

Milling Tools






Indexable milling inserts



MILLING









Indexable Milling Tools









PCD&PCBN inserts









				
APHT-PCD	APHT-W	APHT-CBN	SEHT-PCD	SEHT-CBN
Page B206	B206	B206	B224	B224









Inserts for face milling









							
SEET-CF	SEET-CM	SEET-CR	SEET-DF	SEET-DM	SEET-DR	SEET-EF	SEET-EM
Page B219	B219	B219	B219	B219	B219	B219	B219









							
SEET-LH	SEET-W	SEHT-AL	SEK(E)N	SEKR	SEMR-M	SEKR-M	SNG(M)X-GL
Page B219	B219	B224	B220	B220	B220	B220	B222







							
SNG(M)X-GM	SNG(M)X-GH	SNCU-W4	ODHT-GM	ODHT-GH	ODHT-GL	ODMT-GM	ODHT-LH
Page B222	B222	B223	B211	B211	B211	B211	B211

							
OFKT-DF	OFKT-DM	OFKT-LH	ONHU-PF	ONHU-PM	ONHU-W	ONHU-GM	ONHU-GH
Page B211	B211	B211	B212	B212	B212	B212	B212

							
ONHU-GL	ONHU-W	ONMU-GM	ONMU-GH	SNEG-GM	SNEG-HGR	SNEG-W	HNEX-DF
Page B212	B212	B212	B212	B221	B221	B221	B208

							
HNEX-DM	HNEX-DR	PNEG-GL	PNEG-GM	PNEG-GH	PNEG-CF/CM/CR	PNEG-PF/PM/PR	PNEG-KL/KM/KH
Page B208	B208	B213	B213	B213	B213	B214	B214









							
LNKT-ZR	LNKT-ZR	LNKT-ZR	SPKW	SPKT	SP□N	SPKR-GM	SPEX
Page B209	B209	B209	B226	B224	B225	B226	B227






					
SPMR	SP□N	TPKN	TPGN	TPUN	TPMR
Page B227	B228	B229	B229	B230	B230

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Inserts for face milling

							
SEET□PER-APF	SEET□PER-APM	SEET□PER-APR	WNHU-GM	WNHU-LH	RCKT-DM	RCKT-DR	RCKT-ER
Page B221	B221	B221	B231	B231	B216	B216	B216

				
RCKT-NM	RCMW	RDKW□MO	RDKT□MO	RDKT□MO-NM
Page B216	B216	B217	B217	B217

Inserts for square shoulder milling

							
APHT-AL	APKT-APF	APKT-APM	APKT-ALH	ANGX□PNR-GM	ANMX□PNR-GM	ANGX□PNR-LH	LNKT-GM
Page B206	B207	B207	B207	B208	B208	B208	B210

	
LNKT-GL	LNMT-GM
Page B210	B210

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Inserts for profile milling

						
ZDET	ZPNT	SDMT/SPMT	ROHX	XPHT-GM	ZOHX-GF	ZOHX-GM
Page B232	B233	B218/B224	B217	B232	B233	B233


Inserts for side and face milling

			
LNGX-GM	XSEQ	MPHT	QC□□L
Page B209	B232	B210	B215



Inserts for high feed

					
SDMT-DM	SDMT-PM	SDMT-NM	WPGT	WPGT-PM	SNGU-GM
Page B218	B218	B218	B231	B231	B223

Inserts for T-slot milling


MPHT
Page B210

Inserts for helical milling

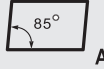




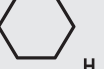
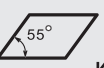
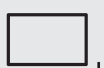

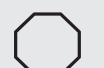
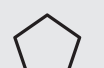




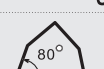
	
APKT-PM/KM	SPMT-PM/KM
Page B207	B224

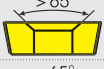

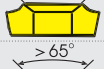



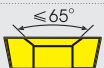
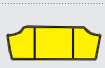
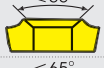
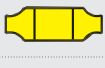

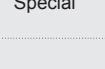
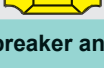

Inserts for chamfer milling


SPMT
Page B224










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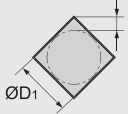
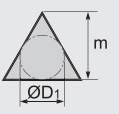
Indexable milling inserts code key

Insert Shape / Code		
		
		
		
		
		
	Others	Z
Insert shape		

Metric							
Code	With/Without hole	With/Without chipbreaker	Section plane of Insert	Code	With/Without hole	With/Without chipbreaker	Section plane of Insert
B	With	Without		N	Without	Without	
H	With	Single-side		R	Without	Single-side	
C	With	Without		F	Without	Double-side	
J	With	Double-side		A	With	Without	
W	With	Without		M	With	Single-side	
T	With	Single-side		G	With	Double-side	
Q	With	Without		X	---	---	Special
U	With	Double-side					
Chipbreaker and clamping system							

S P K N

Clearance angle of main cutting edge			
Code	Clearance angle	Code	Clearance angle
A		B	
C		D	
E		F	
G		N	
P		O	Other clearance angle

Tolerance							
  				(Reference) details of M-class tolerance (identified by shape and size)			
				● Nose height tolerance(mm)			
Code	Nose height M Tolerance(mm)	Inscribed circle ØD1 Tolerance(mm)	Thickness S Tolerance(mm)	Inscribed circle	Regular triangle	Square	Diamond with 80°
A	±0.005	±0.025	±0.025	6.35	±0.08	±0.08	±0.08
F	±0.005	±0.013	±0.025	9.525	±0.08	±0.08	±0.08
C	±0.013	±0.025	±0.025	12.7	±0.13	±0.13	±0.13
H	±0.013	±0.013	±0.025	15.875	±0.15	±0.15	±0.15
E	±0.025	±0.025	±0.025	19.05	±0.15	±0.15	±0.15
G	±0.025	±0.025	±0.13	25.4	---	±0.18	---
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				
				● Tolerance of Inscribed Circle ØD1(mm)			
				Inscribed circle	Regular triangle	Square	Diamond with 80°
				6.35	±0.05	±0.05	±0.05
				9.525	±0.05	±0.05	±0.05
				12.7	±0.08	±0.08	±0.08
				15.875	±0.10	±0.10	±0.10
				19.05	±0.10	±0.10	±0.10
				25.4	---	±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			
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)			
	0-5°	0-0.10	
	1-10°	1-0.15	
	2-15°	2-0.20	
	3-20°	3-0.25	
	4-25°	4-0.30	
	5-30°	5-0.35	
		6-0.40	
		7-0.45	

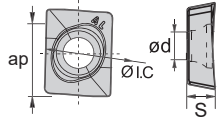
Chipbreaker code

Cutting direction

R	Right hand
L	Left hand
N	Neutral

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AP



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

Workpiece material	K Cast iron		😊	☹️
	N Non ferrous metal	😊		😊

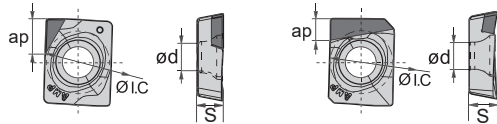
Insert shape	Type	Basic dimensions(mm)				PCD	PCBN	Cemented carbide
		ØI.C	S	Ød	apmax	DN1021	BK1021	YD201
	APHT12T304PPFR-AL	12.7	3.97	4.4	12			★

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

Indexable milling tools

Milling inserts

AP



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

Workpiece material	K Cast iron		😊	☹️
	N Non ferrous metal	😊		😊

Insert shape	Type	Basic dimensions(mm)				PCD	PCBN	Cemented carbide
		ØI.C	S	Ød	apmax	DN1021	BK1021	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

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

Workpiece material	Steel working condition					Stainless steel working condition					Cast iron working condition					Non-ferrous metal working condition					Heat resistant alloy, Ti alloy working condition				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron																									
N Non-ferrous metal																									
S Heat resistant alloy, Ti alloy																									

Milling inserts

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

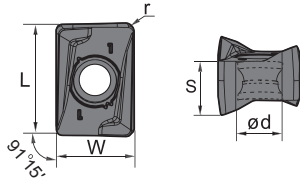
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Figure 10 is a heatmap showing the relationship between workplace material and working conditions. The rows represent workplace materials: Steel (blue), Stainless steel (yellow), Cast iron (orange), Non-ferrous metal (green), and Heat resistant alloy, Ti alloy (light blue). The columns represent working conditions: Temperature (blue), Noise (yellow), Vibration (orange), Air quality (green), and Lighting (red). The color scale ranges from blue (positive) to red (negative). The heatmap shows that Steel has a positive relationship with Temperature, Noise, and Vibration, while Cast iron has a negative relationship with Temperature, Noise, and Vibration. Non-ferrous metal has a positive relationship with Air quality and Lighting. Heat resistant alloy, Ti alloy has a positive relationship with Temperature, Noise, and Vibration, and a negative relationship with Air quality and Lighting.

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




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AN



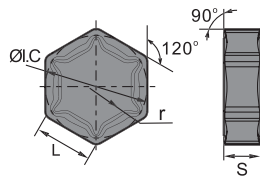
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

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

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet	Cemented carbide								
		L	W	S	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	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

HN



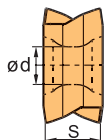
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

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

Insert shape	Type	Basic dimensions(mm)				CVD Coating				PVD Coating						Cermet		Cemented carbide									
		L	ØI.C	S	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	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

Milling inserts

[illegible]

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

	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Ti alloy
Workpiece material					

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

[illegible][illegible]

Indexable milling tools

Milling inserts

[illegible][illegible]

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

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

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

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

● Inserts are suitable for both left and right cuts. ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

[illegible][illegible]

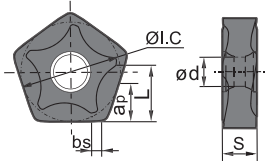
Milling inserts

[illegible][illegible]

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




B MILLING Indexable Milling Tools

PN



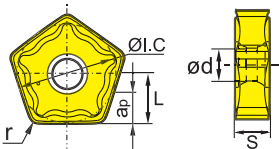
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
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	ØI.C	S	ød	bs	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	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



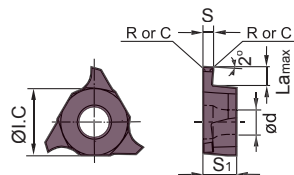
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
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	ØI.C	S	ød	r	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	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



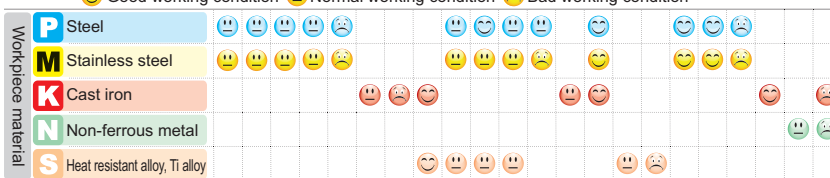
😊 Good working condition 😐 Normal working condition 😞 Bad working condition

[illegible]

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide									
		S±0.025	La _{max}	R/C	ØI.C	S ₁	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302		YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	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									○	○													

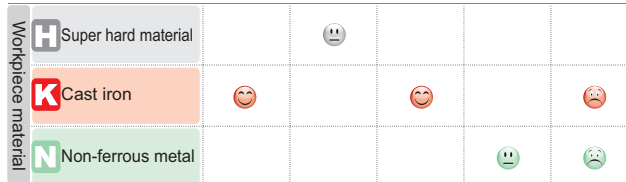
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

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



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

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



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


Workpiece material	CNC turning				Machining				Machining				Machining			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron					😞	😞	😞						😞	😞		😞
N Non-ferrous metal																😊
S Heat resistant alloy, Ti alloy					😞	😞	😞	😞					😞	😞		

[illegible]

Milling inserts

Technical drawing of a circular part. The front view shows a yellow circular disk with a central hole of diameter $\varnothing 1, C$. The outer diameter is $\varnothing 1, C$. The thickness of the disk is L . The cross-section view shows a yellow rectangular bar with a central hole of diameter $\varnothing d$ and a thickness of S .






[illegible]

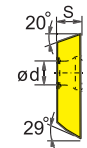
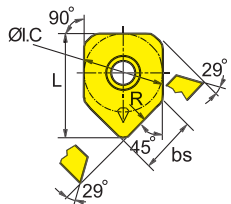
Insert shape	Type	Basic dimensions(mm)				CVD Coating						PVD Coating						Cermet		Cemented carbide							
		ØI.C	L	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YCS30S	YD051	YD101	YD201
	ROHX1203	12	8.5	3	4														○								
	ROHX1604	16	11.3	4	5														○								
	ROHX2005	20	14.1	5	5														○								

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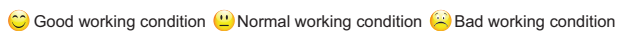
Technical drawing of a square bar with a circular hole. The front view shows a square with side length L and a central circular hole with diameter $\varnothing C$. The top-left corner is chamfered with a 29° angle and a chamfer width S . The bottom-right corner is rounded with a radius bs . The side view shows the bar's thickness $\varnothing d$ and a 20° chamfer angle.

	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Ti alloy
Workpiece material					

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet		Cemented carbide							
		L	ØI.C	S	ød	bs	R	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	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




[illegible]

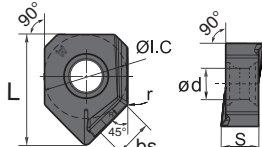
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

[illegible][illegible]

Milling inserts

Workpiece material

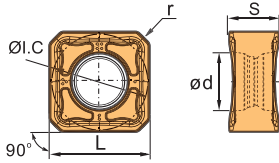
Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide							
		L	ØI.C	S	bs	ød	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNEG1205ANR-GM	7.6	12.0	4.76	1.05	4.6	0.8	★		★		★					★	★			○	○						
	SNEG1506ANR-GM	9.4	15.0	5.54	1.30	5.5	0.9	★		★		★					★	★				○						
	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										●											



B 221





B MILLING Indexable Milling Tools

SN



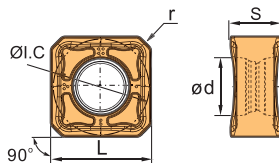
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
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	ØI.C	S	øD	r	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNGX1205ANN-GL	12.7	12.7	6.5	5.9	0.8	6.5				●	●						★											
	SNMX120512-GL	12.7	12.7	6.5	5.9	1.2	6.5				●	●						★											
	SNGX1205ANN-GM	12.7	12.7	6.5	5.9	0.8	6.5				●	●						★				●							
	SNMX1205ANN-GM	12.7	12.7	6.5	5.9	0.8	6.5				●	●						★				●							
	SNMX120512-GM	12.7	12.7	6.5	5.9	1.2	6.5				●	●						★				●							
	SNGX1205ANN-GH	12.7	12.7	6.5	5.9	0.8	6.5				●	●						★											
	SNMX120512-GH	12.7	12.7	6.5	5.9	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

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
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	ØI.C	S	ød	r	apmax	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SNGX1205ENN-GL	12.7	12.7	6.5	5.9	0.8	8.0				●	●					★												
	SNMX120512-GL	12.7	12.7	6.5	5.9	1.2	8.0				●	●					★												
	SNGX1205ENN-GM	12.7	12.7	6.5	5.9	0.8	8.0				●	●					★					●							
	SNMX120512-GM	12.7	12.7	6.5	5.9	1.2	8.0				●	●					★					●							
	SNGX1205ENN-GH	12.7	12.7	6.5	5.9	0.8	8.0				●	●					★												
	SNMX120512-GH	12.7	12.7	6.5	5.9	1.2	8.0				●	●					★												

● Inserts are suitable for both left and right cuts. ★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

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

Indexable milling tools

☐ Make-to-order

Milling inserts

Technical drawing of a square plate with a central hole. The top view shows a square with side length L , a central hole of diameter $\varnothing d$, and a fillet radius r . The side view shows the plate thickness S .

[illegible]

☐ Make-to-order



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

CBN insert edge can be treated as per machining requirements

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

Figure 10 is a heatmap illustrating the relationship between workplace material and working condition. The y-axis represents the workplace material, and the x-axis represents the working condition. The heatmap uses a color scale from green (good) to red (bad) to indicate the quality of the working condition for each material.

Workplace material	Good working condition	Normal working condition	Bad working condition
P Steel	Green	Green	Green
M Stainless steel	Green	Green	Green
K Cast iron	Red	Red	Red
N Non-ferrous metal	Green	Green	Green
S Heat resistant alloy, Ti alloy	Red	Red	Red

Insert shape	Type	Basic dimensions(mm)					CVD Coating						PVD Coating						Cermet	Cemented carbide								
		L	ØI.C	S	be	bs	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302		YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101
	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									○		○								○		○	
	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.

Milling inserts

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


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

Milling inserts

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

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

[illegible]

Insert shape	Type	Basic dimensions(mm)						CVD Coating						PVD Coating						Cermet	Cemented carbide								
		A	ØI.C	I.W	S	bs	R	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302		YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101
	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																			○			●

Indexable milling tools

Milling inserts

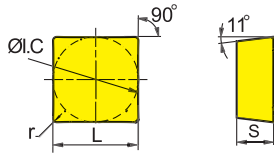
Workpiece material	CNC turning condition					Vibration turning condition					Turning condition					
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron						😞	😞	😞			😞	😞				😞
N Non-ferrous metal																😊
S Heat resistant alloy, Ti alloy						😊	😊	😊	😊	😊		😞	😞			

[illegible]



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

B MILLING Indexable Milling Tools

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	ØI.C	s	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	SPUN090304	9.525	9.525	3.18	0.4																				○		
	SPUN090308	9.525	9.525	3.18	0.8																			○		○	
	SPUN120304	12.7	12.7	3.18	0.4																	○		○			○
	SPUN120308	12.7	12.7	3.18	0.8			○		○														●		○	○
	SPUN120312	12.7	12.7	3.18	1.2																			○			
	SPUN150408	15.875	15.875	4.76	0.8																			○			○
	SPUN150412	15.875	15.875	4.76	1.2																			○		○	○
	SPUN190408	19.05	19.05	4.76	0.8																			○		○	
	SPUN190412	19.05	19.05	4.76	1.2																			○			
	SPUN190416	19.05	19.05	4.76	1.6																			○			
	SPGN090304	9.525	9.525	3.18	0.4																	●				●	
	SPGN090308	9.525	9.525	3.18	0.8																				○	○	○
	SPGN120308	12.7	12.7	3.18	0.8									○										●			●
	SPGN120404	12.7	12.7	4.76	0.4																			○			○
	SPGN120408	12.7	12.7	4.76	0.8								○											○			
	SPGN120412	12.7	12.7	4.76	1.2																			○			○
	SPGN150404	15.875	15.875	4.76	0.4																				●	○	
	SPGN150408	15.875	15.875	4.76	0.8																			●			
	SPGN190408	19.05	19.05	4.76	0.8																					○	
	SPGN190416	19.05	19.05	4.76	1.6								○														

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

Indexable milling tools
Milling inserts

Workpiece material	Steel					Stainless steel					Cast iron					Non-ferrous metal					Heat resistant alloy, Ti alloy				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
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	ØI.C	S	be	bs	α	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	TPKN2204PDFR	22	12.7	4.76	1.4	0.7	11°							○														○
	TPKN2204PDFL	22	12.7	4.76	1.4	0.7	11°							○														○
	TPKN2204PDR	22	12.7	4.76	1.4	0.7	11°	●				●		★ ★			★								● ○ ○ ●			
	TPKN2204PDL	22	12.7	4.76	1.4	0.7	11°																		●			
	TPKN2204PDTR	22	12.7	4.76	1.4	0.7	11°	●																	●			
	TPKN2204PDTL	22	12.7	4.76	1.4	0.7	11°	○																		○		

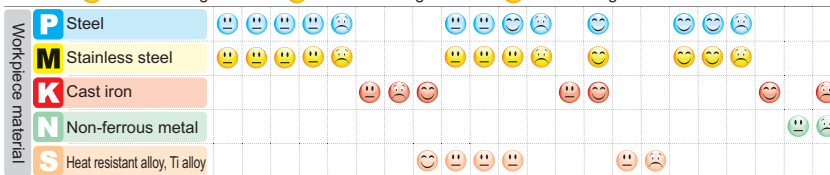
Indexable milling tools



Milling inserts

[illegible][illegible]

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

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



Insert shape	Type	Basic dimensions(mm)				CVD Coating						PVD Coating						Cermet	Cemented carbide								
		L	ØI.C	s	r	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YCS30S	YD051	YD101	YD201
	TPUN110208	11	6.35	2.38	0.8	○																		○			
	TPUN110304	11	6.35	3.18	0.4																			○			
	TPUN110308	11	6.35	3.18	0.8	○																		●		○	○
	TPUN160304	16.5	9.525	3.18	0.4			○																○		○	○
	TPUN160308	16.5	9.525	3.18	0.8			○		○														●		●	○
	TPUN160312	16.5	9.525	3.18	1.2			○																●			
	TPUN160408	16.5	9.525	4.76	0.8																			○			○
	TPUN160412	16.5	9.525	4.76	1.2																			○			○
	TPUN220404	22	12.7	4.76	0.4																						○
	TPUN220408	22	12.7	4.76	0.8	●		○																●		○	
	TPUN220412	22	12.7	4.76	1.2						○													●			○
	TPUN220416	22	12.7	4.76	1.6																						○
	TPMR090204	9.6	5.56	2.38	0.4			○																			
	TPMR110304	11	6.35	3.18	0.4			●														○					
	TPMR110308	11	6.35	3.18	0.8			○														○					
	TPMR160304	16.5	9.525	3.18	0.4			●		○												○	○				
	TPMR160308	16.5	9.525	3.18	0.8			●		●														○			○
	TPMR160312	16.5	9.525	3.18	1.2					○																	
	TPMR220412	22	12.7	4.76	1.2					○																	
	TPMR330916	33	19.05	9.52	1.6												★										

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

Workpiece material	Steel					Stainless steel					Cast iron					Non-ferrous metal					Heat resistant alloy, Ti alloy				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
P Steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
M Stainless steel	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron											😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
N Non-ferrous metal																😊	😊	😊	😊	😊	😊	😊	😊	😊	😊
S Heat resistant alloy, Ti alloy											😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊

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Indexable milling tools

Milling inserts

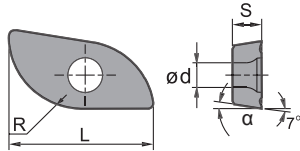
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Ti alloy
Workpiece material					

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B 231


B MILLING Indexable Milling Tools

XP



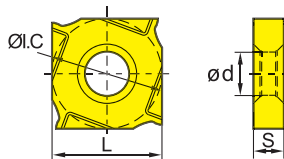
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
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								
		R	ød	S	α	L	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	XPHT16R0803-GM	8	3.1	3.18	9°	16												●										
	XPHT20R10T3-GM	10	4.0	3.97	9°	20												●										
	XPHT25R1204-GM	12.5	4.7	4.76	9°	25												●										
	XPHT30R1506-GM	15	5.8	6.35	11°	30												●										
	XPHT32R1606-GM	16	5.8	6.35	9°	32												●										
	XPHT40R2007-GM	20	6.7	7.94	9°	40												●										
	XPHT50R2507-GM	25	9.2	7.94	9°	50												●										


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

XS



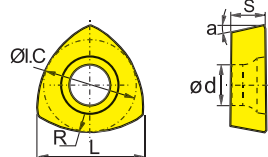
😊 Good working condition 😐 Normal working condition ☹️ Bad working condition

Workpiece material	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal	S Heat resistant alloy, Ti alloy
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											
		ØI.C	L	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	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
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												
		ØI.C	L	S	R	ød	α	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	ZDET08T2CYR10	6.75	8.4	2.78	10	2.8	14°			○									○										
	ZDET1103CYR12.5	8.5	10.6	3.18	12.5	2.8	14°			○									○										
	ZDET13T3CYR16	10.5	13.2	3.97	16	4.4	14°			○									○										

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

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

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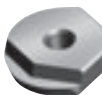
★ Recommended grade (always stock available) ● Available grade (always stock available) ○ Make-to-order

Indexable milling tools

Milling inserts

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

Figure 10 is a heatmap showing the number of working conditions for each material. The materials are listed on the y-axis: Steel, Stainless steel, Cast iron, Non-ferrous metal, and Heat resistant alloy, Ti alloy. The x-axis represents the number of working conditions, ranging from 1 to 10. The color scale indicates the quality of the working conditions: red for Poor, yellow for Normal, and green for Good. The heatmap shows that Steel has the highest number of Good working conditions (green), while Cast iron has the highest number of Poor working conditions (red).

Insert shape	Type	Basic dimensions(mm)				CVD Coating						PVD Coating						Cermet		Cemented carbide							
		R	ØI.C	S	ød	YBC301	YBC302	YBM251	YBM253	YBM351	YBD152	YBD252	YBG102	YBG202	YBG205	YB9320	YBG302	YBG152	YBG252	YBS203	YBS303	YNG151	YNG151C	YC30S	YD051	YD101	YD201
	ZOHX1203-GF	6	12	3	4														●								
	ZOHX1604-GF	8	16	4	5														●								
	ZOHX2005-GF	10	20	5	5														●								
	ZOHX2506-GF	12.5	25	6	6														○								
	ZOHX3007-GF	15	30	7	8														○								
	ZOHX3207-GF	16	32	7	8														○								
	ZOHX1203-GM	6	12	3	4														●								
	ZOHX1604-GM	8	16	4	5														●								
	ZOHX2005-GM	10	20	5	5														●								
	ZOHX2506-GM	12.5	25	6	6														●								
	ZOHX3007-GM	15	30	7	8														●								
	ZOHX3207-GM	16	32	7	8														★								

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