H

BRAZED TOOLS

Technical Information for Brazed Tools

General Cutting Tools

Mining & Construction Tools

Rotating Brazing Tools

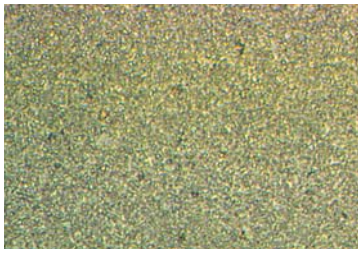
KORLOY ultra-fine grades “F-Series”

Features

In general, when we compare cemented carbide to high speed steel, cemented carbide has higher hardness but is more brittle than high speed steel. To neutralize the difference, KORLOY has developed an ultra fine cemented carbide grade “F-Series”± (WC size under 0.5㎛). It provides improved toughness and plastic deformation resistance against cemented carbide having coarse grain sizes. The main coverage for ultra fine cemented carbide is endmilling of difficult-to-cut materials like high temp alloys

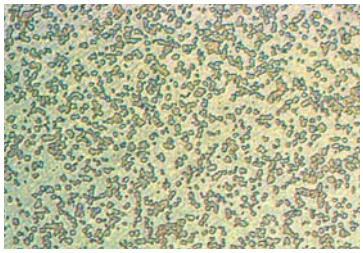
● Micro structure of “F-Series”

FA1



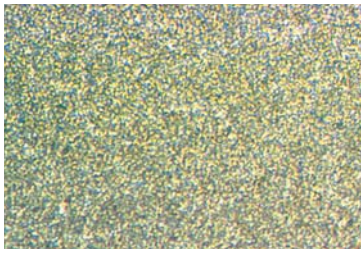
Since it is a grade focused on toughness, it is possible to make endmill, side cutter, gun drill, reamer etc. It has superior quality on toughness and anti built-up edge properties

FCC



It has been modified from FA1 to increase thermal shock resistance, thus FCC has proper properties to machine stainless steel and hard to machine materials at medium to high speed milling

FS1



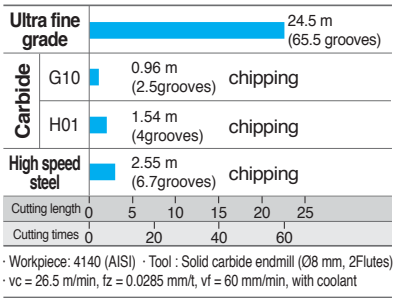
As a ultra fine grade having high hardness and superior toughness at the same time, it is the 1st recommended grade of KORLOY to make sharp cutting edge to cut difficult-to-cut material

Cutting performance

● Special features

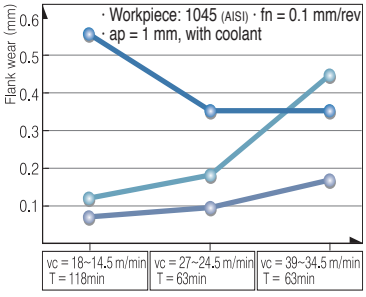
Grade	Characteristics			ISO classification	Wear resistance	Toughness
	Specific Gravity	Hardness (HRA)	TRS (kgf/mm²)			
FS1	14.4	92.4	250	Z10	⦿	○
FCC	12.6	91.5	250	Z10	⦿	○
FA1	14.1	91.2	300	Z20	○	⦿
FG2	14.3	92.7	350	Z10	⦿	○

● Chipping resistance



· Workpiece: 4140 (AISI) · Tool : Solid carbide endmill (Ø8 mm, 2Flutes)
· vc = 26.5 m/min, fz = 0.0285 mm/t, vf = 60 mm/min, with coolant

● Wear resistance

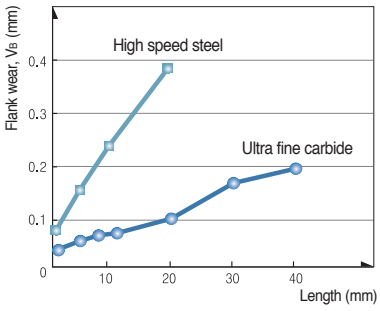


AISI: American Iron and Steel Institute

Guide of grade selection

Workpiece	Non-ferrous metal Steel, Cast iron
1st Recommended grade	FS1, FG2, FCC, FA1
Application tool	Drill, Endmill

- **Workpiece:** SM55C (HRC20)
- **Helix angle:** 30°
- **Tool**: Ø10 mm, 2 Flutes (SSE2100)
- **RPM** = 1,100 min-1
- **Cutting speed** = 35 m/mim
- **Axial depth** = 12 mm
- **Feed** = 0.1 mm/t
- **Radial depth** = 1 mm
- Downward cutting, Without coolant



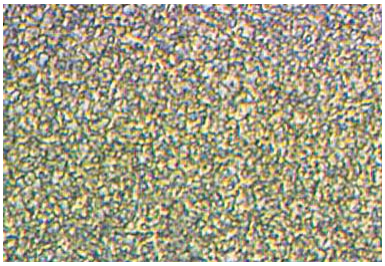
KORLOY corrosion & magnetism proof grades, "IN-Series"

Features

- Outstanding corrosion resistance: several hundred times better performance than general carbide grade (Test have been performed at 30% NHO3, comparing KORLOY G5 and IN-Series)
- Excellent hardness & toughness: Over (H_RA) 85 hardness, Over (TRS) 200 toughness
- Several grades: 3 different kind of grades for specific application, respectively

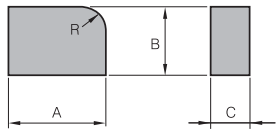
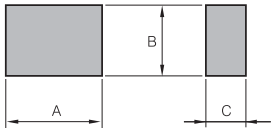
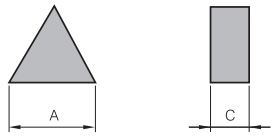
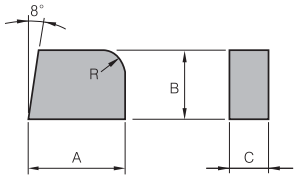
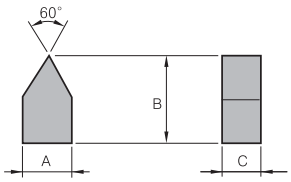
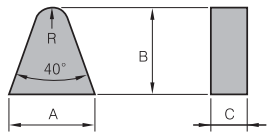
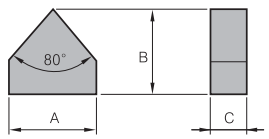
Grade	Specific gravity (g/cm^3)	Hardness (H_RA)	TRS (kgf/mm^2)	Magnetic saturation ($Gauss \cdot cm^3/g$)	Use
IN10	14.4	91.5	230	0	Mechanical Seal, Sliter Knife Anti-corrosive alloy, Magnetism proof alloy
IN20	14.5	91.0	230	90	Mechanical Seal, Sliter Knife Anti-corrosive alloy
IN40	13.5	85.5	230	0	Mold for magnetic powder Anticorrosive-Magnetism proof alloy

● Micro structure of "IN-Series"



Use

For anti-corrosive	For magnetism proof
• Parts for plant of corrosion-high pressure • Parts for sea water pump • Die/punch in high temperature • Mechanical seal	• Tape sliter • Mold for magnetic powder • Parts for VTR

Inserts	Designation	A	B	C	R	Uncoated							Cermet	Available blank
						ST10	ST20	GR35	U20	H01	H05	G10	CN2000	
	01- 0	10	6	3	4									31 Type 32 Type 45 Type 46 Type
	1	13	9	3	5									
	2	16	11	4	5		●							
	3	19	13	5	5		●							
	4	22	15	6	8									
	5	25	17	7	8									
	6	30	20	8	8									
	02- 0	10	6	3	-		●		●	●		●		41 Type 42 Type
	1	13	9	3	-		●		●	●		●		
	2	16	11	4	-		●		●	●		●		
	3	19	13	5	-	●	●		●	●		●		
	4	22	15	6	-		●		●	●		●		
	5	25	17	7	-		●			●		●		
	6	30	20	8	-		●							
	03- 0	10	-	3	-									37 Type 38 Type 47 Type 48 Type
	1	12	-	3	-									
	2	15	-	4	-									
	3	18	-	5	-									
	4	24	-	6	-									
	5	24	-	7	-									
	6	28	-	8	-									
	04- 0	10	6	3	4									33 Type 34 Type
	1	13	9	3	5		●							
	2	16	11	4	5									
	3	19	13	5	5		●							
	4	22	15	6	8									
	5	25	17	7	8									
	6	30	20	8	8									
	05- 1	5	8	3	-		●		●					49 Type 50 Type 51 Type 52 Type
	2	6	10	4	-		●		●					
	3	7	12	5	-		●		●					
	4	9	16	6	-		●							
	5	10	18	7	-									
	6	11	20	8	-									
	06- 0	10	10	3	2		●		●	●				36 Type 39 Type 40 Type
	1	13	13	3	2.5		●		●	●		●		
	2	16	16	4	3	●	●		●	●		●		
	3	19	19	5	4		●	●	●	●		●		
	4	22	22	6	4	●	●		●	●		●		
	5	25	25	7	5		●		●	●		●		
	6	30	30	8	6									
	07- 0	10	10	3	-									35 Type
	1	13	13	3	-									
	2	16	16	4	-									
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	4	25	20	6	-									
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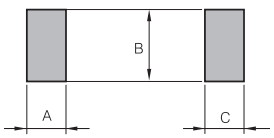
	6	30	25	8	-									
	08- 1	3	8	3	-		●		●					43 Type
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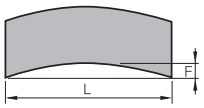
	4	5	15	5	-	●	●		●	●		●		
	5	6	17	6	-	●	●		●			●		
	6	8	20	8	-		●							

RB

■ Bending tolerance



L		F-max
Standard	Tolerance	
~30	+1.0 - 0	0.15
31~50	+1.5 - 0	0.25
51~100	+3.0 - 0	0.30

※ Code system RB 15 04 □
Length Width Thickness

(mm)

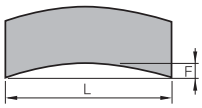
Designation		L	W	T = □								Grades
				3	4	5	6	7	8	9	10	G10
RB	303□	3	3									
	304□	3	4									
	305□	3	5									
	306□	3	6									
	307□	3	7									
	308□	3	8									
	309□	3	9									
	310□	3	10									
RB	403□	4	3									
	404□	4	4									
	405□	4	5									
	406□	4	6									
	407□	4	7									
	408□	4	8									
	409□	4	9									
	410□	4	10									
RB	503□	5	3									
	504□	5	4									
	505□	5	5									
	506□	5	6									
	507□	5	7									
	508□	5	8									
	509□	5	9									
	510□	5	10									
RB	603□	6	3									
	604□	6	4									
	605□	6	5									
	606□	6	6									
	607□	6	7									
	608□	6	8									
	609□	6	9									
	610□	6	10									
RB	703□	7	3									
	704□	7	4									
	705□	7	5									

(mm)

Designation		L	W	T = □								Grades
				3	4	5	6	7	8	9	10	G10
RB	706□	7	6									
	707□	7	7									
	708□	7	8									
	709□	7	9									
	710□	7	10									
RB	803□	8	3									
	804□	8	4									
	805□	8	5									
	806□	8	6									
	807□	8	7									
	808□	8	8									
	809□	8	9									
	810□	8	10									
RB	903□	9	3									
	904□	9	4									
	905□	9	5									
	906□	9	6									
	907□	9	7									
	908□	9	8									
	909□	9	9									
	910□	9	10									
RB	1003□	10	3									
	1004□	10	4									
	1005□	10	5									
	1006□	10	6									
	1007□	10	7									
	1008□	10	8									
	1009□	10	9									
	1010□	10	10									
RB	1504□	15	4									
	1505□	15	5									
RB	2003□	20	3									
	2004□	20	4									
	2005□	20	5									
	2006□	20	6									

RB

■ Bending tolerance



L		F-max
Standard	Tolerance	
~30	+1.0 - 0	0.15
31~50	+1.5 - 0	0.25
51~100	+3.0 - 0	0.30

※ Code system RB 15 04 □
Length Width Thickness

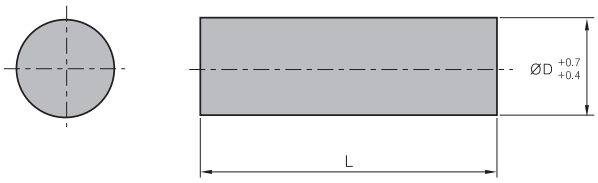
(mm)

Designation		L	W	T = □								Grades
				3	4	5	6	7	8	9	10	G10
RB	2007□	20	7									
	2008□	20	8									
	2009□	20	9									
	2010□	20	10									
RB	3003□	30	3									
	3004□	30	4									
	3005□	30	5									
	3006□	30	6									
	3007□	30	7									
	3008□	30	8									
	3009□	30	9									
	3010□	30	10									
RB	4003□	40	3									
	4004□	40	4									
	4005□	40	5									
	4006□	40	6									
	4007□	40	7									
	4008□	40	8									
	4009□	40	9									
	4010□	40	10									
RB	5003□	50	3									
	5004□	50	4									
	5005□	50	5									
	5006□	50	6									
	5007□	50	7									
	5008□	50	8									
	5009□	50	9									
	5010□	50	10									
RB	6003□	60	3									
	6004□	60	4									
	6005□	60	5									
	6006□	60	6									
	6007□	60	7									
	6008□	60	8									
	6009□	60	9									

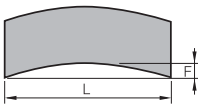
(mm)

Designation		L	W	T = □								Grades
				3	4	5	6	7	8	9	10	G10
RB	6010□	60	10									
RB	7003□	70	3									
	7004□	70	4									
	7005□	70	5									
	7006□	70	6									
	7007□	70	7									
	7008□	70	8									
	7009□	70	9									
	7010□	70	10									
RB	8003□	80	3									
	8004□	80	4									
	8005□	80	5									
	8006□	80	6									
	8007□	80	7									
	8008□	80	8									
	8009□	80	9									
	8010□	80	10									
RB	9003□	90	3									
	9004□	90	4									
	9005□	90	5									
	9006□	90	6									
	9007□	90	7									
	9008□	90	8									
	9009□	90	9									
	9010□	90	10									
RB	10003□	100	3									
	10004□	100	4									
	10005□	100	5									
	10006□	100	6									
	10007□	100	7									
	10008□	100	8									
	10009□	100	9									
	10010□	100	10									

SR Round bars blank



■ Bending tolerance



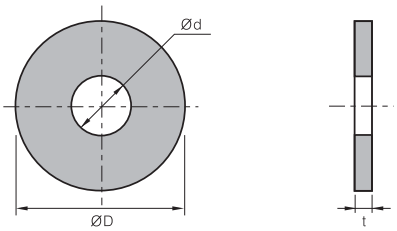
L		F-max
Standard	Tolerance	
~30	+1.5 - 0	0.10
31~40	+1.5 - 0	0.15
41~50	+1.5 - 0	0.20
51~100	+2.5 - 0	0.25

※ Code system SR 03 □
Diamerer Length

(mm)

Designation		ØD	T = □							Grades	
			30	40	50	60	70	80	90	100	ST20	G10
SR	03□	3										
	04□	4										
	05□	5										
	06□	6										
	07□	7										
	08□	8										
	09□	9										
	10□	10										
	11□	11										
	12□	12										

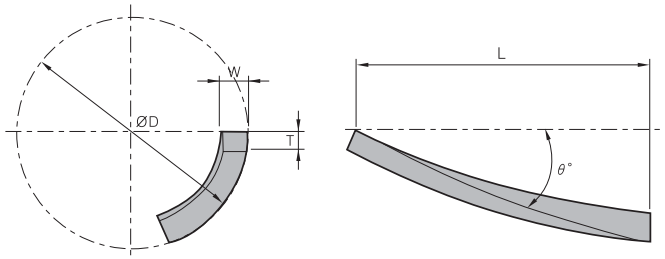
RT Ring blank



(mm)

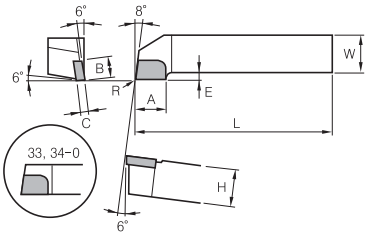
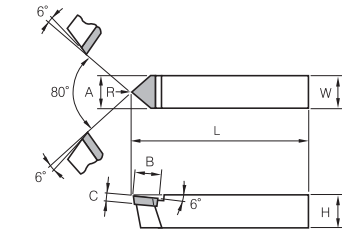
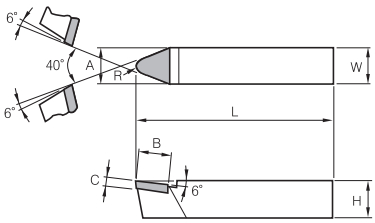
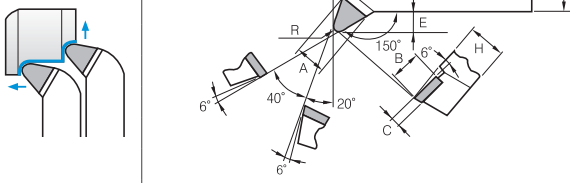
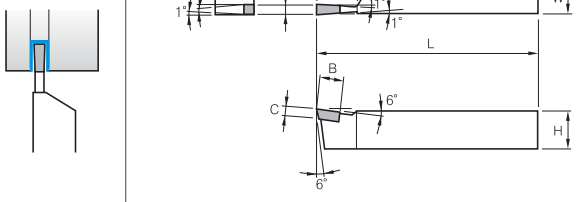
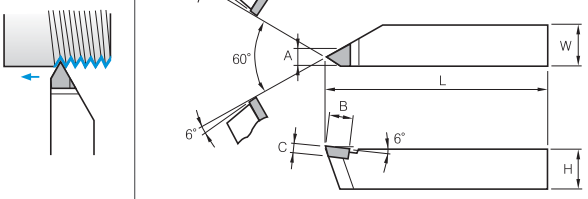
Designation	ØD	Ød	t
ØD×Ød×t	Ø7.2~Ø200	Ø2.7~Ø150	0.8~10

ST Helix blank

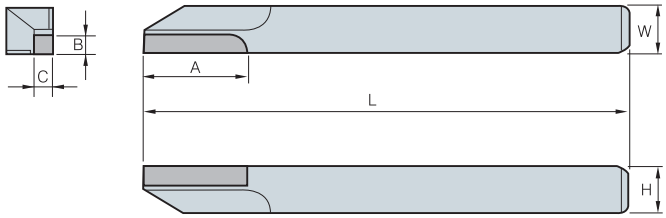


(mm)

Designation		Available endmill (ØD)	L	T	W	θ°
ST	14	Ø13, 14	30	2.3	4.0	23° 44′
	15	Ø15	30	2.3	4.0	25° 13′
	18	Ø18	32	2.3	4.5	25° 13′
	20	Ø20	32	2.8	5.5	24° 09′
	24	Ø23, 24	37	2.8	5.5	25° 13′
	26	Ø26, 27	37	3.3	6.5	24° 24′
	30	Ø29, 30, 31	42	3.8	7.0	25° 13′
	32	Ø32, 33	47	3.8	7.0	26° 41′
	35	Ø34, 35, 36	52	3.8	7.0	24° 36′
	38	Ø37, 38	57	3.8	7.0	23° 51′
	40	Ø39, 40, 41, 42	62	4.3	7.5	24° 57′
	45	Ø43, 44, 45, 46, 47	67	4.3	7.5	25° 13′
	50	Ø48, 49, 50	67	4.3	7.5	24° 09′

Feed direction	Figure	Designation	A	B	C	(R)	W	H	L	E	F	Available blank
33 type (Right hand)/34 type (Left hand)		**33, 34 - 0**	10	6	3	0.3	10	10	80	0		04-0
		1	13	9	3	0.5	13	13	100	4		04-1
		2	16	11	4	0.5	16	16	120	4		04-2
		3	19	13	5	0.5	19	19	140	5		04-3
		4	22	15	6	1	25	25	160	5		04-4
		5	25	17	7	1	25	30	180	5		04-5
		6	30	20	8	1	35	35	200	6		04-6
35 type		**35 - 0**	10	10	3	0.3	10	10	80			07-0
		1	13	13	3	0.5	13	13	100			07-1
		2	16	16	4	0.5	16	16	120			07-2
		3	18	19	5	0.5	19	19	140			07-3
		4	25	20	6	1	25	25	160			07-4
		5	25	22	7	1	25	30	180			07-5
		6	30	25	8	1	30	35	200			07-6
36 type		**36 - 0**	10	10	3	2	10	10	80			06-0
		1	13	13	3	2.5	13	13	100			06-1
		2	16	16	4	3	16	16	120			06-2
		3	18	18	5	4	19	19	140			06-3
		4	22	22	6	4	25	25	160			06-4
		5	25	25	7	5	25	30	180			06-5
		6	30	30	8	6	30	35	200			06-6
39 type (Right hand)/40 type (Left hand)		**39, 40 - 0**	10	10	3	2	10	10	80	5		06-0
		1	13	13	3	2.5	13	13	100	7		06-1
		2	16	16	4	3	16	16	120	10		06-2
		3	19	19	5	4	19	19	140	12		06-3
		4	22	22	6	4	25	25	160	13		06-4
		5	25	25	7	5	25	30	180	15		06-5
		6	30	30	8	6	30	35	200	16		06-6
43 type		**43 - 1**	3	8	3		10	16	100		13	08-1
		2	3	8	3		13	19	120		16	08-1
		3	4	13	4		16	22	140		20	08-3
		4	5	15	5		18	25	160		25	08-4
		5	6	17	6		22	32	180		30	08-5
		6	8	20	8		25	38	200		40	08-6
49 type (Right hand)/50 type (Left hand)		**49, 50 - 1**	5	8	3		13	13	100			05-1
		2	6	10	4		16	16	120			05-2
		3	7	12	5		19	19	140			05-3
		4	9	16	6		25	25	160			05-4

PBX100



(mm)

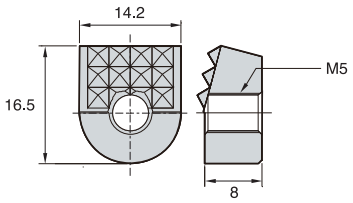
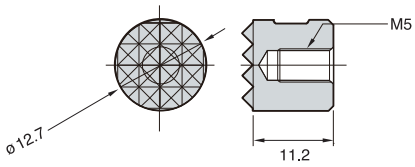
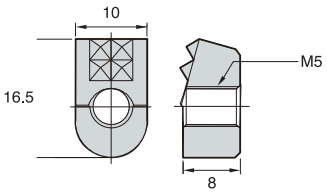
Designation		A	B	C	W	H	L
PBX -	105	20	2.0	2.0	5	5	125
	106	20	2.5	2.5	6	6	140
	107	20	3.0	3.0	7	7	150
	108	20	3.0	3.0	8	8	150
	109	20	3.5	3.5	9	9	150
	110	20	4.0	4.0	10	10	150
	112	20	4.0	4.0	12	12	150
	116	20	4.0	4.0	16	16	150

Chuck Jaw new

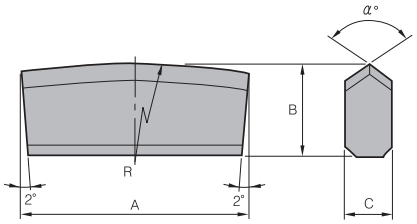
Features

- Chuck Jaw strongly clamps rough workpiece in turning and milling (including MCT)
- Can chuck any types of workpiece

Stock information

Designation	Geometry	Dimension
CJ 04		
CJ 12		
CJ 21		
CJ 22		
CJ 23		
CJ 31		
CJ 32		
CJ 41		
CJ 42		

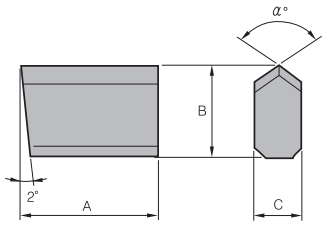
For taper bits 1000 type



(mm)

Designation		A	B	C	α°	R
1000 -	124	24	10	6	100	80
	126	26	10	6	100	80
	128	28	10	6	100	80
	130	30	10	6	100	80
	132	32	10	6	100	80
	232	32	10	6	100	80
	234	34	12	8	110	120
	236	36	12	8	110	120
	238	38	12	8	110	120
	240	40	12	8	110	120
	242	42	12	8	110	120
	332	32	14	8	110	120
	334	34	14	8	110	120
	336	36	14	8	110	120
	338	38	14	8	110	120
	340	40	14	8	110	120
	342	42	14	8	110	120
	434	34	15	10	110	120
	436	36	15	10	110	120
	438	38	15	10	110	120
	440	40	15	10	110	120
	442	42	15	10	110	120
	444	44	15	10	110	120
	446	46	15	10	110	120
	534	34	18	10	110	120
	536	36	18	10	110	120
	538	38	18	10	110	120
	540	40	18	10	110	120
	542	42	18	10	110	120
	544	44	18	10	110	120
	546	46	18	10	110	120

For cross bits 2000 type

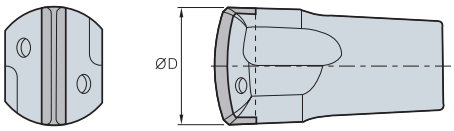


(mm)

Designation		A	B	C	α°	R
2000 -	110	10	10	6	100	
	111	11	10	6	100	
	112	12	10	6	100	
	113	13	10	6	100	
	114	14	10	6	100	
	115	15	12	6	100	
	210	10	12	6	100	
	211	11	12	6	100	
	212	12	12	6	100	
	213	13	12	6	100	
	214	14	12	6	100	
	215	15	14	8	100	
	312	12	14	8	100	
	313	13	14	8	100	
	314	14	14	8	100	
	315	15	14	8	100	
	316	16	14	8	100	
	317	17	14	8	100	
	318	18	14	8	100	

When ordering special items, Please point out the designation, grades, quantity. Available for tailor made

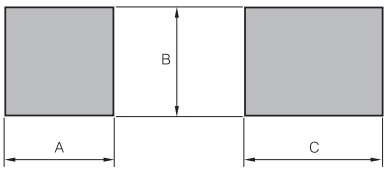
TB For taper bits



(mm)

Designation		ØD
TB	20	20
	32	32
	34	34
	36	36
	38	38
	39	39
	40	40

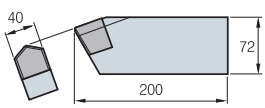
TB Boring crown blank

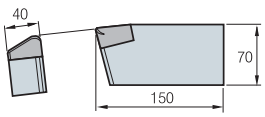


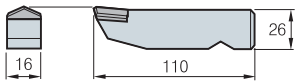
(mm)

Designation		A	B	C
BT	1	5	5	8
	2	6	6	9
	3	8	8	10
	4	7	10	15

Bits for construction

Configuration	Dimensions
Earth auger bits	

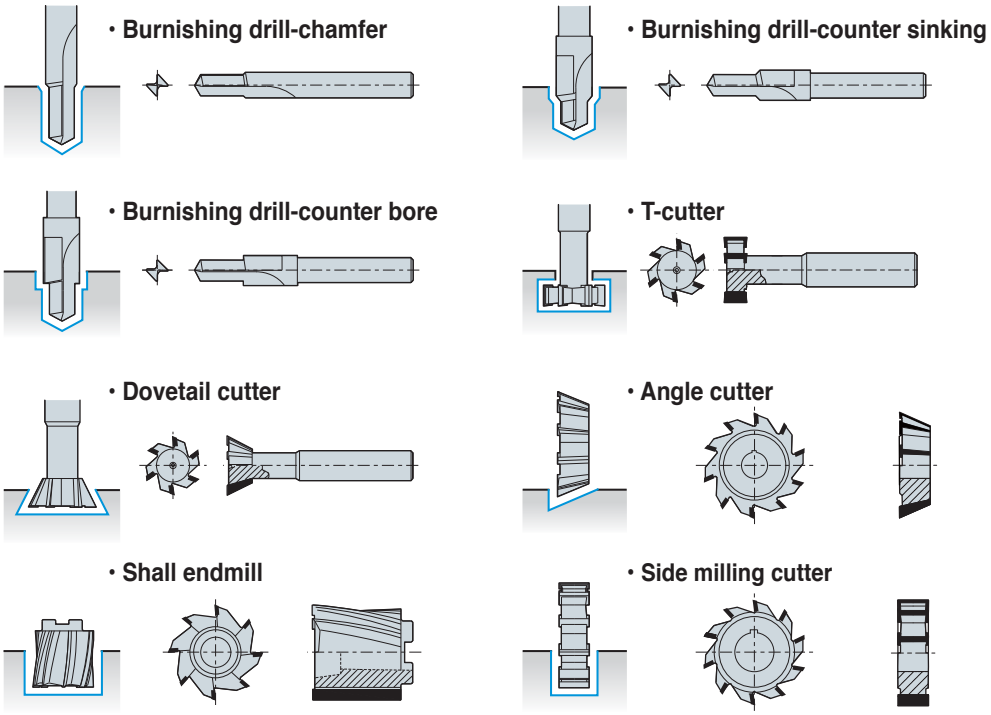
Configuration	Dimensions
Casing bits	

Configuration	Dimensions
Rod bits	

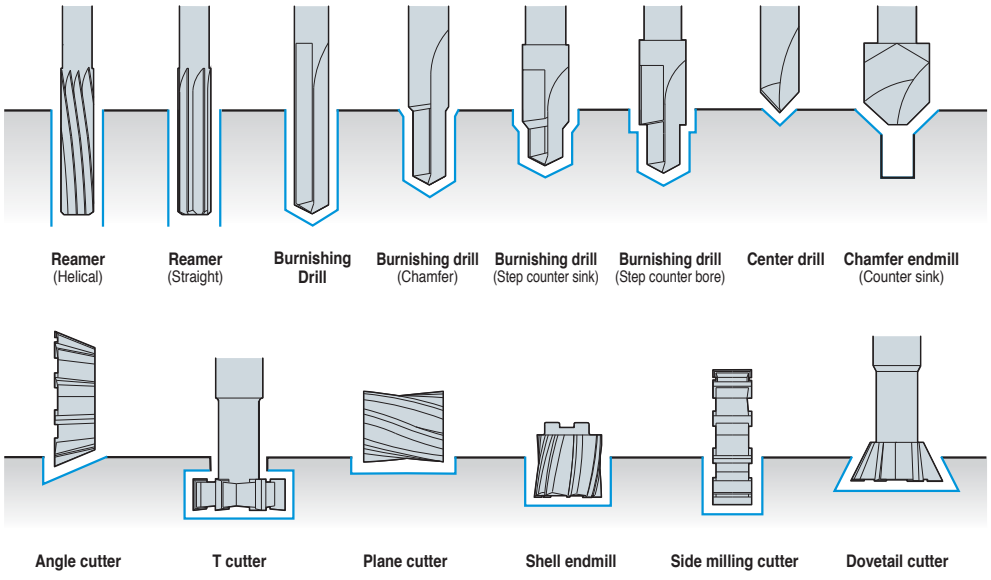
Features

- For various applications
- Precise accuracy. Easy to order for special types
- Suitable for small tools. Short delivery time
- Reasonable tool cost. Reusable after sharpening

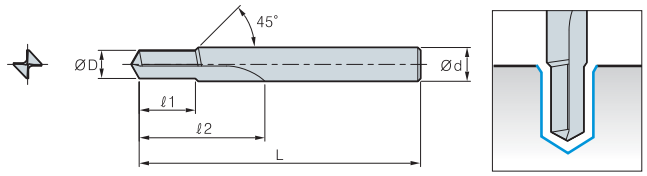
Cutting process type



Cutting processes and type



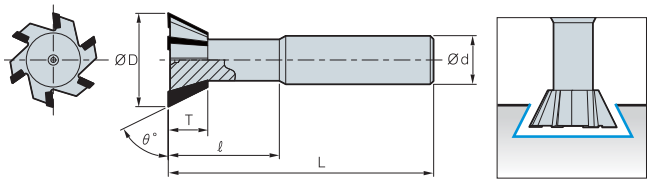
Burnishing Drill-Chamfer



(mm)

Designation	ØD	ℓ1	ℓ2	L	Ød
BDC					

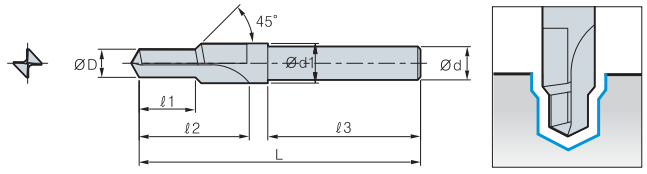
Dovetail Cutter



(mm)

Designation	ØD	ℓ	θ°	ℓ1	L	Ød	No. of Flute
DC							

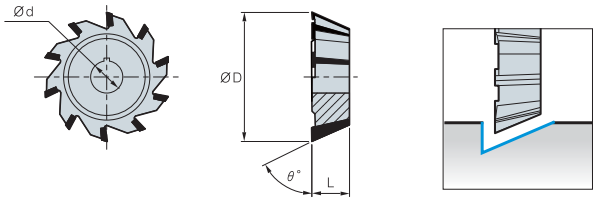
Burnishing Drill-Step



(mm)

Designation	ØD	Ød1	ℓ1	ℓ2	ℓ3	L	Ød
BDS							

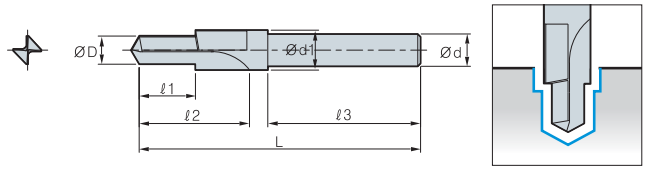
Angle Cutter



(mm)

Designation	ØD	θ°	Ød	L	No. of Flute
AC					

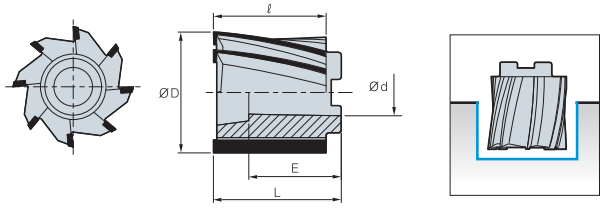
Burnishing Drill-Counter Bore



(mm)

Designation	ØD	Ød2	ℓ1	ℓ2	ℓ3	L	Ød
BDCB							

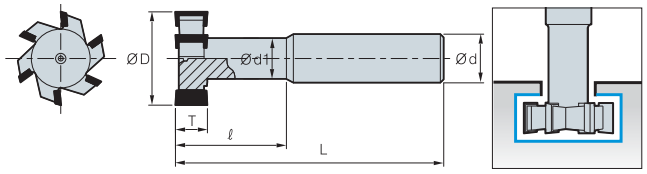
Shall Endmill



(mm)

Designation	ØD	Ød	ℓ	E	L	No. of Flute
SEM						

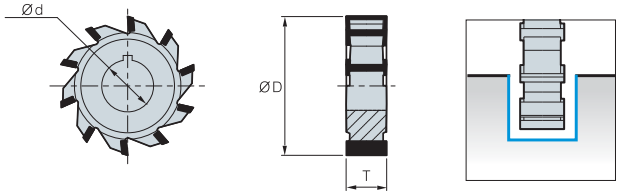
T-Cutter



(mm)

Designation	ØD	Ød1	T	ℓ	L	Ød	No. of Flute
TC							

Side Milling Cutter



(mm)

Designation	ØD	Ød	T	No. of Flute
SMC				