PCD&PCBN inserts





	APHT-PCD	APHT-W	APHT-CBN	SEHT-PCD	SEHT-CBN
Page	B237	B237	B237	B262	B262

Inserts for face milling








	SEET-CF	SEET-CM	SEET-CR	SEET-DF	SEET-DM	SEET-DR	SEET-EF	SEET-EM
Page	B256	B256	B256	B256	B256	B256	B256	B256








	SEET-LH	SEET-W	SEHT-AL	OFKT-DF	OFKT-DM	OFKT-LH	SEEN	SEKN
Page	B256	B256	B262	B246	B246	B246	B257	B257








	SEMR-M	SEKR-M	SEKN	SEMR-M	SEKR-M	ODHT-GM	ODHT-GH	ODHT-GL
Page	B257	B257	B257	B257	B257	B247	B247	B247








	ODMT-GM	ODHT-LH	ONHU-PF	ONHU-PM	ONHU-W	ONHU-GM	ONHU-GH	ONHU-GL
Page	B247	B247	B248	B248	B248	B248	B248	B248








	ONMU-GM	ONMU-GH	ONHU-W	ONHU-CM	SNEG-GM	SNEG-GR	SNEG-HGR	SNEG-W
Page	B248	B248	B248	B247	B258	B258	B258	B258

Inserts for face milling

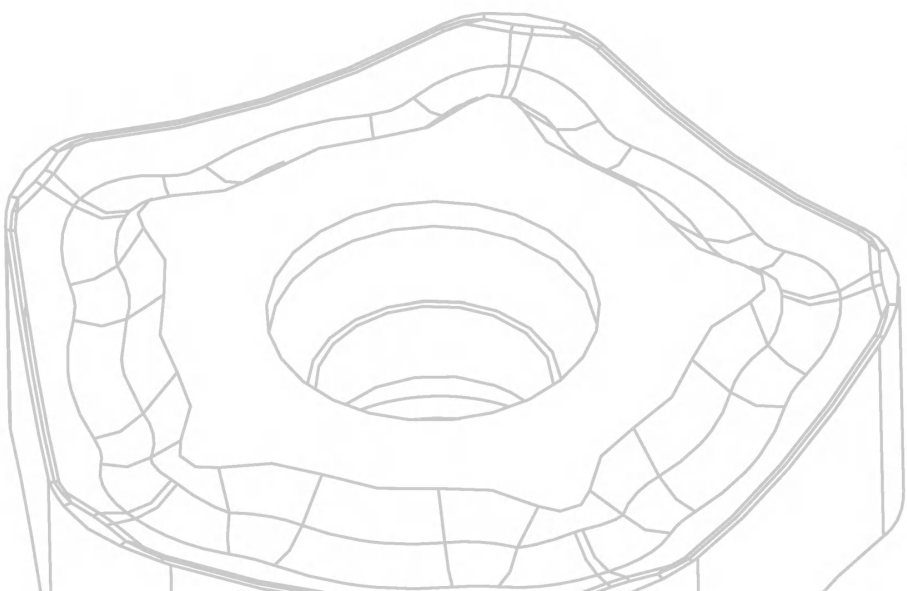
								
	HNEX-DF	HNEX-DM	HNEX-DR	PNEG-CF/CM/CR	PNEG-GL	PNEG-GM	PNEG-GH	PNEG-PF/PM/PR
Page	B242	B242	B242	B249	B249	B249	B249	B250

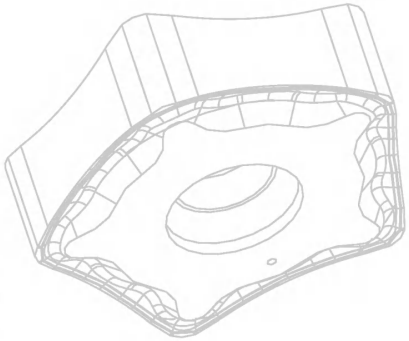
							
	SPKN	SPKR-GM	SPMR-M	SPEX	TPKN	TPMR	SEET□PER-APF
Page	B264	B264,B265	B264,B265	B266	B266	B266	B258

								
	PNEG-KL	PNEG-KM	PNEG-KH	LNKT-ZR	LNKT-ZR	LNKT-ZR	SPKW	SPKT
Page	B250	B250	B250	B242	B242	B242	B265	B265

								
	SEET□PER-APM	SEET□PER-APR	SEET-LH	WN□U-GM	WNHU-LH	RCKT-DM	RCKT-DM	RCKT-DR
Page	B258	B258	B258	B267	B267	B252	B252	B252

								
	RCKT-ER	RCKT-NM	RDKW□MO	RPMW-H	RPMT-M	R□MT-MM	SN□X□-GL	SN□X□-GM
Page	B252	B252	B253	B254	B254	B254	B259,B260,B261	B259,B260,B261





Inserts for face milling

	SN□X□-GH	SNGX-LH	SNCU-W4	SNGX-W	SNGX-W	SNGX-W	XEEC
Page	B259,B260,B261	B259	B261	B259	B260	B261	B268

Inserts for square shoulder milling

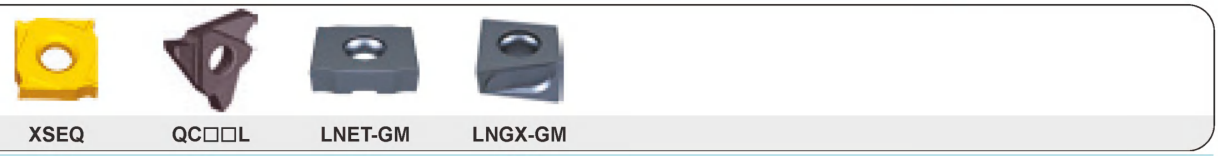
	ADKT-GM	ADKT-GM	APHT-AL	APKT-APL	APKT-APF	APKT-APM	APKT-ALH	ANGX□PNR-GM
Page	B236	B236	B237	B238	B238	B238	B238	B239

	ANMX□PNR-GM	ANGX□PNR-LH	LNKT-GM	LNKT-GL	LNMT-GM
Page	B239	B239	B243	B243	B243

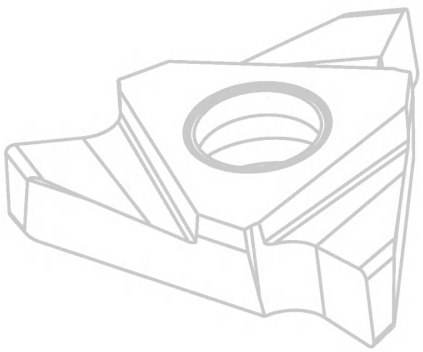
Inserts for profile milling

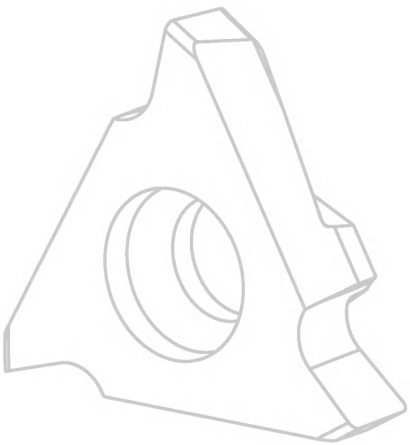
	ZDET	ZPNT	SDMT/SPMT	ROHX	XPHT-GM	ZOHX-GF	ZOHX-GM	ZOHX-HM
Page	B269	B270	B254,B263	B253	B268	B270	B270	B270

Inserts for side and face milling



	XSEQ	QC□□L	LNET-GM	LNGX-GM
Page	B269	B251	B244	B245





Inserts for high feed







	SDMT-DM	SDMT-PM	SDMT-NM	WPGT	WPGT-PM	SNGU-GM	ENMX□□-GM
Page	B255	B255	B255	B267	B267	B262	B240-B241

Inserts for boring


	CNE-A	CNE-B
Page	B240	B240

Inserts for T-slot milling

	MPHT
Page	B246

Inserts for helical milling

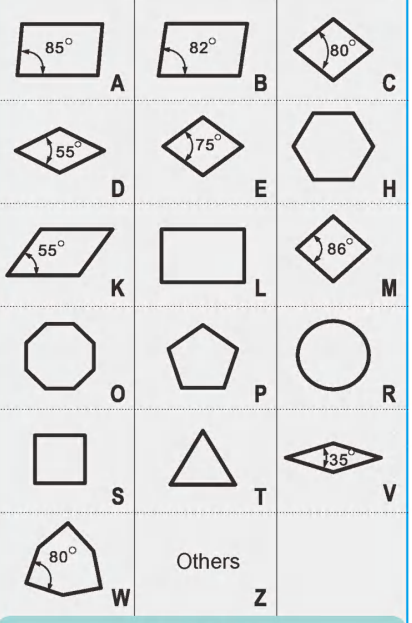

	APKT-PM/KM	SPMT-PM/KM
Page	B238	B263

Inserts for chamfering

	SPMT
Page	B263

Indexable milling inserts code key

Insert Shape / Code



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°				

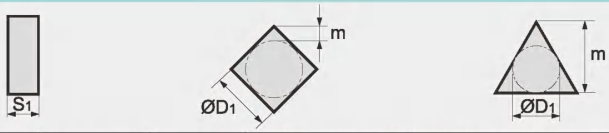
Chipbreaker and clamping system

S P K N

Clearance angle of main cutting edge

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

Tolerance



Code	Nose height M Tolerance(mm)	Inscribed circle ØD1 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-class tolerance (identified by shape and size)

● Nose height tolerance(mm)

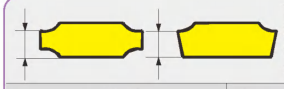
Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
12.7	±0.13	±0.13	±0.13	±0.15	---	---
15.875	±0.15	±0.15	±0.15	±0.18	---	---
19.05	±0.15	±0.15	±0.15	±0.18	---	---
25.4	---	±0.18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

● Tolerance of Inscribed Circle ØD1(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

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

Length of cutting edge



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

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

Insert thickness

12 04 ED T21 R -DM

Wiper

Kr		αn	
A	45°	A	3°
D	60°	B	5°
E	75°	C	7°
F	85°	D	15°
P	90°	E	20°
Z	Others	F	25°
		G	30°
		N	0°
		P	11°
		Z	Others

Chamfer (mm)

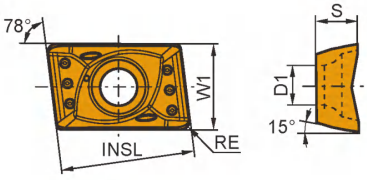
F	0-5°	0-0.10	K
E	1-10°	1-0.15	P
T	2-15°	2-0.20	W
	3-20°	3-0.25	
	4-25°	4-0.30	
S	5-30°	5-0.35	
		6-0.40	No mark
		7-0.45	

Chipbreaker code

Cutting direction

R	Right hand
L	Left hand
N	Neutral

AD□□



Good working condition Normal working condition Bad working condition

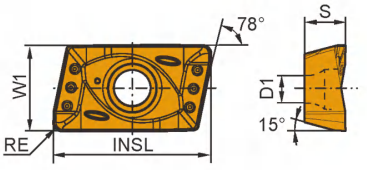
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ADKT080308L-GM	7.96	5.33	3	2.4	0.5									★							
	ADKT100308L-GM	10	6.44	3.2	2.8	0.5									★							
	ADKT12T308L-GM	12.44	8	3.9	3.5	0.5									★							
	ADKT160508L-GM	16	9.62	5	4.4	0.5									★							

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

AD□□



Good working condition Normal working condition Bad working condition

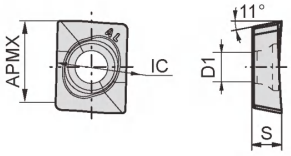
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ADKT090308R-GM	10	5	2.8	2.4	0.8									★							
	ADKT100308R-GM	11.65	6.04	3.5	2.8	0.8									★							
	ADKT12T308R-GM	15	8.16	3.9	3.54	0.8									★							
	ADKT150508R-GM	17.05	8.81	4.95	4.5	0.8									★							

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

APㅁㅁ



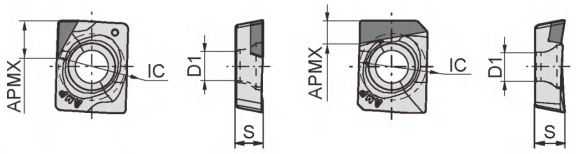
Good working condition 😃 Normal working condition 😟 Bad working condition

Workpiece material					
H	High hardness materials			😃	
K	Cast iron		😊		😟
N	Non-ferrous metal	😃			😃

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	**APHT12T304PPFR-AL**	12.7	3.97	4.4	12				★

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

APㅁㅁ



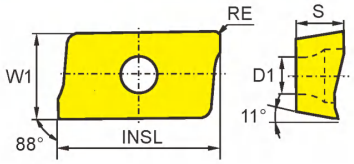
Good working condition 😃 Normal working condition 😟 Bad working condition

Workpiece material					
H	High hardness materials			😃	
K	Cast iron		😊		😟
N	Non-ferrous metal	😃			😃

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	**APHT12T304PPFR-PCD**	12.7	3.97	4.4	3	★			
	**APHT12T304PPFR-CBN**	12.7	3.97	4.4	2		○	○	
	**APHT12T304-W**	12.7	3.97	4.4	1	★	★	★	

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

APKT



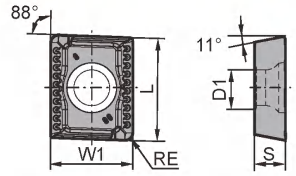
Good working condition 😃 Normal working condition 😟 Bad working condition

Workpiece material		
P	Steel	😃 😃 😃 😃 😊 😟 😊 😊
M	Stainless steel	😃 😃 😃 😃 😃 😟 😊 😊
K	Cast iron	😃 😃 😟 😊 😟
N	Non-ferrous metal	😃 😟
S	Heat resistant alloy, Ti alloy	😊 😃 😃 😃 😃 😟

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	APKT11T304-APL	12.24	6.6	3.6	2.8	0.4									★					○		
	APKT11T308-APL	12.24	6.6	3.6	2.8	0.8	★	★	★						★			○				
	APKT160408-APL	17.877	9.33	5.76	4.4	0.8	★	★	★						★			○				
	APKT160420-APL	17.877	9.33	5.76	4.4	2.0									★							
	APKT070204-APM	7.32	4.34	2.38	2	0.4		●	●						★							
	APKT11T304-APM	12.24	6.6	3.6	2.8	0.4		●							★							
	APKT11T308-APM	12.24	6.6	3.6	2.8	0.8		●	●						★		●	●				
	APKT11T312-APM	12.24	6.6	3.6	2.8	1.2			●						★							
	APKT11T316-APM	12.24	6.6	3.6	2.8	1.6									★							
	APKT11T320-APM	12.24	6.6	3.6	2.8	2.0		●							★							
	APKT160408-APM	17.877	9.33	5.76	4.4	0.8		●	●						★		●	●				
	APKT160416-APM	17.877	9.33	5.76	4.4	1.6		●	●						★		●					
	APKT160420-APM	17.877	9.33	5.76	4.4	2.0			●						★							
	APKT160424-APM	17.877	9.33	5.76	4.4	2.4									★							
	APKT160430-APM	17.877	9.33	5.76	4.4	3.0									★							
	APKT070204-APF	7.32	4.34	2.38	2	0.4	●	●							★							
	APKT11T304-APF	12.24	6.6	3.6	2.8	0.4	●	●							★							
	APKT11T308-APF	12.24	6.6	3.6	2.8	0.8	●	●							★		●	●				
	APKT160408-APF	17.877	9.33	5.76	4.4	0.8	●								★		●	●				
	APKT11T304-ALH	12.24	6.6	3.6	2.8	0.4															★	★
	APKT11T308-ALH	12.24	6.6	3.6	2.8	0.8															★	○
	APKT160408-ALH	17.877	9.33	5.76	4.4	0.8															★	★

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

AP□□



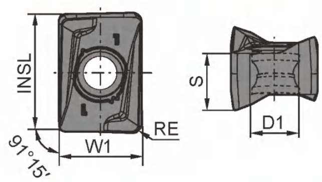
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	APKT150412-PM	16.33	12.7	4.76	5.4	1.2		★								●						
	APKT150412-KM	16.33	12.7	4.76	5.4	1.2										●						

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

AN□□



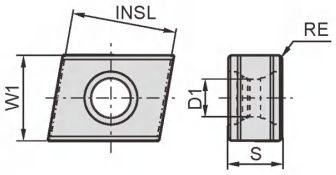
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ANGX110504PNR-GM	11.85	8.4	5.7	3.5	0.4		★	★					★	★							
	ANGX110508PNR-GM	11.85	8.4	5.7	3.5	0.8		★	★					★	★			●				
	ANGX110520PNR-GM	11.85	8.4	5.7	3.5	2.0		★	★		★			★								
	ANGX150608PNR-GM	15.43	11.0	7.3	4.4	0.8		★	★					★	★			●				
	ANGX150616PNR-GM	15.43	11.0	7.3	4.4	1.6		★	★					★	★							
	ANGX150620PNR-GM	15.43	11.0	7.3	4.4	2.0			★		★			★								
	ANMX110508PNR-GM	11.85	8.4	5.7	3.5	0.8		★	★						★			★				
	ANMX150608PNR-GM	15.43	11.0	7.3	4.4	0.8		★	★					★	★							
	ANGX110502PNR-LH	11.85	8.4	5.7	3.5	0.2															★	
	ANGX110504PNR-LH	11.85	8.4	5.7	3.5	0.4															★	
	ANGX150608PNR-LH	15.43	11.0	7.3	4.4	0.8															★	

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

CN□□



Good working condition Normal working condition Bad working condition

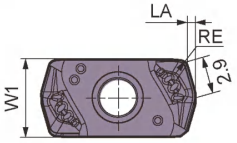
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	RE	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**CNE121006A**	12.8	10.0	6.35	0.4	4.4		●	○													
	**CNE121006B**	12.0	10.0	6.35	0.6	4.4		●	○													

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

EN□□



Good working condition Normal working condition Bad working condition

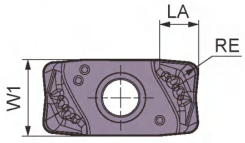
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating							Cermet		Cemented carbide	
		W1	RE	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**ENMX1206XR-GM**	6	0.6	1								●								

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

EN□□



Good working condition Normal working condition Bad working condition

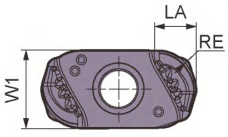
Workpiece material

- P Steel
- M Stainless steel
- K Cast iron
- N Non-ferrous metal
- S Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating							Cermet		Cemented carbide	
		W1	RE	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**ENMX120608-GM**	6	0.8	3								●								

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

EN□□



Good working condition Normal working condition Bad working condition

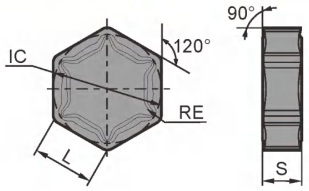
Workpiece material

- P Steel
- M Stainless steel
- K Cast iron
- N Non-ferrous metal
- S Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating							Cermet		Cemented carbide	
		W1	RE	LA	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205H	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**ENMX1206R20-GM**	6	2.0	1.8								○								
	ENMX1206R30-GM	6	3.0	2.8								●								

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

HN□□



Good working condition Normal working condition Bad working condition

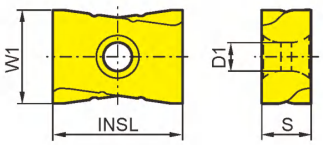
Workpiece material

		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P	Steel	😐	😐				😐	😐	😊	☹				😊	😊		
M	Stainless steel	😐	😐				😐	😐	😐	☹				😊	😊		
K	Cast iron			😐	😐	☹	😊										☹
N	Non-ferrous metal															😐	☹
S	Heat resistant alloy, Ti alloy						😊	😐	😐	😐		😐	☹				

Insert shape	Type	Basic dimensions(mm) L	IC	S	RE	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	HNEX090512-DF	9.16	15.875	5.56	1.2			★													
	HNEX090512-DM	9.16	15.875	5.56	1.2			★													
	HNEX090512-DR	9.16	15.875	5.56	1.2			○		★											

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

LN□□



Good working condition Normal working condition Bad working condition

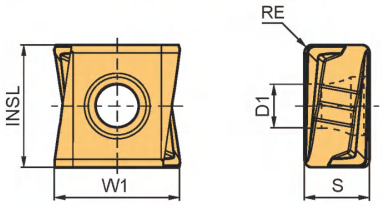
Workpiece material

		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P	Steel	😐	😐				😐	😐	😊	☹				😊	😊		
M	Stainless steel	😐	😐				😐	😐	😐	☹				😊	😊		
K	Cast iron			😐	😐	☹	😊										☹
N	Non-ferrous metal															😐	☹
S	Heat resistant alloy, Ti alloy						😊	😐	😐	😐		😐	☹				

Insert shape	Type	Basic dimensions(mm) INSL	W1	S	D1	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	LNKT2007DN-ZR	20	17	7.94	4.6		○	○							★						
	LNKT2510-ZR	25	18	9.525	5.5		○			○					★						
	LNKT1506EN-ZR	15.875	14	6.35	4.6		○	○							★						

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

LN□□



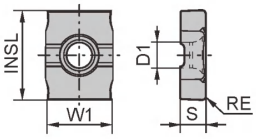
Good working condition Normal working condition Bad working condition

Workpiece material		
P	Steel	😃 😃 — — — 😃 😃 😊 ☹ — — 😊 😊 — —
M	Stainless steel	😐 😐 — — — 😐 😐 😐 ☹ — — 😊 😊 — —
K	Cast iron	— — 😐 😐 ☹ 😊 — — — — — — — — ☹
N	Non-ferrous metal	— — — — — — — — — — — — — — 😐 ☹
S	Heat resistant alloy, Ti alloy	— — — — — 😊 😐 😐 😐 — 😐 ☹ — — — —

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNKT080404PNR-GL	8.75	8.5	4.45	3.4	0.4		★	●		●				★			●				
	LNKT120608PNR-GL	12.7	13	6.75	4.4	0.8		★	●		●				★			●				
	LNKT160708PNR-GL	16.05	15	7.35	5.5	0.8		★	●		●				★			●				
	LNKT080404PNR-GM	8.75	8.5	4.45	3.4	0.4		★	●		●				★			●				
	LNKT080408PNR-GM	8.75	8.5	4.45	3.4	0.8		★	●		●				★							
	LNKT080412PNR-GM	8.75	8.5	4.45	3.4	1.2		★	●		●				★							
	LNKT120608PNR-GM	12.7	13	6.75	4.4	0.8		★	●		●				★			●				
	LNKT120612PNR-GM	12.7	13	6.75	4.4	1.2		★	●		●				★							
	LNKT120616PNR-GM	12.7	13	6.75	4.4	1.6		★	●		●				★							
	LNKT120620PNR-GM	12.7	13	6.75	4.4	2.0		★	●		●				★							
	LNKT120624PNR-GM	12.7	13	6.75	4.4	2.4		★	●		●				★							
	LNKT120632PNR-GM	12.7	13	6.75	4.4	3.2		★	●		●				★							
	LNKT160708PNR-GM	16.05	15	7.35	5.5	0.8		★	●		●				★			●				
	LNKT160712PNR-GM	16.05	15	7.35	5.5	1.2		★	●		●				★							
	LNKT160716PNR-GM	16.05	15	7.35	5.5	1.6		★	●		●				★							
	LNMT080404PNR-GM	8.75	8.5	4.45	3.4	0.4		★	●		●				★							
	LNMT120608PNR-GM	12.7	13	6.75	4.4	0.8		★	●		●				★							
	LNMT160708PNR-GM	16.05	15	7.35	5.5	0.8		★	●		●				★							

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

LN□□

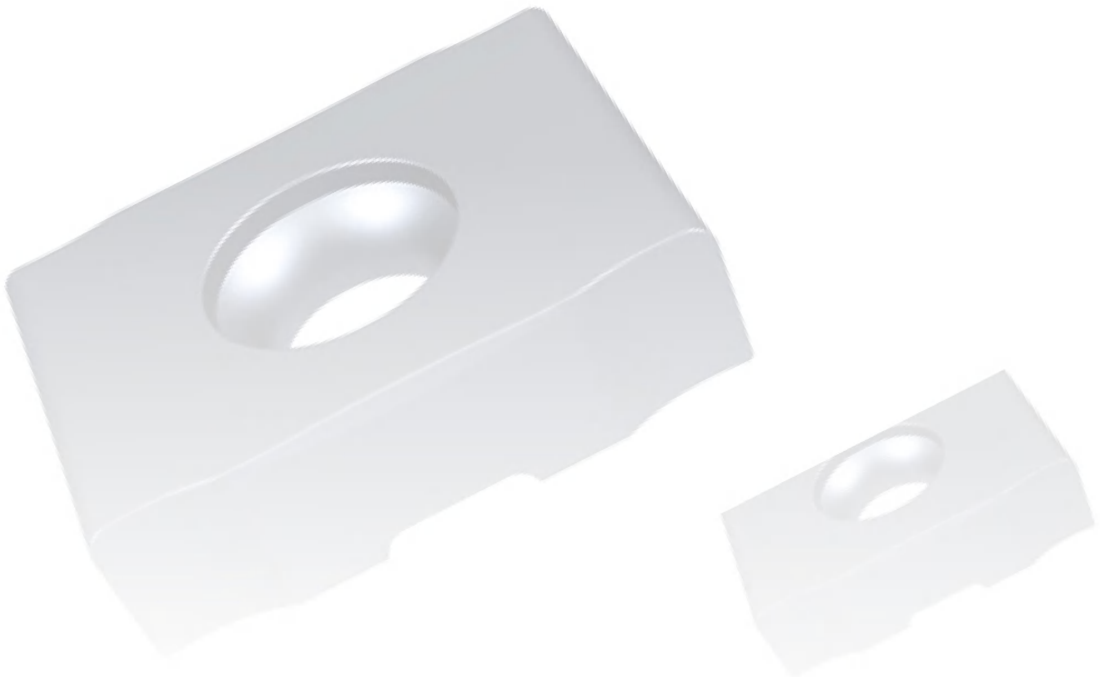


😊 Good working condition 😐 Normal working condition ☹ Bad working condition

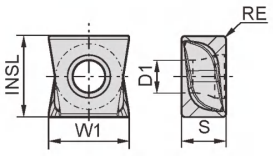
Workpiece material		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P	Steel	😐	😐				😐	😐	😊	☹				😊	😊		
M	Stainless steel	😐	😐				😐	😐	😐	☹				😊	😊		
K	Cast iron			😐	😐	☹	😊										☹
N	Non-ferrous metal															😐	☹
S	Heat resistant alloy, Ti alloy						😊	😐	😐	😐		😐	☹				

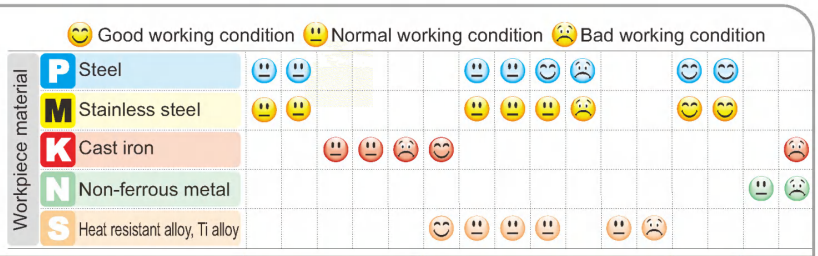
Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		W1	INSL	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNET102304-GM	7.5	10	2.3	2.9	0.4									★			●				
	LNET102804-GM	7.5	10	2.8	2.9	0.4									★			●				
	LNET103304-GM	7.5	10	3.3	2.9	0.4									★			●				
	LNET123804-GM	10	13	3.8	4.4	0.4									★			●				
	LNET124304-GM	10	13	4.3	4.4	0.4									★			●				
	LNET124804-GM	10	13	4.8	4.4	0.4									★			●				
	LNET125304-GM	10	13	5.3	4.4	0.4									★			●				

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



LN□□

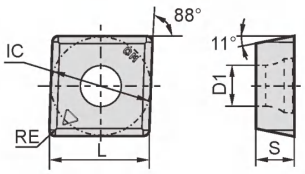




Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		W1	INSL	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	LNGX100504-GM	9.9	10	5.5	4.1	0.4									★			●				
	LNGX100508-GM	9.9	10	5.5	4.1	0.8									★			●				
	LNGX100512-GM	9.9	10	5.5	4.1	1.2									★			●				
	LNGX100516-GM	9.9	10	5.5	4.1	1.6									★			●				
	LNGX100520-GM	9.9	10	5.5	4.1	2.0									★			●				
	LNGX100524-GM	9.9	10	5.5	4.1	2.4									★			●				
	LNGX100530-GM	9.9	10	5.5	4.1	3.0									★			●				
	LNGX100540-GM	9.9	10	5.5	4.1	4.0									★			●				
	LNGX140704-GM	13.4	14	7.5	4.4	0.4									★			●				
	LNGX140708-GM	13.4	14	7.5	4.4	0.8									★			●				
	LNGX140712-GM	13.4	14	7.5	4.4	1.2									★			●				
	LNGX140716-GM	13.4	14	7.5	4.4	1.6									★			●				
	LNGX140720-GM	13.4	14	7.5	4.4	2.0									★			●				
	LNGX140724-GM	13.4	14	7.5	4.4	2.4									★			●				
	LNGX140730-GM	13.4	14	7.5	4.4	3.0									★			●				
	LNGX140740-GM	13.4	14	7.5	4.4	4.0									★			●				
	LNGX140750-GM	13.4	14	7.5	4.4	5.0									★			●				

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

MP□□



Good working condition Normal working condition Bad working condition

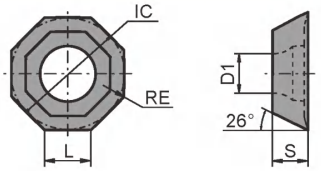
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	L	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**MPHT060304-DM**	6.35	6.35	3.18	2.8	0.4									★	★						
	MPHT080305-DM	8.3	8.3	3.18	3.4	0.5									★	★						
	MPHT120408-DM	12.7	12.7	4.76	5.56	0.8									★	★						

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

OF□□



Good working condition Normal working condition Bad working condition

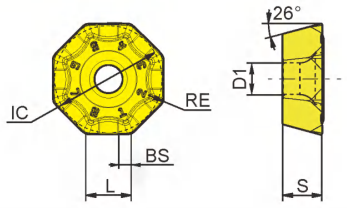
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**OFKT05T3-DF**	5.26	12.7	3.97	4.4	0.5						○	★									
	**OFKT05T3-DM**	5.26	12.7	3.97	4.4	0.5						★	★		★	★						
	**OFKT05T3-LH**	5.26	12.7	3.97	4.4	0.5															○	

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

ODㅁㅁ



Good working condition Normal working condition Bad working condition

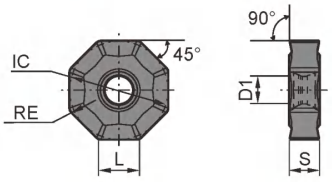
Workpiece material

		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P	Steel	😐	😐				😐	😐	😊	☹				😊	😊		
M	Stainless steel	😐	😐				😐	😐	😐	☹				😊	😊		
K	Cast iron			😐	😐	☹	😊										☹
N	Non-ferrous metal															😐	☹
S	Heat resistant alloy, Ti alloy						😊	😐	😐	😐		😐	☹				

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**ODHT060508-GL**	6.5	15.875	5.56	5.4	0.8	1.6		●	●					●	●							
	**ODHT060508-GM**	6.5	15.875	5.56	5.4	0.8	1.6		●	●					●	●			●				
	**ODMT060512-GM**	6.5	15.875	5.56	5.4	1.2	--		●	●					●	●			●				
	**ODHT060508-GH**	6.5	15.875	5.56	5.4	0.8	1.6		●	●					●	●							
	**ODHT060508-LH**	6.5	15.875	5.56	5.4	0.8	1.6															●	●

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

ONㅁㅁ



Good working condition Normal working condition Bad working condition

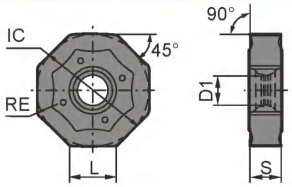
Workpiece material

		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P	Steel	😐	😐				😐	😐	😊	☹				😊	😊		
M	Stainless steel	😐	😐				😐	😐	😐	☹				😊	😊		
K	Cast iron			😐	😐	☹	😊										☹
N	Non-ferrous metal															😐	☹
S	Heat resistant alloy, Ti alloy						😊	😐	😐	😐		😐	☹				

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**ONHU060408-CM**	6.58	15.875	4.76	4.4	0.8			●			●			●							

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

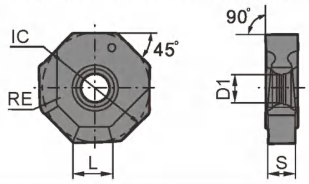
ON□□

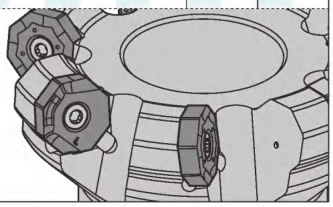


Good working condition / Normal working condition / Bad working condition

Workpiece material		
P	Steel	😐 😐 — — — — 😐 😐 😊 ☹ — — 😊 😊 — —
M	Stainless steel	😐 😐 — — — — 😐 😐 😐 ☹ — — 😊 😊 — —
K	Cast iron	— — 😐 😐 ☹ 😊 — — — — — — — — — ☹
N	Non-ferrous metal	— — — — — — — — — — — — — — 😐 ☹
S	Heat resistant alloy, Ti alloy	— — — — — 😊 😐 😐 😐 — 😐 ☹ — — — —

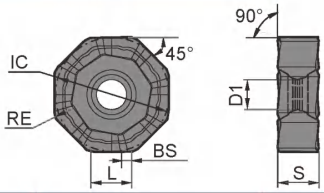
Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ONHU060408-PF	6.58	15.875	4.76	4.4	0.83	★		★				★									
	ONHU08T508-PF	8.37	20.2	5.77	5.3	0.83	★		★				★									
	ONHU060408-PM	6.58	15.875	4.76	4.4	0.83	★	★	★													
	ONHU08T508-PM	8.37	20.2	5.79	5.3	0.83	★	★	★													
	ONHU08T508-W	6.9	20.5	6.00	5.3	0.80						★		★								





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

ON□□



Good working condition / Normal working condition / Bad working condition

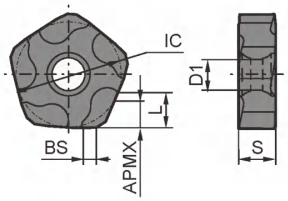
Workpiece material		
P	Steel	😐 😐 — — — — 😐 😐 😊 ☹ — — 😊 😊 — —
M	Stainless steel	😐 😐 — — — — 😐 😐 😐 ☹ — — 😊 😊 — —
K	Cast iron	— — 😐 😐 ☹ 😊 — — — — — — — — — ☹
N	Non-ferrous metal	— — — — — — — — — — — — — — 😐 ☹
S	Heat resistant alloy, Ti alloy	— — — — — 😊 😐 😐 😐 — 😐 ☹ — — — —

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ONHU060404ANN-GL	6.15	15.875	5.54	6	0.4	1.2		●	●					●	●			●				
	ONHU09T508ANN-GL	8.0	20.2	5.8	7	0.8	1.2		●	●					●	●			●				
	ONHU060408ANN-GM	6.15	15.875	5.54	6	0.8	1		●	●					●	●			●				
	ONMU060408-GM	6.15	15.875	5.54	6	0.8	-		●	●					●	●							
	ONHU09T508ANN-GM	8.0	20.2	5.8	7	0.8	1.2		●	●					●	●			●				
	ONMU09T512-GM	8.0	20.2	5.8	7	1.2	-		●	●					●	●							
	ONMU060408-GH	6.15	15.875	5.54	6	0.8	-		●	●					●	●			●				
	ONHU060408ANN-GH	6.15	15.875	5.54	6	0.8	1		●	●					●	●			●				
	ONHU09T508ANN-GH	8.0	20.2	5.8	7	0.8	1.2		●	●					●	●			●				
	ONMU09T512-GH	8.0	20.2	5.8	7	1.2	-		●	●					●	●							
	ONHU0604AN-W	6.15	15.875	4.97	6	0.8	-						●										

●Inserts are suitable for both left and right cuts

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

PN□□



Good working condition Normal working condition Bad working condition

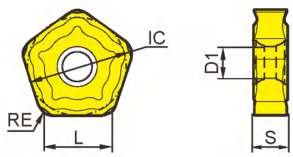
Workpiece material

		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P	Steel	😐	😐					😐	😐	😊	☹			😊	😊		
M	Stainless steel	😐	😐					😐	😐	😐	☹			😊	😊		
K	Cast iron			😐	😐	☹	😊										☹
N	Non-ferrous metal															😐	☹
S	Heat resistant alloy, Ti alloy						😊	😐	😐	😐		😐	☹				

Insert shape	Type	Basic dimensions(mm) L	IC	S	D1	BS	APMX	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	PNEG110512R-CF	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512L-CF	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512R-CM	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512L-CM	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512R-CR	5.4	15.875	5.56	4.64	1.6	5			●													
	PNEG110512L-CR	5.4	15.875	5.56	4.64	1.6	5			●													

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

PN□□



Good working condition Normal working condition Bad working condition

Workpiece material

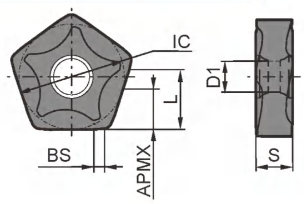
		YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P	Steel	😐	😐					😐	😐	😊	☹			😊	😊		
M	Stainless steel	😐	😐					😐	😐	😐	☹			😊	😊		
K	Cast iron			😐	😐	☹	😊										☹
N	Non-ferrous metal															😐	☹
S	Heat resistant alloy, Ti alloy						😊	😐	😐	😐		😐	☹				

Insert shape	Type	Basic dimensions(mm) L	IC	S	D1	RE	CVD Coating YBC302	YBM253	YBD152	YBD203	YBD252	PVD Coating YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	Cermet YNG151	YNG151C	Cemented carbide YD101	YD201
	PNEG110512-GL	7.5	15.875	5.56	4.64	1.2		●						●	★							
	PNEG110530-GM	7.5	15.875	5.56	4.64	3.0		●						●	★							
	PNEG110530-GH	7.5	15.875	5.56	4.64	3.0		●						●	★							

●Inserts are suitable for both left and right cuts

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

PN□□



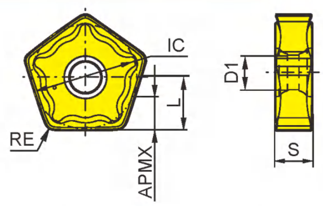
Good working condition / Normal working condition / Bad working condition

Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	BS	APMX	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	PNEG110512R-PF	7.5	15.875	5.56	4.64	1.4	7.5	★	●														
	PNEG110512L-PF	7.5	15.875	5.56	4.64	1.4	7.5	★	●														
	PNEG110512R-PM	7.5	15.875	5.56	4.64	1.4	7.5	★	●														
	PNEG110512L-PM	7.5	15.875	5.56	4.64	1.4	7.5	★	●														
	PNEG110512R-PR	7.5	15.875	5.56	4.64	1.4	7.5	★	●														
	PNEG110512L-PR	7.5	15.875	5.56	4.64	1.4	7.5	★	●														

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

PN□□



Good working condition / Normal working condition / Bad working condition

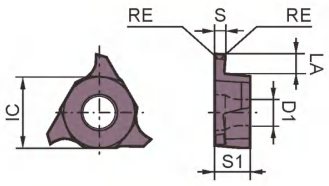
Workpiece material	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
P Steel	Normal	Normal					Normal	Normal	Good	Bad			Good	Good		
M Stainless steel	Normal	Normal					Normal	Normal	Normal	Bad			Good	Good		
K Cast iron			Normal	Normal	Bad	Good										Bad
N Non-ferrous metal															Normal	Bad
S Heat resistant alloy, Ti alloy						Good	Normal	Normal	Normal		Normal	Bad				

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	APMX	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	PNEG110512-KL	6.5	15.875	5.56	4.64	1.2	6.5			●		●											
	PNEG110512-KM	6.5	15.875	5.56	4.64	1.2	6.5			●		●											
	PNEG110512-KH	6.5	15.875	5.56	4.64	1.2	6.5			●		●											

●Inserts are suitable for both left and right cuts

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

QC□□



Good working condition Normal working condition Bad working condition

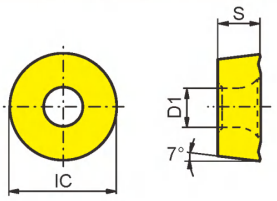
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		S±0.025	LA	RE	IC	S1	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	QC16L110-R01	1.10	2.00	R0.1	9.525	3.18	4.4							○	○								
	QC16L125-R02	1.25	2.00	R0.2	9.525	3.18	4.4							○	○								
	QC16L145-R02	1.45	2.00	R0.2	9.525	3.18	4.4							○	○								
	QC16L150-R02	1.50	2.00	R0.2	9.525	3.18	4.4							○	★								
	QC16L175-R02	1.75	2.00	R0.2	9.525	3.18	4.4							○	○								
	QC16L185-R02	1.85	2.50	R0.2	9.525	3.18	4.4							○	○								
	QC16L200-R02	2.00	2.50	R0.2	9.525	3.18	4.4							○	★								
	QC16L250-R02	2.50	2.50	R0.2	9.525	3.18	4.4							○	★								
	QC16L300-R02	3.00	3.00	R0.2	9.525	3.18	4.4							○	★								
	QC22L125-R02	1.25	2.00	R0.2	12.70	4.76	5.5							○	○								
	QC22L145-R02	1.45	2.00	R0.2	12.70	4.76	5.5							○	○								
	QC22L150-R02	1.50	3.50	R0.2	12.70	4.76	5.5							○	★								
	QC22L175-R02	1.75	3.50	R0.2	12.70	4.76	5.5							○	○								
	QC22L185-R02	1.85	3.50	R0.2	12.70	4.76	5.5							○	○								
	QC22L200-R02	2.00	3.50	R0.2	12.70	4.76	5.5							○	★								
	QC22L230-R02	2.30	3.50	R0.2	12.70	4.76	5.5							○	○								
	QC22L250-R03	2.50	4.00	R0.3	12.70	4.76	5.5							○	★								
	QC22L265-R03	2.65	4.00	R0.3	12.70	4.76	5.5							○	○								
	QC22L280-R03	2.80	4.00	R0.3	12.70	4.76	5.5							○	○								
	QC22L300-R03	3.00	4.00	R0.3	12.70	4.76	5.5							○	★								
	QC22L320-R03	3.20	4.00	R0.3	12.70	4.76	5.5							○	○								
	QC22L330-R03	3.30	4.00	R0.3	12.70	4.76	5.5							○	○								
	QC22L350-R03	3.50	5.00	R0.3	12.70	4.76	5.5							○	★								
	QC22L400-R04	4.00	5.00	R0.4	12.70	4.76	5.5							○	★								
	QC22L430-R04	4.30	5.00	R0.4	12.70	4.76	5.5							○	○								
	QC22L450-R04	4.50	5.00	R0.4	12.70	4.76	5.5							○	○								
	QC22L480-R04	4.80	5.00	R0.4	12.70	5.06	5.5							○	○								

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

RC□□



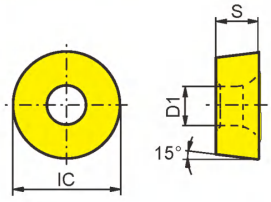
Good working condition Normal working condition Bad working condition

Workpiece material		
P	Steel	😃 😃 · · · · 😃 😃 😊 ☹ · · 😊 😊 · ·
M	Stainless steel	😃 😃 · · · · 😃 😃 😃 ☹ · · 😊 😊 · ·
K	Cast iron	· · 😃 😃 ☹ 😊 · · · · · · · · · ☹
N	Non-ferrous metal	· · · · · · · · · · · · · · 😃 ☹
S	Heat resistant alloy, Ti alloy	· · · · · 😊 😃 😃 😃 · ☹ ☹ · · · ·

Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	RCKT10T3MO-DM	10.0	3.97	4.4							●	★								
	RCKT1204MO-DM	12.0	4.76	4.0			○				●	★		●						
	RCKT1606MO-DM	16.0	6.35	5.56										●						
	RCKT1204MO-DR	12.0	4.76	4.0							●	★								
	RCKT1606MO-DR	16.0	6.35	5.56					○		●	★								
	RCKT2006MO-DR	20.0	6.35	6.55					○		○	★		●						
	RCKT1204MO-ER	12.0	4.76	4.0		★														
	RCKT1606MO-ER	16.0	6.35	5.56		★														
	RCKT2006MO-ER	20.0	6.35	6.55		★														
	RCKT1204MO-NM	12.0	4.76	4.0		○							○	○		○				
	RCKT1606MO-NM	16.0	6.35	5.56		○							○	○		○				

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

RD□□



Good working condition Normal working condition Bad working condition

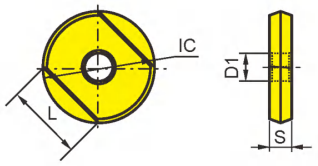
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)			CVD Coating					PVD Coating						Cermet		Cemented carbide	
		IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	RDKW0803MO	8	3.18	3.4							●	★		○						
	RDKW10T3MO	10	3.97	4.4							●	★								
	RDKW1204MO	12.0	4.76	4.4							●	★								
	RDKW1605MO	16.0	5.56	5.5							○	★		○						
	RDKW2006MO	20.0	6.35	6.5								○								

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

RO□□



Good working condition Normal working condition Bad working condition

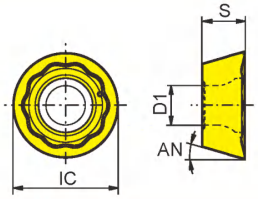
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	L	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBH053	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ROHX1203	12	8.5	3	4											○						
	ROHX1604	16	11.3	4	5											○						
	ROHX2005	20	14.1	5	5											○						

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

RP/D□□



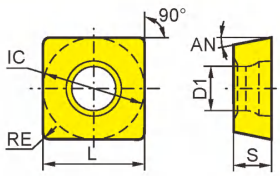
Good working condition Normal working condition Bad working condition

Workpiece material		
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Non-ferrous metal	
S	Heat resistant alloy, Ti alloy	

Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	RPMW10T3MO-H	10.0	3.97	4.1	11°								●								
	RPMW1204MO-H	12.0	4.76	4.4	11°								●								
	RDMW10T3MO-H	10.0	3.97	4.1	15°								●								
	RDMW1204MO-H	12.0	4.76	4.4	15°								●								
	RPMT10T3MO-M	10.0	3.97	4.1	11°								●			●	●				
	RPMT1204MO-M	12.0	4.76	4.4	11°								●			●	●				
	RDMT10T3MO-M	10.0	3.97	4.1	15°								●			●	●				
	RDMT1204MO-M	12.0	4.76	4.4	15°								●			●	●				
	RPMT10T3MO-MM	10.0	3.97	4.1	11°								●			●	●				
	RPMT1204MO-MM	12.0	4.76	4.4	11°								●			●	●				
	RDMT10T3MO-MM	10.0	3.97	4.1	15°								●			●	●				
	RDMT1204MO-MM	12.0	4.76	4.4	15°								●			●	●				

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

SD□□



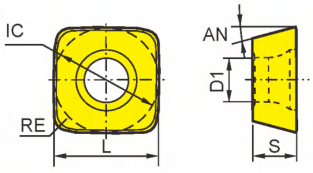
Good working condition Normal working condition Bad working condition

Workpiece material		
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Non-ferrous metal	
S	Heat resistant alloy, Ti alloy	

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SDMT090308	0.8	9.525	9.525	3.18	4.4	15°										○						

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

SD□□



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

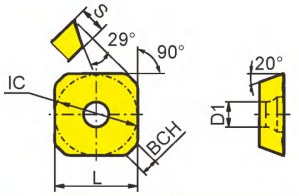
Workpiece material		
P	Steel	😐 😐 😐 😐 😊 ☹ 😊 😊
M	Stainless steel	😐 😐 😐 😐 😐 ☹ 😊 😊
K	Cast iron	😐 😐 ☹ 😊 ☹
N	Non-ferrous metal	😐 ☹
S	Heat resistant alloy, Ti alloy	😊 😐 😐 😐 😐 ☹

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	L	RE	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SDMT06T208-DM	6.35	6.35	0.8	2.58	2.5	15°	★	★							●	●		●				
	SDMT09T312-DM	9.525	9.525	1.2	3.97	4.0	15°	★	★							●	●						
	SDMT120412-DM	12.7	12.7	1.2	4.76	4.4	15°	★	★						★	●	●						
	SDMT150520-DM	15.875	15.875	2.0	5.56	5.5	15°	★	★						●	●	●						
	SDMT06T208-PM	6.35	6.35	0.8	2.58	2.5	15°	★	●						●				●				
	SDMT09T312-PM	9.525	9.525	1.2	3.97	4.0	15°	★	●						●								
	SDMT120412-PM	12.7	12.7	1.2	4.76	4.4	15°	★	●						●								
	SDMT150520-PM	15.875	15.875	2.0	5.56	5.5	15°	★	●						●								
	SDMT06T208-NM	6.35	6.35	0.8	2.58	2.5	15°		●										●				
	SDMT09T312-NM	9.525	9.525	1.2	3.97	4.0	15°		●										●				
	SDMT120412-NM	12.7	12.7	1.2	4.76	4.4	15°		●							●			●				
	SDMT150520-NM	15.875	15.875	2.0	5.56	5.5	15°		●							●			●				

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

Chipbreaker introduction:
-PM chipbreaker has sharp cutting edge, it is more suitable for machining with power shortage and for relatively adhesive materials, such as stainless steel and Ti alloy, etc.
-DM chipbreaker has blunt cutting edge and is relatively suitable for machining of hard materials such as hardened steel and cast iron, etc.

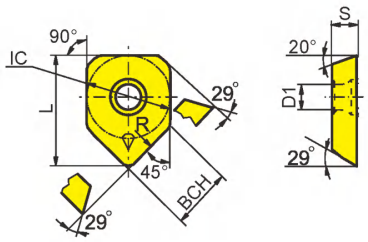
SE□□

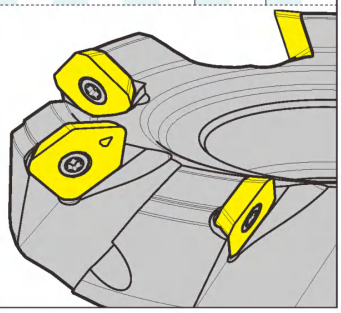


Good working condition Normal working condition Bad working condition

Workpiece material	
P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

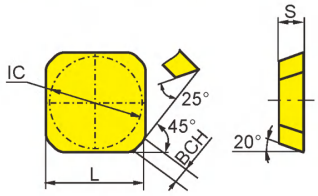
Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	BCH	R	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SEET12T3-DF	13.4	13.4	3.97	4.1	2.55	--	★							★		○	○	○				
	SEET12T3-CF	13.4	13.4	3.97	4.1	2.55	--			○			★		★		○						
	SEET12T3-EF	13.4	13.4	3.97	4.1	2.55	--								★		○	○	○				
	SEET12T3-DM	13.4	13.4	3.97	4.1	2.55	--	★							★		★	○	○				
	SEET18T6-DM	18.0	18.0	6.1	5.5	1.5	--	○	○														
	SEET12T3-CM	13.4	13.4	3.97	4.1	2.55	--			★					★		○						
	SEET12T3-EM	13.4	13.4	3.97	4.1	2.55	--								★		★	○	○				
	SEET18T6-EM	18.0	18.0	6.1	5.5	1.5	--		○							○							
	SEET12T3-DR	13.4	13.4	3.97	4.1	2.55	--	★							★		★						
	SEET12T3-CR	13.4	13.4	3.97	4.1	2.55	--			★					★		★						
	SEET12T3-LH	13.4	13.4	3.97	4.1	2.55	--															○	★
	SEET12T3-W	17.82	13.4	3.97	4.1	9.46	500	★		★			★		★					★			
	SEET18T6-W	24.78	18.0	6.1	5.5	11.0	500						★		○								





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

SE□□



Good working condition Normal working condition Bad working condition

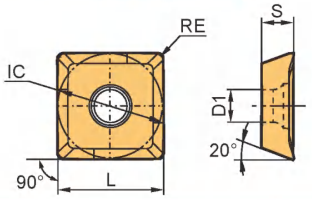
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BCH	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SEEN1203AFTN	12.7	12.7	3.18	1.8							○						●			
	SEKN1203AFFN	12.7	12.7	3.18	1.8						★										
	SEKN1203AFN	12.7	12.7	3.18	1.8	●						○									
	SEKN1203AFTN	12.7	12.7	3.18	1.8	★	★	●				★	★					●			
	SEMR1203AN-M	12.7	12.7	3.3	-								●								
	SEKR1203AN-M	12.7	12.7	3.3	-								●								
	SEKN1504AFN	15.875	15.875	4.76	1.6	●	●														
	SEKN1504AFTN	15.875	15.875	4.76	1.6	★	★							★	●						
	SEMR1504AN-M	15.875	15.875	4.9	-								●								
	SEKR1504AN-M	15.875	15.875	4.9	-								●								

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

SE□□



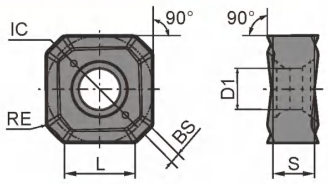
Good working condition Normal working condition Bad working condition

Workpiece material	
P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SEET09T308PER-APF	9.525	9.525	4.01	3.3	0.8			★				●		★							
	SEET120308PER-APF	13.308	13.308	4.04	4.1	0.8			★				●		★							
	SEET09T308PER-APM	9.525	9.525	4.01	3.3	0.8			★				●		★							
	SEET120308PER-APM	13.308	13.308	4.04	4.1	0.8			★				●		★							
	SEET09T308PER-APR	9.525	9.525	4.01	3.3	0.8			★				●		★							
	SEET120308PER-APR	13.308	13.308	4.04	4.1	0.8			★				●		★							
	SEET120308-LH	13.3	13.3	4.05	4.1	0.8															★	

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

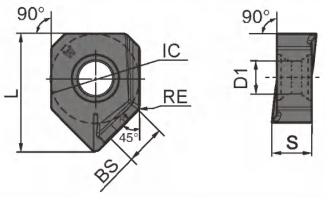
SN□□

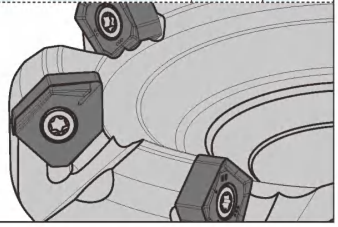


Good working condition Normal working condition Bad working condition

Workpiece material	
P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

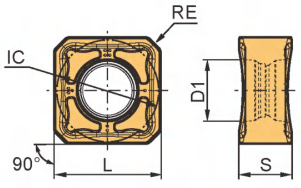
Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BS	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNEG1205ANR-GM	7.6	12.0	4.76	1.05	4.6	0.6	★	★	★	○				★	★		○	○				
	SNEG1506ANR-GM	9.4	15.0	5.54	1.30	5.5	0.9	★	★	★	○				★	★		○	○				
	SNEG1205ANR-GR	7.6	12.0	4.76	1.05	4.6	0.6	★	★	★					★				●				
	SNEG1506ANR-GR	9.4	15.0	5.54	1.30	5.5	0.9	★	★	★					★				●				
	SNEG1907ANR-GR	12.1	19.0	7.0	1.67	7.2	1.0	★	★	★		★			★								
	SNEG1205ANR-HGR	7.6	12.0	4.76	1.05	4.6	0.8	★	★	★	○	○			★	★							
	SNEG1506ANR-HGR	9.4	15.0	5.54	1.30	5.5	0.9	★	★	★	○	○			★	★							
	SNEG1907ANR-HGR	12.1	19.0	7.0	1.67	7.2	1.0	★	★	★		○			★	★							
	SNEG1205ANR-W	15.9	12.0	4.76	4.07	4.6	0.6								●								
	SNEG1506ANR-W	19.9	15.0	5.54	4.97	5.5	0.9								●								

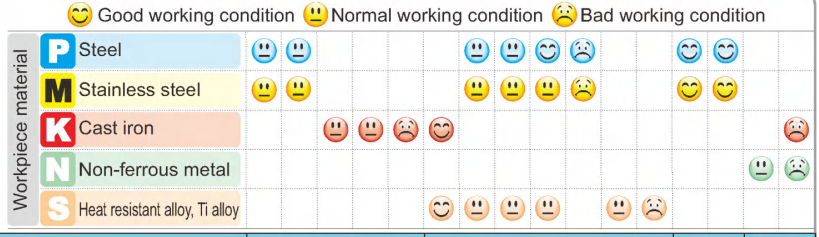




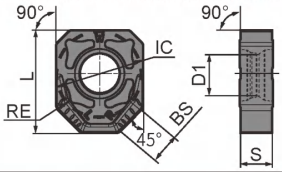
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

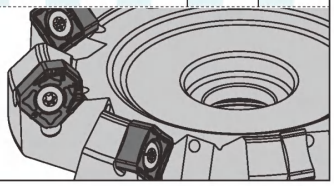
SN□□





Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BS	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNGX1205ANN-GL	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GL	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ANN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						★			●				
	SNMX1205ANN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						★			●				
	SNMX120512-GM	12.7	12.7	6.5	-	5.9	1.2		●	●						★			●				
	SNGX1205ANN-GH	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GH	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ANN-LH	12.7	12.7	6.5	-	5.9	0.8																●
	SNGX1205ANN-W	15	12.7	4.8	4.32	5.9	1.2						●										

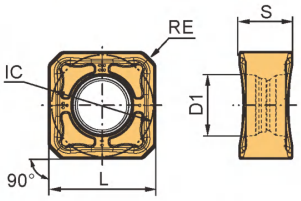




●Inserts are suitable for both left and right cuts

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

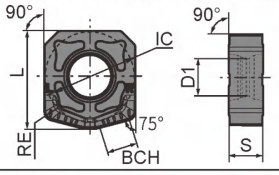
SN□□

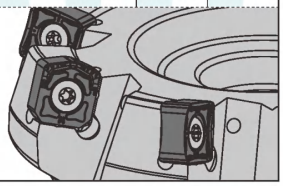


Good working condition Normal working condition Bad working condition

Workpiece material		
P	Steel	😃 😃 — — — 😃 😃 😊 ☹ — — 😊 😊 — —
M	Stainless steel	😃 😃 — — — 😃 😃 😃 ☹ — — 😊 😊 — —
K	Cast iron	— — 😃 😃 ☹ 😊 — — — — — — — — ☹
N	Non-ferrous metal	— — — — — — — — — — — — — 😃 ☹
S	Heat resistant alloy, Ti alloy	— — — — — 😊 😃 😃 😃 — 😃 ☹ — — — —

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BCH	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNGX1205ENN-GL	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GL	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ENN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						★			●				
	SNMX120512-GM	12.7	12.7	6.5	-	5.9	1.2		●	●						★			●				
	SNGX1205ENN-GH	12.7	12.7	6.5	-	5.9	0.8		●	●						★							
	SNMX120512-GH	12.7	12.7	6.5	-	5.9	1.2		●	●						★							
	SNGX1205ENN-W	13.7	12.7	4.8	4.69	5.9	1.2						●										

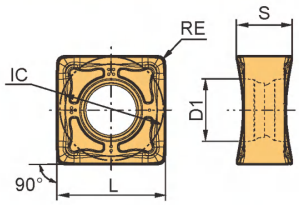


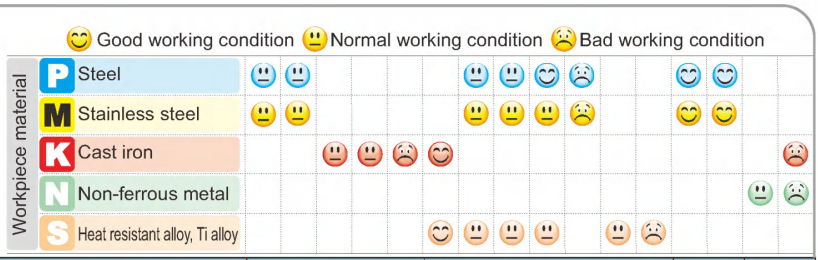


●Inserts are suitable for both left and right cuts

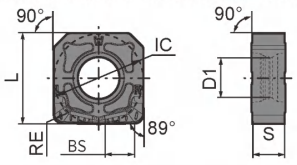
★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

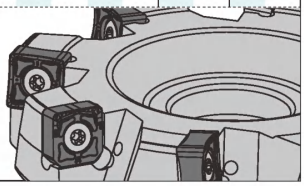
SN□□





Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BS	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SNGX1205PNN-GL	12.7	12.7	6.5	-	5.9	0.8		●	●						○	★						
	SNMX120512-GL	12.7	12.7	6.5	-	5.9	1.2		●	●						○	★						
	SNGX1205PNN-GM	12.7	12.7	6.5	-	5.9	0.8		●	●						○	★		●				
	SNMX120512-GM	12.7	12.7	6.5	-	5.9	1.2		●	●						○	★		●				
	SNGX1205PNN-GH	12.7	12.7	6.5	-	5.9	0.8		●	●						○	★						
	SNMX120512-GH	12.7	12.7	6.5	-	5.9	1.2		●	●						○	★						
	SNCU120420-W4	12.7	12.7	4.8	-	5.9	2.0						●										
	SNGX1205PNN-W	12.86	12.7	4.8	4.26	5.9	1.2									●							

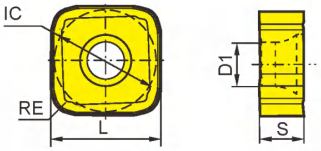


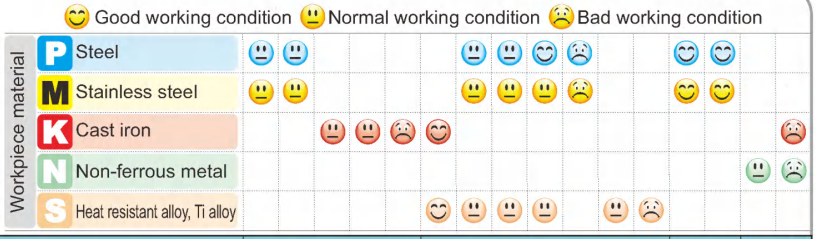


★Recommended grade (always stock available) ●Available grade (always stock available) ○Make-to-order

- Inserts can be mounted left or right.
- The W4 wiper inserts for adjustable tool holders.
- The W wiper inserts can be mounted directly on the cutting teeth.

SN□□

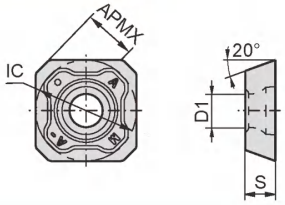


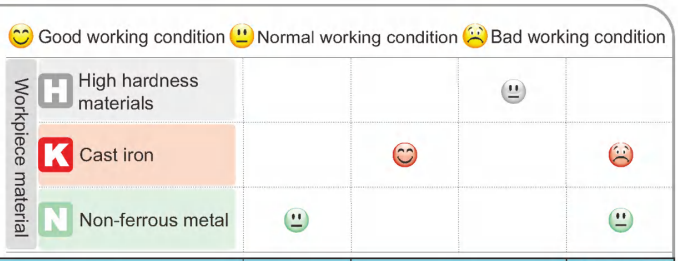


Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	RE	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**SNGU120620-GM**	12.7	12.7	2.0	5.6	4.4		●						●	●							

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

SE□□

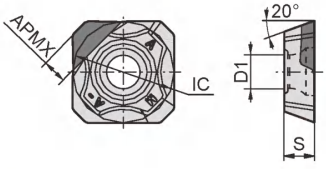


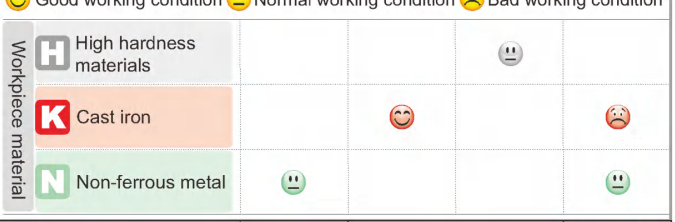


Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	**SEHT12T3AFFN-AL**	12.7	3.97	4.4	6.6				★

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

SE□□



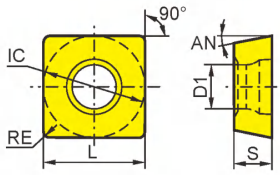


Insert shape	Type	Basic dimensions(mm)				PCD	PCBN		Cemented carbide
		IC	S	D1	APMX	YCD011	YCB011	YCB012	YD201
	**SEHT12T308AFFN-PCD**	12.7	3.97	4.4	2.5	★			
	SEHT12T308AFFN-CBN	12.7	3.97	4.4	2		○	○	

CBN insert edge can be treated as per machining requirements

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

SP□□



Good working condition Normal working condition Bad working condition

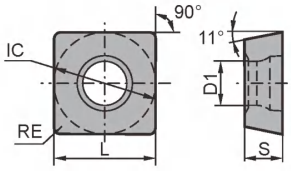
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**SPMT060304**	0.4	6.35	6.35	3.18	2.8	11°										○						
	SPMT120408	0.8	0.8	12.70	4.76	5.5	11°										★						
	**SPMT120408**	12.7	12.7	0.8	4.76	5.5	11°										★						

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

SP□□



Good working condition Normal working condition Bad working condition

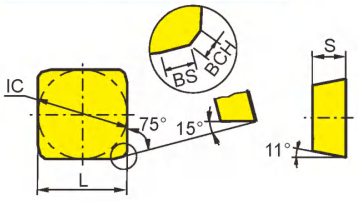
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**SPMT120408-PM**	12.7	12.7	4.76	5.5	0.8		★								●						
	SPMT120408-KM	12.7	12.7	4.76	5.5	0.8										●						

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

SP□N



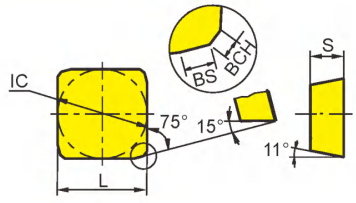
Good working condition Normal working condition Bad working condition

Workpiece material	
P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BCH	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPKN1203EDER	12.7	12.7	3.18	1	1.4							○									
	SPKN1203EDEL	12.7	12.7	3.18	1	1.4							○									
	SPKN1203EDFR	12.7	12.7	3.18	1	1.4						★	○									●
	SPKN1203EDFL	12.7	12.7	3.18	1	1.4						○	○									○
	SPKN1203EDSKR	12.7	12.7	3.18	1	1.4										○						
	SPKN1203EDSKL	12.7	12.7	3.18	1	1.4										○						
	SPKN1203EDTKR	12.7	12.7	3.18	1	1.4							○			★						○
	SPKN1203EDTKL	12.7	12.7	3.18	1	1.4							○			○						○
	SPKN1203EDS31R	12.7	12.7	3.18	1	1.4										○						
	SPKN1203EDS31L	12.7	12.7	3.18	1	1.4										○						
	SPKN1203EDT31R	12.7	12.7	3.18	1	1.4							○			★						○
	SPKN1203EDT31L	12.7	12.7	3.18	1	1.4							○			○						○
	SPKR1203EDR-GM	12.7	12.7	3.18	1	1.4							★			★						●
	SPKR1203EDL-GM	12.7	12.7	3.18	1	1.4							★			★						●
	SPMR1203EDSR-M	12.7	12.7	3.18	-	1.3	●	★	●													
	SPMR1203EDSL-M	12.7	12.7	3.18	-	1.3	●	★	●													
	SPKN1504EDER	15.875	15.875	4.76	1	1.4							○									
	SPKN1504EDEL	15.875	15.875	4.76	1	1.4							○									
	SPKN1504EDFR	15.875	15.875	4.76	1	1.4						○	○									○
	SPKN1504EDFL	15.875	15.875	4.76	1	1.4						○	○									○
	SPKN1504EDSKR	15.875	15.875	4.76	1	1.4										○						
	SPKN1504EDSKL	15.875	15.875	4.76	1	1.4										○						
	SPKN1504EDTKR	15.875	15.875	4.76	1	1.4							★			○						●
	SPKN1504EDTKL	15.875	15.875	4.76	1	1.4							○			○						●
	SPKN1504EDS32R	15.875	15.875	4.76	1	1.4										○						
	SPKN1504EDS32L	15.875	15.875	4.76	1	1.4										○						
	SPKN1504EDT32R	15.875	15.875	4.76	1	1.4							★			○						●
	SPKN1504EDT32L	15.875	15.875	4.76	1	1.4							○			○						●

Ordering guide: **SPKN1203EDT3 1 R** chamfering angle 20° , chamfering width 0.15mm. For other edge shapes, see inserts code key standard.

SP□N



Good working condition Normal working condition Bad working condition

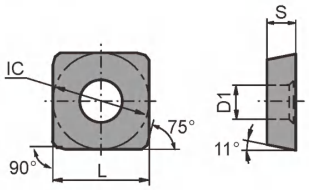
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BCH	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPKR1504EDR-GM	15.875	15.875	4.76	1	1.4							★			★						●
	SPKR1504EDL-GM	15.875	15.875	4.76	1	1.4							★			★						●
	SPMR1504ESR-M	15.875	15.875	4.76	-	1.2	●	★	●													
	SPMR1504ESL-M	15.875	15.875	4.76	-	1.2	●	★	●													

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

SP□□



Good working condition Normal working condition Bad working condition

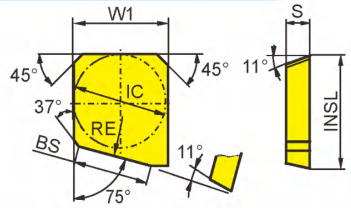
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	SPKW1204EDFR	12.7	12.7	4.76	5.56							○									
	SPKW1204EDSR	12.7	12.7	4.76	5.56							○									
	SPKT1204EDR	12.7	12.7	4.76	5.56							★									

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

SP□X



Good working condition Normal working condition Bad working condition

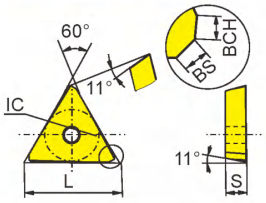
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	IC	W1	S	BS	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
inserts with wiper	SPEX1203EDL-1	15	12.7	12.7	3.18	10	500																●
	SPEX1203EDR-1	15	12.7	12.7	3.18	10	500																●
	SPEX1504EDL-1	18.2	15.875	15.875	4.76	10	500																●
	SPEX1504EDR-1	18.2	15.875	15.875	4.76	10	500																●

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

TP□□



Good working condition Normal working condition Bad working condition

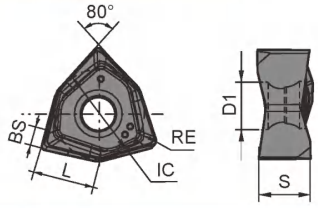
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	BCH	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	TPKN2204PDFR	22	12.7	4.76	1.4	0.7						●										
	TPKN2204PDFL	22	12.7	4.76	1.4	0.7						●										
	TPKN2204PDR	22	12.7	4.76	1.4	0.7	●	●				●	★	●		●						
	TPKN2204PDL	22	12.7	4.76	1.4	0.7	●							●								
	TPKN2204PDTR	22	12.7	4.76	1.4	0.7	●															
	TPKN2204PDTL	22	12.7	4.76	1.4	0.7	●															
	TPMR2204PDSL	22	12.7	4.76	1.4	0.7	○	○														
	TPMR2204PDSR	22	12.7	4.76	1.4	0.7	○	○														

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

WN□□



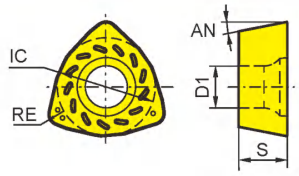
Good working condition Normal working condition Bad working condition

Workpiece material		
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Non-ferrous metal	
S	Heat resistant alloy, Ti alloy	

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		L	IC	S	D1	BS	RE	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	WNHU060404PNR-GM	5.7	9.525	4.0	3.5	1.35	0.4		★	★					★	★							
	WNHU060408PNR-GM	5.7	9.525	4.0	3.5	1.35	0.8		★	★					★	★							
	WNHU080608PNR-GM	7.7	12.7	5.4	4.4	1.6	0.8		★	★					★	★							
	WNHU080612PNR-GM	7.7	12.7	5.4	4.4	1.6	1.2		★	★					★	★							
	WNHU080616PNR-GM	7.7	12.7	5.4	4.4	1.6	1.6		★	★					★	★							
	WNMU060408PNN-GM	5.7	9.525	4.0	3.5	1.35	0.8		★	★					★	★							
	WNMU080608PNN-GM	7.7	12.7	5.4	4.4	1.6	0.8		★	★					★	★							
	WNHU080608PNR-LH	7.7	12.7	5.4	4.4	1.6	0.8															★	

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

WP□□



Good working condition Normal working condition Bad working condition

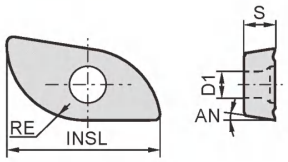
Workpiece material		
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Non-ferrous metal	
S	Heat resistant alloy, Ti alloy	

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	RE	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	WPGT050315ZSR	7.94	1.5	3.5	4.0	11°	★															
	WPGT060415ZSR	9.525	1.5	4.2	4.4	11°	★															
	WPGT080615ZSR	12.85	1.5	6.35	5.5	11°	★															
	WPGT090725ZSR	15.00	2.5	7	5.5	11°	★															
	WPGT050315ZSR-PM	7.94	1.5	3.5	4.0	11°	★							●								
	WPGT060415ZSR-PM	9.525	1.5	4.2	4.4	11°	★							●								
	WPGT080615ZSR-PM	12.85	1.5	6.35	5.5	11°	★							●								
	WPGT090725ZSR-PM	15.00	2.5	7.00	5.5	11°	★							●								

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

Chipbreaker introduction:
-PM chipbreaker has sharp cutting edge, it is more suitable for machining with power shortage and for relatively adhesive materials, such as stainless steel and Ti alloy, etc.
General chipbreaker has blunt cutting edge and is relatively suitable for machining of hard materials such as hardened steel and cast iron, etc.

XP□□



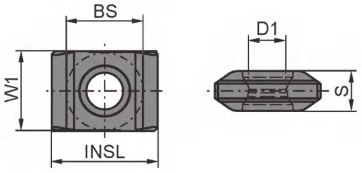
Good working condition Normal working condition Bad working condition

Workpiece material		
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Non-ferrous metal	
S	Heat resistant alloy, Ti alloy	

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		RE	D1	S	AN	INSL	Applicable tools	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**XPHT16R0803-GM**	8	3.1	3.18	9°	16	Ø16										★						
	XPHT20R10T3-GM	10	4.0	3.97	9°	20	Ø20										★						
	XPHT25R1204-GM	12.5	4.7	4.76	9°	25	Ø25										★						
	XPHT30R1506-GM	15	5.8	6.35	11°	30	Ø30										★						
	XPHT32R1606-GM	16	5.8	6.35	9°	32	Ø32										★						
	XPHT40R2007-GM	20	6.7	7.94	9°	40	Ø40										★						
	XPHT50R2507-GM	25	9.2	7.94	9°	50	Ø50										★						

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

XE□□



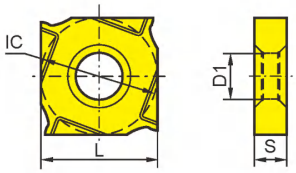
Good working condition Normal working condition Bad working condition

Workpiece material		
P	Steel	
M	Stainless steel	
K	Cast iron	
N	Non-ferrous metal	
S	Heat resistant alloy, Ti alloy	

Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating							Cermet		Cemented carbide	
		INSL	W1	S	D1	BS	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	**XEEC120904**	12.7	9.525	4.76	4.4	7.3			●			●										

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

XS□□



Good working condition Normal working condition Bad working condition

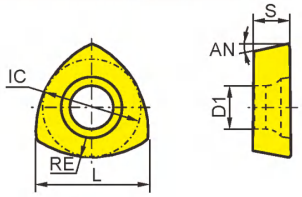
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)				CVD Coating					PVD Coating							Cermet		Cemented carbide	
		IC	L	S	D1	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	XSEQ1202	12.7	12.7	2.3	5.0										★						
	XSEQ1203	12.7	12.7	3.0	5.0										★						
	XSEQ12T3	12.7	12.7	3.5	5.0										★						
	XSEQ1204	12.7	12.7	4.0	5.0										★						
	XSEQ12T4	12.7	12.7	4.5	5.0										★						

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

ZD□□



Good working condition Normal working condition Bad working condition

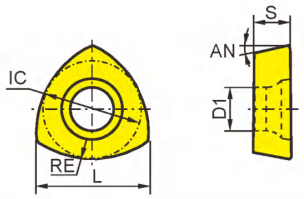
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ZDET08T2CYR10	10	8.4	6.75	2.78	2.8	14°										○						
	ZDET1103CYR12.5	12.5	10.6	8.5	3.18	2.8	14°										○						
	ZDET13T3CYR16	16	13.2	10.5	3.97	4.4	14°										○						

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

ZP□□



Good working condition Normal working condition Bad working condition

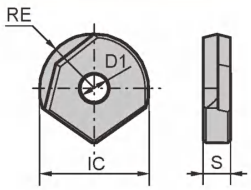
Workpiece material

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metal
S	Heat resistant alloy, Ti alloy

Insert shape	Type	Basic dimensions(mm)						CVD Coating					PVD Coating							Cermet		Cemented carbide	
		RE	L	IC	S	D1	AN	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ZPNT2204CY(R20)	20	16.1	12.7	4.76	5.56	11°										○						
	ZPNT2204CY(R25)	25	16.9	12.7	4.76	5.56	11°										○						
	ZPNT2204CY(R31)	31.5	17.6	12.7	4.76	5.56	11°										○						

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

ZO□□



Good working condition Normal working condition Bad working condition

Workpiece material

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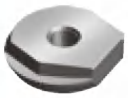
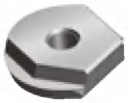
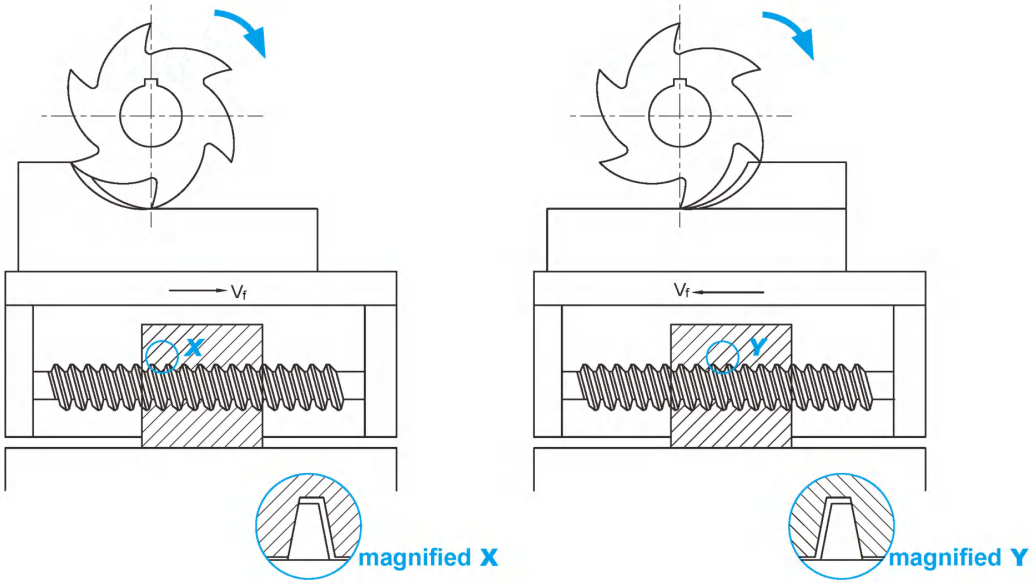
Insert shape	Type	Basic dimensions(mm)					CVD Coating					PVD Coating								Cermet		Cemented carbide	
		RE	IC	S	D1	Applicable tools ØD	YBC302	YBM253	YBD152	YBD203	YBD252	YBG105	YBG202	YBG205	YB9320	YBG302	YBH053	YBS203	YBS303	YNG151	YNG151C	YD101	YD201
	ZOHX1203-GF	6	12	3	4	Ø12											★						
	ZOHX1604-GF	8	16	4	5	Ø16											★						
	ZOHX2005-GF	10	20	5	5	Ø20											★						
	ZOHX2506-GF	12.5	25	6	6	Ø25											★						
	ZOHX3007-GF	15	30	7	8	Ø30											★						
	ZOHX3207-GF	16	32	7	8	Ø32											★						
	ZOHX1203-GM	6	12	3	4	Ø12											★						
	ZOHX1604-GM	8	16	4	5	Ø16											★						
	ZOHX2005-GM	10	20	5	5	Ø20											★						
	ZOHX2506-GM	12.5	25	6	6	Ø25											★						
	ZOHX3007-GM	15	30	7	8	Ø30											★						
	ZOHX3207-GM	16	32	7	8	Ø32											★						
	ZOHX1203-HM	6	12	3	4	Ø12											★						
	ZOHX1604-HM	8	16	4	5	Ø16											★						
	ZOHX2005-HM	10	20	5	5	Ø20											★						
	ZOHX2506-HM	12.5	25	6	6	Ø25											★						
	ZOHX3007-HM	15	30	7	8	Ø30											★						
	ZOHX3207-HM	16	32	7	8	Ø32											★						

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

Common problems in milling and solutions

Failure			Material with higher hardness	Material with perfect toughness	Cutting speed	Feed rate	Cutting depth	Change the diameter and width of milling tools	Cutting liquid	Rake angle	Approach angle	Strength of cutting edge	Number of teeth	Increase the width of chip pocket	Examine the geometry shape of Minor cutting edge.	check the end face run-out	Improve the rigidity of tool	Clamping system of workpiece	Overhang of tool	Power, gap
Fracture of tool nose	severe abrasion on clearance face	Improper cutting condition			↓				✓											
		Unsuitable geometry shape of cutting edge	✓							↑		↓								
	severe abrasion on rake face	Improper cutting condition			↓	↓	↓		✓											
		Unsuitable geometry shape of cutting edge	✓							↑	↓	↓								
	Fracture of cutting edge	Improper cutting condition				↓	↓													
		Unsuitable geometry shape of cutting edge		✓							↓	↑			✓	✓	✓	✓	✓	✓
	Thermal cracking	Improper cutting condition			↓	↓	↓		✓											
		Unsuitable geometry shape of cutting edge								↑		↓								
	Build-up edge	Improper cutting condition			↑	↑			✓											
		Unsuitable geometry shape of cutting edge								↑		↓								
Machining precision	Bad surface roughness	Abrasion of tool Great vibration of milling tool	✓		↑	↓	↓		✓			↓			Wiper	✓				
	Burrs occuring	Unsuitable geometry shape of cutting edge			↓	↓	↓	✓												
		Improper geometry shape of cutting edge								↑	↑	↓			✓					
	Side collapse	Unsuitable geometry shape of cutting edge				↓	↓													
		Unsuitable geometry shape of cutting edge								↑	↓	↓	↑		✓		✓			
	Planeness and parallelism deterioration	Improper geometry Improper technique				↓	↓			↑	↑		↓		✓	✓	✓	✓	✓	✓
Other	Vibration	Cutting condition Improper technology			↓	↓	↓	✓		↑	↑	↓					✓	✓	✓	✓
	Chips twisting and jamming	Improper cutting condition			↑	↑↓		✓	✓				↓							
		Unsuitable geometry shape of cutting edge								↑			↓	✓						

Difference and selection between down milling and up milling



Up milling

Down milling

Climb milling (also called down milling): the feed direction of workpiece is the same as that of the milling rotation at the connecting position.

Conventional milling (also called up milling): the feed direction of workpiece is opposite to that of the milling rotation at the connecting position.

In down milling, the major force of cutting edge is the compressive stress, while in up milling is the tensile stress. The compressive strength of cemented carbide material is much larger than its tensile strength. In down milling, as chips become thin from thick gradually, cutting edge and workpiece press against each other. The friction between edge and workpiece is small, thus reducing the abrasion of edge, the hardening of workpiece surface and the surface roughness (Ra). In up milling, chips become thick from thin gradually. When the insert is cutting into the workpiece, it produces strong friction and more heat than in down milling, and make workpiece surface hardened.

In up milling, because horizontal direction of cutting force milling cutter conducting on workpiece is opposite to the feed direction of workpiece, the lead screw of worktable joints closely with one side of the screw nut. In down milling, the direction of cutting force is the same as the feed direction. When edge's radial force on workpiece is large enough, the worktable will bounce left and right, thus make the gap fall behind. The gap will return to the front side with the continuing rotation of lead screw. At this moment the worktable stops motion, however, it will bounce left and right again when the radial cutting force is large enough again. The periodical bounce of worktable will cause poor surface quality of workpiece and tool breakage.

When using end mills for down milling, the edges always starts cutting at the workpiece surface, therefore end mills are not suitable for machining workpiece with hardened surface.

Up milling is recommended for milling thin-wall components or square milling with high requirement for precision.

Pitch selection

Pitch is the distance between one point on one cutting edge and the same point on the next edge. Milling cutters are mainly classified into coarse, close and extra close pitches.

Optimized stability		
L (Low)	**M** (Medium)	**H** (High)
Coarse pitch Unequal pitch design	**Close pitch**	**Extra close pitch**
When the milling width is equal to diameter of cutter, the machining system is stable and main power of machine is sufficient, the use of coarse pitch can achieve high productive efficiency.	Used in general milling and multiple mixed productions.	When the milling width is less than diameter of cutter, cutting by maximum edges can achieve high productive efficiency.

Selection of approach angle

The approach angle is formed by insert and tool body. It affects chip thickness, cutting forces and tool-life. Decreasing the approach angle reduces chip thickness and expands the cutting area between cutting edge and workpiece at a given feed rate.

A smaller approach angle also ensures stable entry or exit, protecting the cutting edge and extending tool life. However, this will increase axial cutting forces on the workpiece, thus is not suitable for machining thin workpiece such as thin plate.

Approach angle	Feed rate per tooth	Real maximum cutting depth
90°	f_z	$h_{ex}=f_z\times sinkr$
75°	f_z	$h_{ex}=0.96\times f_z$
60°	f_z	$h_{ex}=0.86\times f_z$
45°	f_z	$h_{ex}=0.707\times f_z$
Round insert	f_z	$h_{ex}=\frac{\sqrt{iC^2\times(iC-2a_p)^2}}{iC}\times f_z$

General formula

V_c : cutting speed(*m/min*)
D_c : nominal diameter of milling tool(*mm*)
n : spindle speed(*rev/min*)
z_n : number of teeth
Q : metal removal rate(*cm^3/min*)
L : Actual working distance(*mm*)
V_f : feed rate of worktable (feed speed)(*mm/min*)
f_z : feed rate per tooth(*mm/z*)
π : circumference ratio≈*3.14*
T_c : machining time(*min*)
f_z : feed rate per revolution (*mm/rev*)

- Cutting speed

$$V_c = \frac{\pi \times D_c \times n}{1000} \text{ (m/min)}$$

- Spindle speed

$$n = \frac{1000 \times V_c}{\pi \times D_c} \text{ (rev/min)}$$

- Feed rate of worktable (feed speed)

$$V_f = f_z \times n \times z_n \text{ (mm/min)}$$

- Feed rate per tooth

$$f_z = \frac{V_f}{n \times Z_n} \text{ (mm/z)}$$

- Feed rate per revolution

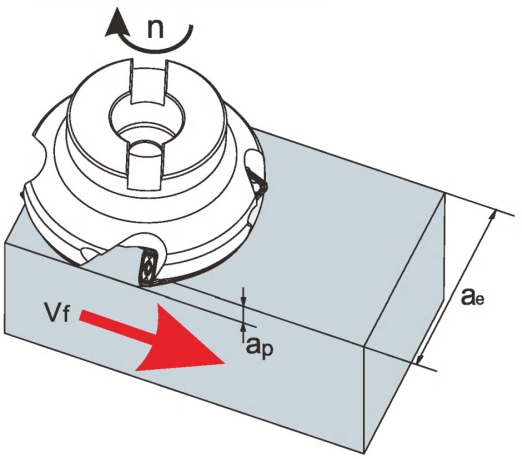
$$f_n = \frac{V_f}{n} \text{ (mm/rev)}$$

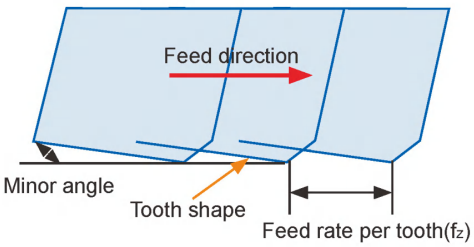
- Machining time

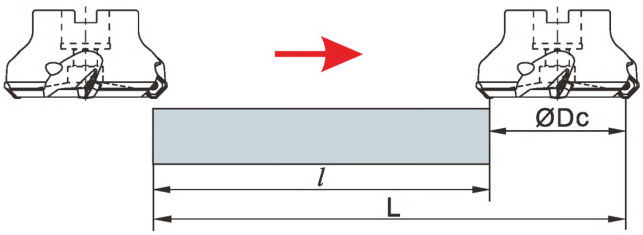
$$T_c = \frac{L}{V_f} \text{ (min)}$$

- Metal removal rate

$$Q = \frac{a_p \times a_e \times V_f}{1000} \text{ (cm^3/min)}$$

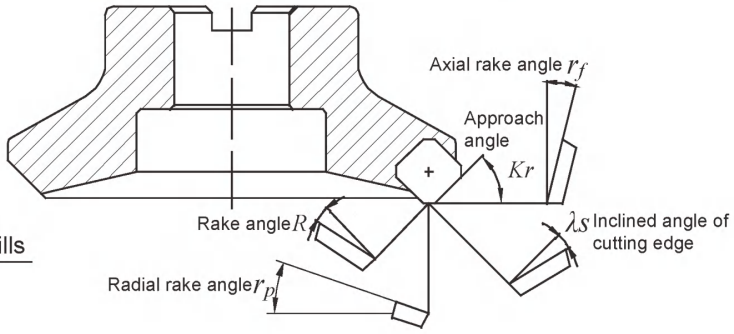






Function of each part in face milling

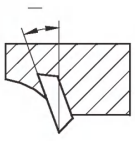
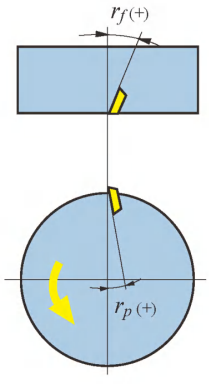
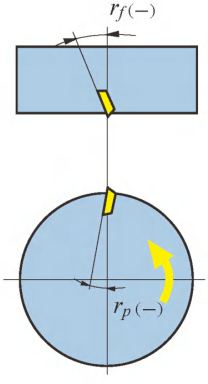
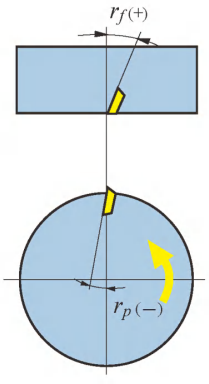
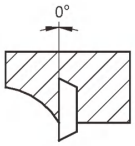
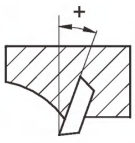
Main angles of face mills



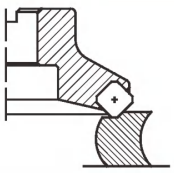
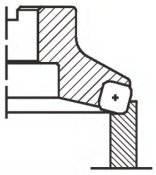
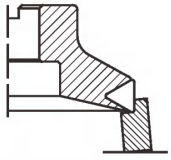
Main angles of face mills

Designation	Function	Effect		
Axial rake angle r_f	Determining the chip direction	Negative angle, excellent capability of chip removal		
Radial rake angle r_p	Determining whether the cutting is easy and fast or not	Positive angle: good cutting performanc		
Approach angle Kr	Determining the chip thickness	Kr↑, chip thickness↑; Kr↓, chip thickness↓;		
Rake angle R	Determining whether easy and fast the cutting is or not	Poor cutting performance, High-strength cutting edge	(−)←0→(+)	Good cutting performance, Low-strength cutting edge
Inclined angle of cutting edge λs	Determining the chip flow direction	Poor capability of chip removal, High-strength cutting edge	(−)←0→(+)	Good performance of chip removal, Low-strength cutting edge

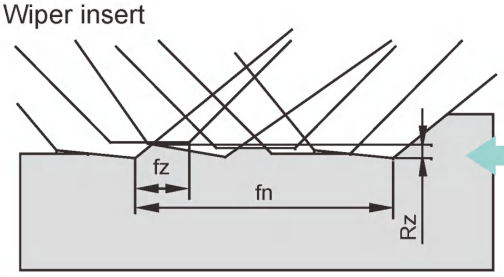
Characteristics of different rake angles combined

		Double positive rake angle	Double negative rake angle	Positive and negative rake angle
Negative rake angle				
0° rake angle				
Positive rake angle				
Axial rake angle r_f		+	−	+
Radial rake angle r_p		+	−	−
Applicable material machined	**P**	✓		✓
	M	✓		✓
	K		✓	✓
	N	✓		
	S	✓		✓

Cutting performances of different approach angles

Approach angle	45°	75°	90°
Schematic diagram			
Instruction	Axial force is the largest. It will bend when machining thin-wall workpiece, reducing the precision of workpiece. It can help avoid fringe breakage of workpiece when machining cast iron.	The main force is radial cutting force. It is often used in general face milling.	The axial force is zero in theory, suitable for milling thin-wall workpiece.

Wiper insert

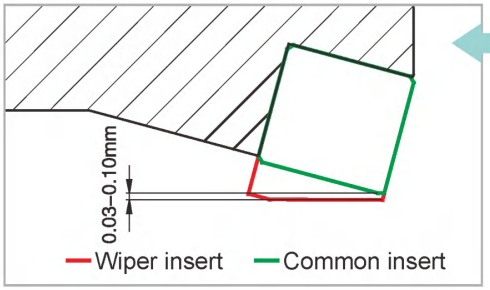


It has axial and radial run-out because tools and inserts have manufacturing tolerance. The axial run-out leads to poor surface roughness.

Solution

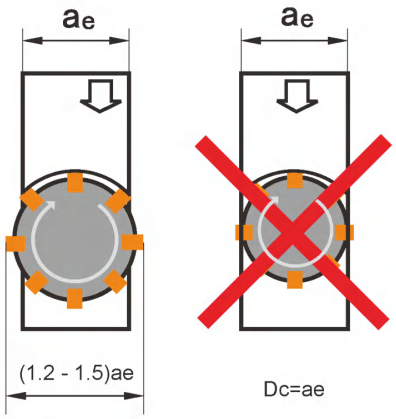
Mounting wiper inserts

usage



The wiper insert must protrude below the other inserts by 0.03-0.10 mm at axial direction, so that the wiping function can take effect. Generally speaking, a cutter just needs only one wiper insert. If the diameter of cutter is much larger or cutter's feed rate per revolution is higher than the length of wiper edge, 2 to 3 wiper inserts can be mounted.

Selection of cutting width and tool cutting diameter in face milling



Generally speaking, the relation between cutting width and tool cutting diameter is Dc=(1.2—1.5) ae.
In practical machining, same center line of tool center and work piece center should be avoided.

Dc: Tool cutting diameter
ae: Cutting width