)4 <b>(</b>	Coated	
Dimensions	Inscribed Circle	9.525	Hole Dia.	3.81
(mm)	Thickness	4.76		

General machining : 1st Recomm (Legend) Cortinuous Cutting nterrupted Cutting 512: 1st Recommendatio K Cast Iron Recommended S Exotic Alloy Application H Hardened Steel • 9 其

Coated SUMIBORON

### Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2125	BNC2010	BNC2020	BNC100	BNC160	NC200	BNC8115	
		2NC-DNGA 110404			0.4	2.5								-	
- 6 10	Standard	110408	1	2	8.0	2.1								$\left  - \right $	
		110412			1.2	2.0									

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

DN	1 1:	504	Unc	oated
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

	K	Cast Iron						0	•			#	
Recommended	S	Exotic Alloy							•			•	
Application	Н	Hardened Steel	0	9	₿	•	*						
	Sinte	ered Components							•		•		

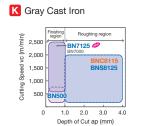
### One-Use type / Negative (With Hole)

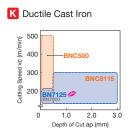
Uncoated SUMIBORON
Oncoated Golvingorion

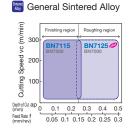
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BNZ000	BN500	BN7125	BN7000	BN700		N750	BNS8125	NCB100
		NU-DNMA 150401			0.1	2.7			-									Ξ,	
		150402			0.2	2.5			-									-].	-
		150404	1	1	0.4	2.5			-								-	$- \cdot$	-
	Standard 7	150408			0.8	2.1			-								-	$-$ ] $\cdot$	-
6		150412			1.2	2.0			-										
		T-NU-DNMA 150401			0.1	2.7			-									-]-	-
		150402			0.2	2.5			-										-
		150404	10	1	0.4	2.5			-									- -	-
		150408			0.8	2.1			-										-
		150412			1.2	2.0			_								-		
-		NS-DNMA 150404			0.4	2.5	_	-		- -	- -	- -	- -	-	-	-	-	- -	-
		150408	1	1	0.8	2.1	_	-	<b>A</b>	- -	- -	- -	- -	-	-		-		-
6	Standard	150412			1.2	2.0	_	_		_ -	_ -	-		_	-	_			
	Otaridard	T-NS-DNMA 150404			0.4	2.5	_			- -	- -	- -	- -	-	-	-	-	-	
		150408	10	1	0.8	2.1	-			- -	- -	- -	-	1-	-				
		150412			1.2	2.0	_	_		- -		-	-	-	-	—	-		

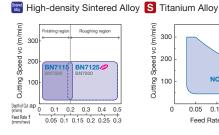
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

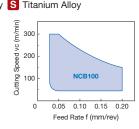
### SUMIBORON Application Range Map











 $\langle w \rangle$ 

### Indexable Inserts





**SUMIBORON Inserts** 

(Legen	d)[0			mmend ommend	ation G	eneral ma	chining	<b>●</b> : 1: <b>□</b> : 2:	st Recor nd Reco	mmend: mmend	ation In	terrupted	Cutting	<b>‡</b> :19	t Recomn nd Recomn	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MII	во	RO	N			DERLESS

### One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	ž	BNX20 BNX26	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN/500	BNS8125	NCBINO
		NU-DNGA 150404			0.4	2.5	-	- -	-	-	-	-	-1		-	- -	-[-	- (	
	Standard	150408	1	1	0.8	2.1	-	- -	- -	-	_	-		-	-	- -		-	
		150412			1.2	2.0		_ -	- -	-			_	_	_	- -	_	- 0	

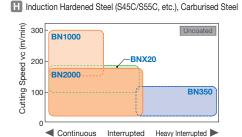
\*Depth of cut for one-use types is 0.5mm or less.

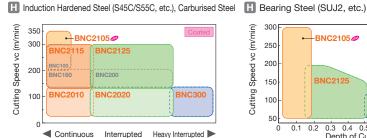
### Multi-Cornered One-Use type / Negative (With Hole)

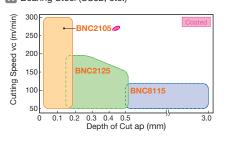
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100	/
		2NU-DNGA 150404			0.4	2.5			-	•	•	•		•	•	<b>A</b>	•		-		ı
		150408	1	2	0.8	2.1			-	•		•		•	•	<b>A</b>	•		-]		
(- O N)	Standard	150412			1.2	2.0			_		•										(
	Standard	T-2NU-DNGA 150404			0.4	2.5			-		•								- -	-	
		150408	10	2	0.8	2.1			-			•		•		▲			- -		
		150412			1.2	2.0			-												
		2NS-DNGA 150404			0.4	2.5	-	$\left  - \right $	$\blacktriangle$	-	- -	-	- -	-	-	+	_		- -	-	L
		150408	1	2	0.8	2.1	_	$\left  - \right $	$\blacktriangle$	-	- -	-	- -	-	-	+	_		- -		
( - A N	Standard	150412			1.2	2.0	_			-	- -	-	-		-	-	_				
	Standard	T-2NS-DNGA 150404			0.4	2.5	_		lack	-	- -	-	-[	-	-	+	_			-	Z
		150408	10	2	0.8	2.1	-		▲	-	- -	-	- -	+		-	_				
		150412			1.2	2.0	_			-	- -		_		+	-	_	_			/

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

### SUMIBORON Application Range Map







Positive Negative

С,













Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101213	101213	101215	_	_	101213	

DΝ	1 1	504	Unc	oated
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

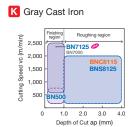
(Legen	d) (i	ortinuous Cutting	1st Reco 2nd Reco	mmenda ommend	ation G	General ma	chining	<b>●</b> :1: <b>□</b> :2:	st Recor	mmend mmend	ation In	terrupted	Cutting	<b>‡</b> :19	t Recomn nd Recomn	nendation mendation
	K	Cast Iron							0	•					*	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																ΩZ

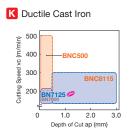
Uncoated SUMIBORON

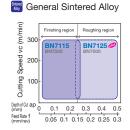
Multi-Corner	ed One-Use	type / Negativ	e (With Hole)

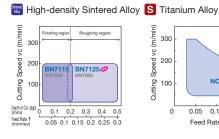
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BNZUUU	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125 NCB100
		2NU-DNGA 150404WG			0.4	2.3			-								-	-
- 0 13	Low Feed Wiper Insert	150408WG	1	2	0.8	2.0			-	•							-	-
		2NU-DNGA 150404WH			0.4	2.1			-	•	D						-	-
- 0 13	High Feed Wiper Insert	150408WH	1	2	0.8	1.8			-	•							-	-
		2NU-DNGM 150404N-LV			0.4	2.5		-	-		<b>D</b> -	-	-  -	-	-		-	- -
(-0)	Light Cutting Chipbreaker	150408N-LV	1	2	0.8	2.1	-	_	-		•	- -	-   -	-	-	$\left  - \right $	_ -	- -
		150412N-LV			1.2	2.0		_	-			-	-   -	-	-		_	
	I am Davieten a	2NU-DNGA 150404LF			0.4	2.5	_	-	_ -	_ -	-[-	-	•	•	<b>A</b>		-	- -
(-0 10)	L Low Resistance F Sharp Edge	150408LF	1	2	0.8	2.1	$\left  - \right $	-	- -	- -	- -	- -	-	•	<b>A</b>		-	- -
		150412LF			1.2	2.0		_	_	_ -	_ -	1-	-				-	
	L Low Resistance	2NU-DNGA 150404LE @			0.4	2.5	-	-	-	- -	- -	- -	-	-	-		-	- -
	E With Honing	150408LE 🥬	1	2	0.8	2.1	_	_	- -	_ -	- -	- -	-	-	-		-	- -
	_	2NU-DNGA 150404LT			0.4	2.5			_	-	<b>)</b> -	-	-  -	-	-		-	- -
- 0 10	L Low Resistance  Negative Land	150408LT	1	2	0.8	2.1			-	-	•	- -	-   -	-	-	$\left  - \right $	_ -	- -
	_ °	150412LT			1.2	2.0			- -	-	-	- -	-	-	_		-	
	II Ohnon - Edina	2NU-DNGA 150404HT			0.4	2.5	_	=	-[		-						-[-	-[=
(-0 10)	H Strong Edge T Negative Land	150408HT	1	2	0.8	2.1		-	- -	-[-	-		-	-	-		- -	-[-
		150412HT			1.2	2.0	_	_		_ -	1	-					-	
	H Strong Edge	2NU-DNGA 150404HS			0.4	2.5	_	-	- -	-	-	- -	-	•			-	-[-
	s Negative Land With Honing	150408HS	1	2	0.8	2.1		-	- -	-	-	-	•	•			-	-[-
	With Floring	150412HS ade. Regarding cutting edge specific			1.2	2.0	_	-	- -								-	- -

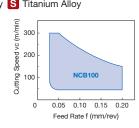
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.











## **SUMIBORON Inserts**

### Indexable Inserts



(Legen	d) [û	ontinuous Cutting	1st Reco 2nd Reco	ommenda ommenda	ation G	eneral ma	chining	<b>●</b> :1: <b>○</b> :2:	st Recor nd Reco	mmenda mmend	ation In	terrupted	Cutting	<b>‡:</b> 1s <b>;:</b> 2r	t Recomn d Recomi	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	\$\$	•	•	#								
	Sint	ered Components								•						
																(n >

**Uncoated SUMIBORON** 

### Negative type (With Hole)

rioganio ijp	0 (*******)																٠,١
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	BNX10	BNX20 BNX25	BN1000	BN2000 BN350	BN500	BN7125	BN7000	BN700	BN7115 RN7500	BNS8125	NCB100
		DNMA 150404			0.4	5.0	•	•		•						-	-
	Standard	150408	1	1	0.8	4.7		•			•		•	<b>A</b>			$\left\  - \right\ $
		150412			1.2	4.3							•	<b>A</b>			-

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

DN	IG <b>■</b> 15	504	Coa	ated
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

	K	Cast Iron								•	#
Recommended	S	Exotic Alloy									
Application	Н	Hardened Steel	0	•	•	0	9	#			
	Sint	ered Components									

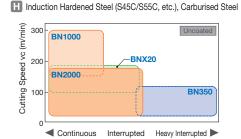
### Multi-Cornered One-Use type / Negative (With Hole)

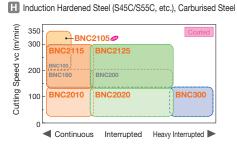
Sintered Components	Application	H Hardened Steel	0	•	0	9	#						
		Sintered Components											
Coated SUMIBOR					C	nat.	ed	SH	MI	RΩ	R(	N	

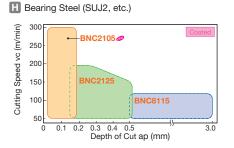
	71 0 (	- /									_						
Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC200	BNC500	BNC8115		
	2NC-DNGA 150404			0.4	2.5			•	•	•					-		2
	150408			0.8	2.1			•	•	•					-		ı
Ctondord	150412		0	1.2	2.0			•	•	•					-		i
Standard	150416 <sup>·1</sup>	'	2	1.6	3.4				•						-		
	150420 <sup>·1</sup>			2.0	3.0				•						-		
	150424 <sup>*1</sup>			2.4	2.7				•						_		
	4NC-DNGA 150402			0.2	2.6				•	•					_		
	150404			0.4	2.5				•					•	-		
	150408			0.8	2.1				•					•	-		
Standard	150412	1	4	1.2	2.0				•					•	-		
	150416 <sup>-1</sup>			1.6	3.4				•						-		
	150420 <sup>-1</sup>			2.0	3.0				•						-		4
	150424 <sup>-1</sup>			2.4	2.7		•	•	•	•					_		
				0.4	2.3					•					-		_
Low Feed Wiper Insert	150408WG <sup>-2</sup>	1	4	0.8	2.0			•	•						-		
	4NC-DNGA 150404WH <sup>-2</sup>			0.4	2.1		•	•	•	•					-		
High Feed Wiper Insert	150408WH <sup>-2</sup>	1	4	8.0	1.8		•	•	•	•					-		
	Cutting Edge Specification  Standard  Standard  Low Feed Wiper Insert	Cutting Edge Specification  2NC-DNGA 150404 150408 150412 150416 <sup>-1</sup> 150420 <sup>-1</sup> 150424 <sup>-1</sup> 4NC-DNGA 150402 150404 150408 Standard  Standard  4NC-DNGA 150402 150416 <sup>-1</sup> 150420 <sup>-1</sup> 150420 <sup>-1</sup> 150424 <sup>-1</sup> 4NC-DNGA 150404WG <sup>-2</sup> 150408WG <sup>-2</sup> 4NC-DNGA 150404WH <sup>-2</sup> 150409WH <sup>-2</sup>	Specification   Pack   Pack	Cutting Edge Specification         Cat. No.         Pcs/Pack         No. of Cutting Edges           2NC-DNGA 150404	Cutting Edge Specification         Cat. No.         Pcs/Pack         No. of Cutting Edges         Corner Radius           Standard         2NC-DNGA 150404 150408 150412 150420 <sup>-1</sup> 150420 <sup>-1</sup> 150424 <sup>-1</sup> 1         2         0.4           4NC-DNGA 150402 150408 Standard         0.2 150404 150408 150416 <sup>-1</sup> 150420 <sup>-1</sup> 150420 <sup>-1</sup> 150424 <sup>-1</sup> 0.2 0.2 0.4 0.4 1.6 1.6 1.6 1.6 1.6 1.6 0.8         0.8 0.8 0.8 0.8           Low Feed Wiper Insert         4NC-DNGA 150404WG <sup>-2</sup> 150408WG <sup>-2</sup> 1         4         0.8 0.4           High Feed         4NC-DNGA 150404WH <sup>-2</sup> 150408WG <sup>-2</sup> 1         4         0.4 0.4	Cutting Edge Specification         Cat. No.         Pcs/Pack         No. of Cutting Edges         Corner Radius         Cutting Edge Length           Standard         2NC-DNGA 150404             150408             150412             150416¹¹             150420¹¹             150424¹¹             150424¹¹             150404             150404             150408             150408             150408             150408             150420¹¹             150420¹¹             150420¹¹             16             150420¹¹             16             150420¹¹             16             150420¹¹             16             150424¹¹             16             12	Cutting Edge Specification         Cat. No.         Pcs/Pack         No. of Cutting Edges         Corner Radius         Cutting Edge Length         Standard         Corner Radius         Cutting Edge Length         Standard         Cutting Edges         Corner Radius         Cutting Edge Length         Standard         Corner Radius         Corner Radius	Cutting Edge Specification         Cat. No.         Pcs/ Pack         No. of Cutting Edges         Corner Radius         Cutting Edge Length         Standard           Standard         2NC-DNGA 150404 150408 150412 150420¹¹ 150424¹¹         1         2         0.4         2.5         0         0           4NC-DNGA 150402 150408 150408 150412         1         2         1.6         3.4         0	Cutting Edge Specification         Cat. No.         Pcs/ Pack         No. of Cutting Edges         Corner Radius         Cutting Edge Length         Standard           Standard         150408 150404 150404 150402 150426 1 150424 1 1 2 1.6 3.4 150424 1 2.7 150408 150402 150404 150408 150402 150406 1 150406 1 150412 1 4 1.2 2.0 3.0 150416 1 150416 1 1.6 3.4 150420 1 150426 1 150424 1 2.0 3.0 150424 1 1 4 1.2 2.0 3.0 150424 1 150424 1 1 150424 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Cutting Edge Specification         Cat. No.         Pcs/Pack         No. of Cutting Edges         Corner Radius         Cutting Edge Length         Standard         2NC-DNGA 150404         0.4         2.5         0	Cutting Edge Specification         Cat. No.         Pcs/Pack         No. of Cutting Edges         Corner Cutting Edges         Cutting Edge Length         Standard         2NC-DNGA 150404         0.4         2.5         0<	Cutting Edge Specification  Cat. No.  Pcs/ Pack  Cutting Edge Specification  Corner Radius  Corn	Cutting Edge Specification  Cat. No.  Pcs/ Pack Cutting Edges Specification  Corner Radius Edge Edges  Corner Radius Edges  Corner Augus Edges Edges  Corner Augus Edges  Corner Augus Edges  Corner Augus Edges  C	Cutting Edge Specification    Cat. No.   Pcs/ Pack   Cutting Edge Edges   Cutting Edges   Cutting Edge Edges   Cut	Cutting Edge Specification    Cat. No.   Pcs/ Pack   Cutting Edge Edges   Corner Radius   Cutting Edge Edges   Corner Radius   Cutting Edge Edges   Corner Edge Edge   Corner Edge Edges   Corner Edges   Corn	Cutting Edge Specification  Cat. No.  Pcs/ Pack  Cutting Edges  Corner Radius  Edges  Corner Radius  Corner Radius  Edge Length  2 No. of Cutting Edge Length  2 No. of Cutting Edge Length  2 No. of Cutting Edge Length  150408  150408  150412  1 2 1.6 3.4  150424'1  2.0 3.0  4NC-DNGA 150404  150408  Standard  ANC-DNGA 150404  150426'1  1 4 1.2 2.0  150416'1  1 50426'1  2.0 3.0  2.4 2.7  ANC-DNGA 150404  150426'1  150426'1  2.0 3.0  2.4 2.7  ANC-DNGA 150404  150426'1  2.0 3.0  2.0 3.0  3.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cutting Edge Specification         Cat. No.         Pcs/ Pack         No. of Cutting Edges         Corner Radius         Cutting Edge Length         Value of Value of Edge Length         Value of Value of Edge Length         Value of

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*1: For use with the SUMIBORON Special Holders for High-Efficiency Machining. \*2: Use a holder with a cutting edge angle of 93°.

### SUMIBORON Application Range Map







SUMIBORON

Positive Negative

SUMIBORON

Positive Negative

C/





	55° Diamond type
D	

Standard cutt	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	C0100E	S01725	C0100E	T01225	C0100E	C0100E	S01225	C0100E	C0100E
Positive	101225	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	001015	T01015	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301215	101215	101215	101215	101213	101215			101213	

DN	IG <b>■</b> 15	504		Coated	
Dimensions	Inscribed Circle	12.7	Hole Dia.	5	5.16
- H	Thickness	4.76			

General machining : 1st Recomm (Legend) Cortinuous Cutting : 1st Reco Interrupted Cutting : 1st Recommendation K Cast Iron . # S Exotic Alloy Recommended Application H Hardened Steel 0 G • #

Coated SUMIBORON

### Multi-Cornered One-Use type / Negative (With Hole)

	00	1)   0   1   1   1   1   1   1   1   1   1	~,														
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC200	BNC500	BNC8115	
		4NC-DNGG 150404N-FV			0.4	2.5		•	•	•	•	- -	-			-	
- (-) 13	Finishing Chipbreaker	150408N-FV	1	4	0.8	2.1		•				- -	-				
		150412N-FV			1.2	2.0		•				- -	-				
_		4NC-DNGG 150404N-LV			0.4	2.5		•		•	•	-	-				
- (2)	Light Cutting Chipbreaker	150408N-LV	1	4	0.8	2.1		•		•		- -	-			-	
		150412N-LV			1.2	2.0		•				- -	-			-	
		4NC-DNGG 150404N-SV			0.4	2.5						- -				_	
- (-)	Carburised Layer Removal Chipbreaker	150408N-SV	1	4	0.8	2.1		•		•		- -	-			-	
		150412N-SV			1.2	2.0		•	•	•		- -	-			-	
		2NC-DNGA 150404LE			0.4	2.5	_	_	_	•	-	- -	- -	-	-		
- 0 "	L Low Resistance  E With Honing	150408LE	1	2	8.0	2.1	_	_	_		-	- -	- -	- -	-	-	
		150412LE			1.2	2.0	_		_		-	- -		-	-		
		2NC-DNGA 150402LT			0.2	2.6	_	_	_	-	•	- -	- -	- -	-		
- 0 0	L Low Resistance	150404LT	1	2	0.4	2.5	_	_	_	-		- -	- -	- -	-	-	
	T Negative Land	150408LT	'		0.8	2.1	_	_	_	_	•	- -	- -	- -	-		
		150412LT			1.2	2.0	_	_	_	-		- -	- -		-		
		2NC-DNGA 150402LS			0.2	2.5			•	-	-				1-		

150412LS Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

1

2

0.4

0.8

1.2

2.5

2.1

2.0

150404LS

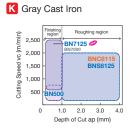
150408LS

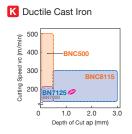
### SUMIBORON Application Range Map

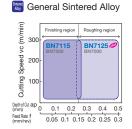
L Low Resistance

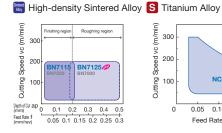
With Honing

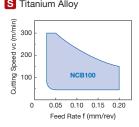
Negative Land











# **SUMIBORON Inserts**





(Legend) Continuous Cutting : 1st Recomm K Cast Iron • X S Exotic Alloy Recommended Application H Hardened Steel 0 0

Coated SUMIBORON

### Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Unit	Corner Count	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC300	BNC100	BNC160	BNC200	BNC500 BNC8115	
	L Low Resistance	4NC-DNGA 150404LS			0.4	2.5	_	_	_	- -	-	•	•	•	- -	
- 0 %	Negative Land	150408LS	1	4	0.8	2.1	-	-	- -	- -	-	•		•	- -	
	With Honing	150412LS			1.2	2.0	_	_	_	- -	-			•	_ -	
	H Strong Edge	4NC-DNGA 150404HS			0.4	2.5	_	•				_		•		
- 913	s Negative Land With Honing	150408HS	1	4	0.8	2.1	_	•				_	•	•		
	with Honing	150412HS			1.2	2.0	_	•			•	_	•	•		
	E High Efficiency	4NC-DNGA 150404ES			0.4	2.5	_	_	- -	-		-		- -	- -	
- 9 13	s Negative Land With Honing	150408ES	1	4	0.8	2.1	_	_	-	-		-		- -	- -	
	with Horling	150412ES			1.2	2.0	_	_	-			_			- -	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

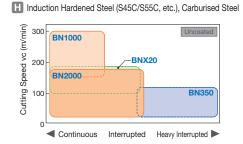
SUMIBORON

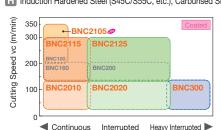
Positive Negative

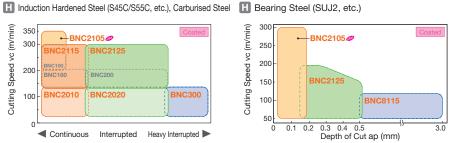
















Standard cutting edge specification BNX10 BNX20 BNX25 T01225 Negative T01225 S01225 S01725 S01225 Positive T01235

BN350 BNC2105 BNC2115 S01225 S01225 S01225 S01225 S01225 BN7000 BN700 BNC500 BN500 BN7125 BN7115 BN7500 BNC8115 BNS8125 NCB100 Negative S02020 T02020 T01215 T01215 T01215 S01215 T01215 T01215 T01215 Positive

DN	IMA15	06	Uncoa	ted
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	6.35		

(Legen	<b>d</b> ) (0	ortinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>●</b> :1: <b>□</b> :2:	st Recor	mmenda mmenda	ation In	terrupted	Cutting	#:1s ;;:2r	t Recomn nd Recomn	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																SS

**Uncoated SUMIBORON** 

Coated SUMIBORON

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX25	BN1000	BN2000	BN350	BN500	CZLING	BN700	BN7115	BN7500	NCB100
		NU-DNMA 150604			0.4	2.5										-	- -
9	Standard	150608	1	1	8.0	2.1										-	- -
		150612			1.2	2.0										-	-

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-DNMA) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

DΝ	IGA15	06	Coate	d
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	6.35		

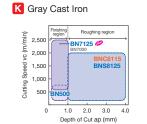
								•	#
0	•	•	0	9	#				
	0		0 0 0			0 • • 0 • *	0 • • 0 • *	0 • • 0 • *	0 • • 0 • *

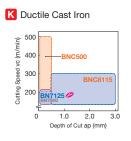
## Multi-Cornered One-Use type / Negative (With Hole)

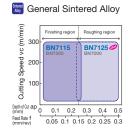
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2125	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115
		4NC-DNGA 150604			0.4	2.5			•					-	-
- 0 "	Standard	150608	1	4	0.8	2.1								-	-
		150612			1.2	2.0									_

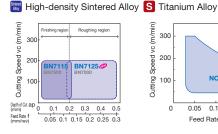
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

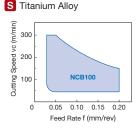
S







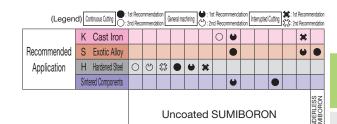




# **SUMIBORON Inserts**



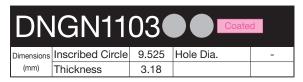




### Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	$\simeq$	$ \mathbf{x} $	BNX25	BN2000	-	BN7125	BN7000	BN700	BN7115	BN/500	NCB100
	Standard	DNGN 110308 110312	1	4	0.8 1.2	10.8 10.5	_	_	_ -	- -		_			_ -	_	) — ) —
	L Low Resistance F Sharp Edge	DNGN 110308LF 110312LF	1	4	0.8	10.8 10.5	_		_   -	-   -	 _	_	_	_	_		  - 

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.



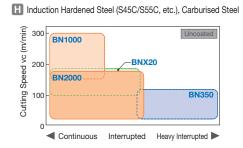
	K	Cast Iron								•	#	
Recommended	S	Exotic Alloy										
Application	Н	Hardened Steel	0	•	•	0	9	#				
	Sint	ered Components										

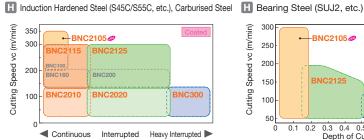
Coated SUMIBORON

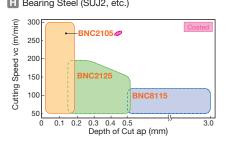
### Solid type / Negative (Without Hole)

71	٠ ,	,															
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNCZUZU	DIVIDAGO DIVIDAGO	DNC 160	BNC200	BNC500	BNC8115	
		DNGN 110308			0.8	10.8	_	_		- -	- -	- -	- -	- -	-	•	
	Standard	110312	1	4	1.2	10.5	_	_		- -	- -	- -	- -	- -	-	•	
																	2

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.







Negative Positive

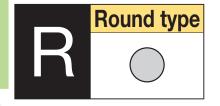
С











RNC	GNO O	•		Incoated
Dimensions	Inscribed Circle	9.525 to 12.7	Hole Dia.	-
(mm)	Thickness	3.18 to 4.76		

(Legen	d) (û	intinuous Cutting	1st Reco	mmenda ommend	ation G	eneral ma	chining	<b>₩</b> :1: <b>₩</b> :2:	st Reco	mmend mmend	ation Ir	terrupted	Cutting	<b>‡</b> :1:	st Recomn nd Recomn	nendatio mendatio
	K	Cast Iron							0	•					*	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	Ð	₿	•	•	#								
	Sint	ered Components								•			•			
						Un	coa	ated	d S	UM	1IB	OR	ΛO	ı		

### Negative type (Without Hole)

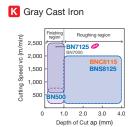
9	- (	/																
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNX10	BNX20	BN1000	BN2000	BN350	N50	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
	Full-top CBN (Standard)	RNGN 120400-B	1	_	12.7								•	<b>&gt;</b>		-		
	Full-top CBN (Standard)	RNGN 150400-B	1	_	15.88											-		

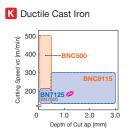
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

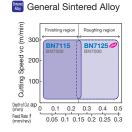
### Solid type / Negative (Without Hole)

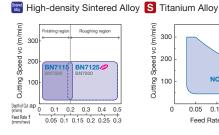
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNX10	BNX20	BNX25	DOOLNIG	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8126	NCB100
	Standard	RNGN 090300	1	_	9.5		_					_	_		_		•	
	L Low Resistance F Sharp Edge	RNGN 090300LF	1	_	9.5		_				_		-	-	_		-	
	Standard	RNGN 120300	1	_	12.7		_	_  -				_	_		_	_ (	•	
	L Low Resistance F Sharp Edge	RNGN 120300LF	1	_	12.7		_					-	_	-			-	

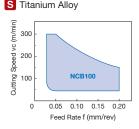
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











### Indexable Inserts



Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative Positive	T01225	S01225	S01725	S01225	T01225 T01235	S01225	S01225	S01225	S01225	S01225
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101215	101215	101215	_	_	101215	

RNO	GNO O			Jncoated
Dimensions	Inscribed Circle	9.525 to 12.7	Hole Dia.	-
(mm)	Thickness	3.18 to 4.76		

(Legen	d) [û	ontinuous Cutting :	1st Reco 2nd Rec	ommend ommend	ation G	ieneral ma	chining	<b>●</b> :1: <b>□</b> :2	st Reco	mmenda mmend	ation In	terrupted	Cutting	#:19 #:2	t Recomn nd Recomn	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			

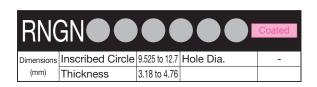
Uncoated SUMIBORON

Coated SUMIBORON

### Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNX10	BNX20 BNX25	BN1000	BN2000 BN350	BN500	BN7125	BN700	BN7115	BN7500	BNS8125	NCB100
	Standard	RNGN 120400	1	_	12.7											

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.



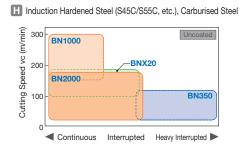
d) (a	ordinuous Cutting	1st Reco 2nd Reco	mmenda ommenda	ation G	eneral ma	chining	<b>₩</b> : 1: <b>'</b> '' : 2:	st Recor nd Reco	mmenda mmend	ation In	terrupted	Cutting	: 1st Recommendation	Z
K	Cast Iron										•	#		
S	Exotic Alloy													
Н	Hardened Steel	0		•	0	9	#							_
Sint	ered Components													
	K S H	K Cast Iron S Exotic Alloy	K Cast Iron S Exotic Alloy H Hardened Steel	K Cast Iron S Exotic Alloy H Hardened Steel	K Cast Iron S Exotic Alloy H Hardened Steel	K Cast Iron S Exotic Alloy H Hardened Steel	K Cast Iron S Exotic Alloy H Hardened Steel	K Cast Iron  S Exotic Alloy  H Hardened Steel	K Cast Iron  S Exotic Alloy  H Hardened Steel	K Cast Iron  S Exotic Alloy  H Hardened Steel	K	K	K Cast Iron	S Exotic Alloy  H Hardened Steel ○ ● ● ○ ○ □ ■

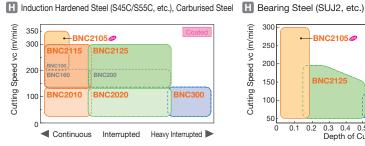
### Solid type / Negative (Without Hole)

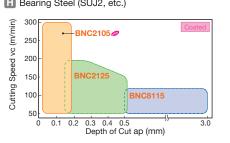
Cond type / 1	regative (vvii	inout riolo)														1 (
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC200	ICS ICS	100	
0	Standard	RNGN 090300	1	_	9.5	_	_	_		-					•	
0	Standard	RNGN 120300	1	=	12.7	_	_	_		_					•	
0	Standard	RNGN 120400	1	_	12.7			_		-					•	_

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

## SUMIBORON Application Range Map



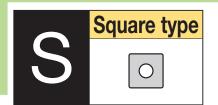




Positive Negative



C



SN	I <b>■</b> A12	04	Uncoat	ed
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

(Legend) Continuous Cutting General machining K Cast Iron 0 × **u** • Recommended S Exotic Alloy H Hardened Steel 9 # Application # **Uncoated SUMIBORON** 

One-Use type / Negative (With Hole)

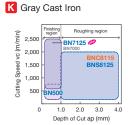
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	BNX20	BNX25	BN1000	BNZ000	BN350	DIVIOU	BNZOOO	RNZOO	BN7115	BN7500	BNS8125	NCB100
		NU-SNMA 120404			0.4	2.5			-1										-
	Standard	120408	1	1	0.8	2.3		•	-										-
0		120412			1.2	2.1		•	-										-
1		T-NU-SNMA 120404			0.4	2.5			-[	•								-	
	Standard	120408	10	1	0.8	2.3		•	-										-
		120412			1.2	2.1		•											

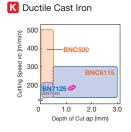
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

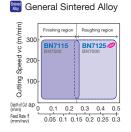
### Multi-Cornered One-Use type / Negative (With Hole)

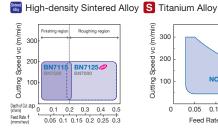
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125		BN700	드	BN7500	NCB100
		2NU-SNGA 120404			0.4	2.5		•	-	•			•	•			-	
	Standard	120408	1	2	0.8	2.3		•	-				•	•			4	-
		120412			1.2	2.1		•					•	•				-
		T-2NU-SNGA 120404			0.4	2.5		•	-	•								- -
	Standard	120408	10	2	0.8	2.3		•	-	•								- -
		120412			1.2	2.1		•	-	•								-
		2NU-SNGA 120404LT			0.4	2.5	_	-	- -	-	-	_	-  -	+	-	- -		- -
	L Low Resistance T Negative Land	120408LT	1	2	0.8	2.3	_	-	- -	-	-	_	- -	-	-	- -		- -
-00		120412LT			1.2	2.1	_	-	- -	•	<u> -</u>	_	-		-	- -		
	H Strong Edge	2NU-SNGA 120404HS			0.4	2.5	_	- -	- -	-	-	_						- -
	Negative Land	120408HS	1	2	0.8	2.3	_	- -	- -	-	-	_						- -
	With Honing	120412HS			1.2	2.1	_	_ -	- -	-	-	_					-	

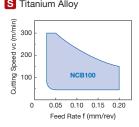
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

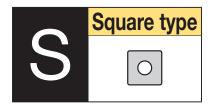












Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	201225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101215	101213	101215	101215	_	_	101215	

SN	■A12	04	Uncoat	ed
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

(Legen	d) [û	ortinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	ieneral ma	chining	<b>₩</b> :19	st Recor	mmenda mmend	ation In	terrupted	Cutting	<b>‡</b> :19	t Recomn nd Recomn	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
''	Sint	ered Components								•			•			
																SSS

Uncoated SUMIBORON

#### Negative type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20 BNX25	BN1000	BN2000	BN350	BN500	BN7125	BN/000	BNI7115	BN7500	BNS8125	NCB100
		SNMA 120404			0.4	4.8											-	
	Standard	120408	1	1	0.8	4.7				•					1		-	_
		120412			1.2	4.6				•							Н	_

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### Solid type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN700	BN7115	BN7500	BNS8125 NCB100	
		SNGA 120408			0.8	12.7	-	- -	- -	-	-	-	-1-	-	-	- (	• -	
	Standard	120412	1	8	1.2	12.7	-	- -	- -	- -	-	-	- -	- -	-	-	• -	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.



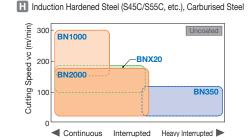
Positive Negative





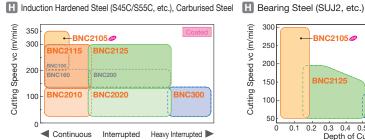


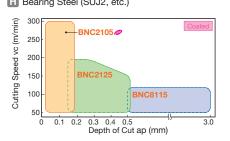
## SUMIBORON Application Range Map



Interrupted

Heavy Interrupted





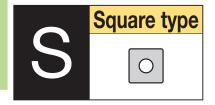
**Positive** Negative

С









Dimensions Inscribed Circle 12.7 Hole Dia. 5.16 4.76 **Thickness** 

(Legen	<b>d</b> ) (0	ortinuous Cutting	1st Reco 2nd Reco	ommend ommend	ation G	eneral ma	chining	<b>●</b> :1: <sup>1</sup> :2:	st Reco	mmend mmend	ation In	terrupted	Cutting	: 1st Recommendatio
	K	Cast Iron										•	#	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

Coated SUMIBORON

#### Multi-Cornered One-Use type / Negative (With Hole)

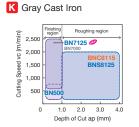
		) (	,													I
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC 100	BNC500	BNC8115	
		2NC-SNGA 120408			0.8	2.3									-	
	Standard	120412	1	2	1.2	2.1									-	
-00																
		4NC-SNGA 120404			0.4	2.5		•		•	•				-	
	Standard	120408	1	4	0.8	2.3		•	•	•	•				-	
		120412			1.2	2.1		•	•	•	•				-	

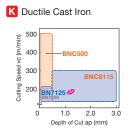
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

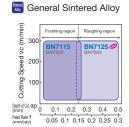
#### Solid type / Negative (With Hole)

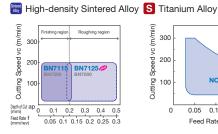
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
		SNGA 120408			0.8	12.7	_	-	-	-	-	-[-	-[-	- -	-[-	-[	•	
	Standard	120412	1	8	1.2	12.7	_	_	-	-	- -	- -	- -	- -	- -	_	•	

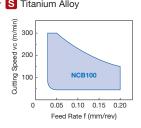
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

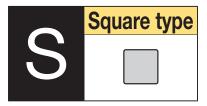












Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative Positive	T01225	S01225	S01725	S01225	T01225 T01235	S01225	S01225	S01225	S01225	S01225
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative Positive	S01215	T01215	T01215	T01215	T01215	T01215	S02020 —	T02020	T01215	

SN	<b>N</b> 09	903		Uncoated	
Dimensions	Inscribed Circle	9.525	Hole Dia.		-
(mm)	Thickness	3.18			

(Legen	d) [û	ortinuous Cutting	1st Reco 2nd Rec	ommend ommend	ation G	'eneral ma	chining	<b>₩</b> :1: <b>1</b> :2:	st Reco	mmend: mmend	ation In	terrupted	Cutting	<b>‡</b> :1s	st Recomm nd Recom	nendatio mendatio
	K	Cast Iron							0	•					*	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MII	во	RO	N			DERLESS

#### Negative type (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10 BNX20	BNX25	BN1000	BN2000	BN350	BN500	0002NB	BN700	BN7115	BN7500	NCR100
		SNGN 090308-B			0.8	9.5										-	- -
	Full-top CBN (Standard)	090312-B	1	4	1.2	9.5										-	- -
	(	090316-B			1.6	9.5											1-

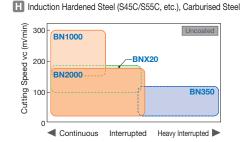
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

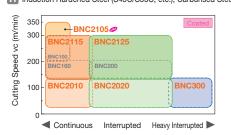
#### Solid type / Negative (Without Hole)

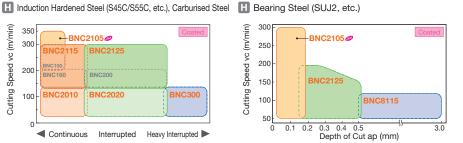
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	NCB100	
	Standard	SNGN 090308 090312	1	8	0.8 1.2	9.5 9.5	_		_	_	_ -		_ - _ -	- -	_	_		_	<b>)</b>   -	
	L Low Resistance F Sharp Edge	SNGN 090308LF 090312LF	1	8	0.8 1.2	9.5 9.5	_			_	_		-	_	_	_		_		
	Wiper Insert	SNEN 090308W	1	8	0.8	9.5	_			=	_	-			-	_		_	-	
	L Low Resistance F Sharp Edge Wiper Insert	SNEN 090308LFW	1	8	0.8	9.5										_				

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### SUMIBORON Application Range Map







Positive Negative C







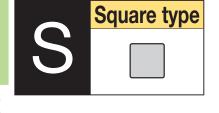
**Positive** Negative

(C)









SN	<b>N</b> 09	903	••	Coa	ted
Dimensions	Inscribed Circle	9.525	Hole Dia.		-
(mm)	Thickness	3.18			

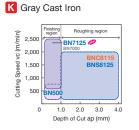
nterrupted Cutting : 1st Recommendatio (Legend) Continuous Cutting : 1st Recom General machining : 1st Recom K Cast Iron **•** # S Exotic Alloy Recommended © **#** Application H Hardened Steel 0 •

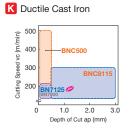
Coated SUMIBORON

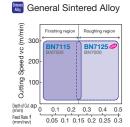
#### Solid type / Negative (Without Hole)

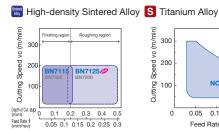
- · · / / / · · ·	3 (	,															
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	<b>IC21</b>	JC21	BNC2125		کے اک	BNC100	19	9	BNC500	BNC8115	
		SNGN 090308			0.8	9.5	_	-	_	- -	- -	- -	-	-	-		
	Standard	090312	1	8	1.2	9.5		_		_ -			_	_	_		
·	Wiper Insert	SNEN 090308W	1	8	0.8	9.5		_						_		•	

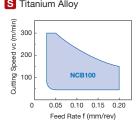
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











C/

е

Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative Positive	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
1 OSILIVE	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	DNICO11E	BNS8125	NCD100	
	ВИСООО	Визоо	BIN/ 125	BN700	BIN/ 1 13	BIN7500	BINCOLIS	BIN20123	NCBIUU	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101213	101213	_	_	101213	

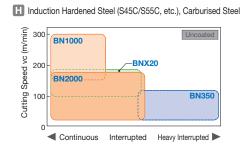
SN	GN12	03	Uncoat	ed
Dimensions	Inscribed Circle	12.7	Hole Dia.	-
(mm)	Thickness	3.18		

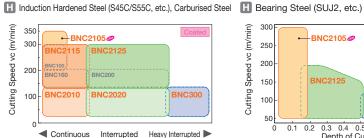
(Legen	d) [û			mmend ommend	ation G	'eneral ma	chining	<b>●</b> :1: <b>○</b> :2	st Reco	mmend: mmend	ation In	rterrupted	Cutting	<b>‡</b> :1s <b>‡</b> :2	it Recomm nd Recom	mendation mendation
	K	Cast Iron							0	•					*	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oat	ed	SU	MII	во	RO	N			DERLESS

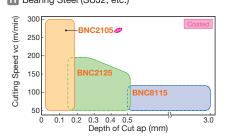
#### Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	Š	BNX25	DNIOUO	خالاِ	ーデ	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NODIOO
	Standard	SNGN 120308 120312	1	8	0.8 1.2	12.7 12.7	_		_ -	_   -		_	_ _	_	-	_		<b>D</b> -	_
	L Low Resistance F Sharp Edge	SNGN 120308LF 120312LF	1	8	0.8 1.2	12.7 12.7	_		_  -			_	_	_	_	_		_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.







Negative Positive

**Square type** 

SN	GN12	03	Coate	d
Dimensions	Inscribed Circle	12.7	Hole Dia.	-
(mm)	Thickness	3.18		

(Legend) Continuous Cutting : 1st Recor General machining : 1st Recom nterrupted Cutting : 1st Recommendation K Cast Iron **•** # S Exotic Alloy Recommended H Hardened Steel 0 G Application #

Coated SUMIBORON

Solid type /	Negative	(Without Hole)
--------------	----------	----------------

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length		BNC2115	BNC2125	BINCZUIU	BNC2020	DIVC2000	DNC100	DIVC 160	NCZO	BNC500	BNC8115	
•	Standard	SNGN 120308 120312	1	8	0.8 1.2	12.7 12.7	_	_	_ -	-	_ -	_   -	_   -	-   - -   -	_ -		•	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.



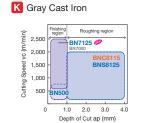


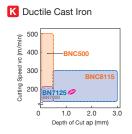


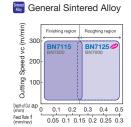


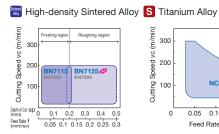


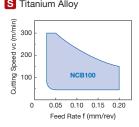


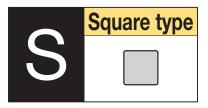












Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	C0100E	S01725	S01225	T01225	S01225	S01225	001005	S01225	S01225
Positive	101225	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01015	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101215	101215	101215	_	_	101215	

SN	G <b>■</b> 12	204	Unco	ated
Dimensions	Inscribed Circle	12.7	Hole Dia.	-
(mm)	Thickness	4.76		

(Legen	d) [û	ortinuous Cutting	1st Reco 2nd Reco	ommenda ommenda	ation G	eneral ma	chining	<b>⊕</b> : 1: <b>⊕</b> : 2:	st Recor nd Reco	mmenda mmend	ation In	terrupted	Cutting	<b>‡:</b> 1s <b>;:</b> 2r	t Recomm nd Recomm	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					C	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sinte	ered Components								•			•			
																SS

Uncoated SUMIBORON

#### Negative type (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	Š	BNX25	BN2000	IJΖ	ヺ	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
	Standard	SNGN 120408 120412	1	1	0.8 1.2	4.8 4.8		•				•						_   -	_
	Full-top CBN (Standard)	SNGN 120408-B 120412-B 120416-B	1	4	0.8 1.2 1.6	12.7 12.7 12.7	_ _ _		-		-					_	_		_

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### Solid type / Negative (Dimple Lock)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BNZOO	BN7115	BN7500	BNS8125	NCB100
		SNGX 120408			0.8	12.7		- -	- -	-	-	-	-  -	-	-	_		
	Standard	120412	1	8	1.2	12.7	-	- -	- -	-	-	-	- -	- -	- -	-	•	
		120416			1.6	12.7		_ -	- -	-		_	-	_	_		•	

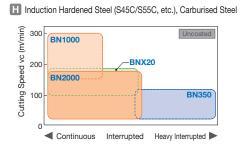
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

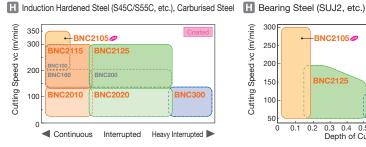
#### Solid type / Negative (Without Hole)

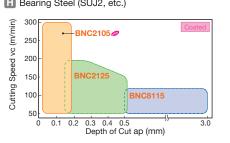
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN350	DUCNIG RN7195	BN7000	BN700	BN7115	BN7500	3NS8125	NCB100
		SNGN 120408			0.8	12.7		_	_	-	_ -	-		Ē	-	_	_ (	•	
	Oten dend	120412	4	0	1.2	12.7	_	_	_ -	_ -	- -	- -	- -	-  -	-	_	_	• -	_   _
	Standard	120416	'	8	1.6	12.7	_	_	- -	- -	- -	- -	- -	-	-	_	- (	• -	-
		120420			2.0	12.7	_		- -	- -	- -	-			-	_	- (	•	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

## SUMIBORON Application Range Map







Positive Negative







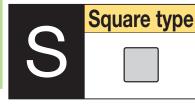








**Positive** Negative



SN	IG <b>■</b> 12	204	Coat	ed
Dimensions	Inscribed Circle	12.7	Hole Dia.	-
(mm)	Thickness	4.76		

(Legen	d) (d	intinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>●</b> :1: <b>○</b> :2:	st Reco	mmend mmend	ation In	terrupted	Cutting	: 1st Recommendatio
	K	Cast Iron										•	#	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

Coated SUMIBORON

#### Solid type / Negative (Dimple Lock)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105 BNC2115 BNC2125 BNC2010 BNC2020 BNC300 BNC100 BNC100 BNC100 BNC100 BNC500
		SNGX 120408			0.8	12.7	
(C)	Standard	120412	1	8	1.2	12.7	
		120416			1.6	12.7	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### Solid type / Negative (Without Hole)

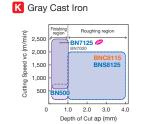
	Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	NC50	BNC8115	
			SNGN 120408			0.8	12.7	_	_	-	-	-	F	-	-	_	-		
		Standard	120412	1	8	1.2	12.7	_	_	-	- -	-	-	-	-	-	-		
		Standard	120416	'	0	1.6	12.7	-	_	-	- -	- -	-	-	-	-	-		
			120420			2.0	12.7	-	-	-	- -	-	-	-	-	-	-		

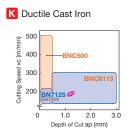
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

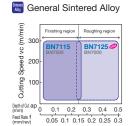


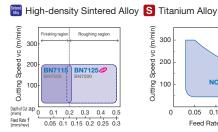


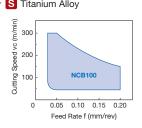


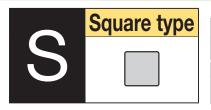












Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	901225	S01725	S01225	T01225		901225	201225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101215	101215	_		101213	

SP	GN09	03	Uncoa	ted
Dimensions	Inscribed Circle	9.525	Hole Dia.	
(mm)	Thickness	3.18		

(Legen	d) [û	ortinuous Cutting	1st Reco 2nd Rec	mmenda ommenda	ation G	'eneral ma	chining	<b>₩</b> :19 <b>₩</b> :21	st Recor nd Reco	mmend: mmend	ation In	terrupted	Cutting	<b>‡:</b> 1s ‡:2r	t Recomm nd Recomm	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sinte	ered Components								•			•			
																SS

Uncoated SUMIBORON

#### One-Use type / 11° Positive (Without Hole)

71-		( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( (														_	
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN2000	BN350	BN500	BN7125	BN7000	BN7115 BN7500		NCB100
		NU-SPGN 090304 090308	1	1	0.4 0.8	2.5 2.5		•		•		•		• /		_ _	
	Standard	T-NU-SPGN 090304 090308	10	1	0.4 0.8	2.5 2.5		•		•						_ _	_
<b>\( \)</b>	L Low Resistance T Negative Land	NU-SPGN 090304LT 090308LT	1	1	0.4 0.8	2.5 2.5	_		_ -	•	_	_		-		_	_
<b>\( \)</b>	H Strong Edge Negative Land With Honing	NU-SPGN 090304HS 090308HS	1	1	0.4 0.8	2.5 2.5	_	_		•	_	_				_ _	_

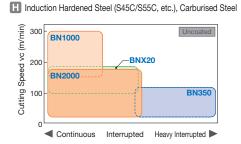
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-SPGN) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

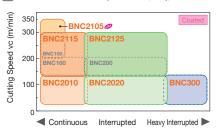
#### 11° Positive type (Without Hole)

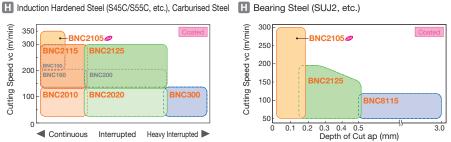
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25 BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115 BN7500	BNS8125	NCB100
		SPGN 090304			0.4	4.8								•	<b>A</b>		-	
	Standard	090308	1	1	0.8	4.8								• .	<b>A</b>		H	-
		090312			1.2	4.8											-	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

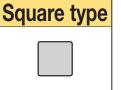
Positive Negative











Dimensions Inscribed Circle 12.7 Hole Dia. Thickness 3.18

(Legen	d) (i	intinuous Cuttino		mmend ommend	1 (	eneral ma	chining	<b>●</b> :1: <b>□</b> :2:	st Recor	mmend mmend	ation Ir	terrupted	Cutting	<b>‡</b> :19	st Recomi nd Recom	mendation imendation
	K	Cast Iron							0	•					*	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	₿	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MI	во	RC	N			BINDERLESS

11° Positive type (Without Hole)

	71 (	,															- 1
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10 BNIX20	BNX25	BN1000	BN2000 BN350	BN500	BN7125	BN/000	BN7115	BN7500	BNS8125	NCB100
		SPGN 120308			8.0	4.8										-	
	Standard	120312	1	1	1.2	4.8										_	_

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.



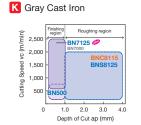


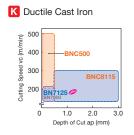


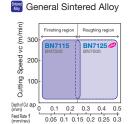


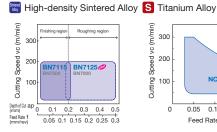


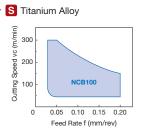
















(Legend) Cortinuous Cutting : 1st Recomm K Cast Iron 0 × • Recommended S Exotic Alloy H Hardened Steel \$\$ • Application **Uncoated SUMIBORON** 

#### One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BNIZOO	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	NU-TBEW 060102LF	1	1	0.2	2.1						_					_	
0	L Low Resistance T Negative Land	NU-TBEW 060102LT	1	1	0.2	2.1		•				_			_	_	_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

TB	GN06	01	Uncoate	ed
Dimensions	Inscribed Circle	3.97	Hole Dia.	-
(mm)	Thickness	1.59		

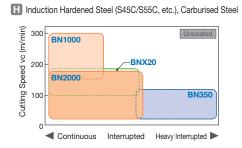
	K	Cast Iron							0	•				#	
Recommended	S	Exotic Alloy								•				•	
Application	Н	Hardened Steel	0	9	#	•	•	#							
''	Sint	ered Components								•			•		
					U	nco	oate	ed	SU	MII	во	RO	N		BORON

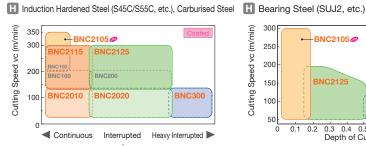
#### 5° Positive type (Without Hole)

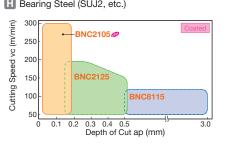
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	×	BNX25	BN1000	BN2000	OCCNIC	DUCNA	CZIVIG	BN700	BN7115	BN7500	BNS8125	NCB100
		TBGN 060102B			0.2	6.5					•							-	-
	Full-top CBN (Standard)	060104B	1	3	0.4	6.3	•			-								-	-
_		060108B			0.8	5.7				-								-	
		TBGN 060102-BSTN			0.2	6.5	_		-	- -	- -	-	-[-	- -	- -	-		-	a l
	Full-top CBN (Emphasis on Edge Sharpness)	060104-BSTN	1	3	0.4	6.3	_	•	-	- -	- -	- -	- -	- -	- -	-		-	- 2
		060108-BSTN			0.8	5.7	_		_	_	- -		_			_		_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### SUMIBORON Application Range Map







Positive Negative

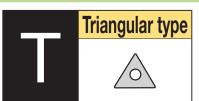
C/

Positive









Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	C01225	S01725	201225	T01225	S01225	201225	S01225	S01225	S01225
Positive	101225	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positiva	301213	101215	101213	101213	101215	101215			101213	

TP	GW08	02	Uncoa	ited
Dimensions	Inscribed Circle	4.76	Hole Dia.	2.4
(mm)	Thickness	2.38		

(Legend) Cortinuous Cutting General machining K Cast Iron 0 × **u** • Recommended S Exotic Alloy Hardened Steel 9 # Application #

Uncoated SUMIBORON

#### One-Use type / 11° Positive (With Hole)

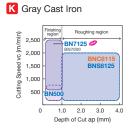
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500 RNS8125	NCB100
		NU-TPGW 080202			0.2	2.6								•	<b>A</b>			
	Standard	080204	1	1	0.4	2.5	•							•	lack			-
<b>A</b>		080208			0.8	2.2				•					lack			-
		T-NU-TPGW 080202			0.2	2.6				•								-]-
	Standard	080204	10	1	0.4	2.5	•											-]-
<b>A</b>		080208			0.8	2.2												-
	<b>T</b>	NU-TPGW 080202LF			0.2	2.6	_	- -	- -	- -	-	-						-]-
	L Low Resistance F Sharp Edge	080204LF	1	1	0.4	2.5	-	- -	- -	- -	-	_		•	lack			- -
<b>A</b>		080208LF			0.8	2.2	_	_ -	-	-	_	_						-
	I I Decistores	NU-TPGW 080202LT			0.2	2.6	_	-	- -	-	-	-	-	-	-	- -		-]-
	L Low Resistance T Negative Land	080204LT	1	1	0.4	2.5	-	-	- -	-	-	_	-	-	- -	- -		-]-
<b>A</b>		080208LT			0.8	2.2	_	-	_ -	-	_	_	-	-	-	- -		-
	H Strong Edge	NU-TPGW 080202HS			0.2	2.6	-	- -	- -	-	-	_						- -
	Negative Land	080204HS	1	1	0.4	2.5	_	- -	-[-	•		_						- -
4	With Honing	080208HS			0.8	2.2	_	_ -	- -	-	_	_						-

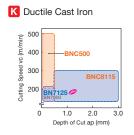
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-TPGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

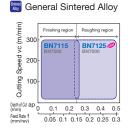
#### Multi-Cornered One-Use type / 11° Positive (With Hole)

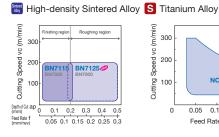
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	3	BNX25	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125 NCB100
	Standard	3NU-TPGW 080202 669 080204 669	1	3	0.2 0.4	2.6 2.5		-	_				•				-	-
	L Low Resistance F Sharp Edge	3NU-TPGW 080204LF 6999	1	3	0.4	2.5	_				_		•				-	

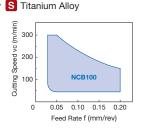
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

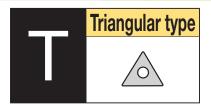














(Legen	d) [û	antinuous Cutting :	1st Reco 2nd Reco	mmend ommend	ation G	leneral ma	chining	<b>●</b> :19	st Reco	mmend mmend	ation In	terrupted	Cutting	: 1st Recommendat
	K	Cast Iron										•	#	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

Coated SUMIBORON

#### Multi-Cornered One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
		3NC-TPGW 080202			0.2	2.6		•	•	•	•						_	
	Standard	080204	1	3	0.4	2.5		•	•	•	•						_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.



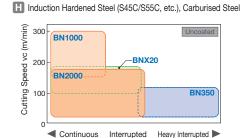


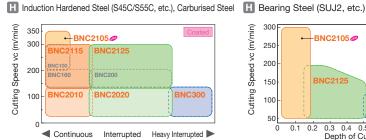


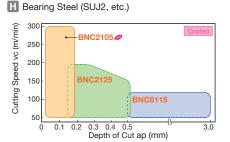




## SUMIBORON Application Range Map







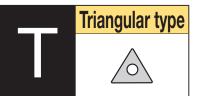
Positive Negative











Standa	rd cutt	ing edge sp	ecification								
		BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Nega	ative	T01225	S01225	S01725	S01225	T01225	S01225	C0100E	S01225	S01225	S01225
Posi	tive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
		BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Nega	ative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Posi	tive	301213	101215	101215	101215	101215	101215	_	_	101215	

TP	GW09	020	Uncoa	ated
Dimensions	Inscribed Circle	5.56	Hole Dia.	2.8
(mm)	Thickness	2.38		

(Legend) Cortinuous Cutting General machining : 1st Recomm K Cast Iron 0 # **u** • Recommended S Exotic Alloy H Hardened Steel 9 # Application #

**Uncoated SUMIBORON** 

One-Use type / 11° Positive (With Hole)

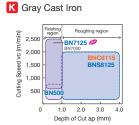
71		,																	
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNXZ5	000110	BNZUUU	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
		NU-TPGW 090202			0.2	2.6				•				•	<b>A</b>			-	
	Standard	090204	1	1	0.4	2.5												-	
		090208			0.8	2.2												-	
		NU-TPGW 090202LT			0.2	2.6	_	-	- -	-	<b>-</b>	-	-	-	_		_	-	
	L Low Resistance T Negative Land	090204LT	1	1	0.4	2.5	_	-	- -	-		-	-	-	-	_	-	-	
	H Strong Edge	NU-TPGW 090202HS			0.2	2.6	_	_ -	- -	-	<b>)</b> -	-						-	
	s Negative Land With Honing	090204HS	1	1	0.4	2.5		_ -	_ -				-					_	
Cutting edge treat	ment differs by are	ade Regarding cutting edge specific	ations r	nt stated aho	we please c	ontact us t	0 00	nfir	m w	het	her	mar	nıfa	ctur	ina	ic r	220	ihle	

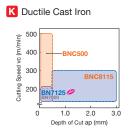
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-TPGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

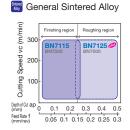
## Multi-Cornered One-Use type / 11° Positive (With Hole)

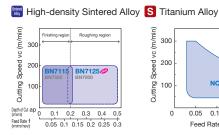
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10 BNX20	BNX25	BN2000	BN350	BN500	BN7125 RN7000	BN700	BN7115	BN7500 BNS8125	NCB100
7		3NU-TPGW 090202 💯			0.2	2.6					•				-	-
	Standard	090204 🐠	1	3	0.4	2.5					•					-
<b>A</b>																

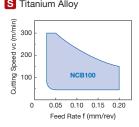
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

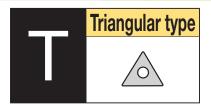














(Legen	d) [û	ontinuous Cutting ::	1st Reco 2nd Reco	ommend ommend	ation G	ieneral ma	chining	<b>●</b> :19	st Reco	mmenda mmend	ation In	terrupted	Cutting	: 1st Recommendatio
	K	Cast Iron										•	×	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	Ð	#						
	Sint	ered Components												

Coated SUMIBORON

#### Multi-Cornered One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
		3NC-TPGW 090202			0.2	2.6		•	•	•	•					•	-	
	Standard	090204	1	3	0.4	2.5		•	•	•	•					•	_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Positive Negative

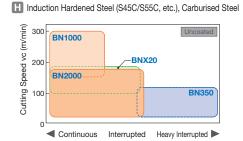


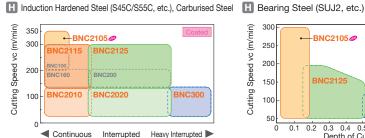


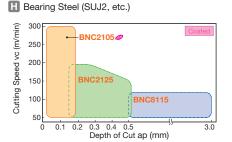










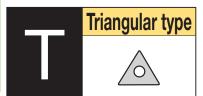




R







Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01005	C0100E	S01725	001005	T01225	C0100E	C0100E	001005	S01225	C0100E
Positive	101225	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	C0101E	T01015	T01215	T01015	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101215	101215	101215	_	_	101215	

TP	GW11	02	Uncoate	ed
Dimensions	Inscribed Circle	6.35	Hole Dia.	2.8
(mm)	Thickness	2.38		

(Legend) Continuous Cutting General machining K Cast Iron 0 × **u** • Recommended S Exotic Alloy Application Hardened Steel 9 # #

One-Use type / 11° Positive (With Hole)

				U	nco	oate	ed (	SU	MII	30	RO	N		
er	Cutting Edge	VX10	VX20	1X25	11000	12000	N350	N500	17125	17000	V700	17115	17500	S8125

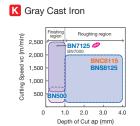
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN350	BN500	BN7125	DN1700		BN7500	BNS8125	NCB100
		NU-TPGW 110202			0.2	2.5					•					<b>\</b>			
		110204	1	1	0.4	2.3										1		-1	
	Standard	110208			0.8	2.0												-	
	Standard	T-NU-TPGW 110202			0.2	2.5													
•		110204	10	1	0.4	2.3													
		110208			0.8	2.0													-
	L Low Resistance	NU-TPGW 110202LT			0.2	2.5	_		-	-		- -	- -	-	-	- -	-		
	T Negative Land	110204LT	1	1	0.4	2.3	_		_	-		-	- -	- -	- -	-[-	-	- -	
		110208LT			0.8	2.0	_		_	_			<u> </u>	-[-	-		$\left  - \right $		
	H Strong Edge  Negative Land With Honing	NU-TPGW 110204HS	1	1	0.4	2.3	_				•								

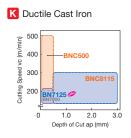
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-TPGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

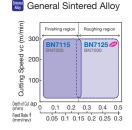
#### Multi-Cornered One-Use type / 11° Positive (With Hole)

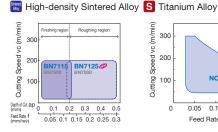
	Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN11000	BN2000	BN350	BN500	BN7125		7700	BN7115	N75	BNS8125	NCBIOO
			3NU-TPGW 110202 💯			0.2	2.5					Г						-	7	
		Standard	110204	1	3	0.4	2.3											•	7	
			110208			0.8	2.0											• -		
	0	L Low Resistance F Sharp Edge	3NU-TPGW 110204LF	1	3	0.4	2.3	_		_ -	- -	-	_	•	•			•	-]-	_
,	•	L Low Resistance E With Honing	3NU-TPGW 110204LE	1	3	0.4	2.3				_	_		•		_		• -		
		L Low Resistance Negative Land With Honing	3NU-TPGW 110204LS	1	3	0.4	2.3									-		•	-	

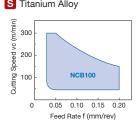
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use 3NS type (3NS-TPGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

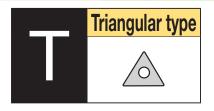














**SUMIBORON Inserts** 

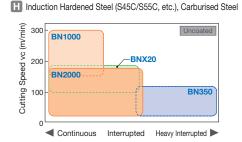
(Legen	d) [û	rtinuous Cutting	1st Reco 2nd Rec	mmend ommend	ation G	eneral ma	chining	<b>●</b> :19	st Recor nd Reco	mmend: mmend	ation In	terrupted	Cutting	<b>‡</b> :19	t Recom nd Recom	nendation mendation
	K	Cast Iron							0	•					*	
Recommended	S	Exotic Alloy								•					٠	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MII	30	RO	N			JERLESS MBORON

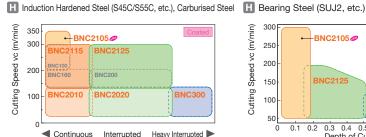
One-Use type / 11° Positive (With Hole)

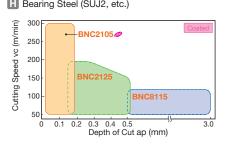
		(**************************************																		
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	INCDION
		NU-TPGW 110302			0.2	2.6	•	•		•	•		•		• .	<b>A</b>		-	-	
		110304	1	1	0.4	2.5		•	-	•		•	•		• .	<b>A</b>		-	-	
0/	Standard	110308			0.8	2.2			$\left  - \right $	•		•	•		•	lack		-	-	
	Standard	T-NU-TPGW 110302			0.2	2.6		•		•	•							-		
· ·		110304	10	1	0.4	2.5			-	•		•						-	- -	-
		110308			0.8	2.2	•	•		•	•	•						-	1	
		NS-TPGW 110302			0.2	2.6	_	_		-	- -	-	-[	+		+	-[	-		
		110304	1	1	0.4	2.5	-	_		-	-	-	- -	+	- -	+	-	- -	- -	-
-/	Standard	110308			0.8	2.2	_	_		-	-	-	$-\lfloor$		_	$\pm$	-	_	-1	
	Standard	T-NS-TPGW 110302			0.2	2.6	_	_		-	- -	-	- -	+	-	-	_	_ -	- -	-
· ·		110304	10	1	0.4	2.5	-	_		-	-	-	- -	+	- -	+	-	- -	-]-	
		110308			0.8	2.2	_	_		-	-	-	_		_		-	-		
		NU-TPGW 110302LF			0.2	2.6	_	_	-	-	-	-	-		•	▲		-	- -	
	L Low Resistance F Sharp Edge	110304LF	1	1	0.4	2.5	-	_	-	-	-	-	-		• .	▲		-	-]-	-
~		110308LF			0.8	2.2	_	_	_	_	_	_	_		• .	▲		-		
		NU-TPGW 110302LT			0.2	2.6	_	•	-	-		-	- -	+		-	-	_ -	- -	-
	L Low Resistance T Negative Land	110304LT	1	1	0.4	2.5	_	•	-	-		-	- -	+		-	-	_ -	- -	-
<b>A</b>	-	110308LT			0.8	2.2	_		_	_	•	_	_		_		_	-		
	H Strong Edge	NU-TPGW 110302HS			0.2	2.6	_	_	$\left -\right $	-		-	_					-		
	s Negative Land With Honing	110304HS	1	1	0.4	2.5	_	_		-	•	-	-					-		
~	with Honing	110308HS			0.8	2.2	_	_		_		-	-					-		-

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

Positive Negative

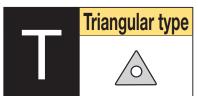












Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	201225	S01725	201225	T01225	S01225	C01225	C01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301225
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positiva	301213	101213	101213	101215	101215	101215			101213	

TP	<b>G</b> ■11	03	Uncoate	ed
Dimensions	Inscribed Circle	6.35	Hole Dia.	3.4
(mm)	Thickness	3.18		

(Legend) Continuous Cutting General machining K Cast Iron 0 × **u** • Recommended S Exotic Alloy Application Hardened Steel 9 # #

Uncoated SUMIBORON

#### Multi-Cornered One-Use type / 11° Positive (With Hole)

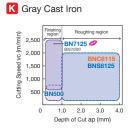
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7000	BN700	BN7115	BN7500	BNS8125 NCB100
<b>T</b>		3NU-TPGW 110302 @			0.2	2.6										-	
	Standard	110304	1	3	0.4	2.5										•	
4		110308			0.8	2.2										•	
7		3NU-TPGT 110304N-FV			0.4	2.2	_	- -	-	•		-[-		-	-		
	Finishing Chipbreaker	110308N-FV	1	3	0.8	1.9	_	- -	-	•	_	_ -		-		_	- -
7 - 7		3NU-TPGW 110302LF			0.2	2.6	_	_ -	- -	-	_	-				•	
	L Low Resistance F Sharp Edge	110304LF	1	3	0.4	2.5	_	- -	- -	-	-	-				•	- -
4	Smarp Lags	110308LF			0.8	2.2	_	- -	- -	-	-	-				•	- -
7		3NU-TPGW 110302LE @			0.2	2.6	_	- -	- -	-	_	-		H		-	
	L Low Resistance  E With Honing	110304LE	1	3	0.4	2.5	_	- -	- -	-	_	-		-		•	- -
<b>A</b>		110308LE 🐠			0.8	2.2	_	- -	- -	-	_	-		-		-	- -
	L Low Resistance  Negative Land With Honing	3NU-TPGW 110304LS	1	3	0.4	2.5											

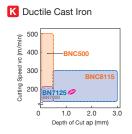
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use 3NS type (3NS-TPGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

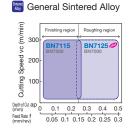
#### 11° Positive type (With Hole)

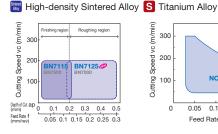
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	$\times$	$ \mathbf{x} $	BNX25	BNISOOO	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
•	Standard	TPGW 110304 110308	1	1	0.4 0.8	3.5 3.2		•						•				_	_
•	H Strong Edge S Negative Land With Honing	TPGW 110304HS 110308HS	1	1	0.4 0.8	3.5 3.2		_	-									_	

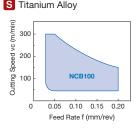
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

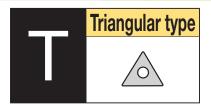














d) (a	rtinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>₩</b> : 1: <b>'</b> '' : 2:	st Recor nd Reco	mmenda mmenda	ation In	terrupted	Cutting	: 1st Recommendation
K	Cast Iron										•	×	
S	Exotic Alloy												
Н	Hardened Steel	0	•	•	0	9	#						
Sinte	ered Components												
	K S H	K Cast Iron S Exotic Alloy	K Cast Iron S Exotic Alloy H Hardened Steel	K Cast Iron S Exotic Alloy H Hardened Steel	K Cast Iron S Exotic Alloy H Hardened Steel	K Cast Iron S Exotic Alloy H Hardened Steel	K Cast Iron S Exotic Alloy H Hardened Steel	K   Cast Iron	K	K	K	K	S Exotic Alloy

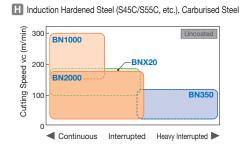
Coated SUMIBORON

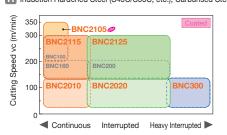
#### Multi-Cornered One-Use type / 11° Positive (With Hole)

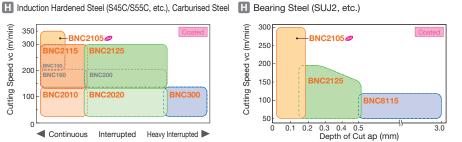
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
		3NC-TPGW 110302			0.2	2.4			•	•	•							
	Standard	110304	1	3	0.4	2.3				•			•	•	•	•	+	
~		110308			0.8	2.0	•						•	•	•	•		
		3NC-TPGT 110304N-FV			0.4	2.2			•	•	•	- -	-	•	•			
	Finishing Chipbreaker	110308N-FV	1	3	0.8	1.9		•	•		•	_ -	_	•	•		_	
	L Low Resistance	3NC-TPGW 110302LE			0.2	2.4	_		- (	•	- -	-	-	-	_			
	E With Honing	110304LE	1	3	0.4	2.3	_	$\left  - \right $	-	•	- -	- -	-	-	-		-	
		110308LE			0.8	2.0	_		_(	•	_ -	_ -						
	L Low Resistance	3NC-TPGW 110302LT			0.2	2.4	_		- -	- •	•	- -	-	-	-		-	
	T Negative Land	110304LT	1	3	0.4	2.3	_	$\left  - \right $	- -	- •	•	- -	-	-	-	-	-	
		110308LT			0.8	2.0	_		_ -	_ (	•	_ -		_				
	L Low Resistance	3NC-TPGW 110302LS			0.2	2.6			•	- -	-						-	
	Negative Land With Honing	110304LS	1	3	0.4	2.3	•		•	- -	-		•	•	•			
*	VVIIII HOHING	110308LS			0.8	2.0	•		•	- -	- (		•	•	•			 _
	H Strong Edge	3NC-TPGW 110304HS			0.4	2.3	_				•	•	-					
	s Negative Land With Honing	110308HS	1	3	0.8	2.0	_				•	•						

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

## SUMIBORON Application Range Map







Positive Negative











R



Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	201225	S01725	201225	T01225	S01225	S01225	201225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01015	T01215	T01015	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101215	101215	101215	_	_	101215	

TP	GW16	03	Uncoa	ted
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	3.18		

General machining : 1st Recommendatio (Legend) Cortinuous Cutting K Cast Iron 0 × **u** • Recommended S Exotic Alloy Application Hardened Steel 9 # #

Uncoated SUMIBORON

One-Use type /	11°	Positive	(With	Hole)
----------------	-----	----------	-------	-------

	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	BNX10	BNX25 BNX25	BN1000	BN2000	BN350	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
NU-TPGW 160302			0.2	2.4		-		•							-	
rd <b>160304</b>	1	1	0.4	2.3		-		•							-	
160308			0.8	2.0		-					Ш				-	
3	NU-TPGW 160302 160304	NU-TPGW 160302 160304 1	Cat. No.   Pcs/ Pack   Cutting Edges	Cat. No.   Pcs/ Pack   Cutting Edges   Corner Radius	Cat. No.   PCS/ Pack   Cutting Edges   Edge Length	Cat. No.   Pcs/ Pack   Cutting Edges   Corner Radius   Edge Length   Edge   Corner Radius   Edge Length   Edge   Corner Radius   Corner Radius   Edge Length   Edge   Corner Radius   Edge Length   Edge Length   Edge   Corner Radius   Edge Length   Edge Length	Cat. No.   PCS/ Pack   Cutting Edges   Edge Length   Edge   2	Cat. No.   Pack   Cutting   Edge   Radius   Edge   Length   Radius   Radi	Cat. No.   PCS/ Pack   Cutting Edges   Radius   Edge Length   Radius   Edge   Radius   Radi	Cat. No.   Pack   Cutting   Edges   Radius   Edge   Length   Radius   Edge   Length   Radius   Radiu	Cat. No.   Post   Cutting   Edges   Radius   Edge   Length   Radius   Radius   Length   Radius   Rad	Cat. No.   Post   Cutting   Edges   Radius   Edge   Length   Radius   Radius   Length   Radius   Rad	Cat. No.   Pcs/ Pack   Cutting Edges   Radius   Edge Length   NU-TPGW 160302   1   1   0.4   2.3   -	Cat. No.   Pack   Cutting   Edges   Radius   Edge   Length   Radius   Radius   Length   Radius   Rad	Cat. No.   Pcs/ Pack   Cutting Edges   Radius   Edge Length   Radius   Ra	Cat. No.   PGS   Pack   Cutting   Edges   Radius   Edge   Length   Radius   Radius

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

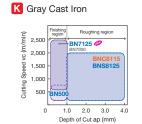
TP	GW16	04(	Uncoa	ted
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	4.76		

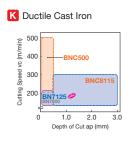
	K	Cast Iron							0	•				#		
Recommended	S	Exotic Alloy								•				•	•	
Application	Н	Hardened Steel	0	9	₿	•	•	#								
	Sint	ered Components								•						
					U	nco	oate	ed	SU	MII	во	RO	N		JERLESS IIBORON	

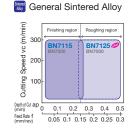
#### One-Use type / 11° Positive (With Hole)

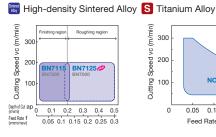
0110 000 typ	0 / 1 1 1 0011	100 (001111111010)																ш 07
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125 NCB100
		NU-TPGW 160402			0.2	2.6			-								-	-
		160404	1	1	0.4	2.5	•		-			•		•			-	-
0/	Standard	160408			0.8	2.2	•		-			•			▲		-	-
	Standard	T-NU-TPGW 160402			0.2	2.6			-								-	- -
		160404	10	1	0.4	2.5	•		-			•					-	- -
		160408			0.8	2.2	•		-								-	_
		NS-TPGW 160402			0.2	2.6	_	_	-	- -	- -	-	-	-	-	-	- -	- -
		160404	1	1	0.4	2.5	_	-	•	- -	- -	-	-	-	-	-	- -	- -
	Standard	160408			0.8	2.2	_	_	•	- -	-	_	-	_	-	-		
	Standard 1	T-NS-TPGW 160402			0.2	2.6	_	-	-	- -	-	-	-	+	-	-	_ -	- -
		160404	10	1	0.4	2.5	_	_	•	- -	- -	-	+	-	-	-	- -	- -
		160408			0.8	2.2	_	_	•	_ -	- -	-	+	+	-	-		- -

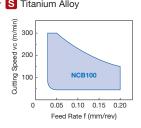
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.











Triangular type
$\Diamond$
701

TP	GW16	04	Uncoa	ted
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	4.76		

#### (Legend) Continuous Cutting K Cast Iron Ħ S Exotic Alloy • Recommended H Hardened Steel \$\$ Application **Uncoated SUMIBORON**

#### One-Use type / 11° Positive (With Hole)

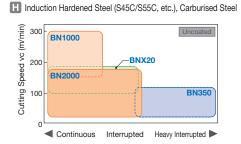
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7500	BNS8125	NCB100
		NU-TPGW 160402LF			0.2	2.6		- -	-	-	-	_					-	_
	L Low Resistance F Sharp Edge	160404LF	1	1	0.4	2.5		- -	- -	-	_	-		•	<b>A</b>		-	_
<b>A</b>		160408LF			0.8	2.2		- -	-	-	_	_						_
	L De sistemas	NU-TPGW 160402LT			0.2	2.6		-	- -	-	_	-	-	- -	- -	- -	-	-
	L Low Resistance T Negative Land	160404LT	1	1	0.4	2.5		•	- -	•	-	-	-	- -	- -	- -	-	-
<b>A</b>		160408LT			0.8	2.2	_	•	- -	•	_	_	-	_ -		-		_
	H Strong Edge	NU-TPGW 160404HS			0.4	2.5		- -	- -	•	-						-	_
	s Negative Land With Honing	160408HS	1	1	0.8	2.5	_	_		•	_	_					_	_

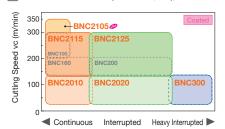
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

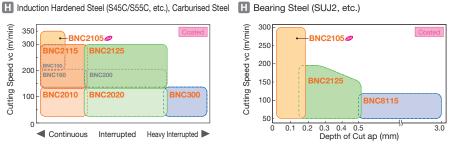
#### Multi-Cornered One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	¥	BNX20	BN1000	BN2000	BN350	BN500	BNZ000	BN700	BN7115	BN/500	NCB100
	Standard	3NU-TPGW 160404 @ 160408 @	1	3	0.4 0.8	2.5 2.2		-	_								-
	L Low Resistance F Sharp Edge	3NU-TPGW 160404LF @ 160408LF @	1	3	0.4 0.8	2.5 2.5	_				_	— (	•			_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.



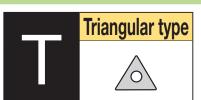












Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	C01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101215	101215	101215	101215	_	_	101215	

TP	GW16	04	Uncoa	ted
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	4.76		

(Legen	d) (d	irtiruous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>₩</b> :1: <b>₩</b> :2:	st Reco nd Reco	mmend mmend	ation In	terrupted	Outting	<b>‡:</b> 1s <b>;:</b> 2r	t Recomn nd Recomn	nendatio mendatio
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																SSS

Uncoated SUMIBORON

Coated SUMIBORON

11° Positive type (With Hole)

	) I (	/																1
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	BNX20	BNX25	BN2000	BN350	BN500	BN7125	BN7000	BN7100	BN7500	BNS8125	NCB100
		TPGW 160404			0.4	3.5		•		•							-	-
	Standard	160408	1	1	0.8	3.2											-	
		160412			1.2	2.9											H	_
	H Strong Edge	TPGW 160404HS			0.4	3.5	_	-	- -	-	-	_					-	_
<b>A</b>	S Negative Land With Honing	160408HS	1	1	0.8	3.5	_	-	_ -	-	-	_					-	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

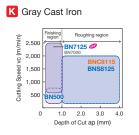
TP	GW16	04(		oated
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	4.76		

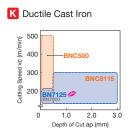
K Cast Iron										•	#
S Exotic Alloy											
H Hardened Steel	0	•	•	0	9	*					
Sintered Components											
	S Exotic Alloy H Hardened Steel										

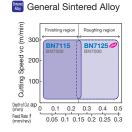
#### Multi-Cornered One-Use type / 11° Positive (With Hole)

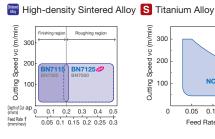
	Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
			3NC-TPGW 160402			0.2	2.4											$\exists$	
		Standard	160404	1	3	0.4	2.3	•	•		•	•			- 1		•	-	
	~		160408			0.8	2.0	•	•		•			•		•	•	-	
-		L Low Resistance	3NC-TPGW 160404LS			0.4	2.3				_	_			- 1		_	-	
		s Negative Land With Honing	160408LS	1	3	0.8	2.0				_	_		•		•	_	_	
		H Strong Edge	3NC-TPGW 160404HS			0.4	2.3	_		•	•	•		-	1	•		+	
		s Negative Land With Honing	160408HS	1	3	0.8	2.0	_		•	•	•		_		•		_	

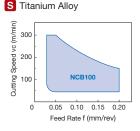
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

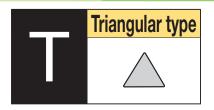


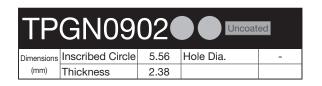












#### 11° Positive type (Without Hole)

	)	,																
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN2000	BN350	BN500	4	BN7000	BN700	BN/115	<b>IS81</b> 2	)B1
	Standard	TPGN 090204 090208	1	1	0.4 0.8	3.5 3.2		•		•		•						
	H Strong Edge S Negative Land With Honing	TPGN 090204HS	1	1	0.4	3.5			_  -	•								

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

TP	GN110	03	Uncoate	d
Dimensions	Inscribed Circle	6.35	Hole Dia.	-
(mm)	Thickness	3.18		

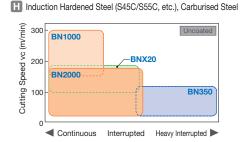
	K	Cast Iron						0	•			#	
Recommended	S	Exotic Alloy							•			•	•
Application	Н	Hardened Steel	0	9	\$ •	•	#						
	Sint	ered Components							•		•		
													SS

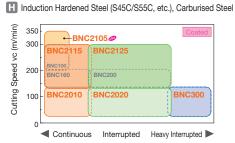
**Uncoated SUMIBORON** 

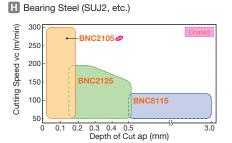
#### One-Use type / 11° Positive (Without Hole)

71-		,																	1
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	×	2	BNX25	2 2	BN350	5	BN7125	BN7000	BN700	BN7115	BNS8125	NCB100	
		NU-TPGN 110302			0.2	2.4											H	-	
		110304	,	4	0.4	2.3		•						•				-	
		110308	'	'	0.8	2.0								•					
	Standard	110312			1.2	2.0												-	ľ
	Standard	T-NU-TPGN 110302			0.2	2.4												-	_
		110304	10	1	0.4	2.3		•										-	
		110308	10	'	0.8	2.0												- -	
		110312			1.2	2.0													

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-TPGN) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.







S01215

Positive

T01215

T01215

S01225









_	Triangular type

Standard cutting edge specification BN1000 BN2000 BN350 BNC2105 BNC2115 BNX10 BNX20 BNX25 Negative T01225 S01225 S01225 S01225 T01225 S01225 S01725 S01225 S01225 Positive T01235 BN7000 BN700 BNC500 BN500 BN7125 BN7115 BN7500 BNC8115 BNS8125 NCB100 Negative S02020 T02020

T01215

T01215

T01215

T01215

TP	GN110	03	Uncoated	d
Dimensions	Inscribed Circle	6.35	Hole Dia.	
(mm)	Thickness	3.18		

Interrupted Cutting :: 1st Recommendatio (Legend) Continuous Cutting General machining K Cast Iron 0 × Recommended S Exotic Alloy **u** Application H Hardened Steel 0 9 #

Uncoated SUMIBORON

#### One-Use type / 11° Positive (Without Hole)

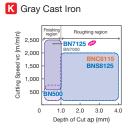
,,		, ,																	
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	$\leq$	$\mathbb{Z} \mathbb{Z}$	BN1000	- N	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
		NU-TPGN 110302LT			0.2	2.4	-	-	- -	•	-	_	-[	-	+	- -	-		
	L Low Resistance T Negative Land	110304LT	1	1	0.4	2.3	-	-	- -	•	-	_	- -	- -	-1	- -	_ -	- -	
•	_ 。	110308LT			8.0	2.0	-	-	- -	•	-	-	- -	- -	-1	- -	- -	- -	
	H Strong Edge	NU-TPGN 110304HS			0.4	2.3	-	- -	- -	•	-	_					-	-[-	
	s Negative Land With Honing	110308HS	1	1	0.8	2.0	-	_			_						-	- -	

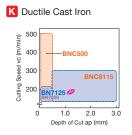
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-TPGN) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

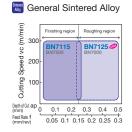
#### 11° Positive type (Without Hole)

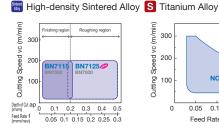
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	BNX20	$\frac{2}{2}$	BN1000	<u>کا ا</u> ک	8N350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
	Standard	TPGN 110304 110308	1	1	0.4	3.5 3.2		•			•				•	<b>A</b>			_	_
V	H Strong Edge Negative Land With Honing	TPGN 110304HS 110308HS	1	1	0.4	2.3 2.0		_	_   -	- (	• -								_	

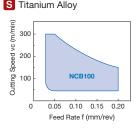
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

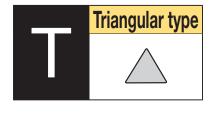












TP	GN160	03	Uncoate	ed
Dimensions	Inscribed Circle	9.525	Hole Dia.	-
(mm)	Thickness	3.18		

# (Legend) Continus Outing 1st Recommendation General metahining 1st Recommendation Interrupted Outing 1st Recommendation Continues Outing 1st Recommendation Continues Outing 1st Recommendation Interrupted Outing 1st Recommendation Continues Outing

#### One-Use type / 11° Positive (Without Hole)

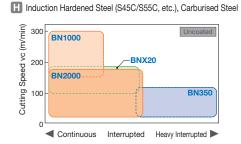
"																ive (vvitilout i lole)	C / 11 1 031t	Offic Odd typ
BN7500 BNS8125	BN7115	BN700	BN7000	BN7125	BN500	BN350	BN2000	BN1000	BNX25	BNX20	BNX10	Cutting Edge Length	Corner Radius	No. of Cutting Edges	Pcs/ Pack	Cat. No.	Cutting Edge Specification	Shape
							•					2.4	0.2			NU-TPGN 160302		
			•			•	•	•		•		2.3	0.4	1	1	160304		
					•	•	•			•		2.0	0.8			160308	Standard	
												2.4	0.2			T-NU-TPGN 160302	Standard	
							•			•		2.3	0.4	1	10	160304		
							•			•		2.0	0.8			160308		
- -		-			-	_	•	-	-		-	2.3	0.4			NU-TPGN 160304LT	I am Davieten a	
		-	+	-	_	_	•	_	-		_	2.0	0.8	1	1	160308LT	L Low Resistance T Negative Land	
					_	_	•	_	_		_	2.3	0.4 0.8	1	1	NU-TPGN 160304HS 160308HS	H Strong Edge Negative Land With Honing	
					 	_		_	_		_			1	1		H Strong Edge	

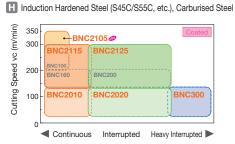
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-TPGN) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

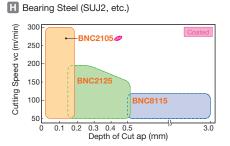
#### 11° Positive type (Without Hole)

11 1 0011110	typo (Withou	111010)																	
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	×	욁	BNX25	BN2000	-	BN500	BN7125	BN7000	BN700	BN7115	BN/300	NCB100	
		TPGN 160304			0.4	3.5		•		•		•		•			-	-]-	
	Standard	160308	1	1	0.8	3.2				•								- -	
•		160312			1.2	2.9											-	_	
	H Strong Edge	TPGN 160304HS			0.4	3.5	_	-	- -	-	-	_						-	-
	S Negative Land With Honing	160308HS	1	1	0.8	3.5		_	_ -		_						_		

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.







C/







Triangular type	

Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101213	101213	_	_	101213	

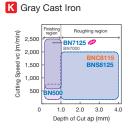
TP	GN22	04	Uncoate	ed
Dimensions	Inscribed Circle	12.7	Hole Dia.	-
(mm)	Thickness	4.76		

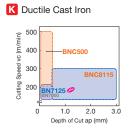
(Legen	d) (i			mmend ommend	ation G	eneral ma	chining	<b>●</b> :1: <b>□</b> :2:	st Recor	nmend mmend	ation In	terrupted	Cutting	#:1s	t Recomr nd Recom	nendatio mendatio
	K	Cast Iron							0	٠					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MI	во	RO	N			DERLESS

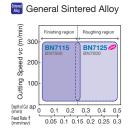
11° Positive type (Without Hole)

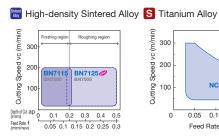
	-)   (	,																	- 1
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	BNX20	BNX25	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
	Standard	TPGN 220408	1	1	0.8	3.2		•		•							-	_	
	H Strong Edge S Negative Land With Honing	TPGN 220408HS	1	1	0.8	3.2		_		•							-		

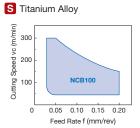
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

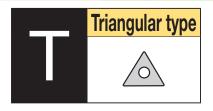












Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301725	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101215	101215	_	_	101213	

TN	<b>1</b>	604	Unco	pated
Dimensions	Inscribed Circle	9.525	Hole Dia.	3.81
(mm)	Thickness	4.76		

(Legen	d) (û	ortinuous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>●</b> : 1: <b>○</b> : 2:	st Recor nd Reco	mmenda mmend	ation In	terrupted	Cutting	<b>‡:</b> 19	t Recomn nd Recomn	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																χz

Uncoated SUMIBORON

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN350	BN500	BN7125	BN7000	BN700	BN7500	BNS8125	NCB100
		NU-TNMA 160401			0.1	2.5											-	ĦΙ
		160402			0.2	2.4			-								-	-
		160404	1	1	0.4	2.3	•	•	-	•				•	<b>A</b>		-	-
		160408			0.8	2.0	•	•	-			•		•	<b>A</b>		-	-
0	Standard	160412			1.2	2.0		•	$\left  - \right $			•		•	<b>A</b>		-	-
	Standard	T-NU-TNMA 160401			0.1	2.5											-	<b>=</b>   '
		160402			0.2	2.4			-								-	
		160404	10	1	0.4	2.3	•	•	$\left  - \right $								-	-
		160408			0.8	2.0	•	•	$\left  - \right $								-	-
		160412			1.2	2.0		•									-	
		NS-TNMA 160404			0.4	2.3	_	_		- -	-	-	-		-	- -	-	
		160408	1	1	0.8	2.0	_	_		- -	- -	-	-	- -	- -	- -	-	
0	Standard	160412			1.2	2.0	_	_		- -		-	-	-	_	_	-	
	Stanuard	T-NS-TNMA 160404			0.4	2.3	_	_		-[-				-[	-			
		160408	10	1	0.8	2.0	_	-		- -	- -	-	-	- -	- -	- -	-	
		160412			1.2	2.0	_	_		- -	-  -	-	-	- -	-[-	- -	-	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

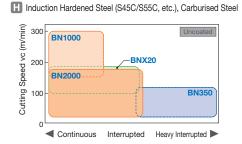


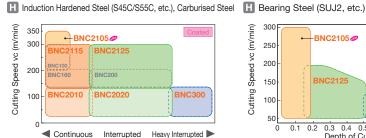
S

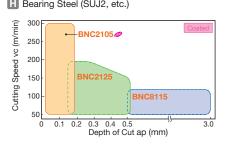
Positive **Negative** 











#### Indexable Inserts

TN	<b>1</b> 16	604		Jncoated
Dimensions	Inscribed Circle	9.525	Hole Dia.	3.81
(mm)	Thickness	4.76		

(Legen	d) (i	ortinuous Cutting	1st Reco 2nd Reco	mmenda ommenda	ation G	eneral ma	chining	<b>●</b> : 1s <b>'</b> : 2r	st Recor nd Reco	nmenda mmenda	ation In	terrupted	Cutting	<b>‡:</b> 1s <b>;:</b> 2n	t Recomn d Recomn	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•						
																w z

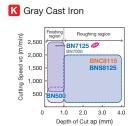
Multi-Cornered One-Use type / Negative (With Hole)

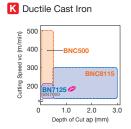
**Uncoated SUMIBORON** 

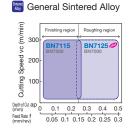
IVIUILI-COITIEI	Ted One-056	type / Negative (with Hole	<del>-</del> )																m v
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN2000	BN350	OUCNIC	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
		3NU-TNGA 160404			0.4	2.3		•	=[	•	•	•					•	-	
		160408	1	3	0.8	2.0		•	-			•					•	-	
	Standard	160412			1.2	2.0		•	-	-							•	-	
	Standard	T-3NU-TNGA 160404			0.4	2.3		•		-	•						•		_
		160408	10	3	0.8	2.0		•	-	-		•					-	-	_
		160412			1.2	2.0		•	_	-							-	-	_
		3NS-TNGA 160404			0.4	2.3		-	<b>A</b>	_	-				-		_	-	_
		160408	1	3	0.8	2.0	_	-	lack	- -	- -	_ -	- -	- -	-	$\left  - \right $	-	-	_
	Ottors down	160412			1.2	2.0	_	-		- -	- -	- -	- -	- -	-	$\left  - \right $	-	-1	_
	Standard	T-3NS-TNGA 160404			0.4	2.3		-		_	-	= -	- -		-		_		_
		160408	10	3	0.8	2.0	_	-	lack	- -	- -	- -	- -	- -	-	$\left  - \right $	-	-	_
		160412			1.2	2.0	_	-		_ -	_ -	_ -	- -	-  -	-	-	-	-1	_
(4-2)		3NU-TNGM 160404N-LV			0.4	2.3	-	_		-	•		-  -	-	-			=	
	Light Cutting Chipbreaker	160408N-LV	1	3	0.8	2.0	_	_	_	-	•	_ -	_ -	- -	-	$\left  - \right $	-	-	_
	Omporeater	160412N-LV			1.2	2.0	_	_	_	-	•	_ -	_ -	- -	-	-	-	-1	_
(0,00)		3NU-TNGA 160404LF			0.4	2.3	_	_	=	_	_	= -	- (				•		
	L Low Resistance F Sharp Edge	160408LF	1	3	0.8	2.0	_	_	-	_	_ -	_ -	-				•	-	_
	Onarp Lage	160412LF			1.2	2.0	_	_	_	_ -	_ -	_ -	-				-	-	_
(4-3)		3NU-TNGA 160404LE			0.4	2.3	_	_	=	_	_		-		-	•	•	=	
	L Low Resistance E With Honing	160408LE	1	3	0.8	2.0	_	_	_	_	_ -	_ -	-	-	-	•	•	-	-
		3NU-TNGA 160404LT			0.4	2.3	_			_	•		-					7	
	L Low Resistance	160408LT	1	3	0.8	2.0	_		_	_	•	_ _	_ -		-				
	T Negative Land	160412LT			1.2	2.0	_		_	_	•	_ -	_ -	- -	-	_	_ .		
	L aux Danietau au	3NU-TNGA 160404LS			0.4	2.3	_	_								•	•		
(0)	L Low Resistance Negative Land	160408LS	1	3	0.8	2.0	_	_		_	_ .		_  -				•		
	With Honing																		
(1)		3NU-TNGA 160404HT			0.4	2.3	-	_		_	_	• -					-	-1	
	H Strong Edge T Negative Land	160408HT	1	3	0.8	2.0	_	_	-	_	-	•	-[-		H	-	-	-1	
A		160412HT			1.2	2.0	_	_	-	_	_	•	-  -		-		-	-	
(4)	H Strong Edge	3NU-TNGA 160404HS			0.4	2.3	-	-	-	-	•		-	•			•	7	
	S Negative Land With Honing	160408HS	1	3	0.8	2.0	_	_	-	-	•	- -	-	•			•	-	
_	With Honing	160412HS			1.2	2.0	_	_	-	-	•	- -	-[					-1	
							-	_		_	_	_			_			_	-

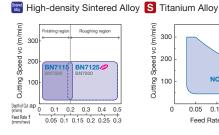
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

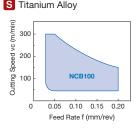
#### SUMIBORON Application Range Map









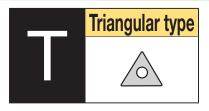


Negative Positive









Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	201225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101215	101215	101215	_	_	101213	

TN	<b>1</b>	604	Unco	ated
Dimensions	Inscribed Circle	9.525	Hole Dia.	3.81
(mm)	Thickness	4.76		

(Legen	d) [û	ortinuous Cutting	1st Reco 2nd Reco	ommenda ommenda	ation G ation	ieneral ma	chining	<b>₩</b> :1: <b>₩</b> :2:	st Recor nd Reco	mmend: mmend	ation In	terrupted	Cutting	<b>‡:</b> 1s <b>;:</b> 2r	t Recomn d Recomi	nendation mendation
	K	Cast Iron							0	•					*	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																SSS

Uncoated SUMIBORON

#### Multi-Cornered One-Use type / Negative (With Hole)

		,, ,	,															- 1
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10 BNX20	BNX25	BN1000	BN2000	BN350	BN500	BN7125	BN700	BN7115	BN7500	BNS8125	NCB100
4	Strong Edge S Negative Land With Honing	3NU-TNGA 160404US	1	3	0.4	2.3				_		-			•			

\*Depth of cut for one-use types is 0.5mm or less.

## Negative type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	BNX10	BNX20	BNX25 BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115 BN7500	BNS8125	NCB100
		TNMA 160402			0.2	3.6		•		•							-	
	Standard	160404		4	0.4	3.5				•							-	
	Standard	160408	'	1	0.8	3.2				•		•		•	<b>A</b>			
		160412			1.2	2.9				•		•		•	<b>A</b>		_	

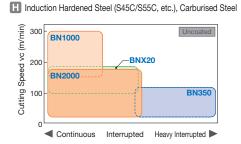
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

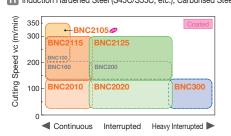
#### Solid type / Negative (With Hole)

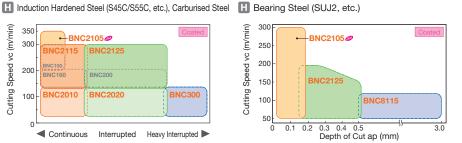
	Cutting Edge		Pcs/	No. of	Corner	Cutting	10	20	22	00	50	00	25	00	15	000	125	001	L
Shape	Specification	Cat. No.	Pack	Cutting Edges	Radius	Edge Length	BNX	BNX	BNX	BNZC	BN3	BN5	BN71	BN70	BN/	BN75	BNS8	NCB.	
		TNGA 160408			0.8	15.3		-[-	- -	-	-		-	-	-	-	•		Z
	Standard	160412	1	6	1.2	15.7		_ -	- -	- -	_	-	-	- -	- -		•	_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### SUMIBORON Application Range Map







Positive Negative

S

nterrupted Cutting : 1st Recommendation

**•** #

**Positive** Negative

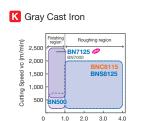




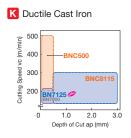


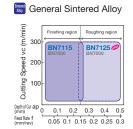






Depth of Cut ap (mm)





High-density Sintered Alloy	S Titanium Alloy
Finishing region  Roughing region	000 - 000 -
BN7115 BN7125 PN7500 BN7500 BN7500	Outting Spee
Depth of Out ap 0 0.1 0.2 0.3 0.4 0.5 Feed Rate f (mm/rev) 0.05 0.1 0.15 0.2 0.25 0.3	0 0.05 0.10 Feed Rate

Cutting Speed vc (m/min 300 200 **NCB100** 100 0.05 0.10 0.15 0.20 Feed Rate f (mm/rev)

TN	<b>G</b> ■16	04	Coa	ated
Dimensions	Inscribed Circle	9.525	Hole Dia.	3.81
(mm)	Thickness	4.76		

**Triangular type** 

Coated SUMIBORON

General machining : 1st Recom

G #

(Legend) Continuous Cutting : 1st Recom

K Cast Iron

S Exotic Alloy

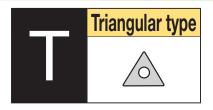
H Hardened Steel

Recommended Application

Multi-Cornered One-Lise type / Negative (With Hole)

/Iulti-Corne	ered One-Use	type / Negative (With Hole	e)														
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115
		3NC-TNGA 160404			0.4	2.3											-
		160408			0.8	2.0									•		-
1000	Standard	160412	1	3	1.2	2.0											+
	Standard	160416*	'	3	1.6	3.3											-
		160420*			2.0	3.0											+
		160424*			2.4	2.7								•	•		
		6NC-TNGA 160402			0.2	2.4		•									-
		160404			0.4	2.3		•								•	+
mos		160408			0.8	2.0		•								•	+
1	Standard	160412	1	6	1.2	2.0		•								•	+
•		160416*			1.6	3.3		•									+
		160420*			2.0	3.0		•									-
		160424*			2.4	2.7									•		
mos	Finishing	6NC-TNGG 160404N-FV			0.4	2.3		•				-	-				
1	Finishing Chipbreaker	160408N-FV	1	6	0.8	2.0		•			•	-	-				-
•		160412N-FV			1.2	2.0		•			•	=		•	•		
3000	Light Cutting	6NC-TNGG 160404N-LV			0.4	2.3		•				-	-				_
1	Chipbreaker	160408N-LV	1	6	0.8	2.0		•				-	-				+
		160412N-LV			1.2	2.0		•			•				•		
1000	Carburised Layer Removal	6NC-TNGG 160404N-SV			0.4	2.3						-	-				
	Carburised Layer Removal Chipbreaker	160408N-SV	1	6	0.8	2.0							-		•		
		160412N-SV			1.2	2.0		•			•				•		
m 000	L Low Resistance	3NC-TNGA 160404LE			0.4	2.3	_	-	-		- -	-	-	-	-	-	
1	E With Honing	160408LE	1	3	0.8	2.0	-	-	-		- -		-	-	-	-	
		160412LE			1.2	2.0	_	_	_	•							
An		3NC-TNGA 160402LT			0.2	2.4	_	-		-	•		-	-	-	-	
-	L Low Resistance	160404LT	1	3	0.4	2.3	_	-	-	-	•	-	-	-	-	-	
	T Negative Land	160408LT	'	J	0.8	2.0	_	-	-	-	•	-	-	-	-	-	
		160412LT			1.2	2.0	_	-		-	•		-	-	-	-	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*For use with the SUMIBORON Special Holders for High-Efficiency Machining.



Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301725	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101215	101215	_	_	101213	

TN	<b>G</b> ■16	04	Coa	ted
Dimensions	Inscribed Circle	9.525	Hole Dia.	3.81
(mm)	Thickness	4.76		

(Legen	d) (û	ortinuous Cutting	1st Reco 2nd Rec	mmend ommend	ation G	eneral ma	chining	<b>●</b> : 1: <sup>1</sup> : 2:	st Recor nd Reco	mmend: mmend	ation In	terrupted	Cutting	: 1st Recommendation
	K	Cast Iron										•	Ħ	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

#### Coated SUMIBORON

#### Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	22	()	BNC2010 BNC2020	$\sim$	BNC100	BNC160	BNC200	BNC8115	
		3NC-TNGA 160402LS			0.2	2.4				- -	-			-	-[-	
~ C C	L Low Resistance Negative Land	160404LS		3	0.4	2.3	•			- -	-			-	- +	
	With Honing	160408LS	'	3	0.8	2.0	•			- -	-			-	- +	
		160412LS			1.2	2.0				- -	-			-	- +	
( m _ 12 )	L Low Resistance	6NC-TNGA 160404LS			0.4	2.3	_	_	-	- -	-	•	•	•		
7	Negative Land	160408LS	1	6	0.8	2.0	_	_	-	- -	-	•	•	•	- -	
~	S With Honing	160412LS			1.2	2.0	_	-	-	- -	-		•	•	- +	
(m_w)	H Strong Edge	6NC-TNGA 160404HS			0.4	2.3	_		•	•	•	_	•	•		1
7	Negative Land	160408HS	1	6	0.8	2.0	_		•			_	•	•		
•	With Honing	160412HS			1.2	2.0	_		•			_	•	•		
(m_w)	E High Efficiency	6NC-TNGA 160404ES			0.4	2.3	_	_		-	<b>)</b>		_	_		1
	Negative Land	160408ES	1	6	0.8	2.0	_	_		-	<b>)</b>	_		- -	- -	
~	With Honing	160412ES			1.2	2.0	_	_		-		_		_	- -	

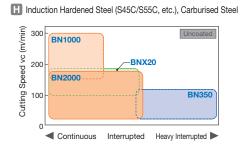
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

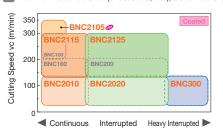
#### Solid type / Negative (Without Hole)

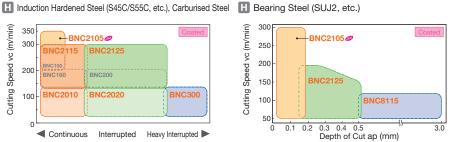
٠,٠	•	•																
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC200	BNC500	BNC8115		
		TNGA 160408			0.8	15.3	_	_	-	-	- -	- -	- -	- -	-	•		
	Standard	160412	1	6	1.2	15.7	_	-	$\left  - \right $	-	- -	- -	- -	- -	-	•		
																	<u> </u>	_

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### SUMIBORON Application Range Map







Positive Negative



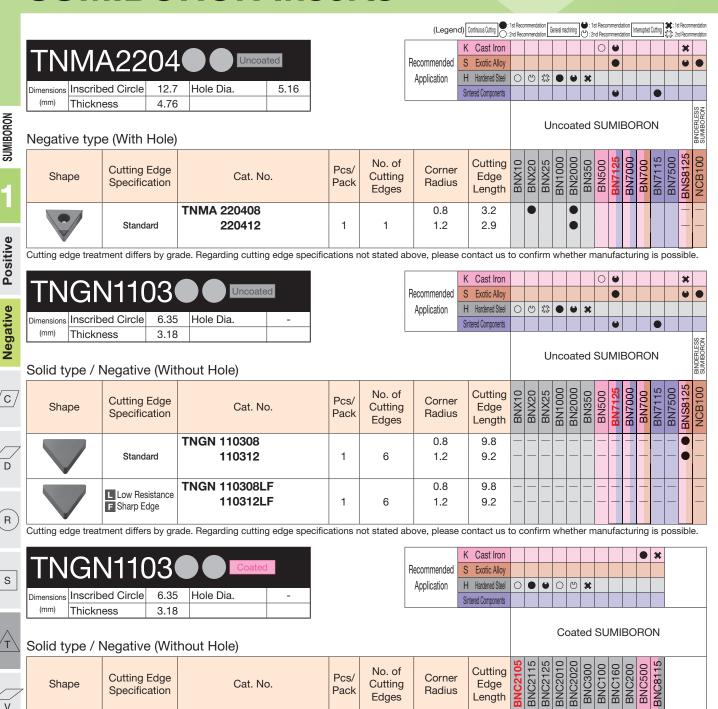








#### Indexable Inserts



Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

6

1

8.0

1.2

9.8

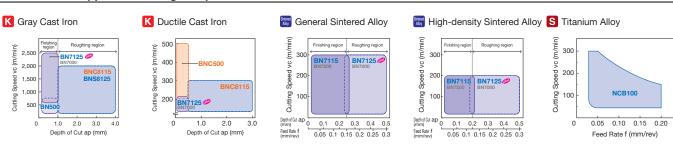
9.2

#### SUMIBORON Application Range Map

Standard

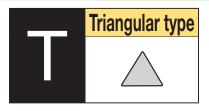
**TNGN 110308** 

110312



 $\langle w \rangle$ 

#### Indexable Inserts



Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	201225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101215	101215	101215	_	_	101213	

TN	GN16	04	Uncoate	ed
Dimensions	Inscribed Circle	9.525	Hole Dia.	-
(mm)	Thickness	4.76		

(Legen	d) [û			mmend ommend		eneral ma	chining	<b>●</b> : 1: <sup>1</sup> : 2:	st Recor nd Reco	mmend: mmend	ation In	terrupted	Cutting	<b>‡</b> :19	t Recomr d Recom	nendation mendation
	K	Cast Iron							0	•					Ħ	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MII	во	RO	N			DERLESS

#### Negative type (Without Hole)

-	· · · · · ·																		
	Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX25	BN1000	BN2000	BN350	BN500	BN7125	BN700	BN7115	BN7500	BNS8125	NCB100
			TNGN 160404			0.4	3.5										-	-[-	
		Standard	160408	1	1	0.8	3.2										-	- -	-
			160412			1.2	2.9										-		

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	X	BNX20	BNX25	00001NB	BNZ000	BN500	BN7125	BN7000	BN700	BN7115	BN/500	NCB100	
		TNGN 160408			0.8	15.3	_	-	-[-	- -	- -	-	-		-		-	<u> </u>	
	Chandard	160416	4	6	1.6	14.2	-	- -	- -	- -	- -	- -	-	-	-	- -	- •	• -	
	Standard	160420	l	0	2.0	13.6	-	- -	- -	- -	- -	- -	-	-	-	- -	- •	<b>)</b>	
		160412			1.2	14.8	_		- -	- -	- -			-	+		-	<b>)</b>	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

TN	GN16	04	Coate	d
Dimensions	Inscribed Circle	9.525	Hole Dia.	-
(mm)	Thickness	4.76		

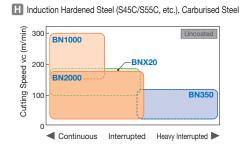
	K	Cast Iron							•	#
Recommended	S	Exotic Alloy								
Application	Н	Hardened Steel	0	•	0	9	*			
	Sinte	ered Components								

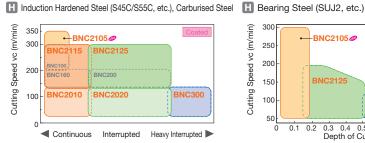
#### Solid type / Negative (Without Hole)

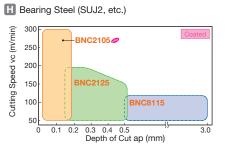
cond type / i	togativo (trit	riodt rioloj															
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2020	BNC300	BNC100	BNC160	NC20	BNC500		4
		TNGN 160408			0.8	15.3		-[-	- -	- -	_	-	_	-	-		
. /	Standard	160412	4	6	1.2	14.8	$\left  - \right $	- -	- -	- -	$\left  - \right $	-	-	- -	-		
	Standard	160416	'	O	1.6	14.2	$\left  - \right $	- -	- -	- -	$\left  - \right $	-	-	- -	-		
		160420			2.0	13.6		- -	- -	-		_	_	-	-		

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### SUMIBORON Application Range Map







Coated SUMIBORON

Positive Negative







Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	C0100E	S01725	S01225	T01225	S01225	C0100E	C0100E	S01225	C0100E
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	201215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301215	101215	101215	101215	101215	101215	_	_	101215	

VB	GW11	03	Uncoat	ted
Dimensions	Inscribed Circle	6.35	Hole Dia.	2.8
(mm)	Thickness	3.18		

	(Legen	d) (0	intinuous Cutting	1st Reco 2nd Reco	mmenda ommend	ation G	eneral ma	chining	<b>●</b> :1: <b>□</b> :2:	st Recor	mmenda mmenda	ation In	terrupted	Cutting	#:1s	t Recomr nd Recom	nendatio mendatio
		K	Cast Iron							0	•					#	
Recomm	nended	S	Exotic Alloy								•					•	•
Applic	ation	Н	Hardened Steel	0	9	#	•	•	#								
		Sint	ered Components								•			•			
																	ΩZ

**Uncoated SUMIBORON** 

	One-l	Use typ	oe / 5°	Positiv	e (With	Hole)
- 1						

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10 BNX20	BNX25	BN1000	BN2000	BN350	BN500	CZL/NG	BN/000	BN7115		BNS8125	NCB100
		NU-VBGW 110302			0.2	3.2												
	Standard	110304	1	1	0.4	2.8 *1												
		110308			0.8	2.0 *2									<b>A</b>			
	I I am Davistanaa	NU-VBGW 110302LT			0.2	3.2		-	_		-	- -	- -	-  -	- -	- -		-
	L Low Resistance T Negative Land	110304LT	1	1	0.4	2.8	_	-	_		-	- -	- -	-  -	- -	- -		-
		110308LT			0.8	2.0	_	_	_		_		_  -	_ -		_		
	H Strong Edge	NU-VBGW 110302HS			0.2	3.2		-	_		-	-						
Neg	Negative Land	110304HS	1	1	0.4	2.8		-	_		-	-						
	With Honing	110308HS			0.8	2.0	- -	-	_		_	-						_

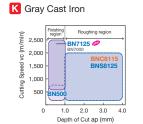
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-VBGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

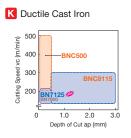
\*1: NCB100 cutting edge length is 2.5.

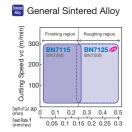
#### Multi-Cornered One-Use type / 5° Positive (With Hole)

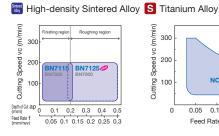
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10 BNX20	BNX25	BN1000	BN2000	BN500	BN7125	BN7000	BN700	BN7115	BN7500 BNS8125	NCB100
		2NU-VBGW 110302 @			0.2	3.2						•					
	Standard	110304	1	2	0.4	2.8		-				•	•				-
		110308			0.8	2.0		-									-

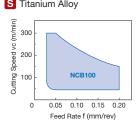
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











<sup>\*2:</sup> NCB100 cutting edge length is 1.6.





(Legen	d) [û	ordinuous Cutting	1st Reco 2nd Reco	mmenda ommenda	ation G	eneral ma	chining	<b>₩</b> :1: <b>₩</b> :2:	st Reco	mmenda mmend	ation In	terrupted	Cutting	: 1st Recommendation
	K	Cast Iron											#	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	Ð	#						
	Sint	ered Components												

Coated SUMIBORON

#### Multi-Cornered One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	<b>IC21</b>	BNC2115	BNC2125	<b>JC20</b>	VC20	BNC300	5	BNC160	JC2	BNC500	BNC8115	
		2NC-VBGW 110302			0.2	3.2		•	•	•	•						-	
	Standard	110304	1	2	0.4	2.8		•		•						•	-	
		110308			0.8	2.0		•		•						•	+	
		2NC-VBGW 110302LT			0.2	3.2	_				•	_	_	_	_	_	-	
- 🖨 🗤	L Low Resistance T Negative Land	110304LT	1	2	0.4	2.8	_	_	_	_	•	_	_	_	_	_	_	2
	Low Resistance	2NC-VBGW 110302LS			0.2	3.2		•	•	_	_					_	-	
	Negative Land	110304LS	1	2	0.4	2.8		•		_	_					_	-	_
	With Honing	110308LS			0.8	2.0		•		_	_					_	_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

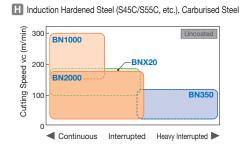


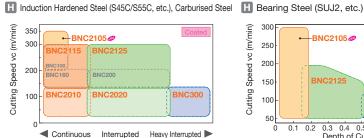
Positive Negative

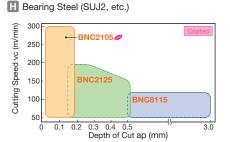
















Standard cutting edge specification BN350 BNC2105 BNC2115 BNC2125 BNX10 BNX20 BNX25 T01225 Negative S01225 S01225 S01225 S01225 T01225 S01225 S01725 S01225 S01225 Positive T01235 BN7000 BN700 BNC500 BN500 BN7125 BN7115 BN7500 BNC8115 BNS8125 NCB100 Negative S02020 T02020 S01215 T01215 T01215 T01215 T01215 T01215 T01215 Positive

VB	GW16	04	Uncoa	ated
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	4.76		

(Legen	d) (û	intinuous Cutting :	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>●</b> :1: <b>○</b> :2:	st Recor nd Reco	mmend mmend	ation In	terrupted	Cutting	#:1s (;;2r	t Recomn nd Recomn	nendation mendation
	K	Cast Iron							0	•					Ħ	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																ΩZ

**Uncoated SUMIBORON** 

#### One-Use type / 5° Positive (With Hole)

71-		<u> </u>																
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN11000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN/500	NCB100
		NU-VBGW 160402			0.2	3.8		-	-									-
	Standard	160404	1	1	0.4	3.3 *1		-	-									-
		160408			0.8	2.5 *2		-	-									-
	I I am Davietana	NU-VBGW 160402LT			0.2	3.8	_	-	- -	-	-	-	-	-	-	- -	-	- -
	L Low Resistance T Negative Land	160404LT	1	1	0.4	3.3	_	-	- -	-	-	-	-	+	-	- -	-	- -
		160408LT			0.8	2.5	_	-	- -	•	<u> </u>	_	_	-	-	_ -		-
	H Strong Edge	NU-VBGW 160404HS			0.4	3.3	-	- -	- -	-	-	-						- -
	s Negative Land With Honing	160408HS	1	1	0.8	2.5			_		_	_						-

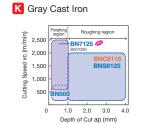
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

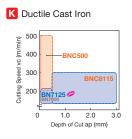
\*1: NCB100 cutting edge length is 2.5.

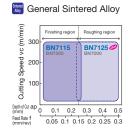
#### Multi-Cornered One-Use type / 5° Positive (With Hole)

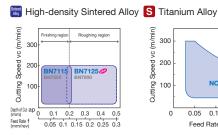
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10 BNX20	BNX25	BN1000	BN2000	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125 NCB100	
		2NU-VBGW 160404			0.4	3.3						•	•			-	-	
	Standard	160408	1	2	0.8	2.5		-				•	•			-	-	

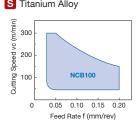
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.











<sup>\*2:</sup> NCB100 cutting edge length is 1.6.

# **SUMIBORON Inserts**





(Legen	d) [û	ortinuous Cutting	1st Reco 2nd Reco	mmenda ommenda	ation G	ieneral ma	chining	<b>●</b> :19	st Reco	mmend: mmend	ation In	terrupted	Cutting	: 1st Recommendation
	K	Cast Iron										•	Ħ	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

Coated SUMIBORON

#### Multi-Cornered One-Use type / 5° Positive (With Hole)

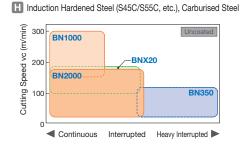
		-															
Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	8	C2	BNC2125	BNC2010	BNC2020	BNC300	PINC 160	BNC200	BNC500	BNC8115		
	2NC-VBGW 160402			0.2	3.8		•	•	•	•					_		1
Standard	160404	1	2	0.4	3.3	•								•	_		
	160408			0.8	2.5	•								•	_		
<b>.</b>	2NC-VBGW 160402LE			0.2	3.8	_	_	-	•	_[-	- -	- -	- -	-	_		]
E With Honing	160404LE	1	2	0.4	3.3	_	_	-	•	- -	- -	- -	-	-	_		
	160408LE			0.8	2.5	_	_	-	•	_ -	- -			-	_		
L Desistence	2NC-VBGW 160402LT			0.2	3.8	_	-	-	- -	•	- -	- -	-	-	_		
T Negative Land	160404LT	1	2	0.4	3.3	_	-	-	-	•	- -	- -	-	-	_		
	160408LT			0.8	2.5	_	_	_	_	•	_ -	1		_	-		
L Low Resistance	2NC-VBGW 160402LS			0.2	3.8			•	- -						_		
S Negative Land	160404LS	1	2	0.4	3.3			•	- -	-					-		
With Honing	160408LS			0.8	2.5				_	-				_	_		
	Standard  Standard  Low Resistance With Honing  Low Resistance Negative Land	Specification   Cat. No.	Specification   Cat. No.   Pack	Cutting Edge   Cat. No.   Pcs/ Pack   Cutting Edges	Cutting Edge   Cat. No.   Pcs/ Pack   Cutting Edges   Radius	Cutting Edge   Cat. No.   Pack   Cutting Edges   Edge   Length	Cat. No.   Pack   Cutting Edges   Collection   Edge Length   Edges   Standard   Cutting Edges   Cutting Edge	Cat. No.   Pack   Cutting Edges   Cat. No.   Pack   Cutting Edges   Cat. No.   Pack   Cutting Edges   Cat. No.   Cutting Edges   Cutting Edges   Cat. No.   Cutting Edges   Cat. No.	Standard       2NC-VBGW 160402       1       2       0.2       3.8       ●       ●         160404       1       2       0.4       3.3       ●       ●       ●         160408       0.8       2.5       ●       ●       ●         2NC-VBGW 160402LE       1       2       0.4       3.3       -       -         160408LE       1       2       0.4       3.3       -       -       -         160404LT       1       2       0.4       3.3       -       -       -         160408LT       1       2       0.4       3.3       -       -       -         1 Low Resistance       Negative Land       0.8       2.5       - </td <td>Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0  </td> <td>Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0  </td> <td>Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0  </td> <td>Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0  </td> <td>Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0  </td> <td>Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0  </td> <td>Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0  </td> <td>Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0  </td>	Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0	Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0	Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0	Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0	Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0	Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0	Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0	Standard   2NC-VBGW 160402   1   2   0.4   3.3   0   0   0   0   0   0   0   0   0

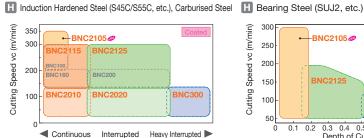
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

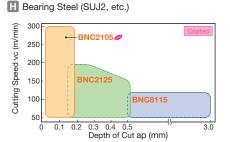
Positive Negative











R



S



Standard cutting edge specification BN1000 BN2000 BN350 BNC2105 BNC2115 BNX10 BNX20 BNX25 T01225 Negative S01225 S01225 S01225 S01225 T01225 S01225 S01725 S01225 S01225 Positive T01235 BN7000 BN700 BNC500 BN500 BN7125 BN7115 BN7500 BNC8115 BNS8125 NCB100 Negative S02020 T02020 S01215 T01215 T01215 T01215 T01215 T01215 T01215 Positive

VCGW0802	
Dimensions Inscribed Circle 4.76 Hole Dia.	2.3
(mm) Thickness 2.38	

(Legend) Continuous Cutting General machining K Cast Iron 0 × Recommended S Exotic Alloy **u** Application H Hardened Steel 0 9 耸

Uncoated SUMIBORON

One-Use typ	e / 7°	Positive	(With	Hole)

		· · · · · · · · · · · · · · · · · · ·				1			_	_	_					_		_	_
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN11000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	_
		NU-VCGW 080202			0.2	3.3		-	-	•							1	-	
	Standard	080204	1	1	0.4	2.8		-	-	•								-	
		080208			0.8	2.0		-	-	•							-		
	L Decistance	NU-VCGW 080202LT			0.2	3.3	_	-	- -	•	-	-	-	-	-	-	-	- -	
	L Low Resistance T Negative Land	080204LT	1	1	0.4	2.8	_	-	- -	•	-	$\left  - \right $	-	-	-	-	-	- -	
		080208LT			0.8	2.0	_	-	_ -	•	_	_	-	-	_			_ -	_
	H Strong Edge	NU-VCGW 080204HS			0.4	2.8	_	- -	- -	•	-	-					-	- -	-
	s Negative Land With Honing	080208HS	1	1	0.8	2.0	_												

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

VC	GW08	302		oated
Dimensions	Inscribed Circle	4.76	Hole Dia.	2.3
(mm)	Thickness	2.38		

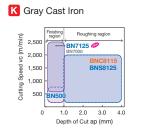
	K	Cast Iron								•	#
Recommended	S	Exotic Alloy									
Application	Н	Hardened Steel	0	•	•	0	9	#			
	Sint	ered Components									

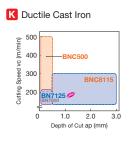
Coated SUMIBORON

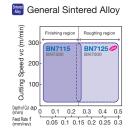
#### Multi-Cornered One-Use type / 5° Positive (With Hole)

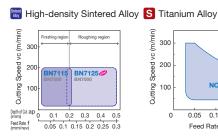
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNCZUIU	BINCEUEU	BNC300	BNC100	BNC160	BNCZUU	DUCCOUR	BNC8115	
		2NC-VCGW 080202			0.2	3.3						П	T			-		
13	Standard	080204	1	2	0.4	2.8										-	+	

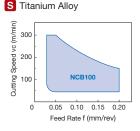
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











# **SUMIBORON Inserts**





(Legen	d) (û			ommend ommend		eneral ma	chining	<b>●</b> : 19	st Recor nd Reco	mmenda mmend	ation In	terrupted	Cutting	<b>‡</b> :19	t Recom nd Recom	nendatio mendatio
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	\$\$	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MII	во	RO	N			BINDERLESS SUMIBORON

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	BNX10	X	BNX25	BN1000	BN350	BN500	BN7125	BN7000	BN700	BN7115	005/NB	CZ18SN8
	Standard	NU-VCGW 110302 110304	1	1	0.2 0.4	3.3 2.8											-	-
	H Strong Edge Negative Land With Honing	NU-VCGW 110302HS 110304HS	1	1	0.2 0.4	3.3 2.8			_	-	_	_					-	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-VCGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

Positive

Negative

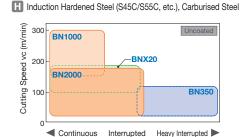
C/



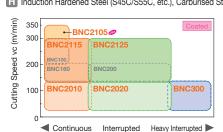


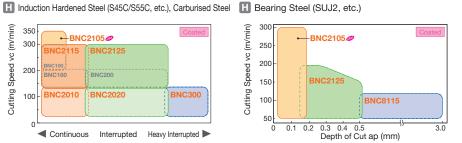


#### SUMIBORON Application Range Map



Interrupted Heavy Interrupted











	35° Diamond type	
V		

Standard cutting edge specification

Otanaara oat	mig cage op	comoanon								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	201225	S01725	S01225	T01225	S01225	201225	201225	201225	201225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	001015	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101215	101213	101215	101215	101215	_	_	101213	

VC	<b>= =</b> 16	604	Unco	ated
Dimensions	Inscribed Circle	9.525	Hole Dia.	4.4
(mm)	Thickness	4.76		

(Legen	d) (i	ortiruous Cutting	1st Reco 2nd Reco	mmend ommend	ation G	eneral ma	chining	<b>₩</b> :1: <b>₩</b> :2:	st Recor nd Reco	mmend mmend	ation Ir ation	terrupted	Cutting	#:1s ;;:2r	t Recomr nd Recom	nendation mendation
	K	Cast Iron							0	•					#	
Recommended	S	Exotic Alloy								•					•	•
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oate	ed	SU	MI	во	RO	N			JERLESS AIBORON

#### One-Use type / 7° Positive (With Hole)

71		,															
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX25	BN1000	BN2000 BN350	BN500	BN7125	BN7000	BN700	BN7115 BN7500	BNS8125	NCB100
		NU-VCGW 160404			0.4	2.8 *1							• 4			-	
	Standard	160408	1	1	0.8	1.9 *2										-	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use NS type (NS-VCGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

\*1: NCB100 cutting edge length is 2.5. \*2: NCB100 cutting edge length is 1.6.

#### Multi-Cornered One-Use type / 7° Positive (With Hole)

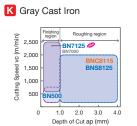
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	BNX10 BNX20	BNX25 BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	NCB100
	Standard	2NU-VCGW 160404 @	1	2	0.4	2.8						•				-	_

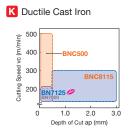
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Use 2NS type (2NS-VCGW) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

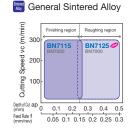
#### 7° Positive type (With Hole)

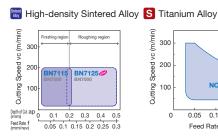
	Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10 BNX20	NX2	BN1000	BN2000	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
			VCMW 160404			0.4	5.2	•										-1	
-		Standard	160408	1	1	0.8	4.3	•				•						-	

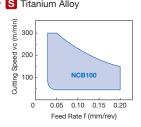
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











# **SUMIBORON Inserts**





(Legen	d) [û	ortinuous Cutting	1st Reco 2nd Reco	mmenda ommenda	ation G	ieneral ma	chining	<b>●</b> :19	st Reco	mmend: mmend	ation In	terrupted	Cutting	: 1st Recommendation
	K	Cast Iron										•	Ħ	
Recommended	S	Exotic Alloy												
Application	Н	Hardened Steel	0	•	•	0	9	#						
	Sint	ered Components												

Coated SUMIBORON

#### Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	1C2	1C2	BNC2125	JC2(	JC2(	BNC300	Š	Š	BNC200	BNC500	BNC8115	
		2NC-VCGW 160404			0.4	2.8	•	•		•	•		•	•	•		-	
	Standard	160408	1	2	0.8	1.9	•	•	•	•	•		•	•	•		_	
	L Low Resistance	2NC-VCGW 160404LS			0.4	2.8	•	•		_	-		•	•	•		-	
	s Negative Land With Honing	160408LS	1	2	0.8	1.9	•	•	•	_	_		•	•	•	_	_	
	H Strong Edge	2NC-VCGW 160404HS			0.4	2.8				•	•			•	•		_	
	s Negative Land With Honing	160408HS	1	2	0.8	1.9				•	•			•	•		_	].

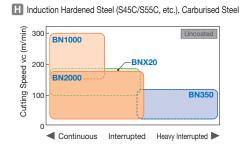
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

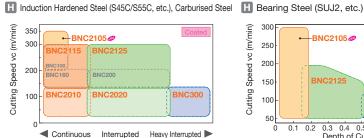
Positive Negative

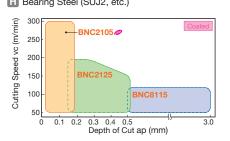














VN	<b>1</b> 16	504	Unco	pated
Dimensions	Inscribed Circle	9.525	Hole Dia.	3.81
(mm)	Thickness	4.76		

(Legend) Cortinuous Cutting General machining K Cast Iron 0 × **u** • Recommended S Exotic Alloy H Hardened Steel 9 Application # **Uncoated SUMIBORON** 

#### One-Use type / Negative (With Hole)

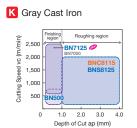
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125
		NU-VNMA 160401			0.1	3.5		-	-	•							-	=
		160402			0.2	3.3		-	-								-	-
		160404	1	1	0.4	2.8		• -	- 0								-	- -
		160408			0.8	2.0		• -	- 0						lack		-	-
6	Standard	160412			1.2	1.7		-	-								-	-
	Standard	T-NU-VNMA 160401			0.1	3.5		-	-								-	=
		160402			0.2	3.3		-	-								-	-
		160404	10	1	0.4	2.8		• -	- 0								-	-
		160408			0.8	2.0		• -	- 0								-	-1
		160412			1.2	1.7		-	-								-	-
		NS-VNMA 160404			0.4	2.8	_	- /		- -	1-	_	_	_	_	-		-
		160408	1	1	0.8	2.0	-	- 4	<b>▲</b>   -	- -	-	-	_	_	_	-	_ -	-
	Standard	T-NS-VNMA 160404			0.4	2.8	_	- 1	<u> </u>	-	-	-	_	_	_	_	_	=
		160408	10	1	0.8	2.0	-	- 1	<b> </b>	-	-	-	-	-	-	-	_ -	-
		NU-VNGA 160404			0.4	2.5	_	_	- -	-	-	-	_	_	_	_	_	+
	Standard	160408	1	1	0.8	1.6	-	-]-	- -	-	-	-	_	_	-		_ -	

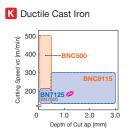
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

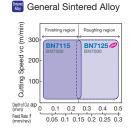
#### Multi-Cornered One-Use type / Negative (With Hole)

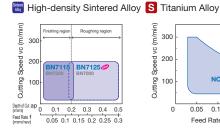
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	×	BNX20	NXS	BN1000	NZ OC	00000	BN500	621/NB	BN/000	BN700	BN7115	BN7500	BNS8125	NCB100
		2NU-VNGA 160404 160408	1	2	0.4 0.8	2.8 2.0		•	_							<b>A</b>	•	•	-	
	Standard	T-2NU-VNGA 160404 160408	10	2	0.4 0.8	2.8 2.0		•	_											

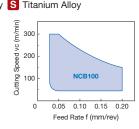
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.











#### Indexable Inserts



Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	C0100E	S01225	C0100E	S01225
Positive	101225	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101215	101215	101215	101215	_	_	101215	

VN	<b>1</b> 16	604		coated
Dimensions	Inscribed Circle	9.525	Hole Dia.	3.81
(mm)	Thickness	4.76		

(Legen	d) [û	rtinuous Cutting	1st Reco 2nd Reco	mmenda ommenda	ation G ation	eneral ma	chining	<b>₩</b> :19	st Recor nd Reco	mmenda mmenda	ation In	terrupted	Cutting	<b>‡:</b> 1s <b>‡:</b> 2r	t Recom d Recom	mendation mendation
	K	Cast Iron							0	•					Ħ	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
																SSS

Uncoated SUMIBORON

#### Multi-Cornered One-Use type / Negative (With Hole)

		71					_		_			_	_				_	_	_
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN/5000	NCB100	
		2NS-VNGA 160404			0.4	2.8	_			- -	- -	_	-	-	-	_[-		-	
		160408	1	2	0.8	2.0	_	_		_ -	- -	_	-	-	_ -	_ -	- -	-	
	Standard	T-2NS-VNGA 160404			0.4	2.8	_				-	_	_	H	_	_ -		-	1
		160408	10	2	0.8	2.0	_	_	<b>A</b>		-		_	-	-	- -		-	
		2NU-VNGM 160404N-LV			0.4	2.8				_	) <u> </u>	_	_	_	_ -	_ -			
	Light Cutting Chipbreaker	160408N-LV	1	2	0.8	2.0	_	_	_	-	-		_	-	-	_ -		-	4
		2NU-VNGA 160404LT			0.4	2.8	_		_	- 0	<u> </u>	_	=	_	_	_ -		-	
10	L Low Resistance T Negative Land	160408LT	1	2	0.8	2.0	_		_	-	-		_	_	- -	_ -		-	
		2NU-VNGA 160404HT			0.4	2.8			_		•	_	=		_	_ -		-	
	H Strong Edge T Negative Land	160408HT	1	2	0.8	2.0	_	_	_	_ -	•	-	_	_	- -	- -			
	H Strong Edge	2NU-VNGA 160404HS			0.4	2.8	_			-	-	_					-	-	1
	Negative Land With Honing	160408HS	1	2	0.8	2.0	_	-	-	-		_	•	•	•			-	
													_						4

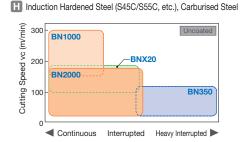
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.

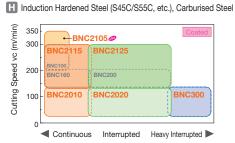
#### Negative type (With Hole)

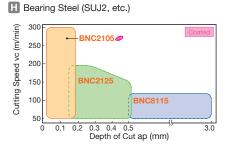
ivegative typ	e (vviti i iole)																	
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	ž	BNX20	BN1000	BN350	BN500	BN7125	BN7000	BN700	BN7115	BN/500	NCB100	V
	Standard	VNMA 160404 160408	1	1	0.4 0.8	5.0 4.1							•	•		-		ŵ

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

#### SUMIBORON Application Range Map







Positive Negative









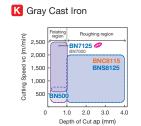
VN	<b>G</b> ■16	04	Coat	ed
Dimensions	Inscribed Circle	9.525	Hole Dia.	3.81
(mm)	Thickness	4.76		

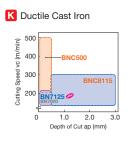
nterrupted Cutting : 1st Recommendatio (Legend) Continuous Cutting : 1st Recom General machining : 1st Recom K Cast Iron . # S Exotic Alloy Recommended Application H Hardened Steel G #

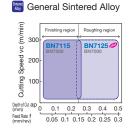
Coated SUMIBORON

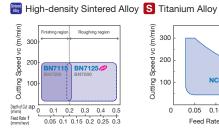
#### Multi-Cornered One-Use type / Negative (With Hole)

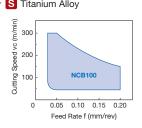
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115
		2NC-VNGA 160404			0.4	2.8				•	•						-
- 0 3	Standard	160408	1	2	0.8	2.0											-
		160412			1.2	1.7											
		4NC-VNGA 160402			0.2	3.3		•									-
- 0 13	Standard	160404	1	4	0.4	2.8	•	•									-
	Startdard	160408	'	4	8.0	2.0	•	•									-
		160412			1.2	1.7											_
	E	4NC-VNGG 160404N-FV			0.4	2.8						_	_				-
- 0 13	Finishing Chipbreaker	160408N-FV	1	4	0.8	2.0			•	•	•	_	_	•			
	Light Cutting	4NC-VNGG 160404N-LV			0.4	2.8			•	•	•			•	•		
- 0 0	Light Cutting Chipbreaker	160408N-LV	1	4	0.8	2.0			•	•	•	_		•			
		2NC-VNGA 160402LT			0.2	3.3	_	_	_		•	=	=	_	_	_	-
- 0 3	L Low Resistance	160404LT	1	2	0.4	2.8	_	_	-	-		_	_	_	-	-	-
	T Negative Land	160408LT	'		0.8	2.0	_	_	-	-		_	_	_	-	-	-
		160412LT			1.2	1.7	_	_	_			_	_	_			_
		2NC-VNGA 160402LS			0.2	3.3				-	-					-	-
- 0 13	L Low Resistance Negative Land	160404LS	1	2	0.4	2.8				-	-					-	-
	S With Honing	160408LS	'	_	0.8	2.0	•			-	-						-
		160412LS			1.2	1.7				_	_						
	L Low Resistance	4NC-VNGA 160404LS			0.4	2.8	_	_	_	-	-						-
- 0 13	Negative Land	160408LS	1	4	0.8	2.0	_	_	-	-	-					-	
	With Honing	160412LS			1.2	1.7	_		_	_							
	H Strong Edge	4NC-VNGA 160404HS			0.4	2.8	_						_				
- 0 13	Negative Land	160408HS	1	4	8.0	2.0	_										-
	With Honing	160412HS			1.2	1.7	_						_				
	E High Efficiency	4NC-VNGA 160404ES			0.4	2.8	_	_	-	-		-	-	-		-	
- 0 3	Negative Land	160408ES	1	4	0.8	2.0	_	_	-	-						-	-
	With Honing	160412ES			1.2	1.7			_								











	<b>Trigon type</b>
W	

Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101215	101215	101215	_	_	101213	

WE	BEW06	601	Unc	oated
Dimensions	Inscribed Circle	3.97	Hole Dia.	2.2
(mm)	Thickness	1.59		

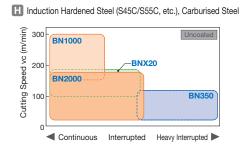
(Legen	d) (a	rtinuous Cutting	1st Reco 2nd Reco	mmenda ommenda	ation G	eneral ma	chining	<b>₩</b> :1: <b>1</b> :2:	st Recor nd Reco	mmenda mmenda	ation In	terrupted	Cutting	<b>‡:</b> 1s ‡:2r	t Recomr d Recom	nendation mendation
	K	Cast Iron							0	•					Ħ	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	\$\$	•	•	#								
	Sinte	ered Components								•			•			
																SSS

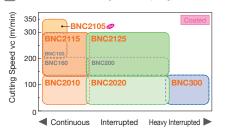
Uncoated SUMIBORON

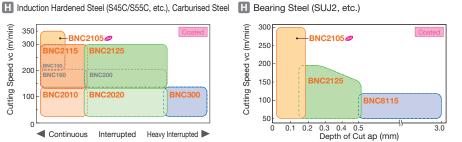
One-Use type / 5° Positive (With Hole)

-																			_
	Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN1000	BNI350	BN500	BN7125	BN7000	BN700	BN7115	BNS8125	NCB100
			NU-WBEW 060102L-LF			0.2	1.3	_	-	- -	- -	- -	- -	•	•	$\blacktriangle$			- -
		L Low Resistance F Sharp Edge	060104L-LF	1	1	0.4	1.2	_	_	_ -	_  -	- -							-
			NU-WBEW 060102L-LT			0.2	1.3	_	•	- -	- -	- -	-	-		-	-[-		-
	O	L Low Resistance Negative Land	060104L-LT	1	1	0.4	1.2	_		_ -	_ -	_   -			_	-	_ -		

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.







C/



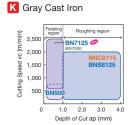
WE	BEW08	302	Und	oated
Dimensions	Inscribed Circle	4.76	Hole Dia.	2.2
(mm)	Thickness	2.38		

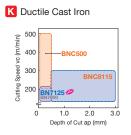
(Legend) Continuous Cutting : 1st Recor General machining : 1st Recomm K Cast Iron 0 × S Exotic Alloy **u** • Recommended Application H Hardened Steel 9 # **Uncoated SUMIBORON** 

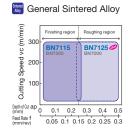
One-Use type / 5° Positive (With Hole)

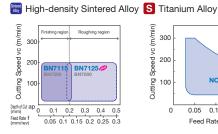
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Edge	×	꽄	BNX25	BNIOOO	BNI350	NSC	BN7125	BN7000	BN700	BN7115	BN7500	BNS8125	NCB100
0	L Low Resistance F Sharp Edge	NU-WBEW 080202L-LF 080204L-LF	1	1	0.2 0.4	1.7 1.6		_	-  -		-   - -   -							_	_
0	L Low Resistance T Negative Land	NU-WBEW 080202L-LT 080204L-LT	1	1	0.2 0.4	1.7 1.6		•	_  -		-   -			_	_		_	-	

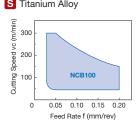
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. \*Depth of cut for one-use types is 0.5mm or less.











R

	<b>Trigon type</b>
W	

Standard cut	ting edge sp	ecification								
	BNX10	BNX20	BNX25	BN1000 BN2000	BN350	BNC2105	BNC2115 BNC2125	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300
Negative	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01225	S01225
Positive	101223	301223	301723	301223	T01235	301223	301223	301223	301223	301223
	BNC500	BN500	BN7125	BN7000 BN700	BN7115	BN7500	BNC8115	BNS8125	NCB100	
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215	
Positive	301213	101213	101213	101213	101213	101213	_	_	101213	

W	30AM	804	Unc	oated
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

(Legen	d)[û			ommend ommend	ation G	leneral ma	chining	<b>₩</b> :19	st Reco nd Reco	mmenda mmend	ation In	terrupted	Cutting	<b>‡</b> :19	it Recomm nd Recom	mendation mendation
	K	Cast Iron							0	•					*	
Recommended	S	Exotic Alloy								•					•	
Application	Н	Hardened Steel	0	9	#	•	•	#								
	Sint	ered Components								•			•			
					U	nco	oat	ed	SU	MII	во	RO	N			DERLESS

#### One-Use type / Negative (With Hole)

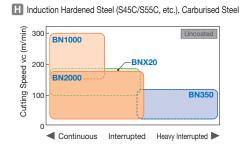
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Ž	BNX25	BN1000	BN2000	BN350	BNSUU	BNZOOO	BN700	BN7115	BN7500	BNS8125	NCB100
		NU-WNMA 080404			0.4	3.3				•				П		-		
	Standard	080408	1	1	0.8	2.8				•						-	- -	
Cutting odgo troot	mont differe by ar	l ade Regarding cutting edge specific	ations r	ot stated abo	l ove please e	ontact us t	to con	firm	who	tho	r m	nuf	acti	rinc	ı ic r	000	iblo	

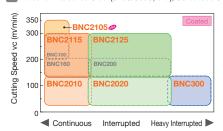
 $^{\star}\text{Use NS}$  type (NS-WNMA) for BNX25.\* Depth of cut for one-use types is 0.5mm or less.

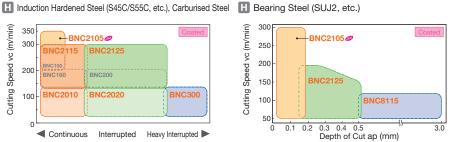
#### Negative type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BNX25	BN2000	BN350	BN500	BN7125	BN7000	BN 700	BN7500	BNS8125	NCB100
		WNMA 080404			0.4	4.5											-	_
	Standard	080408	1	1	0.8	4.4											-	-
		080412			1.2	4.3											_	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.







Negative Positive









	Trigon type
VV	

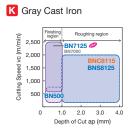
1W	JGA08	304	Coa	ated
Dimensions	Inscribed Circle	12.7	Hole Dia.	5.16
(mm)	Thickness	4.76		

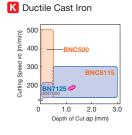
(Legend) Continuous Cutting : 1st Recom General machining : 1st Recom nterrupted Cutting : 1st Recommendatio K Cast Iron . # S Exotic Alloy Recommended Application H Hardened Steel 0 G #

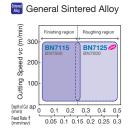
Coated SUMIBORON

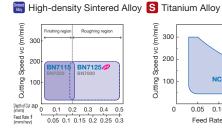
Multi-Cornered One-Use type / Negative (With Hole)																		
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC500	BNC8115	
(A) (3)		6NC-WNGA 080404			0.4	2.3		•	•	•	•						_	
	Standard	080408	1	6	0.8	2.0	•	•	•	•			•	•			_	
		080412			1.2	2.0		•		•							_	
(0)	Low Feed Wiper Insert	6NC-WNGA 080408WG	1	6	0.8	2.0		•	•	•	•			•	•		_	
0	High Feed Wiper Insert	6NC-WNGA 080408WH	1	6	0.8	1.9		•	•	•	•			•	•			
0	L Low Resistance T Negative Land	3NC-WNGA 080408LT	1	3	0.8	2.0	_	_	_	-	•	-	_	_	_	_	_	
0	L Low Resistance Negative Land With Honing	3NC-WNGA 080408LS	1	3	0.8	2.0	•	•	•	_						_	_	
0	L Low Resistance Negative Land With Honing	6NC-WNGA 080408LS	1	6	0.8	2.0	_	_	_		-		•	•	•	_	_	
0	H Strong Edge Negative Land With Honing	6NC-WNGA 080408HS	1	6	0.8	2.0	_	•	•	•	•		_	•	•			

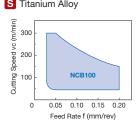
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.











# **Insert Identification Code**

Regrindable type

**CNMX 120408 (B)** 

(1) Insert ISO Code (ISO Standard Classification) (2) Additional Information Refer to Table 1

Table 1 (2) Additional Information

	<u>'</u>
Symbol	Code Description
R	Right-handed
L	Left-handed
В	Full-top PCD type
-WF	Edge with Special Land for Glossy Finishing of Aluminum Wheels
RH	Honing (Cutting Edge Treatment)

Single Corner type F - CNMX 120408 (P)

(1) Type Code Refer to Table 2

(2) Insert ISO Code (ISO Standard Classification) (3) Additional Information Refer to Table 3

Table 2 (1) Type Code

	/ / /
Symbol	Code Description
NF	NF Insert
NU	One-Use Insert (Disposable)

Table 3 (3) Additional Information

Symbol	Code Description
L	Left-handed
Р	Full-length Cutting Edge type
N-LD	Chinhyaalaar tuna (Nautral)
N-GD	Chipbreaker type (Neutral)
R-DM	Chipbreaker type (Right -handed)
L-DM	Chipbreaker type (Left-handed)

Insert Shape

Full-top PCD type	Edge With Special Land for Glossy Finishing of Aluminum Wheels	NF Insert	One-Use Insert	Full-length Cutting Edge type	Chipbreaker type
		•			



# LD type/GD type



SUMIDIA

1

Negative Positive

<u>C</u>



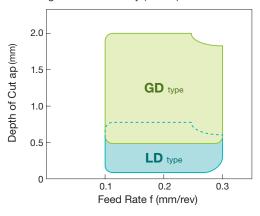






## ■ Application Range

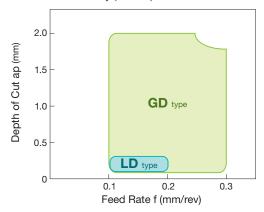
Wrought Aluminum Alloy (A6061)



#### ■ Features

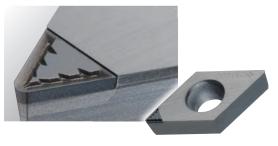
- SUMIDIA insert with chipbreaker.
- Provides excellent chip control in medium finishing and finishing of aluminum alloy.
- Solves chip control problems and dramatically improves work efficiency.
- Achieves long, stable tool life by employing high-toughness grade DA1000.

Cast Aluminum Alloy (ADC12)



#### LD type Chipbreaker for Finishing

Provides excellent chip control in finishing



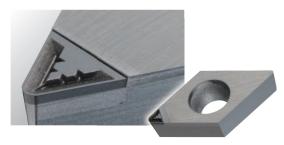
#### **■** Cutting Performance

# For Wrought Aluminum Alloy Machining Machining Details: Internal Boring of Machine Components Provides good chip control at shallow depths of cut for wrought materials BREAK MASTER LD type Without Chipbreaker Work Material : A6061, Tool Cat. No.: NF-VCMT110302N-LD (DA1000)

Cutting Conditions : vc = 200m/min, f = 0.20mm/rev, ap = 0.10mm Wet

#### **GD** type Chipbreaker for Medium Finishing

Provides excellent chip control in medium finishing



#### **■** Cutting Performance



Note: Regrinding this product will adversely affect chip control performance.

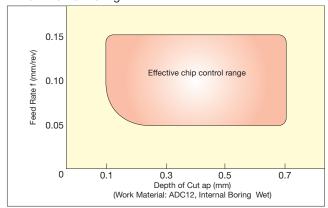
- Economy One-Use type Familiar to users of SUMIBORON one-use inserts, now available in SUMIDIA.
- Cutting Edge with Built-in Chipbreaker for Effective Chip Control

DM type chipbreaker solves chip control problems and greatly improves efficiency.

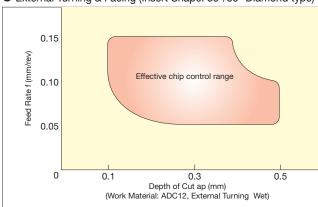


#### ■ Application Range

#### For Internal Boring



#### External Turning & Facing (Insert Shape: 55°/80° Diamond type)



#### ■ Recommended Cutting Conditions

#### Internal Boring (Insert Shape: Triangular type)

		* * * *
Feed Rate f	Depth of Cut ap	Coolant
up to 0.15 mm/rev	up to 0.7mm	Wet

#### ■ External Profiling (Insert Shape: 55°/80° Diamond type)

Feed Rate f	Depth of Cut ap	Coolant
up to 0.15 mm/rev	up to 0.5mm	Wet

For facing, depth of cut should be less than 0.4mm.



#### ■ Chip Control

#### ■ Chips Produced by BREAK MASTER DM type ■ Chips with No Chipbreaker





#### ■ Application Examples

Machining Details	Cutting Conditions	Results
Internal Boring	Work Material: AC2A-T6 vc = 300m/min f = 0.06mm/rev ap = 0.35mm Wet	With the required finished surface roughness of Ra = 1µm or less, the chips curled at lengths of 2mm or so, and did not remain within the work material.

#### ■ Series

Machining Details	Internal Boring	External Turning and Facing
Contridae Heit	NU-TPMR1103 type	_
Cartridge Unit	NU-TPMR1603 type	_
	NU-TPMT0802 type	NU-CCMT0602 type
	NU-TPMT0902 type	NU-CCMT09T3 type
Tool Holder	NU-TPMT1102 type	NU-DCMT0702 type
	NU-TPMT1103 type	NU-DCMT11T3 type
	NU-TPMT1604 type	_

(Legend) General Cutting : 1st Recommendation

N Non-Ferrous Metal Carbide/Hard Brittle Material

# **SUMIDIA Inserts**



SUMIDIA

Negative Positive

R

S

Neg.-Pos. Inscribed Circle IC 12.70 Hole Dia. Thickness S

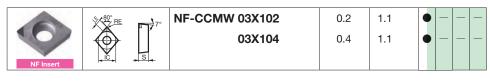
4.76

		<u>ac</u>						
			Dim	ensions (mm)	5	SUN	1IDI/	Α
Shape		Cat. No.	Corner Radius	Cutting Edge Length	DA90	DA150	DA1000	DA2200
	00°RE 10°	NF-CNMX 120402	0.2	5.5	-	_		
	5°	120404	0.4	5.4	-	_		
		120408	0.8	5.4	-	_		
NF Insert	<del>×►</del>   <del>-&gt;                                   </del>	120412	1.2	5.3	-	_		
	0°RE 10°	NU-CNMX 120402	0.2	2.8	-	_		
	5°	120404	0.4	2.8	-	_		
		120408	0.8	2.7	-	_		
One-Use	<del>×►</del> I <del>►I I </del> 5	120412	1.2	2.6	-	—		
	80°p∈ 10°	CNMX 120402	0.2	5.5				
	5°	120404	0.4	5.4		•		
		120408	0.8	5.4		•		
- I	U→					_		

7° Pos.

Thickness S

Inscribed Circle IC 4.3 Hole Dia.



120412



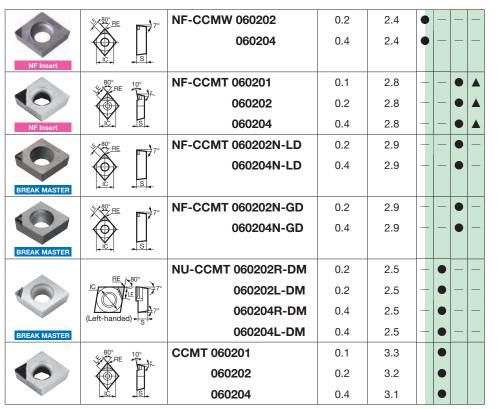
**NF-CCMW 04X102** 04X104 0.4 1.5

1.2

5.3

CC	CM	06	02	
Dimensions	Inscribed Circle IC	6.35	Hole Dia.	2.8
(mm)	Thickness S	2.38		

Thickness S



80° Diamond type

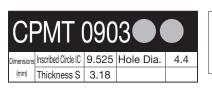
CC	CM	09	T3	
Dimensions	Inscribed Circle IC	9.525	Hole Dia.	4.4
(mm)	Thickness S	3.97		

7° Pos.

				١,	, 0.1		,	
S	hape	Cat. No.	Corner Radius RE	Cutting Edge Length	DA90	DA150	DA1000	DA2200
-	80° RE 7°	NF-CCMW 09T302	0.2	2.4	•	_		-
		09T304	0.4	2.4	•	_	-	-
NF Insert	ic s	09T308	0.8	2.3	•	_	_	_
	80° 40°	NF-CCMT 09T301	0.1	2.8	-	_		
40	80° RE 10°	09T302	0.2	2.8	-	_		
		09T304	0.4	2.8	-	_		
NF Insert	<del>                                    </del>	09T308	0.8	2.7	-	_	•	
	80° RE 7°	NF-CCMT 09T302N-LD	0.2	2.9	-	_		_
		09T304N-LD	0.4	2.9	-	_		-
BREAK MASTER	ic s	09T308N-LD	0.8	2.8	-	_		_
	80° RE 7°	NF-CCMT 09T302N-GD	0.2	2.9	-	_		-
		09T304N-GD	0.4	2.9	-	_		_
BREAK MASTER	ic s	09T308N-GD	0.8	2.8	-	_	•	
	RF ∠80°	NU-CCMT 09T302R-DM	0.2	2.5	-	•		-
100	IC 7°	09T302L-DM	0.2	2.5	-	•	-	-
	(Left-handed)	09T304R-DM	0.4	2.5	-	•	-	-
BREAK MASTER		09T304L-DM	0.4	2.5	-	•		_
	80° 10°	CCMT 09T301	0.1	4.2		•		
		09T302	0.2	4.2		•		
	IC S	09T304	0.4	4.2		•		







	80° 400 RE	10° ÷	NF-CPMT 090302	0.2	2.8	-	_	•		
10			090304	0.4	2.8	_	_	•	▲	
NF Insert	lc	s	090308	0.8	2.7	-	_	•		1
	•			•						

(Legend) General Cutting : 1st Recommendation

N Non-Ferrous Metal



Neg.

O Negative Positive







Inscribed Circle IC 12.70 Hole Dia. Thickness S 4.76

		୍ଷିକ୍ରିଟି Carbide	/Hard Brittl	e Material	•			
			Dim	ensions (mm)	5	SUN	IIDI	A
Shape		Cat. No.	Corner Radius	Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
	4.4 55° RE	NF-DNMA 150408	0.8	2.0	•	_	_	_
NF Insert		150412	1.2	2.0	•			

Neg.-Pos.

	VMX	150	4	
Dimensions			Hole Dia.	5.16
(mm)	Thickness S	4.76		

	55° RE 10°	NF-DNMX 150402	0.2	7.4	-	_	•	▲
A		150404	0.4	7.1	-	_	•	
		150408	0.8	6.7	-	_	•	
NF Insert	aic s	150412	1.2	6.2	-	_	•	
	55°RE 10°	NU-DNMX 150402	0.2	3.0	-	_		
A	5°	150404	0.4	2.8	-	_		
		150408	0.8	2.5	-	_		
One-Use	Juic Juic s	150412	1.2	2.1	-	_		
	55° RE 10°	DNMX 150402	0.2	6.4			•	
	5°	150404	0.4	6.2		•	•	
		150408	0.8	5.8		•	•	
	s I s	150412	1.2	5.4		•	•	

DC	CM	07	02	
Dimensions	Inscribed Circle IC	6.35	Hole Dia.	2.8
(mm)	Thickness S	2.38		

	% 55° RE → 7°	NF-DCMW 070202	0.2	2.6	•	-	-	-
		070204	0.4	2.4	•	_	-	-
NF Insert								
	55° 10°	NF-DCMT 070201	0.1	3.0	-	-	•	
		070202	0.2	3.0	-	_	•	
NF Insert	10 1	070204	0.4	2.8	$\left  - \right $	-	•	
	**************************************	NF-DCMT 070202N-LD	0.2	3.1	-		•	_
		070204N-LD	0.4	2.9	-	-	•	_
BREAK MASTER	V Ls							
	, 55° RE , 17°	NF-DCMT 070202N-GD	0.2	3.1	-		•	_
		070204N-GD	0.4	2.9	-	_	•	_
BREAK MASTER								
		NU-DCMT 070202R-DM	0.2	2.9	-	•	-	_
10	IC RE 55°	070202L-DM	0.2	2.9	-	•	-	_
	7°	070204R-DM	0.4	2.7	-	•	-	_
BREAK MASTER	(Left-handed)	070204L-D <b>M</b>	0.4	2.7	-	•	-	_
	55° 10°	DCMT 070201	0.1	4.3		•		
10		070202	0.2	4.2		•		
	IC. S	070204	0.4	4.0		•		

# **SUMIDIA Inserts**

#### Indexable Inserts

(Legend) General Cutting : 1st Recommendation

N Non-Ferrous Metal



DO	CM	11	T3 <b>•</b>	
Dimensions	Inscribed Circle IC	9.525	Hole Dia.	4.4
(mm)	Thickness S	3.97		

	୍ଡିଛିଟି Carbide/⊦	Hard Britt	le Material	•				
		Dim	ensions (mm)		SUN	1IDI/	4	
Shape	Cat. No.	Corner Radius RE	Cutting Edge Length	DA90	DA150	DA1000	DA2200	OCIVIDIA
\$55° RE -17°	NF-DCMW 11T302	0.2	2.6	•	_	_	-	-
	11T304	0.4	2.4	•	_	_	-	
NF Insert S	11T308	0.8	2.0	•	_	_	-	
550 400	NF-DCMT 11T301	0.1	3.0	-	_			
RE PRE	11T302	0.2	3.0	-	-			700
	11T304	0.4	2.8	-	-	•		Positive
NF Insert	11T308	0.8	2.4	-	_			Û
\$\frac{55^{\circ}}{\times}\text{RE} \frac{1}{2^{\circ}}	NF-DCMT 11T302N-LD	0.2	3.1	-	_		_	Z
	11T304N-LD	0.4	2.9	-	_	•	-	Negative
BREAK MASTER	11T308N-LD	0.8	2.5	-	_		-	IV e
\$55° RE	NF-DCMT 11T302N-GD	0.2	3.1	-	_		_	
	11T304N-GD	0.4	2.9	-	_		-	/c
BREAK MASTER	11T308N-GD	0.8	2.5	-	_		-	
IC RE 55°	NU-DCMT 11T302R-DM	0.2	2.9	-	•	_	_	ī
	11T302L-DM	0.2	2.9	-	•	-	-	_
BREAK MASTER (Left-handed)								
IC RE 55° 17°	NU-DCMT 11T304R-DM	0.4	2.7	-	•		-	
	11T304L-DM	0.4	2.7	-	•	_	-	F
BREAK MASTER (Left-handed)								
55° 10°	DCMT 11T301	0.1	4.3		•			
	11T302	0.2	4.2		•			S
	11T304	0.4	4.0		•			











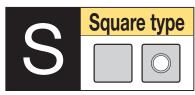








(Legend) General Cutting : 1st Recommendation



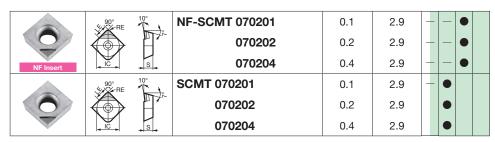
Ne

SNMA 1204●●

imensions	Inscribed Circle IC	12.70	Hole Dia.	4.76
(mm)	Thickness S	5.16		

			Recommended Application Carbides	on-Ferrous	Metal			•	
			Carbide	/Hard Brittl	e Material	•			
				Dimensions (mn					
Shape			Cat. No.	Corner Radius	Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
	90° RE	ш	NF-SNMA 120408	0.8	2.4	•	_	_	
NF Insert		S	120412	1.2	2.4	•			_

7° Pos.



11° Pos.

SPGN 0903

Dimensions Inscribed Circle IC 9.525 Hole Dia. —

(mm) Thickness S 3.18

Applicable Cartridge: CE type

	4,90° RE	÷	NF-SPGN 090304	0.4	4.8	-	_	•	
			090308	0.8	4.8	_	_	•	<b>A</b>
NF Insert	<del>4</del>	-  <u> </u>							
	,490° RE	<u>+</u>	SPGN 090302	0.2	4.8				
			090304	0.4	4.8		•		
	ic	s	090308	0.8	4.8				

SF	PGN	120	03	
Dimensions	Inscribed Circle IC		Hole Dia.	_
(mm)	Thickness S	3.18		

Applicable Cartridge: CE type

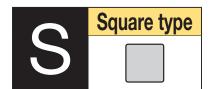
NF Insert	90° RE	NF-SPGN 120304 120308	0.4	4.8 4.8	_	_	•	<b>A</b>
	90° RE -	SPGN 120304	0.4	4.8				
		120308	0.8	4.8				
	IC S	120312	1.2	4.8				

Negative Positive

# **SUMIDIA Inserts**

#### Indexable Inserts

(Legend) General Cutting : 1st Recommendation



20° Pos.

SE	EGN	09(	03	
Dimensions	Inscribed Circle IC	9.525	Hole Dia.	_
(mm)	Thickness S	3 18		

Applicable Cartridge: CE type

			mende cation	N No	n-Ferrous	Metal			•	
			Recommende Application	Carbide/	Hard Brittl	e Material	•			
					Dim	5	SUN	IIDI	4	
Shape		Cat. No.		Corner Radius	Cutting Edge Length LE	DA90	DA150	DA1000	DA2200	
NF Insert	90° RE	NF-SEGN 0903	02		0.2	4.8	_	_	•	
	90° RE	SEGN 090302			0.2	4.8		•		
		090304			0.4	4.8				
	IC S	090308			0.8	4.8				

SE	EGN	120	)3	
Dimensions	Inscribed Circle IC	12.70	Hole Dia.	_
(mm)	Thickness S	3.18		

Applicable Cartridge: CE type

NF Insert	SS RE	NF-SEGN 120302	0.2	4.8		•	
	90° RE	SEGN 120302	0.2	4.8	•		
		120304	0.4	4.8			
	IC s	120308	8.0	4.8			







4.76

Thickness S

SUMIDIA

Negative Positive

Neg.-Pos. NMX 1604 Inscribed Circle IC 9.525 Hole Dia. 3.81

	(Legend) General Cutting	: 1st l	Recon	nmeno	dation
nended	N Non-Ferrous Metal			•	
Recomm	Carbide/Hard Brittle Material	•			
	Dimensions (mm)	S	SUN	1IDI/	Ą

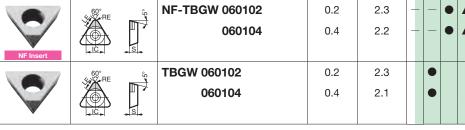
SI	nape	Cat. No.	Corner Radius	Cutting Edge Length	DA90	DA150	DA1000	DA2200
0	60° RE 10°	NF-TNMX 160402	0.2	3.7	-	_	•	
		160404	0.4	3.6	-	_	•	
NF Insert	Lic. H.s	160408	0.8	3.3	-	_	•	
0	60°RE 10°	NU-TNMX 160402	0.2	3.0	-	_		
		160404	0.4	2.9	-	_		
One-Use	IIC. Has	160408	0.8	2.6	-	_		
	60°p= 10°	TNMX 160402	0.2	3.7			•	
0	60°RE 10°	160404	0.4	3.6		•	•	
		160408	0.8	3.3		•	•	
ľ	1.3.2.	160412	1.2	3.0				

/c/

5° Pos.

0601

3.97 Hole Dia. Thickness S 1.59





(mm) Thickness S 1.59

NF Insert	60° RE	ů	NF-TBGN 060102 060104	0.2	2.1	_	_	•	<b>A</b>
	60°		TBGN 060102B	0.2	6.5		•	•	
		مناج	060104B	0.4	6.2		•	•	
	ic	s	060108B	0.8	5.7				





NF Insert	RE IC	10° %	NF-TCMT 090202 090204	0.2	2.9 2.8	_	_	•	<b>A</b>
	60° RE	10°	TCMT 090201	0.1	2.8	-			
12			090202	0.2	2.7				
		s	090204	0.4	2.6				



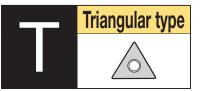
	60°	10° °	NF-TCMT 110201	0.1	3.0	-	_	•	
5			110202	0.2	2.9	-	_	•	
NF Insert		s	110204	0.4	2.8	-	_	•	
	60° RE	10°	TCMT 110201	0.1	2.8	-			
2			110202	0.2	2.7		•		
		s	110204	0.4	2.6		•		

C /

R

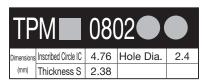
(Legend) General Cutting : 1st Recommendation

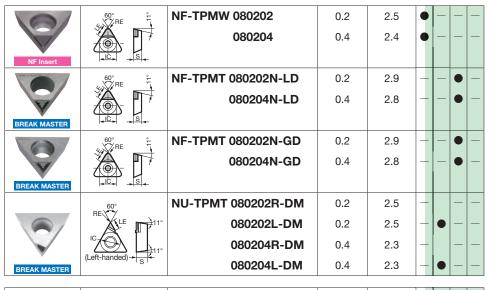
N Non-Ferrous Metal



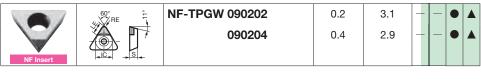
TF	PGW	08	02	
Dimensions	Inscribed Circle IC	4.76	Hole Dia.	2.4
(mm)	Thickness S	2.38		

		<del>                                    </del>					_	
	Carbide/Hard Brittle Mate							
Dimensions (mm)								A
Shape		Cat. No.	Corner Radius	Cutting Edge Length	DA90	DA150	DA1000	DA2200
	60° °F	NF-TPGW 080201	0.1	3.1	-	_	•	
		080202	0.2	3.0	-	_		
NF Insert		080204	0.4	2.9	-	_		
	60° + -	TPGW 080202	0.2	2.9		•		
		080204	0.4	2.7		•		
	S S	080208	0.8	2.4				

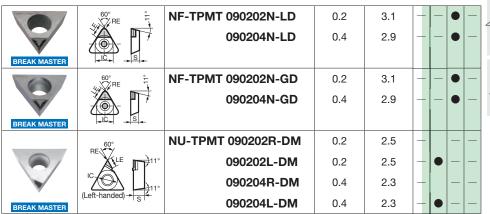






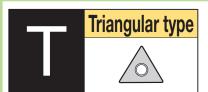




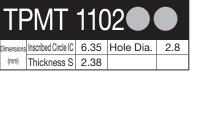


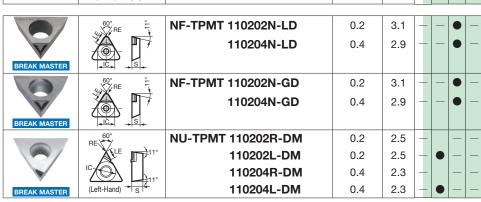
(Legend) General Cutting : 1st Recommendation

N Non-Ferrous Metal



		Carbide/F	lard Brittle M	laterial	•			
Dimensions (mm								A
Shape		Cat. No.	Corner Radius RE	Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
1	60° E	NF-TPGW 110201	0.1	3.1	-	_	•	
		110202	0.2	3.0	+	_	•	
NF Insert	ic s	110204	0.4	2.9	-	_	•	▲
	60° EE	TPGW 110202	0.2	3.7		•		
		110204	0.4	3.6		•		
		110208	0.8	3.3				

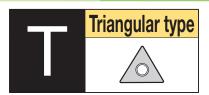




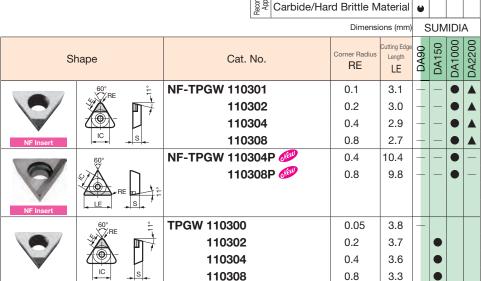
(Legend) General Cutting 

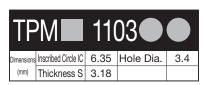
: 1st Recommendation

N Non-Ferrous Metal



TF	PGW	110	03	
Dimensions	Inscribed Circle IC	6.35	Hole Dia.	3.4
(mm)	Thickness S	3.18		





10/	60° RE	NF-TPMW 110302	0.2	2.5	•	_	-	-	
		110304	0.4	2.4	•	_	-	-	1
NF Insert	IC S	110308	0.8	2.1	•	_	-	-	
	<u>,60</u> ° 10° ±	NF-TPMT 110301	0.1	3.0	-	_	•		
	RE RE	110302	0.2	2.9	-	_	•		_
		110304	0.4	2.8	-	_	•		
NF Insert	IC S	110308	0.8	2.5	-	_	•		
	60° RE	NF-TPMT 110302N-LD	0.2	3.1	-	_	•	-	(
		110304N-LD	0.4	2.9	-	_	•	-	
BREAK MASTER	IC S	110308N-LD	0.8	2.7	-	_	•	-	
(6)	60° RE	NF-TPMT 110302N-GD	0.2	3.1	-	_	•	-	Г
V		110304N-GD	0.4	2.9	-	_	•	-	
BREAK MASTER	IC S	110308N-GD	0.8	2.7	-	_	•	-	
	60°	NU-TPMT 110302R-DM	0.2	2.5	-		_	-	
	11°	110302L-DM	0.2	2.5	-	•	-	-	
	IC III.	110304R-DM	0.4	2.3	-		-	-	
BREAK MASTER	(Left-Hand) → S	110304L-DM	0.4	2.3				_	
	60° 10° ÷	TPMT 110300	0.05	3.7	-				
6	RE I	110302	0.2	3.6					
		110304	0.4	3.5					
*	ic s	110308	8.0	3.2					
									_

(Legend) General Cutting : 1st Recommendation

SUMIDIA

1

Positive

O Negative Pc





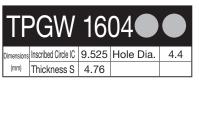




11° Pos.									
TPGW 1603●●									
Dimensions	Inscribed Circle IC	9.525	Hole Dia.	4.4					

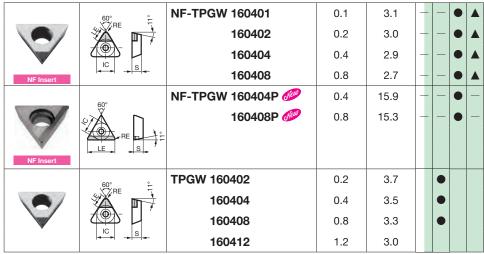
Thickness S 3.18

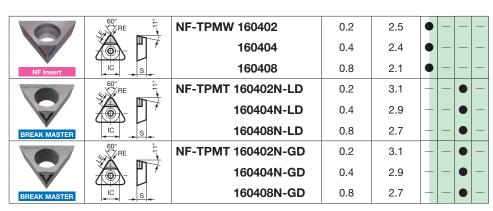
			Recommended Application	N No	n-Ferrous	Metal			•		
			Recomr Applic	Carbide/	Hard Brittl	e Material	•				
Dimensions (mm)							5	А			
SI	паре	Cat. No.  Corner Radius Length LE				06YQ	DA150	DA1000	DA2200		
	60° RE	NF-TPGW 1603	02		0.2	3.1	+	_			
		1603	04		0.4	2.9	-	_	•		
NF Insert	IC S	1603	80		8.0	2.7	-	-			



Inscribed Circle IC 9.525 Hole Dia.

Thickness S 4.76

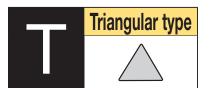




(Legend) General Cutting 

: 1st Recommendation

N Non-Ferrous Metal



**SUMIDIA Inserts** 

11° Pos.

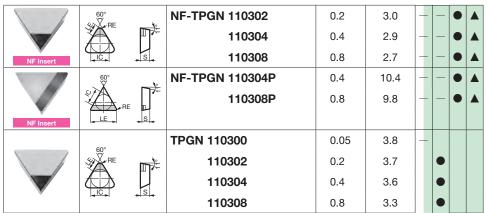
TF	PGN	090	)2	
			Hole Dia.	

(mm) Thickness S 2.38 Applicable Cartridge: CP type

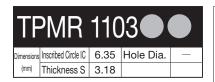
			Carbide	/Hard Brittl	e Material	•			
				Dim	ensions (mm)	5	SUN	IIDI/	A
Shape			Cat. No.	Corner Radius	Cutting Edge Length	DA90	DA150	DA1000	DA2200
	60° KRE	<b>.</b>	NF-TPGN 090202	0.2	3.1	-	_		
			090204	0.4	3.0	-	_	•	
NF Insert		s	090208	0.8	2.7	-	-		
	60°	**	TPGN 090202	0.2	3.7		•		
			090204	0.4	3.6		•		
		s	090208	0.8	3.2				

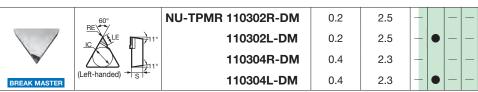
ended

TF	PGN	110	3	
Dimensions	Inscribed Circle IC	6.35	Hole Dia.	_
(mm)	Thickness S	3.18		

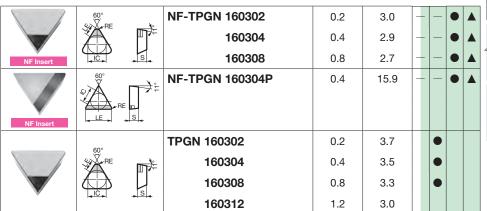


Part number suffix P: Full-length Cutting Edge type

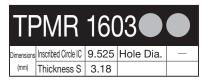




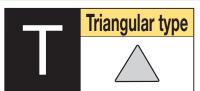




Part number suffix P: Full-length Cutting Edge type



	60°	NU-TPMR 160302R-DM	0.2	2.5	-		_	_
	IC LE 11°	160302L-DM	0.2	2.5	-	•	-	_
*		160304R-DM	0.4	2.3	-		-	-
BREAK MASTER	(Left-handed) - S	160304L-DM	0.4	2.3	_	•	-	_



20° Pos.

TEGN 1102 

Dimensions Inscribed Circle IC | 6.35 | Hole Dia. | —

Thickness S | 2.38 |

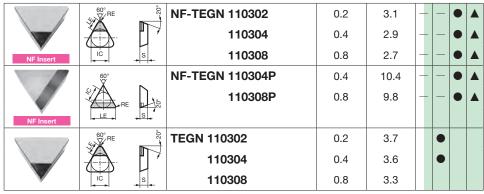
Applicable Cartridge: CE type

	(Legend) General Cutting	: 1st l	Recon	nmend	dation
mended	N Non-Ferrous Metal			•	
Recomr	Carbide/Hard Brittle Material	•			

				DIIII	ensions (mm)	0	OIV	IIDIF	١ ١
Shape			Cat. No.	Corner Radius	Cutting Edge Length	DA90	DA150	DA1000	DA2200
	60° RE	-20°	NF-TEGN 110202	0.2	3.1	+	_	•	
NF Insert	ıc	S	110204	0.4	2.9	_	_	•	<b>A</b>
	60° RE	-20°	TEGN 110202	0.2	3.7		•		
			110204	0.4	3.6				
	IC	s	110208	0.8	3.3				

TE	GN	110	300	
Dimensions	Inscribed Circle IC	6.35	Hole Dia.	_
(mm)	Thickness S	3.18		

Applicable Cartridge: CE type



Part number suffix P: Full-length Cutting Edge type

TE	EGN	160	)3	
Dimensions	Inscribed Circle IC	9.525	Hole Dia.	_
(mm)	Thickness S	3.18		
A 1'	blo Cortridge			

Applicable Cartridge: CE type

NF Insert	60° RE	0 200	NF-TEGN 160302 160304	0.2 0.4	3.0 2.9	_ _	_	•	
NF Insert	60° RE	\$ \$ \$	NF-TEGN 160304P	0.4	15.9	-	_	•	•
	60° RE	-20°	TEGN 160302	0.2	3.7		•		
			160304	0.4	3.6		•	•	
	IC	s	160308	0.8	3.3				

Part number suffix P: Full-length Cutting Edge type

TE	EGN :	220	)4	
Dimensions	Inscribed Circle IC	12.70	Hole Dia.	_
(mm)	Thickness S	4.76		

Applicable Cartridge: CE type

TEGN 220404	0.4	3.6	•	
220408	0.8	3.3		

(Legend) General Cutting : 1st Recommendation

N Non-Ferrous Metal

Carbide/Hard Brittle Material

С





2N-LD	0.2	3.8	-	_		-
4N-LD	0.4	3.4	-	_	•	-
						L
2N-GD	0.2	3.8	-	_		-
4N-GD	0.4	3.4	-	_		-
02	0.2	3.7	•	_	_	-
04	0.4	3.3	•	_	_	-
08	0.8	2.4	•	_	_	_
10	10	2.1				



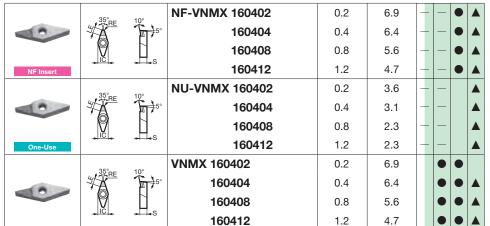
Neg.

Dimensions Inscribed Circle IC | 9.525 | Hole Dia. | 3.81 Thickness S 4.76

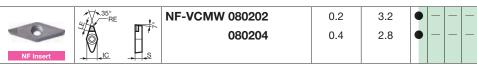
Dimensions (mm)						SUMIDIA			A
Sh	nape		Cat. No.	Corner Radius	Cutting Edge Length	DA90	DA150	DA1000	DA2200
	35° RE		NF-VNMA160408	0.8	1.9	•	_		_
		H	160412	1.2	1.7	•	-	_	_
NF Insert	, IČ ,	-□-s							

Neg.-Pos.

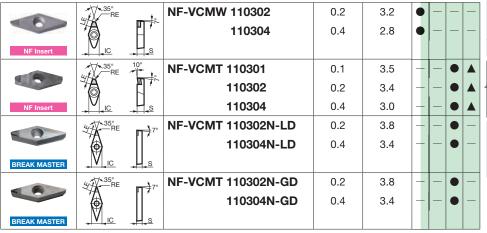
۷ſ	<b>VMX</b>	160	04	
Dimensions	Inscribed Circle IC	9.525	Hole Dia.	3.81
(mm)	Thickness S	4.76		

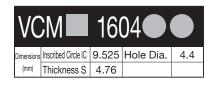












	₹ <b>/</b> 35°		NF-VCMW 160402	0.2	3.7	•	-	_	_
6	##A RE	<b>PT</b> *	160404	0.4	3.3	•	-	_	-
	9	Ħ.	160408	0.8	2.4	•	-	-	_
NF Insert	→ IC	→∏ <sub>∢S</sub>	160412	1.2	2.1	•	-	-	-
	35° RE	10°	NF-VCMT 160404	0.4	6.5	-	_		
	************************************		160408	0.8	5.6	-	-	•	
NF Insert	V <sub>IC</sub>	<u>s</u>	160412	1.2	4.6	-			

(Legend) General Cutting : 1st Recommendation



\ /	35° Diamond type
V	

	l 7° Pos.						
VC	CMT	160	)4				
Dimensions	Inscribed Circle IC	9.525	Hole Dia.	4.4			
(mm)	Thickness S	4.76					

		Recommended Application N N N	on-Ferrous	Metal			•	
		Carbide	e/Hard Brittl	e Material	•			
			Dim	ensions (mm)	5	SUN	1IDI/	4
Shape		Cat. No.	Corner Radius	Cutting Edge Length	DA90	DA150	DA1000	DA2200
4	435°RE →7	NF-VCMT 160404N-LD	0.4	6.5	-	_		_
		160408N-LD	0.8	5.6	-	_		_
BREAK MASTER	V <sub>IC</sub> U <sub>s</sub>	160412N-LD	1.2	4.8	-	_		_
	435° RE →7	NF-VCMT 160404N-GD	0.4	6.5	-	_		_
		160408N-GD	0.8	5.6	-	_		-
BREAK MASTER	V <sub>IC</sub> U <sub>s</sub>	160412N-GD	1.2	4.8	-	_		_
	35° 10°	VCMT 160408	0.8	5.8				
		160412	1.2	4.9				
	V <sub>IC</sub> L <sub>S</sub>	160412-WF	1.2	4.9				

VC	CMT	220	05	
Dimensions	Inscribed Circle IC	12.70	Hole Dia.	5.5
(mm)	Thickness S	5.56		



# **SUMIDIA Inserts**

#### Indexable Inserts

(Legend) General Cutting : 1st Recommendation



W	BMT	060	01	
Dimensions	Inscribed Circle IC	3.97	Hole Dia.	2.2
(mm)	Thickness S	1.59		

	Becommended Application Application			on-Ferrous	Metal			•		
	Recomi				/Hard Brittl	e Material	•			
					Dim	ensions (mm)	5	SUN	1IDI/	Ą
Shape Ca		Cat. N	0.		Corner Radius	Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
RE 82° 10°		NF-WBMT 060	101	L	0.1	1.8	-	_	•	
		060	102	L	0.2	1.8	-	_	•	
NF Insert	ic s	060	104	L	0.4	1.7	-	_		
	RE 82° 10°	WBMT 060101	L		0.1	1.8	-	_		
		060102	L		0.2	1.8	-	_		
	ic s	060104	L		0.4	1.7	_	_		

# SUMIDIA/SUMIDIA BINDERLESS Inserts Indexable Inserts

■ SUMIDIA BINDERLESS NPD10 Neg.			Recommended The Application Seconds	Carbide/ Hard Brittle Material		Cutting	<b>]                                    </b>			ns (mm)
	Shape		Cat.	No.	NPD10	Cutting Edge Length	Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	•		0408RH 0412RH	•	1.8 1.8	12.7 12.7	4.76 4.76	5.16 5.16	0.8 1.2	
	SNM			0408RH 0412RH	•		12.7 12.7	4.76 4.76		0.8 1.2
		VNM		0408RH 0412RH	•	1.8 1.5	9.525 9.525	4.76 4.76	3.81 3.81	0.8 1.2
	(Legend) Continuous Cutting ●: 1st Recommendation									

■ SUMIDIA	(Legend) General Cutting : 1st Recommendation								
DA90	N Non-Ferrous  Wetal  Carbide/Hard  Brittle Material								
Neg. NF	ର୍ଚ୍ଚି ଅ <sup>୯</sup> Brittle Material	•			Din	nensio	ns (mm)		
Shape	Cat. No.	DA90	Cutting	Inscribed Circle	Thickness	Hole Dia.	Corner Radius		
·		Δ	Edge Length	IC	S	D1	RE		
	NF-DNMA 150408		2.0	12.7	4.76	5.16	0.8		
	150412	•	2.0	12.7	4.76	5.16	1.2		
	NF-SNMA 120408		2.4	12.7	4.76	5.16	0.8		
9	120412	•	2.4	12.7	4.76	5.16	1.2		
	NF-VNMA 160408		1.9	9.525	4.76	3.81	0.8		
	160412		1.7	9.525	4.76	3.81	1.2		

N Non-Ferrous Metal

(Legend) General Cutting : 1st Recommendation

(Legend) Continuous Cutting : 1st Recommendation							on			
			Recommended Application	Carbide/						
				Hard Brittle	•					
Pos.				Material				Die	aanaia	ns (mm)
1 03.			æ ^	ivialeriai	_					
	Relief Angle	elgu				Cutting	Inscribed Circle	Thickness	Hole Dia.	Corner Radius
Shape	ellef /		Cat.	No.	NPD10	Edge Length				
	æ				_		IC	S	D1	RE
		CCMV		X102RH		1.3	3.5	1.4	1.9	0.2
			03	X104RH		1.3	3.5	1.4	1.9	0.4
		CCMV		X102RH		1.7	4.3	1.8	2.3	0.2
			04	X104RH		1.7	4.3	1.8	2.3	0.4
	7°				_					
		CCMV		0202RH		1.7	6.35	2.38	2.8	0.2
			06	0204RH		1.7	6.35	2.38	2.8	0.4
									L.,	
		CCMV		T302RH		1.7	9.525	3.97	4.4	0.2
				T304RH		1.7	9.525	3.97	4.4	0.4
				T308RH		1.6	9.525	3.97	4.4	8.0
		DCMV		0202RH		2.1	6.35	2.38	2.8	0.2
	7°		07	0204RH		2.0	6.35	2.38	2.8	0.4
		DCMV		T302RH		2.1	9.525	3.97	4.4	0.2
				T304RH		1.9	9.525	3.97	4.4	0.4
				T308RH		1.6	9.525	3.97	4.4	0.8
	11°	TPMW	<b>1080</b>	0202RH		1.2	4.76	2.38	2.3	0.2
			080	0204RH		1.0	4.76	2.38	2.3	0.4
10/		TPMW		0302RH		1.5	6.35	3.18	3.4	0.2
				0304RH		1.3	6.35	3.18	3.4	0.4
•				0308RH		1.0	6.35	3.18	3.4	0.8
		TPMW	/ 160	0402RH		2.2	9.525	4.76	4.4	0.2
			160	0404RH		2.0	9.525	4.76	4.4	0.4
				0408RH		1.6	9.525	4.76	4.4	0.8
		VCMV	<b>V</b> 08	0201RH		2.2	4.76	2.38	2.3	0.1
				0202RH		1.9	4.76	2.38	2.3	0.2
			08	0204RH		1.5	4.76	2.38	2.3	0.4
		VCMV	V 11	0302RH		2.1	6.35	3.18	2.8	0.2
- 0	7°		11	0304RH		1.7	6.35	3.18	2.8	0.4
	1-									
		VCMV	V 16	0402RH		2.1	9.525	4.76	4.4	0.2
				0404RH		1.7	9.525	4.76	4.4	0.4
			16	0408RH		1.8	9.525	4.76	4.4	0.8
			16	0412RH		1.5	9.525	4.76	4.4	1.2
The R portion of the					-d				<u> </u>	

Pos. NF					٠	Dimensions (mm)				
Shape	Relief Angle	Cat. No.		DA90	Cutting Edge Length	Inscribed Circle	Thickness	Hole Dia.	Corner Radius	
	æ			ш	0 0	IC	S	D1	RE	
		NF-	-CCI	MW 03X102		1.1	3.5	1.4	1.9	0.2
				03X104	•	1.1	3.5	1.4	1.9	0.4
		NF-	·CCI	MW 04X102		1.5	4.3	1.8	2.3	0.2
1				04X104	•	1.5	4.3	1.8	2.3	0.4
	7°	NF-	·CCI	MW 060202	•	2.4	6.35	2.38	2.8	0.2
				060204	•	2.4	6.35	2.38	2.8	0.4
		NF-	-CCI	MW 09T302		2.4	9.525	3.97	4.4	0.2
				09T304		2.4	9.525	3.97	4.4	0.4
				09T308		2.3	9.525	3.97	4.4	0.8
		NF-	DCI	MW 070202		2.6	6.35	2.38	2.8	0.2
	7°			070204	•	2.4	6.35	2.38	2.8	0.4
	1"	NF-	-DCI	MW 11T302		2.6	9.525	3.97	4.4	0.2
				11T304		2.4	9.525	3.97	4.4	0.4
				11T308		2.0	9.525	3.97	4.4	0.8
		NF-	·TPN	/IW 080202		2.5	4.76	2.38	2.3	0.2
	11°			080204	•	2.4	4.76	2.38	2.3	0.4
0		NF-	TPN	/W 110302		2.5	6.35	3.18	3.4	0.2
				110304		2.4	6.35	3.18	3.4	0.4
-				110308		2.1	6.35	3.18	3.4	0.8
		NF-	TPN	/IW 160402		2.5	9.525	4.76	4.4	0.2
				160404		2.4	9.525	4.76	4.4	0.4
				160408	•	2.1	9.525	4.76	4.4	0.8
		NF-	-VCN	/IW 080202		3.2	4.76	2.38	2.3	0.2
				080204		2.8	4.76	2.38	2.3	0.4
		NF-	VCN	/IW 110302		3.2	6.35	3.18	2.8	0.2
6	7°			110304	•	2.8	6.35	3.18	2.8	0.4
		NF-	VCN	/IW 160402	•	3.7	9.525	4.76	4.4	0.2
				160404		3.3	9.525	4.76	4.4	0.4
				160408		2.4	9.525	4.76	4.4	0.8
				160412		2.1	9.525	4.76	4.4	1.2

O Negative Positive





# **External Holders**

2-1 to 2-66

	indexable flead Type Quick Orlange Tool Floider	Al W Selles
		SEC-PB Tool Holders SPB series2-18
	SEC-Mini Tool Holders Zero Offset Holders	PCLC-X type / SCLC-X type / SCAC-X type2-20
		PDJC-X type / SDJC-X type2-21
		SDAC-X type / SDPC-X type2-22
		SVJC-X type / PTXN-X type2-23
	SEC-Mini Tool Holders PC series/SC series	PCLC type / SCLC type2-24
	CEC With Tool Floridoro F C conco, CC conco	SCAC type2-25
	SEC-Mini Tool Holders PD series/SD series	PDJC type / SDJC type2-26
	SEC-WITH TOOLTHOIDERS I D SELIES/SD SELIES	
D. attitus	OFO Mini To al Haldana OO a suita	SDAC type / SDNC type2-27
Positive	SEC-Mini Tool Holders SS series	SSBC type2-28
	SEC-Mini Tool Holders ST series	STGC type / STAC type2-29
	SEC-Mini Tool Holders SV series (7° Positive)	SVLC type / SVPC type2-30
	SEC-Mini Tool Holders SV series (11° Positive)	SVLP type / SVPP type2-31
	SEC-Round Shank Tool Holders	RS-SCL type2-32
		RS-SDU type / RS-SDX type2-33
		RS-SVX type / RS-SVVP type2-34
		RS-PTXN type2-35
		SEC-Wide-Cut Holders SGW series2-36
		SEC-Mini Tool Holders SBT series/PBT series2-38
		SEC-Front Turning Tool Holders SFT series2-40
		SEC-External Holders / Internal Coolant Holders ······2-42
	CN□□ Insert Applicable Holders	DCLN-J type / DCLN type ······2-43
	oreal moorey approause residence	PCLN type2-44
		PCBN type / PCFN type ······2-45
Negative	DN□□ Insert Applicable Holders	DDJN-J type / DDJN type ······2-46
	DNDD Insert Applicable Holders	DDHN type / DDNN type2-47
		PDJN type ·······2-48
Destition	DCMC Incom Applicable Halders	PRGC type / PRDC type ······2-49
Positive	RCM□ Insert Applicable Holders	PRGC type / PRDC type2-49
	SN□□ Insert Applicable Holders	DSBN type / DSDN type2-50
		DSSN type / PSBN type2-51
		PSDN type2-52
		PSSN type / PSKN type2-53
		ESBN type / ESDN type ······2-54
		ESSN type / ESKN type ······2-55
	TN□□ Insert Applicable Holders	DTGN type / DTFN type ······2-56
	''	PTGN type / PTTN type ······2-57
Negative		PTFN type2-58
11094410		ETGN type / ETAN type ······2-59
		ETFN type2-60
		ETEN type / ETXN type ······2-61
		AT IN two / MTVN two was a second sec
	VAIDE I A. II. I	MTJN type / MTXN type2-62
	VN□□ Insert Applicable Holders	DVJN-J type / DVJN type ·····2-63
		DVVN type / DVQN type ······2-64

WN□□ Insert Applicable Holders

DWLN-J type / DWLN type .... PWLN type / MWLN type ......

<sup>•</sup> mark: Standard stocked item

mark: To be replaced with the new item featured on the same page

<sup>▲</sup> mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

<sup>\*</sup> mark: Semi-standard stocked (please confirm stock availability)

O mark: Stock or planned stock (please confirm stock availability) Blank: Made-to-order item

<sup>mark: Not available</sup> 

# **APM** series



Negative



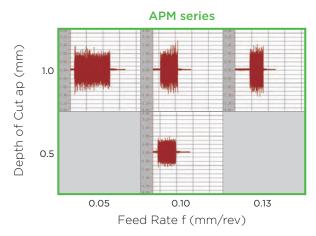
■ Cutting Performance

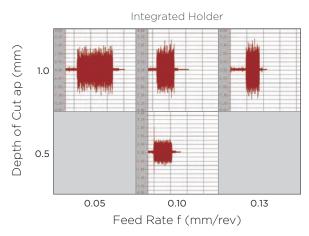
Low vibration

#### ■ Features

- Tool changeover time reduced Mounting / removing the head alone improves workability and safety when changing the insert, reducing machine downtime at changeovers thus increasing productivity
- Excellent head change repeatability High-accuracy polygon taper shape achieves change repeatability within 5µm
- Lineup of 10, 12 and 16mm shank sizes support a wide range of CNC autolathes, etc.
- Supports front turning, back turning, grooving, and cut-off
- Internal coolant supply design, supports coolant supply without hose

The APM series realises low vibration performance equivalent to that of integrated holders

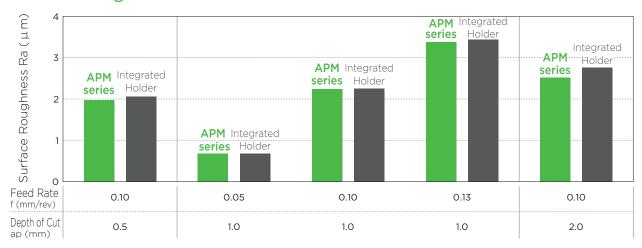




Work Material: SUS420J2 Tool: Shank: APM-R1212X84J Head: APM12-SDJCR11T3J Insert: DCGT11T302MN-SI (AC1030U) Cutting Conditions: vc = 80m/min f = 0.05, 0.10, 0.13mm/rev ap=0.5, 1.0mm Wet

#### Machined surface roughness

The APM series realises machined surface roughness equivalent to that of integrated holders

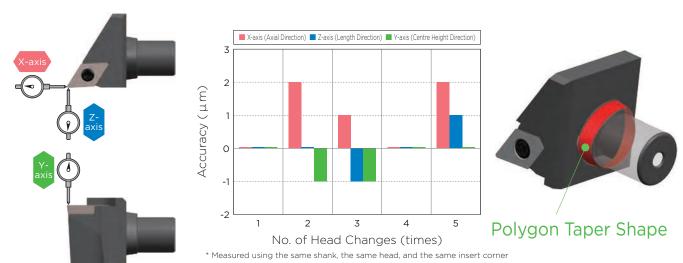


Work Material: SUS420J2 Tool: Shank: APM-R1212X84J Head: APM12-SDJCR11T3J Insert: DCGT11T302MN-SI (AC1030U) Cutting Conditions: vc = 80m/min f = 0.05, 0.10, 0.13mm/rev ap=0.5, 1.0, 2.0mm Wet

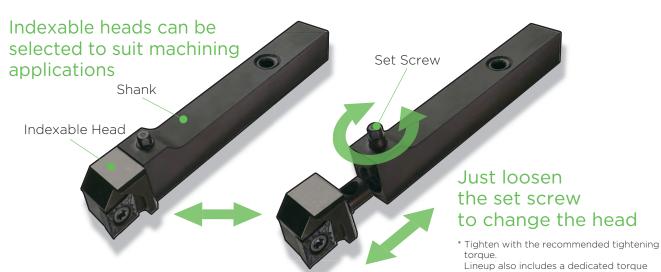
# APM series

#### ■ Head Change Repeatability

## Polygon taper shape achieves change repeatability within $5\mu m$

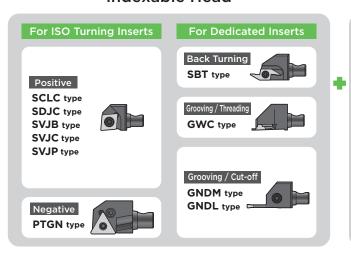


#### ■ Head Change Structure



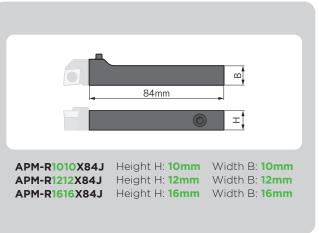
#### ■ APM series Combination Examples





#### Shank

wrench (sold separately).



Positive Negative

S

Others

# **APM** series

#### ■ Head Lineup

Grooving / Cut-off General External Turning (Negative)

Grooving Grooving Grooving Threading

Application / Model / Si











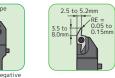


Insert Shape

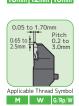












O Negative Positive

External Holders

2

#### ■ Tooling Selection

A 1: 1:	External Turning									
Applications	General Turning / Facing General Turni		ng / Profiling	General Turning	Back Turning					
Insert Shape Clamp Mechanism	80° Diamond type (Positive)	55° Diamond type (Positive)	35° Diamond type (Positive)	Triangular type (Negative)	Dedicated Insert (BT type)					
Screw-on	SCLC type	SDJC type	SVJB type / SVJC type SVJP type	-	SBT type					
Lever Lock	-	_	_	PTGN type	_					

Amplications	External Grooving / Threading / Cut-off								
Applications	Grooving	Threading	Grooving / Cut-off						
Insert Shape	Dedicated Insert	Dedicated Insert	Dedicated Insert						
Clamp Mechanism	(TGA type)	(TTE type)	(GCM type / GCG type)						
Screw-on	GWC type	GWC type	_						
Clamp-on	-	-	GNDM type GNDL type						

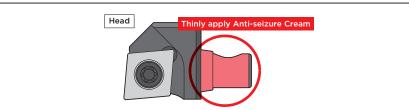
# Holder

### **Quick Change Holder APM series Precautions for Use**

#### ■ Anti-seizure Cream (APM-P)

When removing the head, it may be difficult to take out even when the set screw has been loosened. As a countermeasure, use dedicated Anti-seizure Cream APM-P to enable smooth removal.

#### **Application Method**



After cleaning the head polygon taper and shaft, apply a thin layer of dedicated Anti-seizure Cream APM-P with a rag or similar.

\* Anti-seizure Cream (APM-P) has been applied before packaging.

#### **Anti-seizure Cream**

Cat. No.	Stock	
АРМ-Р	•	

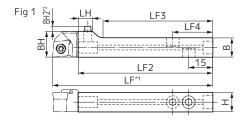
Anti-seizure Cream is sold separately.

### PM series









External Holders

Positive

Negative





S







Others

Shank

**Parts** Dimensions (mm)

		Height	Width	Overall	Width	Protrusion Width	Head	Length	Length			Set Screw		Plug	Torque Wrench
Cat. No.	Stock	Н	В	LF2	ВН	BH2	LH	LF3	LF4	Applicable Size	Fig	60	(N·m)		
APM-R1010X84J	•	10	10	84	13.5	3	9	69.0	25	10	1	BTT0507H	7.0	APM-M8P	TRDRS3530(*)
APM-R1212X84J		12	12	84	16.0	3	9	68.5	25	12	1	BTT0510H	3.0	APIVI-IVIOP	
APM-R1616X84J		16	16	84	20.0	4	10	68.0	27	16	1	BTT0611H	4.0	APM-G1/8P	TRDRS4540(*)

Select shanks and heads with matching applicable size. \*1 See head tables for specific LF dimensions (set dimensions).

Fig 1 (Standard hex type)





Parts (Set Screw)

Dimensions (mm)

Cat. No.	Stock	Screw Standard	Overall Length	Applicable Shank	(N·m	Fig
BTT 0507H		SW3.5	10.0	APM-R1010X84J	3.0	1
BTT 0510H		SW3.5	12.5	APM-R1212X84J	3.0	1
BTT 0611H		SW4.5	14.5	APM-R1616X84J	4.0	1
BTT 0507T		T10	7.0	APM-R1010X84J	3.0	2
BTT 0510T		T10	9.5	APM-R1212X84J	3.0	2
PTT 0611T		TOO	10.5	ADM_R1616Y8/LI	4.0	2

| ● | T20 | 10.5 | APM-R1616X84J | **4.0** | 2 Suffix H: Hex (Packaged with the shank: For the wrench, use the torque wrench below or a commercially available wrench.) Suffix T: Torx (sold separately: use a commercially available wrench)

#### **Set Screw Torque Wrench**

		•			
Cat. No.	Stock	Screw Standard	Torque Value (N·m)	Applicable Shank	
TRDRS3530		CMZE	3.0	APM-R1010X84J	
טככככאטאו		3003.5	3.0	APM-R1212X84J	
TRDRS4540		SW4.5	4.0	APM-R1616X84J	(For hex)

Torque wrench is sold separately. Dedicated for set screw part number suffix H (Hex type).

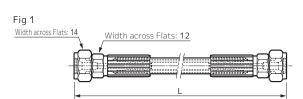


#### Piping Parts (Adapter)

	)		Dim	nensions	(mr
1	Screw Standard	External Diameter	Applicable	Shank	Fig

Cat. No.	JUULK	OCLEM OFGUNDEN	ociew organiana	External Diameter	Applicable Sharik	FIG	
J-M8-G1/8-U			G1/8	ø15	APM-R1010X84J	1	
				0.13	APM-R1212X84J		
J-G1/8-G1/8-U		G1/8	G1/8	ø18	APM-R1616X84J	1	

Adapter is sold separately.

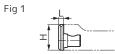


#### Piping Parts (Hose)

_		- :	- /	
L	Dimen	sion	5 (	mm,

				0111101131011	J ()
Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200	•	200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300		300	G1/8	G1/8	1

Hoses are sold separately.



#### Parts (Stopper Plug)

Dimensions (mm)

Cat. No.	Stock	L	Н	Applicable Shank	Fig
APM10-PLUG		2.2	13.4	APM-R1010X84J	1
APM12-PLUG		3.0	15.9	APM-R1212X84J	1
APM16-PLUG		4.0	19.9	APM-R1616X84J	1

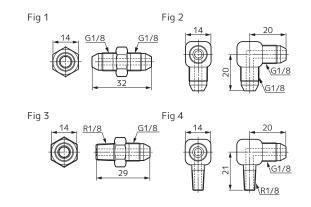
Use the stopper plug to protect the shank joint part when the head is not mounted. (Sold separately)



#### Piping Parts (Plug)

	-			
Cat. No.	Stock	Screw Standard	Applicable Shank	Fig
АРМ-М8Р	•	M8	APM-R1010X84J APM-R1212X84J	1
APM-G1/8P		G1/8	APM-R1616X84J	1

The shank is shipped with two plugs mounted.



#### **Piping Parts (Connector)**

Dimensions (mm)

Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-G1/8-00		G1/8	G1/8	1
J-G1/8-G1/8-90		G1/8	G1/8	2
J-G1/8-R1/8-00	•	G1/8	R1/8	3
J-G1/8-R1/8-90		G1/8	R1/8	4

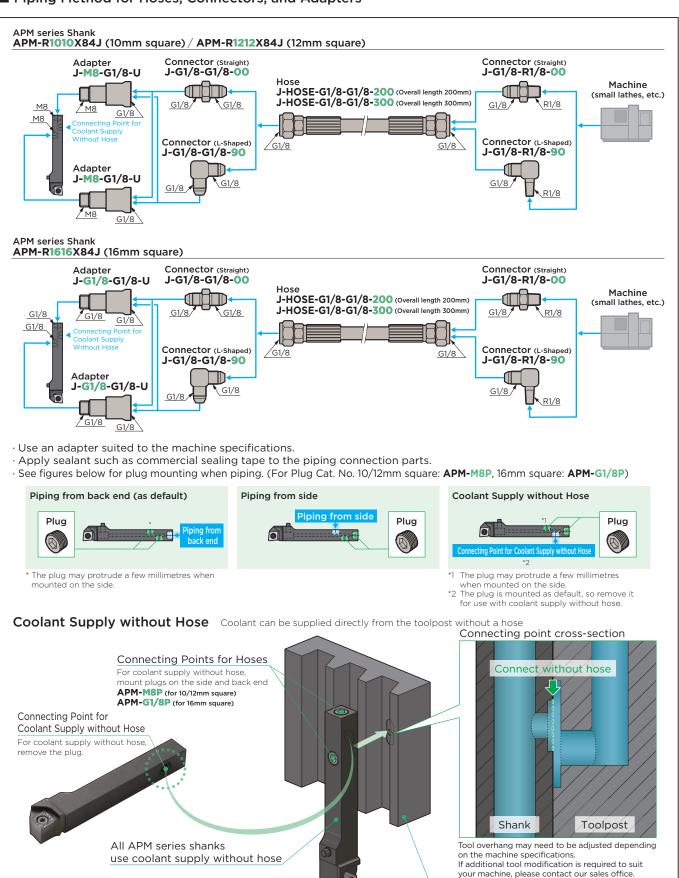
Connectors are sold separately.

<sup>\*2</sup> BH2 = 0mm when using the separately sold set screw (Torx type: BTTOOOT).

<sup>\*</sup> Torque wrench is sold separately from the shank.

### **APM** series

#### ■ Piping Method for Hoses, Connectors, and Adapters



Note: When using external coolant supply, attach a plug at the back end as well.

Compatible Toolpost for Coolant Supply

without Hose





Cat. No.

APM10-SCLC R0602J

APM12-SCLC R0602J

APM16-SCLC R0602J

APM10-SCLC R09T3J

APM12-SCLC R09T3J

APM16-SCLC R09T3J









External Turning Screw-on, Internal Coolant Supply

**Parts** 

BFTX02506N

BFTX0409N

Flat Insert Screw

(N·m

1.5

3.4

Dimensions (mm)

Wrench

(For Torx hole)

TRX08(\*)

TRX15(\*)

**External Turning and Facing** External Holders

Fig 1

Height

Н

11.9

13.9

17.9

11.9

13.9

17.9

Stock

LF (From insert tip to back end of mounted shank)

Overal Length

LF

100

100

100

100

100

100

Offset

WF2

0

0

0

0

0

0

HF

10

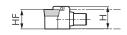
12

16

10

12

16



Head

LH

16

16

16

16

16

16

WF

13.5

16.0

20.0

13.5

16.0

20.0

Figure shows right-handed (R) tool.

Applicable Insert

Cat. No.

CC□T0602

CC□T09T3

Head

**Positive** 

2

Negative









Refer to shank selection for applicable shank. \* Wrenches are sold separately from heads.



Fig 1









External Turning Screw-on, Internal Coolant Supply

Applicable

Size

10

12 1

16 1

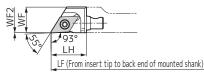
10 1

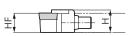
12 1

16 1

Fig

Fig 2

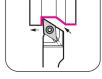




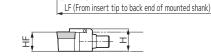
16

Figure shows right-handed (R) tool.

**SDJC** External/Profiling S















Head											Parts		Dimensions (mm)
		Height	Head	Cutting Edge Distance	Cutting Edge Height	Offset		Applicable Insert			Flat Insert Screw		Wrench
Cat. No.	Stock	Н	LH	WF	HF	WF2	Length LF	Cat. No.	Applicable Size	Fig		(N·m)	(For Torx hole)
APM10-SDJC R0702J		11.9	16	13.5	10	0	100		10	1			
APM12-SDJC R0702J		13.9	16	16.0	12	0	100	DC□T0702	12	1	BFTX02506N	1.5	TRX08(*)
APM16-SDJC R0702J		17.9	16	20.0	16	0	100		16	1			
APM10-SDJC R11T3J		11.9	20	13.5	10	0	104		10	1			
APM12-SDJC R11T3J		13.9	22	16.0	12	0	106	DC□T11T3	12	2	BFTX0409N	3.4	TRX15(*)

0 106

**APM16-SDJC R11T3J** ● 17.9 22 | 20.0 | 16 Refer to shank selection for applicable shank.

\* Wrenches are sold separately from heads.







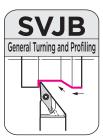


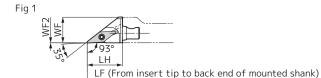




External Turning

Screw-on, Internal Coolant Supply





1

Figure shows right-handed (R) tool.

пеац											Parts		Dimensions (mm)
		Height	Head	Cutting Edge	Cutting Edge	Offset		Applicable Insert			Flat Insert Sc	rew	Wrench
Cat. No.	Stock	Н	LH	WF	Height <b>HF</b>	WF2	Length LF	Cat. No.	Applicable Size	Fig		(N·m)	(For Torx hole)
APM10-SVJB R1103J APM12-SVJB R1103J	•	11.9 13.9	22 22	13.5 16.0	10 12	0	106 106	VB□T1103	10 12	1	BFTX02508NV	1.5	TRX08(*)
APM16-SVJB R1103J		17.9	72	20.0	16	0	106		16	1			

Refer to shank selection for applicable shank. \* Wrenches are sold separately from heads.









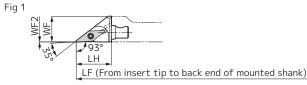




External Turning

Screw-on, Internal Coolant Supply





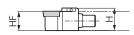


Figure shows right-handed (R) tool.

r	iead											Parts		Dimensions (mm)
			Height	Head	Cutting Edge Distance	Cutting Edge Height	Offset	Overall Length	Applicable Insert			Flat Insert Sc	rew	Wrench
	Cat. No.	Stock	Н	LH	WF	HF	WF2	LF	Cat. No.	Applicable Size	Fig		(N·m)	(For Torx hole)
1	APM10-SVJC R1103J	•	11.9	22	13.5	10	0	106		10	1			
1	APM12-SVJC R1103J		13.9	22	16.0	12	0	106	VC□T1103	12	1	BFTX02508NV	1.5	TRX08(*)
1	APM16-SVJC R1103J		17.9	22	20.0	16	0	106		16	1			

Refer to shank selection for applicable shank. \* Wrenches are sold separately from heads.









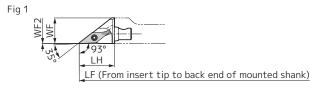






External Turning Screw-on, Internal Coolant Supply





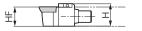


Figure shows right-handed (R) tool.

ь	lead											Parts		Dimensions (mm)
			Height	Head	Cutting Edge Distance	Cutting Edge	Offset		Applicable Insert			Flat Insert Sc	rew	Wrench
	Cat. No.	Stock	Н	LH	WF	Height <b>HF</b>	WF2	LF	Cat. No.	Applicable Size	Fig		(N·m)	(For Torx hole)
1	APM10-SVJP R1103J		11.9	22	13.5	10	0	106		10	1			
A	<b>APM12-SVJP R1103J</b>		13.9	22	16.0	12	0	106	VP□T1103	12	1	BFTX02508NV	1.5	TRX08(*)
1	<b>APM16-SVJP R1103J</b>		17.9	22	20.0	16	0	106		16	1			

Refer to shank selection for applicable shank.

Refer to the chapter 1 for applicable inserts.

External Holders

Positive

Negative

















Others

<sup>\*</sup> Wrenches are sold separately from heads.

### **APM** series











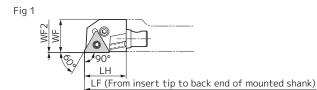


External Turning Lever Lock, Internal Coolant Supply

External Holders







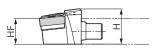


Figure shows right-handed (R) tool.

Negative Positive









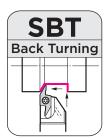


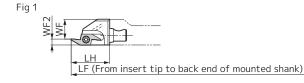


Head											Parts				Dime	ensions (mm)
		Height	Head	Cutting Edge Distance	Cutting Edge Height	Offset		Applicable Insert			Lever Pin	Bolt		Shim	Shim Retainer	Wrench
Cat. No.	Stock	Н	LH	WF	HF	WF2	Length LF	Cat. No.	Applicable Size	Fig		6	(N·m			(For hexagonal hole)
APM16-PTGN R1604J		22	26	20.5	16	0.5	110	TN□□1604	16	1	LCL3APM	LCS3APM	3.5	LST317APM	LSP3APM	LH025(*)

Refer to shank selection for applicable shank.

\* Wrenches are sold separately from heads.





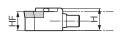
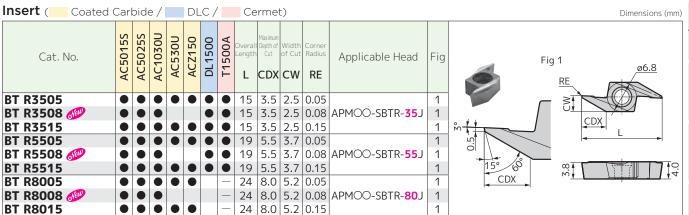


Figure shows right-handed (R) tool.

Head											Parts		Dimensions (mm)
		Height	Head		Cutting Edge	Offset		Applicable Insert			Flat Insert S	crew	Wrench
Cat. No.	Stock			Distance	Height		Length		Applicable	Fig			/3
Cat. No.	Stock	Н	LH	WF	HF	WF2	LF	Cat. No.	Size	1 19		N·m	
													(For Torx hole)
APM10-SBT R-35J	•	11.9	22	11.0	10	2.5	106		10	1			
APM12-SBT R-35J		13.9	22	13.5	12	2.5	106	BTR <b>35</b> 00	12	1	BFTX0307N	2.0	TRX10(*)
APM16-SBT R-35J		17.9	22	17.5	16	2.5	106		16	1			
APM10-SBT R-55J		11.9	22	9.8	10	3.7	106		10	1			
APM12-SBT R-55J		13.9	24	12.3	12	3.7	108	BTR <b>55</b> 00	12	1	BFTX0307N	2.0	TRX10(*)
APM16-SBT R-55J		17.9	24	16.3	16	3.7	108		16	1			
APM12-SBT R-80J		13.9	30	10.8	12	5.2	114	BTR <b>80</b> 00	12	1	BFTX0307N	2.0	TRX10(*)
APM16-SBT R-80J		17.9	30	14.8	16	5.2	114	DINOUCC	16	1	וויייייייייייייייייייייייייייייייייייי	2.0	I N

Refer to shank selection for applicable shank.

<sup>\*</sup> Wrenches are sold separately from heads.



### **Recommended Cutting Conditions**

Work Material	P Free-Cu	itting Steel	P Carb	on Steel	M Stainl	ess Steel	S Exot	ic Alloy	Non-Fe	rrous Metal	
Tooling	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging	Traverse Cut	_
Tool Grades		J/ACZ150 DOA		530U/ACZ150 00A		015S/AC5025S /ACZ150		015S 025S	DL1	500	
Cutting Speed vc (m/min)	50 to	150	50 to	o 150	50 to	o 150	20 t	o 80	150 to	300	
Feed Rate f (mm/rev)	0.02 to 0.10	0.02 to 0.15	0.02 to 0.05	0.02 to 0.10	0.02 to 0.04	0.02 to 0.06	0.01 to 0.03	0.01 to 0.04	0.02 to 0.05	0.02 to 0.10	

## **APM** series











External Shallow Grooving Screw-on

External Holders

2

Negative Positive

**External Grooving** 

Fig 1 LF (From insert tip to back end of mounted shank)

Fig 2 LF (From insert tip to back end of mounted shank)

Head **Parts** Dimensions (mm)

		Height	Head	Cutting Edge Distance	Cutting Edge	Step	Offset	Overall Length	Width of Cut			Applicable Insert		Flat Insert	Screw	Wrench
Cat. No.	Stock	Н	LH	WF			WF2	Lengen	CW	Maximum Groove Depth	Applicable Size	Cat. No.	Fig		(N·m)	(For Torx hole)
APM10-GWC R-R3J		18.3	20	13.5	10	3	0	104	0.33 to 3.00	0.8 to 2.5	10		1			
APM12-GWC R-R3J		18.4	22	16.0	12	1	0	106	0.33 to 3.00	0.8 to 2.5	12	TGAR3···	1	BFTX0409N	3.4*1	TRX15(*2)
APM16-GWC R-R3J		21.4	22	20.0	16	_	0	106	0.33 to 3.00	0.8 to 2.5	16		1			
APM10-GWC R13.5-L3J		18.3	20	_	10	3	13.5	104	0.33 to 3.00	0.8 to 2.5	10		2			
APM12-GWC R16-L3J		18.4	22	_	12	1	16.0	106	0.33 to 3.00	0.8 to 2.5	12	TGAL3···	2	BFTX0409N	3.4*1	TRX15(*2)
APM16-GWC R20-L3J		21.4	22	_	16	_	20.0	106	0.33 to 3.00	0.8 to 2.5	16		2			

Refer to shank selection for applicable shank.

\*1 Cermet inserts have a recommended tightening torque of 4N·m.

Right-handed (part number suffix: -R3J) heads are used with right-handed (R) inserts.

#### Selecting GWC series Heads

	Integrated Holder	Ria	ht-handed (R)	Le	ft-handed (L)
)	APM series	ļ			ded (R) With Offset
	APM series Shank		APM-ROO)	<b>(84J</b> (Con	nmon)
1	GWC series Head	APMOO-	GWC R-R3J	APMOO-	GWC R OO -L3J Offset Dimensions
	Applicable Insert	TGA R3C	)00	TGA L3C	000
	GWC series Head Mounted Appearance	No Offset	Shank: Common  Head: No Offset, Right-handed  Insert: Right-handed	With	Shank: Common  Head: With Offset, Right-handed  Insert: Left-handed



Others

### Rake Angle When Mounted on the Head ( $\alpha$ °)

Coated Carbide	Carbide	DLC	Coated Cermet	Cermet
AC5015S AC5025S AC530U	H1	DL1500	T2500Z	T1500A
10°	20°	10°	10°	5°

2-12

<sup>\*2</sup> Wrenches are sold separately from heads.

Rake Angle by Grade (Grooving)

Honing Honing

Honing 15°
Sharp Edged 25°
Sharp Edged 25°
Honing 15°
Sharp Edged 10°

Grade
Coated Carbide AC5015S
Coated Carbide AC5025S

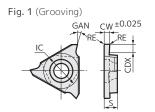
Coated Carbide AC530U

Carbide

Coated Cermet

S

## **APM series**



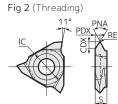


Figure shows right-handed (R) tool.

Insert (Grooving) (									d Cai		_		LC /		Cerm			I		Dimensions	(mm
C + N+ *1	AC5	015S	AC5	025S	AC5	30U	Н	1	DL1	500	T25	00Z	T15	00A	Width of Cut	Maximum Groove Depth	Corner Radius	Inscribed Circle	Thickness	Applicable	Fig
Cat. No.*1	R	L	R	L	R	L	R	L	R	L	R	L	R	L	CW	CDX	RE	IC	S	Head	Fig
TGA R/L3033(E)					•		•	•			•	•	•	•	0.33	0.8	0.05	9.525	3.18		1
TGA R/L3043(E)															0.43	0.8	0.05	9.525	3.18		1
TGA R/L3050(E)					•	•	•	•	•	•	•		•	•	0.50	1.2		9.525			1
TGA R/L3053(E) 🐠															0.53	1.2	0.05	9.525	3.18		1
TGA R/L3065(E) 🐠															0.65	1.2	0.05	9.525	3.18		1
TGA R/L3075(E)							•	•	•	•	•	•	•	•	0.75	2.0	0.1*2	9.525	3.18		1
TGA R/L3080(E) 🐠															0.80	2.0	0.1*2	9.525	3.18		1
TGA R/L3095(E)															0.95	2.0	0.1*2	9.525	3.18		1
TGA R/L3100(E)				•						•					1.00	2.0	0.1*2	9.525	3.18		1
TGA R/L3110(E)	•														1.10	2.0	0.1*2	9.525	3.18		1
TGA R/L3120(E)															1.20	2.0	0.1*2	9.525	3.18		1
TGA R/L3125(E)															1.25	2.0	0.1*2	9.525	3.18		1
TGA R/L3130(E)															1.30	2.0	0.1*2	9.525	3.18	APMOO-	1
TGA R/L3135(E)															1.35	2.0	0.1*2	9.525	3.18	GWCR-R3J	1
TGA R/L3140(E)															1.40	2.0	0.1*2	9.525	3.18	APMOO-	1
TGA R/L3145(E)															1.45	2.0	0.1*2	9.525	3.18	GWCR	1
TGA R/L3150(E)				•											1.50	2.0	0.1*2	9.525		-L3J	1
TGA R/L3160(E) @															1.60	2.0	0.1*2	9.525	3.18		1
TGA R/L3165(E)					•							•	•	•	1.65	2.0	0.1*2	9.525	3.18		1
TGA R/L3175(E)															1.75	2.0	0.1*2	9.525	3.18		1
TGA R/L3185(E)															1.85	2.0	0.1*2	9.525	3.18		1
TGA R/L3200(E)		•	•	•	•	•	•	•		•	•	•	•	•	2.00	2.5	0.1*2	9.525	3.18		1
TGA R/L3220(E)											•			•	2.20	2.5	0.1*2	9.525	3.18		1
TGA R/L3230(E)															2.30	2.5	0.1*2	9.525	3.18		1
TGA R/L3250(E)															2.50	2.5	0.1*2	9.525	3.18		1
TGA R/L3265(E)															2.65	2.5		9.525			1
TGA R/L3270(E)											•			•	2.70	2.5	0.1*2	9.525	3.18		1
TGA R/L3280(E)															2.80	2.5	0.1*2	9.525	3.18		1
TGA R/L3300(E) 🐠	•	•		•											3.00	2.5	0.1*2	9.525	3.18		1

<sup>\*1</sup> Add E as the part number suffix for T1500A. Right-handed (R) inserts are used with right-handed (part number suffix: -R3J) heads.

### **Recommended Cutting Conditions**

Work Material	E	General Ste	el	M Stainl	ess Steel	S Exotic Alloy	Non-Fer	rous Metal
Tool Grades	AC530U	T2500Z	T1500A	AC5015S AC5025S	AC530U	AC5015S AC5025S	Н1	DL1500
Cutting Speed vc (m/min)	50 to 200	100 to 180	100 to 180	50 to 200	50 to 200	20 to 80	up to 300	up to 300
Feed Rate f (mm/rev)	0.02 to 0.10	0.05 to 0.10	0.05 to 0.08	0.02 to 0.10	0.02 to 0.10	0.01 to 0.03	0.05	0.15

Insert (	60°/55° Ge	ne	ral S	Scr	ew	for	Thi	rea	din	<b>g)</b> (		Coated Car	bide /	DL	_C /		erme	/		Dimensions	(mm)
		AC5	0155	AC5	025S	AC10	030U	DL1	500	T15	00A	Pitcl	า	Corner Radius	X Direction	Depth of Cut	Included Angle	Inscribed Circle	Thickness	Applicable	<u> </u>
	Cat. No.	R	L	R	L	R	L	R	L	R	L	mm	Threads/Inch	RE	PDX	CDX	PNA	IC	S	Head	Fig
TTE R/I	36002075	•	•	•	•	•	•	•	•		•	0.20 to 0.75	80 to 32	0.05	0.55	0.65	60	9.525	3.18	APMOO-	2
TTE R/I	<b>.</b> 36005125											0.50 to 1.25	56 to 20	0.05	1.00	1.30	60	9.525	3.18	GWCR-R3J	2
TTE R/I	<b>_3601015</b>											1.00 to 1.50	24 to 16	0.10	1.30	1.80	60	9.525	3.18		2
TTE R/I	<b>L3601530</b>											1.50 to 3.00									2
TTE R/I	_3554816											_	48 to 16	0.05	1.00	1.50	55	9.525	3.18	GWCR	2
TTE R/I	<b>L3552008</b>											_	20 to 8	0.10	1.50	2.40	55	9.525	3.18	-L3J	2

Right-handed (R) inserts are used with right-handed (part number suffix: -R3J) heads.

<sup>\*2</sup> T1500A is RE = 0.2

 $<sup>\</sup>mbox{\ensuremath{^{\star}}}$  SEC-Grooving Tools GWC series can also be used.

SEC-Grooving Tools GWC series can also be used.

### series











Height

**21.9** 

21.9

**21.9 28.5** 

Stock Н

21.9 Head

LH

28.5

28.5

28 5

Refer to shank selection for applicable shank. Select heads and inserts with matching width of cut CW.

\* For traverse cutting (groove expansion), use a multi-functional or profiling insert.

WF2

0

0

20

20

LF

112

112

112

112

For Small Lathes, External Multi-Functional (Grooving, Traverse Cutting and Profiling) Clamp-on

LF (From insert tip to back end of mounted shank)

**Parts** 

BX0515

Fig

Size

16

16

16 2

16

Flat Insert Screw

(N·m

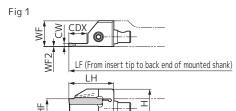
Dimensions (mm)

4.0 LH040(\*)

Wrench

External Holders





WF

20

20

HF

16

16

16

16

Fig 2

CDX

13.0

13.0

13.0

13.0

Head

APM16-GNDMR-213J APM16-GNDMR-313J APM16-GNDMR20-213J APM16-GNDMR20-313J

**Positive** 

Negative

R





External Grooving (for Small Lathes)

0



Cat. No.



\* Wrenches are sold separately from heads.



The maximum groove depth CDX is the figure during grooving.





External Deep Grooving & Cut-off Clamp-on

Мах.

Cut-off

Dia.

26

26

26

26

Fig 2

Vidth of Cut

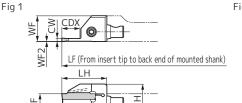
CW

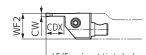
2.00

3.00

2.00

3.00





LF (From insert tip to back end of mounted shank)

S







Others

Head													Parts	D	imensions (mm)
		Height	Head	Cutting Edge Distance	Cutting Edge Height	Offset	Overall Length	Width of Cut	Maximum Groove Depth				Flat Insert S	crew	Wrench
Cat. No.	Stock	Н	LH	WF	HF	WF2	LF	CW	CDX	Max. Cut-off Dia.	Applicable Size	Fig	BX0515	(N·m	LH040(*)
APM10-GNDLR-1.2509J	0	13.9	22	13.5	10	0	106	1.25	9.0	18	10	1			2.10.10( )
APM10-GNDLR-1.509J	0	13.9	22	13.5	10	0	106	1.50	9.0	18	10	1			
APM10-GNDLR-209J		13.9	22	13.5	10	0	106	2.00	9.0	18	10	10 1			
APM10-GNDLR-309J		13.9	22	13.5	10	0	106	3.00	9.0	18	10		BFTX0412N	z 0	1715 10(*)
APM10-GNDLR13.5-1.2509J	0	13.9	22	-	10	13.5	106	1.25	9.0	18	10	2	DF I AU4 I ZIV	3.0	L115-10(")
APM10-GNDLR13.5-1.509J	0	13.9	22	-	10	13.5	106	1.50	9.0	18	10	2			
APM10-GNDLR13.5-209J		13.9	22	_	10	13.5	106	2.00	9.0	18	10	2			
APM10-GNDLR13.5-309J		13.9	22	_	10	13.5	106	3.00	9.0	18	10	2			
APM12-GNDLR-1.2512J	0	17.9	28	16	12	0	112	1.25	12.0	24	12	1			
APM12-GNDLR-1.512J	0	17.9	28	16	12	0	112	1.50	12.0	24	12	BFTX0412			
APM12-GNDLR-213J		17.9	28	16	12	0	112	2.00	13.0	26	12				
APM12-GNDLR-313J		17.9	28	16	12	0	112	3.00	13.0	26	12		DETVOAAON	7.0	LT45 40(*)
APM12-GNDLR16-1.2512J	0	17.9	28	_	12	16	112	1.25	12.0	24	12		BF 1 XU4 1 ZN	5.0	LT15-10(*)
APM12-GNDLR16-1.512J	0	17.9	28	_	12	16	112	1.50	12.0	24	12				

112

112

117

117

117

117

117

117

117

2.00

3.00

1.25

1.50

2.00

3.00

1.25

1.50

2.00

13.0

13.0

12.5

12.5

16.0

16.0

12.5

12.5

16.0

APM16-GNDLR20-316J **21.9** 33 16 20 117 3.00 16.0 Refer to shank selection for applicable shank. Select heads and inserts with matching width of cut CW.

20

20

20

20

\* Wrenches are sold separately from heads.

APM12-GNDLR16-213J

APM12-GNDLR16-313J

APM16-GNDLR-1.2512.5J

APM16-GNDLR20-1.2512.5J

APM16-GNDLR20-1.512.5J

**APM16-GNDLR20-216J** 

APM16-GNDLR-1.512.5J

APM16-GNDLR-216J

APM16-GNDLR-316J

The maximum groove depth CDX is the figure during grooving.

● 17.9

0 21.9

O 21.9 • 21.9

17.9

21.9

21.9

21.9

21.9

28

28

33

33

28.5

28.5

33

28.5

28.5

12

12

16

16

16

16

16

16

16

16

16

0

0

0

0

20

20

20

BX0515

4.0 LH040(\*)

12

12

16

16 1

16

16

16 2

16 2

16

16

26

26

25

25

32

32

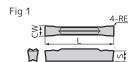
25

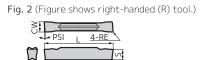
25

32

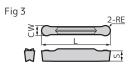
32

#### Inserts for GNDM-J type / GNDL-J type

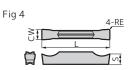




Dimensions (mm)



( Coated Carbide / Cermet / Cemented Carbide / DLC)



2.0 ±0.08 0.03 22.4 3.6

**3.0** ±0.08 0.03 22.4 3.8

3.0 ±0.080.0322.43.8

#### **Grooving / Traverse Cutting**

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	C		Corner Radius	Length	Thickness <b>S</b>	Pcs/Pack	Fig
<b>GCM N3002-MG</b>									_	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-MG									_	3.0	±0.03	0.4	21.1	3.8	Э	1
GCM N2002-ML	_	_	_	_				•	_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML											±0.03					1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1

#### Cut-off (Hand

Cat. No.

GCM R2002-CG-05 GCM L2002-CG-05 GCM R3002-CG-05 GCM L3002-CG-05 GCM R20003-CF-10 GCM L20003-CF-10 GCM R30003-CF-10

GCM L30003-CF-10

GCM R20003-CF-15 GCM L20003-CF-15

GCM R30003-CF-15

GCM L30003-CF-15

	ec	l E	Ξd	ge	<del>)</del> )						Din	nensi	ons (	mm)	
	AC830P	50155	50255	3520U	1530U	AC1030U	Lead Angle	Width	of Cut	Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig	
	¥	BC	8	A	A	AC	PSI	Width of Cut	Tolerance	RE	L	S	PC		
)						_	5°	2.0	±0.03	0.2	21.1	3.6		2	
)						_	5°	2.0	±0.03	0.2	21.1	3.6	Е	2	
)						_	5°	3.0	±0.03	0.2	21.3	3.8	5	2	
)						-	5°	3.0	±0.03	0.2	21.3	3.8		2	
-	_			_	_	•	10°	2.0	±0.08	0.03	22.4	3.6		2	
	-			-	-		10°	2.0	±0.08	0.03	22.4	3.6		2	
	_			_	_	•	10°	3.0	±0.08	0.03	22.4	3.8		2	
	_			_	-		10°	3.0	±0.08	0.03	22.4	3.8	5	2	
	_			_			15°	2.0	+0.08	0 03	22.4	3.6	.)	2	

GCMR: Right-handed, GCML: Left-handed

#### Grooving / Cut-off

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	Width  C' Width of Cut		Radius	Overall Length	Thickness <b>S</b>	Pcs/Pack	Fig
GCM N2002-GG		•	•		•	•	•		_	2.0	±0.03	0.2	21.1	3.6	_	1
GCM N3002-GG						•	•		_	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL									_	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL									_	2.0	±0.03	0.4	21.1	3.6	5	1
GCM N3002-GL									_	3.0	±0.03	0.2	21.1	3.8	J	1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N125005-GF	_	-	_	_	_	-	-		_	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	_	_	_	_	_	_	_		_	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	-		_	_						2.0	±0.03	0.2	21.1	3.6	5	1
N2004-GF			_	_						2.0	±0.03	0.4	21.1	3.6	J	1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1

#### External Profiling / External Radius Grooving

	-	•									_				(
Cat. No.	8025P	8035P	425K	50155	50255	520U	530U	500A	Width	of Cut	Corner Radius	Overall Length	Thickness	s/Pack	Fig
	AC.	S S	A	AC	AC	AC	R	12	Width of Cut	Tolerance	RE	L	S	Pcs	
<b>GCM N3015-RG</b>									3.0	±0.03	1.5	21.1	3.8	5	3

• 15°

• 15°

• 15°

### Profiling / Radius Grooving / Necking

r ronning / ix	aaic	13 0		, A 11	פי	/	1100	>KIII	9	Dir	nensi	ons (	mm)
Cat. No.	AC8025P AC8035P	AC830P AC425K	AC5015S	AC520U	AC530U		С	of Cut <b>W</b> Tolerance	Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
<b>GCM N2010-RN</b>		- -	•				2.0	±0.03	1.0	21.7	3.6	5	3
N3015-RN							3.0	±0.03	1.5	22.6	3.8	5	3

No	n-Ferrous	5 P	1e	tals						Din	nensi	ons (	mm)
	Cat. No.	H10	DL1500				С	of Cut <b>W</b> Tolerance	Corner Radius		Thickness <b>S</b>	Pcs/Pack	Fig
GC	G N2002-GA N3002-GA		•					±0.025				5	4
	N3UUZ-GA						5.0	<u> T</u> U.UZ3	U.Z	21.1	5.0		4

#### Part Number Suffix Code (Chipbreakers)

Туре	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed
C /	GG	Grooving / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed
Cut-on	GF	Grooving / Low cutting force

Туре	Symbol	Applications
Cut-off (Handed Edge)	CG	Cut-off / General-purpose
Cut-on (Handed Edge)	CF	Cut-off / Low cutting force
External Profiling / External Radius Grooving	RG	Profiling / General-purpose
Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
For Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

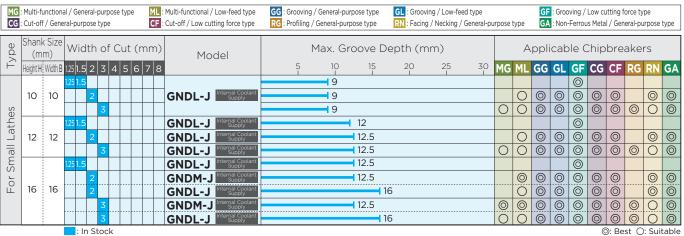
Select heads and inserts with matching width of cut (CW).

Negative

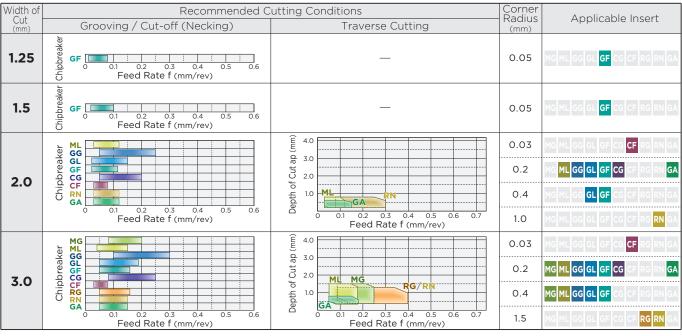
Dimensions (mm)

### **APM** series

#### **GND series Head Lineup**



#### GND series Head Recommended Cutting Conditions (Feed Rate / Depth of Cut)



In cut-off applications, reduce the feed rate to around 30% to 50% near the centre of the workpiece.

#### GND series Head Recommended Cutting Conditions (Cutting Speed by Work Material)

	Work Material	P (	Carbon	Steel /	Alloy St	teel	M St	ainless	Steel		K Cas	t Iron		S Exot	ic Alloy	Non-Ferrous Metal
,	Tool Grades	AC8025P	AC8035P AC830P	AC5015S AC520U	AC5025S AC530U AC1030U	T2500A	AC8035P AC830P	AC5015S AC520U	AC5025S AC530U AC1030U	AC8025P	AC425K	AC5015S AC520U	AC5025S AC530U AC1030U	AC5015S AC520U	AC5025S AC530U AC1030U	H10 DL1500
	Cutting Speed vc (m/min)	80 to 250	80 to 200	80 to 200	50 to 200	50 to 200	70 to 150	70 to 150	50 to 150	80 to 200	80 to 200	60 to 200	50 to 200	20 to 80	20 to 60	150 to 300

#### **Selecting GND series Heads**

Integrated Holder	Right-handed (R)	Left-handed (L)
APM series	Right-handed (R) No Offset	Right-handed ( <b>R</b> ) With Offset
APM series Shank	APM-ROOX8	<b>34J</b> (Common)
GND series Head	APMOO-GND□ R-OOOJ	APMOO-GND ROOO-OOOJ
Applicable Insert	Cor	nmon
GND series Head Mounted Appearance	Shank: Common  Head: No Offset, Right-handed  Insert: Common	Shank: Common  Head: With Offset, Right-handed  Insert: Common

Negative

/c

D

R











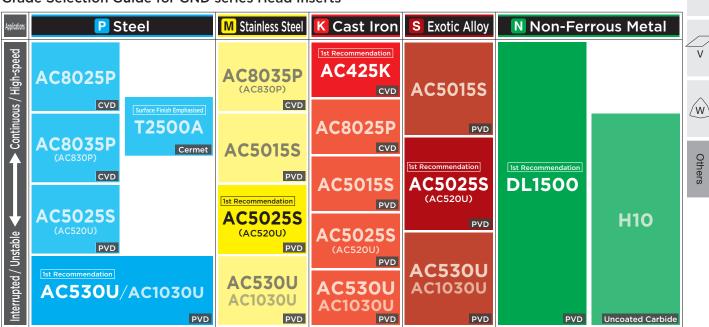
Others

### APM series

#### Chipbreaker Selection Guide for GND series Head Inserts



#### **Grade Selection Guide for GND series Head Inserts**



Positive Negative

ʹС,

R

S

٧

## PB series

■ Grade Application

Steel/

General Stee SK Material

0

Austenitic

 $\bigcirc$ 

0

Applicable

Insert

Grade

**BL130** 

Work Material

Negative Positive











Holder



Stainless Steel

Martensitic Ferritic

0

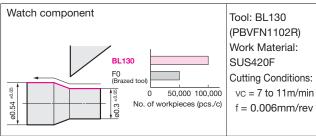
Brass/ Aluminum Alloy

 $\bigcirc$ 

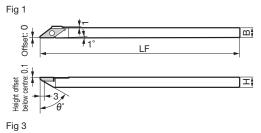
#### ■ Features

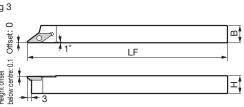
- High rigidity type tools for gang-type NC lathes
- Inserts for various applications can be used on a single holder
- Can also be used on turret-type toolposts
- Uncoated insert blanks are stocked so cutting edges can be ground as required
- BL130 has wear resistance similar to coated grades and sharpness similar to uncoated grades
- Ultra-fine grained cemented carbide grade F1, typically used for brazed tools, is now available for indexable inserts

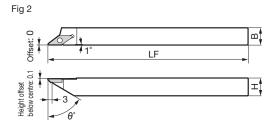
#### ■ Application Examples



Very Small Diameter Part Turning Screw-on







**Parts** 

Figure shows right-handed (R) tool.

Dimensions (mm)

											D	01.0.01.0 (11.11.)
			Sto	ock						Flat Insert So	crew	Wrench
	Toolpost	Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length  LF	Relief Angle $ heta^\circ$	Fig		(N·m)	(For Torx hole)
П		SPB R/L0707-70			7	7	140	70	1	BFTX02505N	1.1	
П		SPB R/L0808-60			8	8	140	60	2	BFTX02506N	1.5	
П	Turret type	SPB R/L0808-70			8	8	140	70	2	BFTX02505N	1.1	LT08-06
	rurret type	SPB R/L0909-70			9.5	9.5	140	70	2	BFTX02505N	1.1	L100-00
		SPB R/L1010-60			10	10	140	60	2	BFTX02506N	1.5	
		SPB R/L1212-60			12	12	140	60	2	BFTX02506N	1.5	
		SPB R/L0808		-	8	8	140	_	3	BFTX02506N	1.5	
	Gang type	SPB R/L1010		-	10	10	140	_	3	BFTX02506N	1.5	LT08-06
		SPB R/L1212		-	12	12	140	_	3	BFTX02506N	1.5	

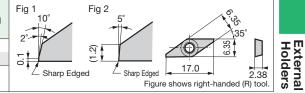
## series

Inserts ( Cemented Carbide)

#### Front Turning Insert

Dimensions (mm)

		Sto	ock		Effective		
Cat. No.	BL	130	F	1	Cutting Edge	Wiper Edge	Fig
	R	L	R	L	Length		
PBVFW 1102 R/L					1.0	Yes	1
PBVFN 1102 R/L					1.0	No	2



() is a reference value

**Positive** 

Negative

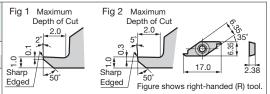
ʹС,

D

R

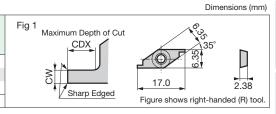
S

Back Turning Insert							
		Sto	ck		Effective		
Cat. No.	BL	130	F	1	Cutting Edge	Wiper Edge	Fig
	R	L	R	L	Length		
PBVBW 1102 R/L					1.0	Yes (2°)	1
PBVBN 1102 R/L					1.0	No (5°)	2



Grooving Insert

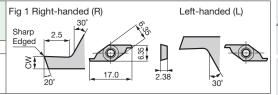
Stock Machining Groove Depth Width of Cut BL130 F1 Cat. No. Fig CW CDX RL R L PBVG 1102 R/L-030 0.5 0.3 1 PBVG 1102 R/L-050 1.0 0.5 1 PBVG 1102 R/L-100 2.0 1.0 1



Cut-off Insert

Dimensions (mm)

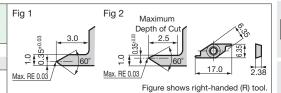
Cat. No.	BL	Sto 130	ock F	1	Max. Cut-off Dia.	Width of Cut	Fig
	R	L	R	L	Out on Dia.	OVV	
PBVC 1102 R/L-50					5.0	1.0	1



Threading Insert

Dimensions (mm)

Cat. No.	BL <sup>-</sup>	Sto 130 L	ck F	1 L	Process Pitch	Fig
PBVTF 1102 R/L					0.2 to 0.5	1
PBVTB 1102 R/L					0.2 to 0.5	2



### **Recommended Cutting Conditions**

Work Material	P Free-Cutting Steel	P Carbon Steel	M Stainless Steel	Non-Ferrous Metal							
Cutting Speed vc (m/min)	5 to 80	5 to 50	5 to 100								
Feed Rate f (mm/rev)		0.003 1	to 0.05								
Coolant	Wet (oil-based)										



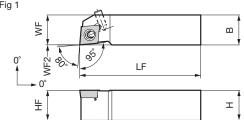












For PCLC R/L1212-K09X

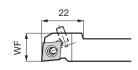


Figure shows right-handed (R) tool.

Negative Positive



















Fig 1		
	MM W	B
0°	M NES	-
	#	<b>±</b>

Holder **Parts** Dimensions (mm)

	Sto	ock							Applicable Inserts		Lever Pin	Set Screw	Pin	Wrench
Cat. No.	R	L	Height <b>H</b>	Width B	Length	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Cat. No.	Fig			1	(For Hexagonal hole)
PCLC R/L1010-K06X			10	10	125	10	10	0	CC□T0602	1	LCL06	BTT0407	LP07	TH020
PCLC R/L1212-K09X			12	12	125	15	12	0	ССПТ09Т3	1	LCL09	BTT0411	I DOG	TH020
PCLC R/L1616-K09X			16	16	125	16	16	0	00010913	1	LOLUS	B110411	LFUU	111020



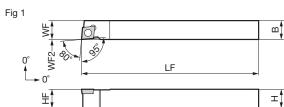


Figure shows right-handed (R) tool.

Holder	Parts	Dimensions (mm)

	Sto	ock							Applicable Inserts		Flat Insert So	crew	Wrench
Cat. No.	R	L	Height <b>H</b>	Width B		Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Cat. No.	Fig		(N·m	(For Torx hole)
SCLC R/L1010-H06X			10	10	100	10	10	0	CC□T0602	1	BFTX02506N	1.5	TRX08
SCLC R/L1215-K09X			12	15	125	15	12	0	ССПТ09Т3	1	BFTX0409N	3.4	TRX15
SCLC R/L1215-F09X*			12	15	85	15	12	0	CCD10913	1	DF17040911	3.4	ILUVIO



**External Turning** 

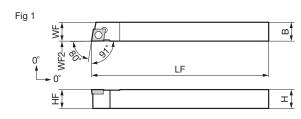


Figure shows right-handed (R) tool.

ŀ	Holder											Parts		Dimensions (mm)
		St	ock							Applicable Inserts		Flat Insert So	crew	Wrench
	Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Offset WF2	Cat. No.	Fig		(N·m)	(For Torx hole)
Γ	SCAC R/L1010-H06X			10	10	100	10	10	0	CC□T0602	1	BFTX02506N	1.5	TRX08
	SCAC R/L1215-F09X*			12	15	85	15	12	0	ССПТ09Т3	1	BFTX0409N	3.4	TRX15
	SCAC R/L1215-K09X			12	15	125	15	12	0	00010913	1	DE 17040914	3.4	IUVIO

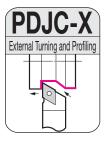
<sup>\*85</sup>mm Shank

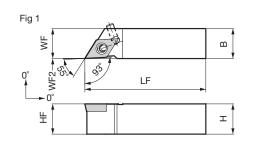












10 10 125

12 12 125

16 | 16 | 125

•

For PDJC R/L1212-K11X

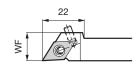


Figure shows right-handed (R) tool.

TH020

TH020

BTT0407 LP04

BTT0411 LP07

Positive

Negative

Holder										Parts		Di	imensions (mm)
	Sto	ck			 			Applicable Inserts		Lever Pin	Set Screw	Pin	Wrench
Cat. No.	R	L	Height H	Midth	"	Cutting Edge Height HF	Offset WF2	Cat. No.	Fig			1	(For Hexagonal hole)

0

0

0

DC□T0702

DC□T11T3



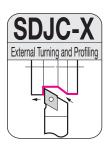


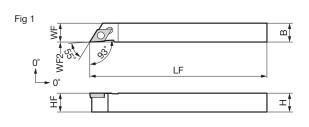
PDJC R/L1010-K07X

PDJC R/L1212-K11X

PDJC R/L1616-K11X







10

15

16

10

12

16

Figure shows right-handed (R) tool.

1 LCL06

LCL09

Holder											Parts		Dimensions (mm)
	Sto	ock							Applicable Inserts		Flat Insert Sc	rew	Wrench
Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Offset WF2	Cat. No.	Fig		(N·m)	(For Torx hole)
SDJC R/L1010-H07X			10	10	100	10	10	0	DC□T0702	1	BFTX02506N	1.5	TRX08
SDJC R/L1215-F11X*			12	15	85	15	12	0	DC□T11T3	1	BFTX0409N	3.4	TRX15
SDJC R/L1215-K11X			12	15	125	15	12	0	БОШТТТЗ	1	DI 170409N	5.4	111/13

\*85mm Shank













2



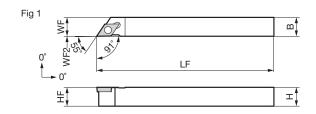


Figure shows right-handed (R) tool.

Holder

noidei											raits		Dimensions (mm)
	St	ock							Applicable Inserts		Flat Insert Sc	rew	Wrench
Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Cat. No.	Fig		(N·m)	(For Torx hole)
SDAC R/L1010-H07X	•		10	10	100	10	10	0	DC□T0702	1	BFTX02506N	1.5	TRX08
SDAC R/L1215-F11X*			12	15	85	15	12	0	DC□T11T3	1	BFTX0409N	3.4	TRX15
SDAC R/L1215-K11X			12	15	125	15	12	0	рошина	1	DI 17040911	3.4	INXIS
*85mm Shank													







Negative Positive

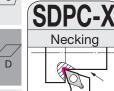
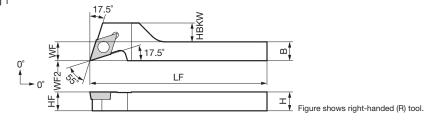


Fig 1



Holder

S











Holder												i aito	ı	imensions (mm)
	St	ock								Applicable Insert		Flat Insert So	crew	Wrench
Cat. No.	R	L	Heigh <b>H</b>	t Width		"	Cutting Edge Height <b>HF</b>	Step HBKW	Offset WF2	Cat. No.	Fig		(N·m	(For Torx hole)
SDPC R/L1010-H11X			10	10	100	10	10	10	0	DC□T11T3	1	BFTX0409N	3.4	TRX15







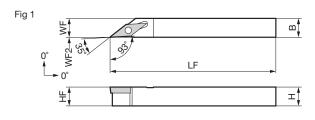


Figure shows right-handed (R) tool.

Holder											Parts		Dimensions (mm)
	St	ock							Applicable Insert		Flat Insert Sc	rew	Wrench
Cat. No.	R	L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Offset WF2	Cat. No.	Fig		(N·m	(For Torx hole)
SVJC R/L1010-H11X	•	•	10	10	100	10	10	0		1			
SVJC R/L1212-F11X*			12	12	85	12	12	0	VC□T1103	1	BFTX02508NV	1.5	TRX08
SVJC R/L1212-K11X			12	12	125	12	12	0		1			

\*85mm Shank









PTXN R1616-X16X PTXN R2020-X16X

16

20

16 120

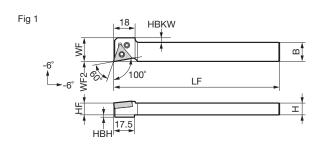
20 120

20

20

16

20



Holder **Parts** Dimensions (mm) Lever Applicable Insert Bolt Wrench Pin utting Edge utting Edge Distance Cat. No. Fig Н В HBH HBKW WF2 WF Cat. No. (For Hexagonal hole PTXN R1016-X16X 10 16 120 20 10 2 0 PTXN R1216-X16X 12 16 120 20 12 0 4 0 1

4

0

0

LCL33NT | LCS33NT | LH020NT

TN□□1604

1

0

0

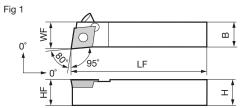
# Series/SC series



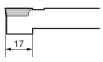




General External Turning Lever Lock



For PCLC R/L0810-K06



e shows right-handed (R) tool.

Dimensions (mm)

Dimensions (mm)

Negative Positive

Holder	<u></u> ±	0 1	,			*	<u>17</u> ►	Parts	Figu	ıre :
	Stock		Overall	Cutting Edge	Cutting Edge	Applicable Inserts		Lever Pin	Set Screw	
			Overall	Cutting Eage	Cutting Eage				1	1

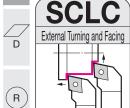
		ock			Overall			Applicable Inserts		Lever Pin	Set Screw	Pin	Wrench	
Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig				(For Hexagonal hole)	
PCLC R/L0810-K06		•	8	10	125	10.5	8	CC□□0602	1	LCL06	BTT0407	I D07	TH020	
PCLC R/L1010-K06			10	10	125	10.5	10	CCLL0002	1	LCLUG	D110407	LFUI	111020	
PCLC R/L1212-M09			12	12	150	12.5	12		1		BTT0407			
PCLC R/L1616-M09			16	16	150	16.5	16	CC□□09T3	1	LCL09	BTT0411 LP06		TH020	
PCLC R/L2020-M09			20	20	150	20.5	20	1			Б110411			





General External Turning Screw-on

Parts



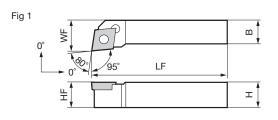


Figure shows right-handed (R) tool.

Holder











When using handed breaker inserts for facing, the holder and insert are opposite handed.



2-24

# SC series





General External Turning Screw-on



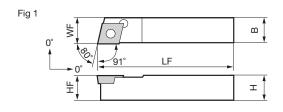


Figure shows right-handed (R) tool.

Holder										Parts		Dimensions (mm)
	St	ock						Applicable Inserts		Flat Insert Scr	ew	Wrench
Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig		(N·m)	(For Torx hole)
SCAC R/L0808-06	•		8	8	100	8.5	8	CC□□0602	1	BFTX02506N	1.5	TRX08
SCAC R/L1010-06			10	10	100	10.5	10		1	DF I AUZ SUON	1.5	INAUO
SCAC R/L1212-09			12	12	100	12.5	12		1			
SCAC R/L1616-09			16	16	100	16.5	16	CC□□09T3	1	BFTX0409N	3.4	TRX15
SCAC R/L2020-09			20	20	125	20.5	20		1			

Positive Negative









## series/SD series







General External Turning and Profiling

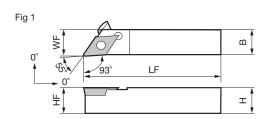


PDJC R/L0810-K07

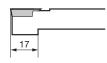
PDJC R/L1010-K07

PDJC R/L1212-M11

PDJC R/L1616-M11



For PDJC R/L0810-K07



LCL06

LCL09

1

1

1

1

Figure shows right-handed (R) tool.

TH020

TH020

Dimensions (mm)

e
aţì
eg

Holder									Parts			Dimensions (mm)
	Stock	(					Applicable Inserts		Lever Pin	Set Screw	Pin	Wrench
Cat. No.	R L	Height <b>H</b>	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>		Fig				S

8

10

12

16

20

DC□□0702

DC□□11T3

PDJC R/L2020-M11

General External Turning and Profiling Screw-on

LP04

LP07

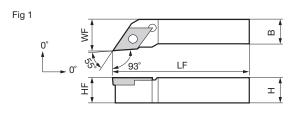
BTT0407

BTT0407

BTT0411







10.5

10.5

12.5

16.5

20.5

10 125

8

10 10 125

12 12 150

16 16 150

20 20 150

.

• •

•

Figure shows right-handed (R) tool.

**Parts** 

Holder

R









		Sto	ck						Applicable Inserts		Flat Insert Sc	rew	Wrench
Cat. No.	Previous Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig		(N·m)	(For Torx hole)
SDJC R/L0808H07	SDJC R/L0808-07			8	8	100	10	8	DC□□0702	1	BFTX02506N	1.5	TRX08
SDJC R/L1010H07	SDJC R/L1010-07			10	10	100	12	10		1	DF I AUZSUON	1.5	INAUO
SDJC R/L1212H11	SDJC R/L1212-11			12	12	100	16	12		1			
SDJC R/L1616H11	SDJC R/L1616-11			16	16	100	20	16	DC□□11T3	1	BFTX0409N	3.4	TRX15
SDJC R/L2020K11	SDJC R/L2020-11			20	20	125	24	20		1			

### D series





General External Turning and Profiling Screw-on



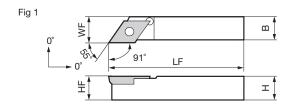


Figure shows right-handed (R) tool.

Holder										Parts		Dimensions (mm)
	Sto	ock						Applicable Inserts		Flat Insert Scr	ew	Wrench
Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig		N·m	(For Torx hole)
SDAC R/L0808-07			8	8	100	8.5	8	DC□□0702	1	BFTX02506N	1.5	TRX08
SDAC R/L1010-07			10	10	100	10.5	10		1	DI IXUZSUUN	1.0	THAUG
SDAC R/L1212-11			12	12	100	12.5	12		1			
SDAC R/L1616-11			16	16	100	16.5	16	DC□□11T3	1	BFTX0409N	3.4	TRX15
SDAC R/L2020-11	•		20	20	125	20.5	20		1			



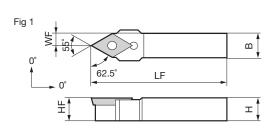


General External Turning and Profiling Screw-on



Positive Negative





**SDNC N2020** 

For SDNC N1616

H	Ю	ld	er	
Г				

Holder									Parts		Dimensions (mm)
							Applicable Inserts		Flat Insert Scre	ew	Wrench
Cat. No.	Stock	Height <b>H</b>	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig		(N·m)	(For Torx hole)
SDNC N0808-07		8	8	100	4	8	DC□□0702	1	BFTX02506N	1.5	TRX08
SDNC N1010-07		10	10	100	5	10		1	DF1XU25U0IN	1.5	INAUO
SDNC N1212-11		12	12	100	6	12		1			
SDNC N1616-11		16	16	100	8	16	DC□□11T3	1	BFTX0409N	3.4	TRX15
SDNC N2020-11		20	20	125	10	20		1			





# SS series





General External Turning Screw-on



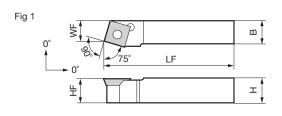


Figure shows right-handed (R) tool.

Holder

**Parts** Dimensions (mm) Flat Insert Screw Wrench Stock Applicable Inserts Overall Cutting Edge Cutting Edge Width Fig Cat. No. Length Distance (N·m RL В Cat. No. LF WF HF (For Torx hole) 1 BFTX0307N SSBC R/L1010-07 100 SC□□0702 TRX10 • • 10 2.0 10 10 9 • SSBC R/L1212-09 • 12 12 100 11 12 1 BFTX0409N SSBC R/L1616-09 • SC□□09T3 1 3.4 TRX15 16 16 100 15 16 SSBC R/L2020-09 • 20 20 125 19 20

2 **Positive** 









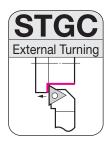




## T series



General External Turning Screw-on



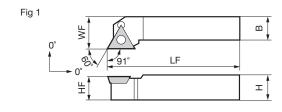


Figure shows right-handed (R) tool.

Holder										Parts		Dimensions (mm)
	Sto	ock						Applicable Inserts		Flat Insert Scr	ew	Wrench
Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig		(N·m)	(For Torx hole)
STGC R/L0808-09			8	8	100	10	8	TC□□0902	1	BFTX02205N	0.5	TRX06
STGC R/L1010-09			10	10	100	12	10	100002	1	DI IXUZZUJIN	0.0	THAU
STGC R/L1212-11			12	12	100	16	12		1			
STGC R/L1616-11			16	16	100	20	16	TC□□1102	1	BFTX02506N	1.5	TRX08
STGC R/L2020-11			20	20	125	25	20		1			





General External Turning Screw-on



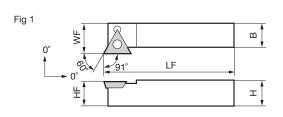


Figure shows right-handed (R) tool.

Н	IO!	a	е	r

Holder										Parts		Dimensions (mm)	
	Sto	ock						Applicable Inserts		Flat Insert Scr	ew	Wrench	Г
Cat. No.	R	L	Height H	Width B	Overall Length	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig		(N·m		
												(For Torx hole)	
STAC R/L0808-09			8	8	100	8.5	8	TC□□0902	1	BFTX02205N	0.5	TRX06	
STAC R/L1010-09			10	10	100	10.5	10	1000002	1	DI IAUZZUJIN	0.5	INAUU	1
STAC R/L1212-11			12	12	100	12.5	12		1				
STAC R/L1616-11			16	16	100	16.5	16	TC□□1102	1	BFTX02506N	1.5	TRX08	
STAC R/L2020-11			20	20	125	20.5	20		1				



S

Positive Negative

# **SV** series (7° Pos.)



General External Turning and Profiling Screw-on



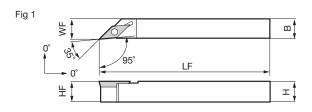


Figure shows right-handed (R) tool.

Holder

SVLC R/L1010-H11 • • 10 10 100 10.5 10 1	Holder										Parts		Dimensions (mm)
Cat. No.       R       L       Height H       Width B       Length LF       Distance WF       Height HF       Cat. No.       Fig         SVLC R/L1010-H11       ●       10       10       10.5       10       1		Sto	ock						Applicable Insert		Flat Insert Sc	rew	Wrench
012010210101111	Cat. No.	R	L			Length	Distance	Height	Cat. No.	Fig		(N·m)	(For Torx hole)
SVI C D/I 1212 H11   A   A   12   100   125   12	SVLC R/L1010-H11	•		10	10	100	10.5	10		1			
3VLC 7/L1212-H11	SVLC R/L1212-H11			12	12	100	12.5	12	VCDD1103	1	1 DETYNOSOBNIV	1.5	TDV00
SVLC R/L1616-H11	SVLC R/L1616-H11			16	16	100	16.5	16	VC□□1103	1 BFTX02508NV	1.5	TRX08	
SVLC R/L2020-K11¹         ●         20         20         125         20.5         20         1	SVLC R/L2020-K11			20	20	125	20.5	20		1			

Old Cat. No. SVLC R/L 2020-H11



General External Turning and Profiling Screw-on

Dimensions (mm)



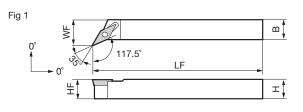


Figure shows right-handed (R) tool.

**Parts** 

Holder

	S	
_		



	Sto	ock						Applicable Insert		Flat Insert Sc	rew	Wrench
Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length <b>LF</b>	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig		(N·m)	(For Torx hole)
SVPC R/L1010-H11			10	10	100	14.5	10		1			
SVPC R/L1212-H11			12	12	100	16.5	12	VC□□1103	1	BFTX02508NV	1.5	TRX08
SVPC R/L1616-H11			16	16	100	20.5	16	VCDD1103	1	DF I AUZ SUOINV	1.5	INAUO
SVPC R/L2020-K11			20	20	125	24.5	20		1			

\* Old Cat. No. SVPC R/L 2020-H11



# SV series (11° Pos.)



General External Turning and Profiling Screw-on



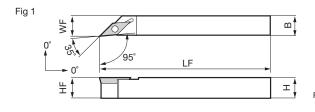


Figure shows right-handed (R) tool.

Holo	der										Parts		Dimensions (mm)
		St	ock						Applicable Insert		Flat Insert Scre	ew	Wrench
	Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig		(N·m	(For Torx hole)
SVL	LP R/L1010-H11	•		10	10	100	10.5	10		1			
SVL	LP R/L1212-H11			12	12	100	12.5	12	VP□T1103	1	BFTX02508NV	1.5	TRX08
SVL	LP R/L1616-H11			16	16	100	16.5	16		1			



General External Turning and Profiling Screw-on



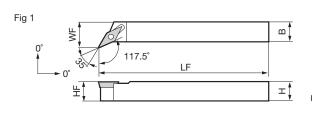


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

	Sto	ock						Applicable Insert		Flat Insert Scr	ew	Wrench
Cat. No.	R	L	Height <b>H</b>	Width B	Overall Length <b>LF</b>	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Cat. No.	Fig		(N·m)	(For Torx hole)
SVPP R/L1010-H11		•	10	10	100	14.5	10		1			
SVPP R/L1212-H11			12	12	100	16.5	12	VP□T1103	1	BFTX02508NV	1.5	TRX08
SVPP R/L1616-H11			16	16	100	20.5	16		1	1		





## **RS-SCL** type

Positive

Negative









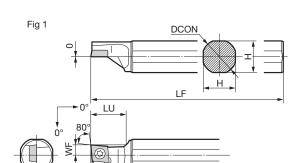
Others



#### **■** Features of Round Shank Holders

- Shank diameters from ø14 to ø25mm are in stock. Holders can be fitted on various manufacturers' sleeve toolposts.
- Bars can be mounted from the rear of the sleeve toolpost to increase the tooling range.

General Turning Screw-on



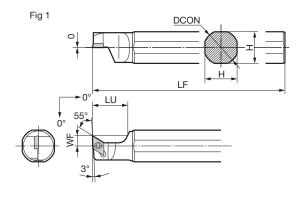
Holder									Parts	Dimensions (mm)
				Overall	Cutting Edge	Usable	Applicable Inserts		Flat Insert Screw	Wrench
Cat. No.	Stock	Diameter DCON	Height H	Length LF	Distance WF	Length LU	Cat. No.	Fig		(For Torx hole)
RS15H-SCL L06		15.875	15	100	6.0	20		1		
RS19X-SCL L06		19.05	18	120	6.0	20		1		
RS20X-SCL L06X		20	19	95	6.0	20		1		
RS20X-SCL L06		20	19	120	6.0	20	CC□□0602	1	BFTX02507NT	RT08
RS22X-SCL L06		22	21	120	6.0	20		1		
RS25X-SCL L06		25	24	120	6.0	20		1		
RS25M-SCL L06		25.4	24	150	6.0	20		1		
RS15H-SCL L09		15.875	15	100	6.0	20		1		
RS19X-SCL L09		19.05	18	120	6.0	20		1		
RS20X-SCL L09S		20	19	95	6.0	20		1		
RS20X-SCL L09		20	19	120	6.0	20	CC□□09T3	1	BFTX0408NT	LT25NT
RS22X-SCL L09		22	21	120	6.0	20		1		
RS25X-SCL L09		25	24	120	6.0	20		1		
RS25M-SCL L09		25.4	24	150	6.0	20		1		

Right hand (R) or neutral (N) inserts can be used.

# RS-SDU type/RS-SDX type



General Turning Screw-on

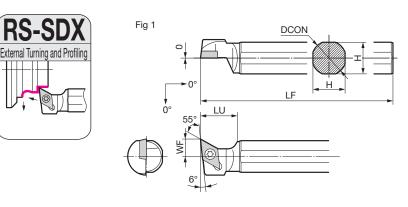


Holder									Parts	Dimensions (mm)
							Applicable Inserts		Flat Insert Screw	Wrench
Cat. No.	Stock	Diameter	Height <b>H</b>	Overall Length	Cutting Edge Distance WF	Usable Length LU	Cat. No.	Fig		(For Torx hole)
RS14F-SDU L07	•	14	13	80	6.0	20		1		
RS15H-SDU L07		15.875	15	100	6.0	20		1		
RS16F-SDU L07		16	15	80	6.0	20		1		
RS16X-SDU L07		16	15	120	6.0	20	DC□□0702	1	BFTX02507NT	RT08
RS19X-SDU L07		19.05	18	120	6.0	20	DCUL0702	1	BF1XU25U/IN1	RIUO
RS20X-SDU L07S		20	19	95	6.0	20		1		
RS20X-SDU L07		20	19	120	6.0	20		1		
RS22X-SDU L07		22	21	120	6.0	20		1		
RS19X-SDU L11		19.05	18	120	10.0	20		1		
RS20X-SDU L11S		20	19	95	10.0	20		1		
RS20X-SDU L11		20	19	120	10.0	20	DCDD11T3	1	BFTX0410NT	LT25NT
RS22X-SDU L11		22	21	120	10.0	20		1	DF1AU41UN1	LIZONI
RS25X-SDU L11		25	24	120	10.0	20		1		
RS25M-SDU L11		25.4	24	150	10.0	20		1		

Right hand (R) or neutral (N) inserts can be used.







General Turning Screw-on

Holder									Parts	Dimensions (mm)
							Applicable Insert		Flat Insert Screw	Wrench
Cat. No.	Stock	Diameter DCON	Height <b>H</b>	Overall Length	Cutting Edge Distance WF	Usable Length	Cat. No.	Fig		(For Torx hole)
RS19X-SDX L11		19.05	18	120	10.0	20		1		
RS20X-SDX L11S		20	19	95	10.0	20	DCDD11T3	1	1 BFTX0410NT	LT25NT
RS20X-SDX L11		20	19	120	10.0	20		1		LIZJIVI
RS25X-SDX L11		25	24	120	10.0	20		1		

Right hand (R) or neutral (N) inserts can be used.

5	
2	4



















# RS-SVX type/RS-SVVP type

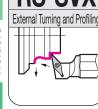


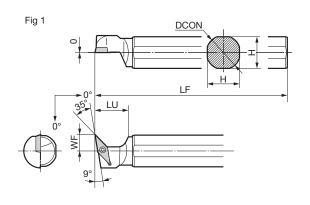


General Turning Screw-on

2

Negative Positive





Holder

Holder									Parts	Dimensions (mm)
							Applicable Insert		Flat Insert Screw	Wrench
Cat. No.	Stock	Diameter DCON	Height <b>H</b>	Overall Length	Cutting Edge Distance WF	Usable Length	Cat. No.	Fig		(For Torx hole)
RS15H-SVX L11		15.875	15	100	10.0	20		1		
RS19X-SVX L11		19.05	18	120	10.0	20		1		
RS20X-SVX L11S		20	19	95	10.0	20	VC□□1103	1	BFTX02507NT	RT08
RS20X-SVX L11		20	19	120	10.0	20	VOLL 1103	1	DI I AUZ SU/ IN I	niuo
RS22X-SVX L11		22	21	120	10.0	20		1		
RS25X-SVX L11		25.4	24	150	10.0	20		1		

Right hand (R) or neutral (N) inserts can be used.

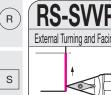


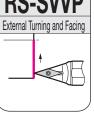
/c/

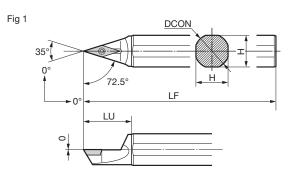




General Turning Screw-on





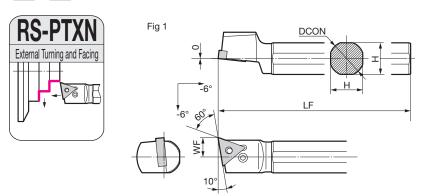


$\wedge$	
/w	

	Holder								Parts	Dimensions (mm)
							Applicable Insert		Flat Insert Screw	Wrench
	Cat. No.	Stock	Diameter DCON	Height <b>H</b>	Overall Length	Usable Length LU	Cat. No.	Fig		(For Torx hole)
	RS19X-SVVP N11		19.05	18	120	27	VP□□1103	1	BFTX02507NT	RT08
П	RS22X-SVVP N11		22	21	120	27	VFLL1103	1	DF170230/1V1	niuo

Others

# RS-PTXN type



Holder								Parts		Dimensions (mm)	
						Applicable Insert		Lever Pin	Bolt	Wrench	
Cat. No.	Stock	Diameter DCON	Height <b>H</b>	Overall Length	Cutting Edge Distance WF	Cat. No.	Fig			(For Hexagonal hole)	
RS19X-PTXN L16		19.05	18	120	11.0		1				
RS20X-PTXN L16		20	19	120	11.0	TN□□1604	1	LCL33NT	LCS33NT	LH020NT	
RS25M-PTXN L16		25.4	24	150	13.0						

Right hand (R) or neutral (N) inserts can be used.

### SGW series



Negative Positive





Others

### ■ SUMIDIA Multi-Function Tool with Chipbreaker SUMIDIA BREAK MASTER LD type

- Provides excellent chip control in traverse cutting and grooving of aluminum alloy.
- Solves chip control problems and dramatically improves work efficiency.
- Achieves long, stable tool life by employing hightoughness grade SUMIDIA DA1000.

#### ■ Features

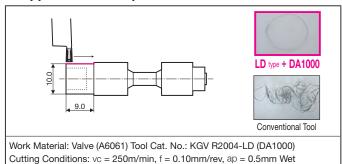
- Enables high-efficiency roughing of long parts
- Coin-shaped chips are less likely to tangle with work material or machinery

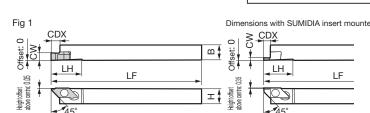






#### ■ Application Examples





External Multi-purpose type (Grooving/Traverse Cutting) Screw-on

*Use the	SUMIDIA	insert for	traverse	cutting.
000 1110	CONTIDIT	11100111101	Havoroo	outing.

**External Turning** 

Но	lder								Parts	Dime	ensions (mm)
									Flat Insert S	crew	Wrench
	Cat. No.	Stock	Height <b>H</b>	Width B	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Fig		(N·m)	(For Torx hole)
S	GW R1212		12	12	120	7.0	24.5	1	BFTX0410T8R	1.1	TRX08
90	2W D1616		16	16	120	7.0	24.5	1	DE IAU4 IU ION	1.1	

The above dimensions for LF, CDX and LH are values with a carbide insert mounted. (Refer to the table below for dimensions with SUMIDIA insert mounted)

Insert (Carbide) (Coa	ated Ca	arbide )	)							Dimensions (mm)
Cat. No.	AC1030U	AC530U	Width of Cut CW	Overall Length	Overall Length <b>LF</b>	Maximum Groove Depth CDX	Head Length LH	Effective Length	Fig	0
KGV R400	•	•	4.0	21.0	120	7.0	24.5	6.3	1	45°
KGV R500			5.0	21.0	120	7.0	24.5	6.3	1	8. 1
KGV R600		•	6.0	21.0	120	7.0	24.5	6.3	1	

#### Insert (SUMIDIA) (SUMIDIA)

Dimensions (mm)

Cat. No.	DA1000	Width of Cut	Overall Length	Overall Length	Maximum Groove Depth CDX	Head Length	Effective Length	Fig		Fig 1 Effective Length 2-RE0.1	
KGV R2004-LD	•	2.0	19.7	118.7	5.0	23.2	4.0	1	100	45°	
KGV R2504-LD	•	2.5	19.7	118.7	5.0	23.2	4.0	1			
KGV R2506-LD	•	2.5	21.2	120.2	6.5	24.7	5.5	1			╛

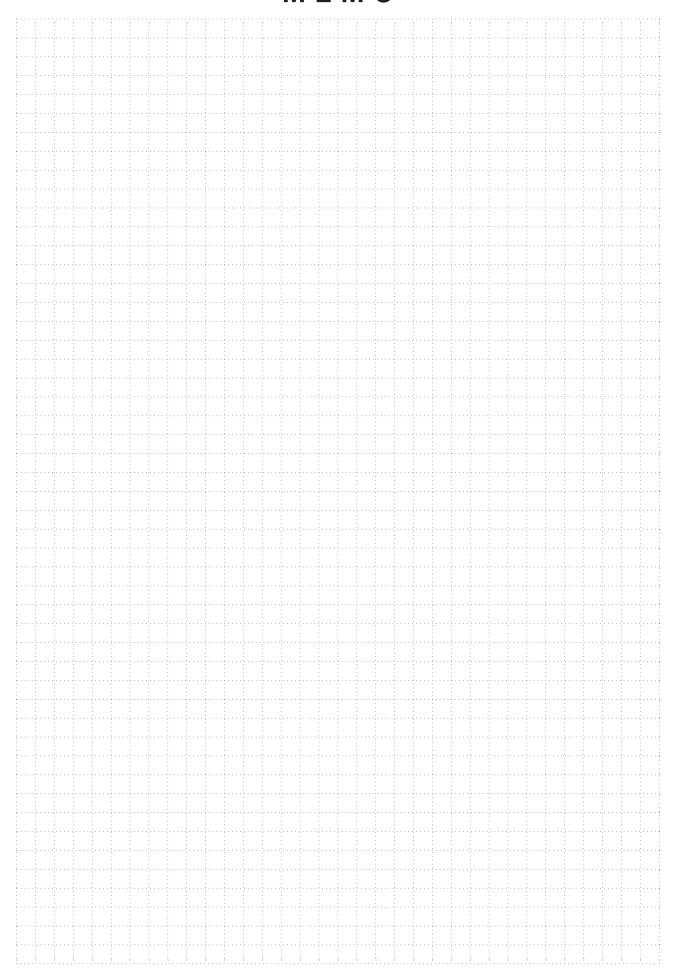
The above dimensions for LF. CDX and LH are the holder dimensions with insert mounted.

#### **Recommended Cutting Conditions**

Work Material	P Steel M Stainless Steel N Non-Ferrous Metal	Non-Ferrous Metal								
Insert Grades	AC1030U DA1000									
Machining Details	Grooving	Grooving	Traverse Cutting							
Spindle Speed n (min-1)	4,000 to 6,000	4,500 to 8,000	4,500 to 8,000							
Feed Rate f (mm/rev)	0.05 to 0.15	0.07 to 0.15	0.07 to 0.15							
Coolant	Wet (oil-based)									

Be careful with spindle power during use. For small lathes, insufficient spindle power during machining may cause the machine to stop.

### **MEMO**



Cat. No.

SBT35 R1010

**SBT35 R1212** 

SBT35 R1616

**SBT35 R2020** 

# SBT series/PBT series

Stock

•

•

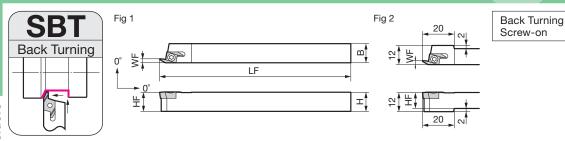
Height **H** 

10

12

16

20



Width

В

10

12

16

20

Overall Length

LF

120

120

120

125

External Holders

Holder

2

**Positive** 

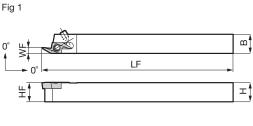
Negative

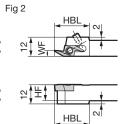












Cutting Edge

HF

10

12

16

20

Applicable

Insert

BTR3500

Cutting Edge

WF

2.5

2.5

2.5

2.5

**Parts** 

Fig

2

1

1

1

**Back Turning** Lever Lock

Flat Insert Screw

BFTX0307N

(N·m

2.0

Dimensions (mm)

Wrench

(For Torx hole

TRX10

R

	Holder									F	Parts		Dime	ensions (mm)	
)		~			Overall	Cutting Edge	Cutting Edge				Lever Pin	Set Screw	Pin	Wrench	
	Cat. No.	Stock	Height <b>H</b>	Width B	Length LF	Distance WF	Height HF	Offset HBL	Applicable Insert	Fig				(For Hexagonal hole)	
	PBT35 R1010		10	10	120	2.5	10	20		2		BTT0407			
	PBT35 R1212		12	12	120	2.5	12	_	BTR3500	1	LCL09	D110407	LP07	TH020	
	PBT35 R1616		16	16	120	2.5	16	_	BIN33CC	1	LOLUS	BTT0411	Li 01	111020	
	PBT35 R2020		20	20	120	2.5	20	_		1		B110411			
	PBT55 R1010		10	10	120	3.7	10	22		2		BTT0407			
7	PBT55 R1212		12	12	120	3.7	12	_	BTR5500	1	LCL09	D110407	LP07	TH020	
	PBT55 R1616		16	16	120	3.7	16	_	BIN3300	1	LOLUS	BTT0411	LFUI	111020	
	PBT55 R2020		20	20	120	3.7	20	_		1		D110411			
-	PBT80 R1010		10	10	120	5.2	10	25		2		BTT0407			
	PBT80 R1212		12	12	120	5.2	12	_	BTR8000	1	LCL09	B110407	LP07	TH020	
	PBT80 R1616		16	16	120	5.2	16	_	BIROUCO		LOLUS	BTT0411	LFUI	111020	
	PBT80 R2020		20	20	120	5.2	20	_		1		D110411			

2-38

# SBT series/PBT series

Insert ( Coated (	Carl	bid	e /		DL	.C /		Ce	rmet	t)				Dimensions (mm)
Cat. No.	AC5015S	AC5025S	AC1030U	AC530U	ACZ150	DL1500		Length	Cut		Corner Radius	Applicable Head	Fig	Fig 1 <u>ø6.8</u>
BT R3505	•			•		•	•	15			0.05		1	
BT R3508 🐠								15	3.5	2.5	0.08	APMOO-SBTR- <b>35</b> J	1	
BT R3515								15	3.5	2.5	0.15		1	m CDX
BT R5505			•	•		•	•	19	5.5	3.7	0.05		1	1000
BT R5508 🐠								19	5.5	3.7	0.08	APMOO-SBTR- <b>55</b> J	1	
BT R5515								19	5.5	3.7	0.15		1	15° 6° 80 170
BT R8005	•						-	24	8.0	5.2	0.05		1	CDX
BT R8008 🐠							-	24	8.0	5.2	0.08	APMOO-SBTR- <mark>80</mark> J	1	
BT R8015					•			24	8.0	5.2	0.15		1	

### **Recommended Cutting Conditions**

Work Material	P Free-Cu	tting Steel	P Carbon Steel		M Stainless Steel		S Exotic Alloy		Non-Ferrous Metal	
Tooling	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging Travers	Traverse Cut
Tool Grades	AC1030U/ACZ150 T1500A		AC1030U/AC530U/ACZ150 T1500A		AC1030U/AC5015S/AC5025S AC530U/ACZ150		AC5015S AC5025S		DL1500	
Cutting Speed vc (m/min)	50 to 150		50 to 150		50 to 150		20 to 80		150 to 300	
Feed Rate f (mm/rev)	0.02 to 0.10	0.02 to 0.15	0.02 to 0.05	0.02 to 0.10	0.02 to 0.04	0.02 to 0.06	0.01 to 0.03	0.01 to 0.04	0.02 to 0.05	0.02 to 0.10

## SFT series

General Turning Screw-on

RE

1: Indicates angle when mounted on the holder Maximum depth of cut 4.0mm

External Turning

Fig 1 **m** LF ΞĴ

Holder

Holder										Parts Dime	ensions (mm)
Cat. No.	Stock	Height <b>H</b>	Width B	Overall Length	Cutting Edge Distance WF	Cutting Edge Height <b>HF</b>	Offset HBH	Applicable Insert	Fig		Wrench (For Torx hole)
SFT R1010		10	10	120	10	10	3	TFR33OO	1	BFTX0410NSW	DTOO
SFT R1212		12	12	120	12	12	1		1		
SFT R1616		16	16	120	16	16	_	IFN3300		DE IVOA IONOM	N100
SFT R2020		20	20	120	20	20	_				

Applicable Holder Fig

SFT ROOOO

Fig 1

1

1

1

1

Negative Positive

Insert ( Coated Carbide)

Cat. No.

TF R3300

**TF R3305** 

TF R3315

**TF R3320** 

ACZ150

Inscribed

Circle

IC

9.525

9.525

9.525

9.525

Width of Cu

CW

4.76

4.76

4.76

4.76

Corner Radius

RE

0.05

0.15

0.20

Dimensions (mm)

32°



_	D	

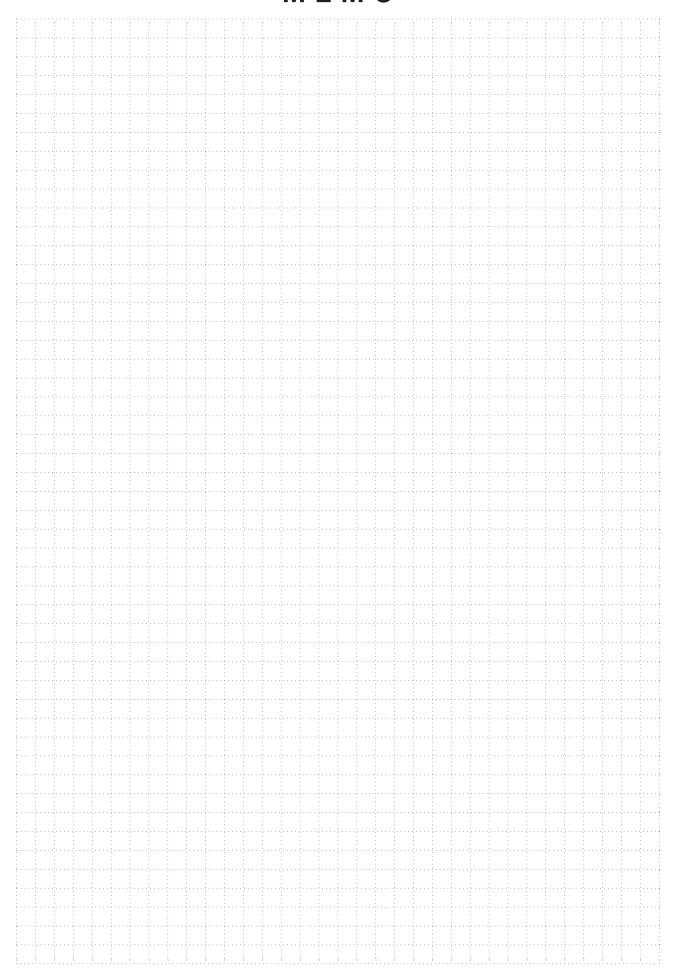








#### **MEMO**



#### **Internal Coolant Holders**

#### ■ Parts for Internal Coolant Holder Piping

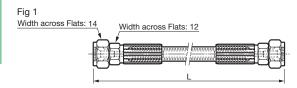


Fig 1 Fig 2 G1/8

Parts (Hose)

Screw Standard Screw Standard Fig Cat. No. J-HOSE-G1/8-G1/8-200 200 G1/8 G1/8 J-HOSE-G1/8-G1/8-300 300 G1/8

Parts (Connector)

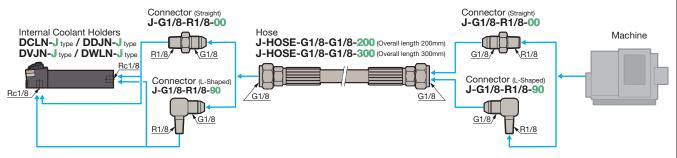
Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00		G1/8	R1/8	1
J-G1/8-R1/8-90		G1/8	R1/8	2

Dimensions (mm)

Connectors are sold separately.

#### Hoses are sold separately.

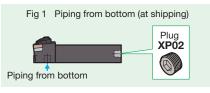
#### Piping Method for Hoses and Connectors

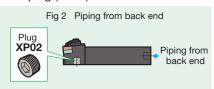


- · Apply sealant such as commercial sealing tape to the piping connection parts.
- · Internal coolant holders have a plug (XP02) mounted on the holder back end at shipping. (See Fig 1) When piping from the holder back end, mount a plug (XP02) on the bottom of the holder for use. (See Fig 2)

Dimensions (mm)

G1/8





#### Precautions for SEC-External Holders-Internal Coolant Holders

#### ■ Insert Removal Precautions

- · Use a wrench to loosen the cap screw for clamp by about three turns, and then remove the insert. (Fig 1-1 below)
- If the clamp plate tip catches on the insert when removing, push the clamp plate in the arrow direction as in Fig 1-2 below.

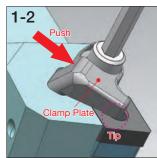
#### ■ Precautions for Removing and Assembling O-Rings and Clamps

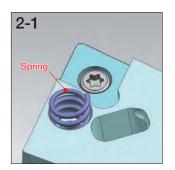
- O-rings are consumable parts. If worn or damage, replace with a new O-ring as stipulated.
- When replacing, remove the cap screw and then remove the clamp from the body. (Be careful not to lose the spring). Remove the old O-ring from the clamp plate, clean the clamp plate groove, and then set the new O-ring so that it fits entirely into the groove.
- When setting the clamp plate, as in Fig 2-1 below, place the spring and then set and tighten the clamp plate and cap screw to mount the clamp plate on the body. (Fig 2-2 below) Be careful at this point that the O-ring does not protrude.
- When mounting the clamp plate, do not tighten the cap screw forcefully all the way to the bottom without setting the insert.

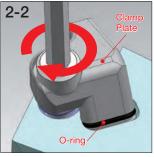
#### Others

- Coolant pressure supports up to max. 15MPa.
- To maximize coolant effects on the flank and prevent holder interference, use with an insert of corner radius RE0.4 to 1.2mm.









**Positive** 

Negative









S



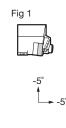


### CLN-J type / DCLN type





SEC-D series Holder - General Turning, Facing and Profiling Internal Coolant Supply Double Clamp



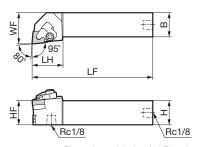


Figure shows right-handed (R) tool.

Holder											Parts									Dimensio	ons (mm)
	C+,	ock					Cuttina		Applicable		Clamp	Cap	)	Spring	O ring	Shim	Shim	Wrench	Тор Нех	Bottom Hex	Plug
	Sit	JUN	Heigh	t Width	Overal	Cutting		Head	Insert		Plate	Scre	W	Spring	O-IIIIg	SHIIII	Screw	for Shim	Wrench	Wrench	Flug
Cat. No.							Height			Fig		_			_	_		1	1		_
Cat. No.	R								Cat. No.	ı ıy	(D)		(N·m								
	١,	-	Н	B	LF	WF	HF	LH	Oat. No.			(1) Ju		Chillian .	0			<i>U</i>			
																		(For Torx hole)	(For Hexagonal hole	(For Hexagonal hole)	
DCLN R/L2020K12-J			20	20	125	25	20	32	CN□□1204	4	IC D/I 01	CP-M5-20-1	E 0	CCD101	ccoco	CNIC1004	DETVOAGON	TDV1E/*\	111040	LLIOSE	VDOO
DCLN R/L2525K12-J			25	25	125	32	25	32	CNUL 1204	l '	JU K/L-UI	GP-IVI3-20-1	5.0	USP 123	55060	UNS 1204	DF I AU4U9IN	IRXIO()	LHU4U	LHUZO	XPU2

<sup>\*</sup>Wrench for shim is sold separately from the main body.





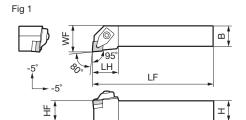


Figure shows right-handed (R) tool.

SEC-D series Holder - General Turning, Facing and Profiling Double Clamp



Holder											Parts					Dime	ensions (mm)	)
	Sto	ock	Height	Width	Overall		Cutting Edge Height		Applicable Inserts		Clamp	Set	Shim	Shim Screw	Wrench for Shim		Bottom Hex Wrench	
Cat. No.	R	L	Н	В	LF				Cat. No.	Fig		(N·m)			(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)	4
DCLN R/L2020K12 DCLN R/L2525M12	_				125 150	_	20 25	32 32	CN□□1204	1	SCP-2	5.0	CNS1204	BFTX0409N	TRX15(*)	LH040	LH025	
DCLN R/L2525M16			25	25	150	32	25	32	CN□□1606	1	SCP-3	5.0	CNS1606	BFTX0509N	TRX20(*)	LH040	LH025	

<sup>\*</sup>Wrench for shim is sold separately from the main body.

Positive

Negative







### PCLN type





2

Negative Positive











SEC-70 Holder - General Turning, Facing and Profiling Lever Lock

В

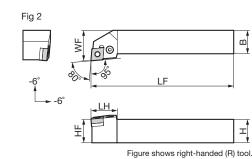
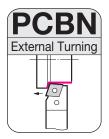


Fig 1	
-5°	LF
-5°	工
	Figure shows right-handed (R) tool.

	Holder												Parts			Dime	nsions (mm)
			Sto	ock	Height		Overall Length	Cutting	Cutting Edge		Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench
	Cat. No.	Previous Cat. No.	R	L	Н			WF	Height	LH	Cat. No.	Fig					(For Hexagonal hole)
	PCLN R/L1616H0903	PCLN R/L1616-32			16	16	100	20	16	20	CN□□0903	1	LCL3	LCS3	LSC32	LSP3	LH025
	PCLN R/L2020K0904 PCLN R/L2525M0904		_	_					-	20 20	CN□□0904	1	LCL3	LCS3	LSC317	LSP3	LH025
7	PCLN R/L2520M12	PCLN R/L2020-43 PCLN R/L2520-43 PCLN R/L2525-43			25	20	150	25	25	28 28 28	CN□□1204	1 1 1	LCL4	LCS4	LSC42	LSP4	LH030
ı	PCLN R/L2525M16	PCLN R/L2525-54	•	•	25	25	150	32	25	33	CN□□1606	1	LCL5	LCS5	LSC53	LSP5	LH030

### CBN type / PCFN type

SEC-70 Holder - General Turning Lever Lock



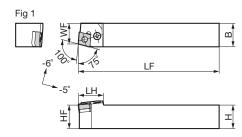
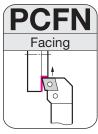


Figure shows right-handed (R) tool.

Holder												Parts			Dime	ensions (mm)
		Sto	ock	Height	t Width	Overall Length	Cutting	Cutting Edge Height	'l	Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench
Cat. No.	Previous Cat. No.	R	L	Н			WF		LH	Cat. No.	Fig					(For Hexagonal hole)
PCBN R/L2020K12 PCBN R/L2525M12								20 25	27 27	CN□□1204	1	LCL4	LCS4	LSC42	LSP4	LH030

SEC-70 series Holder - General Turning, Facing and Profiling Lever Lock



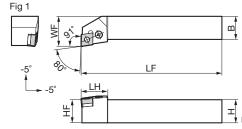


Figure shows right-handed (R) tool.

Holder												Parts			Dime	ensions (mm)
		Sto	ock	Height	t Width	Overall Length		Cutting Edge Height		Applicable Insert		Lever Pin	Bolt	Shim	Shim Retainer	Wrench
Cat. No.	Previous Cat. No.	R	L	Н	В		WF			Cat. No.	Fig					(For Hexagonal hole)
PCFN R/L2020K12 PCFN R/L2525M12	PCFN R/L2020-43 PCFN R/L2525-43								28 28	CN□□1204	1	LCL4	LCS4	LSC42	LSP4	LH030

When using handed breaker inserts for facing, the holder and insert are opposite handed.



S

Positive Negative



### DJN-J type / DDJN type







SEC-D series Holder - General Turning and Profiling Internal Coolant Supply Double Clamp



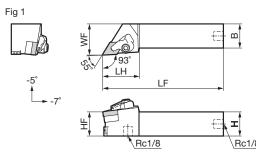


Figure shows right-handed (R) tool.

Negative Positive

	Holder											Parts								D	imensio	ons (mm)
		Sto	ock	Heigh	t Width	Overal	Cutting		Head	Applicable Inserts		Clamp Plate	Cap		Spring	O-ring	Shim		Wrench for Shim			Plug
	Cat. No.	Cat. No.  R L H B LF WF F					Height	LH	Cat. No.	Fig			(N·m		0			(For Torx hole)				
	DDJN R/L2020K15-J DDJN R/L2525K15-J	•	•	-		_	25 32		38 38	DN□□1504	1	JD R/L-01	CP-M5-20-1	5.0	CSP12J	SS060	DNS1504	BFTX0409N	TRX15(*)	LH040	LH025	XP02
ŀ	DDJN R/L2525K15E-J	•	•	-	-	_	32	25		DN□□1506	1	JD R/L-01	CP-M5-20-1	5.0	CSP12J	SS060	DNS1506	BFTX0409N	TRX15(*)	LH040	LH025	XP02

\*Wrench for shim is sold separately from the main body.



R

S









Cat. No.

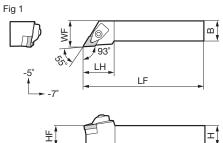


Figure shows right-handed (R) tool.

Applicable Inserts

Cat. No.

DN□□1504

**Parts** 

SCP-2

1 SCP-2

Clamp Set

(N·m

Holder











**DDJN R/L2525M15E** ● ● 25 25 150 32 25 38 DN□□1506 \*Wrench for shim is sold separately from the main body.

Stock

R L

Н В

20 20 125 25

25 25 150 32 25 38

LF WF HF

SEC-D Holder - General Turning and Profiling

Shim

Screw

DNS1504 BFTX0409N TRX15(\*) LH040

DNS1506 BFTX0409N TRX15(\*) LH040

Shim

Dimensions (mm)

Wrench

LH025

LH025

Wrench Top Hex Bottom Hex

for Shim Wrench

### DDHN type / DDNN type



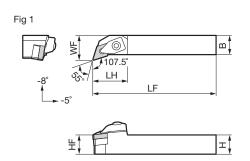


Figure shows right-handed (R) tool.

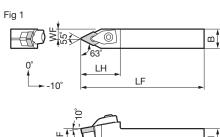
Holder							•	-	· · · · · ·		Parts					Dime	ensions (mm)
	Sto	ock	Height	t Width	Overal	Cutting	Cutting Edge Height		Applicable Insert		Clamp	Set	Shim	Shim Screw	Wrench for Shim		Bottom Hex Wrench
Cat. No.	R	L	н	В	LF	WF	HF	LH	Cat. No.	Fig		(N·m)	<b></b>		(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)
DDHN R/L2020K15 DDHN R/L2525M15	•	•	20 25	20 25	125 150	25 32	20 25	35 35	DN□□1504	1	SCP-2	5.0	DNS1504	BFTX0409N	TRX15(*)	LH040	LH025

\*Wrench for shim is sold separately from the main body.



SEC-D series Holder - General Turning and Profiling Double Clamp







-10° LF		

Fig 2

Holder										Parts					Dime	ensions (mm)	
		Height	Width	Overall	Cutting	Cutting Edge Height	Head	Applicable Insert		Clamp	Set	Shim	Shim Screw	Wrench for Shim		Bottom Hex Wrench	
Cat. No.	Stock	Н	В		WF			Cat No.	Fig		(N·m			(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)	_
DDNN N2020K15 DDNN N2525M15						20 25	40 40	DN□□1504	1 2	SCP-2	5.0	DNS1504	BFTX0409N	TRX15(*)	LH040	LH025	_

<sup>\*</sup>Wrench for shim is sold separately from the main body.

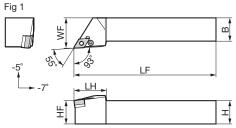
#### **PDJN** type





SEC-70 Holder - General Turning and Profiling





エ Figure shows right-handed (R) tool.

2

Negative Positive

Holder												Parts			Dime	nsions (mm)
		Sto	ock	Height	t Width		Cutting Edge	Cutting Edge	Head	Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench
Cat. No.	Previous Cat. No.	R	L	Н	В		WF	Height	LH	Cat. No.	Fig					(For Hexagonal hole)
PDJN R/L2020K11 PDJN R/L2525M11	PDJN R/L2020-33 PDJN R/L2525-33	_	_	_			25 32		25 25	DN□□1104	1	LCL3	LCS3	LSD317	LSP3	LH025
PDJN R/L2525M1504	PDJN R/L2525-43		•	25	25	150	_	25	35 35	DN□□1504	1	LCL4	LCS4	LSD42	LSP4	LH030
PDJN R/L2525M1506	PDJN R/L2525-44			25	25	150	32	25	35	DN□□1506	1	LCL4	LCS4	LSD42	LSP4	LH030













### PRGC type / PRDC type

S



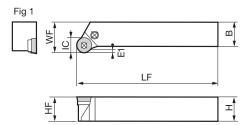
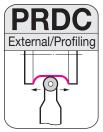


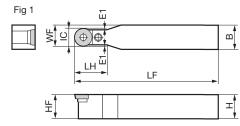
Figure shows right-handed (R) tool.

Holder												Parts			Di	imensions (mm)
	St	ock	Height	Width	Overall Length	Cutting	Cutting Edge	Edge	Inscribed Circle	Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench
Cat. No.	R		Н	В	LF	WF	Height	E1	IC	Cat. No.	Fig					(For Hexagonal hole)
PRGC R/L2020K10 PRGC R/L2525M10	•	•	20 25	20 25	125 150	RCMI 11003		RCM□1003M0	1	LCL10	LCS10	LSR10	LSP10	LH020		
PRGC R/L2020K12 PRGC R/L2525M12	5M10 ● 25 25 150 32 25 1.5 1 0K12 ● 20 20 125 25 20 2.5 1	12 12	RCM□1204M0	1	LCL12	LCS12	LSR12	LSP10	LH025							



SEC-70 Holder - General Turning and Profiling Lever Lock





Holder												Parts			Di	mensions (mm)
		Heigh	Width	Overall	Cutting Edge	Eage	Head	Eage	Circlo	Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench
Cat. No.	Stock		В	LF	WF	Height	LH	Distance E1	IC	Cat. No.	Fig			9		
PRDC N2020M10		20	20	150	15.0	20	22	1.0	10		1					(For Hexagonal hole)
PRDC N2525M10	•	25	-		17.5		22	_	1.0 10 1.0 10 RCM□1003M0 1 1		LCL10	LCS10	LSR10	LSP10	LH020	
PRDC N2525M12	•	25	25	150	18.5	25	24	1.2	12	RCM□1204M0	1	LCL12	LCS12	LSR12	LSP10	LH025

#### DSBN type / DSDN type





SEC-D series Holder - General Turning and Profiling Double Clamp



Fig 1				m t
-6° -5°	75°	LF	-	
± <u>†</u>				±↓ <sub>Fi</sub>

Figure shows right-handed (R) tool.

Negative Positive

Holder						Parts				Dim	nensions (mm)
	Stock	Ov	erall Cutting C	Cutting	Applicable Inserts	Clamp	Shim	Shim	Wrench	- 1	Bottom Hex

	Sto	ock	Height	Width	Overall	Lauminai	Cutting Edge		Applicable Inserts		Clamp Set	)	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
Cat. No.	R	L	Н	В		Edge WF			Cat No.	Fig		(N·m	<b></b>		TRX TRD (For Torx holes)	(For Hexagonal hole)	(For Hexagonal hole)
DSBN R/L2020K12 DSBN R/L2525M12	•		20 25		_		20 25		SN□□1204	1	SCP-2	5.0	SNS1204	BFTX0409N	TRX15(*)	LH040	LH025
DSBN R/L2525M15		•	25	25	150	22	25	36	SN□□1506	1	SCP-3	5.0	SNS1506	BFTX0509N	TRX20(*)	LH040	LH025

\*Wrench for shim is sold separately from the main body.

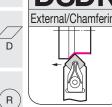


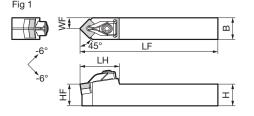
SEC-D series Holder - General Turning and Chamfering Double Clamp











Holder







		Height	t Width Coverall Cutting Length Edge	Cutting Edge	Head	Applicable Insert		Clam <sub>l</sub> Set	0	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench		
Cat. No.	Stock	Н	В	LF			LH	Cat. No.	Fig		(N·m)			(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)
DSDN N2020K12 DSDN N2525M12		20 25					0 36 5 36 SN□□1204		1	SCP-2	5.0	SNS1204	BFTX0409N	TRX15(*)	LH040	LH025

\*Wrench for shim is sold separately from the main body.





### SSN type / PSBN type



SEC-D series Holder - General Turning, Facing and Chamfering Double Clamp

SEC-70 Holder - General Turning and Profiling

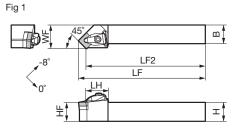


Figure shows right-handed (R) tool.

ts

Lever Lock

Dimensions (mm)

Positive Negative

C/



Others

Holder						Parts

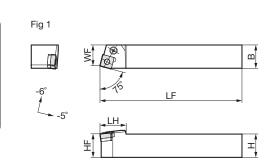
	Sto	ock	Heigh	t Widtl	Overa	II Overall		Cutting Edge	Head	Applicable Inserts		Clam Set	р	Shim	Shim Screw	Wrench for Shim		Bottom Hex Wrench
Cat. No.	R	L	Н	В	LF	LF2	WF	Height			Fig		(N·m			TRX TRD (For Torx holes)	(For Hexagonal hole)	(For Hexagonal hole)
DSSN R/L2020K12 DSSN R/L2525M12	•	•	20	20	133.3 158.3	125	25 32	20 25	30	SN□□1204		SCP-2	5.0	SNS1204	BFTX0409N	TRX15(*)	LH040	LH025
DSSN R/L2525M15	•	_			100.0	, , , ,	02		00	SN□□1506	1	SCP-3	5.0	SNS1506	BFTX0509N	TRX20(*)	LH040	LH025

\*Wrench for shim is sold separately from the main body.



**External Turning** 

PSBN R/L2525M12



PSBN R/L2525-43 • • 25 25 150 22 25 28

Figure shows right-handed (R) tool.

	Holder												Parts			Dime	ensions (mm)	
			Sto	ock	Height	Width	Overall Length		Cutting Edge Height	Head	Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench	l
	Cat. No.	Previous Cat. No.	R	L	Н		LF		Height			Fig					(For Hexagonal hole)	4
ĺ	PSBN R/L1616H09	PSBN R/L1616-32			16	16	100	13	16	22	SN□□0903	1	LCL3	LCS3	LSS32	LSP3	LH025	
	PSBN R/L2020K12	PSBN R/L2020-43			20	20	125	17	20	28		1						
	PSBN R/L2520M12	PSBN R/L2520-43			25	20	150	17	25	28	SN□□1204	1	LCL4	LCS4	LSS42	LSP4	LH030	

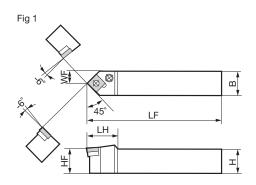
#### PSDN type





SEC-70 Holder - General Turning and Chamfering

External/Chamfering



Holder					Parts	

Dimensions (mm) Lever Shim Cutting Edge Height Applicable Inserts Bolt Shim Wrench Pin Retainer Stock Previous Cat. Cat. No. Fig No. Cat. No. Н В LF WF HF LH (For Hexagonal hole **PSDN N1616H09** PSDN N1616-32 16 16 100 8.0 16 SN□□0903 1 LCL3 LCS3 LSS32 LSP3 LH025 PSDN N2020-43 
20 20 125 10.0 20 30 PSDN N2020K12 1 PSDN N2520M12 PSDN N2520-43 25 20 150 10.0 25 30 SN□□1204 1 LCL4 LCS4 LSS42 LSP4 LH030 PSDN N2525-43 
25 | 25 | 150 | 12.5 | 25 | PSDN N2525M12 30













### SSN type / PSKN type



SEC-70 Holder - General Turning, Facing and Chamfering Lever Lock

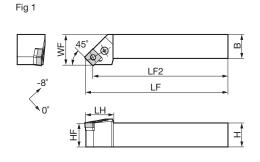


Figure shows right-handed (R) tool.

Holder													Parts			Dir	mensions (mm)
		Sto	ock	Height			Overall Length 2	Cutting Edge		Head	Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench
Cat. No.	Previous Cat. No.	R	L	Н				WF	Height	LH	Cat. No.	Fig					(For Hexagonal hole)
PSSN R/L1616H09	PSSN R/L1616-32			16	16	100	93.8	20	16	22	SN□□0903	1	LCL3	LCS3	LSS32	LSP3	LH025
PSSN R/L2020K12	PSSN R/L2020-43			20	20	125	116.7	25	20	30		1					
PSSN R/L2520M12	PSSN R/L2520-43			25	20	150	141.7	25	25	30	SN□□1204	1	LCL4	LCS4	LSS42	LSP4	LH030
PSSN R/L2525M12	PSSN R/L2525-43			25	25	150	141.7	32	25	30		1					

When using handed breaker inserts for facing, the holder and insert are opposite handed.









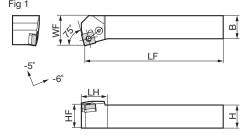


Figure shows right-handed (R) tool.

Holder												Parts			Di	imensions (mm)	_
		Sto	ck	Height	Width	Overall Length		Cutting Edge		Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench	
Cat. No.	Previous Cat. No.	R	L	Н	В			Height	LH	Cat No	Fig					(For Hexagonal hole)	_
PSKN R/L1616H09	PSKN R/L1616-32	•	•	16	16	100	20	16	20	SN□□0903	1	LCL3	LCS3	LSS32	LSP3	LH025	
PSKN R/L2020K12	PSKN R/L2020-43			20	20	125	25	20	26		1						
PSKN R/L2520M12	PSKN R/L2520-43			25	20	150	25	25	26	SN□□1204	1	LCL4	LCS4	LSS42	LSP4	LH030	16
PSKN R/L2525M12	PSKN R/L2525-43			25	25	150	32	25	26		1						
When using handed breaker is	scorte for facing the	hole	dor.	and	incor	t ara	onne	ocito	hanc	lad							

When using handed breaker inserts for facing, the holder and insert are opposite handed.

Positive Negative

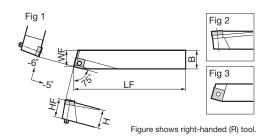
C/

## ESBN type / ESDN type





SEC-30 Holder - General Turning



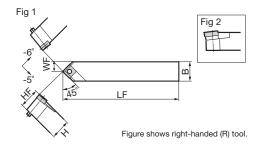
Holder

Parts Dimensions (mm)

	Previous Cat. No.		ock	Height	Width	Overall	Cutting	Cutting Edge	Applicable Inserts		Eccentric Pin	Shim	Wrench
Cat. No.						Length	Edge	Height		Fig	~		
		R	L	Н	В	LF	WF	HF	Cat. No.	9	Q		4/
ESBN R/L1212F09	ESBN R/L1212			12	12	80	9.5	11.5	SNПП0903	1	P321US	_	KY40
ESBN R/L1616H09	ESBN R/L1616H32			16	16	100	13.0	15.5	3110000	1	P322US	_	K140
ESBN R/L1616H12	ESBN R/L1616H43			16	16	100	13.0	15.5		3	P432U	_	
ESBN R/L2020K12	ESBN R/L2020			20	20	125	17.0	19.5		1	P433U	_	
ESBN R/L2020K12W	ESBN R/L2020W			20	20	125	17.0	19.5		2	P433W	ESS42	
ESBN R/L2520M12	ESBN R/L2520			25	20	150	17.0	24.5	SN□□1204	3	P434U	_	KY40
ESBN R/L2520M12W	ESBN R/L2520W			25	20	150	17.0	24.5		2	P434W	ESS42	
ESBN R/L2525M12	ESBN R/L2525			25	25	150	22.0	24.5		1	P434U	_	
ESBN R/L2525M12W	ESBN R/L2525W			25	25	150	22.0	24.5		2	P434W	ESS42	

SEC-30 Holder - General Turning and Chamfering Pin Lock





Holder





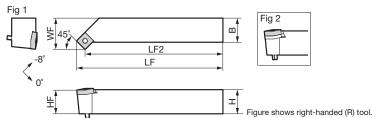
Holder	Parts	Dimensions (mm											
		Sto	ock	Height	Width	Overall	Cutting	Cutting Edge	Applicable Inserts		Eccentric Pin	Shim	Wrench
Cat. No.	Previous Cat. No.			rioigiit	vvidili	Length	Edge	Height		Fig			
Odt. 140.	Trovious Gut. No.	R	L	Н	В	LF	WF	HF	Cat. No.	1 19			6/
ESDN R/L1212F09	ESDN R/L1212			12	12	80	6.0	11.5	SN□□0903	1	P321US	_	KY40
ESDN R/L1616H09	ESDN R/L1616H32			16	16	100	8.0	15.5	2110003	1	P322US	_	K140
ESDN R/L2020K12	ESDN R/L2020			20	20	125	10.0	19.5		1	P433U	_	
ESDN R/L2020K12W	ESDN R/L2020W			20	20	125	10.0	19.5		2	P433W	ESS42	
ESDN R/L2520M12	ESDN R/L2520			25	20	150	10.0	24.5	SN□□1204	1	P434U	_	I/V/40
<b>ESDN R/L2520M12W</b>	ESDN R/L2520W			25	20	150	10.0	24.5	SINLL 1204	2	P434W	ESS42	KY40
ESDN R/L2525M12	ESDN R/L2525			25	25	150	12.5	24.5	1	P434U	_		
<b>ESDN R/L2525M12W</b>	ESDN R/L2525W		<ul><li>25</li></ul>		25	150	12.5	24.5	.5		P434W	ESS42	

### ESSN type / ESKN type



SEC-30 Holder - General Turning, Facing and Chamfering Pin Lock





-	Fig 2
-	
-	

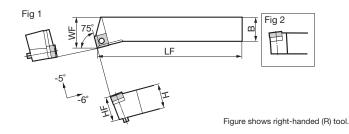
	Holder												Parts	1	Dimensions (mm
			Sto	ock	Heiaht	Width	Overall		Cutting	Cutting Edge	Applicable Inserts		Eccentric Pin	Shim	Wrench
	Cat. No.	Previous Cat. No.	R	L	Н	В	LEngth	LF2	Edge WF	Height	Cat. No.	Fig			
	ESSN R/L1212F09	ESSN R/L1212	•	•	12	12	80	73.8	16	11.5	ONEEDOOO	1	P321US		,
	ESSN R/L1616H09	ESSN R/L1616H32			16	16	100	93.8	20	15.5	SN□□0903	1	P322US	_	KY40
Ī	ESSN R/L1616H12	ESSN R/L1616H43			16	16	100	91.7	20	15.5		1	P432U	_	
	ESSN R/L2020K12	ESSN R/L2020			20	20	125	116.7	25	19.5		1	P433U	_	
	<b>ESSN R/L2020K12W</b>	ESSN R/L2020W			20	20	125	116.7	25	19.5		2	P433W	ESS42	
	ESSN R/L2520M12	ESSN R/L2520			25	20	150	141.7	25	24.5	SN□□1204	1	P434U		KY40
	<b>ESSN R/L2520M12W</b>	ESSN R/L2520W			25	20	150	141.7	25	24.5		2	P434W	ESS42	
	ESSN R/L2525M12	ESSN R/L2525			25	25	150	141.7	32	24.5		1	P434U		
	<b>ESSN R/L2525M12W</b>	ESSN R/L2525W			25	25	150	141.7	32	24.5		2	P434W	ESS42	

When using handed breaker inserts for facing, the holder and insert are opposite handed.



SEC-30 series Holder - Facing Pin Lock





н	$\cap$	d	er	

Holder Parts Dim														1
		Stoc		Height	Width	Overall	Cutting	Cutting Edge	Applicable Inserts		Eccentric Pin	Shim	Wrench	. !
Cat. No.	Previous Cat. No.	R	L	Н	В	Length	Edge WF	Height	Cat. No.	Fig				ì
ESKN R/L1212F09	ESKN R/L1212	•	•	12	12	80	16	11.5	011==0000	1	P321US			
ESKN R/L1616H09	ESKN R/L1616H32			16	16	100	20	15.5	SN□□0903	1	P322US	_	KY40	
ESKN R/L1616H12	ESKN R/L1616H43			16	16	100	20	15.5		1	P432U	_		
ESKN R/L2020K12	ESKN R/L2020			20	20	125	25	19.5		1	P433U	_		. 4
<b>ESKN R/L2020K12W</b>	ESKN R/L2020W			20	20	125	25	19.5		2	P433W	ESS42		
ESKN R/L2520M12	ESKN R/L2520			25	20	150	25	24.5	SN□□1204	1	P434U	_	KY40	
<b>ESKN R/L2520M12W</b>	ESKN R/L2520W			25	20	150	25	24.5		2	P434W	ESS42	]	
ESKN R/L2525M12	ESKN R/L2525			25	25	150	32	24.5		1	P434U	_	_	
<b>ESKN R/L2525M12W</b>	ESKN R/L2525W			25	25	150	32	24.5		2	P434W	ESS42		

When using handed breaker inserts for facing, the holder and insert are opposite handed.

Positive Negative



### TGN type / DTFN type

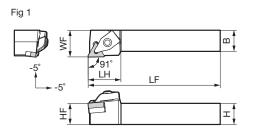


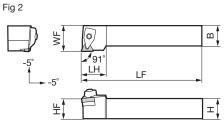


SEC-D Holder - General Turning and Profiling Double Clamp

2







Holder

**Positive** 

Negative

Cat. No. **DTGN R/L2020K16 DTGN R/L2525M16** ● ■ 25 25 150 32 25 31

Applicable Insert Stock Edge Heigh R Cat. No. L Н В LF HF WF 20 20 125 25 20 31 TN□□1604

**Parts** Clamp SCP-1

Parts

(N·m

5.0

Double Clamp

Shim Shim Screw 0 TNS1604 BFTX0307N TRX10(\*)

Shim

Screw

Wrench

for Shim

(For Torx hole)

SEC-D series Holder - Facing

Shim

for Shim (For Torx hole)

Wrench

Figure shows right-handed (R) tool.

Wrench

Wrench

Dimensions (mm) Top Hex Bottom Hex

Dimensions (mm)

Wrench

(For Hexagonal hole

LH025

Top Hex Bottom Hex

Wrench

(For Hexagonal hole)

LH040 LH025

\*Wrench for shim is sold separately from the main body.





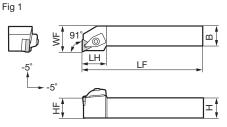


Figure shows right-handed (R) tool.

Holder S

R



30

**DTFN R/L2525M16** ● 25 25 150 32 25 \*Wrench for shim is sold separately from the main body.

When using handed breaker inserts for facing, the holder and insert are opposite handed.



2-56

### TGN type / PTTN type

PTGN R/L2525-33



SEC-70 Holder - General Turning and Profiling Lever Lock

**Parts** 

Lever Lock

SEC-70 Holder - General Turning and Profiling



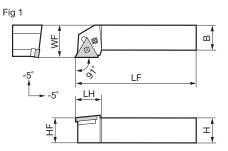


Figure shows right-handed (R) tool.

25 25 150 32 25 20

Dimensions (mm)

U
0
Ö
=
Ξ.
<
(D)

Negative

/	С	/























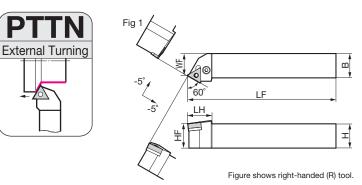


,	_		
		)	
	÷	=	
1	Š		
	ξ		

		Sto	ock	Heigh	Width	Overall Length	Cutting	Eage	Head	Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench	
Cat. No.	Previous Cat. No.	R	L	Н	В			Height	LH	Cat. No.	Fig					(For Hexagonal hole)	
PTGN R/L1616H16	PTGN R/L1616-33	•	•	16	16	100	20	16	20		1						
PTGN R/L2020K16	PTGN R/L2020-33			20	20	125	25	20	20	TN□□1604	1	LCL3	LCS3	LST317	LSP3	LH025	ı
PTGN R/L2520M16	PTGN R/L2520-33			25	20	150	25	25	20	111111111111111111111111111111111111111	1	LOLS	LUSS	LOIOII	LOFO	LI 1023	ı

Holder

PTGN R/L2520M16 PTGN R/L2525M16



Holder Parts

			Sto	ock	Height	Width	Overall Length		Cutting Edge Height	Head	Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench
	Cat. No.	Previous Cat. No.	R	L	Н				Height		Cat. No.	Fig					(For Hexagonal hole)
F	TTN R/L1616H16	PTTN R/L1616-33			16	16	100	13	16	25		1					
F	TTN R/L2020K16	PTTN R/L2020-33			20	20	125	17	20	25	TN□□1604	1	LCL3	LCS3	LST317	LSP3	LH025
F	TTN R/L2520M16	PTTN R/L2520-33			25	20	150	17	25	25	111004	1	LOLS	LUSS	LSISII	LOFO	LHUZS
F	TTN R/L2525M16	PTTN R/L2525-33			25	25	150	22	25	25		1					

### PTFN type





SEC-70 series Holder - Facing Lever Lock

2

Facing

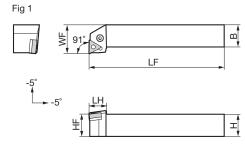


Figure shows right-handed (R) tool.

Negative Positive





Holder												Parts			Dime	ensions (mm)
		Sto	ock	Height	t Width	Overall Length	Cutting	Cutting Edge Height	Head	Applicable Inserts		Lever Pin	Bolt	Shim	Shim Retainer	Wrench
Cat. No.	Previous Cat. No.	R	L	Н				Height			Fig					(For Hexagonal hole)
PTFN R/L1616H16	PTFN R/L1616-33		•	16	16	100	20	16	20		1					
PTFN R/L2020K16	PTFN R/L2020-33			20	20	125	25	20	20	TN□□1604	1	LCL3	LCS3	LST317	LSP3	LH025
PTFN R/L2520M16	PTFN R/L2520-33			25	20	150	25	25	20	111004	1	LOLS	LUGG	LSISII	LOFO	LI1023
PTFN R/L2525M16	PTFN R/L2525-33			25	25	150	32	25	20		1					

When using handed breaker inserts for facing, the holder and insert are opposite handed.

## ETGN type / ETAN type

Holder

SEC-30 Holder - General Turning Pin Lock

SEC-30 Holder - General Turning

Pin Lock

Parts

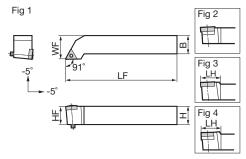


Figure shows right-handed (R) tool.

Dimensions (mm)

Positive Negative







R

S





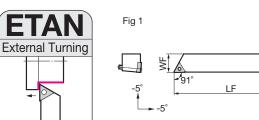




0
#
ē
65
٠,

		Sto	<u>ock</u>	Height	Width	Overall	Cutting	Cutting Edge	Head	Applicable Inserts		Eccentric Pin	Shim	Wrench
Cat. No.	Previous Cat. No.	R	L	Н	В	Length	WF	Height	LH	Cat. No.	Fig	ST. TO		
ETGN R/L1212F11	ETGN R/L1212			12	12	80	16	11.5	_	TN□□1103	1	P221US	_	KY25
ETGN R/L1616H1603	ETGN R/L1616H32			16	16	100	20	15.5	_	TN□□1603	1	P322US	_	KY40
ETGN R/L1616H1604	ETGN R/L1616H33			16	16	100	20	15.5	_	TN□□1604	1	P332US	_	KY40
ETGN R/L2020K1603	ETGN R/L2020K32			20	20	125	25	19.5	_	TN□□1603	1	P323US	_	KY40
ETGN R/L2020K1603W	ETGN R/L2020K32W			20	20	125	25	19.5	_	11111111000	2	P323WS	EST32	K140
ETGN R/L2020K1604	ETGN R/L2020K33			20	20	125	25	19.5	_		1	P333US	_	
ETGN R/L2020K1604W	ETGN R/L2020K33W			20	20	125	25	19.5	_		2	P333WS	EST32	
ETGN R/L2520M1604	ETGN R/L2520			25	20	150	25	24.5	_	TN□□1604	1	P334US	_	KY40
ETGN R/L2520M1604W	ETGN R/L2520W			25	20	150	25	24.5	_	111004	2	P334WS	EST32	K140
ETGN R/L2525M1604	ETGN R/L2525M33			25	25	150	32	24.5	_		1	P334US	_	
ETGN R/L2525M1604W	ETGN R/L2525M33W			25	25	150	32	24.5	_		2	P334WS	EST32	
ETGN R/L2525M22	ETGN R/L2525M43			25	25	150	32	24.5	30	TN□□2204	3	P434U	_	KY40
ETGN R/L2525M22W	ETGN R/L2525M43W			25	25	150	32	24.5	30	111111111111111111111111111111111111111	4	P434W	EST43	N 140





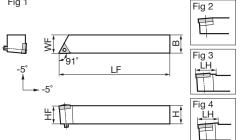


Figure shows right-handed (R) tool.

Holder												Parts		Dimensions (mm)
		Sto	ock	Height	Width		Cutting	Cutting Edge	Head	Applicable Inserts		Eccentric Pin	Shim	Wrench
Cat. No.	Previous Cat. No.	R	L	Н	В	LF	WF	Height	LH	Cat. No.	Fig	(A)		
ETAN R/L1212F11	ETAN R/L1212			12	12	80	12	11.5	_	TN□□1103	1	P221US	_	KY25
ETAN R/L1616H1603	ETAN R/L1616H32			16	16	100	16	15.5	_	TN□□1603	1	P322US	_	KY40
ETAN R/L1616H1604	ETAN R/L1616H33			16	16	100	16	15.5	_	TN□□1604	1	P332US	_	KY40
ETAN R/L2020K1603	ETAN R/L2020K32			20	20	125	20	19.5	_	TN□□1603	1	P323US	_	KY40
ETAN R/L2020K1603W	ETAN R/L2020K32W			20	20	125	20	19.5	_	111111111111111111111111111111111111111	2	P323WS	EST32	K140
ETAN R/L2020K1604	ETAN R/L2020K33			20	20	125	20	19.5	_		1	P333US	_	
ETAN R/L2020K1604W	ETAN R/L2020K33W			20	20	125	20	19.5	_		2	P333WS	EST32	
ETAN R/L2520M1604	ETAN R/L2520			25	20	150	20	24.5	_	TNПП1604	1	P334US	_	KY40
ETAN R/L2520M1604W	ETAN R/L2520W			25	20	150	20	24.5	_	11NLLL 1604	2	P334WS	EST32	K140
ETAN R/L2525M1604	ETAN R/L2525M33			25	25	150	25	24.5	_		1	P334US	_	
ETAN R/L2525M1604W	ETAN R/L2525M33W			25	25	150	25	24.5	_		2	P334WS	EST32	1
ETAN R/L2525M22	ETAN R/L2525M43			25	25	150	25	24.5	30	TNIDD004	3	P434U	_	10/40
ETAN R/L2525M22W	ETAN R/L2525M43W			25	25	150	25	24.5	30	TN□□2204	4	P434W	EST43	KY40

### ETFN type



SEC-30 series Holder - Facing Pin Lock

Negative Positive









Fig 1 Fig 2 Facing m Fig 3 LF LH Fig 4

Figure shows right-handed (R) tool.

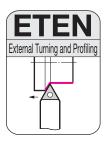
Н	older												Parts	[	Dimensions (mm)
			Sto	ck	Height	Width		Cutting	Cutting Edge	Head	Applicable Inserts		Eccentric Pin	Shim	Wrench
	Cat. No.	Previous Cat. No.	R	L	Н	В	Length	WF	Height HF	LH	Cat. No.	Fig			
E	TFN R/L1212F11	ETFN R/L1212			12	12	80	16	11.5	_	TN□□1103	1	P221US	_	KY25
E	TFN R/L1616H1603	ETFN R/L1616H32			16	16	100	20	15.5	_	TN□□1603	1	P322US	_	KY40
E	TFN R/L1616H1604	ETFN R/L1616H33			16	16	100	20	15.5	_	TN□□1604	1	P332US	_	KY40
E	TFN R/L2020K1603	ETFN R/L2020K32			20	20	125	25	19.5	_	TN□□1603	1	P323US	_	KY40
E	TFN R/L2020K1603W	ETFN R/L2020K32W			20	20	125	25	19.5	_	111000	2	P323WS	EST32	K140
E	TFN R/L2020K1604	ETFN R/L2020K33			20	20	125	25	19.5	_		1	P333US	_	
E	TFN R/L2020K1604W	ETFN R/L2020K33W			20	20	125	25	19.5	_		2	P333WS	EST32	
E	TFN R/L2520M1604	ETFN R/L2520			25	20	150	25	24.5	_	TN□□1604	1	P334US	_	KY40
E	TFN R/L2520M1604W	ETFN R/L2520W			25	20	150	25	24.5	_	111004	2	P334WS	EST32	K140
E	TFN R/L2525M1604	ETFN R/L2525M33			25	25	150	32	24.5	_		1	P334US	_	
E	TFN R/L2525M1604W	ETFN R/L2525M33W			25	25	150	32	24.5	_		2	P334WS	EST32	
E	TFN R/L2525M22	ETFN R/L2525M43			25	25	150	32	24.5	30	TNПП2204	3	P434U	_	KY40
E	TFN R/L2525M22W	ETFN R/L2525M43W			25	25	150	32	24.5	30	111111111111111111111111111111111111111	4	P434W	EST43	K140

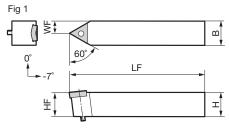
When using handed breaker inserts for facing, the holder and insert are opposite handed.

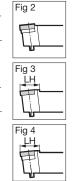
### TEN type / ETXN type



SEC-30 Holder - General Turning and Profiling Pin Lock







Holder											Parts		Dimensions (mm)
			Height	Width	Overall	Cutting	Cutting Edge	Head	Applicable Inserts		Eccentric Pin	Shim	Wrench
Cat. No.	Previous Cat. No.	Stock		В	Length	WF	Height  HF	LH	Cat. No.	Fig			
ETEN N1212F11	ETEN N1212		12	12	80	6.0	11.5	_	TN□□1103	1	P221US	_	KY25
ETEN N1616H1603	ETEN N1616H32		16	16	100	8.0	15.5	_	TN□□1603	1	P322US	_	KY40
ETEN N1616H1604	ETEN N1616H33		16	16	100	8.0	15.5	_	TN□□1604	1	P332US	_	KY40
ETEN N2020K1603	ETEN N2020K32		20	20	125	10.0	19.5	_	TN□□1603	1	P323US	_	KY40
ETEN N2020K1603W	ETEN N2020K32W		20	20	125	10.0	19.5	_	1NUU 1003	2	P323WS	EST32	K140
ETEN N2020K1604	ETEN N2020K33		20	20	125	10.0	19.5	_		1	P333US	_	
ETEN N2020K1604W	ETEN N2020K33W		20	20	125	10.0	19.5	_		2	P333WS	EST32	]
ETEN N2520M1604	ETEN N2520		25	20	150	10.0	24.5	_	TN□□1604	1	P334US	_	KY40
ETEN N2520M1604W	ETEN N2520W		25	20	150	10.0	24.5	_	11NLL 1604	2	P334WS	EST32	K140
ETEN N2525M1604	ETEN N2525M33		25	25	150	12.5	24.5	_		1	P334US	_	
ETEN N2525M1604W	ETEN N2525M33W		25	25	150	12.5	24.5	_		2	P334WS	EST32	
ETEN N2525M22	ETEN N2525M43		25	25	150	12.5	24.5	30	TN□□2204	3	P434U	_	10/40
<b>ETEN N2525M22W</b>	ETEN N2525M43W		25	25	150	12.5	24.5	30	11NLLL22U4	4	P434W	EST43	KY40





SEC-30 Holder - General Turning and Facing Pin Lock



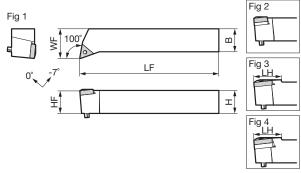


Figure shows right-handed (R) tool.

Holder												Parts	1	Dimensions (mm)
		Sto	ock	Height	Width	Overall	Cutting	Cutting Edge	Head	Applicable Inserts		Eccentric Pin	Shim	Wrench
Cat. No.	Previous Cat. No.	R	L	Н	В	Length	Edge WF	Height  HF	LH	Cat. No.	Fig			
ETXN R/L1212F11	ETXN R/L1212			12	12	80	16	11.5	_	TN□□1103	1	P221US	_	KY25
ETXN R/L1616H1603	ETXN R/L1616H32			16	16	100	20	15.5	_	TN□□1603	1	P322US	_	KY40
ETXN R/L1616H1604	ETXN R/L1616H33			16	16	100	20	15.5	_	TN□□1604	1	P332US		KY40
ETXN R/L2020K1603	ETXN R/L2020K32			20	20	125	25	19.5	_	TNПП1603	1	P323US		KY40
ETXN R/L2020K1603W	ETXN R/L2020K32W			20	20	125	25	19.5	_	111000	2	P323WS	EST32	K140
ETXN R/L2020K1604	ETXN R/L2020K33			20	20	125	25	19.5	_		1	P333US	_	
ETXN R/L2020K1604W	ETXN R/L2020K33W			20	20	125	25	19.5	_		2	P333WS	EST32	
ETXN R/L2520M1604	ETXN R/L2520			25	20	150	25	24.5	_	TNПП1604	1	P334US	_	KY40
ETXN R/L2520M1604W	ETXN R/L2520W			25	20	150	25	24.5	_	111004	2	P334WS	EST32	K140
ETXN R/L2525M1604	ETXN R/L2525M33			25	25	150	32	24.5	_		1	P334US	_	
ETXN R/L2525M1604W	ETXN R/L2525M33W			25	25	150	32	24.5	_		2	P334WS	EST32	]
ETXN R/L2525M22	ETXN R/L2525M43			25	25	150	32	24.5	30	TN□□2204	3	P434U	_	KY40
ETXN R/L2525M22W	ETXN R/L2525M43W			25	25	150	32	24.5	30	11111112204	4	P434W	EST43	K 140

When using handed breaker inserts for facing, the holder and insert are opposite handed.

Positive Negative

R

S

### ITJN type / MTXN type



SEC-M Holder - General Turning and Profiling Clamp-on + Pin Lock

External/Profiling

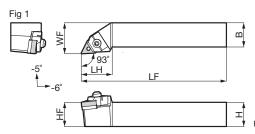


Figure shows right-handed (R) tool.

Negative Positive

Holder										Parts							Dimens	ions (mm)
	Stocl	k Heigh	t Width	Overall		Cutting Edge I		Applicable Inserts		Wedge	Pin	Shim	Bol	t	Nut		Wrench for Bolt	
Cat. No. Previous Cat. No.	R L	. H		Length	Eage	Height		Cat. No.	Fig	Tall V				(N·m)		@	(For Hexagonal hole)	(For Hexagonal hole)
* MTJN R/L2020K16 MTJN R/L2020-33	•	20	20	125	25	20	32		1		MP317S							
* MTJN R/L2520M16 MTJN R/L2520-33							_	TN□□1604	1	MMW30	MP320S	STW323	BHA0525	4.0	CPM32N	ER04	LH030	LH030
* MTJN R/L2525M16 MTJN R/L2525-33									1		MP320S							
MTJN R/L2525M22 MTJN R/L2525-43								TN□□2204	1	MMW40	MP420	ST/M/3/	BHA0625	15	CDM43N	ER05	I HOAO	I HU3U
MTJN R/L3225P22 MTJN R/L3225-43		32	25	170	32	32	38	111111111111111111111111111111111111111	1	1011010040	MP420	0111404	טו והטטבט	7.5	01 1014314	LI 103	LI 1040	LI 1030

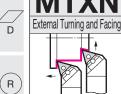
When using CIS standard inserts, the pin for holders marked \* is MP317 and the pin for holders marked \*\* is MP320.











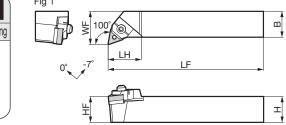


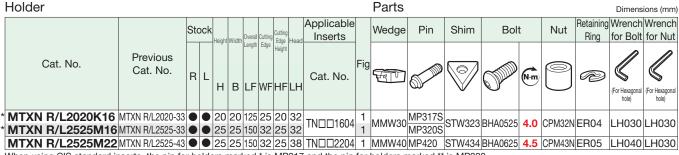
Figure shows right-handed (R) tool.

S









When using CIS standard inserts, the pin for holders marked \* is MP317 and the pin for holders marked \*\* is MP320. When using handed breaker inserts for facing, the holder and insert are opposite handed.



#### VJN-J type / DVJN type

Holder





Stock

RL

**DVJN R/L2525K16-J** ● | **2**5 | 25 | 125 | 32 | 25 | 43 \*Wrench for shim is sold separately from the main body.

Fig 1

Stock

R

**DVJN R/L2020K16-J** ● 20 20 125 25

B LF WF

HF LH

20 43

93

LH

Edae

LF WF HF LH

20 | 20 | 125 | 25 | 20 | 35

25 | 25 | 150 | 32 | 25 | 35

SEC-D series Holder - General Turning and Profiling Internal Coolant Supply Double Clamp

Cat. No.

External Turning and Profiling

Cat. No.

**DVJN R/L2020K16** 

DVJN R/L2525M16

Holder

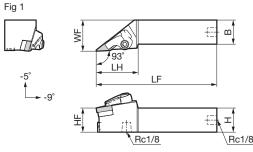


Figure shows right-handed (R) tool.

Applicable

Insert

Cat. No.

VN□□1604

LF

Figure shows right-handed (R) tool.

Applicable

Insert

Cat. No.

VN□□1604

Parts

Clamp

Plate

m

Ŧ,

**Parts** 

SCP-4

Clamp

Set

(N·m

JV R/L-01 CP-M5-20-1

Cap

Screw

(N·m

Double Clamp

Spring O-ring Shim

Positive

Shim Wrench Top Hex Bottom Hex

Screw for Shim Wrench Wrench

CSP12J|SS060|VNS1604|BFTX0307N|TRX10(\*)|LH040|LH025|XP02

SEC-D series Holder - General Turning and Profiling

Shim

Screw

VNS1604 BFTX0307N TRX10(\*) LH040

Shim

Wrench

Negative

C

S

Dimensions (mm)

Top Hex Bottom Hex for Shim Wrench Wrench

LH025

\*Wrench for shim is sold separately from the main body.

### VVN type / DVQN type





SEC-D series Holder - General Turning and Profiling Double Clamp

Negative Positive















Fig 1 m ( LF LH Τ 生

Holder

**Parts** 

Cat. No.  Stock  H B LF WF HF LH  Cat. No.  Set  Screw for Snim Wrench Wrench  Wench  Wench  Set  Screw for Snim Wrench Wrench  Wench  Fig  Fig  Fig  Fig  Fig  Fig  Fig  Fi			Height	Width	Overal Length	Cutting	Cutting Edge	Head	Applicable Insert		Clam Set	•	Shim	Shim Screw			Bottom Hex Wrench
	Cat. No.	Stock	Н	В						Fig		(N·m)				(For Hexagonal hole)	(For Hexagonal hole)
DVVN N2020K16       ● 20 20 125 10.0 20 37 DVVN N2525M16       ■ 20 125 10.0 12.5 25 37 DVVN□□1604       □ 1 SCP-4       5.0 VNS1604 BFTX0307N TRX10(*) LH040 LH025		•						-	VN□□1604	1	SCP-4	5.0	VNS1604	BFTX0307N	TRX10(*)	LH040	LH025

<sup>\*</sup>Wrench for shim is sold separately from the main body.

External/Profiling/Necking

SEC-D series Holder - General Turning, Profiling and Necking Double Clamp

Dimensions (mm)

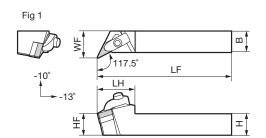


Figure shows right-handed (R) tool.

Holder	Parts	Dimensions (mm)

		Sto	ock	Height	Width	Overall Length	Cutting	Cutting Edge	Head	Applicable Insert		Clam Set	•	Shim	Shim Screw	Wrench for Shim		Bottom Hex Wrench	
	Cat. No.	R	L	Н	В		WF	Height <b>HF</b>	LH	Cat. No.	Fig		(N·m)			(For Torx hole)	(For Hexagonal hole)	(For Hexagonal hole)	
	DVQN R/L2020K16		•	20	20	125	25	20	35	VN□□1604	1	SCP-4	5.0	VNS1604	DETVOSOSNI	TDV10/*\	I H040	LH025	
П	DVQN R/L2525M16			25	25	150	32	25	35	VINLLL 1004	1	30F-4	5.0	VINO 1004	DI IAUSU/IN	1 H × 10( )	LI 1040	LI 1023	

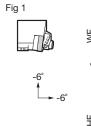
<sup>\*</sup>Wrench for shim is sold separately from the main body.

### WLN-J type / DWLN type





SEC-D series Holder - General Turning and Facing Internal Coolant Supply Double Clamp



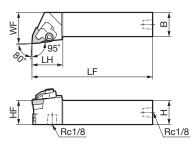


Figure shows right-handed (R) tool.

Holder Parts Dimensions (mm)

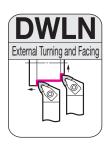
	Sto	ock	Heigh	ıt Widti	Overa	I Cutting	Cutting Edge Height	Head	Applicable Insert		Clamp Plate	Cap Scre		Spring	O-ring	Shim		Wrench for Shim	- P		Plug
Cat. No.	R	L	Н	В		WF			Cat No	Fig			(N·m		0	9		(For Torx hole)	(For Hexagonal hole)	For Hexagonal hole)	
<b>DWLN R/L2020K08-J</b>	•		20	20	125	25	20	32	WN□□0804	4	IC D/I 01	CP-M5-20-1	<b>E</b> 0	CCD101	SSOSO	WINICUOUN	DETVOAGON	TDV15/*\	1 11040	LUOE	VDO2
<b>DWLN R/L2525K08-J</b>			25	25	125	32	25	32	WINDL0004	'	JU N/L-UI	GF-1013-20-1	5.0	USF 120	33000	WW00004	DF I AU4U9IV	ILV 19( )	LHU4U	LHUZS	AFU2

\*Wrench for shim is sold separately from the main body.





SEC-D series Holder - General Turning and Facing Double Clamp



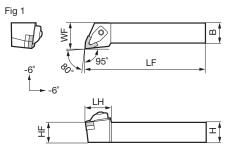


Figure shows right-handed (R) tool.

Holder Parts Dimensions (mm)

	Sto	ock	Height	Width	Overall Length		ting Ige Hea	Applicable Insert		Clan Se	•	Shim	Shim Screw	Wrench for Shim		Bottom Hex Wrench	
Cat. No.	R	L	Н	В		WFF		Cat. No.	Fig		(N·m)			(For Tory hole)	(For Havenonal hole)	(For Hexagonal hole)	2
DWLN R/L2020K08	•	•	20	20	125	25 2	0 32	, WN□□0804	1	000.0		14/11/00/00 4	DETVO 400N	,	, ,	, ,	
DWLN R/L2525M08			25	25	150	32 2	5 32	WNLILLU804	1	SCP-2	5.0	WNS0804	BF1X0409N	I HX 15(^)	LHU40	LH025	li

\*Wrench for shim is sold separately from the main body.

When using handed breaker inserts for facing, the holder and insert are opposite handed.

### PWLN type / MWLN type





SEC-70 Holder - General Turning and Facing

**Positive** 

Negative



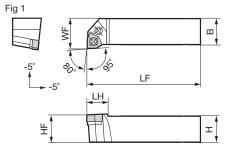


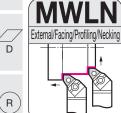
Figure shows right-handed (R) tool.

Holder **Parts** Dimensions (mm) Shim Lever Applicable Insert Bolt Shim Wrench Stock Pin Retainer Previous Cat. Cat. No. No. R Cat. No. B LF WF HF LH (For Hexagonal hole PWLN R/L2020-33 ● ● 20 20 125 25 PWLN R/L2020K06 20 17 WN□□0604 LCL3 LCS3 LSW317 LSP3 LH025 PWLN R/L2525-33 • • 25 25 150 32 25 17 **PWLN R/L2525M06** 

When using handed breaker inserts for facing, the holder and insert are opposite handed.



SEC-M Holder - General Turning, Facing, Profiling and Necking



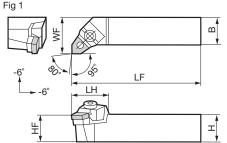
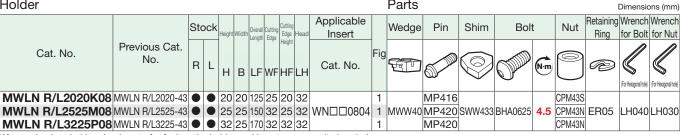


Figure shows right-handed (R) tool. Holder **Parts** 





When using handed breaker inserts for facing, the holder and insert are opposite handed.



# **Boring Bars**

3-1 to 3-54

Do
GOT

Very Small   SEC-MINI Boring Bars   Solid Carbide Bar   Small Diameter Turning   Small Diameter Boring Bars   Small Diameter Boring Bars   SEXBR series   3-14   SEXC series   3-17   SEXC series   3-18   SEXC series   3-20   SEX series   3-2			Twin Head Holders for Multi-functional Small Lathe Tools	3-6
B-SCLC type   3-25	Diameter Turning Small Diameter	Solid Carbide Bar Small Diameter Boring Bars SUMIBORON Small Hole Boring Bars	BXBR series BSME series SEXC series BNBX series BNZ series BNBX series BNB series	3-14 3-17 3-18 3-20 3-21 3-22
B-SDUC type / C-SDUC type   3-30	Bottom Facing	SEC-Boring Bar	B-SCLC type	3-25 3-26 3-27
SEC-Boring Bar   S-STUB type / S-STUP type   3-35	Profiling	SEC-Boring Bar	B-SDUC type / C-SDUC type	3-30 3-31 3-32
B-STUP type   3-38	Through Boring	SEC-Boring Bar	S-CSKP type	3-35
S-SVJC type	Stop Boring	SEC-Boring Bar	B-STUP type	3-38 3-39 3-40
S-SVQC type / A-SVQC type   3-46	Profiling	SEC-Boring Bar	S-SVJC type S-SVQB type / B-SVQB type C-SVQB type / A-SVQC type S-SVQC type / A-SVQC type C-SVUB type / B-SVUB type C-SVUB type / B-SVUC type S-SVUC type / A-SVUC type S-SVZB type / B-SVZB type C-SVZB type / B-SVZB type	3-43 3-44 3-45 3-46 3-47 3-48 3-49 3-50 3-51
Through Boring SEC-Boring Bar S-SWUB type / C-SWUB type 3-53 S-SWUP type 3-54	Through Boring	SEC-Boring Bar		

• mark: Standard stocked item

mark: To be replaced with the new item featured on the same page

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

\* mark: Semi-standard stock (please confirm stock availability) O mark: Stock or planned stock (please confirm stock availability)

Blank: Made-to-order item mark: Not available

### **Selection Guide for Boring Bars**

1 | 1.5 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 | 13 | 14 | 16 | 18 | 20 | 22 | 25 | 28 | 34 | 44 | 54 | 70 |

#### **Guide for Selection by Application**

Applications	Ту	/pe		ank Mat		Applicable Inserts and Shapes	Tooling	*The	Т		_	ll be v	in.	in the	table	if it di	ffers t	rom	those	in th		_	_	Ť
	СКВ	S. S	up to		- 15	Coated Inserts and Dedicated SUMIDIA Inserts		•	•	•	•	•										$\dagger$	t	
Very Small Dia. Boring	BXBR	Emantism		up to 5		Coated Carbide				0 to :													T	
Very Sr	DABB			up to 2		Brazed SUMIDIA					•	П	•											
	BSME	2		up to 4		Brazed SUMIBORON				5 to : 0.5													I	
	SEXC	Eroansion		up to 3		Dedicated Inserts	<b>65</b>			G		Ð												
	BNBX	Emarico		up to 5		Brazed SUMIBORON						to 8.												
	BNB	Emarsion		up to 4		SUMIBORON SUMIDIA Dedicated Inserts								•	•	•		•						
lug	S-STUB/ S-STUP	9	up to 3										•	•	•	•	•	•			•			
Stop Boring	A-STUP®		up to 3											•	<b>①</b>	•		1	Œ	0	•			
St	B-STUP [XBPT]	PA .			up to 6									•	•	•	•	•		•	•	4	10	
	D-STUP® [XBPT-H]				up to 6											•		Ð	Œ	0				
	C-STUB/ C-STUP	<b>&gt;</b>		up to 8									•	•	•	•	•	•	•	•				
	E-STUP			up to 8		Triangular type 5° Positive (With Hole) 11° Positive (With Hole)								•	<b>①</b>	•	•	<b>1</b>	Ð					
	S-CTFP	6	up to 3			Triangular type 11° Positive (Without Hole)											•	•	•	•		• 32		
	BNZ	Emanism		up to 5		SUMIBORON Dedicated Inserts							•	9	11			17	2	1			ſ	
Bottom Facing	S-SCLC	0	up to 3								•	•	•	•	•	•		•			27			
3ottom	A-SCLC®		up to											•	<b>(1)</b>	•		Ð	Œ	0	<b>①</b> 27			
1	D COLO					l i			П		Т	$\Box$											T	

Inside [ ] shows previous product series

**B-SCLC** 

With oil hole

: Steel Shank : Carbide Shank : Steel Shank with Anti-Vibration Mechanism

80° Diamond type

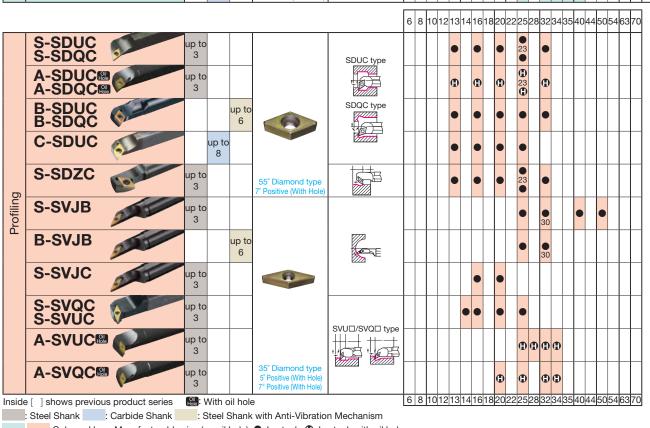
Coloured box: Manufacturable size (no oil hole), ●: In stock, ⊕: In stock with oil hole

up to

3-2

# **Selection Guide for Boring Bars**

Applications	Туре		nk Mat g Depth		Applicable Inserts and Shapes	Tooling	⊢	Т	$\top$	т	will b	e writ	$\Box$	the	tabl	e if it	t diff	fers t	from	thos	e in t	т	n head	dings.
	C-SCLC		up to 8							(	•	•	•	•	•	•	•	•		•				
	E-SCLC		up to 8		80° Diamond type 7° Positive (With Hole)									<b>①</b>		<b>①</b>		<b>①</b>		<b>①</b>				
Facing	S-SCLP [BBPC]	up to 3													•		•	•	•			27		
om Fa	A-SCLP®	up to 3													<b>①</b>		Ð	<b>①</b>	Ð	đ	Đ	<b>(1)</b>		
Bottom	B-SCLP [XBPC]			up to 6													•		•					
	D-SCLP: [XBPC-H]			up to 6													Ð		Ð	0	Đ			
	C-SCLP [WBPC]		up to 8		80° Diamond type 11° Positive (With Hole)										•		•	•	•	•				

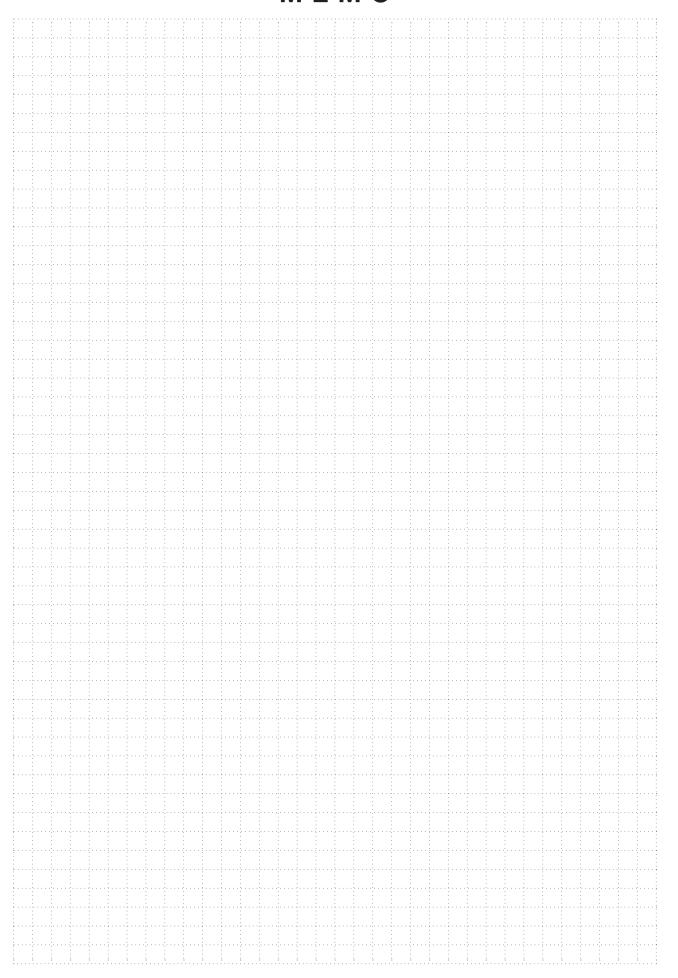


Coloured box: Manufacturable size (no oil hole), ●: In stock, ⊕: In stock with oil hole

## **Selection Guide for Boring Bars**

Applications	Туј	pe	Boring	nk Mat g Deptl	n (L/D)	Applicable Inserts	Tooling					Mi	n.	Во	re l	Dia	a. (	(mı	m)	_			
App			Steel	Carbide	Anti- Vibration	and Shapes		6	8 1	0 12	213	14 16	18	202	225	28	32	343	5 40	445	5054	63	70
	S-SVQB S-SVUB	<b>(</b>	up to 3				SVU□/SVQ□ type								•	•	•	•	•		•		
	B-SVQB B-SVUB	<b>A</b>			up to 6		SVOE/SVOE type							•	•								
D	C-SVQB C-SVUB	<b>\( \)</b>		up to 8										•	•								
Profiling	S-SVZB		up to 3												•		•	•	•		•		
	S-SVZC		up to 3									•		•									
	B-SVZB				up to 6									•	•								
	C-SVZB	The state of the s		up to 8		35° Diamond type 5° Positive (With Hole) 7° Positive (With Hole)								•	•								
	S-SWUB [BBPW]	9	up to 3					5.5		•	•												
	C-SWUB [WBPW]	9		up to 8				5.5															
Soring	S-SWUP	O.	up to 3			Trigon type 5° Positive (With Hole) 11° Positive (With Hole)						•	•	•									
Through Boring	S-SSKP [BBPS]	6	up to 3									•		•	•	•							
Thrc	C-SSKP [WBPS]	0		up to 8		Square type 11° Positive (With Hole)			1			•		•									
	S-SSKC	0	up to 3			Square type 7° Positive (With Hole)			$\downarrow$					•	•		•		•				
	S-CSKP		up to 3			Square type 11° Positive (Without Hole)								•	•		20				-0-		
Inside			Oil Hole					6	8  1	0 12	2 13	14 16	j 18	20 2	2 25	28	32 3	34 3	5 40	144	50 54	63	70
	: Steel Shank					with Anti-Vibratio																	
	Coloured box	x: Manufacturable	size (r	no oil	hole),	■: In stock, <b>①</b> : In	stock with oil hole	9															

#### **MEMO**



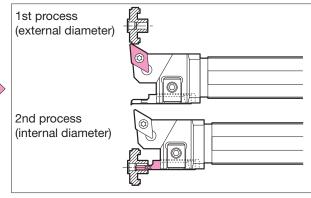
### Twin Head Holder



#### ■ Features

- Having one holder that performs two operations is equivalent to mounting an additional tool on the drill sleeve toolpost.
- External turning possible with the aid of a drill sleeve.
- 2 holder configurations, internal + external and internal + internal, are standard stocked items.
- Centre height difference of the 2 cutting edges is below 40µm, which is good for high-precision machining.

#### Twin head holder

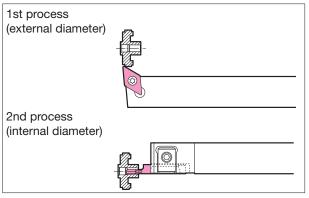


- · A single tool performing 2 different operations.
- · Toolpost moving time can also be reduced.



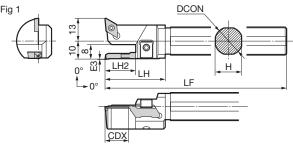
- Advantages of the Twin Head Holder
  - Conventional Tool

C/



· 2 different operations requiring 2 separate tools.





Internal Boring + External Turning Screw-on + Clamp-on

#### Holder (mm) (Internal Boring Depth of 6.0mm)

Cat. No.	성	Diameter	Height	Overall Length	Head	Boring Depth	Head	Max. Work	Insert for	Insert for	Tia.
Cat. No.	Sto	DCON	Н	LF	LH	CDX	LH2	Material Dia.	Internal Boring	External Turning	Fig
S1588X-CKBE-06		15.875	15	130	27	6	10	12.0			1
S16X-CKBE-06		16	15	130	27	6	10	12.0	KBMX ROO06-00		1
S1905X-CKBE-06		19.05	17	130	27	6	10	12.0	KBMX ROO06-OO KBMX ROO06-OOT	DC□□0702OO	1
S20X-CKBE-06		20	18	130	27	6	10	12.0	NDIVIA NOCUU-COT		1
S22X-CKBE-06		22	20	130	27	6	10	12.0			1

<sup>\*</sup> When machining internal diameter

#### Holder (mm) (Internal Boring Depth of 11.0mm)

Holder (Hill) (Hiterial L		ig Deptii	01 11.0111	111)						Dimensions (	(111111)
Cat. No.	성	Diameter	Height	Overall Length	Head	Boring Depth	Head	*Max. Work	Insert for	Insert for	F:~
Cat. No.	Sto	DCON	Н	LF	LH	CDX	LH2	Material Dia.	Internal Boring	External Turning	Fig
S1588X-CKBE-11		15.875	15	130	32	11	15	12.0			1
S16X-CKBE-11		16	15	130	32	11	15	12.0	LABRAN BOOM OO		1
S1905X-CKBE-11		19.05	17	130	32	11	15	12.0	KBMX ROO11-OO KBMX ROO11-OOT	DC 070200	1
S20X-CKBE-11		20	18	130	32	11	15	12.0	NDIVIA NOOTI-OOT		1
S22X-CKBE-11		22	20	130	32	11	15	12.0			1

<sup>\*</sup> When machining internal diameter

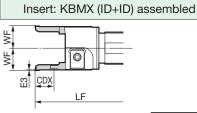
CKBB type

#### Twin Head Holder

Internal Boring, Face Grooving Clamp-on

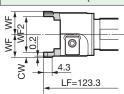
I I a I al a											
Holder									Dimensions	(mm)	)
Cat. No.	상	Diameter	Height	Overall Length	Head	Cutting Edge Distance	Boring Depth	Insert for	Face Grooving	F:~	]
Cat. No.	Sto	DCON	Н	LF	LH	WF	CDX	Internal Boring	Inserts	rig	
S1588X-CKBB-F		15.875	15	130	32	11.0	11			1	11
S16X-CKBB-F		16	15	130	32	11.0	11	LADRAN BOOOD OO		1	
S1905X-CKBB-F		19.05	17	130	32	11.0	11	KBMX ROOOO-OO KBMX ROOOO-OOT	KBMF ROOOO-05	1	П
S20X-CKBB-F		20	18	130	32	11.0	11	NDIVIA NOUCO-COT		1	
S22X-CKBB-F		22	20	130	32	11.0	11			1	1

Reference values for LF, WF and CDX dimensions are with KBMXR0311-OO(T) mounted. (Refer to the table below for dimensions with other inserts mounted.)



	0.11		A 51 51.	
	Offset	Boring Depth	Cutting Edge Distance	Overall Length
Insert	E3	CDX	WF	LF
<b>KBMX R0103-</b> ○○( <b>T</b> )	0.2	3	10.9	122
<b>KBMX R01506-</b> ○○( <b>T</b> )	0.25	6	10.95	125
<b>KBMX R0206-</b> ○○( <b>T</b> )	0.25	6	10.95	125
<b>KBMX R0311-</b> ○○( <b>T</b> )*	0.3	11	11.0	130
<b>KBMX R0411-</b> ○○( <b>T</b> )	0.5	11	11.2	130
<b>KBMX R0511-</b> ○○( <b>T</b> )	0.7	11	11.4	130
<b>KBMX R0420-</b> ○○( <b>T</b> )	0.5	20	11.2	139
<b>KBMX R0520-</b> ○○( <b>T</b> )	0.7	20	11.4	139

#### Insert: KBMF (Face+Face) assembled



	Culling Edge Distance	Culling Edge Distance	Width of Gut
Insert	WF	WF2	CW
<b>KBMF R0615-05</b>	10.9	18.8	1.5
KBMF R0620-05	10.9	17.8	2.0
KBMF R0630-05	10.9	15.8	3.0

#### Part (KBM□R insert mounting part)

`		
Clamp Plate	Double Screw	Wrench
		(For Hexagonal hole)
CKBW16	WB4-8	LH020

#### Part (DC□□ insert mounting part)

`		
Flat Insert S	crew	Wrench
	(N·m)	(For Torx hole)
BFTX02506N	1.5	TRX08

#### Special Holder Configurations



Internal diameter + external diameter (Square holder)



Internal diameter + centre drill

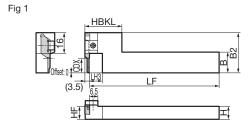


Internal diameter + internal diameter (parallel design)

Holder configurations for different work materials or various machining applications, such as centre holes, chamfering and external necking, can be made to order.

#### CKB series

Very Small Diameter L type Clamp-on



H = HF (Cutting Edge Height)

11

20

ı	10	טוי	

L	C/	















						m-m (out	ung Lu	go i loigili	,					
	Holder											Parts	Dime	ensions (mm)
	Cat. No.	Stock	Height	Width	Overall Length	Boring Depth	Width	Head Head	Applicable Inserts	Fig	Clamp Plate	Double Screw	Wrench	
Cat. No.	ts	Н	В	LF	CDX	B2	HBKL	LH3	Applicable inserts				(For Hexagonal hole)	
	CKBS R1016-16-06		10	16	125	6	26	28.5	10	KBMX L0206-OOR	1			
	CKBS R1016-16-11		10	16	125	11	31	28.5	10	KBMX L03,04,0511-OOR	1			
	CKBS R1216-16-06		12	16	150	6	26	28.5	10	KBMX L0206-OOR	1			
	CKBS R1216-16-11		12	16	150	11	31	28.5	10	KBMX L03,04,0511-OOR	1	CKBW16	MD1 Q	LH020
	CKBS R1216-16-20		12	16	150	20	40	28.5	10	KBMX L04,0520-○○R	1	CKDW10	VVD4-0	LI 1020
	CKBS R1616-16-06		16	16	150	6	26	34.5	16	KBMX L0206-OOR	1			

34.5

34.5

40

16

16

KBMX type (For Very Small Diameter L type Holder) (Coated Carbide)

150

16 150

16

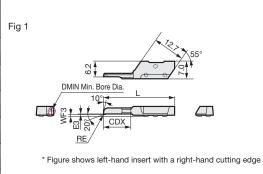
16

16

KBMX L04,0520-OOR

KBMX L03,04,0511-OOR

, · · · ,			,		, (		,
Cat. No.	0300	Min. Bore Dia.	Cutting Edge Position	Offset	Corner Radius	Overall Length	Boring Depth
Oat. No.	AC10	DMIN	WF3	E3	RE	L	CDX
KBMX L0206-05R		2.0	0.5	0.25	0.05	23.5	6
KBMX L0206-20R		2.0	0.5	0.25	0.20	23.5	6
KBMX L0311-05R		3.0	0.5	0.30	0.05	28.5	11
KBMX L0311-20R		3.0	0.5	0.30	0.20	28.5	11
KBMX L0411-05R		4.0	0.5	0.50	0.05	28.5	11
KBMX L0411-20R		4.0	0.5	0.50	0.20	28.5	11
KBMX L0420-05R		4.0	0.5	0.50	0.05	37.5	20
KBMX L0420-20R		4.0	0.5	0.50	0.20	37.5	20
KBMX L0511-05R		5.0	0.5	0.50	0.05	28.5	11
KBMX L0511-20R		5.0	0.5	0.50	0.20	28.5	11
KBMX L0520-05R		5.0	0.5	0.50	0.05	37.5	20
KBMX L0520-20R		5.0	0.5	0.50	0.20	37.5	20

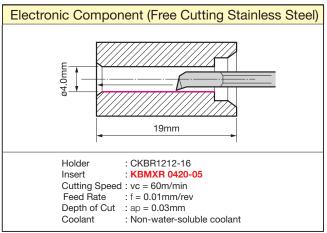


Dimensions (mm)

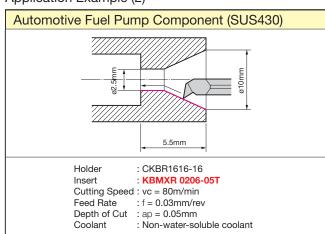
#### Application Example (1)

CKBS R1616-16-11

CKBS R1616-16-20



#### Application Example (2)



Holder

Holder

Cat. No.

S1905H-CKB RS-16

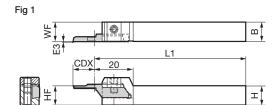
**S20H-CKB RS-16** 

S22K-CKB RS-16 S25K-CKB RS-16

S254K-CKB RS-16

Fig 1

Square Shank Clamp-on



20 \_

**DCON** 

19.05

20

22

25

25.4

Centre height

Stock

•

•

L1

Height

Н

17

18

19

23

23

Overall Length

L1

100

100

125

125

125

Dimensions (mm)

Holder								Parts	Dime	nsions (mm)
	쑹	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height		Clamp Plate	Double Screw	Wrench
Cat. No.	Stock	Н	В	L1	WF	HF	Fig			(For Hexagonal hole)
CKB R1010-16		10	10	100	10	10	1			
CKB R1212-16		12	12	125	12	12	1			
CKB R1616-16		16	16	125	16	16	1	CKBW16	WB4-8	LH020
CKB R2020-16		20	20	125	20	20	1			
CKB R2525-16		25	25	150	25	25	1			

Round Shank (Small Offset) Clamp-on

**Parts** 

CKBW16 WB4-8

S



Dimensions (mm) Clamp Plate | Double Screw | Wrench

VVICITOIT	$\wedge$
	W
(For Hexagonal hole)	Ver Sm

Round Shank Clamp-on

Fig

1

1

1

1

Cutting Edge Distance

WF

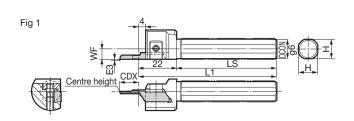
2

2

2

2

2



_	
$D_{\alpha}$	rtc.
ra	115

Dimensions (mm)

LH020

								Clamp Plate	Double Screw	Wrench
Cat. No.	X	Diameter	Height	Overall Length	Length	Cutting Edge Distance	Fig			
Cat. No.	Sto	DCON	Н	L1	LS	WF	ı ıg			(For Hexagonal hole)
S10F-CKB R-16		10	9	80	58	5	1			
S12F-CKB R-16		12	11	80	58	6	1			
S16H-CKB R-16		16	15	100	78	8	1	CKBW16	WB4-8	LH020
S19K-CKB R-16		19.05	17	125	103	8	1			
S20K-CKB R-16		20	18	125	103	10	1			

#### **CKB** series

(Coated Carbide)

#### KBMX type (Internal Boring)

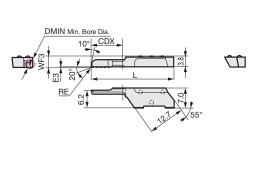
Dimensions (mm)

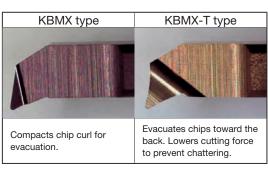
	Cat. No.	AC1030U	Min. Bore Dia.	Cutting Edge Position WF3	Offset	Corner Radius	Overall Length	Boring Depth		
ŀ	KBMX R0103-05	•	1.0	4.00	0.20	0.05	20.5	3		
ŀ	(BMX R0103-20		1.0	4.00	0.20	0.20	20.5	3		
ŀ	KBMX R01506-05	•	1.5	4.05	0.25	0.05	23.5	6	DMIN Min. Bore Dia.	
ŀ	KBMX R01506-20		1.5	4.05	0.25	0.20	23.5	6	10° CDX	
ŀ	KBMX R0206-05		2.0	4.05	0.25	0.05	23.5	6		
ŀ	KBMX R0206-20		2.0	4.05	0.25	0.20	23.5	6	S S S L	
ŀ	KBMX R0311-05		3.0	4.10	0.30	0.05	28.5	11	RE O	
ŀ	KBMX R0311-20		3.0	4.10	0.30	0.20	28.5	11		
ŀ	KBMX R0411-05		4.0	4.30	0.50	0.05	28.5	11	12.1 × 55°	
ŀ	(BMX R0411-20		4.0	4.30	0.50	0.20	28.5	11		
ŀ	KBMX R0420-05		4.0	4.30	0.50	0.05	37.5	20		
ŀ	(BMX R0420-20		4.0	4.30	0.50	0.20	37.5	20		
ŀ	KBMX R0511-05		5.0	4.50	0.70	0.05	28.5	11		
ŀ	KBMX R0511-20		5.0	4.50	0.70	0.20	28.5	11		
ŀ	KBMX R0520-05		5.0	4.50	0.70	0.05	37.5	20		
ŀ	(BMX R0520-20		5.0	4.50	0.70	0.20	37.5	20		

KBMX-T type (Internal Boring)

Dimensions (mm)

Cat. No.	ACZ150	Min. Bore Dia.	Cutting Edge Position	Offset	Corner Radius	Overall Length	Boring Depth	
San 110.		DMIN	WF3	E3	RE	L	CDX	
KBMX R0103-05T		1.0	4.00	0.20	0.05	20.5	3	
KBMX R0103-20T		1.0	4.00	0.20	0.20	20.5	3	/
KBMX R01506-05T		1.5	4.05	0.25	0.05	23.5	6	
KBMX R01506-20T		1.5	4.05	0.25	0.20	23.5	6	
KBMX R0206-05T		2.0	4.05	0.25	0.05	23.5	6	,
KBMX R0206-20T		2.0	4.05	0.25	0.20	23.5	6	
KBMX R0311-05T		3.0	4.10	0.30	0.05	28.5	11	
KBMX R0311-20T		3.0	4.10	0.30	0.20	28.5	11	
KBMX R0411-05T		4.0	4.30	0.50	0.05	28.5	11	
KBMX R0411-20T		4.0	4.30	0.50	0.20	28.5	11	
KBMX R0511-05T		5.0	4.50	0.70	0.05	28.5	11	
KBMX R0511-20T		5.0	4.50	0.70	0.20	28.5	11	





#### KBMZ type (Internal Back Turning)

Dimensions (mm)

	Cat. No.	1030U	Min. Bore Dia.	Cutting Edge Distance	Offset	Corner Radius	Overall Length	Maximum Boring Depth	Boring Depth	DMIN Min. Bore Dia.  CDX2  SP RE  RE  RE
		AC	DMIN	WF3	E3	RE	L	CDX	CDX2	Close-up of outling edge (for min. bore dameter of 0mm)  Close-up of outling edge (for min. bore dameter of 0mm)
f	KBMZ R0411-05	•	4.0	5.10	1.3	0.05	28.5	11	9	00
	KBMZ R0411-20		4.0	5.10	1.3	0.20	28.5	11	9	R0.25 R0.25
Γ	KBMZ R0511-05		5.0	5.10	1.3	0.05	28.5	11	9	RE © CDX2
	KRM7 R0511-20		5.0	5 10	13	0.20	28 5	11	a	

#### KBMG type (Internal Grooving)

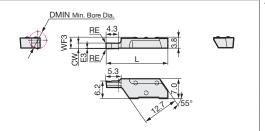
Dimensions (mm)

Cat. No.	1030U	Min. Bore Dia.	Cutting Edge Distance	Width of Cut	Corner Radius	Overall Length	Maximum Groove Depth	Machinable Length
	AC1	DMIN	WF3	CW	RE	L	CDX	LU
KBMG R0411-05		4.0	4.90	1.00	0.05	28.5	1.1	11
KBMG R0411-10		4.0	4.90	2.00	0.10	28.5	1.1	11
KBMG R0511-05		5.0	5.10	1.00	0.05	28.5	1.3	11
KBMG R0511-10		5.0	5.10	2.00	0.10	28.5	1.3	11

#### KBMF type (Face Grooving)

Dimensions (mm)

Cat. No.	ACZ150	Min. Bore Dia.	Cutting Edge Distance	Offset	Width of Cut	Corner Radius	Overall Length	Maximum Groove Depth
KBMF R0615-05		6.0	4.0	0.2	1.5	0.05	21.8	4.0
KBMF R0620-05		6.0	4.0	0.2	2.0	0.05	21.8	4.0
KBMF R0630-05		6.0	4.0	0.2	3.0	0.05	21.8	4.0



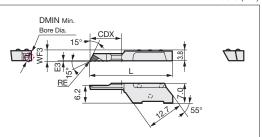
DMIN Min. Bore Dia.

Close-up of cutting edge

#### KBMX type (SUMIDIA/Internal Boring)

Dimensions (mm)

r	VPINIX type (SOIVIIDIA/II	πe	mai d	oring)					
	Cat. No.	DA2200	Min. Bore Dia.	Cutting Edge Distance	Offset	Corner Radius	Overall Length	Maximum Boring Depth	DMIN Min.  Bore Dia.  CDX
			DMIN	WF3	E3	RE	L	CDX	RE CHE
ľ	KBMX R0311-10	•	3.0	4.1	0.3	0.1	28.5	11	<u> </u>
	KBMX R0411-10		4.0	4.3	0.5	0.1	28.5	11	
L	KBMX R0511-10		5.0	4.5	0.7	0.1	28.5	11	



D

S







#### Recommended Cutting Conditions (CKB series)

	Work Material	P General Steel	M Stainless Steel	Non-Fer	rous Metal	S Exotic Alloy
	Insert Grades	ACZ150/AC1030U	ACZ150/AC1030U	ACZ150/AC1030U	DA2200	ACZ150/AC1030U
Internal	Spindle Speed n (min <sup>-1</sup> )	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	5,000 to 15,000	2,000 to 6,000
Boring	Depth of Cut ap (mm)	up to 0.2	up to 0.2	up to 0.2	up to 0.2	up to 0.2
	Feed Rate f (mm/rev)	up to 0.05	up to 0.05	up to 0.05	up to 0.05	up to 0.05
Internal	Spindle Speed n (min <sup>-1</sup> )	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	-	2,000 to 6,000
Back	Depth of Cut ap (mm)	up to 0.2	up to 0.2	up to 0.2	-	up to 0.2
Turning	Feed Rate f (mm/rev)	up to 0.05	up to 0.05	up to 0.05	-	up to 0.05
Internal	Spindle Speed n (min <sup>-1</sup> )	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	-	2,000 to 4,000
Grooving	Feed Rate f (mm/rev)	up to 0.03	up to 0.03	up to 0.05	-	up to 0.02
Face	Spindle Speed n (min <sup>-1</sup> )	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	-	2,000 to 4,000
Grooving	Feed Rate f (mm/rev)	up to 0.03	up to 0.03	up to 0.05	_	up to 0.02









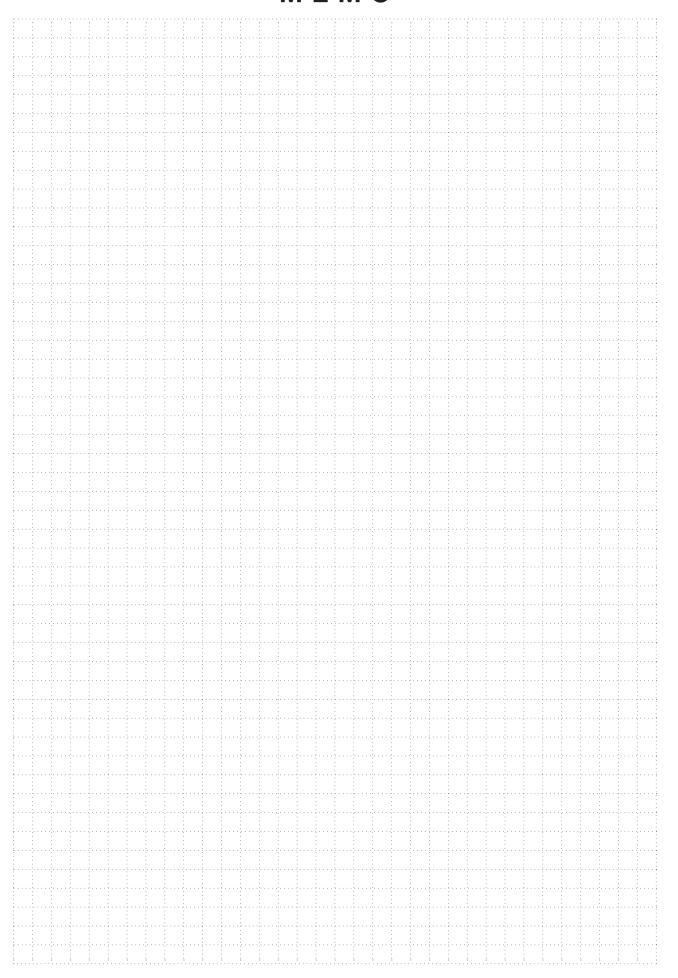








#### **MEMO**

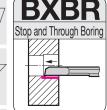


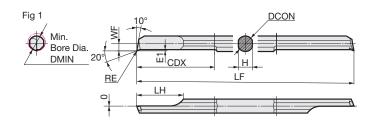












■ Features

- Economical 2-cornered bars
- Boring depths of 5D (5 times the shank diameter)
- Usable at any desired overhang
- Shank size = min. bore diameter for easy selection. (Available from ø2.0mm to ø5.0mm in 0.5mm increments)
- KBMX type cutting edge used. Bars with no chipbreaker are also available in stock
- Corner radius expansion (RE = 0.15mm)
- AC1030U with excellent cutting edge quality now in stock (bars with chipbreaker only)

Internal (Small Diameter) Finishing Solid

S	В

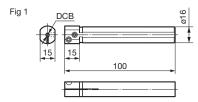




Dimensions	(mm)
------------	------

bai (With Chippheak	OUa	ieu Ca	arbide)									Dimensions	(mm)	
Cat. No.	AC1030U	2150	AC530U	Min. Bore Dia.	Diameter	Height	Overall Length	Cutting Edge Distance	Head	Maximum Boring Depth	Offset	Corner Radius	Applicable	Fig
	AC1	ACZ1	ACE	DMIN	DCON	Н	LF	WF	LH	CDX	E1	RE	Sleeve	1.19
BXBR 02005R				2.0	2.0	1.8	50	0.80	6.0	10.0	0.20	0.05	HBX 2016	1
BXBR 02015R 🐠				2.0	2.0	1.8	50	0.80	6.0	10.0	0.20	0.15	HBX 2016	1
BXBR 02020R				2.0	2.0	1.8	50	0.80	6.0	10.0	0.20	0.20	HBX 2016	1
BXBR 02505R				2.5	2.5	2.2	50	1.05	7.5	12.5	0.20	0.05	HBX 2516	1
BXBR 02515R @				2.5	2.5	2.2	50	1.05	7.5	12.5	0.20	0.15	HBX 2516	1
BXBR 02520R				2.5	2.5	2.2	50	1.05	7.5	12.5	0.20	0.20	HBX 2516	1
BXBR 03005R				3.0	3.0	2.7	50	1.30	9.0	15.0	0.25	0.05	HBX 3016	1
BXBR 03015R 🐠				3.0	3.0	2.7	50	1.30	9.0	15.0	0.25	0.15	HBX 3016	1
BXBR 03020R				3.0	3.0	2.7	50	1.30	9.0	15.0	0.25	0.20	HBX 3016	1
BXBR 03505R				3.5	3.5	3.1	60	1.55	10.5	17.5	0.25	0.05	HBX 3516	1
BXBR 03515R 6				3.5	3.5	3.1	60	1.55	10.5	17.5	0.25	0.15	HBX 3516	1
BXBR 03520R				3.5	3.5	3.1	60	1.55	10.5	17.5	0.25	0.20	HBX 3516	1
BXBR 04005R				4.0	4.0	3.6	60	1.80	12.0	20.0	0.35	0.05	HBX 4016	1
BXBR 04015R @				4.0	4.0	3.6	60	1.80	12.0	20.0	0.35	0.15	HBX 4016	1
BXBR 04020R				4.0	4.0	3.6	60	1.80	12.0	20.0	0.35	0.20	HBX 4016	1
BXBR 04505R				4.5	4.5	4.1	70	2.05	13.5	22.5	0.35	0.05	HBX 4516	1
BXBR 04515R 🐠				4.5	4.5	4.1	70	2.05	13.5	22.5	0.35	0.15	HBX 4516	1
BXBR 04520R				4.5	4.5	4.1	70	2.05	13.5	22.5	0.35	0.20	HBX 4516	1
BXBR 05005R				5.0	5.0	4.5	70	2.30	15.0	25.0	0.40	0.05	HBX 5016	1
BXBR 05015R @				5.0	5.0	4.5	70	2.30	15.0	25.0	0.40	0.15	HBX 5016	1
BXBR 05020R				5.0	5.0	4.5	70	2.30	15.0	25.0	0.40	0.20	HBX 5016	1

Boring depth CDX or less.



#### Sleeve

Dimensions (mm)

		· ·
Stock	Bore Dia.  DCB	Applicable Bar
	2.0	BXBR 020OOR(-NB)
	2.5	BXBR 025OOR(-NB)
	3.0	BXBR 030OOR(-NB)
	3.5	BXBR 035OOR(-NB)
	4.0	BXBR 040OOR(-NB)
	4.5	BXBR 045OOR(-NB)
	5.0	BXBR 050OOR(-NB)
	• • • Stock	<ul><li>2.0</li><li>2.5</li><li>3.0</li><li>3.5</li><li>4.0</li><li>4.5</li></ul>

BXBR bars can also be used with HBB type sleeves. Commercially available sleeves may also be used.

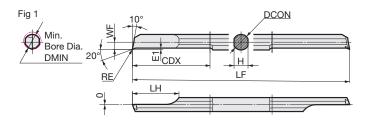
#### Parts (for Adapter Sleeve)

	Flat Insert S	crew	Set Screw	Wrench
Applicable Sleeve		(N·m		(For Torx hole)
HBXOOOO	BFTX0409N	3.4	BT06035T	TRD15

Sleeve is optional.







Internal (Small Diameter) Finishing Solid

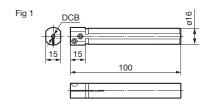
Bar (No Chipbreaker) (

Coated Carbide)

Dimensions (mm)

Cat. No.	0300	150	300	*Min. Bore Dia.	Diameter	Height	Overall Length	Cutting Edge Distance	Head	Maximum Boring Depth	Offset	Corner Radius	Applicable	Fig	
Cat. No.	AC10	ACZ1	AC5	DMIN	DCON	Н	LF	WF	LH	CDX	E1	RE	Sleeve	l ig	
BXBR 02005R-NB				2.0	2.0	1.8	50	0.80	6.0	10.0	0.20	0.05	HBX 2016	1	
BXBR 02020R-NB				2.0	2.0	1.8	50	0.80	6.0	10.0	0.20	0.20	HBX 2016	1	
<b>BXBR 02505R-NB</b>				2.5	2.5	2.2	50	1.05	7.5	12.5	0.20	0.05	HBX 2516	1	
BXBR 02520R-NB				2.5	2.5	2.2	50	1.05	7.5	12.5	0.20	0.20	HBX 2516	1	١.
<b>BXBR 03005R-NB</b>				3.0	3.0	2.7	50	1.30	9.0	15.0	0.25	0.05	HBX 3016	1	
BXBR 03020R-NB				3.0	3.0	2.7	50	1.30	9.0	15.0	0.25	0.20	HBX 3016	1	
<b>BXBR 03505R-NB</b>				3.5	3.5	3.1	60	1.55	10.5	17.5	0.25	0.05	HBX 3516	1	
BXBR 03520R-NB				3.5	3.5	3.1	60	1.55	10.5	17.5	0.25	0.20	HBX 3516	1	
<b>BXBR 04005R-NB</b>				4.0	4.0	3.6	60	1.80	12.0	20.0	0.35	0.05	HBX 4016	1	
BXBR 04020R-NB				4.0	4.0	3.6	60	1.80	12.0	20.0	0.35	0.20	HBX 4016	1	
<b>BXBR 04505R-NB</b>				4.5	4.5	4.1	70	2.05	13.5	22.5	0.35	0.05	HBX 4516	1	
BXBR 04520R-NB				4.5	4.5	4.1	70	2.05	13.5	22.5	0.35	0.20	HBX 4516	1	
<b>BXBR 05005R-NB</b>				5.0	5.0	4.5	70	2.30	15.0	25.0	0.40	0.05	HBX 5016	1	
BXBR 05020R-NB				5.0	5.0	4.5	70	2.30	15.0	25.0	0.40	0.20	HBX 5016	1	

<sup>\*</sup> Boring depth CDX or less.



#### Sleeve

Dimensions (mm)

Parts	(for	Adapter	Sleeve)

(	- /			
	Flat Insert S	crew	Set Screw	Wrench
Applicable Sleeve		(N·m)		(For Torx hole)
HBXOOOO	BFTX0409N	3.4	BT06035T	TRD15
	,	•	•	

Sleeve is optional.

Cat. No.	Stock	Bore Dia.  DCB	Applicable Tool Holder
HBX 2016		2.0	BXBR 020OOR(-NB)
HBX 2516		2.5	BXBR 025OOR(-NB)
HBX 3016		3.0	BXBR 030OOR(-NB)
HBX 3516		3.5	BXBR 035OOR(-NB)
HBX 4016		4.0	BXBR 04000R(-NB)
HBX 4516		4.5	BXBR 045OOR(-NB)
HBX 5016		5.0	BXBR 05000R(-NB)

BXBR bars can also be used with HBB type sleeves. Commercially available sleeves may also be used.

#### **Recommended Cutting Conditions**

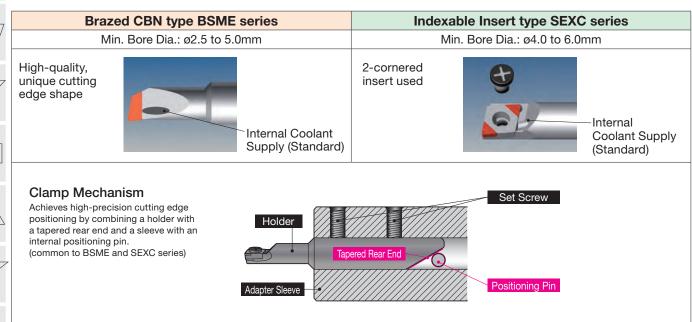
	•				
	Work Material	P General Steel	M Stainless Steel	Non-Ferrous Metal	S Exotic Alloy
	Tool Grades	ACZ150/AC1030U	ACZ150/AC1030U	ACZ150/AC1030U	ACZ150/AC1030U
Internal	Spindle Speed n (min <sup>-1</sup> )	2,000 to 10,000	2,000 to 8,000	5,000 to 15,000	2,000 to 6,000
Boring	Depth of Cut ap (mm)	up to 0.2	up to 0.2	up to 0.2	up to 0.2
	Feed Rate f (mm/rev)	up to 0.05	up to 0.05	up to 0.05	up to 0.05

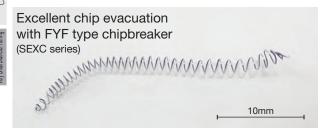
### BSME series/SEXC series



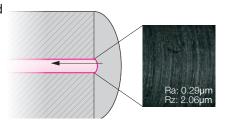
■ Features

- For internal boring of hardened steel with min. bore diameters from ø2.5mm.
- Achieves high-precision cutting edge positioning thanks to the newly developed clamp mechanism.
- Realises high-efficiency machining by switching from grinding to cutting in the small diameter range.
- Brazed type BSME series
   Can be used with bore diameters from ø2.5 to 5.0mm.
- Indexable Insert type SEXC series
   Can be used with bore diameters from ø4.0 to 6.0mm.
   Expansion of coated carbide and cermet grades.
- Economical 2-cornered insert.





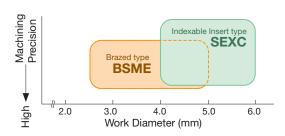
Excellent machined surface quality with cermet grade (SEXC series)



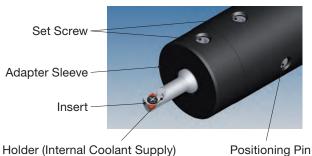
Work Material: SUS304 Internal Boring, Insert: ECEM 03X102L-FYF (AC1030U) Cutting Conditions: vc = 100m/min, f = 0.05mm/rev, ap = 0.03mm, Work Dia.: ø4

Work Material: SCM415 Internal Boring, Insert: ECEM 03X102L-FYF (T1500A) Cutting Conditions:  $vc = 100m/min \ f = 0.03mm/rev \ ap = 0.03mm$ 

#### **Application Range**



#### **Basic Configuration**



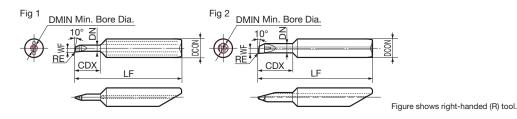
3-16

S

### SME series

SUMIBORON Brazed





Holder ( SUMIBORON)

Dimensions (mm)

Cat. No.         BN2000 R         Min. Bore Dia. DMIN         Shank Diameter DCON         Neck Diameter DN         Courting Edge Distance WF         Courting Edge Distance WF         Courting Edge Distance CDX         Courting Edge Distance RE         Courting Edg	riciaer ( cermbertert)									Billioliololio	(11111)
BSME R/L25020D2S6	Cat No	BN2000	Min. Bore Dia.	Shank Diameter	Neck Diameter	Overall Length	3 3 3	Maximum Boring Depth	Corner Radius	Applicable	Fig
BSME R/L25020D3S6       ●       2.5       6.0       2.0       34.5       1.20       7.8       0.2         BSME R/L25020D4S6       ●       3.0       6.0       2.5       32.8       1.45       6.3       0.2         BSME R/L30020D3S6       ●       3.0       6.0       2.5       35.8       1.45       9.3       0.2         BSME R/L30020D4S6       ●       3.0       6.0       2.5       38.8       1.45       12.3       0.2         BSME R/L35020D2S6       ●       3.5       6.0       3.0       37.0       1.70       7.3       0.2         BSME R/L35020D4S6       ●       3.5       6.0       3.0       37.0       1.70       10.8       0.2         BSME R/L40020D2S6       ●       4.0       6.0       3.5       33.9       1.95       8.3       0.2       HBSM6020A         BSME R/L40020D3S6       ●       4.0       6.0       3.5       37.9       1.95       12.3       0.2         BSME R/L40020D4S6       ●       4.5       6.0       4.0       35.0       2.20       9.3       0.2         BSME R/L45020D4S6       ●       4.5       6.0       4.0       39.5       2.20       13.	Oat. No.	RL	DMIN	DCON	DN	LF	WF	CDX	RE	Sleeve	li ig
BSME R/L25020D4S6         2.5         6.0         2.0         37.0         1.20         10.3         0.2           BSME R/L30020D2S6         ■ 3.0         6.0         2.5         32.8         1.45         6.3         0.2           BSME R/L30020D3S6         ■ 3.0         6.0         2.5         35.8         1.45         9.3         0.2           BSME R/L30020D4S6         3.0         6.0         2.5         38.8         1.45         12.3         0.2           BSME R/L35020D2S6         ■ 3.5         6.0         3.0         37.0         1.70         7.3         0.2           BSME R/L35020D4S6         ■ 3.5         6.0         3.0         37.0         1.70         10.8         0.2           BSME R/L40020D2S6         ■ 4.0         6.0         3.5         33.9         1.95         8.3         0.2         HBSM6020A           BSME R/L40020D3S6         ■ 4.0         6.0         3.5         37.9         1.95         12.3         0.2           BSME R/L45020D3S6         ■ 4.5         6.0         4.0         35.0         2.20         9.3         0.2           BSME R/L45020D3S6         ■ 4.5         6.0         4.0         39.5         2.20         13.8 </th <th>BSME R/L25020D2S6</th> <th></th> <th>2.5</th> <th>6.0</th> <th>2.0</th> <th>32.0</th> <th>1.20</th> <th>5.3</th> <th>0.2</th> <th></th> <th>1</th>	BSME R/L25020D2S6		2.5	6.0	2.0	32.0	1.20	5.3	0.2		1
BSME R/L30020D2S6	BSME R/L25020D3S6		2.5	6.0	2.0	34.5	1.20	7.8	0.2		1
BSME R/L30020D3S6       ●       3.0       6.0       2.5       35.8       1.45       9.3       0.2       2       2       2       2       2       2       2       3.0       6.0       2.5       38.8       1.45       12.3       0.2       3       3	BSME R/L25020D4S6		2.5	6.0	2.0	37.0	1.20	10.3	0.2		1
BSME R/L30020D4S6       3.0       6.0       2.5       38.8       1.45       12.3       0.2       2         BSME R/L35020D2S6       ■       3.5       6.0       3.0       33.5       1.70       7.3       0.2       2         BSME R/L35020D4S6       ■       3.5       6.0       3.0       40.5       1.70       10.8       0.2       HBSM6020       2         BSME R/L40020D2S6       ■       4.0       6.0       3.5       33.9       1.95       8.3       0.2       HBSM6020A       2         BSME R/L40020D3S6       ■       4.0       6.0       3.5       37.9       1.95       12.3       0.2       2         BSME R/L45020D2S6       ■       4.5       6.0       4.0       35.0       2.20       9.3       0.2       2         BSME R/L45020D4S6       ■       4.5       6.0       4.0       39.5       2.20       13.8       0.2       2         BSME R/L45020D4S6       ■       4.5       6.0       4.0       44.0       2.20       18.3       0.2         BSME R/L50020D4S6       ■       5.0       6.0       4.5       35.8       2.45       10.3       0.2	BSME R/L30020D2S6		3.0	6.0	2.5	32.8	1.45	6.3	0.2		2
BSME R/L35020D2S6	BSME R/L30020D3S6		3.0	6.0	2.5	35.8	1.45	9.3	0.2		2
BSME R/L35020D3S6       ●       3.5       6.0       3.0       37.0       1.70       10.8       0.2       HBSM6020       2         BSME R/L35020D4S6       ●       4.0       6.0       3.5       33.9       1.95       8.3       0.2       HBSM6020A       2         BSME R/L40020D3S6       ●       4.0       6.0       3.5       37.9       1.95       12.3       0.2       2         BSME R/L40020D4S6       4.0       6.0       3.5       41.9       1.95       16.3       0.2       2         BSME R/L45020D2S6       ●       4.5       6.0       4.0       35.0       2.20       9.3       0.2       2         BSME R/L45020D4S6       +       4.5       6.0       4.0       39.5       2.20       13.8       0.2       2         BSME R/L45020D4S6       +       4.5       6.0       4.0       44.0       2.20       18.3       0.2       2         BSME R/L50020D2S6       ●       5.0       6.0       4.5       35.8       2.45       10.3       0.2	BSME R/L30020D4S6		3.0	6.0	2.5	38.8	1.45	12.3	0.2		2
BSME R/L35020D4S6       3.5       6.0       3.0       40.5       1.70       14.3       0.2       HBSM6020       2         BSME R/L40020D2S6       ◆       4.0       6.0       3.5       33.9       1.95       8.3       0.2       HBSM6020A       2         BSME R/L40020D3S6       ◆       4.0       6.0       3.5       37.9       1.95       12.3       0.2       2         BSME R/L40020D4S6       4.0       6.0       3.5       41.9       1.95       16.3       0.2       2         BSME R/L45020D3S6       ◆       4.5       6.0       4.0       35.0       2.20       9.3       0.2       2         BSME R/L45020D4S6       ◆       4.5       6.0       4.0       39.5       2.20       13.8       0.2       2         BSME R/L50020D4S6       ◆       5.0       6.0       4.5       35.8       2.45       10.3       0.2       2	BSME R/L35020D2S6	•	3.5	6.0	3.0	33.5	1.70	7.3	0.2		2
BSME R/L40020D2S6       ●       4.0       6.0       3.5       33.9       1.95       8.3       0.2       HBSM6020A       2         BSME R/L40020D3S6       ●       4.0       6.0       3.5       37.9       1.95       12.3       0.2       2         BSME R/L40020D4S6       4.0       6.0       3.5       41.9       1.95       16.3       0.2       2         BSME R/L45020D2S6       ●       4.5       6.0       4.0       35.0       2.20       9.3       0.2       2         BSME R/L45020D4S6       ●       4.5       6.0       4.0       39.5       2.20       13.8       0.2       2         BSME R/L45020D4S6       ●       5.0       6.0       4.5       35.8       2.45       10.3       0.2	BSME R/L35020D3S6		3.5	6.0	3.0	37.0	1.70	10.8	0.2		2
BSME R/L40020D3S6       ■       4.0       6.0       3.5       37.9       1.95       12.3       0.2       2         BSME R/L40020D4S6       4.0       6.0       3.5       41.9       1.95       16.3       0.2       2         BSME R/L45020D2S6       ■       4.5       6.0       4.0       35.0       2.20       9.3       0.2       2         BSME R/L45020D3S6       ■       4.5       6.0       4.0       39.5       2.20       13.8       0.2       2         BSME R/L45020D4S6       4.5       6.0       4.0       44.0       2.20       18.3       0.2       2         BSME R/L50020D2S6       ■       5.0       6.0       4.5       35.8       2.45       10.3       0.2	BSME R/L35020D4S6		3.5	6.0	3.0	40.5	1.70	14.3	0.2	HBSM6020	2
BSME R/L40020D4S6       4.0       6.0       3.5       41.9       1.95       16.3       0.2       2         BSME R/L45020D2S6       ●       4.5       6.0       4.0       35.0       2.20       9.3       0.2       2         BSME R/L45020D3S6       ●       4.5       6.0       4.0       39.5       2.20       13.8       0.2       2         BSME R/L45020D4S6       4.5       6.0       4.0       44.0       2.20       18.3       0.2       2         BSME R/L50020D2S6       ●       5.0       6.0       4.5       35.8       2.45       10.3       0.2       2	BSME R/L40020D2S6		4.0	6.0	3.5	33.9	1.95	8.3	0.2	HBSM6020A	. 2
BSME R/L45020D2S6       ●       4.5       6.0       4.0       35.0       2.20       9.3       0.2         BSME R/L45020D3S6       ●       4.5       6.0       4.0       39.5       2.20       13.8       0.2         BSME R/L45020D4S6       4.5       6.0       4.0       44.0       2.20       18.3       0.2         BSME R/L50020D2S6       ●       5.0       6.0       4.5       35.8       2.45       10.3       0.2	BSME R/L40020D3S6		4.0	6.0	3.5	37.9	1.95	12.3	0.2		2
BSME R/L45020D3S6       ●       4.5       6.0       4.0       39.5       2.20       13.8       0.2       2         BSME R/L45020D4S6       4.5       6.0       4.0       44.0       2.20       18.3       0.2       2         BSME R/L50020D2S6       ●       5.0       6.0       4.5       35.8       2.45       10.3       0.2       2	BSME R/L40020D4S6		4.0	6.0	3.5	41.9	1.95	16.3	0.2		2
BSME R/L45020D4S6       4.5       6.0       4.0       44.0       2.20       18.3       0.2         BSME R/L50020D2S6       ●       5.0       6.0       4.5       35.8       2.45       10.3       0.2         2       2       2       2       2       2       2       2	BSME R/L45020D2S6		4.5	6.0	4.0	35.0	2.20	9.3	0.2		2
<b>BSME R/L50020D2S6</b> ● ● <b>5.0</b> 6.0 4.5 35.8 2.45 10.3 0.2	BSME R/L45020D3S6		4.5	6.0	4.0	39.5	2.20	13.8	0.2		2
	BSME R/L45020D4S6		4.5	6.0	4.0	44.0	2.20	18.3	0.2		2
RSME R/I 50020D3S6	BSME R/L50020D2S6	•	5.0	6.0	4.5	35.8	2.45	10.3	0.2		2
DOIVIL 11/ L000/20 D000	BSME R/L50020D3S6		5.0	6.0	4.5	40.8	2.45	15.3	0.2		2
<b>BSME R/L50020D4S6</b>   <b>5.0</b>   6.0   4.5   45.8   2.45   20.3   0.2   2	BSME R/L50020D4S6		5.0	6.0	4.5	45.8	2.45	20.3	0.2		2

The BSME series requires HBSM6020(A) adapter sleeve (sold separately).

#### **Identification Code**

#### **BSM**

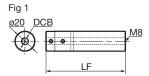
Series Code Carbide Shank Direction with Oil Hole

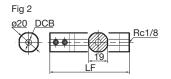
Feed Min. Bore Dia.

Cutting Edge Corner Radius

Shank Dia.

Parts Dimensions (mm)





#### Sleeve (Sold Separately)

					Set Screw	Wrench
Cat. No.	Stock	Bore Dia.	Overall Length	Fig		
	됐			ı 19		
	0,	DCB	LF			
HBSM6020		6.0	80	1	DTOFOG	TUOOF
HBSM6020A		6.0	80	2	BT0506	TH025

#### Alignment Jig (Sold Separately) For HBSM6020 Sleeve

Cat. No.	Stock	
AFBSM60	•	

This jig is used for centring sleeves when setting them into sleeve holders.

#### **Recommended Cutting Conditions**

Work Material	Hardened Steel					
Spindle Speed n (min <sup>-1</sup> )	Above 2,000	Above 2,000				
Depth of Cut ap (mm)	0.01-0.15	0.01-0.15				
Feed Rate f (mm/rev)	0.01-0.10	0.01-0.10				

May cause chattering or chipping at the cutting edge during low-speed machining. Excessive depth of cut causes deformation of the tool, which consequently leads to deterioration of dimensional tolerance.













#### series







Carbide / Cermet / SUMIBORON Screw-on

**Parts** 

MIB1.6-2

MIB1.6-2.5

MIB1.6-3

-ig

1

1

Bolt

(N·m

0.2

0.2

0.2

Dimensions (mm)

Wrench

**SDBSM** 



Fig 1 DMIN Min. Bore Dia. N CDX

GAME

Stock

RL

Min.

**DMIN** 

4.0

4.0

5.0

5.0

6.0

6.0

Figure shows right-handed (R) tool.

Rake

**GAMF** 

-13°

-13°

-12°

-12°

-11°

-11°

Applicable

Sleeve

HBSM6020

HBSM6020A

Borina

CDX

8

12

10

15

12

18











Holder

E06D3-SEXC R/L03-04P E06D2-SEXC R/L03-05P E06D3-SEXC R/L03-05P ● E06D2-SEXC R/L03-06P

**Identification Code** 

Cat. No.

E06D2-SEXC R/L03-04P

E06D3-SEXC R/L03-06P ●

Dia.

**DCB** 

with Oil Hole

Fig 1

ø20

<del>(</del> 🕸 )

on

The SEXC series requires HBSM6020(A) adapter sleeve (sold separately).

Shape

Edge

Shank

**DCON** 

6.0

6.0

6.0

6.0

6.0

6.0

Neck

DN

3.75

3.75

4.75

4.75

5.75

5.75

Overall

Length

LF

33.75

37.75

35.25

40.25

36.75

42.75

Relief

Angle

Direction Inscribed Circle

Cuttina Edae

WF

1.95

1.95

2.45

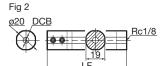
2.45

2.95

2.95

Bore

Dia.



#### Sleeve (Sold Separately)

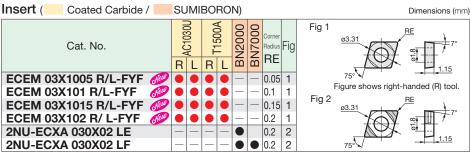
ΙF

(	,					
Cat. No.	×		Overall		Set Screw	Wrench
	Stock	Bore Dia.	Length	Fig		
		DCB	LF	3		
HBSM6020		6.0	80	1	BT0506	TLIOOF
HBSM6020A		6.0	80	2	B10506	111025

#### Parts Dimensions (mm) Alignment Jig (Sold Separately) For HBSM6020 Sleeve

0 0 1		•
Cat. No.	Stock	
AFBSM60	•	

This jig is used for centring sleeves when setting them into sleeve holders.



Part Number Suffix: LE: Honed Edge, LF: Sharp Edged, FYF: Sharp Edged (with Chipbreaker)

#### **Recommended Cutting Conditions**

Work I	Material	P General Steel		M Stainless Steel		K Cast Iron		Non-Ferrous Metal		S Exotic Alloy	H Harde	ned Steel
Insert	Grades	AC1030U	T1500A	AC1030U	T1500A	AC1030U	T1500A	AC1030U	T1500A	AC1030U	BN2000	BN7000
Spindle Sp	peed n (min-1)	2,000-10,000	2,000-10,000	2,000-8,000	2,000-8,000	2,000-10,000	2,000-10,000	5,000-15,000	5,000-15,000	2,000-6,000	Above 2,000	Above 2,000
Depth of 0	Cut ap (mm)	up to 0.2	up to 0.2	up to 0.2	up to 0.2	up to 0.2	up to 0.2	up to 0.2	up to 0.2	up to 0.2	0.01-0.15	0.01-0.15
Feed Rate	e f (mm/rev)	up to 0.05	up to 0.05	up to 0.05	up to 0.05	up to 0.05	up to 0.05	up to 0.05	up to 0.05	up to 0.05	0.01-0.10	0.01-0.10

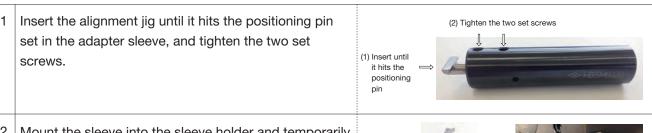
May cause chattering or chipping at the cutting edge during low-speed machining. Excessive depth of cut causes deformation of the tool, which consequently

### BSME series/SEXC series

#### ■ Dedicated Adapter Sleeve/Alignment Jig



■ Mounting Method (HBSM6020A has a side lock flat, so centring with an alignment jig is not required.)



2 Mount the sleeve into the sleeve holder and temporarily tighten the fastening screws.



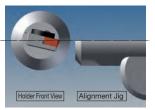


Rotate the sleeve gradually to adjust until the flat strip of the alignment jig is horizontal.



Using a tool presetter, measure the diameter of the tool.

When a boring bar is mounted into the sleeve adjusted by the alignment tool, its cutting edge position will automatically be set at the centre.



\*Steps 1 and 3 above are not required when using HBSM6020A.













#### **BNBX** series

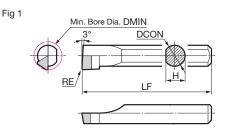






**SUMIBORON** Brazed





**BNBX 060R** 

**BNBX 065R** 

**BNBX 070R** 

**BNBX 075R** 







	Holder (SUMIBORON)		T CHEW							Dimensions	(mm)
i	Cat. No.	000	125	000	Min. Bore Dia.	Diameter	Height	Overall Length	Corner Radius	Applicable	Fig
7	Odt. No.	BN2	BN7	BN7	DMIN	DCON	Н	LF	RE	Sleeve	1 19
	BNBX 020R	•		•	2.5	2.0	1.8	40	0.2	HBX 2016	1
	BNBX 025R				3.0	2.5	2.2	40	0.2	HBX 2516	1
	BNBX 030R				3.5	3.0	2.7	40	0.2	HBX 3016	1
7	BNBX 035R				4.0	3.5	3.2	40	0.2	HBX 3516	1
	BNBX 040R				4.5	4.0	3.7	40	0.2	HBX 4016	1
	BNBX 045R				5.0	4.5	4.2	40	0.2	HBX 4516	1
	BNBX 050R				5.5	5.0	4.7	60	0.2	HBX 5016	1
	BNBX 055R				6.0	5.5	5.2	60	0.2	HBX 5516	1

6.0

6.5

7.0

7.5

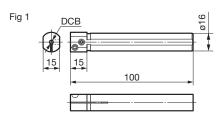
**BNBX 080R** 8.5 8.0 7.7 BNBX bars can be used with HBB type sleeves, but HBX type sleeves are recommended for bars below ø6mm.

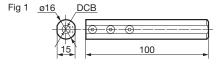
6.5

7.0

7.5

8.0





0.2

0.2

0.2

0.2

0.2

HBX 6016

HBB 6516

HBB 716

HBB 7516

HBB 816

1

1

1

1

1

60

60

80

80

80

#### Sleeve (HBX type)

Dimensions	(mr
------------	-----

Cat. No.	Stock	Bore Dia.  DCB	Applicable Tool Holder	Fig
HBX 2016	•	2.0	BNBX 020R	1
HBX 2516		2.5	BNBX 025R	1
HBX 3016		3.0	BNBX 030R	1
HBX 3516		3.5	BNBX 035R	1
HBX 4016		4.0	BNBX 040R	1
HBX 4516		4.5	BNBX 045R	1
HBX 5016		5.0	BNBX 050R	1
HBX 5516		5.5	BNBX 055R	1
HBX 6016		6.0	BNBX 060R	1

#### Sleeve (HBB type)

5.7

6.2

6.7

7.2

Dimensions (mm)

Cat. No.	Stock	Bore Dia.  DCB	Applicable Tool Holder	Fig
HBB 6516		6.5	BNBX 065R	1
HBB 716		7.0	BNBX 070R	1
HBB 7516		7.5	BNBX 075R	1
HBB 816		8.0	BNBX 080R	1

HBB type sleeve can also be used with ø2.5 to 6.0mm holders.

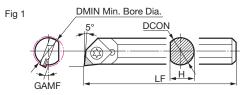
#### Parts (for Adapter Sleeve)

raits (ioi raupter siceve)										
	Flat Insert S	crew	Set Screw	Wrench						
Applicable Sleeve		(N·m)	BT06035T	TRD (For (For Torx holes)						
HBX2OOO	BFTX0409N	1.5	BT06035T	TRD15						
HBX3OOO										
HBX4000	DETY0400NI	3.0	BT06035T	TDD15						
HBX5000	BFTX0409N	3.0	D1000331	נוטחו						
HBX6OOO										
HBBOOOO	_	_	BT0404	LH020						

### BNZ series

**SUMIBORON** Screw-on

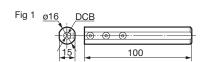




Holder

Holder Parts Dimensions (mm)												
		Min. Bore Dia.	Diameter	Height	Overall Length	Rake Angle		Flat Insert S	crew	Wrench	Adapter Sleeve	
Cot No	Stock	Min. Bore Dia.	Diameter	Height	Overall Length	Hake Angle	F:~		_	19		
Cat. No.	Stc	DMIN	DCON	Н	LF	GAMF	Fig		(N·m	(For Torx hole)		
BNZ 606R		7.0	6.0	5.5	80	-14°	1				HBB616	
BNZ 608R		9.0	8.0	7.5	100	-12°	1				HBB816	
<b>BNZ 610R</b>		11.0	10.0	9.5	125	-10°	1	BFTX0204N	0.5	TRX06		2
BNZ 612R		13.0	12.0	11.0	130	-8°	1	DF 1 AU2U4IN	0.5	1000	_	
BNZ 616R		17.0	16.0	15.0	145	-6°	1					
BNZ 620R		21.0	20.0	19.0	160	-5°	1	1				

Insert ( SUMIBORON) Dimensions (mm) BN1000 BN2000 BN7125 BN7000 Corner Radius Quantity Cat. No. RE Fig 1 NU-ZNEX 040102 0.2 NU-ZNEX 040104 0.4 NC-ZNEX 040102LE 0.2 Single NC-ZNEX 040104LE pack 0.4 NC-ZNEX 040102LT NC-ZNEX 040104LT 0.2 0.4 T-NU-ZNEX 040102 T-NU-ZNEX 040104 0.2 10 pack 0.4



Sleeve			Dimensions (mm)						
Cat. No.	Stock	Bore Dia.  DCB	Applicable Holder	Fig					
HBB 616		6.0	BNZ 606R	1					
HBB 816		8.0	BNZ 608R	1					

HBX type sleeve (HBX6016) can also be used with BNZ606R.





### **BNB** series

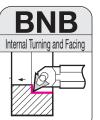


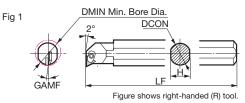






**SUMIBORON** Clamp-on





20.0

**BNB 520R** 







	Holder								Parts		Dime	ensions (mm)	
			Min. Bore Dia.	Diameter	Height	Overall Length	Rake Angle		Clamp Plate	Bolt	Nut	Wrench	
	Cat. No.	Stock	IVIIII. Bore Dia.	Diameter	Height	Overall Length	Hake Angle	r:~					l
7	Cat. No.	Stc	DMIN	DCON	Н	LF	GAMF	Fig				(For Hexagonal hole)	
	BNB 508R		10.0	8.0	7.0	140	-9°	1		BH0306	BNBW-2		
	BNB 510R		12.0	10.0	9.0	140	-8°	1				] '	
7	BNB 512R		14.0	12.0	11.0	160	-6°	1	BNBC	FBUP3-A0-9	BNBW-4	TH020	l
	BNB 516R		18.0	16.0	14.0	180	-5°	1					l

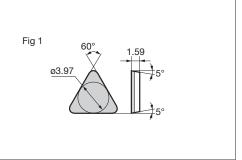
18.0

180

-4°

Insert (SUMIBORON,	SL	JMID	IA)							
			SUN	1IBOI	RON	New		SUN	IIDIA	Corner Badius
Cat. No.	9	20	00	20				20	8	Corner Hadius
Cat. No.	BNX1	BNX20	BN2000	BN350	BN500	BN7125	BN7000	DA150	DA1000	RE
TBGN 060102B		•						•		0.2
TBGN 060104B										0.4
TBGN 060108B										0.8
TBGN 060102-BSTN <sup>-1</sup>	-		_	_	_	_	_	_	_	0.2
TBGN 060104-BSTN <sup>1</sup>	_		_	_	_	_	_	_	_	0.4
TBGN 060108-BSTN <sup>-1</sup>	_		_	_	_	_	_	_	_	0.8
NF-TBGN 060102 <sup>2</sup>	_	_	_	_	_	_	_	_		0.2
NF-TBGN 060104 <sup>2</sup>	_	_	_	_	_	_	_	_		0.4
*1. TPCN COCCO PCTN is only	ovoil	abla ir	DNIN	100 av	odo o	nd he		malla	. noac	tive land anala

22.0



BH0310 BNBW-7

Dimensions (mm)

\*2: NF-TBGN is a single corner insert. (This is not a Full-Top insert)

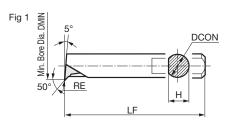
<sup>\*1:</sup> TBGN OOOOO-BSTN is only available in BNX20 grade and has a smaller negative land angle. (BSTN: -15°, B: -25°. However, the negative land angle is uniquely configured for each grade.)

### DABB series



SUMIDIA Brazed



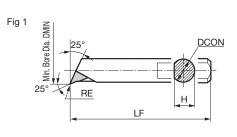


Holder (SUMIDIA)							Dimensions	(mm)
Cat Na	2200	Min. Bore Dia.	Min. Bore Dia. Diameter H		Overall Length	Corner Radius	Applicable	Fia
Cat. No.	DA2	DMIN	DCON	Н	LF	RE	Sleeve	Fig
DABB 025CR	•	3.0	2.5	2.2	60	0.1	HBB 2516	1
DABB 035CR	•	4.0	3.5	3.2	60	0.1	HBB 3516	1
DABB 045CR		5.0	4.5	4.1	80	0.1	HBB 4516	1
DABB 060CR		7.0	6.0	5.2	80	0.1	HBB 616	1

PCD

SUMIDIA Brazed



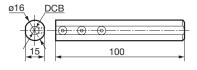


Holder (SUMIDIA)

Dimensions (mm)

Cat. No.	2200	Min. Bore Dia.	Diameter	Height	Overall Length	Corner Radius	Applicable	Fig
Gat. No.	DA2	DMIN	DCON	Н	LF	RE	Sleeve	li ig
DABB 025NR	•	3.0	2.5	2.2	60	0.1	HBB 2516	1
DABB 035NR		4.0	3.5	3.2	60	0.1	HBB 3516	1
DABB 045NR		5.0	4.5	4.1	80	0.1	HBB 4516	1
DABB 060NR		7.0	6.0	5.2	80	0.1	HBB 616	1
DADD CCC.AT		7.10	0.0	U.L		0.1	1100 070	,

Fig 1



SIE		/e
-----	--	----

					, ,
Cat. No.	Stock	Bore Dia.		Set Screw	Wrench
			Eia		
Cat. No.		DCB	Fig		(For Hexagonal hole)
HBB 2516	•	2.5	1		
HBB 3516		3.5	1	DT0404	LH020
HBB 4516		4.5	1	BT0404	LHU20
HBB 616		6.0	1		

HBX type sleeve can also be used.

#### **Recommended Cutting Conditions**

Work Material	Spindle Speed	Depth of Cut ap	Feed Rate f	Coolant
N Aluminum Alloy	Above 2,000 min <sup>-1</sup>	0.1mm or below	0.1mm/rev or below	Wet











### S-SCLC type / A-SCLC type







Internal Finishing to Medium Cutting Screw-on

Parts

2

2

2 BFTX0407N

BFTX0409N

Dimensions (mm)

Wrench

For Torx hole

TRX06

TRX06

TRX08

TRX15

0.2

0.5

1.1

1.5

3.0

3.4

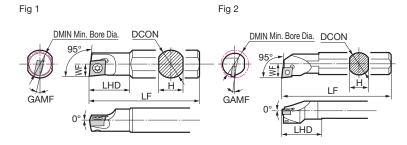


Figure shows right-handed (R) tool.

9.0 27

9.0 30

18 250 11.0 30

-8°

-8°

CC□□09T3

-10°

Holder

S











18 16 15 200

18 16 15 200

22 20

Stock

• • S25T-SCLC R/L09T3-27 27 25 | 23 | 300 | 13.5 | 35 Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



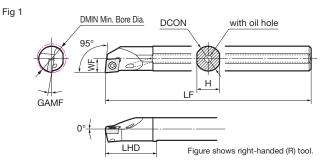




S16R-SCLC R/L0602-18

S16R-SCLC R/L09T3-18

S20S-SCLC R/L09T3-22



Internal Finishing to Medium Cutting

Но	olde	er												Parts	Dime	ensions (mm)
			Sto	ock	Min. Bore	Diameter	Height	Overall	Cutting Edge	Head	Rake Angle	Applicable Inserts		Flat Insert So	crew	Wrench
Sh	ank				Dia.	Diameter	neigni	Length	Distance		nake Aligie					1
	terial	Cat. No.	R	L	DMIN	DCON	н	LF	WF	LHD	GAMF	Cat. No.	Fig		(N·m)	
		10011 001 0 7/1 0000 10												DET (005051)		(For Torx hole)
		A08H-SCLC R/L0602-10			10	8	/	100	5.5	19	-13°	ССПП0602		BFTX02505N	1.1	
١		A10K-SCLC R/L0602-12			12	10	9	125	6.0	21	-12°					TRX08
	eel	A12M-SCLC R/L0602-14			14	12	11	150	7.0	25	-10°			BFTX02506N	1.5	
	ith	A16R-SCLC R/L0602-18			18	16	15	200	9.0	27	-8°		1			
Oil Hole		A16R-SCLC R/L09T3-18			18	16	15	200	9.0	30	-10°	-	1	BFTX0407N	3.0	
	OIC	A20S-SCLC R/L09T3-22			22	20	18	250	11.0	30	-8°	CC□□09T3	1	BFTX0409N	2.4	TRX15
		A25T-SCLC R/L09T3-27			27	25	23	300	13.5	35	-6°		1	BF1X0409N	3.4	

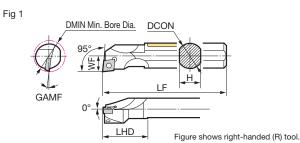
# B-SCLC type











Internal Finishing to Medium Cutting Screw-on



Hold	er												Parts	Dime	ensions (mm)
		Sto	ock	Min. Bore	Diameter	Height	Overall	Cutting Edge	Head	Rake Angle	Applicable Inserts		Flat Insert S	crew	Wrench
Shank				Dia.	Diameter	neigni	Length	Distance	пеац	nake Arigie					19
Material	Cat. No.	R	L	DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.	Fig		N·m	
_	D0011 001 0 D // 0000 10			40		_	100		40	400			DETYCOCOCNI		(For Torx hole)
SIL	B08H-SCLC R/L0602-10			10	8	/	100	5.5	19	-13°		1	BFTX02505N	1.1	
Anti-	B10K-SCLC R/L0602-12			12	10	9	125	6.0	21	-12°	CC□□0602	1			TRX08
	B12M-SCLC R/L0602-14			14	12	11	150	7.0	25	-10°	ССППООО	1	BFTX02506N	1.5	INAUG
				16	12	11	150	9.0	25	-10°		1			
<u></u>	B16R-SCLC R/L09T3-20 ● ●				16	15	200	11.0	30	-8°	CC□□09T3	1	BFTX0407N	3.0	TRX15
Steel v Vibration	B20S-SCLC R/L09T3-25 ● ●				20	18	250	13.0	30	-7°	CCDD0913	1	BFTX0409N	3.4	IRXIS
Zi N	B25T-SCLC R/L1204-32	32	25	23	300	17.0	38	-6°	CC□□1204	1	BFTX0511N	5.0	TRX20		









### C-SCLC type / E-SCLC type

Fig 1 Fig 2 DMIN Min. Bore Dia. DCON DMIN Min. Bore Dia DCON GAMF N٥ LHD

Holder Parts Dimensions (mm) Applicable Inserts Flat Insert Screw Wrench Rake Bore Edge Dia. Shank Cat. No. Previous Cat. No. Fig Material R Cat. No. (N·m DMIN DCON LHD GAMF Н 1 F WF For Torx hole C04G-SCLC R03X1-05 C04G-SCLCR03X1-05° 5 3.8 90 2.5 -15° CC□□03X1 BFTX016033 TRX06 0.2 C05H-SCLC R03X1-06 C05H-SCLCR03X1-06° • 5 4.4 100 3.0 -13° 6 1 C06J-SCLC R04X1-07 C06J-SCLCR04X1-07° 7 6 5.4 110 3.5 -13° 1 CC□□04X1 BFTX0203N TRX06 C07K-SCLC R04X1-08 C07K-SCLCR04X1-08° • 8 7 6.4 125 4.0 -11 C08H-SCLC R0602-10 BFTX02505N 1.1 7.0 100 5.5 19 -139 2 C08H-SCLCR06 10 8 Carbide C10K-SCLC R0602-12 9.0 125 2 C10K-SCLCR06-12 12 10 6.0 21 -12° C10K-SCLC R0602-13 C10K-SCLCR06 13 10 9.0 125 7.0 21 -12° CC□□0602 2 TRX08 BFTX02506N C12M-SCLC R0602-14 11.0 150 -10° 2 C12M-SCLCR06-14 14 12 7.0 25 C12M-SCLC R0602-16 2 C12M-SCLCR06 16 12 11.0 150 9.0 25 -10° BFTX0407N C16R-SCLC R09T3-20 C16R-SCLCR09 20 16 15.0 200 11.0 30 -8 2 3.4 СС□□09Т3 18.0 250 13.0 35 2 BFTX0409N 3.4

C20S-SCLC R09T3-25 C20S-SCLCR09 25 20 Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Separately sold sleeve is required.

D

S

Stock Adapter Sleeve Cat. No. DCB Fig 1 **HBB 416** 4.0 **HBB 516** 5.0 **HBB 616** 6.0 **HBB 716** 100

H

Internal Finishing to Medium Cutting Screw-on

Fig

1

Applicable Holder

C04G-SCLC R03X1-05

C05H-SCLC R03X1-06

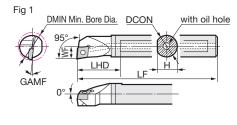
C06J-SCLC R04X1-07

C07K-SCLC R04X1-08 | 1

Bore Dia

Internal Finishing to Medium Cutting





Holde	er												Parts	Dime	ensions (mm)
			Stock	Min.	D: .		Overall	Cutting		Rake	Applicable Inserts		Flat Insert Sc	rew	Wrench
Shank	2			Bore Dia.	Diameter	Height	Length	Edge Distance	Head	Angle					13
Material	Cat. No.	Previous Cat. No.	R	DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.	Fig		(N·m)	
				DIVIIN	DCON	П	LF	VVF	LUD	GAIVIF				$\overline{}$	(For Torx hole)
0.4.1.	E08H-SCLC R0602-10	E08H-SCLCR06	•	10	8	7.5	100	5.5	18	-13°		1	BFTX02505N	1.1	
Carbide with oil	E10K-SCLC R0602-13	E10K-SCLCR06		13	10	9.5	125	7.0	19	-12°	CC□□0602	1	BFTX02506N	1.5	TRX08
hole	E12M-SCLC R0602-16	E12M-SCLCR06		16	12	11.5	150	9.0	25	-10°		1	DF I AUZ SUOIN	1.5	
TIOIC	E16R-SCLC R09T3-20	E16R-SCLCR09		20	16	15.5	200	11.0	30	-8°	CC□□09T3	1	BFTX0407N	3.4	TRX15

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

### S-SCLP type / A-SCLP type



Internal Finishing to Medium Cutting Screw-on

**Parts** 

(N·m

2.0

3.4

TRX10

TRX15

Applicable Inserts

Cat. No.

CP□□0802

CP□□0903

Screw-on

Rake Angle

-5°

-5°

-6°

-4°

-2°

LHD GAMF

6.0 12.0

7.0 10.6

8.0 23.0

9.0 18.0

18 250 11.0 18.0

22 300 13.5 18.0

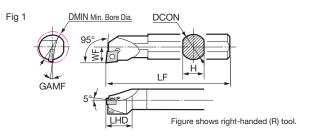


Holder

Shank

Material

Steel



Stock Min. Bore

L

DMIN **DCON** Н LF WF

12

14

16 12 11 150

18

22

27

9 125

15 200

10

12 11 150

16

20

25

R

Dimensions (mm) Flat Insert Screw | Wrench

		,	
/	С	_	
J		_	

(For Torx hole) D

S

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Previous Cat. No.

BBPC-010 R/L

BBPC-012 R/L 14

BBPC-316 R/L 18

BBPC-320 R/L 22

Internal Finishing to Medium Cutting

BFTX0305A

BFTX0407A







Cat. No.

S10K-SCLP R/L0802-12

S12M-SCLP R/L0802-14

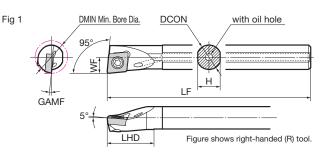
S12M-SCLP R/L0903-16

S16R-SCLP R/L0903-18

S20S-SCLP R/L0903-22

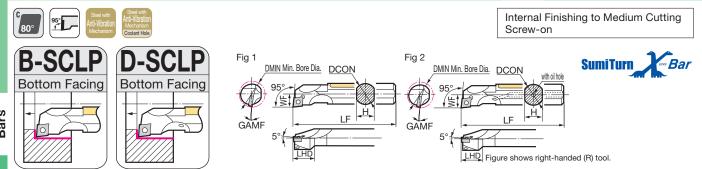
S25T-SCLP R/L0903-27





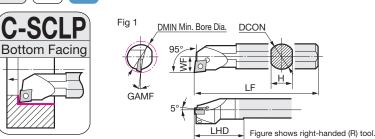
Holde	er												Parts	Dime	ensions (mm)
		Sto	ock	Min. Bore	D: .		Overall	Cutting		Rake	Applicable Inserts		Flat Insert S	crew	Wrench
Shank	0.1.11			Dia.	Diameter	Height	Length	Edge Distance	Head	Angle		<u>-</u> .			
Material	Cat. No.	R	L	DAMA	DOON	١.,		\A/E		CAME	Cat. No.	Fig		(N·m)	
				DMIN	DCON	H	LF	WF	LHD	GAMF					(For Torx hole)
	A10K-SCLP R/L0802-12			12	10	9	125	6.0	12.0	-5°	СВППОООО	1	BFTX0305N	2.0	TRX10
with	A12M-SCLP R/L0802-14			14	12	11	150	7.0	10.6	-5°	- CPI II INSO9	1	BFTX0306N	2.0	IRXIU
oil	A12M-SCLP R/L0903-16			16	12	11	150	8.0	23.0	-6°	6°				
hole	A16R-SCLP R/L0903-18			18	16	15	200	9.0	18.0	-4°			BFTX0407N	3.4	TRX15
Steel	A20S-SCLP R/L0903-22			22	20	18	250	11.0	18.0	-2°		1	DI 17040711	3.4	Invis
	A25T-SCLP R/L0903-27			27	25	22	300	13.5	18.0	-2°		1			

### -SCLP type / D-SCLP type / C-SCLP type



Holder **Parts** Dimensions (mm) Stock Applicable Inserts Flat Insert Screw Wrench Rake Bore Edge Angle Shank Dia. Cat. No. Previous Cat. No. Fig Material R Cat. No. (N·m DMIN **DCON** LF WF LHD GAMF Н (For Torx hole **B12M-SCLP R/L**0802-14 XBPC-012 R/L 14 CP□□0802 BFTX0305A 2.0 TRX10 14 12 11 150 10.6 -5° Steel with Anti-Vibration Mechanis B16R-SCLP R/L0903-18 XBPC-316 R/L 18 18 16 15 200 9 18.0 -4° CP□□0903 BFTX0407A TRX15 B20S-SCLP R/L0903-22 XBPC-320 R/L 22 • • -2° 250 22 20 18 11 18.0 D12M-SCLP R/L0802-14 XBPC-012 R/L H14 CP□□0802 BFTX0305A 2.0 TRX10 14 12 11 | 150 7 10.6 -5° **D16R-SCLP R/L0903-18** | XBPC-316 R/L H18 | ● 18 16 15 200 9 18.0 -4° CP□□0903 BFTX0407A TRX15 3.4 **D20S-SCLP R/L0903-22** | XBPC-320 R/L H22 | ● 22 20 18 250 11 18.0

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Finishing to Medium Cutting Screw-on

Holde	er													Parts	Dime	nsions (mm)
			Sto	ock				Overall	Cutting		Rake	Applicable Inserts		Flat Insert So	crew	Wrench
Shank	Oat Na	Duraniana Cat Na			Bore Dia.	Diameter	Height	Length	Edge Distance	Head	Angle		F:			/3
Material	Cat. No.	Previous Cat. No.	R	L	DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.	Fig		(N·m	
																(For Torx hole)
	C10K-SCLP R/L0802-12	WBPC-010 R/L S			12	10	9	125	6	19	-5°		1			
	C12M-SCLP R/L0802-14	WBPC-012 R/L S14			14	12	11	150	7	25	-5°	CP□□0802	1	BFTX0305A	2.0	TRX10
Carbide	C12M-SCLP R/L0802-16	WBPC-012 R/L S			16	12	11	150	8	25	-3°		1			
	C16R-SCLP R/L0903-18	WBPC-316 R/L S18			18	16	15	200	9	30	0 -4° CP□□0903 1 E	BFTX0407A	2.4	TDV15		
	C16R-SCLP R/L0903-20	WBPC-316 R/L S			20	16	15	200	10	30	-3°		1	DI 170407A	3.4	10/10

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

S









### S-SDUC type / A-SDUC type



Cat. No.

S10M-SDUC R/L0702-13

S12M-SDUC R/L0702-16

S16Q-SDUC R/L0702-20

S16N-SDUC R/L0702-20

S16Q-SDUC R/L11T3-23

S20R-SDUC R/L11T3-25

S20N-SDUC R/L11T3-25

S25S-SDUC R/L11T3-32

**S25Q-SDUC R/L11T3-32** S25Q-SDUC R/L 11

Fig 1

GAMF

Internal Profiling Screw-on

Applicable Inserts

Cat. No.

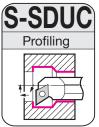
DC□□0702

DC□□11T3

Parts

BFTX02506N

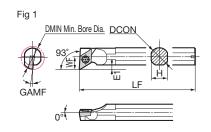
BFTX0409N



Holder

Shank

Materia



Previous Cat.

No.

S10M-SDUC R/L 07

S12M-SDUC R/L 07

S16N-SDUC R/L 07

S20N-SDUC R/L 11

DMIN Min. Bore Dia. DCON

Stock

R

L DMIN **DCON** Н LF WF E1

Dia

20 16 15 180 11.0 4.0

20

25 20

25 20 18

32 25 9 150 7.0 2.5 -8°

11

150

160 11.0

18 200 13.0 4.5

160 13.0

22 250 17.0

9.0 3.5

180 12.5 5.5

4.0

4.5

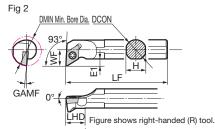
7.0

12 16

> 16 15

> 16 15

● **32** 25 22 180 17.0



Rake Offset Angle

-8°

-6°

-6°

-6° 15

-6°

-6°

-6°

-6°

l HD GAMF

Dimensions (mm)

(For Torx hole)

TRX08

TRX15

Flat Insert Screw Wrench

(N·m

1.5

$\sqrt{c}$	







Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.









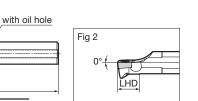


Figure shows right-handed (R) tool.

Internal Profiling Screw-on

2

1



Profiling

Hold	er													Parts	Dim	ensions (mm)
		Sto	ock	Min Rore			Overall	Cutting		Rake		Applicable Inserts		Flat Insert Sc	rew	Wrench
Shank	Cat. No.			Dia.	Diameter	Height	Length	Edge Distance	Offset	Angle	Head		Fig		_	
Material		R	L	DMIN	DCON	Н	LF	WF	E1	GAMF	LHD	Cat. No.	1 19		N·m	(For Torx hole)
	A10M-SDUC R/L0702-13	•	•	13	10	9	150	7.0	2.5	-8°	_		1			
Steel	A12M-SDUC R/L0702-16			16	12	11	150	9.0	3.5	-8°	_	DC□□0702	1	BFTX02506N	1.5	TRX08
with	A16Q-SDUC R/L0702-20			20	16	15	180	11.0	4.0	-6°	_		1			
Oil	A16Q-SDUC R/L11T3-23			23	16	15	180	12.5	5.5	-6°	15		2			
Hole	A20R-SDUC R/L11T3-25			25	20	18	200	13.0	4.5	-6°	_	DC□□11T3	1	BFTX0409N	3.4	TRX15
	A25S-SDUC R/L11T3-32			32	25	22	250	17.0	7.0	-6°	_		1			

## B-SDUC type / C-SDUC type

Stock

L

R

Min. Bore

Dia.

**DMIN** 

13

16

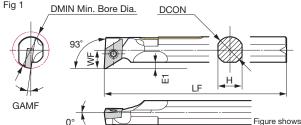
20

25

32

Internal Profiling Screw-on





Diameter

**DCON** 

10

12

16

20

25

Height

Н LF

> 9 150

11

15 200

18

150

250

WF

7

9

11

13

4.0

4.5

7.0

-6°

-69

-6°

DCUU11T3

SumiTurn Bar

Dimensions (mm)

TRX15

3.4

Holder

Shank

Material

with Anti-n Mechanism

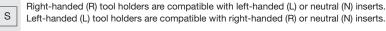




















Cat. No.

B10M-SDUC R/L0702-13

B12M-SDUC R/L0702-16

B16R-SDUC R/L0702-20

B20S-SDUC R/L11T3-25

B25S-SDUC R/L11T3-32 ●













Fig 1	DMIN Min. Bore Dia. DCON
	93° — H
GAMF	0° Figure shows right-handed (R) tool.

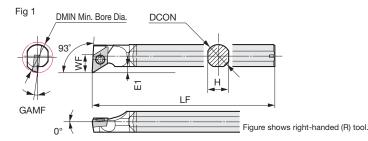
Flat Insert Screw Wrench Applicable Inserts Rake Angle Fig (N·m Cat. No. E1 **GAMF** (For Torx hole) 2.5 -8° DC□□0702 1 BFTX02506N 3.5 -8° 1.5 TRX08

Parts

Internal Profiling Screw-on

1

BFTX0409N



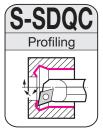
9	Holde	er												Parts	Dim	ensions (mm)
			Sto	ock	Min. Bore			Overall	Cutting		Rake	Applicable Inserts		Flat Insert Sc	rew	Wrench
,	Shank	Cat. No.	R		Dia.	Diameter	Height	Length	Edge Distance	Offset	Angle		Fig			
Material	al	_	-	DMIN	DCON	Н	LF	WF	E1	E1 GAMF	Cat. No.			(N·m	(For Torx hole)	
		C10M-SDUC R/L0702-13			13	10	9	150	7	2.5	-8°		1			
	Carbide	C12M-SDUC R/L0702-16			16	12	11	150	9	3.5	-8°	DC□□0702	1	BFTX02506N	1.5	TRX08
	Carbide	C16R-SDUC R/L0702-20			20	16	15	200	11	4.0	-6°		1			
	[	C20S-SDUC R/L11T3-25			25	20	18	250	13	4.5	-6°	DC□□11T3	1	BFTX0409N	3.4	TRX15

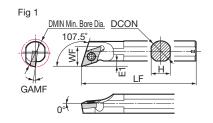
# S-SDQC type / A-SDQC type

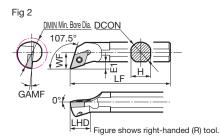
Holder



Internal Profiling Screw-on







Parts Dimensions (mm)

			Sto	ock	Min.			Overall	Cutting		Rake		Applicable Inserts		Flat Insert S	Screw	Wrench
Shank	Cat. No.	Previous Cat. No.			Bore Dia.	Diameter	Height	Length	Edge Distance	Offset	Angle	Head		Fig			<i>(</i> 3)
Material	Gat. No.	Tievious Gat. No.	R	L	DMIN	DCON	Н	LF	WF	E1	GAMF	LHD	Cat. No.	ı ıg		(N·m)	(For Torx hole
	S10M-SDQC R/L0702-13	S10M-SDQC R/L 07	•	•	13	10	9	150	7.0	2.5	-8°	_		1			
	S12M-SDQC R/L0702-16	S12M-SDQC R/L 07			16	12	11	150	9.0	3.5	-8°	_	DC□□0702	1	BFTX02506N	1.5	TDV00
	S16Q-SDQC R/L0702-20	_			20	16	15	180	11.0	4.0	-6°	_	DCLLL0702	1	DFIAUZOUOIN	1.5	TRX08
	S16N-SDQC R/L0702-20	S16N-SDQC R/L 07			20	16	15	160	11.0	4.0	-6°	_		1			
Steel	S16Q-SDQC R/L11T3-23	_			23	16	15	180	12.5	5.5	-6°	15		2			
	S20R-SDQC R/L11T3-25	_			25	20	18	200	13.0	4.5	-6°	_		1			
	S20N-SDQC R/L11T3-25	S20N-SDQC R/L 11			25	20	18	160	13.0	4.5	-6°	_	DC□□11T3	1	BFTX0409N	3.4	TRX15
	S25S-SDQC R/L11T3-32	_			32	25	22	250	17.0	7.0	-6°	_		1			
	S25Q-SDQC R/L11T3-32	S25Q-SDQC R/L 11			32	25	22	180	17.0	7.0	-6°	_		1			

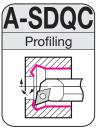
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

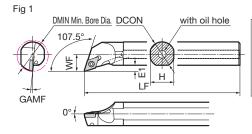












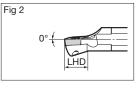


Figure shows right-handed (R) tool.

Parts	Dimensions (mm)

Holde	er													Parts	Dime	ensions (mm)
		Sto	ock	Min. Bore			Overall	Cutting Edge				Applicable Inserts		Flat Insert S	crew	Wrench
Shank	Cat. No.			Dia.	Diameter	Height	Length	Distance	Offset	Rake Angle	Head		Fig		_	<i>(</i> \$
Material	Odi. No.	R	L	DMIN	DCON	Н	LF	WF	E1	GAMF	LHD	Cat. No.	ı ıg		(N·m	
																(For Torx hole)
	A10M-SDQC R/L0702-13			13	10	9	150	7.0	2.5	-8°	_		1			
Steel	A12M-SDQC R/L0702-16			16	12	11	150	9.0	3.5	-8°	-	DC□□0702	1	BFTX02506N	1.5	TRX08
with	A16Q-SDQC R/L0702-20			20	16	15	180	11.0	4.0	-6°	_		1			
Oil	A16Q-SDQC R/L11T3-23			23	16	15	180	12.5	5.5	-6°	15		2			
Hole	A20R-SDQC R/L11T3-25			25	20	18	200	13.0	4.5	-6°	-	DC□□11T3	1	BFTX0409N	3.4	TRX15
	A25S-SDQC R/L11T3-32			32	25	22	250	17.0	7.0	-6°	_		1			



### **B-SDQC** type







Internal Profiling Screw-on

BFTX0409N

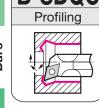
3.4

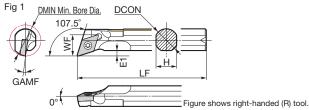
TRX15

DC□□11T3



/c,





Holder

**Parts** Dimensions (mm) Flat Insert Screw Stock Applicable Inserts Wrench Min. Bore utting Edg Rake Angle Shank Cat. No. Fig Material R Cat. No. (N·m **DMIN DCON** LF WF Н E1 **GAMF** (For Torx hole) B10M-SDQC R/L0702-13 13 10 9 150 7 2.5 -8° B12M-SDQC R/L0702-16 16 12 150 9 3.5 -8° DC□□0702 BFTX02506N TRX08 11 1 1.5 B16R-SDQC R/L0702-20 20 16 15 200 11 4.0 -6° B20S-SDQC R/L11T3-25 4.5 25 20 18 250 13 -6° 1

7.0

-6°

22

B25S-SDQC R/L11T3-32 ● 32 25 250 Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

S

D







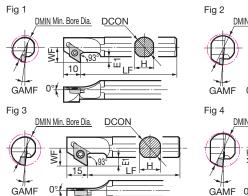


# SEC-Boring Bar S-SDZC type



Internal Profiling Screw-on





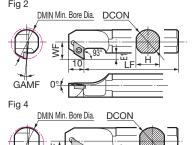


Figure shows right-handed (R) tool.

Holder Parts Dimensions (mm)

		Sto	ock	Min. Bore			Overall	Cutting			Applicable Inserts		Flat Insert S	crew	Wrench
Shank	Cat. No.			Dia.	Diameter	Height	Length	Edge Distance	Offset	Rake Angle		Fig		_	<i>(</i> \$
Material	Oat. NO.	R	L	DMIN	DCON	Н	LF	WF	E1	GAMF	Cat. No.	ı ıy		(N·m	
															(For Torx hole)
	S10M-SDZC R/L0702-13			13	10	9	150	7.5	3.0	-8°		1			
	S12M-SDZC R/L0702-16			16	12	11	150	9.0	3.5	-8°	DC□□0702	1	BFTX02506N	1.5	TRX08
Steel	S16Q-SDZC R/L0702-20			20	16	15	180	11.0	4.0	-6°		2			
Steel	S16Q-SDZC R/L11T3-23			23	16	15	180	13.0	6.0	-6°		3			
	S20R-SDZC R/L11T3-25			25	20	18	200	14.5	6.0	-6°	DC□□11T3	4	BFTX0409N	3.4	TRX15
	S25S-SDZC R/L11T3-32			32	25	22	250	17.0	7.0	-6°		4			

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

'C/

D

S







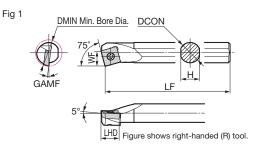
### -SSKP type/C-SSKP type



Through Boring



Internal General-purpose Screw-on



Stock Min. Bore

DMIN

16

20

25

28

**DCON** 

12

16

20

25

Н LF WF LHD

11

15 200 10.0 6.8

18

150

250 12.5

22 | 300 | 14.0 | 5.0

RL

Previous Cat.

No.

BBPS-312 R/L

BBPS-316 R/L

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

BBPS-320 R/L

Shank

Material

Steel

L	С	/

















Cat. No.

S12M-SSKP R/L0903-16

S16R-SSKP R/L0903-20

S20S-SSKP R/L0903-25



**S25T-SSKP R/L0903-28** | BBPS-325 R/L | ● | ●

Internal General-purpose Screw-on

**Parts** 

BFTX0307A

Applicable Insert

Cat. No.

SP□□0903

GAMF

-6°

-4°

-2°

0°

Edge Length

> 8.0 9.0

> > 8.5

Dimensions (mm)

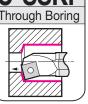
(For Torx hole)

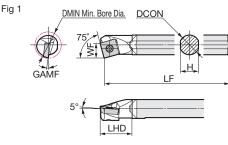
TRX10

Flat Insert Screw Wrench

2.0







ŀ	Holde	er												Parts	Dime	ensions (mm)
				Stock	Min. Bore			Overall	Cutting		Rake	Applicable Insert		Flat Insert S	Screw	Wrench
	Shank	Cat. No.	Previous Cat.		Dia.	Diameter	Height	Length	Edge Distance	Head	Angle		Eia		_	
1	/laterial	Gal. No.	No.	R	DMIN	DCON	Н	LF	WF	I HD	GAMF	Cat. No.	Fig		(N·m	
					Bivilia	Book					C/ tivii					(For Torx hole)
	Carbide Standard	C12M-SSKP R0903-16	WBPS-312RS	•	16	12	11	150	8	25	-6°		1	BFTX0307A	2.0	TRX10
ŀ	Carbide	C12R-SSKP R0903-16	WBPS-312R		16	12	11	200	8	25	-6°	SP□□0903	1			
	Long	C16S-SSKP R0903-20	WBPS-316R	•	20	16	15	250	10	30	-4°		1	BFTX0307A	2.0	TRX10
L	9			_					. •			l	<u>.                                    </u>			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

## S-CSKP type



Holder

Shank

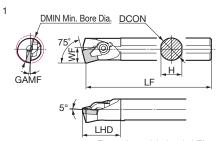
Material





Cat. No.





Stock Min. Bo

R

Figure shows right-handed (R) tool.

DMIN DCON

Edge

WF

LF

Angle

-4°

LHD GAMF

28

28

Internal General-purpose Clamp-on

Parts

Applicable Insert

Cat. No.

SP□□0903

Clamp

Plate

CCM6B L/R

Fig

Boring Bars

3

/c/	

Dimensions (mm)

Wrench

LH030

Double

Screw

WB6-10

WB6-13





T





Small Diameter luming Very Small Diameter Tuming

	Ctool	S16Q-CSKP R/L0903-20	S16Q-CSKP R/L 09			20	16			10.0	
Steel	S20R-CSKP R/L0903-25	S20R-CSKP R/L 09			25	20	18	200	12.5		
	Right-h	anded (R) tool holders are co	mpatible with lef	t-ha	ande	ed (L) o	r neutral	(N) in	serts.		

Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Previous Cat.

No.

# SEC-Boring Bar S-SSKC type









Fig 1

Figure shows right-handed (R) tool.

Internal General-purpose Screw-on

Holder







DMIN Min. Bore Dia. DCON
GAMF 0° LHD

Holde	er													Parts	Dime	nsions (mm)
			Sto	ock	Min. Bore			Overall	Cutting		Rake	Applicable Inserts		Flat Insert S	crew	Wrench
Shank	Cat. No.	Previous Cat.			Dia.	Diameter	Height	Length	Edge Distance	Head	Angle		Eia			/3
Material	Cat. No.	No.	R	L	DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.	Fig		N·m	(For Torx hole)
	S16R-SSKC R/L09T3-20	S16R-SSKC R/L 09	•	•	20	16	15	200	11	23	-10°	SC□□09T3	1	BFTX0407N	3.4	TDV15
Steel	S20S-SSKC R/L09T3-25	S20S-SSKC R/L 09			25	20	18	250	13	27	-8°	SCDD0913	1	BFTX0409N	3.4	TRX15
Steel	S25T-SSKC R/L1204-32	S25T-SSKC R/L 12			32	25	23	300	17	30	-7°	SC□□1204	1	BFTX0511N	5.0	TRX20
	S32U-SSKC R/L1204-40	S32U-SSKC R/L 12			40	32	30	350	22	33	-6°	30001204	1	DEIVOSTIIN	5.0	10020

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

3-36

### S-STUB type/S-STUP type/A-STUP type

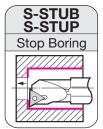
Holder

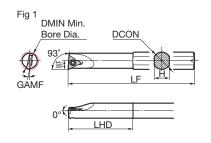




Internal Finishing to Medium Cutting Screw-on

**Parts** 





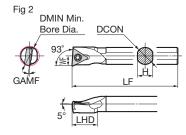


Figure shows right-handed (R) tool.

Dimensions (mm)

			Sto	ock	Min. Bore	Diameter		Overall	Cutting	Head	Rake	Applicable Inserts		Flat Insert S	crew	Wrench
Shank	Cat. No.	Previous Cat.			Dia.	Diameter	Height	Length	Edge Distance	Head	Angle		Fig		~	
Material		No.	R	L	DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.			(N·m)	(For Torx hole)
	S08H-STUB R/L0601-08	BBPT-508 R/L	•	•	8	8	7	100	4.0	30	-12°	TB□□0601	1	BFTX0204A	0.5	TRX06
	S08H-STUP R/L0802-10	BBPT-608 R/L			10	8	7	100	5.0	13	-10°	TP□□0802	1	BFTX0204A	0.5	TRX06
	S08H-STUP R/L0902-10	_			10	8	7	100	5.0	13	-10°	TP□□0902	2	BFTX02505N	1.1	TRX08
	S10K-STUP R/L1103-12	BBPT-210 R/L			12	10	9	125	6.0	15	-8°		2	BFTX0306A	2.0	
	S12M-STUP R/L1103-14	BBPT-212 R/L 14			14	12	11	150	7.0	17	-7°		2	DEIAUSUUA	2.0	
	S12M-STUP R/L1103-16	BBPT-212 R/L			16	12	11	150	8.0	17	-6°		2	BFTX0307A	2.0	
Steel	S16R-STUP R/L1103-18	BBPT-216 R/L 18			18	16	15	200	9.0	18	-4°	TP□□1103	2	BFTX0306A	2.0	TRX10
Sieei	S16R-STUP R/L1103-20	BBPT-216 R/L			20	16	15	200	10.0	18	-2°		2			
	S20S-STUP R/L1103-22	BBPT-220 R/L			22	20	18	250	11.0	18	-2°		2	BFTX0307A	2.0	
	S25T-STUP R/L1103-28	BBPT-225 R/L			28	25	22	300	14.0	27	-2°		2			
	S20S-STUP R/L1603-22	_			22	20	18	250	11.0	18	-3°	TP□□1603	2	BFTX0407A	3.4	TRX15
	S25T-STUP R/L1603-28	_			28	25	22	300	14.0	18	-1°	11 001003	2	DI IAU407A	5.4	111/13
	S20S-STUP R/L1604-22	_			22	20	18	250	12.5	18	-5°	TP□□1604	2	BFTX0409N	3.4	TRX15
	S25T-STUP R/L1604-28	BBPT-325 R/L			28	25	22	300	14.0	18	-2°	11 11 1004	2	BFTX0410A	3.4	111/13

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

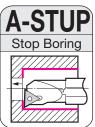


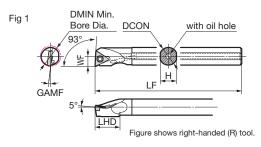
Holder





Internal Finishing to Medium Cutting Screw-on





	Parts	Dime	ensions (mr
3	Flat Insert S	crew	Wrench
			/3

поіа	Stock Min Read Cutting Applicable Inserts												Paris	Dime	ensions (mm)
		Sto	ock	Min. Bore			Overall	Cutting			Applicable Inserts		Flat Insert S	crew	Wrench
Shank	Cat. No.			Dia.	Diameter	Height	Length	Edge Distance	Head	Rake Angle		Fig		_	<i>(</i> \$
Material	Odi. No.	R	L	DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.	1 19		(N·m)	(For Torx hole)
	A08H-STUP R/L0802-10			10	8	7	100	5	13	-10°	TP□□0802	1	BFTX0204N	0.5	TRX06
	A08H-STUP R/L0902-10			10	8	7	100	5	13	-10°	TP□□0902	1	BFTX02505N	1.1	TRX08
	A10K-STUP R/L1102-12			12	10	9	125	6	15	-8°		1	BFTX02505N	1.1	
	A12M-STUP R/L1102-14			14	12	11	150	7	17	-7°	TP□□1102	1	BFTX02506N	1.5	TRX08
an an	A16R-STUP R/L1102-18			18	16	15	200	9	18	-4°		1	DE LY05200IA	1.5	
Hole	A10K-STUP R/L1103-12			12	10	9	125	6	15	-8°		1			
Steel Oil H	A12M-STUP R/L1103-14			14	12	11	150	7	17	-7°		1	BFTX0306N	2.0	
St. O	A16R-STUP R/L1103-18			18	16	15	200	9	18	-4°	TP□□1103	1			TRX10
with	A20S-STUP R/L1103-22			22	20	18	250	11	18	-2°		1	BFTX0307N	2.0	
	A25T-STUP R/L1103-28			28	25	22	300	14	18	-2°		1	DI IAUSU/IN	2.0	
	A20S-STUP R/L1603-22			22	20	18	250	11	18	-3°	TP□□1603	1	BFTX0407N	2.0	
	A25T-STUP R/L1603-28			28	25	22	300	14	18	-1°	111111003	1	DI 17040711	2.0	TRX15
	A20S-STUP R/L1604-22			22	20	18	250	11	18	-5°	TP□□1604	1	BFTX0409N	3.4	10/10
	A25T-STUP R/L1604-28			28	25	22	300	14	18	-2°	17001004	1	DI 170409N	3.4	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



'C/











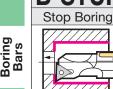
### **B-STUP** type

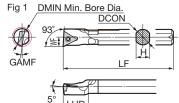


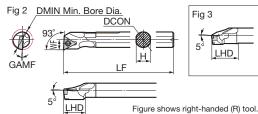




Internal Finishing to Medium Cutting Screw-on







-2°

3





3	Holde	er													Parts	Dime	nsions (mm)
				Sto	ock	Min. Bore			Overall	Cutting			Applicable Inserts		Flat Insert So	rew	Wrench
	Shank Material	Cat. No.	Previous Cat.	R		Dia.	Diameter	Height	Length	Edge Distance	Head	Rake Angle	Cat. No.	Fig		(N·m)	
/ز	Matorial		110.	••		DMIN	DCON	Н	LF	WF	LHD	GAMF	out. 140.				(For Torx hole)
		B08H-STUP R/L0802-10	XBPT-608 R/L			10	8	7	100	5.0	13	-10°	TP□□0802	1	BFTX0204A	0.5	TRX06
	Ε	B10K-STUP R/L1103-12	XBPT-210 R/L			12	10	9	125	6.0	15	-8°		1	BFTX0306A	2.0	
	nis	B12M-STUP R/L1103-14	XBPT-212 R/L 14			14	12	11	150	7.0	17	-7°		2	BI IX0300A	2.0	
)	vith Mechanism	B12M-STUP R/L1103-16	XBPT-212 R/L			16	12	11	150	8.0	17	-6°		2	BFTX0307A	2.0	
	with	B16R-STUP R/L1103-18	XBPT-216 R/L 18			18	16	15	200	9.0	18	-4°	TP□□1103	2	BFTX0306A	2.0	TRX10
		B16R-STUP R/L1103-20	XBPT-216 R/L			20	16	15	200	10.0	18	-2°		2			INXIO
_	Steel	B20S-STUP R/L1103-22	XBPT-220 R/L			22	20	18	250	11.0	18	-2°		2	BFTX0307A	2.0	
3	St	B25T-STUP R/L1103-28	XBPT-225 R/L			28	25	22	300	14.0	18	-2°		2	BI IXUSUIA	2.0	
	Vib	B32T-STUP R/L1103-40	XBPT-232 R/L			40	32	30	300	20.0	53	-2°		3			
	Anti-	B20S-STUP R/L1604-25	XBPT-320 R/L			25	20	18	250	12.5	18	-3°		2			
	₹	B25T-STUP R/L1604-28	XBPT-325 R/L	•		28	25	22	300	14.0	18	-2°	TP□□1604	2	BFTX0410A	3.4	TRX15

40

32

30 300 20.0 53 **B32T-STUP R/L1604-40** XBPT-332 R/L Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

### -STUP type/C-STUB type/C-STUP type







Internal Finishing to Medium Cutting Screw-on



Stop Boring

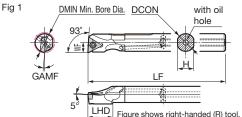


Figure shows right-handed (R) tool. Holder

**Parts** Dimensions (mm)

			Sto	ck				Overall	Cutting			Applicable Insert		Flat Insert S	crew	Wrench
Shank	Cat. No.	Previous Cat.			Bore Dia.	Diameter	Height	Length	Edge Distance	Head	Rake Angle		Fig		_	
Material	Oat. No.	No.	R		DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.	ı ıg		(N·m)	
																(For Torx hole)
Steel with Anti-	D12M-STUP R/L1103-14	XBPT-212 R/L H14			14	12	11	150	7	17	-7°		1	BFTX0306A	2.0	
Vibration Mechanism	D16R-STUP R/L1103-18				18	16	15	200	9	18	-4°	TP□□1103	1	DE I XUSUUA	2.0	TRX10
and Oil Hole	D20S-STUP R/L1103-22	XBPT-220 R/L H22			22	20	18	250	11	18	-2°		1	BFTX0307A	2.0	

Fig 2

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.





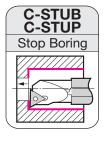


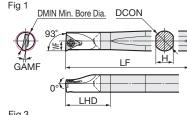




Internal Finishing to Medium Cutting Screw-on







LHD

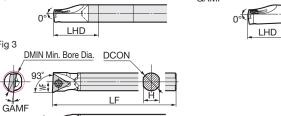


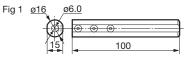
Figure shows right-handed (R) tool.

DMIN Min. Bore Dia. DCON

Holder

Holde	Holder Parts Dimensions (mr													nsions (mm)		
			Sto	ck	Min. Bore			Overall	Cutting		Rake	Applicable Inserts		Flat Insert S	crew	Wrench
Shank Material	Cat. No.	Previous Cat. No.	R		Dia.	Diameter	Height	Lenath	Edge Distance	Head	Angle GAMF	Cat. No.	Fig		(N·m)	(For Torx hole)
	C08H-STUB R/L0601-08	WBPT-508 R/L S		•	8	8	7.0	100	4.0	50	-12°	TB□□0601	1	BFTX0204A	0.5	TRX06
	C08H-STUB R/L0601-08K	WBPT-508 R/L SK*			8	6	5.7		4.0	_	-12°	10001	2	BFTX0204N	0.5	
	C08H-STUP R/L0802-10	WBPT-608 R/L S			10	8	7.0		5.0	18	-10°	TP□□0802	3	BFTX0204A	0.5	TRX06
	C10K-STUP R/L1103-12	WBPT-210 R/L S			12	10	9.0	-	6.0	19	-8°		3	BFTX0306A	2.0	
Carbide	C12M-STUP R/L1103-14	WBPT-212 R/L S14			14		11.0		7.0	25	-7°		3			
Standard	C12M-STUP R/L1103-16	WBPT-212 R/L S			16		11.0		8.0	25	-6°	TP□□1103	3	BFTX0307A	2.0	TRX10
	C16R-STUP R/L1103-18	WBPT-216 R/L S18			18	-	15.0		9.0	30	-4°		3	BFTX0306A	2.0	
	C16R-STUP R/L1103-20	WBPT-216 R/L S			20		15.0			30	-2°		3	BFTX0307A	2.0	
	C20S-STUP R/L1103-22	WBPT-220 R/L S			22	20		250	-	35	-2°		3	D=T)(0.4.0.4		
	C20S-STUP R/L1604-25	WBPT-320 R/L S			25	20		250		35	-3°	TP□□1604	3	BFTX0410A	3.4	TRX15
	C08M-STUB R/L0601-08	WBPT-508 R/L	•		8	8	-	150	4.0	50	-12°	TB□□0601	1	BFTX0204A	0.5	TRX06
	C08M-STUP R/L0802-10	WBPT-608 R/L			10	8	7.0		5.0	18	-10°	TP□□0802	3	BFTX0204A	0.5	TRX06
Carbide	C10Q-STUP R/L1103-12	WBPT-210 R/L	•		12	10	9.0		6.0	19	-8°		3	BFTX0306A	2.0	
Long	C12R-STUP R/L1103-14	WBPT-212 R/L 14			14		11.0		7.0	25	-7°		3	D=T)(000=4		
	C12R-STUP R/L1103-16	WBPT-212 R/L			16		11.0		8.0	25	-6°	TP□□1103	3	BFTX0307A	2.0	TRX10
	C16S-STUP R/L1103-18	WBPT-216 R/L 18			18		15.0		9.0	30	-4°		3	BFTX0306A	2.0	
	C16S-STUP R/L1103-20	WBPT-216 R/L			20				10.0	30	-2°		3	BFTX0307A	2.0	
	C16M-STUP R/L1103-18	WBPT-216 R/L E18			18	16		150		30	-4°		3	BFTX0306A	2.0	
Carbide	C16M-STUP R/L1103-20	WBPT-216 R/L E			20		15.0			30	-2°	TP□□1103	3	BFTX0307A	2.0	TRX10
Short	C20M-STUP R/L1103-22	WBPT-220 R/L E			22				11.0	35	-2°		3			
	C20M-STUP R/L1604-25	WBPT-320 R/L E			25	20	18.0		12.5	35	-3°	TP□□1604	3	BFTX0410A	3.4	TRX15

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts. C08H-STUB R/L0601-08K requires the separately sold HBB616 adapter sleeve. Actual products marked with \* show an ISO type code.



Cat. No.	Stock	Fig
HBB 616		1
Adapter sleeve is option	al.	

Adapter Sleeve



### **E-STUP** type







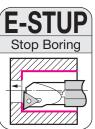
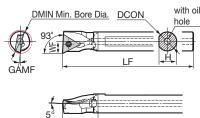


Fig 1



Internal Finishing to Medium Cutting Screw-on

Parts

Dimensions (mm)

Holder

S

Shall Danker Tuming (\$\infty\$)



DMIN Min. Bore Dia. DCON	hole
93	
GAMF LF -	
5° LHD	

			Stock	Min. Bore			Overall	Cutting			Applicable Inserts		Flat Insert S	crew	Wrench
Shank	Cat. No.	Previous Cat.		Dia.	Diameter	Height	Length	Edge Distance		Rake Angle		Fig		<u>_</u>	<i>[</i> 3
Material	Oat. No.	No.	R	DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.	ı ıg		(N·m)	(For Torx hole)
4	E08H-STUP R0802-10	WBPT-608RH		10	8	7.5	100	5	18	-10°	TP□□0802	1	BFTX0204A	0.5	TRX06
e e	E10K-STUP R1103-12	WBPT-210RH		12	10	9.5	125	6	19	-8°		1	BFTX0306A	2.0	
bic H i	E12M-STUP R1103-14	WBPT-212RH14		14	12	11.5	150	7	25	-7°		1	BF1XU3U6A	2.0	
Carbide vith oil hole	E12M-STUP R1103-16	WBPT-212RH		16	12	11.5	150	8	25	-6°	TP□□1103	1	BFTX0307A	2.0	TRX10
○ 🗐	E16R-STUP R1103-18	WBPT-216RH18		18	16	15.5	200	9	30	-4°		1	BFTX0306A	2.0	
	F16R_STUD R1103_20	WRPT-216RH		20	16	15.5	200	10	30	-2°		1	RFTY0307A	2.0	

E16R-STUP R1103-20 | WBPT-216RH | ● | 20 | 16 | 15.5 | 200 | 10 | 30 | -2° | Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

### S-CTFP type

Steel





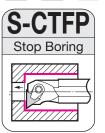


Fig 1

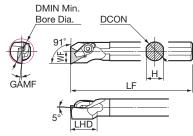


Figure shows right-handed (R) tool.

20

25

Internal General-purpose Clamp-on

1

CCM5BSL/R WB5-10 LH025

1 CCM8UL/R WB8R/L-16T LT27

Boring Bars

0

3

D

S

T

V

w

Small Diameter Turning
Very Small Diameter Turnin

Holde	er													Parts	Dimer	nsions (mm)
			Sto	ock	Min. Bore			Overall	Cutting		Rake	Applicable Inserts		Clamp Plate	Double Screw	Wrench
Shank	Cat. No.	Previous Cat.			Dia.	Diameter	Height	II enath	Edge Distance	Head	Angle		Eia			
Material	Cat. No.	No.	R	L	DMIN	DCON	н	LF	WF	I HD	GAMF	Cat. No.	Fig			
					DIVIIIV	DOON	''		**1		C/ (IVII					(For Hexagonal hole)
	S12M-CTFP R/L1103-16	S12M-CTFP R/L 11			16	12	11	150	8.0	17	-6°		1			

18

-4°

-2°

-2°

10.0 18

18

200 12.5

TP□□1103

TP□□1603

16 | 15 | 180

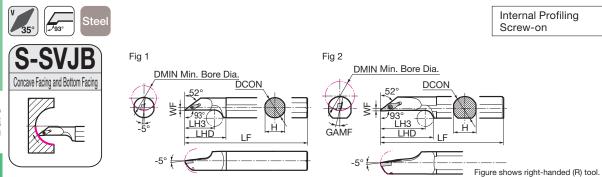
20

S25S-CTFP R/L1603-32 | S25S-CTFP R/L16 | ● | ■ 32 | 25 | 23 | 250 | 16.0 | 38 | Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

**S16Q-CTFP R/L1103-20** S16Q-CTFP R/L 11

**S20R-CTFP R/L1103-25** | S20R-CTFP R/L 11

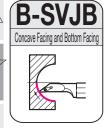
### S-SVJB type/B-SVJB type

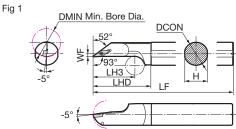


Holder Parts Stock Applicable Inserts Flat Insert Screw Wrench Heiaht Edae Head Shank Cat. No. Fig R Material Cat. No. (N·m DMIN DCON LF WF LHD LH3 GAMF Н (For Torx hole S20R-SVJB R/L1103-25 20 20 25 19 200 42 29 VB□□1103 BFTX02508NV 1.5 TRX08 S25S-SVJB R/L1103-30 25 250 3.5 36 50 -8° S32T-SVJB R/L1604-40 30 300 3.5 2 40 32 75 60 VB□□1604 BFTX03508 TRX10 2.0 2 S40T-SVJB R/L1604-50 ● 50 40 37 300 4.5 95 75

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Internal Profiling Screw-on





-3	Figure shows right-handed (R) too

Hold	er												Parts	Dime	ensions (mm)
		St	ock	Min. Bore			Overall	Cutting			Applicable Insert		Flat Insert So	crew	Wrench
Shank	Cat. No.			Dia.	Diameter	Height	Length	Edge Distance	Head	Head		Eia			/3
Materia	Cat. No.	R	L	DMIN	DCON	н	LF	WF	LHD	LH3	Cat. No.	Fig		(N·m	
				Divilia	DOON			***		L1 10					(For Torx hole)
Steel with Anti-	B20R-SVJB R/L1103-25			25	20	19	200	2.0	55	37.5	VB□□1103	1	BFTX02508NV	1.5	TRX08
Vibration Mechanisi	B25S-SVJB R/L1103-30			30	25	24	250	3.5	62	45	VDLLL1103	1	DF I AUZ SUÖINV	1.5	1000

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

S









### S-SVJC type





Internal Profiling Screw-on



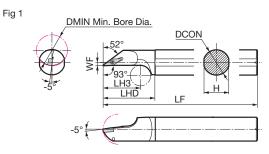


Figure shows right-handed (R) tool.

Holder Applicable Insert Flat Insert Screw Wrench Stock Min. Bore Overall Edge Length Shank Fig Cat. No. (N·m Material RL Cat. No. DMIN **DCON** Н LF WF LHD LH3 (For Torx hole) 2.0 16 12 11 150 30 21 Steel VC□□0802 BFTX0204N 0.5 TRX06 180 2.0 40 29 20 16 15

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.













### -SVQB type/B-SVQB type

Stock

R

50

Bore

Dia.

DMIN **DCON** Н LF WF

25 20

32 25

34 25

40 32

Profiling

Internal Profiling Screw-on

Shim

SVP32

Bolt

BH03504

Parts

Pin

VP40B

Fig

1

1 VP32B

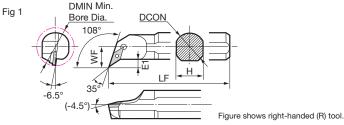
Applicable

Inserts

Cat. No.

VB□□1103

9.0 VB□□1604



Edge Offset

5.5

7.5

9.0

18 200 14.5

23 250 19.0

23 250 20.5

30 300 22.0

40 37 300 27.0 10.0

Holder

Material

Steel

D

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

S

Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.







Cat. No.

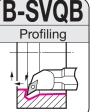
S20R-SVQB R/L1103-25

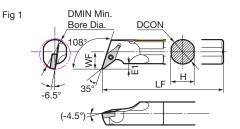
S25S-SVQB R/L1103-32

S25S-SVQB R/L1604-34

S32T-SVQB R/L1604-40

S40T-SVQB R/L1604-50





Internal Profiling Screw-on

Flat Insert

BFTX02508NV

BFTX03508

(N·m

1.5

2.0



Dimensions (mm)

Wrench

TRX08

TRX10

Wrench

for Bolt

LH020

**Parts** Holder Dimensions (mm)

Figure shows right-handed (R) tool.

	Shank	Cat. No.	Stock					Overall	Cutting		Applicable Insert		Flat Insert Screw		Wrench
					Dia.	Diameter	Height	Length	Edge Distance	Offset		Eia		_	<i>[</i> 3
	Material		R	L	DMIN	DCON	Н	LF	WF	E1	Cat. No.	Fig		(N·m)	(For Torx hole)
	Steel with Arti-	B16R-SVQB R/L1103-20			20	16	15	200	11.5	4	VB□□1103	1	BFTX02508NV	4.5	TRX08
	Vibration Mechanism	B20R-SVQB R/L1103-25			25	20	18	200	14.5	5	VBUU1103	1		1.5	I HAU8

## C-SVQB type



Holder





Internal Profiling Screw-on



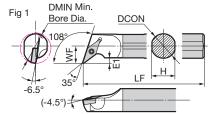


Figure	shows	right-handed	(R)	tool.
riguie	3110443	rigint-nanded	(11)	LOUI

	Parts	Dime	ensions (mm)	i
	Flat Insert S	crew	Wrench	
Fig			(3)	

	Shank Material	Cat. No.	Stock		Min. Bore			Overall	Cutting		Applicable Insert		Flat Insert Screw		Wrench
5			R		Dia.	Diameter	Height	Length	Edge Distance	Offset	Cat. No.	Fig		_	<i>(</i> \$
M				L	DMIN	DCON	Н	LF	WF	E1		ı ıg		(N·m)	(For Torx hole)
Cal	arbide	C16R-SVQB R/L1103-20			20	16	15	200	11.5	4	VB□□1103	1	BFTX02508NV	1.5	TRX08
C	Jarbiue	C20R-SVQB R/L1103-25			25	20	18	200	14.5	5	VBLL1103	1	DF I AUZ SUOINV		INAUO

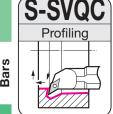


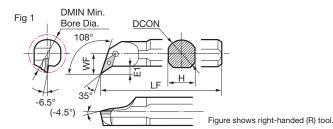


### S-SVQC type/A-SVQC type



Internal Profiling Screw-on





Min. Bore

Dia.

**DMIN** 

14

16

20

**DCON** 

10

12

16

Stock

R

Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Holder

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.



Shank

Material







Cat. No.

S10M-SVQC R/L0802-14

S12M-SVQC R/L0802-16

S16Q-SVQC R/L1103-20 | ● | ●

Internal Profiling Screw-on

**Parts** 

BFTX0204N

1 BFTX02508NV

Fig

Applicable Inserts

Cat. No.

VC□□0802

VC□□1103

Flat Insert Screw

(N·m

0.5

1.5

Dimensions (mm)

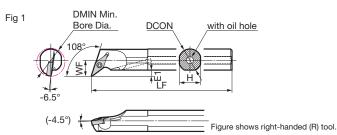
Wrench

(For Torx hole)

TRX06

TRX08







Holder													Parts		Dimensions (mm)	
	Shank Material	Cat No	Stock		Min. Bore			Overall	Cutting		Applicable Inserts		Flat Insert S	crew	Wrench	
			R		Dia.	Diameter	Height	Length	Edge Distance	Offset		Eia		_		
				L	L	DMIN	MIN DCON H LF WF E1 Cat. No.	Cat. No.	Fig		(N·m)	(For Torx hole)				
li	Steel	A16Q-SVQC R/L1103-20			20	16	15	180	11.5	4.5	VC□□1103 -	1		1.5		
ч	with	A20R-SVQC R/L1103-25			25	20	18	200	14.5	5.5		1	BFTX02508NV		TRX08	
	Oil	A25S-SVQC R/L1103-32			32	25	23	250	19.0	7.5		1				
	Hole	A25S-SVQC R/L1604-34			34	25	23	250	20.5	9.0	VC□□1604	1	BFTX03508	2.0	TRX10	

Overall Edge

Length

LF

150

180

Н

9 150

11

15

WF

8.5

9.5

Offset

E1

4.5

4.5

4.5

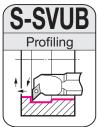
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

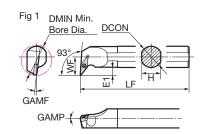
3-46

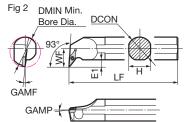
### -SVUB type/B-SVUB type



Internal Profiling Screw-on







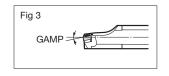


Figure shows right-handed (R) tool.

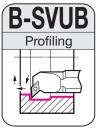
er													Parts					Dimensi	ons (mm)
	Sto	ck	Min. Bore	Diameter	Height	Overall	Cutting Edge	Offset	Rake	Rake	Applicable Inserts		Pin	Bolt	Shim			Wrench	Wrench for Bolt
Cat. No.	R		Dia.			LF	WF	E1		Ŭ	Cat. No.	Fig					(N·m)	(For Torx hole)	(For Hexagonal hole)
			28	20	18	200	17.5	7.5	-7.5°	-3.0°	VB□□1103	1	_	_	_	BFTX02508NV	1.5	TRX08	_
S25S-SVUB R/L1103-32		=	34	25	23	250	20.5	9.0	-6.5 -7.5°	-2.5 -3.0°		2	_	_					_
S32T-SVUB R/L1604-40	B	•	40 50	32								3	VP32B	BH03504	SVP32	BFTX03508	2.0	TRX10	LH020
	Cat. No.  \$20R-SVUB R/L1103-28 \$25S-SVUB R/L1103-32 \$25S-SVUB R/L1604-34 \$32T-SVUB R/L1604-40	Cat. No.  R  \$20R-\$VUB R/L1103-28  \$25\$-\$VUB R/L1103-32  \$25\$-\$VUB R/L1604-34	Cat. No.  R L  S20R-SVUB R/L1103-28 S25S-SVUB R/L1103-32 S25S-SVUB R/L1604-34 S32T-SVUB R/L1604-40  Stock R  C  R  L	Cat. No.    Stock   Min. Bore   Dia.	Cat. No.    Stock   Min. Bore Dia.	Stock       Min. Bore Diameter Dia.       Diameter Dia.       Height Diameter Dia.         S20R-SVUB R/L1103-28       ● ■ 28       20       18         S25S-SVUB R/L1103-32       ● ■ 32       25       23         S25S-SVUB R/L1604-34       ● ■ 34       25       23         S32T-SVUB R/L1604-40       ● ■ 40       32       30	Stock Bore Dia.       Min. Bore Dia.       Dameter Dia.       Height Length Length         S20R-SVUB R/L1103-28 S25S-SVUB R/L1103-32 S25S-SVUB R/L1604-34 S32T-SVUB R/L1604-40       ■ 32 25 23 250 32 250 32 30 300	Stock Diameter Dia.       Min. Don Diameter Dia.       Overall Diameter Diam	Stock Cat. No.       Min. Bore Diameter Dia.       Diameter D	Stock Bore Diameter Dia.       Min. Bore Diameter Dia.       Coverall Edge Distance       Coverall Edge Distance       Offset Angle       Rake Angle         S20R-SVUB R/L1103-28 S25S-SVUB R/L1103-32 S25S-SVUB R/L1604-34 S32T-SVUB R/L1604-40       ■ 32 25 23 250 19.0 7.5 -6.5°       32 25 23 250 20.5 9.0 -7.5°       32 25 23 250 20.5 9.0 -7.5°	Stock Diameter Dia.         Min. Bore Diameter Dia.         Diameter Dia.         Height Distance Distance         Overall Description         Cutting Edge Distance         Offset Angle         Rake Angle         Rake Angle           \$20R-\$VUB R/L1103-28         ■         ■         28         20         18         200         17.5         7.5         -7.5°         -3.0°           \$25S-\$VUB R/L1103-32         ■         ■         32         25         23         250         19.0         7.5         -6.5°         -2.5°           \$25S-\$VUB R/L1604-34         ■         ■         34         25         23         250         20.5         9.0         -7.5°         -3.0°           \$32T-\$VUB R/L1604-40         ■         40         32         30         300         23.5         10.5         -7.5°         -3.0°	Cat. No.         Stock Roll         Min. Bore Diam.         Dameter Dia.         Height Diam.         Coverall Carle Distance         Cutting Distance         Offset Angle Distance         Rake Angle Angle Distance         Angle Angle Distance         Applicable Inserts           S20R-SVUB R/L1103-28 S25S-SVUB R/L1103-32 S25S-SVUB R/L1604-34 S32T-SVUB R/L1604-40         ■ 32 25 23 250 19.0 7.5 -6.5° -2.5°         32 25 23 250 20.5 9.0 -7.5° -3.0°         VB□□1103           S32T-SVUB R/L1604-40         ■ 40 32 30 300 23.5 10.5 -7.5° -3.0°         VB□□1604	Stock         Min. Bore Diameter Dia.         Coverall Edge Distance         Cutting Edge Distance         Offset Angle         Rake Angle Angle         Applicable Inserts           S20R-SVUB R/L1103-28 S25S-SVUB R/L1103-32 S25S-SVUB R/L1604-34 S32T-SVUB R/L1604-40         ■ 34 25 23 250 20.5 9.0 -7.5° -3.0° -2.5°         28 20 18 20 17.5 7.5 -7.5° -3.0° -2.5°         28 25 23 250 20.5 9.0 -7.5° -3.0° -2.5°         VB□□1103 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Stock Cat. No.         Min. Diameter Dia.         Diameter Dia.         Height Dia.         Cutting Edge Distance         Offset Angle Distance         Rake Angle Angle Angle Inserts         Applicable Inserts         Pin           \$20R-\$VUB R/L1103-28         ■ 28         20         18         200 17.5         7.5         -7.5°         -3.0°         VB□□1103         1         2           \$25S-\$VUB R/L1103-32         ■ 32         25         23         250 19.0         7.5         -6.5°         -2.5°         VB□□1103         1         2           \$25\$S-\$VUB R/L1604-34         ■ 34         25         23         250 20.5         9.0         -7.5°         -3.0°         VB□□1604         3         VP32B	Cat. No.         Stock Diameter Dia.         Min. Bore Diameter Dia.         Diameter Dia.         Height Distance Dia.         Offset Distance Distance Distance         Rake Angle Distance Distance         Applicable Inserts         Fig         Pin         Bolt           \$20R-\$VUB R/L1103-28 \$25\$S-\$VUB R/L1103-32         ■ 28 20 18 200 17.5 7.5 7.5 -7.5° -3.0°         7.5 -7.5° -3.0°         -2.5° -2.5° -2.5°         VB□□1103 2 2         1         2         S25\$S-\$VUB R/L1604-34         ■ 34 25 23 250 20.5 9.0 -7.5° -3.0°         9.0 -7.5° -3.0°         VB□□1604         3 VP32B RH050M         RBM55M         RBM55M	Cat. No.         Min. Bore Diameter Dia.         Bore Diameter Dia.         Height Diameter Dia.         Coverall Edge Distance         Offset Angle Distance         Rake Angle Angle Distance         Applicable Inserts         Pin Bolt Shim           \$20R-\$VUB R/L1103-28 \$25S-\$VUB R/L1103-32 \$25S-\$VUB R/L1604-34 \$32T-\$VUB R/L1604-40         ■ 34 25 23 250 20.5 9.0 7.5 -6.5° -2.5°         10.5 -7.5° -3.0° -3.0°         VB□□1103 1 2 2         □ 3.0° - 3.0°         VB□□1604 33 VP328 RH035M SVP32	Stock   Min.   Bore   Dia.   Cutting   Cutting   Cutting   Cutting   Edge   Distance   Cutting   Cat. No.   Fig   Cut. No.	Cat. No.         Stock Bore Dia.         Min. Bore Dia.         Bore Dia.         Height Diance Dia.         Offset Diance         Rake Angle Diance         Applicable Inserts         Fig         Pin         Bolt         Shim         Flat Insert Screw           S20R-SVUB R/L1103-28 S25S-SVUB R/L1103-32         ■ 32 25 23 250 19.0 7.5 -6.5° -2.5°         7.5 -7.5° -3.0° -2.5°         VB□□1103 1 2 BFTX02508NV         1.5           S25S-SVUB R/L1604-34 S32T-SVUB R/L1604-40         ■ 40 32 30 300 23.5 10.5 -7.5° -3.0° VB□□1604         VB□□1604         3 VP32B RH0360 SVP32         BFTX03508 BFTX03508         2.0	Stock Min. Bore Dia. Wrench  Cat. No.  R L DMIN DCON H LF WF E1 GAMF GAMP  S20R-SVUB R/L1103-28

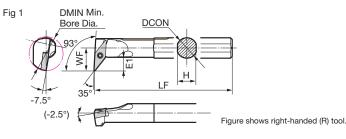
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling Screw-on









Но	lder											Parts	Dime	ensions (mm)	
		Sto	ock	Min. Bore			Overall	Cutting		Applicable Insert		Flat Insert S	crew	Wrench	
Sha				Dia.	Diameter	Height	Length	Edge Distance	Offset		Eia		_	<i>(</i> \s)	
Mate	erial Cat. No.	R	L	DMIN	DCON	н	l F	WF	E1	Cat. No.	Fig		(N·m		•
				Divilia	Book	''		***						(For Torx hole)	
Steel wi	hlii B12M-SVUB R/L1103-20			20	12	11	150	13.5	8	VB□□1103	1	BFTX02508NV	1.5	TRX08	
Vibration M	etraism B16R-SVUB R/L1103-25			25	16	15	200	16.5	9	VDLL1103	1	DI I AUZ SUOINV	1.5	10,000	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

### C-SVUB type



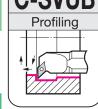
Holder





Internal Profiling Screw-on

3oring Bars



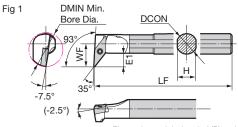


Figure shows right-handed (R) tool.

Parts Dimensions (mm)

		Sto	ock	Min. Bore			Overall	Cutting		Applicable Insert		Flat Insert S	crew	Wrench
Shank	Cat. No.			Dia.	Diameter	Height	Length	Edge Distance	Offset		Eig			<i>[</i> 3
Material	Cat. NO.	R	L	DMIN	DCON	Н	LF	WF	E1	Cat. No.	Fig		(N·m	(For Torx hole)
Carbide	C12M-SVUB R/L1103-20			20	12	11	150	13.5	8	VB□□1103	1	BFTX02508NV	1.5	TRX08
Carbide	C16R-SVUB R/L1103-25			25	16	15	200	16.5	9	VBLLTIUS	1	DETAUZOUOINV	1.5	INAUO

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

S

/c/

D







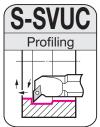


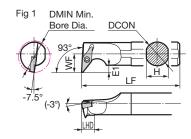
### S-SVUC type/A-SVUC type





Internal Profiling Screw-on





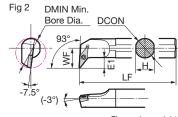


Figure shows right-handed (R) tool.

Н	olde	er												Parts	Dim	ensions (mm)
			Sto	ock	Min. Bore			Overall	Cutting			Applicable Inserts		Flat Insert S	crew	Wrench
Sh	nank	Cat. No.			Dia.	Diameter	Height	Lenath	Edge Distance	Head	Offset		Eia		_	
Ма	terial	Gat. No.	R	L	DMIN	DCON	Н	LF	WF	LHD	E1	Cat. No.	Fig		(N·m)	(For Torx hole)
		S12M-SVUC R/L0802-16			16	12	11	150	9.5	6.5	3.5	VC□□0802	1	BFTX0204N	0.5	TRX06
St	teel	S16Q-SVUC R/L0802-20			20	16	15	180	11.5	_	3.5	VCLL0002	2	DI 170204IN	0.5	INAUU
		S160-SVIIC R/I 1103-25			25	16	15	180	16.5	_	8.5	VCDD1103	2	RFTX02508NIV	1.5	TRYNS

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

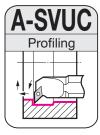


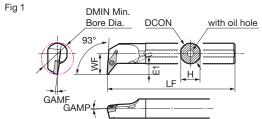




Internal Profiling Screw-on







G	iAMF GAM	4 [	Fig		F H	ght-har	nded (R)	tool.				Parts	С
	Stock	Min. Bore	B: .		Overall	Cutting	Offset	Rake	Rake	Applicable Inserts	ļ	Flat Insert S	crew
		Dia.	Diameter	Height	II enath	Edge Distance		Angle	Angle		Eia		

Holde	er				ΓΙ	jure sn	iows riç	grit-riar	iaea (K)	1001.				Parts	Dime	ensions (mm)
		Sto	ock	Min. Bore			Overall	Cutting	Offset	Rake	Rake	Applicable Inserts		Flat Insert S	crew	Wrench
Shank				Dia.	Diameter	Height	Length	Edge Distance		Angle	Angle		F:			
Material	Cat. No.	R	L	DMIN	DCON	н	LF	WF	E1	CAME	GAMP	Cal. No.	Fig		(N·m)	
				DIVIIIN	DCON	П	LF	VVI		GAIVIF	GAIVIE			<b>S</b>		(For Torx hole)
Steel	A16Q-SVUC R/L1103-25			25	16	15	180	16.5	8.5	-7.5°	-3.0°		1			
with	A20R-SVUC R/L1103-28			28	20	18	200	17.5	7.5	-7.5°	-3.0°	VC□□1103	1	BFTX02508NV	1.5	TRX08
Oil	A25S-SVUC R/L1103-32			32	25	23	250	19.0	7.5	-6.5°	-2.5°		1			
Hole	A25S-SVUC R/L1604-34			34	25	23	250	20.5	9.0	-7.5°	-3.0°	VC□□1604	1	BFTX03508	2.0	TRX10

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.













### -SVZB type/B-SVZB type

Stock

R

**S40T-SVZB R/L1604-50** • 50 40 37 300 20 27.0 10.0

Bore Dia.

25 20

32

34 25

40 32

DMIN DCON

H LF

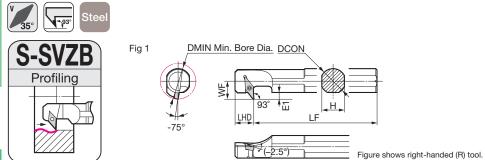
LHD WF

18 200 15 14.5

23 250 15 19.0 7.5

23 250 20 20.5 9.0

30 300 20 22.0 9.0



Holder

Material

Steel

D

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Cat. No.

S20R-SVZB R/L1103-25

S25S-SVZB R/L1103-32

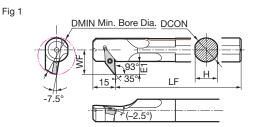
S25S-SVZB R/L1604-34

S32T-SVZB R/L1604-40





Holder



Internal Profiling Screw-on

Parts

Shim Flat Insert Screw

BFTX02508NV

BFTX03508

(N·m

1.5

2.0

TRX08

TRX10

Internal Profiling Screw-on

**Parts** 

Pin

VP40B

1

1

1 VP32B Bolt

BH03504

SVP32

Applicable

Inserts

Cat. No.

VB□□1103

VB□□1604



Dimensions (mm)

Wrench

LH020

Figure shows right-handed (R) tool.

													Dilli	311310113 (111111)
		Sto	ock	Min. Bore			Overall	Cutting		Applicable Insert		Flat Insert S	crew	Wrench
Shank	Cat. No.			Dia.	Diameter	Height	Length	Edge Distance	Offset		F:~			<i>(</i> \$
Material	Cat. No.	R	L	DMIN	DCON	Н	LF	WF	E1	Cat. No.	Fig		(N·m)	(For Torx hole)
Steel with Arti-	B12M-SVZB R/L1103-20			20	12	11	150	13.5	8	VB□□1103	1	BFTX02508NV	1.5	TRX08
/bration Mechanism	B16R-SVZB R/L1103-25			25	16	15	200	16.5	9	VBLLTIUS	1	DF I AUZ SUOINV	1.5	INAUO

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

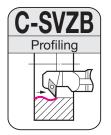
# C-SVZB type

Holder





Internal Profiling Screw-on



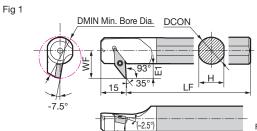


Figure shows right-handed (R) tool.

Parts Dimensions (mm)

			Sto	ock	Min. Bore			Overall	Cutting		Applicable Insert		Flat Insert S	crew	Wrench
	Shank	Cat. No.			Dia.	Diameter	Height	Length	Edge Distance	Offset		Fig		_	<i>(</i> \$
	Material	Gat. NO.	R	L	DMIN	DCON	Н	LF	WF	E1	Cat. No.	i ig		(N·m	(For Torx hole)
Ì	Carbide	C12M-SVZB R/L1103-20			20	12	11	150	13.5	8	VB□□1103	1	BFTX02508NV	1.5	TRX08
	Carbide	C16R-SVZB R/L1103-25			25	16	15	200	16.5	9	VBLL1103	1	DF I AUZ SUOINV	1.5	INAUO
	Dialet le	anded (D) tool baldons are commo	4:61		بمطاحات أبرطا	adad (D) as		/NI) :	a urb a						

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.









Internal Profiling Screw-on

Profiling

Fig 1 DMIN Min. Bore Dia. DCON ,93° ∑35° Figure shows right-handed (R) tool.

Holder

**Parts** Dimensions (mm) Stock Min. Bore Flat Insert Screw Applicable Inserts Wrench Overall Edge Offset Length Shank Cat. No. Fig R (N·m Material Cat. No. LF DMIN **DCON** WF Н LHD E1 (For Torx hole) S12M-SVZC R/L0802-16 ● ● TRX06 16 VC□□0802 1 BFTX0204N 12 11 150 10 9.5 4.5 0.5 Steel S16Q-SVZC R/L1103-20 ● 11.5 1 BFTX02508NV TRX08 20 16 15 180 15 4.5 VC□□1103 1.5

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

/c/









### S-SWUB type/C-SWUB type

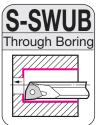


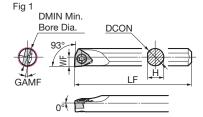
Holder

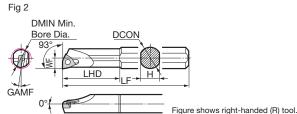


Internal Finishing (Small Diameter)

**Parts** 







Dimensions (mm)

			Sto	ock	Min. Bore			Overall	Cutting		Rake	Applicable Inserts		Flat Insert S	crew	Wrench
Shank	O-t N-	Previous Cat.			Dia.	Diameter	Height	Length	Edge Distance	Head	Angle		F:-		_	
Material	Cat. No.	No.	R	L	DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.	Fig		(N·m	
																(For Torx hole)
	S05H-SWUB R/L0601-06K	BBPW-508 R/L K°			5.5	5	4.7	100	2.75	_	-12°		1			
	S08H-SWUB R/L0601-06	BBPW-508 R/L			5.5	8	7.0	100	2.75	18	-12°	WB□□0601	2	BFTX0203N	0.5	TRX06
Steel	S08H-SWUB R/L0601-08	BBPW-508 R/L 08°			8.0	8	7.0	100	4.00	30	-10°		2			
	S08H-SWUB R/L0802-10	BBPW-608 R/L*			10.0	8	7.0	100	5.00	18	-13°	WB□□0802	2	BFTX02205N	0.5	TRX06
	S10K-SWUB R/L0802-12	BBPW-610 R/L°			12.0	10	9.0	125	6.00	20	-10°	VVDLLLU002	2	DF1AU22U3IN	0.5	1000

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts. S05H-SWUB R/L0601-06K requires the separately sold HBB516 adapter sleeve. Holders marked with \* show an ISO Cat. No.

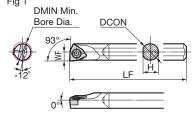


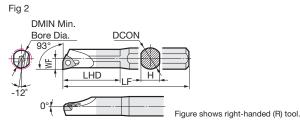
S

Internal Finishing (Small Diameter) Screw-on



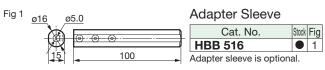






Hold	er												Parts	Dime	ensions (mm)
			Sto	ock	Min. Bore			Overall	Cutting		Applicable Insert		Flat Insert So	crew	Wrench
Shank	Cat. No.	Previous Cat.			Dia.	Diameter	Height	Length	Edge Distance	Head		Eia		_	<i>(</i> \$
Materia	Cat. No.	No.	R	L	DMIN	DCON	н	LF	WF	LHD	Cat. No.	Fig		(N·m	
					Divini	Boon									(For Torx hole)
Carbide	C05H-SWUB R/L0601-06K	WBPW-508 R/L K°			5.5	5	4.7	100	2.75	_	WB□□0601	1	BFTX0203N	0.5	TRX06
Carbide	C08K-SWUB R/L0601-06	WBPW-508 R/L			5.5	8	7.0	125	2.75	30	VVBLLU001	2	DF I AUZUSIN	0.5	INAUG

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts. C05H-SWUB R/L0601-06K requires the separately sold HBB516 adapter sleeve. Holders marked with \* show an ISO Cat. No.



### S-SWUP type

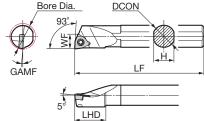








DMIN Min. Fig 1 Bore Dia.



Internal Finishing (Small Diameter) Screw-on

S







THOUGH BUTTING	GAMF LF
	Figure shows right-handed (R) to

ı	Holde	er												Parts	Dime	ensions (mm)
, [			Sto	ock	Min. Bore			Overall	Cutting			Applicable Inserts		Flat Insert S	crew	Wrench
	Shank	Cat. No.			Dia.	Diameter	Height	Length	Edge Distance	Head	Rake Angle		Eia			<b>/</b> \$
	Material	Gat. No.	R	L	DMIN	DCON	Н	LF	WF	LHD	GAMF	Cat. No.	Fig		(N·m)	(For Torx hole)
		S12M-SWUP R/L1102-14			14	12	11	150	7	17	-6°	WP□□1102	1	BFTX02505N	1.1	TRX08
	Steel	S16Q-SWUP R/L1102-18			18	16	15	180	9	18	-3°	VVI LL 1102	1	DI 1X0230311	1.1	111/00
	Steel	S16Q-SWUP R/L1603-18			18	16	15	180	9	18	-3°	WP□□1603	1	BFTX0407N	3.4	TRX15
l		S20R-SWUP R/L1603-22			22	20	18	200	11	18	-2°	VVI LL 1003	1	DI 17040711	5.4	111/13

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

### Cut-off Tools

# **Cut-off Tools**

4

4-1 to 4-30



		SEC-Cut-off Tool Holder series Selection Guide 4-2
	SEC-Small Diameter Cut-off Tool Holders	SCT type 4-4
	SEC-Cut-off Tool Holders	GNDM type / GNDL type (For Small Lathes) 4-6
		GNDM-J type / GNDL-J type (Internal Coolant Supply for Small Lathes) 4-8
		GNDS type 4-10
		GNDM type 4-12
		GNDM-J type (Internal Coolant Supply) 4-14
<b>Cut-off Tools</b>		GNDL type 4-16
		GNDL-J type (Internal Coolant Supply) 4-18
		<b>@GNDXL</b> type 4-20
		SumiGrip Introduction 4-22
	SumiGrip Jr.	STFH type 4-23
		STFS type 4-25
	SumiGrip	WCFH type 4-27
		WCFS type 4-29

mark: Standard stocked item

 mark: To be replaced with the new item featured on the same page
 mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability) \* mark: Semi-standard stocked item (please confirm stock availability)
O mark: Stock or planned stock (please confirm stock availability)

Blank: Made-to-order item

— mark: Not available

### **Selection Guide**

**Cut-off** 



4

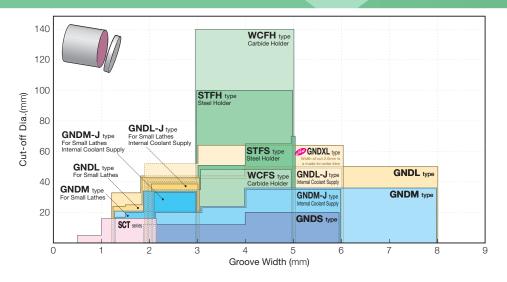
Cuttoff

Grooving

Exterr

al

Vecking



#### ■ Range of Applications (For Solid Workpieces

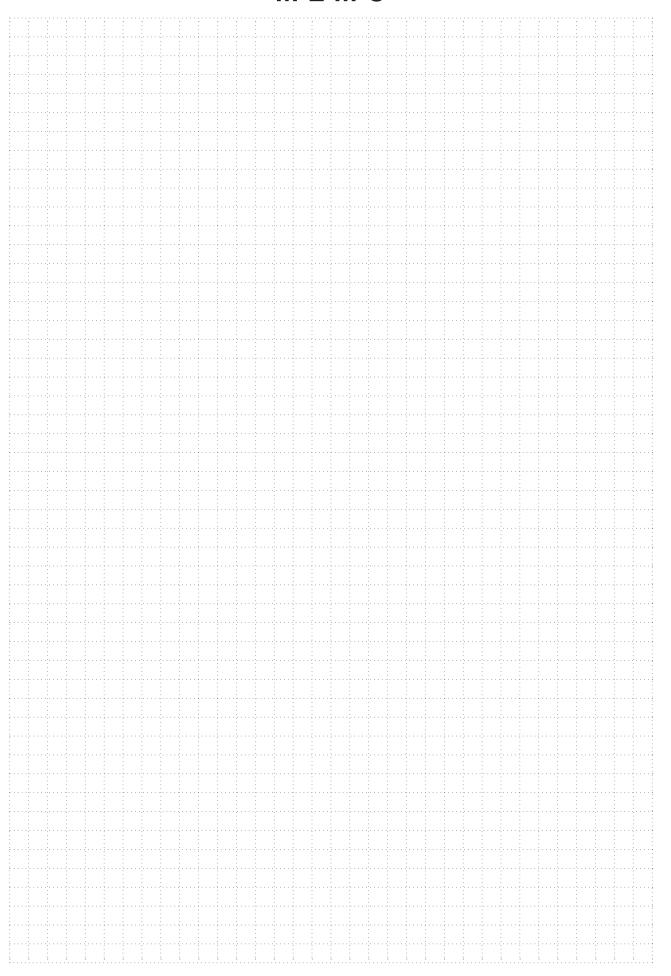
■ R	ange of Applica	ations (For Solid Work	pieces)						
Applications	Series	Shape	Insert Shape () indicates no. of cutting edges	Cut-off Dia. 25 Groove Width 2	50 4 1	75 6 	100 (mm) 8	10 (mm)	Features
For Small Lathes	SCT	0	Right Hand Let-handed Neutral	16.0					Ground insert with good sharpness     Can clamp even from behind     2-cornered type inserts
For Small to Medium Diameters	GND For Small Lathes GNDM/GNDM-J GNDL/GNDL-J		(2)		2.0				High-rigidity design and outstanding chip control     Unground 2-cornered type inserts,     available with widths starting at     1.25mm
For Sr Medium [	GND GNDS GNDM/GNDM-J GNDL/GNDL-J GNDXL		Right Hand Let-handed Neutral	*2.0	50.0		8.0		High-rigidity body, rigid clamping     Outstanding chip control     Unground 2-cornered type inserts
For Medium to arge Diameters	STFH STFS (SumiGrip Jr.)	3	(1) Right Hand Left-handed Neutral	2.0		5.0	100.0		Can be used for large diameter cut-off up to ø100mm     Economical steel shank     1-cornered self-restrained type inserts
For Med Large Di	WCFH WCFS (SumiGrip)	5	(1) Right Hand Left-handed Neutral	2.0		5.0		140.0	Can be used for large diameter cut-off up to ø140mm     High-rigidity carbide shank     1-cornered self-restrained type inserts

<sup>\*</sup> Width of cut 2.0mm is a made-to-order item.

#### ■ Cut-off Tool series



### **MEMO**



### SCT type



Cut-off

Grooving

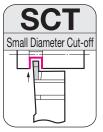


Fig 1 LF LH

Fig 2 LF LH (O) I 18 Figure shows right-handed (R) tool.

**Parts** 

Dimensions (mm)

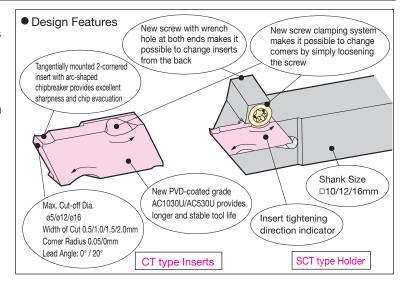
Holder (Right-Hand)

Cat. No.	Stock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Applicable Insert		Flat Head Screw	Wrench
Cat. No.	Slock	Н	В	LF	WF	HF	LH	Applicable Insert	Fig		
SCT R1010		10	10	120	10	10	15	CT DOFOCO (ND)	1		
SCT R1212		12	12	120	12	12	15	CT R05000(-NB) CT R12000(-NB)	1	BFTX0410T8L	TRX08
SCT R1616		16	16	120	16	16	15	CT H12000(-NB)	1		
SCT R1010-16		10	10	120	10	10	18		2		
SCT R1212-16		12	12	120	12	12	18	CT R16000(-NB)	1	BFTX0410T8L	TRX08
SCT R1616-16		16	16	120	16	16	18		1		

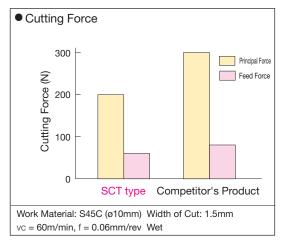
Holder (Left-Hand)										Parts i	Dimensions (mm)
		Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head			Flat Head Screw	Wrench
Cat. No.	Stock	Н	В	LF	WF	HF	LH	Applicable Insert	Fig		
SCT L1010		10	10	120	10	10	15	CT LOFOCOC( NID)	1		
SCT L1212		12	12	120	12	12	15	CT L05000(-NB) CT L12000(-NB)	1	BFTX0410T8R	TRX08
SCT L1616		16	16	120	16	16	15	01 E120000(-NB)	1		
SCT L1010-16		10	10	120	10	10	18		2		
SCT L1212-16		12	12	120	12	12	18	CT L16000(-NB)	1	BFTX0410T8R	TRX08
SCT L1616-16		16	16	120	16	16	18		1		

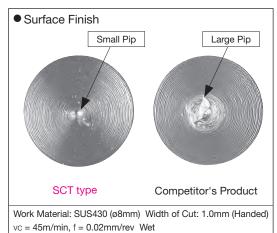
**Features** 

- Simple Indexable Inserts New clamping system makes it possible to change corners simply by loosening the screw from the back
- High Quality Surface Finish Excellent chip removal, leaves only a small pip at center of the work face.
- Long, Stable Tool Life PVD Coating Long, stable tool life with AC1030U/AC530U



### Cutting Performance





### SCT type

Insert Mounting Status and Dimensions (Figure shows insert with chipbreaker)

Holder Feed Direction	For Rig	ght-handed Holder (	SCTR)	For Le	eft-handed Holder (	SCTL)
Insert Cat. No.	CTROOR	CTROON	CTROOL	CTLOOR	CTLOON	CTLOOL
Holder Mounting Status	θ°= 20°		θ°= 20°	θ'= 20°		θ°= 20°
Insert Shape and Dimensions		2-RE	0°= 20° RE	0°= 20° RE	2-RE (CW) (S) (S) (S) (S) (S) (S) (S) (S) (S) (S	RE

Insert (For Right-handed Holders) (Coated Carbide) Dimensions (mm)

, -				,	•								•
Cat. No.		AC1030U			AC530U		Max. Cut-off Dia.	Width of Cut	Corner Radius	Overall Length	Thickness	Chipbreaker	Applicable Holder
	R	N	L	R	N	L		CW	RE	L	S		
CTR 050505 R/N/L							5	0.5	0.05	19	7	Yes	
CTR 050500 R/N/L							5	0.5	0	19	7	Yes	
CTR 121005 R/N/L							12	1.0	0.05	19	7	Yes	OOT D1010
CTR 121505 R/N/L							12	1.5	0.05	19	7	Yes	SCT R1010 SCT R1212
CTR 122005 R/N/L							12	2.0	0.05	19	7	Yes	SCT R1616
CTR 121000 R/N/L							12	1.0	0	19	7	Yes	001111010
CTR 121500 R/N/L							12	1.5	0	19	7	Yes	
CTR 122000 R/N/L							12	2.0	0	19	7	Yes	
CTR 161005 R/N/L							16	1.0	0.05	23.1	8.3	Yes	
CTR 161505 R/N/L							16	1.5	0.05	23.1	8.3	Yes	COT D1010 10
CTR 162005 R/N/L							16	2.0	0.05	23.1	8.3	Yes	SCT R1010-16 SCT R1212-16
CTR 161000 R/N/L							16	1.0	0	23.1	8.3	Yes	SCT R1212-10
CTR 161500 R/N/L							16	1.5	0	23.1	8.3	Yes	001111010 10
CTR 162000 R/N/L							16	2.0	0	23.1	8.3	Yes	
CTR 050500 R/N/L-NB							5	0.5	0	19	7	No	SCT R1010
CTR 121000 R/N/L-NB							12	1.0	0	19	7	No	SCT R1010 SCT R1212
CTR 121500 R/N/L-NB							12	1.5	0	19	7	No	SCT R1616
CTR 122000 R/N/L-NB							12	2.0	0	19	7	No	
CTR 161000 R/N/L-NB							16	1.0	0	23.1	8.3	No	SCT R1010-16
CTR 161500 R/N/L-NB							16	1.5	0	23.1	8.3	No	SCT R1212-16
CTR 162000 R/N/L-NB							16	2.0	0	23.1	8.3	No	SCT R1616-16

Inserts (For Left-handed Holders) ( Coated Carbide)

Dimensions (mm)

Cat. No.		AC1030L			AC530U	Max. Cut-off Dia.	Width of Cut	Corner Radius	Overall Length	Thickness	Chipbreaker	Applicable Holder	i
	R	N	L	R	N L		CW	RE	L	S			ı
CTL 050505 R/N/L					•	5	0.5	0.05	19	7	Yes		ı
CTL 050500 R/N/L						5	0.5	0	19	7	Yes		ı
CTL 121005 R/N/L						12	1.0	0.05	19	7	Yes	SCT L1010	
CTL 121505 R/N/L						12	1.5	0.05	19	7	Yes	SCT L1212	
CTL 122005 R/N/L		_				12	2.0	0.05	19	7	Yes	SCT L1616	
CTL 121000 R/N/L						12	1.0	0	19	7	Yes		
CTL 121500 R/N/L						12	1.5	0	19	7	Yes		
CTL 122000 R/N/L						12	2.0	0	19	7	Yes		
CTL 161005 R/N/L						16	1.0	0.05	23.1	8.3	Yes		
CTL 161505 R/N/L		ш				16	1.5	0.05	23.1	8.3	Yes	SCT L1010-16	
CTL 162005 R/N/L						16	2.0	0.05	23.1	8.3	Yes	SCT L1212-16	
CTL 161000 R/N/L						16	1.0	0	23.1	8.3	Yes	SCT L1616-16	
CTL 161500 R/N/L						16	1.5	0	23.1	8.3	Yes		
CTL 162000 R/N/L						16	2.0	0	23.1	8.3	Yes		
CTL 050500 R/N/L-NB						5	0.5	0	19	7	No	SCT L1010	
CTL 121000 R/N/L-NB						12	1.0	0	19	7	No	SCT L1212	
CTL 121500 R/N/L-NB						12	1.5	0	19	7	No	SCT L1616	
CTL 122000 R/N/L-NB						12	2.0	0	19	7	No	00. 2.0.0	
CTL 161000 R/N/L-NB						16	1.0	0	23.1	8.3	No	SCT L1010-16	
CTL 161500 R/N/L-NB						16	1.5	0	23.1	8.3	No	SCT L1212-16	
CTL 162000 R/N/L-NB						16	2.0	0	23.1	8.3	No	SCT L1616-16	

Grooving

External

Internal

Necking

### DM type / GNDL type







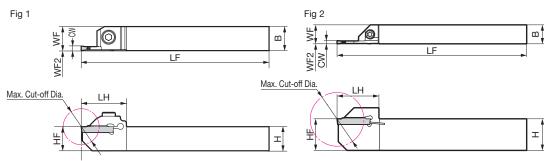


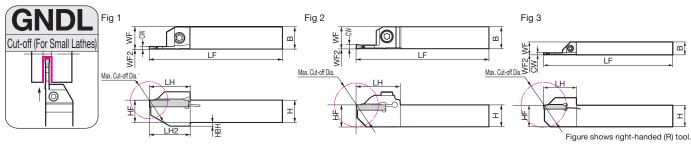
Figure shows right-handed (R) tool.

	Holder														Parts	Dime	ensions (mm)
		Sto	ck	Height	Width	Overall	Cutting Edge	Cutting Edge	Head	Offset	Width of				Cap Scre	W	Wrench
	Cat. No.					Length	Distance	Height			Cut	Max. Cut- off	Applicable Insert	Fig	BX0515		LT15-10
		R	L	Н	В	LF	WF	HF	LH	WF2	CW	Dia.				N·m	
Ш															BFTX0414		LH040
Ш	GNDM R/L1616JX-1.2508	• •		16	16	120	(16)	16	26	0	1.25	16	GCM N125005-GF	1			
П	GNDM R/L1616JX-1.510			16	16	120	(16)	16	26	0	1.50	20	GCM N150005-GF	1	BX0515	4.0	LH040
П	GNDM R/L1616JX-212			16	16	120	(16)	16	30	0	2.00	24	GC□ □20○○-□□	1	BX0313	4.0	LI 1040
Ш	GNDM R/L1616JX-312			16	16	120	(16)	16	30	0	3.00	24	GC□ □30○○-□□	1			
П	GNDM R/L2012JX-217			20	12	120	(12)	20	26.5	0	2.00	34	GC□ □20○○-□□	2	BFTX0414	3.0	LT15-10
Ιl	GNDM R/L2012JX-317			20	12	120	(12)	20	26.5	0	3.00	34	GC□ □30○○-□□	2	DI 170414	3.0	LI 13-10

Select holders and inserts with matching width of cut (CW).







Holder																Parts	Dime	ensions (mm)
	Sto	ock	Height	Width	Overall Length	Edge	Cutting Edge Height	Step	Head	Head	Offset	Width of Cut	Max.			Flat Head So Cap Scre		Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	НВН	LH	LH2	WF2	CW	Cut- off Dia.	Applicable Insert	Fig	BFTX0412N BFTX0414 BX0515	(N·m)	LT15-10 LH040
GNDL R/L1010JX-1.2510			10	10	120	(10)	10	2.0	18	18.3	0	1.25	20	GCM N125005-GF	1			
GNDL R/L1010JX-1.510			10	10	120	(10)	10	2.0	18	18.3	0	1.50	20	GCM N150005-GF	-GF 1 BFT	BFTX0412N	2.0	LT15-10
GNDL R/L1010JX-210			10	10	120	(10)	10	2.0	22	22.3	0	2.00	20	GC□ □20○○-□□		DI 170412N	3.0	LI 13-10
GNDL R/L1010JX-310			10	10	120	(10)	10	2.0	22	22.3	0	3.00	20	GC□ □30○○-□□				
GNDL R/L1212JX-1.2512			12	12	120	(12)	12	2.0	19	19.3	0	1.25	24	GCM N125005-GF	1			
GNDL R/L1212JX-1.512			12	12	120	(12)	12	2.0	19	19.3	0	1.50	24	GCM N150005-GF	1	BFTX0412N	20	LT15-10
GNDL R/L1212JX-212.5			12	12	120	(12)	12	2.0	22	22.3	0	2.00	25	GC□ □20○○-□□	1	BF1X0412N	3.0	LI 15-10
GNDL R/L1212JX-312.5			12	12	120	(12)	12	2.0	22	22.3	0	3.00	25	GC□ □30○○-□□	1			
GNDL R/L1616JX-1.2512.5			16	16	120	(16)	16	_	28	_	0	1.25	20	GCM N125005-GF	2			
GNDL R/L1616JX-1.512.5			16	16	120	(16)	16	_	28	_	0	1.50	25	GCM N150005-GF	2	DV0E1E	40	111040
GNDL R/L1616JX-216			16	16	120	(16)	16	_	32	_	0	2.00	32	GC□ □20○○-□□	-	DAUS 15	4.0	LH040
GNDL R/L1616JX-316			16	16	120	(16)	16	_	32	_	0	3.00	32	GC□ □30○○-□□				
GNDL R/L2012JX-221	•		20	12	120	(12)	20	_	30.5	_	0	2.00	42	GC □ □2000-□□		DETVO444		LT15 10
GNDL R/L2012JX-321			20	12	120	(12)	20	_	30.5	_	0	3.00	42	GC□ □30○○-□□	3	BFTX0414	3.0	LT15-10

Select holders and inserts with matching width of cut (CW).

4-6

Grooving Cut-off

External

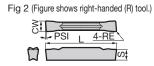
Face

Internal

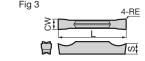
Necking

### GNDM type / GNDL type

Inserts for GNDM type (For Small Lathes)/GNDL type (For Small Lathes) (Coated Carbide/ Cermet/ Cemented Carbide/ DLC)



Dimensions (mm)



#### Grooving / Traverse Cutting

chooting, in	^ ' '	٠. ٠	-				9						ווט	1161131	0115 (	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	C	of Cut W	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3002-MG									_	3.0	±0.03	0.2	21.1	3.8	_	1
N3004-MG									—	3.0	±0.03	0.4	21.1	3.8	5	1
GCM N2002-ML	-	_	_	_					_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8	5	1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1

#### Cut-off (Handed Edge)

out on triand	CC		.uį	gC,	,							Dir	nensi	ons (	mm)
Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	는 Lead S Angle	C	of Cut W	Radius	Overall Length		Pcs/Pack	Fig
GCM R2002-CG-05	•	•	•	•	•	•	-	5°	2.0	±0.03		21.1	3.6		2
L2002-CG-05	•			•			_	5°	2.0	±0.03	0.2	21.1	3.6	_	2
GCM R3002-CG-05								5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-10	_	_				_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	_				_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	_	_				_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	_	_				_		15°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-15	_	_				_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	_	-				_		15°	3.0	±0.08					2
L30003-CF-15	_	<u> </u>			<u> </u>	_		15°	3.0	±0.08	0.03	22.4	3.8		2

GCMR: Right-handed, GCML: Left-handed

#### Grooving / Cut-off

Cat. No.	AC8025P	C8035P	AC830P	AC425K	C5015S	C5025S	AC520U	AC530U	T2500A	C	of Cut W	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N2002-GG	⋖	<	1	1	<b>4</b>	<u> </u>	4	4	•	2.0	±0.03	_	21.1	_	ш	1
0.01.11.00		_	_		_	_	_	_				_				
GCM N3002-GG									_	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL									_	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL									_	2.0	±0.03	0.4	21.1	3.6	5	1
GCM N3002-GL									_	3.0	±0.03	0.2	21.1	3.8	Э	1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N125005-GF	_	_	_	_	_	_	_		_	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF		-	_	_	-	-			_	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF		_	_	_						2.0	±0.03	0.2	21.1	3.6	5	1
N2004-GF			_	_						2.0	±0.03	0.4	21.1	3.6	3	1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1

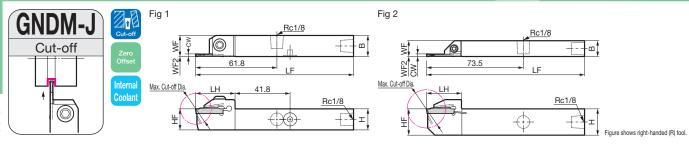
#### Non-Ferrous Metals

Cat No. 199 Width of Cut Corner Overall Indicess CW Radius Length																
Cat. No.	110	)L1500								C		Radius	Length	Thickness	cs/Pack	Fig
	-	_	ш											0	ш.	
GCG N2002-GA											±0.025				5	3
N3002-GA										3.0	±0.025	0.2	21.1	3.8	J	3

#### Part Number Suffix Code (Chipbreakers)

Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
O	GG	Grooving / General-purpose	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed			
Cut-on	GF	Grooving / Low cutting force			

### DM-J type / GNDL-J type



Cut-off

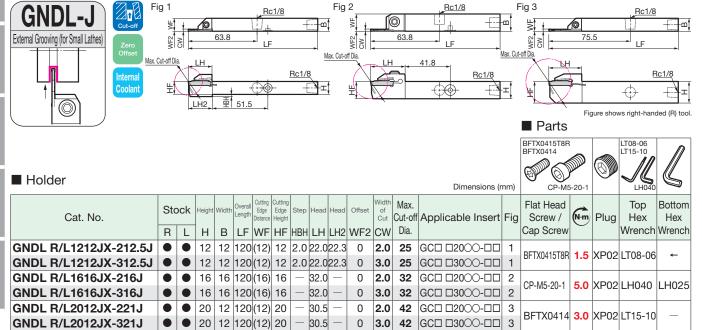
Grooving

External

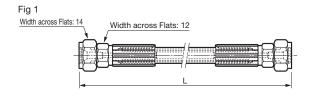
Internal

														■ Parts				
■ Holder												Dimensions (i	mm)	BFTX0414  CP-N	15-20-1		LT15-10 LH040	
Cat. No.	Sto	ock L	Height	Width B	Overall Length	Distalloc	Edge Height	Head	Offset	Cut	Cut-off	Applicable Insert	Fig	Flat Head Screw / Cap Screw	(N·m)	Plug	Hex	Bottom Hex Wrench
GNDM R/L1616JX-212J	•	•	16	16	120	(16)	16	30.0	0	2.0	24	GC□ □20○○-□□	1	CP-M5-20-1	5.0	XP02	LH040	LH025
GNDM R/L1616JX-312J			16	16	120	(16)	16	30.0	0	3.0	24	GC□ □30○○-□□	1	01 1010 20 1	5.0	XI 02	LI 1040	LI 1023
GNDM R/L2012JX-217J			20	12	120	(12)	20	26.5	0	2.0	34	GC□ □20○○-□□	2	BFTX0414	3.0	VD02	LT15-10	
GNDM R/L2012JX-317J			20	12	120	(12)	20	26.5	0	3.0	34	GC□ □30○○-□□	2	DE 170414	3.0	ΛF'02	LI 13-10	

Select holders and inserts with matching width of cut (CW).



Select holders and inserts with matching width of cut (CW).



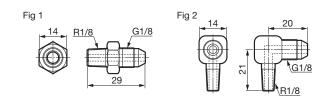
Parts (Hose)				Dimensions (	mm)	
Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig	
J-HOSE-G1/8-G1/8-200		200	G1/8	G1/8	1	

300

G1/8

G1/8

J-HOSE-G1/8-G1/8-300 ● Hoses are sold separately.

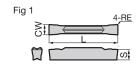


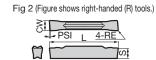
Parts (Connector)			Dimensions (	mm)
Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00		G1/8	R1/8	1
J-G1/8-R1/8-90		G1/8	R1/8	2

Connectors are sold separately.

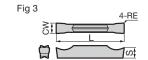
### GNDM-J type / GNDL-J type

Inserts for GNDM-J type (For Small Lathes)/GNDL-J type (For Small Lathes) (Coated Carbide/ Cermet/ Cemented Carbide/ DLC)





Dimensions (mm)



#### Grooving / Traverse Cutting

chooting, in	^ ' '	٠. ٠	-	_			9						DII	1161191	0115 (	
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	C	of Cut  W  Tolerance	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3002-MG									_	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-MG									—	3.0	±0.03	0.4	21.1	3.8	Э	1
GCM N2002-ML	-	_	_	_					_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8	5	1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1

### Dimensions (mm) Cut-off (Handed Edge)

Cat. No.	38035P	C830P	35015S	35025S	2520U	2530U	31030U	Lead Angle	Width C	of Cut		Overall Length	Thickness	Pcs/Pack	Fig
	A	AC	X	M	ĕ	ĕ	A	PSI	Width of Cut	Tolerance	RE	L	S	P	
GCM R2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6	5	2
GCM R3002-CG-05								5°	3.0	±0.03	0.2	21.3	3.8	Э	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	—			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	Э	2
L20003-CF-15	_	—			-	_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	_	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	-			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
CCMD. Diabt band	- d	~	- N A		- 41	1	1	1							

GCMR: Right-handed, GCML: Left-handed

#### Grooving / Cut-off

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut W	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N2002-GG									_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG									_	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL									_	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL									—	2.0	±0.03	0.4	21.1	3.6	5	1
GCM N3002-GL									_	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GF			_	_						2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	_	_	_	_						2.0	±0.03	0.4	21.1	3.6	5	1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1

#### Non-Ferrous Metals

Cat. No. 01 Width of Cut Corner Overall Indicess Fig.															
Cat. No.	H10	DL1500							C		Radius	Length	Thickness	Pcs/Pack	Fig
GCG N2002-GA									2.0	±0.025	0.2	21.1	3.6	5	3
N3002-GA									3.0	±0.025	0.2	21.1	3.8	5	3

#### Part Number Suffix Code (Chipbreakers)

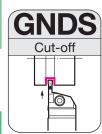
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
Cracilina /	GG	Grooving / General-purpose	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed			
Gut-on	GF	Grooving / Low cutting force			

Dimensions (mm)

### GNDS type



\* For traverse cutting (groove expansion), use a multi-functional or profiling insert.



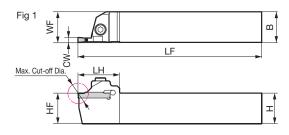


Figure shows right-handed (R) tool.

Cut-off

Grooving

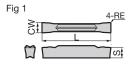
External

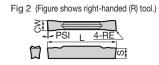
Face

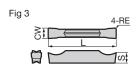
Holder													Parts	Dim	ensions (mm)
	Stock		Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Width of Cut	Max.			Cap Screw		Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	LH	CW	Cut-off Dia.	Applicable Insert	Fig		(N·m)	
GNDS R/L2020K-206			20	20	125	20	20	30	2.0	12	GC□ □20○○-□□	1			
GNDS R/L2020K-306			20	20	125	20	20	30	3.0	12	GC□ □30○○-□□	1			
GNDS R/L2020K-410			20	20	125	20	20	34	4.0	20	GC□ □40○○-□□	1	BX0520	5.0	LH040
GNDS R/L2020K-510			20	20	125	20	20	34	5.0	20	GC□ N50○○-□□	1			
GNDS R/L2020K-610			20	20	125	20	20	34	6.0	20	GC□ N60○○-□□	1			
GNDS R/L2525M-206			25	25	150	25	25	30	2.0	12	GC□ □20○○-□□	1			
GNDS R/L2525M-306			25	25	150	25	25	30	3.0	12	GC□ □30○○-□□	1			
GNDS R/L2525M-410			25	25	150	25	25	34	4.0	20	GC□ □40○○-□□	1	BX0520	5.0	LH040
GNDS R/L2525M-510			25	25	150	25	25	34	5.0	20	GC□ N50○○-□□	1			
GNDS R/L2525M-610			25	25	150	25	25	34	6.0	20	GC□ N60○○-□□	1			

Select holders and inserts with matching width of cut (CW).

#### Inserts for GNDS type







( Coated Carbide/ Cermet/ Cemented Carbide/ DLC)

#### Grooving / Traverse Cutting

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut W Tolerance	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3002-MG									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG									_	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG									_	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG									_	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG									_	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	_	_	_	_					_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8		1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML										4.0	±0.03	0.2	26.4	4.0		1
N4004-ML										4.0	±0.03	0.4	26.4	4.0	5	1
N4008-ML										4.0	±0.03	0.8	26.4	4.0	J	1
GCM N5004-ML									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML									_	5.0	±0.03	8.0	26.4	4.1		1
GCM N6004-ML									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML									_	6.0	±0.03	0.8	26.4	4.5		1

#### Cut-off (Handed Edge)

out on thana	-	٠.	٠.	90	,							DIII	Helisi	OHS (	,111111)
Cat. No.	C8035P	AC830P	C5015S	C5025S	C520U	C530U	AC1030U	Lead Angle	С	••	Radius	Overall Length	Thickness	Pcs/Pack	Fig
	Ĭ	۹	₹	₹	Ø	⋖	Ž	PSI	Width of Cut	Tolerance	KE	L	S	Д	
GCM R2002-CG-05							-	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05							-	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	_	2
L3002-CG-05							—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05							_	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05							-	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	-					_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	—	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	-	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	-	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
					-										

GCMR: Right-handed, GCML: Left-handed

#### Grooving / Cut-off

	Dir	nensi	ons (	mm
Corner	Overall	Thickness	Pack	F:

						_		_						1101101		
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С		Radius	Overall Length		Pcs/Pack	Fig
0.014.110000.00	⋖	A	4	ď	X	X	Q.	4	_		Tolerance	_	L	_	п	
GCM N2002-GG			•		•	•	•	•	_		±0.03					1
GCM N3002-GG		Ч									±0.03			-		1
N3004-GG			•		•	•	•	•	_		±0.03	_	_			1
GCM N4002-GG		Н							_	-	±0.03				_	1
N4004-GG						•	•		_	_	±0.03	_	_	_	5	1
GCM N5002-GG									_	5.0	±0.03					1
N5004-GG			•		•	•	•	•	_		±0.03					1
GCM N6002-GG											±0.03			-		1
N6004-GG					•	•	•	•			±0.03					1
GCM N2002-GL									_	-	±0.03			-		1
N2004-GL			_		•	•		•	_	_	±0.03	_	_			1
GCM N3002-GL									_		±0.03			-		1
N3004-GL						•		•	_		±0.03					1
GCM N4002-GL									_	4.0	±0.03				5	1
N4004-GL			_							4.0	±0.03					1
GCM N5002-GL									_		±0.03					1
N5004-GL									_		±0.03					1
GCM N6002-GL									_		±0.03					1
N6004-GL									_		±0.03					1
GCM N2002-GF		-	_	_						2.0	±0.03	0.2	21.1	3.6		1
N2004-GF		-	_	_							±0.03					1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF										4.0	±0.03	0.2	26.4	4.0	5	1
N4004-GF										4.0	±0.03	0.4	26.4	4.0	S	1
GCM N5002-GF									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF									_	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF									-	6.0	±0.03	0.4	26.4	4.5		1

#### Non-Ferrous Metals

1 11	on-i enous i	νıς	<b>5</b> LC	แอ							Dir	nensi	ons (	mm
	Cat. No.	01	1500					Width C			Overall Length	Thickness	cs/Pack	Fig
		Ì	ై					Width of Cut	Tolerance	RE	L	S	Рс	
G	CG N2002-GA							2.0	±0.025	0.2	21.1	3.6		3
	N3002-GA							3.0	±0.025	0.2	21.1	3.8		3
G	CG N4004-GA							4.0	±0.025	0.4	26.4	4.0	5	3
	N5004-GA							5.0	±0.025	0.4	26.4	4.1		3
	N6004-GA							6.0	±0.025	0.4	26.4	4.5		3

#### Part Number Suffix Code (Chipbreakers)

				,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
Craculas /	GG	Grooving / General-purpose	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed			
Cut-on	GF	Grooving / Low cutting force			

## **GNDM** type



Cut-off

Grooving

External

**GNDM** Cut-off 0

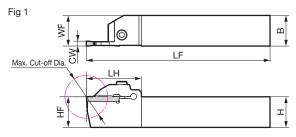


Figure shows right-handed (R) tool.

Holder

Parts	Dimensions (mn

Holder													Parts	Dimer	nsions (mm)
	Sto	ock	Height	Width	Overall	Cutting Edge	Cutting Edge	Head	Width of				Flat Head Sc	rew	Wrench
O-L NI-			rioigitt	vvidin	Length	Distance	Height	ricad	Cut	Max.	A sea Provided a factor and		BX0520		n
Cat. No.	R	L		_		\A/E			O\4/	Cut-off	Applicable Insert	Fig		(N·m	
			Н	В	LF	WF	HF	LH	CW	Dia.			BX0620		
GNDM R/L2020K-1.2510	•		20	20	125	20	20	34.0	1.25	20	GCM N125005-GF	1			
GNDM R/L2020K-1.510			20	20	125	20	20	34.0	1.50	20	GCM N150005-GF	1			
GNDM R/L2020K-210			20	20	125	20	20	33.6	2.00	20	GC□ □20○○-□□	1			
GNDM R/L2020K-312			20	20	125	20	20	36.6	3.00	24	GC□ □30○○-□□	1	BX0520	5.0	LH040
GNDM R/L2020K-418			20	20	125	20	20	45.0	4.00	36	GC□ □40○○-□□	1			
GNDM R/L2020K-518			20	20	125	20	20	45.0	5.00	36	GC□ N50○○-□□	1			
GNDM R/L2020K-618			20	20	125	20	20	45.0	6.00	36	GC□ N60○○-□□	1			
GNDM R/L2525M-1.2510			25	25	150	25	25	36.0	1.25	20	GCM N125005-GF	1			
GNDM R/L2525M-1.510			25	25	150	25	25	36.0	1.50	20	GCM N150005-GF	1			
GNDM R/L2525M-210			25	25	150	25	25	33.6	2.00	20	GC□ □20○○-□□	1			
GNDM R/L2525M-312			25	25	150	25	25	36.6	3.00	24	GC□ □30○○-□□		BX0520	5.0	LH040
GNDM R/L2525M-418			25	25	150	25	25	45.0	4.00	36	GC□ □40○○-□□	1			
GNDM R/L2525M-518			25	25	150	25	25	45.0	5.00	36	GC□ N50○O-□□	1			
GNDM R/L2525M-618			25	25	150	25	25	45.0	6.00	36	GC□ N60○○-□□	1			
GNDM R/L3225P-312			32	25	170	25	32	36.6	3.00	24	GC □ □3000-□□	1			
GNDM R/L3225P-418			32	25	170	25	32	45.0	4.00	36	GC□ □40○○-□□	1	BX0520	5.0	LH040
GNDM R/L3225P-518			32	25	170	25	32	45.0	5.00	36	GC□ N50○○-□□	1	27.0020	0.0	
GNDM R/L3225P-618			32	25	170	25	32	45.0	6.00	36	GC□ N60○○-□□	1			
GNDM R/L3225P-718			32	25	170	25	32	50.0	7.00	36	GCM N70○○-□□	1	BX0620	6.0	LH050
GNDM R/L3225P-818			32	25	170	25	32	50.0	8.00	36	GCM N8000-DD	1			
GNDM R/L3232P-312	•		32	32	170	32	32	36.6	3.00	24	GC □ □30○○-□□	1			
GNDM R/L3232P-418			32	32	170	32	32	45.0	4.00	36	GC	1			
GNDM R/L3232P-518	•		32	32	170	32	32	45.0	5.00	36	GC□ N50○○-□□	1	BX0620	6.0	LH050
GNDM R/L3232P-618			32	32	170	32	32	45.0	6.00	36	GC N6000-	1			
GNDM R/L3232P-718			32	32	170	32	32	50.0	7.00	36	GCM N7000-DD	1			
GNDM R/L3232P-818			32	32	170	32	32	50.0	8.00	36	GCM N80○○-□□	1			

Select holders and inserts with matching width of cut (CW). The maximum cut-off diameter indicated above is for inserts with RE = 0.2mm.

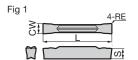
Internal

Necking

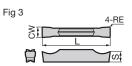
4-12

### **GNDM** type









( Coated Carbide/ Cermet/ Cemented Carbide/ DLC)

Grooving / Traverse Cutting

Grooving / Ira	ave	ers	se	Cı	utt	ın	g						Dir	nensi	ons (	mm)
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	C	of Cut  V  Tolerance		Overall Length	Thickness	Pcs/Pack	Fig
GCM N3002-MG									_	3.0	±0.03		21.1	3.8		1
N3004-MG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	•	•				•		•	_	4.0	±0.03					1
N4004-MG									_	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	•	•	•				•	•	_	4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-MG						•			_	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	•	•	•				•	•	_	5.0	±0.03	0.8	26.4	4.1	5	1
GCM N6004-MG									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-MG									_	7.0	±0.04	0.4	28.8	5.5		1
N7008-MG									_	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-MG									_	8.0	±0.04	0.4	28.8	6.0		1
N8008-MG									_	8.0	±0.04	0.8	28.8	6.0		1
GCM N2002-ML	<u> </u>	<u> </u>	_	_					_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8		1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML										4.0	±0.03	0.2	26.4	4.0		1
N4004-ML										4.0	±0.03	0.4	26.4	4.0		1
N4008-ML										4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML									_	5.0	±0.03	0.4	26.4	4.1	5	1
N5008-ML									_	5.0	±0.03	0.8	26.4	4.1	Э	1
GCM N6004-ML									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-ML									_	7.0	±0.04	0.4	28.8	5.5		1
N7008-ML									_	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-ML									_	8.0	±0.04	0.4	28.8	6.0		1
N8008-ML									_	8.0	±0.04	0.8	28.8	6.0		1

Cut-off (Handed Edge
----------------------

Cut-off (Hand	ec	ΙE	d	ge	)							Dir	nensi	ons (	mm)
Cat. No.	AC8035P	AC830P	AC5015S	AC5025S	AC520U	AC530U	AC1030U	는 Lead S Angle	С	of Cut W Tolerance	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM R2002-CG-05		•			•	•	_	5°	2.0	±0.03		21.1	3.6		2
L2002-CG-05	•	•	•	•	•	•	_	5°	2.0	±0.03	-		3.6		2
GCM R3002-CG-05			•	•			_	5°	3.0	±0.03	0.2	21.3	3.8	_	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05							_	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05							_	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	-					_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	_				_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	<u> </u>				_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	_	_				_		15°	2.0	±0.08	0.03	22.4	3.6	ا	2
L20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	_	_				_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
GCMR: Right-hand	ьd	GC	M	1 - 1	Δft	-ha	nd	ed							

#### Non-Ferrous Metals

٠.	voii i cirous i	VIC	,,,,							DII	nensi	ons (	,mm)
	Cat. No.	10	_1500				Width C		Corner Radius		Thickness	Pcs/Pack	Fig
		İΞ	Ճ				Width of Cut	Tolerance	RE	L	S	Д	
ſ	GCG N2002-GA						2.0	±0.025	0.2	21.1	3.6		3
L	N3002-GA						3.0	±0.025	0.2	21.1	3.8		3
	GCG N4004-GA						4.0	±0.025	0.4	26.4	4.0	5	3
	N5004-GA						5.0	±0.025	0.4	26.4	4.1		3
	N6004-GA						6.0	±0.025	0.4	26.4	4.5		3

Grooving / Cu	ıt-o	ff										Dir	nensi	ons (	(mm)
GCM N2002-GG								_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG				•	•	•	•	_	3.0	±0.03			3.8		1
N3004-GG		Ò		Ŏ	Ŏ	Ŏ	Ŏ	_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG								_	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG								_	4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GG								_	5.0	±0.03	0.2	26.4	4.1	5	1
N5004-GG								_	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG								_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG								_	6.0	±0.03	0.4		4.5		1
GCM N7004-GG									7.0	±0.04	0.4	28.8	5.5		1
GCM N8004-GG								_	8.0	±0.04			6.0		1
GCM N2002-GL								_	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL								_	2.0	±0.03	_		3.6		1
GCM N3002-GL								—	3.0	±0.03			3.8		1
N3004-GL									3.0	±0.03	-	_	3.8		1
GCM N4002-GL								_	4.0	±0.03			4.0		1
N4004-GL								_	4.0	±0.03	-	_	4.0	5	1
GCM N5002-GL								_	5.0	±0.03		26.4		J	1
N5004-GL								_	5.0	±0.03	_	26.4			1
GCM N6002-GL								-	6.0	±0.03		26.4			1
N6004-GL					lacksquare				6.0	±0.03	_		4.5		1
GCM N7004-GL								_	7.0	±0.04	-		5.5		1
GCM N8004-GL							•		8.0	±0.04			6.0		1
GCM N125005-GF								_	1.25			_	_		1
GCM N150005-GF	- -		-	_	_		•	_	1.5	±0.03					1
GCM N2002-GF	- -	- -							2.0	±0.03	-		3.6		1
N2004-GF	- -		-	•	•		•	•	2.0	±0.03			3.6		1
GCM N3002-GF								•	3.0	±0.03			3.8		1
N3004-GF					•		•	•	3.0	±0.03	-	_	3.8		1
GCM N4002-GF								•	4.0	±0.03			4.0		1
N4004-GF							•	•	4.0	±0.03	-	26.4		5	1
GCM N5002-GF									5.0	±0.03	-	26.4		-	1
N5004-GF							•	_	5.0	±0.03	_	26.4	$\overline{}$		1
GCM N6002-GF									6.0	±0.03			4.5		1
N6004-GF				•			•		6.0	±0.03	_	_	4.5		1
GCM N7002-GF									7.0	±0.04			5.5		1
N7004-GF							•		7.0	±0.04	_		5.5		1
GCM N8002-GF		4							8.0	±0.04			6.0		1
N8004-GF									8.0	±0.04	0.4	28.8	6.0		1

#### Part Number Suffix Code (Chipbreakers)

		( -		,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
0	GG	Grooving / General-purpose	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed			
Cut-on	GF	Grooving / Low cutting force			

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

Grooving

External

### GNDM-J type





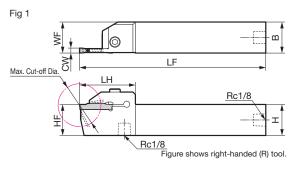
Cut-off

Grooving

External

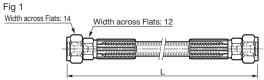
Face

Cut-off ø



Holder													Parts		Dime	nsions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Width of Cut	Max.			Cap Screv		Plug	Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	LH	CW	Cut-off Dia.	Applicable Insert	Fig		(N·m		
GNDM R/L2020K-210J		•	20	20	125	20	20	33.6	2.00	20	GC□ □20○○-□□	1				
R/L2020K-312J			20	20	125	20	20	36.6	3.00	24	GC□ □30○○-□□	1				
R/L2020K-418J			20	20	125	20	20	45	4.00	36	GC□ □40○○-□□	1	BX0520	6.0	XP02	LH040
R/L2020K-518J			20	20	125	20	20	45	5.00	36	GC□ N50○○-□□	1				
R/L2020K-618J			20	20	125	20	20	45	6.00	36	GC□ N60○○-□□	1				
GNDM R/L2525K-210J			25	25	125	25	25	33.6	2.00	20	GC□ □20○○-□□	1				
R/L2525K-312J			25	25	125	25	25	36.6	3.00	24	GC□ □30○○-□□	1				
R/L2525K-418J			25	25	125	25	25	45	4.00	36	GC□ □40○○-□□	1	BX0520	6.0	XP02	LH040
R/L2525K-518J			25	25	125	25	25	45	5.00	36	GC□ N50○○-□□	1				
R/L2525K-618J			25	25	125	25	25	45	6.00	36	GC□ N60○○-□□	1				

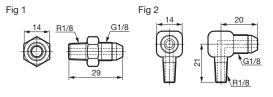
Select holders and inserts with matching width of cut (CW). The maximum cut-off diameter indicated above is for inserts with RE = 0.2mm.





` '				(	,
Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200		200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300		300	G1/8	G1/8	1
	•				_

Hoses are sold separately.



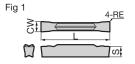
Parts (Connector)

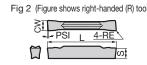
Dimensions (mm)

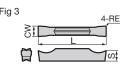
Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00		G1/8	R1/8	1
J-G1/8-R1/8-90		G1/8	R1/8	2

Connectors are sold separately.

#### Inserts for GNDM-J type







( Coated Carbide/ Cermet/ Cemented Carbide/ DLC)

#### Grooving / Traverse Cutting

							_									
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut W	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3002-MG									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG						•			_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	•	•		•	•	•		•	_	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG	•			Ŏ	Ŏ	•		•	_	4.0	±0.03	-				1
N4008-MG	•	•	•	•	•	•		•	_	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG	•	•	•	•		•		•	_	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG	•	•	•	•	•	•		•	_	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	_		_	_					_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML			•	•			•	•	•	3.0	±0.03	0.2	21.1	3.8		1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML										4.0	±0.03	0.2	26.4	4.0		1
N4004-ML										4.0	±0.03	0.4	26.4	4.0	5	1
N4008-ML										4.0	±0.03	0.8	26.4	4.0	Э	1
GCM N5004-ML									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML									_	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML									_	6.0	±0.03	0.8	26.4	4.5		1

#### Cut-off (Handed Edge)

out on triand	CC		.uį	gC,	,							Din	nensi	ons (	mm)
Cat. No.	C8035P	AC830P	35015S	AC5025S	AC520U	C530U	:1030U	Lead Angle		of Cut		Overall Length	Thickness	Pcs/Pack	Fig
	AC	ĕ	AC	A	¥	¥	AC1	PSI	Width of Cut	Tolerance	RE	L	S	P	
GCM R2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	3	2
GCM R4002-CG-05							-	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05							_	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	_	_			-	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	—	_			_	—		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	_	_			-	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	Э	2
L20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	_	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	—			-	_		15°	3.0	±0.08	0.03	22.4	3.8		2
GCMR: Right-hand	ed.	GC	M	1:1	eft	-ha	nd	ed							

#### Grooving / Cut-off

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A		of Cut <b>W</b> Tolerance		Overall Length	Thickness	Pcs/Pack	Fig
GCM N2002-GG									_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG									—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG									_	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG									_	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG									_	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG									_	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL									_	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL									_	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL									—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL									_	4.0	±0.03	0.2	26.4	4.0	5	1
N4004-GL									_	4.0	±0.03	0.4	26.4	4.0	J	1
GCM N5002-GL									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL									—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL									—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GF			_	_						2.0	±0.03	0.2	21.1	3.6		1
N2004-GF		_	—	_						2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF										3.0	±0.03			3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF										4.0	±0.03			4.0	5	1
N4004-GF										4.0	±0.03				J	1
GCM N5002-GF									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF									_	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF									-	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF									_	6.0	±0.03	0.4	26.4	4.5		1

#### Non-Ferrous Metals

Dimensions (mm)

14011 I CITOUS I	VIC	JLU							DII	nensi	ons (	mm
Cat. No.	10	L1500				С	W	Corner Radius		Thickness	cs/Pack	Fig
	Н					Width of Cut	Tolerance	RE	L	S	Д	
GCG N2002-GA			Т			2.0	±0.025	0.2	21.1	3.6		3
N3002-GA						3.0	±0.025	0.2	21.1	3.8		3
GCG N4004-GA			Т			4.0	±0.025	0.4	26.4	4.0	5	3
N5004-GA						5.0	±0.025	0.4	26.4	4.1		3
N6004-GA						6.0	±0.025	0.4	26.4	4.5		3

#### Part Number Suffix Code (Chipbreakers)

				,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
Crossing /	GG	Grooving / General-purpose	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed			
Cut-on	GF	Grooving / Low cutting force			

### **GNDL** type



Cut-off

Grooving

External

CBN

Cut-off 6

**GNDL** 

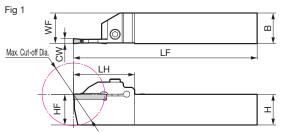


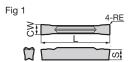
Figure shows right-handed (R) tool.

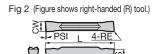
Holder													Parts	Dim	ensions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge	Cutting Edge	Head	Width of Cut				Cap Scre	ew.	Wrench
Cat. No.	R	L	Н	В	LF	WF	Height	LH	CW	Max. Cut-off Dia.	Applicable Insert	Fig	BX0520  BX0620	N·m	
GNDL R/L2020K-1.2516	•	•	20	20	125	20	20	38.0	1.25	32	GCM N125005-GF	1			
GNDL R/L2020K-1.516			20	20	125	20	20	38.0	1.50	32	GCM N150005-GF	1			
GNDL R/L2020K-220	•		20	20	125	20	20	44.5	2.00	40	GC □ □2000-□□	1			
GNDL R/L2020K-320			20	20	125	20	20	44.5	3.00	40	GC □ □30○○-□□	1	BX0520	5.0	LH040
GNDL R/L2020K-425	•		20	20	125	20	20	50.0	4.00	50	GC□ □40○○-□□	1			
GNDL R/L2020K-525			20	20	125	20	20	50.0	5.00	50	GC□ N50○○-□□	1			
GNDL R/L2020K-625			20	20	125	20	20	50.0	6.00	50	GC□ N60○○-□□	1			
GNDL R/L2525M-1.2516			25	25	150	25	25	40.0	1.25	32	GCM N125005-GF	1			
GNDL R/L2525M-1.516			25	25	150	25	25	40.0	1.50	32	GCM N150005-GF	1			
GNDL R/L2525M-220			25	25	150	25	25	44.5	2.00	40	GC□ □20○○-□□	1			
GNDL R/L2525M-320			25	25	150	25	25	44.5	3.00	40	GC□ □30○○-□□	1	BX0520	5.0	LH040
GNDL R/L2525M-425			25	25	150	25	25	50.0	4.00	50	GC□ □40○○-□□	1			
GNDL R/L2525M-525			25	25	150	25	25	50.0	5.00	50	GC□ N50○○-□□	1			
GNDL R/L2525M-625			25	25	150	25	25	50.0	6.00	50	GC□ N60○○-□□	1			
GNDL R/L3225P-320			32	25	170	25	32	44.5	3.00	40	GC□ □30○○-□□	1			
GNDL R/L3225P-425			32	25	170	25	32	50.0	4.00	50	GC□ □40○○-□□	1	BX0520	5.0	LH040
GNDL R/L3225P-525			32	25	170	25	32	50.0	5.00	50	GC□ N50○○-□□	1	BX0520	5.0	LHU40
GNDL R/L3225P-625			32	25	170	25	32	50.0	6.00	50	GC□ N60○○-□□	1			
GNDL R/L3225P-725			32	25	170	25	32	50.0	7.00	50	GCM N70○O-□□	1	BX0620	6.0	LH050
GNDL R/L3225P-825			32	25	170	25	32	50.0	8.00	50	GCM N80○○-□□	1	BA0020	0.0	LHUSU
GNDL R/L3232P-320			32	32	170	32	32	44.5	3.00	40	GC□ □30○○-□□	1			
GNDL R/L3232P-425			32	32	170	32	32	50.0	4.00	50	GC□ □40○○-□□	1			
GNDL R/L3232P-525			32	32	170	32	32	50.0	5.00	50	GC□ N50○○-□□	1	BX0620	6.0	LH050
GNDL R/L3232P-625			32	32	170	32	32	50.0	6.00	50	GC□ N60○○-□□	1	BAU020	0.0	LITUSU
GNDL R/L3232P-725			32	32	170	32	32	50.0	7.00	50	GCM N70○○-□□	1			
GNDL R/L3232P-825			32	32	170	32	32	50.0	8.00	50	GCM N80○O-□□	1			

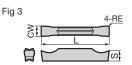
GNDL R/L3232P-825 | ● | ● | 32 | 32 | 170 | 32 | 32 | 50.0 | 8.00 | 50 | GCM N80○○-□□ | 1 | Select holders and inserts with matching width of cut (CW). The maximum cut-off diameter indicated above is for inserts with RE = 0.2mm.

## GNDL type









( Coated Carbide/ Cermet/ Cemented Carbide/ DLC)

#### Grooving / Traverse Cutting

Grooving / Tra	ave	ers	se	C	utt	in	g						Dir	nensi	ons (	mm)
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A		of Cut	Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
	AC	A	Ĭ	ĕ	A	A	ĕ	ĕ	Ë		Tolerance		L	S	<sub>S</sub>	
GCM N3002-MG									_	3.0	±0.03					1
N3004-MG									_	3.0	±0.03	-				1
GCM N4002-MG									_	4.0	±0.03					1
N4004-MG									_	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG										4.0	±0.03	_	_	-		1
GCM N5004-MG									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG									_	5.0	±0.03	0.8	26.4	4.1	5	1
GCM N6004-MG									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-MG									_	7.0	±0.04	0.4	28.8	5.5		1
N7008-MG									—	7.0	±0.04	0.8	28.8	5.5		1
GCM N8004-MG									_	8.0	±0.04	0.4	28.8	6.0		1
N8008-MG									_	8.0	±0.04	0.8	28.8	6.0		1
GCM N2002-ML	$\vdash$	_	_	_					_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8		1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML										4.0	±0.03	0.2	26.4	4.0		1
N4004-ML										4.0	±0.03	0.4	26.4	4.0		1
N4008-ML										4.0	±0.03	0.8	26.4	4.0		1
GCM N5004-ML						•			_	5.0	±0.03	0.4	26.4	4.1	_	1
N5008-ML	•	•	_	•	•		_	•	_	5.0	±0.03	0.8	26.4	4.1	5	1
GCM N6004-ML						•			_	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N7004-ML	•	•		•	•	•		•	_	7.0	±0.04	-	_	_		1
N7008-ML	•	•		•	•			•	_	7.0	±0.04					1
GCM N8004-ML	•			•		•	•	•	_	8.0	±0.04	_	_	-		1

#### Cut-off (Handed Edge)

Out on (Hand	CC		.u	gC,	,						DII	nensi	ons (	(111111)	
Cat. No.	C8035P	AC830P	C5015S	AC5025S	C520U	C530U	C1030U	Lead Angle		of Cut		Overall Length	Thickness	Pcs/Pack	Fig
	A	₹	¥	A	ĕ	ĕ	A	PSI	Width of Cut	Tolerance	RE	L	S	P.	
GCM R2002-CG-05							$\left  - \right $	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05							—	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05							-	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05							-	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05							_	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	-	_				_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15					_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
COMP D. LLL		~			٠.										

GCMR: Right-handed, GCML: Left-handed

#### Non-Ferrous Metals

11011 1 011040	Dimensions (mm)														
Cat. No.	10	_1500							Width C	of Cut	Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
	ÌΞ								Width of Cut	Tolerance	RE	L	S	Д	
GCG N2002-GA									2.0	±0.025	0.2	21.1	3.6		3
N3002-GA									3.0	±0.025	0.2	21.1	3.8		3
GCG N4004-GA									4.0	±0.025	0.4	26.4	4.0	5	3
N5004-GA									5.0	±0.025	0.4	26.4	4.1		3
N6004-GA									6.0	±0.025	0.4	26.4	4.5		3

Grooving / Cu	ıt-of	f										Dir	nensi	ons (	mm)
GCM N2002-GG							_	2.0	±0.	03	0.2	21.1	3.6		1
GCM N3002-GG					•		_	3.0	±0.	03	0.2	21.1	3.8		1
N3004-GG							—	3.0	±0.	03	0.4	21.1	3.8		1
GCM N4002-GG	•						_	4.0	±0.	03	0.2	26.4	4.0		1
N4004-GG							_	4.0	±0.	03	0.4	26.4	4.0		1
GCM N5002-GG							_	5.0	±0.	03	0.2	26.4	4.1	5	1
N5004-GG							—	5.0	±0.	03	0.4	26.4	4.1		1
GCM N6002-GG							_	6.0	±0.	03	0.2	26.4	4.5		1
N6004-GG							-	6.0	±0.	03	0.4	26.4	4.5		1
GCM N7004-GG							_	7.0	±0.	04	0.4	28.8	5.5		1
GCM N8004-GG							-	8.0	±0.	04	0.4	28.8	6.0		1
GCM N2002-GL							-	2.0	±0.	03	0.2	21.1	3.6		1
N2004-GL		1					_	2.0	±0.	03		21.1			1
GCM N3002-GL							-	3.0	±0.	03	0.2	21.1			1
N3004-GL		1					_	3.0	±0.	03	0.4	21.1	3.8		1
GCM N4002-GL							_	4.0	±0.			26.4	4.0		1
N4004-GL		1					_	4.0	±0.	03	0.4	26.4	4.0	5	1
GCM N5002-GL							-	5.0	±0.	03	0.2	26.4	4.1	J	1
N5004-GL		1					_	5.0	±0.	03	0.4	26.4	4.1		1
GCM N6002-GL							-	6.0	±0.			26.4			1
N6004-GL		1					_	6.0	±0.	-		26.4			1
GCM N7004-GL							_	7.0	±0.	04	0.4	28.8	5.5		1
GCM N8004-GL							_	8.0	±0.			28.8			1
GCM N125005-GF	- -	_	_	_			_					17.4			1
GCM N150005-GF		_		二			_	1.5				17.8			1
GCM N2002-GF	- -	-	_					2.0	±0.		-	21.1			1
N2004-GF		_						2.0	±0.			21.1			1
GCM N3002-GF								3.0	±0.		-	21.1			1
N3004-GF		1					•	3.0	±0.			21.1			1
GCM N4002-GF								4.0	±0.			26.4			1
N4004-GF								4.0	±0.			26.4		5	1
GCM N5002-GF							-	5.0	±0.		-	26.4			1
N5004-GF		1				•	_	5.0	±0.			26.4			1
GCM N6002-GF							-	6.0	±0.			26.4	-		1
N6004-GF		1				•	_	6.0	±0.	-	_	26.4	_		1
GCM N7002-GF							-	7.0	±0.	-		28.8			1
N7004-GF							_	7.0	±0.			28.8	-		1
GCM N8002-GF							-	8.0	±0.	-		28.8			1
N8004-GF							_	8.0	±0.	U4	0.4	28.8	6.0		1

#### Part Number Suffix Code (Chipbreakers)

		( -		,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
0	GG	Grooving / General-purpose	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed			
Cut-on	GF	Grooving / Low cutting force			

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

Grooving

External

### GNDL-J type



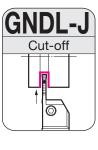




Cut-off

Grooving

External



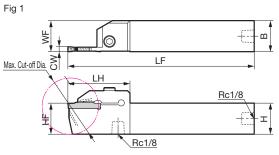
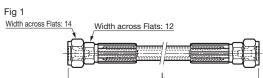


Figure shows right-handed (R) tool.

Holder													Parts		Dimen	sions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge	Cutting Edge	Head	Width of Cut	Max.			Cap So	crew	Plug	Wrench
Cat. No.					Lengin	Distance	Height		Out	Cut-off	Applicable Insert	Fig				
	R	L	Н	В	LF	WF	HF	LH	CW	Dia.				(N·m)		
GNDL R/L2020K-220J	•	•	20	20	125	20	20	44.5	2.00	40	GC□ □20○○-□□	1				
R/L2020K-320J			20	20	125	20	20	44.5	3.00	40	GC□ □30○○-□□	1				
R/L2020K-425J			20	20	125	20	20	50	4.00	50	GC□ □40○○-□□	1	BX0520	6.0	XP02	LH040
R/L2020K-525J			20	20	125	20	20	50	5.00	50	GC□ N50○○-□□	1				
R/L2020K-625J			20	20	125	20	20	50	6.00	50	GC□ N60○○-□□	1				
GNDL R/L2525K-220J			25	25	125	25	25	44.5	2.00	40	GC□ □20○○-□□	1				
R/L2525K-320J			25	25	125	25	25	44.5	3.00	40	GC□ □30○○-□□	1				
R/L2525K-425J			25	25	125	25	25	50	4.00	50	GC□ □40○○-□□	1	BX0520	6.0	XP02	LH040
R/L2525K-525J			25	25	125	25	25	50	5.00	50	GC□ N50○○-□□	1				
R/L2525K-625J			25	25	125	25	25	50	6.00	50	GC□ N60○○-□□	1				

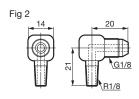
Select holders and inserts with matching width of cut (CW). The maximum cut-off diameter indicated above is for inserts with RE = 0.2mm.

Dimensions (mm)



14 F	29	G1/8

Fig 1



Parts (Hose)

Cat. No.
J-HOSE-G1/8-G1/8-20

Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200		200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300		300	G1/8	G1/8	1

Hoses are sold separately.

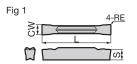
Parts (Connector)

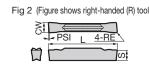
Dimensions (mm)

Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00		G1/8	R1/8	1
J-G1/8-R1/8-90		G1/8	R1/8	2

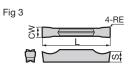
Connectors are sold separately.

#### Inserts for GNDL-J type





Dimensions (mm)



( Coated Carbide / Cermet / Cemented Carbide DLC)

#### Grooving / Traverse Cutting

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut W	Radius	Overall Length	Thickness S	Pcs/Pack	Fig
GCM N3002-MG									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG									—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG									_	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG									_	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG									_	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG									_	5.0	±0.03					1
N5008-MG			•							5.0	±0.03	_	_	-		1
GCM N6004-MG									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	-		_	_						2.0	±0.03					1
GCM N3002-ML										3.0	±0.03					1
N3004-ML										3.0	±0.03		_	-		1
GCM N4002-ML										4.0	±0.03	-	-			1
N4004-ML										4.0	±0.03	0.4	26.4	4.0	5	1
N4008-ML								lacksquare		4.0	±0.03	_	_	_	J	1
GCM N5004-ML									-	5.0	±0.03					1
N5008-ML										5.0	±0.03	_	_	-		1
GCM N6004-ML									-	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML									<u> — </u>	6.0	±0.03	8.0	26.4	4.5		1

Cut-off (Hand	ec	ΙE	d	ge	)							Dir	nensi	ons (	mm)
Cat. No.	C8035P	C830P	C5015S	50258	3520U	2530U	:1030U	Lead Angle		of Cut	Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
	AC	ĕ	A	A	¥	¥	AC	PSI	Width of Cut	Tolerance	RE	L	S	Рс	
GCM R2002-CG-05							-	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05							-	5°	2.0	±0.03	0.2	21.1	3.6	ı	2
GCM R3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05							—	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05							-	5°	4.0	±0.04	0.2	26.7	4.0	ı	2
L4002-CG-05							-	5°	4.0	±0.04	0.2	26.7	4.0	ı	2
GCM R20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6	ı	2
GCM R30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8	ı	2
L30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	<u> </u>	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	၁	2
L20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	ı	2
GCM R30003-CF-15	_	_				_		15°	3.0	+0.08	0.03	22 4	3 8	i	2

GCMR: Right-handed, GCML: Left-handed

#### Grooving / Cut-off

		Dir	nensi	ons (	mm
ut	Corner	Overall Length	Thickness	Pack	Г

arooving / Ct		•											DII	nensi	0115 (	,,,,,,,,,
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	C	of Cut W	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N2002-GG									=	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		Ŏ	Ö		•	•			_	_	±0.03	_		-		1
N3004-GG		Ŏ	Ŏ		Ŏ	•	Ŏ	Ŏ	_		±0.03			-		1
GCM N4002-GG			•						_		±0.03					1
N4004-GG			•		•		•	•	_	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG										5.0	±0.03	0.2	26.4	4.1		1
N5004-GG			•		•		•	•	_	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG										6.0	±0.03	0.2	26.4	4.5		1
N6004-GG									-	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL									—	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL									-	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL									—	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL									-	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL									_	4.0	±0.03	0.2	26.4	4.0	5	1
N4004-GL									-	4.0	±0.03	0.4	26.4	4.0	э	1
GCM N5002-GL									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL									-	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL									=	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL									-	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GF		_	_	_						2.0	±0.03	0.2	21.1	3.6		1
N2004-GF		-	_	_						2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF										4.0	±0.03			-	5	1
N4004-GF										4.0	±0.03	_	_	_	٥	1
GCM N5002-GF									_	5.0	±0.03					1
N5004-GF									_		±0.03					1
GCM N6002-GF									-		±0.03			-		1
N6004-GF									-	6.0	±0.03	0.4	26.4	4.5		1

#### Non-Ferrous Metals

Dimensions (mi												(mm)		
Cat. No.	10	1500						Width C'			Overall Length	Thickness	cs/Pack	Fig
	Ξ							Width of Cut	Tolerance	RE	L	S	P	
GCG N2002-GA								2.0	±0.025	0.2	21.1	3.6		3
N3002-GA								3.0	±0.025	0.2	21.1	3.8		3
GCG N4004-GA								4.0	±0.025	0.4	26.4	4.0	5	3
N5004-GA								5.0	±0.025	0.4	26.4	4.1		3
N6004-GA								6.0	±0.025	0.4	26.4	4.5		3

#### Part Number Suffix Code (Chipbreakers)

Туре	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
O	GG	Grooving / General-purpose	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed			
Cut-on	GF	Grooving / Low cutting force			

### **GNDXL** type





Cut-off Tools

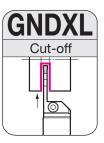
4

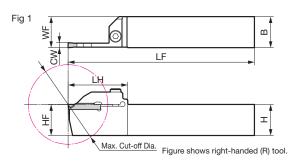
Cut-off

Grooving

External

Face





Holder													Parts	Dime	ensions (mm)		
	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Width of Cut	Max.			Cap Scre	w	Wrench		
Cat. No.	R	L	Н	В	LF	WF	HF	LH	CW	Cut-off Dia.	Applicable Insert					(N·m)	
GNDXL R/L2020K-226			20	20	125	20	20	42.0	2.0	52	GCM N2002-GF1	1					
GNDXL R/L2020K-332			20	20	125	20	20	48.0	3.0	64	GCM N30○O-□□1	1					
GNDXL R/L2020K-432			20	20	125	20	20	48.0	4.0	64	GCM N40○O-□□1	1	BX0520	5.0	LH040		
GNDXL R/L2020K-532			20	20	125	20	20	48.0	5.0	64	GCM N50○O-□□1	1					
GNDXL R/L2020K-632			20	20	125	20	20	48.0	6.0	64	GCM N60○O-□□1	1					
GNDXL R/L2525M-226			25	25	150	25	25	42.0	2.0	52	GCM N2002-GF1	1					
GNDXL R/L2525M-332			25	25	150	25	25	48.0	3.0	64	GCM N30○O-□□1	1					
GNDXL R/L2525M-432			25	25	150	25	25	48.0	4.0	64	GCM N40○O-□□1	1	BX0520	5.0	LH040		
GNDXL R/L2525M-532			25	25	150	25	25	48.0	5.0	64	GCM N50○O-□□1	1					
GNDXL R/L2525M-632			25	25	150	25	25	48.0	6.0	64	GCM N60○O-□□1	1					

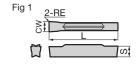
Select holders and inserts with matching width of cut (CW). Only 1-cornered inserts can be used.





Inserts for GNDXL type (1-cornered)

(Coated Carbide)



#### Grooving / Traverse Cutting (1-cornered)

im	ens	ion	a /.	mm	٠,

0				_	`		,				
Cat. No.	50158	C5015S C5025S \C530U			Width of Cut Corner C Radius L			Thickness	Pcs/Pack	Fig	
	AC	AC	ĕ	Width of Cut	Tolerance	RE	L	S	Рс		
GCM N3002-ML1				3.0	±0.03	0.2	21.1	3.8		1	
GCM N4004-ML1				4.0	±0.03	0.4	26.4	4.0	5	1	
GCM N5004-ML1				5.0	±0.03	0.4	26.4	4.1	S	1	
GCM N6004-ML1				6.0	±0.03	0.4	26.4	4.5		1	

#### Grooving / Cut-off (1-cornered)

#### Dimensions (mm)

Cat. No.	50158	35025S 3530U			th of Cut	Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
	AC	AC	¥	Width of Cut	Tolerance	RE	L	S	Рс	
GCM N2002-GF1				2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GF1				3.0	±0.03	0.2	21.1	3.8		1
GCM N4002-GF1				4.0	±0.03	0.2	26.4	4.0	5	1
GCM N5002-GF1				5.0	±0.03	0.2	26.4	4.1		1
GCM N6002-GF1				6.0	±0.03	0.2	26.4	4.5		1

Select holders and inserts with matching width of cut (CW). Use in combination with GNDXL type holders. Not usable with GNDIS type holders.

#### Part Number Suffix Code (Chipbreakers)

		•
Type	Symbol	Applications
Grooving / Traverse Cutting	ML	Multi-functional / Low-feed
Grooving / Cut-off	GF	Grooving / Low cutting force

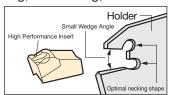


#### ■ Features

- Available in cemented carbide holder (Sumi Grip) and steel holder (SumiGrip Jr.)
- Capable of interrupted cutting
- Can be used for cut-off, grooving, chamfering, etc.

#### Types

- (1) Tool Block type STFH type (Steel)/ WCFH type (Carbide)
- (2) Shank type STFS type (Steel)/ WCFS type (Carbide)



#### ■ Cutting Performance (Holder)

Insert Clamping Force

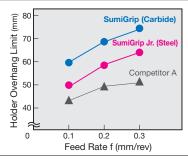
Over double that of competitors' products

SumiGrip Jr.

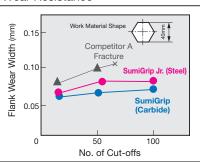
Competitor's Product A Smm Width

130

Holder Overhang



Work Material: S45C (Ø50mm, 250HB) Cutting Conditions: vc = 80m/min Dry Wear Resistance



Work Material: S45C (Hex), Insert: 3mm Width Coated Cutting Conditions: vc = 150m/min, f = 0.15mm/rev Wet (Water Soluble)

#### ■ GG type / GF type / CF type Chipbreaker + AC1030U

Insert Clamping Force (N) Large

- The grooving tool GND series offers several chipbreakers for excellent chip control.
- Low cutting force chipbreaker GF type (neutral) or CF type (handed) inserts, coupled with a carbide blade, enable stable machining and prevent chattering even when machining stainless steel.
- Achieving stable long tool life with the AC1030U grade.







#### ■ Cutting Performance (Chipbreaker)

Chip Control (Performance)



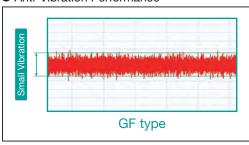
E type

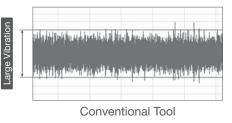


Work Material: S45C (ø40mm) 3.0mm Width Cut-off Cutting Conditions: vc = 100m/min f = 0.1mm/rev Wet

GG type Convent

Anti-Vibration Performance



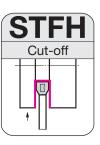


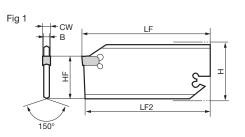
Work Material: SUS316 ( $\phi$ 40mm) 3.0mm Width Cut-off Cutting Conditions: vc = 100m/min f = 0.1mm/rev Wet

### STFH type

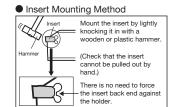
Dimensions (mm)

Dimensions (mm)





Cut-off (Steel Holder/Tool Block type)



Note that driving in the insert too far may cause damage to the insert or holder.

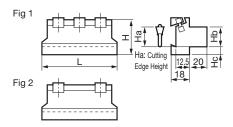
**Parts** 

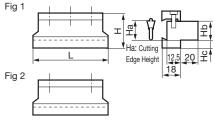
#### Holder

Cat. No.	Stock	Height H	Width	Overall Length	Cutting Edge Height	Reference Length	Width of Cut	Max. Cut-off Dia.	Applicable Insert	Applicable Tool Blocks	Fig	Wrench
STFH 26-2		26	1.6	109	21.4	108	2.0	40	WCFO2□		1	
STFH 26-3		26	2.4	109	21.4	108	3.0	70	WCFO3□	SBN 20-26	1	SL-4
STFH 26-4		26	3.4	109	21.4	108	4.0	70	WCFO4□	SBU 20-26	1	SL-4
STFH 26-5		26	4.3	109	21.4	108	5.0	70	WCF○5□		1	
STFH 32-2		32	1.6	149	25.0	148	2.0	40	WCFO2□	SBN 20-32	1	
STFH 32-3		32	2.4	149	25.0	148	3.0	100	WCFO3□	SBN 25-32	1	SL-4
STFH 32-4		32	3.4	149	25.0	148	4.0	100	WCFO4□	SBU 20-32	1	SL-4
STFH 32-5		32	4.3	149	25.0	148	5.0	100	WCF○5□	SBU 25-32	1	

Dimensions (mm)

<sup>\*</sup> The shape of STFH32-2 is slightly different from the above figure.





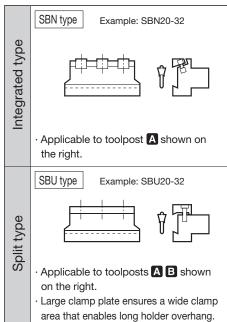
#### Tool Block SBN type (Integrated) Parts

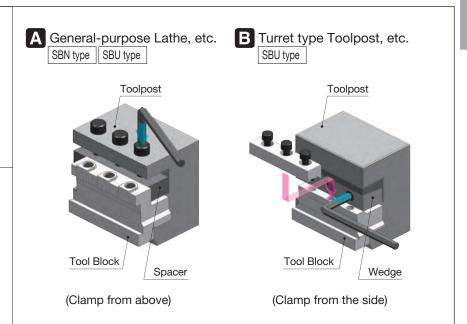
		, ,	,		_		,			31.0.01.0
		Cutting Edge Height	Mounting Length	Mounting Position	Height	Overall Length		Clamp Plate	Double Screw	Wrench
Cat. No.	Stock		Hb	Нс	Н	L	Fig			
SBN 20-26		20	20	10.0	45	80	2			
SBN 20-32		20	20	13.5	50	100	1	BWS30	WB8-20	LH040
SBN 25-32		25	25	8.5	50	110	1			

#### Tool Block SBU type (Split type) Parts

			•	٠.		٠.	,			, ,
		Cutting Edge Height	Mounting Length	Mounting Position	Height	Overall Length		Clamp Wedge	Cap Screw	Wrench
Cat. No.	Stock		Hb	Нс	Н	L	Fig	BCS15 BCS20 BCS25		
SBU 20-26		20	20	10.0	45	80	2	BCS15		
SBU 20-32		20	20	13.5	50	100	1	BCS20	BX0622	LH050
SBU 25-32		25	25	8.5	50	110	1	BCS25		

#### Tool Block type Selection Guide





# STFH type

Fig 1 (Neutral (N))



Inserts for STFH (SumiGrip / SumiGrip Jr. common) (

Fig 2 (Right Hand (R))



Coated Carbide /

Fig 3 (Left Hand (L))



Cermet / Cemented Carbide)

\* WCF 2T: 2-RE0.15

Dimensions (mm)

cut-of Tools

4

Cut-off

Grooving

External

Face

Intern

Neckin

CBN

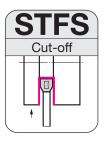
_	•	•	,	•						,	. ,
	Appearance	Cat. No.	AC830P	AC225	AC1030U	T1500A	A30	G10E	Width of Cut	Applicable Holder	Fig
	WCF NO-GG	WCF N2-GG		-		_	_	_	2.0	STFH OO-2	1
	General-purpose	WCF N3-GG	•	1=		_	_	_	3.0	STFH OO-3	1
		WCF N4-GG							4.0	STFH OO-4	1
		WCF N5-GG		-			_	_	5.0	STFH OO-5	1
	WCF NO-GF	WCF N2-GF							2.0	STFH 00-2	1
	Exotic Alloy	WCF N3-GF					_		3.0	STFH 00-3	1
	Low Feed	WCF N4-GF							4.0	STFH 00-4	1
		WCF N4-GF							5.0	STFH 00-5	1
	W05 = 0 05	WCF N3-GF WCF R3-CF	+						3.0	31711 00-3	
	WCF □O-CF Exotic Alloy	WCF L3-CF							3.0	STFH OO-3	3
ш	Low Feed	WCF R4-CF	+								
н	(Handed)	WCF R4-CF				_			4.0 4.0	STFH OO-4	2
н				-							_
	WCF □2T Small Diameter	WCF N2T			-	_	_	_	2.0	OTFIL OO O	1
ш	Low Cutting Force	WCF R2T		-		-	_	_	2.0	STFH OO-2	2
-		WCF L2T		_	-	_	_	_	2.0		3
ш	WCF □O	WCF N3		-	-	_	_	_	3.0		1
н	No Chipbreaker For General Steel	WCF R3		_	-	_	_	_	3.0	STFH OO-3	2
ш	Tor deficial oteer	WCF L3		-	-	_	_	_	3.0		3
н		WCF N4	•	_	-	_	_	_	4.0		1
		WCF R4		-	-	-	_	_	4.0	STFH OO-4	2
ш		WCF L4	•	L	-	_	_	_	4.0		3
ш		WCF N5		-	-	-	-	_	5.0		1
ш		WCF R5		_	-	_	_	_	5.0	STFH OO-5	2
ш		WCF L5		1=	-	_	_	_	5.0		3
ш	WCF □OA	WCF N2A		•	<u>  — </u>	_		_	2.0	STFH OO-2	1
-	Exotic Alloy	WCF N3A			-				3.0		1
ш	Low Feed	WCF R3A			-				3.0	STFH OO-3	2
ш		WCF L3A			-	-			3.0		3
ш		WCF N4A			-				4.0		1
ш		WCF R4A			-	-			4.0	STFH OO-4	2
	~	WCF L4A			<u>  — </u>	_			4.0		3
ш		WCF N5A			-	-			5.0		1
ш		WCF R5A		-	-	-			5.0	STFH OO-5	2
ш		WCF L5A		-	-	_			5.0		3
ш	WCF □OB	WCF N3B		-	-	-	_		3.0		1
ш	Cast Iron	WCF R3B		-	-	-	_		3.0	STFH OO-3	2
	Light Alloys	WCF L3B		L	-		_		3.0		3
		WCF N4B		-	-	_	_		4.0		1
		WCF R4B		-	-	-	-		4.0	STFH OO-4	2
		WCF L4B		_	<u>l</u> -	_	_		4.0		3
	* Same chipbreaker shape as the	WCF N5B		[=	-	_	_	•	5.0		1
	type for general steel (WCF□O), but	WCF R5B		-	-	_	_		5.0	STFH OO-5	2
	with smaller cutting edge treatment.	WCF L5B		-	-	_	_		5.0		3
				-	-					•	

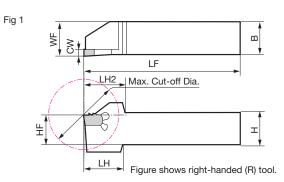
#### Recommended Cutting Conditions

				Cutting Speed vc (m/min)							
Work Material			Coated Carbide		Cermet	Cemented	d Carbide				
		AC830P	AC225	AC1030U	T1500A	A30	G10E				
	General Steel	80 to 200	80 to 200	50 to 200	80 to 200	50 to 120	_				
Steel	Mild Steel	100 to 230	100 to 230	50 to 230	100 to 230	70 to 150	_				
	Die Steel	60 to 150	60 to 150	50 to 150	60 to 150	50 to 120	_				
M Stainles	s Steel	70 to 150	60 to 150	50 to 150	_	70 to 130	_				
K Cast Iro	n	_	_	50 to 200	_		50 to 120				
Non-Fe	rrous Metal	_	_	200 to 500	_	_	200 to 500				

						Feed	d Rate f (mm	/rev)				
Ob in b				Neu	itral					Handed		
Chipbre		GG		No Chipbreaker		Α		No Chipbreaker	CF	Т	Α	В
		General-purpose	Exotic Alloy/Low Cutting Force type	General Steel	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys	General Steel	Exotic Alloy/Low Cutting Force type	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys
Width of	2.0	0.05 to 0.20	0.03 to 0.12	_	0.03 to 0.10	0.03 to 0.12	_	_	_	0.03 to 0.10	_	_
Cut		0.08 to 0.25	0.04 to 0.15	0.08 to 0.25	_	0.04 to 0.15	0.05 to 0.15	0.08 to 0.25	0.05 to 0.12	_	0.04 to 0.15	0.05 to 0.15
CW	4.0	0.10 to 0.30	0.05 to 0.18	0.10 to 0.30	_	0.05 to 0.18	0.05 to 0.18	0.10 to 0.30	0.05 to 0.12	_	0.05 to 0.18	0.05 to 0.18
(mm)	5.0	0.10 to 0.35	0.05 to 0.20	0.10 to 0.30	_	0.05 to 0.20	0.06 to 0.20	0.10 to 0.30	_	_	_	0.06 to 0.20







For Cut-off (Steel Holder/Shank type)

Insert Mounting Method

Mount the insert by lightly knocking it in with a wooden or plastic hammer.

(Check that the insert cannot be pulled out by hand.)

There is no need to force the insert back end against the holder.

Note that driving in the insert too far may cause damage to the insert or holder.

Holder									Parts	Dimension	ns (mm)
	_			0.44:	O						

0.1.11	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Head	Width of Cut	Max.	Applicable		Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	LH	LH2	CW	Cut-off Dia.	Insert	Fig	CAR.
STFS R/L1010-2	•		10	10	86	10	10	17	17	2.0	28		1	
STFS R/L1212-2			12	12	110	12	12	18	18	2.0	30	WCFO2□	1	SL-4
STFS R/L1616-2			16	16	110	16	16	_	19	2.0	32	WCFO2LI	1	SL-4
STFS R/L2020-2			20	20	125	20	20	_	24	2.0	40		1	
STFS R/L1616-3			16	16	110	16	16	20	22	3.0	35		1	
STFS R/L2012-3			20	12	110	12	20	_	24	3.0	40	WCFO3□	1	SL-4
STFS R/L2020-3			20	20	125	20	20	_	30	3.0	50	WOI C3L	1	3L-4
			25	25	150	25	25	_	30	3.0	50		1	
STFS R/L2020-4 STFS R/L2525-4		-	20	20	125	20	20	_	33	4.0	55	WCFO4□	1	SL-4
			25	25	150	25	25	_	38	4.0	65	VVOI ∪4⊔	1	OL-4
			20	20	125	20	20	_	35	5.0	60	WCFO5□	1	SL-4
			25	25	150	25	25	_	40	5.0	70	VVOI OJL	1	3L-4



Fig 2 (Right Hand (R))



Fig 3 (Left Hand (L))



\* WCF□ 2T: 2-RE0.15

Grooving

CBN

Inserts for STFS (SumiGri	p / SumiGrip Jr. commo	n) (	(	С	oat	ed (	Car	bide / Co	*WCF□ 21: 2: ermet / Cemented Carbide) Dimension	
Appearance	Cat. No.	AC830P	AC225	AC1030U	T1500A	A30	G10E	Width of Cut	Applicable Holder	Fig
WCF NO-GG	WCF N2-GG		-		_	_	_	2.0	STFS R/L0000-2	1
General-purpose	WCF N3-GG		Ŀ	-	-	_	_	3.0	STFS R/LOOOO-3	1
	WCF N4-GG		-		_		_	4.0	STFS R/L0000-4	1
	WCF N5-GG		-		_	_	_	5.0	STFS R/LOOO0-5	1
WCF NO-GF	WCF N2-GF		F	-	_	_	_	2.0	STFS R/LOOO0-2	1
Exotic Alloy Low Feed	WCF N3-GF		-	- 0	<u> </u>	_	_	3.0	STFS R/LOOOO-3	1
Low reed	WCF N4-GF		-	- •	_	_	_	4.0	STFS R/LOOOO-4	1
	WCF N5-GF		-	- 0	-	_	_	5.0	STFS R/L0000-5	1
WCF □O-CF Exotic Alloy	WCF R3-CF		-	-	_	_	_	3.0	STFS R/L0000-3	2
Low Feed	WCF L3-CF		-		_	_	_	3.0		3
(Handed)	WCF R4-CF		-	-	_	_	_	4.0	STFS R/L0000-4	2
	WCF L4-CF		-			_		4.0		3
WCF □2T Small Diameter	WCF N2T		-		-	_	_	2.0	CTFC D/I COCCO O	1
Low Cutting Force	WCF LOT		-					2.0 2.0	STFS R/LOOOO-2	3
	WCF L2T WCF N3		H		H	_		3.0		1
WCF □○ No Chipbreaker	WCF N3		-	-1-				3.0	STFS R/L000-3	
For General Steel	WCF L3				E			3.0	31F3 N/LOOO-3	3
	WCF L3				믙			4.0		1
	WCF R4			_   _				4.0	STFS R/L0000-4	2
	WCF L4		-		l_	_		4.0	31131/2000-4	3
	WCF N5		-			_	_	5.0		1
	WCF R5		-	- -	l_	_	_	5.0	STFS R/L0000-5	2
	WCF L5		-	_   _	_	_	_	5.0	011011/200000	3
WCF □○A	WCF N2A				-			2.0	STFS R/LOOOO-2	1
Exotic Alloy	WCF N3A				•			3.0	011011/200002	1
Low Feed	WCF R3A		ľ			•		3.0	STFS R/L0000-3	2
_	WCF L3A				-			3.0	00.,20000	3
	WCF N4A				•			4.0		1
	WCF R4A				Ī			4.0	STFS R/L0000-4	2
	WCF L4A				-			4.0		3
	WCF N5A				-			5.0		1
	WCF R5A		-	- -	-			5.0	STFS R/L0000-5	2
	WCF L5A		-	- -	-			5.0		3
WCF □○B	WCF N3B		1-	- -	-	_		3.0		1
Cast Iron	WCF R3B		-	- -	_	_		3.0	STFS R/L0000-3	2
Light Alloys	WCF L3B		_	-[-	_	_		3.0		3
	WCF N4B		[-	-[-	_	_		4.0		1
	WCF R4B		-	- -	-	_		4.0	STFS R/L0000-4	2
	WCF L4B		_	- -	_			4.0		3
* Same chipbreaker shape as the	WCF N5B		[-	-[-	-	_	•	5.0		1
type for general steel (WCF□O), but	WCF R5B		-	- -		_		5.0	STFS R/L0000-5	2
with smaller cutting edge treatment.	WCF L5B		-	- -	-	-		5.0		3

#### **Recommended Cutting Conditions**

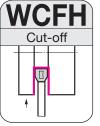
				Cutting Spee	ed vc (m/min)		
Work	Material		Coated Carbide	<u> </u>	Cermet	Cemente	d Carbide
		AC830P	AC225	AC1030U	T1500A	A30	G10E
	General Steel	80 to 200	80 to 200	50 to 200	80 to 200	50 to 120	_
Steel	Mild Steel	100 to 230	100 to 230	50 to 230	100 to 230	70 to 150	_
	Die Steel	60 to 150	60 to 150	50 to 150	60 to 150	50 to 120	—
M Stainle	ss Steel	70 to 150	60 to 150	50 to 150	_	70 to 130	_
K Cast Iro	on	_	_	50 to 200	_	_	50 to 120
N Non-Fe	errous Metal	_	_	200 to 500	_	_	200 to 500

				·		Feed	Rate f (mm	/rev)	<u> </u>		·	
Ob in b				Neu	ıtral					Handed		
Chippre	Chipbreaker	GG		No Chipbreaker		Α		No Chipbreaker		Т	Α	В
		General-purpose	Exotic Alloy/Low Cutting Force type	General Steel	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys	General Steel	Exotic Alloy/Low Cutting Force type	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys
Width of	2.0	0.05 to 0.20	0.03 to 0.12	_	0.03 to 0.10	0.03 to 0.12	_	_	_	0.03 to 0.10	_	_
Cut		0.08 to 0.25	0.04 to 0.15	0.08 to 0.25	_	0.04 to 0.15	0.05 to 0.15	0.08 to 0.25	0.05 to 0.12	_	0.04 to 0.15	0.05 to 0.15
CW	4.0	0.10 to 0.30	0.05 to 0.18	0.10 to 0.30	_	0.05 to 0.18	0.05 to 0.18	0.10 to 0.30	0.05 to 0.12	_	0.05 to 0.18	0.05 to 0.18
(mm)	5.0	0.10 to 0.35	0.05 to 0.20	0.10 to 0.30	_	0.05 to 0.20	0.06 to 0.20	0.10 to 0.30	<u> </u>	_	_	0.06 to 0.20

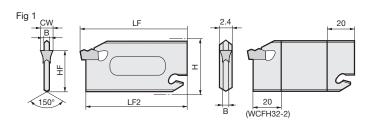
### WCFH type

Dimensions (mm)





WCFH 32-5



For Cut-off (Carbide Holder/Tool Block type)

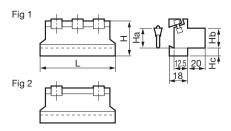
Insert Mounting Method Mount the insert by lightly knocking it in with a wooden or plastic hammer. (Check that the insert cannot be pulled out by hand.) Note that driving in the insert too far may cause damage to the insert or holder.

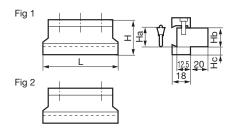
Holder												Parts Dimensions (mm)
Cat. No.	Stock	Height	Width	Overall Length	Cutting Edge Height	Reference Length	Width of Cut	Max.	Applicable Insert	Applicable Tool	Eia	Wrench
WCFH 26-2	OLUUK	Н	В	LF	HF	LF2	CW	Dia.	Applicable insert	Blocks	ı ıy	O. His
WCFH 26-2		26	1.7	110	21.4	109.0	2.0	40	WCF□2○		1	SL-2
WCFH 26-3		26	2.4	110	21.4	108.5	3.0	80	WCF□3○	SBN 20-26	1	
WCFH 26-4		26	3.4	110	21.4	108.5	4.0	80	WCF□4○	SBU 20-26	1	SL-1
WCFH 26-5		26	4.3	110	21.4	108.5	5.0	80	WCF□5○		1	
WCFH 32-2		32	1.7	150	25.0	149.0	2.0	40	WCF□2○	SBN 20-32	1	SL-2
WCFH 32-3		32	2.4	150	25.0	148.5	3.0	140	WCF□3○	SBN 25-32	1	
WCFH 32-4		32	3.4	150	25.0	148.5	4.0	140	WCF□4O	SBU 20-32	1	SL-1

5.0

148.5

140 WCF□5○





#### Tool Block SBN type (Integrated) Parts

	TOOL DIOOK C	וטו	v Ly	PC	(	cgi	alc	u,	i di to	DIIII	ensions (min
			Cutting Edge Height	Mounting Length	Mounting Position	Height	Overall Length		Clamp Plate	Double Screw	Wrench
	Cat. No.	Stock		Hb	Нс	Н	L	Fig			
	SBN 20-26		20	20	10.0	45	80	2			
	SBN 20-32 SBN 25-32		20	20	13.5	50	100	1	BWS30	WB8-20	LH040
			25	25	8.5	50	110	1			

4.3

150

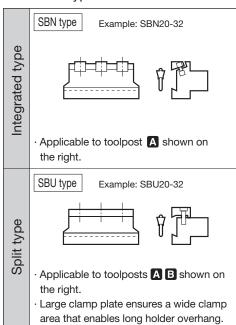
25.0

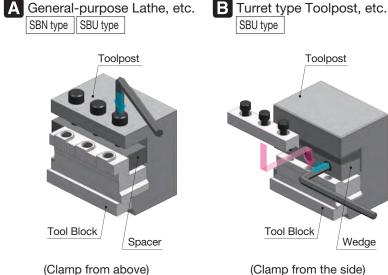
Tool Block SBU type (Split type) Parts

		,	•	١, ١		, ,	,			,
		Cutting Edge Height	Mounting Length	Mounting Position	Height	Overall Length		Clamp Wedge	Cap Screw	Wrench
Cat. No.	Stock		Hb	Нс	Н	L	Fig	BCS15 BCS20 BCS25		
SBU 20-26		20	20	10.0	45	80	2	BCS15		
SBU 20-32 SBU 25-32		20	20	13.5	50	100	1	BCS20	BX0622	LH050
		25	25	8.5	50	110	1	BCS25		

SBU 25-32

#### Tool Block type Selection Guide





Toolpost

# WCFH type

Fig 1 (Neutral (N))



Fig 2 (Right Hand (R))



Fig 3 (Left Hand (L))



\* WCF□ 2T: 2-RE0.15

Grooving

CBN

$\frac{2}{5}$											
	Appearance	Cat. No.	AC830P	AC225	AC1030U	T1500A	A30	G10E	Width of Cut	Applicable Holder	Fig
Ī	WCF NO-GG	WCF N2-GG	•	-		-	-	_	2.0	WCFH OO-2	1
	General-purpose	WCF N3-GG	•	-			-	_	3.0	WCFH OO-3	1
		WCF N4-GG	•	1-	-		-	_	4.0	WCFH OO-4	1
		WCF N5-GG		-	-	-		_	5.0	WCFH OO-5	1
١	WCF NO-GF	WCF N2-GF		1-		$\left  - \right $	-	-	2.0	WCFH OO-2	1
	Exotic Alloy	WCF N3-GF		-		-	-	_	3.0	WCFH OO-3	1
اا	Low Feed	WCF N4-GF		-		-	-	_	4.0	WCFH OO-4	1
		WCF N5-GF		-		_	_	_	5.0	WCFH OO-5	1
	WCF □O-CF	WCF R3-CF		-		-	-	-	3.0	WCFH OO-3	2
	Exotic Alloy	WCF L3-CF		-		_	_	_	3.0	WOTT 00-3	3
	Low Feed Handed)	WCF R4-CF		-		-	-	-	4.0	WCFH 00-4	2
	Tranded)	WCF L4-CF		-		-	_	_	4.0	WOITI 00-4	3
	NCF □2T	WCF N2T		-		-	-	-	2.0		1
	Small Diameter	WCF R2T		-	-	-	-	-	2.0	WCFH 00-2	2
	Low Cutting Force	WCF L2T	•	L	-				2.0		3
	WCF □O	WCF N3		-	-	-	-	-	3.0		1
	No Chipbreaker	WCF R3		-		-	-	-	3.0	WCFH ○○-3	2
'	For General Steel	WCF L3	•	-	-	-	-	_	3.0		3
		WCF N4		-		-	-	-	4.0		1
ч		WCF R4		-	-	-	-	-	4.0	WCFH 00-4	2
		WCF L4	•	_	<u> </u>				4.0		3
ш		WCF N5		-	-	-	-	-	5.0		1
		WCF R5		-	-	-	-	-	5.0	WCFH ○○-5	2
L		WCF L5	•	-	-	_	_	_	5.0		3
	VCF □OA	WCF N2A		•	<u>  — </u>				2.0	WCFH OO-2	1
	Exotic Alloy Low Feed	WCF N3A			-				3.0		1
ll'	Low Feed	WCF R3A			-				3.0	WCFH OO-3	2
		WCF L3A			<u>  — </u>	-			3.0		3
ш		WCF N4A			-				4.0		1
		WCF R4A			-	-			4.0	WCFH OO-4	2
31	•	WCF L4A			-				4.0		3
ш		WCF N5A			-	-			5.0		1
ш		WCF R5A		-	-				5.0	WCFH OO-5	2
H		WCF L5A		-	-				5.0		3
	WCF □OB	WCF N3B		1-	-				3.0		1
	Cast Iron	WCF R3B		-	-	-	-		3.0	WCFH OO-3	2
	Light Alloys	WCF L3B		Ŀ	1-		_		3.0		3
		WCF N4B		-	-	-	-		4.0		1
		WCF R4B		-	-	-	-		4.0	WCFH OO-4	2
		WCF L4B		-	-				4.0		3
	Same chipbreaker shape as the	WCF N5B		-	-		-		5.0		1
	type for general steel (WCF□O), but	WCF R5B		-	-		-		5.0	WCFH 00-5	2
L	with smaller cutting edge treatment.	WCF L5B		1-	1-		_		5.0		3

#### **Recommended Cutting Conditions**

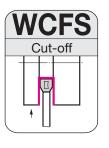
				Cutting Spee	ed vc (m/min)		
Work N	Material		Coated Carbide		Cermet	Cemente	d Carbide
		AC830P	AC225	AC1030U	T1500A	A30	G10E
	General Steel	80 to 200	80 to 200	50 to 200	80 to 200	50 to 120	_
P Steel	Mild Steel	100 to 230	100 to 230	50 to 230	100 to 230	70 to 150	_
	Die Steel	60 to 150	60 to 150	50 to 150	60 to 150	50 to 120	_
M Stainles	ss Steel	70 to 150	60 to 150	50 to 150	_	70 to 130	_
K Cast Iro	n	_	_	50 to 200	_	_	50 to 120
Non-Fe	rrous Metal	_	_	200 to 500	_	_	200 to 500

						Feed	Rate f (mm	ı/rev)				
Obinbus				Neu	utral					Handed		
Chipbre		GG		No Chipbreaker		Α		No Chipbreaker		Т	Α	В
		General-purpose	Exotic Alloy/Low Cutting Force type	General Steel	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys	General Steel	Exotic Alloy/Low Cutting Force type	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys
Width of	2.0	0.05 to 0.20	0.03 to 0.12	_	0.03 to 0.10	0.03 to 0.12	_	_	_	0.03 to 0.10	_	_
Cut		0.08 to 0.25			_	0.04 to 0.15	0.05 to 0.15	0.08 to 0.25	0.05 to 0.12	_	0.04 to 0.15	0.05 to 0.15
CW	4.0	0.10 to 0.30	0.05 to 0.18	0.10 to 0.30	_	0.05 to 0.18	0.05 to 0.18	0.10 to 0.30	0.05 to 0.12	_	0.05 to 0.18	0.05 to 0.18
(mm)	5.0	0.10 to 0.35	0.05 to 0.20	0.10 to 0.30	_	0.05 to 0.20	0.06 to 0.20	0.10 to 0.30	_	_	_	0.06 to 0.20

Mount the insert by lightly knocking it in with a wooden or plastic hammer. (Check that the insert cannot be pulled out by hand.)

at driving in the insert too far may lamage to the insert or holder.





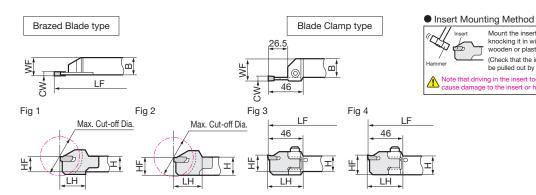


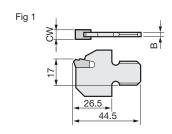
Figure shows right-handed (R) tool.

For Cut-off

(Carbide Holder/Shank type)

Holder														Parts Dimensions (mm)
Type	Cat. No.	Sto	ock	Height	Width	Overall Length	Cutting Edge Height	Head	Width of Cut	Max. Cut-	Applicable	Applicable	Eia	Wrench
туре		R	L	Н	В	LF	HF	LH	CW	off Dia.	Blades	Insert	rig	erin .
	WCFS R/L1010-2			10	10	86	10	10	2.0	28	_	WCF□2○	1	
Brazed type	R/L1212-2			12	12	110	12	18	2.0	30	_	WCF□2○	1	SL-2
brazed type	R/L1616-2			16	16	100	16	25	2.0	35	_	WCF□2○	2	
	R/L1616-3			16	16	100	16	25	3.0	35	_	WCF□3○	2	SL-1
	WCFS R/L20-3			20	20	125	20	46	3.0	50	WCFH17-3	WCF□3○	3	
	R/L20-4			20	20	125	20	46	4.0	50	WCFH17-4	WCF□4○	3	SL-1
Clamp tupo	R/L20-5			20	20	125	20	46	5.0	50	WCFH17-5	WCF□5○	3	
Clamp type	WCFS R/L25-3			25	25	150	25	46	3.0	50	WCFH17-3	WCF□3○	4	
	R/L25-4			25	25	150	25	46	4.0	50	WCFH17-4	WCF□4○	4	SL-1
	R/L25-5			25	25	150	25	46	5.0	50	WCFH17-5	WCF□5○	4	

Blade is included with the holder.



Blade				Dimensions (mm
Cat. No.	Stock	Width of Cut	Width B	Applicable Holder

				Dimonorono (min)
Cat. No.	Stock	Width of Cut	Width B	Applicable Holder
WCFH 17-3		3	2.4	WCFS R/L20-3,25-3
WCFH 17-4		4	3.4	WCFS R/L20-4,25-4
WCFH 17-5		5	4.3	WCFS R/L20-5,25-5

### **Parts**

	Cap Screw	Wrench
Applicable Holder		
WCFS R/L20-○, WCFS R/L25-○	BX0622	LH050



Fig 2 (Right Hand (R))



Fig 3 (Left Hand (L))



\* WCF 2T: 2-RE0.15

ut-of Tools

4

Cut-off

Grooving

Extern

\_

Jecking

CBN

	Inserts for WCFS (SumiGi	rip / SumiGrip Jr. comm	on)	(	(	Coa	atec	l Ca	rbide /	Cermet / Cemented Carbide) Dimension	is (mm)
	Appearance	Cat. No.	AC830P	AC225	AC1030U	T1500A	A30	G10E	Width of Cut	Applicable Holder	Fig
	WCF NO-GG	WCF N2-GG	•	-	-	_	_	_	2.0	WCFS R/LOOOO-2	1
	General-purpose	WCF N3-GG		-	-	-	_	_	3.0	WCFS R/LOOOO-3,WCFS R/LOO-3	1
		WCF N4-GG	•	Ŀ	-	<u> </u>	_	_	4.0	WCFS R/LOO-4	1
		WCF N5-GG	•	-	-	-	_	_	5.0	WCFS R/LOO-5	1
	WCF NO-GF	WCF N2-GF		-	•	_	-	-	2.0	WCFS R/LOOOO-2	1
	Exotic Alloy Low Feed	WCF N3-GF		-	•	-	-	_	3.0	WCFS R/LOOO-3,WCFS R/LOO-3	1
	Low reed	WCF N4-GF		Ŀ	•	-	<u> -</u>		4.0	WCFS R/LOO-4	1
		WCF N5-GF		-	•	-	-	_	5.0	WCFS R/LOO-5	1
	WCF □O-CF	WCF R3-CF		-	•	-	-	-	3.0	WCFS R/L0000-3	2
	Exotic Alloy Low Feed	WCF L3-CF		-	•	-	<u> -</u>	_	3.0	WCFS R/LOO-3	3
•	(Handed)	WCF R4-CF		-	•	-	-	-	4.0	WCFS R/LOO-4	2
		WCF L4-CF	<u> </u>	-		-	-	-	4.0		3
	WCF □2T	WCF N2T	•	-	- -	-	-	-	2.0		1
	Small Diameter Low Cutting Force	WCF R2T		-	- -	-	-	-	2.0	WCFS R/LOOOO-2	2
		WCF L2T	•		-	_	_	_	2.0		3
	WCF 🗆 O	WCF N3		-	- -	-	-	-	3.0	WCFS R/LOOOO-3	1
	No Chipbreaker For General Steel	WCF R3	•	-	-	-	-	-	3.0	WCFS R/LOO-3	2
	Tor deficial oteer	WCF L3		-	1=	-	-		3.0		3
		WCF N4		-	-	-	-	-	4.0		1
		WCF R4		-	- -	-	-		4.0	WCFS R/LOO-4	2
		WCF L4	•			_	_	_	4.0		3
		WCF N5		-	- -	-	-		5.0		1
		WCF R5		-	-	-	_	_	5.0	WCFS R/LOO-5	2
		WCF L5				-	_	_	5.0	MOEO B# 00000 0	3
	WCF □○A Exotic Alloy	WCF N2A			<u> </u>	_			2.0	WCFS R/LOOO0-2	1
	Low Feed	WCF N3A							3.0	WCFS R/L0000-3	1
	2011 000	WCF R3A			)   —				3.0	WCFS R/LOO-3	2
		WCF L3A	-						3.0		3
		WCF N4A			–	•			4.0	W050 B# 00 4	1
		WCF R4A				-			4.0	WCFS R/LOO-4	2
		WCF L4A			1=	_			4.0		3
		WCF N5A				-			5.0	MOEO BUI OO F	1
		WCF R5A		-	-   -	_			5.0	WCFS R/LOO-5	2
	W05 = 0 B	WCF L5A		-		-			5.0		3
	WCF □OB Cast Iron	WCF N3B							3.0	WCFS R/LOOOO-3	1
	Light Alloys	WCF L2B						H	3.0	WCFS R/LOO-3	3
		WCF L3B	-				H		3.0		_
		WCF N4B						H	4.0	WCES B/I OO 4	1
		WCF R4B							4.0	WCFS R/LOO-4	2
		WCF L4B			1	1	$\vdash$		4.0		3
	* Same chipbreaker shape as the	WCF N5B			1-				5.0	WOLC BILOO E	1
	type for general steel (WCF $\square$ O), but	WCF LEB					-		5.0	WCFS R/LOO-5	2
	with smaller cutting edge treatment.	WCF L5B	$\perp$			$\vdash$			5.0		3

### **Recommended Cutting Conditions**

		•											
		Cutting Speed vc (m/min)											
Work Material			Coated Carbide		Cermet	Cemented Carbide							
		AC830P	AC225	AC1030U	T1500A	A30	G10E						
	General Steel	80 to 200	80 to 200	50 to 200	80 to 200	50 to 120	_						
Steel	Mild Steel	100 to 230	100 to 230	50 to 230	100 to 230	70 to 150	—						
	Die Steel	60 to 150	60 to 150	50 to 150	60 to 150	50 to 120	<u> </u>						
M Stainle	ss Steel	70 to 150	60 to 150	50 to 150	_	70 to 130	_						
K Cast Iro	on	_	_	50 to 200	_	_	50 to 120						
Non-Fe	errous Metal	_	_	200 to 500	_	_	200 to 500						

			Feed Rate f (mm/rev)														
Chinhyo	مادمه			Neu	ıtral		Handed										
Chipbre		GG GF		No Chipbreaker		Α		No Chipbreaker		Т	Α	В					
		General-purpose	Exotic Alloy/Low Cutting Force type	General Steel	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys	General Steel	Exotic Alloy/Low Cutting Force type	Small Diameter/ Low Cutting Force	Exotic Alloy/Low Feed	Cast Iron/Light Alloys					
Width of	2.0	0.05 to 0.20	0.03 to 0.12	_	0.03 to 0.10	0.03 to 0.12	_	_		0.03 to 0.10		_					
Cut				0.08 to 0.25	_	0.04 to 0.15	0.05 to 0.15	0.08 to 0.25	0.05 to 0.12	_	0.04 to 0.15	0.05 to 0.15					
CW	4.0	0.10 to 0.30	0.05 to 0.18	0.10 to 0.30	_	0.05 to 0.18	0.05 to 0.18	0.10 to 0.30	0.05 to 0.12	_	0.05 to 0.18	0.05 to 0.18					
(mm)	5.0	0.10 to 0.35	0.05 to 0.20	0.10 to 0.30	_	0.05 to 0.20	0.06 to 0.20	0.10 to 0.30	_	_	_	0.06 to 0.20					

# Grooving

4

4-31 to 4-80



	SEC-Grooving Tools GND series	SEC-Grooving Tool series Selection Guide GND series Selection Guide GNDM type / GNDL type (For Small Lathes)	4-35
		GNDM-J type / GNDL-J type (Internal Coolant Supply for Small Lathes)	4-40
		GNDS type (For Shallow Grooves)	
		GNDM type / GNDMS type (For General-purpose)	
		GNDM-J type (General-purpose Internal Coolant Supply)	
		GNDL type / GNDLS type (For Deep Grooves)	
		GNDL-J type (Deep Groove Internal Coolant Supply)	
		<b>©</b> GNDXL type (Deep Grooves: Groove Depth up to 32mm)	
		GNDN type (For Necking)	
Grooving Tools	SEC-Grooving Tools GWC series	GWC series (Shallow Grooves)	
and a sing reason		GWCS type (Shallow Grooves) / GWCI type (Internal Shallow Grooves)	
		Inserts for GWC series	
	Chipbreaker Insert for GWC series	SumiTurn B-Groove BF type	
	External Grooving	SGE series (Wide Grooves)	
	CBN	SUMIBORON GWB series (For Hardened Steel, Shallow Grooves)	4-63
		SUMIBORON BNGG series (For Hardened Steel, Shallow Grooves)	4-64
	Face Grooving	GNDF type (General-purpose)	
		GNDFS type (General-purpose)	4-68
	Internal Grooving	GNDIS type (For General-purpose Internal Grooves)	4-70
		GNDI type (For General-purpose Internal Grooves)	4-72
		SSH series (For Small Diameters)	4-75
		SGIT series (For Small Diameters)	4-80

mark: To be replaced with the new item featured on the same page
 mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

<sup>\*</sup> mark: Semi-standard stock (please confirm stock availability)
O mark: Stock or planned stock (please confirm stock availability)

Blank: Made-to-order item

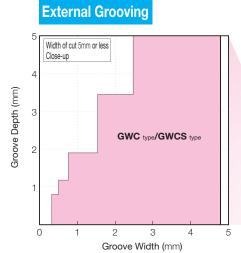
— mark: Not available

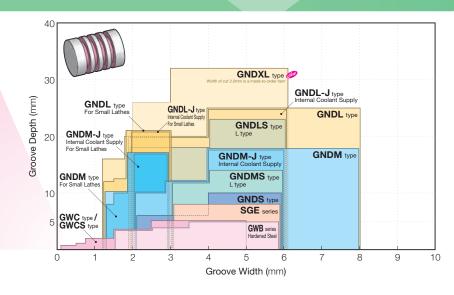
# **Selection Guide**

Grooving

CBN





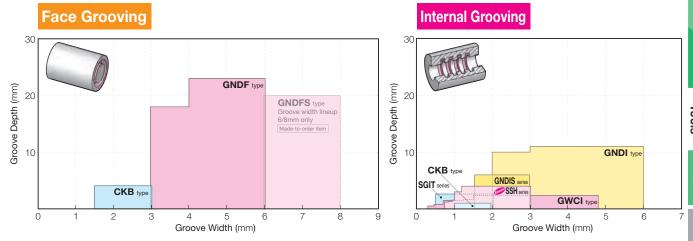


■ External Grooving Tools

	kternal Gro	oving Tools		* mark:	For groove of	lepths and v	vidth cor	nbinations	s, refer t	to the above figures or the relevant page.
ations	Series	Shape	Structure	moent onape	Groove Depth* 10	20	30	40 (mm)		Features
Applic	Series	Snape	Screw-on Clamp-on Double Clamp	() indicates no. of cutting edges	Groove Width* <sup>2</sup>	4	6	8	10 (mm)	reatures
For Shallow Grooves Applications	GWC		•	(3)	5.0	4.8	3	·	·	High rigidity double clamping (Screw-on for Mini Holders)     Triangular type insert with 3 usable corners
allow G	GWCS			(Standard, with Chipbreaker)  Traverse Cutting Possible	5.0	4.8	3			· "L-shaped" (side cut) GWC holder
	GWB <sup>1</sup> Hardened Steel		_   •	(1) Traverse Cutting Possible	5.0		6.0			High rigidity double clamping     Employs Coated SUMIBORON for interrupted turning of hardened steel
ooves	SGE	(a)		Traverse Cutting Possible	8.0	)	<b></b> 16.0			· Traverse cutting (groove expansion) is possible
General Grooves	GNDS				2.0	0	6.0			High-rigidity design reduces vibration     Enables high-efficiency turning and traversing thanks to its short tool overhang length
	GNDM For Small Lathes				1.25	17.0 - 3.0				· High-rigidity design reduces vibration · 16x16, 20x12mm square shanks available
Shallow Grooves to	GNDM-J Internal Coolant Supply For Small Lathes			(2)	1.25	17.0 -13.0				GNDM type with internal coolant supply for small lathes
Groo	GNDM		_  •	Traverse Cutting Possible	1.25	18.0		8.0		High-rigidity design reduces vibration     Perfect for traverse cutting and profiling
hallow	GNDM-J Internal Coolant Supply				2.0	18.0	6.0			· GNDM type with internal coolant supply
For S	GNDMS				3.0	23.0	6.0			· "L-shaped" (side cut) GNDM type
	GNDL For Small Lathes				1.25	21.0				· High-rigidity design reduces vibration · 10x10, 12x12, 16x16, 20x12mm square shanks available
ves	GNDL-J Internal Coolant Supply For Small Lathes				1.25	21.0				GNDL type with internal coolant supply for small lathes
Grooves	GNDL			(2)	1.25	28	5.0	18.0		High-rigidity design reduces vibration     Perfect for grooving, deep grooving and cut-off applications
Deep	GNDL-J Internal Coolant Supply		•		2.0	25	5.0			· GNDL type with internal coolant supply
For [	GNDLS		-		2.0	25	5.0			· "L-shaped" (side cut) GNDL type
	GNDXL			(1) (1)	*2 2.0		32.0	)		· Supports a maximum grooving depth of 32mm.
	*1. For harder	ned steel, for SUMIR	OPON Groot	ing Holder BNGG	oorioo *0: \A	lidth of out 1	0 0mm is	a mada t	o ordor	itom

<sup>\*1:</sup> For hardened steel, for SUMIBORON Grooving Holder BNGG series. \*2: Width of cut 2.0mm is a made-to-order item.

# Selection Guide



■ Face Grooving Tools

Note: \* mark: For groove depths and width combinations, refer to the above figures or the relevant page.

		•								
Applications	Series	Shape	Structure Clamp-on Clamp Clamp		Groove 10 Depth*   Groove 2 Width*	20   	30 (mm) 6	8 (mm)	Machining diameter (mm)	Features
Very Small Diameter	СКВ		•	(1)	4.0	<b>1</b> 3.0			ø6 ~	· Face grooving for small lathes
General Grooves Deep Grooves	GNDF		•	(2)	(	3.01	<b>1</b> 6.0		ø35 to ø1,000	· High-rigidity design reduces vibration
or Generato Topes	GNDFS Made-to-order item		•	Traverse Cutting Possible		20	<b>[</b> 6.0	8.0	ø70 ~	· L-shape (horizontal) type · For wide grooves

■ Internal Grooving Tools

\* mark: For groove depths and width combinations, refer to the above figures or the relevant page.

	corriar aroc	JVIIII TOOLO			man.	i di gidove de	pins and	WIGHT COITE	matic	113, 16161	to the above ligules of the relevant page.
Applications	Series	Shape	Struc Olamp-on Olambon		Insert Shape () indicates no. of cutting edges	Groove 10 Depth* Groove 2 Width*	20       	30 (mm) 6	8 (mm)	Min. bore diameter (mm)	Features
	СКВ		•	)	(1)	1.0 1.0 2.0				ø4	Very small diameter grooving     High clamping force     Wide variety of tool holders
iameter (	SGIT		•		(3)	3.2				ø10	· 3-cornered type
For Small Diameter Grooves	SSH		•		(1) Traverse Cutting Possible	0.74	13.0			ø8	Internal coolant supply for outstanding chip evacuation     Wide range of grooving widths     Tough carbide body for stable grooving
For Shallow Grooves	GWCI		•		(3) (Standard, with Chipbreaker)	2.5		1.8		ø35	Using same inserts as GWC series holders     Inserts with chipbreakers now in stock
or General Grooves to Deep Grooves	GNDIS		•	,	(2) Traverse Cutting Possible		13.0			ø14	Supports grooving with minimum bore diameter from ø14
or Generato to Deep	GNDI		•	,	(2) (2) Traverse Cutting Possible	2.0	)	6.0		ø32	· High-rigidity design reduces vibration

<b>I</b>	cking roo	ois .			* mark:	For groove d	lepths and '	width comb	oinatic	ns, refer t	to the above figures or the relevant page.
Applications	Series	Shape	후 우	Double Clamp	Insert Shape () indicates no. of cutting edges	Groove 10 Depth* Groove 2 Width*	20 4	30 (mm) 6	8 (mm)	Machining diameter (mm)	Features
Facing	GNDN		•		(2)	4.0		<b></b> 16.0		ø20 ~	· Necking at corners possible

Cut-off

Grooving

External

Face

Internal

■ Chipbreaker Selection

Cut-off

Grooving

External

Face

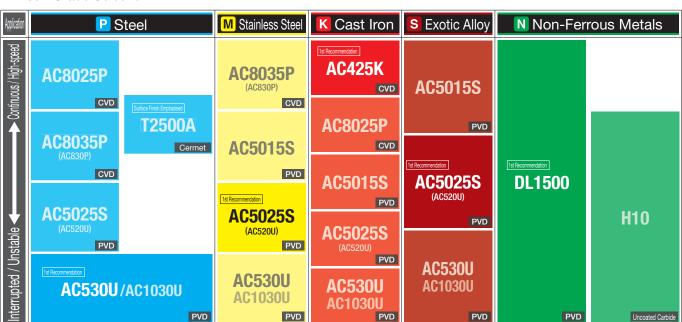
Internal

CBN

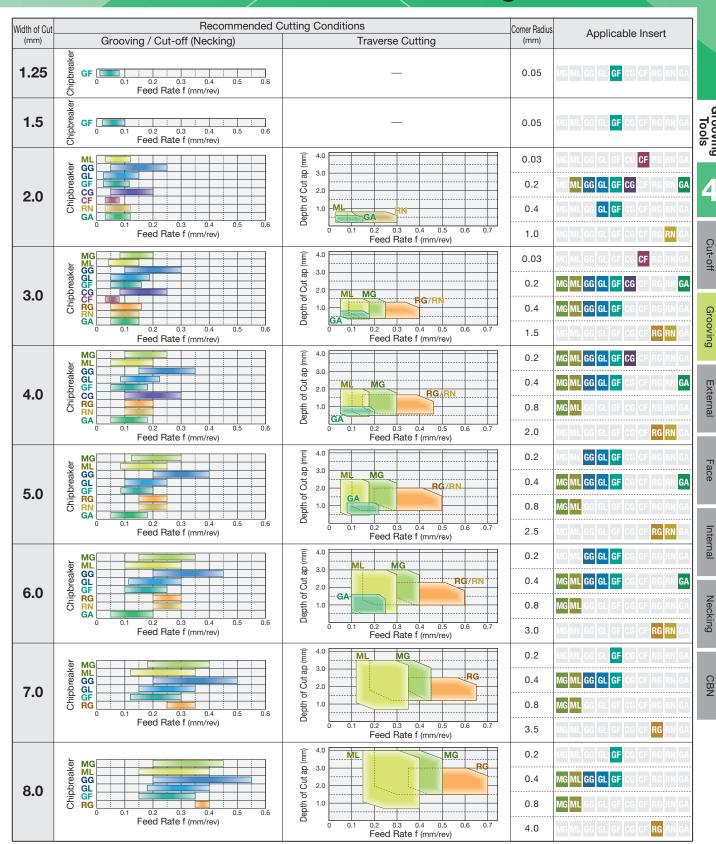




■ Insert Grade Selection



# GND series Recommended Cutting Conditions



For face grooving, use cutting conditions closer to the lower limit of the recommended cutting conditions to ensure that chips are long. In cut-off applications, reduce the feed rate to around 30% to 50% near the centre of the workpiece.

As there is less space for chip evacuation when machining internal diameters (particularly small bore diameters), ML/GL/GF type chipbreakers are recommended. Modifications to inserts and holders are required to perform turning such as radius grooving when using the RG type chipbreaker with the GNDF type holder for facing. Use GNDXL type holders at feed rate 80% or below.

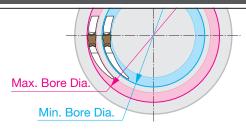
■ Recommended Cutting Conditions (Cutting Speed by Work Material)

	icriaca	Outtill	g conc	JILIOHIS	Outiling	, opecu	Dy WO	in iviate	iiaij						
Work Material			Steel /				ainless	Steel		K Cas	st Iron		S Exot	ic Alloy	Non-Ferrous Metal
Tool Grades	AC8025P	AC8035P AC830P	AC5015S AC520U	AC5025S AC530U AC1030U	T2500A	AC8035P AC830P	AC5015S AC520U	AC5025S AC530U AC1030U	AC8025P	AC425K	AC5015S AC520U	AC5025S AC530U AC1030U	AC5015S AC520U	AC5025S AC530U AC1030U	H10 DL1500
Cutting Speed vc (m/min)	80 to 250	80 to 200	80 to 200	50 to 200	50 to 200	70 to 150	70 to 150	50 to 150	80 to 200	80 to 200	60 to 200	50 to 200	20 to 80	20 to 60	150 to 300

## **GND** series

### Key Points for Facing

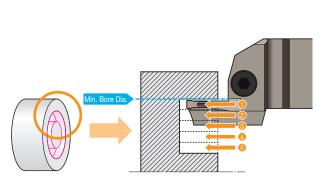
Holder Selection



 Select a holder with which the outer diameter of the first groove to be machined is between the maximum and minimum grooving diameters of the holder.

- · If the turning start point is within the effective work diameter range, the work diameter will not be limited for subsequent passes.
- Select the lower limit of the recommended cutting conditions for the chipbreaker and ensure long chips for evacuation purposes. (In face grooving, broken chips easily get stuck in grooves, which causes problems.)
- · When breaking chips, step feed is required.

Precautions for Groove Expansion Recommended Chipbreakers MG ML GG GL GF GA

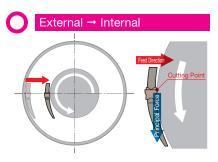


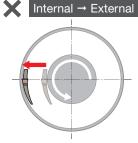
· If the first groove is within the effective work diameter range during groove expansion via plunging, the work diameter will not be limited for subsequent passes.

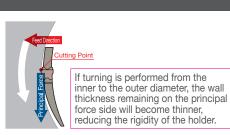
### **Precautions for Traverse Cutting**

Recommended Chipbreakers MG ML RN

Considering the rigidity of the holder, we recommend turning from the outside to the inside.







· If the turning start point for traverse face cutting operation is within the effective work diameter range, the work diameter will not be limited for traverse cutting.

### Key Points in Internal Machining

Precautions for Internal Machining

Recommended Chipbreakers ML GL GF

If the prepared hole diameter is small, use an ML type or GL type low-feed chipbreaker, both of which reduce chip curl diameter, to ensure adequate chip evacuation.









Work Material: SCM415 Prepared Hole Diameter:  $\emptyset$ 25mm Holder: GNDI R2532-T306 Insert: GCM N300 $\bigcirc$ - $\bigcirc$  Cutting Conditions:  $\forall c = 100 \text{m/min}$ , f = 0.1 mm/rev, ap = 3.0 mm Wet

Internal Machining

GG



Chip shapes differ between internal machining and external machining even under the same cutting conditions.

Work Material: SCM415

Holder: GNDL R2525M-320, Insert: GCM N3002-GG

Cutting Conditions: vc = 100 m/min, f = 0.10 mm/rev, ap = 5.0 mm Wet

Grooving

Cut-c

Grooving

Externa

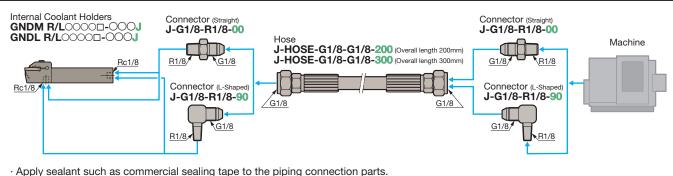
Face

Interna

Necking

### Precautions for SEC-Grooving Tool Holders GND series

Piping Method for Hoses and Connectors

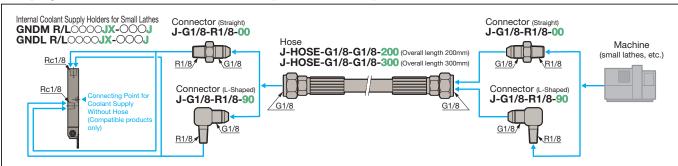


- · Apply sealant such as commercial sealing tape to the piping connection parts.
- · For plug mounting when piping, see the figure below.



\* The plug will protrude a few millimetres when mounted on the bottom.

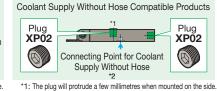
Piping Method for Hoses and Connectors (For Small Lathes)



- · Apply sealant such as commercial sealing tape to the piping connection parts.
- · For plug mounting when piping, see the figure below.

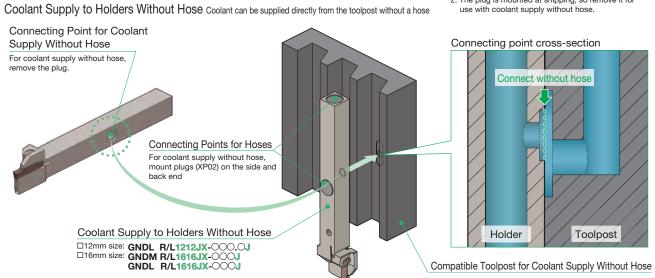






\*2: The plug is mounted at shipping, so remove it for use with coolant supply without hose.





## DM type / GNDL type





\*For traverse cutting (groove expansion), use a multi-functional or profiling insert.

For Small Lathes, External Multi-Functional (Grooving, Traverse Cutting and Profiling) Clamp-on



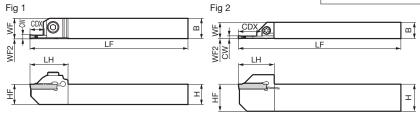


Figure shows right-handed (R) tool.

Cut-off

Grooving

External

Internal

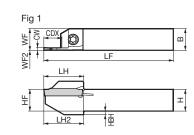
ı	Holder														Parts	Dim	ensions (mm)
		Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Offset	Width of Cut	Maximum Groove Depth			Cap Screw	1	Wrench
	Cat. No.	R	L	Н	В	LF	WF	HF	LH	WF2	CW	CDX	Applicable Insert	Fig	BX0515 BFTX0414	(N·m)	LT15-10 LH040
	GNDM R/L1616JX-1.2508			16	16	120	(16)	16	26	0	1.25	8.0	GCM N125005-GF	1			
П	GNDM R/L1616JX-1.510			16	16	120	(16)	16	26	0	1.50	10.0	GCM N150005-GF	1	BX0515	4.0	LH040
	GNDM R/L1616JX-212			16	16	120	(16)	16	30	0	2.00	12.0	GC□ □20○○-□□	1	BX0313	4.0	LH040
	GNDM R/L1616JX-312			16	16	120	(16)	16	30	0	3.00	12.0	GC□ □30○○-□□	1			
	GNDM R/L2012JX-217			20	12	120	(12)	20	26.5	0	2.00	17.0	GC□ □20○○-□□	2	BFTX0414	3.0	LT15-10
l	GNDM R/L2012JX-317			20	12	120	(12)	20	26.5	0	3.00	17.0	GC□ □30○○-□□	2	DI 170414	3.0	LI 13-10

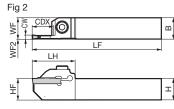
Select holders and inserts with matching width of cut (CW).

The maximum groove depth CDX is the figure during grooving.



For Small Lathes, External Grooving & Cut-off Clamp-on





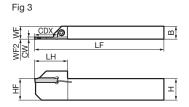


Figure shows right-handed (R) tool.

Holder																Parts	Dime	ensions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Step	Head	Head	Offset	Width of Cut	Maximum Groove Depth			Flat Head Scr Cap Screv		Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	НВН	LH	LH2	WF2	CW	CDX	Applicable Insert		BFTX0412N BFTX0414 BX0515	(N·m)	LT15-10 LH040
GNDL R/L1010JX-1.2510	•	•	10	10	120	(10)	10	2.0	18	18.3	0	1.25	10.0	GCM N125005-GF	1			
GNDL R/L1010JX-1.510			10	10	120	(10)	10	2.0	18	18.3	0	1.50	10.0	GCM N150005-GF	1	BFTX0412N	20	LT15-10
GNDL R/L1010JX-210			10	10	120	(10)	10	2.0	22	22.3	0	2.00	10.0	GC□ □20○○-□□	1	DF1AU412N	3.0	LI 13-10
GNDL R/L1010JX-310			10	10	120	(10)	10	2.0	22	22.3	0	3.00	10.0	GC □ □30○○-□□	1			
GNDL R/L1212JX-1.2512			12	12	120	(12)	12	2.0	19	19.3	0	1.25	12.0	GCM N125005-GF	1			
GNDL R/L1212JX-1.512			12	12	120	(12)	12	2.0	19	19.3	0	1.50	12.0	GCM N150005-GF	1	BFTX0412N	3.0	LT15-10
GNDL R/L1212JX-212.5			12	12	120	(12)	12	2.0	22	22.3	0	2.00	12.5	GC 2000-00	1	DI 170412N	3.0	LI 13-10
GNDL R/L1212JX-312.5			12	12	120	(12)	12	2.0	22	22.3	0	3.00	12.5	GC□ □30○○-□□	1			
GNDL R/L1616JX-1.2512.5			16	16	120	(16)	16	_	28	_	0	1.25	12.5	GCM N125005-GF	2			
GNDL R/L1616JX-1.512.5			16	16	120	(16)	16	-	28	_	0	1.50	12.5	GCM N150005-GF	2	BX0515	40	LH040
GNDL R/L1616JX-216			16	16	120	(16)	16	_	32	_	0	2.00	16.0	GC□ □20○○-□□	2	DA0313	4.0	LHU40
GNDL R/L1616JX-316			16	16	120	(16)	16	_	32	_	0	3.00	16.0	GC □ □3000-□□	2			
GNDL R/L2012JX-221			20	12	120	(12)	20	_	30.5	_	0	2.00	21.0	GC□ □20○○-□□	3	DETVO414	2.0	LT15-10
GNDL R/L2012JX-321			20	12	120	(12)	20	_	30.5	_	0	3.00	21.0	GC □ □3000-□□	3	BFTX0414	3.0	LI 15-10

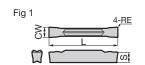
Select holders and inserts with matching width of cut (CW).

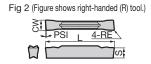
The maximum groove depth CDX is the figure during grooving.

## GNDM type / GNDL type

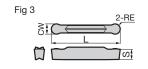
Inserts for GNDM type (For Small Lathes)/GNDL type (For Small Lathes)

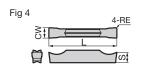






Dimensions (mm)





Dimensions (mm)

Grooving / Traverse Cutting

				_			J						Dii	1101101	0110 (	,
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	C		Radius	Overall Length		Pcs/Pack	Fig
GCM N3002-MG									_	3.0	±0.03	0.2	21.1	3.8	_	1
N3004-MG									—	3.0	±0.03	0.4	21.1	3.8	5	1
GCM N2002-ML	-	_	_	_					-	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8	5	1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1

Cut-off	(Handed	Edge)
---------	---------	-------

Cat. No.	38035P	AC830P	35015S	35025S	2520U	2530U	31030U	Lead Angle	Width C			Overall Length		Pcs/Pack	Fig
	A	ĕ	X	M	ĕ	ĕ	A	PSI	Width of Cut	Tolerance	RE	L	S	P	
GCM R2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6	5	2
GCM R3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	Э	2
L20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	_	_			-	_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	-			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
CCMP: Bight hand	~d	~	1		~ 44	ha	امما	- d							

GCMR: Right-handed, GCML: Left-handed

### Grooving / Cut-off

Cat. No.	AC8025P	38035P	C830P	C425K	35015S	35025S	C520U	C530U	2500A	C		Radius	Overall Length		Pcs/Pack	Fig
	¥	¥	ĕ	⋖	¥	¥	A	⋖	⊥	Width of Cut	Tolerance	RE	L	S	ď	
GCM N2002-GG									_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG									—	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL									_	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL									—	2.0	±0.03	0.4	21.1	3.6	5	1
GCM N3002-GL									_	3.0	±0.03	0.2	21.1	3.8	Э	1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N125005-GF	_	_	_	_	_	_	_		_	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF		_	_	_		_	_		_	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF		_	_	_						2.0	±0.03	0.2	21.1	3.6	5	1
N2004-GF	-	_	_	_						2.0	±0.03	0.4	21.1	3.6	3	1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1

### External Profiling / External Radius Grooving Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A		of Cut W Tolerance	Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3015-RG										3.0	±0.03	1.5	21.1	3.8	5	3

### Profiling / Radius Grooving / Necking

i ronning / riac	410	_	۷.	-	, v .		"		00	9			DIII	1101131	0115 (	,,,,,,,	
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U		C			Overall Length	Thickness	Pcs/Pack	Fig	
GCM N2010-RN	_	_								2.0	±0.03	1.0	21.7	3.6	5	3	
N3015-RN										3.0	±0.03	1.5	22.6	3.8	5	3	

### Non-Ferrous Metals

Dimensions	(mm)

	•••								ווט	1101131	0113 (	,
Cat. No.	H10	DL1500				C		Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCG N2002-GA							±0.025					4
N3002-GA						3.0	±0.025	0.2	21.1	3.8		4

### Part Number Suffix Code (Chipbreakers)

Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
Grooving /	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
	GL	Grooving / Low-feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Cut-off	GF	Grooving / Low cutting force	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

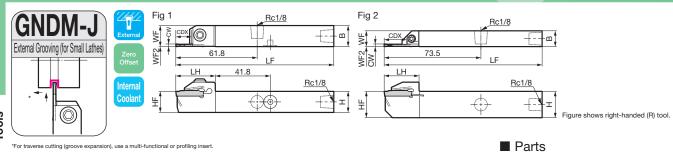
Grooving

External

Face

Internal

## M-J type / GNDL-J type



Grooving Tools

Cut-off

Grooving

External

Internal

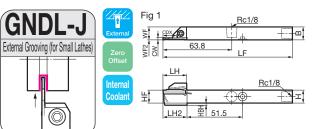
CBN

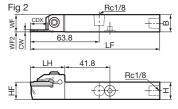
									ſ	BFTX04
										9
■ Holder					_					O
					С	imensio	ns (mm	)		
		Cutting	Cuttina	\	Width	Maximum	14			E1 - 1

■ Holder										[	Dimensio	ns (mm	n)		CP-N	/ 15-20-1		LH040	
Cat. No.	Sto	ck	Height	Width	Length	Edge Distance	Height	Head	Offset	of Cut	- 1	Cut-off	Applicable Insert	Fig		(N·m)	Plug	Hex	Bottom Hex
	R	L	Н	В	LF	WF	HF	LH	WF2	CW	CDX	Dia.			Cap Screw			Wrench	Wrench
GNDM R/L1616JX-212J	•	•	16	16	120	(16)	16	30.0	0	2.0	12.0	24	GC□ □20○○-□□	1	CP-M5-20-1	5.0	VD02	I H040	LH025
GNDM R/L1616JX-312J			16	16	120	(16)	16	30.0	0	3.0	12.0	24	GC ====================================	'	OF-1013-20-1	5.0	XF02	LI 1040	LI 1023
GNDM R/L2012JX-217J		•	20	12	120	(12)	20	26.5	0	2.0	17.0	34	GC □2000-□□	0	BFTX0414	3.0	VD00	LT15-10	_
GNDM R/L2012JX-317J			20	12	120	(12)	20	26.5	0	3.0	17.0	34	GC□ □30○○-□□		DF170414	3.0	AFU2	LI 13-10	

Select holders and inserts with matching width of cut (CW). The maximum groove depth CDX is the figure during grooving.

ansion), use a multi-functional or profiling insert





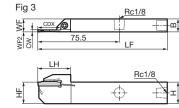


Figure shows right-handed (R) tool.

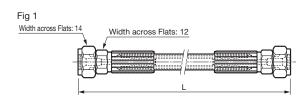
LT08-06 LT15-10

LT15-10

### Parts BFTX0415T8R BFTX0414

■ Holder													Dimensio	ns (mm	1)		CP-M5			UH040	
Cat. No.	Sto	ock	Height	Width	Overall Length	Edge	Cutting Edge Height		Head	Head	Offset	Width of Cut	Maximum Groove Depth	Max. Cut-off	Applicable Insert	Fig	Flat Head Screw /	(N·m)	Plug	Top Hex	Bottom Hex
	R	L	Н	В	LF	WF	HF	HBH	LH	LH2	WF2	CW	CDX	Dia.	IIISCIT		Cap Screw			Wrench	Wrench
GNDL R/L1212JX-212.5J	•	•	12	12	120	(12)	12	2.0	22.0	22.3	0	2.0	12.5	25	GC□ □20○○-□□	4	BFTX0415T8R	4.5	VDO2	LT08-06	_
GNDL R/L1212JX-312.5J	•	•	12	12	120	(12)	12	2.0	22.0	22.3	0	3.0	12.5	25	GC□ □30○○-□□	'	DFIAU41310H	1.5	APU2	L106-06	_
GNDL R/L1616JX-216J	•	•	16	16	120	(16)	16	_	32.0	_	0	2.0	16.0	32	GC□ □20○○-□□	0	CP-M5-20-1	E 0	VDO2	LH040	LUOSE
GNDL R/L1616JX-316J	•	•	16	16	120	(16)	16	_	32.0	_	0	3.0	16.0	32	GC ====================================	-	GF-IVI3-20-1	5.0	AFU2	LH040	LHUZS
GNDL R/L2012JX-221J	•	•	20	12	120	(12)	20	_	30.5	_	0	2.0	21.0	42	GC □ □2000-□□	2	DETVO414	2.0	VDOO	LT15 10	
GNDL R/L2012JX-321J			20	12	120	(12)	20	_	30.5	_	0	3.0	21.0	42	GC = 3000-==	3	BFTX0414	3.0	AP02	LI 13-10	

Select holders and inserts with matching width of cut (CW). The maximum groove depth CDX is the figure during grooving.



Parts (Hose)				Dimensions (	mm)
Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200		200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300		300	G1/8	G1/8	1

Hoses are sold separately.

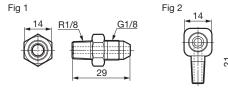


Fig 2	20 G1/8
Щ	<u>* H1/8</u>

Parts	(Connector)

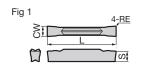
	Dimensions (	,
rew	Standard	Fig

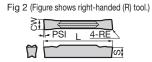
Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00		G1/8	R1/8	1
J-G1/8-R1/8-90		G1/8	R1/8	2

Connectors are sold separately.

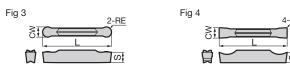
## GNDM-J type / GNDL-J type

Inserts for GNDM-J type (For Small Lathes)/GNDL-J type (For Small Lathes) (Coated Carbide/ Cermet/ Cer





Dimensions (mm)



### Grooving / Traverse Cutting

arooving / me	. v ·	J   C	,0	0	uli		9						DII	nensi	ons (	(111111)	
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С			Overall Length	Thickness	Pcs/Pack	Fig	
GCM N3002-MG									_	3.0	±0.03	0.2	21.1	3.8	_	1	
N3004-MG									_	3.0	±0.03	0.4	21.1	3.8	5	1	
GCM N2002-ML	-		_	_					_	2.0	±0.03	0.2	21.1	3.6		1	
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8	5	1	
N3004-ML										3.0	+0.03	0.4	21.1	3.8		1	

### Cut-off (Handed Edge)

Cut-off (Hand	ec	ΙE	d	ge	)							Dir	nensi	ons (	mm)
Cat. No.	38035P	AC830P	35015S	35025S	3520U	2530U	31030U	Lead Angle	Width C	of Cut		Overall Length	Thickness	Pcs/Pack	Fig
	A	Y	A	A	¥	¥	AC1	PSI	Width of Cut	Tolerance	RE	L	S	Ъ	
GCM R2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6	5	2
GCM R3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	_	—			_	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	_	_			=	_		15°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-15	_	—			-	_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	_	$\overline{}$			=	_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	-			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
GCMR: Right-hand	ed	GC	:M	· i	eft	-ha	nd	ed							

### Grooving / Cut-off

Cat. No.	AC8025P	38035P	C830P	C425K	35015S	35025S	C520U	C530U	<sup>-</sup> 2500A	C		Radius	Overall Length		Pcs/Pack	Fig
	ĕ	₹	⋖	⋖	₹	₹	⋖	⋖	_	Width of Cut	Tolerance		L	S	Д	
GCM N2002-GG									—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG									_	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL									_	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL									_	2.0	±0.03	0.4	21.1	3.6	_	1
GCM N3002-GL									_	3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GF	_		_	_						2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	_	-	_	_						2.0	±0.03	0.4	21.1	3.6	5	1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8	Э	1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1

### External Profiling / External Radius Grooving Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A		of Cut W Tolerance	Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3015-RG										3.0	±0.03	1.5	21.1	3.8	5	3

### Profiling / Radius Grooving / Necking

Profiling / Rad	uik	S	Gr	OC	νi	nς	<b>y</b> /	Ν	ec	king			Din	nensi	ons (	mm)
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U		С		Corner Radius		Thickness	Pcs/Pack	Fig
GCM N2010-RN	-	_	-								±0.03				5	3
N3015-RN										3.0	±0.03	1.5	22.6	3.8	3	3

### Non-Ferrous Metals

Dimensions (mm)
-----------------

										1101101	۱ ۵۰۰۰	,
Cat. No.	10	L1500				C	W	Radius	Overall Length	Thickness	s/Pack	Fig
	I					Width of Cut	Tolerance	RE	L	S	ď	
GCG N2002-GA						2.0	±0.025	0.2	21.1	3.6	5	4
N3002-GA						3.0	±0.025	0.2	21.1	3.8	<u> </u>	4

### Part Number Suffix Code (Chipbreakers)

		( -		,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
O	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Gut-on	GF	Grooving / Low cutting force	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

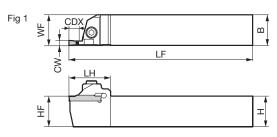
Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

## GNDS type



 ${}^\star \text{For traverse}$  cutting (groove expansion), use a multi-functional or profiling insert.

External Grooving



External Multi-Functional, Shallow Grooves (Grooving, Traverse Cutting and Profiling)
Clamp-on

Figure shows right-handed (R) tool.

Holder

Cut-off

Grooving

External

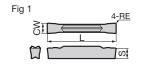
Face

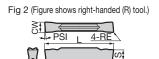
											Parts	ווווע	ensions (mm)
ck	Height	Width	Overall Length	Cutting Edge	Cutting Edge	Head	Width of Cut	Maximum Groove Depth			Cap Scre	W	Wrench
L	Н	В	LF	WF	HF	LH	CW	CDX	Applicable Insert	Fig		(N·m	
•	20	20	125	20	20	30	2.0	6	GC□ □20○○-□□	1			
•	20	20	125	20	20	30	3.0	6	GC□ □30○○-□□	1			
	20	20	125	20	20	34	4.0	10	GC□ □40○○-□□	1	BX0520	5.0	LH040
•	20	20	125	20	20	34	5.0	10	GC□ N50○○-□□	1			
	20	20	125	20	20	34	6.0	10	GC□ N60○○-□□	1			
•	25	25	150	25	25	30	2.0	6	GC□ □20○○-□□	1			
	25	25	150	25	25	30	3.0	6	GC□ □30○○-□□	1			
	25	25	150	25	25	34	4.0	10	GC□ □40○○-□□	1	BX0520	5.0	LH040
	25	25	150	25	25	34	5.0	10	GC□ N50○○-□□	1			
	25	25	150	25	25	34	6.0	10	GC□ N60○○-□□	1			
	L O	L H  20 20 20 20 20 20 20 25 25 25 25	L H B  20 20 20 20 20 20 20 20 20 20 20 20 20 25 25 25 25 25 25 25 25	L H B LF  20 20 125 20 20 125 20 20 125 20 20 125 20 20 125 20 20 125 20 20 125 25 25 150 25 25 150 25 25 150 25 25 150 25 25 150	L         Height         Width         Overain Length Length         Edge Distance           L         H         B         LF         WF           ●         20         20         125         20           ●         20         20         125         20           ●         20         20         125         20           ●         20         20         125         20           ●         20         20         125         20           ●         20         20         125         20           ●         25         25         150         25           ●         25         25         150         25           ●         25         25         150         25           ●         25         25         150         25	DCK         Height         Width         Overail Length         Edge Distance         Edge Distance         Edge Height           L         H         B         LF         WF         HF           ●         20         20         125         20         20           ●         20         20         125         20         20           ●         20         20         125         20         20           ●         20         20         125         20         20           ●         20         20         125         20         20           ●         25         25         150         25         25           ●         25         25         150         25         25           ●         25         25         150         25         25           ●         25         25         150         25         25           ●         25         25         150         25         25	DCK         Height         Width         Overall Length         Edge Distance         Edge Height         Edge Height         Head Head Height           L         H         B         LF         WF         HF         LH           O         20         20         125         20         20         30           O         20         20         125         20         20         30           O         20         20         125         20         20         34           O         20         20         125         20         20         34           O         20         20         125         20         20         34           O         20         125         20         20         34           O         25         25         150         25         25         30           O         25         25         150         25         25         30           O         25         25         150         25         25         34           O         25         25         150         25         25         34           O         25         25	DCK         Height         Width         Overail Length         Edge Distance         Height Height         Head         Width Cut           L         H         B         LF         WF         HF         LH         CW           ●         20         20         125         20         20         30         2.0           ●         20         20         125         20         20         30         3.0           ●         20         20         125         20         20         34         4.0           ●         20         20         125         20         20         34         5.0           ●         25         25         150         25         25         30         2.0           ●         25         25         150         25         25         30         3.0           ●         25         25         150         25         25         34         4.0           ●         25         25         150         25         25         34         4.0           ●         25         25         150         25         25         34         5.0	DCK         Height         Width         Overall Length         Edge Distance         Edge Height         Head         Width Cut         Maximum Groove Depth           L         H         B         LF         WF         HF         LH         CW         CDX           ■         20         20         125         20         20         30         2.0         6           ■         20         20         125         20         20         30         3.0         6           ■         20         20         125         20         20         34         4.0         10           ■         20         20         125         20         20         34         5.0         10           ■         20         20         125         20         20         34         6.0         10           ■         25         25         150         25         25         30         2.0         6           ■         25         25         150         25         25         30         3.0         6           ■         25         25         150         25         25         34         4.0         10	CCK	DCK         Height         Width         Overail Length         Edge Distance         Edge Distance         Head         Width Groove Depth         Applicable Insert         Fig           L         H         B         LF         WF         HF         LH         CU         CDX         Applicable Insert         Fig           •         20         20         125         20         20         30         2.0         6         GC□ □20○○-□□         1           •         20         20         125         20         20         30         3.0         6         GC□ □30○○-□□         1           •         20         20         125         20         20         34         4.0         10         GC□ □40○○-□□         1           •         20         20         125         20         20         34         5.0         10         GC□ N50○○-□□         1           •         20         20         125         20         20         34         6.0         10         GC□ N60○○-□□         1           •         25         25         150         25         25         30         3.0         6         GC□ □ 30○○-□□         1	Ock         Height         Width         Overall Length         Cutting Edge Distance         Cutting Edge Distance         Head         Width of Cut         Maximum Groove Depth         Applicable Insert         Fig           • 20         20         125         20         20         30         2.0         6         GC	Ock         Height         Width         Overall Cunty         Cutting Edge Distance         Cut Edge Distance         Cut Edge Distance         Cut Edge Distance         Cut Edge Distance         Head Edge Distance         Maximum Groove Depth         Applicable Insert         Fig           • 20         20         125         20         20         30         2.0         6         GC   200

Select holders and inserts with matching width of cut (CW).

The maximum groove depth CDX is the figure during grooving.

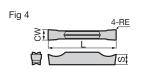
### Inserts for GNDS type





Dimensions (mm)

# Fig 3



### Grooving / Traverse Cutting

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut W Tolerance	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3002-MG										3.0	±0.03	0.2	21 1	3.8		1
N3004-MG										3.0	±0.03	-		3.8		1
GCM N4002-MG				Ĭ	×					4.0	±0.03	-		-		1
				_												
N4004-MG		Ч								4.0	±0.03			- 1	_	1
N4008-MG									_	4.0	±0.03		_	_	5	1
GCM N5004-MG									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG									_	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	_		_	—					_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8		1
N3004-ML								•		3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML						•				4.0	±0.03	0.2	26.4	4.0		1
N4004-ML										4.0	±0.03	0.4	26.4	4.0	_	1
N4008-ML	•					•	_	•	•	4.0	±0.03		26.4	4.0	5	1
GCM N5004-ML						•			_	5.0	±0.03	_	_	_		1
N5008-ML									_	5.0	±0.03					1
GCM N6004-ML						•			_	6.0	±0.03	-	26.4	-		1
N6008-ML									_	6.0	±0.03	0.8	26.4	4.5		1

### Cut-off (Handed Edge)

out on triana	-	٠.	٠,	<u>ر</u>	,							DIII	Helisi	ons (	)
Cat. No.	38035P	AC830P	35015S	<b>350258</b>	3520U	2530U	C1030U	Lead Angle		of Cut		Overall Length	Thickness	cs/Pack	Fig
	A	ĕ	M	M	¥	¥	Я	PSI	Width of Cut	Tolerance	RE	L	S	Д	
GCM R2002-CG-05							$\left  - \right $	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05							-	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05							-	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	5	2
GCM R4002-CG-05							-	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05							_	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	_	_			-	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	_			-	_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	_	_			-	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	Э	2
L20003-CF-15	_	_			-	_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	_	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
GCMR: Right-hand	ed.	GC	M	I : I	eft	-ha	nd	ed							

Coated Carbide/ Cermet/ Cemented Carbide/ DLC)

GCMR: Right-handed, GCML: Left-handed

#### Grooving / Cut-off

Grooving / Cu	ıt-	off											Dir	nensi	ons (	(mm)
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A		of Cut <b>V</b>		Overall Length	Thickness	Pcs/Pack	Fig
GCM N2002-GG						•	•		_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG									_	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG									_	4.0	±0.03		26.4		5	1
GCM N5002-GG									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG									_	5.0	±0.03	0.4	26.4			1
GCM N6002-GG									_	6.0	±0.03		26.4	-		1
N6004-GG									_	6.0	±0.03	0.4	26.4			1
GCM N2002-GL									_	2.0	±0.03		21.1			1
N2004-GL									_	2.0	±0.03	_		3.6		1
GCM N3002-GL									_	3.0	±0.03		21.1			1
N3004-GL									_	3.0	±0.03	_	21.1			1
GCM N4002-GL									_	4.0	±0.03		26.4		5	1
N4004-GL										4.0	±0.03	_	26.4		•	1
GCM N5002-GL									_	5.0	±0.03		26.4			1
N5004-GL									_	5.0	±0.03	_	26.4			1
GCM N6002-GL									_	6.0	±0.03		26.4			1
N6004-GL									_	6.0	±0.03		26.4			1
GCM N125005-GF					_				_	1.25	±0.03					1
GCM N150005-GF					_				_	1.5	±0.03					1
GCM N2002-GF			_	_						2.0	±0.03		21.1			1
N2004-GF					•				•	2.0	±0.03			3.6		1
GCM N3002-GF										3.0	±0.03		21.1			1
N3004-GF									•	3.0	±0.03	_	21.1		5	1
GCM N4002-GF										4.0	±0.03		26.4		•	1
N4004-GF										4.0	±0.03	_	26.4	_		1
GCM N5002-GF									_	5.0	±0.03		26.4			1
N5004-GF										5.0	±0.03		26.4	-		1
GCM N6002-GF									_	6.0	±0.03		26.4			1
N6004-GF										6.0	±0.03	0.4	26.4	4.5		1

External Profiling / External Radius Grooving Dimensions (mm)

Cat. No.	AC8025P	4C8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С		Corner Radius		Thickness	Pcs/Pack	Fig
GCM N3015-RG			•	•			•	•		3.0	±0.03	1.5	21.1	3.8		3
N4020-RG										4.0	±0.03	2.0	26.4	4.0	5	3
GCM N5025-RG									-	5.0	±0.03	2.5	27.2	4.1	Э	3
N6030-RG									-	6.0	±0.03	3.0	27.5	4.5		3

Profiling / Rad	JIL	IS	Gr	OC	OVI	ng	<b>j</b> /	N	ec	king			Din	nensi	ons (ı	mm)
Cat. No.	:8025P	8035P	3830P	3425K	50158	50258	3520U	3530U				Corner Radius	Overall Length	Thickness	cs/Pack	Fig
	AC	AC	¥	¥	AC	AC	Ä	¥		Width of Cut	Tolerance	RE	L	S	٦ ص	
GCM N2010-RN	<u> </u>	_								2.0	±0.03	1.0	21.7	3.6		3
N3015-RN										3.0	±0.03	1.5	22.6	3.8		3
N4020-RN										4.0	±0.03	2.0	28.2	4.0	5	3
NEO25 DN										5.0	TU U3	25	20 2	111	ı İ	2

**6.0** ±0.03 3.0 28.3 4.5

Non-Ferrous	Me	eta	ls							Dir	nensi	ons (	(mm)
Cat. No.	110	JL1500					C		Corner Radius		Thickness	Pcs/Pack	Fig
000 110000 01	<u></u>	4			Н					L		ш	
GCG N2002-GA							2.0	±0.025	0.2	21.1	3.6		4
N3002-GA							3.0	±0.025	0.2	21.1	3.8		4
GCG N4004-GA							4.0	±0.025	0.4	26.4	4.0	5	4
N5004-GA							5.0	±0.025	0.4	26.4	4.1		4
N6004-GA							6.0	±0.025	0.4	26.4	4.5		4

### Part Number Suffix Code (Chipbreakers)

		•	•		
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
0	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Cut-on	GF				Non-Ferrous Metals / General-purpose

 $Select\ holders\ and\ inserts\ with\ matching\ width\ of\ cut\ (CW).\ Not\ usable\ with\ GNDXL\ type\ /\ GNDIS\ type\ holders.$ 

# DM type / GNDMS type

\* For traverse cutting (groove expansion), use a multi-functional or profiling insert. External Multi-Functional (Grooving, Traverse Cutting and Profiling) Clamp-on

Cut-off Grooving

External

<b>GNDM</b>	Fig 1	m (
External Grooving	N LF	
	LH	
	± 1	±

Figure shows right-handed (R) tool.

Holder Parts															nsions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Width of Cut	Maximum Groove Depth			Cap Screv	V	Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	LH	CW	CDX			BX0520 BX0620	(N·m)	
GNDM R/L2020K-1.2510			20	20	125	20	20	34.0	1.25	10	GCM N125005-GF				
GNDM R/L2020K-1.510			20	20	125	20	20	34.0	1.50	10	GCM N150005-GF GC□ □20○○-□□	1			
GNDM R/L2020K-210			20	20	125	20	20	33.6	2.00	10		1			
GNDM R/L2020K-312			20	20	125	20	20	36.6	3.00	12	GC□ □30○○-□□		BX0520	5.0	LH040
GNDM R/L2020K-418			20	20	125	20	20	45.0	4.00	18	GC□ □40○○-□□	1			
GNDM R/L2020K-518			20	20	125	20	20	45.0	5.00	18	GC□ N50○○-□□	1			
GNDM R/L2020K-618			20	20	125	20	20	45.0	6.00	18	GC□ N60○○-□□	1			
GNDM R/L2525M-1.2510			25	25	150	25	25	36.0	1.25	10	GCM N125005-GF	1			
GNDM R/L2525M-1.510			25	25	150	25	25	36.0	1.50	10	GCM N150005-GF	1			
GNDM R/L2525M-210			25	25	150	25	25	33.6	2.00	10	GC□ □20○○-□□	1			
GNDM R/L2525M-312			25	25	150	25	25	36.6	3.00	12	GC□ □30○○-□□	1	BX0520	5.0	LH040
GNDM R/L2525M-418			25	25	150	25	25	45.0	4.00	18	GC□ □40○○-□□	1			
GNDM R/L2525M-518			25	25	150	25	25	45.0	5.00	18	GC□ N50○○-□□	1			
GNDM R/L2525M-618			25	25	150	25	25	45.0	6.00	18	GC□ N60○○-□□	1			

Select holders and inserts with matching width of cut (CW). The maximum groove depth CDX is the figure during grooving.

For traverse cutting (groove expansion), use a multi-functional or profiling insert.

External L-Shaped (Side Cut), Multi-Functional (Grooving, Traverse Cutting and Profiling) Clamp-on



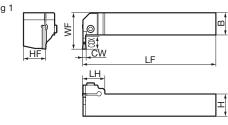


Figure shows right-handed (R) tool.

der													Parts	Dime	nsions (mm)	
	Sto	ock	Height	Width	Overall Length	Edge	Edge	Head	Width of Cut	Maximum Groove			•	V	Wrench	
	R	L	Н	В	LF	WF	HF	LH	CW	CDX	Applicable Insert Fig	Fig		(N·m)		
DMS R/L2020K-310			20	20	125	32	20	25.0	3.0	10	GC□ □30○○-□□					
DMS R/L2020K-412			20	20	125	34	20	25.0	4.0	12		1	BX0520	5.0	LH040	
DMS R/L2020K-512			20	20	125	34	20	25.0	5.0	12	GC□ N50○○-□□	1				
DMS R/L2525M-312			25	25	150	39	25	25.0	3.0	12	12 GC□ □30○○-□□ 14 GC□ □40○○-□□ 14 GC□ N50○○-□□	1				
DMS R/L2525M-414			25	25	150	41	25	25.0	4.0	14		1	DV0E00	E 0	LH040	
DMS R/L2525M-514			25	25	150	41	25	25.0	5.0	14		1	DAUGZU	5.0	LHU40	
DMS R/L2525M-614			25	25	150	41	25	25.0	6.0	14	GC□ N60○○-□□	1				
	Cat. No.  DMS R/L2020K-310  DMS R/L2020K-412  DMS R/L2020K-512  DMS R/L2525M-312  DMS R/L2525M-414  DMS R/L2525M-514	Cat. No.  R  DMS R/L2020K-310  DMS R/L2020K-412  DMS R/L2020K-512  DMS R/L2525M-312  DMS R/L2525M-414	Cat. No.  R L  DMS R/L2020K-310  DMS R/L2020K-412  DMS R/L2020K-512  DMS R/L2525M-312  DMS R/L2525M-414  DMS R/L2525M-514	Cat. No.    Stock   Height	Cat. No.    Stock   Height   Width	Stock       Height       Width       Overall         Cat. No.       R       L       H       B       LF         DMS R/L2020K-310       ●       20       20       125         DMS R/L2020K-412       ●       20       20       125         DMS R/L2525M-312       ●       25       25       150         DMS R/L2525M-414       ●       25       25       150         DMS R/L2525M-514       ●       25       25       150	Stock R L Height Width Coverall Cedge Distance       Cutting Edge Distance         DMS R/L2020K-310       ● 20       20       125       32         DMS R/L2020K-412       ● 20       20       125       34         DMS R/L2020K-512       ● 20       20       125       34         DMS R/L2525M-312       ● 25       25       150       39         DMS R/L2525M-514       ● 25       25       150       41         DMS R/L2525M-514       ● 25       25       150       41	Stock     Height     Width     Coverall Length     Cutting Edge Edge Distance       DMS R/L2020K-310     ●     20     20     125     32     20       DMS R/L2020K-412     ●     20     20     125     32     20       DMS R/L2020K-512     ●     20     20     125     34     20       DMS R/L2525M-312     ●     25     25     150     39     25       DMS R/L2525M-414     ●     25     25     150     41     25       DMS R/L2525M-514     ●     25     25     150     41     25	Stock       Height       Width       Cveral Length       Cutting Edge Distance       Head         DMS R/L2020K-310       ●       20       20       125       32       20       25.0         DMS R/L2020K-412       ●       20       20       125       34       20       25.0         DMS R/L2020K-512       ●       20       20       125       34       20       25.0         DMS R/L2525M-312       ●       25       25       150       39       25       25.0         DMS R/L2525M-414       ●       25       25       150       41       25       25.0         DMS R/L2525M-514       ●       25       25       150       41       25       25.0	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Cat. No.         Stock R L2020K-310         Height Park Power Park Power Park Power Park Power Park Power Park Power Park Power Park Power Park Power Park Power Park Park Park Park Park Park Park Par	Stock         Height         Width         Cutting Edge Edge Distance Height         Head         Width of Cut         Maximum Groove Depth         Applicable Insert           DMS R/L2020K-310         ●         ●         20         20         125         32         20         25.0         3.0         10         GC□         □30○○□□           DMS R/L2020K-412         ●         ●         20         20         125         34         20         25.0         3.0         10         GC□         □40○○□□           DMS R/L2020K-512         ●         ●         20         20         125         34         20         25.0         5.0         12         GC□         □40○○□□           DMS R/L2525M-312         ●         ●         25         25         150         39         25         25.0         3.0         12         GC□         □30○○□□           DMS R/L2525M-414         ●         25         25         150         41         25         25.0         5.0         14         GC□         □40○○□□           DMS R/L2525M-514         ●         25         25         150         41         25         25.0 <td< th=""><th><math display="block"> \begin{array}{c ccccccccccccccccccccccccccccccccccc</math></th><th>Cat. No.         Stock R         Height R/L2020K-310         Width R/L2020K-310         Cap Screen (Control of Course)         Company (Control of Course)         Head (Control of Course)         Width Groove Depth (Course)         Applicable Insert         Fig           DMS R/L2020K-310         ■ 20         20         125         32         20         25.0         3.0         10         GC□□30○○-□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□</th><th>Cat. No.         Stock R         Height R/L2020K-310         Width Length Length         Cutting Edge Distance Height Head         Width of Cut World Groove Depth         Applicable Insert         Fig           DMS R/L2020K-310         ● 20         20         125         32         20         25.0         3.0         10         GC□□30○○□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□</th></td<>	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Cat. No.         Stock R         Height R/L2020K-310         Width R/L2020K-310         Cap Screen (Control of Course)         Company (Control of Course)         Head (Control of Course)         Width Groove Depth (Course)         Applicable Insert         Fig           DMS R/L2020K-310         ■ 20         20         125         32         20         25.0         3.0         10         GC□□30○○-□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	Cat. No.         Stock R         Height R/L2020K-310         Width Length Length         Cutting Edge Distance Height Head         Width of Cut World Groove Depth         Applicable Insert         Fig           DMS R/L2020K-310         ● 20         20         125         32         20         25.0         3.0         10         GC□□30○○□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	

Select holders and inserts with matching width of cut (CW).

The maximum groove depth CDX is the figure during grooving.

## GNDM type / GNDMS type

000

N3004-GF

N4004-GF

N5004-GF

N6004-GF

GCM N4002-GF

GCM N5002-GF

GCM N6002-GF

● 3.0

4.0

4.0

5.0

5.0

6.0

6.0

±0.03 0.2 26.4 4.0

±0.03 0.4 26.4 4.0

±0.03 0.2 26.4 4.1

±0.03 0.4 26.4 4.1

±0.03 0.2 26.4 4.5

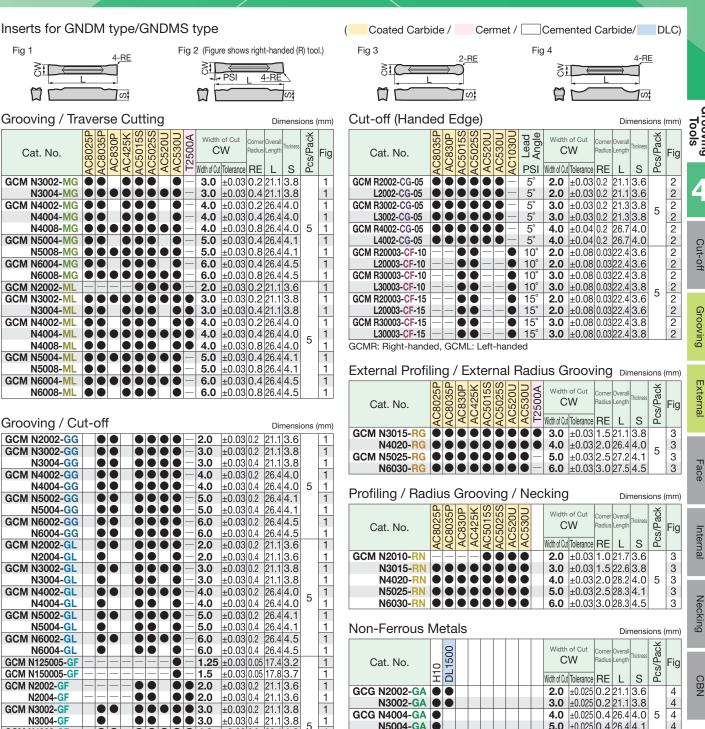
±0.03 0.4 26.4 4.5

1

1

1

1



### Part Number Suffix Code (Chipbreakers)

Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
Cracilina /	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Cut-on	GF	Grooving / Low cutting force	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

**5.0** ±0.025 0.4 26.4 4.1

6.0 ±0.025 0.4 26.4 4.5

N5004-GA

N6004-GA

4

4

Grooving



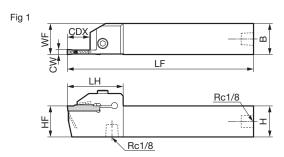


GNDM-J External Grooving

⊚

\* For traverse cutting (groove expansion), use a multi-functional or profiling insert. External Multi-Functional (Grooving, Traverse Cutting and Profiling) Internal Coolant Supply, Clamp-on





125

25

Figure shows right-handed (R) tool.

Cut-off

Grooving

External

Holder **Parts** Dimensions (mm) Cutting Edge Plug Cap Screw Wrench Stock Width Head Edge Length Cut Depth Cat. No. Applicable Insert Fig R L (N·m В CW CDX Н LF WF HF LH GNDM R/L2020K-210J ● 2.00 20 20 125 20 20 33.6 10 R/L2020K-312J 125 36.6 3.00 GC□ □30○○-□□ 20 20 20 20 12 1 R/L2020K-418J 20 20 125 20 20 45 4.00 18 GC□ □40○○-□□ BX0520 6.0 XP02 LH040 125 R/L2020K-518J 20 20 20 20 45 5.00 18 GC□ N50○○-□□ 1 GC□ N60○O-□□ R/L2020K-618J 20 20 125 20 20 45 6.00 18 GC□ □20○○-□□ GNDM R/L2525K-210J 25 125 25 25 33.6 2.00 10 R/L2525K-312J 25 125 25 25 36.6 3.00 12 GC□ □30○○-□□ R/L2525K-418J • • 25 25 125 25 25 45 GC□ □40○○-□□ BX0520 6.0 XP02 LH040 4.00 18 1 R/L2525K-518J 25 25 125 25 25 45 5.00 18 GC□ N50○○-□□

45

25

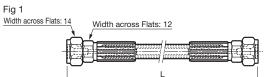
6.00

18

Select holders and inserts with matching width of cut (CW).

R/L2525K-618J ● ●

The maximum groove depth CDX is the figure during grooving.

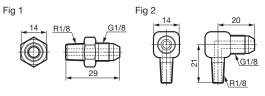


	L	-	
Parts (Hose	)		Dimensions (mm)

,				,	,
Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200		200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300		300	G1/8	G1/8	1

25

Hoses are sold separately.



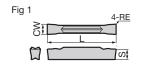
GC□ N60○○-□□

### Parts (Connector)

Dimensions (mm)

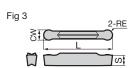
Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00		G1/8	R1/8	1
J-G1/8-R1/8-90		G1/8	R1/8	2

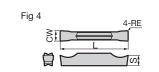
Connectors are sold separately.





Dimensions (mm)





Grooving / Traverse Cutting

•						_									,
Cat. No.	C802	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut  V  Tolerance	Radius	Overall Length		Pcs/Pack	Fig
0.014.1100000.140	Q <	1 -	_	4	4	_	_				_		-	ш.	
GCM N3002-MG								_	3.0	±0.03					1
N3004-MG								—	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG								_	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG								_	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG			ŏ	ŏ	Ŏ		ŏ	_	4.0	±0.03			- 1	5	1
GCM N5004-MG						Ť			5.0	±0.03	-	_	-	·	1
N5008-MG			×	×					5.0	±0.03					1
110000	H					_	-					_	-		
GCM N6004-MG								_	6.0	±0.03			- 1		1
N6008-MG								_	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	-	-	_					—	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML						•			3.0	±0.03	0.2	21.1	3.8		1
N3004-ML									3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML									4.0	±0.03	0.2	26.4	4.0		1
N4004-ML									4.0	±0.03	-	-			1
N4008-ML		4							4.0	±0.03			- 1	5	1
	H		-				-	•	_			_			_
GCM N5004-ML								_	5.0	±0.03					1
N5008-ML									5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML									6.0	±0.03	0.4	26.4	4.5		1
N6008-ML								_	6.0	±0.03	8.0	26.4	4.5		1

Cut-off (Handed Edge)

Gut-on (Hand	ec	1 =	.uį	Je,	)							Dir	nensi	ons (	mm)
Cat. No.	C8035P	AC830P	35015S	C5025S	C520U	C530U	C1030U	Lead Angle	CW		Radius	Overall Length		Pcs/Pack	Fig
	Ă	⋖	¥	¥	A	₹	A	PSI	Width of Cut Tolerance		RE	L	S	ď	
GCM R2002-CG-05							-	5°	2.0 ±0.03		0.2	21.1	3.6		2
L2002-CG-05							-	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	၁	2
GCM R4002-CG-05							_	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05							-	5°	<b>4.0</b> ±0.04 <b>4.0</b> ±0.04		0.2	26.7	4.0		2
GCM R20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	<u> — </u>			-	_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	_	—			-	_		10°	3.0	±0.08	0.03	22.4	3.8	_	2
GCM R20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	5	2
L20003-CF-15	_	—			_	_		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	_	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	—			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
CCMP: Pight hand	~d	G	1	1 - 1	oft	ha	nd								

( Coated Carbide/ Cermet/ Cemented Carbide/ DLC)

GCMR: Right-handed, GCML: Left-handed

N6030-RN

Grooving / Cut-off  Dimensions (mm)  Grooving / Cut-off  Dimensions (mm)																
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut W	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N2002-GG			•		•	•	•	•	_	2.0	±0.03	_	21.1	3.6		1
GCM N3002-GG									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG									_	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG									—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GG									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG									—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GG									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG									—	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GL									_	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL									_	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL									_	4.0	±0.03	0.2	26.4	4.0	5	1
N4004-GL									—	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL									_	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL									—	6.0	±0.03	0.4	26.4	4.5		1
GCM N125005-GF	-	_	_	_	_	_	_		_	1.25	±0.03	0.05	17.4	3.2		1
GCM N150005-GF	-	-	_	_		_	_		_	1.5	±0.03	0.05	17.8	3.7		1
GCM N2002-GF	-	_	_	_						2.0	±0.03	0.2	21.1	3.6		1
N2004-GF		-	_	_						2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8	5	1
GCM N4002-GF										4.0	±0.03	0.2	26.4	4.0	Э	1
N4004-GF										4.0	±0.03	0.4	26.4	4.0		1
GCM N5002-GF									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF									_	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GF					•				—	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF									_	6.0	±0.03	0.4	26.4	4.5		1

External Profiling / External Radius Grooving Dimensions (mm)

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С		Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3015-RG										3.0	±0.03	1.5	21.1	3.8		3
N4020-RG										4.0	±0.03	2.0	26.4	4.0	5	3
GCM N5025-RG									-	5.0	±0.03	2.5	27.2	4.1	5	3
N6030-RG									_	6.0	±0.03	3.0	27.5	4.5		3

Profiling / Radius Grooving / Necking Dimensions (mm) CW Cat. No. Fig Width of Cut Tolerance RE GCM N2010-RN **2.0** ±0.03 1.0 21.7 3.6 3 3 3 3 3 N3015-RN **3.0** ±0.03 1.5 22.6 3.8 N4020-RN **4.0** ±0.03 2.0 28.2 4.0 N5025-RN **5.0** ±0.03 2.5 28.3 4.1

6.0 ±0.03 3.0 28.3 4.5

Non-Ferrous I	Μe	eta	als							Din	nensi	ons (	mm)	ı
Cat. No.	H10	DL1500					C		Radius	Overall Length	Thickness	Pcs/Pack	Fig	
GCG N2002-GA	•	•					2.0	±0.025	0.2	21.1	3.6		4	
N3002-GA							3.0	±0.025	0.2	21.1	3.8		4	
GCG N4004-GA							4.0	±0.025	0.4	26.4	4.0	5	4	
N5004-GA							5.0	±0.025	0.4	26.4	4.1		4	
N6004-GA							6.0	±0.025	0.4	26.4	4.5		4	

### Part Number Suffix Code (Chipbreakers)

		`	•	,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
Cua avina /	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Gut-oii	GF	Grooving / Low cutting force	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

Grooving

External

Face

External Grooving

## GNDL type/GNDLS type

External Deep Grooving & Cut-off Clamp-on

External L-Shaped (Side Cut), Grooving

Clamp-on





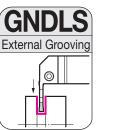
Fig 1		
	CDX	<u>ן</u>
	LF	
	LH LH	
	#	=

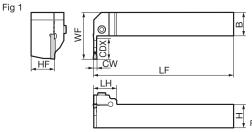
Figure shows right-handed (R) tool.

Holder													Parts	Dime	ensions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Width of Cut	Maximum Groove Depth			Cap Screw	'	Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	LH	CW	CDX	Applicable Insert	Fig	BX0520 BX0620	(N·m)	
GNDL R/L2020K-1.2516			20	20	125	20	20	38.0	1.25	16	GCM N125005-GF	1			
GNDL R/L2020K-1.516			20	20	125	20	20	38.0	1.50	16	GCM N150005-GF	1			
GNDL R/L2020K-220			20	20	125	20	20	44.5	2.00	<b>20</b> (18)	GC□ □20○○-□□	1			
GNDL R/L2020K-320			20	20	125	20	20	44.5	3.00	<b>20</b> (18)	GC□ □30○○-□□	1	BX0520	5.0	LH040
GNDL R/L2020K-425			20	20	125	20	20	50.0	4.00	<b>25</b> (23)	GC□ □40○○-□□	1			
GNDL R/L2020K-525			20	20	125	20	20	50.0	5.00	<b>25</b> (23)	GC□ N50○○-□□	1			
GNDL R/L2020K-625			20	20	125	20	20	50.0	6.00	<b>25</b> (23)	GC□ N60○○-□□	1			
GNDL R/L2525M-1.2516			25	25	150	25	25	40.0	1.25	16	GCM N125005-GF	1			
GNDL R/L2525M-1.516			25	25	150	25	25	40.0	1.50	16	GCM N150005-GF	1			
GNDL R/L2525M-220			25	25	150	25	25	44.5	2.00	<b>20</b> (18)	GC□ □20○○-□□	1			
GNDL R/L2525M-320			25	25	150	25	25	44.5	3.00	<b>20</b> (18)	GC□ □30○○-□□	1	BX0520	5.0	LH040
GNDL R/L2525M-425			25	25	150	25	25	50.0	4.00	<b>25</b> (23)	GC□ □40○○-□□	1			
GNDL R/L2525M-525			25	25	150	25	25	50.0	5.00	<b>25</b> (23)	GC□ N50○○-□□	1			
GNDL R/L2525M-625			25	25	150	25	25	50.0	6.00	<b>25</b> (23)	GC□ N60○○-□□	1			

Select holders and inserts with matching width of cut (CW). Dimensions in parentheses under maximum groove depth are for profiling inserts (RG type / RN type chipbreakers). The maximum groove depth CDX is the figure during grooving.







エ <u>†</u> Figure shows right-handed (R) tool.

Holder													Parts	Dime	ensions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Edge	Head	Width of Cut	Maximum Groove Depth			Cap Screw	1	Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	LH	CW	CDX	Applicable Insert	Fig		(N·m	
GNDLS R/L2020K-216			20	20	125	38	20	25	2.0	16	GC□ □20○○-□□	1	BX0520	5.0	LH040
GNDLS R/L2020K-316			20	20	125	38	20	25	3.0	16	GC□ □30○○-□□	1	DA0320	5.0	LH040
GNDLS R/L2525M-218			25	25	150	45	25	25	2.0	18	GC□ □20○○-□□	1			
<b>GNDLS R/L2525M-318</b>			25	25	150	45	25	25	3.0	18	GC□ □30○○-□□	1			
GNDLS R/L2525M-423			25	25	150	50	25	25	4.0	23	GC□ □40○○-□□	1	BX0520	5.0	LH040
GNDLS R/L2525M-523			25	25	150	50	25	25	5.0	23	GC□ N50○○-□□	1			
<b>GNDLS R/L2525M-623</b>			25	25	150	50	25	25	6.0	23	GC□ N60○○-□□	1			

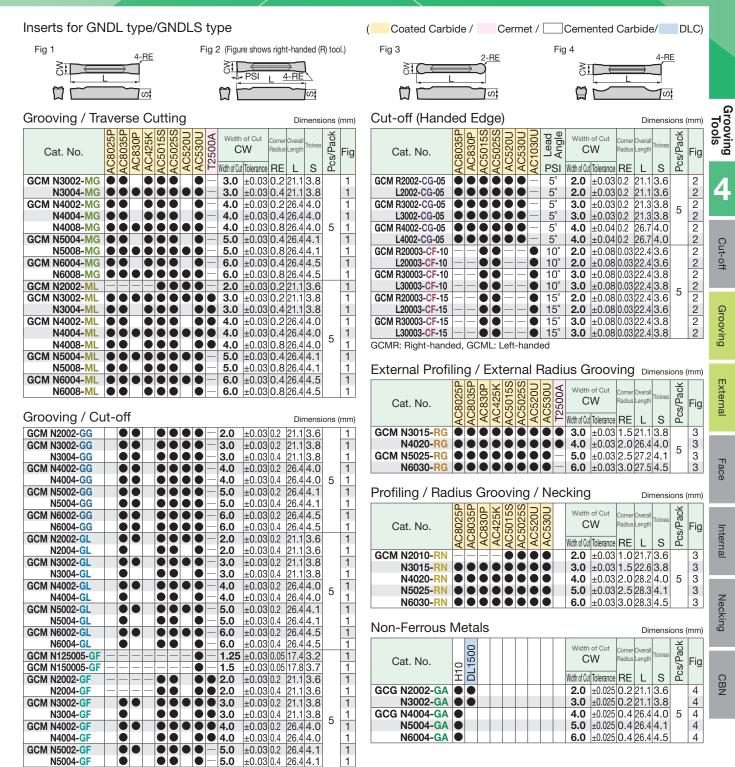
Select holders and inserts with matching width of cut (CW).

The maximum groove depth CDX is the figure during grooving.

GCM N6002-GF

N6004-GF

## GNDL type/GNDLS type



±0.03 0.2 26.4 4.5

±0.03|0.4|26.4|4.5

1

6.0

6.0

### Part Number Suffix Code (Chipbreakers)

Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
Crossing /	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Cut-on	GF	Grooving / Low cutting force	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose

## GNDL-J type

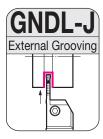


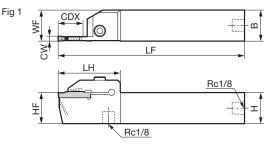
Cut-off

Grooving

External







External Deep Grooving and Cut-off Internal Coolant Supply, Clamp-on

Figure shows right-handed (R) tool.

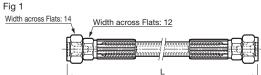
Holder **Parts** Dimensions (mm) Cutting Edge Cutting Edge Plug Maximum Stock Cap Screw Wrench Height Width Head Groove Depth Length Cut Cat. No. Applicable Insert Fig R L (N·m В LF WF HF LH CW CDX GNDL R/L2020K-220J 20 44.5 2.00 GC□ □20○○-□□ 20 125 20 20 **20**(18) R/L2020K-320J 20 20 125 20 20 44.5 3.00 **20**(18) GC□ □30○○-□□ BX0520 **6.0** XP02 LH040 R/L2020K-425J 20 20 20 50 4.00 GC□ □40○○-□□ 125 20 **25**(23) 1 R/L2020K-525J 20 20 125 20 20 50 5.00 **25**(23) GC□ N50○○-□□ 1 GC□ N6000-□□ R/L2020K-625J 20 125 20 50 6.00 20 20 **25**(23) GNDL R/L2525K-220J 125 25 44.5 **2.00** GC□ □20○○-□□ 25 25 25 **20**(18) 1 R/L2525K-320J 25 25 125 25 25 44.5 3.00 **20**(18) GC□ □30○○-□□ R/L2525K-425J 25 25 125 25 25 50 4.00 **25**(23) GC □ □4000-□□ 1 BX0520 **6.0** XP02 LH040

Select holders and inserts with matching width of cut (CW). Dimensions in parentheses under maximum groove depth are for profiling inserts (RG type / RN type chipbreakers). The maximum groove depth CDX is the figure during grooving.

5.00

6.00

**25**(23)



R/L2525K-525J

R/L2525K-625J

Width across Flats: 14	Width across Flats: 12

25

25

25

25

125

125

25

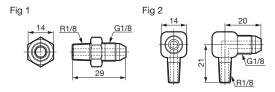
25

25 50

25 50

Parts (Hose)				Dimensions (	mm)
Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-G1/8-G1/8-200		200	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300		300	G1/8	G1/8	1

Hoses are sold separately.



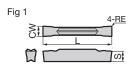
GC□ N5000-□□

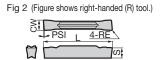
**25**(23) GC□ N60○○-□□

Parts (Connector)			Dimensions (	mm)
Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00		G1/8	R1/8	1
J-G1/8-R1/8-90		G1/8	R1/8	2

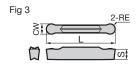
Connectors are sold separately.

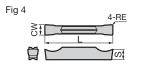
### Inserts for GNDL-J type





Dimensions (mm)





### Grooving / Traverse Cutting

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut W Tolerance	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3002-MG									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG	•	•		•	•	•		•	_	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG						•			_	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG	•		•	•		•		•	_	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG									_	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	_	_	_	_					_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8		1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML										4.0	±0.03	0.2	26.4	4.0		1
N4004-ML										4.0	±0.03	0.4	26.4	4.0	5	1
N4008-ML										4.0	±0.03	0.8	26.4	4.0	J	1
GCM N5004-ML									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML									_	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML									_	6.0	±0.03	0.8	26.4	4.5		1

### Cut-off (Handed Edge)

out on triana	-		٠.	90	,							DIII	Hensi	ons (	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Cat. No.	38035P	AC830P	35015S	25025S	2520U	2530U	C1030U	Lead Angle				Overall Length	Thickness	cs/Pack	Fig
	A	ĕ	X	M	ĕ	ĕ	A	PSI	Width of Cut	Tolerance	RE	L	S	P	
GCM R2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05							_	5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05							_	5°	3.0	±0.03	0.2	21.3	3.8	Э	2
GCM R4002-CG-05							-	5°	4.0	±0.04	0.2	26.7	4.0		2
L4002-CG-05							-	5°	4.0	±0.04	0.2	26.7	4.0		2
GCM R20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
L20003-CF-10	_	_			_	_		10°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-10	_	_			_	_		10°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-10	-	—			-	_		10°	3.0	±0.08	0.03	22.4	3.8	5	2
GCM R20003-CF-15	_	_			_	_		15°	2.0	±0.08	0.03	22.4	3.6	Э	2
L20003-CF-15	-	—			-	<u> </u>		15°	2.0	±0.08	0.03	22.4	3.6		2
GCM R30003-CF-15	-	_			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
L30003-CF-15	_	-			_	_		15°	3.0	±0.08	0.03	22.4	3.8		2
GCMR: Right-hand	ed	GC	M	1 • 1	eft	-ha	nd	ed							

Grooving / Cu	ıt-	off	f										Dir	nensi	ons (	(mm)
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	C	of Cut W	Radius	Overall Length	Thickness S	Pcs/Pack	Fig
GCM N2002-GG									_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-GG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GG									_	4.0	±0.03	0.2	26.4	4.0		1
N4004-GG									_	4.0	±0.03	0.4	26.4		5	1
GCM N5002-GG									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GG										5.0	±0.03	***	26.4	-		1
GCM N6002-GG									_	6.0	±0.03		26.4			1
N6004-GG										6.0	±0.03	_	26.4	_		1
GCM N2002-GL									_	2.0	±0.03		21.1			1
N2004-GL									_	2.0	±0.03	_	21.1	_		1
GCM N3002-GL									_	3.0	±0.03		21.1			1
N3004-GL									_	3.0	±0.03		21.1			1
GCM N4002-GL									_	4.0	±0.03		26.4	-	5	1
N4004-GL										4.0	±0.03	_	26.4	_	•	1
GCM N5002-GL									_	5.0	±0.03		26.4			1
N5004-GL						•			_	5.0	±0.03	_	26.4	$\overline{}$		1
GCM N6002-GL									_	6.0	±0.03		26.4			1
N6004-GL									_	6.0	±0.03		26.4			1
GCM N125005-GF					_				_	1.25	±0.03					1
GCM N150005-GF			_	_	_	_		•	_	1.5	±0.03					1
GCM N2002-GF	-	-	_	_						2.0	±0.03		21.1			1
N2004-GF		_	_		•	•	_	•	•	2.0	±0.03		21.1			1
GCM N3002-GF										3.0	±0.03		21.1			1
N3004-GF										3.0	±0.03	_	21.1	_	5	1
GCM N4002-GF										4.0	±0.03		26.4	-	-	1
N4004-GF										4.0	±0.03	_	26.4			1
GCM N5002-GF										5.0	±0.03		26.4			1
N5004-GF										5.0	±0.03	_	26.4	-		1
GCM N6002-GF										6.0	±0.03		26.4			1
N6004-GF									_	6.0	±0.03	0.4	26.4	4.5		1

External Profiling / External Radius Grooving Dimensions (mm)

Ca	t. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut  W  Tolerance	Corner Radius	Length	Thickness	Pcs/Pack	Fig
GCM N	13015-RG										3.0	±0.03	1.5	21.1	3.8		3
l N	14020-RG										4.0	±0.03	2.0	26.4	4.0	5	3
GCM N	15025-RG									-	5.0	±0.03	2.5	27.2	4.1	5	3
l N	16030-RG									_	6.0	±0.03	3.0	27.5	4.5		3

### Profiling / Radius Grooving / Necking 35P 35P 35P 35P 35P 35P 35P 35P 35P

	Corner Radius		Thickness	s/Pack	Fig	ĺ
е	RE	L	S	Pcs/		П
3	1.0	21.7	3.6		3	П
0	4 E	200	20		2	

Dimensions (mm)

(	Cat. No.	80	80	8	742	20	50	352	553		VV	Radius	Length		s/P	Fig
		AC	AC	¥	¥	AC	AC	A	¥	Width of Cut	Tolerance	RE	L	S	Pcs/	
GCN	/I N2010-RN		-	_						2.0	±0.03	1.0	21.7	3.6		3
	N3015-RN									3.0	±0.03	1.5	22.6	3.8		3
	N4020-RN									4.0	±0.03	2.0	28.2	4.0	5	3
	N5025-RN									5.0	±0.03	2.5	28.3	4.1		3
	N6030-RN									6.0	±0.03	3.0	28.3	4.5		3

Non-Ferrous	Me	eta	ıls							Dir	nensi	ons (	mm)
Cat. No.	H10	DL1500					C		Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCG N2002-GA							2.0	±0.025	0.2	21.1	3.6		4
N3002-GA							3.0	±0.025	0.2	21.1	3.8		4
GCG N4004-GA							4.0	±0.025	0.4	26.4	4.0	5	4
N5004-GA							5.0	±0.025	0.4	26.4	4.1		4
N6004-GA							6.0	±0.025	0.4	26.4	4.5		4

### Part Number Suffix Code (Chipbreakers)

		•	•	,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	(Handed Edge)	CF	Cut-off / Low cutting force
Cuantina /	GG	Grooving / General-purpose	External Profiling / External Radius Grooving	RG	Profiling / General-purpose
Grooving / Cut-off	GL	Grooving / Low-feed	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Gut-on	GF	Grooving / Low cutting force	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-ouroose

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.



External Deep Grooving and Cut-off Clamp-on

LF

Figure shows right-handed (R) tool.

В

Holder													Parts	Dime	ensions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Width of Cut	Maximum Groove Depth			Cap Scre	ew .	Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	LH	CW	CDX	Applicable Insert	Fig		(N·m)	
GNDXL R/L2020K-226			20	20	125	20	20	42.0	2.0	26	GCM N2002-GF1	1			
R/L2020K-332			20	20	125	20	20	48.0	3.0	32	GCM N30○O-□□1	1			
R/L2020K-432			20	20	125	20	20	48.0	4.0	32	GCM N40○O-□□1	1	BX0520	5.0	LH040
R/L2020K-532			20	20	125	20	20	48.0	5.0	32	GCM N50○O-□□1	1			
R/L2020K-632			20	20	125	20	20	48.0	6.0	32	GCM N60○O-□□1	1			
GNDXL R/L2525M-226			25	25	150	25	25	42.0	2.0	26	GCM N2002-GF1	1			
R/L2525M-332			25	25	150	25	25	48.0	3.0	32	GCM N30○O-□□1	1			
R/L2525M-432			25	25	150	25	25	48.0	4.0	32	GCM N40○O-□□1	1	BX0520	5.0	LH040
R/L2525M-532			25	25	150	25	25	48.0	5.0	32	GCM N50○O-□□1	1			
R/L2525M-632			25	25	150	25	25	48.0	6.0	32	GCM N60○O-□□1	1			
Soloot holders and inserts with me	atob	ina	width o	fout (C	144	h 1 oo	rnorod	incorto	oon bo	uood					

Select holders and inserts with matching width of cut (CW). Only 1-cornered inserts can be used. The maximum groove depth CDX is the figure during grooving.

Fig 1

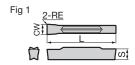
Cut-off

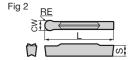
Grooving

External

### Inserts for GNDXL type (1-cornered)

(Coated Carbide)





Grooving / Traverse Cutting (1-cornered)

arooving / mave	130		Jul	ung	(1-0011	10100	1)	DIM	ension	s (mm)
Cat. No.	50158	50258	3530U		th of Cut	Corner Radius	Overall Length	Thickness	F.	Fig
	AC	AC	¥	Width of Cut	Tolerance	RE	L	S	Pcs	
GCM N3002-ML1				3.0	±0.03	0.2	21.1	3.8		1
GCM N4004-ML1				4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5004-ML1				5.0	±0.03	0.4	26.4	4.1	S	1
GCM N6004-ML1				6.0	±0.03	0.4	26.4	4.5		1

Profiling / Radius	s C	aro	ΟV	ing (	1-corn	ered	)	Dim	ension	s (mm)
Cat. No.	AC5015S	AC5025S	AC530U		th of Cut CW Tolerance	Corner Radius		Thickness	Pcs/Pack	Fig
GCM N3015-RN1		•	•	3.0	±0.03		22.6	3.8	_	2
GCM N6030-RN1		•		6.0	±0.03	3.0	28.3	4.5	5	2

Grooving / Cut-off (1-cornered)

•		•			,					
Cat. No.	50158	50258	C530U		th of Cut		Overall Length	Thickness	Ē	Fig
	AC	AC	A	Width of Cut	Tolerance	RE	L	S	Pcs	
GCM N2002-GF1				2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GF1				3.0	±0.03	0.2	21.1	3.8		1
GCM N4002-GF1				4.0	±0.03	0.2	26.4	4.0	5	1
GCM N5002-GF1				5.0	±0.03	0.2	26.4	4.1		1
GCM N6002-GF1				6.0	±0.03	0.2	26.4	4.5		1
0 1 11 11 11								-		

Select holders and inserts with matching width of cut (CW). Use in combination with GNDXL type holders. Not usable with GNDIS type holders.

Dimensions (mm)

Part Number Suffix Code (Chipbreakers)

	Type	Symbol	Applications	Type	Symbol	Applications
	Grooving / Traverse Cutting	ML1	Multi-functional / Low-feed	Profiling / Radius Grooving	RN1	General-purpose
Г	Grooving / Cut-off	GF1	Grooving / Low cutting force			

## **GNDN** type

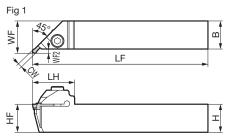


Necking Clamp-on

Grooving

External

**GNDN** Necking



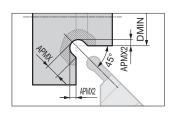


Figure shows right-handed (R) tool.

Holder Parts Dimensions (mm)

1101001																i dito	Dilliell	Sions (min)
	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge	Head	Offset	Min. Bore Dia.	Width of Cut			Applicable		Cap Scr	ew	Wrench
Cat. No.	R	L	Н	В	LF	WF	HF	LH	WF2	DMIN	CW	APMX	APMX2	Insert	Fig		(N·m	
GNDN R/L2020K-215-020			20	20	125	23	20	35	3.0	20	2.0	1.5	0.64	GCM N2010-RN	1			
GNDN R/L2020K-320-020			20	20	125	23	20	35	3.0	20	3.0	2.0	0.79	GCM N3015-RN	1			
GNDN R/L2020K-430-030			20	20	125	24	20	37	4.0	30	4.0	3.0	1.29	GCM N4020-RN	1	BX0520	5.0	LH040
GNDN R/L2020K-535-030			20	20	125	25	20	40	5.0	30	5.0	3.5	1.44	GCM N5025-RN	1			
GNDN R/L2020K-640-030			20	20	125	25	20	40	5.0	30	6.0	4.0	1.59	GCM N6030-RN	1			
GNDN R/L2525M-215-020			25	25	150	28	25	35	3.0	20	2.0	1.5	0.64	GCM N2010-RN	1			
GNDN R/L2525M-320-020			25	25	150	28	25	35	3.0	20	3.0	2.0	0.79	GCM N3015-RN	1			
GNDN R/L2525M-430-030			25	25	150	29	25	37	4.0	30	4.0	3.0	1.29	GCM N4020-RN	1	BX0520	5.0	LH040
GNDN R/L2525M-535-030			25	25	150	30	25	40	5.0	30	5.0	3.5	1.44	GCM N5025-RN	1			
GNDN R/L2525M-640-030			25	25	150	30	25	40	5.0	30	6.0	4.0	1.59	GCM N6030-RN	1			

Select holders and inserts with matching width of cut (CW). The maximum groove depth CDX is the figure during grooving.

Identification Code

## GND N R 20 20 K - 2 15 - 020

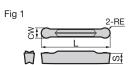
Series Code Application Feed Symbol: Direction Necking

Height (mm)

Shank Shank Shank Width Length (mm)

Width APMX of Cut  $\times 10$  (mm) (mm)

Min. Bore Dia. (mm)



Cat. No.

**GCM N2010-RN** 

N3015-RN

N4020-RN N5025-RN N6030-RN ● ●

Inserts for GNDN type

### Profiling / Radius Grooving / Necking

King			Dir	nensi	ons (	mm)	
Width C		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig	
Width of Cut	Tolerance	RE	L	S	P		
	±0.03					1	
3.0	±0.03	1.5	22.6	3.8		1	
4.0	±0.03	2.0	28.2	4.0	5	1	
	±0.03					1	
6.0	±0.03	3.0	28.3	4.5		1	

Part Number Suffix Code (Chipbreakers)

Type	Symbol	Applications
Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

## series







External







### Features of GWC series for Shallow Groove

- The same insert can be used for both external and internal grooving.
- Full range of insert grades to cover a wide range of work materials. Coated Carbide AC530U, Cemented Carbide H1, Coated Cermet T2500Z and T3000Z,

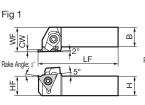
Cermet T1500A,

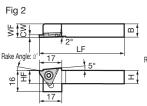
SUMIBORON BN2000, and SUMIDIA DA2200 are now in stock.

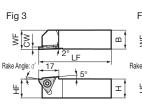
- A wide range of grooving widths from 0.33mm to 4.8mm.
- SumiTurn B-Groove inserts with chipbreaker are now in stock.
- Customers can modify the grooving width, corner radius and rake angle according to their own requirements using the grooving insert blanks. (Sumitomo Electric Hardmetal also accepts orders.)

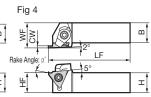
External Shallow Grooves Double Clamp / Screw-on











Note 1: Rake angle  $\alpha^{\circ}$  varies depending on the insert grade. Note 2: Figures show right hand (R) tools.

Holder												Parts					Dimen:	sions (mm)
	Sto	ock	Hoight	\\/idth	Overall Length	Cutting Edge	Cutting Edge	Width of Cut	Mavimum			Flat Head S	crew	Wrench	Clamp Plate	Double So	crew	Wrench
Cat. No.	R	L	Н	В	Length LF	Distance	Height	Width of Cut	Groove Depth	Group No.	Fig		N·m				(N·m	<b>/</b>
GWC R/L1010-3			10	10	125	10	10	0.33 to 2.80	0.8 to 2.5	1	2							
GWC R/L1212-3			12	12	125	12	12	0.33 to 2.80	0.8 to 2.5	1	2				_	_	_	-
GWC R/L1616-3			16	16	125	16	16	0.33 to 2.80	0.8 to 2.5	1	3	BFTX0409N	3.4	TRX15				
GWC R/L2020-3			20	20	125	25	20	0.33 to 2.80	0.8 to 2.5	1	1				CCM6D I /D	WB6-20 T/TL	5 O*	LTOO
GWC R/L2525-3			25	25	150	30	25	0.33 to 2.80	0.8 to 2.5	1	1				COMIOD L/N	WD0-20 1/1L	5.0	LIZU
GWC R/L2020-15			20	20	125	25	20	1.00 to 1.45	2.0	2	4							
GWC R/L2020-25			20	20	125	25	20	1.50 to 2.30	3.5	3	1							
GWC R/L2020-35			20	20	125	25	20	2.50 to 4.80	5.0	4	1	BFTX0511N	5.0	TRYON	CCM8III/B	WB8-22 T/TL	5.0*	I T27
GWC R/L2525-15			25	25	150	30	25	1.00 to 1.45	2.0	2	4	DI IXOSTIN	3.0	111/120	OOWIOU L/N	WDU-22 1/1L	5.0	
GWC R/L2525-25			25	25	150	30	25	1.50 to 2.30	3.5	3	1							
GWC R/L2525-35			25	25	150	30	25	2.50 to 4.80	5.0	4	1							

mark: Cermet inserts have a recommended tightening torque of 4N·m.

Right-handed (R) tool holders are used with right-handed (R) inserts.

Select applicable inserts for the holders by using matching group numbers.

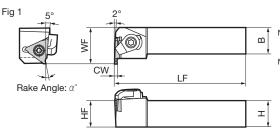
<sup>\*</sup> Right-handed (R) tool holders are compatible with left-handed clamp plates (CCMODL) and right-handed double screws (WBO-2OT). Left-handed (L) tool holders are compatible with right-handed clamp plates (CCMODR) and left-handed double screws (WBO-2OTL).

Double Clamp for External L-Shaped

Dimensions (mm)

Grooving





Note 1: Rake angle  $\alpha^{\circ}$  varies depending on the insert grade. Refer to the insert table at the bottom of this page

Note 2: Figure shows right-handed (R) tool.

Holder Parts

	Sto	ock	Height		Overall	Cutting Edge	Cutting Edge	Width of Cut	Mavimum			Flat Head So	crew	Wrench	Clamp Plate	Double Scr	ew	Wrench
Cat. No.	R	L	Н	В	Length LF	Distance		Width of Cut	Groove Depth	Group No.	Fig		(N·m				(ii)	
GWCS R/L2020-3		•	20	20	125	25	20	0.33 to 2.80	0.8 to 2.5	1	1	BFTX0409N	2.4	TRX15	CCMCD D/I	WB6-20 TL/T	5 O*	LT20
GWCS R/L2525-3			25	25	150	30	25	0.33 to 2.80	0.8 to 2.5	1	1	DF170409N	3.4	INAIS	CCIVIOD N/L	WD0-20 1L/1	5.0	LIZU
GWCS R/L2020-15			20	20	125	27	20	1.00 to 1.45	2.0	2	1							
GWCS R/L2020-25			20	20	125	27	20	1.50 to 2.30	3.5	3	1							
GWCS R/L2020-35			20	20	125	27	20	2.50 to 4.80	5.0	4	1	BFTX0511N	<b>5</b> 0	TRX20	CCMOLLD/I	WB8-22 TL/T	E 0*	LT27
GWCS R/L2525-15			25	25	150	32	25	1.00 to 1.45	2.0	2	1	DEIVOSIII	5.0	INAZU	CCIVIOU N/L	WD0-22 IL/I	5.0	LIZI
<b>GWCS R/L2525-25</b>			25	25	150	32	25	1.50 to 2.30	3.5	3	1							
GWCS R/L2525-35			25	25	150	32	25	2.50 to 4.80	5.0	4	1							

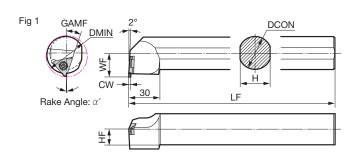
<sup>\*</sup> mark: Cermet inserts have a recommended tightening torque of 4N·m.

Right-handed (R) tool holders are used with left-handed (L) inserts.

- \* Select applicable inserts for the holders by using matching group numbers.
- \* Right-handed (R) tool holders are compatible with right-handed clamp plates (CCMO□R) and left-handed double screws (WBO-2OTL).  $\label{lem:left-handed (L) tool holders are compatible with left-handed clamp plates (CCM \bigcirc L) and right-handed double screws (WB \bigcirc -2 \bigcirc T). } \\$



Internal Grooving



Screw-on for Internal Diameter **Shallow Grooves** 

- Note 1: Rake angle  $\alpha^{\circ}$  varies depending on the insert grade. Refer to the insert table at the bottom of this page
- for details. Note 2: Figure shows right-handed (R) tool.

Holder														Parts	Dim	ensions (mm)
	Sto	ock	Diameter	Height	Overall	Cutting Edge	Cutting Edge	Min. Bore	Rake	Width of Cut	Maximum			Flat Head S	crew	Wrench
Cat. No.			Diameter	rieigni	Length			Dia.	Angle	Width of Out	Groove	Group	Fig			1
Oat. No.	R	L	DCON	Н	LF	WF	HF	DMIN	GAMF	CW	Depth	No.	ı ıy		(N·m)	
GWCI R/L325	•	•	25	23	220	17.5	11.5	35	14°	0.33 to 2.80	0.5 to 2.0	1	1	BFTX0409N	3.4	TRX15
GWCI R/L432			32	30	250	23.0	15.0	40	16°	1.25 to 4.80	1.7 to 2.5	2/3/4	1	BFTX0511N	5.0	TRX20

Right-handed (R) tool holders are used with left-handed (L) inserts.

### lacktriangle Rake angle when mounted on a holder ( $\alpha$ °)

	Coated Carbide	Carbide	Coated Cermet	Cermet	SUMIBORON	SUMIDIA
	AC530U	H1	T2500Z T3000Z	T1500A	BN2000	DA2200
External Grooving GWC/GWCS	10°	20°	10°	5°	0°	10°
Internal Grooving GWCI R/L325	1°	11°	1°	-4°	-9°	1°
Internal Grooving GWCI R/L432	-1°	9°	-1°	-6°	-11°	-1°

## TGA type

Internal

CBN

Coated Carbide / Cermet / Cemented Carbide / SUMIBORON / SUMIDIA)

Fig 1 GAN CW ±0.025 Fig 2 (For BN2000 / DA2200) CW ±0.025 CDX

Gı	ade	Cutting Edge Shape	GAN
Coated Carbide	AC530U	Honing	15°
Carbide	H1	Sharp Edged	25°
Coated Cermet	T2500Z	Honing	15°
Coated Cermet	T3000Z	Honing	15°
Cermet	T1500A	Sharp Edged	10°
SUMIBORON	BN2000	Negative Land	5°
SUMIDIA	DA2200	Sharp Edged	15°

Square Edged Grooving Insert

Figure shows right-handed (R) tool.

Dimensions (mm)

Equal C Lagea Greevin	_		_																			Dimensio	7113 (11111)
	AC5	30U	J F	11	T25	00Z	T30	000Z	T15	00A	BN2	2000	DA2	200	Width of Cut	Maximum D	epth of Cut	Maximum Groove Depth	Corner Radius	Inscribed Circle	Thickness	Group	
Cat. No.	R	ı	R	L	R	1	R	L	R	L	R	ı	R	ı	CW	External	Internal				_	No.	Fig
	ļ.,	_	Τ.,	μ-	1	_	ļ.,	Ι-				_		_				CDX	RE	IC	S	- 1	
TGA R/L4125(E)											•				1.25	2.0	1.7	2.5	0.2	12.70	4.76	2	1(2)
TGA R/L4145(E)															1.45	2.0	1.7	2.5	0.2	12.70	4.76	2	1
TGA R/L4150(E)															1.50	3.5	2.5	3.9	0.2	12.70	4.76	3	1(2)
TGA R/L4165(E)															1.65	3.5	2.5	3.9	0.2	12.70	4.76	3	1
TGA R/L4175(E)															1.75	3.5	2.5	3.9	0.2	12.70	4.76	3	1
TGA R/L4185(E)															1.85	3.5	2.5	3.9	0.2	12.70	4.76	3	1
TGA R/L4200(E)															2.00	3.5	2.5	3.9	0.2	12.70	4.76	3	1(2)
TGA R/L4220(E)															2.20	3.5	2.5	3.9	0.2	12.70	4.76	3	1
TGA R/L4230(E)															2.30	3.5	2.5	3.9	0.2	12.70	4.76	3	1
TGA R/L4250(E)		•													2.50	5.0	2.5	5.4"	0.3 <sup>-2</sup>	12.70	4.76	4	1(2)
TGA R/L4265(E)															2.65	5.0°	2.5	5.4	0.3 <sup>-2</sup>	12.70	4.76	4	1
TGA R/L4270(E)															2.70	5.0 <sup>-1</sup>	2.5	5.4	0.3	12.70	4.76	4	1
TGA R/L4280(E)															2.80	5.0 <sup>-1</sup>	2.5	5.4 <sup>-1</sup>	0.3	12.70	4.76	4	1
TGA R/L4300(E)								lack							3.00	5.0 <sup>-1</sup>	2.5	5.4	0.3	12.70	4.76	4	1(2)
TGA R/L4320(E)					•				•						3.20	5.0 <sup>-1</sup>	2.5	5.4	0.3	12.70	4.76	4	1
TGA R/L4330(E)															3.30	5.0°	2.5	5.4	0.3	12.70	4.76	4	1
TGA R/L4350(E)									•	•					3.50	5.0	2.5	5.4	0.32	12.70	4.76	4	1(2)
TGA R/L4370(E)					•										3.70	5.0	2.5	5.4	0.3	12.70	4.76	4	1
TGA R/L4390(E)															3.90	5.0	2.5	5.4	0.3	12.70	4.76	4	1
TGA R/L4400(E)															4.00	5.0	2.5	5.4	0.4 2	12.70	4.76	4	1(2)
TGA R/L4410(E)				Π					•						4.10	5.0	2.5	5.4	0.4 2	12.70	4.76	4	1
TGA R/L4420(E)															4.20	5.0	2.5	5.4	0.4 -2	12.70	4.76	4	1
TGA R/L4430(E)															4.30	5.0	2.5	5.4	0.4 -2	12.70	4.76	4	1
TGA R/L4440(E)		•													4.40	5.0	2.5	5.4	0.4 -2	12.70	4.76	4	1
TGA R/L4450(E)		•		•					•	•					4.50	5.0	2.5	5.4	0.4	12.70	4.76	4	1
TGA R/L4480(E)	•	•							•						4.80	5.0	2.5	5.4	0.4*2	12.70	5.00	4	1
* Add E as the part number suffix	v for	. T1	500	1/			_	_													2.00		•

<sup>\*</sup> Add E as the part number suffix for T1500A.

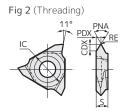
### **Recommended Cutting Conditions**

l	Work Material	G	General Ste	el	M	Stainless St	eel	Non-Fe	rrous Metal	Hardened Steel
ı	Insert Grade	AC530U	T2500Z / T3000Z	T1500A	AC530U	T2500Z / T3000Z	T1500A	H1	DA2200	BN2000
	Cutting Speed vc (m/min)	50 to 200	100 to 180	100 to 180	50 to 200	80 to 150	80 to 120	200 to 300	200 to 300	80 to 120
ı	Feed Rate f (mm/rev)	0.02 to 0.10	0.05 to 0.10	0.05 to 0.08	0.02 to 0.10	0.05 to 0.08	0.05 to 0.08	0.05 to 0.15	0.05 to 0.15	0.03 to 0.07

<sup>\*</sup> Refer to F4 and F5 for group numbers of holders that can be used with the GWC, GWCS and GWCI Types. Select applicable inserts for the holders by using matching group numbers.

<sup>\*1:</sup> CDX = 4.4 (maximum groove depth 4.0) for SUMIBORON and SUMIDIA (2.5 for internal boring)

<sup>\*2:</sup> RE = 0.2 for SUMIBORON; RE = 0.1 for SUMIDIA



### Rake Angle by Grade (Grooving)

Gra	ade	Cutting Edge Shape	GAN
Coated Carbide	AC5015S	Honing	15°
Coated Carbide	AC5025S	Honing	15°
Coated Carbide	AC530U	Honing	15°
Carbide	H1	Sharp Edged	25°
DLC	DL1500	Sharp Edged	25°
Coated Cermet	T2500Z	Honing	15°
Cermet	T1500A	Sharp Edged	10°

Figure shows right-handed (R) tool.

Insert (Grooving)	С	oate	ed Ca	arbid	e / [	C	eme	ente	d Car	rbide	e / 📗	D	LC/		Cerme	t)			Din	nensions	s (mm)
	AC5	0158	AC5	025S	AC5	30U	Н	1	DL1	500	T25	00Z	T15	00A	Width of Cut	Maximum Groove Depth	Corner Radius	Inscribed Circle	Thickness	Group	
Cat. No.*1	R	L	R	L	R	L	R	L	R	L	R	L	R	L	CW	CDX	RE	IC	S	No.	Fig
TGA R/L3033(E)					•	•	•	•				•	•	•	0.33	0.8	0.05	9.525	3.18	1	1
TGA R/L3043(E) 🐠															0.43	0.8	0.05	9.525	3.18	1	1
TGA R/L3050(E)															0.50	1.2	0.05	9.525	3.18	1	1
TGA R/L3053(E) 🐠															0.53	1.2	0.05	9.525	3.18	1	1
TGA R/L3065(E) 🐠															0.65	1.2	0.05	9.525	3.18	1	1
TGA R/L3075(E)															0.75	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3080(E) 🐠															0.80	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3095(E)															0.95	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3100(E)															1.00	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3110(E)	•	•													1.10	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3120(E) 🐠															1.20	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3125(E)	•	•													1.25	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3130(E) 🐠															1.30	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3135(E)															1.35	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3140(E) 🐠															1.40	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3145(E)															1.45	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3150(E)	•														1.50	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3160(E) 🐠															1.60	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3165(E)															1.65	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3175(E)															1.75	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3185(E)															1.85	2.0	0.1*2	9.525	3.18	1	1
TGA R/L3200(E)	•														2.00	2.5	0.1*2	9.525	3.18	1	1
TGA R/L3220(E)															2.20	2.5	0.1*2	9.525	3.18	1	1
TGA R/L3230(E)															2.30	2.5	0.1*2	9.525	3.18	1	1
TGA R/L3250(E)															2.50	2.5	0.1*2	9.525	3.18	1	1
TGA R/L3265(E)															2.65	2.5	0.1*2	9.525	3.18	1	1
TGA R/L3270(E)															2.70	2.5	0.1*2	9.525	3.18	1	1
TGA R/L3280(E)															2.80	2.5	0.1*2	9.525	3.18	1	1
TGA R/L3300(E) 🐠															3.00	2.5	0.1*2	9.525	3.18	1	1

<sup>\*1</sup> Add E as the part number suffix for T1500A. Right-handed (R) inserts are used with right-handed holders. Indexable Head APM series can also be used.

### **Recommended Cutting Conditions**

Work Material	G	General Ste	el	M Stainl	ess Steel	S Exotic Alloy	Non-Fer	rous Metal
Tool Grades	AC530U	T2500Z	T1500A	AC5015S AC5025S	AC530U	AC5015S AC5025S	H1	DL1500
Cutting Speed vc (m/min)	50 to 200	100 to 180	100 to 180	50 to 200	50 to 200	20 to 80	up to 300	up to 300
Feed Rate f (mm/rev)	0.02 to 0.10	0.05 to 0.10	0.05 to 0.08	0.02 to 0.10	0.02 to 0.10	0.01 to 0.03	0.05	0.15

Insert (Threading,	60	°/5!	5° (	Gen	era	l-p	urp	ose	: Th	rea	ads) (	Coated C	Carbide	e /	DLC	/	Cerme	t) Di	mensions	s (mm)
6 + 11	AC5	015S	AC5	025S	AC10	)30U	DL1	500	T15	00A	Pitcl	า	Corner Radius	X Direction	Depth of Cut	Included Angle	Inscribed Circle	Thickness	Group	
Cat. No.	R	L	R	L	R	L	R	L	R	L	mm	Threads/Inch	RE	PDX	CDX	PNA	IC	S	No.	Fig
TTE R/L36002075			•		•		•	•		•	0.20 to 0.75	80 to 32	0.05	0.55	0.65	60	9.525	3.18	1	2
TTE R/L36005125											0.50 to 1.25	56 to 20	0.05	1.00	1.30	60	9.525	3.18	1	2
TTE R/L3601015											1.00 to 1.50	24 to 16	0.10	1.30	1.80	60	9.525	3.18	1	2
TTE R/L3601530											1.50 to 3.00	16 to 8	0.20	1.70	2.40	60	9.525	3.18	1	2
TTE R/L3554816			•		•					•	_	48 to 16	0.05	1.00	1.50	55	9.525	3.18	1	2
TTE R/L3552008											_	20 to 8	0.10	1.50	2.40	55	9.525	3.18	1	2

Right-handed (R) inserts are used with right-handed holders.

Indexable Head APM series can also be used.

Select applicable inserts for the holders by using matching group numbers.

<sup>\*2</sup> T1500A is RE = 0.2

<sup>\*</sup> Select applicable inserts for the holders by using matching group numbers.

Fig 1

## TGA type

rooving

4

Cut-off

External Grooving

( Coated Carbide / Cermet / Cemented Carbide)

Gı	ade	Cutting Edge Shape	GAN
Coated Carbide	AC530U	Honing	15°
Carbide	H1	Sharp Edged	25°
Coated Cermet	T2500Z	Honing	15°
Coated Cermet	T3000Z	Honing	15°
SUMIBORON	BN2000	Negative Land	5°
SUMIDIA	DA2200	Sharp Edged	15°

Figure shows right-handed (R) tool.

### Round Edged Grooving Insert

CW ±0.025

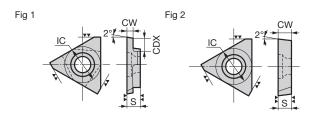
Dimensions (mm)

	AC5	30U	Н	11	T25	00Z	T30	00Z	Width	Maximum D	epth of Cut		Corner	Inscribed Circle	Thickness	Group	
Cat. No.	R	L	R	L	R	L	R	L	of Cut	External	Internal	Groove Depth  CDX	Radius <b>RE</b>	IC	S	No.	Fig
TGA R/L4050R									1.00	2.0	1.7	2.5	0.50	12.70	4.76	2	1
TGA R/L4075R									1.50	3.5	2.5	3.9	0.75	12.70	4.76	3	1
TGA R/L4100R							$\blacktriangle$		2.00	3.5	2.5	3.9	1.00	12.70	4.76	3	1
TGA R/L4125R							lack		2.50	5.0	2.5	5.4	1.25	12.70	4.76	4	1
TGA R/L4150R							lack		3.00	5.0	2.5	5.4	1.50	12.70	4.76	4	1
TGA R/L4200R									4.00	5.0	2.5	5.4	2.00	12.70	4.76	4	1

<sup>\*</sup> Select applicable inserts for the holders by using matching group numbers.

### **Recommended Cutting Conditions**

Work Material	G	General Ste	el	M	Stainless St	eel	Non-Fe	Hardened Steel	
Insert Grade	AC530U	T2500Z / T3000Z	T1500A	AC530U	T2500Z / T3000Z	T1500A	H1	DA2200	BN2000
Cutting Speed vc (m/min)	50 to 200	100 to 180	100 to 180	50 to 200	80 to 150	80 to 120	200 to 300	200 to 300	80 to 120
Feed Rate f (mm/rev)	0.02 to 0.10	0.05 to 0.10	0.05 to 0.08	0.02 to 0.10	0.05 to 0.08	0.05 to 0.08	0.05 to 0.15	0.05 to 0.15	0.03 to 0.07



### Insert Blank

(Uncompleted inserts: Width of cut, corner radius and rake angle modifications are required.)

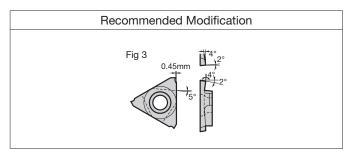
(Cermet / Cemented Carbide)

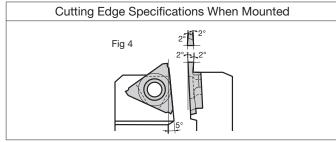
											Dimen	sions (ı	mm)
Cat. No.	KH	103	Н	1	EH:	510	T15	00A	Width of Cut	Maximum Groove Deoth	Inscribed Circle	Thickness	Fig
Gal. No.	R	L	R	L	R	L	R	L	CW	CDX	IC	S	rig
TGA R/L3-T18									1.85	(3.4)	9.525	3.18	1
TGA R/L3-T23									2.35	(3.4)	9.525	3.18	1
TGA R/L3-T31									3.18	_	9.525	3.18	2
TGA R/L4-T22									2.20	(4.8)	12.70	4.76	1
TGA R/L4-T37									3.75	(6.2)	12.70	4.76	1
TGA R/L4-T47									4.76	_	12.70	4.76	2

<Note> Figures in () for CDX are reference values

### Precautions when Modifying Inserts

When modifying the cutting edge, refer to the shapes in Fig 3 for the rake face, back taper, etc. Cutting edge specifications shown in Fig 4 are when the insert is mounted on the holder.





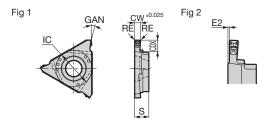
### Ordering TGA type Blanks and Special Inserts

Sumitomo Electric Hardmetal also accepts orders for insert blanks.

### ■ General Features

SumiTurn B-Groove (BF type) inserts with chipbreaker have been added to the TGA type grooving insert lineup to solve chip control problems.

- Features Achieves good chip control in a wide range of grooving processes.
  - Good chip control during final wide groove touch-up with traverse cutting.
  - Series covering grooving widths from 1.4mm to 4.5mm with a total of 60 stocked items.
  - The AC530U grade for a longer tool life is now in stock to cover various work materials from steel and stainless steel to non-ferrous metals.



Coaled Carbide	ACSSUU	Honing	15.

Note 1: Please note that inserts with edge width (CW) less than 1.85mm have different cutting edge distance (E2). Note 2: Figure shows right-handed (R) tool.



Chipbreaker Insert for Square Gro	oves BF typ	e (C	oated	d Ca	rbide	e) c	Dimens	ions (	mm
	AC530LL Width	May Donth of Cut	Maximum	Cornor	Innorihod		Cutting		

Chipbreaker Insert for Square Grooves BF type ( Coated Carbide) Dimensions (mm)  AC530U width Max Depth of Out Maximum Corner Inscribed Parties ( Cutting Course)												
	AC5	30U		Max. Dep	oth of Cut	Maximum Groove		Inscribed	Thickness	Cutting Edge	Group	
Cat. No.	R	L	of Cut	External	Internal	Depth CDX	Radius RE	Circle	s	Distance E2	No.	Fig
TGA R/L4140BF01	•	•	1.40	2.0	1.7	2.5	0.1	_	4.76	_	2	2
TGA R/L4165BF01			1.65	3.5	2.5	3.9	0.1	12.70	4.76	0.175	3	2
TGA R/L4190BF01			1.90	3.5	2.5	3.9	0.1	12.70	4.76	_	3	1
TGA R/L4220BF01			2.20	3.5	2.5	3.9	0.1	12.70	4.76	_	3	1
TGA R/L4270BF02			2.70	5.0	2.5	5.4	0.2	12.70	4.76	_	4	1
TGA R/L4320BF02			3.20	5.0	2.5	5.4	0.2	12.70	4.76	-	4	1
TGA R/L4420BF02			4.20	5.0	2.5	5.4	0.2	12.70	4.76	_	4	1
TGA R/L4150BF			1.50	3.5	2.5	3.9	0.2	12.70	4.76	0.250	3	2
TGA R/L4165BF			1.65	3.5	2.5	3.9	0.2	12.70	4.76	0.175	3	2
TGA R/L4175BF			1.75	3.5	2.5	3.9	0.2	12.70	4.76	0.125	3	2
TGA R/L4185BF			1.85	3.5	2.5	3.9	0.2	12.70	4.76	0.075	3	2
TGA R/L4200BF			2.00	3.5	2.5	3.9	0.2	12.70	4.76	-	3	1
TGA R/L4220BF			2.20	3.5	2.5	3.9	0.2	12.70	4.76	_	3	1
TGA R/L4230BF			2.30	3.5	2.5	3.9	0.2	12.70	4.76	_	3	1
TGA R/L4250BF			2.50	5.0	2.5	5.4	0.3	12.70	4.76	_	4	1
TGA R/L4265BF			2.65	5.0	2.5	5.4	0.3	12.70	4.76	-	4	1
TGA R/L4270BF			2.70	5.0	2.5	5.4	0.3	12.70	4.76	_	4	1
TGA R/L4280BF			2.80	5.0	2.5	5.4	0.3	12.70	4.76	-	4	1
TGA R/L4300BF			3.00	5.0	2.5	5.4	0.3	12.70	4.76	_	4	1
TGA R/L4320BF			3.20	5.0	2.5	5.4		12.70	4.76	_	4	1
TGA R/L4330BF			3.30	5.0	2.5	5.4	0.3	12.70	4.76	_	4	1
TGA R/L4350BF			3.50	5.0	2.5	5.4	0.3	12.70	4.76	-	4	1
TGA R/L4370BF			3.70	5.0	2.5	5.4	0.3	12.70	4.76	_	4	1
TGA R/L4390BF			3.90	5.0	2.5	5.4	0.3	12.70	4.76	_	4	1
TGA R/L4400BF			4.00	5.0	2.5	5.4	0.4	12.70	4.76	_	4	1
TGA R/L4410BF			4.10	5.0	2.5	5.4	0.4	12.70	4.76	-	4	1
TGA R/L4420BF			4.20	5.0	2.5	5.4	0.4	12.70	4.76	_	4	1
TGA R/L4430BF			4.30	5.0	2.5	5.4	0.4	12.70	4.76	-	4	1
TGA R/L4440BF			4.40	5.0	2.5	5.4	0.4	12.70	4.76	_	4	1
TGA R/L4450BF			4.50	5.0	2.5	5.4	0.4	12.70	4.76	_	4	1

### **Recommended Cutting Conditions**

Work Material	Machining	Cuttir	ng	(	iroov	e Widtl	h CW	/ (mm)	
Work	Details	Conditi	ons	1.4 to	2.3	2.5 to	3.3	3.5 to	4.5
	Cutting S	Speed <b>vc</b> (r	n/min)	50 to	180	50 to	180	50 to	180
P		Feed Rate f (	mm/rev)	0.03 to	0.12	0.04 to	0.12	0.05 to	0.12
General Steel	Grooving	Depth of Cut	External	up to	3.5	up to	5.0	up to	5.0
neral			Internal	up to	2.5	up to	2.5	up to	2.5
Ge	Traverse	Feed Rate f (	mm/rev)	0.03 to	0.10	0.05 to	0.10	0.07 to	0.12
	Cutting	Depth of Cut	ap (mm)	up to	0.3	up to	0.5	up to	0.7
	Cutting 9	Speed vc (r	n/min)	50 to	160	50 to	160	50 to	160
Steel 🔽		Feed Rate f (	mm/rev)	0.03 to	0.12	0.04 to	0.12	0.05 to	0.12
Stee	Grooving	Depth of Cut	External	up to	3.5	up to	5.0	up to	5.0
Stainless			Internal	up to	2.5	up to	2.5	up to	2.5
Stail	Traverse	Traverse Feed Rate f (mm/rev) 0.03 to 0.10 0.05 to 0.10 0.07						0.07 to	0.12
	Cutting	Depth of Cut	ap (mm)	up to	0.3	up to	0.5	up to	0.7

<sup>\*</sup> Select applicable inserts for the holders by using matching group

## SGE series



Clamp-on for External Shallow Grooves

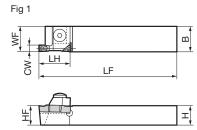
Grooving Tools

Cut-off Grooving

External

Internal





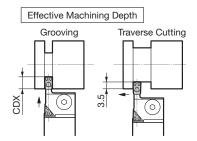


Figure shows right-handed (R) tool.

Holder						Parts	

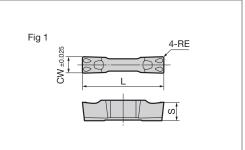
Holder															Dimensions (mm)		
	Sto	ock	Height	Width	Overall	Cutting Edge	Cutting Edge	Head	Width	Maximum Groove			Clamp Plate	Bolt	Spring	Wrench	
Cat. No.	R	L	Н	В	Length	Distance		LH	of Cut	Depth CDX	Applicable Insert	Fig	P				
SGE R/L1016-3	•	•	10	16	120	15.7	10	19.5	3.0	6.2		1		EDIT OF 4 ON T			
SGE R/L1216-3			12	16	120	15.7	12	19.5	3.0	6.2	GEN3000	1	GCL R/L-3	FBH 0516NT	GSP-5	LH025NT	
SGE R/L1616-3			16	16	120	15.7	16	22.0	3.0	8.0	GENSOCO	1	GOL N/L-3	FBH 0520NT	GSF-5	LHUZSINI	
SGE R/L2020-3			20	20	120	19.7	20	22.0	3.0	8.0		1		1 D11 0320111			
SGE R/L1016-45			10	16	120	15.7°	10	19.5		6.2		1		FBH 0516NT			
SGE R/L1216-45			12	16	120	15.7°	12	19.5	4.0	6.2	GEN40OO	1	GCL R/L-4	1 011 03 10101	GSP-5	LH025NT	
SGE R/L1616-45			16	16	120	15.7°	16	22.0	5.0	8.0	GEN5000	1	GOL N/L-4	FBH 0520NT	GSF-5	LITOZJIVI	
SGE R/L2020-45			20	20	120	19.7°	20	22.0		8.0		1		FBH 0320IVI			
SGE R/L1020-6			10	20	120	19.7	10	19.5	6.0	6.2		1		FBH 0516NT			
SGE R/L1220-6			12	20	120	19.7	12	19.5	6.0	6.2	GEN6000	1	GCL R/L-6	LPU 02 10141	GSP-5	LH025NT	
SGE R/L1620-6			16	20	120	19.7	16	22.0	6.0	8.0	GLINOUCC	1	GOL N/L-0	FBH 0520NT	G3F-3	LHUZSINI	
SGE R/L2020-6			20	20	120	19.7	20	22.0	6.0	8.0		1		FDH U32UNT			
*Width of cut CW - 4mm when t	he ir	ncel	rt is mo	nunted	Widtl	n of cu	t CW i	s 0 5m	m lara	er when	a 5mm insert is n	noi ir	nted				

\*Width of cut CW = 4mm when the insert is mounted. Width of cut CW is 0.5mm larger when a 5mm insert is mounted.

Insert ( Coated Carbide)

Dimensions (mm)

Cat. No.	ACZ150	Width of Cut	Overall Length	Thickness	Corner Radius	Applicable Holder	Fig
	¥	CW	L	S	RE		
GEN 3002		3.0	20	4.64	0.2	SGE R/L 0000-3	1
GEN 3004		3.0	20	4.64	0.4	3GE N/L 0000-3	1
GEN 4002		4.0	20	4.50	0.2	SGE R/L 0000-45	1
GEN 4004		4.0	20	4.50	0.4	3GE N/L 0000-43	1
GEN 5002		5.0	20	4.50	0.2	SGE R/L 0000-45	1
GEN 5004		5.0	20	4.50	0.4	3GE N/L 0000-43	1
GEN 6002		6.0	20	4.50	0.2	SGE R/L 0000-6	1
GEN 6004		6.0	20	4.50	0.4	3GE N/L 0000-6	1



Internal

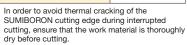
Dimensions (mm)

တ‡

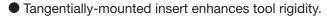
IC

#### Cutting Conditions H Hardened Steel Cutting Speed vc (m/min) 80 to 120 0.04 to 0.08 Feed Rate f (mm/rev)

CDX



### ■ Features



- Double clamping holder design improves stability during continuous and interrupted grooving. Can also be used for traverse cutting.
- Long tool life for interrupted cutting applications with the new Coated SUMIBORON BNC30G grade for grooving (BN2000 recommended for continuous cutting).
- Suited for grooving various types of hardened steel. Variety of widths of cut available from 1.5 to 6.0mm.

Hardened Steel,

Shallow Grooves Double Clamp







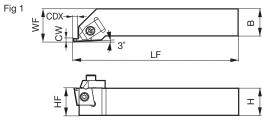


Figure shows right-handed (R) tool.

Fig 1

Holder	
--------	--

Holder												Parts				Dime	ensions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge	Width of Cut	Maximum Groove Depth	Craun		Clamp Plate	Cap Sc	rew	Flat Head Screw	Spring	Wrench
Cat. No.	R		Н	В	LF	WF		CW	CDX	Group No.	Fig			(N·m)			
GWB R/L 2525-45	•	•	25	25	151 (150)	30	25	1.5 ≤ CW ≤ 4.5	3.5 to 5.0	1	1	TF72/TF73	DV0500T	F 0	BFTX0511N	CCDOG	TRX20
GWB R/L 2525-60	•	•	25	25	151	30	25	4.5 < CW ≤ 6.0	5.0	2	1	117/2/117/3	BX0520T	5.0	DEIVOSIIN	G3P06	IRAZU

Dimensions in () are for width of cut (CW) of 3.0 or less. Right-handed (R) tool holders are applicable with right-handed (R) inserts and clamp plates (TF72).

Insert (SUMIBORON)												
Cat. No.	BN2	2000 BNC300		30G			Inscribed Circle	Thickness	Group	Applicable Holder	Eia	Т
Cat. No.	R	L	R	L	CW	CDX	IC	S	No.	Applicable Holder	rig	
CGA R/L 1504150					1.5	3.5	15.875	4.76			1	
CGA R/L 1504200					2.0	3.5	15.875	4.76			1	
CGA R/L 1504250					2.5	4.0	15.875	4.76			1	
CGA R/L 1504300					3.0	4.0	15.875	4.76	1	GWB R/L 2525-45	1	
CGA R/L 1504350					3.5	5.0	15.875	4.76			1	
CGA R/L 1504400					4.0	5.0	15.875	4.76			1	
CGA R/L 1504450					4.5	5.0	15.875	4.76			1	
CGA R/L 1506500					5.0	5.0	15.875	6.35			1	
CGA R/L 1506550					5.5	5.0	15.875	6.35	2	GWB R/L 2525-60	1	
00 "									1			

Cat. No.						l Groove Depth Inscribed Circle 1			Group	Applicable Holder	Fig	
Cat. No.	R	L	R	L	CW	CDX	IC	S	No.	Applicable Holder	ı ıy	
CGA R/L 1504150					1.5	3.5	15.875	4.76				
CGA R/L 1504200					2.0	3.5	15.875	4.76			1	
CGA R/L 1504250					2.5	4.0	15.875	4.76			1	
CGA R/L 1504300					3.0	4.0	15.875	4.76	1	GWB R/L 2525-45	1	
CGA R/L 1504350					3.5	5.0	15.875	4.76			1	
CGA R/L 1504400					4.0	5.0	15.875	4.76			1	
CGA R/L 1504450					4.5	5.0	15.875	4.76			1	
CGA R/L 1506500					5.0	5.0	15.875	6.35			1	
CGA R/L 1506550					5.5	5.0	15.875	6.35	2	GWB R/L 2525-60	1	
CGA R/L 1506600					6.0	5.0	15.875	6.35			1	

* It is also possible to manufactur	widths of cut other than the	hose listed above (CW =	1.5 to 6.0mm).
-------------------------------------	------------------------------	-------------------------	----------------

### Grade Features

Grade Fe	atures				Recommended Cuttin	ng Conditions
Grade	Application Range	Features	HV(GPa)	TRS(GPa)	Cutting Conditions	H Hardened Steel
BN2000	Continuous	General-purpose grade with superior wear	31 to 34	1.0 to 1.1	Cutting Speed vc (m/min)	80 to 120
3	Grooving	resistance	31 10 34	1.0 to 1.1	Feed Rate f (mm/rev)	0.04 to 0.08
BNC30G	Interrupted Grooving	Grade suited to interrupted grooving. Features tough substrate with special ceramic coating that exhibits both peel-off and wear resistance.	33 to 35	1.1 to 1.2	* In order to avoid thermal crack SUMIBORON cutting edge du cutting, ensure that the work n	ring interrupted

#### Application Examples

Application Examples				
Tooling	Work Material	Tool Cat. No.	<b>Cutting Conditions</b>	Tool Life Comparison
Shaft Grooving: Continuous  Required Surface Roughness for Groove Sides: Ra 0.4µm	Carburised steel 58 to 62 HRC	CGAR1504200 BN2000	vc : 120m/min f : 0.05mm/rev Groove Depth: 2mm Dry	GWB series BN2000 Conventional Tool Chipping Chipping No. of Workpieces (pcs.)
Spline Grooving: Interrupted	Carburised steel 58 to 62 HRC	CGAR1504200 BNC30G	vc: 100m/min f: 0.05mm/rev Groove Depth: 1.6mm Dry	GWB series BNC30G Competitor's Product  O 200 400 600 No. of Workpieces (pcs.)

## **BNGG** series



■ Features

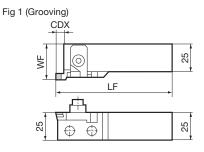
- Improved rigidity for longer tool life Strong clamping reduces insert fracture and holder chatter
- Enhanced tooling for 2mm fine grooves or threading Grooving and threading can be done by changing the support



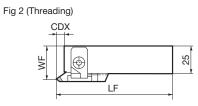


External Grooving Grooving 1(0)





Clamp-on for Hardened Steel Shallow Grooves



Holder

CBN

			Stoc			Groove Depth	Overall Length			
		Cat. No.	_		Distance			Applicable Insert		
			R	L	WF	CDX	LF			
		BNGG R/L2525-200	•		30.5	4	150	BNGNT0200 R/L	1	
Ш	g	BNGG R/L2525-250			30.5	4	150	BNGNT0250 R/L	1	
Ш	Grooving	BNGG R/L2525-300			30.5	5	150	BNGNT0300 R/L	1	
Ш	8	BNGG R/L2525-400			30.5	6	151	BNGNT0400 R/L	1	
Ш	G	BNGG R/L2525-500			30.5	6	151	BNGNT0500 R/L	1	
Ш		BNGG R/L2525-600			30.5	7	152	BNGNT0600 R/L	1	
	Threading	BNGG R/L2525-TT	•		28.5	5	150	BNTT1020 R/L, BNTT1530 R/L	2	

Inserts are not included with the tool holders.

<sup>\*</sup> Holder body is universal. The holder can be configured for different groove widths or threading by changing the support.

nsert (	SUMIBORON)

Dimensions (mm)

ınser	T (SUMIBORON)															Dimensions (mm)
	Oal Na	BN	250	BN.	X20	BN	350	3NX2	5 Width	Groove	Corner Radius		Cutting Edge			
	Cat. No.	R	L	R	L	R	L	RL	- CW	CDX	RE		Distance WF3	HOIGER	rig	Fig 1 (Grooving) Fig 2 (Threading)  Back Taper 30' CDX
	BNGNT0200 R/L	•				•						25	6.0	BNGG R/L 2525-200	1	ST ST ST ST ST ST ST ST ST ST ST ST ST S
_ ا م	BNGNT0250 R/L								2.5	4.0	0.2	25	6.0	BNGG R/L 2525-250	1	17
Ϋ́	BNGNT0300 R/L								3.0	5.0	0.4	25	6.0	BNGG R/L 2525-300	1	2-RE 17
§	BNGNT0400 R/L								4.0	6.0	0.4	26	6.0	BNGG R/L 2525-400	1	Back Taper 30'
ਾਂ	BNGNT0500 R/L								1			-		BNGG R/L 2525-500		
	BNGNT0600 R/L								6.0	7.0	0.4	27	6.0	BNGG R/L 2525-600	1	
Threading	BNTT1020 R/L								Pitch 1	.0 to 2.0	0.14	25	4.0	BNGG R/L 2525-TT	2	6
Three	BNTT1530 R/L								Pitch 1	.5 to 3.0	0.2	25	4.0	BNGG N/L 2323-11	2	

### **Parts**

	Support	Clamp Plate	Adjustment Screw	Spring	Cap Screw	Wre	nch
Applicable Holder					O TIME		
BNGG R/L2525-200	BNGS R/L 200				BX0615	LH050	
BNGG R/L2525-250	BNGS R/L 250						
BNGG R/L2525-300	BNGS R/L 300						
BNGG R/L2525-400	BNGS R/L 400	BNGC R/L	FMJ	GSP06	(For Clamp Plate)	(For Clamp Plate)	1.8×45
BNGG R/L2525-500	BNGS R/L 500				(For Support)		
BNGG R/L2525-600	BNGS R/L 600				(i or support)	(For Support)	
BNGG R/L2525-TT	BNGS R/L TT						

### **Recommended Cutting Conditions**

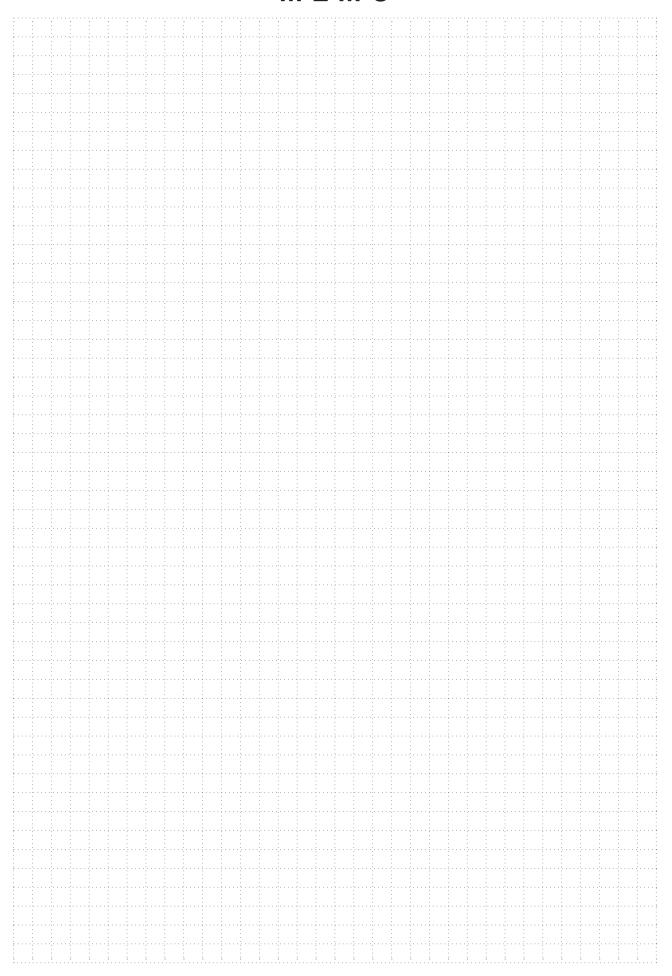
#### Grooving

<b>Cutting Conditions</b>	Hardened Steel
Cutting Speed vc (m/min)	80 to 120
Feed Rate f (mm/rev)	0.03 to 0.07

### Threading

<b>Cutting Conditions</b>	H Hardened Stee
Cutting Speed vc (m/min)	80 to 120
Feed Rate f (mm)	Maximum Pitch 3.0

### **MEMO**



Face Grooving

### **GNDF** type

Holder

\* For traverse cutting (groove expansion), use a multi-functional or profiling insert.

Face Grooving Clamp-on

> (Outer Circumference)
> Min. Bore Dia.
> (Outer Circumference)
> Min. Bore Dia.
> (Inn. Bore Dia. (Inner Circumference)

> > Dimensions (mm)

**Parts** 

Grooving Tools

Grooving

Cut-off

External

Face

Internal

CBN

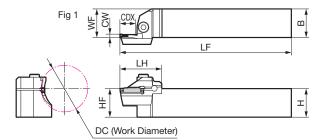


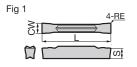
Figure shows right-handed (R) tool.

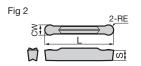
		St	ock	Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Machining diameter	Min. Bore Dia	Width of Cut	Maximum Groove Depth			Cap Scr	ew	Wrench
	Cat. No.	R	L	Н	В	LF	WF	HF	LH	DC	Inner Circumference	CW	CDX	Applicable Insert	Fig		(N·m)	
	ONDE D/I 0000K 040 005			00	00	105	00	00	05.0	05 to 45	00	0.0	40		4			-
П	GNDF R/L2020K-312-035 GNDF R/L2020K-312-040	•		20	20	125 125	20	20	35.6 35.6	35 to 45 40 to 55	29 34	3.0	12 12		1			
	GNDF R/L2020K-312-040	•		20	20	125	20	20	41.6	50 to 70	44	3.0	18		1			
	GNDF R/L2020K-318-065	•		20	20	125	20	20	41.6	65 to 100	59	3.0	18	GC□ N30○○-□□	1	BX0520	5.0	LH040
Н	GNDF R/L2020K-318-090	•		20	20	125	20	20		90 to 150	84	3.0	18	GOD 1100000 DD	1	DAOSZO	0.0	LI 1040
Н	GNDF R/L2020K-318-140	•		20	20	125	20	20		140 to 200	134	3.0	18		1			
il	GNDF R/L2020K-318-180	•	•	20	20	125	20	20		180 to 300	174	3.0	18		1			
H	GNDF R/L2020K-418-040	•	•	20	20	125	20	20	41.6	40 to 55	32	4.0	18		1			
П	GNDF R/L2020K-423-050	•	•	20	20	125	20	20	46.6	50 to 70	42	4.0	23		1			
П	GNDF R/L2020K-423-065			20	20	125	20	20	46.6	65 to 90	57	4.0	23		1			
П	GNDF R/L2020K-423-085	•	•	20	20	125	20	20	46.6	85 to 130	77	4.0	23	GC□ N40○○-□□	1	BX0520	5.0	LH040
	GNDF R/L2020K-423-125			20	20	125	20	20	46.6	125 to 200	117	4.0	23		1			
П	GNDF R/L2020K-423-180	•		20	20	125	20	20	46.6	180 to 300	172	4.0	23		1			
	GNDF R/L2020K-423-280			20	20	125	20	20	46.6	280 to 1000	272	4.0	23		1			
	GNDF R/L2020K-523-050			20	20	125	20	20	46.6	50 to 70	40	5.0	23		1			
П	GNDF R/L2020K-523-065			20	20	125	20	20	46.6	65 to 90	55	5.0	23		1			
	GNDF R/L2020K-523-085			20	20	125	20	20	46.6	85 to 130	75	5.0	23	GC□ N50○○-□□	1	BX0520	5.0	LH040
П	GNDF R/L2020K-523-125			20	20	125	20	20	46.6	125 to 200	115	5.0	23		1	DAUSZU	3.0	LI 1040
П	GNDF R/L2020K-523-180	•	•	20	20	125	20	20		180 to 300	170	5.0	23		1			
П	GNDF R/L2020K-523-280			20	20	125	20	20		280 to 1000	270	5.0	23		1			
	GNDF R/L2020K-623-050	•	•	20	20	125	20	20	46.6	50 to 75	38	6.0	23		1			
	GNDF R/L2020K-623-070		•	20	20	125	20	20		70 to 110	58	6.0	23		1			
П	GNDF R/L2020K-623-100	•	•	20	20	125	20	20		100 to 200	88	6.0	23	GC□ N60○○-□□	1	BX0520	5.0	LH040
П	GNDF R/L2020K-623-180			20	20	125	20	20		180 to 300	168	6.0	23		1			
Н	GNDF R/L2020K-623-280		•	20	20	125	20	20		280 to 1000	268	6.0	23		1			
Н	GNDF R/L2525M-312-035			25	25	150	25	25	35.6	35 to 45	29	3.0	12		1			
П	GNDF R/L2525M-312-040 GNDF R/L2525M-318-050			25 25	25 25	150 150	25 25	25 25	35.6 41.6	40 to 55 50 to 70	34 44	3.0	12 18		1			
П	GNDF R/L2525M-318-065			25	25	150	25	25		65 to 100	59	3.0	18	GC□ N30○○-□□	1	BX0520	E 0	LH040
	GNDF R/L2525M-318-090			25	25	150	25	25		90 to 150	84	3.0	18		1	BAUSZU	5.0	LI 1040
Н	GNDF R/L2525M-318-140			25	25	150	25	25		140 to 200	134	3.0	18		1			
П	GNDF R/L2525M-318-180	•		25	25	150	25	25		180 to 300	174	3.0	18		1			
H	GNDF R/L2525M-418-040		•	25	25	150	25	25	41.6	40 to 55	32	4.0	18		1			
1	GNDF R/L2525M-423-050	•	•	25	25	150	25	25	46.6	50 to 70	42	4.0	23		1			
	GNDF R/L2525M-423-065	•	•	25	25	150	25	25	46.6	65 to 90	57	4.0	23		1			
	GNDF R/L2525M-423-085	•	•	25	25	150	25	25	46.6	85 to 130	77	4.0	23	GC□ N40○○-□□	1	BX0520	5.0	LH040
ı	GNDF R/L2525M-423-125	•	•	25	25	150	25	25	46.6	125 to 200	117	4.0	23		1			
١	GNDF R/L2525M-423-180			25	25	150	25	25	46.6	180 to 300	172	4.0	23		1			
	GNDF R/L2525M-423-280			25	25	150	25	25	46.6	280 to 1000	272	4.0	23		1			
	GNDF R/L2525M-523-050			25	25	150	25	25	46.6	50 to 70	40	5.0	23		1			
	GNDF R/L2525M-523-065			25	25	150	25			65 to 90	55	5.0	23		1			
	GNDF R/L2525M-523-085			25	25	150	25			85 to 130	75	5.0	23	GC□ N5000-□□	1	BX0520	5.0	LH040
	GNDF R/L2525M-523-125	•	•	25	25	150	25			125 to 200	115	5.0	23	CCL 1400000100	1	DAOSEO	0.0	
	GNDF R/L2525M-523-180	•	•	25	25	150	25			180 to 300	170	5.0	23		1			
	GNDF R/L2525M-523-280	•	•	25	25	150	25			280 to 1000		5.0	23		1			
	GNDF R/L2525M-623-050			25	25	150	25			50 to 75	38	6.0	23		1			
	GNDF R/L2525M-623-070			25	25	150	25	25		70 to 110	58	6.0	23	000 N0000 55	1	DVOCOO		1.110.40
	GNDF R/L2525M-623-100			25	25	150	25			100 to 200	88	6.0	23			BX0520	5.0	LH040
	GNDF R/L2525M-623-180			25	25	150	25			180 to 300 280 to 1000		6.0	23 23		1			
Į	GNDF R/L2525M-623-280	_		25	25			25	40.0	200 10 1000	268	6.0	23		1			

Select holders and inserts with matching width of cut (CW).

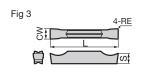
The maximum groove depth CDX is the figure during grooving.

### Inserts for GNDF type





Dimensions (mm)



( Coated Carbide / Cermet / Cemented Carbide)

### **Grooving / Traverse Cutting**

•							_									,
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut  W Tolerance	Radius	Overall Length	Thirknace	Pcs/Pack	Fig
GCM N3002-MG						•		•	_	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG				•		•			_	3.0	±0.03	0.4	21.1	3.8		1
<b>GCM N4002-MG</b>									_	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG									_	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG									_	4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-MG									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG									_	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-MG									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8		1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML										4.0	±0.03	0.2	26.4	4.0		1
N4004-ML										4.0	±0.03	0.4	26.4	4.0		1
N4008-ML										4.0	±0.03	0.8	26.4	4.0	5	1
GCM N5004-ML									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML									_	5.0	±0.03	0.8	26.4	4.1		1
GCM N6004-ML										6.0	±0.03	0.4	26.4	4.5		1
N6008-ML									_	6.0	±0.03	0.8	26.4	4.5		1

Profiling /	Radius	Grooving /	Necking
-------------	--------	------------	---------

rionning / nac	ııu	5	GI	U	וענ	ΠĆ	<i>)</i> /	IV	CC	KIIIg			Din	nensi	ons (	mm)
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U		С		Corner Radius		Thickness	Pcs/Pack	Fig
GCM N3015-RN										3.0	±0.03	1.5	22.6	3.8		2
N4020-RN										4.0	±0.03	2.0	28.2	4.0	_	2
N5025-RN										5.0	±0.03	2.5	28.3	4.1	5	2
N6030-RN										6.0	±0.03	3.0	28.3	4.5		2

Cat. No.     Width of Cut CW     Corner Overall Radius Length     Thickes     S Fig       GCG N3002-GA     3.0 ±0.025 0.2   21.1   3.8     3       GCG N4004-GA     4.0 ±0.025 0.4   26.4   4.0     5       N5004-GA     5.0 ±0.025 0.4   26.4   4.1       N6004-GA     6.0 ±0.025 0.4   26.4   4.5	Non-Ferrous	Me	tals							Dir	nensi	ons (	mm)
GCG N3002-GA	Cat. No.	H10					С	W	Radius		Thickness	cs/P	Fig
<b>N5004-GA</b> ●   <b>5.0</b> ±0.025 0.4 26.4 4.1   5   3	GCG N3002-GA	•			$\top$	+				21.1	3.8		3
N5004-GA   ●	GCG N4004-GA						4.0	±0.025	0.4	26.4	4.0	_	3
N6004-GA ●	N5004-GA						5.0	±0.025	0.4	26.4	4.1	၁	3
	N6004-GA						6.0	±0.025	0.4	26.4	4.5		3

#### Grooving / Cut-off

Grooving / Cu	ıt-c	OΠ											Dir	nensi	ons (	mm)
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut	Radius	Overall Length		Pcs/Pack	Fig
	Ă	Ă	⋖	×	Ä	Ä	⋖	X	-		Tolerance		L	S	ď	
GCM N3002-GG		•	•				•		_	3.0	±0.03					1
N3004-GG											±0.03	_		-		1
GCM N4002-GG									_	4.0	±0.03	-	-	-		1
N4004-GG									_		±0.03	_	_	-	5	1
GCM N5002-GG									_	5.0	±0.03				J	1
N5004-GG									_	5.0	±0.03	_	_	-		1
GCM N6002-GG									_	6.0	±0.03	-	-	-		1
N6004-GG									_	6.0	±0.03					1
GCM N3002-GL									_	3.0	±0.03					1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL									_	4.0	±0.03					1
N4004-GL									_	4.0	±0.03	0.4	26.4	4.0	5	1
GCM N5002-GL									_	5.0	±0.03	0.2	26.4	4.1	5	1
N5004-GL									—	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL									—	6.0	±0.03					1
GCM N3002-GF	П									3.0	±0.03	0.2	21.1	3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF	П	•	•				•	•	•	4.0	±0.03	0.2	26.4	4.0		1
N4004-GF										4.0	±0.03	0.4	26.4	4.0	_	1
GCM N5002-GF			•				•			5.0	±0.03				5	1
N5004-GF								•	_	5.0	±0.03	_	_			1
GCM N6002-GF		•	•					•		6.0	±0.03	_	_	-		1
N6004-GF					•	•	ĺ	•	_	6.0	±0.03	-	-	-		1
	_	_		_				_				-				

### Part Number Suffix Code (Chipbreakers)

		( -		,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Cuantina /	GG	Grooving / General-purpose			
Grooving /	GL	Grooving / Low-feed			
Cut-off	GF	Grooving / Low cutting force			

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

Face Grooving

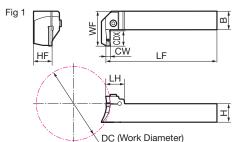
# GNDFS type



\* For traverse cutting (groove expansion), use a multi-functional or profiling insert. Deep Face Grooving L-Shaped (Side Cut) Clamp-on

Grooving Tools

Cut-off



DC (Work Diameter)

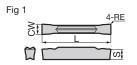
Max. Bore Dia.
(Outer Circumference)
Min. Bore Dia.
(Outer Circumference)
Min. Bore Dia.
(Inner Circumference)

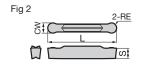
Figure shows right-handed (R) tool.

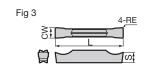
ŀ	Holder									Figure shows I	right-hande	ed (R) t	ool.			Parts	Dime	nsions (mm)
П		Sto	ock		M.C. III	Overall		Cutting		Machining		Width	Maximum			Cap Sci	rew	Wrench
	Cat. No.			Height	vviatn	Length	Edge Distance	Edge Height	Head	diameter	Min. Bore Diameter	of Cut	Groove Depth	Appliachle Incort	Eia	BX0520		
	Cat. NO.	R	L	Н	В	LF	WF	HF	LH	DC	Inner Circumference	CW	CDX	Applicable Insert	rig	BX0620	(N·m)	
	GNDFS R/L2525M-620-070			25	25	150	47	25	25	70 to 100	58	6.0	20		1			
	GNDFS R/L2525M-620-100			25	25	150	47	25	25	100 to 200	88	6.0	20		1			
Ц	GNDFS R/L2525M-620-180			25	25	150	47	25	25	180 to 300	168	6.0	20	GC□ N60○○-□□	1	BX0520	5.0	LH040
Ш	GNDFS R/L2525M-620-280			25	25	150	47	25	25	280 to 1000	268	6.0	20		1			
L	GNDFS R/L2525M-620-450			25	25	150	47	25	25	450 up	438	6.0	20		1			
Ш	GNDFS R/L2525M-820-070			25	25	150	47	25	30	70 to 100	54	8.0	20		1			
Ш	GNDFS R/L2525M-820-100			25	25	150	47	25	30	100 to 200	84	8.0	20		1			
Ш	GNDFS R/L2525M-820-180			25	25	150	47	25	30	180 to 300	164	8.0	20	GCM N80○○-□□	1	BX0620	6.0	LH050
	GNDFS R/L2525M-820-280			25	25	150	47	25	30	280 to 1000	264	8.0	20		1			
	GNDFS R/L2525M-820-450			25	25	150	47	25	30	450 up	434	8.0	20		1			

Select holders and inserts with matching width of cut (CW). The maximum groove depth CDX is the figure during grooving.

### Inserts for GNDFS type







( Coated Carbide / Cermet / Cemented Carbide)

### Grooving / Traverse Cutting

Grooving / Tra	ave	ers	se	C	utt	in	g						Dir	nensi	ons (	(mm)
Cat. No.	C8025P	C8035P	C830P	C425K	C5015S	C5025S	C520U	C530U	72500A	С	of Cut	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N6004-MG	4	<	٩	<b>Q</b>	<	V	٩	<b>Q</b>	_	6.0	Tolerance ±0.03	_	26.4	S	_	1
N6008-MG									_	6.0	±0.03	-	-	-		1
GCM N8004-MG	•	•		Ŏ	•	ŏ		•	_	8.0	±0.04		-	-	5	1
N8008-MG									_	8.0	±0.04	0.8	28.8	6.0		1
GCM N6004-ML									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-ML									_	6.0	±0.03	0.8	26.4	4.5	5	1
GCM N8004-ML									_	8.0	±0.04	0.4	28.8	6.0	٦	1
N8008-ML									_	8.0	±0.04	0.8	28.8	6.0		1

Profiling /	Radius	Grooving /	Necking
	0 0	(0)(0)	

r ronning / riac	110		٠.	0	, v i		"		-	111119			DII	nensi	ons (	(HIIII)
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U		С		Corner Radius	Length	Thickness	Pcs/Pack	Fig
GCM N6030-RN										6.0	±0.03	3.0	28.3	4.5	5	2

Non-Ferrous I	Me	eta	ıls							Dir	nensi	ons (	mm)
Cat. No.	H10						С		Radius		Thickness	Pcs/Pack	Fig
GCG N6004-GA							6.0	±0.025	0.4	26.4	4.5	5	3

#### Grooving / Cut-off

Grooving / Ct				Dir	nensı	ons (	mm)									
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	C	of Cut <b>W</b> Tolerance	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N6002-GG		•			•				_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GG									_	6.0	±0.03	0.4	26.4	4.5	5	1
GCM N8004-GG									_	8.0	±0.04	0.4	28.8	6.0		1
GCM N6002-GL									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL									—	6.0	±0.03	0.4	26.4	4.5	5	1
GCM N8004-GL										8.0	±0.04	0.4	28.8	6.0		1
GCM N6002-GF									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GF									_	6.0	±0.03	0.4	26.4	4.5	5	1
GCM N8002-GF									_	8.0	±0.04	0.2	28.8	6.0	J	1
N8004-GF									_	8.0	±0.04	0.4	28.8	6.0		1

### Part Number Suffix Code (Chipbreakers)

		( -		,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Craculas /	GG	Grooving / General-purpose			
Grooving /	GL	Grooving / Low-feed			
Cut-off	GF	Grooving / Low cutting force			

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

### GNDIS type





Internal Grooving Clamp-on

Cut-off Grooving

External

Medium Internal Grooving O

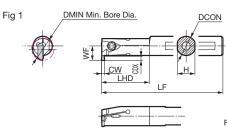


Figure shows right-handed (R) tool.

Holder

Holder														Dimensions (mm)	
	Sto	ock	Diameter	Height	Overall	Head	Cutting Edge	Min. Bore		Maximum Groove			Flat Head S	crew	Wrench
Cat. No.	R	L	DCON	Н	Length	LHD	Distance	Dia.	CW	Depth	Applicable Insert			(N·m)	
GNDIS R/L1214-T1526			12	11	150	30	9.0	14	1.5	2.6		1			
GNDIS R/L1214-T1536			12	11	150	30	10.0	14	1.5	3.6		1	BFTX0409N	3.4	LT15
GNDIS R/L1616-T1536			16	15	160	35	11.5	16	1.5	3.6	GXM N150005S-GF	1			
GNDIS R/L1620-T1546			16	15	160	40	14.5	20	1.5	4.6		1	BFTX0511N	5.0	LT20
GNDIS R/L2025-T1566			20	19	180	40	19.0	25	1.5	6.6			BLIVOSTII	5.0	LIZU
GNDIS R/L1214-T2026			12	11	150	30	9.0	14	2.0	2.6		1			
GNDIS R/L1214-T2036			12	11	150	30	10.0	14	2.0	3.6		1 BFTX0409N	3.4	LT15	
GNDIS R/L1616-T2036			16	15	160	35	11.5	16	2.0	3.6	GXM N2002S-□□	1			
GNDIS R/L1620-T2046			16	15	160	40	14.5	20	2.0	4.6		1	BFTX0511N	5.0	LT20
GNDIS R/L2025-T2066			20	19	180	40	19.0	25	2.0	6.6		1	BLIVOSTII	5.0	LIZU
GNDIS R/L1214-T3026			12	11	150	30	9.0	14	3.0	2.6		1			
GNDIS R/L1214-T3036			12	11	150	30	10.0	14	3.0	3.6		1	BFTX0409N	3.4	LT15
GNDIS R/L1616-T3036			16	15	160	35	11.5	16	3.0	3.6	GXM N3002S-□□	1			
GNDIS R/L1620-T3046			16	15	160	40	14.5	20	3.0	4.6		1	BFTX0511N	5.0	LT20
GNDIS R/L2025-T3066			20	19	180	40	19.0	25	3.0	6.6		1	DI IXOSTIN	5.0	LIZU

Select holders and inserts with matching width of cut (CW). Only GXM inserts can be used.

The maximum groove depth CDX is the figure during grooving.

### Identification Code

### **GND IS R**

Shank

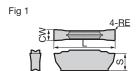
Dia.

(mm)

Series Code Application Feed Symbol: Direction Internal Machining

Min. Bore Dia. (mm)

For Width of Maximum Groove Internal Cut x 10 Depth x 10Machining (mm) (mm)



Grooving / Traverse Cutting

Cat. No.

GXM N2002S-ML

N3002S-ML

AC520U

•

AC1030L

•

Dimensions (mm) Pcs/Pack Length Fig S 11.1 3.1 5

3.1

1

Grooving / Cut-off

Dimensions (mm) AC1030U AC520U Pcs/Pack Width of Cut CW Cat. No. Fig S GXM N150005S-GF 3.1 GXM N2002S-GF ● ● **2.0** ±0.03 0.2 11.1 3.1 5 1 **3.0** ±0.03 0.2 11.1 3.1 N3002S-GF ●

Select holders and inserts with matching width of cut (CW). GCM/GCG inserts are not mutually compatible.

Radius

Width of Cut

CW

Width of Cut Tolerance RE

**2.0** ±0.03 0.2

3.0 ±0.03 0.2 11.1

#### ■ Recommended Cutting Conditions (GNDIS)

Work Material	P Carbon Ste	eel / Alloy Steel	M Stainl	ess Steel	K Ca	st Iron	S Exotic Alloy			
Insert Grade	AC520U AC1030U		AC520U	AC1030U	AC520U	AC1030U	AC520U	AC1030U		
Cutting Speed vc (m/min)	80-200	50-200	70-150	50-150	60-200	50-200	20-80	20-60		

#### ■ Grooving / Cut-off / Necking

		Feed Rate	f (mm/rev)
Chipbi	reaker	ML	GF
Width of Cut	1.5	_	0.02 to 0.10
CW	2.0	0.03 to 0.12	0.03 to 0.12
(mm)	3.0	0.05 to 0.15	0.05 to 0.15

### ■ Traverse Cutting

		N	1L
Chipbi	reaker	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Width of Cut	2.0	0.03 to 0.12	0.2 to 0.8
CW (mm)	3.0	0.05 to 0.15	0.3 to 1.2

### **GNDI** type





Internal Grooving Clamp-on

Grooving Tools

Cut-off Grooving

External

Face

Internal



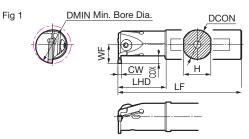


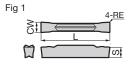
Figure shows right-handed (R) tool.

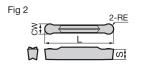
Holder													Parts	Dim	ensions (mm)
	Sto	ock	Diameter	Height	Head	Overall	Cutting Edge	Min. Bore	Width of	Maximum Groove			Bolt		Wrench
Cat. No.	R	L	DCON	Н	LHD	LF	Distance	Dia.	CW	Depth	Applicable Insert	Fig		(N·m	
GNDI R/L2532-T206	•	•	25	23	40	200	16	32	2.0	6	GC□ N20○○-□□	1	BH0516	5.0	LH030
GNDI R/L3240-T210			32	30	50	250	26	40	2.0	10	GCL N2000-LLL	1	BH0616	6.0	LH040
GNDI R/L2532-T306			25	23	40	200	16	32	3.0	6		1	BH0516	5.0	LH030
GNDI R/L3240-T310			32	30	50	250	26	40	3.0	10	GC□ N30○○-□□	1	BH0616	6.0	LH040
GNDI R/L4050-T311			40	38	60	300	31	50	3.0	11		1	БПООТО	0.0	LH040
GNDI R/L2532-T406			25	23	40	200	19	32	4.0	6		1	BH0516	5.0	LH030
GNDI R/L3240-T410			32	30	50	250	26	40	4.0	10	GC□ N40○○-□□	1	BH0616	6.0	LH040
GNDI R/L4050-T411			40	38	60	300	31	50	4.0	11		1	B110010	0.0	LI 1040
GNDI R/L2532-T506			25	23	40	200	19	32	5.0	6		1	BH0516	5.0	LH030
GNDI R/L3240-T510			32	30	50	250	26	40	5.0	10	IO GC□ N50○○-□□		BH0616	6.0	LH040
GNDI R/L4050-T511			40	38	60	300	31	50	5.0	11		1	B110010	0.0	LI 1040
GNDI R/L4050-T611			40	38	60	300	31	50	6.0	11	GC□ N60○○-□□	1	BH0616	6.0	LH040

Select holders and inserts with matching width of cut (CW). The maximum groove depth CDX is the figure during grooving.

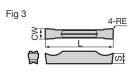
4-72

### Inserts for GNDI type





Dimensions (mm)



( Coated Carbide/ Cermet/ Cemented Carbide/ DLC)

### Grooving / Traverse Cutting

Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A		of Cut W	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N3002-MG									_	3.0	±0.03	0.2	21.1	3.8		1
N3004-MG									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-MG									_	4.0	±0.03	0.2	26.4	4.0		1
N4004-MG									_	4.0	±0.03	0.4	26.4	4.0		1
N4008-MG									_	4.0	±0.03	8.0	26.4	4.0	5	1
GCM N5004-MG									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-MG									_	5.0	±0.03	8.0	26.4	4.1		1
GCM N6004-MG									_	6.0	±0.03	0.4	26.4	4.5		1
N6008-MG									_	6.0	±0.03	0.8	26.4	4.5		1
GCM N2002-ML	_		_	_					_	2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-ML										3.0	±0.03	0.2	21.1	3.8		1
N3004-ML										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-ML										4.0	±0.03	0.2	26.4	4.0		1
N4004-ML										4.0	±0.03	0.4	26.4	4.0	5	1
N4008-ML										4.0	±0.03	0.8	26.4	4.0	J	1
GCM N5004-ML									_	5.0	±0.03	0.4	26.4	4.1		1
N5008-ML									_	5.0	±0.03	8.0	26.4	4.1		1
GCM N6004-ML										6.0	±0.03	0.4	26.4	4.5		1
N6008-ML									_	6.0	±0.03	0.8	26.4	4.5		1

Profiling /	Radius	Grooving /	<b>Necking</b>

Dimensions (mm)																
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U		С		Corner Radius		Thickness	Pcs/Pack	Fig
GCM N2010-RN	_	_	<u> </u>	_						2.0	±0.03	1.0	21.7	3.6		2
N3015-RN										3.0	±0.03	1.5	22.6	3.8		2
N4020-RN										4.0	±0.03	2.0	28.2	4.0	5	2
N5025-RN										5.0	±0.03	2.5	28.3	4.1		2
N6030-RN										6.0	±0.03	3.0	28.3	4.5		2

GCIVI NOUU4-IVIL				L
N6008-ML				
Grooving / Cu	ıt-	off	F	

Dimensions	(mm)
Diffierisions	(111111)

arooving / oc		٠											DII	nensi	0115 (	
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	C	of Cut W Tolerance	Radius	Overall Length		Pcs/Pack	Fig
GCM N2002-GG										2.0	±0.03	0.2	21 1	3.6		1
GCM N3002-GG		Ŏ	•				Ŏ				±0.03					1
N3004-GG		ŏ	ŏ		ŏ	ŏ	ŏ	ŏ			±0.03					1
GCM N4002-GG			•		•	•			_		±0.03					1
N4004-GG		ŏ	ŏ		ŏ	ŏ	ŏ	ŏ			±0.03				5	1
GCM N5002-GG			•		Ŏ	•			_		±0.03					1
N5004-GG		Ŏ	Ŏ		Ŏ	•	Ŏ	Ŏ	_		±0.03					1
GCM N6002-GG									_		±0.03					1
N6004-GG			•		•						±0.03					1
GCM N2002-GL										2.0	±0.03	0.2	21.1	3.6		1
N2004-GL									_	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL					•				_	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL									_	4.0	±0.03	0.2	26.4	4.0	5	1
N4004-GL									-		±0.03				Э	1
GCM N5002-GL									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL									$\left  - \right $	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL									-	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GF	_	-	_	_						2.0	±0.03	0.2	21.1	3.6		1
N2004-GF	-		_	_							±0.03					1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF										4.0	±0.03	0.2	26.4	4.0	5	1
N4004-GF										4.0	±0.03	0.4	26.4	4.0	S	1
GCM N5002-GF										5.0	±0.03	0.2	26.4	4.1		1
N5004-GF									_		±0.03					1
GCM N6002-GF										6.0	±0.03					1
N6004-GF									_	6.0	±0.03	0.4	26.4	4.5		1

Non-Ferrous	Me	eta	ıls							Dir	nensi	ons (	mm)
Cat. No.	01	1500					Width C			Overall Length	Thickness	s/Pack	Fig
	上	ㅁ					Width of Cut	Tolerance	RE	L	S	Pcs/	
GCG N2002-GA							2.0	±0.025	0.2	21.1	3.6		3
N3002-GA							3.0	±0.025	0.2	21.1	3.8		3
GCG N4004-GA							4.0	±0.025	0.4	26.4	4.0	5	3
N5004-GA							5.0	±0.025	0.4	26.4	4.1		3
N6004-GA							6.0	±0.025	0.4	26.4	4.5		3

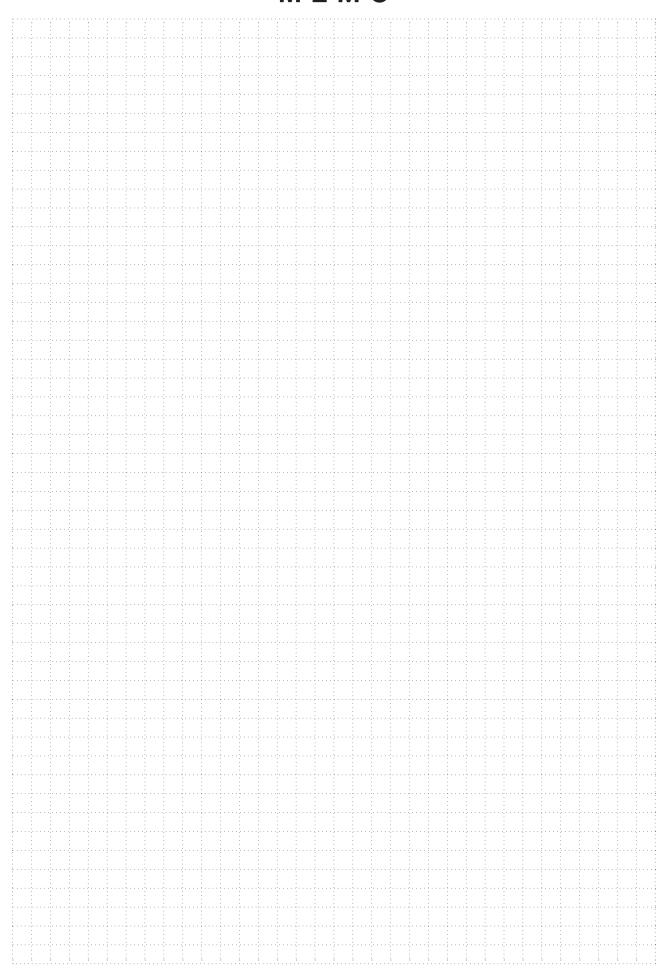
andovinig / Oc		٠											DII	1161131	0115 (	
Cat. No.	AC8025P	AC8035P	AC830P	AC425K	AC5015S	AC5025S	AC520U	AC530U	T2500A	С	of Cut W	Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N2002-GG			•								±0.03		21 1	3.6		1
GCM N3002-GG						ě		•		3.0	±0.03					1
N3004-GG		ŏ	ŏ		ŏ	ĕ	7	ŏ	_		±0.03			-		1
GCM N4002-GG								•			±0.03	-	_	-		1
N4004-GG		ŏ	ŏ		ŏ	ŏ	ŏ	ŏ	_		±0.03				5	1
GCM N5002-GG		•	•		•	•	•	•		5.0	±0.03	_	_	_		1
N5004-GG		ŏ	ŏ		ŏ	ŏ	ŏ	ŏ	_		±0.03					1
GCM N6002-GG		•	•		Ŏ	•	Ŏ			6.0	±0.03					1
N6004-GG		•	Ŏ		Ŏ	•	Ŏ	Ŏ	_	6.0	±0.03			-		1
GCM N2002-GL									_	2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		•			•				_	2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL					•				_	3.0	±0.03	0.2	21.1	3.8		1
N3004-GL									_	3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GL									_	4.0	±0.03	0.2	26.4	4.0	5	1
N4004-GL									_	4.0	±0.03	0.4	26.4	4.0	Э	1
GCM N5002-GL									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GL									_	5.0	±0.03	0.4	26.4	4.1		1
GCM N6002-GL									_	6.0	±0.03	0.2	26.4	4.5		1
N6004-GL									_	6.0	±0.03	0.4	26.4	4.5		1
GCM N2002-GF	-	-	_	_						2.0	±0.03	0.2	21.1	3.6		1
N2004-GF		_	_	_						2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF										3.0	±0.03	0.2	21.1	3.8		1
N3004-GF										3.0	±0.03	0.4	21.1	3.8		1
GCM N4002-GF										4.0	±0.03	0.2	26.4	4.0	5	1
N4004-GF										4.0	±0.03	0.4	26.4	4.0	S	1
GCM N5002-GF									_	5.0	±0.03	0.2	26.4	4.1		1
N5004-GF										5.0	±0.03					1
GCM N6002-GF										6.0	+በ በ3	0 2	26.4	15		1

### Part Number Suffix Code (Chipbreakers)

				,	
Type	Symbol	Applications	Type	Symbol	Applications
Grooving /	MG	Multi-functional / General-purpose	Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Traverse Cutting	ML	Multi-functional / Low-feed	Non-Ferrous Metals	GA	Non-Ferrous Metals / General-purpose
Cuantina /	GG	Grooving / General-purpose			
Grooving /	GL	Grooving / Low-feed			
Cut-off	GF	Grooving / Low cutting force			

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

### **MEMO**





#### ■ Features

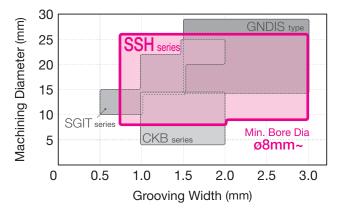
- Internal coolant supply for outstanding chip evacuation
- Tough carbide body for stable turning even with small diameters, suppressing chatter
- Adopts AC1030U for excellent machined surface quality
- Min. bore diameter from ø8mm
- Wide range of grooving widths In addition to grooving applications, we have a lineup for circlip groove machining
- Expanded 09/10 sized inserts support grooving depths of 2mm (min. bore dia. 9mm) and 3mm (min. bore dia. 10mm)

### ■ Insert Lineup



SSHG type SSHR type SSHC type

### ■ Application Range



■ Pro	oduct R	lange	9						Groov	ing / Ra	adius Sl	nape	G	irooving	/ C-Ch	amferin	g	Radi	us Gro	oving/Pro	ofiling Chamfering
Applications	Insert	IIISEIT	Min. Bore					٧	Vidth (	of Cut	/ Cut	ting E	dge C	Corne	r Shap	oe (mm	)				Applicable Holder
Аррікаціона	Type	Size	Dia. (mm)	Groove Depth (mm)	0.74	0.80	0.84	0.94	1.00	1.19	1.20	1.39	1.50	1.69	1.80	2.00	2.20	2.50	3.00	Chamfering	Applicable Holder
		08	8	1.0	C0.05		C0.05	C0.05	C0.05 R0.1	C0.05		C0.05	C0.05 R0.1	C0.05		C0.05 R0.1 R0.2					
	Ø	<b>9</b> 09	9	2.0					R0.1				R0.1			R0.1		R0.1	R0.1 R0.2		EOO□-SSHMNOOO-08
	Ø	<b>2</b> 10	10	3.0					R0.1				R0.1			R0.1		R0.1 R0.2	R0.1 R0.2		
Grooving	SSHG			1.2 1.3	C0.05	{	C0.05														
				1.5				C0.05													
		14	14	1.6					C0.05 R0.1												EOO□-SSHMNOOO-14
				4.0						C0.05		C0.05	C0.05 R0.1	C0.05		C0.05 R0.1 R0.2		C0.05 R0.1 R0.2	C0.05 R0.1 R0.2		
Radius		08	8	1.0		R0.4			R0.5		R0.6		R0.75		R0.9	R1.0					EOO□-SSHMNOOO-08
Grooving/ Profiling	SSHR	14	14	1.6 4.0					R0.5		R0.6		R0.75		R0.9	R1.0	R1.1	R1.25	R1.5		EOO□-SSHMNOOO-14
Chamfering	SSHC	08	8	1.4																C	EOO□-SSHMNOOO-08

09/10 sized inserts are only right-handed.



arooving Tools

4

Cut-off

Grooving

0

Internal

Material

Code

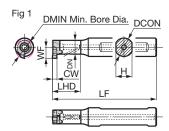
Dia

(mm)

Necking

S

SSH-08
Internal Grooving



1101001													Dimensions (mm)
		Shank	Neck	Width	Overal	Head	Min. Bore	Width of Cut			Flat Head Sc	rew	Wrench
Cat. No.	엉	Diameter	Dia.	Widti	Length	Length	Dia.	Widai oi out	Applicable Insert	Fia			<b>/</b>
Oat. No.	Stc	DCON	DN	Н	LF	LHD	DMIN	CW	Applicable illsert	l ig		(N·m	
E08D-SSHM N125-08	•	8	6	7	60(60.4)	12.5(12.9)	8~	0.74 to 3.00		1	DETVOCCOURC	4.0	TDVOOLD
E08E-SSHM N210-08		8	6	7	70(70.4)	21.0(21.4)	8~	0.74 to 3.00	SSH□ R/L <b>08</b> ···	1	BFTX02608IPS	1.2	TRX08IP
E12E-SSHM N125-08		12	6	11	70(70.4)	12.5(12.9)	8~	In 74 to 3 nn	SSH□ R/L 06···	1			
E12F-SSHM N210-08		12	6	11	80(80.4)	21.0(21.4)	8~	In 7/1 to 3 nn	SSH□ R 10···	1	BFTX02608IPS	10	TRX08IP
E12G-SSHM N300-08		12	6	11	90(90.4)	30.0(30.4)	8~	0.74 to 3.00	SSILL IN IU	1	DF 1 AUZ0001P3	1.2	INVOIL
E12H-SSHM N420-08		12	6	11	100(100.4)	42.0(42.4)	8~	0.74 to 3.00		1			

Overall Length LF and Head Length LHD are dimensions with SSHG Type / SSHR Type inserts mounted. Parentheses show dimensions with SSHG R 09 ··· Type (09 size) / SSHG R 10 ··· Type (10 size) mounted. Min. Bore Dia. DMIN above is the dimension when 08 sized inserts are mounted, it is 9mm with 09 sized inserts and 10mm with 10 sized inserts.

### Identification Code

### E 08 D - SSHM N 125 - 08

Shank Shank Shank Series Code Feed Head

Length Series Code Feed Head Code Direction Length Reference (mm) x 10

Min. Bore Dia. (mm) \* With sized 08 insert mounted



Insert (For E08□-SSHMNOOO-08 / E12□-SSHMNOOO-08) Coated Carbide) Dimensions (mm) Fig 1 (Grooving) tting Edge ıtting Edge Offset of Cut Radius **Applications** Cat. No. Applicable Holder Fig R L CW CDX RE WF3 WF S E2 2-C0.05 4.80 3.6 SSHG R/L 0807400 0.74 1.0 3.2 0.4 1 R/L 0808400 • 4.80 3.6 1 0.84 1.0 3.2 0.4 R/L 0809400 0.94 1.0 3.2 4.80 3.6 0.4 R/L 0810000 4.80 1 1.00 1.0 3.2 3.1 R/L 0810010 1.00 1.0 3.2 4.80 3.1 0.10 Fig 2 (Grooving) ● 1.19 R/L 0811900 1.0 3.2 4.80 3.1 1 Grooving 3.0 R/L 0813900 • 1.39 3.2 4.80 1.0 1 (08 size) 4.80 3.0 1 R/L 0815000 1.50 3.2 1.0 2-RE 3.0 2 R/L 0815010 1.50 1.0 0.10 3.2 4.80 1 • 4.80 R/L 0816900 1.69 1.0 3.2 3.0 R/L 0820000 • • 2.00 1.0 3.2 4.80 3.0 1 2 4.80 R/L 0820010 2.00 1.0 0.10 3.2 3.0 R/L 0820020 2 • **2.00** 1.0 3.2 4.80 3.0 Fig 3 (Radius Grooving/Profiling) 0.20 SSHG R 0910010 6 1.00 2.0 0.10 3.6 5.50 3.5 2 <u>CDX</u>∤ 🖺 R 0915010 @ 2.0 5.50 2 1.50 0.10 3.6 3.4 2 R 0920010 @ 2.00 2.0 3.6 5.50 3.4 0.10 2 R 0920020 @ 2.00 2.0 5.50 3.4 0.20 3.6 Grooving 2 E08□-SSHMNOOO-08 (09 size) R 0925010 @ 2.50 2.0 3.6 5.50 3.4 0.10 3.4 E12□-SSHMNOOO-08 2 R 0925020 @ 2.50 2.0 5.50 36 0.20 R 0930010 @ 3.00 2.0 0.10 3.6 5.50 3.4 Fig 4 (Chamfering) 2 R 0930020 @ 5.50 3.4 3.00 2.0 3.6 0.20 SSHG R 1010010 @ 1.00 3.6 6.50 3.5 2 3.0 0.10 2 R 1015010 🐠 1.50 3.0 0.10 3.6 6.50 3.4 R 1020010 6 2 2.00 3.0 0.10 3.6 6.50 3.4 2 Grooving R 1020020 🜮 2.00 3.0 0.20 3.6 6.50 3.4 2 R 1025010 @ (10 size) 2.50 3.0 0.10 3.6 6.50 3.4 2 R 1025020 💯 2.50 3.0 0.20 3.6 6.50 3.4 2 R 1030010 @ 3.00 3.0 3.6 6.50 3.4 0.10 R 1030020 💯 3.00 3.0 0.20 3.6 6.50 3.4 3 SSHR R/L 08080 0.80 0.40 3.2 4.80 3.1 1.0 3 R/L 08100 1.00 1.0 0.50 3.2 4.80 3.1 3 Radius • 3.2 4.80 R/L 08120 1.20 1.0 0.60 3.1 Grooving/ R/L 08150 • 1.50 1.0 3.2 4.80 3.0 3 0.75 Profiling 3 R/L 08180 4.80 1.80 1.0 3.2 3.0 0.90 R/L 08200 **2.00** 3.2 4.80 3.0 1.0 1.00

Min. Bore Dia. DMIN dimension for 08 size: 8mm, 09 size: 9mm, 10 size: 10mm.

1.4

0.20

#### Recommended Cutting Conditions

Chamfering SSHC R/L 08454502

Work Material	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron
Cutting Speed vc (m/min)	20-200	15-80	20-160
Feed Rate f (mm/rev)	0.01-0.03	0.01-0.03	0.01-0.03

4.65

3.6

1.8

Grooving Tools

4

Figure shows right-handed (R) tool.



Grooving Tools

Cut-off

Grooving

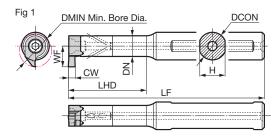
External

Internal

Material

Code

Internal Grooving



Holder						Parts	Dimensions (mm)	

1101001													Dimensions (mm)	
		Shank	Neck Dia.	Width	Overall		Min. Bore	Width of Cut			Flat Head Sci	rew	Wrench	
Cat. No.	Stock	Diameter	DN.	Н	Length LF	LHD	Dia.	CW	Applicable Insert	Fig		(N·m		
E12X-SSHM N195-14		12	9	11	75	19.5	14	0.74 to 3.00		1				
E12H-SSHM N340-14		12	9	11	100	34.0	14	<b>0.74</b> to <b>3.00</b>	3.00 3.00	1	BFTX0412IPS	5.0	LT15IP	
E12J-SSHM N450-14		12	9	11	110	45.0	14	<b>0.74</b> to <b>3.00</b>		1	DI 1704121F3	3.0		
E12X-SSHM N640-14		12	9	11	130	64.0	14	<b>0.74</b> to <b>3.00</b>	SSH□ R/L 14···	1				
E16F-SSHM N195-14		16	9	14	80	19.5	14	<b>0.74</b> to <b>3.00</b>		1				
E16H-SSHM N340-14		16	9	14	100	34.0	14	<b>0.74</b> to <b>3.00</b>	1 to 3.00	1	BFTX0412IPS	5.0	LT15IP	
E16J-SSHM N450-14		16	9	14	110	45.0	14	<b>0.74</b> to <b>3.00</b>		1	DF1XU412IF3	5.0	LITSIF	
E16X-SSHM N640-14		16	9	14	130	64.0	14	<b>0.74</b> to <b>3.00</b>		1				

Identification Code

Length

Code

Dia

(mm)

**SSHM N 195 - 14** 

Shank Shank Shank Series Code Min. Bore

Feed Head Length Direction Reference (mm) x 10

Dia. (mm)

Insert (F	sert (For E12 -SSHMNOO-14 / E16 -SSHMNOO-14) (Coated Carbide)    Coated Carbide   Coated Ca													
Applications	Cat. No.	AC1030U		Max. Groove Depth	Corner Radius	Cutting Edge Distance	Cutting Edge Distance	Thickness	Offset	Applicable Holder	Fig	CDV 80		
		R L	CW	CDX	RE	WF3	WF	S	E2					
	SSHG R/L 1407400	• •	0.74	1.2	_	5.3	9.0	5.5	0.2		1	2-C0.05 N		
	R/L 1408400		0.84	1.3	_	5.3	9.0	5.5	0.2		1	WF. WIO		
	R/L 1409400		0.94	1.5	_	5.3	9.0	5.5	0.2		1			
	R/L 1410000		1.00	1.6	_	5.3	9.0	5.5	0.2		1			
	R/L 1410010		1.00	1.6	0.10	5.3	9.0	5.5	0.2		2	Min. Bore Dia.		
	R/L 1411900		1.19	4.0	_	5.3	9.0	5.2	_		1	DIVIN		
	R/L 1413900		1.39	4.0	_	5.3	9.0	5.1	_		1	Fig 2 ( Grooving)		
	R/L 1415000		1.50	4.0	_	5.3	9.0	5.1	_		1			
Crassina	R/L 1415010		1.50	4.0	0.10	5.3	9.0	5.1	_		2	S CDX E		
Grooving	R/L 1416900		1.69	4.0	_	5.3	9.0	5.1	_		1	V		
(14 size)	R/L 1420000		2.00	4.0	_	5.3	9.0	5.1	_		1	2-RE 3		
	R/L 1420010		2.00	4.0	0.10	5.3	9.0	5.1	_		2	WF		
	R/L 1420020		2.00	4.0	0.20	5.3	9.0	5.1	_	E12□-SSHMNOOO-14	2			
	R/L 1425000		2.50	4.0	_	5.3	9.0	5.1	_	E16□-SSHMNOOO-14	1			
	R/L 1425010		2.50	4.0	0.10	5.3	9.0	5.1	_		2	Min. Bore Dia. DMIN		
	R/L 1425020		2.50	4.0	0.20	5.3	9.0	5.1	_		2	DMIN		
	R/L 1430000		3.00	4.0	_	5.3	9.0	5.1	_		1	Fig 3 (Radius Grooving/Profiling)		
	R/L 1430010		3.00	4.0	0.10	5.3	9.0	5.1	_		2	i ig o (riadius drooving/Froming)		
	R/L 1430020	• •	3.00	4.0	0.20	5.3	9.0	5.1	_		2	σ CDX E		
	SSHR R/L 14100		1.00	1.6	0.50	5.3	9.0	5.2	_		3	>		
	R/L 14120		1.20	4.0	0.60	5.3	9.0	5.2	_		3	RE		
Radius	R/L 14150		1.50	4.0	0.75	5.3	9.0	5.1	_		3	WF		
Grooving/	R/L 14180		1.80	4.0	0.90	5.3	9.0	5.1	_		3			
Profiling	R/L 14200	•	2.00	4.0	1.00	5.3	9.0	5.1	_		3			
1 Tolling	R/L 14220		2.20	4.0	1.10	5.3	9.0	5.1	_		3	Min. Bore Dia.		
	R/L 14250		2.50	4.0	1.25	5.3	9.0	5.1	_		3	DMIN		
	R/L 14300	•	3.00	4.0	1.50	5.3	9.0	5.1	_		3	Figure shows right-handed (R) tool.		

### ■ Recommended Cutting Conditions

Min. Bore Dia. DMIN dimension for 14 size: 14mm.

Work Material	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron
Cutting Speed vc (m/min)	20-200	15-80	20-160
Feed Rate f (mm/rev)	0.01-0.03	0.01-0.03	0.01-0.03

### **SGIT** series

Internal Grooving Screw-on

Grooving Tools

Cut-off

Grooving

External

Internal

Fig 1 DCON LHD Н DMIN Min. Bore Dia

Holder

Parts Dimensions (mm)

	Cat. No.	Stock	Diameter	Height	Overall Length	Cutting Edge Distance	Head LHD	Min. Bore Dia.	Width of Cut	Maximum Groove Depth	Applicable Insert	Fig		Wrench RT08
1	SGIT R08		8	7.0	125	5.0	20	10.0	0.50 to 2.00	0.8	GITL3OOO	1	BFTX02506NS	DTOO
1	SGIT R10		10	9.0	150	6.0	25	12.0	0.50 to 2.00	0.8	GIILSOOO	1	DFIAUZOUONO	RIUO
[	SGIT R12	•	12	11.0	180	7.0	30	14.0	1.00 to 2.00	1.8	GITL5OOO	1	BFTX0307NS	DT10
;	SGIT R14		14	13.0	180	8.0	35	16.0	1.00 to 2.00	1.8	GITLSOOO	1	DEIAUSUINS	ni iu
[	SGIT R16	•	16	15.0	200	10.0	40	20.0	1.50 to 2.00	2.8	GITL6OOO	1	BFTX0307NS	DT10
1	SGIT R20		20	19.0	200	12.0	40	25.0	1.50 to 2.00	2.8	GIILOCOC	1	DE IAUSU/INS	חווט
*	The maximum groove depth is	0.5n	nm when (	GITL3050	is set. (V	Vidth of c	ut CW =	0.5mm)						

Insert (Coated Carbide)

Dimensions (mm)

Cat. No.	ACZ150	Width of Cut	Offset	Corner Radius	Inscribed Circle	Applicable Holder	Fig	3
GIT L3050	•	0.50	1.2	0.05	5.56		1	7
GIT L3065		0.65	1.2	0.05	5.56		1	Fig 1
GIT L3075	•	0.75	1.2	0.05	5.56		1	CW ° RE RE .
GIT L3100	•	1.00	1.2	0.05	5.56	SGIT R08	1	
GIT L3125		1.25	1.2	0.20	5.56	SGIT R10	1	
GIT L3145	•	1.45	1.2	0.20	5.56		1	
GIT L3150	•	1.50	1.2	0.05	5.56		1	
GIT L3200		2.00	1.2	0.10	5.56		1	
GIT L5100		1.00	2.2	0.05	7.94		1	
GIT L5145		1.45	2.2	0.20	7.94	COIT DIO	1	
GIT L5150		1.50	2.2	0.05	7.94	SGIT R12 SGIT R14	1	3.18
GIT L5175		1.75	2.2	0.20	7.94	SGII NI4	1	
GIT L5200		2.00	2.2	0.10	7.94		1	
GIT L6150	•	1.50	3.2	0.20	9.525	SGIT R16	1	
GIT L6175		1.75	3.2	0.20	9.525	SGIT R16	1	
GIT L6200		2.00	3.2	0.20	9.525	JOUIT NZU	1	

# Threading Tools

5

# **Threading Tools**

5-1 to 5-19



		Basics of Threads 5	-2
	For External Threading	STH series (Small Pitch)5	-3
		TTE series 5	-4
	For External/Internal Threading	SSTE type/SSTI type 5	-6
		SSTE/SSTI type Guidelines for Depth of	
Threading		Cut and No. of Passes 5-	12
Tools		STE series (General-purpose) 5-	14
		THE type (For Small Lathes) 5-1	15
	For Internal Threading	STI series (General-purpose) 5-1	16
		STHI series (Small Diameter / General-purpose) 5-	17
		Threading Tool Guidelines for	
		Depth of Cut and No. of Passes 5-	18

mark: Standard stocked item

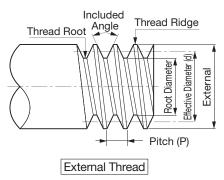
 mark: To be replaced with the new item featured on the same page
 mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability) \* mark: Semi-standard stock (please confirm stock availability)

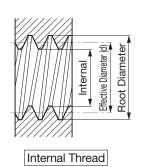
mark: Stock or planned stock (please confirm stock availability)
 Blank: Made-to-order item

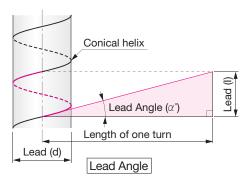
- mark: Not available

# **Basics of Threads**

■ Parts of a Screw







Effective Diameter (d): Diameter of imaginary cylinder that passes through the thread at the point where the groove and ridge widths are equal Pitch (P): Distance between two ridges adjacent to each other

Lead (I): Distance the screw thread moves axially in one turn

(On a single threaded screw, the lead and pitch are identical.)

Lead Angle ( $\alpha$ °): Angle made by the conical helix of the thread ridge at a pitch diameter with a plane perpendicular to the axis

Lead Angle Calculation

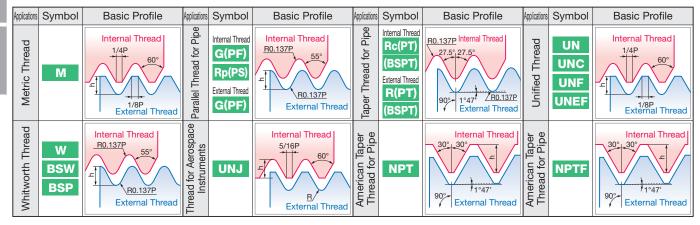
 $lpha^\circ$  : Lead Angle I : Lead

n: No. of Threads

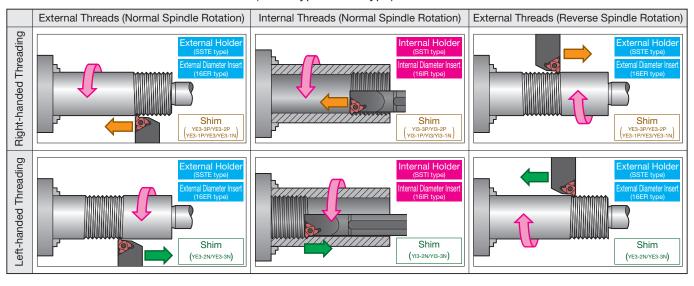
P : Pitch

d : Effective Screw Diameter

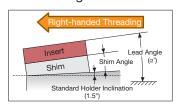
■ Main Screw Types and Standard Thread Patterns

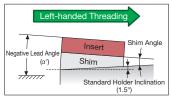


■ Tool Holder and Insert Selection Guide (SSTE type / SSTI type)



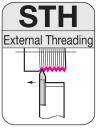
■ Threading Method and Insert Angle

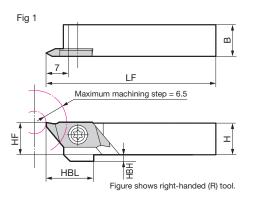




### STH series







External Turning Screw-on

Metric Thread Whitworth Thread

Η	o	ld	er
П	O		CI

Holder											Parts	Dimensions (mm)
	Sto	ock	Height	Width	Overall Length	Cutting Edge Height	Step	Bottom Offset			Flat Head Screw	Wrench
Cat. No.	R	L	Н	В	LF	HF	НВН	HBL	Applicable Insert	Fig		
STH R/L0810	•		8	10	120	8	4	15		1	BFTX0410NTW	
STH R/L1010			10	10	120	10	2	15		1	BF1XU41UIN1VV	
STH R/L1212F			12	12	85	12	_	15		1		RT08
STH R/L1212			12	12	120	12	_	15	TH R/L type	1	BFTX0412NTW	niuo
STH R/L1616H			16	16	100	16	_	15		1	DI I AU4 I ZIVI VV	
STH R/L1616			16	16	120	16	_	15		1		
STH R/L2020			20	20	80	20	_	15		1	BFTX0410NT	LT25NT

Insert ( Coated Carbide)

Dime	nsions	(mm)

Cat. No.	ACZ	'150	Pit	ch	Overall Length	Height	Corner Radius	X Direction	Included Angle	Cutting Edge	Applicable	Fig	Fig 1 RE
	R	L	mm	Threads/Inch	L	W1	RE	PDX		Shape			May 00 o
TH R/L6002075A	•		0.20 to 0.75	_	20	8	_	0.40	60	(A)		1	Fig 2 (A) Flat Shape (B) Radius
TH R/L6002075B			0.20 to 0.75	_	20	8	_	0.40	60	(A)		2	× RE
TH R/L6005125A			0.50 to 1.25	_	20	8	0.05	0.80	60	(B)	0.71.1	1	PNA PNA PNA
TH R/L6005125B			0.50 to 1.25	_	20	8	0.05	0.80	60	(B)	STH type	2	Fig 3 RE
TH R/L601015N			1.00 to 1.50	_	20	8	0.10	1.25	60	(B)	type	3	
TH R/L550515A			0.529 to 1.58	48 to 16	20	8	0.05	0.80	55	(B)		1	â Piva
TH R/L550515B			0.529 to 1.58	48 to 16	20	8	0.05	0.80	55	(B)		2	Figure shows right-handed (R) tool.

### Holder/Insert Combinations

F I D' I'	D'.l.	d . d	1.01	
Feed Direction	Right-r	nanded	Leπ-n	anded
<b>Cutting Edge Position</b>	Guide Bush Side	Back Turning Side	Guide Bush Side	Back Turning Side
Turning Condition	Guide Bush			
Holders	STH R (Right-Hand)	STH R (Right-Hand)	STH L (Left-Hand)	STH L (Left-Hand)
Insert	TH R····A	TH R⋅⋅⋅⋅B	TH L····B	TH L····A
Features	Often used in common tooling for workpieces that have a thread at their top end. In this type of tooling, the necking width indicated with the arrow can be reduced since the cutting edge point is placed closer to the guide bush side.	Often used when a thread is at the middle of the workpiece or at the rear. In this type of tooling, the necking width indicated with the arrow can be reduced since the cutting edge point is placed closer to the back turning side.	edge position is separate from the guide bu	and B type is the reverse of the right-hand holder.

### TE series

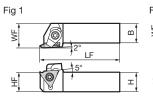


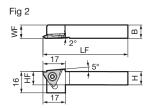
External Turning Double Clamp / Screw-on

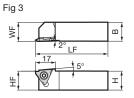
Threading

External









Figures show right hand (R) tools.

Holder										Parts					Dimen	sions (mm)
	Sto	ock	Height	Width	Overall		Cutting Edae			Flat Head Scr	ew	Wrench	Clamp Plate	Double Scre	W	Wrench
Cat. No.			ricigiti	Width	Length	Distance	Height	Group	Fia		<b>~</b>	1			-	,
Oat. No.	R	L	Н	В	LF	WF	HF	No.	1 19		N·m				(N·m	
GWC R/L1010-3			10	10	125	10	10	1	2							
GWC R/L1212-3			12	12	125	12	12	1	2				_	_	-	-
GWC R/L1616-3			16	16	125	16	16	1	3	BFTX0409N	3.4	TRX15				
GWC R/L2020-3			20	20	125	25	20	1	1				CCM6B L/R	WB6-20 T/TL	5.0°	LT20
GWC R/L2525-3			25	25	150	30	25	1	1				COMOD L/N	WD0-20 1/1L	5.0	LIZU

<sup>\*</sup> mark: Cermet inserts have a recommended tightening torque of 4N·m. Right-handed (R) tool holders are used with right-handed (R) inserts.

Fig 1 (Threading)

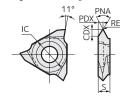


Figure shows right-handed (R) tool.

lı	nsert (Threading,	60°	/5	5° (	Gen	era	ıl-p	urp	ose	? Th	rea	ads) (	Coated C	Carbid	e /	DLC	/	Cerme	t) Di	mensions	s (mm)
	C I N	AC5	015S	AC5	025S	AC10	030U	DL1	500	T15	00A	Pitc	h	Corner Radius	X Direction	Depth of Cut	Included Angle	Inscribed Circle	Thickness	Group	F
	Cat. No.	R	L	R	L	R	L	R	L	R	L	mm	Threads/Inch	RE	PDX	CDX	PNA	IC	S	No.	Fig
1	TE R/L36002075	•	•		•	•		•		•		0.20 to 0.75	80 to 32	0.05	0.55	0.65	60	9.525	3.18	1	1
1	TE R/L36005125											0.50 to 1.25	56 to 20	0.05	1.00	1.30	60	9.525	3.18	1	1
1	TE R/L3601015											1.00 to 1.50	24 to 16	0.10	1.30	1.80	60	9.525	3.18	1	1
1	TE R/L3601530											1.50 to 3.00	16 to 8	0.20	1.70	2.40	60	9.525	3.18	1	1
1	TE R/L3554816		•		•	•						_	48 to 16	0.05	1.00	1.50	55	9.525	3.18	1	1
1	TE R/L3552008											_	20 to 8	0.10	1.50	2.40	55	9.525	3.18	1	1 1

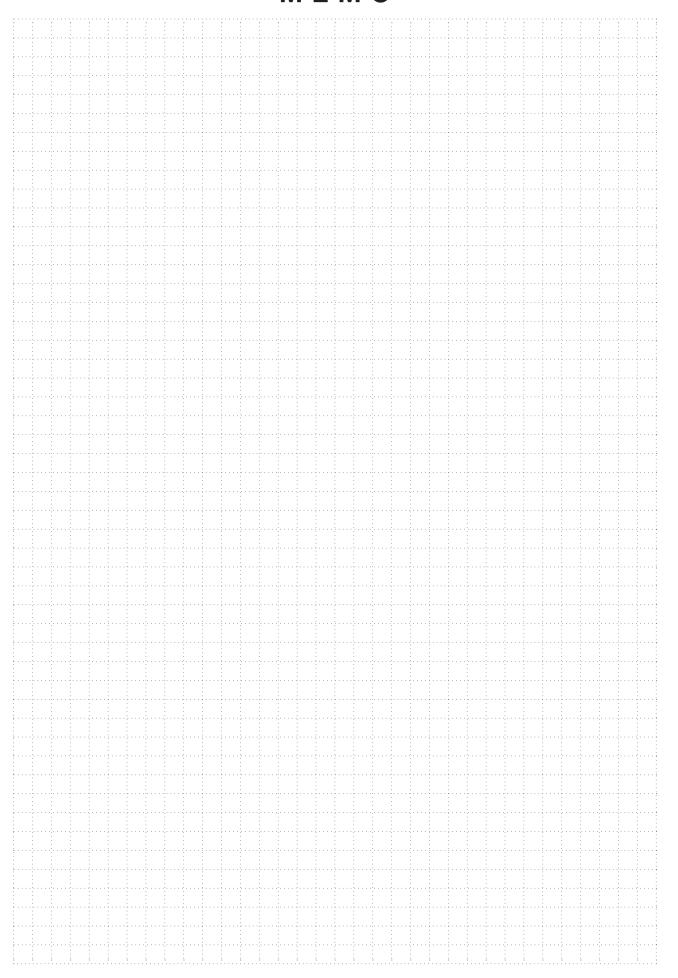
Right-handed (R) inserts are used with right-handed tool holders.

Indexable Head GWC series can also be used.

<sup>\*</sup> Select applicable inserts for the holders by using matching group numbers.

<sup>\*</sup> Right-handed (R) tool holders are compatible with left-handed clamp plates (CCMO□L) and right-handed double screws (WBO-2OT). Left-handed (L) tool holders are compatible with right-handed clamp plates (CCMODR) and left-handed double screws (WBO-2OTL).

### **MEMO**





hreading Tools

5

External Threading

<u>-</u>

■ Features

- High-precision inserts with wiper edge for threading, supporting a wide range of applications from general industrial machinery to pipes and aerospace devices
- Stable chip control through use of a 3D molded chipbreaker.
- Ground cutting edge flank for improved cutting edge sharpness, resulting in high quality threads

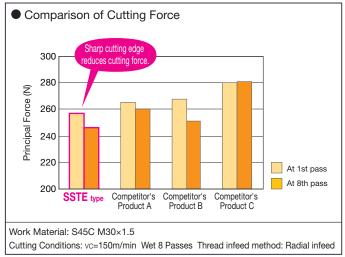


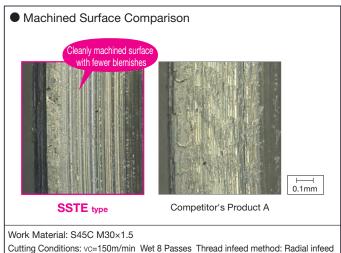
Ground flanks around cutting edge

### ■ Product Range

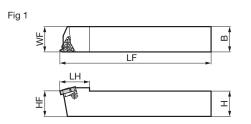
- Froduct harry															
		Edge	External/	Pit	itc	h									Insert Cat. No.
Applications	Туре	Wiper E	Internal	Pitch (mm)	48		<b>TPI</b>						11 10	8 (8	Example:
	60° Canaral numana Thread		External	0.5 3.0											16ER A <mark>60</mark> -CB
	60° General-purpose Thread	No	Internal	0.5 3.0					48 tc	8					16IR A60-CB
	FF0 Consul moves and Thread	Z	External						48 tc	8 (					16ER A55-CB
O a sa a wall loa di wateri al II la a	55° General-purpose Thread		Internal						48 tc	8 (					16IR A55-CB
General Industrial Use	60° ISO Metric Thread		External	0.75 1.0 1.25 1.5 1.75 2.0 2.5 3.0											16ER 075ISO-CB
	60 180 Metric Thread		Internal	0.75 1.0 1.25 1.5 1.75 2.0 2.5 3.0	-1-	- -			-   -						16IR 075ISO-CB
	60° Unified Thread		External												16ER 32UN-CB
	ou Uninea Thread		Internal		-										16IR 32UN-CB
	55° Parallel Thread		External												16ER 36W-CB
Pipe Coupling for	for Pipe/Whitworth		Internal		-						T				16IR 28W-CB
Gas, Water and Water Faucets	COO American NDT	S	External												16ER 27NPT-CB
	60° American NPT	Yes	Internal		-										16IR 27NPT-CB
	55° Taper Thread for Pipe		External												16ER 28BSPT-CB
Steam, Gas and	BSPT		Internal		-			-   -				-   -			16IR 28BSPT-CB
Water Supply Pipes	COO Associate AIDTE		External												16ER 27NPTF-CB
	60° American NPTF		Internal		-	- -			- [						16IR 27NPTF-CB
For Aerospace	LIN I CO9		External												16ER 32UNJ-CB
Equipment	UNJ 60°		Internal		-1-	- -							- * -		16IR 32UNJ-CB
					48	363	28 27	2420	19 18	1614	113	12 11.5	1110	8	

### ■ Application Examples









LH

The values for dimensions LF and LH below are only for reference.

Holder	

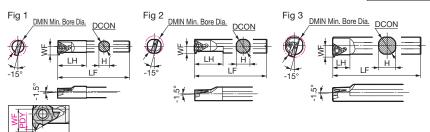
Holder									Parts				Dime	ensions (mm)
	×	Height	Width	Overall Length	Head	Cutting Edge Distance	Cutting Edge Height		Flat Head S	crew	Shim Set Screw	Flat Washer	Shim	Wrench
Cat. No.	Stocl	Н	В	LF	LH	WF	HF	Fig		(N·m)		0		
SSTE R1616H16		16	16	100	20.5	16	16	1						
SSTE R2020K16		20	20	125	30.0	20	20	1	BFTX0312N	2.0	BX0304*1	PW3	YE3	TRX10
SSTE R2525M16		25	25	150	30.0	25	25	1						

<sup>\*1:</sup> Shim screw wrench is sold separately.









PDX The values for dimension WF below are only for reference.

Но	ld	ler	

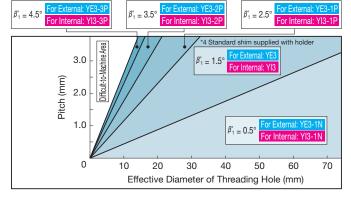
Holder	Parts Dimensions (mm											ensions (mm)												
	×	Diameter	Height	Overall Length	Head	Cutting Edge Distance	Min. Bore Dia.		Flat Head Screv		Flat Head Screw		Flat Head Screw								Shim Screw	Flat Washer	Shim	Wrench
Cat. No.	Stock	DCON	Н	LF	LH	WF	DMIN*2	Fig		(N·m)														
SSTI R1812M16 <sup>3</sup>		12	11.0	150	32.0	10.2	18	1	BFTX03085N	2.0		_												
SSTI R2016M16 <sup>3</sup>		16	15.0	150	63.5	9.2	20	2	DE LY02002IA	2.0														
SSTI R2420Q16		20	18.0	180	19.0	13.5	24	3						TRX10										
SSTI R3125S16		25	23.0	250	14.3	16.5	31	3	BFTX0312N	2.0	BX0304 <sup>*1</sup>	PW3	YI3											
SSTI R3732S16		32	30.0	250	14.3	20.0	37	3																

<sup>\*1:</sup> Shim screw wrench is sold separately. \*2 The minimum bore diameter is the diameter of the prepared hole. \*3 Left-hand threads are not available.

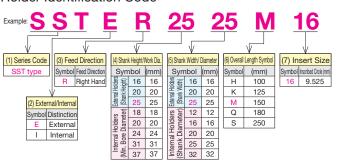
#### Shim and Selection Criteria

zations	Recommended Lead Angle (β°1)	External T	urning	Internal E	Boring
Appli	Lead Angle (β°1)	Cat. No.	Stock	Cat. No.	Stock
ead	4.5°	YE3-3P	•	YI3-3P	
Thread	3.5°	YE3-2P	•	YI3-2P	
Right-hand	2.5°	YE3-1P	•	YI3-1P	•
It-	1.5°	YE3 <sup>*4</sup>	•	YI3*4	•
	0.5°	YE3-1N	•	YI3-1N	•
Let-hand Thead	-0.5°	YE3-2N	•	YI3-2N	•
Leftan	-1.5°	YE3-3N	•	YI3-3N	•

\*4 Standard shim supplied with holder.



#### Holder Identification Code



External

Fig 1

99.525 3-RE PDX Fig 2

3.81 46:80

( Coated Carbide)

}

Threading

External

60°/55° General-purpose Threads (Without Wiper Edge)

Dimensions (mm)

60° American NPT (With Wiper Edge)

Dimensions (mm)

Thread Ridge	Cat. No.	AC530U	Pit	ch	X Direction	Y Direction	Corner Radius	Pcs/	Fig	
Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Pack		
	16ER A60-CB		0.5-1.5	16 - 48	0.8	0.6	0.09		1	
60°	16ER AG60-CB		0.5-3.0	8 - 48	1.5	1.1	0.10	5	1	
	16ER G60-CB		2.0-3.0	8 - 14	1.5	1.1	0.20		1	
	16ER A55-CB		_	16 - 48	0.8	0.5	0.05		1	
55°	16ER AG55-CB		_	8 - 48	1.5	1.1	0.08	5	1	
	16ER G55-CB		_	8 - 14	1.5	1.1	0.22		1	

Thread Ridge	Cat. No.	AC530U	Pit	ch	X Direction	Y Direction	Corner Radius	Pcs/	Fig	
Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Pack		
	16ER 27NPT-CB		_	27	0.8	0.6	0.06		2	
	16ER 18NPT-CB		_	18	0.8	0.6	0.06		2	ı
60°	<b>16ER 14NPT-CB</b>		_	14	1.5	1.0	0.08	5	2	
	16ER 115NPT-CB		_	11.5	1.5	1.0	0.08		2	
	16ER 08NPT-CB		_	8	1.5	1.1	0.13		2	

60° ISO Metric Thread (With Wiper Edge)

Dimensions (mm)

Thread Ridge	Cat. No.	AC530U	Pit	ch	X Direction	Y Direction	Corner Radius	Pcs/ Pack	Fig
Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Раск	
	16ER 075 ISO-CB		0.75	_	0.5	1.0	0.09		2
	16ER 100 ISO-CB		1.00	_	0.8	0.6	0.14		2
	16ER 125 ISO-CB		1.25	_	0.8	0.7	0.15		2
CO°	16ER 150 ISO-CB		1.50	_	0.8	0.7	0.20	_	2
60°	16ED 175 ISO_CB		1 75		15	1.0	0.23	5	2

2.00

3.00

**2.50** 

1.5

1.5 | 1.2 | 0.33

1.5

1.1 0.26

0.41

55° Taper Thread for Pipe	/BSP	T (With Wi	oer E	dge)	Dime	nsions (	(mm
Thread	$\mathbb{S}$	Ditoh	Х	Y	Corner		

Thread Ridge	Cat. No.	AC530U	Pit			Y Direction		Pcs/ Pack	Fig
Angle		Ă	mm	Threads/Inch	PDX	PDY	RE		
	16ER 28BSPT-CB		_	28	0.8	0.6	0.13		2
55°	16ER 19BSPT-CB		_	19	0.8	0.6	0.18	5	2
55	16ER 14BSPT-CB		_	14	1.5	1.3	0.25	Э	2
	16ER 11BSPT-CB		_	11	1.5	1.0	0.31		2

16ER 200 ISO-CB

16ER 250 ISO-CB

16ER 300 ISO-CB

Dimensions (mm)

2

2

2

	•		•						
Thread Ridge	Cat. No.	AC530U	Pit	tch	X Direction	Y Direction	Corner Radius	Pcs/	Fig
Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Pack	
	16ER 32UN-CB	•	_	32	0.5	1.0	0.10		2
	16ER 28UN-CB		_	28	0.8	0.7	0.11		2
	16ER 24UN-CB		_	24	0.8	0.7	0.13		2
	16ER 20UN-CB		_	20	0.8	0.7	0.16		2
	16ER 18UN-CB		_	18	0.8	0.7	0.18		2
60°	16ER 16UN-CB		_	16	0.8	0.8	0.20	5	2
	16ER 14UN-CB		_	14	1.5	1.2	0.23		2
	16ER 13UN-CB		_	13	1.5	1.1	0.26		2
	16ER 12UN-CB		—	12	1.5	1.0	0.27		2
	16ER 10UN-CB		_	10	1.5	1.2	0.33		2
	16ER 08UN-CB		_	8	1.5	1.2	0.42		2

oo minonoan ni (min mpo Lago	60°	American	<b>NPTF</b>	(With	Wiper	Edge
------------------------------	-----	----------	-------------	-------	-------	------

Dimensions (mm)

	Thread Ridge	Cat. No.	.C530U	Pit	ch	X Direction	Y Direction	Corner Radius	Pcs/	HΙC
	Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Pack	
60°		16ER 27NPTF-CB		_	27	0.8	0.6	0.06		2
	16ER 18NPTF-CB		_	18	0.8	0.6	0.06	5	2	
	16ER 14NPTF-CB		_	14	1.5	1.0	0.13		2	
	16ER 115NPTF-CB		_	11.5	1.5	1.0	0.12		2	

### 55° Parallel Thread for Pipe/Whitworth (With Wiper Edge)

Dimensions (mm)

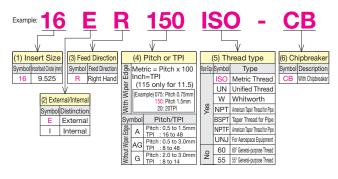
	'		,			3 - /			,
Thread Ridge	Ridge Cat. No.	530U	Pitch Pitch		X Direction	Y Direction	Corner Radius	Pcs/	Fig
Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Pack	
	16ER 36W-CB		-	36	0.5	1.0	0.10		2
	16ER 32W-CB		-	32	0.5	1.0	0.11		2
	16ER 28W-CB		-	28	0.8	0.6	0.12		2
	16ER 24W-CB		-	24	0.8	0.6	0.15		2
	16ER 20W-CB		-	20	0.8	0.6	0.18		2
	16ER 19W-CB		-	19	0.8	0.6	0.18	5	2
55°	16ER 18W-CB		_	18	0.8	0.6	0.19		2
	16ER 16W-CB		-	16	0.8	0.6	0.22		2
	16ER 14W-CB		_	14	1.5	1.0	0.25		2
	16ER 12W-CB		-	12	1.5	1.1	0.29		2
	16ER 11W-CB		_	11	1.5	1.1	0.32		2
	16ER 10W-CB		_	10	1.5	1.1	0.35		2
	16ER 08W-CB		_	8	1.5	1.1	0.43		2
	! COTE + .								

### 60° UNJ (With Wiper Edge)

Dimensions (mm)

Thread Ridge	Cat. No.	AC530U	Pit	tch	X Direction	Y Direction		Pcs/	Fig
Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Pack	
	16ER 32UNJ-CB		_	32	0.5	1.0	0.13		2
	16ER 28UNJ-CB		_	28	0.8	0.6	0.15		2
	16ER 24UNJ-CB		_	24	0.8	0.6	0.18		2
	16ER 20UNJ-CB		_	20	0.8	0.7	0.21		2
60°	<b>16ER 18UNJ-CB</b>		_	18	0.8	0.6	0.23	5	2
	16ER 16UNJ-CB		_	16	0.8	0.6	0.25		2
	<b>16ER 14UNJ-CB</b>		_	14	1.5	1.1	0.29		2
	16ER 12UNJ-CB		_	12	1.5	1.1	0.34		2
	16ER 10UNJ-CB	•		10	1.5	1.1	0.40		2

Insert Identification Code



For these inserts, only SSTE type holders can be used.

( Coated Carbide)

Dimensions (mm)

Pcs/ Fig

Pack

Corne

0.06

0.08

0.08

0.13 1.0

RE

PDY RE

0.6 0.06

1.1

1.0

PDY

0.6 0.13

0.6 0.18

External

# Internal

2

2

2

Dimensions (mm)

Dimensions (mm)

Pcs/ Fig

Pack

5

		,	,
on	Corner Radius	Pcs/	Fia
Y	RE	Pack	1 19

AC530U mm Threads/Inch PDX PD' 27 0.8 0.6 0.06 2 2 18 8.0 0.6 0.08 2 0.13 14 1.5 1.0 11.5 1.5 1.0 0.08 2

1.1

1.5

### 16IR 08NPTF-CB 60° UNJ (With Wiper Edge)

60° American NPT (With Wiper Edge)

Cat. No.

**16IR 27NPT-CB** 

**16IR 18NPT-CB** 

**16IR 14NPT-CB** 

**16IR 08NPT-CB** 

Cat. No.

16IR 28BSPT-CB

16IR 19BSPT-CB

Cat. No.

16IR 27NPTF-CB

16IR 18NPTF-CB

16IR 14NPTF-CB

**16IR 115NPTF-CB** 

16IR 115NPT-CB

AC530U

55° Taper Thread for Pipe/BSPT (With Wiper Edge)

60° American NPTF (With Wiper Edge)

•

Pitch

Threads/Inch PDX

8.0

8.0 0.6

1.5

1.5

27

18

14 1.5

11.5

8

mm | Threads/Inch | PDX |

28 8.0

19 8.0

Pitch

Pitch

8

mm

Dimensions (mm)

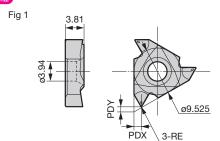
0.13

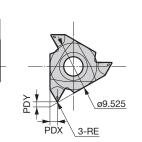
2

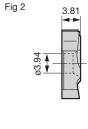
Thread		AC530U	Pit	ch	X Direction	Y Direction	Corner Radius	Pcs/	Fig
Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Pack '	
	16IR 32UNJ-CB		_	32	0.5	0.9	0.04		2
	16IR 28UNJ-CB		_	28	8.0	0.6	0.05		2
	16IR 24UNJ-CB		_	24	8.0	0.6	0.06		2
	16IR 20UNJ-CB		_	20	0.8	0.6	0.06	5	2
60°	<b>16IR 18UNJ-CB</b>		_	18	0.8	0.6	0.06		2
	16IR 16UNJ-CB		_	16	0.8	0.6	0.09		2
	<b>16IR 14UNJ-CB</b>		_	14	1.5	1.1	0.09		2
	16IR 12UNJ-CB		_	12	1.5	1.1	0.11		2
	16IR 10UNJ-CB			10	1.5	1.1	0.15		2

### Insert Identification Code

Example: 16   F	R <u>150</u>	<u>ISO</u> -	<u>CB</u>
(1) Insert Size Symbol techted Orie Imil 16 9.525  (2) External/Internal Symbol Distinction E External I Internal	(4) Pitch or TPI  © Metric = Pitch x 100  Inch=TPI  00 (115 only for 11.5)  (115 only for 11.5)  (120 pitch 1.5mm 20: 2017  Pitch 1.5mm 20: 2017  AG Pitch 1.5 5 to 3.0mm 1PI .: 8 to 48  G Pitch 2.0 to 3.0mm	(5) Thread type tips (5) Thread type tips (5) Metric Thread UN Unified Thread W Whitworth NPT Anexas Tape Thread for Pipe NPTF Anexa	(6) Chipbreaker Symbol Description CB With Chipbreaker
	▼   TPI :8 to 14	55 55° General-purpose Thread	J







g 2		3.81
	ø3.94	

Thread

Ridge

Angle

Thread

Ridge

Angle

55°

Thread

Ridge

Angle

Fig 2		3.81
	ø3.94	

60°/55°	General-purpose	Threads	(Without	Wiper	Edge)

00 /00	DO 755 General-purpose Trireads (Without Wiper Lage) Dimensions (mm)									
Thread Ridge Angle	Cat. No.	AC530U	Pitch		X Direction	Y Direction	Corner Radius	Pcs/	Fig	
		AC	mm	Threads/Inch	PDX	PDY	RE	Pack		
60°	16IR A60-CB		0.5-1.5	16 - 48	0.8	0.5	0.09		1	
	16IR AG60-CB		0.5-3.0	8 - 48	1.5	1.1	0.10	5	1	
	16IR G60-CB		2.0-3.0	8 - 14	1.5	1.1	0.18		1	
	16IR A55-CB		_	16 - 48	0.8	0.5	0.05		1	
55°	16IR AG55-CB		_	8 - 48	1.5	1.1	0.08	5	1	
	16IR G55-CB		_	8 - 14	1.5	1.1	0.20		1	

60° I	SO Metric	Thread	(With	Wiper	Edge	<u>;</u> )

60°	0° ISO Metric Thread (With Wiper Edge) Dimensions (mm)									
Thread Ridge		AC530U	Pit	tch	X Direction	Y Direction	Corner Radius	Pcs/	Fig	
Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Pack		
	16IR 075 ISO-CB	•	0.75	_	0.5	0.9	0.04		2	
	16IR 100 ISO-CB		1.00	_	0.8	0.6	0.06		2	
	16IR 125 ISO-CB		1.25	_	0.8	0.6	0.07		2	
60°	16IR 150 ISO-CB		1.50	_	0.8	0.6	0.09	5	2	
00	16IR 175 ISO-CB		1.75	_	1.5	1.0	0.10	3	2	
	16IR 200 ISO-CB		2.00	_	1.5	1.1	0.13		2	
	16IR 250 ISO-CB		2.50	_	1.5	1.1	0.15		2	
	16IR 300 ISO-CB		3.00	-	1.5	1.1	0.19		2	

60° (	60° Unified Thread (With Wiper Edge)  Dimensions (mm)								
Thread Ridge	Cat. No.	AC530U	Pit	tch	X Direction	Y Direction	Corner Radius	Pcs/	Fig
Angle	Angle		mm	Threads/Inch	PDX	PDY	RE	Pack	
	16IR 32UN-CB		_	32	0.5	0.9	0.04		2
	16IR 28UN-CB		_	28	0.8	0.6	0.06		2
	16IR 24UN-CB		_	24	0.8	0.7	0.06		2
	16IR 20UN-CB		_	20	0.8	0.6	0.08		2
	16IR 18UN-CB		_	18	0.8	0.6	0.08		2
60°	16IR 16UN-CB		_	16	0.8	0.7	0.09	5	2
	16IR 14UN-CB		_	14	1.5	1.1	0.13		2
	16IR 13UN-CB		_	13	1.5	1.1	0.11		2
	16IR 12UN-CB		_	12	1.5	1.1	0.13		2
	16IR 10UN-CB		_	10	1.5	1.1	0.15		2
	16IR 08UN-CB		_	8	1.5	1.1	0.20		2

#### 55° Parallel Thread for Pipe/Whitworth (With Wiper Edge)

00 1 0	Dimensions (mm)								
Thread Ridge	Cat. No.	AC530U	Pit	ch	X Direction	Y Direction	Corner Radius	Pcs/	FIG
Angle		AC	mm	Threads/Inch	PDX	PDY	RE	Pack	
	16IR 28W-CB		_	28	0.8	0.6	0.12		2
55°	16IR 24W-CB		_	24	0.8	0.6	0.14	5	2
55	16IR 20W-CB			20	0.8	0.6	0.18	S S	2
	16IR 19W-CB		_	19	0.8	0.6	0.18		2

#### ■ Shim Selection

If the pitch is large or thread diameter is small, the lead angle of the thread becomes larger and the effective relief angle of the leading edge becomes smaller. It is ideal to set the threading insert so that both right and left relief angles are equal.

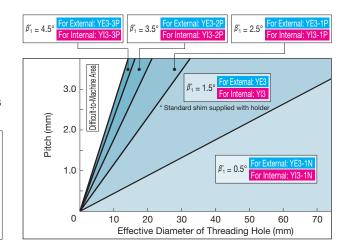
Therefore, it is necessary to select an appropriate shim based on the thread pitch and effective diameter using the table below.

### Shim, Insert ≈ Lead Angle Shim (Ideal Setup) Shim Angle Lead Angle Cross Section A-A

#### ■ Shim Selection Procedure

- (1) Choose from [Right-Hand Thread / Left-Hand Thread] in the table.
- (2) Locate the required threading "pitch".
- (3) Locate the cell with the required "Effective Diameter" range.
- (4) Confirm the part no. at the "Shim" row above the corresponding "Effective Diameter" cell located previously. If the shim part no. is different from the one currently in use, change to the correct one.

Example: When turning an M16×2.0 external right-hand thread, the pitch diameter is 14.701mm. In the table below, locate [2.0]mm under the "Pitch" column and then move along the row to the right to locate the required "Effective Diameter" range [11.4 - 17.4]mm. As such, the correct shim should be [YE3-1P], shown in the corresponding cell under the "External" row below.



### Pitch (mm)

Righ	t-hand/Left-hand Thread		Fo	r Right-hand Thre	ad		For Left-hand Thread		
	Lead Angle	4.5°	3.5°	2.5°	1.5°	0.5°	-0.5°	-1.5°	
_	<b>External Turning</b>	YE3-3P	YE3-2P	YE3-1P	YE3	YE3-1N	YE3-2N	YE3-3N	
Shim	Internal Boring	YI3-3P	YI3-2P	YI3-1P	YI3*	YI3-1N	YI3-2N	YI3-3N	
0)	Shim Angle (β <sub>1</sub> )	3°	2°	1°	0°	-1°	-2°	-3°	
	Pitch (mm)			Effe	ective Diameter (n	nm)			
	0.5	1.9 - 2.2	2.2 - 2.8	2.8 - 4.3	4.3 - 11.4	> 11.4	> 11.4	11.4 - 4.3	
	0.75	2.8 - 3.3	3.3 - 4.3	4.3 - 6.5	6.5 - 17.1	> 17.1	> 17.1	17.1 - 6.5	
	1.0	3.8 - 4.3	4.3 - 5.7	5.7 - 8.7	8.7 - 22.8	> 22.8	> 22.8	22.8 - 8.7	
	1.25	4.7 - 5.4	5.4 - 7.1	7.1 - 10.9	10.9 - 28.5	> 28.5	> 28.5	28.5 - 10.9	
	1.5	5.7 - 6.5	6.5 - 8.5	8.5 - 13.0	13.0 - 34.2	> 34.2	> 34.2	34.2 - 13.0	
	1.75	6.6 - 7.6	7.6 - 10.0	10.0 - 15.2	15.2 - 39.9	> 39.9	> 39.9	39.9 - 15.2	
	2.0	7.6 - 8.7	8.7 - 11.4	11.4 - 17.4	17.4 - 45.6	> 45.6	> 45.6	45.6 - 17.4	
	2.5	9.5 - 10.8	10.8 - 14.2	14.2 - 21.7	21.7 - 57.0	> 57.0	> 57.0	57.0 - 21.7	
	3.0	11.4 - 13.0	13.0 - 17.1	17.1 - 26.0	26.0 - 68.4	> 68.4	> 68.4	68.4 - 26.0	

#### TPI (threads/inch)

Right-l	hand/Left-hand Thread			For Left-hand Thread				
	Lead Angle	4.5°	3.5°	2.5°	1.5°	0.5°	-0.5°	-1.5°
_ [	External Turning	YE3-3P	YE3-2P	YE3-1P	YE3	YE3-1N	YE3-2N	YE3-3N
hir	Internal Boring	YI3-3P	YI3-2P	YI3-1P	YI3 <sup>*</sup>	YI3-1N	YI3-2N	YI3-3N
S	Shim Angle (β <sub>1</sub> )	3°	2°	1°	0°	-1°	-2°	-3°
TPI	(Threads/Inch)			Effe	ective Diameter (n	nm)		
	32	3.0 - 3.3	3.3 - 4.6	4.6 - 6.9	6.9 - 18.0	> 18.0	> 18.0	18.0 - 6.9
	28	3.0 - 3.8	3.8 - 5.1	5.1 - 7.9	7.9 - 20.8	> 20.8	> 20.8	20.8 - 7.9
	27	3.6 - 4.1	4.1 - 5.3	5.3 - 8.1	8.1 - 21.3	> 21.3	> 21.3	21.3 - 8.1
	24	4.1 - 4.6	4.6 - 6.1	6.1 - 9.1	9.1 - 24.4	> 24.4	> 24.4	24.4 - 9.1
	20	4.8 - 5.6	5.6 - 7.1	7.1 - 10.9	10.9 - 29.0	> 29.0	> 29.0	29.0 - 10.9
	18	5.3 - 6.1	6.1 - 8.1	8.1 - 12.4	12.4 - 32.5	> 32.5	> 32.5	32.5 - 12.4
	16	5.8 - 6.9	6.9 - 8.9	8.9 - 13.7	13.7 - 35.8	> 35.8	> 35.8	35.8 - 13.7
	14	6.9 - 7.9	7.9 - 10.2	10.2 - 15.7	15.7 - 41.1	> 41.1	> 41.1	41.1 - 15.7
	13	7.4 - 8.4	8.4 - 11.2	11.2 - 17.0	17.0 - 44.7	> 44.7	> 44.7	44.7 - 17.0
	12	8.1 - 9.1	9.1 - 12.2	12.2 - 18.5	18.5 - 48.8	> 48.8	> 48.8	48.8 - 18.5
	11.5	8.4 - 9.7	9.7 - 12.4	12.4 - 19.3	19.3 - 50.3	> 50.3	> 50.3	50.3 - 19.3
	11	8.9 - 9.9	9.9 - 13.2	13.2 - 20.1	20.1 - 52.6	> 52.6	> 52.6	52.6 - 20.1
	10	9.7 - 10.9	10.9 - 14.5	14.5 - 22.1	22.1 - 57.9	> 57.9	> 57.9	57.9 - 22.1
	9	10.7 - 12.2	12.2 - 16.0	16.0 - 24.4	24.4 - 64.3	> 64.3	> 64.3	64.3 - 24.4
	8	11.9 - 13.7	13.7 - 18.0	18.0 - 27.7	27.7 - 72.4	> 72.4	> 72.4	72.4 - 27.7

<sup>\*</sup> SSTE type / SSTI type holders are shipped with shims for a lead angle of  $\beta_1^\circ$  = 1.5° (SSTE type: YE3, SSTI type: YI3).

Shims for lead angles of  $\beta_1 = -1.5^\circ$ ,  $-0.5^\circ$ ,  $0.5^\circ$ ,  $0.5^\circ$ ,  $0.5^\circ$ ,  $0.5^\circ$ , and  $0.5^\circ$  are sold separately.

Shims are not needed for SSTI R1812M16 and SSTI R2016M16. (The holders are already provided with the standard holder inclination of 1.5°.)

### ■ Shim Replacement

Remove the insert to expose the shim.



Loosen the shim set screw by one to two turns.



Remove the shim and attach a different shim that matches the lead.



Tighten the shim set screw. (Recommended Tightening Torque 1.0 to 1.5N·m)

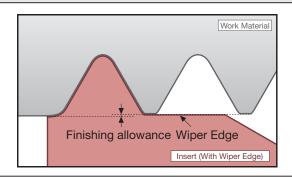
Threading

### ■ Wiper Edge

Without Wiper Edge Work Material Insert (Without Wiper Edge)

- · Performs threading without machining thread ridges (the machined surface from the previous process is left unworked.)
- Enables machining of threads with different pitch widths with the same insert.
- · Finishing of the internal (or external) diameter is required before the threading process.
- Fine burrs are easily formed on edges of ridges.

### With Wiper Edge



- Enables turning of workpieces into shapes compliant with thread standards.
- Only specific thread specifications and pitch can be machined.
- In order to finish a thread with the wiper edge, a finishing allowance of 0.1mm on each side is required.
- Edges of ridges can be rounded off.

#### Infeed Method

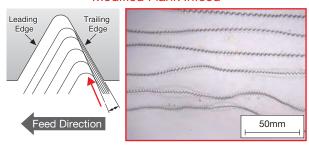
The modified flank infeed is recommended for the SSTE type / SSTI type.

This infeed method, which features reduced chip curl diameters and stable chip control, can also decrease chipping on trailing edges that often occurs in radial infeed machining. (1° is recommended for the modification angle.)

### Impact of Infeed Method on Chip Shapes

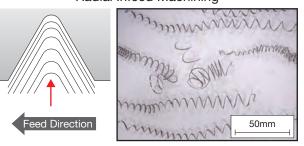
Work Material: SUS316, M30 x 1.5 Cutting Conditions: vc = 60m/min Wet, 8 Passes

#### Modified Flank Infeed



Reduced curl diameters ensure smooth, stable chip control (performance).

#### Radial Infeed Machining



Large curl diameters cause unstable chip control.

5-11

### Guide to Depth of Cut and No. of Passes

### SSTE type Guidelines for Depth of Cut

External Metric Threads (Depth of cut per pass: mm)

	1							
Pitch (mm)	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00
Overall Depth of Cut (mm)	0.48	0.64	0.80	0.92	1.10	1.26	1.57	1.87
No. of Passes	4	5	7	8	10	12	14	16
1	0.24	0.25	0.25	0.28	0.28	0.30	0.38	0.40
2	0.12	0.15	0.15	0.15	0.15	0.16	0.19	0.22
3	0.07	0.11	0.12	0.12	0.12	0.13	0.15	0.15
4	0.05	0.08	0.09	0.10	0.10	0.10	0.10	0.13
5		0.05	0.08	0.09	0.10	0.09	0.10	0.12
6			0.06	0.07	0.09	0.09	0.09	0.10
7			0.05	0.06	0.08	0.08	0.09	0.10
8				0.05	0.07	0.07	0.08	0.09
9					0.06	0.07	0.08	0.09
10					0.05	0.06	0.07	0.08
11						0.06	0.07	0.08
12						0.05	0.06	0.07
13							0.06	0.07
14							0.05	0.06
15								0.06
16								0.05

External Unified Threads (Depth of cut per pass: mm)

External Unified Threads (Depth of cut per pass: mm)													
Threads/Inch	32	28	24	20	18	16	14	13	12	11	10	9	8
Overall Depth of Cut (mm)	0.50	0.57	0.67	0.80	0.89	1.00	1.15	1.23	1.34	1.46	1.60	1.78	2.00
No. of Passes	4	4	5	7	8	10	11	12	12	14	14	16	16
1	0.24	0.25	0.25	0.26	0.26	0.28	0.28	0.30	0.30	0.30	0.38	0.38	0.40
2	0.14	0.17	0.19	0.15	0.15	0.15	0.15	0.18	0.18	0.18	0.20	0.20	0.25
3	0.07	0.10	0.12	0.10	0.12	0.10	0.12	0.13	0.13	0.13	0.15	0.13	0.19
4	0.05	0.05	0.06	0.09	0.10	0.09	0.10	0.10	0.12	0.12	0.12	0.12	0.16
5			0.05	0.08	0.08	0.08	0.10	0.08	0.11	0.11	0.10	0.11	0.14
6				0.07	0.07	0.07	0.09	0.08	0.10	0.10	0.09	0.10	0.12
7				0.05	0.06	0.07	0.08	0.07	0.09	0.08	0.09	0.10	0.11
8					0.05	0.06	0.07	0.07	0.08	0.08	0.08	0.09	0.10
9						0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.09
10						0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08
11							0.05	0.05	0.05	0.06	0.07	0.08	0.07
12								0.05	0.05	0.06	0.06	0.07	0.07
13										0.05	0.06	0.07	0.06
14										0.05	0.05	0.06	0.06
15												0.05	0.05
16												0.05	0.05

No. of passes and depths of cut in the table above are general guidelines only. Increase or decrease depending on conditions. However, the maximum depth of cut should be kept to 0.5mm or less.

When using an insert with a wiper edge, add machining allowance to the total depth of cut.

### ■ Recommended Cutting Conditions

	Work Material	P Carbon Steel	P Alloy Steel (up to 330HB)	M Stainless Steel	K Grey Cast Iron (up to 330HB)	K Ductile Cast Iron	S Titanium Alloy
C	Cutting Speed vc (m/min)	75 to 150	75 to 135	60 to 120	90 to 180	75 to 135	24 to 90

Ě

Threading

External

Interna

# Guide to Depth of Cut and No. of Passes

### SSTI type Guidelines for Depth of Cut

■ Internal Metric Threads (Depth of cut per pass: mm)

	`		•	,				
Pitch (mm)	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00
Overall Depth of Cut (mm)	0.49	0.58	0.74	0.89	1.04	1.18	1.47	1.76
No. of Passes	4	5	8	10	11	12	14	16
1	0.20	0.22	0.22	0.25	0.25	0.25	0.30	0.30
2	0.12	0.14	0.14	0.12	0.17	0.18	0.19	0.20
3	0.12	0.10	0.09	0.08	0.10	0.12	0.15	0.17
4	0.05	0.07	0.07	0.08	0.08	0.10	0.12	0.14
5		0.05	0.06	0.07	0.08	0.09	0.10	0.12
6			0.06	0.07	0.07	0.08	0.09	0.11
7			0.05	0.06	0.07	0.07	0.08	0.10
8			0.05	0.06	0.06	0.07	0.08	0.10
9				0.05	0.06	0.06	0.07	0.08
10				0.05	0.05	0.06	0.07	0.08
11					0.05	0.05	0.06	0.07
12						0.05	0.06	0.07
13							0.05	0.06
14							0.05	0.06
15								0.05
16								0.05

### ■ Internal Unified Threads (Depth of cut per pass: mm)

internal Unitied Threads (Depth of cut per pass: mm)													
Threads/Inch	32	28	24	20	18	16	14	13	12	11	10	9	8
Overall Depth of Cut (mm)	0.43	0.49	0.57	0.69	0.76	0.86	0.98	1.06	1.15	1.25	1.37	1.53	1.72
No. of Passes	4	4	5	7	8	10	11	12	12	14	14	16	16
1	0.20	0.20	0.20	0.22	0.22	0.22	0.25	0.25	0.27	0.27	0.27	0.30	0.30
2	0.10	0.16	0.16	0.12	0.13	0.13	0.15	0.15	0.16	0.16	0.18	0.18	0.22
3	0.08	0.08	0.09	0.09	0.10	0.08	0.10	0.10	0.12	0.12	0.16	0.16	0.18
4	0.05	0.05	0.07	0.08	0.08	0.08	0.08	0.08	0.10	0.10	0.12	0.11	0.15
5			0.05	0.07	0.07	0.07	0.07	0.08	0.09	0.08	0.10	0.09	0.12
6				0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.11
7				0.05	0.05	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.10
8					0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.09
9						0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.08
10						0.04	0.05	0.05	0.05	0.06	0.06	0.07	0.07
11							0.04	0.05	0.05	0.05	0.05	0.06	0.06
12								0.04	0.04	0.05	0.05	0.06	0.06
13										0.04	0.04	0.05	0.05
14										0.04	0.04	0.05	0.05
15												0.04	0.04
16												0.04	0.04

No. of passes and depths of cut in the table above are general guidelines only. Increase or decrease depending on conditions. However, the maximum depth of cut should be kept to 0.5mm or less.

When using an insert with a wiper edge, add machining allowance to the total depth of cut.

### ■ Recommended Cutting Conditions

Work Material	P Carbon Steel	P Alloy Steel (up to 330HB)	M Stainless Steel	K Grey Cast Iron (up to 330HB)	K Ductile Cast Iron	S Titanium Alloy
Cutting Speed vc (m/min)	75 to 150	75 to 135	60 to 120	90 to 180	75 to 135	24 to 90

### SEC-External Threading Tool Holders STE series

Evterna



Fig 1 m

> TME350R, TME400R

ø4.76

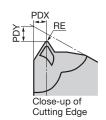
**External Turning** Screw-on / Lever Lock

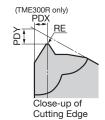
Metric Thread Whitworth Thread UNC/UNF Unified Thread R/Rc Taper Thread for Pipe

External Threading

Holder Parts Dimensions (mm) Flat Head Screw Wrench Cutting Edge Height Width Overall Length Stock Cat. No. Fig (N·m В LF WF HF **STE R1212** • 12 12 100 16 12 BFTX03508 TRX10 **STE R1616** 16 16 100 20 16

Fig 1





Inserts (	Cermet)
-----------	---------

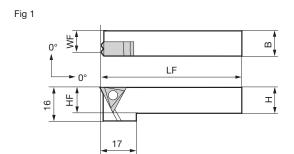
Dimensions (mm)

Type	Cat. No.	Reference	Pi	tch	500A	30A	Corner Radius	X Direction	Y Direction	Inscribed Circle	Thickness	Wiper	Applicable	Fig
Турс	Out. 140.	Cat. No.	mm	Threads/Inch		_	RE	PDX	PDY	IC	S	Edge	Holder	1 19
	TME 100R	16ER100ISO-TE	1.00	_			0.11	0.8	1.2	9.525	3.65	Yes		1
	TME 125R	16ER125ISO-TE	1.25	_			0.15	0.8	1.2	9.525	3.65	Yes		1
	TME 150R	16ER150ISO-TE	1.50	_			0.19	1.0	1.2	9.525	3.65	Yes		1
60°	TME 175R	16ER175ISO-TE	1.75	_			0.22	1.2	1.2	9.525	3.65	Yes		1
Metric	TME 200R	16ER200ISO-TE	2.00	_			0.26	1.4	1.2	9.525	3.65	Yes		1
Thread	TME 250R	16ER250ISO-TE	2.50	_			0.33	1.4	1.2	9.525	3.65	Yes		1
	TME 300R	16ER300ISO-TE	3.00	_			0.40	1.8	1.2	9.525	3.65	Yes		1
	TME 1020R	16ER102060-TE	1.00 to 2.00	24 to 12			0.11	1.1	1.2	9.525	3.65	No		1
	TME 1530R	16ER153060-TE	1.50 to 3.00	16 to 8			0.19	1.6	1.0	9.525	3.65	No		1
55°	TWE 1410R	16ER141055-TE	_	14 to 10			0.21	1.4	1.2	9.525	3.65	No		1
Whitworth Thread	TWE 2416R	16ER241655-TE	_	24 to 16			0.11	1.1	1.2	9.525	3.65	No	STE R1212	1
	TUE 24R	16ER24UN-TE	_	24			0.12	0.8	1.2	9.525	3.65	Yes	STE R1616	1
	TUE 20R	16ER20UN-TE	_	20			0.15	0.8	1.2	9.525	3.65	Yes		1
60°	TUE 18R	16ER18UN-TE	_	18			0.17	1.0	1.2	9.525	3.65	Yes		1
Unified	TUE 16R	16ER16UN-TE	_	16			0.20	1.2	1.2	9.525	3.65	Yes		1
Thread	TUE 14R	16ER14UN-TE	_	14			0.23	1.2	1.2	9.525	3.65	Yes		1
	TUE 12R	16ER12UN-TE	_	12			0.28	1.4	1.2	9.525	3.65	Yes		1
	TUE 08R	16ER08UN-TE	_	8			0.43	1.8	1.2	9.525	3.65	Yes		1
55°	TPE 28R	16ER28BSPT-TE	_	28			0.09	0.9	0.7	9.525	3.65	Yes		1
Taper	TPE 19R	16ER19BSPT-TE	_	19			0.15	0.9	0.7	9.525	3.65	Yes		1
Thread for	TPE 14R	16ER14BSPT-TE	_	14			0.22	1.6	1.2	9.525	3.65	Yes		1
Pipe	TPE 11R	16ER11BSPT-TE	_	11			0.29	1.6	1.2	9.525	3.65	Yes		1

For these inserts, only LTE/STE type holders can be used.







Screw-on / Drawing Pin for SEC-External Diameter (Mini Holders)

M Metric Thread W Whitworth Thread

R/Rc Taper Thread for Pipe

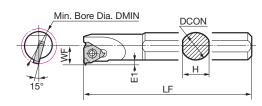
Holder								Parts	Dimensions (mm	
		Height	Width	Overall Length	Cutting Edge	Cutting Edge		Flat Head Screw	Wrench	
Cat. No.	Stock	ricigiit	Widdi	Overall Longin	Distance	Height	Fig			
Oat. No.	Stc	Н	В	LF	WF	HF	l ig			
THE R1010-33		10	10	100	8.6	10	1	DEVO410D	TH025	
THE R1212-33		12	12	100	10.6	12		BFX0410R	HU25	

Inserts ( Cermet /	Cer	men	tec	d Carbide)						Dimensions (mm)
Cat. No.		ST1 8T1 A3		itch	Corner Radius	Included Angle	Cutting edge design	Applicable Holder	60° 1.40 RE	
				mm	Threads/Inch	RE	PNA			
NE R080				0.80	_	0.08	60	Α		
NE R100				1.00	_	0.11	60	Α		
NE R125				1.25	_	0.15	60	В		1.7
NE R150				1.50	_	0.18	60	В		4.76
NE R175				1.75	_	0.22	60	В		
NE R200				2.00	_	0.25	60	В	THE R-33	/
NE R250				2.50	_	0.33	60	В	THE R-44	A type B type
NE R0815				0.80 to 1.50	_	0.08	60	С	THE R1010-33 THE R1212-33	With Wiper Edge With Wiper Edge
NE R1530			•	1.50 to 3.00	_	0.18	60	С	111L N1212-33	
WE R1410				_	14 to 10	0.21	55	С		$\wedge \wedge $
WE R2416 PTE R28 PTE R19				_	24 to 16	0.11	55	С		Ctura
				_	28	0.09	55	D		C type D type Without Wiper Edge
				_	19	0.15	55	D		vviitiout vvipei Lage VVIIII vvipei Lage

## Internal Threading Tools STI series

Internal Threading

Fig 1



Internal Boring Screw-on

M Metric Thread UNC/UNF Unified Thread

External Threading

Internal

	Holder									Parts	Dime	ensions (mm)
			Diameter	Height	Overall Length	Cutting Edge	Cutting Edge	Min. Bore		Flat Head S	crew	Wrench
	Cat. No.	ò	Diameter	ricignt	Overall Length	Distance	Distance	Dia.	Fig		<b>~</b>	1
	Out. 140.	ŝ	DCON	Н	LF	WF	E1	DMIN	1 19		(N·m	
												•
	STI R316		16	15	150	11	3.5	20	1	BFTX03508	2.0	TRX10
ī	STI R320		20	18	180	14	5.0	25	1	DI 1700000	2.0	INXIU

Inserts ( Cermet) Included Reference Pitch Cat. No. Direction Fig Cat. No. Threads/Inch RE **PNA** PDX PDY mm **TMI 100R** 16IR100ISO-TI 1.2 1.00 0.04 60 0.8 **TMI 125R** 16IR125ISO-TI 1.25 0.05 1.2 60 0.8 **TMI 150R** 16IR150ISO-TI 1.50 0.07 60 1.0 1.2 **TMI 175R** 16IR175ISO-TI 0.09 60 1.2 1.75 1.2 1 **TMI 200R** 16IR200ISO-TI 2.00 0.10 60 1.4 1.2 **TMI 250R** 16IR250ISO-TI 2.50 0.14 1.2 1 60 1.4 **TMI 300R** 16IR300ISO-TI 3.00 0.18 60 1.8 1.2 1 **TMI 1020R** 16IR102060-TI 1.00 to 2.00 0.04 60 1.2 1 24 to 12 1.0 **TMI 1530R** 16IR153060-TI | 1.50 to 3.00 0.07 1.2

Fig 1 Close-up of Cutting Edge RE <u>Ø9.5</u>25 ±0

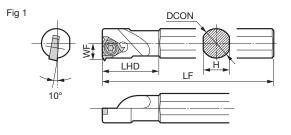
Dimensions (mm)

For these inserts, only STI type holders can be used.

Internal Boring

Dimensions (mm)





Holder Parts Dimensions (mm) Flat Head Screw Wrench Cutting Edge Distance Stock Min. Bore Cat. No. Applicable Insert Fig Dia. DCON LF WF LHD STHI 06 • • • 3.8 6 5.5 100 13.0 8.0 TI R06 BFTX0204NS 1 STHI 08 STHI 10 TI R08 10.0 BFTX0205NS RT06 8 7.0 125 4.7 17.0

0 1 1 11 00	_	-									
STHI 10	•	10	9.0	150	6.0	20	0.0	12.0	T	ΙR	09
Insert ( Coated Carbide	e)										
Cat. No.	Refere Cat. I	Vo.	Pitch (mm)	Haulus		Thickness	Cutting Edge Distance	Depth of	Applicabl Holder	e Fig	Fig 1
TI R06	06IR0410	060-HI <b>●</b>	0.4 to <b>0.5</b> to	1.0 0.03	3.97	1.59	0.7	0.5	STHI06	1	<u>IC</u>
TI R08	08IR0410	060-HI   <b>●</b>	0.4 to <b>0.5</b> to	1.0 0.03	4.76	2.38	0.7	0.5	STHI08	1	
TI R09	09IR0410	060-HI ●	0.4 to <b>0.5</b> to	1.0 0.03	5.56	2.38	0.7	0.5	STHI10	1	-

able der	Fig	Fig 1 E1: Cutting Edge Distance CDX: Maximum Depth of Cut	
401		60° E1	
106	1		
108	1		
110	1	60° 7° 0.5	
		<u>RE</u>	
		CDX	

BFTX02206NT

<sup>·</sup> For these inserts, only STHI type holders can be used.

 $<sup>\</sup>cdot$  Recommended pitch is 0.5mm.

### Guide to Depth of Cut and No. of Passes

### Threading Tool Depth of Cut Guide

### ■ With Wiper Edge

hreading Tools

5

eading

xternal

=

Applications		Cat. No.	Reference Cat. No.	Pitch	Depth of Cut	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		<b>TME 100R</b>	16ER 100ISO-TE	1.00mm	0.68	5	0.20	0.16	0.14	0.11	0.07									
		<b>TME 125R</b>	16ER 125ISO-TE	1.25	0.83	6	0.20	0.18	0.15	0.12	0.11	0.07								
	ding	<b>TME 150R</b>	16ER 150ISO-TE	1.50	0.96	7	0.22	0.18	0.14	0.13	0.12	0.10	0.07							
	External Threading	<b>TME 175R</b>	16ER 175ISO-TE	1.75	1.12	8	0.22	0.19	0.16	0.14	0.13	0.12	0.09	0.07						
	ıl Th	<b>TME 200R</b>	16ER 200ISO-TE	2.00	1.25	8	0.25	0.21	0.18	0.16	0.15	0.13	0.10	0.07						
٦	erna	<b>TME 250R</b>	16ER 250ISO-TE	2.50	1.55	10	0.27	0.24	0.20	0.18	0.16	0.13	0.11	0.10	0.09	0.07				
60° Metric Thread	Ext	<b>TME 300R</b>	16ER 300ISO-TE	3.00	1.85	12	0.28	0.25	0.20	0.19	0.17	0.15	0.13	0.12	0.10	0.10	0.09	0.07		
.i⊇		<b>TME 350R</b>	22ER 350ISO-TE	3.50	2.25	13	0.30	0.27	0.24	0.22	0.20	0.18	0.16	0.15	0.14	0.12	0.11	0.09	0.07	
Metr		<b>TME 400R</b>	22ER 400ISO-TE	4.00	2.57	14	0.35	0.32	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10	0.09	0.08	0.07
0,0		<b>TMI 100R</b>	16IR 100ISO-TI	1.00mm	0.63	5	0.18	0.16	0.12	0.10	0.07									
	ing	TMI 125R	16IR 125ISO-TI	1.25	0.77	6	0.18	0.16	0.14	0.12	0.10	0.07								
	Threading	TMI 150R	16IR 150ISO-TI	1.50	0.90	7	0.20	0.16	0.14	0.13	0.11	0.09	0.07							
ш	I Th	TMI 175R	16IR 175ISO-TI	1.75	1.03	8	0.20	0.18	0.15	0.14	0.11	0.10	0.08	0.07						
ш	Internal	TMI 200R	16IR 200ISO-TI	2.00	1.18	8	0.22	0.19	0.17	0.15	0.14	0.13	0.11	0.07						
	Inte	TMI 250R	16IR 250ISO-TI	2.50	1.44	10	0.25	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.09	0.07				
		TMI 300R	16IR 300ISO-TI	3.00	1.70	12	0.27	0.24	0.20	0.17	0.14	0.12	0.12	0.10	0.10	0.09	0.08	0.07		
		TUE 24R	16ER 24UN-TE	24ты	0.72	5	0.20	0.18	0.15	0.12	0.07									
ead	ling	TUE 20R	16ER 20UN-TE	20	0.85	6	0.21	0.18	0.16	0.13	0.10	0.07								
60° Unified Thread	ernal Threading	TUE 18R	16ER 18UN-TE	18	0.95	6	0.22	0.20	0.18	0.16	0.12	0.07								
iţied	II Th	TUE 16R	16ER 16UN-TE	16	1.05	7	0.22	0.20	0.17	0.15	0.13	0.11	0.07							
S	erna	TUE 14R	16ER 14UN-TE	14	1.20	8	0.22	0.20	0.18	0.16	0.14	0.12	0.11	0.07						
09	Ext	TUE 12R	16ER 12UN-TE	12	1.38	9	0.25	0.22	0.19	0.17	0.15	0.13	0.11	0.09	0.07					
		TUE 08R	16ER 08UN-TE	8	2.05	12	0.28	0.25	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.12	0.11	0.07		
r Pipe	ding	TPE 28R	16ER 28BSPT-TE	28трі	0.62	5	0.18	0.15	0.13	0.10	0.06									
55° Taper Thread for Pipe	Threading	TPE 19R	16ER 19BSPT-TE	19	0.92	6	0.22	0.20	0.17	0.15	0.11	0.07								
tper Th	External 1	TPE 14R	16ER 14BSPT-TE	14	1.04	7	0.22	0.20	0.17	0.15	0.13	0.10	0.07							
55° Ts	Exte	TPE 11R	16ER 11BSPT-TE	11	1.50	9	0.25	0.22	0.21	0.19	0.17	0.15	0.13	0.11	0.07					

<sup>\*</sup> When pitch becomes smaller, decrease the cutting speed. In the case of inserts for internal threading without wiper edge, the number of passes should be increased.

### ■ Recommended Cutting Speeds

(Units: m/min)

Wor	Tool Grade k Material	T1500A / T130A	A30	ST10P
	Mild Steel	100 - 150	70 - 120	120 - 180
P	Low-carbon Steel	80 - 130	70 - 100	90 - 150
	Alloy Steel	80 - 120	70 - 100	80 - 130
M	Stainless Steel	_	70 - 100	_

# Guide to Depth of Cut and No. of Passes

### Threading Tool Depth of Cut Guide

### ■ Without Wiper Edge

Applications		Cat. No.	Reference Cat. No.	Corner Radius	Pitch	Depth of Cut	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14
					1.00mm	0.65	5			0.12											
					1.25	0.84	6			0.16											
	ng	TME 1020R	16ER 102060-TE	0.13	1.50	1.03	7			0.17											
	eadi				1.75	1.22	8		-	0.18			-								
	External Threading				2.00	1.41	10								0.10	0.09	0.07				
	rnal				1.50mm	0.95	7	0.22	0.17	0.14	0.13	0.12	0.10	0.07							
	Exte				1.75	1.14	8	_		0.16		-	-								
l g	ш	TME 1530R	16ER 153060-TE	0.20	2.00	1.33	9			0.18											
hre					2.50	1.71	12	0.25	0.22	0.19	0.17	0.15	0.14	0.13	0.12	0.10	0.09	0.08	0.07		
ric T					3.00	2.09	14	0.25	0.22	0.20	0.20	0.18	0.17	0.15	0.14	0.14	0.10	0.10	0.09	0.08	0.07
60° Metric Thread					1.00mm	0.59	6	0.16	0.12	0.10	0.08	0.08	0.05								
09					1.25	0.75	7	0.16	0.14	0.12	0.10	0.10	0.08	0.05							
	g	TMI 1020R	16IR 102060-TI	0.06	1.50	0.92	8	0.18	0.15	0.14	0.12	0.10	0.10	0.08	0.05						
	adin	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			1.75	1.08	9	0.18	0.16	0.14	0.13	0.12	0.12	0.10	0.08	0.05					
	Internal Threading				2.00	1.24	10	0.20	0.18	0.15	0.14	0.12	0.12	0.10	0.10	0.08	0.05				
	nal -				1.50mm	0.91	8	0.18	0.14	0.14	0.12	0.10	0.10	0.08	0.05						
	nter				1.75	1.07	9	0.18	0.16	0.13	0.13	0.12	0.12	0.10	0.08	0.05					
	_	TMI 1530R	16IR 153060-TI	0.09	2.00	1.23	10	0.20	0.18	0.14	0.14	0.12	0.12	0.10	0.10	0.08	0.05				
					2.50	1.56	12	0.20	0.18	0.16	0.16	0.15	0.13	0.13	0.11	0.11	0.10	0.08	0.05		
					3.00	1.88	14	0.22	0.20	0.18	0.18	0.16	0.16	0.14	0.14	0.10	0.10	0.10	0.08	0.07	0.05
					20ТРІ	0.80	6	0.20	0.17	0.15	0.12	0.09	0.07								
ead	g				19	0.84	6	0.20	0.18	0.16	0.13	0.10	0.07								
Thre	adin	TWE 2416R	16ER 241655-TE	0.13	18	0.90	7	0.20	0.18	0.15	0.12	0.10	0.08	0.07							
orth	External Threading				16	1.03	7	0.22	0.20	0.17	0.15	0.12	0.10	0.07							
     Jitwo					14TPI	1.07	8	0.20	0.17	0.15	0.14	0.13	0.12	0.09	0.07						
₹	xteri				12	1.29	9	0.22	0.20	0.17	0.15	0.14	0.13	0.12	0.09	0.07					
55	Ш	TWE 1410R	16ER 141055-TE	0.23	11	1.43	10	0.22	0.21	0.18	0.16	0.14	0.13	0.12	0.11	0.09	0.07				
	TWE 1410F		TOLIT 141000-1E 0.		10	1.60	11	0.22	0.21	0.18	0.17	0.16	0.14	0.13	0.12	0.11	0.09	0.07			

<sup>\*</sup> When pitch becomes smaller, decrease the cutting speed. In the case of inserts for internal threading without wiper edge, the number of passes should be increased.

Threading External

**Endmills** 6-1 to 6-47





Indexable	SEC-WaveMill WEZ series6-2 SEC-WaveMill WEX series6-3
	GSX series MILL 2 Flute6-6
Solid	GSX series MILL 3 Flute6-22
	GSX series MILL 4 Flute6-28

Stock Markings and Symbols

■ mark: Standard stocked item

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

\* mark: Semi-standard stock (please confirm stock availability) ■ mark: To be replaced with the new item featured on the same page O mark: Stock or planned stock (please confirm stock availability) Blank: Made-to-order item

mark: Not available

## WEZ 11000ES Series for Multi-tasking Machines 🗜 🔼 🔣 🔝

























Square

Rake	Radial	-14° to -18°
Angle	Axial	6° to 10°





Fig 1



LH

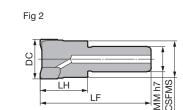




DCSFMS DMM h7







### Body (Short Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia.	Boss DCSFMS	Shank  DMM	Head <b>LH</b>	Effective Length	Overall Length	Number of Teeth	Weight (kg)	Fig
WEZ 11014ES01-12		14	18	12	30(29.7)	27	65(64.7)	1	0.05	1
11016ES02-10		16	18	10	25(24.7)	22	55(54.7)	2	0.04	1
11016ES02-12		16	18	12	30(29.7)	27	65(64.7)	2	0.05	1
11020ES03-10		20	18	10	25(24.7)	_	55(54.7)	3	0.04	2
11020ES03-12		20	18	12	30(29.7)	_	65(64.7)	3	0.06	2
11020ES03-16		20	23	16	30(29.7)	27	70(69.7)	3	0.10	1
11025ES04-12		25	23	12	30(29.7)	_	65(64.7)	4	0.09	2
11025ES04-16		25	23	16	30(29.7)	_	70(69.7)	4	0.12	2

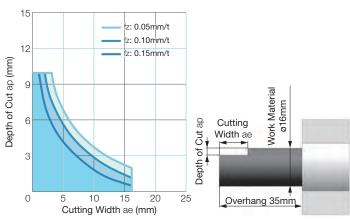
The LH and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 insert. When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm. Inserts are sold separately.

### **Parts**

i aito				
	Flat Insert S	crew	Wrench	Anti-seizure Cream
Applicable Cutter		(N·m)	P	
WEZ11014ES01-12				
WEZ11016ES02-10	BFTX0305IP			
WEZ11016ES02-12				
WEZ11020ES03-10		1.5	TRDR08IP	SUMI-P
WEZ11020ES03-12		1.5	ווסטחעסור	SUIVII-P
WEZ11020ES03-16	BFTX0306IP			
WEZ11025ES04-12				
WEZ11025ES04-16				

### **Recommended Cutting Conditions**

Tool: WEZ11016ES02-10 Insert: AOET11T3OOPEER-F



### **Identification Code**



Size

Short

Shank

of Teeth

Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



Modify the C chamfering portion.

### WEZ11 type

type

Reworking guidelines Corner radius = 2.4: C1 (AOMT11T324PEER) Corner radius = 3.0: C2.5

(AOMT11T330PEER) Corner radius = 3.2: C2.5 (AOMT11T332PEER)

Standard: R1

<sup>·</sup> The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).

# WEZ 11000ES Series for Multi-tasking Machines ... M.K.N.S.







Insert Dimensions (mm)
------------------------

Insert																Dimensions (mm
Gr	ade Classification			Со	ate	d C	arb	ide			Cemented Carbide	DLC	Cermet			
	High-speed/Light Cutting		<b>₹</b> M	P		K	K		<b>™</b> s			N	P			
Process	General-purpose	<b>₹</b>	<b>₹</b>		P	K		K	<b>™</b> s	Me	N	N		1		
	Roughing	R <sub>S</sub> M			P	_		K		W <sub>S</sub>				1		
	riougimig															
		ACU2500	XCU2500	ACP2000	ACP3000	XCK2000	ACK2000	ACK3000	ACM200	ACM300	_	8	_ ×			
	Cat. No.	726	120	22	33	ig	8	33	\ \ \	8	H20	20	000	Corner Radius	Fig	
		15	12	Ö	S	Ò	Ò	Ò	$\overline{Q}$	Ö		DL2000	T2500A	RE		
			×	⋖	⋖	×	⋖	⋖	4	4						
AOMT	11T302PEER-G										_	_	•	0.2	1	
	11T304PEER-G										_	_	•	0.4	1	
	11T305PEER-G										_	_		0.5	1	
	11T308PEER-G										_	_	•	0.8	1	
	11T310PEER-G										_	_		1.0	1	
	11T312PEER-G										_	_		1.2	1	
	11T316PEER-G		•		•	•				•	_	_		1.6	1	
	11T320PEER-G										_	_		2.0	1	
	11T324PEER-G	•			_	_		_			_	_		2.4	1	
	11T330PEER-G	•									_	_		3.0	2	
	11T330FEER-G	•									_	_		3.2	2	
A CRAT	11T304PEER-H	•								-	_	_		0.4	1	
AUNI													_		1	
	11T308PEER-H	•												0.8		
	11T312PEER-H										_			1.2	1	Fig 1 RE
	11T316PEER-H	•								•	_	-	_	1.6	1	nL /
AOET	11T302PEER-F			_			-		-		_	_	_	0.2	1	
	11T304PEER-F			_			_		_		_	_	_	0.4	1	ζ
	11T305PEER-F			_			_		_		_	_	_	0.5	1	500,
	11T308PEER-F			-			_		_		_	_	_	0.8	1	
	11T310PEER-F			-					_		_	—	_	1.0	1	12.8
	11T312PEER-F			_			_		_		_	_	_	1.2	1	
	11T316PEER-F			_			_		_		_	_	_	1.6	1	
	11T320PEER-F			_			_		_		_	_	_	2.0	1	
	11T324PEER-F	•		_			_		_		_	_	_	2.4	1	Fig 2
	11T330PEER-F	•		_			_		_		_	_	_	3.0	2	i RE
	11T332PEER-F	•		_			_		_		_	_	_	3.2	2	
AOFT	11T302PEER-P16	•		_					_		_	_	_	0.2	1	2.2
AOL:	11T304PEER-P16			_			_		_		_	_	_	0.4	1	50.
	11T305PEER-P16			_							_	_	_	0.5	1	
	11T308PEER-P16										_	_	_	0.8	1	12.2 3.4
									_		_	_	_		1	
	11T310PEER-P16	•									_		_	1.0		
AOET	11T312PEER-P16			_							_		_	1.2	1	
AGET	11T302PEER-P20	•		_			_		_		_		_	0.2	1	l l
	11T304PEER-P20			_			_		_		_	_	_	0.4	1	
	11T305PEER-P20	•		_			_					_	_	0.5	1	
	11T308PEER-P20			_			-		-		_	_	_	0.8	1	
	11T310PEER-P20	•		-			_				_	_	_	1.0	1	
	11T312PEER-P20			_			_		_		_	_	_	1.2	1	
AOET	11T302PEER-P25			_			_		_		_	_	_	0.2	1	
	11T304PEER-P25			-			-		-		_	_	_	0.4	1	
	11T305PEER-P25			-			-		-		_	_	_	0.5	1	
	11T308PEER-P25			_			_		-		_	_	_	0.8	1	
	11T310PEER-P25			_			_		_		_	_	_	1.0	1	
	11T312PEER-P25	•		_			_		_		_	_	_	1.2	1	
	11T302PEFR-S	Ī	-	_	_	_		_					_	0.2	1	
	11T304PEFR-S	l_		_	_	_	_	_	_	_			_	0.4	1	
	11T305PEFR-S		_	_	_	_		_					_	0.5	1	
	11T308PEFR-S	_	_							_			_	0.8	1	
	11T310PEFR-S												_	1.0	1	
										_		_		-		
	11T312PEFR-S		_											1.2	1	
	11T316PEFR-S	_	_	_	_	_	_	_	_	_		•	_	1.6	1	
	11T320PEFR-S	-										•	_	2.0	1	
	11T324PEFR-S	1	-	_	_		_	_		_			_	2.4	1	
	11T330PEFR-S		-	-	_	_	-	-	-	_			_	3.0	2	
	11T332PEFR-S	<u> -</u>	<u> -</u>	<u> </u>	<u>  — </u>	<u>                                     </u>	<u>  — </u>	<u>                                     </u>	_	_			_	3.2	2	

<sup>-</sup>G: General-purpose, -H: Strong Edge, -F: Medium Finishing,

<sup>-</sup>P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.

<sup>\* -</sup>P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20.

<sup>-</sup>P25 is applicable to cutter diameters ø25 and ø28.

Body (Shank type)

Cat. No.

**WEX 1010E** 

1012E

1014E

1016E

1018E

1020E

1025E

Inserts are sold separately.

# VEX 1000E/EL type

Shank

DMM

10

12

16

16

20

20

20

DC

10

12

14

16

18

20

25

Head

LH

17

20

22

20

22

22

25

LF

50

80

80

90

100

100

115

of Teeth

2

3

3

4

5





















6

Metric

Radius

Coated











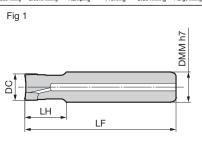


### type

### **Parts** Flat Insert Screw Wrench | Anti-seizure Cream (N·m







Dimensions (mm) Number Weight

(kg)

0.03

0.06

0.10

0.12 1

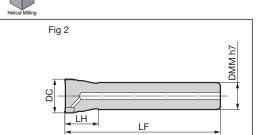
0.21 1

0.22 1

0.27

1

2



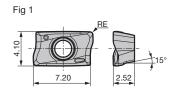
Body (Long Shank type)

	Cat. No.	Stock	Dia.	Shank	Head	Overall Length	Number	Weight	Fig
	Gat. No.	Stc	DC	DMM	LH	LF	of Teeth	(kg)	rig
	WEX 1010EL		10	8	17	100	2	0.03	2
١.	1012EL		12	10	20	120	2	0.06	2
1.2	1014EL		14	12	20	145	3	0.11	2
Matric	1016EL		16	14	20	160	3	0.17	2
-	1018EL		18	16	20	180	3	0.25	2
	1020EL		20	18	25	200	4	0.36	2

Inserts are sold separately.

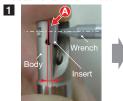
Insert Dimensions (mm)

Gra	de Classification		С	oate	ed Ca	arbic	le		Carbide	DLC		
	High-speed/Light Cutting	P			K		<mark>™</mark> s		K	Z		
Process	General-purpose		M	M	K		<mark>™</mark> s	<mark>™</mark> s		Z		
	Roughing		M	M		K		<mark>™</mark> s				
	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H	DL1000	Corner Radius RE	Fig
<b>AXM</b> 1	Γ 060204PDER-L	•		•		•	•		_	_	0.4	1
	060208PDER-L								_	_	8.0	1
	060212PDER-L								_	_	1.2	1
<b>AXM1</b>	Г 060202PDER-G								_	_	0.2	1
	060204PDER-G								-	_	0.4	1
	060208PDER-G								_	_	8.0	1
	060212PDER-G								_	_	1.2	1
<b>AXM1</b>	Г 060204PDER-H								_	_	0.4	1
	060208PDER-H								_	_	8.0	1
	060212PDER-H								-	_	1.2	1
<b>AXM</b> 1	Г 060202PDFR-S	_	_	_	_	_	_	_	•	•	0.2	1



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -S: Aluminum Alloy.

### Precautions when Mounting WEX1000 Inserts





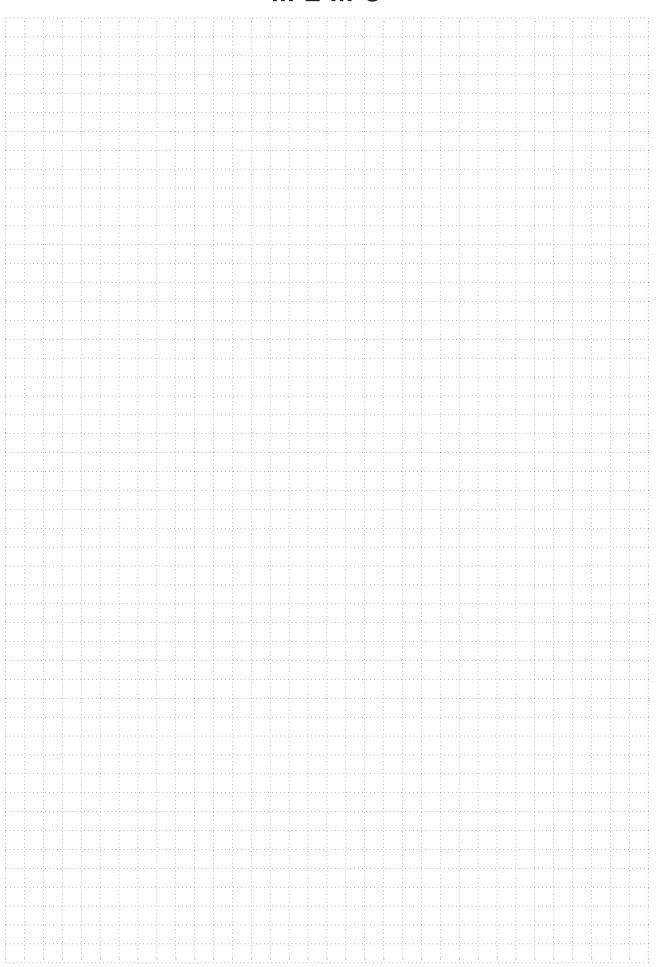


Press the top of the insert

Hold down as shown in os that there is no gap between the insert bottom and the base of insert pocket, and tighten with wrench (B) (tightening torque 0.5N·m)

A dedicated torque wrench is optionally available (sold separately).

### **MEMO**



# SX 20000C-1.5D type General Carbon Steel















**Endmills** 

6

Square









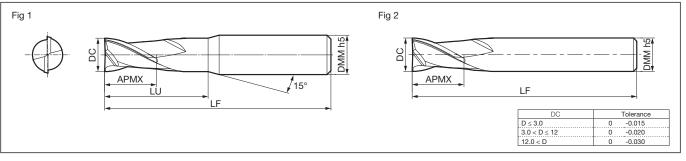












Body						Dimension	ıs (mm	1)
Cat No	충	Dia.	Cutting Edge Length	Neck Length	Overall Length	Shank Dia.	Fic	~

Cat. No.	Stoc	DC	APMX	LU	LF	DMM	Fig
GSX 20050C-1.5D	•	0.5	1.0	1.4	40	4	1
20100C-1.5D		1.0	1.5	2.5	40	4	1
20150C-1.5D		1.5	2.3	3.3	40	4	1
20200C-1.5D		2.0	3.0	4.0	40	4	1
20250C-1.5D		2.5	3.8	4.8	40	4	1
GSX 20300C-1.5D		3.0	4.5	6.0	45	6	1
20350C-1.5D		3.5	5.3	6.8	45	6	1
20400C-1.5D		4.0	6.0	7.5	45	6	1
20450C-1.5D		4.5	6.8	8.3	50	6	1
20500C-1.5D		5.0	7.5	9.5	50	6	1
GSX 20550C-1.5D		5.5	8.3	10.3	50	6	1
20600C-1.5D		6.0	9.0	_	50	6	2
20650C-1.5D		6.5	10.0	12.0	60	8	1
20700C-1.5D		7.0	11.0	13.0	60	8	1
20750C-1.5D		7.5	12.0	14.0	60	8	1
GSX 20800C-1.5D		8.0	12.0	_	60	8	2
20850C-1.5D		8.5	13.0	15.0	70	10	1
20900C-1.5D		9.0	14.0	16.0	70	10	1
20950C-1.5D	•	9.5	15.0	17.0	70	10	1
21000C-1.5D		10.0	15.0	_	70	10	2
GSX 21050C-1.5D	•	10.5	16.0	18.5	75	12	1
21100C-1.5D		11.0	17.0	19.5	75	12	1
21150C-1.5D	•	11.5	18.0	20.5	75	12	1
21200C-1.5D	•	12.0	18.0	_	75	12	2
21300C-1.5D	•	13.0	20.0	23.5	90	16	1
GSX 21400C-1.5D		14.0	21.0	24.5	90	16	1
21500C-1.5D	•	15.0	23.0	26.5	90	16	1
21600C-1.5D		16.0	24.0	_	90	16	2
21700C-1.5D	•	17.0	26.0	30.5	100	20	1
21800C-1.5D		18.0	27.0	31.5	100	20	1
GSX 21900C-1.5D		19.0	29.0	33.5	100	20	1
22000C-1.5D		20.0	30.0	=	100	20	2
22500C-1.5D		25.0	38.0	_	120	25	2

Grade: ACF20

**Identification Code** 

Series Code No. of Flutes

Dia.

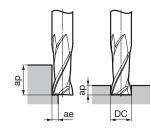
Corner Style C: Gash Land

Cutting Edge Length

# GSX 20000C-1.5D type

- Recommended Cutting Conditions

  1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



### Side Milling

Work Material Cutting Conditions	Structural Steel SC SS (150 to 250HB)			Cast Iron Alloy Steel SCM (25 to 35HRC)			Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC) Hardened Steel (45 to 55HRC)			Stainles SUS304	ss Steel SUS316	Heat-Resis Titaniur	stant Alloy m Alloy			
DC (mm)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)
1.0	19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
2.0	11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
4.0	6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
6.0	4,600	560	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
8.0	3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
10.0	2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
12.0	2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
16.0	1,700	450	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	110	800	85
20.0	1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
25.0	1,080	300	1,080	300	1,080	300	1,040	220	720	130	520	70	640	80	520	60
Standard ap		1.5DC												DC		
Depth of Cut ae					0.05	DC							0.02	2DC		

### Groove Milling

0000	9															
Work Material Cutting Conditions		ral Steel S		n Steel C 250HB)		: Iron C	ś	Steel CM B5HRC)	NAK ,	, Hardened Steel , HPM 45HRC)	Harden	ed Steel 55HRC)		ss Steel ,SUS316		stant Alloy m Alloy
DC (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)		Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)
1.0	19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
2.0	11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
4.0	6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
6.0	4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
8.0	3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
10.0	2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
12.0	2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
16.0	1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
20.0	1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
25.0	1,080	1,080 240 1,080 304		1,080	304	, , , , , , , , , , , , , , , , , , , ,		720 128		520 72		640	56	256	24	
Standard Depth of Cut ap	0.2	DC			0.5	0.5DC			0.2DC		0.05DC			0.2	DC	

# SX 20000S-2D type



Endmills

6

Square

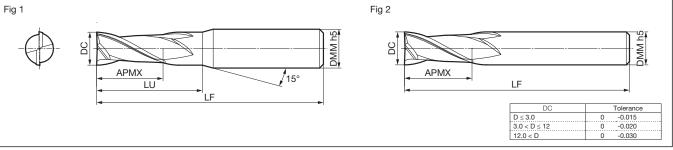












Body (Diameter ø0.3 to 4.3mm)

Dimensions (mm)

Cat. No.	Stock DC Dia.	Cutting Edge Length APMX	Neck Length	Overall Length  LF	Shank Dia.  DMM	Fig
GSX 20030S-2D	0.3	0.6	1.0	40	4	1
20040S-2D	0.4	0.8	1.2	40	4	1
20050S-2D	0.5	1.3	1.7	40	4	1
20060S-2D	0.6	1.3	1.8	40	4	1
20070S-2D	0.7	1.4	1.9	40	4	1
GSX 20080S-2D	0.8	1.6	2.1	40	4	1
20090S-2D	0.9	1.8	2.3	40	4	1
20100S-2D	1.0	2.5	3.5	40	4	1
20110S-2D	● 1.1	2.5	3.5	40	4	1
20120S-2D	1.2	2.5	3.5	40	4	1
GSX 20130S-2D	1.3	2.6	3.6	40	4	1
20140S-2D	1.4	2.8	3.8	40	4	1
20150S-2D	<b>●</b> 1.5	3.8	4.8	40	4	1
20150S-2D-S3	1.5	3.8	4.8	38	3	1
20160S-2D	1.6	3.8	4.8	40	4	1
GSX 20170S-2D	<b>●</b> 1.7	3.8	4.8	40	4	1
20180S-2D	● 1.8	3.8	4.8	40	4	1
20190S-2D	1.9	3.8	4.8	40	4	1
20200S-2D	● 2.0	5.0	6.0	40	4	1
20200S-2D-S3	2.0	5.0	6.0	38	3	1
GSX 20210S-2D	● 2.1	6.0	7.0	40	4	1
20220S-2D	● 2.2	6.0	7.0	40	4	1
20230S-2D	<b>2.3</b>	6.0	7.0	40	4	1
20240S-2D	2.4	6.0	7.0	40	4	1
20250S-2D	2.5	6.3	7.3	40	4	1
GSX 20260S-2D	2.6	7.0	8.0	40	4	1
20270S-2D	● 2.7	7.0	8.0	40	4	1
20280S-2D	2.8	7.0	8.0	40	4	1
20290S-2D	2.9	7.0	8.0	40	4	1
20300S-2D	3.0	7.5	9.0	45	6	1
GSX 20300S-2D-S3	3.0	7.5	_	38	3	2
20310S-2D	3.1	7.5	9.0	45	6	1
20320S-2D	3.2	7.5	9.0	45	6	1
20330S-2D	3.3	7.5	9.0	45	6	1
20340S-2D	3.4	7.5	9.0	45	6	1
GSX 20350S-2D	3.5	8.8	10.3	45	6	1
20360S-2D	3.6	8.8	10.3	45	6	1
20370S-2D	3.7	8.8	10.3	45	6	1
20380S-2D	3.8	8.8	10.3	45	6	1
20390S-2D	3.9	8.8	10.3	45	6	1
GSX 20400S-2D	4.0	11.0	14.0	45	6	1
20400S-2D-S4	4.0	11.0	_	45	4	2
20410S-2D	4.1	11.0	14.0	45	6	1
20420S-2D	4.2	11.0	14.0	45	6	1
20430S-2D	4.3	11.0	14.0	45	6	1

Grade: ACF20

# GSX 20000S-2D type

















**Endmills** 

6

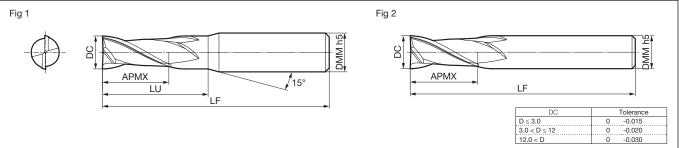












Cat. No.	Dia. <b>DC</b>	Cutting Edge Length APMX	Neck Length LU	Overall Length	Shank Dia.  DMM	Fig
SSX 20440S-2D ●		11.0				
	4.4		14.0	45	6	1
20450S-2D • 20460S-2D •	4.5 4.6	11.3 11.3	12.8 12.8	50 50	6 6	1
	4.7	11.3	12.8	50	6	1
20470S-2D ● 20480S-2D ●	4.8	11.3	12.8	50	6	1
GSX 20490S-2D •	4.9	11.3	12.8	50	6	1
20500S-2D	5.0	13.0	19.6	50	6	1
20510S-2D •	5.1	13.0	19.6	50	6	1
20520S-2D	5.2	13.0	19.6	50	6	1
20530S-2D	5.3	13.0	19.6	50	6	1
GSX 20540S-2D •	5.4	13.0	19.6	50	6	1
20550S-2D	5.5	13.0	19.6	50	6	1
20560S-2D •	5.6	13.0	19.6	50	6	1
20570S-2D	5.7	13.0	19.6	50	6	1
20580S-2D	5.8	13.0	19.6	50	6	1
GSX 20590S-2D •	5.9	13.0	19.6	50	6	1
20600S-2D	6.0	13.0	_	50	6	2
20610S-2D	6.1	13.0	19.6	50	8	1
20620S-2D	6.2	13.0	19.6	50	8	1
20630S-2D	6.3	13.0	19.6	50	8	1
GSX 20640S-2D •	6.4	13.0	19.6	50	8	1
20650S-2D	6.5	13.0	19.6	60	8	1
20660S-2D	6.6	13.2	19.8	60	8	1
20670S-2D	6.7	13.4	20.0	60	8	1
20680S-2D	6.8	13.6	20.2	60	8	1
GSX 20690S-2D •	6.9	13.8	20.4	60	8	1
20700S-2D	7.0	16.0	21.1	60	8	1
20710S-2D •	7.1	16.0	21.1	60	8	1
20720S-2D	7.2	16.0	21.1	60	8	1
20730S-2D	7.3	16.0	21.1	60	8	1
GSX 20740S-2D •	7.4	16.0	21.1	60	8	1
20750S-2D •	7.5	16.0	21.1	60	8	1
20760S-2D	7.6	16.0	21.1	60	8	1
20770S-2D	7.7	16.0	21.1	60	8	1
20780S-2D	7.8	16.0	21.1	60	8	1
GSX 20790S-2D •	7.9	16.0	21.1	60	8	1
20800S-2D	8.0	19.0	_	60	8	2
20810S-2D	8.1	19.0	24.1	60	10	1
20820S-2D	8.2	19.0	24.1	60	10	1
20830S-2D	8.3	19.0	24.1	60	10	1
GSX 20840S-2D •	8.4	19.0	24.1	60	10	1
20850S-2D	8.5	19.0	24.1	70	10	1
20860S-2D	8.6	19.0	24.1	70	10	1
20870S-2D	8.7	19.0	24.1	70	10	1
20880S-2D	8.8	19.0	24.1	70	10	1

Grade: ACF20

# SX 20000S-2D type





Endmills

6

Square

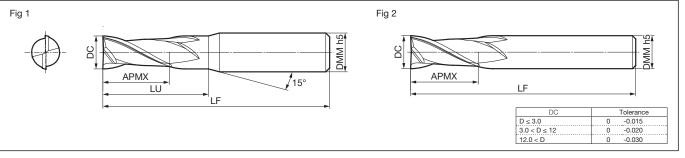












Body (Diameter ø8.9 to 25.0mm)

Dimensions (mm)

		,					
Cat. No.	Stock	Dia. <b>DC</b>	Cutting Edge Length APMX	Neck Length LU	Overall Length <b>LF</b>	Shank Dia.  DMM	Fig
GSX 20890S-2D		8.9	19.0	24.1	70	10	1
20900S-2D		9.0	19.0	24.1	70	10	1
20910S-2D		9.1	19.0	24.1	70	10	1
20920S-2D		9.2	19.0	24.1	70	10	1
20930S-2D		9.3	19.0	24.1	70	10	1
GSX 20940S-2D		9.4	19.0	24.1	70	10	1
20950S-2D		9.5	20.0	25.1	70	10	1
20960S-2D		9.6	20.0	25.1	70	10	1
20970S-2D		9.7	20.0	25.1	70	10	1
20980S-2D		9.8	20.0	25.1	70	10	1
GSX 20990S-2D		9.9	20.0	25.1	70	10	1
21000S-2D		10.0	22.0	_	70	10	2
21050S-2D		10.5	22.0	24.5	75	12	1
21100S-2D		11.0	22.0	24.5	75	12	1
21150S-2D		11.5	23.0	25.5	75	12	1
GSX 21200S-2D		12.0	26.0	_	75	12	2
21250S-2D		12.5	26.0	29.5	75	16	1
21300S-2D		13.0	26.0	29.5	90	16	1
21400S-2D		14.0	28.0	31.5	90	16	1
21500S-2D		15.0	30.0	33.5	90	16	1
GSX 21600S-2D		16.0	32.0	_	90	16	2
21700S-2D		17.0	35.0	39.5	100	20	1
21800S-2D		18.0	40.0	44.5	100	20	1
21900S-2D		19.0	40.0	44.5	100	20	1
22000S-2D		20.0	40.0	_	100	20	2
GSX 22100S-2D		21.0	42.0	47.0	110	25	1
22200S-2D		22.0	44.0	49.0	110	25	1
22300S-2D		23.0	46.0	51.0	120	25	1
22400S-2D		24.0	48.0	53.0	120	25	1
22500S-2D		25.0	50.0	=	120	25	2
Grade: ACF20							

Grade: ACF20

Identification Code

0150

Series Code No. of Flutes Dia.

S: Sharp Edge

Corner Style Cutting Edge Length

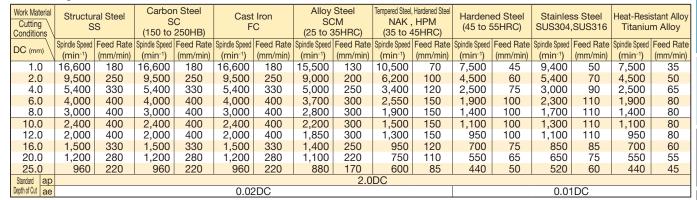
Shank Dia.

### **GSX 20000S-2D** type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 5. This series is not recommended for groove milling.
- 6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

#### Side Milling



#### Groove Finishing

Work Material Cutting Conditions	Structui		S (150 to		Cast F	С	(25 to 3	CM B5HRC)	NAK , (35 to 4		(45 to 5			,SUS316		m Alloy	
DC (mm)	Spindle Speed		Spindle Speed		Spindle Speed		Spindle Speed				Spindle Speed		Spindle Speed		Spindle Speed		
DO (IIIII) \	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	
1.0	16,600	180	16,600	180	16,600	180	15,500	130	10,500	70	7,500	45	9,400	50	7,500	35	
2.0	9,500	250	9,500	250	9,500	250	9,000	200	6,200	100	4,500	60	5,400	70	4,500	50	
4.0	5,400	330	5,400	330	5,400	330	5,000	250	3,400	120	2,500	75	3,000	90	2,500	65	
6.0	4,000	400	4,000	400	4,000	400	3,700	300	2,550	150	1,900	100	2,300	110	1,900	80	
8.0	3,000	400	3,000														
10.0	2,400	400	2,400	400 2,400 400 2,200 300 1,500 150 1,100 100 1,300 110 1,100 80													
12.0	2,000	400	2,000	400	2,000	400	1,850	300	1,300	150	950	100	1,100	110	950	80	
16.0	1,500	330	1,500	330	1,500	330	1,400	250	950	120	700	75	850	85	700	60	
20.0	1,200	280	1,200	280	1,200	280	1,100	220	750	110	550	65	650	75	550	55	
25.0	960	220	960	220	960	220	880	170	600	85	440	50	520	60	440	45	
Standard ap								1.5	DC								
Depth of Cut ae								Below (	0.02DC								

ae DC

# SX 20000C-2D type





Endmills

6

Square











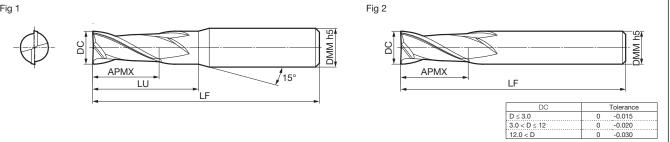












Body Dimensions (mm)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length	Overall Length <b>LF</b>	Shank Dia.  DMM	Fig
	•	0.5	1.0	1.4	40	4	1
20100C-2D	•	1.0	2.0	3.0	40	4	1
20150C-2D		1.5	3.0	4.0	40	4	1
20200C-2D		2.0	4.0	5.0	40	4	1
20250C-2D		2.5	5.0	6.0	40	4	1
GSX 20300C-2D	•	3.0	6.0	7.5	45	6	1
		3.5	7.0	8.5	45	6	1
20400C-2D		4.0	8.0	9.5	45	6	1
		4.5	9.0	10.5	50	6	1
20500C-2D		5.0	10.0	12.0	50	6	1
0.07. 200000 22		5.5	11.0	13.0	50	6	1
20600C-2D		6.0	12.0	_	50	6	2
		6.5	13.0	15.0	60	8	1
20700C-2D		7.0	14.0	16.0	60	8	1
		7.5	15.0	17.0	60	8	1
GSX 20800C-2D		8.0	16.0	_	60	8	2
		8.5	17.0	19.0	70	10	1
LOCOCO LD		9.0	18.0	20.0	70	10	1
		9.5	19.0	21.0	70	10	1
		10.0	20.0	_	70	10	2
J. J. J. J. J. J. J. J. J. J. J. J. J. J		10.5	21.0	23.5	75	12	1
21100C-2D		11.0	22.0	24.5	75	12	1
		11.5	23.0	25.5	75	12	1
		12.0	24.0	_	75	12	2
2.0000 22	•	13.0	26.0	29.5	90	16	1
0.071 = 1.000 ==		14.0	28.0	31.5	90	16	1
	•	15.0	30.0	33.5	90	16	1
21600C-2D		16.0	32.0	_	90	16	2
	•	17.0	34.0	38.5	100	20	1
21800C-2D		18.0	36.0	40.5	100	20	1
0.07. 2.0000 22	•	19.0	38.0	42.5	100	20	1
		20.0	40.0	_	100	20	2
22500C-2D		25.0	50.0	_	120	25	2

Grade: ACF20

Identification Code

Series Code No. of Flutes

C: Gash Land

Corner Style Cutting Edge Length

# GSX 20000C-2D type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

### Side Milling

Work Material Cutting Conditions	Structur		S	n Steel C 250HB)	Cast F			Steel CM B5HRC)	NAK ,	Hardened Steel HPM 45HRC)	Hardene (45 to 5		Stainles SUS304	ss Steel ,SUS316		stant Alloy m Alloy
Dc (mm)	1 1		1 1 2 2 1 2				1 1									Feed Rate
DC (IIIII)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
2.0	11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
4.0	6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
6.0	4,600				4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
8.0	3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
10.0	2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
12.0	2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
16.0	1,700	700 450 1,700 450 1,700 450 1,600							1,100	180	800	100	1,000	110	800	85
20.0	1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
25.0	1,000	300	1,000	300	1,000	300	1,000	220	700	120	500	70	640	80	500	60
Standard ap					1.5	DC					1.0DC					
Depth of Cut ae					0.05	5DC					0.02DC					

### Groove Milling

Work Material Cutting Conditions	Structu		S	n Steel C 250HB)	Cast F	: Iron C	ść	Steel CM B5HRC)	NAK ,	Hardened Steel HPM 45HRC)	Harden (45 to 5	ed Steel 55HRC)	Stainle: SUS304	ss Steel ,SUS316		stant Alloy m Alloy
DC <sub>(mm)</sub>	Spindle Speed		1 1 2 1 1 2													Feed Rate
	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)		(mm/min)		(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)		(mm/min)
1.0	19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
2.0	11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
4.0	6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
6.0	4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
8.0	3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
10.0	2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
12.0	2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
16.0	1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
20.0	1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
25.0	1,000	240	1,000	300	1,000	300	1,000	220	700	120	500	70	640	55	250	25
Standard Depth of Cut ap				DC			0.2DC		0.05DC		0.2DC		DC			

# SX 20000S-3D type





Endmills

6

Square

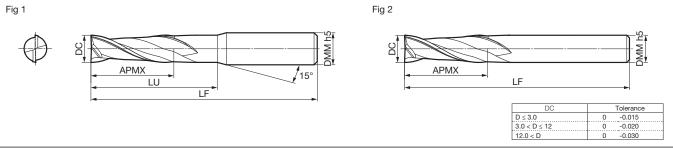












Body Dimensions (mm) 상 Dia. Cutting Edge Length Neck Length Overall Length Cat. No.

20100S-3D	Cat. No.	Sto	DC	ĂPMX	LU	LF	DMM	Fig
20150S-3D	GSX 20050S-3D		0.5	1.5	1.9	40	4	1
20200S-3D	20100S-3D		1.0	3.0	4.0	40	4	1
Q3250S-3D         ■         2.5         7.5         8.5         40         4         1           GSX 20260S-3D         ■         2.6         8.0         9.5         50         4         1           20270S-3D         ■         2.8         9.0         10.5         50         4         1           20290S-3D         ■         2.8         9.0         10.5         50         4         1           Q2090S-3D         ■         2.9         9.0         10.5         50         4         1           Q300S-3D         ■         3.0         9.0         10.5         50         6         1           Q400S-3D         ■         3.5         12.0         13.5         50         6         1           Q500S-3D         ■         4.5         15.0         16.5         50         6         1           Q50S0S-3D         ■         5.0         15.0         17.0         50         6         1           Q50S0S-3D         ■         6.0         18.0         —         50         6         1           Q20650S-3D         ■         6.5         20.0         22.0         70         8         1	20150S-3D		1.5	4.5	5.5	40	4	1
GSX 20260S-3D	20200S-3D		2.0	6.0	7.0	40	4	1
20270S-3D	20250S-3D		2.5	7.5	8.5	40	4	1
20280S-3D	GSX 20260S-3D		2.6	8.0	9.5	50	4	1
20290S-3D	20270S-3D		2.7	8.5	10.0	50	4	1
20300S-3D         ■         3.0         9.0         10.5         50         6         1           GSX 20350S-3D         ■         3.5         12.0         13.5         50         6         1           20400S-3D         ■         4.0         12.0         13.5         50         6         1           20450S-3D         ■         4.5         15.0         16.5         50         6         1           20550S-3D         ■         5.0         15.0         17.0         50         6         1           QSX 2060S-3D         ■         5.5         18.0         20.0         50         6         1           GSX 2060S-3D         ●         6.0         18.0         —         50         6         2           20650S-3D         ●         6.5         20.0         22.0         70         8         1           20700S-3D         ●         6.5         20.0         22.0         70         8         1           20700S-3D         ●         7.5         23.0         25.0         70         8         1           2070S-3D         ●         8.0         24.0         —         70         8	20280S-3D		2.8	9.0	10.5	50	4	1
GSX 20350S-3D 20400S-3D 20400S-3D 0 4.0       3.5       12.0       13.5       50       6       1         20450S-3D 0 0 4.5       15.0       15.0       16.5       50       6       1         20550S-3D 0 0 5.0       15.0       17.0       50       6       1         20550S-3D 0 0 5.5       18.0       20.0       50       6       1         20650S-3D 0 0 6.5       20.0       20.0       50       6       2         20650S-3D 0 0 6.5       20.0       22.0       70       8       1         20750S-3D 0 0 6.5       20.0       22.0       70       8       1         20750S-3D 0 0 7.5       23.0       25.0       70       8       1         20800S-3D 0 0 8.0       24.0       —       70       8       2         20800S-3D 0 0 8.5       26.0       28.0       75       10       1         20900S-3D 0 0 9.5       29.0       27.0       29.0       75       10       1         20900S-3D 0 0 9.5       29.0       31.0       75       10       1         20900S-3D 0 0 10.0       30.0       —       90       12       1         21050S-3D 0 10.0       30.0       —	20290S-3D		2.9	9.0	10.5	50	4	1
20400S-3D (20450S-3D)         ■ 4.0         12.0         13.5         50         6         1           20450S-3D (2050S-3D)         ■ 5.0         15.0         16.5         50         6         1           20550S-3D (2060S-3D)         ■ 5.5         18.0         20.0         50         6         1           20650S-3D (2060S-3D)         ■ 6.5         20.0         22.0         70         8         1           20700S-3D (20750S-3D)         ■ 6.5         20.0         22.0         70         8         1           20750S-3D (2050S-3D)         ■ 7.5         23.0         25.0         70         8         1           20800S-3D (2050S-3D)         ■ 8.5         26.0         28.0         75         10         1           20950S-3D (2050S-3D)         ■ 9.5         29.0         31.0         75         10         1           20950S-3D (2050S-3D)         ■ 9.5         29.0         31.0         75         10         1           20950S-3D (2050S-3D)         ■ 9.5         29.0         31.0         75         10         1           2100S-3D (2050S-3D)         ■ 10.0         30.0         —         90         12         1           21150S-3D (2050S	20300S-3D		3.0	9.0	10.5	50	6	1
20450S-3D	GSX 20350S-3D		3.5	12.0	13.5	50	6	1
20500S-3D	20400S-3D		4.0	12.0	13.5	50	6	1
20550S-3D	20450S-3D		4.5	15.0	16.5	50	6	1
GSX 20600S-3D       ●       6.0       18.0       —       50       6       2         20650S-3D       ●       6.5       20.0       22.0       70       8       1         20750S-3D       ●       7.0       21.0       23.0       70       8       1         20750S-3D       ●       7.5       23.0       25.0       70       8       1         20800S-3D       ●       8.0       24.0       —       70       8       2         GSX 20850S-3D       ●       8.5       26.0       28.0       75       10       1         20900S-3D       ●       9.0       27.0       29.0       75       10       1         20950S-3D       ●       9.5       29.0       31.0       75       10       1         20950S-3D       ●       9.5       29.0       31.0       75       10       1         21000S-3D       ●       10.0       30.0       —       90       12       1         GSX 21100S-3D       ●       11.5       35.0       37.5       90       12       1         21200S-3D       ●       12.0       36.0       —       90			5.0	15.0	17.0	50	6	1
20650S-3D					20.0			1
20700S-3D       ●       7.0       21.0       23.0       70       8       1         20750S-3D       ●       7.5       23.0       25.0       70       8       1         20800S-3D       ●       8.0       24.0       —       70       8       2         GSX 20850S-3D       ●       8.5       26.0       28.0       75       10       1         209050S-3D       ●       9.0       27.0       29.0       75       10       1         20950S-3D       ●       9.5       29.0       31.0       75       10       1         2100S-3D       ●       10.0       30.0       —       90       10       2         21050S-3D       ●       10.5       32.0       34.5       90       12       1         GSX 21100S-3D       ●       11.0       33.0       35.5       90       12       1         2150S-3D       ●       11.5       35.0       37.5       90       12       1         2130OS-3D       ●       12.0       36.0       —       90       12       2         2140OS-3D       ●       13.0       42.5       100       16				18.0	_	50	6	2
20750S-3D								1
20800S-3D       ■       8.0       24.0       —       70       8       2         GSX 20850S-3D       ■       8.5       26.0       28.0       75       10       1         20900S-3D       ■       9.0       27.0       29.0       75       10       1         20950S-3D       ■       9.5       29.0       31.0       75       10       1         21000S-3D       ■       10.0       30.0       —       90       10       2         2150S-3D       ■       10.5       32.0       34.5       90       12       1         GSX 2110OS-3D       ■       11.0       33.0       35.5       90       12       1         2120OS-3D       ■       11.5       35.0       37.5       90       12       1         2130OS-3D       ■       12.0       36.0       —       90       12       1         2140OS-3D       ■       13.0       39.0       42.5       100       16       1         2140OS-3D       ■       14.0       42.0       45.5       110       16       1         GSX 215OOS-3D       ■       15.0       45.0       48.5 <th< th=""><th></th><th></th><th></th><th></th><th></th><th>-</th><th>_</th><th>1</th></th<>						-	_	1
GSX 20850S-3D       •       8.5       26.0       28.0       75       10       1         20900S-3D       •       9.0       27.0       29.0       75       10       1         20950S-3D       •       9.5       29.0       31.0       75       10       1         21000S-3D       •       10.0       30.0       —       90       10       2         21050S-3D       •       10.5       32.0       34.5       90       12       1         GSX 21100S-3D       •       11.0       33.0       35.5       90       12       1         21200S-3D       •       11.5       35.0       37.5       90       12       1         21200S-3D       •       12.0       36.0       —       90       12       1         21300S-3D       •       13.0       39.0       42.5       100       16       1         21400S-3D       •       14.0       42.0       45.5       110       16       1         GSX 21500S-3D       •       16.0       48.0       —       110       16       1         21700S-3D       •       16.0       48.0       — <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>1</th></td<>								1
20900S-3D       ●       9.0       27.0       29.0       75       10       1         20950S-3D       ●       9.5       29.0       31.0       75       10       1         21000S-3D       ●       10.0       30.0       —       90       10       2         21050S-3D       ●       10.5       32.0       34.5       90       12       1         GSX 21100S-3D       ●       11.0       33.0       35.5       90       12       1         21200S-3D       ●       11.5       35.0       37.5       90       12       1         21200S-3D       ●       12.0       36.0       —       90       12       2         21300S-3D       ●       13.0       39.0       42.5       100       16       1         21400S-3D       ●       14.0       42.0       45.5       110       16       1         GSX 21500S-3D       ●       15.0       45.0       48.5       110       16       1         21700S-3D       ●       16.0       48.0       —       110       16       2         21800S-3D       ●       18.0       54.0       58.5       <								2
20950S-3D       ●       9.5       29.0       31.0       75       10       1         21000S-3D       ●       10.0       30.0       —       90       10       2         21050S-3D       ●       10.5       32.0       34.5       90       12       1         GSX 21100S-3D       ●       11.0       33.0       35.5       90       12       1         21150S-3D       ●       11.5       35.0       37.5       90       12       1         21200S-3D       ●       12.0       36.0       —       90       12       2         21300S-3D       ●       13.0       39.0       42.5       100       16       1         21400S-3D       ●       14.0       42.0       45.5       110       16       1         GSX 21500S-3D       ●       15.0       45.0       48.5       110       16       1         21600S-3D       ●       16.0       48.0       —       110       16       2         21700S-3D       ●       17.0       51.0       55.5       110       20       1         21800S-3D       ●       18.0       54.0       58.5						_		
21000S-3D       ●       10.0       30.0       —       90       10       2         21050S-3D       ●       10.5       32.0       34.5       90       12       1         GSX 21100S-3D       ●       11.0       33.0       35.5       90       12       1         21150S-3D       ●       11.5       35.0       37.5       90       12       1         21200S-3D       ●       12.0       36.0       —       90       12       2         21300S-3D       ●       13.0       39.0       42.5       100       16       1         21400S-3D       ●       14.0       42.0       45.5       110       16       1         GSX 21500S-3D       ●       15.0       45.0       48.5       110       16       1         21600S-3D       ●       16.0       48.0       —       110       16       2         21700S-3D       ●       17.0       51.0       55.5       110       20       1         21800S-3D       ●       18.0       54.0       58.5       120       20       1         21900S-3D       ●       19.0       57.0       61.5						-		1
21050S-3D       ●       10.5       32.0       34.5       90       12       1         GSX 21100S-3D       ●       11.0       33.0       35.5       90       12       1         21150S-3D       ●       11.5       35.0       37.5       90       12       1         21200S-3D       ●       12.0       36.0       —       90       12       2         21300S-3D       ●       13.0       39.0       42.5       100       16       1         21400S-3D       ●       14.0       42.0       45.5       110       16       1         GSX 21500S-3D       ●       15.0       45.0       48.5       110       16       1         21600S-3D       ●       16.0       48.0       —       110       16       2         21700S-3D       ●       17.0       51.0       55.5       110       20       1         21800S-3D       ●       18.0       54.0       58.5       120       20       1         21900S-3D       ●       19.0       57.0       61.5       120       20       1								1
GSX 21100S-3D       ●       11.0       33.0       35.5       90       12       1         21150S-3D       ●       11.5       35.0       37.5       90       12       1         21200S-3D       ●       12.0       36.0       —       90       12       2         21300S-3D       ●       13.0       39.0       42.5       100       16       1         21400S-3D       ●       14.0       42.0       45.5       110       16       1         GSX 21500S-3D       ●       15.0       45.0       48.5       110       16       1         21600S-3D       ●       16.0       48.0       —       110       16       2         21700S-3D       ●       17.0       51.0       55.5       110       20       1         21800S-3D       ●       18.0       54.0       58.5       120       20       1         21900S-3D       ●       19.0       57.0       61.5       120       20       1								
21150S-3D       ●       11.5       35.0       37.5       90       12       1         21200S-3D       ●       12.0       36.0       —       90       12       2         21300S-3D       ●       13.0       39.0       42.5       100       16       1         21400S-3D       ●       14.0       42.0       45.5       110       16       1         GSX 21500S-3D       ●       15.0       45.0       48.5       110       16       1         21600S-3D       ●       16.0       48.0       —       110       16       2         21700S-3D       ●       17.0       51.0       55.5       110       20       1         21800S-3D       ●       18.0       54.0       58.5       120       20       1         21900S-3D       ●       19.0       57.0       61.5       120       20       1								-
21200S-3D       ●       12.0       36.0       —       90       12       2         21300S-3D       ●       13.0       39.0       42.5       100       16       1         21400S-3D       ●       14.0       42.0       45.5       110       16       1         GSX 21500S-3D       ●       15.0       45.0       48.5       110       16       1         21600S-3D       ●       16.0       48.0       —       110       16       2         21700S-3D       ●       17.0       51.0       55.5       110       20       1         21800S-3D       ●       18.0       54.0       58.5       120       20       1         21900S-3D       ●       19.0       57.0       61.5       120       20       1								
21300S-3D       ●       13.0       39.0       42.5       100       16       1         21400S-3D       ●       14.0       42.0       45.5       110       16       1         GSX 21500S-3D       ●       15.0       45.0       48.5       110       16       1         21600S-3D       ●       16.0       48.0       —       110       16       2         21700S-3D       ●       17.0       51.0       55.5       110       20       1         21800S-3D       ●       18.0       54.0       58.5       120       20       1         21900S-3D       ●       19.0       57.0       61.5       120       20       1								1
21400S-3D     ●     14.0     42.0     45.5     110     16     1       GSX 21500S-3D     ●     15.0     45.0     48.5     110     16     1       21600S-3D     ●     16.0     48.0     —     110     16     2       21700S-3D     ●     17.0     51.0     55.5     110     20     1       21800S-3D     ●     18.0     54.0     58.5     120     20     1       21900S-3D     ●     19.0     57.0     61.5     120     20     1								
GSX 21500S-3D 21600S-3D 21600S-3D 21600S-3D 21600S-3D 3D								
21600S-3D     ●     16.0     48.0     —     110     16     2       21700S-3D     ●     17.0     51.0     55.5     110     20     1       21800S-3D     ●     18.0     54.0     58.5     120     20     1       21900S-3D     ●     19.0     57.0     61.5     120     20     1								
21700S-3D     ●     17.0     51.0     55.5     110     20     1       21800S-3D     ●     18.0     54.0     58.5     120     20     1       21900S-3D     ●     19.0     57.0     61.5     120     20     1								
21800S-3D     ●     18.0     54.0     58.5     120     20     1       21900S-3D     ●     19.0     57.0     61.5     120     20     1								
<b>21900S-3D</b> ● <b>19.0</b> 57.0 61.5 120 20 1								
							-	
	GSX 22000S-3D		20.0	60.0		120	20	2
					77.0			1
	<b>22500S-3D</b> Grade: ACF20		25.0	75.0	=	130	25	2

Identification Code

<u>GSX 2 0050 S - 3D</u>

Series Code No. of Flutes Dia.

S: Sharp Edge

Corner Style Cutting Edge Length

### **GSX 20000S-3D** type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 5. This series is not recommended for groove milling.
- 6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

### Side Milling

Work Material	Structu	ral Steel		n Steel	Cast	Iron	,	Steel	Tempered Steel,		Hardene	ed Steel			Heat-Resistant Alle	
Cutting		S		C 250HB)	F			CM B5HRC)	NAK ,		(45 to 5		SUS304,			m Alloy
Conditions \			,	,					(35 to 4	- ,						
DC (mm)	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate
DO (IIIII)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25
2.0	8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40
4.0	4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50
6.0	2,900	260   2,900   260   2,900   260   2,700   180   2,100   130   1,200   65   1,400   75   1,200										60				
8.0	2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60
10.0	1,800	220	1,800	220	1,800	220	1,600	170	1,300	130	750	65	850	75	750	60
12.0	1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60
16.0	1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50
20.0	850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45
25.0	680	130	680	130	680	130	640	100	00   480   80   280   40   320   45   280   35						35	
Standard ap				2.5	DC				2.0DC							
Depth of Cut ae		Be	elow ø3:	0.02DC	Above @	93: 0.05E	OC		0.01DC							

### Groove Finishing

									I		ı						
Work Mater	ial Structi	ıral Steel		n Steel	Cast	Iron		Steel		, Hardened Steel	Harden	ed Steel	Stainle	ss Steel	Heat-Resi	stant Alloy	
Cutting		SS	S	C		C	SC	CM	NAK ,	, HPM	(45 to 5			.SUS316		m Allov	
Condition	₃ \	50	(150 to	250HB)	'	O	(25 to 3	B5HRC)	(35 to 4	45HRC)	(40 10 1	0011110)	000004	,000010	Intania	III Alloy	
DC ( )	Spindle Spee	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	
DC (mm)	(min-1)	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	
1.0	14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25	
2.0	8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40	
4.0	4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50	
6.0	2,900	260	2,900	260	2,900	260	2,700	180	2,100	130	1,200	65	1,400	75	1,200	60	
8.0	2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60	
10.0	1,800	220	1,800	1,800         220         1,800         220         1,600         170         1,300         130         750         65         850         75         750         60													
12.0	1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60	
16.0	1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50	
20.0	850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45	
25.0	680	130	680	130	680	130	640	100	480	80	280	40	320	45	280	35	
	ар							1.5	DC								
Depth of Cut	ae							Below (	0.02DC								

DC DC

# SX 20000C-3D type









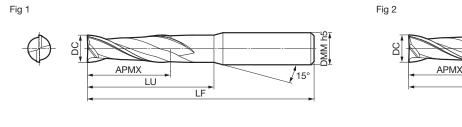


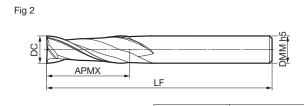












DC		Tolerance
D ≤ 3.0	0	-0.015
3.0 < D ≤ 12	0	-0.020
12.0 < D	0	-0.030

Square

**Endmills** 

6

Body					Dimension	ons (mm)
Cat. No.	Dia. DC	Cutting Edge Length APMX	Neck Length	Overall Length  LF	Shank Dia.  DMM	Fig
GSX 20050C-3D	● 0.5	1.5	1.9	40	4	1
20100C-3D	1.0	3.0	4.0	40	4	1
20150C-3D	● 1.5	4.5	5.5	40	4	1
20200C-3D	● 2.0	6.0	7.0	40	4	1
20250C-3D	● 2.5	7.5	8.5	40	4	1
GSX 20300C-3D	3.0	9.0	10.5	50	6	1
20350C-3D	● 3.5	11.0	12.5	50	6	1
20400C-3D	4.0	12.0	13.5	50	6	1
20450C-3D	● 4.5	14.0	15.5	50	6	1
20500C-3D	5.0	15.0	17.0	50	6	1
GSX 20550C-3D	● 5.5	17.0	19.0	50	6	1
20600C-3D	● 6.0	18.0	_	50	6	2
20650C-3D	● 6.5	20.0	22.0	70	8	1
20700C-3D	● 7.0	21.0	23.0	70	8	1
20750C-3D	● 7.5	23.0	25.0	70	8	1
GSX 20800C-3D	● 8.0	24.0	_	70	8	2
20850C-3D	● 8.5	26.0	28.0	75	10	1
20900C-3D	9.0	27.0	29.0	75	10	1
20950C-3D	9.5	29.0	31.0	75	10	1
21000C-3D	10.0	30.0	_	90	10	2
GSX 21050C-3D	● 10.5	32.0	34.5	90	12	1
21100C-3D	11.0	33.0	35.5	90	12	1
21150C-3D	<b>●</b> 11.5	35.0	37.5	90	12	1
21200C-3D	12.0	36.0	_	90	12	2
21300C-3D	● 13.0	39.0	42.5	100	16	1
GSX 21400C-3D	14.0	42.0	45.5	110	16	1
21500C-3D	15.0	45.0	48.5	110	16	1
21600C-3D	16.0	48.0	_	110	16	2
21700C-3D	● 17.0	51.0	55.5	110	20	1
21800C-3D	● 18.0	54.0	58.5	120	20	1
GSX 21900C-3D	● 19.0	57.0	61.5	120	20	1
22000C-3D	● 20.0	60.0	_	120	20	2
22500C-3D	● 25.0	75.0	_	130	25	2
Grade: ACF20						

Identification Code

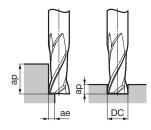
Series Code No. of Flutes Dia.

Corner Style Cutting Edge C: Gash Land Length

# GSX 20000C-3D type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
- 5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



### Side Milling

Work Material Cutting Conditions	Structur S		Carbo S (150 to		Cast Fo			Steel CM B5HRC)		Hardened Steel HPM 15HRC)	Hardene (45 to 5		Stainles SUS304,			stant Alloy m Alloy
DC (mm)	Spindle Speed															Feed Rate
	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	16,600	190	16,600	190	16,600	190	15,500	140	10,500	70	7,500	45	9,400	50	7,500	35
2.0	9,500	250	9,500	250	9,500	250	9,000	200	6,200	120	4,500	60	5,200	70	4,500	50
4.0	5,200	330	5,200	330	5,200	330	4,800	200	3,400	150	2,250	75	2,600	90	2,250	65
6.0	3,500	360	3,500	360	3,500	360	3,200	250	2,550	170	1,500	90	1,700	100	1,500	80
8.0	2,600	320	2,600	320	2,600	320	2,400	240	1,900	170	1,100	90	1,300	100	1,100	80
10.0	2,100	300	2,100	300	2,100	300	1,900	230	1,500	170	900	90	1,000	100	900	80
12.0	1,750	280	1,750	280	1,750	280	1,600	230	1,250	170	750	90	850	100	750	80
16.0	1,300	240	1,300	240	1,300	240	1,200	200	950	150	550	75	650	85	550	65
20.0	1,050	220	1,050	220	1,050	220	950	180	750	140	450	70	500	75	450	60
25.0	840 180 840 180 840 1						760	140	600	110	360	55	400	60	360	45
Standard ap	2.5DC											2.0	DC			
Depth of Cut ae		Below ø3: 0.05DC Above ø3: 0.1DC										0.02	2DC			

### Groove Milling

Contrar Obert																
Work Material Cutting Conditions	Structu		S	n Steel C 250HB)	Cast F	: Iron C	Ś	Steel CM B5HRC)		Hardened Steel HPM H5HRC)	Hardene (45 to 5			ss Steel ,SUS316	Heat-Resis Titaniu	stant Alloy m Alloy
DC (mm)	1 1		1 1 2 2 1 2				1 1		Spindle Speed					Feed Rate		
	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	,	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	16,600	70	16,600	80	16,600	80	15,500	50	10,500	50	7,500	35	9,400	30	3,750	10
2.0	9,500	80	9,500	100	9,500	100	9,000	90	6,200	60	4,500	45	5,200	40	2,250	15
4.0	5,200	120	5,200	150	5,200	150	4,800	120	3,400	80	2,200	50	2,600	50	1,250	20
6.0	3,500	140	3,500	170	3,500	170	3,200	130	2,550	100	1,500	50	1,700	60	950	25
8.0	2,600	140	2,600	160	2,600	160	2,400	130	1,900	100	1,100	50	1,300	60	700	25
10.0	2,100	130	2,100	150	2,100	150	1,900	120	1,500	90	900	50	1,000	60	550	25
12.0	1,750	130	1,750	150	1,750	150	1,600	120	1,250	90	750	50	850	60	450	25
16.0	1,300	110	1,300	130	1,300	130	1,200	110	950	80	550	45	650	50	350	20
20.0	1,050	100	1,050	120	1,050	120	950	100	750	70	450	40	500	40	280	15
25.0	840	80	840	96	840	96	760	80	600	56	360	32	400	32	224	12
Standard Depth of Cut ap	0.1DC					0.2	DC				0.05	5DC		0.1	DC	

ndmills

## SX 20000S-4D type





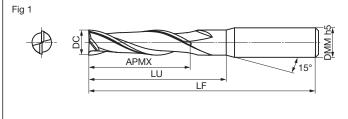


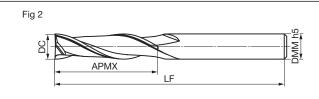












DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Dimensions (mm)

Body

Square

**Endmills** 

6

General-Purpose

Cat. No. Fig DC LU **DMM APMX** LF GSX 20050S-4D 0.5 2.0 2.4 40 4 20100S-4D 6.0 40 1 1.0 5.0 4 20150S-4D 1.5 7.0 8.0 40 4 20200S-4D • 40 2.0 9.0 10.0 4 1 20250S-4D 2.5 12.0 13.0 50 4 1 GSX 20300S-4D 6 1 3.0 12.0 13.5 50 20350S-4D 6 3.5 14.0 15.5 50 1 20400S-4D 4.0 16.0 17.5 50 6 1 20450S-4D 6 4.5 18.0 19.5 60 1 20500S-4D 5.0 20.0 22.0 60 6 1 GSX 20550S-4D 5.5 22.0 24.0 60 6 1 2 20600S-4D 6.0 24.0 60 6 20650S-4D 26.0 28.0 70 8 6.5 1 1 20700S-4D 7.0 28.0 30.0 80 8 20750S-4D 7.5 32.0 80 8 30.0 1 GSX 20800S-4D 8.0 32.0 80 8 2 20850S-4D 36.0 90 10 8.5 34.0 1 20900S-4D 9.0 36.0 38.0 90 10 1 20950S-4D 38.0 40.0 90 10 9.5 1 21000S-4D 10.0 2 40.0 90 10 **GSX 21050S-4D** 10.5 42.0 44.5 100 12 1 21100S-4D 11.0 44.0 46.5 100 12 1 21150S-4D 11.5 46.0 48.5 100 12 1 21200S-4D 2 12.0 48.0 100 12 21300S-4D 13.0 52.0 55.5 110 16 1 GSX 21400S-4D 14.0 56.0 59.5 110 16 1 21500S-4D 15.0 60.0 63.5 120 16 1 21600S-4D 16.0 2 64.0 120 16 21700S-4D 17.0 68.0 72.5 130 20 21800S-4D 18.0 72.0 76.5 130 20 1 **GSX 21900S-4D** 19.0 76.0 80.5 140 20 1 2 22000S-4D 140 20 20.0 80.0 22500S-4D 25.0 2 100.0 160 25

Grade: ACE20

Identification Code

Series Code No. of Flutes

S: Sharp Edge

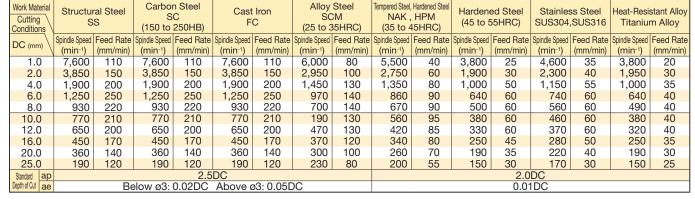
Corner Style Cutting Edge Length

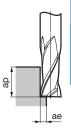
### GSX 20000S-4D type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 5. This series is not recommended for groove milling.
- 6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

#### Side Milling





6

Square

Radius

Multi-

# SX 20000C-4D type





Endmills

6

Square





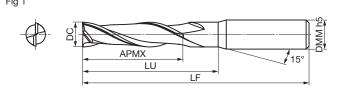


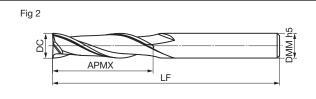












DC		Tolerance
D ≤ 3.0	0	-0.015
3.0 < D ≤ 12	0	-0.020
12.0 < D	0	-0.030

Body Dimensions (mm)

Cat. No.	Dia. DC	Cutting Edge Length APMX	Neck Length	Overall Length <b>LF</b>	Shank Dia.  DMM	Fig
	0.5	2.0	2.4	40	4	1
20100C-4D	1.0	4.0	5.0	40	4	1
20150C-4D	<ul><li>1.5</li></ul>	6.0	7.0	40	4	1
20200C-4D	● 2.0	8.0	9.0	40	4	1
20250C-4D	● 2.5	10.0	11.0	50	4	1
GSX 20300C-4D	● 3.0	12.0	13.5	50	6	1
20350C-4D	● 3.5	14.0	15.5	50	6	1
20400C-4D	● 4.0	16.0	17.5	50	6	1
20450C-4D	<b>4.5</b>	18.0	19.5	60	6	1
20500C-4D	5.0	20.0	22.0	60	6	1
GSX 20550C-4D	<b>5.5</b>	22.0	24.0	60	6	1
20600C-4D	6.0	24.0	_	60	6	2
	● 6.5	26.0	28.0	70	8	1
20700C-4D	<b>●</b> 7.0	28.0	30.0	80	8	1
20750C-4D	<b>●</b> 7.5	30.0	32.0	80	8	1
GSX 20800C-4D	● 8.0	32.0	_	80	8	2
20850C-4D	● 8.5	34.0	36.0	90	10	1
20900C-4D	9.0	36.0	38.0	90	10	1
20950C-4D	9.5	38.0	40.0	90	10	1
21000C-4D	10.0	40.0	_	90	10	2
	10.5	42.0	44.5	100	12	1
21100C-4D	11.0	44.0	46.5	100	12	1
21150C-4D	11.5	46.0	48.5	100	12	1
21200C-4D	12.0	48.0	_	100	12	2
21300C-4D	13.0	52.0	55.5	110	16	1
GSX 21400C-4D	14.0	56.0	59.5	110	16	1
21500C-4D	15.0	60.0	63.5	120	16	1
21600C-4D	16.0	64.0		120	16	2
21700C-4D	17.0	68.0	72.5	130	20	1
21800C-4D	18.0	72.0	76.5	130	20	1
GSX 21900C-4D	19.0	76.0	80.5	140	20	1
22000C-4D	20.0	80.0	_	140	20	2
22500C-4D	25.0	100.0	_	160	25	2

Grade: ACF20

Identification Code

Series Code No. of Flutes

Corner Style Cutting Edge C: Gash Land

# GSX 20000C-4D type

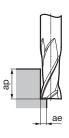
### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.

  5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 6. This series is not recommended for groove milling.
- 7. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

### Side Milling

Work Materia	Structu	ral Steel		n Steel C	Cast	Iron		Steel CM		, Hardened Steel . <b>HPM</b>	Harden	ed Steel	Stainles	ss Steel	Heat-Resi	stant Alloy
Cutting \ Conditions	S	SS	_	250HB)	F	С		B5HRC)		45HRC)	(45 to 5	55HRC)	SUS304	,SUS316	Titaniu	m Alloy
DC (mm)	Spindle Speed		Spindle Speed		Spindle Speed		Spindle Speed		alt a selection		Spindle Speed		Spindle Speed		Spindle Speed	Feed Rate
DO (IIIII)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	9,000	130	9,000	130	9,000	130	7,000	95	6,500	50	4,500	30	5,400	40	4,500	25
2.0	4,500	180	4,500	180	4,500	180	3,500	120	3,200	70	2,300	40	2,700	50	2,300	35
4.0	2,250	240	2,250	240	2,250	240	1,750	160	1,600	95	1,200	60	1,350	65	1,200	40
6.0	1,500	300	1,500	300	1,500	300	1,150	170	1,050	110	800	70	900	70	800	50
8.0	1,100	260	1,100	260	1,100	260	850	170	800	110	600	70	660	70	600	50
10.0	900	250	900	250	900	250	700	160	650	110	460	70	540	70	460	50
12.0	750	240	750	240	750	240	580	160	520	110	400	70	450	70	400	50
16.0	550	200	550	200	550	200	440	140	400	95	300	55	330	60	300	45
20.0	450	180	450	180	450	180	350	120	320	85	240	45	270	50	240	40
25.0	360	360 140 360 140 360 14					280	95	250	65	190	35	210	40	192	30
Standard ap		3.5DC											3.0	DC		
Depth of Cut ae	0.08DC										0.04DC					



Square

Radius

# SX 30000C-1.5D type











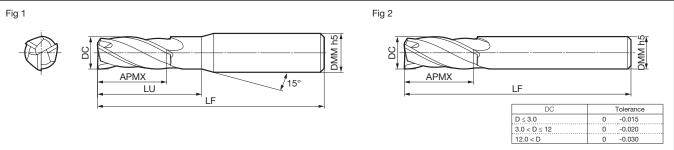












Square

**Endmills** 

6

General-Purpose

Body			Dimensions (	mm)
	,	1		-

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length <b>LF</b>	Shank Dia.  DMM	Fig
GSX 30100C-1.5D		1.0	1.5	2.5	40	4	1
30150C-1.5D		1.5	2.3	3.3	40	4	1
30200C-1.5D		2.0	3.0	4.0	40	4	1
30250C-1.5D		2.5	3.8	4.8	40	4	1
30300C-1.5D		3.0	4.5	6.0	45	6	1
GSX 30400C-1.5D		4.0	6.0	7.5	45	6	1
30500C-1.5D		5.0	7.5	9.5	50	6	1
30600C-1.5D		6.0	9.0	_	50	6	2
30700C-1.5D		7.0	11.0	13.0	60	8	1
30800C-1.5D		8.0	12.0	_	60	8	2
GSX 30900C-1.5D		9.0	14.0	16.0	70	10	1
31000C-1.5D		10.0	15.0	_	70	10	2
31200C-1.5D		12.0	18.0	_	75	12	2

Grade: ACF20

**Identification Code** 

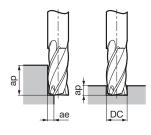
Series Code No. of Flutes Dia.

Corner Style Cutting Edge C: Gash Land Length

# GSX 30000C-1.5D type

- Recommended Cutting Conditions

  1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



### Side Milling

	Material	Structu	al Steel		n Steel	Cast	Iron	Alloy			Hardened Steel	Harden	ed Steel	Stainles	ss Steel	Heat-Resi	stant Alloy
Cutti Condit		S	S		C 250HB)	F	С		CM B5HRC)		HPM 15HRC)	(45 to 5	55HRC)	SUS304	,SUS316	Titaniu	m Alloy
DC (r	,\	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate
DC (r	nm) \	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1	.0	19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2	2.0	11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4	.0	6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6	0.6	4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8	3.0	3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10	0.0	2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12	2.0	2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
Standard														1.0	DC		
Depth of C	ut ae	0.05DC												0.02	2DC		

### Groove Milling

Work Material Cutting Conditions	Structui		Carboi S (150 to		Cast F			Steel CM B5HRC)	Tempered Steel, NAK, (35 to 4		Hardene (45 to 5		Stainles SUS304	ss Steel ,SUS316		stant Alloy m Alloy
DC (mm)	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed		Spindle Speed		Spindle Speed		Spindle Speed		Spindle Speed		Spindle Speed	Feed Rate
DC (mm) \	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0	11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0	6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0	4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0	3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0	2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0	2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
Standard Depth of Cut ap	2.222				0.5	DC			0.2	DC	0.05	5DC		0.2	DC	

# SX 30000C-2D type











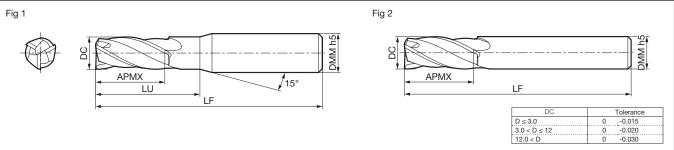












Body

Square

Endmills

6

General-Purpose

Doay						Dimensions	(111111)	
Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length <b>LF</b>	Shank Dia.  DMM	Fig	
GSX 30100C-2D		1.0	2.5	3.5	40	4	1	l
30150C-2D		1.5	3.8	4.8	40	4	1	

G3X 30 1000-2D	1.0	2.5	3.5	40	4	
30150C-2D	1.5	3.8	4.8	40	4	1
30200C-2D	2.0	5.0	6.0	40	4	1
30250C-2D	2.5	6.3	7.3	40	4	1
30300C-2D	3.0	7.5	9.0	45	6	1
GSX 30400C-2D	4.0	11.0	12.5	45	6	1
30500C-2D	5.0	13.0	15.0	50	6	1
30600C-2D	6.0	13.0	_	50	6	2
30700C-2D	7.0	16.0	18.0	60	8	1
30800C-2D	8.0	19.0	_	60	8	2
GSX 30900C-2D	9.0	19.0	21.0	70	10	1
31000C-2D	10.0	22.0	_	70	10	2
31200C-2D	12.0	26.0	_	75	12	2
Grade: ACE20						

Grade: ACF20

**Identification Code** 

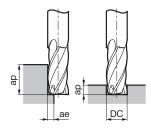
Series Code No. of Flutes Dia.

Corner Style Cutting Edge
C: Gash Land Length

# GSX 30000C-2D type

- Recommended Cutting Conditions

  1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



### Side Milling

(	ork Material Cutting onditions	Structui S		S	n Steel C 250HB)	Cast F	-	Alloy SC (25 to 3		NAK , (35 to 4	HPM	Hardene (45 to 5		Stainles SUS304	ss Steel SUS316		stant Alloy m Alloy
D	C (mm)				Feed Rate												Feed Rate
	(,,,,,,	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)
	1.0	19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
	2.0	11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
	4.0	6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
	6.0	4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
	8.0	3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
	10.0	2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
	12.0	2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
	andard ap					1.5	DC							1.0	DC		
Dep	th of Cut ae					0.05	DC							0.02	2DC		

### Groove Milling

Work Material Cutting Conditions	Structu	ral Steel S	Carbon S (150 to		Cast F	-	Alloy SC (25 to 3	M	Tempered Steel, NAK, (35 to 4		Hardene (45 to 5	ed Steel 55HRC)		ss Steel ,SUS316		stant Alloy m Alloy
DC (mm)	Spindle Speed															
DO (IIIII) \	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0	11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0	6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0	4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0	3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0	2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0	2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
Standard Depth of Cut ap	0.2	DC			0.5	DC			0.2	DC	0.05	5DC		0.2	DC	

## **SXSLT 30000C-1.5D** type



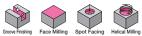








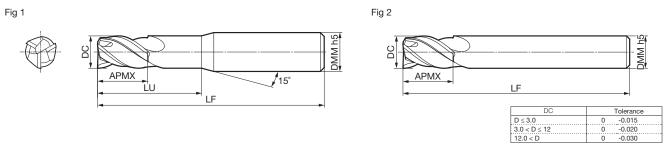












Body

Endmills

6

Square

Dimensions (mm)

,							, ,
Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length <b>LF</b>	Shank Dia.  DMM	Fig
GSXSLT 30100C-1.5D		1.0	1.5	2.5	40	4	1
30150C-1.5D		1.5	2.3	3.3	40	4	1
30200C-1.5D		2.0	3.0	4.0	40	4	1
30250C-1.5D		2.5	3.8	4.8	40	4	1
30300C-1.5D		3.0	4.5	6.0	45	6	1
GSXSLT 30400C-1.5D		4.0	6.0	7.5	45	6	1
30500C-1.5D		5.0	7.5	9.5	50	6	1
30600C-1.5D		6.0	9.0	_	50	6	2
30700C-1.5D		7.0	11.0	13.0	60	8	1
30800C-1.5D		8.0	12.0	_	60	8	2
GSXSLT 30900C-1.5D		9.0	14.0	16.0	70	10	1
31000C-1.5D		10.0	15.0	_	70	10	2
31200C-1.5D		12.0	18.0	_	75	12	2
OI A OFOO							

Grade: ACF20

Identification Code

T 3 0100 C - 1.5D

Series Code

No. of Flutes Dia.

Corner Style Cutting Edge
C: Gash Land Length

General-Purpose

# GSXSLT 30000C-1.5D type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. Use step machining of 0.1 DC when drilling stainless steel, heat-resistant alloy, and titanium alloy.
- 5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

# ae DC

### Side Milling

Work Material Cutting Conditions		ral Steel S	S	n Steel C 250HB)	Cast F		Alloy SC (25 to 3		NAK ,	Hardened Steel HPM 45HRC)	Harden (45 to 5			ss Steel ,SUS316	Heat-Re All Titaniur	
DC (mm)	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate
DC (mm) \	(min-1)	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min-1)	(mm/min)	(min-1)	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2.0	11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4.0	6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6.0	4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8.0	3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10.0	2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12.0	2,300													1,100	130	
Standard ap					1.5	DC							1.0	DC		
Depth of Cut ae					0.05	5DC							0.02	2DC		

### Groove Milling

Work Material Cutting Conditions	Structu		_	n Steel C 250HB)		Iron C	śc	Steel CM B5HRC)	NAK ,	Hardened Steel HPM 45HRC)	Hardene (45 to 5			ss Steel ,SUS316		esistant loy m Alloy
DC (mm)	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate
DC (mm)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0	11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0	6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0	4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0	3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0	2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0	2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
Standard Depth of Cut ap	0.2	DC			0.5	DC			0.2	DC	0.05	5DC		0.2	DC	

### Drilling

Work Material Cutting Conditions	Structur		S	n Steel C 250HB)		: Iron C	Alloy SC (25 to 3		NAK ,	Hardened Steel HPM 45HRC)	Hardene (45 to 5			ss Steel ,SUS316	All	esistant oy m Alloy
DC (mm)	Spindle Speed															
20 ()	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	19,600	70	19,600	90	19,600	90	18,300	60	12,700	40	9,000	25	11,000	20	4,500	10
2.0	11,200	90	11,200	120	11,200	120	10,500	80	7,300	50	5,300	30	6,400	25	2,650	15
4.0	6,400	130	6,400	160	6,400	160	6,000	110	4,200	70	3,000	40	3,600	30	1,500	20
6.0	4,600	160	4,600	200	4,600	200	4,300	130	3,000	80	2,200	50	2,650	40	1,150	20
8.0	3,400	160	3,400	200	3,400	200	3,200	130	2,200	80	1,600	50	2,000	40	800	20
10.0	2,800	160	2,800	200	2,800	200	2,600	130	1,800	80	1,300	50	1,600	40	650	20
12.0	2,300	160	2,300	200	2,300	200	2,200	130	1,500	80	1,100	50	1,300	40	500	20

# GSX 40000C-1.5D type





Endmills

6

Square







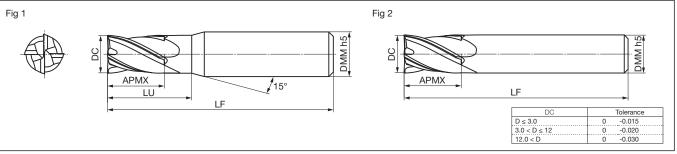












Body

Dimensions (mm)

Cat. No.	Stop Dia.	Cutting Edge Length APMX	Neck Length	Overall Length <b>LF</b>	Shank Dia.  DMM	Fig
GSX 40100C-1.5D	1.0	1.5	2.5	40	4	1
40150C-1.5D	● 1.5	2.3	3.3	40	4	1
40200C-1.5D	● 2.0	3.0	4.0	40	4	1
40250C-1.5D	● 2.5	3.8	4.8	40	4	1
40300C-1.5D	● 3.0	4.5	6.0	45	6	1
GSX 40350C-1.5D	● 3.5	5.3	6.8	45	6	1
40400C-1.5D	● 4.0	6.0	7.5	45	6	1
40450C-1.5D	● 4.5	6.8	8.3	50	6	1
40500C-1.5D	● 5.0	7.5	9.5	50	6	1
40550C-1.5D	<b>●</b> 5.5	8.3	10.3	50	6	1
GSX 40600C-1.5D	● 6.0	9.0	_	50	6	2
40650C-1.5D	● 6.5	10.0	12.0	60	8	1
40700C-1.5D	● 7.0	11.0	13.0	60	8	1
40750C-1.5D	● 7.5	12.0	14.0	60	8	1
40800C-1.5D	● 8.0	12.0	_	60	8	2
GSX 40850C-1.5D	● 8.5	13.0	15.0	70	10	1
40900C-1.5D	9.0	14.0	16.0	70	10	1
40950C-1.5D	9.5	15.0	17.0	70	10	1
41000C-1.5D	● 10.0	15.0	_	70	10	2
41050C-1.5D	● 10.5	16.0	18.5	75	12	1
GSX 41100C-1.5D	● 11.0	17.0	19.5	75	12	1
41150C-1.5D	11.5	18.0	20.5	75	12	1
41200C-1.5D	12.0	18.0	_	75	12	2
41300C-1.5D	● 13.0	20.0	23.5	90	16	1
41400C-1.5D	<b>14.0</b>	21.0	24.5	90	16	1
GSX 41500C-1.5D	● 15.0	23.0	26.5	90	16	1
41600C-1.5D	● 16.0	24.0	_	90	16	2
41700C-1.5D	● 17.0	26.0	30.5	100	20	1
41800C-1.5D	● 18.0	27.0	31.5	100	20	1
41900C-1.5D	19.0	29.0	33.5	100	20	1
GSX 42000C-1.5D	● 20.0	30.0	_	100	20	2
42500C-1.5D	25.0	38.0	_	120	25	2

Grade: ACF20

Identification Code

**GSX 4 0100 C - 1.5D** 

Series Code No. of Flutes

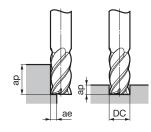
Dia.

Corner Style Cutting Edge C: Gash Land Length

# GSX 40000C-1.5D type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



### Side Milling

Work Material	Structur	ral Steel	Carbo		Cast	Iron	,	Steel		, Hardened Steel	Harden	ed Steel	Stainles	ss Steel	Heat-Resi	stant Allov
Cutting	S			C 250HB)	F			CM B5HRC)	,	HPM 15HRC)	(45 to 5			SUS316		m Alloy
Conditions \			(				(									-
DC (mm)	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed		Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate
DO (IIIII)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85
2.0	12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110
4.0	6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130
6.0	4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150
8.0	3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150
10.0	2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150
12.0	2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150
16.0	1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120
20.0	1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100
25.0	1,050	470	1,050	470	1,050	470	1,050	300	720	210	520	120	640	130	520	80
Standard ap					1.5	DC							1.0	DC		
Depth of Cut ae					0.05	DC							0.02	2DC		

### Side Milling (Using High Speed Machining Centre)

Work Material Cutting Conditions	Structui		S	n Steel C 250HB)	Cast F		Alloy SC (25 to 3	CM		Hardened Steel HPM 45HRC)	Harden (45 to 5			ss Steel ,SUS316		stant Alloy m Alloy
DC (mm)	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate				Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate
DO (IIIII)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300	_	_
2.0	47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400	_	_
4.0	23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490	_	_
6.0	16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520	_	_
8.0	12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520	_	_
10.0	9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520	_	_
12.0	8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520	_	_
16.0	6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450	_	_
20.0	4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380	_	_
25.0												600	1,300	300	_	_
Standard ap					1.5	DC						1.0	DC		-	_
Depth of Cut ae					0.05	5DC	·		<u> </u>	<u> </u>		0.02	2DC	·	-	_

### Groove Milling

Work Material Cutting Conditions	Structui		S	n Steel C 250HB)	Cast F		Alloy SC (25 to 3	M	Tempered Steel, NAK, (35 to 4	HPM	Hardene (45 to 5		Stainles SUS304,			stant Alloy m Alloy
DC (mm)	1.1		Spindle Speed	Feed Rate	Spindle Speed											Feed Rate
DO (IIIII) \	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
2.0	12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
4.0	6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
6.0	4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
8.0	3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
10.0	2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
12.0	2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
16.0	1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
20.0	1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
25.0	1,080	384	1,080	480	1,080	480	1,040	304	720	208	520	120	640	88	256	40
Standard Depth of Cut ap	0.2	DC			0.5	DC			0.2	DC	0.05	DC		0.2	DC	

# **GSX 40000S-2D** type





Endmills

6

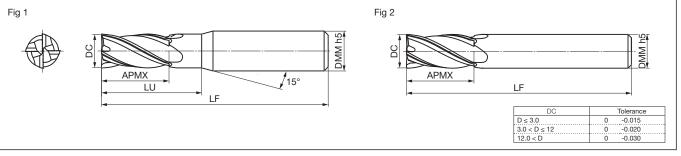
Square











Body

Cat. No. So Dia. Cutting Edge Length Neck Length Overall Length Shank Dia. Fig.

	Cat. No.	Stoc	DC	APMX	LU	LF	DMM	Fig
	GSX 40100S-2D	•	1.0	2.5	3.5	40	4	1
	40100S-2D-S3		1.0	2.5	3.5	38	3	1
	40150S-2D		1.5	3.8	4.8	40	4	1
	40200S-2D		2.0	5.0	6.0	40	4	1
ı	40200S-2D-S3		2.0	5.0	6.0	38	3	1
ı	GSX 40250S-2D		2.5	6.3	7.3	40	4	1
ı	40300S-2D		3.0	7.5	9.0	45	6	1
	40300S-2D-S3		3.0	7.5	_	38	3	2
	40350S-2D		3.5	8.8	10.0	45	6	1
	40400S-2D		4.0	11.0	14.0	45	6	1
	GSX 40400S-2D-S4		4.0	11.0	_	45	4	2
	40450S-2D		4.5	11.3	12.8	50	6	1
	40500S-2D		5.0	13.0	19.6	50	6	1
	40550S-2D		5.5	13.0	19.6	50	6	1
_	40600S-2D		6.0	13.0	_	50	6	2
	GSX 40650S-2D		6.5	13.0	19.6	60	8	1
	40700S-2D		7.0	16.0	21.1	60	8	1
	40750S-2D		7.5	16.0	21.1	60	8	1
	40800S-2D		8.0	19.0	_	60	8	2
	40850S-2D		8.5	19.0	24.1	70	10	1
ı	GSX 40900S-2D		9.0	19.0	24.1	70	10	1
	40950S-2D		9.5	19.0	24.1	70	10	1
	41000S-2D		10.0	22.0	_	70	10	2
	41050S-2D		10.5	22.0	24.5	75	12	1
	41100S-2D	•	11.0	22.0	24.5	75	12	1
	GSX 41150S-2D		11.5	23.0	25.5	75	12	1
	41200S-2D	•	12.0	26.0	_	75	12	2
	41300S-2D		13.0	26.0	29.5	90	16	1
	41350S-2D	•	13.5	27.0	30.5	90	16	1
	41400S-2D		14.0	28.0	31.5	90	16	1
	GSX 41500S-2D	•	15.0	30.0	33.5	90	16	1
	41600S-2D		16.0	32.0	_	90	16	2
	41700S-2D	•	17.0	35.0	39.5	100	20	1
	41800S-2D		18.0	40.0	44.5	100	20	1
	41900S-2D	•	19.0	40.0	44.5	100	20	1
	GSX 42000S-2D		20.0	40.0	-	100	20	2
	42200S-2D	•	22.0	44.0	49.0	110	25	1
	42400S-2D		24.0	48.0	53.0	120	25	1
	42500S-2D		25.0	50.0	_	120	25	2
	Grade: ACF20					-		

Identification Code

<u>GSX 4 0100 S - 2D - S3</u>

Series Code No. of Flutes

Dia.

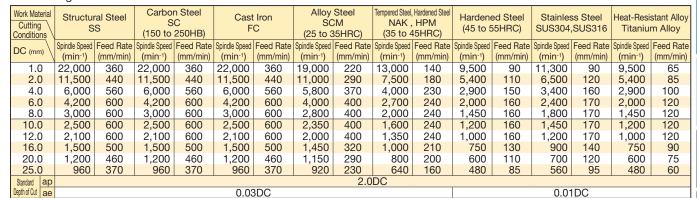
Corner Style Cutting Edge S: Sharp Edge Length Shank Dia.

### GSX 40000S-2D type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 5. This series is not recommended for groove milling.
- 6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

### Side Milling



### Groove Finishing

Work Material Cutting Conditions	Structur S			n Steel C 250HB)	Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		(45 to 55HRC)		Stainless Steel SUS304,SUS316			
DC (mm)	Spindle Speed													Feed Rate		
()	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	22,000	360	22,000	360	22,000	360	19,000	220	13,000	140	9,500	90	11,300	90	9,500	65
2.0	11,500	440	11,500	440	11,500	440	11,000	290	7,500	180	5,400	110	6,500	120	5,400	85
4.0	6,000	560	6,000	560	6,000	560	5,800	370	4,000	230	2,900	150	3,400	160	2,900	100
6.0	4,200	600	4,200	600	4,200	600	4,000	400	2,700	240	2,000	160	2,400	170	2,000	120
8.0	3,000	600	3,000	600	3,000	600	2,800	400	2,000	240	1,450	160	1,800	170	1,450	120
10.0	2,500	600	2,500	600	2,500	600	2,350	400	1,600	240	1,200	160	1,450	170	1,200	120
12.0	2,100	600	2,100	600	2,100	600	2,000	400	1,350	240	1,000	160	1,200	170	1,000	120
16.0	1,500	500	1,500	500	1,500	500	1,450	320	1,000	210	750	130	900	140	750	90
20.0	1,200	460	1,200	460	1,200	460	1,150	290	800	200	600	110	700	120	600	75
25.0	960	370	960	370	960	370	920	230	640	160	480	85	560	95	480	60
Standard ap								1.5	DC							
Depth of Cut ae								Below (	0.02DC							

ndmills

6

Square

Radius

Multi-

General-Purpose

# **GSX 40000C-2D** type



Dimensions (mm)



Endmills

6

Square







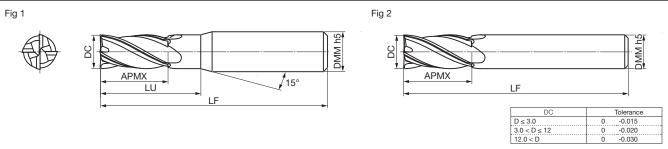












Body

Dody					Dilliension	15 (11111)
Cat. No.	Stock Dia. Dia. Dia.	Cutting Edge Length APMX	Neck Length	Overall Length  LF	Shank Dia.  DMM	Fig
GSX 40100C-2D	1.0	2.0	3.0	40	4	1
40150C-2D	1.5	3.0	4.0	40	4	1
40200C-2D	● 2.0	4.0	5.0	40	4	1
40250C-2D	● 2.5	5.0	6.0	40	4	1
40300C-2D	● 3.0	6.0	7.5	45	6	1
GSX 40350C-2D	● 3.5	7.0	8.5	45	6	1
40400C-2D	● 4.0	8.0	9.5	45	6	1
40450C-2D	● 4.5	9.0	10.5	50	6	1
40500C-2D	● 5.0	10.0	12.0	50	6	1
40550C-2D	● 5.5	11.0	13.0	50	6	1
GSX 40600C-2D	● 6.0	12.0	_	50	6	2
40650C-2D	● 6.5	13.0	15.0	60	8	1
40700C-2D	● 7.0	14.0	16.0	60	8	1
40750C-2D	● 7.5	15.0	17.0	60	8	1
40800C-2D	● 8.0	16.0	_	60	8	2
GSX 40850C-2D	● 8.5	17.0	19.0	70	10	1
40900C-2D	9.0	18.0	20.0	70	10	1
40950C-2D	9.5	19.0	21.0	70	10	1
41000C-2D	● 10.0	20.0	_	70	10	2
41050C-2D	10.5	21.0	23.5	75	12	1
GSX 41100C-2D	● 11.0	22.0	24.5	75	12	1
41150C-2D	11.5	23.0	25.5	75	12	1
41200C-2D	12.0	24.0	_	75	12	2
41300C-2D	● 13.0	26.0	29.5	90	16	1
41400C-2D	<b>14.0</b>	28.0	31.5	90	16	1
GSX 41500C-2D	15.0	30.0	33.5	90	16	1
41600C-2D	<b>16.0</b>	32.0	_	90	16	2
41700C-2D	● 17.0	34.0	39.5	100	20	1
41800C-2D	● 18.0	36.0	40.5	100	20	1
41900C-2D	19.0	38.0	42.5	100	20	1
GSX 42000C-2D	20.0	40.0	_	100	20	2
42500C-2D	25.0	50.0	_	120	25	2

Grade: ACF20

**Identification Code** 

**GSX 4 0100 C - 2D** 

Series Code No. of Flutes

Dia.

Corner Style Cutting Edge
C: Gash Land Length

# GSX 40000C-2D type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

# ae DC

### Side Milling

Work Material Cutting Conditions	Structu			n Steel C 250HB)	Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Allo Titanium Alloy		
DC (mm)	1 1														Spindle Speed		
- ' ' '	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min-1)	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	
1.0	24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85	
2.0	12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110	
4.0	6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130	
6.0	4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150	
8.0	3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150	
10.0	2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150	
12.0	2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150	
16.0	1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120	
20.0	1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100	
25.0	1,000	480	1,000	480	1,000	480	1,000	300	700	200	500	120	640	120	500	80	
Standard ap					1.5	DC					1.0DC						
Depth of Cut ae					0.05	DC					0.02DC						

### Side Milling (Using High Speed Machining Centre)

Work Material Cutting Conditions	Structur		S	n Steel C 250HB)	Cast F		Alloy SC (25 to 3	M		Hardened Steel HPM 15HRC)	Hardene (45 to 5		Stainles SUS304			stant Alloy m Alloy
DC (mm)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)		Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)		Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)
1.0	60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300		_
2.0	47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400	_	_
4.0	23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490	_	_
6.0	16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520	_	_
8.0	12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520	_	_
10.0	9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520	_	_
12.0	8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520	_	_
16.0	6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450	_	_
20.0	4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380	_	_
25.0	3,800	1,500	3,800	1,500	3,800	1,500	3,800	1,100	3,200	900	2,500	600	1,300	300	_	_
Standard ap					1.5	DC					1.0DC					
Depth of Cut ae					0.05	DC					0.02DC					

### Groove Milling

Work Material Cutting Conditions	Structur		S	Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		stant Alloy m Alloy
DC (mm)	Spindle Speed						Spindle Speed						I to the second			
()	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
1.0	24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
2.0	12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
4.0	6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
6.0	4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
8.0	3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
10.0	2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
12.0	2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
16.0	1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
20.0	1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
25.0	1,000	380	1,000	450	1,000	450	1,000	300	700	200	500	120	640	80	250	40
Standard Depth of Cut ap	0.2	0.2DC			0.5DC			0.2DC		0.05DC			0.2	DC		

# SX 40000S-3D type





9 Endmills

Square

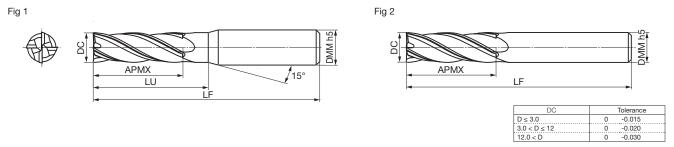












Body Dimensions (mm)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length <b>LF</b>	Shank Dia.  DMM	Fig
GSX 40100S-3D		1.0	3.0	4.0	40	4	1
40150S-3D		1.5	4.5	5.5	40	4	1
40200S-3D		2.0	6.0	7.0	40	4	1
40250S-3D		2.5	8.0	9.0	40	4	1
40300S-3D		3.0	9.0	10.5	50	6	1
GSX 40350S-3D		3.5	11.0	12.5	50	6	1
40400S-3D		4.0	12.0	13.5	50	6	1
40450S-3D		4.5	15.0	16.5	50	6	1
40500S-3D		5.0	15.0	17.0	50	6	1
40550S-3D		5.5	18.0	20.0	50	6	1
GSX 40600S-3D		6.0	18.0	_	50	6	2
40650S-3D		6.5	20.0	22.0	70	8	1
40700S-3D		7.0	21.0	23.0	70	8	1
40750S-3D		7.5	23.0	25.0	70	8	1
40800S-3D		8.0	24.0		70	8	2
GSX 40850S-3D		8.5	26.0	28.0	75	10	1
40900S-3D		9.0	27.0	29.0	75	10	1
40950S-3D		9.5	29.0	31.0	75	10	1
41000S-3D		10.0	30.0	_	90	10	2
41050S-3D		10.5	32.0	34.5	90	12	1
GSX 41100S-3D		11.0	33.0	35.5	90	12	1
41150S-3D		11.5	35.0	37.5	90	12	1
41200S-3D		12.0	36.0	_	90	12	2
41300S-3D		13.0	39.0	42.5	100	16	1
41400S-3D		14.0	42.0	45.5	110	16	1
GSX 41500S-3D		15.0	45.0	48.5	110	16	1
41600S-3D		16.0	48.0	_	110	16	2
41700S-3D		17.0	51.0	55.5	110	20	1
41800S-3D		18.0	54.0	58.5	120	20	1
41900S-3D		19.0	57.0	61.5	120	20	1
GSX 42000S-3D		20.0	60.0	_	120	20	2
42200S-3D		22.0	66.0	71.0	130	25	1
42500S-3D		25.0	75.0	_	130	25	2

Grade: ACF20

Identification Code

Series Code No. of Flutes Dia.

Corner Style Cutting Edge S: Sharp Edge Length

6-34

# GSX 40000S-3D type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
- 5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

# ae DC

### Side Milling

Work Material Cutting Conditions	Structu	ral Steel S		n Steel C 250HB)	Cast F		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316			stant Alloy m Alloy
DC (mm)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate	Spindle Speed (min-1)	Feed Rate	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)
1.0	18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
2.0	9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
4.0	4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
6.0	3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
8.0	2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
10.0	1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
12.0	1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
16.0	1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
20.0	900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
25.0	720	220	720	220	720	220	680	170	560	130	320	60	352	70	320	50
Standard ap				2.5	DC				2.0DC							
Depth of Cut ae	Below @	3: 0.02D	C, Above	ø3 to Be	low ø8: 0	.05DC, A	bove ø8:	0.07DC	0.01DC							

### Groove Finishing

Work Material Cutting Conditions	Structur	S		C 250HB)	Cast F	С	Alloy SC (25 to 3	M S5HRC)	NAK , (35 to 4		Hardene (45 to 5	55HRC)		SUS316	Titaniur	
DC (mm)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)		Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)
1.0	* ' /	, ,	,	,	,	,	,	,	,	,	,	,	,	,	,	,
1.0	18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
2.0	9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
4.0	4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
6.0	3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
8.0	2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
10.0	1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
12.0	1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
16.0	1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
20.0	900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
25.0	720	220	720	220	720	220	680	170	560	130	320	60	352	70	320	50
Standard ap								1.5	DC							
Depth of Cut ae								Below (	0.02DC							

Indmills

6

Square

Radius

Multi-Purpose

General-

# SX 40000C-3D type









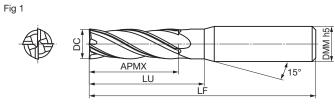


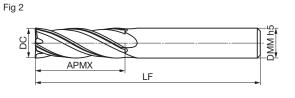












Overall Length

DC		Tolerance
D ≤ 3.0	0	-0.015
3.0 < D ≤ 12	0	-0.020
12.0 < D	0	-0.030

Dimensions (mm)

Body

Square

**Endmills** 

6

General-Purpose

Cat. No. Fig DC LU **DMM APMX** LF GSX 40100C-3D 1.0 3.0 4.0 40 4 1 40150C-3D 40 4 1 1.5 4.5 5.5 40200C-3D 2.0 6.0 7.0 40 4 40250C-3D 40 4 1 2.5 7.5 8.5 40300C-3D 3.0 9.0 10.5 50 6 1 GSX 40350C-3D 50 6 1 3.5 11.0 12.5 40400C-3D 6 4.0 12.0 13.5 50 1 40450C-3D 4.5 14.0 15.5 50 6 1 40500C-3D 50 6 5.0 15.0 17.0 1 40550C-3D 50 1 5.5 17.0 19.0 6 GSX 40600C-3D 6.0 18.0 50 6 2 22.0 1 40650C-3D 6.5 20.0 70 8 40700C-3D 23.0 70 8 7.0 21.0 1 1 40750C-3D 7.5 23.0 25.0 70 8 40800C-3D 2 8.0 24.0 70 8 GSX 40850C-3D 8.5 26.0 28.0 75 10 1 40900C-3D 9.0 29.0 75 10 27.0 1 40950C-3D 9.5 29.0 31.0 75 10 1 41000C-3D 10.0 30.0 90 10 2 41050C-3D 10.5 34.5 1 32.0 90 12 GSX 41100C-3D 11.0 33.0 35.5 90 12 1 41150C-3D 11.5 35.0 37.5 90 12 1 41200C-3D 90 2 12.0 36.0 12 41300C-3D 42.5 1 13.0 39.0 100 16 41400C-3D 14.0 42.0 45.5 110 16 1 GSX 41500C-3D 15.0 45.0 48.5 110 16 1 41600C-3D 16.0 48.0 110 16 2 41700C-3D 17.0 55.5 20 1 51.0 110 41800C-3D 18.0 54.0 58.5 120 20 1 41900C-3D 19.0 57.0 61.5 120 20 1 GSX 42000C-3D 20.0 60.0 120 20 2 2 42500C-3D 25 25.0 75.0 130

Grade: ACF20

Identification Code

**GSX 4 0100 C - 3D** 

Series Code No. of Flutes

Dia.

C: Gash Land

Corner Style Cutting Edge Length

# **GSX 40000C-3D** type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
  5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

### Side Milling

Work Material Cutting Conditions	Structu	ral Steel S	S	n Steel C 250HB)			Alloy Steel   Tempered Steel, Hardened Ste   NAK , HPM (25 to 35HRC) (35 to 45HRC)		HPM	Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Allo Titanium Alloy		
DC (mm)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)
1.0	21,000	360	21,000	360	21,000	360	19,000	220	13,000	140	9,000	90	10,500	90	9,000	65
2.0	10,500	360	10,500	360	10,500	360	9,600	290	7,500	180	4,500	110	5,200	120	4,500	85
4.0	5,200	500	5,200	500	5,200	500	4,800	370	4,000	280	2,250	150	2,600	160	2,250	100
6.0	3,500	560	3,500	560	3,500	560	3,200	400	2,700	300	1,500	160	1,700	170	1,500	120
8.0	2,600	520	2,600	520	2,600	520	2,400	400	2,000	300	1,100	160	1,300	170	1,100	120
10.0	2,100	500	2,100	500	2,100	500	1,900	400	1,600	300	900	160	1,000	160	900	120
12.0	1,750	500	1,750	500	1,750	500	1,600	400	1,350	300	750	150	850	160	750	120
16.0	1,300	420	1,300	420	1,300	420	1,200	330	1,000	260	550	120	650	140	550	100
20.0	1,050	380	1,050	380	1,050	380	950	290	800	230	450	110	500	120	450	90
25.0	840	300	840	300	840	300	760	230	640	180	360	85	400	95	360	70
Standard ap					2.5	DC							2.0	DC		
Depth of Cut ae	Below a	3: 0.05D	C. Above	e ø3 to Be	elow ø8: (	0.1DC. A	hove ø8.	0.15DC				0.02	DC			

### Groove Milling

Work Material Cutting Conditions	Structu	ral Steel S	S	n Steel C 250HB)		: Iron C	Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Allo Titanium Alloy	
DC (mm)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)		Feed Rate (mm/min)		Feed Rate (mm/min)		Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)
1.0	16,600	140	16.600	140	16.600	140	15.500	100	10.500	100	7,500	70	9.400	60	3.750	20
2.0	9.500	160	9,500	160	9.500	160	9.000	180	6.200	120	4,500	90	5.200	80	2,250	30
4.0	5,200	160	5,200	180	5,200	180	4,800	160	3,400	110	2,200	65	2,600	70	1,250	25
6.0	3,500	160	3,500	200	3,500	200	3,200	160	2,550	120	1,500	65	1,700	70	950	25
8.0	2,600	160	2,600	200	2,600	200	2,400	160	1,900	120	1,100	65	1,300	70	700	25
10.0	2,100	160	2,100	200	2,100	200	1,900	160	1,500	120	900	65	1,000	70	550	25
12.0	1,750	160	1,750	200	1,750	200	1,600	160	1,250	120	750	65	850	70	450	25
16.0	1,300	160	1,300	200	1,300	200	1,200	160	950	120	550	65	650	70	350	25
20.0	1,050	160	1,050	200	1,050	200	950	160	750	120	450	65	500	70	280	55
25.0	840	128	840	160	840	160	760	128	600	96	360	52	400	56	224	44
Standard Depth of Cut ap	0.1	DC				0.2	DC				0.05	5DC		0.1	DC	

# SX 40000S-4D type





9 Endmills

Square

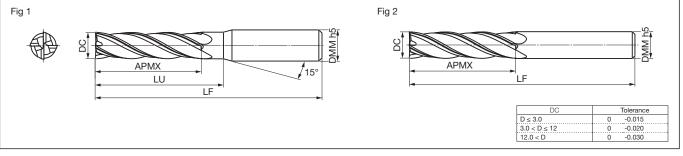












Body Dimensions (mm)

Cat. No.	Stock DC Dia.	Cutting Edge Length APMX	Neck Length <b>LU</b>	Overall Length <b>LF</b>	Shank Dia.  DMM	Fig
GSX 40100S-4D	1.0	4.0	5.0	40	4	1
40150S-4D	1.5	6.0	7.0	40	4	1
40200S-4D	● 2.0	8.0	9.0	40	4	1
40250S-4D	● 2.5	10.0	11.0	50	4	1
40300S-4D	● 3.0	12.0	13.5	50	6	1
GSX 40350S-4D	● 3.5	14.0	15.5	50	6	1
40400S-4D	● 4.0	16.0	17.5	50	6	1
40450S-4D	● 4.5	18.0	19.5	60	6	1
40500S-4D	● 5.0	20.0	22.0	60	6	1
40550S-4D	5.5	22.0	24.0	60	6	1
GSX 40600S-4D	● 6.0	24.0	_	60	6	2
40650S-4D	● 6.5	26.0	28.0	70	8	1
40700S-4D	● 7.0	28.0	30.0	80	8	1
40750S-4D	● 7.5	30.0	32.0	80	8	1
40800S-4D	● 8.0	32.0	_	80	8	2
GSX 40850S-4D	● 8.5	34.0	36.0	90	10	1
40900S-4D	9.0	36.0	38.0	90	10	1
40950S-4D	9.5	39.0	41.0	90	10	1
41000S-4D	● 10.0	40.0	_	90	10	2
41050S-4D	10.5	42.0	44.5	100	12	1
GSX 41100S-4D	● 11.0	44.0	46.5	100	12	1
41150S-4D	11.5	46.0	48.5	100	12	1
41200S-4D	12.0	48.0	_	100	12	2
41300S-4D	13.0	52.0	55.5	110	16	1
41400S-4D	<b>14.0</b>	56.0	59.5	110	16	1
GSX 41500S-4D	15.0	60.0	63.5	120	16	1
41600S-4D	● 16.0	64.0	_	120	16	2
41700S-4D	● 17.0	68.0	72.5	130	20	1
41800S-4D	● 18.0	72.0	76.5	130	20	1
41900S-4D	● 19.0	76.0	80.5	140	20	1
GSX 42000S-4D	● 20.0	80.0	_	140	20	2
42500S-4D	● 25.0	100.0	_	160	25	2

Grade: ACF20

**Identification Code** 

**GSX 4 0100** 

Series Code No. of Flutes

Dia.

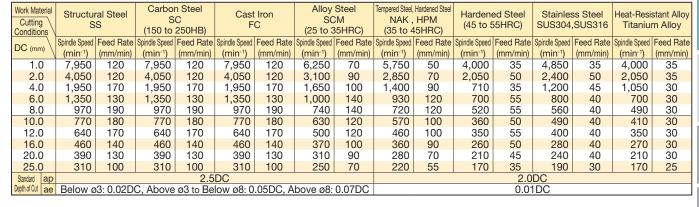
Corner Style Cutting Edge S: Sharp Edge Length

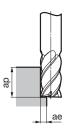
# GSX 40000S-4D type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
- 5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

### Side Milling





S

6

Square

Radius

Multi-

# SX 40000C-4D type





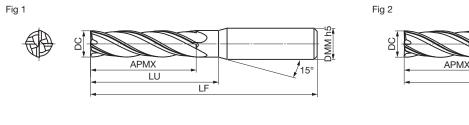












4	ы	-
	DC	Tolerance
	D ≤ 3.0	0 -0.015
	3.0 < D ≤ 12	0 -0.020
	12.0 < D	0 -0.030

DMM h5

Body

Square

Endmills

6

Coated

Body						Dimensio	ns (mm)
Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length	Overall Length  LF	Shank Dia.  DMM	Fig
GSX 40100C-4D	•	1.0	4.0	5.0	40	4	1
40150C-4D		1.5	6.0	7.0	40	4	1
40200C-4D		2.0	8.0	9.0	40	4	1
40250C-4D		2.5	10.0	11.0	50	4	1
40300C-4D		3.0	12.0	13.5	50	6	1
GSX 40350C-4D		3.5	14.0	15.5	50	6	1
40400C-4D		4.0	16.0	17.5	50	6	1
40450C-4D		4.5	18.0	19.5	60	6	1
40500C-4D		5.0	20.0	22.0	60	6	1
40550C-4D		5.5	22.0	24.0	60	6	1
GSX 40600C-4D		6.0	24.0	_	60	6	2
40650C-4D		6.5	26.0	28.0	70	8	1
40700C-4D		7.0	28.0	30.0	80	8	1
40750C-4D		7.5	30.0	32.0	80	8	1
40800C-4D		8.0	32.0	_	80	8	2
GSX 40850C-4D		8.5	34.0	36.0	90	10	1
40900C-4D		9.0	36.0	28.0	90	10	1
40950C-4D		9.5	39.0	41.0	90	10	1
41000C-4D		10.0	40.0	_	90	10	2
41050C-4D		10.5	42.0	44.5	100	12	1
GSX 41100C-4D		11.0	44.0	46.5	100	12	1
41150C-4D		11.5	46.0	48.5	100	12	1
41200C-4D		12.0	48.0	_	100	12	2
41300C-4D		13.0	52.0	55.5	110	16	1
41400C-4D		14.0	56.0	59.5	110	16	1
GSX 41500C-4D		15.0	60.0	63.5	120	16	1
41600C-4D		16.0	64.0	_	120	16	2
41700C-4D		17.0	68.0	72.5	130	20	1
41800C-4D		18.0	72.0	76.5	130	20	1
41900C-4D		19.0	76.0	80.5	140	20	1
GSX 42000C-4D		20.0	80.0	_	140	20	2
42500C-4D		25.0	100.0	_	160	25	2

Grade: ACF20

**Identification Code** 

**GSX 4 0100** 

Series Code No. of Flutes

Dia.

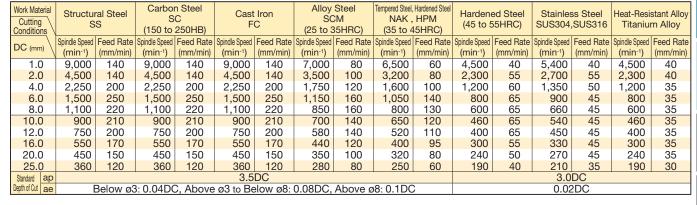
Corner Style Cutting Edge C: Gash Land Length

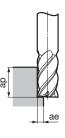
# **GSX 40000C-4D** type

### **Recommended Cutting Conditions**

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
- 5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
- 6. This series is not recommended for groove milling.
- 7. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

### Side Milling





6

Square

Radius

General-Purpose

# SX 40000-R-2D type











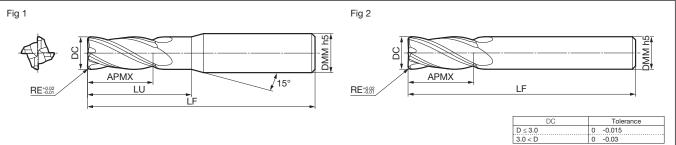












Bodv

Square

**Endmills** 

6

Radius

General-Purpose

Coated

Grade: ACF20

Body							Dimension	ns (mm)
Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length  LF	Shank Dia.  DMM	Fig
GSX 40300-R02-2D		3.0	0.2	8.0	9.5	45	6	1
40300-R05-2D		3.0	0.5	8.0	9.5	45	6	1
40400-R02-2D		4.0	0.2	11.0	14.0	45	6	1
40400-R05-2D		4.0	0.5	11.0	14.0	45	6	1
40400-R10-2D		4.0	1.0	11.0	14.0	45	6	1
GSX 40500-R02-2D		5.0	0.2	13.0	19.6	50	6	1
40500-R05-2D		5.0	0.5	13.0	19.6	50	6	1
40500-R10-2D		5.0	1.0	13.0	19.6	50	6	1
40600-R02-2D		6.0	0.2	13.0	_	50	6	2
40600-R05-2D		6.0	0.5	13.0	_	50	6	2
GSX 40600-R10-2D		6.0	1.0	13.0	_	50	6	2 2
40600-R15-2D		6.0	1.5	13.0	_	50	6	2
40800-R02-2D		8.0	0.2	19.0	_	60	8	2
40800-R05-2D		8.0	0.5	19.0	_	60	8	2
40800-R10-2D		8.0	1.0	19.0		60	8	2
GSX 40800-R15-2D		8.0	1.5	19.0	_	60	8	2
41000-R02-2D		10.0	0.2	22.0	_	70	10	2
41000-R05-2D		10.0	0.5	22.0	_	70	10	2
41000-R10-2D		10.0	1.0	22.0	_	70	10	2
41000-R15-2D		10.0	1.5	22.0	_	70	10	2 2 2 2
GSX 41000-R20-2D		10.0	2.0	22.0	_	70	10	2
41200-R02-2D		12.0	0.2	26.0	_	75	12	2
41200-R05-2D		12.0	0.5	26.0	_	75	12	2
41200-R10-2D		12.0	1.0	26.0	_	75	12	2
41200-R15-2D		12.0	1.5	26.0		75	12	2
GSX 41200-R20-2D		12.0	2.0	26.0	_	75	12	2

Identification Code

**GSX 4 0300** 

Series Code No. of

Flutes

Corner Radius

Cutting Edge Length

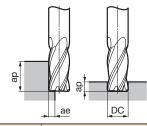
Corner Style R: Radius

6-42

# GSX 40000-R-2D type

### **Recommended Cutting Conditions**

- 1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
- 2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.
- 3. For Groove Milling of stainless steel, use 60% of the recommended spindle speed and 40% of the recommended feed rate. (\*)



### Side Milling

	Structural Steel, Carbon Steel, Casbutting SS. SC. FC		Alloy	Steel	Tempered Steel,	Hardened Steel	Hardened Steel		Stainless Steel (*)		Heat-Resis	etant Alloy
Cutting \	\	C, FC	SC		NAK,		(45 to 5		SUS304,		Titanium Alloy	
Conditions	(150 to	250HB)	(25 to 3	B5HRC)	(35 to 4	5HRC)	(+0 10 0		000004,	000010	Titaliiai	117 tiloy
DC (mm)	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate
DO (IIIII)	m) (min-1) (mm/mir		n/min) (min <sup>-i</sup> ) (mm		(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
2.0	12,800	570	12,000	380	8,300	230	6,000	150	6,000	130	3,700	70
4.0	6,800	730	6,400	490	4,400	300	3,200	200	3,200	170	2,000	90
6.0	4,600	770	4,300	520	3,000	320	2,200	210	2,200	180	1,400	100
8.0	3,400	770	3,200	520	2,200	320	1,600	210	1,600	180	1,000	100
10.0	2,800	780	2,600	520	1,800	320	1,300	210	1,300	180	800	100
12.0	2,300	780	2,200	530	1,500	320			1,100	180	700	100
Standard a		DC	1.5	DC	1.5	DC	1.0	DC	1.5	DC	1.0	DC
Depth of Cut a	e 0.1	DC	0.1	DC	0.05	DC	0.02	2DC	0.1	DC	0.05	DC

### Groove Milling

Work Material Cutting Conditions	Structural Steel, Car SS, S (150 to		Alloy SC (25 to 3	M	Tempered Steel, NAK, (35 to 4	HPM	Hardene (45 to 5		Stainless SUS304,		Heat-Resistant Alloy Titanium Alloy	
DC (mm)	Spindle Speed Feed Rate (min-1) (mm/min		Spindle Speed (min-1)	Feed Rate (mm/min)			Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)
2.0	12.800	570	12.000	380	8.300	230	6.000	150	6.000	130	3.700	70
4.0	6,800	730	6,400	490	4,400	300	3,200	200	3,200	170	2,000	90
6.0	4,600	770	4,300	520	3,000	320	2,200	210	2,200	180	1,400	100
8.0	3,400	770	3,200	520	2,200	320	1,600	210	1,600	180	1,000	100
10.0	2,800	780	2,600	520	1,800	320	1,300	210	1,300	180	800	100
12.0	2,300	780	2,200	530	1,500	320	1,100	210	1,100	180	700	100
Groove Milling ap	0.5	DC	0.5	DC	0.2	DC	0.05	DC	0.3	DC	0.11	DC

### Side Milling (Using High Speed Machining Centre)

Cutting Conditions	Structural Steel, Carbon Steel, Cast Iro SS, SC, FC (150 to 250HB)		SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardene (45 to 5		Stainless Steel (*) SUS304, SUS316	
DC (mm) Sp	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate	Spindle Speed	Feed Rate
DO (IIIII)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)	(min <sup>-1</sup> )	(mm/min)
2.0	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400
4.0	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490
6.0	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	510
8.0	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520
10.0	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520
12.0	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520
Standard ap	1.5[	DC .	1.5	DC	1.5	DC	1.0	DC	1.5	DC
Depth of Cut ae	0.05	DC	0.05	DC	0.05	DC	0.02	2DC	0.05	DC

General Carbon Steel















**Endmills** 

6

Square

Radius







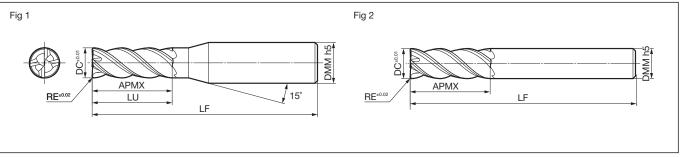












Body Dimensions (mm) 충 Cutting Edge Length Neck Length Overall Length Shank Dia.

ı	Cat. No.	Stoc	DC	RE	APMX	LU	LF	DMM	Fig
ı	GSV 4030-R02-2.5D		3.0	0.2	8.0	9.5	50	6	1
ı	4030-R05-2.5D		3.0	0.5	8.0	9.5	50	6	1
ı	4040-R02-2.5D		4.0	0.2	10.0	11.5	50	6	1
	4040-R05-2.5D		4.0	0.5	10.0	11.5	50	6	1
	4040-R10-2.5D		4.0	1.0	10.0	11.5	50	6	1
	GSV 4050-R02-2.5D		5.0	0.2	13.0	14.5	60	6	1
	4050-R05-2.5D		5.0	0.5	13.0	14.5	60	6	1
ı	4050-R10-2.5D		5.0	1.0	13.0	14.5	60	6	1
ı	4060-R03-2.5D		6.0	0.3	15.0	_	60	6	2
	4060-R05-2.5D		6.0	0.5	15.0	-	60	6	2
	GSV 4060-R10-2.5D		6.0	1.0	15.0	_	60	6	2
ı	4060-R15-2.5D		6.0	1.5	15.0	_	60	6	2
L	4080-R03-2.5D		8.0	0.3	20.0	_	80	8	2
ı	4080-R05-2.5D		8.0	0.5	20.0	_	80	8	2
ı	4080-R10-2.5D		8.0	1.0	20.0		80	8	2
ı	GSV 4080-R15-2.5D		8.0	1.5	20.0	_	80	8	2
9	4080-R20-2.5D		8.0	2.0	20.0	_	80	8	2
	4100-R03-2.5D		10.0	0.3	25.0	_	90	10	2
	4100-R05-2.5D		10.0	0.5	25.0	_	90	10	2
	4100-R10-2.5D		10.0	1.0	25.0	_	90	10	2
	GSV 4100-R15-2.5D		10.0	1.5	25.0	_	90	10	2
	4100-R20-2.5D		10.0	2.0	25.0	_	90	10	2
	4120-R05-2.5D		12.0	0.5	30.0	_	90	12	2
	4120-R10-2.5D		12.0	1.0	30.0	_	90	12	2
	4120-R15-2.5D		12.0	1.5	30.0	_	90	12	2
	GSV 4120-R20-2.5D		12.0	2.0	30.0	_	90	12	2
	4120-R30-2.5D		12.0	3.0	30.0	_	90	12	2
	4160-R10-2.5D		16.0	1.0	40.0	_	115	16	2
	4160-R15-2.5D		16.0	1.5	40.0	_	115	16	2
	4160-R20-2.5D	-	16.0	2.0	40.0	_	115	16	2
	GSV 4160-R30-2.5D		16.0	3.0	40.0	_	115	16	2
	4200-R10-2.5D		20.0	1.0	50.0	_	125	20	2
	4200-R15-2.5D		20.0	1.5	50.0	_	125	20	2
	4200-R20-2.5D		20.0	2.0	50.0	_	125	20	2
	4200-R30-2.5D		20.0	3.0	50.0	_	125	20	2
	GSV 4250-R10-2.5D		25.0	1.0	63.0	_	140	25	2
	4250-R15-2.5D		25.0	1.5	63.0	_	140	25	2
	4250-R20-2.5D		25.0	2.0	63.0	_	140	25	2
	4250-R30-2.5D		25.0	3.0	63.0	_	140	25	2
	Grade: ACF20								

Grade: ACF20

Identification Code

Series Code No. of Flutes Corner Radius Cutting Edge Length

Corner Style R: Radius

# GSV 4000-R-2.5D type

- Recommended Cutting Conditions

  1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

### Side Milling

Work Material Cutting Conditions	Carbon Stee SS, S (150 to	C, FC	SCM (25 to 35HRC)		NAK,	Hardened Steel HPM 50HRC)	Stainles	ss Steel SUS316	Titanium Alloy		
DC (mm)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	
2.0	13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200	
4.0	9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230	
6.0	6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240	
8.0	5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250	
10.0	4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210	
12.0	3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180	
14.0	3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150	
16.0	2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130	
18.0	2,400	1,000	2,000	900	1,400	570	1,300	450	680	120	
20.0	2,200	900	1,700	800	1,200	550	1,100	400	600	100	
25.0	1,700	680	1,400	630	1,000	450	890	310	480	82	
Standard ap				1.5	DC						
Depth of Cut ae	0.2DC		DC		0.05DC		0.1DC		0.05DC		

### Groove Milling

Work Material Cutting Conditions	Carbon Stee SS, S (150 to		SCM (25 to 35HRC)		Tempered Steel / NAK, (40 to 5	HPM		ss Steel ,SUS316	Titanium Alloy		
DC (mm)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	
2.0	13,000	750	10,000	550	8,400	500	6,500	300	4,000	140	
4.0	8,200	800	6,000	600	5,200	500	4,000	330	2,000	130	
6.0	6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150	
8.0	4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140	
10.0	3,600	1,000	2,400	550	2,100	510	1,600	200	800	130	
12.0	3,100	920	2,000	500	1,700	450	1,300	280	660	110	
14.0	2,600	750	1,700	450	1,500	400	1,100	250	570	100	
16.0	2,300	670	1,500	420	1,300	350	1,000	230	500	90	
18.0	2,000	620	1,300	380	1,100	330	900	200	430	80	
20.0	1,900	600	1,200	360	1,000	320	800	180	380	70	
25.0	1,500	470	1,000	300	790	250	640	140	300	55	
Standard Depth of Cut ap		0.8	DC		0.16	BDC	0.4	DC	0.16	BDC	

# GSXVL 4000-R-2.5D type























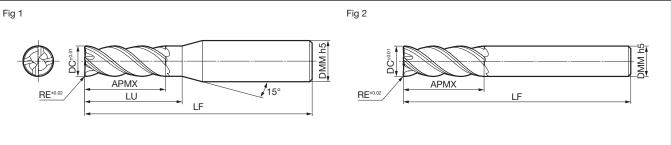












Body Dimensions (mm)

Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length  LF	Shank Dia.	Fig
GSXVL 4030-R02-2.5D		3.0	0.2	8.0	9.5	50	6	1
4030-R05-2.5D		3.0	0.5	8.0	9.5	50	6	1
4040-R02-2.5D		4.0	0.2	10.0	11.5	50	6	1
4040-R05-2.5D		4.0	0.5	10.0	11.5	50	6	1
4040-R10-2.5D		4.0	1.0	10.0	11.5	50	6	1
GSXVL 4050-R02-2.5D		5.0	0.2	13.0	14.5	60	6	1
4050-R05-2.5D		5.0	0.5	13.0	14.5	60	6	1
4050-R10-2.5D		5.0	1.0	13.0	14.5	60	6	1
4060-R03-2.5D		6.0	0.3	15.0	_	60	6	2 2
4060-R05-2.5D		6.0	0.5	15.0	_	60	6	
GSXVL 4060-R10-2.5D		6.0	1.0	15.0	_	60	6	2
4060-R15-2.5D		6.0	1.5	15.0	_	60	6	2
4080-R03-2.5D		8.0	0.3	20.0	_	80	8	2
4080-R05-2.5D		8.0	0.5	20.0	_	80	8	2
4080-R10-2.5D		8.0	1.0	20.0	_	80	8	2
GSXVL 4080-R15-2.5D		8.0	1.5	20.0	_	80	8	2
4080-R20-2.5D		8.0	2.0	20.0	_	80	8	2
4100-R03-2.5D		10.0	0.3	25.0	_	90	10	2
4100-R05-2.5D		10.0	0.5	25.0	_	90	10	2
4100-R10-2.5D		10.0	1.0	25.0	_	90	10	2
GSXVL 4100-R15-2.5D		10.0	1.5	25.0	_	90	10	2
4100-R20-2.5D		10.0	2.0	25.0	_	90	10	2
4120-R05-2.5D		12.0	0.5	30.0	_	90	12	2
4120-R10-2.5D		12.0	1.0	30.0	_	90	12	2
4120-R15-2.5D		12.0	1.5	30.0	_	90	12	2
GSXVL 4120-R20-2.5D		12.0	2.0	30.0	_	90	12	2
4120-R30-2.5D		12.0	3.0	30.0	_	90	12	2
4160-R10-2.5D		16.0	1.0	40.0	_	115	16	2
4160-R15-2.5D		16.0	1.5	40.0	_	115	16	2
4160-R20-2.5D		16.0	2.0	40.0	_	115	16	2
GSXVL 4160-R30-2.5D		16.0	3.0	40.0	_	115	16	2
4200-R10-2.5D		20.0	1.0	50.0	_	125	20	2
4200-R15-2.5D	•	20.0	1.5	50.0	_	125	20	2
4200-R20-2.5D		20.0	2.0	50.0	_	125	20	2
4200-R30-2.5D		20.0	3.0	50.0	_	125	20	2
GSXVL 4250-R10-2.5D		25.0	1.0	63.0	_	140	25	2
4250-R15-2.5D		25.0	1.5	63.0	_	140	25	2
4250-R20-2.5D		25.0	2.0	63.0	_	140	25	2
4250-R30-2.5D		25.0	3.0	63.0	_	140	25	2

Grade: ACF20



For the regrinding procedure, please download the details from our website. https://www.sumitool.com/en/products/cutting-tools/endmills/pdf/gsxvl-regrinding\_en.pdf

Square

Radius

eral- Mu

High Efficiency

# **GSXVL 4000-R-2.5D** type

### Recommended Cutting Conditions

- 1. For stable machining performance use rigid, high-precision machines and holders.
- 2. Use air blow when dry machining.
- 3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
- 4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

# ae DC

### Side Milling

Work Material Cutting Conditions	SS, S	el, Cast Iron C, FC 250HB)	sc	Steel CM 35HRC)	Tempered Steel / NAK, (40 to 5		Stainles	ss Steel ,SUS316	Titaniu	m Alloy
DC (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)
2.0	13,000	1,000	10,000	800	8,000	700 10,000		580	5,000	200
4.0	9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0	6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0	5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0	4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0	3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0	3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0	2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0	2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0	2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0	1,700	680	1,400	630	1,000	450	890	310	480	82
Standard ap					1.5	DC				
Depth of Cut ae		0.2	DC		0.05	DC	0.1	DC	0.05	5DC

### Groove Milling

Work Material Cutting Conditions	Carbon Stee SS, S (150 to	C, FC	sc		Tempered Steel NAK, (40 to 5	HPM	Stainles	ss Steel SUS316	Titaniu	m Alloy	
DC (mm)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed Feed Rate (min-1) (mm/min)		Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	
2.0	13,000	750	10,000	550	8,400	500	6,500	300	4,000	140	
4.0	8,200	800	6,000	600	5,200	500	4,000	330	2,000	130	
6.0	6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150	
8.0	4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140	
10.0	3,600	1,000	2,400	550	2,100	510	1,600	200	800	130	
12.0	3,100	920	2,000	500	1,700	450	1,300	280	660	110	
14.0	2,600	750	1,700	450	1,500	400	1,100	250	570	100	
16.0	2,300	670	1,500	420	1,300	350	1,000	230	500	90	
18.0	2,000	620	1,300	380	1,100	330	900	200	430	80	
20.0	1,900	600	1,200	360	1,000	320	800	180	380	70	
25.0	1,500	470	1,000	300	790	250	640	140	300	55	
Standard Depth of Cut ap		1.0	DC		0.2	DC	0.5DC 0.2D			DC	

# **Drills** 7-1 to 7-99



		Drill Selection Guide
Solid Carbide Drills	General-purpose For Flat Bottom Hole For Stainless Steel For High-efficiency, Deep Hole For Non-Ferrous Metals For Small Diameter Deep Hole For Very Small Hole	MULTIDRILL NeXEO MDE series
Indexable Head type Drills	Indexable Head type Drills	SEC-MULTIDRILL SMD series
Indexable Insert type Drills	General-purpose	SumiDrill WDX series 7-83
Solid Reamers	For High-efficiency, High-precision Reaming	SumiReamer SSR series 7-92

mark: Not available

mark: To be replaced with the new item featured on the same page

<sup>▲</sup> mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

O mark: Stock or planned stock (please confirm stock availability) Blank: Made-to-order item

Applications	Work Material	Series	Cat. No.	Diameter (mm)	Appearance
	PMK	MULTIDRILL NeXEO	MDEOOOSOOE02	ø1.0 to ø20.0	
General-	S	MDE-E type	MDE0000\$00E04	ø1.0 to ø20.0	
purpose	PMK	MULTIDRILL NeXEO	MDE0000\$00H03	ø1.0 to ø20.0	A
1000	NS	MDE-H type	MDE0000\$00H05	ø1.0 to ø20.0	*
	<b>WG</b>	Trippe	MDE0000\$00H08	ø1.0 to ø16.0	
			MDF0000S2D	ø0.3 to 20.0	
Flat Bottom	PMK	Flat MULTIDRILL	MDFOOOL2D	ø3.0 to 20.0	
Hole	PMK N	MDF series	MDFOOOH3D	ø3.0 to 16.0	
			MDFOOOOH5D	ø3.0 to 16.0	
			MDWOOOOXHGS10	ø2.1 to 16.0	
			MDWOOOOXHGS12	ø2.5 to 16.0	
		Super MULTIDRILL	MDWOOOOXHGS15	ø2.1 to 16.0	
Deep	PMK	XHGS series	MDWOOOOXHGS20	ø2.1 to 14.0	
Hole			MDWOOOOXHGS25	ø2.1 to 12.0	
			MDWOOOOXHGS30	ø2.1 to 10.0	
		Guide Drill for Long Drills  PHT series	MDWOOOOPHT	ø2.1 to 16.0	
Stainless	MS	MULTIDRILL	MDM0000S00H03	ø3.0 to ø16.0	
Steel		MDM series	MDM0000\$00H05	ø3.0 to ø16.0	
			MDAOOOOSOOH03	ø1.0 to 12.0	
Non-		MULTIDRILL	MDA0000S00H05	ø1.0 to 12.0	
Ferrous	N	MDA series	MDA0000S00H10	ø1.0 to 12.0	
Metals			MDA0000\$00H15	ø1.0 to 3.0	
			MDA0000\$00H20	ø1.0 to 3.0	

					Р		ŀ	1	M		<b>S</b>	ŀ	(		Ν	
Series	Drilling Depth (L/D)	Coated Carbide S		Alloy up to	n Steel Steel 35HRC	Tempered Steel	_	nardened Steel	Stainless Steel	Titanium Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite
				C 0.28% or below	C 0.29%	SKD SKS	45HRC or less	46HRC or more	SUS	Ti	Inconel	FC	FCD	Al	Cu	CFRP
MDE-E type	2D 4D	NX Coat	External	0	0	0	0		0	0	0	0	0			
MDE-H type	3D 5D 8D	NX Coat	Internal	0	<b>o</b>	0	0		©	0	0	0	0	0	0	
			External S2D	0	0	0	0		0	0	0	0	0	0		
MDF series	2D 3D 5D	PVD	External L2D	0	0	0	0		0			0	0	0		
			Internal	0	0	0	0		0			0	0	0		
XHGS series	10D 12D 15D 20D 25D 30D	<b>DEX</b> Cost	Internal	0	0	0	0		0			0	0			
PHT series	Pilot 3D	DEX	Internal	0	0	0	0		0			0	0			
MDM series	3D 5D	NX Coat	Internal	0	0				0	0	0	0	0			
MDA series	3D 5D 10D 15D 20D	AURORA Coat X DLC	Internal											0	0	

ρſ

7

Solid

Indexable Head type

e Indexable e Insert type

Reamers

Applications/ Specifications	Work Material	Series	Cat. No.	Diameter (mm)	Appearance
			MLDHOOOOL5	ø0.8 to 2.0	
		Micro Long Drill	MLDHOOOOL12	ø0.8 to 2.0	
Small Diameter	PMK	MLDH series	MLDHOOOOL20	ø0.8 to 2.0	
Deep Hole			MLDHOOOOL30	ø0.8 to 2.0	
2 3 3 P 1 1 3 1 3		Guide Drill for MLDH series  MLDH-P type	MLDHOOOP	Ø0.8 to 2.0	
	PMK H	MINI-MULTIDRILL  MDSS series	MDSS	ø0.2 to 1.0	<b>()</b>
Very Small Diameter	PMN	Micro MULTIDRILL MDUS series	MDUS0000-30C	ø0.03 to 0.19	
		Micro Multi Pointing Drill MDUP series	MDUP0000-30C	ø0.03 to 0.18	
			SMDHOOO-1.5D/-1.5DF		
Indexable Head type		SEC-MULTIDRILL	SMDHOOOM/-3D/-3DF	~10.0+-00.0	
Emphasis on Edge	PMK	SMD-MSL type Head	SMDHOOOL/-5D/-5DF	ø12.0 to 30.8   D: ø13.5 to 30.8	
Sharpness			SMDHOOOD/-8D/-8DF		
			SMDHOOO-12D		
			SMDH000-1.5D/-1.5DF		
Indexable Head type		SEC-MULTIDRILL	SMDHOOOM/-3D/-3DF	ø12.0 to 30.8	
High-efficiency	PK	SMD-MTL type Head	SMDHOOOL/-5D/-5DF	M, L: ø12.0 to 42.5 D: ø13.5 to 30.8	4,
,			SMDHOOOD/-8D/-8DF		
			SMDH000-12D		
			SMDH000-1.5D/-1.5DF		
Indexable Head type	PMK	SEC-MULTIDRILL	SMDHOOOM/-3D/-3DF	ø12.0 to 30.8	
Low Resistance	M K	SMD-MEL type Head	SMDHOOOL/-5D/-5DF	D: ø13.5 to 30.8	4.
			SMDHOOOD/-8D/-8DF		
			SMDHOOO-12D		
For Flat Bottom Hole	PMK N	SEC-MULTIDRILL SMD-MFS type Head	SMDH000-1.5D/1.5DF/S	ø12.0 to 30.0	<b>%</b>
For Bridge	P	SEC-MULTIDRILL SMD-MB type Head	SMDHOOOB3	ø24.5 to 26.7	C O TOTAL
			WDXOOOD2SOO	ø13.0 to 68.0	
Indexable	PMK	SumiDrill	WDXOOOD3SOO	ø13.0 to 68.0	
Insert type	N	WDX series	WDXOOOD4SOO	ø13.0 to 63.0	
			WDXOOOD5SOO	ø13.0 to 55.0	
			SSROOOH7T		
Solid	PK	SumiReamer	SSROOOH7S	ø2.97 to 12.0	*
Reamer	<u> </u>	SSR series	SSROOOJT		~
			SSROOOJS		

בֿ

7

Solio

Indexable Head tvp

Indexable

					Р			+	M		3	ŀ	<b>(</b>		N	
Series	Drilling Depth (L/D)	Coated Carbide	Coolant Supply	Alloy	n Steel Steel 35HRC	Tempered Steel	-	Hardened Steel	Stainless Steel	Titanium Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite
				C 0.28% or below	C 0.29%	SKD SKS	45HRC or less	46HRC or more	SUS	Ti	Inconel	FC	FCD	Al	Cu	CFRP
MLDH series	5D 12D 20D 30D	PVD	Internal	0	0	0	0		0	0	0	0	0	0		
MLDH-P series	Pilot 2D	PVD	Internal	0	0	0	0		0	0	0	0	0	0		
MDSS series	10D	FB	External	0	0	0	0	0	0		0	0	0	0		
MDUS series	10D	PVD	External	0	0				0					0	0	
MDUP series	Pilot 1D	PVD	External	0	0				0					0	0	
SMD -MSL type Head	1.5D 3D 5D 8D 12D	NX Coat		0	0				0	0	0	0	0			
SMD -MTL type Head	1.5D 3D 5D 8D 12D	DEX	Internal	0	0	0	0					0	0			
SMD -MEL type Head	1.5D 3D 5D 8D 12D	DEX	Internal	0	0		0		0	0	0	0	0	0		
SMD -MFS type Head	1.5D 3D 5D 8D 12D	DEX	Internal	0	0		0		0			0	0	0		
SMD -MB type Head	3D	DEX	Internal	0	0											
WDX series	2D 3D 4D 5D	PVD Coat Coat	Internal	0	0		0		0			0	0	0		
SSR series		PVD	Internal	0	0	0	0					0	0			

Drilling

7

Indexa Head t

(able Indexa

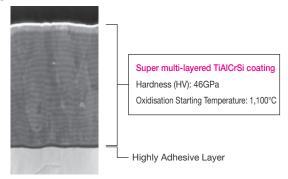
Reamers

# ACT100 ACT70 MULTIDRILL Next for Everyone -

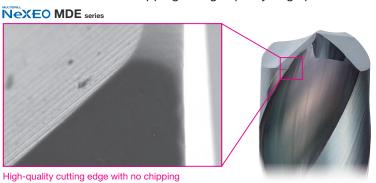
### **NX Coat**



- General Features
  - Sumitomo Electric Hardmetal's proprietary nano-coating technology provides stable tool life under a wide range of cutting conditions with a variety of work materials.
  - Coating Structure



- Features
  - High-quality, high-hardness, high-strength coating based on ABSOTECH™ technology achieves excellent wear and thermal resistance.
  - Resistant to shoulder chipping High-quality edge provides stable tool life



Competitor's Product A



Chipping in edge coating



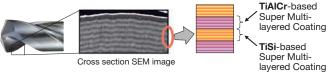
### DEX Coat



### ■ General Features

Sumitomo Electric Hardmetal's dedicated coating for drills utilises nano-coating technology to provide long tool life.

- Features
  - Coating Structure
     World's first compound super multi-layered coating made from alternate layers of two super multi-layered substrates.



- Silicon and chrome improve wear, thermal and adhesion resistance
- Super multi-layered structure offers improved chipping resistance

### ■ DEX Coat Application Examples



# **Drill Coating**



### ■ Features

 Thin, ultra-smooth DLC coating Significantly improved adhesion resistance in drilling of aluminum alloy and non-ferrous metals Significantly reduced cutting force, contributing to stable long tool life

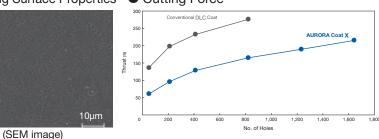
### **AURORA Coat X**



■ General Features

AURORA Coat X, which has ultra-enhanced smoothness through our proprietary new coating technology, low coefficient of friction and high-hardness thin DLC (Diamond Like Carbon) layer, improves wear and adhesion resistance, to realise long and stable tool life in drilling of aluminum alloys and non-ferrous metals.

Coating Surface Properties
 Cutting Force



Work Material: ADC12 Machine: Vertical Machining Centre BT30 Tool: MDA0600S06H05 ( $ø6mm \times 5D$ ) Cutting Conditions: vc = 180m/min f = 0.2mm/rev Internal Coolant Supply (Water-soluble)



### **AURORA Coat**



■ General Features

High-hardness, low-friction coefficient AURORA Coat has excellent adhesion resistance in drilling of aluminum alloy and non-ferrous metals, and works in combination with special cutting edge shapes to achieve stable tool life.

### Features

Thin, smooth DLC coating with a low coefficient of

Suppresses adhesion to the cutting edge and reduces cutting force during drilling of aluminum alloy and nonferrous metals

High adhesion strength withstands violent cutting conditions

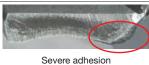
The world's first coating applicable to cutting tools, with our proprietary coating technique improving adhesion strength

### ■ AURORA Coat Application Examples

**AURORA** Coat Super MULTIDRILL NHGS series (after drilling 100 holes)



Competitor's Product B (after drilling 20 holes)



: MDW 0800NHGS5

Work Material : ADC12

Cutting Conditions: vc = 200m/min, f = 1.0mm/rev, H = 32mm, Internal

Coolant Supply

# **NeXEO MDE** series

■ General Features

- Innovative new general purpose drill. Utilising the ACT100 grade.
- Applicable to a wide range of materials from high carbon steel and die steel to stainless steel. Enables stable drilling even on small machining centres and small lathes.
- NX Coat made with ABSOTECH™ technology for excellent wear resistance and thermal resistance.

NeXEO MDE series

· \$50C

: ø8mm

Low resistance chip breaking.

Work Material

Diameter

Thrust

- Features and Applications
  - RX THINNING reduces thrust. Also ideal for small machining centres and small lathes.

Further reduces cutting force with overlap thinning, suppressing wear in hub drilling. Excellent for shallow holes. \*L/D=2 sizes only 1,200

Solid

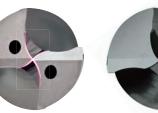
RX THINNING + Arc Shaped Cutting Lip



External Coolant Supply



Internal Coolant Supply



Overlap Thinning

900 **Thrust (N)** 600 3.6 300 1.8

Competitor's Product A

For Hub Drilling

Hole Depth : 5D Cutting Conditions: vc = 80m/min, f = 0.15mm/rev, H = 38mm (through), Internal Coolant Supply (water soluble)

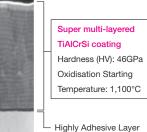
General-purpose drill suitable for a wide range of work materials and cutting conditions

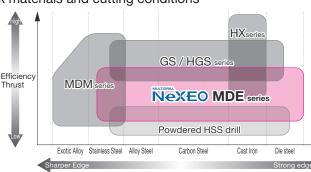
General-purpose grade

Micro-grained carbide substrate Achieves both wear and

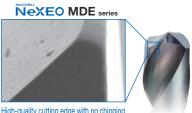
NX Coat ABSOTECH<sup>™</sup> technology for high quality, high hardness, high strength and excellent wear resistance and thermal

fracture resistance





High-quality edge provides stable tool life



High-quality cutting edge with no chipping

Competitor's Product B

Chipping in edge coating

Strong arc-shaped cutting edge design for good chip evacuation

NeXEO MDE series



Chips are broken into small pieces

Competitor's Product C



Elongated chips

Work Material : S50C Diameter : ø9mm Hole Depth : 5D

Cutting Conditions: vc = 80m/min, f = 0.15mm/rev,

Internal Coolant Supply (water soluble)

# Nexe MDE-E type (External Coolant Supply) [Cator Steel Altry Steel (Lyon 1.25%] [Tempered Steel (Lyon 1.25%] [Steel (Lyon 1.25



















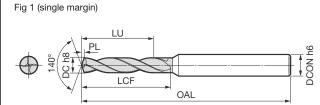


Fig 2 (single margin) DCON h6 OAL

			I <del>4</del>					+	
Diam	neter		.0 to 3.0mm				Dime	ensions (	mm)
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fig
1.0	2		MDE 0100S03E02	5.7	7.2	45.2	0.2	3.0	1
1.0	4		0100S03E04	7.7	9.2	49.2	0.2	3.0	1
1.1	2		MDE 0110S03E02	5.6	7.2	45.2	0.2	3.0	1
••••	4		0110S03E04	7.6	9.2	49.2	0.2	3.0	1
1.2	2	•	MDE 0120S03E02	6.4	8.2	45.2	0.2	3.0	1
	4		0120S03E04	8.4	10.2	49.2	0.2	3.0	1
1.3	2	•	MDE 0130S03E02	6.3	8.2	45.2	0.2	3.0	1
	4		0130S03E04	9.3	11.2	49.2	0.2	3.0	1
1.4	2	•	MDE 0140S03E02	7.2	9.3	45.3	0.3	3.0	1
	2		0140S03E04	9.2 7.1	9.3	49.3 45.3	0.3	3.0	1
1.5	4	•	MDE 0150S03E02 0150S03E04	10.1	12.3	49.3	0.3	3.0	1
	2	•	MDE 0160S03E02	7.9	10.3	45.3	0.3	3.0	1
1.6	4	•	0160S03E04	10.9	13.3	49.3	0.3	3.0	1
	2	•	MDE 0170S03E02	7.8	10.3	45.3	0.3	3.0	1
1.7	4	•	0170S03E04	10.8	13.3	49.3	0.3	3.0	1
	2	•	MDE 0180S03E02	8.6	11.3	45.3	0.3	3.0	1
1.8	4	•	0180S03E04	11.6	14.3	49.3	0.3	3.0	1
	2	•	MDE 0190S03E02	8.5	11.3	45.3	0.3	3.0	1
1.9	4	•	0190S03E04	12.5	15.3	49.3	0.3	3.0	1
	2	•	MDE 0200S03E02	9.4	12.4	45.4	0.4	3.0	1
2.0	4		0200S03E04	13.4	16.4	49.4	0.4	3.0	1
0.4	2		MDE 0210S03E02	9.3	12.4	45.4	0.4	3.0	1
2.1	4		0210S03E04	13.3	16.4	49.4	0.4	3.0	1
2.2	2		MDE 0220S03E02	10.1	13.4	45.4	0.4	3.0	1
2.2	4		0220S03E04	14.1	17.4	49.4	0.4	3.0	1
2.3	2		MDE 0230S03E02	10.0	13.4	45.4	0.4	3.0	1
	4		0230S03E04	14.0	17.4	49.4	0.4	3.0	1
2.4	2	•	MDE 0240S03E02	10.8	14.4	45.4	0.4	3.0	2
	4		0240S03E04	14.8	18.4	49.4	0.4	3.0	2
2.5	2	•	MDE 0250S03E02	10.8	14.5	45.5	0.5	3.0	2
	4		0250S03E04	14.8	18.5	49.5	0.5	3.0	2
2.6	2	•	MDE 0260S03E02 0260S03E04	11.6 15.6	15.5 19.5	45.5 49.5	0.5	3.0	2
	2	•	MDE 0270S03E02	11.5	15.5	45.5	0.5	3.0	2
2.7	4		0270S03E04	15.5	19.5	49.5	0.5	3.0	2
2.76	2	•	MDE 0276S03E02	11.3	15.5	45.5	0.5	3.0	2
2.78	2		0278S03E02	11.3	15.5	45.5	0.5	3.0	2
	2	•	MDE 0280S03E02	11.3	15.5	45.5	0.5	3.0	2
2.8	4	•	0280S03E04	15.3	19.5	49.5	0.5	3.0	2
	2	•	MDE 0290S03E02	11.2	15.5	45.5	0.5	3.0	2
2.9	4	•	0290S03E04	15.2	19.5	49.5	0.5	3.0	2
	2	•	MDE 0300S03E02	9.0	13.5	45.5	0.5	3.0	2
3.0	4		0300S03E04	15.0	19.5	49.5	0.5	3.0	2

		_	_
Diameter	ø3 1	to 5	0mm

Dimonoiono	(mm)

		×							
Dia.	Hole Depth (L/D)	Stock	Cat. No.	Effective Length	Flute Length LCF	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	I FIG I
	2	•	MDE 0310S04E02	15.0	19.6	54.6	0.6	4.0	2
3.1	4		0310S04E04	20.0	24.6	60.6	0.6	4.0	2
	2	•	MDE 0320S04E02	14.8	19.6	54.6	0.6	4.0	2
3.2	4		0320S04E04	19.8	24.6	60.6	0.6	4.0	2
	2	•	MDE 0330S04E02	14.7	19.6	54.6	0.6	4.0	2
3.3	4		0330S04E04	19.7	24.6	60.6	0.6	4.0	2
3.4	2	•	MDE 0340S04E02	14.5	19.6	54.6	0.6	4.0	2
3.4	4		0340S04E04	19.5	24.6	60.6	0.6	4.0	2
3.5	2	•	MDE 0350S04E02	14.4	19.6	54.6	0.6	4.0	2
3.5	4		0350S04E04	19.4	24.6	60.6	0.6	4.0	2
2.6	2	•	MDE 0360S04E02	16.3	21.7	54.7	0.7	4.0	2
3.6	4		0360S04E04	22.3	27.7	60.7	0.7	4.0	2
3.66	2		MDE 0366S04E02	16.2	21.7	54.7	0.7	4.0	2
3.68	2		0368S04E02	16.2	21.7	54.7	0.7	4.0	2
2.7	2		MDE 0370S04E02	16.2	21.7	54.7	0.7	4.0	2
3.7	4		0370S04E04	22.2	27.7	60.7	0.7	4.0	2
3.8	2		MDE 0380S04E02	16.0	21.7	54.7	0.7	4.0	2
3.0	4		0380S04E04	22.0	27.7	60.7	0.7	4.0	2
3.9	2		MDE 0390S04E02	15.9	21.7	54.7	0.7	4.0	2
3.9	4		0390S04E04	21.9	27.7	60.7	0.7	4.0	2
4.0	2		MDE 0400S04E02	15.7	21.7	54.7	0.7	4.0	2
4.0	4		0400S04E04	21.7	27.7	60.7	0.7	4.0	2
4.1	2		MDE 0410S05E02	17.6	23.7	61.7	0.7	5.0	2
4.1	4		0410S05E04	25.6	31.7	76.7	0.7	5.0	2
4.2	2		MDE 0420S05E02	17.5	23.8	61.8	0.8	5.0	2
4.2	4		0420S05E04	25.5	31.8	76.8	0.8	5.0	2
4.3	2		MDE 0430S05E02	17.4	23.8	61.8	8.0	5.0	2
4.0	4		0430S05E04	25.4	31.8	76.8	0.8	5.0	2
4.4	2		MDE 0440S05E02	17.2	23.8	61.8	0.8	5.0	2
-11	4		0440S05E04	25.2	31.8	76.8	0.8	5.0	2
4.5	2	•	MDE 0450S05E02	17.1	23.8	61.8	0.8	5.0	2
	4		0450S05E04	25.1	31.8	76.8	0.8	5.0	2
4.6	2	•	MDE 0460S05E02	18.9	25.8	61.8	0.8	5.0	2
	4		0460S05E04	31.9	38.8	76.8	0.8	5.0	2
4.62	2	•	MDE 0462S05E02	18.9	25.8	61.8	0.8	5.0	2
4.64	2		0464S05E02	18.9	25.8	61.8	0.8	5.0	2
4.7	2	•	MDE 0470S05E02	18.9	25.9	61.9	0.9	5.0	2
L	4	•	0470S05E04	31.9	38.9	76.9	0.9	5.0	2
4.8	2	•	MDE 0480S05E02	18.7	25.9	61.9	0.9	5.0	2
L	4		0480S05E04	31.7	38.9	76.9	0.9	5.0	2
4.9	2	•	MDE 0490S05E02	18.6	25.9	61.9	0.9	5.0	2
	4		0490S05E04	31.6	38.9	76.9	0.9	5.0	2
5.0	2	•	MDE 0500S05E02	18.4	25.9	61.9	0.9	5.0	2
	4		0500S05E04	31.4	38.9	76.9	0.9	5.0	2

Grade: ACT100

Grade: ACT100

# Nexeo MDE-E type (External Coolant Supply) Caton Stell And Stell (Indion











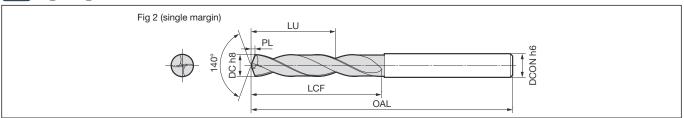












Indexa	Insert t				

Diameter ø5.1 to 7.1mm

Dia.	Hole Depth	8	Cat. No.		-	Overall Length	Tip	Shank Dia.	Fig
DC	(L/D)	Stoc		LU	LCF	OAL	PL	DCON	1 16
5.1	2		MDE 0510S06E02	18.3	25.9	65.9	0.9	6.0	2
J. I	4		0510S06E04	32.3	39.9	81.9	0.9	6.0	2
5.2	2		MDE 0520S06E02	18.1	25.9	65.9	0.9	6.0	2
5.2	4		0520S06E04	32.1	39.9	81.9	0.9	6.0	2
5.3	2		MDE 0530S06E02	18.1	26.0	66.0	1.0	6.0	2
J.J	4		0530S06E04	32.1	40.0	82.0	1.0	6.0	2
	2	•	MDE 0540S06E02	17.9	26.0	66.0	1.0	6.0	2
5.4	4		0540S06E04	31.9	40.0	82.0	1.0	6.0	2
	2	•	MDE 0550S06E02	17.8	26.0	66.0	1.0	6.0	2
5.5	4	•	0550S06E04	31.8	40.0	82.0	1.0	6.0	2
5.52	2	•	MDE 0552S06E02	19.6	28.0	66.0	1.0	6.0	2
5.54	2		0554S06E02	19.6	28.0	66.0	1.0	6.0	2
0.0-1	2	•	MDE 0560S06E02	19.6	28.0	66.0	1.0	6.0	2
5.6	4		0560S06E04	33.6	42.0	82.0	1.0	6.0	2
	2	•	MDE 0570S06E02	19.5	28.0	66.0	1.0	6.0	2
5.7	4	•	0570S06E04	33.5	42.0	82.0	1.0	6.0	2
	2							_	2
5.8		_	MDE 0580S06E02	19.4	28.1	66.1	1.1	6.0	_
	4	•	0580S06E04	33.4	42.1	82.1	1.1	6.0	2
5.9	2	•	MDE 0590S06E02	19.3	28.1	66.1	1.1	6.0	2
	4	•	0590S06E04	33.3	42.1	82.1	1.1	6.0	2
6.0	2	•	MDE 0600S06E02	19.1	28.1	66.1	1.1	6.0	2
	4		0600S06E04	33.1	42.1	82.1	1.1	6.0	2
6.1	2		MDE 0610S07E02	23.0	32.1	74.1	1.1	7.0	2
···	4		0610S07E04	34.0	43.1	84.1	1.1	7.0	2
6.2	2		MDE 0620S07E02	22.8	32.1	74.1	1.1	7.0	2
0.2	4		0620S07E04	33.8	43.1	84.1	1.1	7.0	2
6.3	2		MDE 0630S07E02	22.7	32.1	74.1	1.1	7.0	2
0.3	4		0630S07E04	33.7	43.1	84.1	1.1	7.0	2
6.4	2		MDE 0640S07E02	22.6	32.2	74.2	1.2	7.0	2
0.4	4		0640S07E04	33.6	43.2	84.2	1.2	7.0	2
<u>с</u> г	2		MDE 0650S07E02	22.5	32.2	74.2	1.2	7.0	2
6.5	4		0650S07E04	33.5	43.2	84.2	1.2	7.0	2
	2	•	MDE 0660S07E02	24.3	34.2	74.2	1.2	7.0	2
6.6	4		0660S07E04	34.3	44.2	84.2	1.2	7.0	2
	2	•	MDE 0670S07E02	24.2	34.2	74.2	1.2	7.0	2
6.7	4		0670S07E04	34.2	44.2	84.2	1.2	7.0	2
	2	•	MDE 0680S07E02	24.0	34.2	74.2	1.2	7.0	2
6.8	4	•	0680S07E04	34.0	44.2	84.2	1.2	7.0	2
	2	•	MDE 0690S07E02	24.0	34.3	74.3	1.3	7.0	2
6.9	4	•	0690S07E04	34.0	44.3	84.3	1.3	7.0	2
	2	•	MDE 0700S07E02	23.8	34.3	74.3	1.3	7.0	2
7.0	4		0700S07E04	33.8	44.3	84.3	1.3	7.0	2
							1.3		2
7.1	2		MDE 0710S08E02	23.7	34.3	79.3		8.0	_
	4		0710S08E04	35.7	46.3	91.3	1.3	8.0	2

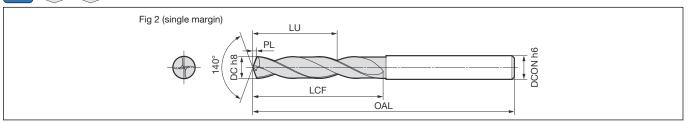
			.2 to 9.1mm				Dime	ensions (	mr
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length LCF	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fi
	2	•	MDE 0720S08E02	23.5	34.3	79.3	1.3	8.0	2
7.2	4		0720S08E04	35.5	46.3	91.3	1.3	8.0	2
	2	•	MDE 0730S08E02	23.4	34.3	79.3	1.3	8.0	2
7.3	4		0730S08E04	35.4	46.3	91.3	1.3	8.0	2
7.36	2	•	MDE 0736S08E02	23.2	34.3	79.3	1.3	8.0	2
7.38	2		0738S08E02	23.2	34.3	79.3	1.3	8.0	2
	2	•	MDE 0740S08E02	23.2	34.3	79.3	1.3	8.0	2
7.4	4		0740S08E04	35.2	46.3	91.3	1.3	8.0	2
	2	•	MDE 0750S08E02	23.2	34.4	79.4	1.4	8.0	2
7.5	4		0750S08E04	35.2	46.4	91.4	1.4	8.0	2
7.52	2	•	MDE 0752S08E02	26.0	37.4	79.4	1.4	8.0	2
7.54	2		0754S08E02	26.0	37.4	79.4	1.4	8.0	2
	2	•	MDE 0760S08E02	26.0	37.4	79.4	1.4	8.0	2
7.6	4		0760S08E04	38.0	49.4	91.4	1.4	8.0	2
	2	•	MDE 0770S08E02	25.9	37.4	79.4	1.4	8.0	2
7.7	4		0770S08E04	37.9	49.4	91.4	1.4	8.0	2
	2	•	MDE 0780S08E02	25.7	37.4	79.4	1.4	8.0	2
7.8	4		0780S08E04	37.7	49.4	91.4	1.4	8.0	2
	2	•	MDE 0790S08E02	25.6	37.4	79.4	1.4	8.0	2
7.9	4		0790S08E04	37.6	49.4	91.4	1.4	8.0	2
	2	•	MDE 0800S08E02	25.5	37.5	79.5	1.5	8.0	2
8.0	4		0800S08E04	37.5	49.5	91.5	1.5	8.0	2
	2	•	MDE 0810S09E02	25.4	37.5	83.5	1.5	9.0	2
8.1	4		0810S09E04	42.4	54.5	99.5	1.5	9.0	2
	2	•	MDE 0820S09E02	25.2	37.5	83.5	1.5	9.0	2
8.2	4		0820S09E04	42.2	54.5	99.5	1.5	9.0	2
	2	•	MDE 0830S09E02	25.1	37.5	83.5	1.5	9.0	2
8.3	4		0830S09E04	42.1	54.5	99.5	1.5	9.0	1
	2	•	MDE 0840S09E02	24.9	37.5	83.5	1.5	9.0	2
8.4	4		0840S09E04	41.9	54.5	99.5	1.5	9.0	2
	2	•	MDE 0850S09E02	24.8	37.5	83.5	1.5	9.0	2
8.5	4		0850S09E04	41.8	54.5	99.5	1.5	9.0	2
	2	•	MDE 0860S09E02	26.7	39.6	83.6	1.6	9.0	2
8.6	4		0860S09E04	43.7	56.6	99.6	1.6	9.0	2
	2	•	MDE 0870S09E02	26.6	39.6	83.6	1.6	9.0	2
8.7	4		0870S09E04	43.6	56.6	99.6	1.6	9.0	2
	2	•	MDE 0880S09E02	26.4	39.6	83.6	1.6	9.0	2
8.8	4	•	0880S09E04	43.4	56.6	99.6	1.6	9.0	2
	2	•	MDE 0890S09E02	26.3	39.6	83.6	1.6	9.0	2
8.9	4		0890S09E04	43.3	56.6	99.6	1.6	9.0	2
	2	•	MDE 0900S09E02	26.1	39.6	83.6	1.6	9.0	2
9.0	4	•	0900S09E04	43.1	56.6	99.6	1.6	9.0	2
	2	•	MDE 0910S10E02	26.1	39.7	88.7	1.7	10.0	2
9.1	4	•	0910S10E04	46.1	59.7	106.7	1.7	10.0	2

# Nexeo MDE-E type (External Coolant Supply) [Sator Steel Language Cator S









Diameter	αQ 2	to 1	1 Omm
Diameter	09.7	10 1	1.011111

	Dime	nsions (	mm
1	age:	01 1 0:	

Diam	neter	Diameter Ø9.2 to 11.0mm Dimensions (mm)							
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length		Tip	Shank Dia.	Fig
DC	(L/D)			LU	LCF	OAL	PL	DCON	_
9.2	2	•	MDE 0920S10E02	25.9	39.7	88.7	1.7	10.0	2
0.04	4	•	0920S10E04 MDE 0924S10E02	45.9	59.7	106.7	1.7	10.0	2
9.24			0926S10E02	25.8 25.8	39.7 39.7	88.7	1.7	10.0	2
9.20	2	•	MDE 0930S10E02	25.8	39.7	88.7 88.7	1.7	10.0	2
9.3	4		0930S10E04	45.8	59.7	106.7	1.7	10.0	2
9.36		•	MDE 0936S10E02	25.6	39.7	88.7	1.7	10.0	2
9.38		•	0938S10E02	25.6	39.7	88.7	1.7	10.0	2
	2	•	MDE 0940S10E02	25.6	39.7	88.7	1.7	10.0	2
9.4	4	•	0940S10E04	45.6	59.7	106.7	1.7	10.0	2
	2	•	MDE 0950S10E02	25.5	39.7	88.7	1.7	10.0	2
9.5	4	•	0950S10E04	45.5	59.7	106.7	1.7	10.0	2
9.52	2	•	MDE 0952S10E02	28.3	42.7	88.7	1.7	10.0	2
9.54			0954S10E02	28.3	42.7	88.7	1.7	10.0	2
0.0	2	•	MDE 0960S10E02	28.3	42.7	88.7	1.7	10.0	2
9.6	4		0960S10E04	47.3	61.7	106.7	1.7	10.0	2
9.7	2		MDE 0970S10E02	28.3	42.8	88.8	1.8	10.0	2
9.7	4		0970S10E04	47.3	61.8	106.8	1.8	10.0	2
9.8	2		MDE 0980S10E02	28.1	42.8	88.8	1.8	10.0	2
9.0	4		0980S10E04	47.1	61.8	106.8	1.8	10.0	2
9.9	2		MDE 0990S10E02	28.0	42.8	88.8	1.8	10.0	2
9.9	4		0990S10E04	47.0	61.8	106.8	1.8	10.0	2
10.0	2		MDE 1000S10E02	27.8	42.8	88.8	1.8	10.0	2
10.0	4		1000S10E04	46.8	61.8	106.8	1.8	10.0	2
10.1	2	•	MDE 1010S11E02	27.7	42.8	94.8	1.8	11.0	2
	4		1010S11E04	52.7	67.8	115.8	1.8	11.0	2
10.2	2	•	MDE 1020S11E02	27.6	42.9	94.9	1.9	11.0	2
	4		1020S11E04	52.6	67.9	115.9	1.9	11.0	2
10.3	2	•	MDE 1030S11E02	27.5	42.9	94.9	1.9	11.0	2
	4		1030S11E04	52.5	67.9	115.9	1.9	11.0	2
10.4	2	•	MDE 1040S11E02 1040S11E04	27.3 52.3	42.9 67.9	94.9 115.9	1.9	11.0	2
	2	•	MDE 1050S11E02	27.2	42.9	94.9	1.9	11.0	2
10.5	4		1050S11E02	52.2	67.9	115.9	1.9	11.0	2
	2	•	MDE 1060S11E02	31.0	46.9	94.9	1.9	11.0	2
10.6	4	•	1060S11E04	54.0	69.9	115.9	1.9	11.0	2
	2	•	MDE 1070S11E02	30.9	46.9	94.9	1.9	11.0	2
10.7	4	•	1070S11E04	53.9	69.9	115.9	1.9	11.0	2
	2	•	MDE 1080S11E02	30.8	47.0	95.0	2.0	11.0	2
10.8	4	•	1080S11E04	53.8	70.0	116.0	2.0	11.0	2
	2	•	MDE 1090S11E02	30.7	47.0	95.0	2.0	11.0	2
10.9	4	•	1090S11E04	53.7	70.0	116.0	2.0	11.0	2
	2	•	MDE 1100S11E02	30.5	47.0	95.0	2.0	11.0	2
11.0	4	•	1100S11E04	53.5		116.0	2.0	11.0	2
	A CT10	_		23.5	. 5.5				

Grade: ACT100

Diameter	~11	1 +-	10	مرس
Lijameter	דרמ	1 TO	1:3	umm

Dimonsions	(mm)

Dian	ICICI		1.1 10 13.011111			Dime	ensions (	mm)
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length Overall Lengt	Tip PL	Shank Dia.	Fig
	2	•	MDE 1110S12E02	30.4	47.0 102.0	2.0	12.0	2
11.1	4		1110S12E04	56.4	73.0 123.0	2.0	12.0	2
	2	•	MDE 1120S12E02	30.2	47.0 102.0	2.0	12.0	2
11.2	4		1120S12E04	56.2	73.0 123.0	2.0	12.0	2
11.22	2	•	MDE 1122S12E02	30.2	47.0 102.0	2.0	12.0	2
11.24	2		1124S12E02	30.2	47.0 102.0	2.0	12.0	2
	2	•	MDE 1130S12E02	30.2	47.1 102.1	2.1	12.0	2
11.3	4		1130S12E04	56.2	73.1 123.1	2.1	12.0	2
11.36	2	•	MDE 1136S12E02	30.0	47.1 102.1	2.1	12.0	2
11.38	2		1138S12E02	30.0	47.1 102.1	2.1	12.0	2
	2	•	MDE 1140S12E02	30.0	47.1 102.1	2.1	12.0	2
11.4	4		1140S12E04	56.0	73.1 123.1	2.1	12.0	2
	2	•	MDE 1150S12E02	29.9	47.1 102.1	2.1	12.0	2
11.5	4		1150S12E04	55.9	73.1 123.1		12.0	2
	2	•	MDE 1160S12E02	31.7	49.1 102.1	+	12.0	2
11.6	4		1160S12E04	57.7	75.1 123.1	2.1	12.0	2
	2	•	MDE 1170S12E02	31.6	49.1 102.1	2.1	12.0	2
11.7	4		1170S12E04	57.6	75.1 123.1	2.1	12.0	2
	2	•	MDE 1180S12E02	31.4	49.1 102.1	2.1	12.0	2
11.8	4		1180S12E04	57.4	75.1 123.1		12.0	2
	2	•	MDE 1190S12E02	31.4	49.2 102.2	2.2	12.0	2
11.9	4		1190S12E04	57.4	75.2 123.2	2.2	12.0	2
	2	•	MDE 1200S12E02	31.2	49.2 102.2	2.2	12.0	2
12.0	4		1200S12E04	57.2	75.2 123.2	2.2	12.0	2
	2	•	MDE 1210S13E02	31.1	49.2 102.2	2.2	13.0	2
12.1	4		1210S13E04	60.1	78.2 139.2	2.2	13.0	2
400	2	•	MDE 1220S13E02	30.9	49.2 102.2	-	13.0	2
12.2	4		1220S13E04	59.9	78.2 139.2	2.2	13.0	2
400	2	•	MDE 1230S13E02	30.8	49.2 102.2	2.2	13.0	2
12.3	4		1230S13E04	59.8	78.2 139.2	2.2	13.0	2
12.4	2	•	MDE 1240S13E02	30.7	49.3 102.3	2.3	13.0	2
12.4	4		1240S13E04	59.7	78.3 139.3	2.3	13.0	2
12.5	2	•	MDE 1250S13E02	30.6	49.3 102.3	2.3	13.0	2
12.5	4		1250S13E04	59.6	78.3 139.3	2.3	13.0	2
10.6	2		MDE 1260S13E02	32.4	51.3 102.3	2.3	13.0	2
12.6	4		1260S13E04	61.4	80.3 139.3	2.3	13.0	2
10.7	2		MDE 1270S13E02	32.3	51.3 102.3	2.3	13.0	2
12.7	4		1270S13E04	61.3	80.3 139.3	2.3	13.0	2
12.8	2		MDE 1280S13E02	32.1	51.3 102.3	2.3	13.0	2
12.0	4		1280S13E04	61.1	80.3 139.3	2.3	13.0	2
12.9	2	•	MDE 1290S13E02	32.0	51.3 102.3	2.3	13.0	2
12.9	4		1290S13E04	61.0	80.3 139.3	2.3	13.0	2
13.0	2		MDE 1300S13E02	31.9	51.4 102.4	2.4	13.0	2
13.0	4		1300S13E04	60.9	80.4 139.4	2.4	13.0	2
Grade:	ACT10	nn						

Grade: ACT100

# Nexe MDE-E type (External Coolant Supply) (Extra Steel Alry Steel (100 Steel 100 Steel (100 Steel 100 Steel (100 Steel 100 Steel (100 Steel 100 Steel (100 









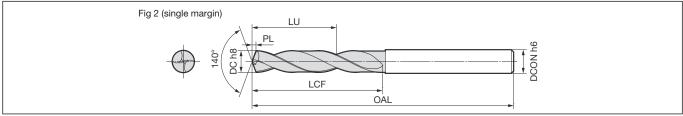










		ш
		ш
7	А	ш
1		ш
┙		ш

m
~
a
č
⊏
B

Diam	neter	ø1:	3.1 to 15.2mm				Dime	nsions (ı	mr
Dia.	Hole Depth	ck	Cat No	Effective Length	Flute Length	Overall Length	Tip	Shank Dia.	

Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length Overall L	- 1	Tip <b>PL</b>	Shank Dia.	Fig
DC	(L/D) 2	S	MDE 1310S14E02	32.8	LCF OA 52.4 107	$\rightarrow$	2.4	14.0	2
13.1	4	•	1310S14E04	66.8	86.4 149	_	2.4	14.0	2
	2	•	MDE 1320S14E02	32.6	52.4 107	$\rightarrow$	2.4	14.0	2
13.2	4		1320S14E04	66.6	86.4 149	1.4	2.4	14.0	2
400	2		MDE 1330S14E02	32.5	52.4 107	'.4	2.4	14.0	2
13.3	4		1330S14E04	66.5	86.4 149	1.4	2.4	14.0	2
13.4	2		MDE 1340S14E02	32.3	52.4 107	'.4	2.4	14.0	2
13.4	4		1340S14E04	66.3	86.4 149	).4	2.4	14.0	2
13.5	2		MDE 1350S14E02	32.3	52.5 107	_	2.5	14.0	2
10.5	4		1350S14E04	66.3	86.5 149	$\rightarrow$	2.5	14.0	2
13.6	2		MDE 1360S14E02	34.1	54.5 107	-	2.5	14.0	2
	4		1360S14E04	68.1	88.5 149	$\rightarrow$	2.5	14.0	2
13.7	2	•	MDE 1370S14E02	34.0	54.5 107	-	2.5	14.0	2
	4		1370S14E04	68.0	88.5 149	_	2.5	14.0	2
13.8	2	•	MDE 1380S14E02	33.8	54.5 107	- 1	2.5	14.0	2
	4		1380S14E04	67.8	88.5 149	-	2.5	14.0	2
13.9	2	•	MDE 1390S14E02	33.7	54.5 107	_	2.5	14.0	2
	4		1390S14E04	67.7	88.5 149	$\rightarrow$	2.5	14.0	2
14.0	2	•	MDE 1400S14E02	33.5 67.5	54.5 107 88.5 149	_	2.5	14.0	2
	2	•	1400S14E04 MDE 1410S15E02	33.5	54.6 110	$\rightarrow$	2.6	15.0	2
14.1	4		1410S15E02	70.5	91.6 155	-	2.6	15.0	2
	2	•	MDE 1420S15E02	33.3	54.6 110	-	2.6	15.0	2
14.2	4		1420S15E04	70.3	91.6 155	- 1	2.6	15.0	2
	2	•	MDE 1430S15E02	33.2	54.6 110	-	2.6	15.0	2
14.3	4	•	1430S15E04	70.2	91.6 155	_	2.6	15.0	2
<u> </u>	2	•	MDE 1440S15E02	33.0	54.6 110	$\rightarrow$	2.6	15.0	2
14.4	4		1440S15E04	70.0	91.6 155	_	2.6	15.0	2
445	2		MDE 1450S15E02	32.9	54.6 110	0.6	2.6	15.0	2
14.5	4		1450S15E04	69.9	91.6 155	6.6	2.6	15.0	2
14.6	2		MDE 1460S15E02	33.8	55.7 110	).7	2.7	15.0	2
14.0	4		1460S15E04	71.8	93.7 155	.7	2.7	15.0	2
14.7	2		MDE 1470S15E02	33.7	55.7 110	).7	2.7	15.0	2
14.7	4		1470S15E04	71.7	93.7 155	$\rightarrow$	2.7	15.0	2
14.8	2		MDE 1480S15E02	33.5	55.7 110	_	2.7	15.0	2
14.0	4		1480S15E04	71.5	93.7 155	$\rightarrow$	2.7	15.0	2
14.9	2	•	MDE 1490S15E02	33.4	55.7 110	_	2.7	15.0	2
	4	•	1490S15E04	71.4	93.7 155	$\rightarrow$	2.7	15.0	2
15.0	2	•	MDE 1500S15E02	33.2	55.7 110	-	2.7	15.0	2
	4		1500S15E04	71.2	93.7 155	_	2.7	15.0	2
15.1	2	•	MDE 1510S16E02	33.1	55.7 114	_	2.7	16.0	2
	4		1510S16E04	74.1	96.7 162	$\rightarrow$	2.7	16.0	2
15.2	2	•	MDE 1520S16E02	33.0	55.8 114	_	2.8	16.0	2
Crada:	ACT10	_	1520S16E04	74.0	96.8 162	ŏ	2.8	16.0	2
Graue.	ACTIO	U							

Diameter	a153t	o 20.0mm
Diameter	ขาว.ง เ	0 20.011111

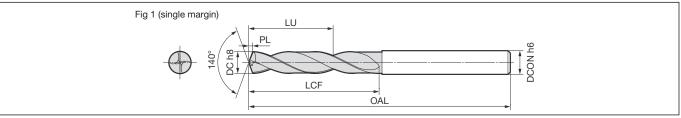
Dim	on	cio	nc	m	m)

	Dimensions (min)									
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length	Tip <b>PL</b>	Shank Dia.	Fig	
45.0	2		MDE 1530S16E02	32.9	55.8	114.8	2.8	16.0	2	
15.3	4		1530S16E04	73.9	96.8	162.8	2.8	16.0	2	
15.4	2		MDE 1540S16E02	32.7	55.8	114.8	2.8	16.0	2	
15.4	4		1540S16E04	73.7	96.8	162.8	2.8	16.0	2	
15.5	2		MDE 1550S16E02	32.6	55.8	114.8	2.8	16.0	2	
15.5	4		1550S16E04	73.6	96.8	162.8	2.8	16.0	2	
15.6	2		MDE 1560S16E02	34.4	57.8	114.8	2.8	16.0	2	
15.0	4		1560S16E04	75.4	98.8	162.8	2.8	16.0	2	
15.7	2		MDE 1570S16E02	34.4	57.9	114.9	2.9	16.0	2	
15.7	4		1570S16E04	75.4	98.9	162.9	2.9	16.0	2	
15.8	2		MDE 1580S16E02	34.2	57.9	114.9	2.9	16.0	2	
13.0	4		1580S16E04	75.2	98.9	162.9	2.9	16.0	2	
15.9	2		MDE 1590S16E02	34.1	57.9	114.9	2.9	16.0	2	
13.3	4		1590S16E04	75.1	98.9	162.9	2.9	16.0	2	
16.0	2		MDE 1600S16E02	33.9	57.9	114.9	2.9	16.0	2	
10.0	4		1600S16E04	74.9	98.9	162.9	2.9	16.0	2	
16.5	2		MDE 1650S17E02	34.3	59.0	119.0	3.0	17.0	2	
10.5	4		1650S17E04	76.3	101.0	170.0	3.0	17.0	2	
16.8	4		MDE 1680S17E04	75.9	_	170.1	3.1	17.0	2	
17.0	2		MDE 1700S17E02	34.6		119.1	3.1	17.0	2	
17.0	4		1700S17E04	75.7	_	170.2	3.2	17.0	2	
17.5	2		MDE 1750S18E02	35.0	-	123.2	3.2	18.0	2	
17.0	4		1750S18E04	77.0		170.2	3.2	18.0	2	
18.0	2		MDE 1800S18E02	35.3		123.3	3.3	18.0	2	
1010	4	•	1800S18E04	78.3		170.3	3.3	18.0	2	
18.5	2		MDE 1850S19E02	34.7		126.4	3.4	19.0	2	
	4		1850S19E04	79.7		182.4	3.4	19.0	2	
19.0	2		MDE 1900S19E02	35.0		126.5	3.5	19.0	2	
1010	4		1900S19E04	80.9		182.4	3.4	19.0	2	
19.5	2		MDE 1950S20E02	35.3		130.5	3.5	20.0	2	
	4	•	1950S20E04	84.3		182.5	3.5	20.0	2	
19.7	4		MDE 1970S20E04	88.1		182.6	3.6	20.0	2	
20.0	2	•	MDE 2000S20E02	35.6		130.6	3.6	20.0	2	
	4		2000S20E04	87.6	117.6	182.6	3.6	20.0	2	
Crada	ACT10	Λ.								

Grade: ACT100

# Nexeo MDE-E type for Hub Drilling (External Coolant Supply) (External





### Diameter ø8.8 to 13.97mm

Dimensions	(mm

	Hole Depth	Stock	Cat. No.			Overall Length	Tip	Shank Dia.	Fig
DC	(L/D)	St	0 4.1. 1.01	LU	LCF	OAL	PL	DCON	9
8.80	2		MDE 0880S09E02H	26.4	39.6	83.6	1.6	9.0	1
10.00	2		1000S10E02H	27.8	42.8	88.88	1.8	10.0	1
10.80	2		1080S11E02H	30.8	47.0	95.0	2.0	11.0	1
12.04	2		1204S13E02H	31.1	49.2	102.2	2.2	13.0	1
12.52	2		1252S13E02H	32.4	51.3	102.3	2.3	13.0	1
13.85	2		1385S14E02H	33.7	54.5	107.5	2.5	14.0	1
13.92	2		1392S14E02H	33.5	54.5	107.5	2.5	14.0	1
13.97	2		1397S14E02H	33.5	54.5	107.5	2.5	14.0	1
	1 O T 1 O	_							

Grade: ACT100

Drilling

7

Solid

Indexable Head type

Indexable Insert type

# Nexeo MDE-E type (External Coolant Supply)

### Recommended Cutting Conditions (MDE-E type, External Coolant Supply, 2D/4D) \*Including hub drilling

- The recommended cutting conditions below are for cases where a water soluble coolant is used (excluding drilling of stainless steel).
- 2. Supply sufficient water soluble coolant to the cutting edge.
- If using non-water-soluble coolant, reduce the cutting speed by 20-30% and ensure that sufficient coolant is supplied.
- When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
- 5. Make sure the flute does not enter the collet.
- If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece.
   If stable drilling is still not possible, pre-drilling of a flat surface with a Flat MULTIDRILL MDF series drill is recommended.
- When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

Work Material		Mild Steel/Low Carbon Steel SS400/S15C up to 160HB		Carbon Steel S35C/S50C up to 230HB		Alloy Steel SCM/SCr 20 to 30HRC		Alloy Steel SCM/SCr 30 to 38HRC	
Cutting	Dia. < ø3	30 to 8	0m/min	30 to 80m/min		30 to 80m/min		30 to 80m/min	
Speed	Dia. ≥ ø3	60 to 10	00m/min	60 to 12	0m/min	50 to 10	0m/min	40 to 8	0m/min
Diamet	ter DC (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)
	ø1.0	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03
	ø1.5	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06
	ø2.0	9,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08
	ø2.5	9,500	0.04 to 0.08	9,000	0.04 to 0.08	8,500	0.04 to 0.08	7,600	0.04 to 0.08
	ø3.0	8,500	0.05 to 0.12	8,500	0.05 to 0.12	7,500	0.05 to 0.12	6,400	0.05 to 0.12
	ø4.0	6,400	0.07 to 0.17	6,400	0.07 to 0.17	5,600	0.07 to 0.17	4,800	0.07 to 0.17
	ø5.0	5,100	0.08 to 0.20	5,100	0.08 to 0.20	4,500	0.08 to 0.20	3,900	0.08 to 0.20
	ø6.0	4,300	0.10 to 0.20	4,300	0.10 to 0.20	3,800	0.10 to 0.20	3,200	0.10 to 0.20
	ø7.0	3,700	0.12 to 0.23	3,700	0.12 to 0.23	3,200	0.12 to 0.23	2,800	0.12 to 0.23
	ø8.0	3,200	0.15 to 0.25	3,200	0.15 to 0.25	2,800	0.15 to 0.25	2,400	0.15 to 0.25
	ø9.0	2,900	0.17 to 0.25	2,900	0.17 to 0.25	2,500	0.17 to 0.25	2,200	0.17 to 0.25
	ø10.0	2,600	0.18 to 0.28	2,600	0.18 to 0.28	2,300	0.18 to 0.28	2,000	0.18 to 0.28
	ø11.0	2,400	0.20 to 0.30	2,400	0.20 to 0.30	2,100	0.20 to 0.30	1,800	0.20 to 0.30
	ø12.0	2,200	0.20 to 0.30	2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30
	ø14.0	1,900	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30
	ø16.0	1,600	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30
	ø18.0	1,500	0.20 to 0.30	1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30
	ø20.0	1,300	0.20 to 0.30	1,300	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.20 to 0.30
High-effi	iciency Product	GS s	eries	GS s	eries	GS series		GS series	

Work Material		Cast Iron FC250 to 280HB		Ductile Cast Iron FCD450/FCD600 to 270HB		Stainless Steel (oil-based drilling) SUS304/SUS410 to 200HB		Special Steel/Pre-hardened Steel SKS2/SKD61 (non-tempered) 30 to 38HRC	
Cutting	Dia. < ø3	30 to 80	Om/min	30 to 80m/min		20 to 50m/min		30 to 60m/min	
Speed	Dia. ≥ ø3	60 to 10	0m/min	50 to 10	00m/min	20 to 50m/min		30 to 6	0m/min
Diamet	ter DC (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Spindle Speed (min <sup>-1</sup> ) Feed Rate (mm/rev)		Feed Rate (mm/rev)
	ø1.0	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03	9,500	0.02 to 0.03
	ø1.5	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.02 to 0.05	8,500	0.02 to 0.04
	ø2.0	8,000	0.04 to 0.08	8,000	0.04 to 0.08	6,300	0.03 to 0.06	7,100	0.03 to 0.06
	ø2.5	9,000	0.04 to 0.08	8,500	0.04 to 0.08	5,100	0.03 to 0.07	5,700	0.03 to 0.06
	ø3.0	8,500	0.06 to 0.15	7,500	0.05 to 0.12	4,300	0.05 to 0.10	5,400	0.05 to 0.12
	ø4.0	6,400	0.08 to 0.18	5,600	0.07 to 0.17	3,200	0.05 to 0.10	4,000	0.07 to 0.17
	ø5.0	5,100	0.10 to 0.20	4,500	0.08 to 0.20	2,600	0.06 to 0.15	3,200	0.08 to 0.20
	ø6.0	4,300	0.12 to 0.23	3,800	0.10 to 0.20	2,200	0.06 to 0.15	2,700	0.10 to 0.20
	ø7.0	3,700	0.12 to 0.23	3,200	0.12 to 0.23	1,900	0.06 to 0.18	2,300	0.10 to 0.20
	ø8.0	3,200	0.18 to 0.25	2,800	0.15 to 0.25	1,600	0.06 to 0.20	2,000	0.12 to 0.25
	ø9.0	2,900	0.17 to 0.25	2,500	0.17 to 0.25	1,500	0.08 to 0.20	1,800	0.12 to 0.25
	ø10.0	2,600	0.18 to 0.28	2,300	0.18 to 0.28	1,300	0.08 to 0.20	1,600	0.12 to 0.25
	ø11.0	2,400	0.20 to 0.30	2,100	0.20 to 0.30	1,200	0.08 to 0.20	1,500	0.15 to 0.30
	ø12.0	2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,100	0.10 to 0.25	1,400	0.15 to 0.30
	ø14.0	1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,000	0.10 to 0.25	1,200	0.15 to 0.30
	ø16.0	1,600	0.20 to 0.30	1,400	0.20 to 0.30	800	0.10 to 0.25	1,000	0.15 to 0.30
	ø18.0	1,500	0.20 to 0.30	1,300	0.20 to 0.30	800	0.10 to 0.25	900	0.15 to 0.30
	ø20.0	1,300	0.20 to 0.30	1,200	0.20 to 0.30	700	0.10 to 0.25	800	0.15 to 0.30
High-eff	iciency Product	GS s	eries	GS s	eries	GS s	eries	GS series	

rilling

7

Solid

ndexable lead type

Indexable

Reamers

# Nexeo MDE-H type (Internal Coolant Supply) Adoy State Internal Coolant Supply) Adoy State Internal Coolant Supply (Patron State Internal Coolant Supply) (Patron State Interna















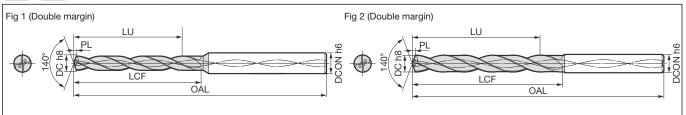












Dime

ensions (mm)	Diameter ø2.5 to 3.7mm					
Shank Dia. Fig	Dia.	Hole Depth	S	Cat. No		

Dimensions	(mm)

2 2 2 3.0 3.0 3.0

2 2 2 3.0 3.0 3.0

2 2 2 3.0 3.0 3.0

Reamers

Diamensions (mm)									
Dia.	Hole Depth (L/D)	Stock	Cat. No.	Effective Length	Flute Length	Overall Length	Tip <b>PL</b>	Shank Dia.	Fig
	3		MDE 0100S03H03	6.7	8.2	57.2	0.2	3.0	1
1.0	5		0100S03H05	8.7	10.2	59.2	0.2	3.0	1
	8	•	0100S03H08	11.7	13.2	62.2	0.2	3.0	1
	3		MDE 0110S03H03	6.6	8.2	57.2	0.2	3.0	1
1.1	5	•	0110S03H05	8.6	10.2	59.2	0.2	3.0	1
	8		0110S03H08	12.6	14.2	62.2	0.2	3.0	1
	3	•	MDE 0120S03H03	7.4	9.2	57.2	0.2	3.0	1
1.2	5	•	0120S03H05	9.4	11.2	59.2	0.2	3.0	1
	8	•	0120S03H08	13.4	15.2	62.2	0.2	3.0	1
	3	•	MDE 0130S03H03	7.3	9.2	57.2	0.2	3.0	1
1.3	5	•	0130S03H05	10.3	12.2	59.2	0.2	3.0	1
1.0	8	•	0130S03H08	14.3	16.2	62.2	0.2	3.0	1
	3	•	MDE 0140S03H03	8.2	10.2	57.3	0.2	3.0	1
1.4	5	•	0140S03H05	11.2	13.3	59.3	0.3	3.0	1
1.4	8	-	0140S03H08	15.2	17.3	62.3	0.3	3.0	1
	3			_	11.3		0.3		1
4.5		_	MDE 0150S03H03	9.1		57.3		3.0	1 -
1.5	5	•	0150S03H05	12.1	14.3	59.3	0.3	3.0	1
	8	•	0150S03H08	16.1	18.3	62.3	0.3	3.0	1
	3	•	MDE 0160S03H03	8.9	11.3	59.3	0.3	3.0	1
1.6	5		0160S03H05	11.9	14.3	62.3	0.3	3.0	1
	8	•	0160S03H08	16.9	19.3	67.3	0.3	3.0	1
	3		MDE 0170S03H03	9.8	12.3	59.3	0.3	3.0	1
1.7	5	•	0170S03H05	12.8	15.3	62.3	0.3	3.0	1
	8		0170S03H08	17.8	20.3	67.3	0.3	3.0	1
	3	•	MDE 0180S03H03	9.6	12.3	59.3	0.3	3.0	1
1.8	5		0180S03H05	13.6	16.3	62.3	0.3	3.0	1
	8	•	0180S03H08	18.6	21.3	67.3	0.3	3.0	1
	3		MDE 0190S03H03	10.5	13.3	59.3	0.3	3.0	1
1.9	5		0190S03H05	14.5	17.3	62.3	0.3	3.0	1
	8		0190S03H08	19.5	22.3	70.3	0.3	3.0	1
	3		MDE 0200S03H03	11.4	14.4	59.4	0.4	3.0	1
2.0	5		0200S03H05	15.4	18.4	62.4	0.4	3.0	1
	8		0200S03H08	21.4	24.4	70.4	0.4	3.0	1
	3		MDE 0210S03H03	11.3	14.4	59.4	0.4	3.0	1
2.1	5		0210S03H05	15.3	18.4	62.4	0.4	3.0	1
	8		0210S03H08	22.3	25.4	70.4	0.4	3.0	1
	3		MDE 0220S03H03	12.1	15.4	59.4	0.4	3.0	1
2.2	5		0220S03H05	16.1	19.4	62.4	0.4	3.0	1
	8		0220S03H08	23.1	26.4	70.4	0.4	3.0	1
	3		MDE 0230S03H03	12.0	15.4	63.4	0.4	3.0	1
2.3	5	•	0230S03H05	17.0	20.4	68.4	0.4	3.0	1
	8		0230S03H08	24.0	27.4	75.4	0.4	3.0	1
	3	•	MDE 0240S03H03	12.8	16.4	63.4	0.4	3.0	2
2.4	5	•	0240S03H05	17.8	21.4	68.4	0.4	3.0	2
	8	•	0240S03H08	24.8	28.4	75.4	0.4	3.0	2
		_	02-100001100	2-7.0	20.7	, ,,,	∪.¬	0.0	

Dia.	Hole Depth	충	Cat. No.	Effective Length	Flute Length	Overall Length	Tip	Shank Dia.	
DC	(L/D)	Stock	Cat. No.	LU	LCF	OAL	PL	DCON	ľ
	3		MDE 0250S03H03	13.8	17.5	63.5	0.5	3.0	Г
2.5	5		0250S03H05	18.8	22.5	68.5	0.5	3.0	
	8		0250S03H08	25.8	29.5	75.5	0.5	3.0	
	3		MDE 0260S03H03	13.6	17.5	63.5	0.5	3.0	ſ
2.6	5		0260S03H05	18.6	22.5	68.5	0.5	3.0	
	8		0260S03H08	26.6	30.5	75.5	0.5	3.0	
	3	•	MDE 0270S03H03	14.5	18.5	68.5	0.5	3.0	Г
2.7	5		0270S03H05	19.5	23.5	78.5	0.5	3.0	
	8		0270S03H08	27.5	31.5	81.5	0.5	3.0	

2.76	5	MDE 0276S03H05	20.3	24.5	78.5	0.5	3.0	2
2.78	5	0278S03H05	20.3	24.5	78.5	0.5	3.0	2
	3	MDE 0280S03H03	14.3	18.5	68.5	0.5	3.0	2
2.8	5	0280S03H05	20.3	24.5	78.5	0.5	3.0	2
	8	0280S03H08	28.3	32.5	81.5	0.5	3.0	2
	3	MDE 0290S03H03	15.2	19.5	68.5	0.5	3.0	2
2.9	5	0290S03H05	21.2	25.5	78.5	0.5	3.0	2
	8	0290S03H08	29.2	33.5	81.5	0.5	3.0	2
	3	MDE 0300S03H03	14.0	18.5	68.5	0.5	3.0	2
3.0	5	0300S03H05	24.0	28.5	78.5	0.5	3.0	2
	8	0300S03H08	29.0	33.5	81.5	0.5	3.0	2
	3	MDE 0310S04H03	16.0	20.6	72.6	0.6	4.0	2
3.1	5	0310S04H05	28.0	32.6	86.6	0.6	4.0	2
	8	0310S04H08	34.5	39.1	92.6	0.6	4.0	2
	3	MDE 0320S04H03	15.8	20.6	72.6	0.6	4.0	2
3.2	5	0320S04H05	27.8	32.6	86.6	0.6	4.0	2
	8	0320S04H08	34.3	39.1	92.6	0.6	4.0	2
	3	MDE 0330S04H03	15.7	20.6	72.6	0.6	4.0	2
3.3	5	0330S04H05	27.7	32.6	86.6	0.6	4.0	2
	8	0330S04H08	34.2	39.1	92.6	0.6	4.0	2
	3	MDE 0340S04H03	15.5	20.6	72.6	0.6	4.0	2
3.4	5	0340S04H05	27.5	32.6	86.6	0.6	4.0	2
	8	0340S04H08	34.0	39.1	92.6	0.6	4.0	2
	3	MDE 0350S04H03	15.4	20.6	72.6	0.6	4.0	2
1 .		 					1	

0350S04H05

0350S04H08

0360S04H05

0360S04H08

0368S04H05

0370S04H05

MDE 0360S04H03

MDE 0366S04H05

MDE 0370S04H03

27.4 | 32.6 | 86.6

36.7

92.6

72.7

86.7

92.7

86.7

86.7

72.7

86.7

33.9 39.1

31.3 36.7

31.2

**0370S04H08** | 39.2 | 44.7 | 92.7

17.8 23.2

39.3 44.7

31.2 36.7

17.7 23.2

31.2 36.7

0.6

0.6

0.7

0.7

0.7

0.7

4.0 2

4.0 2

4.0

4.0 2

4.0

4.0

4.0 2

4.0

2

Grade: ACT100

3.5

3.66

3.68

3.7

5 

3

8

3

5

8

•

•

Grade: ACT100

# Nexeo MDE-H type (Internal Coolant Supply) Cator Steel (Aloy Steel (Internal Coolant Supply) (Cator Steel (Internal Coolant Supply) (Ca

Dimensions (mm)

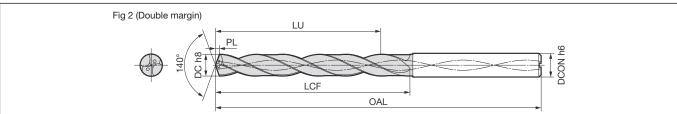
NX Coat





Diameter ø3.8 to 5.1mm





	rn
	٧,
	4
	w
	_
	_
	=
	(O)
	-
	w
•	~
	_

Diamensions (mi									mm)
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length	Tip PL	Shank Dia.	Fig
	3	•	MDE 0380S04H03	17.5	23.2	72.7	0.7	4.0	2
3.8	5		0380S04H05	31.0	36.7	86.7	0.7	4.0	2
	8	•	0380S04H08	39.0	44.7	92.7	0.7	4.0	2
	3		MDE 0390S04H03	17.4	23.2	72.7	0.7	4.0	2
3.9	5	•	0390S04H05	30.9	36.7	86.7	0.7	4.0	2
	8		0390S04H08	38.9	44.7	92.7	0.7	4.0	2
	3	•	MDE 0400S04H03	17.2	23.2	72.7	0.7	4.0	2
4.0	5		0400S04H05	30.7	36.7	86.7	0.7	4.0	2
	8		0400S04H08	38.7	44.7	92.7	0.7	4.0	2
	3		MDE 0410S05H03	19.6	25.7	80.7	0.7	5.0	2
4.1	5	•	0410S05H05	34.6	40.7	98.7	0.7	5.0	2
	8		0410S05H08	44.1	50.2	105.7	0.7	5.0	2
	3	•	MDE 0420S05H03	19.5	25.8	80.8	0.8	5.0	2
4.2	5		0420S05H05	34.5	40.8	98.8	0.8	5.0	2
	8	•	0420S05H08	44.0	50.3		0.8	5.0	2
	3		MDE 0430S05H03	19.4	25.8	80.8	0.8	5.0	2
4.3	5	•	0430S05H05	34.4	40.8	98.8	0.8	5.0	2
	8		0430S05H08	43.9	50.3	105.8	0.8	5.0	2
	3	•	MDE 0440S05H03	19.2	25.8	80.8	0.8	5.0	2
4.4	5		0440S05H05	34.2	40.8	98.8	0.8	5.0	2
	8	•	0440S05H08	43.7	50.3	105.8	0.8	5.0	2
	3		MDE 0450S05H03	19.1	25.8	80.8	0.8	5.0	2
4.5	5		0450S05H05	34.1	40.8	98.8	0.8	5.0	2
	8		0450S05H08	43.6	50.3	105.8	0.8	5.0	2
	3	•	MDE 0460S05H03	21.4	28.3	80.8	0.8	5.0	2
4.6	5		0460S05H05	37.9	44.8	98.8	0.8	5.0	2
	8		0460S05H08	48.9	55.8	105.8	0.8	5.0	2
4.62	5		MDE 0462S05H05	37.9	44.8	98.8	0.8	5.0	2
4.64	5		0464S05H05	37.9	44.8	98.8	0.8	5.0	2
	3		MDE 0470S05H03	21.4	28.4	80.9	0.9	5.0	2
4.7	5		0470S05H05	37.9	44.9	98.9	0.9	5.0	2
	8		0470S05H08	48.9	55.9	105.9	0.9	5.0	2
	3	•	MDE 0480S05H03	21.2	28.4	80.9	0.9	5.0	2
4.8	5		0480S05H05	37.7	44.9	98.9	0.9	5.0	2
	8		0480S05H08	48.7	55.9	105.9	0.9	5.0	2
	3		MDE 0490S05H03	21.1	28.4	80.9	0.9	5.0	2
4.9	5		0490S05H05	37.6	44.9	98.9	0.9	5.0	2
	8		0490S05H08	48.6	55.9	105.9	0.9	5.0	2
	3		MDE 0500S05H03	20.9	28.4	80.9	0.9	5.0	2
5.0	5		0500S05H05	37.4	44.9	98.9	0.9	5.0	2
	8		0500S05H08	48.4	55.9	105.9	0.9	5.0	2
	3		MDE 0510S06H03	20.8	28.4	82.9	0.9	6.0	2
5.1	5		0510S06H05	37.3	44.9	100.9	0.9	6.0	2
	8		0510S06H08	53.8	61.4	118.9	0.9	6.0	2

Grade: ACT100

Dia.	Hole Depth	쏬		Effective Length	Flute Length	Overall Length	Tip	Shank Dia.	
DC	(L/D)	Stock	Cat. No.	LU	LCF	OAL	PL	DCON	Fiç
	3		MDE 0520S06H03	20.6	28.4	82.9	0.9	6.0	2
5.2	5		0520S06H05	37.1	44.9	100.9	0.9	6.0	2
	8		0520S06H08	53.6	61.4	118.9	0.9	6.0	2
	3		MDE 0530S06H03	20.6	28.5	83.0	1.0	6.0	2
5.3	5		0530S06H05	37.1	45.0	101.0	1.0	6.0	2
	8		0530S06H08	53.6	61.5	119.0	1.0	6.0	2
	3		MDE 0540S06H03	20.4	28.5	83.0	1.0	6.0	2
5.4	5		0540S06H05	36.9	45.0	101.0	1.0	6.0	2
	8		0540S06H08	53.4	61.5	119.0	1.0	6.0	2
	3		MDE 0550S06H03	20.3	28.5	83.0	1.0	6.0	2
5.5	5		0550S06H05	36.8	45.0	101.0	1.0	6.0	2
	8		0550S06H08	53.3	61.5	119.0	1.0	6.0	2
5.52	5		MDE 0552S06H05	40.6	49.0	101.0	1.0	6.0	2
5.54	5		0554S06H05	40.6	49.0	101.0	1.0	6.0	2
	3		MDE 0560S06H03	22.6	31.0	83.0	1.0	6.0	2
5.6	5		0560S06H05	40.6	49.0	101.0	1.0	6.0	2
	8		0560S06H08	58.6	67.0	119.0	1.0	6.0	2
	3		MDE 0570S06H03	22.5	31.0	83.0	1.0	6.0	2
5.7	5		0570S06H05	40.5	49.0	101.0	1.0	6.0	2
	8		0570S06H08	58.5	67.0	119.0	1.0	6.0	2
	3		MDE 0580S06H03	22.4	31.1	83.1	1.1	6.0	2
5.8	5		0580S06H05	40.4	49.1	101.1	1.1	6.0	2
	8		0580S06H08	58.4	67.1	119.1	1.1	6.0	2
	3		MDE 0590S06H03	22.3	31.1	83.1	1.1	6.0	2
5.9	5		0590S06H05	40.3	49.1	101.1	1.1	6.0	2
	8		0590S06H08	58.3	67.1	119.1	1.1	6.0	2
	3		MDE 0600S06H03	22.1	31.1	83.1	1.1	6.0	2
6.0	5		0600S06H05	40.1	49.1	101.1	1.1	6.0	2
	8		0600S06H08	58.1	67.1	119.1	1.1	6.0	2
	3		MDE 0610S07H03	24.5	33.6	89.1	1.1	7.0	2
6.1	5		0610S07H05	44.0	53.1	110.1	1.1	7.0	2
	8		0610S07H08	63.5	72.6	131.1	1.1	7.0	2
	3		MDE 0620S07H03	24.3	33.6	89.1	1.1	7.0	2
6.2	5		0620S07H05	43.8	53.1	110.1	1.1	7.0	2
	8		0620S07H08	63.3	72.6	131.1	1.1	7.0	2
	3		MDE 0630S07H03	24.2	33.6	89.1	1.1	7.0	2
6.3	5		0630S07H05	43.7	53.1	110.1	1.1	7.0	2
	8		0630S07H08	63.2	72.6	131.1	1.1	7.0	2
	3		MDE 0640S07H03	24.1	33.7	89.2	1.2	7.0	2
6.4	5		0640S07H05	43.6	53.2	110.2	1.2	7.0	2
	8		0640S07H08	63.1	72.7	131.2	1.2	7.0	2
	0		MADE COCCOCCILION	040	00 7	00.0	4.0	7.0	_

MDE 0650S07H03 24.0 33.7 89.2 1.2

**0650\$07H08** | 63.0 | 72.7 | 131.2 | 1.2

43.5 53.2 110.2 1.2

0650S07H05

7.0 2 7.0 2 7.0 2 7.0 2

Grade: ACT100

6.5

3

5

8

# Nexeo MDE-H type (Internal Coolant Supply) Caton Steel Aloy Steel Open to 2008, Caton Steel Open

















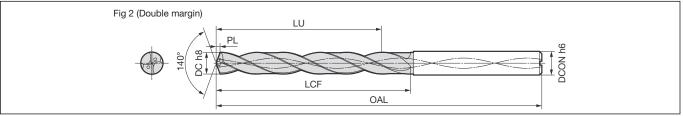












					-							
Diam	neter		.6 to 7.8mm				Dime	ensions (	mm)	Dia	neter	-
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length	Tip PL	Shank Dia.	Fig	Dia.	Hole Depth	Stock
	3		MDE 0660S07H03	26.3	36.2	89.2	1.2	7.0	2		3	•
6.6	5		0660S07H05	47.3	57.2	110.2	1.2	7.0	2	7.9	5	•
	8		0660S07H08	68.3		131.2	1.2	7.0	2		8	•
	3		MDE 0670S07H03	26.2	36.2		1.2	7.0	2		3	•
6.7	5	•	0670S07H05	47.2	-	110.2	1.2	7.0	2	8.0	5	•
	8		0670S07H08	68.2		131.2	1.2	7.0	2		8	
۰.	3	•	MDE 0680S07H03	26.0	36.2		1.2	7.0	2	0.4	3	•
6.8	5 8		0680S07H05 0680S07H08	47.0 68.0		110.2 131.2	1.2	7.0	2	8.1	5 8	•
	3		MDE 0690S07H03	26.0	36.3		1.3	7.0	2	-	3	•
6.9	5	6	0690S07H05	47.0		110.3	1.3	7.0	2	8.2	5	
0.5	8		0690S07H08	68.0		131.3	1.3	7.0	2	0.2	8	•
	3		MDE 0700S07H03	25.8	36.3		1.3	7.0	2		3	•
7.0	5	•	0700S07H05	46.8		110.3	1.3	7.0	2	8.3	5	•
	8	•	0700S07H08	67.8		131.3	1.3	7.0	2		8	•
	3		MDE 0710S08H03	28.2	38.8		1.3	8.0	2		3	•
7.1	5		0710S08H05	50.7	61.3	119.3	1.3	8.0	2	8.4	5	
	8		0710S08H08	73.2	83.8	143.3	1.3	8.0	2		8	
	3		MDE 0720S08H03	28.0	38.8	95.3	1.3	8.0	2		3	
7.2	5		0720S08H05	50.5	61.3	119.3	1.3	8.0	2	8.5	5	
	8		0720S08H08	73.0		143.3	1.3	8.0	2		8	
	3		MDE 0730S08H03	27.9	38.8		1.3	8.0	2		3	
7.3	5	•	0730S08H05	50.4		119.3	1.3	8.0	2	8.6	5	•
	8		0730S08H08	72.9		143.3	1.3	8.0	2	-	8	
7.36	5	•	MDE 0736S08H05	50.2		119.3	1.3	8.0	2		3	•
7.38	5		0738S08H05	50.2		119.3	1.3	8.0	2	8.7	5	
7.4	3 5	•	MDE 0740S08H03 0740S08H05	27.7 50.2	38.8	95.3 119.3	1.3	8.0	2	-	8	•
7.4	8		0740S08H08	72.7		143.3	1.3	8.0	2	8.8	5	
	3		MDE 0750S08H03	27.7	38.9		1.4	8.0	2	0.0	8	•
7.5	5		0750S08H05	50.2		119.4	1.4	8.0	2		3	•
	8		0750S08H08	72.7		143.4	1.4	8.0	2	8.9	5	•
7.52	5		MDE 0752S08H05	54.0		119.4	1.4	8.0	2		8	•
7.54	5		0754S08H05	54.0	65.4	119.4	1.4	8.0	2		3	•
	3	•	MDE 0760S08H03	30.0	41.4	95.4	1.4	8.0	2	9.0	5	•
7.6	5		0760S08H05	54.0	65.4	119.4	1.4	8.0	2		8	
	8		0760S08H08	78.0	89.4	143.4	1.4	8.0	2		3	•
	3		MDE 0770S08H03	29.9	41.4	95.4	1.4	8.0	2	9.1	5	
7.7	5		0770S08H05	53.9		119.4	1.4	8.0	2		8	•
	8		0770S08H08	77.9		143.4	1.4	8.0	2		3	•
	3		MDE 0780S08H03	29.7	41.4		1.4	8.0	2	9.2	5	•
7.8	5		0780S08H05	53.7		119.4	1.4	8.0	2		8	
	8		0780S08H08	77.7	89.4	143.4	1.4	8.0	2	Grad	e: ACT10	00

Diam	neter	ø7.9	to 9.2	mm
		121		

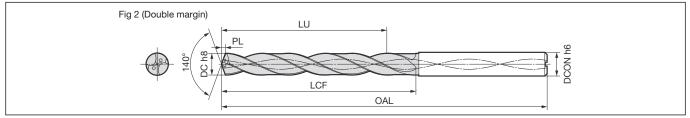
Dimensions (mm)

Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length Overall Length OAL	Tip <b>PL</b>	Shank Dia.	Fig
	3	•	MDE 0790S08H03	29.6	41.4 95.4	1.4	8.0	2
7.9	5		0790S08H05	53.6	65.4 119.4	1.4	8.0	2
	8		0790S08H08	77.6	89.4 143.4	1.4	8.0	2
	3		MDE 0800S08H03	29.5	41.5 95.5	1.5	8.0	2
8.0	5		0800S08H05	53.5	65.5 119.5	1.5	8.0	2
	8		0800S08H08	77.5	89.5 143.5	1.5	8.0	2
	3		MDE 0810S09H03	31.9	44.0 101.5	1.5	9.0	2
8.1	5		0810S09H05	57.4	69.5 128.5	1.5	9.0	2
	8		0810S09H08	82.9	95.0 155.5	1.5	9.0	2
	3		MDE 0820S09H03	31.7	44.0 101.5	1.5	9.0	2
8.2	5		0820S09H05	57.2	69.5 128.5	1.5	9.0	2
	8		0820S09H08	82.7	95.0 155.5	1.5	9.0	2
	3		MDE 0830S09H03	31.6	44.0 101.5	1.5	9.0	2
8.3	5		0830S09H05	57.1	69.5 128.5	1.5	9.0	2
	8	•	0830S09H08	82.6	95.0 155.5	1.5	9.0	2
<b>.</b> .	3		MDE 0840S09H03	31.4	44.0 101.5	1.5	9.0	2
8.4	5	•	0840S09H05	56.9	69.5 128.5	1.5	9.0	2
	8	•	0840S09H08	82.4	95.0 155.5	1.5	9.0	2
	3	•	MDE 0850S09H03	31.3	44.0 101.5	1.5	9.0	2
8.5	5		0850S09H05	56.8	69.5 128.5	1.5	9.0	2
	8	•	0850S09H08	82.3	95.0 155.5	1.5	9.0	2
8.6	3 5	•	MDE 0860S09H03 0860S09H05	33.7	46.6 101.6 73.6 128.6	1.6 1.6	9.0	2
0.0	8		0860S09H08	87.7	100.6155.6	1.6	9.0	2
	3	•	MDE 0870S09H03	33.6	46.6 101.6	1.6	9.0	2
8.7	5		0870S09H05	60.6	73.6128.6	1.6	9.0	2
0.7	8	•	0870S09H08		100.6 155.6	1.6	9.0	2
	3	•	MDE 0880S09H03	33.4	46.6 101.6	1.6	9.0	2
8.8	5	•	0880S09H05	60.4	73.6 128.6	1.6	9.0	2
	8	•	0880S09H08		100.6 155.6	1.6	9.0	2
	3	•	MDE 0890S09H03	33.3	46.6 101.6	1.6	9.0	2
8.9	5		0890S09H05	60.3	73.6 128.6	1.6	9.0	2
	8		0890S09H08	87.3	100.6 155.6	1.6	9.0	2
	3		MDE 0900S09H03	33.1	46.6 101.6	1.6	9.0	2
9.0	5		0900S09H05	60.1	73.6 128.6	1.6	9.0	2
	8		0900S09H08	87.1	100.6 155.6	1.6	9.0	2
	3		MDE 0910S10H03	35.6	49.2 107.7	1.7	10.0	2
9.1	5		0910S10H05	64.1	77.7 137.7	1.7	10.0	2
	8		0910S10H08	92.6	106.2 167.7	1.7	10.0	2
	3		MDE 0920S10H03	35.4	49.2 107.7	1.7	10.0	2
9.2	5		0920S10H05	63.9	77.7 137.7	1.7	10.0	2
	8		0920S10H08	92.4	106.2 167.7	1.7	10.0	2
Grada	ACT10	n						

Grade: ACT100

# Nexeo MDE-H type (Internal Coolant Supply) Caton Steel (Aloy Steel Opto 10.28%) Carbon Steel (Aloy Steel Opt

Goolant Hole 3D 5D 8D NX Coat



7	Diameter ø9.24 to 10.4mm
7	P:

			Dime	nsions (	mm)
Effective Length	Flute Length	Overall Length	Tip	Shank Dia.	Fig

s (ı	mm)		Di
Dia.	Fig		D
		1	

Diameter ø10.5	to 11.7mm
----------------	-----------

Dimensions	(mm

Dia.	Hole Depth	8	Cat. No.	Effective Length	riule Lengin	Overall Lerigill	Tip	Shank Dia.	Fig
DC	(L/D)	Stoc	Oat. No.	LU	LCF	OAL	PL	DCON	ı ıy
9.24			MDE 0924S10H05	63.8	77.7	137.7	1.7	10.0	2
9.26	5		0926S10H05	63.8	77.7	137.7	1.7	10.0	2
	3		MDE 0930S10H03	35.3	49.2	107.7	1.7	10.0	2
9.3	5		0930S10H05	63.8	77.7	137.7	1.7	10.0	2
	8		0930S10H08	92.3	106.2	167.7	1.7	10.0	2
9.36	5		MDE 0936S10H05	63.6	77.7	137.7	1.7	10.0	2
9.38	5		0938S10H05	63.6	77.7	137.7	1.7	10.0	2
	3		MDE 0940S10H03	35.1	49.2	107.7	1.7	10.0	2
9.4	5		0940S10H05	63.6		137.7	1.7	10.0	2
	8		0940S10H08	92.1	106.2		1.7	10.0	2
	3		MDE 0950S10H03	35.0		107.7	1.7	10.0	2
9.5	5		0950S10H05	63.5	77.7	137.7	1.7	10.0	2
	8		0950S10H08	92.0	106.2	167.7	1.7	10.0	2
9.52	5		MDE 0952S10H05	67.3	81.7	137.7	1.7	10.0	2
9.54	5		0954S10H05	67.3		137.7	1.7	10.0	2
	3		MDE 0960S10H03	37.3		107.7	1.7	10.0	2
9.6	5		0960S10H05	67.3		137.7	1.7	10.0	2
	8		0960S10H08		111.7	167.7	1.7	10.0	2
	3		MDE 0970S10H03	37.3		107.8	1.8	10.0	2
9.7	5		0970S10H05	67.3		137.8	1.8	10.0	2
	8		0970S10H08		111.8		1.8	10.0	2
	3		MDE 0980S10H03	37.1		107.8	1.8	10.0	2
9.8	5		0980S10H05	67.1		137.8	1.8	10.0	2
	8		0980S10H08		111.8		1.8	10.0	2
	3	•	MDE 0990S10H03	37.0		107.8	1.8	10.0	2
9.9	5		0990S10H05	67.0		137.8	1.8	10.0	2
	8	•	0990S10H08		111.8		1.8	10.0	2
	3		MDE 1000S10H03	36.8		107.8	1.8	10.0	2
10.0	5		1000S10H05	66.8		137.8	1.8	10.0	2
	8		1000S10H08		111.8		1.8	10.0	2
	3	•	MDE 1010S11H03	39.2		117.8	1.8	11.0	2
10.1	5		1010S11H05	70.7		150.8	1.8	11.0	2
	8	•	1010S11H08		117.3		1.8	11.0	2
40.0	3		MDE 1020S11H03	39.1	-	117.9	1.9	11.0	2
10.2	5	•	1020S11H05	70.6		150.9	1.9	11.0	2
	8	•	1020S11H08		117.4		1.9	11.0	2
40.0	3	•	MDE 1030S11H03	39.0		117.9	1.9	11.0	2
10.3	5		1030S11H05	70.5		150.9	1.9	11.0	2
	8	•	1030S11H08 MDE 1040S11H03	38.8	117.4	117.9	1.9	11.0	2
10.4		•							
10.4	5 8		1040S11H05	70.3		150.9	1.9	11.0	2
	0		1040S11H08	101.8	117.4	103.9	1.9	11.0	4

Diaii	ictei :		0.5 10 11.7111111				Dime	ensions (	mm)
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length LCF	Overall Length	Tip <b>PL</b>	Shank Dia.	Fig
	3		MDE 1050S11H03	38.7	54.4	117.9	1.9	11.0	2
10.5	5		1050S11H05	70.2	85.9	150.9	1.9	11.0	2
	8		1050S11H08	101.7	117.4	183.9	1.9	11.0	2
	3		MDE 1060S11H03	41.0	56.9	117.9	1.9	11.0	2
10.6	5		1060S11H05	74.0	89.9	150.9	1.9	11.0	2
	8		1060S11H08	107.0	122.9	183.9	1.9	11.0	2
	3		MDE 1070S11H03	40.9	56.9	117.9	1.9	11.0	2
10.7	5		1070S11H05	73.9	89.9	150.9	1.9	11.0	2
	8		1070S11H08	106.9	122.9	183.9	1.9	11.0	2
	3		MDE 1080S11H03	40.8	57.0	118.0	2.0	11.0	2
10.8	5		1080S11H05	73.8		151.0	2.0	11.0	2
	8		1080S11H08	106.8	123.0	184.0	2.0	11.0	2
	3	•	MDE 1090S11H03	40.7	57.0	118.0	2.0	11.0	2
10.9	5		1090S11H05	73.7	90.0	151.0	2.0	11.0	2
	8		1090S11H08	106.7	123.0	184.0	2.0	11.0	2
	3		MDE 1100S11H03	40.5	57.0	118.0	2.0	11.0	2
11.0	5		1100S11H05	73.5	90.0	151.0	2.0	11.0	2
	8		1100S11H08	106.5	123.0	184.0	2.0	11.0	2
	3		MDE 1110S12H03	42.9	59.5	124.0	2.0	12.0	2
11.1	5		1110S12H05	77.4	94.0	160.0	2.0	12.0	2
	8		1110S12H08	111.9	128.5	196.0	2.0	12.0	2
	3		MDE 1120S12H03	42.7	59.5	124.0	2.0	12.0	2
11.2	5		1120S12H05	77.2	94.0	160.0	2.0	12.0	2
	8		1120S12H08	111.7	128.5	196.0	2.0	12.0	2
11.22	5	•	MDE 1122S12H05	77.2	94.0	160.0	2.0	12.0	2
11.24	5		1124S12H05	77.2	94.0	160.0	2.0	12.0	2
	3		MDE 1130S12H03	42.7	59.6	124.1	2.1	12.0	2
11.3	5		1130S12H05	77.2	94.1	160.1	2.1	12.0	2
	8		1130S12H08	111.7	128.6	196.1	2.1	12.0	2
11.36	5		MDE 1136S12H05	77.0	94.1	160.1	2.1	12.0	2
11.38	5		1138S12H05	77.0	94.1	160.1	2.1	12.0	2
	3		MDE 1140S12H03	42.5	59.6	124.1	2.1	12.0	2
11.4	5		1140S12H05	77.0	94.1	160.1	2.1	12.0	2
	8		1140S12H08	111.5	128.6	196.1	2.1	12.0	2
	3		MDE 1150S12H03	42.4	59.6	124.1	2.1	12.0	2
11.5	5		1150S12H05	76.9	94.1	160.1	2.1	12.0	2
	8		1150S12H08	111.4	128.6	196.1	2.1	12.0	2
	3		MDE 1160S12H03	44.7		124.1	2.1	12.0	2
11.6	5		1160S12H05	80.7		160.1	2.1	12.0	2
	8		1160S12H08	116.7	134.1	196.1	2.1	12.0	2
	3		MDE 1170S12H03	44.6	-	124.1	2.1	12.0	2
11.7	5		1170S12H05	80.6	98.1	160.1	2.1	12.0	2
	8		1170S12H08		134.1		2.1	12.0	2

8 • Grade: ACT100

# Nexeo MDE-H type (Internal Coolant Supply) (Aloy Steel Aloy Steel Land Steel















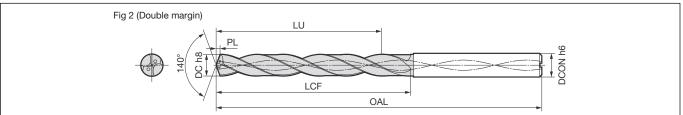












Diameter	$\alpha$ 11	8 to	13	1mm

Dimensions (mm)	Diameter ø13.2 to 14.5mm	
אווווווווווווווווווווווווווווווווווווו	D.G	

Di	men	sior	ıs (r	nm)

Fig. 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
2 2 2 2 2
2 2 2
2 2
2
2
2
2
) 2
2
2
2
2
2
) 2
2
2
2
2
2
) 2
2
2
2
2
2
) 2
2
2
) 2
2
_
_
_
2
_
_
) 2

DC	(L/D)	S	MDE 1200014H02	L
Dia.	Hole Depth	ock	Cat. No.	Effective

Dia.	Hole Depth	Stock	Cat. No.		Flute Length		Tip	Shank Dia.	Fig
DC	(L/D)	क्र	Out. NO.	LU	LCF	OAL	PL	DCON	1 19
	3		MDE 1320S14H03	50.1		136.4	2.4	14.0	2
13.2	5		1320S14H05		110.4	-	2.4	14.0	2
	8	•	1320S14H08		150.9		2.4	14.0	2
	3		MDE 1330S14H03	50.0		136.4	2.4	14.0	2
13.3	5		1330S14H05		110.4	-	2.4	14.0	2
	8		1330S14H08		150.9		2.4	14.0	2
	3		MDE 1340S14H03	49.8		136.4	2.4	14.0	2
13.4	5		1340S14H05		110.4		2.4	14.0	2
	8		1340S14H08		150.9		2.4	14.0	2
	3		MDE 1350S14H03	49.8		136.5	2.5	14.0	2
13.5	5		1350S14H05		110.5		2.5	14.0	2
	8		1350S14H08		151.0		2.5	14.0	2
	3		MDE 1360S14H03	52.1		136.5	2.5	14.0	2
13.6	5		1360S14H05		114.5		2.5	14.0	2
	8		1360S14H08		156.5		2.5	14.0	2
	3		MDE 1370S14H03	52.0		136.5	2.5	14.0	2
13.7	5		1370S14H05		114.5		2.5	14.0	2
	8		1370S14H08	136.0	156.5		2.5	14.0	2
	3		MDE 1380S14H03	51.8		136.5	2.5	14.0	2
13.8	5		1380S14H05		114.5		2.5	14.0	2
	8		1380S14H08		156.5		2.5	14.0	2
	3		MDE 1390S14H03	51.7		136.5	2.5	14.0	2
13.9	5		1390S14H05		114.5		2.5	14.0	2
	8		1390S14H08		156.5		2.5	14.0	2
	3		MDE 1400S14H03	51.5		136.5	2.5	14.0	2
14.0	5		1400S14H05		114.5		2.5	14.0	2
	8		1400S14H08		156.5		2.5	14.0	2
	3		MDE 1410S15H03	54.0	-	142.6	2.6	15.0	2
14.1	5	•	1410S15H05		118.6		2.6	15.0	2
	8		1410S15H08		162.1		2.6	15.0	2
	3	•	MDE 1420S15H03	53.8		142.6	2.6	15.0	2
14.2	5	•	1420S15H05		118.6		2.6	15.0	2
	8	•	1420S15H08		162.1		2.6	15.0	2
	3		MDE 1430S15H03	53.7	-	142.6	2.6	15.0	2
14.3	5	•	1430S15H05	_	118.6		2.6	15.0	2
	8		1430S15H08		162.1		2.6	15.0	2
	3	•	MDE 1440S15H03	53.5	_	142.6	2.6	15.0	2
14.4	5		1440S15H05		118.6		2.6	15.0	2
	8	•	1440S15H08		162.1		2.6	15.0	2
	3	•	MDE 1450S15H03	53.4	-	142.6	2.6	15.0	2
14.5	5	•	1450S15H05		118.6		2.6	15.0	2
	8		1450S15H08	140.4	162.1	232.6	2.6	15.0	2

Grade: ACT100

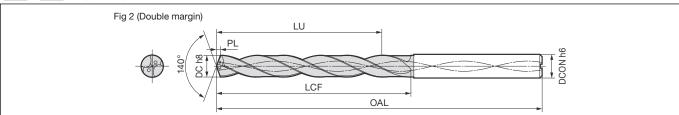
7-19

# Nexeo MDE-H type (Internal Coolant Supply) Caton Steel Aloy Steel (Internal Coolant Supply) Caton Steel (Internal Coolant Supply) Caton Steel (Internal Coolant Supply) (Inter









7	7	
I		

4	മ
응	ğ
xa	+
ge	er
<u>=</u>	ns
	П

ဟ
_
Φ
Ċ
ಹ
Φ
$\alpha$

Diameter Ø14.6 to 15.9mm Dimensions (mm										
Dia.	Hole Depth	Stock	Cat. No.	Effective Length		Overall Length	Tip <b>PL</b>	Shank Dia.	Fig	
	3		MDE 1460S15H03	55.8	77.7	142.7	2.7	15.0	2	
14.6	5		1460S15H05	100.8	122.7	187.7	2.7	15.0	2	

DC	(L/D)	Ś		LU	LOI	OAL	PL	DCON	
	3		MDE 1460S15H03	55.8		142.7	2.7	15.0	2
14.6	5		1460S15H05	100.8	122.7	187.7	2.7	15.0	2
	8		1460S15H08	145.8	167.7	232.7	2.7	15.0	2
	3		MDE 1470S15H03	55.7	77.7	142.7	2.7	15.0	2
14.7	5		1470S15H05	100.7	122.7	187.7	2.7	15.0	2
	8		1470S15H08	145.7	167.7	232.7	2.7	15.0	2
	3		MDE 1480S15H03	55.5	77.7	142.7	2.7	15.0	2
14.8	5		1480S15H05	100.5	122.7	187.7	2.7	15.0	2
	8		1480S15H08	145.5	167.7	232.7	2.7	15.0	2
	3		MDE 1490S15H03	55.4	77.7	142.7	2.7	15.0	2
14.9	5		1490S15H05	100.4	122.7	187.7	2.7	15.0	2
	8		1490S15H08	145.4	167.7	232.7	2.7	15.0	2
	3		MDE 1500S15H03	55.2	77.7	142.7	2.7	15.0	2
15.0	5		1500S15H05	100.2	122.7	187.7	2.7	15.0	2
	8		1500S15H08	145.2	167.7	232.7	2.7	15.0	2
	3		MDE 1510S16H03	57.6	80.2	148.7	2.7	16.0	2
15.1	5		1510S16H05	104.1	126.7	196.7	2.7	16.0	2
	8		1510S16H08	150.6	173.2	244.7	2.7	16.0	2
15.2	3		MDE 1520S16H03	57.5		148.8	2.8	16.0	2
	5		1520S16H05			196.8	2.8	16.0	2
	8		1520S16H08			244.8	2.8	16.0	2
	3		MDE 1530S16H03	57.4	80.3	148.8	2.8	16.0	2
15.3	5		1530S16H05			196.8	2.8	16.0	2
	8		1530S16H08	150.4	173.3	244.8	2.8	16.0	2
	3		MDE 1540S16H03	57.2		148.8	2.8	16.0	2
15.4	5		1540S16H05			196.8	2.8	16.0	2
	8		1540S16H08			244.8	2.8	16.0	2
	3		MDE 1550S16H03	57.1	80.3	148.8	2.8	16.0	2
15.5	5		1550S16H05			196.8	2.8	16.0	2
	8		1550S16H08	150.1	173.3	244.8	2.8	16.0	2
	3		MDE 1560S16H03	59.4		148.8	2.8	16.0	2
15.6	5		1560S16H05			196.8	2.8	16.0	2
	8		1560S16H08			244.8	2.8	16.0	2
	3		MDE 1570S16H03	59.4		148.9	2.9	16.0	2
15.7	5		1570S16H05			196.9	2.9	16.0	2
	8		1570S16H08	155.4			2.9	16.0	2
	3		MDE 1580S16H03	59.2		148.9	2.9	16.0	2
15.8	5		1580S16H05			196.9	2.9	16.0	2
	8		1580S16H08			244.9	2.9	16.0	2
	3		MDE 1590S16H03	59.1		148.9	2.9	16.0	2
15.9	5		1590S16H05			196.9	2.9	16.0	2
	8		1590S16H08	155.1	178.9	244.9	2.9	16.0	2

Diameter	016 C	1 to 1	20 Dmi	m
Diameter	Ø 10.U	ιω	20.01111	П

Dimensions	(mm
	(

Dia. Hole Depth O													
Dia.	Hole Depth (L/D)	Stock	Cat. No.	Effective Length	Flute Length LCF	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fig				
	3		MDE 1600S16H03	58.9	82.9	148.9	2.9	16.0	2				
16.0	5		1600S16H05	106.9	130.9	196.9	2.9	16.0	2				
	8		1600S16H08	154.9	178.9	244.9	2.9	16.0	2				
16.5	3		MDE 1650S17H03	60.8	85.5	155.0	3.0	17.0	2				
10.5	5		1650S17H05	110.3	135.0	206.0	3.0	17.0	2				
17.0	3		MDE 1700S17H03	62.6	88.1	155.1	3.1	17.0	2				
17.0	5		1700S17H05	113.6	139.1	206.1	3.1	17.0	2				
17.5	3		MDE 1750S18H03	64.5	90.7	161.2	3.2	18.0	2				
17.5	5		1750S18H05	116.9	143.2	217.3	3.2	18.0	2				
18.0	3		MDE 1800S18H03	66.3	93.3	161.3	3.3	18.0	2				
10.0	5		1800S18H05	120.3	147.3	217.3	3.3	18.0	2				
18.5	3		MDE 1850S19H03	68.2	95.9	167.4	3.4	19.0	2				
10.5	5		1850S19H05	123.6	151.4	224.4	3.4	19.0	2				
19.0	3		MDE 1900S19H03	70.0	98.5	167.5	3.5	19.0	2				
19.0	5		1900S19H05	127.0	155.5	224.5	3.5	19.0	2				
19.5	3		MDE 1950S20H03	71.8	101.0	173.5	3.5	20.0	2				
19.5	5		1950S20H05	130.3	159.5	233.5	3.5	20.0	2				
20.0	3		MDE 2000S20H03	73.6	103.6	173.6	3.6	20.0	2				
20.0	5		2000S20H05	133.6	163.6	233.6	3.6	20.0	2				

Grade: ACT100

# Nexeo MDE-H type (Internal Coolant Supply)

### Recommended Cutting Conditions (MDE-H type, internal coolant supply, 3D/5D/8D)

- 1. The recommended cutting conditions below are for cases where a water soluble
- 2. MQL coolant is also usable. Note that external mixing MQL equipment may not
- generate MQL with a shank diameter (DCON) of ø16mm or more.

  3. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
- 4. Make sure the flute does not enter the collet.

- 5. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece. If stable drilling is still not possible, pre-drilling of a flat surface with a Flat MULTIDRILL MDF series drill is recommended.
- 6. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

Work Material		Mild Steel/Low SS400 up to		Carbon S35C/ up to 2		Alloy SCM 20 to 3		Alloy Steel SCM/SCr 30 to 38HRC			
Cutting	Dia. < ø3	30 to 80	0m/min	30 to 80	0m/min	30 to 80	Om/min	30 to 80m/min			
Speed Dia. ≥ ø3 60 to 100m/min			0m/min	60 to 12	0m/min	50 to 10	0m/min	40 to 80m/min			
Diamet	Diameter DC (mm) Spindle Speed (min-1) Feed Rate (mm/rev)		Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min-1)	Feed Rate (mm/rev)			
	ø1.0	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03		
	ø1.5	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06		
	ø2.0	9,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08		
	ø2.5	9,500	0.04 to 0.08	9,000	0.04 to 0.08	8,500	0.04 to 0.08	7,600	0.04 to 0.08		
	ø3.0	9,600	9,600 0.05 to 0.12 8,500 0.0		0.05 to 0.12	7,500	0.05 to 0.12 6,400		0.05 to 0.12		
	ø4.0 7,200 0.07 to 0.17		6,400	0.07 to 0.17	5,600	0.07 to 0.17	4,800	0.07 to 0.17			
	ø5.0	5,800	0.08 to 0.20	5,100	0.08 to 0.20	4,500	0.08 to 0.20	3,900	0.08 to 0.20		
	ø6.0	4,800	0.10 to 0.20	4,300	0.10 to 0.20	3,800	0.10 to 0.20	3,200	0.10 to 0.20		
	ø7.0	4,100	0.12 to 0.23	3,700	0.12 to 0.23	3,200	0.12 to 0.23	2,800	0.12 to 0.23		
	ø8.0	3,600	0.12 to 0.25	3,200	0.12 to 0.25	2,800	0.12 to 0.25	2,400	0.12 to 0.25		
	ø9.0	3,200	0.14 to 0.25	2,900	0.14 to 0.25	2,500	0.14 to 0.25	2,200	0.14 to 0.25		
	ø10.0	2,900	0.16 to 0.28	2,600	0.16 to 0.28	2,300	0.16 to 0.28	2,000	0.16 to 0.28		
	ø11.0	2,700	0.18 to 0.30	2,400	0.18 to 0.30	2,100	0.18 to 0.30	1,800	0.18 to 0.30		
	ø12.0	2,400	0.20 to 0.30	2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30		
	ø14.0	2,100	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30		
	ø16.0	1,800	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30		
	ø18.0	1,600	0.20 to 0.30	1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30		
	ø20.0	1,500	0.20 to 0.30	1,300 0.20 to 0.30		1,200	0.20 to 0.30	1,000	0.20 to 0.30		
High-effi	iciency Product	HGS:	series	HGS:	series	HGS	series	HGS:	HGS series		

Work Material		Cast FC to 28	250	Ductile ( FCD450/ to 27		Stainles SUS304/ to 20	SUS410	Special Steel/Pre-hardened Steel SKS2/SKD61 (non-tempered) 30 to 38HRC			
Cutting	Dia. < ø3	30 to 8	0m/min	30 to 8	0m/min	30 to 80	Om/min	30 to 60m/min			
Speed	Dia. ≥ ø3	60 to 10	00m/min	50 to 10	00m/min	40 to 80	Om/min	30 to 6	0m/min		
Diameter DC (mm)		Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)		
	ø1.0	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500 0.02 to 0.03		9,500	0.02 to 0.03		
	ø1.5	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.02 to 0.05	8,500	0.02 to 0.04		
	ø2.0	8,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.03 to 0.06	7,100	0.03 to 0.06		
	ø2.5	9,000	0.04 to 0.08	8,500	0.04 to 0.08	7,600	0.03 to 0.07	5,700	0.03 to 0.06		
	ø3.0 8,500 0.06 to 0.15		ø3.0 8,500 0.06 to 0.15 7,500 0.05 to 0		0.05 to 0.12	6,400 0.05 to 0.12		4,800	0.05 to 0.10		
	ø4.0	ø4.0 6,400 0.08 to 0.18		5,600	0.07 to 0.17	4,800	0.07 to 0.17 3,600		0.06 to 0.13		
	ø5.0	5,100	0.10 to 0.20	4,500	0.08 to 0.20	3,900	0.08 to 0.20	2,900	0.07 to 0.15		
	ø6.0	4,300	0.12 to 0.23	3,800	0.10 to 0.20	3,200	0.10 to 0.20	2,400	0.08 to 0.18		
	ø7.0	3,700	0.12 to 0.23	3,200	0.12 to 0.23	2,800	0.10 to 0.23	2,100	0.10 to 0.20		
	ø8.0	3,200	0.18 to 0.25	2,800	0.12 to 0.25	2,400	0.10 to 0.20	1,800	0.12 to 0.22		
	ø9.0	2,900	0.17 to 0.25	2,500	0.14 to 0.25	2,200	0.12 to 0.23	1,600	0.14 to 0.22		
	ø10.0	2,600	0.18 to 0.28	2,300	0.16 to 0.28	2,000	0.12 to 0.23	1,500	0.16 to 0.25		
	ø11.0	2,400	0.20 to 0.30	2,100	0.18 to 0.30	1,800	0.15 to 0.25	1,400	0.18 to 0.28		
	ø12.0	2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.15 to 0.25	1,200	0.18 to 0.28		
	ø14.0	1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.15 to 0.25	1,100	0.18 to 0.30		
	ø16.0	1,600	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.15 to 0.25	900	0.18 to 0.30		
	ø18.0	1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,100 0.15 to 0.		800	0.18 to 0.30		
	ø20.0	1,300	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.15 to 0.25	720	0.18 to 0.30		
High-effi	ciency Product	HX series	(HY series)	HX series	(HY series)	MDM	series	HGS	HGS series		

## **MDF** series

Drilling

Solid

### ■ General Features

The Flat MULTIDRILL MDF series is a solid carbide drill that can be used for various applications, including high-efficiency flat bottom drilling and drilling in inclined and curved surfaces.



### ■ Features and Applications

- Suited to various types of drilling thanks to a point angle of 180° Suitable for high-efficiency flat bottom drilling, drilling on non-flat surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.
- Improves drilling stability Achieves high rigidity by employing RS THINNING, which ensures thick web.
- Excellent chip evacuation Achieves excellent chip evacuation thanks to the wide chip pocket and high-quality rake face shape.
- Excellent cutting edge strength Achieves excellent cutting edge strength through optimised cutting edge design.
- Coolant can now be supplied internally This enables deeper drilling.



### ■ Reduction of Burrs at Hole Exit



Work Material: SCM415 Machine: BT40 Vertical Machining Centre Tool: MDF 0500S2D (ø5.0mm x 2D) Cutting Conditions: VC = 65m/min, f = 0.12mm/rev, H = 10mm. 150 holes, Wet

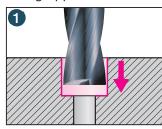
Reduces exit burrs by **half** compared with general-purpose drills



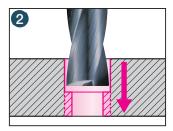


Flat MULTIDRILL MDF series

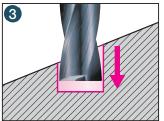
■ Drilling Applications



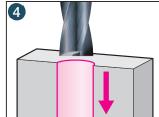
High-efficiency flat bottom drilling



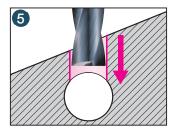
Hole expansion drilling



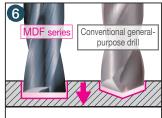
Drilling in non-horizontal surface (inclined surface, cylindrical surface, etc.)



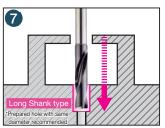
Interrupted drilling



Cross-hole drilling



Pre-tap hole drilling in thin plates Flat Bottom Drilling at deep positions Avoids interference with work material





# MDF series

Long shanked type (MDF-L type 2D) for flat bottom drilling, hole expansion and burr control in long overhang conditions

• For drilling with long overhang and to avoid interference with the work material.

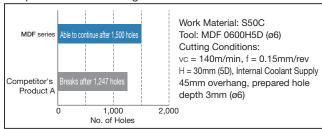
\*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with the long shank type.



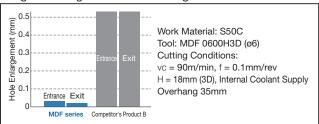
With Oil Hole (MDF-H type 3D/5D) for up to 5D deep hole applications

Internal coolant supply enables deep flat bottom hole drilling.
 \*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with an L/D=5 oil hole.

### Deep Flat Bottom Drilling



### Long Overhang Flat Bottom Drilling



### Drilling on slanted surfaces



Work Material: SCM415 Tool: MDF 0500S2D (ø5) Cutting Conditions: vc = 65m/min, f = 0.08mm/rev H = 10mm, External MQL

### Prevents burrs and conical remnants on tool withdrawal



Work Material: SS400
Tool: MDF 1000S2D (ø10)
Cutting Conditions:
vc = 75m/min, f = 0.12mm/rev
H = 5mm, External MQL

### ■ Distinguishing Flat Drills, General-purpose Drills and Endmills

Tool	Flat Drill	General-purpose Drill	Endmill for Flat Bottom Drilling				
Shape of hole base	Convex (180°)  Almost flat (concave)	Convex (135°)  Concave	Concave (medium/low, 2 to 3°)  Convex (cannot be used as prepared hole drilling)				
Drilling in flat surfaces	Approx. 1/2 the feed of a general-purpose drill	Best	Only for low feed 1D or smaller ≤1/5 the feed of a general-purpose drill				
Drilling non-flat surfaces	Ideal (2D or smaller recommended)	Impossible	Only for low feed 1D or smaller ≤1/2 the feed of a flat drill				
Traverse Cutting	Impossible	Impossible	Best				

### ■ Product Range

	•			
Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Description
Futernal	MDF□□□□S2D	ø0.3 to 20.0	up to 2	188 items in stock
External	MDF□□□□L2D	ø3.0 to 20.0	up to 2	115 items in stock
Internal	MDF□□□□H3D	ø3.0 to 16.0	up to 3	99 items in stock
Internal	MDF□□□□H5D	ø3.0 to 16.0	up to 5	99 items in stock

# MDF-S type (External Coolant Supply) (Zator Shell Aloy Shell (Indo











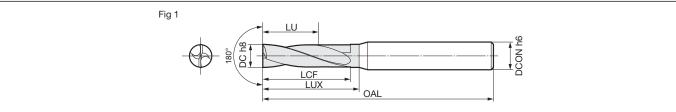












Diam	neter	ø0	.3 to 5.1mm				Dime	mm)							Dimensions (mm)					
Dia.	Hole Depth	Stock	Cat. No.	Effective Length		Neck Length			Fig	Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length				Fig	
DC	(L/D)	_		LU	LCF	LUX	OAL	DCON		DC	(L/D)			LU	LCF	LUX		DCON		
0.3*		•	MDF 0030S2D*	0.9	1.0	1.3	40	3.0	1	5.2			MDF 0520S2D	15.6	20.8	24.2	60	6.0	1	
0.4*			0040S2D*	1.2	1.4	1.7	40	3.0	1	5.3		H	0530S2D	15.9	21.2	24.7	60	6.0	1	
0.5			0050S2D	1.5	2.0	2.3	40	3.0	1	5.4		•	0540S2D	16.2	21.6	25.3	60	6.0	1	
0.6	2		0060S2D	1.8	2.4	2.7	40	3.0	1	5.5			0550S2D	16.5	22.0	25.9	60	6.0	1	
0.7		•	0070S2D	2.1	2.8	3.1	40	3.0	1	5.52	2	•	0552S2D	16.5	22.0	26.1	60	6.0	1	
0.8		H	0080S2D	2.4	3.2	3.5	40	3.0	1	5.54			0554S2D	16.6	22.1	26.2	60	6.0	1	
0.9		•	0090S2D	2.7	3.6	3.9	40	3.0	1	5.6			0560S2D	16.8	22.4	26.5	60	6.0	1	
1.0		H	MDF 0100S2D 0110S2D	3.0	4.0	4.3	45 45	3.0	1	5.7 5.8			0570S2D 0580S2D	17.1	22.8	27.1 27.6	60 60	6.0	1	
1.2			011032D 0120S2D	3.6	4.8	5.1	45	3.0	1	5.9		d	0580S2D	17.4	23.6	28.2	60	6.0	1	
1.3			012032D 0130S2D	3.9	5.2	5.5	45	3.0	1	6.0			MDF 0600S2D	18.0	24.0	28.8	60	6.0	1	
1.4			0140S2D	4.2	5.6	5.9	45	3.0	1	6.1			0610S2D	18.3	24.4	27.4	70	8.0	1	
1.5	2		0150S2D	4.5	6.0	6.3	45	3.0	1	6.2		•	0620S2D	18.6	24.8	28.0	70	8.0	1	
1.6			0160S2D	4.8	6.4	6.7	45	3.0	1	6.3			0630S2D	18.9	25.2	28.5	70	8.0	1	
1.7		ŏ	0170S2D	5.1	6.8	7.1	45	3.0	1	6.4		ŏ	0640S2D	19.2	25.6	29.1	70	8.0	1	
1.8			0180S2D	5.4	7.2	7.5	45	3.0	1	6.5			0650S2D	19.5	26.0	29.7	70	8.0	1	
1.9		•	0190S2D	5.7	7.6	7.9	45	3.0	1	6.6		•	0660S2D	19.8	26.4	30.3	70	8.0	1	
2.0		•	MDF 0200S2D	6.0	8.0	8.3	50	4.0	1	6.7			0670S2D	20.1	26.8	30.9	70	8.0	1	
2.1		•	0210S2D	6.3	8.4	8.7	50	4.0	1	6.8		•	0680S2D	20.4	27.2	31.4	70	8.0	1	
2.2			0220S2D	6.6	8.8	9.1	50	4.0	1	6.9			0690S2D	20.7	27.6	32.0	70	8.0	1	
2.3		•	0230S2D	6.9	9.2	9.5	50	4.0	1	7.0		•	0700S2D	21.0	28.0	32.6	70	8.0	1	
2.4			0240S2D	7.2	9.6	9.9	50	4.0	1	7.1			0710S2D	21.3	28.4	33.2	70	8.0	1	
2.5			0250S2D	7.5	10.0	10.5	50	4.0	1	7.2	2		0720S2D	21.6	28.8	33.8	70	8.0	1	
2.6			0260S2D	7.8	10.4	11.1	50	4.0	1	7.3			0730S2D	21.9	29.2	34.3	70	8.0	1	
2.7			0270S2D	8.1	10.8	11.7	50	4.0	1	7.36			0736S2D	22.0	29.4	34.7	70	8.0	1	
2.76			0276S2D	8.3	11.0	12.0	50	4.0	1	7.38			0738S2D	22.1	29.5	34.8	70	8.0	1	
2.78			0278S2D	8.3	11.1	12.1	50	4.0	1	7.4			0740S2D	22.2	29.6	34.9	70	8.0	1	
2.8			0280S2D	8.4	11.2	12.2	50	4.0	1	7.5			0750S2D	22.5	30.0	35.5	70	8.0	1	
2.9			0290S2D	8.7	11.6	12.8	50	4.0	1	7.52			0752S2D	22.5	30.0	35.7	70	8.0	1	
3.0	2		0300S2D	9.0	12.0	12.3	50	6.0	1	7.54			0754S2D	22.6	30.1	35.8	70	8.0	1	
3.1			0310S2D	9.3	12.4	12.7	50	6.0	1	7.6			0760S2D	22.8	30.4	36.1	70	8.0	1	
3.2			0320S2D	9.6	12.8	13.1	50	6.0	1	7.7			0770S2D	23.1	30.8	36.7	70	8.0	1	
3.3		•	0330S2D	9.9	13.2	13.5	50	6.0	1	7.8			0780S2D	23.4	31.2	37.2	70	8.0	1	
3.4			0340S2D	10.2	13.6	13.9	50	6.0	1	7.9			0790S2D	23.7	31.6	37.8	70	8.0	1	
3.5		•	0350S2D	10.5	14.0	14.3	50	6.0	1	8.0		•	0800S2D	24.0	32.0	38.4	70	8.0	1	
3.6			0360S2D	10.8	14.4	14.9	50	6.0	1	8.1			MDF 0810S2D	24.3	32.4	37.0	80	10.0	1	
3.66		•	0366S2D	10.9	14.6	15.3	50	6.0	1	8.2			0820S2D	24.6	32.8	37.6	80	10.0	1	
3.68			0368S2D	11.0	14.7	15.4	50 50	6.0	1	8.3			0830S2D	24.9	33.2	38.1	80 80	10.0	1	
3.7 3.8			0370S2D 0380S2D	11.1	14.8	15.5 16.0	50	6.0	1	8.4 8.5			0840S2D 0850S2D	25.2 25.5	34.0	38.7	80	10.0	1	
3.9		•	0390S2D	11.7	15.2	16.6	50	6.0	1	8.6		6	0860S2D	25.8	34.4	39.9	80	10.0	1	
4.0			0400S2D		16.0		50	6.0	1	8.7		6	0870S2D	26.1			80	10.0		
4.1		•	MDF 0410S2D	12.3			60	6.0	1	8.8		•	0880S2D	26.4	35.2	41.0	80	10.0		
4.2			0420S2D	12.6			60	6.0	1	8.9			0890S2D	26.7		41.6	80	10.0		
4.3		•	0430S2D	12.9			60	6.0	1	9.0	_	•	0900S2D	27.0		42.2	80	10.0	1	
4.4			0440S2D	13.2			60	6.0	1	9.1	2		0910S2D		36.4	42.8	80	10.0		
4.5		•	0450S2D	13.5			60	6.0	1	9.2			0920S2D		36.8	43.4	80	10.0	1	
4.6			0460S2D	13.8			60	6.0	1	9.24			0924S2D	27.7	36.9	43.6	80	10.0	1	
4.62	2	•	0462S2D	13.8			60	6.0	1	9.26		•	0926S2D	27.7	37.0	43.7	80	10.0		
4.64			0464S2D	13.9			60	6.0	1	9.3			0930S2D	27.9		43.9	80	10.0		
4.7			0470S2D	14.1			60	6.0	1	9.36			0936S2D	28.0	37.4	44.3	80	10.0	1	
4.8			0480S2D	14.4			60	6.0	1	9.38			0938S2D	28.1	37.5	44.4	80	10.0	1	
4.9			0490S2D	14.7			60	6.0	1	9.4			0940S2D	28.2		44.5	80	10.0		
5.0			0500S2D		20.0		60	6.0	1	9.5			0950S2D		38.0	45.1	80	10.0		
5.1			0510S2D		20.4	23.6	60	6.0	1	9.52			0952S2D	28.5	38.0	45.3	80	10.0	1	
*RS thi	nnina is	s us	ed for ø0.5mm and large	er sizes.						Grade:	ACF75	5								

\*RS thinning is used for Ø0.5mm and larger sizes.

Grade: ACF75

## MDF-S type (External Coolant Supply) [And Selection of the Coolant Supply]









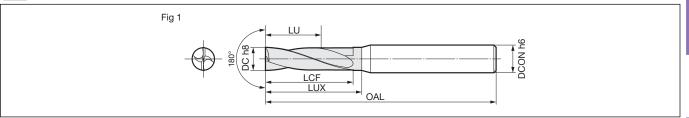












D!	-:O F 4	4- 4	I 4 F
Diameter	Ø9.54	IO.	14.5Mm

Dimensions	(mm)

Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Neck Length	Overall Length  OAL	Shank Dia.	Fig
9.54	(L/D)	S	MDF 0954S2D	28.6	38.1	45.4	80	10.0	1
9.54		•	0960S2D	28.8	38.4	45.4	80	10.0	1
9.7		_	0970S2D	29.1	38.8	46.3	80	10.0	1
-	2	•		-					- 1
9.8		_	0980S2D	29.4	39.2	46.8	80	10.0	1
9.9		•	0990S2D	29.7	39.6	47.4	80	10.0	1
10.0			1000S2D	30.0	40.0	48.0	80	10.0	1
10.1		•	MDF 1010S2D	30.3	40.4	46.6	90	12.0	1
10.2			1020S2D	30.6	40.8	47.2	90	12.0	1
10.3		•	1030S2D	30.9	41.2	47.7	90	12.0	1
10.4			1040S2D	31.2	41.6	48.3	90	12.0	1
10.5		•	1050S2D	31.5	42.0	48.9	90	12.0	1
10.6			1060S2D	31.8	42.4	49.5	90	12.0	1
10.7		•	1070S2D	32.1	42.8	50.1	90	12.0	1
10.8			1080S2D	32.4	43.2	50.6	90	12.0	1
10.9			1090S2D	32.7	43.6	51.2	90	12.0	1
11.0			1100S2D	33.0	44.0	51.8	90	12.0	1
11.1		•	1110S2D	33.3	44.4	52.4	90	12.0	1
11.2	2		1120S2D	33.6	44.8	53.0	90	12.0	1
11.22	_	•	1122S2D	33.6	44.8	53.1	90	12.0	1
11.24			1124S2D	33.7	44.9	53.2	90	12.0	1
11.3		•	1130S2D	33.9	45.2	53.5	90	12.0	1
11.36			1136S2D	34.0	45.4	53.9	90	12.0	1
11.38			1138S2D	34.1	45.5	54.0	90	12.0	1
11.4			1140S2D	34.2	45.6	54.1	90	12.0	1
11.5			1150S2D	34.5	46.0	54.7	90	12.0	1
11.6			1160S2D	34.8	46.4	55.3	90	12.0	1
11.7			1170S2D	35.1	46.8	55.9	90	12.0	1
11.8			1180S2D	35.4	47.2	56.4	90	12.0	1
11.9			1190S2D	35.7	47.6	57.0	90	12.0	1
12.0			1200S2D	36.0	48.0	57.6	90	12.0	1
12.1			MDF 1210S2D	36.3	48.4	52.3	100	14.0	1
12.2			1220S2D	36.6	48.8	52.7	100	14.0	1
12.3			1230S2D	36.9	49.2	53.1	100	14.0	1
12.4			1240S2D	37.2	49.6	53.6	100	14.0	1
12.5			1250S2D	37.5	50.0	54.0	100	14.0	1
12.6			1260S2D	37.8	50.4	55.1	100	14.0	1
12.7			1270S2D	38.1	50.8	55.5	100	14.0	1
12.8			1280S2D	38.4	51.2	55.9	100	14.0	1
12.9			1290S2D	38.7	51.6	56.4	100	14.0	1
13.0			1300S2D	39.0	52.0	56.8	100	14.0	1
13.1			1310S2D	39.3	52.4	57.8	110	14.0	1
13.2			1320S2D	39.6	52.8	58.3	110	14.0	1
13.3	2		1330S2D	39.9	53.2	58.7	110	14.0	1
13.4			1340S2D	40.2	53.6	59.2	110	14.0	1
13.5			1350S2D	40.5	54.0	59.6	110	14.0	1
13.6			1360S2D	40.8	54.4	60.6	110	14.0	1
13.7			1370S2D	41.1	54.8	61.1	110	14.0	1
13.8			1380S2D	41.4	55.2	61.5	110	14.0	1
13.9			1390S2D	41.7	55.6	62.0	110	14.0	1
440	1		4400000	40.0	F0 0	00 4	440	440	4

1400S2D

1410S2D

1420S2D

1430S2D

1440S2D

1450S2D

42.0 56.0 62.4 110 14.0 1

43.2 57.6 64.8 110 16.0 1

43.5 58.0 65.2 110 16.0 1

110

16.0 1

16.0 1

16.0 1

42.3 56.4 63.4

42.6 | 56.8 | 63.9 | 110

42.9 57.2 64.3 110

Diameter	$\alpha 1/1$	6 to	20	$\Omega$ mm

Dimoncione	(mm)

Reamers

	Dimensions (mil								,
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Neck Length	Overall Length	Shank Dia.	Fig
14.6	,		MDF 1460S2D	43.8	58.4	66.2	110	16.0	1
14.7			1470S2D	44.1	58.8	66.6	110	16.0	1
14.8	2		1480S2D	44.4	59.2	67.1	110	16.0	1
14.9			1490S2D	44.7	59.6	67.5	110	16.0	1
15.0			1500S2D	45.0	60.0	68.0	110	16.0	1
15.1			MDF 1510S2D	45.3	60.4	69.0	115	16.0	1
15.2			1520S2D	45.6	60.8	69.4	115	16.0	1
15.3			1530S2D	45.9	61.2	69.9	115	16.0	1
15.4	2		1540S2D	46.2	61.6	70.3	115	16.0	1
15.5			1550S2D	46.5	62.0	70.8	115	16.0	1
15.6			1560S2D	46.8	62.4	71.8	115	16.0	1
15.7			1570S2D	47.1	62.8	72.2	115	16.0	1
15.8			1580S2D	47.4	63.2	72.7	115	16.0	1
15.9			1590S2D	47.7	63.6	73.1	115	16.0	1
16.0			1600S2D	48.0	64.0	73.6	115	16.0	1
16.5	2		MDF 1650S2D	49.5	66.0	72.4	125	18.0	1
17.0			1700S2D	51.0	68.0	75.2	125	18.0	1
17.5	2		MDF 1750S2D	52.5	70.0	78.0	130	18.0	1
18.0			1800S2D	54.0	72.0	80.8	130	18.0	1
18.5			MDF 1850S2D	55.5	74.0	83.6	140	20.0	1
19.0	2		1900S2D	57.0	76.0	86.4	140	20.0	1
19.5	_		1950S2D	58.5	78.0	89.2	140	20.0	1
20.0			2000S2D	60.0	80.0	92.0	140	20.0	1

Grade: ACF75

Grade: ACF75

• • •

14.0

14.1

14.2

14.3

14.4

14.5

### MDF-S type (External Coolant Supply)

#### Recommended Cutting Conditions (for 2D)

- 1. The recommended hole depth is 2 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
- 2. The recommended cutting conditions are those for drilling in flat horizontal surfaces.
- 3. Adjust the feed rate according to the inclination angle when drilling in an inclined surface.
- 4. Set the feed rate at 70% or lower when the inclination angle is  $30^{\circ}$  or less.
- 5. Set the feed rate at 50% or lower when the inclination angle is larger than  $30^{\circ}$ .
- 6. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

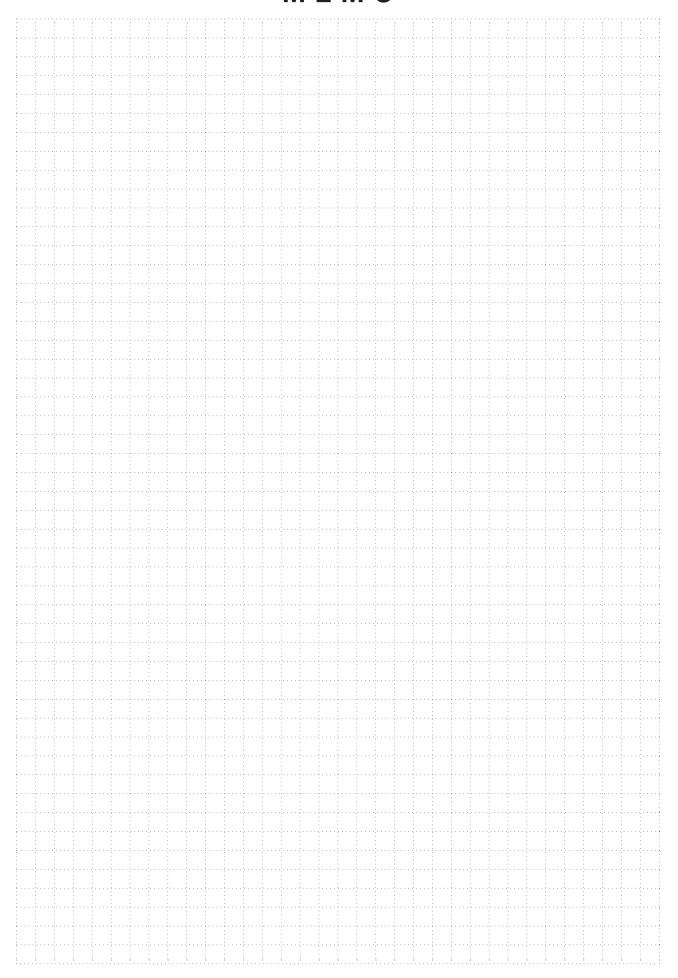
(n: Spindle Speed min<sup>-1</sup> vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
	n	25,500	22,300	12,700	12,700	25,500	19,000	51,000
ø0.5	VC	30 - <b>40</b> - 50	30 - <b>35</b> - 40	15 - <b>20</b> - 25	15 - <b>20</b> - 25	30 - <b>40</b> - 50	20 - <b>30</b> - 40	60 - <b>80</b> - 100
	f	0.004- <b>0.005</b> -0.006	0.004- <b>0.005</b> -0.006	0.001 - <b>0.002</b> - 0.003	0.003- <b>0.004</b> -0.005	0.004- <b>0.005</b> -0.006	0.001 - <b>0.003</b> - 0.005	0.003- <b>0.005</b> -0.007
	n	17,500	14,300	9,500	8,000	17,500	12,700	32,000
ø1.0	VC	45 - <b>55</b> - 65	35 - <b>45</b> - 55	20 - <b>30</b> - 40	20 - <b>25</b> - 30	45 - <b>55</b> - 65	30 - <b>40</b> - 50	80 - <b>100</b> - 120
	f	0.01 - <b>0.03</b> - 0.05		0.002 <b>-0.006</b> - 0.01			0.005- <b>0.01</b> -0.015	
	n	9,500	8,000	4,800	4,800	9,500	8,800	17,500
ø2.0	VC	50 - <b>60</b> - 70	40 - <b>50</b> - 60	20 - <b>30</b> - 40	20 - <b>30</b> - 40	50 - <b>60</b> - 70	45 - <b>55</b> - 65	90 - <b>110</b> - 130
	f	0.02 - <b>0.04</b> - 0.06				0.02 - <b>0.04</b> - 0.06		0.03 - <b>0.05</b> - 0.07
	n	6,000	5,200	3,400	2,400	6,000	5,200	8,800
ø4.0	VC	60 - <b>75</b> - 90	50 - <b>65</b> - 80	20 - <b>30</b> - 40	20 - <b>30</b> - 40	60 - <b>75</b> - 90	55 - <b>65</b> - 75	90 - <b>110</b> - 130
	f	0.06 - <b>0.08</b> - 0.10	0.05 - <b>0.08</b> - 0.10	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.06 - <b>0.08</b> - 0.10	0.04 - <b>0.06</b> - 0.08	0.06 - <b>0.08</b> - 0.10
	n	4,000	3,400	1,600	1,600	4,000	3,700	5,800
ø6.0	VC	60 - <b>75</b> - 90	50 - <b>65</b> - 80	20 - <b>30</b> - 40	20 - <b>30</b> - 50	60 - <b>75</b> - 90	60 - <b>70</b> - 80	90 - <b>110</b> - 130
	f					0.05 - <b>0.10</b> - 0.15		
	n	3,000	2,600	1,200	1,200	3,000	2,800	4,400
ø8.0	VC	60 - <b>75</b> - 90	50 - <b>65</b> - 80	20 - <b>30</b> - 40	20 - <b>30</b> - 50	60 - <b>75</b> - 90	60 - <b>70</b> - 80	90 - <b>110</b> - 130
	f	0.10 - <b>0.15</b> - 0.20				0.10 - <b>0.15</b> - 0.20	0.10 - <b>0.12</b> - 0.15	0.10 - <b>0.15</b> - 0.20
	n	2,400	2,100	950	950	2,400	2,200	3,500
ø10.0	VC	60 - <b>75</b> - 90	50 - <b>65</b> - 80	20 - <b>30</b> - 40	20 - <b>30</b> - 50	60 - <b>75</b> - 90	60 - <b>70</b> - 80	90 - <b>110</b> - 130
	f		0.12 - <b>0.17</b> - 0.22					0.12 - <b>0.17</b> - 0.22
	n	2,000	1,700	800	800	2,000	1,900	2,900
ø12.0	VC	60 - <b>75</b> - 90	50 - <b>65</b> - 80	20 - <b>30</b> - 40	20 - <b>30</b> - 50	60 - <b>75</b> - 90	60 - <b>70</b> - 80	90 - <b>110</b> - 130
	f	0.15 - <b>0.20</b> - 0.25				0.15 - <b>0.20</b> - 0.25		0.15 - <b>0.20</b> - 0.25
	n	1,500	1,300	600	600	1,500	1,400	2,200
ø16.0	VC	60 - <b>75</b> - 90	50 - <b>65</b> - 80	20 - <b>30</b> - 40	20 - <b>30</b> - 50	60 - <b>75</b> - 90	60 - <b>70</b> - 80	90 - <b>110</b> - 130
	f	0.20 - <b>0.25</b> - 0.30				0.17 - <b>0.22</b> - 0.27	0.15 - <b>0.20</b> - 0.25	0.20 - <b>0.25</b> - 0.30
	n	1,200	1,000	480	480	1,200	1,100	1,750
ø20.0	VC	60 - <b>75</b> - 90	50 - <b>65</b> - 80	20 - <b>30</b> - 40	20 - <b>30</b> - 50	60 - <b>75</b> - 90	60 - <b>70</b> - 80	90 - <b>110</b> - 130
	f	0.25 - <b>0.30</b> - 0.35	0.25 - <b>0.30</b> - 0.35	0.16 - <b>0.19</b> - 0.22	0.15 - <b>0.20</b> - 0.25	0.25 - <b>0.30</b> - 0.35	0.20 - <b>0.25</b> - 0.30	0.25 - <b>0.30</b> - 0.35

<sup>\*</sup> If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available. In this case, the tool life may be shortened.

Min. - Optimum - Max.

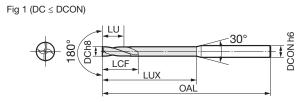
### **MEMO**

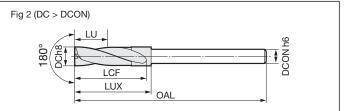


## MDF-L type Long Shank (External Coolant Supply) (aton Steel Up to 2.25%









			4	OAL			-		
			.0 to 8.5mm					nsions (	mm)
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length LCF	Neck Length	Overall Length  OAL	Shank Dia.  DCON	Fig
3.0		S	MDF 0300L2D	9.0	13.5	30.0	100	6.0	1
3.1		•	0310L2D	9.3	14.0	31.0	100	6.0	1
3.2		•	0320L2D	9.6	14.4	32.0	100	6.0	1
3.3		•	0330L2D	9.9	14.9	33.0	100	6.0	1
3.4		•	0340L2D	10.2	15.3	34.0	100	6.0	1
3.5		•	0350L2D	10.5	15.8	35.0	100	6.0	1
3.6		•	0360L2D	10.8	16.2	36.0	100	6.0	1
3.7			0370L2D	11.1	16.7	37.0	100	6.0	1
3.8			0380L2D	11.4	17.1	38.0	100	6.0	1
3.9			0390L2D	11.7	17.6	39.0	100	6.0	1
4.0	2		0400L2D	12.0	18.0	40.0	100	6.0	1
4.1			0410L2D	12.3	18.5	41.0	100	6.0	1
4.2			0420L2D	12.6	18.9	42.0	100	6.0	1
4.3			0430L2D	12.9	19.4	43.0	100	6.0	1
4.4			0440L2D	13.2	19.8	44.0	100	6.0	1
4.5			0450L2D	13.5	20.3	45.0	100	6.0	1
4.6			0460L2D	13.8	20.7	46.0	100	6.0	1
4.7			0470L2D	14.1	21.2	47.0	100	6.0	1
4.8			0480L2D	14.4	21.6	48.0	100	6.0	1
4.9			0490L2D	14.7	22.1	49.0	100	6.0	1
5.0			0500L2D	15.0	22.5	50.0	100	6.0	1
5.1			MDF 0510L2D	15.3	23.0	51.0	110	6.0	1
5.2			0520L2D	15.6	23.4	52.0	110	6.0	1
5.3			0530L2D	15.9	23.9	53.0	110	6.0	1
5.4			0540L2D	16.2	24.3	54.0	110	6.0	1
5.5	2		0550L2D	16.5	24.8	55.0	110	6.0	1
5.6			0560L2D	16.8	25.2	56.0	110	6.0	1
5.7			0570L2D	17.1	25.7	57.0	110	6.0	1
5.8			0580L2D	17.4	26.1	58.0	110	6.0	1
5.9			0590L2D	17.7	26.6	59.0	110	6.0	1
6.0	2	•	MDF 0600L2D-S5	18.0	27.0	30.0	110	5.0	1
6.0	2	•	MDF 0600L2D	18.0	27.0	60.0		6.0	1
6.1		•	MDF 0610L2D	18.3	27.5	30.5	120	6.0	2
6.2			0620L2D	18.6	27.9	30.9	120	6.0	2
6.3		•	0630L2D	18.9	28.4	31.4	120	6.0	2
6.4		•	0640L2D 0650L2D	19.2 19.5	29.3	31.8	120 120	6.0	2
6.5	2		0660L2D	19.8	29.7	32.3	120	6.0	2
6.7		ŏ	0670L2D	20.1	30.2	33.2	120	6.0	2
6.8			0680L2D	20.1	30.6	33.6		6.0	2
6.9		•	0690L2D	20.7	31.1	34.1	120	6.0	2
7.0		•	0700L2D	21.0		34.5	120	6.0	2
7.1		•	MDF 0710L2D	21.3	32.0	35.0	130	6.0	2
7.2		•	0720L2D	21.6		35.4		6.0	2
7.3		•	0730L2D	21.9	32.9	35.9	130	6.0	2
7.4		•	0740L2D	22.2	33.3	36.3		6.0	2
7.5			0750L2D	22.5	33.8	36.8	130	6.0	2
7.6	2		0760L2D	22.8	34.2	37.2	130	6.0	2
7.7		•	0770L2D	23.1	34.7	37.7	130	6.0	2
7.8			0780L2D	23.4	35.1	38.1	130	6.0	2
7.9		•	0790L2D	23.7	35.6	38.6	130	6.0	2
8.0			0800L2D-S6	24.0	36.0	39.0	130	6.0	2
8.0	2	•	MDF 0800L2D	24.0	36.0	80.0	130	8.0	1
8.1		•	MDF 0810L2D	24.3	36.5	39.5	140	8.0	2
8.2			0820L2D	24.6	36.9	39.9	140	8.0	2
8.3	2		0830L2D	24.9	37.4	40.4	140	8.0	2
8.4			0840L2D	25.2	37.8	40.8	140	8.0	2
8.5			0850L2D	25.5	38.3	41.3	140	8.0	2
Cuada	ACF75								

Diam	iameter Ø8.6 to 20.0mm Dimensions (mm)								
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Neck Length	Overall Length  OAL	Shank Dia.	Fig
8.6			MDF 0860L2D	25.8	38.7	41.7	140	8.0	2
8.7			0870L2D	26.1	39.2	42.2	140	8.0	2
8.8	2	•	0880L2D	26.4	39.6	42.6	140	8.0	2
8.9	_	•	0890L2D	26.7	40.1	43.1	140	8.0	2
9.0		•	0900L2D	27.0	40.5	43.5	140	8.0	2
9.1		•	MDF 0910L2D	27.3	41.0	44.0	150	8.0	2
9.2		•	0920L2D	27.6	41.4	44.4	150	8.0	2
					41.9	44.9			2
9.3			0930L2D	27.9			150	8.0	
9.4		•	0940L2D	28.2	42.3	45.3	150	8.0	2
9.5	2		0950L2D	28.5	42.8	45.8		8.0	2
9.6		•	0960L2D	28.8	43.2	46.2	150	8.0	2
9.7			0970L2D	29.1	43.7	46.7	150	8.0	2
9.8			0980L2D	29.4	44.1	47.1	150	8.0	2
9.9			0990L2D	29.7	44.6	47.6	150	8.0	2
10.0			1000L2D-S8	30.0	45.0	48.0	150	8.0	2
10.0	2		MDF 1000L2D	30.0	45.0	100.0	150	10.0	1
10.1			MDF 1010L2D	30.3	45.5	48.5	160	10.0	2
10.2			1020L2D	30.6	45.9	48.9	160	10.0	2
10.3			1030L2D	30.9	46.4	49.4	160	10.0	2
10.4			1040L2D	31.2	46.8	49.8	160	10.0	2
10.5	_		1050L2D	31.5	47.3	50.3	160	10.0	2
10.6	2		1060L2D	31.8	47.7	50.7	160	10.0	2
10.7			1070L2D	32.1	48.2	51.2	160	10.0	2
10.8		•	1080L2D	32.4	48.6	51.6	160	10.0	2
10.9		•	1090L2D	32.7	49.1	52.1	160	10.0	2
11.0		•	1100L2D	33.0	49.5	52.5	160	10.0	2
11.1		•	MDF 1110L2D	33.3	50.0	53.0	170	10.0	2
11.2		•	1120L2D	33.6	50.4	53.4		10.0	2
11.3		•	1130L2D	33.9	50.9	53.9	160	10.0	2
11.4		•	1140L2D	34.2	51.3	54.3		10.0	2
11.5		•	1150L2D	34.5	51.8	54.8	160	10.0	2
	2					55.2			2
11.6		•	1160L2D	34.8	52.2		160	10.0	2
11.7		_	1170L2D	35.1	52.7	55.7	160	10.0	
11.8			1180L2D	35.4	53.1	56.1	160	10.0	2
11.9		•	1190L2D	35.7	53.6	56.6	160	10.0	2
12.0		•	1200L2D-S10	36.0	54.0	57.0	160	10.0	2
12.0	2	•	MDF 1200L2D	36.0	54.0	120.0	170	12.0	1
12.5	2		MDF 1250L2D	37.5	56.3	59.3	180	12.0	2
13.0		•	1300L2D	39.0	58.5	61.5	180	12.0	2
13.5	2		MDF 1350L2D	40.5	60.8	63.8	190	12.0	2
14.0		•	1400L2D-S12	42.0	63.0	66.0	190	12.0	2
14.0	2		MDF 1400L2D			140.0			2
14.5	2	•	MDF 1450L2D	43.5	65.3	68.3		14.0	2
15.0			1500L2D	45.0	67.5	70.5		14.0	2
15.5	2	•	MDF 1550L2D	46.5	69.8	72.8		14.0	2
16.0			1600L2D-S14	48.0	72.0	75.0		14.0	2
16.0	2		MDF 1600L2D	48.0	72.0			16.0	1
16.5	2		MDF 1650L2D	49.5	74.3	77.3	220	16.0	2
17.0			1700L2D	51.0	76.5	79.5	220	16.0	2
17.5	0		MDF 1750L2D	52.5	78.8	81.8	230	16.0	2
18.0	2		1800L2D-S16	54.0	81.0	84.0	230	16.0	2
18.0	2		MDF 1800L2D	54.0	81.0	180.0	230	18.0	1
18.5		•	MDF 1850L2D	55.5	83.3	86.3		18.0	2
19.0	2		1900L2D	57.0	85.5	88.5		18.0	2
19.5	_	•	MDF 1950L2D	58.5	87.8	90.8		18.0	2
20.0	2	•	2000L2D-S18	60.0	90.0	93.0		18.0	2
20.0	2	•	MDF 2000L2D	60.0		200.0		20.0	1
	ACF75								

### MDF-L type Long Shank (External Coolant Supply)

#### Recommended Cutting Conditions (for 2D)

- 1. A prepared hole with the same diameter is needed for drilling with this tool.
- 2. The cutting conditions are recommended when there is a prepared hole with the same diameter.
- 3. The recommended hole depth is 5 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
- 4. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

#### (n: Spindle Speed min<sup>-1</sup> vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
	n	6,400	5,600	3,400	2,400	6,800	6,000	8,800
ø4.0	VC	60 - <b>80</b> - 100	50 - <b>70</b> - 90	20 - <b>30</b> - 40	20 - <b>30</b> - 40	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.06 - <b>0.08</b> - 0.10	0.05 - <b>0.08</b> - 0.10	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.06 - <b>0.08</b> - 0.10	0.04 - <b>0.06</b> - 0.08	0.06 - <b>0.08</b> - 0.10
	n	4,200	3,700	1,600	1,600	4,500	4,000	5,800
ø6.0	VC	60 - <b>80</b> - 100	50 - <b>70</b> - 90	20 - <b>30</b> - 40	20 - <b>30</b> - 50	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.05 - <b>0.10</b> - 0.15	0.05 - <b>0.10</b> - 0.15	0.04 - <b>0.06</b> - 0.08	0.03 - <b>0.04</b> - 0.05	0.05 - <b>0.10</b> - 0.15	0.06 - <b>0.09</b> - 0.12	0.05 - <b>0.10</b> - 0.15
	n	3,200	2,800	1,200	1,200	3,400	3,000	4,400
ø8.0	VC	60 - <b>80</b> - 100	50 - <b>70</b> - 90	20 - <b>30</b> - 40	20 - <b>30</b> - 50	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.10 - <b>0.15</b> - 0.20	0.10 - <b>0.15</b> - 0.20	0.06 - <b>0.08</b> - 0.10	0.04 - <b>0.06</b> - 0.08	0.10 - <b>0.15</b> - 0.20	0.10 - <b>0.12</b> - 0.15	0.10 - <b>0.15</b> - 0.20
	n	2,500	2,200	950	950	2,700	2,400	3,500
ø10.0	VC	60 - <b>80</b> - 100	50 - <b>70</b> - 90	20 - <b>30</b> - 40	20 - <b>30</b> - 50	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.15 - <b>0.20</b> - 0.25	0.15 - <b>0.20</b> - 0.25	0.08 - <b>0.10</b> - 0.12	0.06 - <b>0.08</b> - 0.10	0.15 - <b>0.20</b> - 0.25	0.12 - <b>0.15</b> - 0.18	0.15 - <b>0.20</b> - 0.25
	n	2,100	1,900	800	800	2,300	2,000	2,900
ø12.0	VC	60 - <b>80</b> - 100	50 - <b>70</b> - 90	20 - <b>30</b> - 40	20 - <b>30</b> - 50	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.20 - <b>0.25</b> - 0.30	0.20 - <b>0.25</b> - 0.30	0.12 - <b>0.15</b> - 0.18	0.08 - <b>0.10</b> - 0.12	0.17 - <b>0.22</b> - 0.27	0.15 - <b>0.20</b> - 0.25	0.20 - <b>0.25</b> - 0.30
	n	1,600	1,400	600	600	1,700	1,500	2,200
ø16.0	VC	60 - <b>80</b> - 100	50 - <b>70</b> - 90	20 - <b>30</b> - 40	20 - <b>30</b> - 50	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.20 - <b>0.25</b> - 0.30	0.20 - <b>0.25</b> - 0.30	0.14 - <b>0.17</b> - 0.20	0.10 - <b>0.15</b> - 0.20	0.20 - <b>0.25</b> - 0.30	0.20 - <b>0.25</b> - 0.30	0.25 - <b>0.30</b> - 0.35
	n	1,300	1,100	480	480	1,300	1,200	1,750
ø20.0	VC	60 - <b>80</b> - 100	50 - <b>70</b> - 90	20 - <b>30</b> - 40	20 - <b>30</b> - 50	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.25 <b>- 0.30</b> - 0.35	0.25 <b>- 0.30 -</b> 0.35	0.16 - <b>0.19</b> - 0.22	0.15 - <b>0.20</b> - 0.25	0.30 - <b>0.35</b> - 0.40	0.25 <b>- 0.30 -</b> 0.35	0.35 - <b>0.40</b> - 0.45

Min. - Optimum - Max.

Drillin

7

Solid

Indexable Head type

Indexable

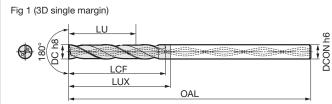
Reamers

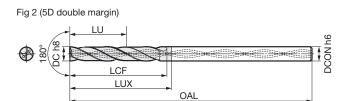
### MDF-H type (Internal Coolant Supply) Cator Shell Aloy Shell (Internal Coolant Supply) (Cator Shell Aloy Shell (Internal Steel











			•						
			.0 to 5.7mm					ensions (	
Dia.	Hole Depth (L/D)	Stock	Cat. No.	Effective Length	Flute Length	Neck Length	Overall Length OAL	Shank Dia.	Fig
2.0	3		MDF 0300H3D	12.0	13.5	16.5	68	3.0	1
3.0	5		0300H5D	18.0	20.1	23.1	78	3.0	2
2.1	3		MDF 0310H3D	12.4	14.0	17.0	72	4.0	1
3.1	5		0310H5D	18.6	20.8	23.8	86	4.0	2
~ ~	3		MDF 0320H3D	12.8	14.4	17.4	72	4.0	1
3.2	5		0320H5D	19.2	21.4	24.4	86	4.0	2
	3	•	MDF 0330H3D	13.2	14.9	17.9	72	4.0	1
3.3	5		0330H5D	19.8	22.1	25.1	86	4.0	2
	3	•	MDF 0340H3D	13.6	15.3	18.3	72	4.0	1
3.4	5		0340H5D	20.4	22.8	25.8	86	4.0	2
	3	•	MDF 0350H3D	14.0	15.8	18.8	72	4.0	1
3.5	5	•	0350H5D	21.0	23.5	26.5	86	4.0	2
	3	•	MDF 0360H3D	14.4	16.2	19.2	72	4.0	1
3.6	5	•	0360H5D	21.6	24.1	27.1	86	4.0	2
	3	•	MDF 0370H3D	14.8	16.7	19.7	72	4.0	1
3.7	5	•	0370H5D	22.2	24.8	27.8	86	4.0	2
	3	ŏ	MDF 0380H3D	15.2	17.1	20.1	72	4.0	1
3.8	5		0380H5D	22.8	25.5	28.5	86	4.0	2
	3	•	MDF 0390H3D	15.6	17.6	20.6	72	4.0	1
3.9	5	•	0390H5D	23.4	26.1	29.1	86	4.0	2
	3	•	MDF 0400H3D	16.0	18.0	21.0	72	4.0	1
4.0	5		0400H5D	24.0	26.8	29.8	86	4.0	2
	3	•	MDF 0410H3D	16.4	18.5	21.5	80	5.0	1
4.1	5		0410H5D	24.6	27.5	30.5	98	5.0	2
	3	•	MDF 0420H3D	16.8	18.9	21.9	80	5.0	1
4.2	5		0420H5D	25.2	28.1	31.1			2
	3	•	MDF 0430H3D	17.2	19.4	22.4	98	5.0	1
4.3	5		0430H5D	25.8	28.8	31.8	98	5.0	2
	3	•	MDF 0440H3D	17.6	19.8	22.8	80	5.0	1
4.4	5		0440H5D	26.4	29.5	32.5	98	5.0	2
	3	•	MDF 0450H3D	18.0	20.3	23.3	80	5.0	1
4.5	5		0450H5D	27.0	30.2	33.2	98	5.0	2
	3	•	MDF 0460H3D	18.4	20.7	23.7	80	5.0	1
4.6	5		0460H5D	27.6	30.8	33.8	98	5.0	2
	3	•	MDF 0470H3D	18.8	21.2	24.2	80	5.0	1
4.7	5		0470H5D	28.2	31.5	34.5	98	5.0	2
	3	•	MDF 0480H3D	19.2	21.6	24.6	80	5.0	1
4.8	5		0480H5D	28.8	32.2	35.2	98	5.0	2
	3	•	MDF 0490H3D	19.6	22.1	25.1	80	5.0	1
4.9	5	•	0490H5D	29.4	32.8	35.8	98	5.0	2
	3		MDF 0500H3D	20.0	22.5	25.5	80	5.0	1
5.0	5	•	0500H5D	30.0		36.5	98	5.0	2
	3	•	MDF 0510H3D	20.4	23.0	26.0	82	6.0	1
5.1	5	•	0510H5D	30.6		37.2	100	6.0	2
	3	•	MDF 0520H3D	20.8	23.4	26.4	82	6.0	1
5.2	5	•	0520H5D	31.2		37.8	100	6.0	2
	3	•	MDF 0530H3D	21.2	23.9	26.9	82	6.0	1
5.3	5		0530H5D	31.8	35.5	38.5	100	6.0	2
	3	•	MDF 0540H3D	21.6	24.3	27.3	82	6.0	1
5.4	5		0540H5D	32.4	36.2	39.2	100	6.0	2
	3		MDF 0550H3D	22.0	24.8		82	6.0	1
5.5	5		0550H5D	33.0	36.9	27.8 39.9	100	6.0	2
		_							
5.6	3	•	MDF 0560H3D	22.4	25.2 37.5	28.2	82	6.0	1
	5		0560H5D	33.6		40.5	100	6.0	2
5.7	3	•	MDF 0570H3D 0570H5D	22.8	25.7	28.7	100	6.0	1
			บอ/บทอบ	104./	100./	41./	100	().()	1/

0570H5D

- 1	Jian	neter	$\alpha$ 5	Ω	to.	Ω	5n	٦m
	וומוע	ietei	Ø3.	O.	LO	Ο.	JII	111

Dime	 ()

Diam	ameter Ø5.8 to 8.5mm Dimensions (mm)								
Dia.	Hole Depth	Stock	Cat. No.			_	Overall Length		Fig
DC	(L/D)			LU	LCF	LUX	OAL	DCON	
5.8	3	•	MDF 0580H3D	23.2	26.1	29.1	82	6.0	1
	5		0580H5D	34.8	38.9	41.9	100	6.0	2
5.9	3		MDF 0590H3D	23.6	26.6	29.6	82	6.0	1
0.0	5		0590H5D	35.4	39.5	42.5	100	6.0	2
6.0	3		MDF 0600H3D	24.0	27.0	30.0	82	6.0	1
0.0	5		0600H5D	36.0	40.2	43.2	100	6.0	2
6.1	3		MDF 0610H3D	24.4	27.5	30.5	88	7.0	1
0.1	5		0610H5D	36.6	40.9	43.9	109	7.0	2
6.0	3		MDF 0620H3D	24.8	27.9	30.9	88	7.0	1
6.2	5		0620H5D	37.2	41.5	44.5	109	7.0	2
	3	•	MDF 0630H3D	25.2	28.4	31.4	88	7.0	1
6.3	5		0630H5D	37.8	42.2	45.2	109	7.0	2
	3	•	MDF 0640H3D	25.6	28.8	31.8	88	7.0	1
6.4	5		0640H5D	38.4	42.9	45.9	109	7.0	2
_	3	•	MDF 0650H3D	26.0	29.3	32.3	88	7.0	1
6.5	5	•	0650H5D	39.0	43.6	46.6	109	7.0	2
	3	•	MDF 0660H3D	26.4	29.7	32.7	88	7.0	1
6.6	5	•	0660H5D	39.6	44.2	47.2	109	7.0	2
	3	•	MDF 0670H3D	26.8	30.2	33.2	88	7.0	1
6.7	5		0670H5D	40.2	44.9	47.9	109	7.0	2
		•	MDF 0680H3D						1
6.8	3 5			27.2	30.6	33.6	88	7.0	-
-		_	0680H5D	40.8	45.6	48.6	109		2
6.9	3	•	MDF 0690H3D	27.6	31.1	34.1	88	7.0	1
-	5		0690H5D	41.4	46.2	49.2	109	7.0	2
7.0	3	•	MDF 0700H3D	28.0	31.5	34.5	88	7.0	1
	5		0700H5D	42.0	46.9	49.9	109	7.0	2
7.1	3	•	MDF 0710H3D	28.4	32.0	35.0	94	8.0	1
	5		0710H5D	42.6	47.6	50.6	118	8.0	2
7.2	3	•	MDF 0720H3D	28.8	32.4	35.4	94	8.0	1
	5		0720H5D	43.2	48.2	51.2	118	8.0	2
7.3	3		MDF 0730H3D	29.2	32.9	35.9	94	8.0	1
- 1.0	5		0730H5D	43.8	48.9	51.9	118	8.0	2
7.4	3		MDF 0740H3D	29.6	33.3	36.3	94	8.0	1
7	5		0740H5D	44.4	49.6	52.6	118	8.0	2
7.5	3		MDF 0750H3D	30.0	33.8	36.8	94	8.0	1
7.5	5		0750H5D	45.0	50.3	53.3	118	8.0	2
7.6	3		MDF 0760H3D	30.4	34.2	37.2	94	8.0	1
7.0	5		0760H5D	45.6	50.9	53.9	118	8.0	2
77	3		MDF 0770H3D	30.8	34.7	37.7	94	8.0	1
7.7	5		0770H5D	46.2	51.6	54.6	118	8.0	2
7.0	3		MDF 0780H3D	31.2	35.1	38.1	94	8.0	1
7.8	5		0780H5D	46.8	52.3	55.3	118	8.0	2
7.0	3	•	MDF 0790H3D	31.6	35.6	38.6	94	8.0	1
7.9	5		0790H5D	47.4	52.9	55.9	118	8.0	2
	3	•	MDF 0800H3D	32.0	36.0	39.0	94	8.0	1
8.0	5		0800H5D	48.0	53.6	56.6	118	8.0	2
	3	•	MDF 0810H3D	32.4	36.5	39.5	100	9.0	1
8.1	5	•	0810H5D	48.6	54.3	57.3	127	9.0	2
	3	•	MDF 0820H3D	32.8	36.9	39.9	100	9.0	1
8.2	5	•	0820H5D	49.2	54.9	57.9	127	9.0	2
	3	•	MDF 0830H3D	33.2	37.4	40.4	100	9.0	1
8.3	5	•	0830H5D	49.8	55.6	58.6	127	9.0	2
	3	•	MDF 0840H3D	33.6	37.8	40.8	100	9.0	1
8.4	5		0840H5D	50.4	56.3	59.3	127	9.0	2
	3		MDF 0850H3D	34.0	38.3	41.3	100	9.0	1
8.5		•							
	5		0850H5D	51.0	57.0	60.0	127	9.0	2

Grade: ACF75

34.2 38.2 41.2 100 6.0 2

A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed.

5

Grade: ACF75

## MDF-H type (Internal Coolant Supply) Caton Stell (Internal Coolant Supply) Caton Stell (Internal Coolant Supply) Caton Stell (Internal Coolant Supply) (Internal Coolant Suppl



















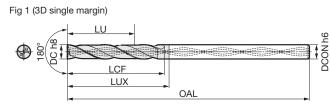


Fig 2 (5D double margin) DCON h6 OAL

	Dir	ne	ns	ioi	าร	(	mm)
Ι.						П	

Dian	leter		.6 10 11.311111				Dime	nsions (	mm)
Dia.	Hole Depth	Stock	Cat. No.		Flute Length				Fig
DC	(L/D)	_		LU	LCF	LUX	OAL	DCON	
8.6	3		MDF 0860H3D	34.4	38.7	41.7	100	9.0	1
	5		0860H5D	51.6	57.6	60.6		9.0	2
8.7	3		MDF 0870H3D	34.8	39.2	42.2	100	9.0	1
	5		0870H5D	52.2	58.3	61.3		9.0	2
8.8	3	•	MDF 0880H3D	35.2	39.6	42.6		9.0	1
	5		0880H5D	52.8	59.0	62.0		9.0	2
8.9	3		MDF 0890H3D	35.6	40.1	43.1	100	9.0	1
	5	•	0890H5D	53.4	59.6	62.6		9.0	2
9.0	3	•	MDF 0900H3D	36.0 54.0	40.5	43.5	100 127	9.0	1
	5	•	0900H5D	36.4	60.3 41.0	63.3 44.0		9.0	1
9.1	3 5		MDF 0910H3D 0910H5D	54.6	61.0	64.0		10.0	2
	3	•	MDF 0920H3D	36.8	41.4	44.4	106	10.0	1
9.2	5		0920H5D	55.2	61.6	64.6		10.0	2
	3		MDF 0930H3D	37.2	41.9	44.9	106	10.0	1
9.3	5		0930H5D	55.8	62.3	65.3		10.0	2
	3	•	MDF 0940H3D	37.6	42.3	45.3	106	10.0	1
9.4	5		0940H5D	56.4	63.0	66.0		10.0	2
	3	•	MDF 0950H3D	38.0	42.8	45.8	106	10.0	1
9.5	5		0950H5D	57.0	63.7	66.7	136	10.0	2
	3	•	MDF 0960H3D	38.4	43.2	46.2	106	10.0	1
9.6	5		0960H5D	57.6	64.3	67.3		10.0	2
	3	•	MDF 0970H3D	38.8	43.7	46.7	106	10.0	1
9.7	5	•	0970H5D	58.2	65.0	68.0	136	10.0	2
	3	•	MDF 0980H3D	39.2	44.1	47.1	106	10.0	1
9.8	5	•	0980H5D	58.8	65.7	68.7	136	10.0	2
	3	•	MDF 0990H3D	39.6	44.6	47.6		10.0	1
9.9	5		0990H5D	59.4	66.3	69.3		10.0	2
	3	•	MDF 1000H3D	40.0	45.0	48.0		10.0	1
10.0	5	•	1000H5D	60.0	67.0	70.0		10.0	2
	3	•	MDF 1010H3D	40.4	45.5	48.5	116	11.0	1
10.1	5		1010H5D	60.6	67.7	70.7	149	11.0	2
40.0	3	•	MDF 1020H3D	40.8	45.9	48.9	116	11.0	1
10.2	5		1020H5D	61.2	68.3	71.3	149	11.0	2
40.0	3		MDF 1030H3D	41.2	46.4	49.4	116	11.0	1
10.3	5		1030H5D	61.8	69.0	72.0	149	11.0	2
10.4	3		MDF 1040H3D	41.6	46.8	49.8	116	11.0	1
10.4	5		1040H5D	62.4	69.7	72.7	149	11.0	2
10.5	3		MDF 1050H3D	42.0	47.3	50.3	116	11.0	1
10.5	5		1050H5D	63.0	70.4	73.4	149	11.0	2
10.6	3		MDF 1060H3D	42.4	47.7	50.7	116	11.0	1
10.0	5		1060H5D	63.6	71.0	74.0	149	11.0	2
10.7	3		MDF 1070H3D	42.8	48.2	51.2		11.0	1
	5		1070H5D	64.2	71.7	74.7		11.0	2
10.8	3	•	MDF 1080H3D	43.2	48.6	51.6		11.0	1
	5		1080H5D	64.8	72.4			11.0	2
10.9	3	•	MDF 1090H3D	43.6	49.1	52.1		11.0	1
	5		1090H5D	65.4	73.0	76.0		11.0	2
11.0	3		MDF 1100H3D	44.0	49.5	52.5		11.0	1
<u> </u>	5		1100H5D	66.0	73.7	76.7		11.0	2
11.1	3	•	MDF 1110H3D	44.4	50.0	53.0		12.0	1
	5		1110H5D	66.6	74.4	77.4		12.0	2
11.2	3	•	MDF 1120H3D	44.8	50.4	53.4		12.0	1
	5		1120H5D	67.2	75.0	78.0		12.0	2
11.3	3	•	MDF 1130H3D	45.2	50.9	53.9		12.0	1
	5		1130H5D	67.8	75.7	78.7	158	12.0	2

Diameter	a11	4 to	16	0mm

D:	 (

Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Neck Length	Overall Length  OAL	Shank Dia.	I FIGI
	3	0)	MDF 1140H3D	45.6	51.3	54.3	122	12.0	1
11.4	5	•	1140H5D	68.4	76.4	79.4		12.0	2
	3	•	MDF 1150H3D	46.0	51.8	54.8	122	12.0	1
11.5	5		1150H5D	69.0	77.1	80.1	158	12.0	2
44.6	3		MDF 1160H3D	46.4	52.2	55.2	122	12.0	1
11.6	5		1160H5D	69.6	77.7	80.7	158	12.0	2
11.7	3		MDF 1170H3D	46.8	52.7	55.7	122	12.0	1
11.7	5		1170H5D	70.2	78.4	81.4	158	12.0	2
11.8	3		MDF 1180H3D	47.2	53.1	56.1	122	12.0	1
11.0	5		1180H5D	70.8	79.1	82.1	158	12.0	2
11.9	3		MDF 1190H3D	47.6	53.6	56.6	122	12.0	1
11.5	5		1190H5D	71.4	79.7	82.7	158	12.0	2
12.0	3		MDF 1200H3D	48.0	54.0	57.0	122	12.0	1
12.0	5		1200H5D	72.0	80.4		158	12.0	2
12.5	3		MDF 1250H3D	50.0	56.3	59.3	128	13.0	1
12.0	5		1250H5D	75.0	83.8	86.8		13.0	2
13.0	3		MDF 1300H3D	52.0	58.5	61.5	128	13.0	1
.0.0	5		1300H5D	78.0	87.1	90.1	167	13.0	2
13.5	3		MDF 1350H3D	54.0	60.8	63.8	134	14.0	1
	5		1350H5D	81.0	90.5			14.0	2
14.0	3	•	MDF 1400H3D	56.0	63.0	66.0	134	14.0	1
	5		1400H5D	84.0	93.8		_	14.0	2
14.5	3	•	MDF 1450H3D	58.0	65.3	68.3	140	15.0	1
	5		1450H5D	87.0	-	100.2	185	15.0	2
15.0	3		MDF 1500H3D	60.0	67.5	70.5	140	15.0	1
	5		1500H5D	90.0	100.5			15.0	2
15.5	3		MDF 1550H3D	62.0	69.8	72.8	146	16.0	1
	5		1550H5D	93.0	103.9		194	16.0	2
16.0	3		MDF 1600H3D	64.0	72.0	75.0	146	16.0	1
	5		1600H5D	96.0	107.2	110.2	194	16.0	2

Grade: ACF75

## MDF-H type (Internal Coolant Supply)

#### Recommended Cutting Conditions (for 3D)

- The recommended hole depth is 3 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
- 2. The recommended cutting conditions are those for drilling in flat horizontal surfaces.
- ${\it 3. Adjust\ the\ feed\ rate\ according\ to\ the\ inclination\ angle\ when\ drilling\ in\ an\ inclined\ surface.}$
- 4. Set the feed rate at 70% or lower when the inclination angle is  $30^{\circ}$  or less.
- 5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
- 6. This product is a drilling tool. Do not use it for traverse cutting or helical milling.
- A prepared hole with the same diameter is recommended for drilling of stainless steel.

(n: Spindle Speed min-1 vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
	n	6,800	5,600	3,200	2,800	6,800	6,000	9,500
ø4.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - <b>40</b> - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.06 - <b>0.08</b> - 0.10	0.05 - <b>0.08</b> - 0.10	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.06 - <b>0.08</b> - 0.10	0.04 - <b>0.06</b> - 0.08	0.06 - <b>0.08</b> - 0.10
	n	4,500	3,700	2,100	1,900	4,500	4,200	6,400
ø6.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - <b>40</b> - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	70 - <b>80</b> - 90	90 - <b>120</b> - 150
	f	0.05 - <b>0.10</b> - 0.15	0.05 - <b>0.10</b> - 0.15	0.04 - <b>0.06</b> - 0.08	0.03 - <b>0.04</b> - 0.05	0.05 - <b>0.10</b> - 0.15	0.06 - <b>0.09</b> - 0.12	0.05 - <b>0.10</b> - 0.15
	n	3,400	2,800	1,600	1,400	3,400	3,200	4,800
ø8.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - <b>40</b> - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	70 - <b>80</b> - 90	90 - <b>120</b> - 150
	f	0.10 - <b>0.15</b> - 0.20	0.10 - <b>0.15</b> - 0.20	0.06 - <b>0.08</b> - 0.10	0.04 - <b>0.06</b> - 0.08	0.10 - <b>0.15</b> - 0.20	0.10 - <b>0.12</b> - 0.15	0.10 - <b>0.15</b> - 0.20
	n	2,700	2,200	1,300	1,100	2,700	2,500	3,800
ø10.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - <b>40</b> - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	70 - <b>80</b> - 90	90 - <b>120</b> - 150
	f	0.12 - <b>0.17</b> - 0.22	0.12 - <b>0.17</b> - 0.22	0.08 - <b>0.10</b> - 0.12	0.06 - <b>0.08</b> - 0.10	0.12 - <b>0.17</b> - 0.22	0.12 - <b>0.15</b> - 0.18	0.15 - <b>0.20</b> - 0.25
	n	2,300	1,900	1,100	900	2,300	2,100	3,200
ø12.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - <b>40</b> - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	70 - <b>80</b> - 90	90 - <b>120</b> - 150
	f	0.15 - <b>0.20</b> - 0.25	0.15 - <b>0.20</b> - 0.25	0.12 <b>- 0.15</b> - 0.18	0.08 - <b>0.10</b> - 0.12	0.15 - <b>0.20</b> - 0.25	0.15 - <b>0.18</b> - 0.20	0.20 - <b>0.25</b> - 0.30
	n	1,700	1,400	600	700	1,700	1,600	2,400
ø16.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - <b>40</b> - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	70 - <b>80</b> - 90	90 - <b>120</b> - 150
	f	0.15 - <b>0.20</b> - 0.25	0.15 - <b>0.20</b> - 0.25	0.12 - <b>0.15</b> - 0.18	0.10 - <b>0.15</b> - 0.20	0.17 - <b>0.22</b> - 0.27	0.15 - <b>0.20</b> - 0.25	0.25 - <b>0.30</b> - 0.40

Min. - Optimum - Max.

#### Recommended Cutting Conditions (for 5D)

- 1. A prepared hole with the same diameter is needed for drilling with this tool.
- 2. The cutting conditions are recommended when there is a prepared hole with the same diameter.
- 3. The recommended hole depth is 5 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
- This product is a drilling tool. Do not use it for traverse cutting or helical milling.

(n: Spindle Speed min-1 vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
	n	6,800	5,600	3,200	2,800	6,800	6,000	9,500
ø4.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - 40 - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.06 - <b>0.08</b> - 0.10	0.05 - <b>0.08</b> - 0.10	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.06 - <b>0.08</b> - 0.10	0.04 - <b>0.06</b> - 0.08	0.06 - <b>0.08</b> - 0.10
	n	4,500	3,700	2,100	1,900	4,500	4,000	6,400
ø6.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - <b>40</b> - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.05 - <b>0.10</b> - 0.15	0.05 - <b>0.10</b> - 0.15	0.04 - <b>0.06</b> - 0.08	0.03 - <b>0.04</b> - 0.05	0.05 - <b>0.10</b> - 0.15	0.06 - <b>0.09</b> - 0.12	0.05 - <b>0.10</b> - 0.15
	n	3,400	2,800	1,600	1,400	3,400	3,000	4,800
ø8.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 <b>- 40 -</b> 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.10 - <b>0.15</b> - 0.20	0.10 - <b>0.15</b> - 0.20	0.06 - <b>0.08</b> - 0.10	0.04 - <b>0.06</b> - 0.08	0.10 - <b>0.15</b> - 0.20	0.10 - <b>0.12</b> - 0.15	0.10 - <b>0.15</b> - 0.20
	n	2,700	2,200	1,300	1,100	2,700	2,400	3,800
ø10.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - <b>40</b> - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.15 - <b>0.20</b> - 0.25	0.15 - <b>0.20</b> - 0.25	0.08 - <b>0.10</b> - 0.12	0.06 - <b>0.08</b> - 0.10	0.15 - <b>0.20</b> - 0.25	0.12 <b>- 0.15</b> - 0.18	0.15 - <b>0.20</b> - 0.25
	n	2,300	1,900	1,100	900	2,300	2,000	3,200
ø12.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 - <b>40</b> - 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.20 - <b>0.25</b> - 0.30	0.20 - <b>0.25</b> - 0.30	0.12 - <b>0.15</b> - 0.18	0.08 - <b>0.10</b> - 0.12	0.17 - <b>0.22</b> - 0.27	0.15 - <b>0.20</b> - 0.25	0.20 - <b>0.25</b> - 0.30
	n	1,700	1,400	600	700	1,700	1,500	2,400
ø16.0	VC	70 - <b>85</b> - 100	60 - <b>75</b> - 90	30 <b>- 40 -</b> 50	25 - <b>35</b> - 45	70 - <b>85</b> - 100	65 - <b>75</b> - 85	90 - <b>120</b> - 150
	f	0.20 - <b>0.25</b> - 0.30	0.20 - <b>0.25</b> - 0.30	0.14 - <b>0.17</b> - 0.20	0.10 - <b>0.15</b> - 0.20	0.20 - <b>0.25</b> - 0.30	0.20 - <b>0.25</b> - 0.30	0.25 - <b>0.30</b> - 0.35

Min. - Optimum - Max.

٥

7

Ŏ

Indexable Head typ

Indexable

# MULTIDRILL MDM series

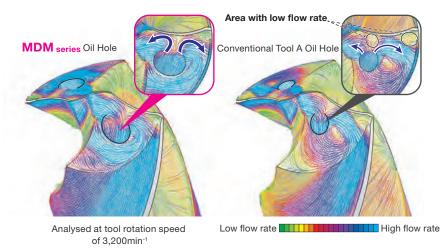


- General Features
  - Oil holes shaped for excellent cooling performance achieves longer tool life.
  - Effective cooling of the cutting edge created through fluid analysis.
    - Reduces adhesion fracture.
  - Chip control and workpiece hardening problems resolved.
  - Outstanding stability in machining of stainless steel and exotic alloys.

- Features and Applications
  - Greater discharge of coolant for effective cooling of the cutting edge.



Effective cooling of the cutting edge created through fluid analysis



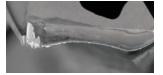
Significantly reduces adhesion on the cutting edge, preventing adhesion fracture

#### MDM series



Minimal adhesion, able to continue

Competitor's Product A



Adhesion fracture in peripheral edge

Work Material : SUS304

Machine : BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8mmx5D)

Cutting Conditions: vc = 80m/min, f = 0.25mm/rev, H = 40mm (through),

Internal Coolant Supply (water soluble)

Drilling Distance : 40m

#### **MULTIDRILL**

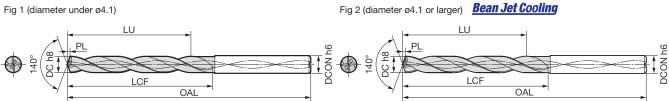
### MDM series (Internal Coolant Supply)







\*Bean Jet Cooling is applicable to diameters ø4.1mm and up



Diameter ø3.0 to 4.9mm Dia. Hole Depth S

Dimensions (mm)

		$\overline{}$		1				1	
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length LCF	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fiç
DO	3	0)	MDM 0300S03H03	14.0	18.5	68.5	0.5	3.0	1
3.0	5	•	0300S03H05	24.0	28.5	78.5	0.5	3.0	1
	3	•	MDM 0310S04H03	16.0	20.6	72.6	0.6	4.0	1
3.1	5		0310S04H05	28.0	32.6	86.6	0.6	4.0	1
	3	•	MDM 0320S04H03	15.8	20.6	72.6	0.6	4.0	1
3.2	5	•	0320S04H05	27.8	32.6	86.6	0.6	4.0	1
	3	•	MDM 0330S04H03	15.7	20.6	72.6	0.6	4.0	1
3.3	5	•	0330S04H05	27.7	32.6	86.6	0.6	4.0	1
	3	•	MDM 0340S04H03	15.5	20.6	72.6	0.6	4.0	1
3.4	5		0340S04H05	27.5	32.6	86.6	0.6	4.0	1
	3	•	MDM 0350S04H03	15.4	20.6	72.6	0.6	4.0	1
3.5	5		0350S04H05	27.4	32.6	86.6	0.6	4.0	1
	3	•	MDM 0360S04H03	17.8	23.2	72.7	0.7	4.0	1
3.6	5		0360S04H05	31.3	36.7	86.7	0.7	4.0	1
	3	•	MDM 0370S04H03	17.7	23.2	72.7	0.7	4.0	1
3.7	5	•	0370S04H05	31.2	36.7	86.7	0.7	4.0	1
	3	•	MDM 0380S04H03	17.5	23.2	72.7	0.7	4.0	1
3.8	5	•	0380S04H05	31.0	36.7	86.7	0.7	4.0	1
	3	•	MDM 0390S04H03	17.4	23.2	72.7	0.7	4.0	1
3.9	5	•	0390S04H05	30.9	36.7	86.7	0.7	4.0	1
	3	•	MDM 0400S04H03	17.2	23.2	72.7	0.7	4.0	1
4.0	5		0400S04H05	30.7	36.7	86.7	0.7	4.0	1
	3	•	MDM 0410S05H03	19.6	25.7	80.7	0.7	5.0	2
4.1	5		0410S05H05	34.6	40.7	98.7	0.7	5.0	2
	3	•	MDM 0420S05H03	19.5	25.8	80.8	0.8	5.0	2
4.2	5		0420S05H05	34.5	40.8	98.8	0.8	5.0	2
4.0	3		MDM 0430S05H03	19.4	25.8	80.8	0.8	5.0	2
4.3	5		0430S05H05	34.4	40.8	98.8	8.0	5.0	2
4.4	3	•	MDM 0440S05H03	19.2	25.8	80.8	0.8	5.0	2
4.4	5		0440S05H05	34.2	40.8	98.8	8.0	5.0	2
4.5	3	•	MDM 0450S05H03	19.1	25.8	80.8	0.8	5.0	2
4.5	5		0450S05H05	34.1	40.8	98.8	8.0	5.0	2
16	3	•	MDM 0460S05H03	21.4	28.3	80.8	0.8	5.0	2
4.6	5		0460S05H05	37.9	44.8	98.8	8.0	5.0	2
4.7	3	•	MDM 0470S05H03	21.4	28.4	80.9	0.9	5.0	2
4.7	5		0470S05H05	37.9	44.9	98.9	0.9	5.0	2
10	3		MDM 0480S05H03	21.2	28.4	80.9	0.9	5.0	2
4.8	5		0480S05H05	37.7	44.9	98.9	0.9	5.0	2
4.0	3		MDM 0490S05H03	21.1	28.4	80.9	0.9	5.0	2
4.9	5		0490S05H05	37.6	44.9	98.9	0.9	5.0	2

Diam	Diameter Ø5.0 to 6.9mm Dimensions (mm)										
Dia.	Hole Depth	ock	Cat. No.			Overall Length	Tip	Shank Dia.	Fig		
DC	(L/D)	रु		LU	LCF	OAL	PL	DCON			
5.0	3		MDM 0500S05H03	20.9	28.4	80.9	0.9	5.0	2		
0.0	5		0500S05H05	37.4	44.9	98.9	0.9	5.0	2		
5.1	3		MDM 0510S06H03	20.8	28.4	82.9	0.9	6.0	2		
0	5		0510S06H05	37.3	44.9	100.9	0.9	6.0	2		
5.2	3		MDM 0520S06H03	20.6	28.4	82.9	0.9	6.0	2		
0.2	5		0520S06H05	37.1		100.9	0.9	6.0	2		
5.3	3		MDM 0530S06H03	20.6	28.5	83.0	1.0	6.0	2		
0.0	5		0530S06H05	37.1	45.0	101.0	1.0	6.0	2		
5.4	3		MDM 0540S06H03	20.4	28.5	83.0	1.0	6.0	2		
0	5		0540S06H05	36.9	45.0	101.0	1.0	6.0	2		
5.5	3		MDM 0550S06H03	20.3	28.5	83.0	1.0	6.0	2		
0.0	5		0550S06H05	36.8	45.0	101.0	1.0	6.0	2		
5.6	3		MDM 0560S06H03	22.6	31.0	83.0	1.0	6.0	2		
0.0	5		0560S06H05	40.6	49.0	101.0	1.0	6.0	2		
5.7	3		MDM 0570S06H03	22.5	31.0	83.0	1.0	6.0	2		
0.7	5		0570S06H05	40.5	49.0	101.0	1.0	6.0	2		
5.8	3		MDM 0580S06H03	22.4	31.1	83.1	1.1	6.0	2		
0.0	5		0580S06H05	40.4	49.1	101.1	1.1	6.0	2		
5.9	3		MDM 0590S06H03	22.3	31.1	83.1	1.1	6.0	2		
0.0	5		0590S06H05	40.3	49.1	101.1	1.1	6.0	2		
6.0	3		MDM 0600S06H03	22.1	31.1	83.1	1.1	6.0	2		
0.0	5		0600S06H05	40.1	49.1	101.1	1.1	6.0	2		
6.1	3		MDM 0610S07H03	24.5	33.6	89.1	1.1	7.0	2		
0.1	5		0610S07H05	44.0		110.1	1.1	7.0	2		
6.2	3		MDM 0620S07H03	24.3	33.6	89.1	1.1	7.0	2		
0.2	5		0620S07H05	43.8	53.1	110.1	1.1	7.0	2		
6.3	3		MDM 0630S07H03	24.2	33.6	89.1	1.1	7.0	2		
0.0	5		0630S07H05	43.7	53.1	110.1	1.1	7.0	2		
6.4	3		MDM 0640S07H03	24.1	33.7	89.2	1.2	7.0	2		
0	5		0640S07H05	43.6	53.2	110.2	1.2	7.0	2		
6.5	3		MDM 0650S07H03	24.0	33.7	89.2	1.2	7.0	2		
0.0	5		0650S07H05	43.5	53.2	110.2	1.2	7.0	2		
6.6	3		MDM 0660S07H03	26.3	36.2	89.2	1.2	7.0	2		
0.0	5		0660S07H05	47.3	57.2	110.2	1.2	7.0	2		
6.7	3		MDM 0670S07H03	26.2	36.2	89.2	1.2	7.0	2		
J.,	5		0670S07H05	47.2	57.2	110.2	1.2	7.0	2		
6.8	3		MDM 0680S07H03	26.0	36.2	89.2	1.2	7.0	2		
0.0	5		0680S07H05	47.0		110.2	1.2	7.0	2		
6.9	3		MDM 0690S07H03	26.0	36.3	89.3	1.3	7.0	2		
	5 ACT70		0690S07H05	47.0	57.3	110.3	1.3	7.0	2		

Grade: ACT70

7-34







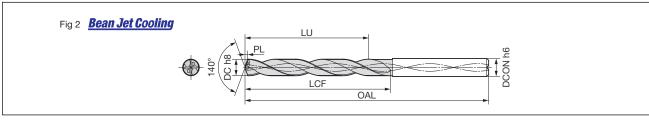












Diam	eter		.0 to 8.9mm				Dime	ensions (	mm
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fiç
7.0	3	•	MDM 0700S07H03	25.8	36.3	89.3	1.3	7.0	2
7.0	5		0700S07H05	46.8	57.3	110.3	1.3	7.0	2
7 4	3		MDM 0710S08H03	28.2	38.8	95.3	1.3	8.0	2
7.1	5		0710S08H05	50.7	61.3	119.3	1.3	8.0	2
7.2	3		MDM 0720S08H03	28.0	38.8	95.3	1.3	8.0	2
1.2	5		0720S08H05	50.5	61.3	119.3	1.3	8.0	2
7.3	3		MDM 0730S08H03	27.9	38.8	95.3	1.3	8.0	2
7.0	5		0730S08H05	50.4	61.3	119.3	1.3	8.0	2
7.4	3		MDM 0740S08H03	27.7	38.8	95.3	1.3	8.0	2
7.4	5		0740S08H05	50.2	61.3	119.3	1.3	8.0	2
7.5	3		MDM 0750S08H03	27.7	38.9	95.4	1.4	8.0	2
	5		0750S08H05	50.2		119.4	1.4	8.0	2
7.6	3		MDM 0760S08H03	30.0	41.4	95.4	1.4	8.0	2
	5		0760S08H05	54.0	65.4	119.4	1.4	8.0	2
7.7	3		MDM 0770S08H03	29.9	41.4	95.4	1.4	8.0	2
	5		0770S08H05	53.9		119.4	1.4	8.0	2
7.8	3	•	MDM 0780S08H03	29.7	41.4	95.4	1.4	8.0	2
	5		0780S08H05	53.7		119.4	1.4	8.0	2
7.9	3	•	MDM 0790S08H03	29.6	41.4	95.4	1.4	8.0	2
	5		0790S08H05	53.6		119.4	1.4	8.0	2
8.0	3	•	MDM 0800S08H03	29.5	41.5	95.5	1.5	8.0	2
	5		0800S08H05	53.5		119.5	1.5	8.0	2
8.1	3	•	MDM 0810S09H03	31.9	44.0	101.5	1.5	9.0	2
	5		0810S09H05	57.4	69.5	128.5	1.5	9.0	2
8.2	3	•	MDM 0820S09H03	31.7	44.0	101.5	1.5	9.0	2
	5		0820S09H05	57.2		128.5	1.5	9.0	2
8.3	3	•	MDM 0830S09H03	31.6	44.0	101.5	1.5	9.0	2
	5		0830S09H05	57.1		128.5	1.5	9.0	2
8.4	3	•	MDM 0840S09H03	31.4	44.0	101.5	1.5	9.0	2
	5		0840S09H05	56.9		128.5	1.5	9.0	2
8.5	3 5		MDM 0850S09H03	31.3		101.5	1.5	9.0	2
	-		0850S09H05 MDM 0860S09H03	56.8	69.5	128.5	1.5	9.0	2
8.6	3 5	•		33.7	46.6	101.6 128.6	1.6	9.0	2
	3	H	0860S09H05 MDM 0870S09H03	60.7	46.6	101.6			2
8.7	5		0870S09H03	33.6 60.6		128.6	1.6	9.0	2
	3	H	MDM 0880S09H03	33.4		101.6	1.6		2
8.8	5						1.6	9.0	2
	-	_	0880S09H05 MDM 0890S09H03	60.4		128.6			2
8.9	3 5			33.3	46.6	101.6	1.6	9.0	2
	ACT70	_	0890S09H05	60.3	73.6	128.6	1.6	9.0	2

10.7	3	•	
10.7	5		
	3		

Jiani	meter ø9.0 to 10.9mm Dimensions (mm)								
Dia.	Hole Depth (L/D)	Stock	Cat. No.	Effective Length	Flute Length (	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fiç
~ ~	3		MDM 0900S09H03	33.1	46.6	101.6	1.6	9.0	2
9.0	5		0900S09H05	60.1	73.6	128.6	1.6	9.0	2
0.4	3		MDM 0910S10H03	35.6	49.2	107.7	1.7	10.0	2
9.1	5		0910S10H05	64.1	77.7	137.7	1.7	10.0	2
9.2	3		MDM 0920S10H03	35.4	49.2	107.7	1.7	10.0	2
9.2	5		0920S10H05	63.9	77.7	137.7	1.7	10.0	2
9.3	3		MDM 0930S10H03	35.3	49.2	107.7	1.7	10.0	2
9.0	5		0930S10H05	63.8	77.7	137.7	1.7	10.0	2
9.4	3		MDM 0940S10H03	35.1	49.2	107.7	1.7	10.0	2
J.7	5		0940S10H05	63.6	77.7		1.7	10.0	2
9.5	3		MDM 0950S10H03	35.0		107.7	1.7	10.0	2
0.0	5		0950S10H05	63.5		137.7	1.7	10.0	2
9.6	3		MDM 0960S10H03	37.3		107.7	1.7	10.0	2
0.0	5		0960S10H05	67.3		137.7	1.7	10.0	2
9.7	3		MDM 0970S10H03	37.3		107.8	1.8	10.0	2
	5		0970S10H05	67.3	81.8		1.8	10.0	2
9.8	3		MDM 0980S10H03	37.1		107.8	1.8	10.0	2
	5		0980S10H05	67.1	81.8		1.8	10.0	2
9.9	3	•	MDM 0990S10H03	37.0	51.8		1.8	10.0	2
	5		0990S10H05	67.0	81.8		1.8	10.0	2
10.0	3	•	MDM 1000S10H03	36.8		107.8	1.8	10.0	2
	5		1000S10H05	66.8	81.8		1.8	10.0	2
10.1	3		MDM 1010S11H03	39.2		117.8	1.8	11.0	2
	5		1010S11H05	70.7	85.8		1.8	11.0	2
10.2	3	•	MDM 1020S11H03	39.1	-	117.9	1.9	11.0	2
	5		1020S11H05	70.6	85.9		1.9	11.0	2
10.3	3	•	MDM 1030S11H03	39.0		117.9	1.9	11.0	2
	5		1030S11H05	70.5	85.9		1.9	11.0	2
10.4	3	•	MDM 1040S11H03	38.8	-	117.9	1.9	11.0	2
	5		1040S11H05	70.3	85.9		1.9	11.0	2
10.5	3		MDM 1050S11H03	38.7	-	117.9	1.9	11.0	2
	5		1050S11H05	70.2		150.9	1.9	11.0	2
10.6	3 5	•	MDM 1060S11H03	41.0		117.9	1.9	11.0	2
			1060S11H05	74.0	89.9		1.9	11.0	2
10.7	3 5	•	MDM 1070S11H03	40.9 73.9		117.9	1.9	11.0	2
	3		1070S11H05 MDM 1080S11H03			150.9		11.0	2
10.8	5			40.8		118.0	2.0	11.0	2
	-	_	1080S11H05 MDM 1090S11H03	73.8	90.0		2.0	11.0	-
10.9	3 5	•	1090S11H05	40.7 73.7		118.0 151.0	2.0	11.0	2
	Э		10905111105	13.1	90.0	131.0	2.0	11.0	2

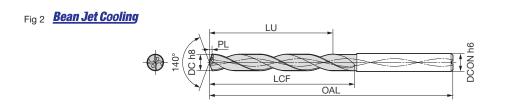
7-35











Diam	neter	ø1	1.0 to 12.9mm
Dia.	Hole Depth	Stock	Cat. No.

3

11.0

MDM 1100S11H03

1100S11H05

	Dime	nsions (	mm)
gth	Tip	Shank Dia.	Eia

Dime	nsions (	mm)
Tip	Shank Dia.	Fia

ensions (mm)								
	Shank Dia.	Fig						
	11.0	2						
	11.0	2						

lute Length	Overall Length	Tip	Shank Dia.	E:
LCF	OAL	PL	DCON	LIĆ
57.0	118.0	2.0	11.0	2
90.0	151.0	2.0	11.0	2
59.5	124.0	2.0	12.0	2
94.0	160.0	2.0	12.0	2

11.1	4 4	3	MDM 1110S12H03	42.9	59.5	124.0	2.0	12.0
ļ ·		5	1110S12H05	77.4	94.0	160.0	2.0	12.0
11.2	3	MDM 1120S12H03	42.7	59.5	124.0	2.0	12.0	
l '	11.2	5	1120S12H05	77.2	94.0	160.0	2.0	12.0
4.	11.3	3	MDM 1130S12H03	42.7	59.6	124.1	2.1	12.0
l '		5	1130S12H05	77.2	94.1	160.1	2.1	12.0
11.4	3	MDM 1140S12H03	42.5	59.6	124.1	2.1	12.0	
	5	1140S12H05	77.0	94.1	160.1	2.1	12.0	

LU

40.5

73.5

ΙL		5	1130S12H05	77.2	94.1 160.1	2.1	12.0	ì
ı	11.4	3	MDM 1140S12H03	42.5	59.6 124.1	2.1	12.0	1
ı	11.4	5	1140S12H05	77.0	94.1 160.1	2.1	12.0	
l	11.5	3	MDM 1150S12H03	42.4	59.6 124.1	2.1	12.0	
ŀ	11.5	5	1150S12H05	76.9	94.1 160.1	2.1	12.0	
	11.6	3	MDM 1160S12H03	44.7	62.1 124.1	2.1	12.0	
	11.6	5	1160S12H05	80.7	98.1 160.1	2.1	12.0	
l	11.7	3	MDM 1170S12H03	44.6	62.1 124.1	2.1	12.0	
ı	11.7	5	1170S12H05	80.6	98.1 160.1	2.1	12.0	
1	11.8	3	MDM 1180S12H03	44.4	62.1 124.1	2.1	12.0	
l	11.0	5	1180S12H05	80.4	98.1 160.1	2.1	12.0	
l	11.0	3	MDM 1190S12H03	44.4	62.2 124.2	2.2	12.0	
ı	11.9	5	1100012405	90 A	09 2 160 2	22	120	II,

		)		1110312003	11.4	94.0 100.0	2.0	12.0	~
	11.2	3	•	MDM 1120S12H03	42.7	59.5 124.0	2.0	12.0	2
	11.2	5		1120S12H05	77.2	94.0 160.0	2.0	12.0	2
	11.3	3	•	MDM 1130S12H03	42.7	59.6 124.1	2.1	12.0	2
	11.3	5		1130S12H05	77.2	94.1 160.1	2.1	12.0	2
	11.4	3		MDM 1140S12H03	42.5	59.6 124.1	2.1	12.0	2
	11.4	5		1140S12H05	77.0		2.1	12.0	2
	11.5	3		MDM 1150S12H03	42.4	59.6 124.1	2.1	12.0	2
	11.5	5		1150S12H05	76.9	94.1 160.1	2.1	12.0	2
11.6	116	3		MDM 1160S12H03	44.7	62.1 124.1	2.1	12.0	2
	11.0	5		1160S12H05	80.7	98.1 160.1	2.1	12.0	2
	11.7	3		MDM 1170S12H03	44.6	62.1 124.1	2.1	12.0	2
11.7	5		1170S12H05	80.6	98.1 160.1	2.1	12.0	2	
	11.8	3		MDM 1180S12H03	44.4	62.1 124.1	2.1	12.0	2
⊩	11.0	5		1180S12H05	80.4	98.1 160.1	2.1	12.0	2
	11.9	3		MDM 1190S12H03	44.4	62.2 124.2	2.2	12.0	2
	11.9	5		1190S12H05	80.4	98.2 160.2	2.2	12.0	2
	12.0	3		MDM 1200S12H03	44.2	62.2 124.2	2.2	12.0	2
	12.0	5		1200S12H05	80.2	98.2 160.2	2.2	12.0	2
	12.1	3		MDM 1210S13H03	46.6	64.7 130.2	2.2	13.0	2
	12.1	5		1210S13H05	84.1	102.2 169.2	2.2	13.0	2
	12.2	3		MDM 1220S13H03	46.4	64.7 130.2	2.2	13.0	2
	12.2	5		1220S13H05	83.9	102.2 169.2	2.2	13.0	2
	12.3	3		MDM 1230S13H03	46.3	64.7 130.2	2.2	13.0	2
	12.0	5		1230S13H05	83.8	102.2 169.2	2.2	13.0	2
	12.4	3		MDM 1240S13H03	46.2	64.8 130.3	2.3	13.0	2
	12.7	5		1240S13H05	83.7	102.3 169.3	2.3	13.0	2
	12.5	3		MDM 1250S13H03	46.1	64.8 130.3	2.3	13.0	2
	12.5	5		1250S13H05	83.6	102.3 169.3	2.3	13.0	2
	12.6	3		MDM 1260S13H03	48.4			13.0	2
	12.0	5		1260S13H05	87.4	106.3 169.3	2.3	13.0	2
	12.7	3		MDM 1270S13H03	48.3	67.3 130.3	2.3	13.0	2
	12.7	5		1270S13H05	87.3	106.3 169.3	2.3	13.0	2
	12.8	3		MDM 1280S13H03	48.1	67.3 130.3		13.0	2
	12.0	5		1280S13H05	87.1	106.3 169.3	2.3	13.0	2
	12.9	3		MDM 1290S13H03	48.0	67.3 130.3	2.3	13.0	2
	14.3	_		40000401105	07.0	1400014000		100	

12.6	3	MDM 1260S13H03	48.4	67.3	130.3	2.3	13.0	
	5	1260S13H05	87.4	106.3	169.3	2.3	13.0	
12.7	, 3	MDM 1270S13H03	48.3	67.3	130.3	2.3	13.0	Ī
	5	1270S13H05	87.3	106.3	169.3	2.3	13.0	
12.8	3	MDM 1280S13H03	48.1	67.3	130.3	2.3	13.0	Ī
12.8	5	1280S13H05	87.1	106.3	169.3	2.3	13.0	
12.9	3	MDM 1290S13H03	48.0	67.3	130.3	2.3	13.0	Ī
	5	1290S13H05	87.0	106.3	169.3	2.3	13.0	

Grade: ACT70

Diameter of	ø13.0 to	14.9mm
-------------	----------	--------

Dian	neter	ø1	13.0	to	14.9mm
Dian	neter	Ø٦	13.0	to	14.9mm

Dimensions	(mm)

Diameter Ø13.0 to 14.9mm							Dime	nsions (	mm)
Dia.	Hole Depth	Stock	Cat. No.	Effective Length FI	lute Length	Overall Length	Tip PL	Shank Dia.	Fig
	3		MDM 1300S13H03	47.9	67.4	130.4	2.4	13.0	2
13.0	5		1300S13H05		-	169.4	2.4	13.0	2
	3	•	MDM 1310S14H03	50.3		136.4	2.4	14.0	2
13.1	5		1310S14H05	90.81	110.4	178.4	2.4	14.0	2
	3		MDM 1320S14H03	50.1		136.4	2.4	14.0	2
13.2	5		1320S14H05	90.61	110.4	178.4	2.4	14.0	2
10.0	3	•	MDM 1330S14H03	50.0	69.9	136.4	2.4	14.0	2
13.3	5		1330S14H05	90.51	110.4	178.4	2.4	14.0	2
40.4	3		MDM 1340S14H03	49.8	69.9	136.4	2.4	14.0	2
13.4	5		1340S14H05	90.31	110.4	178.4	2.4	14.0	2
13.5	3		MDM 1350S14H03	49.8	70.0	136.5	2.5	14.0	2
13.5	5		1350S14H05	90.3 1	110.5	178.5	2.5	14.0	2
13.6	3		MDM 1360S14H03	52.1	72.5	136.5	2.5	14.0	2
13.0	5		1360S14H05	94.1	114.5	178.5	2.5	14.0	2
13.7	3		MDM 1370S14H03	52.0	72.5	136.5	2.5	14.0	2
13.7	5		1370S14H05	94.01	114.5	178.5	2.5	14.0	2
13.8	3		MDM 1380S14H03	51.8	72.5	136.5	2.5	14.0	2
13.0	5		1380S14H05	93.8 1	114.5	178.5	2.5	14.0	2
13.9	3		MDM 1390S14H03	51.7	72.5	136.5	2.5	14.0	2
13.9	5		1390S14H05			178.5	2.5	14.0	2
14.0	3		MDM 1400S14H03	51.5		136.5	2.5	14.0	2
14.0	5		1400S14H05	93.5 1	114.5	178.5	2.5	14.0	2
14.1	3		MDM 1410S15H03	54.0	75.1	142.6	2.6	15.0	2
	5		1410S15H05			187.6	2.6	15.0	2
14.2	3		MDM 1420S15H03	53.8		142.6	2.6	15.0	2
	5		1420S15H05	_		187.6	2.6	15.0	2
14.3	3	•	MDM 1430S15H03	53.7	-	142.6	2.6	15.0	2
	5		1430S15H05	_		187.6	2.6	15.0	2
14.4	3	•	MDM 1440S15H03	53.5		142.6	2.6	15.0	2
L	5		1440S15H05	_		187.6	2.6	15.0	2
14.5	3	•	MDM 1450S15H03	53.4	-	142.6	2.6	15.0	2
<u> </u>	5		1450S15H05	_		187.6	2.6	15.0	2
14.6	3	•	MDM 1460S15H03	55.8		142.7	2.7	15.0	2
	5		1460S15H05	100.8			2.7	15.0	2
14.7	3		MDM 1470S15H03	55.7		142.7	2.7	15.0	2
	5		1470S15H05	100.7 1			2.7	15.0	2
14.8	3	•	MDM 1480S15H03	55.5		142.7	2.7	15.0	2
	5		1480S15H05	100.5 1			2.7	15.0	2
14.9	3 5	H	MDM 1490S15H03	55.4		142.7	2.7	15.0 15.0	2
<u></u>	0 ACT70		1490S15H05	100.4	122.1	167.7	2.7	15.0	2

Grade: ACT70







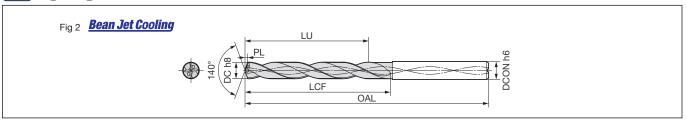












#### Dia

Diameter Ø15.0 to 16.0mm Dimensions (mm)									
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length	Tip <b>PL</b>	Shank Dia.	Fig
15.0	3	•	MDM 1500S15H03	55.2	77.7	142.7	2.7	15.0	2
15.0	5		1500S15H05	100.2	122.7	187.7	2.7	15.0	2
15.1	3	•	MDM 1510S16H03	57.6	80.2	148.7	2.7	16.0	2
15.1	5		1510S16H05	104.1	126.7	196.7	2.7	16.0	2
15.2	3		MDM 1520S16H03	57.5	80.3	148.8	2.8	16.0	2
13.2	5		1520S16H05	104.0	126.8	196.8	2.8	16.0	2
15.3	3		MDM 1530S16H03	57.4	80.3	148.8	2.8	16.0	2
13.3	5		1530S16H05	103.9	126.8	196.8	2.8	16.0	2
15.4	3		MDM 1540S16H03	57.2	80.3	148.8	2.8	16.0	2
15.4	5		1540S16H05	103.7	126.8	196.8	2.8	16.0	2
45.5	3		MDM 1550S16H03	57.1	80.3	148.8	2.8	16.0	2
15.5	5		1550S16H05	103.6	126.8	196.8	2.8	16.0	2

MDM 1560S16H03

MDM 1570S16H03

MDM 1580S16H03

MDM 1590S16H03

59.4 82.8 148.8 2.8

59.4 82.9 148.9 2.9

59.2 82.9 148.9 2.9

59.1 82.9 148.9 2.9

**1560S16H05** | 107.4 | 130.8 | 196.8 | 2.8

**1570\$16H05** |107.4|130.9|196.9| 2.9

**1580S16H05** |107.2|130.9|196.9| 2.9

**1590S16H05** | 107.1 | 130.9 | 196.9 | 2.9

**1600\$16H05** | 106.9 | 130.9 | 196.9 | 2.9

**MDM 1600S16H03** 58.9 82.9 148.9 2.9

16.0

16.0

16.0

16.0 2

16.0 2

16.0 2

16.0 2

16.0 2

16.0 2

16.0 2

5 Grade: ACT70

3

3

5

3

3

3

15.6

15.7

15.8

15.9

16.0

#### Metals Symbols Chart

Work Material	Hardness	Japanese Industrial Standards JIS	International Standard ISO 15510	European Standards EN	US Standards AISI
		SUS405	X6CrAl13	1.4002	405
Ferritic/ Martensitic Stainless Steel		SUS410	X12Cr13	1.4006	410
	≤ 200HB	SUS410S	X6Cr13	1.4000	-
		SUS430	X6Cr17	1.4016	430
		SUS434	X6CrMo17-1	1.4113	434
		SUS420J1	X20Cr13	1.4021	420
	> 200HB	SUS420J2	X30Cr13	1.4028	420
		SUS431	X17CrNi16-2	1.4057	431
		SUS304	X5CrNi18-10	1.4301	304
		SUS305	X6CrNi18-12	1.4303	305
		SUS303	X10CrNiS18-9	1.4305	303
Austenitic Stainless Steel	≤ 200HB	SUS304L X2CrNi18-9		1.4307	304L
		SUS316	X5CrNiMo17-12-2	1.4401	316
		SUS316L X2CrNiMo17-12-2		1.4404	316L
		SUS317L	X2CrNiMo19-14-4	1.4438	317L
		SUS321	X6CrNiTi18-10	1.4541	321
		SUS347	X6CrNiNb18-10	1.4550	347
		SUS316Ti	X6CrNiMoTi17-12-2	1.4571	-
		SUS309S	X6CrNi23-13	1.4950	309S
		SUS310S	X6CrNi25-20	1.4951	310S
		SUS304N1	X5CrNiN19-9	1.4315	304N
	> 200HB	SUS301	X5CrNi17-7	1.4319	301
		SUS301L	X2CrNiN18-7	1.4318	-
Stainless		SUS630	X5CrNiCuNb16-4	1.4542	17-4PH (S17400)
Steel with Deposition Hardened	≤ 340HB	-	-	-	15-5PH (S15500)
Structure		SUS631	X7CrNiAl17-7	1.4568	17-7PH (S17700)
D .		SUS329J1	X6CrNiMo26-4-2	-	329
Duplex Stainless Steel	≤ 310HB	SUS329J3L	X2CrNiMoN22-5-3	1.4462	-
2.0.111000 01001		SUS329J4L	X2CrNiMoN25-7-3	-	-

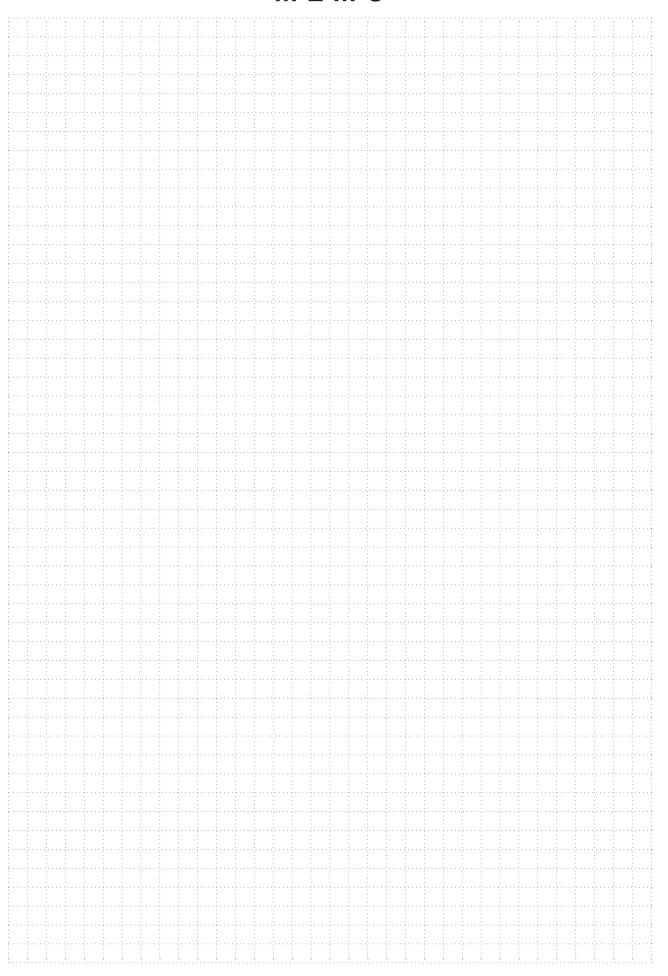
#### **Recommended Cutting Conditions**

- 1. The recommended cutting conditions below are for cases where an internal supply of a water soluble coolant is used.
- 2. If using non-water-soluble coolant, reduce the cutting speed by 20-30% and ensure that sufficient coolant is supplied.
- 3. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
- 4. Make sure the flute does not enter the collet.
- 5. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece. \*If stable drilling is still not possible, pre-drilling of a flat surface with a Flat MULTIDRILL MDF series drill is recommended.
- 6. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

Mouls Material	Ferritic/Martensitic Stainless Steel			Austenitic Stainless Steel				
Work Material	k Materiai ≤ 200HB		> 20	> 200HB		0HB	> 200HB	
Cutting Speed	60 to 10	00m/min	40 to 8	0m/min	60 to 10	0m/min	40 to 80	Om/min
Diameter DC (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min-1)	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)
ø3	8,500	0.06 to 0.12	6,400	0.06 to 0.12	8,500	0.06 to 0.12	6,400	0.06 to 0.12
ø4	6,400	0.08 to 0.17	4,800	0.08 to 0.17	6,400	0.08 to 0.17	4,800	0.08 to 0.17
ø5	5,100	0.08 to 0.20	3,900	0.08 to 0.20	5,100	0.08 to 0.20	3,900	0.08 to 0.20
ø6	4,300	0.10 to 0.20	3,200	0.10 to 0.20	4,300	0.10 to 0.20	3,200	0.10 to 0.20
ø7	3,700	0.12 to 0.23	2,800	0.12 to 0.23	3,700	0.12 to 0.23	2,800	0.12 to 0.23
ø8	3,200	0.15 to 0.25	2,400	0.15 to 0.25	3,200	0.15 to 0.25	2,400	0.15 to 0.25
ø9	2,900	0.17 to 0.25	2,200	0.17 to 0.25	2,900	0.17 to 0.25	2,200	0.17 to 0.25
ø10	2,600	0.18 to 0.28	2,000	0.18 to 0.28	2,600	0.18 to 0.28	2,000	0.18 to 0.28
ø11	2,400	0.20 to 0.30	1,800	0.20 to 0.30	2,400	0.20 to 0.30	1,800	0.20 to 0.30
ø12	2,200	0.20 to 0.30	1,600	0.20 to 0.30	2,200	0.20 to 0.30	1,600	0.20 to 0.30
ø13	2,000	0.20 to 0.30	1,500	0.20 to 0.30	2,000	0.20 to 0.30	1,500	0.20 to 0.30
ø14	1,900	0.20 to 0.30	1,400	0.20 to 0.30	1,900	0.20 to 0.30	1,400	0.20 to 0.30
ø15	1,700	0.20 to 0.30	1,300	0.20 to 0.30	1,700	0.20 to 0.30	1,300	0.20 to 0.30
ø16	1,600	0.20 to 0.30	1,200	0.20 to 0.30	1,600	0.20 to 0.30	1,200	0.20 to 0.30

		.,	0.000	-,		.,		-,	
Ľ									
	Work Material	Stainless Steel with Deposition I Hardened Structure ≤ 340HB		Duplex Stainless Steel ≤ 310HB		Titanium Alloy 260HB to 340HB		Ni-based heat resistant alloy (Inconel 718) 38 to 45HRC	
	Cutting Speed	40 to 6	0m/min	40 to 6	0m/min	30 to 50m/min		10 to 30m/min	
	Diameter DC (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min-1)	Feed Rate (mm/rev)
	ø3	5,300	0.06 to 0.12	5,300	0.06 to 0.12	4,200	0.06 to 0.12	2,100	0.05 to 0.08
	ø4	4,000	0.08 to 0.17	4,000	0.08 to 0.17	3,200	0.08 to 0.17	1,600	0.06 to 0.10
	ø5	3,200	0.08 to 0.20	3,200	0.08 to 0.20	2,500	0.08 to 0.20	1,250	0.07 to 0.12
	ø6	2,700	0.10 to 0.20	2,700	0.10 to 0.20	2,100	0.10 to 0.20	1,050	0.08 to 0.15
	ø7	2,300	0.12 to 0.23	2,300	0.12 to 0.23	1,800	0.12 to 0.23	900	0.08 to 0.15
	ø8	2,000	0.15 to 0.25	2,000	0.15 to 0.25	1,600	0.15 to 0.25	800	0.10 to 0.18
	ø9	1,800	0.17 to 0.25	1,800	0.17 to 0.25	1,400	0.17 to 0.25	700	0.12 to 0.18
	ø10	1,600	0.18 to 0.28	1,600	0.18 to 0.28	1,300	0.18 to 0.28	650	0.12 to 0.18
	ø11	1,400	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30	600	0.15 to 0.20
	ø12	1,300	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30	550	0.15 to 0.20
	ø13	1,200	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.20 to 0.30	500	0.15 to 0.20
	ø14	1,100	0.20 to 0.30	1,100	0.20 to 0.30	900	0.20 to 0.30	450	0.15 to 0.20
	ø15	1,050	0.20 to 0.30	1,050	0.20 to 0.30	850	0.20 to 0.30	420	0.15 to 0.20
	ø16	1 000	0.20 to 0.30	1 000	0.20 to 0.30	800	0.20 to 0.30	400	0.15 to 0.20

### **MEMO**



### XHGS series/PHT series

rilling

7

dexable

Indexable

Reamer



#### General Features

Super MULTIDRILL XHGS series, a next-generation drill specialized for deep hole drilling, features high drill strength and stable chip control to further enhance efficiency of deep hole drilling.

#### ■ Features

- Deep hole drilling
  - · J-flute shape achieves improved chip control during deep hole drilling
  - · High-efficiency drilling at over vf = 1,000mm/min at depths 20 times the diameter (diameter ø5, equivalent to S48C)
  - · Special web thinning shape (RX THINNING) reduces drilling force during high-efficiency machining
- Long tool life
  - · Special DEX Coat provides long tool life on a wide variety of work materials
  - · Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring long, stable tool life
- Eco-friendly
  - · Compatible with the MQL (Minimum Quantity Lubrication) system
  - · Compatible with dual-fluid mist (simultaneous spray of oil and water)

#### ■ Product Range

Applications	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
	MDW□□□□XHGS10	ø2.1 to 16.0	up to 10	76 items in stock
	MDW□□□□XHGS12	ø2.5 to 16.0	up to 12	28 items in stock
Deep Hole	MDW□□□□XHGS15	ø2.1 to 16.0	up to 15	76 items in stock
Drilling	MDW□□□□XHGS20	ø2.1 to 14.0	up to 20	72 items in stock
	MDW□□□□XHGS25	ø2.1 to 12.0	up to 25	68 items in stock
	MDW□□□□XHGS30	ø2.1 to 10.0	up to 30	64 items in stock
For Guide Holes	MDW□□□□PHT	ø2.1 to 16.0	up to 2	76 items in stock



#### ■ Application Examples

#### Automotive Component (equivalent to S38C)

Tool :  $\emptyset$ 5.0x115mm (PHT series),  $\emptyset$ 5.0x170mm (XHGS series) Machine : Horizontal single-spindle NC machine Coolant : MQL (air pressure 0.5MPa, volume approx. 4cc/h) Cutting Conditions : vc = 80m/min, f = 0.28mm/rev, H = 85mm per hole (3 holes per unit) Tool life : 500 units (113m)

#### Automotive Component (equivalent to FCD700)

 $\begin{tabular}{lll} Tool & : \emptyset 5.0x105mm (PHT series), \emptyset 5.0x155mm (XHGS series) \\ Machine & : Horizontal single-spindle NC machine \\ Coolant & : MQL (air pressure 0.4MPa, volume approx. 4cc/h) \\ Cutting Conditions : vc = 50m/min, f = 0.18mm/rev, H = 60mm per hole (5 holes per unit) \\ \end{tabular}$ 

Tool life : 400 units (120m)

#### Automotive Component (equivalent to S43C)

 $\begin{array}{lll} Tool & : \emptyset 6.0x170mm \ (PHT \ series), \emptyset 6.0x230mm \ (XHGS \ series) \\ Machine & : Horizontal \ single-spindle \ NC \ machine \\ Coolant & : MQL \ (air \ pressure \ 0.5MPa, \ volume \ approx. \ 40cc/h) \\ Cutting \ Conditions & : vc = 80m/min, f = 0.18mm/rev, H = 110mm \ per \ hole \ (4 \ holes \ per \ unit) \\ Tool \ life & : 150 \ units \ (113m) \\ \end{array}$ 

#### Machine Component (equivalent to S45C)

Tool : ø6.0x90mm (PHT series), ø6.0x145mm (XHGS series)
Machine : Horizontal single-spindle NC machine

 $\label{eq:coolant} \begin{tabular}{ll} Coolant & : MQL (air pressure 0.5MPa, volume approx. 60cc/h) \\ Cutting Conditions : vc = 80m/min, f = 0.20mm/rev, H = 62mm per hole (3 holes per unit) \\ \end{tabular}$ 

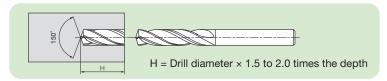
Tool life : 550 units (104m)

# XHGS series/PHT series

#### ■ Recommended Drilling Method

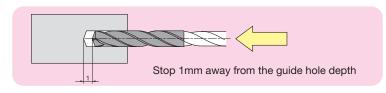
#### (1) Make a guide hole using the PHT series

• Select the same nominal diameter for the PHT series dedicated guide hole drill as the XHGS series deep hole drill. (The guide drill diameter is designed to be 0. 02mm to 0. 05mm larger than the long drill diameter.)



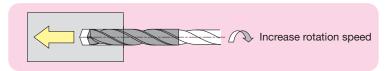
#### (2) Feed the XHGS series deep hole drill through the guide hole at low rotation speed

- Spindle Speed: 500min<sup>-1</sup>
- Feed Rate: 1,000 to 2,000mm/min



\* If the drill is inserted into the guide hole at the set cutting speed, peripheral run-out may cause damage to the drill's peripheral edges.

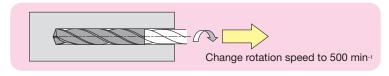
#### (3) Increase rotation speed until the set cutting speed is reached, then start normal drilling operation



\* On some NC machines, the feed command may be activated before the set spindle speed is reached, so it is recommended to enter a dwell sequence before the feed command.

#### (4) After drilling, rotation speed is reduced and the drill is retracted from the work material

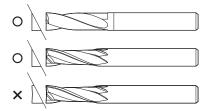
■ Spindle speed: 500min<sup>-1</sup> Feed rate: 1,000 to 2,000mm/min



\* Retracting a drill from the work material at a high rotation speed is dangerous as doing so may result in breakage due to runout.

#### (5) Other notes

• A flat base should be prepared first if the entry side is a non-flat surface (slanted surface, cylindrical surface, etc.).



Flat Bottom Drilling using an endmill or Flat MULTIDRILL MDF series.

• If the exit side is a non-flat surface, reduce the feed rate to f = 0.05mm/rev immediately before the breakthrough point to prevent the drill from fracturing or burrs from forming.

Concave ended endmills cannot be used.

#### ■ Coolant

#### (1) Internal coolant supply

- Use coolant equivalent to JIS A1-1 (emulsion).
- Pump pressure Steel: 1. 5 to 2. 0MPa (higher pressure results in a stronger cooling effect, which affects chips and wear)
   Cast iron and aluminum alloy: 4.0 to 6.0MPa (prioritize cooling performance)

#### (2) Internal MQL

• Air pressure : 0.5MPa or greater

• Evacuation volume: It is recommended to set the maximum evacuation volume for your equipment.

\*Consult the manufacturer if you intend to machine aluminum alloy.

#### (3) Internal dual-fluid mist

Air pressure : 0.5MPa or greater

• Evacuation volume: It is recommended to use the optimal setting for your equipment.

### XHGS series/PHT series (Internal Coolant Supply) Caton Steel Aloy Steel Coolant Supply) Caton Steel Coolant Supply) Caton Steel Coolant Supply Caton Steel C







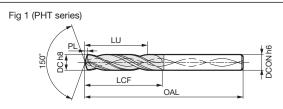


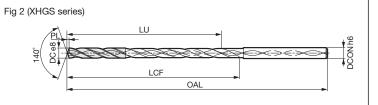






10D 12D 15D 20D 25D 30D Pilot 3D





Dime	nsions	(1	mm)

Dimensions	Imm

Dia.	Hole Depth	Stock	Cat. No.		Flute Length	- 1	Tip	Shank Dia.	Fig
DC	(L/D)	Š		LU	LCF	OAL	PL	DCON	
	3		MDW 0210PHT	12.2	15.3	68.3	0.3	3.0	1
	10		0210XHGS10	35.3	38.4	88.4	0.4	3.0	2
0.4	15		0210XHGS15	45.3	48.4	98.4	0.4	3.0	2
2.1	20		0210XHGS20	58.3	61.4	111.4	0.4	3.0	2
	25		0210XHGS25	70.3	73.4	123.4	0.4	3.0	2
	30		0210XHGS30	83.3	86.4	136.4	0.4	3.0	2
	3	•	MDW 0220PHT	12.0	15.3	68.3	0.3	3.0	1
	10		0220XHGS10	35.1	38.4	88.4	0.4	3.0	2
	15	•	0220XHGS15	45.1	48.4	98.4	0.4	3.0	2
2.2	20	•	0220XHGS20	58.1	-	111.4	0.4	3.0	2
	25	•	0220XHGS25	70.1		123.4	0.4	3.0	2
	30	•	0220XHGS30	83.1	-	136.4	0.4	3.0	2
	3	•	MDW 0230PHT	11.9	15.3	68.3	0.3	3.0	1
	10		0230XHGS10	35.0		88.4	0.3	3.0	2
	-	5							
2.3	15	_	0230XHGS15	45.0		98.4	0.4	3.0	2
	20		0230XHGS20	58.0		111.4	0.4	3.0	2
	25	•	0230XHGS25	70.0		123.4	0.4	3.0	2
	30		0230XHGS30	83.0		136.4	0.4	3.0	2
	3	•	MDW 0240PHT	11.7	15.3	68.3	0.3	3.0	1
	10		0240XHGS10	34.8		88.4	0.4	3.0	2
2.4	15		0240XHGS15	44.8		98.4	0.4	3.0	2
2.7	20		0240XHGS20	57.8	61.4	111.4	0.4	3.0	2
	25		0240XHGS25	69.8		123.4	0.4	3.0	2
	30		0240XHGS30	82.8	86.4	136.4	0.4	3.0	2
	3		MDW 0250PHT	11.6	15.3	68.3	0.3	3.0	1
	10		0250XHGS10	34.8	38.5	88.5	0.5	3.0	2
	12		0250XHGS12	37.8	41.5	91.5	0.5	3.0	2
2.5	15		0250XHGS15	44.8	48.5	98.5	0.5	3.0	2
	20		0250XHGS20	57.8	61.5	111.5	0.5	3.0	2
	25		0250XHGS25	69.8		123.5	0.5	3.0	2
	30		0250XHGS30	82.8		136.5	0.5	3.0	2
	3		MDW 0260PHT	13.9	17.8	68.3	0.3	3.0	1
	10	•	0260XHGS10	41.6		93.5	0.5	3.0	2
	12	Ŭ	0260XHGS12	47.6		99.5	0.5	3.0	2
2.6	15	•	0260XHGS15	56.6		108.5	0.5	3.0	2
2.0	20	•	0260XHGS20	71.6		123.5	0.5	3.0	2
	25	•	0260XHGS25	86.6		138.5	0.5	3.0	2
	30		0260XHGS30		105.5		0.5	3.0	2
	3	•	MDW 0270PHT	13.9	17.9	68.4	0.4	3.0	1
	10	•	0270XHGS10	41.5	45.5	93.5	0.4	3.0	2
	-							3.0	2
0.7	12		0270XHGS12	47.5		99.5	0.5		
2.7	15	_	0270XHGS15	56.5		108.5 123.5	0.5	3.0	2
	20	•	0270XHGS20	71.5			0.5	3.0	2
	25		0270XHGS25	86.5		138.5	0.5	3.0	2
	30	•	0270XHGS30	_	105.5		0.5	3.0	2
	3		MDW 0280PHT	13.7	-		0.4	3.0	1
	10	•	0280XHGS10	41.3			0.5	3.0	2
	12		0280XHGS12	47.3		99.5	0.5	3.0	2
2.8	15	•	0280XHGS15	56.3		108.5	0.5	3.0	2
	20		0280XHGS20	71.3		123.5	0.5	3.0	2
	25		0280XHGS25	86.3		138.5	0.5	3.0	2
	30		0280XHGS30	101.3	105.5	153.5	0.5	3.0	2
Part Nu	umber S	Suffi	ix - PHT: For Guide Hole						

Part Number Suffix - PHT: For Guide Hole	
Grade: ACX70 (XHGS series) / ACX20 (PHT s	eries)

3	Jiam	neter		.9 to 3.6mm				Dime	ensions (	mm)
3			Stock	Cat. No.			- 1			Fig
2.9   15		3		MDW 0290PHT	13.6	17.9	68.4	0.4	3.0	1
2.9   15		10		0290XHGS10	41.2	45.5	93.5	0.5	3.0	2
2.9   15		12		0290XHGS12	47.2	51.5	99.5	0.5	3.0	2
20	2.9	15		0290XHGS15	56.2	60.5	108.5		3.0	2
25		-	-							2
30			_							
3		-	-							
3.0 10			-						_	_
3.0 15			-							
3.0 15		_	_							
20	2 0		_							
25	3.0	-	_							
30			-							
3.1			_							
3.1 15			-						_	
3.1 15		_	_							
3.1 15										
20										2
25	3.1									2
30			_							2
3		25								2
10		30			117.0	121.6	171.6	0.6	4.0	2
3.2 15		3		MDW 0320PHT	15.6	20.4	72.4	0.4	4.0	1
3.2 15		10		0320XHGS10	48.8	53.6	103.6	0.6	4.0	2
20		12		0320XHGS12	53.8	58.6	108.6	0.6	4.0	2
25	3.2	15		0320XHGS15	63.8	68.6	118.6	0.6	4.0	2
30		20		0320XHGS20	81.8	86.6	136.6	0.6	4.0	2
3		25		0320XHGS25	98.8	103.6	153.6	0.6	4.0	2
3		30		0320XHGS30	116.8	121.6	171.6	0.6	4.0	2
10		3	•					0.4	4.0	1
12		10					103.6	0.6	4.0	2
3.3 15		-	_							2
20	3.3								_	2
25		-	-							2
30			_		-					2
3		-	-							
10			_							_
3.4 15			_							
3.4 15										
20	3.4									
25	J. <del>+</del>		_							
30 ● 0340XHGS30 116.5 121.6 171.6 0.6 4.0 2 3 ● MDW 0350PHT 15.3 20.5 72.5 0.5 4.0 1 10 ● 0350XHGS10 48.4 53.6 103.6 0.6 4.0 2 12 ● 0350XHGS12 53.4 58.6 108.6 0.6 4.0 2 3.5 15 ● 0350XHGS15 63.4 68.6 118.6 0.6 4.0 2 25 ● 0350XHGS20 81.4 86.6 136.6 0.6 4.0 2 25 ● 0350XHGS25 98.4 103.6 153.6 0.6 4.0 2 30 ● 0350XHGS30 116.4 121.6 171.6 0.6 4.0 2 30 ● 0350XHGS30 116.4 121.6 171.6 0.6 4.0 2 31 ● MDW 0360PHT 17.6 23.0 72.5 0.5 4.0 1 10 ● 0360XHGS10 55.3 60.7 108.7 0.7 4.0 2 11 ● 0360XHGS12 63.3 68.7 116.7 0.7 4.0 2 12 0360XHGS15 75.3 80.7 128.7 0.7 4.0 2 25 ● 0360XHGS20 95.3 100.7 148.7 0.7 4.0 2 25 ● 0360XHGS20 115.3 120.7 168.7 0.7 4.0 2			-							
3			_							
10									_	
12										
3.5 15										
20	2.5									
25	ა.5									
30 ● 0350XHGS30 116.4 121.6 171.6 0.6 4.0 2  3 ● MDW 0360PHT 17.6 23.0 72.5 0.5 4.0 1  10 ● 0360XHGS10 55.3 60.7 108.7 0.7 4.0 2  12 0360XHGS12 63.3 68.7 116.7 0.7 4.0 2  3.6 15 ● 0360XHGS15 75.3 80.7 128.7 0.7 4.0 2  20 ● 0360XHGS20 95.3 100.7 148.7 0.7 4.0 2  25 ● 0360XHGS25 115.3 120.7 168.7 0.7 4.0 2										
3										
10			-						_	_
3.6 12 0360XHGS12 63.3 68.7 116.7 0.7 4.0 2 15 0360XHGS15 75.3 80.7 128.7 0.7 4.0 2 20 0 0360XHGS20 95.3 100.7 148.7 0.7 4.0 2 25 0 0360XHGS25 115.3 120.7 168.7 0.7 4.0 2			_							
3.6 15										2
20 <b>0360XHGS20</b> 95.3 100.7 148.7 0.7 4.0 2 0360 <b>XHGS25</b> 115.3 120.7 168.7 0.7 4.0 2										2
25 <b>0360XHGS25</b> 115.3 120.7 168.7 0.7 4.0 2	3.6									2
									4.0	2
30   ●   <b>0360XHGS30</b>   135.3   140.7   188.7   0.7   4.0   2										2
		30		0360XHGS30	135.3	140.7	188.7	0.7	4.0	2

Part Number Suffix - PHT: For Guide Hole Grade: ACX70 (XHGS series) / ACX20 (PHT series)

### XHGS series/PHT series (Internal Coolant Supply) (2400 Steel Aloy Steel Jun 1294) (2400







LU LCF OAL

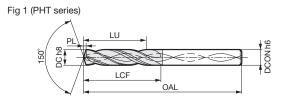


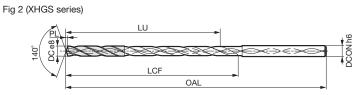






10D 12D 15D 20D 25D 30D Pilot 3D





Diameter   Ø3.7 to   4.4mm			/	/ <b>O</b> A	AL					
Discription   Security   Discription   Dis										
3	Diam	neter	ø3.	.7 to 4.4mm				Dime	ensions (	mm)
3	Dia.	Hole Depth	2CK	Cat No	Effective Length	Flute Length Overa	all Length	Tip	Shank Dia.	Fia
10	DC		_							
3.7 15		_	_		_					- 1
3.7   15							-			
20							-		_	
25	3.7	-	_				-			
30			_							
3		-		00.07000		-	-			
3.8   10			-				-			
3.8 15		_	_				-			
3.8		-					-			
20	3.8		•				-			
25	0.0		_				-			_
30							-		-	
3.9   MDW 040PHT   19.4   25.5   80.5   10.7   4.0   2   2.5   0.440XHGS15   22.6   88.7   116.7   0.7   4.0   2   2.5   2.5   0.440XHGS25   2.5   0.5   2.5   2.5   0.5   2.5   2.5   0.5   0.5   2.5   0.5   0.5   2.5   0.5   0.5   2.5   0.5   0.5   2.5   0.5   0.5   0.5   2.5   0.5   0.5   0.5   2.5   0.					135.0	140.7 18	88.7	0.7	4.0	2
3.9   12			-				-		_	
3.9 15		10		0390XHGS10	54.9	60.7 10	8.7	0.7	4.0	2
20		12		0390XHGS12	62.9	68.7 11	6.7	0.7	4.0	2
25	3.9	15		0390XHGS15	74.9	80.7 12	8.7	0.7	4.0	2
30		20		0390XHGS20	94.9	100.7 14	8.7	0.7	4.0	2
3		25					-	0.7	4.0	
10			_				_		_	_
4.0 15		-								1
4.0 15		_	_		-		-		_	
20			_							_
25	4.0		_				-			
30 ● 0400XHGS30 134.7 140.7 188.7 0.7 4.0 2 3 ● MDW 0410PHT 19.4 25.5 80.5 0.5 5.0 1 10 ● 0410XHGS10 62.6 68.7 120.7 0.7 5.0 2 12 0410XHGS15 82.6 88.7 140.7 0.7 5.0 2 25 ● 0410XHGS20 105.6 111.7 163.7 0.7 5.0 2 25 ● 0410XHGS30 150.6 156.7 208.7 0.7 5.0 2 30 ● 0410XHGS30 150.6 156.7 208.7 0.7 5.0 2 30 ● 0420XHGS10 62.5 68.8 120.8 0.8 5.0 2 12 0420XHGS10 62.5 68.8 140.8 0.8 5.0 2 25 ● 0420XHGS10 62.5 111.8 163.8 0.8 5.0 2 25 ● 0420XHGS20 105.5 111.8 163.8 0.8 5.0 2 25 ● 0420XHGS30 150.5 156.8 208.8 0.8 5.0 2 25 ● 0420XHGS30 150.5 156.8 208.8 0.8 5.0 2 25 ● 0420XHGS10 62.4 68.8 120.8 0.8 5.0 2 30 ● 0420XHGS10 62.4 68.8 120.8 0.8 5.0 2 4.3 ● MDW 0430PHT 19.2 25.6 80.6 0.6 5.0 1 10 ● 0430XHGS10 69.4 75.8 127.8 0.8 5.0 2 4.3 15 ● 0430XHGS10 69.4 75.8 127.8 0.8 5.0 2 4.3 15 ● 0430XHGS10 69.4 75.8 127.8 0.8 5.0 2 30 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 30 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 31 ● 0430XHGS10 69.4 75.8 127.8 0.8 5.0 2 32 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 33 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 34.3 15 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 35 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 36 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 37 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 38 ● 0440XHGS30 150.4 156.8 208.8 0.8 5.0 2 39 ● 0440XHGS30 150.4 156.8 208.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 140.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 111.8 163.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 150.2 111.8 163.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 150.2 111.8 163.8 0.8 5.0 2 4.5 ● 0440XHGS10 150.2 111.8 163.8 0.8 5.0 2 4.6 ● 0440XHGS30 150.2 156.8 208.8 0.8 5.0 2		-	_				-			
3			_				-			
10 ● 0410XHGS10 62.6 68.7 120.7 0.7 5.0 2 12 0410XHGS12 69.6 75.7 127.7 0.7 5.0 2 20 ● 0410XHGS20 105.6 111.7 163.7 0.7 5.0 2 25 ● 0410XHGS25 127.6 133.7 185.7 0.7 5.0 2 30 ● 0410XHGS30 150.6 156.7 208.7 0.7 5.0 2 30 ● 0420XHGS10 62.5 68.8 120.8 0.8 5.0 2 12 0420XHGS10 62.5 68.8 120.8 0.8 5.0 2 12 0420XHGS10 62.5 88.8 140.8 0.8 5.0 2 25 ● 0420XHGS20 105.5 111.8 163.8 0.8 5.0 2 25 ● 0420XHGS20 105.5 111.8 163.8 0.8 5.0 2 25 ● 0420XHGS20 150.5 156.8 208.8 0.8 5.0 2 30 ● 0420XHGS10 62.4 68.8 120.8 0.8 5.0 2 4.2 15 ● 0420XHGS20 150.5 156.8 208.8 0.8 5.0 2 25 ● 0420XHGS10 62.4 68.8 120.8 0.8 5.0 2 4.3 ● MDW 0430PHT 19.2 25.6 80.6 0.6 5.0 1 10 ● 0430XHGS10 62.4 68.8 120.8 0.8 5.0 2 4.3 15 ● 0430XHGS12 69.4 75.8 127.8 0.8 5.0 2 4.3 15 ● 0430XHGS12 69.4 75.8 127.8 0.8 5.0 2 20 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 25 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 30 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 4.3 15 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 30 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 4.3 15 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2 4.3 15 ● 0430XHGS12 69.4 75.8 127.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 111.8 163.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 111.8 163.8 0.8 5.0 2 4.4 15 ● 0440XHGS10 62.2 111.8 163.8 0.8 5.0 2 4.5 ● 0440XHGS10 150.2 111.8 163.8 0.8 5.0 2 4.6 ● 0440XHGS10 150.2 111.8 163.8 0.8 5.0 2			_				_			
4.1 15			_							-
4.1 15		-					-			
20	4.1					-				
25			•		105.6	111.716	3.7		5.0	2
3		25		0410XHGS25	127.6		_	0.7	5.0	2
10		30		0410XHGS30	150.6	156.7 20	8.7	0.7	5.0	2
12		3		MDW 0420PHT	19.3	25.6	0.6	0.6	5.0	1
4.2 15		10		0420XHGS10	62.5	68.8 12	8.0	8.0	5.0	2
20				0420XHGS12	69.5			8.0	5.0	2
25	4.2									
30 ● 0420XHGS30 150.5 156.8 208.8 0.8 5.0 2  3 ● MDW 0430PHT 19.2 25.6 80.6 0.6 5.0 1  10 ● 0430XHGS10 62.4 68.8 120.8 0.8 5.0 2  12 0430XHGS12 69.4 75.8 127.8 0.8 5.0 2  24.3 15 ● 0430XHGS15 82.4 88.8 140.8 0.8 5.0 2  20 ● 0430XHGS20 105.4 111.8 163.8 0.8 5.0 2  25 ● 0430XHGS25 127.4 133.8 185.8 0.8 5.0 2  30 ● 0430XHGS30 150.4 156.8 208.8 0.8 5.0 2  30 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2  12 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2  4.4 15 ● 0440XHGS15 82.2 88.8 140.8 0.8 5.0 2  4.5 ● 0440XHGS10 62.2 111.8 163.8 0.8 5.0 2  4.6 □ 0440XHGS10 62.2 111.8 163.8 0.8 5.0 2  30 ● 0440XHGS25 127.2 133.8 185.8 0.8 5.0 2  30 ● 0440XHGS25 127.2 133.8 185.8 0.8 5.0 2  30 ● 0440XHGS30 150.2 156.8 208.8 0.8 5.0 2										
3										
10										
12       0430XHGS12       69.4       75.8       127.8       0.8       5.0       2         4.3       15       0430XHGS15       82.4       88.8       140.8       0.8       5.0       2         20       0430XHGS20       105.4       111.8       163.8       0.8       5.0       2         25       0430XHGS25       127.4       133.8       185.8       0.8       5.0       2         30       0430XHGS30       150.4       156.8       208.8       0.8       5.0       2         10       0440XHGS30       62.2       68.8       120.8       0.8       5.0       2         4.4       15       0440XHGS12       69.2       75.8       127.8       0.8       5.0       2         4.4       15       0440XHGS15       82.2       88.8       140.8       0.8       5.0       2         20       0440XHGS20       105.2       111.8       163.8       0.8       5.0       2         25       0440XHGS25       127.2       133.8       185.8       0.8       5.0       2         30       0440XHGS30       150.2       156.8       208.8       0.8       5.0       2     <		_	_							
4.3 15			_							
20	13									
25	7.3		_							
30 ● 0430XHGS30 150.4 156.8 208.8 0.8 5.0 2  3 ● MDW 0440PHT 19.0 25.6 80.6 0.6 5.0 1  10 ● 0440XHGS10 62.2 68.8 120.8 0.8 5.0 2  12 0440XHGS12 69.2 75.8 127.8 0.8 5.0 2  4.4 15 ● 0440XHGS15 82.2 88.8 140.8 0.8 5.0 2  20 ● 0440XHGS20 105.2 111.8 163.8 0.8 5.0 2  25 ● 0440XHGS25 127.2 133.8 185.8 0.8 5.0 2  30 ● 0440XHGS30 150.2 156.8 208.8 0.8 5.0 2			_							
3										
10			-						_	
12										
4.4       15       •       0440XHGS15       82.2       88.8       140.8       0.8       5.0       2         20       •       0440XHGS20       105.2       111.8       163.8       0.8       5.0       2         25       •       0440XHGS25       127.2       133.8       185.8       0.8       5.0       2         30       •       0440XHGS30       150.2       156.8       208.8       0.8       5.0       2				0440XHGS12				8.0		
25 <b>0440XHGS25</b> 127.2 133.8 185.8 0.8 5.0 2 0440XHGS30 150.2 156.8 208.8 0.8 5.0 2	4.4									
30 • 0440XHGS30 150.2 156.8 208.8 0.8 5.0 2		20		0440XHGS20	105.2	111.8 16	3.8	8.0	5.0	2
		25								
Part Number Suffix DUT: For Guide Hele					150.2	156.8 20	8.8	8.0	5.0	2

	00		OTTOXI IGOOD	100.2	•
Part Nu	ımber S	Suffi	ix - PHT: For Guide Hole		
Grade:	ACX70	(XI	HGS series) / ACX20 (PH	T series	3)

Diam	neter	Ø4.	.5 to 5.2mm
Dia.	Hole Depth	Stock	Cat. No.
	3		<b>MDW 0450PHT</b>

Dimensions	(mm)

DCON

	3		MDW 0450PHT	18.9	25.6	80.6	0.6	5.0	1
	10		0450XHGS10	62.1	68.8	120.8	8.0	5.0	2
	12		0450XHGS12	69.1	75.8	127.8	8.0	5.0	2
4.5	15		0450XHGS15	82.1	88.8	140.8	8.0	5.0	2
	20		0450XHGS20	105.1	111.8	163.8	8.0	5.0	2
	25		0450XHGS25	127.1	133.8	185.8	8.0	5.0	2
	30		0450XHGS30	150.1	156.8	208.8	8.0	5.0	2
	3		MDW 0460PHT	21.2	-	80.6	0.6	5.0	1
	10		0460XHGS10	68.9			8.0	5.0	2
	12		0460XHGS12	78.9			8.0	5.0	2
4.6	15		0460XHGS15		100.8		8.0	5.0	2
	20		0460XHGS20		125.8		8.0	5.0	2
	25		0460XHGS25		150.8		8.0	5.0	2
	30		0460XHGS30		175.8		8.0	5.0	2
	3		MDW 0470PHT	21.1	28.1	80.6	0.6	5.0	1
	10		0470XHGS10	68.9			0.9	5.0	2
	12		0470XHGS12	78.9			0.9	5.0	2
4.7	15		0470XHGS15		100.9		0.9	5.0	2
	20		0470XHGS20		125.9		0.9	5.0	2
	25		0470XHGS25		150.9		0.9	5.0	2
	30	•	0470XHGS30		175.9		0.9	5.0	2
	3		MDW 0480PHT	20.9	-	80.6	0.6	5.0	1
	10		0480XHGS10	68.7			0.9	5.0	2
	12		0480XHGS12	78.7			0.9	5.0	2
4.8	15	•	0480XHGS15		100.9		0.9	5.0	2
	20		0480XHGS20		125.9		0.9	5.0	2
	25	•	0480XHGS25		150.9		0.9	5.0	2
	30		0480XHGS30		175.9		0.9	5.0	2
	3	•	MDW 0490PHT	20.9		80.7	0.7	5.0	1
	10		0490XHGS10	68.6			0.9	5.0	2
4.0	12		0490XHGS12	78.6			0.9	5.0	2
4.9	15	•	0490XHGS15		100.9		0.9	5.0	2
	20 25	_	0490XHGS20 0490XHGS25		125.9 1 150.9 2		0.9	5.0 5.0	2
	30	•					0.9	5.0	2
	30	•	0490XHGS30 MDW 0500PHT	20.7	175.9 28.2	80.7	0.9	5.0	1
	10	5	0500XHGS10	68.4	-		0.7	5.0	2
	12		0500XHGS10	78.4			0.9	5.0	2
5.0	15	5	0500XHGS12		100.9	- 1	0.9	5.0	2
3.0	20		0500XHGS15		125.9		0.9	5.0	2
	25	•	0500XHGS25		150.9		0.9	5.0	2
	30		0500XHGS25		175.92		0.9	5.0	2
	30		MDW 0540DUT			223.9	0.9	5.0	4

20.6 28.2 82.7 0.7

76.3 83.9 137.9 0.9

85.3 92.9 146.9 0.9

20.4 28.2 82.7 0.7

101.1 108.9 162.9 0.9

131.1 138.9 192.9 0.9

156.1 163.9 217.9 0.9

**0520XHGS30** | 184.1 | 191.9 | 245.9 | 0.9

101.3 108.9 162.9 0.9

131.3 138.9 192.9

156.3 163.9 217.9

184.3 191.9 245.9

76.1 83.9 137.9

85.1 92.9 146.9

6.0

6.0

6.0

6.0 2

6.0 2

6.0 2

6.0

6.0 2 2

6.0

6.0

6.0 2

Part Number Suffix - PHT: For Guide Hole

30 3

10

12

15

20

25 

30

3

10

12

15

20

25

30

5.1

5.2

Grade: ACX70 (XHGS series) / ACX20 (PHT series)

**MDW 0510PHT** 

**MDW 0520PHT** 

0510XHGS10

0510XHGS12

0510XHGS15

0510XHGS20

0510XHGS25

0510XHGS30

0520XHGS10

0520XHGS12

0520XHGS15

0520XHGS20

0520XHGS25

### XHGS series/PHT series (Internal Coolant Supply) (aton Steel Alry) Seed (Internal Coolant Supply) (aton Steel Alry) Seed (Internal Coolant Supply)





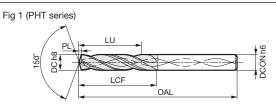


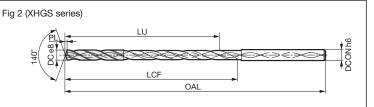






10D 12D 15D 20D 25D 30D Pilot 3D





	Diam	eter		.3 to 5.9mm				Dime	nsions (	mm)
	Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length	Tip	Shank Dia.	Fig
Ц	DC	(L/D)	Š	Gat. No.	LU	LCF	OAL	PL	DCON	ı ıy
		3		MDW 0530PHT	20.3	28.2	82.7	0.7	6.0	1
		10		0530XHGS10	76.1	84.0	138.0	1.0	6.0	2
		12		0530XHGS12	85.1	93.0	147.0	1.0	6.0	2
П	5.3	15		0530XHGS15	101.1	109.0	163.0	1.0	6.0	2
П		20		0530XHGS20	131.1	139.0	193.0	1.0	6.0	2
П		25		0530XHGS25	156.1	164.0	218.0	1.0	6.0	2
П		30		0530XHGS30	184.1	192.0	246.0	1.0	6.0	2
П		3		MDW 0540PHT	20.1	28.2	82.7	0.7	6.0	1
П		10		0540XHGS10	75.9	84.0	138.0	1.0	6.0	2
П		12		0540XHGS12	84.9	93.0	147.0	1.0	6.0	2
П	5.4	15		0540XHGS15	100.9	109.0	163.0	1.0	6.0	2
		20		0540XHGS20	130.9	139.0	193.0	1.0	6.0	2
П		25		0540XHGS25	155.9	164.0	218.0	1.0	6.0	2
		30		0540XHGS30	183.9	192.0	246.0	1.0	6.0	2
		3		MDW 0550PHT	20.0	28.2	82.7	0.7	6.0	1
		10		0550XHGS10	75.8	84.0	138.0	1.0	6.0	2
		12		0550XHGS12	84.8	93.0	147.0	1.0	6.0	2
П	5.5	15		0550XHGS15	100.8	109.0	163.0	1.0	6.0	2
		20		0550XHGS20	130.8	139.0	193.0	1.0	6.0	2
П		25		0550XHGS25	155.8	164.0	218.0	1.0	6.0	2
П		30		0550XHGS30	183.8	192.0	246.0	1.0	6.0	2
		3		MDW 0560PHT	22.4	30.8	82.8	0.8	6.0	1
		10		0560XHGS10	82.6	91.0	143.0	1.0	6.0	2
		12		0560XHGS12	94.6	103.0	155.0	1.0	6.0	2
	5.6	15		0560XHGS15	112.6	121.0	173.0	1.0	6.0	2
		20		0560XHGS20	142.6	151.0	203.0	1.0	6.0	2
		25		0560XHGS25	172.6	181.0	233.0	1.0	6.0	2
		30		0560XHGS30	202.6	211.0	263.0	1.0	6.0	2
		3	•	MDW 0570PHT	22.3	30.8	82.8	0.8	6.0	1
		10		0570XHGS10	82.5	91.0	143.0	1.0	6.0	2
		12		0570XHGS12	94.5	103.0	155.0	1.0	6.0	2
	5.7	15		0570XHGS15	112.5	121.0	173.0	1.0	6.0	2
		20		0570XHGS20	142.5	151.0	203.0	1.0	6.0	2
		25		0570XHGS25	172.5	181.0	233.0	1.0	6.0	2
		30		0570XHGS30	202.5	211.0	263.0	1.0	6.0	2
		3		MDW 0580PHT	22.1	30.8	82.8	0.8	6.0	1
		10		0580XHGS10	82.4	91.1	143.1	1.1	6.0	2
		12		0580XHGS12	-	103.1		1.1	6.0	2
	5.8	15		0580XHGS15	112.4	121.1	173.1	1.1	6.0	2
		20		0580XHGS20	142.4	151.1	203.1	1.1	6.0	2
		25		0580XHGS25	172.4	181.1	233.1	1.1	6.0	2
		30		0580XHGS30	202.4	211.1	263.1	1.1	6.0	2
		3		MDW 0590PHT	22.0	30.8	82.8	0.8	6.0	1
		10		0590XHGS10	82.3	91.1	143.1	1.1	6.0	2
		12		0590XHGS12	94.3	103.1	155.1	1.1	6.0	2
	5.9	15		0590XHGS15	112.3	121.1	173.1	1.1	6.0	2

**0590XHGS20** 142.3 151.1 203.1 1.1

**0590XHGS25** | 172.3 | 181.1 | 233.1 | 1.1

0590XHGS30 202.3 211.1 263.1 1.1 Part Number Suffix - PHT: For Guide Hole Grade: ACX70 (XHGS series) / ACX20 (PHT series)

20

25

Diameter	ø6	0 to	6	6mm

Dim	on	cio	nc	m	m)

3	Diameter 90.0 to 0.011111 Dimensions (mm)									
6.0 10			Stock	Cat. No.						Fig
12		3		MDW 0600PHT	21.8	30.8	82.8	0.8	6.0	1
6.0 15		10		0600XHGS10	82.1	91.1	143.1	1.1	6.0	2
20		12		0600XHGS12	94.1	103.1	155.1	1.1	6.0	2
25	6.0	15		0600XHGS15	112.1	121.1	173.1	1.1	6.0	2
25		20	•	0600XHGS20	142.1	151.1	203.1	1.1	6.0	2
30		25		0600XHGS25				1.1	6.0	2
6.1   10		30		0600XHGS30	202.1	211.1	263.1	1.1	6.0	2
6.1 15		3		MDW 0610PHT	24.2	33.3	88.8	0.8	7.0	1
6.1 15		10	•	0610XHGS10	90.0	99.1	154.1	1.1	7.0	2
6.1   15		12		0610XHGS12	101.0	110.1	165.1	1.1	7.0	2
20	6.1	15			120.0	129.1	184.1			2
25		20			153.0	162.1	217.1	1.1	7.0	2
30										2
3			_							2
6.2 15			_							1
6.2  15		-	_		_					2
6.2 15										2
20	62								_	2
25	0.2									2
30		-	_			_			_	2
6.3			_							2
6.3  10  0630XHGS10  12  0630XHGS12  100.7  110.1  165.1  1.1  7.0  20  0630XHGS25  119.7  129.1  184.1  1.1  7.0  25  0630XHGS20  152.7  162.1  217.1  1.1  7.0  25  0630XHGS25  184.7  194.1  249.1  1.1  7.0  25  0630XHGS30  217.7  227.1  228.1  1.1  7.0  24  0640XHGS10  12  0640XHGS10  12  0640XHGS12  100.6  110.2  165.2  1.2  7.0  12  0640XHGS25  119.6  120.2  121.2  121.1  1.1  1.1  1.0  0640XHGS10  122  0640XHGS10  123.8  33.4  88.9  0.9  7.0  12  0640XHGS10  12  0640XHGS10  13  14  15  0640XHGS25  152.6  162.2  217.2  1.2  7.0  25  0640XHGS30  217.6  227.2  282.2  1.2  7.0  10  0650XHGS10  10.5  110.2  165.2  1.2  7.0  10  0650XHGS10  100.5  110.2  165.2  1.2  7.0  12  0650XHGS10  119.5  129.2  184.2  1.2  7.0  12  0650XHGS25  119.5  129.2  184.2  1.2  7.0  12  0650XHGS10  119.5  129.2  184.2  1.2  7.0  12  0650XHGS25  184.5  194.2  249.2  1.2  7.0  12  0650XHGS20  152.5  162.2  217.2  1.2  7.0  12  0650XHGS30  217.5  227.2  282.2  1.2  7.0  0650XHGS30  217.5  227.2  282.2  1.2  7.0  0650XHGS30  217.5  227.2  282.2  1.2  7.0  0650XHGS30  217.5  227.2  282.2  1.2  7.0  0650XHGS30  217.5  227.2  282.2  1.2  7.0  0650XHGS30  0650XHGS30  217.5  227.2  282.2  1.2  7.0  0650XHGS30  0650XHGS30  217.5  227.2  282.2  1.2  7.0  0650XHGS30  07.0  0660XHGS30  07.0  0660XHGS30  07.0  07.0  07.0			_		_	_			_	1
6.3  12  0630XHGS12  100.7 110.1 165.1 1.1 7.0  0630XHGS25  119.7 129.1 184.1 1.1 7.0  25  0630XHGS25  152.7 162.1 217.1 1.1 7.0  25  0630XHGS25  184.7 194.1 249.1 1.1 7.0  27  30  0630XHGS30  217.7 227.1 282.1 1.1 7.0  10  0640XHGS30  12  0640XHGS10  12  0640XHGS10  13  0640XHGS12  100.6 110.2 165.2 1.2 7.0  12  0640XHGS25  119.6 129.2 184.2 1.2 7.0  25  0640XHGS25  184.6 194.2 249.2 1.2 7.0  25  0640XHGS30  217.6 227.2 282.2 1.2 7.0  25  0650XHGS10  10  0650XHGS10  10  0650XHGS10  10  0650XHGS10  119.5 129.2 184.2 1.2 7.0  12  0650XHGS10  13  0650XHGS10  14  15  0650XHGS10  17.5 129.2 184.2 1.2 7.0  184.5 194.2 249.2 1.2 7.0  185.5 15  0650XHGS25  184.5 194.2 249.2 1.2 7.0  185.5 162.2 217.2 1.2 7.0  185.5 162.2 217.2 1.2 7.0  185.5 165.2 17.2 7.0  185.5 165.2 17.2 7.0  185.5 165.2 17.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 185.5 162.2 217.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 186.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0  185.5 184.5 194.2 249.2 1.2 7.0										2
6.3			_							2
20	6.0									2
25	0.3				-		-			
30										2
3		-	_						_	2
6.4  10  0640XHGS10  12  0640XHGS12  100.6 110.2 165.2 1.2 7.0  100.6 110.2 165.2 1.2 7.0  100.6 110.2 165.2 1.2 7.0  100.6 110.2 165.2 1.2 7.0  100.6 129.2 184.2 1.2 7.0  100.6 162.2 217.2 1.2 7.0  100.6 162.2 217.2 1.2 7.0  100.6 162.2 217.2 1.2 7.0  100.6 162.2 217.2 1.2 7.0  100.6 162.2 217.2 1.2 7.0  100.6 1620XHGS30  100.5 110.2 165.2 1.2 7.0  100.5 15  100.6 1620XHGS10  100.5 110.2 165.2 1.2 7.0  100.6 1620XHGS10  100.5 110.2 165.2 1.2 7.0  100.6 1620XHGS10  100.5 110.2 165.2 1.2 7.0  100.6 1620XHGS10  100.5 110.2 165.2 1.2 7.0  100.6 1620XHGS20  100.5 110.2 165.2 1.2 7.0  100.6 1650XHGS20  100.5 110.2 165.2 1.2 7.0  100.6 1600XHGS20  100.5 110.2 165.2 1.2 7.0  100.6 1600XHGS20  100.5 110.2 165.2 1.2 7.0  100.6 17.5 129.2 184.2 1.2 7.0  100.6 1600XHGS30  100.5 110.2 165.2 1.2 7.0  100.6 1600XHGS30  100.5 110.2 165.2 1.2 7.0  100.5 110.2 1			_							2
6.4  12  0640XHGS12  100.6  110.2  165.2  1.2  7.0  0640XHGS15  119.6  129.2  184.2  1.2  7.0  152.6  162.2  172.2  172.0  184.6  194.2  184.		_	_							1
6.4 15			Ц							2
20	C 4									2
25	0.4									2
30 ● 0640XHGS30 217.6 227.2 282.2 1.2 7.0  3 ● MDW 0650PHT 23.7 33.4 88.9 0.9 7.0  10 ● 0650XHGS10 89.5 99.2 154.2 1.2 7.0  12 ● 0650XHGS12 100.5 110.2 165.2 1.2 7.0  15 ● 0650XHGS15 119.5 129.2 184.2 1.2 7.0  20 ● 0650XHGS20 152.5 162.2 217.2 1.2 7.0  25 ● 0650XHGS25 184.5 194.2 249.2 1.2 7.0  30 ● 0650XHGS30 217.5 227.2 282.2 1.2 7.0  31 ● MDW 0660PHT 26.0 35.9 88.9 0.9 7.0  10 ● 0660XHGS10 96.3 106.2 159.2 1.2 7.0		-	_			_				2
3										2
10		_	_						_	2
12					-					1
6.5 15		-	_				-			2
20										2
25	6.5	-	_							2
30 ● <b>0650XHGS30</b> 217.5 227.2 282.2 1.2 7.0 3 ● <b>MDW 0660PHT</b> 26.0 35.9 88.9 0.9 7.0 10 ● <b>0660XHGS10</b> 96.3 106.2 159.2 1.2 7.0										2
3 MDW 0660PHT 26.0 35.9 88.9 0.9 7.0 0660XHGS10 96.3 106.2 159.2 1.2 7.0		-					-		_	2
10 • 0660XHGS10 96.3 106.2 159.2 1.2 7.0			-							2
									_	1
12   <b>0660XHGS12</b>  110.3 120.2 173.2  1.2   7.0										2
										2
	6.6									2
								1.2	7.0	2
		-	-							2
30 ● <b>0660XHGS30</b>  236.3  246.2  299.2   1.2   7.0		30		0660XHGS30	236.3	246.2	299.2	1.2	7.0	2

Part Number Suffix - PHT: For Guide Hole Grade: ACX70 (XHGS series) / ACX20 (PHT series)

2

6.0

6.0

6.0 2

### XHGS series/PHT series (Internal Coolant Supply) Cator Steel Tempered Aloy Steel Cotton Steel Tempered Aloy Steel Control Steel Steel







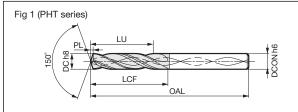


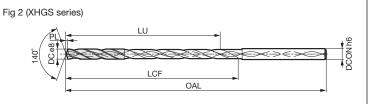






10D 12D 15D 20D 25D 30D Pilot 3D





Diameter	α6	7 to	7	2mi	m
Tharmeter	WO.	. / 10	-	'JIII	

Dimensions	(mm)
Difficition	(

Dimensione	(mm)

Dian	ieter		.7 to 7.3mm			Dime	ensions (	mm)
Dia.	Hole Depth	Stock	Cat. No.	Effective Length Flute L	-	Tip <b>PL</b>	Shank Dia.	Fig
	3	•	MDW 0670PHT		5.9 88.9	0.9	7.0	1
	10		0670XHGS10		6.2 159.2	1.2	7.0	2
	12		0670XHGS12	110.2 120		1.2	7.0	2
6.7	15		0670XHGS15	131.2 141		1.2	7.0	2
0.7	20	•	0670XHGS20	166.2 176	-	1.2	7.0	2
	25	•	0670XHGS25	201.2211		1.2	7.0	2
	30	•	0670XHGS30	236.2 246		1.2	7.0	2
	3	•	MDW 0680PHT	25.7 35		0.9	7.0	1
	10	•	0680XHGS10		3.2 159.2	1.2	7.0	2
	12		0680XHGS12	110.0120		1.2	7.0	2
6.8	15	•	0680XHGS15	131.0141		1.2	7.0	2
0.0	20	•	0680XHGS20	166.0176		1.2	7.0	2
	25	•	0680XHGS25	201.0211		1.2	7.0	2
	30		0680XHGS30	236.0246		1.2	7.0	2
		_						
	10	•	MDW 0690PHT 0690XHGS10		5.9 88.9 6.3 159.3	0.9	7.0	1
			0690XHGS10 0690XHGS12	110.0120		1.3	7.0	2
6.0	12						7.0	2
6.9	15		0690XHGS15	131.0141		1.3	7.0	_
	20	•	0690XHGS20	166.0 176		1.3	7.0	2
	25		0690XHGS25	201.0211		1.3	7.0	2
	30	•	0690XHGS30	236.0 246		1.3	7.0	2
	3		MDW 0700PHT	25.4 35		0.9	7.0	1
	10	•	0700XHGS10		6.3 159.3	1.3	7.0	2
	12		0700XHGS12	109.8 120		1.3	7.0	2
7.0	15	•	0700XHGS15	130.8 141		1.3	7.0	2
	20		0700XHGS20	165.8 176		1.3	7.0	2
	25	•	0700XHGS25	200.8 211		1.3	7.0	2
	30		0700XHGS30	235.8 246		1.3	7.0	2
	3	•	MDW 0710PHT		3.5 95.0	1.0	8.0	1
	10		0710XHGS10	103.7 114		1.3	8.0	2
	12	_	0710XHGS12	116.7 127		1.3	8.0	2
7.1	15		0710XHGS15	138.7 149		1.3	8.0	2
	20	•	0710XHGS20	176.7 187	-	1.3	8.0	2
	25		0710XHGS25	213.7 224		1.3	8.0	2
	30	•	0710XHGS30	251.7 262		1.3	8.0	2
	3		MDW 0720PHT		3.5 95.0	1.0	8.0	1
	10	•	0720XHGS10	103.5 114		1.3	8.0	2
	12		0720XHGS12	116.5 127		1.3	8.0	2
7.2	15	•	0720XHGS15	138.5 149		1.3	8.0	2
	20		0720XHGS20	176.5 187		1.3	8.0	2
	25		0720XHGS25	213.5 224		1.3	8.0	2
	30		0720XHGS30	251.5 262		1.3	8.0	2
	3	•	MDW 0730PHT		3.5 95.0	1.0	8.0	1
	10		0730XHGS10	103.4 114		1.3	8.0	2
	12		0730XHGS12	116.4 127		1.3	8.0	2
7.3	15		0730XHGS15	138.4 149		1.3	8.0	2
	20		0730XHGS20	176.4 187	-	1.3	8.0	2
	25		0730XHGS25	213.4 224		1.3	8.0	2
	30			251.4 262	2.3 318.3	1.3	8.0	2
D A A I-	ımbor 9	٠ دد	iv DUT: For Guido Holo					

	30		0730XHGS30	251.4	2	
Part Number Suffix - PHT: For Guide Hole						
Grade:	ACX70	(XI	HGS series) / ACX20 (PH	T series	3)	

Jiam	ameter Ø7.4 to 8.0mm Dimensions (							nsions (	mm
Dia.	Hole Depth (L/D)	Stock	Cat. No.	Effective Length F	lute Length	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fig
	3		MDW 0740PHT	27.4	38.5	95.0	1.0	8.0	1
	10		0740XHGS10	103.2			1.3	8.0	2
	12		0740XHGS12	116.2	127.3	183.3	1.3	8.0	2
7.4	15		0740XHGS15	138.2	149.3	205.3	1.3	8.0	2
	20		0740XHGS20	176.2	187.3	243.3	1.3	8.0	2
	25		0740XHGS25	213.2	224.3	280.3	1.3	8.0	2
	30		0740XHGS30	251.2	262.3	318.3	1.3	8.0	2
	3		MDW 0750PHT	27.3	38.5	95.0	1.0	8.0	1
	10		0750XHGS10	103.2	114.4	170.4	1.4	8.0	2
	12		0750XHGS12	116.2	127.4	183.4	1.4	8.0	2
7.5	15		0750XHGS15	138.2	149.4	205.4	1.4	8.0	2
	20		0750XHGS20	176.2	187.4	243.4	1.4	8.0	2
	25	•	0750XHGS25	213.22			1.4	8.0	2
	30		0750XHGS30	251.22			1.4	8.0	2
	3	•	MDW 0760PHT	29.6	41.0	95.0	1.0	8.0	1
	10		0760XHGS10	110.0	-		1.4	8.0	2
	12		0760XHGS12	126.0			1.4	8.0	2
7.6	15		0760XHGS15	150.0			1.4	8.0	2
	20	•	0760XHGS20	190.02			1.4	8.0	2
	25	•	0760XHGS25	230.02			1.4	8.0	2
	30	•	0760XHGS30	270.02			1.4	8.0	2
	3		MDW 0770PHT	_		95.0	1.0	8.0	1
	10	6	0770XHGS10	109.9	-		1.4	8.0	2
	12	_	0770XHGS10	125.9		-	1.4	8.0	2
7.7		•					1.4		
1.1	15		0770XHGS15	149.9				8.0	2
	20 25	P	0770XHGS20 0770XHGS25	229.92			1.4	8.0	
		•					1.4	8.0	2
	30		0770XHGS30	269.9		95.0	1.4	8.0	1
	3	•	MDW 0780PHT	29.3	41.0		1.0	8.0	
	10		0780XHGS10	109.7			1.4	8.0	2
	12		0780XHGS12	125.7			1.4	8.0	2
7.8	15		0780XHGS15	149.7			1.4	8.0	2
	20	•	0780XHGS20	189.7			1.4	8.0	2
	25		0780XHGS25	229.7			1.4	8.0	2
	30	•	0780XHGS30	269.7			1.4	8.0	2
	3		MDW 0790PHT	29.3		95.1	1.1	8.0	1
	10	•	0790XHGS10	109.6		-	1.4	8.0	2
	12		0790XHGS12	125.6			1.4	8.0	2
7.9	15	•	0790XHGS15	149.6	-		1.4	8.0	2
	20		0790XHGS20	189.6			1.4	8.0	2
	25		0790XHGS25	229.6			1.4	8.0	2
	30		0790XHGS30	269.6			1.4	8.0	2
	3		MDW 0800PHT	29.1	41.1	95.1	1.1	8.0	1
	10		0800XHGS10	109.5	-		1.5	8.0	2
	12		0800XHGS12	125.5	137.5	191.5	1.5	8.0	2
8.0	15		0800XHGS15	149.5	161.5	215.5	1.5	8.0	2
	20		0800XHGS20	189.5	201.5	255.5	1.5	8.0	2
	25		0800XHGS25	229.5	241.5	295.5	1.5	8.0	2
	30		0800XHGS30	269.52	281.5	335.5	1.5	8.0	2

Part Number Suffix - PHT: For Guide Hole Grade: ACX70 (XHGS series) / ACX20 (PHT series)

### XHGS series/PHT series (Internal Coolant Supply) Caton Steel Aloy Steel Chorn





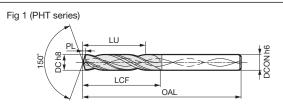


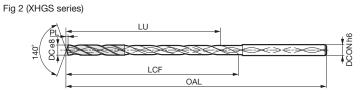






10D 12D 15D 20D 25D 30D Pilot 3D





	Dime	ensions (	mm)	
enath	Tin	Shank Dia		

	4		LCF OAL	-				
	4							
Diam	Diameter ø12.0 to 16.0mm							
Dia.	Hole Depth	Stock	Cat. No.		Flute Length LCF			
	3		MDW 1200PHT	43.6	61.6	123.6		
	10	П	1200XHGS10	164.2	182.2	244.2		

מטמ	type	
בוממלא	Head	

Ш	DC.	(L/D)	Stoc	Cat. No.	LU LCF OAL	PL	DCON	Fig
	DO	3	•	MDW 0850PHT	30.9 43.6 101.1	1.1	9.0	1
П		10	•		116.8 129.5 186.5	1.5	9.0	2
		12		0850XHGS12	131.8 144.5 201.5	1.5	9.0	2
П	8.5	15			156.8 169.5 226.5	1.5	9.0	2
	0.5	20	•	0850XHGS13	199.8212.5269.5	1.5	9.0	2
		25			241.8 254.5 311.5	1.5		2
П		30	-	0850XHGS25	284.8297.5354.5	1.5	9.0	2
Н		3	•	MDW 0900PHT	32.7 46.2 101.2		9.0	1
П		10		0900XHGS10	123.1 136.6 191.6	1.2	9.0	
П		12	•			1.6		2
	9.0	15	•	0900XHGS12	141.1 154.6 209.6 168.1 181.6 236.6	1.6	9.0	2
	9.0	20			213.1 226.6 281.6	1.6	9.0	2
П		25	-					2
		30		0900XHGS25 0900XHGS30	258.1 271.6 326.6 303.1 316.6 371.6	1.6	9.0	2
			•				9.0	1
		3		MDW 0950PHT	34.6 48.8 107.3	1.3	10.0	
		10 12	5		130.5 144.7 202.7	1.7	10.0	2
	9.5	15		0950XHGS12	147.5 161.7 219.7 175.5 189.7 247.7	1.7		2
	9.5	20	5			1.7	10.0	2
		25		0950XHGS20 0950XHGS25	223.5 237.7 295.7 270.5 284.7 342.7	1.7	10.0	2
		30	5	0950XHGS25	318.5 332.7 390.7	1.7	10.0	2
		3	_	MDW 1000PHT		1.3		1
١		10	•	1000XHGS10	36.3 51.3 107.3 136.8 151.8 207.8	1.8	10.0	2
		12		1000XHGS10	156.8 171.8 227.8	1.8	10.0	2
	10.0	15	-	1000XHGS12	186.8 201.8 257.8	1.8	10.0	2
	10.0	20			236.8251.8307.8	1.8	10.0	2
		25	•	1000XHGS20	286.8301.8357.8	1.8	10.0	2
		30			336.8 351.8 407.8	1.8	10.0	2
		3	•	MDW 1050PHT	38.2 53.9117.4	1.4	11.0	1
		10			144.2 159.9 222.9	1.9	11.0	2
		12	•	1050XHGS10	163.2 178.9 241.9	1.9	11.0	2
	10.5	15			194.2 209.9 272.9	1.9	11.0	2
		20	•	1050XHGS20	247.2 262.9 325.9	1.9	11.0	2
		25	•		299.2 314.9 377.9	1.9	11.0	2
		3	•	MDW 1100PHT	40.0 56.5 117.5	1.5	11.0	1
		10			150.5 167.0 228.0	2.0	11.0	2
		12	•	1100XHGS12	172.5 189.0 250.0	2.0	11.0	2
	11.0	15	•		205.5 222.0 283.0	2.0	11.0	2
		20	•	1100XHGS20	260.5277.0338.0	2.0	11.0	2
		25	•		315.5 332.0 393.0	2.0	11.0	2
		3	•	MDW 1150PHT	41.8 59.0 123.5	1.5	12.0	1
		10	•		157.9 175.1 239.1	2.1	12.0	2
		12	•	1150XHGS12	178.9 196.1 260.1	2.1	12.0	2
	11.5	15	•		212.9230.1294.1	2.1	12.0	2
		20	•		270.9288.1352.1	2.1	12.0	2
		25	•		327.9345.1409.1	2.1	12.0	2
	Part No		Suffi	ix - PHT: For Guide Hole				
	Crada.	A C V 7 C	/VL	JCC agrica) / ACV20 (DL	T aariaa)			

Part Number Suffix - PHT: For Guide Hole	
Grade: ACX70 (XHGS series) / ACX20 (PHT se	eries

Diameter Ø12.0 to 16.0mm Dimensions (mm)									
Dia.	Hole Depth	Stock	Cat. No.	Effective Length Flute Length Overall Length	Tip	Shank Dia.	Fig		
DC	(L/D)	St		LU LCF OAL	PL	DCON	rig		
	3		MDW 1200PHT	43.6 61.6 123.6	1.6	12.0	1		
	10		1200XHGS10	164.2 182.2 244.2	2.2	12.0	2		
12.0	12		1200XHGS12	188.2 206.2 268.2	2.2	12.0	2		
12.0	15		1200XHGS15	224.2 242.2 304.2	2.2	12.0	2		
	20		1200XHGS20	284.2 302.2 364.2	2.2	12.0	2		
	25		1200XHGS25	344.2 362.2 424.2	2.2	12.0	2		
	3		MDW 1250PHT	45.5 64.2 129.7	1.7	13.0	1		
	10		1250XHGS10	171.6 190.3 255.3	2.3	13.0	2		
12.5	12		1250XHGS12	194.6 213.3 278.3	2.3	13.0	2		
	15		1250XHGS15	231.6 250.3 315.3	2.3	13.0	2		
	20		1250XHGS20	294.6 313.3 378.3	2.3	13.0	2		
	3		MDW 1300PHT	47.2 66.7 129.7	1.7	13.0	1		
	10		1300XHGS10	177.9 197.4 260.4	2.4	13.0	2		
13.0	12		1300XHGS12	203.9 223.4 286.4	2.4	13.0	2		
	15		1300XHGS15	242.9 262.4 325.4	2.4	13.0	2		
	20		1300XHGS20	307.9 327.4 390.4	2.4	13.0	2		
	3		MDW 1350PHT	49.1 69.3 135.8	1.8	14.0	1		
	10		1350XHGS10	185.3 205.5 271.5	2.5	14.0	2		
13.5	12		1350XHGS12	210.3 230.5 296.5	2.5	14.0	2		
	15		1350XHGS15	250.3 270.5 336.5	2.5	14.0	2		
	20		1350XHGS20	318.3 338.5 404.5	2.5	14.0	2		
	3		MDW 1400PHT	50.9 71.9 135.9	1.9	14.0	1		
	10		1400XHGS10	191.5 212.5 276.5	2.5	14.0	2		
14.0	12		1400XHGS12	219.5 240.5 304.5	2.5	14.0	2		
	15		1400XHGS15	261.5 282.5 346.5	2.5	14.0	2		
	20		1400XHGS20	331.5 352.5 416.5	2.5	14.0	2		
	3		MDW 1450PHT	52.7 74.4 141.9	1.9	15.0	1		
14.5	10		1450XHGS10	198.9 220.6 287.6	2.6	15.0	2		
14.5	12		1450XHGS12	225.9 247.6 314.6	2.6	15.0	2		
	15		1450XHGS15	268.9 290.6 357.6	2.6	15.0	2		
	3		MDW 1500PHT	54.5 77.0 142.0	2.0	15.0	1		
15.0	10		1500XHGS10	205.2 227.7 292.7	2.7	15.0	2		
15.0	12		1500XHGS12	235.2 257.7 322.7	2.7	15.0	2		
	15		1500XHGS15	280.2 302.7 367.7	2.7	15.0	2		
	3		MDW 1550PHT	56.4 79.6 148.1	2.1	16.0	1		
15 F	10		1550XHGS10	212.6 235.8 303.8	2.8	16.0	2		
15.5	12		1550XHGS12	241.6 264.8 332.8	2.8	16.0	2		
L	15		1550XHGS15	287.6 310.8 378.8	2.8	16.0	2		
	3		MDW 1600PHT	58.1 82.1 148.1	2.1	16.0	1		
16.0	10		1600XHGS10	218.9 242.9 308.9	2.9	16.0	2		
16.0	12		1600XHGS12	248.9 272.9 340.9	2.9	16.0	2		
	15		1600XHGS15	298.9 322.9 388.9	2.9	16.0	2		

Part Number Suffix - PHT: For Guide Hole Grade: ACX70 (XHGS series) / ACX20 (PHT series)

### XHGS series/PHT series (Internal Coolant Supply) Caton Steel Aloy Steel Cool (Internal Coolant Supply) Caton Steel (Internal Coolant Supply) Caton





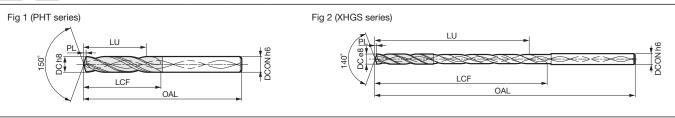








10D 12D 15D 20D 25D 30D Pilot 3D



Made-to-order items: Inquire about production of drills in tool diameters and lengths that are not listed in the dimensions at left or not in stock.

#### Recommended Cutting Conditions (n: Spindle Speed min-1 vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel (up to 200HB)	General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 40HRC)	Grey Cast Iron Ductile Cast Iron
	n	6,400	8,500	5,800	4,200	5,800
ø3.0	VC	50 - <b>60</b> - 80	60 - <b>80</b> - 100	40 - <b>55</b> - 70	30 - <b>40</b> - 50	40 - <b>55</b> - 70
	f	0.12 - <b>0.15</b> - 0.20	0.12 - <b>0.15</b> - 0.20	0.10 - <b>0.13</b> - 0.16	0.06 - <b>0.08</b> - 0.12	0.15 - <b>0.18</b> - 0.23
	n	3,800	5,100	3,800	2,900	3,800
ø5.0	VC	50 - <b>60</b> - 80	60 - <b>80</b> - 100	50 - <b>60</b> - 70	30 - <b>45</b> - 55	50 - <b>60</b> - 70
	f	0.15 - <b>0.20</b> - 0.25	0.15 - <b>0.23</b> - 0.30	0.12 - <b>0.15</b> - 0.20	0.08 - <b>0.10</b> - 0.14	0.17 - <b>0.25</b> - 0.35
	n	2,200	2,500	2,100	1,600	2,100
ø10.0	VC	50 - <b>70</b> - 90	60 - <b>80</b> - 110	50 - <b>65</b> - 80	30 - <b>50</b> - 60	50 - <b>65</b> - 80
	f	0.20 - <b>0.25</b> - 0.30	0.20 <b>- 0.25 -</b> 0.32	0.15 - <b>0.20</b> - 0.25	0.10 - <b>0.15</b> - 0.20	0.25 - <b>0.28</b> - 0.35
	n	1,600	1,800	1,300	1,100	1,300
ø16.0	VC	60 - <b>80</b> - 100	60 - <b>90</b> - 120	50 - <b>65</b> - 80	40 - <b>55</b> - 70	50 - <b>65</b> - 80
	f	0.25 - <b>0.30</b> - 0.35	0.25 - <b>0.30</b> - 0.35	0.15 - <b>0.23</b> - 0.27	0.12 - <b>0.15</b> - 0.23	0.25 - <b>0.30</b> - 0.35

Note: Use lower speed when using MQL coolant, and higher speed when using internal coolant supply or dual-liquid mist.

Min. - Optimum - Max.

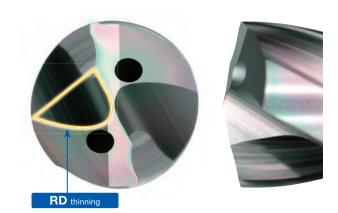




- Features
- Venturing into new regions of aluminum alloy drilling Covers a wide application range from high-precision to highefficiency drilling
- New DLC Coat and AURORA Coat X adopted

### **RD THINNING**

Outstanding centring with special web thinning effect!



### ■ Hole Position Accuracy

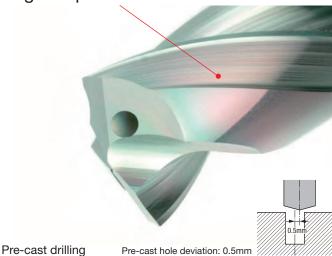
#### Direct drilling

<b>Cutting Speed</b>	vc=180m/min						
Feed Rate	MDA series	Competitor's Product					
	0.3	0.3					
	0.2	0.2					
	0.1	0.1					
f=0.6mm/rev	0	0					
	-0.1	-0.1					
	-0.2	-0.2					
	-0.3 -0.2 -0.1 0 0.1 0.2 0.3	-0.3 -0.2 -0.1 0 0.1 0.2 0.3					
	0.3	0.3					
	0.2	0.2					
	0.1	0.1					
f=1.2mm/rev	0	0					
	-0.1	-0.1					
	-0.2	-0.2					
	-0.3 -0.2 -0.1 0 0.1 0.2 0.3	-0.3 -0.2 -0.1 0 0.1 0.2 0.3					

Work Material: ADC12 Tool: MDA0600S06H05 (ø6mm × 5D) Wet

Wide Double Margin 'Diameter: 3.1mm up

Hole precision is improved with wide double margin providing excellent guide performance!



i ie-cast dillilli	g Fie-cast floie deviation. 0.3min ////////////////////////////////////							
Cutting Speed	vc=180	0m/min						
Feed Rate	MDA series	Competitor's Product						
	0.6	0.6						
	0.4	0.4						
	0.2	0.2						
f=0.4mm/rev	0	0						
	-0.2	-0.2						
	-0.4	-0.4						
	-0.6 -0.4 -0.2 0 0.2 0.4 0.6	-0.6 -0.4 -0.2 0 0.2 0.4 0.6						
	0.6	0.6						
	0.4	0.4						
	0.2	0.2						
f=1.2mm/rev	0	0						
	-0.2	-0.2						
	-0.4	-0.4						
	-0.6 -0.4 -0.2 0 0.2 0.4 0.6	-0.6 -0.4 -0.2 0 0.2 0.4 0.6						
		Unit (mm						

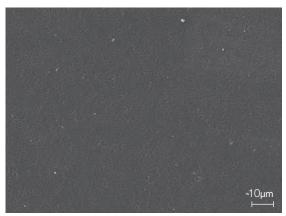
Work Material: ADC12 Tool: MDA0600S06H05 (ø6mm × 5D) Wet

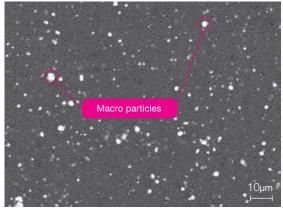
Hole position stable even under high-efficiency conditions

# MDA series

### **AURORA Coat X DLC Coat**

#### Coating Surface Properties (SEM image)



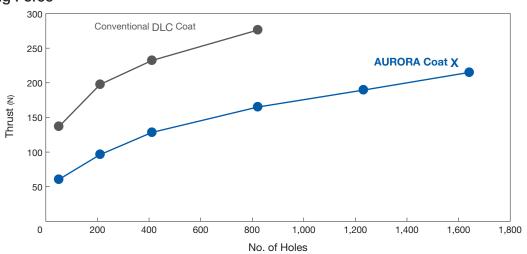


**AURORA Coat X** 

Conventional DLC Coat

#### New technology significantly improves smoothness

#### Cutting Force



Work Material: ADC12 Machine: Vertical Machining Centre BT30 Tool: MDA0600S06H05 (ø6mm × 5D)

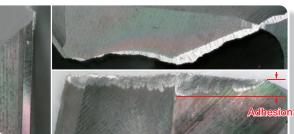
Cutting Conditions: vc = 180m/min f = 0.2mm/rev Internal Coolant Supply (Water-soluble)

Improved coating surface smoothness keeps resistance low at the initial stage, then transitions to a gradual rise in resistance for a longer tool life

#### Adhesion Resistance

**AURORA Coat X** 



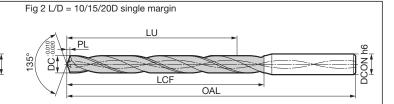


Conventional DLC Coat

Work Material: ADC12 Machine: Vertical Machining Centre BT30 Tool: MDA0600S06H05 ( $\emptyset$ 6mm  $\times$  5D)

Cutting Conditions: vc = 180m/min f = 0.2mm/rev Internal Coolant Supply (Water-soluble)

Excellent smoothness significantly reduces adhesion



Diameter ø1.0 to 2.0mm

Dimensions (mm)

Diameter ø2.1 to 3.0mm

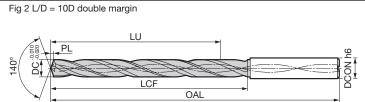
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length	Tip <b>PL</b>	Shank Dia.	Fig
DO	3	•	MDA 0100S03H03	4.5	6.0	45.0	0.2	3.0	1
	5		0100S03H05	8.5	10.0	50.0	0.2	3.0	1
1.0	10	•	0100S03H10	12.5	14.0	55.0	0.2	3.0	2
1.0	15	•	0100S03H15	17.5	19.0	60.0	0.2	3.0	2
	20	•	0100S03H15	22.5	24.0	65.0	0.2	3.0	2
-	3	•	MDA 0110S03H03	6.4	8.0	45.0	0.2	3.0	1
	5	•	0110S03H05	10.4	12.0	50.0	0.2	3.0	1
4.4	10	•	0110S03H05	16.4	18.0	55.0			2
1.1	15		0110S03H10	19.4	21.0	65.0	0.2	3.0	2
		•	0110S03H15	24.4	26.0	70.0	0.2	3.0	2
	20		MDA 0120S03H03						1
	3	•		6.2	8.0	48.0	0.2	3.0	
1.0	5	•	0120S03H05	10.2	12.0	55.0	0.2	3.0	1
1.2	10	•	0120S03H10	16.2	18.0	60.0	0.2	3.0	2
	15		0120S03H15	21.2	23.0	65.0	0.2	3.0	2
	20	•	0120S03H20	27.2	29.0	70.0	0.2	3.0	2
	3		MDA 0130S03H03	6.1	8.0	48.0	0.3	3.0	1
	5		0130S03H05	12.1	14.0	55.0	0.3	3.0	1
1.3	10		0130S03H10	18.1	20.0	60.0	0.3	3.0	2
	15		0130S03H15	23.1	25.0	65.0	0.3	3.0	2
	20		0130S03H20	29.1	31.0	75.0	0.3	3.0	2
	3		MDA 0140S03H03	5.9	8.0	48.0	0.3	3.0	1
	5		0140S03H05	11.9	14.0	55.0	0.3	3.0	1
1.4	10		0140S03H10	17.9	20.0	60.0	0.3	3.0	2
	15		0140S03H15	25.9	28.0	70.0	0.3	3.0	2
	20		0140S03H20	31.9	34.0	75.0	0.3	3.0	2
	3		MDA 0150S03H03	5.8	8.0	48.0	0.3	3.0	1
	5	•	0150S03H05	13.8	16.0	55.0	0.3	3.0	1
1.5	10		0150S03H10	20.8	23.0	65.0	0.3	3.0	2
	15	•	0150S03H15	25.8	28.0	70.0	0.3	3.0	2
	20		0150S03H20	33.8	36.0	75.0	0.3	3.0	2
	3	•	MDA 0160S03H03	7.6	10.0	50.0	0.3	3.0	1
	5		0160S03H05	13.6	16.0	55.0	0.3	3.0	1
1.6	10	•	0160S03H10	22.6	25.0	65.0	0.3	3.0	2
	15		0160S03H15	29.6	32.0	75.0	0.3	3.0	2
	20	•	0160S03H20	35.6	38.0	80.0	0.3	3.0	2
	3		MDA 0170S03H03	7.5	10.0	50.0	0.4	3.0	1
	5	•	0170S03H05	15.5	18.0	60.0	0.4	3.0	1
1.7	10		0170S03H10	22.5	25.0	65.0	0.4	3.0	2
	15	•	0170S03H15	29.5	32.0	75.0	0.4	3.0	2
	20		0170S03H20	38.5	41.0	80.0	0.4	3.0	2
	3	•	MDA 0180S03H03	7.3	10.0	50.0	0.4	3.0	1
	5	•	0180S03H05	15.3	18.0	60.0	0.4	3.0	1
1.8	10	•	0180S03H10	25.3	28.0	70.0	0.4	3.0	2
	15	•	0180S03H15	32.3	35.0	75.0	0.4	3.0	2
	20	•	0180S03H20	40.3	43.0	85.0	0.4	3.0	2
	3	•	MDA 0190S03H03	7.2	10.0	50.0	0.4	3.0	1
	5	•	0190S03H05	17.2	20.0	60.0	0.4	3.0	1
1.9	10	•	0190S03H10	25.2	28.0	70.0	0.4	3.0	2
	15	•	0190S03H15	32.2	35.0	75.0	0.4	3.0	2
	20	•	0190S03H20	43.2	46.0	85.0	0.4	3.0	2
	3	•	MDA 0200S03H03	7.0	10.0	50.0	0.4	3.0	1
	5		0200S03H05	17.0	20.0	60.0	0.4	3.0	1
20		•							
2.0	10		0200S03H10 0200S03H15	27.0	30.0	70.0	0.4	3.0	2
	15			37.0	40.0	80.0	0.4	3.0	2
Crade	20	00	0200S03H20	45.0	48.0	90.0	0.4	3.0	2
Grade:	DLX17	UÜ							

Dia.	Hole Depth	8	Cat. No.	Effective Length	Flute Length	Overall Length	Tip	Shank Dia.	Fig
DC	(L/D)	Stoc	Oat. No.	LU	LCF	OAL	PL	DCON	ı ıy
	3		MDA 0210S03H03	9.9	13.0	55.0	0.4	3.0	1
	5		0210S03H05	18.9	22.0	65.0	0.4	3.0	1
2.1	10	•	0210S03H10	26.9	30.0	70.0	0.4	3.0	2
	15		0210S03H15	36.9	40.0	80.0	0.4	3.0	2
	20	•	0210S03H20	46.9	50.0	95.0	0.4	3.0	2
	3		MDA 0220S03H03	9.7	13.0	55.0	0.5	3.0	1
	5	•	0220S03H05	18.7	22.0	65.0	0.5	3.0	1
2.2	10	•	0220S03H10	28.7	32.0	75.0	0.5	3.0	2
	15	•	0220S03H15	38.7	42.0	85.0	0.5	3.0	2
	20	•	0220S03H20	47.7	51.0	95.0	0.5	3.0	2
	3	•	MDA 0230S03H03	9.6	13.0	55.0	0.5	3.0	1
	5	•	0230S03H05	20.6	24.0	65.0	0.5	3.0	1
2.3	10	•	0230S03H10	28.6	32.0	75.0	0.5	3.0	2
				41.6					2
	15		0230S03H15		45.0	85.0	0.5	3.0	
	20	•	0230S03H20	49.6	53.0	100.0	0.5	3.0	2
	3		MDA 0240S03H03	9.4	13.0	55.0	0.5	3.0	1
	5	•	0240S03H05	20.4	24.0	65.0	0.5	3.0	1
2.4	10	•	0240S03H10	31.4	35.0	75.0	0.5	3.0	2
	15	•	0240S03H15	41.4	45.0	85.0	0.5	3.0	2
	20	•	0240S03H20	52.4		100.0	0.5	3.0	2
	3	•	MDA 0250S03H03	9.3	13.0	55.0	0.5	3.0	1
	5		0250S03H05	22.3	26.0	65.0	0.5	3.0	1
2.5	10	•	0250S03H10	31.3	35.0	75.0	0.5	3.0	2
	15		0250S03H15	41.3	45.0	85.0	0.5	3.0	2
	20	•	0250S03H20	56.3	60.0	105.0	0.5	3.0	2
	3	•	MDA 0260S03H03	11.1	15.0	60.0	0.5	3.0	1
	5	•	0260S03H05	22.1	26.0	70.0	0.5	3.0	1
2.6	10	•	0260S03H10	34.1	38.0	80.0	0.5	3.0	2
	15	•	0260S03H15	46.1	50.0	90.0	0.5	3.0	2
	20		0260S03H20	57.1		105.0	0.5	3.0	2
	3	•	MDA 0270S03H03	11.0	15.0	60.0	0.6	3.0	1
	5	•	0270S03H05	24.0	28.0	70.0	0.6	3.0	1
2.7	10		0270S03H10	34.0	38.0	80.0	0.6	3.0	2
	15	•	0270S03H15	46.0	50.0	90.0	0.6	3.0	2
	20	•	0270S03H20	59.0	63.0	105.0	0.6	3.0	2
	3		MDA 0280S03H03	10.8	15.0	60.0	0.6	3.0	1
	5		0280S03H05	23.8	28.0	70.0	0.6	3.0	1
2.8	10	•	0280S03H10	35.8	40.0	80.0	0.6	3.0	2
	15	•	0280S03H15	50.8	55.0	95.0	0.6	3.0	2
	20	•	0280S03H20	60.8	65.0	110.0	0.6	3.0	2
	3	•	MDA 0290S03H03	10.7	15.0	60.0	0.6	3.0	1
	5	•	0290S03H05	25.7	30.0	70.0	0.6	3.0	1
2.9	10	•	0290S03H10	35.7	40.0	80.0	0.6	3.0	2
	15	•	0290S03H15	50.7	55.0	95.0	0.6	3.0	2
	20	•	0290S03H20	62.7	67.0	110.0	0.6	3.0	2
	3		MDA 0300S03H03	10.5	15.0	60.0	0.6	3.0	1
	5	•	0300S03H05	25.5	30.0	70.0	0.6	3.0	1
3.0	10	•	0300S03H10	37.5	42.0	82.0	0.6	3.0	2
	15	•	0300S03H15	53.5	58.0	98.0	0.6	3.0	2
	20	•	0300S03H20	64.5		110.0	0.6	3.0	2

Grade: DLX1700

Drilling

Reamers



	~/  -		OAL	-			-		
Diam		~?	1 to 4 Emm						
Dian			.1 to 4.5mm					ensions (	mm)
Dia.	Hole Depth	Stock	Cat. No.			Overall Length	Tip	Shank Dia.	Fig
DC	(L/D)	_	MDA 0240C04H02	LU 15.8	LCF	OAL	PL 0.4	DCON	1
3.1	3 5	•	MDA 0310S04H03 0310S04H05	27.8	20.4 32.4	72.4 86.4	0.4	4.0	1
3.1	10	•	0310S04H10	44.9	49.6	106.6	0.4	4.0	2
	3	•	MDA 0320S04H03	15.6	20.4	72.4	0.4	4.0	1
3.2	5	•	0320S04H05	27.6	32.4	86.4	0.4	4.0	1
0.2	10	•	0320S04H10	44.8	49.6	106.6	0.6	4.0	2
	3	•	MDA 0330S04H03	15.5	20.4	72.4	0.4	4.0	1
3.3	5	•	0330S04H05	27.5	32.4	86.4	0.4	4.0	1
0.0	10		0330S04H10	44.7	49.6	106.6	0.6	4.0	2
	3		MDA 0340S04H03	15.4	20.5	72.5	0.5	4.0	1
3.4	5	•	0340S04H05	27.4	32.5	86.5	0.5	4.0	1
	10	•	0340S04H10	44.5	49.6	106.6	0.6	4.0	2
	3	•	MDA 0350S04H03	15.2	20.5	72.5	0.5	4.0	1
3.5	5	•	0350S04H05	27.2	32.5	86.5	0.5	4.0	1
	10	•	0350S04H10	44.4	49.6	106.6	0.6	4.0	2
	3		MDA 0360S04H03	17.6	23.0	72.5	0.5	4.0	1
3.6	5	•	0360S04H05	31.1	36.5	86.5	0.5	4.0	1
	10	•	0360S04H10	51.3	56.7	106.7	0.7	4.0	2
3.65	3	•	MDA 0365S04H03	17.4	23.0	72.5	0.5	4.0	1
3.03	5	•	0365S04H05	30.9	36.5	86.5	0.5	4.0	1
3.66	5	•	MDA 0366S04H05	30.9	36.5	86.5	0.5	4.0	1
	3		MDA 0370S04H03	17.4	23.0	72.5	0.5	4.0	1
3.7	5	•	0370S04H05	30.9	36.5	86.5	0.5	4.0	1
	10		0370S04H10	51.1	56.7	106.7	0.7	4.0	2
	3		MDA 0380S04H03	17.3	23.0	72.5	0.5	4.0	1
3.8	5		0380S04H05	30.8	36.5	86.5	0.5	4.0	1
	10		0380S04H10	51.0	56.7	106.7	0.7	4.0	2
	3		MDA 0390S04H03	17.2	23.0	72.5	0.5	4.0	1
3.9	5	•	0390S04H05	30.7	36.5	86.5	0.5	4.0	1
	10		0390S04H10	50.9	56.7	106.7	0.7	4.0	2
4.0	3	•	MDA 0400S04H03	17.0	23.0	72.5	0.5	4.0	1
4.0	5 10	•	0400S04H05 0400S04H10	30.5	36.5 56.7	86.5 106.7	0.5	4.0	2
	3	•	MDA 0410S06H03	19.4	25.5	80.5	0.7	6.0	1
4.1	5	•	0410S06H05	34.4	40.5	98.5	0.5	6.0	1
7.1	10		0410S06H10	57.6	63.7	121.7	0.7	6.0	2
	3	•	MDA 0420S06H03	19.3	25.6	80.6	0.6	6.0	1
4.2	5	•	0420S06H05	34.3	40.6	98.6	0.6	6.0	1
	10		0420S06H10	57.5	63.8	121.8	0.8	6.0	2
	3		MDA 0430S06H03	19.1	25.6			6.0	1
4.3	5	•	0430S06H05	34.1	40.6	98.6	0.6	6.0	1
	10		0430S06H10	57.3	63.8	121.8	0.8	6.0	2
	3		MDA 0440S06H03	19.0	25.6	80.6	0.6	6.0	1
4.4	5	•	0440S06H05	34.0	40.6	98.6	0.6	6.0	1
	10		0440S06H10	57.2	63.8	121.8	0.8	6.0	2
	3	•	MDA 0450S06H03	18.9	25.6	80.6	0.6	6.0	1
4.5	5	•	0450S06H05	33.9	40.6	98.6	0.6	6.0	1
	10	•	0450S06H10	57.1	63.8	121.8	8.0	6.0	2
0 1	DI V17	700							

Diameter Ø4.6 to 6.0mm  Dimensions (mm)  Dia. Hole Depth											
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length	Tip <b>PL</b>	Shank Dia.	Fig		
DC	3	S	MDA 0460S06H03	20.7	27.6	80.6	0.6	6.0	1		
4.6	5		0460S06H05	37.7	44.6	98.6	0.6	6.0	1		
4.0	10		0460S06H10	61.9	-	121.8	0.8	6.0	2		
	3		MDA 0470S06H03	20.6	27.6	80.6	0.6	6.0	1		
4.7	5	•	0470S06H05	37.6	44.6	98.6	0.6	6.0	1		
7.7	10		0470S06H10	61.8		121.9	0.9	6.0	2		
	3		MDA 0480S06H03	20.4	27.6	80.6	0.6	6.0	1		
4.8	5		0480S06H05	37.4	44.6	98.6	0.6	6.0	1		
7.0	10		0480S06H10	61.7	68.9	121.9	0.9	6.0	2		
	3		MDA 0490S06H03	20.5	27.7	80.7	0.7	6.0	1		
4.9	5	•	0490S06H05	37.5	44.7	98.7	0.7	6.0	1		
7.5	10		0490S06H10	61.7		121.9	0.9	6.0	2		
	3	•	MDA 0500S06H03	20.2	27.7	80.7	0.5	6.0	1		
5.0	5		0500S06H05	37.2	44.7	98.7	0.7	6.0	1		
5.0	10		0500S06H10	61.4	68.9	121.9	0.7	6.0	2		
	3		MDA 0510S06H03	20.5	28.2	82.7	0.9	6.0	1		
5.1	5	•	0510S06H05	37.0	44.7	100.7	0.7	6.0	1		
5.1	10	•	0510S06H10	70.3		136.9	0.7	6.0	2		
	3		MDA 0520S06H03	20.4	28.2	82.7	0.9	6.0	1		
5.2	5	•	0520S06H05	36.9		100.7	0.7	6.0	1		
5.2	10	_	0520S06H10	70.1		136.9	0.7	6.0	2		
	3	•	MDA 0530S06H03	20.3	28.2	82.7	0.9	6.0	1		
5.3	5	-	0530S06H05	36.8	-	100.7	0.7	6.0	1		
5.5	10	•	0530S06H10	70.0		137.0	1.0	6.0	2		
	3		MDA 0540S06H03	20.1	28.2	82.7	0.7	6.0	1		
5.4	5		0540S06H05	36.6	-	100.7	0.7	6.0	1		
5.4	10		0540S06H10	69.9		137.0	1.0	6.0	2		
	3		MDA 0550S06H03	20.0	28.2	82.7	0.7	6.0	1		
5.5	5		0550S06H05	36.5		100.7	0.7	6.0	1		
5.5	10		0550S06H10	69.8		137.0	1.0	6.0	2		
	3		MDA 0560S06H03	22.3	30.7	82.7	0.8	6.0	1		
5.6	5	•	0560S06H05	40.3		100.7	0.8	6.0	1		
5.0	10		0560S06H10	76.6	-	137.0	1.0	6.0	2		
	3		MDA 0570S06H03	22.2	30.8	82.8	0.8	6.0	1		
5.7	5	•	0570S06H05	40.2		100.8	0.8	6.0	1		
5.7	10		0570S06H10	76.5		137.0	1.0	6.0	2		
	3		MDA 0580S06H03	22.1	30.8	82.8	0.8	6.0	1		
5.8	5	•	0580S06H05	40.1		100.8	0.8	6.0	1		
J.0	10	-	0580S06H10	76.4		137.1	1.1	6.0	2		
	3		MDA 0590S06H03	21.9	30.8	82.8	0.8	6.0	1		
5.9	5		0590S06H05	39.9	48.8	02.0 100.8	0.8	6.0	1		
J.9	10	•	0590S06H10	76.2		137.1	1.1	6.0	2		
	3		MDA 0600S06H03	21.8	30.8	82.8	0.8	6.0	1		
6.0	5	•	0600S06H05	39.8		100.8	0.8	6.0	1		
			UDUUSUDIIUS		40.0	IIUU.O	U.O	U.U			

10 • Grade: DLX1700

10 Grade: DLX1700



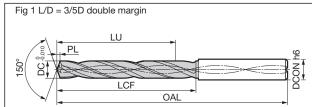


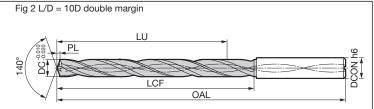
Drilling

Solid









Diameter ø6.1 to 7.5mm Dia. Hole Depth Q

Dimensions (mm)

Diameter ø7.6 to 9.0mm

Dimensions (mm)

							ensions (	mm
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length Overall Length	Tip <b>PL</b>	Shank Dia.	Fig
DC	(L/D)	S	MDA 0610S08H03	24.2	33.3 88.8	0.8	8.0	1
6.1	3	•	0610S08H05					1
0.1	5	•		43.7	52.8 109.8	0.8	8.0	
	10	•	0610S08H10	83.0	92.1 152.1 33.3 88.8	1.1	8.0	2
6.2	3	•	MDA 0620S08H03	24.0		8.0	8.0	
0.2	5	•	0620S08H05	43.5	52.8 109.8	0.8	8.0	1
	10		0620S08H10	82.8	92.1 152.1	1.1	8.0	1
6.2	3		MDA 0630S08H03	23.9	33.3 88.8	8.0	8.0	
6.3	5	•	0630S08H05	43.4	52.8 109.8	0.8	8.0	1
	10		0630S08H10	82.7	92.1 152.1	1.1	8.0	2
6.4	3		MDA 0640S08H03	23.8	33.4 88.9	0.9	8.0	1
	5	•	0640S08H05	43.3	52.9 109.9	0.9	8.0	1
	10		0640S08H10	82.6	92.2 152.2	1.2	8.0	2
	3	•	MDA 0650S08H03	23.6	33.4 88.9	0.9	8.0	1
6.5	5	•	0650S08H05	43.1	52.9 109.9	0.9	8.0	1
	10	•	0650S08H10	82.4	92.2 152.2	1.2	8.0	2
	3		MDA 0660S08H03	24.0	33.9 88.9	0.9	8.0	1
6.6	5	•	0660S08H05	45.0	54.9 109.9	0.9	8.0	1
	10		0660S08H10	87.3	97.2 152.2	1.2	8.0	2
	3	•	MDA 0670S08H03	24.0	33.9 88.9	0.9	8.0	1
6.7	5	•	0670S08H05	45.0	54.9 109.9	0.9	8.0	1
	10		0670S08H10	87.3	97.2 152.2	1.2	8.0	2
	3	•	MDA 0680S08H03	23.7	33.9 88.9	0.9	8.0	1
6.8	5	•	0680S08H05	44.7	54.9 109.9	0.9	8.0	1
	10	•	0680S08H10	87.0	97.2 152.2	1.2	8.0	2
	3		MDA 0690S08H03	23.6	33.9 88.9	0.9	8.0	1
6.9	5		0690S08H05	44.6	54.9 109.9	0.9	8.0	1
	10	_	0690S08H10	86.9	97.3 152.3	1.3	8.0	2
	3		MDA 0700S08H03	23.4	33.9 88.9	0.9	8.0	1
7.0	5	•	0700S08H05	44.4	54.9 109.9	0.9	8.0	1
	10	•	0700S08H10	86.8	97.3 152.3	1.3	8.0	2
	3		MDA 0710S08H03	27.8	38.4 94.9	1.0	8.0	1
7.1	5	•	0710S08H05	50.3	60.9 118.9	1.0	8.0	1
	10		0710S08H10	95.6	106.3 167.3	1.3	8.0	2
	3		MDA 0720S08H03	27.7	38.5 95.0	1.0	8.0	1
7.2	5	•	0720S08H05	50.2	61.0 119.0	1.0	8.0	1
	10		0720S08H10		106.3 167.3	1.3	8.0	2
	3		MDA 0730S08H03	27.5	38.5 95.0	1.0	8.0	1
7.3	5	•	0730S08H05	50.0	61.0 119.0	1.0	8.0	1
	10		0730S08H10	95.4	106.3 167.3	1.3	8.0	2
7.35	3	•	MDA 0735S08H03	27.4	38.5 95.0	1.0	8.0	1
	5	•	0735S08H05	49.9	61.0 119.0	1.0	8.0	1
<b>-</b> -	3	•	MDA 0740S08H03	27.4	38.5 95.0	1.0	8.0	1
7.4	5	•	0740S08H05	49.9	61.0 119.0	1.0	8.0	1
	10		0740S08H10		106.3 167.3	1.3	8.0	2
	3	•	MDA 0750S08H03	27.3	38.5 95.0	1.0	8.0	1
7.5	5	•	0750S08H05	49.8	61.0 119.0	1.0	8.0	1
	10	1	0750S08H10	95.1	106.4 167.4	1.4	8.0	2

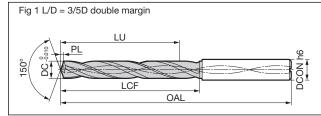
Diameter Ø7.6 to 9.0mm Dimensions (mm)									
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length	Tip PL	Shank Dia.	Fig
	3		MDA 0760S08H03	29.6	41.0	95.0	1.0	8.0	1
7.6	5	•	0760S08H05	53.6	65.0	119.0	1.0	8.0	1
	10		0760S08H10	102.0	113.4	167.4	1.4	8.0	2
	3		MDA 0770S08H03	29.5	41.0	95.0	1.0	8.0	1
7.7	5	•	0770S08H05	53.5	65.0	119.0	1.0	8.0	1
	10		0770S08H10		113.4		1.4	8.0	2
	3	•	MDA 0780S08H03	29.3	41.0	95.0	1.0	8.0	1
7.8	5	•	0780S08H05	53.3		119.0	1.0	8.0	1
	10	•	0780S08H10	_	113.4		1.4	8.0	2
	3		MDA 0790S08H03	29.2	41.1	95.1	1.1	8.0	1
7.9	5	•	0790S08H05	53.2		119.1	1.1	8.0	1
	10		0790S08H10		113.4		1.4	8.0	2
	3	•	MDA 0800S08H03	29.1	41.1	95.1	1.1	8.0	1
8.0	5	•	0800S08H05	53.1		119.1	1.1	8.0	1
	10	•	0800S08H10 MDA 0810S10H03	31.4	113.5	167.5 101.1	1.5	8.0	2
8.1	5	•	0810S10H05	56.9		128.1	1.1	10.0	1
0.1	10		0810S10H05		120.5	_	1.5	10.0	2
	3		MDA 0820S10H03	31.3		101.1	1.1	10.0	1
8.2	5	•	0820S10H05	56.8		128.1	1.1	10.0	1
0.2	10	•	0820S10H10		120.5		1.5	10.0	2
	3		MDA 0830S10H03	31.2		101.1	1.1	10.0	1
8.3	5	•	0830S10H05	56.7		128.1	1.1	10.0	1
	10		0830S10H10	108.1	120.5	182.5	1.5	10.0	2
	3		MDA 0840S10H03	31.0	43.6	101.1	1.1	10.0	1
8.4	5		0840S10H05	56.5	69.1	128.1	1.1	10.0	1
	10		0840S10H10	107.9	120.5	182.5	1.5	10.0	2
	3		MDA 0850S10H03	31.0	43.6	101.1	1.1	10.0	1
8.5	5	•	0850S10H05	56.5	69.1	128.1	1.1	10.0	1
	10		0850S10H10		120.5		1.5	10.0	2
	3	•	MDA 0860S10H03	31.2		101.1	1.2	10.0	1
8.6	5	•	0860S10H05	58.2		128.1	1.2	10.0	1
	10		0860S10H10		125.6		1.6	10.0	2
	3		MDA 0870S10H03	31.1		101.2	1.2	10.0	1
8.7	5	•	0870S10H05	58.1		128.2	1.2	10.0	1
	10		0870S10H10		125.6		1.6	10.0	1
8.8	3 5	•	MDA 0880S10H03 0880S10H05	31.0 58.0		101.2 128.2	1.2	10.0	1
0.0	10		0880S10H10		125.6		1.6	10.0	2
	3		MDA 0890S10H03	30.8		101.2	1.2	10.0	1
8.9	5	•	0890S10H05	57.8		128.2	1.2	10.0	1
	10		0890S10H10		125.6	_	1.6	10.0	2
	3	•	MDA 0900S10H03	30.7		101.2	1.2	10.0	1
9.0	5	•	0900S10H05	57.7		128.2	1.2	10.0	1
	10	•	0900S10H10	112.1	125.6	182.6	1.6	10.0	2
Crada	DI Y17	00							

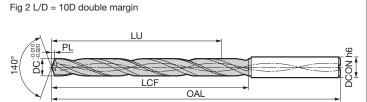
10 • Grade: DLX1700











Diameter	αQ 1	to :	10	5mm
Diameter	09. I	TO	IU.	.niiiic.

Dim	ensions (mm)	
	0	

Diameter   Diameter			~ ~				DIIII	311010115 (	,
9.1			tock	Cat. No.					IFIGI
9.1   5	DO		()	MDV 0010810H03					-
9.2   10	0.1								- 1
9.2 5	5.1				1				
9.2 5 0920S10H05 63.4 77.2 137.2 1.2 10.0 1 0920S10H10 120.9 134.7 197.7 1.7 10.0 2 10.0 1						_		_	-
10	0.2					-			
9.21 5	3.2	-							
9.3   MDA 0930S10H03   34.8   48.7   107.2   1.2   10.0   1   10   0930S10H10   120.7   134.7   197.7   1.7   10.0   2   9.4   5   0940S10H05   63.2   77.3   137.3   1.3   10.0   1   10   0940S10H10   120.6   134.7   197.7   1.7   10.0   2    9.5   0   MDA 0950S10H03   34.5   48.8   107.3   1.3   10.0   1   10   0950S10H05   63.0   77.3   137.3   1.3   10.0   1   10   0950S10H10   120.5   134.7   197.7   1.7   10.0   2    9.5   0   MDA 0950S10H03   34.5   48.8   107.3   1.3   10.0   1   10   0950S10H10   120.5   134.7   197.7   1.7   10.0   2    9.6   0   MDA 0960S10H03   36.9   51.3   107.3   1.3   10.0   1   10   0960S10H10   127.3   141.7   197.7   1.7   10.0   2    9.7   5   0970S10H05   66.7   81.3   137.3   1.3   10.0   1   10   0970S10H10   127.2   141.8   197.8   1.8   10.0   2    9.8   5   0   0980S10H05   66.6   81.3   137.3   1.3   10.0   1   10   0980S10H05   66.6   81.3   137.3   1.3   10.0   1   10   0980S10H10   127.1   141.8   197.8   1.8   10.0   2    9.8   5   0   0980S10H03   36.5   51.3   107.3   1.3   10.0   1   10   0   0980S10H03   36.5   51.3   107.3   1.3   10.0   1   10   0   0980S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0980S10H10   127.1   141.8   197.8   1.8   10.0   2   10   0   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0990S10H10   127.1   141.8   197.8   1.8   10.0   2   10   0   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0   0   0   0   0   0   0   0   0	0.21	-							-
9.3	3.21	_							-
9.4 5	0.3					-			
9.4 5	3.5								
9.4 5 0940S10H05 63.2 77.3 137.3 1.3 10.0 1 10 0940S10H10 120.6 134.7 197.7 1.7 10.0 2 3 MDA 0950S10H03 34.5 48.8 107.3 1.3 10.0 1 10 0950S10H10 120.5 134.7 197.7 1.7 10.0 2 3 MDA 0960S10H03 36.9 51.3 107.3 1.3 10.0 1 9.6 5 0960S10H05 66.9 81.3 137.3 1.3 10.0 1 0 0960S10H10 127.3 141.7 197.7 1.7 10.0 2 3 MDA 0960S10H03 36.7 51.3 107.3 1.3 10.0 1 0 0960S10H10 127.3 141.7 197.7 1.7 10.0 2 3 MDA 0970S10H03 36.7 51.3 107.3 1.3 10.0 1 0 0970S10H10 127.2 141.8 197.8 1.8 10.0 1 10 0970S10H10 127.2 141.8 197.8 1.8 10.0 1 10 0980S10H10 127.1 141.8 197.8 1.8 10.0 2 3 MDA 0980S10H03 36.6 51.3 107.3 1.3 10.0 1 10 0980S10H10 127.1 141.8 197.8 1.8 10.0 2 3 MDA 0990S10H05 66.6 81.3 137.3 1.3 10.0 1 10 0990S10H10 127.0 141.8 197.8 1.8 10.0 2 3 MDA 0990S10H00 36.5 51.3 107.3 1.3 10.0 1 10 0990S10H10 127.0 141.8 197.8 1.8 10.0 2 10 0990S10H10 127.0 141.8 197.8 1.8 10.0 1 10 10 0990S10H10 127.0 141.8 197.8 1.8 10.0 1 10 10 090S10H10 127.0 141.8 197.8 1.8 10.0 2 10 10 090S10H10 127.0 141.8 197.8 1.8 10.0 1 10 100S10H10 126.8 141.8 197.8 1.8 10.0 2 10 10 100S10H10 126.8 141.8 197.8 1.8 10.0 2 10 10 100S10H10 133.6 148.9 216.9 1.9 12.0 1 10 100S12H10 133.6 148.9 216.9 1.9 12.0 2 10 3 MDA 1030S12H03 38.6 53.9 117.4 1.4 12.0 1 10 1030S12H10 133.6 148.9 216.9 1.9 12.0 2 10 3 MDA 1030S12H03 38.6 53.9 117.4 1.4 12.0 1 10 1030S12H10 133.6 148.9 216.9 1.9 12.0 2 10 4 5 1030S12H03 38.3 53.9 117.4 1.4 12.0 1 10 1040S12H10 133.6 148.9 216.9 1.9 12.0 2 10 5 MDA 1050S12H03 38.2 53.9 117.4 1.4 12.0 1 10 1040S12H10 133.3 148.9 216.9 1.9 12.0 2 10 5 MDA 1050S12H03 38.2 53.9 117.4 1.4 12.0 1 10 1040S12H10 133.3 148.9 216.9 1.9 12.0 2								_	-
10	0.4	-							
9.5   S   MDA 0950S10H03   34.5   48.8   107.3   1.3   10.0   1   10   0950S10H10   120.5   134.7   197.7   1.7   10.0   2   2   3   MDA 0960S10H03   36.9   51.3   107.3   1.3   10.0   1   10   0960S10H10   127.3   141.7   197.7   1.7   10.0   2   2   3   MDA 0960S10H10   127.3   141.7   197.7   1.7   10.0   2   2   3   MDA 0970S10H03   36.7   51.3   107.3   1.3   10.0   1   10   0970S10H10   127.3   141.7   197.7   1.7   10.0   2   2   3   MDA 0970S10H10   127.2   141.8   197.8   1.8   10.0   2   10   0970S10H10   127.2   141.8   197.8   1.8   10.0   2   10   0980S10H10   127.1   141.8   197.8   1.8   10.0   2   10   0980S10H10   127.1   141.8   197.8   1.8   10.0   2   10   0990S10H10   127.0   141.8   197.8   1.8   10.0   2   10   0990S10H10   127.0   141.8   197.8   1.8   10.0   2   10   0990S10H10   127.0   141.8   197.8   1.8   10.0   2   10   10   10   10   10   10   10	3.4								
9.5		_				_			-
10	9.5		_						
9.6 5	3.3	-							
9.6   5   0960S10H05   66.9   81.3   137.3   1.3   10.0   1   10   0960S10H10   127.3   141.7   197.7   1.7   10.0   2   3   MDA 0970S10H03   36.7   51.3   107.3   1.3   10.0   1   10   0970S10H10   127.2   141.8   197.8   1.8   10.0   2   3   MDA 0980S10H03   36.6   51.3   107.3   1.3   10.0   1   10   0980S10H05   66.6   81.3   137.3   1.3   10.0   1   10   0980S10H10   127.1   141.8   197.8   1.8   10.0   2   3   MDA 0990S10H03   36.5   51.3   107.3   1.3   10.0   1   10   0990S10H10   127.1   141.8   197.8   1.8   10.0   2   3   MDA 0990S10H03   36.5   51.3   107.3   1.3   10.0   1   10   0990S10H10   127.0   141.8   197.8   1.8   10.0   2   3   MDA 1000S10H03   36.3   51.3   107.3   1.3   10.0   1   10   0990S10H10   127.0   141.8   197.8   1.8   10.0   2   3   MDA 1000S10H05   66.3   81.3   137.3   1.3   10.0   1   10   1000S10H10   126.8   141.8   197.8   1.8   10.0   2   3   MDA 1010S12H03   38.7   53.8   117.3   1.4   12.0   1   10   1010S12H05   70.2   85.3   150.3   1.4   12.0   1   10   1010S12H05   70.1   85.4   150.4   1.4   12.0   1   10   1020S12H10   133.6   148.9   216.9   1.9   12.0   2   3   MDA 1030S12H05   70.1   85.4   150.4   1.4   12.0   1   10   1030S12H10   133.6   148.9   216.9   1.9   12.0   2   3   MDA 1040S12H03   38.6   53.9   117.4   1.4   12.0   1   10   1030S12H10   133.6   148.9   216.9   1.9   12.0   2   3   MDA 1040S12H03   38.8   53.9   117.4   1.4   12.0   1   10   1040S12H05   69.8   85.4   150.4   1.4   12.0   1   10   1040S12H05   69.7   85.4   150.4   1.4   12.0   1   10   1050S12H05   69.7   85.4   150.4   1.4   12.0   1   10   1050S12H10   133.2   148.9   216.9   1.9   12.0								_	-
10	9.6								- 1
9.7 5	0.0								
9.7									
10	9.7	-							
9.8   S   MDA 0980S10H03   36.6   51.3   107.3   1.3   10.0   1   10   0980S10H05   66.6   81.3   137.3   1.3   10.0   1   10   0980S10H10   127.1   141.8   197.8   1.8   10.0   2   2   3   MDA 0990S10H03   36.5   51.3   107.3   1.3   10.0   1   10   0990S10H05   66.5   81.3   137.3   1.3   10.0   1   10   0990S10H10   127.0   141.8   197.8   1.8   10.0   2   3   MDA 1000S10H03   36.3   51.3   107.3   1.3   10.0   1   10   0990S10H10   127.0   141.8   197.8   1.8   10.0   2   10   10   1000S10H05   66.3   81.3   137.3   1.3   10.0   1   10   1000S10H10   126.8   141.8   197.8   1.8   10.0   2   10   10   1000S10H10   126.8   141.8   197.8   1.8   10.0   2   10   10   10   10   10   10   10									
9.8								_	-
10   0980\$10H10   127.1   141.8   197.8   1.8   10.0   2	9.8								
9.9 5		10	•						2
10		3		MDA 0990S10H03	36.5 51.	3 107.3	1.3	10.0	1
10.0   10.0   10.0   10.0   10.0   1.0	9.9	5		0990S10H05	66.5 81.	3 137.3	1.3	10.0	1
10.0 5		10		0990S10H10	127.0 141.	8 197.8	1.8	10.0	2
10		3	•	MDA 1000S10H03	36.3 51.	3 107.3	1.3	10.0	1
10.1   3	10.0	5		1000S10H05	66.3 81.3	3 137.3	1.3	10.0	1
10.1         5         1010\$\$12H05         70.2         85.3         150.3         1.4         12.0         1           10         1010\$\$12H10         133.7         148.8         216.8         1.8         12.0         2           3         MDA 1020\$\$12H03         38.6         53.9         117.4         1.4         12.0         1           10         1020\$\$12H05         70.1         85.4         150.4         1.4         12.0         1           10         1020\$\$12H10         133.6         148.9         216.9         1.9         12.0         2           3         MDA 1030\$\$12H03         38.6         53.9         117.4         1.4         12.0         1           10.3         5         1030\$\$\$12H05         70.1         85.4         150.4         1.4         12.0         1           10         1030\$\$\$\$12H0         133.6         148.9         216.9         1.9         12.0         2           3         MDA 1040\$\$\$\$12H03         38.3         53.9         117.4         1.4         12.0         1           10.4         5         1040\$		10		1000S10H10	126.8 141.	8 197.8	1.8	10.0	2
10		3		MDA 1010S12H03	38.7 53.	8 117.3	1.4	12.0	1
3	10.1	5		1010S12H05	70.2 85.	3 150.3	1.4	12.0	1 - 1
10.2     5     1020S12H05     70.1     85.4     150.4     1.4     12.0     1       10     1020S12H10     133.6     148.9     216.9     1.9     12.0     2       3     MDA 1030S12H03     38.6     53.9     117.4     1.4     12.0     1       10.3     10     1030S12H05     70.1     85.4     150.4     1.4     12.0     1       10     1030S12H10     133.6     148.9     216.9     1.9     12.0     2       10.4     5     1040S12H03     38.3     53.9     117.4     1.4     12.0     1       10     1040S12H10     133.3     148.9     216.9     1.9     12.0     2       3     MDA 1050S12H03     38.2     53.9     117.4     1.4     12.0     1       10.5     1050S12H05     69.7     85.4     150.4     1.4     12.0     1       10     1050S12H10     133.2     148.9     216.9     1.9     12.0     2		10		1010S12H10	133.7 148.	8 216.8		12.0	-
10. 1020\$12H10 133.6 148.9 216.9 1.9 12.0 2  10.3 5		_							
10.3   MDA 1030\$12H03   38.6   53.9   117.4   1.4   12.0   1   10   10   1030\$12H05   70.1   85.4   150.4   1.4   12.0   1   10   1030\$12H10   133.6   148.9   216.9   1.9   12.0   2   2   2   3   MDA 1040\$12H03   38.3   53.9   117.4   1.4   12.0   1   10   1040\$12H05   69.8   85.4   150.4   1.4   12.0   1   10   1040\$12H10   133.3   148.9   216.9   1.9   12.0   2   2   3   MDA 1050\$12H03   38.2   53.9   117.4   1.4   12.0   1   1050\$12H05   69.7   85.4   150.4   1.4   12.0   1   10   1050\$12H10   133.2   148.9   216.9   1.9   12.0   2   2   2   2   3   3   3   3   3   3	10.2	5							
10.3     5     1030\$\$12H05     70.1     85.4     150.4     1.4     12.0     1       10     1030\$\$12H10     133.6     148.9     216.9     1.9     12.0     2       3     MDA 1040\$\$12H03     38.3     53.9     117.4     1.4     12.0     1       10.4     5     1040\$\$12H05     69.8     85.4     150.4     1.4     12.0     1       10     1040\$\$12H10     133.3     148.9     216.9     1.9     12.0     2       3     MDA 1050\$\$12H03     38.2     53.9     117.4     1.4     12.0     1       10.5     5     1050\$\$12H05     69.7     85.4     150.4     1.4     12.0     1       10     1050\$\$12H05     133.2     148.9     216.9     1.9     12.0     2		_						_	-
10					1	-			
10.4   5   MDA 1040S12H03   38.3   53.9   117.4   1.4   12.0   1   10   10   1040S12H05   69.8   85.4   150.4   1.4   12.0   1   10   1040S12H10   133.3   148.9   216.9   1.9   12.0   2   2   3   MDA 1050S12H03   38.2   53.9   117.4   1.4   12.0   1   1050S12H05   69.7   85.4   150.4   1.4   12.0   1   10   1050S12H10   133.2   148.9   216.9   1.9   12.0   2   2	10.3	-	•					_	
10.4     5     1040S12H05     69.8     85.4     150.4     1.4     12.0     1       10     1040S12H10     133.3     148.9     216.9     1.9     12.0     2       3     MDA 1050S12H03     38.2     53.9     117.4     1.4     12.0     1       10.5     5     1050S12H05     69.7     85.4     150.4     1.4     12.0     1       10     1050S12H10     133.2     148.9     216.9     1.9     12.0     2		-				_			-
10 1040S12H10 133.3 148.9 216.9 1.9 12.0 2 3 MDA 1050S12H03 38.2 53.9 117.4 1.4 12.0 1 10.5 5 1050S12H05 69.7 85.4 150.4 1.4 12.0 1 10 1050S12H10 133.2 148.9 216.9 1.9 12.0 2		_	_						
10.5     5     MDA 1050S12H03     38.2     53.9     117.4     1.4     12.0     1       10     1050S12H05     69.7     85.4     150.4     1.4     12.0     1       10     1050S12H10     133.2     148.9     216.9     1.9     12.0     2	10.4				1				
10.5       5       •       1050\$12H05       69.7       85.4       150.4       1.4       12.0       1         10       •       1050\$12H10       133.2       148.9       216.9       1.9       12.0       2		-				_			-
10 • 1050\$12H10   133.2   148.9   216.9   1.9   12.0   2	40.5		_		1				
	10.5	-	_						
			_	1050S12H10	133.2 148.	9 216.9	1.9	12.0	2

Diameter	ø10.6 to	12 0mm
Diameter	Ø10.0 to	12.0111111

Dimonoiono	(mm)

Reamers

Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fig
	3	•	MDA 1060S12H03	38.5		117.4	1.4	12.0	1
10.6	5		1060S12H05	71.5	87.4	150.4	1.4	12.0	1
	10		1060S12H10	138.0	153.9	216.9	1.9	12.0	2
	3		MDA 1070S12H03	38.4	54.4	117.4	1.4	12.0	1
10.7	5		1070S12H05	71.4	87.4	150.4	1.4	12.0	1
	10		1070S12H10	137.9	153.9	216.9	1.9	12.0	2
	3		MDA 1080S12H03	38.2	54.4	117.4	1.4	12.0	1
10.8	5		1080S12H05	71.2	-	150.4	1.4	12.0	1
	10	•	1080S12H10		154.0		2.0	12.0	2
	3		MDA 1090S12H03	38.1		117.5	1.5	12.0	1
10.9	5		1090S12H05	71.1		150.5	1.5	12.0	1
	10		1090S12H10		154.0		2.0	12.0	2
	3	•	MDA 1100S12H03	38.0		117.5	1.5	12.0	1
11.0	5		1100S12H05	71.0		150.5	1.5	12.0	1
	10		1100S12H10		154.0		2.0	12.0	2
	3		MDA 1110S12H03	42.3		123.5	1.5	12.0	1
11.1	5	•	1110S12H05	76.8		159.5	1.5	12.0	1
	10		1110S12H10		163.0		2.0	12.0	2
	3		MDA 1120S12H03	42.2		123.5	1.5	12.0	1
11.2	5		1120S12H05	76.7		159.5	1.5	12.0	1
	10		1120S12H10		163.0		2.0	12.0	2
44.0	3		MDA 1130S12H03	42.1		123.5	1.5	12.0	1
11.3	5		1130S12H05	76.6		159.5	1.5	12.0	1
	10		1130S12H10		163.1	-	2.1	12.0	1
44.4	3		MDA 1140S12H03	41.9 76.4		123.5	1.5	12.0	1
11.4	5 10		1140S12H05 1140S12H10		163.1	159.5	1.5	12.0	2
	3	•	MDA 1150S12H03	41.8		123.5	1.5	12.0	1
11.5	5	•	1150S12H05	76.3		159.5	1.5	12.0	1
11.5	10	•	1150S12H10		163.1		2.1	12.0	2
	3		MDA 1160S12H03	44.1		123.5	1.6	12.0	1
11.6	5		1160S12H05	80.1		159.5	1.6	12.0	1
	10		1160S12H10		170.1		2.1	12.0	2
	3		MDA 1170S12H03	44.0	_	123.6	1.6	12.0	1
11.7	5		1170S12H05	80.0		159.6	1.6	12.0	1
	10		1170S12H10		170.1		2.1	12.0	2
	3		MDA 1180S12H03	43.9		123.6	1.6	12.0	1
11.8	5		1180S12H05	79.9	97.6	159.6	1.6	12.0	1
	10		1180S12H10	152.4	170.1	232.1	2.1	12.0	2
	3		MDA 1190S12H03	43.7	61.6	123.6	1.6	12.0	1
11.9	5		1190S12H05	79.7		159.6	1.6	12.0	1
	10		1190S12H10	152.3	170.2	232.2	2.2	12.0	2
	3		MDA 1200S12H03	43.6	61.6	123.6	1.6	12.0	1
12.0	5	•	1200S12H05	79.6		159.6	1.6	12.0	1
	10		1200S12H10	152.2	170.2	232.2	2.2	12.0	2

Grade: DLX1700

10 • Grade: DLX1700

#### Recommended Cutting Conditions (L/D = 3D, 5D)

Work Material	, ,	ninum alloy die cast material	Duralumin-based Al-Zn-Mg t	d aluminum alloy type (7075)	Wrought aluminum alloy Al-Mg type (5052)		
Dia. (mm)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)	
up to ø2.00	50 - 120	0.05 - 0.40	40 - 90	0.05 - 0.20	50 - 120	0.04 - 0.08	
up to ø3.00	60 - 150	0.10 - 0.60	50 - 100	0.10 - 0.30	60 - 150	0.04 - 0.08	
up to ø4.00	60 - 150	0.15 - 0.80	50 - 120	0.15 - 0.40	60 - 150	0.05 - 0.12	
up to ø6.00	80 - 200	0.20 - 1.20	80 - 180	0.20 - 0.60	80 - 200	0.08 - 0.18	
up to Ø8.00	100 - 200	0.20 - 1.20	80 - 180	0.20 - 0.80	100 - 200	0.10 - 0.20	
up to ø10.00	100 - 200	0.20 - 1.20	100 - 180	0.20 - 0.80	100 - 200	0.10 - 0.25	
up to ø12.00	120 - 250	0.20 - 1.20	120 - 200	0.20 - 0.80	120 - 250	0.10 - 0.30	

- · The recommended cutting conditions above are for cases where a water-soluble coolant is used.
- · Use with internal coolant supply.
- $\cdot$  Recommended coolant supply pressure of 2.0MPa or higher for ø3 or below, and 1.5MPa or higher for over ø3.
- · Keep the drill runout at 0.02mm or lower.
- $\cdot$  If abnormalities such as noise or vibration occur, change the cutting conditions accordingly.
- · When drilling with pre-cast holes, we recommend the lower-limit end of the recommended conditions.

#### Recommended Cutting Conditions (L/D = 10D or longer)

Work Material	Aluminum alloy casting/Alum ADC	*	Duralumin-based Al-Zn-Mg t	d aluminum alloy type (7075)	Wrought alu Al-Mg typ	,
Dia. (mm)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)
up to ø2.00	50 - 100	0.05 - 0.20	40 - 60	0.05 - 0.15	50 - 100	0.04 - 0.08
up to ø3.00	60 - 120	0.10 - 0.30	50 - 80	0.10 - 0.20	60 - 120	0.04 - 0.08
up to ø4.00	60 - 120	0.15 - 0.40	50 - 100	0.10 - 0.25	60 - 120	0.04 - 0.10
up to ø6.00	80 - 150	0.20 - 0.60	60 - 120	0.15 - 0.30	80 - 150	0.06 - 0.12
up to Ø8.00	80 - 180	0.20 - 0.60	80 - 150	0.20 - 0.40	80 - 180	0.08 - 0.15
up to ø10.00	100 - 180	0.20 - 0.60	100 - 150	0.20 - 0.40	100 - 180	0.10 - 0.20
up to ø12.00	120 - 200	0.20 - 0.60	120 - 180	0.20 - 0.40	120 - 200	0.10 - 0.25

- $\cdot \ \text{The recommended cutting conditions above are for cases where a water-soluble coolant is used.}$
- · Use with internal coolant supply.
- · Recommended coolant supply pressure of 2.0MPa or higher for ø3 or below, and 1.5MPa or higher for ø4.
- · Keep the drill runout at 0.02mm or lower.
- $\cdot \ \text{If abnormalities such as noise or vibration occur, change the cutting conditions accordingly}.$
- $\cdot$  For drilling with pre-cast holes, drills of 10D (or longer) are not recommended.
- · Drilling holes 10D or longer may lead to abnormalities; drill a guide hole (hole depth 1D to 2D) in advance.
- · A 3D (5D) drill can be used for guide hole drilling. (For guide hole drilling, use conditions lower than the "Recommended feed for 10D or longer")

## Reamers

#### ■ Features

Micro Long Drills are oil-hole drills for high-efficiency drilling developed for drilling deep, small-diameter holes. Featuring improved drill strength, often a problem area with small drills.

Deep hole drilling

Flute shape ensures good drill rigidity and chip evacuation. High-efficiency drilling to depths of over 20 times the diameter at over vf = 500mm/min

(equivalent to blade diameter ø1.3 SUS416).

Optimal thinning and edge balance for stable chip control.

Long tool life

Special coating provides long tool life with a wide variety of work materials.

Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring stable tool life.

#### ■ Product Range

Applications	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
	MLDH□□□□L5	ø0.8 to 2.0	up to 5	41 items in stock
Deep Hole Drilling	MLDH□□□□L12	ø0.8 to 2.0	up to 12	41 items in stock
Беер пове Блішту	MLDH□□□□L20	ø0.8 to 2.0	up to 20	41 items in stock
	MLDH□□□□L30	ø0.8 to 2.0	up to 30	41 items in stock
For Guide Hole	MLDHOOOP	ø0.8 to 2.0	up to 2	41 items in stock

#### ■ Recommended Cutting Conditions

#### MLDH-P type / MLDH-L5 type

(n: Spindle Speed min-1 vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Mild Steel up to 200HB	General Steel up to 250HB	Alloy Steel up to 300HB	Stainless Steel up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Steel
	n	16,000	16,000	16,000	9,500	16,000	19,000	3,200
ø1.0	VC	40 - <b>50</b> - 60	40 - <b>50</b> - 60	40 - <b>50</b> - 60	20 - <b>30</b> - 40	40 - <b>50</b> - 60	50 - <b>60</b> - 70	5 - <b>10</b> - 15
	f	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.02 - <b>0.03</b> - 0.04	0.03 - <b>0.04</b> - 0.06	0.005 - <b>0.01</b> - 0.02
	n	11,000	11,000	11,000	6,400	11,000	13,000	2,100
ø1.5	VC	40 - <b>50</b> - 60	40 - <b>50</b> - 60	40 - <b>50</b> - 60	20 - <b>30</b> - 40	40 - <b>50</b> - 60	50 - <b>60</b> - 70	5 - <b>10</b> - 15
	f	0.04 - <b>0.08</b> - 0.12	0.04 - <b>0.08</b> - 0.12	0.04 - <b>0.08</b> - 0.12	0.02 - <b>0.05</b> - 0.10	0.04 - <b>0.08</b> - 0.12	0.05 - <b>0.10</b> - 0.15	0.01 - <b>0.03</b> - 0.05
	n	8,000	8,000	8,000	4,800	8,000	9,500	1,600
ø2.0	VC	40 - <b>50</b> - 60	40 - <b>50</b> - 60	40 - <b>50</b> - 60	20 - <b>30</b> - 40	40 - <b>50</b> - 60	50 - <b>60</b> - 70	5 - <b>10</b> - 15
	f	0.06 - <b>0.08</b> - 0.12	0.06 - <b>0.08</b> - 0.12	0.06 - <b>0.08</b> - 0.12	0.04 - <b>0.06</b> - 0.10	0.06 - <b>0.08</b> - 0.12	0.08 - <b>0.12</b> - 0.15	0.01 - <b>0.03</b> - 0.05

Min. - Optimum - Max.

#### MLDH-L12 type / MLDH-L20 type / MLDH-L30 type

		typo, meen	LEG type / IVILL	711 <u>200 typo</u>				
Diameter DC (mm)	Cutting Conditions	Mild Steel up to 200HB	General Steel up to 250HB	Alloy Steel up to 300HB	Stainless Steel up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Steel
	n	16,000	16,000	16,000	9,500	16,000	19,000	3,200
ø1.0	VC	40 - <b>50</b> - 60	40 - <b>50</b> - 60	40 - <b>50</b> - 60	20 - <b>30</b> - 40	40 - <b>50</b> - 60	50 - <b>60</b> - 70	5 - <b>10</b> - 15
	f	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.01 - <b>0.02</b> - 0.03	0.02 - <b>0.03</b> - 0.04	0.03 - <b>0.04</b> - 0.06	0.005 - <b>0.01</b> - 0.02
	n	11,000	11,000	11,000	6,400	11,000	13,000	2,100
ø1.5	VC	40 - <b>50</b> - 60	40 - <b>50</b> - 60	40 - <b>50</b> - 60	20 - <b>30</b> - 40	40 - <b>50</b> - 60	50 - <b>60</b> - 70	5 - <b>10</b> - 15
	f	0.03 - <b>0.05</b> - 0.07	0.03 - <b>0.05</b> - 0.07	0.03 - <b>0.05</b> - 0.07	0.02 - <b>0.04</b> - 0.07	0.04 - <b>0.07</b> - 0.10	0.05 - <b>0.08</b> - 0.12	0.01 - <b>0.02</b> - 0.03
	n	8,000	8,000	8,000	4,800	8,000	9,500	1,600
ø2.0	VC	40 - <b>50</b> - 60	40 - <b>50</b> - 60	40 - <b>50</b> - 60	20 - <b>30</b> - 40	40 - <b>50</b> - 60	50 - <b>60</b> - 70	5 - <b>10</b> - 15
	f	0.04 - <b>0.06</b> - 0.08	0.04 - <b>0.06</b> - 0.08	0.04 - <b>0.06</b> - 0.08	0.04 - <b>0.06</b> - 0.08	0.04 - <b>0.07</b> - 0.10	0.05 - <b>0.08</b> - 0.12	0.01 - <b>0.02</b> - 0.03

<sup>\*</sup> If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available. In this case, the tool life may be shortened.

Min. - Optimum - Max.

### MLDH-L/MLDH-P type (Internal Coolant Supply)



















Fig 1 (MLDH-P type)



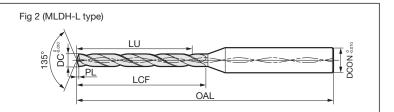


OAL









Diameter ø0.80 to 0.90mm

Dimensions (mm)

2	Dia.	Hole Depth	Stock	Cat. No.		Flute Length		Tip	Shank Dia.	Fig
0.80   12	DC	(L/D)			LU	LCF	OAL	PL	DCON	_
0.80         12         ●         0800L12         12.8         14         55         0.2         3.0           20         ●         0800L20         17.8         19         60         0.2         3.0           30         ●         0800L30         26.8         28         70         0.2         3.0           5         ●         0810L5         7.8         9         50.0         0.2         3.0           0.81         12         ●         0810L20         17.8         19         60         0.2         3.0           20         ●         0810L20         17.8         19         60         0.2         3.0           30         ●         0810L30         26.8         28         70         0.2         3.0           2         ●         MLDH 0820P         2.1         3.3         45         0.1         3.0           5         ●         0820L5         7.8         9         50.0         0.2         3.0           0.82         12         ●         0820L30         26.8         28         70         0.2         3.0           0.83         12         ●         0830L5         7.8			_			_				1
20			_			-				2
30	0.80		_							2
2			_		-	-				2
0.81       12       ●       0810L12       12.8       14       55       0.2       3.0       2         20       ●       0810L20       17.8       19       60       0.2       3.0       2         30       ●       0810L30       26.8       28       70       0.2       3.0       2         2       ●       MLDH 0820P       2.1       3.3       45       0.1       3.0       2         5       ●       0820L5       7.8       9       50.0       0.2       3.0       2         20       ●       0820L20       18.8       20       60       0.2       3.0       2         30       ●       0820L30       26.8       28       70       0.2       3.0       2         2       ●       MLDH 0830P       2.1       3.3       45       0.1       3.0       3.0         0.83       12       ●       0830L5       7.8       9       50.0       0.2       3.0       3.0         0.84       12       ●       0830L20       18.8       20       60       0.2       3.0       3.0         0.84       12       ●       0840L5			•		26.8	-	-			2
0.81       12       ●       0810L12       12.8       14       55       0.2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0 <th></th> <th></th> <th></th> <th></th> <th></th> <th>-</th> <th></th> <th></th> <th>3.0</th> <th>1</th>						-			3.0	1
20		5		0810L5	7.8	9	50.0	0.2	3.0	2
30	0.81	12		0810L12	12.8	14	55	0.2	3.0	2
2		20			17.8	19	60	0.2	3.0	2
0.82       5       ●       0820L5       7.8       9       50.0       0.2       3.0       2         20       ●       0820L12       12.8       14       55       0.2       3.0       2         30       ●       0820L30       26.8       28       70       0.2       3.0       2         2       ●       MLDH 0830P       2.1       3.3       45       0.1       3.0       2         5       ●       0830L5       7.8       9       50.0       0.2       3.0       2         20       ●       0830L12       12.8       14       55       0.2       3.0       2         30       ●       0830L30       26.8       28       70       0.2       3.0       2         4       2       ●       MLDH 0840P       2.1       3.4       45       0.1       3.0         5       ●       0840L5       7.7       9       50.0       0.2       3.0       3.0         0.84       12       ●       0840L30       27.7       29       70       0.2       3.0       3.0         0.85       12       ●       0850L5       7.7		30		0810L30	26.8	28		0.2	3.0	2
0.82       12       ●       0820L12       12.8       14       55       0.2       3.0       2         30       ●       0820L30       26.8       28       70       0.2       3.0       2         2       ●       MLDH 0830P       2.1       3.3       45       0.1       3.0       2         5       ●       0830L5       7.8       9       50.0       0.2       3.0       3.0         20       ●       0830L20       18.8       20       60       0.2       3.0       3.0         30       ●       0830L30       26.8       28       70       0.2       3.0       3.0         5       ●       0840L5       7.7       9       50.0       0.2       3.0       3.0         6       0840L12       12.7       14       55       0.2       3.0       3.0         9       0840L20       18.7       20       60       0.2       3.0       3.0         10.84       12       ●       0840L20       18.7       20       60       0.2       3.0         2       ●       MLDH 0850P       2.1       3.4       45       0.1       3		2		MLDH 0820P	2.1	3.3	45	0.1	3.0	1
20		5		0820L5	7.8	9	50.0	0.2	3.0	2
30	0.82	12		0820L12	12.8	14	55	0.2	3.0	2
2		20		0820L20	18.8	20	60	0.2	3.0	2
0.83       5       ●       0830L5       7.8       9       50.0       0.2       3.0       12       ●       0830L12       12.8       14       55       0.2       3.0       2        3.0       2       3.0       2       3.0       2       3.0        2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2       3.0       2        3.0       2       3.0       2       3.0       2       3.0        2       3.0       2       3.0       2       3.0       2        3.0       2       3.0       2       3.0       2       3.0		30		0820L30	26.8	28	70	0.2	3.0	2
0.83       12       ●       0830L12       12.8       14       55       0.2       3.0       2         30       ●       0830L20       18.8       20       60       0.2       3.0       2         30       ●       0830L30       26.8       28       70       0.2       3.0       2         2       ●       MLDH 0840P       2.1       3.4       45       0.1       3.0       2         5       ●       0840L5       7.7       9       50.0       0.2       3.0       2         20       ●       0840L20       18.7       20       60       0.2       3.0       2         30       ●       0840L30       27.7       29       70       0.2       3.0       2         4       2       ●       0850L5       7.7       9       50.0       0.2       3.0       2         5       ●       0850L12       12.7       14       55       0.2       3.0       2         0.85       12       ●       0850L12       12.7       14       55       0.2       3.0       2         20       ●       0850L30       27.7       29		2		MLDH 0830P	2.1	3.3	45	0.1	3.0	1
20		5		0830L5	7.8	9	50.0	0.2	3.0	2
30	0.83	12		0830L12	12.8	14	55	0.2	3.0	2
2		20		0830L20	18.8	20	60	0.2	3.0	2
0.84       5       ●       0840L5       7.7       9       50.0       0.2       3.0       12         20       ●       0840L20       18.7       20       60       0.2       3.0       2         30       ●       0840L30       27.7       29       70       0.2       3.0       2         2       ●       MLDH 0850P       2.1       3.4       45       0.1       3.0       2         5       ●       0850L5       7.7       9       50.0       0.2       3.0       2         20       ●       0850L12       12.7       14       55       0.2       3.0       2         30       ●       0850L20       18.7       20       60       0.2       3.0       2         2       ●       MLDH 0860P       2.1       3.4       45       0.1       3.0       3.0       3.0         0.86       12       ●       0860L5       7.7       9       50.0       0.2       3.0       3.0         2       ●       0860L12       13.7       15       55       0.2       3.0       3.0         30       ●       0860L30       27.7		30		0830L30	26.8	28	70	0.2	3.0	2
0.84       12       ●       0840L12       12.7       14       55       0.2       3.0       2         30       ●       0840L20       18.7       20       60       0.2       3.0       2         30       ●       0840L30       27.7       29       70       0.2       3.0       2         2       ●       MLDH 0850P       2.1       3.4       45       0.1       3.0       2         5       ●       0850L5       7.7       9       50.0       0.2       3.0       2         20       ●       0850L12       12.7       14       55       0.2       3.0       2         30       ●       0850L20       18.7       20       60       0.2       3.0       2         2       ●       MLDH 0860P       2.1       3.4       45       0.1       3.0         5       ●       0860L5       7.7       9       50.0       0.2       3.0       3         0.86       12       ●       0860L12       13.7       15       55       0.2       3.0       3         20       ●       0860L30       27.7       29       70       <		2	•	MLDH 0840P	2.1	3.4	45	0.1	3.0	1
20		5		0840L5	7.7	9	50.0	0.2	3.0	2
30	0.84	12	•	0840L12	12.7	14	55	0.2	3.0	2
30		20	•		18.7	20			3.0	2
2			•							2
0.85       5       ●       0850L5       7.7       9       50.0       0.2       3.0       2         12       ●       0850L12       12.7       14       55       0.2       3.0       2         20       ●       0850L20       18.7       20       60       0.2       3.0       2         30       ●       0850L30       27.7       29       70       0.2       3.0       2         5       ●       0860L5       7.7       9       50.0       0.2       3.0       2         0.86       12       ●       0860L12       13.7       15       55       0.2       3.0       2         20       ●       0860L20       19.7       21       65       0.2       3.0       2         30       ●       0860L30       27.7       29       70       0.2       3.0       2         2       ●       MLDH 0870P       2.2       3.5       45       0.1       3.0         5       ●       0870L5       7.7       9       50.0       0.2       3.0       2		2	•		2.1	3.4	45	0.1	3.0	1
0.85       12       ●       0850L12       12.7       14       55       0.2       3.0       2         30       ●       0850L20       18.7       20       60       0.2       3.0       2         30       ●       0850L30       27.7       29       70       0.2       3.0       2         2       ●       MLDH 0860P       2.1       3.4       45       0.1       3.0       3.0         5       ●       0860L5       7.7       9       50.0       0.2       3.0       3.0         20       ●       0860L12       13.7       15       55       0.2       3.0       3.0         30       ●       0860L30       27.7       29       70       0.2       3.0       3.0         2       ●       MLDH 0870P       2.2       3.5       45       0.1       3.0         5       ●       0870L5       7.7       9       50.0       0.2       3.0       3.0			•			-				2
0.86   20	0.85	-	•			_	55			2
30     ■     0850L30     27.7     29     70     0.2     3.0     :       2     ■     MLDH 0860P     2.1     3.4     45     0.1     3.0       5     ■     0860L5     7.7     9     50.0     0.2     3.0     :       12     ■     0860L12     13.7     15     55     0.2     3.0     :       20     ■     0860L20     19.7     21     65     0.2     3.0     :       30     ■     0860L30     27.7     29     70     0.2     3.0     :       2     ■     MLDH 0870P     2.2     3.5     45     0.1     3.0       5     ■     0870L5     7.7     9     50.0     0.2     3.0     :	0.00		_							2
2			_							2
0.86 12			_							1
0.86       12       ●       0860L12       13.7       15       55       0.2       3.0       2         20       ●       0860L20       19.7       21       65       0.2       3.0       2         30       ●       0860L30       27.7       29       70       0.2       3.0       2         2       ●       MLDH 0870P       2.2       3.5       45       0.1       3.0         5       ●       0870L5       7.7       9       50.0       0.2       3.0       2			_			_				2
20	0.86		_			-				2
30 ● <b>0860L30</b> 27.7 29 70 0.2 3.0 2 2 ● <b>MLDH 0870P</b> 2.2 3.5 45 0.1 3.0 5 5 ● <b>0870L5</b> 7.7 9 50.0 0.2 3.0 2	0.00		_							2
2 MLDH 0870P 2.2 3.5 45 0.1 3.0 5 0870L5 7.7 9 50.0 0.2 3.0 5 0.2 5										2
5 • <b>0870L5</b> 7.7 9 50.0 0.2 3.0			_			_	_	_		1
			_							2
<b>0.87</b>   12   <b>6</b>   <b>0.870   12</b>   13.7   15   55   0.2   3.0   1	0.87	12	•	0870L12	13.7	15	55	0.2	3.0	2
	0.07		_			-				2
		_	_							2
			_							1
=   -  =   -   -   -   -   -   -   -   -   -			_				_			2
	0.88									2
	3.30									2
									I	2
			-						_	1
										2
	0 80		_							2
	J.JJ		_							2
			_							2
										1
										2
	00									2
	0.30		_							2
Part Number Suffix - P: For Guide Hole	Dart Ni		Suffi		23.1	J I	13	0.2	0.0	2

Part Number	Suffix - I	P: For	Guide I	Hole
Grade: ACV7	Ω			

Diameter Ø0.91 to 1.05mm Dimensions (mm)									
Dia.	Hole Depth (L/D)	Stock	Cat. No.	Effective Length	Flute Length LCF	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fig
	2		MLDH 0910P	2.2	3.6	45	0.1	3.0	1
	5		0910L5	8.6	10	50.0	0.2	3.0	2
0.91	12		0910L12	13.6	15	55	0.2	3.0	2
	20		0910L20	20.6	22	65	0.2	3.0	2
	30		0910L30	29.6	31	75	0.2	3.0	2
	2		MLDH 0920P	2.3	3.7	45	0.1	3.0	1
	5	•	0920L5	8.6	10	50.0	0.2	3.0	2
0.92	12		0920L12	14.6	16	60	0.2	3.0	2
	20	•	0920L20	20.6	22	65	0.2	3.0	2
	30		0920L30	29.6	31	75	0.2	3.0	2
	2	•	MLDH 0930P	2.3	3.7	45	0.1	3.0	1
	5	•	0930L5	8.6	10	50.0	0.2	3.0	2
0.93	12	•	0930L12	14.6	16	60	0.2	3.0	2
0.00	20	•	0930L20	20.6	22	65	0.2	3.0	2
	30	•	0930L30	30.6	32	75	0.2	3.0	2
	2	•	MLDH 0940P	2.4	3.8	45	0.1	3.0	1
	5	•	0940L5	8.6	10	50.0	0.1	3.0	2
0.94	12	•	0940L12	14.6	16	60	0.2	3.0	2
0.34	20	5	0940L12 0940L20	21.6	23	65	0.2	3.0	2
	30		0940L20	30.6	32	75	0.2	3.0	2
		•			-	45			1
	2		MLDH 0950P	2.4 8.6	3.8	-	0.2	3.0	
0.95	5 12	_	0950L5	14.6	16	50.0	0.2		2
		•	0950L12 0950L20	_	-	60	0.2	3.0	2
	20	_		21.6	23	65	0.2	3.0	2
	30	•	0950L30 MLDH 0960P	30.6	32	75	0.2	3.0	1
0.00	2			2.4		45	0.2	3.0	
	5	•	0960L5	8.6	10	50.0	0.2	3.0	2
0.96	12		0960L12	14.6	16	60	0.2	3.0	2
	20 30	•	0960L20	21.6	23 33	65	0.2	3.0	2
			0960L30 MLDH 0970P	31.6		75 45	0.2	3.0	1
	2 5	•	0970L5	8.5	3.9	45 50.0	0.2	3.0	2
0.97	12	•		14.5	16		0.2	3.0	2
0.97	20		0970L12 0970L20	21.5	-	60 65	0.2	3.0	2
	30	•			23 33			3.0	2
	2	-	0970L30 MLDH 0980P	31.5	3.9	75 45	0.2	3.0	1
						-			
0.98	5 12		0980L5 0980L12	8.5 15.5	10 17	50.0	0.2	3.0	2
0.90		•	0980L12						
	20 30		0980L20	22.5	33	65 75	0.2	3.0	2
	2	•	MLDH 0990P	2.5	4	45	0.2	3.0	1
	5		0990L5	8.5	10	50.0	0.2	3.0	2
0.99	12	•	0990L12	15.5	17	60		3.0	2
0.99				22.5			0.2		
	20	_	0990L20 0990L30		24	65	0.2	3.0	2
	30	•		32.5	34	75	0.2	3.0	2
	2 5		MLDH 1000P 1000L5	2.5 8.5	10	45 50.0	0.2	3.0	1
1 00	12	_					0.2	3.0	2
1.00			1000L12 1000L20	15.5	17	60	0.2		2
	20	•		22.5	24	65 75	0.2	3.0	2
	30		1000L30	32.5	34	75	0.2	3.0	1
	2	•	MLDH 1050P	2.6	4.2	45	0.2	3.0	
1 05	5		1050L5	10.4	12	55.0	0.2	3.0	2
1.05	12 20	•	1050L12	16.4	18	60	0.2	3.0	2
	/ ( )		1050L20	23.4	25	65	0.2	(J.U.	2
	30		1050L30	34.4	36	80	0.2	3.0	2

Part Number Suffix - P: For Guide Hole

Grade: ACV70

Made-to-order items: Inquire about production of drills in tool diameters and lengths that are not listed in the dimensions above or not in stock.

### MLDH-L/MLDH-P type (Internal Coolant Supply) [Adj Sale]





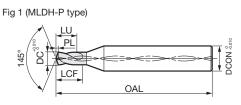


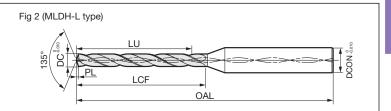












Diameter ø1.10 to 1.60mm

Dia. Hole Depth

Dimensions (mm)

Effective Length Flute Length Overall Length Tip Shank Dia.

mm
١

Dimensions (mm)

DC	(L/D)	Sto	Cat. No.	LU	LCF	OAL	PL	DCON	Fig
	2		MLDH 1100P	2.8	4.4	45	0.2	3.0	1
	5		1100L5	10.4	12	55.0	0.2	3.0	2
1.10	12		1100L12	17.4	19	60	0.2	3.0	2
	20		1100L20	24.4	26	70	0.2	3.0	2
	30		1100L30	35.4	37	80	0.2	3.0	2
	2		MLDH 1150P	2.9	4.5	45	0.2	3.0	1
	5		1150L5	10.3	12	55.0	0.2	3.0	2
1.15	12		1150L12	18.3	20	60	0.2	3.0	2
	20	1150L20	26.3	28	70	0.2	3.0	2	
	30		1150L30	37.3	39	80	0.2	3.0	2
	2		MLDH 1200P	3.0	4.8	45	0.2	3.0	1
	5		1200L5	10.2	12	55.0	0.2	3.0	2
1.20	12		1200L12	18.2	20	60	0.2	3.0	2
	20		1200L20	27.2	29	70	0.2	3.0	2
	30		1200L30	39.2	41	85	0.2	3.0	2
	2		MLDH 1250P	3.1	8	45	0.2	3.0	1
	5		1250L5	12.1	14	55.0	0.3	3.0	2
1.25	12		1250L12	19.1	21	65	0.3	3.0	2
	20		1250L20	28.1	30	70	0.3	3.0	2
	30		1250L30	41.1	43	85	0.3	3.0	2
	2	•	MLDH 1300P	3.3	5.2	45	0.2	3.0	1
	5		1300L5	12.1	14	55.0	0.3	3.0	2
1.30	12	•	1300L12	20.1	22	65	0.3	3.0	2
	20		1300L20	29.1	31	75	0.3	3.0	2
	30	•	1300L30	42.1	44	85	0.3	3.0	2
	2		MLDH 1350P	3.4	5.4	45	0.2	3.0	1
4.05	5	•	1350L5	12.0	14	55.0	0.3	3.0	2
1.35	12		1350L12	21.0	23	65	0.3	3.0	2
	20	•	1350L20	30.0	32 46	75	0.3	3.0	2
	30		1350L30 MLDH 1400P	44.0	5.6	90 45	0.3	3.0	1
	5	•	1400P	3.5	14	55.0	0.2	3.0	2
1.40	12	•	1400L3 1400L12	21.9	24	65	0.3	3.0	2
1.40	20		1400L12 1400L20	31.9	34	75	0.3	3.0	2
	30	•	1400L20	45.9	48	90	0.3	3.0	2
	2	•	MLDH 1450P	3.6	5.8	45	0.2	3.0	1
	5	•	1450L5	13.8	16	55.0	0.2	3.0	2
1.45	12	•	1450L12	22.8	25	65	0.3	3.0	2
1.40	20	•	1450L20	32.8	35	75	0.3	3.0	2
	30	•	1450L30	46.8	49	90	0.3	3.0	2
	2	•	MLDH 1500P	3.8	6	45	0.2	3.0	1
	5	•	1500L5	13.8	16	55.0	0.3	3.0	2
1.50	12	•	1500L12	23.8	26	65	0.3	3.0	2
	20	•	1500L20	33.8	36	75	0.3	3.0	2
	30	•	1500L30	48.8	51	90	0.3	3.0	2
	2	•	MLDH 1550P	3.9	6.2	45	0.2	3.0	1
	5	•	1550L5	13.7	16	55.0	0.3	3.0	2
	40		45501.40	00.7	00	0.5	0.0	0.0	_

23.7 26

50.7 53

24.6 27

35.6 38

51.6 54

34.7

4.0 6.4

13.6 16

37

65

80

95

45

70

95

55.0 0.3

0.3

0.3

0.3

0.3

0.3

0.3

0.3

1550L12

1550L20

1550L30

1600L5

1600L12

1600L20

1600L30

**MLDH 1600P** 

Dian	Diamensions (mm)								
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Flute Length	Overall Length  OAL	Tip <b>PL</b>	Shank Dia.	Fig
	2	•	MLDH 1650P	4.1	6.6	50	0.3	3.0	1
	5		1650L5	15.5	18	60.0	0.3	3.0	2
1.65	12		1650L12	25.5	28	70	0.3	3.0	2
	20		1650L20	37.5	40	80	0.3	3.0	2
	30		1650L30	53.5	56	95	0.3	3.0	2
	2		MLDH 1700P	4.3	6.8	50	0.3	3.0	1
	5		1700L5	15.5	18	60.0	0.4	3.0	2
1.70	12		1700L12	26.5	29	70	0.4	3.0	2
	20		1700L20	38.5	41	80	0.4	3.0	2
	30		1700L30	55.5	58	100	0.4	3.0	2
	2		MLDH 1750P	4.4	7	50	0.3	3.0	1
	5		1750L5	15.4	18	60.0	0.4	3.0	2
1.75	12		1750L12	27.4	30	70	0.4	3.0	2
	20		1750L20	39.4	42	85	0.4	3.0	2
	30		1750L30	57.4	60	100	0.4	3.0	2
	2		MLDH 1800P	4.5	7.2	50	0.3	3.0	1
	5		1800L5	15.3	18	60.0	0.4	3.0	2
1.80	12		1800L12	28.3	31	70	0.4	3.0	2
	20	•	1800L20	40.3	43	85	0.4	3.0	2
	30		1800L30	58.3	61	100	0.4	3.0	2
	2	•	MLDH 1850P	4.6	7.4	50	0.3	3.0	1
	5		1850L5	17.2	20	60.0	0.4	3.0	2
1.85	12	•	1850L12	28.2	31	70	0.4	3.0	2
	20		1850L20	41.2	44	85	0.4	3.0	2
	30	•	1850L30	59.2	62	103	0.4	3.0	2
	2		MLDH 1900P	4.8	7.6	50	0.3	3.0	1
	5	•	1900L5	17.2	20	60.0	0.4	3.0	2
1.90	12		1900L12	29.2	32	75	0.4	3.0	2
	20 30		1900L20	43.2	46 63	85	0.4	3.0	2
	2	H	1900L30 MLDH 1950P		7.8	103 50	0.4	3.0	1
	5		1950P 1950L5	4.9	20	60.0	0.3	3.0	2
1.95	12	H	1950L5 1950L12	30.1	33	75	0.4		2
1.93	20		1950L12 1950L20	44.1	47	85	0.4	3.0	2
	30	H	1950L20 1950L30	61.1	64	103	0.4	3.0	2
	2		MLDH 2000P	5.0	8	50	0.4	3.0	1
	5	H	2000F 2000L5	17.0	20	60.0	0.3	3.0	2
2.00	12		2000L5 2000L12	31.0	34	75	0.4	3.0	2
2.00	20	H	2000L12 2000L20	45.0	48	90	0.4	3.0	2
	30		2000L20 2000L30	63.0	66	103	0.4	3.0	2
	30		2000L30	03.0	00	103	0.4	3.0	_

Part Number Suffix - P: For Guide Hole

Grade: ACV70

2

2

2

3.0

3.0 2

3.0

3.0 1

3.0

3.0

3.0 2

Part Number Suffix - P: For Guide Hole

12

20

30

2

5 

12

20

30

Grade: ACV70

1.55

1.60

### MDUS series/MDUP series/MDSS series

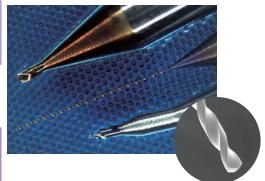








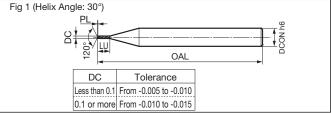
For Steel, Stainless Steel and Other Metals



- Micro MULTIDRILL MDUS seires Ø0.03 to Ø0.19mm
  - High-precision shank (Shank tolerance h3, circularity 0.3µm or less, cylindricity 0.5µm or less)
  - Ultra-thin TiAIN coating gives improved wear resistance
  - Perfect for drilling steel, stainless steel, or copper
  - Available from Ø0.03mm to Ø0.19mm in 0.005mm increments
- Micro Multi Pointing Drill MDUP seires Ø0.03 to Ø0.18mm
  - For drilling guide hole for MDUS series drills



Pilot 1D **PVD** 



Micro Multi Pointing Drill MDUP seires Diameter Ø0.03 to 0.18mm Dimensions (mm)

Dia.	Stock	Cat. No.	Effective Length	Overall Length	Tip <b>PL</b>	Shank Dia.	Fig
	တ		_	- · · · -	FL	DCON	-
0.03		MDUP 0030-30C	0.02	38.2	0.01	3.0	1
0.04		0040-30C	0.04	38.2	0.01	3.0	1
0.05		0050-30C	0.05	38.2	0.01	3.0	1
0.08		0080-30C	0.06	38.2	0.02	3.0	1
0.10		0100-30C	0.10	38.2	0.03	3.0	1
0.12		0120-30C	0.08	38.2	0.03	3.0	1
0.15		0150-30C	0.08	38.2	0.04	3.0	1
0.18		0180-30C	0.17	38.2	0.05	3.0	1

Grade: KP011

- Solid Carbide MINI-MULTIDRILL MDSS series ©0.20 to ©1.00mm
  - The combination of a hard, tough carbide substrate and a highrigidity design (web thickness, flute width ratio, helix angle) greatly improves fracture resistance.
  - PVD coating dedicated for small drills significantly extends tool life
  - Applicable to a wide range of work materials including carbon steel, alloy steel, die steel, and stainless steel
  - Shanks standardised to ø3mm diameter and overall length of 38mm \(\vec{\phi}\) for greater ease of use.

MDSS Recommended Cutting Conditions (Wet) (Inquire about cutting conditions for the MDUS series)

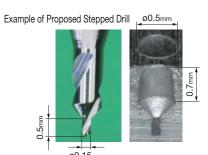
- 1	Work Material Cutting Conditions	/ moy occon, r ro maraomoa occo.			Die Steel, Tempered Steel (30 to 40HRC)			Stainless Steel SUS			
	Dia. DC (mm)	Spindle Speed min <sup>-1</sup>	Feed Rate mm/min	Step Feed (mm)	Spindle Speed min <sup>-1</sup>	Feed Rate mm/min	Step Feed (mm)	Spindle Speed min <sup>-1</sup>	Feed Rate mm/min	Step Feed (mm)	
	ø0.2 ø0.3 ø0.4 ø0.5	26,500 26,500 25,900 25,500	50 80 100 150	0.1D	21,200 21,200 19,900 19,100	40 60 80 110	0.1D	10,600 10,600 9,500 9,500	20 30 40 50	0.1D	
l	ø1.0	15,900	240	0.2D to 0.5D*	12,700	190	0.2D to 0.5D*	5,600	80		

- 12,000 (bcs.) SUS304 re than 10.000 ho : MDSS0050 (ø0.5mr 10,000 to Fracture vc = 15m/min (n = 9,550min f = 0.005mm/rev (vf = 48mm/m H = 1.5mm, Step Feed = 0.05n 8,000 6.000 4.000 1,670 <u>1,</u>912 2,000 MDSS seires Competitor's Product A Product B
  - 1. The conditions at left are recommended under wet conditions, using water-soluble coolant.
- 2. If cutting noise and vibration are present, please adjust the cutting conditions accordingly.
- 3. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available. In this case, lower the feed rate by the same ratio.
- Step feed is recommended for drilling of holes deeper than 3D (D=drill diameter).



#### ■ Made-to-order Fine Drills Ø0.02mm up

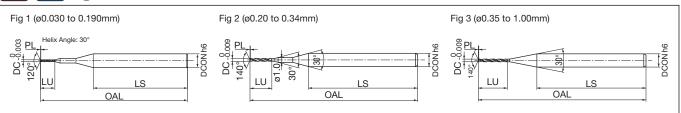
- Dedicated cutting edge designs are available for various work materials including non-metals, ceramics, and
- Customised designs are also available for improved efficiency, such as integration of processes by using a stepped drill.
- Various drill diameters (from ø0.02) and LxDs are available to order. (Contact us for possible profiles.)



MDUS series/MDSS series (External Coolant Supply/Small Diameter type) MDSS







	_		_	_	
Diameter	$\alpha \Omega$	വദവ	tΩ	n	49mm

Dime	nsions (ı	mm)
Shank	Shank Dia.	Eia

Diam	Diameter Ø0.030 to 0.49mm Dimensions (mm)									
Dia.	Hole Depth (L/D)	Stock	Cat. No.	LU	Overall Length	Tip PL	Shank LS	Shank Dia.	Fig	
0.030			MDUS 0030-30C		38.0	0.01	28	3.0	1	
0.035			0035-30C		38.0	0.01	28	3.0	1	
0.040	10	•	0040-30C	0.34		0.01	28	3.0	1	
0.045			0045-30C		38.0	0.01	28	3.0	1	
0.050		•	0050-30C	0.45		0.01	28	3.0	1	
0.055			MDUS 0055-30C	0.55		0.02	28	3.0	1	
0.060			0060-30C	0.54		0.02	28	3.0	1	
0.065			0065-30C		38.0	0.02	28	3.0	1	
0.070	10		0070-30C	0.63		0.02	28	3.0	1	
0.075			0075-30C		38.0	0.02	28	3.0	1	
0.080		•	0080-30C	0.72		0.02	28	3.0	1	
0.085			0085-30C		38.0	0.02	28	3.0	1	
0.090			MDUS 0090-30C	0.91		0.03	28	3.0	1	
0.095			0095-30C	0.91		0.03	28	3.0	1	
0.100	10	•	0100-30C	0.90		0.03	28	3.0	1	
0.110			0110-30C		38.0	0.03	28	3.0	1	
0.120		•	0120-30C		38.0	0.03	28	3.0	1	
0.130			MDUS 0130-30C	1.37		0.04	28	3.0	1	
0.140	10		0140-30C	1.36		0.04	28	3.0	1	
0.150			0150-30C		38.0	0.04	28	3.0	1	
0.160			MDUS 0160-30C	1.64		0.05	28	3.0	1	
0.170	10		0170-30C	1.63		0.05	28	3.0	1	
0.180		•	0180-30C	1.62	38.0	0.05	28	3.0	1	
0.190			0190-30C	1.71	38.0	0.05	28	3.0	1	
0.20 0.21		•	MDSS 0020	2.25	38	0.04	28	3.0	2	
0.21	10	•	0021 0022	2.24	38 38	0.04	28 28	3.0	2	
0.22	10	•	0022	2.23		0.04	28	3.0	2	
0.23		•	0024	2.20	38	0.04	28	3.0	2	
0.25		•	MDSS 0025	2.19		0.05	28	3.0	2	
0.26		•	0026	2.18		0.05	28	3.0	2	
0.27		•	0027	2.16		0.05	28	3.0	2	
0.28	10	•	0028	2.15	38	0.05	28	3.0	2	
0.29		•	0029	2.14		0.05	28	3.0	2	
0.30		•	0030	2.6	38	0.05	28	3.0	2	
0.31			MDSS 0031	2.6	38	0.06	28	3.0	2	
0.32		•	0032	2.6	38	0.06	28	3.0	2	
0.33	10		0033	2.6	38	0.06	28	3.0	2	
0.34		•	0034	2.6	38	0.06	28	3.0	2	
0.35			0035	3.6	38	0.06	28	3.0	3	
0.36			MDSS 0036	3.6	38	0.07	28	3.0	3	
0.37			0037	3.5	38	0.07	28	3.0	3	
0.38	10		0038	3.5	38	0.07	28	3.0	3	
0.39	10		0039	3.5	38	0.07	28	3.0	3	
0.40			0040	4.5	38	0.07	28	3.0	3	
0.41			0041	4.5	38	0.07	28	3.0	3	
0.42		•	MDSS 0042	4.5	38	0.08	28	3.0	3	
0.43			0043	4.5	38	0.08	28	3.0	3	
0.44	10	•	0044	4.5	38	0.08	28	3.0	3	
0.45			0045	4.4	38	0.08	28	3.0	3	
0.46		•	0046	4.4	38	0.08	28	3.0	3	
0.47			MDSS 0047	4.4	38	0.09	28	3.0	3	
0.48	10	•	0048	4.4	38	0.09	28	3.0	3	
0.49	145110		0049	4.4	38	0.09	28	3.0	3	

#### Diameter Ø0.50 to 1.00mm

Dimoneione (mm)	

Diam	neter (		.50 to 1.00m	m			Dime	nsions (	mm)
Dia.	Hole Depth	Stock	Cat. No.	Effective Length	Overall Length	Tip <b>PL</b>	Shank LS	Shank Dia.	Fig
0.50	(L, D)	•	MDSS 0050	5.4	38	0.09	27	3.0	3
0.51	10	•	0051	5.4	38	0.09	27	3.0	3
0.52		ŏ	0052	5.4	38	0.09	27	3.0	3
0.53		•	MDSS 0053	5.3	38	0.10	27	3.0	3
0.54		ŏ	0054	5.3	38	0.10	27	3.0	3
0.55	10	•	0055	5.3	38	0.10	27	3.0	3
0.56			0056	5.3	38	0.10	27	3.0	3
0.57			0057	5.3	38	0.10	27	3.0	3
0.58		•	MDSS 0058	5.3	38	0.11	27	3.0	3
0.59		•	0059	5.3	38	0.11	27	3.0	3
0.60			0060	6.3	38	0.11	26	3.0	3
0.61	10		0061	6.2	38	0.11	26	3.0	3
0.62			0062	6.2	38	0.11	26	3.0	3
0.63			0063	6.2	38	0.11	26	3.0	3
0.64		•	MDSS 0064	6.2	38	0.12	26	3.0	3
0.65			0065	6.2	38	0.12	26	3.0	3
0.66	10		0066	6.2	38	0.12	26	3.0	3
0.67			0067	6.2	38	0.12	26	3.0	3
0.68			0068	6.2	38	0.12	26	3.0	3
0.69			MDSS 0069	6.1	38	0.13	26	3.0	3
0.70			0070	8.1	38	0.13	24	3.0	3
0.71	10		0071	8.1	38	0.13	24	3.0	3
0.72	10		0072	8.1	38	0.13	24	3.0	3
0.73			0073	8.1	38	0.13	24	3.0	3
0.74			0074	8.1	38	0.13	24	3.0	3
0.75			MDSS 0075	8.1	38	0.14	24	3.0	3
0.76			0076	8.1	38	0.14	24	3.0	3
0.77	10		0077	8.0	38	0.14	24	3.0	3
0.78			0078	8.0	38	0.14	24	3.0	3
0.79			0079	8.0	38	0.14	24	3.0	3
0.80			MDSS 0080	9.0	38	0.15	23	3.0	3
0.81			0081	9.0	38	0.15	23	3.0	3
0.82	10		0082	9.0	38	0.15	23	3.0	3
0.83			0083	9.0	38	0.15	23	3.0	3
0.84			0084	9.0	38	0.15	23	3.0	3
0.85			0085	8.9	38	0.15	23	3.0	3
0.86		•	MDSS 0086	8.9	38	0.16	23	3.0	3
0.87	40		0087	8.9	38	0.16	23	3.0	3
0.88	10	•	0088	8.9	38	0.16	23	3.0	3
0.89			0089	8.9	38	0.16	23	3.0	3
0.90		•	0090 MDSS 0091	9.9	38	0.16	22	3.0	3
0.91				9.9	38	0.17	22	3.0	-
0.92			0092	9.9	38	0.17	22	3.0	3
0.93 0.94	10	7	0093 0094	9.8	38	0.17 0.17	22	3.0	3
			0094	9.8	38		22		-
0.95 0.96		7	0095	9.8 9.8	38 38	0.17 0.17	22 22	3.0	3
0.96			MDSS 0097	9.8	38	0.17	22	3.0	3
0.98		7	0098	9.8	38	0.18	22	3.0	3
0.99	10		0098	9.8	38	0.18	22	3.0	3
1.00			0100	10.8	38	0.18	21	3.0	3
	MDHS	sar	ies KP011 / MDS			0.10	۷.	0.0	J

Grade: MDUS series KP011 / MDSS series ACF40B

Grade: MDUS series KP011 / MDSS series ACF40B

#### Radial serration provides Front screw clamp design steady and precise clamping Head Specially surface-treated MULTIDRILL type + body for high wear and dedicated coated rust resistance carbide grades Oil holes are directed at cutting lip and chips **Holders** ■ Features

Indexable head type drills which utilises an unique radial serration mounting for high precision and strength.

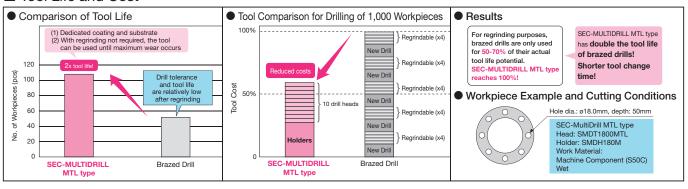
An exchangeable drill head provides a new cutting edge, higher productivity and cost efficiency with easy tool management. Regrinding allowance of 1.5mm to 3mm makes further tool cost reductions possible.\* Regrinding is available only for MTL/MSL/MEL/MB

#### ■ Product Range

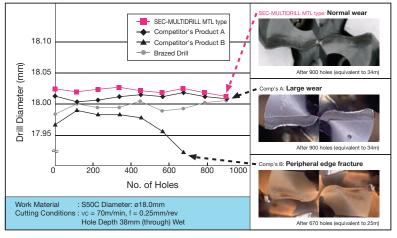
Head	Applications	Holder (L/D)	DC Range
MTL type	General Steel	1.5D type / 1.5DF type (1.5D)	ø12.0 to ø30.8 M type / L type ø12.0 to ø42.5 D type ø13.5 to ø30.8
		M type / 3D type / 3DF type (3D)	
		L type / 5D type / 5DF type (5D)	
		D type / 8D type / 8DF type (8D)	
		12D type (12D)	
MSL type	SUS SS FC	1.5D type / 1.5DF type (1.5D)	ø12.0 to ø30.8 D type ø13.5 to ø30.8
		M type / 3D type / 3DF type (3D)	
		L type / 5D type / 5DF type (5D)	
		D type / 8D type / 8DF type (8D)	
		12D type (12D)	
MFS type	Flat Bottom Hole	1.5D type/1.5DF type	ø12.0 to ø30.0
MB type	Bridge	B3 type (3D)	ø24.5 to ø26.7

\*MFS type can also be used with 3D, 5D, 8D, and 12D holders

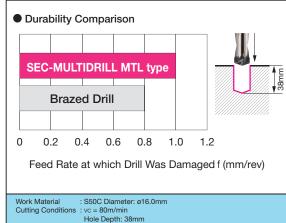
#### ■ Tool Life and Cost



#### Drilling Precision



#### ■ Tool Strength

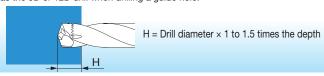


#### ■ Recommended Drilling Method for 8D and 12D type: Use a hydro chuck, milling chuck or collet chuck to hold the 12D drill body

Use a 1.5D drill body and a drill head with the same diameter (same Cat. No.)

(1) Use a SMDHOOO-1.5D(F) type (1.5D holder) + MTL type, MSL type (head) to drill a guide hole (3) Increase spindle speed until the set spindle speed is reached, then start drilling

as the 8D or 12D drill when drilling a guide hole.



(2) Feed the 8D or 12D holder + MTL type, MSL type (head) through the guide hole at a low spindle speed

■ Spindle speed: 500min<sup>-1</sup> • Feed rate: 1,000 to 2,000mm/min





\* On some NC machine tools, the feed command may be activated before the set spindle speed is reached, so it is recommended to enter a dwell sequence before the feed command.

(4) After drilling, rotation speed is reduced and the drill is retracted from the work material

● Spindle speed: 500min<sup>-1</sup> ● Feed rate: 1,000 to 2,000mm/min



Retracting the drill from the work material at a high spindle speed, is dangerous as doing so may result in breakage due to runout.

Change rotation speed to 500min-1

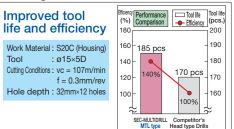
### MTL type Suitable for high-efficiency drilling of general steel



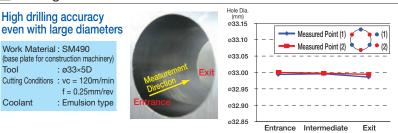
- Excellent cutting edge strength
   Large edge treatment is used to reduce fracture of the cutting edge.
- Stable machined hole accuracy

X type thinning achieves excellent centring on drill entry and stable drilling.

Longer Tool Life



Drilling Precision



### MSL type Stable drilling of mild steel, stainless steel, etc.



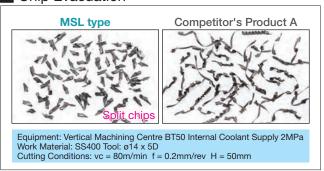
 Exceptional cutting edge sharpness in mild steel and SUS drilling

Newly designed linear cutting edge and special R THINNING enable improved chip evacuation and stable drilling.

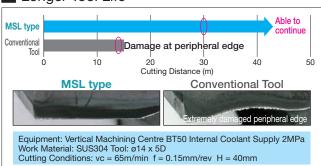
Stable long tool life

NX Coat based on ABSOTECH™ technology for improved fracture resistance and adhesion resistance.

Chip Evacuation



Longer Tool Life



■ Recommended Cutting Conditions (MSL type/MTL type/MEL type)

(n: Spindle Speed min-1 vc: Cutting Speed m/min f: Feed Rate mm/rev)

		_	,	• • • • • • • • • • • • • • • • • • • •	,, ,,	(iii Opiiidi	o opoca mim vo. oc	atting opood minimi	
Wor Mate		Mild Steel (up to 250HB)		al Steel 320HB)	Hardened Steel (45HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron	Ductile Cast Iron	Aluminum Alloy
Recommend	ded Head	MSL type	MTL type	MSL type	MTL type	MSL type / MEL type	MTL type / MSL type	MTL type / MSL type	(Special Cutting Edge)*
Diameter	Cutting	Min Optimum -	Min Optimum -	Min Optimum -	Min Optimum -	Min Optimum -	Min Optimum -	Min Optimum -	Min Optimum -
DC (mm)	Conditions	Max.	Max.	Max.	Max.	Max.	Max.	Max.	Max.
	n	2,000 (1,400)	2,000 (1,400)	2,000 (1,400)	1,200 (1,000)	1,200 (1,000)	1,400 (1,200)	1,200 (1,000)	4,800 (4,000)
up to	vc	80- <b>100</b> -120	70 <b>-100</b> -120	70- <b>100</b> -120	40- <b>60</b> -90	30- <b>50</b> -80	50- <b>70</b> -90	50- <b>60</b> -80	200- <b>240</b> -260
ø16.0	VC	(50- <b>70</b> -80)	(50- <b>70</b> -80)	(50- <b>70</b> -80)	(30- <b>50</b> -70)	(30- <b>50</b> -60)	(40- <b>60</b> -80)	(40- <b>50</b> -70)	(180- <b>200</b> -240)
	f	0.15 <b>-0.20</b> -0.25	0.15- <b>0.20</b> -0.30	0.10- <b>0.15</b> -0.20	0.10- <b>0.15</b> -0.20	0.10- <b>0.15</b> -0.20	0.20- <b>0.25</b> -0.30	0.20- <b>0.25</b> -0.30	0.35 <b>-0.45</b> -0.55
	n	1,600 (1,100)	1,600 (1,100)	1,600 (1,100)	1,000 (800)	1,100 (950)	1,300 (1,100)	1,100 (950)	3,800 (3,200)
Up to	vc	80- <b>100</b> -120	70- <b>100</b> -120	70- <b>100</b> -120	40- <b>60</b> -90	30- <b>60</b> -90	60- <b>80</b> -100	50- <b>70</b> -90	200- <b>240</b> -260
ø20.0	VC	(50- <b>70</b> -80)	(50- <b>70</b> -80)	(50- <b>70</b> -80)	(30- <b>50</b> -70)	(30- <b>50</b> -70)	(50- <b>70</b> -90)	(40- <b>60</b> -80)	(180- <b>200</b> -240)
	f	0.15- <b>0.25</b> -0.30	0.20- <b>0.25</b> -0.35	0.15 <b>-0.20</b> -0.25	0.15 <b>-0.20</b> -0.25	0.10- <b>0.20</b> -0.25	0.20 <b>-0.30</b> -0.35	0.20 <b>-0.25</b> -0.35	0.35 <b>-0.50</b> -0.60
	n	1,000 (700)	1,000 (700)	1,000 (700)	600 (500)	700 (600)	800 (700)	700 (600)	2,500 (2,000)
Up to	vc	80- <b>100</b> -120	70- <b>100</b> -120	70- <b>100</b> -120	40- <b>60</b> -90	30- <b>60</b> -90	60- <b>80</b> -100	50- <b>70</b> -90	200- <b>240</b> -260
ø30.8	VC	(50- <b>70</b> -80)	(50- <b>70</b> -80)	(50- <b>70</b> -80)	(30- <b>50</b> -70)	(30- <b>50</b> -70)	(50- <b>70</b> -90)	(40- <b>60</b> -80)	(180- <b>200</b> -240)
	f	0.20 <b>-0.25</b> -0.30	0.20- <b>0.25</b> -0.35	0.15- <b>0.20</b> -0.25	0.15- <b>0.20</b> -0.25	0.10- <b>0.20</b> -0.25	0.20- <b>0.30</b> -0.40	0.25- <b>0.30</b> -0.35	0.35 <b>-0.50</b> -0.60
Recommend	ded Head				Large Diameter M	TL type (ø31.0 up)			
~21.0	n	650 (520)	650	(520)	380 (300)	450 (300)	520 (450)	450 (380)	1,800 (1,500)
ø31.0	vc	70 <b>-90</b> -120	70- <b>90</b>	<b>)</b> -120	40- <b>50</b> -80	40- <b>60</b> -80	60- <b>70</b> -100	50- <b>60</b> -90	200- <b>240</b> -260
ø42.5	VC	(50- <b>70</b> -80)	(50- <b>7</b>	<b>0</b> -80)	(30- <b>40</b> -60)	(30- <b>40</b> -60)	(50- <b>60</b> -90)	(40- <b>50</b> -70)	(180- <b>200</b> -240)
2 12.0	f	0.25- <b>0.35</b> -0.45	0.25- <b>0.</b> 3	<b>30</b> -0.40	0.15- <b>0.25</b> -0.30	0.20- <b>0.25</b> -0.30	0.25 <b>-0.35</b> -0.45	0.25 <b>-0.30</b> -0.35	0.35- <b>0.50</b> -0.60

### series (Internal Coolant Supply)















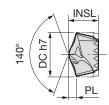




Indexable Head

Fig 1 (DC≤30.8mm)





Indexable Head MTL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Indexable Head MTL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

			Ø12.0 to			(mm)
Diameter DC	Stock	Cat. No.	Head Length INSL	Tip <b>PL</b>	Applicable Holder	Fig
		SMDT 1200 MTL			rioldel	1
12.0	•		9.1	2.2		
12.1		1210 MTL	9.1	2.2	CMDH400	1
12.2	•	1220 MTL	9.1	2.2	SMDH120□	1
12.3		1230 MTL	9.1	2.2		1
12.4	•	1240 MTL	9.1	2.3		1
12.5		SMDT 1250 MTL	9.4	2.3		1
12.6	•	1260 MTL	9.4	2.3		1
12.7		1270 MTL	9.4	2.3	SMDH125□	1
12.8	•	1280 MTL	9.4	2.3		1
12.9		1290 MTL	9.4	2.3		1
13.0	•	SMDT 1300 MTL	9.7	2.4		1
13.1		1310 MTL	9.7	2.4		1
13.2	•	1320 MTL	9.7	2.4	SMDH130□	1
13.3		1330 MTL	9.7	2.4		1
13.4	•	1340 MTL	9.7	2.4		1
13.5		SMDT 1350 MTL	10.3	2.5		1
13.6	•	1360 MTL	10.3	2.5		1
13.7		1370 MTL	10.3	2.5		1
13.8		1380 MTL	10.3	2.5		1
13.9		1390 MTL	10.3	2.5		1
14.0		1400 MTL	10.3	2.5	SMDH140□	1
14.1		1410 MTL	10.3	2.6		1
14.2		1420 MTL	10.3	2.6		1
14.3		1430 MTL	10.3	2.6		1
14.4		1440 MTL	10.3	2.6		1
14.5		1450 MTL	10.3	2.6		1
14.6	•	SMDT 1460 MTL	11.0	2.7		1
14.7		1470 MTL	11.0	2.7		1
14.8		1480 MTL	11.0	2.7		1
14.9		1490 MTL	11.0	2.7		1
15.0	•	1500 MTL	11.0	2.7	CMDU450	1
15.1		1510 MTL	11.0	2.7	SMDH150□	1
15.2	•	1520 MTL	11.0	2.8		1
15.3		1530 MTL	11.0	2.8		1
15.4	•	1540 MTL	11.0	2.8	1	1
15.5		1550 MTL	11.0	2.8		1
15.6	•	SMDT 1560 MTL	11.6	2.8		1
15.7	•	1570 MTL	11.6	2.9		1
15.8	•	1580 MTL	11.6	2.9	1	1
15.9	•	1590 MTL	11.6	2.9		1
16.0	•	1600 MTL	11.6	2.9		1
16.1	•	1610 MTL	11.6	2.9	SMDH160□	1
16.2		1620 MTL	11.6	2.9		1
16.3	•	1630 MTL	11.6	3.0		1
16.4	•	1640 MTL	11.6	3.0		1
16.5	•	1650 MTL	11.6	3.0		1
16.6	•	SMDT 1660 MTL	12.2	3.0		1
16.7	•	1670 MTL	12.2	3.0		1
16.8	•	1680 MTL	12.2	3.1		1
16.9	•	1690 MTL	12.2	3.1		1
17.0	•	1700 MTL	12.2	3.1	SMDH170□	1
17.0	•	1700 MTL	12.2	3.1		1
17.1	•	1710 MTL	12.2	3.1		1
17.2		1720 MTL	12.2	3.1		1
	_	1/30 WITL			tor DC: 20 0 to 40	-

Diameter DC	Stock	Cat. No.	Head Length	Tip PL	Applicable Holder	Fig
17.4	•	SMDT 1740 MTL	12.2	3.2		1
17.5		1750 MTL	12.2	3.2	SMDH170□	1
17.6	•	SMDT 1760 MTL	12.9	3.2		1
17.7	•	1770 MTL	12.9	3.2		1
17.7	•	1770 MTL	12.9	3.2		1
17.9	•	1790 MTL	12.9	3.3		1
18.0	•	1800 MTL	12.9	3.3		1
			12.9	3.3	SMDH180□	1
18.1	-	1810 MTL				
18.2	•	1820 MTL	12.9	3.3		1
18.3		1830 MTL	12.9	3.3		1
18.4	•	1840 MTL	12.9	3.3		1
18.5		1850 MTL	12.9	3.4		1
18.6	•	SMDT 1860 MTL	13.5	3.4		1
18.7		1870 MTL	13.5	3.4		1
18.8	•	1880 MTL	13.5	3.4		1
18.9		1890 MTL	13.5	3.4		1
19.0		1900 MTL	13.5	3.5	SMDH190□	1
19.1		1910 MTL	13.5	3.5	J	1
19.2		1920 MTL	13.5	3.5		1
19.3		1930 MTL	13.5	3.5		1
19.4		1940 MTL	13.5	3.5		1
19.5		1950 MTL	13.5	3.5		1
19.6		SMDT 1960 MTL	14.1	3.6		1
19.7		1970 MTL	14.1	3.6		1
19.8		1980 MTL	14.1	3.6		1
19.9		1990 MTL	14.1	3.6		1
20.0		2000 MTL	14.1	3.6	014511000	1
20.1		2010 MTL	14.1	3.7	SMDH200□	1
20.2		2020 MTL	14.1	3.7		1
20.3		2030 MTL	14.1	3.7		1
20.4	•	2040 MTL	14.1	3.7		1
20.5	•	2050 MTL	14.1	3.7		1
20.6	•	SMDT 2060 MTL	14.8	3.7		1
20.7	•	2070 MTL	14.8	3.8		1
20.8	•	2080 MTL	14.8	3.8		1
20.9	•	2090 MTL	14.8	3.8		1
21.0	•	2100 MTL	14.8	3.8		1
21.1	•	2110 MTL	14.8	3.8	SMDH210□	1
21.2	•	2120 MTL	14.8	3.9		1
21.3	•	2130 MTL	14.8	3.9		1
21.4		2140 MTL	14.8	3.9		1
21.5	•	2150 MTL	14.8	3.9		1
21.6		SMDT 2160 MTL	15.0	3.9		1
21.7	•	2170 MTL		3.9		1
21.7	•	2170 MTL 2180 MTL	15.0 15.0	4.0		1
21.0		2190 MTL	15.0	4.0		1
	_					1
22.0 22.1	•	2200 MTL 2210 MTL	15.0 15.0	4.0		1
			15.0	4.0	SMDH220□	
22.2 22.3	_	2220 MTL		4.0		1
		2230 MTL	15.0	4.1		1
22.4	•	2240 MTL	15.0	4.1		1
22.5		2250 MTL	15.0	4.1		1
22.6	•	2260 MTL	15.0	4.1		1
22.7		2270 MTL	15.0	4.1		1
Grades: AC	X70	(Diameter DC: 12.0 to 30	1.8) ACX8	0 (Diamet	ter DC: 30.9 to 42	2.5)

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

### series (Internal Coolant Supply)















Indexable Head



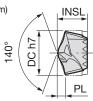


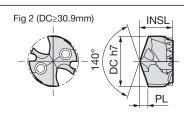












Indexable Head MTL type Diameter ø28.2 to 42.5mm

Dimensions (mm)

Indexable	He	ad MTL type Diamete	ø22.8 to	28.1m	m Dimensions	(mm)
Diameter DC	Stock	Cat. No.	Head Length	Tip PL	Applicable Holder	Fig
22.8	•	SMDT 2280 MTL	15.0	4.1	SMDH220□	1
22.9		SMDT 2290 MTL	15.1	4.2		1
23.0		2300 MTL	15.1	4.2		1
23.1		2310 MTL	15.1	4.2		1
23.2		2320 MTL	15.1	4.2		1
23.3		2330 MTL	15.1	4.2	ON A DI LOCAD	1
23.4		2340 MTL	15.1	4.3	SMDH230□	1
23.5		2350 MTL	15.1	4.3		1
23.6		2360 MTL	15.1	4.3		1
23.7		2370 MTL	15.1	4.3		1
23.8		2380 MTL	15.1	4.3		1
23.9		SMDT 2390 MTL	15.4	4.3		1
24.0		2400 MTL	15.4	4.4		1
24.1		2410 MTL	15.4	4.4		1
24.2		2420 MTL	15.4	4.4		1
24.3		2430 MTL	15.4	4.4	SMDH240□	1
24.4		2440 MTL	15.4	4.4	SWIDH240	1
24.5		2450 MTL	15.4	4.5		1
24.6		2460 MTL	15.4	4.5		1
24.7		2470 MTL	15.4	4.5		1
24.8		2480 MTL	15.4	4.5		1
24.9		SMDT 2490 MTL	15.8	4.5		1
25.0		2500 MTL	15.8	4.5		1
25.1		2510 MTL	15.8	4.6		1
25.2		2520 MTL	15.8	4.6		1
25.3		2530 MTL	15.8	4.6	SMDH250□	1
25.4	•	2540 MTL	15.8	4.6	0211200	1
25.5		2550 MTL	15.8	4.6		1
25.6	•	2560 MTL	15.8	4.7		1
25.7		2570 MTL	15.8	4.7		1
25.8	•	2580 MTL	15.8	4.7		1
25.9		SMDT 2590 MTL	16.4	4.7		1
26.0	•	2600 MTL	16.4	4.7		1
26.1		2610 MTL	16.4	4.7		1
26.2	•	2620 MTL	16.4	4.8		1
26.3		2630 MTL	16.4	4.8	SMDH260□	1
26.4	•	2640 MTL	16.4 16.4	4.8 4.8		1
26.5 26.6	•	2650 MTL 2660 MTL	16.4			1
26.7		2670 MTL	16.4	4.8 4.9		1
26.8		2680 MTL	16.4	4.9		1
26.9		SMDT 2690 MTL	17.1	4.9		1
27.0	•	2700 MTL	17.1	4.9		1
27.1		2710 MTL	17.1	4.9		1
27.1	•	2710 MTL	17.1	4.9		1
27.3	•	2730 MTL	17.1	5.0		1
27.4	•	2740 MTL	17.1	5.0	SMDH270□	1
27.5	•	2750 MTL	17.1	5.0		1
27.6	•	2760 MTL	17.1	5.0		1
27.7	•	2770 MTL	17.1	5.0		1
27.8	•	2780 MTL	17.1	5.1		1
27.9	•	SMDT 2790 MTL	17.7	5.1		1

					Billionologia	, (,
Diameter	Stock	Cat. No.	Head Length		Applicable	Fig
DC	(y)	SMDT 2820 MTL	INSL	PL 5.1	Holder	1
28.2 28.3			17.7	-		1
	•	2830 MTL 2840 MTL	17.7	5.2 5.2		1
28.4			17.7	5.2	SMDH280□	1
28.5 28.6	•	2850 MTL 2860 MTL	17.7 17.7	5.2	SIVIDH200	1
28.7		2870 MTL	17.7	5.2		1
28.8	5	2880 MTL	17.7	5.2		1
28.9	•	SMDT 2890 MTL	18.3	5.3		1
29.0	-	2900 MTL	18.3	5.3		1
29.1	•	2910 MTL	18.3	5.3		1
29.2	•	2920 MTL	18.3	5.3		1
29.3	•	2930 MTL	18.3	5.3		1
29.4	•	2940 MTL	18.3	5.4	SMDH290□	1
29.5	•	2950 MTL	18.3	5.4		1
29.6	•	2960 MTL	18.3	5.4		1
29.7	•	2970 MTL	18.3	5.4		1
29.8	•	2980 MTL	18.3	5.4		1
29.9	•	SMDT 2990 MTL	19.0	5.4		1
30.0	•	3000 MTL	19.0	5.5		1
30.1	•	3010 MTL	19.0	5.5		1
30.2	•	3020 MTL	19.0	5.5		1
30.3	•	3030 MTL	19.0	5.5		1
30.4	•	3040 MTL	19.0	5.5	SMDH300□	1
30.5	•	3050 MTL	19.0	5.6		1
30.6	•	3060 MTL	19.0	5.6		1
30.7	•	3070 MTL	19.0	5.6		1
30.8	•	3080 MTL	19.0	5.6		1
31.0		SMDT 3100 MTL	21.0	5.6		2
31.5		3150 MTL	21.0	5.7	SMDH320□	2
32.0		3200 MTL	21.0	5.8		2
32.5		SMDT 3250 MTL	21.0	5.9		2
33.0		3300 MTL	21.0	6.0	SMDH335□	2
33.5		3350 MTL	21.0	6.1		2
34.0		SMDT 3400 MTL	23.0	6.2		2
34.5		3450 MTL	23.0	6.3	SMDH350□	2
35.0		3500 MTL	23.0	6.4		2
35.5		SMDT 3550 MTL	23.0	6.5		2
36.0		3600 MTL	23.0	6.6	SMDH365□	2
36.5		3650 MTL	23.0	6.6		2
37.0		SMDT 3700 MTL	25.0	6.7		2
37.5		3750 MTL	25.0	6.8	SMDH380□	2
38.0		3800 MTL	25.0	6.9		2
38.5		SMDT 3850 MTL	25.0	7.0		2
39.0		3900 MTL	25.0	7.1	SMDH395□	2
39.5		3950 MTL	25.0	7.2		2
40.0		SMDT 4000 MTL	27.0	7.3		2
40.5		4050 MTL	27.0	7.4	SMDH410□	2
41.0		4100 MTL	27.0	7.5		2
41.5		SMDT 4150 MTL	27.0	7.6		2
42.0		4200 MTL	27.0	7.6	SMDH425□	2
42.5		4250 MTL	27.0	7.7		2

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

Grades: ACX70 (Diameter DC: 12.0 to 30.8) ACX80 (Diameter DC: 30.9 to 42.5)

17.7

17.7

2800 MTL

2810 MTL

5.1

5.1

SMDH280□

28.0

### SMD series (Internal Coolant Supply) MSD (Caton Steel Ma) Seel (Internal Coolant Supply) (Caton Steel Ma) Seel (Internal Coola





















Indexable Head







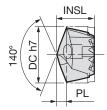






Fig 1





Indexable Head MSL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Indexable Head MSL type Diameter ø17.4 to 22.7mm

Πασκασίο		ad MOL type Diamete	1 0 12.0 10	7 17.0111	Dimensions	(mm)
Diameter	Stock	Cat. No.	Head Length		Applicable	Fig
DC			INSL	PL	Holder	Ŭ
12.0		SMDT 1200 MSL	9.1	2.2		1
12.1		1210 MSL	9.1	2.2		1
12.2		1220 MSL	9.1	2.2	SMDH120□	1
12.3		1230 MSL	9.1	2.2		1
12.4	•	1240 MSL	9.1	2.3	1	1
12.5	•	SMDT 1250 MSL	9.4	2.3		1
12.6	•	1260 MSL	9.4	2.3		1
12.7	•	1270 MSL	9.4	2.3	SMDH125□	1
12.7	•	1280 MSL			SWIDITI25	1
-	_		9.4	2.3		
12.9		1290 MSL	9.4	2.3		1
13.0	•	SMDT 1300 MSL	9.7	2.4		1
13.1		1310 MSL	9.7	2.4		1
13.2		1320 MSL	9.7	2.4	SMDH130□	1
13.3		1330 MSL	9.7	2.4		1
13.4		1340 MSL	9.7	2.4		1
13.5		SMDT 1350 MSL	10.3	2.5		1
13.6	•	1360 MSL	10.3	2.5	1	1
13.7	•	1370 MSL	10.3	2.5		1
13.8	•	1380 MSL	10.3	2.5		1
13.9	•	1390 MSL	10.3	2.5		1
14.0	_	1400 MSL	10.3	2.5	SMDH140□	1
14.0	•	1410 MSL	10.3		SIVIDA 140	1
	_			2.6		
14.2	•	1420 MSL	10.3	2.6		1
14.3		1430 MSL	10.3	2.6		1
14.4		1440 MSL	10.3	2.6		1
14.5		1450 MSL	10.3	2.6		1
14.6		SMDT 1460 MSL	11.0	2.7		1
14.7		1470 MSL	11.0	2.7		1
14.8	•	1480 MSL	11.0	2.7		1
14.9		1490 MSL	11.0	2.7		1
15.0	•	1500 MSL	11.0	2.7		1
15.1	•	1510 MSL	11.0	2.7	SMDH150□	1
15.1	•	1520 MSL	11.0	2.8	1	1
	_					
15.3		1530 MSL	11.0	2.8		1
15.4	•	1540 MSL	11.0	2.8		1
15.5		1550 MSL	11.0	2.8		1
15.6		SMDT 1560 MSL	11.6	2.8		1
15.7		1570 MSL	11.6	2.9		1
15.8		1580 MSL	11.6	2.9		1
15.9		1590 MSL	11.6	2.9		1
16.0	•	1600 MSL	11.6	2.9		1
16.1	•	1610 MSL	11.6	2.9	SMDH160□	1
16.2		1620 MSL	11.6	2.9	1	1
16.3	•	1630 MSL	11.6	3.0		1
16.4	-	1640 MSL	11.6	3.0	1	1
	_					
16.5		1650 MSL	11.6	3.0		1
16.6	•	SMDT 1660 MSL	12.2	3.0		1
16.7		1670 MSL	12.2	3.0		1
16.8		1680 MSL	12.2	3.1		1
16.9		1690 MSL	12.2	3.1	CMDU470	1
17.0		1700 MSL	12.2	3.1	SMDH170□	1
17.1	•	1710 MSL	12.2	3.1		1
	•	1710 MSL	12.2	3.1	1	1
17 2						1 1
17.2 17.3		1730 MSL	12.2	3.1		1

Diameter	Stock	Cat. No.	Head Length	Tip	Applicable	Fig
DC		ONIDT 4740 MOI	INSL	PL	Holder	
17.4	•	SMDT 1740 MSL	12.2	3.2	SMDH170□	1
17.5		1750 MSL	12.2	3.2		1
17.6	•	SMDT 1760 MSL	12.9	3.2		1
17.7						1
17.8						1
17.9						1
18.0					SMDH180□	1
18.1					0211100	1
18.2						1
18.3		1830 MSL	12.9	3.3		1
18.4		1840 MSL	12.9	3.3		1
18.5		1850 MSL	12.9	3.4		1
18.6		SMDT 1860 MSL	13.5	3.4		1
18.7		1870 MSL	13.5	3.4		1
18.8		1880 MSL	13.5	3.4		1
18.9		1890 MSL	13.5	3.4		1
19.0		1900 MSL	13.5	3.5	CMDU400	1
19.1		1910 MSL	13.5	3.5	SMDH190□	1
19.2		1920 MSL	13.5	3.5		1
19.3		1930 MSL	13.5	3.5		1
19.4		1940 MSL	13.5	3.5		1
19.5	•					1
19.6	•					1
19.7	•					1
19.8	•					1
19.9	•					1
20.0	•					1
20.1	•				SMDH200□	1
20.2	•					1
20.3	•					1
20.4	•					1
20.5	•					1
20.6	•					1
20.7	•					1
20.8	•					1
20.9	•					1
21.0	•					1
21.1			-		SMDH210□	1
21.1	•					1
21.2	•		-			1
21.4	5					1
21.5						1
21.6	•					1
21.7						1
21.7	•					1
21.0						1
21.9						1
	•					
22.1					SMDH220□	1
22.2	•					
22.3						1
22.4	•					1
22.5						1
22.6	•					1
22.7	100	1810 MSL 12.9 3.3 1820 MSL 12.9 3.3 1830 MSL 12.9 3.3 1840 MSL 12.9 3.3 1850 MSL 12.9 3.4  SMDT 1860 MSL 13.5 3.4 1870 MSL 13.5 3.4 1880 MSL 13.5 3.4 1900 MSL 13.5 3.5 1910 MSL 13.5 3.5 1910 MSL 13.5 3.5 1920 MSL 13.5 3.5 1930 MSL 13.5 3.5 1940 MSL 13.5 3.5 1950 MSL 13.5 3.5 SMDT 1960 MSL 14.1 3.6 1970 MSL 14.1 3.6 1970 MSL 14.1 3.6 1990 MSL 14.1 3.6 2010 MSL 14.1 3.7 2020 MSL 14.1 3.7 2030 MSL 14.1 3.7 2040 MSL 14.1 3.7 2040 MSL 14.1 3.7 2050 MSL 14.1 3.7 2050 MSL 14.1 3.7 2050 MSL 14.1 3.7 2050 MSL 14.8 3.8 2080 MSL 14.8 3.8 2080 MSL 14.8 3.8 2110 MSL 14.8 3.8 2110 MSL 14.8 3.9 2130 MSL 14.8 3.9 2130 MSL 14.8 3.9 2130 MSL 14.8 3.9 2130 MSL 14.8 3.9 2150 MSL 14.8 3.9 2150 MSL 14.8 3.9 2170 MSL 14.8 3.9 2170 MSL 14.8 3.9 2170 MSL 14.8 3.9 2170 MSL 15.0 4.0 2210 MSL 15.0 4.0 2220 MSL 15.0 4.0 2220 MSL 15.0 4.0 2220 MSL 15.0 4.0 2220 MSL 15.0 4.0 2220 MSL 15.0 4.0 2220 MSL 15.0 4.0 2220 MSL 15.0 4.0 2220 MSL 15.0 4.1 2250 MSL 15.0 4.1 2260 MSL 15.0 4.1 2260 MSL 15.0 4.1 2260 MSL 15.0 4.1 2260 MSL 15.0 4.1 2270 MSL 15.0 4.1 2260 MSL 15.0 4.1 2270 MSL 15.0 4.1		1		
Grade: ACT	100	1				

# SMD series (Internal Coolant Supply) MSL (2000 Steel Roy





















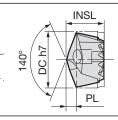






Indexable Head

Fig 1



Dimensions	(mm)

Reamers

Πασκασίο		ad MOL type Diameter	020.2 1	5 00.0111	Dimensions	(mm)
Diameter	Stock	Cat. No.	Head Length		Applicable	Fig
DC	S		INSL	PL	Holder	
28.2		SMDT 2820 MSL	17.7	5.1		1
28.3		2830 MSL	17.7	5.2		1
28.4		2840 MSL	17.7	5.2		1
28.5		2850 MSL	17.7	5.2	SMDH280□	1
28.6		2860 MSL	17.7	5.2		1
28.7		2870 MSL	17.7	5.2		1
28.8		2880 MSL	17.7	5.2		1
28.9		SMDT 2890 MSL	18.3	5.3		1
29.0		2900 MSL	18.3	5.3		1
29.1		2910 MSL	18.3	5.3		1
29.2		2920 MSL	18.3	5.3		1
29.3		2930 MSL	18.3	5.3	SMDH290□	1
29.4		2940 MSL	18.3	5.4	SIVIDI 1290	1
29.5		2950 MSL	18.3	5.4		1
29.6		2960 MSL	18.3	5.4		1
29.7		2970 MSL	18.3	5.4		1
29.8		2980 MSL	18.3	5.4		1
29.9		SMDT 2990 MSL	19.0	5.4		1
30.0		3000 MSL	19.0	5.5		1
30.1		3010 MSL	19.0	5.5		1
30.2		3020 MSL	19.0	5.5		1
30.3		3030 MSL	19.0	5.5	SMDH300□	1
30.4		3040 MSL	19.0	5.5	3MDH300	1
30.5		3050 MSL	19.0	5.6		1
30.6		3060 MSL	19.0	5.6		1
30.7		3070 MSL	19.0	5.6		1
30.8		3080 MSL	19.0	5.6		1
Grade: ACT	100					

Diameter	Stock	Cat. No.	Head Length	Tip	Applicable	F
DC	Sto	Cat. No.	INSL	PL	Holder	ľ
22.8		SMDT 2280 MSL	15.0	4.1	SMDH220□	T
22.9		SMDT 2290 MSL	15.1	4.2		Ť
23.0	•	2300 MSL	15.1	4.2		
23.1	•	2310 MSL	15.1	4.2		
23.2	•	2320 MSL	15.1	4.2		
23.3		2330 MSL	15.1	4.2		ŀ
23.4	•	2340 MSL	15.1	4.3	SMDH230□	
23.5		2350 MSL	15.1	4.3		
		2360 MSL				
23.6	•		15.1	4.3		ŀ
23.7		2370 MSL	15.1	4.3		
23.8	•	2380 MSL	15.1	4.3		1
23.9		SMDT 2390 MSL	15.4	4.3		
24.0	•	2400 MSL	15.4	4.4		l
24.1		2410 MSL	15.4	4.4		
24.2	•	2420 MSL	15.4	4.4		
24.3		2430 MSL	15.4	4.4	SMDH240□	
24.4	•	2440 MSL	15.4	4.4		
24.5		2450 MSL	15.4	4.5		
24.6	•	2460 MSL	15.4	4.5		l
24.7		2470 MSL	15.4	4.5		
24.8	•	2480 MSL	15.4	4.5		ļ
24.9		SMDT 2490 MSL	15.8	4.5		
25.0		2500 MSL	15.8	4.5		L
25.1		2510 MSL	15.8	4.6		
25.2		2520 MSL	15.8	4.6		L
25.3		2530 MSL	15.8	4.6	SMDH250□	
25.4		2540 MSL	15.8	4.6	SIVIDI 1230	
25.5		2550 MSL	15.8	4.6		
25.6		2560 MSL	15.8	4.7		
25.7		2570 MSL	15.8	4.7		
25.8		2580 MSL	15.8	4.7		
25.9		SMDT 2590 MSL	16.4	4.7		
26.0		2600 MSL	16.4	4.7		ľ
26.1		2610 MSL	16.4	4.7		
26.2		2620 MSL	16.4	4.8		ľ
26.3		2630 MSL	16.4	4.8	CMDLICCO	
26.4		2640 MSL	16.4	4.8	SMDH260□	
26.5		2650 MSL	16.4	4.8		
26.6		2660 MSL	16.4	4.8		
26.7	•	2670 MSL	16.4	4.9		
26.8		2680 MSL	16.4	4.9		
26.9	•	SMDT 2690 MSL	17.1	4.9		İ
27.0	•	2700 MSL	17.1	4.9		
27.1	•	2710 MSL	17.1	4.9		
27.2	•	2720 MSL	17.1	4.9		
27.3	•	2730 MSL	17.1	5.0		
27.4	•	2740 MSL	17.1	5.0	SMDH270□	
27.5	•	2750 MSL	17.1	5.0		
27.6	•	2760 MSL	17.1	5.0		ſ
27.7	•	2770 MSL	17.1	5.0		
27.8	•	2780 MSL	17.1	5.1		
27.9	•	SMDT 2790 MSL	17.1	5.1		
28.0		2800 MSL	17.7	5.1	SMDH280□	
		ZOUU IVIÕL	1 17.7	J. I	3WDH200	1

Grade: ACT100

SMD series (Internal Coolant Supply) MED Cattor Shell Cat































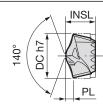




Indexable Head

Fig 1





Indexable Head MEL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Indexable Head MEL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Ιασκαρίο		ad MEE type Diameter				(
Diameter	Stock	Cat. No.	Head Length		Applicable	Fig
DC			INSL	PL	Holder	`
12.0		SMDT 1200 MEL	9.1	2.2		1
12.1		1210 MEL	9.1	2.2		1
12.2		1220 MEL	9.1	2.2	SMDH120□	1
12.3		1230 MEL	9.1	2.2		1
12.4		1240 MEL	9.1	2.3		1
12.5		SMDT 1250 MEL	9.4	2.3		1
12.6		1260 MEL	9.4	2.3		1
12.7		1270 MEL	9.4	2.3	SMDH125□	1
12.8		1280 MEL	9.4	2.3	OMBITI20	1
12.9	Ā	1290 MEL	9.4	2.3		1
		SMDT 1300 MEL		2.4		1
13.0			9.7			
13.1		1310 MEL	9.7	2.4		1
13.2		1320 MEL	9.7	2.4	SMDH130□	1
13.3		1330 MEL	9.7	2.4		1
13.4		1340 MEL	9.7	2.4		1
13.5		SMDT 1350 MEL	10.3	2.5		1
13.6		1360 MEL	10.3	2.5		1
13.7		1370 MEL	10.3	2.5		1
13.8		1380 MEL	10.3	2.5		1
13.9		1390 MEL		2.5		1
14.0		1400 MEL	10.3	2.5	SMDH140□	1
14.1	Ā	1410 MEL	10.3	2.6	OWIDITI40	1
						1
14.2	<b>A</b>	1420 MEL	10.3	2.6		1 -
14.3		1430 MEL	10.3	2.6		1
14.4		1440 MEL	10.3	2.6		1
14.5		1450 MEL	10.3	2.6		1
14.6		SMDT 1460 MEL	11.0	2.7		1
14.7		1470 MEL	11.0	2.7		1
14.8		1480 MEL	11.0	2.7		1
14.9		1490 MEL	11.0	2.7		1
15.0		1500 MEL	11.0	2.7	ONADULATOR	1
15.1		1510 MEL	11.0	2.7	SMDH150□	1
15.2		1520 MEL	11.0	2.8		1
15.3		1530 MEL	11.0	2.8		1
15.4		1540 MEL	11.0	2.8		1
15.5		1550 MEL	11.0	2.8		1
15.6		SMDT 1560 MEL	11.6			1
	_			2.8		1
15.7		1570 MEL	11.6	2.9		1
15.8	<b>A</b>	1580 MEL	11.6	2.9		1
15.9		1590 MEL	11.6	2.9		1
16.0		1600 MEL	11.6	2.9	SMDH160□	1
16.1		1610 MEL	11.6	2.9	SWIDTIOOL	1
16.2		1620 MEL	11.6	2.9		1
16.3		1630 MEL	11.6	3.0		1
16.4	lack	1640 MEL	11.6	3.0		1
16.5		1650 MEL	11.6	3.0		1
16.6		SMDT 1660 MEL	12.2	3.0		1
16.7	Ā	1670 MEL	12.2	3.0		1
16.8		1680 MEL	12.2	3.1		1
16.9	Â	1690 MEL	12.2	3.1		1
	-				SMDH170□	
17.0	<b>A</b>	1700 MEL	12.2	3.1		1
17.1		1710 MEL	12.2	3.1		1
17.2		1720 MEL	12.2	3.1		1
17.3		1730 MEL	12.2	3.1		1

Diameter	Stock	Ca	at. No.		Head Length	Tip	Applicable	Fig
DC					INSL	PL	Holder	_
17.4	<b>A</b>	SMDT			12.2	3.2	SMDH170□	1
17.5	A		1750		12.2	3.2		1
17.6	A	SMDT			12.9	3.2		1
17.7			1770		12.9	3.2		1
17.8	A		1780		12.9	3.2		1
17.9			1790		12.9	3.3		1
18.0			1800		12.9	3.3	SMDH180□	1
18.1			1810		12.9	3.3	_	1
18.2			1820		12.9	3.3		1
18.3			1830		12.9	3.3		1
18.4	<b>A</b>		1840		12.9	3.3		1
18.5			1850		12.9	3.4		1
18.6	<b>A</b>	SMDT			13.5	3.4		1
18.7	A		1870		13.5	3.4		1
18.8	A		1880		13.5	3.4		1
18.9 19.0			1890 1900		13.5 13.5	3.4 3.5		1
19.0	A		1910		13.5	3.5	SMDH190□	1
19.1	A		1920		13.5	3.5		1
19.2	Â		1930		13.5	3.5		1
19.4	ā		1940		13.5	3.5		1
19.5	Ā		1950		13.5	3.5		1
19.6		SMDT			14.1	3.6		1
19.7			1970		14.1	3.6		1
19.8	$\overline{\mathbf{A}}$		1980		14.1	3.6		1
19.9	$\overline{\blacktriangle}$		1990		14.1	3.6		1
20.0	$\overline{\blacktriangle}$		2000		14.1	3.6		1
20.1	Λ		2010	MEL	14.1	3.7	SMDH200□	1
20.2	lacksquare	:	2020	MEL	14.1	3.7		1
20.3		:	2030	MEL	14.1	3.7		1
20.4	lack	:	2040	MEL	14.1	3.7		1
20.5	lack	:	2050	MEL	14.1	3.7		1
20.6		SMDT 2	2060	MEL	14.8	3.7		1
20.7		:	2070	MEL	14.8	3.8		1
20.8			2080		14.8	3.8		1
20.9			2090		14.8	3.8		1
21.0			2100		14.8	3.8	SMDH210□	1
21.1			2110		14.8	3.8	021.2102	1
21.2	<b>A</b>		2120		14.8	3.9		1
21.3	A		2130		14.8	3.9		1
21.4			2140		14.8	3.9		1
21.5 21.6		SMDT	2150		14.8 15.0	3.9		1
21.7	Â			MEL		3.9		1
21.7			2180		15.0 15.0	4.0		1
21.9	Ā		2190		15.0	4.0		1
22.0	ā		2200		15.0	4.0		1
22.1	Ā		2210		15.0	4.0		1
22.2			2220		15.0	4.0	SMDH220□	1
22.3			2230		15.0	4.1		1
22.4	$\blacksquare$		2240		15.0	4.1		1
22.5		_	2250		15.0	4.1		1
22.6	lacksquare		2260		15.0	4.1		1
22.7			2270	MEL	15.0	4.1		1
Grade: ACX	380							

Grade: ACX80

7-66

## SMD series (Internal Coolant Supply) MEL (2008)



























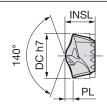
Fig 1





Indexable Head





Indexable Head MEL type Diameter ø28.2 to 30.8mm Cat. No.

Dimensions	()	
Applicable	Fig	İ
	1	i
	1	П
	1	П
SMDH280□	1 1 1 1 1 1 1 1 1 1 1 1 1	П
	1	П
	1	d
	1	
	1	
	1	i.
	1	
	1	
	1	i
	Holder   1	П
		П
	1	П
	1	

1 1 1 1 1 1 1 1	xable d type
1	
1	Inde
1	Indexable nsert type
1	oe e
1	
1	He He

8.1mm	Dimensions	(mm
	11 1 1	

Diameter	Stock	Cat. No.	Head Length	Tip	Applicable	Fig
DC		OMBT COCC ME	INSL	PL	Holder	_
22.8	<b>A</b>	SMDT 2280 MEL	15.0	4.1	SMDH220□	1
22.9		SMDT 2290 MEL	15.1	4.2		1
23.0	<b>A</b>	2300 MEL	15.1	4.2		1
23.1		2310 MEL	15.1	4.2		1
23.2	<b>A</b>	2320 MEL	15.1	4.2		1
23.3		2330 MEL	15.1	4.2	SMDH230□	1
23.4		2340 MEL	15.1	4.3	0211200	1
23.5		2350 MEL	15.1	4.3		1
23.6		2360 MEL	15.1	4.3		1
23.7		2370 MEL	15.1	4.3		1
23.8		2380 MEL	15.1	4.3		1
23.9		SMDT 2390 MEL	15.4	4.3		1
24.0		2400 MEL	15.4	4.4		1
24.1		2410 MEL	15.4	4.4		1
24.2		2420 MEL	15.4	4.4		1
24.3		2430 MEL	15.4	4.4	SMDH240□	1
24.4		2440 MEL	15.4	4.4	SIMIDHZ40	1
24.5	$\blacktriangle$	2450 MEL	15.4	4.5		1
24.6		2460 MEL	15.4	4.5		1
24.7	lack	2470 MEL	15.4	4.5		1
24.8	lack	2480 MEL	15.4	4.5		1
24.9		SMDT 2490 MEL	15.8	4.5		1
25.0		2500 MEL	15.8	4.5		1
25.1		2510 MEL	15.8	4.6		1
25.2	lack	2520 MEL	15.8	4.6		1
25.3		2530 MEL	15.8	4.6		1
25.4	lacksquare	2540 MEL	15.8	4.6	SMDH250□	1
25.5		2550 MEL	15.8	4.6		1
25.6		2560 MEL	15.8	4.7		1
25.7		2570 MEL	15.8	4.7		1
25.8		2580 MEL	15.8	4.7		1
25.9		SMDT 2590 MEL	16.4	4.7		1
26.0		2600 MEL	16.4	4.7		1
26.1	$\overline{\mathbf{A}}$	2610 MEL	16.4	4.7		1
26.2	$\overline{\mathbf{A}}$	2620 MEL	16.4	4.8		1
26.3	Ā	2630 MEL	16.4	4.8		1
26.4	$\overline{\mathbf{A}}$	2640 MEL	16.4	4.8	SMDH260□	1
26.5	Ā	2650 MEL	16.4	4.8		1
26.6		2660 MEL	16.4	4.8		1
26.7	Ā	2670 MEL	16.4	4.9		1
26.8	$\overline{\mathbf{A}}$	2680 MEL	16.4	4.9		1
26.9	Ā	SMDT 2690 MEL	17.1	4.9		1
27.0	Ā	2700 MEL	17.1	4.9		1
27.1	Â	2710 MEL	17.1	4.9		1
27.1	Ā	2710 MEL 2720 MEL	17.1	4.9		1
27.2	Â	2730 MEL	17.1	5.0		1
27.3	Ā	2740 MEL	17.1	5.0	SMDH270□	1
27.4	Â	2750 MEL	17.1	5.0		1
27.5		2760 MEL	17.1	5.0		1
27.0	Â	2770 MEL	17.1	5.0		1
27.7		2770 MEL 2780 MEL	17.1	5.1		1
						-
27.9		SINIDI 2/90 MEL	17.7	5.1		1

17.7 5.1 SMDH280□ 28.0 2800 MEL 28.1 2810 MEL

DC	S		INSL	PL	Holder	
28.2		SMDT 2820 MEL	17.7	5.1		1
28.3		2830 MEL	17.7	5.2		1
28.4	lack	2840 MEL	17.7	5.2		1
28.5		2850 MEL	17.7	5.2	SMDH280□	1
28.6	lack	2860 MEL	17.7	5.2		1
28.7		2870 MEL	17.7	5.2		1
28.8		2880 MEL	17.7	5.2		1
28.9		SMDT 2890 MEL	18.3	5.3		1
29.0		2900 MEL	18.3	5.3		1
29.1		2910 MEL	18.3	5.3		1
29.2		2920 MEL	18.3	5.3		1
29.3		2930 MEL	18.3	5.3	SMDH290□	1
29.4		2940 MEL	18.3	5.4	SIVIDI 1290	1
29.5		2950 MEL	18.3	5.4		1
29.6		2960 MEL	18.3	5.4		1
29.7		2970 MEL	18.3	5.4		1
29.8		2980 MEL	18.3	5.4		1
29.9		SMDT 2990 MEL	19.0	5.4		1
30.0		3000 MEL	19.0	5.5		1
30.1		3010 MEL	19.0	5.5		1
30.2	$\blacksquare$	3020 MEL	19.0	5.5		1
30.3		3030 MEL	19.0	5.5	SMDH300□	1
30.4	$\blacksquare$	3040 MEL	19.0	5.5	SIVIDI 1300	1
30.5		3050 MEL	19.0	5.6		1
30.6	lack	3060 MEL	19.0	5.6		1
30.7		3070 MEL	19.0	5.6		1
30.8		3080 MEL	19.0	5.6		1

Grade: ACX80

Grade: ACX80

### **SMD** series (Internal Coolant Supply) Side Lock Flat/No Flange













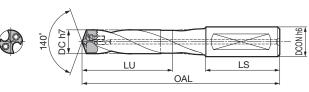






Set Figure MTL MSL MEL





Drilling

Holder ø12.0 to	29.8n	nm with MTL	typ	e/MSI	_ type	/MEL	type set			Parts		Dimensions (mm)			
											Cap Screw				
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig		(N·m)				
12.0 ≤ D < 12.5	3 5	SMDH 120M 120L	•	42.0 67.0	132.2	48 48	16 16	MTL/MSL MEL	1	BXD02208IP	0.75 to 1.00	TRDR08IP			
12.5 ≤ D < 13.0	3 5	SMDH 125M 125L	•	44.0 69.0		48 48	16 16	MTL/MSL MEL	1	BXD02208IP	0.75 to 1.00	TRDR08IP			
13.0 ≤ D < 13.5	3 5	SMDH 130M 130L	•	45.0 72.0		48 48	16 16	MTL/MSL MEL	1	BXD02208IP	0.75 to 1.00	TRDR08IP			
13.5 ≤ D ≤ 14.5	3 5	SMDH 140M 140L	•	51.0 80.0	149.0	48 48	16 16	MTL/MSL MEL	1	BXD02208IP	0.75 to 1.00	TRDR08IP			
14.5 < D ≤ 15.5	8 3 5	140D SMDH 150M 150L	•	123.0 54.0 85.0	129.2	48 50 50	16 20 20	MTL/MSL	1 1 1	BXD02208IP	0.75 to	TRDR08IP			
	8	150D SMDH 160M	•	131.0 57.0	204.2	50 50	20	MEL MEL	1		1.00				
15.5 < D ≤ 16.5	5 8	160L 160D	•	90.0 140.0	214.4	50 50	20 20	MTL/MSL MEL	1	BXD02509IP	0.93 to 1.24	TRDR10IP			
16.5 < D ≤ 17.5	3 5 8	SMDH 170M 170L 170D	•	60.0 95.0 148.0		50 50 50	20 20 20	MTL/MSL MEL	1 1 1	BXD02509IP	0.93 to 1.24	TRDR10IP			
17.5 < D ≤ 18.5	3 5 8	SMDH 180M 180L 180D	•	63.0 100.0 156.0	144.8 179.8	50 50 50	20 20 20	MTL/MSL MEL	1 1 1	BXD02509IP	0.93 to 1.24	TRDR10IP			
18.5 < D ≤ 19.5	3 5 8	SMDH 190M 190L 190D	•	67.0 106.0	160.0	56 56 56	25 25 25 25	MTL/MSL MEL	1 1 1	BXD03011IP	1.83 to 2.44	TRDR15IP			
19.5 < D ≤ 20.5	3 5	SMDH 200M 200L	•	70.0 111.0	160.1 200.1	56 56	25 25	MTL/MSL MEL	1	BXD03011IP	1.83 to 2.44	TRDR15IP			
20.5 < D ≤ 21.5	8 3 5	200D SMDH 210M 210L	•	73.0 116.0	160.3 200.3	56 56 56	25 25 25	MTL/MSL MEL	1 1 1	BXD03011IP	1.83 to 2.44	TRDR15IP			
21.5 < D ≤ 22.8	8 3 5	210D SMDH 220M 220L	•	77.0 123.0		56 56 56	25 25 25	MTL/MSL	1 1 1	BXD03512IP	2.79 to	TRDR15IP			
	8	220D SMDH 230M	•	191.0 80.0	275.1 164.7	56 56	25 25	MEL MTL/MSL	1		3.72 2.79 to				
22.8 < D ≤ 23.8	5 8 3	230L 230D SMDH 240M	•	128.0 199.0 83.0	284.7	56 56 60	25 25 32	MEL	1 1 1	BXD03512IP	3.72	TRDR15IP			
23.8 < D ≤ 24.8	5 8	240L 240D	•	133.0 207.0	224.6 299.6	60 60	32 32	MTL/MSL MEL	1	BXD03512IP	2.79 to 3.72	TRDR15IP			
24.8 < D ≤ 25.8	3 5 8	SMDH 250M 250L 250D	•	87.0 138.0 216.0		60 60 60	32 32 32	MTL/MSL MEL	1 1 1	BXD04014IP	4.14 to 5.52	TRDR20IP			
25.8 < D ≤ 26.8	3 5 8	SMDH 260M 260L 260D	•		179.7 234.7	60 60 60	32 32 32 32	MTL/MSL MEL	1 1 1	BXD04014IP	4.14 to 5.52	TRDR20IP			
26.8 < D ≤ 27.8	3 5 8	SMDH 270M 270L 270D	•		179.9 239.9	60 60 60	32 32 32	MTL/MSL MEL	1 1 1	BXD04014IP	4.14 to 5.52	TRDR20IP			
27.8 < D ≤ 28.8	3 5 8	SMDH 280M 280L 280D	•	96.0	185.1 245.1	60 60 60	32 32 32 32	MTL/MSL MEL	1 1 1	BXD04515IP	4.98 to 6.64	TRDR25IP			
28.8 < D ≤ 29.8	3 5 8	SMDH 290M 290L 290D	•		190.3 250.3	60 60 60	32 32 32 32	MTL/MSL MEL	1 1 1	BXD04515IP	4.98 to 6.64	TRDR25IP			





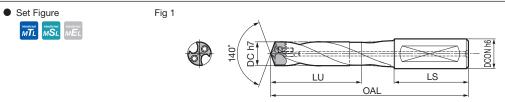








(Indexable 3D 5D 8D



Reamers

Holder ø29.8 to 42.5mm with MTL type/MSL type/MEL type set Parts													
										Cap Scr	Wrench		
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length	Overall Length OAL	Shank LS	Shank Dia.  DCON	Indexable Head	Fig		(N·m)		
	3	SMDH 300M	•	103.0	190.5	60	32	NATI /NACI	1		4.98 to		
$29.8 < D \le 30.8$	5	300L		164.0	260.5	60	32	MTL/MSL MEL	1	BXD04515IP	4.98 to 6.64	TRDR25IP	
	8	300D		257.0	350.5	60	32	IVILL	1		0.04		
	3	SMDH 320M		106.0	200.7	60	32		1		4.98 to		
$30.8 < D \le 32.0$	5	320L		170.0		60	32	MTL	1	BXD04515IP	6.64	TRDR25IP	
	8	320D		266.0	360.8	60	32		1		0.04		
	3	SMDH 335M	•	111.0		60	32		1		4.98 to		
$32.0 < D \le 33.5$	5	335L		178.0		60	32	MTL	1	BXD04515IP	6.64	TRDR25IP	
	8	335D	•	279.0		60	32		1				
	3	SMDH 350M		116.0		70	40		1				
$33.5 < D \le 35.0$	5	350L	•	186.0	296.4	70	40	MTL	1	BX0515	7.2	HD040	
	8	350D		291.0	401.4	70	40		1			<u> </u>	
	3	SMDH 365M	•	121.0	226.4	70	40		1				
$35.0 < D \le 36.5$	5	365L		194.0	301.6	70	40	MTL		BX0515	7.2	HD040	
	8	365D		303.0		70	40		1				
	3	SMDH 380M		125.0		70	40		1	D. 40 = 4 =			
$36.5 < D \le 38.0$	5	380L			311.9	70	40	MTL	1	BX0515	7.2	HD040	
	8	380D		315.0		70	40		1				
00.0 0.005	3	SMDH 395M		130.0	237.0	70	40		1	DV0545	7.0	110040	
$38.0 < D \le 39.5$	5	395L		209.0		70	40	MTL		BX0515	7.2	HD040	
	8	395D	•	328.0		70	40		1				
20 E + D + 41 0	3	SMDH 410M		135.0		70	40	NAT!	1	DV0515	7.0	LIDO40	
$39.5 < D \le 41.0$	5	410L		217.0	332.5	70	40 40	MTL		BX0515	7.2	HD040	
	8	410D		340.0	457.5	70	40		1				
41.0 < D ≤ 42.5	3 5	SMDH 425M 425L		140.0 225.0	257.5 342.7	70 70	40	MTL	1	BX0515	7.2	HD040	
41.0 < D ≤ 42.5					-		40	IVIIL	1	DV0212	1.2	DD040	
	8	425D		352.0	467.7	70	40						

## SMD series (Internal Coolant Supply) Side Lock Flat/Flange













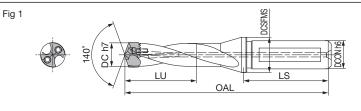






Set Figure





	Holder ø12.0 to 24.	.8mm	with MTL type / N	ИS	SL type	e / MEI	_ typ	oe set				Parts		Dimensions (mm)
										Cap Scre	Wrench			
	Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length	Overall Length OAL	Shank LS	Flange Diameter	Shank Dia.	Indexable Head	Fig		(N·m)	
П		(L/D)		(0)	LU	OAL		DOSFINIS	200	1.000				
П		1.5	SMDH 120-1.5DF	•	23.0	90.5	48	20	16		1			
П		3		•	42.0	107.2	48	20	16	MTL/	1		0.75	
П	$12.0 \le D < 12.5$	5		•	67.0	132.2	48	20	16	MSL	1	BXD02208IPC	to	TRDR08IP
1		8	120-8DF	•	98.0	164.4	48	20	16	MEL	1		1.00	
		1.5	SMDH 125-1.5DF	•	24.0	91.0	48	20	16		1			
		3		•	44.0	107.3	48	20	16	MTL/	1		0.75	
	$12.5 \le D < 13.0$	5		•	69.0	132.3	48	20	16	MSL	1	BXD02208IPC	to	TRDR08IP
		8		•	102.0	170.1	48	20	16	MEL	1		1.00	
		1.5		•	25.0	92.2	48	20	16		1		_	
П		3		•	45.0	112.4	48	20	16	MTL/	1	D)/D000001D0	0.75	
	$13.0 \le D < 13.5$	5		•	72.0	142.4	48	20	16	MSL	1	BXD02208IPC	to	TRDR08IP
		8		•	106.0	178.4	48	20	16	MEL	1		1.00	
		1.5		•	29.0	96.3	48	20	16		1			
	40 E . D . 44 E	3		•	51.0	119.0	48	20	16	MTL/	1	DVD00000150	0.75	TDDDCCID
	$13.5 \le D \le 14.5$	5		•	80.0	149.0	48	20	16	IVIOL		BXD02208IPC		TRDR08IP
		8		•	123.0	194.0	48	20	16	MEL	1		1.00	
П		1.5		•	31.0	100.0	50	25	20		1		_	
П		3	150-3DF	•	54.0	129.2	50	25	20	MTL/	1		0.75	
	$14.5 < D \le 15.5$	5		•	85.0	159.2	50	25	20	MSL	1	BXD02208IPC		TRDR08IP
П		8		•	131.0	204.2	50	25	20	MEL	1		1.00	
	15.5 < D ≤ 16.5	1.5		•	32.0	102.7	50	25	20		1			
		3	160-3DF	•	57.0	134.4	50	25	20	MTL/	1		0.93	
		5	160-5DF	•	90.0	169.4	50	25	20	MSL	1	BXD02509IPC	to	TRDR10IP
		8		•	140.0	214.4	50	25	20	MEL	1		1.24	
		1.5		•	34.0	104.4	50	25	20		1			
		3		•	60.0	139.6	50	25	20	MTL/	1	D\/D005001D0	0.93	
	$16.5 < D \le 17.5$	5	170-5DF	•	95.0	174.6	50	25	20	MSL MEL	1	BXD02509IPC	to	TRDR10IP
		8	170-8DF		148.0	224.6	50	25	20	IVIEL	1		1.24	
		1.5	SMDH 180-1.5DF	•	36.0	107.1	50	25	20		1			
	17 F . D . 10 F	3			63.0	144.8	50	25	20	MTL/	1	DADOULOUIDO	0.93	TDDD10ID
	$17.5 < D \le 18.5$	5	180-5DF	•	100.0	179.8	50	25	20	MSL MEL	1	BXD02509IPC	to 1.24	TRDR10IP
		8	180-8DF		156.0	229.8	50	25	20	IVILL	1		1.24	
		1.5		•	37.0	114.8	56	30	25		1		4.00	
	18.5 < D ≤ 19.5	3			67.0	160.0	56	30	25	MTL/	1	DADUSU111DO	1.83	TDDD15ID
	10.5 < U ≤ 19.5	5	190-5DF	•	106.0	195.0	56	30	25	MSL MEL	1	BXD03011IPC	to 2.44	TRDR15IP
		8			164.0	255.0	56	30	25		1		2.44	
		1.5	SMDH 200-1.5DF	•	39.0	117.4	56	30	25	N 4771 /	1		1.83	
	19.5 < D ≤ 20.5	3	200-3DF	•	70.0	160.1	56	30	25	MTL/ MSL	1	BXD03011IPC		TRDR15IP
	13.3 < D ≤ 20.3	5			111.0	200.1	56	30	25	MEL	1	BYD0901116C	to 2.44	אופו חטח ו
		8	200-8DF		172.0	265.1	56	30	25		1		2.77	
		1.5	SMDH 210-1.5DF		41.0		56	30	25	NATI /	1		1.83	
	20.5 < D ≤ 21.5	3	210-3DF		73.0	160.3	56	30	25	MTL/	1	BXD03011IPC		TDDD15ID
	ZU.J < D ≤ Z1.J	5		•	116.0	200.3	56	30	25	MSL MEL	1	PVD0001116C	to 2.44	TRDR15IP
		8			180.0	270.3	56	30	25		1		2.77	
		1.5		•	43.0	120.9	56	30	25	NATI /	1		2.70	
	21.5 < D ≤ 22.8	3	220-3DF		77.0	165.1	56	30	25	MTL/ MSL	1	BXD03512IPC	2.79 to	TRDR15IP
	∠1.0 < D ≥ ∠∠.0	5		•	123.0	205.1	56	30	25	MEL	1	DAD000 121PU	3.72	THUITISIE
		8			191.0		56	30	25		1		5.12	
		1.5		•	45.0	122.0	56	30	25	NATI /	1		2.79	
	22.8 < D ≤ 23.8	3				164.7	56	30	25	MTL/ MSL	1	BXD03512IPC	2.79 to	TRDR15IP
	ZZ.0 \ D \ Z Z0.0	5	230-5DF		128.0	214.7	56	30	25	MEI	1	באסטטובוויט	2 72	ווטויוטוי

MEL

MTL/ MSL

MEL

25

32

32

32

32

30

37

37

37

37

BXD03512IPC

3.72

2.79

to

3.72

TRDR15IP

230-8DF

240-3DF

240-5DF

240-8DF

SMDH 240-1.5DF

•

199.0

46.0

83.0

133.0

207.0

284.7

128.4

174.6

224.6

299.6

56

60

60

60

60

 $23.8 < D \le 24.8$ 

8

3

5

8

1.5

<sup>\*</sup>The SMDHOOOS Holder Cat. No. has been changed to SMDHOOO-1.5DF. The specifications have not changed.

Indexable

Head

MTL/

MSL

MEL

MTL/

MSL

MEL

MTL/

MSL

MEL

MTL/

MSL

MEL

MTL/

MSL

MEL

MTL/

MSL

Fig



DC

 $24.8 < D \le 25.8$ 

 $25.8 < D \le 26.8$ 

 $26.8 < D \le 27.8$ 

 $27.8 < D \le 28.8$ 

 $28.8 < D \le 29.8$ 

 $29.8 < D \leq 30.8$ 



(L/D)

1.5

3

8

3

5

8

3

5

8

3

5

8

3

5

8

3

1.5

1.5

1.5

1.5

1.5







LU

48.0

87.0

138.0

216.0

50.0

90.0

143.0

224.0

51.0

93.0

149.0

232.0

53.0

96.0

154.0

240.0

55.0

99.0

159.0

248.0

56.0

103.0

•

•

OAL

128.8

174.5

229.5

304.5

131.5

179.7

234.7

314.7

132.2

179.9

239.9

324.9

133.9

185.1

245.1

330.1

135.6

190.3

250.3

340.3

138.3

190.5

164.0 260.5

60

60

60

60

60

60

60

60

60

60

60

60

60

60

60

60

60

60

60





Flange

DCSFMS

37

37

37

37

37

37

37

37

37

37

37

37

37

37

37

37

37

37

37

37

37

37

37

Shank Dia

**DCON** 

32

32

32

32

32

32

32

32

32

32

32

32

32

32

32

32

32

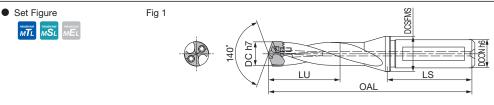
32

32

32

32

32



Holder ø24.8 to 30.8mm with MTL type / MSL type / MEL type set

Cat. No.

SMDH 250-1.5DF

SMDH 260-1.5DF

SMDH 270-1.5DF

SMDH 280-1.5DF

SMDH 290-1.5DF

**SMDH 300-1.5DF** 

250-3DF

250-5DF

250-8DF

260-3DF

260-5DF

260-8DF

270-3DF

270-5DF

270-8DF

280-3DF

280-5DF

280-8DF

290-3DF

290-5DF

290-8DF

300-3DF

300-5DF

Parts	
Cap Screw	I

BXD04014IPC

BXD04014IPC

BXD04014IPC

BXD04515IPC

BXD04515IPC

BXD04515IPC

(N·m

4.14

to

5.52

4.14

to

5.52

4.14

to

5.52

4.98

to

6.64

4.98

to

6.64

4.98

to

6.64

	7
	γ.
w	7
	-1

Dimensions (mm)

Wrench

TRDR20IP

TRDR20IP

TRDR20IP

TRDR25IP

TRDR25IP

TRDR25IP

C	Solid

Indexable Head type

₩.
П

9	S	
Ì	≓	
2	2	

/pe	ole
- 100	Rosi

П	
≈	
8	
24	
3	
ā	
Ť.	
S	

	5	300-5DF		164.0	260.5	60	37	32	MEL
	8	300-8DF		257.0	350.5	60	37	32	IVILL
*The SMDHOOOS Holder O	Cat. No.	has been changed to S	MDI	HOOO-1.	.5DF. The	spec	ifications ha	ave not cha	nged.

# SMD series (Internal Coolant Supply) No Side Lock Flat/Flange











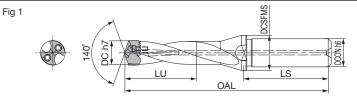








 Set Figure Manage had MSL Medicate had MEL

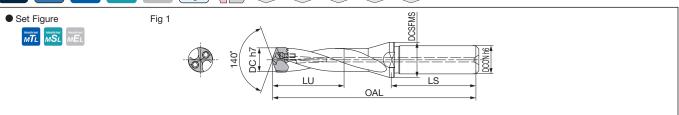


Drilling

		with MTL type/M			y	,,,,					Parts		ensions (m	
	Hole		_	Effective	Overall						Cap Scre	W	Wrench	
Diameter	Depth	Cat. No.	Stock	Length	Length	Shank	Flange Diameter	Shank Dia.	Indexable	Fig				
DC	(L/D)	Cal. NO.	Stc	LŬ	OAL	LS	DCSFMS	DCON	Head	ı ıy		(N·m)	\ \frac{1}{2}	
	(2, 2)		٠,		0712									
	1.5	SMDH 120-1.5D	•	23.0	90.5	48	20	16		1				
	3	120-3D		42.0	107.2	48	20			1				
400 D 405								16	MTL/MSL		DVD00000IDO	0.75	TDDDOO	
$12.0 \le D < 12.5$	5	120-5D	•	67.0	132.2	48	20	16	MEL	1	BXD02208IPC	to	TRDR08	
	8	120-8D		98.0	164.4	48	20	16		1		1.00		
	12	120-12D	•	146.0	213.3	48	20	16		1				
	1.5	SMDH 125-1.5D		24.0	91.0	48	20	16		1				
	3	125-3D		44.0	107.3	48	20	16	MTL/MSL	1		0.75		
$12.5 \le D < 13.0$	5	125-5D		69.0	132.3	48	20	16	MEL	1	BXD02208IPC	to	TRDR08	
	8	125-8D		102.0	170.1	48	20	16	IVILL	1		1.00		
	12	125-12D		152.0	219.5	48	20	16		1				
	1.5	SMDH 130-1.5D	•	25.0	92.2	48	20	16		1				
	3	130-3D		45.0	112.4	48	20	16		1		0.75		
13.0 ≤ D < 13.5	5	130-5D	•	72.0	142.4	48	20	16	MTL/MSL	1	BXD02208IPC	to	TRDR08	
	8	130-8D	•	106.0	178.4	48	20	16	MEL	1		1.00		
	12	130-3D	•	158.0	225.7	48	20	16	1	1		1.00		
	1.5	SMDH 140-1.5D		29.0	96.3	48	20	16		1				
	3	140-3D	•	51.0	119.0	48	20	16	1	1		0.75		
40.5 D .44.5									MTL/MSL	1	DVD00000IDO	0.75 to 1.00	TRDR08IP	
$13.5 \le D \le 14.5$	5	140-5D		80.0	149.0	48	20	16	MEL	1	BXD02208IPC			
	8	140-8D	•	123.0	194.0	48	20	16		1			1.00	
	12	140-12D		170.0	238.5	48	20	16		1				
	1.5	SMDH 150-1.5D		31.0	100.0	50	25	20		1	1			
	3	150-3D		54.0	129.2	50	25	20	MTL/MSL	1	BXD02208IPC	0.75	TRDR08IP	
$14.5 < D \le 15.5$	5	150-5D		85.0	159.2	50	25	20	MEL	1 B		to		
	8	150-8D		131.0	204.2	50	25	20	IVILL			1.00		
	12	150-12D		182.0	253.0	50	25	20		1				
	1.5	SMDH 160-1.5D		32.0	102.7	50	25	20	MTL/MSL 1 1 1 1 1 1 1 1 1	1				
	3	160-3D	•	57.0	134.4	50	25	20		1	1	0.93		
15.5 < D ≤ 16.5	5	160-5D		90.0	169.4	50	25	20		BXD02509IPC		TRDR10IF		
10.0 \ D = 10.0	8	160-8D	•	140.0	214.4	50	25	20				1.24	INDNIUIP	
	12	160-12D	•	194.0	265.5	50	25	20						
	1.5	SMDH 170-1.5D	•	34.0	104.4	50	25	20		1				
					139.6	50	25	20	MTL/MSL 1 1 1 1 1 1 1 1			0.93	TDDD4015	
40.5 D .47.5	3	170-3D		60.0							DADOCEOOIDO			
$16.5 < D \le 17.5$	5	170-5D	•	95.0	174.6	50	25	20		MEL 1		BXD02509IPC		TRDR10IF
	8	170-8D		148.0	224.6	50	25	20				1.24		
	12	170-12D	•	207.0	278.1	50	25	20		_				
	1.5	SMDH 180-1.5D		36.0	107.1	50	25	20		1				
	3	180-3D		63.0	144.8	50	25	20	NATI /NACI	1		0.93		
$17.5 < D \le 18.5$	5	180-5D		100.0	179.8	50	25	20	MTL/MSL MEL	1	BXD02509IPC	to	TRDR10	
	8	180-8D		156.0	229.8	50	25	20	IVILL	1		1.24		
	12	180-12D		219.0	290.5	50	25	20		1				
	1.5			37.0	114.8	56	30	25		1				
	3	190-3D	•	67.0	160.0	56	30	25	1	1		1.83		
18.5 < D ≤ 19.5	5	190-5D	•	106.0	195.0	56	30	25	MTL/MSL	1	BXD03011IPC	to	TRDR15	
10.0 \ D \ 10.0	8	190-8D		164.0	255.0	56	30	25	MEL	1	2/12/00/11/11/0	2.44	11.01110	
			_		309.1					1				
	12	190-12D	•	231.0		56	30	25						
	1.5	SMDH 200-1.5D		39.0	117.4	56	30	25		1				
	3	200-3D	•	70.0	160.1	56	30	25	MTL/MSL	1	D) (D 00 - · · ·	1.83		
$19.5 < D \le 20.5$	5	200-5D		111.0	200.1	56	30	25	MEL	1	BXD03011IPC	to	TRDR15	
	8	200-8D		172.0	265.1	56	30	25		1		2.44		
	12	200-12D		243.0	321.4	56	30	25		1				
	1.5	SMDH 210-1.5D	•	41.0	119.1	56	30	25		1				
	3	210-3D		73.0	160.3	56	30	25		1		1.83		
20.5 < D ≤ 21.5	5	210-5D	•	116.0	200.3	56	30	25	MTL/MSL	1	BXD03011IPC	to	TRDR15	
	8	210-8D	•	180.0	270.3	56	30	25	MEL	1		2.44	1	
	12	210-12D	•	255.0	333.9		30	25	1	1				
								20						

## Indexable head MSL





uer ø2 1.5 to 30	.emm	with MTL type / I	IVIS	L type	:/IVIEL	Lyp	e set				Parts		ensions				
	Hole			Effective	Overall						Cap Scre	W	Wren				
Diameter	Depth	Cat. No.	Stock	Length	Length	1	Flange Diameter	Shank Dia.	Indexable	Fig		_	,				
DC	(L/D)	Oat. No.	St	LÜ	OAL	LS	DCSFMS	DCON	Head	1 19		(N·m)	×				
	( )																
	1.5	SMDH 220-1.5D		43.0	120.9	56	30	25		1							
	3	220-3D		77.0	165.1	56	30	25	MTL/MSL MEL	1		2.79					
21.5 < D ≤ 22.8	5	220-5D		123.0	205.1	56	30	25		1	BXD03512IPC	to	TRDR				
	8	220-8D		191.0	275.1	56	30	25		IVIEL	IVIEL	1		3.72			
	12	220-12D		268.0	347.0	56	30	25		1							
	1.5	SMDH 230-1.5D		45.0	122.0	56	30	25		1							
	3	230-3D		80.0	164.7	56	30	25		1		2.79					
22.8 < D ≤ 23.8	5	230-5D		128.0	214.7	56	30	25	MTL/MSL MEL	1	BXD03512IPC	to	TRDR				
	8	230-8D		199.0	284.7	56	30	25	IVIEL	1		3.72					
	12	230-12D		280.0	359.0	56	30	25		1							
	1.5	SMDH 240-1.5D		46.0	128.4	60	37	32		1							
	3	240-3D		83.0	174.6	60	37	32	NATI (NAO:	1		2.79					
$23.8 < D \le 24.8$	5	240-5D		133.0	224.6	60	37	32	MTL/MSL MEL	MEL	1	BXD03512IPC	to	TRDR			
	8	240-8D		207.0	299.6	60	37	32			IVIEL	IVIEL	MEL	1		3.72	
	12	240-12D		292.0	376.1	60	37	32					1				
	1.5	SMDH 250-1.5D		48.0	128.8	60	37	32	MTL/MSL 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1						
	3	250-3D		87.0	174.5	60	37	32		1	BXD04014IPC	4.14 to 5.52	TRDR20				
$24.8 < D \le 25.8$	5	250-5D		138.0	229.5	60	37	32		1							
	8	250-8D		216.0	304.5	60	37	32		1							
	12	250-12D		304.0	388.3	60	37	32		1							
	1.5	SMDH 260-1.5D		50.0	131.5	60	37	32		1							
	3	260-3D		90.0	179.7	60	37	32	MEL	1		4.14 to	TRDR20				
25.8 < D ≤ 26.8	5	260-5D		143.0	234.7	60	37	32									
	8	260-8D		224.0	314.7	60	37	32		1	1	1	1	1	5.52		
	12	260-12D		316.0	400.8	60	37	32		1							
	1.5	SMDH 270-1.5D		51.0	132.2	60	37	32		1							
	3	270-3D		93.0	179.9	60	37	32	NATI (NACI	1		4.14					
$26.8 < D \le 27.8$	5	270-5D		149.0	239.9	60	37	32	MTL/MSL 1	1 B	BXD04014IPC	to	TRDR				
	8	270-8D		232.0	324.9	60	37	32	IVILL	1		5.52					
	12	270-12D		328.0	413.3	60	37	32		1							
	1.5	SMDH 280-1.5D		53.0	133.9	60	37	32		1							
	3	280-3D		96.0	185.1	60	37	32	NATI /NAC'	1		4.98					
$27.8 < D \le 28.8$	5	280-5D		154.0	245.1	60	37	32	MTL/MSL MEL	1	BXD04515IPC	to	TRDR				
	8	280-8D		240.0	330.1	60	37	32	IVILL	1		6.64					
	12	280-12D		341.0	425.8	60	37	32		1							
·	1.5	SMDH 290-1.5D		55.0	135.6	60	37	32		1							
	3	290-3D		99.0	190.3	60	37	32	NATI /NACI	1		4.98					
$28.8 < D \le 29.8$	5	290-5D		159.0	250.3	60	37	32	MTL/MSL MEL	1	BXD04515IPC	to	TRDR				
	8	290-8D		248.0	340.3	60	37	32	IVIEL .	- 1		6.64					
	12	290-12D		353.0	438.4	60	37	32		1							
	1.5	SMDH 300-1.5D		56.0	138.3	60	37	32		1							
	3	300-3D		103.0	190.5	60	37	32	NATI /NAC'	1		4.98					
29.8 < D ≤ 30.8	5	300-5D		164.0	260.5	60	37	32	MTL/MSL MEL	1	BXD04515IPC	to	TRDR				
	8	300-8D		257.0	350.5	60	37	32	IVILL	1		6.64					
	12	300-12D		365.0	450.8	60	37	32		1							

#### MFS type Ideal for drilling and burr control on non-flat surfaces



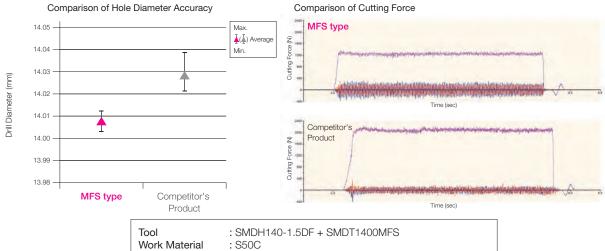
### Suited to various types of drilling thanks to a point angle of 180°

Supports high-efficiency flat bottom drilling, drilling on non-flat surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.

### Improved drilling stability

Achieves high rigidity by employing RS THINNING, which ensures thick web at the bottom.

#### ■ Performance



Cutting Conditions: vc = 100mm/min f = 0.15mm/rev Hole depth 21mm Wet

#### ■ Precautions when Using MFS type Heads

	No guide hole	(direct drilling)	With gu	ide hole	Flat Finishing of Hole Bottom
Applications	Flat surface	Non-flat surface	Guide	e hole	
1.5D holder	(	)	(guide hole	e not needed)	0
3D to 12D holders	>	<	>	×	0

#### ■ Recommended Cutting Conditions (MFS type)

(n: Spindle Speed min<sup>-1</sup> vc: Cutting Speed m/min f: Feed Rate mm/rev)

Work Material		Mild Steel (up to 250HB)	General Steel (250 to 320HB)	Hardened Steel (45HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron	Ductile Cast Iron	Aluminum Alloy*
Diameter	Cutting	Min Optimum -	Min Optimum -	Min Optimum -	Min Optimum -	Min Optimum -	Min Optimum -	Min Optimum -
DC (mm)	Conditions	Max.	Max.	Max.	Max.	Max.	Max.	Max.
	n	2,000	2,000	1,200	1,200	1,400	1,200	4,800
ø16.0	VC	60- <b>100</b> -120	70- <b>100</b> -120	40- <b>60</b> -90	50- <b>60</b> -80	50- <b>70</b> -90	50- <b>60</b> -80	200- <b>240</b> -260
	f	0.15 <b>-0.20</b> -0.35	0.15- <b>0.20</b> -0.30	0.10 <b>-0.15</b> -0.20	0.10 <b>-0.15</b> -0.20	0.20- <b>0.25</b> -0.30	0.20- <b>0.25</b> -0.30	0.35- <b>0.45</b> -0.55
	n	1,600	1,600	1,000	1,100	1,300	1,100	3,800
ø20.0	VC	80- <b>100</b> -120	70- <b>100</b> -120	40- <b>60</b> -90	60- <b>70</b> -90	60- <b>80</b> -100	50- <b>70</b> -90	200- <b>240</b> -260
	f	0.15 <b>-0.25</b> -0.35	0.15 <b>-0.25</b> -0.35	0.15 <b>-0.20</b> -0.25	0.15- <b>0.20</b> -0.25	0.20 <b>-0.30</b> -0.35	0.20 <b>-0.25</b> -0.35	0.35- <b>0.50</b> -0.60
	n	1,000	1,000	600	700	800	700	2,500
ø30.8	VC	80- <b>100</b> -120	70- <b>100</b> -120	40- <b>60</b> -90	60- <b>70</b> -90	60- <b>80</b> -100	50- <b>70</b> -90	200- <b>240</b> -260
	f	0.20 <b>-0.30</b> -0.35	0.20- <b>0.25</b> -0.35	0.15 <b>-0.20</b> -0.25	0.15- <b>0.20</b> -0.25	0.20 <b>-0.30</b> -0.40	0.25- <b>0.30</b> -0.35	0.35- <b>0.50</b> -0.60

Note: The recommended hole depth is 2 x DC. The depth is measured from the highest point of the hole when drilling in inclined surfaces.

The recommended cutting conditions are those for drilling in flat horizontal surfaces. Adjust the feed rate according to the inclination angle when drilling in an inclined surface. Set the feed rate at 70% or lower when the inclination angle is 30° or less. Set the feed rate at 50% or lower when the inclination angle is larger than 30°. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

\*Inquire if you require special drill heads for aluminum alloy

### series (Internal Coolant Supply)



















Indexable Head













Fig 1





Indexable Head MFS type Diameter ø12.0 to 21.5mm

Dimensions (mm)

DC h7	
INSL	

Πασκασίο		ad IVII o type Diameter	012.0 10 21.01	Dimensions	(mn
Diameter DC	Stock	Cat. No.	Head Length INSL	Applicable Holder	Fi
12.0		SMDT 1200 MFS	7.1	SMDH120□	1
12.5		1250 MFS	7.2	SMDH125□	1
13.0		1300 MFS	7.5	SMDH130□	1
13.5		SMDT 1350 MFS	7.9		1
14.0		1400 MFS	7.9	SMDH140□	1
14.5		1450 MFS	7.9		1
15.0		SMDT 1500 MFS	8.3	SMDH150□	1
15.5		1550 MFS	8.3	SWIDITIOU	1
16.0		SMDT 1600 MFS	8.8	SMDH160□	1
16.5		1650 MFS	8.8	SWIDH 1000	1
17.0		SMDT 1700 MFS	9.3	SMDH170□	1
17.5		1750 MFS	9.3	SWIDH170	1
18.0		SMDT 1800 MFS	9.8	SMDH180□	1
18.5		1850 MFS	9.8	SWIDTTIOO	1
19.0		SMDT 1900 MFS	10.2	SMDH190□	1
19.5		1950 MFS	10.2	SWIDTTIBU	1
20.0		SMDT 2000 MFS	10.7	SMDH200□	1
20.5		2050 MFS	10.7	ON DI 1200	1
21.0		SMDT 2100 MFS	11.2	SMDH210□	1
21.5		2150 MFS	11.2	SIVIDI1210	1

Indexable Head MFS type Diameter ø22.0 to 30.0mm

SMDT 3000 MFS

SMDH300□

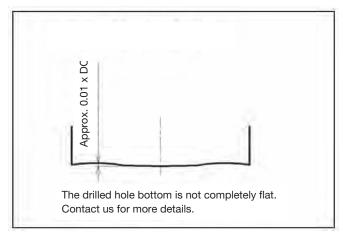
Applicable Stock Head Length Cat. No. Fig INSL DC Holder 22.0 SMDT 2200 MFS 11.2 SMDH220□ 22.5 2250 MFS 11.2 23.0 **SMDT 2300 MFS** 11.2 SMDH230□ 23.5 2350 MFS 11.2 24.0 **SMDT 2400 MFS** 11.3 SMDH240□ 24.5 2450 MFS 11.3 25.0 **SMDT 2500 MFS** 11.7 SMDH250□ 25.5 2550 MFS 11.7 26.0 **SMDT 2600 MFS** 12.2 SMDH260□ 26.5 2650 MFS 12.2 27.0 **SMDT 2700 MFS** 12.7 SMDH270□ 27.5 2750 MFS 12.7 28.0 **SMDT 2800 MFS** 13.2 SMDH280□ 28.5 2850 MFS 13.2 29.0 SMDT 2900 MFS 13.6 SMDH290□ 29.5 2950 MFS 13.6

14.1

30.0 Grade: ACX70

Grade: ACX70

Shape of Hole Bottom Drilled with MFS type



Set Figure

## SMD series (Internal Coolant Supply) Side Lock Flat/No Flange









1 1 BXD04515IP

4.98

to 6.64 TRDR25IP





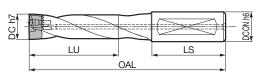




### 3D 5D 8D

Fig 1





Holder ø12.0 to 29.8	nm with	n MFS type set								Parts	Dim	ensions (mn
										Cap Scre	ew	Wrench
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length	Overall Length OAL	Shank LS	Shank Dia.  DCON	Indexable Head	Fig		(N·m)	
12.0 ≤ D < 12.5	3 5	SMDH 120M 120L	•	40.0 65.0	105.2 130.2	48 48	16 16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IF
12.5 ≤ D < 13.0	3 5	SMDH 125M 125L	0	41.0 67.0	105.1 130.1	48 48	16 16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08II
13.0 ≤ D < 13.5	3	SMDH 130M	•	43.0	110.2	48	16	MFS	1	BXD02208IP	0.75 to	TRDR08II
	5 3	130L SMDH 140M		70.0 48.0	140.2 116.6	48 48	16 16		1		1.00 0.75	
$13.5 \le D \le 14.5$	5	140L	•	77.0	146.6	48	16	MFS	1	BXD02208IP	to	TRDR08I
	8	140D	•	121.0	191.6	48	16		1		1.00	
	3	SMDH 150M	•	51.0	126.6	50	20		1		0.75	
$14.5 < D \le 15.5$	5	150L	•	82.0	156.6	50	20	MFS	1	BXD02208IP	1.00	TRDR08
	8	150D SMDH 160M		129.0 54.0	201.6 131.6	50 50	20		1			
15.5 < D ≤ 16.5	5	160L		87.0	166.6	50	20	MFS	1	BXD02509IP	0.93 to	TRDR10I
10.0 < D 3 10.0	8	160D	•	137.0	211.6	50	20	IVII O	1	BABOZOGON	1.24	IIIDITTO
	3	SMDH 170M	•	57.0	136.6	50	20		1		0.93	
$16.5 < D \le 17.5$	5	170L	•	92.0	171.6	50	20	MFS	1	BXD02509IP	to	TRDR10II
	8	170D	•	145.0	221.6	50	20		1		1.24	
17.F . D . 10.F	3	SMDH 180M	•	60.0	141.7	50	20	MEC	1	DYDOOFOOID	0.93	TDDD10
17.5 < D ≤ 18.5	5 8	180L 180D		97.0 153.0	176.7 226.7	50 50	20 20	MFS	1	BXD02509IP	to 1.24	TRDR10I
	3	SMDH 190M		63.0	156.6	56	25		1		1.83	
18.5 < D ≤ 19.5	5	190L	•	102.0	191.6	56	25	MFS	1	BXD03011IP	to	TRDR15I
	8	190D		161.0	251.6	56	25		1		2.44	
	3	SMDH 200M	•	66.0	156.7	56	25		1		1.83	
$19.5 < D \le 20.5$	5	200L		107.0	196.7	56	25	MFS	1	BXD03011IP	to	TRDR15
	8	200D SMDH 210M		169.0 69.0	261.7 156.7	56 56	25 25		1		2.44	
20.5 < D ≤ 21.5	5	210L		112.0	196.7	56	25	MFS	1	BXD03011IP	1.83 to	TRDR15
20.0 ( 2 2 2 1.0	8	210D	•	177.0	266.7	56	25	10	1	BABGGG I III	2.44	
	3	SMDH 220M	•	73.0	161.3	56	25		1		2.79	
$21.5 < D \le 22.8$	5	220L	•	119.0	201.3	56	25	MFS	1	BXD03512IP	to	TRDR15
	8	220D	•	187.0	271.3	56	25		1		3.72	
22.8 < D ≤ 23.8	3 5	SMDH 230M 230L		76.0 124.0	160.7 210.7	56 56	25 25	MFS	1	BXD03512IP	2.79 to	TRDR15
∠∠.U < D ≤ ∠3.0	8	230D		195.0	280.7	56	25 25	IVIFO	1	DAD033121P	3.72	ופו חחח ופו
	3	SMDH 240M	•	79.0	170.5	60	32		1		2.79	
$23.8 < D \le 24.8$	5	240L	•	129.0	220.5	60	32	MFS		BXD03512IP	to	TRDR15
	8	240D	•	203.0	295.5	60	32		1		3.72	
040 5 555	3	SMDH 250M	•	82.0	170.4	60	32		1	D)/D0 /5 / //-	4.14	
$24.8 < D \le 25.8$	5	250L		134.0	225.4	60	32	MFS		BXD04014IP	to 5.52	TRDR20I
	3	250D SMDH 260M		211.0 85.0	300.4 175.5	60 60	32 32		1			
25.8 < D ≤ 26.8	5	260L		139.0	230.5	60	32	MFS		BXD04014IP	4.14 to	TRDR20
20.0 \ D 3 20.0	8	260D	•	219.0	310.5	60	32	1,,,,	1	2,120,101,411	5.52	1.1.211201
	3	SMDH 270M	•	88.0	175.5	60	32		1		4.14	
$26.8 < D \le 27.8$	5	270L	•	144.0	235.5	60	32	MFS		BXD04014IP	to	TRDR20
	8	270D	•	227.0	320.5	60	32		1		5.52	
07.0 . 5 . 00.0	3	SMDH 280M		91.0	180.6	60	32	MEG	1	DVD0454515	4.98	TDDDOG
27.8 < D ≤ 28.8	5 8	280L 280D		149.0 235.0	240.6 325.6	60 60	32 32	MFS	1	BXD04515IP	6.64	TRDR25I
	3	SMDH 200M			185.4		32		1		4.09	

 $28.8 < D \le 29.8$ 

3 5

**SMDH 290M** 

290L

94.0

154.0

185.4

245.4

60

32

32

MFS



● Set Figure

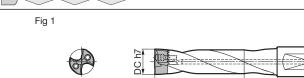












DCON he

Holder ø	29 8 to	30 8mm	with	MFS type	set
I loldel k	23.0 10	30.011111	VVILII	IVII O LYPE	301

Holder ø29.8 to 30.8mn	n with	n MFS type set								Parts	Dim	ensions (mm)
										Cap Screw		Wrench
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig		(N·m)	
29.8 < D ≤ 30.8	3	SMDH 300M		97.0	185.6	60	32		1		4.98	
	5	300L		159.0	255.6	60	32	MFS	1	BXD04515IP	to	TRDR25IP
	8	300D		251.0	345.6	60	32		1		6.64	

OAL

### SMD series (Internal Coolant Supply) Side Lock Flat/Flange (Stor Shell Ally) Selection Shell (Jack) (Stor Shell Ally) Selection Shell (Jack) (













Dimensions (mm) Wrench



















	ഗ
	ᇹ
	Ě
	ਲ
,	æ

	_	OAL
	-	

MFS 24 OG	LU OAL
Holder ø12.0 to 24.8mm with MFS type set	Parts

											Cap Sci	ew	vvrencn
Diameter	Hole Depth	Cat. No.	Stock	Effective Length	Overall Length	Shank	Flange Diameter		Indexable	Fig		(N·m)	
DC	(L/D)		(V)	LU	OAL	LS	DCSFMS	DCON	Head			(N·m	
		014511400455						1.0			•		
	1.5	SMDH 120-1.5DF		21.0	88.5	48	20	16		1			
12.0 ≤ D < 12.5	3	120-3DF		40.0	105.2	48	20	16	MFS	1	BXD02208IPC	0.75 to	TRDR08IP
	5	120-5DF	•	65.0	130.2	48	20	16		1		1.00	
	8	120-8DF		96.0	162.4	48	20	16		1			
	1.5	SMDH 125-1.5DF	•	22.0	88.8	48	20	16		1			
12.5 ≤ D < 13.0	3	125-3DF	H	41.0	105.1	48	20	16	MFS	1	BXD02208IPC	0.75 to	TRDR08IP
	5	125-5DF		67.0	130.1	48	20	16		1		1.00	
	8	125-8DF		100.0	167.9	48	20	16		1			
	1.5	SMDH 130-1.5DF	•	23.0	90.0	48	20	16		1		0.75.1	
13.0 ≤ D < 13.5	3	130-3DF		43.0	110.2	48	20	16	MFS	1	BXD02208IPC	0.75 to	TRDR08IP
	5	130-5DF		70.0	140.2	48	20	16				1.00	
	8	130-8DF		104.0	176.2	48	20	16		1			
	1.5	SMDH 140-1.5DF		26.0 48.0	93.9	48	20	16				0.75.4-	
$13.5 \le D \le 14.5$	3	140-3DF			116.6	48 48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	5	140-5DF		77.0	146.6	48	_	16				1.00	
	1.5	140-8DF SMDH 150-1.5DF		121.0 28.0	191.6 97.3	50	20 25	16 20		1			
	3	150-3DF		51.0	126.6	50	25	20				0.75 to	
$14.5 < D \le 15.5$	5	150-5DF		82.0	156.6	50	25	20	MFS	1	BXD02208IPC	1.00	TRDR08IP
		8 <b>150-8DF</b> • <b>129.0 201.6</b> 50 25 20		1		1.00							
	1.5	SMDH 160-1.5DF		29.0	99.9	50	25	20		1			
	3	160-3DF		54.0	131.6	50	25	20				0.93 to	
$15.5 < D \le 16.5$	5	160-5DF		87.0	166.6	50	25	20	MFS	1	BXD02509IPC	1.24	TRDR10IP
	8	160-8DF		137.0	211.6	50	25	20		1		1.24	
	1.5	SMDH 170-1.5DF	•	31.0	101.4	50	25	20		1			
	3	170-3DF		57.0	136.6	50	25	20		1		0.93 to	
$16.5 < D \le 17.5$	5	170-5DF		92.0	171.6	50	25	20	MFS	1	BXD02509IPC	1.24	TRDR10IP
	8	170-8DF		145.0	221.6	50	25	20		1		1.24	
	1.5	SMDH 180-1.5DF	•	32.0	104.0	50	25	20		1			
	3	180-3DF		60.0	141.7	50	25	20		1		0.93 to	
$17.5 < D \le 18.5$	5	180-5DF	•	97.0	176.7	50	25	20	MFS	1	BXD02509IPC	1.24	TRDR10IP
	8	180-8DF		153.0	226.7	50	25	20		1			
	1.5	SMDH 190-1.5DF	•	34.0	111.4	56	30	25		1			
	3	190-3DF		63.0	156.6	56	30	25		1		1.83 to	
$18.5 < D \le 19.5$	5	190-5DF		102.0	191.6	56	30	25	MFS	1	BXD03011IPC	2.44	TRDR15IP
	8	190-8DF		161.0	251.6	56	30	25		1			
	1.5	SMDH 200-1.5DF	•	35.0	114.0	56	30	25		1			
	3	200-3DF		66.0	156.7	56	30	25		1		1.83 to	
$19.5 < D \le 20.5$	5	200-5DF	•	107.0	196.7	56	30	25	MFS	1	BXD03011IPC	2.44	TRDR15IP
	8	200-8DF	•	169.0	261.7	56	30	25		1			
	1.5	SMDH 210-1.5DF	•	37.0	115.5	56	30	25		1			
	3	210-3DF	•	69.0	156.7	56	30	25		1	DVD 005 : ::= =	1.83 to	
$20.5 < D \le 21.5$	5	210-5DF	•	112.0	196.7	56	30	25	MFS	1	BXD03011IPC	2.44	TRDR15IP
	8	210-8DF	•	177.0		56	30	25		1			
	1.5	SMDH 220-1.5DF	•	39.0	117.1	56	30	25		1			
0.4 5 5 5 5 5	3	220-3DF	•	73.0	161.3	56	30	25		1	DVD005:0:5	2.79 to	TDDD : -:-
$21.5 < D \le 22.8$	5	220-5DF	•	119.0	201.3	56	30	25	MFS	1	BXD03512IPC	3.72	TRDR15IP
	8	220-8DF	•	187.0		56	30	25		1			
	1.5	SMDH 230-1.5DF	•	40.0	118.0	56	30	25		1			
	3	230-3DF	•	76.0		56	30	25		1	DVD 005 : -:	2.79 to	
$22.8 < D \le 23.8$	5	230-5DF	•	124.0	210.7	56	30	25	MFS	1	BXD03512IPC	3.72	TRDR15IP
	8	230-8DF	•	195.0	280.7	56	30	25		1			
	1.5	SMDH 240-1.5DF	•	42.0	124.3	60	37	32		1			
	3	240-3DF	•	79.0		60	37	32		1	DVD 005 : -:	2.79 to	
$23.8 < D \le 24.8$	5	240-5DF	•	129.0		60	37	32	MFS	1	BXD03512IPC	3.72	TRDR15IP
	8	240-8DF		203.0		60	37	32		1			

**<sup>240-8</sup>DF** | ● | **203.0** | **295.5** | 60 | 37 | 32 | \*The SMDHOOOS Holder Cat. No. has been changed to SMDHOOO-1.5DF. The specifications have not changed.

# SMD series (Internal Coolant Supply) Side Lock Flat/Flange MFS (http://dx/) Series (Internal Coolant Supply)















Set Figure

8



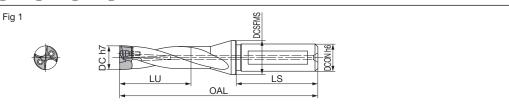












Holder	a24	a to	30 8mm	with	MFS type	set

Holder ø24.8 to 30.8mm with MFS type set Parts Dimensions													
											Cap Scre	ew	Wrench
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia.	Indexable Head	Fig		(N·m)	
	1.5	SMDH 250-1.5DF		43.0	124.7	60	37	32		1			
24.8 < D ≤ 25.8	3	250-3DF		82.0	170.4	60	37	32	MFS	1 BXD04014IPC 4	4.14 to	TRDR20IP	
24.6 < D ≤ 25.6	5	250-5DF		134.0	225.4	60	37	32	IVII S	1	DADO4014II O	5.52	TRURZUP
	8	250-8DF		211.0	300.4	60	37	32		1			
25.8 < D ≤ 26.8	1.5	SMDH 260-1.5DF		45.0	127.3	60	37	32		1			TRDR20IP
	3	260-3DF		85.0	175.5	60	37	32	MFS	1	BXD04014IPC	4.14 to	
	5	260-5DF		139.0	230.5	60	37	32	IVII O	1	BABO IOT III O	5.52	
	8	260-8DF		219.0	310.5	60	37	32		1			
	1.5	SMDH 270-1.5DF		46.0	127.8	60	37	32		1	BXD04014IPC	4.14 to 5.52	TRDR20IP
26.8 < D ≤ 27.8	3	270-3DF		88.0	175.5	60	37	32	MFS	1			
20.0 \ D \ Z Z I .0	5	270-5DF		144.0	235.5	60	37	32	IVII O	1			
	8	270-8DF		227.0	320.5	60	37	32		1			
	1.5	SMDH 280-1.5DF		48.0	129.4	60	37	32		1			
27.8 < D ≤ 28.8	3	280-3DF		91.0	180.6	60	37	32	MFS	1	BXD04515IPC	4.98 to	TRDR25IP
21.0 < D \( \) \( \) \( \) 20.0	5	280-5DF		149.0	240.6	60	37	32	IVII O	1	DAD0431311 C	6.64	THUHESII
	8	280-8DF		235.0	325.6	60	37	32		1			
	1.5	SMDH 290-1.5DF		49.0	130.8	60	37	32		1			
28.8 < D ≤ 29.8	3	290-3DF		94.0	185.4	60	37	32	MFS	1	BXD04515IPC	4.98 to	TRDR25IP
20.0 < D \ 23.0	5	290-5DF		154.0	245.4	60	37	32	IVII S	1	DVD042121LC	6.64	I I IDI IZJIF
	8	290-8DF		243.0	335.4	60	37	32		1			
29.8 < D ≤ 30.8	1.5	SMDH 300-1.5DF		51.0	133.4	60	37	32		1			
	3	300-3DF		97.0	185.6	60	37	32	MFS	1	BXD04515IPC	4.98 to	TRDR25IP
	5	300-5DF		159.0	255.6	60	37	32	IVII G	1	DVD049 IOILO	6.64	וועשווטווצוו

32

300-5DF

255.6

345.6

60

37

<sup>251.0</sup> \*The SMDHOOOS Holder Cat. No. has been changed to SMDHOOO-1.5DF. The specifications have not changed.

## SMD series (Internal Coolant Supply) No Side Lock Flat/Flange (Internal Coolant Supply) No Side Lock Flat/Flange (Internal Coolant Supply) Stainless (Internal Coolant Supply)

















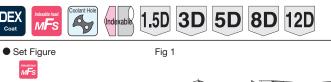












D	art	0

Dimensions (mm)

											Cap Screw		Wrench
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	DO011	Indexable Head	Fig		(N·m)	
	1.5	SMDH 120-1.5D	•	21.0	88.5	48	20	16		1			
	3	120-3D		40.0	105.2	48	20	16		1		0.75 to	
12.0 ≤ D < 12.5	5	120-5D	•	65.0	130.2	48	20	16	MFS		BXD02208IPC	1.00	TRDR08IP
	8	120-8D		96.0	162.4	48	20	16		1			
	12	120-12D	•	144.0	211.3	48	20	16		1			
	1.5	SMDH 125-1.5D		22.0	88.8	48	20	16		1			TDDDOOLD
10 F D 10 0	3	125-3D		41.0	105.1	48	20	16	1450	1	DVD00000IDO	0.75 to	
12.5 ≤ D < 13.0	5	125-5D		67.0	130.1	48	20	16	MFS		BXD02208IPC	1.00	TRDR08IP
	8	125-8D 125-12D	•	100.0 150.0	167.9 217.3	48	20	16 16		1			
	1.5	SMDH 130-1.5D		23.0	90.0	48	20	16		1			
	3	130-3D		43.0	110.2	48	20	16		1			
13.0 ≤ D < 13.5	5	130-5D		70.0	140.2	48	20	16	MFS	1	BXD02208IPC	0.75 to	TRDR08IP
10.0 2 0 < 10.0	8	130-8D		104.0	176.2	48	20	16	1011 0	1	DADOZZOON O	1.00	1110110011
	12	130-12D		156.0	223.5	48	20	16		1			
	1.5	SMDH 140-1.5D	•	26.0	93.9	48	20	16		1			
	3	140-3D	•	48.0	116.6	48	20	16		1			
13.5 ≤ D ≤ 14.5	5	140-5D	•	77.0	146.6	48	20	16	MFS		BXD02208IPC	0.75 to	TRDR08IP
	8	140-8D	•	121.0	191.6	48	20	16		1		1.00	
	12	140-12D	•	168.0	236.1	48	20	16		1			
	1.5	SMDH 150-1.5D	•	28.0	97.3	50	25	20		1			
	3	150-3D		51.0	126.6	50	25	20		1			
$14.5 < D \le 15.5$	5	150-5D		82.0	156.6	50	25	20	MFS	1	BXD02208IPC	0.75 to	TRDR08IP
	8	150-8D		129.0	201.6	50	25	20		1		1.00	
	12	150-12D		180.0	250.4	50	25	20		1			
	1.5	SMDH 160-1.5D	•	29.0	99.9	50	25	20		1			
	3	160-3D		54.0	131.6	50	25	20	1		0.02 +0	TDDD13:5	
$15.5 < D \le 16.5$	5	160-5D		87.0	166.6	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	8	160-8D		137.0	211.6	50	25	20		1			
	12	160-12D		192.0	262.7	50	25	20		1			
	1.5	SMDH 170-1.5D	•	31.0	101.4	50	25	20		1			TDDD40ID
	3	170-3D		57.0	136.6	50	25	20		1		0.93 to	
$16.5 < D \le 17.5$	5	170-5D	•	92.0	171.6	50	25	20	MFS	1	BXD02509IPC	1.24	TRDR10IP
	8	170-8D	H	145.0	221.6	50	25	20		1			
	12	170-12D	•	204.0	275.1	50	25	20		1			
	1.5	SMDH 180-1.5D		32.0	104.0	50	25	20		1			
17.5 < D ≤ 18.5	3 5	180-3D 180-5D	•	60.0 97.0	141.7 176.7	50 50	25 25	20	MFS		BXD02509IPC	0.93 to	TRDR10IP
17.5 < U ≥ 10.5	8	180-8D		153.0	226.7	50	25	20	IVII O	1	DVD05209ILC	1.24	THUITIUIF
	12	180-12D		216.0	287.4	50	25	20		1			
	1.5	SMDH 190-1.5D	ŏ	34.0	111.4	56	30	25		1			
	3	190-3D	•	63.0	156.6	56	30	25		1			
18.5 < D ≤ 19.5	5	190-5D	•	102.0	191.6	56	30	25	MFS		BXD03011IPC	1.83 to	TRDR15IP
. 5.5 1 5 2 10.0	8	190-8D		161.0	251.6	56	30	25	0	1		2.44	
	12	190-12D	•	228.0	305.7	56	30	25		1			
	1.5	SMDH 200-1.5D	•	35.0	114.0	56	30	25		1			
	3	200-3D		66.0	156.7	56	30	25		1	1	4.00.	
19.5 < D ≤ 20.5	5	200-5D		107.0	196.7	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	8	200-8D		169.0	261.7	56	30	25		1		2.44	
	12	200-12D		240.0	318.0	56	30	25		1			
	1.5	SMDH 210-1.5D		37.0	115.5	56	30	25		1			
	3	210-3D		69.0	156.7	56	30	25		1		1 82 +0	
$20.5 < D \le 21.5$	5	210-5D		112.0	196.7	56	30	25	MFS	1 BXD03011IPC 1.83 to	TRDR15IP		
	8	210-8D		177.0	266.7	56	30	25		1 2.44		2.77	
	12	210-12D		252.0	330.3	56	30	25		1			

7-80





















280-12D •

SMDH 290-1.5D

SMDH 300-1.5D

290-3D

290-5D

290-8D

290-12D

300-3D

300-5D

300-8D

300-12D

12

3

5

8

12

3

5

8

12

1.5

 $28.8 < D \le 29.8$ 

 $29.8 < D \leq 30.8$ 

1.5

336.0

49.0

94.0

154.0

243.0

348.0

51.0

97.0

159.0

251.0

360.0

421.3

130.8

185.4

245.4

335.4

433.5

133.4

185.6

255.6

345.6

445.9

60

60

60

60

60

60

60

60

37

37

37

37

37

37

37

37

37

37

37

32

32

32

32

32

32

32

32

32

32

32

MFS

MFS

1

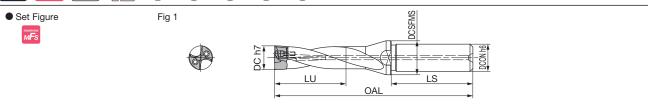
1

1

1 BXD04515IPC

BXD04515IPC





**Parts** 

Dimensions (mm) Wrench

Holder ø21.5 to	30.8n	nm with	MFS	typ	e set

											Cap Scre	ew	
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia.	Indexable Head	Fig		(N·m)	
	1.5	SMDH 220-1.5D		39.0	117.1	56	30	25		1			

30

25

						00	00					0 =0 :	
21.5 < D ≤ 22.8	5	220-5D	•	119.0	201.3	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	8	220-8D		187.0	271.3	56	30	25		1		3.12	
	12	220-12D		264.0	343.2	56	30	25		1			
	1.5	SMDH 230-1.5D	•	40.0	118.0	56	30	25		1			
	3	230-3D		76.0	160.7	56	30	25		1		0.70 +-	
$22.8 < D \le 23.8$	5	230-5D		124.0	210.7	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	8	230-8D		195.0	280.7	56	30	25		1		3.12	
	12	230-12D		276.0	355.0	56	30	25		1			
	1.5	SMDH 240-1.5D	•	42.0	124.3	60	37	32		1			
	3	240-3D		79.0	170.5	60	37	32		1		2.79 to	
$23.8 < D \le 24.8$	5	240-5D		129.0	220.5	60	37	32	MFS	1	BXD03512IPC	3.72	TRDR15IP
	8	240-8D		203.0	295.5	60	37	32		1		0.72	
	12	240-12D		288.0	372.0	60	37	32		1			
	1.5	SMDH 250-1.5D		43.0	124.7	60	37	32		1			
24.8 < D ≤ 25.8	3	250-3D		82.0	170.4	60	37	32		1		4.14 to	
	5	250-5D		134.0	225.4	60	37	32	MFS	1	BXD04014IPC	5.52	TRDR20IP
	8	250-8D		211.0	300.4	60	37	32		1		0.02	
	12	250-12D		300.0	384.2	60	37	32		1			
	1.5	SMDH 260-1.5D		45.0	127.3	60	37	32		1			
	3	260-3D		85.0	175.5	60	37	32	1	1	BXDD4D14DC:	4 14 to	
$25.8 < D \le 26.8$	5	260-5D		139.0	230.5	60	37	32	MFS	1		4.14 to 5.52	TRDR20IP
	8	260-8D		219.0	310.5	60	37	32		1		0.02	
	12	260-12D		312.0	396.6	60	37	32		1			
	1.5	SMDH 270-1.5D		46.0	127.8	60	37	32		1			
	3	270-3D		88.0	175.5	60	37	32		1		4.14 to	
$26.8 < D \le 27.8$	5	-:		144.0	235.5	60	37	32	MFS	1	BXD04014IPC	5.52	TRDR20IP
	8	270-8D		227.0	320.5	60	37	32		1		0.02	
	12	270-12D		324.0	408.9	60	37	32		1			
	1.5	0211.200 1.02		48.0	129.4	60	37	32		1			
	3			91.0	180.6	60	37	32		1		4.98 to	
$27.8 < D \le 28.8$	5		•	149.0	240.6	60	37	32	MFS	1 BXD04515IPC 4.98 to 6.64	TRDR25IP		
	8	280-8D		235.0	325.6	60	37	32		1		0.04	

4.98 to

6.64

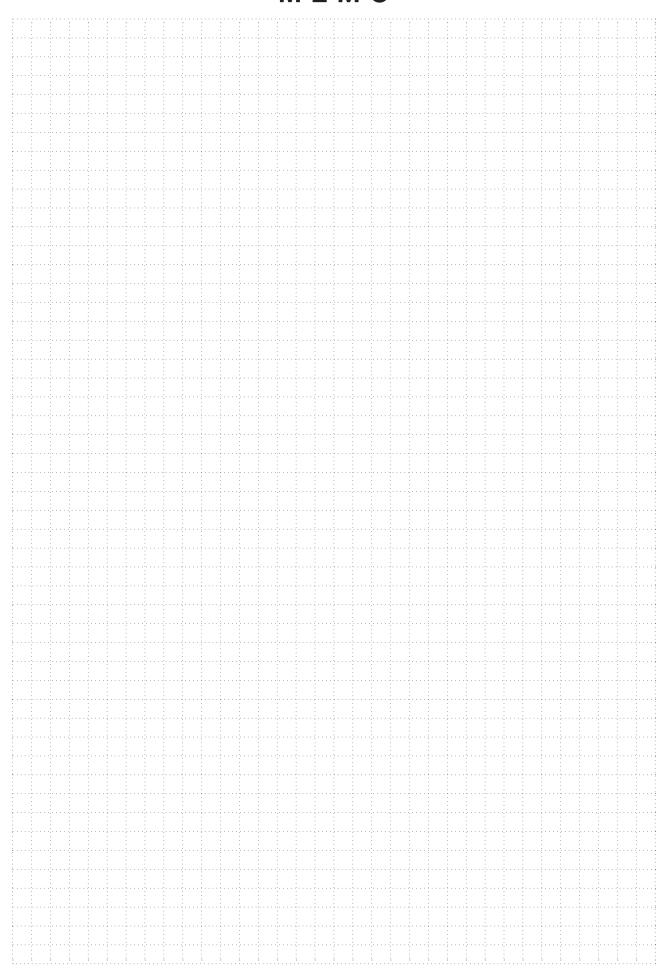
4.98 to

6.64

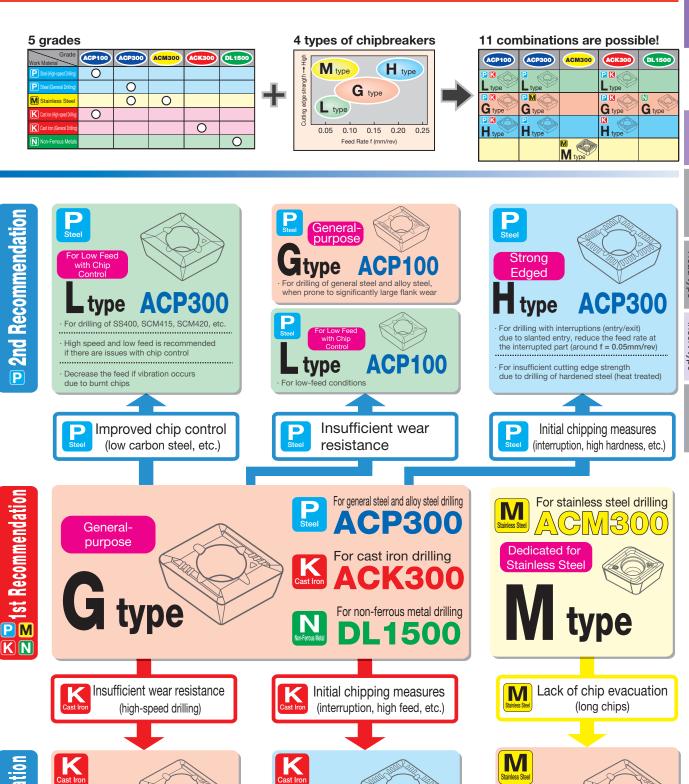
TRDR25IP

TRDR25IP

### **MEMO**



#### Insert Selection Guide The WDX insert series has a variety of options



\*ACP100 is the first recommendation for steel with a hardness of 200HB or greater, or for high-speed drilling of steel.

Strong

Edged

type

high-feed drilling

When interrupted drilling is performed

due to slanted entry, etc. as with steel drilling For insufficient cutting edge strength due to

General-

purpose

feed conditions

drilling

type

When heavy flank wear occurs in cast iron

To limit wear in high-speed, low to medium

General-

purpose

type

When chips becomes long and tangled

### WDX series for 2D (Internal Coolant Supply)



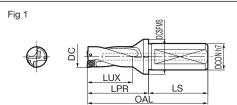


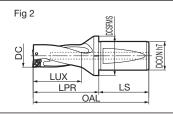


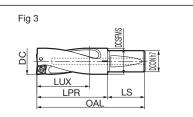




Drilling tolerance: -0.05 to +0.15mm







Diameter ø13.0 to 45.0m	m

	Dimens	sions (ı	mm)
de monto	Radial		

Diameter @	946.0 to	68.0mm
------------	----------	--------

Dimensions	1mm

Diai	me	ter Ø 13.0 to 45.0i	mm					[	Dimens	sions (	mm)
Dia.	Stock	Cat. No.	Neck Length	Overhang Length	Length	Shank	Flange Dia.	Dia.	Radial Offset Amount	Applicable	Fig
DC	Ś		LUX	LPR	OAL	LS	DCSFMS	DCON	(Max)	Insert	
13.0		WDX 130D2S20	29	44	88	44	28.0	20	0.35		1
13.5		135D2S20	30	45	89	44	28.0	20	0.30	WDXT	1
14.0		140D2S20	31	46	90	44	28.0	20	0.25	042004	1
14.5		145D2S20	32	47	91	44	28.0	20	0.20	072007	1
15.0		150D2S20	33	48	92	44	28.0	20	0.15		1
15.5		WDX 155D2S20	34	49	93	44	30.0	20	0.40		1
16.0		160D2S20	35	50	94	44	30.0	20	0.40		1
16.5		165D2S20	36	51	95	44	30.0	20	0.35	WDXT	1
17.0		170D2S20	37	52	96	44	30.0	20	0.30	052504	1
17.5		WDX 175D2S25	38	53	109	56	32.0	25	0.25		1
18.0	•	180D2S25	39	54	110	56	32.0	25	0.20		1
18.5		WDX 185D2S25	40	55	111	56	33.0	25	0.50		1
19.0	•	190D2S25	41	56	112	56	33.0	25	0.45		1
19.5		195D2S25	42	57	113	56	33.0	25	0.40		1
20.0	•	200D2S25	43	58	114	56	33.0	25	0.30	WDXT	1
20.5		205D2S25	44	59	115	56	33.0	25		063006	1
21.0	•	210D2S25	45	60	116	56	33.0	25	0.20		1
21.5		215D2S25	46	61	117	56	33.0	25	0.15		1
22.0	•	220D2S25	47	62	118	56	33.0	25	0.10		1
22.5		225D2S25	48	63	119	56	33.0	25	0.05		1
23.0	•	WDX 230D2S25	49	67	123	56	37.0	25	0.70		1
23.5		235D2S25	50	68	124	56	37.0	25			1
24.0	•	240D2S25	51	69	125	56	37.0	25	0.60		1
24.5		245D2S25	52	70	126	56	37.0	25	0.50		1
25.0	•	250D2S25	53	71	127	56	37.0	25	0.45	WDVT	1
25.5		WDX 255D2S32	54	74	134	60	41.0	32	0.45	WDXT	2
26.0		260D2S32	55	75	135	60	41.0	32	0.40	073506	2
26.5		265D2S32	56	76	136	60	41.0	32	0.35		2
27.0 27.5		270D2S32 275D2S32	57	77	137 138	60	41.0	32	0.25		2
		275D2S32 280D2S32	58	78 79	138	60	41.0	32	0.20		2
28.0			59			60	-				-
28.5 29.0		285D2S32 WDX 290D2S32	60 62	80	140	60	41.0 50.0	32	1.00		2
29.0		295D2S32	63	84	143	60	50.0	32	0.95		2
29.5 30.0*		300D2S32	64	88	144	60	54.0	32	0.90		2
31.0*		310D2S32	66	90	150	60	54.0	32	0.80		2
32.0*		320D2S32	68	90	150	60	54.0	32	0.70		2
30.0*		WDX 300D2S40	64	88	158	70	54.0	40	0.70	WDXT	2
31.0*		310D2S40	66	90	160	70	54.0	40	0.80	094008	2
31.0		00000040	00	90	100	70	54.0	40	0.00	000000	2

Diai	He	ter 046.0 to 66.01	111111					[	Dimens	sions (r	mm)
Dia.	Stock	Cat. No.	Length	Overhang Length	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0		WDX 460D2S40	97	127	197	70	49.5	40	1.50		2
47.0		470D2S40	99	129	199	70	49.5	40	1.40		2
48.0		480D2S40	101	131	201	70	49.5	40	1.30		2
49.0		490D2S40	103	133	203	70	49.5	40	1.20		2
50.0		500D2S40	105	135	205	70	49.5	40	1.10	WDXT	2
51.0		510D2S40	107	137	207	70	49.5	40	1.00	156012	3
52.0		520D2S40	109	139	209	70	50.5	40	0.90		3
53.0		530D2S40	111	141	211	70	51.5	40	0.80		3
54.0		540D2S40	113	143	213	70	52.5	40	0.60		3
55.0		550D2S40	115	145	215	70	53.5	40	0.50		3
56.0		WDX 560D2S40	120	152	222	70	54.0	40	2.00		3
57.0		570D2S40	122	154	224	70	55.0	40	1.80		3
58.0		580D2S40	124	156	226	70	56.0	40	1.70		3
59.0		590D2S40	126	158	228	70	57.0	40	1.60		3
60.0		600D2S40	128	160	230	70	58.0	40	1.50		3
61.0		610D2S40	130	162	232	70	59.0	40	1.40	WDXT	3
62.0		620D2S40	132	164	234	70	60.0	40	1.30	186012	3
63.0		630D2S40	134	166	236	70	61.0	40	1.20	100012	3
64.0		640D2S40	136	168	238	70	62.0	40	1.00		3
65.0		650D2S40	138	170	240	70	63.0	40	0.90		3
66.0		660D2S40	140	172	242	70	64.0	40	0.70		3
67.0		670D2S40	142	174	244	70	65.0	40	0.60		3
68.0		680D2S40	144	176	246	70	66.0	40	0.50		3

<sup>\*</sup>Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

#### Parts

i dito				
	Flat Insert S	crew	Wrench	Wrench
Applicable Holder		(N·m)		
WDX130D2S20 to WDX150D2S20	BFTX01604N	0.3	TRX06	-
WDX155D2S20 to WDX180D2S25	BFTX0204N	0.5	TRX06	-
WDX185D2S25 to WDX225D2S25	BFTY02206	1.0	-	TRD07
WDX230D2S25 to WDX285D2S32	BFTX02506N	1.5	-	TRD08
WDX290D2S32 to WDX360D2S40	BFTX03584	3.5	-	TRD15
WDX370D2S40 to WDX450D2S40	BFTX0511N	5.0	-	TRD20
WDX460D2S40 to WDX680D2S40	BFTX0615N	5.0	-	TRD25

Identification Code

#### **WDX 200 D2** Shank Dia. DCON

Flute Length (L/D) (2D) (ø25.0)

70

72

74

94 164

96 166

98 168

79 109 179

81 111 181

83 113 183

85 115 185

87 117 187

89 119 189

91 121 191

92 162 70 54.0 40 0.70

76 100 170 70 54.0 40 0.20

70 54.0 40 0.55

70 54.0 40 0.35

40

40 0.50

70 49.5 40 0.80

0.45

1.00

0.90

0.60

40 0.70

70 54.0 40

70 |49.5 | 40

70 49.5 40

70 49.5 40

70 49.5

70 49.5

70 49.5

93 123 193 70 49.5 40

95 125 195 70 49.5 40 0.40

2

2

2

2

2

2

2

2

2

125012

32.0\*

33.0

34.0

35.0

36.0

37.0

38.0

39.0

40.0

41.0

42.0

43.0

44.0

45.0

7-84

320D2S40

330D2S40

340D2S40

350D2S40

360D2S40

380D2S40

390D2S40

400D2S40

410D2S40

420D2S40

430D2S40

440D2S40

450D2S40

WDX 370D2S40

<sup>\*</sup>Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

### WDX series for 2D (Internal Coolant Supply)

Insert Dimensions (mm)

Grad	e Classification	Co	nata	d C	arhi	dΔ							
Grad	High-speed/Light Cutting				Libi	N							
Process	General-purpose	<b>K</b>	P	M		W							
F100633	Roughing		P	···	K								
	Houghing	0		C									
Cat. No.		ACP100	ACP300	ACM300	8	DL1500		Width	Thickness	Corner Radius	Corner Radius	Applicable	
		SP	G.	듯	<b>ACK300</b>	Ë	Fig	W1	S	RE1	RE2	Holders	
		Ă	ĕ	Ă	ĕ	Ω				111	TILL		
WD	XT 042004-L						1	4.2	2.0	0.4	0.4	WDX130D2S20	
	042004-G						2	4.2	2.0	0.4	0.4	to	
	042004-H						3	4.2	2.0	0.4	0.4	WDX150D2S20	
	042004-M						4	4.2	2.0	0.4	0.8		
WD	XT 052504-L	•	•				1	5.0	2.5	0.4	0.4	WDX155D2S20	
	052504-G						2	5.0	2.5	0.4	0.4	to	
	052504-H						3	5.0	2.5	0.4	0.4	WDX180D2S25	
	052504-M						4	5.0	2.5	0.4	1.0		
WD	XT 063006-L						1	6.0	3.0	0.6	0.6	WDX185D2S25	
	063006-G						2	6.0	3.0	0.6	0.6	to	
	063006-H						3	6.0	3.0	0.6	0.6	WDX225D2S25	
	063006-M						4	6.0	3.0	0.6	1.4		
WD	XT 073506-L	•	•		•		1	7.5	3.5	0.6	0.6	WDX230D2S25	
	073506-G		•				2	7.5	3.5	0.6	0.6	to	
	073506-H	•	•				3	7.5	3.5	0.6	0.6	WDX285D2S32	
	073506-M	_	_		_		4	7.5	3.5	0.6	1.6		
WD	XT 094008-L	•	•		•		1	9.6	4.0	0.8	0.8	WDX290D2S32	
	094008-G		•				2	9.6	4.0	0.8	0.8	to	
	094008-H						3	9.6	4.0	0.8	0.8	WDX360D2S40	
	094008-M						4	9.6	4.0	0.8	2.4		
WD	XT 125012-L		•				1	12.4	5.0	1.2	1.2	WDX370D2S40	
	125012-G						2	12.4	5.0	1.2	1.2	to	
	125012-H						3	12.4	5.0	1.2	1.2	WDX450D2S40	
14/5	125012-M						4	12.4	5.0	1.2	3.2		
WD.	XT 156012-L		•		•		1	15.2	6.0	1.2	1.2	WDX460D2S40	
	156012-G		•				2	15.2	6.0	1.2	1.2	to WDX550D2S40	
ME	156012-H		•		•		3	15.2	6.0	1.2	1.2		
WD.	XT 186012-L						1	18.0	6.0	1.2	1.2	WDX560D2S40	
	186012-G		•		•		2	18.0	6.0	1.2	1.2	to WDX680D2S40	
	186012-H						3	18.0	6.0	1.2	1.2	VVDA000D2340	

Fig 1 For low feed with chip control Fig 2 General-purpose

L type G type RE2

RE1

Fig 3 Strong edged

H type

RE2

RE1

Fig 4 Dedicated for stainless steel

W1 RE2 S

nsert type

Reamers

Identification Code

# WDXT 06 30 06 -G

#### Recommended Cutting Conditions (for 2D)

				Workpiece Hardness	Recommended	Recommended	vc Cutting	f fee	ed rate (mm/re	v) (Min	Optimum - M	ax.)
		Work Material			Chipbreaker	Insert Grade	Speed (m/min)	ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0	ø56.0 to ø68.0
		Steel, Carbon Steel	SS400	125	G	ACP300	120- <b>180</b> -240	0.05- <b>0.08</b> -0.10	0.05- <b>0.08</b> -0.10	0.05- <b>0.08</b> -0.11	0.05- <b>0.08</b> -0.12	0.06- <b>0.09</b> -0.13
			S15C	125	L	ACP300	130- <b>170</b> -220	0.04 <b>-0.08</b> -0.12	0.04 <b>-0.08</b> -0.12	0.04 <b>-0.08</b> -0.13	0.05- <b>0.10</b> -0.15	0.06- <b>0.11</b> -0.17
			S45C	190	G	ACP300	100- <b>150</b> -200	0.08- <b>0.13</b> -0.24	0.08-0.13-0.24	0.08- <b>0.14</b> -0.26	0.09- <b>0.16</b> -0.29	0.10- <b>0.17</b> -0.32
			S45C Hardened	250	G	ACP100	100-170-240	0.05- <b>0.09</b> -0.14	0.05-0.09-0.14	0.05 <b>-0.09</b> -0.14	0.05- <b>0.10</b> -0.17	0.06- <b>0.11</b> -0.18
			S75C	270	G	ACP100	120- <b>180</b> -240	0.06 <b>-0.10</b> -0.17	0.06- <b>0.10</b> -0.17	0.06- <b>0.10</b> -0.17	0.07- <b>0.12</b> -0.19	0.08- <b>0.13</b> -0.21
	В		S75C Hardened	300	G	ACP100	85- <b>150</b> -210	0.05 <b>-0.09</b> -0.14	0.05- <b>0.09</b> -0.14	0.05- <b>0.09</b> -0.14	0.05- <b>0.10</b> -0.15	0.06- <b>0.11</b> -0.17
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100- <b>140</b> -180	0.05- <b>0.08</b> -0.14	0.05 <b>-0.08</b> -0.14	0.05- <b>0.08</b> -0.16	0.06- <b>0.09</b> -0.17	0.07 <b>-0.10</b> -0.19
			SCM, SNCM Hardened	275	G	ACP100	100- <b>170</b> -240	0.06- <b>0.10</b> -0.14	0.06- <b>0.10</b> -0.14	0.06- <b>0.10</b> -0.14	0.07- <b>0.11</b> -0.16	0.08- <b>0.11</b> -0.17
			SCM, SNCM Hardened	300	G	ACP100	90- <b>150</b> -210	0.06- <b>0.10</b> -0.14	0.06- <b>0.10</b> -0.14	0.06- <b>0.10</b> -0.14	0.07- <b>0.11</b> -0.16	0.08- <b>0.11</b> -0.17
2D			SCM, SNCM Hardened	350	G	ACP100	75- <b>120</b> -165	0.06- <b>0.10</b> -0.14	0.06- <b>0.10</b> -0.14	0.06- <b>0.10</b> -0.14	0.07- <b>0.11</b> -0.16	0.08- <b>0.11</b> -0.17
20		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120- <b>180</b> -240	0.08 <b>-0.12</b> -0.17	0.08 <b>-0.12</b> -0.17	0.08 <b>-0.12</b> -0.18	0.09- <b>0.12</b> -0.21	0.10- <b>0.13</b> -0.22
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100- <b>140</b> -180	0.06- <b>0.10</b> -0.15	0.06 <b>-0.10</b> -0.15	0.06- <b>0.11</b> -0.15	0.07- <b>0.11</b> -0.16	0.08- <b>0.11</b> -0.17
		Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	М	ACM300	120- <b>150</b> -180	0.06 <b>-0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.07- <b>0.10</b> -0.16	0.08- <b>0.12</b> -0.16
	M		SUS403/Others (Martensitic (hardened))	240	М	ACM300	90- <b>120</b> -150	0.06- <b>0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.07- <b>0.10</b> -0.16	0.08- <b>0.12</b> -0.16
			SUS304, SUS316 (Austenitic)	180	М	ACM300	120- <b>150</b> -180	0.06- <b>0.08</b> -0.15	0.06 <b>-0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.07- <b>0.10</b> -0.16	0.08- <b>0.12</b> -0.16
	K	Cast Iron			Н	ACK300	120- <b>160</b> -200	0.09- <b>0.20</b> -0.32	0.10 <b>-0.22</b> -0.36	0.11- <b>0.24</b> -0.39	0.12- <b>0.26</b> -0.44	0.13- <b>0.29</b> -0.48
	2	Ductile Ca	ıst Iron		Н	ACK300	90- <b>120</b> -150	0.09- <b>0.20</b> -0.32	0.10 <b>-0.22</b> -0.36	0.11 <b>-0.24</b> -0.39	0.12- <b>0.26</b> -0.44	0.13- <b>0.29</b> -0.48
	S	Exotic Alloy (Heat	t-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	200	G	ACP300	25- <b>50</b> -70	0.06- <b>0.11</b> -0.18	0.06- <b>0.11</b> -0.18	0.06- <b>0.12</b> -0.19	0.07- <b>0.13</b> -0.22	0.08- <b>0.14</b> -0.24
	N	Aluminum	Alloy		G	DL1500	200- <b>260</b> -320	0.06- <b>0.11</b> -0.17	0.06- <b>0.11</b> -0.17	0.06- <b>0.12</b> -0.18	0.07- <b>0.13</b> -0.20	0.08- <b>0.14</b> -0.22
	17	Copper Al	loy		G	DL1500	180- <b>230</b> -280	0.06- <b>0.11</b> -0.17	0.06- <b>0.11</b> -0.17	0.06- <b>0.12</b> -0.18	0.07-0.13-0.20	0.08-0.14-0.22

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation. In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.

### WDX series for 3D (Internal Coolant Supply)





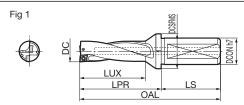


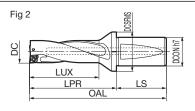


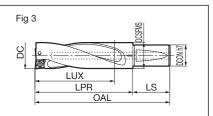




Drilling tolerance: 0 to +0.20mm







Diameter	~12	$\cap$	15	$\cap mm$
Diameter	$\omega$ 1 $\alpha$	טו ט	40.	CHILL

Diameter ø46.0 to 6	8.0mm
---------------------	-------

Dimensione	Imm

									Da inst		
Dia.	Stock	Cat. No.	Neck Length	Overhang Length	Overall Length	Shank	Flange Dia.	Shank Dia.	Radial Offset	Applicable	Fig
DC	Stc	Cat. NO.		LPR		LS	DCSFMS		Amount	Insert	rig
13.0		WDX 130D3S20	42.0	57 N	101.0	44	28.0	20	(Max) 0.35		1
13.5		135D3S20	43.5		102.5	44	28.0	20	0.30		1
14.0	7	140D3S20	45.0		104.0	44	28.0	20	0.25	WDXT	1
14.5		145D3S20	46.5		105.5	44	28.0	20	0.20	042004	1
15.0	7	150D3S20	48.0		107.0	44	28.0	20	0.15		1
15.5		WDX 155D3S20	49.5		108.5	44	30.0	20			1
16.0		160D3S20	51.0		110.0	44	30.0	20	0.40		1
16.5		165D3S20	52.5		111.5	44	30.0	20	0.35	WDXT	1
17.0		170D3S20	54.0		113.0	44	30.0	20	0.30	052504	1
17.5	•	WDX 175D3S25	55.5		126.5	56	32.0	25	0.25		1
18.0		180D3S25	57.0		128.0	56	32.0	25	0.20		1
18.5	•	WDX 185D3S25	58.5		129.5	56	33.0	25	0.50		1
19.0		190D3S25	60.0		131.0	56	33.0	25	0.45		1
19.5		195D3S25	61.5		132.5	56	33.0	25	0.40		1
20.0	•	200D3S25	63.0		134.0	56	33.0	25			1
20.5		205D3S25	64.5		135.5	56	33.0	25	0.30	WDXT	1
21.0	•	210D3S25	66.0		137.0	56	33.0	25	0.20	063006	1
21.5		215D3S25	67.5		138.5	56	33.0	25	0.15		1
22.0	•	220D3S25	69.0		140.0	56	33.0	25	0.10		1
22.5		225D3S25	70.5		141.5	56	33.0	25	0.05		1
23.0	•	WDX 230D3S25	72.0		146.0	56	37.0	25			1
23.5		235D3S25	73.5		147.5	56	37.0	25	0.70		1
24.0	•	240D3S25	75.0		149.0	56	37.0	25	0.60		1
24.5		245D3S25	76.5		150.5	56	37.0	25			1
25.0	•	250D3S25	78.0		152.0	56	37.0	25	0.50		1
25.5	•	WDX 255D3S32	79.5			60	41.0	32	0.45	WDXT	2
26.0		260D3S32	81.0		161.0	60	41.0	32	0.40	073506	2
26.5		265D3S32	82.5	102.5		60	41.0	32	0.35		2
27.0	•	270D3S32	84.0	104.0	164.0	60	41.0	32	0.25		2
27.5		275D3S32	85.5	105.5	165.5	60	41.0	32	0.20		2
28.0		280D3S32	87.0	107.0	167.0	60	41.0	32	0.15		2
28.5		285D3S32	88.5	108.5	168.5	60	41.0	32	0.10		2
29.0		WDX 290D3S32	91.0	112.0	172.0	60	50.0	32	1.00		2
29.5		295D3S32	92.5	113.5	173.5	60	50.0	32	0.95		2
30.0°		300D3S32	94.0	118.0	178.0	60	54.0	32	0.90		2
31.0°		310D3S32	97.0	121.0	181.0	60	54.0	32	0.80		2
32.0°		320D3S32	100.0	124.0	184.0	60	54.0	32	0.70		2
30.0°		WDX 300D3S40	94.0	118.0	188.0	70	54.0	40	0.90	WDXT	2
31.0°		310D3S40	97.0	121.0	191.0	70	54.0	40	0.80	094008	2
32.0°		320D3S40	100.0	124.0	194.0	70	54.0	40	0.70		2
33.0		330D3S40	103.0	127.0	197.0	70	54.0	40	0.55		2
34.0		340D3S40	106.0	130.0	200.0	70	54.0	40	0.45		2
35.0		350D3S40	109.0	133.0	203.0	70	54.0	40	0.35		2
36.0		360D3S40			206.0		54.0	40	0.20		2
37.0		WDX 370D3S40			216.0		49.5	40	1 00		2
38.0		380D3S40			219.0		49.5	40	1.00		2
39.0		390D3S40	122.0	152.0	222.0	70	49.5	40	0.90		2
40.0		400D3S40	125.0	155.0	225.0	70	49.5	40	0.80	WDVT	2
41.0		410D3S40			228.0		49.5	40	0.70	WDXT 125012	2
42.0		420D3S40	131.0	161.0	231.0	70	49.5	40	0.60	123012	2
43 0		430D3S40	13/10	16/10	23/I N	70	195	40		]	2

Diai	Dimensions (mm)											
Dia.	Stock	Cat. No.	Length	Overhang Length	Length	Shank LS	Flange Dia. DCSFMS	Dia.	Radial Offset Amount (Max)	Applicable Insert	Fig	
46.0		WDX 460D3S40	143.0	173.0	243.0	70	49.5	40	1.50		2	
47.0		470D3S40	146.0	176.0	246.0	70	49.5	40	1.40		2	
48.0		480D3S40	149.0	179.0	249.0	70	49.5	40	1.30		2	
49.0		490D3S40	152.0	182.0	252.0	70	49.5	40	1.20		2	
50.0		500D3S40	155.0	185.0	255.0	70	49.5	40	1.10	WDXT	2	
51.0		510D3S40	158.0	188.0	258.0	70	49.5	40	1.00	156012	3	
52.0		520D3S40	161.0	191.0	261.0	70	50.5	40	0.90		3	
53.0		530D3S40	164.0	194.0	264.0	70	51.5	40	0.80		3	
54.0		540D3S40	167.0	197.0	267.0	70	52.5	40	0.60		3	
55.0		550D3S40	170.0	200.0	270.0	70	53.5	40	0.50		3	
56.0		WDX 560D3S40	176.0	208.0	278.0	70	54.0	40	2.00		3	
57.0		570D3S40	179.0	211.0	281.0	70	55.0	40	1.80		3	
58.0		580D3S40	182.0	214.0	284.0	70	56.0	40	1.70		3	
59.0		590D3S40	185.0	217.0	287.0	70	57.0	40	1.60		3	
60.0		600D3S40	188.0	220.0	290.0	70	58.0	40	1.50		3	
61.0		610D3S40	191.0	223.0	293.0	70	59.0	40	1.40	WDXT	3	
62.0		620D3S40	194.0	226.0	296.0	70	60.0	40	1.30	186012	3	
63.0		630D3S40	197.0	229.0	299.0	70	61.0	40	1.20	100012	3	
64.0		640D3S40		232.0		70	62.0	40	1.00		3	
65.0		650D3S40	203.0	235.0	305.0	70	63.0	40	0.90		3	
66.0		660D3S40		238.0		70	64.0	40	0.70		3	
67.0		670D3S40	209.0	241.0	311.0	70	65.0	40	0.60		3	
68.0		680D3S40	212.0	244.0	314.0	70	66.0	40	0.50		3	
*Diam	+ .	ro a20 a21 a22 are in a	haale,	م طائنہ	باحجا	مد ما	-+	af an	0	~ 10		

<sup>\*</sup>Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

#### **Parts**

	Flat Insert S	crew	Wrench	Wrench
Applicable Holders		(N·m)		
WDX130D3S20 to WDX150D3S20	BFTX01604N	0.3	TRX06	-
WDX155D3S20 to WDX180D3S25	BFTX0204N	0.5	TRX06	-
WDX185D3S25 to WDX225D3S25	BFTY02206	1.0	-	TRD07
WDX230D3S25 to WDX285D3S32	BFTX02506N	1.5	-	TRD08
WDX290D3S32 to WDX360D3S40	BFTX03584	3.5	-	TRD15
WDX370D3S40 to WDX450D3S40	BFTX0511N	5.0	-	TRD20
WDX460D3S40 to WDX680D3S40	BFTX0615N	5.0	-	TRD25

Identification Code

2

2

0.50

### **WDX 200**

(ø25.0) Flute Length (L/D) (3D)

**450D3S40** | 140.0 | 170.0 | 240.0 | 70 | 49.5 | 40 | 0.40

**440D3S40** | 137.0 | 167.0 | 237.0 | 70 | 49.5 | 40

134.0 164.0 234.0 70 49.5 40

43.0

44.0

7-86

430D3S40

<sup>\*</sup>Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

### WDX series for 3D (Internal Coolant Supply)

Insert Dimensions (mm)

Grade Classification	Co	oate	d C	arbi	ide						
High-speed/Light Cutting	R				N						
Process General-purpose		P	M								
Roughing		P		K							
Cat. No.	ACP100	ACP300	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holders
WDXT 042004-L						1	4.2	2.0	0.4	0.4	WDV100D0000
042004-G						2	4.2	2.0	0.4	0.4	WDX130D3S20
042004-H						3	4.2	2.0	0.4	0.4	to WDX150D3S20
042004-M						4	4.2	2.0	0.4	0.8	WDX130D3320
WDXT 052504-L						1	5.0	2.5	0.4	0.4	MDV455D0000
052504-G						2	5.0	2.5	0.4	0.4	WDX155D3S20 to
052504-H						3	5.0	2.5	0.4	0.4	WDX180D3S25
052504-M						4	5.0	2.5	0.4	1.0	WDX100D3323
WDXT 063006-L						1	6.0	3.0	0.6	0.6	WDV10ED000E
063006-G						2	6.0	3.0	0.6	0.6	WDX185D3S25 to
063006-H						3	6.0	3.0	0.6	0.6	WDX225D3S25
063006-M						4	6.0	3.0	0.6	1.4	WDXZZJDOOZJ
WDXT 073506-L						1	7.5	3.5	0.6	0.6	MDV000D000E
073506-G						2	7.5	3.5	0.6	0.6	WDX230D3S25 to
073506-H						3	7.5	3.5	0.6	0.6	WDX285D3S32
073506-M						4	7.5	3.5	0.6	1.6	WDX200D0002
WDXT 094008-L						1	9.6	4.0	0.8	0.8	WDX290D3S32
094008-G						2	9.6	4.0	0.8	0.8	to
094008-H						3	9.6	4.0	0.8	0.8	WDX360D3S40
094008-M						4	9.6	4.0	0.8	2.4	112/100020010
WDXT 125012-L						1	12.4	5.0	1.2	1.2	WDX370D3S40
125012-G						2	12.4	5.0	1.2	1.2	to
125012-H						3	12.4	5.0	1.2	1.2	WDX450D3S40
125012-M						4	12.4	5.0	1.2	3.2	WBX100B0010
WDXT 156012-L		•				1	15.2	6.0	1.2	1.2	WDX460D3S40
156012-G						2	15.2	6.0	1.2	1.2	to
156012-H		•		•		3	15.2	6.0	1.2	1.2	WDX550D3S40
WDXT 186012-L						1	18.0	6.0	1.2	1.2	WDX560D3S40
186012-G						2	18.0	6.0	1.2	1.2	to
186012-H						3	18.0	6.0	1.2	1.2	WDX680D3S40

Fig 1 For low feed with chip control Fig 2 General-purpose G type RE1

Fig 3 Strong edged

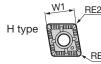
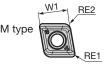


Fig 4 Dedicated for stainless steel



### Identification Code

### Recommended Cutting Conditions (for 3D)

				Workpiece Hardness		Recommended	vc Cutting	f fe	ed rate (mm/re	v) (Min	Optimum - M	ax.)
		Work Material			Chipbreaker	Insert Grade	Speed (m/min)	ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0	ø56.0 to ø68.0
		Steel, Carbon Steel	SS400	125	G	ACP300	120- <b>180</b> -240	0.05- <b>0.07</b> -0.10	0.05 <b>-0.07</b> -0.10	0.05 <b>-0.08</b> -0.11	0.05 <b>-0.08</b> -0.12	0.06- <b>0.09</b> -0.13
			S15C	125	L	ACP300	130- <b>170</b> -220	0.04- <b>0.07</b> -0.10	0.04- <b>0.07</b> -0.10	0.04 <b>-0.08</b> -0.11	0.05- <b>0.09</b> -0.12	0.06- <b>0.10</b> -0.13
			S45C	190	G	ACP300	100- <b>150</b> -200	0.08 <b>-0.12</b> -0.20	0.08- <b>0.12</b> -0.20	0.08 <b>-0.13</b> -0.22	0.09- <b>0.14</b> -0.24	0.10- <b>0.16</b> -0.27
			S45C Hardened	250	G	ACP100	100- <b>170</b> -240	0.05 <b>-0.08</b> -0.11	0.05 <b>-0.08</b> -0.11	0.05 <b>-0.08</b> -0.12	0.05 <b>-0.09</b> -0.14	0.06- <b>0.10</b> -0.15
			S75C	270	G	ACP100	120- <b>180</b> -240	0.06- <b>0.09</b> -0.14	0.06- <b>0.09</b> -0.14	0.06- <b>0.10</b> -0.14	0.07 <b>-0.11</b> -0.17	0.08- <b>0.12</b> -0.18
	D		S75C Hardened	300	G	ACP100	85- <b>150</b> -210	0.05- <b>0.08</b> -0.11	0.05- <b>0.08</b> -0.11	0.05 <b>-0.08</b> -0.11	0.05- <b>0.09</b> -0.14	0.06- <b>0.10</b> -0.14
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100- <b>140</b> -180	0.05- <b>0.07</b> -0.12	0.05- <b>0.07</b> -0.12	0.05 <b>-0.08</b> -0.13	0.06- <b>0.08</b> -0.15	0.07- <b>0.09</b> -0.16
			SCM, SNCM Hardened	275	G	ACP100	100- <b>170</b> -240	0.06- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11	0.07- <b>0.10</b> -0.12	0.08- <b>0.10</b> -0.13
			SCM, SNCM Hardened	300	G	ACP100	90- <b>150</b> -210	0.06- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11	0.07 <b>-0.10</b> -0.12	0.08- <b>0.10</b> -0.13
3D			SCM, SNCM Hardened	350	G	ACP100	75- <b>120</b> -165	0.06- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11	0.07 <b>-0.10</b> -0.12	0.08- <b>0.10</b> -0.13
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120- <b>180</b> -240	0.08- <b>0.11</b> -0.14	0.08- <b>0.12</b> -0.15	0.08 <b>-0.12</b> -0.16	0.09- <b>0.14</b> -0.18	0.10- <b>0.14</b> -0.19
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100- <b>140</b> -180	0.06- <b>0.09</b> -0.11	0.06- <b>0.09</b> -0.11	0.06 <b>-0.09</b> -0.11	0.07 <b>-0.10</b> -0.12	0.08- <b>0.10</b> -0.13
		Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	М	ACM300	120- <b>150</b> -180	0.06- <b>0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.07 <b>-0.10</b> -0.16	0.08- <b>0.12</b> -0.16
	M		SUS403/Others (Martensitic (hardened))	240	M	ACM300	90 <b>-120</b> -150	0.06- <b>0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.07 <b>-0.10</b> -0.16	0.08- <b>0.12</b> -0.16
			SUS304, SUS316 (Austenitic)	180	М	ACM300	120- <b>150</b> -180	0.06- <b>0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.06- <b>0.08</b> -0.15	0.07 <b>-0.10</b> -0.16	0.08- <b>0.12</b> -0.16
	к	Cast Iron			Н	ACK300	120- <b>160</b> -200	0.09 <b>-0.18</b> -0.27	0.10- <b>0.20</b> -0.30	0.11 <b>-0.22</b> -0.32	0.12 <b>-0.24</b> -0.36	0.13- <b>0.26</b> -0.40
		Ductile Ca	ast Iron		Н	ACK300	90- <b>120</b> -150	0.09 <b>-0.18</b> -0.27	0.10 <b>-0.20</b> -0.30	0.11 <b>-0.22</b> -0.32	0.12 <b>-0.24</b> -0.36	0.13 <b>-0.26</b> -0.40
	S	, ,	t-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	200	G	ACP300	25 <b>-50</b> -70		0.06- <b>0.10</b> -0.15			
	N	Aluminum	Alloy		G	DL1500	200- <b>260</b> -320	0.06- <b>0.11</b> -0.17	0.06- <b>0.11</b> -0.17	0.06- <b>0.12</b> -0.18	0.07 <b>-0.13</b> -0.20	0.08- <b>0.14</b> -0.22
		Copper Al	loy		G	DL1500	180- <b>230</b> -280	0.06- <b>0.11</b> -0.17	0.06- <b>0.11</b> -0.17	0.06- <b>0.12</b> -0.18	0.07 <b>-0.13</b> -0.20	0.08- <b>0.14</b> -0.22

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation. In that case, it is recommended to set the cutting speed vo to 130% and the feed rate f to 75% of the figures in the table above.

### WDX series for 4D (Internal Coolant Supply)





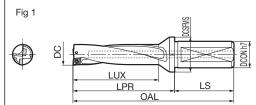








Drilling tolerance: 0 to +0.25mm



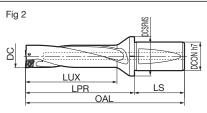


Fig 3	
DOSPHIS	DOON h7
LUX LPR OAL	

#### Diameter ø13

ᅕ

3.0 to 45.0r	nm						Dimens	sions (ı	mn
	Neck	Overhang	Overall	Shank	Flange	Shank	Radial	Applicable	

Dia.	쏬			Overhang		Shank	Flange		Radiai	Applicable	
DC.	Stock	Cat. No.	Length LUX	Length LPR	Length OAL	LS	Dia.	Dia.	Offset Amount (Max)		Fig
13.0	•	WDX 130D4S20	55	70	114	44	28.0	20	0.35		1
13.5	•	135D4S20	57	72	116	44	28.0	20	0.30		1
14.0	•	140D4S20	59	74	118	44	28.0	20	0.25	WDXT	1
14.5	•	145D4S20	61	76	120	44	28.0	20	0.20	042004	1
15.0	•	150D4S20	63	78	122	44	28.0	20	0.15		1
15.5	•	WDX 155D4S20	65	80	124	44	30.0	20	0.13		1
16.0	-	160D4S20	67	82	126	44	30.0	20	0.40		1
16.5		165D4S20	69	84	128	44	30.0	20	0.35	WDXT	1
17.0	•	170D4S20	71	86	130	44	30.0	20	0.30	052504	1
17.5		WDX 175D4S25	73	88	144	56	32.0	25	0.25	00200+	1
18.0	•	180D4S25	75	90	146	56	32.0	25	0.20		1
18.5		WDX 185D4S25	77	92	148	56	33.0	25	0.50		1
19.0	•	190D4S25	79	94	150	56	33.0	25	0.45		1
19.5	•	195D4S25	81	96	152	56	33.0	25	0.40		1
20.0	•	200D4S25	83	98	154	56	33.0	25	0.40		1
20.5	•	205D4S25	85	100	156	56	33.0	25	0.30	WDXT	1
21.0	•	210D4S25	87	102	158	56	33.0	25	0.20	063006	1
21.5		215D4S25	89	104	160	56	33.0	25	0.20		1
22.0	•	220D4S25	91	104	162	56	33.0	25	0.10		1
22.5		225D4S25	93	108	164	56	33.0	25	0.10		1
23.0	•	WDX 230D4S25	95	113	169	56	37.0	25	0.00		1
23.5		235D4S25	97	115	171	56	37.0	25	0.70		1
24.0	•	240D4S25	99	117	173	56	37.0	25	0.60		1
24.5	•	245D4S25	101	119	175	56	37.0	25	0.00		1
25.0	-	250D4S25	103	121	177	56	37.0	25	0.50		1
25.5		WDX 255D4S32	105	125	185	60	41.0	32	0.45	WDXT	2
26.0	•	260D4S32	107	127	187	60	41.0	32	0.40	073506	2
26.5	•	265D4S32	109	129	189	60	41.0	32	0.40	070000	2
27.0	•	270D4S32	111	131	191	60	41.0	32	0.25		2
27.5	•	275D4S32	113	133	193	60	41.0	32	0.20		2
28.0	•	280D4S32	115	135	195	60	41.0	32	0.15		2
28.5	•	285D4S32	117	137	197	60	41.0	32	0.10		2
29.0	•	WDX 290D4S32	120	141	201	60	50.0	32	1.00		2
29.5	•	295D4S32	122	143	203	60	50.0	32	0.95		2
30.0°	•	300D4S32	124	148	208	60	54.0	32	0.90		2
31.0°	•	310D4S32	128	152		60	54.0	32	0.80		2
32.0°	•	320D4S32	132	156	216	60	54.0	32	0.70		2
30.0°	•	WDX 300D4S40	124	148	218	70	54.0	40	0.90	WDXT	2
31.0°	•	310D4S40	128	152	222	70	54.0	40	0.80	094008	2
32.0°	•	320D4S40	132	156	226	70	54.0	40	0.70		2
33.0	•	330D4S40	136	160	230	70	54.0	40	0.55		2
34.0	•	340D4S40	140	164	234	70	54.0	40	0.45		2
35.0	•	350D4S40	144	168	238	70	54.0	40	0.35		2
36.0		360D4S40	148	172		70	54.0	40	0.20		2
37.0	•	WDX 370D4S40	153	183		70	49.5	40			2
38.0		380D4S40	157			70	49.5	40	1.00		2
39.0	•	390D4S40	161	191		70	49.5	40	0.90		2
40.0		400D4S40	165	195	265	70	49.5	40	0.80	MENT	2
41.0	•	410D4S40	169	199	269	70	49.5	40	0.70	WDXT	2
42.0		420D4S40	173	203	273	70	49.5	40	0.60	125012	2
43.0		430D4S40		207		70	49.5			1	2

Diameter ø46.0 to 63.0mm

Din	200	010	-	mn	

Dia.	Stock	Cat. No.	Neck Length	Overhang Length LPR	Length	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0		WDX 460D4S40	189	219	289	70	49.5	40	1.50		2
47.0		470D4S40	193	223	293	70	49.5	40	1.40		2
48.0		480D4S40	197	227	297	70	49.5	40	1.30		2
49.0		490D4S40	201	231	301	70	49.5	40	1.20		2
50.0		500D4S40	205	235	305	70	49.5	40	1.10	WDXT	2
51.0		510D4S40	209	239	309	70	49.5	40	1.00	156012	3
52.0		520D4S40	213	243	313	70	50.5	40	0.90		3
53.0		530D4S40	217	247	317	70	51.5	40	0.80		3
54.0		540D4S40	221	251	321	70	52.5	40	0.60		3
55.0		550D4S40	225	255	325	70	53.5	40	0.50		3
56.0		WDX 560D4S40	232	264	334	70	54.0	40	2.00		3
57.0		570D4S40	236	268	338	70	55.0	40	1.80		3
58.0		580D4S40	240	272	342	70	56.0	40	1.70		3
59.0		590D4S40	244	276	346	70	57.0	40	1.60	WDXT	3
60.0		600D4S40	248	280	350	70	58.0	40	1.50	186012	3
61.0		610D4S40	252	284	354	70	59.0	40	1.40		3
62.0		620D4S40	256	288	358	70	60.0	40	1.30		3
63.0		630D4S40	260	292	362	70	61.0	40	1.20		3

\*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

#### **Parts**

	Flat Insert S	crew	Wrench	Wrench
Applicable Holders		(N·m)		
WDX130D4S20 to WDX150D4S20	BFTX01604N	0.3	TRX06	-
WDX155D4S20 to WDX180D4S25	BFTX0204N	0.5	TRX06	-
WDX185D4S25 to WDX225D4S25	BFTY02206	1.0	-	TRD07
WDX230D4S25 to WDX285D4S32	BFTX02506N	1.5	-	TRD08
WDX290D4S32 to WDX360D4S40	BFTX03584	3.5	-	TRD15
WDX370D4S40 to WDX450D4S40	BFTX0511N	5.0	-	TRD20
WDX460D4S40 to WDX630D4S40	BFTX0615N	5.0	-	TRD25

**Identification Code** 

2

2

0.50

70 49.5 40

### **WDX 200** Shank Dia. DCON

Flute Length L/D (4D)

**440D4S40** 181 211 281 70 49.5 40

**450D4S40** | 185 | 215 | 285 | 70 | 49.5 | 40 | 0.40

43.0

44.0

7-88

430D4S40 | 177 | 207 | 277

<sup>\*</sup>Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

## WDX series for 4D (Internal Coolant Supply)

Insert Dimensions (mm)

							_					
Grad	le Classification		ate	d C	arbi							
	High-speed/Light Cutting	K				N						
Process	General-purpose		P	M								
	Roughing		P		K							
	Cat. No.	ACP100	ACP300	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holders
WD	XT 042004-L						1	4.2	2.0	0.4	0.4	WDX130D4S20
	042004-G						2	4.2	2.0	0.4	0.4	to
	042004-H						3	4.2	2.0	0.4	0.4	WDX150D4S20
	042004-M						4	4.2	2.0	0.4	0.8	WBX100B 10E0
WD	XT 052504-L						1	5.0	2.5	0.4	0.4	WDX155D4S20
	052504-G						2	5.0	2.5	0.4	0.4	to
	052504-H						3	5.0	2.5	0.4	0.4	WDX180D4S25
	052504-M						4	5.0	2.5	0.4	1.0	
WD	XT 063006-L						1	6.0	3.0	0.6	0.6	WDX185D4S25
	063006-G						2	6.0	3.0	0.6	0.6	to
	063006-H						3	6.0	3.0	0.6	0.6	WDX225D4S25
	063006-M						4	6.0	3.0	0.6	1.4	WB/IEEOD IOEO
WD	XT 073506-L						1	7.5	3.5	0.6	0.6	WDX230D4S25
	073506-G						2	7.5	3.5	0.6	0.6	to
	073506-H						3	7.5	3.5	0.6	0.6	WDX285D4S32
	073506-M						4	7.5	3.5	0.6	1.6	WB/IEOOB 100E
WD	XT 094008-L						1	9.6	4.0	0.8	0.8	WDX290D4S32
	094008-G						2	9.6	4.0	0.8	0.8	to
	094008-H						3	9.6	4.0	0.8	0.8	WDX360D4S40
	094008-M						4	9.6	4.0	0.8	2.4	
WD	XT 125012-L						1	12.4	5.0	1.2	1.2	WDX370D4S40
	125012-G						2	12.4	5.0	1.2	1.2	to
	125012-H		•				3	12.4	5.0	1.2	1.2	WDX450D4S40
	125012-M						4	12.4	5.0	1.2	3.2	
WD	XT 156012-L	•	•		•		1	15.2	6.0	1.2	1.2	WDX460D4S40
	156012-G						2	15.2	6.0	1.2	1.2	to
	156012-H	•	•		•		3	15.2	6.0	1.2	1.2	WDX550D4S40
WD	XT 186012-L						1	18.0	6.0	1.2	1.2	WDX560D4S40
	186012-G	•	•				2	18.0	6.0	1.2	1.2	to
	186012-H						3	18.0	6.0	1.2	1.2	WDX630D4S40



Fig 3 Strong edged

H type RE2

Fig 4 Dedicated for stainless steel

M type

RE2

Indexable Insert type

type Reamers

Identification Code

# WDXT 06 30 06 -G Width across Flats Tibides 10 Come Radius 10 Breaker

### Recommended Cutting Conditions (for 4D)

				Workpiece	Recommended	Recommended	vc Cutting	f fee	ed rate (mm/re	v) (Min	v) (Min <b>Optimum</b> - Max.)			
			Work Material	Hardness HB	Chipbreaker	Insert Grade	Speed (m/min)	ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0	ø56.0 to ø63.0		
		Steel, Carbon Steel	SS400	125	G	ACP300	120- <b>180</b> -240	0.05- <b>0.07</b> -0.10	0.05- <b>0.07</b> -0.10	0.05- <b>0.07</b> -0.10	0.05- <b>0.08</b> -0.10	0.06- <b>0.09</b> -0.11		
			S15C	125	L	ACP300	130- <b>170</b> -220	0.04- <b>0.07</b> -0.09	0.04 <b>-0.07</b> -0.09	0.04- <b>0.07</b> -0.09	0.05- <b>0.08</b> -0.10	0.06- <b>0.09</b> -0.11		
			S45C	190	G	ACP300	100- <b>150</b> -200	0.08- <b>0.11</b> -0.17	0.08 <b>-0.11</b> -0.17	0.08- <b>0.12</b> -0.18	0.09- <b>0.14</b> -0.21	0.10- <b>0.15</b> -0.23		
			S45C Hardened	250	G	ACP100	100- <b>170</b> -240	0.05- <b>0.08</b> -0.10	0.05 <b>-0.08</b> -0.10	0.05- <b>0.08</b> -0.11	0.05- <b>0.08</b> -0.11	0.06- <b>0.09</b> -0.13		
			S75C	270	G	ACP100	120- <b>180</b> -240	0.06- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11	0.06- <b>0.09</b> -0.13	0.07- <b>0.11</b> -0.14	0.08- <b>0.11</b> -0.15		
	В		S75C Hardened	300	G	ACP100	85- <b>150</b> -210	0.05- <b>0.07</b> -0.09	0.05 <b>-0.07</b> -0.09	0.05- <b>0.08</b> -0.10	0.05- <b>0.08</b> -0.11	0.06- <b>0.09</b> -0.12		
	1	Low-alloy Steel	SCM,SNCM	180	L	ACP300	100- <b>140</b> -180	0.05 <b>-0.07</b> -0.10	0.05 <b>-0.07</b> -0.10	0.05- <b>0.07</b> -0.11	0.06- <b>0.08</b> -0.12	0.07 <b>-0.09</b> -0.14		
			SCM, SNCM Hardened	275	G	ACP100	100- <b>170</b> -240	0.05 <b>-0.08</b> -0.10	0.05 <b>-0.08</b> -0.10	0.05- <b>0.08</b> -0.10	0.05- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11		
			SCM, SNCM Hardened	300	G	ACP100	90- <b>150</b> -210	0.05- <b>0.08</b> -0.10	0.05 <b>-0.08</b> -0.10	0.05- <b>0.08</b> -0.10	0.05- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11		
4D			SCM, SNCM Hardened	350	G	ACP100	75- <b>120</b> -165	0.05 <b>-0.08</b> -0.10	0.05 <b>-0.08</b> -0.10	0.05- <b>0.08</b> -0.10	0.05- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11		
TD		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120- <b>180</b> -240	0.06- <b>0.10</b> -0.13	0.07 <b>-0.11</b> -0.14	0.07- <b>0.11</b> -0.15	0.08- <b>0.12</b> -0.16	0.09- <b>0.13</b> -0.17		
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100- <b>140</b> -180	0.05 <b>-0.08</b> -0.10	0.05 <b>-0.08</b> -0.10	0.05- <b>0.08</b> -0.10	0.05- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11		
		Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	ACM300	120- <b>150</b> -180	0.06- <b>0.08</b> -0.13	0.06 <b>-0.08</b> -0.13	0.06- <b>0.08</b> -0.14	0.07- <b>0.09</b> -0.14	0.08- <b>0.11</b> -0.14		
	M		SUS403/Others (Martensitic (hardened))	240	М	ACM300	90- <b>120</b> -150	0.06- <b>0.08</b> -0.13	0.06- <b>0.08</b> -0.13	0.06- <b>0.08</b> -0.14	0.07- <b>0.09</b> -0.14	0.08- <b>0.11</b> -0.14		
			SUS304, SUS316 (Austenitic)	180	М	ACM300	120- <b>150</b> -180	0.06- <b>0.08</b> -0.13	0.06- <b>0.08</b> -0.13	0.06- <b>0.08</b> -0.14	0.07- <b>0.09</b> -0.14	0.08- <b>0.11</b> -0.14		
	ĸ	Cast Iron			Н	ACK300	120- <b>160</b> -200	0.09- <b>0.17</b> -0.23	0.10- <b>0.19</b> -0.26	0.11- <b>0.21</b> -0.28	0.12- <b>0.23</b> -0.31	0.13- <b>0.25</b> -0.34		
	ĸ	Ductile Ca	st Iron		Η	ACK300	90- <b>120</b> -150	0.09 <b>-0.17</b> -0.23	0.10- <b>0.19</b> -0.26	0.11- <b>0.21</b> -0.28	0.12- <b>0.23</b> -0.31	0.13- <b>0.25</b> -0.34		
	S	Exotic Alloy (Heat	-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	200	G	ACP300	25- <b>50</b> -70	0.06 <b>-0.10</b> -0.13	0.06 <b>-0.10</b> -0.13	0.06- <b>0.10</b> -0.14	0.07- <b>0.11</b> -0.15	0.08 <b>-0.12</b> -0.17		
	N	Aluminum	Alloy		G	DL1500	200- <b>260</b> -320	0.05 <b>-0.10</b> -0.15	0.05 <b>-0.10</b> -0.15	0.06- <b>0.11</b> -0.16	0.06- <b>0.12</b> -0.18	0.07 <b>-0.13</b> -0.20		
	IN	Copper Al	loy		G	DL1500	180- <b>230</b> -280	0.05 <b>-0.10</b> -0.15	0.05 <b>-0.10</b> -0.15	0.06- <b>0.11</b> -0.16	0.06- <b>0.12</b> -0.18	0.07- <b>0.13</b> -0.20		

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation. In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.

## WDX series for 5D (Internal Coolant Supply)





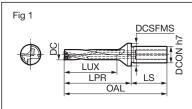


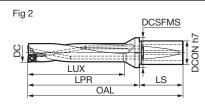


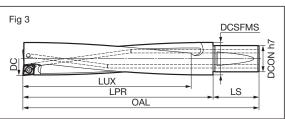




Drilling tolerance: 0 to +0.25mm







Dimensions (	(mn

Diameter ø46.0 to 55	.0mm
----------------------	------

Dimensions	(mm)

;	Stock	Cat. No.	Length	Overhang Length	Length	Shank	Flange Dia. DCSFMS	Dia.	Amount	Applicable Insert	Fig	Dia.	Stock	Cat. No.	Length	Overhang Length	Overall Length OAL	Shank	Flange Dia. DCSFMS	Dia.	Radial Offset Amount (Max)	Applicable Insert	Fig
0		WDX 130D5S20	68.0	83.0	127.0	44	28.0	20.0	0.35		1	46.0		WDX 460D5S40	235.0	265.0	335.0	70	49.5	40.0	1.50		2
5		135D5S20	70.5	85.5	129.5	44	28.0	20.0	0.30	WDVT	1	47.0		470D5S40	240.0	270.0	340.0	70	49.5	40.0	1.40		2
0		140D5S20	73.0	88.0	132.0	44	28.0	20.0	0.25	NADVI	1	48.0		480D5S40	245.0	275.0	345.0	70	49.5	40.0	1.30		2
5		145D5S20	75.5	90.5	134.5	44	28.0	20.0	0.20	042004	1	49.0		490D5S40	250.0	280.0	350.0	70	49.5	40.0	1.20		2
0		150D5S20	78.0	93.0	137.0	44	28.0	20.0	0.15		1	50.0		500D5S40	255.0	285.0	355.0	70	49.5	40.0	1.10	WDXT	2
5		WDX 155D5S20	80.5	95.5	139.5	44	30.0	20.0	0.40		1	51.0		510D5S40	260.0	290.0	360.0	70	49.5	40.0	1.00	156012	3
0		160D5S20	83.0	98.0	142.0	44	30.0	20.0	0.40		1	52.0		520D5S40	265.0	295.0	365.0	70	50.5	40.0	0.90		3
5		165D5S20	85.5	100.5	144.5	44	30.0	20.0	0.35	WDXT	1	53.0		530D5S40	270.0	300.0	370.0	70	51.5	40.0	0.80		3
0		170D5S20	88.0	103.0	147.0	44	30.0	20.0	0.30	052504	1	54.0		540D5S40	275.0	305.0	375.0	70	52.5	40.0	0.60		3
5		WDX 175D5S25	90.5	105.5	161.5	56	32.0	25.0	0.25		1	55.0		550D5S40	280.0	310.0	380.0	70	53.5	40.0	0.50		3
0		180D5S25	93.0	108.0	164.0	56	32.0	25.0	0.20		1	*Diam	ete	rs ø30, ø31, ø32 are in st	tock v	with s	hank o	diame	eters	of ø32	and	ø40.	

### **Parts**

	Flat Insert S	crew	Wrench	Wrench
Applicable Holders		(N·m)		
WDX130D5S20 to WDX150D5S20	BFTX01604N	0.3	TRX06	-
WDX155D5S20 to WDX180D5S25	BFTX0204N	0.5	TRX06	-
WDX185D5S25 to WDX225D5S25	BFTY02206	1.0	-	TRD07
WDX230D5S25 to WDX280D5S32	BFTX02506N	1.5	-	TRD08
WDX290D5S32 to WDX360D5S40	BFTX03584	3.5	-	TRD15
WDX370D5S40 to WDX450D5S40	BFTX0511N	5.0	-	TRD20
WDX460D5S40 to WDX550D5S40	BFTX0615N	5.0	-	TRD25

### Identification Code

Flute Length (L/D) (5D)

Diameter ø1	3.0 to	45.0mm
-------------	--------	--------

Diai	HE	rei	ØI	S.U	ιΟ	45.	UI	111111	
D:	×							Neck	Ove

-	\:_	쏬			Neck	Overhang		Ch!	Flange		Radial Offset	Applicable	
	oia. OC	Stock	Cat. No.		Length		Length	Shank	Dia.	Dia.	Amount	Insert	Fig
Ľ		S			LUX	LPR	OAL	LO	DCSFMS	DCON	(Max)	IIIoat	
1	3.0		WDX 130D5	S20	68.0	83.0	127.0	44	28.0	20.0	0.35		1
1	3.5		135D5	S20	70.5	85.5	129.5	44	28.0	20.0	0.30	WDXT	1
1	4.0		140D5		73.0	88.0	132.0	44	28.0			042004	1
	4.5		145D5		75.5		134.5	44		20.0		012001	1
-	5.0		150D5		78.0		137.0	44		20.0	0.15		1
	5.5		WDX 155D5		80.5	95.5	139.5	44	30.0		0.40		1
_	6.0		160D5		83.0		142.0	44	30.0				1
	6.5		165D5		85.5	100.5	144.5	44		20.0		WDXT	1
1	7.0		170D5		88.0	103.0	147.0	44		20.0		052504	1
1	7.5		WDX 175D5	S25	90.5	105.5	161.5	56	32.0	25.0	0.25		1
1	8.0		180D5	S25	93.0	108.0	164.0	56	32.0	25.0	0.20		1
	8.5		WDX 185D5	S25	95.5	110.5	166.5	56	33.0	25.0	0.50		1
1	9.0		190D5	S25	98.0	113.0	169.0	56	33.0	25.0	0.45		1
1	9.5		195D5	S25	100.5	115.5	171.5	56	33.0	25.0	0.40		1
2	0.0		200D5	<b>S25</b>	103.0	118.0	174.0	56	33.0	25.0	0.30	WDVT	1
2	0.5		205D5	S25	105.5	120.5	176.5	56	33.0	25.0	0.30	WDXT 063006	1
2	1.0		210D5	S25	108.0	123.0	179.0	56	33.0	25.0	0.20	000000	1
2	1.5		215D5	S25	110.5	125.5	181.5	56	33.0	25.0	0.15		1
2	2.0		220D5	<b>S25</b>	113.0	128.0	184.0	56	33.0	25.0	0.10		1
2	2.5		225D5	S25	115.5	130.5	186.5	56	33.0	25.0	0.05		1
2	3.0		WDX 230D5	S25	118.0	136.0	192.0	56	37.0	25.0	0.70		1
2	3.5		235D5	S25	120.5	138.5	194.5	56	37.0	25.0	0.70		1
2	4.0		240D5	S25	123.0	141.0	197.0	56	37.0	25.0	0.60		1
2	4.5		245D5	S25	125.5	143.5	199.5	56	37.0	25.0	0.50	WDXT	1
2	5.0		250D5	S25	128.0	146.0	202.0	56	37.0	25.0	0.50	073506	1
2	6.0		WDX 260D5	S32	133.0	153.0	213.0	60	41.0	32.0	0.40		2
2	7.0		270D5	S32	138.0	158.0	218.0	60	41.0	32.0	0.25		2
2	8.0		280D5	<b>S32</b>	143.0	163.0	223.0	60	41.0	32.0	0.15		2
2	9.0	•	WDX 290D5	S32	149.0	170.0	230.0	60	50.0	32.0	1.00		2
3	0.0		300D5	S32	154.0	178.0	238.0	60	54.0	32.0	0.90		2
3	1.0		310D5	S32	159.0	183.0	243.0	60	54.0	32.0	0.80		2
3	2.0		320D5	S32	164.0	188.0	248.0	60	54.0	32.0	0.70		2
3	0.0		WDX 300D5	S40	154.0	178.0	248.0	70	54.0	40.0	0.90		2
3	1.0		310D5		159.0	183.0	253.0	70	54.0	40.0	0.80	WDXT	2
3	2.0		320D5	S40	164.0	188.0	258.0	70	54.0	40.0	0.70	094008	2
3	3.0		330D5	S40	169.0	193.0	263.0	70	54.0	40.0	0.55		2
3	4.0	•	340D5	S40	174.0	198.0	268.0	70	54.0	40.0	0.45		2
3	5.0		350D5		179.0	203.0	273.0	70	54.0	40.0	0.35		2
3	6.0	•	360D5	S40		208.0		70	54.0				2
-	7.0		WDX 370D5			220.0		70	49.5	40.0			2
	8.0	•	380D5			225.0		70	49.5	40.0	1.00		2
	9.0	•	390D5			230.0		70	49.5	40.0	0.90		2
	0.0	•	400D5			235.0		70	49.5	40.0			2
_	1.0	•	410D5			240.0		70	49.5	40.0		WDXT	2
	2.0	•	420D5		215.0	245.0		70	49.5	40.0		125012	2
_	3.0		430D5			250.0		70	49.5	40.0			2
	4.0	•	440D5			255.0		70	49.5	40.0	0.50		2
_	5.0	_	450D5				330.0			40.0	0.40		2

<sup>\*</sup>Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

**450D5S40** | 230.0 | 260.0 | 330.0 | 70 | 49.5 | 40.0 | 0.40

Drilling

### WDX series for 5D (Internal Coolant Supply)

Insert Dimensions (mm)

		_					_					
Grad	le Classification	Co	oate	d C	arb	ide						
	High-speed/Light Cutting	PK				N						
Process	General-purpose		P	M								
	Roughing		P		K		1					
	Cat. No.	ACP100	ACP300	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holders
WD	XT 042004-L						1	4.2	2.0	0.4	0.4	MDV400DE000
	042004-G						2	4.2	2.0	0.4	0.4	WDX130D5S20
	042004-H						3	4.2	2.0	0.4	0.4	to WDX150D5S20
	042004-M						4	4.2	2.0	0.4	0.8	WDX130D3320
WD:	XT 052504-L						1	5.0	2.5	0.4	0.4	MDV455D5000
	052504-G						2	5.0	2.5	0.4	0.4	WDX155D5S20 to
	052504-H						3	5.0	2.5	0.4	0.4	WDX180D5S25
	052504-M						4	5.0	2.5	0.4	1.0	WDX100D3323
WD	XT 063006-L						1	6.0	3.0	0.6	0.6	WDX185D5S25
	063006-G						2	6.0	3.0	0.6	0.6	to
	063006-H						3	6.0	3.0	0.6	0.6	WDX225D5S25
	063006-M						4	6.0	3.0	0.6	1.4	WBALLOBOOLO
WD:	XT 073506-L						1	7.5	3.5	0.6	0.6	WDX230D5S25
	073506-G						2	7.5	3.5	0.6	0.6	to
	073506-H						3	7.5	3.5	0.6	0.6	WDX280D5S32
	073506-M						4	7.5	3.5	0.6	1.6	WBALOODOOL
WD:	XT 094008-L						1	9.6	4.0	0.8	0.8	WDX290D5S32
	094008-G						2	9.6	4.0	0.8	0.8	to
	094008-H						3	9.6	4.0	0.8	0.8	WDX360D5S40
	094008-M						4	9.6	4.0	0.8	2.4	
WD	XT 125012-L						1	12.4	5.0	1.2	1.2	WDX370D5S40
	125012-G						2	12.4	5.0	1.2	1.2	to
	125012-H				•		3	12.4	5.0	1.2	1.2	WDX450D5S40
	125012-M						4	12.4	5.0	1.2	3.2	
WD	XT 156012-L				•		1	15.2	6.0	1.2	1.2	WDX460D5S40
	156012-G						2	15.2	6.0	1.2	1.2	to
	156012-H						3	15.2	6.0	1.2	1.2	WDX550D5S40

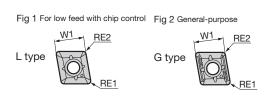
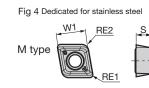


Fig 3 Strong edged

H type

RE2

RE1



Indexable Insert type

type Reamers

**Identification Code** 

# WDXT 06 30 06 -G

#### Recommended Cutting Conditions (for 5D)

1100	OIIII	Ticriaca	Cutting Conditions (	101 0	<u>,                                    </u>						
				Workpiece	Recommended	Recommended	vc Cutting	f feed r	ate (mm/rev)	(Min Optimum	- Max.)
			Work Material	Hardness HB	Chipbreaker	Insert Grade	Speed (m/min)	ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0
		Steel, Carbon Steel	SS400	125	G	ACP300	120- <b>180</b> -240	0.05- <b>0.06</b> -0.09	0.05- <b>0.06</b> -0.09	0.05 <b>-0.06</b> -0.09	0.05- <b>0.07</b> -0.09
			S15C	125	L	ACP300	130- <b>170</b> -220	0.04- <b>0.06</b> -0.08	0.04 <b>-0.06</b> -0.08	0.04 <b>-0.06</b> -0.08	0.05- <b>0.07</b> -0.09
			S45C	190	G	ACP300	100- <b>150</b> -200	0.07- <b>0.10</b> -0.15	0.07 <b>-0.10</b> -0.15	0.08- <b>0.11</b> -0.17	0.09- <b>0.12</b> -0.19
			S45C Hardened	250	G	ACP100	100- <b>170</b> -240	0.04- <b>0.07</b> -0.08	0.04 <b>-0.07</b> -0.08	0.05 <b>-0.07</b> -0.09	0.05- <b>0.08</b> -0.11
			S75C	270	G	ACP100	120- <b>180</b> -240	0.05- <b>0.08</b> -0.11	0.05- <b>0.08</b> -0.11	0.06- <b>0.08</b> -0.11	0.07- <b>0.09</b> -0.13
	_		S75C Hardened	300	G	ACP100	85- <b>150</b> -210	0.04- <b>0.07</b> -0.08	0.04- <b>0.07</b> -0.08	0.05 <b>-0.07</b> -0.09	0.05- <b>0.08</b> -0.10
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100- <b>140</b> -180	0.05- <b>0.06</b> -0.09	0.05 <b>-0.06</b> -0.09	0.05 <b>-0.06</b> -0.10	0.05- <b>0.07</b> -0.11
			SCM, SNCM Hardened	275	G	ACP100	100- <b>170</b> -240	0.04- <b>0.06</b> -0.09	0.04- <b>0.06</b> -0.09	0.04 <b>-0.06</b> -0.09	0.05- <b>0.07</b> -0.10
			SCM, SNCM Hardened	300	G	ACP100	90- <b>150</b> -210	0.04- <b>0.06</b> -0.09	0.04- <b>0.06</b> -0.09	0.04 <b>-0.06</b> -0.09	0.05- <b>0.07</b> -0.10
5D			SCM, SNCM Hardened	350	G	ACP100	75- <b>120</b> -165	0.04- <b>0.06</b> -0.09	0.04- <b>0.06</b> -0.09	0.04 <b>-0.06</b> -0.09	0.05- <b>0.07</b> -0.10
30		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120- <b>180</b> -240	0.05- <b>0.08</b> -0.12	0.06- <b>0.09</b> -0.12	0.06 <b>-0.09</b> -0.13	0.07- <b>0.10</b> -0.14
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100- <b>140</b> -180	0.04- <b>0.06</b> -0.09	0.04 <b>-0.06</b> -0.09	0.04 <b>-0.06</b> -0.09	0.04- <b>0.06</b> -0.09
		Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	ACM300	120- <b>150</b> -180	0.05- <b>0.08</b> -0.11	0.05 <b>-0.08</b> -0.12	0.05 <b>-0.08</b> -0.12	0.06- <b>0.09</b> -0.12
	M		SUS403/Others (Martensitic (hardened))	240	М	ACM300	90- <b>120</b> -150	0.05- <b>0.08</b> -0.11	0.05- <b>0.08</b> -0.12	0.05 <b>-0.08</b> -0.12	0.06- <b>0.09</b> -0.12
			SUS304, SUS316 (Austenitic)	180	М	ACM300	120- <b>150</b> -180	0.05- <b>0.08</b> -0.11	0.05 <b>-0.08</b> -0.12	0.05 <b>-0.08</b> -0.12	0.06- <b>0.09</b> -0.12
	ĸ	Cast Iron			Н	ACK300	120- <b>160</b> -200	0.08- <b>0.15</b> -0.21	0.09- <b>0.17</b> -0.23	0.09- <b>0.18</b> -0.25	0.11- <b>0.20</b> -0.28
	Α.	Ductile Ca	ıst Iron		Н	ACK300	90- <b>120</b> -150	0.08- <b>0.15</b> -0.21	0.09- <b>0.17</b> -0.23	0.09 <b>-0.18</b> -0.25	0.11- <b>0.20</b> -0.28
	S	Exotic Alloy (Heat	t-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	200	G	ACP300	25- <b>50</b> -70	0.05- <b>0.09</b> -0.11	0.05- <b>0.09</b> -0.11	0.06- <b>0.09</b> -0.12	0.06- <b>0.10</b> -0.14
	N	Aluminum	Alloy		G	DL1500	200- <b>260</b> -320	0.05- <b>0.10</b> -0.15	0.05- <b>0.10</b> -0.15	0.06- <b>0.11</b> -0.16	0.06- <b>0.12</b> -0.18
	",	Copper Al	loy		G	DL1500	180- <b>230</b> -280	0.05- <b>0.10</b> -0.15	0.05- <b>0.10</b> -0.15	0.06- <b>0.11</b> -0.16	0.06- <b>0.12</b> -0.18

For P and K class grades, if ACP300 and ACK300 are the first recommendations, ACP100 is the second recommendation. In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.



■ Features

- High efficiency and high-precision reaming achieved through excellent cutting edge quality and gradual right-hand helix flutes
- Dedicated coating for reamers enables machining with long, stable tool life



 Optimised back taper reduces frictional resistance and hole diameter is stable due to machined finish



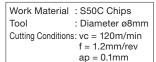
Smooth Chip Evacuation

· A balanced design combining sharpness and cutting edge strength with gradual right-hand helix flutes

**SSR** series

Conventional Tool A

# SSR series





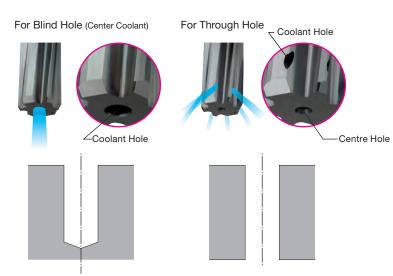
Work Material : S50C Chips
Tool : Diameter ø8mm
Cutting Conditions : vc = 20m/min
f = 0.09mm/rev
ap = 0.1mm

- High-precision Reaming
- · Excellent cutting edge quality free of microchipping realizes good hole surface quality

#### Long, Stable Tool Life: Dedicated Coating for Reamers

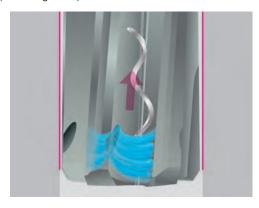
· High quality, high hardness and high strength coating layer for excellent wear resistance and thermal resistance

#### Coolant Mechanism by Application



## Unique coolant supply mechanism which does not hamper chip evacuation

(for through hole)



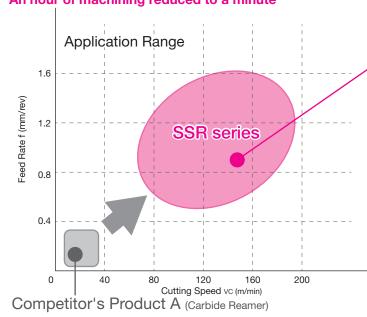
Coolant is supplied to the cutting edge from the flank side through the inner wall of the hole achieving smooth chip evacuation without obstruction

### **SumiReamer** series

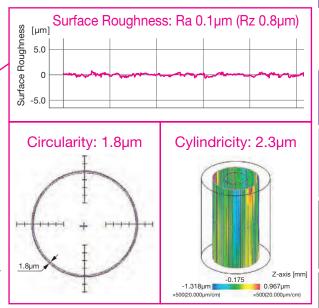
#### ■ Cutting Performance

### Machining Efficiency Comparison Realizes 60 times or higher machining efficiency

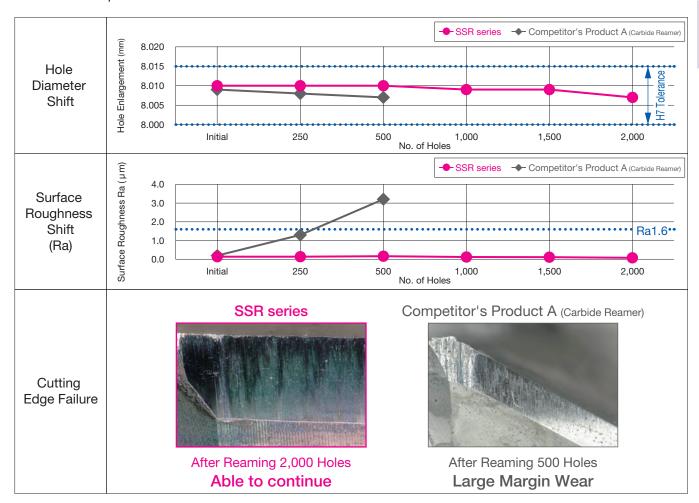
### An hour of machining reduced to a minute



### Reaming Precision



### Tool Life Comparison



: BT30 (Internal Coolant Supply) Work Material: S50C Tool: SSR08000H7S (ø8mm H7 tolerance hole) H = 16mm) **Cutting Conditions: SSR series** vc = 150 m/min f = 0.90 mm/rev vf = 5,374 mm/min ap = 0.1 mm (Depth of Cut/Radius)Competitor's Product A vc = 15m/min f = 0.15mm/rev vf = 89.6mm/min ap = 0.1mm (Depth of Cut/Radius)

# **SSR** series For H7 Tolerance Hole (Through Hole)



















#### Diameter ø3.0 to 12.0mm

Dimensions (mm)											
Dia.	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia.	Neck Length	Cutting Edge Length	Engagement Length PL	Tip <b>L</b>	Number of Flutes	Fig
3.0	+0.008 +0.004	•	SSR 03000H7T	68	4	40	12	0.5	0.7	4	1
3.5			SSR 03500H7T	68	4	40	12	0.5	0.9	4	1
4.0			04000H7T	76	5	40	12	0.5	1.0	4	1
4.5	+0.010		04500H7T	76	5	40	12	0.5	1.2	4	1
5.0	+0.005		05000H7T	76	6	40	12	0.5	1.3	4	1
5.5			05500H7T	76	6	40	12	0.5	1.5	4	1
6.0			06000H7T	76	7	40	16	1.0	_	4	2
6.5			SSR 06500H7T	76	7	40	16	1.0	_	4	2
7.0			07000H7T	101	8	65	16	1.0	_	6	2
7.5			07500H7T	101	8	65	16	1.0	_	6	2
8.0	+0.012		08000H7T	101	9	65	19	1.0	_	6	2
8.5	+0.006		08500H7T	101	9	65	19	1.0	_	6	2
9.0			09000H7T	101	10	65	19	1.0	_	6	2
9.5			09500H7T	101	10	65	19	1.0	_	6	2
10.0			10000H7T	130	11	85	22	1.0	_	6	2
10.5			SSR 10500H7T	130	11	85	22	1.0	_	6	2
11.0	+0.015		11000H7T	130	12	85	22	1.0	_	6	2
11.5	+0.008		11500H7T	130	12	85	22	1.0	_	6	2
12.0			12000H7T	130	13	85	22	1.0	_	6	2
Grade	: ACR40										

**Identification Code** 

**SSR** Series Code

03500

Hole Tolerance for Through Hole

Coolant Hole

# SSR series For H7 Tolerance Hole (Blind Hole)



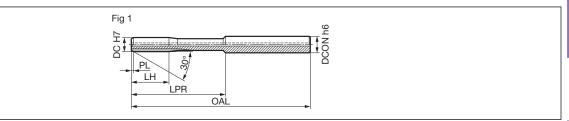












#### Diameter ø3.0 to 12.0mm

Dia.	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length	Cutting Edge Length	Engagement Length PL	Number of Flutes	Fig
3.0	+0.008 +0.004	•	SSR 03000H7S	68	4	40	12	0.5	4	1
3.5			SSR 03500H7S	68	4	40	12	0.5	4	1
4.0			04000H7S	76	5	40	12	0.5	4	1
4.5	+0.010		04500H7S	76	5	40	12	0.5	4	1
5.0	+0.005		05000H7S	76	6	40	12	0.5	4	1
5.5			05500H7S	76	6	40	12	0.5	4	1
6.0			06000H7S	76	7	40	16	1.0	4	1
6.5			SSR 06500H7S	76	7	40	16	1.0	4	1
7.0			07000H7S	101	8	65	16	1.0	6	1
7.5			07500H7S	101	8	65	16	1.0	6	1
8.0	+0.012		08000H7S	101	9	65	19	1.0	6	1
8.5	+0.006		08500H7S	101	9	65	19	1.0	6	1
9.0			09000H7S	101	10	65	19	1.0	6	1
9.5			09500H7S	101	10	65	19	1.0	6	1
10.0			10000H7S	130	11	85	22	1.0	6	1
10.5			SSR 10500H7S	130	11	85	22	1.0	6	1
11.0	+0.015		11000H7S	130	12	85	22	1.0	6	1
11.5	+0.008		11500H7S	130	12	85	22	1.0	6	1
12.0			12000H7S	130	13	85	22	1.0	6	1

Grade: ACR40

Identification Code

**SSR** Series Code

03500

Hole Tolerance for Blind Hole

7-95

## SSR series (Through Hole)







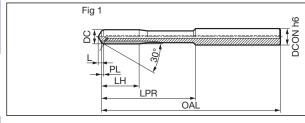


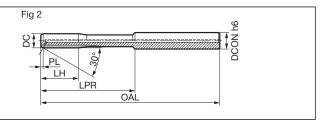












#### Diameter ø2.97 to 8.99mm

	Dim	ensic	ns (ı	mm)
utting	Engagement	Tin	Nimbar	

Diameter ø9.00 to 12.00mn	n
---------------------------	---

Dimensions (mm)	)
-----------------	---

Dia.	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length	Cutting Edge Length	Engagement Length <b>PL</b>	Tip L	Number of Flutes	Fig
9.00			SSR 09000JT	101	10	65	19	1.0	_	6	2
9.01			09010JT	101	10	65	19	1.0	_	6	2
9.02	+0.005		09020JT	101	10	65	19	1.0	_	6	2
9.03	0.003		09030JT	101	10	65	19	1.0	_	6	2
9.97	U		09970JT	130	11	85	22	1.0	_	6	2
9.98			09980JT	130	11	85	22	1.0	_	6	2
9.99			09990JT	130	11	85	22	1.0	_	6	2
10.00			SSR 10000JT	130	11	85	22	1.0	_	6	2
10.01			10010JT	130	11	85	22	1.0	_	6	2
10.02	+0.005		10020JT	130	11	85	22	1.0	_	6	2
10.03	+0.005		10030JT	130	11	85	22	1.0	_	6	2
10.97	U		10970JT	130	12	85	22	1.0	_	6	2
10.98			10980JT	130	12	85	22	1.0	_	6	2
10.99			10990JT	130	12	85	22	1.0	_	6	2
11.00			SSR 11000JT	130	12	85	22	1.0	_	6	2
11.01			11010JT	130	12	85	22	1.0	-	6	2
11.02			11020JT	130	12	85	22	1.0	_	6	2
11.03	+0.005		11030JT	130	12	85	22	1.0	-	6	2
11.97	0		11970JT	130	13	85	22	1.0	_	6	2
11.98			11980JT	130	13	85	22	1.0	-	6	2
11.99			11990JT	130	13	85	22	1.0	_	6	2
12.00			12000JT	130	13	85	22	1.0	_	6	2
Grade	: ACR40										

Overall Stock Dia. Dia. \_ength L of Flutes Fig Cat. No. Tolerance OAL DCON LPR PL LH **SSR 02970JT** 4 12 0.5 0.7 4 2.97 68 40 +0.005 2.98 02980JT 40 12 0.5 0.7 4 68 • 02990JT 2.99 4 40 12 0.5 0.7 4 68 3.00 SSR 03000JT 68 4 40 12 0.5 0.7 4 3.01 03010JT 12 0.5 0.8 4 68 40 03020JT 12 0.5 0.8 4 1 3.02 68 4 40 +0.005 • 3.03 03030JT 68 4 40 12 0.5 0.8 4 12 0.5 1.0 4 3.97 03970JT 76 5 40 12 0.5 1.0 4 3.98 03980JT 76 5 40 03990JT 12 0.5 1.0 4 1 3.99 76 5 40 4.00 **SSR 04000JT** 76 5 40 12 0.5 1.0 4 1 4.01 04010JT 76 5 40 12 0.5 1.0 4 4.02 04020JT 76 5 40 12 0.5 1.0 4 +0.005 12 0.5 1.0 4 04030JT 40 4.03 76 5 4.97 04970JT 12 0.5 1.3 4 76 40 12 0.5 1.3 4 1 4.98 04980JT 76 6 4.99 04990JT 12 0.5 1.3 4 76 6 40 5.00 SSR 05000JT 40 12 0.5 1.3 4 1 76 6 5.01 05010JT 76 6 40 12 0.5 1.3 40 12 0.5 1.3 4 5.02 05020JT 76 6 +0.005 5.03 05030JT 40 12 0.5 1.3 4 76 6 0 4 5.97 05970JT 76 7 40 16 1.0 2 5.98 05980JT 76 7 40 16 1.0 4 5.99 05990JT 76 40 16 1.0 4 2 6.00 SSR 06000JT 7 40 4 2 76 16 1.0 2 6.01 06010JT 76 40 16 1.0 4 06020JT 4 2 6.02 76 7 40 16 1.0 +0.005 6.03 06030JT 40 16 1.0 4 2 76 0 2 6.97 06970JT 101 8 65 16 1.0 6 6.98 06980JT 101 8 65 16 1.0 6 2 2 6.99 06990JT 16 1.0 6 101 8 65 7.00 **SSR 07000JT** 16 1.0 2 101 8 6 7.01 07010JT 101 R 65 16 1.0 6 2 7.02 07020JT 16 1.0 6 2 101 8 65 +0.005 2 7.03 07030JT 101 8 65 16 1.0 6 7.97 07970JT 101 65 19 1.0 6 2 7.98 07980JT 101 9 65 19 1.0 6 6 2 7.99 07990JT 101 9 65 19 1.0 8.00 SSR 08000JT 101 9 65 19 1.0 6 8.01 08010JT 6 101 9 65 19 1.0 8.02 08020JT 19 1.0 +0.005 6 2 8.03 08030JT 101 9 65 19 1.0 8.97 08970JT 101 19 1.0 6 10 65 8.98 08980JT 101 10 65 19 1.0 6 8.99 08990JT 101 10 65 19 1.0

Grade: ACR40

**Identification Code** 

SSR Series Code

03000

For Through Hole

## SSR series (Blind Hole)





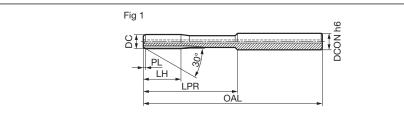












Diameter ø2.97 to 8.99mm

Dimensions (mm)
-----------------

a	ietei ø	۷.:	97 to 8.99mm				Dir	nensic	ns (ı	mm	
	D:	×		Overall	Shank	Neck	Cutting	Engagement			
Dia.	Dia.	Stock	Cat. No.	Length	Dia.	Length	Edge Length	Length	Number	Fig	
DC	Tolerance	ŝ		OAL	DCON	LPR	LH	PL	of Flutes		
2.97		•	SSR 02970JS	68	4	40	12	0.5	4	1	
2.98	+0.005		02980JS	68	4	40	12	0.5	4	1	
2.99	0		02900JS	68	4	40	12	0.5	4	1	
3.00		•	SSR 03000JS	68	4	40	12	0.5	4	1	
3.00		•	03010JS	68	4	40	12	0.5	4	1	
3.02			030103S 03020JS	68	4	40	12	0.5	4	1	
3.02	+0.005	5		68	4	40	12		4	1	
3.03	0		03030JS		5	40	12	0.5	4	1	
		_	03970JS	76	-	-		0.5			
3.98		•	03980JS	76	5	40	12	0.5	4	1	
3.99		•	03990JS	76	5	40	12	0.5	4	1	
4.00		•	SSR 04000JS	76	5	40	12	0.5	4	1	
4.01			04010JS	76	5	40	12	0.5	4	1	
4.02	+0.005	•	04020JS	76	5	40	12	0.5	4	1	
4.03	0		04030JS	76	5	40	12	0.5	4	1	
4.97	-	•	04970JS	76	6	40	12	0.5	4	1	
4.98			04980JS	76	6	40	12	0.5	4	1	
4.99		•	04990JS	76	6	40	12	0.5	4	1	
5.00			SSR 05000JS	76	6	40	12	0.5	4	1	
5.01			05010JS	76	6	40	12	0.5	4	1	
5.02	+0.005 0		05020JS	76	6	40	12	0.5	4	1	
5.03				05030JS	76	6	40	12	0.5	4	1
5.97			05970JS	76	7	40	16	1.0	4	1	
5.98			05980JS	76	7	40	16	1.0	4	1	
5.99			05990JS	76	7	40	16	1.0	4	1	
6.00			SSR 06000JS	76	7	40	16	1.0	4	1	
6.01			06010JS	76	7	40	16	1.0	4	1	
6.02	. 0. 005		06020JS	76	7	40	16	1.0	4	1	
6.03	+0.005		06030JS	76	7	40	16	1.0	4	1	
6.97	0		06970JS	101	8	65	16	1.0	6	1	
6.98			06980JS	101	8	65	16	1.0	6	1	
6.99		•	06990JS	101	8	65	16	1.0	6	1	
7.00		•	SSR 07000JS	101	8	65	16	1.0	6	1	
7.01		•	07010JS	101	8	65	16	1.0	6	1	
7.02	0.005		07020JS	101	8	65	16	1.0	6	1	
7.03	+0.005	•	07030JS	101	8	65	16	1.0	6	1	
7.97	0	•	07970JS	101	9	65	19	1.0	6	1	
7.98		•	07980JS	101	9	65	19	1.0	6	1	
7.99		•	07990JS	101	9	65	19	1.0	6	1	
8.00		•	SSR 08000JS	101	9	65	19	1.0	6	1	
8.01			08010JS	101	9	65	19	1.0	6	1	
8.02		•	08020JS	101	9	65	19	1.0	6	1	
8.03	+0.005	•	08030JS	101	9	65	19	1.0	6	1	
8.97	0	•	08970JS	101	10	65	19	1.0	6	1	
8.98			08980JS	101	10	65	19	1.0	6	1	
0.30		_		101	10	65	19	1.0	6	1	
8.99			08990JS								

Diameter ø9.00 to 12.00mm

Dimensions (mm	)
----------------	---

Dia.	Dia. Tolerance	Stock	Cat. No.	Overall Length	Shank Dia.	Neck Length	Cutting Edge Length	Engagement Length	Number of Flutes	Fig	
		0,		O, (L	DOON	_, ,,	LH	' -			
9.00			SSR 09000JS	101	10	65	19	1.0	6	1	S
9.01			09010JS	101	10	65	19	1.0	6	1	Solid
9.02	0.005		09020JS	101	10	65	19	1.0	6	1	Ω
9.03	+0.005		09030JS	101	10	65	19	1.0	6	1	
9.97	0	•	09970JS	130	11	85	22	1.0	6	1	
9.98			09980JS	130	11	85	22	1.0	6	1	품파
9.99			09990JS	130	11	85	22	1.0	6	1	dex
10.00			SSR 10000JS	130	11	85	22	1.0	6	1	Indexable Head type
10.01			10010JS	130	11	85	22	1.0	6	1	96
10.02	. 0 005		10020JS	130	11	85	22	1.0	6	1	
10.03	+0.005		10030JS	130	11	85	22	1.0	6	1	<u> </u>
10.97	"		10970JS	130	12	85	22	1.0	6	1	Indexable Insert type
10.98			10980JS	130	12	85	22	1.0	6	1	t t
10.99			10990JS	130	12	85	22	1.0	6	1	ole /pe
11.00			SSR 11000JS	130	12	85	22	1.0	6	1	
11.01			11010JS	130	12	85	22	1.0	6	1	
11.02			11020JS	130	12	85	22	1.0	6	1	Re
11.03	+0.005		11030JS	130	12	85	22	1.0	6	1	am
11.97	0		11970JS	130	13	85	22	1.0	6	1	Reamers
11.98			11980JS	130	13	85	22	1.0	6	1	0,
11.99			11990JS	130	13	85	22	1.0	6	1	
12.00			12000JS	130	13	85	22	1.0	6	1	

Grade: ACR40

**Identification Code** 

SSR Series Code 03000

Dia.

For Blind Hole

7-97

### ■ Recommended Cutting Conditions

	ork erial	Carbon Steel for Me Alloy Steel for Mec General Stru	hanical Structures	Cast Iron		Ductile Cast Iron		Hardene Up to 4	Depth of Cut	
	Speed		0m/min	60 to 14	0m/min	60 to 18	0m/min	20 to 60	0m/min	ар
Diameter DC (mm)	of Flutos		Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/rev)	(mm/radius)
ø3	4	8,400-19,100	0.5-0.8	6,300-14,800	0.5-0.8	6,300-19,100	0.5-0.8	2,100-6,300	0.12-0.3	
ø4	4	6,300-14,300	0.5-1.0	4,700-11,100	0.5-1.0	4,700-14,300	0.5-1.0	1,500-4,700	0.16-0.3	0.05-0.075
ø5	4	5,000-11,400	0.6-1.0	3,800-8,900	0.6-1.0	3,800-11,400	0.6-1.0	1,200-3,800	0.16-0.4	0.05-0.075
ø6	4	4,200-9,500	0.6-1.0	3,100-7,400	0.6-1.0	3,100-9,500	0.6-1.0	1,000-3,100	0.2-0.4	
ø7	6	3,600-8,100	0.6-1.8	2,700-6,300	0.6-1.8	2,700-8,100	0.6-1.8	900-2,700	0.25-0.6	
ø8	6	3,100-7,100	0.6-1.8	2,300-5,500	0.6-1.8	2,300-7,100	0.6-1.8	800-2,300	0.25-0.6	0.05-0.10
ø9	6	2,800-6,300	0.6-1.8	2,100-4,900	0.6-1.8	2,100-6,300	0.6-1.8	700-2,100	0.3-0.6	0.05-0.10
ø10	6	2,500-5,700	0.6-1.8	1,900-4,400	0.6-1.8	1,900-5,700	0.6-1.8	630-1,900	0.3-0.6	
ø11	6	2,300-5,200	0.6-2.0	1,700-4,000	0.6-2.0	1,700-5,200	0.6-2.0	570-1,700	0.3-0.8	0.10-0.15
ø12	6	2,100-4,700	0.6-2.0	1,500-3,700	0.6-2.0	1,500-4.700	0.6-2.0	530-1,500	0.3-0.8	0.10-0.15

- 1. The recommended conditions above are for cases where a water soluble coolant is used.
- 2. Supply sufficient water soluble coolant to the blade. 3. When performing intermittent cutting, reduce the feed rate for the interrupted part by about 30%.
- 4. Use with external coolant supply is also possible, but chip evacuation may
- 5. For machining with oil-based coolant and oil-based MQL, use the low speed

#### ■ Precautions for Use

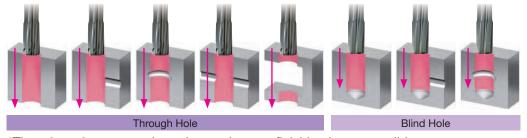
Runout

Machining with poor runout negatively affects hole accuracy and tool life.

Mount on a high-accuracy tool holder and collet, etc., in order to minimize cutting edge runout as far as possible. (10µm or less is required.)

For the tool holder, holders with hydraulic chuck, shrink-fit, or runout adjustment mechanism are recommended.

Applicable Hole Shapes



<sup>\*</sup>There is no bottom cutting edge, so bottom finishing is not possible.

Coolant

Internal coolant supply is recommended.

We recommend coolant pressure of 1.5MPa or higher, for chip evacuation purposes.

Use of external coolant supply may reduce chip evacuation performance and damage machined surface quality.

Blind Hole with Escape Hole

When reaming blind holes connected to through holes, use through hole type reamers. (Not usable for blind holes)

Also check that the process does not create problems for chip evacuation performance.



## SSR series

### ■ Troubleshooting

Iroubleshooting						
Failure	Countermeasures					
Enlarged hole diameter	Reduce runout as much as possible. (Use holder with hydraulic chuck, shrinkfit, or runout adjustment mechanism) Decrease cutting speed. Increase feed rate. Reduce stock removal. Check cutting edge for damage. Change reamer diameter. Increase coolant concentration.					
Tapered hole	Reduce runout as much as possible. (Use holder with hydraulic chuck, shrinkfit, or runout adjustment mechanism) Decrease cutting speed. Reduce feed rate. Review pre-reaming process. (Prepared hole deviation) Review workpiece clamping method. Compare hole diameters when the workpiece is clamped and unclamped. Correct chip evacuation. (Increase coolant supply pressure) Adjust coolant concentration.					
Chatter marks on machined surface	Reduce runout as much as possible.     (Use holder with hydraulic chuck, shrinkfit, or runout adjustment mechanism)     Decrease cutting speed.     Increase feed rate.     Review workpiece clamping method.     Change cutting edge approach angle to a made-to-order design.					
Poor finished surface roughness	Reduce runout as much as possible.     (Use holder with hydraulic chuck, shrinkfit, or runout adjustment mechanism)     Increase cutting speed.     Check cutting edge for damage.     Check whether cutting conditions are within the recommended range.     Increase coolant concentration.					

Failure	Countermeasures	
Return mark	Reduce runout as much as possible. (Use holder with hydraulic chuck, shrinkfit, or runout adjustment mechanism) Check cutting edge for damage. Reduce stock removal. Decrease return rate after reaming.	
Irregular cutting noise	Check cutting edge for damage.     Increase the stock removal.     Decrease the coolant concentration.     Change cutting edge approach angle to a made-to-order design.	
Smaller hole diameter	Increase cutting speed.     Reduce feed rate.     Check cutting edge for damage.     Increase the stock removal.     Decrease the coolant concentration.	

### Technical References

ces a

# Technical References 8-1 to 8-11



SI Unit Conversion List 8-	-2
Metals Symbols Chart (Excerpt)8-	-3
Steel and Non-Ferrous Metal Symbol Chart (Excerpt) 8-	-5
Hardness Scale Comparison Chart8-	-6
Dimensional Tolerance of Standard Fittings 8-	-7
Dimensional Tolerance and Fittings 8-	-9
Standard of Tapers 8-1	0
Surface Roughness 8-1	1

### ■ Basic SI units

Quantity as a reference of SI

Quantity	Material	Symbol
Length	Metre	m
Mass	Kilogram	kg
Time	Second	S
Current	Ampere	A
Temperature	Kelvin	K
Quantity of substance	Mol	mol
Luminous intensity	Candela	cd

Basic unit provided with unique name and symbol (extracted)

	<u>'</u>	,
Quantity	Material	Symbol
Frequency	Hertz	Hz
Force	Newton	N
Pressure and stress	Pascal	Pa
Energy, work, and heat quantity	Joule	J
Power and efficiency	Watt	W
Voltage	Bolt	V
Electrical resistance	Ohm	Ω

### ■ SI prefixes

Prefix showing integral powers of 10 combined with SI units

Coefficient	Material	Symbol	Coefficient	Material	Symbol	Coefficient	Material	Symbol
10 <sup>24</sup>	Yotta	Υ	10³	Kilo	k	10-9	Nano	n
1021	Zeta	Z	10 <sup>2</sup>	Hecto	h	10 <sup>-12</sup>	Pico	р
10 <sup>18</sup>	Exa	Е	10¹	Deca	da	10 <sup>-15</sup>	Femto	f
1015	Peta	Р	10-1	Deci	d	10 <sup>-18</sup>	Atto	а
1012	Tera	Т	10-2	Centi	С	10 <sup>-21</sup>	Zepto	Z
10°	Giga	G	10 <sup>-3</sup>	Milli	m	10 <sup>-24</sup>	Yocto	у
10 <sup>6</sup>	Mega	M	10-6	Micro	ш			

### ■ Principal SI unit conversion list ( portions are SI units)

Force

### Stress

N	kgf
1	1.01972 × 10 <sup>-1</sup>
9.80665	1

Pa(N/m²)	Pa(N/m²) MPa(N/mm²)		kgf/cm²	kgf/m²	
1	1 × 10 <sup>-6</sup>	1.01972 × 10 <sup>-7</sup>	1.01972 × 10⁻⁵	1.01972 × 10 <sup>-1</sup>	
1 × 10 <sup>6</sup>	1	1.01972 × 10 <sup>-1</sup>	1.01972 × 10	1.01972 × 10⁵	
9.80665 × 10 <sup>6</sup>	9.80665	1	1 × 10 <sup>2</sup>	1 × 10 <sup>6</sup>	
9.80665 × 10 <sup>4</sup>	9.80665 × 10 <sup>-2</sup>	1 × 10 <sup>-2</sup>	1	1 × 10 <sup>4</sup>	
9.80665	9.80665 × 10 <sup>-6</sup>	1 × 10 <sup>-6</sup>	1 × 10 <sup>-4</sup>	1	

### Pressure

 $1Pa = 1N/m^2$ ,  $1MPa = 1N/mm^2$ 

Pa(N/m²)	kPa	MPa	GPa	bar	kgf/cm²	mmHg or Torr
1	1 × 10 <sup>-3</sup>	1 × 10 <sup>-6</sup>	1 × 10 <sup>-9</sup>	1 × 10 <sup>-5</sup>	1.01972 × 10⁻⁵	7.50062 × 10 <sup>-3</sup>
1 × 10 <sup>3</sup>	1	1 × 10 <sup>-3</sup>	1 × 10 <sup>-6</sup>	1 × 10 <sup>-2</sup>	1.01972 × 10 <sup>-2</sup>	7.50062
1 × 10 <sup>6</sup>	1 × 10 <sup>3</sup>	1	1 × 10 <sup>-3</sup>	1 × 10	1.01972 × 10	7.50062 × 10 <sup>3</sup>
1 × 10°	1 × 10 <sup>6</sup>	1 × 10 <sup>3</sup>	1	1 × 10 <sup>4</sup>	1.01972 × 10⁴	7.50062 × 10 <sup>6</sup>
1 × 10⁵	1 × 10 <sup>2</sup>	1 × 10 <sup>-1</sup>	1 × 10 <sup>-4</sup>	1	1.01972	$7.50062 \times 10^{2}$
9.80665 × 10 <sup>4</sup>	9.80665 × 10	9.80665 × 10 <sup>-2</sup>	9.80665 × 10⁻⁵	9.80665 × 10 <sup>-1</sup>	1	7.35559 × 10 <sup>2</sup>
1.33322 × 10 <sup>2</sup>	1.33322 × 10 <sup>-1</sup>	1.33322 × 10 <sup>-4</sup>	1.33322 × 10 <sup>-7</sup>	1.33322 × 10⁻³	1.35951 × 10⁻³	1

### Work/Energy/Heat quantity

 $1Pa = 1N/m^2$ 

J	kW∙h	kgf⋅m	kcal 2.38889 × 10 <sup>-4</sup> 8.60000 × 10 <sup>2</sup>	
1	2.77778 × 10 <sup>-7</sup>	1.01972 × 10 <sup>-1</sup>		
3.60000 × 10 <sup>6</sup>	1	3.67098 × 10⁵		
9.80665	2.72407 × 10 <sup>-6</sup>	1	2.34270 × 10 <sup>-3</sup>	
4.18605 × 10 <sup>3</sup>	1.16279 × 10⁻³	4.26858 × 10 <sup>2</sup>	1	

#### 1J=1W/s,1J=1N/m Power (efficiency and motive energy) / Thermal flow

	,	037	
W	kgf·m/s	PS	kcal/h
1	1 1.01972 × 10 <sup>-1</sup> 1.35962		8.60000 × 10 <sup>-1</sup>
1 × 10 <sup>3</sup>	1.01972 × 10 <sup>2</sup>	1.35962	8.60000 ×10 <sup>2</sup>
9.80665	1	1.33333 × 10 <sup>-2</sup>	8.43371
7.355 × 10 <sup>2</sup>	$7.355 \times 10^2$ $7.5 \times 10$		6.32529 × 10 <sup>2</sup>
1.16279 1.18572 × 10 <sup>-1</sup>		1.58095 × 10 <sup>-3</sup>	1

1W = 1J/s, PS: Horsepower

Specific heat

Opodino riodi				
J/(kg⋅K)	1kcal (kg/°C)			
3/(kg·K)	cal/(g/°C)			
1	2.38889 ×10 <sup>-4</sup>			
4.18605 ×10 <sup>3</sup>	1			

Thermal conductivity

W/(m/K)	kcal/(h·m·°C)
1	8.60000 ×10 <sup>-1</sup>
1.16279	1

Rotation speed

1 1	min <sup>-1</sup>	rpm
I I	1	1

### Metals Symbols Chart (Excerpt)

Carbon Steel for Structural Use

JIS	AISI/ASTM	DIN/EN	GB	BS	AFNOR	ГОСТ
S10C	1008 1010	C10E C10R 1.1122	08 10	040A10 045A10 045M10	XC10	08 10
S12C	1012	_	_	040A12	XC12	_
S15C	1015	C15E C15R 1.1132	15	055M15	_	15
S20C	1020	C22 CK22	20	070M20	_	20
S25C	1025	C25 C25E C25R C16D 1.0415	25	_	_	25
S30C	1030	C30 C30E C30R	30	080A30 080M30	_	30
S35C	1035	C35 C35E C35R 1.1172	35	080A35 080M36	_	35
S40C	1040 C40E	C40 C40E C40R 1.1186	40	060A40 080A40 080M40	_	40
S43C	1042 1043	_	_	080A42	XC42H1 XC42H2	40Γ
S45C	1045 1045H	C45 C45E C45R 1.1191 1.1192	45	060A45 080M46	XC45	45
S50C	1049	C50 C50E C50R 1.1206	50	080M50	XC50	50
S53C	1050 1053	_	50Mn	080A52	XC54	_
S55C	1055	C55 C55E C55R 1.1203	55	070M55	XC55H1 XC55H2	55
S58C	1060	C60 C60E C60R	60	060A57 080A57	XC60	_
S60C	1059	C60E 1.1221	60 60Mn	_	_	60
S09CK	1010	C10E C10R	_	045A10 045M10	XC10	
S15CK	1015	C15E C15R	_	_	XC12	_
S20CK	_	CK22	_	_	XC18	_

Cr Steel

SCr415	5115	17Cr3 1.7016	15Cr	_	_	15X
SCr420	5120	_	20Cr	_	20MC5	20X
SCr430	5130 5132	34Cr4 34CrS4 1.7033	30Cr	530A30 530A32	32C4	30X
SCr435	5135	37Cr4 1.7034	35Cr	530A36	38C4	35X
SCr440	5140	41Cr4 41CrS4 1.7035	40Cr	530M40 530A40	42C4	40X
SCr445	5147	_	45Cr	_	_	45X

Nickel Chromium Steel

SNC415	4720 4715	20NiCrMo2-2 10NiCr5-4 17CrNi6-6 1.5918 1.5805 1.6523	20CrNi 12CrNi2 15CrNi6K	_	_	20XH 12XH
SNC236	3140 4337	41crCrMo7-3-2 34CrNiMo6	40CrNi 34CrNi2	_	_	40XH
SNC246	8645	_	45CrNi	_	_	45XH
SNC815	E3310	15niCr13 1.5752	12CrNi3	_	_	12XH3A
SNC620	_	20NiCrMo13-4 1.6660	20CrNi3	_	_	20XH3A
SNC631	_	30NiCrMo16-6 1.6747	30CrNi3	_	_	30XH3A
SNC836	_	35NiCrMo16 1.6773	37CrNi3	_	_	_

Ni-Cr-Mo Steel

SNCM220	8615 8617 8620 8622 4718	20NiCrMo2-2 20NiCrMoS2-2 17NiCrMo6 1.6566 1.6523	20CrNiMo 18CrMnNiMo 20NiCrMoK	805A20 805M20 805A22 805M22	20NCD 2	20XH2M 18XHГМ
SNCM240	8637 8640	39NiCrMo3 1.6510	40CrNiMo	_	_	40XH2MA
SNCM415	_	_	_	_	_	
SNCM420	4320	17NiCrMo6-4	20CrNi2Mo			20XH2M (20XHM)
SNCM439	4340	41NiCrMo7-3-2 1.6563	40CrNi2Mo	_	_	40XH2MA
SNCM447	4340	41NiCrMo7-3-2 1.6563	45CrNiMoV	_	_	_

Cr-Mo Steel P

OI-IVIO	Steel 1					
SCM415	_	18CrMo4 1.7243	15CrMo	_	_	15XM
SCM420	_	20MoCr4 1 7321	20CrMo	708M20	_	20XM

● Cr-Mo Steel (continued) P

JIS	AISI/ASTM	DIN/EN	GB	BS	AFNOR	ГОСТ
SCM421	4121	18CrMo4 22CrMoS35 1.7243	20CrMnMo	_	_	25ХГМ
SCM425	_	25CrMo 1.7218	25CrMo	_	_	_
SCM430	4130	_	30CrMo	708A30	30CD4	30XM
SCM435	4135 4137	34CrMo4 1.7220	35CrMo	708A37 709A37	34CD4 38CD4 35CD4	35XM
SCM440	4142 4140	42CrMo4 42CrMoS4 1.7225	42CrMo	708M40 708A40 708A42 709A42 709M40	42CD4	38XM
SCM445	4145 4150	50CrMo4 1.7228	50CrMo	708A47	_	_

Manganese Chromium Steel/Manganese Steel P

SMn420	1522 1524	18Mn5 1.0436	20Mn2	150M19 120M19	20M5	20Г
SMn433	1330	28Mn6 1.1170	30Mn2	_	_	30Г2
SMn438	1335 1541	_	35Mn2	150M36	40M6	35Г2
SMn443	1340 1345 1541	_	40Mn2 45Mn2	135M40 150M36	35M5	35Г2 45Г2
SMnC420	5120	20MnCr5 1.7147	20CrMn	_	_	18XF
SMnC443	5140	41Cr4 1.7035	40CrMn	_	_	_

Carbon Tool Steel

SK140 SK1	W2-13A W1-13	_	T13	_	Y <sub>2</sub> 140	_
SK120 SK2	W1-11 1/2	C120U 1.1555	T12	BW1C	Y <sub>2</sub> 120	y12
SK105 SK3	W1-10 W1-10 1/2	C105U 1.1545 C105W1	T11	BW1B	Y₁105	_
SK95 SK4	W1-9 W1-9 1/2	C105U 1.1545	T10	BW1A	Y₁90 Y₁80	y10
SK85 SK5	W1-8C W1-8	C80W1	T8Mn	BW1A	_	у8Г
SK80	W1-8A	C80U 1.1525	Т8	_	_	y8
SK70	1070	C70U 1.1520	T7	_	_	у7

High Speed Steel

riigii c	speed Si	.001				
SKH2	T1	HS18-0-1 1.3355	W18Cr4V	BT1	Z80WCV 18-04-01	P18
SKH3	T4	S18-1-2-5	_	BT4	Z80WKCV 18-05-04-01	_
SKH4	T5	_	_	BT5	Z80WKCV 18-10-04-02	_
SKH10	T15	S12-1-4-5	W12Cr4V5Co5	BT15	Z160WKCV 12-05-05-04	P12K5V5
SKH51	M2	S6-5-2 1.3339	W6Mo5Cr4V2	BM2	Z160WDCV 06-05-04-02	P6M5ø2
SKH52	M3-1	HS6-6-2 1.3350	W6Mo6Cr4V2	ı	_	_
SKH53	M3-2	S6-5-3 HS6-5-3 1.3344	W6Mo5Cr4V3	_	Z160WDCV 06-05-04-03	P6M5ø3
SKH54	M4	_	W6Mo5Cr4V4	BM4	Z130WDCV 06-05-04-04	_
SKH55	M35 M41	S6-5-2-5 HS6-5-2-5 1.3243	W6Mo5Cr4V2Co5	BM35	Z190WDCV 06-05-05-04-02	P6M5K5
SKH56	M36	_	_	_	_	_
SKH57	M48	HS10-4-3-10 1.3207	W10Mo4Cr4V3Co10	_	Z130WKCDV 10-10-04-04-03	_
SKH58	M7	HS2-8-2 1.3348	W2Mo9Cr4V2	_	Z100DCWV 09-04-02-02	_
SKH59	M42	HS2-10-1-8 1.3247	W2Mo9Cr4VCo8	BM42	Z130DKCWV 09-08-04-02-01	P2M9K8ø

Alloy Tool Steel

, , iii O y	iooi otco	1				
SKS11	F2	_	_	_	_	_
SKS2	_	105WCr6	_	_	105WC13	_
SKS51	L6	_	_	_	_	_
SKS41	_	_	4CrW2Si	_	_	4XB2C
SKS43	W2-9 1/2	_	_	BW2	Y₁105V	_
SKS44	W2-8 1/2	_	_	_	_	_
SKS3	O1	95MnWCr5 1.2825	9CrWMn	_	_	9ХВГ
SKS31	07	105WCr6	CrWMn	_	105WC31	ХВГ
SKD1	D3	X210Cr12 1.2080	Cr12	BD3	X200Cr12	X12
SKD4	_	_	30W4Cr2V	BH21	Z32WCV5	_
SKD5	H21	X30WCrV9-3 1.2581	3Cr2W8V	BH21	Z30WCV9	3X2B8ø
SKD6	H11	X37CrMoV5-1 1.2343	4Cr5MoSiV	BH11	X38CrMoV5	4X5MøC
SKD61	H13	X40CrMoV5-1 1.2344	4Cr5MoSiV1	BH13	Z40CDV5	4X5Mø1C
SKD7	H10	X32CrMoV33 1.2365	3Cr3Mo3V	BH10	32DCV28	_
SKD8	H19	38CrCoWV18-17-17 1.2661	3Cr3Mo3VCo3	BH19	_	_
SKD10	D2	X153CrMoV12 1.2379	Cr12Mo1V1	_	_	X12M1ø1

Z8CD17.01

Alloy Tool Steel (continued)

- ,		( ,	_			
JIS	AISI/ASTM	DIN/EN	GB	BS	AFNOR	ГОСТ
SKD11	D2 D4	_	Cr12MoV	BD2	X160CrMoV12	X12Mø
SKD12	A2	X100CrMoV5 1 2363	Cr5Mo1V	BA2	Z100CDV5	_

<ul><li>Ferrition</li></ul>	Ferritic Stainless Steels M									
SUS405	405 S40500	X10CrAl13 1.4002	0Cr13Al 06Cr13Al	405S17	26CA13	_				
SUS429	429 S42900	_	1Cr15 10Cr15 022Cr15NbTi	_	_	_				
SUS430	430 S43000	X6Cr17 1.4016	1Cr17 10Cr15 S11710	430S17	Z8C17	12X17				
SUS430F	430F	X12CrMoS17	Y1Cr17	_	210CF17	_				

### Martensitic Stainless Steels

SUS410	410 S41010	X10Cr13 1.4006	12Cr13 1Cr13	410S21	Z13C13	12X13
SUS403	403 S40300	_	12Cr12 1Cr12	_	_	_
SUS444	444 S44400	X2CrMoTi18-2 1.4521	019Cr19Mo2NbTi 00Cr18Mo2	_	_	_
SUS416	416 S41600	X12CrS13 1.4005	Y12Cr13 Y1Cr13	416S21	Z12CF13	_
SUS420J1	420 S42000	X20Cr13 1.4021	20Cr13 2Cr13	420S29	Z20C13	20X13
SUS420J2	420 S42000	X30Cr13 1.4028	30Cr13 3Cr13	420\$45	Z30C13	30X13
SUS420F	420G S42020	X29Cr13 1.4029	Y30Cr13 Y3Cr13	_	Z30CF13	_
SUS431	431 S43100	X17CrNi16-2	17Cr16Ni2	431S29	_	_
SUS440C	440C S44004	_	108Cr17 11Cr17	_	Z100CD17	-

### Stainless Steel (Precipitation Hardened Structure)

SUS630	630 S17400	X5CrNiCuNb16-4 1.4542	0Cr17Ni4Cu4Nb 05Cr17Ni4Cu4Nb	_	Z6CNU17.04	_
SUS631	631 S17700	X7CrNiAl17-7 1.4568	0Cr17Ni7Al 07Cr17Ni7Al	_	Z8CNA17.07	09Х17Н7 Ю

### Austenitic Stainless Steels

Austei	iilic Stai	niess Ste	eis 🞹			
SUS201	201 S20100	X12crMnNiN17-7-5 1.4372	1Cr17Mn6Ni5N 12Cr17Mn6Ni5N	_	Z12CMN17-07Az	_
SUS202	202 S20200	X12CrMnNiN18-9-5 1.4373	1Cr18Mn9Ni5N 12Cr18Mn9Ni5N	284S16	_	_
SUS301	301 S30100	X12CrNi17 7 1.4319 1.4310	1Cr17Ni7 12Cr17Ni7	_	Z12CN17.07	17X18H9
SUS302	302 S30200	X9CrNi18-9 1.4325	1Cr18Ni9 12Cr18Ni9	302\$25	Z10CN18.09	12X18H9
SUS302B	302B S30215	_	1Cr18Ni9Si3 12Cr18Ni9Si3		_	_
SUS303	303 S30300	X8CrNiS18-9 X10CrNiS189 1.4305	Y1Cr18Ni9 Y12Cr18Ni9	303S21	Z10CNF18.09	_
SUS303Se	303Se S30323	_	Y12Cr18Ni9Se Y1Cr18Ni9Se	303S41	_	12X18H10E
SUS304	304 S30400	X5CrNi18-10 1.4301	0Cr18Ni9 06Cr19Ni10	304S31	Z6CN18.09	08X18H10
SUS304L	304L S30403	X2CrNi19-11 1.4306	00Cr19Ni10 022Cr19Ni10	304S11	Z2CN18.10	03X18H11
SUS304N1	304N S30451	X5CrNiN19-9 1.4315	06Cr19Ni10N 06Cr19Ni10NbN	-	Z6CN19-09Az	_
SUS305	305 S30500	X2CrNiN18-10 1.4311	1Cr18Ni12 10Cr18Ni12	305S19	Z8CN18.12	_
SUS309S	309S S30908	X6CrNi23-13 1.4950	0Cr23Ni13 06Cr23Ni13	_	_	0X23H12
SUS310S	310S S31008	X6CrNi25-20 1.4951	0Cr25Ni20 06Cr25Ni20	_	_	08X23H20
SUS316	316 S31600	X5CrNiMo17-12-2 1.4401	0Cr17Ni12Mo2 06Cr17Ni12Mo2	316S31	Z7CND17.12	_
SUS316L	316L S31603	X2CrNiMo17-12-2 1.4404	00Cr17Ni12Mo2 022Cr17Ni12Mo2	316S11	Z2CND17.12	03X17H14M2
SUS316N	316N S31651		0Cr17Ni12Mo2N 06Cr17Ni12Mo2N		_	_
SUS317	317 S31700	_	0Cr19Ni13Mo3 06Cr19Ni13Mo3	317S16	_	_
SUS317L	317L S31703	X2CrNiMo18-15-4 1.4438	00Cr19Ni13Mo3 022Cr19Ni13Mo3	317S12	Z2CND19.15	03X19H13M3
SUS321	321 S32100	X6CrNiTi18-10 1.4541	0Cr18Ni10Ti 06Cr18Ni1Ti	321S31	Z6CNT18.10	08X18H10T
SUS347	347 S34700	X6CrNiNb18-10 1.4550	0Cr18Ni11Nb 06Cr18Ni11Nb	347S31	Z6CNNb18.10	08Х18Н12Б

### ● Ferritic Heat Resistant Steels S

SUH409	409 S40900	X6CrTi12	06Cr11Ti 0Cr11T1	409S19	Z6CT12	_
SUH446	446 S44600	_	2Cr25N 16Cr25N	_	Z12C24	_

### Martensitic Heat Resistant Steel

- 1110110	- Martonorio Moat Modiciant Otool									
SUH1	_	_	45Cr9Si3	401S45	Z45CS9	_				
SUH3	_	_	4Cr10Si2Mo 40Cr10Si2Mo	_	Z40CSD10	40X10C2M				
SUH4	_	_	8Cr20Si2Ni 80Cr20Si2Ni	443S65	Z80CSN20.02	_				

### Martensitic Heat Resistant Steel (continued)

JIS	AISI/ASTM	DIN/EN	GB	BS	AFNOR	ГОСТ
SUH11	_	_	4Cr9Si2 42Cr9Si2	_	_	40X 9C2
SUH600	_	_	2Cr12MoVNbN 18Cr12MoVNbN	_	_	_
SUH616	616 S42200	_	2Cr12NiMoWV 22Cr12NiWMoV		_	_

### Austenitic Heat Resistant Steel

Austernitic fleat flesistant Steel													
SUH31	_	_	4Cr14Ni14W2Mo	331S42	_	45X14H14B2M							
SUH35	_	X53CrMnNiN21-9-4 1.4871	5Cr21Mn9Ni4N 53Cr21Mn9Ni4N	349S52	Z52CMN21.09	55X20Г9AH4							
SUH36	_	X53CrMnNi21 9	_	349S54	Z55CMN21-09Az	55X20Г9АН4							
SUH37	_	X15CrNiSi20-12 1.4828	22Cr21Ni12N 2Cr21Ni12N	381S34	_	_							
SUH38	_	_	_	_	_	_							
SUH309	309 S30900	X12CrNi23-13 1.4833	16Cr23Ni13 2Cr23Ni13	309S24	Z15CN24.13	20X23H12							
SUH310	310 S31000	_	2Cr25Ni21 20Cr25Ni20	310S24	Z15CN25.20	_							
SUH330	-	X12CrNiMnMoN25-18-6-5 1.4565	1Cr16Ni35 12Cr16Ni35	_	Z12NCS35.16	_							

### Gray Cast Iron

		_				
FC100	No 20B	GG-10	HT100	100	_	Cy10
FC150	No 25B	GG-15	HT150	150	FGL150	Cy15
FC200	No 30B	GG-20	HT200	200	FGL200	Cy20
FC250	No 35B	GG-25	HT250	250	FGL250	Cy25
FC300	No 45B	GG-30	HT300	300	FGL300	Cy30
FC350	No 50B	GG-35	HT350	350	FGL350	Cy35

### Nodular Cast Iron K

FCD400	60-40-18	GGG-40	QT400-18	400/17	FGS370-17	By40
FCD450	_	GGG-40.3	QT450-10	420/12	FGS400-12	By45
FCD500	80-55-06	GGG-50	QT500-7	500/7	FGS500-7	By50
FCD600	_	GGG-60	QT600-3	600/7	FGS600-2	By60
FCD700	100-70-03	GGG-70	QT700-2	700/2	FGS700-2	By70
FCD800	120-90-02	GGG-80	_	800/2	FGS800-2	By80

### Aluminum and Al Alloys - Sheets, plates and strips N

Alullill	iuiii aiiu	AI AIIUys	- Officets	s, plates	and strip	3 🚻
A1060P	1060	EN AW-1060	L2	_	_	_
A1050P	1050	A199.50	1A50	_	_	_
A1100P	1100	EN AW-1100	L5-1	_	_	_
A1200P	1200	EN AW-1200	L5	EN AW-1200	EN AW-1200	_
A2014P	2014	EN AW-2014	LD10	EN AW-2014	EN AW-2014	_
A2017P	2017	EN AW-2017	2A11(LY11)	EN AW-2017	EN AW-2017	_
A2219P	2219	EN AW-2219	2A16(LY16)	_	_	_
A2024P	2024	EN AW-2024	2A12(LY12)	EN AW-2024	EN AW-2024	_
A2124P	2124	EN AW-2124	2A12(LY12)	_	_	_
A3003P	3003	EN AW-3003	LF21	EN AW-3003	EN AW-3003	_
A3004P	3004	EN AW-3004	3004	_	_	_
A3005P	3005	EN AW-3005	3005	_	_	_
A3015P	3105	EN AW-3105	3105	_	_	_
A5005P	5005	EN AW-5005	5005	_	_	_
A5050P	5050	EN AW-5050	_	_	_	_
A5052P	5052	EN AW-5052	5A02	EN AW-5052	EN AW-5052	_
A5154P	5154	_	LF3	_	_	_
A5254P	5254	_	LF3	_	_	_
A5454P	5454	EN AW-5454	5454	EN AW-5454	EN AW-5454	_
A5456P	5456	EN AW-5456	_			
A6101P	6101	EN AW-6101	6101			
A6061P	6061	EN AW-6061	6061(LD30)	EN AW-6061	EN AW-6061	_
A7075P	7075	EN AW-7075	7A04	EN AW-7075	EN AW-7075	_
A7178P	7178	EN AW-7178	7A03(LC3)	_	_	_

### Aluminum Alloy Die Castings

ADC1	A413.0	EN AC-44300	YL102	_	_	_
ADC3	A360.0	EN AC-43400	YL104	EN AC-43400	EN AC-43400	_
ADC5	518.0	_	Al-Mg7	_	_	_
ADC10	_	EN AC-46000	YL112	_	_	_
ADC12	_	_	YL113 LM20		_	_
ADC14	B390.0	_	_	_	_	_
AC4C	357	G-AlSi7Mg	ZAISi7Mg1A	LM25	A-S7G-03	_
AC4CH	356	G-AlSi7Mg	ZALSi7Mg	LM25	A-S7G	_
_	308	G-AlSi6Cu4	ZAISi5Cu6Mg	LM21	_	_

### Hardened Steel

C4BS	440A	X100CrMo13	7Cr17	_	_	_
AC4A	610	X110CrMoV15	_	_	_	_
AC4A	0-2	X65CrMo14	_	_	_	

### Steel and Non-Ferrous Metal Symbols Chart (Excerpt)

### Classifications and Symbols of Steels

Classifica		Material	Symbol	Symbol Description			
99	5	Rolled steels for welded structures	SM	"M" for "Marine": Usually used in welded marine structures			
Structural Stee	3	Re-rolled steels	SRB	"R" for "Re-rolled" and "B" for "Bar"			
ctur		Rolled steel for general structures	SS	S for "Steel" and S for "Structure"			
Stru	;	Light gauge sections for general structures	SSC	"C" for "Cold" after SS			
Steel Sh	eets	Hot rolled mild steel sheets / plates in coil form	SPH	P for "Plate" and "H" for "Hot"			
		Carbon steel tubes for piping	SGP	"GP" for "Gas Pipe"			
		Carbon steel tubes for boiler and heat exchangers	STB	"T" for "Tube" and "B" for "Boiler"			
	Ī	Seamless steel tubes for high-pressure gas cylinders	STH	"H" for "High Pressure" after ST			
		Carbon steel tubes for general structures	STK	"K" for "Kozo" ("structure" in Japanese) after ST			
hes	2	Carbon steel tubes for mechanical structures	STKM	"M" for "Machine" after STK			
Steel Tubes		Alloy steel tubes for structures	STKS	"S" for "Special" after STK			
stee		Alloy steel tubes for piping	STPA	"A" for "Alloy" after STP			
0,	<b>'</b>	Carbon steel tubes for pressure piping	STPG	"P" for "Piping" and "G" for "General" after ST			
		Carbon steel tubes for high-temperature piping	STPT	"T" for "Temperature" after ST			
		Carbon steel tubes for high-pressure piping	STS	"S" for "Special" after ST			
	Ī	Stainless steel tubes for piping	SUS-TP	"T" for "Tube" and "P" for "Piping" after SUS			
res	3	Carbon steels for mechanical structures	SxxC	"C" for "Carbon"			
ructu		Aluminum-chromium-molybdenum steels	SACM	"A" for "Al", "C" for "Cr" and "M" for "Mo"			
al St	5	Chromium molybdenum steels	SCM	"C" for "Cr" and "M" for "Mo"			
Janic	2	Chromium steels	SCr	"Cr" for "Chromium" after "S" for "Steel"			
Mec		Nickel Chromium steels	SNC	"N" for "Nickel" and "C"for "Chromium"			
Steel for Mechanical Structures	5	Nickel Chromium Molybdenum steels	SNCM	"M" for "Molybdenum" in SNC			
Stee	3	Manganese steels and manganese chromium steels for mechanical structures	SMn SMnC	"Mn" for "Manganese" "C" for "Chromium" in SMn			
	٠,	Carbon tool steels	SK	"K" for "Kogu" ("tool" in Japanese)			
-	Steels	Hollow drill steels	SKC	"C" for "Chisel" after SK			
	ool St	Alloy tool steel	SKS SKD SKT	S for "Special" after SK D for "Die" after SK T for "Tanzo" - ("forging" in Japanese) after SK			
		High-speed tool steels	SKH	"H" for "High speed" after SK			
Steels	ee	Free cutting sulphuric steels	SUM	"M" for "Machinability" after SU			
اهاة	Ś	High-carbon chromium bearing steels	SUJ	"J" for "Jikuuke" ("bearing" in Japanese) after SU			
Special	Stainless	Spring steels	SUP	"P" for "Spring" after SU			
S.	Stall	Stainless steel	SUS	"S" for "Stainless Steel" after SU			
-	Stee	Heat-resistant steel	SUH	"U" for "Special Usage" and "H" for "Heat"			
	=	Heat-resistant steel bars	SUH-B	"B" for "Bar" after SUH			
Forged Steels	eat-rec	Heat-resistant steel sheets	SUHP	"P" for "Plate" after SUH			
8	)	Carbon steel forgings for general use	SF	"F" for "Forging"			
Ste		Carbon steel booms and billets for forgings	SFB	"B" for "Billet" after SF			
pe	5	Chromium molybdenum steel forgings	SFCM	"C" for "Chromium" and "M" for "Molybdenum" after SF			
-oro	"	Nickel chromium molybdenum steel forgings	SFNCM	"N" for "Nickel" in SFCM			
		Gray cast iron	FC	"F" for "Ferrous" and "C" for "Casting"			
u	;	Spherical graphite / Ductile cast irons	FCD	"D" for "Ductile" after FC			
Cast Iron		Blackheart malleable cast irons	FCMB	"M" for "Malleable" and "B" for "Black" after FC			
Cas	Ś	Whiteheart malleable cast irons	FCMW	"W" for "White" after FCM			
		Pearlite malleable cast iron	FCMP	"P" for "Pearlite" after FCM			
U)	)	Carbon cast steels	SC	"C" for "Casting"			
0	)	Cast stainless steels	SCS	"S" for "Stainless Steel" after SC			
te	t Ste			"H" for "Heat" after SC			
Cast Steels		Heat-resistant cast steels	SCH	"H" for "Heat" after SC			

### Non-Ferrous Metals

	OII-Ferrous Metais	
Classification	Material	Symbol
oys		CxxxxP
Aluminum and Aluminum Alloys Copper and Copper Alloys	Copper and copper alloys - sheets, plates and strips	CxxxxPP
bbe	plates and simps	CxxxxR
ပို		CxxxxBD
anc	Copper and copper alloys - welded	CxxxxBDS
pper	pipes and tubes	CxxxxBE
S		CxxxxBF
oys	Aluminum and Al alloys - Sheets,	AxxxxP
) Alk	plates and strips	AxxxxPC
inun		AxxxxBE
l m	Aluminum and Al alloys Rods, bars and wires	AxxxxBD
pul /	Trous, sars and miss	AxxxxW
E E	Aluminum and Al alloys - Extruded shapes	AxxxxS
min	Aluminum and Al alloy costings	AxxxxFD
Alu	Aluminum and Al alloy castings	AxxxxFH
Wrought Aloys Magnesium	Magnesium alloy sheets and plates	MP
erial	Nickel-copper alloy sheets and plates	NCuP
Mat	Nickel-copper alloy rods and bars	NCuB
Wrought Naterials Tilanium	Titanium rods and bars	ТВ
	Brass castings	YBsCx
	High-strength brass castings	HBsCx
	Bronze castings	BCx
	Phosphorus Bronze castings	PBCx
	Aluminum bronze castings	AIBCx
gs	Aluminum alloy castings	AC
Castings	Magnesium alloy castings	MC
ပိ	Zinc alloy die castings	ZDCx
	Aluminum alloy die castings	ADC
	Magnesium alloy die castings	MDC
	White metals	WJ
	Aluminum alloy castings for bearings	AJ
	Copper-lead alloy castings for bearings	KJ

### **Hardness Scale Comparison Chart**

Approximate corresponding values for steel hardness on the Brinell scale

		Rockwell	Hardness								
Brinell 3,000kgf	A Scale 60kgf brale	B Scale 100kgf 1/10in ball	C Scale 150kgf brale	D Scale 100kgf brale	Vickers 50kgf	Shore Hardness	Tensile Strength (GPa)				
НВ	HRA	HRB	HRC	HRD	HV	HS					
_	85.6	_	68.0	76.9	940	97	_				
	85.3		67.5	76.5	920	96	-				
	85.0	<u> </u>	67.0	76.1	900						
767	84.7		66.4	75.7	880	93					
757	84.4	_	65.9	75.3	860	92					
745	84.1	_	65.3	74.8	840	91	_				
733	83.8	_	64.7	74.3	820	90	_				
722	83.4	_	64.0	73.8	800	88	_				
712	_	_	_	_	_	_	_				
710	83.0	_	63.3	73.3	780	87	_				
698	82.6	_	62.5	72.6	760	86	_				
684	82.2	_	61.8	72.1	740	_	_				
682	82.2	_	61.7	72.0	737	84	_				
670	81.8		61.0	71.5	720	83	_				
656	81.3	—	60.1	70.8	700	_	—				
653	81.2	—	60.0	70.7	697	81	—				
647	81.1	—	59.7	70.5	690	—	_				
638	80.8		59.2	70.1	680	80					
630	80.6		58.8	69.8	670	—	—				
627	80.5		58.7	69.7	667	79	—				
601	79.8		57.3	68.7	640	77	—				
578	79.1		56.0	67.7	615	75	—				
555	78.4		54.7	66.7	591	73	2.06				
534	77.8		53.5	65.8	569	71	1.98				
514	76.9		52.1	64.7	547	70	1.89				
495	76.3		51.0	63.8	528	68	1.82				
477	75.6		49.6	62.7	508	66	1.73				
461	74.9		48.5	61.7	491	65	1.67				
444	74.2		47.1	60.8	472	63	1.59				
429	73.4		45.7	59.7	455	61	1.51				
415	72.8		44.5	58.8	440	59	1.46				
401	72.0		43.1	57.8	425	58	1.39				
388	71.4		41.8	56.8	410	56	1.33				
375	70.6		40.4	55.7	396	54	1.26				
363	70.0		39.1	54.6	383	52	1.22				
352	69.3	(110.0)	37.9	53.8	372	51	1.18				
					ļ		1.13				
							1.10				
341 331	68.7	(109.0)	36.6 35.5	52.8 51.9	360 350	50 48	1.1				

	Rockwell Hardness													
Brinell 3,000kgf	A Scale 60kgf brale	B Scale 100kgf 1/10in ball	C Scale 150kgf brale	D Scale 100kgf brale		Shore Hardness	Tensile Strength (GPa)							
НВ	HRA	HRB	HRC	HRD	HV	HS								
321	67.5	(108.0)	34.3	50.1	339	47	1.06							
311	66.9	(107.5)	33.1	50.0	328	46	1.03							
302	66.3	(107.0)	32.1	49.3	319	45	1.01							
293	65.7	(106.0)	30.9	48.3	309	43	0.97							
285	65.3	(105.5)	29.9	47.6	301		0.95							
277	64.6	(104.5)	28.8	46.7	292	41	0.92							
269	64.1	(104.0)	27.6	45.9	284	40	0.89							
262	63.6	(103.0)	26.6	45.0	276	39	0.87							
255	63.0	(102.0)	25.4	44.2	269	38	0.84							
248	62.5	(101.0)	24.2	43.2	261	37	0.82							
241	61.8	100.0	22.8	42.0	253	36	0.80							
235	61.4	99.0	21.7	41.4	247	35	0.78							
229	60.8	98.2	20.5	40.5	241	34	0.76							
223	_	97.3	(18.8)	_	234		_							
217	_	96.4	(17.5)		228	33	0.73							
212	—	95.5	(16.0)	—	222	—	0.71							
207	—	94.6	(15.2)	—	218	32	0.69							
201	—	93.8	(13.8)	—	212	31	0.68							
197	_	92.8	(12.7)	_	207	30	0.66							
192	—	91.9	(11.5)	—	202	29	0.64							
187	—	90.7	(10.0)	—	196	—	0.62							
183	_	90.0	(9.0)		192	28	0.62							
179	_	89.0	(8.0)	—	188	27	0.60							
174	_	87.8	(6.4)		182	—	0.59							
170	—	86.8	(5.4)		178	26	0.57							
167	—	86.0	(4.4)		175	—	0.56							
163	—	85.0	(3.3)		171	25	0.55							
156	—	82.9	(0.9)		163	_	0.52							
149	—	80.8			156	23	0.50							
143	—	78.7			150	22	0.49							
137		76.4			143	21	0.46							
131	·····	74.0		137		0.45								
126	·····	72.0			132	20	0.43							
121	<u> </u>	69.8	L		127	19	0.41							
116		67.6	l		122	18	0.40							
111		65.7			117	15	0.40							
	hin the ( ) ar	e not commo	nly used		117	13	0.00							

<sup>1)</sup> Figures within the () are not commonly used

<sup>2)</sup> Rockwell A, C and D scales utilise a diamond brale.

<sup>3)</sup> This chart was taken from the JIS Iron and Steel Handbook (1980).

### Dimensional Tolerance of Standard Fittings [Excerpt from JIS B 0401 (1999)]

• [	Dime	ensid	onal	Tole	eran	ice l	Jsec	d for	Sha	afts	of S	Stand	dard	Fitt	tings	3																
Classif of Refe Dimer	erence nsions												Shaf	t To	lerar	nce (	Class	3												U	nit: μ	ım
_		b9	с9	d8	d9	e7	е8	е9	f6	f7	f8	g5	g6	h5	h6	h7	h8	h9	js5	js6	js7	k5	k6	m5	m6	n6	p6	r6	s6	t6	u6	х6
_	3	-140 -165	-60 -85	-20 -34	-20 -45		l 1			-6 -16	-8 -20	-2 -6	-2 -8	0 -4	0 -6	0 -10	0 -14	0 -25	±2	±3	±5	+4	+6 0	+6 +2	+8 +2	+10 +4	+12 +6		+20 +14		+24 +18	
3	6	-140 -170	-70 -100	-30 -48	-30 -60								-4 -12	0 -5	0 -8	0 -12	0 -18	0 -30	±2.5	±4	±6	+6 +1	+9 +1	+9 +4	+12 +4	+16 +8		+23 +15	+27 +19	_	+31 +23	+36 +28
6	10	-150 -186	-80 -116	-40 -62	-40 -76			-25 -61				-5 -11	-5 -14	0 -6	0 -9	0 -15	0 -22	0 -36	±3	±4.5	±7.5	+7 +1	+10 +1	+12 +6		+19 +10	+24 +15	+28 +19			+37 +28	
10	14	-150			-50					-16			-6	0	0	0	0	0	±4	+5.5	+0						+29				+44	
14	18	-193	-138	-77	-93	-50	-59	-75	-27	-34	-43	-14	-17	-8	-11	-18	-27	-43		10.0	13	+1	+1	+7	+7	+12	+18	+23	+28		+33	+56 +45
18	24			-65									-7	0	0	0	0	0	+4 5	+6.5	±10.5	+11	+15	+17	+21	+28	+35	+41	+48	_	+54 +41	
24			-162	-98	-117	-61	-73	-92	-33	-41	-53	-16	-20	-9	-13	-21	-33	-52	11.0	20.0	10.0	+2	+2	+8	+8	+15	+22	+28	+35	+54	+61 +48	
30	40		-102	-80	-80	-50	-50	-50	-25	-25	-25	-9	-9	0	0	0	0	0	+5.5	+8	±12.5	+13	+18	+20	+25	+33	+42	+50	+59		+76 +60	
40	50		-130 -192	-119	-142	-75	-89	-112	-41	-50	-64	-20	-25	-11	-16	-25	-39	-62			12.0	+2	+2	+9	+9	+17	+26	+34	+43	+70	+86 +70	
50	65	-264	-140 -214	-100	-100	-60	-60	-60	-30	-30	-30	-10	-10	0	0	0	0	0	±6.5	+9.5	+15					+39			+72 +53			
65	80		-150 -224	-146	-174	-90	-106	-134	-49	-60	-76	-23	-29	-13	-19	-30	-46	-74	_0.0		10	+2	+2	+11	+11	+20	+32		+78 +59			
80	100	-307	-170 -257	-120	-120	-72	-72	-72	-36	-36			-12	0	0	0	0	0 -87	±7.5	±11	±17.5	+18	+25	+28	+35	+45	+59		+93 +71			
100	120	-240 -327	-180 -267	-1/4	-207	-107	-126	-159	-58	-71	-90	-27	-34	-15	-22	-35	-54	-87				+3	+3	+13	+13	+23	+37	+76	+101 +79			
120	140		-200 -300																										+117 +92			
	160	-380	-310	-208	-145 -245	-85 -125	-85 -148	-85 -185	-43 -68	-43 -83	-43 106-	-14 -32	-14 -39	0 -18	0 -25	-40	-63	0 -100	±9	±12.5	±20	+21 +3				+52 +27	+68 +43		+125 +100			-
		-310 -410	000																										+133 +108			
180	200	-340 -455	-240 -355																										+122			
200	225	-380 -495	-260 -375	-170 -242	-170 -285	-100 -146	-100 -172	-100 -215	-50 -79	-50 -96	-50 -122	-15 -35	-15 -44	0 -20	0 -29	-46	-72	0 -115	±10	±14.5	±23	+24 +4	+33 +4	+37 +17	+46 +17	+60 +31	+79 +50	+109 +80	+159 +130	_	_	
225	250		-280 -395																										+169 +140			
250	280	-610	-300 -430	-190	-190	-110	-110	-110	-56	-56	-56	-17	-17	0	0	0	0	0 -130	±11.5	±16	±26	+27	+36	+43	+52	+66	+88	+126 +94	_	_		
280	315	-540 -670	-330	-2/1	-320	-162	-191	-240	-88	-108	-13/	-40	-49	-23	-32	-52	-81	-130				+4	+4	+20	+20	+34	+56	+130 +98				
315	355	-740	-360 -500	-210	-210	-125	-125	-125	-62	-62 -119	-62	-18	-18	0	0	0	0	0	±12.5	±18	±28.5	+29	+40	+46	+57	+73		+144 +108	_	_		
355	400	-680 -820	-400	-299	-ა50	-182	-214	-265	-98	-119	-151	-43	-54	-25	-36	-5/	-89	- 140				+4	+4	+21	+21	+3/		+150 +114				
	450	-915	-440 -595 -480	-230 -327	-230 -385	-135 -198	-135 -232	-135 -290	-68 -108	-68 -131	-68 -165	-20 -47	-20 -60	0 -27	0 -40	0 -63	0 -97	0 -155	±13.5	±20	±31.5	+32 +5	+45 +5	+50 +23	+63 +23	+80 +40	+108 +68	+166 +126 +172	_	_	_	
450	500		-635																									+172				

Dimensional Tolerance Used for Holes of Standard Fittings

Classi	fication	1131	Ulla	1 10	iei a	arice	US	eu	IOI	ПОП		01 51	and	dard	I FIL	ung	S																		
Dime	erence nsions <b>m)</b>													Hol	e To	lera	nce	Clas	ss														Ur	nit: µ	m
or greater		$\square$				<b>D9</b>									<b>G7</b> +12		<b>H7</b> +10			H10 J			<b>K6</b>	<b>K7</b>				<b>N7</b>					<b>T7</b>	<b>U7</b>	
		+140	+60	+60	+20	+20	+20	+14	+14	+14	+6	+6	+6	+2	+2	0	0	0	0		3	±5	-6	-10	-2 -8	-2 -12	-4 -10			-6 -16	-20		_	-28	-30
3		+140	+/0	+/0	+30	+60 +30	+30	+20	+20	+20	+10	+10	+10	+4	+4	0	0	0	0	0	4	±6	+2 -6	+3 -9	-1 -9	-12	-5 -13	-4 -16		-8 -20			_	-19 -31	
6	10	+208 +150	+116 +80	+138 +80	+62 +40	+76 +40	+98 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0	+22 0	+36 0	+58 0	4.5	±7.5	+2 -7	+5 -10	-3 -12	0 -15	-7 -16		-12 -21				_	-22 -37	
10	14	+220	+138	+165	+77	+93	+120	+50	+59	+75	+27	+34	+43	+17	+24	+11	+18	+27	+43	+70 0		. 0	+2	+6	-4	0	-9	-5	-15	-11	-16	-21		-26	-33 -51
14			+95	+95	+50	+50	+50	+32	+32	+32	+16	+16	+16	+6	+6	0	0	0	0	0 =	5.5	±9	-9	-12	-15	-18	-20	-23	-26	-29	-34	-39		-44	-38 -56
18	24	+244	+162	+194	+98	+117	+149	+61	+73	+92	+33	+41	+53	+20	+28	+13	+21	+33	+52	+84		10.5	+2	+6	-4	0	-11	-7	-18	-14	-20	-27	_	-33 -54	
24			+110	+110	+65	+65	+65	+40	+40	+40	+20	+20	+20	+7	+7	0	0	0	0	0 =	0.5	±10.5	-11	-15	-17	-21	-24	-28	-31	-35	-41	-48		-40 -61	
30	40	+270 +170	+182 +120	+220 +120	+119	+142	+180	+75	+89	+112	+41	+50	+64	+25	+34	+16	+25	+39	+62	+100		.10.5	+3	+7	-4	0	-12	-8	-21	-17	-25	-34		-51 -76	
40	50	+280 +180	+192 +130	+230 +130	+80	+80	+80	+50	+50	+50	+25	+25	+25	+9	+9	0	0	0	0	+100 0	:8 I	±12.5	-13	-18	-20	-25	-28	-33	-37	-42	-50	-59		-61 -86	
50		±190	+214 +140	<b>+14</b> 0	+146	+174	+220	+90	+106	+134	+49	+60	+76	+29	+40	+19	+30	+46	+74	+120			+4	+9	-5	0	-14	-9	-26	-21	-30 -60			-76 -106	
65	80	+320 +200	+224 +150	+270 +150	+100	+174 +100	+100	+60	+60	+60	+30	+30	+30	+10	+10	0	0	0		0 *	9.5	±15	-15	-21	-24	-30	-33	-39	-45	-51	-32 -62	-48 -78		-91 -121	
80	100	+360 +220	+257 +170	+310 +170	+174	+207	+260	+107	+126	+159	+58	+71	+90	+34	+47	+22	+35	+54	+87	+140 0		47.5	+4	+10	-6	0	-16	-10	-30	-24	-73	-58 -93			
100	120	+380 +240	+267 +180	+320 +180	+120	+120	+120	+72	+72	+72	+36	+36	+36	+12	+12	0	0	0	0	0	:11	±17.5	-18	-25	-28	-35	-38	-45	-52	-59	-4	-66 -101 -			
120	140	+420 +260	+300 +200																													-77 -117			
140	160	+440 +280	+310 +210	+370 +210	+208 +145	+245 +145	+305 +145	+125 +85	+148 +85	+185 +85	+68 +43	+83 +43	+106 +43	+39 +14	+54 +14	+25 0	+40 0	+63 0	+100 0	+160 0	:12.5	±20		+12 -28				-12 -52			-50 -90	-85 -125			-
160	180	+470 +310	+330 +230																													-93 -133			
180	200	+525 +340	+355 +240	+425 +240																											-60 -106	-105 -151			
200	225	+565 +380	+375 +260	+445 +260	+242 +170	+285 +170	+355 +170	+146 +100	+172 +100	+215 +100	+79 +50	+96 +50	+122 +50	+44 +15	+61 +15	+29 0	+46 0	+72 0	+115 0	+185 0	:14.5	±23		+13 -33				-14 -60			-63 -109		-	_	-
225	250		+395 +280																												-67 -113	-123 -169			
250	280	+690 +480	+430 +300	+510 +300	+271	+320	+400	+162	+191	+240	+88	+108	+137	+49	+69	+32	+52	+81	+130	+210			+5	+16	-9	0	-25	-14	-47	-36	-74 -126				
280	315	+750 +540	+460 +330	+540	+190	+190	+190	+110	+110	+110	+56	+56	+56	+17	+17	0	0	0	0	+210 0	-16	±26	-27	-36	-41	-52				-88	-78 -130		-	-	-
315	355		+500 +360	+360	+299	+350	+440	+182	+214	+265	+98	+119	+151	+54	+75	+36	+57	+89	+140	+230	10	.00 -	+7	+17	-10	0	-26	-16	-51	-41	-87 -144				
355	400		+540 +400	+030	+210	+210	+210	+125	+125	+125	+62	+62	+62	+18	+18	0	0	0	0	0	:18	±28.5	-29	-40							-93 -150	-		_	-
400	450	+1010 +760	+595 +440	+690 +440	+327	+385	+480	+198	+232	+290	+108	+131	+165	+60	+83	+40	+63	+97	+155	+250 0			+8	+18	-10	0	-27	-17	-55	-45	-103 -166				
450	500		+635 +480	+130	+230	+230	+230	+135	+135	+135	+68	+68	+68	+20	+20	0	0	0	0	0	20	±31.5	-32	-45						-108	-109 -172	-	-	-	-

### Dimensional Tolerance and Fittings [Excerpt from JIS B 0401 (1999)]

### Standard Fittings for Holes

Reference							Sha	aft T	oler	anc	e Cla	เรร					
Hole			Gap	o fit	ting	1		Intern	nediate	fitting		Т	ight i	fittir	ng		
H6						g5	h5	js5	k5	m5							
Но					f6	g6	h6	js6	k6	m6	n6*	p6*					
117					f6	g6	h6	js6	k6	m6	n6	p6*	r6*	s6	t6	u6	x6
H7				e7	f7		h7	js7									
					f7		h7										
Н8				e8	f8		h8										
			d9	е9													
H9			d8	e8			h8										
1 119		с9	d9	е9			h9										
H10	b9	с9	d9														

Note: \*Exceptions may arise with these fittings depending on the dimension category.

### Standard Fittings for Shafts

Reference	Hole Tolerance Class																
Shaft			Gap	o fit	ting	ı		Interm	nediate	fitting		Tię	ght	fittir	ng		
h5							H6	JS6	K6	M6	N6*	P6					
h6					F6	G6	H6	JS6	K6	M6	N6	P6*					
110					F7	G7	H7	JS7	K7	M7	N7	P7*	R7	S7	T7	U7	X7
h7				E7	F7		Н7										
"/					F8		Н8										
L-0			D8	E8	F8		Н8										
h8			D9	E9			Н9										
			D8	E8			Н8										
h9		C9	D9	E9			Н9										
	B10	C10	D10														

Note: \*Exceptions may arise with these fittings depending on the dimension category.

#### Correlation of Tolerance Zones in Standard Hole Fittings

Reference Hole		H6		H7	H8	H9 H10
Fitting	Gap fitting	Intermediate fitting Tight fitting	Gap fitting	St.   St.	Cope rotary fitting date of the cope of th	Gap fitting Gap fitting
thaft Tolerance Class	f6 g5g6 h5 h6	js5js6k5 k6m5m6n6p6	e7 f6 f7 g6h6h7	isá is 7 k6 mán a pá rás a 6 tá uá x6	d9,e8,e9,f7,f8,h7,h8	c9d8d9g8le9h8h9 b9 c9 c
50 — — —					H8	H10
Dimensional tolerance (µm)	H6		H7			
-100 - - - - - -150 -						
-190 - - - - -200 -						
-						

Note: The above table is for reference dimensions greater than 18mm up to 30mm.

### Correlation of Tolerance Zones in Standard Shaft Fittings

Reference Shaft		h5	5						h6	3								h	7			h	8					h۶	9		
Fitting Hole Tolerance Class	Gap fitting	Intermediate fitting	Tight fitting		Gap fitting				Intermediate fitting					Tight fitting	)			Con fitting	طعل الدللان			Con fitting	dap IIIIIIg					Gap fitting			
Hole Tolerance Class	М6	JS6 K5 M	6 N6 P6	F6 F7 (	36 G7 H	H6 H7	JS6 JS	7 K6 K	7 M6	M7 N	6 N7	P6	P7 R	<b>S</b> 7	T7 L	J7 X7	E7	F7 F8	H7	Н8	D8 D9	E8 E	9 F8	H8 H	19 B10	C9 C	10 D8	D9 01	0 E8	E9 H	8 H9
Dimensional tolerance (µm)			h5			h6																									
- - - -50-														16		Ī		h	7			h	18					h9			
-50-																															

Note: The above table is for reference dimensions greater than 18mm up to 30mm.

### Morse Taper

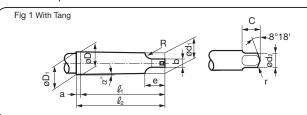


Fig 2 Drawing Thread type

															(U	nit: mm)
Morse			Taper			Ta	per					Ta	ng			]
Taper Number	Тар	oer <sup>(1)</sup>	Angle (α)	D	а	D <sub>1</sub> <sup>(2)</sup> (approx.)	d <sub>1</sub> <sup>(2)</sup> (approx.)	$\ell_1$ (Max)	ℓ <sub>2</sub> (Max)	d <sub>2</sub> (Max)	b	C (Max)	e (Max)	R	r	Fig
0	1 19.212	0.05205	1°29'27"	9.045	3	9.2	6.1	56.5	59.5	6.0	3.9	6.5	10.5	4	1	
1	1 20.047	0.04988	1°25'43"	12.065	3.5	12.2	9.0	62.0	65.5	8.7	5.2	8.5	13.5	5	1.2	
2	1 20.020	0.04995	1°25'50"	17.780	5	18.0	14.0	75.0	80.0	13.5	6.3	10	16	6	1.6	
3	1 19.922	0.05020	1°26'16"	23.825	5	24.1	19.1	94.0	99.0	18.5	7.9	13	20	7	2	] , [
4	1 19.245	0.05194	1°29'15"	31.267	6.5	31.6	25.2	117.5	124.0	24.5	11.9	16	24	8	2.5	'
5	1 19.002	0.05263	1°30'26"	44.399	6.5	44.7	36.5	149.5	156.0	35.7	15.9	19	29	10	3	]
6	1 19.180	0.05214	1°29'36"	63.348	8	63.8	52.4	210.0	218.0	51.0	19.0	27	40	13	4	
7	1 19.231	0.05200	1°29'22"	83.058	10	83.6	68.2	286.0	296.0	66.8	28.6	35	54	19	5	

Morse			Taper			Ta	per					Screw			
Taper Number	Ta <sub>l</sub>	oer (1)	Angle (α)	D	а	D <sub>1</sub> <sup>(2)</sup> (approx.)	d <sub>1</sub> <sup>(2)</sup> (approx.)	ℓ₁ (Max)	$\ell_2$ (Max)	d <sub>2</sub> (Max)	d₃	K (Min)	t (Max)	r	Fig
0	1 19.212	0.05205	1°29'27"	9.045	3	9.2	6.4	50	53	6	_	_	4	0.2	
1	$\frac{1}{20.047}$	0.04988	1°25'43"	12.065	3.5	12.2	9.4	53.5	57	9	M 6	16	5	0.2	
2	1 20.020	0.04995	1°25'50"	17.780	5	18.0	14.6	64	69	14	M10	24	5	0.2	
3	1 19.922	0.05020	1°26'16"	23.825	5	24.1	19.8	81	86	19	M12	28	7	0.6	
4	1 19.254	0.05194	1°29'15"	31.267	6.5	31.6	25.9	102.5	109	25	M16	32	9	1	]
5	1 19.002	0.05263	1°30'26"	44.399	6.5	44.7	37.6	129.5	136	35.7	M20	40	9	2.5	
6	1 19.180	0.05214	1°29'36"	63.348	8	63.8	53.9	182	190	51	M24	50	12	4	
7	<u>1</u> 19.231	0.05200	1°29'22"	83.058	10	83.6	70.0	250	260	65	M33	80	18.5	5	

Note (1) The fractional values are the taper standards.

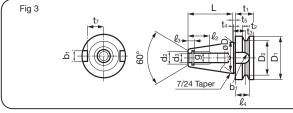
(2) Diameters D<sub>1</sub> and d<sub>1</sub> are calculated from the diameter D value, the taper, a, and  $\ell_1$  and rounded up to one decimal place.

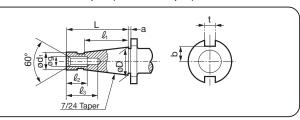
Remark 1. Tapers are measured using JIS B 3301 ring gauges. The contact rate must be at least 75%.

 $2. \ Screws \ must \ have \ metric \ coarse \ screw \ thread \ as \ per \ JIS \ B \ 0205 \ and \ Class \ 3 \ precision \ as \ per \ JIS \ B \ 0209.$ 

### Bottle Grip Taper

### American Standard Taper (National Taper)





### Bottle Grip Taper

(Units: mm)

Taper No.	D (Standard Dimensions)	D <sub>1</sub>	D <sub>2</sub>	t <sub>1</sub>	<b>t</b> 2	tз	t <sub>4</sub>	<b>t</b> 5	d <sub>2</sub>	dз	L	$\ell_2$	$\ell_3$	$\ell_4$	g	b <sub>1</sub>	t <sub>7</sub>	Fig
BT30	31.75	46	38	20	8	13.6	2	2	14	12.5	48.4	24	7	17	M12	16.1	16.3	
BT35	38.10	53	43	22	10	14.6	2	2	14	12.5	56.4	24	7	20	M12	16.1	19.6	
BT40	44.45	63	53	25	10	16.6	2	2	19	17	65.4	30	8	21	M16	16.1	22.6	3
BT45	57.15	85	73	30	12	21.2	3	3	23	21	82.8	36	9	26	M20	19.3	29.1	ا
BT50	69.85	100	85	35	15	23.2	3	3	27	25	101.8	45	11	31	M24	25.7	35.4	
BT60	107.95	155	135	45	20	28.2	3	3	33	31	161.8	56	12	34	M30	25.7	60.1	

### American Standard Taper (National Taper)

(Units: mm)

Taper No.	Nominal Size	D	С	l <sub>1</sub>	L	$\ell_1$ (Min)	$\ell_2$ (Min)	$\ell_3$ (Min)	g	а	t	b	Fig
30	1 <sup>1</sup> / <sub>4"</sub>	31.750	17.4	-0.29 -0.36	68.4	48.4	24	34	1/2"	1.6	15.9	16	
40	1 <sup>3</sup> / <sub>4"</sub>	44.450	25.3	-0.30 -0.384	93.4	65.4	32	43	5/ <sub>8"</sub>	1.6	15.9	22.5	1 , 1
50	2 <sup>3</sup> / <sub>4"</sub>	69.850	39.6	-0.31 -0.41	126.8	101.8	47	62	1"	3.2	25.4	35	] 4
60	41/4"	107.950	60.2	-0.34 -0.46	206.8	161.8	59	76	1 <sup>1</sup> / <sub>4"</sub>	3.2	25.4	60	

### **Surface Roughness**

### Types and Definitions of Typical Surface Roughness

U I Y	Jes and	Definitions of Typical Surf	iace hougililess
Туре	Symbol	Method of Determination	Descriptive Figure
R Max.	°1) Rz	This value is found by extracting the reference length in the mean line direction from the surface roughness curve, measuring the intervals between the peaks and valleys in the extracted area in the longitudinal magnification direction of the surface roughness curve, and expressing this value in micrometres (µm).  Remarks: When finding Rz, any areas deemed to be scratches are removed before extracting the reference length from an area with no high peaks or low valleys.	Rz=Rp+Rv
Calculated Roughness	Ra	This value is found by extracting the reference length in the mean line direction from the roughness curve, taking the average line direction of the extracted area as the X-axis and the longitudinal magnification direction as the Y-axis and expressing the value found by the equation below in micrometres (µm) with the roughness curve expressed by y=f(x).	$\frac{\ell}{Ra = \frac{1}{\ell} \int_{0}^{\ell} \{f(x)\} dx}$
10-point Average Roughness	*2) Rz Jis	This value is found by extracting the reference length in the mean line direction from the roughness curve, finding the sum of the mean absolute peak height taken from the five highest peaks (Yp) and the mean absolute valley height taken from the five lowest valleys (YV) measured in the longitudinal magnification direction from the mean line direction of the extracted area and expressing this value in micrometres (µm).	Rizas= (Vp++Yps+Yps+Yps+Yps+Yps+Yvs+Vvs+Vvs+Vvs+Vvs)

Designated values for the above types of maximum height (R2) $^{"1}$ ), 10-point average roughness (Rz  $_{\rm JIS}^{"2}$ ), calculated average roughness (Ra) classifications, and reference length  $\,\ell$  are shown on the table at right with triangular symbols.

### Relationship with Triangular Symbol Display

Designated values for maximum height *1) (Rz)	Designated values for calculated average roughness (Ra)	Designated values for 10-point average roughness "2) (RzJIS)	Standard reference $\ell$ length value (mm)	Triangular * symbols
(0.05) 0.1 0.2 0.4	(0.012) 0.025 0.05 0.10	(0.05) 0.1 0.2 0.4	0.25	VVVV
1.6 3.2 6.3	0.40 0.80 1.6	1.6 3.2 6.3	0.8	VVV
12.5 (18) 25	3.2 6.3	12.5 (18) 25	2.5	$\vee$
(35) 50 (70) 100	12.5 25	(35) 50 (70) 100	8	$\nabla$
(140) 200 (280) 400 (560)	(50) (100)	(140) 200 (280) 400 (560)	_	_

Remarks: The designated values in ( ) do not apply unless otherwise stated.

<sup>&</sup>quot;) The maximum height symbol (Rz) is calculated according to the new **JIS B 0601**:2001 standard. (This value was Ry under the old standard.)

<sup>&</sup>lt;sup>2)</sup> The 10-point average roughness (Rz Jis) is calculated according to the new **JIS B 0601**:2001 standard. (This value was Rz under the old standard.)

<sup>\*</sup> Finish symbols (triangular symbol (▽) and tilde (~)) were removed from JIS in the 1994 revision.

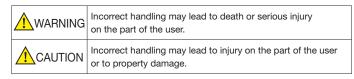
# Hard Tool Material Product Safety Pamphlet / Cutting Tool Edition

#### 1. Safety Notes

Below is an explanation of the items to be observed in order to prevent personal injury or property damage when using hard tool materials and products. Carefully read the precautions within the text as well and use products correctly.

■ Precautions are classified as follows.

All are important with regard to safety and must be observed.



[Example of pict	torial displays]
$\Diamond$	The Symbol indicates prohibition (do NOT do this).
1	The 1 symbol indicates compulsion (you MUST do this).

#### 2. Basic Characteristics of Hard Tool Materials

#### 2-1. Understanding the Terminology in this Pamphlet

2-1-1. Hard Tool Material

A general term for tool materials such as tool steel, high speed steel, cemented carbide, cermet, ceramic, CBN, polycrystalline diamond, etc.

2-1-2. Co-based Hard Tool Material

Hard tool materials containing 0.1% or more Co. WC-Co-based cemented carbide; cermet, CBN, polycrystalline diamond, etc. containing Co 2-2. Physical Characteristics

2-2-1. Appearance

Depends on the material. Ex: grey, black, gold, etc.

2-2-2. Smell

Odourless

2-2-3. Hardness, Specific Gravity

Hardness and specific gravity of hard tool materials are displayed in Table 1.

Table 1 Hardness and specific gravity of hard tool materials

Hard Tool Materials	Hardness (HV)	Specific Gravity
Cemented Carbide	500 to 3000	9 to 16
Cermet	500 to 3000	5 to 9
Ceramic	1000 to 4000	2 to 7
CBN	2000 to 5000	3 to 5

Hard Tool Materials	Hardness (HV)	Specific Gravity
Polycrystalline Diamond	8000 to 12000	3 to 5
High Speed Steel	200 to 1200	7 to 9
Tool Steels	200 to 1200	7 to 9
(Diamond Electroplated Products)	8000 to 12000	3 to 5

#### 2-2-4. Constituents

Carbides, nitrides, carbon nitrides and oxides of W, Ti, Al, Si, Ta, B, and V, in addition to alloys containing Fe, Co, Ni, Cr, Mo and other constituents.

### 3. Safety of Hard Tool Materials

Precautions for Handling Hard Tool Materials

- · In order to prevent workplace accidents, occupational illnesses, etc., be sure to observe the Safety Notes in Table 2.
- · Before use, read all of the Safety Notes and follow the directions for correct use.
- · After reading, be sure to store the materials in a place where the users can read them at any time.

### Table 2 Safety of Hard Tool Materials

### WARNING (1) Hard tool materials with extremely high hardness are brittle and may break or scatter if forcibly tightened or subjected to impact, so handle with care. (2) Hard tool materials with specific gravity of 10 or above must be handled as heavy objects in the case of large products or quantities; handle with care for their weight. Engraving on hard tool materials with a laser, electric pen, electroplated grindstone, etc. may cause them to crack. Do not engrave on workpiece parts or areas subjected to stress (4) Hard tool materials may have different thermal expansion coefficients from general steel cases and holders, etc. As they may split or scatter during hot-fit, cool-fit, or high-temperature applications, approach design and work with sufficient consideration. (5) Hard tool materials may split if temperature changes higher than their thermal shock resistance temperature are applied during brazing, etc. They may also become dislodged or damaged if not brazed at a suitable temperature. Braze under appropriate conditions. (6) When repairing used hard tool materials, damaged or worn parts such as cracks developed during use must be thoroughly removed. Do not repair on your own. (7) Hard tool materials generate cutting dust, etc. when cutting. The dust is toxic if swallowed or inhaled, so use local ventilation devices and wear Hard tool materials generate cutting dust, etc. when cutting. The dust is dangerous if in contact with or adhered to eyes or skin, so make use of suitable protective gear such as protective glasses. (9) If cutting dust adheres to eyes or skin, wash with water. If the dust enters eyes or is swallowed in quantity, immediately see a specialist physician. (10) Cobalt and other inorganic compounds are designated as specified chemical substances. Tools in normal use are exempt, but in workplaces applying physical changes (material modification/product repair, etc.), their handling must comply with the Ordinance on Prevention of Hazards (11) For details of first aid, measures in case of fire, measures in case of leaks, precautions for disposal, etc., see the material (M)SDS and act accordingly





- (12) Hard tool materials without corrosion resistance may corrode due to liquids such as grinding fluid or lubricant, reducing their strength.
- (13) The strength of hard tool materials may be drastically reduced if the surface shape is changed after grinding, so finish under suitable cutting conditions.



- (14) When electrical discharge machining is applied to hard tool materials, minuscule cracks and affected layers may form on the surface, decreasing the strength. In order to maintain the material's original properties, grind away the cracks or affected layers.
- (15) Among hard tool materials, heat-treated tool steel and high speed steel will soften if heat above the tempering temperature is applied, possibly leading to insufficient strength, etc. In particular, be careful of the heat generated during grinding, the brazing temperature, and the thermal effects of surface treatment, surface improvement, etc.

Table 3-1 Precautions on the Use of Cutting Tools: Cutting Tools Overall

Product Line	CAUTION	Countermeasures
General Cutting Tools	(1) Incorrect use or inappropriate application conditions could result in injuries caused by tool breakage or projectiles.	Refer to instruction manuals, catalogs, etc. and use within the recommended conditions and ranges. Appropriately use safety covers, safety glasses and other protection measures.
	(2) If there is a sharp increase in cutting force due to high impact loads or excessive wear, injuries may result from tool breakage or projectiles.	Schedule tool changes appropriately and carry them out as planned.  Appropriately use safety covers, safety glasses and other protection measures.
	(3) At high rotational speeds, injuries may result from tool breakage if the cutter is not balanced or if there are runout vibrations.	Perform a dry run to ensure that there is no vibration or abnormal noises.  Appropriately use safety covers, safety glasses and other protection measures.
	CAUTION	Ocuntermeasures
	(4) Chips may catch fire from sparks during machining or from heat produced from breakage.	Do not use this product in places where there are highly flammable or highly explosive materials. If non-water-soluble coolant is used, precautions against fire must be taken beforehand.
	CAUTION	Countermeasures
	(5) As the tools have sharp cutting edges, you may cut your hands if they come into direct contact with the edges.	Appropriately use gloves and other protective gear, especially when removing a product from its case or mounting it onto a machine.
	(6) Scratches or splits in tools may lead to damage and scattering during use.	Confirm before use that there are no scratches, splits, etc.
	(7) Incorrect rotation directions risk damaged or scattered tools.	Confirm the rotation direction before use.
	(8) Injuries may result from tool breakage if the rotating part (including the machine tool jig) is not balanced or if there is runout vibration.	Conduct a trial run and check the balance.
	(9) Insufficient tool holding risks damaged or scattering tools.	Use holders, etc., suited to the tools and machining application. Fix the tools securely to the holders and prevent runout.
	(10) Tools not held properly risks being dragged by the workpiece. It also risks damaged or scattering tools or workpieces.	Make sure the workpiece is firmly held.
	(11) Touching rotating tools or workpieces will lead to injury.	Never touch a rotating tool, workpiece, etc.
	(12) Loose clothing risks being caught in machinery.	Wear closely fitting clothing.
	(13) If abnormal vibration, etc., is generated during machining, immediately stop work. Continuing machining risks damaged or scattered tools.	Eliminate the cause of the abnormality before resuming machining.
	(14) Using damaged or seriously worn tools leads to damage or scattering.	Exchange tools which have become dull.
	(15) High-temperature chips or lengthy chips being discharged may cause injuries or burns.	Appropriately use safety covers, safety glasses and other protection measures. When clearing chips, stop the machine, use protective gear, and use a work tool such as nippers or clippers.
	(16) Both the tool and work material will heat up during machining. Burns may occur if touched with bare hands immediately after machining operations.	Appropriately use gloves and other protective measures, especially when removing products from their cases.
	(17) Burrs formed on the workpiece are sharp and may cause injuries.	Do not handle with bare hands. Appropriately use gloves and other protective measures, especially when removing products from their cases.

Table 3-2 Precautions on the Use of Cutting Tools: Indexable Tools Overall

Product Line	<u></u> WARNING	Ocuntermeasures
General Indexable Tools	(1) If inserts or holder parts are not clamped properly, they may drop off or be flung out during machining.	Do not use inserts or parts not specified by the manufacturer.
	and a control of the	Countermeasures
		Remove any foreign particles and clean all contact and clamping parts before mounting the inserts.  Check that inserts and parts have been properly clamped for mounting. Use wrenches provided for securing.
	(2) The use of tools at high speeds is dangerous, as inserts may be flung out due to centrifugal force.	Ocuntermeasures
	nang car acc to comming a reven	Always operate within recommended conditions. Regarding handling, refer to the instruction manuals, catalogs, etc. and use with sufficient attention to safety.
	(3) Using pipes to aid tightening may cause insert or tool breakage as a result of over tightening.	Countermeasures
		Do not use tightening aids such as pipes, etc. Use the included wrench to tighten at suitable torque.

Table 3-3 Precautions on the Use of Cutting Tools: Rotating Tools

Product Line	<u></u> WARNING	Counte	ermeasures
Rotating Cutters	(1) Injuries may result from tool breakage or projectiles if there is rotational imbalance in the cutter, which is dangerous as it causes wobbling or vibrations.	Always obey the regulations speci	fied for intended use.
	CAUTION	Countermeasures	Ocuntermeasures
	(2) Cutters have sharp cutting edges and are dangerous as they may cause injury if touched directly with your hands.	Appropriately use gloves and other protective measures, especially when removing products from their cases.	When near the rotor, do not wear protective gear such as gloves which may be snagged.
Drills	<u></u> MARNING	Counter	ermeasures
	(3) When using rotary tools to perform drilling, the uncut bottom may pop out at high speed during drill exit. The disc is dangerous as it has sharp edges.	A safety cover must also be mounted on the chuck. Appropriately use safety covers, safety glasses and other protection measures.	
	CAUTION	Countermeasures	Ocuntermeasures
	(4) Drills with very small diameters have sharp tips and will prick the fingers. Surgery will be required if the drills break inside the finger. Drills may also scatter shards when fractured, which is dangerous.	Appropriately use gloves and other protective measures, especially when removing products from their cases.	Do not use protective gear such as work gloves near rotating parts as they get snagged.

Table 3-4 Precautions on the Use of Cutting Tools: Brazed Tools and Others

Product Line	<u></u> MARNING	Countermeasures
Brazed Tools	(1) Repeated brazing is dangerous as the tool tips are easily damaged during use.	Do not use tool tips which have been brazed more than once, as their strength will be lowered. Do not use the product under high-temperature conditions.
Others	CAUTION	Countermeasures
	(2) Injuries may result from a dislodged tool tip or tool breakage.	Ensure that tools have been properly brazed before use.
	<u></u> WARNING	Countermeasures
	(3) There is a danger of breakages and even injuries if machines and tools are used for purposes other than their intended use.	Please follow the prescribed usage of the tool.

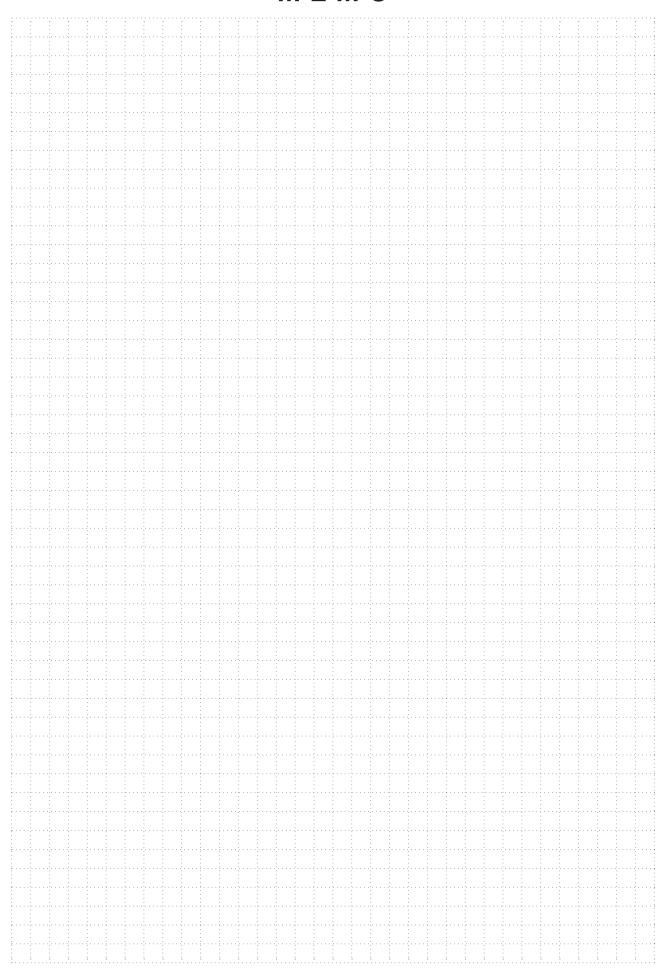
### 5. Closing Notes

The content of this pamphlet covers only basic instructions for precautionary measures on health and safety. For other details, refer to the relevant items on the (M)SDS.

With regard to legal requirements, refer to the relevant laws (Industrial Safety and Health Act/PRTR Act). Regarding the content of tool instruction manuals and catalogs, contact Sumitomo Electric Hardmetal if anything is not clear.

Sumitomo Electric Hardmetal Corp. shall not be liable for any injuries sustained from any unauthorised modifications made to the original tool specifications.

### **MEMO**







### Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.

- Please handle with care as this product has sharp edges.
  Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.
- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

### Sumitomo Electric Industries, Ltd.

### Hardmetal Division

Global Marketing Department: 1-1-1, Koyakita, Itami, Hyogo 664-0016, Japan https://www.sumitool.com/global