

WERKZEUG

**2019 – WERKZEUG Turning Inserts Mill
Inserts
Catalogue
CARBIDE CNC INSERTS**



ABOUT US

WERKZEUG brand produces mainly high-performance carbide CNC inserts and solid carbide cutting tools, tool holders. Products are mainly used in manufacturing in industries such as Engineering, Automotive, Mining, machining, and other Industries. We promise high quality products to compete with well-known brands at a competitive price and excellent customer service.



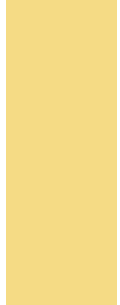


TABLE OF CONTENT

Ball milling inserts series.....

Hard steel, alloy steel's semi-finishing and rough.....

Semi-finishing of steel, low-alloy steel series.....

Insert for cast iron machining series.....

General processing of Stainless steel, mild steel.....

Steel Genreal turning.....

Aluminium and copper processing series.....

RP & RD circular milling inserts series.....

Face milling inserts series.....

Square series milling cutter blade.....

Cermet series.....

Precision boring inserts series.....

Cermet series.....

Aluminium milling inserts series.....

Waterjet drilling inserts series.....

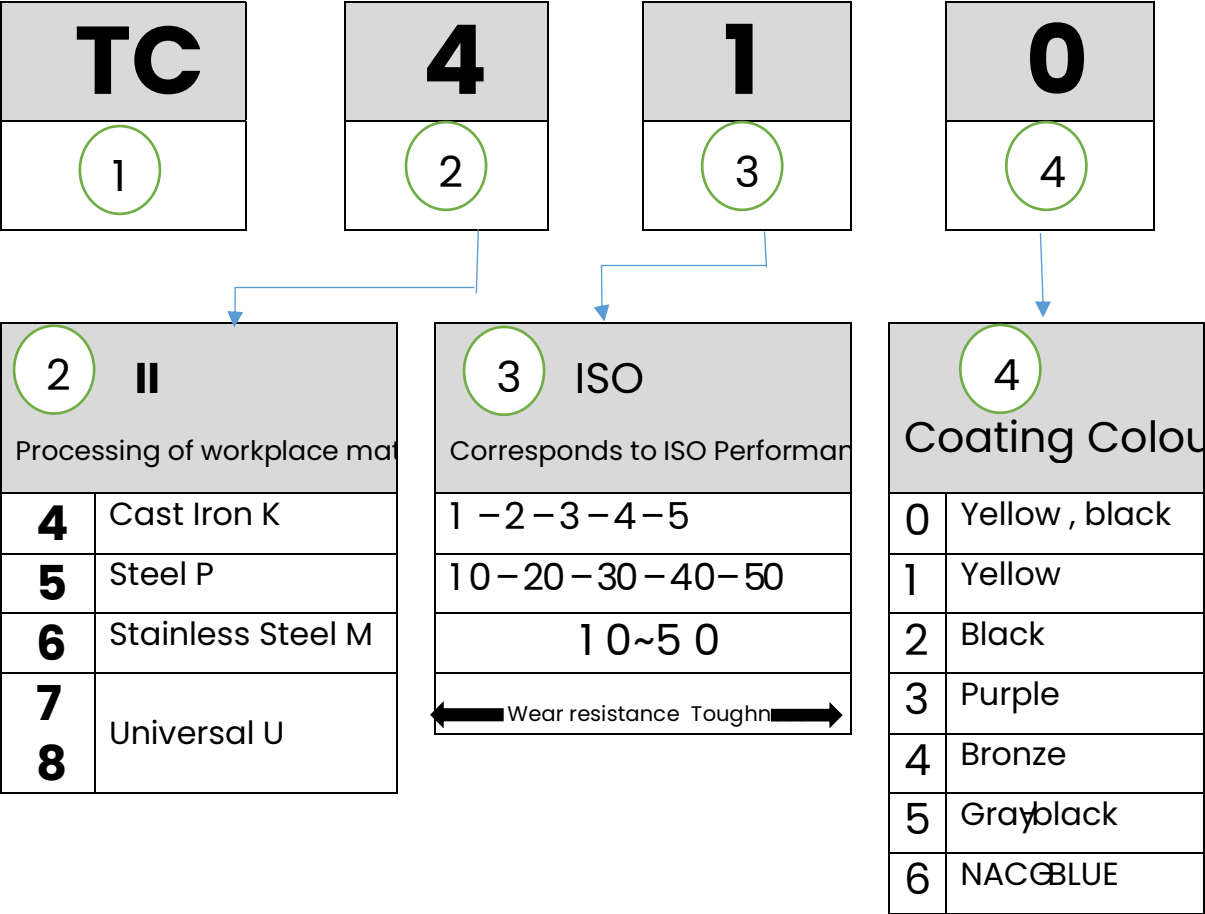
Cutting off and grooving insert series.....

WERKZEUG tool grades table.....



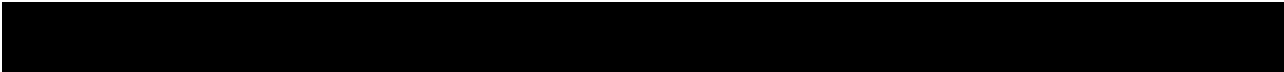
BRAND NAMING RULES

1. Coating	
TC	CVD Coating
TP	PVD Coating



WERKZEUG

BRAND RECOMMENDATION – GLANCE OVER



	40					TC510	TC510	TC510	
N	01								
Cermat	10							TC510	
	20					TC510			
	30								
	40								

TURNING INSERTS CODE KEY

WERKZEUG



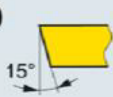
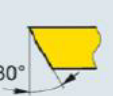
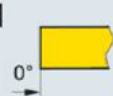
The blade shape / code			
H	O	P	R
S	T	C	D
E	M	V	W
L	A	B	K
Shape code			

Metric sytem							
Code	With or without hole	Presence of chip breaker groove	Blade profile	Code	With or without hole	Presence of chip breaker groove	Blade profile
B	have	not have		N	not have	not have	
H	have	single face		R	not have	single face	
C	have	not have		F	have	two-sided	
J	have	two-sided		A	have	not have	
W	have	not have		M	have	single face	
T	have	single face		G	have	two-sided	
Q	have	not have		X	---	---	Special
U	have	two-sided					
Chip breaker groove, and solid forms							

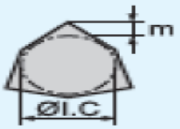
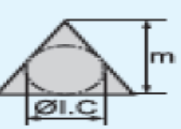


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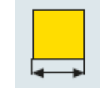
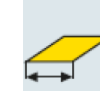
After the main cutting edge Ar

Code	Clearance angl	Code	Clearance angl
A		B	
C		D	
E		F	
G		N	
P		O	Spezial Spezial

Tolerance

  										
Code	Nose height tolerance (mm)	Incircled C tolerand (mm)	Thickness S tolerance (mm)	Reference M class accuracy of details (According to the shape and size)						
				● Nose height tolerance (mm)						
A	±0.005	±0.025	±0.025	incircle	Regula r triangl e	Square	80 rhomb us	55 rhombus	35 rhombus	roundness
F	±0.005	±0.013	±0.025	6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
C	±0.013	±0.025	±0.025	9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
H	±0.013	±0.013	±0.025	12.7	±0.13	±0.13	±0.13	±0.15	---	---
E	±0.025	±0.025	±0.025	15.875	±0.15	±0.15	±0.15	±0.18	---	---
G	±0.025	±0.025	±0.013	19.05	±0.15	±0.15	±0.15	±0.18	---	---
J	±0.005	±0.05 -±0.13	±0.025	25.4	---	±0.18	---	---	---	---
K	±0.013	±0.05 -±0.13	±0.025	● incircleCI.Ctolerance (mm)						
L	±0.025	±0.05 -±0.13	±0.025	incircle	Regula r triangl e	Square	80 rhomb us	55 rhombus	35 rhombus	roundness
M	±0.08 -±0.18	±0.05 -±0.13	±0.013	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
N	±0.08 -±0.18	±0.05 -±0.13	±0.025	15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
				19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
U	±0.13 -±0.38	±0.08 -±0.25	±0.013	25.4	---	±0.13	---	---	---	±0.13

TURNING INSERTS CODE KEY

Inscribed circle diameter (mm)	The blade shape/ code							
	C	D	R	S	T	V	W	K
								
3.97					06			
5.0			05					
5.56					09			
6.0			06					
6.35	6	07			11	11		
8.0			08					
9.525	9	11	09	09	16	16	06	16
10.0			10					
12.0			12					
12.7	12	15	12	12	22	22	08	
15.875	16		15	15	27			
16.0		19	16					
19.05	19		19	19	33			
20.0			20					
25.0	25	25	25					
25.4			25	25				
31.75			31					
32			32					
The length of the cutting edge								

	
Code	Blade 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	5.56
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70
Blade thickness	

12 04 08 - TM (ISO)

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4

3

2

Incircle	
Code	Inscribed circle diameter
2	6.35
3	9.525
4	12.7
5	15.875
6	19.05
8	25.4

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

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

The tip arc code	
Code	Corner radius (mm)
00	No round corners
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	Else
Blade diameter size (mm)	Circular shear blade

The code chip breaker groove

MILLING

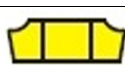
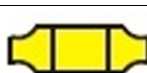
INSERTS CODE KEY

The blade shape / code

Metric system

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

Shape code

Code	With or without hole	Presence of chip breaker groove	Blade profile	Code	With or without hole	Presence of chip breaker groove	Blade profile
B	have	not have		N	not have	not have	
H	have	single face		R	not have	single face	
C	have	not have		F	have	two-sided	
J	have	two-sided		A	have	not have	
W	have	not have		M	have	single face	
T	have	single face		G	have	two-sided	
Q	have	not have		X	---	---	Special
U	have	two-sided					

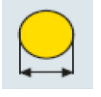
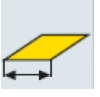
Chip breaker groove, and solid forms



After the main cutting edge Angle			
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	Spezial Spezial

Tolerance										
Code	Nose height tolerance (mm)	Incircled C tolerance (mm)	Thickness S tolerance (mm)	Reference M class accuracy of details (According to the shape and size)						
● Nose height tolerance (mm)										
A	±0.005	±0.025	±0.025	incircle	Regular triangle	Square	80 rhombus	55 rhombus	35 rhombus	roundness
F	±0.005	±0.013	±0.025	6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
C	±0.013	±0.025	±0.025	9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
H	±0.013	±0.013	±0.025	12.7	±0.13	±0.13	±0.13	±0.15	---	---
E	±0.025	±0.025	±0.025	15.875	±0.15	±0.15	±0.15	±0.18	---	---
G	±0.025	±0.025	±0.013	19.05	±0.15	±0.15	±0.15	±0.18	---	---
J	±0.005	±0.05 - ±0.13	±0.025	25.4	---	±0.18	---	---	---	---
K	±0.013	±0.05 - ±0.13	±0.025	● incircleCItolerance (mm)						
L	±0.025	±0.05 - ±0.13	±0.025	incircle	Regular triangle	Square	80 rhombus	55 rhombus	35 rhombus	roundness
M	±0.08 - ±0.18	±0.05 - ±0.13	±0.013	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
N	±0.08 - ±0.18	±0.05 - ±0.13	±0.025	15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
				19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
U	±0.13 - ±0.38	±0.08 - ±0.25	±0.013	25.4	---	±0.13	---	---	---	±0.13

MILLINGINSERTS CODE KEY

Inscribed circle diameter (mm)	The blade shape/ code							
	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					
The length of the cutting edge								

	
Code	Blade thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
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T2	2.58
03	3.18
T3	3.97
04	4.76
T4	4.96
05	5.56
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70
Blade thickness	

12

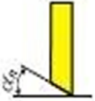
04

ED

T21

R

DM

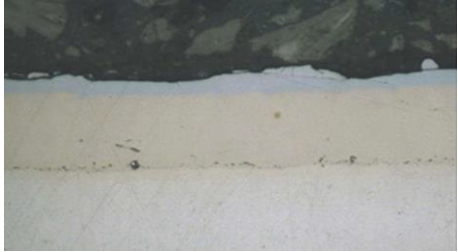
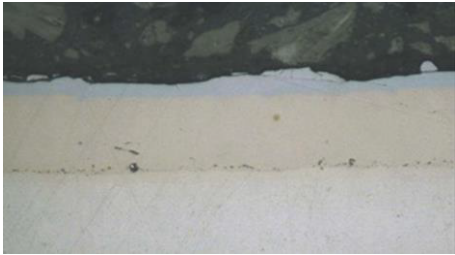
B			
			
A	45	A	3
B	60	B	5
E	75	C	7
F	85	D	15
P	90	E	20
Z	Else	F	25
		G	30
		N	0
		P	11
		Z	Else

B			
E			
F			
T		0-5	0-0.10
S		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

The code chip breaker groo

B	
R	
L	
N	

COATED INTRODUCTION

	BD-CDV ● Using a new CVD coating process, thick TiCN and AL202, improve the wear resistance while improving the impact resistance. Surface covered tin layer, after a special surface treatment process, low coefficient of friction, cutting more fluid. ● First chooise of steel, alloy steel, high hardness steel turning, also suitable for high hardness steel and alloy steel rough turning.
	MT-CDV ● MT-Ticn / AL203 / TiN composite process, the special structure of the perfect combination of AL203 and TiCN, both to ensure high-speed cutting of the anti-proliferation wear, but also improve the flank wear. ● Suitable for all kinds of carbon steel, alloy steel turning. Also suitable for steel, cast iron rough milling.
	Thicken AL 203-CDV ● This is a new coating, using a special process to the ultra-thick AL203 and the perfect combination of substrate, ultra-fine AL203 coating has a very high red hardness and wear resistance. ● After a special surface treatment process, suitable for cast iron, steel turning.

INTRODUCTION AND APPLICATION OF GRADES

Material	Cutting range	Grade	Color	Turning				Milling			
				Steel	Cast Iron	Alloy steel	Stainless steel	Steel	Cast Iron	Alloy steel	Stainless steel
P steel	Finishing	TC510	Yellow, black	●		●					
		TC511	Yellow	●		●					
		TC512	Black	●		●					
	Semi-finishing	TC520	Yellow, black	●		●					
		TC521	Yellow	●		●					
		TC522	Black	●		●					
	H-Rough	TC530	Yellow, black	●		●					
		TC531	Yellow	●		●					
		TC532	Black	●		●					
	Grooving	TC830	Yellow, black	●		●		●		●	
		TC831	Yellow	●		●		●		●	
M Stainless steel	Finishing/Semi-finishing	TC622	Black	●	●		●	●	●		●
	Roughing	TC632	Black	●	●		●	●	●		●
K Cast iron	Finishing	TC412	Black		●						
	Semi-finishing	TC422	Black		●						
	Rough	TC432	Black		●						
U Versatility	Finishing/Semi-finishing	TC720	Yellow, black	●	●	●		●	●	●	
		TC721	Yellow	●	●	●		●			
	Rough	TC730	Yellow, black		●	●		●		●	
		TC731	Yellow		●	●		●			
	Grooving/roughing	TC741	Yellow	●		●		●		●	

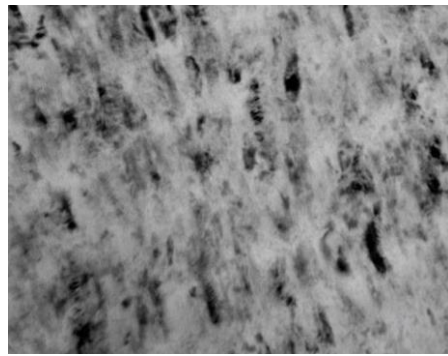
● Main Product

● Optional

PVD COATED INTRODUCTION



nc-TiAlN Coating



TiAlN composite Coating

New composite TiN

- The new composite TiN, using ALTiN as the base layer, increasing the coating's high temperature red hardness and wear resistance. Thick TiN as the surface layer impact toughness is good, Moroccco coefficient is low. Very suitable for mold steel and ordinary steel milling.

Composite Si-ALTiN

- ALTiN by adding Si elements, greatly enhance the coating hardness, wear resistance and high temperature red hardness. After special coating process after treatment The surface is smooth and delicate. Suitable for high wear-resistant steel turning.

NANO-ALTiN

- Special multi-layer NANO PVD coating has excellent resistance to oxidation and wear resistance the coating after the special treatment process, the surface is smooth and delicate. Suitable for stainless steel, steel parts of the common processing.

SEHIEL-Si

- TiN-Si on the basis of a new technology upgrade, a significant increase in wear resistance oxidation resistance is extremely strong, suitable for turning the steel, milling.

AlCrN

- ALTiN as the base layer, adding AlCrN, using a special composite process to ensure that the coating wear resistance and high temperature red hardness, low coefficient of friction for stainless steel, high hardness turning and drilling and milling

NANO-BULE

- Special NANO-PVD coating, with a high coating hardness, and wear resistance, is ideal for high-hardness steel, high-speed milling steel mold.

INTRODUCTION AND APPLICATION OF GRADES

Material	Cutting range	Grade	Color	Turning				Milling			
				Steel	Cast Iron	Alloy steel	Stainless steel	Steel	Cast Iron	Alloy steel	Stainless steel
P steel	Finishing	TP512	Black	●							
		TP513	Purple	●			●				
		TP514	Bronze	●		●					
	Semi Finishing	TP522	Black	●							
		TP523	Purple	●			●				
		TP524	Bronze	●		●					
	Rough	TP53	Yellow	●							
		TP533	Purple	●			●				
		TP534	Bronze	●		●					
	Grooving	TP822	Black	●		●					
		TP823	Purple	●			●				
		TP824	Bronze	●		●					
		TP832	Black	●		●					
		TP833	Purple	●	●		●				
		TP834	Bronze	●		●					
M Stainless steel	Finishing	TP613	Purple	●			●	●			
		TP615	Grayblack		●	●	●		●		
	Semi finishing	TP623	Purple	●			●	●			
		TP625	Grayblack		●	●	●		●		
	Rough	TP633	Purple	●	●		●	●			
		TP635	Grayblack		●	●	●		●		
U Versatility	finishing	TP712	Black	●				●	●		
		TP713	Purple		●		●	●	●		●
		TP714	Bronze			●		●	●	●	
	Semi finishing	TP721	Yellow	●	●	●		●	●		
		TP722	Black					●	●		
		TP723	Purple	●	●		●	●	●	●	●
		TP724	Bronze	●		●		●	●	●	
	Rough	TP731	Yellow	●	●	●		●	●		
		TP732	Black					●	●		
		TP733	Purple	●	●		●	●	●	●	●
		TP734	Bronze	●		●		●	●	●	

● Main Product

● Optional

TICN

TICN cermet has a very high chemical stability, cutting process, the friction coefficient is small, low cutting temperature, Can prevent the process of cutting the inter-atomic diffusion of materials, anti-stick knife and wear resistance is also much higher than the hard alloy. But also has better red hardness and anti-crescent crater wear performance, suitable for steel high speed processing and semi-finishing

Uncoated cermet grade

Grade	Turning	Milling	Grooving
JT3000	●		
JT6000		●	●
TP3000	●		
TP6000		●	●

● Main product



JT3000

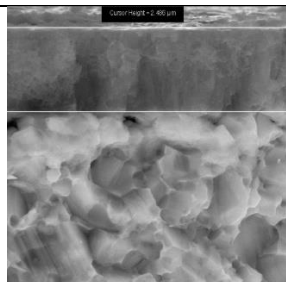
Ultra-fine particles of cermet, with high wear resistance and high temperature red hardness suitable for turning steel parts.



JT6000

Special grain organization, while ensuring wear resistance, but also greatly improved the anti-bending strength, to ensure that the material anti-collapse of the knife Very suitable for milling of steel parts.

Coated cermet grade



TP3000/TP6000

Combined with NANO-PVD coating process, improve the hardness and wear resistance and inhibit the proliferation of wear and oxidation. To achieve a stable long-life ultra-high-speed processing.

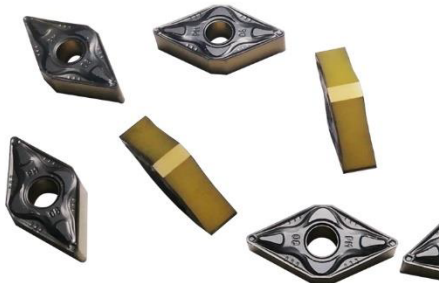
Ball milling insert series



1. Processing objects: steel, stainless steel universal processing
2. Features: Cutting light, great wear resistance suitable for ultra-high-speed processing
3. P3200/P3204 Common specification
4. TP632, TP732 Common used grades

Ordering Code	Dimensions (mm)							Grade	
	Dc	Dl	Ll	L1xL2	S	a	r	TP632	TP732
P3200	8.00	3.00	4.00		2.00			*	*
P3200	10.00	4.00	5.00		2.50			*	*
P3200	12.00	5.00	6.00		2.50			*	*
P3200	16.00	5.00	6.00		3.00			*	*
P3200	20.00	5.00	6.00		3.00			*	*
P3200	25.00	6.00	9.00		4.00			*	*
P3200	30.00	8.00	10.00		5.00			*	*
P3200	32.00	8.00	10.00		5.00			*	*
P3204	8.00	3.00	4.00		2.00			*	*
P3204	10.00	4.00	5.00		2.50			*	*
P3204	12.00	5.00	6.00		2.50			*	*
P3204	16.00	5.00	6.00		3.00			*	*
P3204	20.00	5.00	6.00		3.00			*	*
P3204	25.00	6.00	9.00		4.00			*	*
P3204	30.00	8.00	10.00		5.00			*	*
P3204	32.00	8.00	10.00		5.00			*	*
XDMT16T3I00R - F55				9x16	3.74	15.00	10.00	*	*
XDMT2004I25R - F55				11.3x20	4.68	15.00	12.50	*	*
XDMT2405I50R - F55				13.5x24	5.62	15.00	15.00	*	*
XDMT2506I60R - F55				14.4x25.5	6.00	15.00	16.00	*	*
XDGT3207200R - D57				18x32	7.50	15.00	20.00	*	*
XDGT4009250R - D57				22.5x39	9.39	15.00	25.00	*	*

Hard steel, alloy steel's semi-finishing and rough



1. Processing objects: Alloy steel, hard steel semi-finishing and rough
2. Features: Strong edge strength, wear resistance, wide range of applications
3. CNMG/DNMG/VNMG/WNMG Common specification
4. TC520, TC522 Common used grades

Ordering Code	Dimensions (mm)					Grade	
	L	ϕ l.C	s	ϕ d	r	TC520	TC522
CCMT060204-PM-S	6.40	6.35	2.38	2.50	0.40	*	*
CCMT060208-PM-S	6.40	6.35	2.38	2.80	0.80	*	*
CCMT09T304-PM-S	9.70	9.52	3.97	4.40	0.40	*	*
CCMT09T308-PM-S	9.70	9.52	3.97	4.40	0.80	*	*
CCMT120404-PM-S	12.90	12.70	4.76	5.56	0.40	*	*
CCMT120408-PM-S	12.90	12.70	4.76	5.56	0.80	*	*
CNMG120404-PM-S	12.90	12.70	4.76	5.16	0.40	*	*
CNMG120408-PM-S	12.90	12.70	4.76	5.16	0.80	*	*
CNMG120412-PM-S	12.90	12.70	4.76	5.16	1.20	*	*
CNMG160608-PM-S	16.10	15.88	6.35	6.35	0.80	*	*
CNMG160612-PM-S	16.10	15.88	6.35	6.35	1.20	*	*
CNMG190608-PM-S	19.30	19.05	6.35	7.94	0.80	*	*
CNMG190612-PM-S	19.30	19.05	6.35	7.94	1.20	*	*
CNMG190616-PM-S	19.30	19.05	6.35	7.94	1.60	*	*
DCMT070204-PM-S	7.80	6.35	2.38	2.80	0.40	*	*
DCMT070208-	7.80	6.35	2.38	2.80	0.80	*	*

Ordering Code	Dimensions (mm)					Grade	
	L	ϕ l.C	s	ϕ d	r	TC520	TC522
DCMT11T304 -PM -S	11.60	9.52	3.97	4.40	0.40	*	*
DCMT11T308 -PM -S	11.60	9.52	3.97	4.40	0.80	*	*
DCMT11T312 -PM -S	11.60	9.52	3.97	4.40	1.20	*	*
DNMG150604 -PM -S	15.50	12.70	6.35	5.16	0.40	*	*
DNMG150608 -PM -S	15.50	12.70	6.35	5.16	0.80	*	*
DNMG150612 -PM -S	15.50	12.70	6.35	5.16	1.20	*	*
DNMG150616 -PM -S	15.50	12.70	6.35	5.16	1.60	*	*
SNMG120408 -PM -S	12.70	12.70	4.76	5.16	0.80	*	*
TCMT090204 -PM -S	9.60	5.56	2.38	2.50	0.40	*	*
TCMT110304 -PM -S	11.00	6.35	2.38	2.80	0.40	*	*
TCMT16T304 -PM -S	16.50	9.52	3.97	4.40	0.40	*	*
TCMT16T308 -PM -S	16.50	9.52	3.97	4.40	0.80	*	*
TNMG160404 -PM -S	16.50	9.52	4.76	3.81	0.40	*	*
TNMG160408 -PM -S	16.50	9.52	4.76	3.81	0.80	*	*
TNMG220404 -PM -S	22.00	12.70	4.76	5.16	0.40	*	*
TNMG220408 -PM -S	22.00	12.70	4.76	5.16	0.80	*	*
TNMG220412 -PM -S	22.00	12.70	4.76	5.16	1.20	*	*
VBMT160404 -PM -S	16.50	9.52	4.76	4.40	0.40	*	*
VBMT160408 -PM -S	16.50	9.82	4.76	4.40	0.80	*	*
VNMG160404 -PM -S	16.60	9.52	4.76	3.81	0.40	*	*
VNMG160408 -PM -S	16.60	9.52	4.76	3.81	0.80	*	*
WNMG080404 -PM -S	8.70	12.70	4.76	5.16	0.40	*	*
WNMG080408 -PM -S	8.70	12.70	4.76	5.16	0.80	*	*
WNMG080412 -PM -S	8.70	12.70	4.76	5.16	1.20	*	*
KNUX160405R11	16.15	1.W9.52	4.76	brn2.2	0.50	*	*
KNUX160405L11	16.15	1.W9.52	4.76	brn2.2	0.50	*	*

Cutting parameter Processing material	Continuous processing irregular processing		Intermittent processing	
	Linear velocity Vc	Feed per tooth f	Linear velocity Vc	Feed per tooth
Stainless steel	80-120 -180	0.06 -0.30	06-90-110	0.08 -0.20
Mild steel	120 -180 -250	0.06 -0.30	100 -150 -200	0.08 -0.30
HRC < 52	80-120 -150	0.06 -0.03	60-100 -120	0.08 -0.20
HRC52 - 60 Steel	40-120	0.06 -0.12		
Ap=0.4 - 3.0 mm cutting depth				

Semi-finishing of steel, low-alloy steel series



1. Processing objects: semi-finishing of steel alloy steel, hard steel
2. Features: good impact toughness, smooth chip removal, wide range of applications
3. CNMG/DNMG/TNMG/VNMG/WNMG Common specification
4. TC521, TC522 Common used grades

Ordering Code	Dimensions (mm)					Grade	
	L	ϕ l.C	s	ϕ d	r	TC521	TC522
CCMT060204 -PM -S	6.40	6.35	2.38	2.50	0.40	*	*
CCMT060208 -PM -S	6.40	6.35	2.38	2.80	0.80	*	*
CCMT09T304 -PM -S	9.70	9.52	3.97	4.40	0.40	*	*
CCMT09T308 -PM -S	9.70	9.52	3.97	4.40	0.80	*	*
CCMT120404 -PM -S	12.90	12.70	4.76	5.56	0.40	*	*
CCMT120408 -PM -S	12.90	12.70	4.76	5.56	0.80	*	*
CNMG120404 -PM -S	12.90	12.70	4.76	5.16	0.40	*	*
CNMG120408 -PM -S	12.90	12.70	4.76	5.16	0.80	*	*
CNMG120412 -PM -S	12.90	12.70	4.76	5.16	1.20	*	*
CNMG160608 -PM -S	16.10	15.88	6.35	6.35	0.80	*	*
CNMG160612 -PM -S	16.10	15.88	6.35	6.35	1.20	*	*
CNMG190608 -PM -S	19.30	19.05	6.35	7.94	0.80	*	*
CNMG190612 -PM -S	19.30	19.05	6.35	7.94	1.20	*	*
CNMG190616 -PM -S	19.30	19.05	6.35	7.94	1.60	*	*
DCMT070204 -PM -S	7.80	6.35	2.38	2.80	0.40	*	*
DCMT070208 -PM -S	7.80	6.35	2.38	2.80	0.80	*	*

Ordering Code	Dimensions (mm)					Grade	
	L	φl.C	s	φd	r	TC520	TC522
DCMT11T304 -PM-S	11.60	9.52	3.97	4.40	0.40	*	*
DCMT11T308 -PM-S	11.60	9.52	3.97	4.40	0.80	*	*
DCMT11T312 -PM-S	11.60	9.52	3.97	4.40	1.20	*	*
DNMG150604 -PM-S	15.50	12.70	6.35	5.16	0.40	*	*
DNMG150608 -PM-S	15.50	12.70	6.35	5.16	0.80	*	*
DNMG150612 -PM-S	15.50	12.70	6.35	5.16	1.20	*	*
DNMG150616 -PM-S	15.50	12.70	6.35	5.16	1.60	*	*
SNMG120408 -PM-S	12.70	12.70	4.76	5.16	0.80	*	*
TCMT090204-PM-S	9.60	5.56	2.38	2.50	0.40	*	*
TCMT110304 -PM-S	11.00	6.35	2.38	2.80	0.40	*	*
TCMT16T304 -PM-S	16.50	9.52	3.97	4.40	0.40	*	*
TCMT16T308 -PM-S	16.50	9.52	3.97	4.40	0.80	*	*
TNMG160404 -PM-S	16.50	9.52	4.76	3.81	0.40	*	*
TNMG160408 -PM-S	16.50	9.52	4.76	3.81	0.80	*	*
TNMG220404 -PM-S	22.00	12.70	4.76	5.16	0.40	*	*
TNMG220408 -PM-S	22.00	12.70	4.76	5.16	0.80	*	*
TNMG220412 -PM-S	22.00	12.70	4.76	5.16	1.20	*	*
VBMT160404 -PM-S	16.50	9.52	4.76	4.40	0.40	*	*
VBMT160408 -PM-S	16.50	9.82	4.76	4.40	0.80	*	*
VNMG160404 -PM-S	16.60	9.52	4.76	3.81	0.40	*	*
VNMG160408 -PM-S	16.60	9.52	4.76	3.81	0.80	*	*
WNMG080404-PM-S	8.70	12.70	4.76	5.16	0.40	*	*
WNMG080408-PM-S	8.70	12.70	4.76	5.16	0.80	*	*
WNMG080412 -PM-S	8.70	12.70	4.76	5.16	1.20	*	*
KNUX160405R11	16.15	1.W9.52	4.76	brn2.2	0.50	*	*
KNUX160405L11	16.15	1.W9.52	4.76	brn2.2	0.50	*	*

	Cutting parameters Processing material	Continuous processing and irregular processing		Intermittent processing	
		Linear velocity Vc	Feed per tooth f	Linear velocity Vc	Feed per tooth f
TC521	Stainless steel	80-120 -180	0.10 -0.30	06-80-120	0.10 -0.20
	Mild steel	120 -180 -250	0.10 -0.35	100 -150 -220	0.10 -0.25
	HRC < 48 Steel	80-120 -180	0.10 -0.35	60-80-100	0.10 -0.20
TC522	Medium Carbon steel Machining	160 -220 -250	0.10 -0.35	100 -120 -150	0.08 -0.20
	Mild steel	180 -220 -280	0.10 -0.35	120 -150 -200	0.10 -0.20
	HRC< 48 Steel	80-120 -180	0.10 -0.35	60-80-100	0.08 -0.15
Ap=0.4 – 4.0 mm cutting depth					

Insert for cast iron machining series



1. Processing objects: semi-finishing and roughing of gray and ductile iron and steel
2. Features: relatively light cutting speed, strong edge resistance, high wear resistance
3. CNMG/DNMG/TNMG/VNMG/WNMG
Common specification
4. TC412, TC422, TC432 Common used grades

Ordering Code	Dimensions (mm)					Grade		
	L	φl.C	s	φd	r	TC412	TC422	TC432
CNMA120404 -V	12.90	12.70	4.76	5.16	0.40	*	*	*
CNMA120408 -V	12.90	12.70	4.76	5.16	0.80	*	*	*
CNMA120412 -V	12.90	12.70	4.76	5.16	1.20	*	*	*
CNMA120416 -V	12.90	12.70	4.76	5.16	1.60	*	*	*
CNMG120404 -GH	12.90	12.70	4.76	5.16	0.40	*	*	*
CNMG120408 -GH	12.90	12.70	4.76	5.16	0.80	*	*	*
CNMG120412 -GH	12.90	12.70	4.76	5.16	1.20	*	*	*
CNMG120416 -GH	12.90	12.70	4.76	5.16	1.60	*	*	*
DNMA150608 -V	12.50	12.70	6.35	5.16	0.80	*	*	*
DNMA150612 -V	15.50	12.70	6.35	5.16	1.20	*	*	*
DNMG150608 -GH	15.50	12.70	6.35	5.16	0.80	*	*	*
DNMG150612 -GH	15.50	12.70	6.35	5.16	1.20	*	*	*
SNMA120404 -V	12.70	12.70	4.76	5.16	0.40	*	*	*
SNMA120408 -V	12.70	12.70	4.76	5.16	0.80	*	*	*
SNMA120412 -V	12.70	12.70	4.76	5.16	1.20	*	*	*
SNMG120404 -GH	12.70	12.70	4.76	5.16	0.40	*	*	*
SNMG120408 -GH	12.70	12.70	4.76	5.16	0.80	*	*	*
SNMG120412 -GH	12.70	12.70	4.76	5.16	1.20	*	*	*
TNMG160404 -GH	16.50	9.52	4.76	3.81	0.40	*	*	*
TNMG160408 -GH	16.50	9.52	4.76	3.81	0.80	*	*	*

Ordering Code	Dimensions (mm)					Grade		
	L	ϕ l.C	s	ϕ d	r	TC520	TC522	TC433
TNMG160412 -GH	16.50	9.52	4.76	3.81	1.20	*	*	*
TNMA220408 -V	22.00	12.70	4.76	5.16	0.80	*	*	*
TNMA220412 -V	22.00	12.70	4.76	5.16	1.20	*	*	*
TNMA220416 -V	22.00	12.70	4.76	5.16	1.60	*	*	*
VNMA160404 -V	16.60	9.52	4.76	3.81	0.40	*	*	*
VNMA160408 -V	16.60	9.52	4.76	3.81	1.80	*	*	*
VNMA160412 -V	16.60	9.52	4.76	3.81	1.20	*	*	*
VNMG160404 -GH	16.60	9.52	4.76	3.81	0.40	*	*	*
VNMG160408 -GH	16.60	9.52	4.76	3.81	0.80	*	*	*
VNMG160412 -GH	16.60	9.52	4.76	3.81	1.20	*	*	*
WNMA080404 -V	8.70	12.70	4.76	5.16	0.40	*	*	*
WNMA080408 -V	8.70	12.70	4.76	5.16	0.80	*	*	*
WNMA080412 -V	8.70	12.70	4.76	5.16	1.20	*	*	*
WNMG080404 -GH	8.70	12.70	4.76	5.16	0.40	*	*	*
WNMG080408 -GH	8.70	12.70	4.76	5.16	0.80	*	*	*
WNMG080412 -GH	8.70	12.70	4.76	5.16	1.20	*	*	*
CCMT09T304	9.70	9.52	3.97	4.40	0.40	*	*	*
CCMT09T308	9.70	9.52	3.97	4.40	0.80	*	*	*
DCTMIIT304	11.60	9.52	3.97	4.40	0.40	*	*	*
DCTMIIT308	11.60	9.52	3.97	4.40	0.80	*	*	*
DCTMIIT312	11.60	9.52	3.97	4.40	1.20	*	*	*
TCMT16T304	16.50	9.52	3.97	4.40	0.40	*	*	*
TCMT16T308	16.50	9.52	3.97	4.40	0.80	*	*	*
TCMT16T312	16.50	9.52	3.97	4.40	1.20	*	*	*
VBMT160404	16.50	9.52	4.76	4.40	0.40	*	*	*
VBMT160408	16.50	9.52	4.76	4.40	0.80	*	*	*

Cutting parameters Processing material	Continuous processing and irregular processing		Intermittent processing	
	Linear velocity Vc	Feed per tooth f	Linear velocity Vc	Feed per tooth f
Gray cast iron	250 -300 -350	0.10 -0.40	200 -250 -300	0.10 -0.35
Ductile iron	200 -250 -300	0.10 -0.40	180 -220 -250	0.10 -0.35
Cast steel	180 -250 -350	0.06 -0.10	120 -180 -250	0.06 -0.08
Ap=0.8 - 5.0 mm cutting depth				

General processing of Stainless steel, mild steel



1. Processing objects: Stainless steel stell finishing and semi-finishing
2. Features: Very light cutting speed, smooth chip removal, Versatility
3. CNMG/DNMG/TNMG/VNMG/WNMG Common specification
4. TP622, TP623, TP625 Common used grades

Ordering Code	Dimensions (mm)					Grade		
	L	φl.C	s	φd	r	TP622	TP623	TP625
CCMT060204 -NN	6.40	6.35	2.38	2.80	0.40	*	*	*
CCMT060208 -NN	6.40	6.35	2.38	2.80	0.80	*	*	*
CCMT09T304 -NN	9.70	9.52	3.97	4.40	0.40	*	*	*
CCMT09T308 -NN	9.70	9.52	3.97	4.40	0.80	*	*	*
CCTM120404 -NN	12.90	12.70	4.76	5.56	0.40	*	*	*
CCMT120408 -NN	12.90	12.70	4.76	5.56	0.80	*	*	*
CNMG120404 -NN	12.90	12.70	4.76	5.16	0.40	*	*	*
CNMG120408 -NN	12.90	12.70	4.76	5.16	0.80	*	*	*
CNMG120412 -NN	12.50	12.70	4.76	5.16	1.20	*	*	*
DCMT070204 -NN	7.80	6.35	2.38	2.80	0.40	*	*	*
DCMT11T304 -NN	11.60	9.52	3.97	4.40	0.40	*	*	*
DCMT11T308 -NN	11.60	9.52	3.97	4.40	0.80	*	*	*
DNMG110404 -NN	11.60	9.52	4.76	3.81	0.40	*	*	*
DNMG110408 -NN	11.60	9.52	4.76	3.81	0.80	*	*	*
DNMG150404 -NN	15.50	12.70	4.76	5.16	0.40	*	*	*
DNMG150408 -NN	15.50	12.70	4.76	5.16	0.80	*	*	*

Ordering Code	Dimensions (mm)					Grade		
	L	ϕ l.C	s	ϕ d	r	TP622	TP623	TP625
DNMG150412 -NN	15.50	12.70	4.76	5.16	1.20	*	*	*
DNMG150604 -NN	15.50	12.70	6.35	5.16	0.40	*	*	*
DNMG150608 -NN	15.50	12.70	6.35	5.16	0.80	*	*	*
TCMT110204 -NN	11.00	6.35	2.38	2.80	0.40	*	*	*
TCMT110208 -NN	11.00	6.35	2.38	2.80	0.80	*	*	*
TCMT16T304 -NN	16.50	9.52	3.97	4.40	0.40	*	*	*
TCMT16T308 -NN	16.50	9.52	3.97	4.40	0.80	*	*	*
TCMT16T312 -NN	16.50	9.52	3.97	4.40	1.20	*	*	*
TNMG160404 -NN	16.50	9.52	4.76	3.81	0.40	*	*	*
TNMG160408 -NN	16.50	9.52	4.76	3.81	0.80	*	*	*
TNMG160412 -NN	16.50	9.52	4.76	3.81	1.20	*	*	*
TNMG220404 -NN	22.00	12.70	4.76	5.16	0.40	*	*	*
TNMG220408 -NN	22.00	12.70	4.76	5.16	0.80	*	*	*
TNMG220412 -NN	22.00	12.70	4.76	5.16	1.20	*	*	*
TNUX160404R-NN	16.50	9.52	4.76	3.81	0.40	*	*	*
TNUX160408R-NN	16.50	9.52	4.76	3.81	0.80	*	*	*
TNUX160404L-NN	16.50	9.52	4.76	3.81	0.40	*	*	*
TNUX160408L-NN	16.50	9.52	4.76	3.81	0.80	*	*	*
KNUX160405R-NN	16.15	1.0W9.52	4.76	brn2.2	0.50	*	*	*
KNUX160405L-NN	16.15	1.0W9.52	4.76	brn2.2	0.50	*	*	*
VBMT110304 -NN	11.00	6.35	3.18	2.80	0.40	*	*	*
VBMT110308 -NN	11.00	6.35	3.18	2.80	0.80	*	*	*
VBMT160404 -NN	16.50	9.52	4.76	4.40	0.40	*	*	*
VBMT160408 -NN	16.50	9.52	4.76	4.40	0.80	*	*	*
VNMG160404 -NN	16.60	9.52	4.76	3.81	0.40	*	*	*
VNMG160408 -NN	16.60	9.52	4.76	3.81	0.80	*	*	*
WNMG060404 -NN	6.50	9.52	4.76	3.81	0.40	*	*	*
WNMG060408 -NN	6.50	9.52	4.76	3.81	0.80	*	*	*
WNMG080404 -NN	8.70	12.70	4.76	5.16	0.40	*	*	*
WNMG080408 -NN	8.70	12.70	4.76	5.16	0.80	*	*	*
WNMG080412 -NN	8.70	12.70	4.76	5.16	1.20	*	*	*

Cutting parameters Processing material	Continuous processing and irregular processing		Intermittent processing	
	Linear velocity Vc	Feed per tooth f	Linear velocity Vc	Feed per tooth f
Stainless steel	80-120 -180	0.08-0.30	06-90-110	0.08-0.20
Mild steel	120 -180 -250	0.08-0.35	100 -150 -200	0.08-0.30
48-52 mild steel	50-70-90	0.08-0.20	40-50-60	0.08-0.15
Ap=0.4 – 4.0 mm cutting depth				

Steel General turning



1. Processing objects:mild steel, steel stainless steel finishing andsemi-finishing
2. Features: light cutting, strong edge resistance, good wearresistance
3. CNMG/TNMG/WNMG/VBMT/VCMT/CCMT/DNMG Common specification
4. TP522, TP524 Common used grade

Ordering Code	Dimensions (mm)					Grade	
	L	φl.C	s	φd	r	TP522	TP524
CCMT060204-SM	6.40	6.35	2.38	2.80	0.40	*	*
CCMT060208-SM	6.40	6.35	2.38	2.80	0.80	*	*
CCMT09T304-SM	9.70	9.52	3.97	4.40	0.40	*	*
CCMT09T308-SM	9.70	9.52	3.97	4.40	0.80	*	*
CNMG120404 -TF	12.90	12.70	4.76	5.16	0.40	*	*
CNMG120408 -TF	12.90	12.70	4.76	5.16	0.80	*	*
CNMG160608 -TF	16.10	15.88	6.35	6.35	0.80	*	*
CNMG160612 -TF	16.10	15.88	6.35	6.35	1.20	*	*
DCMT070204-SM	7.80	6.35	2.38	2.80	0.40	*	*
DCMT070208-SM	7.80	6.35	2.90	2.80	0.80	*	*
DCMT11T304 -SM	11.60	9.52	3.97	4.40	0.40	*	*
DCMT11T308 -SM	11.60	9.52	3.97	4.40	0.80	*	*
DNMG150404 -TF	15.50	12.70	4.76	5.16	0.40	*	*
DNMG150408 -TF	15.50	12.70	4.76	5.16	0.80	*	*
DNMG150604 -TF	15.50	12.70	6.35	5.16	0.40	*	*
DNMG150608 -TF	15.50	12.70	6.35	5.16	0.80	*	*

Steel General turning

Ordering Code	Dimensions (mm)					Grade	
	L	ϕ l.C	S	ϕ d	r	TP522	TP524
TCMT090204-SM	9.60	5.56	2.38	2.50	0.40	*	*
TCMT110204 -SM	11.00	6.35	2.38	2.80	0.40	*	*
TCMT110208 -SM	11.00	6.35	2.38	2.80	0.80	*	*
TCMT16T304 -SM	16.50	9.52	3.97	4.40	0.40	*	*
TCMT16T308 -SM	16.50	9.52	3.97	4.40	0.80	*	*
TNMG160404 -TF	16.50	9.52	4.76	3.81	0.40	*	*
TNMG160408 -TF	16.50	9.52	4.76	3.81	0.80	*	*
TNMG220404 -TF	22.00	12.70	4.76	5.16	0.40	*	*
TNMG220408 -TF	22.00	12.70	4.76	5.16	0.80	*	*
TNMG220412 -TF	22.00	12.70	4.76	5.16	1.20	*	*
VCMT160404 -SM	16.50	9.52	4.76	4.40	0.40	*	*
VCMT160408 -SM	16.50	9.52	4.76	4.40	0.80	*	*
WNMG060404 -TF	6.50	9.52	4.76	3.81	0.40	*	*
WNMG060408 -TF	6.50	9.52	4.76	3.81	0.80	*	*
WNMG080404 -TF	8.70	12.70	4.76	5.16	0.40	*	*
WNMG080408 -TF	8.70	12.70	4.76	5.16	0.80	*	*

Cutting parameters Processing material	Continuous processing and irregular processing		Intermittent processing	
	Linear velocity Vc	Feed per tooth f	Linear velocity Vc	Feed per tooth f
Stainless steel	80-120 -180	0.08 -0.30	06-90 -110	0.08 -0.20
Mild steel	120 -180 -250	0.08 -0.35	100 -150 -200	0.08 -0.30
HRC < 52 steel	80-120 -150	0.08 -0.35	60-100 -120	0.08 -0.20
Ap=0.4 – 3.0 mm cutting depth				

Aluminum and copper processing series



1. Processing objects: Aluminum, acrylic and non-ferrous metal semi-finishing and finishing
2. Features: light cutting, strong edge resistance, good wear resistance
3. CCGT/DCGT/TCGT/VCGT Common specification
4. JTK101 Common used grades

Ordering Code	Dimensions (mm)					Grade
	L	φl.C	s	φd	r	JTK101
CCGT060204 -AK	6.40	6.35	2.38	2.80	0.40	*
CCGT060208 -AK	6.40	6.35	2.38	2.80	0.80	*
CCGT09T302 -AK	9.70	9.52	3.97	4.40	0.20	*
CCGT09T304 -AK	9.70	9.52	3.97	4.40	0.40	*
CCGT09T308 -AK	9.70	9.52	3.97	4.40	0.80	*
CCGT120404 -AK	12.90	12.70	4.76	5.56	0.40	*
CCGT120408 -AK	12.90	12.70	4.76	5.56	0.80	*
DCGT070202 -AK	7.80	6.35	2.38	2.80	0.20	*
DCGT070204 -AK	7.80	6.35	2.38	2.80	0.40	*
DCGT070208 -AK	7.80	6.35	2.38	2.80	0.80	*
DCGT11T302 -AK	11.60	9.52	3.97	4.40	0.20	*
DCGT11T304 -AK	11.60	9.52	3.97	4.40	0.40	*
DCGT11T308 -AK	11.60	9.52	3.97	4.40	0.80	*
SCGT09T302 -AK	9.52	9.52	3.97	4.40	0.20	*
SCGT09T304 -AK	9.52	9.52	3.97	4.40	0.40	*
SCGT09T308 -AK	9.52	9.52	3.97	4.40	0.80	*

Ordering Code	Dimensions (mm)					Grade
	L	φl.C	s	φd	r	JTK101
SCGT120402-AK	12.70	12.70	4.76	5.56	0.20	*
SCGT120404-AK	12.70	12.70	4.76	5.56	0.40	*
SCGT120408-AK	12.70	12.70	4.76	5.56	0.80	*
TCGT090202-AK	9.60	5.56	2.38	2.50	0.20	*
TCGT090204-AK	9.60	5.56	2.38	2.50	0.40	*
TCGT110202 -AK	11.00	6.35	2.38	2.80	0.20	*
TCGT110204 -AK	11.00	6.35	2.38	2.80	0.40	*
TCGT110208 -AK	11.00	6.35	2.38	2.80	0.80	*
TCGT110302 -AK	11.00	6.35	3.18	2.80	0.20	*
TCGT110304 -AK	11.00	6.35	3.18	2.80	0.40	*
TCGT110308 -AK	11.00	6.35	3.18	2.80	0.80	*
TCGT16T302 -AK	16.50	9.52	3.97	4.40	0.20	*
TCGT16T304 -AK	16.50	9.52	3.97	4.40	0.40	*
TCGT16T308 -AK	16.50	9.52	3.97	4.40	0.80	*
VCGT110302 -AK	11.00	6.35	3.18	2.80	0.20	*
VCGT110304 -AK	11.00	6.35	3.18	2.80	0.40	*
VCGT160402-AK	16.50	9.52	4.76	4.40	0.20	*
VCGT160404-AK	16.50	9.52	4.76	4.40	0.40	*
VCGT160408-AK	16.50	9.52	4.76	4.40	0.80	*
VCGT160412 -AK	16.50	9.52	4.76	4.40	1.20	*
VCGT220530-AK	22.00	12.70	5.56	5.50	3.00	*
WNMG080402 -AK	8.70	12.70	4.76	5.16	0.20	*
WNMG080404 -AK	8.70	12.70	4.76	5.16	0.40	*
WNMG080408 -AK	8.70	12.70	4.76	5.16	0.80	*
CNMG120404 +HA	12.90	12.70	4.76	5.16	0.40	*
CNMG120408 +HA	12.90	12.70	4.76	5.16	0.80	*
TNMG110404 +HA	11.00	6.35	3.18	3.18	0.40	*
TNMG160404 +HA	16.50	9.52	4.76	3.81	0.40	*
TNMG160408 +HA	16.50	9.52	4.76	3.81	0.80	*
WNMG080404 +HA	8.70	12.70	4.76	5.16	0.40	*
WNMG080408 +HA	8.70	12.70	4.76	5.16	0.80	*
GIPA -8.00-4.00	8.00		6.00		4.00	*

Cutting parameters Processing material	Continuous processing and irregular processing		Intermittent processing	
	Linear velocity Vc	Feed per tooth f	Linear velocity Vc	Feed per tooth f
Aluminum alloy	300-400-500	0.03-0.50	200-300-350	0.03-0.35
Titanium alloy	60-70-80	0.03-0.20	50-60-70	0.03-0.15
Ap=0.5 – 5.0 mm cutting depth				

RP & RD circular milling inserts series



1. Processing objects: Roughing of mold steel tool steel and stainless steel
2. Features: light cutting, anti-collapse performance, high efficiency of roughing
3. RPMT/RDMT Common specification
4. TP731, TP732, TP734, TP736 Common used grades

Ordering Code	Dimensions (mm)			Grade			
	I	S	ϕd	TP731	TP732	TP734	TP736
RPMT08T2MO -JS	8.00	3.18	3.40	*	*	*	*
RPMT10T30MO -JS	10.00	3.97	4.40	*	*	*	*
RPMT1204MOE -JS	12.00	4.76	4.40	*	*	*	*
RPMW1003MO	10.00	3.97	4.40	*	*	*	*
RPMW10T3MO	10.00	3.97	4.40	*	*	*	*
RPMW1204MO	12.00	4.76	4.40	*	*	*	*
RPMW1604MO	16.00	6.35	5.56	*	*	*	*
RDMT0803MO -NN	8.00	3.18	3.40	*	*	*	*
RDMT1003MO -NN	10.00	3.18	4.40	*	*	*	*
RDMT10T3MO -NN	10.00	3.97	4.40	*	*	*	*
RDMT1204MO -NN	12.00	4.76	4.40	*	*	*	*
RDMT08T2MO -R	8.00	3.18	3.40	*	*	*	*
RDMT10T3MO -R	10.00	3.97	4.40	*	*	*	*
RDMT1204MO -R	12.00	4.76	4.40	*	*	*	*
RDMT1604MO -R	16.00	4.76	5.56	*	*	*	*
RDGW1604MO	16.00	6.35	5.56	*	*	*	*
RDMT1003MO -A27	10.00	3.97	4.40	*	*	*	*
RDMT1204MO -A27	12.00	4.76	4.00	*	*	*	*
RDMT1604MO -A27	16.00	6.35	5.56	*	*	*	*
RPMT1003 -XM	10.00	3.97	4.40	*	*	*	*
RPMT1204 -XM	12.00	4.76	4.40	*	*	*	*
RCKT10T3MO -PM	10.00	3.97	4.40	*	*	*	*
RCKT1204MO -PM	12.00	4.76	4.40	*	*	*	*
RCKT1204MO -PL	12.00	4.76	4.40	*	*	*	*

Face milling inserts series



1. Processing objects: Roughing of mold steel tool steel and stainless steel
2. Features: light cutting, anti-collapse performance, high efficiency of roughing
3. SEKT/SEMT/R210/R245/R490 Common specification
4. . TP731, TP732 Common used grades

Ordering Code	Dimensions (mm)			Grade	
	l	φl.C	S	TP731	TP732
SEMT13T3AGSN-JM	----		----	*	*
SEKT12T3AGSN	13.40		3.97	*	*
SEKT1204AFTN	12.70		4.76	*	*
SEKN1203AFTN	12.70		3.18	*	*
SEKN1203EDR	12.70		3.18	*	*
SEKN1504AFTN	15.88		4.76	*	*
SEKR1203AFTN	12.70		3.18	*	*
SNEN1204ANTN	12.70		3.18	*	*
SNEN1204ENN	12.70		3.18	*	*
SNEX1206ENN-MM	12.70		3.18	*	*
SEHT1204AFSN-X45	12.70		3.18	*	*
SPKN1203EDR	12.70		3.18	*	*
SPKN1504EDR	15.88		4.76	*	*
SPKR1203EDR	12.70		3.18	*	*
SPKR1504EDR	15.88		4.76	*	*
R210-140512M -KM	10.00	13.40	3.97	*	*
R245-12T3 - PM	13.90	18.00	6.10	*	*
R24518T6M-MM	10.70	13.29	3.97	*	*
R290-12T308- PM	5.60		3.30	*	*
R490-08T308- PM	5.60		3.30	*	*
R490-08T312- PM	5.60		3.30	*	*
ODMT060508TN	15.88		5.46	*	*
OFMT05T305TN	12.70		4.00	*	*
ONMG050504	12.70		4.00	*	*

Square series milling cutter blade



1. Processing objects: Roughing of mold steel tool steel and stainless steel
2. Features: light cutting, anti-collapse performance, high efficiency of roughing
3. APKT/APMT/R390 Common specification
4. TP731, TP732, TP734, TP736 Common used grades

Ordering Code	Dimensions (mm)			Grade			
	L	S	r	TP731	TP732	TP734	TP736
APKT1003PDR - HM90	10.39	3.53	0.80	*	*	*	*
APKT1003PDTR - RM	10.39	3.53	0.80	*	*	*	*
APKT1003PDTR - NN	10.39	3.53	0.80	*	*	*	*
APMT1135PDER - H2	11.45	3.52	0.70	*	*	*	*
APMT1135PDER - M2	11.45	3.52	0.70	*	*	*	*
APMT1135 - M8	11.45	3.52	0.70	*	*	*	*
APMT1135 -XM	11.45	3.52	0.70	*	*	*	*
APMT1604PDER - H2	15.30	4.76	0.80	*	*	*	*
APMT1604PDER - M2	15.30	4.76	0.80	*	*	*	*
APMT1604 - M8	15.30	4.76	0.80	*	*	*	*
APMT1604 -XM	15.30	4.76	0.80	*	*	*	*
APKT160408 -PF	15.30	4.76	0.80	*	*	*	*
APKT1604PDR -76	15.30	4.76	0.80	*	*	*	*
APMT090308 -EM	9.10	2.60	0.80	*	*	*	*
APKT170508R -EM	17.00	5.60	0.31	*	*	*	*
ADMT1505 -76	15.70	6.40	0.80	*	*	*	*

Ordering Code	Dimensions (mm)					Grade			
	L	I.W	S	ϕd	r	TP731	TP732	TP734	TP736
AOMT123608PEER -M	11.93		3.62		0.70	*	*	*	*
AOMT184804PEER - M	18.00		4.80		0.40	*	*	*	*
JDMT100308R -FW	9.50		5.50			*	*	*	*
R390-11T304 -PM	11.00	6.80	3.50	bs0.9	0.40	*	*	*	*
R390-11T308 -PM	11.00	6.80	3.50	bs1.2	0.80	*	*	*	*
R390-11T316E -PM	11.00	6.80	3.50	bs0.4	1.60	*	*	*	*
R390-11T320E -PM	11.00	6.80	3.50		2.00	*	*	*	*
R390-170408 -PM	17.00	9.60	4.70	bs1.5	0.80	*	*	*	*
R390-170420 -PM	17.00	9.60	4.70	bs0.3	2.00	*	*	*	*
R390-180608 -PM	18.00	11.00	6.	1.	0.80	*	*	*	*
R390-180612M -PM	18.00	11.00	6.	1.	1.20	*	*	*	*

WERKZEUG



WERKZEUG

Cermet series

WERKZEUG



1. Processing objects: finishing and semi-finishing of steel, hard steel, stainless steel
2. Features: light cutting, smooth chip removal
high wear resistance
3. CCGT/TPGT/TPGH/WBGT/TNGG/CNMG/DNMG/TNMG/VNMG/WNMG Common specification
4. JT3000, JT6000, TP3000, TP6000 Common used grades

Ordering Code	Dimensions (mm)					Grade			
	L	φI.C	S	φd	r	JT3000	JT6000	TP3000	TP6000
CCMT060204-MT	6.40	6.35	2.38	2.80	0.40	*	*	*	*
CCMT060208-MT	6.40	6.35	2.38	2.80	0.80	*	*	*	*
CCMT09T304-MT	9.70	9.52	3.97	4.40	0.40	*	*	*	*
CCMT09T308-MT	9.70	9.52	3.97	4.40	0.80	*	*	*	*
CCMT09T304-FG	9.70	9.52	3.97	4.40	0.40	*	*	*	*
CCMT09T308-FG	9.70	9.52	3.97	4.40	0.80	*	*	*	*
CNMG120404 -MT	12.90	12.70	4.76	5.16	0.40	*	*	*	*
CNMG120408 -MT	12.90	12.70	4.76	5.16	0.80	*	*	*	*
CNMG120404 -FG	12.90	12.70	4.76	5.16	0.40	*	*	*	*
CNMG120408 -FG	12.90	12.70	4.76	5.16	0.80	*	*	*	*
DCMT070204 -MT	7.80	6.35	2.38	2.80	0.40	*	*	*	*
DCMT070208 -MT	7.80	6.35	2.38	2.80	0.80	*	*	*	*
DCMT11T304 -MT	11.60	9.52	3.97	4.40	0.40	*	*	*	*
DCMT11T308 -MT	11.60	9.52	3.97	4.40	0.80	*	*	*	*
DNMG150404 -MT	15.50	12.70	4.76	5.16	0.40	*	*	*	*
DNMG150408 -MT	15.50	12.70	4.76	5.16	0.80	*	*	*	*
DNMG150404 -FG	15.50	12.70	4.76	5.16	0.40	*	*	*	*
DNMG150408 -FG	15.50	12.70	4.76	5.16	0.80	*	*	*	*
DNMG150404 -VF	15.50	12.70	4.76	5.16	0.40	*	*	*	*
DNMG150408 -VF	15.50	12.70	4.76	5.16	0.80	*	*	*	*

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Ordering Code	Dimensions (mm)					Grade			
	L	I.C	S	d	r	JT3000	JT6000	TP3000	TP6000
TNMG160404MT	16.50	9.52	4.76	3.81	0.40	*	*	*	*
TNMG160408MT	16.50	9.52	4.76	3.81	0.80	*	*	*	*
TNMG160404FG	16.50	9.52	4.76	3.81	0.40	*	*	*	*
TNMG160408FG	16.50	9.52	4.76	3.81	0.80	*	*	*	*
TNMG160402R/E	16.50	9.52	4.76	3.81	0.20	*	*	*	*
TNMG160404R/E	16.50	9.52	4.76	3.81	0.40	*	*	*	*
TNMG160408R/E	16.50	9.52	4.76	3.81	0.80	*	*	*	*
TNMG160402R/2G	16.50	9.52	4.76	3.81	0.20	*	*	*	*
TNMG160404R/2G	16.50	9.52	4.76	3.81	0.40	*	*	*	*
TNMG160408R/2G	16.50	9.52	4.76	3.81	0.80	*	*	*	*
WNMG080404MT	8.70	12.70	4.76	5.16	0.40	*	*	*	*
WNMG080408MT	8.70	12.70	4.76	5.16	0.80	*	*	*	*

WERKZEUG



WERKZEUG

Precision boring inserts series



1. Processing objects: finishing and semi-finishing of steel, hard steel, stainless steel
2. Features: light cutting, smooth chip removal high wear resistance
3. CCGT/TPGH/TBGT/WBGT Common specification
4. JT3000, JT6000, TP3000, TP6000 Common used grades

Ordering Code	Dimensions (mm)				Grade			
	L	S	ϕd	α	JT3000	JT6000	TP3000	TP6000
CCGT060202R/L	6.35	2.38	2.80	7°	*	*	*	*
CCGT060204R/L	6.35	2.38	2.80	7°	*	*	*	*
CCGT09T301	9.52	3.97	4.40	7°	*	*	*	*
CCGT09T302	9.52	3.97	4.40	7°	*	*	*	*
CCGT09T304	9.52	3.97	4.40	7°	*	*	*	*
TPGH080201R/L	4.76	2.38	2.30	11°	*	*	*	*
TPGH080202R/L	4.76	2.38	2.30	11°	*	*	*	*
TPGH080204R/L	4.76	2.38	2.30	11°	*	*	*	*
TPGH090201R/L	5.56	2.38	3.00	11°	*	*	*	*
TPGH090202R/L	5.56	2.38	3.00	11°	*	*	*	*
TPGH090204R/L	5.56	2.38	3.00	11°	*	*	*	*
TPGH110301R/L	6.35	3.18	3.30	11°	*	*	*	*
TPGH110302R/L	6.35	3.18	3.30	11°	*	*	*	*
TPGH110304R/L	6.35	3.18	3.30	11°	*	*	*	*
TBGT060101	3.97	1.59	2.30	5°	*	*	*	*
TBGT060102	3.97	1.59	2.30	5°	*	*	*	*
TBGT060104	3.97	1.59	2.30	5°	*	*	*	*
WBGT060101	3.97	1.59	2.30	5°	*	*	*	*
WBGT060102	3.97	1.59	2.30	5°	*	*	*	*
WBGT060104	3.97	1.59	2.30	5°	*	*	*	*
WBGT080201	4.76	2.38	2.30	5°	*	*	*	*
WBGT080202	4.76	2.38	2.30	5°	*	*	*	*
WBGT080204	4.76	2.38	2.30	5°	*	*	*	*

Cermet



1. Processing objects: finishing and semifinishing of stainless steel, titanium, alloy steel, hardened steel
2. Features: light cutting, smooth chip removal high wear resistance
3. APMT/TPKN/TEKN/SPKN/SPKR/SEKN/SEKR/SNKN Common specification
4. JT3000, JT6000, TP3000, TP6000 Common used grades

Ordering Code	Dimensions (mm)					Grade			
	L	φI.C	S	bs	be	JT3000	JT6000	TP300	TP600
APMT1135	16.50	9.52	4.76	3.81	0.40	*	*	*	*
APMT1604	16.50	9.52	4.76	3.81	0.80	*	*	*	*
TPKN110304	16.50	9.52	4.76	3.81	0.40	*	*	*	*
TPKN110308	16.50	9.52	4.76	3.81	0.80	*	*	*	*
TPKN160304	16.50	9.52	4.76	3.81	0.20	*	*	*	*
TPKN160308	16.50	9.52	4.76	3.81	0.40	*	*	*	*
TPKN1603PDER	16.50	9.52	4.76	3.81	0.8	*	*	*	*
TPKN1603PDTR	16.50	9.52	4.76	3.81	0.20	*	*	*	*
TEKN1603PDTR	16.50	9.52	4.76	3.81	0.40	*	*	*	*
TEKN2204PDTR	16.50	9.52	4.76	3.81	0.80	*	*	*	*
SPKN1203EDTR	12.70	12.70	3.18	1.40	1.00	*	*	*	*
SPKN1504EDTR	15.88	15.88	4.76	1.40	1.00	*	*	*	*
SPKR1203EDR	12.70	12.70	3.18	1.40	1.00	*	*	*	*
SPKR1504EDR	15.88	15.88	4.76	1.40	1.00	*	*	*	*
SEKN1203AFTN	12.70	12.70	3.18	1.80		*	*	*	*
SEKN1203	12.70	12.70	3.18	1.80		*	*	*	*
SEKR1203AFTN	12.70	12.70	3.18	1.80		*	*	*	*
SEKR1504AFTR	15.88	15.88	4.76	1.60		*	*	*	*
SNKN1204ANTN	12.70	12.70	3.18			*	*	*	*
SNKN1204ENN	12.70	12.70	3.18			*	*	*	*

Aluminum milling inserts series



1. Processing objects: finishing and semi-finishing of aluminum, acrylic and non-ferrous metal
2. Features: light cutting, strong edge resistance high wear resistance
3. APKT/SEHT/RCGT Common specification
4. JTK101 Common used grades

Ordering Code	Dimensions (mm)			Grade
	L	S	r	
APKT1003PDTR	10.39	3.53	0.80	JTK101 *
APKT1135PDER -G	11.45	3.52	0.70	JTK101 *
APKT1604PDER-G	15.30	4.76	0.80	JTK101 *
APKT160404 -MA	15.30	4.76	0.40	JTK101 *
SEHT1204AFFN-M	16.50	4.76	0.20	JTK101 *
RCGT0803MO -AK	8.00	3.18		JTK101 *
RCGT1003MO -AK	10.00	3.97		JTK101 *
RCGT10T3MOE -AK	10.00	3.97		JTK101 *
RCGT1204MO -AK	12.00	4.76		JTK101 *
RCGT1606MO -AK	16.00	6.35		JTK101 *

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Cutting parameters Processing material	Continuous processing and irregular processing		Intermittent processing	
	Linear velocity Vc	Feed per tooth f	Linear velocity Vc	Feed per tooth f
Aluminum alloy	300 -400 -500	0.03 -0.50	200 -300 -350	0.03 -0.35
Titanium alloy	60 -70 -80	0.03 -0.20	50 -60 -70	0.03 -0.15
Ap=0.5 – 5.0 mm cutting depth				

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Waterjet drilling inserts series



1. Processing objects: finishing and semi-finishing of stainless steel, steel
2. Features: Very light cutting, smooth chip removal
3. SPMG/WCMX Common specification
4. TP522, TP622 Common used grades

Ordering Code	Dimensions (mm)			Grade	
	L	S	r	TP522	TP622
SPMG050204 -DG	5.00	2.38	0.4	*	*
SPMG060204 -DG	6.00	2.38	0.40	*	*
SPMG07T308 -DG	7.94	3.97	0.80	*	*
SPMG090408 -DG	9.80	4.30	0.80	*	*
SPMG110408 -DG	11.50	4.80	0.80	*	*
SPMG140512 -DG	14.30	5.20	1.20	*	*
WCMX030204R -53	3.00	2.38	0.40	*	*
WCMX040208R -53	4.00	2.38	0.80	*	*
WCMX050308R -53	5.00	3.18	0.80	*	*
WCMX06T308R -53	6.00	3.97	0.80	*	*
WCMX080412R -53	7.00	4.76	1.20	*	*
WCMX030204 -FN	3.00	2.38	0.40	*	*
WCMX040208 -FN	4.00	2.38	0.80	*	*
WCMX050308 -FN	5.00	3.18	0.80	*	*
WCMX06T308 -FN	6.00	3.97	0.80	*	*
WCMX080412 -FN	7.00	4.76	1.20	*	*

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Cutting off and grooving inserts series



1. Processing objects: general machining of steel stainless steel
2. Features: light cutting, smooth chip removal high surface finish
3. MGMN/N151.2/N123H2 Common specification
4. TP822, TP823, TO824, TP832, TP833, TP834 Common used grades

Ordering Code	Dimensions (mm)					Grade					
	b	r	l	d	t	TP822	TP823	TP824	TP832	TP833	TP834
MGMN200 -G	2.00	0.20	16.0	1.60	3.50	*	*	*	*	*	*
MGMN250 -M	2.50	0.20	18.5	2.00	3.85	*	*	*	*	*	*
MGMN300 -M	3.00	0.40	21.0	2.35	4.80	*	*	*	*	*	*
MGMN400 -M	4.00	0.40	21.0	3.30	4.80	*	*	*	*	*	*
MGMN500 -M	5.00	0.80	26.0	4.10	5.80	*	*	*	*	*	*
MGMN600 -M	6.00	0.80	26.0	5.00	5.80	*	*	*	*	*	*
MGMN800 -M	8.00	0.80	31.0	6.00	6.50	*	*	*	*	*	*
MRMN200 -M	2.00	1.00	16.0	1.50	3.50	*	*	*	*	*	*
MRMN300 -M	3.00	1.50	21.0	2.35	4.80	*	*	*	*	*	*
MRMN400 -M	4.00	2.00	21.0	3.30	4.80	*	*	*	*	*	*
MRMN500 -M	5.00	2.50	26.0	4.10	5.80	*	*	*	*	*	*
MRMN600 -M	6.00	3.00	26.0	5.00	5.80	*	*	*	*	*	*
MRMN800 -M	8.00	4.00	31.0	6.00	6.50	*	*	*	*	*	*
SP200	2.20	0.20	9.30			*	*	*	*	*	*
SP300	3.10	0.20	9.30			*	*	*	*	*	*
SP400	4.10	0.25	11.3			*	*	*	*	*	*
SP500	5.10	0.30	11.4			*	*	*	*	*	*
ZTED02503 -MG	2.50	0.30	17.00			*	*	*	*	*	*
STFD0303 -MG	3.00	0.30	17.00			*	*	*	*	*	*
STGD404 -MG	4.00	0.40	22.00			*	*	*	*	*	*
ZTHD0504 -MG	5.00	0.40	22.00			*	*	*	*	*	*

Ordering Code	Dimensions (mm)			Grade					
	la	Ψr	$r \epsilon$	TP822	TP823	TP824	TP832	TP833	TP834
N151.2 -200 -4E	2.00	0°	0.20	*	*	*	*	*	*
N151.2 -300 -4E	3.00	0°	0.30	*	*	*	*	*	*
N151.2 -400 -4E	4.00	0°	0.30	*	*	*	*	*	*
N151.2 -500 -4E	5.00	0°	0.40	*	*	*	*	*	*
N151.2 -500 -5G	5.00	0°	----	*	*	*	*	*	*
N151.2 -600 -4E	6.00	0°	0.40	*	*	*	*	*	*
N151.2 -800 -4E	8.00	0°	0.60	*	*	*	*	*	*
N123J2 -0200 -002 -CM	2.00	0°	0.20	*	*	*	*	*	*
N123J2 -0200 -002 -GF	2.00	0°	0.20	*	*	*	*	*	*
N123G2 -0250 -002 -CM	2.50	0°	0.20	*	*	*	*	*	*
N123G2 -0250 -002 -GF	2.50	0°	0.20	*	*	*	*	*	*
N123J2 -0300 -002 -CM	3.00	0°	0.20	*	*	*	*	*	*
N123J2 -0300 -002 -GF	3.00	0°	0.20	*	*	*	*	*	*
N123J2 -0400 -002 -CM	4.00	0°	0.20	*	*	*	*	*	*
N123J2 -0400 -002 -GF	4.00	0°	0.20	*	*	*	*	*	*
N123G2 -0500 -002 -CM	5.00	0°	0.20	*	*	*	*	*	*
N123H2 -0400 -0003 -GM	4.00	0°	0.30	*	*	*	*	*	*
N123H2 -0400 -0003 -TM	4.00	0°	0.30	*	*	*	*	*	*
N123K2 -0600 -0004 -GM	6.00	0°	0.40	*	*	*	*	*	*
TDC2	2.00	0°	0.20	*	*	*	*	*	*
TDC3	3.00	0°	0.20	*	*	*	*	*	*
TDC4	4.00	0°	0.30	*	*	*	*	*	*
GIPA-300 -0.21	3.00	0°	0.20	*	*	*	*	*	*
DGN2002C	2.00	0°	0.20	*	*	*	*	*	*
GSFN3-C	3.02	7°	0.20	*	*	*	*	*	*

Cutting parameters Processing material	Continuous processing and irregular processing	
	Linear velocity Vc	Feed per tooth f
Stainless steel	60-80 - 120	2mm:0.06 - 0.12 2.5mm:0.08 - 0.15
Mild steel, Easy cutting steel	120 -150 - 180	3mm:0.10 - 0.20 4.0mm:0.12 - 0.30
HRC < 52 Steel	50-70 - 90	5mm:0.15 - 0.30
5~8 Recommended selection of inserts' width= diameter of workpiece ÷ 5 - 8		

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Category	Use in Category Code		JINTE	ZCC-CT	SANDVIK	KORLOY	TaeguTec	WALTER	MITSUBISHI	SUMITOMO	TUNGALOY	KYOCER A	DIJET	HITACHI	KENNAMETAL	SECO	ISCAR	
	XXXX	Code																
TURNING	P	P01																
		P10								ACP100		JC730U			TN2510 TN25M	IC9080 IC4100		
		P20	TC720 TC721	YBM251	GC4020 GC4220			WAP25	FH7020 F7030	ACP100		JC730U			TN7525	T200M T250M	IC520M	
		P30	TC730 TC731	YBM351	GC4030 GC4230	NCM335	TT7300	WAP35	F7030	AC230	T3030				KC930M	T250M T350M T25M	IC4050	
	P40	TC7741	YBC302	GC4240 GC4040					AC230					GF30 GX2030 GX30	TN7535	T350M		
	M01																	
	M10														TN25M			
	M20	TC720 TC722	YBM251 YBM253						F7030				JC730U			TN7525	T350M T25M	IC520M
	M30	TC730 TC732	YBM351	GC2040	NCM335			WTP35	F7030		T3030					KC930M TN7535	T250M T25M	IC4050
	M40		YBC302											GF30 GX30				
	K01												JC600					IC9080
	K10	TC412	YBD152		NCM310			WAK15	MC5020 F5010	ACK200 AC211		T1015		JC600		TN5505 TN5515		IC4100
K20	TC422	YBD252	GC3220 GC3020 K20D K20W	NCM320			WAK25	MC5020 F5020	ACK200		T1015		JC610		KC915M TN5520	T150M T200M	IC520M IC5100 IC9150	
K30	TC422 TC432	YBC302	GC3040										JC610		KC930M KC935M	T200M	IC4050 IC520M	

Category	Use in Category Code		JINTE	ZCC.CT	SANDVIK	KORLOY	T W A L T	MITSUBISHI	SUMITOMO	TUNGALOY	KYOCERA	DIJET	HITACHI	KENNAMETAL	SECO	ISCAR	
	XXXX	Code															
TURNING	P	P01									PR915 PRI005	JC5003					
		P10	TP512 TP613 TP513 TP615 TP514	YBG102	GCI1525 GCI1025			VPI0MF		AH710	PR915 PR930 PRI025 RRI115	JC5003		KC5010 KC5510 KUI0T	CP200 TS2000	IC250 IC507 IC570	
		P20	TP522 TP625 TP523 TP822 TP524 TP823 TP623 TP824	YBG202	GCI1525 GCI1020 GCI125	PC230		VPI5TF VP20MF		AH710 AH330	PR630 PR915 PR930 PR660 PRI025 RRI225	JC5015		KC5025 KU25T	CP250 TS2500	IC908 IC928 IC1008 IC1028 IC3028	
		P30	TP522 TP533 TP523 TP534 TP524 TP633 TP531 TP833 TP532 TP834	YBG202	GCI1025 GCI125			VPI5TF VP20MF		GH330 GH730 AH120 AH330 AH740	PR630 PR660	JC5015		KC7015 KC7020 KC7235	CP500	IC928 IC1008 IC1028 IC3028	
	P40	TP531 TP533 TP534	YBG302	GCI1020 GC2145	PC240		VPI5TF VP20MF		AH120	PR660				KC7040	CP500	IC928 IC1008 IC1028	
	M	M01										PR915 PRI025					
		M10	TP512 TP513 TP514 TP613 TP615	YBG102	GCI1005 GCI1025 GCI125			VPI0MF	AC510N			PR915 PR930 PRI125 PRI225	JC5003		KC5010 KC5510	CP200 TS2000	IC330 IC354 IC507 IC907 IC3028
		M20	TP522 TP822 TP523 TP823 TP524 TP832 TP623 TP833 TP625 TP834	YBG202 YBG205	GCI1020 CI025 GC4125	PC9030		VPI5TF VP20MF	AC520U		GH330 GH730	PR630 PR915 PR930	JC5015		KC5025 KC730 KC5525	CP200 CP500 TS2500	IC228 IC250 IC354 IC3028
		M30	TP633 TP635	YBG302	GCI1020 GC2035	PC9030		VPI5TF VP20MF	AC520U AC530U	AH120	PR630 PR660	JC5015			KC5025 KC5525	CP500	IC908 IC928 IC1008 IC1028
	M40				GC2035 GC2145				AC530U		PR660						IC228 IC328
	K	K01								EH10Z	AH110		JC5003				
		K10	TP613 TP615	YBG102		PC205K				EH10Z	GH110 AH110		JC5003 JC5015		KC5010 KC5510	CP200 TS2000	IC350
		K20	TP623 TP822 TP625 TP823 TP633 TP635	YBG202	GCI1020	PC215K			VPI0RT VPI5TF VP20RT	EH20Z	AH120		JC5015		KC7015 KC7020	CP200 CP250	IC928 IC1008 IC908 IC22
		K30	TP832 TP833 TP834		GC4125			VPI5TF							KC7225	CP500	IC928 IC1008 IC908 IC22

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