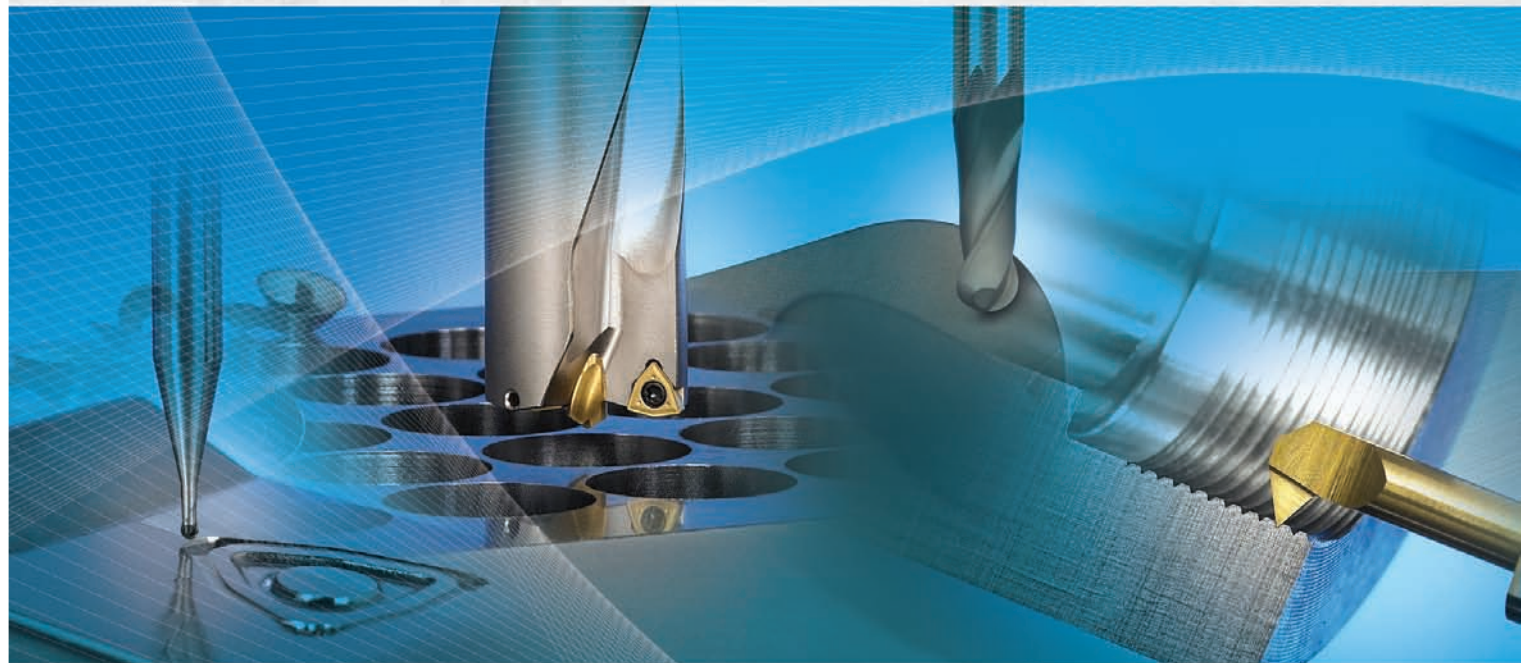




KORLOY Special Tooling Application

Turning / Milling / Endmill / Drill / PCD Tools / Brazed Tools / etc.







KORLOY Special Tooling Application

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MSB Tools

- High hardness grade guarantees longer tool life.
- Various kinds of machining (Fitting, Valve, Medical parts, Automobile component, and Semiconductor equipment) are available.
- Various types of MSB tools (Boring, Grooving, Threading)

Code system

M G R 06 20 - $\frac{1.5}{\diamond 60}$ - 1

Type	Application	Shank dia.	Max. aspect ratio	Machining size	Cutting edge																					
M Micro	B Boring BC Copying BB Back Boring BF Chamfering G Square Grooving GR Round Grooving GF Face Grooving T Threading	03 3.0 04 4.0 06 6.0 08 8.0 10 10.0	10 10.0 15 15.0 20 20.0 25 25.0 35 35.0	<table><tr><td>Boring</td><td colspan="2">No Code</td></tr><tr><td>Grooving</td><td colspan="2">Width of Groove</td></tr><tr><td rowspan="2">Threading</td><td>60°</td><td>55°</td></tr><tr><td>Pitch</td><td>tpi</td></tr><tr><td rowspan="3">◇</td><td>F</td><td>0.25~1.0</td><td>72~24</td></tr><tr><td>A</td><td>0.5~1.5</td><td>48~16</td></tr><tr><td>AG</td><td>0.5~3.0</td><td>48~8</td></tr></table>	Boring	No Code		Grooving	Width of Groove		Threading	60°	55°	Pitch	tpi	◇	F	0.25~1.0	72~24	A	0.5~1.5	48~16	AG	0.5~3.0	48~8	1 Single ended None Double ended
Boring	No Code																									
Grooving	Width of Groove																									
Threading	60°	55°																								
	Pitch	tpi																								
◇	F	0.25~1.0	72~24																							
	A	0.5~1.5	48~16																							
	AG	0.5~3.0	48~8																							

Features

- High hardness grade ensures excellent surface roughness and long tool life.
- Various kinds of machining (Fitting, Valve, Medical parts, Automobile component, and Semiconductor equipment) are available
- Various types of MSB tools (Boring, Grooving, Threading)



MSB tool code system

	Types	Application		Designation
01	Boring	Boring		MBR/LOO☆☆
02		Copying		MBCR/LOO☆☆
03		Back Boring		MBBR/LOO☆☆
04		Chamfering		MBFR/LOO☆☆
05	Grooving	Square Grooving		MGR/LOO☆☆-
06		Round Grooving		MGRR/LOO☆☆-
07		Face Grooving		MGFR/LOO00-
08	Threading	Partial	60°	MTR/LOO☆☆-◇60
			55°	MTR/LOO☆☆-◇55

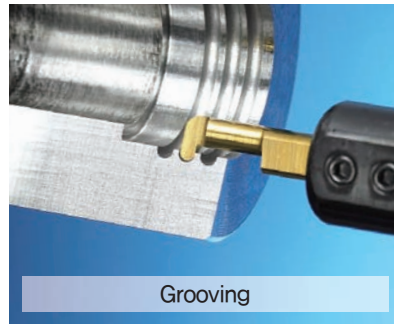
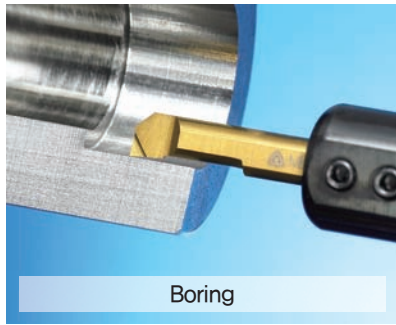
Details

Marks	○○	Shank dia.	Shank dia.		
	☆☆	Depth of cut	Max. depth of boring		
	□□	Width of groove	Width of groove		
	◇	Pitch/tpi	F	0.25~1.0	72~24
			A	0.5~1.5	48~16
			AG	0.5~3.0	48~8

Grades

Grades	Coated	Application and features
Z12M	Uncoated	• Ultra fine grain substrate ensures high wear resistance and toughness. • Application : Cast iron, Aluminum alloy and Non-ferrous metal machining
PC30M	TiN layer	• Ultra fine grain substrate with TiN coated layer increases tool life. • Application : Hard-to-cut material machining (stainless steel and heat resisting alloy etc.)

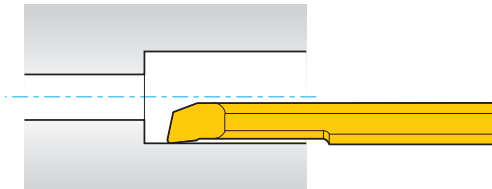
Machining types



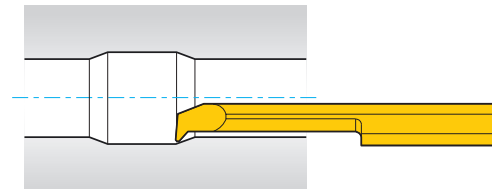
Types

► Boring

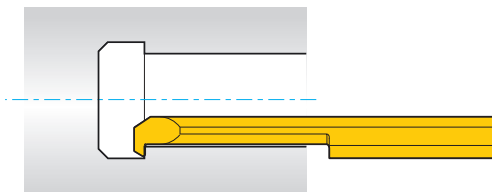
- **Boring** Min. dia. of machining : $\varnothing 3,2$



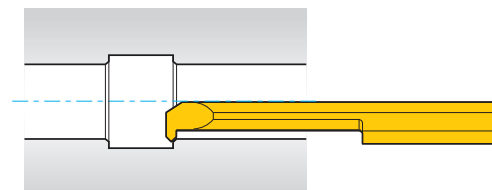
- **Copying** Min. dia. of machining : $\varnothing 4,2$



- **Back boring** Min. dia. of machining : $\varnothing 3,2$

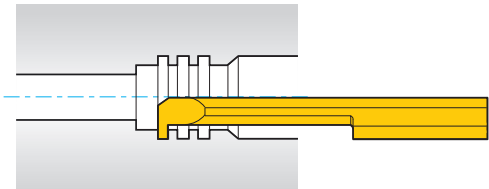


- **Chamfering** Min. dia. of machining : $\varnothing 4,2$

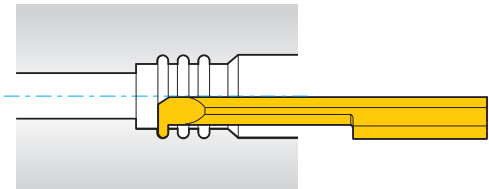


► Grooving

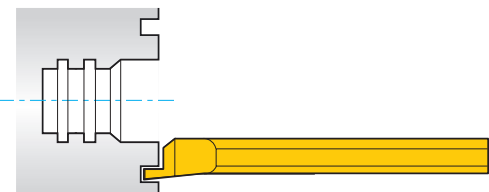
- **Square grooving** Min. dia. of machining : $\varnothing 3,2$



- **Round grooving** Min. dia. of machining : $\varnothing 3,2$

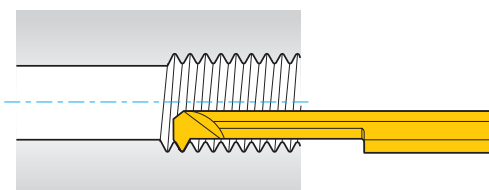


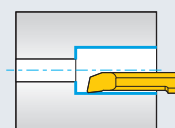
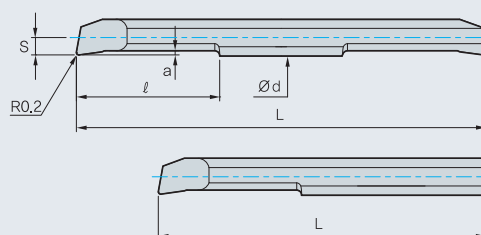
- **Face grooving** Min. dia. of machining : $\varnothing 6,0$



► Threading

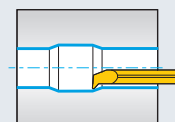
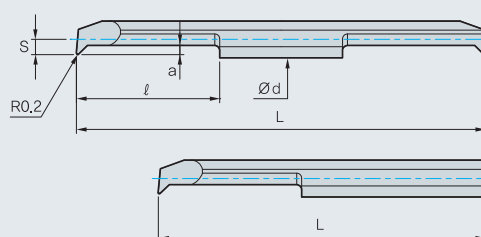
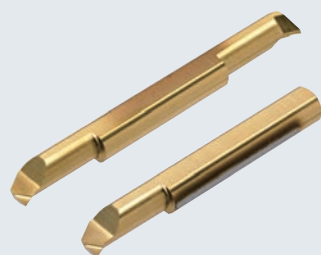
- **Threading** Min. dia. of machining : $\varnothing 3,3$



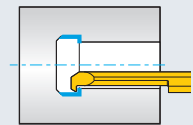
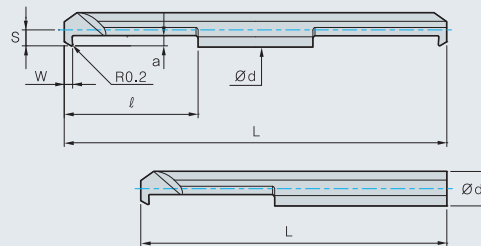


Double ended			Single ended			Ød	Min.dia. of machining	ℓ	Overall length		Cutting edge	
Designation	Coated	Uncoated	Designation	Coated	Uncoated				L		a	S
	PC30M	Z12M		PC30M	Z12M				Double ended	Single ended		
MBR 0310			MBR 0310-1			3,0	3,2	10	40	35	0,5	1,4
	0315	●	0315-1					15	50	45		
	0410		0410-1			4,0	4,2	10	40	35	0,6	1,9
	0415	●	0415-1					15	50	45		
	0420		0420-1					20	60	50		
	0610		0610-1			6,0	6,2	10	45	40	0,75	2,9
	0615	●	0615-1					15	55	45		
	0620		0620-1					20	65	50		
	0810		0810-1			8,0	8,2	10	50	45	0,8	3,9
	0820	●	0820-1					20	70	60		
	0830		0830-1					30	80	70		
	1015		1015-1			10,0	10,2	15	60	60	1,0	4,9
	1025	●	1025-1					25	80	70		
	1035		1035-1					35	100	80		

Copying

[illegible]

Back boring

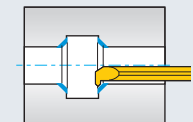
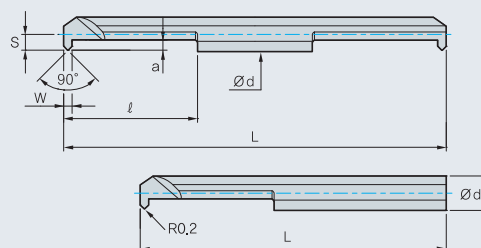


(mm)

Double ended			Single ended			Ød	Min. dia. of machining	l	Overall length		Cutting edge		
Designation	Coated	Uncoated	Designation	Coated	Uncoated				L		W	a	S
	PC30M	Z12M		PC30M	Z12M				Double ended	Single ended			
MBBR 0310			MBBR 0310-1			3.0	3.2	10	40	35	1.5	0.8	1.4
0315			0315-1					15	50	45			
0410			0410-1					10	40	35			
0415			0415-1			4.0	4.2	15	50	45	2.0	1.3	1.9
0420			0420-1					20	60	50			
0610			0610-1					10	45	40			
0615			0615-1			6.0	6.2	15	55	45	2.0	1.9	2.9
0620			0620-1					20	65	50			

● : Under preparing for stock

Chamfering

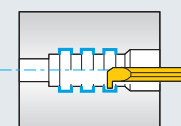
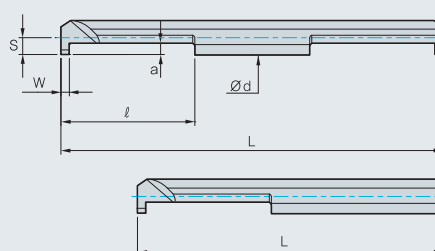


(mm)

Double ended			Single ended			Ød	Min. dia. of machining	l	Overall length		Cutting edge		
Designation	Coated	Uncoated	Designation	Coated	Uncoated				L		W	a	S
	PC30M	Z12M		PC30M	Z12M				Double ended	Single ended			
MBFR 0410			MBFR 0410-1			4.0	4.2	10	40	35	0.8	1.0	1.9
0415			0415-1					15	50	45			
0420			0420-1					20	60	50			
0610			0610-1			6.0	6.2	10	45	40	1.4	1.2	2.9
0615			0615-1					15	55	45			
0620			0620-1					20	65	50			

● : Under preparing for stock

Square grooving

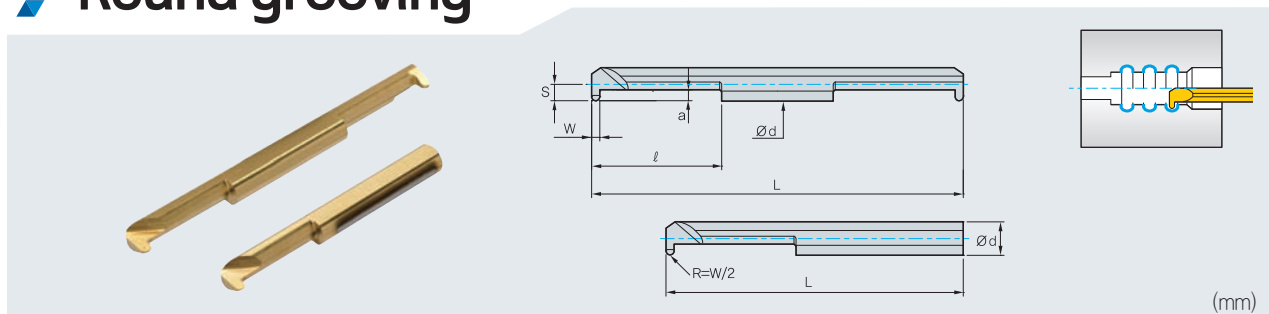


(mm)

[illegible]

● : Under preparing for stock

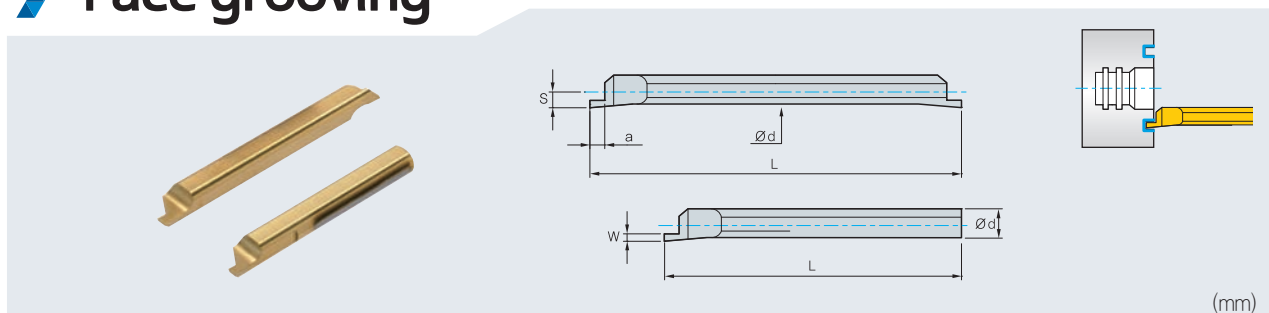
Round grooving



Double ended				Single ended			Ød	Min. dia. of machining	ℓ	Overall length		Cutting edge			
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M				Uncoated Z12M	L		W	a	S
											Double ended	Single ended			
MGRR	0310-0.8			MGRR	0310-0.8-1			3.0	3.2	10	40	35	0.8	0.8	1.4
	0315-0.8				0315-0.8-1					15	50	45			
	0410-1.0				0410-1.0-1			4.0	4.2	10	40	35	1.0	1.0	1.9
	0420-1.0			0420-1.0-1			20			60	50				
	0610-1.0				0610-1.0-1			6.0	6.2	10	45	40	1.0	2.0	2.9
	0620-1.0			0620-1.0-1			20			65	50				
	0610-1.5			0610-1.5-1			10			45	40	1.5			
	0620-1.5			0620-1.5-1			20			65	50				
	0610-2.0			0610-2.0-1			10			45	40	2.0			
	0620-2.0			0620-2.0-1			20			65	50				
	0820-1.0			0820-1.0-1			8.0	8.2	20	70	60	1.0	2.3	3.9	
	0820-1.5			0820-1.5-1								1.5			
	0820-2.0			0820-2.0-1								2.0			
	1025-1.0			1025-1.0-1			10.0	10.2	25	80	70	1.0	2.8	4.9	
	1025-1.5			1025-1.5-1								1.5			
	1025-2.0			1025-2.0-1								2.0			

● : Under preparing for stock

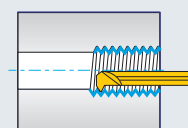
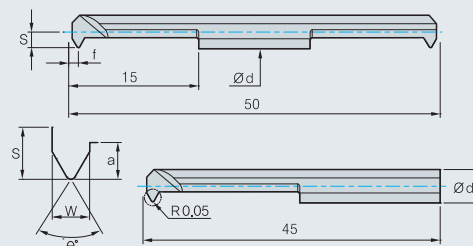
Face grooving



Double ended			Single ended			Ød	Min. dia. of machining	Overall length		Cutting edge		
Designation	Coated	Uncoated	Designation	Coated	Uncoated			L		W	a	S
	PC30M	Z12M		PC30M	Z12M			Double ended	Single ended			
MGFR 0400-1.0			MGFR 0400-1.0-1			4.0	6.0	50	45	1.0	1.5	1.8
										1.5	2.0	
0600-1.0			0600-1.0-1			6.0	8.5	50	45	1.0	1.5	2.9
0600-1.5			0600-1.5-1							1.5	2.0	
0600-2.0			0600-2.0-1			8.0	10.4	70	60	2.0	2.5	3.9
0800-1.0			0800-1.0-1							1.0	1.5	
0800-1.5			0800-1.5-1							1.5	2.0	
0800-2.0			0800-2.0-1			10.0	12.4	80	70	2.0	2.5	4.9
1000-2.0			1000-2.0-1							2.0	2.5	
1000-2.5			1000-2.5-1							2.5	3.0	
1000-3.0			1000-3.0-1							3.0	3.5	
1000-3.5			1000-3.5-1							3.5	4.0	
1000-4.0			1000-4.0-1							4.0	4.5	
1000-4.5			1000-4.5-1							4.5	5.0	

● : Under preparing for stock

Threading



(mm)

Double ended			Single ended			Ød	Min. dia. of machining	Thread			Cutting edge		
Designation	Coated PC30M	Uncoated Z12M	Designation	Coated PC30M	Uncoated Z12M			W	Pitch /tpi	θ°	S	a	f
MTR 0315-F60			MTR 0315-F60-1			3,0	3,3	1,2	0,5~1,0	60°	1,45	1,2	0,6
0415-F60			0415-F60-1			4,0	4,3				1,95		
0615-A60			0615-A60-1			6,0	6,2	2,0	0,5~1,5		2,90	2,2	1,0
0315-F55			0315-F55-1			3,0	3,3	1,2	48~24	55°	1,45	1,2	0,6
0415-F55			0415-F55-1			4,0	4,3				1,95		
0615-A55			0615-A55-1			6,0	6,2	2,0	28~16		2,9	2,2	1,0

● : Under preparing for stock

SLEEVE

SL
(SLEEVE)

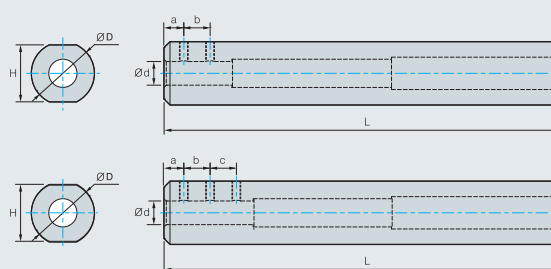


Fig.1

Fig.2

(mm)

Designation	Ød	a	b	c	ØD	H	L	Screw	Wrench	Fig.
SL 1603	3	5	—	—	16	14	100	M3	HW15L	1
1604	4	5	6	—	16	14	100	M4	HW20L	
1605	5	5	8	—	16	14	100	M4	HW20L	
1606	6	5	6	6	16	14	100	M4	HW20L	2
1607	7	5	6	8	16	14	100	M4	HW20L	
2008	8	5	10	10	20	18	100	M4	HW20L	2
2010	10	5	10	10	20	18	100	M5	HW20L	

※Ground internal and external parts make tight tolerance and superior surface finish.



Multi Functional Chamfer Tool

- One holder with an insert can cover centering, grooving and chamfering
- Improved coated layer increases wear resistance.
- Economical tool with 3-cornered insert

Code system

CE 45 - 16 00 R - S 20

Chamfer Endmill

Inscribed circle of insert

16 TWX16R-KC
22 TWX22R-KC

Hand

R Right handed
L Left handed

Shank dia.

Ø12
Ø20
Ø25

Chamfer angle

45°

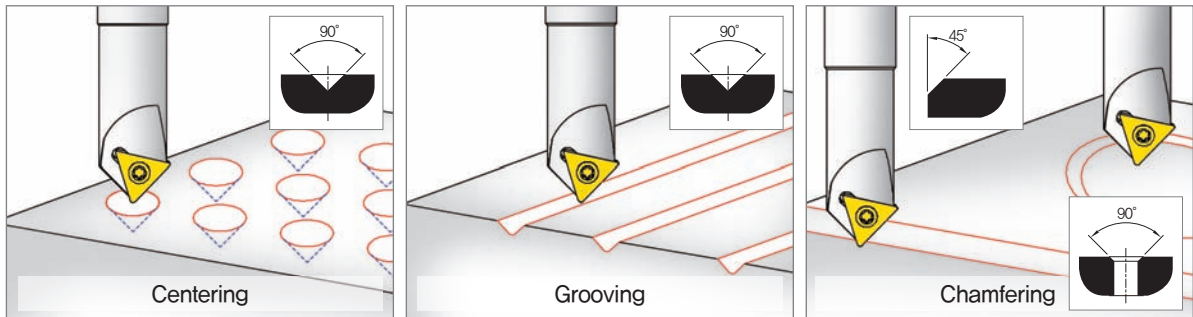
Min. cutting dia.

Ø0

Overall length

S = 90,110
L = 200

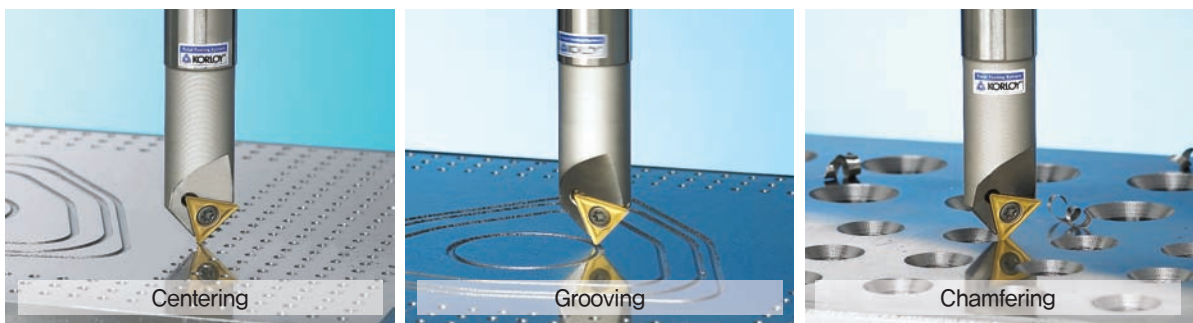
Application and recommended cutting condition



Workpiece	Hardness	Centering, Grooving		Chamfering	
		vc(mm/min)	fz(mm/t)	vc(mm/min)	fz(mm/t)
Carbon steel, Alloy steel	below H _R C 30	80~200	0.01~0.04	100~250	0.04~0.06
Carbon steel, Alloy steel	H _R C 30~40	150~250	0.02~0.06	150~300	0.05~0.10
Al, Copper	—	150~300	0.04~0.08	150~350	0.05~0.10
GC, GCD	—	80~150	0.02~0.06	100~250	0.05~0.10
Stainless steel	—	60~120	0.01~0.03	60~150	0.03~0.06
Ti, Ti-alloy	—	60~80	0.01~0.03	60~100	0.03~0.06

Note) With wrong fz, back touch and chipping are caused

Machining examples



CE Multi functional tool

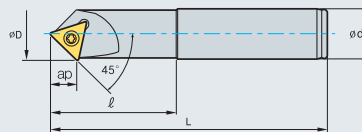


Fig.1

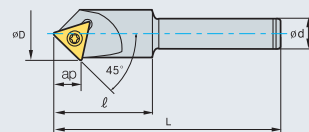
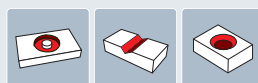


Fig.2



- AR : $-12^{\circ} \sim 15^{\circ}$
- PR : 0°

(mm)

Designation	ØD	Ød	ℓ	L	ap	Fig.	Insert	Machining range (Min.~Max.)	Application
CE 45-1600R-S12	22	12	40	90	10	2	TWX16R-KC	Ø0~Ø20	Centering, Grooving
45-1600R-S20	22	20	50	110	10	1	TWX16R-KC	Ø0~Ø20	Chamfering
45-1600R-L20	22	20	60	200	10	1	TWX16R-KC	Ø0~Ø20	
45-2200R-S12	29	12	40	90	14	2	TWX22R-KC	Ø0~Ø27	
45-2200R-S25	29	25	50	110	14	1	TWX22R-KC	Ø0~Ø27	
45-2200R-L25	29	25	60	200	14	1	TWX22R-KC	Ø0~Ø27	

► Inserts

Inserts	Designation	Coated										Cermet			Uncoated			
		NCM325	NCM335	NC5330	PC3500	PC5300	PC3545	PC9530	PC6510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10E	A30	ST20E
 TWX-KC	TWX 16R-KC				●													
	22R-KC				●													

● : Under preparing for stock

► Parts

	Screw	Wrench
CE45-□□□□R-□□	 FTNA0408	 TW15L



Solid Chamfer Tool

- Various tool line-up for chamfering and centering
- Machinable chamfer angles : 60°, 90°, 120°
- Wide tool application range with single, twin and long types

Code system

CCT - 090

Type

CCT Centering & Chamfering Tool
CET Centering & Chamfering Endmill Tool

Chamfer angle

060 60°
090 90°
120 120°

T - 080

Cutting edge

No code Single
T Twin

Dia.

080 Ø8,0

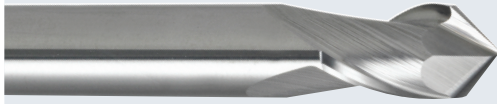
L

Overall length

No code Standard
L Long

Features

CET (Centering & Chamfering endmill tool)



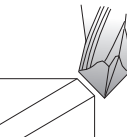
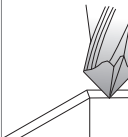
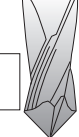
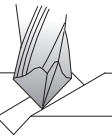
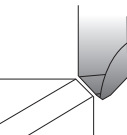
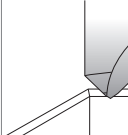
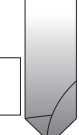
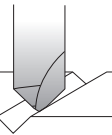
- For internal chamfering up to 0.5mm
- Can be applied to side milling and easy to regrinding

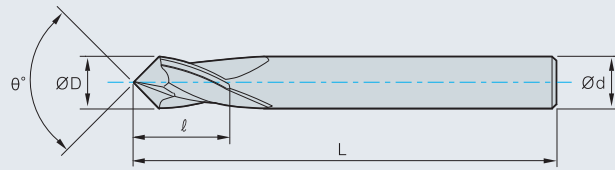
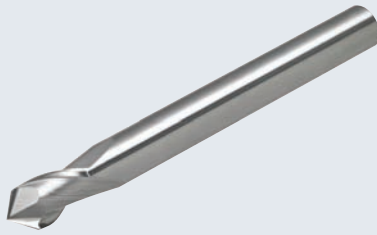
CCT (Centering & Chamfering tool)



- Chipping resistance realizes machining in high speed due to double point angle.
- Lowers cutting load due to web thinning.

Applications

	Centering	Hole chamfering	External chamfering	Internal chamfering	Side milling	Slot milling
CET						
60°	×	●	●	● ~ ▲	●	×
90°	▲	●	●	●	●	● ~ ▲
120°	●	●	●	●	●	●
CCT						
60°	●	●	● ~ ▲	▲ ~ ×	×	×
90°	●	●	● ~ ▲	▲ ~ ×	×	×
120°	●	●	●	●	×	●



(mm)

Designation	ØD	Ød	ℓ	L	θ°
CET060 - 030	3	3	5,5	50	60°
040	4	4	7	50	
060	6	6	10	60	
080	8	8	13	70	
100	10	10	16	70	
120	12	12	18	75	
160	16	16	24	100	
CET090 - 030	3	3	5,5	50	90°
040	4	4	7	50	
060	6	6	10	60	
080	8	8	13	70	
100	10	10	16	70	
120	12	12	18	75	
160	16	16	24	100	
CET120 - 030	3	3	5,5	50	120°
040	4	4	7	50	
060	6	6	10	60	
080	8	8	13	70	
100	10	10	16	70	
120	12	12	18	75	
160	16	16	24	100	

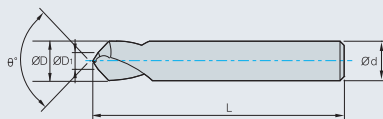
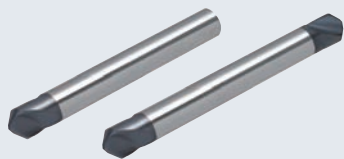


Fig. 1

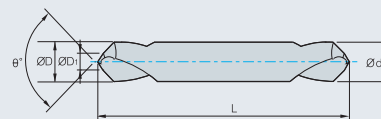


Fig. 2

(mm)

Designation	$\text{ØD} = \text{Ød}$	ØD_1	L	θ°	Fig.
CCT060 - 030	3	1.0	40	60°	1
040	4	1.5	40		
060	6	2.0	50		
080	8	2.5	60		
100	10	3.0	70		
120	12	4.0	80		
160	16	5.0	100		2
CCT060T - 030	3	1.0	40		
040	4	1.5	40		
060	6	2.0	50		
080	8	2.5	60		
100	10	3.0	70		
120	12	4.0	80		
160	16	5.0	100		
CCT060T - 030L	3	1.0	100	90°	1
040L	4	1.5	100		
060L	6	2.0	100		
080L	8	2.5	120		
100L	10	3.0	120		
120L	12	4.0	150		
CCT090 - 030	3	1.0	40		2
040	4	1.5	40		
060	6	2.0	50		
080	8	2.5	60		
100	10	3.0	70		
120	12	4.0	80		
160	16	5.0	100		1
CCT090T - 030	3	1.0	40		
040	4	1.5	40		
060	6	2.0	50		
080	8	2.5	60		
100	10	3.0	70		
120	12	4.0	80		
160	16	5.0	100		2
CCT090T - 030L	3	1.0	100		
040L	4	1.5	100		
060L	6	2.0	100		
080L	8	2.5	120		
100L	10	3.0	120		
120L	12	4.0	150		
CCT120 - 030	3	1.0	40	120°	1
040	4	1.5	40		
060	6	2.0	50		
080	8	2.5	60		
100	10	3.0	70		
120	12	4.0	80		
160	16	5.0	100		2
CCT120T - 030	3	1.0	40		
040	4	1.5	40		
060	6	2.0	50		
080	8	2.5	60		
100	10	3.0	70		
120	12	4.0	80		
160	16	5.0	100		1
CCT120T - 030L	3	1.0	100		
040L	4	1.5	100		
060L	6	2.0	100		
080L	8	2.5	120		
100L	10	3.0	120		
120L	12	4.0	150		



O-ring Cutter

- Optimized for grooving the seat of an O-Ring for preventing water leaks in a plastic mold.
- Guarantees superior surface roughness compared to HSS and brazed tool.
- High productivity with optimized grade for high speed machining
- Reduces time for regrinding and tool alignment.

Code system

► Holder

ORC - P30

O-Ring Cutter

O-Ring size

► Insert

ORG - 325

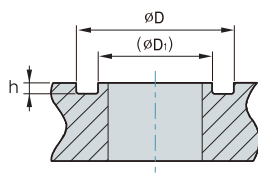
O-Ring groove

Grooving insert

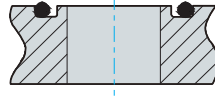
Width of groove

325 3,25

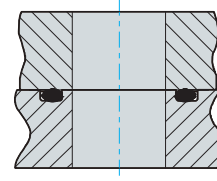
Grooving and assembly of the O-ring



Grooving seat for O-ring



O-ring on the seat



Engaging the upper punch and lower punch of a plastic mold

(mm)

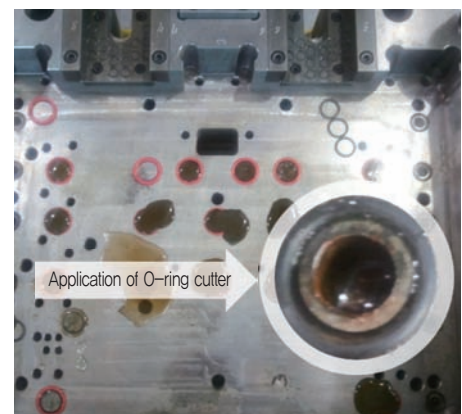
Size	ØD	(ØD₁)	h±0.05
P08	11.0	5.8	1.40
P09	12.0	6.8	
P10	13.0	7.8	
P11	15.0	8.5	
P12	16.0	9.5	1.80
P14	18.0	11.5	
P15	19.0	12.5	
P16	20.0	13.5	
P18	22.0	15.5	
P20	24.0	17.5	
P21	25.0	18.5	
P22	26.0	19.5	2.70
P24	30.0	20.6	
P25	31.0	21.6	

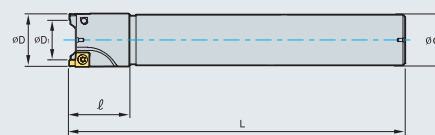
Size	ØD	(ØD₁)	h±0.05
P26	32.0	22.6	2.70
P28	34.0	24.6	
P29	35.0	25.6	
P30	36.0	26.6	
P31	37.0	27.6	
P32	38.0	28.6	
P34	40.0	30.6	
P35	41.0	31.6	
P38	44.0	34.6	
P40	46.0	36.6	
G25	30.0	21.8	2.40
G30	35.0	26.8	
G35	40.0	31.8	
G40	45.0	36.8	

Recommended cutting condition

Workpiece	fn(mm/t)	vc(m/min)
		Coated PC3500
Stainless steel (STS304)	0.03~0.12	60~130
Carbon steel (SM□□C)	0.05~0.15	80~150
Alloy steel (SCM)	0.05~0.15	80~150
Hardened steel (STD, NAK)	0.03~0.12	60~130

Application





(mm)

Designation		ØD	ØD1	Ød	ℓ	L	Insert	O-ring size
ORC - P08	1	11.0	5.7	16	30	150	ORG265	P08
P09	1	12.0	6.7	16	30	150	ORG265	P09
P10	1	13.0	7.7	16	30	150	ORG265	P10
P11	1	15.0	8.5	16	30	150	ORG325	P11
P12	2	16.0	9.5	16	30	200	ORG325	P12
P14	2	18.0	11.5	20	30	200	ORG325	P14
P15	2	19.0	12.5	20	30	200	ORG325	P15
P16	2	20.0	13.5	20	30	200	ORG325	P16
P18	2	22.0	15.5	20	30	200	ORG325	P18
P20	2	24.0	17.5	25	30	200	ORG325	P20
P21	2	25.0	18.5	25	30	200	ORG325	P21
P22	2	26.0	19.5	25	30	200	ORG325	P22
P24	2	30.0	20.6	32	40	250	ORG470	P24
P25	2	31.0	21.6	32	40	250	ORG470	P25
P26	2	32.0	22.6	32	40	250	ORG470	P26
P28	2	34.0	24.6	32	40	250	ORG470	P28
P29	2	35.0	25.6	32	40	250	ORG470	P29
P30	2	36.0	26.6	32	40	250	ORG470	P30
P31	2	37.0	27.6	32	40	250	ORG470	P31
P32	2	38.0	28.6	32	40	250	ORG470	P32
P34	2	40.0	30.6	42	40	250	ORG470	P34
P35	2	41.0	31.6	42	40	250	ORG470	P35
P38	2	44.0	34.6	42	40	250	ORG470	P38
P40	2	46.0	36.6	42	40	250	ORG470	P40
ORC - G25	2	30.0	21.9	32	40	250	ORG405	G25
G30	2	35.0	26.9	32	40	250	ORG405	G30
G35	2	40.0	31.9	42	40	250	ORG405	G35
G40	2	45.0	36.9	42	40	250	ORG405	G40

► Inserts

Inserts	Cutter designation	Designation	Coated										Cermet			Uncoated			
			NCM325	NCM335	NC5330	PC3500	PC5300	PC3545	PC9530	PC6510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10E	A30	ST20E
	ORC-P08~P10	ORG 265				●													
	ORC-P11~P22	325				●													
	ORC-P24~P40	470				●													
	ORC-G25~G40	405				●													

● : Under preparing for stock

► Parts

	Screw	Wrench
ORC - P08~P22	FTKA0307	TW09S
P24~P40	FTGA03508	TW15S
G25~G40		



T-Cutter

- For precision T-grooving
- High hardness insert can be applied to machine various workpieces.

Code system

TFE

T-Cutter
face endmill

25

Cutter dia.

25

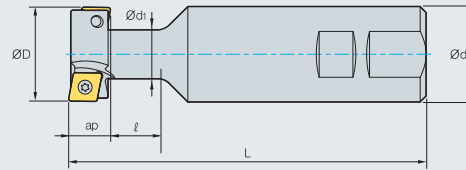
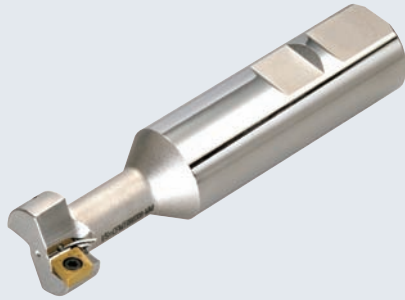
Shank dia.

R

Hand

R Right handed
L Left handed

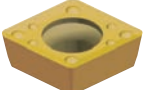
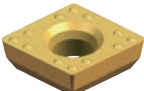
TFE

AA
90°• AR : 5°
• PR : -5°

(mm)

Designation		ØD	Ød	ØD1	l	L	ap	Insert
TFE 2125R/L	2	21	25	10,5	20	109	9	CPMT06
2525R/L	2	25	25	12,5	21	112	11	CPMT08
3232R/L	2	32	32	16,5	26	120	14	CPMT09
4032R/L	2	40	32	20,5	32	130	18	CPMH12
5032R/L	4	50	32	26,5	38	140	22	CPMH12

► Insert

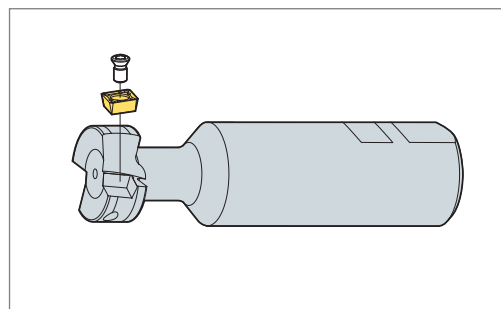
Insert	Designation	Coated										Cermet			Uncoated			
		NCM325	NCM335	NC5330	PC3500	PC5300	PC3545	PC9530	PC6510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10E	A30	ST20E
 CPMT	CPMT 060204-MM				•													
	080308-MM				•													
	09T308-MM				•													
 CPMH	CPMH 120408-MM				•													

• : Under preparing for stock

► Parts

	Screw 	Wrench 
2125R/L	FTNA02555	TW08S
2525R/L	FTNA0306	TW09S
3232R/L	FTNA0407	TW15S
4032R/L	PTMA0511A	TW15S
5032R/L		

► Assembling





cBN Endmill

- Excellent machinability in high hardness machining ($\sim$ HrC70)
- High precision machining with superior fracture resistance
- Superb wear resistance even in overload machining
- Long tool life due to less tool wear
- Better machinability compared to coated endmills

Code system

CSBE

Type

CSBE Ball
CSRE Radius

040

Dia.

Ø0,4

L06 - R02

Neck length

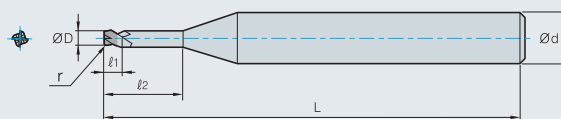
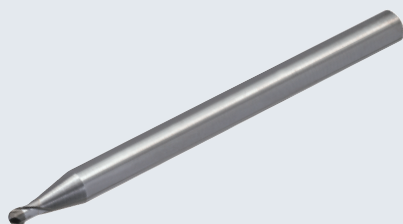
6

Corner R

R0,2

 Recommended cutting condition

Workpiece					STAVAX, STD61			STD11, STS420			SKH		
					~HRC 52			HRC 50~62			HRC 60~70		
Designation		Dia.	Radius	Neck length	n (min ⁻¹)	vf (mm/min)	ap (mm)	n (min ⁻¹)	vf (mm/min)	ap (mm)	n (min ⁻¹)	vf (mm/min)	ap (mm)
CSBE	030L008	0.3	0.15	0.8	45,000	500	0.005	45,000	450	0.005	40,000	340	0.005
	030L01	0.3	0.2	1.0	45,000	500	0.005	45,000	450	0.005	40,000	340	0.005
	040L01	0.4	0.2	1.0	40,000	550	0.006	40,000	500	0.006	35,000	380	0.006
	040L02	0.4	0.2	2.0	35,000	450	0.005	35,000	400	0.005	30,000	300	0.005
	050L02	0.5	0.25	2.0	30,000	450	0.006	30,000	400	0.006	28,000	320	0.006
	060L02	0.6	0.3	2.0	35,000	700	0.008	35,000	600	0.008	32,000	470	0.008
	060L04	0.6	0.3	4.0	26,000	480	0.005	25,000	400	0.005	24,000	330	0.005
	080L02	0.8	0.4	2.0	30,000	700	0.010	30,000	600	0.010	28,000	480	0.010
	080L04	0.8	0.4	4.0	22,000	370	0.008	20,000	300	0.008	18,000	230	0.008
	100L03	1.0	0.5	3.0	26,000	800	0.014	25,000	650	0.012	22,000	500	0.012
	100L06	1.0	0.5	6.0	20,000	450	0.008	18,000	360	0.008	15,000	270	0.008
	100L10	1.0	0.5	10.0	For Graphite processing								
	120L06	1.2	0.6	6.0	22,000	960	0.016	20,000	800	0.016	18,000	620	0.016
	150L04	1.5	0.75	4.0	26,000	1,600	0.025	25,000	1,300	0.025	22,000	1,000	0.020
	150L06	1.5	0.75	6.0	23,000	1,100	0.020	22,000	900	0.025	20,000	700	0.020
	150L10	1.5	0.75	10.0	19,000	770	0.015	18,000	700	0.015	15,000	500	0.015
	200L04	2.0	1.0	4.0	25,000	1,700	0.030	23,000	1,500	0.022	20,000	1,100	0.022
	200L06	2.0	1.0	6.0	22,000	1,500	0.022	20,000	1,200	0.022	18,000	900	0.022
	200L10	2.0	1.0	10.0	17,000	900	0.018	15,000	700	0.018	13,000	520	0.018
	200L15	2.0	1.0	15.0	15,000	700	0.015	13,000	550	0.015	11,000	400	0.015
	300L06	3.0	1.5	6.0	20,000	1,600	0.033	20,000	1,400	0.033	18,000	1,080	0.033
	300L08	3.0	1.5	8.0	18,000	1,250	0.030	18,000	1,100	0.030	16,000	850	0.030
	300L12	3.0	1.5	12.0	17,000	1,100	0.030	16,000	900	0.030	14,000	680	0.030
	300L16	3.0	1.5	16.0	15,000	850	0.020	14,000	700	0.020	12,000	520	0.020
	400L20	4.0	2.0	20.0	17,000	1,470	0.040	17,000	1,300	0.040	15,000	1,000	0.040
CSRE	040L01R005	0.4	0.05	1.0	40,000	550	0.006	40,000	500	0.006	35,000	380	0.006
	050L01R005	0.5	0.05	1.0	35,000	550	0.007	35,000	500	0.007	30,000	370	0.007
	050L01R01	0.5	0.10	1.0	35,000	550	0.007	35,000	500	0.007	30,000	370	0.007
	060L02R005	0.6	0.05	2.0	35,000	700	0.008	35,000	600	0.008	32,000	470	0.008
	060L02R01	0.6	0.10	2.0	35,000	700	0.008	35,000	600	0.008	32,000	470	0.008
	080L02R01	0.8	0.10	2.0	30,000	700	0.010	30,000	600	0.010	28,000	480	0.010
	080L03R01	0.8	0.10	3.0	26,000	560	0.010	25,000	440	0.010	23,000	350	0.010
	100L02R01	1.0	0.10	2.0	28,000	900	0.015	28,000	770	0.014	25,000	600	0.014
	100L04R01	1.0	0.10	4.0	24,000	700	0.012	22,000	550	0.012	20,000	420	0.012
	100L02R02	1.0	0.20	2.0	28,000	900	0.015	28,000	770	0.014	25,000	600	0.014
	100L04R02	1.0	0.20	4.0	24,000	700	0.012	22,000	550	0.012	20,000	420	0.012
	120L02R01	1.2	0.10	2.0	32,000	1,500	0.020	30,000	1,400	0.020	28,000	1,300	0.020
	120L02R02	1.2	0.20	2.0	32,000	1,500	0.020	30,000	1,400	0.020	28,000	1,300	0.020
	150L04R01	1.5	0.10	4.0	26,000	1,600	0.025	25,000	1,300	0.025	22,000	1,000	0.020
	150L06R01	1.5	0.10	6.0	23,000	1,100	0.020	22,000	900	0.025	20,000	700	0.020
	150L04R02	1.5	0.20	4.0	26,000	1,600	0.025	25,000	1,300	0.025	22,000	1,000	0.020
	150L06R02	1.5	0.20	6.0	23,000	1,100	0.020	22,000	900	0.025	20,000	700	0.020
	200L06R01	2.0	0.10	6.0	22,000	1,500	0.022	20,000	1,200	0.022	18,000	900	0.022
	200L06R02	2.0	0.20	6.0	22,000	1,500	0.022	20,000	1,200	0.022	18,000	900	0.022
	200L06R03	2.0	0.30	6.0	22,000	1,500	0.022	20,000	1,200	0.022	18,000	900	0.022
	300L08R01	3.0	0.10	8.0	18,000	1,250	0.030	18,000	1,100	0.030	16,000	850	0.030
	300L08R02	3.0	0.20	8.0	18,000	1,250	0.030	18,000	1,100	0.030	16,000	850	0.030
	300L08R03	3.0	0.30	8.0	18,000	1,250	0.030	18,000	1,100	0.030	16,000	850	0.030

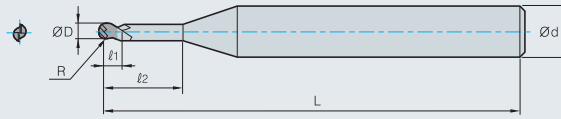
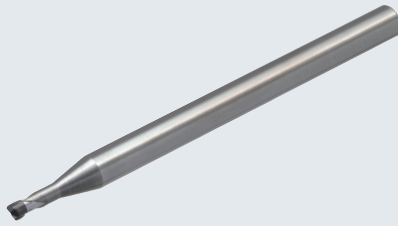


- ØD : Ø0.2~Ø4.0
- Tolerance : 0~-0.005

(mm)

Designation	R	ØD	Ød	l ₁	l ₂	L
CSBE 020L003	0.1	0.2	4	0.3	0.3	54
030L008	0.15	0.3	4	0.3	0.8	54
030L01	0.15	0.3	4	0.3	1	54
040L01	0.2	0.4	4	0.4	1	54
040L02	0.2	0.4	4	0.4	2	54
050L01	0.25	0.5	4	0.5	1	54
050L02	0.25	0.5	4	0.5	2	54
060L02	0.3	0.6	4	0.6	2	54
060L04	0.3	0.6	4	0.6	4	54
080L02	0.4	0.8	4	0.7	2	54
080L04	0.4	0.8	4	0.7	4	54
080L10	0.4	0.8	4	0.7	10	54
100L03	0.5	1.0	4	0.8	3	54
100L04	0.5	1.0	4	0.8	4	54
100L06	0.5	1.0	4	0.8	6	54
100L08	0.5	1.0	4	0.8	8	54
100L10	0.5	1.0	4	0.8	10	54
100L15	0.5	1.0	4	0.8	15	54
120L03	0.6	1.2	4	1.0	3	54
120L04	0.6	1.2	4	1.0	4	54
120L05	0.6	1.2	4	1.0	5	54
120L06	0.6	1.2	4	1.0	6	54
150L04	0.75	1.5	4	1.4	4	54
150L06	0.75	1.5	4	1.4	6	54
150L08	0.75	1.5	4	1.4	8	54
150L10	0.75	1.5	4	1.4	10	54
150L15	0.75	1.5	4	1.4	15	54
200L04	1.0	2.0	4	1.7	4	54
200L06	1.0	2.0	4	1.7	6	54
200L08	1.0	2.0	4	1.7	8	54
200L10	1.0	2.0	4	1.7	10	54
200L15	1.0	2.0	4	1.7	15	54
200L20	1.0	2.0	4	1.7	20	63
300L06	1.5	3.0	4	2.3	6	54
300L08	1.5	3.0	4	2.3	8	54
300L12	1.5	3.0	4	2.3	12	54
300L16	1.5	3.0	4	2.3	16	54
300L20	1.5	3.0	4	2.3	20	63
400L20	2.0	4.0	4	3.0	20	60
400L30	2.0	4.0	4	3.0	30	80

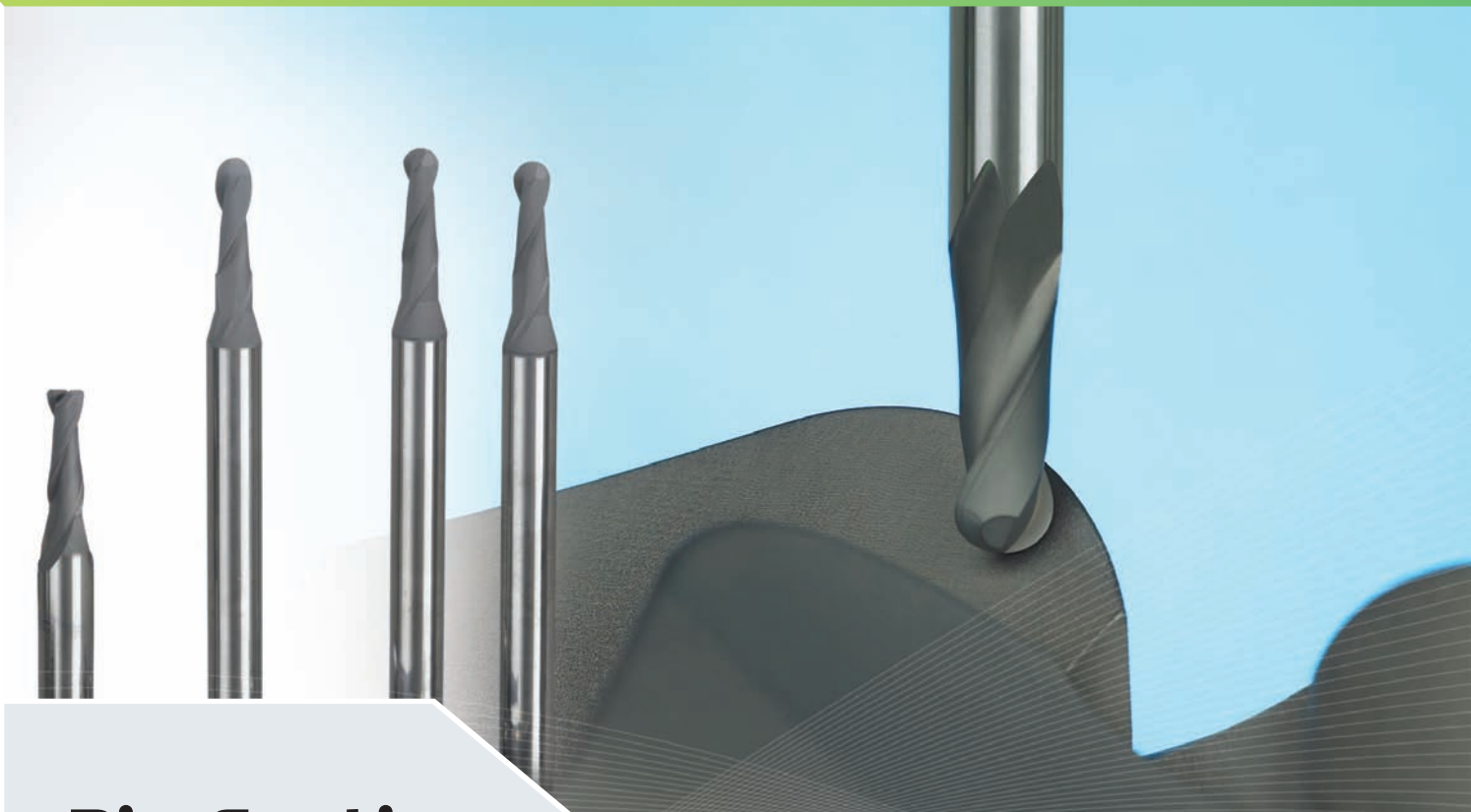
CSRE Radius



- ØD : Ø0.2~Ø4.0
- Tolerance : 0~-0.005

(mm)

Designation	R	ØD	Ød	l ₁	l ₂	L
CSRE 020L003R003	0.03	0.2	4	0.3	0.3	54
030L003R005	0.05	0.3	4	0.4	0.3	54
030L008R005	0.05	0.3	4	0.4	0.8	54
040L01R005	0.05	0.4	4	0.4	1	54
040L01R01	0.1	0.4	4	0.4	1	54
050L01R005	0.05	0.5	4	0.5	1	54
050L01R01	0.1	0.5	4	0.5	1	54
060L02R005	0.05	0.6	4	0.6	2	54
060L02R01	0.1	0.6	4	0.6	2	54
080L02R01	0.1	0.8	4	0.8	2	54
080L03R01	0.1	0.8	4	0.8	3	54
100L02R01	0.1	1.0	4	0.9	2	54
100L04R01	0.1	1.0	4	0.9	4	54
100L06R01	0.1	1.0	4	0.9	6	54
100L02R02	0.2	1.0	4	0.9	2	54
100L04R02	0.2	1.0	4	0.9	4	54
120L02R01	0.1	1.2	4	1.0	2	54
120L04R01	0.1	1.2	4	1.0	4	54
120L02R02	0.2	1.2	4	1.0	2	54
120L04R02	0.2	1.2	4	1.0	4	54
150L04R01	0.1	1.5	4	1.4	4	54
150L06R01	0.1	1.5	4	1.4	6	54
150L04R02	0.2	1.5	4	1.4	4	54
150L06R02	0.2	1.5	4	1.4	6	54
150L04R03	0.3	1.5	4	1.4	4	54
150L06R03	0.3	1.5	4	1.4	6	54
200L06R01	0.1	2.0	4	1.5	6	54
200L10R01	0.1	2.0	4	1.5	10	54
200L06R02	0.2	2.0	4	1.5	6	54
200L10R02	0.2	2.0	4	1.5	10	54
200L06R03	0.3	2.0	4	1.5	6	54
200L10R03	0.3	2.0	4	1.5	10	54
300L08R01	0.1	3.0	4	2.3	8	54
300L08R02	0.2	3.0	4	2.3	8	54
300L08R03	0.3	3.0	4	2.3	8	54
400L30R01	0.1	4.0	6	3.0	30	80
400L30R02	0.2	4.0	6	3.0	30	80
400L30R03	0.3	4.0	6	3.0	30	80
400L40R05	0.5	4.0	6	3.0	40	100
400L40R10	1.0	4.0	6	3.0	40	100



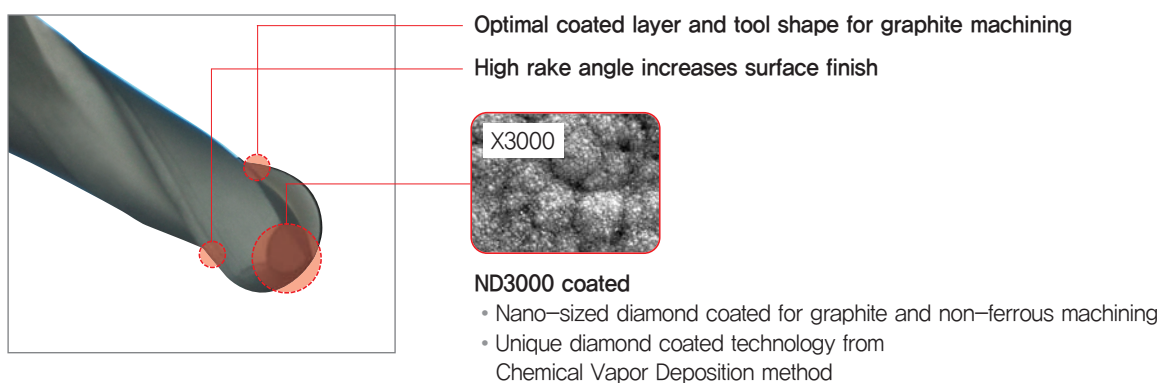
Dia Coating Endmill

- Unique diamond coated technology from Chemical Vapor Deposition method
- Longer tool life and excellent surface finish in graphite and non-ferrous metal machining due to improved shape of endmill and Nano-sized diamond particles
- Wide application range from interrupted machining to high precision machining
- 10~20 times longer tool life than uncoated endmill
- High productivity efficiency

Code system

D	S	R	E	2	040 - R1	
Coated	Solid	Type	Endmill	No. of flute	Dia.	Corner R
Dia Coating	Solid	B Ball F Flat R Radius	Endmill		○○○Ø (to one decimal place)	○○○ (to one decimal place)

Features and coated



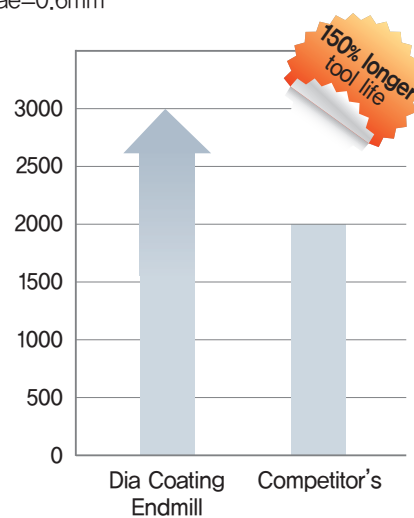
Series

Designation	Shape	No. of flute	Type	Shape	Diameter
DBE2000		2	Standard	Ball	Ø4.0~Ø8.0
DFE2000		2	Standard	Flat	Ø3.0~Ø8.0
DRE2000		2	Standard	Radius	Ø4.0~Ø8.0

Machining example

- **Workpiece** Graphite
- **Cutting condition** $n=16,000\text{min}^{-1}$, $v_f=2,600\text{mm/min}$, $a_p=1.5\text{mm}$, $a_e=0.6\text{mm}$

	Wear on the cutting edge	Enlarged
Dia Coating Endmill		
Competitor's		

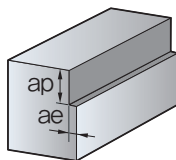


Recommended cutting condition

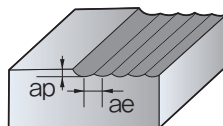
Workpiece	Shape	Diameter (Ø)	n(min ⁻¹)	vf(mm/min)
DBE2000	Graphite	4	15,000	1,900
		6	15,000	1,900
		8	13,900	1,900
	Aluminum alloy	4	15,900	1,550
		6	10,500	1,550
		8	7,950	1,550
	Copper alloy and copper	4	11,900	1,150
		6	7,950	1,150
		8	5,950	1,150
DFE2000	Graphite	3	21,000	1,280
		4	16,000	1,180
		6	10,500	1,180
		8	8,000	1,080
	Aluminum alloy	3	21,000	670
		4	16,000	670
		6	10,500	670
		8	8,000	600
	Copper alloy and copper	3	21,000	640
		4	16,000	640
		6	10,500	560
		8	8,000	540
DRE2000	Graphite	4	13,990	1,180
		6	13,900	1,180
		8	10,000	1,080
	Aluminum alloy	4	15,900	670
		6	10,500	670
		8	7,950	600
	Copper alloy and copper	4	11,990	640
		6	7,950	560
		8	5,950	540

※ The above depth of cut is based on side milling.

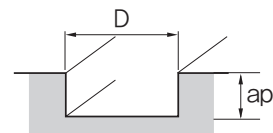
Depth of cut



- **Graphite** ap=1.5D, ae=0.1D
- **Aluminum alloy** ap=1.5D, pf=0.1D
- **Copper alloy** ap=1.5D, pf=0.1D

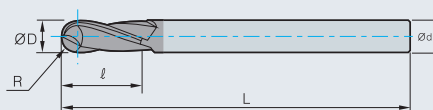


- **Graphite** ap=1.5D, ae=0.1D
- **Aluminum alloy** ap=0.5D, pf=0.1D
- **Copper alloy** ap=0.5D, pf=0.1D



- **Graphite** ap=0.1D
- **Aluminum alloy** ap=0.1D
- **Copper alloy** ap=0.1D

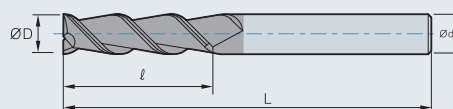
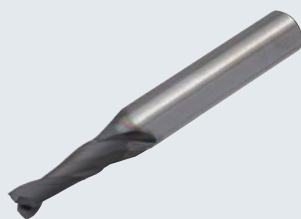
DBE2000 Ball



(mm)

Designation	R	ØD	Ød	ℓ	L
DBE 2040-070	2	4	6	12	70
2060-080	3	6	6	15	80
2080-090	4	8	8	20	90

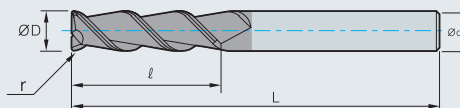
DFE2000 Flat



(mm)

Designation	ØD	Ød	ℓ	L
DFE 2030-045	3	6	10	45
2040-045	4	6	12	45
2060-050	6	6	15	50
2080-060	8	8	20	60

DRE2000 Radius



(mm)

Designation	r	ØD	Ød	ℓ	L
DRE 2040-045-R05	0.5	4	6	5	45
2060-050-R05	0.5	6	6	7	50
2080-060-R10	1	8	8	9	60



WPDC

- WPDC can drill deeper than current drills, NPD/SPD. ⇒ Center drill as a guide ensures deep hole making.
- The available aspect ratios are 5D, 6.5D and 8D.
- Drill holder, Insert, and Center drill
- Insert : WPDC-WC□T-C21

Code system

► Drill

WPDC	410	-	40	-	8
Type	Drill dia.		Shank dia.		Aspect ratio
WPDC using W type insert and center drill	410 Ø41.0 6570 Ø65~70		32 Ø32 40 Ø40		5 5D 6.5 6.5D 8 8D

► Cartridge

CWP	4145	C
Type	Drill dia.	Classification
CWP Cartridge-WPDC	4145 Ø41~45 450 Ø45.0	C Central P Peripheral

► Center drill

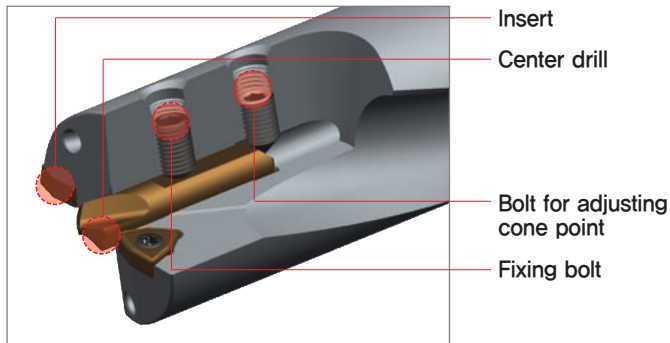
CD	H	1035
Type	Coolant	Dia.×Length of tool
Center drill	H Coolant No code None	0630 Ø6×30 0835 Ø8×35 1035 Ø10×35 1238 Ø12×38 1645 Ø16×45

► Grade

PC	40H
Type	Coated layer
PVD Coated	40H TiN Coated

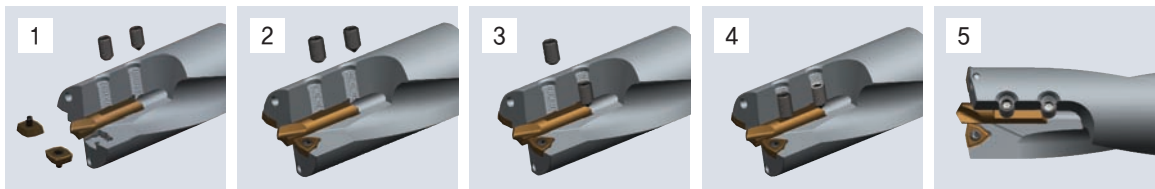
How to clamp the drills

► Features of the cone-point system



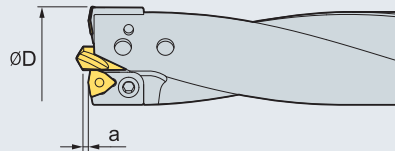
- Convenient and quick adjustable heights when inserting the center drill
- In case the center drill brakes while in usage, it can be replaced with the bolt for adjusting cone point.
- The bolt for adjusting cone point prevents chattering on the center drill.

► Clamping



- 1 Place a center drill.
 - 2 Clamp insert and cartridge.
 - 3 Adjust the center drill with the bolt for adjusting cone point.
 - 4 Clamp the center drill firmly with fixing bolt.
 - 5 Reassure the clamp with bolt for adjusting cone point.
- (1) Use safety covers for your safety when clamping the center drill and insert.
 (2) When machining, be careful of the drill disk.

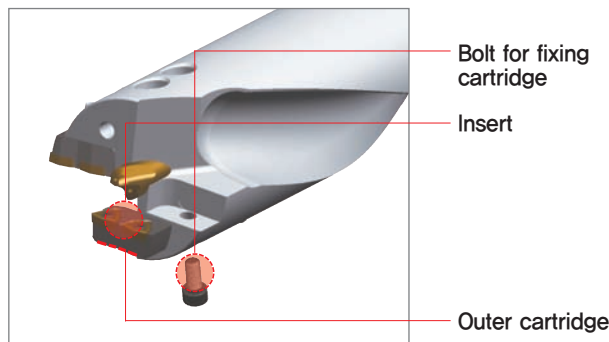
► Length of the 'a' part of center drill



- The length of 'a' being too short can cause bad surface finish or high cutting load. On the other hand, the length of 'a' being too long can make tool failure and chattering while drilling.

Diameter ($\varnothing D$)	Length of the 'a' part of center drill		
	Steel	Alloy steel	Non-ferrous metals
25~30	1.2	1.0	1.5
31~40	1.5	1.3	1.8
41~50	1.8	1.5	2.2
51~59	2.2	1.8	2.5
60~75	2.5	2.0	2.8
76~80	3.0	2.5	3.5

Adjusting diameter of cartridge type drill



- Range of adjustable drill diameter
 - ① Single cartridge type
(Drill diameter $\varnothing 41 \sim \varnothing 59$) $\rightarrow -1.0\text{mm}$
 - ② Dual cartridge type
(Drill diameter $\varnothing 60 \sim \varnothing 80$) $\rightarrow -5.0\text{mm}$
- Diameter of the standard drills is provided with maximum size of standards.
(Ex) WPDC6570-40-6.5 $\rightarrow$ Drill diameter 70.0mm

- Disassemble a cartridge from the holder by loosening the bolt fixed for outer cartridge.
- Machine after calculating the hole size on the side of the outer cartridge.
- Trim the sharp part after machining.
- Clamp the bolt for fixing cartridge without any gap in between the holder and the machined outer cartridge.

(Ex) How to adjust drill diameter to $\varnothing 66.0$ machining with WPDC6570-40-8

➔ To make the drill diameter of outer cartridge to $\varnothing 66.0$, machine 2.0mm. ($\varnothing 70.0 - \varnothing 66.0 = 4 \Rightarrow 4 \div 2 = 2(\text{radius})$)

Recommended cutting condition

Workpiece information			C/B	Grade	vc(m/min)	Feed (Aspect ratio = 5D, 6.5D, 8D)					
						Feed(mm/rev) per drill diameter (mm)					
ISO	workpiece	HB				$\sim \varnothing 30$	$\varnothing 31 \sim \varnothing 40$	$\varnothing 41 \sim \varnothing 50$	$\varnothing 51 \sim \varnothing 59$	$\varnothing 60 \sim \varnothing 75$	$\varnothing 75 \sim \varnothing 80$
P Carbon steel	Low carbon steel($\sim 0.25\%$)	80~180	C21	PC3500	190(160~220)	0.07~0.11	0.08~0.12	0.10~0.14	0.12~0.16	0.12~0.16	0.12~0.16
	High carbon steel(0.25%~)	180~280	C21	PC3500	140(110~170)	0.07~0.11	0.08~0.12	0.10~0.14	0.12~0.16	0.12~0.16	0.12~0.16
P Alloy steel	Low alloy steel	140~260	C21	PC3500	130(100~160)	0.08~0.12	0.08~0.12	0.10~0.14	0.12~0.18	0.12~0.18	0.12~0.18
	High alloy steel	50~260	C21	PC3500	100(70~130)	0.06~0.10	0.08~0.12	0.08~0.12	0.10~0.16	0.10~0.16	0.10~0.16
M Stainless steel	Stainless steel	135~275	C21	PC3500	100(70~130)	0.06~0.10	0.08~0.12	0.10~0.12	0.12~0.14	0.12~0.14	0.12~0.14
K Cast iron	Gray cast iron	150~220	C21	PC3500	160(130~190)	0.09~0.15	0.10~0.16	0.12~0.2	0.14~0.22	0.14~0.22	0.14~0.22
	Ductile cast iron	200~300	C21	PC3500	140(170~110)	0.09~0.15	0.10~0.16	0.12~0.2	0.14~0.22	0.14~0.22	0.14~0.22
	Nalleable cast iron	130~230	C21	PC3500	150(180~120)	0.09~0.15	0.10~0.16	0.12~0.2	0.14~0.22	0.14~0.22	0.14~0.22
N Aluminum	Aluminum	30~150	C21	PC3500	300(250~350)	0.08~0.12	0.10~0.14	0.12~0.16	0.14~0.18	0.14~0.18	0.14~0.18
N Copper alloy	Copper alloy	150~160	C21	PC3500	250(200~300)	0.08~0.12	0.10~0.14	0.12~0.16	0.14~0.18	0.14~0.18	0.14~0.18
S Heat resisting steel	Heat resisting steel	130~400	C21	PC3500	50(70~30)	0.05~0.08	0.05~0.08	0.06~0.10	0.06~0.10	0.06~0.10	0.06~0.10

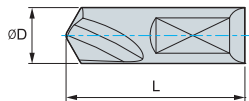
Parts

(mm)

Designation	ØD	Insert			Center drill			Cartridge		
		Insert	Screw 	Wrench 	Center drill 	Fixing bolt 	Adjusting bolt 	Central insert	Peripheral insert	Fixing bolt
WPDC 250-32-□	25	WC□T030204-C21	FTKA02206	TW06S	CD0630	KHA0508	KHC0510			
260~280-32-□	26~28	WC□T040204-C21	FTKA02565	TW07S		KHA0510				
290~300-32-□	29~30	WC□T050308-C21	FTKA0307	TW09S		KHA0610	KHC0610			
310~350-32-□	31~35				KHA0612					
360~400-32-□	36~40									
410-40-□	41	WC□T06T308-C21	FTKA03508	TW15S	CDH1035	KHA0812	KHC0812	CWP4145C	CWP410P	BHA0510
420-40-□	42								CWP420P	
430-40-□	43								CWP430P	
440-40-□	44								CWP440P	
450-40-□	45								CWP450P	
460-40-□	46				KHA0815	CWP4650C	CWP460P	BHA0512		
470-40-□	47						CWP470P			
480-40-□	48						CWP480P			
490-40-□	49						CWP490P			
500-40-□	50						CWP500P			
510-40-□	51	WC□T080408-C21	FTKA0411K	TW15S	CDH1238	KHA1015	KHC1016	CWP5155C	CWP510P	BHA0612
520-40-□	52								CWP520P	
530-40-□	53								CWP530P	
540-40-□	54								CWP540P	
550-40-□	55								CWP550P	
560-40-□	56							CWP5659C	CWP560P	BHA0614
570-40-□	57								CWP570P	
580-40-□	58								CWP580P	
590-40-□	59								CWP590P	
6065-40-□	60~65									
6570-40-□	65~70	WC□T050308-C21	FTKA0307	TW09S	KHA1020	KHC1020	CWP6065C	CWP6065P	RHA0510	
7075-40-□	70~75						CWP6570C	CWP6570P		
7580-40-□	75~80	WC□T06T308-C21	FTKA03508	TW15S			CDH1645	CWP7075C		CWP7075P
							CWP7580C	CWP7580T	BHA0612	

Center drill

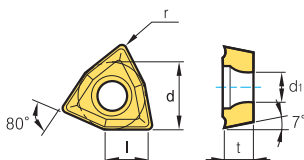
(mm)



Designation	Grade PC40H	ØD	L	Coolant
CD 0630		6	30	×
0835		8	35	×
CDH 1035		10	35	○
1238		12	38	○
1645		16	45	○

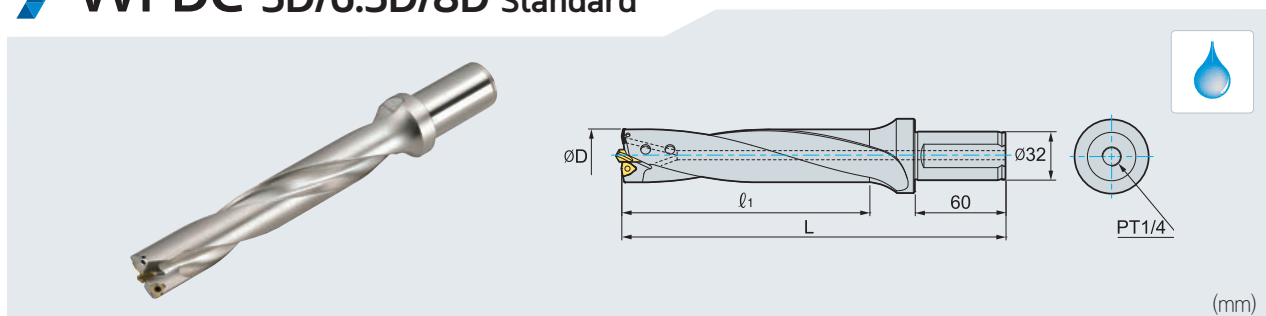
*Tin coated on the HSS drill

Insert



ØD	Designation	Grade	ℓ	d	t	r	d ₁
Ø25	WC□T 030204-C21	PC5300	3.8	5.56	2.38	0.4	2.5
Ø26~Ø30	040204-C21	PC5300	4.3	6.35	2.38	0.4	2.8
Ø31~Ø45 Ø60~Ø75	050308-C21	PC5300	5.4	7.94	3.18	0.8	3.4
Ø41~Ø50 Ø75~Ø80	06T308-C21	PC5300	6.5	9.525	3.97	0.8	4.4
Ø51~Ø59	080408-C21	PC5300	8.7	12.7	4.76	0.8	5.5

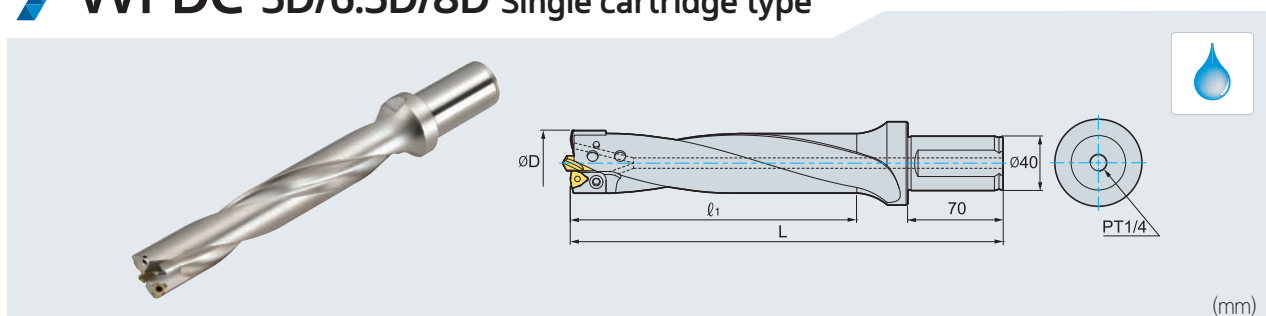
WPDC-5D/6.5D/8D Standard



Designation		ØD	5D		6.5D		8D		Insert	Center drill
			ℓ ₁	L	ℓ ₁	L	ℓ ₁	L		
WPDC	250-32-□	25	150	240	185	275	220	310	WC□T030204—C21	CD0630
	260-32-□	26							WC□T040204—C21	
	270-32-□	27								
	280-32-□	28								
	290-32-□	29								
	300-32-□	30								
	310-32-□	31	175	265	218	308	260	350	WC□T050308—C21	CD0835
	320-32-□	32								
	330-32-□	33								
	340-32-□	34								
	350-32-□	35								
	360-32-□	36								
	370-32-□	37	200	290	250	340	300	390		
	380-32-□	38								
	390-32-□	39								
	400-32-□	40								

※The special drills are available for quotation. (ex.) Drill diameter 32,5mm×6.5D → WPDC325-32-6.5

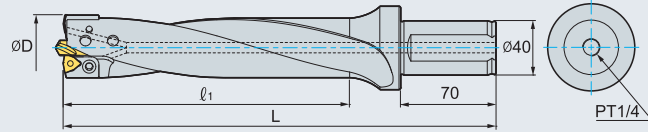
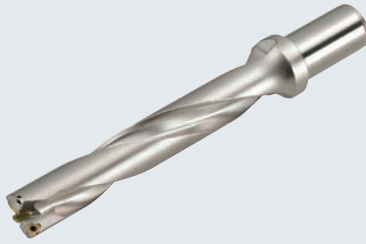
WPDC-5D/6.5D/8D Single cartridge type



Designation	ØD	5D		6.5D		8D		Insert	Center drill	Cartridge	
		l ₁	L	l ₁	L	l ₁	L			Central insert	Peripheral insert
WPDC 410-40-□	41	225	330	283	388	340	445	WC□T06T308-C21	CDH1035	CWP4145C	CWP410P
420-40-□	42										CWP420P
430-40-□	43										CWP430P
440-40-□	44										CWP440P
450-40-□	45										CWP450P

※The special drills are available for quotation. (ex.) Drill diameter 47,5mm×5D → WPDC475-40-5

WPDC-5D/6.5D/8D Single cartridge type

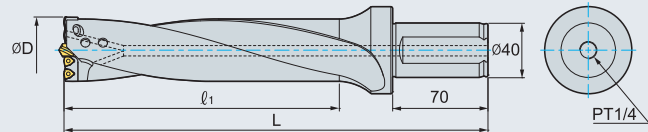
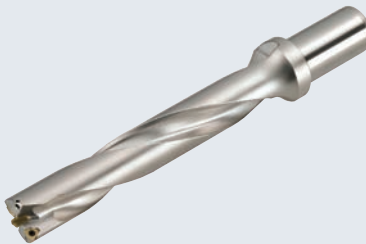


(mm)

Designation		ØD	5D		6.5D		8D		Insert	Center drill	Cartridge	
			ℓ ₁	L	ℓ ₁	L	ℓ ₁	L			Central insert	Peripheral insert
WPDC	460-40-□	46	250	355	315	420	380	485	WC□T06T308-C21	CDH1035	CWP4650C	CWP460P
	470-40-□	47										CWP470P
	480-40-□	48										CWP480P
	490-40-□	49										CWP490P
	500-40-□	50										CWP500P
	510-40-□	51										CWP510P
	520-40-□	52	275	380	348	453	420	525	WC□T080408-C21	CDH1238	CWP5155C	CWP520P
	530-40-□	53										CWP530P
	540-40-□	54										CWP540P
	550-40-□	55										CWP550P
	560-40-□	56	300	405	380	485	460	565			CWP5659C	CWP560P
	570-40-□	57										CWP570P
	580-40-□	58										CWP580P
	590-40-□	59										CWP590P

※The special drills are available for quotation. (ex.) Drill diameter 47.5mm×5D → WPDC475-40-5

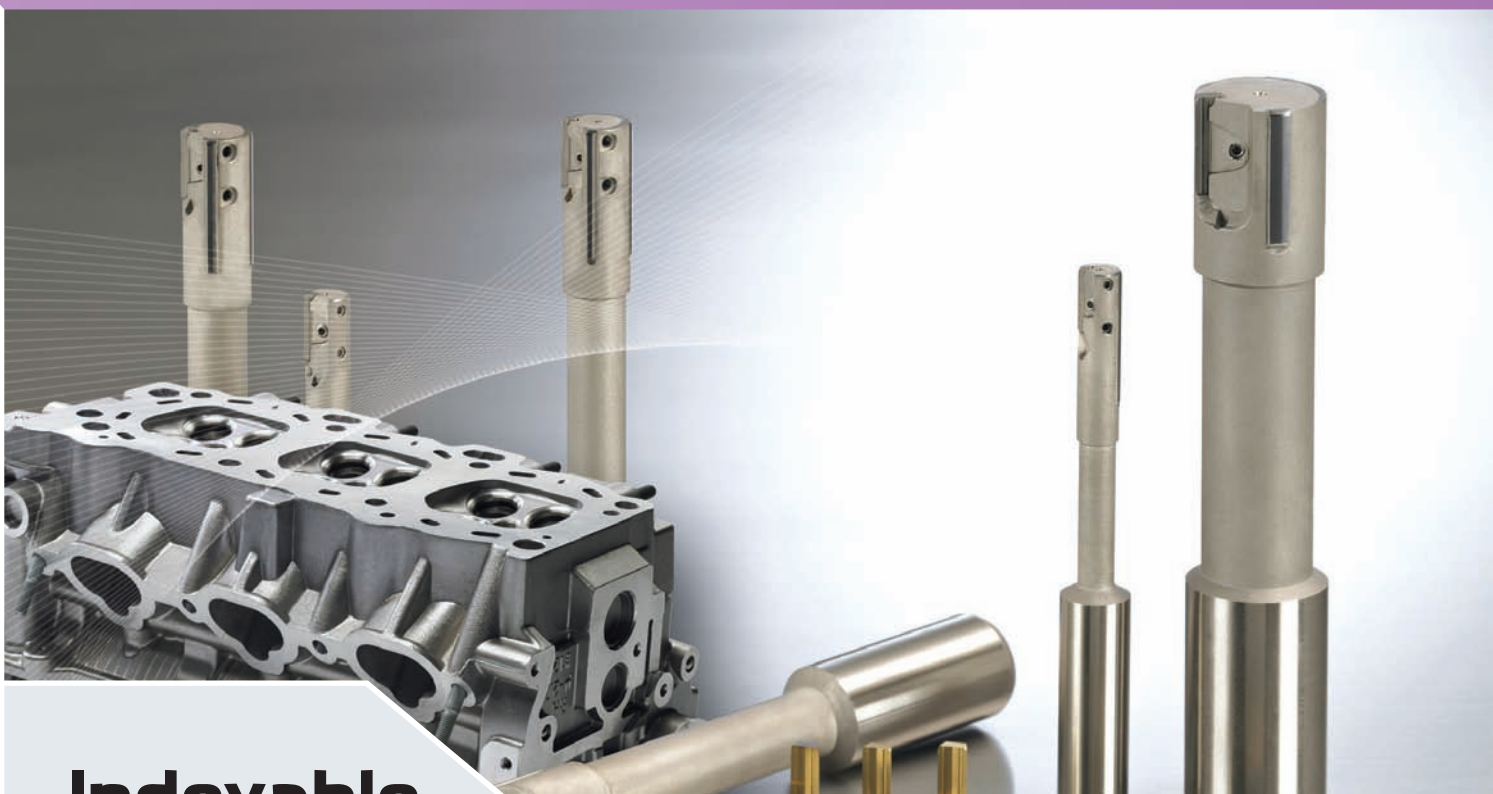
WPDC-5D/6.5D/8D Dual cartridge type



(mm)

Designation	ØD	5D		6.5D		8D		Insert	Center drill	Cartridge	
		ℓ₁	L	ℓ₁	L	ℓ₁	L			Central insert	Peripheral insert
WPDC 6065-40-□	60~65	325	430	423	528	520	625	WC□T050308-C21	CDH1238	CNP6065C	CNP6065P
6570-40-□	65~70	350	455	455	560	560	665			CNP6570C	CNP6570P
7075-40-□	70~75	375	480	488	593	600	705			CNP7075C	CNP7075P
7580-40-□	75~80	400	505	520	625	640	745	WC□T06T308-C21	CDH1645	CNP7580C	CNP7580P

※The special drills are available for quotation. (ex.) Drill diameter 70.5mm×6.5D → WPDC705-40-6.5



Indexable Reamer

- Optimal tool for mass production and high speed machining.
- Adjustable diameter ensures high precision machining.

Code system

► Holder

IR	T	12.000	- 16	135	- 16
Indexable Reamer		Reamer dia.	Shank dia.	Length	Insert size
Indexable Reamer		12,000 Ø12,0			15 15,0×3,0 16 16,0×3,5 17 17,0×4,5 22 22,0×6,5
Application					
T Throughout hole machining B Blind hole machining					

► Insert

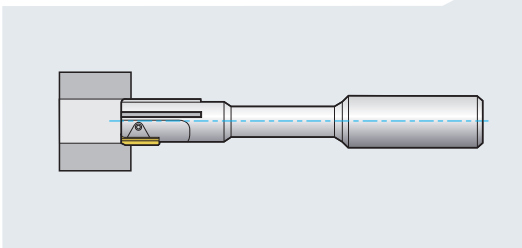
RI	15	- B	06
Reamer insert	Insert size	Insert lead type	Angle of C/B
Reamer insert	15 15,0×3,0 16 16,0×3,5 17 17,0×4,5 22 22,0×6,5	A Excellent surface finish, Low cutting condition B General machining, high cutting condition C Aluminum and copper alloy D Blind hole, low feed	00 0°, Cast iron machining 06 6°, General steel 12 12°, Stainless and aluminum

Feature

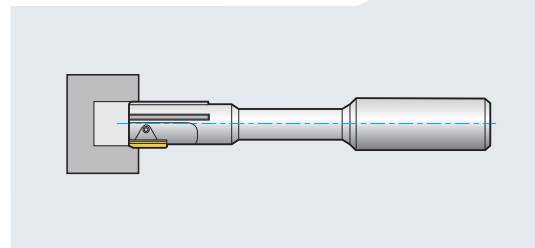
- Suitable for mass production and High performance
- Using PCD or coated insert as high speed machining
- Excellent high accuracy and adjustable machining hole
- Using accuracy chucking system (Hydraulic, rotating type arbor)
- Using inner coolant type machine to evacuate chips
- Using suitable holder and insert
- As insert setting, using setting fixture (KIRSD-210)

Applications

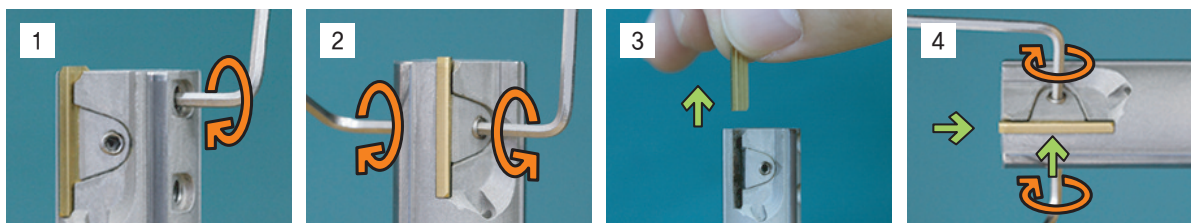
► Throughout hole machining (IRT)



► Blind hole machining (IRB)

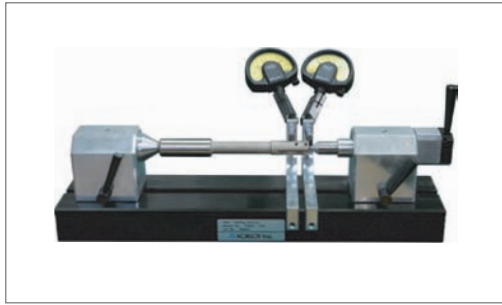


How to set an insert



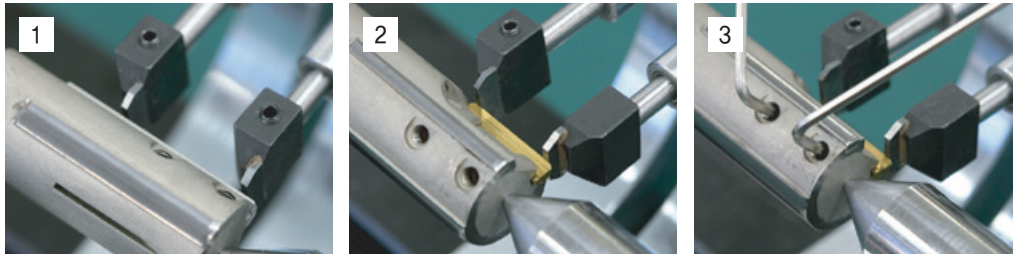
- 1 Screw the wedge screw counterclockwise with the exclusive wrench
- 2 Screw the clamp screw
 - ① Top side : counterclockwise
 - ② Lower side : clockwise
- 3 Remove the insert and clean the pocket
- 4 Put the insert up to the edge stopper and clamp the insert.
 - ① Top side : clockwise
 - ② Lower side : counterclockwise

Exclusive fixture



- Designation : KIRSD-210
- Maximum diameter of reamer : $\varnothing 60 \times 210\text{mm}$
- The fixture is also available for setting special reamer and mono tool.
- Special reamers (out of maximum setting range) are available quotation.

How to set an insert with a fixture



- ① Adjust the gauge to '0'
- ② Rotate the reamer until the insert touches the gauge.
- ③ Set the back taper and adjust the insert height and screw in the wedge screw.
 - ① Top side of insert : $+0.015 \sim +0.020\text{mm}$
 - ② Bottom side of insert : $+0.005 \sim +0.010\text{mm}$
 - ③ Back taper : $0.010 \sim 0.015\text{mm}$

Back taper

- Ensures low cutting load and excellent surface finish with good chip evacuation.
- Inaccurate back taper could cause unstable machining with the wear of an insert.
- The size of back taper of the insert's bottom side should be less than $0.010 \sim 0.015\text{mm}$ to one of the insert's top side.

Insert setting with a micrometer



- Lathe with both centers or Bench center are also available.
- (Notice) The setting with a micrometer is not recommended due to chipping on the cutting edge.

Recommended cutting condition

Workpiece	Type of insert		fn(mm/rev)	vc(m/min)		
	Angle of C/B	Lead type		Coated	Uncoated	Cermet
Carbon steel General steel	6	A	0.1~0.4	60~80	40~60	110~160
		B	0.1~0.3	80~120	60~80	
		D	0.05~0.2			
Soft steel Alloy steel	6	A	0.1~0.4	40~60	20~40	110~160
		B	0.1~0.3	80~120	60~80	
		D	0.05~0.2			
High alloy steel Tool steel	6	A	0.1~0.4	20~60	20~40	20~60
		B	0.1~0.3	40~80	40~60	40~80
		D	0.05~0.2			
Stainless steel	12	A	0.1~0.3	40~60	20~40	40~60
		B	0.1~0.2	60~80	40~60	60~80
		D	0.05~0.2			
Cast iron	6	A	0.1~0.3	60~100	40~60	
		B	0.1~0.25	80~120	60~80	
		D	0.05~0.2			
Aluminum	12	B	0.1~0.3		160~200	
		C	0.15~0.3		150~250	
		D	0.05~0.2		110~200	
Copper alloy	0	B	0.1~0.2		80~100	
		D	0.05~0.2			
Non-ferrous metals	0	B	0.1~0.3		10~70	

Parts

Range of diameter	Clamp 	Adjusting wedge 	Clamp screw 	Wedge screw  (NYLOK)	Clamp wrench 	Wedge wrench 
10.0~11.9	CV 15	AW2430	DHA0308	HSO306	HW15L	HW15L
12.0~17.9	CV 16	AW2435				
18.0~27.9	CV 17	AW3240	DHA0409	HSO406	HW20L	HW20L
28.0~31.9	CV 22	AW3260				

Inserts for indexable reamer



(mm)

Designation	Grade			Size			Lead type	Angle of C/B (α°)
	K10 (Uncoated)	BPK110 (TiAlN)	BPK210 (TiN)	L	W	S		
RI 15-A06			○	15	3.0	1.5	A	6°
15-A12	○			15	3.0	1.5	A	12°
15-B06		○	○	15	3.0	1.5	B	6°
15-B12		○		15	3.0	1.5	B	12°
16-A06			○	16	3.5	1.5	A	6°
16-A12	○			16	3.5	1.5	A	12°
16-B06		○	○	16	3.5	1.5	B	6°
16-B12		○		16	3.5	1.5	B	12°
17-A06			○	17	4.5	2.0	A	6°
17-A12	○			17	4.5	2.0	A	12°
17-B06		○	○	17	4.5	2.0	B	6°
17-B12		○		17	4.5	2.0	B	12°
22-A06			○	22	6.5	3.0	A	6°
22-A12	○			22	6.5	3.0	A	12°
22-B06		○	○	22	6.5	3.0	B	6°
22-B12		○		22	6.5	3.0	B	12°

○ : recommended grade per insert type

► Angle of chip breaker

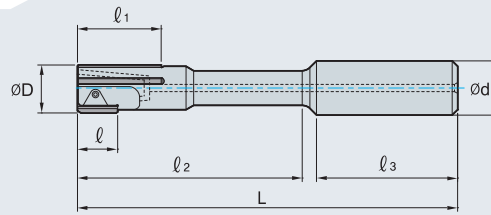
	00	06	12
Shape			
Application	For cast iron machining	For general machining	For stainless and aluminum machining

► Insert lead type

Type	Shape	Application
A		For excellent surface, low cutting condition
B		For general application, high cutting condition

Type	Shape	Application
C		For aluminum and copper alloy machining
D		For blind hole machining, low feed

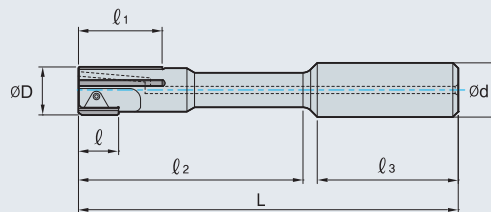
IRT Throughout hole machining



(mm)

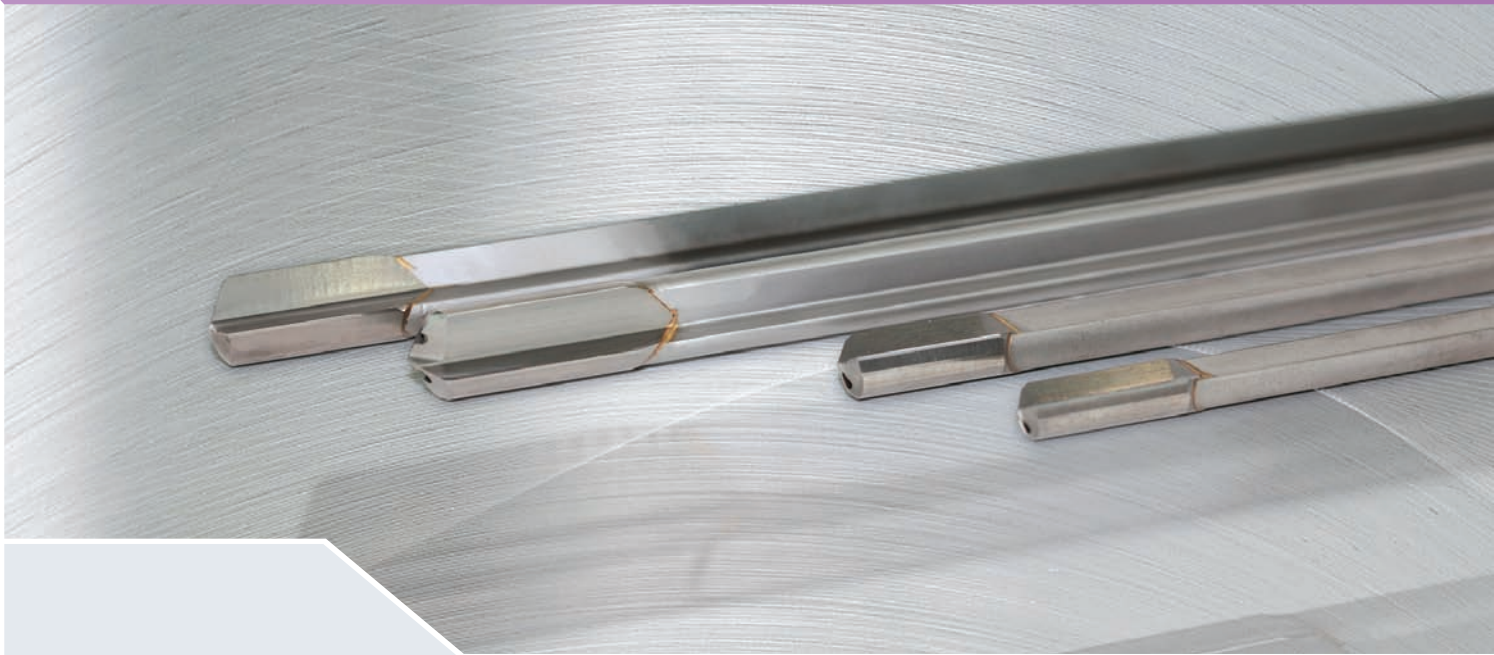
Designation	ØD	ℓ	ℓ₁	ℓ₂	ℓ₃	L	Ød	Insert
IRT 10.000-16125-15	10	15	30	75	45	125	16	RI 15
	11	15	30	75	45	125	16	RI 15
	12	16	30	85	45	135	16	RI 16
	13	16	30	85	45	135	16	RI 16
	14	16	30	85	45	135	16	RI 16
	15	16	30	85	45	135	16	RI 16
	16	16	30	100	50	155	20	RI 16
	17	16	30	100	50	155	20	RI 16
	18	17	30	100	50	155	20	RI 17
	19	17	30	100	50	155	20	RI 17
	20	17	30	110	56	165	25	RI 17
	21	17	30	110	56	165	25	RI 17
	22	17	30	110	56	165	25	RI 17
	23	17	30	110	56	165	25	RI 17
	24	17	30	110	56	165	25	RI 17
	25	17	30	110	56	165	25	RI 17
	26	17	30	110	56	165	25	RI 17
	27	17	30	110	56	165	25	RI 17
	28	22	30	110	56	165	32	RI 22
	29	22	30	110	56	165	32	RI 22
	30	22	30	110	56	165	32	RI 22
	31	22	30	110	56	165	32	RI 22

IRB Blind hole machining



(mm)

Designation	ØD	ℓ	ℓ₁	ℓ₂	ℓ₃	L	Ød	Insert
IRB 10.000-16125-15	10	15	30	75	45	125	16	RI 15
	11	15	30	75	45	125	16	RI 15
	12	16	30	85	45	135	16	RI 16
	13	16	30	85	45	135	16	RI 16
	14	16	30	85	45	135	16	RI 16
	15	16	30	85	45	135	16	RI 16
	16	16	30	100	50	155	20	RI 16
	17	16	30	100	50	155	20	RI 16
	18	17	30	100	50	155	20	RI 17
	19	17	30	100	50	155	20	RI 17
	20	17	30	110	56	165	25	RI 17
	21	17	30	110	56	165	25	RI 17
	22	17	30	110	56	165	25	RI 17
	23	17	30	110	56	165	25	RI 17
	24	17	30	110	56	165	25	RI 17
	25	17	30	110	56	165	25	RI 17
	26	17	30	110	56	165	25	RI 17
	27	17	30	110	56	165	25	RI 17
	28	22	30	110	56	165	32	RI 22
	29	22	30	110	56	165	32	RI 22
	30	22	30	110	56	165	32	RI 22
	31	22	30	110	56	165	32	RI 22



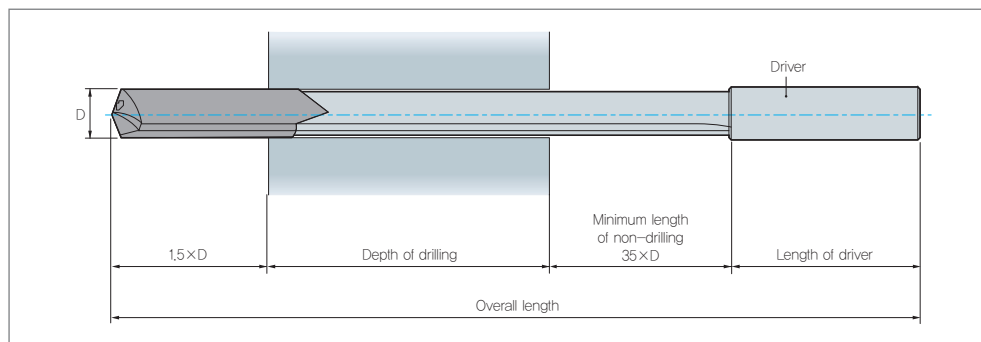
Gun Drill

- High efficiency in deep hole machining
- High accuracy (Hole tolerance : H7, Rmax : 7s)
- Stable Quality due to unique cutting edge and guide pad Available regrinding
- Used drill can recycle as change part of carbide
- Depending on request, The drills can change geometry of cutting edge and drive specification
- For ordering, please check length of drill

Code system

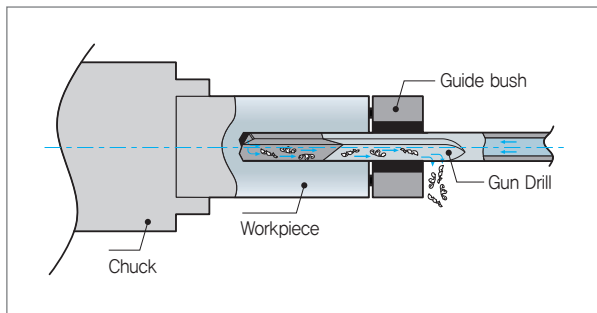
KGD S 12.05 - 1500 / D30

KORLOY Gun Drill	Lip type	Drill dia.	Length of drill	Drive No.
	S Single T Twin	Ø12.05	1500mm	D30



- Refer to the code system and the above drawing when ordering.
- Check the length of drill when ordering.

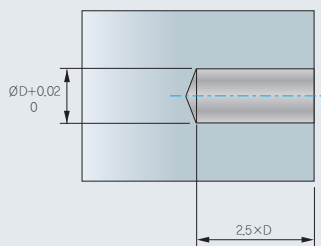
Application of Gun Drill on exclusive machine



- The guide bush is necessary for centering before gun drilling.

Application of Gun Drill on machining center

► Machining of a pilot hole

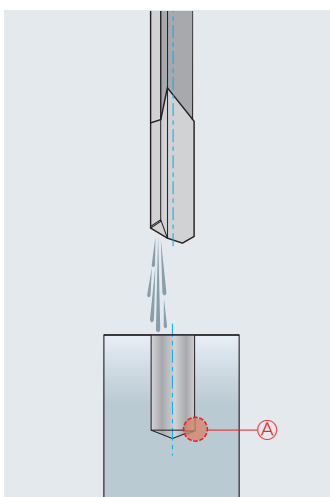


- A pilot hole is necessary in machining on machining center in place of a guide bush.
- The diameter of the pilot hole should be 0.01~0.02(H7) bigger than one of Gun Drill and the depth of drilling should be about $2.5 \times D$.
- Use Mach Drill to machine a pilot hole.



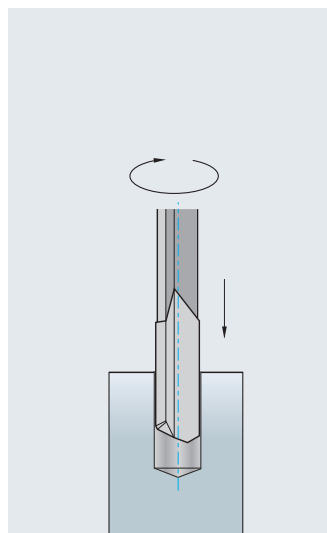
Mach Drill(MSD)

► Moving the Gun Drill to the pilot hole



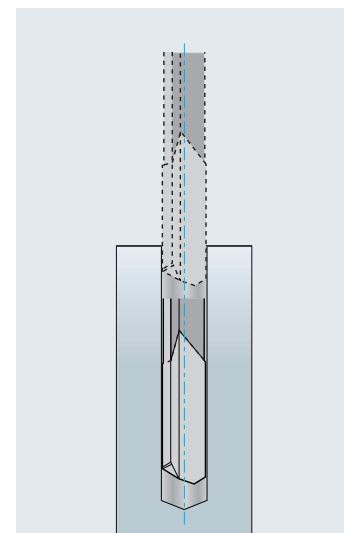
- 1 The Gun Drill should not start drilling until drill is secured in the pilot hole.
- 2 Coolant is necessary for gun drilling.

► Start gun drilling



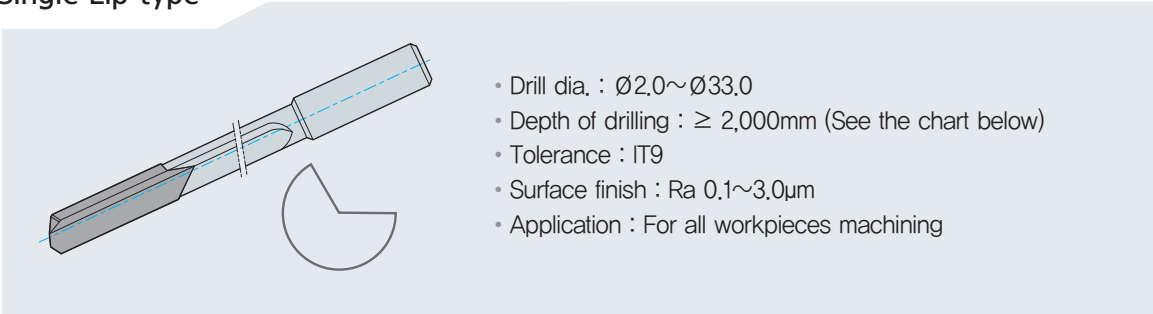
- 1 Rotate the spindle.
- 2 Machine by drilling into the vertical axis.

► After gun drilling



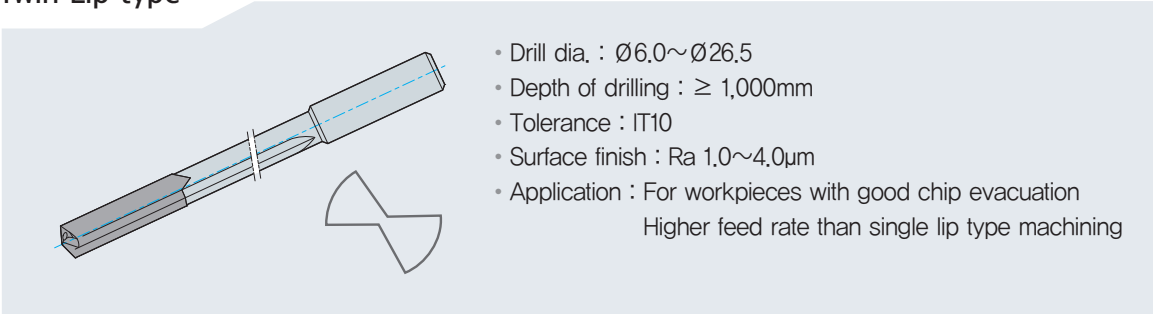
- 1 Return the drill.
- 2 Approach the drill to the ① part.
- 3 Stop drilling and supplying coolant.
- 4 Remove the Gun Drill.

► Single Lip type



- Drill dia. : $\varnothing 2.0 \sim \varnothing 33.0$
- Depth of drilling : $\geq 2,000\text{mm}$ (See the chart below)
- Tolerance : IT9
- Surface finish : $Ra\ 0.1 \sim 3.0\mu\text{m}$
- Application : For all workpieces machining

► Twin Lip type

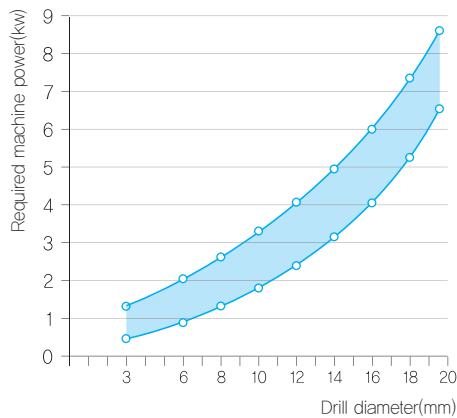


- Drill dia. : $\varnothing 6.0 \sim \varnothing 26.5$
- Depth of drilling : $\geq 1,000\text{mm}$
- Tolerance : IT10
- Surface finish : $Ra\ 1.0 \sim 4.0\mu\text{m}$
- Application : For workpieces with good chip evacuation
Higher feed rate than single lip type machining

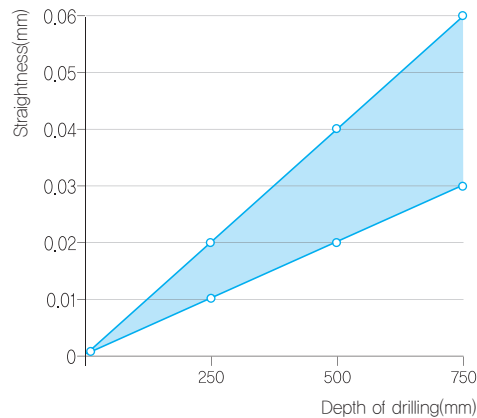
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Technical information

► Required machine power



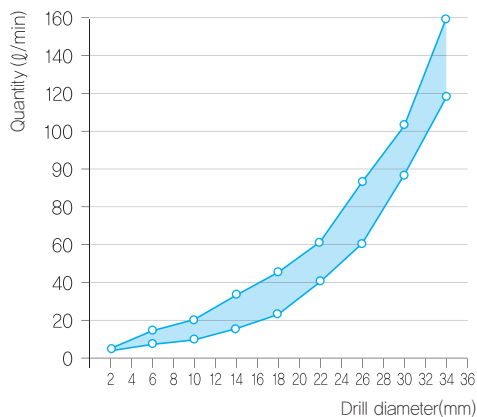
► Straightness



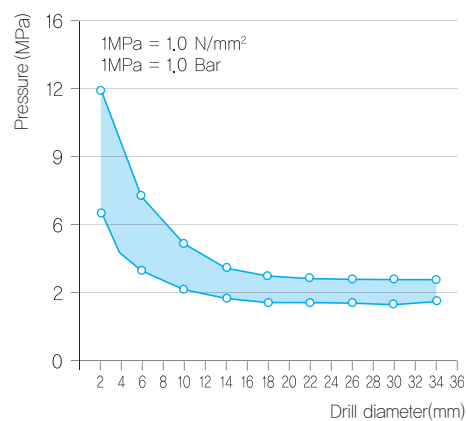
The factors determine the straightness of hole.

- Drill diameter and depth of drilling
- Cutting condition and the kind of application
- Quality of material
- Type of workpiece and machine
- Drill bush

► Quantity of coolant



► Pressure of coolant



The above graph shows general information but it may be changed depending on the type of tool, cutting conditions, and other factors.

• Pressure and quantity of coolant

High pressure of coolant ensures excellent chip evacuation and cooling of the cutting edge.

• Use a filter for removing impurities

Should be less than 20μm. Impurities could make the flow of coolant bad, wear on the tool, and high load on the cooling pump.

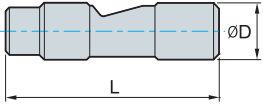
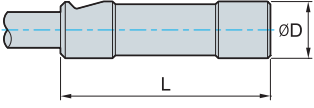
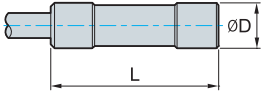
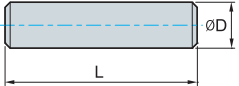
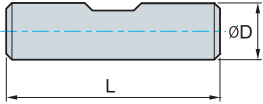
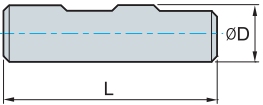
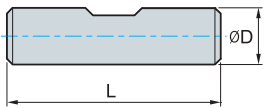
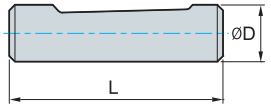
• Temperature of coolant

Proper temperature of coolant : 20~22°C. Do not use coolant above 50°C.

Trouble shooting

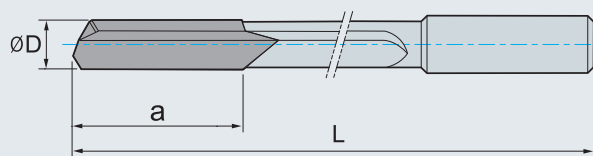
Factors and solutions		Tooling failure														
		Drill									Hole					
		Short tool life	Built-up edge	chipping	Fracture	Wear on flank	Wear on margine	Wear on margin	Fracture of pad	Bended shank	Heat on drill	Smaller diameter	Bigger diameter	Bad straightness	Bad surface finish	Scratch
Coolant	Lack of oil pressure	●	●		●				●	●	●	●				
	Too much oil pressure												●	●	●	
	High temperature	●				●	●	●	●		●	●				
	Lack of coolant	●	●		●				●	●	●	●	●	●		●
Feed	Unsafe	●	●	●	●					●		●		●		
	High feed	●	●		●	●				●	●	●	●	●		●
	Low feed	●	●	●										●		
No. revolution	Too high	●			●	●	●	●	●	●						
	Too low		●									●				
Wear	Wear on cutting edge	●	●	●	●		●							●		●
	Wear on central insert	●							●	●		●	●			●
	Wear on peripheral insert	●	●				●			●		●				●
	Wear on body	●			●		●		●	●	●		●		●	●
Built-up edge	Built-up edge	●			●		●					●	●			
Chip evacuation	Bad chip evacuation	●			●	●		●	●	●		●	●	●		●
Shape of drill	Narrow flute	●		●		●		●	●		●			●		●
	Improper drill shape	●	●		●		●	●	●	●		●	●	●		●
	Improper point angle	●	●	●	●	●	●			●		●	●	●	●	
	Short uncoated head	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Back touch	●			●	●		●	●	●	●	●	●	●	●	●
Bush	Bigger than drill	●			●								●	●		●
	Gap between workpiece and bush	●			●	●						●	●	●		●
	Small bush	●			●	●		●	●	●					●	●
Clamping	Unsafe				●			●					●	●	●	●
Workpiece	Structure	●	●	●	●		●		●					●		●
	Wrong centering	●			●	●		●	●	●			●	●		●
	Contraction due to heat	●			●		●		●		●	●				●
	Thin plate machining	●			●									●	●	●
	Small diameter hole making	●			●	●		●	●		●	●				
Chattering	Too much chattering	●	●	●	●		●		●	●		●	●	●		●
	Chattering in reverse revolution	●	●	●	●		●		●	●		●	●			●

Size of driver

Types	Shape	No.	ØD×L		Uncoated type	
			ØD×L	Thread	Tipped	Solid
Central Clamping Surface 15°		D01	10×40		●	●
		D02	16×45		●	
		D03	19,05×69,8		●	
		D04	25×70		●	
		D05	25,4×69,8		●	
Central Clamping Surface 15°		D06	16×50		●	
Central Clamping Tapered		D07	12,7×38,1		●	●
		D08	16×70			
		D09	19,05×69,8		●	
		D10	20×70			
Cylindrical DIN1835A DIN6535HA		D11	4×28		●	●
		D12	6×36		●	●
		D13	10×40		●	●
		D14	16×48		●	●
		D15	20×50		●	
		D16	25×56		●	
Weldon DIN1835B		D17	10×40		●	●
		D18	12×45		●	●
		D19	16×48		●	●
		D20	20×50		●	●
Weldon DIN6535HB		D21	25×56		●	
		D22	32×60		●	
		D23	40×70			
Whistle Notch DIN1835E		D24	10×40		●	●
		D25	12×45		●	●
		D26	16×48		●	●
		D27	20×50		●	●
		D28	25×56		●	
Whistle Notch DIN6535HE		D29	32×60		●	
		D30	10×40		●	●
		D31	12×45		●	●
		D32	16×48		●	●
		D33	20×50		●	●

※Special types are available for quotation with specifications of the shape and size.

Gun Drill - KGDS Single lip type



Designation discription

○.○○	Diameter
□□□□	Length
D△△	Driver code no.

(mm)

Designation	ØD	a
KGDS ○.○○-□□□□/D△△	2,00~2,49	18
○.○○-□□□□/D△△	2,50~2,99	18
○.○○-□□□□/D△△	3,00~3,49	19
○.○○-□□□□/D△△	3,50~3,99	19
○.○○-□□□□/D△△	4,00~4,49	23
○.○○-□□□□/D△△	4,50~4,99	23
○.○○-□□□□/D△△	5,00~5,49	24
○.○○-□□□□/D△△	5,50~5,99	26
○.○○-□□□□/D△△	6,00~6,49	27
○.○○-□□□□/D△△	6,50~6,99	28
○.○○-□□□□/D△△	7,00~7,49	29
○.○○-□□□□/D△△	7,50~7,99	30
○.○○-□□□□/D△△	8,00~8,49	31
○.○○-□□□□/D△△	8,50~8,99	31
○.○○-□□□□/D△△	9,00~8,49	31
○.○○-□□□□/D△△	9,50~9,99	31
○.○○-□□□□/D△△	10,00~10,49	31
○.○○-□□□□/D△△	10,50~10,99	32
○.○○-□□□□/D△△	11,00~11,49	35
○.○○-□□□□/D△△	11,50~11,99	35
○.○○-□□□□/D△△	12,00~12,49	38

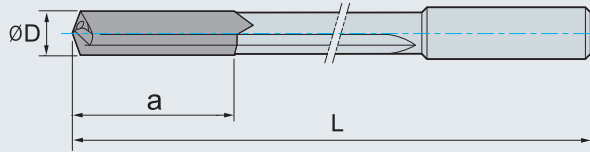
Designation	ØD	a
KGDS ○.○○-□□□□/D△△	12,50~12,99	38
○.○○-□□□□/D△△	13,00~13,99	38
○.○○-□□□□/D△△	14,00~14,99	38
○.○○-□□□□/D△△	15,00~15,99	39
○.○○-□□□□/D△△	16,00~16,99	39
○.○○-□□□□/D△△	17,00~17,99	40
○.○○-□□□□/D△△	18,00~18,99	41
○.○○-□□□□/D△△	19,00~19,99	41
○.○○-□□□□/D△△	20,00~20,99	44
○.○○-□□□□/D△△	21,00~21,99	46
○.○○-□□□□/D△△	22,00~22,99	49
○.○○-□□□□/D△△	23,00~23,99	51
○.○○-□□□□/D△△	24,00~24,99	52
○.○○-□□□□/D△△	25,00~25,99	54
○.○○-□□□□/D△△	26,00~26,99	54
○.○○-□□□□/D△△	27,00~27,99	54
○.○○-□□□□/D△△	28,00~28,99	54
○.○○-□□□□/D△△	29,00~29,99	56
○.○○-□□□□/D△△	30,00~30,99	59
○.○○-□□□□/D△△	31,00~31,99	61
○.○○-□□□□/D△△	32,00~32,99	61

※When ordering, specify overall length and driver number.

► Overall length (L)

Designation	ØD	Overall length				
		250mm	500mm	1000mm	1500mm	2000mm
KGDS	2,00~2,99	○	○			
	3,00~3,49	○	○	○		
	3,50~32,99	○	○	○	○	○

Gun Drill - KGDT Twin lip type



Designation discription

○.○○	Diameter
□□□□	Length
D△△	Driver code no.

(mm)

Designation	ØD	a
KGDT ○.○○-□□□□/D△△	6.00~6.49	35
○.○○-□□□□/D△△	6.50~6.99	35
○.○○-□□□□/D△△	7.00~7.49	38
○.○○-□□□□/D△△	7.50~7.99	38
○.○○-□□□□/D△△	8.00~8.49	38
○.○○-□□□□/D△△	8.50~8.99	38
○.○○-□□□□/D△△	9.00~8.49	40
○.○○-□□□□/D△△	9.50~9.99	40
○.○○-□□□□/D△△	10.00~10.49	40
○.○○-□□□□/D△△	10.50~10.99	40
○.○○-□□□□/D△△	11.00~11.49	45
○.○○-□□□□/D△△	11.50~11.99	45
○.○○-□□□□/D△△	12.00~12.49	45
○.○○-□□□□/D△△	12.50~12.99	48

Designation	ØD	a
KGDT ○.○○-□□□□/D△△	13.00~13.99	48
○.○○-□□□□/D△△	14.00~14.99	48
○.○○-□□□□/D△△	15.00~15.99	48
○.○○-□□□□/D△△	16.00~16.99	50
○.○○-□□□□/D△△	17.00~17.99	50
○.○○-□□□□/D△△	18.00~18.99	50
○.○○-□□□□/D△△	19.00~19.99	50
○.○○-□□□□/D△△	20.00~20.99	55
○.○○-□□□□/D△△	21.00~21.99	55
○.○○-□□□□/D△△	22.00~22.99	55
○.○○-□□□□/D△△	23.00~23.99	60
○.○○-□□□□/D△△	24.00~24.99	60
○.○○-□□□□/D△△	25.00~25.99	65
○.○○-□□□□/D△△	26.00~26.50	65

※When ordering, specify overall length and driver number.

► Overall length (L)

Designation	ØD	Overall length				
		250mm	500mm	1000mm	1500mm	2000mm
KGDT	6.00~26.50	○	○	○		



PCD Revolution Tools

PCD tools produced under the process combining the diamond polycrystalline at ultra high temperature and ultra high pressure ensure high hardness and wear resistance.

The diamond particle size control technology of PCD tools provides wide application range for various workpieces. PCD tools realize superior surface finish, high precision machining and long tool life.

- Superior performance in aluminum, copper alloy, ceramic, high Si-aluminum alloy, rubber, graphite, timber machining.

Code system

► PCD Face Cutter

PDF 6 032 - HSK63A

PCD Face Cutter

Tooth

Dia.

Shank

► PCD Saw

PDS 40 255 25 - Ø25.4

PCD Saw

Tooth

External dia.

Width

Internal dia.

► PCD Endmill

PDE 2 080

PCD Endmill

No. of flute

Dia.

Ø8,0

► PCD Drill

PDD 065

PCD Drill

Dia.

Ø6,5

► PCD Reamer

PDR 2 070

PCD Reamer

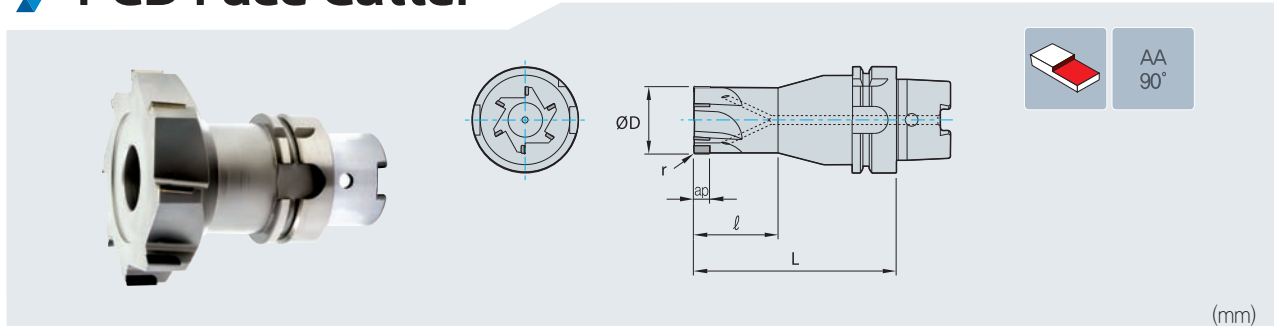
Tooth

Dia.

Ø7,0

PCD Face Cutter

PCD Face Cutter



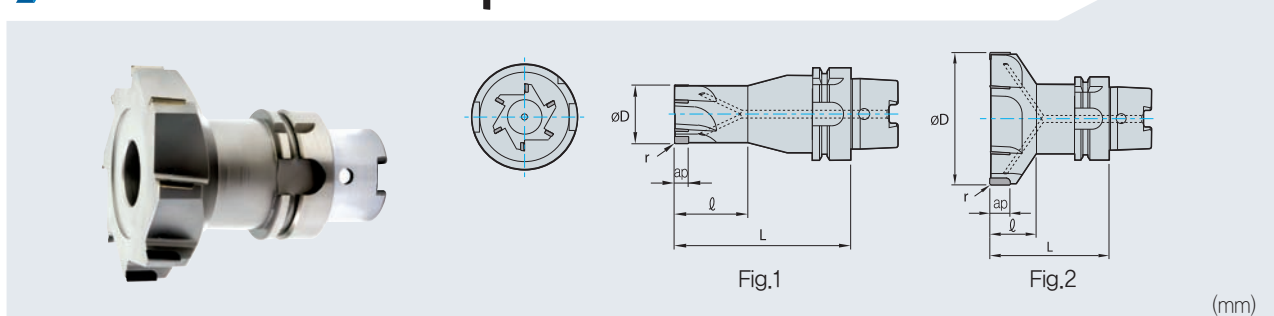
(mm)

Designation		ØD	r	ap	ℓ	L
PDF 4032-HSK50A	4	32	0.5	8	50	120
4040-HSK50A	4	40	0.5	8	50	120
4032-HSK63A	4	32	0.5	8	50	120
4040-HSK63A	4	40	0.5	8	50	120
4050-HSK63A	4	50	0.5	8	50	120
6063-HSK63A	6	63	0.5	12	—	100
6063-HSK100A	6	63	0.5	12	—	100

► Recommended cutting condition

Workpiece	vc(mm/t)	fz(mm/t)	ap(mm)
Aluminum alloy, Copper alloy	200~2,000	0.02~0.1	0.05~4.0

Order form for special PCD Face Cutter

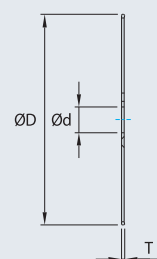
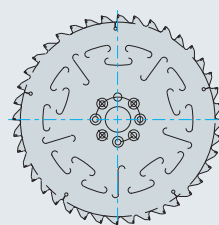


(mm)

Designation	Fig.	Tooth	Size					
			ØD	r	ap	ℓ	L	Size of shank
PDF								

PCD Saw

PCD Saw



(mm)

Designation		Grade		Size		
		DP150	DP200	ØD	Ød	T
PDS 4025525-Ød	40			255	20 / 25.4 / 31.75	2.5
4025530-Ød	40			255	20 / 25.4 / 31.75	3.0
4825525-Ød	48			255	20 / 25.4 / 31.75	2.5
4825530-Ød	48			255	20 / 25.4 / 31.75	3.0
6025525-Ød	60			255	20 / 25.4 / 31.75	2.5
6025530-Ød	60			255	20 / 25.4 / 31.75	3.0
8025525-Ød	80			255	20 / 25.4 / 31.75	2.5
8025530-Ød	80			255	20 / 25.4 / 31.75	3.0
4030525-Ød	40			305	20 / 25.4 / 31.75	2.5
4030530-Ød	40			305	20 / 25.4 / 31.75	3.0
6030525-Ød	60			305	20 / 25.4 / 31.75	2.5
6030530-Ød	60			305	20 / 25.4 / 31.75	3.0
8030525-Ød	80			305	20 / 25.4 / 31.75	2.5
8030530-Ød	80			305	20 / 25.4 / 31.75	3.0

※For high speed and high precision machining.

► Recommended cutting condition

Workpiece	vc(mm/t)	fz(mm/t)	ap(mm)
Aluminum alloy, Copper alloy	100~200	0.02~0.1	0.05~2.0

PCD Endmill

Features

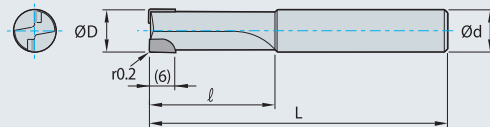
- Long tool life and excellent surface finish
- Less burr in non-ferrous metal machining
- 1000 type : for finishing of non-ferrous metal machining
- 2000 type : optimal for aluminum alloy, carbon, graphite and reinforced plastics machining



Recommended cutting condition

Workpiece	vc(m/min)	n(min ⁻¹)	fz(mm/t)
Aluminum alloy, Copper alloy	30~300	2,000~12,000	0.02~0.07
Reinforced plastics	35~300	2,800~16,000	0.04~0.12
Carbon, Graphite	10~100	5,300~16,000	0.04~0.2

PDE1000/2000 Flat



(mm)

Designation	ØD	Ød	ℓ	L
PDE 1040	4	6	15	45
1050	5	6	15	50
1060	6	6	20	60
2060	6	8	20	60
2070	7	8	20	60
2080	8	8	20	60
2090	9	10	25	70
2100	10	10	25	70
2120	12	12	25	75

Order form for special Endmill

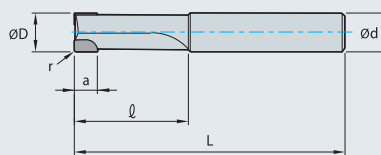


Fig.1

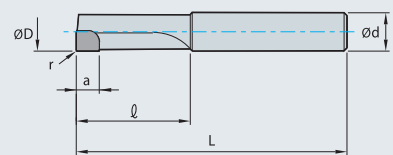


Fig.2

(mm)

Designation	Fig.	No. of flute	Size				
			ØD	r	ap	ℓ	L
PDES							

※Special endmills are available for quotation.

PCD Drill

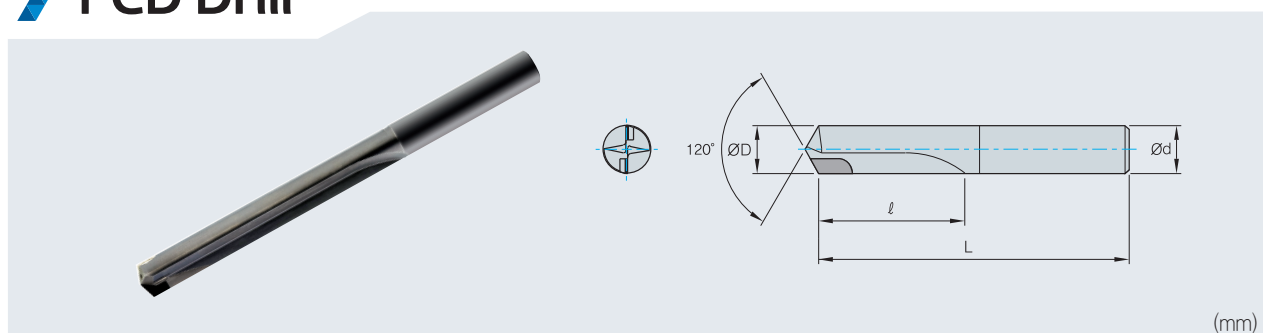
Features

- High precision hole making of aluminum alloy machining.
- Tolerance : IT7~8 classes
- High rigidity machine and high precision holder recommended

Recommended cutting condition

Workpiece	vc(m/min)	fn(mm/rev)
Aluminum alloy	50~250	0.05~0.2
		0.1~0.4

PCD Drill



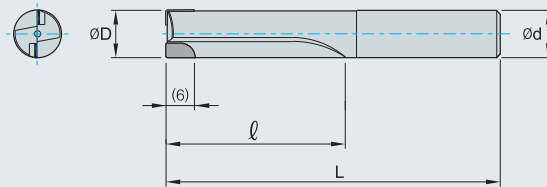
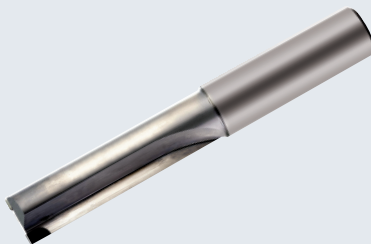
Designation	ØD	Ød	ℓ	L
PDD 0500	5.0	5.0	30	80
0550	5.5	5.5	30	80
0600	6.0	6.0	30	80
0650	6.5	6.5	40	95
0700	7.0	7.0	40	95
0750	7.5	7.5	45	100
0800	8.0	8.0	45	100
0850	8.5	8.5	50	110
0900	9.0	9.0	50	110
0950	9.5	9.5	55	115
1000	10.0	10.0	55	115
1050	10.5	10.5	60	120
1100	11.0	11.0	60	120
1150	11.5	11.5	65	125
1200	12.0	12.0	65	125

PCD Reamer

Recommended cutting condition

Workpiece	vc(m/min)	fn(mm/rev)
Aluminum alloy	50~250	0.05~0.2

PCD Reamer



(mm)

Designation	Tooth	ØD	Ød	ℓ	L
PDR 2050	2	5.0	6.0	30	65
2060	2	6.0	6.0	40	75
2070	2	7.0	8.0	40	75
2080	2	8.0	8.0	40	75
2090	2	9.0	10.0	40	85
2100	2	10.0	10.0	40	85
2120	2	12.0	12.0	50	95
2140	2	14.0	16.0	50	95
2150	2	15.0	16.0	50	100
4160	4	16.0	16.0	50	100
4180	4	18.0	20.0	60	110
4200	4	20.0	20.0	60	110

※For high speed and high precision machining.



Brazed Revolution Tools

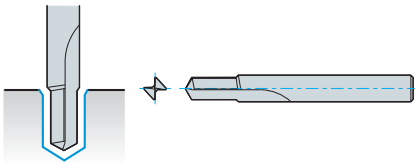
- For general application
- High precision machining
- All special types are available for quotation.
- Optimal for machining small-sized workpiece & High machinability.
- Regrinding possible to lower tool cost.



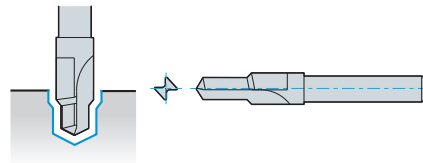
Braze Tools

Applications

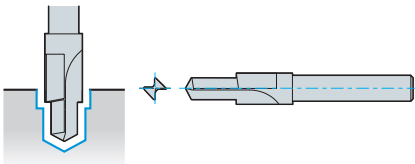
- Burnishing drill – Chamfer



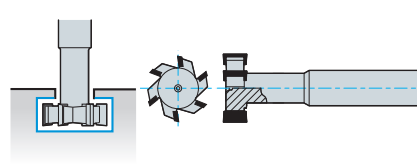
- Burnishing drill – Counter sink



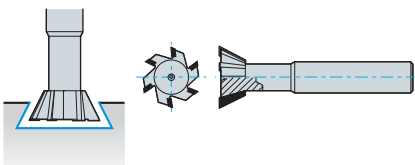
- Burnishing drill – Counter bore



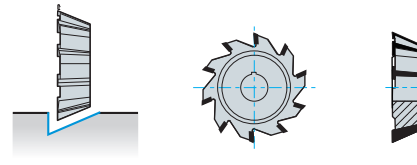
- T-Cutter



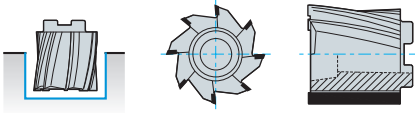
- Dovetail cutter



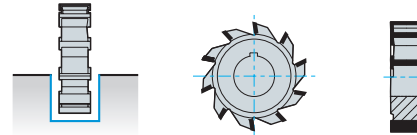
- Angle cutter



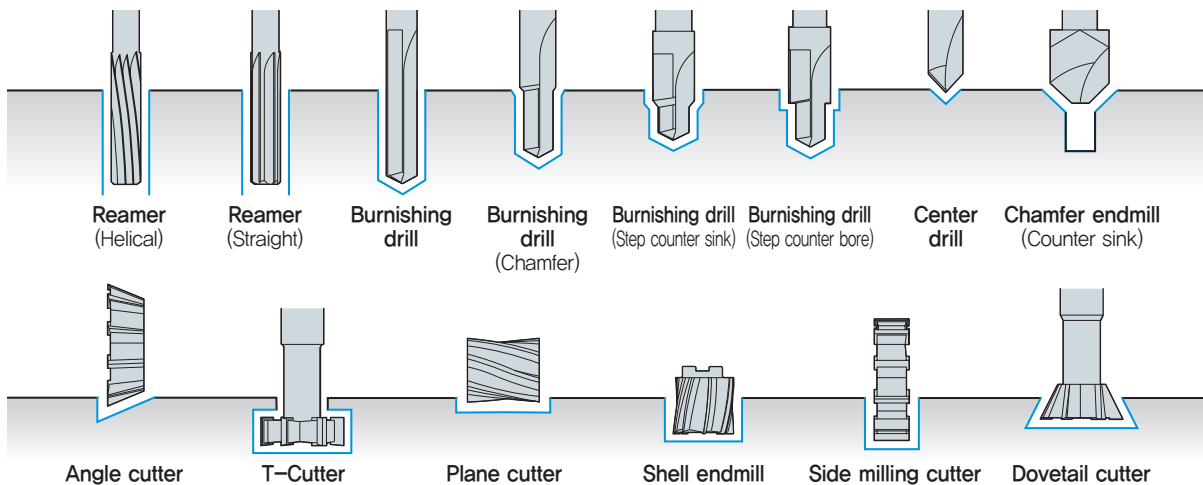
- Shell endmill



- Side milling cutter



Applications

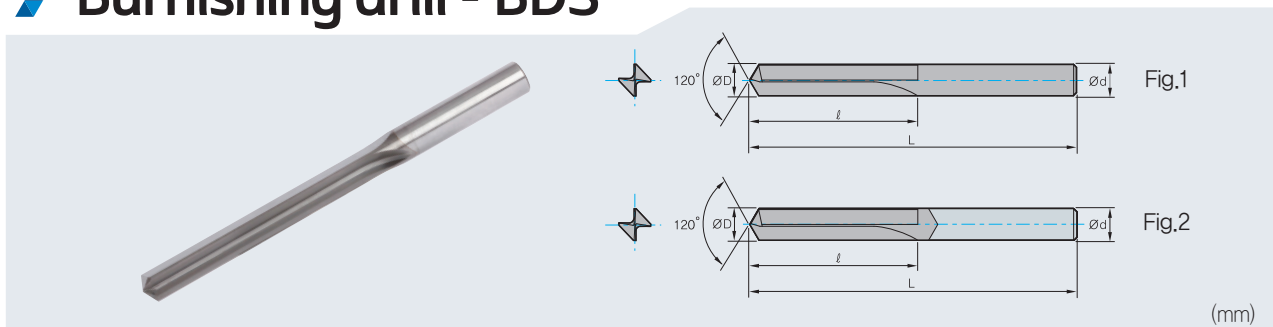


Burnishing Drill

Recommended cutting condition

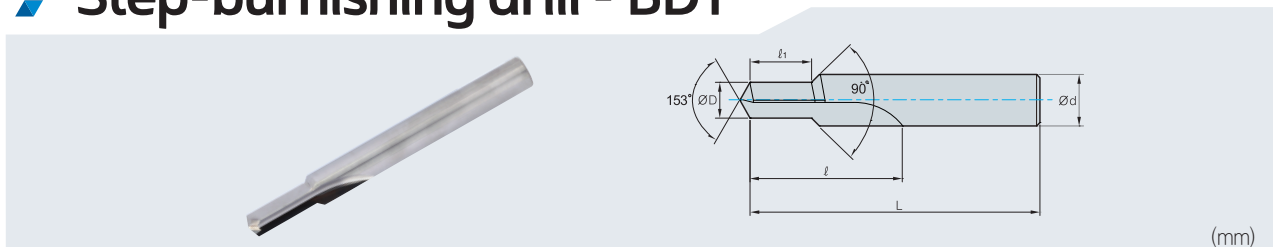
Workpiece	vc(m/min)	fn(mm/rev)				
		Ø2.0~3.0	Ø3.5~5.0	Ø5.5~8.0	Ø8.5~12	Ø12.5~18
Aluminum alloy, Copper alloy	30~60	0.02~0.05	0.03~0.10	0.04~0.15	0.05~0.20	0.05~0.30
Aluminum alloy for die-casting's	50~80	0.02~0.05	0.03~0.10	0.04~0.15	0.05~0.20	0.05~0.30
Cast iron (GC)	25~60	0.01~0.04	0.02~0.08	0.05~0.12	0.05~0.20	0.05~0.30
Ductile cast iron (GCD)	20~50	0.01~0.03	0.02~0.05	0.03~0.08	0.04~0.12	0.05~0.15

Burnishing drill - BDS



Designation	ØD	Ød	ℓ	L	Fig.
BDS 040S	4.0	4.0	35	80	1
050S	5.0	5.0	40	85	1
060S	6.0	6.0	50	95	1
070S	7.0	7.0	55	100	1
080S	8.0	8.0	65	110	1
090S	9.0	9.0	70	120	1
100S	10.0	10.0	80	130	1
110S	11.0	11.0	90	140	1
120B	12.0	12.0	95	150	2
130B	13.0	16.0	105	160	2
140B	14.0	16.0	110	170	2
150B	15.0	16.0	120	185	2
160B	16.0	16.0	125	190	2

Step-burnishing drill - BDT



Designation	ØD	Ød	ℓ	ℓ ₁	L	Tap
BDT M05080-Ø1	4.2	6.0	35	9~15	90	M5XP0.8
M06100-Ø1	5.0	7.0	40	11~18	95	M6XP1.0
M08125-Ø1	6.8	10.0	50	15~24	105	M8XP1.25
M10125-Ø1	8.8	12.0	55	17~30	110	M10XP1.25
M10150-Ø1	8.5	12.0	55	17~30	110	M10XP1.5
M12125-Ø1	10.8	14.0	60	19~36	120	M12XP1.25
M12150-Ø1	10.5	14.0	60	19~36	120	M12XP1.5
M12175-Ø1	10.3	14.0	60	19~36	120	M12XP1.75

※For starting hole making in tapping.

Chucking / Machine Reamer

Recommended cutting condition

Workpiece	Hardness (HB)	Cutting condition	Diameter		
			~ $\varnothing 9$	$\varnothing 10 \sim 25$	$\varnothing 26 \sim 60$
Steel	~100kg/mm ²	vc(m/min)	8~12	8~12	8~12
		fn(mm/rev)	0.15~0.25	0.20~0.40	0.30~0.50
	100~140kg/mm ²	vc(m/min)	5~10	5~10	5~10
		fn(mm/rev)	0.10~0.20	0.15~0.25	0.20~0.40
Cast iron	HB ~220	vc(m/min)	6~12	6~12	8~15
		fn(mm/rev)	0.15~0.30	0.30~0.50	0.40~0.80
	HB 220~	vc(m/min)	5~10	5~10	8~12
		fn(mm/rev)	0.10~0.20	0.20~0.35	0.30~0.50
Brass	HB 50~120	vc(m/min)	8~12	10~15	10~15
		fn(mm/rev)	0.10~0.15	0.15~0.25	0.25~0.40
Bronze	HB 60~100	vc(m/min)	8~12	10~15	10~15
		fn(mm/rev)	0.10~0.15	0.15~0.25	0.25~0.40
Aluminum alloy	HB 90~120	vc(m/min)	15~25	15~25	20~30
		fn(mm/rev)	0.15~0.25	0.25~0.40	0.40~0.70
Synthetic resins	—	vc(m/min)	15~30	20~35	30~40
		fn(mm/rev)	0.15~0.25	0.25~0.40	0.40~0.50

Chuckling reamer - SCRS

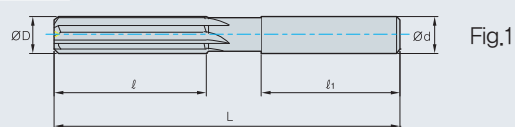
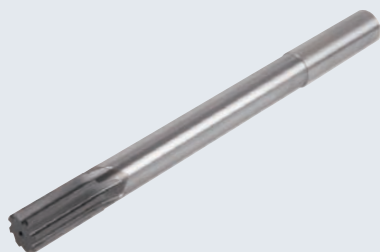


Fig.1

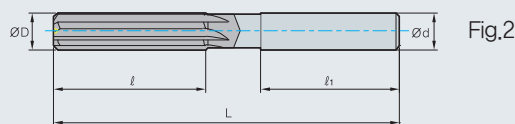


Fig.2

(mm)

Designation	Tooth	ØD	Ød	ℓ	ℓ ₁	L	Fig.
SCRS 050S	4	5.0	6.0	20	40	100	1
060S	4	6.0	6.0	20	40	115	1
070S	4	7.0	8.0	20	40	125	1
080S	4	8.0	8.0	20	40	135	1
090S	4	9.0	10.0	20	45	140	1
100B	4	10.0	10.0	25	50	145	2
110B	4	11.0	12.0	25	50	150	2
120B	4	12.0	12.0	25	50	160	2
130B	4	13.0	16.0	25	50	165	2
140B	6	14.0	16.0	25	50	170	2
150B	6	15.0	16.0	30	50	180	2
160B	6	16.0	16.0	30	50	190	2
180B	6	18.0	20.0	30	55	210	2
200B	6	20.0	20.0	40	60	230	2

Chuckling reamer - SCRH

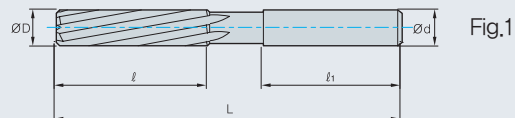


Fig.1

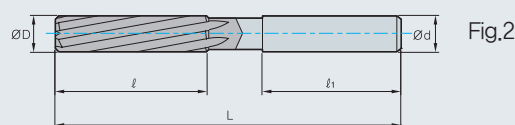
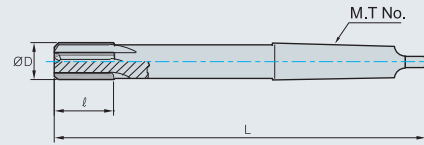
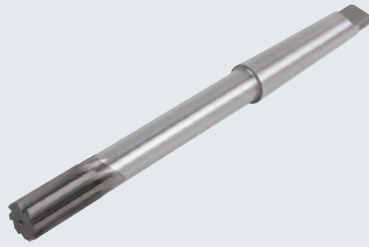


Fig.2

(mm)

Designation	Tooth	ØD	Ød	ℓ	ℓ ₁	L	Fig.
SCRH 050S	4	5.0	6.0	20	40	100	1
060S	4	6.0	6.0	20	40	115	1
070S	4	7.0	8.0	20	40	125	1
080S	4	8.0	8.0	20	40	135	1
090S	4	9.0	10.0	20	45	140	1
100B	4	10.0	10.0	25	50	145	2
110B	4	11.0	12.0	25	50	150	2
120B	4	12.0	12.0	25	50	160	2
130B	4	13.0	16.0	25	50	165	2
140B	6	14.0	16.0	25	50	170	2
150B	6	15.0	16.0	30	50	180	2
160B	6	16.0	16.0	30	50	190	2
180B	6	18.0	20.0	30	55	210	2
200B	6	20.0	20.0	40	60	230	2

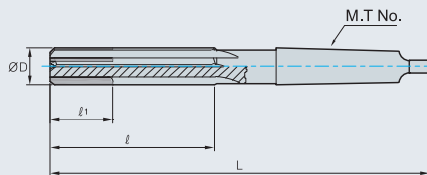
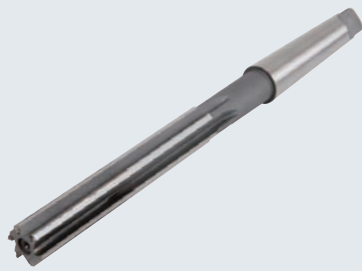
Chucking reamer - TCRS



(mm)

Designation	Tooth	ØD	ℓ	L	M.T. No.
TCRS 070	4	7,0	20	150	1
080	4	8,0	20	150	1
090	4	9,0	20	160	1
100	4	10,0	25	160	1
110	4	11,0	25	170	1
120	4	12,0	25	170	1
130	4	13,0	25	180	1
140	6	14,0	25	190	1
150	6	15,0	30	200	2
160	6	16,0	30	200	2
180	6	18,0	30	220	2
200	6	20,0	40	230	2
250	6	25,0	40	260	3
280	8	28,0	40	270	3
300	8	30,0	50	290	3

Machine reamer - TMRS



(mm)

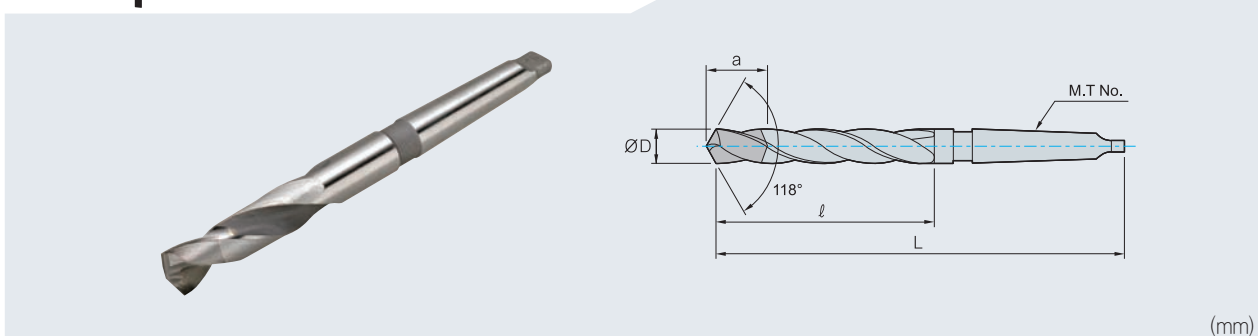
Designation	Tooth	ØD	ℓ	ℓ ₁	L	M.T. No.
TMRS 070	4	7,0	60	60	150	1
080	4	8,0	70	70	150	1
090	4	9,0	70	70	160	1
100	4	10,0	75	75	170	1
110	4	11,0	75	75	170	1
120	4	12,0	80	40	180	1
130	4	13,0	85	40	190	1
140	6	14,0	90	45	210	1
150	6	15,0	90	45	215	2
160	6	16,0	100	50	220	2
180	6	18,0	105	50	225	2
200	6	20,0	120	50	240	2
250	6	25,0	130	50	270	3
280	8	28,0	140	50	280	3
300	8	30,0	150	50	290	3

Top Solid Drill

Recommended cutting condition

Diameter (mm)	Cutting condition	Ductile cast iron	Gray cast iron	Light alloy
Ø8~Ø10	vc(m/min)	30(20~35)	40(20~60)	100(50~150)
	fn(mm/rev)	0.30(0.20~0.40)	0.30(0.20~0.40)	0.15(0.10~0.20)
Ø10.1~Ø15	vc(m/min)	50(30~70)	60(30~80)	130(70~200)
	fn(mm/rev)	0.35(0.30~0.40)	0.35(0.30~0.40)	0.15(0.10~0.20)
Ø15.1~Ø25	vc(m/min)	60(50~60)	75(50~100)	150(100~250)
	fn(mm/rev)	0.35(0.30~0.45)	0.40(0.30~0.50)	0.15(0.10~0.20)

Top solid drill - TSDM

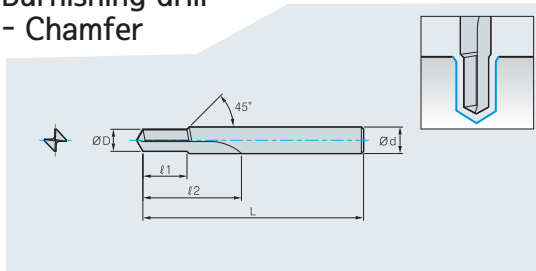


Diameter	ØD	L	ℓ	a	M.T No.
TSDM 080~085	8.0~8.5	168	85	25	1
086~090	8.6~9.0	172	88	25	1
091~095	9.1~9.5	175	92	26	1
096~100	9.6~10.0	178	95	26	1
101~105	10.1~10.5	182	98	26	1
106~110	10.6~11.0	185	102	26	1
111~115	11.1~11.5	188	105	26	1
116~120	11.6~12.0	192	108	26	1
121~125	12.1~12.5	195	112	26	1
126~130	12.6~13.0	198	115	26	2
131~135	13.1~13.5	202	118	27	2
136~140	13.6~14.0	205	122	27	2
141~145	14.1~14.5	222	122	27	2
146~150	14.6~15.0	225	125	27	2
151~155	15.1~15.5	228	125	27	2
156~160	15.6~16.0	230	130	27	2
161~165	16.1~16.5	232	132	27	2
166~170	16.6~17.0	234	135	27	2
171~180	17.1~18.0	240	140	27	2
181~190	18.1~19.0	245	145	27	2
191~200	19.1~20.0	250	150	30	2
201~210	20.1~21.0	255	155	30	2
211~220	21.1~22.0	260	160	30	2
221~230	22.1~23.0	265	165	30	2
231~250	23.1~25.0	285	165	34	3

※Order form : TSDM125

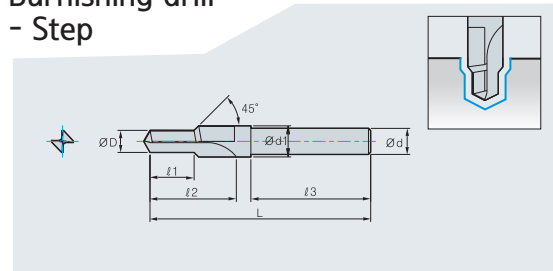
Order form for special braze revolution tool

Burnishing drill - Chamfer



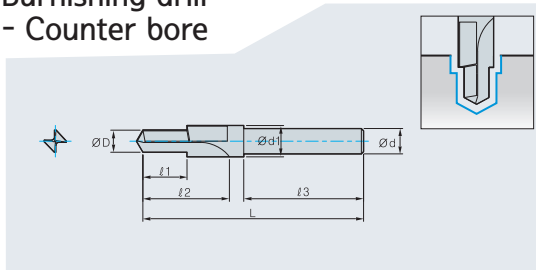
Designation	ØD	l ₁	l ₂	L	Ød
BDC					

Burnishing drill - Step



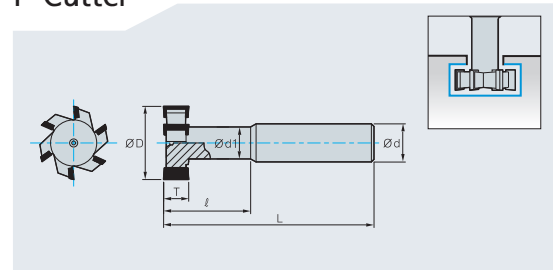
Designation	ØD	l ₁	l ₂	L	Ød
BDS					

Burnishing drill - Counter bore



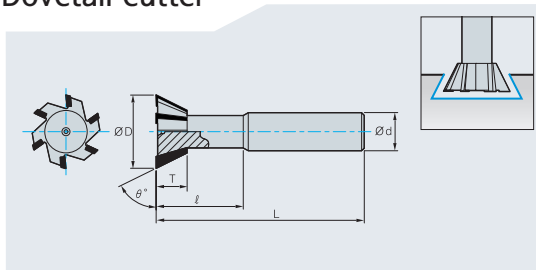
Designation	ØD	l ₁	l ₂	L	Ød
BDCB					

T-Cutter



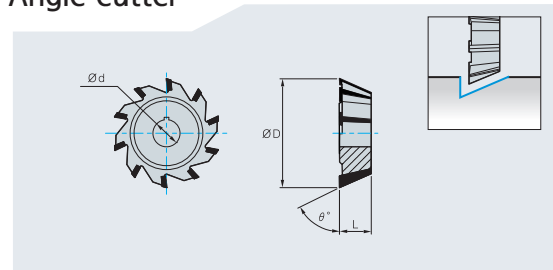
Designation	ØD	l ₁	l ₂	L	Ød
TC					

Dovetail cutter



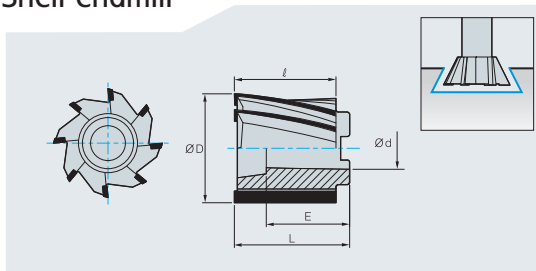
Designation	ØD	l ₁	l ₂	L	Ød
DC					

Angle cutter



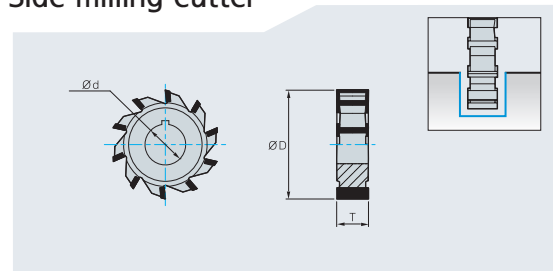
Designation	ØD	l ₁	l ₂	L	Ød
AC					

Shell endmill



Designation	ØD	l ₁	l ₂	L	Ød
SEM					

Side milling cutter



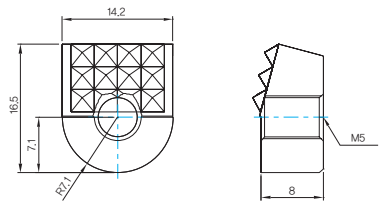
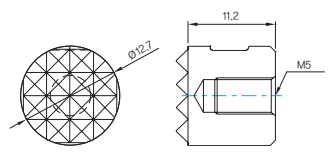
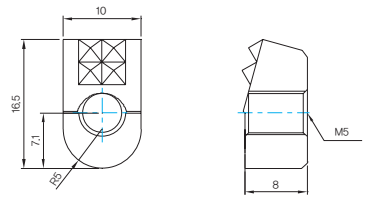
Designation	ØD	l ₁	l ₂	L	Ød
SMC					

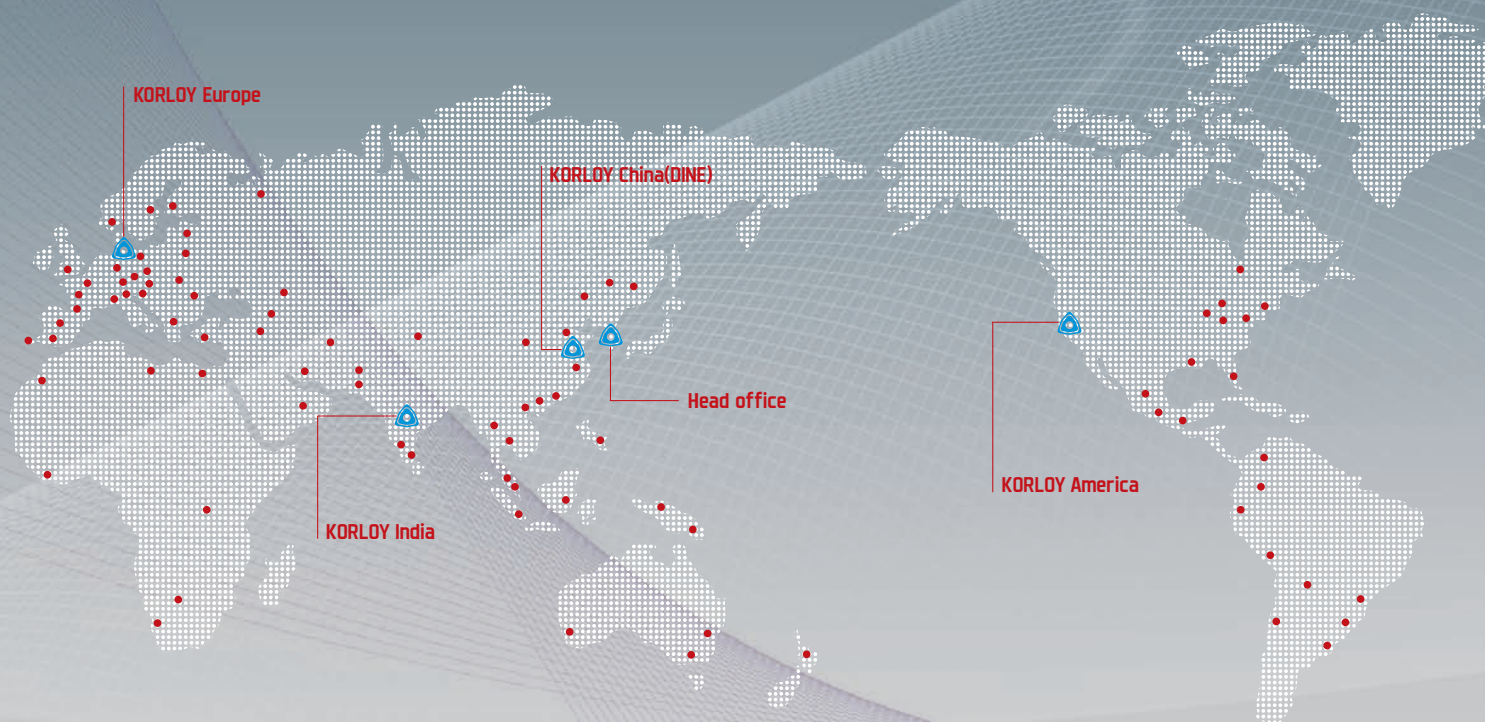


Chuck Jaw

- For chucking workpieces with uneven surface in turning and milling (Including MCT)
- For chucking any type of workpiece shapes

Stock status

Designation	Shape	Size
CJ 04		
CJ 12		
CJ 21		
CJ 22		
CJ 23		
CJ 31		
CJ 32		
CJ 41		
CJ 42		



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