ZCC·CT

2015-2016

CUTTING TOOLS

◆Turning Tools ◆Milling Tools ◆Boring Tools

ZHUZHOU CEMENTED CARBIDE
CUTTING TOOLS CO., LTD.

By using this catalogue, you can get the following information:

- Information on new products.
- Product information: Turning tools, milling tools, boring tools, standard product series of tool holding system, description, basic dimensions, recommended grade and cutting parameters, stock, etc.
- Technical instruction: Tool selection and application, selection of insert chipbreaker and grade, typical machining case, etc.
- General technical information.

To better understand and use this catalogue, please pay more attention to the “how to choose ***”, “*** overview” sections in the front of each main catalogue introduction.

Statement

- The product only provides the specifications information based on current productive conditions. We will continuously improve and innovate along with the development of technology.
- The product photos in the catalogue are for demonstration only. Due to different production technologies, product color (such as insert coating color, tool surface color) might be different from the colors shown in this catalogue. It would be advisable to refer to the real product.
- Please note that in the catalogue, the minimum ordering quantity of common inserts and ceramic insert is 10 pcs, and the minimum ordering quantity of CBN & PCD inserts is 2 pcs.
- The stock may change because new product or new grade is released.

Symbol explanation

😊 Good working condition

😐 Normal working condition

☹ Bad working condition

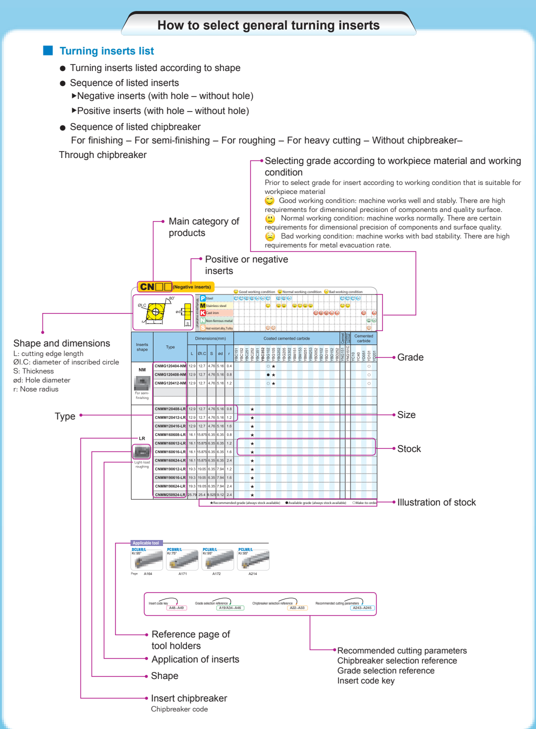
★ Recommended grade (always stock available)

● Available grade (always stock available)

○ Make-to-order

▲ Stock available　　△ Make-to-order

◎ Very suitable　　○ Suitable



Machining application	Geometry	Number of teeth	Type	Shape	Size range	Workpiece material: P Carbon steel, alloy steel	P Pre-hardened steel	M Stainless steel	K Cast iron	N Copper alloy	N Aluminum alloy	S Heat resistant alloy, Titanium alloy	H High hardness steel: Below 55HRC	H High hardness steel: Above 55HRC	Page: Specification	Page: Cutting parameters
High-performance general milling	Flattened	4	UM-4E (Unequal pitch)		Ø4.0~Ø20.0	◎	◎	○	◎			○	◎		B230	B360-361
			UM-4EL (Unequal pitch)		Ø4.0~Ø20.0	◎	◎	○	◎			○	◎		B231	B360-361
			UM-4EFP (Unequal pitch)		Ø6.0~Ø20.0	◎	◎	○	◎			○	◎		B232	B362-363
	Radius	4	UM-4R (Unequal pitch)		Ø4.0~Ø20.0	◎	◎	○	◎			○	◎		B233	B364-365
			UM-4RL (Unequal pitch)		Ø6.0~Ø16.0	◎	◎	○	◎			○	◎		B234	B364-365
			UM-4RFP (Unequal pitch)		Ø6.0~Ø16.0	◎	◎	○	◎			○	◎		B235	B366
	Flattened	2	PML-2E (Corner protection)		Ø1.0~ Ø20.0	◎	◎	○	◎			○			B236	B367
			PML-2F (Sharp)		Ø1.0~ Ø20.0	◎	◎	○	◎			○			B237	B368
			PML-2EL (Corner protection)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B238	B367
			PML-2FL (Sharp)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B239	B368
			PML-2EFP (Corner protection)		Ø6.0~ Ø20.0	◎	◎	○	◎			○			B240	B369
		3	PML-3E-H (Corner protection)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B241	B370
			PML-3EL-H (Corner protection)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B242	B370
		4	PML-4E-G (Corner protection)		Ø1.0~ Ø20.0	◎	◎	○	◎			○			B243	B371-372
			PML-4F-G (Sharp)		Ø1.0~ Ø20.0	◎	◎	○	◎			○			B244	B373-374
			PML-4EL-G (Corner protection)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B245	B371-372
			PML-4FL-G (Sharp)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B246	B373-374
			PML-4EX-G (Corner protection)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B247	B375
			PML-4E (Corner protection)		Ø1.0~ Ø20.0	◎	◎	○	◎			○			B248	B376-377
			PML-4EL (Corner protection)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B249	B376-377
			PML-4E-H (Corner protection)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B250	B371-372
			PML-4EL-H (Corner protection)		Ø3.0~ Ø20.0	◎	◎	○	◎			○			B251	B371-372
			PML-4EFP (Corner protection)		Ø6.0~ Ø20.0	◎	◎	○	◎			○			B252	B378-379
		6	PML-6E (Corner protection)		Ø6.0~ Ø20.0	◎	◎	○	◎			○			B253	B380
			PML-6EL (Corner protection)		Ø6.0~ Ø20.0	◎	◎	○	◎			○			B254	B381
	Ball nose	2	PML-2B		R0.5~R10.0	◎	◎	○	◎			○			B255	B382-383

◎Very suitable ○Suitable

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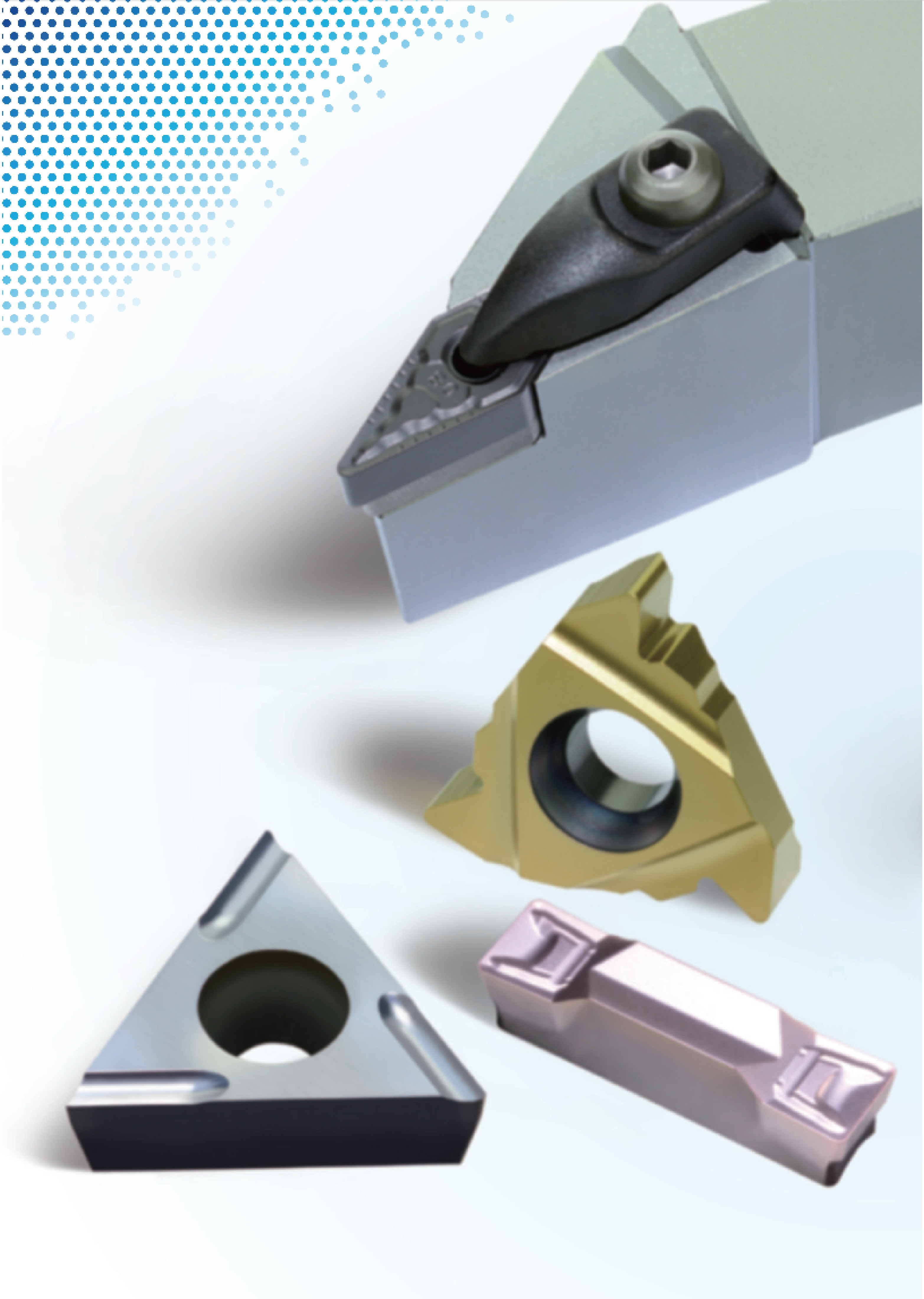
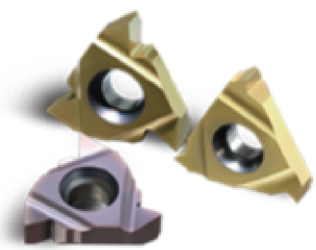


Turning Tools

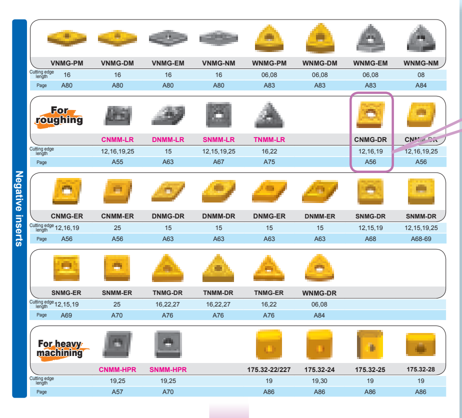
General turning tools
Parting and grooving tools
Threading tools

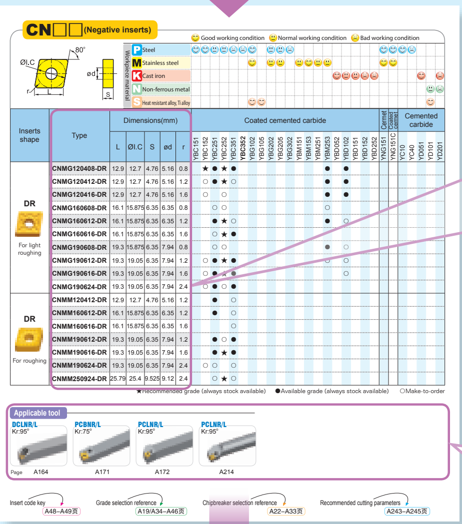
Turning A

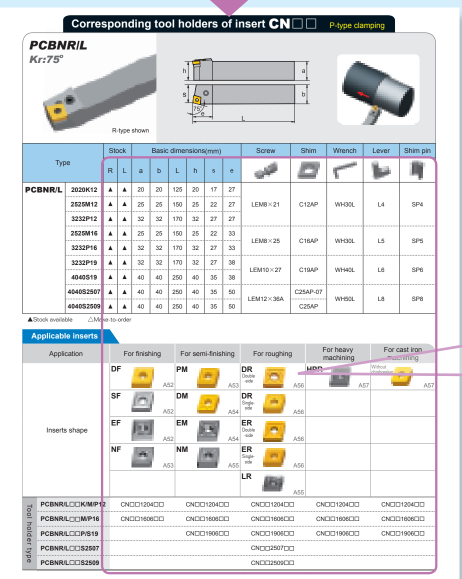


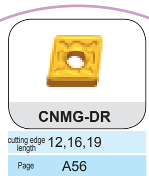
Guide to selecting general turning tools

Selection A









Step **1** : **I want to order inserts**

•Shape, •Size, •Chipbreaker

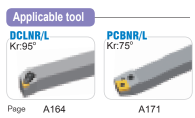
Dimensions(mm)				
L	I.C	S	d	r
12.9	12.7	4.76	5.16	0.4

Step **2** : **Details of inserts**

•Shape, •Size, •Chipbreaker, •Grade, •Stock

Applicable tool holders

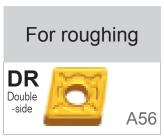
•Approach angle, Page



Step **3** : **Selecting tool holder**

•Tool holder type, Size, •Stock

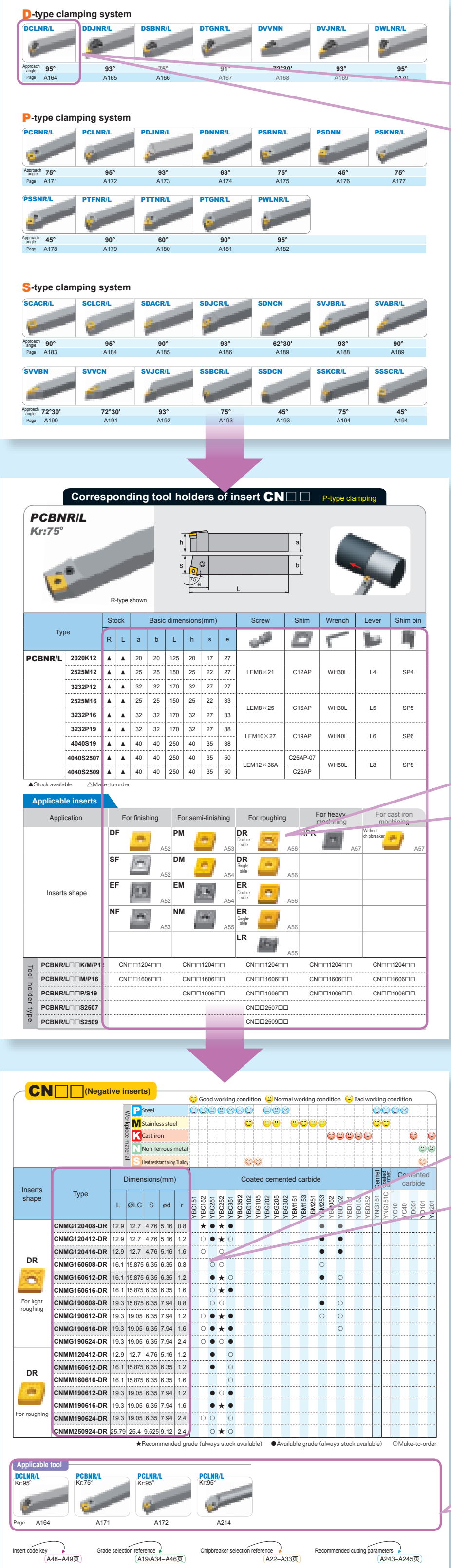
•Operation genre, •Applicable inserts

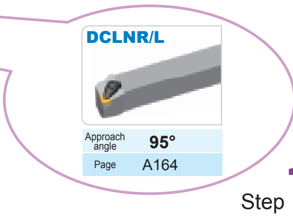


Step **4** : **Return to locate inserts**

Guide to selecting general turning tools

Selection B





Step **1** : **I want to order tool holders**

•Approach angle, •Clamping system

Step **2** : **Details of tool holder**

•Tool holder type, Size, •Operation genre

•Applicable inserts

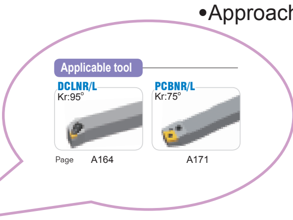
Dimensions(mm)				
L	I.C	S	d	r
12.9	12.7	4.76	5.16	0.4

Step **3** : **Details of insert**

•Shape, •Size, •Chipbreaker, •Grade, •Stock

Applicable tool holders

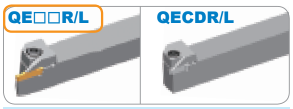
•Approach angle, •Page



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

Guide to selecting parting and grooving tools

Parting and grooving tools



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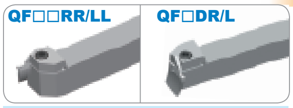

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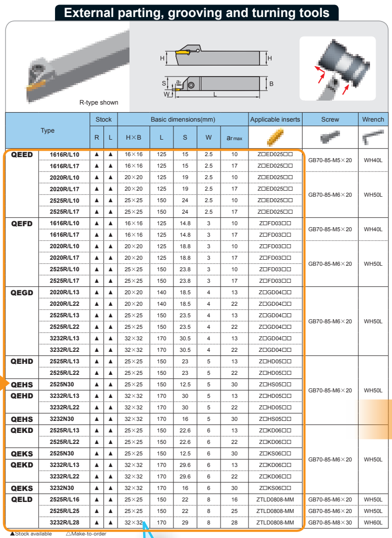
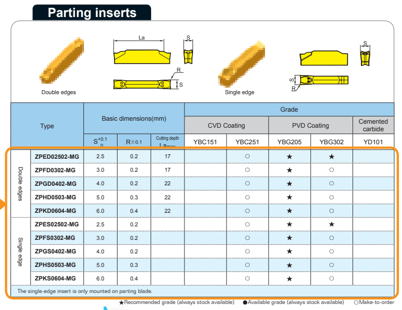


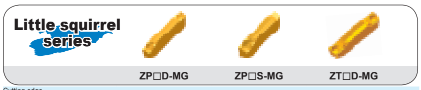


1 Selection of tool holder type

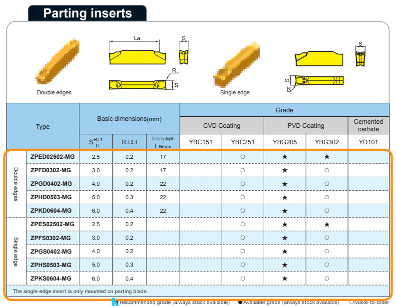
2 Tool holder type, Size and applicable inserts

3 Insert type, Chip-breaker, Size and grade

Parting and grooving inserts



	ZP□D-MG	ZP□S-MG	ZT□D-MG
Cutting edge width	2.5,3,4,5,6	2.5,3,4,5,6	2.5,3,4,5,6
Page	A257	A257	A258

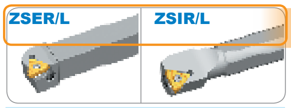


1 Selecting insert type

2 Insert type, Chip-breaker, Size and grade

Guide of selecting threading tools

Threading tools



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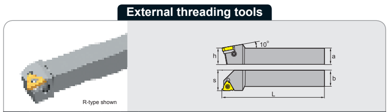
1 Selection of tool holder type

External threading tools



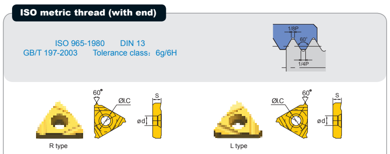
Type		Stock	Basic dimensions(mm)					Applicable inserts	Inserts screw	Shim	Shim screw	Wrench
			a	h	b	L	s					
ZSER	1616H16	▲	16	16	16	100	20	Z16ER□□□□	I60 M3.5X12TT	MT16-□□MN	SM4X8C	WT15IP
	2020K16	▲	20	20	20	125	25					
	2525M16	▲	25	25	25	150	32					
	3225P16	▲	32	32	25	170	32					
	3232P16	▲	32	32	32	170	40					
	2525M22	▲	25	25	25	150	32	Z22ER□□□□	I60 M5X17	MT22-□□MN	SM5X8.5	WT20IP
	3225P22	▲	32	32	25	170	32					
	3232P22	▲	32	32	32	170	40					
	4040S22	△	40	40	40	250	50					
ZSEL	1616H16	▲	16	16	16	100	20	Z16EL□□□□	I60 M3.5X12TT	MT16-□□MN	SM4X8C	WT15IP
	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	Z22EL□□□□	I60 M5X17	MT22-□□MN	SM5X8.5	WT20IP
	3225P22	▲	32	32	25	170	32					
	3232P22	▲	32	32	32	170	40					
	4040S22	△	40	40	40	250	50					

▲Stock available △Make-to-order

2 Tool holder type, Size and applicable inserts

ISO metric thread (with end)

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

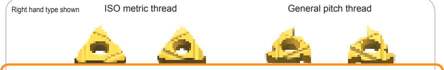


	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch	S	ØI.C	ød	YBG203	YBG205
External thread	Z16ER0.5ISO	Z16EL0.5ISO	0.50	3.52	9.525	4.0	★	○
	Z16ER0.75ISO	Z16EL0.75ISO	0.75	3.52	9.525	4.0	★	○
	Z16ER1.0ISO	Z16EL1.0ISO	1.00	3.52	9.525	4.0	★	○
	Z16ER1.25ISO	Z16EL1.25ISO	1.25	3.52	9.525	4.0	★	○
	Z16ER1.5ISO	Z16EL1.5ISO	1.50	3.52	9.525	4.0	★	○
	Z16ER1.75ISO	Z16EL1.75ISO	1.75	3.52	9.525	4.0	★	○
	Z16ER2.0ISO	Z16EL2.0ISO	2.00	3.52	9.525	4.0	★	○
	Z16ER2.5ISO	Z16EL2.5ISO	2.50	3.52	9.525	4.0	★	○
	Z16ER3.0ISO	Z16EL3.0ISO	3.00	3.52	9.525	4.0	★	○
	Z22ER3.5ISO	Z22EL3.5ISO	3.50	4.65	12.7	5.0	★	○
	Z22ER4.0ISO	Z22EL4.0ISO	4.00	4.65	12.7	5.0	★	○
	Z22ER4.5ISO	Z22EL4.5ISO	4.50	4.65	12.7	5.0	★	○
	Z22ER5.0ISO	Z22EL5.0ISO	5.00	4.65	12.7	5.0	★	○
	Z22ER5.5ISO	Z22EL5.5ISO	5.50	4.65	12.7	5.0	★	○
	Z22ER6.0ISO	Z22EL6.0ISO	6.00	4.65	12.7	5.0	★	○

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

3 Insert type, Chip-breaker, Size and grade

Threading inserts

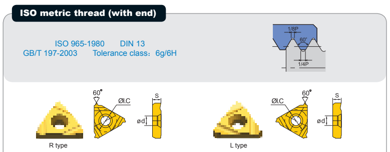


	External thread	Internal thread	External thread	Internal thread
Pitch/ Number of pitch	0.5~6	0.5~6	0.5~5	0.5~5
Page	A290	A291	A392	A392

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 coating grade	
	The right hand tools	The left hand tools	Pitch	S	ØI.C	ød	YBG203	YBG205
External thread	Z16ER0.5ISO	Z16EL0.5ISO	0.50	3.52	9.525	4.0	★	○
	Z16ER0.75ISO	Z16EL0.75ISO	0.75	3.52	9.525	4.0	★	○
	Z16ER1.0ISO	Z16EL1.0ISO	1.00	3.52	9.525	4.0	★	○
	Z16ER1.25ISO	Z16EL1.25ISO	1.25	3.52	9.525	4.0	★	○
	Z16ER1.5ISO	Z16EL1.5ISO	1.50	3.52	9.525	4.0	★	○
	Z16ER1.75ISO	Z16EL1.75ISO	1.75	3.52	9.525	4.0	★	○
	Z16ER2.0ISO	Z16EL2.0ISO	2.00	3.52	9.525	4.0	★	○
	Z16ER2.5ISO	Z16EL2.5ISO	2.50	3.52	9.525	4.0	★	○
	Z16ER3.0ISO	Z16EL3.0ISO	3.00	3.52	9.525	4.0	★	○
	Z22ER3.5ISO	Z22EL3.5ISO	3.50	4.65	12.7	5.0	★	○
	Z22ER4.0ISO	Z22EL4.0ISO	4.00	4.65	12.7	5.0	★	○
	Z22ER4.5ISO	Z22EL4.5ISO	4.50	4.65	12.7	5.0	★	○
	Z22ER5.0ISO	Z22EL5.0ISO	5.00	4.65	12.7	5.0	★	○
	Z22ER5.5ISO	Z22EL5.5ISO	5.50	4.65	12.7	5.0	★	○
	Z22ER6.0ISO	Z22EL6.0ISO	6.00	4.65	12.7	5.0	★	○

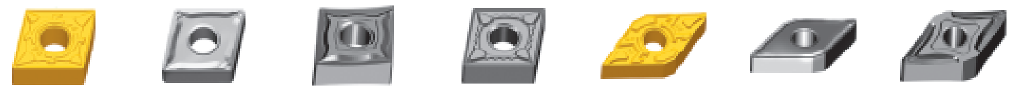
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

2 Insert type, Chip-breaker, Size and grade

Cemented carbide and cermet inserts

Negative inserts

For finishing



	CNMG-DF	CNMG-SF	CNMG-EF	CNEG-NF	DNMG-DF	DNMG-SF	DNMG-EF
Cutting edge length	09,12	09,12	09,12	12	11,15	11,15	11,15
Page	A52	A52	A52	A53	A59	A60	A60

	DNEG-NF	SNMG-DF	SNMG-EF	SNMG-SF	TNMG-DF	TNMG-SF	TNMG-EF	VNMG-DF
Cutting edge length	15	09,12	09,12,15	09,12,15	16,22	11,16,22	11,16,22	16
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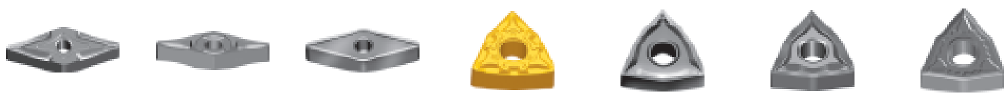
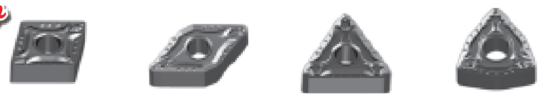
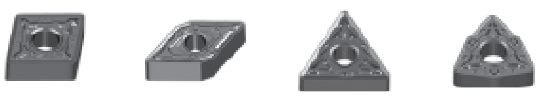


	VNMG-EF	VNEG-NF	VNMG-SF	WNMG-DF	WNMG-SF	WNMG-EF	WNEG-NF
Cutting edge length	16	16	16	06,08	06,08	06,08	08
Page	A79	A79	A79	A81	A81	A82	A82

Wiper *New*

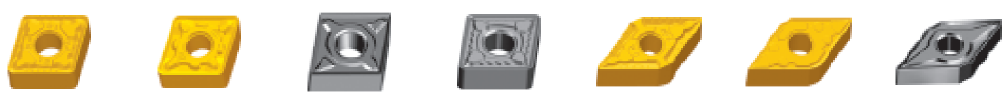


	CNMG-WGF	DNMX-WGF	TNMX-WGF	WNMG-WGF
Cutting edge length	12	11,15	16	06,08
Page	A52	A59	A73	A81

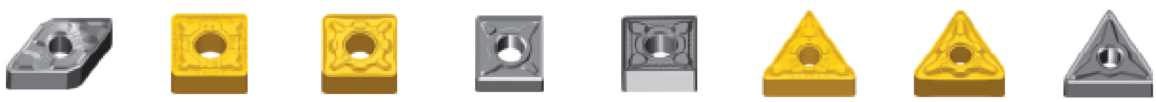


	CNMG-WGM	DNMX-WGM	TNMX-WGM	WNMG-WGM
Cutting edge length	12	15	16	06,08
Page	A53	A61	A74	A82

For semi-finishing

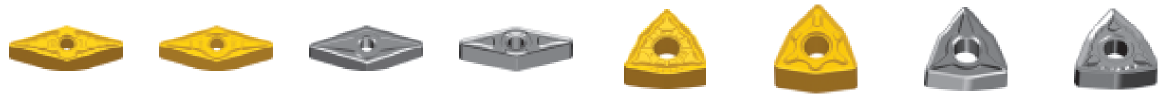


	CNMG-PM	CNMG-DM	CNMG-EM	CNMG-NM	DNMG-PM	DNMG-DM	DNMG-EM
Cutting edge length	09,12,16,19	09,12,16,19	12,16	12	11,15	11,15	11,15
Page	A53	A54	A54	A55	A61	A62	A62



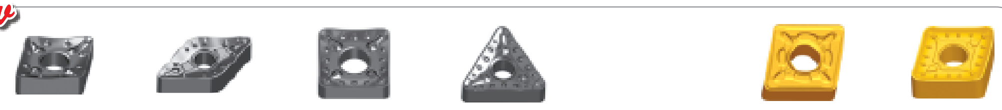
	DNMG-NM	SNMG-PM	SNMG-DM	SNMG-EM	SNMG-NM	TNMG-PM	TNMG-DM	TNMG-EM
Cutting edge length	15	09,12,15,19	09,12,15,19	12,15	12	11,16,22	11,16,22	16,22
Page	A62	A66	A66	A67	A67	A74	A75	A75

Negative inserts



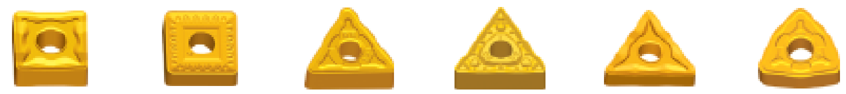
	VNMG-PM	VNMG-DM	VNMG-EM	VNMG-NM	WNMG-PM	WNMG-DM	WNMG-EM	WNMG-NM
Cutting edge length	16	16	16	16	06,08	06,08	06,08	08
Page	A80	A80	A80	A80	A83	A83	A83	A84

New **For roughing**



	CNMM-LR	DNMM-LR	SNMM-LR	TNMM-LR		CNMG-DR	CNMM-DR
Cutting edge length	12,16,19,25	15	12,15,19,25	16,22		12,16,19	12,16,19,25
Page	A55	A63	A67	A75		A56	A56

	CNMG-ER	CNMM-ER	DNMG-DR	DNMM-DR	DNMG-ER	DNMM-ER	SNMG-DR	SNMM-DR
Cutting edge length	12,16,19	25	15	15	15	15	12,15,19	12,15,19,25
Page	A56	A56	A63	A63	A63	A63	A68	A68-69



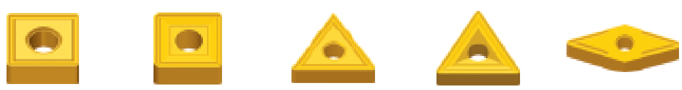
	SNMG-ER	SNMM-ER	TNMG-DR	TNMM-DR	TNMG-ER	WNMG-DR
Cutting edge length	12,15,19	25	16,22,27	16,22,27	16,22	06,08
Page	A69	A70	A76	A76	A76	A84

New **For heavy machining**

	CNMM-HPR	SNMM-HPR		175.32-22/227	175.32-24	175.32-25	175.32-28
Cutting edge length	19,25	19,25		19	19,30	19	19
Page	A57	A70		A86	A86	A86	A86

For profiling **All round**

	KNUX	CNMG	CNMM	DNMG
Cutting edge length	16	12,16,19	12,19	15,19
Page	A85	A58	A58	A64



	SNMG	SNMM	TNMG	TNMM	VNMG
Cutting edge length	09,12,15,19,25	09,12,19,25	11,16,22,27,33	16,22,27	16
Page	A71	A71-72	A77	A78	A80

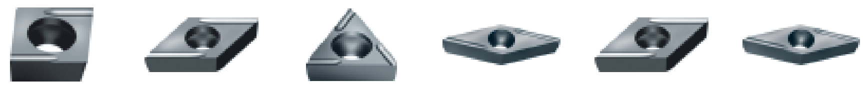
Without chipbreaker

	CNMA	DNMA	SNMA	TNMA	WNMA
Cutting edge length	12,16,19	11,15	09,12,15,19	16,22,27	06,08
Page	A57	A64	A72	A78	A84

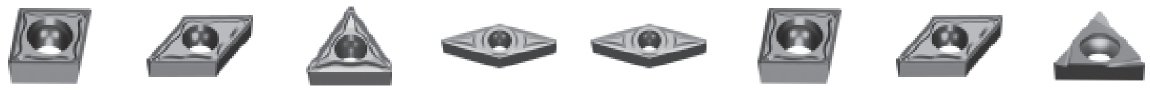
Positive inserts

For extra finishing

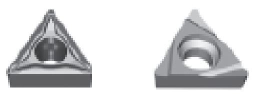
New -USF



	CCGT-USF	DCGT-USF	TCGT-USF	VCGT-USF	DPGT-USF	VPGT-USF
Cutting edge length	09	07,11	11	08,11	07,11	08,11
Page	A87	A91	A98	A103	A109	A112



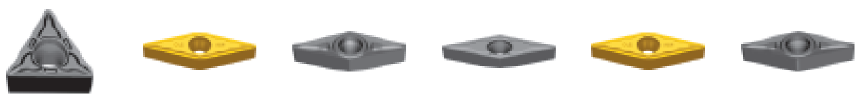
	CCGT-SF	DCGT-SF	TCGT-SF	VCGT-SF	VBGT-SF	CPGT-SF	DPGT-SF	TBGH-L
Cutting edge length	06,09	07,11	06,09,11	11	11	06,09	07,11	06
Page	A87	A91	A98	A103	A106	A108	A109	A111



	TPGT-SF	TPGH-L
Cutting edge length	09,11	09,11
Page	A111	A111

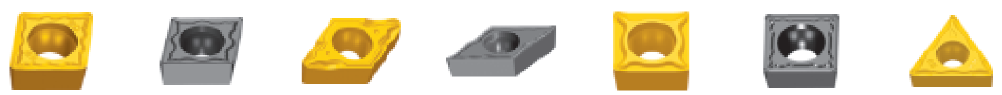
For finishing

	CCMT-HF	CCMT-EF	DCMT-HF	DCMT-EF	SCMT-HF	SCMT-EF	TCMT-HF
Cutting edge length	06,09,12	06,09,12	07,11	07,11	09	09	06,09,11,16
Page	A87	A88	A91	A92	A96	A96	A99

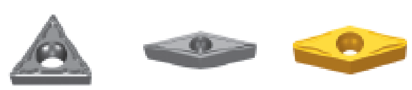


	TCMT-EF	VCGT-HF	VCGT-NF	VBMT-EF	VBMT-HF	VBET-NF
Cutting edge length	09,11,16	11	16	11,16	11	16
Page	A100	A103	A103	A106	A106	A106

For semi-finishing



	CCMT-HM	CCMT-EM	DCMT-HM	DCMT-EM	SCMT-HM	SCMT-EM	TCMT-HM
Cutting edge length	06,09,12	06,09,12	07,11	07, 11	09,12	09,12	09,11,16
Page	A88	A88	A92	A92	A96	A96	A101



	TCMT-EM	VBMT-EM	VBMT-HM
Cutting edge length	09,11,16	11	16
Page	A100	A107	A107

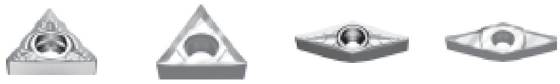
Positive inserts

For roughing

	CCMT-HR	DCMT-HR	SCMT-HR	TCMT-HR	VBMT-HR
Cutting edge length	06,09,12	11	09,12	09,11,16,22	16
Page	A89	A93	A97	A101	A107

For Al machining

	CCGX-LC	CCGX-LH	DCGX-LC	DCGX-LH	RCGX-LH	SCGX-LC	SCGX-LH
Cutting edge length	06,09,12	06,09,12	07,11	07,11	08	09,12	09,12
Page	A89	A89-90	A93	A93	A94	A97	A97



	TCGX-LC	TCGX-LH	VCGX-LC	VCGX-LH
Cutting edge length	09,11,16	09,11,16	11,16,22	11,16,22
Page	A101	A102	A104	A104

All round

	RCM(G)T	RCMX	SCMT	TCMT	WCMX-53
Cutting edge length	08,10,12,16,19	08,10,12,16,20,25,32	09,12	22	04,06,08
Page	A94	A95	A97	A102	A105

Without chipbreaker

	CCMW	DCMW	SCMW	TCMW	SPMW
Cutting edge length	06,09,12	07,11	06,09,12	11,16,22	09,12
Page	A90	A93	A97	A102	A110

New PCBN&PCD inserts

Negative inserts

	CNGA	DNGA	SNGA	TNGA	VNGA	WNGA
Cutting edge length	12	15	12	16	16	08
Page	A120	A122	A124	A126	A127	A128

PCBN inserts turning case

	CNGN	DNGN	SNGN	WNGN	RNGN
Cutting edge length	12	11	12,15	06,08	09,12,15
Page	A121	A123	A125	A129	A129

Positive inserts

	CCGW	CCMX	DCGW	DCMX	SCGW	SCMX	TCGW	TCMX
Cutting edge width	06,09,12	06,09,12	07,11	07,11	12	12	09,11,16	09,11,16
Page	A130	A131	A132	A132	A134	A134	A135	A136

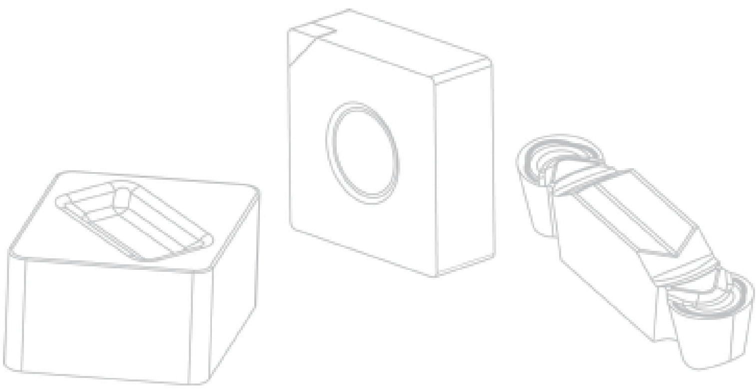
PCBN inserts turning case

	VBGW	VBMX	VCGW	VCMX	CCGN	DCGN	RCGN
Cutting edge width	16	16	16	16	12	11	09,12,15
Page	A137	A137	A138	A138	A131	A133	A138

Ceramic inserts

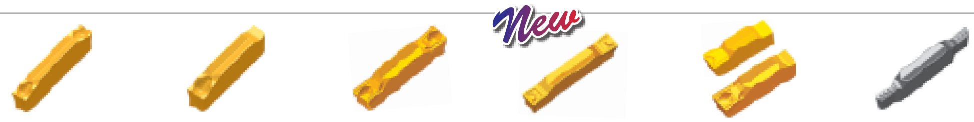
	CNGA	CNGN	CNGX	DNGA	DNGN	DNGX	SNGA	SNGX
Cutting edge width	12,16	12,16	12	15	15	15	12	12
Page	A142	A143	A144	A144	A145	A145	A146	A146

	SNGN	TNGA	TNGN	WNGA	RNGN
Cutting edge width	09,12,15,19,25	16,22	16,22	08	09,12,15,19,25
Page	A147	A148	A149	A150	A150



Parting and grooving inserts

Little squirrel series



	ZP□D-MG	ZP□S-MG	ZT□D-MG	ZT□D-MM	ZT□S-MG	ZT□D-EG
Cutting edge width	2.5,3,4,5,6	2.5,3,4,5,6	2.5,3,4,5,6	2,3,4,5,6,8	5,6	1-2.4(tailor-made)
Page	A257	A257	A258	A258	A258	A259

	ZT□D-EG	ZIMF-NM	ZR□D-MG	ZR□D-EG	ZIGQ-NM	ZR□D-LH	ZILD-LC
Cutting edge width	2.4-6.5(tailor-made)	3,4,5,6	2.5,3,4,5,6	3,4,5,6	3,4,5,6	6,8	8
Page	A259	A260	A260	A261	A261	A262	A262

Supplemental series

	ZQMX-1E
Cutting edge width	3.125,4.125,5.125,6.4,7.05
Page	A263

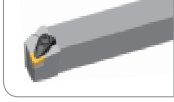
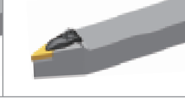
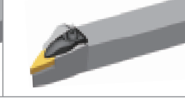
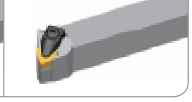
Threading inserts

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	A290	A291	A292	A292	A293	A293

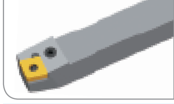
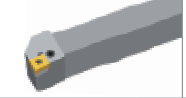
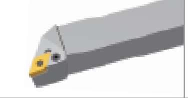
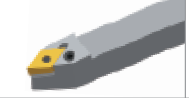
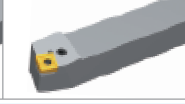
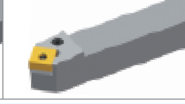
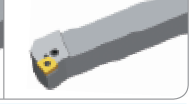
Right hand type shown	Unified thread		British Standard pipe thread		American standard pipe thread	
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/ Number of pitch	8~24	8~24	11~28	11~28	8~27	8~27
Page	A294	A294	A295	A295	A296	A296

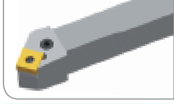
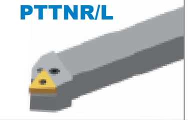
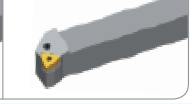
Tool holders for external turning

D-type clamping system

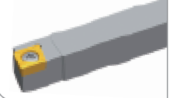
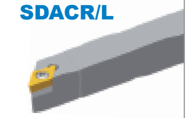
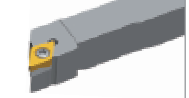
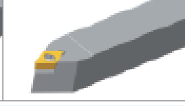
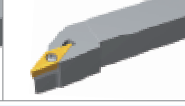
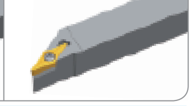
	DCLNR/L	DDJNR/L	DSBNR/L	DTGNR/L	DVVNN	DVJNR/L	DWLNR/L
							
Approach angle	95°	93°	75°	91°	72°30'	93°	95°
Page	A164	A165	A166	A167	A168	A169	A170

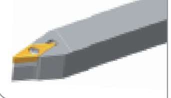
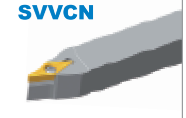
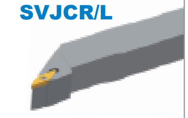
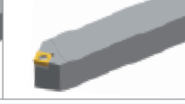
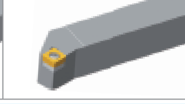
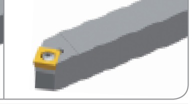
P-type clamping system

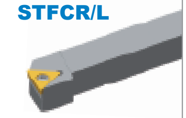
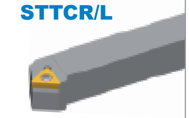
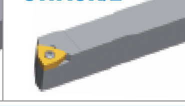
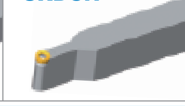
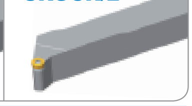
	PCBNR/L	PCLNR/L	PDJNR/L	PDNNR/L	PSBNR/L	PSDNN	PSKNR/L
							
Approach angle	75°	95°	93°	63°	75°	45°	75°
Page	A171	A172	A173	A174	A175	A176	A177

	PSSNR/L	PTFNR/L	PTTNR/L	PTGNR/L	PWLNR/L
					
Approach angle	45°	91°	60°	90°	95°
Page	A178	A179	A180	A181	A182

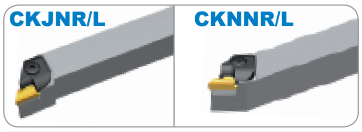
S-type clamping system

	SCACR/L	SCLCR/L	SDACR/L	SDJCR/L	SDNCN	SVJBR/L	SVABR/L
							
Approach angle	90°	95°	90°	93°	62°30'	93°	90°
Page	A183	A184	A185	A186	A187	A188	A189

	SVVBN	SVVCN	SVJCR/L	SSBCR/L	SSDCN	SSKCR/L	SSSCR/L
							
Approach angle	72°30'	72°30'	93°	75°	45°	75°	45°
Page	A190	A191	A192	A193	A193	A194	A194

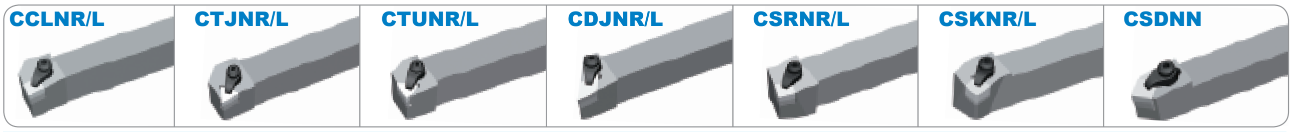
	STACR/L	STFCR/L	STGCR/L	STTCR/L	SWACR/L	SRDCN	SRGCR/L
							
Approach angle	90°	91°	91°	60°	90°		
Page	A195	A195	A196	A197	A198	A199	A200

C-type clamping system

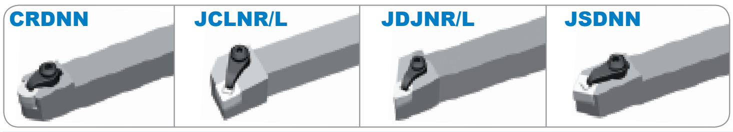


	CKJNR/L	CKNNR/L
Approach angle	**93°**	**63°**
Page	A201	A201

Turning tool holders for ceramic inserts



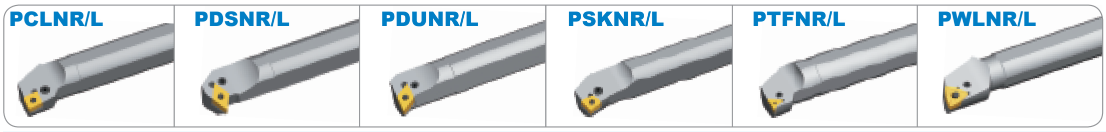
	CCLNR/L	CTJNR/L	CTUNR/L	CDJNR/L	CSRNR/L	CSKNR/L	CSDNN
Approach angle	**95°**	**93°**	**93°**	**93°**	**75°**	**75°**	**45°**
Page	A202	A202	A203	A203	A204	A204	A205



	CRDNN	JCLNR/L	JDJNR/L	JSDNN
Approach angle		**95°**	**93°**	**45°**
Page	A205	A206	A206	A207

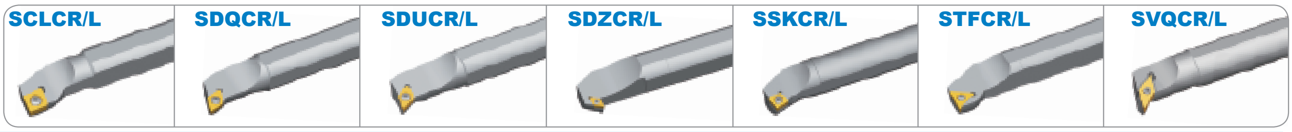
Turning tool holders for internal machining

P-type clamping system

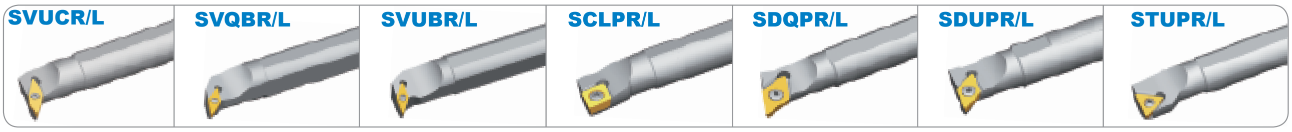


	PCLNR/L	PDSNR/L	PDUNR/L	PSKNR/L	PTFNR/L	PWLNR/L
Approach angle	**95°**	**62°30'**	**93°**	**75°**	**90°**	**95°**
Page	A214	A215	A216	A217	A218	A219

S-type clamping system



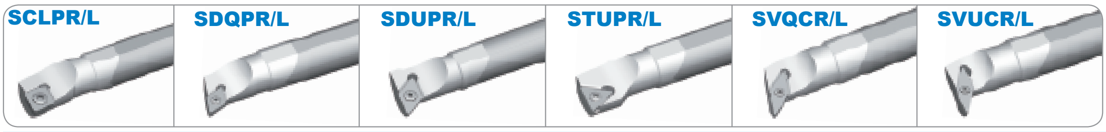
	SCLCR/L	SDQCR/L	SDUCR/L	SDZCR/L	SSKCR/L	STFCR/L	SVQCR/L
Approach angle	**95°**	**107°30'**	**93°**	**95°**	**75°**	**91°**	**107°30'**
Page	A220	A221	A222	A223	A224	A225	A226



	SVUCR/L	SVQBR/L	SVUBR/L	SCLPR/L	SDQPR/L	SDUPR/L	STUPR/L
Approach angle	93°	107°30'	93°	95°	107°30'	93°	93°
Page	A227	A228	A229	A230	A231	A232	A233

	SCFCR	SCLCR
Approach angle	90°	95°
Page	A234	A235

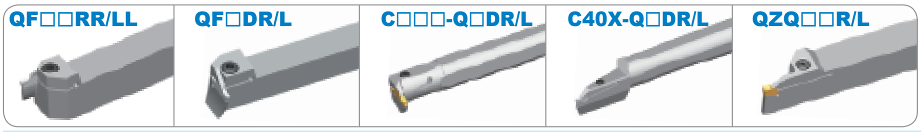
Damping tool holders



	SCLPR/L	SDQPR/L	SDUPR/L	STUPR/L	SVQCR/L	SVUCR/L
Approach angle	95°	107°30'	93°	93°	107°30'	93°
Page	A237	A238	A239	A240	A241	A241

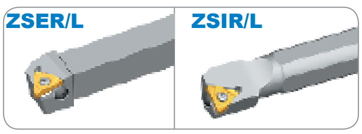
Parting and grooving tools

	QE□□R/L	QECDR/L	QX□DR/L	QE□SR/L	QE□S□□N	QZS□	QF□□R/L
Page	A266	A267	A267	A268	A269	A269	A270-271



	QF□□RR/LL	QF□DR/L	C□□□-Q□DR/L	C40X-Q□DR/L	QZQ□□R/L
Page	A272-275	A276-277	A278	A278	A280

Threading tools



	ZSER/L	ZSIR/L
Page	A298	A299

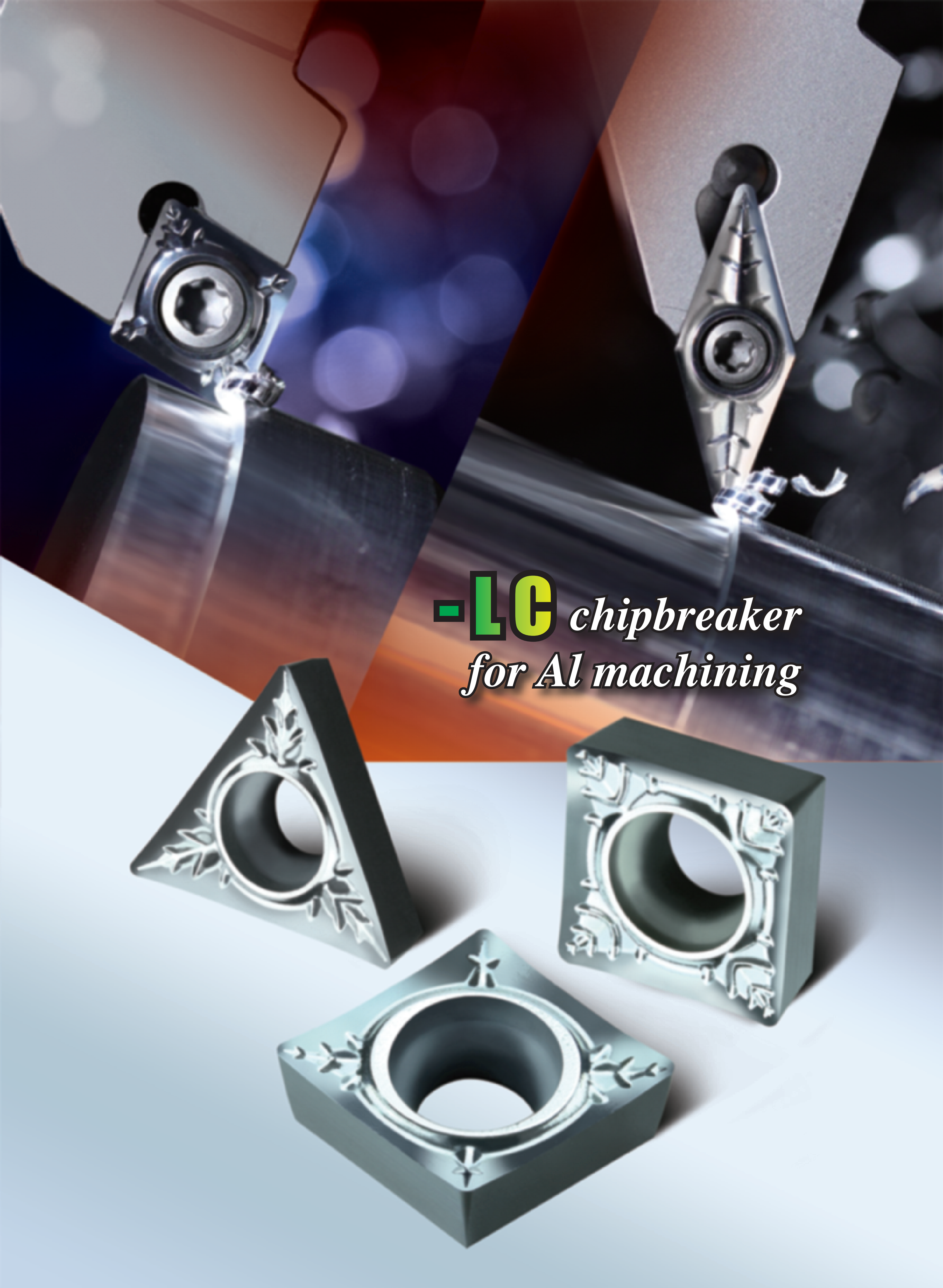

-WGM
-WGF
New product for turning
Wiper

- HPR

New product for turning

New Generation of Roughing Chipbreaker

- LR


-LC chipbreaker
for Al machining

New product for turning

YBM153

Grade for stainless steel machining

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

ISO	General turning								Threading	Parting and grooving		
Code	Coating CVD	Coating PVD	Cermet	Coated cermet	Ceramic	Cemented carbide	PCBN	PCD	Coating PVD	Coating CVD	Coating PVD	Cemented carbide
P Steel (01, 10, 20, 30, 40)	YBC151, YBC251, YBC152, YBC252, YBC351, YBC352	YBG102, YBG202	YNG151	YNG151C	CN2000, CA1000	YC10, YC40			YBG202, YBG203	YBC251	YBG205, YBG302	
M Stainless steel (01, 10, 20, 30, 40)	YBM151, YBM153, YBM251, YBM253	YBG202, YBG205	YNG151	YNG151C					YBG202, YBG203		YBG205, YBG302	
K Cast iron (01, 10, 20, 30)	YBD052, YBD102, YBD152, YBD151, YBD252		YNG151	YNG151C	CN1000, CN2000	YD051, YD201	YCB211, YCB011, YZB221, YZB231		YBG202, YBG203		YBG205, YBG302	YD201
N Non ferrous metal (01, 10, 20, 30)						YD101		YCD412, YCD011, YCD421, YCD511	YBG202, YBG203			YD201
S Heat resistant alloy & Ti alloy (01, 10, 20, 30)		YBG102, YBG105, YBG202				YD101			YBG202, YBG203		YBG102, YBG302	YD201
H Super hard material (01, 10, 20, 30)							YCB121, YCB012, YZB121		YBG202, YBG203			

How to select general turning inserts

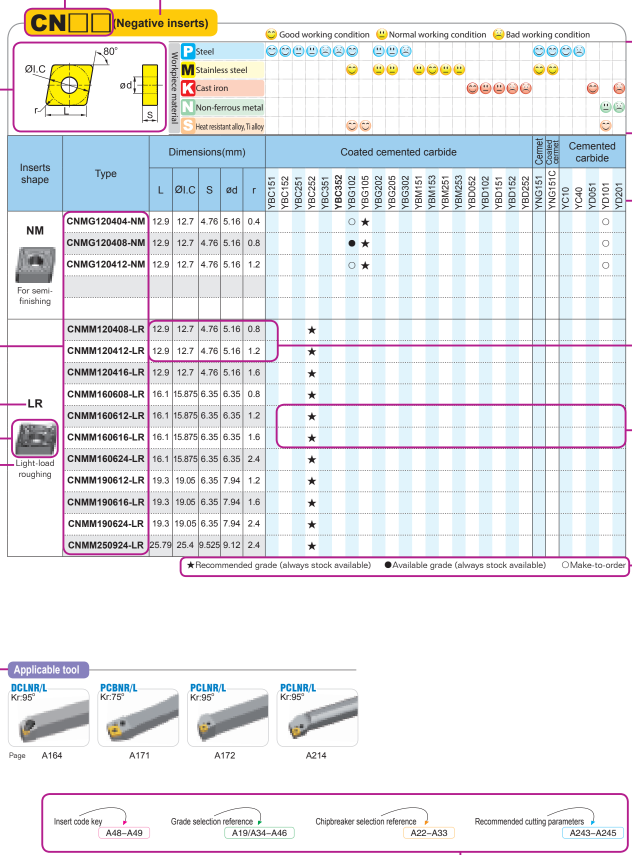
Turning inserts list

- Turning inserts listed according to shape
- Sequence of listed inserts
  - ▸Negative inserts (with hole – without hole)
  - ▸Positive inserts (with hole – without hole)
- Sequence of listed chipbreaker
  For finishing – For semi-finishing – For roughing – For heavy cutting – Without chipbreaker– Through chipbreaker

Selecting grade according to workpiece material and working condition
Prior to select grade for insert according to working condition that is suitable for workpiece material
😊 Good working condition: machine works well and stably. There are high requirements for dimensional precision of components and quality surface.
😐 Normal working condition: machine works normally. There are certain requirements for dimensional precision of components and surface quality.
☹ Bad working condition: machine works with bad stability. There are high requirements for metal evacuation rate.

Main category of products

Positive or negative inserts



Shape and dimensions
L: cutting edge length
ØI.C: diameter of inscribed circle
S: Thickness
ød: Hole diameter
r: Nose radius

Type

Grade

Size

Stock

Illustration of stock

Reference page of tool holders

Application of inserts

Shape

Insert chipbreaker
Chipbreaker code

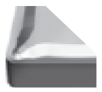
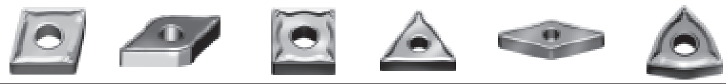
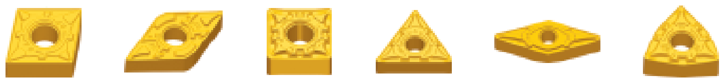
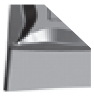
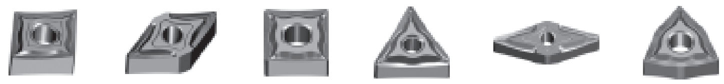
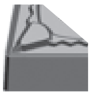
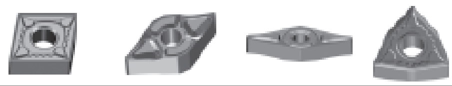
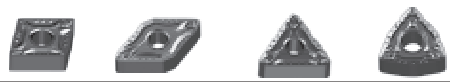
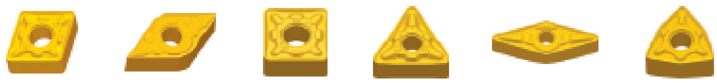
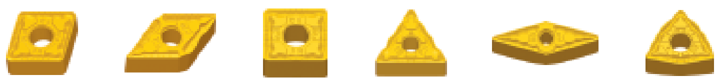
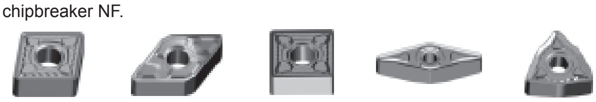
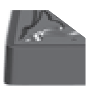
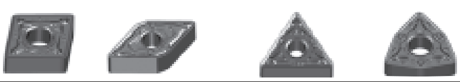
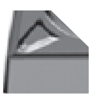
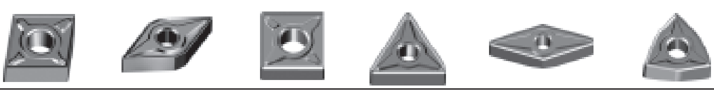
Recommended cutting parameters
Chipbreaker selection reference
Grade selection reference
Insert code key

TURNING

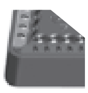
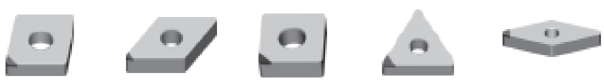
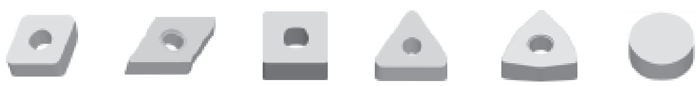
General turning inserts

General turning inserts overview

Negative inserts with hole

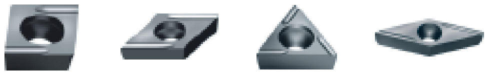
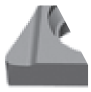
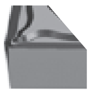
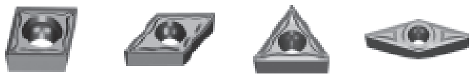
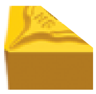
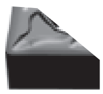
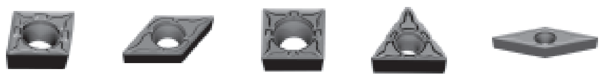
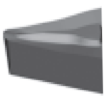
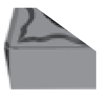
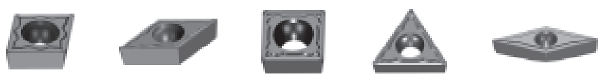
Application	Chipbreaker	Precision	Recommended cutting parameters	Feature/Shape of insert
For finishing	**SF** 	M	ap=0.05~1(mm) fn=0.05~0.35(mm/r)	**Recommended chipbreaker for finishing of P-type materials** Double-sided chipbreaker with M-level tolerance has outstanding performance in finishing, achieving good surface quality. 
For finishing	**DF** 	M	ap=0.3~2(mm) fn=0.05~0.35(mm/r)	**Recommended chipbreaker for finishing of M- type materials** 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. 
For finishing	**EF** 	M	ap=0.05~1(mm) fn=0.05~0.3 (mm/r)	**Recommended chipbreaker for finishing of S-type materials** Double-sided chipbreaker with M-level tolerance can prevent wear and hardening to achieve high machining precision and good surface quality. 
For finishing	**NF** 	E	ap=0.1~1(mm) fn=0.05~0.3(mm/r)	**Recommended chipbreaker for finishing of S-type materials** Double-sided chipbreaker with E-level tolerance can prevent wear and hardening to achieve high machining precision and good surface quality. 
Wiper	**WGF** 	M	ap=0.5~3.0(mm) fn=0.05~0.5(mm/r)	**Wiper chipbreaker for finishing** Double-sided chipbreaker with M-level tolerance, finishing chipbreaker with wiper designed can achieve high surface quality. With excellent chip breaking ability, It is suitable for machining at high feed and small depth of cut. 
For semi-finishing	**DM** 	M	ap=1.5~5(mm) fn=0.15~0.5(mm/r)	**Recommended chipbreaker for semi-finishing of P-type materials** 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. 
For semi-finishing	**PM** 	M	ap=1.5~5(mm) fn=0.15~0.5(mm/r)	**Recommended chipbreaer for semi-finishing of P-type materials** 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. 
For semi-finishing	**NM** 	M	ap=0.1~1.5(mm) fn= 0.05~0.3(mm/r)	**Recommended chipbreaker for semi-finishing of S-type materials** 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. 
For semi-finishing	**WGM** 	M	ap=1.0~5.0(mm) fn=0.15~0.80(mm/r)	**Wiper chipbreaker for semi-finishing** 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 efficiently and good surface quality. 
For semi-finishing	**EM** 	M	ap=0.5~1.5(mm) fn=0.1~0.3(mm/r)	**Recommended chipbreaker for semi-finishing of M-type materials** 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. 

Negative inserts with hole

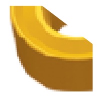
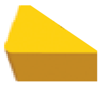
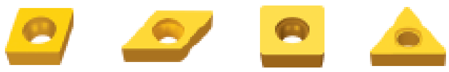
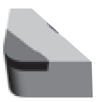
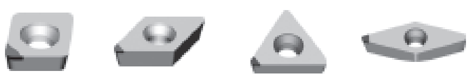
Application	Chipbreaker	Precision	Recommended cutting parameters	Feature/Shape of insert
For semi-finishing	All round 	M	ap=1.5~5(mm) fn=0.2~0.5(mm/r)	**From semi-finishing to roughing of P-type, M-type, K-type materials** Double-sided chipbreaker with M-level tolerance has good cutting edge strength and wide application. 
Light-load roughing	DR Double-side 	M	ap=3~12(mm) fn=0.3~0.8(mm/r)	**Recommended chipbreaker for light roughing of P-type and K-type materials** Double-sided chipbreaker with M-level tolerance is the first choice for light roughing, can achieve high evacuation rate and efficiency of cutting edge. 
Light-load roughing	LR Single-side 	M	ap=3~15(mm) fn=0.3~1.0 (mm/r)	**Recommended chipbreaker for light-load roughing of P-type materials** 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 reduces the contact area with chips, so that heat can easily be dissipated. 
For roughing	DR Single-side 	M	ap=3~15(mm) fn=0.3~0.8 (mm/r)	**Recommended chipbreaker for roughing of P-type materials** 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. 
For roughing	ER Single/ Double side 	M	Double sided ap=2.5~8(mm) fn=0.2~0.6(mm/r) Single sided ap=2.5~20(mm) fn=0.2~1.2(mm/r)	**Recommended chipbreaker for roughing of M-type materials** 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. 
For roughing	HPR Single-side 	M	ap=3~17(mm) fn= 0.5~1.2(mm/r)	**Recommended chipbreaker for heavy-load machining of P-type materials** 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	ap=0.3~12(mm) fn=0.05~0.6(mm/r)	**For cast iron machining** Double-sided chipbreaker with M-level tolerance has high cutting edge strength. It can overcome inferior factors such as intettruption and vibration, etc. when machining cast iron. 
Super hard inserts	Without chipbreaker 	G	ap=0.05~0.5(mm) fn=0.05~0.3(mm/r)	**For machining of non-ferrous metal and high-hardness metal** 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	ap=0.1~3(mm) fn= 0.05~0.4(mm/r)	**For machining of hardened steel, cast iron and steel** Ceramic inserts with double-side G-level tolerance can be used for machining various materials such as hardened steel, cast iron and steel, etc. according to different treatment on cutting edge. 

General turning inserts overview

Positive inserts with hole

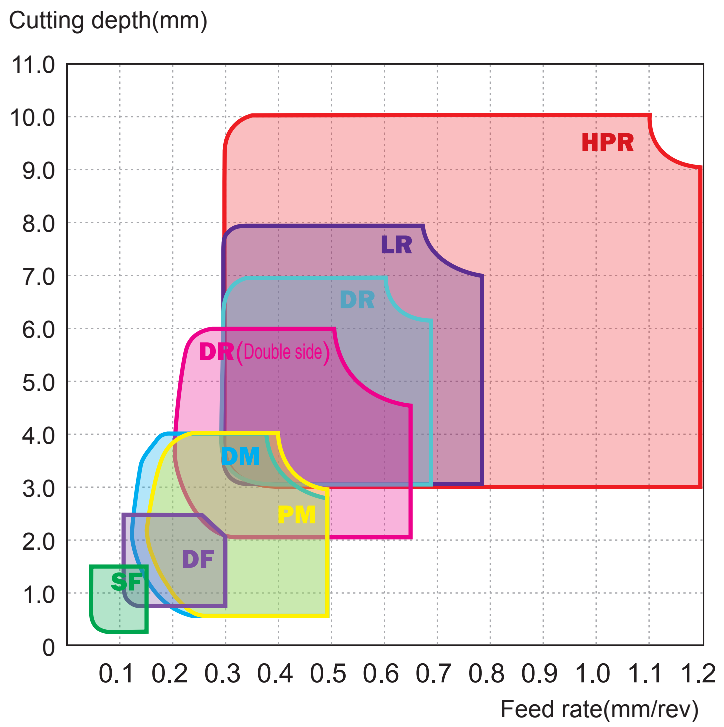
Application	Chipbreaker	Precision	Recommended cutting parameters	Feature/Shape of insert
For extra finishing	**USF** 	G	ap=0.02~1.5(mm) fn= 0.01~0.08(mm/r)	**Precision turning chipbreaker** With G-level tolerance, large rake angle, sharp cutting edge, for soft cutting action, this is the first choice for precision turning of small shaft parts. 
	R/L 	G	ap=0.05~2.5(mm) fn= 0.03~0.25(mm/r)	**Recommended chipbreaker for precise boring inserts** 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. 
	SF 	G	ap=0.05~1(mm) fn=0.05 ~0.3(mm/r)	**First choice for finishing with high requirements on chipbreaker** With G-level tolerance, it is the first choice for precise finishing due to its excellent performance on chip breaking. 
For finishing	**HF** 	M	ap=0.1~2(mm) fn=0.05~0.3 (mm/r)	**Chipbreaker for finishing with wide application** With M-level tolerance, it is suitable for internal and external finishing of various materials such as steel and cast iron. 
	EF 	M	ap=0.1~2(mm) fn=0.05~0.3 (mm/r)	**Recommended chipbreaker for finishing of M-type materials** With M-level tolerance, it has sharp cutting edges and is suitable for cutting adhesive materials such as stainless steel, soft steel, etc. 
	NF 	E G	ap=0.05~1(mm) fn=0.05~0.2 (mm/r)	**Recommended chipbreaker for finishing S-type materials** With E and G-level tolerance and sharp cutting edges, it is suitable for internal and external finishing of high-temperature alloy materials. 
For semi-finishing	**HM** 	M	ap=1~4(mm) fn=0.2~0.5(mm/r)	**Chipbreaker for semi-finishing with wide application** With M-level tolerance, it is suitable for internal and external semi-finishing of materials like steel, cast iron, etc. 
	EM 	M	ap=1~4(mm) fn=0.2~0.5(mm/r)	**Recommended chipbreaker for semi-finishing of M-Type materials** With M-level tolerance, it has higher hardness of cutting edge than EF and can achieve higher efficiency. 

Positive inserts with hole

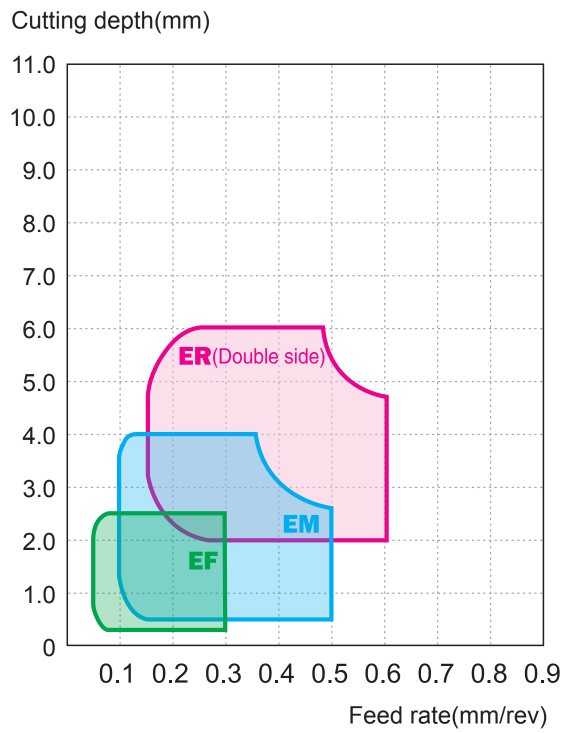
Application	Chipbreaker	Precision	Recommended cutting parameters	Feature/Shape of insert
For semi-finishing	All round 	M	ap=1~8(mm) fn=0.2~0.6(mm/r)	**Recommended chipbreaker for semi-finishing of M-type materials** With M-level tolerance, it is suitable for profile machining materials like steel, cast iron, etc. 
Cast iron machining	Without chipbreaker 	M G	ap=0.3~12(mm) fn= 0.05~0.5(mm/r)	**Chipbreaker for machining of cast iron** 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	ap=3~7(mm) fn=0.3~0.7(mm/r)	**General chipbreaker for roughing** With M-level tolerance, it is suitable for both internal and external roughing of materials such as steel, stainless steel, cast iron, etc. 
For roughing	Special chipbreaker 	M	ap=3~10(mm) fn=0.3~1.2(mm/r)	**Recommended chipbreaker for heavy machining of P-type materials** Single-sided with M-level tolerance, it has good cutting edge strength with high security. It is the first choice for profile roughing. 
For Al machining	LC 	G	ap=0.02~4.8(mm) fn=0.05~0.5(mm/r)	**Chipbreaker for machining of Al alloy** 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. 
For Al machining	LH 	G	ap=0.1~8(mm) fn=0.1~0.5(mm/r)	**Special chipbreaker for machining of Al alloy** 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	ap=0.05~0.5(mm) fn=0.05~0.3(mm/r)	**Special chipbreaker for non-ferrous metals and materials with high hardness** 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

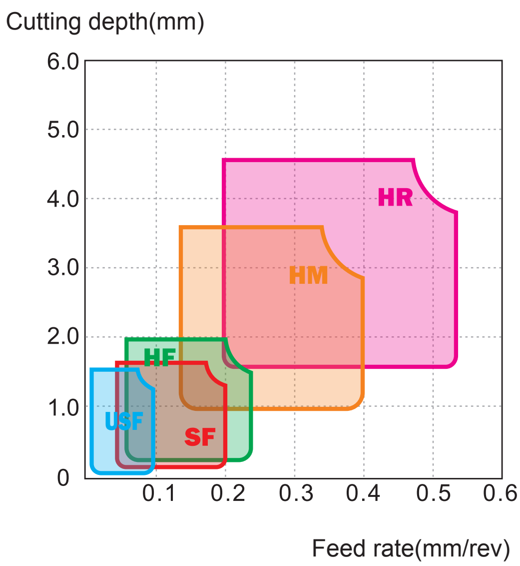


▶ Workpiece material: 45# steel

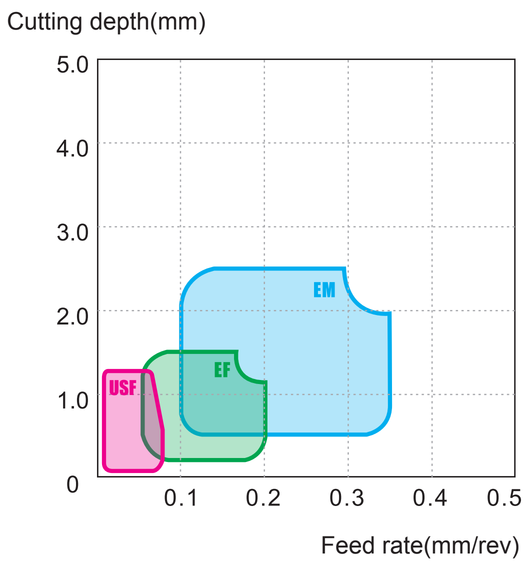


▶ Workpiece material: stainless steel (1Cr18Ni9Ti)

Positive inserts



▶ Workpiece material: 45# steel



▶ Workpiece material: stainless steel (1Cr18Ni9Ti)

Cutting test for chip breaking range of general turning inserts

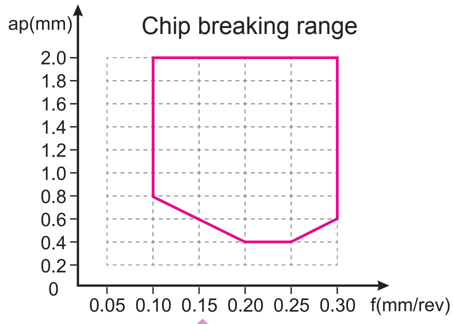
Case

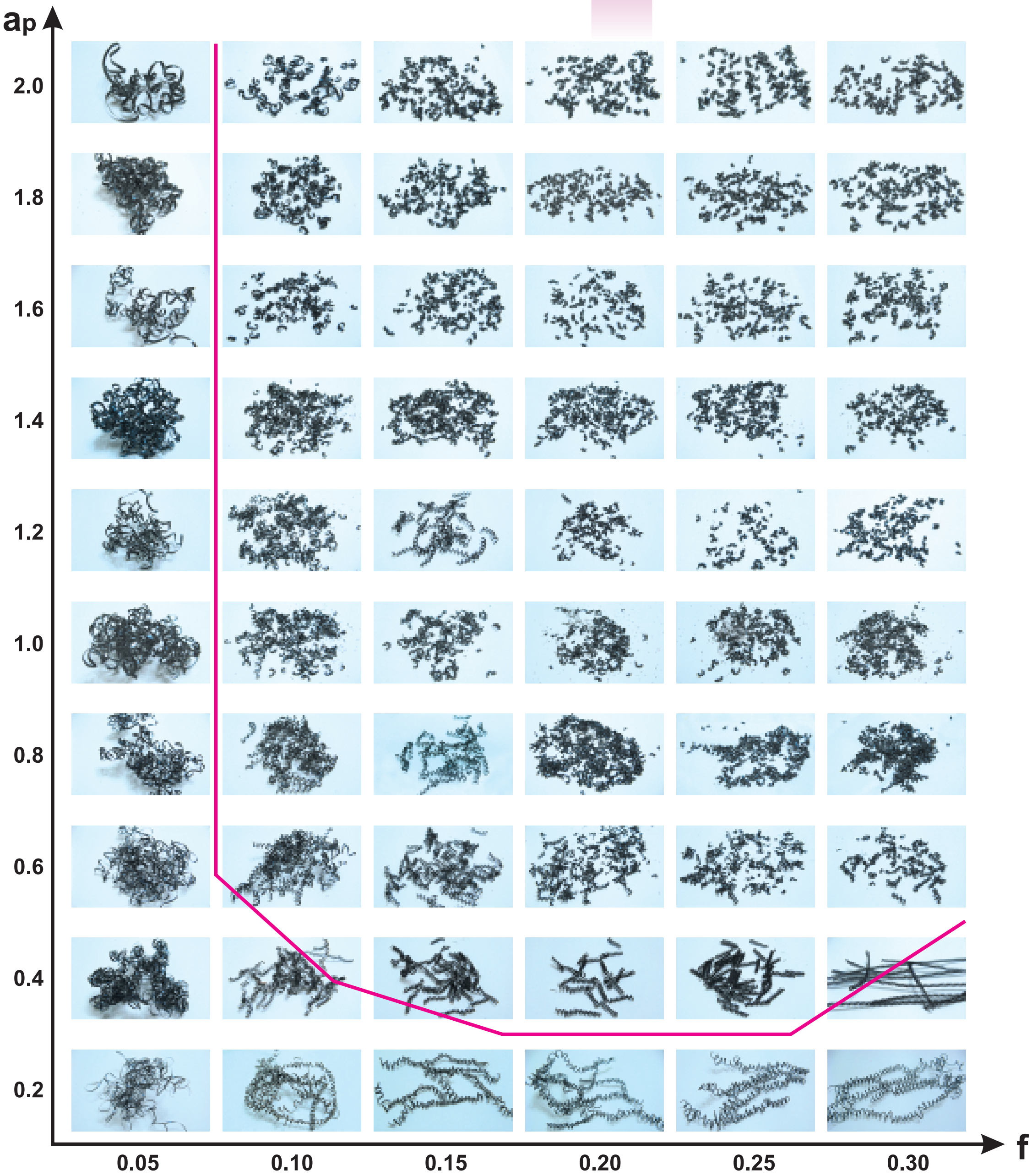
Insert: CNMG120408-DF

Toolholder: PCLNL2525M12

Workpiece material: 45# steel

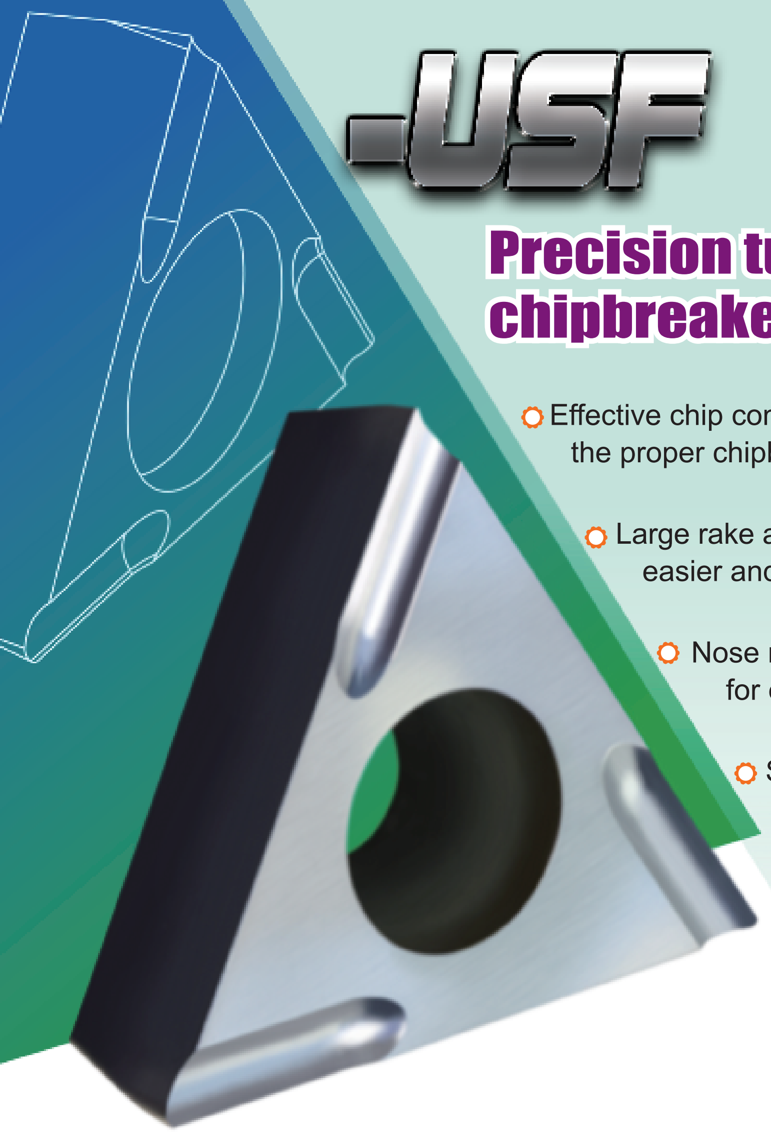
Cutting speed: 200(m/min)



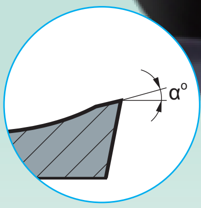


-USF

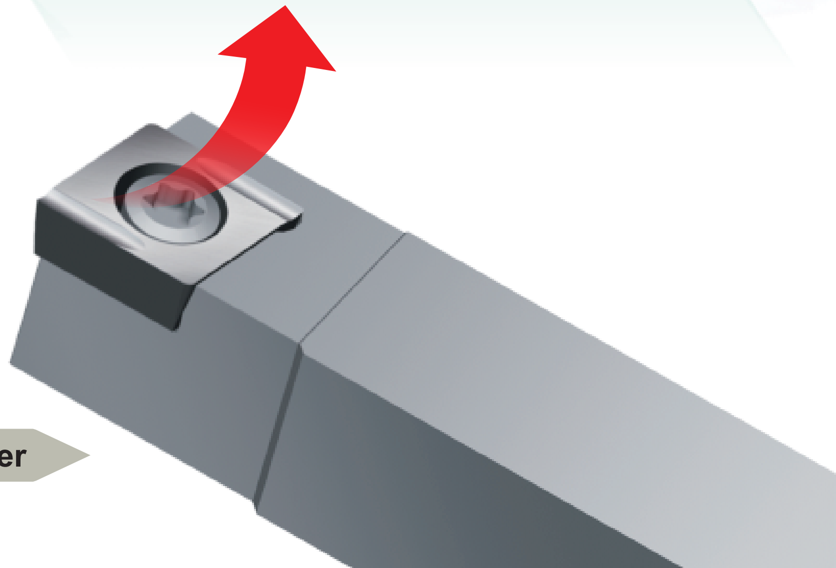
Precision turning chipbreaker



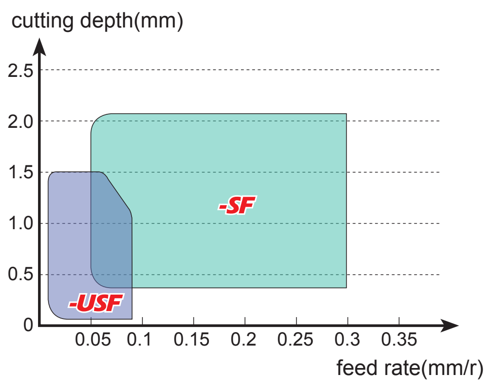
- Effective chip control due to the proper chipbreaker.
- Large rake angle makes cutting easier and faster.



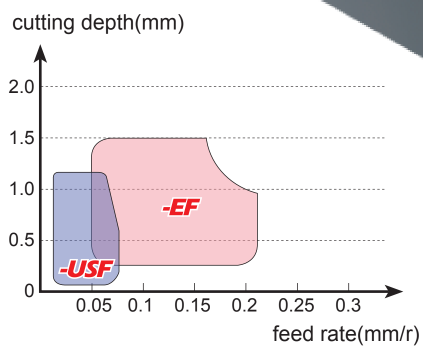
- Nose radius precision controlled within 0.02mm for excellent machining precision.
- Special surface after-treatment for better surface quality.
- High strength screw clamping ensures good repeatability and accuracy .



Application range of USF chipbreaker



Workpiece material: 42CrMo

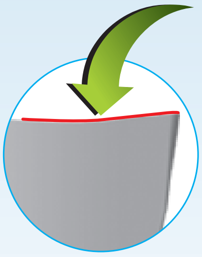


Workpiece material: 1Cr18Ni9Ti

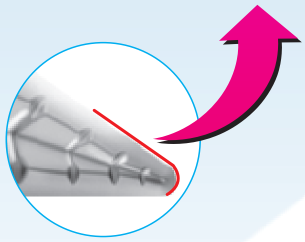
-LC chipbreaker for aluminum

- -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 resistence, 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.

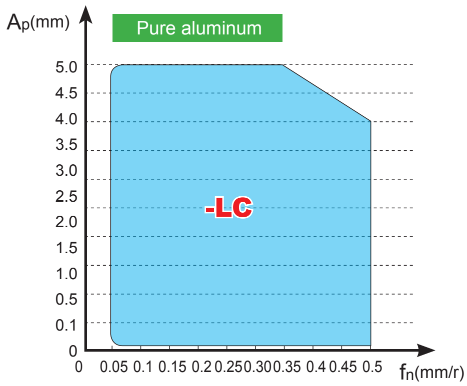


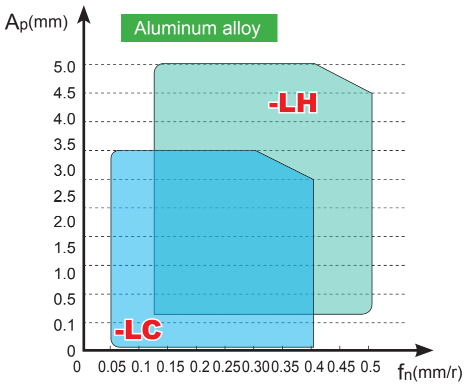
Smooth connection of insert nose and cutting edge makes rake face smoother.



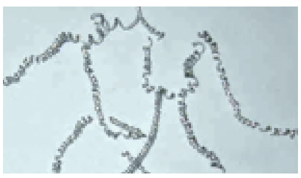
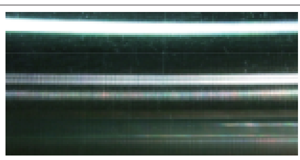
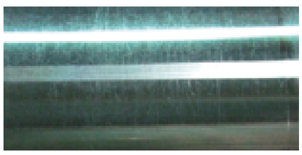
–LC and –LH chipbreaker characteristics and machining range

-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.





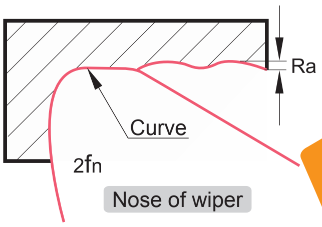
Workpiece material: Pure aluminum

Cutting parameters	V=350m/min Ap=0.2mm F=0.2mm/r	
Chips		
Surface quality		
	-LC chipbreaker	similar products from overseas manufacturers

- **-LH chipbreaker is more suitable for machining aluminum alloy in condition of large cutting depth and high feed rate.**
- **-LC chipbreaker is more suitable for machining aluminum alloy in condition of small cutting depth and low feed rate.**
- **-LC chipbreaker can be used in machining pure aluminum.**

-WGF/WGM

chipbreaker series
Turning inserts with wiper



High efficiency

Roughness remains the same when feed rate is doubled.

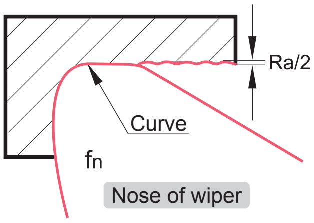
Wiper is assembled by three curves to form a circular arc edge. The nose of wiper provides less profile height on the surface that is formed by the cutting edge, resulting in a smooth turning surface.

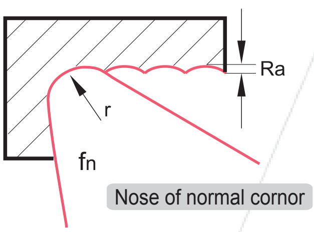
Inserts with wiper has high efficiency when used for finish and semi-finish turning. The surface quality remains the same even at double feed rate.

Wiper technique = high machining efficiency + high surface quality

High quality

Roughness value is reduced to half when feed rate remains the same.





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

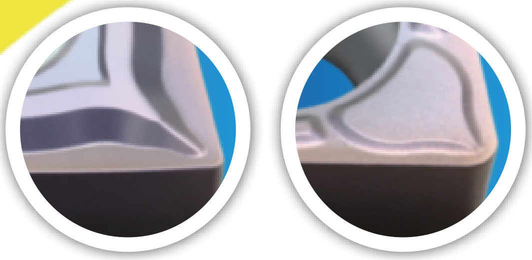
Minor angle being close to 0 degree is the reason that inserts with wiper can reduce roughness of the surface, which is determined by the shape of insert and approach angle of the tool holder. Therefore, acceptable roughness of surface is the result of reasonable approach (minor) angle. The finishing 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.

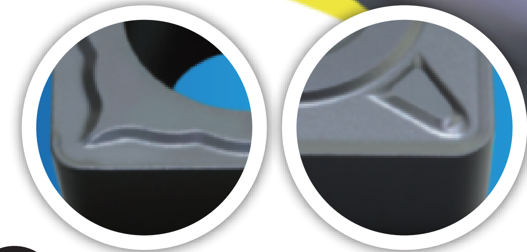
●Be careful with DNMX / TNMX inserts

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.

-EF -EM -ER

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



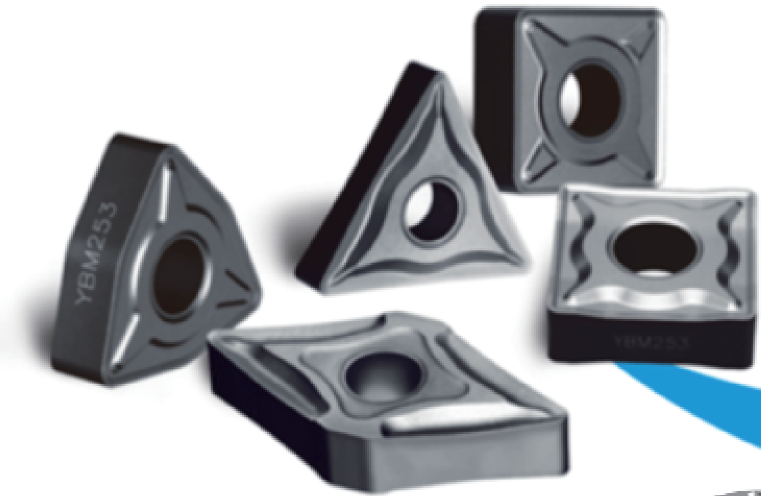


-EM

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.

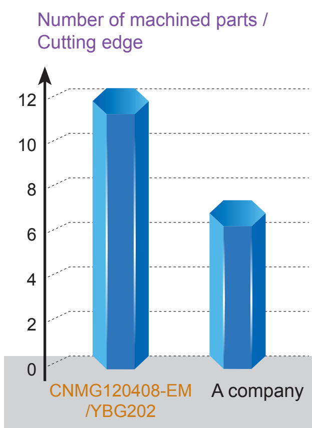
-EF

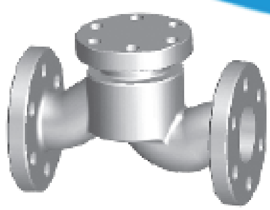
Rake angle and inclined angle are specially designed for intensively adhesive stainless steel and high-plasticity materials which are hard to be machined. Sharp cutting edge enables it to cut lightly and easily and achieve good surface quality by well controlling chip breaking. It is especially suitable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



-ER

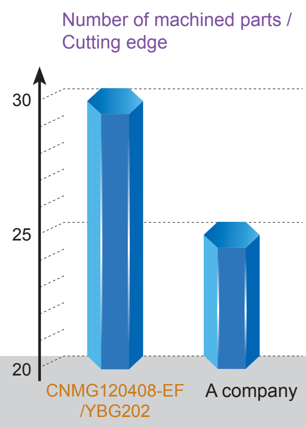
Specially designed double rake angle with wide land achieves balance between edge security and sharpness, and effectively reduces cutting resistance and wear on groove.





Machining external of valve

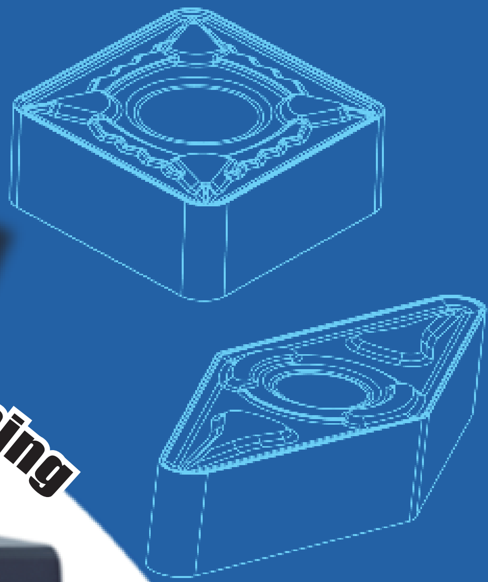
Machining end surface of valve
(intermittent machining)
Workpiece diameter:135mm
Rotating speed:350rpm
Feed rate:0.25mm/r
Cutting depth:1.5mm

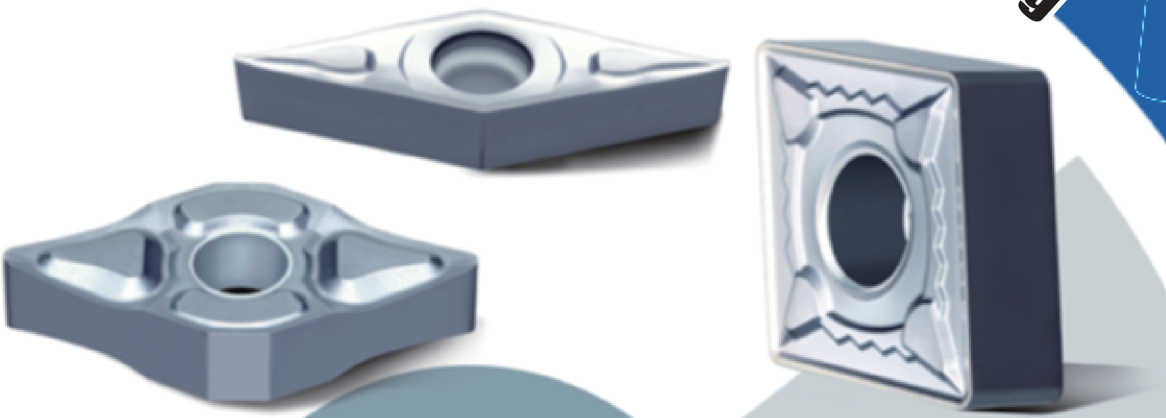


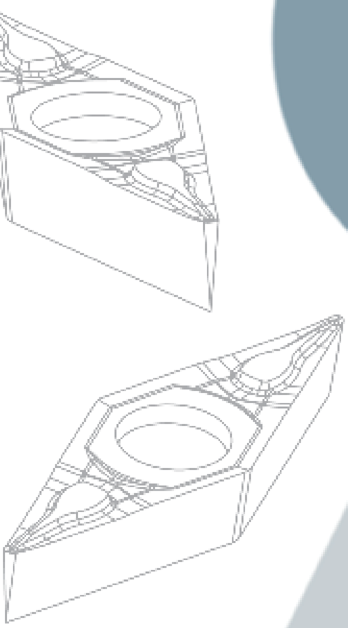
Machining external of valve
Workpiece diameter:89mm
Rotating speed:635rpm
Feed rate:0.15mm/r
Cutting depth:1.0mm

-NF/NM

Overcome difficulties on machining Ni- base high temperature alloy







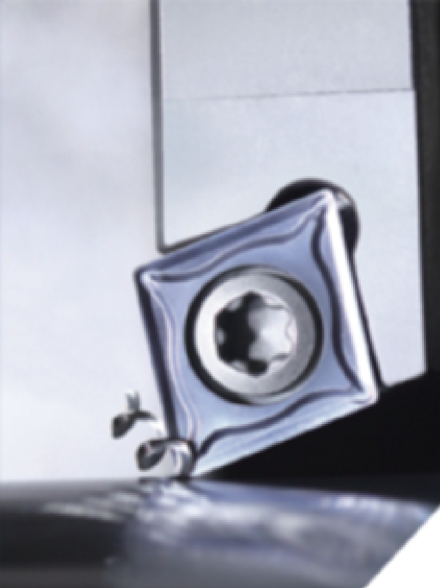
Characteristics of machining Ni-base high temperature alloy.

- Great cutting resistance (It contains massive alloy element, is easily hardened, and liable to plastic deformation during machining).
- High temperature during cutting.
- Inserts severely wear.

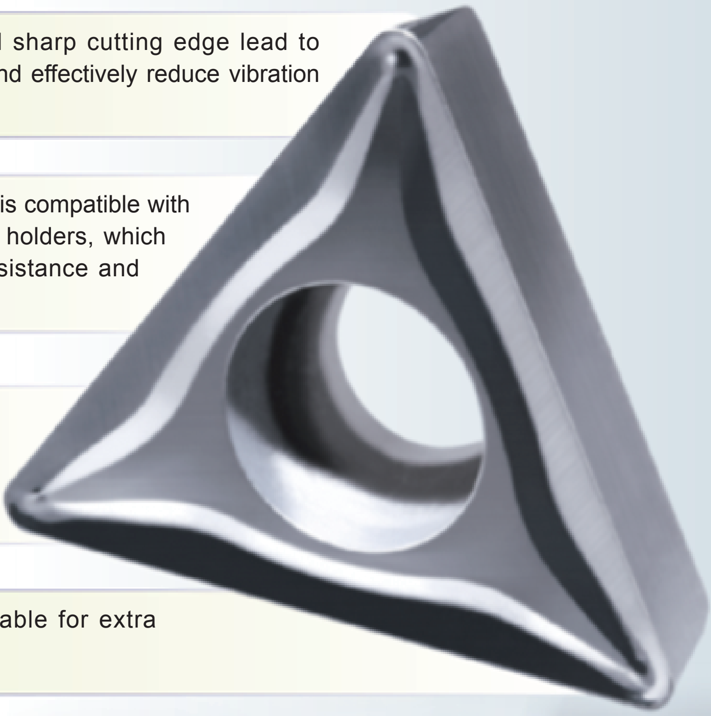
Feature of –NF/NM chipbreaker

- -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.

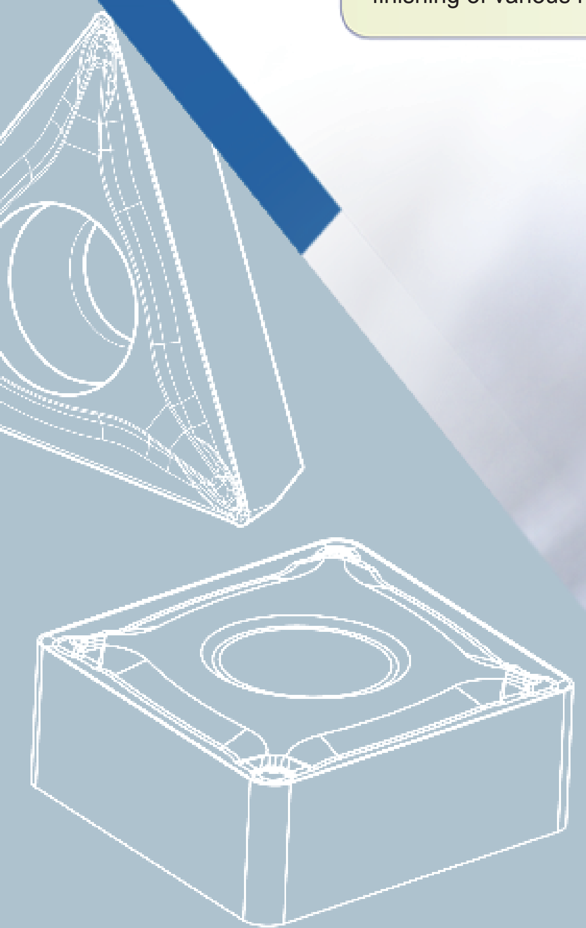
Chipbreaker of inserts for machining of Ni-high heat alloy is supposed to have sharp and hard edge nose, smooth rake face and rational inclined angle.

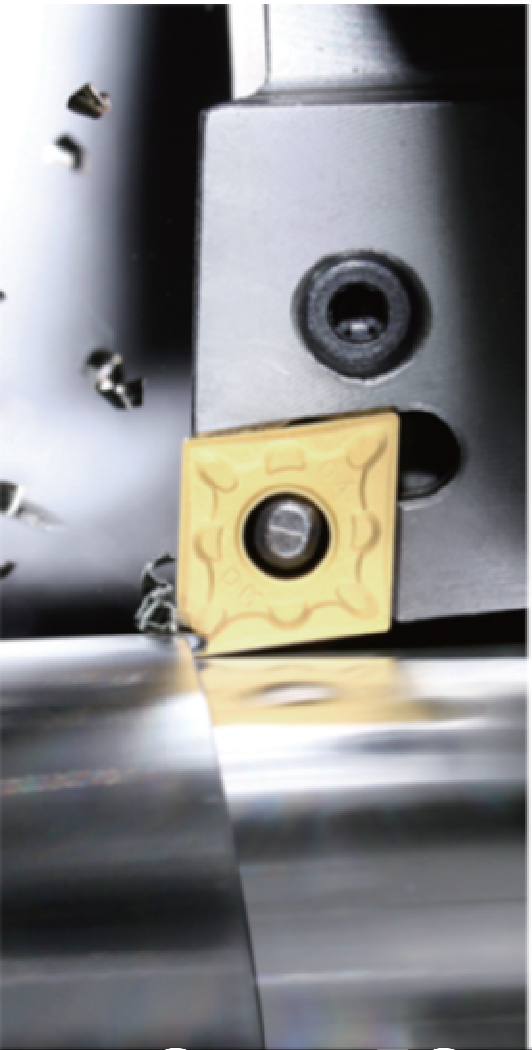


-SF chipbreaker for finishing



- 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_2O_3 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_2O_3 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_2O_3 layer and TiN makes it suitable for finishing and semi-finishing of cast iron materials.

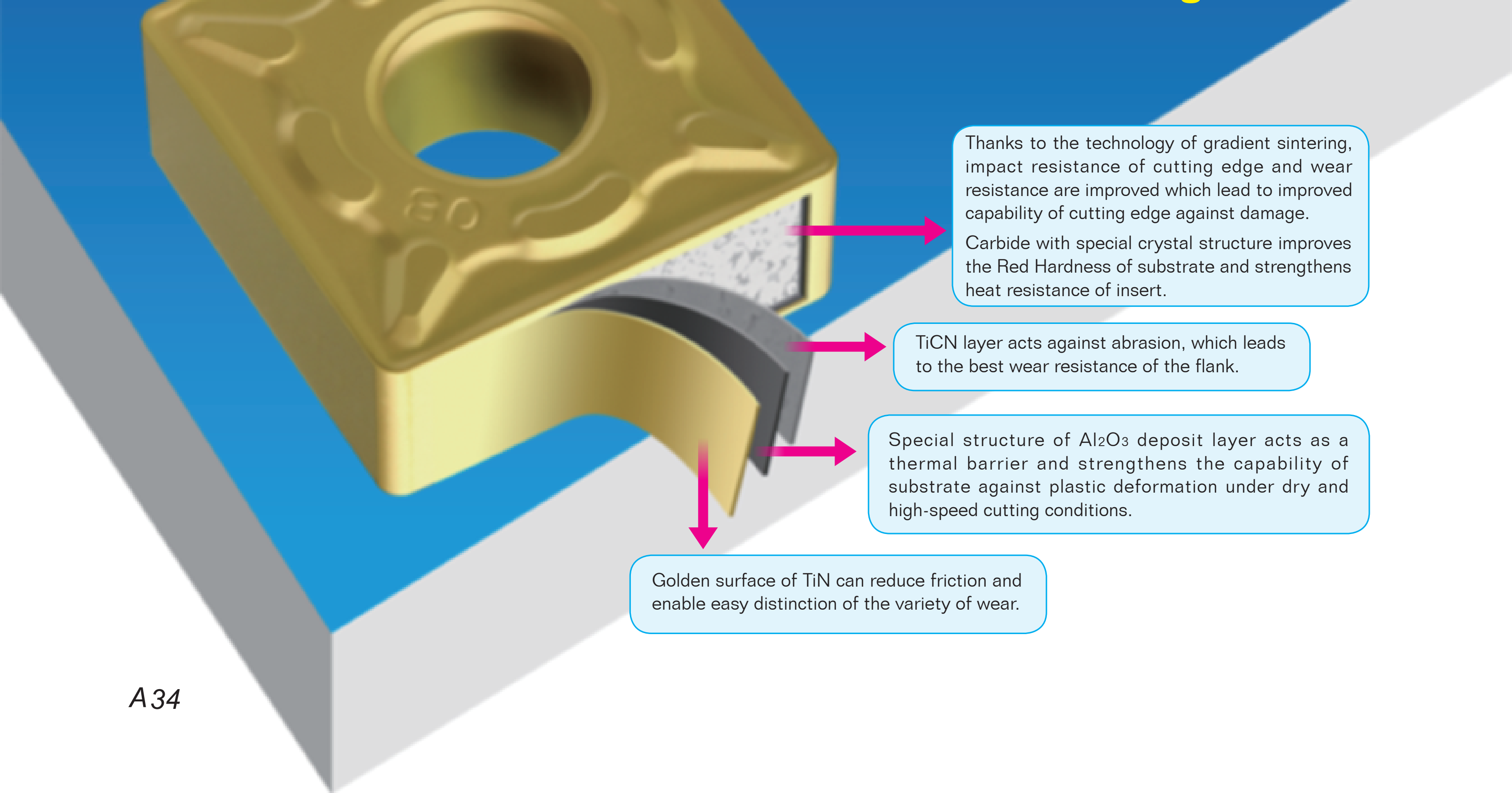
YBD151
The substrate with high strength and resistance against plastic deformation, in combination with coating composed of MT-TiCN, thick layer of Al_2O_3 and TiN makes it suitable for steel roughing.

YBM151
Substrate with special structure, in combination with coating composed of TiCN, thin Al_2O_3 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_2O_3 layer and TiN makes it suitable for semi-finishing and roughing of stainless steel.

Coated Cemented Carbide CVD

YBC251 Coating

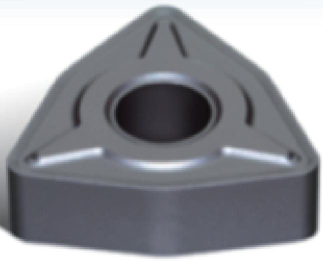


BLACK DIAMOND INSERTS

Innovation of machining techniques for stainless steel turning

YBM

YBM153



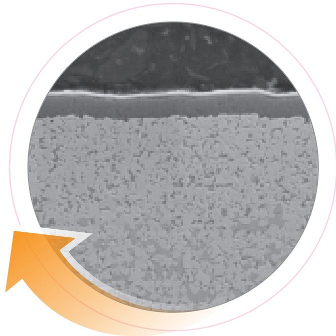
Best choice for roughing of stainless steel with high-speed under good working condition

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.

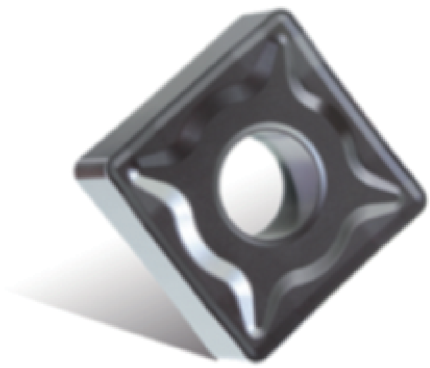
Substrate

- 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



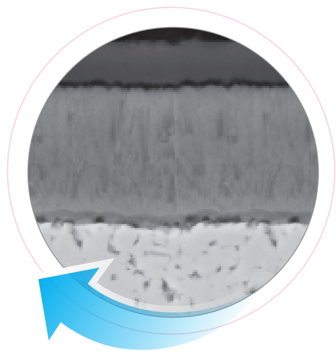
Ideal grade for turning of stainless steel with high cutting depth and high feed rate under bad working condition

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.

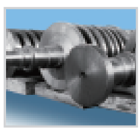
Substrate

- 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.






BLACK DIAMOND INSERTS

Achieving both higher cutting speed and longer tool life

Second generation of YBC

YBC152

Thick TiCN and thick Al_2O_3 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_2O_3 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.

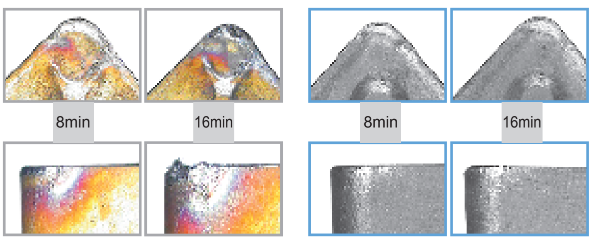
YBC352

Thickness TiCN and Al_2O_3 coating, with strongest toughness and plastic deformation resistance, the ideal grade for high efficient steel rough machining under the bad condition.

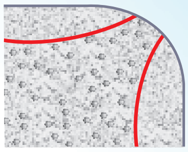
Test comparison of inserts abrasion

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

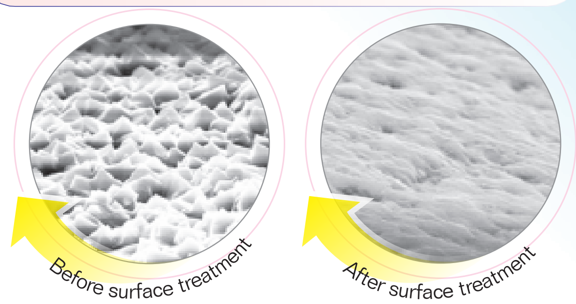
Grade from other company　　YBC152



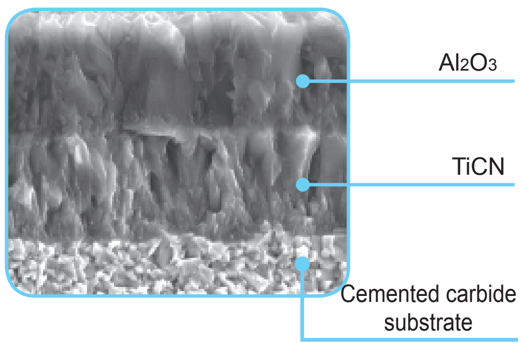
- Perfect unification of toughness and anti-plastic deformation.
Specially designed cutting edge with "skeleton" realizes perfect unification of toughness and anti-plastic deformation.



- 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_2O_3 obviously improves abrasion resistance and anti-breakage of inserts.



YBD052

CVD coated grade, which is characterized by super fine grain and smooth surface, is the combination of hard substrate and coating (extra thick Al_2O_3 + thick TiCN). The grade is optimized for best wear resistance when machining gray cast iron at high speed under dry condition.

YBD152

CVD coated grade, which is the combination of hard substrate and coating (medium thick Al_2O_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.

YBD102

CVD coated grade, which is the combination of hard substrate and coating (thick Al_2O_3 + thick TiCN), shows excellent wear resistance and impact resistance when machining nodular cast iron at high speed.

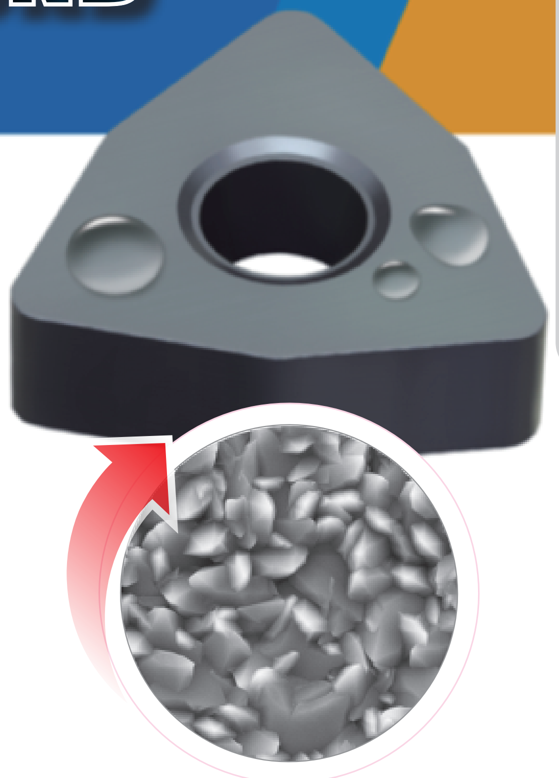
YBD252

CVD coated grade, which is the combination of hard substrate and coating (medium thick Al_2O_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.

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

BLACK DIAMOND INSERTS YBD

- 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.



Layer of fine grain with compact surface

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.

Recommended combination of grade and chipbreaker

For machining of P-type materials

Grade	Type
YBC151 YBC152	DF
YBC251 YBC252	DM PM
YBC251 YBC252	DR (Double-side)
YBC351	DR
YBC351 YBC352	HPR

For machining of M-type materials

Grade	Type
YBM151	EF EM ER
YBM153	EF EM
YBM251	EM ER
YBM253	EM ER

For machining of K-type materials

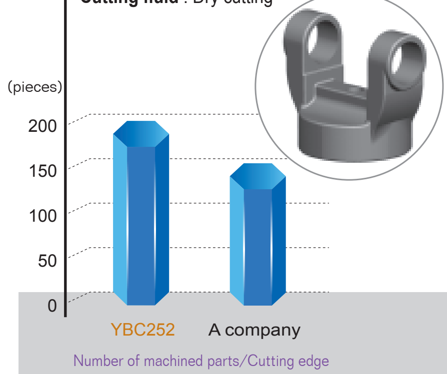
Grade	Type
YBD052	Without chipbreaker PM
YBD102	Without chipbreaker PM
YBD152	Without chipbreaker
YBD252	Without chipbreaker

Recommended cutting parameters

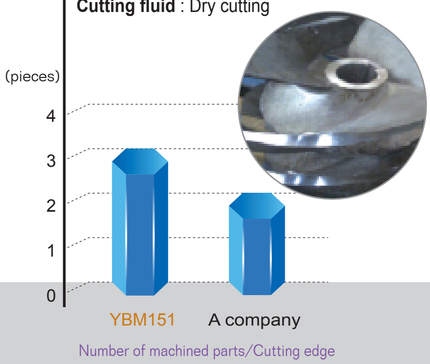
Workpiece material	Range of machining	Grade	Recommended cutting speed(m/min)
P Steel	For finishing	YBC151	180-460
		YBC152	220-500
	For semi-finishing	YBC251	160-440
		YBC252	180-480
	For roughing	YBC351	130-380
		YBC352	
M Stainless steel	For finishing For semi-finishing For roughing	YBM151	110-280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

Case

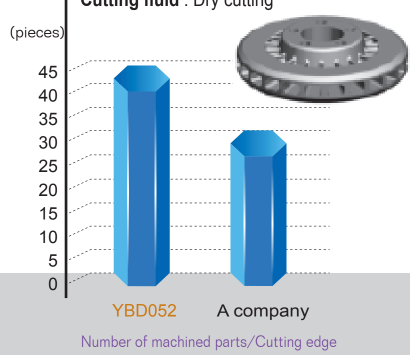
Insert : YBC252/WNMG060408-PM
Material and hardness of workpiece : 45#Steel HB220
Cutting conditions : V=220m/min, a_p=1.5~2mm, f=0.25mm/r
Cutting fluid : Dry cutting



Insert : YBM151/CNMG190616-ER
Material and hardness of workpiece : Double phase stainless steel HB260
Cutting conditions : V=103m/min, a_p=1.5mm, f=0.3mm/r
Cutting fluid : Dry cutting

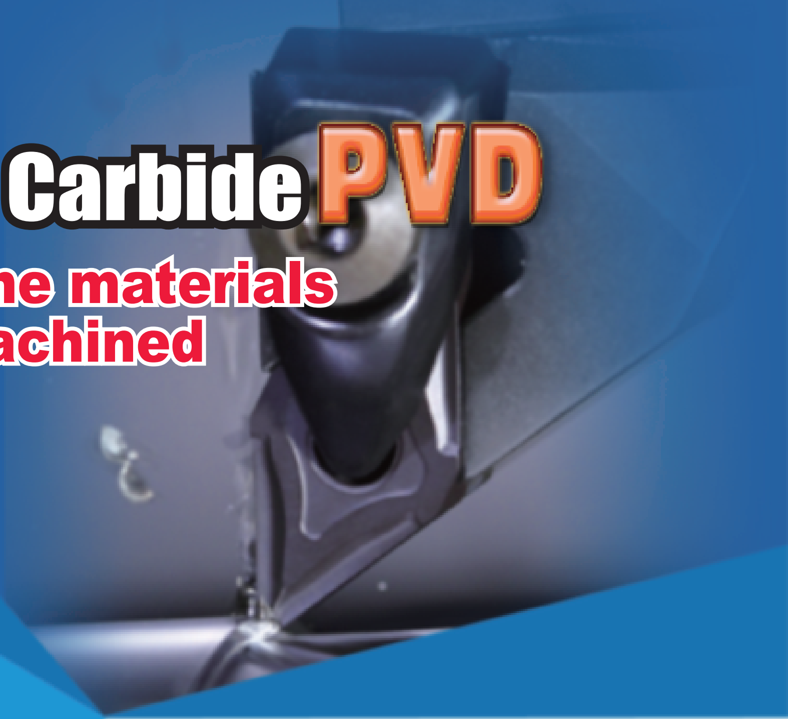


Insert : YBD052/TNMA220412
Material and hardness of workpiece : Gray cast iron HB280
Cutting conditions : Vmax=400m/min, a_p=1.3~2.5mm, f=0.4~1.1mm/r
Cutting fluid : Dry cutting



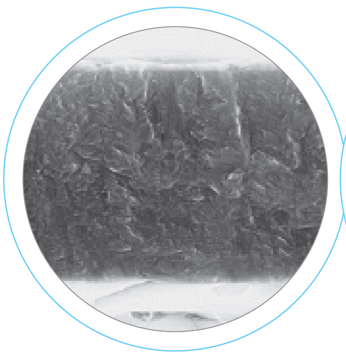
Coated Cemented Carbide PVD

makes it easy to machine materials which are hard to be machined

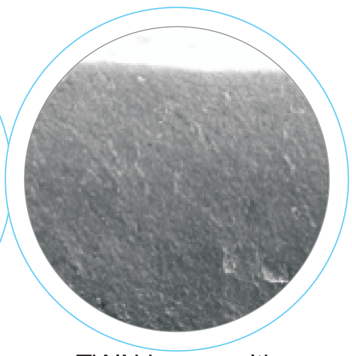


New nano coating grade

- 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.

Recommended combination of grade and chipbreaker

For machining P-type materials

Grade	Type
YBG202	DM

For machining M-type materials

Grade	Type
YBG202 YBG205	EF
YBG202 YBG205	EM

For machining S-kind materials

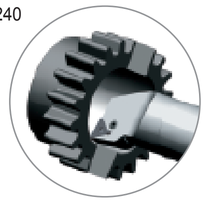
Grade	Type
YBG102 YBG105	NF
YBG102 YBG105	NM

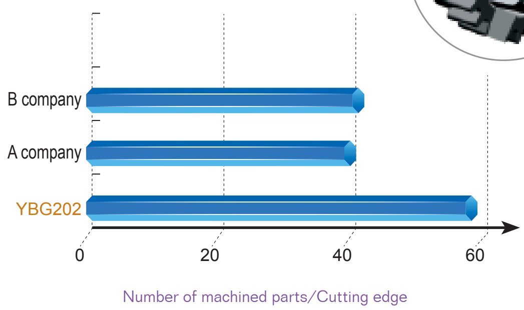
Recommended cutting parameters

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	170-300
S Heat resistant Alloy Ti alloy	For finishing	YBG102	30-90
		YBG105	40-90
	For semi-finishing	YBG202	20-70
		YBG105	30-70

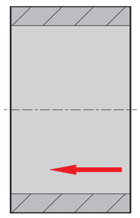
Case

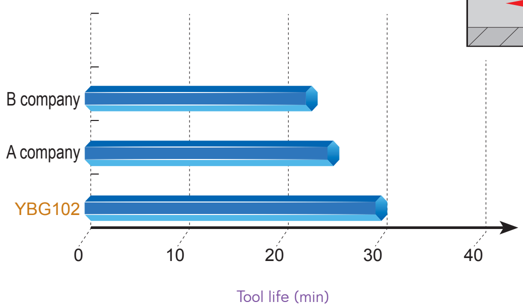
Insert : YBG202/TNMG120404-EF
Hardness and material of workpiece : 0Cr18Ni9 HB240
Cutting conditions : V=200m/min, a_p=1mm, f=0.15mm/r
Cutting fluid : Dry cutting





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





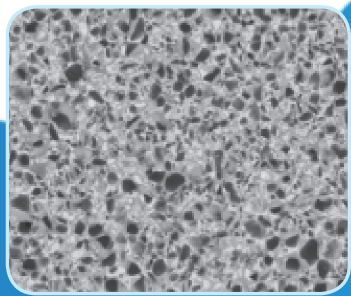
Cermet & Coated Cermet

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_2O_3 and Si_3N_4 ceramic. This fulfils the application blank of WC-base cemented carbide and Al_2O_3 and Si_3N_4 ceramic from finishing to semi-finishing at high speed.

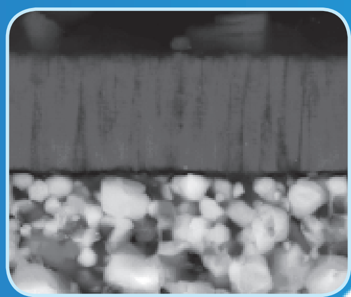
Product features

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 conductibility 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)
P Steel	For finishing	YNG151	260-550
		YNG151C	260-580
M Stainless steel		YNG151	170-330
		YNG151C	160-350
K Cast iron		YNG151	250-400
		YNG151C	270-420

Case

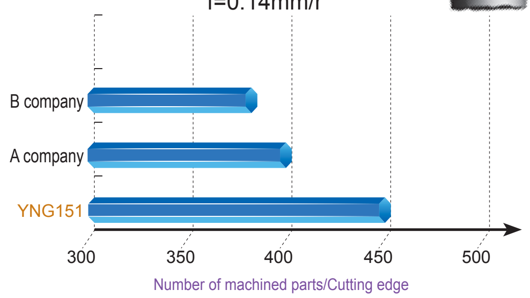
Insert: YNG151/CNMG120404-SF

Hardness and material of workpiece: 20CrMnTi HB180-223

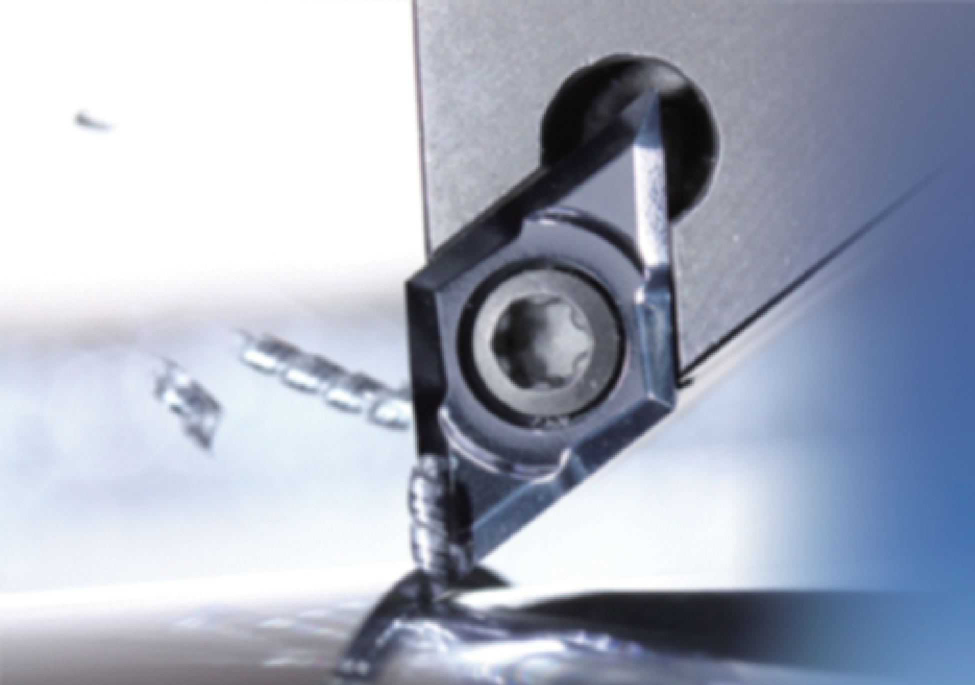
Cutting parameters: v=220m/min

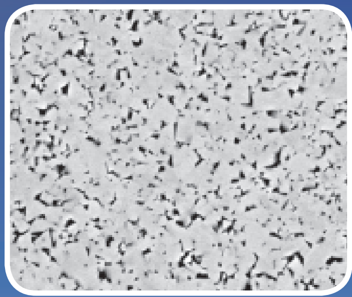
a_p=0.5~1.0mm

f=0.14mm/r



Outstanding chip breaking Good surface quality

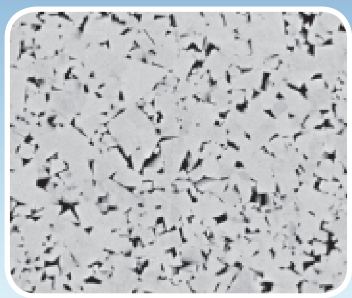




Substrate of YD101: the combination of cemented carbide phrase WC of fine grain and bonding phase Co

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)
P Steel	For finishing	YC10	130-360
	For roughing	YC40	80-300
K Cast iron	For finishing	YD051	100-170
	For semi-finishing～For roughing	YD201	60-130
N Non-ferrous metal	For finishing～for semi-finishing	YD101	110-1750
S Heat resistant Alloy Ti alloy	For finishing	YD101	20-50

Case

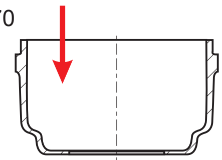
Insert: YD101/CCGX09T304-LH

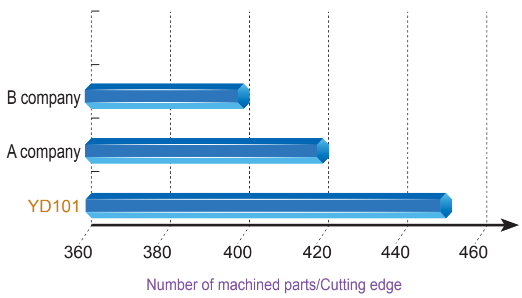
Workpiece material: ZL105 HB70

Cutting parameters: v=400m/min

a_p=1mm

f=0.3mm/r



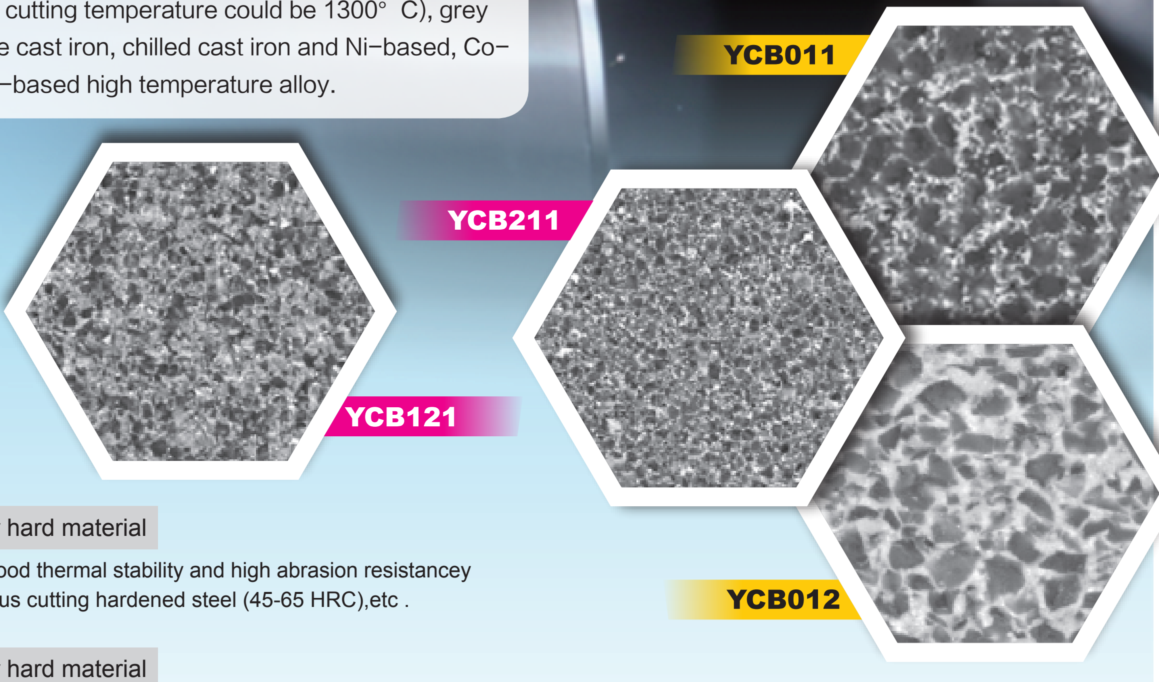


Workpiece has high surface quality and high dimensional precision.

Ceramic Grade

Polycrystalline Cubic Boron Nitride PCBN

PCBN cutting tools with high hardness, abrasion resistance , good heat resistance and high temperature hardness for cutting of hardened steel greater than 45 HRC (such as carbon steel , bearing steel, mould steel and high speed steel, the cutting temperature could be 1300° C), grey cast iron, nodular graphite cast iron, chilled cast iron and Ni−based, Co−based, Cr−based and Fe−based high temperature alloy.



▶ YCB012 — H Super hard material

Low-CBN content gradey with good thermal stability and high abrasion resistancey suitable for high speed continuous cutting hardened steel (45-65 HRC),etc .

▶ YCB121 — H Super hard material

Low-CBN content grade,with high abrasion resistance,good impact strength and chemical stability,suitable for continuous or weak interrupted cutting tool steel alloy steel,mould steel,etc .

▶ YCB011 — K Cast iron

High-CBN content grade, with high hardness and abrasion resistance, suitable for high speed continuous cutting cast iron, etc.

▶ YCB211 — K Cast iron

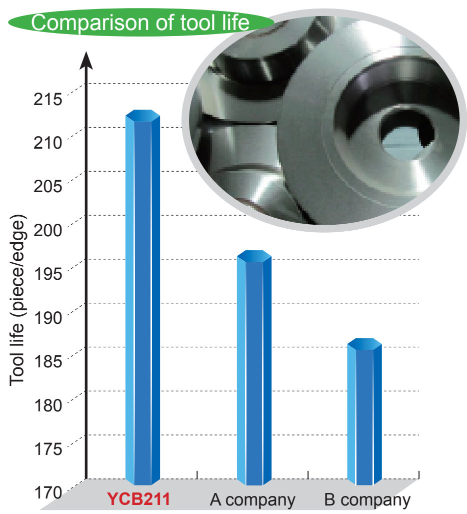
High-CBN content grade,with high hardness and abrasion resistance,excellent impact strength,suitable for continuous or weak interrupted cutting cast iron,etc.

Application and machining Parameter Guidelines:

Grade	Workpiece material	Speed(m/min)	Feed(mm/r)	Depth of Cut(mm)
YCB012	hardened steel	100~300	0.03~0.5	0.05~0.5
YCB121	alloy steel	120~200	0.1~0.2	0.1~0.5
	tools/mould steel	80~120	0.1~0.2	0.1~0.5
YCB011	grey cast iron	400~1500	0.2~0.5	<0.5
	nodular graphite cast iron	200~400	0.3~0.5	<0.5
	alloy cast iron	100~300	0.1~0.2	<0.5
YCB211	pearlitic grey cast iron	60~90	0.1~0.2	0.1~0.5

Case

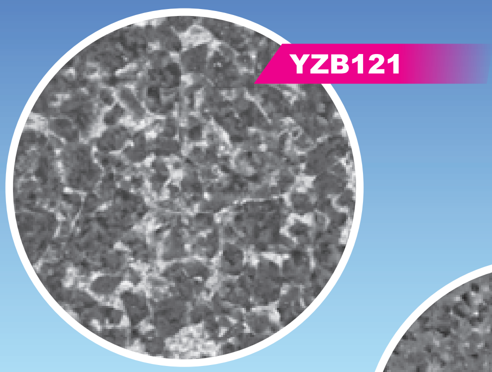
Workpiece material:Cast iron TL048
Insert grade:YCB211
Insert type:CNGA120408-2
Machining mode: Continuous dry cutting
Cutting parameters: v_c=600m/min
f_n=0.2mm/rev, a_p=0.5mm

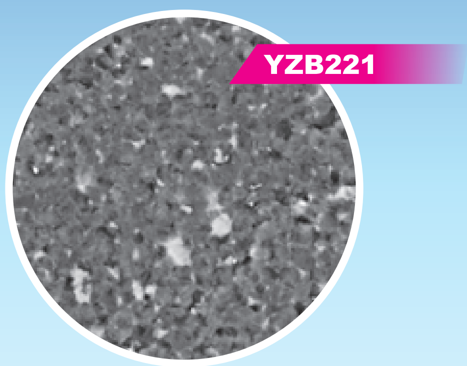


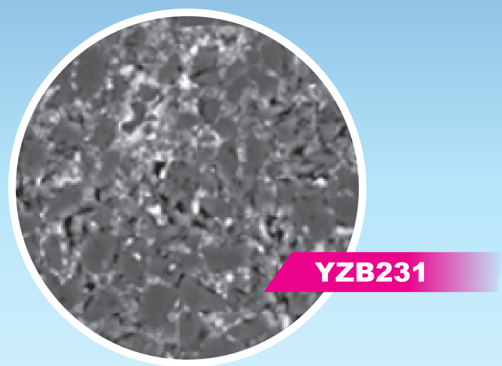
Ceramic Grade

PCBN inserts turning case

Solid PCBN with good abrasion resistance and chemical stability, compared with the PCBN compact has higher impact strength suitable for the turning/ milling roughing and semi-finishing.







▶ YZB121 — H Super hard material

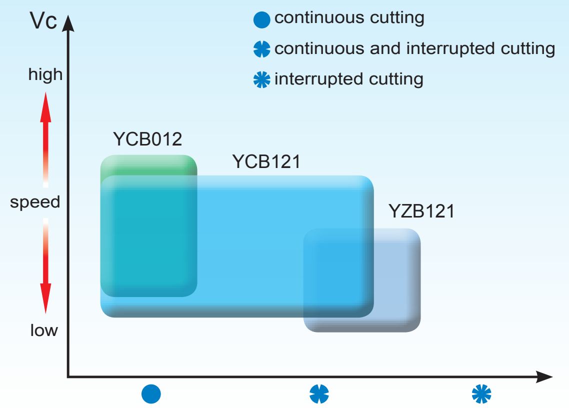
Solid PCBN grade, with good abrasion resistance and edge chipping resistance, suitable for low speed interrupted cutting bearing steel, mould steel ,tool steel , high speed steel , etc .

▶ YZB221 — K Cast iron

Solid PCBN grade, with good abrasion resistance and heat resistance, suitable for milling alloy cast iron , nodular graphite cast iron ,grey cast iron, high chromium cast iro ,high –Ni-Cr cast iron ,etc .

▶ YZB231 — K Cast iron

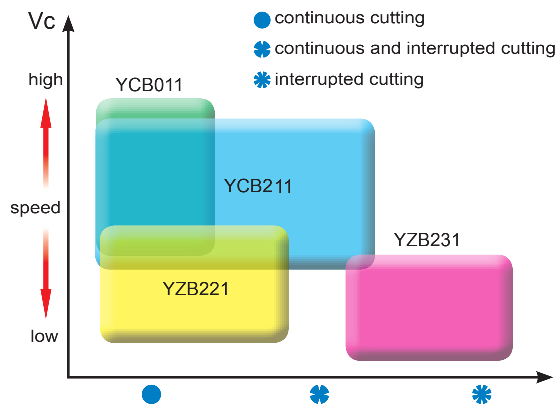
Solid PCBN grade, with excellent impact strength, suitable for low speed and heavy cutting alloy cast iron ,grey cast iron ,high chromium cast iron ,etc .



The PCBN cutting tools for machining of super hard material

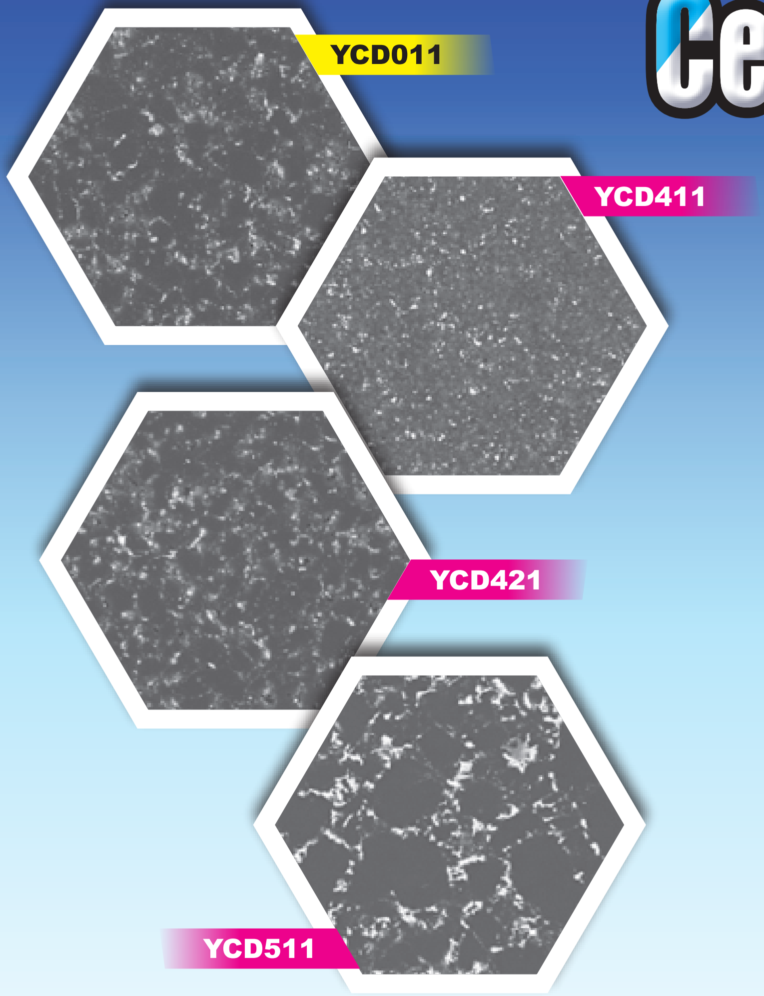
Application and machining Parameter Guidelines:

Grade	Workpiece material	Hardness	Speed (m/min)	Feed (mm/r)	Depth of Cut (mm)
YZB121	hardened steel	HRC45-65	50~200	0.1~0.5	＜3
	bearing steel	HRC55-65	50~120	0.1~0.5	＜3
YZB221	grey cast iron	HB170-300	100~600	0.3~1.0	＜2
	nodular graphite cast iron	HB200-300	60~500	0.3~1.0	＜5
	alloy cast iron	HB240-300	20~300	0.2~3.0	＜5
YZB231	grey cast iron	HB170-300	100~600	0.3~1.0	＜2
	nodular graphite cast iron	HB200-300	60~300	0.3~1.0	＜5
	alloy cast iron	HB240-300	20~150	0.2~3.0	＜5



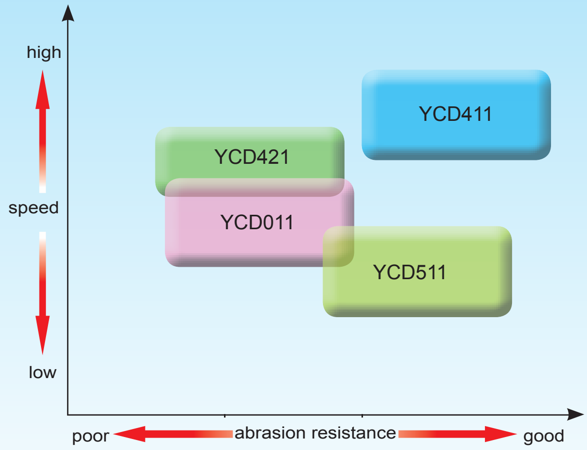
The PCBN cutting tools of machining cast iron

Ceramic Grade



Polycrystalline Diamond PCD

PCD cutting tools with high hardness , excellent abrasion resistance and thermal conductivity , low fiction coefficient for cutting of Non-ferrous metals and their alloys(such as Cu , Al , Mg , etc) , Non-metallic materials and compound materials.



▶ YCD011 N Non-ferrous materials

Medium diamond grain size grade,with good hardness and abrasion resistance, suitable for turning low-medium content silicon aluminum alloys, compound materials, copper/magnesium and their alloys,YCD011 is the general turning grade.

▶ YCD411 N Non-ferrous materials

Super-fine diamond grain size grade, with higher edge chipping resistance and abrasion resistance, suitable for high precision andmirror machining low-medium content silicon aluminum alloys, also precision cutting copper/magnesium and their alloys .

▶ YCD421 N Non-ferrous materials

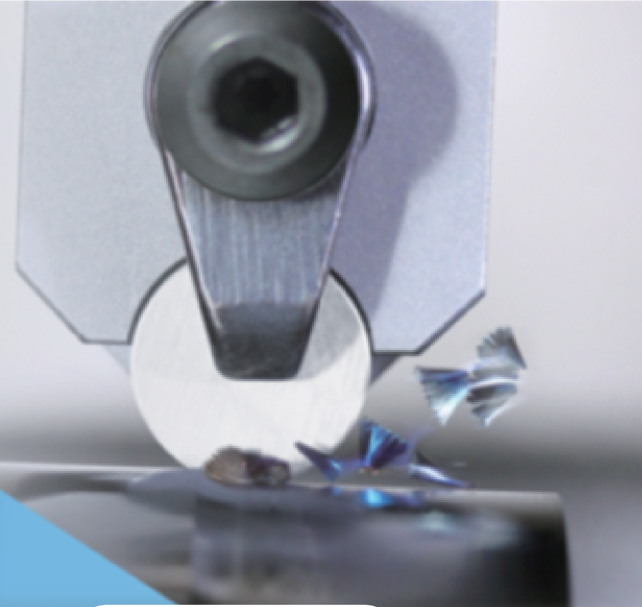
Medium diamond grain size grade,with high abrasion resistance and good edge quality, suitable for milling low-medium content siliconaluminum alloys,compound materials, copper/magnesium and their alloys, YCD421 is tgeneral milling grade.

▶ YCD511 N Non-ferrous materials

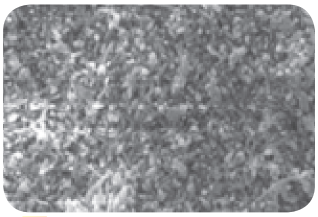
Mixed(2-30um) diamond grain size grade, with excelltent abrasion resistance and edge strength, suitable for cutting high -medium content silicon aluminum alloys, metal matrix composites(MMC),ceramic, Bi-metals.

Application and machining Parameter Guidelines:

Grade	Workpiece material	Cutting mode	Speed (m/min)
YCD011	silicon aluminum alloys (The content of Si 12%)	turning	400~1200
		milling	250~1400
	copper/magnesium and their alloys	turning /milling	400~1260
YCD411	silicon aluminum alloys (The content of Si 12%)	turning	500~1000
		milling	300~1500
	fiber reinforced composites	turning /milling	200~1000
YCD421	silicon aluminum alloys (The content of Si 12%)	turning	400~1200
		milling	600~2400
	MMC	turning /milling	1500~1800
	copper/magnesium and their alloys	turning /milling	400~1260
	cemented carbide	turning	20~40
YCD511	silicon aluminum alloys (The content of Si 12%)	turning	300~700
		turning	500~1000
	MMC	turning	500~1000
	ceramic(green)	milling	100~200
	ceramic(sintered)	milling	20~50
	Bi-metals	milling	200~300

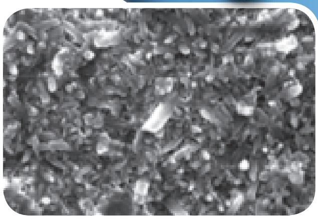


Ceramic Grade



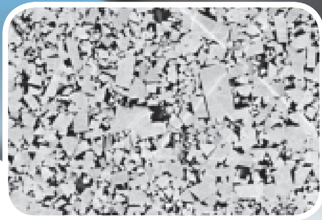
CN1000

With Si_3N_4 substrate, it has excellent capacity against cutting edge breakage and thermal shock, suitable for finishing and semi-finishing of grey cast iron. It also has great performance on heavy-load intermittent cutting of cast surface materials.



CN2000

With Si_3N_4 substrate, it has good wear resistance and toughness. It is suitable for not only intermittent and continuous machining of hardened steel and grey cast iron, but also machining of die steel and other high hardness materials.



CA1000

With Si_3N_4 substrate, it combines high wear resistance and good toughness, suitable for not only intermittent and continuous turning of hardened steel and grey cast iron, but also machining of die steel and other high-hardness materials.

Physical properties

Grade	Density (g/cm^3)	HardnessHv (GPa)	Bending strength (MPa)	Fracture toughness (MPa $m^{1/2}$)
CA1000 (Al_2O_3+TiCN)	4.2	19	⩾700	4.5
CN1000 (Si_3N_4)	3.25	16	⩾900	7.5
CN2000 (Si_3N_4)	3.25	16	⩾900	8

Recommended cutting parameters

Grade	Workpiece material	Machining mode	Cutting speed (m/min)	Feed rate (mm/r)	Cutting depth (mm)
CA1000	Grey cast iron Malleable Cast Iron	For roughing	150~800	0.2~0.5	3.0~6.0
		For finishing	200~1200	0.3~0.5	0.1~0.5
	Chilled cast iron	For roughing	30~100	0.1~0.2	0.5~1.5
		For finishing	50~200	0.05~0.15	0.1~0.5
	Carbon steel Alloy steel Bearing steel	For roughing	150~400	0.2~0.5	2.0~5.0
		For finishing	200~800	0.05~0.20	0.1~0.5
	Chilled steel	For roughing	20~100	0.1~0.2	0.5~1.5
		For semi-finishing	40~200	0.05~0.50	0.1~0.5
		For finishing	300~1200	0.05~0.30	0.1~0.5
CN1000	Grey cast iron Malleable Cast Iron	For roughing	150~1100	0.3~0.8	<5
		For finishing	250~1200	0.15~0.4	<1
	Chilled cast iron	For roughing	20~250	0.2~0.8	<5
		For finishing	60~450	0.1~0.6	<1
CN2000	Ni-base Alloy Non-ferrous metal	For roughing	150~250	0.2~0.4	<5
		For finishing	150~450	0.1~0.2	<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 decrease ← Hardness difference(Measured value – Theoretical value) → Hardness increase								
			-60	-40	-20	0	+20	+40	+60	+80	+100
P		HB180	1.42	1.24	1.11	1.0	0.91	0.84	0.77	0.72	0.67
M		HB180	1.44	1.25	1.11	1.0	0.91	0.84	0.78	0.73	0.68
K	Grey cast iron	HB220	1.21	1.13	1.06	1.0	0.95	0.90	0.86	0.82	0.79
K	Nodular cast iron	HB250	1.33	1.21	1.09	1.0	0.91	0.84	0.75	0.70	0.65
N		HB75			1.05	1.0	0.95				
S		HB350			1.12	1.0	0.89				
Rockwell hardness HRC				-6	-3	0	+3	+6	+9		
H		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
YBC151	1.12	1.00	0.82	0.73	0.67	0.60
YBC251	1.11	1.00	0.84	0.76	0.71	0.64
YBC351	1.11	1.00	0.84	0.76	0.70	0.63
YBC152	1.25	1.00	0.68	0.54	0.46	0.37
YBC252	1.55	1.00	0.47	0.30	0.22	0.14
YBM151	1.28	1.00	0.66	0.52	0.43	0.34
YBM153	1.32	1.00	0.64	0.48	0.37	0.31
YBM251	1.19	1.00	0.75	0.63	0.56	0.47
YBM253	1.22	1.00	0.73	0.61	0.54	0.45
YBG202	1.10	1.00	0.85	0.77	0.72	0.66
YBG205	1.15	1.00	0.82	0.74	0.69	0.64
YBD052	1.22	1.00	0.80	0.65	0.60	0.55
YBD102	1.20	1.00	0.75	0.62	0.58	0.50
YBD151	1.20	1.00	0.74	0.63	0.55	0.47
YBD152	1.11	1.00	0.70	0.60	0.50	0.40
YBG105	1.28	1.00	0.79	0.72	0.63	0.58
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.

General turning inserts code key

Insert shape/Code

85° A	82° B	80° C
55° D	75° E	H
55° K	L	86° M
O	P	R
S	T	75° T
35° V	80° 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°				

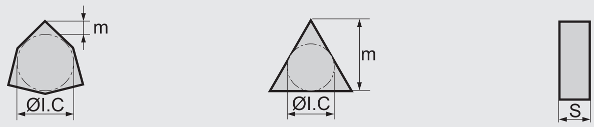
Chipbreaker and clamping system

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)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05-±0.13	±0.025
K	±0.013	±0.05-±0.13	±0.025
L	±0.025	±0.05-±0.13	±0.025
M	±0.08-±0.18	±0.05-±0.13	±0.13
N	±0.08-±0.18	±0.05-±0.13	±0.025
U	±0.13-±0.38	±0.08-±0.25	±0.13

(Reference) Details of M-level tolerance (Identified by shape)

● Nose height tolerance(mm)

Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
12.7	±0.13	±0.13	±0.13	±0.15	---	---
15.875	±0.15	±0.15	±0.15	±0.18	---	---
19.05	±0.15	±0.15	±0.15	±0.18	---	---
25.4	---	±0.18	---	---	---	---

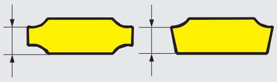
● Tolerance of inscribed circle ØI.C(mm)

Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
6.35	±0.05	±0.05	±0.05	±0.05	±0.05	---
9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
12.7	±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

Length of cutting edge

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					

Insert thickness



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

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

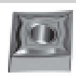
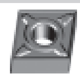
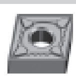
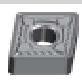
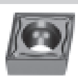
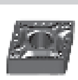
Nose radius

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

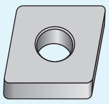
Code	Nose radius (mm)
00	No radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	Others
Diameter of insert (Metric)	Round insert

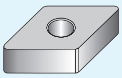
Chipbreaker code

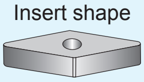
DF	DM	DR
		
HF	**HM**	**HR**
		
EF	**EM**	**ER**
		
NF	**NM**	**SF**
		
PM	**HR**	**WGF**
		

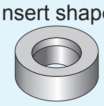
Metric and inch comparison table of general turning inserts

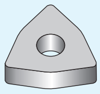
Metric and inch comparison table of negative inserts

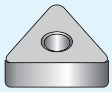
C-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	090304	321	-DF -WGF -SF -EF -NF -WGM -PM -DM -EM -NM -DR -ER -LR -HPR
	090308	322	
	120404	431	
	120408	432	
	120412	433	
	120416	434	
	160608	542	
	160612	543	
	160616	544	
	190608	642	
	190612	643	
	190616	644	
	190624	646	
	250724	856	
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

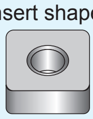
D-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	110404	331	-EF -DF -WGF -SF -NF -WGM -PM -DM -EM -NM -DR -ER -LR
	110408	332	
	110412	333	
	150404	431	
	150408	432	
	150412	433	
	150604	441	
	150608	442	
	150612	443	
	150616	444	
	190608	542	
	190612	543	

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

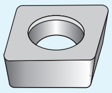
R-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	0903MO	32	
	1204MO	43	

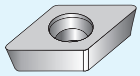
W-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	06T304	3(2.5)1	-DF -WGF -SF -EF -NF -WGM -PM -DM -EM -NM -DR
	06T308	3(2.5)2	
	06T312	3(2.5)3	
	060404	331	
	060408	332	
	060412	333	
	080404	431	
	080408	432	
	080412	433	

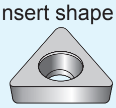
T-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	110304	221	-DF -WGF -SF -EF -WGM -PM -DM -EM -DR -ER -LR
	110308	222	
	160404	331	
	160408	332	
	160412	333	
	220404	431	
	220408	432	
	220412	433	
	220416	434	
	270608	542	
	270612	543	
	270616	544	

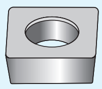
S-type negative angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	090304	321	-DF -SF -EF -PM -DM -EM -NM -DR -ER -LR -HPR
	090308	322	
	090312	323	
	120404	431	
	120408	432	
	120412	433	
	120416	434	
	150608	542	
	150612	543	
	150616	544	
	190412	633	
	190424	636	
	190612	643	
	190616	644	
	250724	856	
	250732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

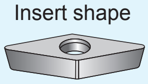
Metric and inch comparison table of positive insert

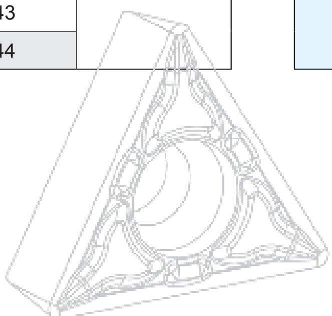
C-type positive angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	060202	2(1.5)0	-USF
	060204	2(1.5)1	-SF
	060208	2(1.5)2	-HF
	09T302	3(2.5)0	-EF
	09T304	3(2.5)1	-HM
	09T308	3(2.5)2	-EM
	120404	431	-HR
	120408	432	-LH
	120412	433	-LC

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

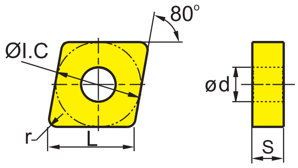
T-type positive angle	(ISO)	(Inch)	Chipbreaker
Insert shape 	06T102	1.2(1.2)0	-USF -SF -HF -EF -HM -EM -HR -LH -LC
	06T104	1.2(1.2)1	
	06T108	1.2(1.2)2	
	090202	1.8(1.5)0	
	090204	1.8(1.5)1	
	090208	1.8(1.5)2	
	110202	2(1.5)0	
	110204	2(1.5)1	
	110208	2(1.5)2	
	110302	220	
	110304	221	
	110308	222	
	16T302	3(2.5)0	
	16T304	3(2.5)1	
	16T308	3(2.5)2	
	16T312	3(2.5)3	
	160400	330	
	220408	432	
	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	-HF -EF -HM -EM -HR -LH -LC
	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	-USF -SF -HF -NF -LH -LC
	110204	2(1.5)1	
	110208	2(1.5)2	
	110302	220	
	110304	221	
	110308	222	
	160402	330	
	160404	331	
	160408	332	
	160412	333	



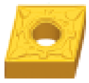
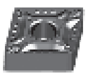
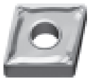
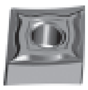
CN□□ (Negative inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Coated cemented carbide: YBC151 – YBD252; Cermet: YNG151; Coated cermet: YNG151C; Cemented carbide: YC10 – YD201

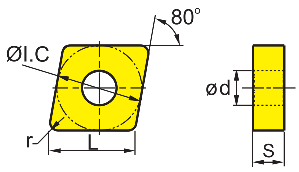
Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
DF  For finishing	CNMG090304-DF	9.7	9.525	3.18	3.81	0.4		○		○					○																		
	CNMG090308-DF	9.7	9.525	3.18	3.81	0.8		○	○	○																							
	CNMG120404-DF	12.9	12.7	4.76	5.16	0.4		★	●	★					○					○							○						
	CNMG120408-DF	12.9	12.7	4.76	5.16	0.8		★	●	★	○				○					○							●						
	CNMG120412-DF	12.9	12.7	4.76	5.16	1.2		★	○	○										○													
WGF  For finishing Wiper	CNMG120404-WGF	12.9	12.7	4.76	5.16	0.4		★											★			★											
	CNMG120408-WGF	12.9	12.7	4.76	5.16	0.8		★											★			★											
SF  For finishing	CNMG090304-SF	9.7	9.525	3.18	3.81	0.4							○														○						
	CNMG090308-SF	9.7	9.525	3.18	3.81	0.8							○														○	★					
	CNMG120404-SF	12.9	12.7	4.76	5.16	0.4							○															★					
	CNMG120408-SF	12.9	12.7	4.76	5.16	0.8							○															★					
	CNMG120412-SF	12.9	12.7	4.76	5.16	1.2							○														○						
EF  For finishing	CNMG090304-EF	9.7	9.525	3.18	3.81	0.4									●	★			★														
	CNMG090308-EF	9.7	9.525	3.18	3.81	0.8									○	★			★														
	CNMG120404-EF	12.9	12.7	4.76	5.16	0.4									●	★			★														
	CNMG120408-EF	12.9	12.7	4.76	5.16	0.8							●		●	★			★														
	CNMG120412-EF	12.9	12.7	4.76	5.16	1.2									○	★			★														

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

Applicable tool

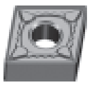
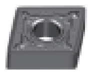
DCLNR/L Kr:95°	PCBNR/L Kr:75°	PCLNR/L Kr:95°	PCLNR/L Kr:95°
			
Page A164	A171	A172	A214

CN□□ (Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
NF  For finishing	CNEG120404-NF	12.9	12.7	4.76	5.16	0.4							●	★																		○	
	CNEG120408-NF	12.9	12.7	4.76	5.16	0.8							○	★																		○	
	CNEG120412-NF	12.9	12.7	4.76	5.16	1.2							○	★																		○	
WGM  For finishing Wiper	CNMG120408-WGM	12.9	12.7	4.76	5.16	0.8				★						★									★								
	CNMG120412-WGM	12.9	12.7	4.76	5.16	1.2				★						★									★								
PM  For semi-finishing	CNMG090304-PM	9.7	9.525	3.18	3.81	0.4		★	●	○																							
	CNMG090308-PM	9.7	9.525	3.18	3.81	0.8		○	●	○															★								
	CNMG120404-PM	12.9	12.7	4.76	5.16	0.4		★	●	★	○												★		★	○							
	CNMG120408-PM	12.9	12.7	4.76	5.16	0.8	●	★	●	★	●												★		★	★							
	CNMG120412-PM	12.9	12.7	4.76	5.16	1.2		○	●	★	●												★		★	★							
	CNMG120416-PM	12.9	12.7	4.76	5.16	1.6		★	●	○	●												★		○								
	CNMG160608-PM	16.1	15.875	6.35	6.35	0.8	●	○	●	○	○												○		○								
	CNMG160612-PM	16.1	15.875	6.35	6.35	1.2	●	○	●	○	●												★		○								
	CNMG160616-PM	16.1	15.875	6.35	6.35	1.6			●	○													○		○								
	CNMG190608-PM	19.3	19.05	6.35	7.94	0.8		★	●	○	○														★								
	CNMG190612-PM	19.3	19.05	6.35	7.94	1.2		★	●	★	●												○		★								
	CNMG190616-PM	19.3	19.05	6.35	7.94	1.6	●	★	●	○	●												○										

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

Applicable tool

DCLNR/L Kr:95°

PCBNR/L Kr:75°

PCLNR/L Kr:95°

PCLNR/L Kr:95°

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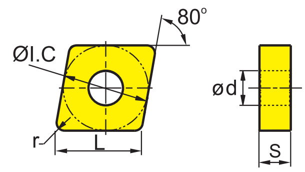
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

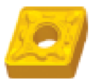
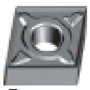
Cemented carbide and cermet inserts

CN□□(Negative inserts)



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

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
DM	CNMG090304-DM	9.7	9.525	3.18	3.81	0.4		○	●	○										●													
	CNMG090308-DM	9.7	9.525	3.18	3.81	0.8			○	○										●													
For semi-finishing	CNMG120404-DM	12.9	12.7	4.76	5.16	0.4		★	●	★	○				●		○			●							●						
	CNMG120408-DM	12.9	12.7	4.76	5.16	0.8	●	★	●	★	●				●		●	○		●							●						
	CNMG120412-DM	12.9	12.7	4.76	5.16	1.2		★	●	★	●				○					●													
	CNMG120416-DM	12.9	12.7	4.76	5.16	1.6			●	○	●									○													
	CNMG160608-DM	16.1	15.875	6.35	6.35	0.8		★	●	★	○									●													
	CNMG160612-DM	16.1	15.875	6.35	6.35	1.2		○	●	★	○									○													
	CNMG160616-DM	16.1	15.875	6.35	6.35	1.6		★	●	○	●									○													
	CNMG190608-DM	19.3	19.05	6.35	7.94	0.8		○	●	○										○													
	CNMG190612-DM	19.3	19.05	6.35	7.94	1.2		★	●	★	○									○													
	CNMG190616-DM	19.3	19.05	6.35	7.94	1.6			●	★	○									○													
EM	CNMG120404-EM	12.9	12.7	4.76	5.16	0.4									●	★					★												
	CNMG120408-EM	12.9	12.7	4.76	5.16	0.8									●	★					★												
For semi-finishing	CNMG120412-EM	12.9	12.7	4.76	5.16	1.2									●	★					★												
	CNMG160608-EM	16.1	15.875	6.35	6.35	0.8							○		○	★					★												
	CNMG160612-EM	16.1	15.875	6.35	6.35	1.2									○	★					★												
	CNMG160616-EM	16.1	15.875	6.35	6.35	1.6									○	★					★												

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

Applicable tool

DCLNR/L Kr:95°

PCBNR/L Kr:75°

PCLNR/L Kr:95°

PCLNR/L Kr:95°

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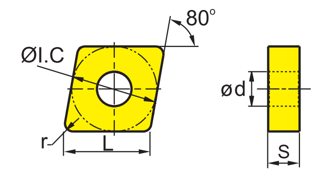
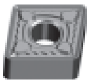
CN□□ (Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
NM  For semi-finishing	CNMG120404-NM	12.9	12.7	4.76	5.16	0.4							○	★																		○	
	CNMG120408-NM	12.9	12.7	4.76	5.16	0.8							●	★																		○	
	CNMG120412-NM	12.9	12.7	4.76	5.16	1.2							○	★																		○	
LR  Light-load roughing	CNMM120408-LR	12.9	12.7	4.76	5.16	0.8				★																							
	CNMM120412-LR	12.9	12.7	4.76	5.16	1.2				★																							
	CNMM120416-LR	12.9	12.7	4.76	5.16	1.6				★																							
	CNMM160608-LR	16.1	15.875	6.35	6.35	0.8				★																							
	CNMM160612-LR	16.1	15.875	6.35	6.35	1.2				★																							
	CNMM160616-LR	16.1	15.875	6.35	6.35	1.6				★																							
	CNMM160624-LR	16.1	15.875	6.35	6.35	2.4				★																							
	CNMM190612-LR	19.3	19.05	6.35	7.94	1.2				★																							
	CNMM190616-LR	19.3	19.05	6.35	7.94	1.6				★																							
	CNMM190624-LR	19.3	19.05	6.35	7.94	2.4				★																							
	CNMM250924-LR	25.79	25.4	9.525	9.12	2.4				★																							

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

Applicable tool

DCLNR/L Kr:95°

PCBNR/L Kr:75°

PCLNR/L Kr:95°

PCLNR/L Kr:95°

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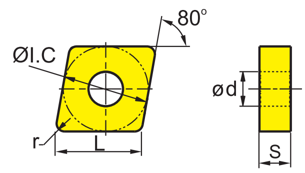
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

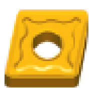
Cemented carbide and cermet inserts

CN□□(Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
DR  For light roughing	CNMG120408-DR	12.9	12.7	4.76	5.16	0.8		★	●	★	●										●		●										
	CNMG120412-DR	12.9	12.7	4.76	5.16	1.2		○	●	★	○										●		●										
	CNMG120416-DR	12.9	12.7	4.76	5.16	1.6		○		○											●		●										
	CNMG160608-DR	16.1	15.875	6.35	6.35	0.8			○	○											○												
	CNMG160612-DR	16.1	15.875	6.35	6.35	1.2			●	★	○										●		○										
	CNMG160616-DR	16.1	15.875	6.35	6.35	1.6			○	★	●																						
	CNMG190608-DR	19.3	15.875	6.35	7.94	0.8			○	○											●		○										
	CNMG190612-DR	19.3	19.05	6.35	7.94	1.2		○	●	★	●										○		○										
	CNMG190616-DR	19.3	19.05	6.35	7.94	1.6		○	●	★	●												○										
	CNMG190624-DR	19.3	19.05	6.35	7.94	2.4		○	●	○	●																						
DR  For roughing	CNMM120412-DR	12.9	12.7	4.76	5.16	1.2			●		○																						
	CNMM160612-DR	16.1	15.875	6.35	6.35	1.2			●		○																						
	CNMM160616-DR	16.1	15.875	6.35	6.35	1.6					○																						
	CNMM190612-DR	19.3	19.05	6.35	7.94	1.2			●	○	●																						
	CNMM190616-DR	19.3	19.05	6.35	7.94	1.6			●	★	●																						
	CNMM190624-DR	19.3	19.05	6.35	7.94	2.4		○	○		○																						
	CNMM250924-DR	25.79	25.4	9.525	9.12	2.4			○	★	○																						
ER  For roughing	CNMG120408-ER	12.9	12.7	4.76	5.16	0.8												●			★												
	CNMG120412-ER	12.9	12.7	4.76	5.16	1.2												●			★												
	CNMG160612-ER	16.1	15.875	6.35	6.35	1.2												●			★												
	CNMG160616-ER	16.1	15.875	6.35	6.35	1.6															★												
	CNMG190612-ER	19.3	19.05	6.35	7.94	1.2															★												
	CNMG190616-ER	19.3	19.05	6.35	7.94	1.6															★												
ER  For roughing	CNMM250724-ER	25.79	25.4	7.94	9.12	2.4				★											★												
	CNMM250732-ER	25.79	25.4	7.94	9.12	3.2				★											★												
	CNMM250924-ER	25.79	25.4	9.525	9.12	2.4				★											★												
	CNMM250932-ER	25.79	25.4	9.525	9.12	3.2				★											★												

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

Applicable tool

DCLNR/L
Kr:95°


PCBNR/L
Kr:75°


PCLNR/L
Kr:95°


PCLNR/L
Kr:95°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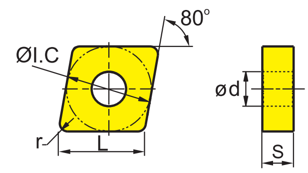
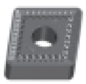
CN□□ (Negative inserts)



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

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	☺	☺	😐	😐	☹	☹	☺		😐	😐	☹										☺	☺	☺	☹			
M Stainless steel							☺		😐	😐		😐	☺	😐	😐						☺	☺					
K Cast iron																☺	😐	😐	☹	☹					☺		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							☺	☺																		☺	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
HPR  For heavy machining	CNMM190616-HPR	19.5	19.05	6.35	7.94	1.6				★		○																					
	CNMM250924-HPR	25.19	25.4	9.525	9.12	2.4				★		○																					
Without chipbreaker 	CNMA120404	12.9	12.7	4.76	5.16	0.4																★	○	○	○								
	CNMA120408	12.9	12.7	4.76	5.16	0.8																★	★	●	★								
	CNMA120412	12.9	12.7	4.76	5.16	1.2																★	★	●	★								
	CNMA120416	12.9	12.7	4.76	5.16	1.6																★	★		○								
	CNMA160608	16.1	15.875	6.35	6.35	0.8																	○	○									
	CNMA160612	16.1	15.875	6.35	6.35	1.2																	★	○									
	CNMA160616	16.1	15.875	6.35	6.35	1.6																○	★		○								
	CNMA160620	16.1	15.875	6.35	6.35	2.0																		●									
	CNMA160630	16.1	15.875	6.35	6.35	3.0																		○									
	CNMA190612	19.3	19.05	6.35	7.94	1.2																★	○		★								
	CNMA190616	19.3	19.05	6.35	7.94	1.6																○	★		★								

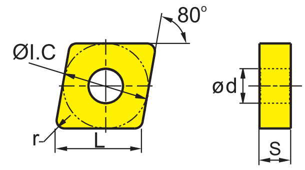
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

DCLNR/L	PCBNR/L	PCLNR/L	PCLNR/L
Kr:95°	Kr:75°	Kr:95°	Kr:95°
			
Page A164	A171	A172	A214

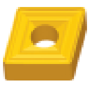
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

CN□□(Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
All round 	**CNMG120404**	12.9	12.7	4.76	5.16	0.4	●		●											●			○	●							○		
	CNMG120408	12.9	12.7	4.76	5.16	0.8	●	★	●	★	○									●			★	●	★	★			●		○		
	CNMG120412	12.9	12.7	4.76	5.16	1.2	●	★	●	★												○	○		○								
	CNMG160608	16.1	15.875	6.35	6.35	0.8	●		●											○				○					○		○		
	CNMG160612	16.1	15.875	6.35	6.35	1.2			●		○													○									
	CNMG160616	16.1	15.875	6.35	6.35	1.6			○																								
	CNMG190608	19.3	19.05	6.35	7.94	0.8	○		○		○																						
	CNMG190612	19.3	19.05	6.35	7.94	1.2	○		●		○													○									
	CNMG190616	19.3	19.05	6.35	7.94	1.6	○		○		○													○									
All round 	**CNMM120404**	12.9	12.7	4.76	5.16	0.4	○																										
	CNMM120408	12.9	12.7	4.76	5.16	0.8	○		○																								
	CNMM120412	12.9	12.7	4.76	5.16	1.2	○																						○	○			
	CNMM190608	19.3	19.05	6.35	7.94	0.8					○																		○				
	CNMM190612	19.3	19.05	6.35	7.94	1.2			○		○																						
	CNMM190616	19.3	19.05	6.35	7.94	1.6			○																								
	CNMM190624	19.3	19.05	6.35	7.94	2.4					○																						

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

Applicable tool

DCLNR/L Kr:95°

PCBNR/L Kr:75°

PCLNR/L Kr:95°

PCLNR/L Kr:95°

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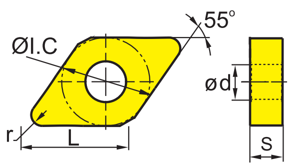
DN□□ (Negative inserts)



Good working condition · Normal working condition · Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
DF  For finishing	DNMG110404-DF	11.6	9.525	4.76	3.81	0.4		○	●	○																	●						
	DNMG110408-DF	11.6	9.525	4.76	3.81	0.8		○	○	○																							
	DNMG110412-DF	11.6	9.525	4.76	3.81	1.2		○	○																								
	DNMG150404-DF	15.5	12.7	4.76	5.16	0.4		★	●	★																							
	DNMG150408-DF	15.5	12.7	4.76	5.16	0.8		★	●	★																							
	DNMG150412-DF	15.5	12.7	4.76	5.16	1.2		○		○																							
	DNMG150604-DF	15.5	12.7	6.35	5.16	0.4	●	★	●	★										○													
	DNMG150608-DF	15.5	12.7	6.35	5.16	0.8		★	●	○																							
	DNMG150612-DF	15.5	12.7	6.35	5.16	1.2			○																								
WGF  For finishing Wiper	DNMX110404-WGF	11.6	9.525	4.76	3.81	0.4		★											★			★											
	DNMX110408-WGF	11.6	9.525	4.76	3.81	0.8		★											★			★											
	DNMX150404-WGF	15.5	12.7	4.76	5.16	0.4		★											★			★											
	DNMX150408-WGF	15.5	12.7	4.761	5.16	0.8		★											★			★											
	DNMX150604-WGF	15.5	12.7	6.35	5.16	0.4		★											★			★											
	DNMX150608-WGF	15.5	12.7	6.35	5.16	0.8		★											★			★											

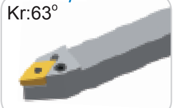
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

DDJNR/L Kr:93°

PDJNR/L Kr:93°

PDNNR/L Kr:63°



PDSNR/L Kr:62°30'

PDUNR/L Kr:93°

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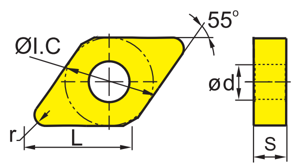
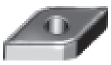
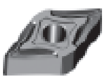
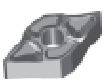
Insert code key A48–A49 Grade selection reference A19/A34–A46 Chipbreaker selection reference A22–A33 Recommended cutting parameters A243–A245

DN□□(Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

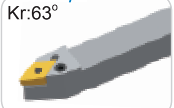
Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
SF  For finishing	**DNMG110404-SF**	11.6	9.525	4.76	3.81	0.4							○														○	★					
	DNMG150404-SF	15.5	12.7	4.76	5.16	0.4							○														○	★					
	DNMG150408-SF	15.5	12.7	4.76	5.16	0.8							○														○	★					
	DNMG150604-SF	15.5	12.7	6.35	5.16	0.4							○														○	★					
	DNMG150608-SF	15.5	12.7	6.35	5.16	0.8							○														○	★					
EF  For finishing	**DNMG110404-EF**	11.6	9.525	4.76	3.81	0.4									●	★			★														
	DNMG110408-EF	11.6	9.525	4.76	3.81	0.8									○	★			★														
	DNMG110412-EF	11.6	9.525	4.76	3.81	1.2									○	★			★														
	DNMG150404-EF	15.5	12.7	4.76	5.16	0.4									●	★			★														
	DNMG150408-EF	15.5	12.7	4.76	5.16	0.8									●	★			★														
	DNMG150412-EF	15.5	12.7	4.76	5.16	1.2									○	★			★														
	DNMG150604-EF	15.5	12.7	6.35	5.16	0.4									●	★			★														
	DNMG150608-EF	15.5	12.7	6.35	5.16	0.8									●	★			★														
	DNMG150612-EF	15.5	12.7	6.35	5.16	1.2									○	★			★														
NF  For finishing	**DNEG150404-NF**	15.5	12.7	4.76	5.16	0.4							○	★																		○	
	DNEG150408-NF	15.5	12.7	4.76	5.16	0.8							○	★																		○	
	DNEG150604-NF	15.5	12.7	6.35	5.16	0.4							●	★																		○	
	DNEG150608-NF	15.5	12.7	6.35	5.16	0.8							●	★																		○	

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

Applicable tool

DDJNR/L
Kr:93°


PDJNR/L
Kr:93°


PDNNR/L
Kr:63°


PDSNR/L
Kr:62°30'


PDUNR/L
Kr:93°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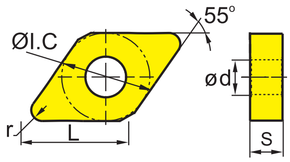
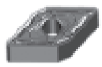
DN□□ (Negative inserts)



Good working condition / Normal working condition / Bad working condition

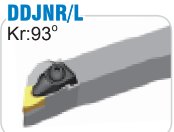
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
WGM  For semi-finishing Wiper	DNMX150408-WGM	15.5	12.7	4.76	5.16	0.8				★						★									★								
	DNMX150412-WGM	15.5	12.7	4.76	5.161	1.2				★						★									★								
	DNMX150608-WGM	15.5	12.7	6.35	5.16	0.8				★						★									★								
	DNMX150612-WGM	15.5	12.7	6.35	5.16	1.2				★						★									★								
PM  For semi-finishing	DNMG110404-PM	11.6	9.525	4.76	3.81	0.4		●	●	○															●								
	DNMG110408-PM	11.6	9.525	4.76	3.81	0.8		●	●	○	○												★		○	○							
	DNMG110412-PM	11.6	9.525	4.76	3.81	1.2			○	○																							
	DNMG150404-PM	15.5	12.7	4.76	5.16	0.4		●	●	○																							
	DNMG150408-PM	15.5	12.7	4.76	5.16	0.8	●	●	●	○	○												★		★	○							
	DNMG150412-PM	15.5	12.7	4.76	5.16	1.2			●	○			○										○		★	○							
	DNMG150416-PM	15.5	12.7	4.76	5.16	1.6			○	○																							
	DNMG150604-PM	15.5	12.7	6.35	5.16	0.4		●	●	○	○												★		★								
	DNMG150608-PM	15.5	12.7	6.35	5.16	0.8	●	○	●	★	●												★		★	○							
	DNMG150612-PM	15.5	12.7	6.35	5.16	1.2		★	●	★	○												★		○								
	DNMG150616-PM	15.5	12.7	6.35	5.16	1.6			○	○																							

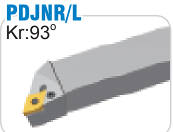
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

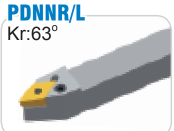
DDJNR/L Kr:93°



PDJNR/L Kr:93°



PDNNR/L Kr:63°



PDSNR/L Kr:62°30'

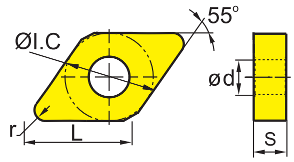
PDUNR/L Kr:93°

Page A165 A173 A174 A215 A216

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

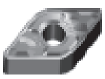
Cemented carbide and cermet inserts

DN□□ (Negative inserts)



Good working condition / Normal working condition / Bad working condition

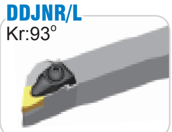
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
DM  For semi-finishing	DNMG110404-DM	11.6	9.525	4.76	3.81	0.4		●	●	○										○													
	DNMG110408-DM	11.6	9.525	4.76	3.81	0.8		★	●	★	○									●													
	DNMG110412-DM	11.6	9.525	4.76	3.81	1.2		○		○																							
	DNMG150404-DM	15.5	12.7	4.76	5.16	0.4		○	●	★																	○						
	DNMG150408-DM	15.5	12.7	4.76	5.16	0.8		★	●	★																	●						
	DNMG150412-DM	15.5	12.7	4.76	5.16	1.2		★	○	★																							
	DNMG150416-DM	15.5	12.7	4.76	5.16	1.6				○																							
	DNMG150604-DM	15.5	12.7	6.35	5.16	0.4		★	●	★	○									●							●						
	DNMG150608-DM	15.5	12.7	6.35	5.16	0.8		★	●	★	●									●													
	DNMG150612-DM	15.5	12.7	6.35	5.16	1.2		●	●	★	○																						
	DNMG150616-DM	15.5	12.7	6.35	5.16	1.6		○	○	○																							
EM  For semi-finishing	DNMG110404-EM	11.6	9.525	4.76	3.81	0.4									○	★					★												
	DNMG110408-EM	11.6	9.525	4.76	3.81	0.8									○	★					★												
	DNMG110412-EM	11.6	9.525	4.76	3.81	1.2									○	★					★												
	DNMG150404-EM	15.5	12.7	4.76	5.16	0.4									●	★					★												
	DNMG150408-EM	15.5	12.7	4.76	5.16	0.8									●	★					★												
	DNMG150412-EM	15.5	12.7	4.76	5.16	1.2									○	★					★												
	DNMG150604-EM	15.5	12.7	6.35	5.16	0.4							○		●	★					★												
	DNMG150608-EM	15.5	12.7	6.35	5.16	0.8									●	★					★												
	DNMG150612-EM	15.5	12.7	6.35	5.16	1.2									○	★					★												
NM  For semi-finishing	DNMG150412-NM	15.5	12.7	4.76	5.16	1.2							○	★																		○	
	DNMG150612-NM	15.5	12.7	6.35	5.16	1.2							●	★																		○	

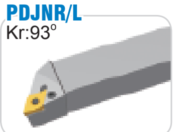
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

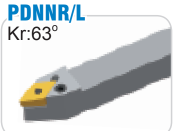
DDJNR/L Kr:93°



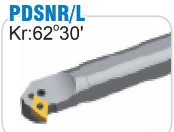
PDJNR/L Kr:93°



PDNNR/L Kr:63°



PDSNR/L Kr:62°30'



PDUNR/L Kr:93°

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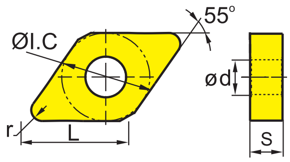
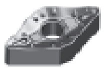
DN□□ (Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

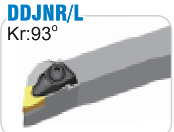
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
LR  Light-load roughing	DNMM150608-LR	15.5	12.7	6.35	5.16	0.8				★																							
	DNMM150612-LR	15.5	12.7	6.35	5.16	1.2				★																							
	DNMM150616-LR	15.5	12.7	6.35	5.16	1.6				★																							
DR  For light roughing	DNMG150408-DR	15.5	12.7	4.76	5.16	0.8				○																							
	DNMG150412-DR	15.5	12.7	4.76	5.16	1.2				○																							
	DNMG150416-DR	15.5	12.7	4.76	5.16	1.6				○	○																						
	DNMG150608-DR	15.5	12.7	6.35	5.16	0.8		★	○	○	○												●		●								
	DNMG150612-DR	15.5	12.7	6.35	5.16	1.2		○	●	★	○												○		●								
	DNMG150616-DR	15.5	12.7	6.35	5.16	1.6					○														○								
DR  For roughing	DNMM150608-DR	15.5	12.7	6.35	5.16	0.8		○	○																								
	DNMM150612-DR	15.5	12.7	6.35	5.16	1.2		○	●																								
	DNMM150616-DR	15.5	12.7	6.35	5.16	1.6					○																						
ER  For roughing	DNMG150608-ER	15.5	12.7	6.35	5.16	0.8															★												
	DNMG150612-ER	15.5	12.7	6.35	5.16	1.2															★												
ER  For roughing	DNMM150608-ER	15.5	12.7	6.35	5.16	0.8															★												
	DNMM150612-ER	15.5	12.7	6.35	5.16	1.2															★												

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

Applicable tool

DDJNR/L Kr:93°



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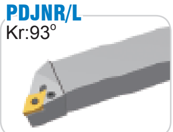
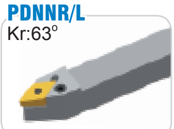
PDJNR/L Kr:93°



A173

PDNNR/L Kr:63°



A174

PDSNR/L Kr:62°30'

A215

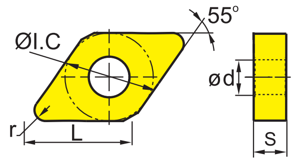
PDUNR/L Kr:93°

A216

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

Cemented carbide and cermet inserts

DN□□(Negative inserts)



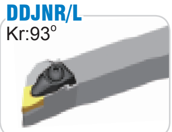
😊 Good working condition 😐 Normal working condition ☹ Bad working condition

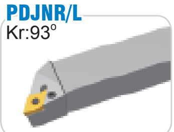
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

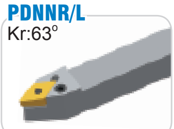
Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
All round 	DNMG150604	15.5	12.7	6.35	5.16	0.4			○																								
	DNMG150608	15.5	12.7	6.35	5.16	0.8			○																								
	DNMG150612	15.5	12.7	6.35	5.16	1.2			○																								
	DNMG150616	15.5	12.7	6.35	5.16	1.6			○																								
	DNMG190608	19.3	15.875	6.35	7.94	0.8			○																								
	DNMG190612	19.3	15.875	6.35	7.94	1.2			○		○																		○				
Without chipbreaker 	DNMA110416	11.6	9.525	4.76	3.81	1.6																			○								
	DNMA110424	11.6	9.525	4.76	3.81	2.4																			○								
	DNMA150404	15.5	12.7	4.76	5.16	0.4																		○									
	DNMA150408	15.5	12.7	4.76	5.16	0.8																★	★	●	○								
	DNMA150604	15.5	12.7	6.35	5.16	0.4																○	○	○	○								
	DNMA150608	15.5	12.7	6.35	5.16	0.8																○	★	●	★						○		
	DNMA150612	15.5	12.7	6.35	5.16	1.2																○	○		○								
	DNMA150616	15.5	12.7	6.35	5.16	1.6																	○	○	○								

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

Applicable tool

DDJNR/L
Kr:93°


PDJNR/L
Kr:93°


PDNNR/L
Kr:63°


PDSNR/L
Kr:62°30'


PDUNR/L
Kr:93°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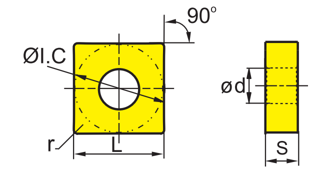
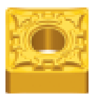
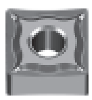
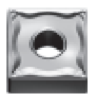
SN□□ (Negative inserts)



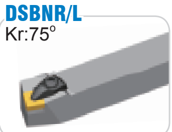
Good working condition / Normal working condition / Bad working condition

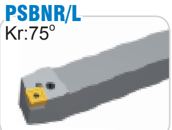
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

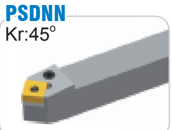
Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
DF  For finishing	SNMG090304-DF	9.525	9.525	3.18	3.81	0.4		○																									
	SNMG090308-DF	9.525	9.525	3.18	3.81	0.8		○																									
	SNMG120404-DF	12.7	12.7	4.76	5.16	0.4		○																									
	SNMG120408-DF	12.7	12.7	4.76	5.16	0.8		○	●	○																	○						
	SNMG120412-DF	12.7	12.7	4.76	5.16	1.2		○		○																							
EF  For finishing	SNMG090304-EF	9.525	9.525	3.18	3.81	0.4									○	★			★														
	SNMG090308-EF	9.525	9.525	3.18	3.81	0.8									○	★			★														
	SNMG090312-EF	9.525	9.525	3.18	3.81	1.2									○	★			★														
	SNMG120404-EF	12.7	12.7	4.76	5.16	0.4									●	★			★														
	SNMG120408-EF	12.7	12.7	4.76	5.16	0.8									●	★			★														
	SNMG120412-EF	12.7	12.7	4.76	5.16	1.2									○	★			★														
	SNMG150608-EF	15.875	15.875	6.35	6.35	0.8									○	★			★														
	SNMG150612-EF	15.875	15.875	6.35	6.35	1.2									○	★			★														
SF  For finishing	SNMG090304-SF	9.525	9.525	3.18	3.81	0.4							○														○	★					
	SNMG090308-SF	9.525	9.525	3.18	3.81	0.8							○														○	★					
	SNMG120404-SF	12.7	12.7	4.76	5.16	0.4							○														○	★					
	SNMG120408-SF	12.7	12.7	4.76	5.16	0.8							○														○	★					
	SNMG120412-SF	12.7	12.7	4.76	5.16	1.2							○														○						
	SNMG150608-SF	15.875	15.875	6.35	6.35	0.8							○														○						

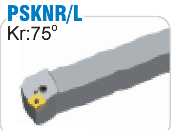
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

DSBNR/L Kr:75°


PSBNR/L Kr:75°


PSDNN Kr:45°


PSKNR/L Kr:75°


PSSNR/L Kr:45°


PSKNR/L Kr:75°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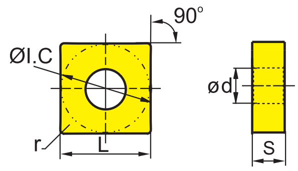
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

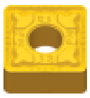
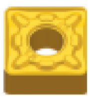
Cemented carbide and cermet inserts

SN□□ (Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

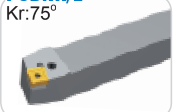
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

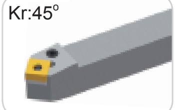
Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
PM	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		●	●	○	○												★		★	★							
For semi-finishing	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			●	○																							
DM	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			●	○	○																						
For semi-finishing	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

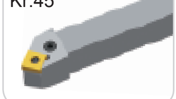
Applicable tool

DSBNR/L Kr:75°


PSBNR/L Kr:75°


PSDNN Kr:45°


PSKNR/L Kr:75°


PSSNR/L Kr:45°


PSKNR/L Kr:75°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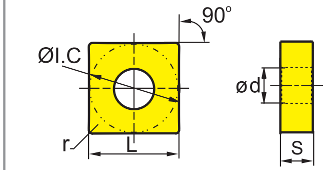
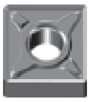
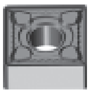
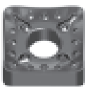
SN□□(Negative inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
EM  For semi-finishing	SNMG120404-EM	12.7	12.7	4.76	5.16	0.4									●	★					★												
	SNMG120408-EM	12.7	12.7	4.76	5.16	0.8									●	★					★												
	SNMG120412-EM	12.7	12.7	4.76	5.16	1.2									●	★					★												
	SNMG120416-EM	12.7	12.7	4.76	5.16	1.6									○	★					★												
	SNMG150612-EM	15.875	15.875	6.35	6.35	1.2									●	★					★												
	SNMG150616-EM	15.875	15.875	6.35	6.35	1.6									○	★					★												
NM  For semi-finishing	SNMG120408-NM	12.7	12.7	4.76	5.16	0.8							●	★																		○	
	SNMG120412-NM	12.7	12.7	4.76	5.16	1.2							○	★																		○	
LR  Light-load roughing	SNMM120408-LR	12.9	12.7	4.76	5.16	0.8				★																							
	SNMM120412-LR	12.9	12.7	4.76	5.16	1.2				★																							
	SNMM120416-LR	12.9	12.7	4.76	5.16	1.6				★																							
	SNMM150612-LR	15.875	15.875	6.35	6.35	1.2				★																							
	SNMM150616-LR	15.875	15.875	6.35	6.35	1.6				★																							
	SNMM190612-LR	19.3	19.05	6.35	7.94	1.2				★																							
	SNMM190616-LR	19.3	19.05	6.35	7.94	1.6				★																							
	SNMM190624-LR	19.3	19.05	6.35	7.94	2.4				★																							
	SNMM250924-LR	25.79	25.4	9.525	9.12	2.4				★																							

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

Applicable tool

DSBNR/L Kr:75°

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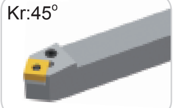
PSBNR/L Kr:75°

A175

PSDNN Kr:45°

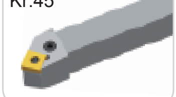


A176

PSKNR/L Kr:75°

A177

PSSNR/L Kr:45°



A178

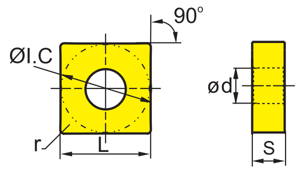
PSKNR/L Kr:75°

A217

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

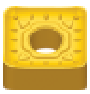
Cemented carbide and cermet inserts

SN□□(Negative inserts)



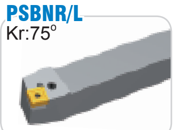
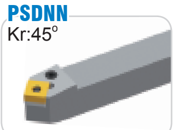
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

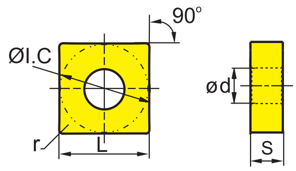
Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
DR  For light roughing	SNMG120408-DR	12.7	12.7	4.76	5.16	0.8		○	●	★	○												○		○								
	SNMG120412-DR	12.7	12.7	4.76	5.16	1.2			●	○	●												○										
	SNMG120416-DR	12.7	12.7	4.76	5.16	1.6		○	○	○																							
	SNMG150608-DR	15.875	15.875	6.35	6.35	0.8				○																							
	SNMG150612-DR	15.875	15.875	6.35	6.35	1.2			●	★	●												○		○								
	SNMG150616-DR	15.875	15.875	6.35	6.35	1.6			●	★													○		○								
	SNMG150624-DR	15.875	15.875	6.35	6.35	2.4				○																							
	SNMG190612-DR	19.05	19.05	6.35	7.94	1.2			●	○	○																						
	SNMG190616-DR	19.05	19.05	6.35	7.94	1.6			●	★	●												○		○								
	SNMG190624-DR	19.05	19.05	6.35	7.94	2.4			●	○	○																						
DR  For roughing	SNMM120408-DR	12.7	12.7	4.76	5.16	0.8					○																						
	SNMM120412-DR	12.7	12.7	4.76	5.16	1.2					○																						
	SNMM120416-DR	12.7	12.7	4.76	5.16	1.6					○																						
	SNMM150608-DR	15.875	15.875	6.35	6.35	0.8					○																						
	SNMM150612-DR	15.875	15.875	6.35	6.35	1.2					○																						
	SNMM150616-DR	15.875	15.875	6.35	6.35	1.6			●		○																						
	SNMM190608-DR	19.05	19.05	6.35	7.94	0.8					○																						

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

Applicable tool

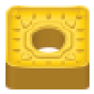
DSBNR/L Kr:75°	PSBNR/L Kr:75°	PSDNN Kr:45°	PSKNR/L Kr:75°	PSSNR/L Kr:45°	PSKNR/L Kr:75°
					
Page A166	A175	A176	A177	A178	A217

SN□□ (Negative inserts)



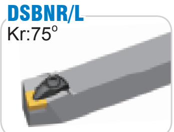
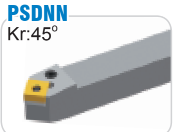
😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
DR  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			●	★	●																						
ER  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															★												

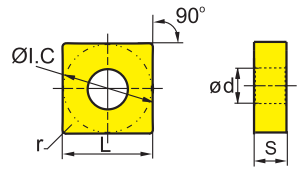
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

DSBNR/L Kr:75°	PSBNR/L Kr:75°	PSDNN Kr:45°	PSKNR/L Kr:75°	PSSNR/L Kr:45°	PSKNR/L Kr:75°
					
Page A166	A175	A176	A177	A178	A217

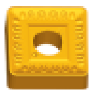
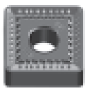
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

SN□□ (Negative inserts)



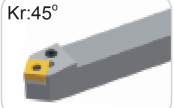
😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

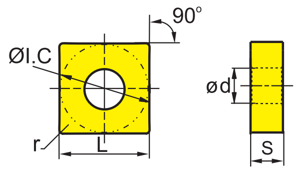
Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
ER  For 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				●											★												
HPR  For heavy machining	SNMM190616-HPR	19.5	19.05	6.35	7.94	1.6				★		○																					
	SNMM250924-HPR	25.4	25.4	9.525	9.12	2.4				★		○																					

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

Applicable tool

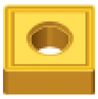
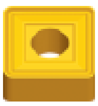
DSBNR/L	PSBNR/L	PSDNN	PSKNR/L	PSSNR/L	PSKNR/L
Kr:75°	Kr:75°	Kr:45°	Kr:75°	Kr:45°	Kr:75°
					
Page A166	A175	A176	A177	A178	A217

SN□□ (Negative inserts)



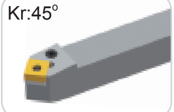
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
All round 	SNMG090304	9.525	9.525	3.18	3.81	0.4			○																								
	SNMG090308	9.525	9.525	3.18	3.81	0.8			○		○																						
	SNMG120404	12.7	12.7	4.76	5.16	0.4			●																								
	SNMG120408	12.7	12.7	4.76	5.16	0.8	○		●		○									●				●	○								
	SNMG120412	12.7	12.7	4.76	5.16	1.2			○	○	●																						
	SNMG120416	12.7	12.7	4.76	5.16	1.6	○		○																								
	SNMG150608	15.875	15.875	6.35	6.35	0.8			○																								
	SNMG150612	15.875	15.875	6.35	6.35	1.2	○		●																								
	SNMG190612	19.05	19.05	6.35	7.94	1.2	○		●		○																						
	SNMG190616	19.05	19.05	6.35	7.94	1.6	○		●																								
	SNMG250724	25.4	25.4	7.94	9.12	2.4	○		○		●																						
	SNMG250924	25.4	25.4	9.525	9.12	2.4			○		●																						
All round 	SNMM090304	9.525	9.525	3.18	3.81	0.4																											○
	SNMM090308	9.525	9.525	3.18	3.81	0.8			○																								
	SNMM120408	12.7	12.7	4.76	5.16	0.8	○																										
	SNMM120412	12.7	12.7	4.76	5.16	1.2			○																								
	SNMM120416	12.7	12.7	4.76	5.16	1.6			○																								

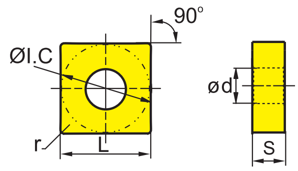
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

DSBNR/L Kr:75°	PSBNR/L Kr:75°	PSDNN Kr:45°	PSKNR/L Kr:75°	PSSNR/L Kr:45°	PSKNR/L Kr:75°
					
Page A166	A175	A176	A177	A178	A217

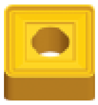
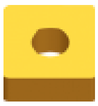
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

SN□□(Negative inserts)



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

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	☺	☺	😐	😐	☹	☹	☺		😐	😐	☹										☺	☺	☺	☹			
M Stainless steel							☺		😐	😐		😐	☺	😐	😐						☺	☺					
K Cast iron																☺	😐	😐	☹	☹					☺		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							☺	☺																		☺	

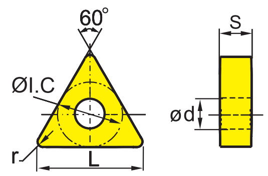
Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
All round 	**SNMM190608**	19.05	19.05	6.35	7.94	0.8			○																								
	SNMM190612	19.05	19.05	6.35	7.94	1.2			○																								
	SNMM190616	19.05	19.05	6.35	7.94	1.6																								●			
	SNMM250724	25.4	25.4	7.94	9.12	2.4			●		●													○									
	SNMM250924	25.4	25.4	9.525	9.12	2.4					○																						
Without chipbreaker 	**SNMA090304**	9.525	9.525	3.18	3.81	0.4																			○								
	SNMA090308	9.525	9.525	3.18	3.81	0.8																○	○										
	SNMA120404	12.7	12.7	4.76	5.16	0.4																○											
	SNMA120408	12.7	12.7	4.76	5.16	0.8																○	★	●	★						○		●
	SNMA120416	12.7	12.7	4.76	5.16	1.6																○	○		★								
	SNMA150608	15.875	15.875	6.35	6.35	0.8																		○									
	SNMA150612	15.875	15.875	6.35	6.35	1.2																		○	★						●		
	SNMA190612	19.05	19.05	6.35	7.94	1.2																○	○	●	★								
	SNMA190616	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

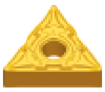
Page A166 A175 A176 A177 A178 A217

TN□□ (Negative inserts)



Workpiece material: 😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
DF  For finishing	TNMG160404-DF	16.5	9.525	4.76	3.81	0.4	★	●	★											○							●						
	TNMG160408-DF	16.5	9.525	4.76	3.81	0.8	★	○	★																		●						
	TNMG160412-DF	16.5	9.525	4.76	3.81	1.2	○	○	○																								
	TNMG220408-DF	22	12.7	4.76	5.16	0.8	★	○	○																								
	TNMG220412-DF	22	12.7	4.76	5.16	0.8	○																										
WGF  For finishing Wiper	TNMX160404-WGF	16.5	9.525	4.76	3.81	0.4	★												★			★											
	TNMX160408-WGF	16.5	9.525	4.76	3.81	0.8	★												★			★											
SF  For finishing	TNMG110304-SF	11	6.35	3.18	2.26	0.4							○														○	★					
	TNMG160404-SF	16.5	9.525	4.76	3.81	0.4							○														○	★					
	TNMG160408-SF	16.5	9.525	4.76	3.81	0.8							○														○	★					
	TNMG220408-SF	22	12.7	4.76	5.16	0.8							○														○	★					
	TNMG220412-SF	22	12.7	4.76	5.16	1.2							○														○	★					

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

Applicable tool

DTGNR/L Kr:91°

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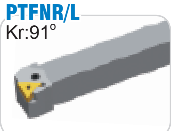
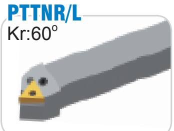
PTFNR/L Kr:91°

A179

PTTNR/L Kr:60°

A180

PTGNR/L Kr:90°

A181

PTFNR/L Kr:90°

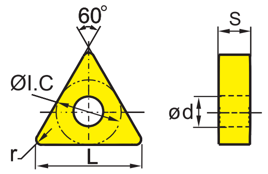
A218

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

A TURNING General Turning Inserts

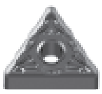
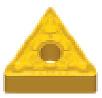
Cemented carbide and cermet inserts

TN□□(Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
EF  For finishing	TNMG110304-EF	11	6.35	3.18	2.26	0.4									○	★			★														
	TNMG110308-EF	11	6.35	3.18	2.26	0.8									○	★			★														
	TNMG160404-EF	16.5	9.525	4.76	3.81	0.4									●	★			★														
	TNMG160408-EF	16.5	9.525	4.76	3.81	0.8									●	★			★														
	TNMG160412-EF	16.5	9.525	4.76	3.81	1.2									○	★			★														
	TNMG220404-EF	22	12.7	4.76	5.16	0.4									○	★			★														
	TNMG220408-EF	22	12.7	4.76	5.16	0.8									○	★			★														
	TNMG220412-EF	22	12.7	4.76	5.16	1.2									○	★			★														
WGM  For semi-finishing Wiper	TNMX160408-WGM	16.5	9.525	4.76	3.81	0.8				★						★									★								
	TNMX160412-WGM	16.5	9.525	4.76	3.81	1.2				★						★									★								
PM  For semi-finishing	TNMG110304-PM	11	6.35	3.18	2.26	0.4		★	●	○																							
	TNMG110308-PM	11	6.35	3.18	2.26	0.8		★	○	○																							
	TNMG160404-PM	16.5	9.525	4.76	3.81	0.4		★	●	★													★		★								
	TNMG160408-PM	16.5	9.525	4.76	3.81	0.8		★	●	★	●		○										★		★	★							
	TNMG160412-PM	16.5	9.525	4.76	3.81	1.2		★	●	○	○												★		★	○							
	TNMG220408-PM	22	12.7	4.76	5.16	0.8		★	●	○	●												★		○	○							
	TNMG220412-PM	22	12.7	4.76	5.16	1.2	●	★	●	○	○												○		○								
	TNMG220416-PM	22	12.7	4.76	5.16	1.6			○	○															○								

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

Applicable tool

DTGNR/L Kr:91°

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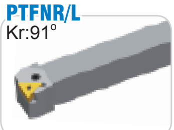
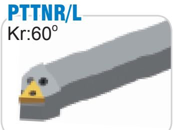
PTFNR/L Kr:91°



A179

PTTNR/L Kr:60°



A180

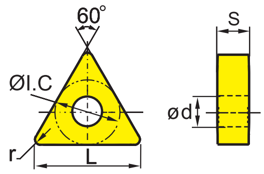
PTGNR/L Kr:90°

A181

PTFNR/L Kr:90°

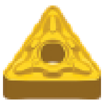
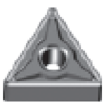
A218

TN□□ (Negative inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

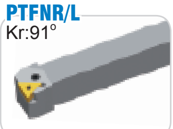
Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
DM  For semi-finishing	TNMG110308-DM	11	6.35	3.18	2.26	0.8		○		○																							
	TNMG160404-DM	16.5	9.525	4.76	3.81	0.4		★	●	★	○				○												●						
	TNMG160408-DM	16.5	9.525	4.76	3.81	0.8		★	●	★	●				●					●							○						
	TNMG160412-DM	16.5	9.525	4.76	3.81	1.2		○	○	★	○																						
	TNMG220404-DM	22	12.7	4.76	5.16	0.4		★	●	★	○									○													
	TNMG220408-DM	22	12.7	4.76	5.16	0.8		★	●	★	●									○							○						
	TNMG220412-DM	22	12.7	4.76	5.16	1.2		○	○	○	○																						
	TNMG220416-DM	22	12.7	4.76	5.16	1.6		○	○	○																							
EM  For semi-finishing	TNMG160404-EM	16.5	9.525	4.76	3.81	0.4									●	★					★												
	TNMG160408-EM	16.5	9.525	4.76	3.81	0.8									●	★					★												
	TNMG160412-EM	16.5	9.525	4.76	3.81	1.2									○	★					★												
	TNMG220408-EM	22	12.7	4.76	5.16	0.8									●	★					★												
	TNMG220412-EM	22	12.7	4.76	5.16	1.2									○	★					★												
	TNMG220416-EM	22	12.7	4.76	5.16	1.6									○	★					★												
LR  Light-load roughing	TNMM160408-LR	16.5	9.525	4.76	3.81	0.8				★																							
	TNMM160412-LR	16.5	9.525	4.76	3.81	1.2				★																							
	TNMM220408-LR	22	12.7	4.76	5.16	0.8				★																							
	TNMM220412-LR	22	12.7	4.76	5.16	1.2				★																							
	TNMM220416-LR	22	12.7	4.76	5.16	1.6				★																							

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

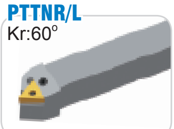
Applicable tool

DTGNR/L Kr:91°

PTFNR/L Kr:91°



PTTNR/L Kr:60°



PTGNR/L Kr:90°

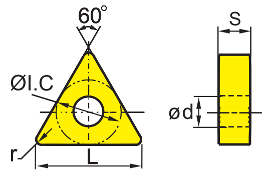
PTFNR/L Kr:90°

Page A167 A179 A180 A181 A218

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

Cemented carbide and cermet inserts

TN□□(Negative inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
DR  For light roughing	TNMG160408-DR	16.5	9.525	4.76	3.81	0.8		○		○	○												○		○								
	TNMG160412-DR	16.5	9.525	4.76	3.81	1.2		○	○	○	○												●		●								
	TNMG220408-DR	22	12.7	4.76	5.16	0.8				○	●												○										
	TNMG220412-DR	22	12.7	4.76	5.16	1.2			○	○	○														○								
	TNMG220416-DR	22	12.7	4.76	5.16	1.6					○												○										
	TNMG270608-DR	27.5	15.875	6.35	6.35	0.8					○																						
	TNMG270612-DR	27.5	15.875	6.35	6.35	1.2					○																						
	TNMG270616-DR	27.5	15.875	6.35	6.35	1.6					○																						
DR  For roughing	TNMM160408-DR	16.5	9.525	4.76	3.81	0.8			○		○																						
	TNMM160412-DR	16.5	9.525	4.76	3.81	1.2			○		○																						
	TNMM220408-DR	22	12.7	4.76	5.16	0.8			●		●																						
	TNMM220412-DR	22	12.7	4.76	5.16	1.2			●		○																						
	TNMM220416-DR	22	12.7	4.76	5.16	1.6			○		○																						
	TNMM270612-DR	27.5	15.875	6.35	5.16	1.2					○																						
	TNMM270616-DR	27.5	15.875	6.35	5.16	1.6					○																						
ER  For roughing	TNMG160408-ER	16.5	9.525	4.76	3.81	0.8															★												
	TNMG160412-ER	16.5	9.525	4.76	3.81	1.2															★												
	TNMG220408-ER	22	12.7	4.76	5.16	0.8															★												
	TNMG220412-ER	22	12.7	4.76	5.16	1.2															★												

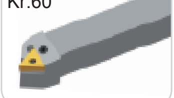
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

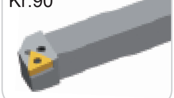
DTGNR/L Kr:91°

PTFNR/L Kr:91°

PTTNR/L Kr:60°



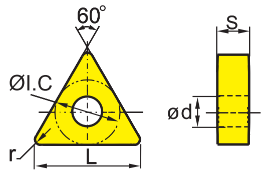
PTGNR/L Kr:90°



PTFNR/L Kr:90°

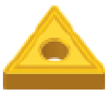
Page A167 A179 A180 A181 A218

TN□□(Negative inserts)



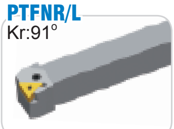
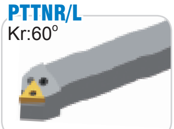
😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
All round 	**TNMG110308**	11	6.35	3.18	2.26	0.8																		○									
	TNMG160404	16.5	9.525	4.76	3.81	0.4	○		●															●									
	TNMG160408	16.5	9.525	4.76	3.81	0.8	●	○	●															●									
	TNMG160412	16.5	9.525	4.76	3.81	1.2	●		●	○										○				○									
	TNMG220404	22	12.7	4.76	5.16	0.4	○		●		○													●									
	TNMG220408	22	12.7	4.76	5.16	0.8	○		●		○									○				○					○				
	TNMG220412	22	12.7	4.76	5.16	1.2	●		●		○													●					○				
	TNMG220416	22	12.7	4.76	5.16	1.6																		●									
	TNMG270612	27.5	15.875	6.35	6.35	1.2			●		●													○						○			
	TNMG270616	27.5	15.875	6.35	6.35	1.6			○		○																						
	TNMG330916	33	19.05	9.525	7.94	1.6					●																						
	TNMG330924	33	19.05	9.525	7.94	2.4	○		○		●																						

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

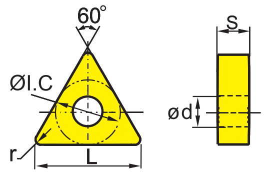
Applicable tool

DTGNR/L Kr:91°	PTFNR/L Kr:91°	PTTNR/L Kr:60°	PTGNR/L Kr:90°	PTFNR/L Kr:90°
				
Page A167	A179	A180	A181	A218

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

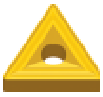
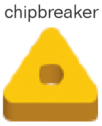
Cemented carbide and cermet inserts

TN□□(Negative inserts)



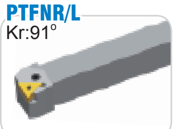
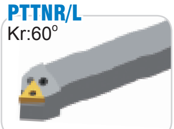
😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

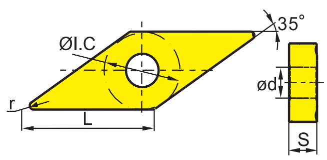
Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
All round 	TNMM160404	16.5	9.525	4.76	3.81	0.4			○																								
	TNMM160408	16.5	9.525	4.76	3.81	0.8					○																						
	TNMM160412	16.5	9.525	4.76	3.81	1.2	○		○																				○				
	TNMM220408	22	12.7	4.76	5.16	0.8			○																								
	TNMM220412	22	12.7	4.76	5.16	1.2			●		○									○													
	TNMM220416	22	12.7	4.76	5.16	1.6					○																						
	TNMM270616	27.5	15.875	6.35	6.35	1.6			●		○																						
Without chipbreaker 	TNMA160404	16.5	9.525	4.76	3.81	0.4																○	★	●	★								
	TNMA160408	16.5	9.525	4.76	3.81	0.8	○															★	★	●	★						○		○
	TNMA160412	16.5	9.525	4.76	3.81	1.2																★	○		○								
	TNMA160416	16.5	9.525	4.76	3.81	1.6																		○									
	TNMA220404	22	12.7	4.76	5.16	0.4																○	○	○	○								
	TNMA220408	22	12.7	4.76	5.16	0.8																○	○	○	○								
	TNMA270616	27.5	15.875	6.35	6.35	1.6																			○								

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

Applicable tool

DTGNR/L Kr:91°	PTFNR/L Kr:91°	PTTNR/L Kr:60°	PTGNR/L Kr:90°	PTFNR/L Kr:90°
				
Page A167	A179	A180	A181	A218

VN□□ (Negative inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
DF For finishing	VNMG160404-DF	16.6	9.525	4.76	3.81	0.4		★	●	★										●													
	VNMG160408-DF	16.6	9.525	4.76	3.81	0.8		★	○	○																							
EF For finishing	VNMG160404-EF	16.6	9.525	4.76	3.81	0.4									○	★			★														
	VNMG160408-EF	16.6	9.525	4.76	3.81	0.8									○	★			★														
	VNMG160412-EF	16.6	9.525	4.76	3.81	1.2									○	★			★														
NF For finishing	VNEG160404-NF	16.6	9.525	4.76	3.81	0.4							○	★																		○	
	VNEG160408-NF	16.6	9.525	4.76	3.81	0.8							○	★																		○	
SF For finishing	VNMG160404-SF	16.6	9.525	4.76	3.81	0.4							○														○	★					
	VNMG160408-SF	16.6	9.525	4.76	3.81	0.8							○														○						

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

Applicable tool

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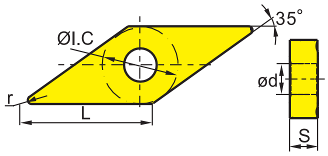
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

Cemented carbide and cermet inserts

VN□□(Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

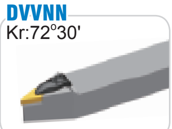
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
PM  For semi-finishing	VNMG160404-PM	16.6	9.525	4.76	3.81	0.4		★	●	○	○														○	○							
	VNMG160408-PM	16.6	9.525	4.76	3.81	0.8		★	●	○													★		★	○							
	VNMG160412-PM	16.6	9.525	4.76	3.81	1.2			○	○													○		○								
DM  For semi-finishing	VNMG160408-DM	16.6	9.525	4.76	3.81	0.8		★	●	★	○									○													
	VNMG160412-DM	16.6	9.525	4.76	3.81	1.2		○	○	○										○													
EM  For semi-finishing	VNMG160404-EM	16.6	9.525	4.76	3.81	0.4									●	★					★												
	VNMG160408-EM	16.6	9.525	4.76	3.81	0.8									●	★					★												
NM  For semi-finishing	VNMG160412-NM	16.6	9.525	4.76	3.81	1.2							○	★																		○	
All round 	VNMG160404	16.6	9.525	4.76	3.81	0.4	○		○															●									
	VNMG160408	16.6	9.525	4.76	3.81	0.8	●		●															●									

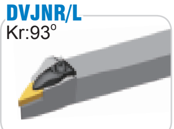
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

DVVNN
Kr:72°30'



DVJNR/L
Kr:93°



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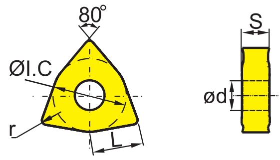
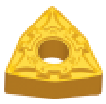
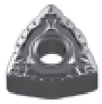
WN□□(Negative inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
DF  For finishing	WNMG06T304-DF	6.5	9.525	3.97	3.81	0.4		★																									
	WNMG06T308-DF	6.5	9.525	3.97	3.81	0.8		★		★																							
	WNMG06T312-DF	6.5	9.525	3.97	3.81	1.2		★		★																							
	WNMG060404-DF	6.5	9.525	4.76	3.81	0.4		★	●	★										○													
	WNMG060408-DF	6.5	9.525	4.76	3.81	0.8		★	●	★										●													
	WNMG060412-DF	6.5	9.525	4.76	3.81	1.2		★	●	○										○													
	WNMG080404-DF	8.7	12.7	4.76	5.16	0.4		★	●	○										○													
	WNMG080408-DF	8.7	12.7	4.76	5.16	0.8		★	●	★										●													
	WNMG080412-DF	8.7	12.7	4.76	5.16	1.2		○	○	○																							
WGF  For finishing Wiper	WNMG060404-WGF	6.5	9.525	4.76	3.81	0.4		★											★			★											
	WNMG060408-WGF	6.5	9.525	4.76	3.81	0.8		★											★			★											
	WNMG080404-WGF	8.7	12.7	4.76	5.16	0.4		★											★			★											
	WNMG080408-WGF	8.7	12.7	4.76	5.16	0.8		★											★			★											
SF  For finishing	WNMG06T304-SF	6.5	9.525	3.97	3.81	0.4							○														○	★					
	WNMG06T308-SF	6.5	9.525	3.97	3.81	0.8							○														○						
	WNMG06T312-SF	6.5	9.525	3.97	3.81	1.2							○														○						
	WNMG060404-SF	6.5	9.525	4.76	3.81	0.4							○														○	★					
	WNMG060408-SF	6.5	9.525	4.76	3.81	0.8							○														○	★					
	WNMG080404-SF	8.7	12.7	4.76	5.16	0.4							○														○	★					
	WNMG080408-SF	8.7	12.7	4.76	5.16	0.8							○														○	★					
	WNMG080412-SF	8.7	12.7	4.76	5.16	1.2							○														○						

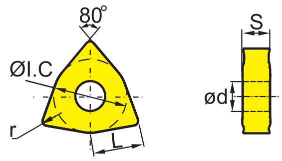
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

Page A170 A182 A219

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

WN□□(Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

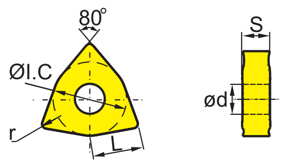
Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
EF For finishing	WNMG06T304-EF	6.5	9.525	3.97	3.81	0.4									○	★			★														
	WNMG06T308-EF	6.5	9.525	3.97	3.81	0.8									○	★			★														
	WNMG06T312-EF	6.5	9.525	3.97	3.81	1.2									○	★			★														
	WNMG060404-EF	6.5	9.525	4.76	3.81	0.4									●	★			★														
	WNMG060408-EF	6.5	9.525	4.76	3.81	0.8									●	★			★														
	WNMG080404-EF	8.7	12.7	4.76	5.16	0.4							○		●	★			★														
	WNMG080408-EF	8.7	12.7	4.76	5.16	0.8							○		●	★			★														
NF For finishing	WNEG080404-NF	8.7	12.7	4.76	5.16	0.4							○	★																		○	
	WNEG080408-NF	8.7	12.7	4.76	5.16	0.8							○	★																		○	
WGM For semi-finishing Wiper	WNMG060408-WGM	6.5	9.525	4.76	3.81	0.8				★						★									★								
	WNMG060412-WGM	6.5	9.525	4.76	3.81	1.2				★						★									★								
	WNMG080408-WGM	8.7	12.7	4.76	5.16	0.8				★						★									★								
	WNMG080412-WGM	8.7	12.7	4.76	5.16	1.2				★						★									★								

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

Applicable tool

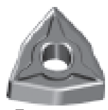
DWLNR/L Kr:95°	PWLNR/L Kr:95°	PWLNR/L Kr:95°
		
Page A170	A182	A219

WN□□(Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
PM  For semi-finishing	WNMG060408-PM	6.5	9.525	4.76	3.81	0.8		★	●	○	○												★		★								
	WNMG060412-PM	6.5	9.525	4.76	3.81	1.2		○		○													★		★								
	WNMG080404-PM	8.7	12.7	4.76	5.16	0.4		○	●	○	○																						
	WNMG080408-PM	8.7	12.7	4.76	5.16	0.8		★	●	★	●												★		★	★							
	WNMG080412-PM	8.7	12.7	4.76	5.16	1.2		★	●	★	●												★		★	★							
	WNMG080416-PM	8.7	12.7	4.76	5.16	1.6				○													○		○								
	WNMG080608-PM	8.7	12.7	6.35	5.16	0.8				○																							
DM  For semi-finishing	WNMG06T304-DM	6.5	9.525	3.97	3.81	0.4				○																							
	WNMG06T308-DM	6.5	9.525	3.97	3.81	0.8			○	○																							
	WNMG06T312-DM	6.5	9.525	3.97	3.81	1.2				○																							
	WNMG060408-DM	6.5	9.525	4.76	3.81	0.8		★	●	★	●									●													
	WNMG060412-DM	6.5	9.525	4.76	3.81	1.2			○	○																							
	WNMG080404-DM	8.7	12.7	4.76	5.16	0.4		★	●	★	○				○					○													
	WNMG080408-DM	8.7	12.7	4.76	5.16	0.8		★	●	★	●									○													
	WNMG080412-DM	8.7	12.7	4.76	5.16	1.2		★	●	★										○													
	WNMG080416-DM	8.7	12.7	4.76	5.16	1.6				○																							
EM  For semi-finishing	WNMG06T304-EM	6.5	9.525	3.97	3.81	0.4									○	★					★												
	WNMG06T308-EM	6.5	9.525	3.97	3.81	0.8									○	★					★												
	WNMG06T312-EM	6.5	9.525	3.97	3.81	1.2									○	★					★												
	WNMG060404-EM	6.5	9.525	4.76	3.81	0.4									○	★					★												
	WNMG060408-EM	6.5	9.525	4.76	3.81	0.8									●	★					★												
	WNMG080404-EM	8.7	12.7	4.76	5.16	0.4									●	★					★												
	WNMG080408-EM	8.7	12.7	4.76	5.16	0.8									●	★					★												
	WNMG080412-EM	8.7	12.7	4.76	5.16	1.2									●	★					★												

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

Applicable tool

DWLNR/L
Kr:95°

PWLNR/L
Kr:95°

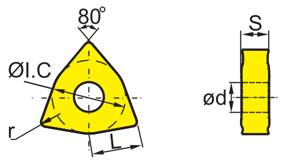
PWLNR/L
Kr:95°

Page A170 A182 A219

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

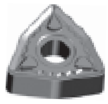
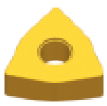
Cemented carbide and cermet inserts

WN□□(Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
NM  For semi-finishing	WNMG080408-NM	8.7	12.7	4.76	5.16	0.8							○	★																		○	
	WNMG080412-NM	8.7	12.7	4.76	5.16	1.2							○	★																		○	
DR  For roughing	WNMG060408-DR	6.5	9.525	4.76	3.81	0.8		○	○	○													○										
	WNMG060412-DR	6.5	9.525	4.76	3.81	1.2			○	○	○												○		○								
	WNMG080408-DR	8.7	12.7	4.76	5.16	0.8		○	○	★	○												●		●								
	WNMG080412-DR	8.7	12.7	4.76	5.16	1.2		○	○	★	○												●		●								
	WNMG080416-DR	8.7	12.7	4.76	5.16	1.6				○													○		○								
Without chipbreaker 	WNMA06T308	6.5	9.525	3.97	3.81	0.8																○		○									
	WNMA060404	6.5	9.525	4.76	3.81	0.4																			○								
	WNMA060408	6.5	9.525	4.76	3.81	0.8																★	○	○	○								
	WNMA060412	6.5	9.525	4.76	3.81	1.2																			○								
	WNMA080404	8.7	12.7	4.76	5.16	0.4																	○	○									
	WNMA080408	8.7	12.7	4.76	5.16	0.8																★	★	●	★								
	WNMA080412	8.7	12.7	4.76	5.16	1.2																★	★	●	★								
	WNMA080416	8.7	12.7	4.76	5.16	1.6																			★								

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

Applicable tool

DWLNR/L Kr:95°

PWLNR/L Kr:95°

PWLNR/L Kr:95°

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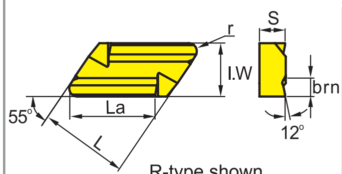
KN□□(Negative inserts)



R-type shown

😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	La	L	I.W	S	brn	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)						Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
 Profile turning	KNUX160405L11	16	16.15	9.525	4.76	2.2	0.5	○		●	★	○									●									○				
	KNUX160410L11	16	16.15	9.525	4.76	2.2	1.0			●											○													
	KNUX160405L12	16	16.15	9.525	4.76	2.2	0.5	○		●											○													
	KNUX160410L12	16	16.15	9.525	4.76	2.2	1.0	○	○	●											○									○				
	KNUX160415L12	16	16.15	9.525	4.76	2.2	1.5			○																								
	KNUX160405R11	16	16.15	9.525	4.76	2.2	0.5	●		●	○	●									●									●				
	KNUX160410R11	16	16.15	9.525	4.76	2.2	1.0	○		●											○									○				
	KNUX160405R12	16	16.15	9.525	4.76	2.2	0.5	●		●											○													
	KNUX160410R12	16	16.15	9.525	4.76	2.2	1.0	○	○	●		○									○									●				
	KNUX160415R12	16	16.15	9.525	4.76	2.2	1.5			○																								

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

Note: KNUX160405L11
Chipbreaker code: 11→Declining chipbreaker 12→Straight chipbreaker

Applicable tool

CKJNR/L
Kr:93°

CKNNR/L
Kr:63°

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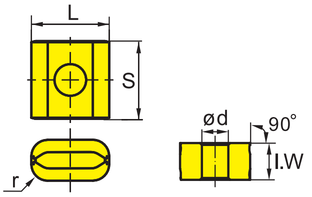
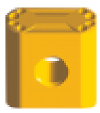
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

Heavy turning(Negative inserts)



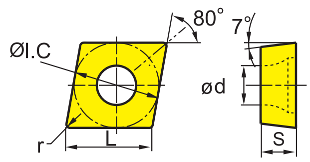
😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm) L	I.W	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
 Inserts for train wheel hub	**175.32-191940-22**	19.05	10	19.05	6.35	4.0	●		●																								
	175.32-191940-227	19.05	10	19.05	7.2	4.0			●																								
 Inserts for train wheel hub	**175.32-191940-24**	19.05	10	19.05	6.35	4.0	○		●																								
	175.32-301940-24	30	10	19.05	6.35	4.0	○		●																								
 Inserts for train wheel hub	**175.32-191940-25**	19.05	10	19.05	6.35	4.0			●																								
 Inserts for train wheel hub	**175.32-191940-28**	19.05	10	19.05	6.35	4.0	●	★	●	○																							

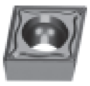
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

CC□□ (Positive inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
USF  For extra finishing	CCGT09T301R-USF	9.7	9.525	3.97	4.4	0.1									○	○																	
	CCGT09T302R-USF	9.7	9.525	3.97	4.4	0.2									●	○																	
	CCGT09T304R-USF	9.7	9.525	3.97	4.4	0.4									○	○																	
USF  For extra finishing	CCGT09T301L-USF	9.7	9.525	3.97	4.4	0.1									○	○																	
	CCGT09T302L-USF	9.7	9.525	3.97	4.4	0.2									●	○																	
	CCGT09T304L-USF	9.7	9.525	3.97	4.4	0.4									○	○																	
SF  For extra finishing	CCGT060202-SF	6.4	6.35	2.38	2.8	0.2							○														○	○					
	CCGT060204-SF	6.4	6.35	2.38	2.8	0.4							○														○	○					
	CCGT09T304-SF	9.7	9.525	3.97	4.4	0.4							○														○	★					
HF  For finishing	CCMT060202-HF	6.4	6.35	2.38	2.8	0.2		★	●	★					●												○						○
	CCMT060204-HF	6.4	6.35	2.38	2.8	0.4		★	●	○	○				●										●		●					●	
	CCMT060208-HF	6.4	6.35	2.38	2.8	0.8		★	●		○				●					○							●						
	CCMT09T302-HF	9.7	9.525	3.97	4.4	0.2			●	○					●												●						○
	CCMT09T304-HF	9.7	9.525	3.97	4.4	0.4		★	●	★	○				●								●		●		●	○					○
	CCMT09T308-HF	9.7	9.525	3.97	4.4	0.8		★	●	○	○				●					○		○	○		○		●					○	○
	CCMT120404-HF	12.9	12.7	4.76	5.56	0.4	●	○	●	○															●		○		○				
	CCMT120408-HF	12.9	12.7	4.76	5.56	0.8		○																									

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

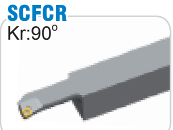
Applicable tool

SCACR/L Kr:90°

SCLCR/L Kr:95°

SCLCR/L Kr:95°

SCFCR Kr:90°



SCLCR Kr:95°

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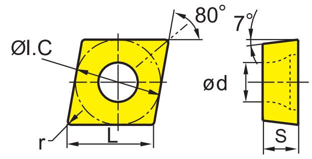
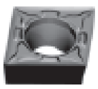
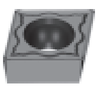
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

CC□□ (Positive inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151 (Cermet)	YNG151C (Coated cermet)	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
EF  For finishing	CCMT060202-EF	6.4	6.35	2.38	2.8	0.2							○		●	★			★														
	CCMT060204-EF	6.4	6.35	2.38	2.8	0.4							○		●	★			★														
	CCMT09T302-EF	9.7	9.525	3.97	4.4	0.2							○		●	★			★														
	CCMT09T304-EF	9.7	9.525	3.97	4.4	0.4							○		●	★			★														
	CCMT09T308-EF	9.7	9.525	3.97	4.4	0.8							○		●	★			○														
	CCMT120404-EF	12.9	12.7	4.76	5.56	0.4							○		●	★			★														
	CCMT120408-EF	12.9	12.7	4.76	5.56	0.8							○		●	★			○														
HM  For semi-finishing	CCMT060204-HM	6.4	6.35	2.38	2.8	0.4		★	●	★	○				●					●			●		●								●
	CCMT060208-HM	6.4	6.35	2.38	2.8	0.8		★	●	○	○				●					○			○		●								
	CCMT09T304-HM	9.7	9.525	3.97	4.4	0.4	●	★	●	★	●				●					●			●		●								
	CCMT09T308-HM	9.7	9.525	3.97	4.4	0.8		★	●	★	●				●					●			●		●								
	CCMT120404-HM	12.9	12.7	4.76	5.56	0.4		★	●	○	○									○			○		○								
	CCMT120408-HM	12.9	12.7	4.76	5.56	0.8		★	●	★	●				○					●			●		●								
	CCMT120412-HM	12.9	12.7	4.76	5.56	1.2		○	○														○										
EM  For semi-finishing	CCMT060204-EM	6.4	6.35	2.38	2.8	0.4									●	★					★												
	CCMT060208-EM	6.4	6.35	2.38	2.8	0.8									●	★					★												
	CCMT09T304-EM	9.7	9.525	3.97	4.4	0.4									●	★					★												
	CCMT09T308-EM	9.7	9.525	3.97	4.4	0.8									●	★					★												
	CCMT120404-EM	12.9	12.7	4.76	5.56	0.4									●	★					★												
	CCMT120408-EM	12.9	12.7	4.76	5.56	0.8									●	★					★												
	CCMT120412-EM	12.9	12.7	4.76	5.56	1.2									●	★					★												

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

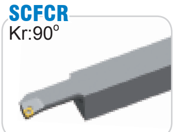
Applicable tool

SCACR/L Kr:90°

SCLCR/L Kr:95°

SCLCR/L Kr:95°

SCFCR Kr:90°



SCLCR Kr:95°

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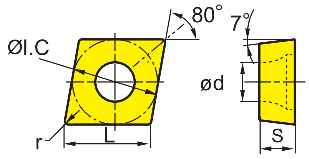
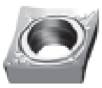
CC□□ (Positive inserts)

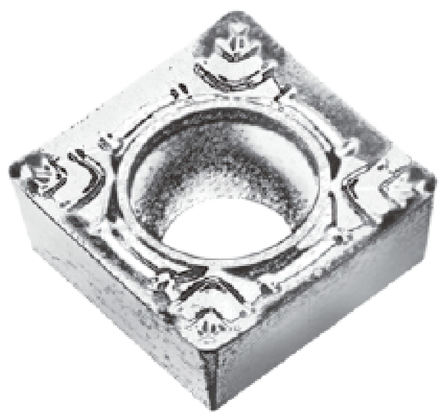


Good working condition · Normal working condition · Bad working condition

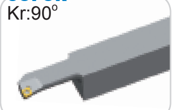
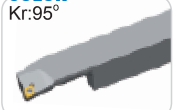
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
HR  For roughing	CCMT060204-HR	6.4	6.35	2.38	2.8	0.4		○	●	○	○				○																		
	CCMT060208-HR	6.4	6.35	2.38	2.8	0.8		○	●		●									●					●								
	CCMT09T304-HR	9.7	9.525	3.97	4.4	0.4			●		○				○																		
	CCMT09T308-HR	9.7	9.525	3.97	4.4	0.8		★	●	★	●									●		●	●		●					○		●	
	CCMT120408-HR	12.9	12.7	4.76	5.56	0.8		★	●		●				○					●		●	●	●	●					○		●	●
	CCMT120412-HR	12.9	12.7	4.76	5.56	1.2		○	●		●									○			●		○								
LC  For Al machining	CCGX060202-LC	6.4	6.35	2.38	2.8	0.2																										★	
	CCGX060204-LC	6.4	6.35	2.38	2.8	0.4																										★	
	CCGX09T302-LC	9.7	9.525	3.97	4.4	0.2																										★	
	CCGX09T304-LC	9.7	9.525	3.97	4.4	0.4																										★	
	CCGX09T308-LC	9.7	9.525	3.97	4.4	0.8																										★	
	CCGX120404-LC	12.9	12.7	4.76	5.5	0.4																										★	
	CCGX120408-LC	12.9	12.7	4.76	5.5	0.8																										★	
LH  For Al machining	CCGX060202-LH	6.4	6.35	2.38	2.8	0.2																										★	
	CCGX060204-LH	6.4	6.35	2.38	2.8	0.4																										★	●
	CCGX060208-LH	6.4	6.35	2.38	2.8	0.8																										★	
	CCGX09T302-LH	9.7	9.525	3.97	4.4	0.2																										★	

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



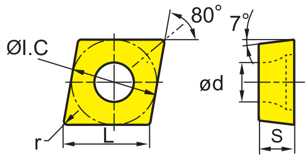
Applicable tool

SCACR/L Kr:90°	SCLCR/L Kr:95°	SCLCR/L Kr:95°	SCFCR Kr:90°	SCLCR Kr:95°
				
Page A183	A184	A220	A234	A235

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

Cemented carbide and cermet inserts

CC□□(Positive inserts)



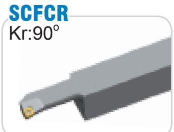
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

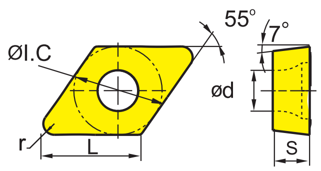
Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
LH  For Al machining	**CCGX09T304-LH**	9.7	9.525	3.97	4.4	0.4																										★	●
	CCGX09T308-LH	9.7	9.525	3.97	4.4	0.8																										★	
	CCGX120402-LH	12.9	12.7	4.76	5.56	0.2																										○	
	CCGX120404-LH	12.9	12.7	4.76	5.56	0.4																										★	
	CCGX120408-LH	12.9	12.7	4.76	5.56	0.8																										★	
	CCGX120412-LH	12.9	12.7	4.76	5.56	1.2																										○	
Without chipbreaker 	**CCMW060204**	6.4	6.35	2.38	2.8	0.4																		○					○		○	●	
	CCMW09T304	9.7	9.525	3.97	4.4	0.4																		○					○			●	●
	CCMW09T308	9.7	9.525	3.97	4.4	0.8	○																	○							○	○	
	CCMW120404	12.9	12.7	4.76	5.56	0.4																											●
	CCMW120408	12.9	12.7	4.76	5.56	0.8																		○								●	○

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

Applicable tool

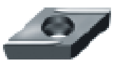
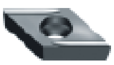
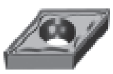
SCACR/L Kr:90°	SCLCR/L Kr:95°	SCLCR/L Kr:95°	SCFCR Kr:90°	SCLCR Kr:95°
				
Page A183	A184	A220	A234	A235

DC□□(Positive inserts)



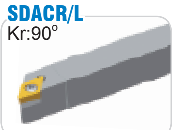
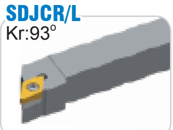
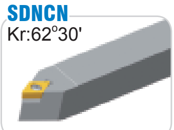
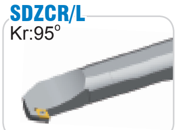
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
USF  For extra finishing	DCGT0702005R-USF	7.8	6.35	2.38	2.8	0.05									●	○																	
	DCGT070201R-USF	7.8	6.35	2.38	2.8	0.1									●	○																	
	DCGT070202R-USF	7.8	6.35	2.38	2.8	0.2									●	○																	
	DCGT11T301R-USF	11.6	9.525	3.97	4.4	0.1									○	○																	
	DCGT11T302R-USF	11.6	9.525	3.97	4.4	0.2									●	○																	
USF  For extra finishing	DCGT0702005L-USF	7.8	6.35	2.38	2.8	0.05									○	○																	
	DCGT070201L-USF	7.8	6.35	2.38	2.8	0.1									○	○																	
	DCGT070202L-USF	7.8	6.35	2.38	2.8	0.2									●	○																	
	DCGT11T301L-USF	11.6	9.525	3.97	4.4	0.1									○	○																	
	DCGT11T302L-USF	11.6	9.525	3.97	4.4	0.2									●	○																	
SF  For extra finishing	DCGT070202-SF	7.8	6.35	2.38	2.8	0.2							○														○						
	DCGT070204-SF	7.8	6.35	2.38	2.8	0.4							○															○					
	DCGT070208-SF	7.8	6.35	2.38	2.8	0.8							○																				
	DCGT11T302-SF	11.6	9.525	3.97	4.4	0.2							○														○	○					
	DCGT11T304-SF	11.6	9.525	3.97	4.4	0.4							○															★					
	DCGT11T308-SF	11.6	9.525	3.97	4.4	0.8							○														○	○					
HF  For finishing	DCMT070202-HF	7.8	6.35	2.38	2.8	0.2		★	●	○					○												○						
	DCMT070204-HF	7.8	6.35	2.38	2.8	0.4		★	●	★	○				●										○		○					●	
	DCMT070208-HF	7.8	6.35	2.38	2.8	0.8		○	○		○																						
	DCMT11T302-HF	11.6	9.525	3.97	4.4	0.2		★	●	○					●												○						○
	DCMT11T304-HF	11.6	9.525	3.97	4.4	0.4		★	●	★	○				●								○		○		●		○				○
	DCMT11T308-HF	11.6	9.525	3.97	4.4	0.8		★	●	○					○												○						

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

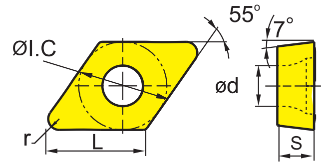
Applicable tool

SDACR/L	SDJCR/L	SDNCN	SDQCR/L	SDUCR/L	SDZCR/L
Kr:90°	Kr:93°	Kr:62°30'	Kr:107°30'	Kr:93°	Kr:95°
					
Page A185	A186	A187	A221	A222	A223

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

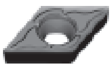
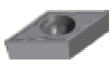
Cemented carbide and cermet inserts

DC□□ (Positive inserts)



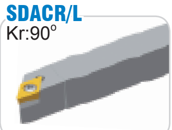
Good working condition / Normal working condition / Bad working condition

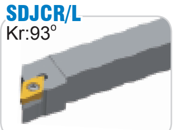
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

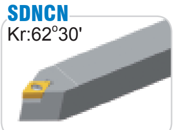
Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
EF  For finishing	DCMT070202-EF	7.8	6.35	2.38	2.8	0.2							○		●	★			★														
	DCMT070204-EF	7.8	6.35	2.38	2.8	0.4							○		●	★			★														
	DCMT11T302-EF	11.6	9.525	3.97	4.4	0.2							○		●	★			★														
	DCMT11T304-EF	11.6	9.525	3.97	4.4	0.4							○		●	★			★														
	DCMT11T308-EF	11.6	9.525	3.97	4.4	0.8							○		●	★			○														
HM  For semi-finishing	DCMT070204-HM	7.8	6.35	2.38	2.8	0.4		★	●	★	●				●					●					●								
	DCMT070208-HM	7.8	6.35	2.38	2.8	0.8		★	●	★					○					○					○								
	DCMT11T304-HM	11.6	9.525	3.97	4.4	0.4	●	★	●	★	○				●					●			●		●		●		○			●	○
	DCMT11T308-HM	11.6	9.525	3.97	4.4	0.8	●	★	●	★	●				●					●			●		○		○						○
	DCMT11T312-HM	11.6	9.525	3.97	4.4	1.2			○																								
EM  For semi-finishing	DCMT070204-EM	7.8	6.35	2.38	2.8	0.4									●	★					★												
	DCMT070208-EM	7.8	6.35	2.38	2.8	0.8									●	★					★												
	DCMT11T304-EM	11.6	9.525	3.97	4.4	0.4									●	★					★												
	DCMT11T308-EM	11.6	9.525	3.97	4.4	0.8									●	★					★												

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

Applicable tool

SDACR/L
Kr:90°


SDJCR/L
Kr:93°


SDNCN
Kr:62°30'


SDQCR/L
Kr:107°30'


SDUCR/L
Kr:93°


SDZCR/L
Kr:95°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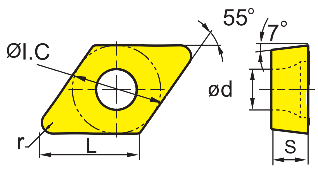
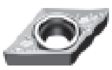
DC□□ (Positive inserts)



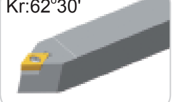
Good working condition · Normal working condition · Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
HR  For roughing	DCMT11T304-HR	11.6	9.525	3.97	4.4	0.4		○	●	○	○									○			○		●								
	DCMT11T308-HR	11.6	9.525	3.97	4.4	0.8		●	●	★	○									○		○	●		●					○			
	DCMT11T312-HR	11.6	9.525	3.97	4.4	1.2		○	●																								
LC  For Al machining	DCGX070201-LC	7.8	6.35	2.38	2.8	0.1																										★	
	DCGX070202-LC	7.8	6.35	2.38	2.8	0.2																										★	
	DCGX070204-LC	7.8	6.35	2.38	2.8	0.4																										★	
	DCGX11T304-LC	11.6	9.525	3.97	4.4	0.4																										★	
	DCGX11T308-LC	11.6	9.525	3.97	4.4	0.8																										★	
LH  For Al machining	DCGX070202-LH	7.8	6.35	2.38	2.8	0.2																										★	
	DCGX070204-LH	7.8	6.35	2.38	2.8	0.4																										★	○
	DCGX11T302-LH	11.6	9.525	3.97	4.4	0.2																										★	○
	DCGX11T304-LH	11.6	9.525	3.97	4.4	0.4																										★	●
	DCGX11T308-LH	11.6	9.525	3.97	4.4	0.8																										★	
Without chipbreaker 	DCMW070204	7.8	6.35	2.38	2.8	0.4																	○										
	DCMW11T304	11.6	9.525	3.97	4.4	0.4																		●					○			●	
	DCMW11T308	11.6	9.525	3.97	4.4	0.8																		○					○		●		

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

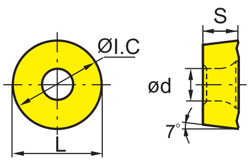
Applicable tool

SDACR/L Kr:90°	SDJCR/L Kr:93°	SDNCN Kr:62°30'	SDQCR/L Kr:107°30'	SDUCR/L Kr:93°	SDZCR/L Kr:95°
					
Page A185	A186	A187	A221	A222	A223

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

Cemented carbide and cermet inserts

RC□□(Positive inserts)

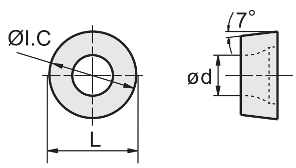


😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm)				Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
	RCGT1204MO	12	12	4.76	4.4			○																								
	RCMT0803MO	8.0	8.0	3.18	3.36				○																							
	RCMT10T3MO	10	10	3.97	4.4				○																							
	RCMT1204MO	12	12	4.76	4.4	○		●	★												★	★		○								
	RCMT1606MO	16	16	6.35	5.5	○		●		●											★											

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



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

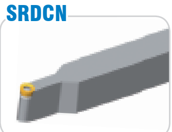
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm)				Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
LH  For Al machining	RCGX0803MO-LH	8.0	8.0	3.18	3.36																										★	

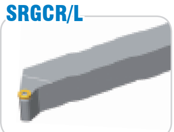
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

SRDCN



SRGCR/L



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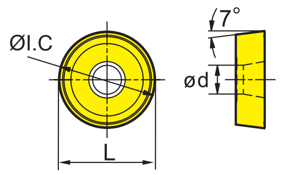
RC□□(Positive inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

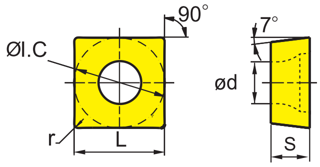
Inserts shape	Type	Dimensions(mm)				Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
	**RCMX0803MO**	8.0	8.0	3.18	3.36			●		○											○											
	RCMX1003MO	10	10	3.18	3.6	●		●		●																				○	○	
	RCMX1204MO	12	12	4.76	4.4	○		●																					○	●	○	●
	RCMX1606MO	16	16	6.35	5.5	●		●		○																			○	●	○	
	RCMX2006MO	20	20	6.35	6.5	○	★	●	○	○													○	★						●	○	●
	RCMX2507MO	25	25	7.94	7.2		★	●	○	○														○						●		
	RCMX3209MO	32	32	9.52	9.5	○	○	●	○	○												●										

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

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

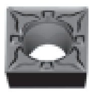
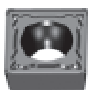
Cemented carbide and cermet inserts

SC□□ (Positive inserts)



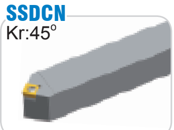
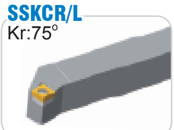
😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

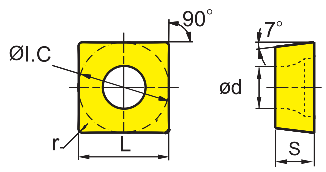
Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
HF  For finishing	SCMT09T302-HF	9.525	9.525	3.97	4.4	0.2		○	○						○																		
	SCMT09T304-HF	9.525	9.525	3.97	4.4	0.4		●	●	○																							
	SCMT09T308-HF	9.525	9.525	3.97	4.4	0.8		●	○						○									●	○				●				○
EF  For finishing	SCMT09T302-EF	9.525	9.525	3.97	4.4	0.2							○		●	★			★														
	SCMT09T304-EF	9.525	9.525	3.97	4.4	0.4							○		●	★			★														
	SCMT09T308-EF	9.525	9.525	3.97	4.4	0.8							○		●	★			○														
HM  For semi-finishing	SCMT09T304-HM	9.525	9.525	3.97	4.4	0.4		○	●											●			●		●								
	SCMT09T308-HM	9.525	9.525	3.97	4.4	0.8		●	●	○	●				○					●			●	●	○								
	SCMT120404-HM	12.7	12.7	4.76	5.56	0.4		○	●		○														●								
	SCMT120408-HM	12.7	12.7	4.76	5.56	0.8		●	●	○	○		●		○					●			●						○				
	SCMT120412-HM	12.7	12.7	4.76	5.56	1.2		○	○											○											○		
EM  For semi-finishing	SCMT09T304-EM	9.525	9.525	3.97	4.4	0.4									●	★					★												
	SCMT09T308-EM	9.525	9.525	3.97	4.4	0.8									●	★					★												
	SCMT120404-EM	12.7	12.7	4.76	5.56	0.4									●	★					★												
	SCMT120408-EM	12.7	12.7	4.76	5.56	0.8									●	★					★												
	SCMT120412-EM	12.7	12.7	4.76	5.56	1.2									●	★					★												

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

Applicable tool

SSBCR/L Kr:75°	SSDCN Kr:45°	SSKCR/L Kr:75°	SSSCR/L Kr:45°	SSKCR/L Kr:75°
				
Page A193	A193	A194	A194	A224

SC□□ (Positive inserts)



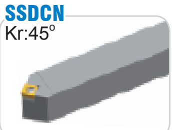
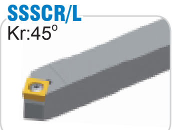
😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
LC	SCGX09T304-LC	9.525	9.525	3.97	4.4	0.4																										★	
	SCGX09T308-LC	9.525	9.525	3.97	4.4	0.8																										★	
For Al machining	SCGX120408-LC	12.7	12.7	4.76	5.5	0.8																										★	
LH	SCGX09T302-LH	9.525	9.525	3.97	4.4	0.2																										○	
	SCGX09T304-LH	9.525	9.525	3.97	4.4	0.4																										○	
	SCGX09T308-LH	9.525	9.525	3.97	4.4	0.8																										★	
For Al machining	SCGX120404-LH	12.7	12.7	4.76	5.56	0.4																										○	
	SCGX120408-LH	12.7	12.7	4.76	5.56	0.8																										★	
HR	SCMT09T304-HR	9.525	9.525	3.97	4.4	0.4		★	●		●				●										○								
	SCMT09T308-HR	9.525	9.525	3.97	4.4	0.8		★	○		●												●		●								
	SCMT09T312-HR	9.525	9.525	3.97	4.4	1.2		★																									
	SCMT120404-HR	12.7	12.7	4.76	5.56	0.4		○	●		○																						
For roughing	SCMT120408-HR	12.7	12.7	4.76	5.56	0.8		★	●	○	●				○							○	●		●								
	SCMT120412-HR	12.7	12.7	4.76	5.56	1.2		○	○		●											○	○										
All round	SCMT09T304	9.525	9.525	3.97	4.4	0.4	○		●																								
	SCMT120404	12.7	12.7	4.76	5.56	0.4			○		○																						
	SCMT120408	12.7	12.7	4.76	5.56	0.8	○		●																○								
Without chipbreaker	SCMW060204	6.35	6.35	2.38	2.8	0.4																		○									
	SCMW09T304	9.525	9.525	3.97	4.4	0.4																		○			○						
	SCMW09T308	9.525	9.525	3.97	4.4	0.8	○																	●									
	SCMW120408	12.7	12.7	4.76	5.56	0.8	●																	●									

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

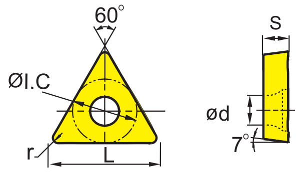
Applicable tool

SSBCR/L Kr:75°	SSDCN Kr:45°	SSKCR/L Kr:75°	SSSCR/L Kr:45°	SSKCR/L Kr:75°
				
Page A193	A193	A194	A194	A224

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

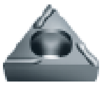
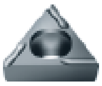
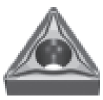
Cemented carbide and cermet inserts

TC□□ (Positive inserts)



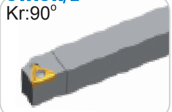
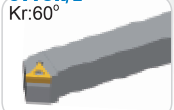
😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

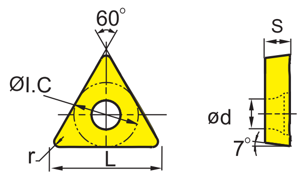
Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
USF  For extra finishing	TCGT110301R-USF	11	6.35	3.18	2.8	0.1									●	○																	
	TCGT110302R-USF	11	6.35	3.18	2.8	0.2									●	○																	
USF  For extra finishing	TCGT110301L-USF	11	6.35	3.18	2.8	0.1									●	○																	
	TCGT110302L-USF	11	6.35	3.18	2.8	0.2									●	○																	
SF  For extra finishing	TCGT06T102-SF	6.4	3.97	1.98	2.2	0.2							○																				
	TCGT06T104-SF	6.4	3.97	1.98	2.2	0.4							○															○					
	TCGT090202-SF	9.6	5.56	2.38	2.5	0.2							○																				
	TCGT090204-SF	9.6	5.56	2.38	2.5	0.4							○															○					
	TCGT090208-SF	9.6	5.56	2.38	2.5	0.8							○																				
	TCGT110302-SF	11	6.35	3.18	2.8	0.2							○														○						
	TCGT110304-SF	11	6.35	3.18	2.8	0.4							○														○	○					
	TCGT110308-SF	11	6.35	3.18	2.8	0.8							○																				

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

Applicable tool

STACR/L Kr:90°	STFCR/L Kr:91°	STGCR/L Kr:91°	STTCR/L Kr:60°	STFCR/L Kr:91°
				
Page A195	A195	A196	A197	A225

TC□□(Positive inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

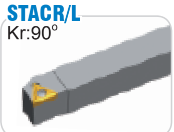
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
HF  For finishing	TCMT06T104-HF	6.4	3.97	1.98	2.2	0.4		○																									
	TCMT06T108-HF	6.4	3.97	1.98	2.2	0.8		○																									
	TCMT090202-HF	9.6	5.56	2.38	2.5	0.2		★	●											○							○					○	
	TCMT090204-HF	9.6	5.56	2.38	2.5	0.4		★	●																		●		○				
	TCMT090208-HF	9.6	5.56	2.38	2.5	0.8			○																○								
	TCMT110202-HF	11	6.35	2.38	2.8	0.2			●						●					○													
	TCMT110204-HF	11	6.35	2.38	2.8	0.4	●	★	●	★										●					●		○						
	TCMT110208-HF	11	6.35	2.38	2.8	0.8		○	●	○					●					○			○									○	
	TCMT16T302-HF	16.5	9.525	3.97	4.4	0.2		○																									
	TCMT16T304-HF	16.5	9.525	3.97	4.4	0.4		●	●						○										●		●						
	TCMT16T308-HF	16.5	9.525	3.97	4.4	0.8		○	●																		○					○	

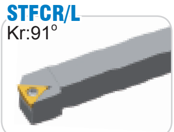
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

STACR/L
Kr:90°

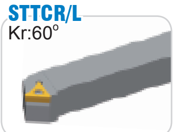


STFCR/L
Kr:91°



STGCR/L
Kr:91°

STTCR/L
Kr:60°



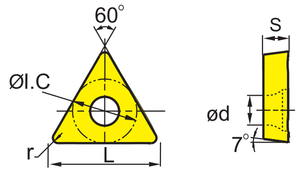
STFCR/L
Kr:91°

Page A195 A195 A196 A197 A225

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

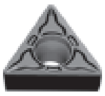
Cemented carbide and cermet inserts

TC□□(Positive inserts)



Good working condition / Normal working condition / Bad working condition

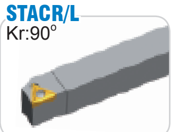
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
EF  For finishing	TCMT090202-EF	9.6	5.56	2.38	2.5	0.2							○		●	★			★														
	TCMT090204-EF	9.6	5.56	2.38	2.5	0.4							○		●	★			★														
	TCMT110202-EF	11	6.35	2.38	2.8	0.2							○		●	★			★														
	TCMT110204-EF	11	6.35	2.38	2.8	0.4							○		●	★			★														
	TCMT110208-EF	11	6.35	2.38	2.8	0.8							○		●	★			○														
	TCMT16T304-EF	16.5	9.525	3.97	4.4	0.4							○		●	★			★														
	TCMT16T308-EF	16.5	9.525	3.97	4.4	0.8							○		●	★			○														
EM  For semi-finishing	TCMT090204-EM	9.6	5.56	2.38	2.8	0.4									●	★					★												
	TCMT090208-EM	9.6	5.56	2.38	2.8	0.8									●	★					★												
	TCMT110204-EM	11	6.35	2.38	2.8	0.4									●	★					★												
	TCMT110208-EM	11	6.35	2.38	2.8	0.8									●	★					★												
	TCMT110212-EM	11	6.35	2.38	2.8	1.2									●	★					★												
	TCMT16T304-EM	16.5	9.525	3.97	4.4	0.4									●	★					★												
	TCMT16T308-EM	16.5	9.525	3.97	4.4	0.8									●	★					★												
	TCMT16T312-EM	16.5	9.525	3.97	4.4	1.2									●	★					★												

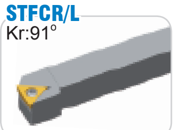
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

STACR/L
Kr:90°

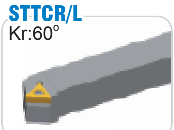


STFCR/L
Kr:91°



STGCR/L
Kr:91°

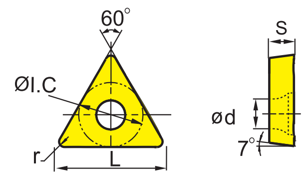
STTCR/L
Kr:60°



STFCR/L
Kr:91°

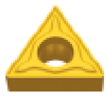
Page A195 A195 A196 A197 A225

TC□□ (Positive inserts)



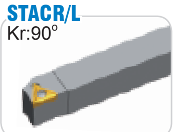
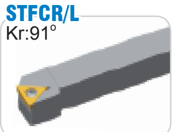
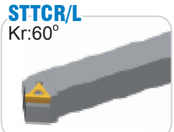
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151 (Cermet)	YNG151C (Coated cermet)	YC10 (Cemented carbide)	YC40	YD051	YD101	YD201
HM For semi-finishing 	TCMT090204-HM	9.6	5.56	2.38	2.5	0.4		★	●		○									○					●								
	TCMT090208-HM	9.6	5.56	2.38	2.5	0.8		○	●		○																						
	TCMT110204-HM	11	6.35	2.38	2.8	0.4		★	●	○	○				●					●			●		●		○						
	TCMT110208-HM	11	6.35	2.38	2.8	0.8		★	●		○														●								
	TCMT16T304-HM	16.5	9.525	3.97	4.4	0.4		★	●	★	●									●			○		●								
	TCMT16T308-HM	16.5	9.525	3.97	4.4	0.8		★	●	★	●									●			●		●							○	
	TCMT16T312-HM	16.5	9.525	3.97	4.4	1.2			●		●									○													
HR For roughing 	TCMT090204-HR	9.6	5.56	2.38	2.5	0.4			○																								
	TCMT090208-HR	9.6	5.56	2.38	2.5	0.8																			○								●
	TCMT110204-HR	11	6.35	2.38	2.8	0.4			○																								
	TCMT110208-HR	11	6.35	2.38	2.8	0.8			○																								
	TCMT16T304-HR	16.5	9.525	3.97	4.4	0.4		○	●																								
	TCMT16T308-HR	16.5	9.525	3.97	4.4	0.8		●	●		●												●		●								
	TCMT16T312-HR	16.5	9.525	3.97	4.4	1.2		○	●														●		●								○
	TCMT220408-HR	22	12.7	4.76	5.5	0.8		○	●		○									●													
LC For Al machining 	TCGX090202-LC	9.6	5.56	2.38	2.5	0.2																										★	
	TCGX090204-LC	9.6	5.56	2.38	2.5	0.4																										★	
	TCGX110202-LC	11	6.35	2.38	2.8	0.2																										★	
	TCGX110204-LC	11	6.35	2.38	2.8	0.4																										★	
	TCGX110208-LC	11	6.35	2.38	2.8	0.8																										★	
	TCGX16T304-LC	16.5	9.525	3.97	4.4	0.4																										★	
	TCGX16T308-LC	16.5	9.525	3.97	4.4	0.8																										★	

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

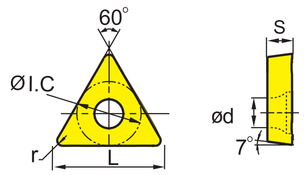
Applicable tool

STACR/L Kr:90°	STFCR/L Kr:91°	STGCR/L Kr:91°	STTCR/L Kr:60°	STFCR/L Kr:91°
				
Page A195	A195	A196	A197	A225

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

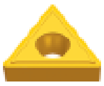
Cemented carbide and cermet inserts

TC□□(Positive inserts)



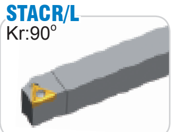
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

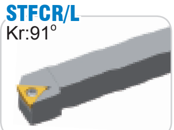
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹️	☹️	😊		😐	😐	☹️										😊	😊	😊	☹️			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹️	☹️					😊		☹️
N Non-ferrous metal																										😐	☹️
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
LH  For Al machining	TCGX090202-LH	9.6	5.56	2.38	2.5	0.2																										★	
	TCGX090204-LH	9.6	5.56	2.38	2.5	0.4																										★	
	TCGX110202-LH	11	6.35	2.38	2.8	0.2																										★	
	TCGX110204-LH	11	6.35	2.38	2.8	0.4																										★	
	TCGX110208-LH	11	6.35	2.38	2.8	0.8																										★	
	TCGX16T302-LH	16.5	9.525	3.97	4.4	0.2																										○	
	TCGX16T304-LH	16.5	9.525	3.97	4.4	0.4																										★	
	TCGX16T308-LH	16.5	9.525	3.97	4.4	0.8																										★	
All round 	TCMT220408	22	12.7	4.76	5.5	0.8	○		●														○						○				○
Without chipbreaker 	TCMW110204	11	6.35	2.38	2.8	0.4																		○					○			●	○
	TCMW16T304	16.5	9.525	3.97	4.4	0.4																							○				
	TCMW16T308	16.5	9.525	3.97	4.4	0.8																		○									
	TCMW16T312	16.5	9.525	3.97	4.4	1.2	○																	○									
	TCMW220408	22	12.7	4.76	5.5	0.8	○																	○	○								

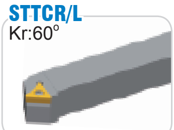
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

STACR/L
Kr:90°


STFCR/L
Kr:91°


STGCR/L
Kr:91°


STTCR/L
Kr:60°


STFCR/L
Kr:91°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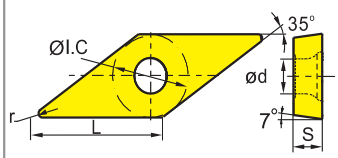
VC□□ (Positive inserts)



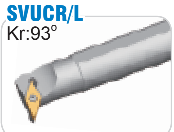
Good working condition / Normal working condition / Bad working condition

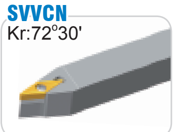
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

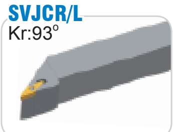
Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
USF  For extra finishing	VCGT080201R-USF	8	4.76	2.38	2.3	0.1									○	○																	
	VCGT080202R-USF	8	4.76	2.38	2.3	0.2									●	○																	
	VCGT110301R-USF	11	6.35	3.18	2.8	0.1									●	○																	
	VCGT110302R-USF	11	6.35	3.18	2.8	0.2									●	○																	
USF  For extra finishing	VCGT080201L-USF	8	4.76	2.38	2.3	0.1									○	○																	
	VCGT080202L-USF	8	4.76	2.38	2.3	0.2									○	○																	
	VCGT110301L-USF	11	6.35	3.18	2.8	0.1									○	○																	
	VCGT110302L-USF	11	6.35	3.18	2.8	0.2									●	○																	
SF  For extra finishing	VCGT110302-SF	11	6.35	3.18	2.8	0.2							○														○	★					
	VCGT110304-SF	11	6.35	3.18	2.8	0.4							○														○	★					
HF  For finishing	VCGT110304-HF	11	6.35	3.18	2.8	0.4			●																								
NF  For finishing	VCGT160408-NF	16.5	9.525	4.76	4.4	0.8							●	★																			

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

Applicable tool







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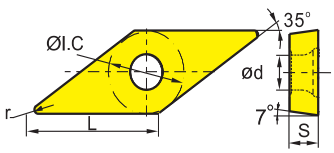
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

Cemented carbide and cermet inserts

VC□□(Positive inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
LC  For Al machining	VCGX110301-LC	11	6.35	3.18	2.8	0.1																										★	
	VCGX110302-LC	11	6.35	3.18	2.8	0.2																										★	
	VCGX110304-LC	11	6.35	3.18	2.8	0.4																										★	
	VCGX110308-LC	11	6.35	3.18	2.8	0.8																										★	
	VCGX160404-LC	16.6	9.525	4.76	4.4	0.4																										★	
	VCGX160408-LC	16.6	9.525	4.76	4.4	0.8																										★	
	VCGX160412-LC	16.6	9.525	4.76	4.4	1.2																										★	
	VCGX220530-LC	22	12.7	5.56	5.5	3.0																										★	
LH  For Al machining	VCGX110202-LH	11	6.35	2.38	2.8	0.2																										○	
	VCGX110204-LH	11	6.35	2.38	2.8	0.4																										★	
	VCGX110301-LH	11	6.35	3.18	2.8	0.1																										★	●
	VCGX110302-LH	11	6.35	3.18	2.8	0.2																										★	●
	VCGX110304-LH	11	6.35	3.18	2.8	0.4																										★	●
	VCGX110308-LH	11	6.35	3.18	2.8	0.8																										○	
	VCGX160402-LH	16.6	9.525	4.76	4.4	0.2																										★	
	VCGX160404-LH	16.6	9.525	4.76	4.4	0.4																										★	○
	VCGX160408-LH	16.6	9.525	4.76	4.4	0.8																										★	○
	VCGX160412-LH	16.6	9.525	4.76	4.4	1.2																										★	●
	VCGX220530-LH	22	12.7	5.56	5.5	3.0																										★	●

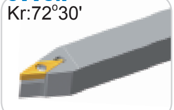
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

SVQCR/L
Kr:107°30'

SVUCR/L
Kr:93°

SVVCN
Kr:72°30'



SVJCR/L
Kr:93°

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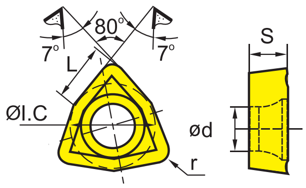
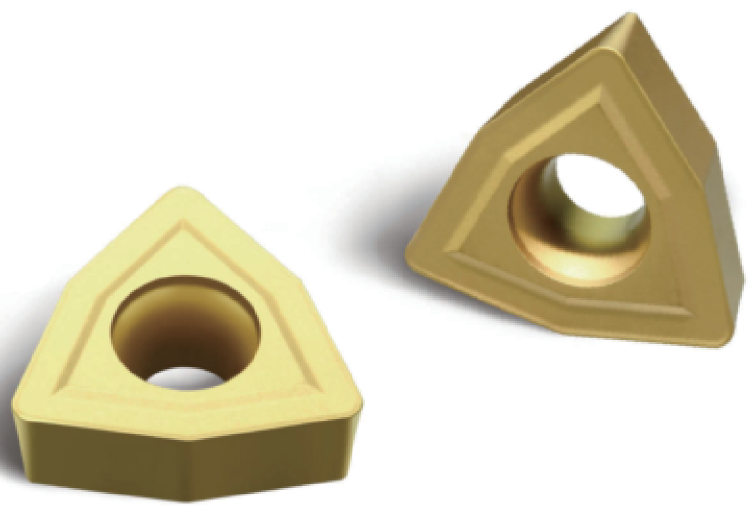
WC□□(Positive inserts)



Good working condition / Normal working condition / Bad working condition

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
Workpiece material	P Steel						Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
Workpiece material	M Stainless steel												Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
Workpiece material	K Cast iron																					Good	Normal	Normal	Bad	Bad					Good		Bad
Workpiece material	N Non-ferrous metal																															Normal	Bad
Workpiece material	S Heat resistant alloy, Ti alloy												Good	Good																		Good	
53 	WCMX040208R-53	4.3	6.35	2.38	3.1	0.8			●															○									○
	WCMX06T308R-53	6.5	9.525	3.97	3.7	0.8	●		○															○									○
	WCMX080412R-53	8.7	12.7	4.76	4.3	1.2																							○				

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



Applicable tool

SWACR/L
Kr:90°

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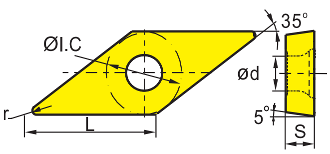
Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

Cemented carbide and cermet inserts

VB□□ (Positive inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

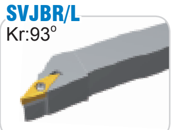
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	😊	😊	😐	😐	☹	☹	😊		😐	😐	☹										😊	😊	😊	☹			
M Stainless steel							😊		😐	😐		😐	😊	😐	😐						😊	😊					
K Cast iron																😊	😐	😐	☹	☹					😊		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							😊	😊																		😊	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
SF  For extra finishing	VBGT110302-SF	11	6.35	3.18	2.8	0.2							○														○	○					
	VBGT110304-SF	11	6.35	3.18	2.8	0.4							○														○	○					
EF  For finishing	VBMT110302-EF	11	6.35	3.18	2.8	0.2							○		●	★			★														
	VBMT110304-EF	11	6.35	3.18	2.8	0.4							○		●	★			★														
	VBMT110308-EF	11	6.35	3.18	2.8	0.8							○		●	★			○														
	VBMT160404-EF	16.5	9.525	4.76	4.4	0.4							○		●	★			★														
	VBMT160408-EF	16.5	9.525	4.76	4.4	0.8							○		●	★			○														
HF  For finishing	VBMT110202-HF	11	6.35	2.38	2.8	0.2			●		○				●																		
	VBMT110204-HF	11	6.35	2.38	2.8	0.4			●						○										○								
	VBMT110208-HF	11	6.35	2.38	2.8	0.8			●						○																		
NF  For finishing	VBET160404-NF	16.5	9.525	4.76	4.4	0.4							●	★																			
	VBET160408-NF	16.5	9.525	4.76	4.4	0.8							●	★																			

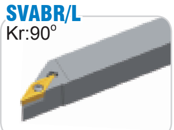
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

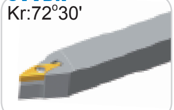
SVJBR/L
Kr:93°



SVABR/L
Kr:90°



SVVBN
Kr:72°30'

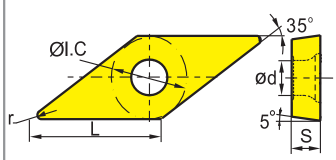


SVQBR/L
Kr:107°30'

SVUBR/L
Kr:93°

Page A188 A189 A190 A228 A229

VB□□ (Positive inserts)



Good working condition / Normal working condition / Bad working condition

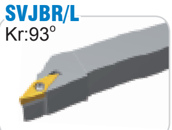
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
EM	VBMT110304-EM	11	6.35	3.18	2.8	0.4									●	★					★												
	VBMT110308-EM	11	6.35	3.18	2.8	0.8									●	★					★												
For semi-finishing																																	
HM	VBMT160404-HM	16.5	9.525	4.76	4.4	0.4		★	●	★	●				●					●			●										○
	VBMT160408-HM	16.5	9.525	4.76	4.4	0.8		★	●	★	●				●					●			●		●								
	VBMT160412-HM	16.5	9.525	4.76	4.4	1.2			●						○					○					○						○		○
For semi-finishing																																	
HR	VBMT160404-HR	16.5	9.525	4.76	4.4	0.4		★	●	○	●																						
	VBMT160408-HR	16.5	9.525	4.76	4.4	0.8		○	●	○	●														○								
	VBMT160412-HR	16.5	9.525	4.76	4.4	1.2					○																						
For roughing	VBGT160408-HR	16.5	9.525	4.76	4.4	0.8			○																								

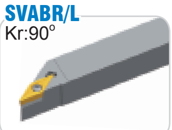
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

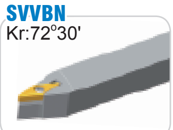
SVJBR/L
Kr:93°



SVABR/L
Kr:90°



SVVBN
Kr:72°30'



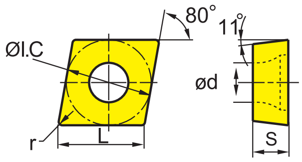
SVQBR/L
Kr:107°30'

SVUBR/L
Kr:93°

Page A188 A189 A190 A228 A229

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

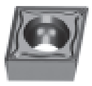
CP□□ (Positive inserts)



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

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	☺	☺	😐	😐	☹	☹	☺		😐	😐	☹										☺	☺	☺	☹			
M Stainless steel							☺		😐	😐		😐	☺	😐	😐						☺	☺					
K Cast iron																☺	😐	😐	☹	☹					☺		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							☺	☺																		☺	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
SF	CPGT060202-SF	6.4	6.35	2.38	2.8	0.2							○														○						
	CPGT060204-SF	6.4	6.35	2.38	2.8	0.4							○														○						
For extra finishing	CPGT09T304-SF	9.7	9.525	3.97	4.4	0.4							○														○	○					



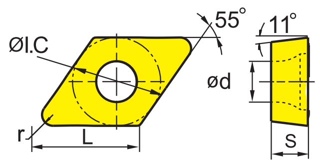
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Applicable tool

SCLPR/L
Kr:95°

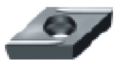
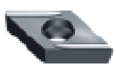
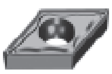
Page A230

DP□□(Positive inserts)



Good working condition / Normal working condition / Bad working condition

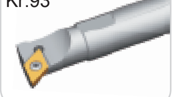
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
USF  For extra finishing	DPGT0702005R-USF	7.8	6.35	2.38	2.8	0.05									○	○																	
	DPGT070201R-USF	7.8	6.35	2.38	2.8	0.1									○	○																	
	DPGT11T301R-USF	11.6	9.525	3.97	4.4	0.1									●	○																	
USF  For extra finishing	DPGT0702005L-USF	7.8	6.35	2.38	2.8	0.05									○	○																	
	DPGT070201L-USF	7.8	6.35	2.38	2.8	0.1									○	○																	
	DPGT11T301L-USF	11.6	9.525	3.97	4.4	0.1									○	○																	
SF  For extra finishing	DPGT070202-SF	7.8	6.35	2.38	2.8	0.2							○														○	○					
	DPGT070204-SF	7.8	6.35	2.38	2.8	0.4							○														○						
	DPGT070208-SF	7.8	6.35	2.38	2.8	0.8							○																				
	DPGT11T304-SF	11.6	9.525	3.97	4.4	0.4							○														○						
	DPGT11T308-SF	11.6	9.525	3.97	4.4	0.8							○																				

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

Applicable tool


SDQPR/L
Kr:107°30'

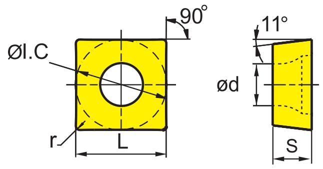

SDUPR/L
Kr:93°

Page A231 A232

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

Cemented carbide and cermet inserts

SP□□(Positive inserts)



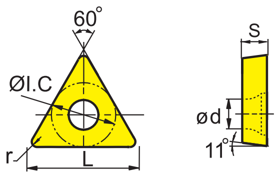
☺ Good working condition ☺ Normal working condition ☹ Bad working condition

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm) L	ØI.C	S	ød	r	Coated cemented carbide YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	YC40	YD051	YD101	YD201
Without chipbreaker 	**SPMW09T304**	9.525	9.525	3.97	4.4	0.4			○																							○	
	SPMW09T308	9.525	9.525	3.97	4.4	0.8	●																								●		
	SPMW120408	12.7	12.7	4.76	5.56	0.8																		●									○

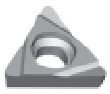
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

TP□□ (Positive inserts)



Good working condition / Normal working condition / Bad working condition

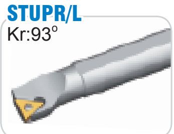
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
SF  For extra finishing	TPGT090202-SF	9.6	5.56	2.38	2.5	0.2							○															○					
	TPGT090204-SF	9.6	5.56	2.38	2.5	0.4							○														○	★					
	TPGT090208-SF	9.6	5.56	2.38	2.5	0.8							○														○						
	TPGT110302-SF	11	6.35	3.18	2.8	0.2							○														○						
	TPGT110304-SF	11	6.35	3.18	2.8	0.4							○														○	○					
	TPGT110308-SF	11	6.35	3.18	2.8	0.8							○															○					
 For extra finishing	TPGH090202L	9.6	5.56	2.38	2.8	0.2							●														○						
	TPGH090204L	9.6	5.56	2.38	2.8	0.4							●														●						
	TPGH110302L	11	6.35	3.18	3.18	0.2							○														●						
	TPGH110304L	11	6.35	3.18	3.18	0.4							●														●		○				

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

Applicable tool

STUPR/L
Kr:93°



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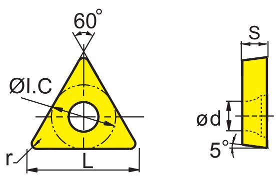
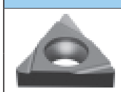
TB□□ (Positive inserts)



Good working condition / Normal working condition / Bad working condition

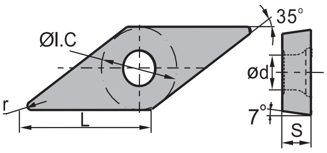
Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	Good	Good	Normal	Normal	Bad	Bad	Good		Normal	Normal	Bad										Good	Good	Good	Bad			
M Stainless steel							Good		Normal	Normal		Normal	Good	Normal	Normal						Good	Good					
K Cast iron																Good	Normal	Normal	Bad	Bad					Good		Bad
N Non-ferrous metal																										Normal	Bad
S Heat resistant alloy, Ti alloy							Good	Good																		Good	

Inserts shape	Type	Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
		L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	**YBC352**	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
 For extra finishing	TBGH060102L	6.4	3.97	1.59	2.2	0.2							★														★						
	TBGH060104L	6.4	3.97	1.59	2.2	0.4							★																				

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

Insert code key A48–A49
Grade selection reference A19/A34–A46
Chipbreaker selection reference A22–A33
Recommended cutting parameters A243–A245

VP□□ (Positive inserts)



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

Workpiece material	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
P Steel	☺	☺	😐	😐	☹	☹	☺		😐	😐	☹										☺	☺	☺	☹			
M Stainless steel							☺		😐	😐		😐	☺	😐	😐						☺	☺					
K Cast iron																☺	😐	😐	☹	☹					☺		☹
N Non-ferrous metal																										😐	☹
S Heat resistant alloy, Ti alloy							☺	☺																		☺	

Inserts shape	Type	L	ØI.C	S	ød	r	YBC151	YBC152	YBC251	YBC252	YBC351	YBC352	YBG102	YBG105	YBG202	YBG205	YBG302	YBM151	YBM153	YBM251	YBM253	YBD052	YBD102	YBD151	YBD152	YBD252	YNG151	YNG151C	YC10	YC40	YD051	YD101	YD201
		Dimensions(mm)					Coated cemented carbide																				Cermet	Coated cermet	Cemented carbide				
USF  For extra finishing	**VPGT080201R-USF**	8	4.76	2.38	2.3	0.1									○	○																	
	VPGT080202R-USF	8	4.76	2.38	2.3	0.2									○	○																	
	VPGT110301R-USF	11	6.35	3.18	2.8	0.1									●	○																	
USF  For extra finishing	**VPGT080201L-USF**	8	4.76	2.43	2.3	0.1									●	○																	
	VPGT080202L-USF	8	4.76	2.43	2.3	0.2									●	○																	
	VPGT110301L-USF	11	6.35	3.18	2.8	0.1									○	○																	

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

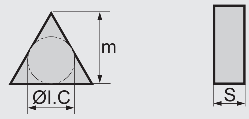

New product for turning
PCBN&PCD inserts

PCBN&PCD inserts code key

Insert shape

85° A	82° B	80° C
55° D	75° E	H
55° K	L	86° M
P	S	T
35° V	80° 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

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	$>65°$
C	With	$>65°$
A	With	
W	With	$\leqslant 65°$
Q	With	$\leqslant 65°$
X	---	Special

Length of cutting edge

Diameter of IC (mm)	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						

(Column heading group: Insert shape)

Insert thickness

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

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

12 04 08 T 020 20 - 2

Type of cutting edge

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

Chamfer width

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°

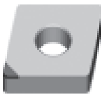
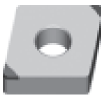
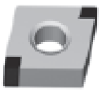
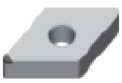
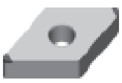
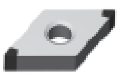
Number of cutting nose

Code	Number	Diagram
Unspeci-fied	Single edge	
2	Double edges	
3	Three edges	
4	Four edges	

CNGA120408 ISO standard code

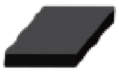
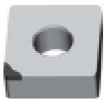
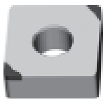
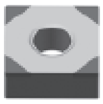
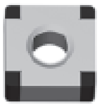
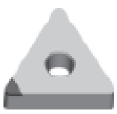
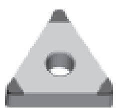
	Grade						
	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Type of cutting edge	T	S	T	S	S	T	T
Chamfer angle	15°	20°	20°	25°	20°	20°	20°
Chamfer width	0.15	0.10	0.20	0.15	0.10	0.20	0.25

PCBN&PCD inserts overview Negative inserts

Inserts shape	Type	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	CNGA120404	○	○	○	○							
	CNGA120408	○	○	○	○							
A120	CNGA120412	○	○	○	○							
	CNGA120404-2	★	★	★	★							
	CNGA120408-2	★	★	★	★							
A120	CNGA120412-2	○	○	○	○							
	CNGA120404-2					○	○	○				
	CNGA120408-2					○	○	○				
A120	CNGA120412-2					○	○	○				
	CNGN120404					○	★	○				
	CNGN12T608					○	★	○				
A121	CNGN120712					○	★	○				
	DNGA150404	○	○	○	○							
	DNGA150408	○	○	○	○							
	DNGA150412	○	○	○	○							
	DNGA150602	○	○	○	○							
	DNGA150604	○	○	○	○							
	DNGA150608	○	○	○	○							
A122	DNGA150612	○	○	○	○							
	DNGA150404-2	★	★	★	★							
	DNGA150408-2	★	★	★	★							
	DNGA150412-2	○	○	○	○							
	DNGA150602-2	○	○	○	○							
	DNGA150604-2	○	○	○	○							
	DNGA150608-2	○	○	○	○							
A122	DNGA150612-2	○	○	○	○							
	DNGA150404-2					○	○	○				
	DNGA150408-2					○	○	○				
	DNGA150412-2					○	○	○				
	DNGA150604-2					○	○	○				
	DNGA150608-2					○	○	○				
A122	DNGA150612-2					○	○	○				

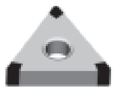
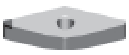
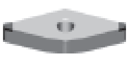
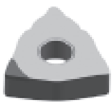
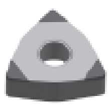
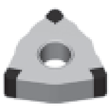
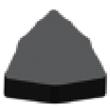
★ Recommended grade

PCBN&PCD inserts overview Negative inserts

Inserts shape	Type	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	DNGN110404					○	★	○				
	DNGN110408					○	★	○				
A123												
	SNGA120402	○	○	○	○							
	SNGA120404	○	○	○	○							
	SNGA120408	○	○	○	○							
A124	SNGA120412	○	○	○	○							
	SNGA120402-2	○	○	○	○							
	SNGA120404-2	★	★	★	★							
	SNGA120408-2	★	★	★	★							
A124	SNGA120412-2	○	○	○	○							
	SNGA120402-4	○	○	○	○							
	SNGA120404-4	○	○	○	○							
	SNGA120408-4	○	○	○	○							
A124	SNGA120412-4	○	○	○	○							
	SNGA120404-4					○	○	○				
	SNGA120408-4					○	○	○				
A124	SNGA120412-4					○	○	○				
	SNGN120404					○	★	○				
	SNGN120408					○	★	○				
	SNGN12T612					○	★	○				
	SNGN150716					○	★	○				
A125	SNGN150720					○	★	○				
	TNGA160402	○	○	○	○							
	TNGA160404	○	○	○	○							
	TNGA160408	○	○	○	○							
A126	TNGA160412	○	○	○	○							
	TNGA160402-3	○	○	○	○							
	TNGA160404-3	★	★	★	★							
	TNGA160408-3	★	★	★	★							
A126	TNGA160412-3	○	○	○	○							

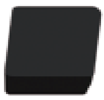
★ Recommended grade

PCBN&PCD inserts overview Negative inserts

Inserts shape	Type	Grade										
		YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	TNGA160404-3					○	○	○				
	TNGA160408-3					○	○	○				
A126	TNGA160412-3					○	○	○				
	VNGA160402	○	○	○	○							
	VNGA160404	○	○	○	○							
	VNGA160408	○	○	○	○							
A127	VNGA160412	○	○	○	○							
	VNGA160402-2	○	○	○	○							
	VNGA160404-2	★	★	★	★							
	VNGA160408-2	★	★	★	★							
A127	VNGA160412-2	○	○	○	○							
	WNGA080404	○	○	○	○							
	WNGA080408	○	○	○	○							
A128	WNGA080412	○	○	○	○							
	WNGA080404-3	★	★	★	★							
	WNGA080408-3	★	★	★	★							
A128	WNGA080412-3	○	○	○	○							
	WNGA080404-3					○	○	○				
	WNGA080408-3					○	○	○				
A128	WNGA080412-3					○	○	○				
	WNGN060304					○	★	○				
	WNGN080408					○	★	○				
A129	WNGN080412					○	★	○				
	RNGN090300					○	★	○				
	RNGN120400					○	★	○				
	RNGN120700					○	★	○				
A129	RNGN150700					○	★	○				

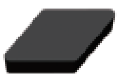
★ Recommended grade

PCBN&PCD inserts overview Positive inserts

Inserts shape	Type	Grade										
		YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	CCGW060204	○	○	○	○				★	○	★	○
	CCGW060208	○	○	○	○				★	○	★	○
	CCGW09T304	○	○	○	○				★	○	★	○
	CCGW09T308	○	○	○	○				★	○	★	○
	CCGW120404	○	○	○	○							
	CCGW120408	○	○	○	○				★	○	★	○
A130	CCGW120412	○	○	○	○							
	CCGW060204-2	○	○	○	○							
	CCGW060208-2	○	○	○	○							
	CCGW09T304-2	★	★	★	★							
	CCGW09T308-2	★	★	★	★							
	CCGW120404-2	★	★	★	★							
	CCGW120408-2	★	★	★	★							
A130	CCGW120412-2	○	○	○	○							
	CCGN120404					★	★	★				
	CCGN12T608					★	★	★				
A131	CCGN120712					★	★	★				
	CCGW09T304-2					○	○	○				
	CCGW09T308-2					○	○	○				
	CCGW09T312-2					○	○	○				
	CCGW120404-2					○	○	○				
	CCGW120408-2					○	○	○				
A130	CCGW120412-2					○	○	○				
	CCMX060202								★	○	★	○
	CCMX060204								★	○	★	○
	CCMX060208								★	○	★	○
	CCMX09T304								★	○	★	○
	CCMX09T308								★	○	★	○
A131	CCMX120408								★	○	★	○

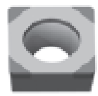
★ Recommended grade

PCBN&PCD inserts overview Positive inserts

Inserts shape	Type	Grade										
		YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
 A132	DCGW070202	○	○	○	○				★	○	★	○
	DCGW070204	○	○	○	○				★	○	★	○
	DCGW070208	○	○	○	○							
	DCGW11T304	○	○	○	○				★	○	★	○
	DCGW11T308	○	○	○	○				★	○	★	○
 A132	DCGW070202-2	○	○	○	○							
	DCGW070204-2	○	○	○	○							
	DCGW070208-2	○	○	○	○							
	DCGW11T304-2	★	★	★	★							
	DCGW11T308-2	★	★	★	★							
 A133	DCGN110404					★	★	★				
	DCGN110408					★	★	★				
 A132	DCGW11T304-2					○	○	○				
	DCGW11T308-2					○	○	○				
	DCGW11T312-2					○	○	○				
	DCGW11T304-2					○	○	○				
	DCGW11T308-2					○	○	○				
 A132	DCMX070202								★	○	★	○
	DCMX070204								★	○	★	○
	DCMX11T304								★	○	★	○
	DCMX11T308								★	○	★	○
 A134	SCGW120404	○	○	○	○				★	○	★	○
	SCGW120408	○	○	○	○				★	○	★	○
	SCGW120412	○	○	○	○				★	○	★	○
 A134	SCGW120404-2	★	★	★	★							
	SCGW120408-2	★	★	★	★							
	SCGW120412-2	○	○	○	○							

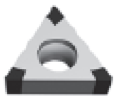
★ Recommended grade

PCBN&PCD inserts overview Positive inserts

Inserts shape	Type	Grade										
		YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
 A134	SCGW120404-4	○	○	○	○							
	SCGW120408-4	○	○	○	○							
	SCGW120412-4	○	○	○	○							
 A134	SCGW120404-4					○	○	○				
	SCGW120408-4					○	○	○				
	SCGW120412-4					○	○	○				
 A134	SCMX120404								★	○	★	○
	SCMX120408								★	○	★	○
	SCMX120412								★	○	★	○
 A135	TCGW090204	○	○	○	○				★	○	★	○
	TCGW090208	○	○	○	○				★	○	★	○
	TCGW110202	○	○	○	○				★	○	★	○
	TCGW110204	○	○	○	○				★	○	★	○
	TCGW110208	○	○	○	○				★	○	★	○
	TCGW110304	○	○	○	○				★	○	★	○
	TCGW16T304	○	○	○	○				★	○	★	○
	TCGW16T308	○	○	○	○				★	○	★	○
	TCGW16T312	○	○	○	○				★	○	★	○
 A135	TCGW090204-3	○	○	○	○							
	TCGW090208-3	○	○	○	○							
	TCGW110202-3	○	○	○	○							
	TCGW110204-3	★	★	★	★							
	TCGW110208-3	★	★	★	★							
	TCGW110304-3	★	★	★	★							
	TCGW16T304-3	★	★	★	★							
	TCGW16T308-3	★	★	★	★							
	TCGW16T312-3	○	○	○	○							

★ Recommended grade

PCBN&PCD inserts overview Positive inserts

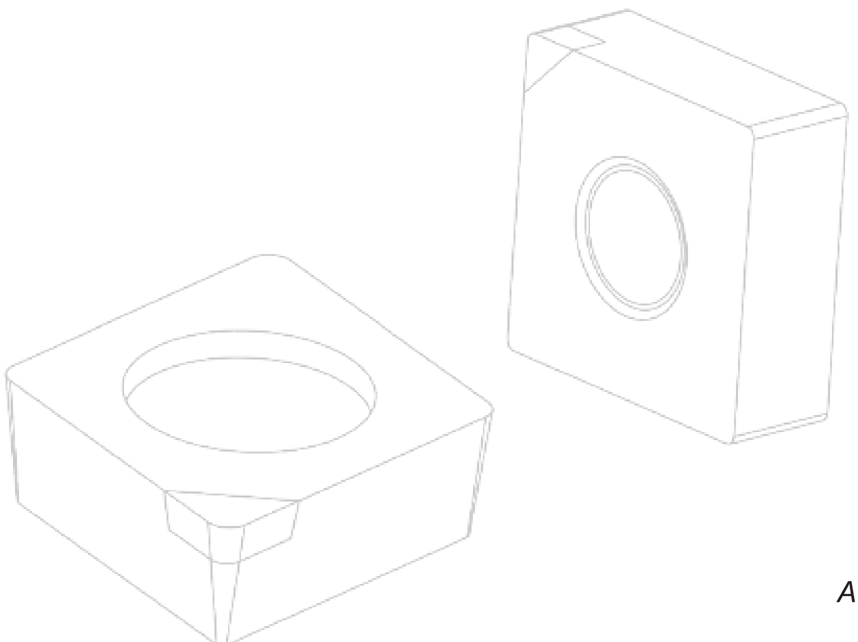
Inserts shape	Type	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	TCGW090204-3					○	○	○				
	TCGW090208-3					○	○	○				
	TCGW090212-3					○	○	○				
	TCGW110304-3					○	○	○				
	TCGW110308-3					○	○	○				
	TCGW110312-3					○	○	○				
	TCGW16T304-3					○	○	○				
	TCGW16T308-3					○	○	○				
A135	TCGW16T312-3					○	○	○				
	TCMX090204								★	○	★	○
	TCMX090208								★	○	★	○
	TCMX110202								★	○	★	○
	TCMX110204								★	○	★	○
	TCMX110208								★	○	★	○
	TCMX110304								★	○	★	○
	TCMX16T304								★	○	★	○
	TCMX16T308								★	○	★	○
A136	TCMX16T312								★	○	★	○

★ Recommended grade

PCBN&PCD inserts overview Positive inserts

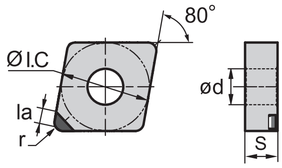
Inserts shape	Type	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	VBGW160404	○	○	○	○				★	○	★	○
	VBGW160408	○	○	○	○				★	○	★	○
A137	VBGW160412	○	○	○	○				★	○	★	○
	VBGW160404-2	★	★	★	★							
	VBGW160408-2	★	★	★	★							
A137	VBGW160412-2	○	○	○	○							
	VBMX160404								★	○	★	○
	VBMX160408								★	○	★	○
A137	VBMX160412								★	○	★	○
	VCGW160404								★	○	★	○
	VCGW160408								★	○	★	○
A138	VCGW160412								★	○	★	○
	VCMX160404								★	○	★	○
	VCMX160408								★	○	★	○
A138	VCMX160412								★	○	★	○
	RCGN090300					★	★	★				
	RCGN120400					★	★	★				
	RCGN120700					★	★	★				
A138	RCGN150700					★	★	★				

★ Recommended grade



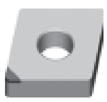
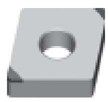
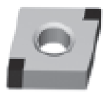
PCBN&PCD inserts

CN□□ (Negative inserts)



Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

Good working condition / Normal working condition / Bad working condition

Inserts shape	Type	ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	CNGA120404	12.7	4.76	5.16	0.4	2.5	○	○	○	○							
	CNGA120408	12.7	4.76	5.16	0.8	2.4	○	○	○	○							
	CNGA120412	12.7	4.76	5.16	1.2	2.3	○	○	○	○							
	CNGA120404-2	12.7	4.76	5.16	0.4	2.5	★	★	★	★							
	CNGA120408-2	12.7	4.76	5.16	0.8	2.4	★	★	★	★							
	CNGA120412-2	12.7	4.76	5.16	1.2	2.3	○	○	○	○							
	CNGA120404-2	12.7	4.76	5.16	0.4	2.5					○	○	○				
	CNGA120408-2	12.7	4.76	5.16	0.8	2.4					○	○	○				
	CNGA120412-2	12.7	4.76	5.16	1.2	2.3					○	○	○				

Dimensions(mm): ØI.C, S, ød, r, la. Grade: YCB011 – YCD511.

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

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

DCLNR/L Kr:95°

PCLNR/L Kr:95°

MCLNR/L Kr:95°

PCLNR/L Kr:95°

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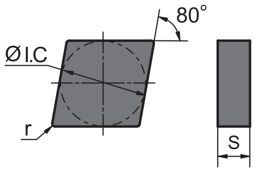
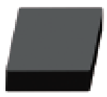
CN□□ (Negative inserts)



Good working condition　Normal working condition　Bad working condition

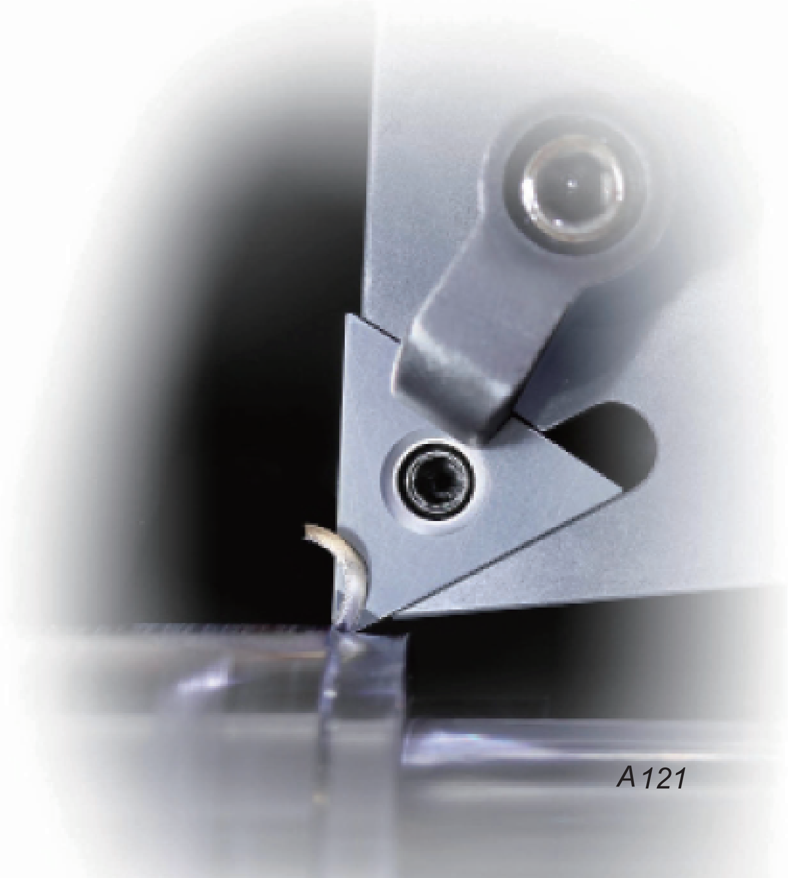
Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

Inserts shape	Type	Dimensions(mm)			Grade										
		ØI.C	S	r	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	**CNGN120404**	12.7	4.76	0.4					○	★	○				
	CNGN12T608	12.7	6.75	0.8					○	★	○				
	CNGN120712	12.7	7.94	1.2					○	★	○				

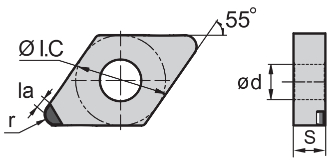
★Recommended grade (always stock available)　●Available grade (always stock available)　○Make-to-order

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

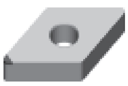
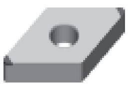
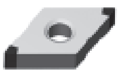


DN□□ (Negative inserts)



Workpiece material: 😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	😊		😐						
K Cast iron	😊			😊		😐	☹				
N Non ferrous metal								😐	😊	😐	☹

Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	**DNGA150404**	12.7	4.76	5.16	0.4	2.5	○	○	○	○							
	DNGA150408	12.7	4.76	5.16	0.8	2.1	○	○	○	○							
	DNGA150412	12.7	4.76	5.16	1.2	2.0	○	○	○	○							
	DNGA150602	12.7	6.35	5.16	0.2	2.7	○	○	○	○							
	DNGA150604	12.7	6.35	5.16	0.4	2.5	○	○	○	○							
	DNGA150608	12.7	6.35	5.16	0.8	2.1	○	○	○	○							
	DNGA150612	12.7	6.35	5.16	1.2	2.0	○	○	○	○							
	**DNGA150404-2**	12.7	4.76	5.16	0.4	2.5	★	★	★	★							
	DNGA150408-2	12.7	4.76	5.16	0.8	2.1	★	★	★	★							
	DNGA150412-2	12.7	4.76	5.16	1.2	2.0	○	○	○	○							
	DNGA150602-2	12.7	6.35	5.16	0.2	2.7	○	○	○	○							
	DNGA150604-2	12.7	6.35	5.16	0.4	2.5	○	○	○	○							
	DNGA150608-2	12.7	6.35	5.16	0.8	2.1	○	○	○	○							
	DNGA150612-2	12.7	6.35	5.16	1.2	2.0	○	○	○	○							
	**DNGA150404-2**	12.7	4.76	5.16	0.4	2.5					○	○	○				
	DNGA150408-2	12.7	4.76	5.16	0.8	2.1					○	○	○				
	DNGA150412-2	12.7	4.76	5.16	1.2	2.0					○	○	○				
	DNGA150604-2	12.7	6.35	5.16	0.4	2.5					○	○	○				
	DNGA150608-2	12.7	6.35	5.16	0.8	2.1					○	○	○				
	DNGA150612-2	12.7	6.35	5.16	1.2	2.0					○	○	○				

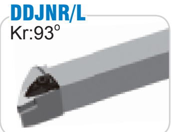
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

DDJNR/L Kr:93°



PDJNR/L Kr:93°

PDNNR/L Kr:63°

PDSNR/L Kr:62°30'

PDUNR/L Kr:93°

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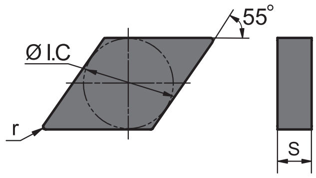
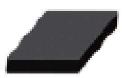
DN□□ (Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	😊		😐						
K Cast iron	😊			😊		😐	☹				
N Non ferrous metal								😐	😊	😐	☹

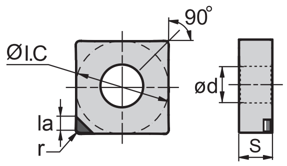
Inserts shape	Type	Dimensions(mm)			Grade										
		ØI.C	S	r	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	DNGN110404	9.525	4.76	0.4					○	★	○				
	DNGN110408	9.525	4.76	0.8					○	★	○				

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

Type of cutting edge

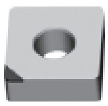
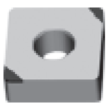
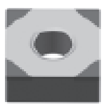
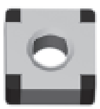
	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

SN□□ (Negative inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	SNGA120402	12.7	4.76	5.16	0.2	2.7	○	○	○	○							
	SNGA120404	12.7	4.76	5.16	0.4	2.5	○	○	○	○							
	SNGA120408	12.7	4.76	5.16	0.8	2.3	○	○	○	○							
	SNGA120412	12.7	4.76	5.16	1.2	2.1	○	○	○	○							
	SNGA120402-2	12.7	4.76	5.16	0.2	2.7	○	○	○	○							
	SNGA120404-2	12.7	4.76	5.16	0.4	2.5	★	★	★	★							
	SNGA120408-2	12.7	4.76	5.16	0.8	2.3	★	★	★	★							
	SNGA120412-2	12.7	4.76	5.16	1.2	2.1	○	○	○	○							
	SNGA120402-4	12.7	4.76	5.16	0.2	2.7	○	○	○	○							
	SNGA120404-4	12.7	4.76	5.16	0.4	2.5	○	○	○	○							
	SNGA120408-4	12.7	4.76	5.16	0.8	2.3	○	○	○	○							
	SNGA120412-4	12.7	4.76	5.16	1.2	2.1	○	○	○	○							
	SNGA120404-4	12.7	4.76	5.16	0.4	2.5					○	○	○				
	SNGA120408-4	12.7	4.76	5.16	0.8	2.3					○	○	○				
	SNGA120412-4	12.7	4.76	5.16	1.2	2.1					○	○	○				

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

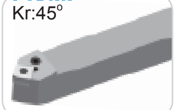
Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

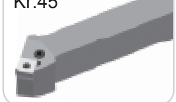
Applicable tool

DSBNR/L Kr:75°


PSBNR/L Kr:75°


PSDNN Kr:45°


PSKNR/L Kr:75°


PSSNR/L Kr:45°


PSKNR/L Kr:75°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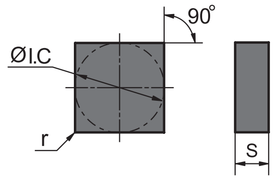
SN□□ (Negative inserts)



Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

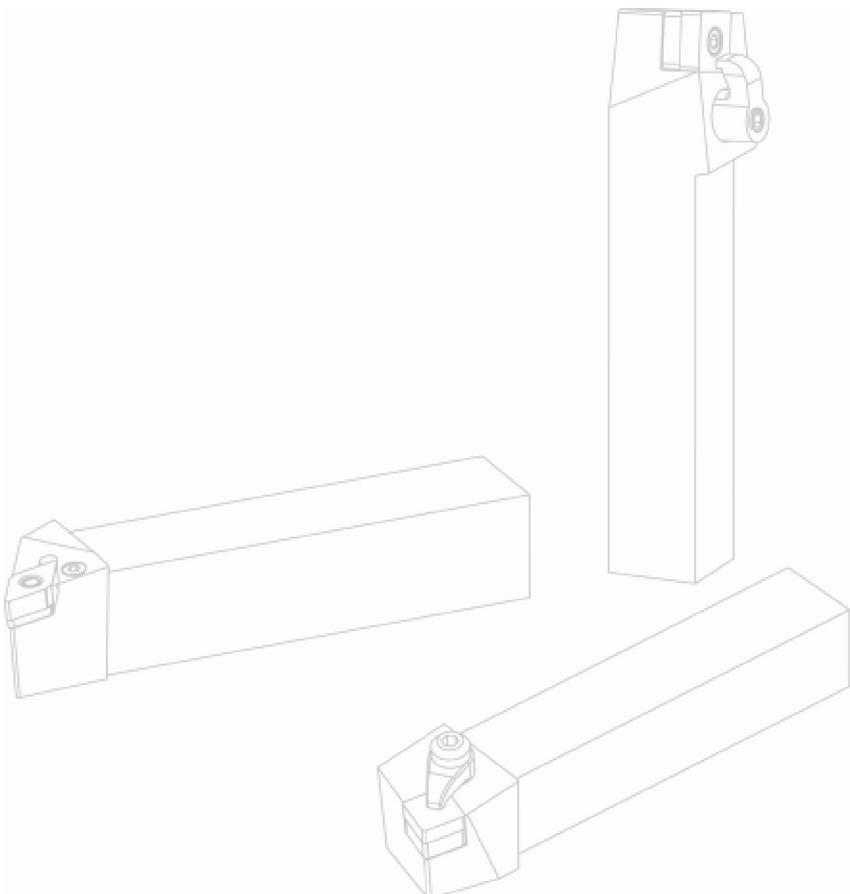
Good working condition / Normal working condition / Bad working condition

Inserts shape	Type	Dimensions(mm) ØI.C	S	r	Grade YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	**SNGN120404**	12.7	4.76	0.4					○	★	○				
	SNGN120408	12.7	4.76	0.8					○	★	○				
	SNGN12T612	12.7	6.75	1.2					○	★	○				
	SNGN150716	15.875	7.94	1.6					○	★	○				
	SNGN150720	15.875	7.94	2.0					○	★	○				

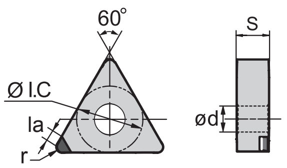
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

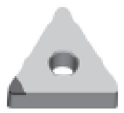
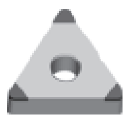
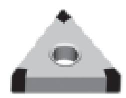


TN□□ (Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	😊		😐						
K Cast iron	😊			😊		😐	☹				
N Non ferrous metal								😐	😊	😐	☹

Inserts shape	Type	Dimensions(mm) ØI.C	S	ød	r	la	Grade YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	TNGA160402	9.525	4.76	3.81	0.2	2.5	○	○	○	○							
	TNGA160404	9.525	4.76	3.81	0.4	2.5	○	○	○	○							
	TNGA160408	9.525	4.76	3.81	0.8	2.2	○	○	○	○							
	TNGA160412	9.525	4.76	3.81	1.2	2.0	○	○	○	○							
	TNGA160402-3	9.525	4.76	3.81	0.2	2.5	○	○	○	○							
	TNGA160404-3	9.525	4.76	3.81	0.4	2.5	★	★	★	★							
	TNGA160408-3	9.525	4.76	3.81	0.8	2.2	★	★	★	★							
	TNGA160412-3	9.525	4.76	3.81	1.2	2.0	○	○	○	○							
	TNGA160404-3	9.525	4.76	3.81	0.4	2.5					○	○	○				
	TNGA160408-3	9.525	4.76	3.81	0.8	2.2					○	○	○				
	TNGA160412-3	9.525	4.76	3.81	1.2	2.0					○	○	○				

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

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

DTGNR/L Kr:91°

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PTFNR/L Kr:91°

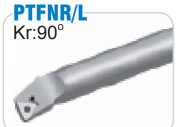
A179

PTTNR/L Kr:60°

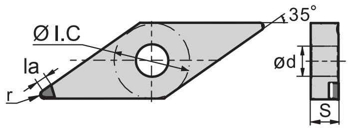
A180

PTGNR/L Kr:90°

A181

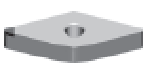
PTFNR/L Kr:90°

A218

VN□□ (Negative inserts)



Good working condition · Normal working condition · Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	VNGA160402	9.525	4.76	3.81	0.2	3.3	○	○	○	○							
	VNGA160404	9.525	4.76	3.81	0.4	2.8	○	○	○	○							
	VNGA160408	9.525	4.76	3.81	0.8	2.5	○	○	○	○							
	VNGA160412	9.525	4.76	3.81	1.2	2.0	○	○	○	○							
	VNGA160402-2	9.525	4.76	3.81	0.2	3.3	○	○	○	○							
	VNGA160404-2	9.525	4.76	3.81	0.4	2.8	★	★	★	★							
	VNGA160408-2	9.525	4.76	3.81	0.8	2.5	★	★	★	★							
	VNGA160412-2	9.525	4.76	3.81	1.2	2.0	○	○	○	○							

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

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

DVVNN
Kr:72°30'

DVJNR/L
Kr:93°

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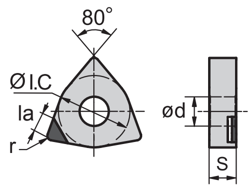
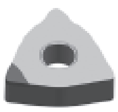
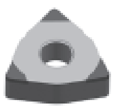
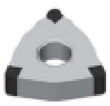
WN□□ (Negative inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	😊		😐						
K Cast iron	😊			😊		😐	☹				
N Non ferrous metal								😐	😊	😐	☹

Inserts shape	Type	Dimensions(mm) ØI.C	S	ød	r	la	Grade YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	WNGA080404	12.7	4.76	5.16	0.4	3.3	○	○	○	○							
	WNGA080408	12.7	4.76	5.16	0.8	2.8	○	○	○	○							
	WNGA080412	12.7	4.76	5.16	1.2	2.8	○	○	○	○							
	WNGA080404-3	12.7	4.76	5.16	0.4	3.3	★	★	★	★							
	WNGA080408-3	12.7	4.76	5.16	0.8	2.8	★	★	★	★							
	WNGA080412-3	12.7	4.76	5.16	1.2	2.8	○	○	○	○							
	WNGA080404-3	12.7	4.76	5.16	0.4	3.3					○	○	○				
	WNGA080408-3	12.7	4.76	5.16	0.8	2.8					○	○	○				
	WNGA080412-3	12.7	4.76	5.16	1.2	2.8					○	○	○				

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

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

DWLNR/L
Kr:95°

PWLNR/L
Kr:95°

PWLNR/L
Kr:95°

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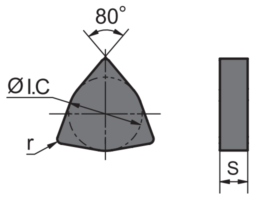
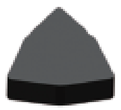
WN□□ (Negative inserts)



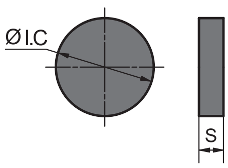
Good working condition / Normal working condition / Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

Inserts shape	Type	Dimensions(mm)			Grade										
		ØI.C	S	r	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	WNGN060304	9.525	3.18	0.4					○	★	○				
	WNGN080408	12.7	4.76	0.8					○	★	○				
	WNGN080412	12.7	4.76	1.2					○	★	○				

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

RN□□ (Negative inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

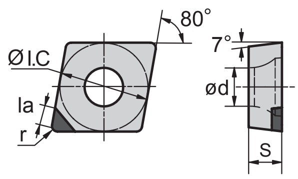
Inserts shape	Type	Dimensions(mm)		Grade										
		ØI.C	S	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	RNGN090300	9.525	3.18					○	★	○				
	RNGN120400	12.7	4.76					○	★	○				
	RNGN120700	12.7	7.94					○	★	○				
	RNGN150700	15.875	7.94					○	★	○				

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

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

CC□□ (Positive inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	😊		😐						
K Cast iron	😊			😊		😐	☹				
N Non ferrous metal								😐	😊	😐	☹

Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	**CCGW060204**	6.35	2.38	2.8	0.4	2.5	○	○	○	○				★	○	★	○
	CCGW060208	6.35	2.38	2.8	0.8	2.4	○	○	○	○				★	○	★	○
	CCGW09T304	9.525	3.97	4.4	0.4	2.5	○	○	○	○				★	○	★	○
	CCGW09T308	9.525	3.97	4.4	0.8	2.4	○	○	○	○				★	○	★	○
	CCGW120404	12.7	4.76	5.5	0.4	2.5	○	○	○	○							
	CCGW120408	12.7	4.76	5.5	0.8	2.4	○	○	○	○				★	○	★	○
	CCGW120412	12.7	4.76	5.5	1.2	2.3	○	○	○	○							
	**CCGW060204-2**	6.35	2.38	2.8	0.4	2.5	○	○	○	○							
	CCGW060208-2	6.35	2.38	2.8	0.8	2.4	○	○	○	○							
	CCGW09T304-2	9.525	3.97	4.4	0.4	2.5	★	★	★	★							
	CCGW09T308-2	9.525	3.97	4.4	0.8	2.4	★	★	★	★							
	CCGW120404-2	12.7	4.76	5.5	0.4	2.5	★	★	★	★							
	CCGW120408-2	12.7	4.76	5.5	0.8	2.4	★	★	★	★							
	CCGW120412-2	12.7	4.76	5.5	1.2	2.3	○	○	○	○							
	**CCGW09T304-2**	9.525	3.97	4.4	0.4	2.5					○	○	○				
	CCGW09T308-2	9.525	3.97	4.4	0.8	2.4					○	○	○				
	CCGW09T312-2	9.525	3.97	4.4	1.2	2.3					○	○	○				
	CCGW120404-2	12.7	4.76	5.5	0.4	2.5					○	○	○				
	CCGW120408-2	12.7	4.76	5.5	0.8	2.4					○	○	○				
	CCGW120412-2	12.7	4.76	5.5	1.2	2.3					○	○	○				

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

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

SCACR/L Kr:90°

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SCLCR/L Kr:95°

A184

SCLCR/L Kr:95°

A220

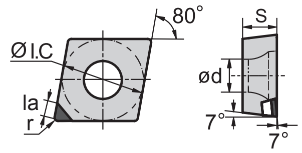
SCFCR Kr:90°

A234

SCLCR Kr:95°

A235

CC□□ (Positive inserts)



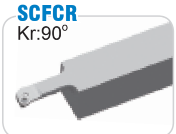
Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	☺		😐						
K Cast iron	☺			☺		😐	☹				
N Non ferrous metal								😐	☺	😐	☹

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

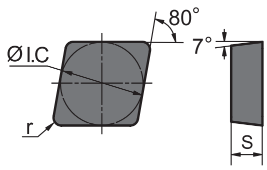
Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	CCMX060202	6.35	2.38	2.8	0.2	2.5								★	○	★	○
	CCMX060204	6.35	2.38	2.8	0.4	2.5								★	○	★	○
	CCMX060208	6.35	2.38	2.8	0.8	2.4								★	○	★	○
	CCMX09T304	9.525	3.97	4.4	0.4	2.5								★	○	★	○
	CCMX09T308	9.525	3.97	4.4	0.8	2.4								★	○	★	○
	CCMX120408	12.7	4.76	5.5	0.8	2.4								★	○	★	○

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

Applicable tool

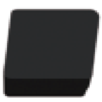
SCACR/L Kr:90°	SCLCR/L Kr:95°	SCLCR/L Kr:95°	SCFCR Kr:90°	SCLCR Kr:95°
				
Page A183	A184	A220	A234	A235

CC□□ (Positive inserts)



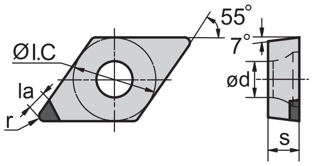
Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	☺		😐						
K Cast iron	☺			☺		😐	☹				
N Non ferrous metal								😐	☺	😐	☹

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

Inserts shape	Type	Dimensions(mm)			Grade										
		ØI.C	S	r	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	CCGN120404	12.7	4.76	0.4					★	★	★				
	CCGN12T608	12.7	6.75	0.8					★	★	★				
	CCGN120712	12.7	7.94	1.2					★	★	★				

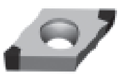
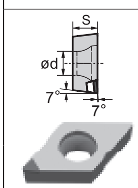
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

DC□□ (Positive inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

Inserts shape	Type	Dimensions(mm) ØI.C	S	ød	r	la	Grade YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	DCGW070202	6.35	2.38	2.8	0.2	2.7	○	○	○	○				★	○	★	○
	DCGW070204	6.35	2.38	2.8	0.4	2.5	○	○	○	○				★	○	★	○
	DCGW070208	6.35	2.38	2.8	0.8	2.1	○	○	○	○							
	DCGW11T304	9.525	3.97	4.4	0.4	2.5	○	○	○	○				★	○	★	○
	DCGW11T308	9.525	3.97	4.4	0.8	2.1	○	○	○	○				★	○	★	○
	DCGW070202-2	6.35	2.38	2.8	0.2	2.7	○	○	○	○							
	DCGW070204-2	6.35	2.38	2.8	0.4	2.5	○	○	○	○							
	DCGW070208-2	6.35	2.38	2.8	0.8	2.1	○	○	○	○							
	DCGW11T304-2	9.525	3.97	4.4	0.4	2.5	★	★	★	★							
	DCGW11T308-2	9.525	3.97	4.4	0.8	2.1	★	★	★	★							
	DCGW11T304-2	9.525	3.97	4.4	0.4	2.5					○	○	○				
	DCGW11T308-2	9.525	3.97	4.4	0.8	2.1					○	○	○				
	DCGW11T312-2	9.525	3.97	4.4	0.8	2					○	○	○				
	DCGW11T304-2	9.525	3.97	4.4	0.4	2.5					○	○	○				
	DCGW11T308-2	9.525	3.97	4.4	0.8	2.1					○	○	○				
 s ød 7° 7°	DCMX070202	6.35	2.38	2.8	0.2	2.7								★	○	★	○
	DCMX070204	6.35	2.38	2.8	0.4	2.5								★	○	★	○
	DCMX11T304	9.525	3.97	4.4	0.4	2.5								★	○	★	○
	DCMX11T308	9.525	3.97	4.4	0.8	2.1								★	○	★	○

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

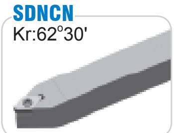
Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

SDACR/L Kr:90°


SDJCR/L Kr:93°


SDNCN Kr:62°30'


SDQCR/L Kr:107°30'


SDUCR/L Kr:93°


SDZCR/L Kr:95°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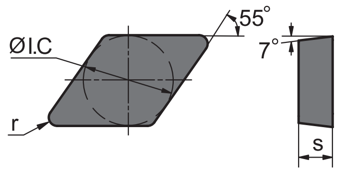
DC□□ (Positive inserts)



Good working condition | Normal working condition | Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

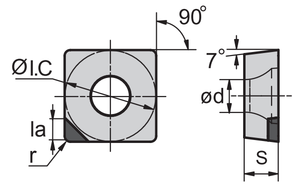
Inserts shape	Type	Dimensions(mm)			Grade										
		ØI.C	S	r	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	**DCGN110404**	9.525	4.76	0.4					★	★	★				
	DCGN110408	9.525	4.76	0.8					★	★	★				

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

Type of cutting edge

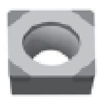
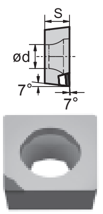
	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

SC□□ (Positive inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	SCGW120404	12.7	4.76	5.56	0.4	2.5	○	○	○	○				★	○	★	○
	SCGW120408	12.7	4.76	5.56	0.8	2.3	○	○	○	○				★	○	★	○
	SCGW120412	12.7	4.76	5.56	1.2	2.1	○	○	○	○				★	○	★	○
	SCGW120404-2	12.7	4.76	5.56	0.4	2.5	★	★	★	★							
	SCGW120408-2	12.7	4.76	5.56	0.8	2.3	★	★	★	★							
	SCGW120412-2	12.7	4.76	5.56	1.2	2.1	○	○	○	○							
	SCGW120404-4	12.7	4.76	5.56	0.4	2.5	○	○	○	○							
	SCGW120408-4	12.7	4.76	5.56	0.8	2.3	○	○	○	○							
	SCGW120412-4	12.7	4.76	5.56	1.2	2.1	○	○	○	○							
	SCGW120404-4	12.7	4.76	5.56	0.4	2.5					○	○	○				
	SCGW120408-4	12.7	4.76	5.56	0.8	2.3					○	○	○				
	SCGW120412-4	12.7	4.76	5.56	1.2	2.1					○	○	○				
	SCMX120404	12.7	4.76	4.4	0.4	2.5								★	○	★	○
	SCMX120408	12.7	4.76	4.4	0.8	2.3								★	○	★	○
	SCMX120412	12.7	4.76	4.4	1.2	2.1								★	○	★	○

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

Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

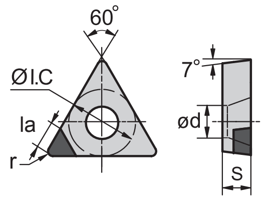
SSBCR/L Kr:75°

SSSCR/L Kr:45°

SSKCR/L Kr:75°

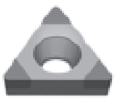
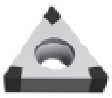
Page	A193	A193	A194

TC□□ (Positive inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	😊		😐						
K Cast iron	😊			😊		😐	☹				
N Non ferrous metal								😐	😊	😐	☹

Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	TCGW090204	5.56	2.38	2.5	0.4	2.5	○	○	○	○				★	○	★	○
	TCGW090208	5.56	2.38	2.5	0.8	2.2	○	○	○	○				★	○	★	○
	TCGW110202	6.35	2.38	2.8	0.2	2.5	○	○	○	○				★	○	★	○
	TCGW110204	6.35	2.38	2.8	0.4	2.5	○	○	○	○				★	○	★	○
	TCGW110208	6.35	2.38	2.8	0.8	2.2	○	○	○	○				★	○	★	○
	TCGW110304	6.35	3.18	2.8	0.4	2.5	○	○	○	○				★	○	★	○
	TCGW16T304	9.525	3.97	4.4	0.4	2.5	○	○	○	○				★	○	★	○
	TCGW16T308	9.525	3.97	4.4	0.8	2.2	○	○	○	○				★	○	★	○
	TCGW16T312	9.525	3.97	4.4	1.2	2.0	○	○	○	○				★	○	★	○
	TCGW090204-3	5.56	2.38	2.5	0.4	2.5	○	○	○	○							
	TCGW090208-3	5.56	2.38	2.5	0.8	2.2	○	○	○	○							
	TCGW110202-3	6.35	2.38	2.8	0.2	2.5	○	○	○	○							
	TCGW110204-3	6.35	2.38	2.8	0.4	2.5	★	★	★	★							
	TCGW110208-3	6.35	2.38	2.8	0.8	2.2	★	★	★	★							
	TCGW110304-3	6.35	3.18	2.8	0.4	2.5	★	★	★	★							
	TCGW16T304-3	9.525	3.97	4.4	0.4	2.5	★	★	★	★							
	TCGW16T308-3	9.525	3.97	4.4	0.8	2.2	★	★	★	★							
	TCGW16T312-3	9.525	3.97	4.4	1.2	2.0	○	○	○	○							
	TCGW090204-3	5.56	2.38	2.5	0.4	2.5					○	○	○				
	TCGW090208-3	5.56	2.38	2.5	0.8	2.2					○	○	○				
	TCGW090212-3	5.56	2.38	2.5	1.2	2.2					○	○	○				
	TCGW110304-3	6.35	2.38	2.8	0.4	2.5					○	○	○				
	TCGW110308-3	6.35	2.38	2.8	0.8	2.2					○	○	○				
	TCGW110312-3	6.35	3.18	2.8	1.2	2.2					○	○	○				
	TCGW16T304-3	9.525	3.97	4.4	0.4	2.5					○	○	○				
	TCGW16T308-3	9.525	3.97	4.4	0.8	2.2					○	○	○				
	TCGW16T312-3	9.525	3.97	4.4	1.2	2.2					○	○	○				

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

Applicable tool

STACR/L
Kr:90°

STFCR/L
Kr:91°

STGCR/L
Kr:91°

STTCR/L
Kr:60°

STFCR/L
Kr:91°

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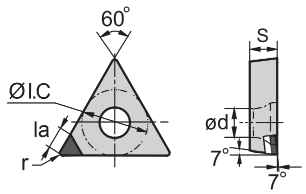
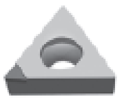
TC□□ (Positive inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	😊		😐						
K Cast iron	😊			😊		😐	☹				
N Non ferrous metal								😐	😊	😐	☹

Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	TCMX090204	5.56	2.38	2.5	0.4	2.5								★	○	★	○
	TCMX090208	5.56	2.38	2.5	0.8	2.0								★	○	★	○
	TCMX110202	6.35	2.38	2.8	0.2	2.5								★	○	★	○
	TCMX110204	6.35	2.38	2.8	0.4	2.5								★	○	★	○
	TCMX110208	6.35	2.38	2.8	0.8	2.0								★	○	★	○
	TCMX110304	6.35	3.18	2.8	0.4	2.5								★	○	★	○
	TCMX16T304	9.525	3.97	4.4	0.4	2.5								★	○	★	○
	TCMX16T308	9.525	3.97	4.4	0.8	2.0								★	○	★	○
	TCMX16T312	9.525	3.97	4.4	1.2	2.0								★	○	★	○

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

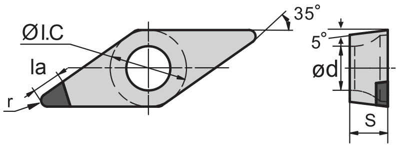
Type of cutting edge

	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

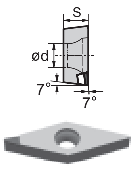
STACR/L Kr:90°	STFCR/L Kr:91°	STGCR/L Kr:91°	STTCR/L Kr:60°	STFCR/L Kr:91°
				
Page A195	A195	A196	A197	A225

VB□□ (Positive inserts)



Good working condition / Normal working condition / Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		Normal	Good		Normal						
K Cast iron	Good			Good		Normal	Bad				
N Non ferrous metal								Normal	Good	Normal	Bad

Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	VBGW160404	9.525	4.76	4.4	0.4	2.8	○	○	○	○				★	○	★	○
	VBGW160408	9.525	4.76	4.4	0.8	2.5	○	○	○	○				★	○	★	○
	VBGW160412	9.525	4.76	4.4	1.2	2.0	○	○	○	○				★	○	★	○
	VBGW160404-2	9.525	4.76	4.4	0.4	2.8	★	★	★	★							
	VBGW160408-2	9.525	4.76	4.4	0.8	2.5	★	★	★	★							
	VBGW160412-2	9.525	4.76	4.4	1.2	2.0	○	○	○	○							
	VBMX160404	9.525	4.76	4.4	0.4	2.8								★	○	★	○
	VBMX160408	9.525	4.76	4.4	0.8	2.5								★	○	★	○
	VBMX160412	9.525	4.76	4.4	1.2	2.0								★	○	★	○

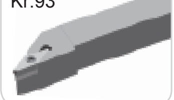
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

Type of cutting edge

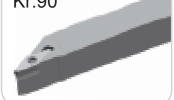
	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231
Negative inserts / Positive inserts	T01515	S01020	S02020	T01525	S01020	T02020	T02025

Applicable tool

SVJBR/L
Kr:93°



SVABR/L
Kr:90°



SVVBN
Kr:72°30'

SVQBR/L
Kr:107°30'

SVUBR/L
Kr:93°

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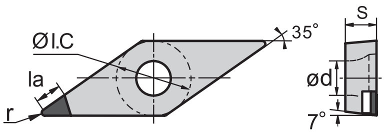
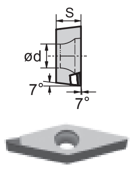
VC□□ (Positive inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	😊		😐						
K Cast iron	😊			😊		😐	☹				
N Non ferrous metal								😐	😊	😐	☹

Inserts shape	Type	Dimensions(mm)					Grade										
		ØI.C	S	ød	r	la	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	VCGW160404	9.525	4.76	4.4	0.4	2.8								★	○	★	○
	VCGW160408	9.525	4.76	4.4	0.8	2.5								★	○	★	○
	VCGW160412	9.525	4.76	4.4	1.2	2.0								★	○	★	○
	VCMX160404	9.525	4.76	4.4	0.4	2.8								★	○	★	○
	VCMX160408	9.525	4.76	4.4	0.8	2.5								★	○	★	○
	VCMX160412	9.525	4.76	4.4	1.2	2.0								★	○	★	○

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

Applicable tool

SVVCN
Kr:72°30'

SVJCR/L
Kr:93°

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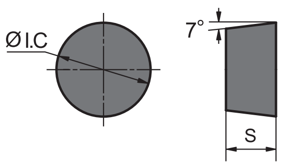
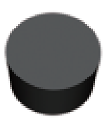
RC□□ (Positive inserts)



😊 Good working condition 😐 Normal working condition ☹ Bad working condition

Workpiece material	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
H Super hard material		😐	😊		😐						
K Cast iron	😊			😊		😐	☹				
N Non ferrous metal								😐	😊	😐	☹

Inserts shape	Type	Dimensions(mm)			Grade										
		ØI.C	S	r	YCB011	YCB012	YCB121	YCB211	YZB121	YZB221	YZB231	YCD011	YCD412	YCD421	YCD511
	RCGN090300	9.525	3.18						★	★	★				
	RCGN120400	12.7	4.76						★	★	★				
	RCGN120700	12.7	7.94						★	★	★				
	RCGN150700	15.875	7.94						★	★	★				

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

Abnormal failure and solutions for cast iron machining

Abnormal failure		Solution
Breakage	Breakage occurring on chamfer of rake face	Enlarge chamfered negative rake angle
	Edge crashing when finishing grey cast iron	
Abrasion	Abrasion occurring when machining nodular cast iron	Change to dry cutting
	Abrasion under dry cutting conditions	Reduce cutting speed
	Abrasion occurring when machining grey cast iron	Change to dry cutting; increase cutting speed
Surface quality	Poor 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

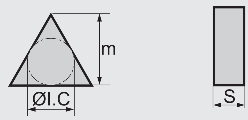
Abnormal failure			Solution
Breakage	Cutting edge breakage		Enlarge chamfered negative rake angle; raise cutting speed and reduce feed
	Flaking and crater wear on rake face		Reduce cutting speed
	Thermal cracks		Change to dry cutting; reduce cutting speed
Abrasion	Wear occurring on chamfer of rake face		Reduce cutting speed
	Rapid wear when finishing grey cast iron		
Surface quality	Poor 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

Ceramic inserts code key

Insert shape

85° A	82° B	80° C
55° D	75° E	H
55° K	L	86° M
P	S	T
35° V	80° 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

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	> 65°
C	With	> 65°
A	With	
W	With	≤65°
Q	With	≤65°
X	---	Special

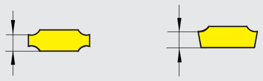
12 04 08 T 020 20

Length of cutting edge

Diameter of IC (mm)	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						

(Columns C–W: Insert shape)

Insert thickness



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

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		

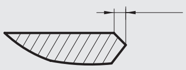
Nose radius code

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

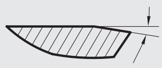
Code	Type of cutting edge	Picture
E	Honing	
T	Chamfering	
S	Chamfering +honing	
F	Sharp edges	

Chamfer width (mm)



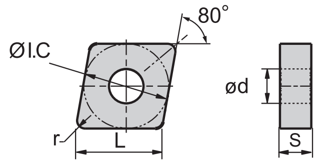
010	0.10	040	0.40
015	0.15	045	0.45
020	0.20	050	0.50
025	0.25	100	1.00
030	0.30	200	2.00
035	0.35		

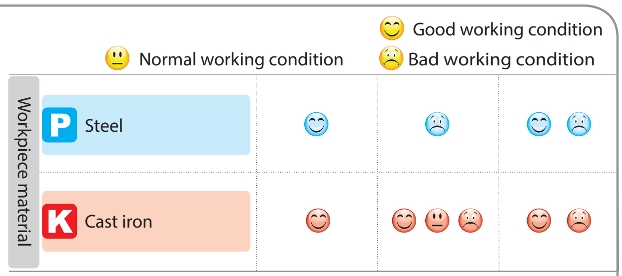
Chamfer angle



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

Ceramic inserts





Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	CNGA120404T02020	12.9	12.7	4.76	5.16	0.4		★	
	CNGA120408T02020	12.9	12.7	4.76	5.16	0.8		★	
	CNGA120412T02020	12.9	12.7	4.76	5.16	1.2		★	
	CNGA160608T02020	16.1	15.875	6.35	6.35	0.8		★	
	CNGA160612T02020	16.1	15.875	6.35	6.35	1.2		★	
	CNGA160616T02020	16.1	15.875	6.35	6.35	1.6		★	

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

Applicable tool

DCLNR/L Kr:95°

PCBNR/L Kr:75°

PCLNR/L Kr:95°

PCLNR/L Kr:95°

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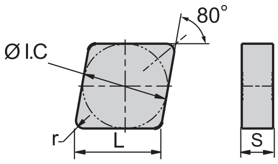

Workpiece material		CA1000	CN1000	CN2000
P	Steel	Good	Bad	Good, Bad
K	Cast iron	Good	Good, Normal, Bad	Good, Bad

Good working condition
Normal working condition
Bad working condition

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	CNGN120404T02020	12.9	12.7	4.76	-	0.4	★		
	CNGN120408T02020	12.9	12.7	4.76	-	0.8	★	○	★
	CNGN120412T02020	12.9	12.7	4.76	-	1.2	★	○	★
	CNGN120708T02020	12.9	12.7	7.94	-	0.8	★	○	★
	CNGN120712T02020	12.9	12.7	7.94	-	1.2	★	○	★
	CNGN120716T02020	12.9	12.7	7.94	-	1.6	★	○	★
	CNGN160408T02020	16.1	15.875	4.76	-	0.8	★		
	CNGN160412T02020	16.1	15.875	4.76	-	1.2	★	○	★
	CNGN160416T02020	16.1	15.875	4.76	-	1.6	★	○	★
	CNGN160612T02020	16.1	15.875	6.35	-	1.2	★		
	CNGN160616T02020	16.1	15.875	6.35	-	1.6	★	○	★

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

Applicable tool

CCLNR/L
Kr:95°


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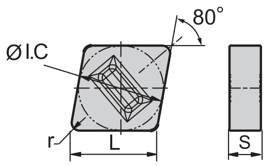
Ceramic inserts



Workpiece material	CA1000	CN1000	CN2000
P Steel	😊	☹	😊 ☹
K Cast iron	😊	😊 😐 ☹	😊 ☹

😊 Good working condition　😐 Normal working condition　☹ Bad working condition

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	**CNGX120712T02020**	12.9	12.7	7.94	-	1.2		★	
	CNGX120716T02020	12.9	12.7	7.94	-	1.6		★	

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

Applicable tool

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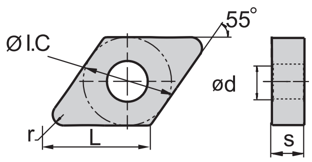


Workpiece material	CA1000	CN1000	CN2000
P Steel	😊	☹	😊 ☹
K Cast iron	😊	😊 😐 ☹	😊 ☹

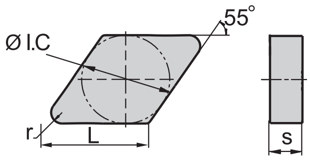
😊 Good working condition　😐 Normal working condition　☹ Bad working condition

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	**DNGA150604T02020**	15.5	12.7	6.35	5.16	0.4		★	
	DNGA150608T02020	15.5	12.7	6.35	5.16	0.8		★	
	DNGA150612T02020	15.5	12.7	6.35	5.16	1.2		★	
	DNGA150616T02020	15.5	12.7	6.35	5.16	1.6		★	

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

Applicable tool

Page A165　A173　A174　A215　A216



😊 Good working condition
😐 Normal working condition
☹ Bad working condition

Workpiece material	CA1000	CN1000	CN2000
P Steel	😊	☹	😊 ☹
K Cast iron	😊	😊 😐 ☹	😊 ☹

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	**DNGN150408T02020**	15.5	12.7	4.76	-	0.8	★	★	★
	DNGN150412T02020	15.5	12.7	4.76	-	1.2	★	★	★
	DNGN150704T02020	15.5	12.7	7.94	-	0.4	★	★	★
	DNGN150708T02020	15.5	12.7	7.94	-	0.8	★	★	★
	DNGN150712T02020	15.5	12.7	7.94	-	1.2	★	★	★
	DNGN150716T02020	15.5	12.7	7.94	-	1.6	★	★	★

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

Applicable tool

CDJNR/L
Kr:93°

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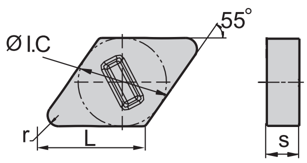
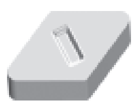


😊 Good working condition
😐 Normal working condition
☹ Bad working condition

Workpiece material	CA1000	CN1000	CN2000
P Steel	😊	☹	😊 ☹
K Cast iron	😊	😊 😐 ☹	😊 ☹

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	**DNGX150712T02020**	15.5	12.7	7.94	-	1.2		★	
	DNGX150716T02020	15.5	12.7	7.94	-	1.6		★	

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

Applicable tool

JDJNR/L
Kr:93°

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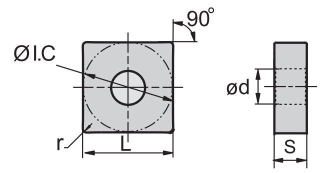
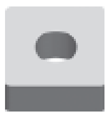
Ceramic inserts



Good working condition
Normal working condition
Bad working condition

Workpiece material	CA1000	CN1000	CN2000
P Steel	Good	Bad	Good, Bad
K Cast iron	Good	Good, Normal, Bad	Good, Bad

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	SNGA120404T02020	12.7	12.7	4.76	5.16	0.4		★	
	SNGA120408T02020	12.7	12.7	4.76	5.16	0.8		★	
	SNGA120412T02020	12.7	12.7	4.76	5.16	1.2		★	
	SNGA120416T02020	12.7	12.7	4.76	5.16	1.6		★	

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

Applicable tool

DSBNR/L Kr:75°


PSBNR/L Kr:75°


PSDNN Kr:45°


PSKNR/L Kr:75°


PSSNR/L Kr:45°


PSKNR/L Kr:75°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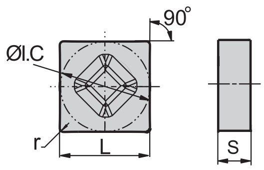
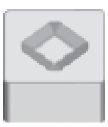


Good working condition
Normal working condition
Bad working condition

Workpiece material	CA1000	CN1000	CN2000
P Steel	Good	Bad	Good, Bad
K Cast iron	Good	Good, Normal, Bad	Good, Bad

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	SNGX120708T02020	12.7	12.7	7.94	-	0.8		★	
	SNGX120712T02020	12.7	12.7	7.94	-	1.2		★	
	SNGX120716T02020	12.7	12.7	7.94	-	1.6		★	

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

Applicable tool

JSDNN Kr:45°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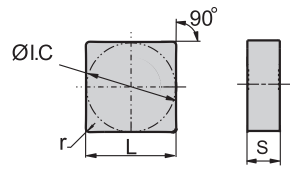

😊 Good working condition
😐 Normal working condition
☹ Bad working condition

Workpiece material	CA1000	CN1000	CN2000
P Steel	😊	☹	😊 ☹
K Cast iron	😊	😊 😐 ☹	😊 ☹

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	SNGN090308T01020	9.525	9.525	3.18	-	0.8	★		
	SNGN090312T01020	9.525	9.525	3.18	-	1.2	★		
	SNGN120404T02020	12.7	12.7	4.76	-	0.4	★	○	★
	SNGN120408T02020	12.7	12.7	4.76	-	0.8	★	○	★
	SNGN120412T02020	12.7	12.7	4.76	-	1.2	★	○	★
	SNGN120416T02020	12.7	12.7	4.76	-	1.6	★		
	SNGN120704T02020	12.7	12.7	7.94	-	0.4	★		
	SNGN120708T02020	12.7	12.7	7.94	-	0.8	★	○	★
	SNGN120712T02020	12.7	12.7	7.94	-	1.2	★		
	SNGN120716T02020	12.7	12.7	7.94	-	1.6	★		
	SNGN150708T02020	15.875	15.875	7.94	-	0.8	★	○	★
	SNGN150712T02020	15.875	15.875	7.94	-	1.2	★	○	★
	SNGN150716T02020	15.875	15.875	7.94	-	1.6	★		
	SNGN190708T03020	19.05	19.05	7.94	-	0.8	★		
	SNGN190712T03020	19.05	19.05	7.94	-	1.2	★		
	SNGN190716T03020	19.05	19.05	7.94	-	1.6	★		
	SNGN190724T03020	19.05	19.05	7.94	-	2.4	★		
	SNGN191024T04020	19.05	19.05	10.05	-	2.4	★		
	SNGN251024T10015	25.4	25.4	10.05	-	2.4	★		

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

Applicable tool

CSRNR/L
Kr:75°

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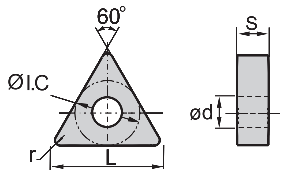
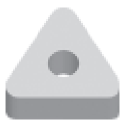
Ceramic inserts



😊 Good working condition
😐 Normal working condition
☹ Bad working condition

Workpiece material	CA1000	CN1000	CN2000
P Steel	😊	☹	😊 ☹
K Cast iron	😊	😊 😐 ☹	😊 ☹

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	**TNGA160404T01020**	16.50	9.525	4.76	3.86	0.4		★	
	TNGA160408T02020	16.50	9.525	4.76	3.86	0.8		★	
	TNGA160412T02020	16.50	9.525	4.76	3.86	1.2		★	
	TNGA220408T02020	22.00	12.7	4.76	5.16	0.8		★	
	TNGA220412T02020	22.00	12.7	4.76	5.16	1.2		★	
	TNGA220416T02020	22.00	12.7	4.76	5.16	1.6		★	

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

Applicable tool

DTGNR/L Kr:91°

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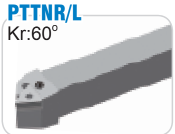
PTFNR/L Kr:91°

A179

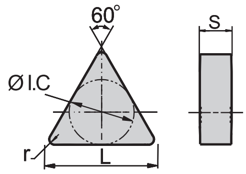
PTTNR/L Kr:60°

A180

PTGNR/L Kr:90°

A181

PTFNR/L Kr:90°

A218



😊 Good working condition
😐 Normal working condition
☹ Bad working condition

Workpiece material	CA1000	CN1000	CN2000
P Steel	😊	☹	😊 ☹
K Cast iron	😊	😊 😐 ☹	😊 ☹

Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	TNGN160404T02020	16.50	9.525	4.76	-	0.4	★		
	TNGN160408T02020	16.50	9.525	4.76	-	0.8	★	○	★
	TNGN160412T02020	16.50	9.525	4.76	-	1.2	★	○	★
	TNGN160708T02020	16.50	9.525	7.94	-	0.8	★	○	★
	TNGN160712T02020	16.50	9.525	7.94	-	1.2	★		
	TNGN160716T02020	16.50	9.525	7.94	-	1.6	★		
	TNGN220408T02020	22.00	12.7	4.76	-	0.8	★	○	★
	TNGN220412T02020	22.00	12.7	4.76	-	1.2	★	○	★
	TNGN220416T02020	22.00	12.7	4.76	-	1.6	★	○	★
	TNGN220712T02020	22.00	12.7	7.94	-	1.2	★		
	TNGN220716T02020	22.00	12.7	7.94	-	1.6	★		

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

Applicable tool

CTJNR/L
Kr:93°

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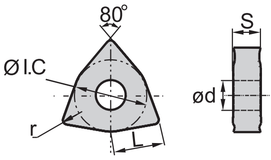
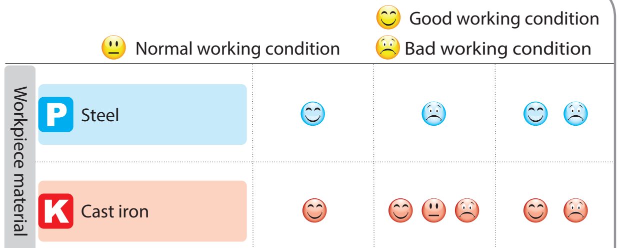
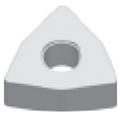
Ceramic inserts





Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	WNGA080408T02020	8.69	12.7	4.76	5.16	0.8		★	
	WNGA080412T02020	8.69	12.7	4.76	5.16	1.2		★	
	WNGA080416T02020	8.69	12.7	4.76	5.16	1.6		★	

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

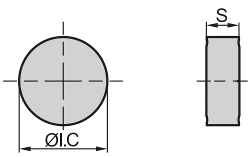
Applicable tool

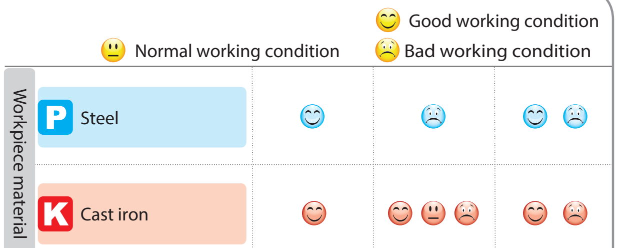
DWLNR/L Kr:95°

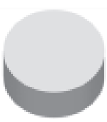
PWLNR/L Kr:95°

PWLNR/L Kr:95°

Page A170 A182 A219





Inserts shape	Type	Dimensions(mm)					Grade		
		L	ØI.C	S	ød	r	CA1000	CN1000	CN2000
	RNGN090400T02020	---	9.53	4.76	---	---	★		
	RNGN120400T02020	---	12.7	4.76	---	---	★	○	★
	RNGN120700T02020	---	12.7	7.94	---	---	★	○	★
	RNGN150700T02020	---	15.875	7.94	---	---	★	○	★
	RNGN190700T03020	---	19.05	7.94	---	---	★	○	★
	RNGN251000T05020	---	25.40	10.05	---	---	★		

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

Applicable tool

CRDNN

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DVJNR2525M16
DSBNR2525M12
D-type
double-clamping tool holder

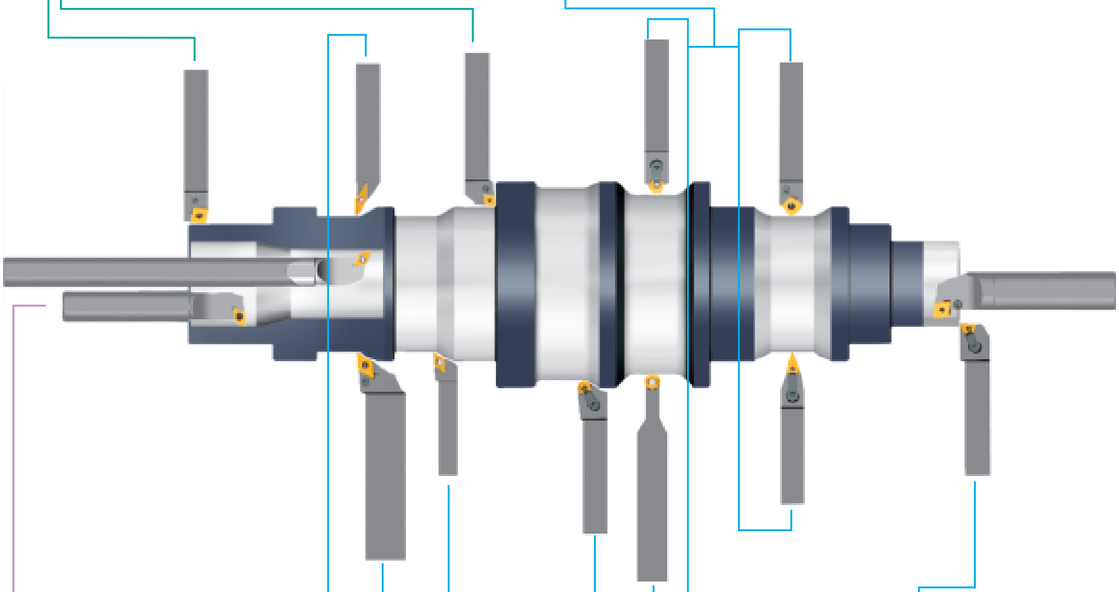
Applications sketch map of turning tools

External and internal turning

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

External and end surface turning	Tool holder type
DCLCR/L□□	DWLNR/L□□
PCLNR/L□□	PWLNR/L□□
SCLCR/L□□	

Profile turning	Tool holder type		
DVVNN□□	PDNNR/L□□	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
	SRGCR/L□□

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

Tool holders for internal turning (Steel tool shank)

S□-PSKNR/L□	S□-PCLNR/L□	S□-PDSNR/L□	S□-PDUNR/L□	S□-SDQCR/L□	S□-SDZCR/L□
S□-PTFNR/L□	S□-PWLNR/L□		S□-SDUCR/L□	S□-SDQPR/L□	
S□-SCFCR□	S□-SCLCR/L□		S□-SDUNR/L□	S□-SVQBR/L□	
S□-SSKCR/L□	S□-SCLPR/L□		S□-SDUPR/L□	S□-SVQCR/L□	
S□-STFCR/L□			S□-SVUBR/L□		
S□-STUPR/L□			S□-SVUCR/L□		

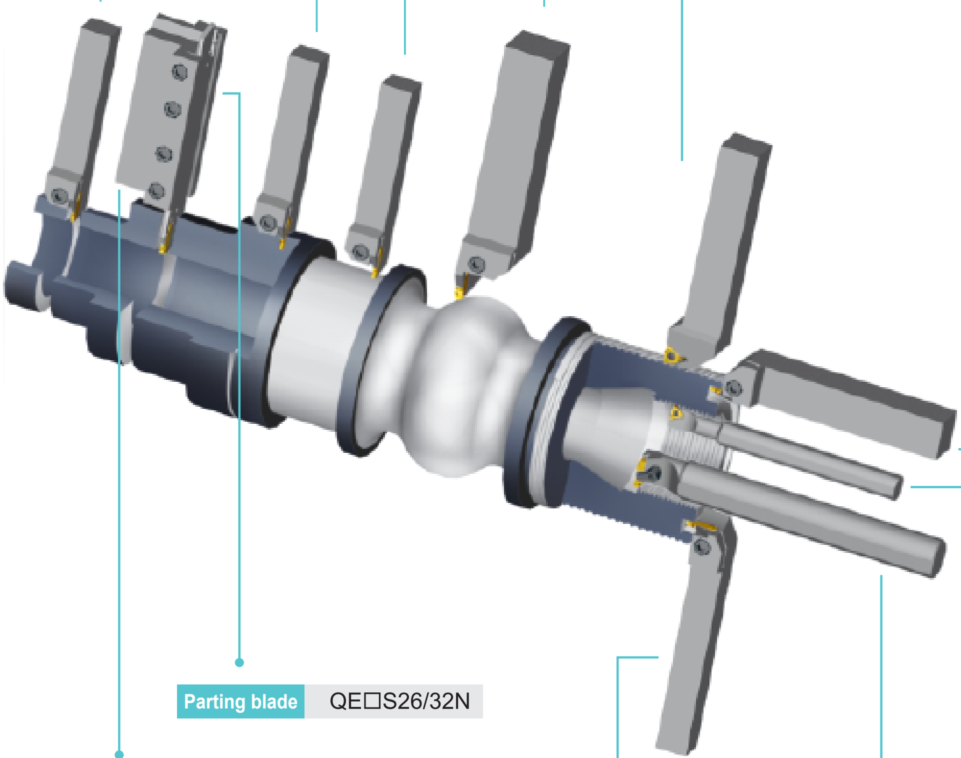
Tool holders for internal turning (Cemented carbide tool shank)

C□-STUPR/L□	C□-SCLPR/L□	C□-SDUPR/L□	C□-SDQPR/L□
		C□-SVUCR/L□	C□-SVQCR/L□

Parting, grooving and threading tools

External threading tools	ZSER/L□

End surface grooving, turning	QF□D□□R/L□-□H



Parting blade	QE□S26/32N

Parting blade holder	QZS□26/32

Internal threading tools	ZSIR/L□

External parting, grooving, turning and profilin	QE□D□R/L□ the Little Squirrel series
	QZQ□R/L□
	ZQS□R/L□
	QT□R□
Precise grooving and turning	QECD□R/L025 the Little Squirrel series
External recess and profiling	QX□D□R/L□-45 the Little Squirrel series
External grooving for hard-to-machine materials	QE□S□R/L□-□N the Little Squirrel series

Internal grooving, turning	C□-Q□DR/L□ the Little Squirrel series

End surface grooving, turning	QF□D□R/L□-□L

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

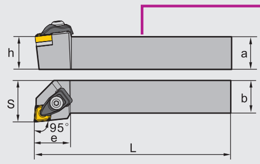
Inserts type

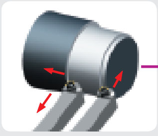
Specification chart

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

DCLNR/L
Kr:95°





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

▲Stock available △Make-to-order

Applicable inserts

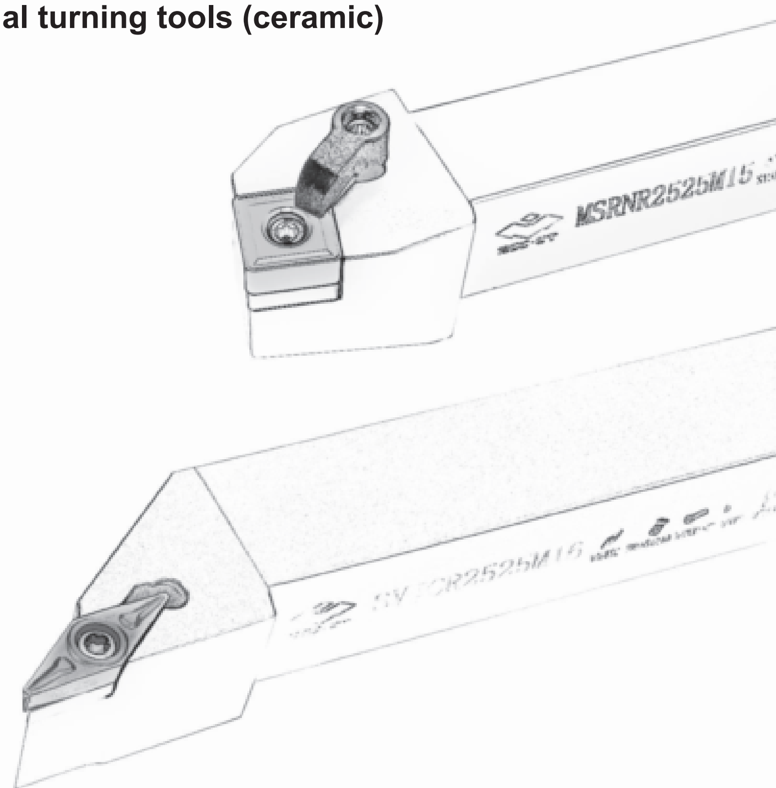
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	DF A52	WGM Wiper A53	DR Double-side A56	HPR A57	Without chipbreaker A57	Without chipbreaker A120
	WGF Wiper A52	PM A53	DR Single-side A56			Without chipbreaker A120
	SF A52	DM A54	ER Double-side A56			Without chipbreaker A120
	EF A52	EM A54	ER Single-side A56			
	NF A53	NM A55	LR Single-side A55			
Tool holder type DCLNR/L□□H/K/M09	CN□□0903□□	CN□□0903□□				
Tool holder type DCLNR/L□□K/M/P12	CN□□1204□□	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.

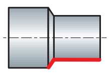
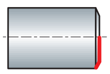
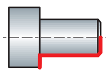
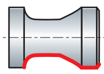
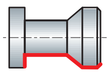
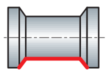
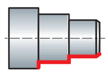
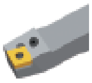
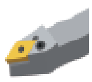
Applicable inserts
Including applications of inserts, reference page, insert shape and corresponding tool holders.

TURNING

External Turning Tools



External turning tools overview

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	
											
D	DCLNR/L 	95			Recommended				Recommended		A164
D	DDJNR/L 	93					Recommended		Recommended	Available	A165
D	DSBNR/L 	75	Recommended						Recommended		A166
D	DTGNR/L 	91	Recommended						Recommended	Available	A167
D	DVVNN 	72.5						Recommended	Recommended		A168
D	DVJNR/L 	93					Recommended		Recommended	Available	A169
D	DWLNR/L 	95			Recommended				Recommended		A170
P	PCBNR/L 	75	Recommended						Recommended		A171
P	PCLNR/L 	95			Recommended				Recommended		A172
P	PDJNR/L 	93					Recommended		Recommended	Available	A173
P	PDNNR/L 	63						Recommended	Recommended		A174

☺ Recommended ☺ Available

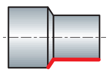
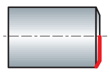
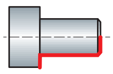
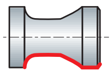
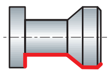
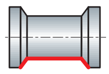
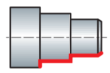
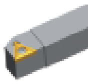
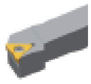
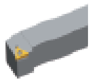
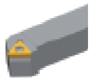
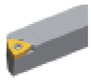
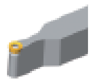
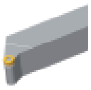
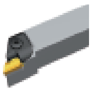
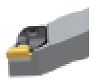
Clamping system	Tool type	Approach angle(Kr°)	Turning type: External turning	End surface turning	External and end surface turning	Profile turning	Profile turning	Profile turning	Applicable workpiece shape: Short, Thick	Thin, Long	Page
P	PSBNR/L	75	☺						☺		A175
P	PSDNN	45						☺	☺		A176
P	PSKNR/L	75		☺					☺		A177
P	PSSNR/L	45	☺						☺		A178
P	PTFNR/L	91		☺					☺	○	A179
P	PTTNR/L	60	☺						☺		A180
P	PTGNR/L	90	☺						☺	○	A181
P	PWLNR/L	95			☺				☺		A182
S	SCACR/L	90	☺						☺	☺	A183
S	SCLCR/L	95			☺				☺	☺	A184
S	SDACR/L	90					☺		☺	☺	A185

☺ Recommended ○ Available

External turning tools overview

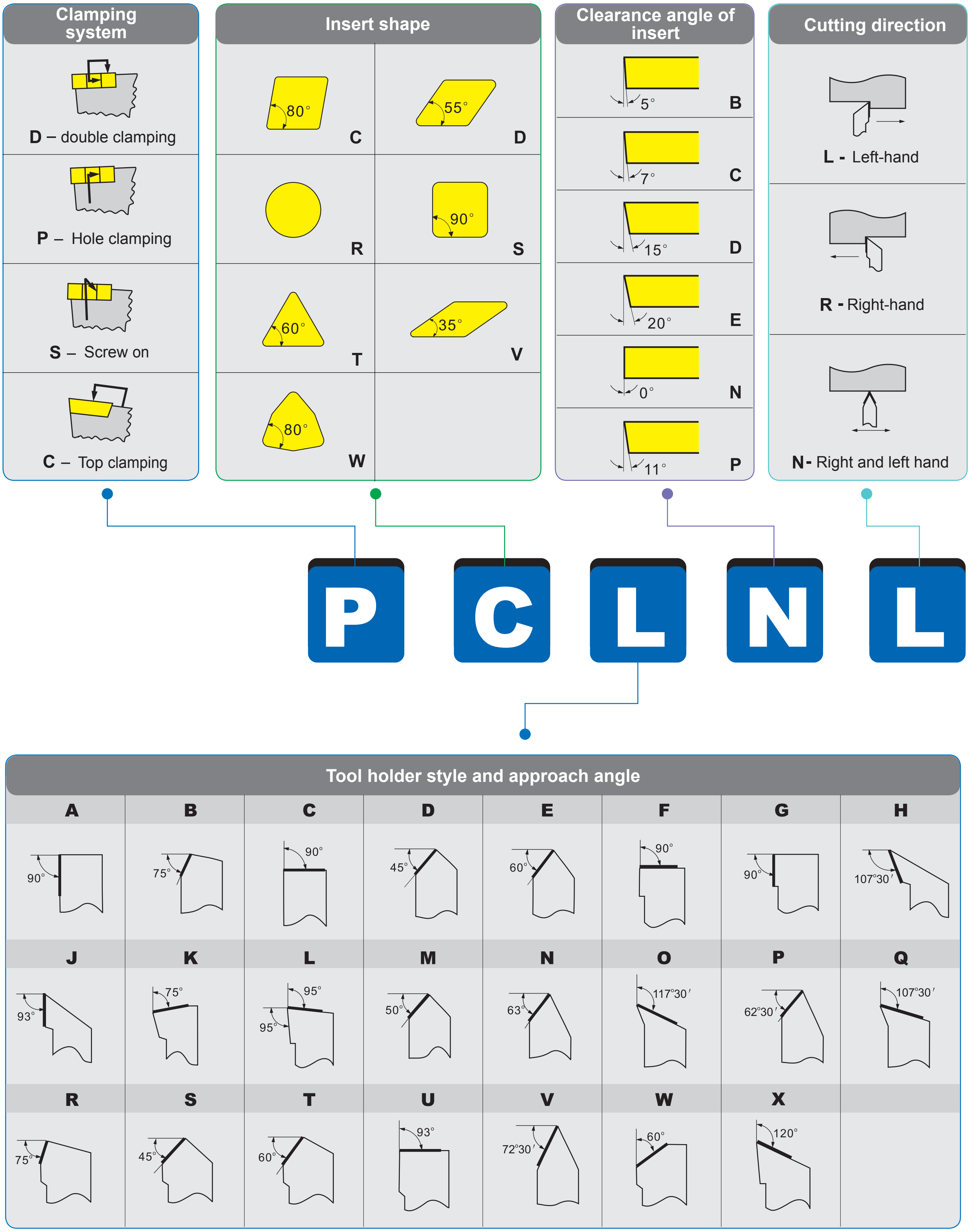
Clamping system	Tool type	Approach angle(Kr°)	Turning type: External turning	Turning type: End surface turning	Turning type: External and end surface turning	Turning type: Profile turning	Turning type: Profile turning	Turning type: Profile turning	Applicable workpiece shape: Short, Thick	Applicable workpiece shape: Thin, Long	Page
S	SDJCR/L	93					☺		☺	☺	A186
S	SDNCN	62.5						☺	☺	☺	A187
S	SVJBR/L	93					☺		☺	☺	A188
S	SVABR/L	90					☺		☺	☺	A189
S	SVVBN	72.5						☺	☺	☺	A190
S	SVVCN	72.5						☺	☺	☺	A191
S	SVJCR/L	93					☺		☺	☺	A192
S	SSBCR/L	75	☺						☺		A193
S	SSDCN	45						☺	☺		A193
S	SSKCR/L	75		☺					☺		A194
S	SSSCR/L	45	☺						☺		A194

☺ Recommended ☺ Available

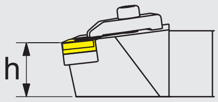
Clamping system	Tool type	Approach angle(Kr°)	Turning type: External turning	End surface turning	External and end surface turning	Profile turning	Profile turning	Profile turning	Applicable workpiece shape: Short, Thick	Thin, Long	Page
											
	STACR/L 	90	☺						☺	☺	A195
	STFCR/L 	91		☺					☺		A195
	STGCR/L 	91	☺						☺	☺	A196
S	STTCR/L 	60	☺						☺		A197
	SWACR/L 	90	☺						☺	☺	A198
	SRDCN 							☺	☺		A199
	SRGCR/L 					☺			☺		A200
	CKJNR/L 	93					☺		☺		A201
	CKNNR/L 	63						☺	☺		A201
C											

☺ Recommended ☺ Available

External turning tools code key

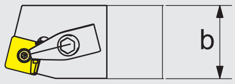


Nose height (mm)



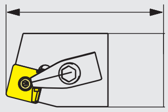
Code	Height
12	12
16	16
20	20
25	25
32	32
40	40
50	50

Width of tool holder (mm)



Code	Width
12	12
16	16
20	20
25	25
32	32
40	40
50	50

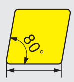
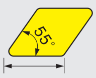
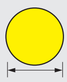
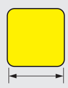
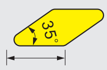
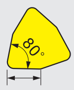
Length of tool holder (mm)

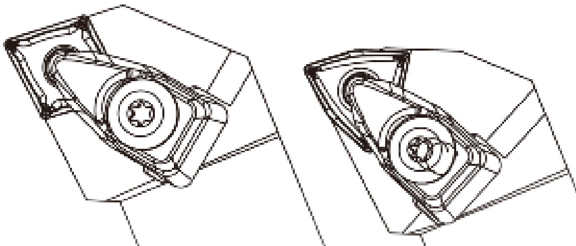


Code	Length
H	100
K	125
M	150
P	170
Q	180
R	200
S	250
T	300

25 25 M 12

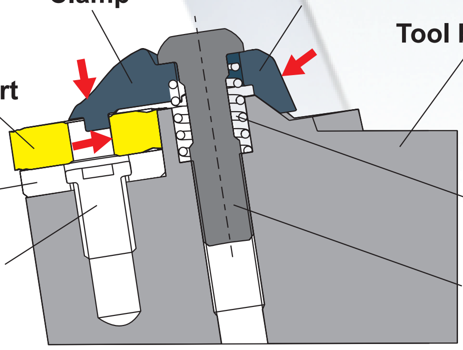
Length of cutting edge

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

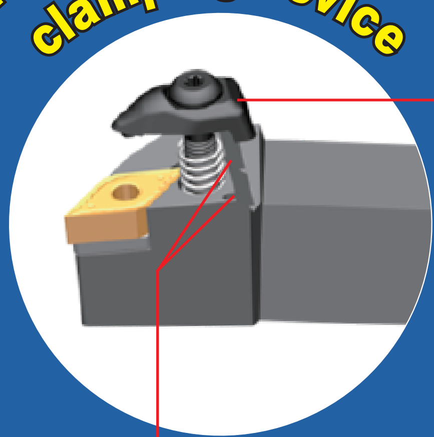
With newly developed double-clamping structure, D-type turning tools have high clamping rigidity and high positioning accuracy, achieving easy and secure clamping of inserts. It is the best choice for the clamping of straight hole negative inserts.



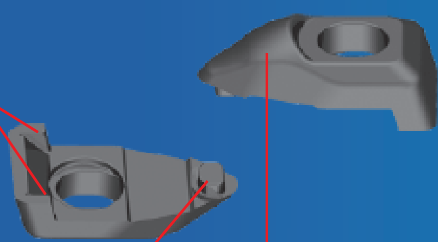
Uniquely clamp

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

Convenient secure clamping device



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



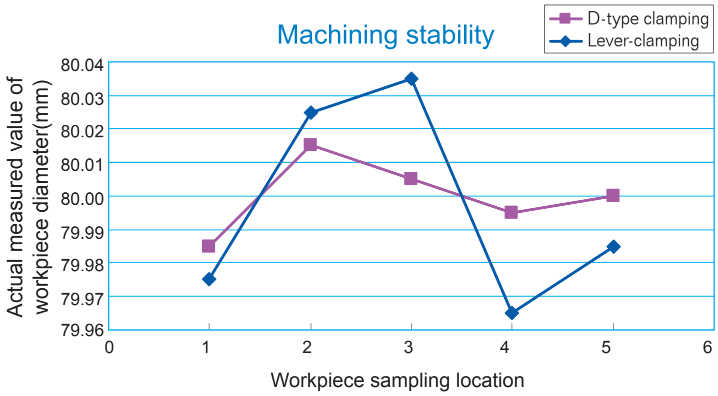
lug boss on both ends and double-locating make more insert clamp secure .

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

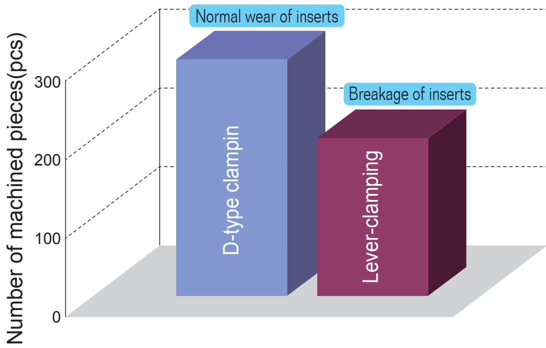
Simple and compact structure effectively prevents chip blocking while ensuring high clamping rigidity.

Compared with lever-clamping:

① Accurate locating ensures more stable machining accuracy.



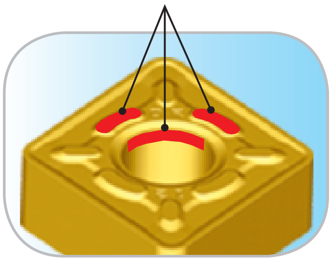
② High clamping rigidity effectively improves resistance to breakage of insert.



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.



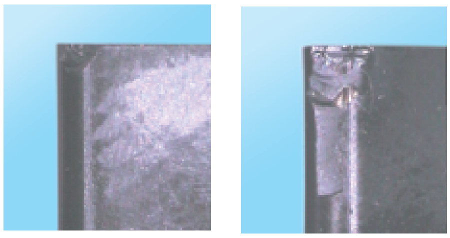
ZCC·CT

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=250m/min
a_p=2mm
f=0.6mm/r

After 60 minutes of cutting



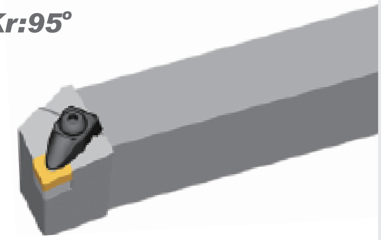
ZCC·CT　　Similar product of company A

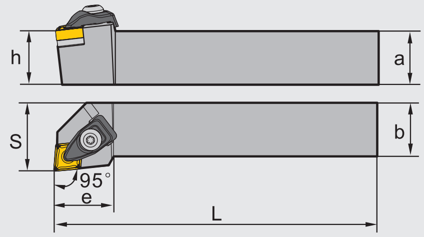
General turning

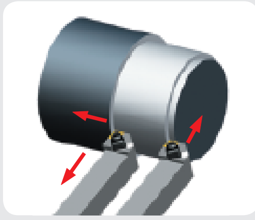
External turning tools

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

DCLNR/L
Kr:95°







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

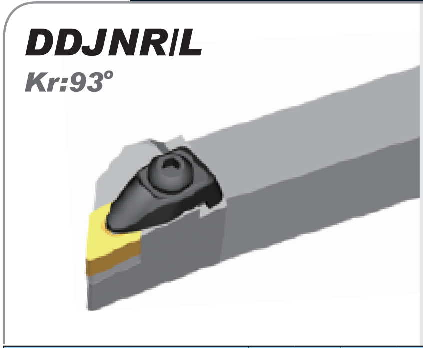
▲Stock available　　△Make-to-order

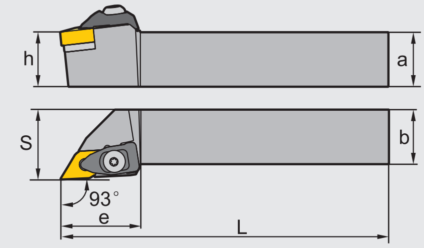
Applicable inserts

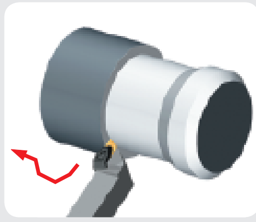
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	**DF** A52	**WGM** Wiper A53	**DR** Double-side A56	**HPR** A57	Without chipbreaker A57	Without chipbreaker A120
	WGF Wiper A52	**PM** A53	**DR** Single-side A56			Without chipbreaker A120
	SF A52	**DM** A54	**ER** Double-side A56			Without chipbreaker A120
	EF A52	**EM** A54	**ER** Single-side A56			
	NF A53	**NM** A55	**LR** Single-side A55			
Tool holder type: **DCLNR/L□□H/K/M09**	CN□□0903□□	CN□□0903□□				
Tool holder type: **DCLNR/L□□K/M/P12**	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□

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

DDJNR/L
Kr:93°







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

Basic dimensions(mm): a, b, L, h, s, e

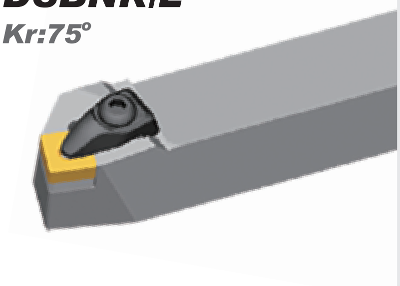
▲Stock available △Make-to-order

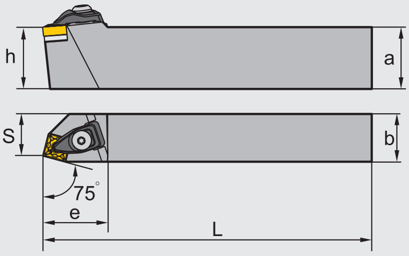
Applicable inserts

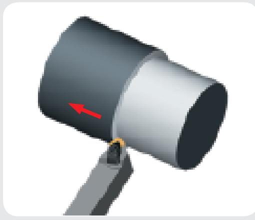
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	DF A59	WGM Wiper A61	DR Double-side A63	Without chipbreaker A64	Without chipbreaker A122
	WGF Wiper A59	PM A61	DR Single-side A63		Without chipbreaker A122
	SF A60	DM A62	ER Double-side A63		Without chipbreaker A122
	EF A60	EM A62	ER Single-side A63		
	NF A60	NM A62	LR Single-side A63		
Tool holder type: DDJNR/L□□H/K/M/P11	DN□□1104□□	DN□□1104□□		DN□□1104□□	
Tool holder type: DDJNR/L□□K/M/P15	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□

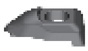
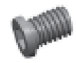
Corresponding tool holders of insert SN□□ D-type clamping

DSBNR/L
Kr:75°



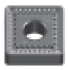
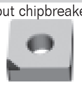
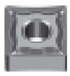
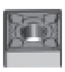
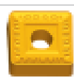




Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring
		R	L	a	b	L	h	s	e						
DSBNR/L	**1616H09**	▲	△	16	16	100	16	13	26	CM5×22C	S09BM	WH30L	C1RA	SM5×8.65XA1	SPR6
	2020K12	▲	▲	20	20	125	20	17	34	CM6×25C	S12BM	WH40L	C2RA	SM6×10XA1	SPR4
	2525M12	▲	▲	25	25	150	25	22	34						
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

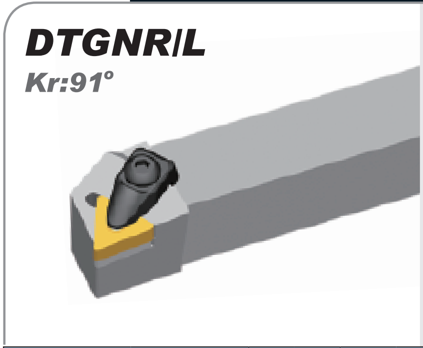
▲Stock available △Make-to-order

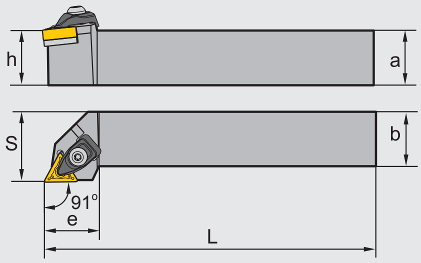
Applicable inserts

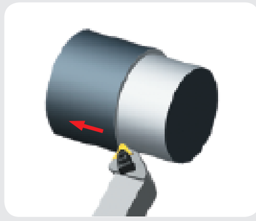
Application		For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape		**DF**  A65	**PM**  A66	**DR** Double-side  A68	**HPR**  A70	Without chipbreaker  A72	Without chipbreaker  A124
		EF  A65	**DM**  A66	**DR** Single-side  A68-69			Without chipbreaker  A124
		SF  A65	**EM**  A67	**ER** Double-side  A69			Without chipbreaker  A124
			NM  A67	**ER** Single-side  A70			Without chipbreaker  A124
				LR Single-side  A67			
Tool holder type	**DSBNR/L□□H09**	SN□□0903□□	SN□□0903□□			SN□□0903□□	
	DSBNR/L□□K/M/P12	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
	DSBNR/L□□P15	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	

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

DTGNR/L
Kr:91°







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

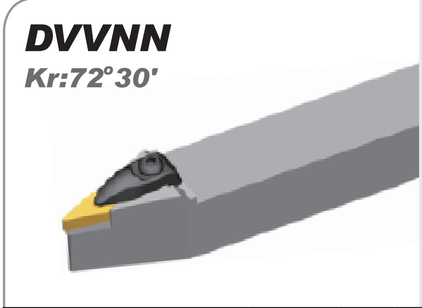
▲Stock available △Make-to-order

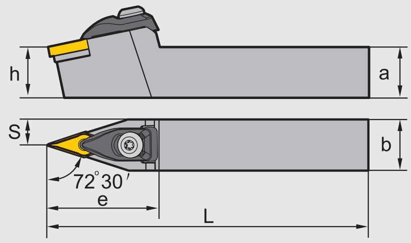
Applicable inserts

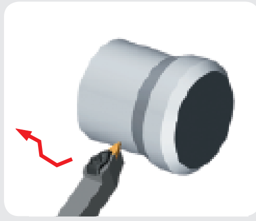
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	DF A73	WGM Wiper A74	DR Double -side A76	Without chipbreaker A78	Without chipbreaker A126
	WGF Wiper A73	PM A74	DR Single- side A76		Without chipbreaker A126
	SF A73	DM A75	ER Double -side A76		Without chipbreaker A126
	EF A74	EM A75	LR Single- side A75		
Tool holder type: DTGNR/L□□H/K/M16	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□

Corresponding tool holders of insert VN□□ D-type clamping

DVVNN
Kr:72°30′







Type		Stock	Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring
			a	b	L	h	s	e						
DVVNN	2020K16	△	20	20	125	20	10	44	CM5×22C	V16BM	WH30L	C6RA	SM5×8.65XA1	SPR6
	2525M16	▲	25	25	150	25	12.5	44						

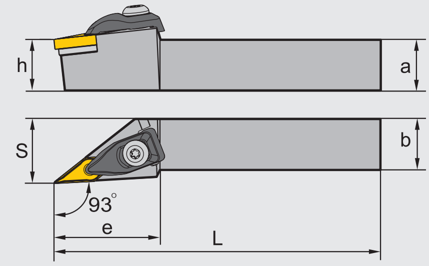
▲Stock available △Make-to-order

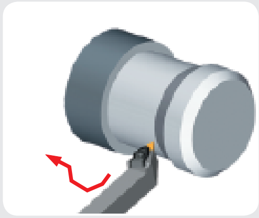
Applicable inserts

Application	For finishing	For semi-finishing	PCBN&PCD inserts
Inserts shape	DF A79	PM A80	Without chipbreaker A127
	EF A79	DM A80	Without chipbreaker A127
	SF A79	EM A80	
	NF A79	NM A80	
Tool holder type: DVVNN□□K/M16	VN□□1604□□	VN□□1604□□	VN□□1604□□

Corresponding tool holders of insert VN□□ D-type clamping

DVJNR/L
Kr:93°





Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Clamp	Shim screw	Spring
		R	L	a	b	L	h	s	e						
DVJNR/L	**2020K16**	▲	▲	20	20	125	20	25	41	CM5×22C	V16BM	WH30L	C6RA	SM5×8.65XA1	SPR6
	2525M16	▲	▲	25	25	150	25	32	41						

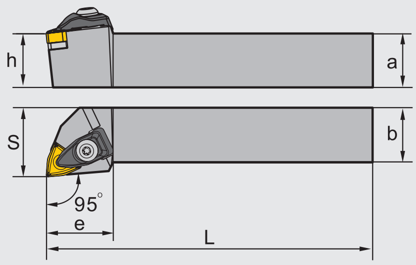
▲Stock available △Make-to-order

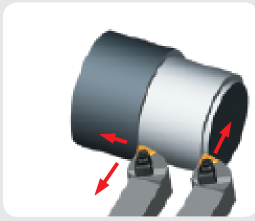
Applicable inserts

Application	For finishing	For semi-finishing	PCBN&PCD inserts
Inserts shape	DF A79	PM A80	Without chipbreaker A127
	EF A79	DM A80	Without chipbreaker A127
	SF A79	EM A80	
	NF A79	NM A80	
Tool holder type: **DVJNR/L□□K/M16**	VN□□1604□□	VN□□1604□□	VN□□1604□□

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

DWLNR/L
Kr:95°





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

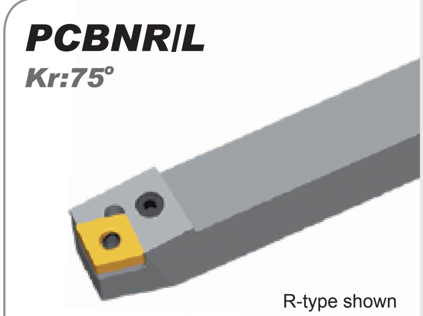
▲Stock available　　△Make-to-order

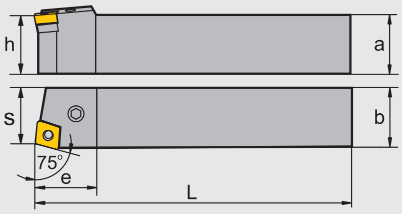
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	**DF** A81	**WGM** Wiper A82	**DR** Double-side A84	Without chipbreaker A84	Without chipbreaker A128
	WGF Wiper A81	**PM** A83			Without chipbreaker A128
	SF A81	**DM** A83			Without chipbreaker A128
	EF A82	**EM** A83			
	NF A82	**NM** A84			
Tool holder type: **DWLNR/L□□H/K/M06**	WN□□0604□□	WN□□0604□□	WN□□0604□□	WN□□0604□□	
Tool holder type: **DWLNR/L□□K/M/P08**	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□

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

PCBNR/L
Kr:75°

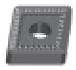
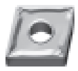
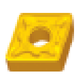
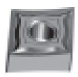
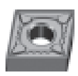
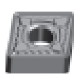

R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin
		R	L	a	b	L	h	s	e					
PCBNR/L	**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	27					
	2525M16	▲	▲	25	25	150	25	22	33	LEM8×25	C16AP	WH30L	L5	SP5
	3232P16	▲	▲	32	32	170	32	27	33					
	3232P19	▲	▲	32	32	170	32	27	38	LEM10×27	C19AP	WH40L	L6	SP6
	4040S19	▲	▲	40	40	250	40	35	38					
	4040S2507	▲	▲	40	40	250	40	35	50	LEM12×36A	C25AP-07	WH50L	L8	SP8
	4040S2509	▲	▲	40	40	250	40	35	50		C25AP			

▲Stock available　　△Make-to-order

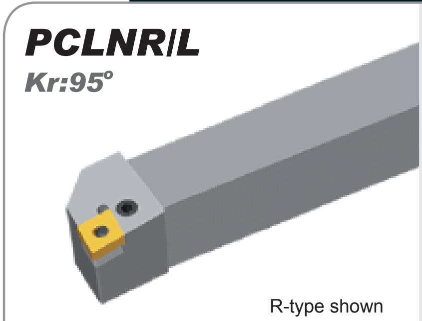
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining
Inserts shape	**DF**  A52	**PM**  A53	**DR** Double-side  A56	**HPR**  A57	Without chipbreaker  A57
	SF  A52	**DM**  A54	**DR** Single-side  A56		
	EF  A52	**EM**  A54	**ER** Double-side  A56		
	NF  A53	**NM**  A55	**ER** Single-side  A56		
			LR  A55		

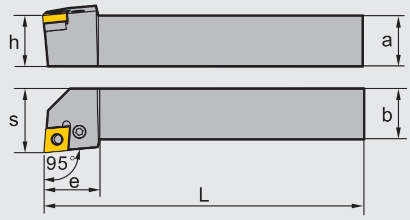
Tool holder type					
PCBNR/L□□K/M/P12	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□
PCBNR/L□□M/P16	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□
PCBNR/L□□P/S19		CN□□1906□□	CN□□1906□□	CN□□1906□□	CN□□1906□□
PCBNR/L□□S2507			CN□□2507□□		
PCBNR/L□□S2509			CN□□2509□□		

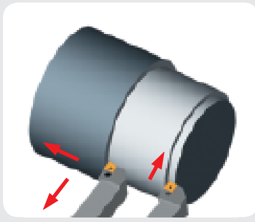
Corresponding tool holders of insert CN□□ P-type clamping

PCLNR/L
Kr:95°



R-type shown





Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Wrench	Lever	Shim pin
PCLNR/L	1616H09	▲	▲	16	16	100	16	20	20	LEM6×13.4A	C09AP	WH25L	L3	SP10
	2020K09	▲	▲	20	20	125	20	25	22					
	2525M09	▲	▲	25	25	150	25	32	22					
	2020K12	▲	▲	20	20	125	20	25	28	LEM8×21	C12AP	WH30L	L4	SP4
	2525M12	▲	▲	25	25	150	25	32	28					
	3232P12	▲	▲	32	32	170	32	40	28					
	2525M16	▲	▲	25	25	150	25	32	33	LEM8×25	C16AP	WH30L	L5	SP5
	3232P16	▲	▲	32	32	170	32	40	33					
	3232P19	▲	▲	32	32	170	32	40	38	LEM10×27	C19AP	WH40L	L6	SP6
	4040S19	▲	▲	40	40	250	40	50	38					
	4040S2507	▲	▲	40	40	250	40	50	49	LEM12×36A	C25AP-07	WH50L	L8	SP8
	4040S2509	▲	▲	40	40	250	40	50	49		C25AP			

▲Stock available △Make-to-order

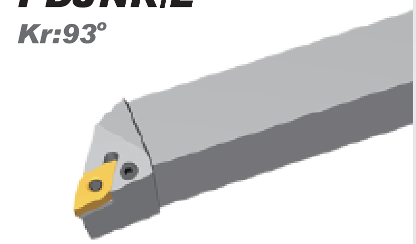
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	DF A52	WGM Wiper A53	DR Double-side A56	HPR A57	Without chipbreaker A57	Without chipbreaker A120
	WGF Wiper A52	PM A53	DR Single-side A56			Without chipbreaker A120
	SF A52	DM A54	ER Double-side A56			Without chipbreaker A120
	EF A52	EM A54	ER Single-side A56			
	NF A53	NM A55	LR Single-side A55			

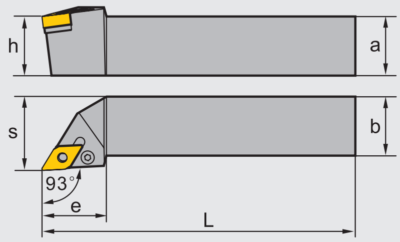
Tool holder type	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
PCLNR/L□□H/K/M09	CN□□0903□□	CN□□0903□□				
PCLNR/L□□K/M/P12	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□
PCLNR/L□□M/P16	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□	
PCLNR/L□□P/S19		CN□□1906□□	CN□□1906□□	CN□□1906□□	CN□□1906□□	
PCLNR/L□□S2507			CN□□2507□□			
PCLNR/L□□S2509			CN□□2509□□			

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

PDJNR/L
Kr:93°



R-type shown



Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Wrench	Lever	Shim pin
PDJNR/L	**1616H11**	▲	▲	16	16	100	16	20	25	LEM6×13.4A	D11AP	WH25L	L3	SP3
	2020K11	▲	▲	20	20	125	20	25	25					
	2525M11	▲	▲	25	25	150	25	32	30					
	2020K15	▲	▲	20	20	125	20	25	35	LEM8×21	D15AP	WH30L	L4B	SP4
	2525M15	▲	▲	25	25	150	25	32	35					
	3232P15	▲	▲	32	32	170	32	40	35					
	2020K15-3	▲	△	20	20	125	20	25	35	LEM8×21	D15AP	WH30L	L4	SP4
	2525M15-3	▲	▲	25	25	150	25	32	35					
	3232P15-3	▲	△	32	32	170	32	40	35					

Basic dimensions(mm): a, b, L, h, s, e

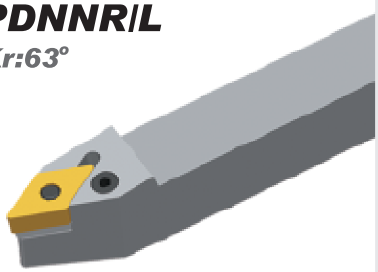
▲Stock available △Make-to-order

Applicable inserts

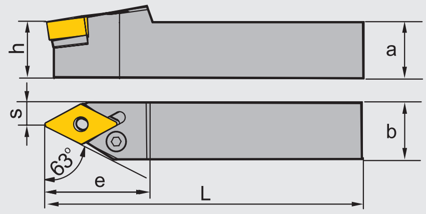
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	**DF** A59	**WGM** Wiper A61	**DR** Double-side A63	Without chipbreaker A64	Without chipbreaker A122
	WGF Wiper A59	**PM** A61	**DR** Single-side A63		Without chipbreaker A122
	SF A60	**DM** A62	**ER** Double-side A63		Without chipbreaker A122
	EF A60	**EM** A62	**ER** Single-side A63		
	NF A60	**NM** A62	**LR** Single-side A63		
Tool holder type: **PDJNR/L□□H/K/M11**	DN□□1104□□	DN□□1104□□		DN□□1104□□	
Tool holder type: **PDJNR/L□□K/M/P15**	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□
Tool holder type: **PDJNR/L□□K/M/P15-3**	DN□□1504□□	DN□□1504□□		DN□□1504□□	DN□□1504□□

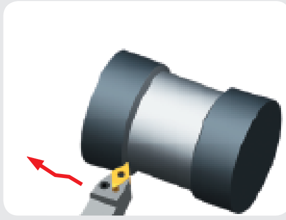
Corresponding tool holders of insert DN□□ P-type clamping

PDNNR/L
Kr:63°



R-type shown





Type		Stock		Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin
		R	L	a	b	L	h	s	e					
PDNNR/L	**2020K15**	▲	▲	20	20	125	20	8	37	LEM8×21	D15AP	WH30L	L4B	SP4
	2525M15	▲	▲	25	25	150	25	12.5	37					
	3232P15	▲	▲	32	32	170	32	16	37					
	2020K15-3	▲	▲	20	20	125	20	8	37	LEM8×21	D15AP	WH30L	L4	SP4
	2525M15-3	▲	▲	25	25	150	25	12.5	37					
	3232P15-3	▲	▲	32	32	170	32	16	37					

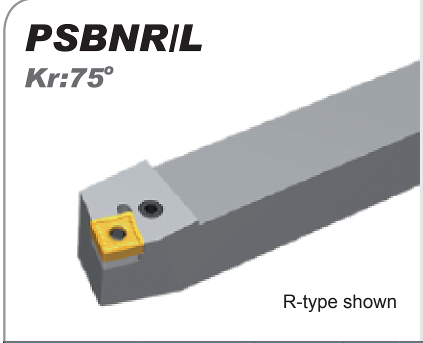
▲Stock available △Make-to-order

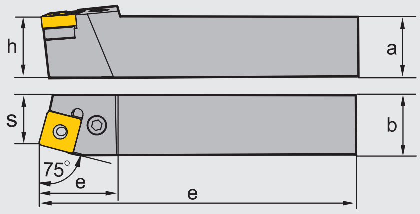
Applicable inserts

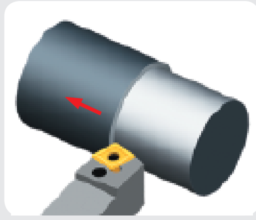
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	**DF** A59	**PM** A61	**DR** Double-side A63	Without chipbreaker A64	Without chipbreaker A122
	SF A60	**DM** A62	**DR** Single-side A63		Without chipbreaker A122
	EF A60	**EM** A62	**ER** Double-side A63		Without chipbreaker A122
	NF A60	**NM** A62	**ER** Single-side A63		
			LR Single-side A63		
Tool holder type: **PDNNR/L□□K/M/P15**	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□
Tool holder type: **PDNNR/L□□K/M/P15-3**	DN□□1504□□	DN□□1504□□		DN□□1504□□	DN□□1504□□

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

PSBNR/L
Kr:75°


R-type shown





Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Wrench	Lever	Shim pin
PSBNR/L	1616H09	▲	▲	16	16	100	16	13	21	LEM6×13.4A	S09AP	WH25L	L3	SP3
	2020K09	▲	▲	20	20	125	20	17	23					
	2020K12	▲	▲	20	20	125	20	17	28	LEM8×21	S12AP	WH30L	L4	SP4
	2525M12	▲	▲	25	25	125	25	22	28					
	3225P12	▲	△	32	25	170	32	22	28					
	3232P12	▲	▲	32	32	170	32	27	28					
	2525M15	▲	▲	25	25	150	25	22	35	LEM8×25	S15AP	WH30L	L5	SP5
	3232P15	▲	▲	32	32	170	32	27	35					
	3232P19	▲	▲	32	32	170	32	27	40	LEM10×27	S19AP	WH40L	L6	SP6
	4040S19	▲	▲	40	40	250	40	35	40					
	4040S2507	▲	▲	40	40	250	40	35	48	LEM12×36A	S25AP	WH50L	L8	SP8
	4040S2509	▲	▲	40	40	250	40	35	48		S25AP-09			

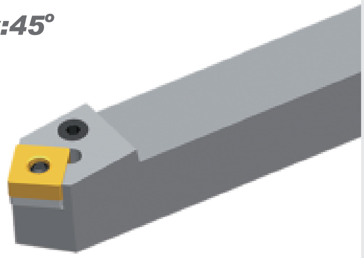
▲Stock available △Make-to-order

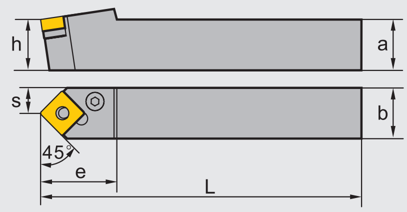
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	DF A65	PM A66	DR Double-side A68	HPR A70	Without chipbreaker A72	Without chipbreaker A124
	EF A65	DM A66	DR Single-side A68-69			Without chipbreaker A124
	SF A65	EM A67	ER Double-side A69			Without chipbreaker A124
		NM A67	ER Single-side A70			Without chipbreaker A124
			LR Single-side A67			
Tool holder type						
PSBNR/L□□H/K09	SN□□0903□□	SN□□0903□□			SN□□0903□□	
PSBNR/L□□K/M/P12	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□□	
PSBNR/L□□P/S19		SN□□1906□□	SN□□1906□□	SN□□1906□□	SN□□1906□□	
PSBNR/L□□S2507			SN□□2507□□	SN□□2507□□		
PSBNR/L□□S2509			SN□□2509□□	SN□□2509□□		

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

PSDNN
Kr:45°





Type		Stock	Basic dimensions(mm)						Screw	Shim	Wrench	Lever	Shim pin
			a	b	L	h	s	e					
PSDNN	**1212F09**	△	12	12	80	12	6	21	LEM5×12B	—	WH20L	L3B	—
	1616H09	△	16	16	100	16	8	23	LEM6×13.4A	S09AP	WH25L	L3	SP3
	2020K12	▲	20	20	125	20	10	30	LEM8×21	S12AP	WH30L	L4	SP4
	2525M12	▲	25	25	150	20	12.5	30					
	3232P12	▲	32	32	170	32	16	40					
	2525M15	▲	25	25	150	25	12.5	40	LEM8×25	S15AP	WH30L	L5	SP5
	3232P15	▲	32	32	170	32	16	40					
	3232P19	▲	32	32	170	32	16	40	LEM10×27	S19AP	WH40L	L6	SP6
	4040S19	▲	40	40	250	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	PCBN&PCD inserts
Inserts shape	**DF** A65	**PM** A66	**DR** Double-side A68	**HPR** A70	Without chipbreaker A72	Without chipbreaker A124
	EF A65	**DM** A66	**DR** Single-side A68-69			Without chipbreaker A124
	SF A65	**EM** A67	**ER** Double-side A69			Without chipbreaker A124
		NM A67	**ER** Single-side A70			Without chipbreaker A124
			LR Single-side A67			
Tool holder type						
PSDNN□□F/H09	SN□□0903□□	SN□□0903□□			SN□□0903□□	
PSDNN□□K/M/P12	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
PSDNN□□M/P15	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	
PSDNN□□P/S19		SN□□1906□□	SN□□1906□□	SN□□1906□□	SN□□1906□□	

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

PSKNR/L
Kr:75°

R-type shown

Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Wrench	Lever	Shim pin
PSKNR/L	**1616H09**	▲	▲	16	16	100	16	20	17	LEM6×13.4A	S09AP	WH25L	L3	SP3
	2020K09	▲	△	20	20	125	20	25	20					
	2020K12	▲	▲	20	20	125	20	25	26	LEM8×21	S12AP	WH30L	L4	SP4
	2525M12	▲	▲	25	25	150	25	32	26					
	3232P12	▲	▲	32	32	170	32	40	26					
	2525M15	▲	▲	25	25	150	25	32	32	LEM8×25	S15AP	WH30L	L5	SP5
	3232P15	▲	▲	32	32	170	32	40	32					
	3232P19	▲	▲	32	32	170	32	40	36	LEM10×27	S19AP	WH40L	L6	SP6
	4040S19	▲	▲	40	40	250	40	50	40					

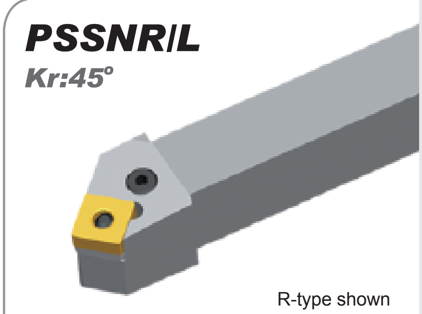
▲Stock available △Make-to-order

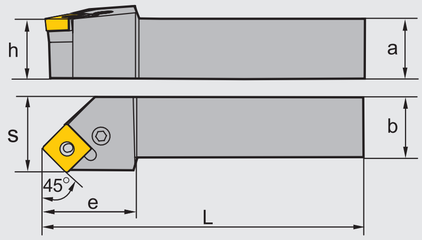
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	**DF** A65	**PM** A66	**DR** Double-side A68	**HPR** A70	Without chipbreaker A72	Without chipbreaker A124
	EF A65	**DM** A66	**DR** Single-side A68-69			Without chipbreaker A124
	SF A65	**EM** A67	**ER** Double-side A69			Without chipbreaker A124
		NM A67	**ER** Single-side A70			Without chipbreaker A124
			LR Single-side A67			
Tool holder type: **PSKNR/L□□H/K09**	SN□□0903□□	SN□□0903□□			SN□□0903□□	
PSKNR/L□□K/M/P12	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
PSKNR/L□□M/P15	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	
PSKNR/L□□P/S19		SN□□1906□□	SN□□1906□□	SN□□1906□□	SN□□1906□□	

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

PSSNR/L
Kr:45°


R-type shown



Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Wrench	Lever	Shim pin
PSSNR/L	**1616H09**	▲	▲	16	16	100	16	20	25	LEM6×13.4A	S09AP	WH25L	L3	SP3
	2020K12	▲	▲	20	20	125	20	25	30	LEM8×21	S12AP	WH30L	L4	SP4
	2525M12	▲	▲	25	25	150	25	32	30					
	3232P12	▲	▲	32	32	170	32	40	40					
	2525M15	▲	▲	25	25	150	25	32	30	LEM8×25	S15AP	WH30L	L5	SP5
	3232P15	▲	▲	32	32	170	32	40	40					
	3232P19	▲	▲	32	32	170	32	40	40	LEM10×27	S19AP	WH40L	L6	SP6
	4040S19	▲	▲	40	40	250	40	50	50					
	4040S2507	▲	▲	40	40	250	40	50	50	LEM12×36A	S25AP	WH50L	L8	SP8
	4040S2509	▲	▲	40	40	250	40	50	50		S25AP-09			

Basic dimensions(mm): a, b, L, h, s, e

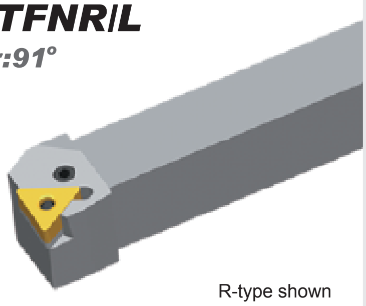
▲Stock available △Make-to-order

Applicable inserts

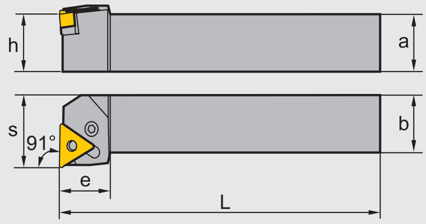
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	**DF** A65	**PM** A66	**DR** Double-side A68	**HPR** A70	Without chipbreaker A72	Without chipbreaker A124
	EF A65	**DM** A66	**DR** Single-side A68-69			Without chipbreaker A124
	SF A65	**EM** A67	**ER** Double-side A69			Without chipbreaker A124
		NM A67	**ER** Single-side A70			Without chipbreaker A124
			LR Single-side A67			
Tool holder type: **PSSNR/L□□H09**	SN□□0903□□	SN□□0903□□	SN□□0903□□		SN□□0903□□	
PSSNR/L□□K/M/P12	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□
PSSNR/L□□M/P15	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	SN□□1506□□	
PSSNR/L□□P/S19		SN□□1906□□	SN□□1906□□	SN□□1906□□	SN□□1906□□	
PSSNR/L□□S2507			SN□□2507□□	SN□□2507□□		
PSSNR/L□□S2509			SN□□2509□□	SN□□2509□□		

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

PTFNR/L
Kr:91°



R-type shown



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

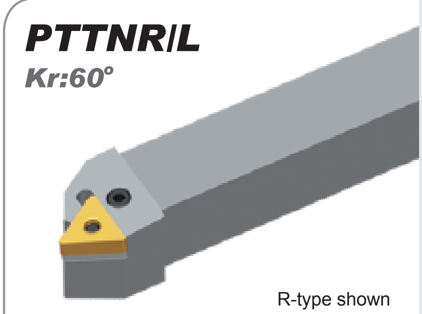
▲Stock available △Make-to-order

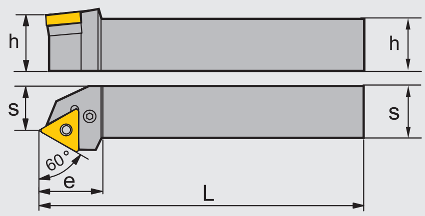
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	**DF** A73	**WGM** Wiper A74	**DR** Double-side A76	Without chipbreaker A78	Without chipbreaker A126
	WGF A73	**PM** A74	**DR** Single-side A76		Without chipbreaker A126
	SF A73	**DM** A75	**ER** Double-side A76		Without chipbreaker A126
	EF A74	**EM** A75	**LR** Single-side A75		
Tool holder type **PTFNR/L□□H/K/M16**	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□
Tool holder type **PTFNR/L□□M/P22**	TN□□2204□□	TN□□2204□□	TN□□2204□□	TN□□2204□□	
Tool holder type **PTFNR/L□□P/S27**			TN□□2706□□	TN□□2706□□	

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

PTTNR/L
Kr:60°


R-type shown



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

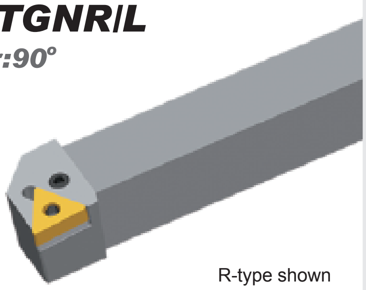
▲Stock available △Make-to-order

Applicable inserts

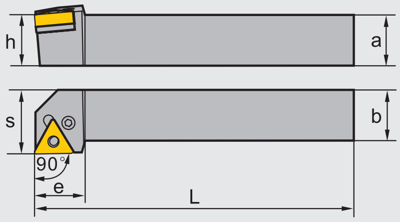
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	DF A73	WGM Wiper A74	DR Double-side A76	Without chipbreaker A78	Without chipbreaker A126
	WGF Wiper A73	PM A74	DR Single-side A76		Without chipbreaker A126
	SF A73	DM A75	ER Double-side A76		Without chipbreaker A126
	EF A74	EM A75	LR Single-side A75		
Tool holder type: PTTNR/L□□H/K16	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□
Tool holder type: PTTNR/L□□M22	TN□□2204□□	TN□□2204□□	TN□□2204□□	TN□□2204□□	

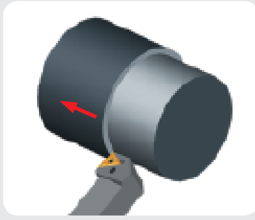
Corresponding tool holders of insert TN□□ P-type clamping

PTGNR/L
Kr:90°



R-type shown





Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Wrench	Lever	Shim pin
PTGNR/L	1010E11	△	△	10	10	70	10	14	16	LEM5×9B	—	WH20L	L2	—
	1212F11	△	△	12	12	80	12	16	14					
	1616H11	▲	▲	16	16	100	16	20	18					
	2020K11	▲	▲	20	20	125	20	25	19					
	2525M11	▲	▲	25	25	150	25	32	20					
	1616H16	▲	▲	16	16	100	16	20	20	LEM6×13.4A	T16AP	WH25L	L3	SP3
	2020K16	▲	▲	20	20	125	20	25	20					
	2525M16	▲	▲	25	25	150	25	32	20					
	3232P16	▲	▲	32	32	170	32	40	20					
	2525M22	▲	▲	25	25	150	25	32	28	LEM8×21	T22AP	WH30L	L4	SP4
	3232P22	▲	▲	32	32	170	32	40	28					
	3232P27	▲	▲	32	32	170	32	40	33	LEM8×25	T27AP	WH30L	L5	SP5
	4040S27	▲	▲	40	40	250	40	50	33					

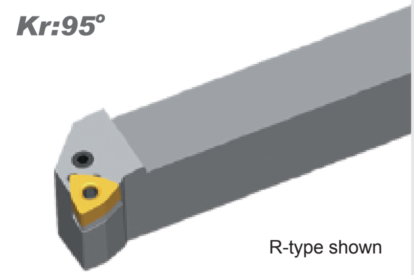
▲Stock available　　△Make-to-order

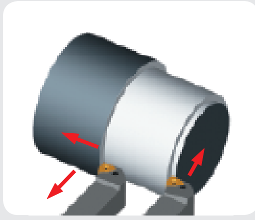
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	DF A73	WGM Wiper A74	DR Double-side A76	Without chipbreaker A78	Without chipbreaker A126
	WGF Wiper A73	PM A74	DR Single-side A76		Without chipbreaker A126
	SF A73	DM A75	ER Double-side A76		Without chipbreaker A126
	EF A74	EM A75	LR Single-side A75		
Tool holder type: PTGNR/L□□E/F/H/K/M11	TN□□1103□□	TN□□1103□□		TN□□1103□□	
PTGNR/L□□H/K/M/P16	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□
PTGNR/L□□M/P22	TN□□2204□□	TN□□2204□□	TN□□2204□□	TN□□2204□□	
PTGNR/L□□P/S27			TN□□2706□□	TN□□2706□□	

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

PWLNR/L
Kr:95°


R-type shown



Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Wrench	Lever	Shim pin
PWLNR/L	1616H06	▲	▲	16	16	100	16	20	20	LEM6×13.4A	W06AP	WH25L	L3	SP3
	2020K06	▲	▲	20	20	125	20	25	20					
	2525M06	▲	▲	25	25	150	25	32	20					
	2020K08	▲	▲	20	20	125	20	25	26	LEM8×21	W08AP	WH30L	L4	SP4
	2525M08	▲	▲	25	25	150	25	32	26					

▲Stock available △Make-to-order

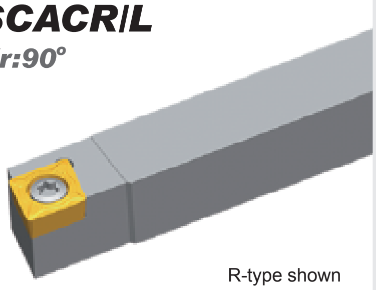
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN&PCD inserts
Inserts shape	DF A81	WGM Wiper A82	DR Double-side A84	Without chipbreaker A84	Without chipbreaker A128
	WGF Wiper A81	PM A83			Without chipbreaker A128
	SF A81	DM A83			Without chipbreaker A128
	EF A82	EM A83			
	NF A82	NM A84			
Tool holder type: PWLNR/L□□H/K/M06	WN□□0604□□	WN□□0604□□	WN□□0604□□	WN□□0604□□	
Tool holder type: PWLNR/L□□K/M08	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□

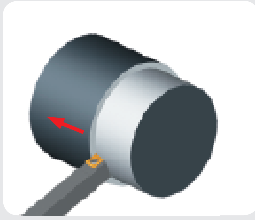
Corresponding tool holders of insert CC□□ S-type clamping

SCACR/L

Kr:90°



R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Wrench
		R	L	a	b	L	h	s	e		
SCACR/L	**1010E06**	▲	△	10	10	70	10	10	10	I60M2.5×6.5	WT07IP
	1212F09	▲	▲	12	12	80	12	12	16	I60M3.5×8	WT15IP

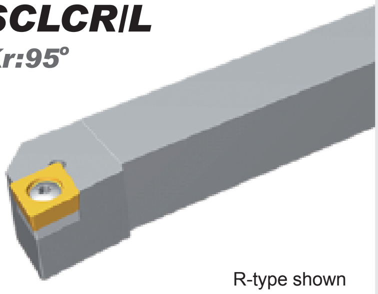
▲Stock available △Make-to-order

Applicable inserts

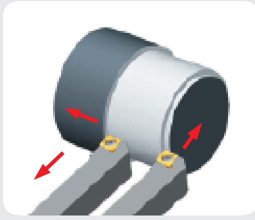
Application		For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape		USF A87	HF A87	HM A88	HR A89	LH A89	Without chipbreaker A90	Without chipbreaker A130
		SF A87	EF A88	EM A88		LC A89		Without chipbreaker A130
Tool holder type	**SCACR/L□□E06**	CC□□0602□□	CC□□0602□□	CC□□0602□□	CC□□0602□□	CCGX 0602□□	CC□□ 0602□□	CC□□ 0602□□
	SCACR/L□□F09	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CCGX 09T3□□	CC□□ 09T3□□	CC□□ 09T3□□

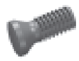
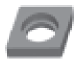
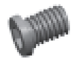
Corresponding tool holders of insert CC□□ S-type clamping

SCLCR/L
Kr:95°



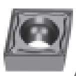
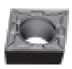
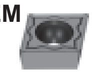
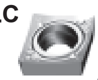
R-type shown



Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
SCLCR/L	**0808D06**	▲	△	08	08	60	08	10	10	I60M2.5×6.5	—	—	WT07IP
	1010E06	▲	▲	10	10	70	10	12	10				
	1212F09	▲	▲	12	12	80	12	16	16	I60M3.5×8	—	—	WT15IP
	1616H09	▲	▲	16	16	100	16	20	16				
	2020K12	▲	▲	20	20	125	20	25	25	I60M4×11X	C12BS	SM6×10XA	WT15IP WH40L
	2525M12	▲	▲	25	25	150	25	32	26				
	3225P12	▲	▲	32	25	170	32	32	26				

▲Stock available △Make-to-order

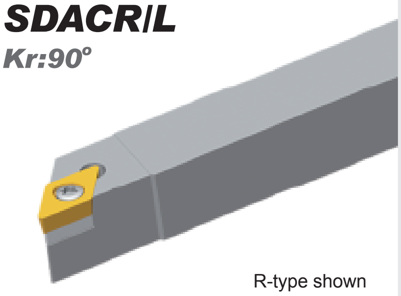
Applicable inserts

Application		For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape		**USF**  A87	**HF**  A87	**HM**  A88	**HR**  A89	**LH**  A89	Without chipbreaker  A90	Without chipbreaker  A130
		SF  A87	**EF**  A88	**EM**  A88		**LC**  A89		Without chipbreaker  A130
Tool holder type	**SCLCR/L□□D/E06**	CC□□ 0602□□	CC□□ 0602□□	CC□□ 0602□□	CC□□ 0602□□	CCGX 0602□□	CC□□ 0602□□	CC□□ 0602□□
	SCLCR/L□□F/H09	CC□□ 09T3□□	CC□□ 09T3□□	CC□□ 09T3□□	CC□□ 09T3□□	CCGX 09T3□□	CC□□ 09T3□□	CC□□ 09T3□□
	SCLCR/L□□K/M/P12		CC□□ 1204□□	CC□□ 1204□□	CC□□ 1204□□	CCGX 1204□□	CC□□ 1204□□	CC□□ 1204□□

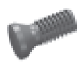
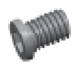
Corresponding tool holders of insert DC□□ S-type clamping

SDACR/L

Kr:90°

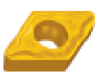
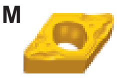
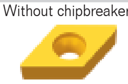
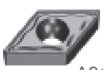
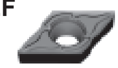
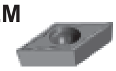
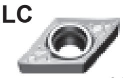
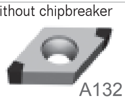


R-type shown

Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
SDACR/L	**1010E07**	△	△	10	10	70	10	10	15	I60M2.5×6.5	—	—	WT07IP
	1212F11	△	△	12	12	80	12	12	15	I60M3.5×8	—	—	WT15IP
	1616H11	△	△	16	16	100	16	16	24	I60M3.5×12	D11BS	SM5×8.65XA	WT15IP WH35L

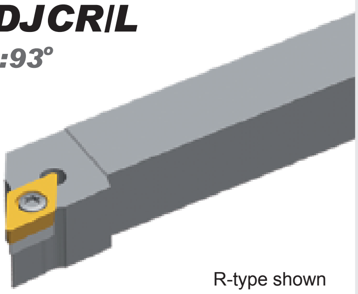
▲Stock available △Make-to-order

Applicable inserts

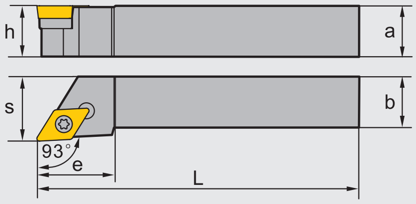
Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	USF  A91	HF  A91	HM  A92	HR  A93	LH  A93	Without chipbreaker  A93	Without chipbreaker  A132
	SF  A91	EF  A92	EM  A92		LC  A93		Without chipbreaker  A132
Tool holder type: **SDACR/L□□E07**	DC□□ 0702□□	DC□□ 0702□□	DC□□ 0702□□		DCGX 0702□□	DC□□0702□□	DC□□0702□□
Tool holder type: **SDACR/L□□F/H11**	DC□□ 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□	DCGX 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□

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

SDJCR/L
Kr:93°



R-type shown



Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Shim screw	Wrench
SDJCR/L	**1010E07**	▲	△	10	10	70	10	12	15	I60M2.5×6.5	—	—	WT07IP
	1212F07	▲	▲	12	12	80	12	16	15				
	1616H07	▲	▲	16	16	100	16	20	18				
	1616H11	▲	▲	16	16	100	16	20	24	I60M3.5×12	D11BS	SM5×8.65XA	WT15IP WH35L
	2020K11	▲	▲	20	20	125	20	25	24				
	2525M11	▲	▲	25	25	150	25	32	29				
	3225P11	▲	▲	32	25	170	32	32	29				

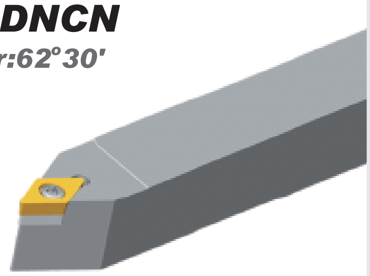
▲Stock available △Make-to-order

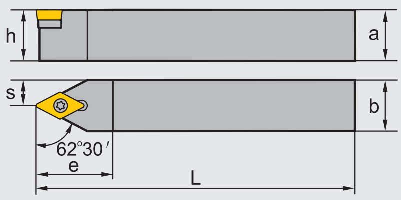
Applicable inserts

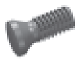
Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	USF A91	HF A91	HM A92	HR A93	LH A93	Without chipbreaker A93	Without chipbreaker A132
	SF A91	EF A92	EM A92		LC A93		Without chipbreaker A132
Tool holder type: **SDJCR/L□□E/F/H07**	DC□□0702□□	DC□□ 0702□□	DC□□0702□□		DCGX 0702□□	DC□□ 0702□□	DC□□ 0702□□
Tool holder type: **SDJCR/L□□H/K/M/P11**	DC□□ 11T3□□	DC□□ 11T3□□	DC□□11T3□□	DC□□11T3□□	DCGX 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□

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

SDNCN
Kr:62°30'

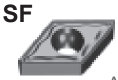
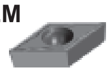
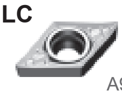
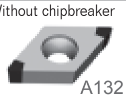




Type		Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
			a	b	L	h	s	e				
SDNCN	**1010E07**	▲	10	10	70	10	5	20	I60M2.5×6.5	—	—	WT07IP
	1212F07	▲	12	12	80	12	6	20				
	1212H11	▲	12	12	100	12	6	30	I60M3.5×8	—	—	WT15IP
	1616H11	▲	16	16	100	16	8	30	I60M3.5×12	D11BS	SM5×8.65XA	WT15IP WH35L
	2020K11	▲	20	20	125	20	10	30				
	2525M11	▲	25	25	150	25	12.5	30				

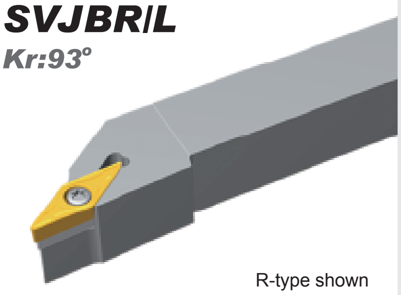
▲Stock available △Make-to-order

Applicable inserts

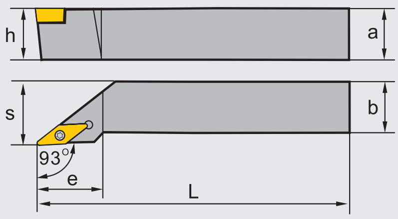
Application		For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape		**USF**  A91	**HF**  A91	**HM**  A92	**HR**  A93	**LH**  A93	Without chipbreaker  A93	Without chipbreaker  A132
		SF  A91	**EF**  A92	**EM**  A92		**LC**  A93		Without chipbreaker  A132
Tool holder type	**SDNCN□□E/F07**	DC□□0702□□	DC□□ 0702□□	DC□□0702□□		DCGX 0702□□	DC□□ 0702□□	DC□□ 0702□□
	SDNCN□□H/K/M11	DC□□ 11T3□□	DC□□ 11T3□□	DC□□11T3□□	DC□□11T3□□	DCGX 11T3□□	DC□□ 11T3□□	DC□□ 11T3□□

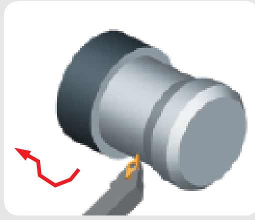
Corresponding tool holders of insert VB□□ S-type clamping

SVJBR/L
Kr:93°



R-type shown





Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Shim screw	Wrench
SVJBR/L	**1212F11**	▲	▲	12	12	80	12	16	27	I60M2.5×6.5	—	—	WT07IP
	1616H11	▲	▲	16	16	100	16	20	27				
	2020K11	▲	▲	20	20	125	20	25	27				
	2525M11	▲	▲	25	25	150	25	32	27				
	1616H16	▲	▲	16	16	100	16	20	36	I60M3.5×12	V16BS	SM5×8.65XA	WT15IP WH35L
	2020K16	▲	▲	20	20	125	20	25	41				
	2525M16	▲	▲	25	25	150	25	32	41				
	3225P16	▲	▲	32	25	170	32	32	41				

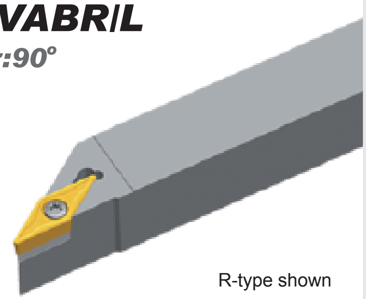
▲Stock available △Make-to-order

Applicable inserts

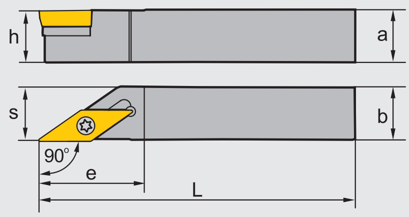
Application	For finishing	For semi-finishing	For roughing	PCBN&PCD inserts
Inserts shape	**HF** A106	**HM** A107	**HR** A107	Without chipbreaker A137
	NF A106			Without chipbreaker A137
Tool holder type: **SVJBR/L□□F/H/K/M11**	VB□□1102□□			
Tool holder type: **SVJBR/L□□H/K/M/P16**	VB□□1604□□	VB□□1604□□	VB□□1604□□	VB□□1604□□

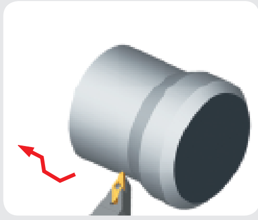
Corresponding tool holders of insert VB□□ S-type clamping

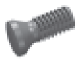
SVABR/L
Kr:90°



R-type shown





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

▲Stock available △Make-to-order

Applicable inserts

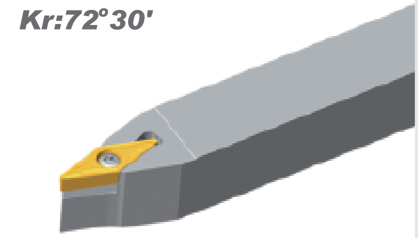
Application	For finishing	For semi-finishing	For roughing	PCBN&PCD inserts
Inserts shape	**HF**  A106	**HM**  A107	**HR**  A107	Without chipbreaker  A137
	NF  A106			Without chipbreaker  A137
Tool holder type: **SVABR/L□□F11**	VB□□1102□□			
Tool holder type: **SVABR/L□□H/K/M16**	VB□□1604□□	VB□□1604□□	VB□□1604□□	VB□□1604□□

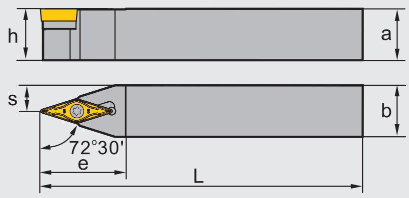
General turning

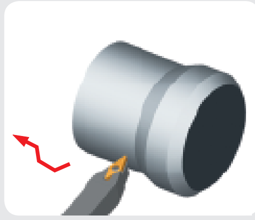
External turning tools

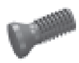
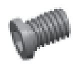
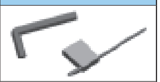
Corresponding tool holders of insert VB□□ S-type clamping

SVVBN
Kr:72°30'







Type		Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
			a	b	L	h	s	e				
SVVBN	**1212F11**	▲	12	12	80	12	6	27	I60M2.5×6.5	—	—	WT07IP
	1616H11	▲	16	16	100	16	8	27				
	2020K11	▲	20	20	125	20	10	30				
	1616H16	▲	16	16	100	16	8	33	I60M3.5×12	V16BS	SM5×8.65XA	WT15IP WH35L
	2020K16	▲	20	20	125	20	10	33				
	2525M16	▲	25	25	150	25	12.5	38				

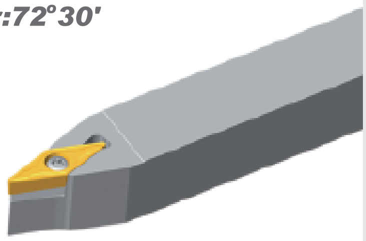
▲Stock available △Make-to-order

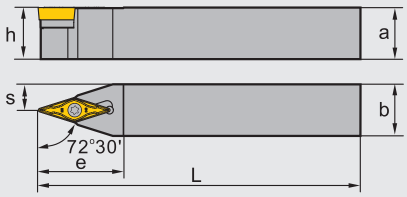
Applicable inserts

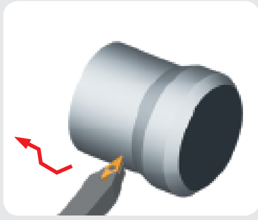
Application		For finishing	For semi-finishing	For roughing	PCBN&PCD inserts
Inserts shape		**HF**  A106	**HM**  A107	**HR**  A107	Without chipbreaker  A137
		NF  A106			Without chipbreaker  A137
Tool holder type	**SVVBN□□F/H/K11**	VB□□1102□□			
	SVVBN□□H/K/M16	VB□□1604□□	VB□□1604□□	VB□□1604□□	VB□□1604□□

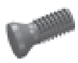
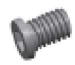
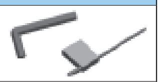
Corresponding tool holders of insert VC□□ S-type clamping

SVVCN
Kr:72°30'



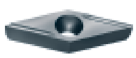




Type		Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
			a	b	L	h	s	e				
SVVCN	**1212F11**	▲	12	12	80	12	6	27	I60M2.5×6.5	—	—	WT07IP
	1212M11	▲	12	12	150	12	6	27				
	1616H11	▲	16	16	100	16	8	27				
	2020K11	▲	20	20	125	20	10	30				
	2525M11	△	25	25	150	25	12.5	38				
	1616H16	▲	16	16	100	16	8	33	I60M3.5×12	V16BSC	SM5×8.65XA	WT15IP WH35L
	2020K16	▲	20	20	125	20	10	33				
	2525M16	▲	25	25	150	25	12.5	38				

▲Stock available △Make-to-order

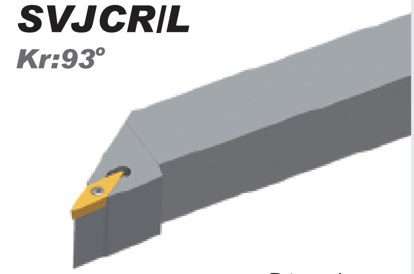
Applicable inserts

Application		For extra finishing	For finishing	For Al machining	PCBN&PCD inserts
Inserts shape		**USF**  A103	**HF**  A103	**LH**  A104	Without chipbreaker  A138
		SF  A103	**NF**  A103	**LC**  A104	Without chipbreaker  A138
Tool holder type	**SVVCN□□F/H/K/M11**	VC□□1103□□	VC□□1103□□	VCGX1103□□	
	SVVCN□□H/K/M16		VC□□1604□□	VCGX1604□□	VC□□1604□□

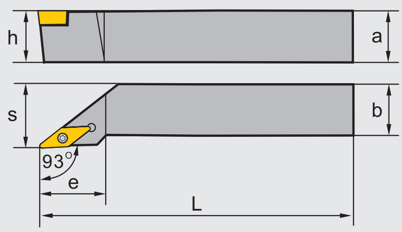
Corresponding tool holders of insert VC□□ S-type clamping

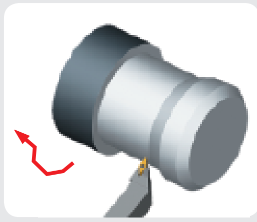
SVJCR/L

Kr:93°



R-type shown





Type		Stock R	Stock L	a	b	L	h	s	e	Screw	Shim	Shim screw	Wrench
SVJCR/L	1010E11	▲	△	10	10	70	10	12	22	I60M2.5×6.5	—	—	WT07IP
	1212F11	△	△	12	12	80	12	16	27				
	1616H11	▲	▲	16	16	100	16	20	27				
	2020K11	▲	▲	20	20	125	20	25	27				
	2525M11	▲	▲	25	25	150	25	32	27				
	1616H16	▲	▲	16	16	100	16	20	36	I60M3.5×12	V16BSC	SM5×8.65XA	WT15IP WH35L
	2020K16	▲	▲	20	20	125	20	25	41				
	2525M16	▲	▲	25	25	150	25	32	41				
	3225P16	△	△	32	25	170	32	32	41				

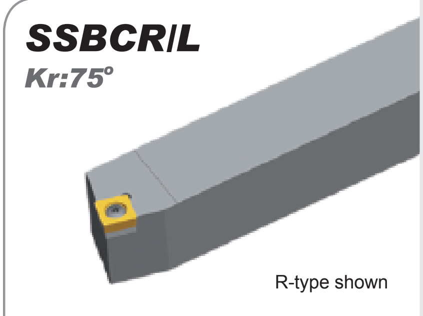
▲Stock available　　△Make-to-order

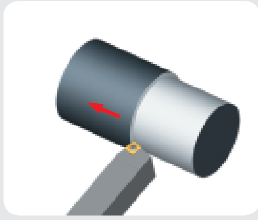
Applicable inserts

Application	For extra finishing	For finishing	For Al machining	PCBN&PCD inserts
Inserts shape	USF  A103	HF  A103	LH  A104	Without chipbreaker  A138
	SF  A103	NF  A103	LC  A104	Without chipbreaker  A138
Tool holder type: SVJCR/L□□E/F/H/K/M11	VC□□1103□□	VC□□1103□□	VCGX1103□□	
Tool holder type: SVJCR/L□□H/K/M/P16		VC□□1604□□	VCGX1604□□	VC□□1604□□

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

SSBCR/L
Kr:75°

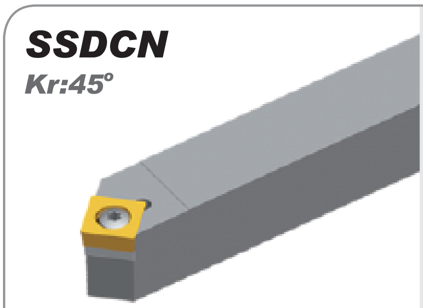

R-type shown

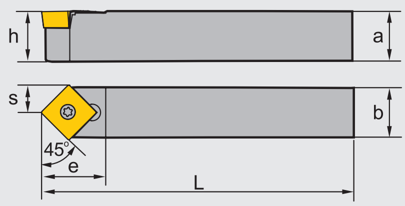


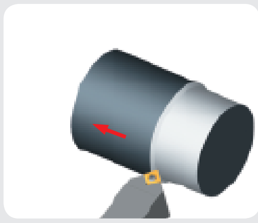
Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
SSBCR/L	**1212F09**	▲	▲	12	12	80	12	11	16	I60M3.5×8	—	—	WT15IP
	1616H09	▲	▲	16	16	100	16	13	16	I60M3.5×8	S09BS	SM5×8.65XA	WT15IP WH35L
	2020K12	▲	▲	20	20	125	20	17	25	I60M4×11X	S12BS	SM6×10XA	WT15IP WH40L

▲Stock available △Make-to-order

SSDCN
Kr:45°







Type		Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
			a	b	L	h	s	e				
SSDCN	**1212F09**	▲	12	12	80	12	6	15.5	I60M3.5×8	—	—	WT15IP
	1616H09	▲	16	16	100	16	8	15.5	I60M3.5×12	S09BS	SM5×8.65XA	WT15IP WH35L

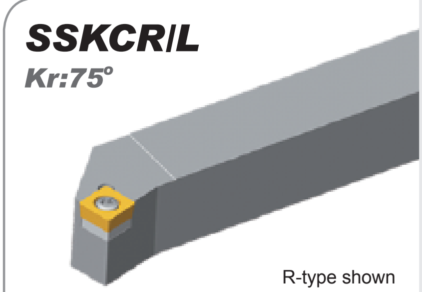
▲Stock available △Make-to-order

Applicable inserts

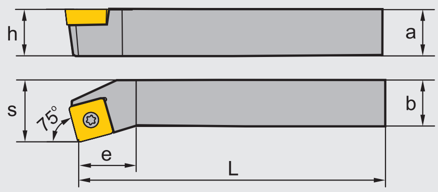
Application		For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape		HF A96	HM A96	HR A97	LH A97	Without chipbreaker A97	Without chipbreaker A134
		EF A96	EM A96		LC A97		Without chipbreaker A134
Tool holder type	**SSBCR/L□□F/H09**	SC□□09T3□□	SC□□09T3□□	SC□□09T3□□	SCGX09T3□□	SC□□09T3□□	
	SSBCR/L□□K12		SC□□1204□□	SC□□1204□□	SCGX1204□□	SC□□1204□□	SC□□1204□□
	SSDCN□□F/H09	SC□□09T3□□	SC□□09T3□□	SC□□09T3□□	SCGX09T3□□	SC□□09T3□□	

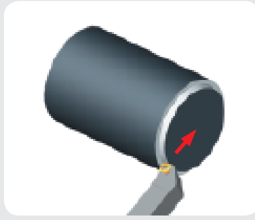
Corresponding tool holders of insert SC□□ S-type clamping

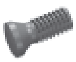
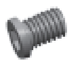
SSKCR/L
Kr:75°



R-type shown

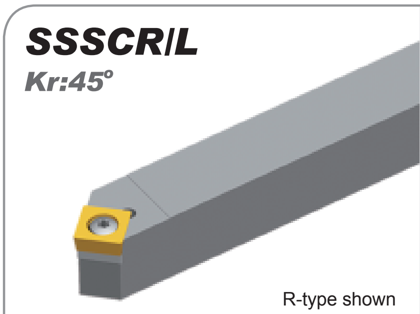




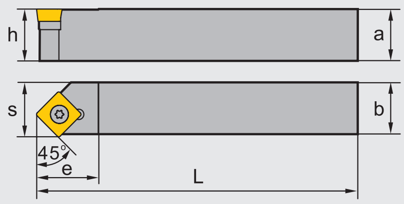
Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
SSKCR/L	1616H09	▲	△	16	16	100	16	20	13	I60M3.5×12	S09BS	SM5×8.65XA	WT15IP WH35L

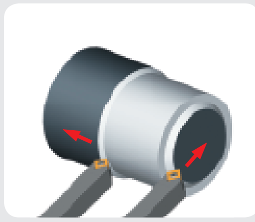
▲Stock available △Make-to-order

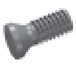
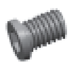
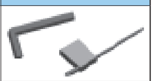
SSSCR/L
Kr:45°



R-type shown

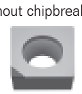
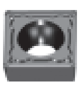




Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
SSSCR/L	1616H09	▲	▲	16	16	100	16	17	16	I60M3.5×12	—	—	WT15IP
	2020K12	▲	▲	20	20	125	20	21	24	I60M4×11X	S12BS	SM6×10XA	WT15IP WH40L

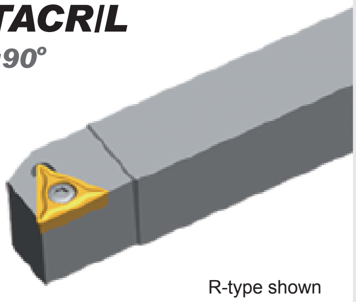
▲Stock available △Make-to-order

Applicable inserts

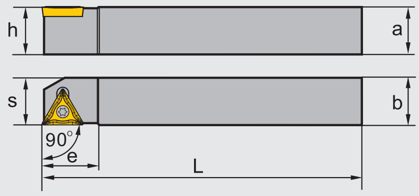
Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	HF  A96	HM  A96	HR  A97	LH  A97	Without chipbreaker  A97	Without chipbreaker  A134
	EF  A96	EM  A96		LC  A97		Without chipbreaker  A134
Tool holder type: SSKCR/L□□H09	SC□□09T3□□	SC□□09T3□□	SC□□09T3□□	SCGX09T3□□	SC□□09T3□□	
SSSCR/L□□H09	SC□□09T3□□	SC□□09T3□□	SC□□09T3□□	SCGX09T3□□	SC□□09T3□□	
SSSCR/L□□K12		SC□□1204□□	SC□□1204□□	SCGX1204□□	SC□□1204□□	SC□□1204□□

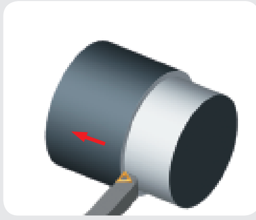
Corresponding tool holders of insert TC□□ S-type clamping

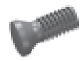
STACR/L
Kr:90°



R-type shown

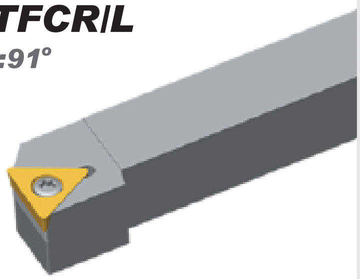




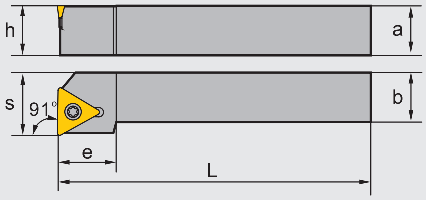
Type		Stock		Basic dimensions(mm)						Screw	Wrench		
		R	L	a	b	L	h	s	e				
STACR/L	1212F11	△	△	12	12	80	12	12	14	I60M2.5×6.5	WT07IP		

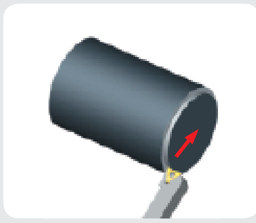
▲Stock available　△Make-to-order

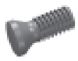
STFCR/L
Kr:91°



R-type shown

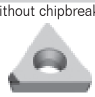
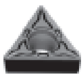
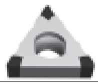




Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
STFCR/L	1212F11	▲	▲	12	12	80	12	16	14	I60M2.5×6.5	—	—	WT07IP
	1616H11	▲	▲	16	16	100	16	20	14				
	1616H16	▲	▲	16	16	100	16	20	19	I60M3.5×12	T16BS	SM5×8.65XA	WT15IP WH35L
	2020K16	▲	▲	20	20	125	20	25	19				

▲Stock available　△Make-to-order

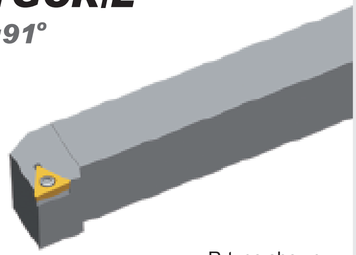
Applicable inserts

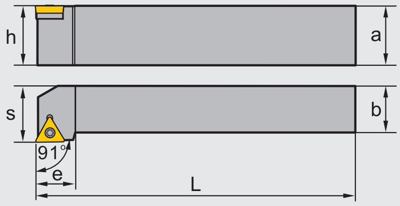
Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape	HF  A99	HM  A101	HR  A101	LH  A102	Without chipbreaker  A102	Without chipbreaker  A135
	EF  A100	EM  A100		LC  A101		Without chipbreaker  A135
Tool holder type: STACR/L□□F11	TC□□1102□□	TC□□1102□□	TC□□1102□□	TCGX1102□□	TC□□1102□□	TC□□1102□□
STFCR/L□□F/H11	TC□□1102□□	TC□□1102□□	TC□□1102□□	TCGX1102□□	TC□□1102□□	TC□□1102□□
STFCR/L□□H/K16	TC□□16T3□□	TC□□16T3□□	TC□□16T3□□	TCGX16T3□□	TC□□16T3□□	TC□□16T3□□

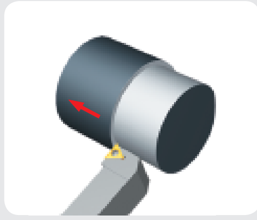
Corresponding tool holders of insert TC□□ S-type clamping

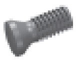
STGCR/L

Kr:91°


R-type shown

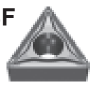
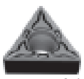




Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
STGCR/L	0808D09	▲	△	08	08	60	8	10	11	I60M2.2×5.5	—	—	WT06IP
	1010E09	▲	▲	10	10	70	10	12	11				
	1212F11	▲	▲	12	12	80	12	16	14	I60M2.5×6.5	—	—	WT07IP
	1616H11	▲	▲	16	16	100	16	20	16				
	2020K16	▲	▲	20	20	125	20	25	21	I60M3.5×12	T16BS	SM5×8.65XA	WT15IP WH35L
	2525M16	▲	▲	25	25	150	25	32	21				

▲Stock available △Make-to-order

Applicable inserts

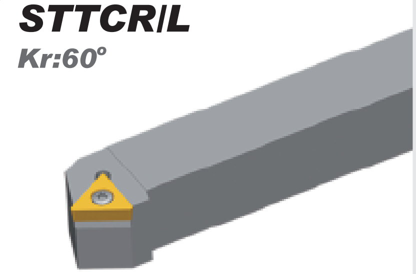
Application		For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape		SF  A98	HF  A99	HM  A101	HR  A101	LH  A102	Without chipbreaker  A102	Without chipbreaker  A135
			EF  A100	EM  A100		LC  A101		Without chipbreaker  A135
Tool holder type	STGCR/L□□D/E09	TC□□0902□□	TC□□0902□□	TC□□0902□□	TC□□0902□□	TCGX0902□□	TC□□0902□□	TC□□0902□□
	STGCR/L□□F/H11		TC□□1102□□	TC□□1102□□	TC□□1102□□	TCGX1102□□	TC□□1102□□	TC□□1102□□
	STGCR/L□□K/M16		TC□□16T3□□	TC□□16T3□□	TC□□16T3□□	TCGX16T3□□	TC□□16T3□□	TC□□16T3□□

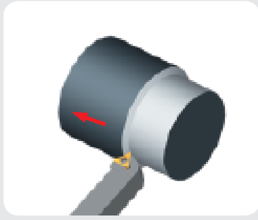
General turning

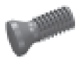
External turning tools

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

STTCR/L
Kr:60°

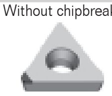
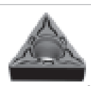
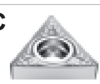
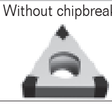

R-type shown

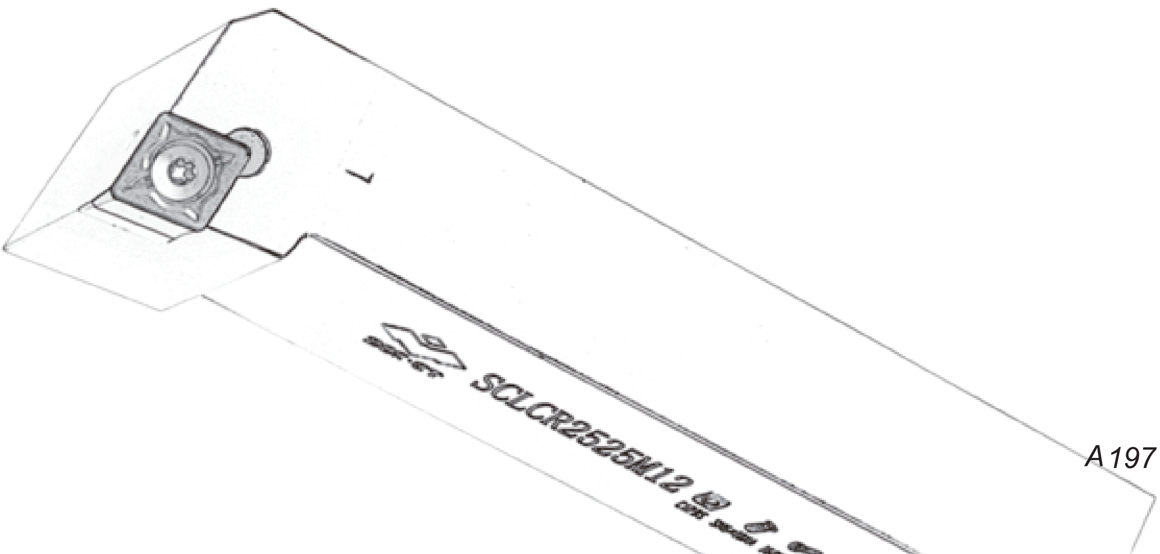


Type		Stock		Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
		R	L	a	b	L	h	s	e				
STTCR/L	**1616H11**	△	△	16	16	100	16	13	14	I60M2.5×6.5	—	—	WT07IP
	1616H16	△	△	16	16	100	16	13	19	I60M3.5×12	T16BS	SM5×8.65XA	WT15IP WH35L
	2020K16	△	△	20	20	125	20	17	19				

▲Stock available △Make-to-order

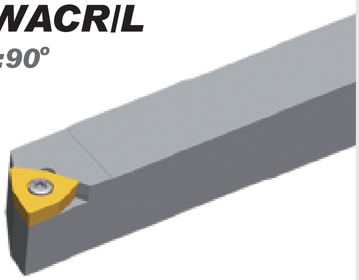
Applicable inserts

Application		For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN&PCD inserts
Inserts shape		HF  A99	HM  A101	HR  A101	LH  A102	Without chipbreaker  A102	Without chipbreaker  A135
		EF  A100	EM  A100		LC  A101		Without chipbreaker  A135
Tool holder type	**STTCR/L□□H11**	TC□□1102□□	TC□□1102□□	TC□□1102□□	TCGX1102□□	TC□□1102□□	TC□□1102□□
	STTCR/L□□H/K16	TC□□16T3□□	TC□□16T3□□	TC□□16T3□□	TCGX16T3□□	TC□□16T3□□	TC□□16T3□□

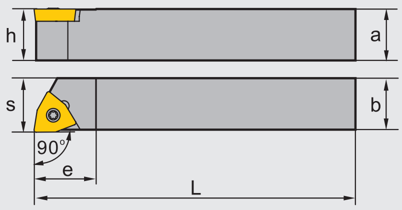


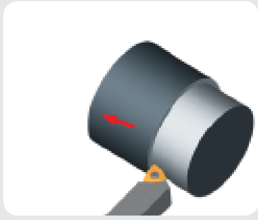
Corresponding tool holders of insert WC□□ S-type clamping

SWACR/L
Kr:90°



R-type shown





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

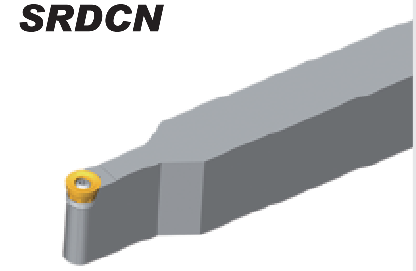
▲Stock available △Make-to-order

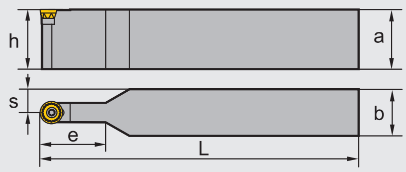
Applicable inserts

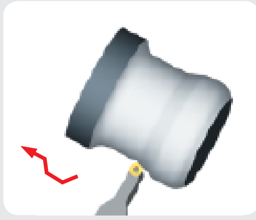
Application		For finishing
Inserts shape		53 A105
Tool holder type	**SWACR/L□□E/F04**	WC□X0402□□
	SWACR/L□□H06	WC□X06T3□□
	SWACR/L□□K08	WC□X0804□□

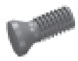
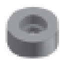
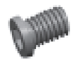
Corresponding tool holders of insert RC□□ S-type clamping

SRDCN



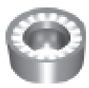




Type		Stock	Basic dimensions(mm)						Screw	Shim	Shim screw	Wrench
			a	b	L	h	s	e				
SRDCN	**1616H08**	△	16	16	100	16	8	16	I60M3×7	—	—	WT10IP
	1616H10	△	16	16	100	16	8	25				
	2020K10	△	20	20	125	20	10	25	I60M3.5×10	—	—	WT15IP
	2525M10	▲	25	25	150	25	12.5	25				
	2020K12	▲	20	20	125	20	10	35				
	2525M12	▲	25	25	150	25	12.5	35	I60M3.5×12	R12BS	SM5×8.65XA	WT15IP WH35L
	3225P12	▲	32	25	170	32	12.5	35				
	3225P16	▲	32	25	170	32	12.5	35				
	3232P16	▲	32	32	170	32	16	40	I60M4×15X	R16BS	SM6×10XA	WT15IP WH40L
	4040S16	▲	40	40	250	40	20	50				

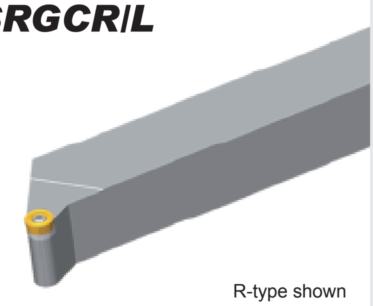
▲Stock available △Make-to-order

Applicable inserts

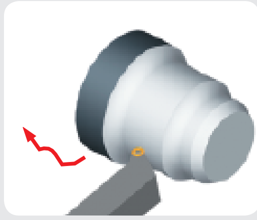
Application		For semi-finishing	For roughing	For Al machining	
Inserts shape		 A94	 A94	LH  A94	 A94
Tool holder type	**SRDCN□□H08**	RCMT0803MO	RCMT0803MO	RCGX0803MO-LH	RCMT0803MO
	SRDCN□□H/K/M10	RCMT10T3MO	RCMT10T3MO		RCMT10T3MO
	SRDCN□□K/M/P12	RCMT1204MO	RCMT1204MO		RCMT1204MO
	SRDCN□□P/S16	RCMT1606MO	RCMT1606MO		RCMT1606MO

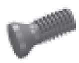
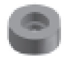
Corresponding tool holders of insert RC□□ S-type clamping

SRGCR/L



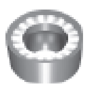
R-type shown



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

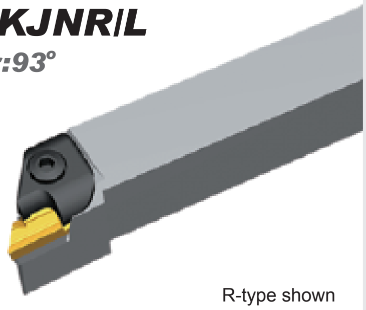
▲Stock available △Make-to-order

Applicable inserts

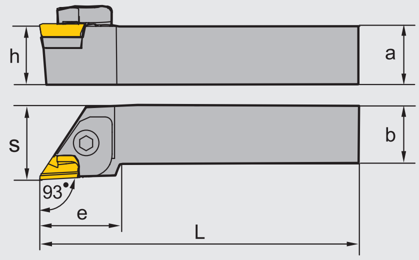
	Application	For semi-finishing	For roughing	For Al machining	
	Inserts shape	 A94	 A94	LH  A94	 A94
Tool holder type	**SRGCR/L□□H08**	RCMT0803MO	RCMT0803MO	RCGX0803MO-LH	RCMT0803MO
	SRGCR/L□□H/K/M10	RCMT10T3MO	RCMT10T3MO		RCMT10T3MO
	SRGCR/L□□K/M12	RCMT1204MO	RCMT1204MO		RCMT1204MO

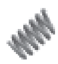
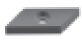
Corresponding tool holders of insert KNUX□□ C-type clamping

CKJNR/L
Kr:93°



R-type shown

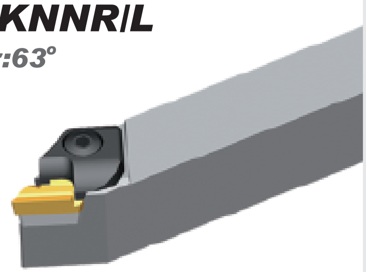


Type		Stock	Basic dimensions(mm)						Applicable inserts	Clamp	Clamp screw	Spring	Clamping stud	Shim	Shim screw	Wrench
			a	b	L	h	s	e								
CKJNR	2525M16	△	25	25	150	25	32	32	KNUX1604□□R A85	C6R1T	CM6×25A	SPR1 SPR2	P0515	K16CC	SM3×10B	WH20L WH40L
	3232P16	△	32	32	170	32	40	32								
	4040R16	△	40	40	200	40	50	32								
CKJNL	2525M16	△	25	25	150	25	32	32	KNUX1604□□L A85	C6L1T				K16CCL		
	3232P16	△	32	32	170	32	40	32								
	4040R16	△	40	40	200	40	50	32								

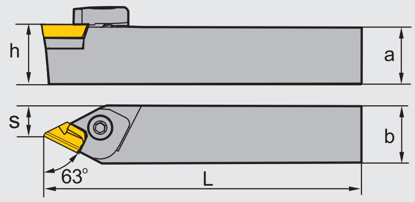
▲Stock available △Make-to-order

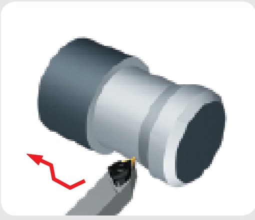
Corresponding tool holders of insert KNUX□□ C-type clamping

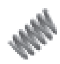
CKNNR/L
Kr:63°



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								
CKNNR	2525M16	△	25	25	150	25	14.3	KNUX1604□□R A85	C6R1T	CM6×25A	SPR1 SPR2	P0515	K16CC	SM3×10B	WH20L WH40L
	3232P16	△	32	32	170	32	16.8								
CKNNL	2525M16	△	25	25	150	25	14.3	KNUX1604□□L A85	C6L1T	CM6×25A	SPR1 SPR2	P0515	K16CCL	SM3×10B	
	3232P16	△	32	32	170	32	16.8								

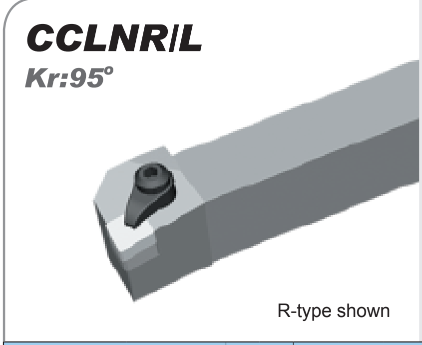
▲Stock available △Make-to-order

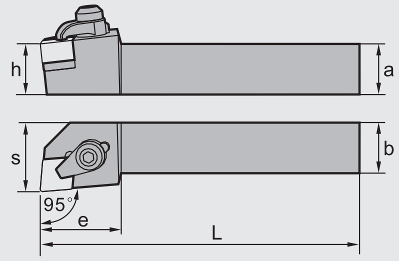
External turning tools for ceramic inserts

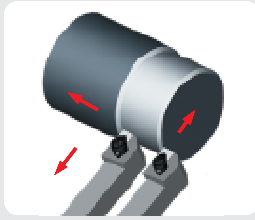
Corresponding tool holders of insert CN□□ C-type clamping

CCLNR/L

Kr:95°


R-type shown





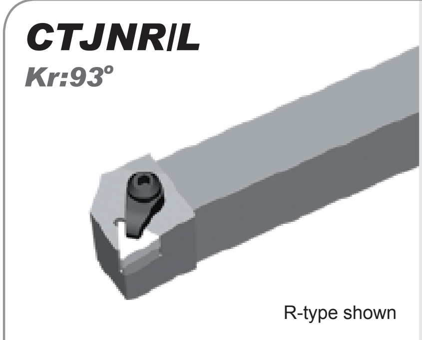
Type		Stock R	Stock L	a	b	L	h	s	e	Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
CCLNR/L	**2020K12**	△	△	20	20	125	20	27	32	CNGN1207□□ (1204□□) A143	C1RC	CM6×30B	WH20L WH40L	C12CC-07 (C12CC-04)	SM3×10B	SPR1
	2525M12	△	△	25	25	150	25	27	36							
	2525M16	△	△	25	25	150	25	32	36	CNGN1606□□ (1604□□) A143	C2RC	CM8×30B	WH30L WH50L	C16CC-06 (C16CC-04)	SM4×12B	SPR3
	3225P16	△	△	32	25	170	32	32	36							

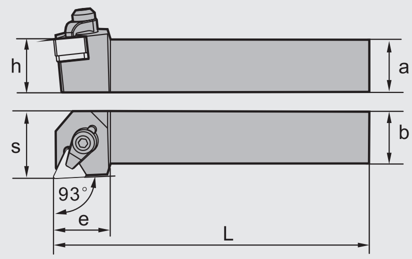
▲Stock available △Make-to-order

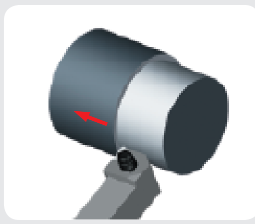
Corresponding tool holders of insert TN□□ C-type clamping

CTJNR/L

Kr:93°


R-type shown



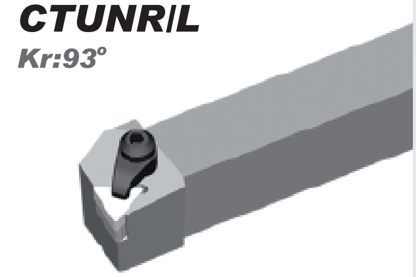


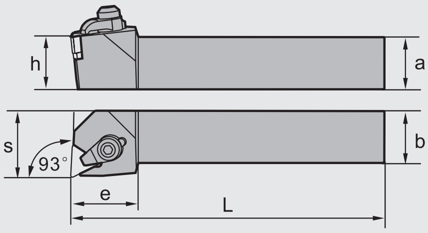
Type		Stock R	Stock L	a	b	L	h	s	e	Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
CTJNR/L	**2020K16**	△	△	20	20	125	20	25	30	TNGN1607□□ (1604□□) A149	C1RC	CM6×30B	WH20L WH40L	T16CC-07 (T16CC-04)	SM3×10B	SPR1
	2525M16	△	△	25	25	150	25	32	30							

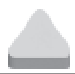
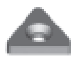
▲Stock available △Make-to-order

Corresponding tool holders of insert TN□□ C-type clamping

CTUNR/L
Kr:93°


R-type shown

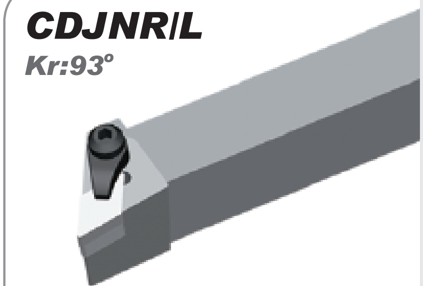


Type		Stock		Basic dimensions(mm)						Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
		R	L	a	b	L	h	s	e							
CTUNR/L	**2020K16**	△	△	20	20	125	20	25	27	TNGN1607□□ (1604□□) A149	C1RC	CM6×30B	WH20L WH40L	T16CC-07 (T16CC-04)	SM3×10B	SPR1
	2525M16	△	△	25	25	150	25	32	27							

▲Stock available △Make-to-order

Corresponding tool holders of insert DN□□ C-type clamping

CDJNR/L
Kr:93°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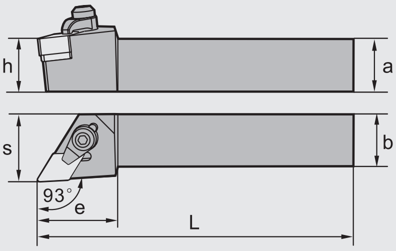
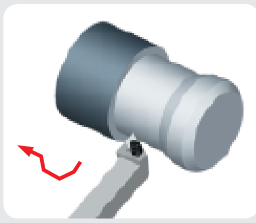




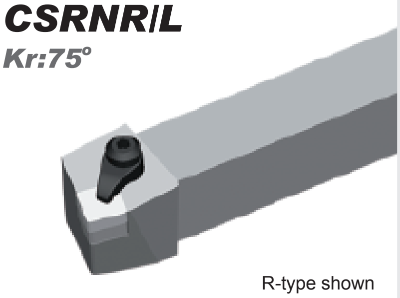
Type		Stock		Basic dimensions(mm)						Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
		R	L	a	b	L	h	s	e							
CDJNR/L	**2525M15**	△	△	25	25	150	25	32	32	DNGN1507□□ (1504□□) A145	C1RC	CM6×30B	WH20L WH40L	D15CC-07 (D15CC-04)	SM3×10B	SPR1
	3225P15	△	△	32	25	170	32	32	32							

▲Stock available △Make-to-order

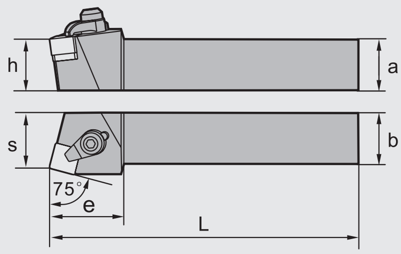
Corresponding tool holders of insert SN□□ C-type clamping

CSRNR/L

Kr:75°



R-type shown

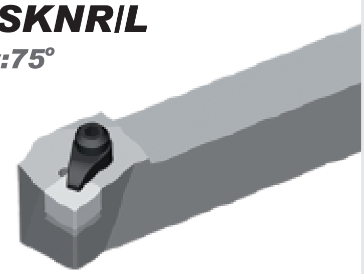


Type		Stock R	Stock L	a	b	L	h	s	e	Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
CSRNR/L	2020K12	△	△	20	20	125	20	22	32	SNGN1207□□ (1204□□) A147	C1RC	CM6×30B	WH20L WH40L	S12CC-07 (S12CC-04)	SM3×10B	SPR1
	2525M12	△	△	25	25	150	25	27	32							
	3225P12	△	△	32	25	170	32	27	32							
	3225P15	△	△	32	25	170	32	32	40	SNGN1507□□ A147	C2RC	CM8×30B	WH30L WH50L	S15CC-07	SM4×12B	SPR3
	4040R15	△	△	40	40	200	40	43	40							

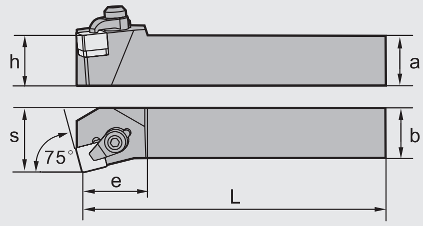
▲Stock available △Make-to-order

CSKNR/L

Kr:75°



R-type shown

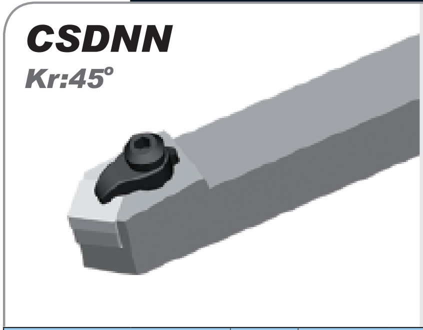


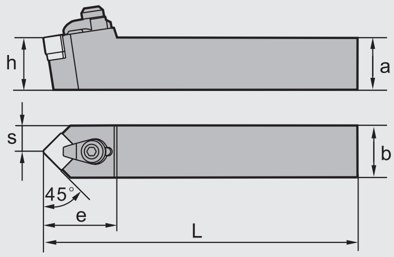
Type		Stock R	Stock L	a	b	L	h	s	e	Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
CSKNR/L	2020K12	△	△	20	20	125	20	25	25	SNGN1207□□ (1204□□) A147	C1RC	CM6×30B	WH20L WH40L	S12CC-07 (S12CC-04)	SM3×10B	SPR1
	2525M12	△	△	25	25	150	25	32	25							
	3225P12	△	△	32	25	170	32	32	25							
	3225P15	△	△	32	25	170	32	32	30	SNGN1507□□ A147	C2RC	CM8×30B	WH30L WH50L	S15CC-07	SM4×12B	SPR3

▲Stock available △Make-to-order

Corresponding tool holders of insert SN□□ C-type clamping

CSDNN
Kr:45°



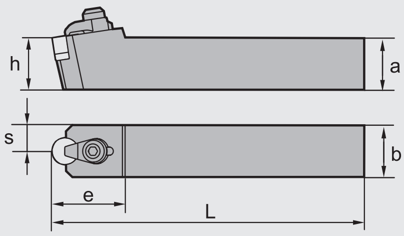


Type		Stock	a	b	L	h	s	e	Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
CSDNN	**2020K12**	△	20	20	125	20	10	35	SNGN1207□□ (1204□□) A147	C1RC	CM6×30B	WH20L WH40L	S12CC-07 (S12CC-04)	SM3×10B	SPR1
	2525M12	△	25	25	150	25	12.5	35							
	3225P12	△	32	25	170	32	12.5	35							

▲Stock available △Make-to-order

Corresponding tool holders of insert RN□□ C-type clamping

CRDNN

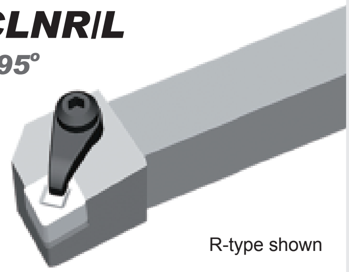


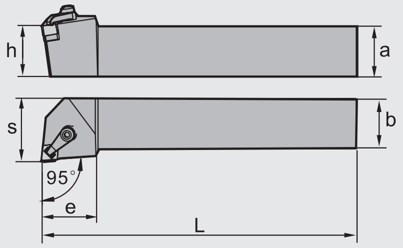
Type		Stock	a	b	L	h	s	e	Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
CRDNN	**2020K12**	△	20	20	125	20	10	32	RNGN1207□□ (1204□□) A150	C1RC	CM6×30B	WH20L WH40L	R12CC-07 (R12CC-04)	SM3×10B	SPR1
	2525M12	△	25	25	150	25	12.5	32							
	3225P12	△	32	25	170	32	12.5	32							
	3232P15	△	32	32	170	32	17.5	40	RNGN1507□□ A150	C2RC	CM8×30B	WH20L WH50L	R15CC-07	SM3×10B	SPR3
	4040R15	△	40	40	200	40	20	40							

▲Stock available △Make-to-order

Corresponding tool holders of insert CN□□ J-type clamping

JCLNR/L
Kr:95°


R-type shown

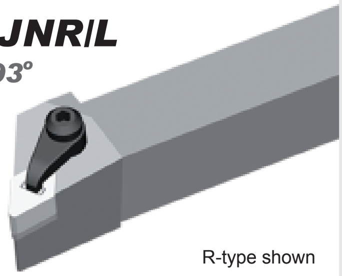


Type		Stock		Basic dimensions(mm)						Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
		R	L	a	b	L	h	s	e							
JCLNR/L	**2020K12**	△	△	20	20	125	20	29	32	CNGX1207□□ A144	C1RJ	CM6×30B	WH20L WH40L	C12CC-07	SM3×10B	SPR1
	2525M12	△	△	25	25	150	25	32	32							

▲Stock available △Make-to-order

Corresponding tool holders of insert DN□□ J-type clamping

JDJNR/L
Kr:93°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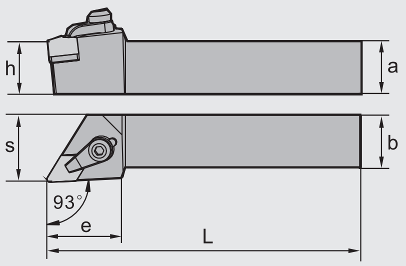
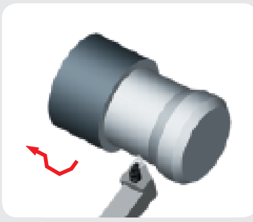


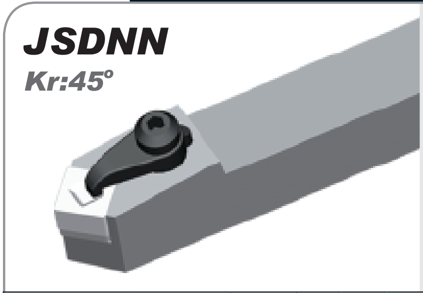


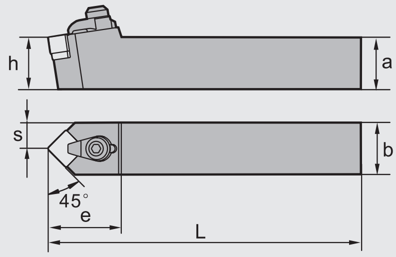
Type		Stock		Basic dimensions(mm)						Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
		R	L	a	b	L	h	s	e							
JDJNR/L	**2525M15**	△	△	25	25	150	25	32	38	DNGX1507□□ A145	C1RJ	CM6×30B	WH20L WH40L	D15CC-07	SM3×10B	SPR1
	3225P15	△	△	32	25	170	32	32	38							

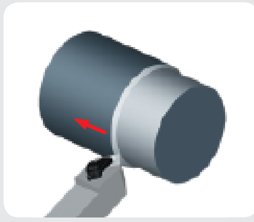
▲Stock available △Make-to-order

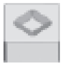
Corresponding tool holders of insert SN□□ J-type clamping

JSDNN
Kr:45°







Type		Stock	Basic dimensions(mm)						Applicable inserts	Clamp	Clamping screw	Wrench	Shim	Screw for clamping shim	Spring
			a	b	L	h	s	e							
JSDNN	**2020K12**	△	20	20	125	20	10	40	SNGX1207□□ A146	C1RJ	CM6×30B	WH20L WH40L	S12CC-07	SM3×10B	SPR1
	2525M12	△	25	25	150	25	12.5	40							
	3225P12	△	32	25	170	32	12.5	40							

▲Stock available △Make-to-order

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.

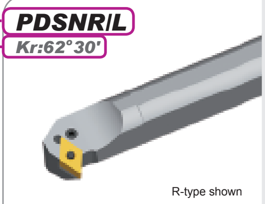
Insert type

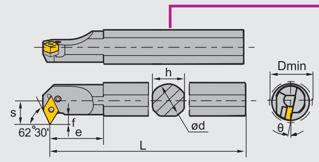
Specification chart

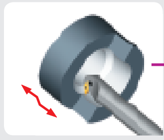
Application chart
The arrow shows suitable applications such as internal turning, profiling and end turning, etc.

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

PDSNR/L
Kr:62°30'


R-type shown





Type	Stock R	Stock L	Dmin	ød	h	L	S	θ	e	f	Screw	Wrench	Lever	Shim	Shim pin
S32R-PDSNR/L15	△	△	40	32	30	200	22	-11°	45	8.5	LEM8×21	WH30L	L4B	D15AP	SP4
S32U-PDSNR/L15	▲	▲	40	32	30	350	22	-11°	45	8.5					
S32R-PDSNR/L15-3	△	△	40	32	30	200	22	-11°	45	8.5	LEM8×21	WH30L	L4	D15AP	SP4
S32U-PDSNR/L15-3	▲	△	40	32	30	350	22	-11°	45	8.5					
S40S-PDSNR/L15	△	△	50	40	37	250	27	-11°	43	9.4	LEM8×21	WH30L	L4B	D15AP	SP4
S40V-PDSNR/L15	▲	▲	50	40	37	400	27	-11°	43	9.4					
S40S-PDSNR/L15-3	△	△	50	40	37	250	27	-11°	43	9.4	LEM8×21	WH30L	L4	D15AP	SP4
S40V-PDSNR/L15-3	▲	△	50	40	37	400	27	-11°	43	9.4					
※A32S- PDSNR/L15	△	△	40	32	31	250	22	-11°	45	8.5	LEM8×21	WH30L	L4B	D15AP	SP4
※A32S- PDSNR/L15-3	△	△	40	32	31	250	22	-11°	45	8.5	LEM8×21	WH30L	L4	D15AP	SP4

※ Tool holders with oil hole ▲Stock available △Make-to-order

Applicable inserts

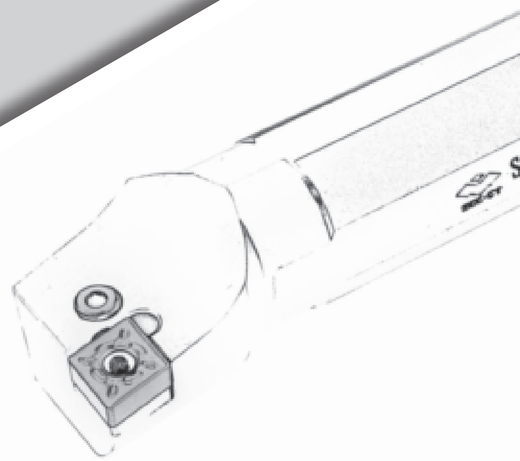
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN/PCD inserts
Inserts shape	DF A59	WGM Wiper A61	DR Double-side A63	Without chipbreaker A64	Without chipbreaker A122
	WGF Wiper A59	PM A61	DR Single-side A63		Without chipbreaker A122
	SF A60	DM A62	ER Double-side A63		Without chipbreaker A122
	EF A60	EM A62	ER Single-side A63		
	NF A60	NM A62	LR Single-side A63		
Tool holder type: □□-PDSNR/L15-3	DN□□1504□□	DN□□1504□□		DN□□1504□□	DN□□1504□□
Tool holder type: □□-PDSNR/L15	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□

Tool holders with oil hole

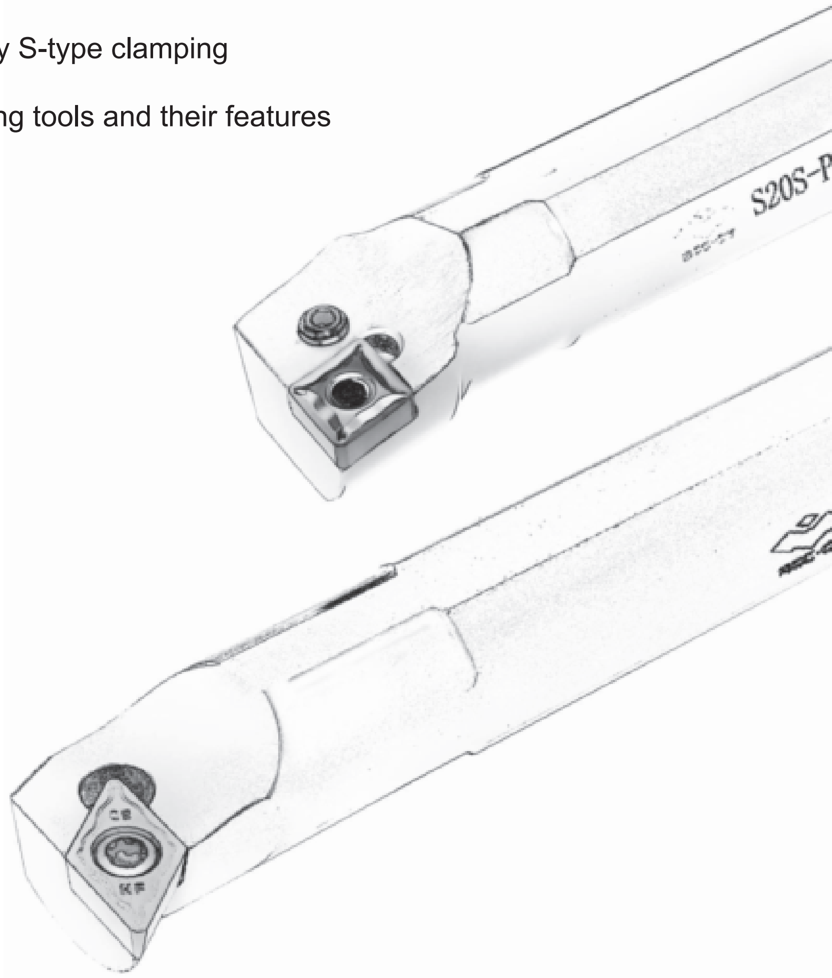
Products specification
Including product description, stock (left and right hand), basic dimensions and applicable spare parts.

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

TURNING



Internal turning tools



Internal turning tools

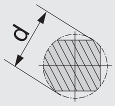
Name	Feature	62°30′	75°	90°	91°	93°	93°	95°	95°	107°30′
P-type internal turning tools	● The minimum machining diameter is 20mm. ● Applicable inserts are economic negative inserts. ● Hole clamping	PDSN A215	PSKN A217	PTFN A218			PDUN A216		PCLN A214	
									PWLN A219	
S-type internal turning tools	● The minimum machining diameter is 10mm. ● Applicable inserts are 5°, 7° and 11° positive inserts. ● Screw clamping.		SSKC A224	SCFC A234	STFC A225	STUP A233	SDUC A222	SDZC A223		SDQC A221
							SDUP A232		SCLC A220	SDQP A231
							SVUC A227		A235	SVQB A228
							SVUB A229		SCLP A230	SVQC A226
Damping internal turning tools	● The minimum diameter can be machined is 12mm. ● Applicable inserts are 7°、11° positive inserts. ● Good Performance on reducing shake.					STUP A240	SDUP A239		SCLP A237	SDQP A238
							SVUC A241			SVQC A241

Internal turning tools code key

Type of tool holder

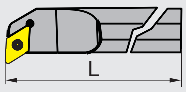
Code	Type
A	Steel tool holder with oil-hole
C	Cemented carbide tool holder
E	Cemented carbide tool holder with oil hole
S	Steel tool holder
X	Special inserts applied

Diameter of tool holder



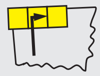
Code	Diameter
16	16
20	20
25	25
32	32
40	40
50	50

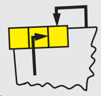
Length of tool holder

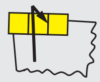


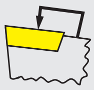
Code	Length
H	100
K	125
M	150
N	160
Q	180
R	200
S	250
T	300
U	350
V	400

Clamping system

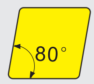

P-Hole clamping


M-Top and hole clamping

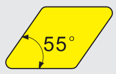

S-Screw on


C-Top clamping

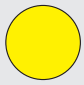
Inserts shape

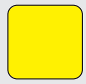


C

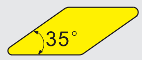


D

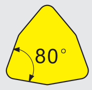

R


S

T



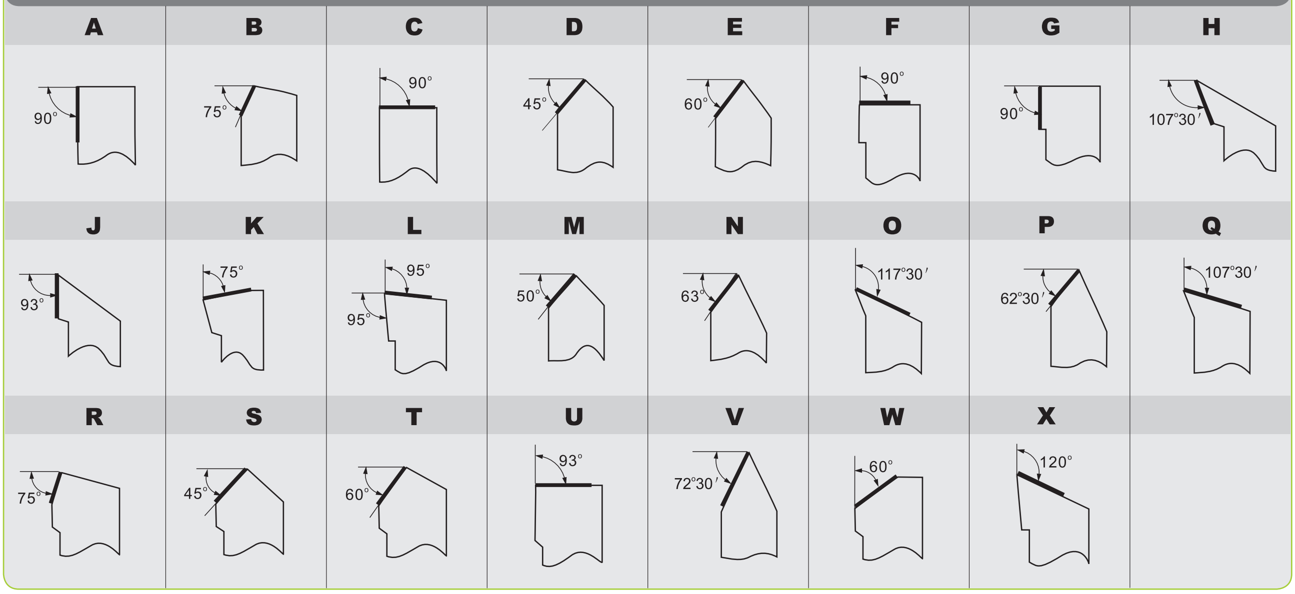
V



W

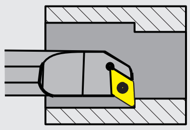
S 16 R - S D U

Tool holder style and approach angle

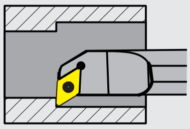


Clearance angle of insert	
5°	B
7°	C
15°	D
20°	E
0°	N
11°	P

Cutting direction



L - Left hand



R - Right hand

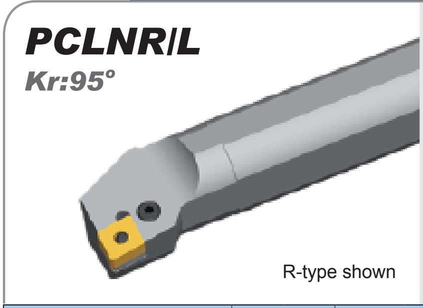
Manufacture option	
D	Increase offset f size+1.0mm
E	Increase offset f size+2.0mm
R	Round shank
W	Wedge clamping
X	Back boring

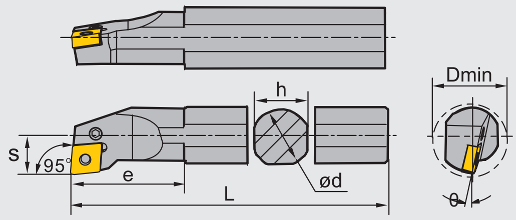
C R 07

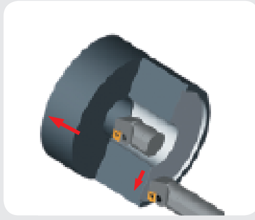
Length of cutting edge							
Inserts shape	C (80°)	D (55°)	R	S	T (60°)	V (35°)	W (80°)
Inscribed circle	Length of cutting edge(mm)						
5.556	---	---	---	---	09	---	---
6.350	06	07	---	---	11	---	---
9.525	09	11	09	09	16	16	06
12.700	12	15	12	12	22	22	08
15.875	16	19	15	15	27	---	---
19.050	19	---	19	19	33	---	---
25.400	25	---	25	25	44	---	---

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	θ	e					
S16M-PCLNR/L09	△	△	20	16	15	150	11	-12°	28	LEM5×9B	WH20L	L3C	---	---
S16R-PCLNR/L09	▲	▲	20	16	15	200	11	-12°	28					
S20Q-PCLNR/L09	△	△	25	20	18	180	13	-11°	31					
S20S-PCLNR/L09	▲	▲	25	20	18	250	13	-11°	31					
S25Q-PCLNR/L09	△	△	32	25	23	180	17	-10°	35					
S25T- PCLNR/L09	▲	▲	32	25	23	300	17	-10°	35					
S25Q-PCLNR/L12	△	△	32	25	23	180	17	-12°	40	LEM6×13.4A	WH25L	L4A	---	---
S25T- PCLNR/L12	▲	▲	32	25	23	300	17	-12°	40					
S32R-PCLNR/L12	△	△	44	32	30	200	22	-10°	50	LEM8×21	WH30L	L4	C12APB	SP4
S32U-PCLNR/L12	▲	▲	44	32	30	350	22	-10°	50					
S40S-PCLNR/L12	△	△	54	40	37	250	27	-10°	55					
S40V-PCLNR/L12	▲	▲	54	40	37	400	27	-10°	55					
S50S-PCLNR/L12	△	△	63	50	47	250	35	-10°	56					
S50W-PCLNR/L12	▲	▲	63	50	47	450	35	-10°	56					
S50S-PCLNR/L19	△	△	63	50	47	250	35	-10°	63	LEM10×27	WH40L	L6	C19AP	SP6
S50W-PCLNR/L19	▲	▲	63	50	47	450	35	-10°	63					
※A25R-PCLNR/L12	▲	▲	32	25	24	200	17	-12°	40	LEM6×13.4A	WH25L	L4A	---	---
※A32S-PCLNR/L12	▲	▲	44	32	31	250	22	-10°	50	LEM8×21	WH30L	L4	C12APB	SP4

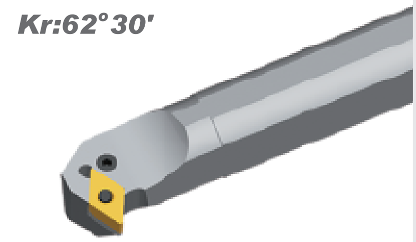
※ Tool holders with oil hole ▲Stock available △Make-to-order

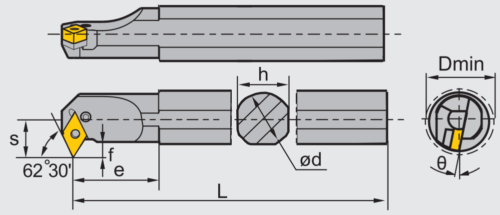
Applicable inserts

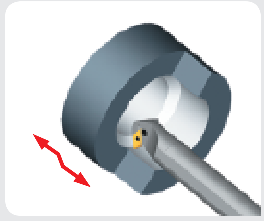
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN/PCD inserts
Inserts shape	DF A52	WGM Wiper A53	DR Double-side A56	Without chipbreaker A57	Without chipbreaker A120
	WGF Wiper A52	PM A53	DR Single-side A56		Without chipbreaker A120
	SF A52	DM A54	ER Double-side A56		Without chipbreaker A120
	EF A52	EM A54	ER Single-side A56		
	NF A53	NM A55	LR Single-side A55		
Tool holder type □□-PCLNR/L09	CN□□0903□□	CN□□0903□□		CN□□0903□□	
Tool holder type □□-PCLNR/L12	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□
Tool holder type □□-PCLNR/L19			CN□□1906□□	CN□□1906□□	

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

PDSNR/L
Kr:62°30'


R-type shown





Type	Stock		Basic dimensions(mm)								Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S	θ	e	f					
S32R-PDSNR/L15	△	△	40	32	30	200	22	-11°	45	8.5	LEM8×21	WH30L	L4B	D15AP	SP4
S32U-PDSNR/L15	▲	▲	40	32	30	350	22	-11°	45	8.5					
S32R-PDSNR/L15-3	△	△	40	32	30	200	22	-11°	45	8.5	LEM8×21	WH30L	L4	D15AP	SP4
S32U-PDSNR/L15-3	▲	△	40	32	30	350	22	-11°	45	8.5					
S40S-PDSNR/L15	△	△	50	40	37	250	27	-11°	43	9.4	LEM8×21	WH30L	L4B	D15AP	SP4
S40V-PDSNR/L15	▲	▲	50	40	37	400	27	-11°	43	9.4					
S40S-PDSNR/L15-3	△	△	50	40	37	250	27	-11°	43	9.4	LEM8×21	WH30L	L4	D15AP	SP4
S40V-PDSNR/L15-3	▲	△	50	40	37	400	27	-11°	43	9.4					
※A32S- PDSNR/L15	△	△	40	32	31	250	22	-11°	45	8.5	LEM8×21	WH30L	L4B	D15AP	SP4
※A32S- PDSNR/L15-3	△	△	40	32	31	250	22	-11°	45	8.5	LEM8×21	WH30L	L4	D15AP	SP4

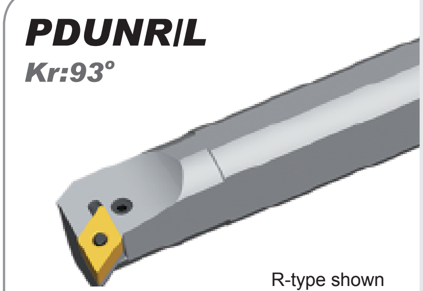
※ Tool holders with oil hole ▲Stock available △Make-to-order

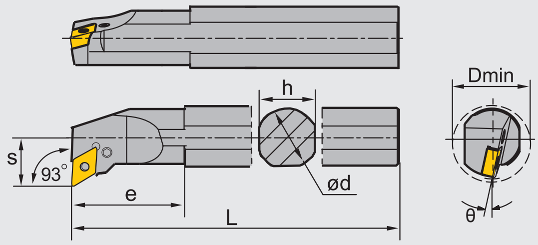
Applicable inserts

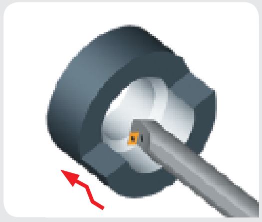
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN/PCD inserts
Inserts shape	**DF** A59	**WGM** Wiper A61	**DR** Double-side A63	Without chipbreaker A64	Without chipbreaker A122
	WGF Wiper A59	**PM** A61	**DR** Single-side A63		Without chipbreaker A122
	SF A60	**DM** A62	**ER** Double-side A63		Without chipbreaker A122
	EF A60	**EM** A62	**ER** Single-side A63		
	NF A60	**NM** A62	**LR** Single-side A63		
Tool holder type: **□□-PDSNR/L15-3**	DN□□1504□□	DN□□1504□□		DN□□1504□□	DN□□1504□□
Tool holder type: **□□-PDSNR/L15**	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□

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

PDUNR/L
Kr:93°


R-type shown





Type	Stock R	Stock L	Dmin	ød	h	L	S	θ	e	Screw	Wrench	Lever	Shim	Shim pin
S20Q-PDUNR/L11	△	△	25	20	18	180	13	-16°	30	LEM5×12B	WH20L	L3D	---	---
S20S-PDUNR/L11	▲	▲	25	20	18	250	13	-16°	30					
S25Q-PDUNR/L11	△	△	32	25	23	180	17	-13°	35					
S25T-PDUNR/L11	▲	▲	32	25	23	300	17	-13°	35					
S32R-PDUNR/L11	△	△	40	32	30	200	22	-16°	40	LEM6×17	WH25L	L3	D11AP	SP3
S32U-PDUNR/L11	▲	▲	40	32	30	350	22	-16°	40					
S32R-PDUNR/L15	△	△	40	32	30	200	22	-16°	50	LEM8×21	WH30L	L4B	D15AP	SP4
S32U-PDUNR/L15	▲	▲	40	32	30	350	22	-16°	50					
S32R-PDUNR/L15-3	△	△	40	32	30	200	22	-16°	50	LEM8×21	WH30L	L4	D15AP	SP4
S32U-PDUNR/L15-3	▲	▲	40	32	30	350	22	-16°	50					
S40S-PDUNR/L15	△	△	50	40	37	250	27	-11°	50	LEM8×21	WH30L	L4B	D15AP	SP4
S40V-PDUNR/L15	▲	▲	50	40	37	400	27	-11°	50					
S40S-PDUNR/L15-3	△	△	50	40	37	250	27	-11°	50	LEM8×21	WH30L	L4	D15AP	SP4
S40V-PDUNR/L15-3	▲	▲	50	40	37	400	27	-11°	50					
※A32S- PDUNR/L15	▲	▲	40	32	31	250	22	-16°	50	LEM8×21	WH30L	L4B	D15AP	SP4
※A32S- PDUNR/L15-3	▲	△	40	32	31	250	22	-16°	50	LEM8×21	WH30L	L4	D15AP	SP4

※ Tool holders with oil hole ▲Stock available △Make-to-order

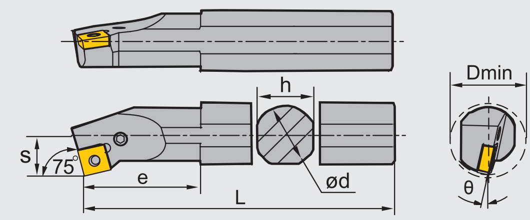
Applicable inserts

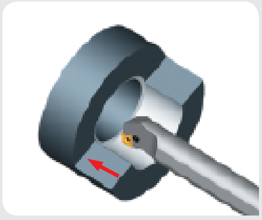
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN/PCD inserts
Inserts shape	DF A59	WGM Wiper A61	DR Double-side A63	Without chipbreaker A64	Without chipbreaker A122
	WGF Wiper A59	PM A61	DR Single-side A63		Without chipbreaker A122
	SF A60	DM A62	ER Double-side A63		Without chipbreaker A122
	EF A60	EM A62	ER Single-side A63		
	NF A60	NM A62	LR Single-side A63		
Tool holder type: □□-PDUNR/L11	DN□□1104□□	DN□□1104□□			
Tool holder type: □□-PDUNR/L15-3	DN□□1504□□	DN□□1504□□		DN□□1504□□	DN□□1504□□
Tool holder type: □□-PDUNR/L15	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□

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

PSKNR/L
Kr:75°

R-type shown





Type	Stock		Basic dimensions(mm)							Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S	θ	e					
S25Q-PSKNR/L12	△	△	32	25	23	180	17	-12°	42	LEM6×13.4A	WH25L	L4A	---	---
S25T-PSKNR/L12	▲	▲	32	25	23	300	17	-12°	42					
S32R-PSKNR/L12	△	△	44	32	30	200	22	-10°	45	LEM8×21	WH30L	L4	S12APB	SP4
S32U-PSKNR/L12	▲	▲	44	32	30	350	22	-10°	45					
S40S-PSKNR/L12	△	△	54	40	37	250	27	-10°	50					
S40V-PSKNR/L12	▲	△	54	40	37	400	27	-10°	50					
※A25R-PSKNR/L12	▲	▲	32	25	24	200	17	-12°	42	LEM6×13.4A	WH25L	L4A	---	---
※A32S-PSKNR/L12	▲	△	44	32	31	250	22	-12°	50	LEM8×21	WH30L	L4	S12APB	SP4

※ Tool holders with oil hole ▲Stock available △Make-to-order

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For roughing	PCBN/PCD inserts
Inserts shape	DF A65	PM A66	DR Double-side A68	Without chipbreaker A72	Without chipbreaker A124
	EF A65	DM A66	DR Single-side A68-69		Without chipbreaker A124
	SF A65	EM A67	ER A69		Without chipbreaker A124
		NM A67	ER Single-side A70		Without chipbreaker A124
			LR Single-side A67		
Tool holder type: □□-PSKNR/L12	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□	SN□□1204□□

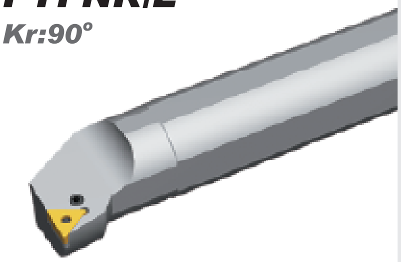
General turning

Internal turning tools

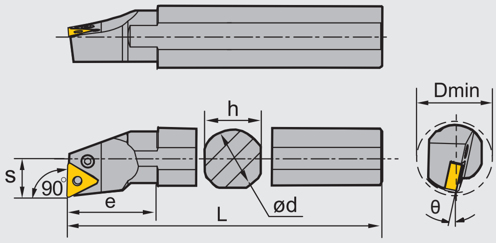
Corresponding tool holders of insert TN□□ P-type clamping

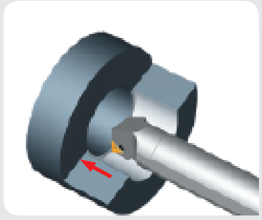
PTFNR/L

Kr:90°



R-type shown

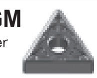
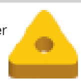
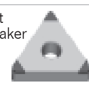
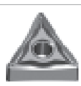
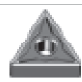




Type	Stock		Basic dimensions(mm)							Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S	θ	e					
S16M-PTFNR/L11	△	△	20	16	15	150	11	-14°	28	LEM5×9B	WH20L	L2	---	---
S16R-PTFNR/L11	▲	▲	20	16	15	200	11	-14°	28					
S20Q-PTFNR/L11	△	△	25	20	18	180	13	-12°	31					
S20S-PTFNR/L11	▲	▲	25	20	18	250	13	-12°	31					
S25Q-PTFNR/L11	△	△	32	25	23	180	17	-10°	35					
S25T-PTFNR/L11	▲	▲	32	25	23	300	17	-10°	35					
S25Q-PTFNR/L16	△	△	32	25	23	180	17	-12°	42	LEM5×12B	WH20L	L3B	---	---
S25T-PTFNR/L16	▲	▲	32	25	23	300	17	-12°	42					
S32R-PTFNR/L16	△	△	44	32	30	200	22	-10°	50	LEM6×17	WH25L	L3	T16APB	SP3
S32U-PTFNR/L16	▲	▲	44	32	30	350	22	-10°	50					
S40S-PTFNR/L16	△	△	54	40	37	250	27	-10°	55					
S40V-PTFNR/L16	▲	▲	54	40	37	400	27	-10°	55					
※A25R-PTFNR/L16	△	△	32	25	24	200	17	-12°	40					
※A32S-PTFNR/L16	▲	▲	44	32	31	250	22	-10°	50					

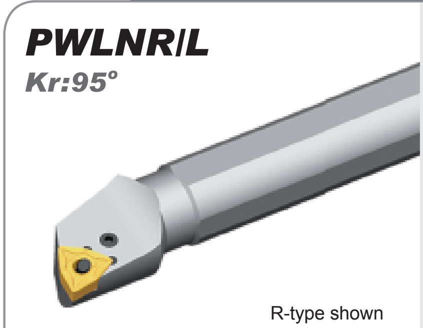
※ Tool holders with oil hole ▲Stock available △Make-to-order

Applicable inserts

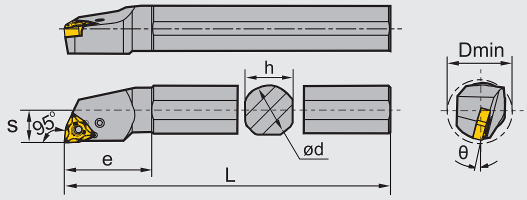
Application		For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN/PCD inserts
Inserts shape		DF  A73	WGM Wiper  A74	DR Double-side  A76	Without chipbreaker  A78	Without chipbreaker  A126
		WGF Wiper  A73	PM  A74	DR Single-side  A76		Without chipbreaker  A126
		SF  A73	DM  A75	ER Double-side  A76		Without chipbreaker  A126
		EF  A74	EM  A75	LR Single-side  A75		
Tool holder type	□□PTFNR/L11	TN□□1103□□	TN□□1103□□		TN□□1103□□	
	□□PTFNR/L16	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□	TN□□1604□□

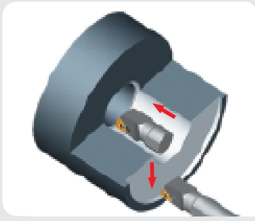
Corresponding tool holders of insert WN□□ P-type clamping

PWLNR/L
Kr:95°



R-type shown





Type	Stock R	Stock L	Dmin	ød	h	L	S	θ	e	Screw	Wrench	Lever	Shim	Shim pin
S16M-PWLNR/L06	△	△	20	16	15	150	11	-13°	25	LEM5X12B	WH20L	L3B	---	---
S16R-PWLNR/L06	△	△	20	16	15	200	11	-13°	25					
S20Q-PWLNR/L06	△	△	25	20	18	180	13	-13°	35	LEM5X12B	WH20L	L3B	---	---
S20S-PWLNR/L06	△	△	25	20	18	250	13	-13°	35					
S25Q-PWLNR/L06	△	△	32	25	23	180	17	-13°	35					
S25T-PWLNR/L06	△	△	32	25	23	300	17	-13°	35					
S20Q-PWLNR/L08	△	△	25	20	18	180	13	-13°	32	LEM6X13.4A	WH25L	L4A	---	---
S20S-PWLNR/L08	△	△	25	20	18	250	13	-13°	32					
S25Q-PWLNR/L08	△	△	32	25	23	180	17	-13°	45					
S25T-PWLNR/L08	△	△	32	25	23	300	17	-13°	45					
S32R-PWLNR/L08	△	△	40	32	30	200	22	-15°	50	LEM8X21	WH30L	L4	W08AP	SP4
S32U-PWLNR/L08	△	△	40	32	30	350	22	-15°	50					
※A25T-PWLNR/L08	△	△	32	25	23	300	17	-13°	45	LEM6X13.4A	WH25L	L4A	---	---
※A32R-PWLNR/L08	△	△	40	32	30	200	22	-15°	50	LEM8X21	WH30L	L4	W08AP	SP4

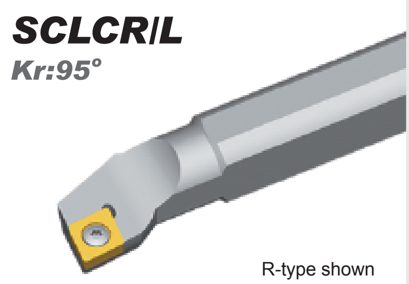
※ Tool holders with oil hole ▲Stock available △Make-to-order

Applicable inserts

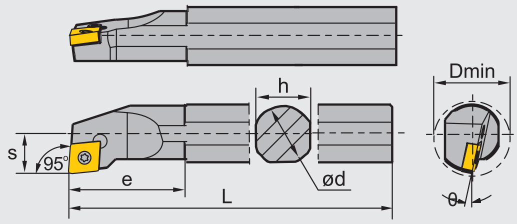
Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN/PCD inserts
Inserts shape	DF A81	WGM Wiper A82	DR Double-side A84	Without chipbreaker A84	Without chipbreaker A128
	WGF Wiper A81	DM A83			Without chipbreaker A128
	SF A81	PM A83			Without chipbreaker A128
	EF A82	EM A83			
	NF A82	NM A84			
Tool holder type □□-PWLNR/L06	WN□□0604□□	WN□□0604□□	WN□□0604□□	WN□□0604□□	
Tool holder type □□-PWLNR/L08	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□

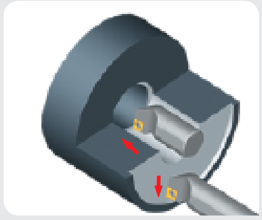
Corresponding tool holders of insert CC□□ S-type clamping

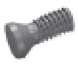
SCLCR/L
Kr:95°



R-type shown

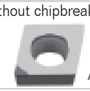
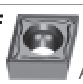
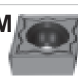
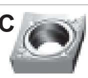
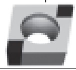




Type	Stock R	Stock L	Dmin	ød	h	L	S	θ	e	Screw	Wrench	Shim	Shim screw
													
S08K-SCLCR/L06	▲	▲	10	8	7	125	5	-15°	14				
S10M-SCLCR/L06	▲	▲	12	10	9	150	6	-13°	14	I60M2.5×5.5	WT07IP	---	---
S12M-SCLCR/L06	▲	▲	16	12	11	150	9	-10°	25				
S12M-SCLCR/L09	▲	▲	16	12	11	150	9	-10°	25				
S16M-SCLCR/L09	△	△	20	16	15	150	11	-12°	32.5				
S16R-SCLCR/L09	▲	▲	20	16	15	200	11	-12°	32.5	I60M3.5×8	WT15IP	---	---
S20Q-SCLCR/L09	△	△	25	20	18	180	13	-8°	38				
S20S-SCLCR/L09	▲	▲	25	20	18	250	13	-8°	38				
S25Q-SCLCR/L09	△	△	32	25	23	180	17	-6°	45	I60M3.5×10	WT15IP	---	---
S25T-SCLCR/L09	▲	▲	32	25	23	300	17	-6°	45				
S25Q-SCLCR/L12	△	△	32	25	23	180	17	-6°	45	I60M4×11X	WT15IP	---	---
S25T-SCLCR/L12	▲	▲	32	25	23	300	17	-6°	45	I60M4×11X	WT15IP	---	---
S32R-SCLCR/L12	△	△	40	32	30	200	22	-10°	50				
S32U-SCLCR/L12	▲	▲	40	32	30	350	22	-10°	50	I60M4×11X	WH40L WT15IP	C12BS	SM6×10XA
S40S-SCLCR/L12	△	△	50	40	37	250	27	-8°	60				
S40V-SCLCR/L12	▲	▲	50	40	37	400	27	-8°	60				
※A08F-SCLCR/L06	▲	▲	10	8	7.5	80	5	-15°	14				
※A10H-SCLCR/L06	▲	▲	12	10	9.5	100	6	-13°	14	I60M2.5×5.5	WT07IP	---	---
※A12K-SCLCR/L06	▲	▲	16	12	11.5	125	9	-10°	25				
※A12K-SCLCR/L09	▲	▲	16	12	11.5	125	9	-10°	25				
※A16M-SCLCR/L09	▲	▲	20	16	15.5	150	11	-12°	32.5	I60M3.5×8	WT15IP	---	---
※A20Q-SCLCR/L09	▲	▲	25	20	19	180	13	-8°	38				
※A25R-SCLCR/L09	▲	▲	32	25	24	200	17	-6°	45	I60M3.5×10			
※A25R-SCLCR/L12	▲	▲	32	25	24	200	17	-6°	45	I60M4×11X	WT15IP	---	---
※A32S-SCLCR/L12	▲	▲	40	32	31	250	22	-10°	50		WH40L WT15IP	C12BS	SM6×10XA

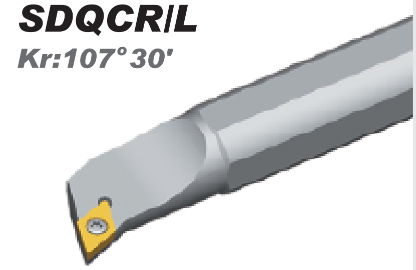
※ Tool holders with oil hole ▲Stock available △Make-to-order

Applicable inserts

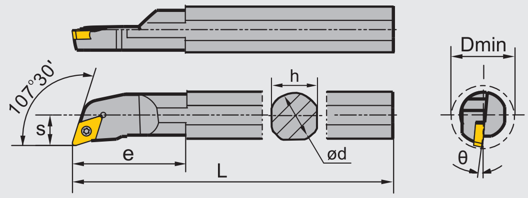
Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	USF  A87	HF  A87	HM  A88	HR  A89	LH  A89	Without chipbreaker  A90	Without chipbreaker  A130
	SF  A87	EF  A88	EM  A88		LC  A89		Without chipbreaker  A130
Tool holder type □□-SCLCR/L06	CC□□0602□□	CC□□0602□□	CC□□0602□□	CC□□0602□□	CCGX0602□□	CC□□0602□□	CC□□0602□□
Tool holder type □□-SCLCR/L09	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CCGX09T3□□	CC□□09T3□□	CC□□09T3□□
Tool holder type □□-SCLCR/L12		CC□□1204□□	CC□□1204□□	CC□□1204□□	CCGX1204□□	CC□□1204□□	CC□□1204□□

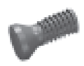
Corresponding tool holders of insert DC□□ S-type clamping

SDQCR/L
Kr:107°30'



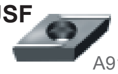
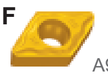
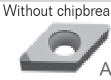
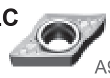
R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e			---	---
S10M-SDQCR/L07	▲	▲	13	10	9	150	7	-8°	20	I60M2.5×5.5	WT07IP	---	---
S12M-SDQCR/L07	▲	▲	16	12	11	150	9	-8°	22	I60M2.5×6.5			
S16M-SDQCR/L07	△	△	20	16	15	150	11	-6°	27				
S16R-SDQCR/L07	▲	▲	20	16	15	200	11	-6°	27				
S20Q-SDQCR/L11	△	△	25	20	18	180	13	-6°	32	I60M3.5×8	WT15IP	---	---
S20S-SDQCR/L11	▲	▲	25	20	18	250	13	-6°	32				
S25Q-SDQCR/L11	△	△	32	25	23	180	17	-6°	32	I60M3.5×10			
S25T-SDQCR/L11	▲	▲	32	25	23	300	17	-6°	32				
※A10H-SDQCR/L07	▲	△	13	10	9.5	100	7	-8°	20	I60M2.5×5.5	WT07IP	---	---
※A12K-SDQCR/L07	▲	▲	16	12	11.5	125	9	-8°	22	I60M2.5×6.5			
※A16M-SDQCR/L11	▲	△	20	16	15.5	150	11	-6°	27	I60M3.5×8	WT15IP	---	---
※A20Q-SDQCR/L11	▲	▲	25	20	19	180	13	-6°	32				
※A25R-SDQCR/L11	▲	▲	32	25	24	200	17	-6°	32	I60M3.5×10			

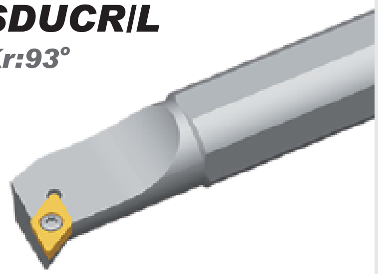
※ Tool holders with oil hole ▲Stock available △Make-to-order

Applicable inserts

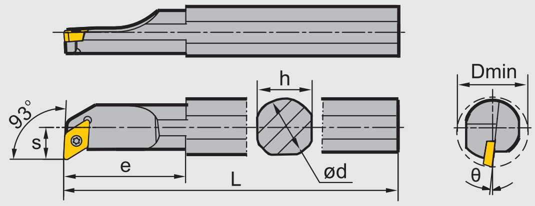
	Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
	Inserts shape	USF  A91	HF  A91	HM  A92	HR  A93	LH  A93	Without chipbreaker  A93	Without chipbreaker  A132
		SF  A91	EF  A92	EM  A92		LC  A93		Without chipbreaker  A132
Tool holder type	□□-SDQCR/L07	DC□□0702□□	DC□□0702□□	DC□□0702□□		DCGX0702□□	DC□□0702□□	DC□□0702□□
	□□-SDQCR/L11	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DCGX11T3□□	DC□□11T3□□	DC□□11T3□□

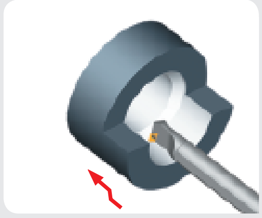
Corresponding tool holders of insert DC□□ S-type clamping

SDUCR/L
Kr:93°



R-type shown





Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e			---	---
S10M-SDUCR/L07	▲	▲	13	10	9	150	7	-8°	0	I60M2.5×5.5	WT07IP	---	---
S12M-SDUCR/L07	▲	▲	16	12	11	150	9	-8°	22	I60M2.5×6.5			
S16M-SDUCR/L07	△	△	20	16	15	150	11	-6°	27				
S16R-SDUCR/L07	▲	▲	20	16	15	200	11	-6°	27				
S20Q-SDUCR/L11	△	△	25	20	18	180	13	-6°	40	I60M3.5×8	WT15IP	---	---
S20S-SDUCR/L11	▲	▲	25	20	18	250	13	-6°	40				
S25Q-SDUCR/L11	△	△	32	25	23	180	17	-6°	46	I60M3.5×10			
S25T-SDUCR/L11	▲	▲	32	25	23	300	17	-6°	46				
※A10H-SDUCR/L07	▲	▲	13	10	9.5	100	7	-8°	0	I60M2.5×5.5	WT07IP	---	---
※A12K-SDUCR/L07	△	▲	16	12	11.5	125	9	-8°	22	I60M2.5×6.5			
※A16M-SDUCR/L07	▲	▲	20	16	15.5	150	11	-6°	27				
※A20Q-SDUCR/L11	▲	▲	25	20	19	180	13	-6°	40	I60M3.5×8	WT15IP	---	---
※A25R-SDUCR/L11	▲	▲	32	25	24	200	17	-6°	46	I60M3.5×10			

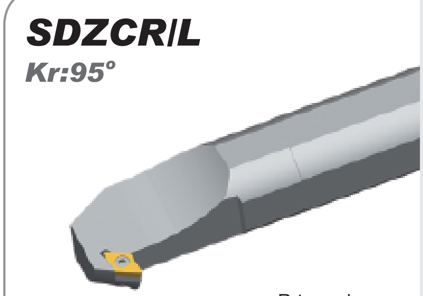
※ Tool holders with oil hole ▲Stock available △Make-to-order

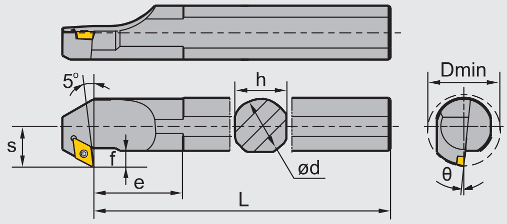
Applicable inserts

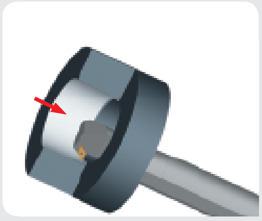
Application		For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape		USF A91	HF A91	HM A92	HR A93	LH A93	Without chipbreaker A93	Without chipbreaker A132
		SF A91	EF A92	EM A92		LC A93		Without chipbreaker A132
Tool holder type	□□-SDUCR/L07	DC□□0702□□	DC□□0702□□	DC□□0702□□		DCGX0702□□	DC□□0702□□	DC□□0702□□
	□□-SDUCR/L11	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DCGX11T3□□	DC□□11T3□□	DC□□11T3□□

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

SDZCR/L
Kr:95°


R-type shown





Type	Stock		Basic dimensions(mm)								Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S	θ	e	f				
S25Q-SDZCR/L11	△	△	32	25	23	180	17	-6°	30	6.9	I60M3.5×10	WT15IP	---	---
S25T-SDZCR/L11	▲	▲	32	25	23	300	17	-6°	30	6.9				
S32R-SDZCR/L11	△	△	40	32	30	200	22	-6°	39	8.4	I60M3.5×12	WT15IP WH35L	D11BS	SM5×8.65XA
S32U-SDZCR/L11	▲	▲	40	32	30	350	22	-6°	39	8.4				
S40S-SDZCR/L11	△	△	50	40	37	250	27	-4°	47	9.4				
S40V-SDZCR/L11	▲	▲	50	40	37	400	27	-4°	47	9.4				
※A25R-SDZCR/L11	▲	△	32	25	24	200	17	-6°	30	4.5	I60M3.5×10	WT15IP	---	---
※A32S-SDZCR/L11	△	△	40	32	31	250	22	-6°	39	6.0	I60M3.5×12	WT15IP WH35L	D11BS	SM5×8.65XA

※ Tool holders with oil hole ▲Stock available △Make-to-order

Applicable inserts

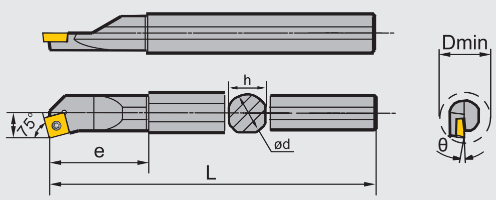
Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	USF A91	HF A91	HM A92	HR A93	LH A93	Without chipbreaker A93	Without chipbreaker A132
	SF A91	EF A92	EM A92		LC A93		Without chipbreaker A132
Tool holder type **□□-SDZCR/L11**	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DC□□11T3□□	DCGX11T3□□	DC□□11T3□□	DC□□11T3□□

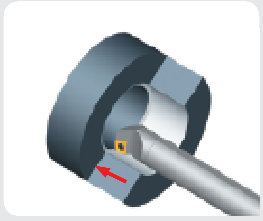
Corresponding tool holders of insert SC□□ S-type clamping

SSKCR/L

Kr:75°

R-type shown





Type	Stock R	Stock L	Dmin	ød	h	L	S	θ	e	Screw	Wrench	Shim	Shim screw
S12M- SSKCR/L09	▲	△	16	12	11	150	9	-10°	26				
S16M- SSKCR/L09	△	△	20	16	15	150	11	-11°	32.5				
S16R- SSKCR/L09	▲	▲	20	16	15	200	11	-11°	32.5	I60M3.5×8	WT15IP	---	---
S20Q- SSKCR/L09	△	△	25	20	18	180	13	-6°	34.5				
S20S- SSKCR/L09	▲	△	25	20	18	250	13	-6°	34.5				
S25Q- SSKCR/L12	△	△	32	25	23	180	17	-8°	36.3		WT15IP	---	---
S25T- SSKCR/L12	▲	▲	32	25	23	300	17	-8°	36.3	I60M4×11X			
S32R- SSKCR/L12	△	△	40	32	30	200	22	-10°	43.5		WT15IP WH40L	S12BS	SM6×10XA
S32U- SSKCR/L12	▲	△	40	32	30	350	22	-10°	43.5				
※A12K- SSKCR/L09	△	△	16	12	11	125	9	-10°	26				
※A16M- SSKCR/L09	△	△	20	16	15	150	11	-11°	32.5	I60M3.5×8	WT15IP	---	---
※A20Q- SSKCR/L09	▲	△	25	20	19	180	13	-6°	34.5				
※A25R- SSKCR/L12	△	△	32	25	24	200	17	-8°	41.3	I60M4×11X	WT15IP	---	---
※A32S- SSKCR/L12	▲	△	40	32	31	250	22	-10°	42.8		WT15IP WH40L	S12BS	SM6×10XA

Column groups: Stock (R, L); Basic dimensions(mm) (Dmin, ød, h, L, S, θ, e).

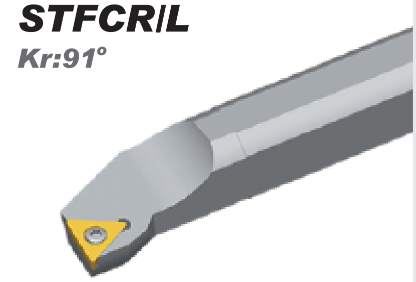
※ Tool holders with oil hole ▲Stock available △Make-to-order

Applicable inserts

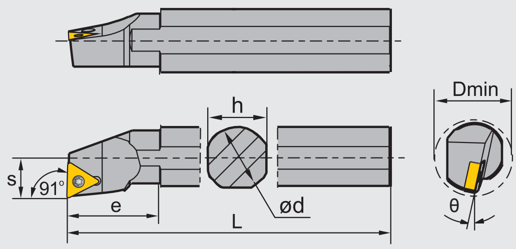
Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	HF A96	HM A96	HR A97	LH A97	Without chipbreaker A97	Without chipbreaker A134
	EF A96	EM A96		LC A97		Without chipbreaker A134
Tool holder type: □□-SSKCR/L09	SC□□09T3□□	SC□□09T3□□	SC□□09T3□□	SCGX09T3□□	SC□□09T3□□	
Tool holder type: □□-SSKCR/L12		SC□□1204□□	SC□□1204□□	SCGX1204□□	SC□□1204□□	SC□□1204□□

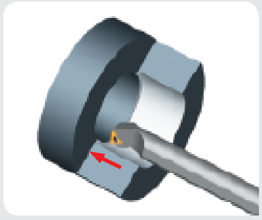
Corresponding tool holders of insert TC□□ S-type clamping

STFCR/L
Kr:91°



R-type shown





Type	Stock R	Stock L	Dmin	ød	h	L	S	θ	e	Screw	Wrench	Shim	Shim screw
S12M-STFCR/L11	▲	▲	16	12	11	150	9	-10°	30	I60M2.5×6.5	WT07IP	---	---
S16M-STFCR/L11	△	△	20	16	15	150	11	-6°	35				
S16R-STFCR/L11	▲	▲	20	16	15	200	11	-6°	35				
S20Q-STFCR/L11	△	△	25	20	18	180	13	-3°	36				
S20S-STFCR/L11	▲	▲	25	20	18	250	13	-3°	36				
S25Q-STFCR/L16	△	△	32	25	23	180	17	-6°	49	I60M3.5×10	WT15IP	---	---
S25T-STFCR/L16	▲	▲	32	25	23	300	17	-6°	49				
S32R-STFCR/L16	△	△	40	32	30	200	22	-10°	50	I60M3.5×12	WT15IP WH35L	T16BS	SM5×8.65XA
S32U-STFCR/L16	▲	▲	40	32	30	350	22	-10°	50				
S40S-STFCR/L16	△	△	50	40	37	250	27	-8°	60				
S40V-STFCR/L16	▲	▲	50	40	37	400	27	-8°	60				
※A12K-STFCR/L11	▲	△	16	12	11.5	125	9	-10°	26	I60M2.5×6.5	WT07IP	---	---
※A16M-STFCR/L11	▲	△	20	16	15.5	150	11	-6°	30				
※A20Q-STFCR/L11	▲	△	25	20	19	180	13	-3°	36				
※A25R-STFCR/L16	▲	▲	32	25	24	200	17	-6°	45	I60M3.5×10	WT15IP	---	---
※A32S-STFCR/L16	△	△	40	32	31	250	22	-10°	49	I60M3.5×12	WT15IP	T16BS	SM5×8.65XA

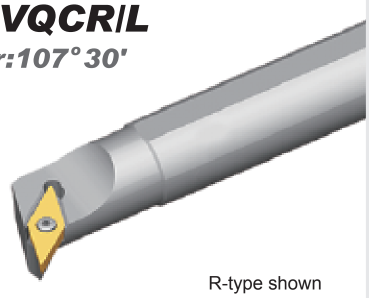
※ Tool holders with oil hole ▲Stock available △Make-to-order

Applicable inserts

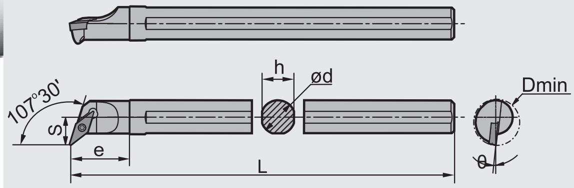
Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	HF A99	HM A101	HR A101	LH A102	Without chipbreaker A102	Without chipbreaker A135
	EF A100	EM A100		LC A101		Without chipbreaker A135
Tool holder type □□-STFCR/L11	TC□□1102□□	TC□□1102□□	TC□□1102□□	TCGX1102□□	TC□□1102□□	TC□□1102□□
Tool holder type □□-STFCR/L16	TC□□16T3□□	TC□□16T3□□	TC□□16T3□□	TCGX16T3□□	TC□□16T3□□	TC□□16T3□□

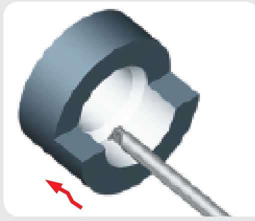
Corresponding tool holders of insert VC□□ S-type clamping

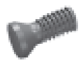
SVQCR/L
Kr:107°30'



R-type shown

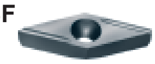




Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e			---	---
S16Q-SVQCR/L11	▲	▲	22	16	15	180	13	-6°	28	I60M2.5×6.5	WT07IP	---	---
S20R-SVQCR/L11	△	△	26	20	18	200	15	-4°	32				

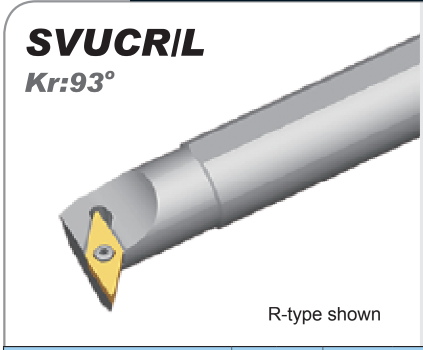
▲Stock available △Make-to-order

Applicable inserts

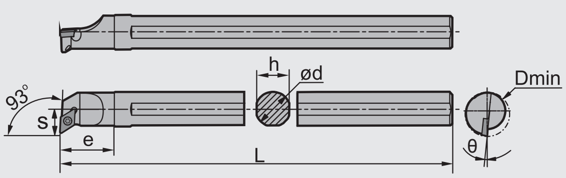
Application		For extra finishing	For finishing	For Al machining
Inserts shape		**USF**  A103	**HF**  A103	**LH**  A104
		SF  A103		**LC**  A104
Tool holder type	□□-SVQCR/L11	VC□□1103□□	VC□□1103□□	VCGX1103□□

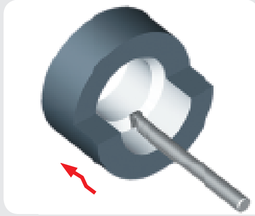
Corresponding tool holders of insert VC□□ S-type clamping

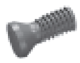
SVUCR/L
Kr:93°



R-type shown

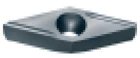




Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e			---	---
S16Q-SVUCR/L11	△	△	24	16	15	180	15	-6°	25	I60M2.5×6.5	WT07IP	---	---
S20R-SVUCR/L11	△	△	28	20	18	200	17	-4°	30				

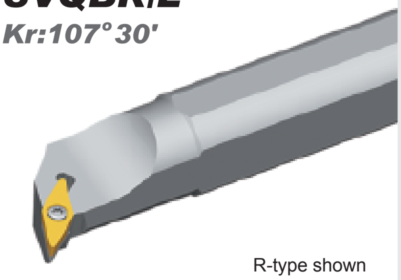
▲Stock available △Make-to-order

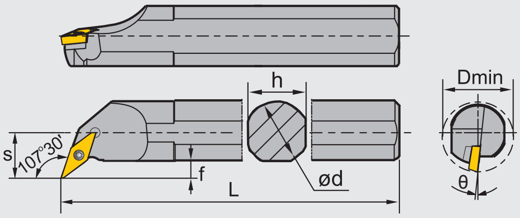
Applicable inserts

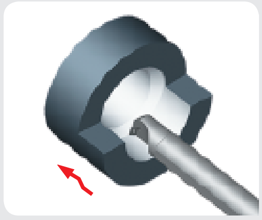
Application	For extra finishing	For finishing	For Al machining
Inserts shape	USF  A103	HF  A103	LH  A104
	SF  A103		LC  A104
Tool holder type: □□-SVUCR/L11	VC□□1103□□	VC□□1103□□	VCGX1103□□

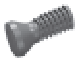
Corresponding tool holders of insert VB□□ S-type clamping

SVQBR/L
Kr:107°30'


R-type shown

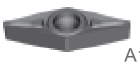
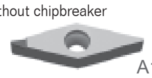




Type	Stock		Basic dimensions(mm)								Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S	θ	e	f				
S32RSVQBR/L16	△	△	40	32	30	200	22	-8°	56	8.4				
S32U-SVQBR/L16	▲	▲	40	32	30	350	22	-8°	56	8.4				
S40S-SVQBR/L16	△	△	50	40	37	250	27	-8°	64	9.4	I60M3.5×12	WT15IP WH35L	V16BS	SM5×8.65XA
S40V-SVQBR/L16	▲	▲	50	40	37	400	27	-8°	64	9.4				
※A32S- SVQBR/L16	▲	△	40	32	31	250	22	-8°	56	8.4				

※ Tool holders with oil hole ▲Stock available △Make-to-order

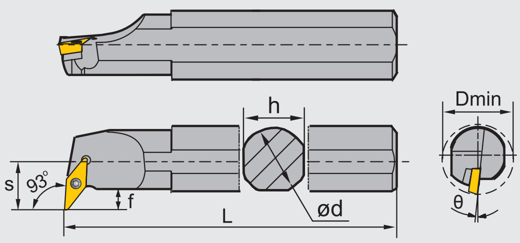
Applicable inserts

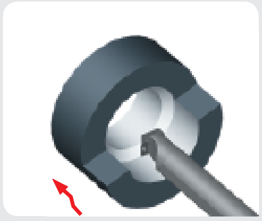
Application	For finishing	For semi-finishing	For roughing	PCBN/PCD inserts
Inserts shape	**EF**  A106	**HM**  A107	**HR**  A107	Without chipbreaker  A137
	NF  A106			Without chipbreaker  A137
Tool holder type: □□-SVQBR/L16	VB□□1604□□	VB□□1604□□	VB□□1604□□	VB□□1604□□

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

SVUBR/L
Kr:93°


R-type shown





Type	Stock		Basic dimensions(mm)								Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S	θ	e	f				
S32R-SVUBR/L16	△	△	40	32	30	200	22	-8°	49	8.4	I60M3.5×12	WT15IP WH35L	V16BS	SM5×8.65XA
S32U-SVUBR/L16	▲	▲	40	32	30	350	22	-8°	49	8.4				
S40S- SVUBR/L16	△	△	50	40	37	250	27	-8°	56.5	9.4				
S40V- SVUBR/L16	▲	▲	50	40	37	400	27	-8°	56.5	9.4				
※A32S- SVUBR/L16	▲	▲	40	32	31	250	22	-8°	49	8.4				

※ Tool holders with oil hole ▲Stock available △Make-to-order

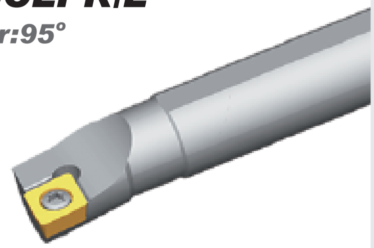
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	PCBN/PCD inserts
Inserts shape	**EF** A106	**HM** A107	**HR** A107	Without chipbreaker A137
	NF A106			Without chipbreaker A137
Tool holder type: **□□-SVUBR/L16**	VB□□1604□□	VB□□1604□□	VB□□1604□□	VB□□1604□□

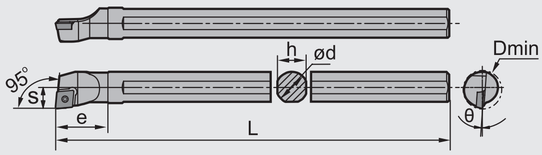
Corresponding tool holders of insert CP□□ S-type clamping

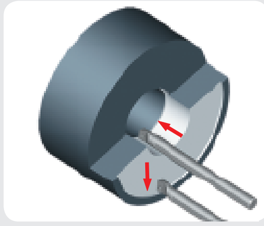
SCLPR/L

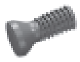
Kr:95°



R-type shown

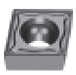




Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e			---	---
S10K-SCLPR/L06	▲	▲	12	10	9	125	6	-7°	17	I60M2.5×5.5	WT07IP	---	---
S12M-SCLPR/L06	▲	▲	16	12	11	150	8	-4°	20				
S16Q-SCLPR/L09	▲	▲	20	16	15	180	10	-4°	29	I60M3.5×8	WT15IP	---	---
S20R-SCLPR/L09	△	△	25	20	18	200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

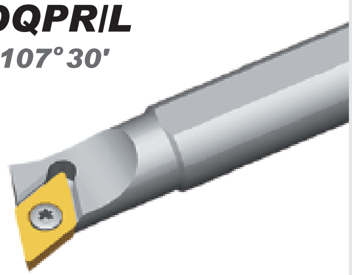
▲Stock available　　△Make-to-order

Applicable inserts

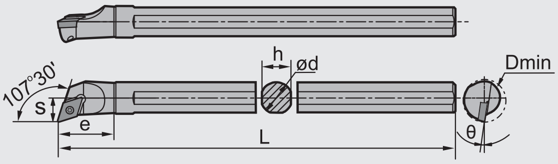
	Application	For extra finishing
	Inserts shape	**SF**  A108
Tool holder type	**□□-SCLPR/L06**	CP□□0602□□
	□□-SCLPR/L09	CP□□09T3□□

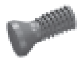
Corresponding tool holders of insert DP□□ S-type clamping

SDQPR/L
Kr:107°30'



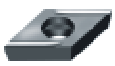
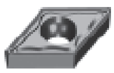
R-type shown



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			
S16Q-SDQPR/L11	▲	△	20	16	15	180	11	-6°	32	I60M3.5×8	WT15IP	---	---
S20R-SDQPR/L11	△	△	25	20	18	200	13	-6°	33				

▲Stock available △Make-to-order

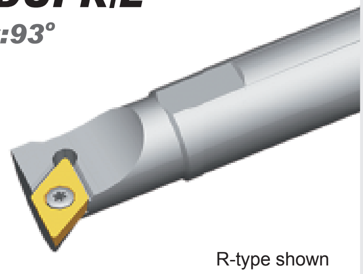
Applicable inserts

Application	For extra finishing
Inserts shape	USF  A109
	SF  A109
Tool holder type: □□-SDQPR/L07	DP□□0702□□
Tool holder type: □□-SDQPR/L11	DP□□11T3□□

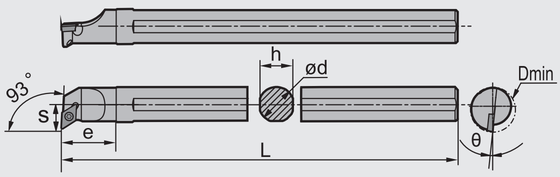
Corresponding tool holders of insert DP□□ S-type clamping

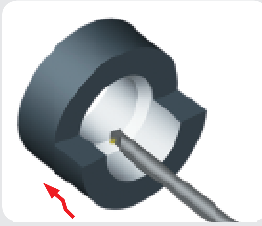
SDUPR/L

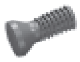
Kr:93°



R-type shown

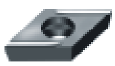
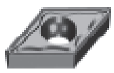




Type	Stock R	Stock L	Dmin	ød	h	L	S	θ	e	Screw	Wrench	---	---
												---	---
S10K-SDUPR/L07	▲	▲	15	10	9	125	9	-8°	18	I60M2.5×5.5	WT07IP	---	---
S12M-SDUPR/L07	▲	△	16	12	11	150	9	-8°	19	I60M2.5×5.5	WT07IP	---	---
S16Q-SDUPR/L07	△	△	20	16	15	180	11	-6°	25	I60M2.5×6.5	WT07IP	---	---

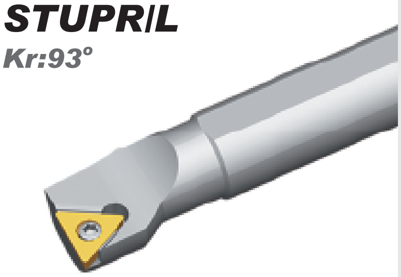
▲Stock available △Make-to-order

Applicable inserts

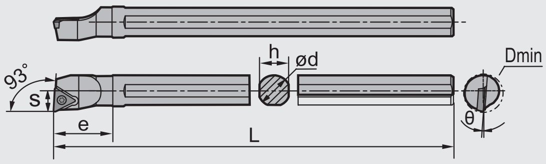
Application	For extra finishing
Inserts shape	**USF**  A109 **SF**  A109
Tool holder type: □□-SDUPR/L07	DP□□0702□□

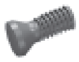
Corresponding tool holders of insert TP□□ S-type clamping

STUPR/L
Kr:93°



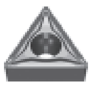
R-type shown

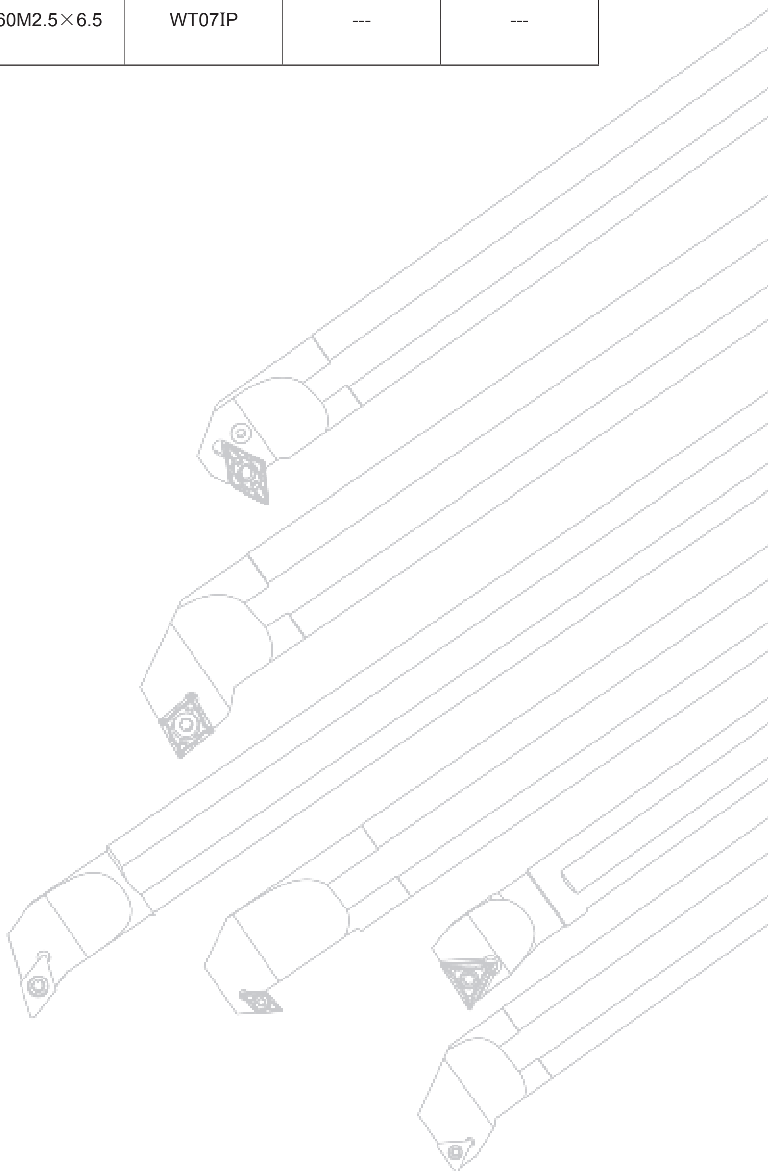


Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e			---	---
S10K-STUPR/L09	▲	△	12	10	9	125	6	-6°	20	I60M2.2×5.5	WT07IP	---	---
S12M-STUPR/L09	▲	△	16	12	11	150	8	-4°	22				
S12M-STUPR/L11	▲	△	16	12	11	150	8	-4°	25	I60M2.5×6.5	WT07IP	---	---
S16Q-STUPR/L11	▲	△	20	16	15	180	10	-3°	27				

▲Stock available △Make-to-order

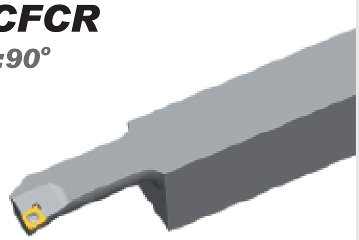
Applicable inserts

	Application	For extra finishing
	Inserts shape	SF  A111
Tool holder type	□□-STUPR/L09	TP□□0902□□
	□□-STUPR/L11	TP□□1103□□

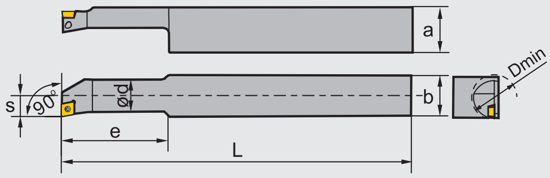


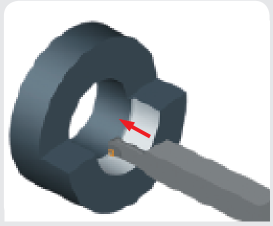
Corresponding tool holders of insert CC□□ S-type clamping

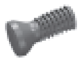
SCFCR
Kr:90°



R-type shown

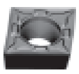
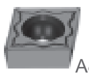
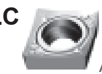




Type	Stock R	Stock L	Dmin	ød	L	s	a	b	e	Screw	Wrench	---	---
												---	---
S10M-SCFCR06S25	▲	△	13	10	150	7	27	25	30	I60M2.5×5.5	WT07IP	---	---
S12P-SCFCR06S25	▲	△	16	12	170	9	27	25	35	I60M2.5×6.5			
S16Q-SCFCR09S25	△	△	20	16	180	11	27	25	40	I60M3.5×8	WT15IP	---	---
S20R-SCFCR09S25	▲	△	25	20	200	13	27	25	45				
S25R-SCFCR12S25	▲	△	32	25	200	17	27	25	50	I60M5×13	WT20IP	---	---

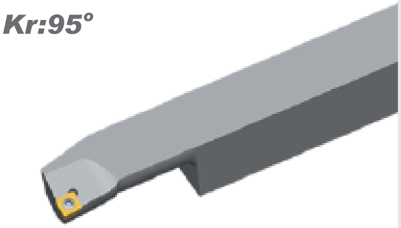
▲Stock available △Make-to-order

Applicable inserts

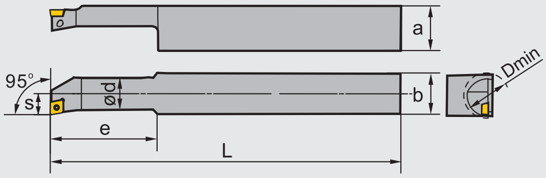
Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	USF  A87	HF  A87	HM  A88	HR  A89	LH  A89	Without chipbreaker  A90	Without chipbreaker  A130
	SF  A87	EF  A88	EM  A88		LC  A89		Without chipbreaker  A130
Tool holder type: □□-SCFCR06S25	CC□□0602□□	CC□□0602□□	CC□□0602□□	CC□□0602□□	CCGX0602□□	CC□□0602□□	CC□□0602□□
Tool holder type: □□-SCFCR09S25	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CCGX09T3□□	CC□□09T3□□	CC□□09T3□□
Tool holder type: □□-SCFCR12S25		CC□□1204□□	CC□□1204□□	CC□□1204□□	CCGX1204□□	CC□□1204□□	CC□□1204□□

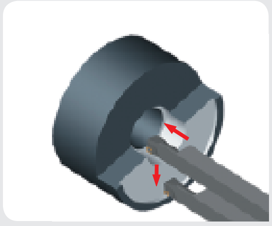
Corresponding tool holders of insert CC□□ S-type clamping

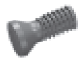
SCLCR
Kr:95°



R-type shown

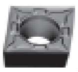
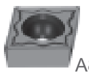


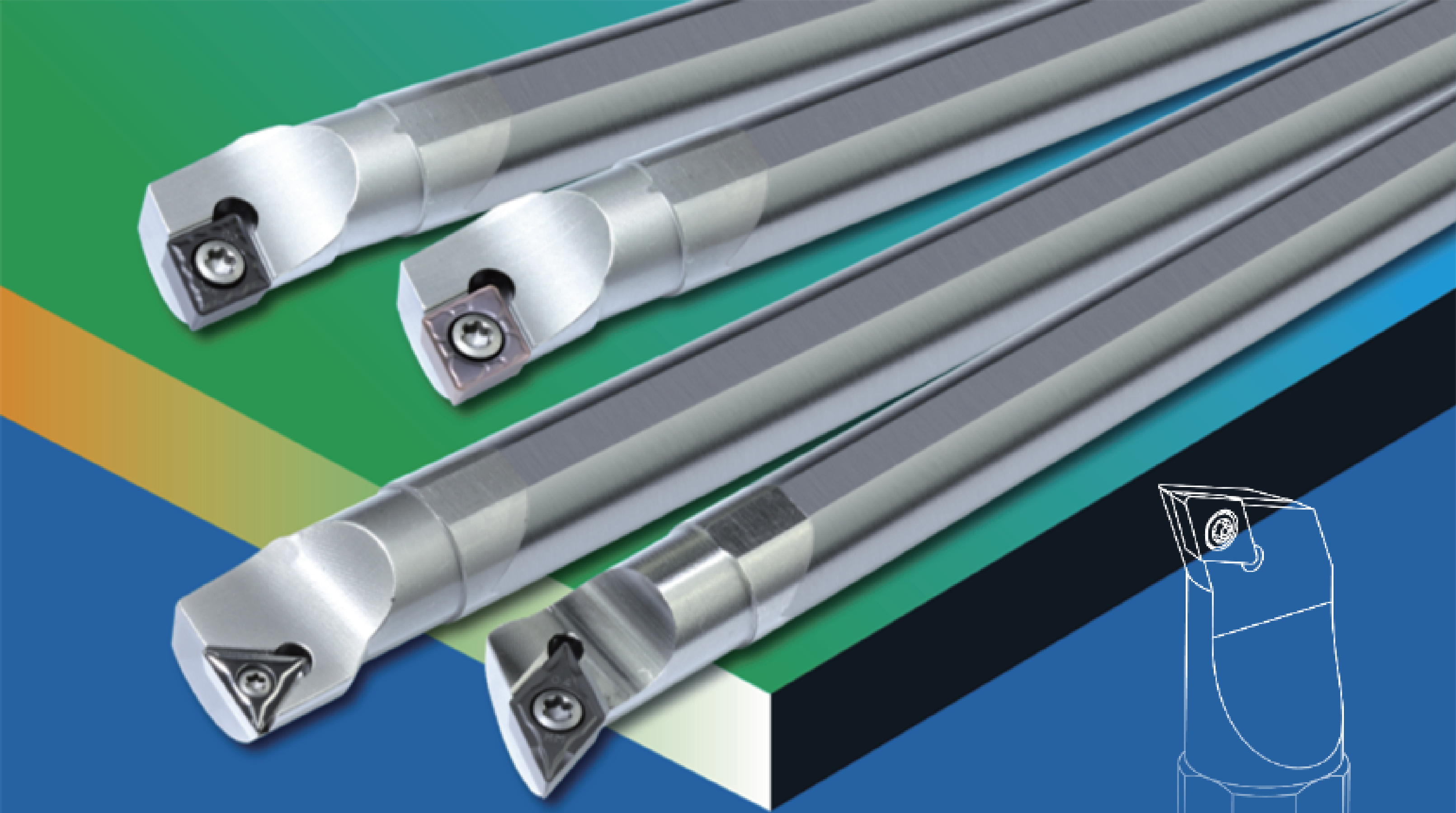


Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	L	s	a	b	e			---	---
S10M-SCLCR06S20	▲	△	13	10	150	7	22	20	30	I60M2.5×5.5	WT07IP	---	---
S12P-SCLCR06S20	▲	△	16	12	170	9	22	20	35				
S16Q-SCLCR09S20	▲	△	20	16	180	11	22	20	40	I60M3.5×8	WT15IP	---	---
S20R-SCLCR09S20	▲	△	25	20	200	13	22	20	60				

▲Stock available △Make-to-order

Applicable inserts

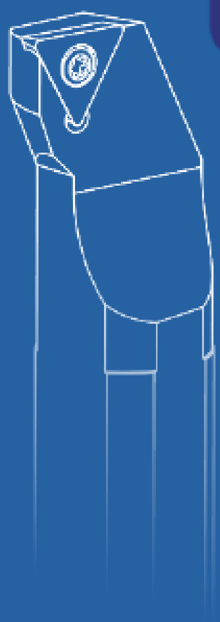
Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	USF  A87	HF  A87	HM  A88	HR  A89	LH  A89	Without chipbreaker  A90	Without chipbreaker  A130
	SF  A87	EF  A88	EM  A88		LC  A89		Without chipbreaker  A130
Tool holder type: □□-SCLCR06S20	CC□□0602□□	CC□□0602□□	CC□□0602□□	CC□□0602□□	CCGX0602□□	CC□□0602□□	CC□□0602□□
Tool holder type: □□-SCLCR09S20	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CC□□09T3□□	CCGX09T3□□	CC□□09T3□□	CC□□09T3□□



Damping tool holders for internal turning

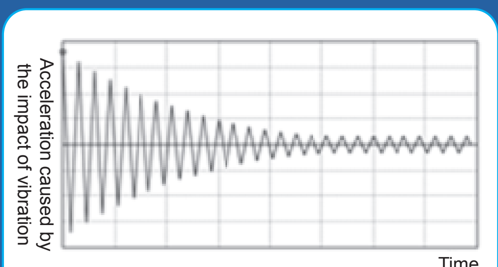
Technical features

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.

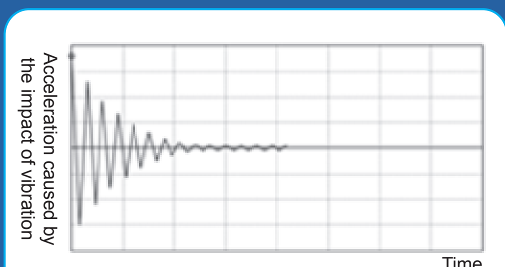


Under the same machining condition

the maximum overhang of cemented carbide tool holder can reach L≤6D, while the recommended maximum overhang of steel tool holder is L≤3D.



Steel tool holder

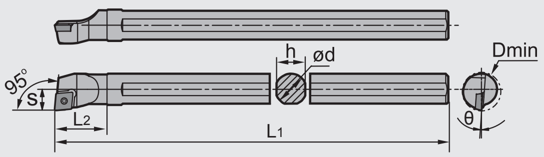


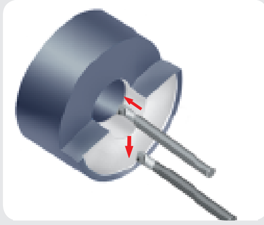
Cemented carbide tool holder

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

SCLPR/L
Kr:95°


R-type shown

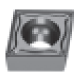




Type	Stock		Basic dimensions(mm)							Screw	Wrench		
	R	L	Dmin	ød	s	L_1	L_2	h	θ				
C10M-SCLPR/L06	▲	△	12	10	6	150	17	9	-7°	I60M2.5×5.5	WT07IP		
C12Q-SCLPR/L06	△	△	16	12	8	180	20	11	-4°				
C16R-SCLPR/L09	▲	△	20	16	10	200	29	15	-4°	I60M3.5×8	WT15IP		
C20S-SCLPR/L09	△	△	25	20	13	250	35	18	-4°				

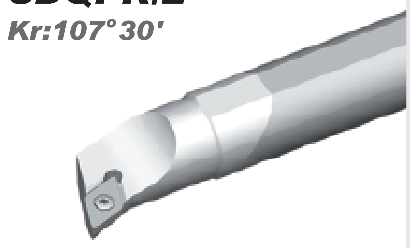
▲Stock available △Make-to-order

Applicable inserts

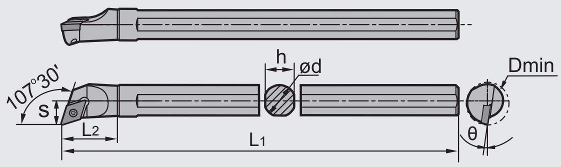
	Application	For extra finishing
	Inserts shape	SF  A108
Tool holder type	□□-SCLPR/L06	CP□□0602□□
	□□--SCLPR/L09	CP□□09T3□□

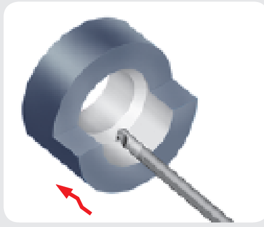
Corresponding tool holders of insert DP□□(Damping tool holder) S-type clamping

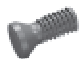
SDQPR/L
Kr:107°30'



R-type shown

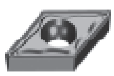




Type	Stock		Basic dimensions(mm)							Screw	Wrench		
	R	L	Dmin	ød	s	L_1	L_2	h	θ				
C10M-SDQPR/L07	▲	△	13	10	7	150	20	9	-8°	I60M2.5×5.5	WT07IP		
C12Q-SDQPR/L07	△	△	16	12	9	180	22	11	-8°				
C16R-SDQPR/L07	△	△	20	16	11	200	27	15	-6°	I60M2.5×6.5			
C16R-SDQPR/L11	△	△	20	16	11	200	32	15	-6°	I60M3.5×8	WT15IP		
C20S-SDQPR/L11	▲	△	25	20	13	250	33	18	-6°				

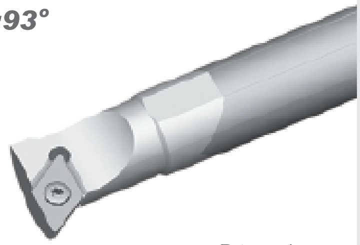
▲Stock available △Make-to-order

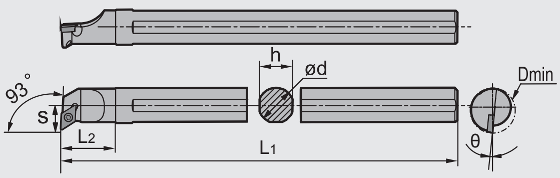
Applicable inserts

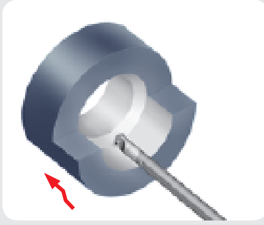
	Application	For extra finishing
	Inserts shape	SF  A109
Tool holder type	□□-SDQPR/L07	DP□□0702□□
	□□-SDQPR/L11	DP□□11T3□□

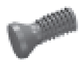
Corresponding tool holders of insert DP□□(Damping tool holder) S-type clamping

SDUPR/L
Kr:93°


R-type shown

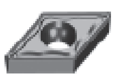




Type	Stock		Basic dimensions(mm)							Screw	Wrench		
	R	L	Dmin	ød	s	L_1	L_2	h	θ				
C10M-SDUPR/L07	△	△	15	10	9	150	18	9	-8°	I60M2.5×5.5	WT07IP		
C12Q-SDUPR/L07	△	△	16	12	9	180	19	11	-8°	I60M2.5×6.5			
C16R-SDUPR/L07	△	△	20	16	11	200	25	15	-6°				

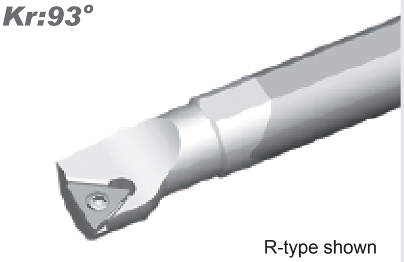
▲Stock available △Make-to-order

Applicable inserts

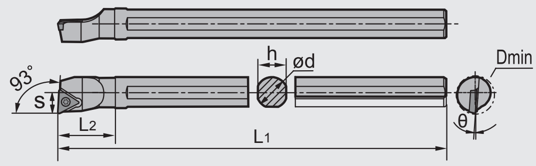
	Application	For extra finishing
	Inserts shape	SF  A109
Tool holder type	□□-SDQPR/L07	DP□□0702□□

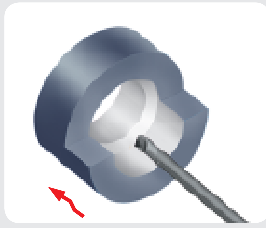
Corresponding tool holders of insert TP□□ (Damping tool holder) S-type clamping

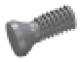
STUPR/L
Kr:93°



R-type shown

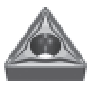


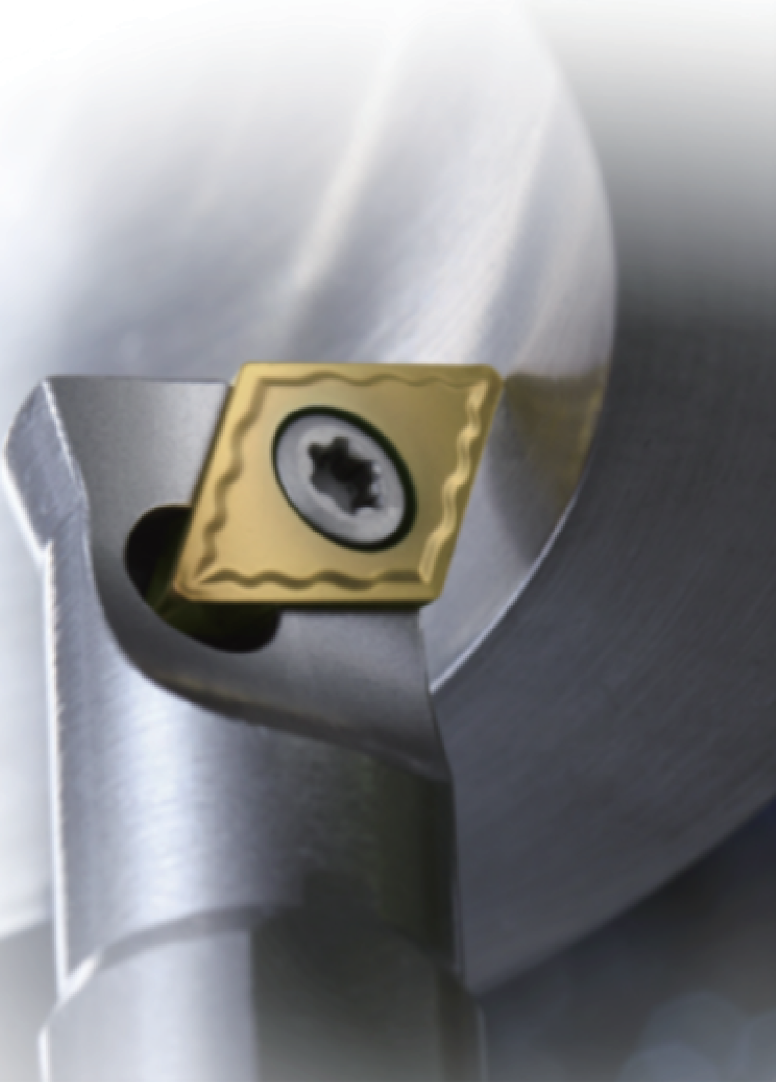


Type	Stock R	Stock L	Dmin	ød	s	L1	L2	h	θ	Screw	Wrench		
													
C10M-STUPR/L09	▲	△	12	10	6	150	20	9	-6°	I60M2.2×5.5	WT07IP		
C12Q-STUPR/L09	▲	△	16	12	8	180	22	11	-4°				
C12Q-STUPR/L11	▲	△	16	12	8	180	25	11	-4°	I60M2.5×6.5	WT07IP		
C16R-STUPR/L11	▲	△	20	16	10	250	27	15	-3°				

▲Stock available △Make-to-order

Applicable inserts

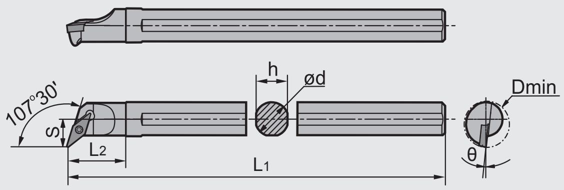
Application	For extra finishing
Inserts shape	SF  A111
Tool holder type: □□-STUPR/L09	TP□□0902□□
Tool holder type: □□-STUPR/L11	TP□□1103□□

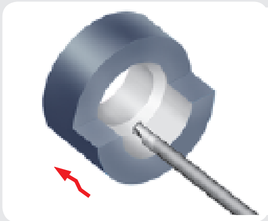


Corresponding tool holders of insert VC□□(Damping tool holder) S-type clamping

SVQCR/L
Kr:107°30'

R-type shown





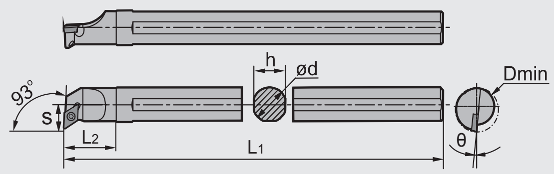
Type	Stock		Basic dimensions(mm)							Screw	Wrench		
	R	L	Dmin	ød	s	L1	L2	h	θ				
C16R-SVQCR/L11	△	△	22	16	13	200	28	15	-6°	I60M2.5×6.5	WT07IP		
C20S-SVQCR/L11	△	△	26	20	15	250	32	18	-4°				

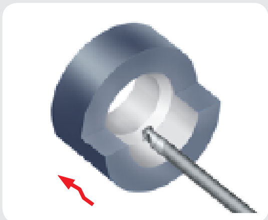
▲Stock available △Make-to-order

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

SVUCR/L
Kr:93°

R-type shown





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

▲Stock available △Make-to-order

Applicable inserts

Application		For extra finishing	For finishing	For Al machining
Inserts shape		USF A103	HF A103	LH A104
		SF A103		LC A104
Tool holder type	□□-SVQCR/L11	VC□□1103□□	VC□□1103□□	VCGX1103□□
	□□-SVUCR/L11	VC□□1103□□	VC□□1103□□	VCGX1103□□

Application information of general turning

Table of recommended cutting parameters for general turning

ISO	Materials		Hardness HB	CVD Coating YBC151	CVD Coating YBC251	CVD Coating YBC152	CVD Coating YBC252	CVD Coating YBC351	CVD Coating YBC352	PVD Coating YBG102	PVD Coating YBG202	PVD Coating YBG302	Cermet YNG151	Coated cermet YNG151C	Cemented carbide YC10	Cemented carbide YC40	Ceramic CA1000	Ceramic CN2000
		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	0.1-1.5	0.1-1.5
		Cutting speed (m/min)																
P	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	800-300	
P	Carbon steel	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	600-200	
P	Carbon steel	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	400-150	
P	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	150-180	400-150
P	Alloy steel	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	350-120	300-100
P	Alloy steel	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	300-100	250-80
P	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	300-80	
P	High alloy steel	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	400-150	350-120
P	High alloy 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	300-100	280-80
P	Cast steel	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	600-220	
P	Cast steel	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	400-150	
P	Cast steel	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	350-120	

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

Recommended table of cutting parameters for general turning

ISO	Materials		Hardness HB	CVD Coating					Cermet	Coated cermet	Ceramic			Cemented carbide	
				YBD052	YBD151	YBD102	YBD152	YBD252	YNG151	YNG151C	CA1000	CN1000	CN2000	YC10	YC40
				Feed rate (mm/rev)											
				0.1-0.4	0.1-0.6	0.1-0.4	0.1-0.5	0.1-0.8	0.1-0.4	0.1-0.4	0.1-1.5	0.1-1.5	0.1-1.5	0.1-0.3	0.1-0.4
				Cutting speed (m/min)											
K	Malleable cast iron	Ferrite	130	350-230	315-210	330-220	320-105	250-170	280-160	300-180	1200-200	800-600	800-600	150-90	105-45
K	Malleable cast iron	Pearlite	230	250-105	225-95	230-100	230-100	180-75	220-120	240-150	1000-200	700-500	700-500	120-70	80-30
K	Low cast iron		180	520-200	450-180	480-200	480-190	380-150	400-250	420-270	1200-200	800-600	700-500	170-100	130-60
K	High cast iron		260	230-120	210-110	220-115	210-100	170-90	360-240	380-260	1000-200	750-500	800-600	130-70	95-40
K	Nodular cast iron	Ferrite	160	310-150	285-140	300-150	290-140	220-110	330-190	350-210	800-200	600-450	600-450	140-80	115-45
K	Nodular cast iron	Pearlite	250	230-110	210-100	220-105	210-100	170-90	310-200	330-220	700-200	500-350	500-350	110-70	80-30

ISO	Materials		Hardness HB	PVD Coating		Cemented carbide	CBN		PCD						
				YBG102	YBG105	YD101	YCB011	YCB012	YCD011						
				Feed rate (mm/rev)											
				0.05-0.15	0.05-0.15	0.05-0.35	0.05-0.5	0.05-0.2	0.05-0.5						
				Cutting speed (m/min)											
N	Al alloy	No heat treatment	60			1750-800			<2500						
N	Al alloy	Heat treatment	100			510-250			<2500						
N	Cast aluminum alloy	No heat treatment	75			460-175			<2500						
N	Cast aluminum alloy	Heat treatment	90			300-110			<2500						
N	Copper alloy	Lead alloy	110			610-205			630-65						
N	Copper alloy	Copper, pure copper	90			310-195			630-65						
N	Copper alloy	Copper, nonleaded Copper, electrolytic copper	100			225-115			375-30						
S	Ni-base alloy	Ni-base alloy	40	90-30	90-40	70-20									
H	Other materials	Hard steel	45 HRC					350-225							
H	Other materials	Super hard steel	50~60 HRC					250-135							
H	Other materials	Chilled cast iron	500				180-120								

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≥Φ16mm)	
				Feed rate (mm/rev)	Cutting depth (mm)	Feed rate (mm/rev)	Cutting depth (mm)
P	Carbon steel, Alloy steel 45#, 42CrMo	HB180—280	For semi-finishing	0.1-**0.25**-0.4	<5.0	0.1-**0.2**-0.3	<4.0
M	Stainless steel 1Cr18Ni9Ti 0Cr18Ni9	≤HB220	For semi-finishing	0.1-**0.2**-0.3	<4.0	0.1-**0.15**-0.25	<3.0
K	Cast iron HT250	HB170—230	For semi-finishing	0.1-**0.25**-0.4	<5.0	0.1-**0.2**-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)
P	Carbon steel, Alloy steel 45#, 42CrMo	HB180-280	For finishing	0.05-**0.1**-0.15	<0.2	0.05-**0.1**-0.15	<0.2				
			For semi-finishing	0.15-**0.25**-0.35	<3.0	0.1-**0.15**-0.2	<1.5				
M	Stainless steel 1Cr18Ni9Ti 0Cr18Ni9	≤HB220	For finishing	0.05-**0.1**-0.15	<0.2	0.05-**0.1**-0.15	<0.2				
			For semi-finishing	0.15-**0.2**-0.25	<2.0	0.1-**0.15**-0.2	<1.0				
N	Al Alloy	---	For finishing	0.05-**0.1**-0.15	<0.2	0.05-**0.1**-0.15	<0.2	0.05-**0.1**-0.15	-0.15	0.05-**0.1**-0.15	<0.1
			For semi-finishing	0.05-**0.1**-0.15	<2.0	0.05-**0.1**-0.15	<1.5	0.05-**0.1**-0.15	-1.0	0.05-**0.1**-0.15	<1.0

Damping internal turning tools

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

Blue words are recommended cutting parameters.

Frequent problems of turning and solutions

Common problem		Cause \ Solutions	Tool material: Harder materials	Tool material: Tougher materials	Cutting conditions: Cutting speed	Cutting conditions: Feed rate	Cutting conditions: Cutting depth	Cutting conditions: Cutting liquid	Tool shape: Change chipbreaker of inserts	Tool shape: Rake face	Tool shape: Nose radius	Tool shape: Approach angle	Tool shape: Cutting edge strength	Tool shape: Increase precision of inserts	Tool shape: Increase rigidity of tool holder	Machine clamping system: Clamping of tool holder and workpiece	Machine clamping system: Overhang of tool holder	Machine clamping system: 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	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
Flank wear	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.	◆Select tool materials with good wear resistance. ◆Reduce cutting speed. ◆Enlarge clearance angle. ◆Increase feed rate.
Rake face wear (Crater wear)	Bad chip controlling Surface quality deterioration	Tool material is too soft. Cutting speed is too hig. Feed rate is too high.	◆Select tool materials with good wear resistance. ◆Reduce cutting speed. ◆Reduce feed rate.
Cutting edge breakage	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.	◆Select tool materials with good toughness. ◆Reduce feed rate. ◆Increase land width (if rounding changes into chamfering). ◆Enlarge tool bar size.
Breakage	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.	◆Select tool materials with good toughness. ◆Reduce feed rate. ◆Increase land width (if rounding changes into chamfering). ◆Enlarge tool bar size.
Plastic deformation (Cutting edge collapse)	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.	◆Select tool material with good wear resistance ◆Reduce cutting speed. ◆Reduce cutting depth and feed rate. ◆Select tool materials with good heat conductivity.
Built-up edge (Bonding)	Surface quality deterioration during finishing Cutting resistant force increasing	Cutting speed is low. Cutting edge is not sharp enough. Tool material is unsuitable.	◆Increase cutting speed. ◆Enlarge rake angle. ◆Select tool materials that are not easy to adhere together (coating, cermet, etc.)
Thermal cracking	Damage because of thermal circulation Normally occurring during intermittent machining	Premature edge failure due to thermal cracks. Tool material is too hard.	◆Adopt dry cutting. ◆Select tool materials with good toughness.
Chattering	burrs occurring Cutting resistant force increasing	Feed rate and cutting speed are too high.	◆Select tool materials with good wear resistance. ◆Sharpen cutting edge by enlarging rake angle. ◆Reduce cutting speed.
Flaking	Usually occurring when machining super hard materials, which is accompanied with vibration	Bonding occurs on cutting edge. Chip flow is obstructed.	◆Sharpen cutting edge by enlarging rake angle. ◆Enlarge chip pocket.

Parting and grooving tools

How to select parting and grooving tools

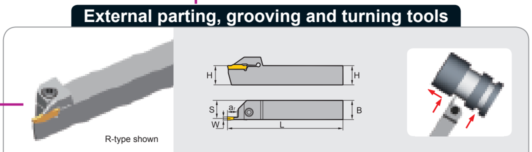
Structure of parting and grooving tools selection table

- 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

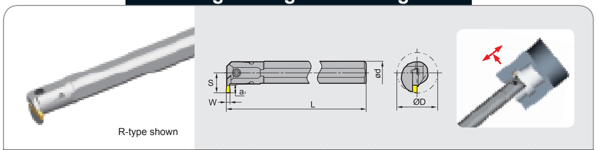
External parting, grooving and turning tools



Type		Stock R	Stock L	H×B	L	S	W	ar max	Applicable inserts	Screw	Wrench
QEED	1616R/L10	▲	▲	16×16	125	15	2.5	10	Z□ED025□□	GB70-85-M5×20	WH40L
	1616R/L17	▲	▲	16×16	125	15	2.5	17	Z□ED025□□		
	2020R/L10	▲	▲	20×20	125	19	2.5	10	Z□ED025□□	GB70-85-M6×20	WH50L
	2020R/L17	▲	▲	20×20	125	19	2.5	17	Z□ED025□□		
	2525R/L10	▲	▲	25×25	150	24	2.5	10	Z□ED025□□		
	2525R/L17	▲	▲	25×25	150	24	2.5	17	Z□ED025□□		
QEFD	1616R/L10	▲	▲	16×16	125	14.8	3	10	Z□FD03□□	GB70-85-M5×20	WH40L
	1616R/L17	▲	▲	16×16	125	14.8	3	17	Z□FD03□□		
	2020R/L10	▲	▲	20×20	125	18.8	3	10	Z□FD03□□	GB70-85-M6×20	WH50L
	2020R/L17	▲	▲	20×20	125	18.8	3	17	Z□FD03□□		
	2525R/L10	▲	▲	25×25	150	23.8	3	10	Z□FD03□□		
	2525R/L17	▲	▲	25×25	150	23.8	3	17	Z□FD03□□		
QEGD	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□□		
	2525R/L22	▲	▲	25×25	150	23.5	4	22	Z□GD04□□		
	3232R/L13	▲	▲	32×32	170	30.5	4	13	Z□GD04□□		
	3232R/L22	▲	▲	32×32	170	30.5	4	22	Z□GD04□□		
QEHD	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□□		
QEHS	2525N30	▲	▲	25×25	150	12.5	5	30	Z□HS05□□		
QEHD	3232R/L13	▲	▲	32×32	170	30	5	13	Z□HD05□□		
	3232R/L22	▲	▲	32×32	170	30	5	22	Z□HD05□□		
QEHS	3232N30	▲	▲	32×32	170	16	5	30	Z□HS05□□		
QEKD	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□□		
QEKS	2525N30	▲	▲	25×25	150	12.5	6	30	Z□KS06□□		
QEKD	3232R/L13	▲	▲	32×32	170	29.6	6	13	Z□KD06□□		
	3232R/L22	▲	▲	32×32	170	29.6	6	22	Z□KD06□□		
QEKS	3232N30	▲	▲	32×32	170	16	6	30	Z□KS06□□		
QELD	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

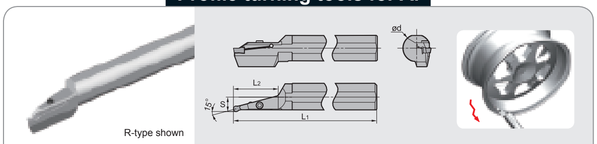
Internal grooving and turning tools



Type	Stock R	Stock L	ød	L	S	W	ar max	ØDmin	Applicable inserts	Screw	Wrench
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		GB70-85-M5×20	
C20Q-QFDR/L05-27	▲	▲	20	180	15.2	3	5	27	ZTFD03□□ ZRFD03□□	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	
C25R-QGDR/L08-35	▲	▲	25	200	21.5	4	8	35	ZTGD04□□ ZRGD04□□	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		GB70-85-M6×20	
C25R-QHDR/L08-35	▲	▲	25	200	21.5	5	8	35	ZTHD05□□ ZRHD05□□	GB70-85-M5×16	WH40L
C32S-QHDR/L11-44	▲	▲	32	250	27.5	5	11	44		GB70-85-M6×20	WH50L
C40T-QHDR/L13-54	▲	▲	40	300	33.5	5	13	54		GB70-85-M6×20	
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		GB70-85-M6×20	

▲Stock available　△Make-to-order

Profile turning tools for Al



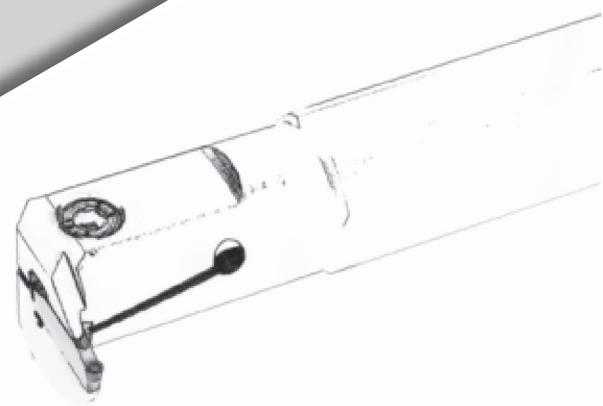
Type	Stock R	Stock L	ØD (Minimum machining diameter)	ød	S	L_1	L_2	Applicable inserts	Screw	Wrench
C40X-QLDR/L65-15A	▲	▲	160	40	21	320	65	ZRLD08-LH	GB70-85-M6×20	WH50L
C40X-QLDR/L80-15A	▲	△	160	40	21	320	80	ZRLD08-LH		
C40X-QKDR/L60-15A	△	△	160	40	20	320	60	ZRKD06-LH		
C40X-QKDR/L75-15A	△	△	160	40	20	320	75	ZRKD06-LH		

▲Stock available　△Make-to-order

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

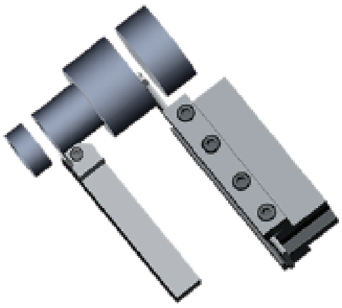
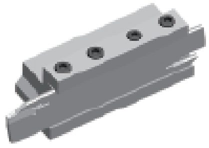
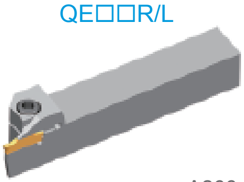
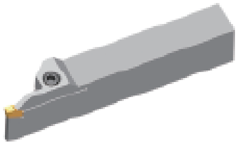
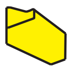
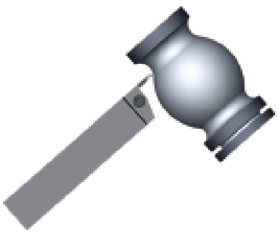
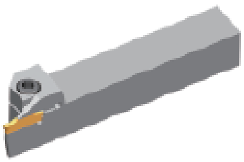
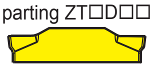
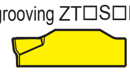
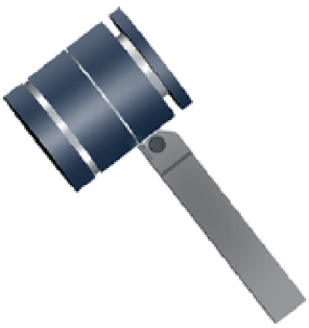
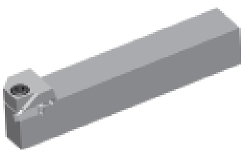
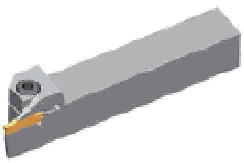
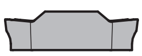
Indicating the minimum machining diameter
The minimum machining diameter is very important for internal machining.

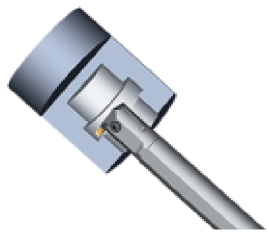
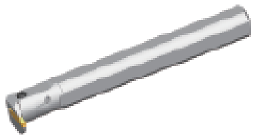
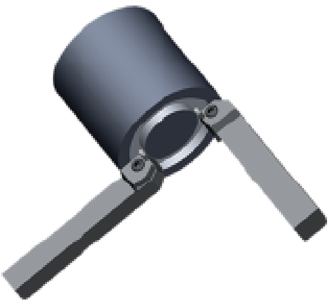
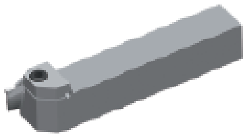
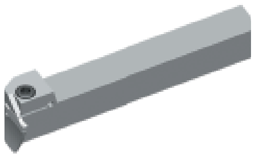
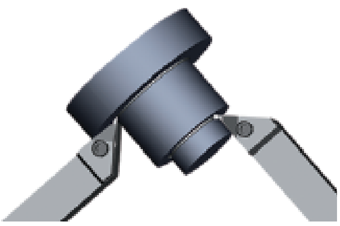
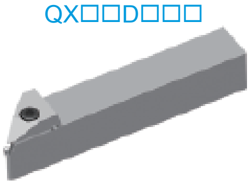
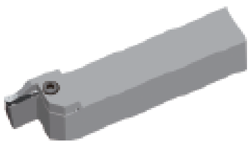
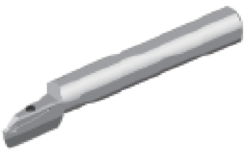
TURNING



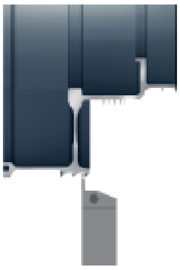
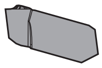
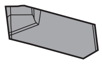
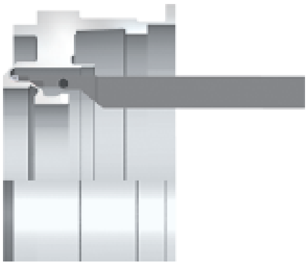
Parting and grooving tools

Parting and grooving tools overview

Machining application	Machining type		Applicable tools	Corresponding inserts	Tool features and parameters
External machining	Parting		Little squirrel series QZ□□+QE□□  A269	Parting inserts ZP□S□□ 	● Assemble structure of parting blade and holder; good rigidity; adjustable parting range ● The maximum parting diameter is 120mm.
			Little squirrel series QE□□R/L  A266	ZP□D□□  ZP□S□ 	● Inserts have three-dimensional chipbreaker with low cutting force and good performance on chip-breaking. ● The maximum parting diameter is 60mm.
			Supplementary series QZQ□□R/L  A280	ZQMX□□ 	● Cutting edge strength is suitable for bad machining conditions. ● The maximum parting diameter is 70mm.
	Grooving and turning		Little squirrel series QE□□R/L  A266	Double cutting edges for parting ZT□D□□  Profile turning ZR□D□□  Single cutting edge for deep grooving ZT□S□□ 	● A single tool with multiple applications such as grooving, parting and profile turning, reducing tools categories needed. ● A multifunctional tool when used with grooving inserts. Suitable for profile machining. ● The maximum slot depth machinable is 30mm.
	Precise grooving		Little squirrel series QECD  A267	Precise grooving ZT□D□□-EG  Edge width1.2~2.4mm	● Grinded insert used for precise grooving ● Edge width can be anything between 1.0-6.5mm, customized according to users' needs. ● ZT□□D□□-EG inserts: When edge width is between 1.2-2.4mm, the maximum cutting depth is 2.5mm. When edge width is above 2.4-6.5mm, the maximum cutting depth is 22mm.
			Little squirrel series QE□□R/L  A266	Precise grooving ZT□D□□-EG  Edge width12.4~6.5mm	

Machining application	Machining type		Applicable tools	Corresponding inserts	Tool features and parameters
Internal machining	Grooving and turning		Little squirrel series C□□-Q□□R/L□  A278	Grooving, Turning ZT□D□□  Profile turning ZR□D□□ 	● By using inserts for grooving and profiling, one tool can be versatile, reducing the tool categories needed. ● The maximum slot depth machinable is 13mm. ● The minimum machining diameter is 27mm.
End surface machining	Grooving and turning		Little squirrel series QF□□□□H  A270-A275	Grooving, Turning ZT□D□□  Profile turning ZR□D□□ 	● By using inserts for grooving and profiling, one tool can be versatile, reducing the tool categories needed. ● Grooving diameter is 48-400mm. ● Grooving depth is 10-30mm.
			Little squirrel series QF□□□□L  A276-A277	Grooving, Turning ZT□D□□  Profile turning ZR□D□□ 	● 90°holder, top clamping. ● By using inserts for grooving and profiling, one tool can be versatile, reducing the tool categories needed. ● Grooving diameter is 48～400mm. ● Grooving depth is 10～30mm.
recess machining	Recess machining		Little squirrel series QX□□D□□□  A267	Grooving, Turning ZT□D□□  Profile turning ZR□D□□ 	● The unique tool for recess machining. ● Complete range of specifications, able to achieve various recess machining.
Al profiling	External machining		Little squirrel series QE□□R/L  A266	Little squirrel series ZR□□-LH 	● The unique tool for profiling of Al material. ● Cutting edge is designed to combine sharpness and strength, suitable for continuous and intermittent turning. ● Used for external, surface and inner wall machining of Al wheel hub.
	Inner wall and surface machining		Little squirrel series C40X□□  A278		

Parting and grooving tools overview

Machining application	Machining type		Applicable tools	Corresponding inserts	Tool features and parameters
Tools for aviation and aerospace industries	External machining		Little squirrel series QE☐S☐☐N  A268	Little squirrel series ZIGQ☐☐  Little squirrel series ZIMF☐☐ 	● V-type locating, top clamping, precise locating, safe clamping. ● 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.
	Non-standard Tools		Non-standard tools to match workpiece	Select and manufacture as required	● Tailor made solutions for machining various parts to satisfy your requirements.

New product for turning

Little squirrel series

– MM linear edge grooving insert

High strength cutting edge suitable for medium to high feed, mainly applied for flat bottom surfaces with high surface requirement.

Little squirrel series

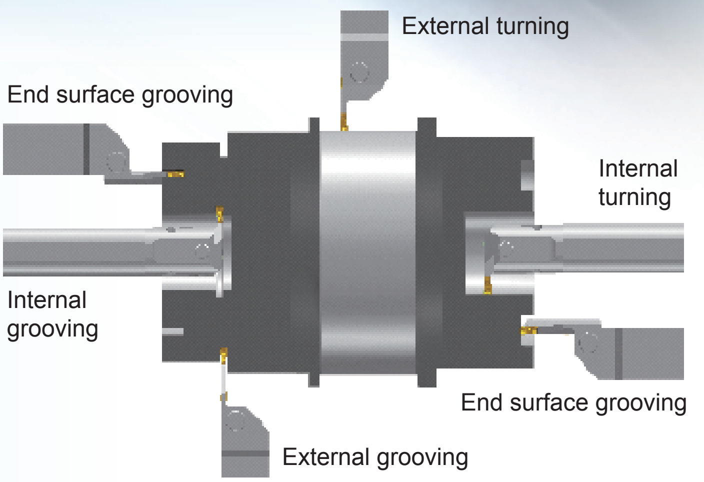
-MG Chipbreaker

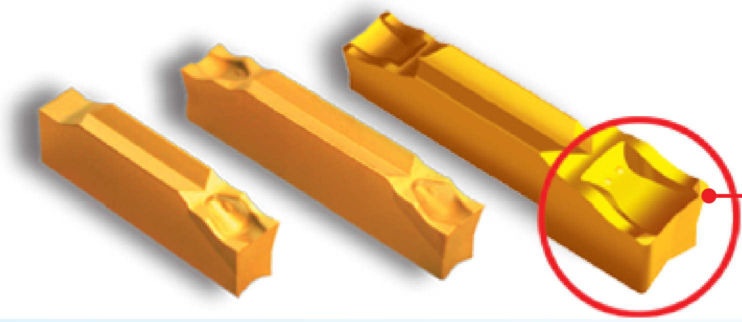
Customized -MG chipbreaker series

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.

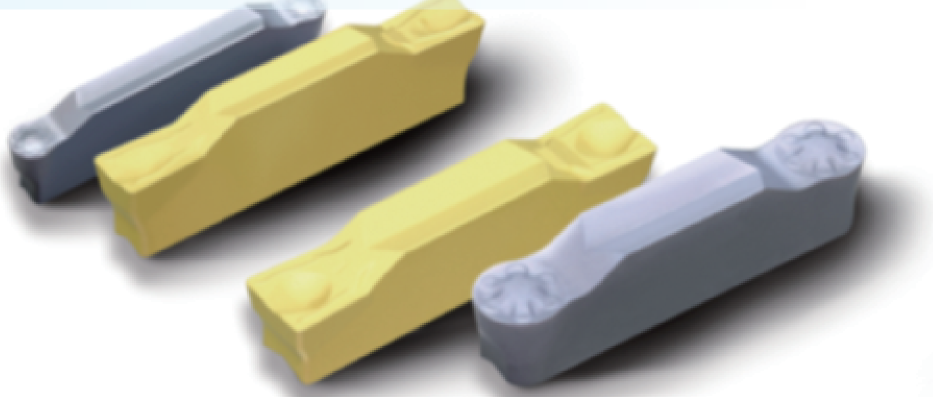




The cutting force is reduced by 20%, and the vibration is diminished.

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

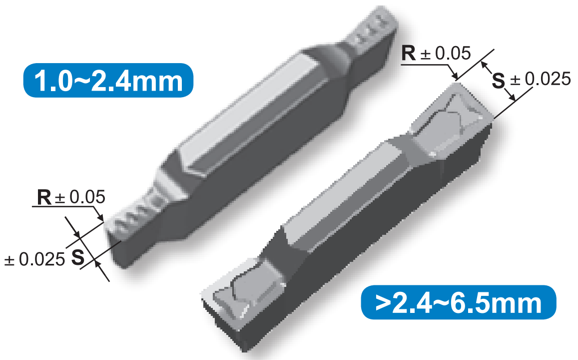
Precision grooving and profile turning inserts

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 ±0.025.
Inserts can also be mounted on the corresponding specifications of original tool series.

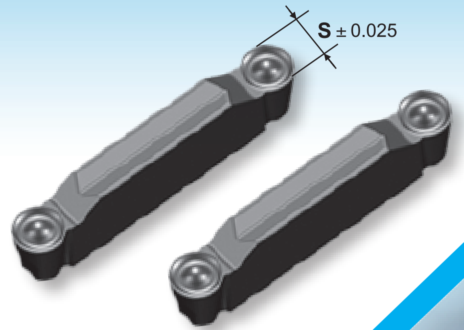
-EG Precision grooving inserts

The edge width can be anything between 1.0-6.5MM according to your requirements.



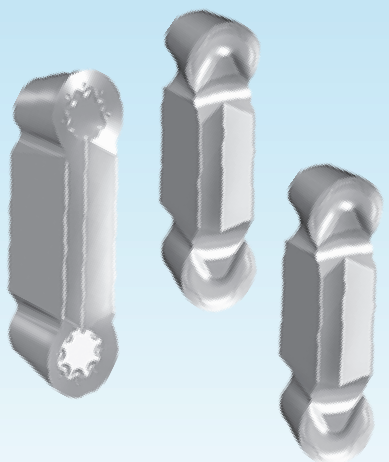
The width of the Little Squirrel series precise grooving inserts can be anything between 1.0mm to 6.5mm, which means products with any edge width or nose radius can be provided according to customers' requirements. The inserts are mainly used for precise grooving, such as sealing slot and locating slot, 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.

Little squirrel series parting, grooving and profiling inserts code key

ZP G D 04 04 - M G

Insert applications

- **ZP** Parting
- **ZT** Grooving and turning
- **ZR** Profiling

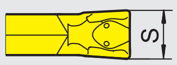
Code of locating slot

Code of locating slot	E	F	G	H	K	L
Corresponding edge width of inserts	2.5	3.0	4.0	5.0	6.0	8.0

Code of cutting edge number

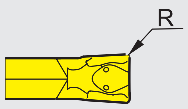
- **S** Single cutting edge
- **D** Double cutting edge

Cutting edge width



025=2.5mm
03=3.0mm
04=4.0mm
05=5.0mm
06=6.0mm
08=8.0mm

Nose radius



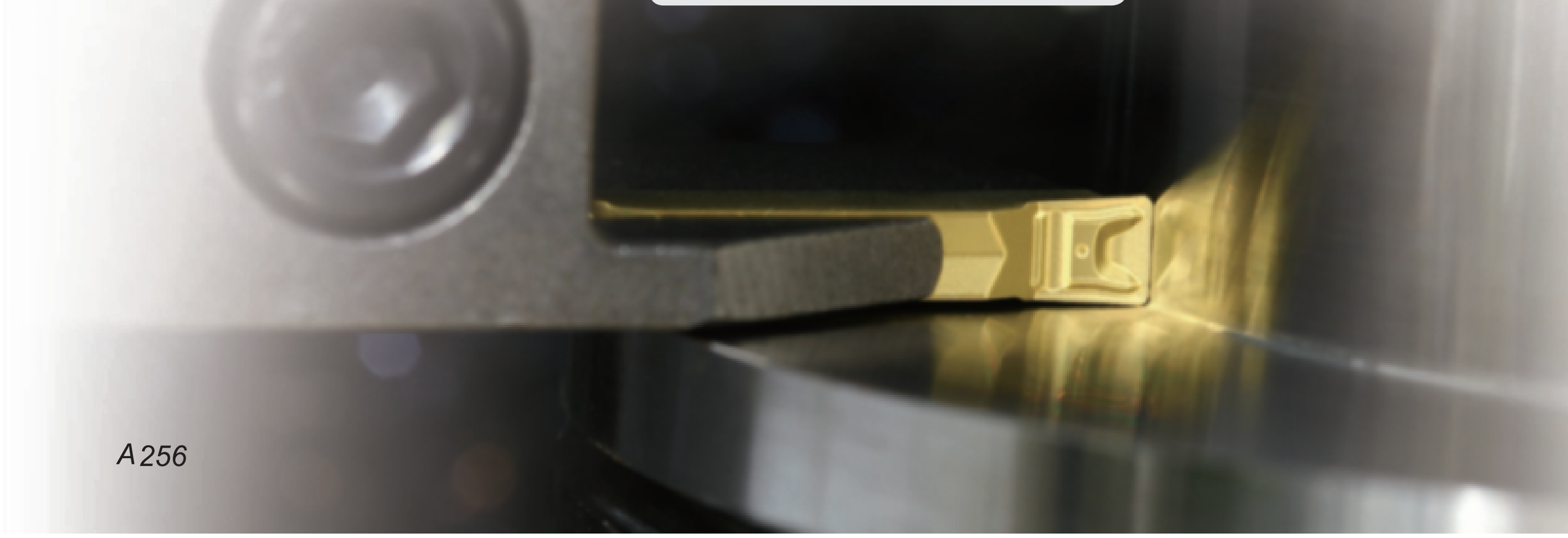
02=0.2mm
03=0.3mm
04=0.4mm
08=0.8mm

Tolerance class

- **M** M-level tolerance
- **E** E-level tolerance

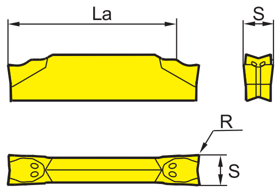
Chipbreaker code

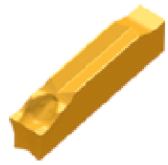
- **G** Curve edges universal chipbreaker, suitable for machining various materials
- **M** linear edges universal chipbreaker, suitable for machining various materials
- **F** Special chipbreaker



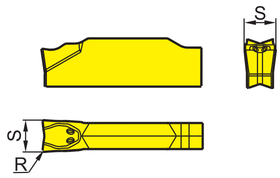
Parting inserts

Double edges





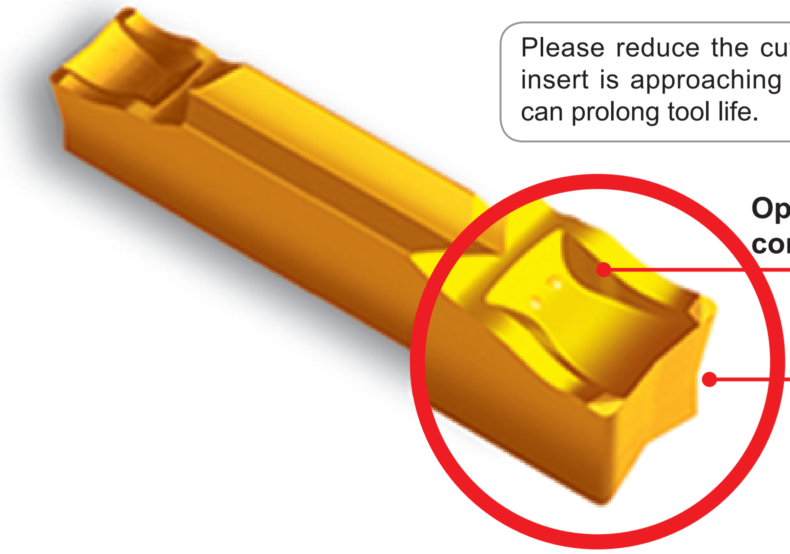
Single edge



Type		Basic dimensions(mm)			Grade				
					CVD Coating		PVD Coating		Cemented carbide
		$S^{+0.1}_{0}$	R±0.1	Cutting depth La max	YBC151	YBC251	YBG205	YBG302	YD101
Double edges	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			○	★	○	

The single-edge insert is only mounted on parting blade.

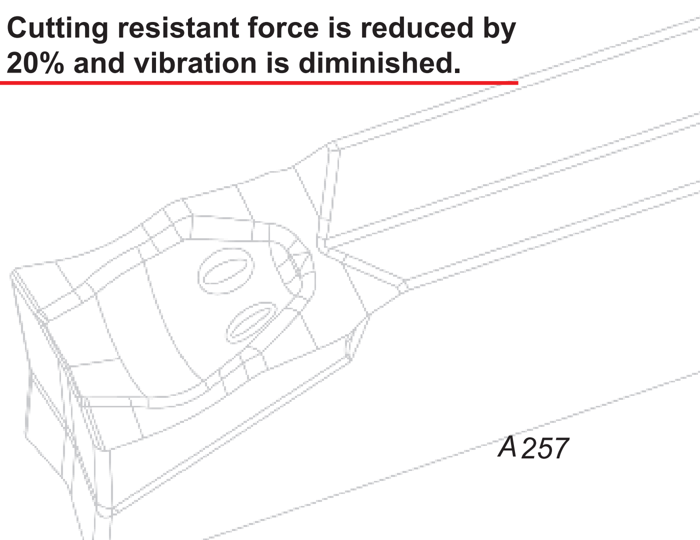
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



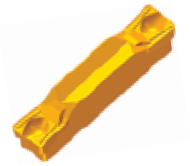
Please reduce the cutting speed by 30% when the insert is approaching the centre of workpiece. This can prolong tool life.

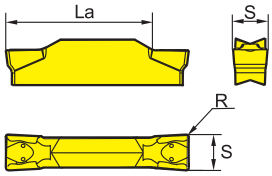
Optimal chipbreaker structure can well control chip flow and curling.

Cutting resistant force is reduced by 20% and vibration is diminished.

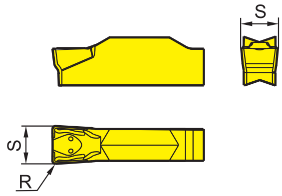


Grooving and turning inserts


Double edges

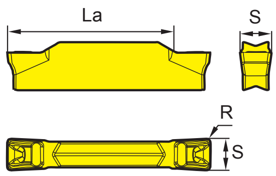



Single edge



	Type	Basic dimensions(mm)			Grade					
					CVD Coating		PVD Coating			Cemented carbide
		$S^{+0.1}_{0}$	R±0.10	Cutting depth La max	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			○	○	★	○	

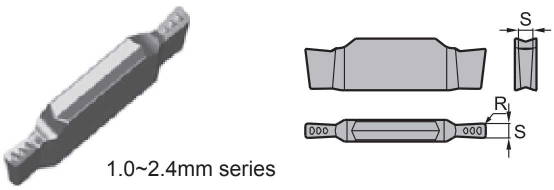
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



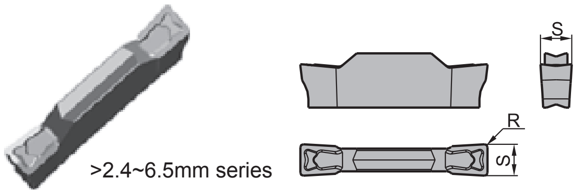
	Type	Basic dimensions(mm)			Grade					
					CVD Coating		PVD Coating			Cemented carbide
		S	R±0.1	Cutting depth La max	YBC151	YBC251	YBG202	YBG205	YBG302	YD101
Double edges	ZTED02503-MM	2.5±0.03	0.3	17	○	○	●	★	○	
	ZTFD0303-MM	3.0±0.03	0.3	17	○	○	●	★	○	
	ZTGD0404-MM	4.0±0.04	0.4	22	○	○	●	★	○	
	ZTHD0504-MM	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

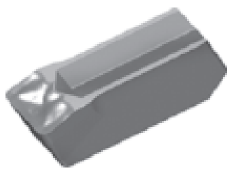
Type		Basic dimensions(mm)			Grade					
					CVD Coating		PVD Coating			Cemented carbide
		S±0.025	R(2)±0.05	Cutting depth La max	YBC151	YBC251	YBG202	YBG205	YBG302	YD101
Double edges	**ZTCD□□□□□(1)-EG**	1.0~1.6	See note. (2)	2.6	○	○	○	★	○	
		1.6~2.4		3.4						
	ZTED□□□□□-EG	2.4~3.0		17	○	○	○	★	○	
	ZTFD□□□□□-EG	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	○	○	○	★	○	

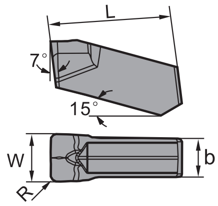
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

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≤R≤0.5 on request.

Single-edge grooving and turning inserts for machining (from semi-finishing to roughing) materials hard to be machined

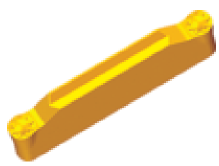


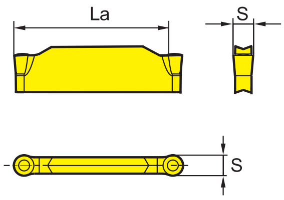


Type	Basic dimensions(mm)				Grade			
					PVD Coating			Cemented carbide
	W±0.05	R±0.1	b	L	YBG102	YBG202	YBG205	YD101
ZIMF304N-NM	3	0.4	2.4	15.3	★	○	★	○
ZIMF406N-NM	4	0.6	3.2	15.3	★	○	★	○
ZIMF506N-NM	5	0.6	4	15.3	★	○	★	○
ZIMF608N-NM	6	0.8	4	15.3	★	○	★	○

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

Profile turning inserts

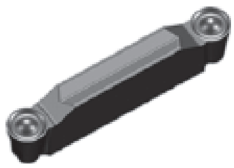


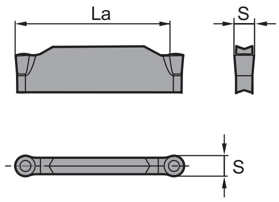


	Type	Basic dimensions(mm)		Grade					
				CVD Coating		PVD Coating			Cemented carbide
		$S^{+0.1}_{0}$	Cutting depth La max	YBC151	YBC251	YBG202	YBG205	YBG302	YD101
Double edges	ZRED025-MG	2.5	17.5		○	●	★	★	
	ZRFD03-MG	3.0	17		○	●	★	★	
	ZRGD04-MG	4.0	21		○	●	★	★	
	ZRHD05-MG	5.0	20		○	○	★	★	
	ZRKD06-MG	6.0	19		○	●	★	★	

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

Precision profiling inserts

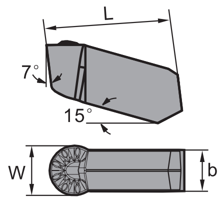




Type		Basic dimensions(mm)		Grade				
				CVD Coating		PVD Coating		Cemented carbide
		S±0.025	Cutting depth Lamax	YBC151	YBC251	YBG202	YBG302	YD101
Double edges	ZRFD03- EG	3.0	17		○		○	
	ZRGD04- EG	4.0	21		○		○	
	ZRHD05-EG	5.0	20		○		○	
	ZRKD06-EG	6.0	19		○		○	

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

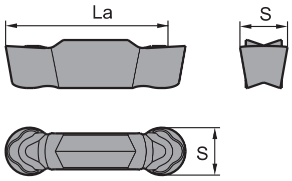
Single-edge inserts for machining materials hard to be machined



Type	Basic dimensions(mm)			Grade		
				PVD Coating		Cemented carbide
	W±0.025	b	L	YBG102	YBG202	YD101
ZIGQ3N-NM	3	2.4	15.3	★	○	○
ZIGQ4N-NM	4	3.2	15.3	★	○	○
ZIGQ5N-NM	5	4	15.3	★	○	○
ZIGQ6N-NM	6	5	15.3	★	○	○

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

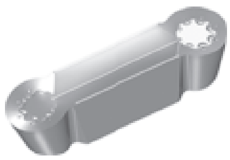
Profiling inserts for Al

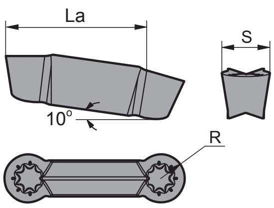


Type	Basic dimensions(mm)		Grade
	$S\pm0.02$	Cutting depth La max	Cemented carbide
			YD101
ZRKD06- LH	6.0	19	★
ZRLD08-LH	8.0	22	★

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

Profiling inserts for Al

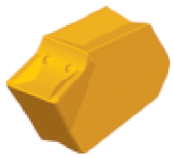


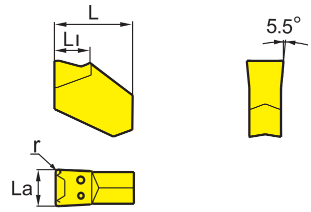


Type	Basic dimensions(mm)			Grade
	$S\pm0.02$	R	Cutting depth La max	Cemented carbide
				YD101
ZILD08-LC	8.0	4.0	22	●

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

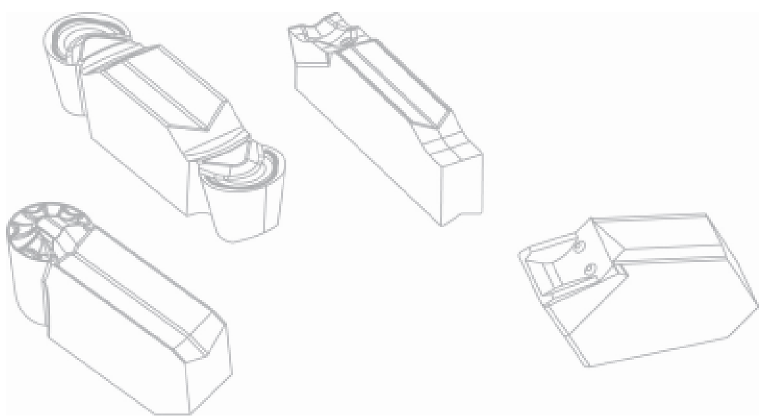
ZQMX series





Type	Basic dimensions(mm)				Grade			
					CVD Coating	Cemented carbide		
	L1	La	r	L	YBC251	YC10	YC40	YD201
ZQMX3N11-1E	4.4	3.125	0.3	11	●	●	●	●
ZQMX4N11-1E	4.95	4.125	0.3	11	●		●	●
ZQMX5N11-1E	5	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



Little squirrel series parting and grooving tools code key

● **External and surface turning**

Q E G D - 2525 R 13 / 32 N

Q F G D 2525 R 22 S - 130 H

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

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

QZ S 32 32

- **QZ** — Coder of holder for parting blade
- **S** — Code of edge number for corresponding inserts
  - S > Single cutting edge D > Double cutting edge
- **32** — Specification of holder
  - Including 20/25/32 etc
- **32** — Blade height

● Internal machining

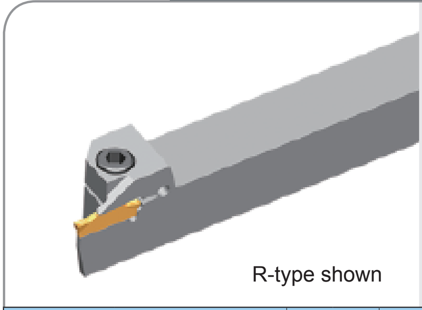
C 32 S - Q G D R 11 - 44

- **C** — Clamping system
- **32** — Diameter of shank
- **S** — Length of shank

Code	Q	R	S	T
Length(mm)	180	200	250	300

- **Q** — Code of grooving tools
- **G** — Code of locating slot
  - Accords with locating slot code of insert and corresponding to certain range of insert edge width.
- **D** — Code of edge number for corresponding inserts
  - S > Single cutting edge D > Double Cutting edge
- **R** — Left and right hand of tool
  - R > Right L > Left
- **11** — Maximum cutting depth
- **44** — Minimum machining hole diameter

External parting, grooving and turning tools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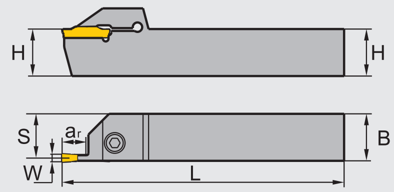
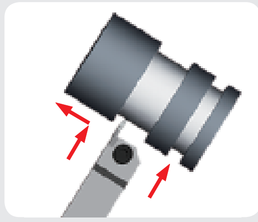
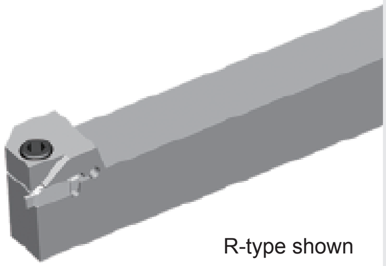




Type		Stock R	Stock L	H×B	L	S	W	a_r max	Applicable inserts	Screw	Wrench
QEED	**1616R/L10**	▲	▲	16×16	125	15	2.5	10	Z□ED025□□	GB70-85-M5×20	WH40L
	1616R/L17	▲	▲	16×16	125	15	2.5	17	Z□ED025□□		
	2020R/L10	▲	▲	20×20	125	19	2.5	10	Z□ED025□□	GB70-85-M6×20	WH50L
	2020R/L17	▲	▲	20×20	125	19	2.5	17	Z□ED025□□		
	2525R/L10	▲	▲	25×25	150	24	2.5	10	Z□ED025□□		
	2525R/L17	▲	▲	25×25	150	24	2.5	17	Z□ED025□□		
QEFD	**1616R/L10**	▲	▲	16×16	125	14.8	3	10	Z□FD03□□	GB70-85-M5×20	WH40L
	1616R/L17	▲	▲	16×16	125	14.8	3	17	Z□FD03□□		
	2020R/L10	▲	▲	20×20	125	18.8	3	10	Z□FD03□□	GB70-85-M6×20	WH50L
	2020R/L17	▲	▲	20×20	125	18.8	3	17	Z□FD03□□		
	2525R/L10	▲	▲	25×25	150	23.8	3	10	Z□FD03□□		
	2525R/L17	▲	▲	25×25	150	23.8	3	17	Z□FD03□□		
QEGD	**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□□		
	2525R/L22	▲	▲	25×25	150	23.5	4	22	Z□GD04□□		
	3232R/L13	▲	▲	32×32	170	30.5	4	13	Z□GD04□□		
	3232R/L22	▲	▲	32×32	170	30.5	4	22	Z□GD04□□		
QEHD	**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□□		
QEHS	**2525N30**	▲	▲	25×25	150	12.5	5	30	Z□HS05□□		
QEHD	**3232R/L13**	▲	▲	32×32	170	30	5	13	Z□HD05□□		
	3232R/L22	▲	▲	32×32	170	30	5	22	Z□HD05□□		
QEHS	**3232N30**	▲	▲	32×32	170	16	5	30	Z□HS05□□		
QEKD	**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□□		
QEKS	**2525N30**	▲	▲	25×25	150	12.5	6	30	Z□KS06□□		
QEKD	**3232R/L13**	▲	▲	32×32	170	29.6	6	13	Z□KD06□□		
	3232R/L22	▲	▲	32×32	170	29.6	6	22	Z□KD06□□		
QEKS	**3232N30**	▲	▲	32×32	170	16	6	30	Z□KS06□□		
QELD	**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



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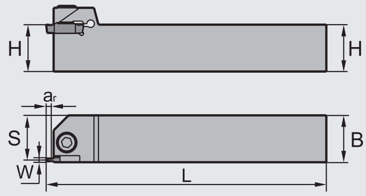
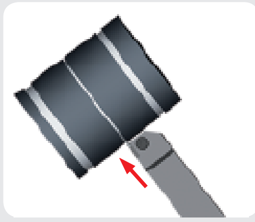
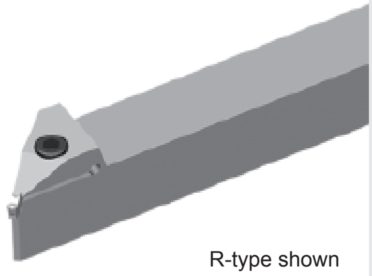




Type		Stock R	Stock L	Basic dimensions(mm) H×B	L	S	W	ar max	Applicable inserts	Screw	Wrench
QECD	**1616R/L025**	△	△	16×16	125	14.75		2.5	ZTCD□□□□□□-EG	GB70-85-M5×20	WH40L
	2020R/L025	▲	△	20×20	125	18.75		2.5	ZTCD□□□□□□-EG	GB70-85-M6×20	WH50L
	2525R/L025	▲	△	25×25	150	23.75		2.5	ZTCD□□□□□□-EG	GB70-85-M6×20	WH50L

▲Stock available △Make-to-order

External recess and profiling turning tools



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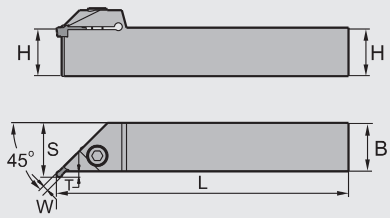
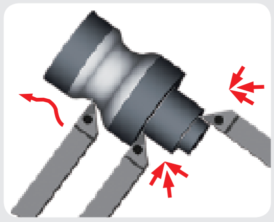
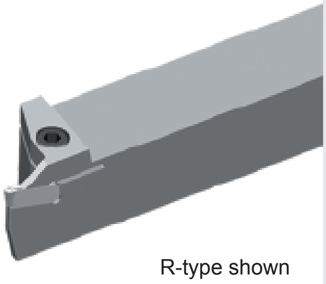




Type		Stock R	Stock L	Basic dimensions(mm) H×B	L	S	W	ar max	Applicable inserts	Screw	Wrench
QXFD	**2020R/L03-45**	△	△	20×20	125	23	3.0	3.0	ZR(T)FD03-EG ZR(T)FD03-MG	GB70-85-M6×20	WH50L
	2525R/L03-45	△	△	25×25	150	28	3.0	3.0	ZR(T)FD03-EG ZR(T)FD03-MG	GB70-85-M6×20	WH50L
	3232R/L03-45	△	△	32×32	170	35	3.0	3.0	ZR(T)FD03-EG ZR(T)FD03-MG	GB70-85-M6×20	WH50L
QXGD	**2020R/L03-45**	△	△	20×20	125	23	4.0	3.0	ZR(T)GD04-EG ZR(T)GD04-MG	GB70-85-M6×20	WH50L
	2525R/L03-45	△	△	25×25	150	28	4.0	3.0	ZR(T)GD04-EG ZR(T)GD04-MG	GB70-85-M6×20	WH50L
	3232R/L03-45	△	△	32×32	170	35	4.0	3.0	ZR(T)GD04-EG ZR(T)GD04-MG	GB70-85-M6×20	WH50L
QXHD	**2020R/L04-45**	△	△	20×20	125	24	5.0	4.0	ZR(T)HD05-EG ZR(T)HD05-MG	GB70-85-M6×20	WH50L
	2525R/L04-45	△	△	25×25	150	29	5.0	4.0	ZR(T)HD05-EG ZR(T)HD05-MG	GB70-85-M6×20	WH50L
	3232R/L04-45	△	△	32×32	170	36	5.0	4.0	ZR(T)HD05-EG ZR(T)HD05-MG	GB70-85-M6×20	WH50L
QXKD	**2020R/L04-45**	△	△	20×20	125	24	6.0	4.0	ZR(T)KD06-EG ZR(T)KD06-MG	GB70-85-M6×20	WH50L
	2525R/L04-45	△	△	25×25	150	29	6.0	4.0	ZR(T)KD06-EG ZR(T)KD06-MG	GB70-85-M6×20	WH50L
	3232R/L04-45	△	△	32×32	170	36	6.0	4.0	ZR(T)KD06-EG ZR(T)KD06-MG	GB70-85-M6×20	WH50L

▲Stock available △Make-to-order

External grooving tools for materials hard to be machined



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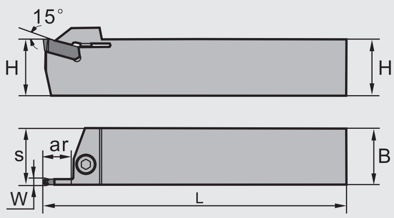
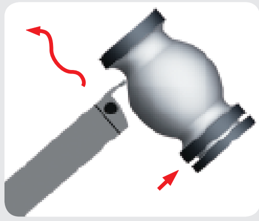
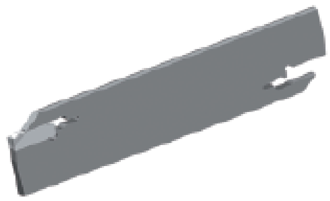


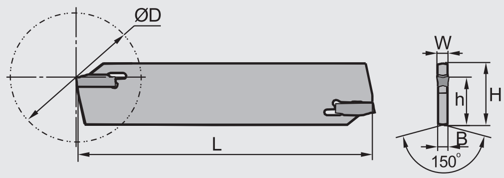


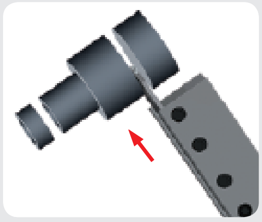
Type		Stock R	Stock L	Basic dimensions(mm) H×B	L	S	W	ar max	Applicable inserts	Screw	Wrench
QEFS	**2525R/L12-3N**	△	△	25×25	150	25.3	3	12	ZIGQ3N-NM ZIMF304N-NM	GB70-85-M6×20	WH50L
	3232R/L22-3N	△	△	32×32	170	32.3	3	22			
QEGS	**2525R/L12-4N**	△	△	25×25	150	25.3	4	12	ZIGQ4N-NM ZIMF406N-NM		
	3232R/L22-4N	△	△	32×32	170	32.3	4	22			
QEHS	**2525R/L12-5N**	△	△	25×25	150	25.4	5	12	ZIGQ5N-NM ZIMF506N-NM		
	3232R/L22-5N	△	△	32×32	170	32.4	5	22			
QEKS	**2525R/L12-6N**	△	△	25×25	150	25.4	6	12	ZIGQ6N-NM ZIMF608N-NM		
	3232R/L22-6N	△	△	32×32	170	32.4	6	22			

▲Stock available △Make-to-order

Blade for external parting



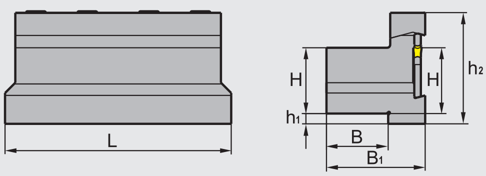


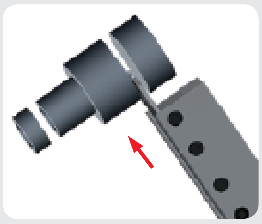


Type	Stock	Basic dimensions(mm)						Applicable inserts	Wrench
		L	H	h	B	W	ØDmax (Maximum parting diameter)		
QEES26N	▲	110	26	19	2	2.5	60	ZPES02502-MG	W50RL
QEFS26N	▲	110	26	19	2.4	3	60	ZPFS0302-MG	
QEGS26N	▲	110	26	19	3.2	4	70	ZPGS0402-MG	
QEHS26N	▲	110	26	19	4	5	70	ZPHS0503-MG	
QEKS26N	▲	110	26	19	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

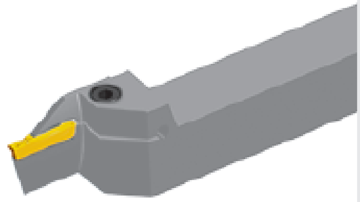




Type	Stock	Basic dimensions(mm)						Clamp	Screw	Wrench
		L	H	h_1	h_2	B	B_1			
QZS2026	▲	86	20	10	46.6	19	38	QZC26	GB70-85-M6×20	WH50L
QZS2526	▲	86	25	5	46.6	23	42	QZC26		
QZS3226	▲	86	30	3	51.6	30	48	QZC26		
QZS2032	▲	110	20	13	50	19	38	QZC32		
QZS2532	▲	110	25	8	50	23	42	QZC32		
QZS3232	▲	110	32	5	54	30	48	QZC32		

▲Stock available　　△Make-to-order

End surface grooving and turning tools



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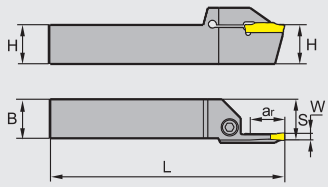
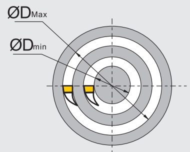


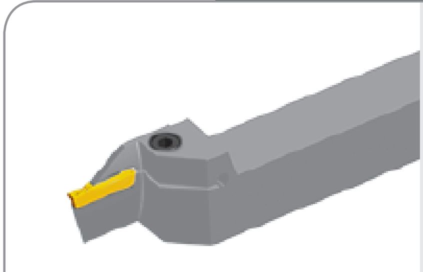


Diameter range of entering

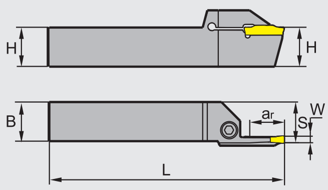
Type		Stock		Basic dimensions(mm)						Applicable inserts	Screw	Wrench
		R	L	H×B	L	S	W	ar max	ØD (min-max)			
QFFD	**2020R/L7-48H**	▲	▲	20×20	150	21	3	7	48-66	ZTFD0303-□□	GB70-85-M6×20	WH50L
	2020R/L10-48H	▲	▲	20×20	150	21	3	10	48-66			
	2525R/L10-48H	▲	▲	25×25	150	26	3	10	48-66			
	2525R/L17-48H	▲	▲	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			
QFGD	**2020R/L10-52H**	△	△	20×20	150	21	4	10	52-72	ZTGD0404-□□		
	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			

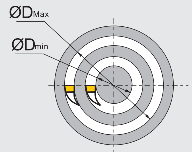
▲Stock available　　△Make-to-order

End surface grooving and turning tools

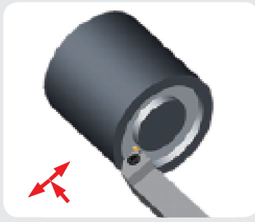


L-type shown





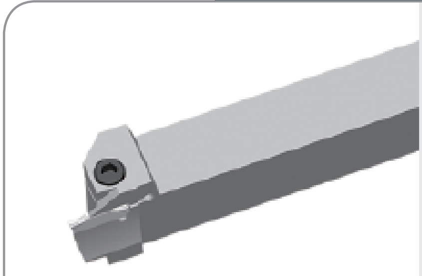
Diameter range of entering



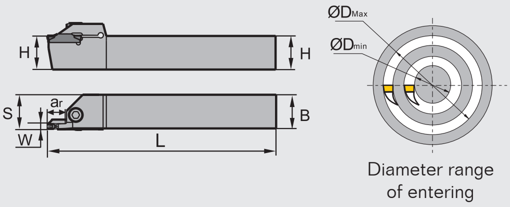
Type		Stock R	Stock L	H×B	L	S	W	ar max	ØD (min-max)	Applicable inserts 	Screw 	Wrench 
QFHD	**2525R/L13-58H**	▲	▲	25×25	150	26	5	13	58-96	ZTHD0504-□□	GB70-85-M6×20	WH50L
	2525R/L22-58H	▲	▲	25×25	150	26	5	22	58-96			
	2525R/L13-86H	△	▲	25×25	150	26	5	13	86-140			
	2525R/L22-86H	▲	▲	25×25	150	26	5	22	86-140			
	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			
QFHS	**2525R/L30-185H**	△	△	25×25	150	26	5	30	185-400	ZTHS0504-MG		
QFKD	**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			
QFKS	**2525R/L30-160H**	△	△	25×25	150	26	6	30	160-400	ZTKS0608-MG		
QFLD	**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

End surface grooving and turning tools



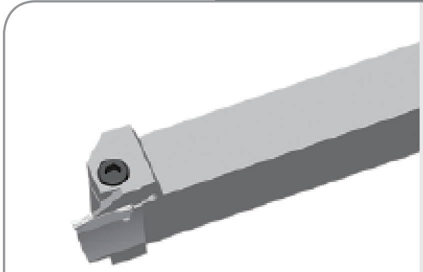
RR-type shown

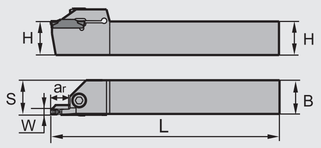


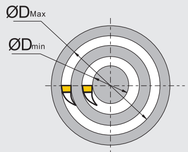
Type		Stock	Basic dimensions(mm)						Applicable inserts	Screw	Wrench
			H×B	L	S	W	ar max	ØD (min-max)			
QFFD	**2020RR7-48H**	△	20×20	150	21	3	7	48-66	ZTFD0303-□□	GB70-85-M6×20	WH50L
	2020RR10-48H	△	20×20	150	21	3	10	48-66			
	2525RR10-48H	△	25×25	150	26	3	10	48-66			
	2525RR17-48H	△	25×25	150	26	3	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			
QFGD	**2020RR10-52H**	△	20×20	150	21	4	10	52-72	ZTGD0404-□□		
	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


RR-type shown



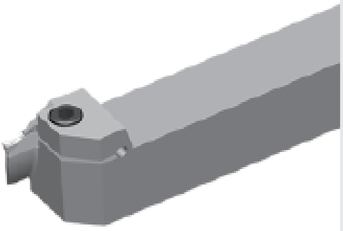


Diameter range of entering

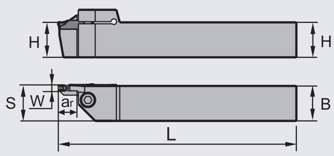
Type		Stock	Basic dimensions(mm)						Applicable inserts	Screw	Wrench
			H×B	L	S	W	ar max	ØD (min-max)			
QFHD	2525RR13-58H	△	25×25	150	26	5	13	58-96	ZTHD0504-□□	GB70-85-M6×20	WH50L
	2525RR22-58H	△	25×25	150	26	5	22	58-96			
	2525RR13-86H	△	25×25	150	26	5	13	86-140			
	2525RR22-86H	△	25×25	150	26	5	22	86-140			
	2525RR13-130H	△	25×25	150	26	5	13	130-200			
	2525RR22-130H	△	25×25	150	26	5	22	130-200			
	2525RR13-185H	△	25×25	150	26	5	13	185-400			
	2525RR22-185H	△	25×25	150	26	5	22	185-400			
QFHS	2525RR30-185H	△	25×25	150	26	5	30	185-400	ZTHS0504-MG		
QFKD	2525RR13-60H	△	25×25	150	26	6	13	60-100	ZTKD0608-□□	GB70-85-M6×20	WH50L
	2525RR22-60H	△	25×25	150	26	6	22	60-100			
	2525RR13-88H	△	25×25	150	26	6	13	88-180			
	2525RR22-88H	△	25×25	150	26	6	22	88-180			
	2525RR13-160H	△	25×25	150	26	6	13	160-400			
	2525RR22-160H	△	25×25	150	26	6	22	160-400			
QFKS	2525RR30-160H	△	25×25	150	26	6	30	160-400	ZTKS0608-MG		

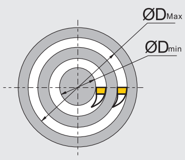
▲Stock available　　△Make-to-order

End surface grooving and turning tools



LL-type shown



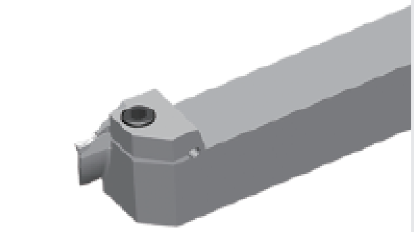


Diameter range of entering

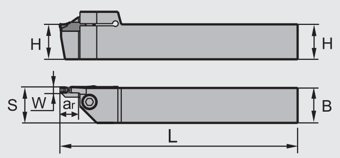
Type		Stock	Basic dimensions(mm)						Applicable inserts	Screw	Wrench
			H×B	L	S	W	ar max	ØD (min-max)			
QFFD	**2020LL7-48H**	△	20×20	150	21	3	7	48-66	ZTFD0303-□□	GB70-85-M6×20	WH50L
	2020LL10-48H	△	20×20	150	21	3	10	48-66			
	2525LL10-48H	△	25×25	150	26	3	10	48-66			
	2525LL17-48H	△	25×25	150	26	3	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			
QFGD	**2020LL10-52H**	△	20×20	150	21	4	10	52-72	ZTGD0404-□□		
	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			

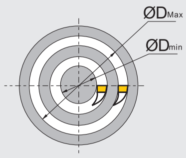
▲Stock available △Make-to-order

End surface grooving and turning tools

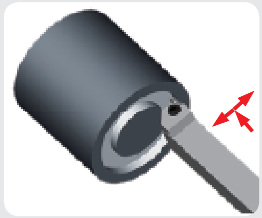


LL-type shown



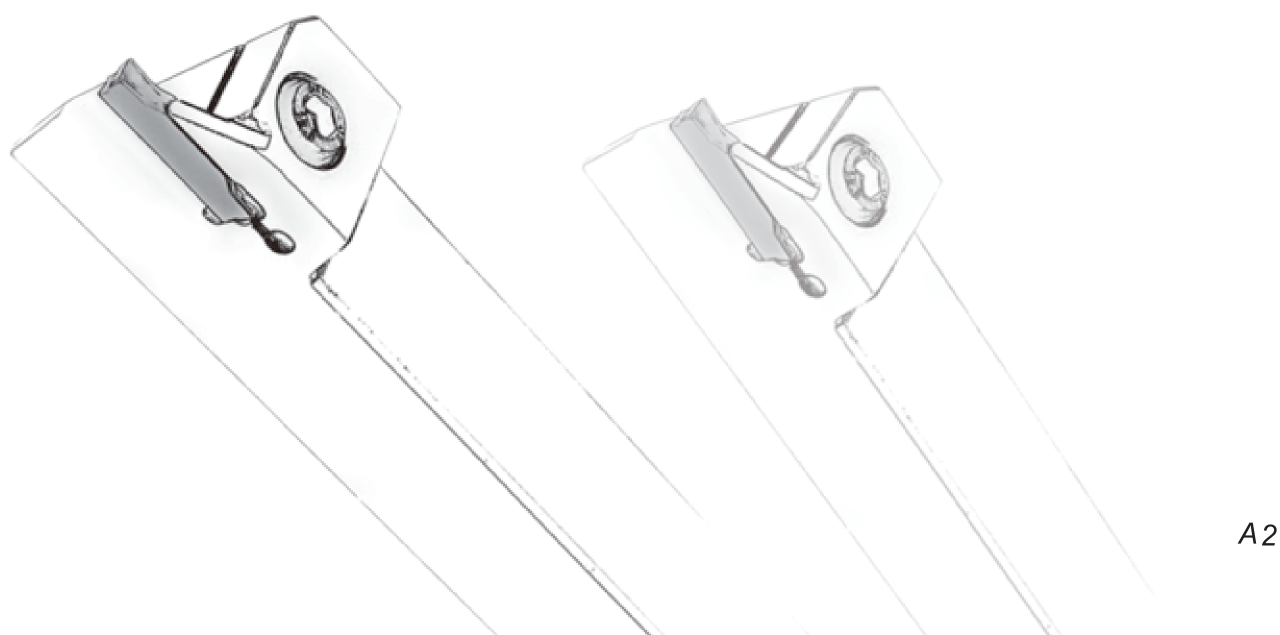


Diameter range of entering

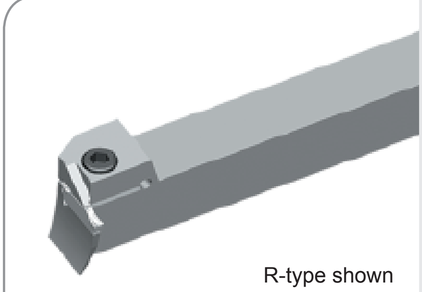


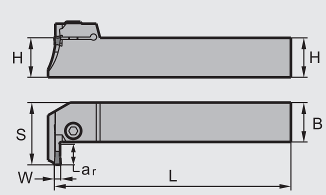
Type		Stock	Basic dimensions(mm)						Applicable inserts	Screw	Wrench
			H×B	L	S	W	ar max	ØD (min-max)			
QFHD	**2525LL13-58H**	△	25×25	150	26	5	13	58-96	ZTHD0504-□□	GB70-85-M6×20	WH50L
	2525LL22-58H	△	25×25	150	26	5	22	58-96			
	2525LL13-86H	△	25×25	150	26	5	13	86-140			
	2525LL22-86H	△	25×25	150	26	5	22	86-140			
	2525LL13-130H	△	25×25	150	26	5	13	130-200			
	2525LL22-130H	△	25×25	150	26	5	22	130-200			
	2525LL13-185H	△	25×25	150	26	5	13	185-400			
	2525LL22-185H	△	25×25	150	26	5	22	185-400			
QFHS	**2525LL30-185H**	△	25×25	150	26	5	30	185-400	ZTHS0504-MG		
QFKD	**2525LL13-60H**	△	25×25	150	26	6	13	60-100	ZTKD0608-□□	GB70-85-M6×20	WH50L
	2525LL22-60H	△	25×25	150	26	6	22	60-100			
	2525LL13-88H	△	25×25	150	26	6	13	88-180			
	2525LL22-88H	△	25×25	150	26	6	22	88-180			
	2525LL13-160H	△	25×25	150	26	6	13	160-400			
	2525LL22-160H	△	25×25	150	26	6	22	160-400			
QFKS	**2525LL30-160H**	△	25×25	150	26	6	30	160-400	ZTKS0608-MG		

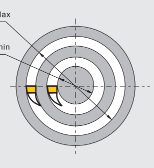
▲Stock available △Make-to-order



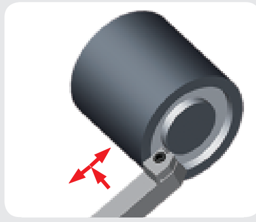
L type tools for surface grooving and turning


R-type shown





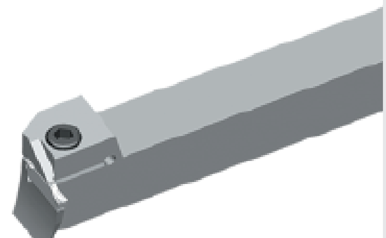
Diameter range of entering



Type		Stock R	Stock L	H×B	L	S	W	ar max	ØD (min-max)	Applicable inserts 	Screw 	Wrench 
QFFD	**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			
QFGD	**2020R/L10-52L**	△	△	20×20	150	31.5	4	10	52-72	ZTGD0404-□□		
	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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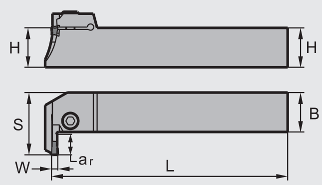
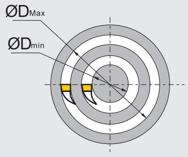
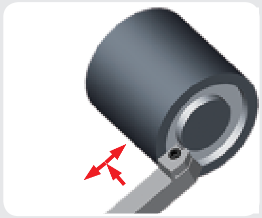


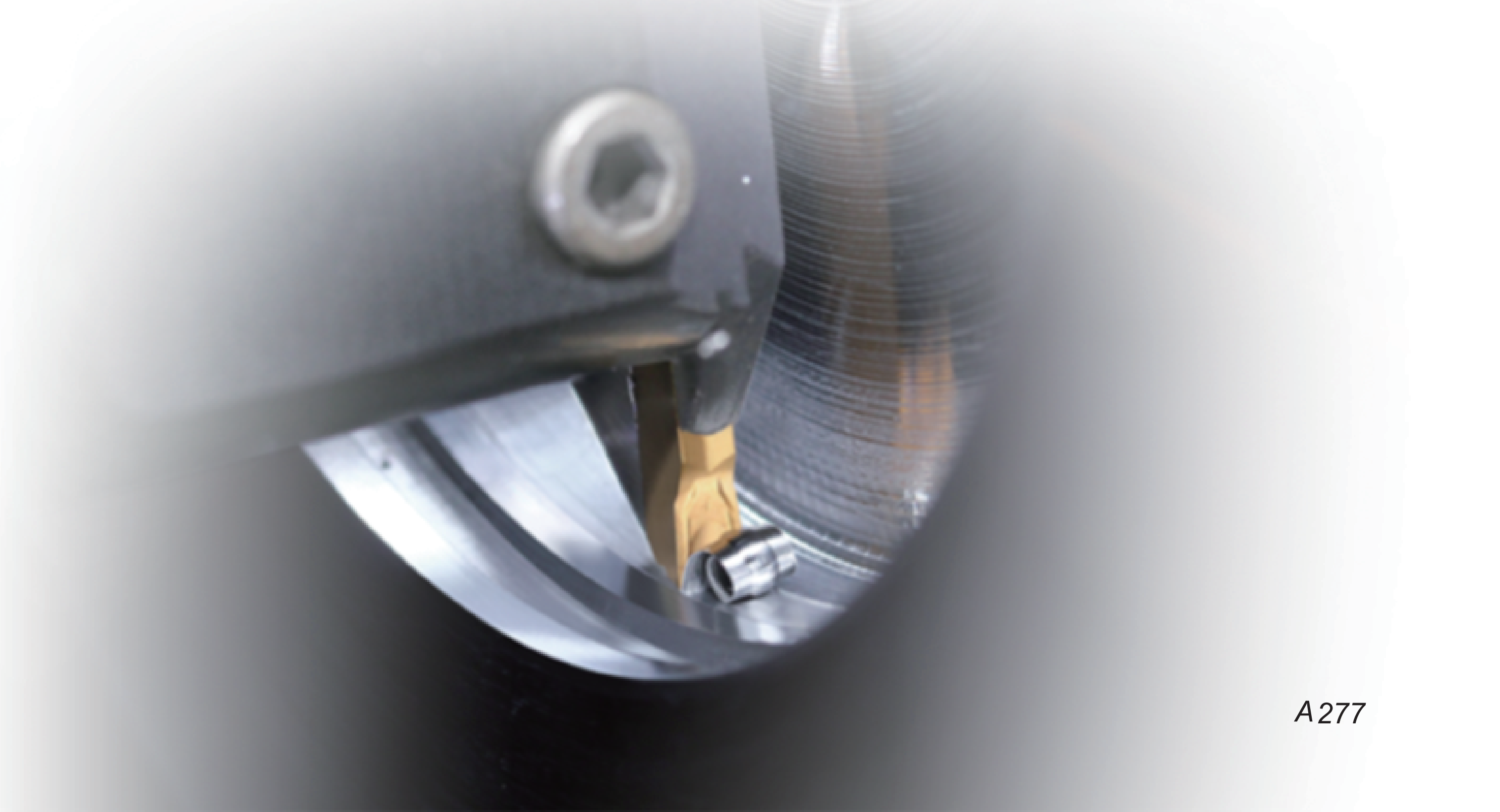


Diameter range of entering

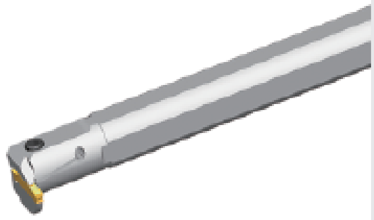


Type		Stock R	Stock L	Basic dimensions(mm) H×B	L	S	W	ar max	ØD (min-max)	Applicable inserts	Screw	Wrench
QFHD	**2525R/L13-58L**	△	△	25×25	150	39.5	5	13	58-96	ZTHD0504-□□	GB70-85-M6×20	WH50L
	2525R/L22-58L	△	△	25×25	150	48.5	5	22	58-96			
	2525R/L13-86L	△	△	25×25	150	39.5	5	13	86-140			
	2525R/L22-86L	△	△	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			
QFHS	**2525R/L30-185L**	△	△	25×25	150	56.5	5	30	185-400	ZTHS0504-MG		
QFKD	**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



Internal grooving and turning tools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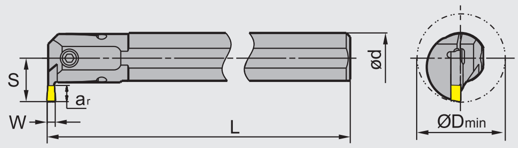
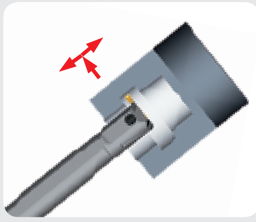
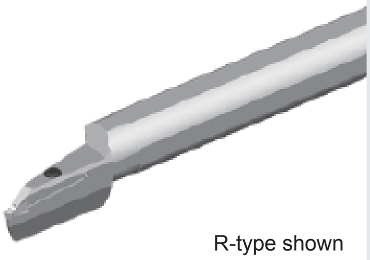




Type	Stock		Basic dimensions(mm)						Applicable inserts	Screw	Wrench
	R	L	ød	L	S	W	ar max	ØDmin			
C20Q-QEDR/L05-27	▲	▲	20	180	15.2	2.5	5	27	ZTED025□□ ZRED025□□	GB70-85-M4×12	WH30L
C25R-QEDR/L07-33	▲	▲	25	200	20.3	2.5	7	33		GB70-85-M5×16	WH40L
C32S-QEDR/L09-42	▲	▲	32	250	25.3	2.5	9	42		GB70-85-M5×20	
C20Q-QFDR/L05-27	▲	▲	20	180	15.2	3	5	27	ZTFD03□□ ZRFD03□□	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	
C25R-QGDR/L08-35	▲	▲	25	200	21.5	4	8	35	ZTGD04□□ ZRGD04□□	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		GB70-85-M6×20	
C25R-QHDR/L08-35	▲	▲	25	200	21.5	5	8	35	ZTHD05□□ ZRHD05□□	GB70-85-M5×16	WH40L
C32S-QHDR/L11-44	▲	▲	32	250	27.5	5	11	44		GB70-85-M6×20	WH50L
C40T-QHDR/L13-54	▲	▲	40	300	33.5	5	13	54		GB70-85-M6×20	
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		GB70-85-M6×20	

▲Stock available △Make-to-order

Profile turning tools for Al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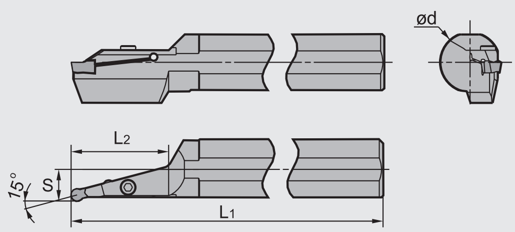


Type	Stock		Basic dimensions(mm)					Applicable inserts	Screw	Wrench
	R	L	ØD (Minimum machining diameter)	ød	S	L1	L2			
C40X-QLDR/L65-15A	▲	▲	160	40	21	320	65	ZRLD08-LH	GB70-85-M6×20	WH50L
C40X-QLDR/L80-15A	▲	△	160	40	21	320	80	ZRLD08-LH		
C40X-QKDR/L60-15A	△	△	160	40	20	320	60	ZRKD06-LH		
C40X-QKDR/L75-15A	△	△	160	40	20	320	75	ZRKD06-LH		

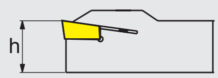
▲Stock available △Make-to-order

Parting and grooving tools code key

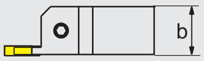
● External grooving

Q ZQ 16 16 R 04

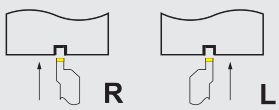
- Q — Code of grooving tools
- ZQ — Inserts shape
- 16 — Nose height



- 16 — Width of tool holder



- R — Cutting direction

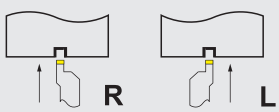


- 04 — Cutting edge width

● Internal grooving

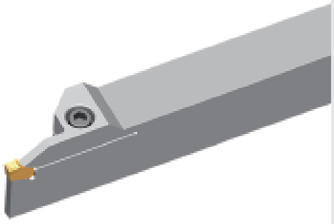
C 16 M - Q ZS R 3

- C — Clamping system
- 16 — Diameter of tool holder
- M — Length of tool holder
- Q — Code of grooving tools
- ZS — Inserts shape
- R — Cutting direction

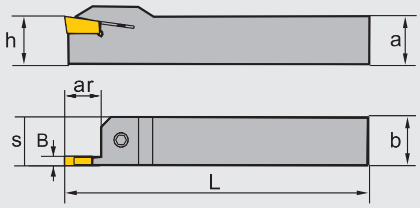


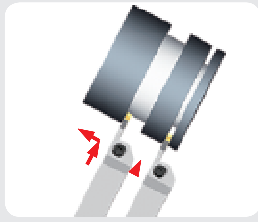
- 3 — Cutting edge width

External parting and grooving tools: QZQ series



R-type shown



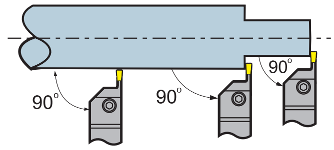


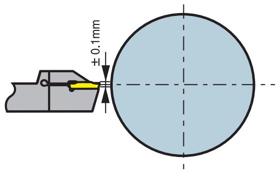
Type		Stock R	Stock L	Basic dimensions(mm) a=h	b	L	S	B	ar max	Applicable inserts	Screw	Wrench
QZQ	**1616R/L03**	▲	▲	16	16	100	16.4	3	16	ZQMX3N11-IE	GB70-85-M5×16	WH40L
	1616R/L04	▲	▲	16	16	100	16.4	4	18	ZQMX4N11-IE		
	2020R/L03	▲	▲	20	20	125	20.4	3	20	ZQMX3N11-IE	GB70-85-M6×20	WH50L
	2020R/L04	▲	▲	20	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		
	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 ±0.1mm, especially for lever parting and grooving workpieces with small diameter. This can improve tool life, reduce cutting resistant force, and diminish burrs.

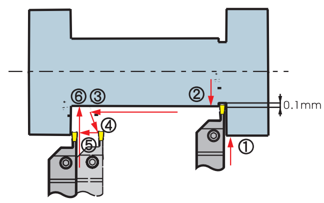




Conventional diagram of height difference of tool center line

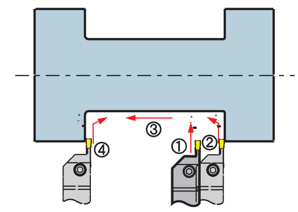
Parting

- 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.



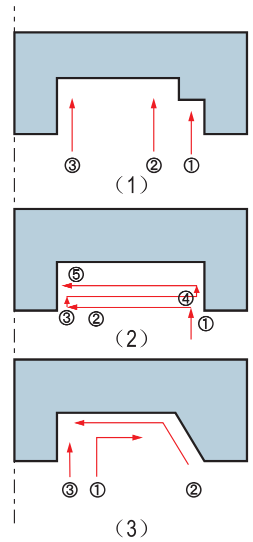
External grooving, turning and profiling

- In-feed sequence: When cutting depth>0.5mm, radial in-feed (Max. cutting depth can be 0.75×insert edge width S) → radial out-feed about 0.1mm → axial in-feed →flank out-feed → axial in-feed → 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.



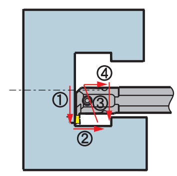
Surface grooving and turning

- 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×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.



Application information of parting and grooving

The cutting parameters recommended are suitable for wet machining.

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	

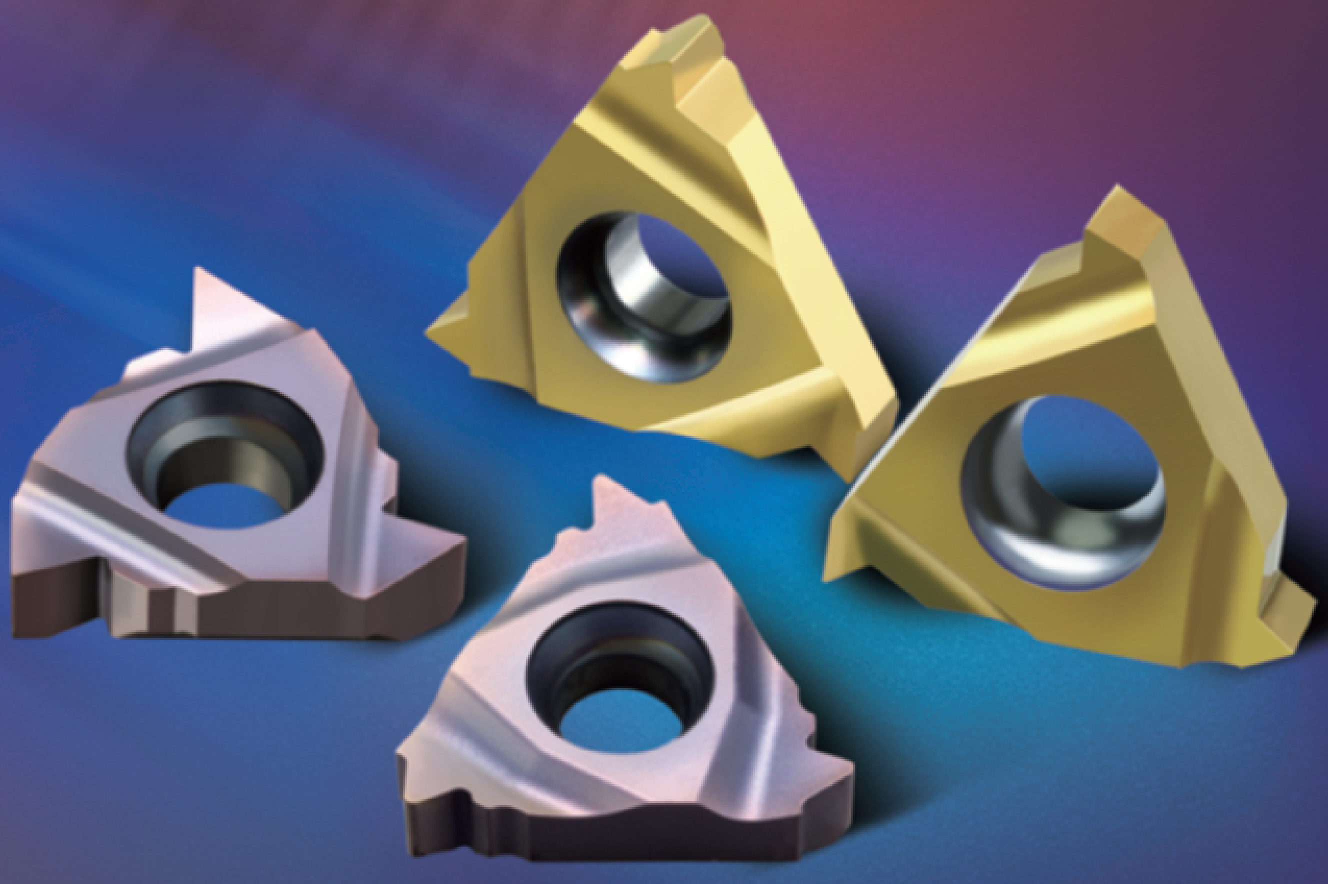
Workpiece material		Hardness	YBG302	YBG202 YBG205	YBC151	YBC251	YD101	YD201	YBG102	YC10	YC40
P	Carbon steel	125≤HB≤170	120-260	150-280	140-280	150-280				130-280	110-260
P	Low alloy steel	180≤HB≤275	80-175	110-200	100-240	110-200				90-200	70-175
P	High alloy steel	180≤HB≤325	80-160	110-190	100-220	110-190				90-190	70-160
P	Cast steel	180≤HB≤250	75-140	100-170	80-160	100-170				80-170	60-140
M	Ferrite, Martensite	200≤HB≤300	70-170	100-200		100-200				80-200	60-170
M	Austenite	180≤HB≤300	80-200	110-220		110-220				90-220	70-200
K	Malleable cast iron	130≤HB≤230	100-200	130-220				90-160			
K	Grey cast iron	180≤HB≤220	90-170	120-200				80-140			
K	Nodular cast iron	160≤HB≤250	80-150	110-180				60-140			
N	Al alloy	--					200-400				
S	High temperature alloy	≤400					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%.

New product for turning

Six series

- 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

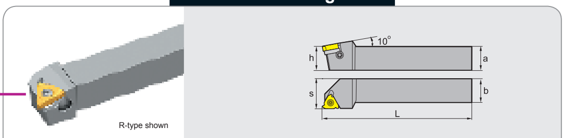
Structure of threading tools selected table

- 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



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	Z16ER□□□□	I60 M3.5X12TT	MT16-□□MN	SM4X8C	WT15IP
	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	Z22ER□□□□	I60 M5X17	MT22-□□MN	SM5X8.5	WT20IP
	3225P22	▲	32	32	25	170	32					
	3232P22	▲	32	32	32	170	40					
	4040S22	△	40	40	40	250	50					
ZSEL	1616H16	▲	16	16	16	100	20	Z16EL□□□□	I60 M3.5X12TT	MT16-□□MN	SM4X8C	WT15IP
	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	Z22EL□□□□	I60 M5X17	MT22-□□MN	SM5X8.5	WT20IP
	3225P22	▲	32	32	25	170	32					
	3232P22	▲	32	32	32	170	40					
	4040S22	△	40	40	40	250	50					

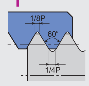
▲Stock available △Make-to-order

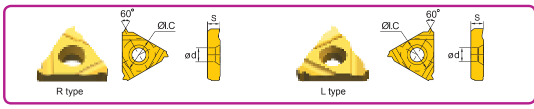
Threading insert type
Including type, standard, tolerance class

Diagram of thread pitch

ISO metric thread (with end)

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





	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch	S	ØI.C	ød	YBG203	YBG205
External thread	Z16ER0.5ISO	Z16EL0.5ISO	0.50	3.52	9.525	4.0	★	○
	Z16ER0.75ISO	Z16EL0.75ISO	0.75	3.52	9.525	4.0	★	○
	Z16ER1.0ISO	Z16EL1.0ISO	1.00	3.52	9.525	4.0	★	○
	Z16ER1.25ISO	Z16EL1.25ISO	1.25	3.52	9.525	4.0	★	○
	Z16ER1.5ISO	Z16EL1.5ISO	1.50	3.52	9.525	4.0	★	○
	Z16ER1.75ISO	Z16EL1.75ISO	1.75	3.52	9.525	4.0	★	○
	Z16ER2.0ISO	Z16EL2.0ISO	2.00	3.52	9.525	4.0	★	○
	Z16ER2.5ISO	Z16EL2.5ISO	2.50	3.52	9.525	4.0	★	○
	Z16ER3.0ISO	Z16EL3.0ISO	3.00	3.52	9.525	4.0	★	○
	Z22ER3.5ISO	Z22EL3.5ISO	3.50	4.65	12.7	5.0	★	○
	Z22ER4.0ISO	Z22EL4.0ISO	4.00	4.65	12.7	5.0	★	○
	Z22ER4.5ISO	Z22EL4.5ISO	4.50	4.65	12.7	5.0	★	○
	Z22ER5.0ISO	Z22EL5.0ISO	5.00	4.65	12.7	5.0	★	○
	Z22ER5.5ISO	Z22EL5.5ISO	5.50	4.65	12.7	5.0	★	○
	Z22ER6.0ISO	Z22EL6.0ISO	6.00	4.65	12.7	5.0	★	○

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

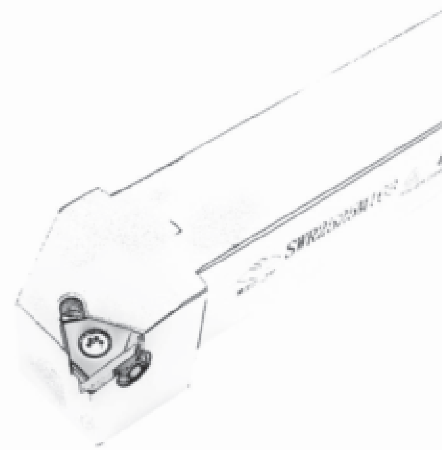
Product specification
Including type (right hand and left hand), basic dimensions, applicable inserts, spare parts

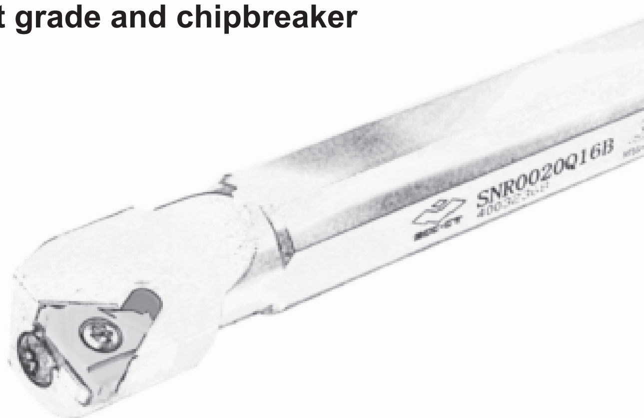
Product specification
Including type (right hand and left hand), basic dimensions, stock

Dimension diagram of insert

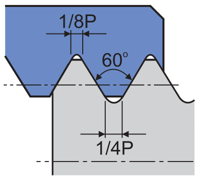
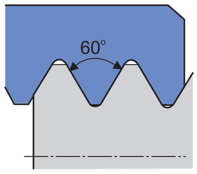
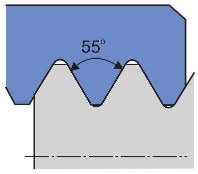
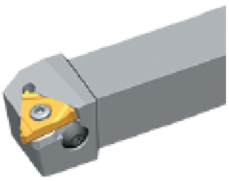
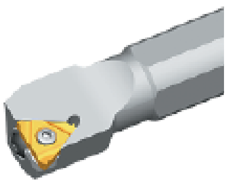
TURNING

Threadin

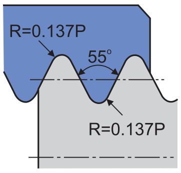
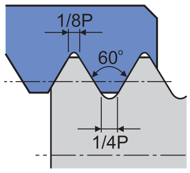
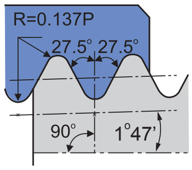
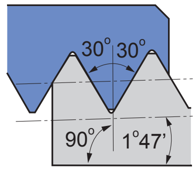




Threading tools overview

Applications		For general use		
Legend				
Thread name		ISO metric thread With end	General pitch thread Without end	General pitch thread Without end
Profil		**GM**	**60**	**55**
Shape of insert (length: 11, 16, 22mm)		R style shown  A290-291	R style shown  A292	R style shown  A292
Pitch / Tool holder	Dimensions (mm) (H×W×L) (Dia×L×Min. dia)	Pitch/mm	Pitch/mm (pitch/Inch)	Pitch/mm (pitch/Inch)
External thread  R-type shown A298	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 A299	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)

General turning
Parting and grooving
Threading
Threading tools overview

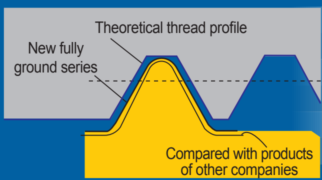
For general use	For aerospace industry	Heater, gas and water pipe thread	For gas and water faucet and pipe connection
			
Whitworth thread	Unified thread (American standard threads)	British standard taper piper threads	American standard taper pipe threads
W	**UN**	**BSPT**	**NPT**
R style shown  A293	R style shown  A294	R style shown  A295	R style shown  A296
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

YBG203

New nano coating grade

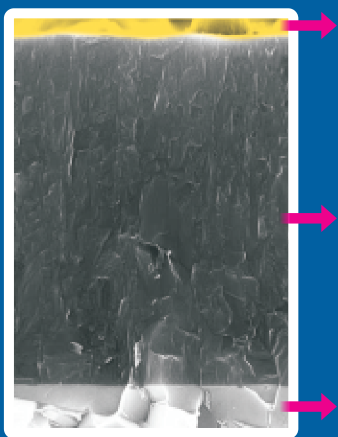
suitable for threading in a variety of materials

- **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**



Thread type	Grade of tolerance
ISO metric thread	6g/6H
Whitworth thread W	Medium Class A
British standard pipe thread	Standard BSPT
Unified thread	2A/2B
American standard pipe thread	Standard NPT

- **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 structre, improving coating stress, enhancing bond strength of coating and substrate.

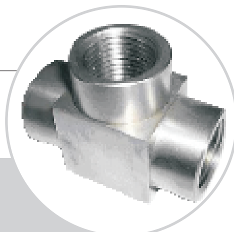
Case:

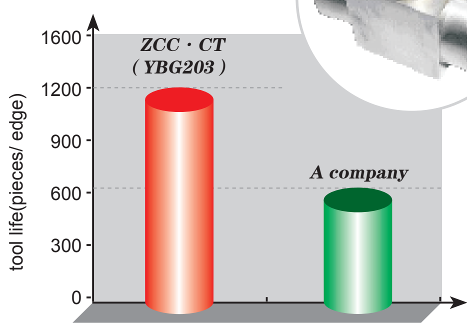
workpiece material: 42CrMo(HB260)

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

Z16 E R 2.0 ISO (P)

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-Righ

L-Left

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 piper thread

NPT—American standard taper piper thread

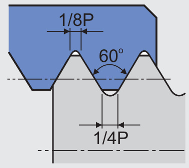
chip breaker

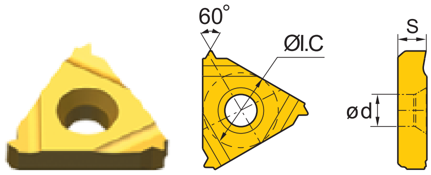
□-fully ground edge insert

P –3-Dimensional chip-breaking insert

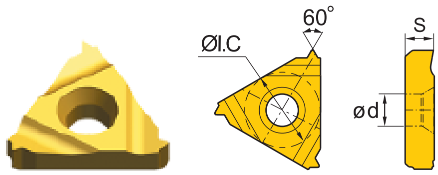
ISO metric thread (with end)

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





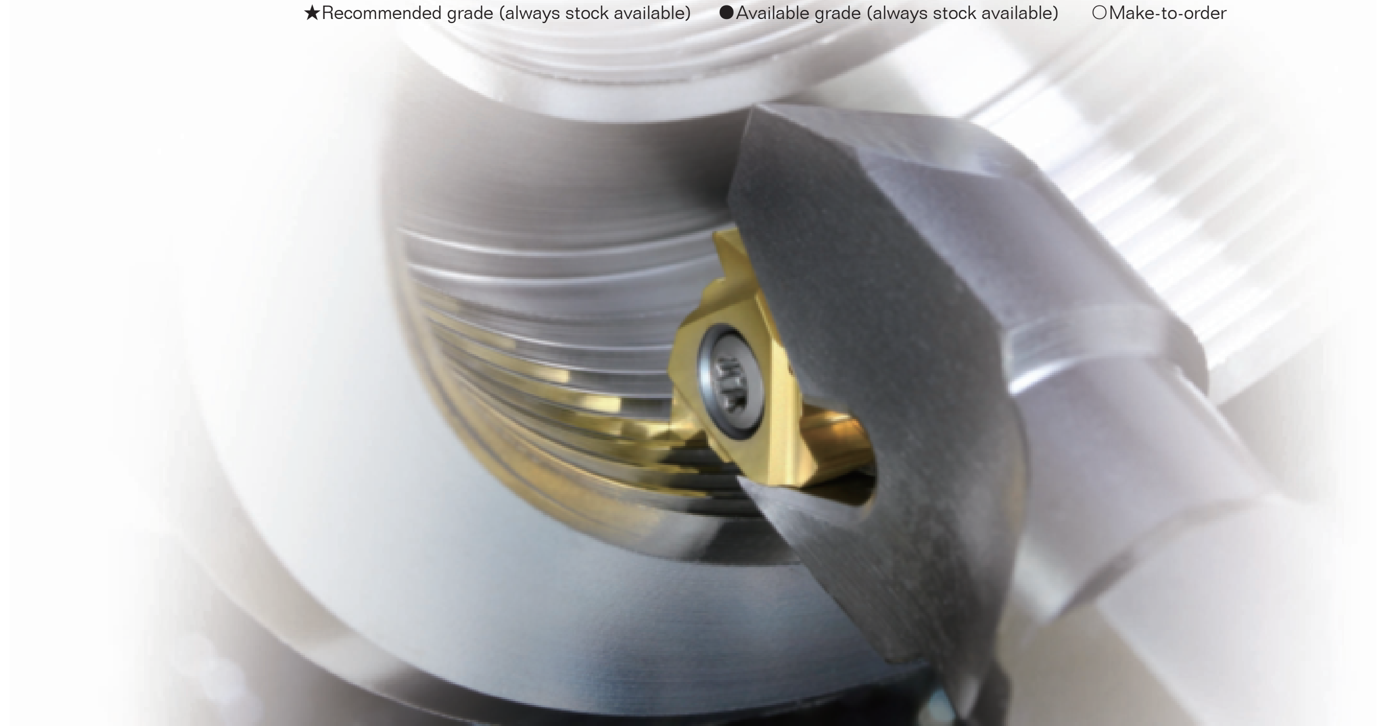
R type



L type

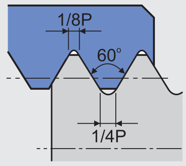
	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch	S	ØI.C	ød	YBG203	YBG205
External thread	**Z16ER0.5ISO**	**Z16EL0.5ISO**	0.50	3.52	9.525	4.0	★	○
	Z16ER0.75ISO	**Z16EL0.75ISO**	0.75	3.52	9.525	4.0	★	○
	Z16ER1.0ISO	**Z16EL1.0ISO**	1.00	3.52	9.525	4.0	★	○
	Z16ER1.25ISO	**Z16EL1.25ISO**	1.25	3.52	9.525	4.0	★	○
	Z16ER1.5ISO	**Z16EL1.5ISO**	1.50	3.52	9.525	4.0	★	○
	Z16ER1.75ISO	**Z16EL1.75ISO**	1.75	3.52	9.525	4.0	★	○
	Z16ER2.0ISO	**Z16EL2.0ISO**	2.00	3.52	9.525	4.0	★	○
	Z16ER2.5ISO	**Z16EL2.5ISO**	2.50	3.52	9.525	4.0	★	○
	Z16ER3.0ISO	**Z16EL3.0ISO**	3.00	3.52	9.525	4.0	★	○
	Z22ER3.5ISO	**Z22EL3.5ISO**	3.50	4.65	12.7	5.0	★	○
	Z22ER4.0ISO	**Z22EL4.0ISO**	4.00	4.65	12.7	5.0	★	○
	Z22ER4.5ISO	**Z22EL4.5ISO**	4.50	4.65	12.7	5.0	★	○
	Z22ER5.0ISO	**Z22EL5.0ISO**	5.00	4.65	12.7	5.0	★	○
	Z22ER5.5ISO	**Z22EL5.5ISO**	5.50	4.65	12.7	5.0	★	○
	Z22ER6.0ISO	**Z22EL6.0ISO**	6.00	4.65	12.7	5.0	★	○

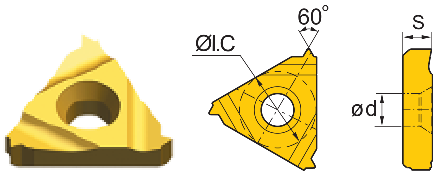
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order



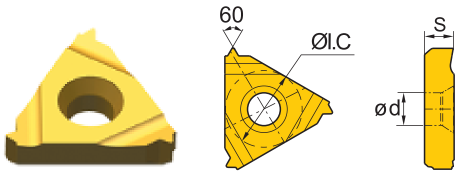
ISO metric thread (with end)

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





R type

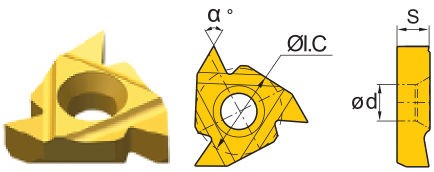


L type

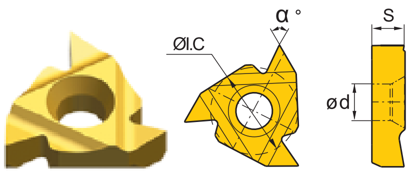
	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch	S	ØI.C	ød	YBG203	YBG205
Internal thread	**Z11IR0.5ISO**	**Z11IL0.5ISO**	0.50	3.05	6.35	3.2	★	○
	Z11IR0.75ISO	**Z11IL0.75ISO**	0.75	3.05	6.35	3.2	★	○
	Z11IR1.0ISO	**Z11IL1.0ISO**	1.00	3.05	6.35	3.2	★	○
	Z11IR1.25ISO	**Z11IL1.25ISO**	1.25	3.05	6.35	3.2	★	○
	Z11IR1.5ISO	**Z11IL1.5ISO**	1.50	3.05	6.35	3.2	★	○
	Z11IR1.75ISO	**Z11IL1.75ISO**	1.75	3.05	6.35	3.2	★	○
	Z11IR2.0ISO	**Z11IL2.0ISO**	2.00	3.05	6.35	3.2	★	○
	Z16IR0.5ISO	**Z16IL0.5ISO**	0.50	3.52	9.525	4.0	★	○
	Z16IR0.75ISO	**Z16IL0.75ISO**	0.75	3.52	9.525	4.0	★	○
	Z16IR1.0ISO	**Z16IL1.0ISO**	1.00	3.52	9.525	4.0	★	○
	Z16IR1.25ISO	**Z16IL1.25ISO**	1.25	3.52	9.525	4.0	★	○
	Z16IR1.5ISO	**Z16IL1.5ISO**	1.50	3.52	9.525	4.0	★	○
	Z16IR1.75ISO	**Z16IL1.75ISO**	1.75	3.52	9.525	4.0	★	○
	Z16IR2.0ISO	**Z16IL2.0ISO**	2.00	3.52	9.525	4.0	★	○
	Z16IR2.5ISO	**Z16IL2.5ISO**	2.50	3.52	9.525	4.0	★	○
	Z16IR3.0ISO	**Z16IL3.0ISO**	3.00	3.52	9.525	4.0	★	○
	Z22IR3.5ISO	**Z22IL3.5ISO**	3.50	4.65	12.7	5.0	★	○
	Z22IR4.0ISO	**Z22IL4.0ISO**	4.00	4.65	12.7	5.0	★	○
	Z22IR4.5ISO	**Z22IL4.5ISO**	4.50	4.65	12.7	5.0	★	○
	Z22IR5.0ISO	**Z22IL5.0ISO**	5.00	4.65	12.7	5.0	★	○
	Z22IR5.5ISO	**Z22IL5.5ISO**	5.50	4.65	12.7	5.0	★	○
	Z22IR6.0ISO	**Z22IL6.0ISO**	6.00	4.65	12.7	5.0	★	○

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

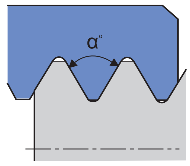
General pitch thread (without end)



R type

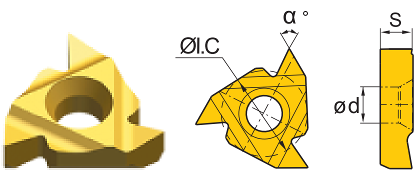


L type

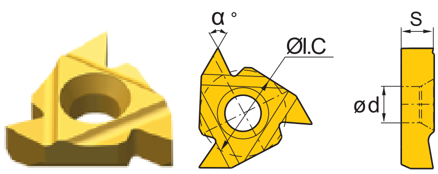


		Type		Basic dimensions(mm)					Recommended coating grade	
		The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	α°	YBG203	YBG205
External thread	55°	**Z16ERA55**	**Z16ELA55**	0.5-1.5(48-16)	3.52	9.525	4.0	55°	★	○
		Z16ERG55	**Z16ELG55**	1.75-3.0(14-8)	3.52	9.525	4.0	55°	★	○
		Z16ERAG55	**Z16ELAG55**	0.5-3.0(48-8)	3.52	9.525	4.0	55°	★	○
		Z22ERN55	**Z22ELN55**	3.5-5.0(7-5)	4.65	12.7	5.0	55°	★	○
	60°	**Z16ERA60**	**Z16ELA60**	0.5-1.5(48-16)	3.52	9.525	4.0	60°	★	○
		Z16ERG60	**Z16ELG60**	1.75-3.0(14-8)	3.52	9.525	4.0	60°	★	○
		Z16ERAG60	**Z16ELAG60**	0.5-3.0(48-8)	3.52	9.525	4.0	60°	★	○
		Z22ERN60	**Z22ELN60**	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



R type



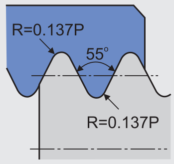
L type

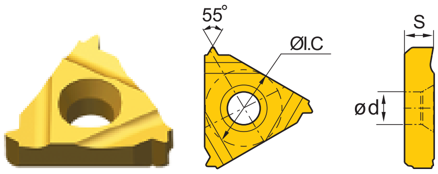
		Type		Basic dimensions(mm)					Recommended coating grade	
		The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	α°	YBG203	YBG205
Internal thread	55°	**Z11IRA55**	**Z11ILA55**	0.5-1.5(48-16)	3.05	6.35	3.2	55°	★	○
		Z16IRA55	**Z16ILA55**	0.5-1.5(48-16)	3.52	9.525	4.0	55°	★	○
		Z16IRG55	**Z16ILG55**	1.75-3.0(14-8)	3.52	9.525	4.0	55°	★	○
		Z16IRAG55	**Z16ILAG55**	0.5-3.0(48-8)	3.52	9.525	4.0	55°	★	○
		Z22IRN55	**Z22ILN55**	3.5-5.0(7-5)	4.65	12.7	5.0	55°	★	○
	60°	**Z11IRA60**	**Z11ILA60**	0.5-1.5(48-16)	3.05	6.35	3.2	60°	★	○
		Z16IRA60	**Z16ILA60**	0.5-1.5(48-16)	3.52	9.525	4.0	60°	★	○
		Z16IRG60	**Z16ILG60**	1.75-3.0(14-8)	3.52	9.525	4.0	60°	★	○
		Z16IRAG60	**Z16ILAG60**	0.5-3.0(48-8)	3.52	9.525	4.0	60°	★	○
		Z22IRN60	**Z22ILN60**	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

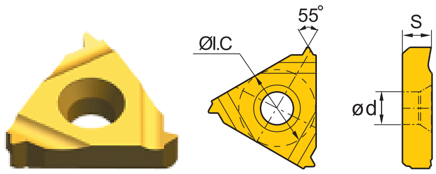
Whitworth thread (with end)

ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class：Medium class A





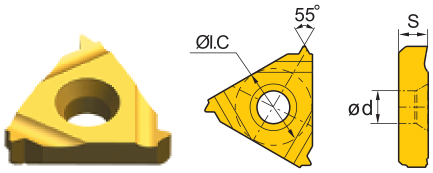
R type



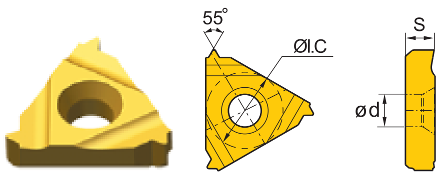
L type

	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



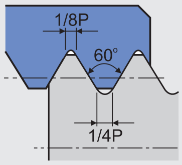
L type

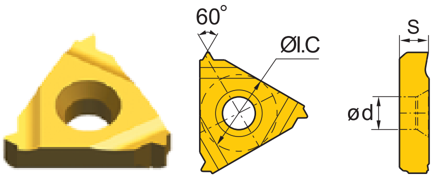
	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
Internal thread	Z16IR8W	Z16IL8W	8	3.52	9.525	4.0	★	○
	Z16IR9W	Z16IL9W	9	3.52	9.525	4.0	★	○
	Z16IR10W	Z16IL10W	10	3.52	9.525	4.0	★	○
	Z16IR11W	Z16IL11W	11	3.52	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

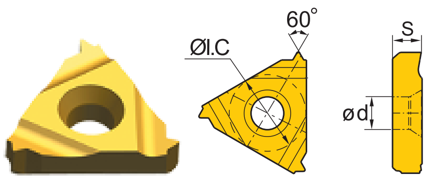
Unified thread (with end)

ASME B1.1-1989
Tolerance class：2A/2B





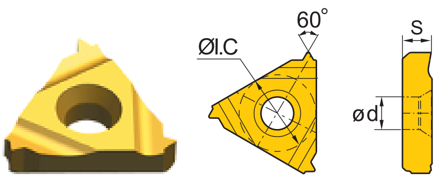
R type



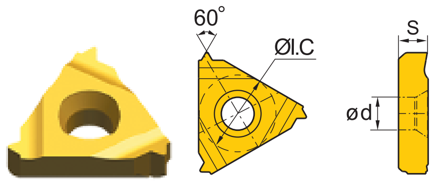
L type

	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



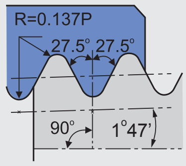
L type

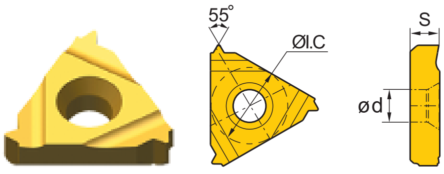
	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
Internal thread	**Z16IR8UN**	**Z16IL8UN**	8	3.52	9.525	4.0	★	○
	Z16IR10UN	**Z16IL10UN**	10	3.52	9.525	4.0	★	○
	Z16IR12UN	**Z16IL12UN**	12	3.52	9.525	4.0	★	○
	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

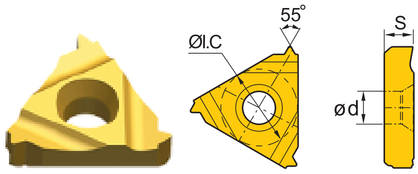
British standard taper piper thread (with end)

ISO 7/1:1994
B.S.21:1985
Standard BSPT





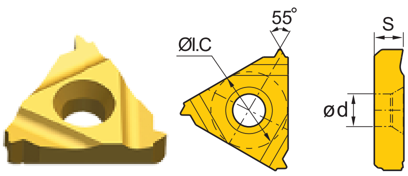
R type



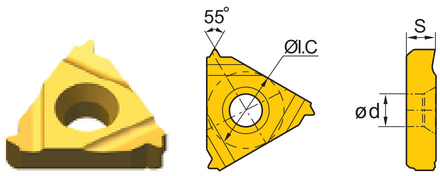
L type

	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	Z16ER11BSPT	Z16EL11BSPT	11	3.52	9.525	4.0	★	○
	Z16ER14BSPT	Z16EL14BSPT	14	3.52	9.525	4.0	★	○
	Z16ER19BSPT	Z16EL19BSPT	19	3.52	9.525	4.0	★	○
	Z16ER28BSPT	Z16EL28BSPT	28	3.52	9.525	4.0	★	○

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



R type



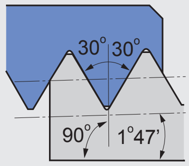
L type

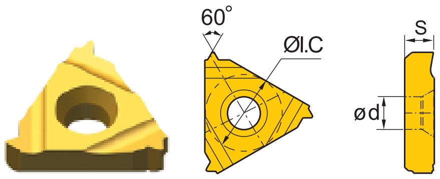
	Type		Basic dimensions(mm)				Recommended coating grade	
	The right hand tools	The left hand tools	Pitch/mm (pitch/Inch)	S	ØI.C	ød	YBG203	YBG205
Internal thread	Z16IR11BSPT	Z16IL11BSPT	11	3.52	9.525	4.0	★	○
	Z16IR14BSPT	Z16IL14BSPT	14	3.52	9.525	4.0	★	○
	Z16IR19BSPT	Z16IL19BSPT	19	3.52	9.525	4.0	★	○
	Z16IR28BSPT	Z16IL28BSPT	28	3.52	9.525	4.0	★	○

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

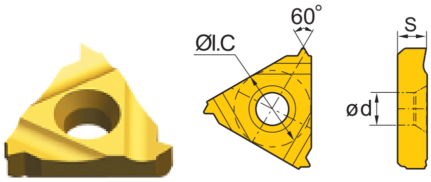
American standard taper piper thread (with end)

ASME B1.20.1-1983
Standard NPT





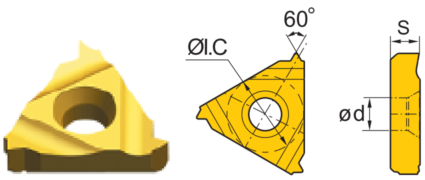
R type



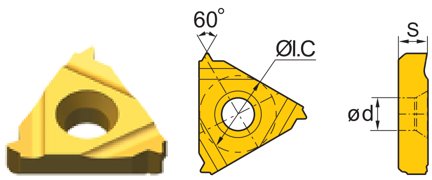
L type

	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	**Z16ER8NPT**	**Z16EL8NPT**	8	3.52	9.525	4.0	★	○
	Z16ER11.5NPT	**Z16EL11.5NPT**	11.5	3.52	9.525	4.0	★	○
	Z16ER14NPT	**Z16EL14NPT**	14	3.52	9.525	4.0	★	○
	Z16ER18NPT	**Z16EL18NPT**	18	3.52	9.525	4.0	★	○
	Z16ER27NPT	**Z16EL27NPT**	27	3.52	9.525	4.0	★	○

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



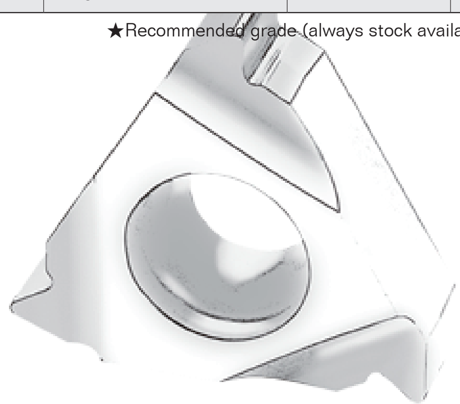
R type



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	**Z16IR8NPT**	**Z16IL8NPT**	8	3.52	9.525	4.0	★	○
	Z16IR11.5NPT	**Z16IL11.5NPT**	11.5	3.52	9.525	4.0	★	○
	Z16IR14NPT	**Z16IL14NPT**	14	3.52	9.525	4.0	★	○
	Z16IR18NPT	**Z16IL18NPT**	18	3.52	9.525	4.0	★	○
	Z16IR27NPT	**Z16IL27NPT**	27	3.52	9.525	4.0	★	○

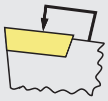
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

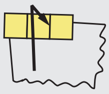


Threading tools code key

Clamping system

Top clamping | Screw clamping


ZC


ZS

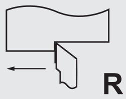
Thread type

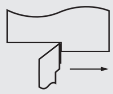
I Internal thread

E External thread

Cutting direction

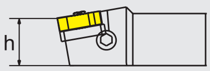
Right hand | Left hand


R


L

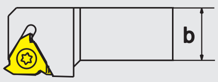
ZS E R 20 20 K 16

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.

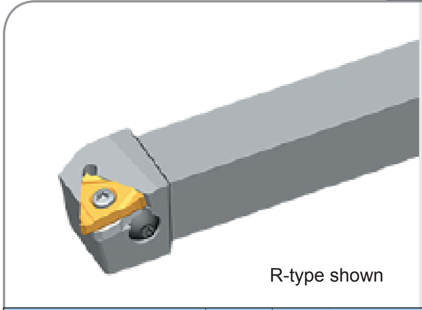
Tool length

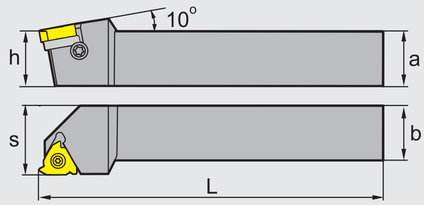
Code	H	K	M	P	Q	R	S	T	U
Length	100	125	150	170	180	200	250	300	350

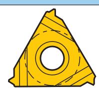
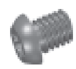
Insert size

Code	11	16	22
Triangle side length	11	16	22
Inscribed circle	6.35	9.525	12.70

External threading tools

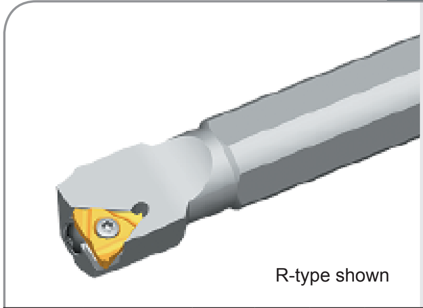

R-type shown

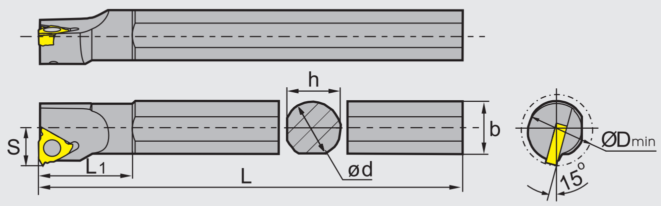


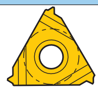
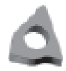
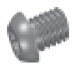
Type		Stock	Basic dimensions(mm)					Applicable inserts	Inserts screw	Shim	Shim screw	Wrench
			a	h	b	L	s					
ZSER	**1616H16**	▲	16	16	16	100	20	Z16ER□□□□	I60 M3.5X12TT	MT16-□□MN	SM4X8C	WT15IP
	2020K16	▲	20	20	20	125	25					
	2525M16	▲	25	25	25	150	32					
	3225P16	▲	32	32	25	170	32					
	3232P16	▲	32	32	32	170	40					
	2525M22	▲	25	25	25	150	32	Z22ER□□□□	I60 M5X17	MT22-□□MN	SM5X8.5	WT20IP
	3225P22	▲	32	32	25	170	32					
	3232P22	▲	32	32	32	170	40					
	4040S22	△	40	40	40	250	50					
ZSEL	**1616H16**	▲	16	16	16	100	20	Z16EL□□□□	I60 M3.5X12TT	MT16-□□MN	SM4X8C	WT15IP
	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	Z22EL□□□□	I60 M5X17	MT22-□□MN	SM5X8.5	WT20IP
	3225P22	▲	32	32	25	170	32					
	3232P22	▲	32	32	32	170	40					
	4040S22	△	40	40	40	250	50					

▲Stock available　　△Make-to-order

Internal threading tools


R-type shown



Type		Stock	Basic dimensions(mm)							Applicable inserts	Inserts screw	Shim	Shim screw	Wrench
			d	L	b	D_{min}	s	h	L_1					
ZSIR	**0016K11**	▲	16	125	16	12	10	15	20.9	Z11IR□□□□	I60 M2.5X6.5T	---	---	WT08IP
	0016M11	▲	16	150	15.5	16	10.5	15	25.9					
	0016M16	▲	16	150	15.5	20	12	15	27	Z16IR□□□□	I60 M3.5X08TT	---	---	WT15IP
	0020M16	▲	20	150	19	25	14	18	28.7		I60 M3.5X12TT	MT16-□□MN	SM4X8C	
	0020Q16	▲	20	180	19	25	14	18	34					
	0025M16	▲	25	150	24	32	17	23	28.8					
	0032R16	▲	32	200	31	40	22	30	30.9					
	0032S16	▲	32	250	31	40	22	30	30.9					
	0040T16	▲	40	300	38.5	50	27	37	31.5					
	0050U16	▲	50	350	49.5	63	35	49	40.2					
	0020Q22	▲	20	180	21.5	25	15	18	35	Z22IR□□□□	I60 M5X13.2	---	---	WT20IP
	0025R22	▲	25	200	24	32	19	23	39		I60 M5X17	MT22-□□MN	SM5X8.5	
	0032S22	▲	32	250	31	40	22	30	36.4					
	0040T22	▲	40	300	38.5	50	27	37	37.2					
	0050U22	▲	50	350	48.5	63	35	47	42.6					
ZSIL	**0016K11**	▲	16	125	16	12	10	15	20.9	Z11IL□□□□	I60 M2.5X6.5	---	---	WT07IP
	0016M11	▲	16	150	15.5	16	10.5	15	25.9					
	0016M16	▲	16	150	15.5	20	12	15	27	Z16IL□□□□	I60 M3.5X08TT	---	---	WT15IP
	0020M16	▲	20	150	19	25	14	18	28.7		I60 M3.5X12	MT16-□□MN	SM4X8C	
	0020Q16	▲	20	180	19	25	14	18	34					
	0025M16	▲	25	150	24	32	17	23	28.8					
	0032R16	▲	32	200	31	40	22	30	30.9					
	0032S16	▲	32	250	31	40	22	30	30.9					
	0040T16	▲	40	300	38.5	50	27	37	31.5					
	0050U16	▲	50	350	49.5	63	35	49	40.2					
	0020Q22	▲	20	180	21.5	25	15	18	35	Z22IL□□□□	I60 M5X13.2	---	---	WT20IP
	0025R22	▲	25	200	24	32	19	23	39		I60 M5X17	MT22-□□MN	SM5X8.5	
	0032S22	▲	32	250	31	40	22	30	36.4					
	0040T22	▲	40	300	38.5	50	27	37	37.2					
	0050U22	▲	50	350	48.5	63	35	47	42.6					

▲Stock available　　△Make-to-order

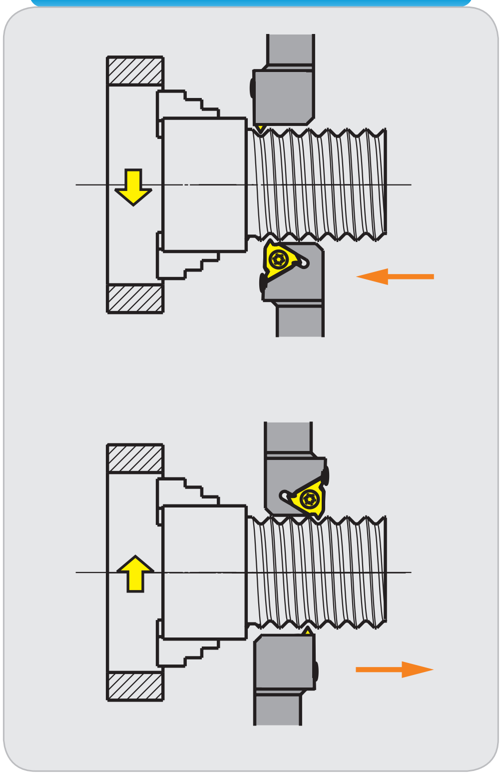
Application information of threading

Please follow the following steps to get the best threading result:

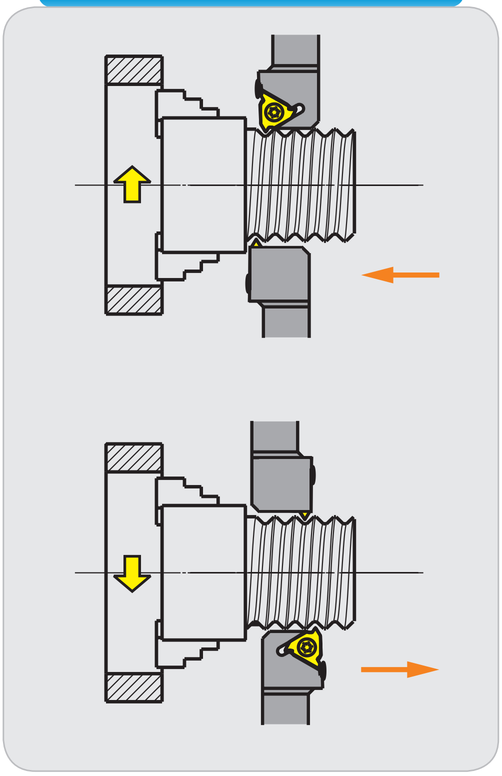
1. Select proper thread machining method.
2. Define helical angle and select shim.
3. Select proper insert and tool holder size.
4. By checking reference table of standard threading programs, select feasible cutting parameters.
5. Select feed way.

Machining method of threading tools

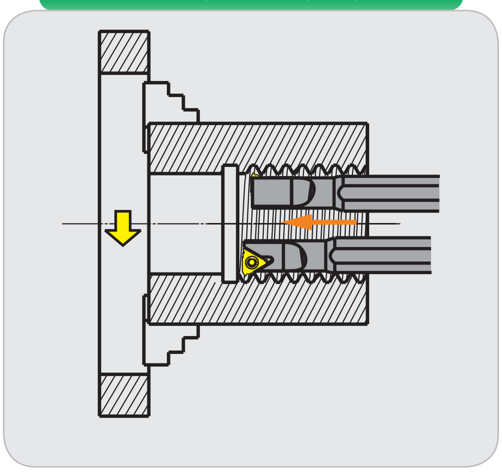
External threading machining (Right thread)



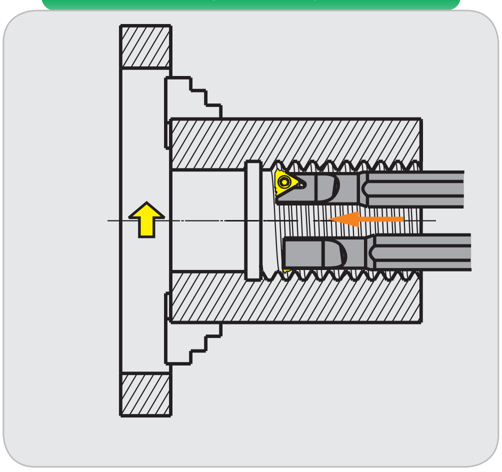
External threading machining (Left thread)



Internal threading machining (Right thread)

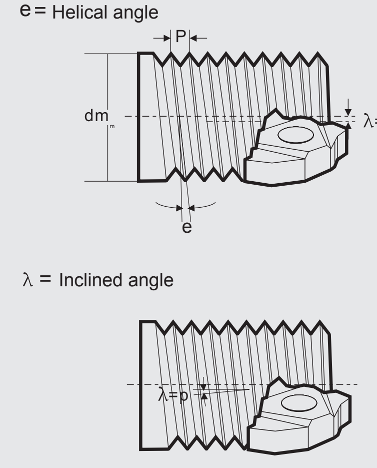


Internal threading machining (Left thread)



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_2= 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°.

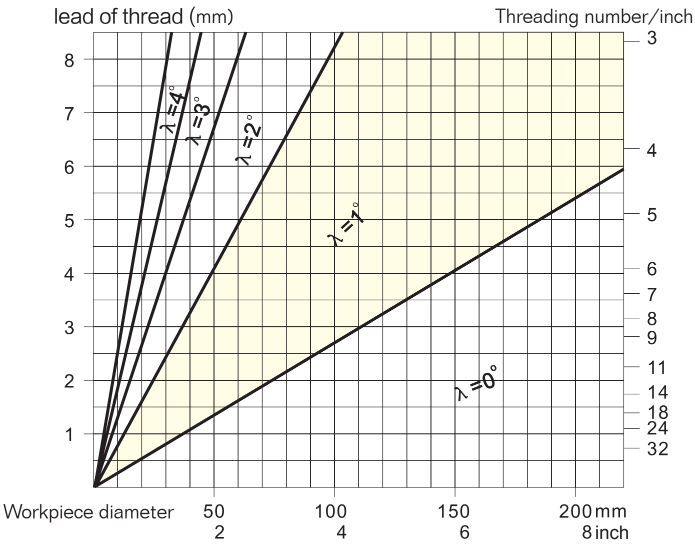
Please refer to the table below for actual value:

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°

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, d2=24mm,
helical angle1.14°-(2°~0°)=inclined angle (-0.86°~1.14°)
it is feasible to use standard shim 1°.

Select shim:



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)

Application information of threading

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	0.72	0.86	1.02	1.17	1.33	1.63	1.94	2.58	3.21
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	0.20/-	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/-

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/-

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	0.165/0.095
10							0.090/0.052	0.094/0.054	0.100/0.058	0.108/0.063	0.119/0.069	0.134/0.078	0.156/0.090
11								0.090/0.052	0.095/0.055	0.103/0.059	0.113/0.065	0.128/0.074	0.149/0.086
12									0.091/0.053	0.098/0.057	0.108/0.063	0.122/0.071	0.142/0.082
13										0.094/0.054	0.104/0.060	0.117/0.068	0.136/0.079
14											0.100/0.058	0.113/0.065	0.131/0.076
15												0.109/0.063	0.126/0.073
16													0.122/0.071

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	**0.573**	**0.687**	**0.764**	**0.860**	**0.982**	**1.146**	**1.250**	**1.375**	**1.528**	**1.719**	**1.964**	**2.291**	**2.750**
Number of passes	**5**	**6**	**6**	**7**	**8**	**9**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
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

Application information of threading

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	**0.581**	**0.813**	**0.856**	**1.017**	**1.162**	**1.355**	**1.479**	**1.626**	**1.807**	**2.033**	**2.324**	**2.711**	**3.253**
Number of passes	**5**	**6**	**6**	**8**	**8**	**9**	**9**	**10**	**11**	**12**	**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	0.179/—	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	0.133/0.069
16													0.129/0.067

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

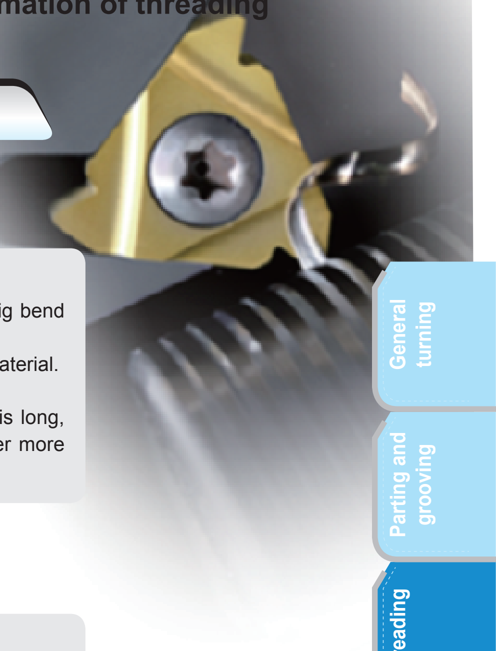
Screw pitch	28	19	14	11
Total in-feed	0.581	0.856	1.162	1.479
Number of passes	5	6	8	10
Order to follow in threading operation	Value of radial in-feed (X) and flank in-feed (Z)			
	X/Z	X/Z	X/Z	X/Z
1	0.179/-	0.223/-	0.222/-	0.214/-
2	0.134/0.070	0.181/0.094	0.213/0.111	0.242/0.126
3	0.103/0.054	0.139/0.072	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

Application information of threading

Table of recommended cutting parameters

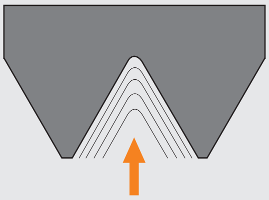
ISO	Material			Unit cutting force Kc0.4 N/mm^2	Hardness HB	Grade YBG202 YBG203 YBG205 Cutting speed(m/min)
P	Carbon steel	C=0.15%		1900	125	150–175
		C=0.35%		2100	150	140–155
		C=0.60%		2250	200	130–145
	Alloy steel	Anneal		2100	180	110–130
		Hardened		2600	275	80–100
		Hardened		2700	300	70–90
		Hardened		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
M	Stainless steel	Austenite		2450	180	110–130
		Martensite/Ferrite		2300	200	130–170
K	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
N	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
S	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
H	Hardened steel	Hardened steel		4500	HRC55	40–50

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.



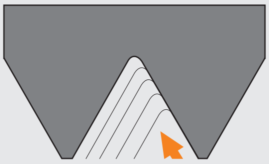
In-feed way of threading tools

Radial in-feed



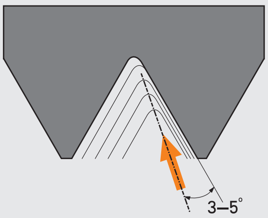
- Easy operating, high general.
- V-shape chip caused by long chip steel workpiece will produce big bend stress on cutting edge.
- It requires low cutting depth, sharp cutting edge and good tough material.
- Big quantity of heat when cutting ,V-shape chip is hard to control.
- Because the interface of 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



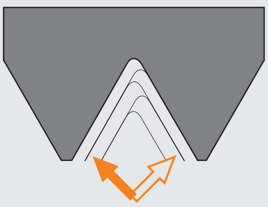
- Cutting edge suffer small bend stress, stable estate, it is easy for chips formation in deep cutting depth.
- There are enough space to leave chips flow when flank in-feed.
- Big abrasion on right flank.

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.

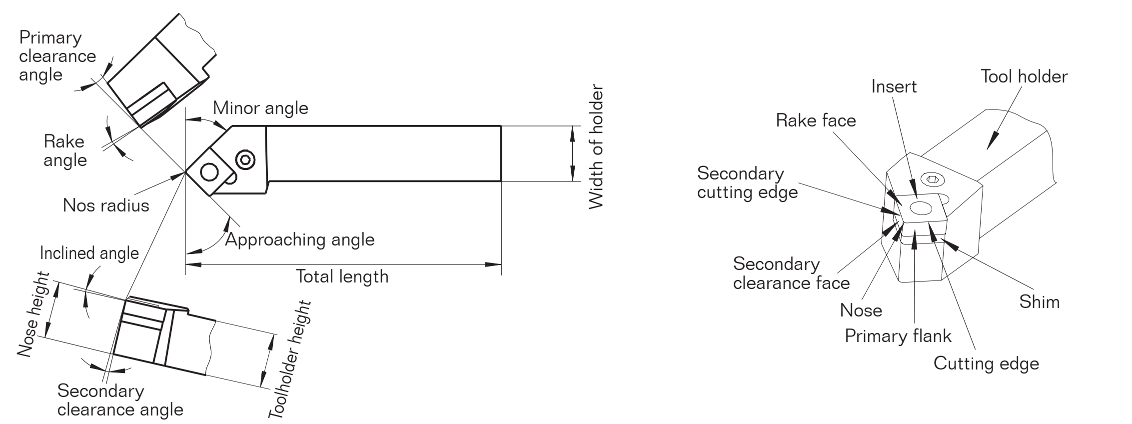
Application information of threading

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.

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	●When machining brittle and hard materials ●When roughing and intermittent cutting
Big rake angle	●When machining plastic or soft materials ●When finishing

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.

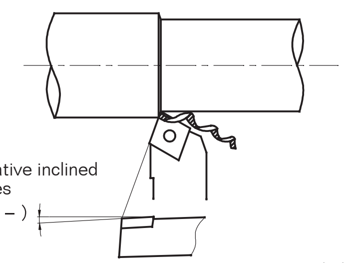
The principle of choosing clearance angle: Choose small clearance angle if friction is not serious.

Value Selection	Situations
Small clearance angle	●In order to increase nose strength when roughing ●When machining brittle and hard materials
Large clearance angle	●In order to reduce friction when finishing ●When machining materials easy to be hardened

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.

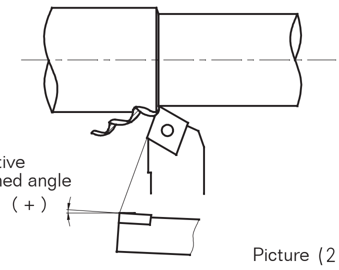


Picture (1)

General technical information for turning

◆ 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.

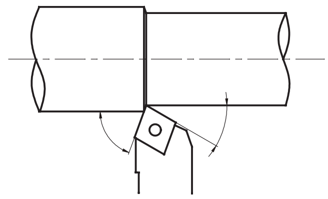


Picture (2)

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

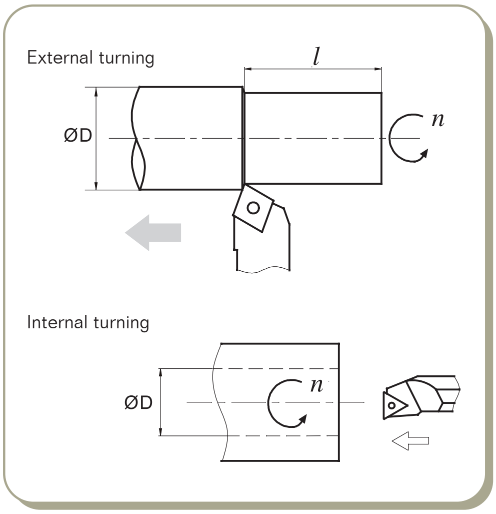
Nose radius significantly affects nose strength and surface quality.

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	●Finishing at small cutting depth ●Machining parts such as slender shaft ●When the rigidity of the machine is not enough
Large nose radius	●When roughing ●When machining hard materials (intermittent cutting) ●When the rigidity of the machine is not enough

Calculation method of turning parameters

1 Calculation of cutting speed



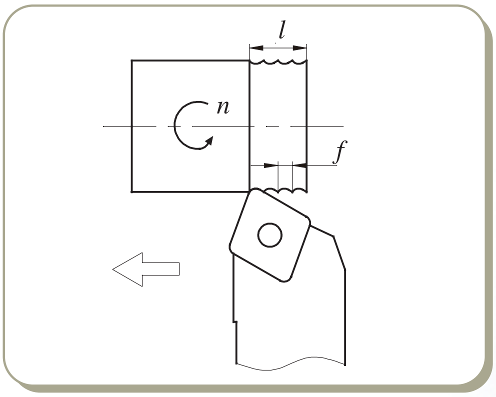
$$Vc=\frac{\pi\times D\times n}{1000}\ (m/min)$$

In the formula: Vc: 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:

$$Vc=\frac{\pi\times D\times n}{1000}\ (m/min)\ =132(m/min)$$

2 Calculation of feed rate



$$f=\frac{l}{n}\ (mm/rev)$$

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:

$$f=\frac{l}{n}=\frac{100}{500}=0.2(mm/rev)$$

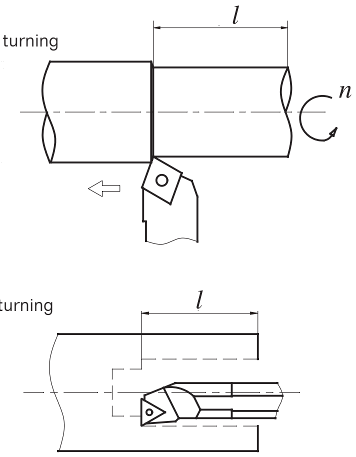
3 Cutting time calculation of external and internal turning

$$T=\frac{l}{f\times n}\ (min)$$

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:

$$T=\frac{l}{f\times n}=\frac{150}{0.2\times 250}=3(min)$$

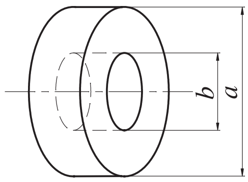


4 Time calculation for end surface turning (constant linear speed)

$$T=\frac{\pi\times(a^2-b^2)}{4000\times Vc\times f}\ (min)$$

In the formula: T: Cutting time (min)
Vc: Cutting speed (m/min)
f: Feed rate (mm/rev)

For end surface without hole, b=0, the formula is still valid.



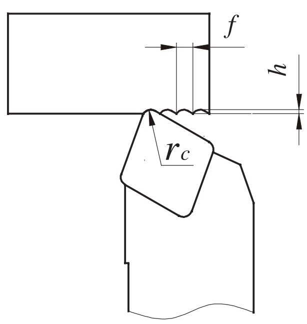
5 Theoretical value calculation of machined surface roughness

$$R=\frac{f^2}{8r_c}\times 1000\,(\mu m)$$

In the formula: R: Theoretical roughness value of machined surface
f: Feed rate (mm/rev)
rc: 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:

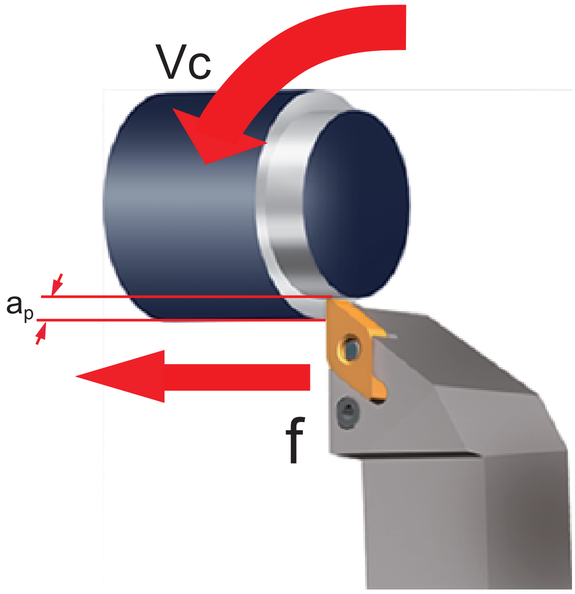
$$R=\frac{f^2}{8r_c}\times 1000=\frac{0.2^2}{8\times 0.4}\times 1000=12.5(\mu m)$$



Effect of three main turning parameters on machining

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 (Vc)

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 (fn)

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 (ap)

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 insert chipbreaker

Negative inserts

ISO	Machining range	ZCC.CT	SANDVIK	KORLOY	TaeguTec	WALTER	SECO	MITSUBISHI	SUMITOMO	KENNAMETAL	DIJET	HITACHI	TUNGALOY	KYOCERA	VALANTTE
P	For extra finishing		QF	HU	FA, EA	NF3	FF1	PK※ FH, FY	FA, FL	UF, FF	F1, FA	FE	01※, TF, ZF	DP※, GP, VF XP, XP-T	F1
	For finishing	DF	PF MF	HF	FG, SF	NS6	MF2	C, SA, SH	SU, LU, SX	LF, FN	PF, UR UA, UT	BE, CE	NS, 27 TS, AS	HQ, CQ	F2(2B), F5(5C)
	For finishing (Soft steel)	SF		HF				SY					17	XQ, XS	
	For finishing (Wiper)	WGF	WP WF	HW		NF	W-MF2	SW	LUW	FW			AFW, ASW	WP, WQ	
	For semi-finishing	DM PM	PM QM SM	HA HC HM	MC MT MP	NM4 NM6	MF3 MR3 MF5	MV MA MH	GU UG UX	MG MN	PG UB	AB AY AE	NM ZM TM DM 37	CJ, GS PS, HS PT, CS	F3, F4(8A), M2(2C), M3 M4, M5(5B), M6, M7, 55, M8
	For semi-finishing	WGM	WM		WS, WT	NM	W-M3	MW	GUW	MW					
	(Wiper)	DR (Double-side)	PR		MT, MG	NM9	MR7	GH	MU, MX	RN	UD, GG	AR, RE	TH	GT, HT	
	For light roughing	LR, DR (Single-side) HDR, HPR	QR PR HR	HR HH	HT, RH	NR6	R4, R6 R7, PR9	HZ, HX HV	MP, HG HP	MR, RM RH	UC	HX HE	57, 65, TU	HX	R3, R4, R6(9A) R7(9B), R9(9C)

※ Periphery grinding type

Comparison table for turning insert chipbreaker

Negative inserts

ISO	Machining range	ZCC.CT	SANDVIK	KORLOY	TaeguTec	WALTER	SECO	MITSUBISHI	SUMITOMO	KENNAMETAL	DIJET	HITACHI	TUNGALOY	KYOCERA	VALANTTE
M	For finishing	EF	MF	HA	FG, SF	NF4		FS	SU	K, FP		SE	SS	GU	F1, F2(2B), F5(5C)
M	For semi-finishing	EM	MM	HS	ML, MP	NM4		MS, ES	EX, UP	P, MP	SF, SG	DE	SA, SM, S	SU, HU, ST	F3, F4(8A), M2(2C), M3 M4, M5(5B), M6, M7, 55, M8
M	For roughing	ER	MR	GS, HM	MT, RH	NR4	M5, MR7 56, R6	GH, HZ	MP	RP					R3, R4, R6(9A) R7(9B), R9(9C)
K	For finishing	PM	KF	Without chip-breaker	FG	MA		Through chip-breaker,	UZ	FN		Y	CM	Through chip-breaker, , C	F2(2B)
K	For Semi-Finishing	PM	KM	Through chip-breaker, HM	MC, MT, MG	MA, NM5		Through chip-breaker,	UX	Through chip-breaker, , UN		V	33, through chip-breaker,	ZS, GC	M5(5B), M6, M8
K	For roughing	Without chip-breaker	KR	GR, HR, GH	RT, RH	MA		Without chip-breaker	Without chip-breaker					Without chip-breaker	R3, R4, R7(9B)
S	For finishing	NF			SF	NF4	MF1※	FJ※		FS※, K※					F5(5C), M2(2C)
S	For semi-finishing	NM	NGP※, 23			NM4	M1	MJ※	SU※	NGP※			SA		M4, M5(5B), M7, 55
S	For roughing		SR			NR4		GJ		MS					

※ Periphery grinding type

Comparison table for turning insert chipbreaker

Positive inserts

ISO	Machining range	ZCC.CT	SANDVIK	KORLOY	TaeguTec	WALTER	SECO	MITSUBISHI	SUMITOMO	KENNAMETAL	DIJET	HITACHI	TUNGALOY	KYOCERA	VALANTTE
P	For finishing	USF, SF, HF	UF, PF	HFP	FA, FG	PF4	FF1 F1	FV, SV	FP, LU SU, SK	11, UF LF		JQ	01※, PF FS	GP, XP VF	PF4 JQ, JZ
P	For finishing (Wiper)		WK※, W WP			PF	W-F1	SW	LUW	FW					
P	For semi-finishing	HM	UM PM	HMP C25	MT, CMX	PS5 PM5	F2	MV, through chip-breaker	MU	MF	FT	JE	PM 23, 24	HQ, XQ GK	PM2 PM4
P	For semi-finishing (Wiper)		WM			PM		MW		MW					
M	For finishing	EF	MF	HFP	FA, FG	PF4		SV					SS※		1A, 2A
M	For semi-finishing	EM	MM	HMP C25	MT CMX	PS5 PM5		Through chip-breaker, MV							PM2 PM4
K	For semi-finishing	HM, HR without chip-breaker	KF KM KR	HMP C25	MT CMX	MW PS5 PM5		Without chip-breaker	Without chip-breaker※		FT		Without chip-breaker	Without chip-breaker※	PM2 PM4
S	For finishing/ For semi-finishing					PF4 PS5 PM5		FJ※	SC※	LF※ HP※					PM2, 1A 2A
N	For general turning	LC, LH	AL	TA AK MA	FL	PM2			AG	HP	ALU ACB		PP	A3	1L, 1A 2A

※ Periphery grinding type