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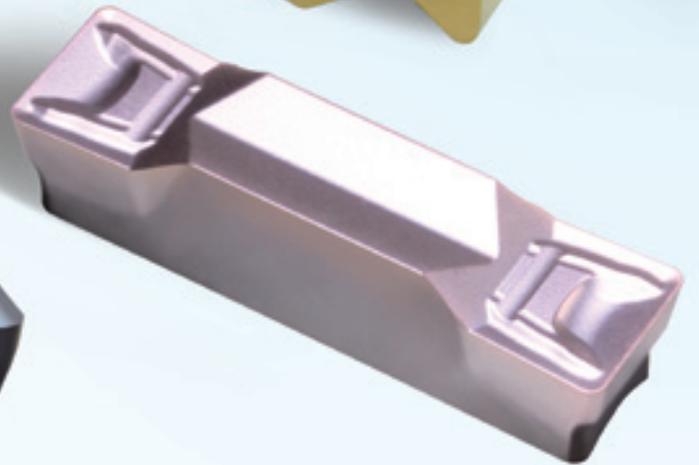
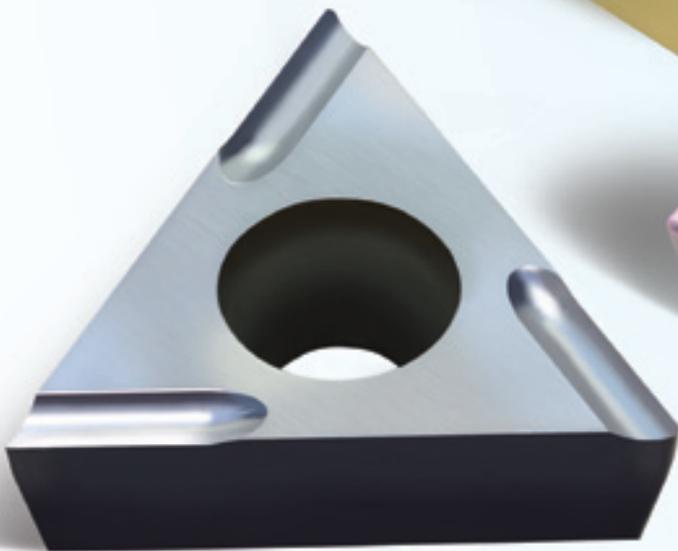
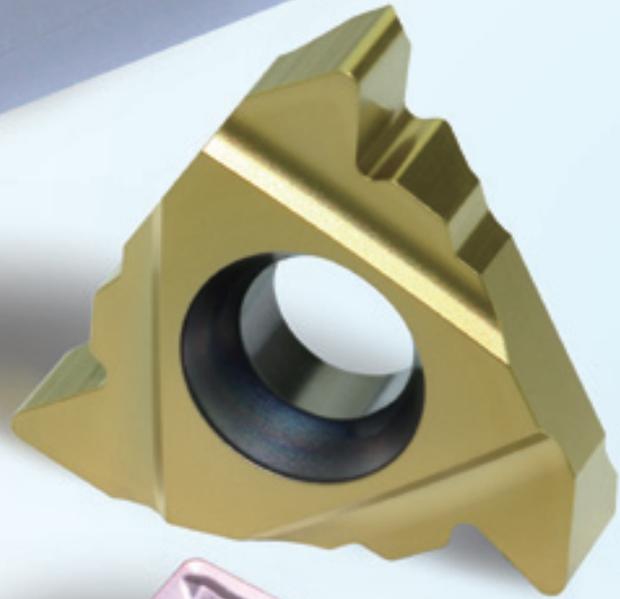
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General technical information	D1-D30
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DV JNR2525M16  
40829344

V16UM CMS\*22C SMS\*8.65XA1 SPRG C6RA



## Turning Tools

*General turning tools  
Parting and grooving tools  
Threading tools*



# Turning



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## Guide to selecting general turning tools

### Selection B

**D-type clamping system**

DCLNR/L, DDJNR/L, DSBNR/L, DTGNR/L, DVVNR, DVJNR/L, DWLNR/L

**P-type clamping system**

PCBNR/L, PCLNR/L, PDJNR/L, PDPNR, PSBNR/L, PSDNR, PSKNR/L

PSNR/L, PTFNR/L, PTFNR/L, PTGNR/L, PVLNR/L

**S-type clamping system**

SCACR/L, SCLCR/L, SDACR/L, SDJCR/L, SDNCR, SVJCR/L, SVACR/L

SVVNR, SVVCR, SVJCR/L, SBCR/L, SDCR, SBACR/L, SBCR/L

DCLNR/L

Approach angle **95°**  
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**Step 1: I want to order tool holders**  
• Approach angle, • Clamping system

**Corresponding tool holders of insert CN**

PCBNR/L, Kerf 7°

Type	Stock		Basic dimensions (mm)						Screw	Shim	Wrench	Lever	Shim pin
	R	L	a	b	L	h	s	a					
PCBNR/L 2020K12	A	20	20	125	20	17	27						
PCBNR/L 2020M12	A	25	25	150	25	22	27	LEM11-21	C12AP	W12SL	L4	SP4	
PCBNR/L 2020P12	A	30	30	125	30	27	33						
PCBNR/L 2020R16	A	30	30	125	30	22	33						
PCBNR/L 2020P16	A	32	32	110	32	27	33	LEM11-25	C15AP	W12SL	L8	SP8	
PCBNR/L 4040R16	A	40	40	200	40	35	38						
PCBNR/L 2020P19	A	32	32	170	32	27	38	LEM101-27	C18AP	W14SL	L6	SP6	
PCBNR/L 4040R19	A	40	40	200	40	35	42						
PCBNR/L 4040S20P1	A	40	40	200	40	35	50						
PCBNR/L 4040S20P2	A	40	40	200	40	35	50	LEM121-35A	C22AP-C1	W15SL	L8	SP8	

**Applicable inserts**

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining
DF	WDM	DR	HDR		
SP	PM	DR	HDR		
WGF	ER	DM	ER		
EF	EM	ER			
NF	NM	SNC	SNC		
		LR			

For finishing

DF

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**Step 2: Details of tool holder**  
• Tool holder type, Size, • Operation genre  
• Applicable inserts

**CN (Negative inserts)**

Inserts shape	Type	Dimensions (mm)				Coated cemented carbide
		L	IC	S	d	
NM	CNM12044-NM	12.0	4.76	5.16	0.4	
	CNM12045-NM	12.0	4.76	5.16	0.8	
	CNM12041-NM	12.0	4.76	5.16	1.2	
LR	CNM12140-LR	12.0	4.76	5.16	0.8	*
	CNM12042-LR	12.0	4.76	5.16	1.2	*
	CNM12043-LR	12.0	4.76	5.16	0.8	*
	CNM12044-LR	12.0	4.76	5.16	0.8	*
	CNM12045-LR	12.0	4.76	5.16	0.8	*
	CNM12046-LR	12.0	4.76	5.16	0.8	*

Dimensions (mm)

L	IC	S	d	r
12.9	12.7	4.76	5.16	0.4

**Step 3: Details of insert**  
• Shape, • Size, • Chipbreaker, • Grade, • Stock  
**Applicable tool holders**  
• Approach angle, • Page

Applicable tool

PCBNR/L Kerf 7° A172

PCLNR/L Kerf 95° A173

**Step 4: Return to locate tool holder**

**Applicable tool**

DCLNR/L Kerf 95° A166

PCBNR/L Kerf 7° A172

PCLNR/L Kerf 95° A173

PCLNR/L Kerf 95° A172

General turning  
Guide to selecting turning tools



## Guide to selecting parting and grooving tools

General turning

Guide to selecting turning tools

### External parting, grooving and turning tools

Type	Stock	Basic dimension(mm)				Applicable inserts	Screw	Thread	
		W	H	D	Length				
QEAD	1218RL07	A	12-14	125	18.4	7	ZC1405102	GB70 85-M4 x 12	WH3L
	1218RL12	A	12-12	125	18.4	12	ZC1405102		
	1618RL07	A	16-16	125	15.4	7	ZC1405102		
	1618RL12	A	16-16	125	15.4	12	ZC1405102		
	2028RL07	A	20-20	125	18.4	7	ZC1405102	GB70 85-M4 x 16	WH4L
2028RL12	A	20-20	125	18.4	12	ZC1405102			
QEED	1218EL07	A	12-14	125	18.2	7	ZC1405102	GB70 85-M4 x 12	WH3L
	1218EL12	A	12-12	125	18.2	12	ZC1405102		
	1618EL07	A	16-16	125	15.2	7	ZC1405102		
	1618EL12	A	16-16	125	15.2	12	ZC1405102		
	2028EL07	A	20-20	125	18.2	7	ZC1405102	GB70 85-M4 x 16	WH4L
2028EL12	A	20-20	125	18.2	12	ZC1405102			
QEFD	1618FL07	A	16-16	125	15.2	7	ZC1405102		
	1618FL12	A	16-16	125	15.2	12	ZC1405102		
	2028FL07	A	20-20	125	18.2	7	ZC1405102	GB70 85-M4 x 16	WH4L
	2028FL12	A	20-20	125	18.2	12	ZC1405102		
	2828FL17	A	28-28	150	24.2	7	ZC1405102	GB70 85-M4 x 20	WH5L
QEOD	1618OL07	A	16-16	125	15.2	7	ZC1405102		
	1618OL12	A	16-16	125	15.2	12	ZC1405102		
	2028OL07	A	20-20	125	18.2	7	ZC1405102	GB70 85-M4 x 16	WH4L
	2028OL12	A	20-20	125	18.2	12	ZC1405102		
	2828OL17	A	28-28	150	24.2	7	ZC1405102	GB70 85-M4 x 20	WH5L

### Parting and grooving tools



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### Parting inserts

Type	Basic dimension(mm)			Coating			Recommended grade	Available grade	Make-to-stock
	W <sup>(1)</sup>	R <sup>(1+2)</sup>	Chip-breaker Length	YBC151	YBC251	YBC302			
ZPAC1502-MG	1.5	0.2	12	□	□	□	□	□	□
ZPFC0302-MG	2.0	0.2	14	□	□	□	□	□	□
ZPFD0302-MG	2.5	0.2	17	□	□	□	□	□	□
ZPFE0302-MG	3.0	0.2	17	□	□	□	□	□	□
ZPFG0302-MG	4.0	0.2	22	□	□	□	□	□	□
ZPH0302-MG	5.0	0.2	22	□	□	□	□	□	□
ZPIS0302-MG	6.0	0.4	22	□	□	□	□	□	□
ZPFS0302-MG	2.5	0.2	17	□	□	□	□	□	□
ZPFS0402-MG	4.0	0.2	22	□	□	□	□	□	□
ZPFS0502-MG	5.0	0.2	22	□	□	□	□	□	□
ZPFS0604-MG	6.0	0.4	22	□	□	□	□	□	□

**1** Selection of tool holder type

**2** Tool holder type, Size and applicable inserts

**3** Insert type, Chip-breaker, Size and grade

### Parting and grooving inserts

Little squirrel series	ZP□□-MG	ZP□□S-MG	ZT□□-MG
Cutting edge width	1.5, 2.2, 5.3, 4.5, 6	2.5, 3, 4, 5, 6	2.5, 3, 4, 5, 6
Page	A259	A259	A260

### Parting inserts

Type	Basic dimension(mm)			Coating			Recommended grade	Available grade	Make-to-stock
	W <sup>(1)</sup>	R <sup>(1+2)</sup>	Chip-breaker Length	YBC151	YBC251	YBC302			
ZPAC1502-MG	1.5	0.2	12	□	□	□	□	□	□
ZPFC0302-MG	2.0	0.2	14	□	□	□	□	□	□
ZPFD0302-MG	2.5	0.2	17	□	□	□	□	□	□
ZPFE0302-MG	3.0	0.2	17	□	□	□	□	□	□
ZPFG0302-MG	4.0	0.2	22	□	□	□	□	□	□
ZPH0302-MG	5.0	0.2	22	□	□	□	□	□	□
ZPIS0302-MG	6.0	0.4	22	□	□	□	□	□	□
ZPFS0302-MG	2.5	0.2	17	□	□	□	□	□	□
ZPFS0402-MG	4.0	0.2	22	□	□	□	□	□	□
ZPFS0502-MG	5.0	0.2	22	□	□	□	□	□	□
ZPFS0604-MG	6.0	0.4	22	□	□	□	□	□	□

**1** Selecting insert type

**2** Insert type, Chip-breaker, Size and grade



Guide of selecting threading tools

**Threading tools**

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**External threading tools**

Type	Stock	Basic dimensions(mm)				Applicable inserts	Inserts codes	Chip	Chip breaker	Wrench	
	φ	h	D	L	s						
1618016	A	16	16	16	100	23					
2030A16	A	20	20	20	120	23	Z16ERD2202	ISO M3, EX-VT	MT16-CC3AN	DM40C	WT50P
2030P16	A	20	20	20	100	23					
3230P16	A	32	32	32	170	43	Z22ERD2202	ISO M5X7	MT22-CC3AN	DM40C	WT50P
3230P16	A	32	32	32	170	43					
3230P22	A	32	32	32	170	43					
4040S22	A	40	40	40	200	55					
1618016	A	16	16	16	100	23	Z16ELD2202	ISO M3, EX-VT	MT16-CC3AN	DM40C	WT50P
2030P16	A	20	20	20	120	23					
2030P16	A	20	20	20	170	33					
3230P16	A	32	32	32	170	43					
3230P22	A	32	32	32	170	43	Z22ELD2202	ISO M5X7	MT22-CC3AN	DM40C	WT50P
3230P22	A	32	32	32	170	43					
4040S22	A	40	40	40	200	55					

**ISO metric thread (with end)**

ISO 965-1980 DIN 13  
GB/T 197-2003 Tolerance class: 6g/6H

Type	Basic dimensions(mm)				Recommended cutting speeds	
	Pitch	S	(R) C	ed	VBS200	VBS205
Z16ERD ISO	Z16EL ISO	0.50	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	0.75	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	1.00	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	1.25	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	1.50	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	1.75	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	2.00	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	2.50	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	3.00	3.00	0.50	4.0	4.0
Z22ERD ISO	Z22EL ISO	4.00	4.00	12.7	5.0	5.0
Z22ERD ISO	Z22EL ISO	4.50	4.00	12.7	5.0	5.0
Z22ERD ISO	Z22EL ISO	5.00	4.00	12.7	5.0	5.0
Z22ERD ISO	Z22EL ISO	5.50	4.00	12.7	5.0	5.0
Z22ERD ISO	Z22EL ISO	6.00	4.00	12.7	5.0	5.0

**1** Selection of tool holder type

**2** Tool holder type, Size and applicable inserts

**3** Insert type, Chip-breaker, Size and grade

**Threading inserts**

Right hand type shown

ISO metric thread

General pitch thread

General pitch thread

	External thread	Internal thread	External thread	Internal thread
Part Number of stock	0.5-6	0.5-6	0.5-5	0.5-5
Page	A298	A299	A300	A300

**1** Selecting insert category

**ISO metric thread (with end)**

ISO 965-1980 DIN 13  
GB/T 197-2003 Tolerance class: 6g/6H

Type	Basic dimensions(mm)				Recommended cutting speeds	
	Pitch	S	(R) C	ed	VBS200	VBS205
Z16ERD ISO	Z16EL ISO	0.50	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	0.75	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	1.00	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	1.25	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	1.50	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	1.75	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	2.00	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	2.50	3.00	0.50	4.0	4.0
Z16ERD ISO	Z16EL ISO	3.00	3.00	0.50	4.0	4.0
Z22ERD ISO	Z22EL ISO	4.00	4.00	12.7	5.0	5.0
Z22ERD ISO	Z22EL ISO	4.50	4.00	12.7	5.0	5.0
Z22ERD ISO	Z22EL ISO	5.00	4.00	12.7	5.0	5.0
Z22ERD ISO	Z22EL ISO	5.50	4.00	12.7	5.0	5.0
Z22ERD ISO	Z22EL ISO	6.00	4.00	12.7	5.0	5.0

**2** Insert type, Chip-breaker, Size and grade





# TURNING Turning Inserts Overview

## Cemented carbide and cermet inserts

General turning

Turning inserts overview

Negative inserts

<b>For finishing</b>							
	<b>DNEG-NGF</b>	<b>VNEG-NGF</b>	<b>CNMG-DF</b>	<b>CNMG-SF</b>	<b>CNMG-EF</b>	<b>CNEG-NF</b>	<b>DNMG-DF</b>
Cutting edge length	15	16	09,12	09,12	09,12	12	11,15
Page	A62	A81	A54	A54	A54	A55	A61

<b>DNMG-SF</b>	<b>DNMG-EF</b>	<b>DNEG-NF</b>	<b>SNMG-DF</b>	<b>SNMG-EF</b>	<b>SNMG-SF</b>	<b>TNMG-DF</b>	<b>TNMG-SF</b>
Cutting edge length	11,15	11,15	15	09,12	09,12,15	09,12,15	16,22
Page	A62	A62	A62	A67	A67	A67	A75

<b>TNMG-EF</b>	<b>VNMG-DF</b>	<b>VNMG-EF</b>	<b>VNEG-NF</b>	<b>VNMG-SF</b>	<b>WNMG-DF</b>	<b>WNMG-SF</b>	<b>WNMG-EF</b>
Cutting edge length	11,16,22	16	16	16	16	06,08	06,08
Page	A76	A81	A81	A81	A81	A83	A84

	<b>Wiper</b>	<b>For finishing</b>				
<b>WNEG-NF</b>			<b>CNMG-WGF</b>	<b>DNMX-WGF</b>	<b>TNMX-WGF</b>	<b>WNMG-WGF</b>
Cutting edge length	08		12	11,15	16	06,08
Page	A84		A54	A61	A75	A83

<b>For semi-finishing</b>					<b>For semi-finishing</b>	
	<b>CNMG-WGM</b>	<b>DNMX-WGM</b>	<b>TNMX-WGM</b>	<b>WNMG-WGM</b>		<b>CNMG-PM</b>
Cutting edge length	12	15	16	06,08		09,12,16,19
Page	A55	A63	A76	A84		A55

<b>CNMG-DM</b>	<b>CNMG-EM</b>	<b>CNMG-NM</b>	<b>DNMG-PM</b>	<b>DNMG-DM</b>	<b>DNMG-EM</b>	<b>DNMG-NM</b>	<b>SNMG-PM</b>
Cutting edge length	09,12,16,19	12,16	12	11,15	11,15	11,15	15
Page	A56	A56	A57	A63	A64	A64	A64

<b>SNMG-DM</b>	<b>SNMG-EM</b>	<b>SNMG-NM</b>	<b>TNMG-PM</b>	<b>TNMG-DM</b>	<b>TNMG-EM</b>	<b>VNMG-PM</b>	<b>VNMG-DM</b>
Cutting edge length	09,12,15,19	12,15	12	11,16,22	11,16,22	16,22	16
Page	A68	A69	A69	A76	A77	A77	A82



Negative inserts

General turning

Turning inserts overview

<b>VNMG-EM</b>	<b>VNMG-NM</b>	<b>WNMG-PM</b>	<b>WNMG-DM</b>	<b>WNMG-EM</b>	<b>WNMG-NM</b>	
Cutting edge length	16	16	06,08	06,08	06,08	08
Page	A82	A82	A85	A85	A85	A86

**For roughing**

<b>CNMG-SNR</b>	<b>DNMG-SNR</b>	<b>SNMG-SNR</b>	<b>TNMG-SNR</b>	<b>VNMG-SNR</b>	<b>WNMG-SNR</b>	
Cutting edge length	12, 16, 19	15	12	16	16	08
Page	A58	A65	A71	A78	A82	A86

<b>CNMM-LR</b>	<b>DNMM-LR</b>	<b>SNMM-LR</b>	<b>TNMM-LR</b>	<b>CNMG-DR</b>	<b>CNMM-DR</b>	<b>CNMG-ER</b>	<b>CNMM-ER</b>	
Cutting edge length	12, 16, 19, 25	15	12, 15, 19, 25	16, 22	12, 16, 19	12, 16, 19, 25	12, 16, 19	25
Page	A57	A65	A69	A77	A58	A58	A58	A58

<b>DNMG-DR</b>	<b>DNMM-DR</b>	<b>DNMG-ER</b>	<b>DNMM-ER</b>	<b>SNMG-DR</b>	<b>SNMM-DR</b>	<b>SNMG-ER</b>	<b>SNMM-ER</b>	
Cutting edge length	15	15	15	15	12, 15, 19	12, 15, 19, 25	12, 15, 19	25
Page	A65	A65	A65	A65	A70	A70-A71	A71	A71

<b>TNMG-DR</b>	<b>TNMM-DR</b>	<b>TNMG-ER</b>	<b>WNMG-DR</b>	
Cutting edge length	16, 22, 27	16, 22, 27	16, 22	06, 08
Page	A78	A78	A78	A86

**For heavy machining**

<b>CNMM-HPR</b>	<b>SNMM-HPR</b>	<b>CNMM-HDR</b>	<b>DNMM-HDR</b>	<b>SNMM-HDR</b>	<b>TNMM-HDR</b>	
Cutting edge length	19, 25	19, 25	12, 16, 19	15	12, 15, 19, 25	16, 22, 27
Page	A59	A72	A59	A66	A72	A79

<b>175.32-22/227</b>	<b>175.32-24</b>	<b>175.32-25</b>	<b>175.32-28</b>	<b>KNUX</b>	<b>CNMG</b>	
Cutting edge length	19	19, 30	19	19	16	12, 16, 19
Page	A88	A88	A88	A88	A87	A60

<b>CNMM</b>	<b>DNMG</b>	<b>SNMG</b>	<b>SNMM</b>	<b>TNMG</b>	<b>TNMM</b>	<b>VNMG</b>	
Cutting edge length	12, 19	15, 19	09, 12, 15, 19, 25	09, 12, 19, 25	11, 16, 22, 27, 33	16, 22, 27	16
Page	A60	A66	A73	A73-74	A79	A80	A82



# TURNING / Turning Inserts Overview

General turning

Turning inserts overview

Negative inserts

**Without chipbreaker**

					
	<b>CNMA</b>	<b>DNMA</b>	<b>SNMA</b>	<b>TNMA</b>	<b>WNMA</b>
Cutting edge length	12,16,19	11,15	09,12,15,19	16,22,27	06,08
Page	A59	A66	A74	A80	A86

**For extra finishing** **-USF**

						
	<b>CCGT-USF</b>	<b>DCGT-USF</b>	<b>TCGT-USF</b>	<b>VCGT-USF</b>	<b>DPGT-USF</b>	<b>VPGT-USF</b>
Cutting edge length		09	07,11	11	08,11	07,11
Page		A89	A93	A100	A105	A111

							
<b>CCGT-SF</b>	<b>DCGT-SF</b>	<b>TCGT-SF</b>	<b>VCGT-SF</b>	<b>VBGT-SF</b>	<b>CPGT-SF</b>	<b>DPGT-SF</b>	<b>TBGH-L</b>
Cutting edge length	06,09	07,11	06,09,11	11	11	06,09	07,11
Page	A89	A93	A100	A105	A108	A110	A111

	
<b>TPGT-SF</b>	<b>TPGH-L</b>
Cutting edge length	09,11
Page	A113

Positive inserts

**For finishing**

						
<b>VCGT-NGF</b>	<b>VBET-NGF</b>	<b>CCMT-HF</b>	<b>CCMT-EF</b>	<b>DCMT-HF</b>	<b>DCMT-EF</b>	<b>SCMT-HF</b>
Cutting edge length	16	16	06,09,12	06,09,12	07,11	07,11
Page	A105	A108	A89	A90	A93	A94

							
<b>SCMT-EF</b>	<b>TCMT-HF</b>	<b>TCMT-EF</b>	<b>VCGT-HF</b>	<b>VCGT-NF</b>	<b>VBMT-EF</b>	<b>VBMT-HF</b>	<b>VBET-NF</b>
Cutting edge length	09	06,09,11,16	09,11,16	11	16	11,16	11
Page	A98	A101	A102	A105	A105	A108	A108

**For semi-finishing**

						
<b>CCMT-HM</b>	<b>CCMT-EM</b>	<b>DCMT-HM</b>	<b>DCMT-EM</b>	<b>SCMT-HM</b>	<b>SCMT-EM</b>	<b>TCMT-HM</b>
Cutting edge length	06,09,12	06,09,12	07,11	07,11	09,12	09,12
Page	A90	A90	A94	A94	A98	A98



Positive inserts

<b>TCMT-EM</b>	<b>VBMT-EM</b>	<b>VBMT-HM</b>	
Cutting edge length	09,11,16	11	16
Page	A102	A109	A109

**For roughing**

<b>VBMT-SNR</b>	<b>CCMT-HR</b>	<b>DCMT-HR</b>	<b>SCMT-HR</b>	<b>TCMT-HR</b>	<b>VBMT-HR</b>	
Cutting edge length	16	06,09,12	11	09,12	09,11,16,22	16
Page	A109	A91	A95	A99	A103	A109

**For Al machining**

<b>CCGX-LC</b>	<b>DCGX-LC</b>	<b>SCGX-LC</b>	<b>TCGX-LC</b>	<b>VCGX-LC</b>	<b>CCGX-LH</b>	<b>DCGX-LH</b>	
Cutting edge length	06,09,12	07,11	09,12	09,11,16	11,16,22	06,09,12	07,11
Page	A91	A95	A99	A103	A106	A91-92	A95

**All round**

<b>RCGX-LH</b>	<b>SCGX-LH</b>	<b>TCGX-LH</b>	<b>VCGX-LH</b>	<b>RCM(G)T</b>	<b>RCMX</b>	<b>SCMT</b>	
Cutting edge length	08	09,12	09,11,16	11,16,22	08,10,12,16	08,10,12,16,20,25,32	09,12
Page	A96	A99	A104	A106	A96	A97	A99

**Without chipbreaker**

<b>TCMT</b>	<b>WCMX-53</b>	<b>CCMW</b>	<b>DCMW</b>	<b>SCMW</b>	<b>TCMW</b>	<b>SPMW</b>	
Cutting edge length	22	04,06,08	06,09,12	07,11	06,09,12	11,16,22	09,12
Page	A104	A107	A92	A95	A99	A104	A112

*New* **PCBN&PCD inserts**

Negative inserts

**PCBN inserts**

<b>CNGA</b>	<b>DNGA</b>	<b>SNGA</b>	<b>TNGA</b>	<b>VNGA</b>	<b>WNGA</b>	
Cutting edge length	12	15	12	16	16	08
Page	A118	A121	A126	A130	A133	A136

**PCBN inserts turning case**

<b>CNGN</b>	<b>DNGN</b>	<b>SNGN</b>	<b>TNGN</b>	<b>VNGN</b>	<b>WNGN</b>	
Cutting edge length	12	15	12	16	16	08
Page	A120	A125	A129	A132	A135	A138

General turning

Turning inserts overview



# TURNING / Turning Inserts Overview

General turning

Turning inserts overview

Positive inserts

**PCBN inserts**

	CCGW	DCGW	TCGW	VBGW	VCGW
Cutting edge width	06,09,12	07,11	09,11	16	16
Page	A139	A140	A141	A142	A143

**PCD 0° Front Angle Blade**

	CCGW□□AF	DCGW□□AF	TCGW□□AF	VBGW□□AF	VCGW□□AF
Cutting edge length	06,09,12	07,11	09,11	16	16
Page	A144	A145	A146	A147	A148

**PCD 7° Front Angle Blade**

	CCMX□□AF	DCMX□□AF	TCMX□□AF	VBMX□□AF	VCMX□□AF
Cutting edge width	06,09,12	07,11	09,11	16	16
Page	A144	A145	A146	A147	A148

## Ceramic inserts

	RCGN	RPGN
Cutting edge width	09,12	09,12
Page	A152	A152

## Parting and grooving inserts

**Little squirrel series** QC series shallow grooving inserts

	QC□□R/L	QC□□R/L□□□R	ZP□D-MG	ZP□S-MG
Cutting edge width	1.1~4.8	1.0~4.0	1.5,2.0,2.5,3,4,5,6	2.5,3,4,5,6
Page	A267-268	A268	A259	A259

	ZT□D-MG	ZT□D-MM	ZT□S-MG	ZT□D-EG	ZT□D-EG	ZIMF-NM	ZIMF-SM
Cutting edge width	2.5,3,4,5,6	1.5,2,3,4,5,6,8	5,6	1-2.4(tailor-made)	2.4-6.5(tailor-made)	3,4,5,6	3,4,5,6
Page	A260	A260	A260	A261	A261	A262	A262

	ZR□D-MG	ZR□D-NM	ZR□D-EG	ZIGQ-NM	ZIGQ-NF	ZR□D-LH	ZILD-LC
Cutting edge width	2.5,3,4,5,6	3,4,5,6	3,4,5,6	3,4,5,6	3,4,5,6	6,8	8
Page	A263	A263	A263	A264	A264	A265	A265



## Supplemental series



ZQMX-1E

Cutting edge width	3.125,4.125,5.125,6.4,7.05
Page	A269

General turning

Turning inserts overview

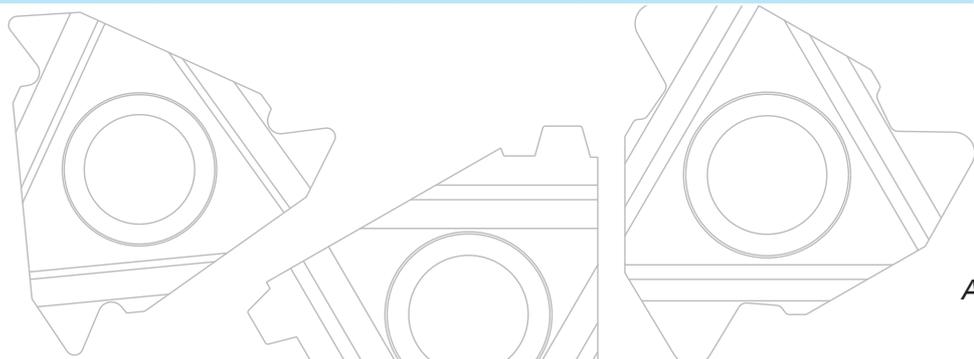
## Threading inserts

Right hand type shown	ISO metric thread		General pitch thread		Whitworth thread	
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/ Number of pitch	0.5~6	0.5~6	0.5~5	0.5~5	8~19	8~19
Page	A298	A299	A300	A300	A301	A301

Right hand type shown	Unified thread		British Standard pipe thread		American standard pipe thread	
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/ Number of pitch	8~24	8~24	11~28	11~28	8~27	8~27
Page	A302	A302	A303	A303	A304	A304

Right hand type shown	ISO metric thread (Thin type)		General pitch thread (Thin type)		Whitworth thread (Thin type)	
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/ Number of pitch	0.5~3.0	0.5~3.0	0.5~5.0(5~48)	0.5~5.0(5~48)	8~16	8~16
Page	A306	A306	A307	A307	A308	A308

Right hand type shown	Unified thread (Thin type)		British Standard pipe thread (Thin type)		American standard pipe thread (Thin type)	
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/ Number of pitch	8~20	8~20	11~28	11~28	8~27	8~27
Page	A309	A309	A310	A310	A311	A311





### Tool holders for external turning

#### D-type clamping system

							
Approach angle Page	<b>95°</b> A166	<b>93°</b> A167	<b>75°</b> A168	<b>91°</b> A169	<b>72°30'</b> A170	<b>93°</b> A170	<b>95°</b> A171

#### P-type clamping system

							
Approach angle Page	<b>75°</b> A172	<b>95°</b> A173	<b>93°</b> A174	<b>62°30'</b> A175	<b>75°</b> A176	<b>45°</b> A177	<b>75°</b> A178

					
Approach angle Page	<b>45°</b> A179	<b>90°</b> A180	<b>60°</b> A181	<b>90°</b> A182	<b>95°</b> A183

#### S-type clamping system

							
Approach angle Page	<b>90°</b> A184	<b>95°</b> A185	<b>90°</b> A186	<b>93°</b> A187	<b>62°30'</b> A188	<b>93°</b> A189	<b>90°</b> A190

							
Approach angle Page	<b>72°30'</b> A191	<b>72°30'</b> A192	<b>93°</b> A193	<b>75°</b> A194	<b>45°</b> A195	<b>75°</b> A196	<b>45°</b> A197

							
Approach angle Page	<b>90°</b> A198	<b>90°</b> A198	<b>91°</b> A199	<b>60°</b> A200	<b>90°</b> A201	A202	A203

General turning

Turning tools overview



## C-type clamping system



Approach angle	<b>93°</b>	<b>63°</b>
Page	A204	A204

## Turning tool holders for ceramic inserts



Approach angle		
Page	A205	A205

## Turning tool holders for internal machining

### P-type clamping system



Approach angle	<b>95°</b>	<b>62°30'</b>	<b>93°</b>	<b>75°</b>	<b>90°</b>	<b>95°</b>
Page	A212	A213	A214	A215	A216	A217

### S-type clamping system



Approach angle	<b>95°</b>	<b>107°30'</b>	<b>93°</b>	<b>95°</b>	<b>75°</b>	<b>90°</b>	<b>107°30'</b>
Page	A218	A219	A220	A221	A222	A223	A224



Approach angle	<b>93°</b>	<b>107°30'</b>	<b>93°</b>	<b>95°</b>	<b>107°30'</b>	<b>93°</b>	<b>93°</b>
Page	A225	A226	A227	A228	A229	A230	A231





Approach angle	<b>90°</b>	<b>95°</b>
Page	A232	A233

### Damping tool holders



Approach angle	<b>95°</b>	<b>107°30'</b>	<b>93°</b>	<b>93°</b>	<b>107°30'</b>	<b>93°</b>
Page	A235	A236	A237	A238	A239	A240

### Parting and grooving tools



Page	A272-A273	A273	A274	A274	A275	A275	A276-A277
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Page	A278-A281	A282-A283	A284	A284	A288	A286	A286
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### Threading tools



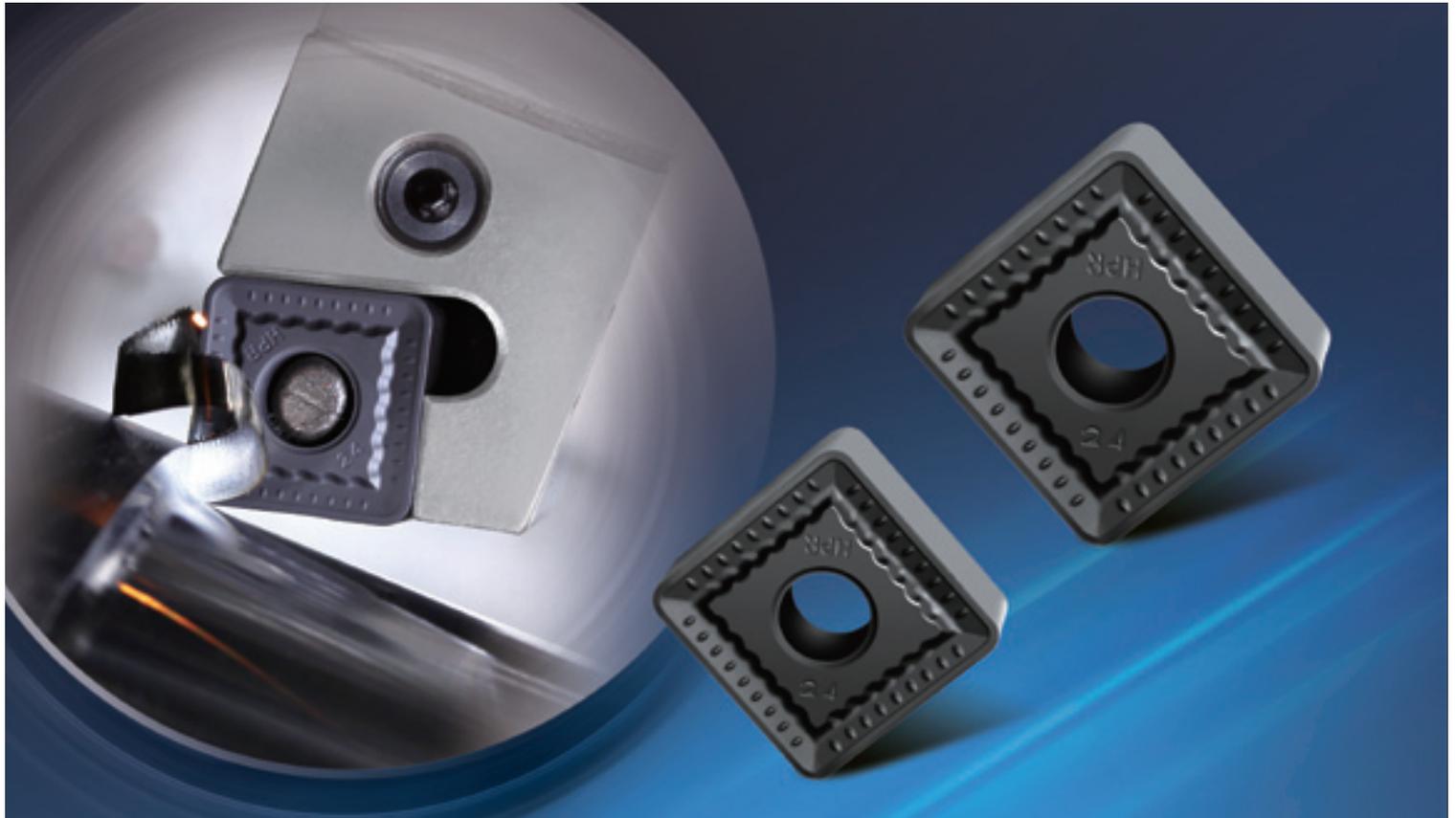
Page	A313	A314
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**-WGM**

**Wiper**

**-WGF**

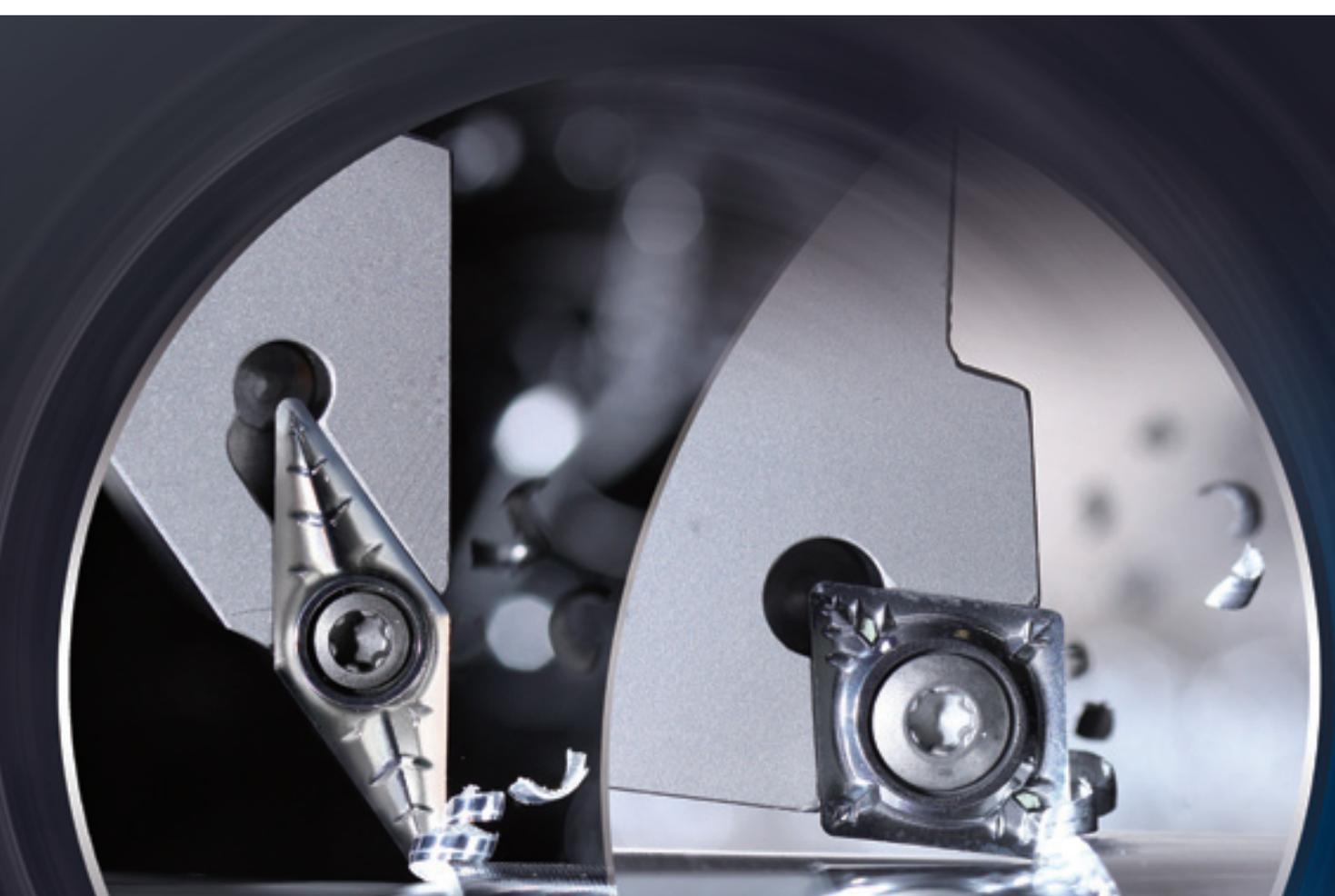


**-HPR**

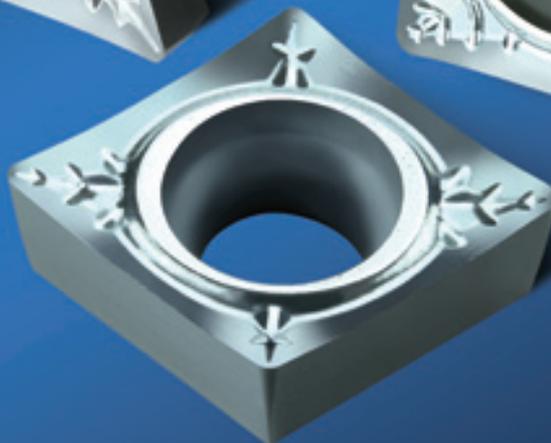
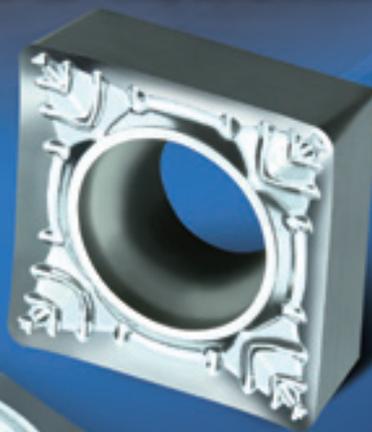
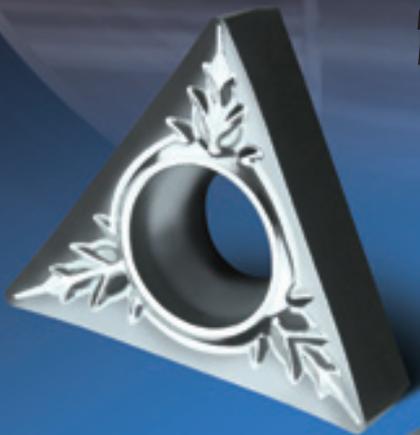
**New Generation of  
Roughing Chipbreaker**

**-LR**





**-LC** chipbreaker  
for Al machining





**YBM215**

Outstanding wear resistance, extends the tool life  
achieves high efficient processing

**Grade for stainless  
steel machining**



**YBM153**

Best choice for cutting stainless steel  
with high speed under good working condition



ISO	Code	General turning							Threading	Parting and grooving		
		Coating		Cermet	Coated cermet	Ceramic	Cemented carbide	PCBN	PCD	Coating	Cemented carbide	
		CVD	PVD							PVD		CVD
<b>P</b> Steel	01											
	10	YBC151										
	20	YBC251	YBC152									
	30	YBC252	YBC351						YBG202			YC10
	40		YBC352						YBG203			YC40
<b>M</b> Stainless steel	01											
	10	YBM151										
	20	YBM153	YBM251									
	30	YBM253							YBG202			
	40								YBG203			
<b>K</b> Cast iron	01											
	10	YBD052	YBD102	YBD152								
	20											
	30								YBG202			
	40								YBG203			
<b>N</b> Non ferrous metal	01											
	10											
	20											
	30								YBG202			
	40								YBG203			
<b>S</b> Heat resistant alloy & Ti alloy	01											
	10											
	20											
	30											
	40											
<b>H</b> Super hard material	01											
	10											
	20											
	30											
	40											

General turning

Recommended overview for turning inserts



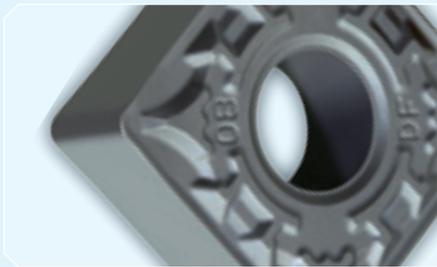


# TURNING



## General turning inserts

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<b>Application instruction of general turning inserts</b>	•	A27-A49
<b>General turning inserts</b>	•	A50-A152
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Positive inserts		A89-A114
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PCBN&PCD inserts		A118-A149
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Ceramic inserts code key		A150-A151
Ceramic inserts	•	A152







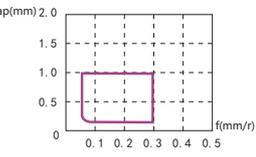
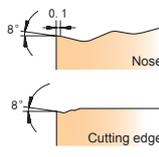
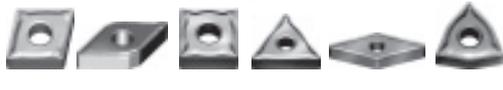
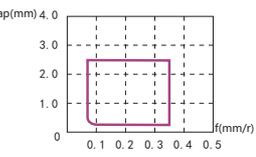
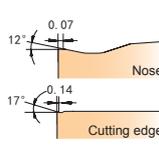
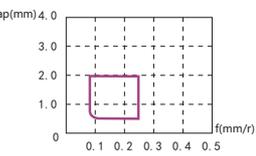
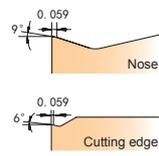
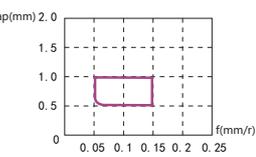
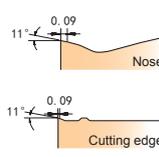
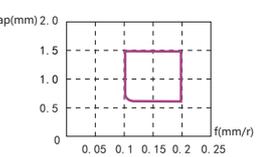
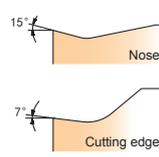
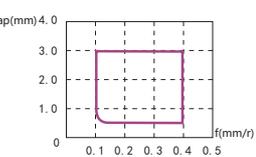
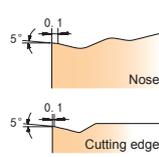
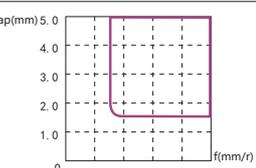
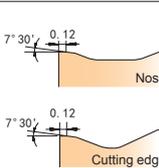
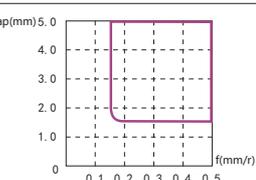
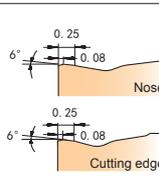
# TURNING / General Turning Inserts

## General turning inserts overview

General turning

General turning inserts overview

### Negative inserts with hole

Appli- cation	Chipbreaker	Preci- sion	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For finishing	<b>SF</b> 	M			<b>Recommended chipbreaker for finishing of P-type materials</b> Double-sided chipbreaker with M-level tolerance has outstanding performance in finishing, achieving good surface quality. 
	<b>DF</b> 	M			<b>Recommended chipbreaker for finishing of P-type materials</b> Double-sided chipbreaker with M-level tolerance has sharp edges, which can effectively cut off stainless steel and avoid adhering and surface hardening, achieving high surface quality. 
	<b>EF</b> 	M			<b>Recommended chipbreaker for finishing of M-type materials</b> Double-sided chipbreaker with M-level tolerance can prevent wear and hardening to achieve high machining precision and good surface quality. 
	<b>NF</b> 	E			<b>Recommended chipbreaker for finishing of S-type materials</b> Double-sided chipbreaker with E-level tolerance can prevent wear and hardening to achieve high machining precision and good surface quality. 
	<b>NGF</b> 	E			<b>Recommended chipbreaker for finishing of S-materials</b> E-class double side chip breaker with excellent sharp edge. High positioning accuracy, light cutting force. -NGF is recommended chip breaker for S series material general finishing. 
	<b>WGF</b> 	M			<b>Recommended chipbreaker for finishing of S-materials</b> E-class double side chip breaker with excellent sharp edge. High positioning accuracy, light cutting force. -NGF is recommended chip breaker for S series material general finishing. 
For semi-finishing	<b>DM</b> 	M			<b>Recommended chipbreaker for semi-finishing of P-type materials</b> Double-sided chipbreaker with M-level tolerance produces small cutting forces and has large chip breaking range, which ensures good performance for machining highly adhesive alloy steel. 
	<b>PM</b> 	M			<b>Recommended chipbreaker for semi-finishing of P-type materials</b> Double-sided chipbreaker with M-level tolerance has higher strength of cutting edge than chipbreaker DM. It is suitable for semi-finishing under unstable working conditions as well as machining cast iron with small cutting forces. 



Negative inserts with hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For semi-finishing	<b>NM</b>	M			<p><b>Recommended chipbreaker for semi-finishing of S-type materials</b></p> <p>Double-sided chipbreaker with M-class tolerance keeps high precision after inserts are turned, with good capability to prevent wear and hardening to achieve higher machining efficiency than chipbreaker NF.</p>
	<b>EM</b>				<p><b>Recommended chipbreaker for semi-finishing of M-type materials</b></p> <p>Double-sided chipbreaker with M-level tolerance can solve the processing problems such as chip breaking and adhering of stainless steel, achieving higher machining efficiency than chipbreaker EF.</p>
	<b>WGM</b>				<p><b>Wiper chipbreaker for semi-finishing</b></p> <p>Double-sided chipbreaker with M-level tolerance, semi-finishing chipbreaker with wiper designed, perfect combination of good wiper result and sturdy cutting edge structure, which perfectly meet the requirement of high efficiency and good surface quality.</p>
	All round				<p><b>From semi-finishing to roughing of P-type, M-type, K-type materials</b></p> <p>Double-sided chipbreaker with M-level tolerance has good cutting edge strength and wide application.</p>
Light-load roughing	<b>DR</b> Double-side	M			<p><b>Recommended chipbreaker for light roughing of P-type and K-type materials</b></p> <p>Double-sided chipbreaker with M-level tolerance is the first choice for light roughing, can achieve high evacuation rate and efficiency of cutting edge.</p>
	<b>LR</b> Single-side				<p><b>Recommended chipbreaker for light-load roughing of P-type materials</b></p> <p>Single-sided general chipbreaker with M-level tolerance, has wide chip breaking range and sharp cutting edge is designed with inclined angle, which enables it to cut lightly and easily and control the chipping flow direction. Chip-leaded-stages can reduce the contact area with chips, so that heat can easily be dissipated.</p>
For roughing	<b>ER</b> Single/Double side	M			<p><b>Recommended chipbreaker for roughing of M-type materials</b></p> <p>Single / double-sided chipbreaker with M-level tolerance has good capacity of impact-resistance. It is designed to achieve balance between security and sharpness of the cutting edge, and it can achieve high efficiency by preventing the problems of adhering and high cutting heat when roughing stainless steel.</p>

General turning

General turning inserts overview



# TURNING / General Turning Inserts

## General turning inserts overview

General turning

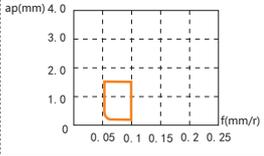
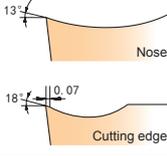
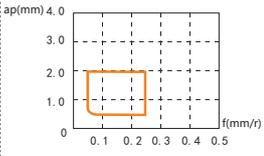
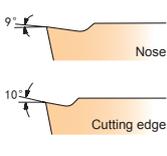
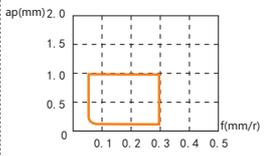
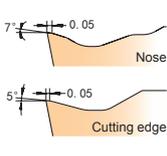
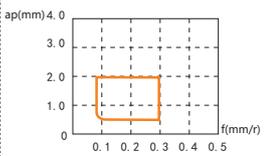
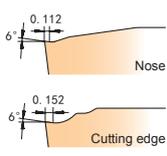
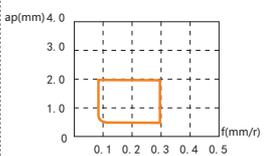
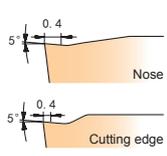
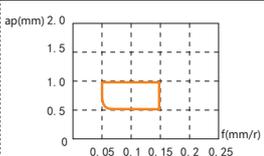
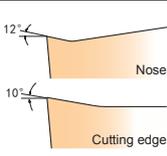
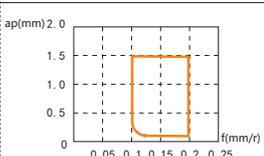
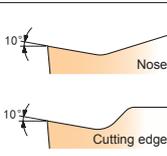
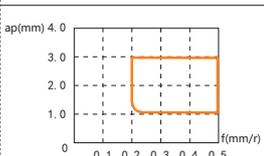
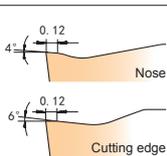
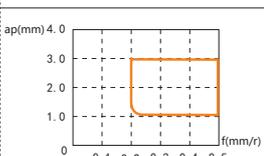
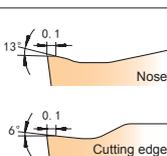
General turning inserts overview

### Negative inserts with hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For roughing	<b>DR</b> Single-side	M			<b>Recommended chipbreaker for roughing of P-type materials</b> Single-sided chipbreaker with M-level tolerance has high security of cutting edge, which can achieve high feed rate and low cutting forces at great cutting depth and high feed rate.
	<b>SNR</b>				<b>Recommended chipbreaker for S-material high efficiency roughing</b> M-level double-sided chipbreaker perfectly combines sharpness and strength of the cutting edge, with small cutting resistance and high edge strength can effectively reduce groove wear. SNR is recommended chipbreaker for high depth roughing of S- materials.
Heavy-load machining	<b>HDR</b> Single-side	M			<b>Recommended chipbreaker for heavy load machining of P materials</b> M level single-sided chip breaker with strengthen cutting edges, high safety and excellent plastic deformation resistance under high metal removal rate.
	<b>HPR</b> Single-side				<b>Recommended chipbreaker for heavy-load machining of P-type materials</b> Single-sided chipbreaker with M-level tolerance, strong cutting edge. Multi-stages chipbreaker ensures the flowing of chip and heat dissipation of insert. It is suitable for machining under unstable and relatively bad working condition, especially for external roughing of work piece with a rough oxidized surfaces.
Cast iron machining	Without chipbreaker	M			<b>For cast iron machining</b> Double-sided chipbreaker with M-level tolerance has high cutting edge strength. It can overcome inferior factors such as interruption and vibration, etc. when machining cast iron.
Super hard inserts	Without chipbreaker	G			<b>For machining of non-ferrous metal and high-hardness metal</b> G-level tolerance is the best choice for machining non-ferrous metals and high-hardness material by welding PCBN and PCD material to cemented carbide substrate.
Ceramic inserts	Without chipbreaker	G			<b>For roughing of K-, H- high-temperature alloy roughing</b> Sialon Ceramics, V-positioning, solution for high-speed machining of cast iron, hardened steel and superalloy.



Positive inserts with hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For extra finishing	<b>USF</b> 	<b>G</b>			<b>Precision turning chipbreaker</b> With G-level tolerance, large rake angle, sharp cutting edge, for soft cutting action, this is the first choice for precision turning of small shaft parts. 
	<b>R/L</b> 	<b>G</b>			<b>Recommended chipbreaker for precise boring inserts</b> With G-level tolerance, sharp cutting edge and small nose radius, it can effectively reduce the vibration in machining and is suitable for boring and external turning. 
	<b>SF</b> 	<b>G</b>			<b>First choice for finishing with high requirements on chipbreaker</b> With G-level tolerance, it is the first choice for precise finishing due to its excellent performance on chip breaking. 
For finishing	<b>HF</b> 	<b>M</b>			<b>Chipbreaker for finishing with wide application</b> With M-level tolerance, it is suitable for internal and external finishing of various materials such as steel and cast iron. 
	<b>EF</b> 	<b>M</b>			<b>Recommended chipbreaker for finishing of M-type materials</b> With M-level tolerance, it has sharp cutting edges and is suitable for cutting adhesive materials such as stainless steel, soft steel, etc. 
	<b>NF</b> 	<b>E G</b>			<b>Recommended chipbreaker for finishing S-type materials</b> With E and G-level tolerance and sharp cutting edges, it is suitable for internal and external finishing of high-temperature alloy materials. 
	<b>NGF</b> 	<b>E G</b>			<b>Recommended chipbreaker for S-material general finishing</b> E, G grade accuracy, for inner hole finishing of S materials. 
For semi-finishing	<b>HM</b> 	<b>M</b>			<b>Chipbreaker for semi-finishing with wide application</b> With M-level tolerance, it is suitable for internal and external semi-finishing of materials like steel, cast iron, etc. 
	<b>EM</b> 	<b>M</b>			<b>Recommended chipbreaker for semi-finishing of M-Type materials</b> With M-level tolerance, it has higher hardness of cutting edge than EF and can achieve higher efficiency. 

General turning

General turning inserts overview



# TURNING / General Turning Inserts

## General turning inserts overview

General turning

General turning inserts overview

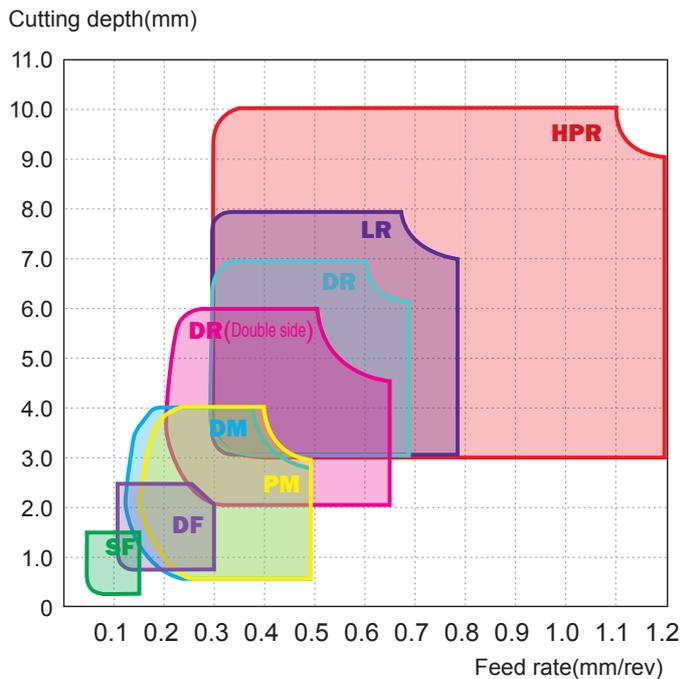
### Positive inserts with hole

Appli- cation	Chipbreaker	Preci- sion	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For semi-finishing	All round	M			<b>Recommended chipbreaker for semi-finishing of M-type materials</b> With M-level tolerance, it is suitable for profile machining materials like steel, cast iron, etc.
	Without chipbreaker	M G			<b>Chipbreaker for machining of cast iron</b> With M- and G- level tolerance, it has high cutting edge strength and is suitable for internal and external machining of cast iron.
For roughing	HR	M			<b>General chipbreaker for roughing</b> With M-level tolerance, it is suitable for both internal and external roughing of materials such as steel, stainless steel, cast iron, etc.
	Special chipbreaker	M			<b>Recommended chipbreaker for heavy machining of P-type materials</b> Single-sided with M-level tolerance, it has good cutting edge strength with high security. It is the first choice for profile roughing.
	SNR	M			<b>Recommended chipbreaker for S-material high-efficiency roughing</b> M-level accuracy, for inner hole roughing of S materials.
For Al machining	LC	G			<b>Chipbreaker for machining of Al alloy</b> With G-level tolerance, large rake angle and clearance angle make the cutting edge sharper, ensuring easy and fast cutting while remaining effective chip breaking.
	LH	G			<b>Special chipbreaker for machining of Al alloy</b> With G-level tolerance, large rake angle and polishing treatment on surface, it can effectively prevent built-up edge and achieve high workpiece surface quality while maintaining long life.
Super hard inserts	Without chipbreaker	G			<b>Special chipbreaker for non-ferrous metals and materials with high hardness</b> With G-level tolerance, it is the best choice for machining of non-ferrous metals and materials with high-hardness by welding PCBN and PCD material to cemented carbide substrate.

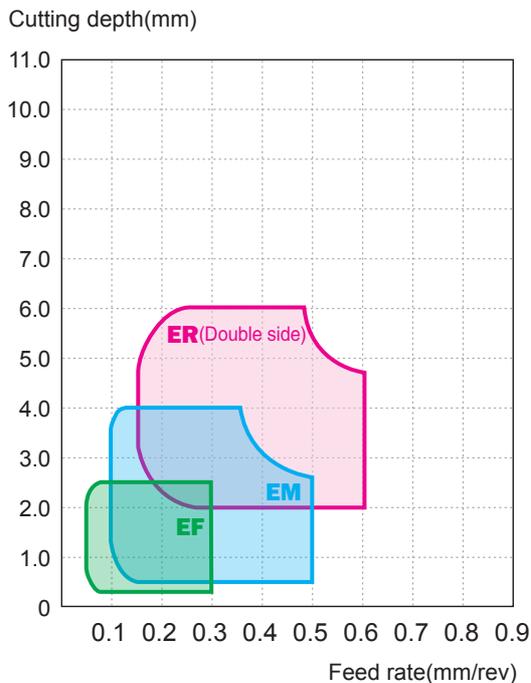


Chip breaking range reference for general turning inserts

Negative inserts

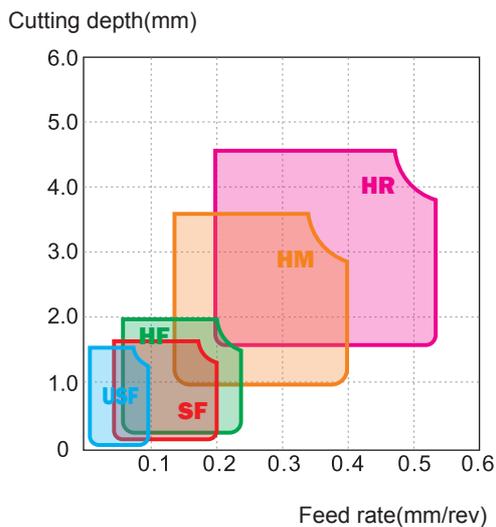


▶ Workpiece material: 45# steel

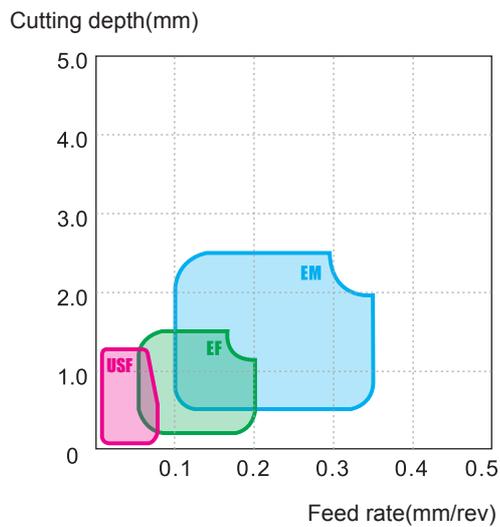


▶ Workpiece material: stainless steel (1Cr18Ni9Ti)

Positive inserts



▶ Workpiece material: 45# steel



▶ Workpiece material: stainless steel (1Cr18Ni9Ti)



# TURNING / General Turning Inserts

Application instruction for general turning tools

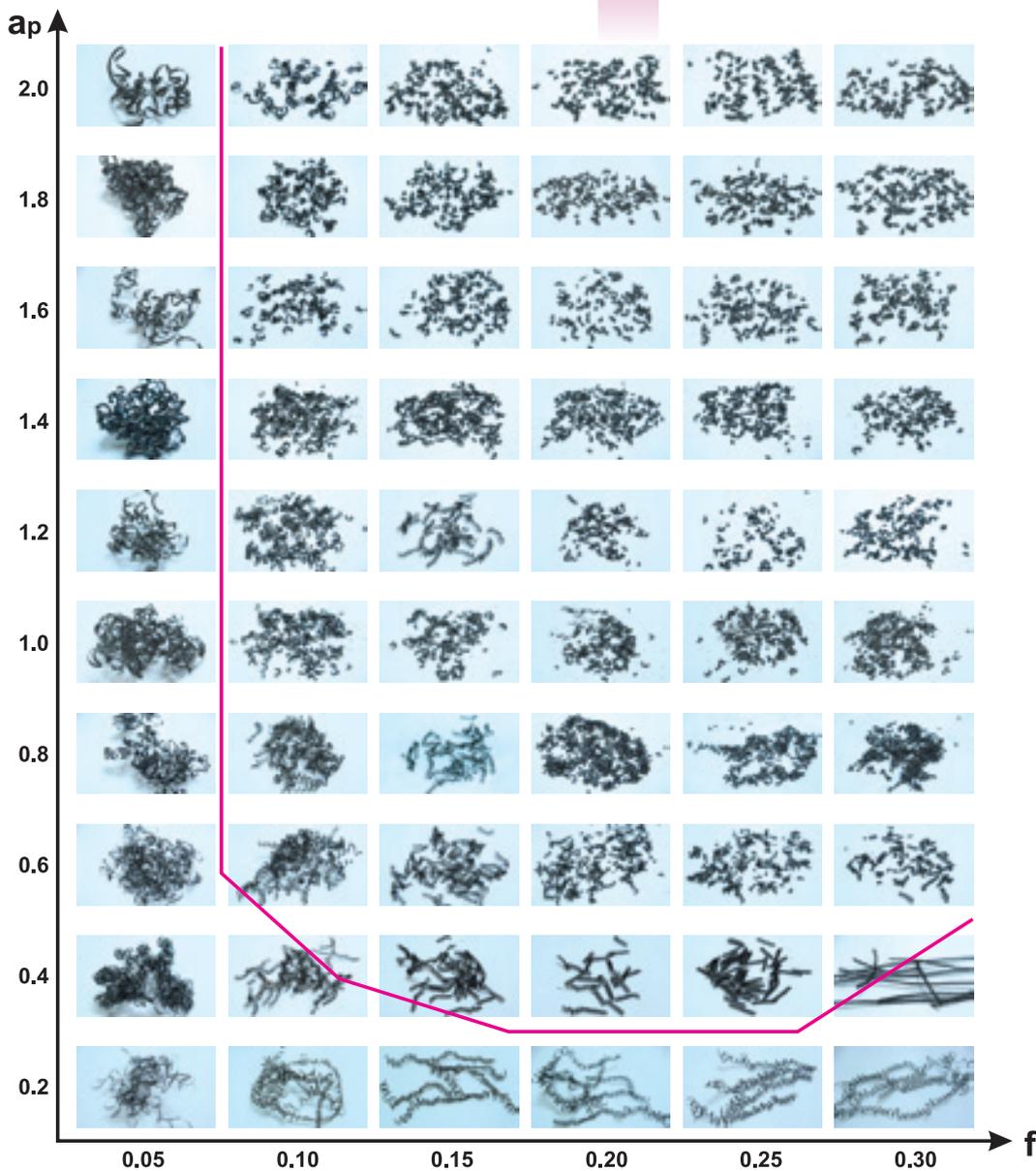
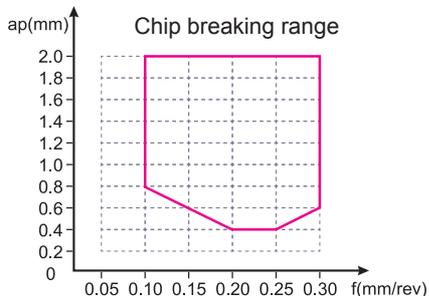
## Cutting test for chip breaking range of general turning inserts

General turning

Application instruction for general turning tools

### Case

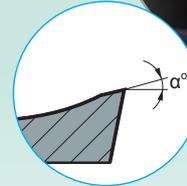
Insert: CNMG120408-DF  
Toolholder: PCLNL2525M12  
Workpiece material: 45# steel  
Cutting speed: 200m/min



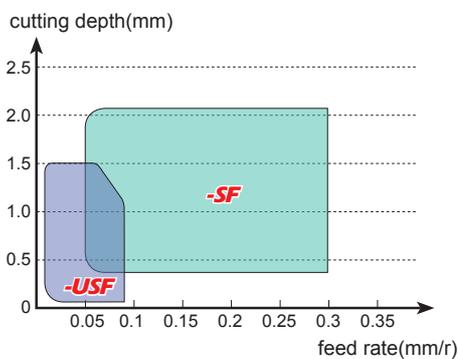
# -USF

## Precision turning chipbreaker

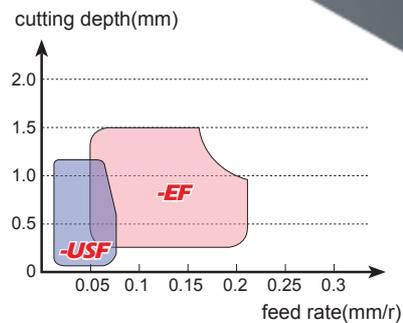
- Effective chip control due to the proper chipbreaker.
- Large rake angle makes cutting easier and faster.
- Nose radius precision controlled within 0.02mm for excellent machining precision.
- Special surface after-treatment for better surface quality.
- High strength screw clamping ensures good repeatability and accuracy.



### Application range of USF chipbreaker



Workpiece material: 42CrMo



Workpiece material: 1Cr18Ni9Ti

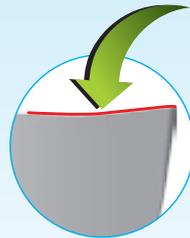


# -LC

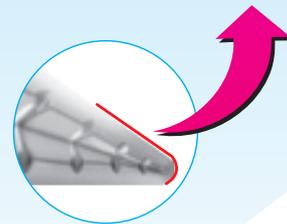
## chipbreaker for aluminum

- LC inserts are designed with a special chipbreaker. Large rake angle and clearance angle make the cutting edge sharper, ensuring easier cutting while remaining effective chip breaking.
- Achieved the mirror rake face after special treatment. Reduced the friction resistance, and stick free. Accordingly, make the chip removal fluently and improve the surface quality and tool life.
- The G-class tolerance of insert, higher Repeated Position Accuracy, at the same time, it can effectively avoid the vibration during the machining process.

Optimized inclined angel makes controlling the chipping flow direction valid.

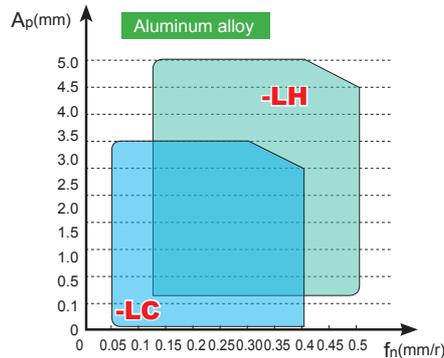
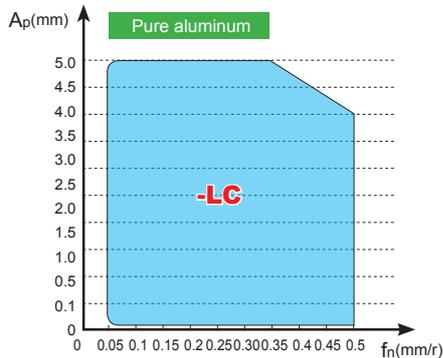


Smooth connection of insert nose and cutting edge makes rake face smoother.



### -LC and -LH chipbreaker characteristics and machining range

- LC chipbreaker can be used in machining of pure Al, while -LH chipbreaker can not.
- LC chipbreaker expand the chip breaking range of Al alloy machining.

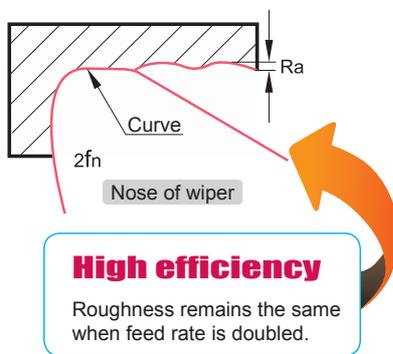


#### Workpiece material: Pure aluminum

Cutting parameters	V=350m/min    Ap=0.2mm    F=0.2mm/r	
Chips		
Surface quality		
	<b>-LC chipbreaker</b>	similar products from overseas manufacturers
	<ul style="list-style-type: none"> <li>-LH chipbreaker is more suitable for machining aluminum alloy in condition of large cutting depth and high feed rate.</li> <li>-LC chipbreaker is more suitable for machining aluminum alloy in condition of small cutting depth and low feed rate.</li> <li>-LC chipbreaker can be used in machining pure aluminum.</li> </ul>	

# -WGF/WGM

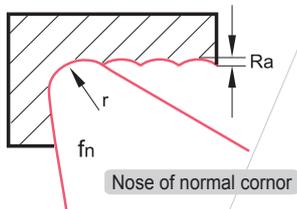
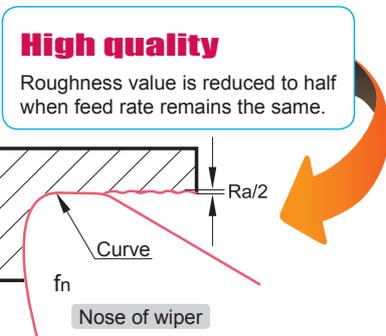
## chipbreaker series Turning inserts with wiper



Wiper is assembled by three curves to form a circular arc edge. The nose of wiper provides less profile height on the surface that is formed by the cutting edge, resulting in a smooth turning surface.

Inserts with wiper has high efficiency when used for finish and semi-finish turning. The surface quality remains the same even at double feed rate.

Wiper technique =  
high machining efficiency + high surface quality



When used for finishing, it can improve roughness of workpiece surface and achieve turning instead of grinding.

When used for semi-finishing, efficiency could be improved by doubling the feed rate, the roughness of workpiece surface remaining the same.

### Guide to use

#### ● Select reasonable approach angle of the tools

Minor angle being close to 0 degree is the reason that inserts with wiper can reduce roughness of the surface, which is determined by the shape of insert and approach angle of the tool holder. Therefore, acceptable roughness of surface is the result of reasonable approach (minor) angle. The finishing function of wiper would be reduced or invalid if unreasonable approach (minor) angle is chosen. For example, the approach angle should be 95° for CNMG / WNMG inserts, while 93° is the best for DNMX, TNMX inserts.

#### ● Be careful with DNMX / TNMX inserts

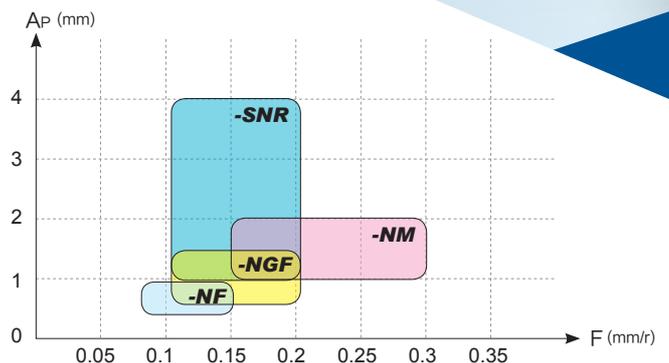
DNMX / TNMX inserts with wiper don't have wide application. It cannot achieve a wiper result when minor angle is not 0 degree, like chamfer and profile surface, and will even cause over-cutting or no-cutting on workpiece, affecting the shape and size precision of workpiece. Please contact technical service regarding these problems.

# S- Ni-based Superalloy Machining Difficulties Overcame

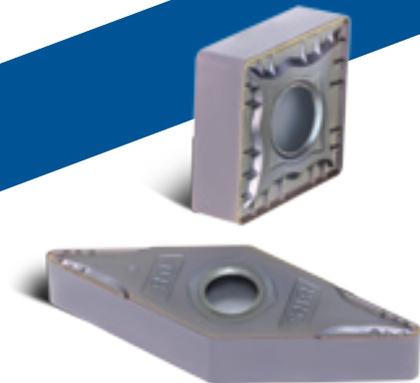
## Features of Ni-based superalloy machining

- High cutting resistance (containing a large amount of alloying elements, severe hardening, great plastic deformation ;
- High cutting temperature;
- Severe wear of inserts.

Chipbreaker for machining of Ni-based superalloy should have tough and sharp insert nose, smooth rake face and proper inclination angle.



**-NM** for semi-finishing      **-SNR** for high efficiency roughing  
**-NF** for finishing          **-NGF** for general finishing



## **-SNR** Chipbreaker for roughing with large depth of cut

- Positive rake angle design, sharp cutting edge, low cutting resistance, effectively reducing groove wear;
- Cutting edge with variable rake angles increase cutting edge strength at large depths of cut. Edge strength increases as the depth of cut increases;
- Large slot width combined with unique edge rib design not only provides excellent chip breaking performance but also can effectively improve edge strength.



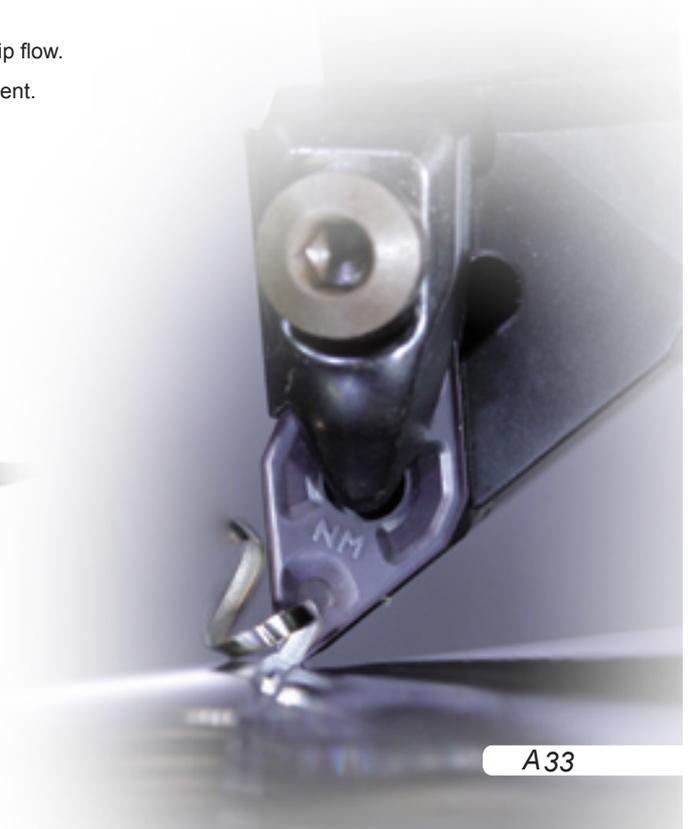
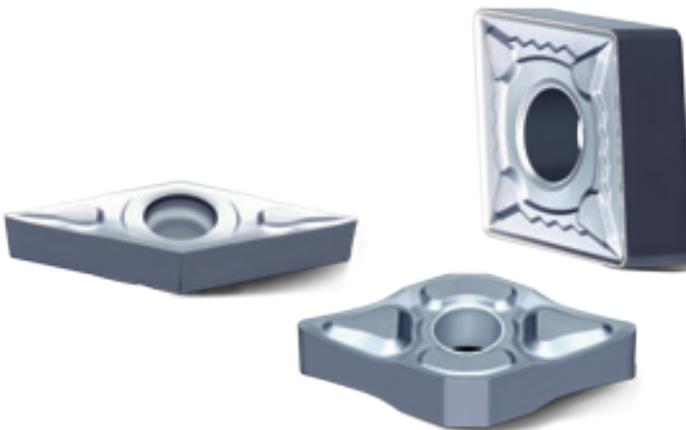
## **-NGF** Chipbreaker for General Finishing

- Proper inclination angle design, sharp cutting edge, small cutting resistance;
- E-level tolerance of insert, high clamping accuracy, proper chipbreaker width, good chip breaking performance, excellent surface quality;
- Special edge treatment, high wear resistance.



## **-NF/NM** Chipbreaker for General Finishing

- -NF chipbreaker has sharp cutting edge, while -NM chipbreaker high cutting edge strength.
- Smooth surface of chipbreaker ensures unobstructed chip flow.
- High wear resistance of cutting edge after special treatment.



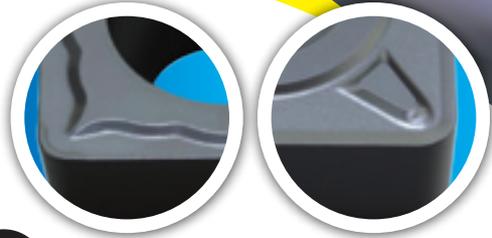
# -EF -EM -ER

Specially designed for machining intensively adhesive and high-plasticity materials such as stainless steel, etc



**-EF**

Rake angle and inclined angle are specially designed for intensively adhesive stainless steel and high-plasticity materials which are hard to be machined. Sharp cutting edge enables it to cut lightly and easily and achieve good surface quality by well controlling chip breaking. It is especially suitable for finishing these kinds of materials.



**-EM**

Inserts meet the requirements of machining intensively adhesive materials. Impact resistance of cutting edge is improved in addition to sharpness, which makes it suitable for semi-finishing and intermittent machining of adhesive materials such as austenitic stainless steel, etc.

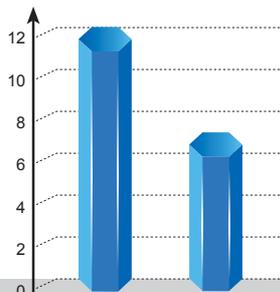


**-ER**

Specially designed double rake angle with wide land achieves balance between edge security and sharpness, and effectively reduces cutting resistance and wear on groove.



Number of machined parts / Cutting edge



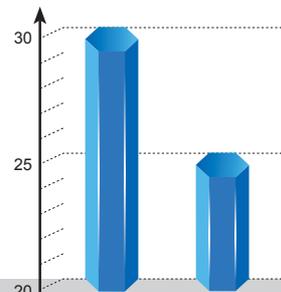
CNMG120408-EM / YBG202 A company



Machining external of valve

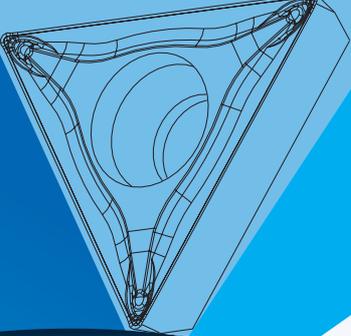
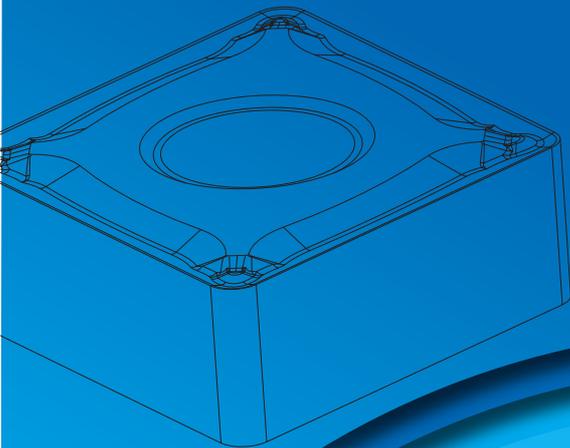
Machining end surface of valve (intermittent machining)  
Workpiece diameter: 135mm  
Rotating speed: 350rpm  
Feed rate: 0.25mm/r  
Cutting depth: 1.5mm

Number of machined parts / Cutting edge



CNMG120408-EF / YBG202 A company

Machining external of valve  
Workpiece diameter: 89mm  
Rotating speed: 635rpm  
Feed rate: 0.15mm/r  
Cutting depth: 1.0mm



## **-SF** Chipbreaker for finishing

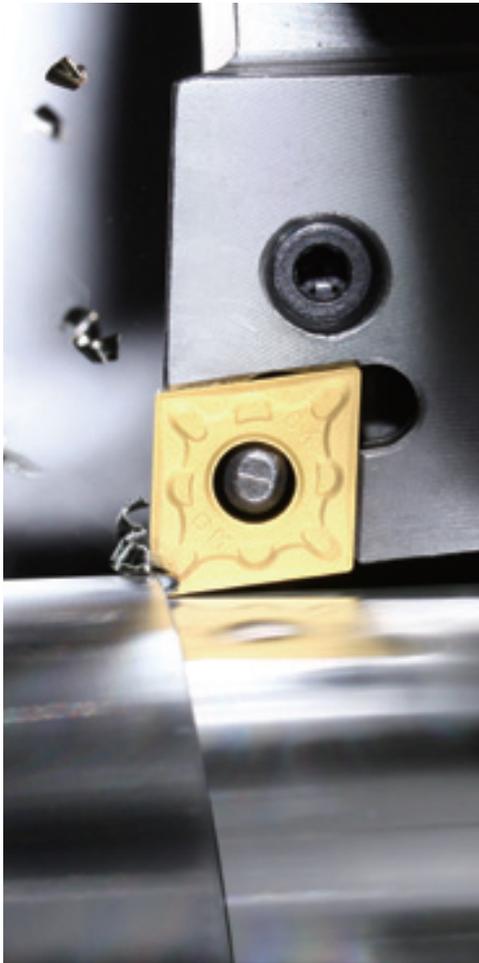
Unique nose design and sharp cutting edge lead to small cutting resistance and effectively reduce vibration of the tool holder.

With high re-positioning precision, the insert is compatible with specially developed cemented carbide tool holders, which can increase the capability of vibration resistance and improve machining quality.

Special treatment on insert's surface can reduce the possibility of chips adhering to the rake face of insert. Good performance of chip breaking and chip flowing ensures improved surface quality of workpiece.

By adopting excellent grade, it is suitable for extra finishing of various materials.





### YBC151

The combination of substrate with excellent wear resistance and coating composed of MT-TiCN, thick layer of Al<sub>2</sub>O<sub>3</sub> and TiN makes it suitable for finishing steel.

### YBC251

The substrate with good toughness and high security of cutting edge, in optimal combination with coating composed of MT-TiCN, thick layer of Al<sub>2</sub>O<sub>3</sub> and TiN makes it suitable for steel semi-finishing.

### YBC351

The best combination of substrate with high wear resistance and coating composed of MT-Ti (CN), thick Al<sub>2</sub>O<sub>3</sub> layer and TiN makes it suitable for finishing and semi-finishing of cast iron materials.

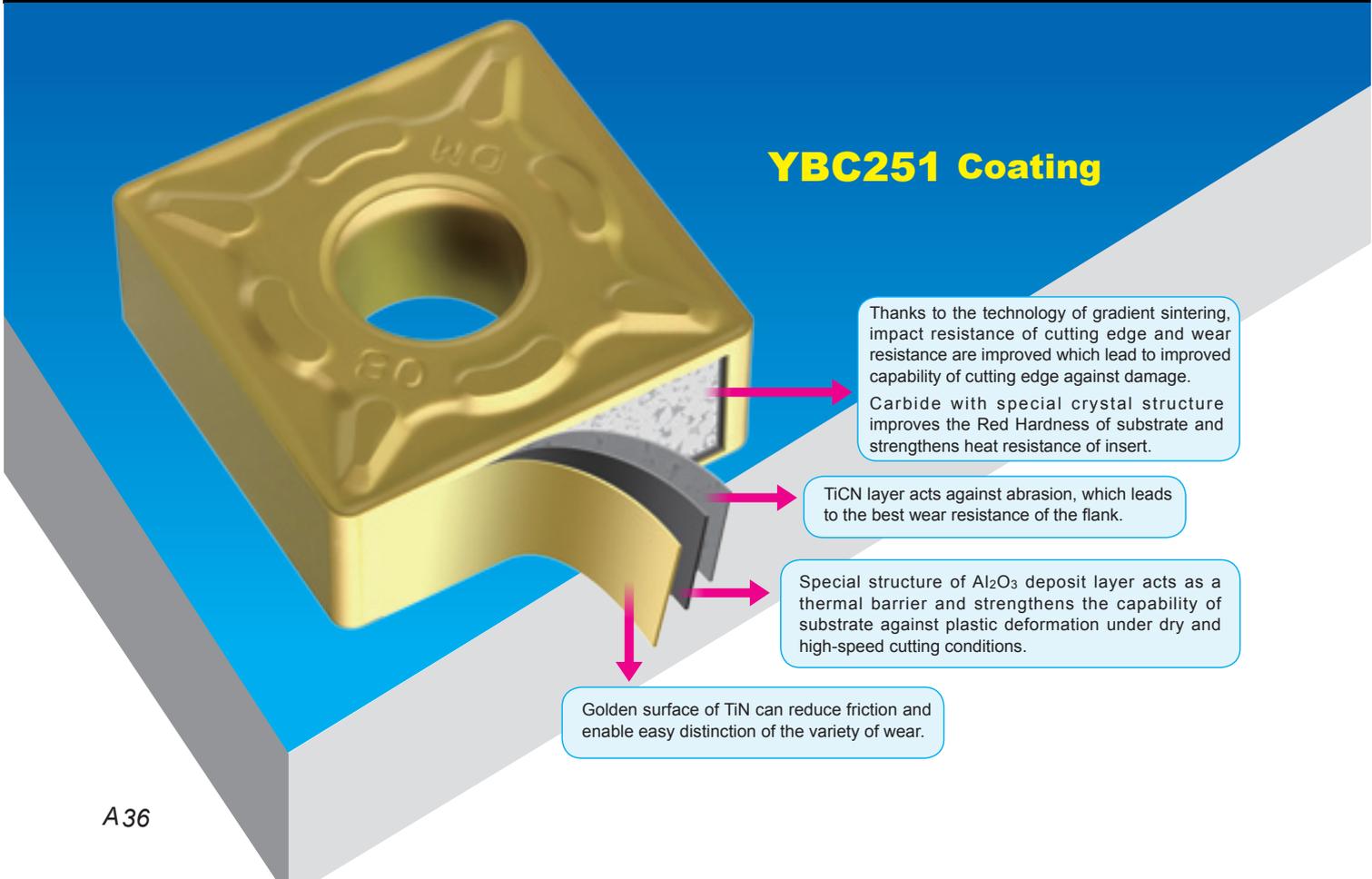
### YBM151

Substrate with special structure, in combination with coating composed of TiCN, thin Al<sub>2</sub>O<sub>3</sub> layer and TiN, with excellent resistance against diffusive wear and plastic deformation makes it suitable for finishing, semi-finishing and roughing of stainless steel.

### YBM251

Combination of substrate with good toughness and strength and coating composed of TiCN, thin Al<sub>2</sub>O<sub>3</sub> layer and TiN makes it suitable for semi-finishing and roughing of stainless steel.

# Coated Cemented Carbide **CVD**

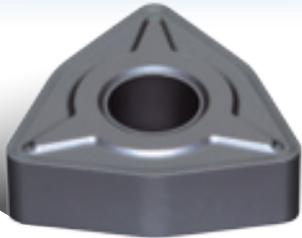


# BLACK DIAMOND INSERTS

**Innovation of machining techniques for stainless steel turning**



## YBM153



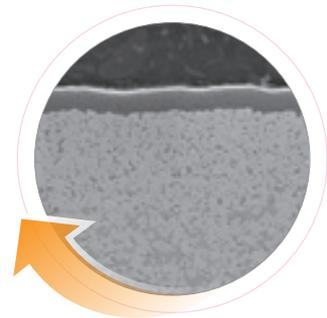
Best choice for roughing of stainless steel with high-speed under good working condition

### Coating

- ✓ CVD coating with advanced ultra-fine grain coating technology, greatly improves wear resistance of inserts.
- ✓ Thanks to special treatment on transition layer, multi-layer coating are combined firmly.
- ✓ The exceptionally smooth coating surface and good low friction ability can reduce the occurrence of built-up edges.

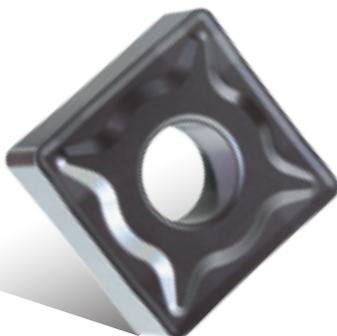
### Substrate

- ✓ Added with resist high temperature rare element, inserts shows a good capability against plastic deformation and good capability of Red Hardness.
- ✓ Unique manufacturing technology improves high temperature toughness and wear resistance of substrate.



**Application fields** YBM153 is suitable for finishing and semi-finishing of stainless steel with high cutting efficiency under stable working condition. Such as medium-size fluid valve components in petrochemical industry, flange and other parts in auto pipeline, valve and valve body in auto engine systems, ship mechanical parts, aviation hydraulic parts, adapting pieces in IT and semiconductor industry, medium and long-axis in food processing machinery, construction machinery and general machinery.

## YBM253



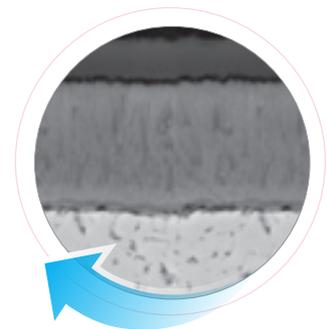
Ideal grade for turning of stainless steel with high cutting depth and high feed rate under bad working condition

### Coating

- ✓ Ultra-fine grain coating technology provides better wear resistance and toughness;
- ✓ Improved remain internal stress design ensures good toughness and anti-cracking performance;
- ✓ Polishing treatment on coating surface makes it suitable for cutting adhesive materials.

### Substrate

- ✓ With gradient carbide substrate insert has better impact resistance and cutting edge strength.



**Application fields** YBM253 grade is suitable for roughing of heavy stainless steel parts with high cutting depth and high feed rate under the condition with great impact.



Coated Cemented Carbide CVD



# BLACK DIAMOND INSERTS

**Achieving both higher cutting  
speed and longer tool life**

Second generation of



Coated Cemented Carbide CVD

## YBC152

Thick TiCN and thick Al<sub>2</sub>O<sub>3</sub> coatings improve the impact toughness and abrasion resistance, which makes it suitable for finishing and semi-finishing of steel at high speed. Cutting speed can increase by more than 25%, while the tool life can increase by more than 30% at the same cutting speed.

## YBC252

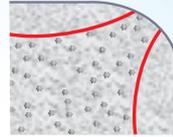
Comprising of thick TiCN and thick Al<sub>2</sub>O<sub>3</sub> coatings, the grade has high capability against plastic deformation and good hardness of cutting edge. It is preferred grade for machining of steel from finishing to roughing. Under the same cutting conditions, the cutting speed can be increased by more than 25%, while the tool life can be 30% longer under the same cutting speed.

## YBC352

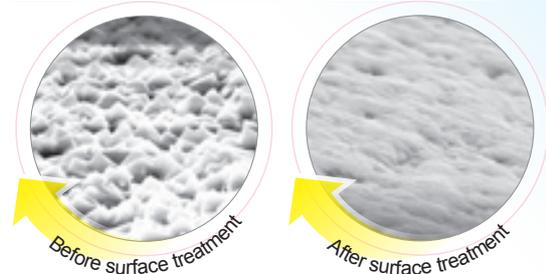
Thickness TiCN and Al<sub>2</sub>O<sub>3</sub> coating, with strongest toughness and plastic deformation resistance, the ideal grade for high efficient steel rough machining under the bad condition.

Perfect unification of toughness and anti-plastic deformation.

Specially designed cutting edge with "skeleton" realizes perfect unification of toughness and anti-plastic deformation.



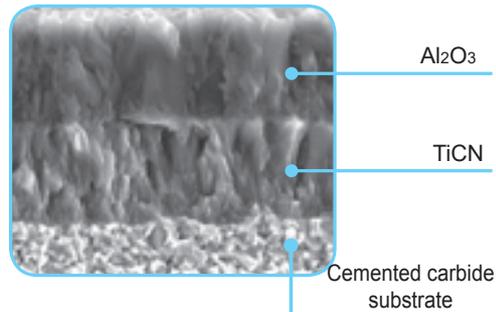
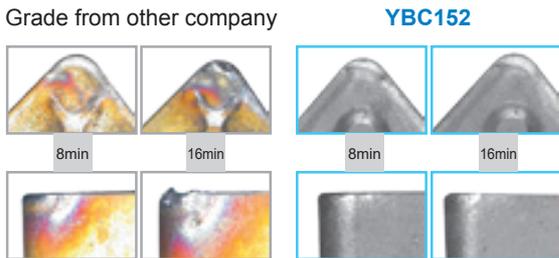
Roughness of insert surface is improved after special treatment on surface, which effectively reduces cutting forces, prevents workpiece adhering to surface of inserts and improves operation stability of inserts.



The perfect combination of fibrous TiCN and fine grain Al<sub>2</sub>O<sub>3</sub> obviously improves abrasion resistance and anti-breakage of inserts.

### Test comparison of inserts abrasion

Workpiece material : 45<sup>#</sup> steel  
 Inserts: CNMG120408-DM  
 Cutting parameters: Vc=400m/min ap=1mm fn=0.2mm/r



## YBD052

CVD coated grade, which is characterized by super fine grain and smooth surface, is the combination of hard substrate and coating (extra thick  $\text{Al}_2\text{O}_3$  + thick TiCN ). The grade is optimized for best wear resistance when machining gray cast iron at high speed under dry condition.

## YBD102

CVD coated grade, which is the combination of hard substrate and coating (thick  $\text{Al}_2\text{O}_3$  + thick TiCN ), shows excellent wear resistance and impact resistance when machining nodular cast iron at high speed.

## YBD152

CVD coated grade, which is the combination of hard substrate and coating (medium thick  $\text{Al}_2\text{O}_3$  + thick TiCN ), has good flaking resistance. It is suitable for turning of cast iron at high speed, and light intermittent cutting can be supported even at moderate speed. It is also suitable for milling of cast iron.

## YBD252

CVD coated grade, which is the combination of hard substrate and coating (medium thick  $\text{Al}_2\text{O}_3$  + thick TiCN ), achieves the balance between wear resistance and toughness. It is suitable for wet milling of cast iron, which requires toughness (such as nodular cast iron) at moderate or low speed. It is also suitable for intermittent turning.

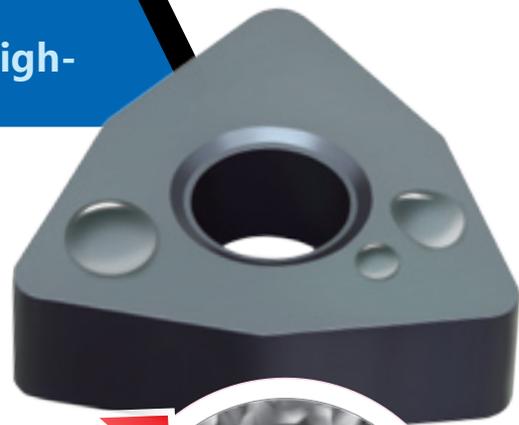
# BLACK DIAMOND INSERTS YBD

First choice for high-efficiency and high-speed machining of cast iron

- The combination of thick coating and substrate with good hardness and impact resistance gives the inserts excellent impact resistance and stability under high temperature, and improves wear resistance of inserts. Inserts also satisfy the requirements of high speed and high feed rate when machining cast iron.
- The appearance of shining full black is easily identified.

### Significant results

- Working efficiency has been improved. Both the coating and the substrate are suitable for machining cast iron at high speed and high feed rate. Cutting speed can be increased by **30% to 40%**.
- Cost is reduced as tool life is increased by **40%-50%**.
- High machining stability.



Layer of fine grain with compact surface

Coated Cemented Carbide CVD

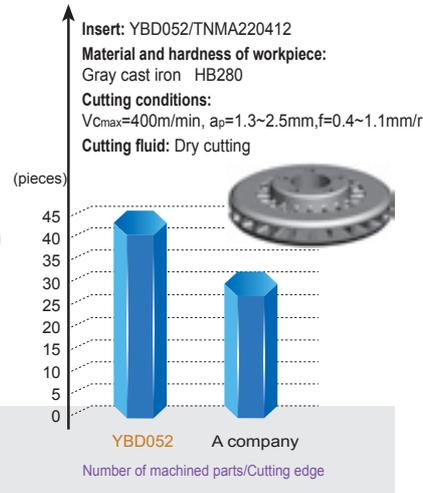
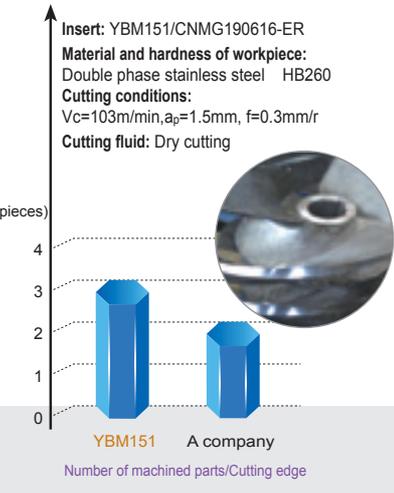
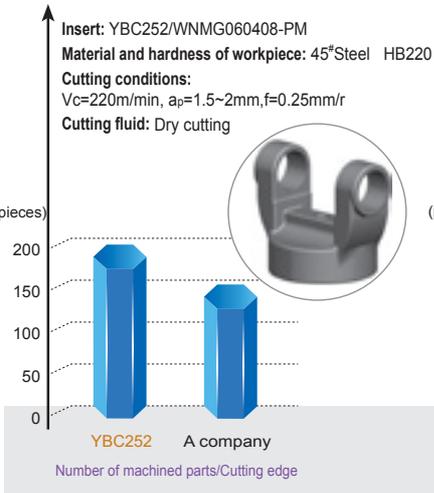
Recommended combination of grade and chipbreaker

For machining of P-type materials		For machining of M-type materials		For machining of K-type materials	
Grade	Type	Grade	Type	Grade	Type
YBC151	DF	YBM151	EF	YBD052	Without chipbreaker
YBC152			EM		PM
YBC251	DM		ER	YBD102	Without chipbreaker
YBC252		PM	PM		
YBC251	DR	YBM153	EF	YBD152	Without chipbreaker
YBC252			EM		PM
YBC252	(Double-side)		EM	Without chipbreaker	
YBC351	DR	YBM251	EM	YBD252	Without chipbreaker
YBC351	HPR		ER		
YBC352			EM	Without chipbreaker	
		ER			

Recommended cutting parameters

Workpiece material	Range of machining	Grade	Recommended cutting speed(m/min)
P Steel	For finishing	YBC151	180-460
		YBC152	220-500
	For semi-finishing	YBC251	160-440
		YBC252	180-480
	For roughing	YBC351	130-380
	YBC352		
M Stainless steel	For finishing	YBM151	110-280
	For semi-finishing	YBM153	
	For roughing	YBM251	
		YBM253	
K Cast iron	For finishing	YBD052	200-500
	For semi-finishing	YBD102	200-480
		YBD151	180-450
	For roughing	YBD152	190-450
		YBD252	150-380

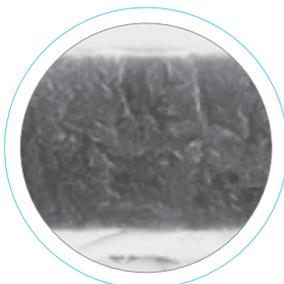
Case



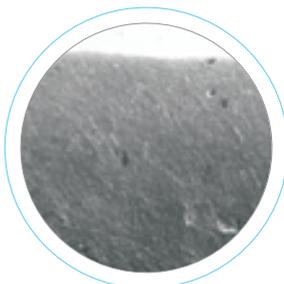
# Coated Cemented Carbide **PVD** **makes it easy to machine materials which are hard to be machined**

## New nano coating grade

- Special coating techniques make inserts smooth, which leads to low friction and unobstructed chip flow.
- Unique coating with nano structure closely integrates with substrate, ensuring higher hardness and toughness.
- Excellent thermal stability and chemical stability can effectively protect cutting edge.



nc-TiAlN coating(YBG202)



TiAlN base multi-elements coating (YBG105)

High-performance nanostructure coating guarantees good toughness and hardness of inserts. Special coating technology guarantees smooth surface and excellent wear resistance. Outstanding thermal stability and chemical stability effectively protect cutting edge.

### ▶ **YBG102**

The combination of nc-TiAlN coating and fine grain substrate makes it suitable for turning of various materials and finishing and semi-finishing of high-temperature alloys.

### ▶ **YBG202**

nc-TiAlN coating and ultra-fine grain substrate makes it suitable for finishing and semi-finishing of various materials and turning of super alloy.

### ▶ **YBG302**

The combination of nc-TiAlN coating and tough cemented carbide substrate, which integrates security and wear resistance, makes it suitable for parting and grooving of various materials.

### ▶ **YBG105**

**Finishing and semi-finishing for materials difficult to cut PVD coated grade**

PVD coated grade, new TiAlN based multilayer coating, has higher wear resistance and Anti-thermal-oxidation ability. It is suitable for finishing and semi-finishing turning of various materials difficult to cut, such as high temperature alloy, heat resistant alloy, etc.

### ▶ **YBG205**

**PVD coating grade for finishing of stainless steel**

**Suitable for relatively small workpieces which require high surface smoothness.**

Superfine TiAlN nano coating added with wear-resistant and heat-resistant rare elements has high hardness and excellent heat-resistance, providing effective protection for the cutting edge. Special coating technology ensures stronger combination of coating and substrate. It is suitable for extra finishing of stainless steel.

### ▶ **YBG212**

Nc-TiAlN coating combined with super tough substrate which made of super fine grain. It's suitable for finishing and roughing materials which are hard to be machined.

### ▶ **YBS103** *New*

**Turning grade for Ni-based S material**

Fine wear resistance, and good capability against built-up edge and heat resistance. Suitable for turning of Ni-based materials.

### ▶ **YBM215** *New*

**PVD coating of multiple layer nanometer**

Improved capability of grade's wear resistance and anti-high temperature increases the strength between grade and substrate and the tool stability. This grade is very suitable for turning for stainless steel.

Recommended combination of grade and chipbreaker

For machining  
P-type materials

Grade	Type
YBG202	DM

For machining  
M-type materials

Grade	Type
YBG202	EF
YBG205	
YBM215	
YBG202	EM
YBG205	
YBM215	

For machining  
S-kind materials

Grade	Type
YBG102	NF/NGF
YBG105	
YBG212	NGF
YBG102	NM
YBG105	
YBS103	
YBG102	SNR
YBG105	
YBG212	
YBS103	

Recommended cutting parameters

Workpiece material	Range of machining	Grade	Recommended cutting speed(m/min)
P	Steel	For finishing	YBG102 180-460
		For semi-finishing	YBG202 YBG205 150-380
M	Stainless steel	For finishing ~ for semi-finishing	YBG202 YBG205 YBM215 170-300
S	Heat resistant Alloy Ti alloy	For finishing ~ for semi-finishing	YBG102 40-60
			YBG105 40-70
			YBG212 30-50
			YBS103 40-90
		For roughing	YBG102 20-40
			YBG105 30-40
		YBG212 20-40	
		YBS103 20-50	

Case

Insert : YBG202/TNMG120404-EF  
 Hardness and material of workpiece : 0Cr18Ni9 HB240  
 Cutting conditions : Vc=200m/min, ap=1mm, f=0.15mm/r  
 Cutting fluid : Dry cutting

Company	Value
B company	~42
A company	~40
YBG202	~60

Insert : YBG102/DNEG150404-NF  
 Hardness and material of workpiece : High temperature alloy Inconel 718 HRC≥39  
 Cutting conditions : Vc=80m/min, ap=0.3mm, f=0.15mm/r  
 Cutting fluid : Dry cutting

Company	Value
B company	~25
A company	~28
YBG102	~32

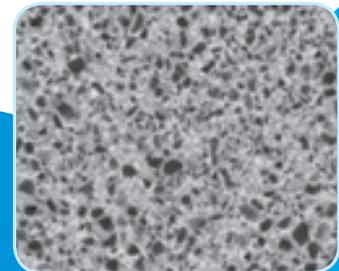
# Cermet & Coated Cermet

The chemical stability between Ti(CN) base cermet inserts and workpieces is relatively high, which reduces the friction and temperature of the cutting edge during cutting, preventing mutual diffusion of atoms of the workpiece material and the inserts, and improving resistance to bonding abrasion. Therefore, Ti(CN) base cermet shows good capability of Red Hardness and resistance to crater wear. It is an optimal material for high-speed finishing and semi-finishing of steel. High temperature strength of cermet is higher than that of WC-Co, and toughness better than that of Al<sub>2</sub>O<sub>3</sub> and Si<sub>3</sub>N<sub>4</sub> ceramic. This fulfils the application blank of WC-base cemented carbide and Al<sub>2</sub>O<sub>3</sub> and Si<sub>3</sub>N<sub>4</sub> ceramic from finishing to semi-finishing at high speed.

## Product features

**Scientifically designed structure ensures good material performance and long tool life. Refined production management assures the stability of product quality.**

- Symmetrical fine grain organization, together with the control of symmetrical organization and toric phase structure, improves the strength and hardness of cermet.
- Intensified bonding phase and well-designed grain boundary improve the high temperature capacity, heat conductivity and thermal vibration resistance.
- Coating of Physical Vapor Deposition (PVD) is applied to cermet substrate with high toughness, so that the grade has high hardness and toughness with wide-range application.



Substrate of cermet grade of YNG151 (homogenized ultra-fine structure)



PVD coating organization structure of cermet

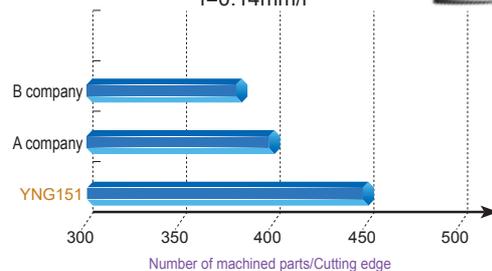
## Recommended cutting parameters

Workpiece material	Range of machining	Grade	Recommended cutting speed(m/min)
<b>P</b> Steel	For finishing	YNG151	260-550
		YNG151C	260-580
<b>M</b> Stainless steel		YNG151	170-330
		YNG151C	160-350
<b>K</b> Cast iron		YNG151	250-400
		YNG151C	270-420

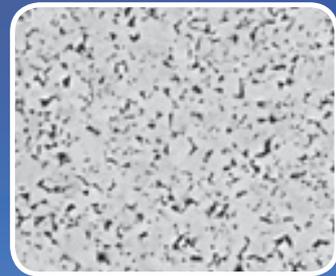
## Case

Insert: YNG151/CNMG120404-SF  
 Hardness and material of workpiece:  
 20CrMnTi HB180-223  
 Cutting parameters:  $V_c=220\text{m/min}$

$a_p=0.5\sim 1.0\text{mm}$   
 $f=0.14\text{mm/r}$



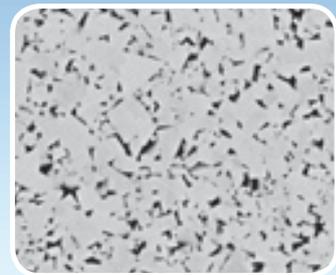
**Outstanding chip breaking Good surface quality**



Substrate of YD101: the combination of cemented carbide phase WC of fine grain and bonding phase Co

# Cemented Carbide Grade

**Uncoated cemented carbide grade is widely used for machining of non-ferrous metal, high temperature alloy, etc. It is economical and can be universally applied.**



Substrate of YD201: the combination of cemented carbide phase WC of middle grain and bonding phase Co

## Recommended cutting parameters

Workpiece material	Range of machining	Grade	Recommended cutting speed(m/min)
<b>K</b> Cast iron	For semi-finishing For roughing	YD201	60-130
<b>N</b> Non-ferrous metal	For finishing For semi-finishing	YD101	110-1750
<b>S</b> Heat resistant Alloy Ti alloy	For finishing	YD101	20-50

## Case

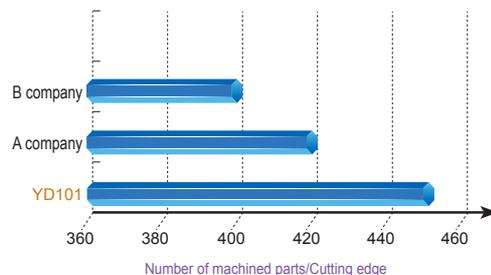
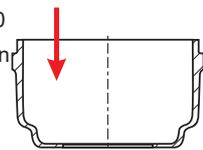
Insert: YD101/CCGX09T304-LH

Workpiece material: ZL105 HB70

Cutting parameters:  $V_c=400\text{m/min}$

$a_p=1\text{mm}$

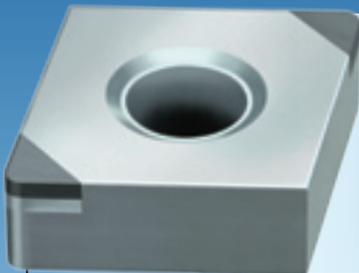
$f=0.3\text{mm/r}$



**Workpiece has high surface quality and high dimensional precision.**

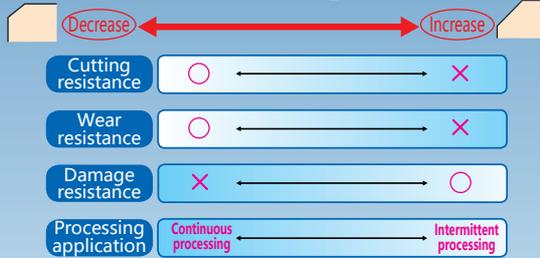
# PCBN

PCBN tool material has high hardness, high thermal stability and high chemical inertness, There will be no chemical reaction with iron materials under the high temperature, the cutting temperature can reach 1200-1300°C, Suitable for cutting hardened steel, cast iron, powder metallurgy and high temperature alloys.

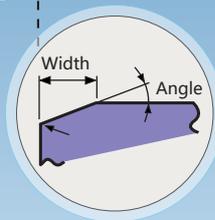


- High hardness and high heat resistance to achieve tool long life and high-speed processing;
- Effectively inhibit crater wear and realize stable processing;
- Improve the stress of the matrix and reduce the micro chipping and spalling of the cutting edge.

## Chamfer width and angle



## The shape of chamfering



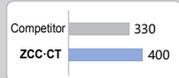
## Cutting edge specifications of PCBN inserts

(The form below is just for typical example, the actual application shall be adjusted according to the corresponding situation.)

	Low cutting force	Universal type	Highly damage resistance
High hardness material processing	15° 0.08 R=0.015	25° 0.12 R=0.02	35° 0.17 R=0.02
Cast iron processing	10° 0.05 R=0	15° 0.12 R=0	25° 0.12 R=0.02

## Machining differential gears

Workpiece material: carburizing steel 20CrMnTi, HRC58-62  
 Insert model: VNGA160404AS01225-2  
 Grade: BH0121  
 Cutting parameters: Vc=130m/min; f=0.1mm/r; ap=0.15mm  
 Processing method: turning the side of the inner groove  
 Cooling method: dry cutting  
 Processing requirements: surface finish Ra < 0.8μm



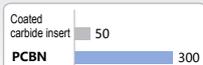
- 21% increase in processing life
- 42% savings in insert cost



## Case

### Machining cylinder liner

Workpiece material: gray cast iron HT250, HB220  
 Insert model: CNGA120416AS01015-2  
 Insert grade: BK1011  
 Cutting parameters: Vc=600m/min; f=0.2mm/r; ap=0.15mm  
 Processing method: turning outer circle  
 Cooling method: wet cutting  
 Processing requirements: surface finish Ra < 1.6μm and no dimension deviation.



- Machining life increased by 5 times
- Processing efficiency increased by 1 times

### Machining of high-temperature alloy bars

Workpiece material: nickel-based alloy Inconel 718, 43-48HRC  
 Insert model: VBGW160404AT01225-2  
 Insert grade: BS3011  
 Cutting parameters: Vc=150m/min; f=0.15mm/r; ap=0.25mm  
 Processing method: turning outer circle  
 Cooling method: dry cutting  
 Processing requirements: flank wear ≤ 0.2mm



- Machining life increased by 6 times
- Processing efficiency increased by 5 times

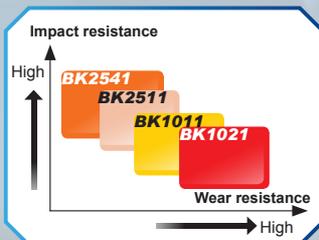




# Coated PCBN insert

By using a combination of strong PCBN substrate and heat-resistant ceramic coating, developed a new super-hard series product—Coated PCBN inserts, dedicated used for cutting all kinds of hardened steel. The tool life of coated PCBN inserts have been greatly improved, being compared with previous uncoated PCBN inserts.

## Cast iron processing category:



### Finishing

- ▶ **BK1011** Extremely high wear resistance and edge retention; Suitable for continuous to intermittent high-speed finishing, and capable of achieving consistent surface quality.
- ▶ **BK1021** Excellent wear resistance and good impact resistance; Suitable for continuous to intermittent heavy-duty roughing, good versatility.

**Typical applications:** brake discs, brake drums, cylinder liners, compressor parts.

### Semi-finishing / Roughing

- ▶ **BK2511** Great wear resistance and outstanding chemical stability; Suitable for continuous to interrupted high speed roughing.
- ▶ **BK2541** Very high wear resistance and excellent fracture toughness; Suitable for continuous to interrupted finishing, good versatility.

**Typical application industries:** brake discs, brake drums, cylinder liners, compressor parts, rolls, slurry pumps.

## Powder metallurgy and high temperature alloy processing category:

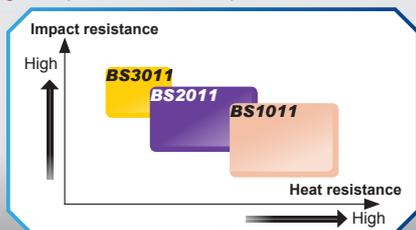
### Finishing

- ▶ **BS1011** Excellent wear resistance and chemical stability; Suitable for machining powder metallurgical parts in continuous to lightly interrupted operation; Suitable for machining powder metallurgical parts with more than 10% alloying elements.

- ▶ **BS2011** Excellent heat resistance and chemical stability; Suitable for continuous to lightly interrupted machining of powder metallurgical parts; Suitable for processing powder metallurgical parts with an alloying element content of up to 10%.

- ▶ **BS3011** Very high hardness and wear resistance. Suitable for continuous to interrupted machining of powder metallurgy and high temperature alloy parts.

**Typical application industries:** automotive parts, high temperature resistant parts.



## Hardened steel processing:

### Finishing

- ▶ **BH0121** Excellent heat and wear resistance; Suitable for continuous to lightly interrupted high-speed finishing; Suitable for machining carburized hardened steel such as 20CrMnTi, 20CrMn, 18Cr2Ni4WA, etc.

- ▶ **BH2511** Excellent heat resistance and impact strength; Suitable for continuous to moderate intermittent finishing; Suitable for machining carburized hardened steels such as 20CrMnTi, 20CrMn, 18Cr2Ni4WA, etc.

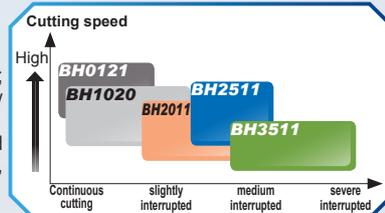
**Typical application industries:** Gears, bearings.

- ▶ **BH1020** Effective balance of wear resistance and chemical resistance; Suitable for continuous to lightly intermittent finishing of all types of hardened steels, with good versatility.

- ▶ **BH2011** Excellent wear resistance and impact strength; Suitable for continuous to moderate intermittent finishing; Suitable for machining hardened bearing and die steels such as GCr15, 100Cr6, 18Cr2Ni4WA, etc.

- ▶ **BH3511** Excellent chipping resistance and very high fracture toughness; Suitable for roughing and finishing all types of hardened steels in moderate to heavy interrupted work conditions.

**Typical application industries:** gears, bearings, molds.



## Recommended cutting data

Grade	Workpiece material	Cutting speed(m/min)	Feed amount(mm/r)	Depth of cut(mm)
BK1011	Gray cast iron	400-1500	0.02-0.5	0.1-0.3
	Hard cast iron	80-160	0.05-0.5	0.05-0.1
BK1021	Gray cast iron	400-1500	0.02-0.5	0.1-0.3
	Hard cast iron	80-160	0.05-0.5	0.05-0.1
BK2511	Gray cast iron	300-600	0.1-0.5	1-3
BK2541	Hard cast iron	50-150	0.1-0.5	1-3
BH0121	Hardened steel	150-250	0.05-0.5	0.05-0.1
BH1020		140-220	0.05-0.5	0.05-0.1
BH2011		100-170	0.05-0.5	0.05-0.1
BH2511		120-180	0.05-0.5	0.05-0.1
BH3511		80-150	0.05-0.4	0.05-0.2
BS1011	Powder metallurgy and high temperature alloys	70-180	0.05-0.25	0.03-0.2
BS2011		100-200	0.05-0.25	0.03-0.2
BS3011		50-160	0.05-0.25	0.03-0.25

# PCD tools

PCD tool material has high hardness, excellent wear resistance, low friction coefficient, Excellent thermal conductivity, suitable for non-ferrous metals and its alloys (e.g. Cu, Al, Mg, etc.) Nonmetallic materials and composite materials (such as: MMC, ceramics, reinforced plastics, etc.) machining

# N

## ▶ DN0121

Super-fine grain particle size  
great sharpness and edges durability

**Application range:** suitable for mirror effect occasion

## ▶ DN0511

Fine grain particle size  
Excellent toughness and relatively good wear-resistance

**Application range:**  
strong universality, particular suitable for low-medium silumin materials in milling.

## ▶ DN1021

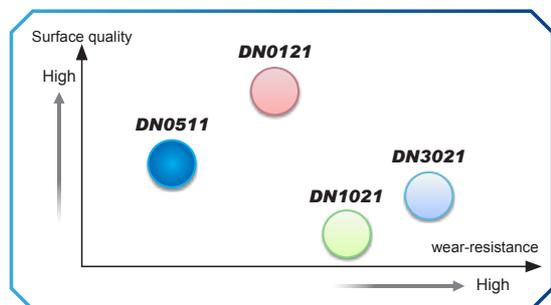
medium grain particle size  
Excellent toughness and wear-resistance

**Application range:**  
strong universality, particular suitable for low-medium silumin materials in turning.

## ▶ DN3021

mixed combined with fine particle and coarse particle  
Excellent wear-resistance

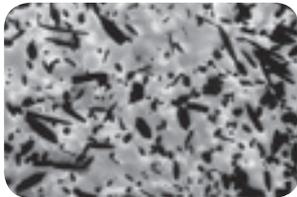
**Application range:**  
suitable for MMC, high silumin, high-strength silumin and bimetallic materials



## Recommended cutting data

Grade	Workpiece materials	Machining method	Cutting speed (m/min)
DN0121	Silumin (Si≤12%)	Turning	500~1000
		Milling	300~1500
DN0511	fibre reinforced composite materials	Turning /Milling	200~1000
	Silumin (Si≤12%)	Turning	900~3500
		Milling	600~2400
	Metal base compound	Turning /Milling	1500~1800
DN1021	Coppeer and magnesium alloyssilumin	Turning /Milling	400~1260
	Cemented carbide	Turning	20~40
	Silumin (Si≤12%)	Turning	400~1200
DN3021		Milling	250~1400
	Coppeer and magnesium alloyssilumin	Turning /Milling	400~1260
	Silumin (Si≤12%)	Turning	300~700
		Milling	500~1000
	Metal base compound	Milling	500~1000
	Unsintered ceramic materials	Turning	100~200
DN3021	Sintered Ceramic	Turning	20~50
	Bimetallic materials	Milling	200~300

# Ceramic Grade



## CN3100

A-sialon/ $\beta$ -sialon matrix, the latest developed Siloxane sialon.

Applications: With excellent wear resistance, fracture toughness and thermal shock resistance, for use in general machining to finishing in high temperature alloy parts. It has better resistance of breakage at the depth of cut, compared with SiC/Al<sub>2</sub>O<sub>3</sub> whisker ceramic material.

### Physical properties

Grade	Density(g/cm <sup>3</sup> )	HardnessHv(GPa)	Flexural strength(MPa)	Fracture toughness (MPa m <sup>1/2</sup> )
<b>CN3100</b>	3.34	1720	≥900	7.5

### Recommended cutting data

Grade	Workpiece material	Operation	Cutting speed (m/min)	Feed rate(mm/r)	Depth of cut (mm)
<b>CN3100</b>	Nickel high temperature alloy	For roughing	150-260	0.1-0.3	<5

### Case

Workpiece material: GH4169  
 Insert specification: RPGN090700T01020-V  
 Cutting data: Vc=200 m/min, ap=1 mm,  
 f=0.1 (mm/r)

Workpiece shape and process: Figure 1, four working procedures, two blades and four cutting edges in the figure finish the milling of turbine disk section, and the wear resistance is excellent.

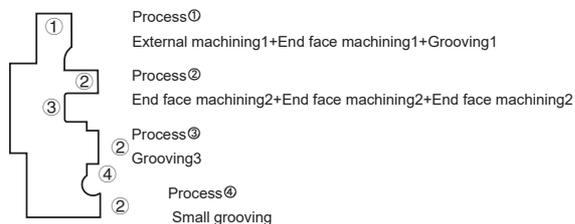


Figure 1



**Table of correctional coefficient between material hardness and cutting speed**

Workpiece material	Theoretical Hardness	Correctional coefficient between hardness of materials and cutting speed								
		Hardness difference (Measured value – Theoretical value)								
		Hardness decrease ←								→ Hardness increase
		-60	-40	-20	0	+20	+40	+60	+80	+100
<b>P</b>	HB180	1.42	1.24	1.11	1.0	0.91	0.84	0.77	0.72	0.67
<b>M</b>	HB180	1.44	1.25	1.11	1.0	0.91	0.84	0.78	0.73	0.68
<b>K</b>	Grey cast iron	HB220	1.21	1.13	1.06	1.0	0.95	0.90	0.86	0.82
	Nodular cast iron	HB250	1.33	1.21	1.09	1.0	0.91	0.84	0.75	0.70
<b>N</b>	HB75			1.05	1.0	0.95				
<b>S</b>	HB350			1.12	1.0	0.89				
Rockwell hardness HRC			-6	-3	0	+3	+6	+9		
<b>H</b>	HRC60		1.10	1.02	1.0	0.96	0.93	0.90		
Actual Cutting Speed = Recommended Cutting Speed × Correctional Coefficient of Cutting Speed										

● Please find recommended cutting parameters on insert packing box.

Example: If the material you are going to machine is normal alloy steel, whose theoretical hardness is HB180, and the selected insert is CNMG120404-DF/YBC151, then the recommended cutting speed is V=150m/min. If the hardness measured value of the material is HB220, then the hardness difference value is 220-180= +40. Correctional coefficient found in the table is 0.84. Therefore, the actual applicable cutting speed is Vc=250×0.84=210m/min.

**Correctional coefficient table between tool life and cutting speed**

Tool life / Insert materials	Correctional coefficient between tool life and cutting speed					
	10 minutes	15 minutes (Standard life)	30 minutes	45 minutes	60 minutes	90 minutes
<b>YBC151</b>	1.12	1.00	0.82	0.73	0.67	0.60
<b>YBC251</b>	1.11	1.00	0.84	0.76	0.71	0.64
<b>YBC351</b>	1.11	1.00	0.84	0.76	0.70	0.63
<b>YBC152</b>	1.25	1.00	0.68	0.54	0.46	0.37
<b>YBC252</b>	1.55	1.00	0.47	0.30	0.22	0.14
<b>YBM151</b>	1.28	1.00	0.66	0.52	0.43	0.34
<b>YBM153</b>	1.32	1.00	0.64	0.48	0.37	0.31
<b>YBM215</b>	1.22	1.00	0.85	0.77	0.72	0.67
<b>YBM251</b>	1.19	1.00	0.75	0.63	0.56	0.47
<b>YBM253</b>	1.22	1.00	0.73	0.61	0.54	0.45
<b>YBG202</b>	1.10	1.00	0.85	0.77	0.72	0.66
<b>YBG205</b>	1.15	1.00	0.82	0.74	0.69	0.64
<b>YBD052</b>	1.22	1.00	0.80	0.65	0.60	0.55
<b>YBD102</b>	1.20	1.00	0.75	0.62	0.58	0.50
<b>YBD152</b>	1.11	1.00	0.70	0.60	0.50	0.40
<b>YBG105</b>	1.28	1.00	0.79	0.72	0.63	0.58
<b>YBG212</b>	1.25	1.00	0.75	0.70	0.60	0.50
<b>YBS103</b>	1.35	1.00	0.85	0.78	0.68	0.62
Actual cutting speed = Recommended cutting speed × Correctional coefficient of cutting speed						

Example: If the material you are going to machine is normal alloy steel, and the selected insert is CNMG120404-DF/YBC151, then the recommended cutting speed is V=250m/min (standard life is 15 minutes). If you expect the tool life to reach 60 minutes, the correctional coefficient found in the table is 0.67, then the applicable cutting speed is Vc=250×0.67=167.5m/min.



# TURNING / General Turning Inserts

## General turning inserts code key

General turning

General turning inserts code key

Insert shape/Code		
A	B	C
D	E	H
K	L	M
O	P	R
S	T	T
V	W	Others Z

**Insert shape**

Metric							
Code	With/Without hole	With/Without chipbreaker	Section plane of insert	Code	With/Without hole	With/Without chipbreaker	Section plane of insert
B	With	Without	>65°	N	Without	Without	
H	With	Single-side	>65°	R	Without	Single-side	
C	With	Without	>65°	F	Without	Double-side	
J	With	Double-side	>65°	A	With	Without	
W	With	Without	≤65°	M	With	Single-side	
T	With	Single-side	≤65°	G	With	Double-side	
Q	With	Without	≤65°	X	---	---	Special
U	With	Double-side	≤65°				

**Chipbreaker and clamping system**

T N M G

Clearance angle of main cutting edge			
Code	Clearance angle	Code	Clearance angle
A	3°	B	5°
C	7°	D	15°
E	20°	F	25°
G	30°	N	0°
P	11°	O	Other clearance angles

Tolerance										
Code	Nose height m Tolerance(mm)	Inscribed circle ØI.C Tolerance(mm)	Thickness S Tolerance(mm)	(Reference) Details of M-level tolerance (Identified by shape)						
				Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
A	±0.005	±0.025	±0.025	● Nose height tolerance(mm)						
F	±0.005	±0.013	±0.025	6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
C	±0.013	±0.025	±0.025	9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
H	±0.013	±0.013	±0.025	12.7	±0.13	±0.13	±0.13	±0.15	---	---
E	±0.025	±0.025	±0.025	15.875	±0.15	±0.15	±0.15	±0.18	---	---
G	±0.025	±0.025	±0.13	19.05	±0.15	±0.15	±0.15	±0.18	---	---
J	±0.005	±0.05-±0.13	±0.025	25.4	---	±0.18	---	---	---	---
K	±0.013	±0.05-±0.13	±0.025	● Tolerance of inscribed circle ØI.C(mm)						
L	±0.025	±0.05-±0.13	±0.025	Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
M	±0.08-±0.18	±0.05-±0.13	±0.13	6.35	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
N	±0.08-±0.18	±0.05-±0.13	±0.025	9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
U	±0.13-±0.38	±0.08-±0.25	±0.13	12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08
				15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
				19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
				25.4	---	±0.13	---	---	---	±0.13



General turning inserts code key

Diameter of IC	Insert shape							
	C	D	R	S	T	V	W	K
3.97					06			
5.0			05					
5.56					09			
6.0			06					
6.35	06	07			11	11		
8.0			08					
9.525	09	11	09	09	16	16	06	16
10.0			10					
12.0			12					
12.7	12	15	12	12	22	22	08	
15.875	16		15	15	27			
16.0		19	16					
19.05	19		19	19	33			
20.0			20					
25.0	25	25	25					
25.4			25	25				
31.75			31					
32			32					

**Length of cutting edge**

Thickness is defined as the height from the bottom of insert to the highest part of cutting edge

Code	Insert thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
02	2.38
T2	2.58
03	3.18
T3	3.97
04	4.76
T4	4.96
05	5.96
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70

**Insert thickness**

**22 04 08 - DM (ISO)**

**4 3 2 (inch)**

Inscribed circle	
Code	Diameter of IC(mm)
2	6.35
3	9.525
4	12.7
5	15.875
6	19.05
8	25.4

Thickness	
Code	Thickness (mm)
2	3.18
3	4.76
4	6.35
5	7.94
6	9.52

Nose radius	
Code	Nose radius (mm)
0	0.2
1	0.4
2	0.8
3	1.2
4	1.6
5	2.0
6	2.4

Nose radius code	
Code	Nose radius (mm)
00	No radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	Others

Diameter of insert (Metric) Round insert

Chipbreaker code		
DF	DM	DR
HF	HM	HR
EF	EM	ER
NF	NM	SF
PM	WGF	SNR

General turning inserts code key



# TURNING / General Turning Inserts

Metric and inch comparison table of general turning inserts

## Metric and inch comparison table of negative inserts

General turning

Metric and inch comparison table of general turning inserts

C-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	090304	321	-DF
	090308	322	-WGF
	120404	431	-SF
	120408	432	-EF
	120412	433	-NF
	120416	434	-WGM
	160608	542	-PM
	160612	543	-DM
	160616	544	-EM
	190608	642	-NM
	190612	643	-DR
	190616	644	-ER
	190624	646	-LR
	250724	856	-HDR
	250732	858	-HPR
	250924	866	-SNR
250932	868		

D-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	110404	331	-EF
	110408	332	-DF
	110412	333	-WGF
	150404	431	-SF
	150408	432	-NF
	150412	433	-WGM
	150416	434	-PM
	150424	436	-DM
	150604	441	-EM
	150608	442	-NM
	150612	443	-DR
	150616	444	-ER
	190608	542	-LR
190612	543	-HDR	
			-SNR
			-NGF

V-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	160404	331	-DF -EF
	160408	332	-SF -NF
	160412	333	-PM -DM
			-EM -NM
			-SNR -NGF

R-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	120400	43	

W-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	06T304	3(2.5)1	-DF
	06T308	3(2.5)2	-WGF
	06T312	3(2.5)3	-SF
	060404	331	-EF
	060408	332	-NF
	060412	333	-WGM
	080404	431	-PM
	080408	432	-DM
	080412	433	-EM
			-DR
			-SNR

T-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	110304	221	-DF
	110308	222	-WGF
	160404	331	-SF
	160408	332	-EF
	160412	333	-NF
	220404	431	-WGM
	220408	432	-PM
	220412	433	-DM
	220416	434	-EM
	270608	542	-DR
	270612	543	-ER
	270616	544	-LR
			-SNR

S-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	090304	321	
	090308	322	
	090312	323	
	120404	431	-DF
	120408	432	-SF
	120412	433	-EF
	120416	434	-PM
	150608	542	-DM
	150612	543	-EM
	150616	544	-NM
	190412	633	-DR
	190424	636	-ER
	190612	643	-LR
	190616	644	-HDR
	250724	856	-HPR
	250732	858	-SNR
	250924	866	
	250932	868	



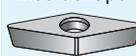
### Metric and inch comparison table of positive insert

C-type positive angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	060202	2(1.5)0	-USF
	060204	2(1.5)1	-SF
	060208	2(1.5)2	-HF
	09T302	3(2.5)0	-EF
	09T304	3(2.5)1	-HM
	09T308	3(2.5)2	-EM
	120404	431	-HR
	120408	432	-LH
	120412	433	-LC

D-type positive angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	070202	2(1.5)0	-USF
	070204	2(1.5)1	-SF
	070208	2(1.5)2	-HF
	11T302	3(2.5)0	-EF
	11T304	3(2.5)1	-HM
	11T308	3(2.5)2	-EM
	11T312	3(2.5)3	-HR
			-LH

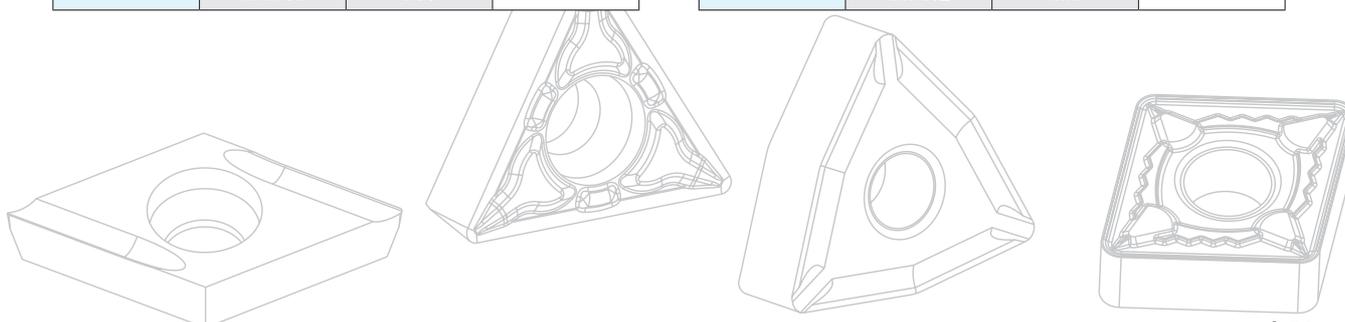
T-type positive angle	(ISO)	(Inch)	Chipbreaker	
Insert shape 	06T102	1.2(1.2)0		
	06T104	1.2(1.2)1		
	06T108	1.2(1.2)2		
	090202	1.8(1.5)0		
	090204	1.8(1.5)1		
	090208	1.8(1.5)2		
	110202	2(1.5)0		
	110204	2(1.5)1		
	110208	2(1.5)2		
	110302	220		-USF
	110304	221		-SF
	110308	222		-HF
	16T302	3(2.5)0	-EF	
	16T304	3(2.5)1	-HM	
	16T308	3(2.5)2	-EM	
	16T312	3(2.5)3	-HR	
	160400	330	-LH	
	220408	432	-LC	
	220412	433		
	220416	434		
	270408	532		
	270412	533		
	330612	643		
	330616	644		

S-type positive angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	060204	2(1.5)1	
	09T302	3(2.5)0	
	09T304	3(2.5)1	
	09T308	3(2.5)2	
	120404	431	
	120408	432	
	120412	433	
	150404	531	
	150408	532	
	150412	533	
	190408	632	
	190412	633	
	190416	634	

V-type positive angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	110202	2(1.5)0	
	110204	2(1.5)1	
	110208	2(1.5)2	
	110302	220	
	110304	221	
	110308	222	
	160402	330	
	160404	331	
	160408	332	
	160412	333	

General turning

Metric and inch comparison table of general turning inserts

































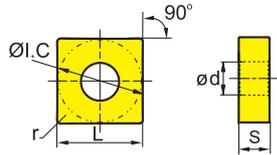




# General Turning Inserts

Cemented carbide and cermet inserts

## SN (Negative inserts)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG212	YBG302	YBM151	YBM153	YBM215	YBM251	YBM253	YBS103	YBD052	YBD102	YBD152	YBD252	YNG151	YNG151C	YD101	YD201
<b>P</b> Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>M</b> Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>N</b> Non-ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																	Cemented cermet	Cemented carbide											
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG212	YBG302	YBM151	YBM153	YBM215	YBM251	YBM253			YBS103	YBD052	YBD102	YBD152	YBD252	YNG151	YNG151C	YD101	YD201		
 For semi-finishing	SNMG090304-PM	9.525	9.525	3.18	3.81	0.4	○	●	○																											
	SNMG090308-PM	9.525	9.525	3.18	3.81	0.8	○	●	○	○																○										
	SNMG090312-PM	9.525	9.525	3.18	3.81	1.2	○		○																											
	SNMG120404-PM	12.7	12.7	4.76	5.16	0.4	○	●	○	○																	○									
	SNMG120408-PM	12.7	12.7	4.76	5.16	0.8	●	●	○	●																		★	★	★						
	SNMG120412-PM	12.7	12.7	4.76	5.16	1.2	●	●	○	○																		★	★	★						
	SNMG120416-PM	12.7	12.7	4.76	5.16	1.6			●	○	○																		○							
	SNMG150608-PM	15.875	15.875	6.35	6.35	0.8				○																										
	SNMG150612-PM	15.875	15.875	6.35	6.35	1.2	●	●	○																			○	●							
	SNMG190616-PM	19.05	19.05	6.35	7.94	1.6			●	○																										
 For semi-finishing	SNMG090304-DM	9.525	9.525	3.18	3.81	0.4	○		○																											
	SNMG090308-DM	9.525	9.525	3.18	3.81	0.8	○	●	○	○																										
	SNMG120404-DM	12.7	12.7	4.76	5.16	0.4	★	●	○																											
	SNMG120408-DM	12.7	12.7	4.76	5.16	0.8				○																										
	SNMG120412-DM	12.7	12.7	4.76	5.16	1.2	★	●	★																											
	SNMG120416-DM	12.7	12.7	4.76	5.16	1.6			●	○	○																									
	SNMG150608-DM	15.875	15.875	6.35	6.35	0.8	○	●	○																											
	SNMG150612-DM	15.875	15.875	6.35	6.35	1.2	●	●	★	●																										
	SNMG150616-DM	15.875	15.875	6.35	6.35	1.6				○																										
	SNMG190612-DM	19.05	19.05	6.35	7.94	1.2	○	●	○	○																		○								
SNMG190616-DM	19.05	19.05	6.35	7.94	1.6				○																											

★ Recommended grade (always stock available)    ● Available grade (always stock available)    ○ Make-to-order

### Applicable tool

DSBNR/L  
Kr:75°



Page A168

PSBNR/L  
Kr:75°



A176

PSDNN  
Kr:45°



A177

PSKNR/L  
Kr:75°



A178

PSSNR/L  
Kr:45°



A179

PSKNR/L  
Kr:75°



A215

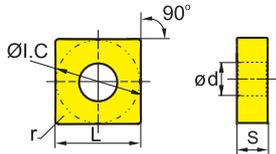








### SN (Negative inserts)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG212	YBG302	YBM151	YBM153	YBM215	YBM251	YBM253	YBS103	YBD052	YBD102	YBD152	YBD252	YNG151	YNG151C	YD101	YD201
<b>P</b> Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>M</b> Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>N</b> Non-ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																	Cemented cermet	Cemented carbide										
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG212	YBG302	YBM151	YBM153	YBM215	YBM251	YBM253			YBS103	YBD052	YBD102	YBD152	YBD252	YNG151	YNG151C	YD101	YD201	
<b>DR</b>  For roughing	SNMM190612-DR	19.05	19.05	6.35	7.94	1.2			●	○	○																								
	SNMM190616-DR	19.05	19.05	6.35	7.94	1.6		○	●	★	●																								
	SNMM190624-DR	19.05	19.05	6.35	7.94	2.4		★	●	○	●																								
	SNMM250724-DR	25.4	25.4	7.94	9.12	2.4			●		○																								
	SNMM250924-DR	25.4	25.4	9.525	9.12	2.4			●	★	●																								
<b>ER</b>  For roughing	SNMG120408-ER	12.7	12.7	4.76	5.16	0.8																													
	SNMG120412-ER	12.7	12.7	4.76	5.16	1.2																													
	SNMG150608-ER	15.875	15.875	6.35	6.35	0.8																													
	SNMG150612-ER	15.875	15.875	6.35	6.35	1.2																													
	SNMG190612-ER	19.05	19.05	6.35	7.94	1.2																													
SNMG190616-ER	19.05	19.05	6.35	7.94	1.6																														
<b>ER</b>  For roughing	SNMM250724-ER	25.4	25.4	7.94	9.12	2.4				●																									
	SNMM250732-ER	25.4	25.4	7.94	9.12	3.2				●																									
	SNMM250924-ER	25.4	25.4	9.525	9.12	2.4				●																									
	SNMM250932-ER	25.4	25.4	9.525	9.12	3.2				●																									
<b>SNR</b>  For roughing	SNMG120408-SNR	12.7	12.7	4.76	5.16	0.8								○	●																				

★ Recommended grade (always stock available)    ● Available grade (always stock available)    ○ Make-to-order

### Applicable tool

**DSBNR/L**  
Kr:75°



Page A168

**PSBNR/L**  
Kr:75°



A176

**PSDNN**  
Kr:45°



A177

**PSKNR/L**  
Kr:75°



A178

**PSSNR/L**  
Kr:45°



A179

**PSKNR/L**  
Kr:75°



A215

Insert code key → A50-A51

Grade selection reference → A19/A36-A48

Chipbreaker selection reference → A22-A35

Recommended cutting parameters → A241-A244

General turning

Cemented carbide and cermet inserts



































































































**PCBN & PCD** Insert



# TURNING / General Turning Inserts

PCBN&PCD inserts code key

General turning

PCBN&PCD inserts code key

Insert shape		
A	B	C
D	E	H
K	L	M
P	S	T
V	W	Others Z

Tolerance class							
Code	Nose height M Tolerance(mm)	Inscribed circle Tolerance(mm)	Thickness S Tolerance(mm)	Code	Nose height M Tolerance(mm)	Inscribed circle Tolerance(mm)	Thickness S Tolerance(mm)
A	±0.005	±0.025	±0.025	J	±0.005	±0.05-±0.13	±0.025
F	±0.005	±0.013	±0.025	K	±0.013	±0.05-±0.13	±0.025
C	±0.013	±0.025	±0.025	L	±0.025	±0.05-±0.13	±0.025
H	±0.013	±0.013	±0.025	M	±0.08-±0.18	±0.05-±0.13	±0.13
E	±0.025	±0.025	±0.025	N	±0.08-±0.18	±0.05-±0.13	±0.025
G	±0.025	±0.025	±0.13	U	±0.13-±0.38	±0.08-±0.25	±0.13

## C N G A 12

Clearance angle of main cutting edge			
Code	Clearance angle	Code	Clearance angle
A	3°	B	5°
C	7°	D	15°
E	20°	F	25°
G	30°	N	0°
P	11°	O	Other clearance angle

Chipbreaker and clamping system		
Code	With/Without hole	Section plane of insert
N	Without	
B	With	
C	With	
A	With	
W	With	
Q	With	
X	---	Special

Diameter of IC (mm)	Insert shape						
	C	D	R	S	T	V	W
3.97					06		
5.0			05				
5.56					09		
6.0			06				
6.35	06	07			11	11	
8.0			08				
9.525	09	11	09	09	16	16	06
10.0			10				
12.0			12				
12.7	12	15	12	12	22	22	08
15.875	16		15	15	27		
16.0		19	16				
19.05	19		19	19	33		
20.0			20				
25.0	25	25	25	25			
25.4			25	25			
31.75			31				
32			32				



Insert thickness			
<p>Thickness is defined as height from bottom of insert to the highest part of cutting edge.</p>			
Code	Insert thickness(mm)	Code	Insert thickness(mm)
02	2.38	06	6.35
T2	2.58	T6	6.75
03	3.18	07	7.94
T3	3.97	09	9.52
04	4.76	T9	9.72
T4	4.96	11	11.11
05	5.56	12	12.70
T5	5.95		

Nose radius code	
Code	Nose radius(mm)
00	No radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	Others
Diameter of insert (Metric)	
Round insert	

Type of cutting edge		
Code	Type of cutting edge	Picture
E	Honing	
T	Chamfering	
S	Chamfering + honing	
F	Sharp edges	

**04 04 A T 010 20 - 2 S**

Insert Structure		
Code	Type of cutting edge	Diagram
A	Single-sided insert	
B	Intact insert	
C	penetration insert	
D	Double-sided insert	

Chamfer width	
Code	Dimensions (mm)
000	--
008	0.08
012	0.12
017	0.17
022	0.22

Chamfer angle	
Code	Angle (°)
00	--
10	10
15	15
20	20
25	25

Cutting edge number	
Code	number
/	number1
2	number2
3	number3
4	number4
6	number6

The length of cutting edge			
	Standard	Elongate	Overlength
Code	Omission	S	SS
Length	Standard	+1mm	+2mm

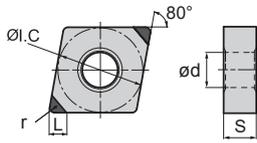




# General Turning Inserts

PCBN&PCD inserts

**CN** (Negative angle)



😊 Good working condition   😐 Normal working condition   😞 Bad working condition

Workpiece material	Working condition											
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material									😊	😊	😊	😊
<b>N</b> Non ferrous metal												

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy				
				Ø1.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011	
Single-sided insert		CNGA120404AE-2	AE	12.7	4.76	5.156	0.4	2.5	○	○							○	○	○		
		CNGA120408AE-2		12.7	4.76	5.156	0.8	2.4	○	○							○	○	○		
		CNGA120412AE-2		12.7	4.76	5.156	1.2	2.3	○	○							○	○	○		
		CNGA120404AS01225-2	S01225	12.7	4.76	5.156	0.4	2.5	○	○			○	○	○	○	○	○	○	○	
		CNGA120408AS01225-2		12.7	4.76	5.156	0.8	2.4	○	○			○	○	○	○	○	○	○	○	
		CNGA120412AS01225-2		12.7	4.76	5.156	1.2	2.3	○	○			○	○	○	○	○	○	○	○	
		CNGA120404AS00815-2	S00815	12.7	4.76	5.156	0.4	2.5					○	○	○						
		CNGA120408AS00815-2		12.7	4.76	5.156	0.8	2.4					○	○	○						
		CNGA120412AS00815-2		12.7	4.76	5.156	1.2	2.3					○	○	○						
		CNGA120404AS01735-2	S01735	12.7	4.76	5.156	0.4	2.5								○	○	○			
		CNGA120408AS01735-2		12.7	4.76	5.156	0.8	2.4								○	○	○			
		CNGA120412AS01735-2		12.7	4.76	5.156	1.2	2.3								○	○	○			
		CNGA120404AT01215-2	T01215	12.7	4.76	5.156	0.4	2.5	○	○									○	○	○
		CNGA120408AT01215-2		12.7	4.76	5.156	0.8	2.4	○	○									○	○	○
CNGA120412AT01215-2	12.7	4.76		5.156	1.2	2.3	○	○									○	○	○		
Double-sided insert		CNGA120404DE-4	DE	12.7	4.76	5.156	0.4	2.5	○	○							○	○	○		
		CNGA120408DE-4		12.7	4.76	5.156	0.8	2.4	○	○							○	○	○		
		CNGA120412DE-4		12.7	4.76	5.156	1.2	2.3	○	○							○	○	○		
		CNGA120404DT01215-4	T01215	12.7	4.76	5.156	0.4	2.5	★	★								★	★	★	
		CNGA120408DT01215-4		12.7	4.76	5.156	0.8	2.4	★	★								★	★	★	
		CNGA120412DT01215-4		12.7	4.76	5.156	1.2	2.3	★	★								★	★	★	

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order

Applicable tool

**DCLNR/L**  
Kr:95°



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**PCLNR/L**  
Kr:95°



A173

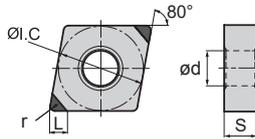
**PCLNR/L**  
Kr:95°



A212



**CN** (Negative angle)



☺ Good working condition ☹ Normal working condition ☹ Bad working condition

Workpiece material	Cast iron	Heat resistant alloy, Ti alloy	Super hard material	Non ferrous metal
K	☺☺☺☺	☺☺☺☺	☺☺☺☺	☺☺☺☺
S	☺☺☺☺	☺☺☺☺	☺☺☺☺	☺☺☺☺
H	☺☺☺☺	☺☺☺☺	☺☺☺☺	☺☺☺☺
N	☺☺☺☺	☺☺☺☺	☺☺☺☺	☺☺☺☺

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy			
				$\varnothing l, C$	S	$\varnothing d$	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
Double-sided insert		CNGA120404DS01225-4	S01225	12.7	4.76	5.156	0.4	2.5	○	○										
		CNGA120408DS01225-4		12.7	4.76	5.156	0.8	2.4	○	○										
		CNGA120412DS01225-4		12.7	4.76	5.156	1.2	2.3	○	○										
		CNGA120404DS00815-4		12.7	4.76	5.156	0.4	2.5												
		CNGA120408DS00815-4	S00815	12.7	4.76	5.156	0.8	2.4					★	★	○					
		CNGA120412DS00815-4		12.7	4.76	5.156	1.2	2.3					★	★	○					
		CNGA120404DS01225-4		12.7	4.76	5.156	0.4	2.5					★	★	★	★	★	○	○	○
		CNGA120408DS01225-4	S01225	12.7	4.76	5.156	0.8	2.4					★	★	★	★	★	○	○	○
		CNGA120412DS01225-4		12.7	4.76	5.156	1.2	2.3					★	★	★	★	★	○	○	○
		CNGA120404DS01735-4	S01735	12.7	4.76	5.156	0.4	2.5									○	★	○	
		CNGA120408DS01735-4		12.7	4.76	5.156	0.8	2.4									○	★	○	
		CNGA120412DS01735-4		12.7	4.76	5.156	1.2	2.3									○	★	○	
Penetration insert		CNGA120404CE-2	CE	12.7	4.76	5.156	0.4	2.5			○									
		CNGA120408CE-2		12.7	4.76	5.156	0.8	2.4			○									
		CNGA120412CE-2		12.7	4.76	5.156	1.2	2.3			○									
		CNGA120404CT01215-2	T01215	12.7	4.76	5.156	0.4	2.5				★								
		CNGA120408CT01215-2		12.7	4.76	5.156	0.8	2.4					★							
		CNGA120412CT01215-2		12.7	4.76	5.156	1.2	2.3					★							
		CNGA120404CS01225-2	S01225	12.7	4.76	5.156	0.4	2.5				○								
		CNGA120408CS01225-2		12.7	4.76	5.156	0.8	2.4				○								
CNGA120412CS01225-2	12.7	4.76		5.156	1.2	2.3				○										

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DCLNR/L  
Kr:95°



Page A166

PCLNR/L  
Kr:95°



A173

PCLNR/L  
Kr:95°



A212

General turning

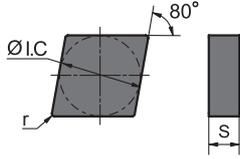
PCBN&PCD inserts



# TURNING / General Turning Inserts

PCBN&PCD inserts

**CN** (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Working Condition											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material									😊	😊	😊	😊
<b>N</b> Non ferrous metal												

General turning

PCBN&PCD inserts

Type	Shape of insert	Model	Specifi-cation	Dimension(mm)			Cast iron				Hardened steel				Powder alloy & Superalloy		
				ØI.C	S	r	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011
Intact insert		CNGN120404BE	BE	12.7	4.76	0.4			○								
		CNGN120408BE		12.7	4.76	0.8			○								
		CNGN120412BE		12.7	4.76	1.2			○								
		CNGN120404BT01215	T01215	12.7	4.76	0.4			★								
		CNGN120408BT01215		12.7	4.76	0.8			★								
		CNGN120412BT01215		12.7	4.76	1.2			★								
		CNGN120404BS01225	S01225	12.7	4.76	0.4			○								
		CNGN120408BS01225		12.7	4.76	0.8			○								
		CNGN120412BS01225		12.7	4.76	1.2			○								

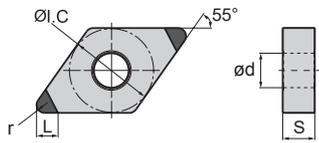
According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order



**DN** (Negative angle)



☺ Good working condition    😐 Normal working condition    ☹ Bad working condition

Workpiece material	Working condition											
	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>K</b> Cast iron	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>S</b> Heat resistant alloy, Ti alloy	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>H</b> Super hard material	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>N</b> Non ferrous metal	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy					
				Ø1.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011		
Single-sided insert		DNGA150404AE-2	AE	12.7	4.76	5.156	0.4	2.5	○	○							○	○	○			
		DNGA150408AE-2		12.7	4.76	5.156	0.8	2.1	○	○								○	○	○		
		DNGA150412AE-2		12.7	4.76	5.156	1.2	2.0	○	○									○	○	○	
		DNGA150604AE-2		12.7	6.35	5.156	0.4	2.5	○	○									○	○	○	
		DNGA150608AE-2		12.7	6.35	5.156	0.8	2.1	○	○										○	○	○
		DNGA150612AE-2		12.7	6.35	5.156	1.2	2.0	○	○										○	○	○
		DNGA150404AT01215-2	T01215	12.7	4.76	5.156	0.4	2.5	○	○									○	○	○	
		DNGA150408AT01215-2		12.7	4.76	5.156	0.8	2.1	○	○									○	○	○	
		DNGA150412AT01215-2		12.7	4.76	5.156	1.2	2.0	○	○										○	○	○
		DNGA150604AT01215-2		12.7	6.35	5.156	0.4	2.5	○	○										○	○	○
		DNGA150608AT01215-2		12.7	6.35	5.156	0.8	2.1	○	○										○	○	○
		DNGA150612AT01215-2		12.7	6.35	5.156	1.2	2.0	○	○										○	○	○
		DNGA150404AS01225-2	S01225	12.7	4.76	5.156	0.4	2.5	○	○									○	○	○	
		DNGA150408AS01225-2		12.7	4.76	5.156	0.8	2.1	○	○									○	○	○	
		DNGA150412AS01225-2		12.7	4.76	5.156	1.2	2.0	○	○										○	○	○
		DNGA150604AS01225-2		12.7	6.35	5.156	0.4	2.5	○	○										○	○	○
		DNGA150608AS01225-2		12.7	6.35	5.156	0.8	2.1	○	○										○	○	○
		DNGA150612AS01225-2		12.7	6.35	5.156	1.2	2.0	○	○										○	○	○
		DNGA150404AS00815-2	S00815	12.7	4.76	5.156	0.4	2.5											○	○	○	
		DNGA150408AS00815-2		12.7	4.76	5.156	0.8	2.1											○	○	○	
		DNGA150412AS00815-2		12.7	4.76	5.156	1.2	2.0											○	○	○	
		DNGA150604AS00815-2		12.7	6.35	5.156	0.4	2.5											○	○	○	
		DNGA150608AS00815-2		12.7	6.35	5.156	0.8	2.1											○	○	○	
		DNGA150612AS00815-2		12.7	6.35	5.156	1.2	2.0											○	○	○	

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

DDJNR/L  
Kr:93°



Page A167

PDJNR/L  
Kr:93°



A174

PDPNN  
Kr:62°30'



A175

PDPNR/L  
Kr:62°30'



A213

PDUNR/L  
Kr:93°



A214

General turning

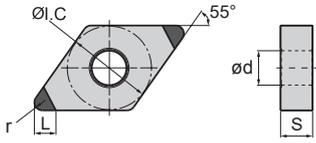
PCBN&PCD inserts



# General Turning Inserts

PCBN&PCD inserts

**DN** (Negative angle)



😊 Good working condition   😐 Normal working condition   😞 Bad working condition

Workpiece material	Working condition											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material										😊	😊	😊
<b>N</b> Non ferrous metal										😊	😊	😊

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy					
				ØL.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011		
Single-sided insert		DNGA150404AS01735-2	S01735	12.7	4.76	5.156	0.4	2.5														
		DNGA150408AS01735-2		12.7	4.76	5.156	0.8	2.1														
		DNGA150412AS01735-2		12.7	4.76	5.156	1.2	2.0														
		DNGA150604AS01735-2		12.7	6.35	5.156	0.4	2.5														
		DNGA150608AS01735-2		12.7	6.35	5.156	0.8	2.1														
		DNGA150612AS01735-2		12.7	6.35	5.156	1.2	2.0														
Double-sided insert		DNGA150404DE-4	DE	12.7	4.76	5.156	0.4	2.5	○	○								○	○	○		
		DNGA150408DE-4		12.7	4.76	5.156	0.8	2.1	○	○									○	○	○	
		DNGA150412DE-4		12.7	4.76	5.156	1.2	2.0	○	○										○	○	○
		DNGA150604DE-4		12.7	6.35	5.156	0.4	2.5	○	○										○	○	○
		DNGA150608DE-4		12.7	6.35	5.156	0.8	2.1	○	○										○	○	○
		DNGA150612DE-4		12.7	6.35	5.156	1.2	2.0	○	○										○	○	○
		DNGA150404DT01215-4	T01215	12.7	4.76	5.156	0.4	2.5	★	★									★	★	★	
		DNGA150408DT01215-4		12.7	4.76	5.156	0.8	2.1	★	★									★	★	★	
		DNGA150412DT01215-4		12.7	4.76	5.156	1.2	2.0	★	★									★	★	★	
		DNGA150604DT01215-4		12.7	6.35	5.156	0.4	2.5	★	★									★	★	★	
		DNGA150608DT01215-4		12.7	6.35	5.156	0.8	2.1	★	★									★	★	★	
		DNGA150612DT01215-4		12.7	6.35	5.156	1.2	2.0	★	★									★	★	★	

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order

Applicable tool

**DDJNR/L**  
Kr:93°



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**PDJNR/L**  
Kr:93°



A174

**PDPNN**  
Kr:62°30'



A175

**PDPNR/L**  
Kr:62°30'



A213

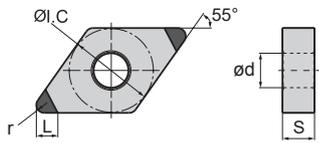
**PDUNR/L**  
Kr:93°



A214



**DN** (Negative angle)



☺ Good working condition    😐 Normal working condition    ☹ Bad working condition

Workpiece material	Working condition											
	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>K</b> Cast iron	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>S</b> Heat resistant alloy, Ti alloy	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>H</b> Super hard material	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>N</b> Non ferrous metal	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy					
				Ø1.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011		
Double-sided insert		DNGA150404DS01225-4	S01225	12.7	4.76	5.156	0.4	2.5	○	○			★	★	★	★	★	○	○	○		
		DNGA150408DS01225-4		12.7	4.76	5.156	0.8	2.1	○	○			★	★	★	★	★	○	○	○		
		DNGA150412DS01225-4		12.7	4.76	5.156	1.2	2.0	○	○			★	★	★	★	★	○	○	○		
		DNGA150602DS01225-4		12.7	6.35	5.156	0.2	2.7					★	★	★	★	★					
		DNGA150604DS01225-4		12.7	6.35	5.156	0.4	2.5	○	○			★	★	★	★	★	○	○	○		
		DNGA150608DS01225-4		12.7	6.35	5.156	0.8	2.1	○	○			★	★	★	★	★	○	○	○		
		DNGA150612DS01225-4	12.7	6.35	5.156	1.2	2.0	○	○			★	★	★	★	★	○	○	○			
		DNGA150404DS00815-4	S00815	12.7	4.76	5.156	0.4	2.5					★	★	○							
		DNGA150408DS00815-4		12.7	4.76	5.156	0.8	2.1					★	★	○							
		DNGA150412DS00815-4		12.7	4.76	5.156	1.2	2.0					★	★	○							
		DNGA150602DS00815-4		12.7	6.35	5.156	0.2	2.7					★	★	○							
		DNGA150604DS00815-4		12.7	6.35	5.156	0.4	2.5					★	★	○							
		DNGA150608DS00815-4		12.7	6.35	5.156	0.8	2.1					★	★	○							
		DNGA150612DS00815-4	12.7	6.35	5.156	1.2	2.0					★	★	○								
		DNGA150404DS01735-4	S01735	12.7	4.76	5.156	0.4	2.5									○	★	○			
		DNGA150408DS01735-4		12.7	4.76	5.156	0.8	2.1									○	★	○			
		DNGA150412DS01735-4		12.7	4.76	5.156	1.2	2.0									○	★	○			
		DNGA150602DS01735-4		12.7	6.35	5.156	0.2	2.7									○	★	○			
		DNGA150604DS01735-4		12.7	6.35	5.156	0.4	2.5									○	★	○			
		DNGA150608DS01735-4		12.7	6.35	5.156	0.8	2.1									○	★	○			
DNGA150612DS01735-4	12.7	6.35	5.156	1.2	2.0									○	★	○						

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

**DDJNR/L**  
Kr:93°



Page A167

**PDJNR/L**  
Kr:93°



A174

**PDPNN**  
Kr:62°30'



A175

**PDPNR/L**  
Kr:62°30'



A213

**PDUNR/L**  
Kr:93°



A214

General turning

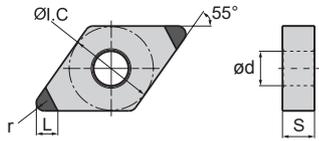
PCBN&PCD inserts



# General Turning Inserts

PCBN&PCD inserts

**DN** (Negative angle)



😊 Good working condition   😐 Normal working condition   😞 Bad working condition

Workpiece material	Working condition											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material										😊	😊	😊
<b>N</b> Non ferrous metal										😊	😊	😊

General turning

PCBN&PCD inserts

Type	Shape of insert	Model	Specifi-cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy		
				$\varnothing L, C$	S	$\varnothing d$	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011
Penetration insert		DNGA150404CE-2	CE	12.7	4.76	5.156	0.4	2.5			○								
		DNGA150408CE-2		12.7	4.76	5.156	0.8	2.1			○								
		DNGA150412CE-2		12.7	4.76	5.156	1.2	2.0			○								
		DNGA150604CE-2		12.7	6.35	5.156	0.4	2.5			○								
		DNGA150608CE-2		12.7	6.35	5.156	0.8	2.1			○								
		DNGA150612CE-2		12.7	6.35	5.156	1.2	2.0			○								
		DNGA150404CT01215-2	T01215	12.7	4.76	5.156	0.4	2.5				★							
		DNGA150408CT01215-2		12.7	4.76	5.156	0.8	2.1				★							
		DNGA150412CT01215-2		12.7	4.76	5.156	1.2	2.0				★							
		DNGA150604CT01215-2		12.7	6.35	5.156	0.4	2.5				★							
		DNGA150608CT01215-2		12.7	6.35	5.156	0.8	2.1				★							
		DNGA150612CT01215-2		12.7	6.35	5.156	1.2	2.0				★							
		DNGA150404CS01225-2	S01225	12.7	4.76	5.156	0.4	2.5				○							
		DNGA150408CS01225-2		12.7	4.76	5.156	0.8	2.1				○							
		DNGA150412CS01225-2		12.7	4.76	5.156	1.2	2.0				○							
		DNGA150604CS01225-2		12.7	6.35	5.156	0.4	2.5				○							
		DNGA150608CS01225-2		12.7	6.35	5.156	0.8	2.1				○							
		DNGA150612CS01225-2		12.7	6.35	5.156	1.2	2.0				○							

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order

Applicable tool

**DDJNR/L**  
Kr:93°



Page A167

**PDJNR/L**  
Kr:93°



A174

**PDPNN**  
Kr:62°30'



A175

**PDPNR/L**  
Kr:62°30'



A213

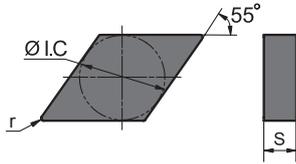
**PDUNR/L**  
Kr:93°



A214



**DN** (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Cast iron				Heat resistant alloy, Ti alloy					Super hard material			Non ferrous metal		
	K1011	K1021	K2511	K2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011	N1011	N1021	N1031
K	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
S	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
H	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
N	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊

Type	Shape of insert	Model	Specifi-cation	Dimension(mm)			Cast iron				Hardened steel					Powder alloy& Superalloy			
				ØI.C	S	r	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011	
Intact insert		DNGN150404BE	BE	12.7	4.76	0.4			○										
		DNGN150408BE		12.7	4.76	0.8			○										
		DNGN150412BE		12.7	4.76	1.2			○										
		DNGN150604BE		12.7	6.35	0.4			○										
		DNGN150608BE		12.7	6.35	0.8			○										
		DNGN150612BE		12.7	6.35	1.2			○										
		DNGN150404BT01215	T01215	12.7	4.76	0.4			★										
		DNGN150408BT01215		12.7	4.76	0.8			★										
		DNGN150412BT01215		12.7	4.76	1.2			★										
		DNGN150604BT01215		12.7	6.35	0.4			★										
		DNGN150608BT01215		12.7	6.35	0.8			★										
		DNGN150612BT01215		12.7	6.35	1.2			★										
		DNGN150404BS01225	S01225	12.7	4.76	0.4			○										
		DNGN150408BS01225		12.7	4.76	0.8			○										
		DNGN150412BS01225		12.7	4.76	1.2			○										
		DNGN150604BS01225		12.7	6.35	0.4			○										
		DNGN150608BS01225		12.7	6.35	0.8			○										
		DNGN150612BS01225		12.7	6.35	1.2			○										

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

General turning

PCBN&PCD inserts

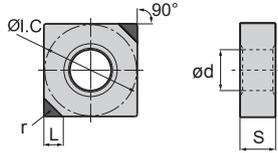




# General Turning Inserts

PCBN&PCD inserts

**SN** (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Cast iron				Heat resistant alloy, Ti alloy				Super hard material				Non ferrous metal		
	☺	☺	☹	☹	☺	☺	☹	☹	☺	☺	☹	☹	☺	☺	☹
<b>K</b> Cast iron	☺	☺	☹	☹											
<b>S</b> Heat resistant alloy, Ti alloy					☺	☺	☹	☹							
<b>H</b> Super hard material									☺	☺	☹	☹			
<b>N</b> Non ferrous metal															

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy					
				ØL.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011		
Single-sided insert		SNGA120404AE-2	AE	12.7	4.76	5.156	0.4	2.5	○	○							○	○	○			
		SNGA120408AE-2		12.7	4.76	5.156	0.8	2.2	○	○								○	○	○		
		SNGA120412AE-2		12.7	4.76	5.156	1.2	2.0	○	○									○	○	○	
		SNGA120404AE-4		12.7	4.76	5.156	0.4	2.5											○	○	○	
		SNGA120408AE-4		12.7	4.76	5.156	0.8	2.2											○	○	○	
		SNGA120412AE-4		12.7	4.76	5.156	1.2	2.0											○	○	○	
		SNGA120404AT01215-2	T01215	12.7	4.76	5.156	0.4	2.5	○	○									○	○	○	
		SNGA120408AT01215-2		12.7	4.76	5.156	0.8	2.2	○	○									○	○	○	
		SNGA120412AT01215-2		12.7	4.76	5.156	1.2	2.0	○	○									○	○	○	
		SNGA120404AT01215-4		12.7	4.76	5.156	0.4	2.5											○	○	○	
		SNGA120408AT01215-4		12.7	4.76	5.156	0.8	2.2											○	○	○	
		SNGA120412AT01215-4		12.7	4.76	5.156	1.2	2.0											○	○	○	
		SNGA120404AS01225-2	S01225	12.7	4.76	5.156	0.4	2.5	○	○										○	○	○
		SNGA120408AS01225-2		12.7	4.76	5.156	0.8	2.2	○	○										○	○	○
		SNGA120412AS01225-2		12.7	4.76	5.156	1.2	2.0	○	○										○	○	○
		SNGA120404AS01225-4		12.7	4.76	5.156	0.4	2.5											○	○	○	○
		SNGA120408AS01225-4		12.7	4.76	5.156	0.8	2.2											○	○	○	○
		SNGA120412AS01225-4		12.7	4.76	5.156	1.2	2.0											○	○	○	○
		SNGA120404AS00815-4	S00815	12.7	4.76	5.156	0.4	2.5										○	○	○	○	
		SNGA120408AS00815-4		12.7	4.76	5.156	0.8	2.2										○	○	○	○	
		SNGA120412AS00815-4		12.7	4.76	5.156	1.2	2.0										○	○	○	○	
		SNGA120404AS01735-4	S01735	12.7	4.76	5.156	0.4	2.5											○	○	○	
		SNGA120408AS01735-4		12.7	4.76	5.156	0.8	2.2										○	○	○	○	
		SNGA120412AS01735-4		12.7	4.76	5.156	1.2	2.0										○	○	○	○	

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

**DSBNR/L**  
Kr:75°



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**PSBNR/L**  
Kr:75°



A176

**PSDNN**  
Kr:45°



A177

**PSKNR/L**  
Kr:75°



A178

**PSSNR/L**  
Kr:45°



A179

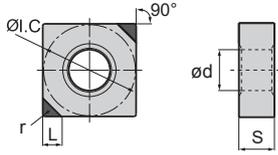
**PSKNR/L**  
Kr:75°



A215



SN (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Working condition											
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>H</b> Super hard material	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>N</b> Non ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy			
				Øl.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
Double-sided insert		SNGA120404DE-4	DE	12.7	4.76	5.156	0.4	2.5	○	○										
		SNGA120408DE-4		12.7	4.76	5.156	0.8	2.2	○	○										
		SNGA120412DE-4		12.7	4.76	5.156	1.2	2.0	○	○										
		SNGA120404DT01215-4	T01215	12.7	4.76	5.156	0.4	2.5	★	★										
		SNGA120408DT01215-4		12.7	4.76	5.156	0.8	2.2	★	★										
		SNGA120412DT01215-4		12.7	4.76	5.156	1.2	2.0	★	★										
		SNGA120404DS01225-4	S01225	12.7	4.76	5.156	0.4	2.5	○	○										
		SNGA120408DS01225-4		12.7	4.76	5.156	0.8	2.2	○	○										
		SNGA120412DS01225-4		12.7	4.76	5.156	1.2	2.0	○	○										
		SNGA120404DS01225-8	S01225	12.7	4.76	5.156	0.4	2.5					○	○	○	○	○			
		SNGA120408DS01225-8		12.7	4.76	5.156	0.8	2.2					○	○	○	○	○			
		SNGA120412DS01225-8		12.7	4.76	5.156	1.2	2.0					○	○	○	○	○			
		SNGA120404DS00815-8	S00815	12.7	4.76	5.156	0.4	2.5					○	○	○					
		SNGA120408DS00815-8		12.7	4.76	5.156	0.8	2.2					○	○	○					
		SNGA120412DS00815-8		12.7	4.76	5.156	1.2	2.0					○	○	○					
		SNGA120404DS01735-8	S01735	12.7	4.76	5.156	0.4	2.5								○	○	○		
		SNGA120408DS01735-8		12.7	4.76	5.156	0.8	2.2								○	○	○		
		SNGA120412DS01735-8		12.7	4.76	5.156	1.2	2.0								○	○	○		

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available) ○ Make-to-order

Applicable tool

DSBNR/L  
Kr:75°



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PSBNR/L  
Kr:75°



A176

PSDNN  
Kr:45°



A177

PSKNR/L  
Kr:75°



A178

PSSNR/L  
Kr:45°



A179

PSKNR/L  
Kr:75°



A215

General turning

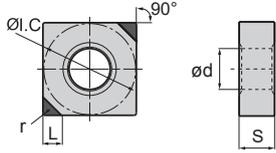
PCBN&PCD inserts



# General Turning Inserts

PCBN&PCD inserts

**SN** (Negative angle)



😊 Good working condition   😐 Normal working condition   😞 Bad working condition

Workpiece material	Working condition											
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>H</b> Super hard material	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>N</b> Non ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy			
				Øl.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
Penetration insert		SNGA120404CE-2	CE	12.7	4.76	5.156	0.4	2.5			○									
		SNGA120408CE-2		12.7	4.76	5.156	0.8	2.2			○									
		SNGA120412CE-2		12.7	4.76	5.156	1.2	2.0			○									
		SNGA120404CE-4		12.7	4.76	5.156	0.4	2.5			○									
		SNGA120408CE-4		12.7	4.76	5.156	0.8	2.2			○									
		SNGA120412CE-4		12.7	4.76	5.156	1.2	2.0			○									
		SNGA120404CT01215-4	T01215	12.7	4.76	5.156	0.4	2.5			★									
		SNGA120408CT01215-4		12.7	4.76	5.156	0.8	2.2			★									
		SNGA120412CT01215-4		12.7	4.76	5.156	1.2	2.0			★									
		SNGA120404CT01215-2		12.7	4.76	5.156	0.4	2.5			★									
		SNGA120408CT01215-2		12.7	4.76	5.156	0.8	2.2			★									
		SNGA120412CT01215-2		12.7	4.76	5.156	1.2	2.0			★									
		SNGA120404CS01225-4	S01225	12.7	4.76	5.156	0.4	2.5			○									
		SNGA120408CS01225-4		12.7	4.76	5.156	0.8	2.2			○									
		SNGA120412CS01225-4		12.7	4.76	5.156	1.2	2.0			○									
		SNGA120404CS01225-2		12.7	4.76	5.156	0.4	2.5			○									
		SNGA120408CS01225-2		12.7	4.76	5.156	0.8	2.2			○									
		SNGA120412CS01225-2		12.7	4.76	5.156	1.2	2.0			○									

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order

Applicable tool



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A177

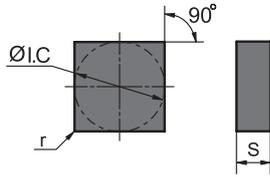
A178

A179

A215



**SN** (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	K	S	H	N	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
<b>K</b> Cast iron	😊	😊	😊	😊												
<b>S</b> Heat resistant alloy, Ti alloy														😊	😊	😊
<b>H</b> Super hard material									😊	😊	😊	😊	😊			
<b>N</b> Non ferrous metal																

Type	Shape of insert	Model	Specifi-cation	Dimension(mm)			Cast iron				Hardened steel				Powder alloy& Superalloy			
				ØI.C	S	r	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
Intact insert		SNGN120404BE	BE	12.7	4.76	0.4			○									
		SNGN120408BE		12.7	4.76	0.8			○									
		SNGN120412BE		12.7	4.76	1.2			○									
		SNGN120404BT01215	T01215	12.7	4.76	0.4			★									
		SNGN120408BT01215		12.7	4.76	0.8			★									
		SNGN120412BT01215		12.7	4.76	1.2			★									
		SNGN120404BS01225	S01225	12.7	4.76	0.4			○									
		SNGN120408BS01225		12.7	4.76	0.8			○									
		SNGN120412BS01225		12.7	4.76	1.2			○									

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

General turning

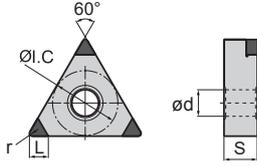
PCBN&PCD inserts



# General Turning Inserts

PCBN&PCD inserts

**TN** (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Working condition											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy											😊	😊
<b>H</b> Super hard material										😊	😊	😊
<b>N</b> Non ferrous metal											😊	😊

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy			
				ØL.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
Single-sided insert		TNGA160404AE-3	AE	9.525	4.76	3.81	0.4	2.5	○	○							○	○	○	
		TNGA160408AE-3		9.525	4.76	3.81	0.8	2.2	○	○								○	○	○
		TNGA160412AE-3		9.525	4.76	3.81	1.2	2.0	○	○								○	○	○
		TNGA160404AT01215-3	T01215	9.525	4.76	3.81	0.4	2.5	○	○								○	○	○
		TNGA160408AT01215-3		9.525	4.76	3.81	0.8	2.2	○	○								○	○	○
		TNGA160412AT01215-3		9.525	4.76	3.81	1.2	2.0	○	○								○	○	○
		TNGA160404AS01225-3	S01225	9.525	4.76	3.81	0.4	2.5	○	○				○	○	○	○	○	○	○
		TNGA160408AS01225-3		9.525	4.76	3.81	0.8	2.2	○	○				○	○	○	○	○	○	○
		TNGA160412AS01225-3		9.525	4.76	3.81	1.2	2.0	○	○				○	○	○	○	○	○	○
		TNGA160404AS00815-3	S00815	9.525	4.76	3.81	0.4	2.5						○	○	○				
		TNGA160408AS00815-3		9.525	4.76	3.81	0.8	2.2						○	○	○				
		TNGA160412AS00815-3		9.525	4.76	3.81	1.2	2.0						○	○	○				
		TNGA160404AS01735-3	S01735	9.525	4.76	3.81	0.4	2.5									○	○	○	
		TNGA160408AS01735-3		9.525	4.76	3.81	0.8	2.2									○	○	○	
TNGA160412AS01735-3	9.525	4.76		3.81	1.2	2.0									○	○	○			
Double-sided insert		TNGA160404DE-6	DE	9.525	4.76	3.81	0.4	2.5	○	○							○	○	○	
		TNGA160408DE-6		9.525	4.76	3.81	0.8	2.2	○	○							○	○	○	
		TNGA160412DE-6		9.525	4.76	3.81	1.2	2.0	○	○							○	○	○	
		TNGA160404DT01215-6	T01215	9.525	4.76	3.81	0.4	2.5	★	★								★	★	★
		TNGA160408DT01215-6		9.525	4.76	3.81	0.8	2.2	★	★								★	★	★
		TNGA160412DT01215-6		9.525	4.76	3.81	1.2	2.0	★	★								★	★	★

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

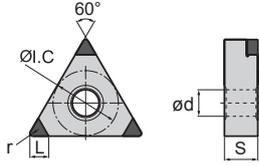
★ Recommended grade (always stock available)    ○ Make-to-order

**Applicable tool**

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**TN** (Negative angle)



😊 Good working condition   😐 Normal working condition   😞 Bad working condition

Workpiece material	Cast iron				Heat resistant alloy, Ti alloy					Super hard material					Non ferrous metal		
	K	S	H	N	S	H	N	S	H	N	S	H	N	S	H	N	
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel					Powder alloy & Superalloy			
				ØI.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011	
Double-sided insert		TNGA160404DS01225-6	S01225	9.525	4.76	3.81	0.4	2.5	○	○			★	★	★	★	★	○	○	○	
		TNGA160408DS01225-6		9.525	4.76	3.81	0.8	2.2	○	○			★	★	★	★	★	○	○	○	
		TNGA160412DS01225-6		9.525	4.76	3.81	1.2	2.0	○	○			★	★	★	★	★	○	○	○	
		TNGA160404DS00815-6	S00815	9.525	4.76	3.81	0.4	2.5							★	★	○				
		TNGA160408DS00815-6		9.525	4.76	3.81	0.8	2.2							★	★	○				
		TNGA160412DS00815-6		9.525	4.76	3.81	1.2	2.0							★	★	○				
		TNGA160404DS01735-6	S01735	9.525	4.76	3.81	0.4	2.5									○	★	○		
		TNGA160408DS01735-6		9.525	4.76	3.81	0.8	2.2								○	★	○			
		TNGA160412DS01735-6		9.525	4.76	3.81	1.2	2.0								○	★	○			
Penetration insert		TNGA160404CE-3	CE	9.525	4.76	3.81	0.4	2.5			○										
		TNGA160408CE-3		9.525	4.76	3.81	0.8	2.2			○										
		TNGA160412CE-3		9.525	4.76	3.81	1.2	2.0			○										
		TNGA160404CT01215-3	T01215	9.525	4.76	3.81	0.4	2.5				★									
		TNGA160408CT01215-3		9.525	4.76	3.81	0.8	2.2				★									
		TNGA160412CT01215-3		9.525	4.76	3.81	1.2	2.0				★									
		TNGA160404CS01225-3	S01225	9.525	4.76	3.81	0.4	2.5				○									
		TNGA160408CS01225-3		9.525	4.76	3.81	0.8	2.2				○									
		TNGA160412CS01225-3		9.525	4.76	3.81	1.2	2.0				○									

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order

Applicable tool

DTGNR/L  
Kr:90°



Page A169

PTFNR/L  
Kr:90°



A180

PTTNR/L  
Kr:60°



A181

PTGNR/L  
Kr:90°



A182

PTFNR/L  
Kr:90°



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General turning

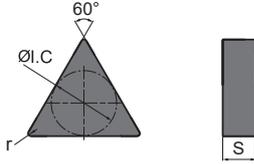
PCBN&PCD inserts



# General Turning Inserts

PCBN&PCD inserts

**TN** (Negative angle)



😊 Good working condition   🟡 Normal working condition   😞 Bad working condition

Workpiece material	Working Condition											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material									😊	😊	😊	😊
<b>N</b> Non ferrous metal												

General turning

PCBN&PCD inserts

Type	Shape of insert	Model	Specifi-cation	Dimension(mm)			Cast iron				Hardened steel				Powder alloy & Superalloy				
				Ø1.C	S	r	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011	
Intact insert		TNGN160404BE	BE	9.525	4.76	0.4			○										
		TNGN160408BE		9.525	4.76	0.8			○										
		TNGN160412BE		9.525	4.76	1.2			○										
		TNGN160404BT01215	T01215	9.525	4.76	0.4			★										
		TNGN160408BT01215		9.525	4.76	0.8			★										
		TNGN160412BT01215		9.525	4.76	1.2			★										
		TNGN160404BS01225	S01225	9.525	4.76	0.4			○										
		TNGN160408BS01225		9.525	4.76	0.8			○										
		TNGN160412BS01225		9.525	4.76	1.2			○										

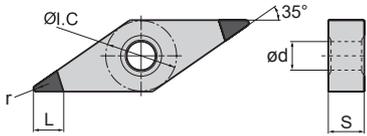
According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order



**VN** (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	K	S	H	N	Cast iron	Heat resistant alloy, Ti alloy	Super hard material	Non ferrous metal
K	😊	😊	😊	😊	😊	😊	😊	😊
S	😊	😊	😊	😊	😊	😊	😊	😊
H	😊	😊	😊	😊	😊	😊	😊	😊
N	😊	😊	😊	😊	😊	😊	😊	😊

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy				
				$\varnothing L.C$	S	$\varnothing d$	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011	
Single-sided insert		VNGA160404AE-2	AE	9.525	4.76	3.81	0.4	2.8									○	○	○		
		VNGA160408AE-2		9.525	4.76	3.81	0.8	2.5										○	○	○	
		VNGA160412AE-2		9.525	4.76	3.81	1.2	2.0										○	○	○	
		VNGA160404AT01215-2	T01215	9.525	4.76	3.81	0.4	2.8										○	○	○	
		VNGA160408AT01215-2		9.525	4.76	3.81	0.8	2.5										○	○	○	
		VNGA160412AT01215-2		9.525	4.76	3.81	1.2	2.0										○	○	○	
		VNGA160404AS01225-2	S01225	9.525	4.76	3.81	0.4	2.8				○	○	○	○	○	○	○	○	○	○
		VNGA160408AS01225-2		9.525	4.76	3.81	0.8	2.5				○	○	○	○	○	○	○	○	○	
		VNGA160412AS01225-2		9.525	4.76	3.81	1.2	2.0				○	○	○	○	○	○	○	○	○	
		VNGA160404AS00815-2	S00815	9.525	4.76	3.81	0.4	2.8				○	○	○							
		VNGA160408AS00815-2		9.525	4.76	3.81	0.8	2.5				○	○	○							
		VNGA160412AS00815-2		9.525	4.76	3.81	1.2	2.0				○	○	○							
		VNGA160404AS01735-2	S01735	9.525	4.76	3.81	0.4	2.8							○	○	○				
		VNGA160408AS01735-2		9.525	4.76	3.81	0.8	2.5							○	○	○				
VNGA160412AS01735-2	9.525	4.76		3.81	1.2	2.0							○	○	○						
Double-sided insert		VNGA160404DE-4	DE	9.525	4.76	3.81	0.4	2.8									○	○	○		
		VNGA160408DE-4		9.525	4.76	3.81	0.8	2.5										○	○	○	
		VNGA160412DE-4		9.525	4.76	3.81	1.2	2.0										○	○	○	
		VNGA160404DT01215-4	T01215	9.525	4.76	3.81	0.4	2.8										★	★	★	
		VNGA160408DT01215-4		9.525	4.76	3.81	0.8	2.5										★	★	★	
		VNGA160412DT01215-4		9.525	4.76	3.81	1.2	2.0										★	★	★	

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

DVNN  
Kr:72°30'



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DVJNR/L  
Kr:93°



A170

General turning

PCBN&PCD inserts

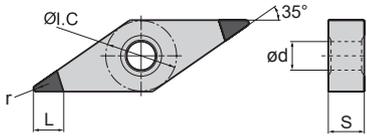




# General Turning Inserts

PCBN&PCD inserts

**VN** (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Working condition											
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>H</b> Super hard material	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>N</b> Non ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy					
				$\varnothing L, C$	S	$\varnothing d$	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011		
Double-sided insert		VNGA160404DS01225-4	S01225	9.525	4.76	3.81	0.4	2.8					★	★	★	★	★	○	○	○		
		VNGA160408DS01225-4		9.525	4.76	3.81	0.8	2.5					★	★	★	★	★	○	○	○		
		VNGA160412DS01225-4		9.525	4.76	3.81	1.2	2.0					★	★	★	★	★	○	○	○		
		VNGA160404DS00815-4	S00815	9.525	4.76	3.81	0.4	2.8					★	★	○							
		VNGA160408DS00815-4		9.525	4.76	3.81	0.8	2.5					★	★	○							
		VNGA160412DS00815-4		9.525	4.76	3.81	1.2	2.0					★	★	○							
		VNGA160404DS01735-4	S01735	9.525	4.76	3.81	0.4	2.8									○	★	○			
		VNGA160408DS01735-4		9.525	4.76	3.81	0.8	2.5									○	★	○			
		VNGA160412DS01735-4		9.525	4.76	3.81	1.2	2.0									○	★	○			
Penetration insert		VNGA160402CE-2	CE	9.525	4.76	3.81	0.2	3.3				○										
		VNGN160404CE-2		9.525	4.76	3.81	0.4	2.8				○										
		VNGN160408CE-2		9.525	4.76	3.81	0.8	2.5														
		VNGN160412CE-2		9.525	4.76	3.81	1.2	2.0				○										
		VNGA160402CT01215-2	T01215	9.525	4.76	3.81	0.2	3.3				★										
		VNGN160404CT01215-2		9.525	4.76	3.81	0.4	2.8				★										
		VNGN160408CT01215-2		9.525	4.76	3.81	0.8	2.5				★										
		VNGN160412CT01215-2		9.525	4.76	3.81	1.2	2.0				★										
		VNGA160402CS01225-2	S01225	9.525	4.76	3.81	0.2	3.3				○										
		VNGN160404CS01225-2		9.525	4.76	3.81	0.4	2.8				○										
		VNGN160408CS01225-2		9.525	4.76	3.81	0.8	2.5														
		VNGN160412CS01225-2		9.525	4.76	3.81	1.2	2.0				○										

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

DVVNN  
Kr:72°30'



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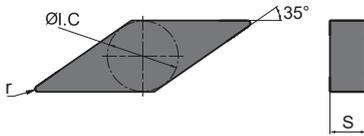
DVJNR/L  
Kr:93°



A170



**VN** (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Working condition											
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material										😊	😊	😊
<b>N</b> Non ferrous metal												

Type	Shape of insert	Model	Specifi-cation	Dimension(mm)			Cast iron				Hardened steel				Powder alloy & Superalloy			
				Øl.C	S	r	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
Intact insert		VNGN160402BE	BE	9.525	4.76	0.4			○									
		VNGN160404BE		9.525	4.76	0.4			○									
		VNGN160408BE		9.525	4.76	0.8												
		VNGN160412BE		9.525	4.76	1.2			○									
		VNGN160402BT01215	T01215	9.525	4.76	0.4			★									
		VNGN160404BT01215		9.525	4.76	0.4			★									
		VNGN160408BT01215		9.525	4.76	0.8			★									
		VNGN160412BT01215		9.525	4.76	1.2			★									
		VNGN160402BS01225	S01225	9.525	4.76	0.4			○									
		VNGN160404BS01225		9.525	4.76	0.4			○									
		VNGN160408BS01225		9.525	4.76	0.8												
		VNGN160412BS01225		9.525	4.76	1.2			○									

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

General turning

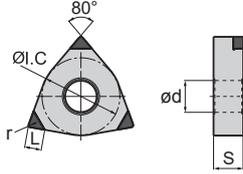
PCBN&PCD inserts



# General Turning Inserts

PCBN&PCD inserts

**WN** (Negative angle)



😊 Good working condition   🙄 Normal working condition   😞 Bad working condition

Workpiece material	Working condition											
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy											😊	😊
<b>H</b> Super hard material										😊	😊	😊
<b>N</b> Non ferrous metal												

General turning

PCBN&PCD inserts

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy				
				Øl.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011	
Single-sided insert		WNGA080404AE-3	AE	12.7	4.76	5.16	0.4	2.5										○	○	○	
		WNGA080408AE-3		12.7	4.76	5.16	0.8	2.4										○	○	○	
		WNGA080412AE-3		12.7	4.76	5.16	1.2	2.3										○	○	○	
		WNGA080404AT01215-3		12.7	4.76	5.16	0.4	2.5										○	○	○	
		WNGA080408AT01215-3	T01215	12.7	4.76	5.16	0.8	2.4										○	○	○	
		WNGA080412AT01215-3		12.7	4.76	5.16	1.2	2.3										○	○	○	
		WNGA080404AS01225-3		12.7	4.76	5.16	0.4	2.5								○	○	○	○	○	○
		WNGA080408AS01225-3	S01225	12.7	4.76	5.16	0.8	2.4								○	○	○	○	○	○
		WNGA080412AS01225-3		12.7	4.76	5.16	1.2	2.3								○	○	○	○	○	○
		WNGA080404AS00815-3	S00815	12.7	4.76	5.16	0.4	2.5								○	○	○			
		WNGA080408AS00815-3		12.7	4.76	5.16	0.8	2.4								○	○	○			
		WNGA080412AS00815-3		12.7	4.76	5.16	1.2	2.3								○	○	○			
		WNGA080404AS01735-3	S01735	12.7	4.76	5.16	0.4	2.5										○	○	○	
		WNGA080408AS01735-3		12.7	4.76	5.16	0.8	2.4										○	○	○	
WNGA080412AS01735-3	12.7	4.76		5.16	1.2	2.3										○	○	○			
Double-sided insert		WNGA080404DE-6	DE	12.7	4.76	5.16	0.4	2.5	○	○											
		WNGA080408DE-6		12.7	4.76	5.16	0.8	2.4	○	○											
		WNGA080412DE-6		12.7	4.76	5.16	1.2	2.3	○	○											
		WNGA080404DT01215-6	T01215	12.7	4.76	5.16	0.4	2.5	★	★											
		WNGA080408DT01215-6		12.7	4.76	5.16	0.8	2.4	★	★											
		WNGA080412DT01215-6		12.7	4.76	5.16	1.2	2.3	★	★											

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order

Applicable tool

DWLNRL  
Kr:95°



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PWLNRL  
Kr:95°



A183

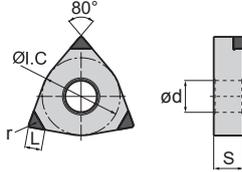
PWLNRL  
Kr:95°



A217



**WN** (Negative angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Working condition											
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>H</b> Super hard material	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>N</b> Non ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊

Type	Shape of insert	Model	Specifi- cation	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy				
				Ø1.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011	
Double-sided insert		WNGA080404DS01225-6	S01225	12.7	4.76	5.16	0.4	2.5	○	○											
		WNGA080408DS01225-6		12.7	4.76	5.16	0.8	2.4	○	○											
		WNGA080412DS01225-6		12.7	4.76	5.16	1.2	2.3	○	○											
		WNGA080404DS00815-6	S00815	12.7	4.76	3.81	0.4	2.5					★	★	○						
		WNGA080408DS00815-6		12.7	4.76	3.81	0.8	2.2					★	★	○						
		WNGA080412DS00815-6		12.7	4.76	3.81	1.2	2.0					★	★	○						
		WNGA080404DS01225-6	S01225	12.7	4.76	3.81	0.4	2.5					★	★	★	★	★				
		WNGA080408DS01225-6		12.7	4.76	3.81	0.8	2.2					★	★	★	★	★				
		WNGA080412DS01225-6		12.7	4.76	3.81	1.2	2.0					★	★	★	★	★				
		WNGA080404DS01735-6	S01735	12.7	4.76	3.81	0.4	2.5								○	★	○			
		WNGA080408DS01735-6		12.7	4.76	3.81	0.8	2.2								○	★	○			
		WNGA080412DS01735-6		12.7	4.76	3.81	1.2	2.0								○	★	○			
Penetration insert		WNGA080404CE-3	CE	12.7	4.76	5.16	0.4	2.5			○										
		WNGN080408CE-3		12.7	4.76	5.16	0.8	2.4				○									
		WNGN080412CE-3		12.7	4.76	5.16	1.2	2.3					○								
		WNGA080404CT01215-3	T01215	12.7	4.76	5.16	0.4	2.5					★								
		WNGN080408CT01215-3		12.7	4.76	5.16	0.8	2.4					★								
		WNGN080412CT01215-3		12.7	4.76	5.16	1.2	2.3					★								
		WNGA080404CS01225-3	S01225	12.7	4.76	5.16	0.4	2.5					○								
		WNGN080408CS01225-3		12.7	4.76	5.16	0.8	2.4					○								
		WNGN080412CS01225-3		12.7	4.76	5.16	1.2	2.3					○								

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

DWLNRL  
Kr:95°



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PWLNRL  
Kr:95°



A183

PWLNRL  
Kr:95°



A217

General turning

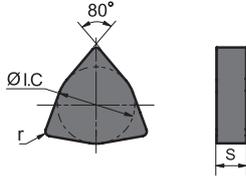
PCBN&PCD inserts



# TURNING / General Turning Inserts

PCBN&PCD inserts

**WN**   (Negative angle)



😊 Good working condition   🙄 Normal working condition   😞 Bad working condition

Workpiece material	Working Condition											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material									😊	😊	😊	😊
<b>N</b> Non ferrous metal												

General turning

PCBN&PCD inserts

Type	Shape of insert	Model	Specifi-cation	Dimension(mm)			Cast iron				Hardened steel				Powder alloy & Superalloy		
				ØI.C	S	r	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011
Intact insert		WNGN080404BE	BE	12.7	4.76	0.4			○								
		WNGN080408BE		12.7	4.76	0.8			○								
		WNGN080412BE		12.7	4.76	1.2			○								
		WNGN080404BT01215	T01215	12.7	4.76	0.4			★								
		WNGN080408BT01215		12.7	4.76	0.8			★								
		WNGN080412BT01215		12.7	4.76	1.2			★								
		WNGN080404BS01225	S01225	12.7	4.76	0.4			○								
		WNGN080408BS01225		12.7	4.76	0.8			○								
		WNGN080412BS01225		12.7	4.76	1.2			○								

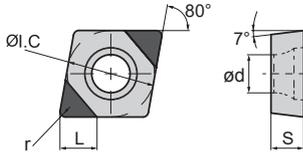
According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order



**CC** (Positive angle)



☺ Good working condition    😐 Normal working condition    ☹ Bad working condition

Workpiece material	Working condition												
	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>K</b> Cast iron	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>S</b> Heat resistant alloy, Ti alloy	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>H</b> Super hard material	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
<b>N</b> Non ferrous metal	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺

Insert shape	Specification	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy			
		Ø1.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
	CCGW060202AE-2	6.35	2.38	2.8	0.2	2.5	○	○								○	○	○
	CCGW060204AE-2	6.35	2.38	2.8	0.4	2.5	○	○								○	○	○
	CCGW060208AE-2	6.35	2.38	2.8	0.8	2.4	○	○								○	○	○
	CCGW060202AS01225-2	6.35	2.38	2.8	0.2	2.5					○	○	○	○		○	○	○
	CCGW060204AS01225-2	6.35	2.38	2.8	0.4	2.5					○	○	○	○		○	○	○
	CCGW060208AS01225-2	6.35	2.38	2.8	0.8	2.4					○	○	○	○		○	○	○
	CCGW060202AT01225-2	6.35	2.38	2.8	0.2	2.5	○	○								○	○	○
	CCGW060204AT01225-2	6.35	2.38	2.8	0.4	2.5	○	○								○	○	○
	CCGW060208AT01225-2	6.35	2.38	2.8	0.8	2.4	○	○								○	○	○
	CCGW09T302AE-2	9.525	3.97	4.4	0.2	2.5	○	○								○	○	○
	CCGW09T304AE-2	9.525	3.97	4.4	0.4	2.5	○	○								○	○	○
	CCGW09T308AE-2	9.525	3.97	4.4	0.8	2.4	○	○								○	○	○
	CCGW09T302AS01225-2	9.525	3.97	4.4	0.2	2.5					○	○	○	○		○	○	○
	CCGW09T304AS01225-2	9.525	3.97	4.4	0.4	2.5					○	○	○	○		○	○	○
	CCGW09T308AS01225-2	9.525	3.97	4.4	0.8	2.4					○	○	○	○		○	○	○
	CCGW09T302AT01225-2	9.525	3.97	4.4	0.2	2.5	○	○								○	○	○
	CCGW09T304AT01225-2	9.525	3.97	4.4	0.4	2.5	○	○								○	○	○
	CCGW09T308AT01225-2	9.525	3.97	4.4	0.8	2.4	○	○								○	○	○
	CCGW120402AE-2	12.7	4.76	5.5	0.2	2.5	○	○								○	○	○
	CCGW120404AE-2	12.7	4.76	5.5	0.4	2.5	○	○								○	○	○
	CCGW120408AE-2	12.7	4.76	5.5	0.8	2.4	○	○								○	○	○
	CCGW120402AS01225-2	12.7	4.76	5.5	0.2	2.5					○	○	○	○		○	○	○
	CCGW120404AS01225-2	12.7	4.76	5.5	0.4	2.5					○	○	○	○		○	○	○
	CCGW120408AS01225-2	12.7	4.76	5.5	0.8	2.4					○	○	○	○		○	○	○
	CCGW120402AT01225-2	12.7	4.76	5.5	0.2	2.5	○	○								○	○	○
	CCGW120404AT01225-2	12.7	4.76	5.5	0.4	2.5	○	○								○	○	○
	CCGW120408AT01225-2	12.7	4.76	5.5	0.8	2.4	○	○								○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

SCACR/L  
Kr:90°



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SCLCR/L  
Kr:95°



A185

SCLCR/L  
Kr:95°



A218

SCFCR/L  
Kr:90°



A232

SCLCR/L  
Kr:95°



A233

General turning

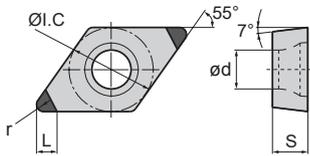
PCBN&PCD inserts



# General Turning Inserts

PCBN&PCD inserts

**DC** (Positive angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Working condition											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material										😊	😊	😊
<b>N</b> Non ferrous metal												

General turning

PCBN&PCD inserts

Insert shape	Specification	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy			
		ØI.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
	DCGW070202AE-2	6.35	2.38	2.8	0.2	2.7	○	○								○	○	○
	DCGW070204AE-2	6.35	2.38	2.8	0.4	2.5	○	○								○	○	○
	DCGW070208AE-2	6.35	2.38	2.8	0.8	2.1	○	○								○	○	○
	DCGW070202AS01225-2	6.35	2.38	2.8	0.2	2.7					○	○	○	○		○	○	○
	DCGW070204AS01225-2	6.35	2.38	2.8	0.4	2.5					○	○	○	○		○	○	○
	DCGW070208AS01225-2	6.35	2.38	2.8	0.8	2.1					○	○	○	○		○	○	○
	DCGW070202AT01225-2	6.35	2.38	2.8	0.2	2.7	○	○								○	○	○
	DCGW070204AT01225-2	6.35	2.38	2.8	0.4	2.5	○	○								○	○	○
	DCGW070208AT01225-2	6.35	2.38	2.8	0.8	2.1	○	○								○	○	○
	DCGW11T302AE-2	9.525	3.97	4.4	0.2	2.7	○	○								○	○	○
	DCGW11T304AE-2	9.525	3.97	4.4	0.4	2.5	○	○								○	○	○
	DCGW11T308AE-2	9.525	3.97	4.4	0.8	2.1	○	○								○	○	○
	DCGW11T302AS01225-2	9.525	3.97	4.4	0.2	2.7					○	○	○	○		○	○	○
	DCGW11T304AS01225-2	9.525	3.97	4.4	0.4	2.5					○	○	○	○		○	○	○
	DCGW11T308AS01225-2	9.525	3.97	4.4	0.8	2.1					○	○	○	○		○	○	○
	DCGW11T302AT01225-2	9.525	3.97	4.4	0.2	2.7	○	○								○	○	○
	DCGW11T304AT01225-2	9.525	3.97	4.4	0.4	2.5	○	○								○	○	○
	DCGW11T308AT01225-2	9.525	3.97	4.4	0.8	2.1	○	○								○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

**SDACR/L**  
Kr:90°



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**SDJCR/L**  
Kr:93°



A187

**SDNCN**  
Kr:62°30'



A188

**SDQCR/L**  
Kr:107°30'



A219

**SDUCR/L**  
Kr:93°



A220

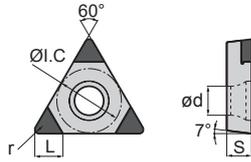
**SDZCR/L**  
Kr:95°



A221



**TC** (Positive angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Working condition											
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material										😊	😊	😊
<b>N</b> Non ferrous metal												

Insert shape	Sepcification	Dimnsion(mm)					Cast iron				Hardened steel				Powder alloy& Superalloy			
		ØI.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
	TCGW090202AE-3	5.56	2.38	2.5	0.2	2.5	○	○								○	○	○
	TCGW090204AE-3	5.56	2.38	2.5	0.4	2.5	○	○								○	○	○
	TCGW090208AE-3	5.56	2.38	2.5	0.8	2.2	○	○								○	○	○
	TCGW090202AS01225-3	5.56	2.38	2.5	0.2	2.5					○	○	○	○		○	○	○
	TCGW090204AS01225-3	5.56	2.38	2.5	0.4	2.5					○	○	○	○		○	○	○
	TCGW090208AS01225-3	5.56	2.38	2.5	0.8	2.2					○	○	○	○		○	○	○
	TCGW090202AT01225-3	5.56	2.38	2.5	0.2	2.5	○	○								○	○	○
	TCGW090204AT01225-3	5.56	2.38	2.5	0.4	2.5	○	○								○	○	○
	TCGW090208AT01225-3	5.56	2.38	2.5	0.8	2.2	○	○								○	○	○
	TCGW110202AE-3	6.35	2.38	2.8	0.2	2.5	○	○								○	○	○
	TCGW110204AE-3	6.35	2.38	2.8	0.4	2.5	○	○								○	○	○
	TCGW110208AE-3	6.35	2.38	2.8	0.8	2.2	○	○								○	○	○
	TCGW110202AS01225-3	6.35	2.38	2.8	0.2	2.5					○	○	○	○		○	○	○
	TCGW110204AS01225-3	6.35	2.38	2.8	0.4	2.5					○	○	○	○		○	○	○
	TCGW110208AS01225-3	6.35	2.38	2.8	0.8	2.2					○	○	○	○		○	○	○
	TCGW110202AT01225-3	6.35	2.38	2.8	0.2	2.5	○	○								○	○	○
	TCGW110204AT01225-3	6.35	2.38	2.8	0.4	2.5	○	○								○	○	○
	TCGW110208AT01225-3	6.35	2.38	2.8	0.8	2.2	○	○								○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

STACR/L  
Kr:90°



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STFCR/L  
Kr:90°



A198

STGCR/L  
Kr:91°



A199

STECR/L  
Kr:60°



A200

STFCR/L  
Kr:90°



A223

General turning

PCBN&PCD inserts

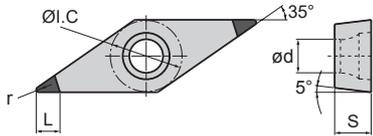




# TURNING / General Turning Inserts

PCBN&PCD inserts

**VB** (Positive angle)



😊 Good working condition   🙄 Normal working condition   😞 Bad working condition

Workpiece material	K Cast iron	S Heat resistant alloy, Ti alloy	H Super hard material	N Non ferrous metal
	😊😊😊😊	😊😊😊😊	😊😊😊😊	😊😊😊😊
	😊😊😊😊	😊😊😊😊	😊😊😊😊	😊😊😊😊
	😊😊😊😊	😊😊😊😊	😊😊😊😊	😊😊😊😊
	😊😊😊😊	😊😊😊😊	😊😊😊😊	😊😊😊😊
	😊😊😊😊	😊😊😊😊	😊😊😊😊	😊😊😊😊

Insert shape	Specification	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy		
		ØI.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011
	<b>VBGW160402AE-2</b>	9.525	4.76	4.4	0.2	3.3	○	○							○	○	○
	<b>VBGW160404AE-2</b>	9.525	4.76	4.4	0.4	2.8	○	○							○	○	○
	<b>VBGW160408AE-2</b>	9.525	4.76	4.4	0.8	2.5	○	○							○	○	○
	<b>VBGW160402AS01225-2</b>	9.525	4.76	4.4	0.2	3.3					○	○	○	○	○	○	○
	<b>VBGW160404AS01225-2</b>	9.525	4.76	4.4	0.4	2.8					○	○	○	○	○	○	○
	<b>VBGW160408AS01225-2</b>	9.525	4.76	4.4	0.8	2.5					○	○	○	○	○	○	○
	<b>VBGW160402AT01225-2</b>	9.525	4.76	4.4	0.2	3.3	○	○							○	○	○
	<b>VBGW160404AT01225-2</b>	9.525	4.76	4.4	0.4	2.8	○	○							○	○	○
	<b>VBGW160408AT01225-2</b>	9.525	4.76	4.4	0.8	2.5	○	○							○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order

Applicable tool

**SVJBR/L**  
Kr:93°



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**SVABR/L**  
Kr:90°



A190

**SVVBN**  
Kr:72°30'



A191

**SVQBR/L**  
Kr:107°30'



A226

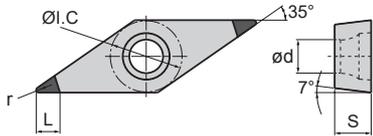
**SVUBR/L**  
Kr:93°



A227



**VC** (Positive angle)



😊 Good working condition   😐 Normal working condition   😞 Bad working condition

Workpiece material	Working condition											
	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>K</b> Cast iron	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
<b>S</b> Heat resistant alloy, Ti alloy										😊	😊	😊
<b>H</b> Super hard material									😊	😊	😊	😊
<b>N</b> Non ferrous metal												

Insert shape	Specification	Dimension(mm)					Cast iron				Hardened steel				Powder alloy & Superalloy		
		ØI.C	S	ød	r	L	BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011
	VCGW160402AE-2	9.525	4.76	4.4	0.2	3.3	○	○							○	○	○
	VCGW160404AE-2	9.525	4.76	4.4	0.4	2.8	○	○							○	○	○
	VCGW160408AE-2	9.525	4.76	4.4	0.8	2.5	○	○							○	○	○
	VCGW160402AS01225-2	9.525	4.76	4.4	0.2	3.3					○	○	○	○	○	○	○
	VCGW160404AS01225-2	9.525	4.76	4.4	0.4	2.8					○	○	○	○	○	○	○
	VCGW160408AS01225-2	9.525	4.76	4.4	0.8	2.5					○	○	○	○	○	○	○
	VCGW160402AT01225-2	9.525	4.76	4.4	0.2	3.3	○	○							○	○	○
	VCGW160404AT01225-2	9.525	4.76	4.4	0.4	2.8	○	○							○	○	○
	VCGW160408AT01225-2	9.525	4.76	4.4	0.8	2.5	○	○							○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

When using PCBN blades, please try to keep the cutting depth below 0.5mm.

★ Recommended grade (always stock available)   ○ Make-to-order

General turning

PCBN&PCD inserts

Applicable tool



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A224

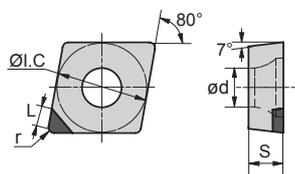
A225



# TURNING / General Turning Inserts

PCBN&PCD inserts

**CC** (Positive angle)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	<b>K</b> Cast iron				
	<b>S</b> Heat resistant alloy, Ti alloy				
	<b>H</b> Super hard material				
	<b>N</b> Non ferrous metal	😊	😊	😐	😞

Type	Shape	Specification	Dimension(mm)					Grade			
			ØI.C	S	ød	r	L	DN0121	DN0511	DN1021	DN3021
0° rake angle		CCGW060202AF	6.35	2.38	2.8	0.2	2.6	○	○	○	○
		CCGW060204AF	6.35	2.38	2.8	0.4	2.5	★	★	★	★
		CCGW060208AF	6.35	2.38	2.8	0.8	2.4	○	○	○	○
		CCGW09T302AF	9.525	3.97	4.4	0.2	2.6	○	○	○	○
		CCGW09T304AF	9.525	3.97	4.4	0.4	2.5	○	○	○	○
		CCGW09T308AF	9.525	3.97	4.4	0.8	2.4	★	★	★	★
		CCGW120402AF	12.7	4.76	5.5	0.2	2.6	○	○	○	○
		CCGW120404AF	12.7	4.76	5.5	0.4	2.5	○	○	○	○
		CCGW120408AF	12.7	4.76	5.5	0.8	2.4	★	★	★	★
7° rake angle		CCMX060202AF	6.35	2.38	2.8	0.2	2.6	○	○	○	○
		CCMX060204AF	6.35	2.38	2.8	0.4	2.5	○	○	○	○
		CCMX060208AF	6.35	2.38	2.8	0.8	2.4	○	○	○	○
		CCMX09T302AF	9.525	3.97	4.4	0.2	2.6	○	○	○	○
		CCMX09T304AF	9.525	3.97	4.4	0.4	2.5	○	○	○	○
		CCMX09T308AF	9.525	3.97	4.4	0.8	2.4	○	○	○	○
		CCMX120402AF	12.7	4.76	5.5	0.2	2.6	○	○	○	○
		CCMX120404AF	12.7	4.76	5.5	0.4	2.5	○	○	○	○
		CCMX120408AF	12.7	4.76	5.5	0.8	2.4	○	○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available)    ○ Make-to-order

Applicable tool

SCACR/L  
Kr:90°



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SCLCR/L  
Kr:95°



A185

SCLCR/L  
Kr:95°



A218

SCFCR/L  
Kr:90°



A232

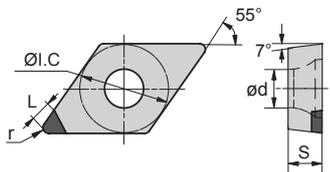
SCLCR/L  
Kr:95°



A233



**DC** (Positive angle)



😊 Good working condition   😐 Normal working condition   😞 Bad working condition

Workpiece material	<b>K</b> Cast iron				
	<b>S</b> Heat resistant alloy, Ti alloy				
	<b>H</b> Super hard material				
	<b>N</b> Non ferrous metal	😊	😊	😐	😞

Type	Shape	Specification	Dimension(mm)					Grade			
			ØI.C	S	ød	r	L	DN0121	DN0511	DN1021	DN3021
0° rake angle		DCGW070202AF	6.35	2.38	2.8	0.2	2.7	○	○	○	○
		DCGW070204AF	6.35	2.38	2.8	0.4	2.5	○	○	○	○
		DCGW070208AF	6.35	2.38	2.8	0.8	2.1	★	★	★	★
		DCGW11T302AF	9.525	3.97	4.4	0.2	2.7	○	○	○	○
		DCGW11T304AF	9.525	3.97	4.4	0.4	2.5	○	○	○	○
		DCGW11T308AF	9.525	3.97	4.4	0.8	2.1	★	★	★	★
7° rake angle		DCMX070202AF	6.35	2.38	2.8	0.2	2.7	○	○	○	○
		DCMX070204AF	6.35	2.38	2.8	0.4	2.5	○	○	○	○
		DCMX070208AF	6.35	2.38	2.8	0.8	2.1	○	○	○	○
		DCMX11T302AF	9.525	3.97	4.4	0.2	2.7	○	○	○	○
		DCMX11T304AF	9.525	3.97	4.4	0.4	2.5	○	○	○	○
		DCMX11T308AF	9.525	3.97	4.4	0.8	2.1	○	○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available)   ○ Make-to-order

General turning

PCBN&PCD inserts

Applicable tool

**SDACR/L**  
Kr:90°



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**SDJCR/L**  
Kr:93°



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**SDNCN**  
Kr:62°30'



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**SDQCR/L**  
Kr:107°30'



A219

**SDUCR/L**  
Kr:93°



A220

**SDZCR/L**  
Kr:95°



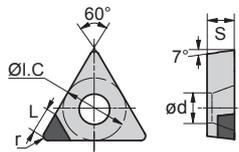
A221



# General Turning Inserts

PCBN&PCD inserts

## TC (Positive inserts)



😊 Good working condition   🙄 Normal working condition   😞 Bad working condition

Workpiece material	K	Cast iron				
	S	Heat resistant alloy, Ti alloy				
	H	Super hard material				
	N	Non ferrous metal	😊	😊	😞	😞

Type	Shape	Specification	Dimension(mm)					Grade			
			ØI.C	S	ød	r	L	DN0121	DN0511	DN1021	DN3021
0° rake angle		TCGW090202AF	5.56	2.38	2.5	0.2	2.5	○	○	○	○
		TCGW090204AF	5.56	2.38	2.5	0.4	2.5	○	○	○	○
		TCGW090208AF	5.56	2.38	2.5	0.8	2.2	★	★	★	★
		TCGW110202AF	6.35	2.38	2.8	0.2	2.5	○	○	○	○
		TCGW110204AF	6.35	2.38	2.8	0.4	2.5	○	○	○	○
		TCGW110208AF	6.35	2.38	2.8	0.8	2.2	★	★	★	★
7° rake angle		TCMX090202AF	5.56	2.38	2.5	0.2	2.5	○	○	○	○
		TCMX090204AF	5.56	2.38	2.5	0.4	2.5	○	○	○	○
		TCMX090208AF	5.56	2.38	2.5	0.8	2.2	○	○	○	○
		TCMX110202AF	6.35	2.38	2.8	0.2	2.5	○	○	○	○
		TCMX110204AF	6.35	2.38	2.8	0.4	2.5	○	○	○	○
		TCMX110208AF	6.35	2.38	2.8	0.8	2.2	○	○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available)   ○ Make-to-order

### Applicable tool

STACR/L  
Kr:90°



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STFCR/L  
Kr:90°



A198

STGCR/L  
Kr:91°



A199

STECR/L  
Kr:60°



A200

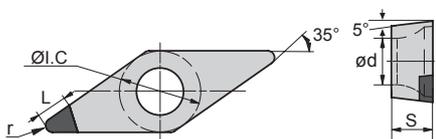
STFCR/L  
Kr:90°



A223



**VB** (Positive inserts)



😊 Good working condition   🙄 Normal working condition   😞 Bad working condition

Workpiece material	<b>K</b> Cast iron				
	<b>S</b> Heat resistant alloy, Ti alloy				
	<b>H</b> Super hard material				
	<b>N</b> Non ferrous metal	😊	😊	😞	😞

Type	Shape	Specification	Dimension(mm)					Grade			
			ØI.C	S	ød	r	L	DN0121	DN0511	DN1021	DN3021
0° rake angle		<b>VBGW160402AF</b>	9.525	4.76	4.4	0.2	3.3	○	○	○	○
		<b>VBGW160404AF</b>	9.525	4.76	4.4	0.4	2.8	○	○	○	○
		<b>VBGW160408AF</b>	9.525	4.76	4.4	0.8	2.5	★	★	★	★
5° rake angle		<b>VBMX160402AF</b>	9.525	4.76	4.4	0.2	3.3	○	○	○	○
		<b>VBMX160404AF</b>	9.525	4.76	4.4	0.4	2.8	○	○	○	○
		<b>VBMX160408AF</b>	9.525	4.76	4.4	0.8	2.5	○	○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available)   ○ Make-to-order

General turning

PCBN&PCD inserts

Applicable tool

**SVJBR/L**  
Kr:93°



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**SVABR/L**  
Kr:90°



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**SVVBN**  
Kr:72°30'



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**SVQBR/L**  
Kr:107°30'



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**SVUBR/L**  
Kr:93°



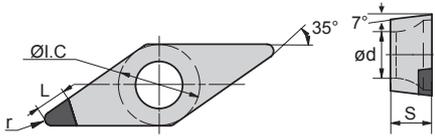
A227



# TURNING / General Turning Inserts

PCBN&PCD inserts

## VC □ □ (Positive inserts)



😊 Good working condition    😐 Normal working condition    😞 Bad working condition

Workpiece material	Cast iron	Heat resistant alloy, Ti alloy	Super hard material	Non ferrous metal
<b>K</b> Cast iron				
<b>S</b> Heat resistant alloy, Ti alloy				
<b>H</b> Super hard material				
<b>N</b> Non ferrous metal	😊	😊	😊	😊

Type	Shape	Specification	Dimension(mm)					Grade			
			ØI.C	S	ød	r	L	DN0121	DN0511	DN1021	DN3021
0° rake angle		VCGW160402AF	9.525	4.76	4.4	0.2	3.3	○	○	○	○
		VCGW160404AF	9.525	4.76	4.4	0.4	2.8	○	○	○	○
		VCGW160408AF	9.525	4.76	4.4	0.8	2.5	○	○	○	○
7° rake angle		VCMX160402AF	9.525	4.76	4.4	0.2	3.3	○	○	○	○
		VCMX160404AF	9.525	4.76	4.4	0.4	2.8	○	○	○	○
		VCMX160408AF	9.525	4.76	4.4	0.8	2.5	○	○	○	○

According to processing requirements, the size and number of non-standard tool nose arcs can be provided.

★ Recommended grade (always stock available)    ○ Make-to-order

### Applicable tool

**SVVCN**  
Kr:72°30'



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**SVJCR/L**  
Kr:93°



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**SVQCR/L**  
Kr:107°30'



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**SVUCR/L**  
Kr:93°



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**Abnormal failure and solutions for cast iron machining**

	Abnormal failure	Solution
<b>Breakage</b>	Breakage occurs on chamfer of rake face	Enlarge chamfered negative rake angle
	Edge crashing appears when finishing grey cast iron	
<b>Abrasion</b>	Abrasion occurs when machining nodular cast iron	Change to dry cutting
	Abrasion under dry cutting conditions	Reduce cutting speed
	Abrasion occurs when machining grey cast iron	Change to dry cutting, increase cutting speed
<b>Surface quality</b>	Bad surface finish	Increase cutting speed, increase nose radius, reduce feed rate
	Bad cylindricity and coaxiality	Reduce nose radius, improve stability, change to positive insert
	Burrs	Change to positive insert, reduce chamfer width

**Abnormal failure and solutions for hardened steel**

	Abnormal failure	Solution	
<b>Breakage</b>	Cutting edge breakage	Enlarge chamfered negative rake angle; raise cutting speed and reduce feed	
	Flaking and crater wear on rake face	Reduce cutting speed	
	Thermal cracks	Change to dry cutting; reduce cutting speed	
<b>Abrasion</b>	Wear occurs on chamfer of rake face	Reduce cutting speed	
	Rapid wear when finishing grey cast iron		
<b>Surface quality</b>	Bad surface finish	Vibration	Reduce chamfered negative rake angle; reduce nose radius; reduce feed rate; improve stability
		Tool mark	Increase nose radius; reduce feed rate; change to dry cutting; increase cutting speed
	Bad cylindricity and coaxiality		Reduce nose radius; improve stability; change to positive insert





# TURNING / General Turning Inserts

Ceramic inserts

General turning

Ceramic inserts code key

## Ceramic inserts code key

Insert shape		
A	B	C
D	E	H
K	L	M
P	R	S
T	V	W

Tolerance class							
Code	Nose height M Tolerance(mm)	Inscribed circle Tolerance(mm)	Thickness S Tolerance(mm)	Code	Nose height M Tolerance(mm)	Inscribed circle Tolerance(mm)	Thickness S Tolerance(mm)
A	±0.005	±0.025	±0.025	J	±0.005	±0.05-±0.13	±0.025
F	±0.005	±0.013	±0.025	K	±0.013	±0.05-±0.13	±0.025
C	±0.013	±0.025	±0.025	L	±0.025	±0.05-±0.13	±0.025
H	±0.013	±0.013	±0.025	M	±0.08-±0.18	±0.05-±0.13	±0.13
E	±0.025	±0.025	±0.025	N	±0.08-±0.18	±0.05-±0.13	±0.025
G	±0.025	±0.025	±0.13	U	±0.13-±0.38	±0.08-±0.25	±0.13

**R P G N**

Clearance angle of main cutting edge			
Code	Clearance angle	Code	Clearance angle
A	3°	B	5°
C	7°	D	15°
E	20°	F	25°
G	30°	N	0°
P	11°	O	Other clearance angle

Chipbreaker and clamping system		
Code	With/Without hole	Section plane of insert
N	Without	
B	With	
C	With	
A	With	
W	With	
Q	With	
X	---	Special



Length of cutting edge						
Diameter of IC (mm)	Insert shape					
	C	D	S	T	V	W
3.97				06		
5.0						
5.56				09		
6.0						
6.35	06	07		11	11	
8.0						
9.525	09	11	09	16	16	06
10.0						
12.0						
12.7	12	15	12	22	22	08
15.875	16		15	27		
16.0		19				
19.05	19		19	33		
20.0						
25.0	25	25				
25.4			25			
31.75						
32						

Insert thickness			
<p>Thickness is defined as height from bottom of insert to the highest part of cutting edge.</p>			
Code	Insert thickness(mm)	Code	Insert thickness(mm)
02	2.38	06	6.35
T2	2.58	T6	6.75
03	3.18	07	7.94
T3	3.97	09	9.52
04	4.76	T9	9.72
T4	4.96	11	11.11
05	5.56	12	12.70
T5	5.95		

Nose radius code	
Code	Nose radius(mm)
00	No radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	Others
Diameter of insert (Metric)	Round insert

General turning  
Ceramic inserts code key

**09 07 00 T 010 20 - V**

Type of cutting edge		
Code	Type of cutting edge	Picture
E	Honing	
T	Chamfering	
S	Chamfering + honing	
F	Sharp edges	

Chamfer width (mm)			
010	0.10	040	0.40
015	0.15	045	0.45
020	0.20	050	0.50
025	0.25	100	1.00
030	0.30	200	2.00
035	0.35		

Chamfer angle	
05	5°
10	10°
15	15°
20	20°
25	25°
30	30°

V-type positioning surface



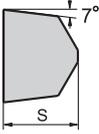
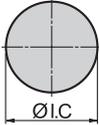
# TURNING / General Turning Inserts

## Ceramic inserts

General turning

Ceramic inserts

😊 Good working condition   🙄 Normal working condition   😞 Bad working condition

Inserts shape	Type	Dimensions(mm)		Grade
		ØI.C	S	CN3100
	<b>RCGN090700T01015-V</b>	9.525	7.94	○
	<b>RCGN090700T01520-V</b>	9.525	7.94	○
	<b>RCGN090700T01020-V</b>	9.525	7.94	●
	<b>RCGN120700T01015-V</b>	12.7	7.94	○
	<b>RCGN120700T01020-V</b>	12.7	7.94	○
	<b>RCGN120700T01520-V</b>	12.7	7.94	○

Workpiece material

<b>K</b> Cast iron	😞
<b>S</b> Heat resistant alloy	🙄
<b>H</b> Super hard material	😊

**Applicable tool**

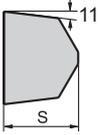
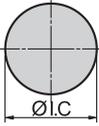


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2. Tailor-made nonstandard CRXCR

★ Recommended grade (always stock available)   ● Available grade (always stock available)   ○ Make-to-order

😊 Good working condition   🙄 Normal working condition   😞 Bad working condition

Inserts shape	Type	Dimensions(mm)		Grade
		ØI.C	S	CN3100
	<b>RPGN090700T01015-V</b>	9.525	7.94	○
	<b>RPGN090700T01520-V</b>	9.525	7.94	○
	<b>RPGN090700T01020-V</b>	9.525	7.94	●
	<b>RPGN120700T01015-V</b>	12.7	7.94	○
	<b>RPGN120700T01020-V</b>	12.7	7.94	○
	<b>RPGN120700T01520-V</b>	12.7	7.94	○

Workpiece material

<b>K</b> Cast iron	😞
<b>S</b> Heat resistant alloy	🙄
<b>H</b> Super hard material	😊

**Applicable tool**



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2. Tailor-made nonstandard CRXCR

★ Recommended grade (always stock available)   ● Available grade (always stock available)   ○ Make-to-order

# **D**-type double-clamping tool holder





## Applications sketch map of turning tools

### External and internal turning

General turning

Applications sketch map of turning tools

External turning	Tool holder type						
	DTGNR/L□□	DSBNR/L□□	PCBNR/L□□	PSBNR/L□□	PSSNR/L□□	PTGNR/L□□	PTTNR/L□□
	SCACR/L□□	SSBCR/L□□	SSSCR/L□□	STACR/L□□	STGCR/L□□	STECR/L□□	SWACR/L□□

External and end surface turning	Tool holder type	
	DCLNR/L□□	DWLNRL/L□□
	PCLNR/L□□	PWLNRL/L□□
	SCLCR/L□□	

Profile turning	Tool holder type			
	DVVNN□□	PDPNN□□	PSDNN□□	SDNCN□□
	SVVBN□□	SVVCN□□	SSDCN□□	SRDCN□□
	CKNNR/L□□			

Profile turning	Tool holder type			
	DDJNR/L□□	DVJNR/L□□	PDJNR/L□□	
	SDACR/L□□	SDJCR/L□□	SVABR/L□□	
	SVJBR/L□□	SVJCR/L□□	CKJNR/L□□	

Profile turning	Tool holder type	End surface turning	Tool holder type	
	SRGCR/L□□		PSKNR/L□□	PTFNR/L□□
			SSKCR/L□□	STFCR/L□□

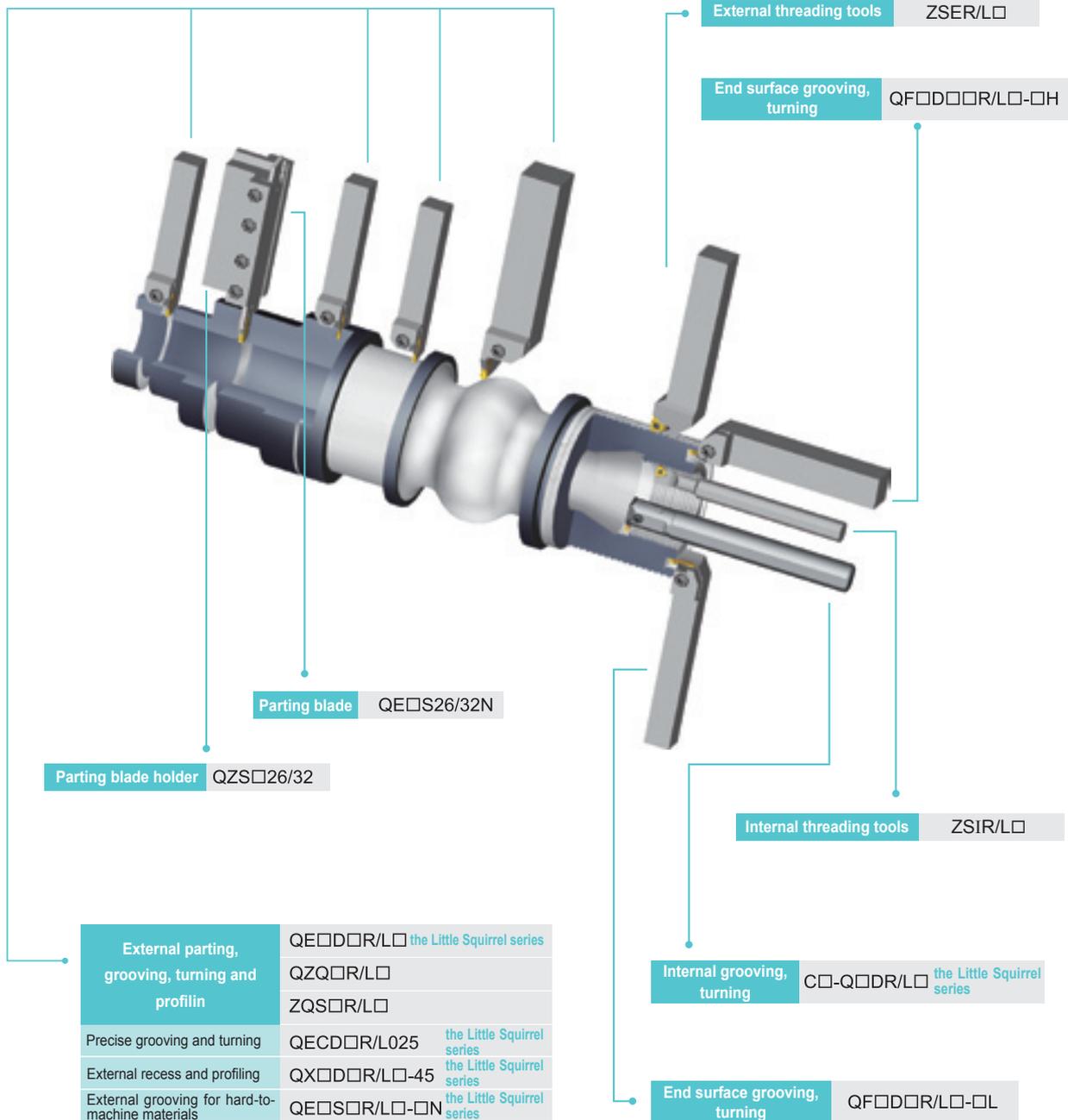
Tool holders for internal turning (Steel tool shank)						
	S□-PSKNR/L□	S□-PCLNR/L□	S□-PDPNR/L□	S□-PDUNR/L□	S□-SDQCR/L□	S□-SDZCR/L□
	S□-PTFNR/L□	S□-PWLNR/L□		S□-SDUCR/L□	S□-SDQPR/L□	
	S□-SCFCR/L□	S□-SCLCR/L□		S□-SDUPR/L□	S□-SVQBR/L□	
	S□-SSKCR/L□	S□-SCLPR/L□		S□-SVUBR/L□	S□-SVQCR/L□	
	S□-STFCR/L□			S□-SVUCR/L□		
	S□-STUPR/L□					

Tool holders for internal turning (Cemented carbide tool shank)				
	C□-STUPR/L□	C□-SCLPR/L□	C□-SDUPR/L□	C□-SDQPR/L□
		C□-SVUCR/L□	C□-SVQCR/L□	



● Parting, grooving and threading tools



General turning

Applications sketch map of turning tools



## How to select external turning tools

### How to select external turning tools

#### Explanation of external turning tools detailed table

- Listed according to clamping types.

Approach angle of tools

Tools type

The first 4 letters in the type description stands for tool shape and application

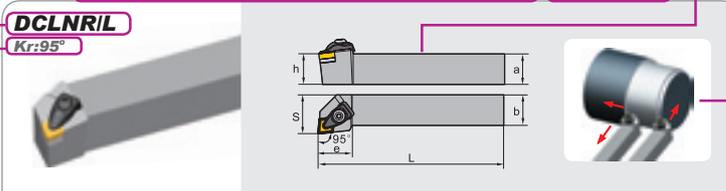
Inserts type

Specification chart

Application chart

The arrow shows suitable applications such as external turning, profiling and end turning, etc.

Corresponding tool holders of insert **CN**   **D-type clamping**



Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring
	R	L	a	b	L	h	s	e						
<b>DCLNR/L</b>	▲	△	16	16	100	16	20	24	CM5×22C	C09BM	WH30L	C1RA	SM5×8.65XA1	SPR6
	▲	△	20	20	125	20	25	24						
	▲	△	25	25	150	25	32	24						
	▲	△	20	20	125	20	25	28	CM6×25C	C12BM	WH40L	C2RA	SM6×10XA1	SPR4
	▲	△	25	25	150	25	32	28						
▲	△	32	25	170	32	32	28							

▲ Stock available    △ Make-to-order

Applicable inserts						
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining Without chipbreaker	PCBN&PCD inserts
Inserts shape	<b>DF</b> Wiper A54	<b>WGM</b> Wiper A55	<b>DR</b> Double side A58	<b>HDR</b> A59	<b>Without chipbreaker</b> A59	<b>PCBN&amp;PCD inserts</b> A118
	<b>WGF</b> Wiper A54	<b>PM</b> A55	<b>DR</b> Single side A58	<b>HPR</b> A59		A118 -A119
	<b>SF</b> A54	<b>DM</b> A56	<b>ER</b> Double side A58			A119
	<b>EF</b> A54	<b>EM</b> A56	<b>ER</b> Single side A58			
	<b>NF</b> A55	<b>NM</b> A57	<b>SNR</b> Double side A58			
			<b>LR</b> Single side A57			
Tool holder type	<b>DCLNR/L</b> □□□□/K/M09	CN□□0903□□	CN□□0903□□			
	<b>DCLNR/L</b> □□□□/M/P12	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□

Products specification

Including product description, stock (left and right hand), basic dimensions and applicable spare parts.

Applicable inserts

Including applications of inserts, reference page, insert shape and corresponding tool holders.



# TURNING



## External Turning Tools

**External turning tools overview** ● A158-A161

**External turning tools code key** ● A162-A163

**Detailed table of external turning tools** ● A166-A204

External turning tool holders by D type clamping ● A166-A171

External turning tool holders by P type clamping ● A172-A183

External turning tool holders by S type clamping ● A184-A203

External turning tool holders by C type clamping ● A204

**Detailed table of external turning tools  
(ceramic)** ● A205







# TURNING / General Turning Tools

## External turning tools overview

General turning

External turning tools overview

Clamping system	Tool type	Approach angle(Kr°)	Turning type						Applicable workpiece shape		Page
			External turning	End surface turning	External and end surface turning	Profile turning	Profile turning	Profile turning	Short, Thick	Thin, Long	
											
<b>D</b>	 DCLNR/L	95			☺				☺		A166
	 DDJNR/L	93					☺		☺	☺	A167
	 DSBnr/L	75	☺						☺		A168
	 DTGnr/L	91	☺						☺	☺	A169
	 DVVNN	72.5						☺	☺		A170
	 DVJnr/L	93					☺		☺	☺	A170
	 DWLnr/L	95			☺				☺		A171
<b>P</b>	 PCBnr/L	75	☺						☺		A172
	 PCLnr/L	95			☺				☺		A173
	 PDJnr/L	93					☺		☺	☺	A174
	 PDPNN	62.5						☺	☺		A175

☺ Recommended    ☺ Available



Clamping system	Tool type	Approach angle(Kr°)	Turning type						Applicable workpiece shape		Page
			External turning	End surface turning	External and end surface turning	Profile turning	Profile turning	Profile turning	Short, Thick	Thin, Long	
<b>P</b>	PSBNR/L	75	☺						☺		A176
	PSDNN	45						☺	☺		A177
	PSKNR/L	75		☺					☺		A178
	PSSNR/L	45	☺						☺		A179
	PTFNR/L	90		☺					☺	☺	A180
	PTTNR/L	60	☺						☺		A181
	PTGNR/L	90	☺						☺	☺	A182
	PWLNR/L	95			☺				☺		A183
<b>S</b>	SCACR/L	90	☺						☺	☺	A184
	SCLCR/L	95			☺				☺	☺	A185
	SDACR/L	90					☺		☺	☺	A186

☺ Recommended ☺ Available

General turning

External turning tools overview



# TURNING / General Turning Tools

## External turning tools overview

General turning

External turning tools overview

Clamping system	Tool type	Approach angle (K°)	Turning type						Applicable workpiece shape		Page	
			External turning	End surface turning	External and end surface turning	Profile turning	Profile turning	Profile turning	Short, Thick	Thin, Long		
S	SDJCR/L	93						☺		☺	☺	A187
	SDNCN	62.5							☺	☺	☺	A188
	SVJBR/L	93						☺		☺	☺	A189
	SVABR/L	90						☺		☺	☺	A190
	SVVBN	72.5							☺	☺	☺	A191
	SVVCN	72.5							☺	☺	☺	A192
	SVJCR/L	93						☺		☺	☺	A193
	SSBCR/L	75	☺							☺		A194
	SSDCN	45							☺	☺		A195
	SSKCR/L	75		☺						☺		A196
	SSSCR/L	45	☺							☺		A197

☺ Recommended    ☹ Available



External turning tools overview

Clamping system	Tool type	Approach angle(K°)	Turning type						Applicable workpiece shape		Page
			External turning	End surface turning	External and end surface turning	Profile turning	Profile turning	Profile turning	Short, Thick	Thin, Long	
<b>S</b>	STACR/L 	90	☺						☺	☺	A198
	STFCR/L 	90		☺					☺		A198
	STGCR/L 	91	☺						☺	☺	A199
	STECR/L 	60	☺						☺		A200
	SWACR/L 	90	☺						☺	☺	A201
	SRDCN 	--						☺	☺		A202
	SRGCR/L 	--				☺			☺		A203
<b>C</b>	CKJNR/L 	93					☺		☺		A204
	CKNNR/L 	63						☺	☺		A204
	CRDCR/L CRDPR/L 	--					☺		☺		A205

☺ Recommended    ☹ Available

General turning

External turning tools overview



# TURNING / General Turning Tools

## External turning tools code key

General turning

External turning tools code key

Clamping system	Insert shape		Clearance angle of insert	Cutting direction
 D – double clamping	 C	 D	 B	 L - Left-hand
 P – Hole clamping	 R	 S	 C	 R - Right-hand
 S – Screw on	 T	 V	 D	
 C – Top clamping	 W		 E	
			 N	 N - Right and left hand
			 P	

**P C L N L**

Tool holder style and approach angle							
A	B	C	D	E	F	G	H
J	K	L	M	N	O	P	Q
R	S	T	U	V	W	X	



**Nose height (mm)**

Code	Height
<b>12</b>	12
<b>16</b>	16
<b>20</b>	20
<b>25</b>	25
<b>32</b>	32
<b>40</b>	40
<b>50</b>	50

**Width of tool holder (mm)**

Code	Width
<b>12</b>	12
<b>16</b>	16
<b>20</b>	20
<b>25</b>	25
<b>32</b>	32
<b>40</b>	40
<b>50</b>	50

**Length of tool holder (mm)**

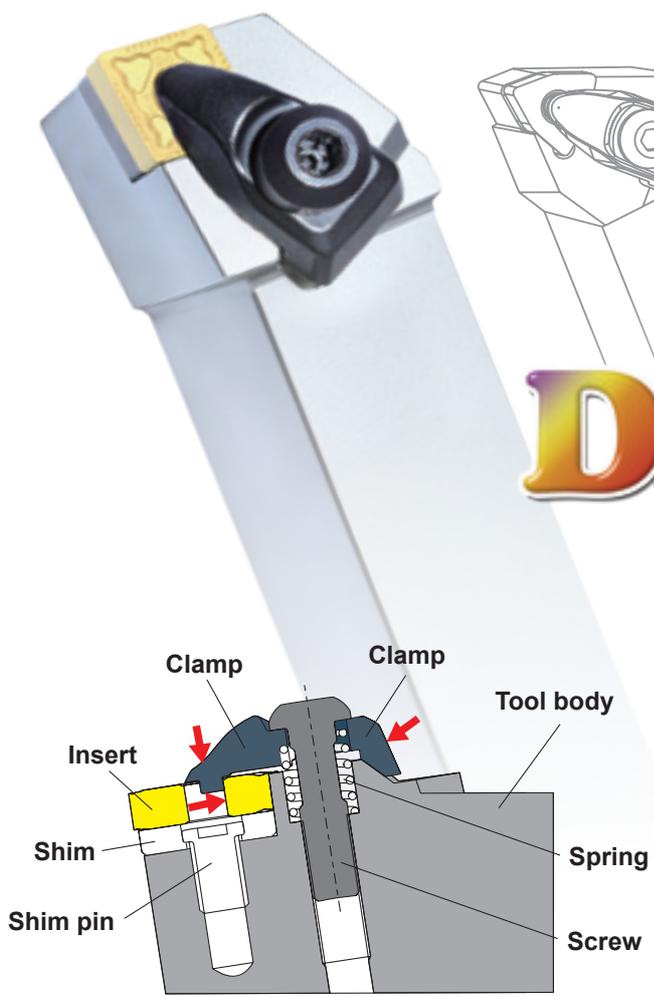
Code	Length
<b>E</b>	70
<b>F</b>	80
<b>H</b>	100
<b>K</b>	125
<b>M</b>	150
<b>P</b>	170
<b>Q</b>	180
<b>R</b>	200
<b>S</b>	250
<b>T</b>	300

General turning

External turning tools code key

**25 25 M 12**

Length of cutting edge							
Inserts shape	C	D	R	S	T	V	W
Inscribed circle (mm)	Length of cutting edge(mm)						
5.556	---	---	---	---	09	---	---
6.350	06	07	---	---	11	---	---
9.525	09	11	09	09	16	16	06
12.700	12	15	12	12	22	22	08
15.875	16	19	15	15	27	---	---
19.050	19	---	19	19	33	---	---
25.400	25	---	25	25	44	---	---
32.000	---	---	32	---	---	---	---



# D-type double-clamping tool holder

With newly developed double-clamping structure, D-type turning tools have high clamping rigidity and high positioning accuracy, achieving easy and secure clamping of inserts. It is the best choice for the clamping of straight hole negative inserts.

## Convenient secure clamping device

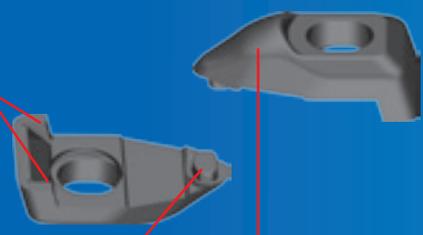


Slots in the tool body match perfectly with the clamp, realizing simple and easy clamping.

## Uniquely clamp

The clamp and the inner wall of insert hole make an arc contact. The stable and evenly distributed clamping force ensures more secure clamping.

lug boss on both ends and double-locating make more insert clamp secure .

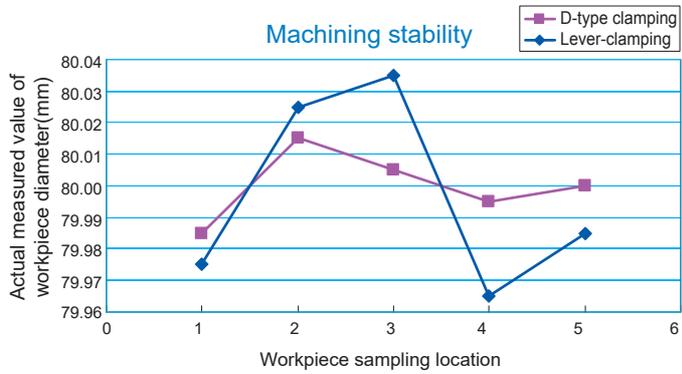


Arc locating surface makes large contact area and the force is evenly distributed.

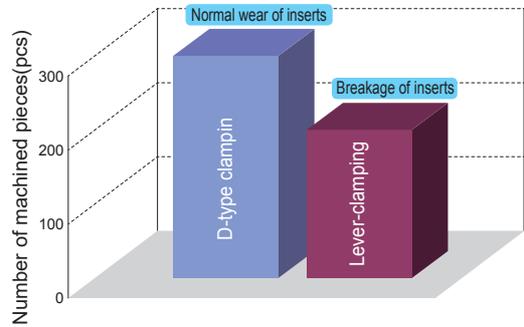
Simple and compact structure effectively prevents chip blocking while ensuring high clamping rigidity.

## Compared with lever-clamping:

① Accurate locating ensures more stable machining accuracy.



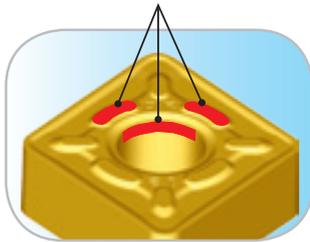
② High clamping rigidity effectively improves resistance to breakage of insert.



## Compared with similar products of company A:

① Locating surface contact: (checking the contact location of clamp by dyeing)

Force evenly distributed, firm clamping, high locating accuracy.



ZCC-CT



Similar product of company A

② Effect on tool life:

Tool holder: DCLNL3225P12  
 Insert: YBC252/CNMG120408-DR  
 Cutting material: 45# steel  
 Cutting parameters:  $V_c=250\text{m/min}$   
 $a_p=2\text{mm}$   
 $f=0.6\text{mm/r}$

After 60 minutes of cutting



ZCC-CT



Similar product of company A



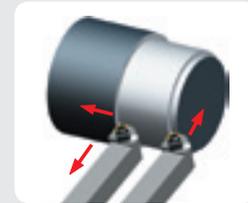
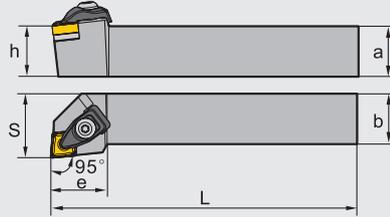


# TURNING / General Turning Tools

External turning tools

## Corresponding tool holders of insert **CN** D-type clamping

**DCLNRIL**  
Kr:95°



Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring	
	R	L	a	b	L	h	s	e							
<b>DCLNR/L</b>	<b>1616H09</b>	▲	△	16	16	100	16	20	24						
	<b>2020K09</b>	▲	△	20	20	125	20	25	24	CM5×22C	C09BM	WH30L	C1RA	SM5×8.65XA1	SPR6
	<b>2525M09</b>	▲	△	25	25	150	25	32	24						
	<b>2020K12</b>	▲	▲	20	20	125	20	25	28						
	<b>2525M12</b>	▲	▲	25	25	150	25	32	28	CM6×25C	C12BM	WH40L	C2RA	SM6×10XA1	SPR4
	<b>3225P12</b>	▲	▲	32	25	170	32	32	28						

▲Stock available    △Make-to-order

### Applicable inserts

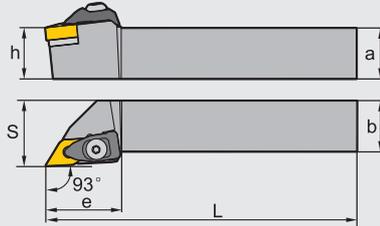
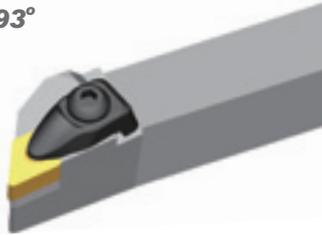
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b> Wiper  A54	<b>WGM</b> Wiper  A55	<b>DR</b> Double-side  A58	<b>HDR</b>  A59	 Without chipbreaker A59	 A118
	<b>WGF</b> Wiper  A54	<b>PM</b>  A55	<b>DR</b> Single-side  A58	<b>HPR</b>  A59		 A118 -A119
	<b>SF</b>  A54	<b>DM</b>  A56	<b>ER</b> Double-side  A58			 A119
	<b>EF</b>  A54	<b>EM</b>  A56	<b>ER</b> Single-side  A58			
	<b>NF</b>  A55	<b>NM</b>  A57	<b>SNR</b> Double-side  A58			
			<b>LR</b> Single-side  A57			

Tool holder type	<b>DCLNR/L□□H/K/M09</b>	CN□□0903□□	CN□□0903□□				
	<b>DCLNR/L□□K/M/P12</b>	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□



Corresponding tool holders of insert **DN**   D-type clamping

**DDJNRIL**  
Kr:93°



Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring	
		R	L	a	b	L	h	s	e							
<b>DDJNR/L</b>	<b>1616H11</b>	△	△	16	16	100	16	20	30	CM5×22C	D11BM	WH30L	C1RA	SM5×8.65XA1	SPR6	
	<b>2020K11</b>	▲	△	20	20	125	20	25	30							
	<b>2525M11</b>	▲	△	25	25	150	25	32	30							
		<b>3225P11</b>	△	△	32	25	170	32	32	30	CM6×25C	D15BM	WH40L	C2RA	SM6×10XA1	SPR4
		<b>2020K15</b>	▲	▲	20	20	125	20	25	35						
		<b>2525M15</b>	▲	▲	25	25	150	25	32	35						
		<b>3232P15</b>	▲	▲	32	32	170	32	40	35						

▲Stock available    △Make-to-order

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b>  A61	<b>WGM</b> Wiper  A63	<b>DR</b> Double-side  A65	<b>HDR</b>  A66	Without chipbreaker  A66	 A121 -A122
	<b>WGF</b> Wiper  A61	<b>PM</b>  A63	<b>DR</b> Single-side  A65			 A122 -A123
	<b>SF</b>  A62	<b>DM</b>  A64	<b>ER</b> Double-side  A65			 A124
	<b>EF</b>  A62	<b>EM</b>  A64	<b>ER</b> Single-side  A65			
	<b>NF</b>  A62	<b>NM</b>  A64	<b>SNR</b> Double-side  A65			
	<b>NGF</b>  A62		<b>LR</b> Single-side  A65			
Tool holder type	<b>DDJNR/L□□H/K/M/P11</b>	DN□□1104□□	DN□□1104□□		DN□□1104□□	
	<b>DDJNR/L□□K/M/P15</b>	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□

General turning

External turning tools

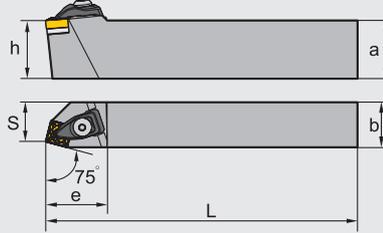


# TURNING / General Turning Tools

## External turning tools

### Corresponding tool holders of insert **SN** D-type clamping

**DSBNRIL**  
Kr:75°



Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring
	R	L	a	b	L	h	s	e						
<b>DSBNR/L</b>	<b>1616H09</b>	▲ △	16	16	100	16	13	26	CM5×22C	S09BM	WH30L	C1RA	SM5×8.65XA1	SPR6
	<b>2020K12</b>	▲ ▲	20	20	125	20	17	34						
	<b>2525M12</b>	▲ ▲	25	25	150	25	22	34	CM6×25C	S12BM	WH40L	C2RA	SM6×10XA1	SPR4
	<b>3225P12</b>	▲ ▲	32	25	170	32	22	34						
	<b>3232P15</b>	▲ ▲	32	32	170	32	27	41	CM6×25C	S15BM	WH40L	C3RA	SM6×10XA2	SPR4

▲ Stock available    △ Make-to-order

### Applicable inserts

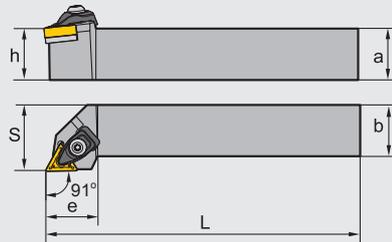
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining Without chipbreaker	PCBN&PCD inserts
Inserts shape	<b>DF</b> A67	<b>PM</b> A68	<b>DR</b> Double-side  A70	<b>HDR</b> A72	A74	A126
	<b>EF</b> A67	<b>DM</b> A68	<b>DR</b> Single-side  A70-71	<b>HPR</b> A72		A127
	<b>SF</b> A67	<b>EM</b> A69	<b>ER</b> Double-side  A71			A128
		<b>NM</b> A69	<b>ER</b> Single-side  A71			
			<b>SNR</b> Double-side  A71			
			<b>LR</b> Single-side  A69			
<b>Tool holder type</b>	<b>DSBNR/L□□H09</b>	SN□□0903□□	SN□□0903□□		SN□□0903□□	
	<b>DSBNR/L□□K/M/P12</b>	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
	<b>DSBNR/L□□P15</b>	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	

General turning  
External turning tools



Corresponding tool holders of insert **TN**   D-type clamping

**DTGNRIL**  
Kr:91°



Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring						
		R	L	a	b	L	h	s	e												
<b>DTGNR/L</b>	<b>1616H16</b>	△	△	16	16	100	16	20	25												
	<b>2020K16</b>	▲	▲	20	20	125	20	25	25							CM5×22C	T16BM	WH30L	C1RA	SM5×8.65XA1	SPR6
	<b>2525M16</b>	▲	▲	25	25	150	25	32	25												

▲Stock available    △Make-to-order

General turning

External turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b>  A75	<b>WGM</b> Wiper  A76	<b>DR</b> Double-side  A78	<b>HDR</b>  A79	Without chipbreaker  A80	 A130
	<b>WGF</b> Wiper  A75	<b>PM</b>  A76	<b>DR</b> Single-side  A78			 A130 -A131
	<b>SF</b>  A75	<b>DM</b>  A77	<b>ER</b> Double-side  A78			 A131
	<b>EF</b>  A76	<b>EM</b>  A77	<b>SNR</b> Double-side  A78			
			<b>LR</b> Single-side  A77			
Tool holder type	<b>DTGNR/L□□H/K/M16</b>	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□



# TURNING / General Turning Tools

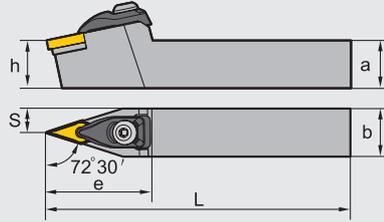
## External turning tools

### Corresponding tool holders of insert **VN** D-type clamping

General turning

External turning tools

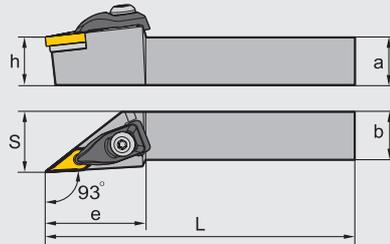
**DVVNN**  
Kr:72°30'



Type	Stock	Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring	
		a	b	L	h	s	e							
<b>DVVNN</b>	<b>2020K16</b>	△	20	20	125	20	10	44						
	<b>2525M16</b>	▲	25	25	150	25	12.5	44						

▲Stock available    △Make-to-order

**DVJNR/L**  
Kr:93°



Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring	
	R	L	a	b	L	h	s	e							
<b>DVJNR/L</b>	<b>2020K16</b>	▲	▲	20	20	125	20	25	41						
	<b>2525M16</b>	▲	▲	25	25	150	25	32	41						

▲Stock available    △Make-to-order

### Applicable inserts

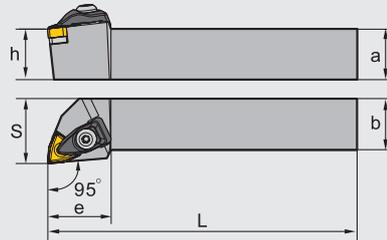
Application	For finishing	For semi-finishing	For roughing	PCBN&PCD inserts
Inserts shape	<b>DF</b>  A81	<b>PM</b>  A82	<b>SNR</b>  A82	 A133
	<b>EF</b>  A81	<b>DM</b>  A82		 A133 -A134
	<b>SF</b>  A81	<b>EM</b>  A82		 A134
	<b>NF</b>  A81	<b>NM</b>  A82		
	<b>NGF</b>  A81			

Tool holder type	DVVNN□□K/M16	DVJNR/L□□K/M16
For finishing	VN□□1604□□	VN□□1604□□
For semi-finishing	VN□□1604□□	VN□□1604□□
For roughing	VN□□1604□□	VN□□1604□□
PCBN&PCD inserts	VN□□1604□□	VN□□1604□□



Corresponding tool holders of insert **WN**   D-type clamping

**DWLNRL**  
Kr:95°



Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring
		R	L	a	b	L	h	s	e						
<b>DWLNRL/L</b>	<b>1616H06</b>	▲	△	16	16	100	16	25	25						
	<b>2020K06</b>	▲	▲	20	20	125	20	25	24	CM5×22C	W06BM	WH30L	C1RA	SM5×8.65XA1	SPR6
	<b>2525M06</b>	▲	▲	25	25	150	25	32	24						
	<b>2020K08</b>	▲	▲	20	20	125	20	25	31						
	<b>2525M08</b>	▲	▲	25	25	150	25	32	31	CM6×25C	W08BM	WH40L	C2RA	SM6×10XA1	SPR4
	<b>3225P08</b>	△	△	32	25	170	32	32	31						

▲Stock available    △Make-to-order

General turning

External turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts	
Inserts shape	<b>DF</b> A83	<b>WGM</b> Wiper A84	<b>DR</b> Double-side A86	Without chipbreaker A86	A136	
	<b>WGF</b> Wiper A83	<b>PM</b> A85	<b>SNR</b> Double-side A86		A136 -A137	
	<b>SF</b> A83	<b>DM</b> A85			A137	
	<b>EF</b> A84	<b>EM</b> A85				
	<b>NF</b> A84	<b>NM</b> A86				
Tool holder type	<b>DWLNRL/□□H/K/M06</b>	WN□□0604□□	WN□□0604□□	WN□□0604□□	WN□□0604□□	
	<b>DWLNRL/□□K/M/P08</b>	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□



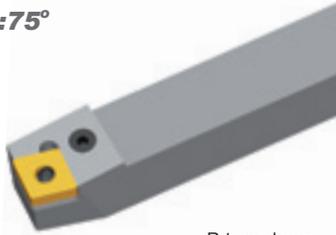
# TURNING / General Turning Tools

## External turning tools

### Corresponding tool holders of insert **CN** P-type clamping

#### PCBNR/L

Kr:75°



R-type shown



Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin	
	R	L	a	b	L	h	s	e						
<b>PCBNR/L</b>	2020K12	▲	▲	20	20	125	20	17	27	LEM8×21	C12AP	WH30L	L4	SP4
	2525M12	▲	▲	25	25	150	25	22	27					
	3232P12	▲	▲	32	32	170	32	27	33					
	2525M16	▲	▲	25	25	150	25	22	33	LEM8×25	C16AP	WH30L	L5	SP5
	3232P16	▲	▲	32	32	170	32	27	33					
	4040R16	▲	▲	40	40	200	40	35	38	LEM10×27	C19AP	WH40L	L6	SP6
	3232P19	▲	▲	32	32	170	32	27	38					
	4040R19	▲	▲	40	40	200	40	35	40	LEM12×36A	C25AP-07	WH50L	L8	SP8
	4040S2507	▲	▲	40	40	250	40	35	50		C25AP			
	4040S2509	▲	▲	40	40	250	40	35	50					

▲Stock available    △Make-to-order

#### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining
Inserts shape	<b>DF</b> Wiper  A54	<b>WGM</b> Wiper  A55	<b>DR</b> Double-side  A58	<b>HDR</b>  A59	Without chipbreaker  A59
	<b>WGF</b> Wiper  A54	<b>PM</b>  A55	<b>DR</b> Single-side  A58	<b>HPR</b>  A59	
	<b>SF</b>  A54	<b>DM</b>  A55	<b>ER</b> Double-side  A58		
	<b>EF</b>  A54	<b>EM</b>  A56	<b>ER</b> Single-side  A58		
	<b>NF</b>  A55	<b>NM</b>  A57	<b>SNR</b> Double-side  A58		
			<b>LR</b> Single-side  A57		
Tool holder type	<b>PCBNR/L□□K/M/P12</b>	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□
	<b>PCBNR/L□□M/P/R16</b>	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□
	<b>PCBNR/L□□P/R19</b>		CN□□1906□□	CN□□1906□□	CN□□1906□□
	<b>PCBNR/L□□S2507</b>			CN□□2507□□	
	<b>PCBNR/L□□S2509</b>			CN□□2509□□	

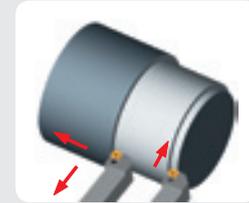
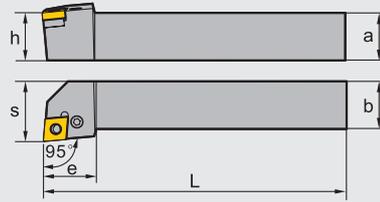


Corresponding tool holders of insert **CN**   P-type clamping

**PCLNRIL**  
Kr:95°



R-type shown



Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin	
	R	L	a	b	L	h	s	e						
<b>PCLNR/L</b>	<b>2020K12</b>	▲	▲	20	20	125	20	25	28	LEM8×21	C12AP	WH30L	L4	SP4
	<b>2525M12</b>	▲	▲	25	25	150	25	32	28					
	<b>3225P12</b>	△	△	32	25	170	32	32	33					
	<b>3232P12</b>	▲	▲	32	32	170	32	40	28					
	<b>2525M16</b>	▲	▲	25	25	150	25	32	33	LEM8×25	C16AP	WH30L	L5	SP5
	<b>3225P16</b>	△	△	32	25	170	32	32	33					
	<b>3232P16</b>	▲	▲	32	32	170	32	40	33					
	<b>4040R16</b>	△	△	40	40	200	40	50	42					
	<b>3232P19</b>	▲	▲	32	32	170	32	40	38	LEM10×27	C19AP	WH40L	L6	SP6
	<b>4040R19</b>	▲	▲	40	40	200	40	50	40					
	<b>4040S2507</b>	▲	▲	40	40	250	40	50	49	LEM12×36A	C25AP-07	WH50L	L8	SP8
<b>4040S2509</b>	▲	▲	40	40	250	40	50	49	C25AP					

▲Stock available    △Make-to-order

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b> A54	<b>WGM</b> Wiper A55	<b>DR</b> Double-side A58	<b>HDR</b> A59	Without chipbreaker A59	A118
	<b>WGF</b> Wiper A54	<b>PM</b> A55	<b>DR</b> Single-side A58	<b>HPR</b> A59		A118 -A119
	<b>SF</b> A54	<b>DM</b> A56	<b>ER</b> Double-side A58			A119
	<b>EF</b> A54	<b>EM</b> A56	<b>ER</b> Single-side A58			
	<b>NF</b> A55	<b>NM</b> A57	<b>SNR</b> Double-side A58			
			<b>LR</b> Single-side A57			

Tool holder type	<b>PCLNR/L□□K/M/P12</b>	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□
	<b>PCLNR/L□□M/P/R16</b>	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□
	<b>PCLNR/L□□P/R19</b>		CN□□1906□□	CN□□1906□□	CN□□1906□□	CN□□1906□□	CN□□1906□□
	<b>PCLNR/L□□S2507</b>			CN□□2507□□			
	<b>PCLNR/L□□S2509</b>			CN□□2509□□			

General turning

External turning tools



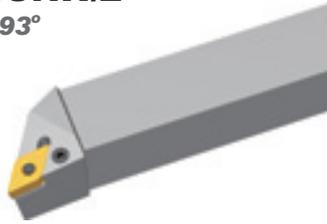


# TURNING / General Turning Tools

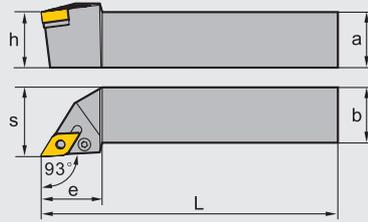
## External turning tools

### Corresponding tool holders of insert **DN** P-type clamping

**PDJNR/L**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin	
	R	L	a	b	L	h	s	e						
<b>PDJNR/L</b>	<b>1616H11</b>	▲	▲	16	16	100	16	20	25	LEM6×17	D11AP	WH25L	L3	SP3
	<b>2020K11</b>	▲	▲	20	20	125	20	25	25					
	<b>2525M11</b>	▲	▲	25	25	150	25	32	30					
	<b>2020K15</b>	▲	▲	20	20	125	20	25	35	LEM8×21	D15AP	WH30L	L4B	SP4
	<b>2525M15</b>	▲	▲	25	25	150	25	32	35					
	<b>3232P15</b>	▲	▲	32	32	170	32	40	35					
	<b>2020K15-3</b>	▲	△	20	20	125	20	25	35	LEM8×21	D15AP	WH30L	L4	SP4
	<b>2525M15-3</b>	▲	▲	25	25	150	25	32	35					
	<b>3232P15-3</b>	▲	△	32	32	170	32	40	35					

▲Stock available    △Make-to-order

### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b>  A61	<b>WGM</b> Wiper  A63	<b>DR</b> Double-side  A65	<b>HDR</b>  A66	Without chipbreaker  A66	 A121 -A122
	<b>WGF</b> Wiper  A61	<b>PM</b>  A63	<b>DR</b> Single-side  A65			 A122 -A123
	<b>SF</b>  A62	<b>DM</b>  A64	<b>ER</b> Double-side  A65			 A124
	<b>EF</b>  A62	<b>EM</b>  A64	<b>ER</b> Single-side  A65			
	<b>NF</b>  A62	<b>NM</b>  A64	<b>SNR</b> Double-side  A65			
	<b>NGF</b>  A62		<b>LR</b> Single-side  A65			

Tool holder type	PDJNR/L□□H/K/M11	DN□□1104□□	DN□□1104□□		DN□□1104□□	
	PDJNR/L□□K/M/P15	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□
	PDJNR/L□□K/M/P15-3	DN□□1504□□	DN□□1504□□		DN□□1504□□	DN□□1504□□

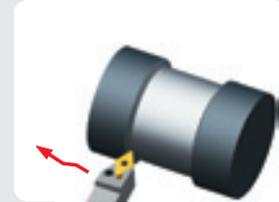
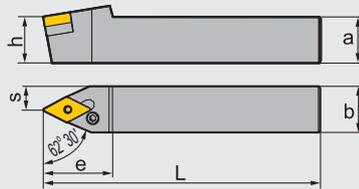


Corresponding tool holders of insert **DN**   P-type clamping

**PDPNN**  
Kr:62°30'



R-type shown



Type	Stock	Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin	
		a	b	L	h	s	e						
<b>PDPNN</b>	<b>2020K15</b>	▲	20	20	125	20	8	38	LEM8×21	D15AP	WH30L	L4B	SP4
	<b>2525M15</b>	▲	25	25	150	25	12.5	38					
	<b>3232P15</b>	▲	32	32	170	32	16	38					
	<b>2020K15-3</b>	▲	20	20	125	20	8	38	LEM8×21	D15AP	WH30L	L4	SP4
	<b>2525M15-3</b>	▲	25	25	150	25	12.5	38					
	<b>3232P15-3</b>	▲	32	32	170	32	16	38					

▲Stock available    △Make-to-order

General turning

External turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b> A61	<b>WGM</b> Wiper A63	<b>DR</b> Double-side A65	<b>HDR</b> A66	Without chipbreaker A66	A121 -A122
	<b>WGF</b> Wiper A61	<b>PM</b> A63	<b>DR</b> Single-side A65			A122 -A123
	<b>SF</b> A62	<b>DM</b> A64	<b>ER</b> Double-side A65			A124
	<b>EF</b> A62	<b>EM</b> A64	<b>ER</b> Single-side A65			
	<b>NF</b> A62	<b>NM</b> A64	<b>SNR</b> Double-side A65			
	<b>NGF</b> A62		<b>LR</b> Single-side A65			
<b>Tool holder type</b>	<b>PDPNN□□K/M/P15</b>	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□
	<b>PDPNN□□K/M/P15-3</b>	DN□□1504□□	DN□□1504□□		DN□□1504□□	DN□□1504□□



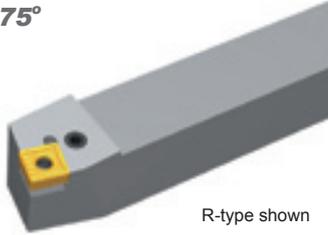
# TURNING / General Turning Tools

## External turning tools

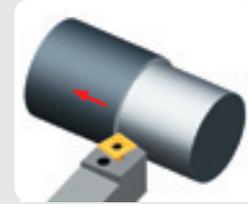
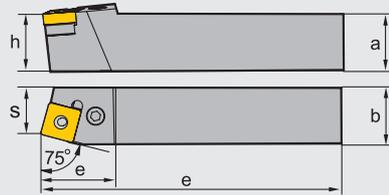
### Corresponding tool holders of insert **SN** P-type clamping

#### PSBNRIL

Kr:75°



R-type shown



Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin	
	R	L	a	b	L	h	s	e						
<b>PSBNR/L</b>	<b>1616H09</b>	▲	▲	16	16	100	16	13	21	LEM6×13.4A	S09AP	WH25L	L3	SP3
	<b>2020K09</b>	▲	▲	20	20	125	20	17	23	LEM8×21	S12AP	WH30L	L4	SP4
	<b>2020K12</b>	▲	▲	20	20	125	20	17	28					
	<b>2525M12</b>	▲	▲	25	25	150	25	22	28	LEM8×25	S15AP	WH30L	L5	SP5
	<b>3225P12</b>	▲	△	32	25	170	32	22	28					
	<b>3232P12</b>	▲	▲	32	32	170	32	27	28	LEM8×25	S15AP	WH30L	L5	SP5
	<b>2525M15</b>	▲	▲	25	25	150	25	22	35					
	<b>3232P15</b>	▲	▲	32	32	170	32	27	35	LEM10×27	S19AP	WH40L	L6	SP6
	<b>3232P19</b>	▲	▲	32	32	170	32	27	40					
	<b>4040R19</b>	▲	▲	40	40	200	40	35	40	LEM12×36A	S25AP	WH50L	L8	SP8
	<b>4040S2507</b>	▲	▲	40	40	250	40	35	48		S25AP-09			
	<b>4040S2509</b>	▲	▲	40	40	250	40	35	48					

▲Stock available    △Make-to-order

#### Applicable inserts

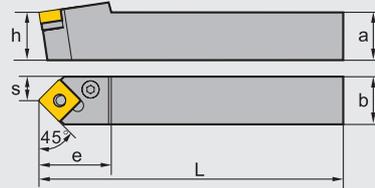
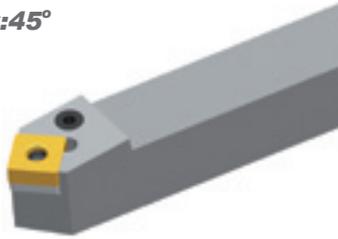
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining Without chipbreaker	PCBN&PCD inserts
Inserts shape	<b>DF</b> A67	<b>PM</b> A68	<b>DR</b> Double-side  A70	<b>HDR</b> A72	A74	A126
	<b>EF</b> A67	<b>DM</b> A68	<b>DR</b> Single-side  A70-71	<b>HPR</b> A72		A127
	<b>SF</b> A67	<b>EM</b> A69	<b>ER</b> Double-side  A71			A128
		<b>NM</b> A69	<b>ER</b> Single-side  A71			
			<b>SNR</b> Double-side  A71			
			<b>LR</b> Single-side  A69			

Tool holder type	PSBNR/L□□H/K09	SN□□0903□□	SN□□0903□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
	PSBNR/L□□K/M/P12	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
	PSBNR/L□□M/P15	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□
	PSBNR/L□□P/R19		SN□□1906□□	SN□□1906□□	SN□□1906□□	SN□□1906□□	SN□□1906□□	SN□□1906□□	SN□□1906□□
	PSBNR/L□□S2507			SN□□2507□□	SN□□2507□□	SN□□2507□□	SN□□2507□□	SN□□2507□□	SN□□2507□□
	PSBNR/L□□S2509			SN□□2509□□	SN□□2509□□	SN□□2509□□	SN□□2509□□	SN□□2509□□	SN□□2509□□



Corresponding tool holders of insert **SN**   P-type clamping

**PSDNN**  
Kr:45°



General turning

External turning tools

Type	Stock	Basic dimensions(mm)							Screw	Shim	Wrench	Lever	Shim pin
		a	b	L	h	s	e						
<b>PSDNN</b>	<b>2020K12</b>	▲	20	20	125	20	10	30	LEM8×21	S12AP	WH30L	L4	SP4
	<b>2525M12</b>	▲	25	25	150	25	12.5	30					
	<b>3232P12</b>	▲	32	32	170	32	16	40					
	<b>2525M15</b>	▲	25	25	150	25	12.5	40	LEM8×25	S15AP	WH30L	L5	SP5
	<b>3232P15</b>	▲	32	32	170	32	16	40					
	<b>3232P19</b>	▲	32	32	170	32	16	40	LEM10×27	S19AP	WH40L	L6	SP6
	<b>4040R19</b>	▲	40	40	200	40	20	40					

▲Stock available    △Make-to-order

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining Without chipbreaker	PCBN&PCD inserts
Inserts shape	<b>DF</b>  A67	<b>PM</b>  A68	<b>DR</b> Double-side  A70	<b>HDR</b>  A72	 A74	 A126
	<b>EF</b>  A67	<b>DM</b>  A68	<b>DR</b> Single-side  A70-71	<b>HPR</b>  A72		 A127
	<b>SF</b>  A67	<b>EM</b>  A69	<b>ER</b> Double-side  A71			 A128
		<b>NM</b>  A69	<b>ER</b> Single-side  A71			
			<b>SNR</b> Double-side  A71			
			<b>LR</b> Single-side  A69			
Tool holder type	<b>PSDNN□□K/M/P12</b>	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
	<b>PSDNN□□M/P15</b>	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□
	<b>PSDNN□□P/R19</b>		SN□□1906□□	SN□□1906□□	SN□□1906□□	SN□□1906□□



# TURNING / General Turning Tools

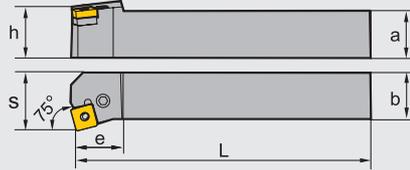
## External turning tools

### Corresponding tool holders of insert **SN** P-type clamping

**PSKNRIL**  
Kr:75°



R-type shown



Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin	
	R	L	a	b	L	h	s	e						
<b>PSKNR/L</b>	<b>1616H09</b>	▲	▲	16	16	100	16	20	17	LEM6×13.4A	S09AP	WH25L	L3	SP3
	<b>2020K09</b>	▲	△	20	20	125	20	25	20					
	<b>2020K12</b>	▲	▲	20	20	125	20	25	26					
	<b>2525M12</b>	▲	▲	25	25	150	25	32	26	LEM8×21	S12AP	WH30L	L4	SP4
	<b>3232P12</b>	▲	▲	32	32	170	32	40	26					
	<b>2525M15</b>	▲	▲	25	25	150	25	32	32	LEM8×25	S15AP	WH30L	L5	SP5
	<b>3232P15</b>	▲	▲	32	32	170	32	40	32					
	<b>3232P19</b>	▲	▲	32	32	170	32	40	36	LEM10×27	S19AP	WH40L	L6	SP6
	<b>4040R19</b>	▲	▲	40	40	200	40	50	40					

▲Stock available    △Make-to-order

### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b> A67	<b>PM</b> A68	<b>DR Double-side</b> A70	<b>HDR</b> A72	Without chipbreaker  A74	A126
	<b>EF</b> A67	<b>DM</b> A68	<b>DR Single-side</b> A70-71	<b>HPR</b> A72		A127
	<b>SF</b> A67	<b>EM</b> A69	<b>ER Double-side</b> A71			A128
		<b>NM</b> A69	<b>ER Single-side</b> A71			
			<b>SNR Double-side</b> A71			
			<b>LR Single-side</b> A69			
<b>Tool holder type</b>	<b>PSKNR/L□□H/K09</b>	SN□□0903□□	SN□□0903□□		SN□□0903□□	
	<b>PSKNR/L□□K/M/P12</b>	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
	<b>PSKNR/L□□M/P15</b>	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	
	<b>PSKNR/L□□P/R19</b>		SN□□1906□□	SN□□1906□□	SN□□1906□□	

General turning

External turning tools

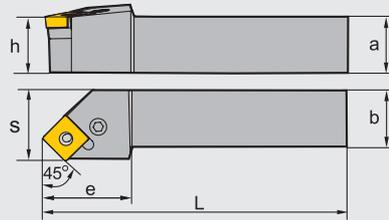


Corresponding tool holders of insert **SN**   P-type clamping

**PSSNRIL**  
Kr:45°



R-type shown



General turning

External turning tools

Type	Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin	
	R	L	a	b	L	h	s	e						
<b>PSSNR/L</b>	<b>1616H09</b>	▲	▲	16	16	100	16	20	25	LEM6×13.4A	S09AP	WH25L	L3	SP3
	<b>2020K09</b>	△	△	20	20	125	20	25	25					
	<b>2020K12</b>	▲	▲	20	20	125	20	25	30					
	<b>2525M12</b>	▲	▲	25	25	150	25	32	30	LEM8×21	S12AP	WH30L	L4	SP4
	<b>3232P12</b>	▲	▲	32	32	170	32	40	40					
	<b>2525M15</b>	▲	▲	25	25	150	25	32	30	LEM8×25	S15AP	WH30L	L5	SP5
	<b>3232P15</b>	▲	▲	32	32	170	32	40	40					
	<b>3232P19</b>	▲	▲	32	32	170	32	40	40	LEM10×27	S19AP	WH40L	L6	SP6
	<b>4040R19</b>	▲	▲	40	40	200	40	50	40					
	<b>4040S2507</b>	▲	▲	40	40	250	40	50	50	LEM12×36A	S25AP S25AP-09	WH50L	L8	SP8
	<b>4040S2509</b>	▲	▲	40	40	250	40	50	50					

▲Stock available    △Make-to-order

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining Without chipbreaker	PCBN&PCD inserts
Inserts shape	<b>DF</b> A67	<b>PM</b> A68	<b>DR</b> Double-side  A70	<b>HDR</b> A72	A74	A126
	<b>EF</b> A67	<b>DM</b> A68	<b>DR</b> Single-side  A70-71	<b>HPR</b> A72		A127
	<b>SF</b> A67	<b>EM</b> A69	<b>ER</b> Double-side  A71			A128
		<b>NM</b> A69	<b>ER</b> Single-side  A71			
			<b>SNR</b> Double-side  A71			
			<b>LR</b> Single-side  A69			
<b>Tool holder type</b>	<b>PSSNR/L□□H/K09</b>	SN□□0903□□	SN□□0903□□	SN□□0903□□	SN□□0903□□	
	<b>PSSNR/L□□K/M/P12</b>	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
	<b>PSSNR/L□□M/P15</b>	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	
	<b>PSSNR/L□□P/R19</b>		SN□□1906□□	SN□□1906□□	SN□□1906□□	
	<b>PSSNR/L□□S2507</b>		SN□□2507□□	SN□□2507□□		
	<b>PSSNR/L□□S2509</b>		SN□□2509□□	SN□□2509□□		



# TURNING / General Turning Tools

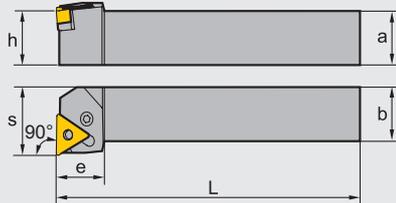
## External turning tools

### Corresponding tool holders of insert **TN** P-type clamping

**PTFNR/L**  
Kr:90°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin
		R	L	a	b	L	h	s	e					
<b>PTFNR/L</b>	<b>1616H16</b>	△	▲	16	16	100	16	20	20	LEM6×13.4A	T16AP	WH25L	L3	SP3
	<b>2020K16</b>	▲	▲	20	20	125	20	25	20					
	<b>2525M16</b>	▲	▲	25	25	150	25	32	20					
	<b>2525M22</b>	▲	▲	25	25	150	25	32	25	LEM8×21	T22AP	WH30L	L4	SP4
	<b>3232P22</b>	▲	▲	32	32	170	32	40	25					
	<b>3232P27</b>	▲	▲	32	32	170	32	40	34	LEM8×25	T27AP	WH30L	L5	SP5
	<b>4040S27</b>	▲	▲	40	40	250	40	50	34					

▲Stock available    △Make-to-order

### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b> A75	<b>WGM</b> Wiper A76	<b>DR</b> Double-side A78	<b>HDR</b> A79	Without chipbreaker A80	A130
	<b>WGF</b> Wiper A75	<b>PM</b> A76	<b>DR</b> Single-side A78			A130 -A131
	<b>SF</b> A75	<b>DM</b> A77	<b>ER</b> Double-side A78			A131
	<b>EF</b> A76	<b>EM</b> A77	<b>SNR</b> A78			
			<b>LR</b> Single-side A77			
<b>Tool holder type</b>	<b>PTFNR/L□□H/K/M16</b>	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□
	<b>PTFNR/L□□M/P22</b>	TN□□2204□□	TN□□2204□□	TN□□2204□□	TN□□2204□□	TN□□2204□□
	<b>PTFNR/L□□P/S27</b>		TN□□2706□□	TN□□2706□□	TN□□2706□□	



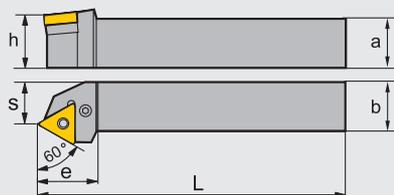
Corresponding tool holders of insert **TN**   P-type clamping

**PTTNRIL**

Kr:60°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin
		R	L	a	b	L	h	s	e					
<b>PTTNR/L</b>	<b>1616H16</b>	▲	▲	16	16	100	16	13	25	LEM6×13.4A	T16AP	WH25L	L3	SP3
	<b>2020K16</b>	▲	▲	20	20	125	20	17	25					
	<b>2525M16</b>	△	△	25	25	150	25	22	25	LEM8×21	T22AP	WH30L	L4	SP4
	<b>2525M22</b>	▲	▲	25	25	150	20	22	32					

▲Stock available    △Make-to-order

General turning

External turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts	
Inserts shape	<b>DF</b>  A75	<b>WGM</b> Wiper  A76	<b>DR</b> Double-side  A78	<b>HDR</b>  A79	 A80 Without chipbreaker	 A130	
	<b>WGF</b> Wiper  A75	<b>PM</b>  A76	<b>DR</b> Single-side  A78			 A130 -A131	
	<b>SF</b>  A75	<b>DM</b>  A77	<b>ER</b> Double-side  A78			 A131	
	<b>EF</b>  A76	<b>EM</b>  A77	<b>SNR</b>  A78				
			<b>LR</b> Single-side  A77				
Tool holder type	<b>PTTNR/L□□H/K/M16</b>	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□
	<b>PTTNR/L□□M22</b>	TN□□2204□□	TN□□2204□□	TN□□2204□□	TN□□2204□□		



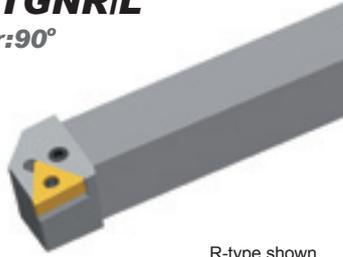


# TURNING / General Turning Tools

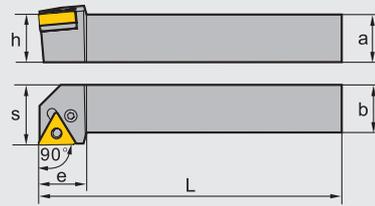
## External turning tools

### Corresponding tool holders of insert **TN** P-type clamping

**PTGNR/L**  
Kr:90°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin
		R	L	a	b	L	h	s	e					
<b>PTGNR/L</b>	<b>1616H16</b>	▲	▲	16	16	100	16	20	20	LEM6×13.4A	T16AP	WH25L	L3	SP3
	<b>2020K16</b>	▲	▲	20	20	125	20	25	20					
	<b>2525M16</b>	▲	▲	25	25	150	25	32	20					
	<b>3232P16</b>	▲	▲	32	32	170	32	40	20					
	<b>2525M22</b>	▲	▲	25	25	150	25	32	28	LEM8×21	T22AP	WH30L	L4	SP4
	<b>3232P22</b>	▲	▲	32	32	170	32	40	28					
	<b>3232P27</b>	▲	▲	32	32	170	32	40	33					
	<b>4040S27</b>	▲	▲	40	40	250	40	50	33					

▲Stock available    △Make-to-order

### Applicable inserts

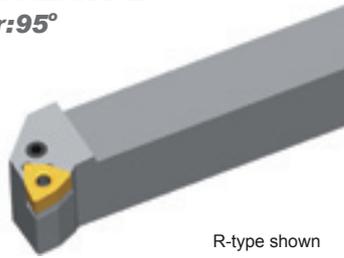
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b> A75	<b>WGM</b> Wiper A76	<b>DR</b> Double-side A78	<b>HDR</b> A79	Without chipbreaker A80	A130
	<b>WGF</b> Wiper A75	<b>PM</b> A76	<b>DR</b> Single-side A78			A130 -A131
	<b>SF</b> A75	<b>DM</b> A77	<b>ER</b> Double-side A78			A131
	<b>EF</b> A76	<b>EM</b> A77	<b>SNR</b> A78			
			<b>LR</b> Single-side A77			
<b>Tool holder type</b>	<b>PTGNR/L□□H/K/M/P16</b>	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□
	<b>PTGNR/L□□M/P22</b>	TN□□2204□□	TN□□2204□□	TN□□2204□□	TN□□2204□□	
	<b>PTGNR/L□□P/S27</b>			TN□□2706□□	TN□□2706□□	



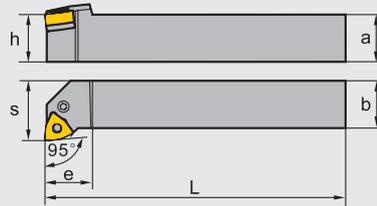
Corresponding tool holders of insert **WN**   P-type clamping

**PWLNRL**

Kr:95°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin
		R	L	a	b	L	h	s	e					
<b>PWLNRL/L</b>	<b>1616H06</b>	▲	▲	16	16	100	16	20	20	LEM6×13.4A	W06AP	WH25L	L3	SP3
	<b>2020K06</b>	▲	▲	20	20	125	20	25	20					
	<b>2525M06</b>	▲	▲	25	25	150	25	32	20					
	<b>2020K08</b>	▲	▲	20	20	125	20	25	26	LEM8×21	W08AP	WH30L	L4	SP4
	<b>2525M08</b>	▲	▲	25	25	150	25	32	26					
	<b>3232P08</b>	△	△	32	32	170	32	40	28					

▲Stock available    △Make-to-order

General turning

External turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>DF</b> Wiper A83	<b>WGM</b> Wiper A84	<b>DR</b> Double-side A86	Without chipbreaker A86	A136
	<b>WGF</b> Wiper A83	<b>PM</b> A85	<b>SNR</b> Double-side A86		A136 -A137
	<b>SF</b> A83	<b>DM</b> A85			A137
	<b>EF</b> A84	<b>EM</b> A85			
	<b>NF</b> A84	<b>NM</b> A86			
Tool holder type	<b>PWLNRL/□□H/K/M06</b>	WN□□0604□□	WN□□0604□□	WN□□0604□□	WN□□0604□□
	<b>PWLNRL/□□K/M/P08</b>	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□

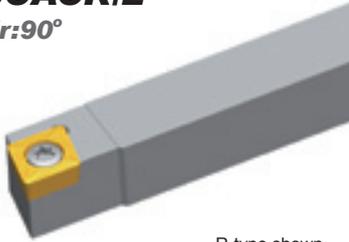


# TURNING / General Turning Tools

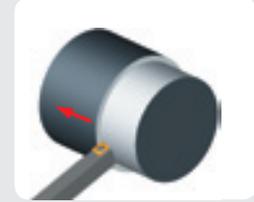
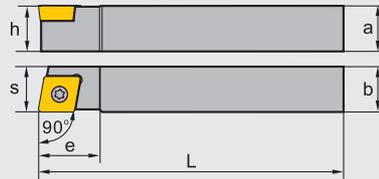
## External turning tools

### Corresponding tool holders of insert **CC** S-type clamping

**SCACRIL**  
Kr:90°



R-type shown



General turning

External turning tools

Type	Stock		Basic dimensions(mm)							Screw	Wrench
	R	L	a	b	L	h	s	e			
<b>SCACR/L</b>	<b>0808F06</b>	△	△	8	8	80	8	8	16	I60M2.5×6.5	WT07IP
	<b>1010H06</b>	▲	△	10	10	100	10	10	16		
	<b>1212H06</b>	△	△	12	12	100	12	12	16		
	<b>1212H09</b>	▲	▲	12	12	100	12	12	20	I60M3.5×8	WT15IP
	<b>1616H09</b>	△	△	16	16	100	16	16	20		

▲Stock available    △Make-to-order

### Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>USF</b>  A89	<b>HF</b>  A89	<b>HM</b>  A90	<b>HR</b>  A91	<b>LH</b>  A91-92	 Without chipbreaker A92	 A139
	<b>SF</b>  A89	<b>EF</b>  A90	<b>EM</b>  A90		<b>LC</b>  A91		 A144
Tool holder type	<b>SCACR/L□□H/F06</b>	CC□□0602□□	CC□□0602□□	CC□□0602□□	CC□□0602□□	CCGX 0602□□	CC□□ 0602□□
	<b>SCACR/L□□H09</b>	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CCGX 09T3□□	CC□□ 09T3□□

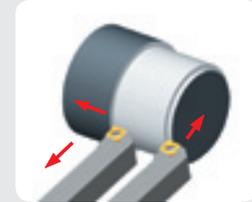
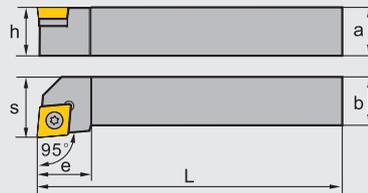


Corresponding tool holders of insert **CC**   S-type clamping

**SCLCR/L**  
Kr:95°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>SCLCR/L</b>	<b>0808F06</b>	▲	△	08	08	80	08	10	12	I60M2.5×6.5	---	---	WT07IP
	<b>1010F06</b>	▲	▲	10	10	80	10	12	12				
	<b>1212H06</b>	△	△	12	12	100	12	16	12				
	<b>1616H06</b>	△	△	16	16	100	16	20	16				
	<b>1212H09</b>	▲	▲	12	12	100	12	16	16	I60M3.5×8	---	---	WT15IP
	<b>1616H09</b>	▲	▲	16	16	100	16	20	16				
	<b>2020K09</b>	△	△	20	20	125	20	25	16				
	<b>2525M09</b>	△	△	25	25	150	25	32	16	I60M4×11X	C12BS	SM6×10XA	WT15IP WH40L
	<b>2020K12</b>	▲	▲	20	20	125	20	25	20				
	<b>2525M12</b>	▲	▲	25	25	150	25	32	20				
<b>3225M12</b>	▲	▲	32	25	150	32	32	20					

▲Stock available    △Make-to-order

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>USF</b>  A89	<b>HF</b>  A89	<b>HM</b>  A90	<b>HR</b>  A91	<b>LH</b>  A91-92	 Without chipbreaker A92	 A139
	<b>SF</b>  A89	<b>EF</b>  A90	<b>EM</b>  A90		<b>LC</b>  A91		 A144
Tool holder type	<b>SCLCR/L□□H/F06</b>	CC□□ 0602□□	CC□□ 0602□□	CC□□ 0602□□	CC□□ 0602□□	CCGX 0602□□	CC□□ 0602□□
	<b>SCLCR/L□□H/K/M09</b>	CC□□ 09T3□□	CC□□ 09T3□□	CC□□ 09T3□□	CC□□ 09T3□□	CCGX 09T3□□	CC□□ 09T3□□
	<b>SCLCR/L□□K/M12</b>		CC□□ 1204□□	CC□□ 1204□□	CC□□ 1204□□	CCGX 1204□□	CC□□ 1204□□

General turning

External turning tools

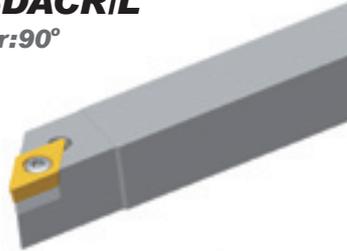


# TURNING / General Turning Tools

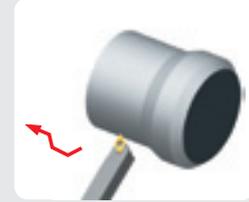
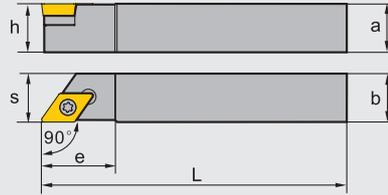
## External turning tools

### Corresponding tool holders of insert **DC** S-type clamping

**SDACR/L**  
Kr:90°



R-type shown



General turning

External turning tools

Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>SDACR/L</b>	<b>0808K07</b>	△	△	8	8	125	8	8	15	I60M2.5×6.5	---	---	WT07IP
	<b>1010K07</b>	△	△	10	10	125	10	10	15				
	<b>1212K07</b>	△	△	12	12	125	10	10	15				
	<b>1212K11</b>	△	△	12	12	125	12	12	22	I60M3.5×8	---	---	WT15IP
	<b>1616K11</b>	△	△	16	16	125	16	16	22	I60M3.5×12	D11BS	SM5×8.65XA	WT15IP WH35L
	<b>2020K11</b>	△	△	20	20	125	20	20	22				
	<b>2525M11</b>	△	△	25	25	150	25	25	22				

▲Stock available    △Make-to-order

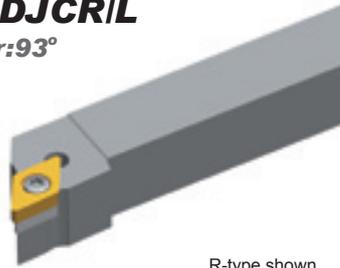
### Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts	
Inserts shape	<b>USF</b>  A93	<b>HF</b>  A93	<b>HM</b>  A94	<b>HR</b>  A95	<b>LH</b>  A95	 Without chipbreaker A95	 A140	
	<b>SF</b>  A93	<b>EF</b>  A94	<b>EM</b>  A94		<b>LC</b>  A95		 A145	
Tool holder type	<b>SDACR/L□□K07</b>	DC□□ 0702□□	DC□□ 0702□□	DC□□ 0702□□		DCGX 0702□□	DC□□0702□□	DC□□0702□□
	<b>SDACR/L□□K/M11</b>	DC□□ 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□	DCGX 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□

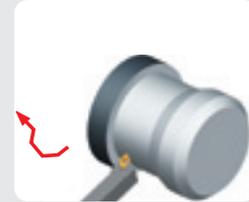
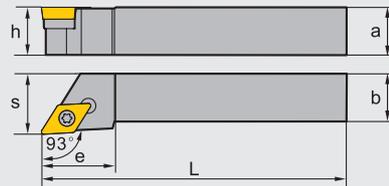


Corresponding tool holders of insert **DC**   S-type clamping

**SDJCRIL**  
Kr:93°



R-type shown



General turning

External turning tools

Type	Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench	
	R	L	a	b	L	h	s	e					
<b>SDJCR/L</b>	<b>0808F07</b>	△	△	8	8	80	8	10	15	I60M2.5×6.5	---	---	WT07IP
	<b>1010F07</b>	▲	△	10	10	80	10	12	15				
	<b>1212H07</b>	▲	▲	12	12	100	12	16	15				
	<b>1414H07</b>	△	△	14	14	100	14	18	15				
	<b>1616H07</b>	▲	▲	16	16	100	16	20	15				
	<b>2020K07</b>	△	△	20	20	125	20	25	28				
	<b>2525M07</b>	△	△	25	25	150	25	32	28				
<b>1212K11</b>	△	△	12	12	125	12	16	22	I60M3.5×12	D11BS	SM5×8.65XA	WT15IP WH35L	
<b>1616K11</b>	▲	▲	16	16	125	16	20	22					
<b>2020K11</b>	▲	▲	20	20	125	20	25	22					
<b>2525M11</b>	▲	▲	25	25	150	25	32	22					

▲Stock available    △Make-to-order

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts	
Inserts shape	<b>USF</b>  A93	<b>HF</b>  A93	<b>HM</b>  A94	<b>HR</b>  A95	<b>LH</b>  A95	<b>Without chipbreaker</b>  A95	 A140	
	<b>SF</b>  A93	<b>EF</b>  A94	<b>EM</b>  A94		<b>LC</b>  A95		 A145	
Tool holder type	<b>SDJCR/L□□F/H/K/M07</b>	DC□□ 0702□□	DC□□ 0702□□	DC□□ 0702□□		DCGX 0702□□	DC□□ 0702□□	DC□□ 0702□□
	<b>SDJCR/L□□K/M11</b>	DC□□ 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□	DCGX 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□

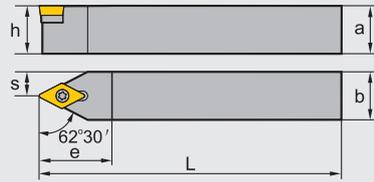
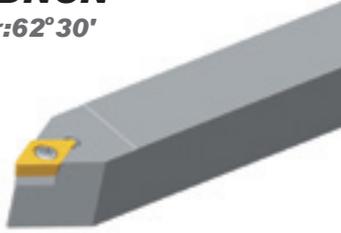


# TURNING / General Turning Tools

## External turning tools

### Corresponding tool holders of insert **DC** S-type clamping

**SDNCN**  
Kr:62°30'



General turning

External turning tools

Type	Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench	
		a	b	L	h	s	e					
<b>SDNCN</b>	0808F07	△	8	8	80	8	4	15	I60M2.5×6.5	---	---	WT07IP
	1010F07	▲	10	10	80	10	5	15				
	1212H07	▲	12	12	100	12	6	15				
	1616H07	△	16	16	100	16	8	15				
	2020K07	△	20	20	125	20	10	20				
	2525M07	△	25	25	150	25	12.5	20				
	1616K11	▲	16	16	125	16	8	22	I60M3.5×12	D11BS	SM5×8.65XA	WT15IP WH35L
	2020K11	▲	20	20	125	20	10	22				
	2525M11	▲	25	25	150	25	12.5	22				
	3225M11	△	32	25	150	32	12.5	22				
	3232P11	△	32	32	170	32	16	22				

▲Stock available    △Make-to-order

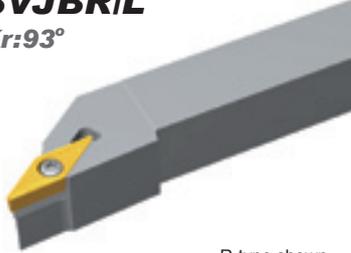
### Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>USF</b>  A93	<b>HF</b>  A93	<b>HM</b>  A94	<b>HR</b>  A95	<b>LH</b>  A95	 A95 <small>Without chipbreaker</small>	 A140
	<b>SF</b>  A93	<b>EF</b>  A94	<b>EM</b>  A94		<b>LC</b>  A95		 A145
Tool holder type	<b>SDNCN□□F/H/K/M07</b>	DC□□0702□□	DC□□0702□□	DC□□0702□□		DCGX 0702□□	DC□□0702□□
	<b>SDNCN□□K/M/P11</b>	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DCGX 11T3□□	DC□□11T3□□

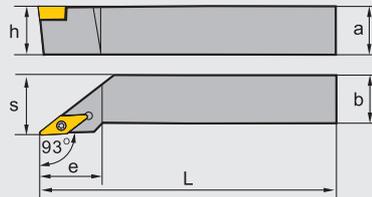


Corresponding tool holders of insert **VB**   S-type clamping

**SVJBR/L**  
Kr:93°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>SVJBR/L</b>	1212H11	▲	▲	12	12	100	12	16	25	I60M2.5×6.5	---	---	WT071P
	1616H11	▲	▲	16	16	100	16	20	25				
	2020K11	▲	▲	20	20	125	20	25	25				
	2525M11	▲	▲	25	25	150	25	32	25				
	1616H16	▲	▲	16	16	100	16	20	35	I60M3.5×12	V16BS	SM5×8.65XA	WT151P WH35L
	2020K16	▲	▲	20	20	125	20	25	35				
	2525M16	▲	▲	25	25	150	25	32	35				

▲Stock available    △Make-to-order

General turning

External turning tools

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	PCBN&PCD inserts
Inserts shape	<b>SF</b> 	<b>HF</b> 	<b>HM</b> 	<b>HR</b> 	
		<b>NF</b> 	<b>EM</b> 	<b>SNR</b> 	
		<b>EF</b> 			
		<b>NGF</b> 			
Tool holder type	SVJBR/L□□H/K/M11	VB□□1103□□	VB□□1103□□	VB□□1103□□	
	SVJBR/L□□H/K/M16		VB□□1604□□	VB□□1604□□	VB□□1604□□



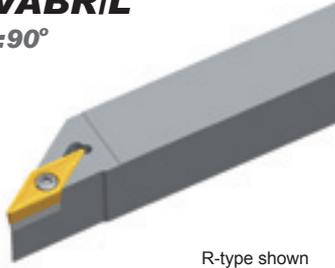


# TURNING / General Turning Tools

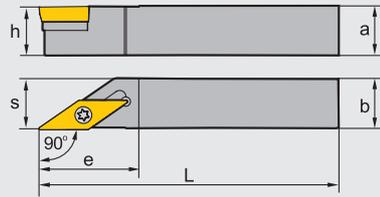
## External turning tools

### Corresponding tool holders of insert **VB** S-type clamping

**SVABRIL**  
Kr:90°



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Shim	Shim screw	Wrench
	R	L	a	b	L	h	s	e					
<b>SVABR/L</b>	<b>1010F11</b>	△	△	10	10	80	10	10	25	I60M2.5×6.5	---	---	WT07IP
	<b>1616H16</b>	△	△	16	16	100	16	16	28	I60M3.5×12	V16BS	SM5×8.65XA	WT15IP WH35L
	<b>2020K16</b>	△	△	20	20	125	20	20	28				
	<b>2525M16</b>	△	△	25	25	150	25	25	28				

▲Stock available    △Make-to-order

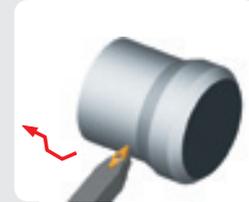
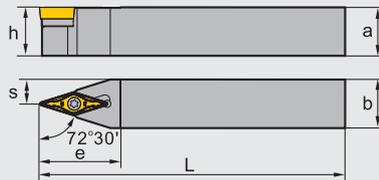
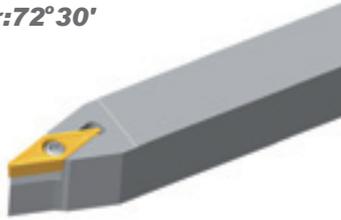
### Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	PCBN&PCD inserts
Inserts shape	<b>SF</b>  A108	<b>HF</b>  A108	<b>HM</b>  A109	<b>HR</b>  A109	 A142
		<b>NF</b>  A108	<b>EM</b>  A109	<b>SNR</b>  A109	 A147
		<b>EF</b>  A108			
		<b>NGF</b>  A108			
Tool holder type	<b>SVABR/L□□F11</b>	VB□□1103□□	VB□□1103□□	VB□□1103□□	
	<b>SVABR/L□□H/K/M16</b>		VB□□1604□□	VB□□1604□□	VB□□1604□□



Corresponding tool holders of insert **VB**   S-type clamping

**SVVBN**  
Kr:72°30'



Type	Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench	
		a	b	L	h	s	e					
<b>SVVBN</b>	<b>1212H11</b>	▲	12	12	100	12	6	25	I60M2.5×6.5	---	---	WT071P
	<b>1616H11</b>	▲	16	16	100	16	8	25				
	<b>2020K11</b>	▲	20	20	125	20	10	25				
	<b>2525M11</b>	△	25	25	150	25	12.5	35				
	<b>1616H16</b>	▲	16	16	100	16	8	35	I60M3.5×12	V16BS	SM5×8.65XA	WT151P WH35L
	<b>2020K16</b>	▲	20	20	125	20	10	35				
	<b>2525M16</b>	▲	25	25	150	25	12.5	35				

▲Stock available    △Make-to-order

General turning

External turning tools

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	PCBN&PCD inserts
Inserts shape	<b>SF</b>  A108	<b>HF</b>  A108	<b>HM</b>  A109	<b>HR</b>  A109	 A142
		<b>NF</b>  A108	<b>EM</b>  A109	<b>SNR</b>  A109	 A147
		<b>EF</b>  A108			
		<b>NGF</b>  A108			
Tool holder type	<b>SVVBN□□H/K/M11</b>	VB□□1103□□	VB□□1103□□	VB□□1103□□	
	<b>SVVBN□□H/K/M16</b>		VB□□1604□□	VB□□1604□□	VB□□1604□□



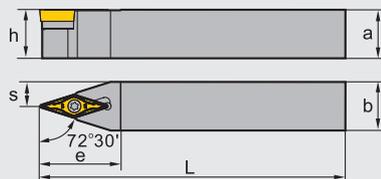
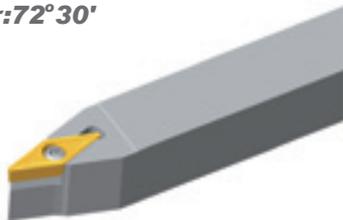
# TURNING / General Turning Tools

External turning tools

## Corresponding tool holders of insert VC□□ S-type clamping

**SVVCN**

Kr:72°30'



General turning

External turning tools

Type	Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench	
		a	b	L	h	s	e					
<b>SVVCN</b>	1212H11	▲	12	12	100	12	6	25	I60M2.5×6.5	---	---	WT071P
	1616H11	▲	16	16	100	16	8	27				
	2020K11	▲	20	20	125	20	10	30				
	2525M11	△	25	25	150	25	12.5	38				
<b>SVVCN</b>	1616H16	▲	16	16	100	16	8	33	I60M3.5×12	V16BSC	SM5×8.65XA	WT151P WH35L
	2020K16	▲	20	20	125	20	10	33				
	2525M16	▲	25	25	150	25	12.5	38				

▲Stock available    △Make-to-order

### Applicable inserts

Application	For extra finishing	For finishing	For Al machining	PCBN&PCD inserts
Inserts shape	<b>USF</b>  A105	<b>HF</b>  A105	<b>LH</b>  A106	 A143
	<b>SF</b>  A105	<b>NF</b>  A105	<b>LC</b>  A106	 A148
		<b>NGF</b>  A105		
Tool holder type	<b>SVVCN□□H/K/M11</b>	VC□□1103□□	VC□□1103□□	VCGX1103□□
	<b>SVVCN□□H/K/M16</b>		VC□□1604□□	VCGX1604□□    VC□□1604□□

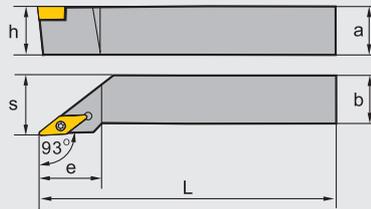


Corresponding tool holders of insert VC □ □ S-type clamping

**SVJCR/L**  
Kr:93°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>SVJCR/L</b>	<b>1212H11</b>	△	△	12	12	100	12	16	25	I60M2.5×6.5	---	---	WT07IP
	<b>1616H11</b>	▲	▲	16	16	100	16	20	25				
	<b>2020K11</b>	▲	▲	20	20	125	20	25	25				
	<b>2525M11</b>	▲	▲	25	25	150	25	32	35	I60M3.5×12	V16BSC	SM5×8.65XA	WT15IP WH35L
	<b>1616H16</b>	▲	▲	16	16	100	16	20	35				
	<b>2020K16</b>	▲	▲	20	20	125	20	25	35				
	<b>2525M16</b>	▲	▲	25	25	150	25	32	35				

▲Stock available    △Make-to-order

General turning

External turning tools

Applicable inserts

Application	For extra finishing	For finishing	For Al machining	PCBN&PCD inserts
Inserts shape	<b>USF</b>  A105	<b>HF</b>  A105	<b>LH</b>  A106	 A143
	<b>SF</b>  A105	<b>NF</b>  A105	<b>LC</b>  A106	 A148
		<b>NGF</b>  A105		
Tool holder type	<b>SVJCR/L□□H/K/M11</b>	VC□□1103□□	VC□□1103□□	VCGX1103□□
	<b>SVJCR/L□□H/K/M16</b>		VC□□1604□□	VCGX1604□□ VC□□1604□□

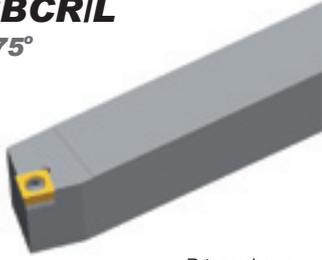


# TURNING / General Turning Tools

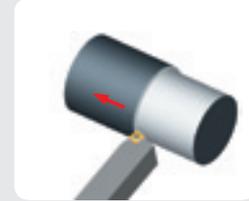
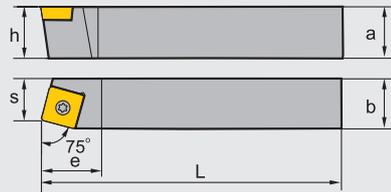
## External turning tools

### Corresponding tool holders of insert **SC** S-type clamping

**SSBCRIL**  
Kr:75°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>SSBCR/L</b>	<b>1212H09</b>	▲	▲	12	12	100	12	9	16	I60M3.5×8	---	---	WT15IP
	<b>1616H09</b>	▲	▲	16	16	100	16	13	16	I60M3.5×12	S09BS	SM5×8.65XA	WT15IP WH35L
	<b>2020K09</b>	△	△	20	20	125	20	17	20				
	<b>2525M09</b>	△	△	25	25	150	25	22	20	I60M4×11X	S12BS	SM6×10XA	WT15IP WH40L
	<b>2020K12</b>	▲	▲	20	20	125	20	17	25				
	<b>2525M12</b>	△	△	25	25	150	25	22	25				

▲Stock available    △Make-to-order

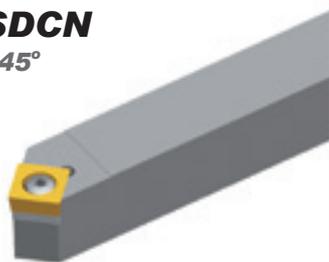
### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining
Inserts shape	<b>HF</b>  A98	<b>HM</b>  A98	<b>HR</b>  A99	<b>LH</b>  A99	Without chipbreaker  A99
	<b>EF</b>  A98	<b>EM</b>  A98		<b>LC</b>  A99	
Tool holder type	<b>SSBCR/L□□H/K/M09</b>		SC□□09T3□□	SC□□09T3□□	SC□□09T3□□
	<b>SSBCR/L□□K/M12</b>		SC□□1204□□	SC□□1204□□	SC□□1204□□



Corresponding tool holders of insert **SC**   S-type clamping

**SSDCN**  
Kr:45°



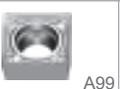
Type		Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
			a	b	L	h	s	e				
<b>SSDCN</b>	<b>1212H09</b>	▲	12	12	100	12	6	16	I60M3.5×8	---	---	WT15IP
	<b>1616H09</b>	▲	16	16	100	16	8	16	I60M3.5×12	S09BS	SM5×8.65XA	WT15IP WH35L
	<b>2020K09</b>	△	20	20	125	20	10	20				
	<b>2525M09</b>	△	25	25	150	25	12.5	20				
	<b>2525M12</b>	▲	25	25	150	25	12.5	22	I60M4×11	S12BS	SM6×10XA	WT15IP WH40L

▲Stock available    △Make-to-order

General turning

External turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	
Inserts shape	<b>HF</b>  A98	<b>HM</b>  A98	<b>HR</b>  A99	<b>LH</b>  A99	Without chipbreaker  A99	
	<b>EF</b>  A98	<b>EM</b>  A98		<b>LC</b>  A99		
Tool holder type	<b>SSDCN□□H/K/M09</b>	SC□□09T3□□	SC□□09T3□□	SC□□09T3□□	SCG□09T3□□	SC□□09T3□□
	<b>SSDCN□□M12</b>		SC□□1204□□	SC□□1204□□	SCG□1204□□	SC□□1204□□

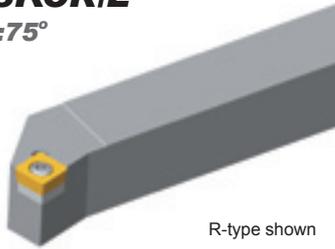


# TURNING / General Turning Tools

## External turning tools

### Corresponding tool holders of insert **SC** S-type clamping

**SSKCRIL**  
Kr:75°



Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>SSKCR/L</b>	<b>1212H09</b>	△	△	12	12	100	12	16	16	I60M3.5×8	---	---	WT15IP
	<b>1616H09</b>	▲	△	16	16	100	16	20	16	I60M3.5×12	S09BS	SM5×8.65XA	WT15IP WH35L
	<b>2020K09</b>	△	△	20	20	125	20	25	20		S12BS	SM6×10XA	WT15IP WH40L
	<b>2525M09</b>	△	△	25	25	150	25	32	20				
	<b>2020K12</b>	△	△	20	20	125	20	25	22	I60M4×11X	S12BS	SM6×10XA	WT15IP WH40L
	<b>2525M12</b>	△	△	25	25	150	25	32	22				

▲Stock available    △Make-to-order

### Applicable inserts

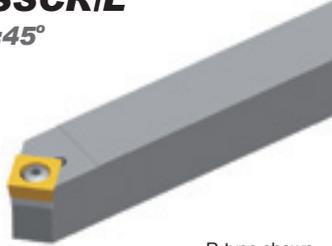
Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining
Inserts shape	<b>HF</b>  A98	<b>HM</b>  A98	<b>HR</b>  A99	<b>LH</b>  A99	Without chipbreaker  A99
	<b>EF</b>  A98	<b>EM</b>  A98		<b>LC</b>  A99	
Tool holder type	<b>SSKCR/L□□H/K/M09</b>	SC□□09T3□□	SC□□09T3□□	SC□□09T3□□	SCGX09T3□□
	<b>SSKCR/L□□K/M12</b>		SC□□1204□□	SC□□1204□□	SCGX1204□□



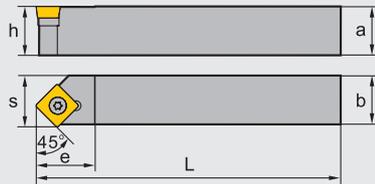
Corresponding tool holders of insert **SC**   S-type clamping

**SSSCR/L**

Kr:45°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>SSSCR/L</b>	<b>1212H09</b>	△	△	12	12	100	12	16	16	I60M3.5×8	---	---	WT15IP
	<b>1616H09</b>	▲	▲	16	16	100	16	17	16	I60M3.5×12	S09BS	SM5×8.65XA	WT15IP WH35L
	<b>2020K09</b>	△	△	20	20	125	20	21	20		S12BS	SM6×10XA	WT15IP WH40L
	<b>2525M09</b>	△	△	25	25	150	25	32	20				
	<b>2020K12</b>	▲	▲	20	20	125	20	21	24	I60M4×11X	S12BS	SM6×10XA	WT15IP WH40L
	<b>2525M12</b>	△	△	25	25	150	25	32	22				

▲ Stock available    △ Make-to-order

General turning

External turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For AI machining	For cast iron machining
Inserts shape	<b>HF</b>  A98	<b>HM</b>  A98	<b>HR</b>  A99	<b>LH</b>  A99	Without chipbreaker  A99
	<b>EF</b>  A98	<b>EM</b>  A98		<b>LC</b>  A99	
Tool holder type	<b>SSSCR/L□□H/K/M09</b>	SC□□09T3□□	SC□□09T3□□	SC□□09T3□□	SCGX09T3□□
	<b>SSSCR/L□□K/M12</b>		SC□□1204□□	SC□□1204□□	SCGX1204□□





# TURNING / General Turning Tools

## External turning tools

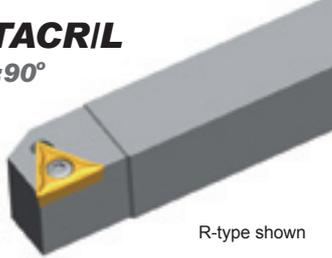
### Corresponding tool holders of insert **TC** S-type clamping

General turning

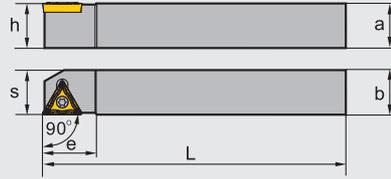
External turning tools

#### STACR/L

Kr:90°



R-type shown

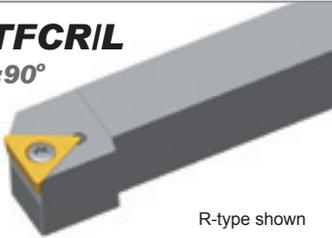


Type		Stock		Basic dimensions(mm)						Screw	Wrench	---	---
		R	L	a	b	L	h	s	e			---	---
<b>STACR/L</b>	<b>1010K11</b>	△	△	10	10	100	10	10	12	I60M2.5×6.5		---	---
	<b>1212F11</b>	△	△	12	12	100	12	12	14			---	---
	<b>1616K11</b>	△	△	16	16	100	16	16	16			---	---

▲Stock available    △Make-to-order

#### STFCR/L

Kr:90°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>STFCR/L</b>	<b>1212H11</b>	▲	▲	12	12	100	12	16	14	I60M2.5×6.5	---	---	WT07IP
	<b>1616H11</b>	▲	▲	16	16	100	16	20	14				
	<b>2020K11</b>	△	△	20	20	125	20	25	20				
	<b>2525M11</b>	△	△	25	25	150	25	32	20	I60M3.5×12	T16BS	SM5×8.65XA	WT15IP WH35L
	<b>1616K16</b>	▲	▲	16	16	125	16	20	20				
	<b>2020K16</b>	▲	▲	20	20	125	20	25	20				
<b>2525M16</b>	△	△	25	25	150	25	32	25	---	---	---	---	

▲Stock available    △Make-to-order

#### Applicable inserts

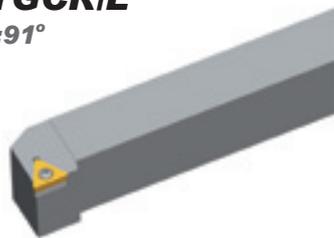
Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>HF</b> A101	<b>HM</b> A103	<b>HR</b> A103	<b>LH</b> A104	A104 Without chipbreaker	A141
	<b>EF</b> A102	<b>EM</b> A102		<b>LC</b> A103		
Tool holder type	<b>STACR/L□□K/F11</b>	TC□□1102□□	TC□□1102□□	TC□□1102□□	TCGX1102□□	TC□□1102□□
	<b>STFCR/L□□H/K/M11</b>	TC□□1102□□	TC□□1102□□	TC□□1102□□	TCGX1102□□	TC□□1102□□
	<b>STFCR/L□□K/M16</b>	TC□□16T3□□	TC□□16T3□□	TC□□16T3□□	TCGX16T3□□	TC□□16T3□□



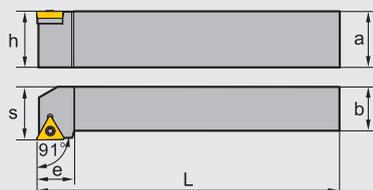
Corresponding tool holders of insert **TC**   S-type clamping

**STGCRIL**

Kr:91°



R-type shown



General turning

External turning tools

Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>STGCR/L</b>	<b>0808F09</b>	▲	△	08	08	80	8	10	12	I60M2.2×5.5	---	---	WT06IP
	<b>1010F09</b>	▲	▲	10	10	80	10	12	12				
	<b>1212H09</b>	△	△	12	12	100	12	16	12				
	<b>1212H11</b>	▲	▲	12	12	100	12	16	16	I60M2.5×6.5	---	---	WT07IP
	<b>1616H11</b>	▲	▲	16	16	100	16	20	16				
	<b>2020K11</b>	△	△	20	20	125	20	25	20				
	<b>2525M11</b>	△	△	25	25	150	25	32	20				
	<b>1616K16</b>	△	△	16	16	125	16	20	20	I60M3.5×12	T16BS	SM5×8.65XA	WT15IP WH35L
	<b>2020K16</b>	▲	▲	20	20	125	20	25	21				
	<b>2525M16</b>	▲	▲	25	25	150	25	32	21				

▲Stock available    △Make-to-order

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	<b>USF</b>  A100	<b>HF</b>  A101	<b>HM</b>  A103	<b>HR</b>  A103	<b>LH</b>  A104	<b>Without chipbreaker</b>  A104	 A141
	<b>SF</b>  A100	<b>EF</b>  A102	<b>EM</b>  A102		<b>LC</b>  A103		
Tool holder type	<b>STGCR/L□□F/H09</b>	TC□□0902□□	TC□□0902□□	TC□□0902□□	TC□□0902□□	TCGX0902□□	TC□□0902□□
	<b>STGCR/L□□H/K/M11</b>		TC□□1102□□	TC□□1102□□	TC□□1102□□	TCGX1102□□	TC□□1102□□
	<b>STGCR/L□□K/M16</b>		TC□□16T3□□	TC□□16T3□□	TC□□16T3□□	TCGX16T3□□	TC□□16T3□□

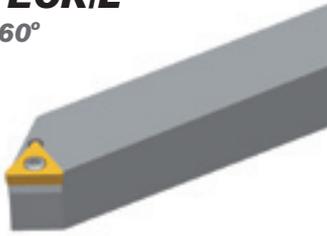


# TURNING / General Turning Tools

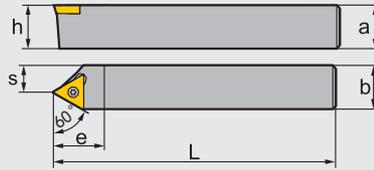
## External turning tools

### Corresponding tool holders of insert **TC** S-type clamping

**STECRIL**  
Kr:60°



R-type shown



General turning

External turning tools

Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
<b>STECR/L</b>	<b>1616H11</b>	△	△	16	16	100	16	10.5	16	I60M2.5×6.5	---	---	WT07IP
	<b>2020K11</b>	△	△	20	20	125	20	14.5	20		---	---	WT15IP
	<b>2020K16</b>	△	△	20	20	125	20	12.5	20	I60M3.5×12	T16BS	SM5×8.65XA	WT15IP
	<b>2525M16</b>	△	△	25	25	150	25	17.0	25		---	---	WT35IP

▲Stock available    △Make-to-order

### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For AI machining	For cast iron machining Without chipbreaker	PCBN&PCD inserts	
Inserts shape	<b>HF</b>  A101	<b>HM</b>  A103	<b>HR</b>  A103	<b>LH</b>  A104	 A104	 A141	
	<b>EF</b>  A102	<b>EM</b>  A102		<b>LC</b>  A103			
Tool holder type	<b>STECR/L□□H/K11</b>	TC□□1102□□	TC□□1102□□	TC□□1102□□	TCGX1102□□	TC□□1102□□	TC□□1102□□
	<b>STECR/L□□K/M16</b>	TC□□16T3□□	TC□□16T3□□	TC□□16T3□□	TCGX16T3□□	TC□□16T3□□	

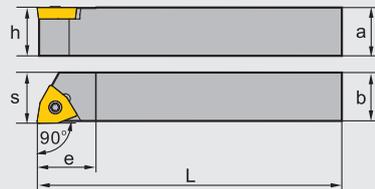


Corresponding tool holders of insert WC   S-type clamping

**SWACRIL**  
Kr:90°



R-type shown



General turning

External turning tools

Type		Stock		Basic dimensions(mm)						Screw	Wrench	—	—
		R	L	a	b	L	h	s	e				
<b>SWACR/L</b>	<b>1010E04</b>	△	△	10	10	70	10	10	10	I60M2.5×6.5	WT07IP	---	---
	<b>1212F04</b>	▲	△	12	12	80	12	12	14				
	<b>1616H06</b>	▲	△	16	16	100	16	16	20	I60M3×7	WT10IP	---	---
	<b>2020K08</b>	▲	▲	20	20	125	20	20	24	I60M3.5×12	WT15IP	---	---

▲Stock available    △Make-to-order

Applicable inserts

Application	For finishing
Inserts shape	<b>53</b> 
Tool holder type	<b>SWACR/L□□E/F04</b> WC□X0402□□
	<b>SWACR/L□□H06</b> WC□X06T3□□
	<b>SWACR/L□□K08</b> WC□X0804□□



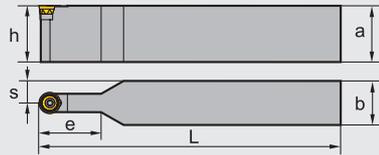
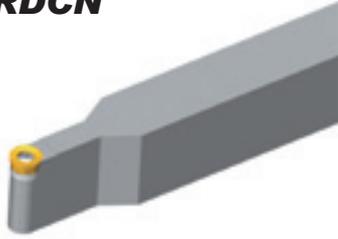


# TURNING / General Turning Tools

## External turning tools

### Corresponding tool holders of insert **RC** S-type clamping

#### SRDCN



Type	Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench	
		a	b	L	h	s	e					
<b>SRDCN</b>	<b>1616H08</b>	△	16	16	100	16	8	16	I60M3×7	---	---	WT10IP
	<b>2020K08</b>	△	20	20	125	20	10	16				
	<b>2525M08</b>	△	25	25	150	25	12.5	16				
	<b>2020K10</b>	△	20	20	125	20	10	20	I60M3.5×10	---	---	WT15IP
	<b>2525M10</b>	▲	25	25	150	25	12.5	20				
	<b>2525M12</b>	▲	25	25	150	25	12.5	35	I60M3.5×12	R12BS	SM5×8.65XA	WT15IP WH35L
	<b>3232P12</b>	△	32	32	170	32	16	35				
	<b>3225P16</b>	▲	32	25	170	32	12.5	35	I60M4×15X	R16BS	SM6×10XA	WT15IP WH40L
	<b>4040S16</b>	△	40	40	250	40	20	40				

▲ Stock available    △ Make-to-order

#### Applicable inserts

Application	For semi-finishing	For roughing	For Al machining
Inserts shape	 A96	 A96	<b>LH</b>  A96
Tool holder type	<b>SRDCN□□K/M/H08</b>	RCMT0803MO	RCMT0803MO
	<b>SRDCN□□K/M10</b>	RCMT10T3MO	RCMT10T3MO
	<b>SRDCN□□M/P12</b>	RCMT1204MO	RCMT1204MO
	<b>SRDCN□□P/S16</b>	RCMT1606MO	RCMT1606MO



Corresponding tool holders of insert **RC**   S-type clamping

**SRGCRIL**



R-type shown



General turning

External turning tools

Type		Stock		Basic dimensions(mm)					Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s				
<b>SRGCR/L</b>	<b>1616H08</b>	△	△	16	16	100	16	20	I60M3×7	---	---	WT10IP
	<b>2020K08</b>	△	△	20	20	125	20	25				
	<b>2525M08</b>	△	△	25	25	150	25	32				
	<b>1616H10</b>	△	△	16	16	100	16	20	I60M3.5×10	---	---	WT15IP
	<b>2020K10</b>	▲	▲	20	20	125	20	25				
	<b>2525M10</b>	▲	▲	25	25	150	25	32				
	<b>2020K12</b>	▲	△	20	20	125	20	27	I60M3.5×12	R12BS	SM5×8.65XA	WT15IP WH35L
	<b>2525M12</b>	▲	▲	25	25	150	25	32				
	<b>3232P16</b>	▲	△	32	32	170	32	40	I60M4×15X	R16BS	SM6×10XA	WT15IP WH40L

▲Stock available    △Make-to-order

Applicable inserts

Application	For semi-finishing	For roughing	For AI machining
Inserts shape	 A96	 A96	<b>LH</b>  A96
Tool holder type	<b>SRGCR/L□□H/K/M08</b>	RCMT0803MO	RCMT0803MO    RCGX0803MO-LH
	<b>SRGCR/L□□H/K/M10</b>	RCMT10T3MO	RCMT10T3MO
	<b>SRGCR/L□□K/M12</b>	RCMT1204MO	RCMT1204MO
	<b>SRGCR/L□□P16</b>	RCMT1606MO	RCMT1606MO



# TURNING / General Turning Tools

## External turning tools

General turning

External turning tools

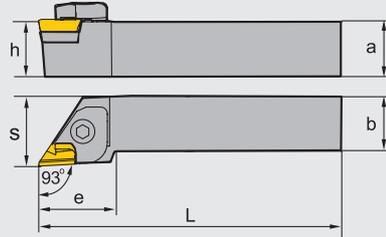
### Corresponding tool holders of insert **KNUX** C-type clamping

#### CKJNRIL

Kr:93°



R-type shown



Type	Stock	Basic dimensions(mm)						Applicable inserts	Clamp	Clamp screw	Spring	Clamping stud	Shim	Shim screw	Wrench	
		a	b	L	h	s	e									
<b>CKJNR</b>	<b>2525M16</b>	△	25	25	150	25	32	KNUX1604□□R A87	C6R1T	CM6×25A	SPR1 SPR2	P0515	K16CC	SM3×10B	WH20L WH40L	
	<b>3232P16</b>	△	32	32	170	32	40									32
	<b>4040R16</b>	△	40	40	200	40	50									32
<b>CKJNL</b>	<b>2525M16</b>	△	25	25	150	25	32	KNUX1604□□L A87	C6L1T	CM6×25A	SPR1 SPR2	P0515	K16CCL	SM3×10B	WH20L WH40L	
	<b>3232P16</b>	△	32	32	170	32	40									32
	<b>4040R16</b>	△	40	40	200	40	50									32

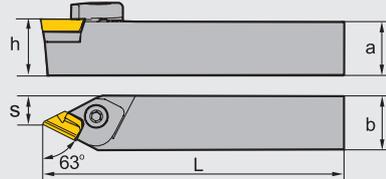
▲Stock available    △Make-to-order

#### CKNNRIL

Kr:63°



R-type shown



Type	Stock	Basic dimensions(mm)					Applicable inserts	Clamp	Clamp screw	Spring	Clamping stud	Shim	Shim screw	Wrench	
		a	b	L	h	s									
<b>CKNNR</b>	<b>2525M16</b>	△	25	25	150	25	14.3	KNUX1604□□R A87	C6R1T	CM6×25A	SPR1 SPR2	P0515	K16CC	SM3×10B	WH20L WH40L
	<b>3232P16</b>	△	32	32	170	32	16.8								
<b>CKNNL</b>	<b>2525M16</b>	△	25	25	150	25	14.3	KNUX1604□□L A87	C6L1T	CM6×25A	SPR1 SPR2	P0515	K16CCL	SM3×10B	WH20L WH40L
	<b>3232P16</b>	△	32	32	170	32	16.8								

▲Stock available    △Make-to-order

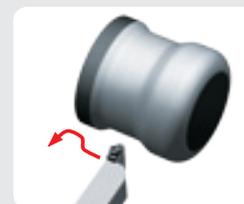
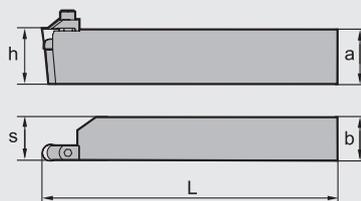


Corresponding tool holders of insert **RC/P**   C-type clamping

**CRDCRIL**  
**CRDPRIL**



R-type shown



General turning

External turning tools for ceramic inserts

Type		Stock		Basic dimensions(mm)						Applicable inserts	Clamp	Clamping screw	Wrench	Shim
		R	L	a	b	L	h	s	Ar					
<b>CRDCR/L</b>	<b>2525M09V-19</b>	△	△	25	25	150	25	25.5	19	RCGN0907 <input type="checkbox"/> <input type="checkbox"/> A152	C3RH	M5*16(GB70-85)	WH40L	RC09XC
	<b>3232P09V-28</b>	△	△	32	32	170	32	32.5	28					
	<b>4040S09V-38</b>	△	△	40	40	250	40	40.5	38					
	<b>2525M12V-19</b>	△	△	25	25	150	25	25.5	19	RCGN1207 <input type="checkbox"/> <input type="checkbox"/> A152	C4RH	M6*20(GB70-85)	WH50L	RC12XC
	<b>3232P12V-28</b>	△	△	32	32	170	32	32.5	28					
	<b>4040S12V-38</b>	△	△	40	40	250	40	40.5	38					
<b>CRDPR/L</b>	<b>2525M09V-19</b>	△	△	25	25	150	25	25.5	19	RPGN0907 <input type="checkbox"/> <input type="checkbox"/> A152	C3RH	M5*16(GB70-85)	WH40L	RP09XC
	<b>3232P09V-28</b>	△	△	32	32	170	32	32.5	28					
	<b>4040S09V-38</b>	△	△	40	40	250	40	40.5	38					
	<b>2525M12V-19</b>	△	△	25	25	150	25	25.5	19	RPGN1207 <input type="checkbox"/> <input type="checkbox"/> A152	C4RH	M6*20(GB70-85)	WH50L	RP12XC
	<b>3232P12V-28</b>	△	△	32	32	170	32	32.5	28					
	<b>4040S12V-38</b>	△	△	40	40	250	40	40.5	38					

▲Stock available    △Make-to-order



## How to select internal turning tools

### How to select internal turning tools

#### Explanation of internal turning tools detailed table

- Listed according to clamping types.

Approach angle of tools

Tools type

The first 4 letters in the type description stands for tool shape and applicatio.

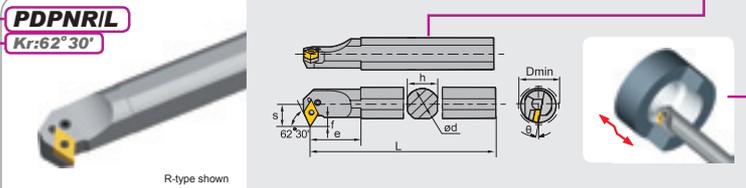
Insert type

Specification chart

Application chart

The arrow shows suitable applications such as internal turning, profiling and end turning, etc.

Corresponding tool holders of insert DN   P-type clamping



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
S32T-PDPNR/L15-3	▲	▲	40	32	30	300	22	LEM8×21	WH30L	L4	D15AP	SP4
S40U-PDPNR/L15-3	▲	▲	50	40	38	350	27					
S32T-PDPNR/L15	△	△	40	32	30	300	22	LEM8×21	WH30L	L4B	D15AP	SP4
S40U-PDPNR/L15	△	△	50	40	38	350	27					

▲ Stock available △ Make-to-order

Applicable inserts							
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	DF Wiper A61	WGM Wiper A63	DR Double side A65	HDR A66	Without chipbreaker A66	A121 -A122	
	WGF Wiper A61	PM A63	DR Single side A65			A122 -A123	
	SF A62	DM A64	ER Double side A65			A123	
	EF A62	EM A64	ER Single side A65				
	NF A62	NM A64	SNR Double side A65				
	NGF A62		LR Single side A65				
Tool holder type	<input type="checkbox"/> -PDPNR/L15-3	DN□□1504□□	DN□□1504□□	DN□□1504□□	DN□□1504□□	DN□□1504□□	
	<input type="checkbox"/> -PDPNR/L15	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□

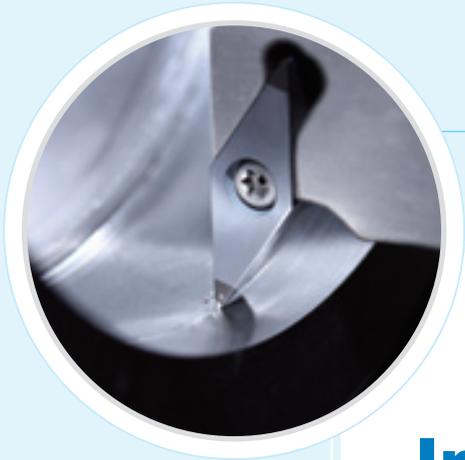
Tool holders with oil hole

Products specification

Including product description, stock (left and right hand), basic dimensions and applicable spare parts.

Applicable inserts

Including applications of inserts, reference page, insert shape and corresponding tool holders.



# TURNING



## Internal turning tools

**Internal turning tools overview** ● A209

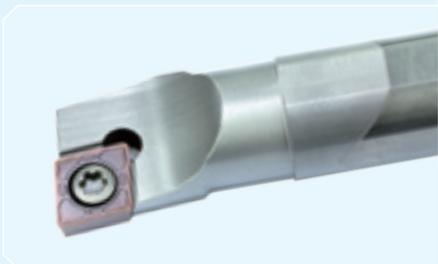
**Internal turning tools code key** ● A210-A211

**Detailed table of internal turning tools** ● A212-A240

Internal turning Tools by P-type clamping ● A212-A217

Internal turning tools by S-type clamping ● A218-A233

Damping internal turning tools and their features ● A234-A240



# ***Internal turning tools***





Internal turning tools overview

Name	Feature	62°30'	75°	90°	90°	93°	93°	95°	95°	107°30'
										
P-type internal turning tools	<ul style="list-style-type: none"> <li>The minimum machining diameter is 20mm.</li> <li>Applicable inserts are economic negative inserts.</li> <li>Hole clamping</li> </ul>	<b>PDPN</b>  A213	<b>PSKN</b>  A215	<b>PTFN</b>  A216			<b>PDUN</b>  A214	<b>PCLN</b>  A212		
									<b>PWLN</b>  A217	
S-type internal turning tools	<ul style="list-style-type: none"> <li>The minimum machining diameter is 10mm.</li> <li>Applicable inserts are 5°, 7° and 11° positive inserts.</li> <li>Screw clamping.</li> </ul>		<b>SSKC</b>  A222	<b>SCFC</b>  A232	<b>STFC</b>  A223	<b>STUP</b>  A231	<b>SDUC</b>  A220	<b>SDZC</b>  A221		<b>SDQC</b>  A219
							<b>SDUP</b>  A230		<b>SCLC</b>  A218	<b>SDQP</b>  A229
							<b>SVUC</b>  A225		<b>SCLP</b>  A233	<b>SVQB</b>  A226
							<b>SVUB</b>  A227		<b>SCLP</b>  A228	<b>SVQC</b>  A224
Damping internal turning tools	<ul style="list-style-type: none"> <li>The minimum diameter can be machined is 12mm.</li> <li>Applicable inserts are 7°, 11° positive inserts.</li> <li>Good Performance on reducing shake.</li> </ul>				<b>STUP</b>  A238	<b>SDUP</b>  A237		<b>SCLP</b>  A235	<b>SDQP</b>  A236	
							<b>SVUC</b>  A240			<b>SVQC</b>  A239

General turning

Internal turning tools overview



# TURNING / General Turning Tools

## Internal turning tools code key

General turning

Internal turning tools code key

Type of tool holder	
Code	Type
A	Steel tool holder with oil-hole
C	Cemented carbide tool holder
E	Cemented carbide tool holder with oil hole
S	Steel tool holder
X	Special inserts applied

Diameter of tool holder	
Code	Diameter
08	08
10	10
16	16
20	20
25	25
32	32
40	40
50	50

Length of tool holder	
Code	Length
H	100
K	125
M	150
N	160
Q	180
R	200
S	250
T	300
U	350
V	400

Clamping system	
	P-Hole clamping
	M-Top and hole clamping
	S-Screw on
	C-Top clamping

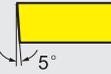
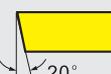
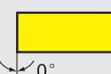
Inserts shape	
	C
	D
	R
	S
	T
	V
	W

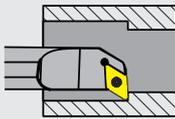
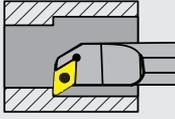
S 16 R - S D U

Tool holder style and approach angle							
A	B	C	D	E	F	G	H
J	K	L	M	N	O	P	Q
R	S	T	U	V	W	X	



Internal turning tools code key

Clearance angle of insert	
	<b>B</b>
	<b>C</b>
	<b>D</b>
	<b>E</b>
	<b>N</b>
	<b>P</b>

Cutting direction	
	<b>L - Left hand</b>
	<b>R - Right hand</b>

Manufacture option	
<b>D</b>	Increase offset f size+1.0mm
<b>E</b>	Increase offset f size+2.0mm
<b>R</b>	Round shank
<b>W</b>	Wedge clamping
<b>X</b>	Back boring

**C** **R** **07**

General turning

Internal turning tools code key

Length of cutting edge							
Inserts shape	<b>C</b>	<b>D</b>	<b>R</b>	<b>S</b>	<b>T</b>	<b>V</b>	<b>W</b>
							
Inscribed circle	Length of cutting edge(mm)						
5.556	---	---	---	---	09	---	---
6.350	06	07	---	---	11	---	---
9.525	09	11	09	09	16	16	06
12.700	12	15	12	12	22	22	08
15.875	16	19	15	15	27	---	---
19.050	19	---	19	19	33	---	---
25.400	25	---	25	25	44	---	---

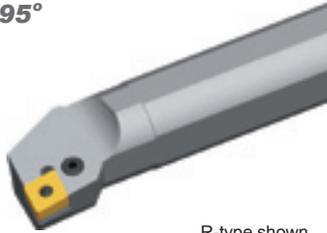


# TURNING / General Turning Tools

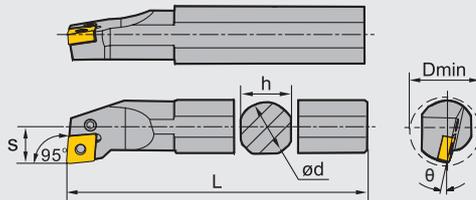
## Internal turning tools

### Corresponding tool holders of insert **CN** P-type clamping

**PCLNR/L**  
Kr:95°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	s					
S16Q-PCLNR/L09	△	△	20	16	15	180	10	LEM5×12	WH20L	L3C	---	---
S20R-PCLNR/L09	△	△	25	20	19	200	12.5					
S25S-PCLNR/L09	△	△	32	25	24	250	15	LEM6×14	WH25L	L4A	---	---
S25S-PCLNR/L12	△	△	32	25	24	250	16					
S32T-PCLNR/L12	▲	▲	40	32	30	300	21	LEM8×21	WH30L	L4	C12APB	SP4
S40U-PCLNR/L12	▲	▲	50	40	38	350	26					
S50V-PCLNR/L12	▲	▲	63	50	48	400	31	LEM8×25	WH30L	L5	C16AP	SP5
S50V-PCLNR/L16	△	△	63	50	48	400	31					
S50S-PCLNR/L19	△	△	63	50	47	250	35	LEM10×27	WH40L	L6	C19AP	SP6
S50W-PCLNR/L19	▲	▲	63	50	47	450	35					

▲Stock available    △Make-to-order

### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining Without chipbreaker	PCBN/PCD inserts
Inserts shape	DF  A54	WGM Wiper  A55	DR Double-side  A58	HDR  A59	 A59	 A118
	WGF Wiper  A54	PM  A55	DR Single-side  A58	HPR  A59		 A118 -A119
	SF  A54	DM  A56	ER Double-side  A58			 A119
	EF  A54	EM  A56	ER Single-side  A58			
	NF  A55	NM  A57	SNR Double-side  A58			
			LR Single-side  A57			

Tool holder type	□□-PCLNR/L09	CN□□0903□□	CN□□0903□□	□□-PCLNR/L12	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□
	□□-PCLNR/L16	CN□□1606□□	CN□□1606□□	□□-PCLNR/L19	CN□□1906□□	CN□□1906□□	CN□□1906□□	CN□□1906□□	CN□□1906□□	CN□□1906□□

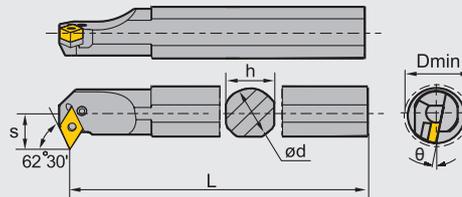


Corresponding tool holders of insert **DN**   P-type clamping

**PDPNRIL**  
Kr:62° 30'



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
S32T-PDPNR/L15-3	▲	▲	40	32	30	300	22					
S40U-PDPNR/L15-3	▲	▲	50	40	38	350	27					
S32T-PDPNR/L15	△	△	40	32	30	300	22	LEM8×21	WH30L	L4B	D15AP	SP4
S40U-PDPNR/L15	△	△	50	40	38	350	27					

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	<b>DF</b>  A61	<b>WGM</b> Wiper  A63	<b>DR</b> Double-side  A65	<b>HDR</b>  A66	Without chipbreaker  A66	 A121 -A122	
	<b>WGF</b> Wiper  A61	<b>PM</b>  A63	<b>DR</b> Single-side  A65			 A122 -A123	
	<b>SF</b>  A62	<b>DM</b>  A64	<b>ER</b> Double-side  A65			 A123	
	<b>EF</b>  A62	<b>EM</b>  A64	<b>ER</b> Single-side  A65				
	<b>NF</b>  A62	<b>NM</b>  A64	<b>SNR</b> Double-side  A65				
	<b>NGF</b>  A62		<b>LR</b> Single-side  A65				
Tool holder type	<input type="checkbox"/> -PDPNR/L15-3	DN□□1504□□	DN□□1504□□	DN□□1504□□		DN□□1504□□	DN□□1504□□
	<input type="checkbox"/> -PDPNR/L15	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□



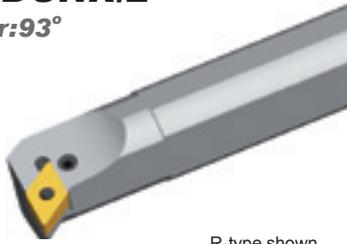


# TURNING / General Turning Tools

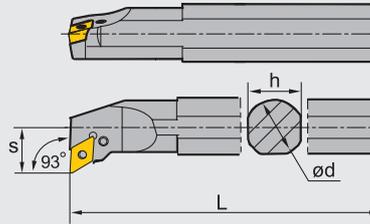
## Internal turning tools

### Corresponding tool holders of insert **DN** P-type clamping

**PDUNRIL**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
S20R-PDUNR/L11	△	△	25	20	19	200	13	LEM5×12	WH20L	L3D	---	---
S25S-PDUNR/L11	△	△	32	25	24	250	17					
S32T-PDUNR/L15	△	△	40	32	30	300	23	LEM8×21	WH30L	L4B	D15AP	SP4
S32T-PDUNR/L15-3	△	△	40	32	30	300	23	LEM8×21	WH30L	L4	D15AP	SP4
S40U-PDUNR/L15	△	△	50	40	38	350	27	LEM8×21	WH30L	L4B	D15AP	SP4
S40U-PDUNR/L15-3	▲	▲	50	40	38	350	27	LEM8×21	WH30L	L4	D15AP	SP4

▲Stock available    △Make-to-order

### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	DF  A61	WGM Wiper  A63	DR Double-side  A65	HDR  A66	Without chipbreaker  A66	A121 -A122
	WGF Wiper  A61	PM  A63	DR Single-side  A65			A122 -A123
	SF  A62	DM  A64	ER Double-side  A65			A123
	EF  A62	EM  A64	ER Single-side  A65			
	NF  A62	NM  A64	SNR Double-side  A65			
	NGF  A62		LR Single-side  A65			
Tool holder type	<input type="checkbox"/> -PDUNR/L11	DN <input type="checkbox"/> 1104 <input type="checkbox"/>	DN <input type="checkbox"/> 1104 <input type="checkbox"/>	DN <input type="checkbox"/> 1104 <input type="checkbox"/>		
	<input type="checkbox"/> -PDUNR/L15-3	DN <input type="checkbox"/> 1504 <input type="checkbox"/>	DN <input type="checkbox"/> 1504 <input type="checkbox"/>	DN <input type="checkbox"/> 1504 <input type="checkbox"/>	DN <input type="checkbox"/> 1504 <input type="checkbox"/>	DN <input type="checkbox"/> 1504 <input type="checkbox"/>
	<input type="checkbox"/> -PDUNR/L15	DN <input type="checkbox"/> 1506 <input type="checkbox"/>	DN <input type="checkbox"/> 1506 <input type="checkbox"/>	DN <input type="checkbox"/> 1506 <input type="checkbox"/>	DN <input type="checkbox"/> 1506 <input type="checkbox"/>	DN <input type="checkbox"/> 1506 <input type="checkbox"/>



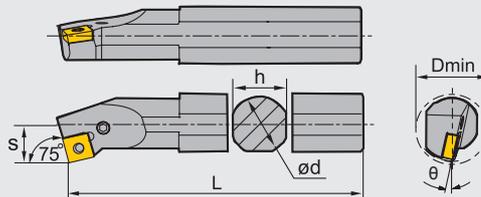
Corresponding tool holders of insert **SN**   P-type clamping

**PSKNRIL**

Kr:75°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
<b>S25S-PSKNR/L12</b>	▲	▲	32	25	24	250	17	LEM6×14	WH25L	L4A	---	---
<b>S32T-PSKNR/L12</b>	△	△	41	32	30	300	22	LEM8×21	WH30L	L4	S12APB	SP4
<b>S40U-PSKNR/L12</b>	△	△	50	40	38	350	27					

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For roughing	PCBN/PCD inserts
Inserts shape	<b>DF</b>  A67	<b>PM</b>  A68	<b>DR</b> Double-side  A70	<b>HDR</b>  A72	Without chipbreaker  A74	 A126
	<b>EF</b>  A67	<b>DM</b>  A68	<b>DR</b> Single-side  A70-71	<b>HPR</b>  A72		 A127
	<b>SF</b>  A67	<b>EM</b>  A69	<b>ER</b> Double-side  A71			 A128
		<b>NM</b>  A69	<b>ER</b> Single-side  A71			
			<b>SNR</b> Double-side  A71			
			<b>LR</b> Single-side  A69			
Tool holder type	<input type="checkbox"/> <input type="checkbox"/> -PSKNR/L12	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>

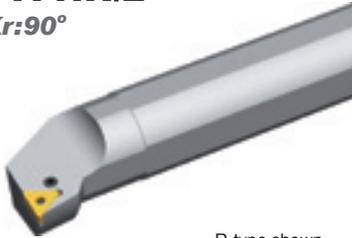


# TURNING / General Turning Tools

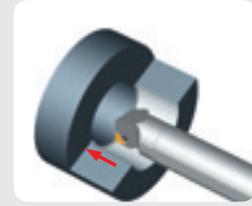
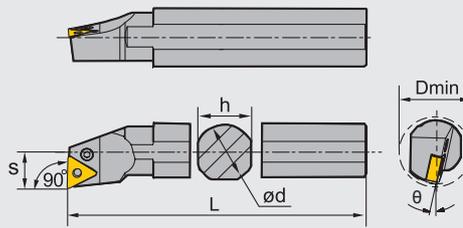
## Internal turning tools

### Corresponding tool holders of insert **TN** P-type clamping

**PTFNRIL**  
Kr:90°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
<b>S25S-PTFNR/L16</b>	▲	▲	32	25	24	250	16	LEM5×12	WH20L	L3B	---	---
<b>S32T-PTFNR/L16</b>	△	△	41	32	30	300	21	LEM6×17	WH25L	L3	T16APB	SP3
<b>S40U-PTFNR/L16</b>	△	△	50	40	38	350	26					

▲Stock available    △Make-to-order

### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	<b>DF</b> A75	<b>WGM</b> Wiper A76	<b>DR</b> Double-side A78	<b>HDR</b> A79	Without chipbreaker A80	A130
	<b>WG</b> Wiper A75	<b>PM</b> A76	<b>DR</b> Single-side A78			A130 -A131
	<b>SF</b> A75	<b>DM</b> A77	<b>ER</b> Double-side A78			A131
	<b>EF</b> A76	<b>EM</b> A77	<b>SNR</b> Double-side A78			
			<b>LR</b> Single-side A77			
Tool holder type	<input type="checkbox"/> -PTFNR/L16	TN <input type="checkbox"/> 1604 <input type="checkbox"/>	TN <input type="checkbox"/> 1604 <input type="checkbox"/>	TN <input type="checkbox"/> 1604 <input type="checkbox"/>	TN <input type="checkbox"/> 1604 <input type="checkbox"/>	TN <input type="checkbox"/> 1604 <input type="checkbox"/>



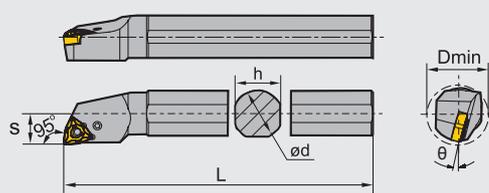
Corresponding tool holders of insert **WN**   P-type clamping

**PWLNR/L**

Kr:95°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
S16R-PWLNR/L06	△	△	20	16	15	200	10	LEM5X12	WH20L	L3D	---	---
S20R-PWLNR/L06	△	△	25	20	19	200	12			L3B		
S25S-PWLNR/L06	△	△	35	25	24	250	15					
S20R-PWLNR/L08	△	△	23	20	19	200	12.5	LEM6X14	WH25L	L4A	---	---
S25S-PWLNR/L08	△	△	32	25	24	250	16					
S32T-PWLNR/L08	△	△	41	32	30	300	21	LEM8X21	WH30L	L4	W08AP	SP4

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN/PCD inserts
Inserts shape	<b>DF</b> A83	<b>WGM</b> Wiper A84	<b>DR</b> Double-side A86	Without chipbreaker A86	A136
	<b>WGF</b> Wiper A83	<b>PM</b> A85	<b>SNR</b> Double-side A86		A136 -A137
	<b>SF</b> A83	<b>DM</b> A85			A137
	<b>EF</b> A84	<b>EM</b> A85			
	<b>NF</b> A84	<b>NM</b> A86			
Tool holder type	<input type="checkbox"/> -PWLNR/L06	WN <input type="checkbox"/> 0604 <input type="checkbox"/>	WN <input type="checkbox"/> 0604 <input type="checkbox"/>	WN <input type="checkbox"/> 0604 <input type="checkbox"/>	WN <input type="checkbox"/> 0604 <input type="checkbox"/>
	<input type="checkbox"/> -PWLNR/L08	WN <input type="checkbox"/> 0804 <input type="checkbox"/>	WN <input type="checkbox"/> 0804 <input type="checkbox"/>	WN <input type="checkbox"/> 0804 <input type="checkbox"/>	WN <input type="checkbox"/> 0804 <input type="checkbox"/>



# TURNING / General Turning Tools

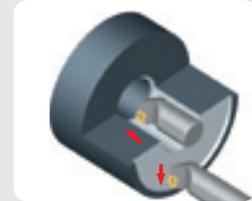
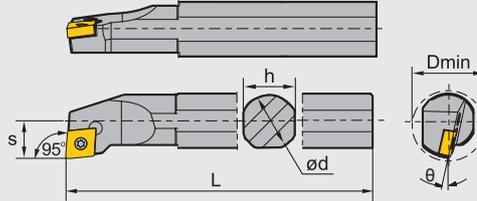
## Internal turning tools

### Corresponding tool holders of insert **CC** S-type clamping

**SCLCR/L**  
Kr:95°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
S08K-SCLCR/L06	▲	▲	10	8	7.4	125	5	I60M2.5×5.5	WT07IP	---	---
S10K-SCLCR/L06	▲	▲	13	10	9	125	6.5				
S12M-SCLCR/L06	▲	▲	16	12	11	150	9				
S12M-SCLCR/L09	▲	▲	16	12	11	150	9	I60M3.5×8	WT15IP	---	---
S14N-SCLCR/L09	△	△	18	14	13	160	9				
S16Q-SCLCR/L09	△	△	20	16	15	180	10				
S20R-SCLCR/L09	△	△	25	20	19	200	12	I60M3.5×10	WT15IP	---	---
S25S-SCLCR/L09	△	△	32	25	24	250	15.5				
S20R-SCLCR/L12	△	△	25	20	19	200	12.5	I60M4×11X	WT15IP	---	---
S25S-SCLCR/L12	▲	▲	32	25	24	250	15.5	I60M4×11X	WT15IP	---	---
S32T-SCLCR/L12	△	△	39	32	30	300	20	I60M4×11X	WH40L WT15IP	C12BS	SM6×10×A
S40U-SCLCR/L12	△	△	50	40	38	350	24.5				

▲Stock available    △Make-to-order

### Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining Without chipbreaker	PCBN/PCD inserts
Inserts shape	USF  A89	HF  A89	HM  A90	HR  A91	LH  A91-92	 A92	 A139
	SF  A89	EF  A90	EM  A90		LC  A91		 A144
Tool holder type	<input type="checkbox"/> -SCLCR/L06	CC <input type="checkbox"/> 0602 <input type="checkbox"/>	CC <input type="checkbox"/> 0602 <input type="checkbox"/>	CC <input type="checkbox"/> 0602 <input type="checkbox"/>	CC <input type="checkbox"/> 0602 <input type="checkbox"/>	CCGX0602 <input type="checkbox"/>	CC <input type="checkbox"/> 0602 <input type="checkbox"/>
	<input type="checkbox"/> -SCLCR/L09	CC <input type="checkbox"/> 09T3 <input type="checkbox"/>	CC <input type="checkbox"/> 09T3 <input type="checkbox"/>	CC <input type="checkbox"/> 09T3 <input type="checkbox"/>	CC <input type="checkbox"/> 09T3 <input type="checkbox"/>	CCGX09T3 <input type="checkbox"/>	CC <input type="checkbox"/> 09T3 <input type="checkbox"/>
	<input type="checkbox"/> -SCLCR/L12		CC <input type="checkbox"/> 1204 <input type="checkbox"/>	CC <input type="checkbox"/> 1204 <input type="checkbox"/>	CC <input type="checkbox"/> 1204 <input type="checkbox"/>	CCGX1204 <input type="checkbox"/>	CC <input type="checkbox"/> 1204 <input type="checkbox"/>

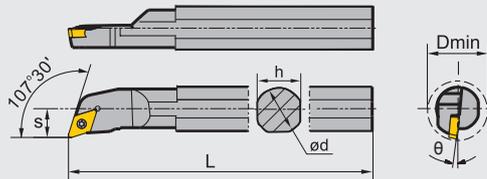


Corresponding tool holders of insert **DC**   S-type clamping

**SDQCRIL**  
Kr:107° 30'



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S				
S10K-SDQCR/L07	▲	▲	13	10	9	125	7	I60M2.5×5.5	WT07IP	---	---
S12M-SDQCR/L07	▲	▲	16	12	11	150	9				
S16Q-SDQCR/L07	△	△	20	16	15	180	11	I60M3.5×8	WT15IP	---	---
S20R-SDQCR/L11	△	△	25	20	19	200	13				
S25S-SDQCR/L11	△	△	32	25	24	250	17	I60M3.5×10	WT15IP	---	---
S32T-SDQCR/L11	△	△	40	32	30	300	22				
S40T-SDQCR/L11	△	△	50	40	38	350	27				

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For AI machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	USF  A93	HF  A93	HM  A94	HR  A95	LH  A95	 A95 Without chipbreaker	 A140	
	SF  A93	EF  A94	EM  A94		LC  A95		 A145	
Tool holder type	<input type="checkbox"/> -SDQCR/L07	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>		DCGX0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SDQCR/L11	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DCGX11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>



# TURNING / General Turning Tools

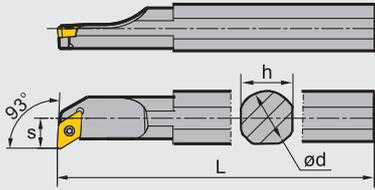
## Internal turning tools

### Corresponding tool holders of insert DC S-type clamping

**SDUCRIL**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S				
S10K-SDUCR/L07	▲	▲	13	10	9	125	7	I60M2.5×5.5	WT07IP	---	---
S12M-SDUCR/L07	▲	▲	16	12	11	150	9				
S16Q-SDUCR/L07	△	△	20	16	15	180	11	I60M3.5×8	WT15IP	---	---
S20R-SDUCR/L11	△	△	25	20	19	200	13				
S25S-SDUCR/L11	△	△	32	25	24	250	17	I60M3.5×10	WT15IP	---	---
S32T-SDUCR/L11	△	△	40	32	30	300	22				
S40U-SDUCR/L11	△	△	50	40	38	350	27				

▲Stock available    △Make-to-order

### Applicable inserts

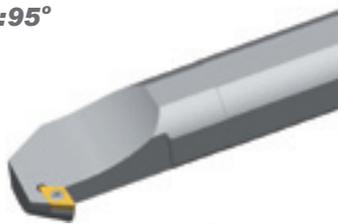
Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	<b>USF</b>  A93	<b>HF</b>  A93	<b>HM</b>  A94	<b>HR</b>  A95	<b>LH</b>  A95	 A95 Without chipbreaker	 A140	
	<b>SF</b>  A93	<b>EF</b>  A94	<b>EM</b>  A94		<b>LC</b>  A95		 A145	
Tool holder type	<input type="checkbox"/> <b>-SDUCR/L07</b>	DC□□0702□□	DC□□0702□□	DC□□0702□□		DCGX0702□□	DC□□0702□□	DC□□0702□□
	<input type="checkbox"/> <b>-SDUCR/L11</b>	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DCGX11T3□□	DC□□11T3□□	DC□□11T3□□



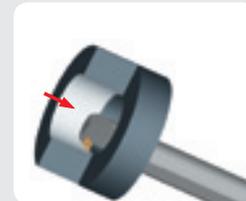
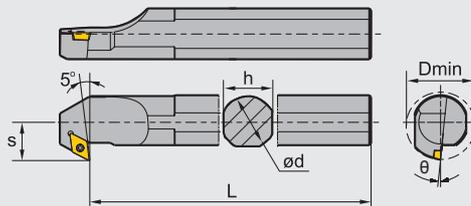
Corresponding tool holders of insert **DC**   S-type clamping

**SDZCRIL**

Kr:95°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S25S-SDZCR/L11</b>	△	△	33	25	24	250	18	I60M3.5×10	WT15IP	---	---
<b>S32T-SDZCR/L11</b>	△	△	40	32	30	300	22				
<b>S40U-SDZCR/L11</b>	△	△	48	40	38	350	27	I60M3.5×12	WT15IP WH35L	D11BS	SM5×8.65XA

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	<b>USF</b>  A93	<b>HF</b>  A93	<b>HM</b>  A94	<b>HR</b>  A95	<b>LH</b>  A95	Without chipbreaker  A95	 A140
	<b>SF</b>  A93	<b>EF</b>  A94	<b>EM</b>  A94		<b>LC</b>  A95		 A145
Tool holder type	□□-SDZCR/L11    DC□□11T3□□    DC□□11T3□□    DC□□11T3□□    DC□□11T3□□    DCGX11T3□□    DC□□11T3□□    DC□□11T3□□						



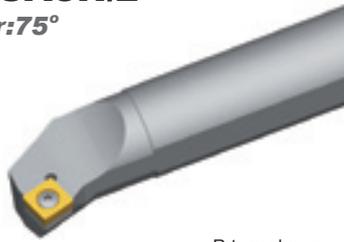


# TURNING / General Turning Tools

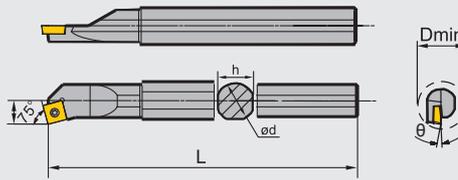
## Internal turning tools

### Corresponding tool holders of insert **SC** S-type clamping

**SSKCRIL**  
Kr:75°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S12M-SSKCR/L09</b>	▲	△	16	12	11	150	9	I60M3.5×8	WT15IP	---	---
<b>S16Q-SSKCR/L09</b>	△	△	20	16	15	180	11				
<b>S20R-SSKCR/L09</b>	△	△	25	20	19	200	13				
<b>S25S-SSKCR/L12</b>	△	△	32	25	24	250	17	I60M4×11X	WT15JP	---	---
<b>S32T-SSKCR/L12</b>	△	△	40	32	30	300	22		WT15JP WH40L	S12BS	SM6×10XA

▲Stock available    △Make-to-order

### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	
Inserts shape	<b>HF</b>  A98	<b>HM</b>  A98	<b>HR</b>  A99	<b>LH</b>  A99	 A99 Without chipbreaker	
	<b>EF</b>  A98	<b>EM</b>  A98		<b>LC</b>  A99		
Tool holder type	<input type="checkbox"/> -SSKCR/L09	SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	SCGX09T3 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SSKCR/L12		SC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SCGX1204 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>



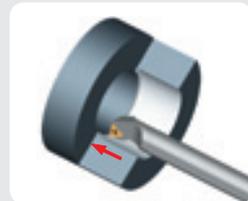
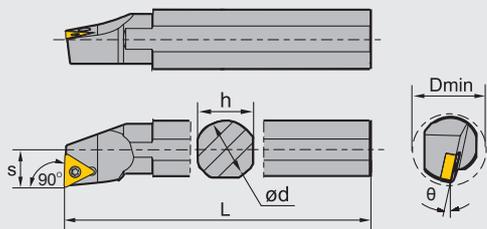
Corresponding tool holders of insert **TC**   S-type clamping

**STFCRIL**

Kr:90°



R-type shown



General turning

Internal turning tools

Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S12M-STFCR/L11</b>	▲	▲	16	12	11	150	9	I60M2.5×6.5		---	---
<b>S16Q-STFCR/L11</b>	△	△	20	16	15	180	10				
<b>S20R-STFCR/L11</b>	△	△	25	20	19	200	12				
<b>S25S-STFCR/L16</b>	△	△	32	25	24	250	16	I60M3.5×10		---	---
<b>S32T-STFCR/L16</b>	△	△	40	32	30	300	21	I60M3.5×12		T16BS	SM5×8.65XA
<b>S40U-STFCR/L16</b>	△	△	50	40	38	350	25				

▲Stock available    △Make-to-order

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	<b>HF</b> A101	<b>HM</b> A103	<b>HR</b> A103	<b>LH</b> A104	A104 Without chipbreaker	A141	
	<b>EF</b> A102	<b>EM</b> A102		<b>LC</b> A103			
Tool holder type	<input type="checkbox"/> -STFCR/L11	TC <input type="checkbox"/> <input type="checkbox"/> 1102 <input type="checkbox"/> <input type="checkbox"/>	TC <input type="checkbox"/> <input type="checkbox"/> 1102 <input type="checkbox"/> <input type="checkbox"/>	TC <input type="checkbox"/> <input type="checkbox"/> 1102 <input type="checkbox"/> <input type="checkbox"/>	TCGX1102 <input type="checkbox"/> <input type="checkbox"/>	TC <input type="checkbox"/> <input type="checkbox"/> 1102 <input type="checkbox"/> <input type="checkbox"/>	TC <input type="checkbox"/> <input type="checkbox"/> 1102 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -STFCR/L16	TC <input type="checkbox"/> <input type="checkbox"/> 16T3 <input type="checkbox"/> <input type="checkbox"/>	TC <input type="checkbox"/> <input type="checkbox"/> 16T3 <input type="checkbox"/> <input type="checkbox"/>	TC <input type="checkbox"/> <input type="checkbox"/> 16T3 <input type="checkbox"/> <input type="checkbox"/>	TCGX16T3 <input type="checkbox"/> <input type="checkbox"/>	TC <input type="checkbox"/> <input type="checkbox"/> 16T3 <input type="checkbox"/> <input type="checkbox"/>	TC <input type="checkbox"/> <input type="checkbox"/> 16T3 <input type="checkbox"/> <input type="checkbox"/>



# TURNING / General Turning Tools

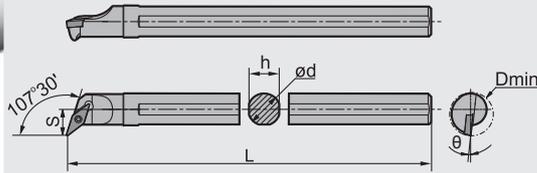
## Internal turning tools

### Corresponding tool holders of insert VC □ □ S-type clamping

**SVQCRIL**  
Kr:107° 30'



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S16Q-SVQCR/L11</b>	▲	▲	22	16	15	180	13	I60M2.5×6.5	WT071P	---	---
<b>S20R-SVQCR/L16</b>	△	△	27	16	19	200	14	I60M3.5×12	WT151P WH35L	V16BSC	SM5×8.65×A
<b>S25S-SVQCR/L16</b>	△	△	35	25	24	250	20				
<b>S32T-SVQCR/L16</b>	△	△	42	32	30	300	23				

▲Stock available    △Make-to-order

### Applicable inserts

Application	For extra finishing	For finishing	For AI machining	PCBN/PCD inserts
Inserts shape	<b>USF</b> A105	<b>HF</b> A105	<b>LH</b> A106	A143
	<b>SF</b> A105	<b>NF</b> A105	<b>LC</b> A106	A148
Tool holder type	□□-SVQCR/L11	VC□□1103□□	VC□□1103□□	VCGX1103□□
	□□-SVQCR/L16		VC□□1604□□	VCGX1604□□
				VC□□1604□□

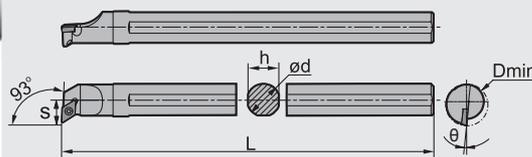


Corresponding tool holders of insert VC □ □ S-type clamping

**SVUCRIL**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S16Q-SVUCR/L11</b>	△	△	24	16	15	180	15	I60M2.5×6.5	WT07IP	---	---
<b>S20R-SVUCR/L11</b>	△	△	28	20	19	200	17				
<b>S25S-SVUCR/L16</b>	△	△	35	25	24	250	20	I60M3.5×12	WT15IP	V16BS	SM5×8.65×A
<b>S32T-SVUCR/L16</b>	△	△	42	32	30	300	23		WT15IP WH35L		

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For extra finishing	For finishing	For Al machining	PCBN/PCD inserts
Inserts shape	<b>USF</b> A105	<b>HF</b> A105	<b>LH</b> A106	A143
	<b>SF</b> A105	<b>NF</b> A105	<b>LC</b> A106	A148
Tool holder type	□□-SVUCR/L11	VC□□1103□□	VC□□1103□□	VCGX1103□□
	□□-SVUCR/L16		VC□□1604□□	VC□□1604□□

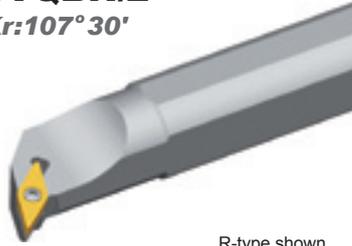


# TURNING / General Turning Tools

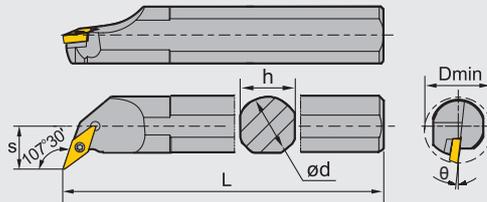
## Internal turning tools

### Corresponding tool holders of insert **VB** S-type clamping

**SVQBRIL**  
Kr:107° 30'



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S20R-SVQBR/L16</b>	△	△	27	20	19	200	14	I60M3.5×12	WT15IP WH35L	V16BS	SM5×8.65XA
<b>S25S-SVQBR/L16</b>	△	△	35	25	24	250	20				
<b>S32T-SVQBR/L16</b>	▲	▲	42	32	30	300	23				

▲Stock available    △Make-to-order

### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	PCBN/PCD inserts
Inserts shape	<b>EF</b>  A108	<b>HM</b>  A109	<b>HR</b>  A109	 A147
	<b>NF</b>  A108	<b>EM</b>  A109	<b>SNR</b>  A109	 A147
	<b>NGF</b>  A108			
Tool holder type	<input type="checkbox"/> -SVQBR/L16	VB <input type="checkbox"/> 1604 <input type="checkbox"/>	VB <input type="checkbox"/> 1604 <input type="checkbox"/>	VB <input type="checkbox"/> 1604 <input type="checkbox"/>

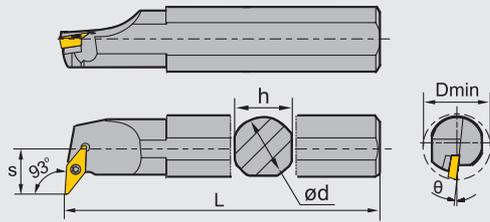


Corresponding tool holders of insert **VB**   S-type clamping

**SVUBRIL**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S25S-SVUBR/L16</b>	△	△	35	25	24	250	20	I60M3.5×12	WT15IP WH35L	V16BS	SM5×8.65XA
<b>S32T-SVUBR/L16</b>	△	△	42	32	30	300	23				

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	PCBN/PCD inserts
Inserts shape	<b>EF</b>  A108	<b>HM</b>  A109	<b>HR</b>  A109	 A147
	<b>NF</b>  A108	<b>EM</b>  A109	<b>SNR</b>  A109	 A147
	<b>NGF</b>  A108			
Tool holder type	<input type="checkbox"/> <input type="checkbox"/> -SVUBR/L16	VB <input type="checkbox"/> <input type="checkbox"/> 1604 <input type="checkbox"/> <input type="checkbox"/>	VB <input type="checkbox"/> <input type="checkbox"/> 1604 <input type="checkbox"/> <input type="checkbox"/>	VB <input type="checkbox"/> <input type="checkbox"/> 1604 <input type="checkbox"/> <input type="checkbox"/>



# TURNING / General Turning Tools

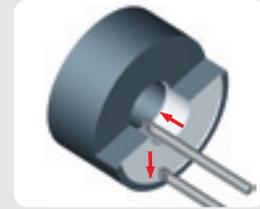
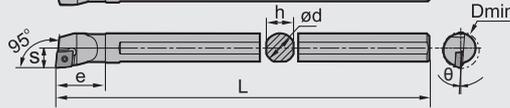
## Internal turning tools

### Corresponding tool holders of insert CP S-type clamping

**SCLPR/L**  
Kr:95°



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e				
S10K-SCLPR/L06	▲	▲	12	10	9	125	6	-7°	17	I60M2.5×5.5	WT07IP	---	---
S12M-SCLPR/L06	▲	▲	16	12	11	150	8	-4°	20				
S16Q-SCLPR/L09	▲	▲	20	16	15	180	10	-4°	29	I60M3.5×8	WT15IP	---	---
S20R-SCLPR/L09	△	△	25	20	18	200	13	-4°	35				

▲Stock available    △Make-to-order

### Applicable inserts

Application	For extra finishing
Inserts shape	<b>SF</b>  A110
Tool holder type	<input type="checkbox"/> -SCLPR/L06      CP <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCLPR/L09      CP <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>



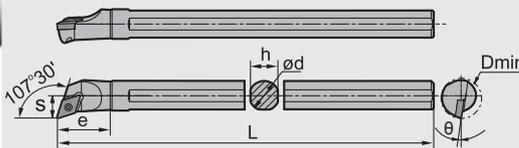
Corresponding tool holders of insert **DP**   S-type clamping

**SDQPRIL**

Kr:107° 30'



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e				
S10K-SDQPR/L07	△	△	13	10	9	125	7	-8°	20	I60M2.5×5.5	WT07IP	---	---
S12M-SDQPR/L07	▲	△	16	12	11	150	9	-8°	22				
S16Q-SDQPR/L07	▲	△	20	16	15	180	11	-6°	27	I60M2.5×6.5	WT15IP	---	---
S16Q-SDQPR/L11	▲	△	20	16	15	180	11	-6°	32	I60M3.5×8			
S16Q-SDQPR/L11	△	△	25	20	18	200	13	-6°	33				

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For extra finishing
Inserts shape	<b>USF</b> A111
	<b>SF</b> A111
Tool holder type	<input type="checkbox"/> -SDQPR/L07      DP <input type="checkbox"/> 0702 <input type="checkbox"/>
	<input type="checkbox"/> -SDQPR/L11      DP <input type="checkbox"/> 11T3 <input type="checkbox"/>







# TURNING / General Turning Tools

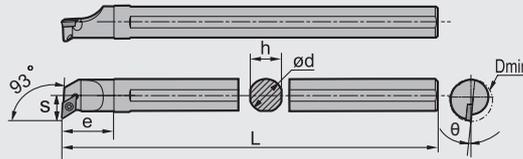
## Internal turning tools

### Corresponding tool holders of insert DP S-type clamping

**SDUPRIL**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e				
S10K-SDUPR/L07	▲	▲	15	10	9	125	9	-8°	18	I60M2.5×5.5	WT07IP	---	---
S12M-SDUPR/L07	▲	△	16	12	11	150	9	-8°	19				
S16Q-SDUPR/L07	△	△	20	16	15	180	11	-6°	25				

▲Stock available    △Make-to-order

### Applicable inserts

Application	For extra finishing
Inserts shape	SF  A111
Tool holder type	DP <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>

General turning

Internal turning tools

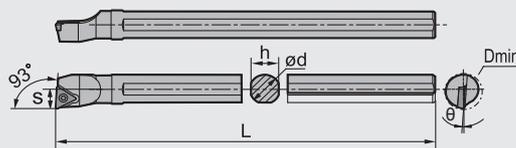


Corresponding tool holders of insert TP   S-type clamping

**STUPRIL**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S			---	---
S10M-STUPR/L09	△	△	13	10	9.4	150	6	I60M2.2×5.5	WT07IP	---	---
S10M-STUPR/L11	△	△	13	10	9.4	150	6			---	---
S12Q-STUPR/L11	△	△	16	12	11.4	180	7.5	I60M2.5×6.5	WT07IP	---	---
S16R-STUPR/L11	△	△	20	16	15	200	10			---	---

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For extra finishing
Inserts shape	SF  A113
Tool holder type	<input type="checkbox"/> -STUPR/L09      TP <input type="checkbox"/> 0902 <input type="checkbox"/>
	<input type="checkbox"/> -STUPR/L11      TP <input type="checkbox"/> 1103 <input type="checkbox"/>



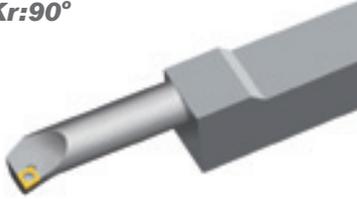


# TURNING / General Turning Tools

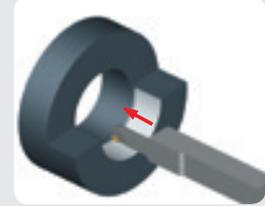
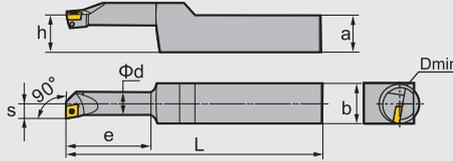
## Internal turning tools

### Corresponding tool holders of insert **CC** S-type clamping

**SCFCRIL**  
Kr:90°



R-type shown



General turning

Internal turning tools

Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	L	s	a	b	e				
S10M-SCFCR/L06S25	▲	▲	13	10	150	7	27	25	30	I60M2.5×5.5	WT07IP	---	---
S12P-SCFCR/L06S25	▲	▲	16	12	170	9	27	25	35				
S16Q-SCFCR/L09S25	▲	▲	20	16	180	11	27	25	40	I60M3.5×8	WT15IP	---	---
S20R-SCFCR/L09S25	△	△	25	20	200	13	27	25	45				
S25R-SCFCR/L12S25	△	△	30	25	200	16	27	25	50	I60M4×11X		---	---

▲Stock available    △Make-to-order

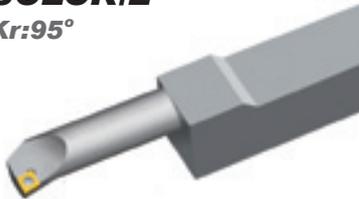
### Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	<b>USF</b>  A89	<b>HF</b>  A89	<b>HM</b>  A90	<b>HR</b>  A91	<b>LH</b>  A91-92	 A92 Without chipbreaker	 A139	
	<b>SF</b>  A89	<b>EF</b>  A90	<b>EM</b>  A90		<b>LC</b>  A91		 A144	
Tool holder type	<input type="checkbox"/> -SCFCR/L06S25	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CCGX0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCFCR/L09S25	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CCGX09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCFCR/L12S25		CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CCGX1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>

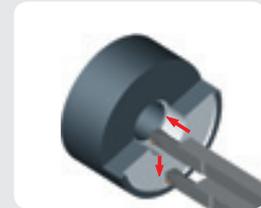
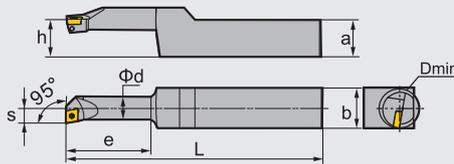


Corresponding tool holders of insert **CC**   S-type clamping

**SCLCR/L**  
Kr:95°



R-type shown



General turning

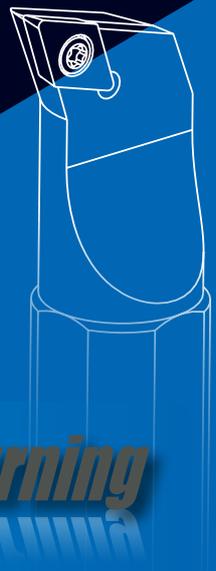
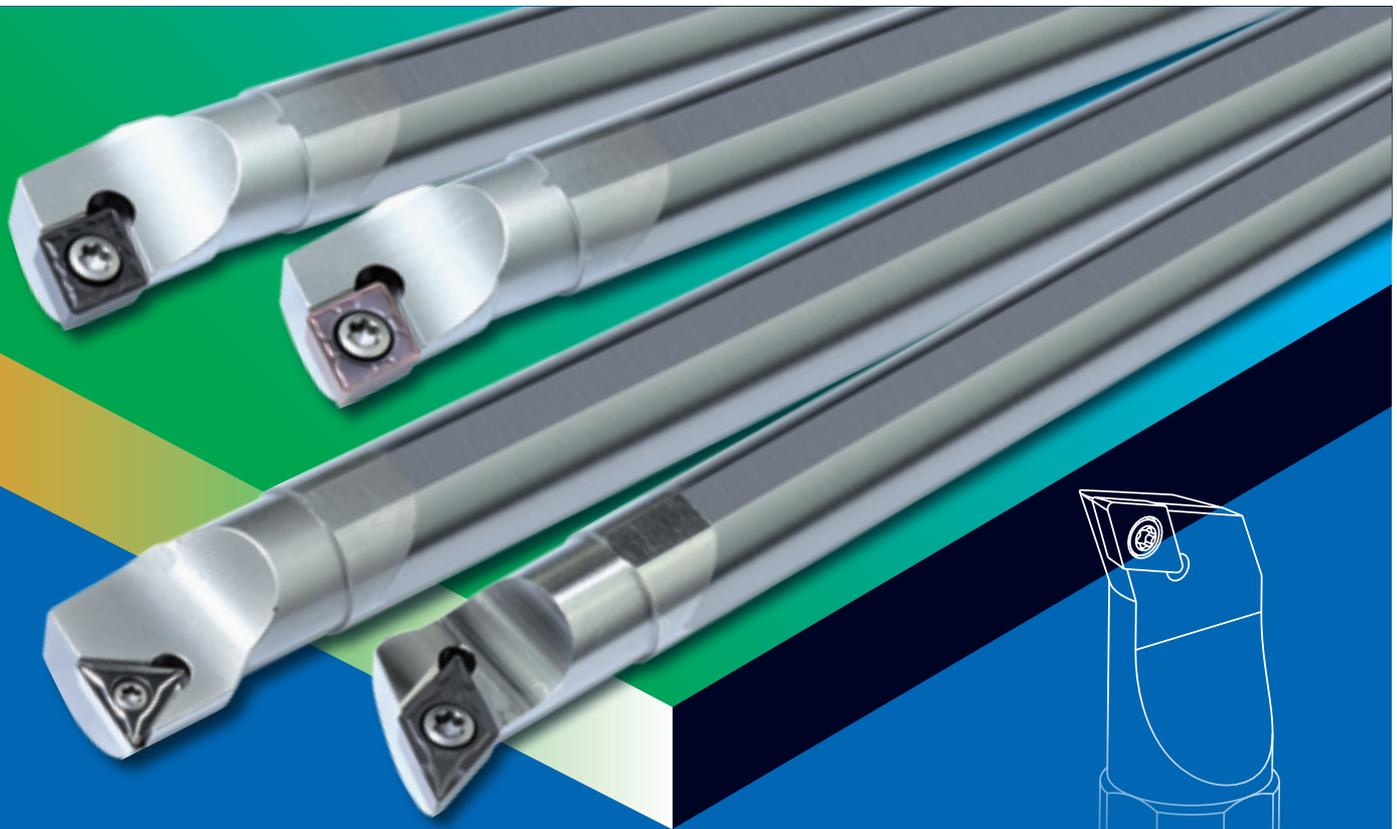
Internal turning tools

Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	L	s	a	b	e				
S10M-SCLCR/L06S20	▲	▲	13	10	150	7	22	20	30	I60M2.5×5.5	WT07IP	---	---
S12P-SCLCR/L06S20	▲	▲	16	12	170	9	22	20	35				
S16Q-SCLCR/L09S20	▲	▲	20	16	180	11	22	20	40	I60M3.5×8	WT15IP	---	---
S20R-SCLCR/L09S20	△	△	25	20	200	13	22	20	60				

▲Stock available    △Make-to-order

Applicable inserts

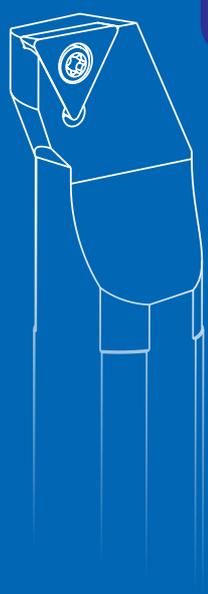
Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	<b>USF</b>  A89	<b>HF</b>  A89	<b>HM</b>  A90	<b>HR</b>  A91	<b>LH</b>  A91-92	<b>Without chipbreaker</b>  A92	 A139	
	<b>SF</b>  A89	<b>EF</b>  A90	<b>EM</b>  A90		<b>LC</b>  A91		 A144	
Tool holder type	<input type="checkbox"/> -SCLCR/L06S20	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CCGX0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCLCR/L09S20	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CCGX09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>



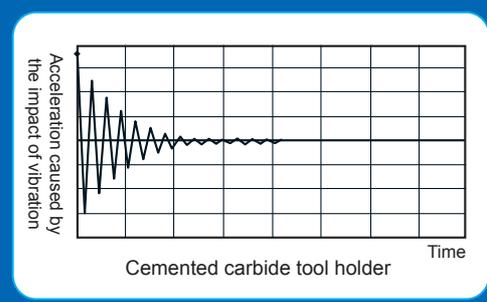
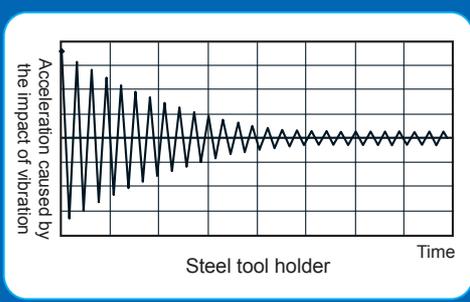
## *Damping tool holders for internal turning*

### **Technical features**

Increasing material rigidity of tool holder can reduce the amplitude, or obtain larger overhang under the condition of same systemic stability. Therefore, compared with steel tool holder, cemented carbide tool holder has better dampening effect, smaller amplitude and reaches convergence point sooner. As for machining under the condition of long overhang and easy vibration, they can exert excellent performance and achieve higher dimensional accuracy and surface quality.



Under the same machining condition  
**the maximum overhang of cemented carbide tool holder can reach  $L \leq 6D$ , while the recommended maximum overhang of steel tool holder is  $L \leq 3D$ .**





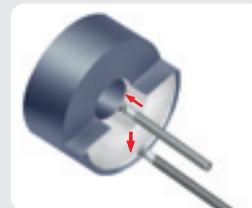
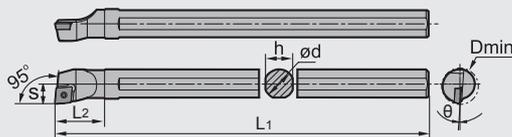
Corresponding tool holders of insert **CP**   (Damping tool holder) S-type clamping

**SCLPR/L**

Kr:95°



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L1	L2	h	θ				
<b>C10M-SCLPR/L06</b>	▲	△	12	10	6	150	17	9	-7°	I60M2.5×5.5	WT07IP	--	--
<b>C12Q-SCLPR/L06</b>	△	△	16	12	8	180	20	11	-4°				
<b>C16R-SCLPR/L09</b>	▲	△	20	16	10	200	29	15	-4°	I60M3.5×8	WT15IP	--	--
<b>C20S-SCLPR/L09</b>	△	△	25	20	13	250	35	18	-4°				

▲Stock available    △Make-to-order

Applicable inserts

Application	For extra finishing
Inserts shape	<b>SF</b>  A110
Tool holder type	<input type="checkbox"/> -SCLPR/L06      CP <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCLPR/L09      CP <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>

General turning

Internal turning tools



# TURNING / General Turning Tools

## Internal turning tools

General turning

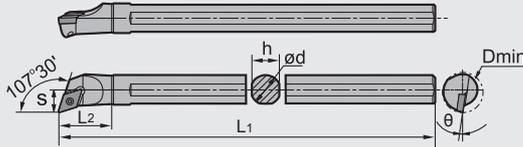
Internal turning tools

### Corresponding tool holders of insert **DP** (Damping tool holder) S-type clamping

**SDQPRIL**  
Kr:107° 30'



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L1	L2	h	θ				
C10M-SDQPR/L07	▲	△	13	10	7	150	20	9	-8°	I60M2.5×5.5	WT07IP	---	---
C12Q-SDQPR/L07	△	△	16	12	9	180	22	11	-8°				
C16R-SDQPR/L07	△	△	20	16	11	200	27	15	-6°	I60M2.5×6.5	WT15IP	---	---
C16R-SDQPR/L11	△	△	20	16	11	200	32	15	-6°				
C20S-SDQPR/L11	▲	△	25	20	13	250	33	18	-6°	I60M3.5×8	WT15IP	---	---

▲Stock available    △Make-to-order

#### Applicable inserts

Application	For extra finishing
Inserts shape	<b>SF</b>  A111
Tool holder type	□□-SDQPR/L07      DP□□0702□□ □□-SDQPR/L11      DP□□11T3□□



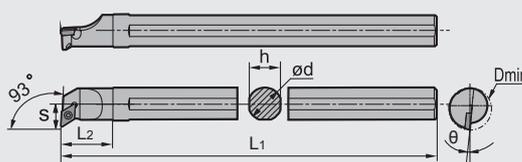
Corresponding tool holders of insert **DP** □ □ (Damping tool holder) S-type clamping

**SDUPRIL**

Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---	
	R	L	Dmin	ød	s	L1	L2	h	θ			---	---	
C10M-SDUPR/L07	△	△	15	10	9	150	18	9	-8°	I60M2.5×5.5		---	---	
C12Q-SDUPR/L07	△	△	16	12	9	180	19	11	-8°			WT07IP	---	---
C16R-SDUPR/L07	△	△	20	16	11	200	25	15	-6°			---	---	

▲Stock available    △Make-to-order

Applicable inserts

Application	For extra finishing
Inserts shape	SF  A111
Tool holder type	□□-SDUPR/L07      DP□□0702□□

General turning

Internal turning tools





# TURNING / General Turning Tools

Internal turning tools

General turning

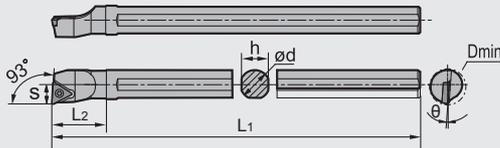
Internal turning tools

Corresponding tool holders of insert **TP**   (Damping tool holder) S-type clamping

**STUPRIL**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L1	L2	h	θ				
C10M-STUPR/L09	▲	△	12	10	6	150	20	9	-6°	I60M2.2×5.5	WT07IP	---	---
C12Q-STUPR/L09	▲	△	16	12	8	180	22	11	-4°				
C12Q-STUPR/L11	▲	△	16	12	8	180	25	11	-4°	I60M2.5×6.5	WT07IP	---	---
C16R-STUPR/L11	▲	△	20	16	10	200	27	15	-3°				

▲Stock available    △Make-to-order

### Applicable inserts

Application	For extra finishing
Inserts shape	<b>SF</b>  A113
Tool holder type	
<input type="checkbox"/> -STUPR/L09	TP <input type="checkbox"/> 0902 <input type="checkbox"/>
<input type="checkbox"/> -STUPR/L11	TP <input type="checkbox"/> 1103 <input type="checkbox"/>





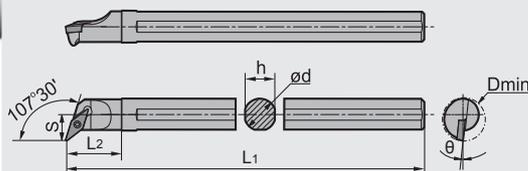
Corresponding tool holders of insert VC□□ (Damping tool holder) S-type clamping

**SVQCRIL**

Kr:107° 30'



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L1	L2	h	θ				
C16R-SVQCR/L11	△	△	22	16	13	200	28	15	-6°	I60M2.5×6.5	WT07IP	---	---
C20S-SVQCR/L11	△	△	26	20	15	250	32	18	-4°				

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For extra finishing	For finishing	For AI machining
Inserts shape	<b>USF</b>  A105	<b>HF</b>  A105	<b>LH</b>  A106
	<b>SF</b>  A105		<b>LC</b>  A106
Tool holder type	VC□□1103□□	VC□□1103□□	VCGX1103□□



# TURNING / General Turning Tools

## Internal turning tools

General turning

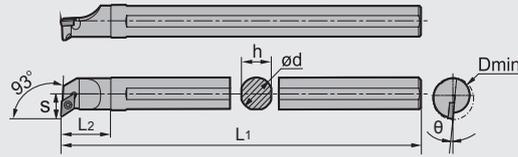
Internal turning tools

### Corresponding tool holders of insert VC □ □ (Damping tool holder) S-type clamping

**SVUCRIL**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L1	L2	h	θ				
<b>C16R-SVUCR/L11</b>	△	△	24	16	15	200	25	15	-6°	I60M2.5×6.5	WT07IP	---	---
<b>C20S-SVUCR/L11</b>	△	△	28	20	17	250	30	18	-4°				

▲Stock available    △Make-to-order

### Applicable inserts

Application	For extra finishing	For finishing	For AI machining
Inserts shape	<b>USF</b>  A105	<b>HF</b>  A105	<b>LH</b>  A106
	<b>SF</b>  A105		<b>LC</b>  A106
Tool holder type	VC□□1103□□	VC□□1103□□	VCGX1103□□



**Table of recommended cutting parameters for general turning**

ISO	Materials	Hardness HB	CVD Coating					PVD Coating			Cermet	Coated cermet	Cemented carbide			
			YBC151	YBC251	YBC152	YBC252	YBC351	YBC352	YBG102	YBG202	YBG302	YNG151	YNG151C	YC10	YC40	
			Feed rate (mm/rev)													
			0.1-0.6	0.1-0.8	0.1-0.6	0.1-0.8	0.2-1.0	0.2-1.0	0.2-0.4	0.1-0.6	0.05-0.8	0.05-0.2	0.05-0.2	0.1-0.4	0.1-0.5	
Cutting speed (m/min)																
<b>P</b>	Carbon steel	C=0.15%	125	430-200	430-190	500-270	480-240	380-165	430-220	460-220	380-180	360-165	550-350	580-350	360-165	300-145
		C=0.35%	150	380-180	410-180	460-250	460-230	300-150	350-200	440-210	300-170	280-150	500-300	520-300	280-150	220-130
		C=0.60%	200	330-150	350-150	400-220	400-200	260-130	310-180	380-180	260-150	240-130	460-260	480-260	240-130	180-80
	Alloy steel	Anneal	180	350-170	350-150	400-180	400-200	200-100	250-150	380-180	200-120	180-100	410-240	430-240	180-100	160-80
		Hardened	275	230-100	210-100	280-150	260-140	140-70	200-120	240-120	140-90	120-70	300-180	320-180	120-70	120-50
		Hardened	300	210-100	190-70	260-150	240-120	125-60	180-110	220-100	125-80	100-60	250-170	270-170	100-60	80-40
	High alloy steel	Hardened	350	180-80	170-70	230-120	220-120	110-55	160-100	200-100	110-75	90-55	230-150	250-150	90-55	70-45
		Anneal	200	320-150	260-120	360-190	310-170	175-80	220-130	290-150	175-100	155-80	350-200	370-200	155-80	135-60
	Cast steel	Hardene	325	140-90	100-50	190-130	150-100	85-40	140-90	130-80	85-60	65-40	170-110	190-110	65-40	45-30
		Non-Alloy	180	240-120	200-100	280-160	250-140	135-75	190-130	230-125	135-95	115-75	260-170	280-170	115-75	95-55
		Low alloy	200	230-70	170-60	280-110	220-110	120-80	170-130	200-90	120-100	100-80	260-170	280-170	100-80	80-60
		High alloy	225	160-70	140-50	210-110	190-100	95-55	150-110	170-80	95-55	95-55	260-100	280-100	95-55	75-35

ISO	Materials	Hardness HB	CVD Coating				PVD Coating			Cermet	Coated cermet		
			YBM151	YBM153	YBM251	YBM253	YBM215	YBG202	YBG205	YBG302	YNG151	YNG151C	
			Feed rate (mm/rev)										
			0.2-0.6	0.2-0.6	0.2-0.6	0.2-0.6	0.2-0.4	0.1-0.4	0.2-0.4	0.2-0.6	0.1-0.3	0.1-0.3	
Cutting speed (m/min)													
<b>M</b>	Stainless steel	Ferrite	180	280-180	280-180	250-140	260-140	290-190	300-190	290-190	250-150	330-220	350-210
		Austenite	260	250-150	250-150	200-110	210-110	240-160	250-160	240-160	220-120	250-150	270-140
		Martensite	330	200-140	200-140	210-130	220-130	250-170	260-170	250-170	210-120	270-170	290-160

General turning

Application information of general turning



### Recommended table of cutting parameters for general turning

General turning

Application information of general turning

ISO	Materials		Hardness HB	CVD Coating				Cermet	Coated cermet	Ceramics	Cemented carbide		
				YBD052	YBD102	YBD152	YBD252	YNG151	YNG151C	CN3100	YC10	YC40	
				Feed rate (mm/rev)									
				0.1-0.4	0.1-0.4	0.1-0.5	0.1-0.8	0.1-0.4	0.1-0.4	0.1-1.5	0.1-0.3	0.1-0.4	
Cutting speed (m/min)													
<b>K</b>	Malleable cast iron	Ferrite	130	350-230	330-220	320-105	250-170	280-160	300-180	800-600	150-90	105-45	
		Pearlite	230	250-105	230-100	230-100	180-75	220-120	240-150	700-500	120-70	80-30	
	Low cast iron		180	520-200	480-200	480-190	380-150	400-250	420-270	700-500	170-100	130-60	
	High cast iron		260	230-120	220-115	210-100	170-90	360-240	380-260	800-600	130-70	95-40	
	Nodular cast iron	Ferrite	160	310-150	300-150	290-140	220-110	330-190	350-210	600-450	140-80	115-45	
		Pearlite	250	230-110	220-105	210-100	170-90	310-200	330-220	500-350	110-70	80-30	

ISO	Materials		Hardness HB	PVD Coating					Cemented carbide	Ceramics	
				YBG102	YBG105	YBG202	YBS103	YBG212	YD101	CN3100	
				Feed rate (mm/rev)							
				0.05-0.15	0.05-0.15	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.35	0.05-0.2	
Cutting speed (m/min)											
<b>N</b>	Al alloy	No heat treatment	60						1750-800		
		Heat treatment	100						510-250		
	Cast aluminum alloy	No heat treatment	75						460-175		
		Heat treatment	90						300-110		
	Copper alloy	Lead alloy	110						610-205		
		Copper, pure copper	90						310-195		
Copper, nonleaded Copper, electrolytic copper		100						225-115			
<b>S</b>	Ni-base alloy	Ni-base alloy	40	90-30	90-40	90-30	90-20	90-30	70-20	15-260	



**Recommended table of cutting parameters for general turning**

ISO	Materials	PCBN											
		BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
		Feed rate (mm/rev)											
		0.02-0.5		0.1-0.5		0.05-0.5				0.05-0.25			
		Cutting speed (m/min)											
<b>K</b>	Gray cast iron	400-1500		300-600									
	Hard cast iron	80-160		50-150									
<b>S</b>	Powder metallurgy and high temperature alloys									70-180	100-200	50-160	
<b>H</b>	Hardened steel					150-250	140-220	100-170	120-180	80-150			

General turning

Application information of general turning

ISO	Materials	PCD			
		DN0121	DN0511	DN1021	DN3021
		Feed rate (mm/rev)			
		0.05~0.4			
		Cutting speed (m/min)			
<b>N</b>	Silumin ( si≤12% )	500~1000	900~3500	400~1200	300~700
	fibre reinforced composite materials	200~1000			
	Metal base compound		1500~1800		
	Copper and magnesium alloy silumin		400~1260	400~1260	
	Cemented carbide		20~40		
	Unsintered ceramic materials				100~200
	Sintered Ceramic				20~50



# TURNING / General Turning Tools

## Application information of general turning

Table of correctional cutting parameters of internal turning

### Internal turning tools by P-type clamping

	Workpiece material	Hardness HB	Machining category	L/D≤3		L/D=3-4 (Diameter of shank ≥ Φ 16mm)	
				Feed rate (mm/rev)	Cutting depth (mm)	Feed rate (mm/rev)	Cutting depth (mm)
<b>P</b>	Carbon steel, Alloy steel 45 <sup>#</sup> , 42CrMo	HB180—280	For semi-finishing	0.1- <b>0.25</b> -0.4	<5.0	0.1- <b>0.2</b> -0.3	<4.0
<b>M</b>	Stainless steel 1Cr18Ni9Ti 0Cr18Ni9	≤HB220	For semi-finishing	0.1- <b>0.2</b> -0.3	<4.0	0.1- <b>0.15</b> -0.25	<3.0
<b>K</b>	Cast iron HT250	HB170—230	For semi-finishing	0.1- <b>0.25</b> -0.4	<5.0	0.1- <b>0.2</b> -0.3	<4.0

### Internal turning tools by S-type clamping

	Workpiece material	Hardness HB	Machining category	L/D≤3		L/D=4		L/D=5		L/D=6	
				Feed rate (mm/rev)	Cutting depth (mm)	Feed rate (mm/rev)	Cutting depth (mm)	Feed rate (mm/rev)	Cutting depth (mm)	Feed rate (mm/rev)	Cutting depth (mm)
<b>P</b>	Carbon steel, Alloy steel 45 <sup>#</sup> , 42CrMo	HB180-280	For finishing	0.05- <b>0.1</b> -0.15	<0.2	0.05- <b>0.1</b> -0.15	<0.2				
			For semi-finishing	0.15- <b>0.25</b> -0.35	<3.0	0.1- <b>0.15</b> -0.2	<1.5				
<b>M</b>	Stainless steel 1Cr18Ni9Ti 0Cr18Ni9	≤HB220	For finishing	0.05- <b>0.1</b> -0.15	<0.2	0.05- <b>0.1</b> -0.15	<0.2				
			For semi-finishing	0.15- <b>0.2</b> -0.25	<2.0	0.1- <b>0.15</b> -0.2	<1.0				
<b>N</b>	Al alloy	---	For finishing	0.05- <b>0.1</b> -0.15	<0.2	0.05- <b>0.1</b> -0.15	<0.2	0.05- <b>0.1</b> -0.15	-0.15	0.05- <b>0.1</b> -0.15	<0.1
			For semi-finishing	0.05- <b>0.1</b> -0.15	<2.0	0.05- <b>0.1</b> -0.15	<1.5	0.05- <b>0.1</b> -0.15	-1.0	0.05- <b>0.1</b> -0.15	<1.0

### Damping internal turning tools

	Workpiece material	Machining conditions	Chipbreaker	Inserts material	Feed rate (mm/rev)	Cutting depth (mm)
<b>P</b>	Steel HB180—280	For finishing	SF	YNG151 YNG151C	0.05- <b>0.2</b> -0.35	0.05- <b>0.1-0.3</b> -0.5
<b>M</b>	Stainless steel ≤HB220				0.05- <b>0.2</b> -0.35	0.05- <b>0.1-0.3</b> -0.5
<b>K</b>	Cast iron HB170—230				0.05- <b>0.2</b> -0.35	0.05- <b>0.1-0.3</b> -0.5

Blue words are recommended cutting parameters.

General turning

Application information of general turning



Frequent problems of turning and solutions

Common problem	Cause	Solutions	Tool material		Cutting conditions				Tool shape					Machine clamping system					
			Harder materials	Tougher materials	Cutting speed	Feed rate	Cutting depth	Cutting liquid	Change chipbreaker of inserts	Rake face	Nose radius	Approach angle	Cutting edge strength	Increase precision of inserts	Increase rigidity of tool holder	Clamping of tool holder and workpiece	Overhang of tool holder	Power gap	
Over abrasion on nose	Bad precision during machining	Abrasion intensified on flank	✓																
		Unsuitable cutting conditions			↓	↑													
Surface precision deterioration	Bad surface quality	Abrasion intensified and cutting edge not sharp enough	✓		↓					✓		↑	↑		↓	✓			
		Cutting edge breakage		✓		↓	↓			✓		↑		↑			✓	✓	✓
		Unsuitable geometrical shape of cutting edge								✓		↑		↓	✓				
		Unsuitable cutting conditions			↑	↓	↓	✓											
		Vibration		✓		↑	↓	↓	✓	✓	↑	↓	↑	↓		✓	✓	✓	✓
		Built-up edge				↑	↑		✓	✓	↑			↓	✓				
Radiation of heat	Effect of cutting heat	Unsuitable cutting conditions			↓	↓	↓												
		Unsuitable geometrical shape of cutting edge	✓						✓	↑			↓						
Bad precision of dimensions	Dimensions fluctuate during cutting	Insert tolerance												✓					
		Offset of workpiece or tools							✓	↑	↓	↑			✓	✓	✓	✓	
Breakage	Abrasion on flank and rake face	Abrasion on clearance face	✓		↓				✓	↑	↑		↓						
		Abrasion on rake face	✓		↓	↓	↓		✓	↑		↓							
	Edge chipping	Vibration and impact		✓		↓	↓		✓			↓	↑		✓	✓	✓	✓	
	Built-up edge	Unsuitable workpiece hardness for cutting conditions			↑	↑		✓	✓	↑			↓	✓					
	Thermal cracking	Hardness of workpiece material and tool material unsuitable for cutting conditions			↓	↓	↓	✓	✓	↑			↓						
	Cutting edge nose deformation	Occurring during intermittent machining with high feed rate	✓		↑	↓	↓	✓	✓	↑	↑	↓	↓						
	Tool life	Unsuitable materials and cutting conditions		✓		↓	↓		✓		↑	↓	↑		✓	✓	✓	✓	
	Chip controlling	Long, unbroken and snarled chips	Unsuitable cutting condition			↓	↑	↑	✓										
Unsuitable geometry									✓		↓	↑							
Too short and hard chips		Unsuitable cutting condition				↓	↓	✓											
		Unsuitable geometrical shape of cutting edge							✓		↑	↓							
Burr and knockdown flange	Steel and Al, burrs occurring	Unsuitable cutting condition			↑	↓		✓											
		Tool abrasion and unsuitable geometrical shape	✓						✓	↑	↓	↑	↓						
	Edge break out on cast iron	Unsuitable cutting conditions			↓	↑		✓											
		Tool abrasion and unsuitable geometrical shape	✓						✓	✓	↓	↓	↓						
	Heavy burr on soft steel	Unsuitable cutting condition				↓	↓												
		Tool abrasion and unsuitable geometrical shape	✓						✓	↑	↑		↑		✓	✓	✓	✓	





### Abrasion of tools and various damages

Tool damage type	Phenomenon	Cause	Solution
<b>Flank wear</b>	Cutting resistant force increasing Groove wear on flank	Tool material is too soft. Cutting speed is too high. Clearance angle is too small. Feed rate is too low.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good wear resistance.</li> <li>◆ Reduce cutting speed.</li> <li>◆ Enlarge clearance angle.</li> <li>◆ Increase feed rate.</li> </ul>
<b>Rake face wear (Crater wear)</b>	Bad chip controlling Surface quality deterioration	Tool material is too soft. Cutting speed is too high. Feed rate is too high.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good wear resistance.</li> <li>◆ Reduce cutting speed.</li> <li>◆ Reduce feed rate.</li> </ul>
<b>Cutting edge breakage</b>	Occasional breakage Instability of tool life	Tool material is too hard. Feed rate is high. Cutting edge strength is not high enough. Rigidity of tool holder and tool bar is small.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good toughness.</li> <li>◆ Reduce feed rate.</li> <li>◆ Increase land width (if rounding changes into chamfering).</li> <li>◆ Enlarge tool bar size.</li> </ul>
<b>Breakage</b>	Cutting resistant force increasing Deterioration of surface roughness	Tool material is too hard. Feed rate is high. Cutting edge strength is not high enough. Rigidity of tool holder and tool bar is low.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good toughness.</li> <li>◆ Reduce feed rate.</li> <li>◆ Increase land width (if rounding changes into chamfering).</li> <li>◆ Enlarge tool bar size.</li> </ul>
<b>Plastic deformation (Cutting edge collapse)</b>	Workpiece dimensions change Nose abrasion	Tool material is too soft. Cutting speed is too high. Cutting depth and feed rate are too high. Cutting edge temperature is too high.	<ul style="list-style-type: none"> <li>◆ Select tool material with good wear resistance</li> <li>◆ Reduce cutting speed.</li> <li>◆ Reduce cutting depth and feed rate.</li> <li>◆ Select tool materials with good heat conductivity.</li> </ul>
<b>Built-up edge (Bonding)</b>	Surface quality deterioration during finishing Cutting resistant force increasing	Cutting speed is low. Cutting edge is not sharp enough. Tool material is unsuitable.	<ul style="list-style-type: none"> <li>◆ Increase cutting speed.</li> <li>◆ Enlarge rake angle.</li> <li>◆ Select tool materials that are not easy to adhere together (coating, cermet, etc.)</li> </ul>
<b>Thermal cracking</b>	Damage because of thermal circulation Normally occurring during intermittent machining	Premature edge failure due to thermal cracks. Tool material is too hard.	<ul style="list-style-type: none"> <li>◆ Adopt dry cutting.</li> <li>◆ Select tool materials with good toughness.</li> </ul>
<b>Chattering</b>	burrs occurring Cutting resistant force increasing	Feed rate and cutting speed are too high.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good wear resistance.</li> <li>◆ Sharpen cutting edge by enlarging rake angle.</li> <li>◆ Reduce cutting speed.</li> </ul>
<b>Flaking</b>	Usually occurring when machining super hard materials, which is accompanied with vibration	Bonding occurs on cutting edge. Chip flow is obstructed.	<ul style="list-style-type: none"> <li>◆ Sharpen cutting edge by enlarging rake angle.</li> <li>◆ Enlarge chip pocket.</li> </ul>

*Parting and  
grooving tools*





# TURNING Parting and grooving tools

How to select parting and grooving tools

## How to select parting and grooving tools

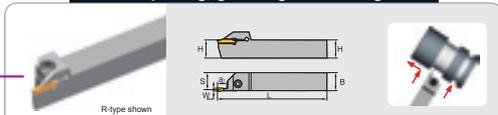
### Structure of parting and grooving tools selection table

- Categorized as external machining, internal machining and profile machining.
- Concluded and separately listed according to product series (Little squirrel series and Supplementary series).

Dimensions

Application of external machining, internal machining and profile machining

#### External parting, grooving and turning tools

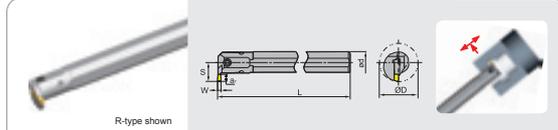


Type	Stock		Basic dimensions(mm)					Applicable inserts	Screw	Wrench		
	R	L	H	X	B	L	S				W	B <sub>max</sub>
QEAD	1212R/L07	▲	▲	12	12	125	11.4	1.5	7	ZCAD0150□	GB70-85-M4 × 12	WH30L
	1212R/L12	▲	▲	12	12	125	11.4	1.5	12	ZCAD0150□		
	1616R/L07	▲	▲	16	16	125	15.4	1.5	7	ZCAD0150□		
	1616R/L12	▲	▲	16	16	125	15.4	1.5	12	ZCAD0150□		
	2020R/L07	▲	▲	20	20	125	19.4	1.5	7	ZCAD0150□	GB70-85-M5 × 16	WH40L
QEBD	1212R/L12	▲	▲	12	12	125	11.2	2	7	ZCB0020□		
	1212R/L10	▲	▲	12	12	125	11.2	2	10	ZCB0020□	GB70-85-M4 × 12	WH30L
	1212R/L14	▲	▲	12	12	125	11.2	2	14	ZCB0020□		
	1616R/L07	▲	▲	16	16	125	15.2	2	7	ZCB0020□		
	1616R/L10	▲	▲	16	16	125	15.2	2	10	ZCB0020□		
QEED	1616R/L10	▲	▲	16	16	125	15	2.5	10	ZCE0050□	GB70-85-M5 × 20	WH40L
	1616R/L17	▲	▲	16	16	125	15	2.5	17	ZCE0050□		
	2020R/L10	▲	▲	20	20	125	19	2.5	10	ZCE0050□		
	2020R/L17	▲	▲	20	20	125	19	2.5	17	ZCE0050□	GB70-85-M6 × 20	WH50L
	2525R/L10	▲	▲	25	25	150	24	2.5	10	ZCE0050□		
QEFD	1616R/L10	▲	▲	16	16	125	14.8	3	10	ZCF0030□	GB70-85-M5 × 20	WH40L
	1616R/L17	▲	▲	16	16	125	14.8	3	17	ZCF0030□		
	2020R/L10	▲	▲	20	20	125	18.8	3	10	ZCF0030□		
	2020R/L17	▲	▲	20	20	125	18.8	3	17	ZCF0030□	GB70-85-M6 × 20	WH50L
	2525R/L10	▲	▲	25	25	150	23.8	3	10	ZCF0030□		
QEOD	2020R/L13	▲	▲	20	20	140	18.5	4	13	ZCG0040□		
	2020R/L12	▲	▲	20	20	140	18.5	4	22	ZCG0040□	GB70-85-M6 × 20	WH50L
	2525R/L15	▲	▲	25	25	150	23.5	4	15	ZCG0040□		

▲ Stock available    △ Make-to-order

Specification of products Including type, basic dimensions, applicable inserts and accessories.

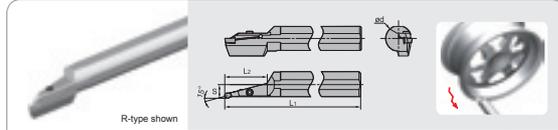
#### Internal grooving and turning tools



Type	Stock		Basic dimensions(mm)						Applicable inserts	Screw	Wrench
	R	L	ed	L	S	W	ar <sub>max</sub>	ØD <sub>min</sub>			
C200-QEDR/L05-27	▲	▲	20	180	15.2	2.5	5	27	ZTED025□ ZRED025□	GB70-85-M4 × 12	WH30L
C25R-QEDR/L07-33	▲	▲	25	200	20.3	2.5	7	33		GB70-85-M5 × 16	WH40L
C32S-QEDR/L09-42	▲	▲	32	250	25.3	2.5	9	42		GB70-85-M5 × 20	WH30L
C200-QFDR/L05-27	▲	▲	20	180	15.2	3	5	27	ZTF030□ ZRF030□	GB70-85-M4 × 12	WH30L
C25R-QFDR/L07-33	▲	▲	25	200	20.3	3	7	33		GB70-85-M5 × 16	WH40L
C32S-QFDR/L09-42	▲	▲	32	250	25.3	3	9	42		GB70-85-M5 × 20	WH40L
C25R-QGDR/L08-35	▲	▲	25	200	21.5	4	8	35		GB70-85-M6 × 16	WH40L
C32S-QGDR/L11-44	▲	▲	32	250	27.5	4	11	44	ZTG0040□ ZRG0040□	GB70-85-M6 × 20	WH50L
C40T-QGDR/L13-54	▲	▲	40	300	33.5	4	13	54		GB70-85-M6 × 20	WH50L
C25R-QHDR/L08-35	▲	▲	25	200	21.5	5	8	35		GB70-85-M6 × 16	WH40L
C32S-QHDR/L11-44	▲	▲	32	250	27.5	5	11	44	ZTH0050□ ZRH0050□	GB70-85-M6 × 20	WH50L
C40T-QHDR/L13-54	▲	▲	40	300	33.5	5	13	54		GB70-85-M6 × 20	WH50L
C25R-QKDR/L08-35	▲	▲	25	200	21.5	6	8	35		GB70-85-M6 × 16	WH40L
C32S-QKDR/L11-44	▲	▲	32	250	27.5	6	11	44	ZTK0060□ ZRK0060□	GB70-85-M6 × 20	WH50L
C40T-QKDR/L13-54	▲	▲	40	300	33.5	6	13	54		GB70-85-M6 × 20	WH50L

▲ Stock available    △ Make-to-order

#### Profile turning tools for Al



Type	Stock		Basic dimensions(mm)					Applicable inserts	Screw	Wrench
	R	L	ØD (minimum machining diameter)	ed	S	L <sub>1</sub>	L <sub>2</sub>			
C40X-QLDR/L65-15A	▲	▲	160	40	21	320	65	ZRLD08-LH		
C40X-QLDR/L80-15A	▲	▲	160	40	21	320	80	ZRLD08-LH		
C40X-QKDR/L60-15A	▲	▲	160	40	20	320	60	ZRKD06-LH	GB70-85-M6 × 20	WH50L
C40X-QKDR/L75-15A	▲	▲	160	40	20	320	75	ZRKD06-LH		

▲ Stock available    △ Make-to-order

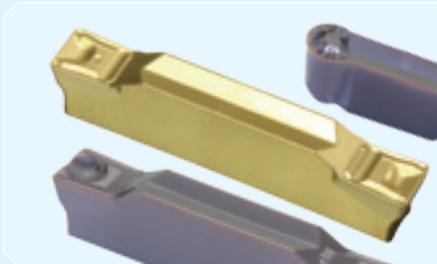
Indicating the minimum machining diameter The minimum machining diameter is very important for internal machining.



# TURNING



## Parting and grooving tools



<b>Parting and grooving tools overview</b>	•	A250-A252
<b>Parting and grooving inserts</b>	•	A253-A269
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Inserts of Little Squirrel series	•	A259-A265
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External parting, grooving and turning tools		A272-A273
Precise grooving and turning tools		A274
External recess and profiling tools		A274
External grooving tools for materials hard to be machined		A275
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External shallow grooving tools		A286
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<b>Supplementary series</b>	•	
Supplementary series parting and grooving tools code key		A287
QZQ external grooving series		A288
<b>Application information on parting and grooving</b>	•	A289-A290

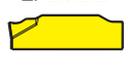
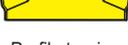
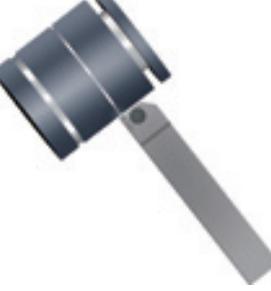


# TURNING Parting and grooving tools

## Parting and grooving tools overview

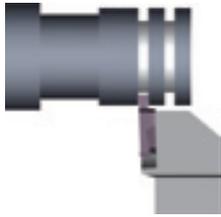
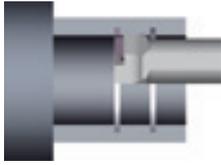
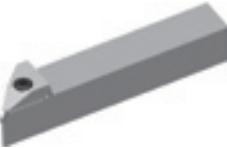
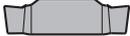
General turning  
Parting and grooving

Parting and grooving tools overview

Machining application	Machining type	Applicable tools	Corresponding inserts	Tool features and parameters	
External machining	Parting	<p>Little squirrel series QZ□□+QE□□</p>  <p>A275</p>	<p>Parting inserts ZP□S□□</p> 	<ul style="list-style-type: none"> <li>Assemble structure of parting blade and holder; good rigidity; adjustable parting range.</li> <li>The maximum parting diameter is 120mm.</li> </ul>	
		<p>Little squirrel series QE□□R/L</p>  <p>A272-A273</p>	<p>ZP□D□□</p>  <p>ZP□S□</p> 	<ul style="list-style-type: none"> <li>Inserts have three-dimensional chipbreaker with low cutting force and good performance on chip-breaking.</li> <li>The maximum parting diameter is 60mm.</li> </ul>	
		<p>Supplementary series QZQ□□R/L</p>  <p>A288</p>	<p>ZQMX□□</p> 	<ul style="list-style-type: none"> <li>Cutting edge strength is suitable for bad machining conditions.</li> <li>The maximum parting diameter is 70mm.</li> </ul>	
	Grooving and turning		<p>Little squirrel series QE□□R/L</p>  <p>A272-A273</p>	<p>Double cutting edges for parting ZT□D□□</p>  <p>Profile turning ZR□D□□</p>  <p>Single cutting edge for deep grooving ZT□S□□</p> 	<ul style="list-style-type: none"> <li>A single tool with multiple applications such as grooving, parting and profile turning, reducing tools categories needed.</li> <li>A multifunctional tool when used with grooving inserts. Suitable for profile machining.</li> <li>The maximum slot depth machinable is 30mm.</li> </ul>
				<p>Little squirrel series QECD</p>  <p>A273</p>	<p>Precise grooving ZT□D□□-EG</p>  <p>Edge width 1.2~2.4mm</p>
	<p>Little squirrel series QE□□R/L</p>  <p>A272-A273</p>	<p>Precise grooving ZT□D□□-EG</p>  <p>Edge width 2.4~6.5mm</p>			



## Parting and grooving tools overview

Machining application	Machining type	Applicable tools	Corresponding inserts	Tool features and parameters
External machining	Shallow grooving	 QC series GQCR/L  A286	QC16/22□□□□ 	<ul style="list-style-type: none"> <li>• Fine grinding of blades with high precision.</li> <li>• Sharp edges and high machining accuracy.</li> <li>• Three finely ground cutting edges for good economy.</li> <li>• For cutting shallow grooves, groove width 0.5-4.8mm.</li> <li>• Maximum depth of cut 4mm.</li> </ul>
	Grooving and turning	 Little squirrel series C□□-Q□□R/L□  A284	Grooving, Turning ZT□□□□  Profile turning ZR□□□□ 	<ul style="list-style-type: none"> <li>• By using inserts for grooving and profiling, one tool can be versatile, reducing the tool categories needed.</li> <li>• The maximum slot depth machinable is 13mm.</li> <li>• The minimum machining diameter is 27mm.</li> </ul>
Internal machining	Shallow grooving	 QC series S□□□-QC□□R/L□  A286	QC11/16/22□□□□ 	<ul style="list-style-type: none"> <li>• Fine grinding of blades with high precision.</li> <li>• Machining groove width 0.5-4.8mm.</li> <li>• Minimum machining diameter 16mm.</li> <li>• Maximum depth of cut 4mm.</li> </ul>
	Grooving and turning	 Little squirrel series QF□□□□H  A278-A281  Little squirrel series QF□□□□L  A282-A283	Grooving, Turning ZT□□□□  Profile turning ZR□□□□   Grooving, Turning ZT□□□□  Profile turning ZR□□□□ 	<ul style="list-style-type: none"> <li>• By using inserts for grooving and profiling, one tool can be versatile, reducing the tool categories needed.</li> <li>• Grooving diameter is 48-400mm.</li> <li>• Grooving depth is 10-30mm.</li> </ul> <ul style="list-style-type: none"> <li>• 90°holder, top clamping.</li> <li>• By using inserts for grooving and profiling, one tool can be versatile, reducing the tool categories needed.</li> <li>• Grooving diameter is 48~400mm.</li> <li>• Grooving depth is 10~30mm.</li> </ul>
Recess machining	 Little squirrel series QX□□□□□□  A274	Grooving, Turning ZT□□□□  Profile turning ZR□□□□ 	<ul style="list-style-type: none"> <li>• The unique tool for recess machining.</li> <li>• Complete range of specifications, able to achieve various recess machining.</li> </ul>	

General turning

Parting and grooving

Parting and grooving tools overview



# TURNING / Parting and grooving tools

## Parting and grooving tools overview

General turning  
Parting and grooving

Parting and grooving tools overview

Machining application	Machining type	Applicable tools	Corresponding inserts	Tool features and parameters
AI profiling	External machining	 <p>Little squirrel series QE□□R/L</p>  <p>A272-A273</p>	<p>Little squirrel series ZR□□-LH</p> 	<ul style="list-style-type: none"> <li>• The unique tool for profiling of Al material.</li> <li>• Cutting edge is designed to combine sharpness and strength, suitable for continuous and intermittent turning.</li> <li>• Used for external, surface and inner wall machining of Al wheel hub.</li> </ul>
	Inner wall and surface machining	 <p>Little squirrel series C40X□□</p>  <p>A284</p>		
Tools for aviation and aerospace industries	External machining	 <p>Little squirrel series QE□S□□N</p>  <p>A274</p>	<p>Little squirrel series ZIG□□□</p>  <p>Little squirrel series ZIMF□□</p> 	<ul style="list-style-type: none"> <li>• V-type locating, top clamping, precise locating, safe clamping.</li> <li>• Normal square-ended inserts and precise square-ended inserts are suitable for adhesive materials hard to machine such as Ni-base high-temperature alloy, Ti alloy and stainless steel, etc.</li> </ul>
	Non-standard Tools	 <p>Non-standard tools to match workpiece</p>	<p>Select and manufacture as required</p>	<ul style="list-style-type: none"> <li>• Tailor made solutions for machining various parts to satisfy your requirements.</li> </ul>

Little squirrel series

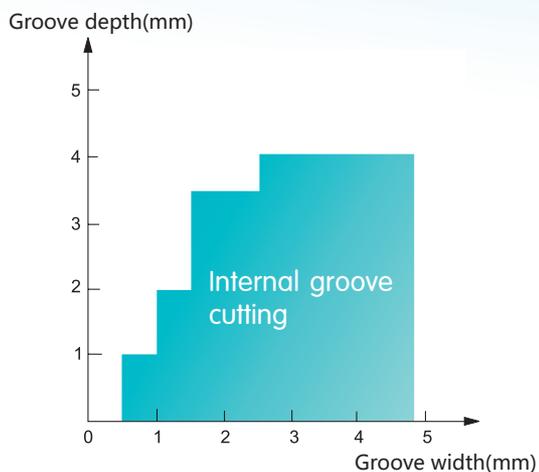
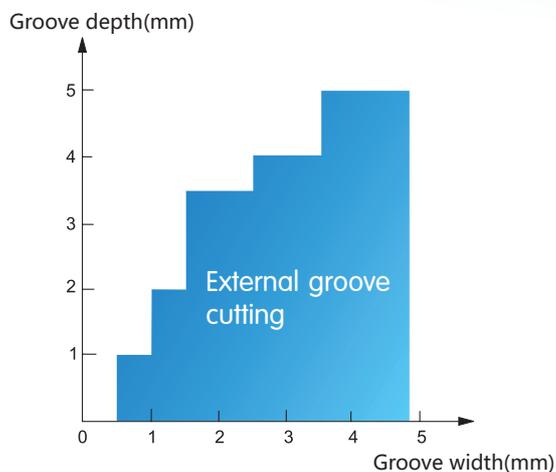


# QC series shallow grooving tools

**Machine industry shallow groove processing tool**

Widely used for shallow groove machining of shaft and ring parts in machinery industry

 **Shallow groove series tool grooving range**





## Little-Squirrel Series

**Profile turning inserts for parting of aviation titanium alloy, high temperature alloy**

### **-NF**

#### **Single-headed precision profile turning inserts**

Sharp edge, small cutting force, good surface quality;  
Indexing accuracy reaches  $\pm 0.025\text{mm}$ , safe and stable clamping;  
Mainly applied in finishing of high-temperature alloy, titanium alloy.

### **-NM**

#### **Precision profile turning inserts**

Sharp edge, small cutting force, good surface quality;  
Indexing accuracy reaches  $\pm 0.025\text{mm}$ ;  
Highly economical, two edges available;  
Compatible with little squirrel tool holder, suitable for small depth profile finishing and semi-finishing of high-temperature alloy and Ti-alloy.



# -SM

## Single-headed groove turning inserts

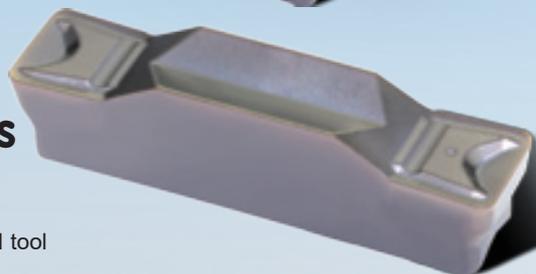
Straight edge, excellent surface quality;  
Sharp edge, smaller cutting force;  
Good chip breaking;  
Mainly used for rough machining of high-temperature alloy and titanium alloy.



# -MM

## Straight edge groove turning inserts

High edge strength, sharp edge;  
Highly economical, two edges available, compatible with little squirrel tool holder;  
With special grades, suitable for roughing with small cutting depths of high-temperature alloy and titanium alloy.



### Case

Insert: YBG105/ZIMF604N-SM  
Hardness of workpiece material: GH4169 (HB380)  
Cutting data:  $V_c=45\text{m/min}$ ,  $f=0.2\text{mm/r}$   
Coolant: Water



Products of company A



YBG105/ZIMF604N-SM

Conclusion: Under the same conditions, chip breaking performance is better and the time for stopping the removal of long winding chips is reduced.

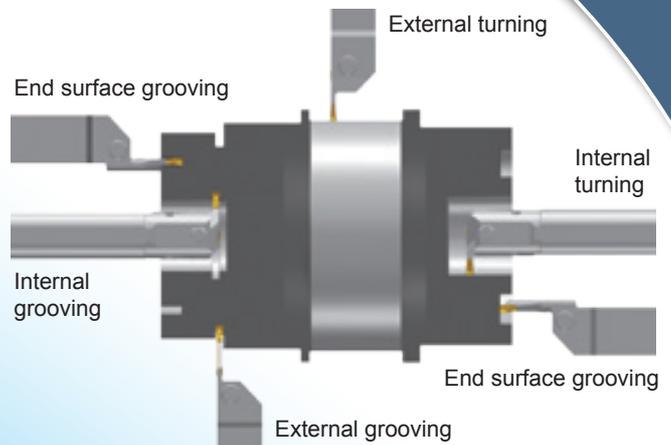
# -MG Chipbreaker

## Customized -MG chipbreaker series

Suitable for parting ,grooving, profile turning and turning, etc. Easy machining and unobstructed chip flow lead to improved surface quality.

## Human-centered design realizes various application of one single insert, reducing number of tools needed

Inserts of the same edge with can work with corresponding tool holders to satisfy the requirements of external, internal and surface grooving and turning by using minimum numbers of inserts and tool holders, effectively reducing cost of tool storage and management.



The cutting force is reduced by 20%, and the vibration is diminished.

## Unique and professional structure design of parting inserts

- A special flank structure is designed to reduce cutting resistant force by 20% and diminish vibration, which improves the surface quality.
- A special edge design requires less rigidity of machine. It can be used on low power machines.



## Little squirrel series

# -EG

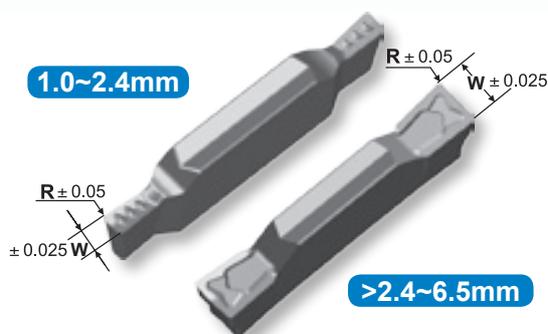
### Precision grooving and profile turning inserts

Special chipbreaker design, suitable for precise grooving of low-carbon steel, stainless steel, adhesive materials and non-ferrous metal.

The tolerance of the edge width S of precise grooving and profiling inserts can reach  $\pm 0.025$ . Inserts can also be mounted on the corresponding specifications of original tool series.

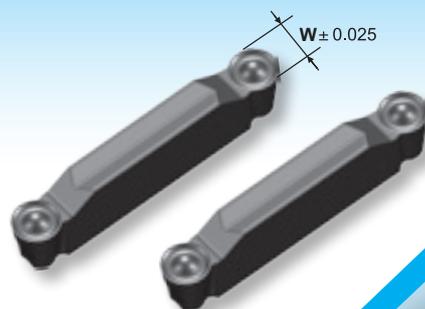
#### -EG Precision grooving inserts

The edge width can be anything between **1.0-6.5MM** according to your requirements.



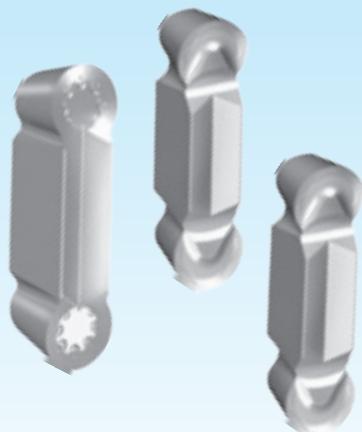
The width of the Little Squirrel series precise grooving inserts can be anything between 1.0mm to 6.5mm, which means products with any edge width or nose radius can be provided according to customers' requirements. The inserts are mainly used for precise grooving, such as sealing slot and locating slot, etc.

#### -EG Precision profile turning inserts



The Little Squirrel series precise profiling and turning inserts are mainly used for Precise grooving and profiling.

# -LC/-LH



#### Profile turning inserts for Al

The special chipbreaker for aluminum profiling is designed to combine sharpness and strength of the cutting edge, effectively reducing the friction between chips and the rake face. The inserts are suitable for continuous and intermittent profiling of Al alloy.

Suitable for various machining of Al wheel boss periphery, surface and inner wall, etc.



# TURNING Parting and grooving tools

Little squirrel series parting and grooving inserts

## Little squirrel series parting, grooving and profiling inserts code key

General turning

Parting and grooving

Little squirrel series parting and grooving inserts

### Insert applications

- ZP** > Parting    **ZT** > Grooving and turning
- ZR** > Profiling

### Code of locating slot

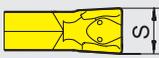
Code of locating slot	A	B	E	F	G	H	K	L
Corresponding edge width of inserts	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0

### Code of cutting edge number

- S** > Single cutting edge    **D** > Double cutting edge

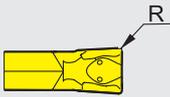
# ZP G D 04 04 - M G

### Cutting edge width



- 015=1.5mm
- 02=2.0mm
- 025=2.5mm
- 03=3.0mm
- 04=4.0mm
- 05=5.0mm
- 06=6.0mm
- 08=8.0mm

### Nose radius



- 02=0.2mm
- 03=0.3mm
- 04=0.4mm
- 08=0.8mm

### Tolerance class

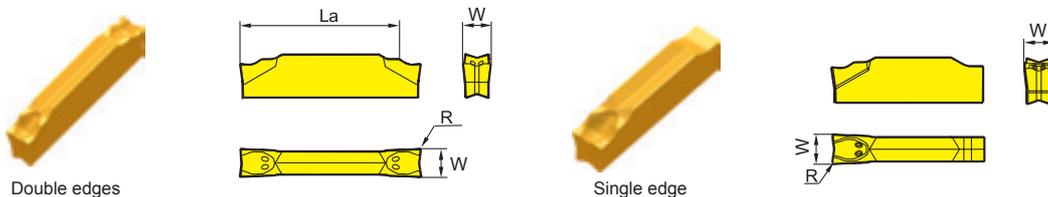
- M** > M-level tolerance
- E** > E-level tolerance

### Chipbreaker code

- G** > Curve edges universal chipbreaker, suitable for machining various materials
- M** > linear edges universal chipbreaker, suitable for machining various materials
- F** > Special chipbreaker



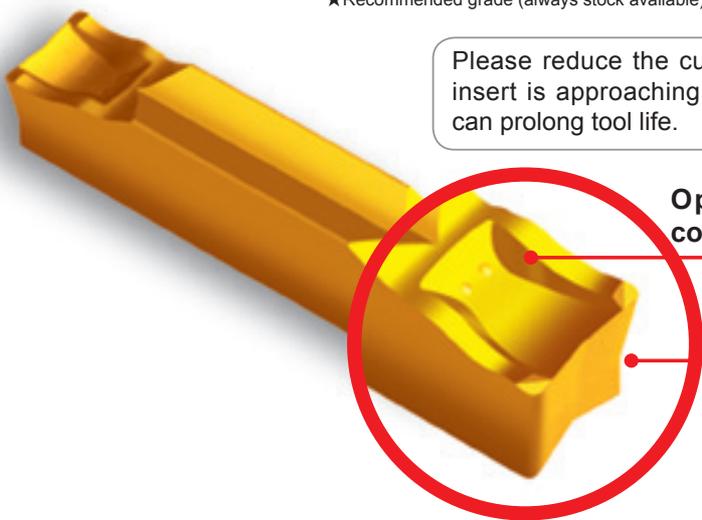
Parting inserts



Type		Basic dimensions(mm)			Grade				
					CVD Coating		PVD Coating		Cemented carbide
		$W_{0}^{+0.1}$	$R_{\pm 0.1}$	Cutting depth $L_{max}$	YBC151	YBC251	YBG205	YBG302	YD101
Double edges	ZPAD01502-MG	1.5	0.2	12		○	★	○	
	ZPBD0202-MG	2.0	0.2	14		○	★	○	
	ZPED02502-MG	2.5	0.2	17		○	★	★	
	ZPFD0302-MG	3.0	0.2	17		○	★	○	
	ZPGD0402-MG	4.0	0.2	22		○	★	○	
	ZPHD0503-MG	5.0	0.3	22		○	★	○	
	ZPKD0604-MG	6.0	0.4	22		○	★	○	
Single edge	ZPES02502-MG	2.5	0.2			○	★	★	
	ZPFS0302-MG	3.0	0.2			○	★	○	
	ZPGS0402-MG	4.0	0.2			○	★	○	
	ZPHS0503-MG	5.0	0.3			○	★	○	
	ZPKS0604-MG	6.0	0.4			○	★	○	

Single edge tool for cutter plate only

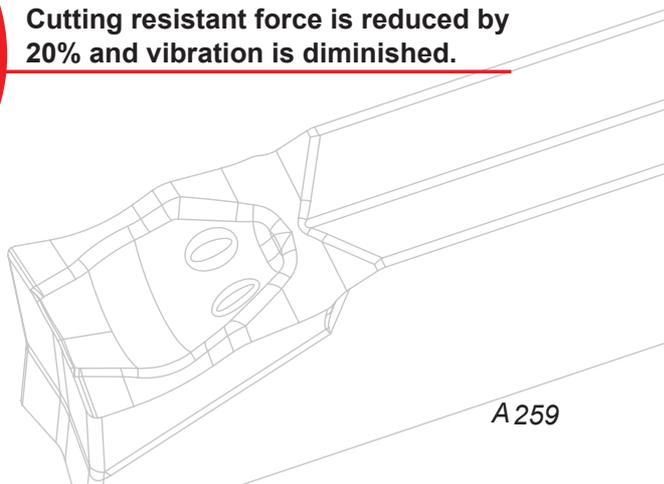
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



Please reduce the cutting speed by 30% when the insert is approaching the centre of workpiece. This can prolong tool life.

Optimal chipbreaker structure can control chip flow and curling well.

Cutting resistant force is reduced by 20% and vibration is diminished.



General turning

Parting and grooving

Little squirrel series parting and grooving inserts



# TURNING Parting and grooving tools

Little squirrel series parting and grooving inserts

## Grooving and turning inserts

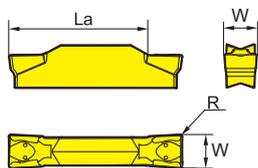
General turning

Parting and grooving

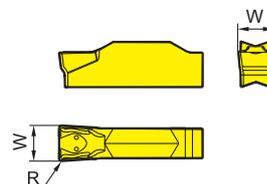
Little squirrel series parting and grooving inserts



Double edges

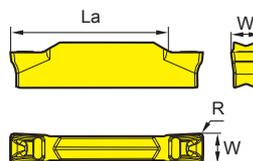


Single edge



Type	Basic dimensions(mm)			Grade						
	$W^{+0.1}_0$	$R \pm 0.10$	Cutting depth $L_{max}$	CVD Coating		PVD Coating			Cemented carbide	
				YBC151	YBC251	YBG202	YBG205	YBG302	YD101	
Double edges	ZTED02503-MG	2.5	0.3	17	○	○	●	★	★	
	ZTFD0303-MG	3.0	0.3	17	○	○	●	★	★	
	ZTGD0404-MG	4.0	0.4	22	●	○	●	★	★	
	ZTHD0504-MG	5.0	0.4	22		○	●	★	★	
	ZTKD0608-MG	6.0	0.8	22		○	●	★	★	
Single edge	ZTHS0504-MG	5.0	0.4			○	○	★	○	
	ZTKS0608-MG	6.0	0.8			○	○	★	○	

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



Type	Basic dimensions(mm)			Grade						
	W	$R \pm 0.1$	Cutting depth $L_{max}$	CVD Coating		PVD Coating			Cemented carbide	
				YBC151	YBC251	YBG202	YBG205	YBG302	YD101	
Double edges	ZTAD01502-MM	1.5±0.03	0.2	12	○	○	●	★	○	
	ZTBD02002-MM	2.0±0.03	0.2	14	○	○	●	★	○	
	ZTED02503-MM	2.5±0.03	0.3	17	○	○	●	★	○	
	ZTFD0303-MM	3.0±0.03	0.3	17	○	○	●	★	○	
	ZTGD0404-MM	4.0±0.04	0.4	22	○	○	●	★	○	
	ZTHD0504-MM	5.0±0.04	0.4	22	○	○	●	★	○	
	ZTKD0608-MM	6.0±0.04	0.8	22	○	○	●	★	○	
	ZTLD0808-MM	8.0±0.05	0.8	28	○	○	●	★	○	

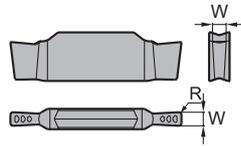
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



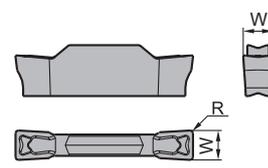
Precise grooving and turning inserts



1.0~2.4mm series



>2.4~6.5mm series



Type		Basic dimensions(mm)			Grade					
					CVD Coating		PVD Coating			Cemented carbide
		$W \pm 0.025$	$R^{(2)} \pm 0.05$	Cutting depth $L_{max}$	YBC151	YBC251	YBG202	YBG205	YBG302	YD101
Double edges	ZTCD□□□□□□ <sup>(1)</sup> -EG	1.0~1.6	See note. (2)	2.6	○	○	○	★	○	
		1.6~2.4		3.4	○	○	○	★	○	
	ZTED□□□□□□-EG	2.4~3.0		17	○	○	○	★	○	
	ZTFD□□□□□□-EG	3.0~3.8		17	○	○	○	★	○	
	ZTGD□□□□□□-EG	3.8~4.8		22	○	○	○	★	○	
	ZTHD□□□□□□-EG	4.8~5.8		22	○	○	○	★	○	
ZTKD□□□□□□-EG	5.8~6.5	22	○	○	○	★	○			

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

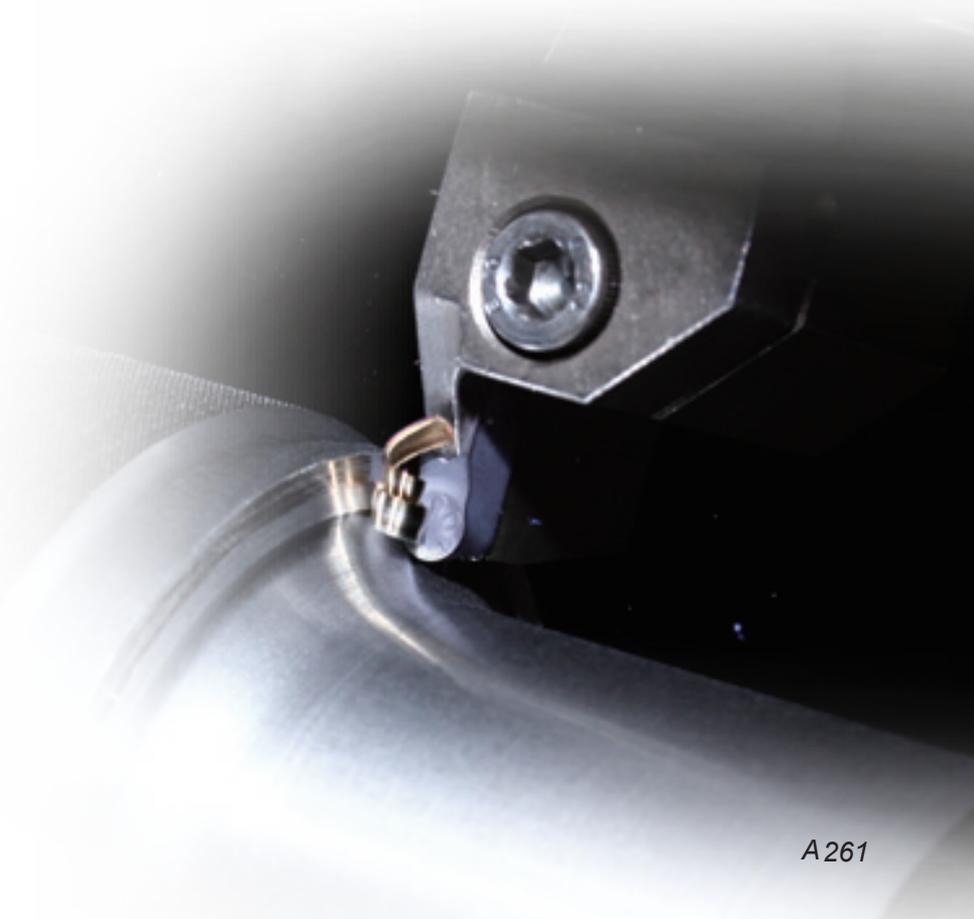
Note: (1) □ The code here in the description is determined by edge width and nose radius requested by customers. For example, when the customer requires an edge width of 3.5mm and a nose radius of 0.3mm, the description of the insert would be ZTFD03503-EG.

(2) The nose radius range is  $0.2 \leq R \leq 0.5$  on request.

General turning

Parting and grooving

Little squirrel series parting and grooving inserts







# TURNING Parting and grooving tools

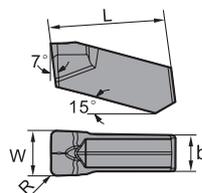
Little squirrel series parting and grooving inserts

General turning

Parting and grooving

Little squirrel series parting and grooving inserts

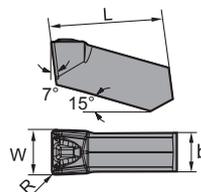
## Single-edge grooving and turning inserts for semi-finishing and roughing difficult-to-machine materials



Type	Basic dimensions(mm)				Grade				
					PVD Coating				Cemented carbide
	W±0.05	R±0.1	b	L	YBG102	YBG202	YBG205	YBS103	YD101
ZIMF304N-NM	3	0.4	2.4	15.3	★	○	★	●	○
ZIMF406N-NM	4	0.6	3.2	15.3	★	○	★	●	○
ZIMF506N-NM	5	0.6	4.0	15.3	★	○	★	○	○
ZIMF608N-NM	6	0.8	4.0	15.3	★	○	★	○	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

## Single-edge grooving and turning inserts for semi-finishing and roughing difficult-to-machine materials

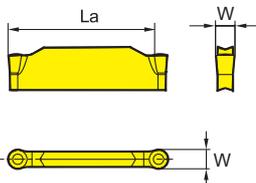


Type	Basic dimensions(mm)				Grade				
					PVD Coating				Cemented carbide
	W±0.05	R±0.1	b	L	YBG105	YBG212	YBG205	YBS103	YD101
ZIMF304N-SM	3	0.4	2.4	15.3	★	★		●	○
ZIMF404N-SM	4	0.4	3.2	15.3	★	★		○	○
ZIMF504N-SM	5	0.4	4.0	15.3	★	★		○	○
ZIMF604N-SM	6	0.4	5.1	15.3	★	★		○	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



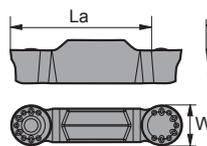
Profiling inserts



Type	Basic dimensions(mm)		Grade						
			CVD Coating		PVD Coating			Cemented carbide	
	$W^{+0.1}_0$	Cutting depth $L_{max}$	YBC151	YBC251	YBG202	YBG205	YBG302	YD101	
Double edges	ZRED025-MG	2.5	17.5		○	●	★	★	
	ZRFD03-MG	3.0	17		○	●	★	★	
	ZRGD04-MG	4.0	21		○	●	★	★	
	ZRHD05-MG	5.0	20		○	○	★	★	
	ZRKD06-MG	6.0	19		○	●	★	★	

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

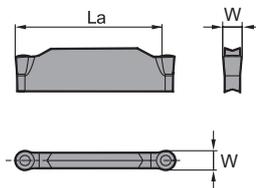
Profiling inserts



Type	Basic dimensions(mm)		Grade							
			CVD Coating		PVD Coating			Cemented carbide		
	$W \pm 0.025$	Cutting depth $L_{max}$	YBC151	YBC251	YBG105	YBG212	YBG302	YBS103	YD101	
Double edges	ZRFD03-NM	3	17			★	★		●	
	ZRGD04-NM	4	21			★	★		●	
	ZRHD05-NM	5	20			★	★		○	
	ZRKD06-NM	6	19			★	★		○	

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Precision profiling inserts



Type	Basic dimensions(mm)		Grade					
			CVD Coating		PVD Coating		Cemented carbide	
	$W \pm 0.025$	Cutting depth $L_{max}$	YBC151	YBC251	YBG202	YBG302	YD101	
Double edges	ZRFD03-EG	3.0	17		○		○	
	ZRGD04-EG	4.0	21		○		○	
	ZRHD05-EG	5.0	20		○		○	
	ZRKD06-EG	6.0	19		○		○	

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

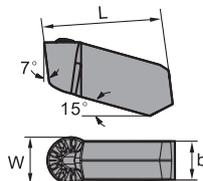
Little squirrel series parting and grooving inserts



# TURNING Parting and grooving tools

Little squirrel series parting and grooving inserts

## Single-edge inserts for profiling materials hard to be machined



Type	Basic dimensions(mm)			Grade			
				PVD Coating			Cemented carbide
	$W \pm 0.025$	b	L	YBG102	YBG202	YBS103	YD101
ZIGQ3N-NM	3	2.4	15.3	★	○	●	○
ZIGQ4N-NM	4	3.2	15.3	★	○	●	○
ZIGQ5N-NM	5	4.0	15.3	★	○	○	○
ZIGQ6N-NM	6	5.0	15.3	★	○	○	○

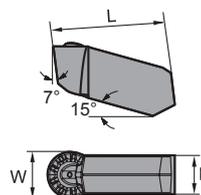
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving inserts

## Single-edge inserts for profiling materials hard to be machined

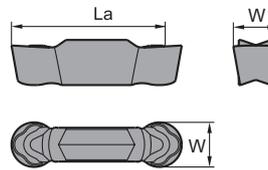


Type	Basic dimensions(mm)			Grade			
				PVD Coating			Cemented carbide
	$W \pm 0.025$	b	L	YBG105	YBG212	YBS103	YD101
ZIGQ3N-NF	3	2.4	15.3	★	★	●	
ZIGQ4N-NF	4	3.2	15.3	★	★	○	
ZIGQ5N-NF	5	4.0	15.3	★	★	○	
ZIGQ6N-NF	6	5.0	15.3	★	★	○	

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



Profiling inserts for Al



Type	Basic dimensions(mm)		Grade
	$W \pm 0.02$	Cutting depth $L_{max}$	Cemented carbide
ZRKD06-LH	6.0	19	YD101
ZRLD08-LH	8.0	22	YD101

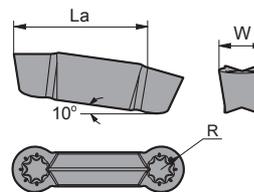
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving inserts

Profiling inserts for Al



Type	Basic dimensions(mm)			Grade
	$W \pm 0.02$	R	Cutting depth $L_{max}$	Cemented carbide
ZILD08-LC	8.0	4.0	22	YD101

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



# TURNING Parting and grooving tools

## QC series shallow grooving inserts

### QC series shallow grooving inserts code key

#### ● Square head shallow groove inserts

**QC**

Shallow grooving inserts

**22**

Cutting edge length code	Inner tangent circle diameter(mm)
11	6.35
16	9.525
22	12.70

**R**

Direction	
Code	Form
R	Rightward 
L	Leftward 

**300**

Grooving width(mm)	
Code	Width
050	0.50
100	1.00
...	...
480	4.80

**R**

Inserts tip form	
Code	Form
R	Circular arc 
C	Chamfering 

**03**

Rounding or chamfering(mm)	
Code	Size
02	0.2
03	0.3
04	0.4

#### ● Round head shallow groove inserts

**QC**

Shallow grooving inserts

**22**

Cutting edge length code	Inner tangent circle diameter(mm)
11	6.35
16	9.525
22	12.70

**R**

Direction	
Code	Form
R	Rightward 
L	Leftward 

**300**

Grooving width(mm)	
Code	Width
050	0.50
100	1.00
...	...
480	4.80

**R**

Head form: round head

General turning

Parting and grooving

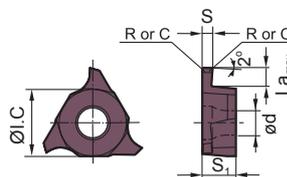
QC series shallow grooving inserts



## Square head shallow groove inserts



R-type shown



Type		Basic dimensions(mm)						Grade	
		$S \pm 0.025$	$L_{a_{max}}$	R/C	ØI.C	$S_1$	$\phi d$	PVD Coating	
								YBG202	YBG205
QC11R/L	120-R02	1.20	1.50	R0.2	6.35	3.18	2.8	○	○
	125-R02	1.25	1.50	R0.2	6.35	3.18	2.8	○	○
	145-R02	1.45	1.50	R0.2	6.35	3.18	2.8	○	○
	150-R02	1.50	1.50	R0.2	6.35	3.18	2.8	○	○
	200-R02	2.00	2.00	R0.2	6.35	3.18	2.8	○	○
	225-R02	2.25	2.00	R0.2	6.35	3.18	2.8	○	○
QC16R/L	110-R01	1.10	2.00	R0.1	9.525	3.18	4.4	○	○
	125-R02	1.25	2.00	R0.2	9.525	3.18	4.4	○	○
	145-R02	1.45	2.00	R0.2	9.525	3.18	4.4	○	○
	150-R02	1.50	2.00	R0.2	9.525	3.18	4.4	○	★
	175-R02	1.75	2.00	R0.2	9.525	3.18	4.4	○	○
	185-R02	1.85	2.50	R0.2	9.525	3.18	4.4	○	○
	200-R02	2.00	2.50	R0.2	9.525	3.18	4.4	○	★
	250-R02	2.50	2.50	R0.2	9.525	3.18	4.4	○	★
	300-R02	3.00	3.00	R0.2	9.525	3.18	4.4	○	★
QC22R/L	125-R02	1.25	2.00	R0.2	12.70	4.76	5.5	○	○
	145-R02	1.45	2.00	R0.2	12.70	4.76	5.5	○	○
	150-R02	1.50	3.50	R0.2	12.70	4.76	5.5	○	★
	175-R02	1.75	3.50	R0.2	12.70	4.76	5.5	○	○
	185-R02	1.85	3.50	R0.2	12.70	4.76	5.5	○	○
	200-R02	2.00	3.50	R0.2	12.70	4.76	5.5	○	★
	230-R02	2.30	3.50	R0.2	12.70	4.76	5.5	○	○
	250-R03	2.50	4.00	R0.3	12.70	4.76	5.5	○	★
	265-R03	2.65	4.00	R0.3	12.70	4.76	5.5	○	○
	280-R03	2.80	4.00	R0.3	12.70	4.76	5.5	○	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

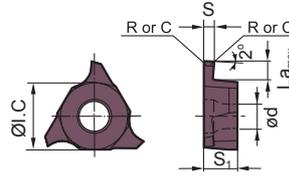
QC series shallow grooving inserts



### Square head shallow groove inserts



R-type shown



Type		Basic dimensions(mm)						Grade	
		S $\pm 0.025$	L <sub>max</sub>	R/C	ØI.C	S <sub>1</sub>	ød	PVD Coating	
								YBG202	YBG205
QC22R/L	300-R03	3.00	4.00	R0.3	12.70	4.76	5.5	○	★
	320-R03	3.20	4.00	R0.3	12.70	4.76	5.5	○	○
	330-R03	3.30	4.00	R0.3	12.70	4.76	5.5	○	○
	350-R03	3.50	5.00	R0.3	12.70	4.76	5.5	○	★
	400-R04	4.00	5.00	R0.4	12.70	4.76	5.5	○	★
	430-R04	4.30	5.00	R0.4	12.70	4.76	5.5	○	○
	450-R04	4.50	5.00	R0.4	12.70	4.76	5.5	○	○
	480-R04	4.80	5.00	R0.4	12.70	5.06	5.5	○	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

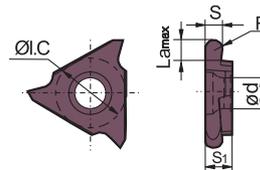
Example of special specification customization:

1. Custom-made insert width of 1.6mm, the tip form of the arc form, arc radius of 0.3mm right blade, I.C value of 12.7mm, then the custom-made insert model is QC22R160-R03.
2. Customized edge width range: QC11: 0.50~3.0mm; QC16: 0.50~3.0mm; QC22: 1.0~4.8mm.

### Round head shallow groove inserts



R-type shown



Type		Basic dimensions(mm)						Grade	
		S $\pm 0.025$	L <sub>max</sub>	R/C	ØI.C	S <sub>1</sub>	ød	PVD Coating	
								YBG202	YBG205
QC16R/L	200R	2.00	2.50	1.00	12.70	3.18	4.4	○	○
	300R	3.00	2.50	1.50	12.70	3.18	4.4	○	○
QC22R/L	100R	1.00	2.00	0.50	12.70	4.76	5.5	○	○
	150R	1.50	3.50	0.75	12.70	4.76	5.5	○	○
	200R	2.00	3.50	1.00	12.70	4.76	5.5	○	○
	250R	2.50	4.00	1.25	12.70	4.76	5.5	○	○
	300R	3.00	4.00	1.50	12.70	4.76	5.5	○	○
	400R	4.00	5.00	2.00	12.70	4.76	5.5	○	○

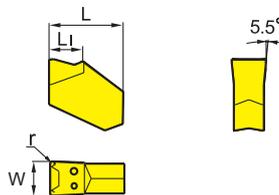
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Example of special specification customization:

Custom-made inserts width of 1.6mm, the tip form of the arc form, the arc radius of 0.8mm right insert, then the custom-made insert model is QC22R160R.



**ZQMX series**



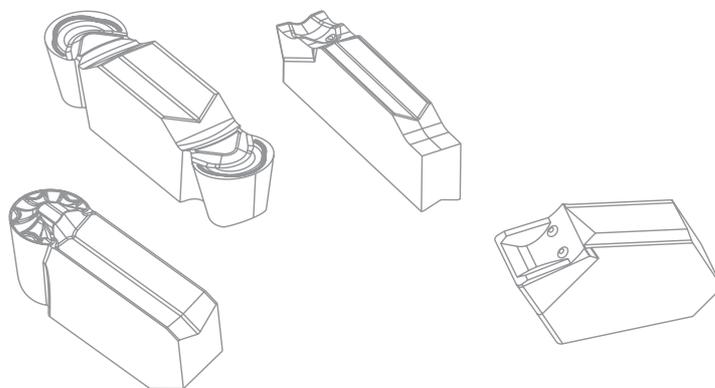
Type	Basic dimensions(mm)				Grade		
					CVD Coating	Cemented carbide	
	L1	W	r	L	YBC251	YC40	YD201
ZQMX3N11-1E	4.4	3.125	0.3	11	●	●	●
ZQMX4N11-1E	4.95	4.125	0.3	11	●	●	●
ZQMX5N11-1E	5.0	5.125	0.3	11	●	●	●
ZQMX6N11-1E	5.28	6.4	0.3	11	●	●	○
ZQMX7N11-1E	4.53	7.05	0.3	14		○	

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Supplementary series parting and grooving inserts







# TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

## Little squirrel series parting and grooving tools code key

### ● External and surface turning

General turning

Parting and grooving

Little squirrel series parting and grooving tools

Code of grooving tools

Machining mode

**E** > External cutting    **F** > End surface cutting

Code of locating slot

Accords with locating slot code of insert and corresponds to certain range of insert edge width

Code of edge number of corresponding inserts

**S** > Single cutting edge    **D** > Double cutting edge

**Q** **E** **G** **D** - **2525** **R** **13**  
**32** **N**

**Q** **F** **G** **D** **2525** **R** **22** **S** - **130** **H**

Nose height and width of tool holder

Left and right hand of tool

**R** > Right    **L** > Left    **N** > Both are acceptable

Maximum cutting depth

Supplementary code

S: Strengthened tool holder for external and surface deep grooving

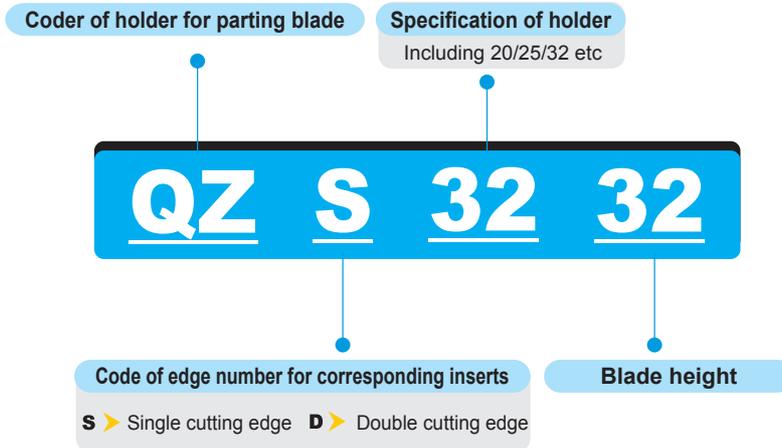
The minimum diameter of end surface grooving tools for initial machining

Holder type of end surface grooving tools

**H** > Straight holder    **L** > 90° holder

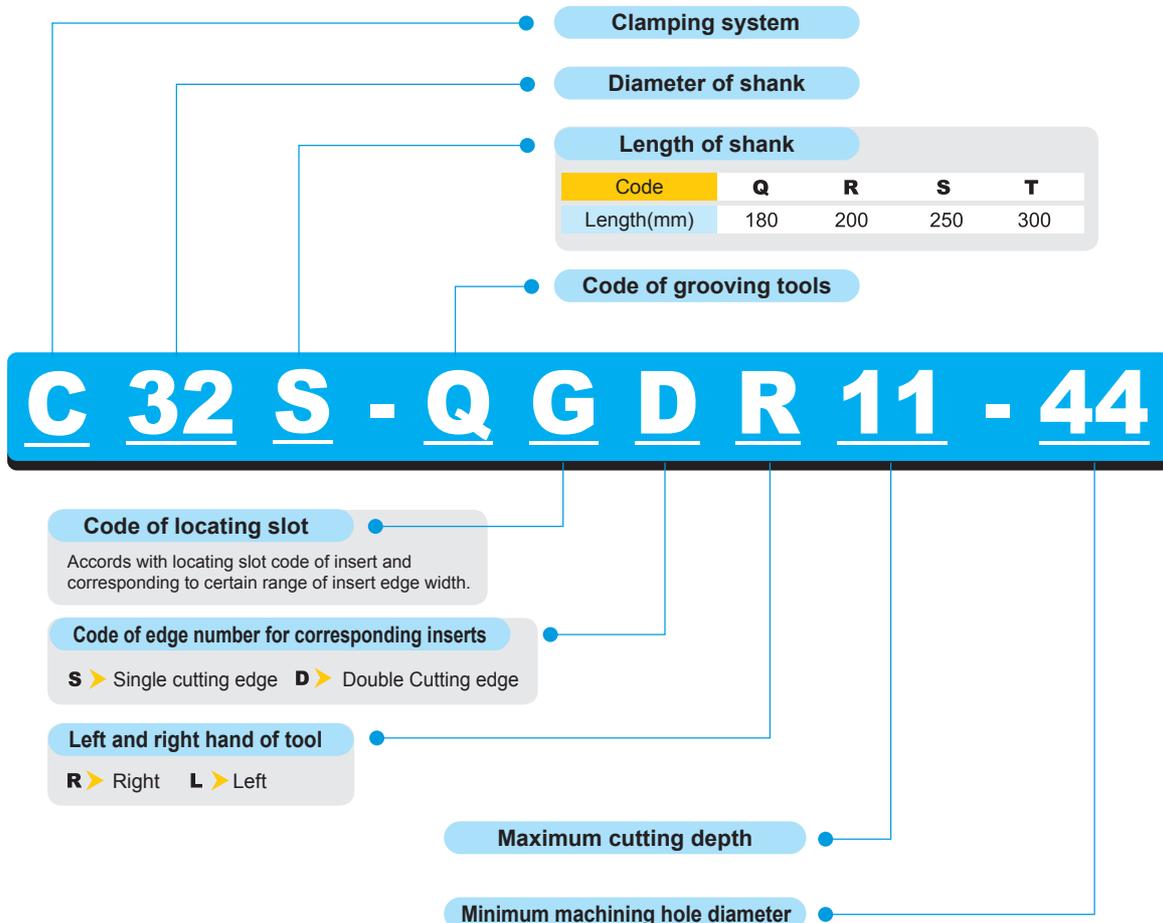


● Holder for parting blade



General turning  
Parting and grooving  
Little squirrel series parting and grooving tools

● Internal machining





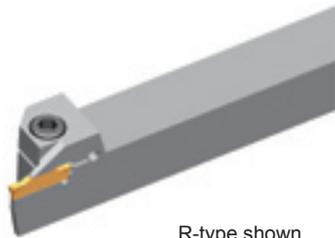
# TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

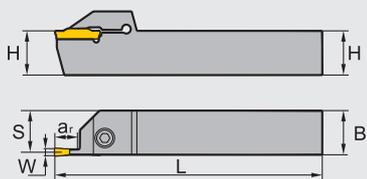
## External parting, grooving and turning tools

General turning  
Parting and grooving

Little squirrel series parting and grooving tools



R-type shown

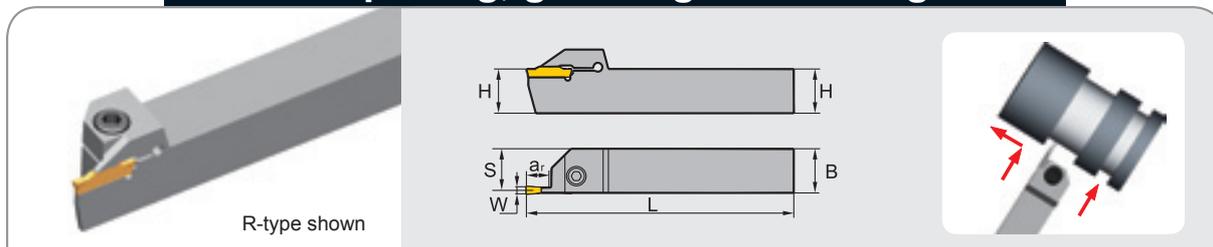


Type		Stock		Basic dimensions(mm)					Applicable inserts	Screw	Wrench	
		R	L	H×B	L	S	W	ar max				
<b>QEAD</b>	1212R/L07	▲	▲	12×12	125	11.4	1.5	7	Z□AD015□□	GB70-85-M4×12	WH30L	
	1212R/L12	▲	▲	12×12	125	11.4	1.5	12	Z□AD015□□			
	1616R/L07	▲	▲	16×16	125	15.4	1.5	7	Z□AD015□□			
	1616R/L12	▲	▲	16×16	125	15.4	1.5	12	Z□AD015□□	GB70-85-M5×16	WH40L	
	2020R/L07	▲	▲	20×20	125	19.4	1.5	7	Z□AD015□□			
	2020R/L12	▲	▲	20×20	125	19.4	1.5	12	Z□AD015□□			
<b>QEBD</b>	1212R/L07	▲	▲	12×12	125	11.2	2	7	Z□BD02□□	GB70-85-M4×12	WH30L	
	1212R/L10	▲	▲	12×12	125	11.2	2	10	Z□BD02□□			
	1212R/L14	▲	▲	12×12	125	11.2	2	14	Z□BD02□□			
	1616R/L07	▲	▲	16×16	125	15.2	2	7	Z□BD02□□	GB70-85-M5×16	WH40L	
	1616R/L10	▲	▲	16×16	125	15.2	2	10	Z□BD02□□			
	1616R/L14	▲	▲	16×16	125	15.2	2	14	Z□BD02□□			
	2020R/L07	▲	▲	20×20	125	19.2	2	7	Z□BD02□□	GB70-85-M6×20	WH50L	
	2020R/L10	▲	▲	20×20	125	19.2	2	10	Z□BD02□□			
	2020R/L14	▲	▲	20×20	125	19.2	2	14	Z□BD02□□			
	<b>QEED</b>	2525R/L07	▲	▲	25×25	150	24.2	2	7	Z□BD02□□	GB70-85-M5×20	WH40L
		2525R/L10	▲	▲	25×25	150	24.2	2	10	Z□BD02□□		
		2525R/L14	▲	▲	25×25	150	24.2	2	14	Z□BD02□□		
1616R/L10		▲	▲	16×16	125	15	2.5	10	Z□ED025□□	GB70-85-M6×20	WH50L	
1616R/L17		▲	▲	16×16	125	15	2.5	17	Z□ED025□□			
2020R/L10		▲	▲	20×20	125	19	2.5	10	Z□ED025□□			
<b>QEFD</b>	2020R/L17	▲	▲	20×20	125	19	2.5	17	Z□ED025□□	GB70-85-M5×20	WH40L	
	2525R/L10	▲	▲	25×25	150	24	2.5	10	Z□ED025□□			
	2525R/L17	▲	▲	25×25	150	24	2.5	17	Z□ED025□□			
	1616R/L10	▲	▲	16×16	125	14.8	3	10	Z□FD03□□	GB70-85-M6×20	WH50L	
	1616R/L17	▲	▲	16×16	125	14.8	3	17	Z□FD03□□			
	2020R/L10	▲	▲	20×20	125	18.8	3	10	Z□FD03□□			
<b>QEGD</b>	2020R/L17	▲	▲	20×20	125	18.8	3	17	Z□FD03□□	GB70-85-M5×20	WH40L	
	2525R/L10	▲	▲	25×25	150	23.8	3	10	Z□FD03□□			
	2525R/L17	▲	▲	25×25	150	23.8	3	17	Z□FD03□□			
<b>QEGD</b>	2020R/L13	▲	▲	20×20	140	18.5	4	13	Z□GD04□□	GB70-85-M6×20	WH50L	
	2020R/L22	▲	▲	20×20	140	18.5	4	22	Z□GD04□□			
	2525R/L13	▲	▲	25×25	150	23.5	4	13	Z□GD04□□			

▲Stock available    △Make-to-order



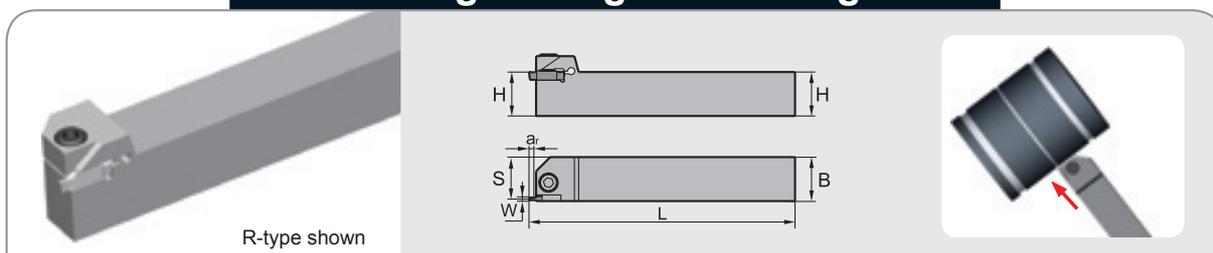
External parting, grooving and turning tools



Type		Stock		Basic dimensions(mm)					Applicable inserts	Screw	Wrench
		R	L	H×B	L	S	W	ar max			
<b>QEGD</b>	2525R/L22	▲	▲	25×25	150	23.5	4	22	Z□GD04□□	GB70-85-M6×20	WH50L
	3232R/L13	▲	▲	32×32	170	30.5	4	13	Z□GD04□□		
	3232R/L22	▲	▲	32×32	170	30.5	4	22	Z□GD04□□		
<b>QEHD</b>	2525R/L13	▲	▲	25×25	150	23	5	13	Z□HD05□□	GB70-85-M6×20	WH50L
	2525R/L22	▲	▲	25×25	150	23	5	22	Z□HD05□□		
<b>QEHS</b>	2525N30	▲	▲	25×25	150	12.5	5	30	Z□HS05□□		
<b>QEHD</b>	3232R/L13	▲	▲	32×32	170	30	5	13	Z□HD05□□		
	3232R/L22	▲	▲	32×32	170	30	5	22	Z□HD05□□		
<b>QEHS</b>	3232N30	▲	▲	32×32	170	16	5	30	Z□HS05□□		
<b>QEKD</b>	2525R/L13	▲	▲	25×25	150	22.6	6	13	Z□KD06□□	GB70-85-M6×20	WH50L
	2525R/L22	▲	▲	25×25	150	22.6	6	22	Z□KD06□□		
<b>QEKD</b>	2525N30	▲	▲	25×25	150	12.5	6	30	Z□KS06□□		
<b>QEKD</b>	3232R/L13	▲	▲	32×32	170	29.6	6	13	Z□KD06□□		
	3232R/L22	▲	▲	32×32	170	29.6	6	22	Z□KD06□□		
<b>QEKD</b>	3232N30	▲	▲	32×32	170	16	6	30	Z□KS06□□		
<b>QELD</b>	2525R/L16	▲	▲	25×25	150	22	8	16	ZTLD0808-MM	GB70-85-M6×20	WH50L
	2525R/L25	▲	▲	25×25	150	22	8	25	ZTLD0808-MM	GB70-85-M6×20	WH50L
	3232R/L28	▲	▲	32×32	170	29	8	28	ZTLD0808-MM	GB70-85-M8×30	WH60L

▲Stock available    △Make-to-order

Precision grooving and turning tools



Type		Stock		Basic dimensions(mm)					Applicable inserts	Screw	Wrench
		R	L	H×B	L	S	W	ar max			
<b>QECD</b>	1616R/L025	△	△	16×16	125	14.75	1.0~2.4	2.5	ZTCD□□□□□-EG	GB70-85-M5×20	WH40L
	2020R/L025	▲	△	20×20	125	18.75				GB70-85-M6×20	WH50L
	2525R/L025	▲	△	25×25	150	23.75				GB70-85-M6×20	WH50L

▲Stock available    △Make-to-order

General turning

Parting and grooving

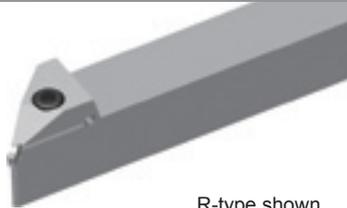
Little squirrel series parting and grooving tools



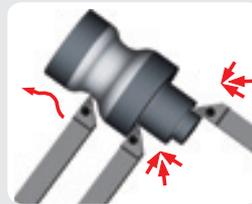
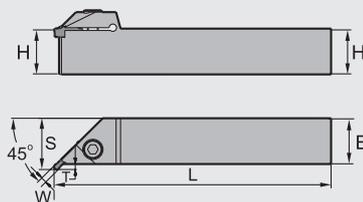
# TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

## External relief groove machining and profiling tools



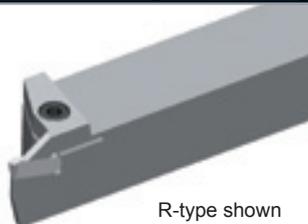
R-type shown



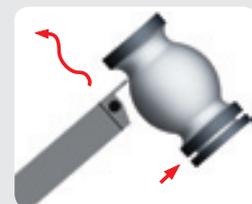
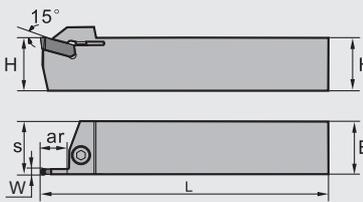
Type		Stock		Basic dimensions(mm)					Applicable inserts	Screw	Wrench
		R	L	H×B	L	S	W	ar max			
<b>QXFD</b>	2020R/L03-45	△	△	20×20	125	23	3.0	3.0	ZR(T)FD03-□□	GB70-85-M6×20	WH50L
	2525R/L03-45	△	△	25×25	150	28					
	3232R/L03-45	△	△	32×32	170	35					
<b>QXGD</b>	2020R/L03-45	△	△	20×20	125	23	4.0	3.0	ZR(T)GD04-□□		
	2525R/L03-45	△	△	25×25	150	28					
	3232R/L03-45	△	△	32×32	170	35					
<b>QXHD</b>	2020R/L04-45	△	△	20×20	125	24	5.0	4.0	ZR(T)HD05-□□		
	2525R/L04-45	△	△	25×25	150	29					
	3232R/L04-45	△	△	32×32	170	36					
<b>QXKD</b>	2020R/L04-45	△	△	20×20	125	24	6.0	4.0	ZR(T)KD06-□□		
	2525R/L04-45	△	△	25×25	150	29					
	3232R/L04-45	△	△	32×32	170	36					

▲Stock available    △Make-to-order

## External grooving tools for difficult-to-machine materials



R-type shown



Type		Stock		Basic dimensions(mm)					Applicable inserts	Screw	Wrench
		R	L	H×B	L	S	W	ar max			
<b>QEFS</b>	2525R/L12-3N	△	△	25×25	150	25.3	3	12	ZIGQ3N-□□ ZIMF304N-□□	GB70-85-M6×20	WH50L
	3232R/L22-3N	△	△	32×32	170	32.3	3	22			
<b>QEGS</b>	2525R/L12-4N	△	△	25×25	150	25.3	4	12	ZIGQ4N-□□ ZIMF40□N-□□		
	3232R/L22-4N	△	△	32×32	170	32.3	4	22			
<b>QEHS</b>	2525R/L12-5N	△	△	25×25	150	25.4	5	12	ZIGQ5N-□□ ZIMF50□N-□□		
	3232R/L22-5N	△	△	32×32	170	32.4	5	22			
<b>QEKS</b>	2525R/L12-6N	△	△	25×25	150	25.4	6	12	ZIGQ6N-□□ ZIMF60□N-□□		
	3232R/L22-6N	△	△	32×32	170	32.4	6	22			

▲Stock available    △Make-to-order

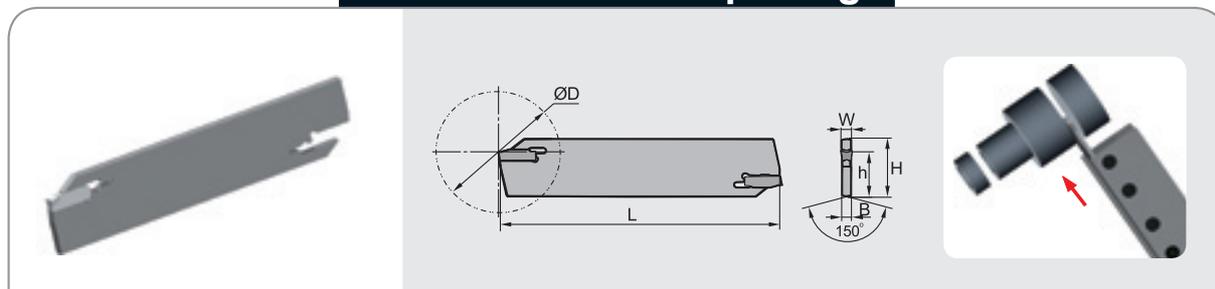
General turning

Parting and grooving

Little squirrel series parting and grooving tools



**Blade for external parting**

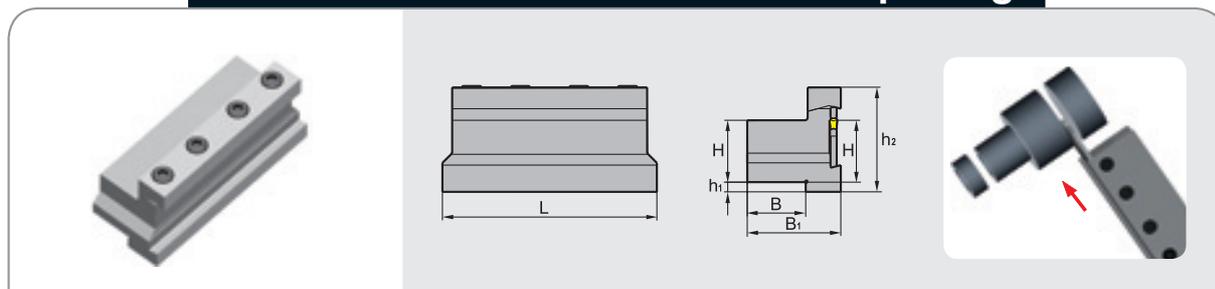


Type	Stock	Basic dimensions(mm)						Applicable inserts	Wrench
		L	H	h	B	W	ØD <sub>max</sub> (Maximum parting diameter)		
QEES26N	▲	110	26	19	2	2.5	60	ZPES02502-MG	W50RL
QEFS26N	▲	110	26	19	2.4	3	60	ZPFS0302-MG	
QEGS26N	▲	110	26	19	3.2	4	70	ZPGS0402-MG	
QEHS26N	▲	110	26	19	4	5	70	ZPHS0503-MG	
QEKS26N	▲	110	26	19	5	6	70	ZPKS0604-MG	
QEES32N	▲	150	32	24.6	2	2.5	100	ZPES02502-MG	
QEFS32N	▲	150	32	24.6	2.4	3	100	ZPFS0302-MG	
QEGS32N	▲	150	32	24.6	3.2	4	120	ZPGS0402-MG	
QEHS32N	▲	150	32	24.6	4	5	120	ZPHS0503-MG	
QEKS32N	▲	150	32	24.6	5	6	120	ZPKS0604-MG	

▲Stock available

△Make-to-order

**Holder for blade used for external parting**



Type	Stock	Basic dimensions(mm)						Clamp	Screw	Wrench
		L	H	h <sub>1</sub>	h <sub>2</sub>	B	B <sub>1</sub>			
QZS2026	▲	86	20	10	46.6	19	38	QZC26	GB70-85-M6×20	WH50L
QZS2526	▲	86	25	5	46.6	23	42	QZC26		
QZS3226	▲	86	30	3	51.6	30	48	QZC26		
QZS2032	▲	110	20	13	50	19	38	QZC32		
QZS2532	▲	110	25	8	50	23	42	QZC32		
QZS3232	▲	110	32	5	54	30	48	QZC32		

▲Stock available

△Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving tools



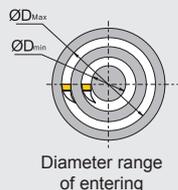
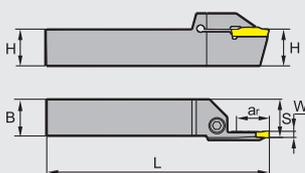
# TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

## End surface grooving and turning tools



L-type shown



Diameter range of entering



General turning

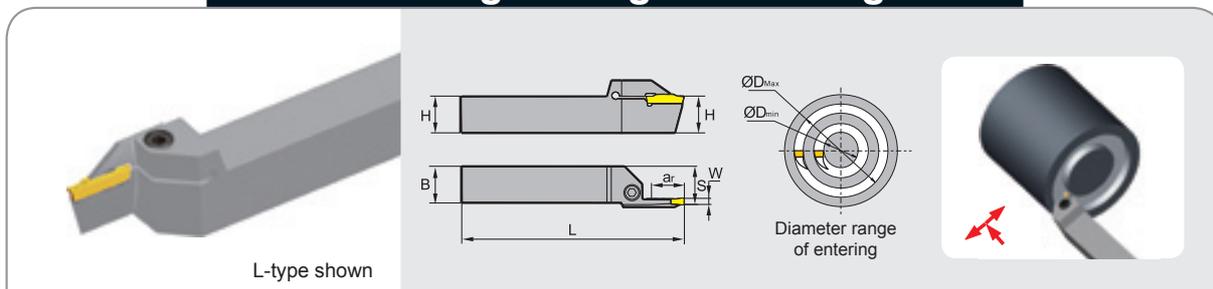
Parting and grooving

Little squirrel series parting and grooving tools

Type	Stock		Basic dimensions(mm)						Applicable inserts	Screw	Wrench	
	R	L	H×B	L	S	W	ar max	ØD (min-max)				
<b>QFFD</b>	2020R/L7-48H	▲	▲	20×20	150	21	3	7	48-66	ZTFD0303-□□	GB70-85-M6×20	WH50L
	2020R/L10-48H	▲	▲	20×20	150	21	3	10	48-66			
	2525R/L10-48H	▲	▲	25×25	150	26	3	10	48-66			
	2525R/L17-48H	▲	▲	25×25	150	26	3	17	48-66			
	2020R/L7-60H	△	△	20×20	150	21	3	7	60-80			
	2020R/L10-60H	△	△	20×20	150	21	3	10	60-80			
	2525R/L10-60H	▲	▲	25×25	150	26	3	10	60-80			
	2525R/L17-60H	▲	▲	25×25	150	26	3	17	60-80			
	2020R/L7-74H	△	△	20×20	150	21	3	7	74-110			
	2020R/L10-74H	△	▲	20×20	150	21	3	10	74-110			
	2525R/L10-74H	▲	▲	25×25	150	26	3	10	74-110			
	2525R/L17-74H	▲	▲	25×25	150	26	3	17	74-110			
	2020R/L7-100H	△	△	20×20	150	21	3	7	100-150			
	2020R/L10-100H	△	△	20×20	150	21	3	10	100-150			
	2525R/L10-100H	▲	▲	25×25	150	26	3	10	100-150			
2525R/L17-100H	▲	▲	25×25	150	26	3	17	100-150				
<b>QFGD</b>	2020R/L10-52H	△	△	20×20	150	21	4	10	52-72	ZTGD0404-□□	GB70-85-M6×20	WH50L
	2525R/L13-52H	▲	▲	25×25	150	26	4	13	52-72			
	2020R/L15-52H	△	△	20×20	150	21	4	15	52-72			
	2525R/L22-52H	▲	▲	25×25	150	26	4	22	52-72			
	2020R/L10-64H	△	▲	20×20	150	21	4	10	64-100			
	2525R/L13-64H	▲	▲	25×25	150	26	4	13	64-100			
	2020R/L15-64H	△	△	20×20	150	21	4	15	64-100			
	2525R/L22-64H	▲	▲	25×25	150	26	4	22	64-100			
	2020R/L10-90H	△	△	20×20	150	21	4	10	90-140			
	2525R/L13-90H	▲	▲	25×25	150	26	4	13	90-140			
	2020R/L15-90H	△	△	20×20	150	21	4	15	90-140			
	2525R/L22-90H	▲	▲	25×25	150	26	4	22	90-140			
	2020R/L10-130H	△	△	20×20	150	21	4	10	130-230			
	2525R/L13-130H	▲	▲	25×25	150	26	4	13	130-230			
	2020R/L15-130H	△	△	20×20	150	21	4	15	130-230			
2525R/L22-130H	▲	▲	25×25	150	26	4	22	130-230				

▲Stock available    △Make-to-order

### End surface grooving and turning tools



L-type shown

Type	Stock		Basic dimensions(mm)						Applicable inserts	Screw	Wrench	
	R	L	H×B	L	S	W	ar max	ØD (min-max)				
<b>QFHD</b>	2525R/L13-58H	▲	▲	25×25	150	26	5	13	58-96	ZTHD0504-□□	GB70-85-M6×20	WH50L
	2525R/L22-58H	▲	▲	25×25	150	26	5	22	58-96			
	2525R/L13-86H	△	▲	25×25	150	26	5	13	86-140			
	2525R/L22-86H	▲	▲	25×25	150	26	5	22	86-140			
	2525R/L13-130H	▲	▲	25×25	150	26	5	13	130-200			
	2525R/L22-130H	▲	▲	25×25	150	26	5	22	130-200			
	2525R/L13-185H	▲	▲	25×25	150	26	5	13	185-400			
	2525R/L22-185H	▲	▲	25×25	150	26	5	22	185-400			
<b>QFHS</b>	2525R/L30-185H	△	△	25×25	150	26	5	30	185-400	ZTHS0504-MG		
<b>QFKD</b>	2525R/L13-60H	▲	▲	25×25	150	26	6	13	60-100	ZTKD0608-□□	GB70-85-M6×20	WH50L
	2525R/L22-60H	▲	▲	25×25	150	26	6	22	60-100			
	2525R/L13-88H	△	▲	25×25	150	26	6	13	88-180			
	2525R/L22-88H	▲	▲	25×25	150	26	6	22	88-180			
	2525R/L13-160H	▲	▲	25×25	150	26	6	13	160-400			
	2525R/L22-160H	▲	▲	25×25	150	26	6	22	160-400			
<b>QFKS</b>	2525R/L30-160H	△	△	25×25	150	26	6	30	160-400	ZTKS0608-MG		
<b>QFLD</b>	2525R/L25-75H	▲	▲	25×25	150	27	8	25	75-150	ZTLD0808-MM	GB70-85-M6×20	WH50L
	2525R/L25-140H	▲	▲	25×25	150	27	8	25	140-400	ZTLD0808-MM	GB70-85-M6×20	WH50L
	3232R/L28-140H	▲	▲	32×32	170	30	8	28	140-400	ZTLD0808-MM	GB70-85-M8×30	WH60L

▲Stock available    △Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving tools





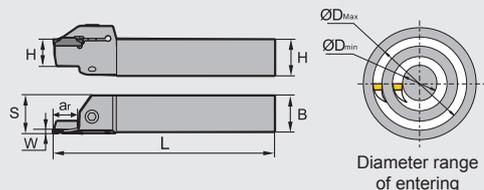
# TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

## End surface grooving and turning tools



RR-type shown



Diameter range of entering



General turning

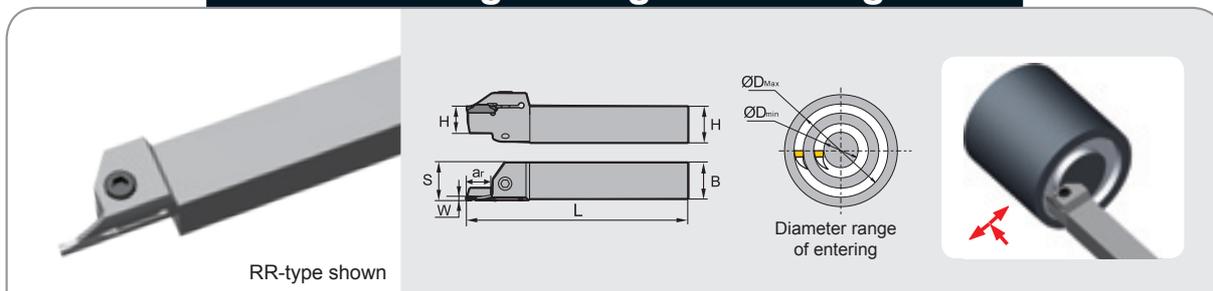
Parting and grooving

Little squirrel series parting and grooving tools

Type	Stock	Basic dimensions(mm)							Applicable inserts	Screw	Wrench
		H×B	L	S	W	ar max	ØD (min-max)				
<b>QFFD</b>	2020RR7-48H	△	20×20	150	21	3	7	48-66	ZTFD0303-□□	GB70-85-M6×20	WH50L
	2020RR10-48H	△	20×20	150	21	3	10	48-66			
	2525RR10-48H	△	25×25	150	26	3	10	48-66			
	2525RR17-48H	△	25×25	150	26	3	17	48-66			
	2020RR7-60H	△	20×20	150	21	3	7	60-80			
	2020RR10-60H	△	20×20	150	21	3	10	60-80			
	2525RR10-60H	△	25×25	150	26	3	10	60-80			
	2525RR17-60H	△	25×25	150	26	3	17	60-80			
	2020RR7-74H	△	20×20	150	21	3	7	74-110			
	2020RR10-74H	△	20×20	150	21	3	10	74-110			
	2525RR10-74H	△	25×25	150	26	3	10	74-110			
	2525RR17-74H	△	25×25	150	26	3	17	74-110			
	2020RR7-100H	△	20×20	150	21	3	7	100-150			
	2020RR10-100H	△	20×20	150	21	3	10	100-150			
2525RR10-100H	△	25×25	150	26	3	10	100-150				
2525RR17-100H	△	25×25	150	26	3	17	100-150				
<b>QFGD</b>	2020RR10-52H	△	20×20	150	21	4	10	52-72	ZTGD0404-□□	GB70-85-M6×20	WH50L
	2020RR15-52H	△	20×20	150	26	4	15	52-72			
	2525RR13-52H	△	25×25	150	21	4	13	52-72			
	2525RR22-52H	△	25×25	150	26	4	22	52-72			
	2020RR10-64H	△	20×20	150	21	4	10	64-100			
	2020RR15-64H	△	20×20	150	26	4	15	64-100			
	2525RR13-64H	△	25×25	150	21	4	13	64-100			
	2525RR22-64H	△	25×25	150	26	4	22	64-100			
	2020RR10-90H	△	20×20	150	21	4	10	90-140			
	2020RR15-90H	△	20×20	150	26	4	15	90-140			
	2525RR13-90H	△	25×25	150	21	4	13	90-140			
	2525RR22-90H	△	25×25	150	26	4	22	90-140			
	2020RR10-130H	△	20×20	150	21	4	10	130-230			
	2020RR15-130H	△	20×20	150	26	4	15	130-230			
2525RR13-130H	△	25×25	150	21	4	13	130-230				
2525RR22-130H	△	25×25	150	26	4	22	130-230				

▲Stock available    △Make-to-order

### End surface grooving and turning tools



Type	Stock	Basic dimensions(mm)							Applicable inserts	Screw	Wrench
		H×B	L	S	W	ar max	ØD (min-max)				
<b>QFHD</b>	<b>2525RR13-58H</b>	△	25×25	150	26	5	13	58-96	ZTHD0504-□□	GB70-85-M6×20	WH50L
	<b>2525RR22-58H</b>	△	25×25	150	26	5	22	58-96			
	<b>2525RR13-86H</b>	△	25×25	150	26	5	13	86-140			
	<b>2525RR22-86H</b>	△	25×25	150	26	5	22	86-140			
	<b>2525RR13-130H</b>	△	25×25	150	26	5	13	130-200			
	<b>2525RR22-130H</b>	△	25×25	150	26	5	22	130-200			
	<b>2525RR13-185H</b>	△	25×25	150	26	5	13	185-400			
	<b>2525RR22-185H</b>	△	25×25	150	26	5	22	185-400			
<b>QFHS</b>	<b>2525RR30-185H</b>	△	25×25	150	26	5	30	185-400	ZTHS0504-MG		
<b>QFKD</b>	<b>2525RR13-60H</b>	△	25×25	150	26	6	13	60-100	ZTKD0608-□□	GB70-85-M6×20	WH50L
	<b>2525RR22-60H</b>	△	25×25	150	26	6	22	60-100			
	<b>2525RR13-88H</b>	△	25×25	150	26	6	13	88-180			
	<b>2525RR22-88H</b>	△	25×25	150	26	6	22	88-180			
	<b>2525RR13-160H</b>	△	25×25	150	26	6	13	160-400			
	<b>2525RR22-160H</b>	△	25×25	150	26	6	22	160-400			
<b>QFKS</b>	<b>2525RR30-160H</b>	△	25×25	150	26	6	30	160-400	ZTKS0608-MG		

▲Stock available    △Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving tools



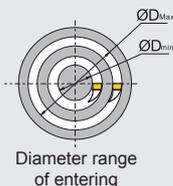
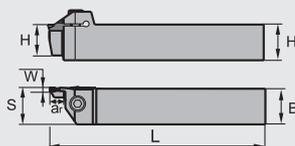
# TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

## End surface grooving and turning tools



LL-type shown



Diameter range of entering



General turning

Parting and grooving

Little squirrel series parting and grooving tools

Type	Stock	Basic dimensions(mm)							Applicable inserts	Screw	Wrench
		H×B	L	S	W	ar max	ØD (min-max)				
<b>QFFD</b>	2020LL7-48H	△	20×20	150	21	3	7	48-66	ZTFD0303-□□	GB70-85-M6×20	WH50L
	2020LL10-48H	△	20×20	150	21	3	10	48-66			
	2525LL10-48H	△	25×25	150	26	3	10	48-66			
	2525LL17-48H	△	25×25	150	26	3	17	48-66			
	2020LL7-60H	△	20×20	150	21	3	7	60-80			
	2020LL10-60H	△	20×20	150	21	3	10	60-80			
	2525LL10-60H	△	25×25	150	26	3	10	60-80			
	2525LL17-60H	△	25×25	150	26	3	17	60-80			
	2020LL7-74H	△	20×20	150	21	3	7	74-110			
	2020LL10-74H	△	20×20	150	21	3	10	74-110			
	2525LL10-74H	△	25×25	150	26	3	10	74-110			
	2525LL17-74H	△	25×25	150	26	3	17	74-110			
	2020LL7-100H	△	20×20	150	21	3	7	100-150			
	2020LL10-100H	△	20×20	150	21	3	10	100-150			
	2525LL10-100H	△	25×25	150	26	3	10	100-150			
2525LL17-100H	△	25×25	150	26	3	17	100-150				
<b>QFGD</b>	2020LL10-52H	△	20×20	150	21	4	10	52-72	ZTGD0404-□□	GB70-85-M6×20	WH50L
	2020LL15-52H	△	20×20	150	26	4	15	52-72			
	2525LL13-52H	△	25×25	150	21	4	13	52-72			
	2525LL22-52H	△	25×25	150	26	4	22	52-72			
	2020LL10-64H	△	20×20	150	21	4	10	64-100			
	2020LL15-64H	△	20×20	150	26	4	15	64-100			
	2525LL13-64H	△	25×25	150	21	4	13	64-100			
	2525LL22-64H	△	25×25	150	26	4	22	64-100			
	2020LL10-90H	△	20×20	150	21	4	10	90-140			
	2020LL15-90H	△	20×20	150	26	4	15	90-140			
	2525LL13-90H	△	25×25	150	21	4	13	90-140			
	2525LL22-90H	△	25×25	150	26	4	22	90-140			
	2020LL10-130H	△	20×20	150	21	4	10	130-230			
	2020LL15-130H	△	20×20	150	26	4	15	130-230			
	2525LL13-130H	△	25×25	150	21	4	13	130-230			
2525LL22-130H	△	25×25	150	26	4	22	130-230				

▲Stock available

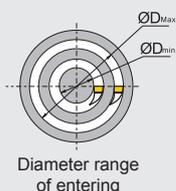
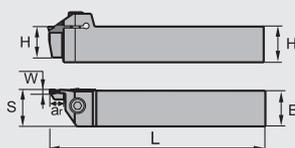
△Make-to-order



## End surface grooving and turning tools



LL-type shown



Diameter range of entering



Type	Stock	Basic dimensions(mm)							Applicable inserts	Screw	Wrench
		H×B	L	S	W	$\alpha r_{max}$	$\varnothing D$ (min-max)				
<b>QFHD</b>	<b>2525LL13-58H</b>	△	25×25	150	26	5	13	58-96	ZTHD0504-□□	GB70-85-M6×20	WH50L
	<b>2525LL22-58H</b>	△	25×25	150	26	5	22	58-96			
	<b>2525LL13-86H</b>	△	25×25	150	26	5	13	86-140			
	<b>2525LL22-86H</b>	△	25×25	150	26	5	22	86-140			
	<b>2525LL13-130H</b>	△	25×25	150	26	5	13	130-200			
	<b>2525LL22-130H</b>	△	25×25	150	26	5	22	130-200			
	<b>2525LL13-185H</b>	△	25×25	150	26	5	13	185-400			
	<b>2525LL22-185H</b>	△	25×25	150	26	5	22	185-400			
<b>QFHS</b>	<b>2525LL30-185H</b>	△	25×25	150	26	5	30	185-400	ZTHS0504-MG		
<b>QFKD</b>	<b>2525LL13-60H</b>	△	25×25	150	26	6	13	60-100	ZTKD0608-□□	GB70-85-M6×20	WH50L
	<b>2525LL22-60H</b>	△	25×25	150	26	6	22	60-100			
	<b>2525LL13-88H</b>	△	25×25	150	26	6	13	88-180			
	<b>2525LL22-88H</b>	△	25×25	150	26	6	22	88-180			
	<b>2525LL13-160H</b>	△	25×25	150	26	6	13	160-400			
	<b>2525LL22-160H</b>	△	25×25	150	26	6	22	160-400			
<b>QFKS</b>	<b>2525LL30-160H</b>	△	25×25	150	26	6	30	160-400	ZTKS0608-MG		

▲Stock available

△Make-to-order

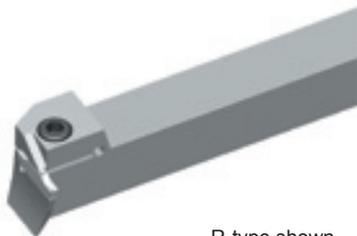
General turning

Parting and grooving

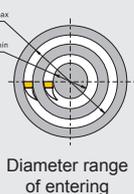
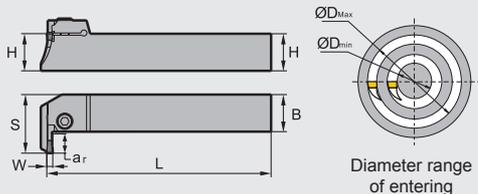
Little squirrel series parting and grooving tools



### L type tools for surface grooving and turning



R-type shown



Diameter range of entering



General turning

Parting and grooving

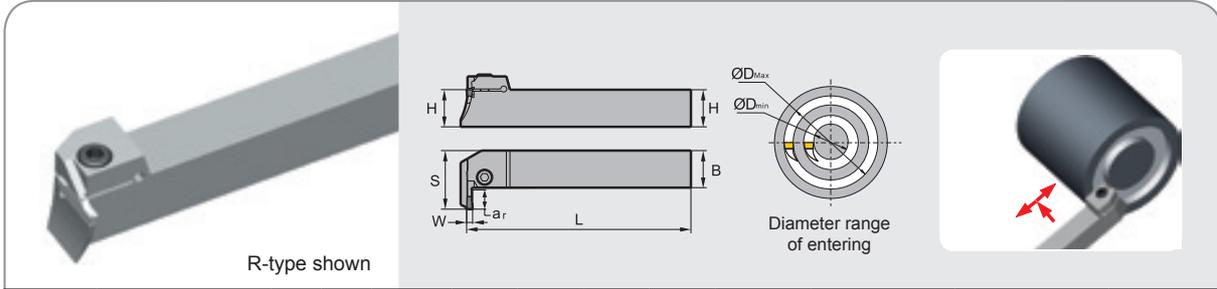
Little squirrel series parting and grooving tools

Type	Stock		Basic dimensions(mm)						Applicable inserts	Screw	Wrench	
	R	L	H×B	L	S	W	ar max	ØD (min-max)				
<b>QFFD</b>	2020R/L7-48L	△	△	20×20	150	28.5	3	7	48-66	ZTFD0303-□□	GB70-85-M6×20	WH50L
	2020R/L10-48L	△	△	20×20	150	31.5	3	10	48-66			
	2525R/L10-48L	▲	▲	25×25	150	36.5	3	10	48-66			
	2525R/L17-48L	△	△	25×25	150	43.5	3	17	48-66			
	2020R/L7-60L	△	△	20×20	150	28.5	3	7	60-80			
	2020R/L10-60L	△	△	20×20	150	31.5	3	10	60-80			
	2525R/L10-60L	▲	▲	25×25	150	36.5	3	10	60-80			
	2525R/L17-60L	△	△	25×25	150	43.5	3	17	60-80			
	2020R/L7-74L	△	△	20×20	150	28.5	3	7	74-110			
	2020R/L10-74L	△	△	20×20	150	31.5	3	10	74-110			
	2525R/L10-74L	▲	▲	25×25	150	36.5	3	10	74-110			
	2525R/L17-74L	△	△	25×25	150	43.5	3	17	74-110			
	2020R/L7-100L	△	△	20×20	150	28.5	3	7	100-150			
	2020R/L10-100L	△	△	20×20	150	31.5	3	10	100-150			
	2525R/L10-100L	▲	▲	25×25	150	36.5	3	10	100-150			
2525R/L17-100L	△	△	25×25	150	43.5	3	17	100-150				
<b>QFGD</b>	2020R/L10-52L	△	△	20×20	150	31.5	4	10	52-72	ZTGD0404-□□	GB70-85-M6×20	WH50L
	2525R/L13-52L	▲	△	25×25	150	39.5	4	13	52-72			
	2020R/L15-52L	△	△	20×20	150	36.5	4	15	52-72			
	2525R/L22-52L	△	△	25×25	150	48.5	4	22	52-72			
	2020R/L10-64L	△	△	20×20	150	31.5	4	10	64-100			
	2525R/L13-64L	△	△	25×25	150	39.5	4	13	64-100			
	2020R/L15-64L	△	△	20×20	150	36.5	4	15	64-100			
	2525R/L22-64L	△	△	25×25	150	48.5	4	22	64-100			
	2020R/L10-90L	△	△	20×20	150	31.5	4	10	90-140			
	2525R/L13-90L	△	△	25×25	150	39.5	4	13	90-140			
	2020R/L15-90L	△	△	20×20	150	36.5	4	15	90-140			
	2525R/L22-90L	▲	△	25×25	150	48.5	4	22	90-140			
	2020R/L10-130L	△	△	20×20	150	31.5	4	10	130-230			
	2525R/L13-130L	△	△	25×25	150	39.5	4	13	130-230			
	2020R/L15-130L	△	△	20×20	150	36.5	4	15	130-230			
2525R/L22-130L	▲	▲	25×25	150	48.5	4	22	130-230				

▲Stock available    △Make-to-order



L type tools for surface grooving and turning



R-type shown

Type		Stock		Basic dimensions(mm)						Applicable inserts	Screw	Wrench
		R	L	H×B	L	S	W	ar max	ØD (min-max)			
<b>QFHD</b>	2525R/L13-58L	△	△	25×25	150	39.5	5	13	58-96	ZTHD0504-□□	GB70-85-M6×20	WH50L
	2525R/L22-58L	△	△	25×25	150	48.5	5	22	58-96			
	2525R/L13-86L	△	△	25×25	150	39.5	5	13	86-140			
	2525R/L22-86L	△	△	25×25	150	48.5	5	22	86-140			
	2525R/L13-130L	△	△	25×25	150	39.5	5	13	130-200			
	2525R/L22-130L	△	△	25×25	150	48.5	5	22	130-200			
	2525R/L13-185L	△	△	25×25	150	39.5	5	13	185-400			
	2525R/L22-185L	▲	△	25×25	150	48.5	5	22	185-400			
<b>QFHS</b>	2525R/L30-185L	△	△	25×25	150	56.5	5	30	185-400	ZTHS0504-MG		
<b>QFKD</b>	2525R/L13-60L	▲	▲	25×25	150	39.5	6	13	60-100	ZTKD0608-□□	GB70-85-M6×20	WH50L
	2525R/L22-60L	▲	▲	25×25	150	48.5	6	22	60-100			
	2525R/L13-88L	△	▲	25×25	150	39.5	6	13	88-180			
	2525R/L22-88L	▲	▲	25×25	150	48.5	6	22	88-180			

▲Stock available    △Make-to-order

General turning

Parting and grooving

Little squirrel series parting and grooving tools

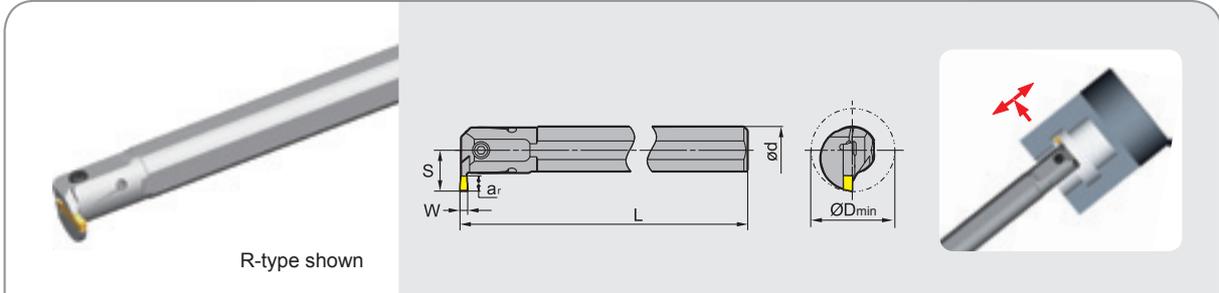




# TURNING Parting and grooving tools

Little squirrel series parting and grooving tools

## Internal grooving and turning tools

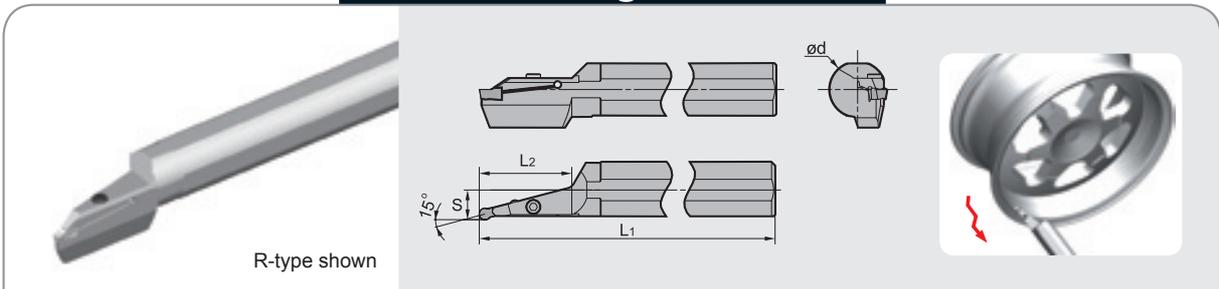


R-type shown

Type	Stock		Basic dimensions(mm)						Applicable inserts	Screw	Wrench
	R	L	ød	L	S	W	ar <sub>max</sub>	ØD <sub>min</sub>			
C20Q-QEDR/L05-27	▲	▲	20	180	15.2	2.5	5	27	ZTED025□□ ZRED025□□	GB70-85-M4×12	WH30L
C25R-QEDR/L07-33	▲	▲	25	200	20.3	2.5	7	33		GB70-85-M5×16	WH40L
C32S-QEDR/L09-42	▲	▲	32	250	25.3	2.5	9	42	ZTFD03□□ ZRFD03□□	GB70-85-M5×20	WH40L
C20Q-QFDR/L05-27	▲	▲	20	180	15.2	3	5	27		GB70-85-M4×12	WH30L
C25R-QFDR/L07-33	▲	▲	25	200	20.3	3	7	33	ZTGD04□□ ZRGD04□□	GB70-85-M5×16	WH40L
C32S-QFDR/L09-42	▲	▲	32	250	25.3	3	9	42		GB70-85-M5×20	WH40L
C25R-QGDR/L08-35	▲	▲	25	200	21.5	4	8	35	ZTHD05□□ ZRHD05□□	GB70-85-M5×16	WH40L
C32S-QGDR/L11-44	▲	▲	32	250	27.5	4	11	44		GB70-85-M6×20	WH50L
C40T-QGDR/L13-54	▲	▲	40	300	33.5	4	13	54	ZTKD06□□ ZRKD06□□	GB70-85-M6×20	WH50L
C25R-QHDR/L08-35	▲	▲	25	200	21.5	5	8	35		GB70-85-M5×16	WH40L
C32S-QHDR/L11-44	▲	▲	32	250	27.5	5	11	44	ZTKD06□□ ZRKD06□□	GB70-85-M6×20	WH50L
C40T-QHDR/L13-54	▲	▲	40	300	33.5	5	13	54		GB70-85-M6×20	WH50L
C25R-QKDR/L08-35	▲	▲	25	200	21.5	6	8	35	ZTKD06□□ ZRKD06□□	GB70-85-M5×16	WH40L
C32S-QKDR/L11-44	▲	▲	32	250	27.5	6	11	44		GB70-85-M6×20	WH50L
C40T-QKDR/L13-54	▲	▲	40	300	33.5	6	13	54	ZTKD06□□ ZRKD06□□	GB70-85-M6×20	WH50L

▲Stock available    △Make-to-order

## Profile turning tools for Al



R-type shown

Type	Stock		Basic dimensions(mm)					Applicable inserts	Screw	Wrench
	R	L	ØD (Minimum machining diameter)	ød	S	L <sub>1</sub>	L <sub>2</sub>			
C40X-QLDR/L65-15A	▲	▲	160	40	21	320	65	ZRLD08-LH	GB70-85-M6×20	WH50L
C40X-QLDR/L80-15A	▲	△	160	40	21	320	80	ZRLD08-LH		
C40X-QKDR/L60-15A	△	△	160	40	20	320	60	ZRKD06-LH		
C40X-QKDR/L75-15A	△	△	160	40	20	320	75	ZRKD06-LH		

▲Stock available    △Make-to-order

General turning

Parting and grooving

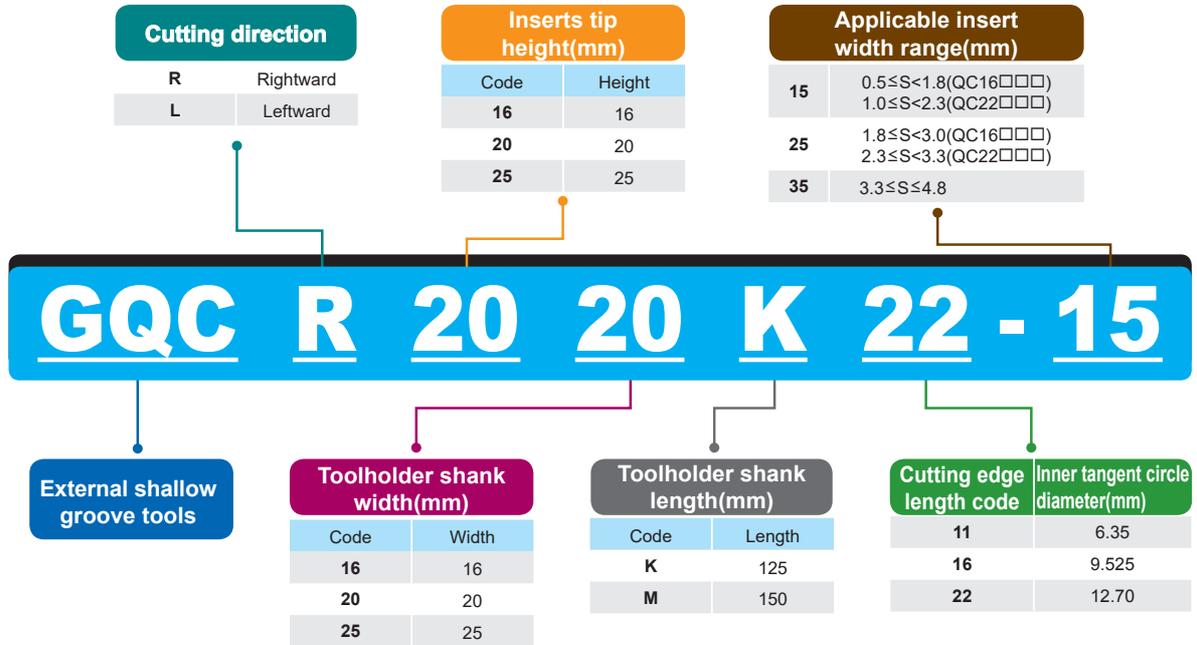
Little squirrel series parting and grooving tools



QC series

shallow grooving tools code key

● External shallow groove tools

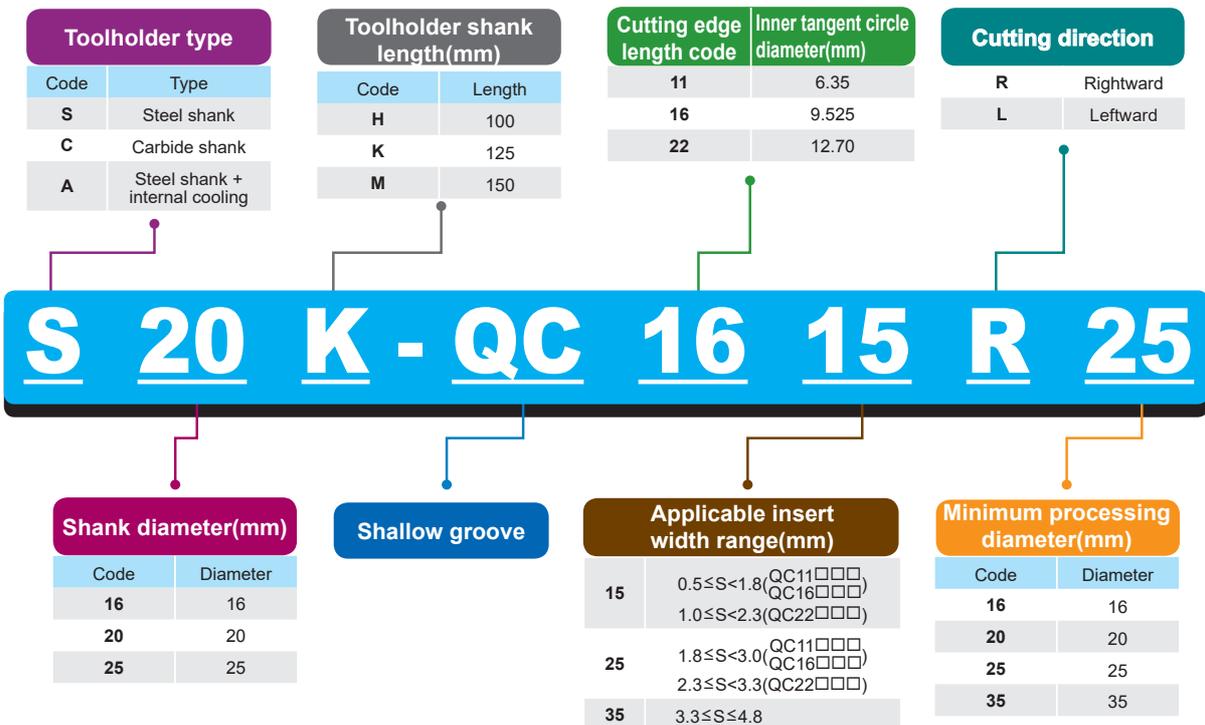


General turning

Parting and grooving

QC series shallow grooving tools

● Internal shallow groove tools



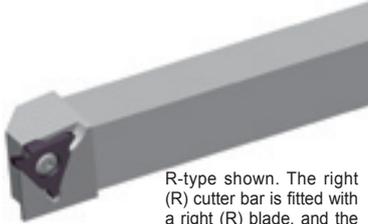




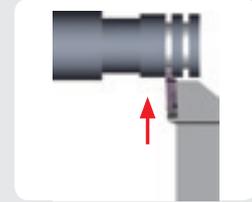
# TURNING Parting and grooving tools

## QC series shallow grooving tools

### External shallow groove tools



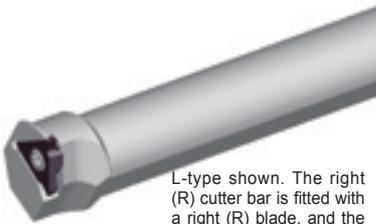
R-type shown. The right (R) cutter bar is fitted with a right (R) blade, and the left (L) cutter bar is fitted with a left (L) blade.



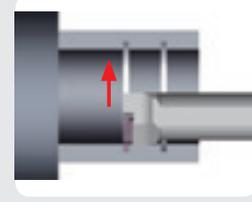
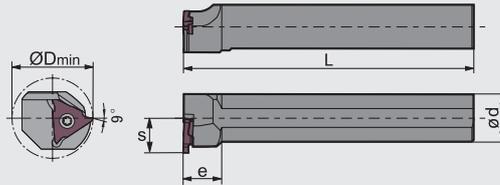
Type	Stock	Basic dimensions(mm)					Width (mm)	Applicable inserts	Screw	Wrench
		H	B	S	e	L				
<b>GQCR/L</b>	▲	16	16	21	25.5	125	1.1-1.8	QC16R/L 110~180	I60M3.5×10	WT15IP
	▲	20	20	25		125				
	▲	25	25	30		150				
	▲	16	16	21		125				
	▲	20	20	25		125				
	▲	25	25	30		150				
	▲	20	20	25		125	1.0-2.3	QC22R/L 100~230	I60M5×13	WT20IP
	▲	25	25	30		150				
	▲	20	20	25		125				
	▲	25	25	30		150				
	▲	20	20	25		125				
	▲	25	25	30		150				
▲	20	20	25	125	3.3-4.8	QC22R/L 330~480				
▲	25	25	30	150						

▲Stock available    △Make-to-order

### Internal shallow groove tools



L-type shown. The right (R) cutter bar is fitted with a right (R) blade, and the left (L) cutter bar is fitted with a left (L) blade.



Type	Stock	Basic dimensions(mm)					Width (mm)	Applicable inserts	Screw	Wrench
		ØD <sub>min</sub>	ød	S	e	L				
<b>S20K-QC1115R/L 16</b>	▲	16	20	11.1	40	125	1.2-1.8	QC11R/L 120~180	I60M2.5×6.5	WT07IP
<b>S20K-QC1125R/L 16</b>	▲	16	20	11.1	40	125	1.8-3.0	QC11R/L180~300		
<b>S16H-QC1115R/L 20</b>	▲	21	16	11.5	12	100	1.2-1.8	QC11R/L 120~180		
<b>S16H-QC1125R/L 20</b>	▲	21	16	11.5	12	100	1.8-3.0	QC11R/L180~300	I60M3.5×10	WT15IP
<b>S20M-QC1615R/L 25</b>	▲	26	20	12.5	15	150	1.1-1.8	QC16R/L110~180		
<b>S20M-QC1625R/L 25</b>	▲			12.5			1.8-3.0	QC16R/L180~300		
<b>S25M-QC2215R/L 35</b>	▲	35	25	18.2	20	150	1.0-2.3	QC22R/L100~230	I60M5×13	WT20IP
<b>S25M-QC2225R/L 35</b>	▲			18.2			2.3-3.3	QC22R/L230~330		
<b>S25M-QC2235R/L 35</b>	▲			18.2			3.3-4.8	QC22R/L 330~480		

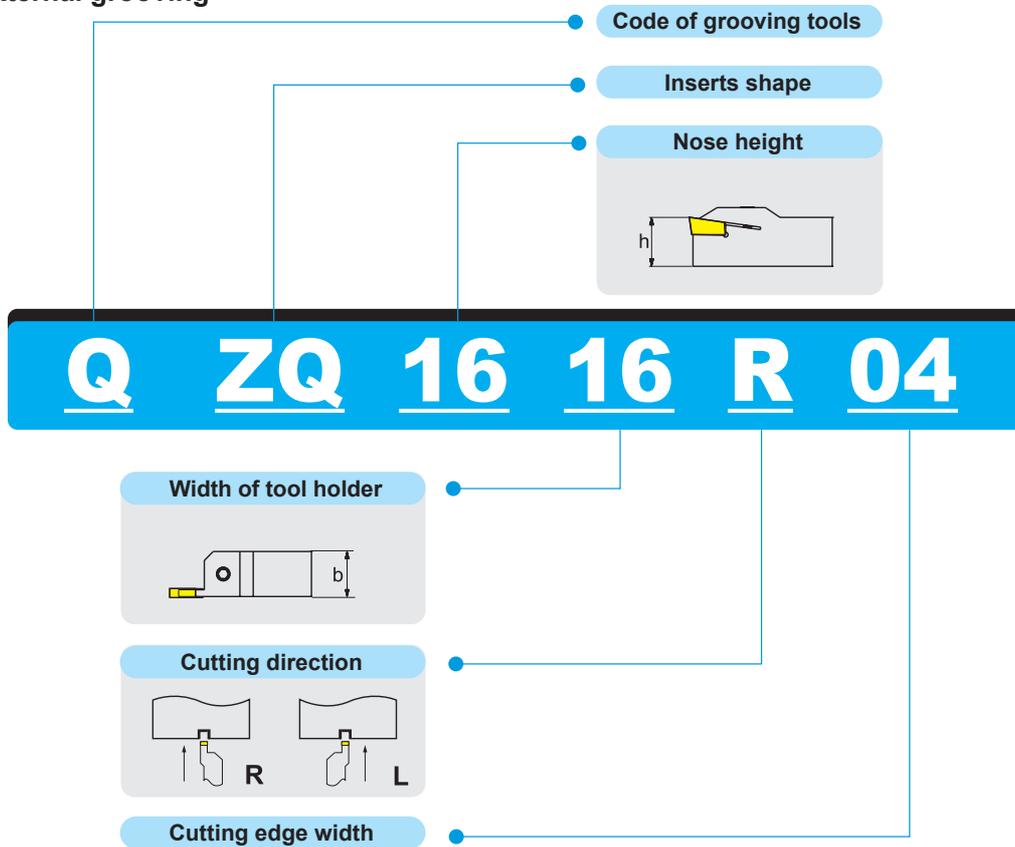
▲Stock available    △Make-to-order

General turning  
Parting and grooving

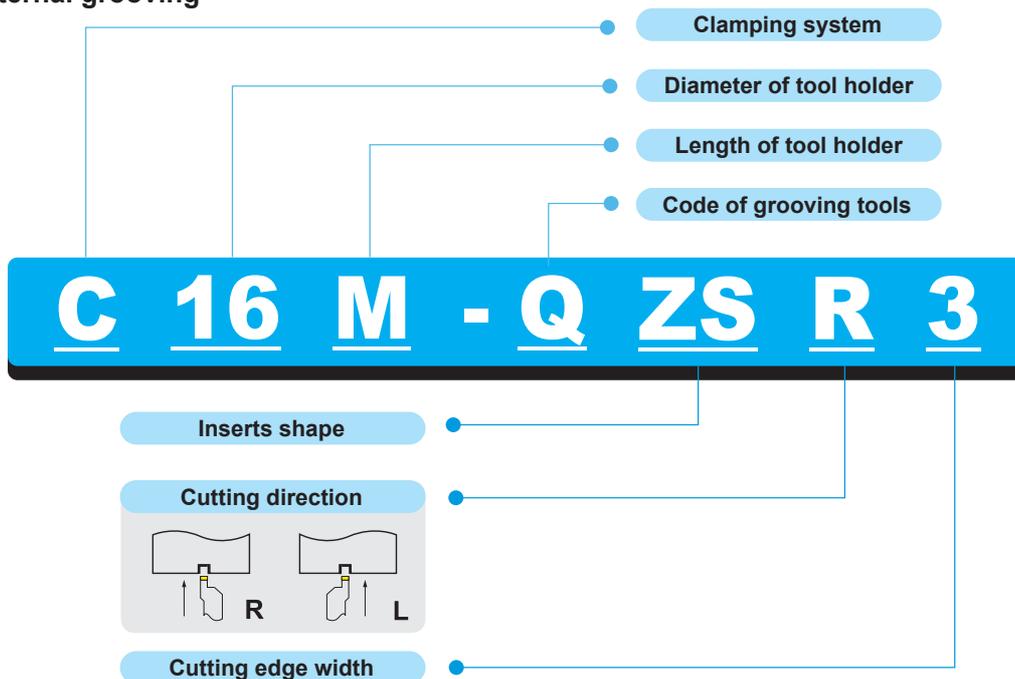
QC series shallow grooving tools

Parting and grooving tools code key

● External grooving



● Internal grooving

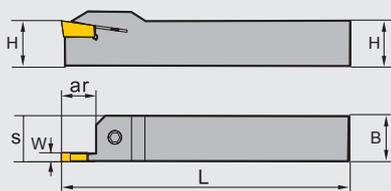




## External parting and grooving tools: QZQ series



R-type shown



General turning

Parting and grooving

Supplementary series parting and grooving inserts

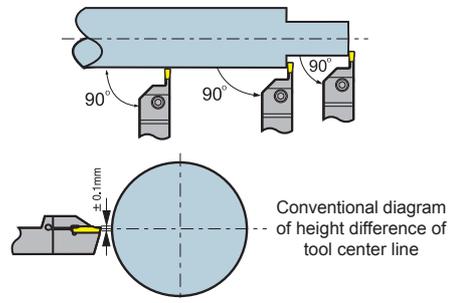
Type	Stock		Basic dimensions(mm)							Applicable inserts	Screw	Wrench
	R	L	H	B	L	S	W	ar <sub>max</sub>				
<b>QZQ</b>	1616R/L03	▲	▲	16	16	100	16.4	3	16	ZQMX3N11-IE	GB70-85-M5 × 16	WH40L
	1616R/L04	▲	▲	16	16	100	16.4	4	18	ZQMX4N11-IE		
	2020R/L03	▲	▲	20	20	125	20.4	3	20	ZQMX3N11-IE		
	2020R/L04	▲	▲	20	20	125	20.4	4	20	ZQMX4N11-IE		
	2525R/L03	▲	▲	25	25	150	25.4	3	20	ZQMX3N11-IE		
	2525R/L04	▲	▲	25	25	150	25.4	4	20	ZQMX4N11-IE		
	2525R/L05	▲	▲	25	25	150	25.4	5	25	ZQMX5N11-IE	GB70-85-M6 × 20	WH50L
	2525R/L06	▲	▲	25	25	150	25.7	6	32	ZQMX6N11-IE		
	3225R/L03	▲	▲	32	25	170	25.4	3	25	ZQMX3N11-IE		
	3225R/L04	▲	▲	32	25	170	25.4	4	25	ZQMX4N11-IE		
	3225R/L05	▲	▲	32	25	170	25.4	5	25	ZQMX5N11-IE		
	3225R/L06	▲	▲	32	25	170	25.7	6	35	ZQMX6N11-IE		

▲ Stock available    △ Make-to-order



### Center height control of parting and grooving tools

- No matter which parting or grooving tools you select, the ideal surface quality is only achieved by ensuring that insert is vertical from the center line of workpiece, which can also effectively reduce vibration during machining.
- The height tolerance between insert edge bottom and the center height of workpiece should be remained in  $\pm 0.1\text{mm}$ , especially for lever parting and grooving workpieces with small diameter. This can improve tool life, reduce cutting resistant force, and diminish burrs.

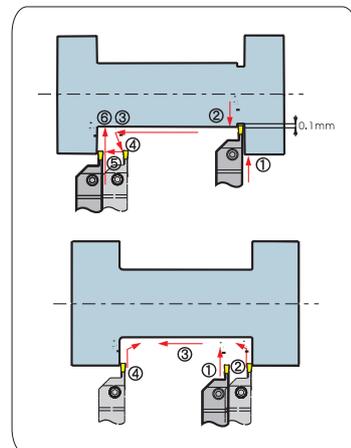


### Parting

- When the insert is approaching the center of workpiece, the cutting speed should be reduced by 30%, which is good for improving life and surface quality.
- As long as conditions allow, try to shorten the overhang of tools as much as possible to ensure good stability.

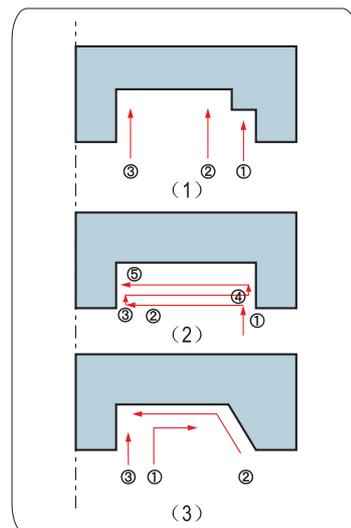
### External grooving, turning and profiling

- In-feed sequence: When cutting depth  $> 0.5\text{mm}$ , radial in-feed (Max. cutting depth can be  $0.75 \times \text{insert edge width } S$ )  $\rightarrow$  radial out-feed about  $0.1\text{mm}$   $\rightarrow$  axial in-feed  $\rightarrow$  flank out-feed  $\rightarrow$  axial in-feed  $\rightarrow$  radial machining to required depth.
- When finishing, adopt the sequence shown in the diagram. It can reduce vibration caused by the friction between tools and chips.



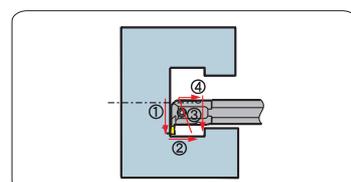
### Surface grooving and turning

- Finishing (Multi-slot cutting)  
Cut inwards from Max. diameter. Inserts offset to inward flange when retracting, as is shown in diagram (1).
- Recess turning  
Axial turning depth should not exceed  $0.75 \times S$  (cutting edge width).  
If slot width is larger than slot depth, it is recommended to adopt recess turning, as is shown in diagram (2).  
If slot depth is larger than slot depth, it is recommended to adopt multi-slot cutting.
- Finish machining  
First finish bottom and external diameter fringe, then finish the internal diameter to required size, as is shown in diagram (3).



### Internal grooving and turning

- To facilitate chip flow, always feed along the direction of moving from the deepest in the hole to outside.



General turning

Parting and grooving

Application information of parting and grooving



# TURNING Parting and grooving tools

Application information of parting and grooving

The cutting parameters recommended are suitable for wet machining.

General turning

Parting and grooving

Application information of parting and grooving

Insert size	Recommended feed rate(mm/r)						
	Insert width(mm)	Parting	Grooving	Grooving(-MM)	Turning	Turning(-MM)	Profiling
2.5		0.05-0.15	0.05-0.15	0.05-0.2	0.05-0.15	0.05-0.2	0.05-0.15
3		0.05-0.15	0.05-0.15	0.05-0.2	0.07-0.15	0.07-0.2	0.1-0.2
4		0.05-0.2	0.05-0.2	0.05-0.25	0.07-0.25	0.07-0.3	0.1-0.2
5		0.07-0.2	0.07-0.22	0.07-0.25	0.1-0.25	0.1-0.3	0.15-0.3
6		0.1-0.3	0.07-0.25	0.07-0.3	0.1-0.3	0.1-0.35	0.15-0.3
8				0.1-0.4		0.15-0.45	

Workpiece material	Hardness	YBG302	YBG202 YBG205	YBG105	YBG212	YBC151	YBC251	YBS103	YD101	YD201	YBG102	YC10	YC40
<b>P</b> Carbon steel	125 ≤ HB ≤ 170	120-260	150-280			140-280	150-280					130-280	110-260
	Low alloy steel	180 ≤ HB ≤ 275	80-175	110-200		100-240	110-200					90-200	70-175
	High alloy steel	180 ≤ HB ≤ 325	80-160	110-190		100-220	110-190					90-190	70-160
	Cast steel	180 ≤ HB ≤ 250	75-140	100-170		80-160	100-170					80-170	60-140
<b>M</b> Ferrite, Martensite	200 ≤ HB ≤ 300	70-170	100-200				100-200					80-200	60-170
	Austenite	180 ≤ HB ≤ 300	80-200	110-220			110-220					90-220	70-200
<b>K</b> Malleable cast iron	130 ≤ HB ≤ 230	100-200	130-220							90-160			
	Grey cast iron	180 ≤ HB ≤ 220	90-170	120-200						80-140			
	Nodular cast iron	160 ≤ HB ≤ 250	80-150	110-180						60-140			
<b>N</b> Al alloy	--								200-400				
<b>S</b> High temperature alloy	≤ 400			40-70	20-50			30-80	20-50		30-60		

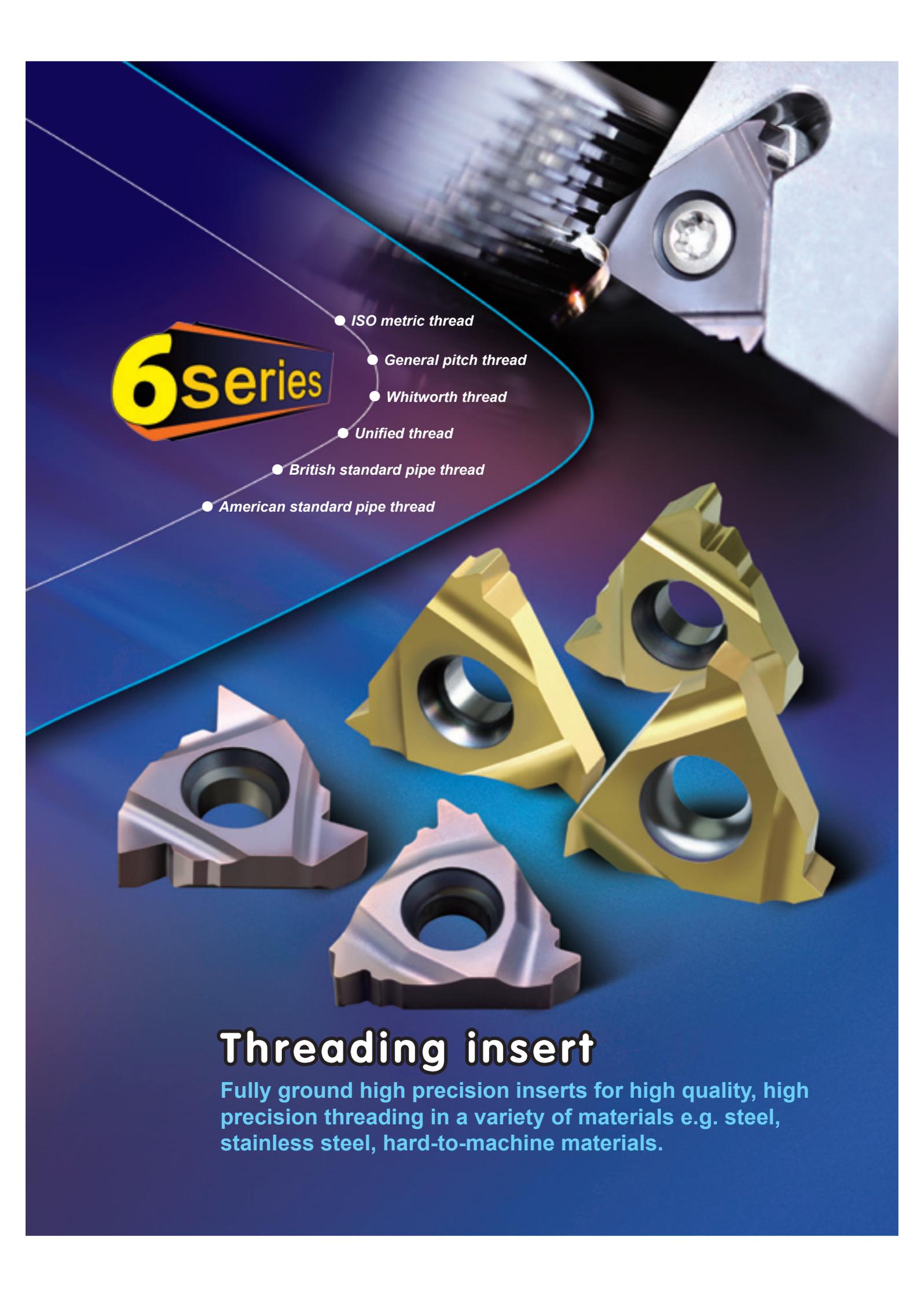
The cutting parameters recommended are suitable for wet machining.

Advice: internal machining and end machining, The cutting speed should be reduced by 30%-40%.

● Recommended cutting parameters for QC series shallow groove tools

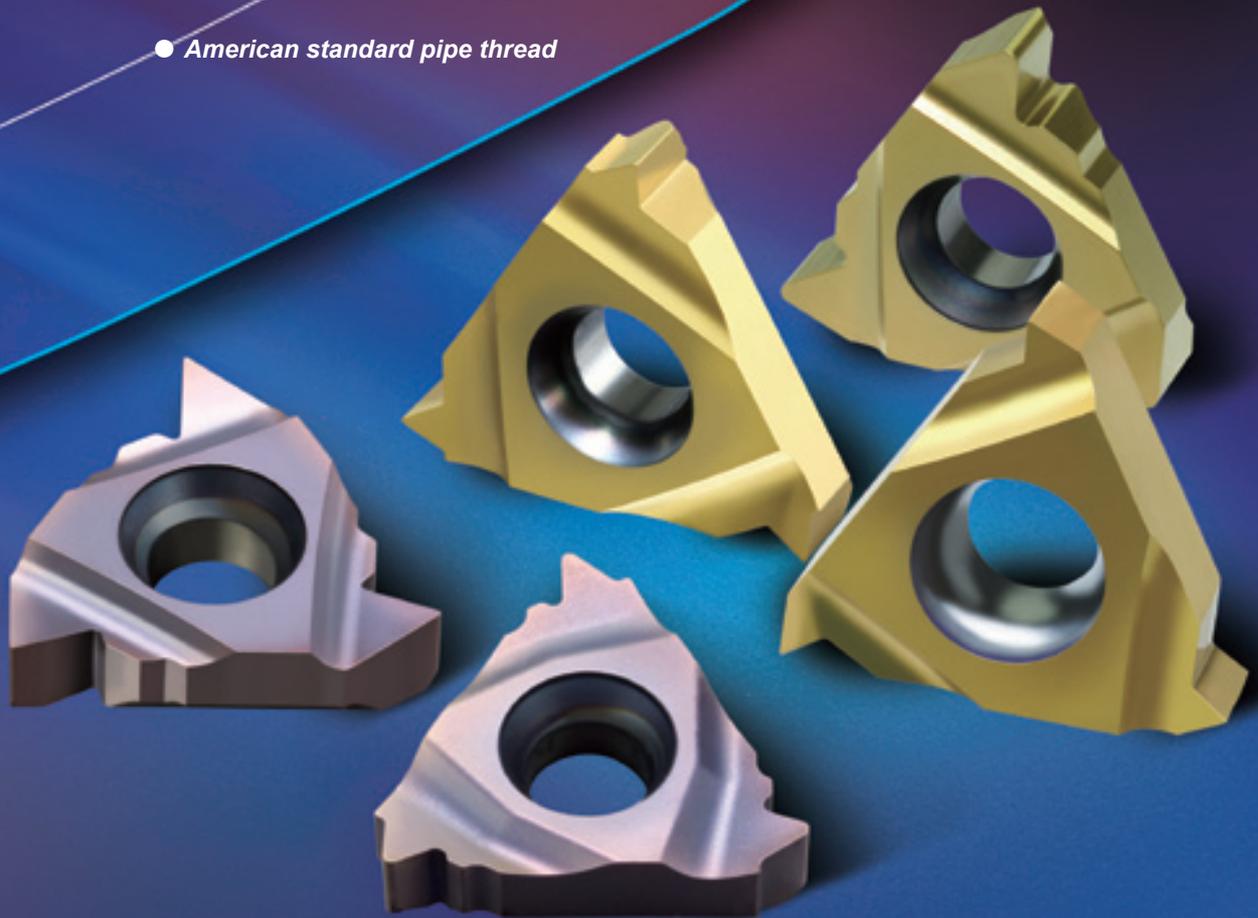
Processed material	Recommended insert material (cutting speed m/min)		A: Tool feed for grooving(mm/r)				
	PVD Coating		B: Tool feed for transverse machining(mm/r)				
	YBG202	YBG205	C: Depth of cut for transverse machining(mm)				
			QC**R/L050-120	QC**R/L125-225	QC**R/L230-325	QC**R/L330-400	QC**R/L400-480
Carbon Steel	80-180	80-180	A: 0.03-0.08	A: 0.04-0.09	A: 0.05-0.1	A: 0.05-0.12	A: 0.05-0.12
			Non-horizontal processing	B: 0.04-0.09	B: 0.05-0.1	B: 0.05-0.1	B: 0.05-1
			Non-horizontal processing	C: 0.3(MAX)	C: 0.5(MAX)	C: 0.5(MAX)	C: 0.8(MAX)
Alloy Steel	80-160	80-160	A: 0.03-0.07	A: 0.04-0.08	A: 0.05-0.09	A: 0.05-0.1	A: 0.05-0.1
			Non-horizontal processing	B: 0.04-0.08	B: 0.05-0.09	B: 0.05-0.1	B: 0.05-1
			Non-horizontal processing	C: 0.3(MAX)	C: 0.5(MAX)	C: 0.5(MAX)	C: 0.5(MAX)
Stainless Steel	60-130	60-130	A: 0.03-0.07	A: 0.04-0.08	A: 0.05-0.09	A: 0.05-0.1	A: 0.05-0.1
			Non-horizontal processing	B: 0.04-0.08	B: 0.05-0.09	B: 0.05-0.1	B: 0.05-1
			Non-horizontal processing	C: 0.3(MAX)	C: 0.5(MAX)	C: 0.5(MAX)	C: 0.5(MAX)

The cutting parameters above are applicable to external grooving. When machining internal hole grooves, please reduce the cutting speed and feed by 10%.



# 6series

- *ISO metric thread*
- *General pitch thread*
- *Whitworth thread*
- *Unified thread*
- *British standard pipe thread*
- *American standard pipe thread*



## Threading insert

Fully ground high precision inserts for high quality, high precision threading in a variety of materials e.g. steel, stainless steel, hard-to-machine materials.

## How to select threading tools

### How to select threading tools

#### Structure of threading tools selected table

- Categorized as external threading and internal threading according to machining type.
- Separately listed out according to series.

Dimensions of product

Indicating external threading or internal threading

External threading tools

R-type shown

Threading insert type Including type, standard, tolerance class

Diagram of thread pitch

ISO metric thread (with end)

ISO 965-1980 DIN 13  
GB/T 197-2003 Tolerance class: 6g/6H

R type L type

Product specification Including type (right hand and left hand), basic dimensions, applicable inserts, spare parts

Product specification Including type (right hand and left hand), basic dimensions, stock

Dimension diagram of insert

Type	Stock	Basic dimensions(mm)					Applicable inserts	Inserts screw	Shim	Shim screw	Wrench	
		a	h	b	L	s						
ZSER	1616H16	▲	16	16	16	100	20	Z16ERC□□□□	80 M3.5X12T	MT16-□□MN	SM4X8C	WT15P
	2020K16	▲	20	20	20	125	25					
	2525M16	▲	25	25	25	150	32					
	3225P16	▲	32	32	25	170	32					
	3232P16	▲	32	32	32	170	40					
	4040S22	△	40	40	40	250	50					
ZSEL	1616H16	▲	16	16	16	100	20	Z16EL□□□□	80 M3.5X12T	MT16-□□MN	SM4X8C	WT15P
	2020K16	▲	20	20	20	125	25					
	2525M16	▲	25	25	25	150	32					
	3225P16	▲	32	32	25	170	32					
	3232P16	▲	32	32	32	170	40					
	4040S22	△	40	40	40	250	50					

▲ Stock available    △ Make-to-order

Type	Basic dimensions(mm)					Recommended coating grade	
	Pitch	S	ØL.C	ed		YBG203	YBG205
The right hand tools	The left hand tools						
Z16ER0.SISO	Z16EL0.SISO	0.50	3.52	9.525	4.0	★	○
Z16ER0.7SISO	Z16EL0.7SISO	0.75	3.52	9.525	4.0	★	○
Z16ER1.0SISO	Z16EL1.0SISO	1.00	3.52	9.525	4.0	★	○
Z16ER1.2SISO	Z16EL1.2SISO	1.25	3.52	9.525	4.0	★	○
Z16ER1.SISO	Z16EL1.SISO	1.50	3.52	9.525	4.0	★	○
Z16ER1.7SISO	Z16EL1.7SISO	1.75	3.52	9.525	4.0	★	○
Z16ER2.0SISO	Z16EL2.0SISO	2.00	3.52	9.525	4.0	★	○
Z16ER2.SISO	Z16EL2.SISO	2.50	3.52	9.525	4.0	★	○
Z16ER3.0SISO	Z16EL3.0SISO	3.00	3.52	9.525	4.0	★	○
Z22ER3.SISO	Z22EL3.SISO	3.50	4.65	12.7	5.0	★	○
Z22ER4.SISO	Z22EL4.SISO	4.00	4.65	12.7	5.0	★	○
Z22ER4.SISO	Z22EL4.SISO	4.50	4.65	12.7	5.0	★	○
Z22ER5.SISO	Z22EL5.SISO	5.00	4.65	12.7	5.0	★	○
Z22ER5.SISO	Z22EL5.SISO	5.50	4.65	12.7	5.0	★	○
Z22ER6.SISO	Z22EL6.SISO	6.00	4.65	12.7	5.0	★	○

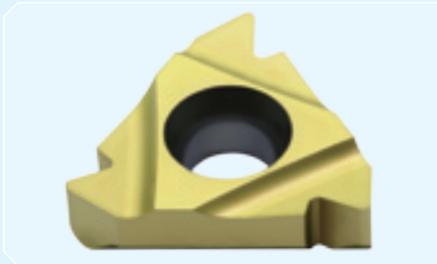
★ Recommended grade (always stock available)    ● Available grade (always stock available)    ○ Make-to-order



# TURNING



## Threading Tools



<b>Threading tools overview</b>	•	A294-A295
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<b>Threading insert</b>	•	A297-A304
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Thin ISO metric external thread		A298-A299
Thin General pitch thread		A300
Thin Whitworth thread		A301
Thin Unified thread		A302
Thin British standard pipe thread		A303
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# TURNING Threading Tools

## Threading tools overview

General turning  
Parting and grooving  
Threading

Threading tools overview

Applications		For general use			
Legend					
Thread name		ISO metric thread With end	General pitch thread Without end	General pitch thread Without end	
Profil		<b>GM</b>	<b>60</b>	<b>55</b>	
Shape of insert (length: 11, 16, 22mm)		R style shown  A298-299	R style shown  A300	R style shown  A300	
Tool holder	Pitch	Dimensions (mm) (H×W×L) (Dia×L×Min. dia)	Pitch/mm	Pitch/mm (pitch/Inch)	Pitch/mm (pitch/Inch)
	External thread  R-type shown A313	16×16×100 20×20×125 25×25×150 32×25×170 32×32×170 40×40×250	0.5~6.0	0.5~5.0 (5~48)	0.5~5.0 (5~48)
Internal thread  R-type shown A314	16×125×12 16×150×16 16×150×20 20×150×25 20×180×25 25×150×32 32×200×40 32×250×40 40×300×50 50×350×63	0.5~6.0	0.5~5.0 (5~48)	0.5~5.0 (5~48)	



For general use	For aerospace industry	Heater, gas and water pipe thread	For gas and water faucet and pipe connection
Whitworth thread	Unified thread (American standard threads)	British standard taper pipe threads	American standard taper pipe threads
<b>W</b>	<b>UN</b>	<b>BSPT</b>	<b>NPT</b>
R style shown	R style shown	R style shown	R style shown
<p>A301</p>	<p>A302</p>	<p>A303</p>	<p>A304</p>
Pitch/mm (pitch/Inch)	Pitch/mm (pitch/Inch)	Pitch/mm (pitch/Inch)	Pitch/mm (pitch/Inch)
8~19	8~24	11~28	8~27
8~19	8~24	11~28	8~27

General turning

Parting and grooving

Threading

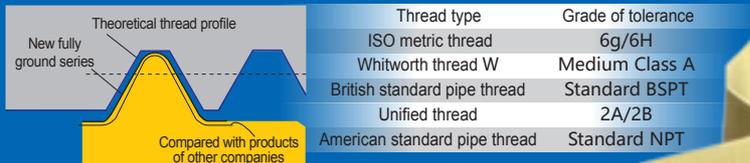
Threading tools overview

suitable for threading in a variety of materials

# New nano coating grade

## YBG203

- Specially treated edge for superior surface quality
- Sharp nose with small cutting resistance and superior performance
- Full ground inserts with high dimensional precision for high quality threading



- New nano coating grade specially designed for threading with longer insert life



Advanced surface treatment techniques effectively reduce friction and allows for better wear observation.

Advanced TiAlN substrate nano coating, in combination with proper coating ingredients, improves the mechanical and thermal properties of coating.

Further optimizing coating structure, improving coating stress, enhancing bond strength of coating and substrate.



A 296



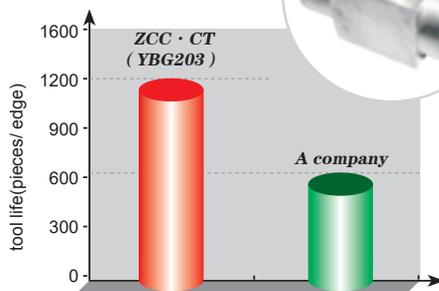
### Case:

Workpiece material: 42CrMo(HB260)

Insert: Z16ER2.0ISO/YBG203

Thread pitch: p=2.0mm

Cutting data: Vc=120 m/min



84% tool life improvement of ZCC·CT product than that of company A under the same cutting condition.



Threading inserts code key

General turning

Parting and grooving

Threading

Threading insert

Insert size

Code	Diameter of IC(mm)
Z11	ø6.35
Z16	ø9.525
Z22	ø12.7

Cutting style

- E -External threading inserts
- I -Internal threading inserts

Cutting direction

- R-Right
- L-Left

**Z16 E R 2.0 ISO (PP)**

Screw pitch

Full profile (Range of screw pitch is indicated by numbers).

mm	TPI
0.5-6.0	48-5

V profile (Range of screw pitch is indicated by letters).

	mm	TPI
A	0.5-1.5	48-16
AG	0.5-3.0	48-8
G	1.75-3.0	14-8
N	3.5-5.0	7-5

Thread specification	Range of thread pitch
ISO metric thread	0.5-6.0
General pitch thread	0.5-5.0
Whitworth thread W	8-19
British standard pipe thread	11-28
Unified thread	8-24
American standard pipe thread	8-27

Profile

- ISO—ISO metric 60° thread
- 60—60° general pitch thread
- 55—55° general pitch thread
- W—Whitworth thread
- UN—Unified thread(American standard threads)
- BSPT—British standard taper pipe thread
- NPT—American standard taper pipe thread

Chip breaker

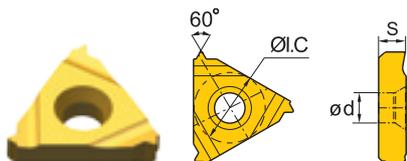
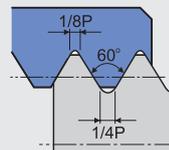
- fully ground edge insert
- PP -3-Dimensional chip-breaking insert

# A TURNING Threading Tools

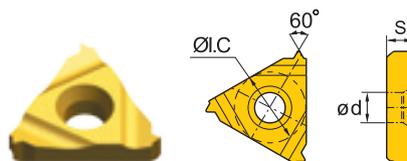
## Threading insert

### ISO metric thread (with end)

ISO 965-1980 DIN 13  
GB/T 197-2003 Tolerance class: 6g/6H



R type



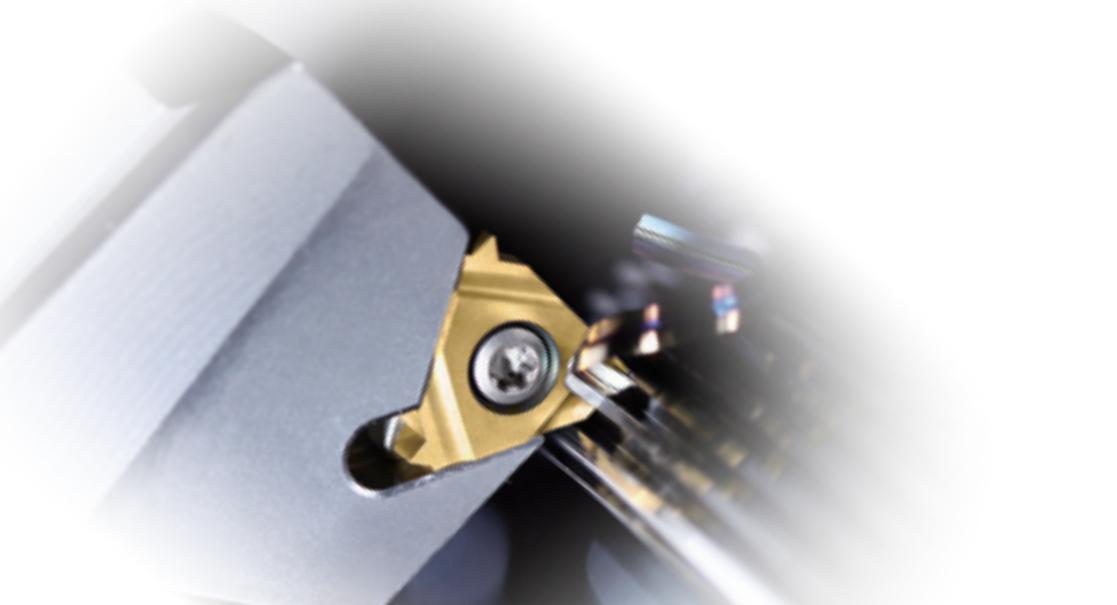
L type

	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch	S	ØI.C	ød	YBG203	YBG205
External thread	<b>Z16ER0.5ISO</b>	<b>Z16EL0.5ISO</b>	0.50	3.52	9.525	4.0	★	○
	<b>Z16ER0.75ISO</b>	<b>Z16EL0.75ISO</b>	0.75	3.52	9.525	4.0	★	○
	<b>Z16ER1.0ISO</b>	<b>Z16EL1.0ISO</b>	1.00	3.52	9.525	4.0	★	○
	<b>Z16ER1.25ISO</b>	<b>Z16EL1.25ISO</b>	1.25	3.52	9.525	4.0	★	○
	<b>Z16ER1.5ISO</b>	<b>Z16EL1.5ISO</b>	1.50	3.52	9.525	4.0	★	○
	<b>Z16ER1.75ISO</b>	<b>Z16EL1.75ISO</b>	1.75	3.52	9.525	4.0	★	○
	<b>Z16ER2.0ISO</b>	<b>Z16EL2.0ISO</b>	2.00	3.52	9.525	4.0	★	○
	<b>Z16ER2.5ISO</b>	<b>Z16EL2.5ISO</b>	2.50	3.52	9.525	4.0	★	○
	<b>Z16ER3.0ISO</b>	<b>Z16EL3.0ISO</b>	3.00	3.52	9.525	4.0	★	○
	<b>Z22ER3.5ISO</b>	<b>Z22EL3.5ISO</b>	3.50	4.65	12.7	5.0	★	○
	<b>Z22ER4.0ISO</b>	<b>Z22EL4.0ISO</b>	4.00	4.65	12.7	5.0	★	○
	<b>Z22ER4.5ISO</b>	<b>Z22EL4.5ISO</b>	4.50	4.65	12.7	5.0	★	○
	<b>Z22ER5.0ISO</b>	<b>Z22EL5.0ISO</b>	5.00	4.65	12.7	5.0	★	○
	<b>Z22ER5.5ISO</b>	<b>Z22EL5.5ISO</b>	5.50	4.65	12.7	5.0	★	○
	<b>Z22ER6.0ISO</b>	<b>Z22EL6.0ISO</b>	6.00	4.65	12.7	5.0	★	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning  
Parting and grooving  
Threading

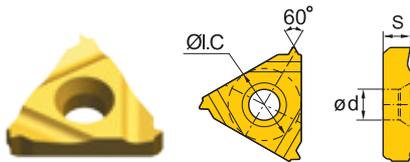
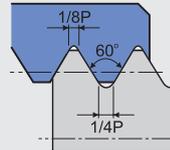
Threading insert



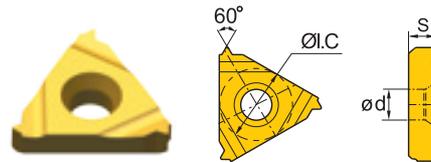


ISO metric thread (with end)

ISO 965-1980 DIN 13  
GB/T 197-2003 Tolerance class: 6g/6H



R type



L type

	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch	S	ØI.C	ød	YBG203	YBG205
Internal thread	Z111R0.5ISO	Z111L0.5ISO	0.50	3.05	6.35	3.2	★	○
	Z111R0.75ISO	Z111L0.75ISO	0.75	3.05	6.35	3.2	★	○
	Z111R1.0ISO	Z111L1.0ISO	1.00	3.05	6.35	3.2	★	○
	Z111R1.25ISO	Z111L1.25ISO	1.25	3.05	6.35	3.2	★	○
	Z111R1.5ISO	Z111L1.5ISO	1.50	3.05	6.35	3.2	★	○
	Z111R1.75ISO	Z111L1.75ISO	1.75	3.05	6.35	3.2	★	○
	Z111R2.0ISO	Z111L2.0ISO	2.00	3.05	6.35	3.2	★	○
	Z161R0.5ISO	Z161L0.5ISO	0.50	3.52	9.525	4.0	★	○
	Z161R0.75ISO	Z161L0.75ISO	0.75	3.52	9.525	4.0	★	○
	Z161R1.0ISO	Z161L1.0ISO	1.00	3.52	9.525	4.0	★	○
	Z161R1.25ISO	Z161L1.25ISO	1.25	3.52	9.525	4.0	★	○
	Z161R1.5ISO	Z161L1.5ISO	1.50	3.52	9.525	4.0	★	○
	Z161R1.75ISO	Z161L1.75ISO	1.75	3.52	9.525	4.0	★	○
	Z161R2.0ISO	Z161L2.0ISO	2.00	3.52	9.525	4.0	★	○
	Z161R2.5ISO	Z161L2.5ISO	2.50	3.52	9.525	4.0	★	○
	Z161R3.0ISO	Z161L3.0ISO	3.00	3.52	9.525	4.0	★	○
	Z221R3.5ISO	Z221L3.5ISO	3.50	4.65	12.7	5.0	★	○
	Z221R4.0ISO	Z221L4.0ISO	4.00	4.65	12.7	5.0	★	○
	Z221R4.5ISO	Z221L4.5ISO	4.50	4.65	12.7	5.0	★	○
	Z221R5.0ISO	Z221L5.0ISO	5.00	4.65	12.7	5.0	★	○
Z221R5.5ISO	Z221L5.5ISO	5.50	4.65	12.7	5.0	★	○	
Z221R6.0ISO	Z221L6.0ISO	6.00	4.65	12.7	5.0	★	○	

★Recommended grade (always stock available) ● Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading insert



# TURNING Threading Tools

## Threading insert

General turning

Parting and grooving

Threading

Threading insert

### General pitch thread (without end)



		Type		Basic dimensions(mm)				Recommended coating grade		
		The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	α°	YBG203	YBG205
External thread	55°	<b>Z16ERA55</b>	<b>Z16ELA55</b>	0.5-1.5(48-16)	3.52	9.525	4.0	55°	★	○
		<b>Z16ERG55</b>	<b>Z16ELG55</b>	1.75-3.0(14-8)	3.52	9.525	4.0	55°	★	○
		<b>Z16ERAG55</b>	<b>Z16ELAG55</b>	0.5-3.0(48-8)	3.52	9.525	4.0	55°	★	○
		<b>Z22ERN55</b>	<b>Z22ELN55</b>	3.5-5.0(7-5)	4.65	12.7	5.0	55°	★	○
	60°	<b>Z16ERA60</b>	<b>Z16ELA60</b>	0.5-1.5(48-16)	3.52	9.525	4.0	60°	★	○
		<b>Z16ERG60</b>	<b>Z16ELG60</b>	1.75-3.0(14-8)	3.52	9.525	4.0	60°	★	○
		<b>Z16ERAG60</b>	<b>Z16ELAG60</b>	0.5-3.0(48-8)	3.52	9.525	4.0	60°	★	○
		<b>Z22ERN60</b>	<b>Z22ELN60</b>	3.5-5.0(7-5)	4.65	12.7	5.0	60°	★	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



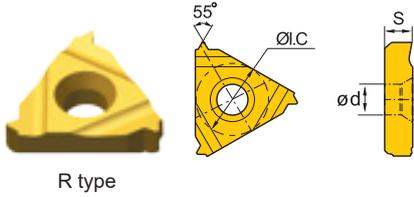
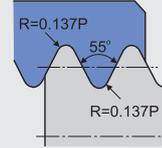
		Type		Basic dimensions(mm)				Recommended coating grade		
		The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	α°	YBG203	YBG205
Internal thread	55°	<b>Z11IRA55</b>	<b>Z11ILA55</b>	0.5-1.5(48-16)	3.05	6.35	3.2	55°	★	○
		<b>Z16IRA55</b>	<b>Z16ILA55</b>	0.5-1.5(48-16)	3.52	9.525	4.0	55°	★	○
		<b>Z16IRG55</b>	<b>Z16ILG55</b>	1.75-3.0(14-8)	3.52	9.525	4.0	55°	★	○
		<b>Z16IRAG55</b>	<b>Z16ILAG55</b>	0.5-3.0(48-8)	3.52	9.525	4.0	55°	★	○
		<b>Z22IRN55</b>	<b>Z22ILN55</b>	3.5-5.0(7-5)	4.65	12.7	5.0	55°	★	○
	60°	<b>Z11IRA60</b>	<b>Z11ILA60</b>	0.5-1.5(48-16)	3.05	6.35	3.2	60°	★	○
		<b>Z16IRA60</b>	<b>Z16ILA60</b>	0.5-1.5(48-16)	3.52	9.525	4.0	60°	★	○
		<b>Z16IRG60</b>	<b>Z16ILG60</b>	1.75-3.0(14-8)	3.52	9.525	4.0	60°	★	○
		<b>Z16IRAG60</b>	<b>Z16ILAG60</b>	0.5-3.0(48-8)	3.52	9.525	4.0	60°	★	○
		<b>Z22IRN60</b>	<b>Z22ILN60</b>	3.5-5.0(7-5)	4.65	12.7	5.0	60°	★	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

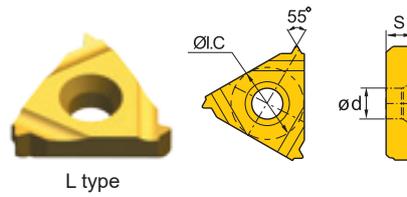


**Whitworth thread (with end)**

ISO 228/1:1982,  
DIN 259, B.S.84:1956  
Tolerance class: Medium class A



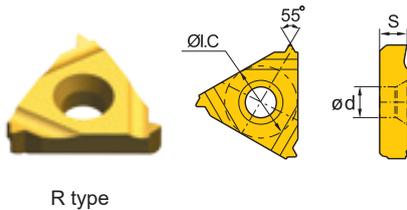
R type



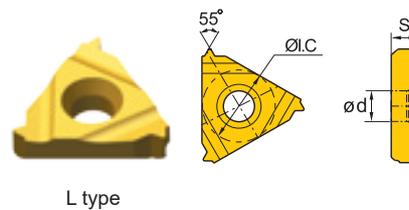
L type

	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
External thread	Z16ER8W	Z16EL8W	8	3.52	9.525	4.0	★	○
	Z16ER9W	Z16EL9W	9	3.52	9.525	4.0	★	○
	Z16ER10W	Z16EL10W	10	3.52	9.525	4.0	★	○
	Z16ER11W	Z16EL11W	11	3.52	9.525	4.0	★	○
	Z16ER12W	Z16EL12W	12	3.52	9.525	4.0	★	○
	Z16ER14W	Z16EL14W	14	3.52	9.525	4.0	★	○
	Z16ER16W	Z16EL16W	16	3.52	9.525	4.0	★	○
	Z16ER18W	Z16EL18W	18	3.52	9.525	4.0	★	○
	Z16ER19W	Z16EL19W	19	3.52	9.525	4.0	★	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



L type

	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
Internal thread	Z16IR8W	Z16IL8W	8	3.52	9.525	4.0	★	○
	Z16IR9W	Z16IL9W	9	3.52	9.525	4.0	★	○
	Z16IR10W	Z16IL10W	10	3.52	9.525	4.0	★	○
	Z16IR11W	Z16IL11W	11	3.52	9.525	4.0	★	○
	Z16IR12W	Z16IL12W	12	3.52	9.525	4.0	★	○
	Z16IR14W	Z16IL14W	14	3.52	9.525	4.0	★	○
	Z16IR16W	Z16IL16W	16	3.52	9.525	4.0	★	○
	Z16IR18W	Z16IL18W	18	3.52	9.525	4.0	★	○
	Z16IR19W	Z16IL19W	19	3.52	9.525	4.0	★	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading insert





# TURNING Threading Tools

## Threading insert

General turning

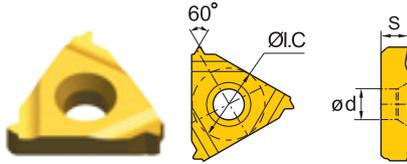
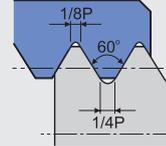
Parting and grooving

Threading

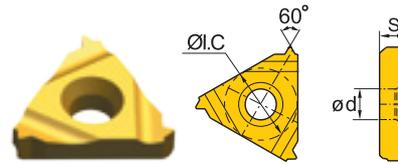
Threading insert

### Unified thread (with end)

ASME B1.1-1989  
Tolerance class: 2A/2B



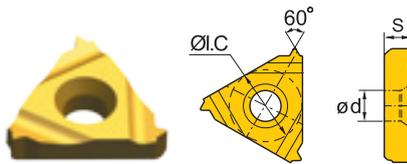
R type



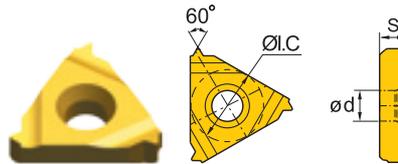
L type

	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
External thread	Z16ER8UN	Z16EL8UN	8	3.52	9.525	4.0	★	○
	Z16ER10UN	Z16EL10UN	10	3.52	9.525	4.0	★	○
	Z16ER12UN	Z16EL12UN	12	3.52	9.525	4.0	★	○
	Z16ER14UN	Z16EL14UN	14	3.52	9.525	4.0	★	○
	Z16ER16UN	Z16EL16UN	16	3.52	9.525	4.0	★	○
	Z16ER18UN	Z16EL18UN	18	3.52	9.525	4.0	★	○
	Z16ER20UN	Z16EL20UN	20	3.52	9.525	4.0	★	○
	Z16ER24UN	Z16EL24UN	24	3.52	9.525	4.0	★	○

★Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



R type



L type

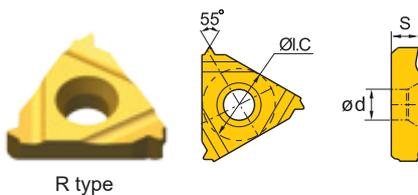
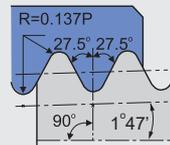
	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
Internal thread	Z16IR8UN	Z16IL8UN	8	3.52	9.525	4.0	★	○
	Z16IR10UN	Z16IL10UN	10	3.52	9.525	4.0	★	○
	Z16IR12UN	Z16IL12UN	12	3.52	9.525	4.0	★	○
	Z16IR14UN	Z16IL14UN	14	3.52	9.525	4.0	★	○
	Z16IR16UN	Z16IL16UN	16	3.52	9.525	4.0	★	○
	Z16IR18UN	Z16IL18UN	18	3.52	9.525	4.0	★	○
	Z16IR20UN	Z16IL20UN	20	3.52	9.525	4.0	★	○
	Z16IR24UN	Z16IL24UN	24	3.52	9.525	4.0	★	○

★Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

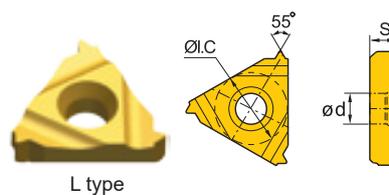


### British standard taper piper thread (with end)

ISO 7/1:1994  
B.S.21:1985  
Standard BSPT



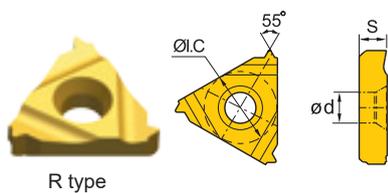
R type



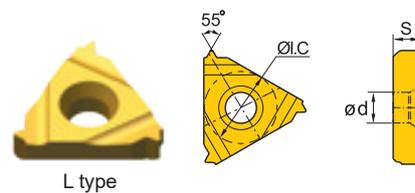
L type

	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
External thread	<b>Z16ER11BSPT</b>	<b>Z16EL11BSPT</b>	11	3.52	9.525	4.0	★	○
	<b>Z16ER14BSPT</b>	<b>Z16EL14BSPT</b>	14	3.52	9.525	4.0	★	○
	<b>Z16ER19BSPT</b>	<b>Z16EL19BSPT</b>	19	3.52	9.525	4.0	★	○
	<b>Z16ER28BSPT</b>	<b>Z16EL28BSPT</b>	28	3.52	9.525	4.0	★	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



L type

	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
Internal thread	<b>Z16IR11BSPT</b>	<b>Z16IL11BSPT</b>	11	3.52	9.525	4.0	★	○
	<b>Z16IR14BSPT</b>	<b>Z16IL14BSPT</b>	14	3.52	9.525	4.0	★	○
	<b>Z16IR19BSPT</b>	<b>Z16IL19BSPT</b>	19	3.52	9.525	4.0	★	○
	<b>Z16IR28BSPT</b>	<b>Z16IL28BSPT</b>	28	3.52	9.525	4.0	★	○

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading insert



# TURNING Threading Tools

## Threading insert

General turning

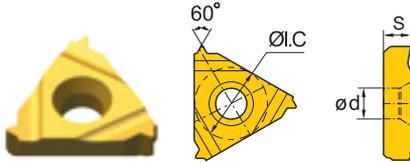
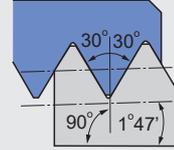
Parting and grooving

Threading

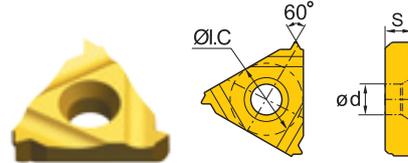
Threading insert

### American standard taper pipe thread (with end)

ASME B1.20.1-1983  
Standard NPT



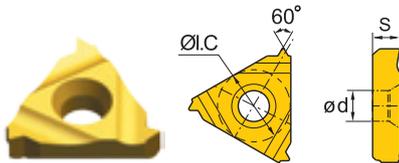
R type



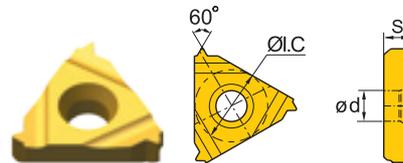
L type

	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
External thread	<b>Z16ER8NPT</b>	<b>Z16EL8NPT</b>	8	3.52	9.525	4.0	★	○
	<b>Z16ER11.5NPT</b>	<b>Z16EL11.5NPT</b>	11.5	3.52	9.525	4.0	★	○
	<b>Z16ER14NPT</b>	<b>Z16EL14NPT</b>	14	3.52	9.525	4.0	★	○
	<b>Z16ER18NPT</b>	<b>Z16EL18NPT</b>	18	3.52	9.525	4.0	★	○
	<b>Z16ER27NPT</b>	<b>Z16EL27NPT</b>	27	3.52	9.525	4.0	★	○

★Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



R type



L type

	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
Internal thread	<b>Z16IR8NPT</b>	<b>Z16IL8NPT</b>	8	3.52	9.525	4.0	★	○
	<b>Z16IR11.5NPT</b>	<b>Z16IL11.5NPT</b>	11.5	3.52	9.525	4.0	★	○
	<b>Z16IR14NPT</b>	<b>Z16IL14NPT</b>	14	3.52	9.525	4.0	★	○
	<b>Z16IR18NPT</b>	<b>Z16IL18NPT</b>	18	3.52	9.525	4.0	★	○
	<b>Z16IR27NPT</b>	<b>Z16IL27NPT</b>	27	3.52	9.525	4.0	★	○

★Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order



### Threading inserts code key

#### Cutting direction

**R** > Right rotation **L** > Left rotation

#### Insert shape



**T**

Other

**Z**

**22** > Indicates that the inner cutting circle diameter of the blade is 12.7

**16** > Indicates that the inner cutting circle diameter of the blade is 9.525

**11** > Indicates that the inner cutting circle diameter of the blade is 6.35

#### Number of cutting edge teeth

**01** > Number of teeth per cutting edge

#### Cutting Type

**W** > External thread cutting inserts

**N** > Internal thread cutting inserts

**R T 16. 01 W- 3.00 GM (B)**

#### Pitch

Full tooth shape  
(pitch range is indicated by numbers)

mm	TPI
0.35-9.0	72-2

V-tooth  
(pitch range is indicated by letter)

	mm	TPI
<b>A</b>	0.5-1.5	48-16
<b>AG</b>	0.5-3.0	48-8
<b>G</b>	1.75-3.0	14-8
<b>N</b>	3.5-5.0	7-5
<b>Q</b>	5.5-6.0	4 1/2-4

#### Threaded tooth shape

<b>GM</b>	ISO metric 60° thread
<b>60</b>	60° general pitch thread
<b>55</b>	55° general pitch thread
<b>W</b>	Whitworth thread
<b>UN</b>	Unified thread
<b>BSPT</b>	British standard pipe thread
<b>NPT</b>	American standard pipe thread

#### Supplementary number

**B** > Thin Threaded Inserts

General turning

Parting and grooving

Threading

Threading tools

# TURNING Threading Tools

Threading tools

General turning

Parting and grooving

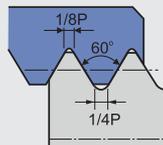
Threading

Threading tools

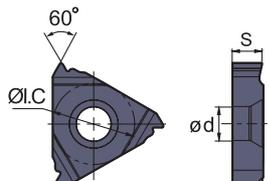
## ISO metric thread (with end) **Thin type**

ISO 965-1980, DIN 13, GB/T 197-2003

Tolerance class: 6g/6H



R type

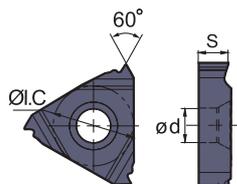


	Type	Basic dimensions(mm)				Recommended coating grade
	The right hand tools	Pitch/mm	S	ØI.C	ød	YBG202
External thread	RT16.01W-0.50GMB	0.50	3.52	9.525	4.0	★
	RT16.01W-0.75GMB	0.75	3.52	9.525	4.0	★
	RT16.01W-1.00GMB	1.00	3.52	9.525	4.0	★
	RT16.01W-1.25GMB	1.25	3.52	9.525	4.0	★
	RT16.01W-1.50GMB	1.50	3.52	9.525	4.0	★
	RT16.01W-1.75GMB	1.75	3.52	9.525	4.0	★
	RT16.01W-2.00GMB	2.00	3.52	9.525	4.0	★
	RT16.01W-2.50GMB	2.50	3.52	9.525	4.0	★
	RT16.01W-3.00GMB	3.00	3.52	9.525	4.0	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



	Type	Basic dimensions(mm)				Recommended coating grade
	The right hand tools	Pitch/mm	S	ØI.C	ød	YBG202
Internal thread	RT16.01N-0.50GMB	0.50	3.52	9.525	4.0	★
	RT16.01N-0.75GMB	0.75	3.52	9.525	4.0	★
	RT16.01N-1.00GMB	1.00	3.52	9.525	4.0	★
	RT16.01N-1.25GMB	1.25	3.52	9.525	4.0	★
	RT16.01N-1.50GMB	1.50	3.52	9.525	4.0	★
	RT16.01N-1.75GMB	1.75	3.52	9.525	4.0	★
	RT16.01N-2.00GMB	2.00	3.52	9.525	4.0	★
	RT16.01N-2.50GMB	2.50	3.52	9.525	4.0	★
	RT16.01N-3.00GMB	3.00	3.52	9.525	4.0	★

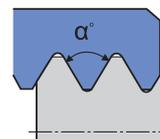
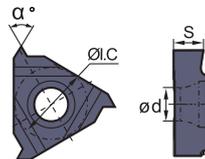
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



General pitch thread (without end) **Thin type**



R type



		Type	Basic dimensions(mm)				Recommended coating grade	
		The right hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	α°	YBG202
External thread	60°	RT16.01W-A60B	0.5-1.5(48-16)	3.52	9.525	4.0	60°	★
		RT16.01W-G60B	1.75-3.0(14-8)	3.52	9.525	4.0	60°	★
		RT16.01W-AG60B	0.5-3.0(48-8)	3.52	9.525	4.0	60°	★
	55°	RT16.01W-A55B	0.5-1.5(48-16)	3.52	9.525	4.0	55°	★
		RT16.01W-G55B	1.75-3.0(14-8)	3.52	9.525	4.0	55°	★
		RT16.01W-AG55B	0.5-3.0(48-8)	3.52	9.525	4.0	55°	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

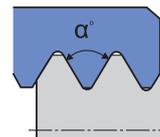
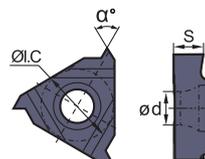
Parting and grooving

Threading

Threading tools



R type



		Type	Basic dimensions(mm)				Recommended coating grade	
		The right hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	α°	YBG202
Internal thread	60°	RT16.01N-A60B	0.5-1.5(48-16)	3.52	9.525	4.0	60°	★
		RT16.01N-G60B	1.75-3.0(14-8)	3.52	9.525	4.0	60°	★
		RT16.01N-AG60B	0.5-3.0(48-8)	3.52	9.525	4.0	60°	★
	55°	RT16.01N-A55B	0.5-1.5(48-16)	3.52	9.525	4.0	55°	★
		RT16.01N-G55B	1.75-3.0(14-8)	3.52	9.525	4.0	55°	★
		RT16.01N-AG55B	0.5-3.0(48-8)	3.52	9.525	4.0	55°	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

# A TURNING Threading Tools

Threading tools

General turning

Parting and grooving

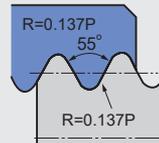
Threading

Threading tools

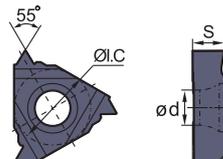
## Whitworth thread (with end) **Thin type**

ISO 228/1:1982, DIN 259, B.S.84:1956

Tolerance class: Medium class A



R type

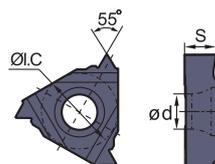


	Type	Basic dimensions(mm)				Recommended coating grade
		Pitch/mm (pitch/Inch)	S	ØI.C	ød	
	The right hand tools					YBG202
External thread	RT16.01W-8WB	8	3.52	9.525	4.0	★
	RT16.01W-9WB	9	3.52	9.525	4.0	★
	RT16.01W-10WB	10	3.52	9.525	4.0	★
	RT16.01W-11WB	11	3.52	9.525	4.0	★
	RT16.01W-12WB	12	3.52	9.525	4.0	★
	RT16.01W-14WB	14	3.52	9.525	4.0	★
	RT16.01W-16WB	16	3.52	9.525	4.0	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



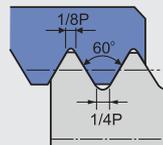
	Type	Basic dimensions(mm)				Recommended coating grade
		Pitch/mm (pitch/Inch)	S	ØI.C	ød	
	The right hand tools					YBG202
Internal thread	RT16.01N-8WB	8	3.52	9.525	4.0	★
	RT16.01N-9WB	9	3.52	9.525	4.0	★
	RT16.01N-10WB	10	3.52	9.525	4.0	★
	RT16.01N-11WB	11	3.52	9.525	4.0	★
	RT16.01N-12WB	12	3.52	9.525	4.0	★
	RT16.01N-14WB	14	3.52	9.525	4.0	★
	RT16.01N-16WB	16	3.52	9.525	4.0	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

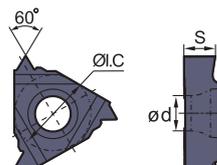


### Unified thread (with end) **Thin type**

ASME B1.1-1989  
Tolerance class: 2A/2B



R type

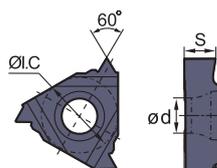


	Type	Basic dimensions(mm)				Recommended coating grade
	The right hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG202
External thread	<b>RT16.01W-8UNB</b>	8	3.52	9.525	4.0	★
	<b>RT16.01W-10UNB</b>	10	3.52	9.525	4.0	★
	<b>RT16.01W-12UNB</b>	12	3.52	9.525	4.0	★
	<b>RT16.01W-14UNB</b>	14	3.52	9.525	4.0	★
	<b>RT16.01W-16UNB</b>	16	3.52	9.525	4.0	★
	<b>RT16.01W-18UNB</b>	18	3.52	9.525	4.0	★
	<b>RT16.01W-20UNB</b>	20	3.52	9.525	4.0	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



	Type	Basic dimensions(mm)				Recommended coating grade
	The right hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG202
Internal thread	<b>RT16.01N-8UNB</b>	8	3.52	9.525	4.0	★
	<b>RT16.01N-10UNB</b>	10	3.52	9.525	4.0	★
	<b>RT16.01N-12UNB</b>	12	3.52	9.525	4.0	★
	<b>RT16.01N-14UNB</b>	14	3.52	9.525	4.0	★
	<b>RT16.01N-16UNB</b>	16	3.52	9.525	4.0	★
	<b>RT16.01N-18UNB</b>	18	3.52	9.525	4.0	★
	<b>RT16.01N-20UNB</b>	20	3.52	9.525	4.0	★
	<b>RT16.01N-24UNB</b>	24	3.52	9.525	4.0	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading tools



# TURNING Threading Tools

Threading tools

General turning

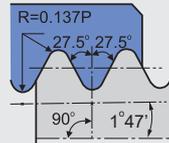
Parting and grooving

Threading

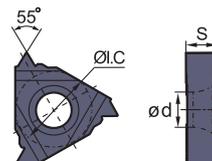
Threading tools

## British standard taper pipe thread (with end) **Thin type**

ISO 7/1:1994,B.S.21:1985  
Standard BSPT



R type

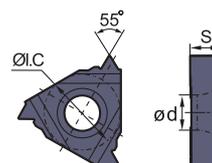


	Type	Basic dimensions(mm)				Recommended coating grade
		Pitch/mm (pitch/Inch)	S	Ø1.C	ød	
	The right hand tools					YBG202
External thread	RT16.01W-11BSPTB	11	3.52	9.525	4.0	★
	RT16.01W-14BSPTB	14	3.52	9.525	4.0	★
	RT16.01W-19BSPTB	19	3.52	9.525	4.0	★
	RT16.01W-28BSPTB	28	3.52	9.525	4.0	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



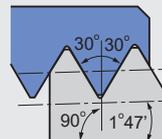
	Type	Basic dimensions(mm)				Recommended coating grade
		Pitch/mm (pitch/Inch)	S	Ø1.C	ød	
	The right hand tools					YBG202
Internal thread	RT16.01N-11BSPTB	11	3.52	9.525	4.0	★
	RT16.01N-14BSPTB	14	3.52	9.525	4.0	★
	RT16.01N-19BSPTB	19	3.52	9.525	4.0	★
	RT16.01N-28BSPTB	28	3.52	9.525	4.0	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

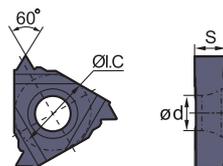


American standard taper pipe thread (with end) **Thin type**

ASME B1.20.1-1983  
Standard NPT



R type

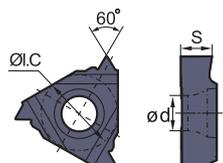


	Type	Basic dimensions(mm)				Recommended coating grade
	The right hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG202
External thread	RT16.01W-8NPTB	8	3.52	9.525	4.0	★
	RT16.01W-11.5NPTB	11.5	3.52	9.525	4.0	★
	RT16.01W-14NPTB	14	3.52	9.525	4.0	★
	RT16.01W-18NPTB	18	3.52	9.525	4.0	★
	RT16.01W-27NPTB	27	3.52	9.525	4.0	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



R type



	Type	Basic dimensions(mm)				Recommended coating grade
	The right hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG202
Internal thread	RT16.01N-8NPTB	8	3.52	9.525	4.0	★
	RT16.01N-11.5NPTB	11.5	3.52	9.525	4.0	★
	RT16.01N-14NPTB	14	3.52	9.525	4.0	★
	RT16.01N-18NPTB	18	3.52	9.525	4.0	★
	RT16.01N-27NPTB	27	3.52	9.525	4.0	★

★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

General turning

Parting and grooving

Threading

Threading tools

# A TURNING Threading Tools

Threading tools

## Threading tools code key

General turning  
Parting and grooving  
Threading

Threading tools

**Clamping system**

Top clamping    Screw clamping

**ZC**      **ZS**

**Thread type**

**I** > Internal thread  
**E** > External thread

**Cutting direction**

Right hand    Left hand

**R**      **L**

**ZS E R 20 20 K 16**

**Nose height**

Note: 00 for round tool holder.  
Only to integer, for example:  
h=8mm is labeled as 08.

**Shank width**

Note: Diameter for round tool holder  
for example: b=8mm is labeled as 08.

**Tool length**

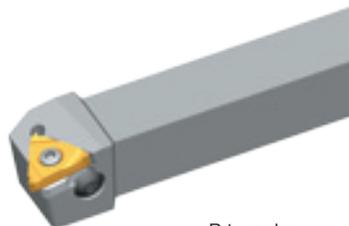
Code	H	K	M	P	Q	R	S	T	U
Length	100	125	150	170	180	200	250	300	350

**Insert size**

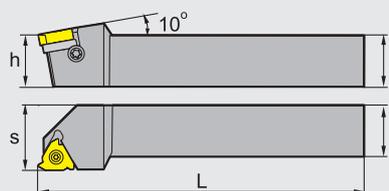
Code	11	16	22
Triangle side length	11	16	22
Inscribed circle	6.35	9.525	12.70



External threading tools



R-type shown



Type	Stock	Basic dimensions(mm)					Applicable inserts	Inserts screw	Shim	Shim screw	Wrench	
		a	h	b	L	s						
ZSER	1616H16	▲	16	16	16	100						
	2020K16	▲	20	20	20	125						25
	2525M16	▲	25	25	25	150						32
	3225P16	▲	32	32	25	170						32
	3232P16	▲	32	32	32	170						40
	2525M22	▲	25	25	25	150						32
	3225P22	▲	32	32	25	170						32
	3232P22	▲	32	32	32	170						40
4040S22	△	40	40	40	250	50						
ZSEL	1616H16	▲	16	16	16	100						
	2020K16	▲	20	20	20	125						25
	2525M16	▲	25	25	25	150						32
	3225P16	▲	32	32	25	170						32
	3232P16	▲	32	32	32	170						40
	2525M22	▲	25	25	25	150						32
	3225P22	▲	32	32	25	170						32
	3232P22	▲	32	32	32	170						40
4040S22	△	40	40	40	250	50						

▲Stock available

△Make-to-order

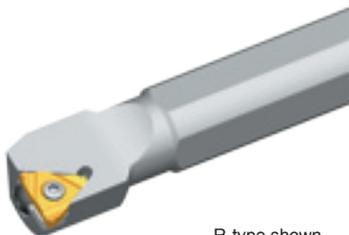
General turning

Parting and grooving

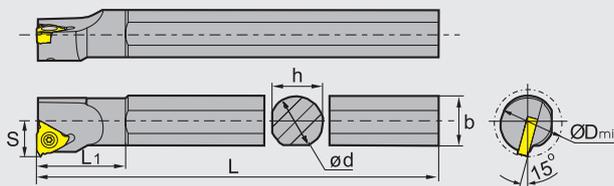
Threading

Threading tools

## Internal threading tools



R-type shown



Type	Stock	Basic dimensions(mm)								Applicable inserts	Inserts screw	Shim	Shim screw	Wrench		
		d	L	b	D <sub>min</sub>	s	h	L <sub>1</sub>								
ZSIR	0016K11	▲	16	125	15.5	12	10	15	20.9	Z11IR□□□□	I60 M2.5X6.5T	---	---	WT08IP		
	0016M11	▲	16	150	16	16	10.5	15	25.9		I60 M3.5X08TT	---	---			
	0016M16	▲	16	150	15.5	20	12	15	27			Z16IR□□□□	I60 M3.5X12TT		MT16-□□MN	SM4X8C
	0020M16	▲	20	150	19	25	14	18	28.7	I60 M5×13.2			---	---		
	0020Q16	▲	20	180	19	25	14	18	34			Z22IR□□□□	I60 M4×15X	MT22-□□MN	SM5X8.5	WT20IP
	0025M16	▲	25	150	24	32	17	23	28.8				I60 M4×15X	---	---	
	0032R16	▲	32	200	31	40	22	30	30.9	Z22IR□□□□	---	---				
	0032S16	▲	32	250	31	40	22	30	30.9		I60 M5×13.2	---		---		
	0040T16	▲	40	300	38.5	50	27	37	31.5			Z22IR□□□□		---	---	
	0050U16	▲	50	350	48.5	63	35	49	40.2	I60 M4×15X	---			---		
	0020Q22	▲	20	180	19	25	15	18	35		Z22IR□□□□	---	---			
	0025R22	▲	25	200	24	32	19	23	39			Z22IR□□□□	---	---		
	0032S22	▲	32	250	31	40	22	30	36.4		I60 M4×15X		---	---		
	0040T22	▲	40	300	38.5	50	27	37	37.2				Z22IR□□□□	---	---	
	0050U22	▲	50	350	48.5	63	35	47	42.6	I60 M5×13.2	---	---				
ZSIL	0016K11	▲	16	125	15.5	12	10	15	20.9		Z11IL□□□□	I60 M2.5X6.5T		---	---	WT07IP
	0016M11	▲	16	150	16	16	10.5	15	25.9	I60 M3.5X08TT		---		---		
	0016M16	▲	16	150	16	20	12	15	27			Z16IL□□□□		I60 M3.5X12TT	MT16-□□MN	
	0020M16	▲	20	150	19	25	14	18	28.7		I60 M5×13.2		---	---		
	0020Q16	▲	20	180	19	25	14	18	34			Z22IL□□□□	I60 M4×15X	MT22-□□MN	SM5X8.5	WT20IP
	0025M16	▲	25	150	24	32	17	23	28.8				I60 M4×15X	---	---	
	0032R16	▲	32	200	31	40	22	30	30.9	Z22IL□□□□	---	---				
	0032S16	▲	32	250	31	40	22	30	30.9		I60 M5×13.2	---		---		
	0040T16	▲	40	300	38.5	50	27	37	31.5			Z22IL□□□□		---	---	
	0050U16	▲	50	350	48.5	63	35	49	40.2	I60 M4×15X	---			---		
	0020Q22	▲	20	180	19	25	15	18	35		Z22IL□□□□	---	---			
	0025R22	▲	25	200	24	32	19	23	39			Z22IL□□□□	---	---		
	0032S22	▲	32	250	31	40	22	30	36.4		I60 M4×15X		---	---		
	0040T22	▲	40	300	38.5	50	27	37	37.2				Z22IL□□□□	---	---	
	0050U22	▲	50	350	48.5	63	35	47	42.6	Z22IL□□□□	---	---				

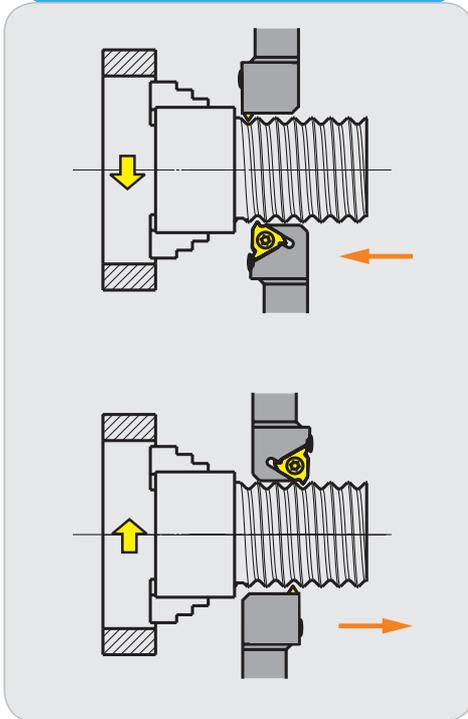
▲Stock available    △Make-to-order

Please follow the following steps to get the best threading result:

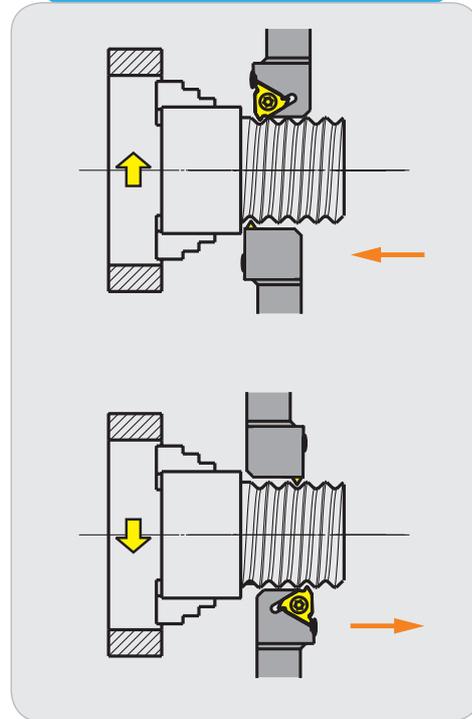
- 1 Select proper thread machining method.
- 2 Define helical angle and select shim.
- 3 Select proper insert and tool holder size.
- 4 By checking reference table of standard threading programs, select feasible cutting parameters.
- 5 Select feed way.

### Machining method of threading tools

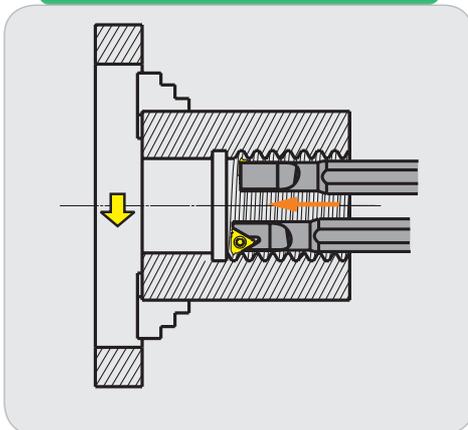
External threading machining (Right thread)



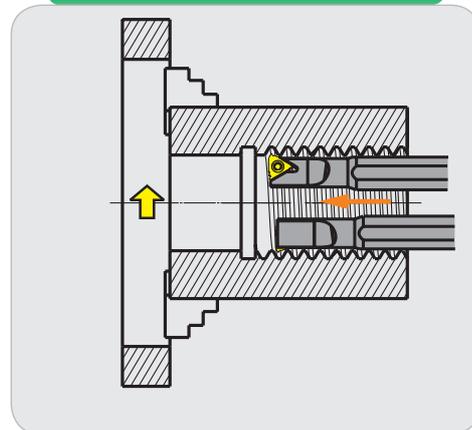
External threading machining (Left thread)



Internal threading machining (Right thread)



Internal threading machining (Left thread)





# TURNING Threading Tools

## Application information of threading

### Decide helical angle and select shim

The clearance angle of threading inserts is actually along the edge (flank). This has significant effect on heat diffusion, spread of abrasion as well as tool life, security and pitch quality. The clearance angle of threading pitch on clearance face is determined by thread helical angle. These two angles are similar to each other to some extent. If inclined angle of insert is different from the helical angle, then the clearance angle won't be the same either.

The helical angle of pitch has to be the same with the inclined angle of insert to prevent over wearing on the clearance face which could affect tool life. the helical angle is calculated as below:

$$e = \arctan \frac{p}{d_2 \times \pi}$$

P= Pitch

d<sub>2</sub>= pitch diameter

The most common inclined angle is 1°. MT standard shim and its inclined angle is also 1°.

Calculation of clearance angle:

Clearance angle is calculated as below:

$$\beta = \arctan (\tan \theta \times \tan \alpha)$$

2θ=Thread profile angle

α=The rake angle of external standard threading tools is 10°; the rake angle of internal standard threading tools is 15°.

The shim has to be changed when helical angle of thread is ≤ clearance angle of tool, which could cause intervene on insert flank.

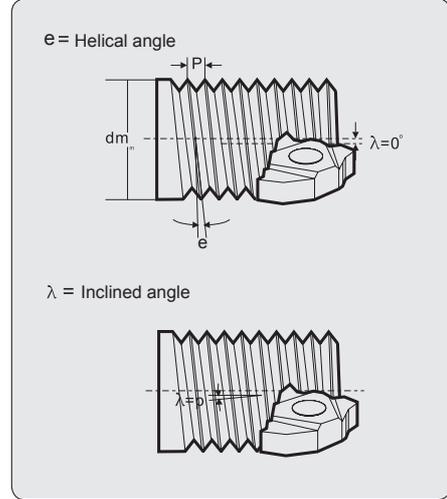
Please change the shim to adjust the difference between helical angle of thread and inclined angle of shim to be within 2°~0°.

For example: when P=1.5, d<sub>2</sub>=24mm, helical angle 1.14°-(2°~0°)=inclined angle (-0.86°~1.14°) it is feasible to use standard shim 1°.

Shim specification table is as follows:

Screw pitch range	Insert dimensions	Inclined angle	Shim
0.5-3.0	16	0	MT16-00MN
		1	MT16-01MN
		2	MT16-02MN
		3	MT16-03MN
3.5-6.0	22	0	MT22-00MN
		1	MT22-01MN
		2	MT22-02MN
		3	MT22-03MN

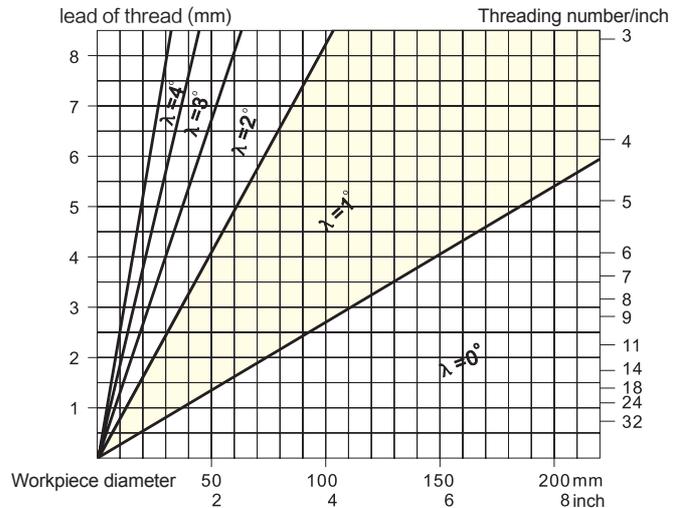
Note: the standard angle of shim for our threading tools is 1°. ((MT16-01MN or MT22-01MN))



Please refer to the table below for actual value:

Thread profile angle 2θ	β	
	External thread	Internal thread
60°	5.8°	8.79°
55°	5.24°	7.94°
30°	2.7°	4.1°
29°	2.6°	3.96°

Select shim:





Select proper inserts and size of tool holder (Please refer to detailed table of threading tools and inserts)

### Parameter table for threading program under different standards

■ Table of recommended in-feed for metric ISO external threading with wiper edge

Screw pitch	1.0	1.25	1.5	1.75	2.0	2.5	3.0	4.0	5.0
Total in-feed	<b>0.72</b>	<b>0.86</b>	<b>1.02</b>	<b>1.17</b>	<b>1.33</b>	<b>1.63</b>	<b>1.94</b>	<b>2.58</b>	<b>3.21</b>
Number of passes	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>11</b>	<b>13</b>	<b>15</b>	<b>17</b>
Order to follow in threading operation	Value of radial in-feed (X) and flank in-feed (Z)								
	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.20/-	0.20/-	0.21/-	0.22/-	0.24/-	0.25/-	0.26/-	0.35/-	0.40/-
2	0.18/0.10	0.18/0.10	0.18/0.10	0.20/0.12	0.22/0.13	0.24/0.14	0.24/0.14	0.30/0.17	0.35/0.20
3	0.16/0.09	0.14/0.09	0.18/0.10	0.18/0.10	0.20/0.12	0.21/0.12	0.20/0.12	0.25/0.14	0.30/0.17
4	0.10/0.06	0.10/0.08	0.15/0.09	0.15/0.09	0.15/0.09	0.18/0.10	0.20/0.12	0.20/0.12	0.28/0.16
5	0.08/-	0.08/0.06	0.12/0.07	0.13/0.08	0.12/0.07	0.15/0.09	0.18/0.10	0.18/0.10	0.25/0.14
6			0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.15/0.09	0.18/0.10	0.20/0.12
7			0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.13/0.08	0.16/0.09	0.18/0.10
8				0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.15/0.09	0.16/0.09
9					0.08/-	0.10/0.06	0.10/0.06	0.15/0.09	0.15/0.09
10						0.08/0.05	0.10/0.06	0.13/0.08	0.15/0.09
11						0.08/-	0.08/0.06	0.12/0.07	0.13/0.08
12							0.08/0.05	0.12/0.07	0.13/0.08
13								0.11/0.06	0.12/0.07
14								0.10/0.06	0.12/0.07
15								0.08/-	0.11/0.06
16									0.10/0.06
17									0.08/-

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■ Table of recommended in-feed for metric ISO internal threading with wiper edge

Screw pitch	1.00	1.25	1.5	1.75	2.0	2.5	3.0	4.0	5.0
Total in-feed	0.62	0.77	0.92	1.06	1.21	0.15	1.79	2.36	2.95
Number of passes	5	6	7	8	9	11	13	15	17
Order to follow in threading operation	Value of radial in-feed (X) and flank in-feed (Z)								
	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.18/-	0.20/-	0.22/-	0.23/-	0.24/-	0.25/-	0.26/-	0.30/-	0.32/-
2	0.14/0.08	0.15/0.09	0.16/0.09	0.16/0.09	0.18/0.10	0.20/0.12	0.20/0.12	0.25/0.14	0.28/0.16
3	0.12/0.07	0.12/0.07	0.14/0.08	0.14/0.08	0.15/0.09	0.15/0.09	0.20/0.12	0.22/0.13	0.25/0.14
4	0.10/0.06	0.12/0.07	0.12/0.07	0.13/0.08	0.14/0.08	0.15/0.09	0.18/0.10	0.20/0.12	0.22/0.13
5	0.08/-	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.13/0.08	0.15/0.09	0.18/0.10	0.21/0.12
6			0.09/0.05	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.15/0.09	0.20/0.12
7			0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.12/0.07	0.15/0.09	0.18/0.10
8				0.08/-	0.09/0.05	0.10/0.06	0.10/0.06	0.15/0.09	0.18/0.10
9					0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.15/0.09
10						0.09/0.05	0.10/0.06	0.12/0.07	0.15/0.09
11						0.08/-	0.10/0.06	0.12/0.07	0.15/0.09
12							0.08/0.05	0.11/0.06	0.15/0.09
13								0.11/0.06	0.12/0.07
14								0.10/0.06	0.11/0.06
15								0.08/-	0.10/0.06
16									0.10/0.06
17									0.08/-

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Table of recommended in-feed for American unified standard external threading with wiper edge

Screw pitch	24	20	18	16	14	12	11	10	9	8	7	6	5
Total in-feed	0.649	0.779	0.866	0.974	1.113	1.299	1.416	1.558	1.731	1.948	2.226	2.597	3.116
Number of passes	5	6	6	7	9	9	10	11	12	13	14	15	16
Order to follow in threading operation	Value of radial in-feed (X) and flank in-feed (Z)												
	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.206 / —	0.210 / —	0.233 / —	0.226 / —	0.196 / —	0.229 / —	0.220 / —	0.214 / —	0.210 / —	0.211 / —	0.213 / —	0.218 / —	0.229 / —
2	0.148 / 0.086	0.163 / 0.094	0.181 / 0.104	0.188 / 0.109	0.189 / 0.110	0.222 / 0.128	0.228 / 0.132	0.240 / 0.139	0.256 / 0.148	0.276 / 0.160	0.304 / 0.176	0.343 / 0.198	0.399 / 0.230
3	0.114 / 0.066	0.125 / 0.072	0.139 / 0.080	0.145 / 0.083	0.146 / 0.084	0.170 / 0.098	0.176 / 0.102	0.184 / 0.106	0.196 / 0.113	0.212 / 0.122	0.234 / 0.135	0.263 / 0.152	0.306 / 0.177
4	0.096 / 0.055	0.105 / 0.061	0.117 / 0.068	0.122 / 0.070	0.123 / 0.071	0.143 / 0.083	0.148 / 0.086	0.155 / 0.090	0.165 / 0.095	0.179 / 0.103	0.197 / 0.114	0.222 / 0.128	0.258 / 0.149
5	0.085 / 0.049	0.093 / 0.054	0.103 / 0.059	0.107 / 0.062	0.108 / 0.062	0.126 / 0.073	0.131 / 0.075	0.137 / 0.079	0.146 / 0.084	0.158 / 0.091	0.173 / 0.100	0.195 / 0.113	0.227 / 0.131
6		0.084 / 0.048	0.093 / 0.054	0.097 / 0.056	0.098 / 0.056	0.114 / 0.066	0.118 / 0.068	0.124 / 0.072	0.132 / 0.076	0.142 / 0.082	0.157 / 0.091	0.177 / 0.102	0.205 / 0.119
7				0.089 / 0.052	0.090 / 0.052	0.105 / 0.061	0.109 / 0.063	0.114 / 0.066	0.121 / 0.070	0.131 / 0.076	0.144 / 0.083	0.163 / 0.094	0.189 / 0.109
8					0.084 / 0.048	0.098 / 0.056	0.101 / 0.058	0.106 / 0.061	0.113 / 0.065	0.122 / 0.070	0.134 / 0.078	0.151 / 0.087	0.176 / 0.101
9						0.079 / 0.045	0.092 / 0.053	0.095 / 0.055	0.100 / 0.057	0.106 / 0.061	0.114 / 0.066	0.126 / 0.073	0.142 / 0.082
10								0.090 / 0.052	0.094 / 0.054	0.100 / 0.058	0.108 / 0.063	0.119 / 0.069	0.156 / 0.090
11									0.090 / 0.052	0.095 / 0.055	0.103 / 0.059	0.113 / 0.065	0.149 / 0.086
12										0.091 / 0.053	0.098 / 0.057	0.108 / 0.063	0.142 / 0.082
13											0.094 / 0.054	0.104 / 0.060	0.136 / 0.079
14												0.100 / 0.058	0.131 / 0.076
15													0.109 / 0.063
16													0.122 / 0.071

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Table of recommended in-feed for American unified standard internal threading with wiper edge

Screw pitch	24	20	18	16	14	12	11	10	9	8	7	6	5
Total in-feed	<b>0.573</b>	<b>0.687</b>	<b>0.764</b>	<b>0.860</b>	<b>0.982</b>	<b>1.146</b>	<b>1.250</b>	<b>1.375</b>	<b>1.528</b>	<b>1.719</b>	<b>1.964</b>	<b>2.291</b>	<b>2.750</b>
Number of passes	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>
Order to follow in threading operation	Value of radial in-feed (X) and flank in-feed (Z)												
	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.193 / —	0.200 / —	0.222 / —	0.219 / —	0.220 / —	0.228 / —	0.250 / —	0.247 / —	0.246 / —	0.252 / —	0.262 / —	0.278 / —	0.302 / —
2	0.127 / 0.073	0.239 / 0.081	0.155 / 0.089	0.161 / 0.093	0.173 / 0.100	0.190 / 0.110	0.207 / 0.120	0.216 / 0.125	0.229 / 0.132	0.247 / 0.142	0.271 / 0.156	0.304 / 0.176	0.353 / 0.204
3	0.098 / 0.056	0.107 / 0.062	0.119 / 0.069	0.124 / 0.072	0.132 / 0.076	0.146 / 0.084	0.159 / 0.092	0.166 / 0.096	0.176 / 0.101	0.189 / 0.109	0.208 / 0.120	0.234 / 0.135	0.271 / 0.156
4	0.082 / 0.048	0.090 / 0.052	0.100 / 0.058	0.104 / 0.060	0.112 / 0.064	0.123 / 0.071	0.134 / 0.077	0.140 / 0.081	0.148 / 0.086	0.160 / 0.092	0.175 / 0.101	0.197 / 0.114	0.228 / 0.132
5	0.073 / 0.042	0.079 / 0.046	0.088 / 0.051	0.092 / 0.053	0.098 / 0.057	0.108 / 0.062	0.118 / 0.068	0.123 / 0.071	0.130 / 0.075	0.141 / 0.081	0.1543 / 0.089	0.173 / 0.100	0.201 / 0.116
6		0.072 / 0.041	0.080 / 0.046	0.083 / 0.048	0.089 / 0.051	0.098 / 0.056	0.107 / 0.062	0.111 / 0.064	0.118 / 0.068	0.127 / 0.073	0.140 / 0.081	0.157 / 0.091	0.182 / 0.105
7				0.077 / 0.044	0.082 / 0.047	0.090 / 0.052	0.098 / 0.057	0.102 / 0.059	0.108 / 0.063	0.117 / 0.067	0.128 / 0.074	0.144 / 0.083	0.167 / 0.097
8					0.076 / 0.044	0.084 / 0.048	0.091 / 0.053	0.095 / 0.055	0.101 / 0.058	0.109 / 0.063	0.119 / 0.069	0.134 / 0.078	0.156 / 0.090
9						0.079 / 0.045	0.086 / 0.050	0.090 / 0.052	0.095 / 0.055	0.102 / 0.059	0.112 / 0.065	0.126 / 0.073	0.146 / 0.084
10								0.085 / 0.049	0.090 / 0.052	0.097 / 0.056	0.106 / 0.061	0.119 / 0.069	0.138 / 0.080
11									0.085 / 0.049	0.092 / 0.053	0.101 / 0.058	0.113 / 0.065	0.131 / 0.076
12										0.088 / 0.051	0.096 / 0.056	0.108 / 0.063	0.126 / 0.073
13											0.092 / 0.053	0.101 / 0.060	0.121 / 0.070
14												0.100 / 0.058	0.116 / 0.067
15													0.112 / 0.065

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Table of recommended in-feed for British standard internal and external threading with wiper edge

Screw pitch	28	20	19	16	14	12	11	10	9	8	7	6	5
Total in-feed	<b>0.581</b>	<b>0.813</b>	<b>0.856</b>	<b>1.017</b>	<b>1.162</b>	<b>1.355</b>	<b>1.479</b>	<b>1.626</b>	<b>1.807</b>	<b>2.033</b>	<b>2.324</b>	<b>2.711</b>	<b>3.253</b>
Number of passes	<b>5</b>	<b>6</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>15</b>	<b>16</b>
Order to follow in threading operation	Value of radial in-feed (X) and flank in-feed (Z)												
	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.179 / —	0.211 / —	0.223 / —	0.196 / —	0.223 / —	0.226 / —	0.246 / —	0.236 / —	0.230 / —	0.255 / —	0.195 / —	0.197 / —	0.204 / —
2	0.134 / 0.070	0.172 / 0.089	0.181 / 0.094	0.186 / 0.097	0.213 / 0.111	0.234 / 0.122	0.255 / 0.133	0.226 / 0.139	0.282 / 0.147	0.304 / 0.158	0.322 / 0.167	0.361 / 0.189	0.421 / 0.219
3	0.104 / 0.054	0.132 / 0.069	0.139 / 0.072	0.143 / 0.074	0.163 / 0.085	0.180 / 0.093	0.197 / 0.102	0.206 / 0.106	0.216 / 0.113	0.233 / 0.121	0.247 / 0.128	0.278 / 0.145	0.323 / 0.168
4	0.087 / 0.045	0.111 / 0.058	0.117 / 0.061	0.120 / 0.063	0.138 / 0.072	0.151 / 0.079	0.165 / 0.086	0.172 / 0.090	0.182 / 0.095	0.197 / 0.102	0.208 / 0.108	0.234 / 0.122	0.272 / 0.142
5	0.077 / 0.040	0.098 / 0.051	0.103 / 0.054	0.106 / 0.055	0.121 / 0.063	0.133 / 0.069	0.145 / 0.076	0.152 / 0.079	0.161 / 0.084	0.1738 / 0.090	0.183 / 0.095	0.207 / 0.108	0.240 / 0.125
6		0.089 / 0.046	0.093 / 0.049	0.096 / 0.050	0.110 / 0.057	0.121 / 0.063	0.131 / 0.068	0.137 / 0.071	0.145 / 0.076	0.157 / 0.082	0.166 / 0.086	0.187 / 0.097	0.217 / 0.113
7				0.088 / 0.046	0.101 / 0.052	0.111 / 0.058	0.121 / 0.063	0.126 / 0.066	0.134 / 0.070	0.144 / 0.075	0.152 / 0.079	0.172 / 0.089	0.200 / 0.104
8				0.082 / 0.043	0.093 / 0.049	0.103 / 0.054	0.113 / 0.059	0.117 / 0.061	0.124 / 0.065	0.134 / 0.070	0.142 / 0.074	0.160 / 0.083	0.186 / 0.097
9						0.097 / 0.050	0.106 / 0.055	0.110 / 0.057	0.117 / 0.061	0.126 / 0.066	0.133 / 0.069	0.150 / 0.078	0.174 / 0.091
10								0.104 / 0.054	0.111 / 0.058	0.119 / 0.062	0.126 / 0.066	0.142 / 0.074	0.165 / 0.086
11									0.105 / 0.055	0.113 / 0.059	0.120 / 0.062	0.135 / 0.070	0.157 / 0.082
12										0.108 / 0.056	0.114 / 0.060	0.129 / 0.067	0.150 / 0.078
13											0.110 / 0.055	0.124 / 0.064	0.144 / 0.075
14												0.119 / 0.062	0.138 / 0.072
15													0.115 / 0.060
16													0.129 / 0.067

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■ Table of recommended in-feed for NPT internal and external threading with wiper edge

Screw pitch	27	18	14	11.5	8
Total in-feed	0.75	1.129	1.451	1.767	2.54
Number of passes	6	8	10	12	14
Order to follow in threading operation	Value of radial in-feed (X) and flank in-feed (Z)				
	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.19/-	0.22/-	0.240/-	0.24/-	0.255/-
2	0.15/0.087	0.181/0.104	0.200/0.115	0.208/0.120	0.250/0.144
3	0.13/0.075	0.152/0.088	0.170/0.098	0.182/0.105	0.245/0.141
4	0.11/0.063	0.141/0.081	0.150/0.086	0.168/0.097	0.230/0.133
5	0.09/0.052	0.131/0.075	0.140/0.081	0.155/0.089	0.210/0.121
6	0.08/0.46	0.121/0.070	0.130/0.075	0.145/0.084	0.195/0.112
7		0.101/0.058	0.120/0.069	0.138/0.079	0.180/0.104
8		0.082/0.047	0.110/0.063	0.124/0.072	0.175/0.101
9			0.100/0.058	0.117/0.067	0.170/0.098
10			0.091/0.052	0.105/0.060	0.155/0.089
11				0.095/0.055	0.140/0.080
12				0.090/0.052	0.125/0.072
13					0.110/0.063
14					0.100/0.058

■ Table of recommended in-feed for BSPT internal and external threading with wiper edge

Screw pitch	28	19	14	11
Total in-feed	0.581	0.856	1.162	1.479
Number of passes	5	6	8	10
Order to follow in threading operation	Value of radial in-feed (X) and flank in-feed (Z)			
	X/Z	X/Z	X/Z	X/Z
1	0.179/-	0.223/-	0.222/-	0.214/-
2	0.134/0.070	0.181/0.094	0.213/0.111	0.242/0.126
3	0.103/0.054	0.139/0.072	0.163/0.085	0.186/0.097
4	0.087/0.045	0.117/0.061	0.138/0.072	0.157/0.082
5	0.078/0.040	0.103/0.054	0.121/0.063	0.138/0.072
6		0.093/0.049	0.110/0.057	0.125//0.065
7			0.101/0.052	0.115/0.060
8			0.094/0.049	0.107/0.056
9				0.100/0.052
10				0.095//0.049

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### Table of recommended cutting parameters

ISO	Material		Unit cutting force Kc0.4 N/mm <sup>2</sup>	Hardness HB	Grade	
					YBG202 YBG203 YBG205	
Cutting speed(m/min)						
<b>P</b>	Carbon steel	C=0.15%	1900	125	150-175	
		C=0.35%	2100	150	140-155	
		C=0.60%	2250	200	130-145	
	Alloy steel	Anneal	2100	180	110-130	
		Hardened	2600	275	80-100	
		Hardened	2700	300	70-90	
		Hardened	2850	350	60-80	
	High alloy steel	Anneal	2600	200	90-115	
		Hardened	3900	325	70-90	
	Cast steel	Non-alloy	2000	180	180-210	
low alloy		2500	200	90-115		
High alloy		2700	225	90-115		
Martensite steel 12%Mn		3600	250	40-50		
<b>M</b>	Stainless steel	Austenite	2450	180	110-130	
		Martensite/Ferrite	2300	200	130-170	
<b>K</b>	Malleable cast iron	Ferrite	1100	130	110-140	
		Pearlite	1100	230	85-105	
	Gray cast iron	Low tensile-strength	1100	180	110-140	
		High tensile-strength	1500	260	90-115	
Nodular cast iron	Ferrite	1100	160	110-130		
	Pearlite	1800	250	80-100		
<b>N</b>	Al alloy	Non-aging treatment	500	60	1300-1450	
		Aging treatment	800	100	450-500	
	Cast aluminum alloy	Non-aging treatment	750	75	430-470	
Aging treatment		900	90	250-290		
<b>S</b>	Heat resistant alloy	Iron base	Anneal	3000	200	35-50
			Aging	3050	280	25-35
		Ni- or Co-base	Anneal	3500	250	15-25
			Aging	4150	350	10-20
Casting	4150	320	10-15			
<b>H</b>	Hardened steel	Hardened steel	4500	HRC55	40-50	

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Note: •The values in the above table are range values. High values in the range could be considered in actual cutting. When trying new cutting speed, please check the cutting edge condition before operation.  
 •In stainless steel threading, high cutting speed should be used to prevent built-up edge.  
 •The cutting parameters should be reduced when cutting small pitch thread and when using tools with small nose radius.  
 •When cutting thread by tools with small nose radius, such as NPT standard thread, it is advisable to use tools with big nose radius first to rough, so as to improve the life of tools with small nose radius.



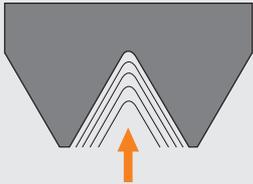
### In-feed way of threading tools



- General turning
- Parting and grooving
- Threading**

Application information of threading

#### Radial in-feed



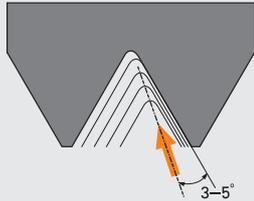
- Easy operating, high general.
- V-shape chip caused by long chip steel workpiece will produce big bend stress on cutting edge.
- It requires low cutting depth, sharp cutting edge and good tough material.
- Big quantity of heat when cutting ,V-shape chip is hard to control.
- Because the interface of cutting chips on the right and left side is long, so it is easy to cause vibration and make the cutting edge suffer more overloading.

#### Flank in-feed



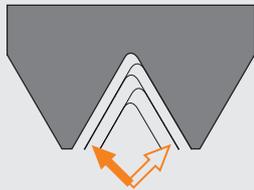
- Cutting edge suffer small bend stress, stable estate, it is easy for chips formation in deep cutting depth.
- There are enough space to leave chips flow when flank in-feed.
- Big abrasion on right flank.

#### Modified flank in-feed



- Right Cutting Edge also engage on cutting depth to a certain extent, it can reduce the abrasion on right side of clearance face.
- Cutting edge suffer small bend stress, stable estate, it is easy for chips formation in deep cutting depth.
- Good Cutting Performance.

#### Alternate flank in-feed



- Cutting edge trade off when machining, equality abrasion on left and right side of clearance face on cutting edge, it can improve the life of tools.
- Chips are flowing from both of right and left side, good chips flowing.
- Recommend using in big screw-pitch thread cutting.

**!** Recommend adopting flank in-feed or alternate flank in-feed under allowable range of machining equipment or programmer, it can eliminate the machining vibration effectively, and it has enough space discharge the chips between pitch. Cutting edge suffer a small stress, machining stable, it likes the general turning process when machining thread, good chip control without extra chips.



### Common problems in threading and solutions

Problem	Cause	Solutions
Wear on clearance face	Cutting speed too high.	Reduce cutting speed.
	Low cutting depth, abrasion.	Reduce frequency of feed and friction of cutting edge.
	Inserts are over the center line.	Adopt correct center height.
Asymmetric wear on right and left cutting edge	The inclined angle of insert is different from the helical angle of thread.	Change to proper shim to get correct inclined angle.
	Flank in-feed is not correct.	Change the way of flank in-feed.
Breakage	Cutting speed too low.	Increase cutting speed.
	Cutting force too high.	Increase frequency of feed and reduce Max in-feed.
	Unstable clamping.	Check if workpiece vibrates. Reduce overhang of tool. Verify clamping of workpiece and tool.
	Chip twisting.	Increase the pressure of cooling liquid to blow away chips.
Plastic deformation	High cutting speed, high temperature on cutting area.	Reduce cutting speed. Increase feed frequency and reduce Max cutting depth.
	Insufficient cooling fluid.	Increase cooling fluid supply.
Low thread surface quality	Cutting speed too low. The insert is over the center line. Chips are not under control.	Increase cutting speed. Adjust centre height. Change the operation way of tools to well control chips.
Incorrect profile	Incorrect center height.	Adjust centre height.
	Pitch on machine is not correct.	Adjust machine.
Shallow profile	Cutting speed set wrong.	Adjust cutting depth.
Surface damage	Chips involved or contacted.	Change to flank in-feed to control chip flow direction.
Built-up edge	Temperature of cutting edge is too low. Usually occur when machining stainless steel and low carbon steel.	Increase cutting speed as well as pressure and concentration of cooling fluid. Choose inserts with good toughness.
Crack on surface	Cutting force too high	Reduce the cutting depth of each feed.
Vibration	Incorrect clamping of workpiece or tool	Verify clamping of workpiece and tool. Minimize overhang of tool.
	Incorrect cutting parameters	Increase cutting speed or reduce it substantially.
	Incorrect tool clamping	Adjust center height.

General turning

Parting and grooving

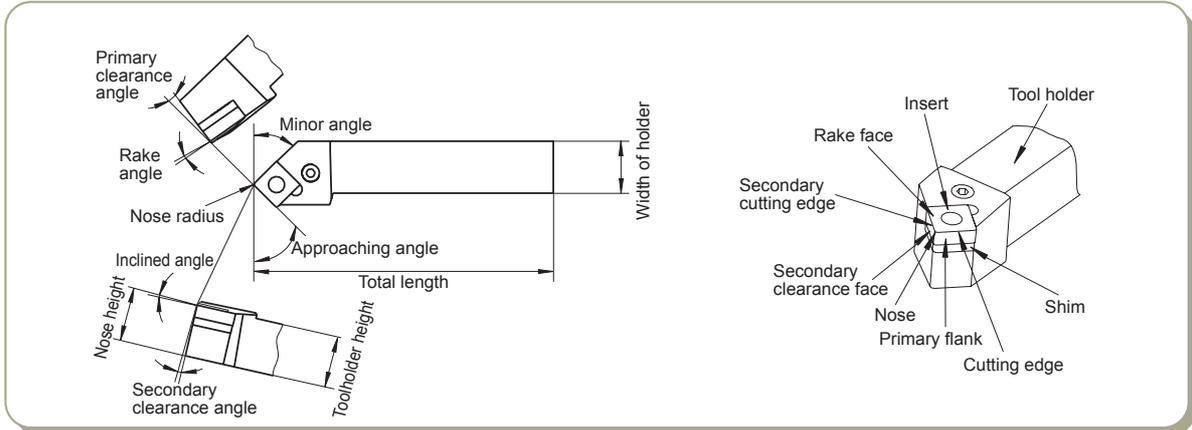
Threading

Application information of threading



### The functions of each part of turning tools

#### 1 The names of each part of turning tools



#### 2 Effects of rake angle

Larger rake angle makes cutting edge sharper, reduces resistant forces of chip flow, diminishes friction and prevent deformation, leading to smaller cutting forces and cutting power, lower cutting temperature, less abrasion and higher surface quality. However, too large rake angle would reduce the rigidity and strength of tool. Heat can't be diffused easily. Serious breakage and abrasion on tool would occur, reducing tool life. Please choose rake angle according to machining conditions.

Value selection	Situations
Small rake angle	<ul style="list-style-type: none"> <li>● When machining brittle and hard materials</li> <li>● When roughing and intermittent cutting</li> </ul>
Big rake angle	<ul style="list-style-type: none"> <li>● When machining plastic or soft materials</li> <li>● When finishing</li> </ul>

#### 3 Effects of clearance angle

The main function of clearance angle is to reduce the friction between the clearance face of tool and the surface of workpiece. When the rake angle is fixed, larger clearance angle can increase the sharpness of cutting edge, reduce cutting forces and friction, and then achieve higher surface quality. However, if clearance angle is too large, the strength of cutting edge would decrease. Also, heat can't be diffused easily and serious abrasion would occur, reducing tool life.

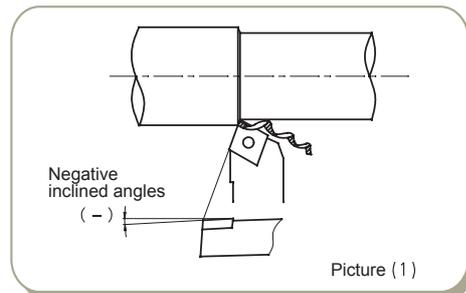
The principle of choosing clearance angle: Choose small clearance angle if friction is not serious.

Value Selection	Situations
Small clearance angle	<ul style="list-style-type: none"> <li>● In order to increase nose strength when roughing</li> <li>● When machining brittle and hard materials</li> </ul>
Large clearance angle	<ul style="list-style-type: none"> <li>● In order to reduce friction when finishing</li> <li>● When machining materials easy to be hardened</li> </ul>

#### 4 Effects of inclined angle

Positive or negative inclined angle determines the direction of chip flow, and also affects the strength and impact resistance of insert nose.

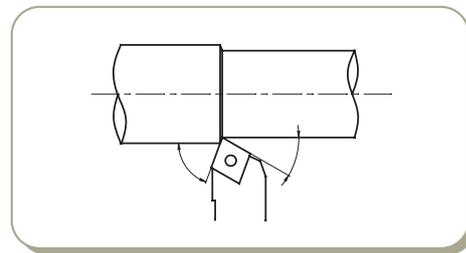
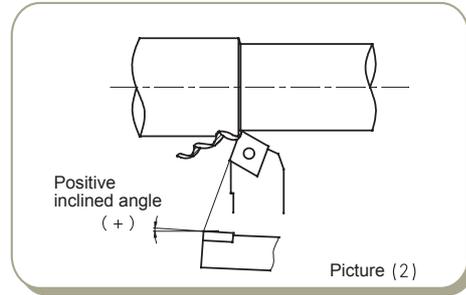
◆As diagram (1) shows, when the inclined angle is negative, namely nose is in the lowest point as apposed to the bottom of tool, chips flow to the machined surface of workpiece.





◆ As diagram (2) shows, when inclined angle is positive, namely the nose is in the highest point as apposed to the bottom of the tool, chips flow to the areas of workpiece surface that haven't been machined.

◆ The change of inclined angle also affects insert nose strength and impact resistance. When the inclined angle is negative, the nose is in the lowest point of cutting edge. When the cutting edge enters the workpiece, the contacting point is on the cutting edge or rake face, protecting the nose from impact and increase the strength of the nose. Normally, negative inclined angle should be chosen for tools with big rake angle. This can not only increase nose strength, but also prevent the impact of entry.



### 5 Effects of approach angle

Reduced approaching angle increases the strength of tools and enable heat to diffuse easily, improving surface quality. This is because when the approach angle is small, cutting edge width is large, and then the unit width of cutting edge bears less cutting force. Meanwhile, tool life can be improved.

Normally, select 90° approach angle for turning of slender and step shaft; select 45° approach angle for external turning, end surface machining and chamfering. When approach angle is larger, radial force is reduced, cutting is stable, cutting thickness is increased, and chip breaking is excellent.

Value selection	Situations
Small approach angle	For those materials with high intensity, high hardness and hardened layer on the surface
Big approach angle	When rigidity of the machine is not enough

### 6 Effects of minor angle

Minor angle is the main angle that can affect surface quality, and it can also affect tool strength. If the approach angle is too small, the friction between the secondary flank and machined surface of workpiece will increase, causing vibration.

The principle of selecting minor angle: Select small minor angle when roughing or when the friction is unaffected and there is no vibration. Select large minor angle when finishing.

### 7 Nose radius

Nose radius significantly affects nose strength and surface quality.

Large nose radius means higher cutting edge strength, and the abrasion on the rake face and clearance face can be reduced to some extent. However, if the nose radius is too large, radial force will increase, and vibration is easy to occur, affecting machining precision and surface quality.

Value selection	Situations
Small nose radius	<ul style="list-style-type: none"> <li>● Finishing at small cutting depth</li> <li>● Machining parts such as slender shaft</li> <li>● When the rigidity of the machine is not enough</li> </ul>
Large nose radius	<ul style="list-style-type: none"> <li>● When roughing</li> <li>● When machining hard materials (intermittent cutting)</li> <li>● When the rigidity of the machine is not enough</li> </ul>

General turning

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General technical information for turning



### Calculation method of turning parameters

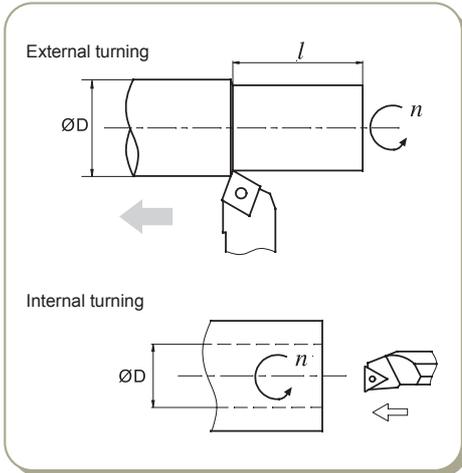
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#### 1 Calculation of cutting speed



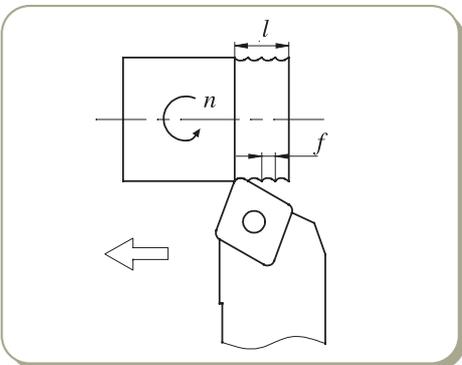
$$V_c = \frac{\pi \times D \times n}{1000} \text{ (m/min)}$$

In the formula:  $V_c$ : Cutting speed (m/min)  
 $n$ : Rotating speed of main axle (rev/min)  
 $D$ : Diameter of workpiece (mm)

For example: When the rotating speed is 280rev/min and the diameter of workpiece is 150mm, the cutting speed should be:

$$V_c = \frac{\pi \times D \times n}{1000} \text{ (m/min)} = 132 \text{ (m/min)}$$

#### 2 Calculation of feed rate



$$f = \frac{l}{n} \text{ (mm/rev)}$$

In the formula:  $f$ : Feed rate per rotation (mm/rev)  
 $l$ : Cutting length per minute (mm/min)  
 $n$ : Rotating speed of main axle (rev/min)

For example: When the rotating speed of main axle is 500rev/min, and the cutting length per minute is 100mm/min, the feed rate per rotation should be:

$$f = \frac{l}{n} = \frac{100}{500} = 0.2 \text{ (mm/rev)}$$





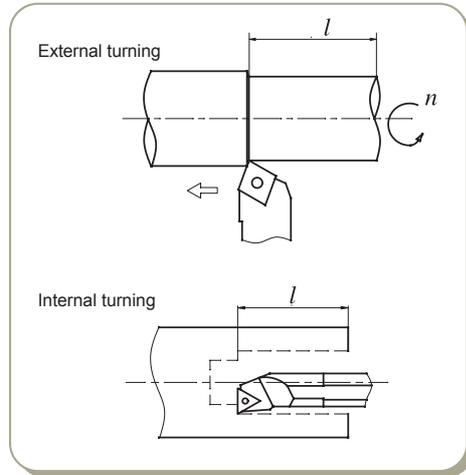
**3 Cutting time calculation of external and internal turning**

$$T = \frac{l}{f \times n} \text{ (min)}$$

In the formula: T: Cutting time (min)  
 l: Length of machined areas (mm)  
 f: Feed rate (mm/rev)  
 n: Rotating speed of main axle (rev/min)

For example: When the rotating speed of main axle is 250rev/min, and the feed rate is 0.2mm/rev, the time needed for a cutting length of 150mm should be:

$$T = \frac{l}{f \times n} = \frac{150}{0.2 \times 250} = 3 \text{ (min)}$$



General turning

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Threading

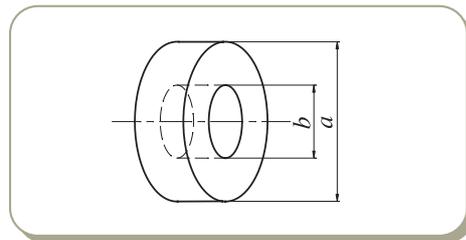
General technical information for turning

**4 Time calculation for end surface turning (constant linear speed)**

$$T = \frac{\pi \times (a^2 - b^2)}{4000 \times V_c \times f} \text{ (min)}$$

In the formula: T: Cutting time (min)  
 V<sub>c</sub>: Cutting speed (m/min)  
 f: Feed rate (mm/rev)

For end surface without hole, b=0, the formula is still valid.



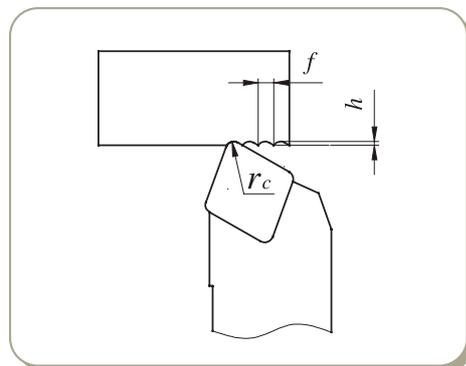
**5 Theoretical value calculation of machined surface roughness**

$$R = \frac{f^2}{8r_c} \times 1000 \text{ (}\mu\text{m)}$$

In the formula: R: Theoretical roughness value of machined surface  
 f: Feed rate (mm/rev)  
 r<sub>c</sub>: Nose radius (mm)

For example: When the feed rate is 0.2mm/rev, and the nose radius is 0.4mm, the theoretical roughness value of machined surface should be:

$$R = \frac{f^2}{8r_c} \times 1000 = \frac{0.2^2}{8 \times 0.4} \times 1000 = 12.5 \text{ (}\mu\text{m)}$$





#### Effect of three main turning parameters on machining

General turning

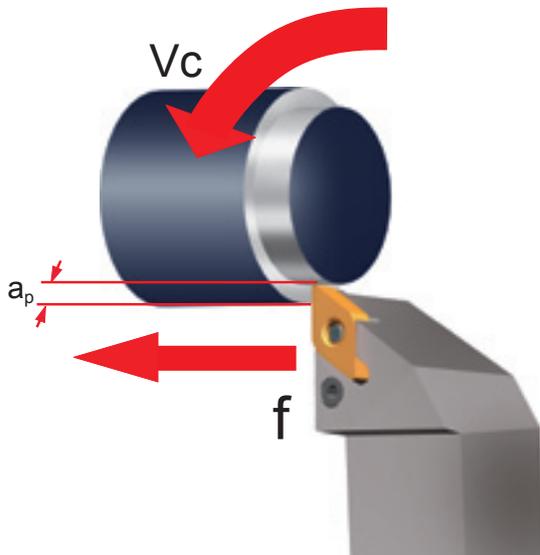
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General technical information for turning

#### Effects of three main parameters

Normally, short machining time, long tool life and high machining precision are expected in machining, so the material quality, hardness, and shape of the workpiece, and properties of machine should be fully considered, and then we can select suitable tools and adopt high-efficiency cutting parameters, namely three parameters.



#### Cutting speed ( $V_c$ )

When the workpiece is rotating on the machine, the number of its rotation per minute is defined as Rotating speed of main axle ( $n$ ). Because of its rotation, the cutting speed measured on the contacting point of diameter is defined as linear speed, m/min. Normally, linear speed is considered to measure the effect of cutting speed on machining.

#### Effect of cutting speed

Cutting speed has significant effect on tool life. When the cutting speed is increased, cutting temperature will increase and tool life will be shortened. Cutting speed varies according to the different types and hardness of workpiece. The below conclusions are reached after many cutting experiments:

(1) Normally tool life would be reduced to half when the cutting speed is increased by 20%. Tool life would be 20% of the original life if the cutting speed is raised by 50%.

(2) Low speed (20-40m/min) cutting could easily cause vibration and shorten tool life.

#### Feed rate ( $f_n$ )

Feed rate is defined as the moving distance of tool after workpiece rotates for one circle, measured by mm/rotation.

#### Effect of feed rate

Feed rate is a key factor that determines surface quality. Meanwhile it also affect the range of chip forming and the thickness of chips during machining.

In term of the effect on tool life, small feed rate leads to serious abrasion on clearance face, greatly reducing tool life.

#### Cutting depth ( $a_p$ )

Cutting depth is defined as the difference between machined surface and unmachined surface, measured by mm. It is half the difference value between the original diameter and machined diameter.

#### Effect of cutting depth

Cutting depth should be determined by the machining allowance and shape of workpiece, power and rigidity of machine, and tool rigidity.

The change of cutting depth has little effect on tool life. If the cutting depth is too low, the cutting nose only scrapes the hardened layer on the workpiece surface, reducing tool life. When there is hardened oxide layer on workpiece surface, higher cutting depth should be adopted within the possible range of machine's power to avoid cutting nose just cutting the hardened layer of workpiece.



Comparison table for turning inserts chipbreaker

Comparison table for turning insert chipbreaker

Negative inserts

ISO	Machining range	ZCCCT	SANDVIK	KORLOY	TaeguTec	WALTER	SECO	MITSUBISHI	SUMITOMO	KENAMETAL	DIJET	HITACHI	TUNGALOY	KYOCERA	VALANTTE
	For extra finishing		QF LC	HU	FA FX	FP5	FF1 FF2	PK※FH, FY FP, FS	FB FA, FL	FF		FE	01※, TF, ZF 11	DP※, GP, PP, VF, XP XP-T, XF	F1
	For finishing	DF	PF XF	HF	FG FM	MP3, FV5 NF3, NF4	MF2	LP, C SA, SH	FE, SU, LU, SX, SE	LF, FN	PF, UR UA, UT	BE, CE B, BH	NS, 27 TSF, AS, TQ	HQ, CQ PQ	F2(2B), F5(5C)
	For finishing (Soft steel)	SF		HF	FC			SY					17	XQ, XS	
	For finishing (Wiper)	WGF	WL WF	HW	WS	NF	W-MF2	SW	LUW SEW	FW			AFW, ASW FW, SW	WF WP, WQ	
	For semi-finishing	DM PM	PM QM XM	HA HC HM	PC FT MT SM MP	MF3 MV5	MF3 MF5 M3 M5	MP MA MH	GU UG UX GE	P MN	PG UB	CT AB AY AE AH	NM, ZM TM, DM 37, AM 33, 38	PG, C-J, GS, PS HS, PT	F3, F4(8A), M2(2C), M3 M4, M5(5B), M6, M7, 55, M8
	For semi-finishing (Wiper)	WGM	WMX WM		WT	NM	W-M6 W-M3 W-MF5	MW	GUW	MW RW				WE	
	For light roughing	LR(Single-site) DR(Double-site)	PR, HM XMR		RT	NM6, RP5 NM9, RP7	MR7 MR6	RP GH	MU, MX ME, UZ	RN RP	UD, GG	Y, RE	TH	RH, GT	
	For heavy roughing	HDR HPR	QR PR HR MR	HR HH	RX, HD HY, HT RT, RH HZ, EH	NR6 NRF NRR	R5, R56 R4, R6 R7, PR9 R57, RR6 R8	HM, HL HZ, HX HV, HR	MP, HG HP, HU HW, HF	MR, RM RH	UC	TE, UE HX, HE H	TU, TRS TUS	PX	R3, R4, R6(9A) R7(9B), R9(9C)

※ Periphery grinding type

Comparison table for turning inserts chipbreaker

Threading

Parting and grooving

General turning



## Comparison table for turning inserts chipbreaker

Threading  
Parting and grooving  
General turning

Comparison table for turning inserts chipbreaker

### Comparison table for turning insert chipbreaker

Negative inserts

ISO	Machining range	ZCCCT	SANDVIK	KORLOY	TaeguTec	WALTER	SECO	MITSUBISHI	SUMITOMO	KENNAMETAL	DIJET	HITACHI	TUNGALOY	KYOCERA	VALANTTE
M	For finishing	EF	MF	HA	SF	NF4, FM5	MF1	SH, LM	SU, EF	FP, LF*		MP, AB BH	SS	MQ GU	F1, F2(2B), F5(5C)
	For semi-finishing	EM	MM, QM XM, K	HS	ML, EM MM, VF	MM5 RM5 NM4	MF4	MS, ES GM, MM MA	EX, EG UP, GU HM	MP	SF, SG SZ	DE PV SE AH	SF, SA, SM, S	MS, MU SU, HU, ST, TK	F3, F4(8A), M2(2C), M3 M4, M5(5B), M6, M7, 55, M8
	For roughing	ER	MR	GS, HM	MT	NR4 NR5	M5, MR7 RR6	GH, HZ RM, HL	EM, MU MP	UP RP		AE	TH, SH		R3, R4, R6(9A) R7(9B), R9(9C)
K	For finishing	PM	KF			MK5	MF2, M3 MF5, M4	VA AH		FN		VA, AH	CF	KQ	F2(2B)
	For Semi-Finishing	PM	KM	Through chip-breaker, HM	MC	RK5 NM5	M5	V AE	UZ, GZ UX	RP, UN	PG	V, AE	CM	KG, C	M5(5B), M6, M8
S	For roughing	Without chip-breaker	KR KRR	GR, HR GH	KT	RK7		RE			GG	RE		KH, GC	R3, R4, R7(9B)
	For finishing	NF/NGF	SF SGF*		EA	NF4, NFT MS3	MF5, MF1 MF4	FJ*, LS MJ, MJ*	EF, SU*	FS, LF*, MS			HRF	MQ	F5(5C), M2(2C)
	For semi-finishing	NM	NGP*, SM			NMT, NMS	M1	MS	EG, EX SU*, UP	NGP*, UP, P		VI	HRM, SA HMM	SQ, MS MU, TK	M4, M5(5B), M7, 55
	For roughing	SNR	SR SMR		ET	NRS NRT	MR3 MR4	GJ RS	MU	RP				SG SX	

\* Periphery grinding type



Comparison table for turning inserts chipbreaker

Comparison table for turning insert chipbreaker															
Positive inserts															
ISO	Machining range	ZCCCT	SANDVIK	KORLOY	TaeguTec	WALTER	SECO	MITSUBISHI	SUMITOMO	KENAMETAL	DIJET	HITACHI	TUNGALOY	KYOCERA	VALANTTE
<b>P</b>	For finishing	SF, HF	PF, UF XF	HFP	FA, FG FX	PF4 FP4	FF1 F1	FV, SV FP, LP	FP, LU SU, SK	11, UF LF, FP		JQ	PF, PSF PS, PSS	GP, XP VF, PP	PF4 JQ, JZ
	For finishing (Wiper)		WF			PF2* PF, PF5*	W-F1	SW	LUW SDW	FW				WP	
<b>M</b>	For semi-finishing	HM	UM, XM PM, PR XR	HMP C25	MT, PC	PS5 PM5 FP6	F2 MF2, M5	MV, MP	MU	MF, MP	FT	JE	PM 23, 24	HQ, XQ GK MF*	PM2 PM4
	For semi-finishing (Wiper)		WM		WT	PM	W-F2 W-M3	MW		MW					
<b>K</b>	For finishing	EF	MF	HFP		FM4	F1, F2	FM, LM	FC*, SI* LU, SU	MF		MP	PF, PSF PS, PSS	CF*, CK* GQ*, GF* MQ, SK	1A, 2A
	For semi-finishing	EM	MM	HMP C25		MM4 RM4		MM	MU	MP			PM	HQ GK	PM2 PM4
<b>S</b>	For semi-finishing	HM, HR without chip-breaker	KF KM KR	HMP C25		FK6	F1 M3, M5	MK Without chip-breaker	MU Without chip-breaker	Without chip-breaker			CM Without chip-breaker	Without chip-breaker*	PM2 PM4
	For finishing/ For semi-finishing	NGF						FS*, LS* FJ*, FSP* LS-P*	SL*	LF* HP*				MQ	PM2, 1A 2A
<b>N</b>	For general turning	LH	AL	TAAK MA	FL	PM2, FN2 MN2	AL*	AZ*	AG	HP*	ALU ACB ASF		AL*	AH*	1L, 1A 2A

\* Periphery grinding type

Comparison table for turning inserts chipbreaker

Threading

Parting and grooving

General turning