CDBPTools

2023 CNC CUTTING TOOLS CATALOG

Chengdu Bangpu Cutting Tools Co.,Ltd

Safety guidelines for carbide tools

·Chengdu Bangpu Cutting Tools Co LTD has been committed to developing and producing the safe and reliable carbide products.

·Please read the safety guidelines as below before operation and contact us in time in case of any problems.

1.Basic characteristics of carbide cutting tools

Carbide cutting tools is made of carbon-nitride, nitride, carbide, and oxide such as tungsten, titanium, aluminum, silicon,boron and adhesion agent such as aluminum, nickel, cobalt and manganese

The carbide cutting tools are featured with high hardness and large specific gravity.

2.Cautions

① Carbide tool materials are extremely both hard and brittle. Thus, it might be broken by shocks and tightening with excess force.

② Carbide tool materials have a large specific gravity. Thus, they require special attention as heavy materials when the size or quantity is large.

③ It is required to handle the carbide tool with gloves in case getting hurt from sharp cutting edge.

④ Cutting tools stocked in corrosive gas will be corroded with decreased toughness.

⑤ Please read the catalog and safety guidelines carefully before application.

⑥ It is forbidden to use the cutting tools under unfavorable conditions.

3.Attention to be paid in the process of application

① It is recommended to use local exhaust ventilation and respirators, a dust protective mask and dust-clean equipment when grinding and machining since cutting tool products generate harmful mist and dust containing cobalt. If dust makes contact with the hands or eyes, immediately wash the affected area with clean water. Washing hands or eyes with clean water immediately if dust splashed into those body part accidently.

② Surface conditions affect toughness of cutting tools. Therefore, use a diamond grinding wheel for finishing.

③ Cracks caused by lasering or electrograving on cutting tools will decrease tools life badly

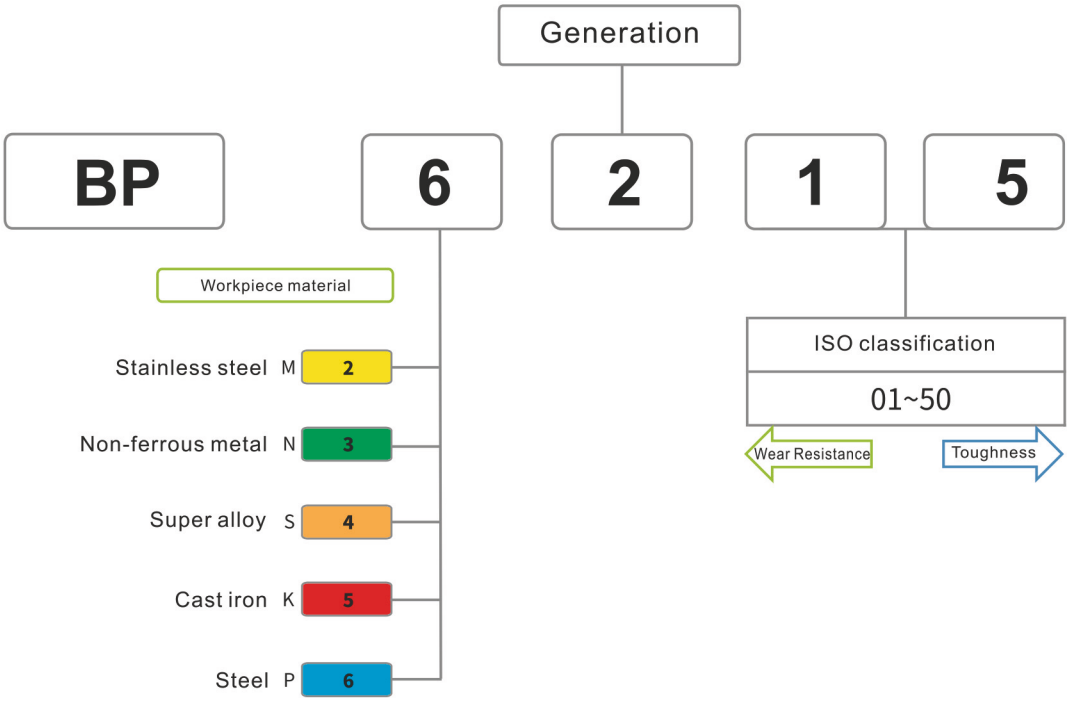
④ Cutting tools will fall off or break in the process of welding with extremely high or low melting point .

⑤ Fire prevention measures must be taken, as oily cutting fluids will cause fires at high temperature under process.

4.Safety guidelines for metal cutting

Items	Risk factors	Solutions
cutting tools	Easy to be cut without golves	Put on protective equipment before taking out or installing the cutting tools
	Easy to be burned or cut by sharp chips in the process of cutting	Wear protective glass or mask for safety Stop the machine and wear golves before removing chipes by hooks
	Cutting resistance increased much with over load and excessive abrasion will break tools and get hurt	Wear protective glass or mask for safetyand change cutting tools in time
	Cutting tools will be broken by misoperation under improper process condition. People can easily get hurt by spattering chips	Wear protective glass or mask for safety The cutting tools must be applied against recommendation.
	People will get gurt if touching the workpiece with bare hands due to high temperature and burrs.	Do not touch workpiece with bare hands
	Cutting tools will be broken when machined with loose clamping workpiece and It brings harm to people	clamping the workingpiece tightly before starting the machine
Indexable tools	The insert and its accessory will fall down or fly out without tight clamping and hurt people	Confirm that the insert and its accessory are clamped tightly with wrench. Please use appointed tools
	The insert and its accessory will be at the risk of falling down or flying out due to centrifugal force when cutting at high speed	Please apply the tools within recommended parameter
Rotary tools	Under the condition of Eccentric rotating orpoor balance,the tool will sway and vibrate to cause hurt	Please select the cutting speed within recommended range,and check the machine's balance periodically
	It is danger to wear gloves for rotory cutting It is dangerous to get close to the rotary parts in the process of rotary cutting	Do not wear gloves in the process of rotary cutting Stay away from the machine in the process of rotary cutting
	Chips probably will fly out at high speed from central part of drilling area	Wear protective glass or mask for safety
	Small sized drill with sharp tip can be broken easilyand the broken parts is hard to be take out	Wear protective glass or mask for safety
Others	The carbide insert will be degraded and easy broken after being welded repeatedly	Use the insert welded repeatedly as less as possible
	Misuse of the tool may cause the machine and tool broken, thus getting hurt.	Please use the tool under guidance

Coating grade description



Terms for cutting tool parameters

Terms	Symbol	Unit
Cutter diameter	D	mm
Cutting speed	V_c	m/min
Rotational speed per minute	n	min^{-1}
Feed speed per minute	vf	mm/min
Feed speed per revolution	f_n	mm/rev
Feed speed per tooth	f_z	mm/t
Tooth(Edge) Number	z	
Depth of axial cutting	a_p	mm
Depth of radial cutting	ae	mm
The peak of feed	pf	mm

Terms	Symbol	Unit
Horsepower required	Pc	kW
Specific cutting resistance	kc	MPa
Torque	Mc	N·m
Insertion force	Tc	N
Cycling time	tc	min
Tool life	T	min
Flank wear	Vb	mm
Rake face wear	Kt	mm
Nose radius	r	mm

CONTENTS

A

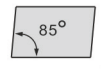
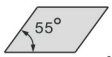
Turning Inserts

Turning insert identification system

T	N	M	G
1	2	3	4

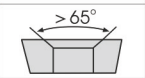
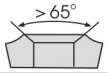
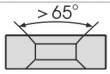
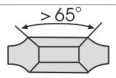
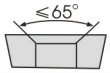
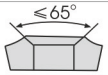
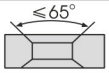
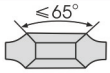
1 Insert shape

Insert shape/code

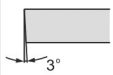
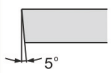
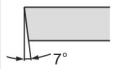
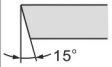
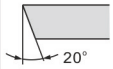
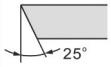
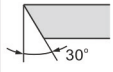
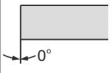
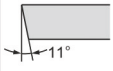
 A	 B	 C
 D	 E	 H
 K	 L	 M
 O	 P	 R
 S	 T	 V
 W	Others Z	

4 Chip breaker and clamping system

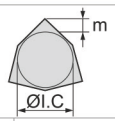
Metric

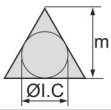
Code	with hole	with chipbreaker	Section plane	Code	with hole	with chipbreaker	Section plane
B	with	without		N	without	without	
H	with	single-side		R	without	single-side	
C	with	without		F	without	double-side	
J	with	double-side		A	with	without	
W	with	without		M	with	single-side	
T	with	single-side		G	with	double-side	
Q	with	without		X	---	---	Special
U	with	double-side					

2 Clearance angle of main cutting edge

Code	Clearance angle	Code	Clearance angle
A		B	
C		D	
E		F	
G		N	
P		O	others

3 Allowed tolerance





Code	Allowed tolerance (mm)	inscribed circle tolerance(mm)	thickness tolerance (mm)	Nose height tolerance						
A	±0.005	±0.025	±0.025	inscribed circle	T	S	C	K	V	R
F	±0.005	±0.013	±0.025	6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
C	±0.013	±0.025	±0.025	9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
H	±0.013	±0.013	±0.025	12.7	±0.13	±0.13	±0.13	±0.15	---	---
E	±0.025	±0.025	±0.025	15.875	±0.15	±0.15	±0.15	±0.18	---	---
G	±0.025	±0.025	±0.13	19.05	±0.15	±0.15	±0.15	±0.18	---	---
J	±0.005	±0.05-±0.13	±0.025	25.4	---	±0.18	---	---	---	---
K	±0.013	±0.05-±0.13	±0.025	inscribed circle tolerance(mm)						
L	±0.025	±0.05-±0.13	±0.025	inscribed circle	T	S	C	K	V	R
M	±0.08-±0.18	±0.05-±0.13	±0.13							
N	±0.08-±0.18	±0.05-±0.13	±0.025	6.35	±0.05	±0.05	±0.05	±0.05	±0.05	---
U	±0.13-±0.38	±0.08-±0.25	±0.13	9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
				12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08
				15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
				19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
				25.4	---	±0.13	---	---	---	±0.13

16 04 08 (E) (N) P1

5 6 7 8 9 10

3 3 2 (inch)

inscribed circle	
Code	diameter (mm)
2	6.35
3	9.525
4	12.7
5	15.875
6	19.05
8	25.4

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

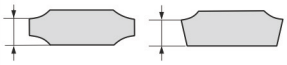
nose radius	
Code	nose radius (mm)
0	0.2
1	0.4
2	0.8
3	1.2
4	1.6
5	2.0
6	2.4

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

5 Length of cutting edge

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

6 Insert thickness



Thickness is defined as height from bottom of insert to 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	2.78
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

7 Nose radius code

code	nose radius Diameter(mm)
00	no radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	others
Mo(Metric)	Round insert

8 Edge honing code

F sharp

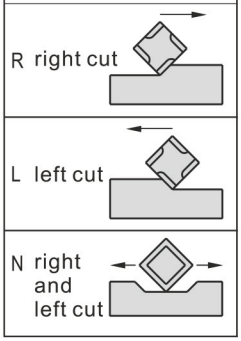
E round

T chamfer

S round and chamfer

our company omitted edge grinding code

9 Cutting direction



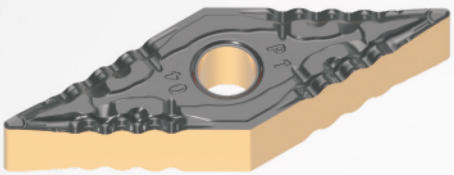
10 Chip breaker code

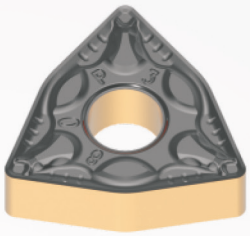
P1	P3	P6
RM	RH	RS
MS	MA	MX
K3	K6	
SL	TF3	
LHC	TF3	

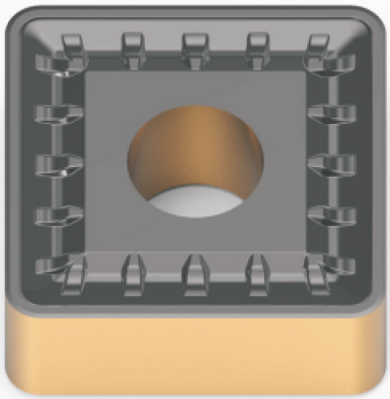
A

Turning inserts for steel

CDBP developed a series of indexable CNC turning inserts for steel with specially designed chipbreaker and CVD coating, which is suitable for various applications including external turning, boring and end face turning as well as chamfering. The inserts can be used not only for steel, but for parts of cast iron and exotic alloys, thus meeting the most part of machining requirements.







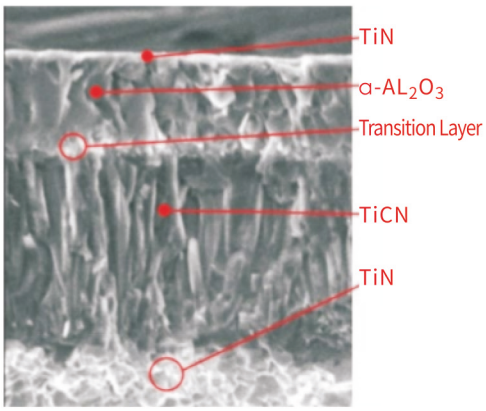
BP6215/BP6225

The new generation high performance turning inserts specialized for steel

● New material

The improved substrate functions with high stability and excellent resistance to breakage; the materials has improved the tool life and better resistance to plastic deformation by applying composite coating technique with upgraded CVD coating (MTCVD) and thick film-a-AL2O3.
It is suitable for forging steel, bearing steel and etc; BP6215 is suitabie for continuous cutting at high speed and BP6225 is suitable for interrupted cutting.

● New coating

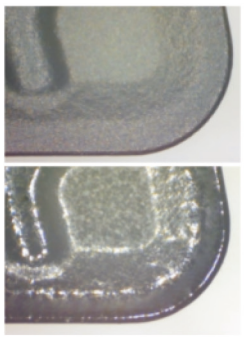


TiN is the coating on the surface,yellow coating makes it easier to tell the abrasive condition of the inserts.

TiCN has excellent adhesion and edge strength,excellent performance to crater wear and flank wear,which is necessary for continuous automatic machining

The substrate is carbide alloy in gradient distribution; it is rough in the surface and hard internally,which can provide excellent resistance to anti-plastic deformation and roughness required for cutting at high speed.

Before Upgrading

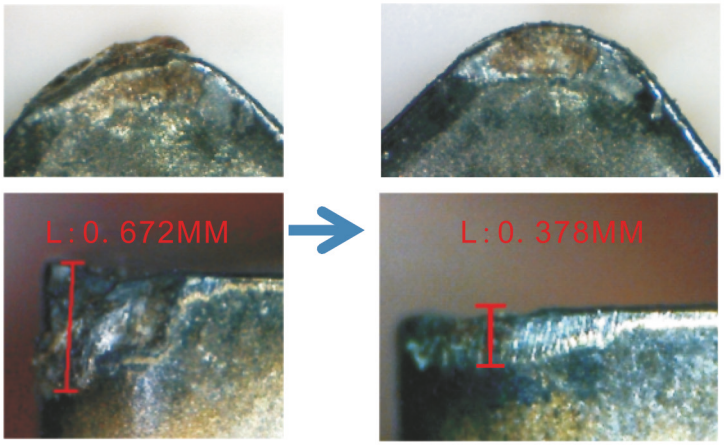


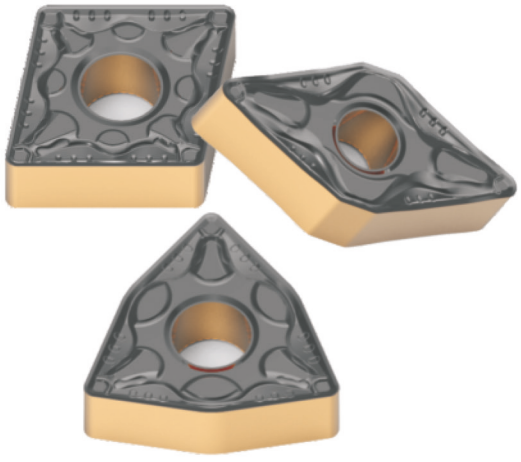
After Upgrading

● Test results before and after upgrading

BP6115(before upgrading)

BP6215(after upgrading)



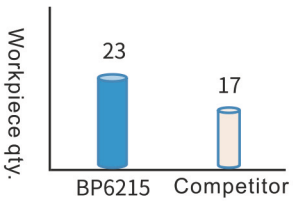


The new material has better wear at the same machining period and the same working condition; thus improving tool life.

Cutting performance(BP6215/BP6225)

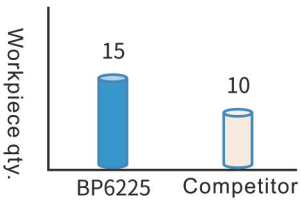
P Alloy steel

Cutting parameter V_c(m/min)=220
f_n(mm/rev)=0.20
a_p(mm)=2.50
Specification WNMG080408-P3 (BP6215)
Test resuilt



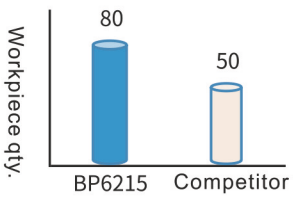
P Carbon steel

Cutting parameter V_c(m/min)=200
f_n(mm/rev)=0.26
a_p(mm)=1.80
Specification CNMG120408-P3 (BP6225)
Test resuilt



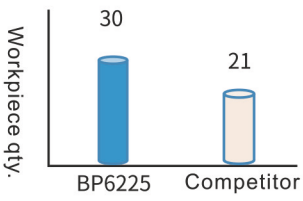
P Alloy steel

Cutting parameter V_c(m/min)=220
f_n(mm/rev)=0.20
a_p(mm)=0.70
Specification WNMG080408-P1 (BP6215)
Test resuilt



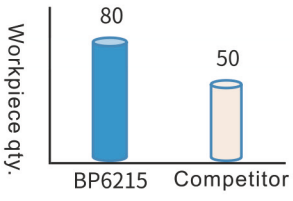
P Carbon steel

Cutting parameter V_c(m/min)=260
f_n(mm/rev)=0.15
a_p(mm)=0.50
Specification DNMG150408-P1 (BP6225)
Test resuilt



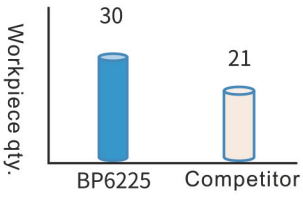
P Alloy steel

Cutting parameter V_c(m/min)=220
f_n(mm/rev)=0.20
a_p(mm)=0.70
Specification WNMG080408-P1 (BP6215)
Test resuilt



P Carbon steel

Cutting parameter V_c(m/min)=260
f_n(mm/rev)=0.15
a_p(mm)=0.80
Specification DNMG150408-P1 (BP6225)
Test resuilt



Material selection of CVD coating

Workpiece material		Machining type	Recommend material	Cutting speed V_c(m/min)		Application
P	Steel	continuous cutting	BP6215	260(120-360)	P10	BP6215
		interrupted cutting	BP6225	210(120-300)	P20	BP6225

Features of CVD coating

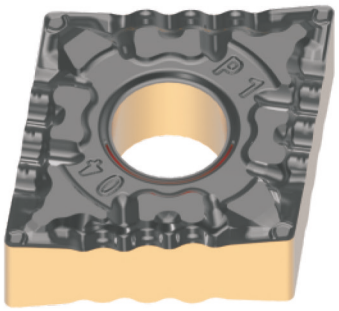
Workpiece material		Coating	ISO	Features
P	Steel	BP6215	P10-P20 K10-K20	• Continuous cutting of general steel at high speed • Substrate with excellent resistance to heating crack and plastic deformation • TiN+TiCN+Al_2O_3+TiN
		BP6225	P20-P30 K15-K25	• Seml-finish and rough machining of steel for continuous cutting • Substrate with excellent toughness, plus heat resistance coating Al_2O_3 improving wear resistance performance and stability. • TiN+TiCN+Al_2O_3

Recommended cutting parameter

ISO	Workpiece material	Unit cutting force N/mm²	Brinell Hardness HB	Cutting speed V_c(m/min) Coating	
				BP6215	BP6225
P	non-alloy steel				
	C=0.1-0.25%	1500	125	200-480	180-380
	C=0.25-0.55%	1600	150	180-450	150-400
	C=0.55-0.80%	1700	170	160-430	130-350
	low alloy steel（alloying element≤5%）				
	non-hardening	1700	180	200-500	170-400
	bearing steel	1800	210	150-280	140-240
	tempered steel	1850	275	130-260	120-230
	tempered steel	2050	350	120-230	110-200
	high alloy steel（alloying element>5%）				
	annealing	1950	200	190-380	140-280
	hardened steel	3000		90-180	70-130
	cast steel				
	non-alloy	1550	180	130-260	110-220
	low alloy（alloying element≤5%）	1600	200	130-260	120-200
	high alloy（alloying element>5%）	2050	225	110-200	90-160

Chipbreaker features - Negative insert

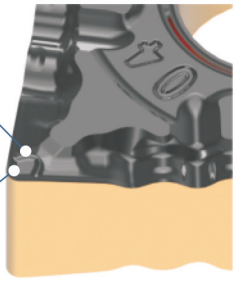
Chipbreaker P1(Finishing)



- Suitable for finish machining of carbon steel and ordinary steel.
- Suitable for processing workpiece with various dimensions and types.
- Maintaining tool life and excellent surface when machining at high speed and high feed.

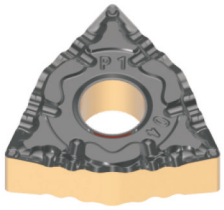
Chip pocket

- Chips can be controlled and evacuated smoothly even when profiling at different cutting depth.



Cutting edge with large rake angle

- Big rake angle with little touching area with the workpiece.
- Ensuring better tool life by controlling the stability of finishing machining as much as possible.
- Recommended cutting parameter: V_c=120-350(m/min) ; f_n=0.05-0.35(mm/rev); a_p=0.1-1.2(mm)



Cutting parameter

Table of wear resistance comparison with other brands

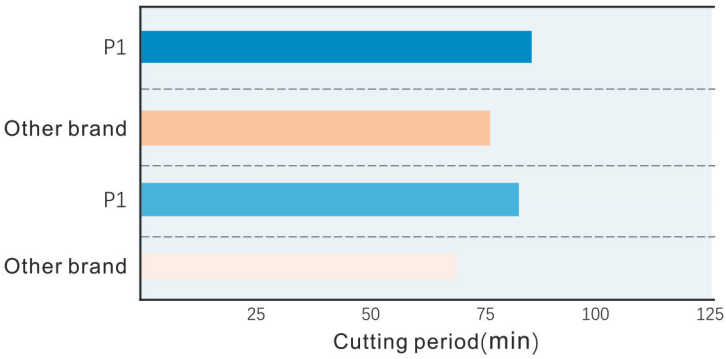
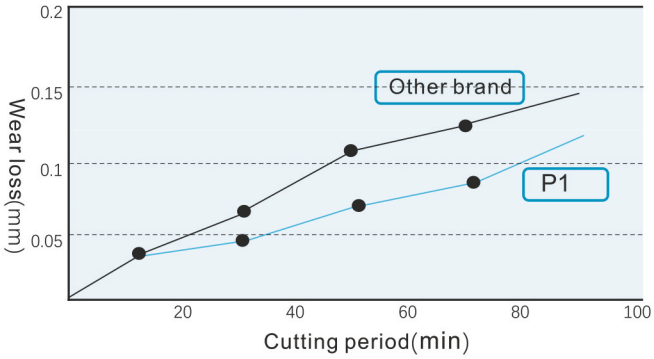


Table of wear resistance comparison with other brands

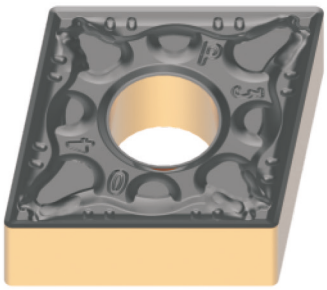


	Process	External turning	
	Cooling liquid	Wet machining	
	Workpiece material	42CrMo (Alloy steel / Carbon steel)	
	Insert	WNMG080408-P1	
Cutting speed	V_c(m/min)	280	
Feed	f_n(mm/rev)	0.15	
Cutting depth	ap(mm)	0.50	
	Result	BP6215	WNMG080408-(Other brand)
	Tool life	220PCS	180PCS
	Tool life increasing	20%	

Chipbreaker features - Negative insert

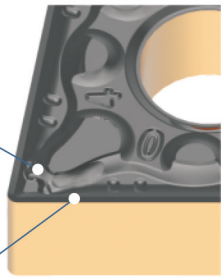
Chipbreaker P3(semi-finishing)

- Suitable for semi-finish machining of carbon steel and alloy steel.
- Suitable for processing workpiece with various dimensions and types.
- Maintaining tool life and excellent surface when machining at high speed and high feed.

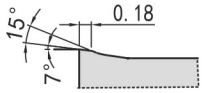


Chip pocket

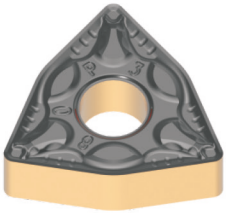
- Chips can be controlled and evacuate smoothly even when profiling at different cutting depth and feed rate
- Good chip control under different cutting depth.



Minor cutting edge



- There is enough pocket to evacuate the chips at high feed rate
- Less contact with the chips and decreased cutting resistance



Cutting parameter

Table of wear resistance comparison with other brands

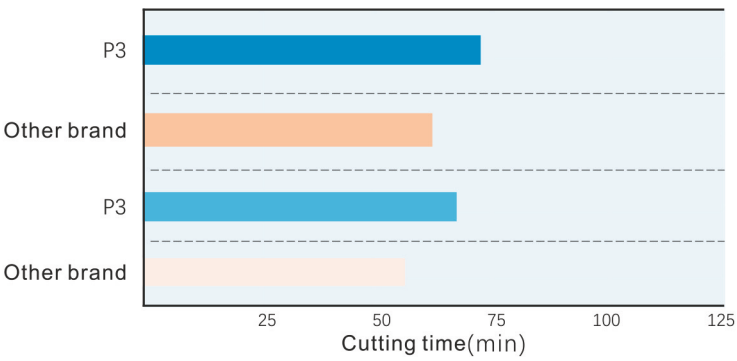
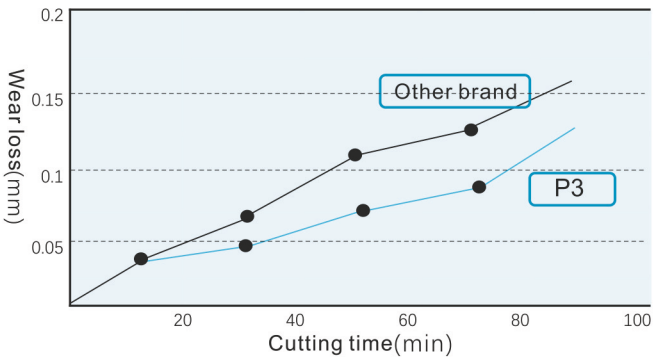


Table of wear resistance comparison with other brands

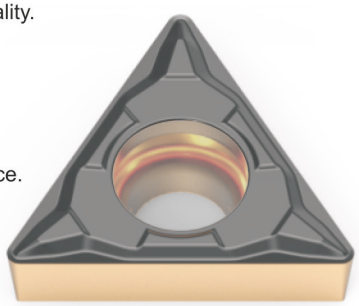


Process	Rough external turning and endface turning		
Cooling liquid	Wet machining		
Workpiece material	40Cr		
Insert	CNMG120408-P3		
Cutting speed V_c(m/min)	180		
Feed f_n(mm/rev)	0.18		
Cutting depth ap(mm)	1.50-2.00		
Result	BP6225	WNMG080408-(Other brand)	
Tool life	73PCS	62PCS	
Tool life increasing	17%		

Chipbreaker features - Positive insert

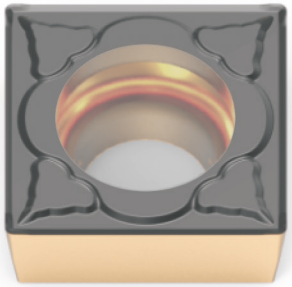
Chipbreaker P1(finishing)

- Suitable for finishing machining of alloy steel, carbon steel and stainless steel.
- Improved chipbreaker design with rake angle to improve finishing efficiency and surface quality.
- The chip breaker is with smooth surface which can evacuate chips easily.



Characteristics of the chip breaker

- Special designed rake angle and cutting edge inclination angle to decrease cutting resistance.
- Sharp cutting edge makes cutting lighter and faster with low cutting resistance.
- Special designed chip breaker, chips evacuate smoothly.
- The insert surface is subject to special treatment to reduce chip adhesion.



Chipbreaker P3(Semi - finishing)

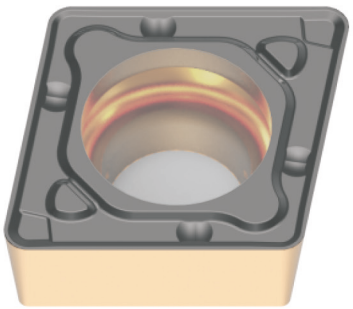
- Suitable for semi-finishing of alloy steel, carbon steel and stainless steel.
- Suitable for general turning, reliable on most of the working condition.

Characteristics of the chipbreaker

- Designed with two rake angles to ensure sharp cutting edge and enhance strength.
- Sharp cutting edge and wide chip pocket to ensure fracture resistance when materials with unstable inner diameter is machined.
- Stable control of the chips when the cutting depth and feed rate are not consistent.
- The insert surface is subject to special treatment for chip evacuation smoothly.

Chipbreaker P6 (Rough machining)

- Suitable for rough machining of alloy steel, carbon steel and ordinary steel.
- Higher metal removal rate during endface, external and profiling turning.
- Suitable for machining at high speed, high feed and big cutting depth.



Characteristics of the chipbreaker

- Wide chip pocket to improve cutting performance at high feed.
- Improved minor cutting edge guarantees more stable interrupted cutting.
- Special designed chip breaker with high cutting strength and good chip breaking performance.

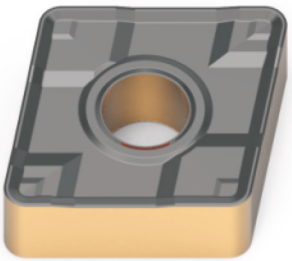
Features of chipbreaker - Negative insert for heavy cutting

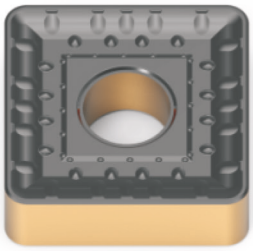
RM/RH/RS chipbreaker(heavy cutting)

- Suitable for wind power industry and mining industry
- First choice for machining rotor,large-sized flange,roller and shaft components
- Higher metal removal rate and excellent shock resistance at big cutting depth

Features of RM chipbreaker

- Good control of chips in heavy machining for stainless steel
- Designed with big inclination angel to remove chips smoothly
- Improved design of chip breaker
- Broaden the minor cutting edge to improve the cutting strength

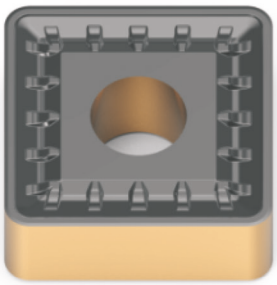




Features of RH chipbreaker

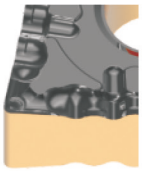
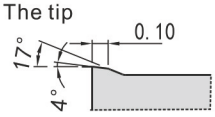
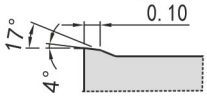
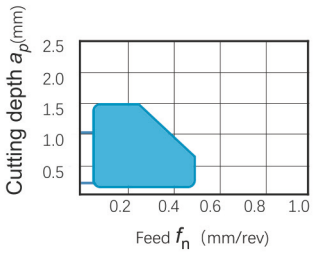
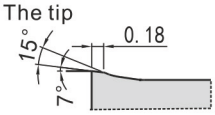
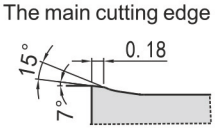
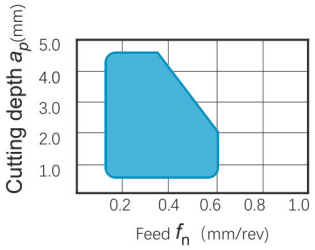
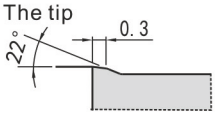
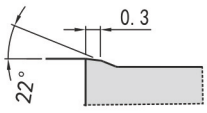
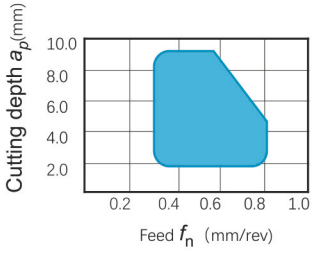
- Heavy cutting for steel and stainless steel
- Better tool life and stable cutting
- Improved chamfering design at the cutting edge offers both better shock resistance and sharpness
- The chip breaker is designed with bulges(to dissipate heat, enhance wear resistance and decrease vibration)

Features of RS chipbreaker

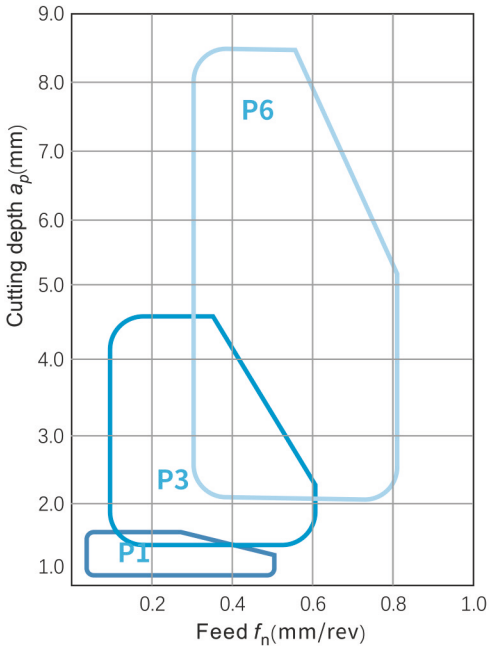


- Better tool life and stable cutting for steel(high feed rate and big cutting depth)
- Chips will be removed more smoothly when the feed rate is more than 1mm/rev
- Improved design of chip breaker to make sure the chips being removed smoothly when the cutting depth is more than 16mm
- Special designed with minor cutting edge makes sure a prolonged tool life at unstable working conditions
- The chip breaker is designed with bulges(to dissipate heat, enhance wear resistance and decrease vibration)

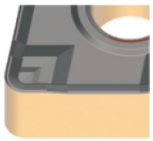
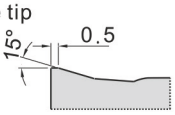
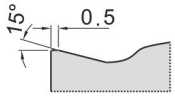
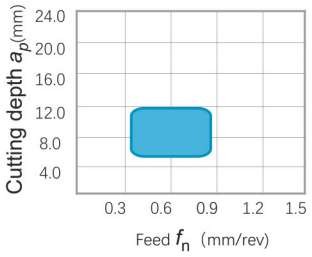
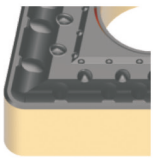
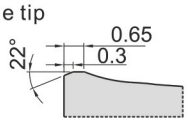
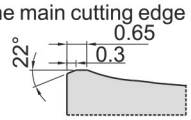
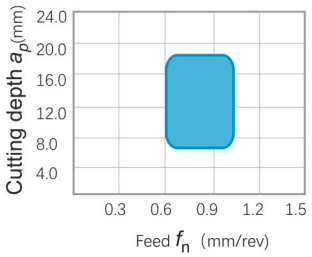
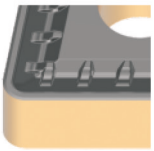
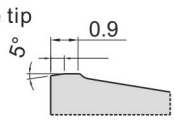
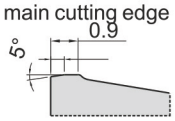
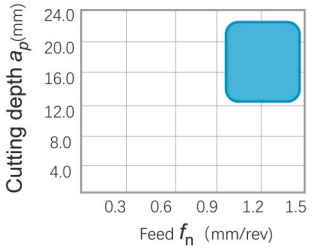
Steel processing - Negative chipbreaker

Application	Name	Chipbreaker	Cutting edge	Features & application	Application range
Finishing	P1		The tip  The main cutting edge 	· Exclusive design for steel finishing · Improved chip control and higher surface quality in profiling · Special designed chip breaker with excellent cutting edge strength · Special designed chip breaking point to prevent clogging	
Semi-finishing	P3		The tip  The main cutting edge 	· Exclusive design for steel semi-finishing · Stable chip control in profiling and boring · Excellent chip control in unstable cutting depth · Special designed chip breaking point to prevent clogging	
Rough machining	P6		The tip  The main cutting edge 	· Exclusive design for steel rough machining · Good economical efficiency in interrupted cutting	

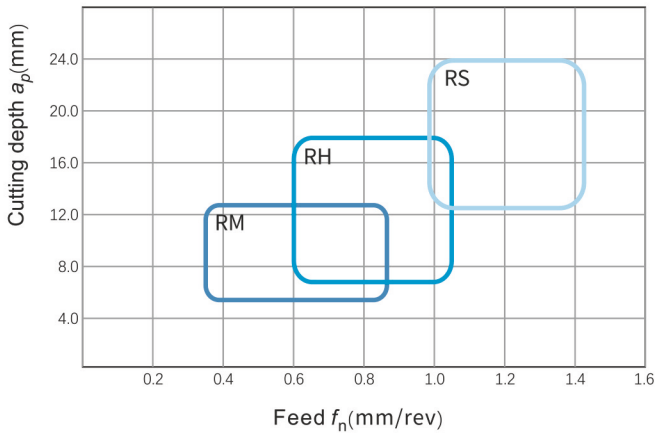
Negative insert Recommend cutting parameter



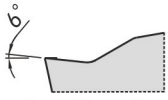
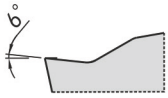
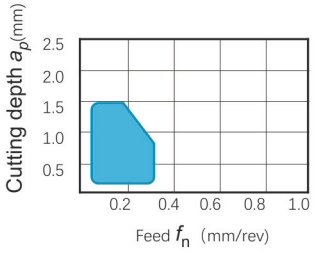
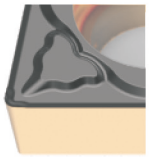
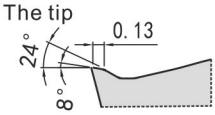
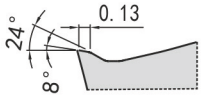
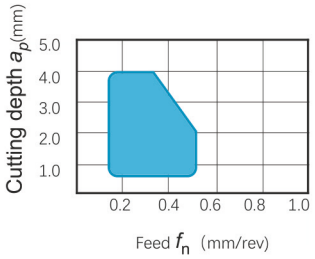
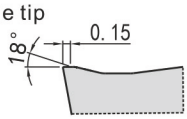
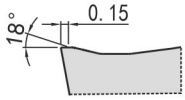
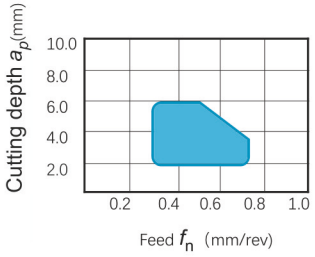
Steel processing - Negative chipbreaker

Application	Name	Chipbreaker	Cutting edge	Features & application	Application range
Heavy cutting	RM single side		The tip  The main cutting edge 	· Exclusive design for heavy cutting of stainless steel · Specially designed chip breaker with large inclination angle for smooth chip evacuation · excellent chip-removal in heavy cutting	
	RH		The tip  The main cutting edge 	· Exclusive design for general machining of stainless steel and steel · Chipbreaker suitable for heavy loaded machining in ship building industry and wind power industry · Stable cutting and excellent lifetime can be achieved in heavy cutting	
	RS		The tip  The main cutting edge 	· Exclusive design for steel rough machining with heavy load and high feed · Strong cutting edge for cutting stability the conves point distributed on chip breaker help dissipate heat and reduce vibration · Suitable for large-scale horizontal or vertical lathe shaft, roller and rotor and the first choice for machining large-sized flange	

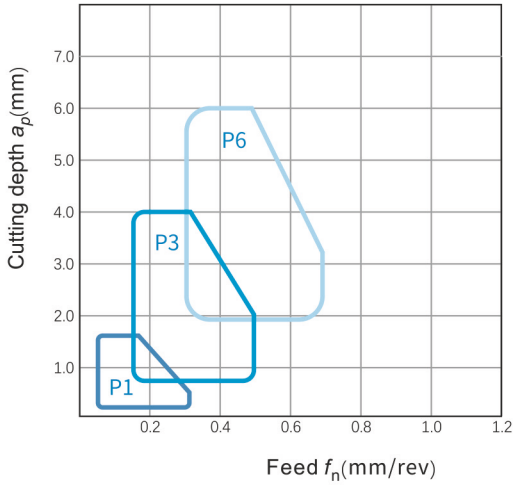
Negative insert Recommend cutting parameter



Steel processing - Postive chipbreaker

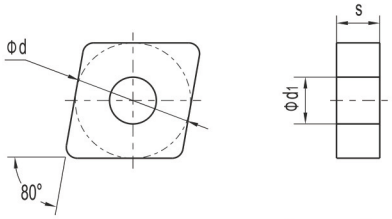
Application	Name	Chipbreaker	Cutting edge	Features & application	Application range
Finishing	P1		The tip  The main cutting edge 	· Exclusive design for finishing of steel and stainless steel · Excellent chip control at small cutting depth and low feed · Positive rake Angle with light cutting breaker can produce low cutting force	
Semi-finishing	P3		The tip  The main cutting edge 	· Exclusive design for semi-finishing of steel and stainless steel · Chips control at wide range and suitable for profiling, external turning, boring and end face turning	
Rough machining	P6		The tip  The main cutting edge 	· Exclusive design for rough processing of steel · Application for steel with big cutting depth and high feed.Chips control at wide range with low cutting resistance	

Positive insert Recommend cutting parameter



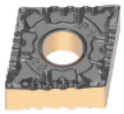
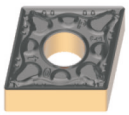
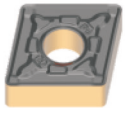
CN□□

80° negative insert



Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16
16	15.875	6.35	6.35
19	19.05	6.35	7.93

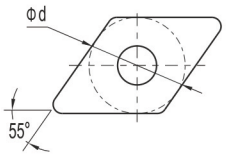
Workpiece					Processing types
	Steel	P	●	◑	
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		CNMG	120404-P1	▲	▲	0.07~0.30	0.25~1.00
			120408-P1	▲	▲	0.10~0.40	0.30~1.20
Semi-finishing		CNMG	120404-P3	▲	▲	0.12~0.30	0.40~2.00
			120408-P3	▲	▲	0.15~0.50	0.50~2.50
			120412-P3	▲	▲	0.18~0.60	0.80~3.00
			160612-P3	▲		0.18~0.60	0.80~5.00
			190608-P3		▲	0.15~0.50	0.50~7.50
			190612-P3		▲	0.18~0.60	0.80~7.50
			190616-P3		▲	0.23~0.65	1.00~7.50
Rough machining		CNMG	120408-P6		▲	0.20~0.50	1.00~5.00
			120412-P6		▲	0.25~0.70	1.50~5.00
			160612-P6		▲	0.25~0.70	1.50~7.00
			190616-P6		▲	0.30~0.80	1.50~8.00

Recommended: ▲

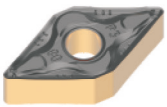
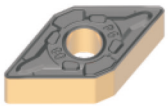
DN□□

55° negative insert



Dimension（mm）			
Size	d	s	d1
11	9.525	4.76	3.81
15	12.70	4.76/6.35	5.16

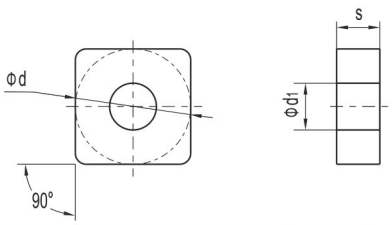
Workpiece	Steel	P	●	◑	Processing types
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		DNMG	150604-P1		▲	0.07~0.30	0.25~1.00
			150608-P1	▲		0.10~0.40	0.30~1.00
			150612-P1		▲	0.15~0.50	0.35~1.00
Semi-finishing		DNMG	110404-P3		▲	0.12~0.30	0.40~2.5
			110408-P3		▲	0.15~0.50	0.50~2.5
			150404-P3	▲		0.12~0.30	0.40~4.00
			150408-P3		▲	0.15~0.50	0.50~4.00
			150412-P3	▲		0.18~0.60	0.80~5.00
			150604-P3	▲	▲	0.12~0.30	0.40~4.00
			150608-P3	▲	▲	0.15~0.50	0.50~4.00
			150612-P3		▲	0.18~0.60	0.80~5.00
Rough machining		DNMG	150608-P6		▲	0.20~0.50	1.00~5.00
			150612-P6		▲	0.25~0.70	1.50~5.00

Recommended: ▲

SN□□

90° negative insert



Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16
15	15.875	6.35	6.35
19	19.05	6.35	7.93

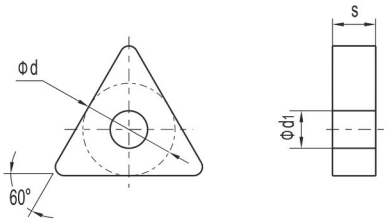
Workpiece	Steel	P	●	◑	Processing types
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Semi-finishing		SNMG	120404-P3	▲		0.15~0.30	0.40~3.00
			120408-P3	▲	▲	0.15~0.50	0.50~4.00
			120412-P3		▲	0.18~0.60	0.80~5.00
			150608-P3		▲	0.18~0.60	0.80~7.50
			150612-P3	▲		0.18~0.60	0.80~7.50
			190608-P3		▲		
Rough machining		SNMG	120408-P6	▲	▲	0.20~0.50	1.00~5.00
			120412-P6	▲	▲	0.25~0.70	1.00~5.50
			150612-P6		▲	0.25~0.70	2.00~8.00
			190612-P6		▲	0.25~0.70	2.00~10.00
			190616-P6		▲	0.30~0.80	3.00~10.00

Recommended: ▲

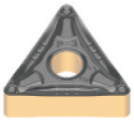
TN□□

60° negative insert



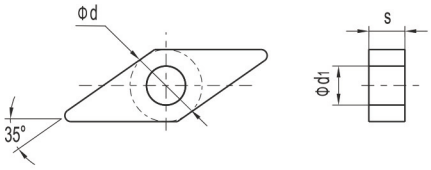
Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81
22	12.70	4.76	5.16

Workpiece					Processing types
	Steel	P	●	◑	
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		TNMG	160404-P1	▲		0.07~0.30	0.25~1.00
			160408-P1	▲	▲	0.10~0.40	0.30~1.00
			160412-P1		▲	0.15~0.50	0.35~1.00
			220408-P1		▲	0.15~0.50	0.35~1.20
Semi-finishing		TNMG	160404-P3	▲	▲	0.15~0.30	0.40~2.00
			160408-P3	▲	▲	0.15~0.50	0.50~3.00
			160412-P3		▲	0.18~0.60	0.80~4.00
			220404-P3		▲	0.15~0.30	0.40~3.00
			220408-P3		▲	0.15~0.50	0.50~4.00
			220412-P3		▲	0.18~0.60	0.80~5.00
Rough machining		TNMG	160408-P6	▲	▲	0.20~0.55	1.00~4.00
			160412-P6	▲	▲	0.25~0.65	1.50~4.50
			220408-P6		▲	0.20~0.55	1.50~7.00

Recommended: ▲

VN□□



35° negative insert

Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81

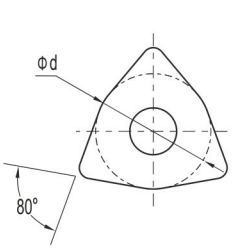
Workpiece	Steel	P	●	◑	Processing types
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		VNMG	VNMG160404-P1	▲		0.07~0.30	0.25~1.00
Semi-finishing		VNMG	VNMG160404-P3	▲	▲	0.15~0.50	0.50~2.00
			VNMG160408-P3	▲	▲	0.15~0.50	0.50~2.50
			VNMG160412-P3		▲	0.18~0.60	0.80~2.50

Recommended: ▲

WN□□

80° negative insert



Dimension（mm）			
Size	d	s	d1
06	9.525	4.76	3.81
08	12.70	4.76	5.16

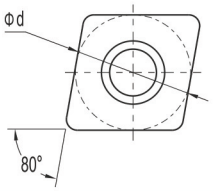
Workpiece					Processing types
	Steel	P	●	◑	
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

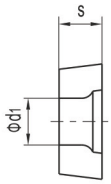
Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		WNMG	080404-P1	▲		0.07~0.30	0.25~1.20
			080408-P1	▲	▲	0.10~0.40	0.30~1.20
			080412-P1	▲		0.15~0.50	0.40~1.20
Semi-finishing		WNMG	060408-P3		▲	0.15~0.50	0.50~2.00
			080404-P3	▲	▲	0.15~0.50	0.50~2.50
			080408-P3	▲	▲	0.15~0.50	0.50~3.00
			080412-P3	▲	▲	0.18~0.60	0.80~4.00
Rough machining		WNMG	080408-P6	▲	▲	0.20~0.55	1.50~5.00
			080412-P6	▲	▲	0.25~0.70	1.50~5.00
			080416-P6	▲		0.32~0.75	1.50~5.00

Recommended: ▲

CC□□

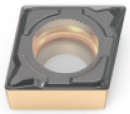
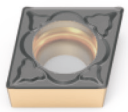
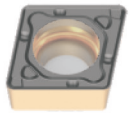
80° positive insert





Dimension（mm）			
Size	d	s	d1
06	6.35	2.38	2.80
09	9.525	3.97	4.40
12	12.70	4.76	5.50

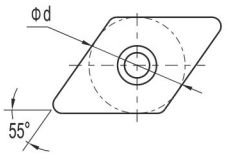
Workpiece					Processing types
	Steel	P	●	◑	
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		CCMT	060202-P1	▲		0.05~0.25	0.06~0.80
			060204-P1	▲	▲	0.08~0.35	0.20~1.00
			09T302-P1	▲		0.06~0.30	0.10~1.00
			09T304-P1	▲		0.08~0.35	0.20~1.00
			09T308-P1		▲	0.10~0.35	0.15~1.00
			120404-P1	▲		0.07~0.35	0.18~1.50
			120408-P1		▲	0.10~0.35	0.35~1.50
Semi-finishing		CCMT	060204-P3	▲	▲	0.08~0.20	0.20~2.00
			060208-P3		▲	0.10~0.30	0.40~2.00
			09T304-P3	▲	▲	0.10~0.30	0.35~2.50
			09T308-P3	▲	▲	0.10~0.30	0.50~2.50
			120404-P3	▲	▲	0.09~0.27	0.30~3.60
			120408-P3	▲	▲	0.12~0.36	0.60~3.60
			120412-P3		▲	0.14~0.43	0.72~3.60
Rough machining		CCMT	09T308-P6		▲	0.12~0.35	1.00~4.00
			120408-P6		▲	0.14~0.42	1.20~4.80

Recommended: ▲

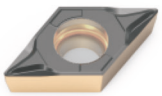
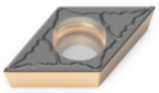
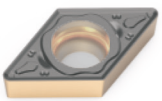
DC□□

55° positive insert



Dimension（mm）			
Size	d	s	d1
07	6.35	2.38	2.80
11	9.525	3.97	4.40

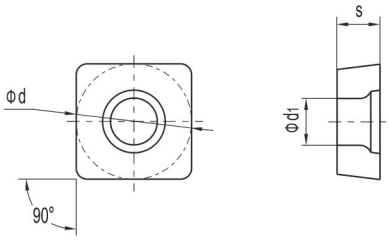
Workpiece					Processing types
	Steel	P	●	◑	
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		DCMT	070202-P1	▲		0.03~0.20	0.06~1.00
			070204-P1	▲		0.05~0.20	0.15~1.00
			11T302-P1	▲		0.04~0.15	0.08~1.20
			11T304-P1	▲		0.06~0.23	0.18~1.20
			11T308-P1	▲		0.08~0.30	0.35~1.20
Semi-finishing		DCMT	070204-P3	▲	▲	0.06~0.17	0.19~1.80
			070208-P3		▲	0.08~0.23	0.38~1.80
			11T302-P3		▲	0.08~0.23	0.25~2.50
			11T304-P3	▲	▲	0.08~0.23	0.25~2.50
			11T308-P3	▲	▲		
Rough machining		DCMT	11T308-P6		▲	0.12~0.35	1.00~4.00

Recommended: ▲

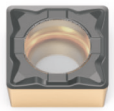
SC□□

90° positive insert



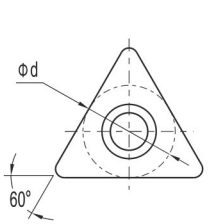
Dimension（mm）			
Size	d	s	d1
09	9.525	3.97	4.40
12	12.70	4.76	5.50

Workpiece					Processing types
	Steel	P	●	◑	
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		SCMT	09T304-P1	▲		0.06~0.23	0.15~1.50
			09T308-P1	▲		0.08~0.30	0.35~1.50
Semi-finishing		SCMT	09T304-P3	▲	▲	0.08~0.23	0.25~3.00
			09T308-P3	▲	▲	0.10~0.30	0.50~3.00
			120404-P3		▲	0.09~0.27	0.30~3.60
			120408-P3	▲	▲	0.12~0.36	0.60~3.60

Recommended: ▲

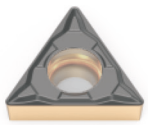
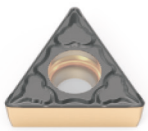
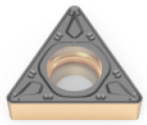
TC□□



Dimension（mm）			
Size	d	s	d1
09	5.56	2.38	2.50
11	6.35	2.38/3.18	2.80
16	9.525	3.97	4.40

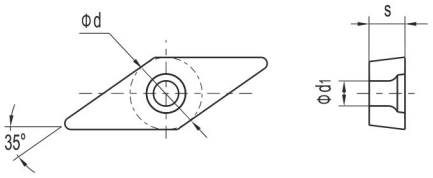
60° positive insert

Workpiece	Steel	P	●	◑	Processing types
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		TCMT	110204-P1	▲		0.03~0.25	0.06~1.00
			16T304-P1	▲		0.06~0.23	0.11~1.20
			16T308-P1	▲		0.06~0.30	0.35~1.20
Semi-finishing		TCMT	090204-P3	▲		0.06~0.17	0.19~2.00
			110204-P3	▲	▲	0.06~0.19	0.21~2.20
			110304-P3		▲	0.06~0.19	0.21~2.20
			16T304-P3	▲	▲	0.08~0.23	0.25~2.50
			16T308-P3	▲	▲	0.10~0.30	0.50~2.50
			16T312-P3		▲	0.12~0.36	0.60~2.50
Rough machining		TCMT	16T308-P6		▲	0.12~0.35	1.00~3.00

Recommended: ▲

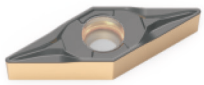
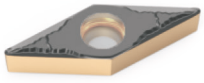
VB□□



35° positive insert

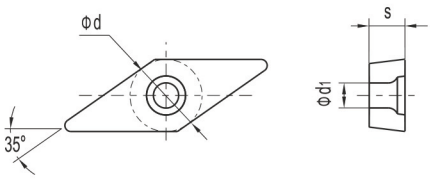
Dimension（mm）			
Size	d	s	d1
11	6.35	3.18	2.80
16	9.525	4.76	4.40

Workpiece	Steel	P	●	◑	Processing types
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		VBMT	160404-P1	▲	▲	0.05~0.30	0.20~1.20
			160408-P1	▲	▲	0.07~0.35	0.35~1.20
Semi-finishing		VBMT	110304-P3	▲		0.07~0.20	0.23~1.80
			160404-P3	▲	▲	0.07~0.20	0.23~2.20
			160408-P3	▲	▲	0.09~0.27	0.45~2.50

Recommended: ▲

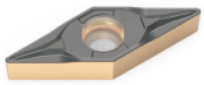
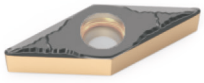
VC□□



Dimension（mm）			
Size	d	s	d1
11	6.35	3.18	2.80
16	9.525	4.76	4.40

35° positive insert

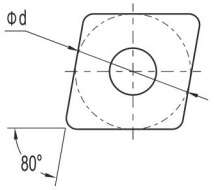
Workpiece	Steel	P	●	◑	Processing types
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

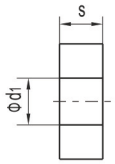
Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		VCMT	110302-P1	▲		0.03~0.20	0.06~1.00
			110304-P1	▲		0.05~0.20	0.18~1.00
			110308-P1	▲		0.05~0.20	0.35~1.00
			160404-P1	▲		0.05~0.30	0.20~1.20
			160408-P1	▲		0.07~0.35	0.35~1.20
Semi-finishing		VCMT	110304-P3	▲		0.07~0.20	0.23~1.80
			110308-P3	▲		0.07~0.20	0.23~2.20
			160404-P3		▲	0.09~0.27	0.45~2.50
			160408-P3	▲	▲	0.11~0.32	0.54~2.50

Recommended: ▲

CN□□

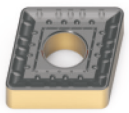
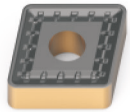
80° negative insert





Dimension（mm）			
Size	d	s	d1
25	25.00	9.52	7.30

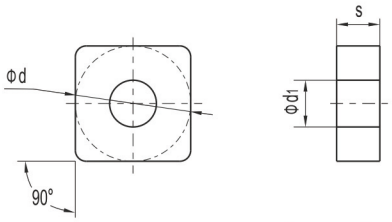
Workpiece					Processing types
	Steel	P	●	◑	
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Heavy cut		CNMM	250924-RM	▲	▲	0.40-0.80	5.00-15.00
		CNMM	250924-RH	▲	▲	0.60-1.00	8.00-18.00
		CNMM	250924-RS	▲	▲	1.00-1.50	15.00-24.00

Recommended: ▲

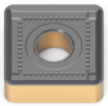
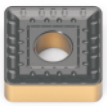
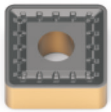
SN□□

90° negative insert



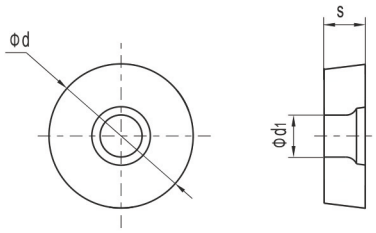
Dimension（mm）			
Size	d	s	d1
25	25.00	7.94/9.52	7.30

Workpiece	Steel	P	●	◑	Processing types
	Stainless steel	M			
	Cast iron	K	◑	○	
	Nonferrous metals	N			● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Heavy cut		SNMM	250724-RM	▲	▲	0.40-0.80	5.00-15.00
			250924-RM	▲	▲	0.40-0.80	5.00-15.00
		SNMM	250724-RH	▲	▲	0.60-1.00	8.00-18.00
			250924-RH	▲	▲	0.60-1.00	8.00-18.00
		SNMM	250724-RS	▲	▲	1.00-1.50	15.00-24.00
			250924-RS	▲	▲	1.00-1.50	15.00-24.00

Recommended: ▲

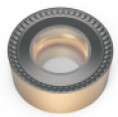
RC□□



Dimension（mm）			
Size	d	s	d1
08	8.00	3.18	3.40
10	10.00	3.97	4.40
12	12.00	4.76	4.40
16	16.00	6.35	5.50
20	20.00	6.35	6.50
25	25.00	7.94	7.30
32	32.00	9.52	9.50

positive insert

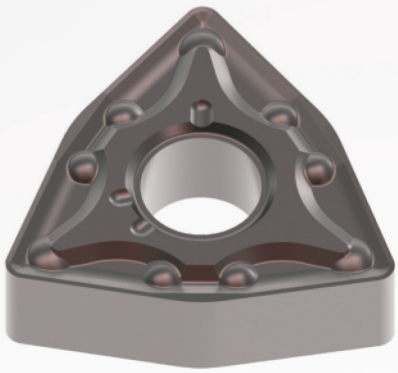
Workpiece	Steel	P	●	◑	Processing types
	Stainless steel	M			
	Cast iron	K	◑	○	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

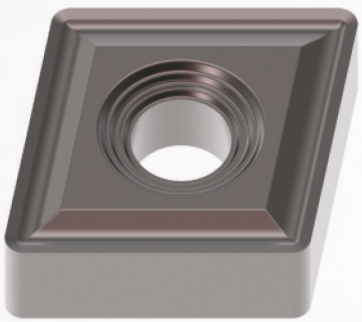
Insert		Specification		Coating		Cutting parameter	
				BP6215	BP6225	fn(mm/rev)	ap(mm)
Finishing		RCMT	0803MOE-R1		▲	0.06-0.25	0.70-3.20
			10T3MOE-R1		▲	0.08-0.32	1.00-4.00
			1204MOE-R2		▲	0.10-0.35	1.20-4.80
			1606MOE-R3		▲	0.15-0.45	1.60-6.40
			2006MOE-R4		▲	0.15-0.55	2.00-8.00
Semi-finishing		RCGT	2507MOS-HP	▲		0.15-0.55	2.00-8.00
			3209MOS-HP	▲		0.25-0.80	3.20-12.80
Rough machining		RCGT	1606MOS-RP	▲		0.15-0.45	1.60-6.40
			2507MOS-RP	▲		0.20-0.75	2.50-10.00

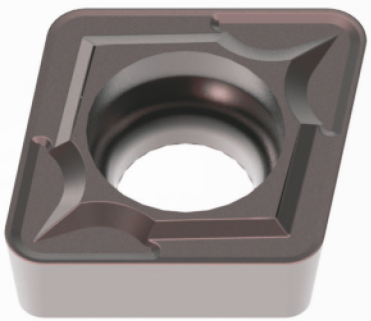
Recommended: ▲

Turning Insert for Stainless Steel

General machining indexable insert for stainless steel, with sepcial designed substrate and upgraded coating technology, enhanced abrasive resistance and tool life.



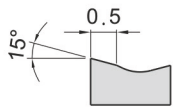
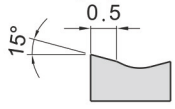
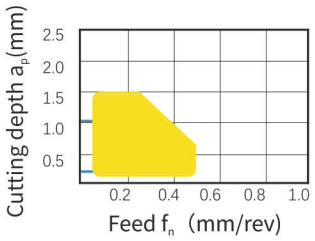
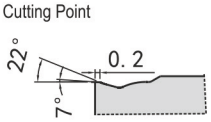
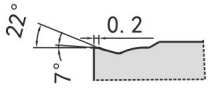
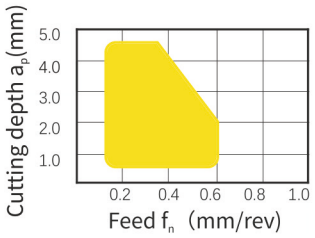




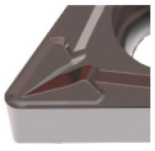
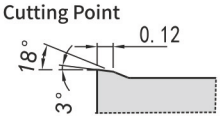
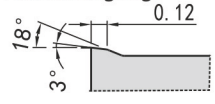
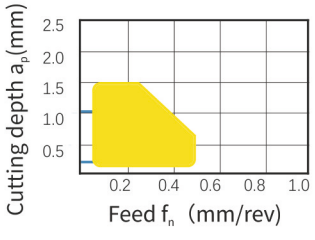
PVD coating grade characteristics

Workpiece		Coating	ISO	Features
M	stainless steel	BPU207	M20-M30 S20-S30	· A new PVD coating · Generally used and stable material · Small friction coefficient, reducing the adhesion between workpiece and cutting edge · Excellent strength on cutting edge and anti-chipping performance to improve stability

Features of chipbreaker - Negative inserts

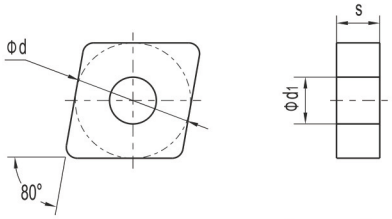
Function	code	shape	Cutting Edge	Applications and Features	Application range
Finishing	MS		Cutting Point  Main cutting edge 	· Finishing of stainless steel · Full circumference groove design with wide chip removal space · Chipbreaker with low cutting force is highly reliable and versatile to achieve trouble free cutting	
Semi-finishing	MA		Cutting Point  Main cutting edge 	· Semi finishing of stainless steel · Special design, good cutting control ability in stainless steel processing · Sharp cutting edge design reduces the generation of chip accumulation	

Features of chipbreaker - Positive inserts

Function	code	shape	Cutting Edge	Applications and Features	Application range
Semi-finishing	MX		Cutting Point  Main cutting edge 	· For semi finishing · Wide application for stainless steel · General chipbreaker for stainless steel and cast iron · For longitudinal turning, face turning and profiling cutting	

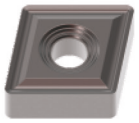
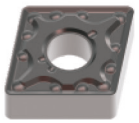
CN□□

80° negative insert



Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16

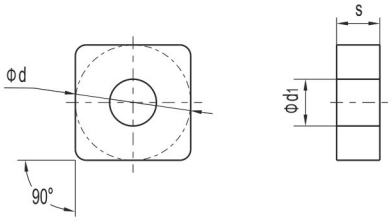
Workpiece	Steel	P		Processing types
	Stainless steel	M	◑	
	Cast iron	K		● Continous cutting
	Nonferrous metals	N		◑ Ordinary cutting
	Heat-resistant alloy	S		○ Interrupted cutting
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPU207	fn(mm/rev)	ap(mm)
Finishing		CNMG	120404-MS	▲	0.10-0.40	0.50-2.00
			120408-MS	▲	0.12-0.45	0.80-2.50
Semi-finishing		CNMG	120404-MA	▲	0.12-0.45	0.80-2.50
			120408-MA	▲	0.15-0.50	0.80-3.00

Recommended: ▲

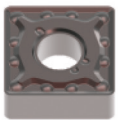
SN□□

90° negative insert



Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16

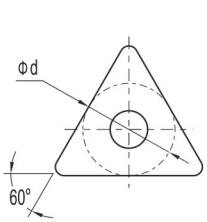
Workpiece	Steel	P		Processing types
	Stainless steel	M	◑	
	Cast iron	K		● Continous cutting
	Nonferrous metals	N		◑ Ordinary cutting
	Heat-resistant alloy	S		○ Interrupted cutting
	Hardened steel	H		

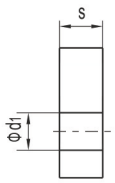
Insert		Specification		Coating	Cutting parameter	
				BPU207	fn(mm/rev)	ap(mm)
Finishing		SNMG	120404-MS	▲	0.10-0.40	0.50-2.00
			120408-MS	▲	0.12-0.45	0.80-2.50
Semi-finishing		SNMG	120412-MA	▲	0.15-0.70	0.50-3.00

Recommended: ▲

TN□□

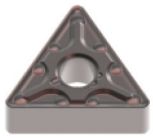
60° negative insert





Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81

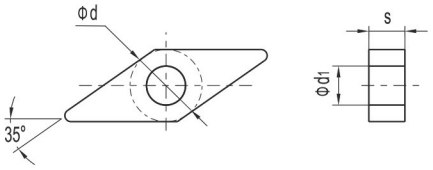
Workpiece				Processing types
	Steel	P		
	Stainless steel	M	◑	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPU207	fn(mm/rev)	ap(mm)
Finishing		TNMG	160404-MS	▲	0.10-0.40	0.50-2.00
			160408-MS	▲	0.12-0.45	0.80-2.50
Semi-finishing		TNMG	160404-MA	▲	0.12-0.45	0.80-2.50
			160408-MA	▲	0.15-0.50	0.80-3.00

Recommended: ▲

VN□□

35° negative insert



Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81

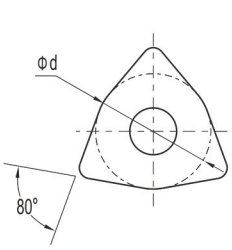
Workpiece	Steel	P		Processing types
	Stainless steel	M	◑	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPU207	fn(mm/rev)	ap(mm)
Finishing		VNMG	160404-MS	▲	0.10-0.40	0.50-2.00
			160408-MS	▲	0.12-0.45	0.80-2.50

Recommended: ▲

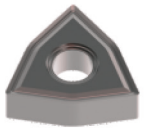
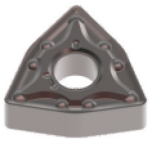
WN□□

80° negative insert



Dimension（mm）			
Size	d	s	d1
08	12.70	4.76	5.16

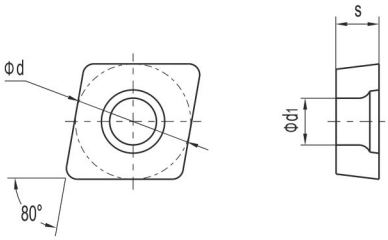
Workpiece				Processing types
	Steel	P		
	Stainless steel	M	◑	
	Cast iron	K		● Continous cutting
	Nonferrous metals	N		◑ Ordinary cutting
	Heat-resistant alloy	S		○ Interrupted cutting
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPU207	fn(mm/rev)	ap(mm)
Finishing		WNMG	080404-MS	▲	0.10-0.40	0.50-2.00
			080408-MS	▲	0.12-0.45	0.80-2.50
Semi-finishing		WNMG	080404-MA	▲	0.12-0.45	0.80-2.50
			080408-MA	▲	0.15-0.50	0.80-3.00

Recommended: ▲

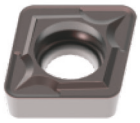
CC□□

80° positive insert



Dimension（mm）			
Size	d	s	d1
06	6.35	2.38	2.80
09	9.525	3.97	4.40
12	12.70	4.76	5.50

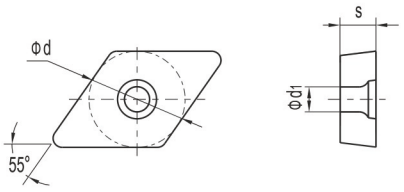
Workpiece	Steel	P		Processing types
	Stainless steel	M	◑	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPU207	fn(mm/rev)	ap(mm)
Semi-finishing		CCMT	060202-MX	▲	0.04-0.12	0.10-1.50
			060204-MX	▲	0.05-0.18	0.20-2.50
			060208-MX	▲	0.08-0.25	0.40-2.50
			09T304-MX	▲	0.08-0.25	0.30-3.00
			09T308-MX	▲	0.10-0.30	0.50-3.00
			120404-MX	▲	0.08-0.25	0.30-3.00
			120408-MX	▲	0.10-0.40	0.60-3.50

Recommended: ▲

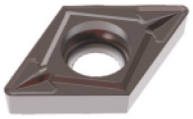
DC□□

55° positive insert



Dimension（mm）			
Size	d	s	d1
11	9.525	3.97	4.40

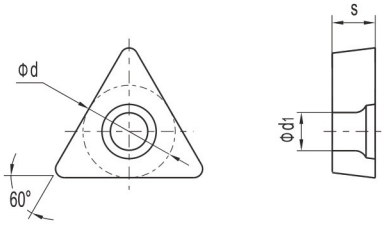
Workpiece	Steel	P		Processing types
	Stainless steel	M	◑	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPU207	fn(mm/rev)	ap(mm)
Semi-finishing		DCMT	11T304-MX	▲	0.08-0.25	0.30-3.00
			11T308-MX	▲	0.15-0.40	0.50-3.00

Recommended: ▲

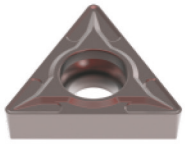
TC□□

60° positive insert



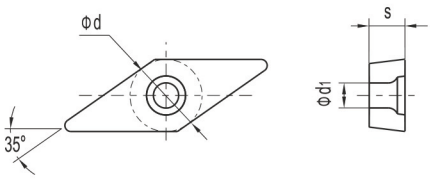
Dimension（mm）			
Size	d	s	d1
11	6.35	2.38	2.80
16	9.525	3.97	4.40

Workpiece				Processing types
	Steel	P		
	Stainless steel	M	◑	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPU207	fn(mm/rev)	ap(mm)
Semi-finishing		TCMT	110204-MX	▲	0.05-0.20	0.20-2.50
			110208-MX	▲	0.08-0.30	0.40-2.80
			16T304-MX	▲	0.08-0.30	0.30-3.00
			16T308-MX	▲	0.10-0.35	0.50-3.50

Recommended: ▲

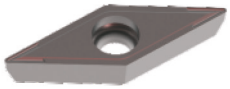
VC□□



35° positive insert

Dimension（mm）			
Size	d	s	d1
11	6.35	3.18	2.80
16	9.525	4.76	4.40

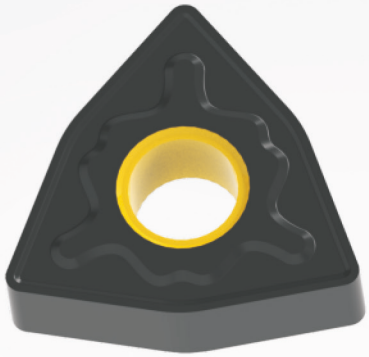
Workpiece	Steel	P		Processing types
	Stainless steel	M	◑	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPU207	fn(mm/rev)	ap(mm)
Semi-finishing		VCMT	110304-MX	▲	0.05-0.20	0.20-2.50
			160404-MX	▲	0.08-0.30	0.30-3.00
			160408-MX	▲	0.10-0.35	0.50-3.50

Recommended: ▲

Turning Insert for Cast Iron

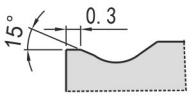
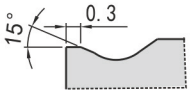
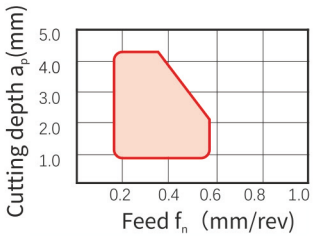
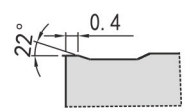
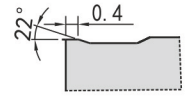
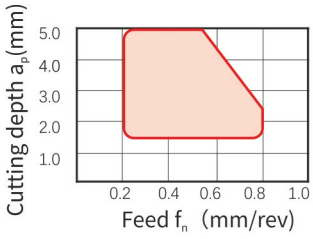
General machining indexable insert for cast iron, with sepcial designed substrate and upgraded coating technology, enhanced abrasive resistance and tool life.



CVD coating grade characteristics

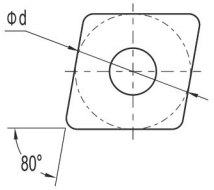
Workpiece		Coating	ISO	Features
K	cast iron	BPC10K	K05-K15	· Newly upgraded CVD coating with excellent wear resistance, improved tool life · The substrate with excellent thermal crack resistance and anti-plastic deformation can ensure the inserst with blade collapse resistance · TiN+TiCN+Al_2O_3
		BPC13K	K10-K20	· General grade for cast iron processing · The substrate with super strong toughness is combined with heat-resistant Al2O3 coating, which can improve wear resistance and stability · TiN+TiCN+Al_2O_3

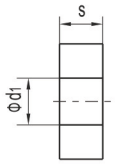
Features of chipbreaker-Negative inserts

Function	code	shape	Cutting Edge	Applications and Features	Application range
Semi-finishing	K3		Cutting Point  Main cutting edge 	· For semi finishing of cast iron · Full circumference groove design, with wide chip pocket space · Better production efficiency can be achieved with more wear-resistant coating grades	
Rough machining	K6		Cutting Point  Main cutting edge 	· Rough machining of cast iron · Strong cutting edge and big positive rake angle design, which can still maintain stable machining under large cutting depth · Wide processing range, more economical	

CN□□

80° negative insert





Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16

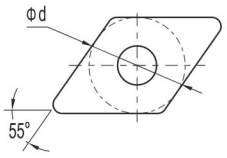
Workpiece					Processing types
	Steel	P			
	Stainless steel	M			
	Cast iron	K	◑	◑	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BPC10K	BPC13K	fn(mm/rev)	ap(mm)
Semi-finishing		CNMG	120404-K3		▲	0.35-0.60	0.20-3.00
			120408-K3		▲	0.35-0.60	0.40-4.00
			120412-K3		▲	0.45-0.65	0.40-4.00
Rough machining		CNMG	120408-K6		▲	0.20-0.60	0.40-6.00
			120412-K6		▲	0.25-0.70	0.50-6.00
Rough machining		CNMA	120404		▲	0.15-0.50	0.20-3.00
			120408		▲	0.15-0.60	0.40-4.00
			120412		▲	0.20-0.70	0.60-5.00
			120416		▲	0.20-0.80	1.00-6.00

Recommended: ▲

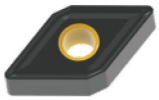
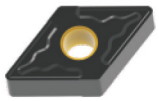
DN□□

55° negative insert



Dimension（mm）			
Size	d	s	d1
15	12.70	4.76/6.35	5.16

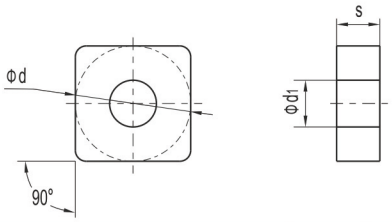
Workpiece					Processing types
	Steel	P			
	Stainless steel	M			
	Cast iron	K	◑	◑	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BPC10K	BPC13K	fn(mm/rev)	ap(mm)
Semi-finishing		DNMG	150604-K3		▲	0.15-0.50	0.20-3.00
			150608-K3		▲	0.35-0.60	0.40-4.00
			150612-K3		▲	0.18-0.60	0.80-5.00
Rough machining		DNMG	150408-K6		▲	0.20-0.50	0.40-6.00
			150608-K6		▲	0.20-0.50	0.40-6.00
Rough machining		DNMA	150404		▲	0.15-0.50	0.20-3.00
			150408		▲	0.15-0.60	0.40-4.00
			150604		▲	0.15-0.50	0.20-3.00
			150608		▲	0.15-0.60	0.40-4.00
			150612			0.20-0.80	1.00-6.00

Recommended: ▲

SN□□

90° negative insert



Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16

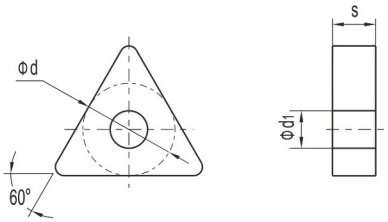
Workpiece	Steel	P			Processing types
	Stainless steel	M			
	Cast iron	K	◑	◑	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BPC10K	BPC13K	fn(mm/rev)	ap(mm)
Semi-finishing		SNMG	120408-K3		▲	0.10-0.35	0.30-4.00
			120412-K3		▲	0.10-0.35	0.50-4.50
Rough machining		SNMA	120408		▲	0.15-0.60	0.50-4.00
			120412		▲	0.20-0.80	0.60-5.00
			120416		▲	0.20-1.00	0.60-6.00

Recommended: ▲

TN□□

60° negative insert



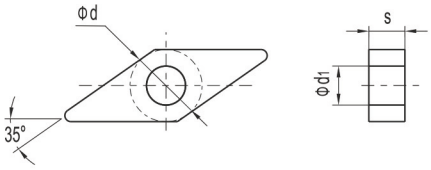
Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81
22	12.70	4.76	5.16

Workpiece					Processing types
	Steel	P			
	Stainless steel	M			
	Cast iron	K	◑	◑	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BPC10K	BPC13K	fn(mm/rev)	ap(mm)
Semi-finishing		TNMG	160404-K3		▲	0.15-0.30	0.35-3.00
			160408-K3		▲	0.20-0.42	0.45-4.00
Rough machining		TNMG	160408-K6		▲	0.20-0.40	0.50-5.00
			160412-K6		▲	0.20-0.60	0.60-6.00
			220408-K6		▲	0.20-0.40	0.50-5.00
			220412-K6		▲	0.20-0.60	0.60-6.00
Rough machining		TNMA	160404		▲	0.10-0.30	0.20-4.00
			160408		▲	0.15-0.60	0.40-4.00
			160412		▲	0.20-0.80	0.60-5.00
			160416		▲	0.20-1.00	0.80-5.00

Recommended: ▲

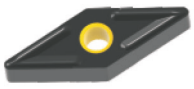
VN□□



35° negative insert

Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81

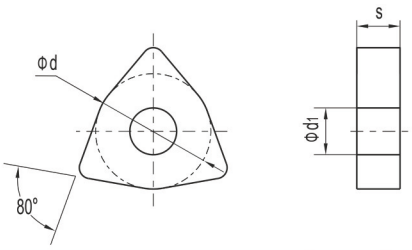
Workpiece					Processing types
	Steel	P			
	Stainless steel	M			
	Cast iron	K	◑	◑	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BPC10K	BPC13K	fn(mm/rev)	ap(mm)
Semi-finishing		VNMG	160408-K3		▲	0.20-0.42	0.45-4.00
Rough machining		VNMG	160408-K6		▲	0.20-0.40	0.50-5.00

Recommended: ▲

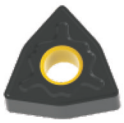
WN□□

80° negative insert



Dimension（mm）			
Size	d	s	d1
06	9.525	4.76	3.81
08	12.70	4.76	5.16

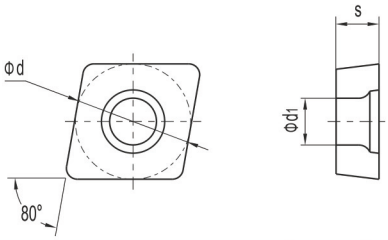
Workpiece					Processing types
	Steel	P			
	Stainless steel	M			
	Cast iron	K	◑	◑	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BPC10K	BPC13K	fn(mm/rev)	ap(mm)
Semi-finishing		WNMG	080404-K3		▲	0.15-0.50	0.20-3.00
			080408-K3		▲	0.35-0.60	0.40-4.00
			080412-K3		▲	0.18-0.60	0.80-5.00
Rough machining		WNMG	080408-K6		▲	0.20-0.40	0.50-5.00
			080412-K6		▲	0.20-0.60	0.60-6.00
Rough machining		WNMA	060404		▲	0.15-0.60	0.20-3.00
			060408		▲	0.16-0.60	0.40-4.00
			060412		▲	0.20-0.80	0.60-4.00
			080404		▲	0.15-0.60	0.20-3.00
			080408		▲	0.15-0.60	0.40-4.00
			080412		▲	0.20-0.80	0.60-5.00
			080416		▲	0.20-1.00	0.80-5.00

Recommended: ▲

CC□□

80° positive insert



Dimension（mm）			
Size	d	s	d1
06	6.35	2.38	2.80
09	9.525	3.97	4.40
12	12.70	4.76	5.50

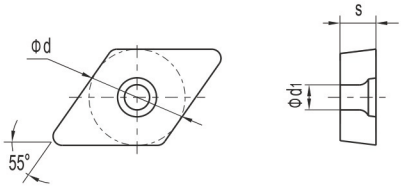
Workpiece	Steel	P			Processing types
	Stainless steel	M			
	Cast iron	K	◑	◑	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BPC10K	BPC13K	fn(mm/rev)	ap(mm)
Semi-finishing		CCMT	060204-MX		▲	0.05-0.18	0.20-2.50
			060208-MX		▲	0.08-0.25	0.40-2.50
			09T304-MX		▲	0.08-0.25	0.30-3.00
			09T308-MX		▲	0.10-0.30	0.50-3.00
			120408-MX		▲	0.08-0.25	0.30-3.00

Recommended: ▲

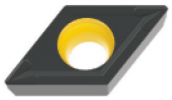
DC□□

55° positive insert



Dimension（mm）			
Size	d	s	d1
11	9.525	3.97	4.40

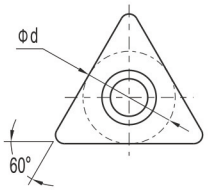
Workpiece					Processing types
	Steel	P			
	Stainless steel	M			
	Cast iron	K	◑	◑	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

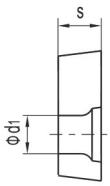
Insert		Specification		Coating		Cutting parameter	
				BPC10K	BPC13K	fn(mm/rev)	ap(mm)
Semi-finishing		DCMT	11T304-MX		▲	0.08-0.25	0.30-3.00

Recommended: ▲

TC□□

60° positive insert





Dimension（mm）			
Size	d	s	d1
11	6.35	2.38/3.18	2.80

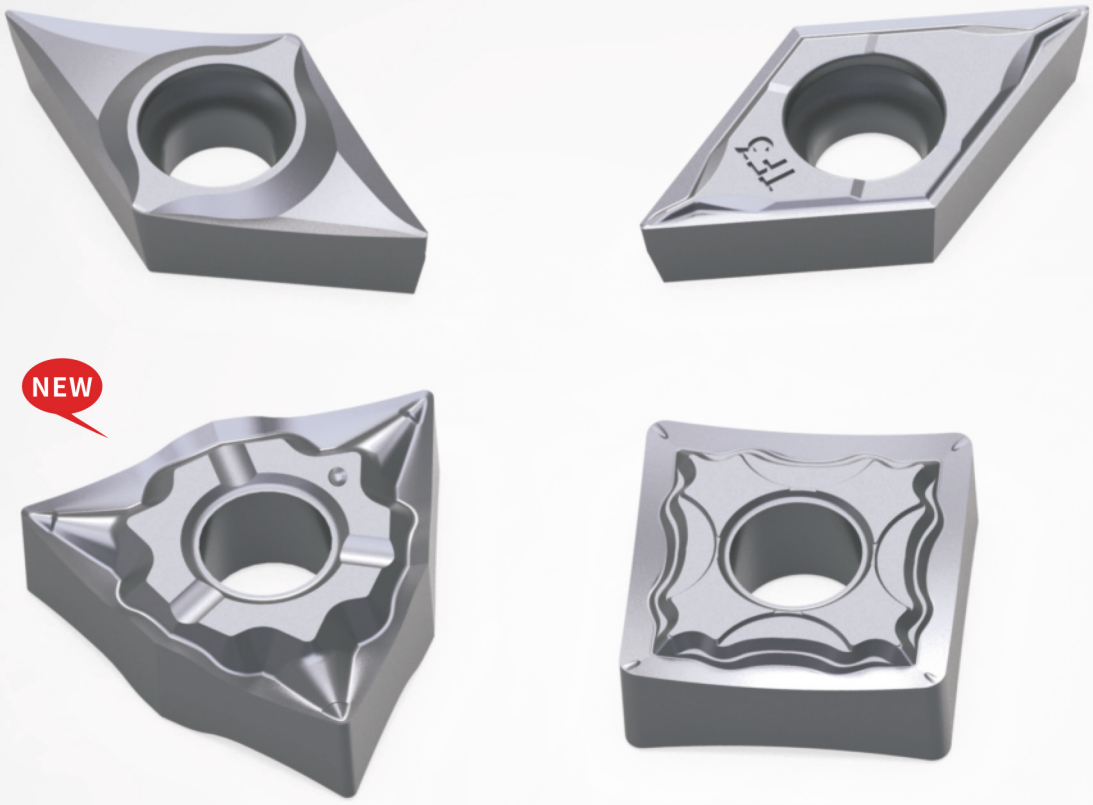
Workpiece	Steel	P			Processing types
	Stainless steel	M			
	Cast iron	K	◑	◑	● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N			
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Coating		Cutting parameter	
				BPC10K	BPC13K	fn(mm/rev)	ap(mm)
Semi-finishing		TCMT	110204-MX		▲	0.10-0.30	0.50-3.00

Recommended: ▲

Turning Inserts for Finishing Processing

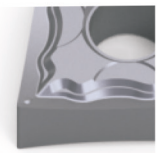
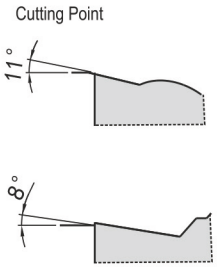
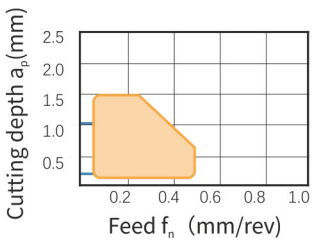
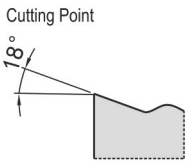
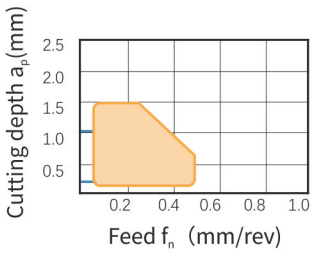
CDBP has launched inserts for difficult-to-machine materials with particular chipbreaker design special substrate formula and newest nACO3 coating technology. Better performance and surface quality can be achieved during medium and finishing for high temperature alloy,Titanium alloy and other difficult-to-process materials



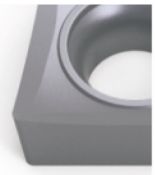
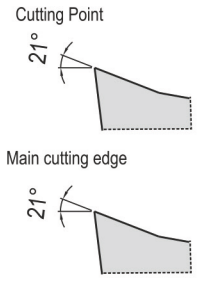
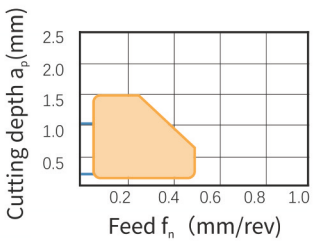
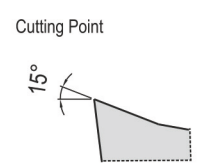
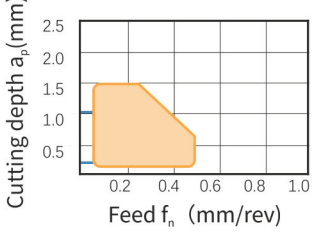
PVD coating grade characteristics

Workpiece		Coating	ISO	Features
S	Heat-resistant Alloy	BPG05E	M01-M10 S01-S10	· New generation PVD coating with strong hardness and high temperature oxidation resistance · Submicron grain material ensures wear resistance and anti collapse performance · Special surface treatment to improve surface roughness and reduce cutting resistance · Finishing machining for steel, stainless steel, difficult to machine alloy

Features of chipbreaker - Negative Inserts

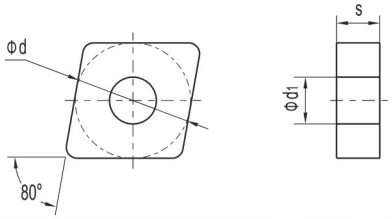
Function	code	shape	Cutting Edge	Applications and Features	Application range
Finishing	LHC			· Used for finishing of stainless steel and hard to process materials · Sharp cutting edge to reduce cutting resistance and achieve stable cutting · Ultra precision grinding technology ensures good cutting edge condition and reliable installation · Suitable for machining workpieces with high precision and high finish requirements	
Finishing	TF3			· Used for finishing of stainless steel and hard to process materials · Sharp cutting edge to reduce cutting resistance and improve tool life · Unique chipbreaker design,ensure stable chip control and smooth chip-removal · Suitable for turning with small cutting depth.	

Features of chipbreaker - Positive Inserts

Function	code	shape	Cutting Edge	Applications and Features	Application range
Finishing	SL			· Used for finishing of stainless steel and hard to process materials · The open chip breaking groove design allows the chips to flow faster and effectively reduce cutting force, improve tool life · Fine grinding inserts, ensuring good cutting edge condition, suitable for high-precision product processing	
Finishing	TF3			· Used for finishing of steel, stainless steel and difficult-to-process materials · Special chipbreaker design to ensure perfect chip control · Periphery grinding for better location accuracy and the cutting edge quality	

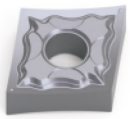
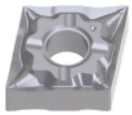
CN□□

80° negative insert



Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16

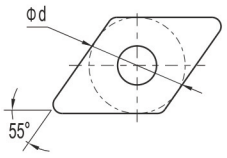
Workpiece				Processing types
	Steel	P		
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting
	Nonferrous metals	N		◑ Ordinary cutting
	Heat-resistant alloy	S	●	○ Interrupted cutting
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		CNGG	120402E-LHC	▲	0.05-0.30	0.10-1.50
			120404E-LHC	▲	0.05-0.30	0.20-1.50
			120408E-LHC	▲	0.10-0.40	0.30-1.50
			120412E-LHC	▲	0.15-0.50	0.40-2.00
Finishing	NEW 	CNGG	120404E-TF3	▲	0.05-0.30	0.20-1.50
			120408E-TF3	▲	0.10-0.40	0.30-1.50

Recommended: ▲

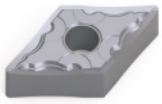
DN□□

55° negative insert



Dimension（mm）			
Size	d	s	d1
15	12.70	4.76/6.35	5.16

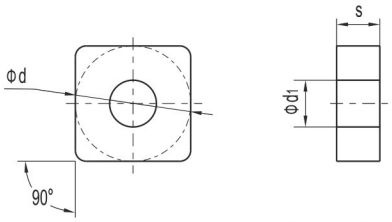
Workpiece	Steel	P		Processing types
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S	●	
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		DNGG	150402E-LHC	▲	0.05-0.30	0.10-1.50
			150404E-LHC	▲	0.05-0.30	0.20-1.50
			150408E-LHC	▲	0.10-0.40	0.30-1.50
			150602E-LHC	▲	0.05-0.30	0.10-1.50
			150604E-LHC	▲	0.05-0.30	0.20-1.50
			150608E-LHC	▲	0.10-0.40	0.30-1.50

Recommended: ▲

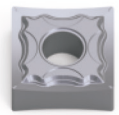
SN□□

90° negative insert



Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16

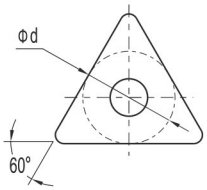
Workpiece	Steel	P		Processing types
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S	●	
	Hardened steel	H		

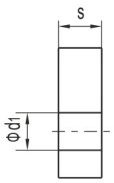
Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		SNGG	120404E-LHC	▲	0.05-0.30	0.20-1.50
			120408E-LHC	▲	0.10-0.40	0.30-1.50
			120412E-LHC	▲	0.15-0.50	0.40-2.00

Recommended: ▲

TN□□

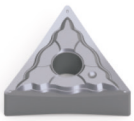
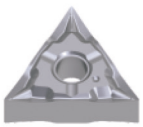
60° negative insert





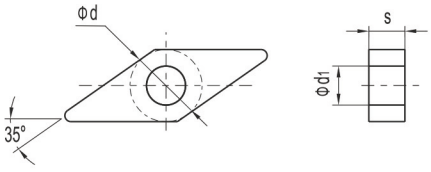
Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81
22	12.70	4.76	5.16

Workpiece				Processing types
	Steel	P		
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting
	Nonferrous metals	N		◑ Ordinary cutting
	Heat-resistant alloy	S	●	○ Interrupted cutting
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		TNGG	160402E-LHC	▲	0.05-0.30	0.10-1.50
			160404E-LHC	▲	0.05-0.30	0.20-1.50
			160408E-LHC	▲	0.10-0.40	0.30-1.50
			160412E-LHC	▲	0.15-0.50	0.40-2.00
			220408E-LHC	▲	0.10-0.40	0.30-2.00
Finishing	NEW 	TNGG	160402E-TF3	▲	0.03-0.25	0.10-1.50
			160404E-TF3	▲	0.05-0.30	0.20-1.50
			160408E-TF3	▲	0.10-0.40	0.30-1.50

Recommended: ▲

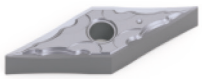
VN□□



35° negative insert

Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81

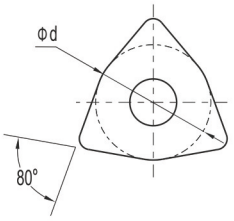
Workpiece	Steel	P		Processing types
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S	●	
	Hardened steel	H		

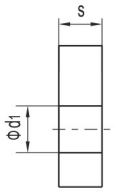
Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		VNGG	160401E-LHC	▲	0.03-0.25	0.08-1.20
			160402E-LHC	▲	0.05-0.30	0.10-1.50
			160404E-LHC	▲	0.05-0.30	0.20-1.50
			160408E-LHC	▲	0.10-0.40	0.30-1.50

Recommended: ▲

WN□□

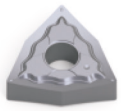
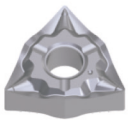
80° negative insert





Dimension（mm）			
Size	d	s	d1
06	9.525	4.76	3.81
08	12.70	4.76	5.16

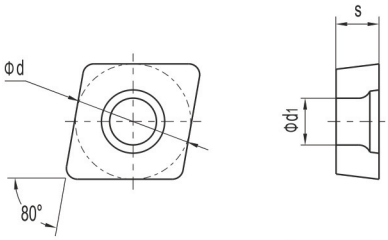
				Processing types
Workpiece	Steel	P		
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S	●	
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		WNGG	060404E-LHC	▲	0.05-0.30	0.20-1.50
			060408E-LHC	▲	0.10-0.40	0.30-1.50
			060412E-LHC	▲	0.15-0.50	0.40-2.00
			080404E-LHC	▲	0.05-0.30	0.20-1.50
			080408E-LHC	▲	0.10-0.40	0.30-1.50
			080412E-LHC	▲	0.15-0.50	0.40-2.00
Finishing	NEW 	WNGG	080404E-TF3	▲	0.05-0.30	0.20-1.50
			080408E-TF3	▲	0.10-0.40	0.30-1.50

Recommended: ▲

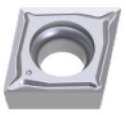
CC□□

80° positive insert



Dimension（mm）			
Size	d	s	d1
06	6.35	2.38	2.80
09	9.525	3.97	4.40
12	12.70	4.76	5.50

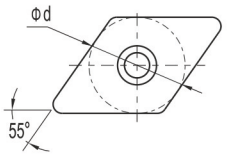
Workpiece	Steel	P		Processing types
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting
	Nonferrous metals	N		◑ Ordinary cutting
	Heat-resistant alloy	S	●	○ Interrupted cutting
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		CCGT	060201-SL	▲	0.02-0.10	0.02-1.00
			060202-SL	▲	0.03-0.11	0.10-1.70
			060204-SL	▲	0.05-0.17	0.10-1.70
			09T301-SL	▲	0.02-0.10	0.08-1.50
			09T302-SL	▲	0.04-0.15	0.10-2.00
			09T304-SL	▲	0.06-0.23	0.20-2.00
			09T308-SL	▲	0.08-0.30	0.40-2.00
			120402-SL	▲	0.07-0.27	0.11-2.40
			120404-SL	▲	0.07-0.30	0.20-2.40
			120408-SL	▲	0.07-0.35	0.40-2.40
Finishing		CCGT	060201E-TF3	▲	0.03-0.11	0.06-1.00
			060202E-TF3	▲	0.03-0.11	0.06-1.00
			060204E-TF3	▲	0.05-0.15	0.08-1.50
			09T301E-TF3	▲	0.04-0.15	0.08-1.00
			09T302E-TF3	▲	0.04-0.15	0.08-1.50
			09T304E-TF3	▲	0.06-0.23	0.11-1.50

Recommended: ▲

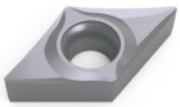
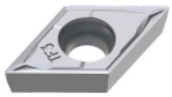
DC□□

55° positive insert



Dimension（mm）			
Size	d	s	d1
07	6.35	2.38	2.80
11	9.525	3.97	4.40

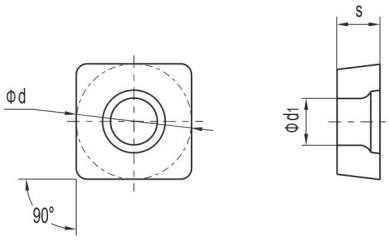
Workpiece	Steel	P		Processing types
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting
	Nonferrous metals	N		◑ Ordinary cutting
	Heat-resistant alloy	S	●	○ Interrupted cutting
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		DCGT	070201-SL	▲	0.03-0.20	0.06-1.00
			070202-SL	▲	0.03-0.20	0.06-1.50
			070204-SL	▲	0.05-0.25	0.08-1.50
			11T301-SL	▲	0.04-0.15	0.08-1.50
			11T302-SL	▲	0.04-0.15	0.08-2.00
			11T304-SL	▲	0.06-0.23	0.11-2.00
			11T308-SL	▲	0.08-0.30	0.15-2.00
Finishing		DCGT	070201E-TF3	▲	0.03-0.11	0.06-1.00
			070202E-TF3	▲	0.03-0.11	0.06-1.00
			11T301E-TF3	▲	0.04-0.15	0.08-1.00
			11T302E-TF3	▲	0.04-0.15	0.08-1.50
			11T304E-TF3	▲	0.06-0.23	0.11-1.50

Recommended: ▲

SC□□

90° positive insert



Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.50

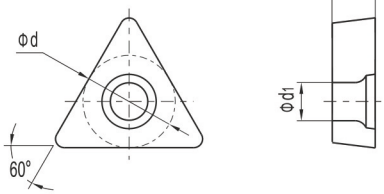
Workpiece	Steel	P		Processing types
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N		
	Heat-resistant alloy	S	●	
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		SCGT	120404-SL	▲	0.07-0.35	0.18-3.00
			120408-SL	▲	0.10-0.35	0.18-3.00

Recommended: ▲

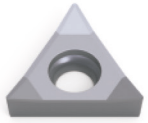
TC□□

60° positive insert



Dimension（mm）			
Size	d	s	d1
06	3.97	1.59	2.16
09	5.56	2.38	2.50
11	6.35	2.38/3.18	2.80
16	9.525	3.97	4.40

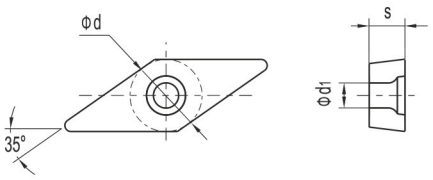
Workpiece	Steel	P		Processing types
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting
	Nonferrous metals	N		◑ Ordinary cutting
	Heat-resistant alloy	S	●	○ Interrupted cutting
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		TBGT	060102-SL	▲	0.02-0.10	0.03-0.20
			060104-SL	▲	0.05-0.20	0.10-0.35
		TCGT	090202-SL	▲	0.03-0.13	0.06-1.70
			090204-SL	▲	0.05-0.19	0.10-1.70
			110202-SL	▲	0.03-0.13	0.06-1.70
			110204-SL	▲	0.05-0.19	0.10-1.70
			110208-SL	▲	0.05-0.19	0.10-1.70
			16T304-SL	▲	0.06-0.23	0.11-3.00

Recommended: ▲

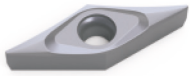
VC□□

35° positive insert



Dimension（mm）			
Size	d	s	d1
08	4.76	2.38	2.30
11	6.35	3.18	2.80
16	9.525	4.76	4.40

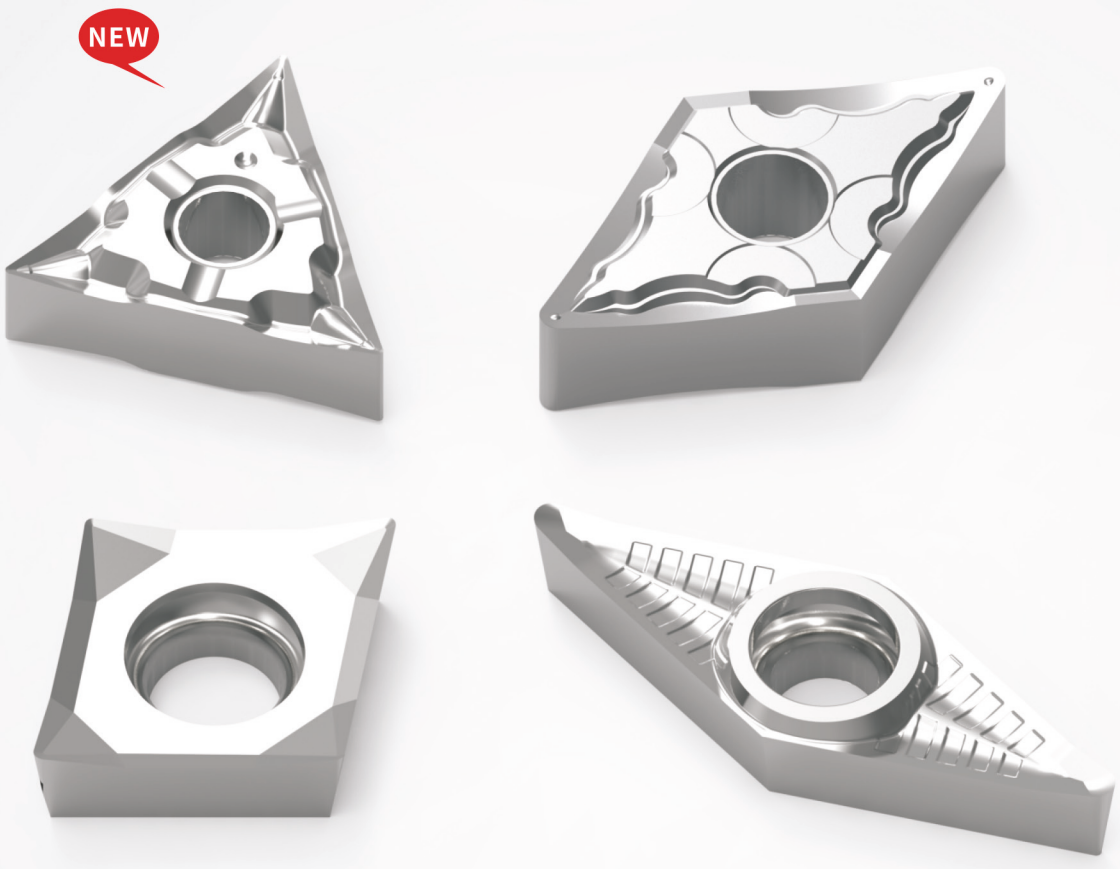
Workpiece	Steel	P		Processing types
	Stainless steel	M	●	
	Cast iron	K		● Continous cutting
	Nonferrous metals	N		◑ Ordinary cutting
	Heat-resistant alloy	S	●	○ Interrupted cutting
	Hardened steel	H		

Insert		Specification		Coating	Cutting parameter	
				BPG05E	fn(mm/rev)	ap(mm)
Finishing		VBGT	110301-SL	▲	0.03-0.13	0.06-1.70
			110302-SL	▲	0.03-0.13	0.06-1.70
			110304-SL	▲	0.05-0.19	0.10-1.70
			160402-SL	▲	0.04-0.14	0.07-1.80
			160404-SL	▲	0.05-0.22	0.14-1.80
			160408-SL	▲	0.07-0.27	0.14-1.80
		VCGT	080201-SL	▲	0.03-0.10	0.06-1.00
			080202-SL	▲	0.03-0.12	0.10-1.20
			080204-SL	▲	0.05-0.13	0.20-1.70
			110301-SL	▲	0.03-0.11	0.06-1.00
			110302-SL	▲	0.03-0.13	0.06-1.70
			110304-SL	▲	0.05-0.19	0.10-1.70
			110308-SL	▲	0.07-0.26	0.13-1.70
			160402-SL	▲	0.04-0.14	0.07-1.80
			160404-SL	▲	0.05-0.20	0.10-1.80
			160408-SL	▲	0.07-0.27	0.14-1.80
Finishing		VBGT	160404E-TF3	▲	0.05-0.20	0.10-1.80
			160408E-TF3	▲	0.07-0.27	0.14-1.80
		VCGT	080202E-TF3	▲	0.02-0.10	0.05-1.00
			080204E-TF3	▲	0.02-0.10	0.05-1.00
			110302E-TF3	▲	0.03-0.13	0.06-1.70
			110304E-TF3	▲	0.04-0.14	0.07-1.80
			160402E-TF3	▲	0.04-0.14	0.07-1.80
			160404E-TF3	▲	0.05-0.20	0.10-1.80

Recommended: ▲

Non-ferrous Metal Machining

Non-ferrous Metal Machining for external, internal, end face and chamferring machining, such as aluminum, cooper, magnesium alloy



Uncoated grade characteristics

Workpiece		Grade	ISO	Metallography	Characteristics
N	Non-ferrous metals	BH3110	N01-N10		·The material with submicron-fine grain can ensure the wear resistance and micro crack resistance ·Special surface treatment to reduce the build-up edge ·Suitable for non-ferrous metals such as aluminum,copper and magnesium
		BU810	N01-N10		·The material with submicron-fine grain can ensure the wear resistance and micro crack resistance ·Special surface treatment to reduce the built-up edge ·Suitable for continous and interrupt cutting of non-ferrous metals
		BU811	N05-N15		·Submicron grain material ensures wear-resistance and anti-collapse performance ·Special surface treatment, reduce built-up chippings ·Special surface and cutting edge treatment to ensure sharpness and stability ·Suitable for continuous and interrupt processing of non-ferrous metals

Recommended cutting parameter

Workpiece			Hardness(HB)	kc(MPa)	V_c(m/min)	f_n(mm/rev)
N	Aluminum Alloy (casting)	Before heat-treatment	50-80	500-600	1100-2700	0.12-0.65
		After heat-treatment	85-120	700-900	400-1000	0.12-0.55
	Aluminum Alloy (casting)	Before heat-treatment	65-85	700-800	400-1000	0.12-0.65
		After heat-treatment	70-100	800-950	300-600	0.12-0.45
	Copper Alloy	-	90-120	700	150-450	0.12-0.55
	Magnesium Alloy	-	-	700-800	120-400	0.08-0.35

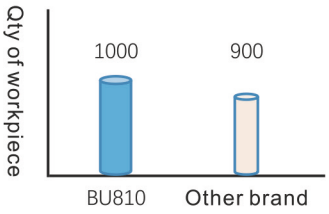
Application cases

Performance(BU810/BH110)

N Aluminum Alloy

Workpiece	Aluminum Alloy
Cutting Parameter	V_c(m/min)=600
	f_n(mm/rev)=0.20
	a_p(mm)=0.30
Type	CCGT120404-LHC（BU810）

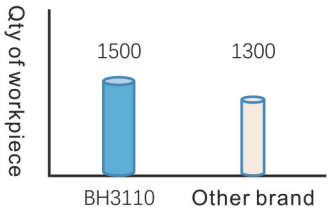
Test Result



N Aluminum Alloy

Workpiece	Aluminum Alloy
Cutting Parameter	V_c(m/min)=550
	f_n(mm/rev)=0.26
	a_p(mm)=1.20
Type	VCGT160412-AL（BH3110）

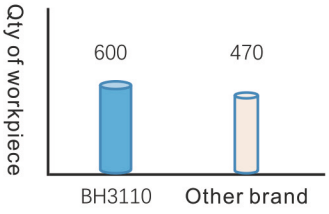
Test Result



N Copper Alloy

Workpiece	Copper Alloy
Cutting Parameter	V_c(m/min)=230
	f_n(mm/rev)=0.15
	a_p(mm)=0.80
Type	VCGT160404-AL（BH3110）

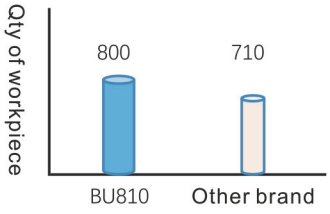
Test Result



N Copper Alloy

Workpiece	Aluminum Alloy
Cutting Parameter	V_c(m/min)=230
	f_n(mm/rev)=0.26
	a_p(mm)=0.20
Type	CCGT120404-LHC（BU810）

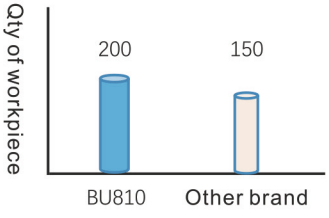
Test Result



N Aluminum Alloy

Workpiece	Aluminum Alloy
Cutting Parameter	V_c(m/min)=620
	f_z(mm/z)=0.20
	a_p(mm)=1.00
Type	CNGG120404-LHC（BU810）

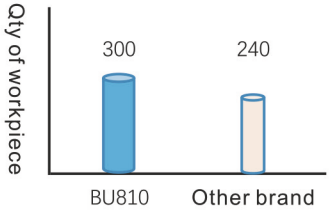
Test Result



N Aluminum Alloy

Workpiece	Aluminum Alloy
Cutting Parameter	V_c(m/min)=500
	f_z(mm/z)=0.26
	a_p(mm)=1.20
Type	VNGG160402-LHC（BU810）

Test Result



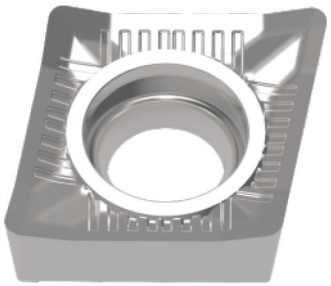
Chipbreaker characteristics-Positive Inserts

Chipbreaker LHC

·Suitable for finish machining of aluminum, copper and other non-ferrous metal materials,the main grade recommended is BU810

·Excellent Chip breaker design supports a smooth and stable control of chips

·Effectively reduce the cutting resistance and extend tool life



Chipbreaker characteristics

·Applyining wave-type chip pocket design to reduce cutting resistance

·Applying the cutting edge with large rake angle for chip breaking and evacuation smoothly

·Applying waved chip pocket and sharp cutting edges to disperse cutting resistance and extend tool life·

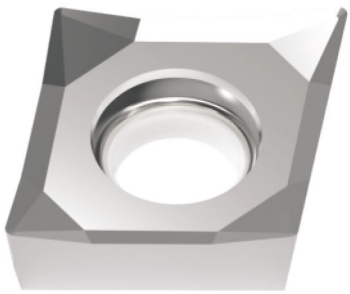
·The surface is polished to reduce the contact time with the chips, making it easier for chip evacuation, reducing built-up edge, and extending the tool life

Chipbreaker AL

·Suitable for aluminum, copper and other non-ferrous metals with higher strength

·It performs better in finish,semi-finish and rough machining

·Maintain excellent cutting performance in high feed, high speed and continous cutting.



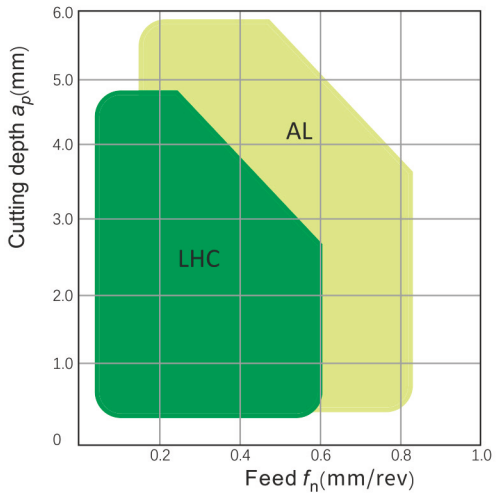
Chipbreaker characteristics

·Special design of rake angle and cutting edge inclination angle to reduce cutting resistance

·Sharp edge and wide pocket to reduce chip sticky tendency in unstable boring condition

·Applying stable chip control when cutting depth and feed is unstable

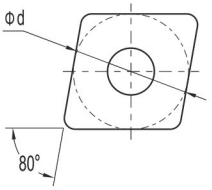
·Special surface treatment to improve melting resistance and chipping resistance

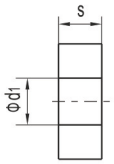


Recomended Parameter		Grade
LHC	a_p=0.50-4.80(mm) f_n=0.03-0.60(mm/rev)	BU810
AL	a_p=0.70-5.80(mm) f_n=0.17-0.82(mm/rev)	BH3110

CN□□

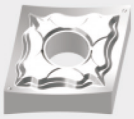
80° negative insert





Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16

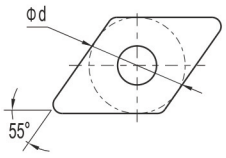
Workpiece				Processing types
	Steel	P		
	Stainless steel	M		
	Cast iron	K		● Continous cutting
	Nonferrous metals	N	●	◑ Ordinary cutting
	Heat-resistant alloy	S		○ Interrupted cutting
	Hardened steel	H		

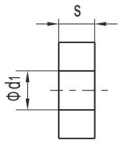
Insert		Specification		Uncoating grade	Cutting parameter	
				BU810	fn(mm/rev)	ap(mm)
Finishing		CNGG	120402-LHC	▲	0.05-0.30	0.10-1.50
			120404-LHC	▲	0.05-0.30	0.20-1.50
			120408-LHC	▲	0.10-0.40	0.30-1.50
			120412-LHC	▲	0.15-0.50	0.40-2.00
Finishing	NEW 	CNGG	120404-TF3	▲	0.05-0.30	0.20-1.50
			120408-TF3	▲	0.10-0.40	0.30-1.50

Recommended: ▲

DN□□

55° negative insert





Dimension（mm）			
Size	d	s	d1
15	12.70	4.76/6.35	5.16

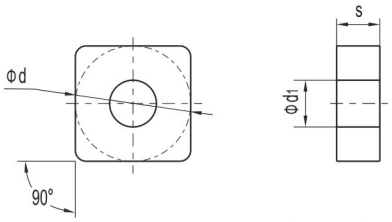
Workpiece				Processing types
	Steel	P		
	Stainless steel	M		
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Uncoating grade	Cutting parameter	
				BU810	fn(mm/rev)	ap(mm)
Finishing		DNGG	150402-LHC	▲	0.05-0.30	0.10-1.50
			150404-LHC	▲	0.05-0.30	0.20-1.50
			150408-LHC	▲	0.10-0.40	0.30-1.50
			150602-LHC	▲	0.05-0.30	0.10-1.50
			150604-LHC	▲	0.05-0.30	0.20-1.50
			150608-LHC	▲	0.10-0.40	0.30-1.50

Recommended: ▲

SN□□

90° negative insert



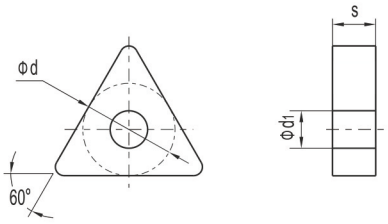
Dimension（mm）			
Size	d	s	d1
12	12.70	4.76	5.16

Workpiece	Steel	P		Processing types
	Stainless steel	M		
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Uncoating grade	Cutting parameter	
				BU810	fn(mm/rev)	ap(mm)
Finishing		SNGG	120404-LHC	▲	0.05-0.30	0.20-1.50
			120408-LHC	▲	0.10-0.40	0.30-1.50
			120412-LHC	▲	0.15-0.50	0.40-2.00

Recommended: ▲

TN□□



60° negative insert

Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81
22	12.70	4.76	5.16

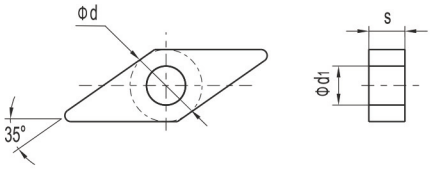
Workpiece	Steel	P		Processing types
	Stainless steel	M		
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Uncoating grade	Cutting parameter	
				BU810	fn(mm/rev)	ap(mm)
Finishing		TNGG	160402-LHC	▲	0.05-0.30	0.10-1.50
			160404-LHC	▲	0.05-0.30	0.20-1.50
			160408-LHC	▲	0.10-0.40	0.30-1.50
			160412-LHC	▲	0.15-0.50	0.40-2.00
			220408-LHC	▲	0.10-0.40	0.30-2.00
Finishing	NEW 	TNGG	160402-TF3	▲	0.03-0.25	0.10-1.50
			160404-TF3	▲	0.05-0.30	0.20-1.50
			160408-TF3	▲	0.10-0.40	0.30-1.50

Recommended: ▲

VN□□

35° negative insert



Dimension（mm）			
Size	d	s	d1
16	9.525	4.76	3.81

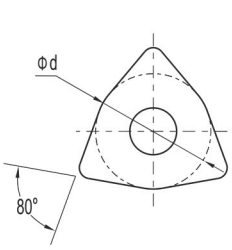
Workpiece				Processing types
	Steel	P		
	Stainless steel	M		
	Cast iron	K		● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	
	Heat-resistant alloy	S		
	Hardened steel	H		

Insert		Specification		Uncoating grade	Cutting parameter	
				BU810	fn(mm/rev)	ap(mm)
Finishing		VNGG	160401-LHC	▲	0.03-0.25	0.08-1.20
			160402-LHC	▲	0.05-0.30	0.10-1.50
			160404-LHC	▲	0.05-0.30	0.20-1.50
			160408-LHC	▲	0.10-0.40	0.30-1.50

Recommended：▲

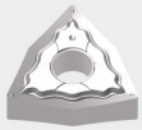
WN□□

80° negative insert



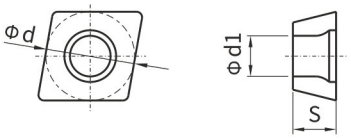
Dimension（mm）			
Size	d	s	d1
06	9.525	4.76	3.81
08	12.70	4.76	5.16

Workpiece				Processing types
	Steel	P		
	Stainless steel	M		
	Cast iron	K		● Continous cutting
	Nonferrous metals	N	●	◑ Ordinary cutting
	Heat-resistant alloy	S		○ Interrupted cutting
	Hardened steel	H		

Insert		Specification		Uncoating grade	Cutting parameter	
				BU810	fn(mm/rev)	ap(mm)
Finishing		WNGG	060404-LHC	▲	0.05-0.30	0.20-1.50
			060408-LHC	▲	0.10-0.40	0.30-1.50
			060412-LHC	▲	0.15-0.50	0.40-2.00
			080404-LHC	▲	0.05-0.30	0.20-1.50
			080408-LHC	▲	0.10-0.40	0.30-1.50
			080412-LHC	▲	0.15-0.50	0.40-2.00
Finishing	NEW 	WNGG	080404-TF3	▲	0.05-0.30	0.20-1.50
			080408-TF3	▲	0.10-0.40	0.30-1.50

Recommended: ▲

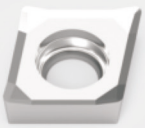
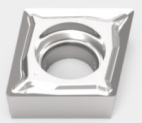
CC□□



Dimension（mm）			
Size	d	s	d1
06	6.35	2.38	2.80
09	9.525	3.97	4.40
12	12.70	4.76	5.50

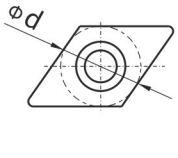
80° negative insert

Workpiece	Steel	P			Processing types
	Stainless steel	M			
	Cast iron	K			● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	●	
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Uncoating grade		Cutting parameter	
				BU810	BH3110	fn(mm/rev)	ap(mm)
Finishing-Semi-finishing		CCGT	060201-LHC	▲		0.01-0.10	0.05-1.00
			060202-LHC	▲		0.01-0.15	0.05-2.50
			060204-LHC	▲		0.02-0.18	0.10-3.00
			060208-LHC	▲		0.03-0.20	0.10-3.50
			09T301-LHC	▲		0.03-0.20	0.05-2.50
			09T302-LHC	▲		0.03-0.25	0.05-3.00
			09T304-LHC	▲		0.04-0.30	0.10-4.00
			09T308-LHC	▲		0.04-0.50	0.12-4.50
			120402-LHC	▲		0.05-0.25	0.10-4.00
			120404-LHC	▲		0.05-0.50	0.15-4.50
			120408-LHC	▲		0.08-0.70	0.15-5.50
			120412-LHC	▲		0.08-0.70	0.20-6.00
Semi-finishing-Roughing		CCGT	060201-AL		▲	0.01-0.02	0.05-3.50
			060202-AL		▲	0.02-0.30	0.05-3.50
			060204-AL		▲	0.03-0.35	0.10-4.00
			060208-AL		▲	0.04-0.40	0.10-4.50
			09T301-AL		▲	0.03-0.35	0.10-4.00
			09T302-AL		▲	0.05-0.40	0.05-4.50
			09T304-AL		▲	0.05-0.45	0.10-5.00
			09T308-AL		▲	0.06-0.50	0.12-5.00
			120402-AL		▲	0.05-0.40	0.10-6.00
			120404-AL		▲	0.05-0.50	0.15-6.00
			120408-AL		▲	0.08-0.70	0.15-6.50
Finishing-Semi-finishing		CCGT	060201-TF3	▲		0.01-0.02	0.05-3.50
			060202-TF3	▲		0.02-0.30	0.05-3.50
			060204-TF3	▲		0.03-0.35	0.10-4.00
			09T301-TF3	▲		0.03-0.35	0.10-4.00
			09T302-TF3	▲		0.05-0.40	0.05-4.50
			09T304-TF3	▲		0.05-0.45	0.10-5.00

Recommended: ▲

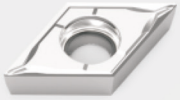
DC□□



Dimension（mm）			
Size	d	S	d1
7	6.35	2.38	2.80
11	9.525	3.97	4.40

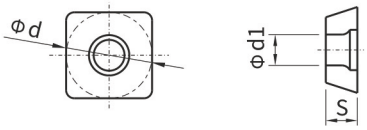
55° positive insert

Workpiece	Steel	P			Processing types
	Stainless steel	M			
	Cast iron	K			● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	●	
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Uncoating grade		Cutting parameter	
				BU810	BH3110	fn(mm/rev)	ap(mm)
Finishing-Semi-finishing		DCGT	070201-LHC	▲		0.01-0.02	0.20-2.50
			070202-LHC	▲		0.02-0.35	0.30-4.00
			070204-LHC	▲		0.03-0.40	0.50-5.00
			070208-LHC	▲		0.04-0.50	0.50-5.50
			11T301-LHC	▲		0.02-0.25	0.30-4.00
			11T302-LHC	▲		0.03-0.40	0.30-6.00
			11T304-LHC	▲		0.05-0.50	0.50-6.00
			11T308-LHC	▲		0.08-0.60	0.50-6.00
			11T312-LHC	▲		0.08-0.70	0.05-6.50
Semi-finishing-Roughing		DCGT	070201-AL		▲	0.01-0.02	0.20-2.50
			070202-AL		▲	0.02-0.30	0.30-4.00
			070204-AL		▲	0.03-0.40	0.50-5.00
			070208-AL		▲	0.04-0.50	0.50-5.00
			11T301-AL		▲	0.02-0.30	0.30-4.00
			11T302-AL		▲	0.03-0.45	0.30-6.00
			11T304-AL		▲	0.05-0.60	0.50-6.00
			11T308-AL		▲	0.08-0.65	0.50-6.00
Finishing-Semi-finishing		DCGT	070201-TF3	▲		0.01-0.02	0.20-2.50
			070202-TF3	▲		0.02-0.30	0.30-4.00
			11T301-TF3	▲		0.02-0.30	0.30-4.00
			11T302-TF3	▲		0.03-0.45	0.30-6.00
			11T304-TF3	▲		0.05-0.60	0.50-6.00

Recommended: ▲

SC□□



Dimension（mm）			
Size	d	S	d1
09	9.525	3.97	4.40
12	12.70	4.76	5.50

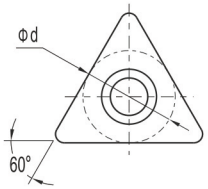
90° positive insert

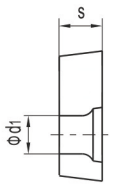
Workpiece					Processing types
	Steel	P			
	Stainless steel	M			
	Cast iron	K			● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	●	
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Uncoating grade		Cutting parameter	
				BU810	BH3110	fn(mm/rev)	ap(mm)
Finishing-Semi-finishing		SCGT	09T302-LHC	▲		0.02-0.30	0.10-4.00
			09T304-LHC	▲		0.03-0.40	0.10-5.00
			09T308-LHC	▲		0.04-0.40	0.10-5.00
			120402-LHC	▲		0.03-0.40	0.15-5.00
			120404-LHC	▲		0.03-0.50	0.15-5.50
			120408-LHC	▲		0.04-0.60	0.20-6.00
Semi-finishing-Roughing		SCGT	09T302-AL		▲	0.03-0.40	0.50-5.00
			09T304-AL		▲	0.04-0.50	0.50-6.00
			09T308-AL		▲	0.04-0.50	0.50-6.50
			120404-AL		▲	0.05-0.60	0.50-6.50
			120408-AL		▲	0.05-0.60	0.50-7.00

Recommended: ▲

TC□□

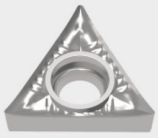




Dimension（mm）			
Size	d	S	d1
09	5.56	2.38	2.50
11	6.35	2.38/3.18	2.80
16	9.525	3.97	4.40

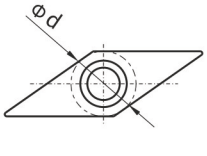
60° positive insert

Workpiece	Steel	P			Processing types
	Stainless steel	M			
	Cast iron	K			● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	●	
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Uncocnted Grade		Cutting parameter	
				BU810	BH3110	fn(mm/rev)	ap(mm)
Finishing-Semi-finishing		TCGT	090202-LHC	▲		0.01-0.12	0.05-3.00
			090204-LHC	▲		0.02-0.15	0.10-4.00
			090208-LHC	▲		0.02-0.15	0.10-4.00
			110201-LHC	▲		0.02-0.15	0.05-3.50
			110202-LHC	▲		0.02-0.20	0.10-4.00
			110204-LHC	▲		0.03-0.30	0.10-4.00
			110208-LHC	▲		0.03-0.40	0.15-4.50
			110302-LHC	▲		0.02-0.25	0.10-4.00
			110304-LHC	▲		0.03-0.30	0.10-4.00
			110308-LHC	▲		0.03-0.40	0.15-5.00
			16T302-LHC	▲		0.02-0.30	0.05-5.00
			16T304-LHC	▲		0.03-0.40	0.10-5.50
			16T308-LHC	▲		0.03-0.50	0.10-5.50
Semi-finishing-Roughing		TCGT	090202-AL		▲	0.02-0.18	0.30-3.00
			090204-AL		▲	0.02-0.25	0.30-5.00
			090208-AL		▲	0.02-0.25	0.30-5.00
			110202-AL		▲	0.02-0.30	0.30-4.00
			110204-AL		▲	0.03-0.40	0.30-5.00
			110208-AL		▲	0.04-0.45	0.50-6.00
			110302-AL		▲	0.02-0.20	0.05-4.00
			110304-AL		▲	0.03-0.30	0.10-4.00
			110308-AL		▲	0.03-0.40	0.10-5.00
			16T302-AL		▲	0.03-0.45	0.30-5.00
			16T304-AL		▲	0.04-0.50	0.50-6.00
			16T308-AL		▲	0.05-0.60	0.05-6.00

Recommended: ▲

VC□□



Dimension（mm）			
Size	d	S	d1
08	4.76	2.38	2.30
11	6.35	3.18	2.80
16	9.525	4.76	4.40

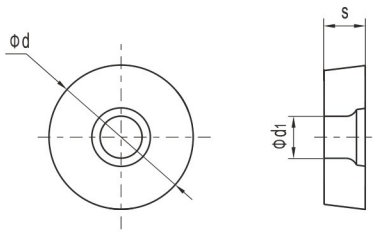
35° positive insert

Workpiece	Steel	P			Processing types
	Stainless steel	M			
	Cast iron	K			● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	●	
	Heat-resistant alloy	S			
	Hardened steel	H			

Insert		Specification		Uncocnted Grade		Cutting parameter	
				BU810	BH3110	fn(mm/rev)	ap(mm)
Finishing-Semi-finishing		VCGT	110301-LHC	▲		0.02-0.15	0.05-3.00
			110302-LHC	▲		0.02-0.20	0.05-3.00
			110304-LHC	▲		0.03-0.30	0.10-3.50
			110308-LHC	▲		0.03-0.35	0.10-4.00
			160401-LHC	▲		0.01-0.30	0.05-4.00
			160402-LHC	▲		0.02-0.35	0.08-5.00
			160404-LHC	▲		0.03-0.40	0.12-5.50
			160408-LHC	▲		0.03-.-50	0.12-6.00
			160412-LHC	▲		0.05-0.55	0.12-6.00
Semi-finishing-Roughing		VBGT	110301-AL		▲	0.02-0.20	0.10-2.50
		VCGT	110301-AL		▲	0.02-0.20	0.10-2.50
			110302-AL		▲	0.03-0.25	0.10-3.00
			110304-AL		▲	0.03-0.30	0.30-3.50
			110308-AL		▲	0.03-0.40	0.40-3.50
			160401-AL		▲	0.02-0.35	0.30-3.00
			160402-AL		▲	0.03-0.40	0.50-5.00
			160404-AL		▲	0.04-0.40	0.50-6.00
			160408-AL		▲	0.04-0.50	0.50-6.00
			160412-AL		▲	0.05-0.50	0.50-6.00
Finishing-Semi-finishing		VBGT	160404-TF3	▲		0.05-0.20	0.10-1.80
			160408-TF3	▲		0.07-0.27	0.14-1.80
		VCGT	080202-TF3	▲		0.02-0.10	0.05-1.00
			080204-TF3	▲		0.02-0.10	0.05-1.00
			110302-TF3	▲		0.03-0.13	0.06-1.70
			110304-TF3	▲		0.04-0.14	0.07-1.80
			160402-TF3	▲		0.04-0.14	0.07-1.80
			160404-TF3	▲		0.05-0.20	0.10-1.80

Recommended: ▲

RC□□



Dimension（mm）			
Size	d	s	d1
06	6.00	2.38	2.30
08	8.00	3.18	3.40
10	10.00	3.97	4.40
12	12.00	4.76	4.40

positive insert

Workpiece	Steel	P			Processing types
	Stainless steel	M			
	Cast iron	K			● Continous cutting ◑ Ordinary cutting ○ Interrupted cutting
	Nonferrous metals	N	●	●	
	Heat-resistant alloy	S			
	Hardened steel	H			

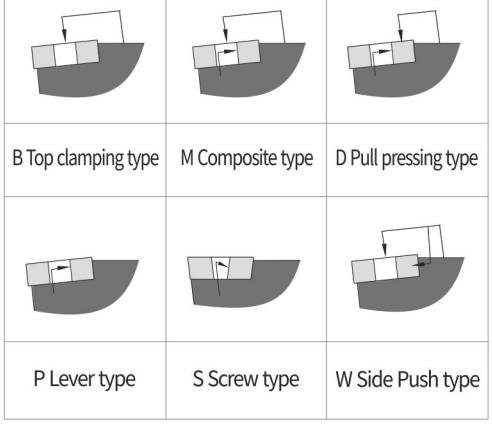
Insert		Specification		Uncocnted Grade		Cutting parameter	
				BU810	BH3110	fn(mm/rev)	ap(mm)
Finishing-Semi-finishing		RCGT	0602MO-LHC	▲		0.05-0.20	0.50-2.00
			0803MO-LHC	▲		0.05-0.25	0.50-2.50
			10T3MO-LHC	▲		0.10-0.30	1.00-3.00
			1204MO-LHC	▲		0.10-0.35	1.00-3.50

Recommended：▲

External Toolholder Identification System

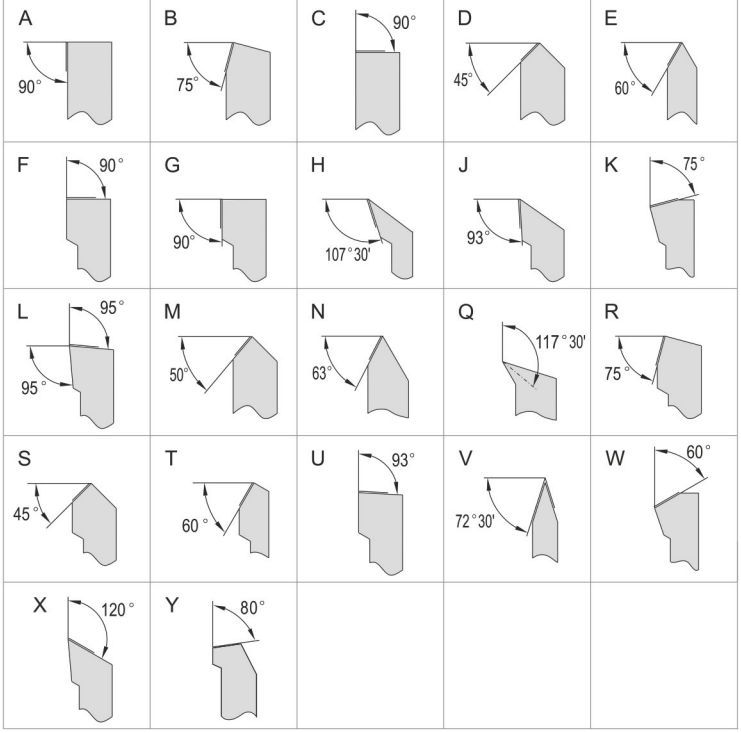
M	C	L	N	R	25	25	M	12
1	2	3	4	5	6	7	8	9

1 Clamping system

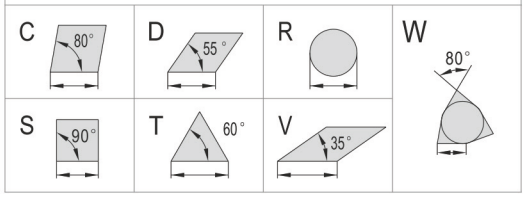


B Top clamping type	M Composite type	D Pull pressing type
P Lever type	S Screw type	W Side Push type

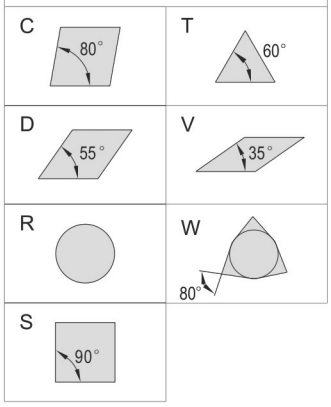
3 Type and approach angle



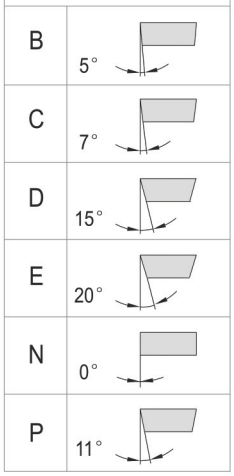
9 Length of cutting edge



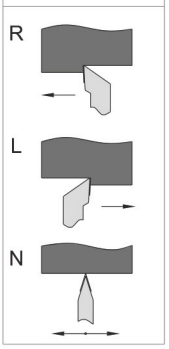
2 Insert shape



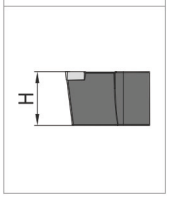
4 Insert clearance angle



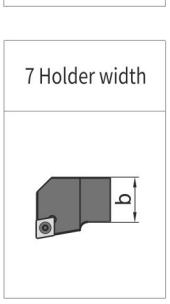
5 Cutting direction



6 Nose height



7 Holder width



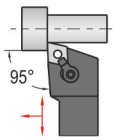
8 Tool holder length

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

Negative external turning tool index

External / End face turning

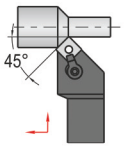
95° Tool cutting edge angle



CN..

MCLNR/L

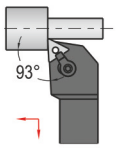
45° Tool cutting edge angle



SN..

MSSNR/L

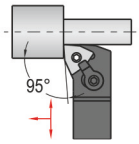
93° Tool cutting edge angle



TN..

MTJNR/L

95° Tool cutting edge angle

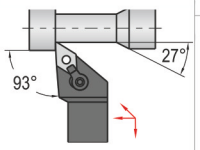


WN..

MWLNR/L

Profiling

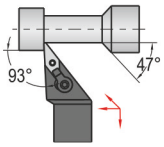
93° Tool cutting edge angle



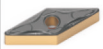
DN..

MDJNR/L

93° Tool cutting edge angle

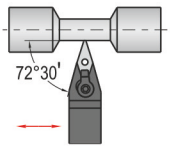


VN..

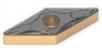


MVJNR/L

72°30′ Tool cutting edge angle

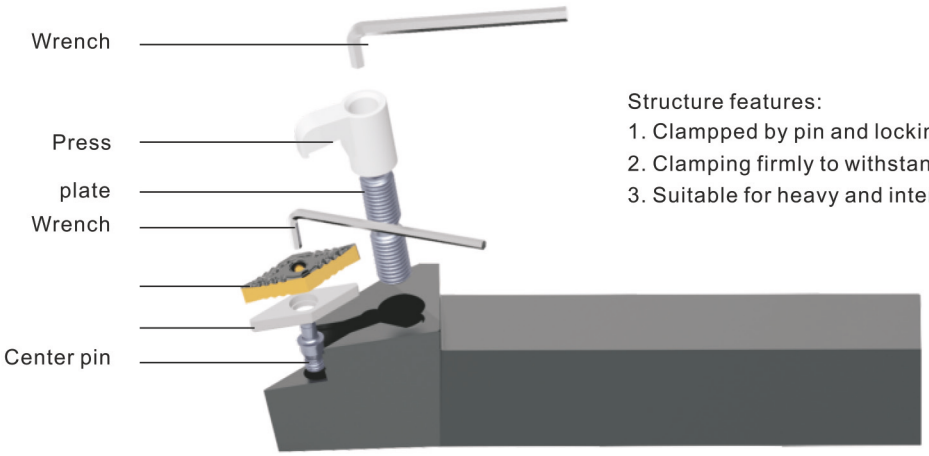


VN..



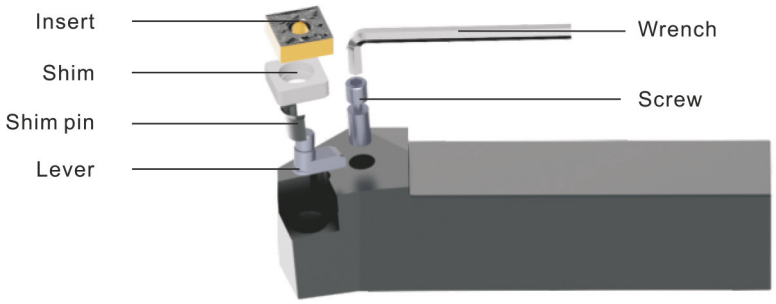
MVVNN

External turning tool - Composite clamping



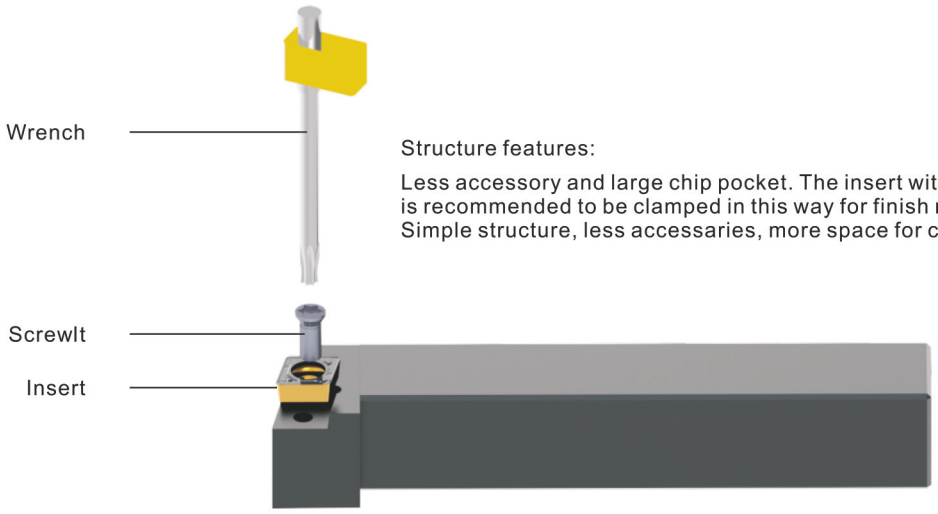
Structure features:
1. Clampped by pin and locking press plate simultaneously
2. Clamping firmly to withstand higher cutting load and impact
3. Suitable for heavy and interrupted cutting

External turning tool -Lever type



Applying the lever principle, the insert is locked with forcing screw and lever, which supporting heavy turning applications.
The insert without clearance angle will be locked for double-sided cutting, achieving high efficiency.

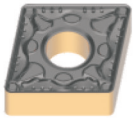
External turning tool -Screw clamping



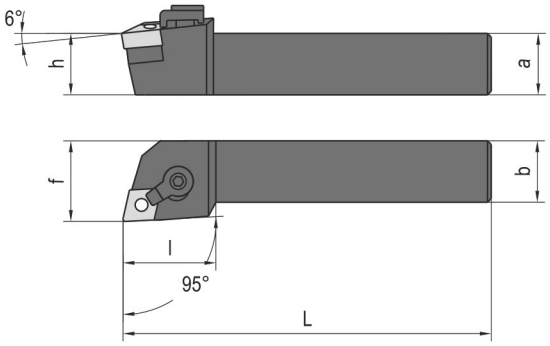
Structure features:

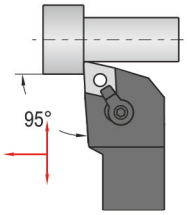
Less accessory and large chip pocket. The insert with clearance angle of 7° is recommended to be clamped in this way for finish machining.
Simple structure, less accessaries, more space for cutting chips, ripped chips

95°MCLNR/L



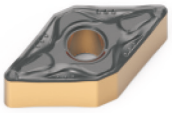
CN□□



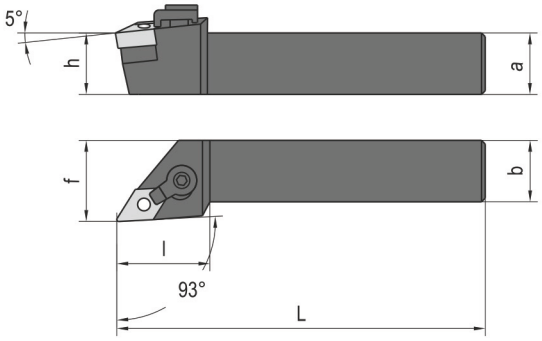


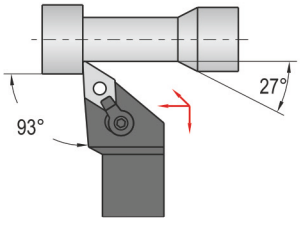
Specification		Insert available	Dimension(mm)						Shim	Pin	Press	plate Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l					
MCLNR1616H12	MCLNL1616H12	CN..1204..	16	16	100	16	20	32	MC1204	CTM617	HL1814	ML0625	L2.5, L3.0
MCLNR2020K12	MCLNL2020K12		20	20	125	20	25	32					
MCLNR2525M12	MCLNL2525M12		25	25	150	25	32	32					
MCLNR3232P12	MCLNL3232P12		32	32	170	32	40	32					
MCLNR2525M16	MCLNL2525M16	CN..1606..	25	25	150	25	32	35	MC1604	CTM822	HL2217	ML0830	L3.0, L4.0
MCLNR3232P16	MCLNL3232P16		32	32	170	32	40	35					
MCLNR3232P19	MCLNL3232P19	CN..1906..	32	32	170	32	40	36	MC1904	CTM1022	HL2217	ML0830	L4.0
MCLNR4040R19	MCLNL4040R19		40	40	200	40	50	36					

93°MDJNR/L



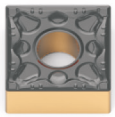
DN□□



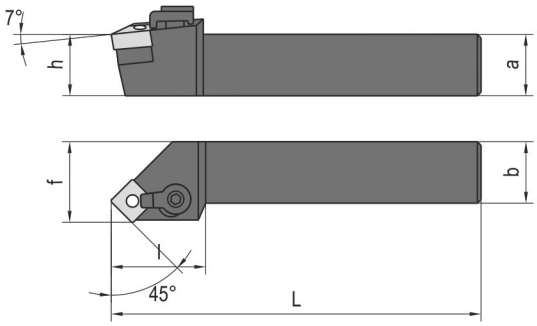


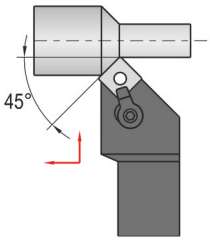
Specification		Insert available	Dimension(mm)						Shim	Pin	Press	plate Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l					
MDJNR1616H11	MDJNL1616H11	DN..1104..	16	16	100	16	20	32	MD1103	CTM513	HL2114	ML0625	L2.0, L3.0
MDJNR2020K11	MDJNL2020K11		20	20	125	20	25	32					
MDJNR2525M11	MDJNL2525M11		25	25	150	25	32	32					
MDJNR2020K15	MDJNL2020K15	DN..1504.. DN..1506..	20	20	125	20	25	38	MD1506 MD1504	CTM619	HL2114	ML0625	L2.5, L3.0
MDJNR2525M15	MDJNL2525M15		25	25	150	25	32	38					
MDJNR3232P15	MDJNL3232P15		32	32	170	32	40	38					

45°MSSNR/L



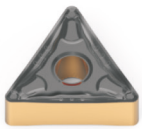
SN□□



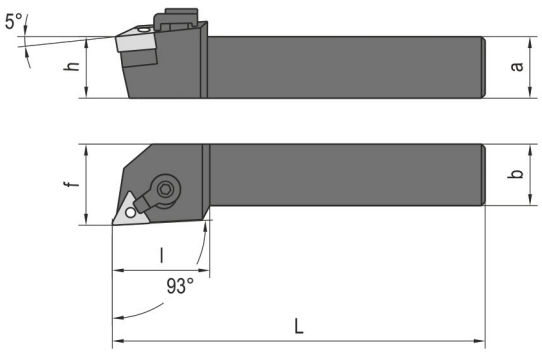


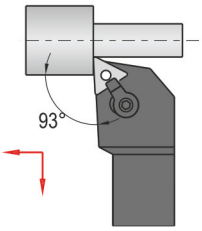
Specification		Insert available	Dimension(mm)						Shim	Pin	Press	plate Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l					
MSSNR2020K12	MSSNL2020K12	SN..1204..	20	20	125	20	25	34	MS1204	CTM617	HL1814	ML0625	L2.0，L3.0
MSSNR2525M12	MSSNL2525M12		25	25	150	25	32	34					
MSSNR3232P12	MSSNL3232P12		32	32	170	32	40	34					
MSSNR2525M15	MSSNL2525M15	SN..1506..	25	25	150	25	32	36	MS1504	CTM822	HL2217	ML0830	L3.0，L4.0
MSSNR3232P15	MSSNL3232P15		32	32	170	32	40	45					
MSSNR3232P19	MSSNL3232P19	SN..1906..	32	32	170	32	40	50	MS1904	CTM1022	HL2217	ML0830	L4.0
MSSNR4040R19	MSSNL4040R19		40	40	200	40	50	50					

93°MTJNR/L



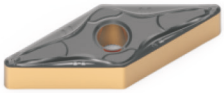
TN□□



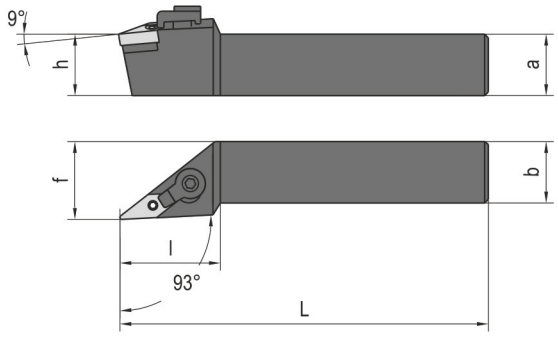


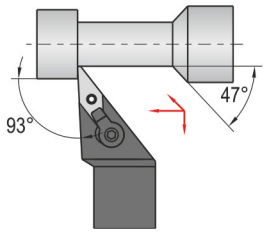
Specification		Insert available	Dimension(mm)						Shim	Pin	Press	plate Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l					
MTJNR1616H16	MTJNL1616H16	TN..1604..	16	16	100	16	20	28	MT1603	CTM513	HL1814	ML0625	L2.0,L3.0
MTJNR2020K16	MTJNL2020K16		20	20	125	20	25	28					
MTJNR2525M16	MTJNL2525M16		25	25	150	25	32	28					
MTJNR3232P16	MTJNL3232P16		32	32	170	32	40	28					
MTJNR2525M22	MTJNL2525M22	TN..2204..	25	25	150	25	32	32	MT2204	CTM617	HL1917	ML0830	L2.5,L4.0
MTJNR3232P22	MTJNL3232P22		32	32	170	32	40	32					
MTJNR4040R22	MTJNL4040R22		40	40	200	40	50	32					

93°MVJNR/L



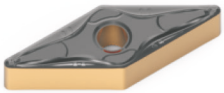
VN□□



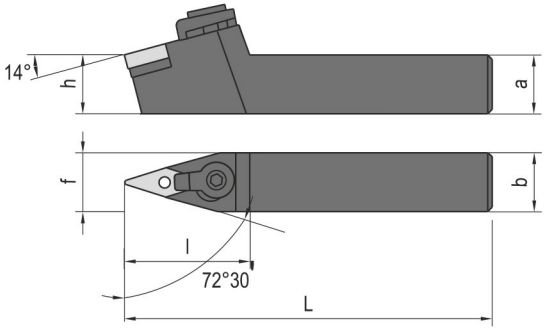


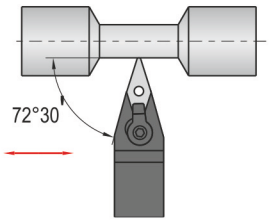
Specification		Insert available	Dimension(mm)						Shim	Pin	Press	plate Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l					
MVJNR1616K16	MVJNL1616K16	VN..1604..	16	16	100	16	20	36	MV1603	CTM513	HL2414	ML0625	L2.0,L3.0
MVJNR2020K16	MVJNL2020K16		20	20	125	20	25	36					
MVJNR2525M16	MVJNL2525M16		25	25	150	25	32	42					
MVJNR3232P16	MVJNL3232P16		32	32	170	32	40	42					

72°30′MVVNN



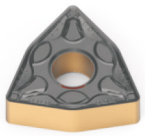
VN□□



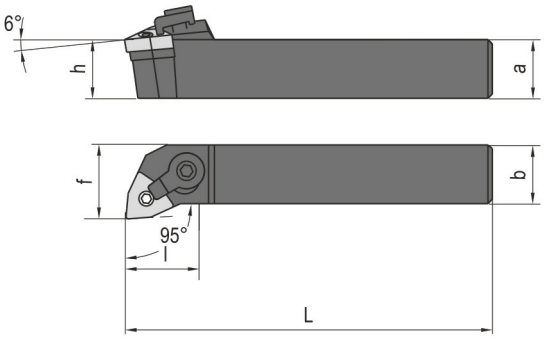


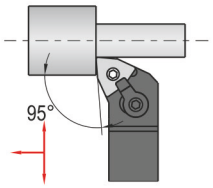
Specification	Insert available	Dimension(mm)						Shim	Pin	Press	plate Screw	Wrench
		a	b	L	h	f	l					
MVVNN2020K16	VN..1604..	20	20	125	20	10	42	MV1603	CTM513	HL2414	ML0625	L2.0,L3.0
MVVNN2525M16		25	25	150	25	12.5	42					

95°MWLNR/L



WN□□





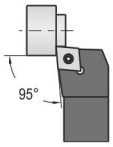
Specification		Insert available	Dimension(mm)						Shim	Pin	Press	plate Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l					
MWLNR1616H06	MWLNL1616H06		16	16	100	16	20	27					
MWLNR2020K06	MWLNL2020K06	WN..0604..	20	20	125	20	25	27	MW0603	CTM513	HL1814	ML0625	L2.0,L3.0
MWLNR2525M06	MWLNL2525M06		25	25	150	25	32	27					
MWLNR1616H08	MWLNL1616H08		16	16	100	16	20	27					
MWLNR2020K08	MWLNL2020K08		20	20	125	20	25	27					
MWLNR2525M08	MWLNL2525M08	WN..0804..	25	25	150	25	32	27	MW0804	CTM617	HL1814	ML0625	L2.5,L3.0
MWLNR3232P08	MWLNL3232P08		32	32	170	32	40	27					
MWLNR4040R08	MWLNL4040R08		40	40	200	40	50	30					

Positive external turning tool index

External /Face turning

95° Tool cutting edge angle

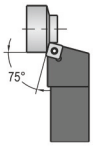
CC..



SCLCR/L

75° Tool cutting edge angle

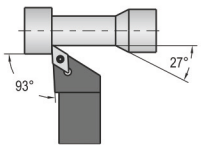
SC..



SSBCR/L

93° Tool cutting edge angle

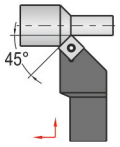
DC..



SDJCR/L

45° Tool cutting edge angle

SC..

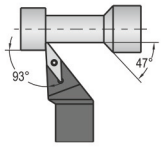


SSSCN

Profiling

93° Tool cutting edge angle

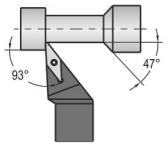
VC..



SVJCR/L

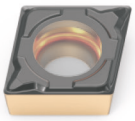
93° Tool cutting edge angle

VB..

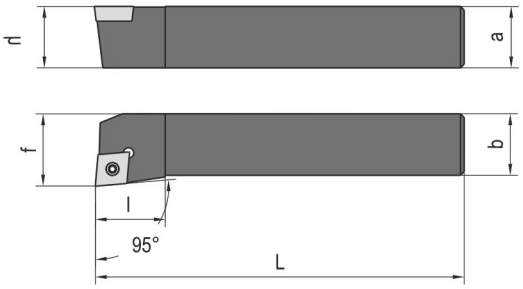


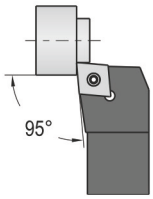
SVJBR/L

95°SCLCR/L



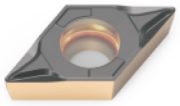
CC□□



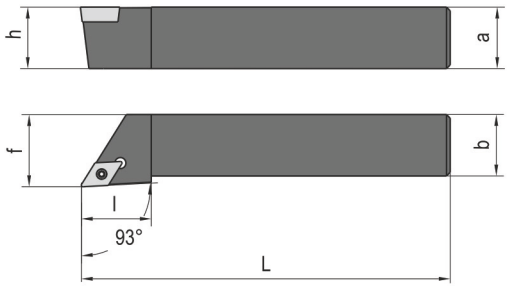


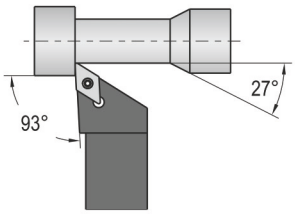
Specification		Insert available	Dimension(mm)						Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l		
SCLCR1010F06	SCLCL1010F06	CC..0602..	10	10	70	10	12	12	M2.5x6	T8
SCLCR1212F09	SCLCL1212F09	CC..09T3..	12	12	80	12	16	16	M3.5x9	T15
SCLCR1616H09	SCLCL1616H09		16	16	100	16	20	16		
SCLCR2020K09	SCLCL2020K09		20	20	125	20	25	16		
SCLCR2525M09	SCLCL2525M09		25	25	150	25	32	16		
SCLCR2020K12	SCLCL2020K12	CC..1204..	20	20	125	20	25	20	M5x12	T20
SCLCR2525M12	SCLCL2525M12		25	25	150	25	32	20		
SCLCR3232P12	SCLCL3232P12		32	32	170	32	40	20		

93°SDJCR/L



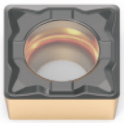
DC□□



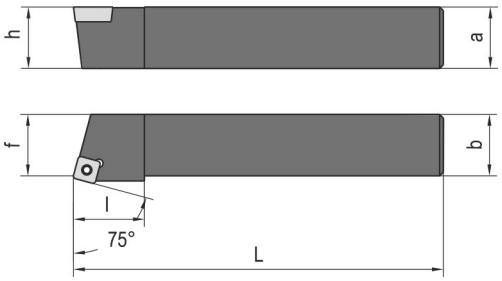


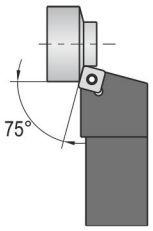
Specification		Insert available	Dimension(mm)						Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l		
SDJCR1010F07	SDJCL1010F07	DC..0702..	10	10	80	10	12	14	M2.5x8	T8
SDJCR1212F07	SDJCL1212F07		12	12	80	12	16	14		
SDJCR1616H07	SDJCL1616H07		16	16	100	16	20	14		
SDJCR1212F11	SDJCL1212F11	DC..11T3..	12	12	80	12	16	20	M3.5x9	T15
SDJCR1616H11	SDJCL1616H11		16	16	100	16	20	20		
SDJCR2020K11	SDJCL2020K11		20	20	125	20	25	20		
SDJCR2525M11	SDJCL2525M11		25	25	150	25	32	22		

75°SSBCR/L



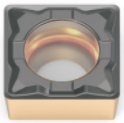
SC□□



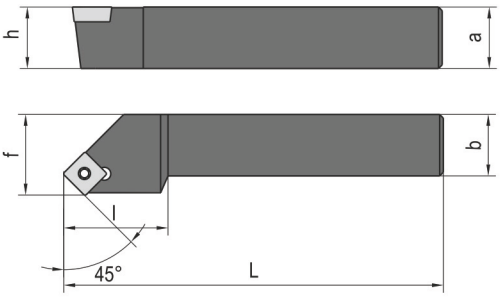


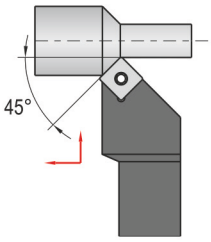
Specification		Insert available	Dimension(mm)						Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l		
SSBCR1212F09	SSBCL1212F09	SC..09T3	12	12	80	12	9.5	18	M3.5x9	T15
SSBCR1616H09	SSBCL1616H09		16	16	100	16	12	18		
SSBCR2020K09	SSBCL2020K09		20	20	125	20	17	18		
SSBCR2020K12	SSBCL2020K12	SC..1204	20	20	125	20	17	22	M5x12	T20
SSBCR2525M12	SSBCL2525M12		25	25	150	25	22	22		

45°SSSCN



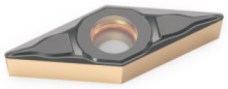
SC□□



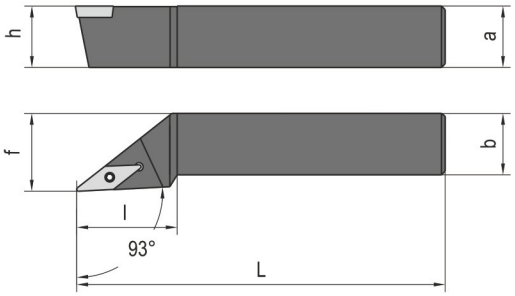


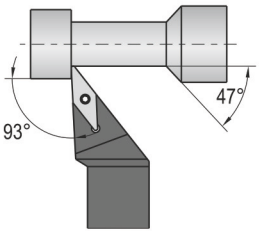
Specification		Insert available	Dimension(mm)						Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l		
SSSCR1212F09	SSSCL1212F09	SC..09T3..	12	12	80	12	16	16	L60 M3.5x9	T15
SSSCR1616H09	SSSCL1616H09		16	16	100	16	20	16		
SSSCR2020K09	SSSCL2020K09		20	20	125	20	25	18		
SSSCR2525M09	SSSCL2525M09		25	25	150	25	32	25		
SSSCR2525M12	SSSCL2525M12	SC..1204..	25	25	150	25	32	25	L60 M5x12	T20

93°SVJCR/L



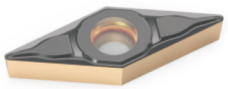
VC□□



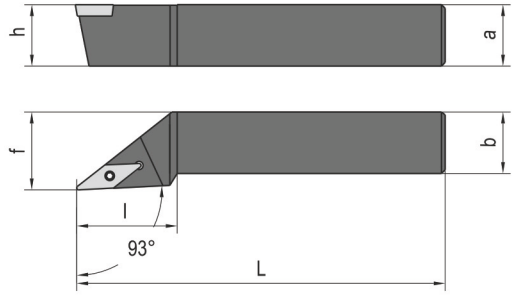


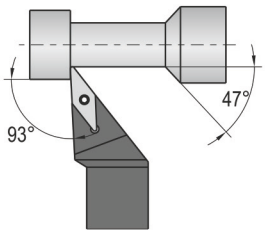
Specification		Insert available	Dimension(mm)						Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l		
SVJCR1212F11	SVJCL1212F11	VC..1103..	12	12	80	12	16	22	M2.5x8	T8
SVJCR1616H11	SVJCL1616H11		16	16	100	16	20	25		
SVJCR2020K11	SVJCL2020K11		20	20	125	20	25	32		
SVJCR2525M11	SVJCL2525M11		25	25	150	25	32	38		
SVJCR1616H16	SVJCL1616H16	VC..1604..	16	16	100	16	20	30	M3.5x9	T15
SVJCR2020K16	SVJCL2020K16		20	20	125	20	25	32		
SVJCR2525M16	SVJCL2525M16		25	25	150	25	32	40		
SVJCR3232P16	SVJCL3232P16		32	32	170	32	40	45		

93°SVJBR/L



VB□□





Specification		Insert available	Dimension(mm)						Screw	Wrench
Right hand	Left hand		a	b	L	h	f	l		
SVJBR1212F11	SVJBL1212F11	VB..1103..	12	12	80	12	16	22	L60 M2.5x8	T8
SVJBR1616H11	SVJBL1616H11		16	16	100	16	20	25		
SVJBR2020K11	SVJBL2020K11		20	20	125	20	25	32		
SVJBR2525M11	SVJBL2525M11		25	25	150	25	32	38		
SVJBR1616H16	SVJBL1616H16	VB..1604..	16	16	100	16	20	30	L60 M3.5x9	T15
SVJBR2020K16	SVJBL2020K16		20	20	125	20	25	32		
SVJBR2525M16	SVJBL2525M16		25	25	150	25	32	40		
SVJBR3232P16	SVJBL3232P16		32	32	170	32	40	45		

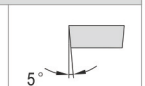
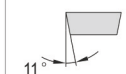
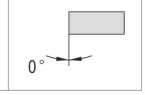
Boring tool identification system

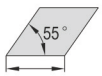
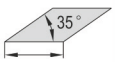
S	32	U	-	S	T	F	C	R	16
1	2	3		4	5	6	7	8	9

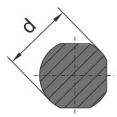
1 Toolholder types	
S	Steel holder
A	Steel holder with cooling hole
B	Steel holder with cushioning system
D	Steel holder with cushioning system
C	Carbide holder
E	Carbide holder with cooling hole
F	Carbide holder with clamping system
G	Carbide holder with cooling hole and cushioning syste
H	Heavy metal holder
J	Heavy metal holder with cooling hole

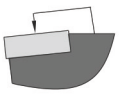
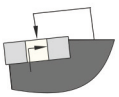
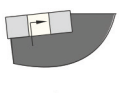
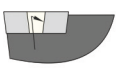
3 Length of holder	
F	80
H	100
K	125
M	150
Q	180
R	200
S	250
T	300
U	350
V	400
W	450

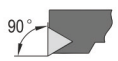
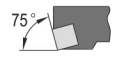
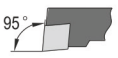
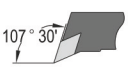
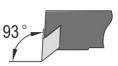
5 Insert shape	
T	
S	
C	
D	
V	

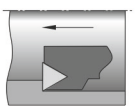
7 Clearance angle	
B	
C	
P	
N	

8 Cutting edge length	
T	
S	
C	
D	
V	

2 Tool Diameter


4 Clamping	
C	 Top clamping type
M	 Composite pressing type
P	 Lever pressing type
S	 Screw pressing type

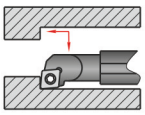
6 Tool tip shape (tool cutting edge angle)	
F	
K	
L	
Q	
U	

8 Cutting direction
 R
 L

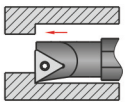
Positive boring tool index

Boring machining

95° Tool cutting edge angle

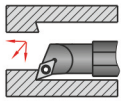
	CC..
	
SCLCR/L	

90° Tool cutting edge angle

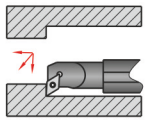
	TC..
	
STFCR/L	

Profiling

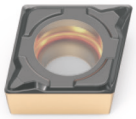
107°5′ Tool cutting edge angle

	DC..
	
SDQCR/L	

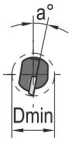
93° Tool cutting edge angle

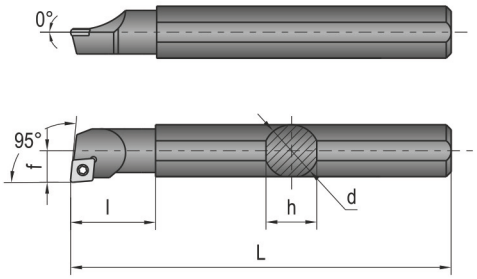
	DC..
	
SDUCR/L	

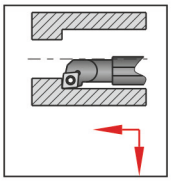
SCLCR/L



CC□□

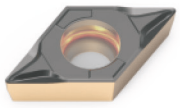




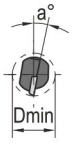


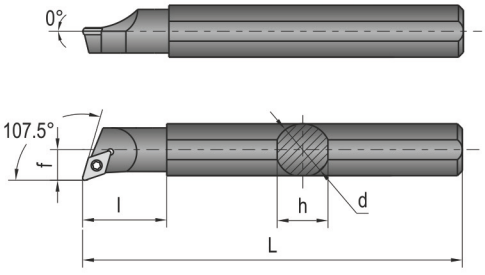
Specification		Insert available	Dimension(mm)							Screw	Wrench
Right hand	Left hand		Dmin	Φd	f	L	l	h	α°		
S07K-SCLCR06	S07K-SCLCL06	CC..0602..	8	7	5	125	18	7	15	M2.5×6	T8
S08K-SCLCR06	S08K-SCLCL06		9	8	5.5	125	18	7	13		
S10K-SCLCR06	S10K-SCLCL06		11	10	7	125	22	9	12		
S12M-SCLCR06	S12M-SCLCL06		13	12	8	150	25	11	10		
S12M-SCLCR09	S12M-SCLCL09	CC..09T3..	16	12	5.5	150	27	11	12	M3.5×9	T15
S14M-SCLCR09	S14M-SCLCL09		15	14	8	150	27	13	12		
S16Q-SCLCR09	S16Q-SCLCL09		17	16	11	180	34	15	10		
S20Q-SCLCR09	S20Q-SCLCL09		21	20	13	180	38	18	8		
S25R-SCLCR09	S25R-SCLCL09		26	25	17	200	45	23	6		
S32S-SCLCR09	S32S-SCLCL09		33	32	22	250	45	30	4		
S20Q-SCLCR12	S20Q-SCLCL12	CC..1204..	21	20	13	180	42	18	8	M5×12	T20
S25R-SCLCR12	S25R-SCLCL12		26	25	17	200	45	23	8		
S32S-SCLCR12	S32S-SCLCL12		33	32	22	250	45	30	6		
S40T-SCLCR12	S40T-SCLCL12		41	40	27	300	48	38	4		

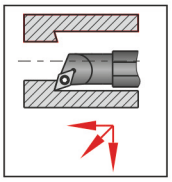
SDQCR/L



DC□□

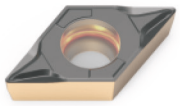




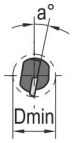


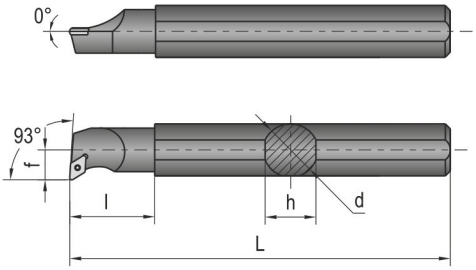
Specification		Insert available	Dimension(mm)							Screw	Wrench
Right hand	Left hand		Dmin	Φd	f	L	l	h	α°		
S08K-SDQCR07	S08K-SDQCL07	DC..0702..	10	8	6	125	18	7	12	M2.5×6	T8
S10K-SDQCR07	S10K-SDQCL07		11	10	7	125	24	9	10		
S12M-SDQCR07	S12M-SDQCL07		15	12	9	150	30	11	8		
S16N-SDQCR07	S16N-SDQCL07		17	16	11	160	30	15	6		
S20Q-SDQCR11	S20Q-SDQCL11	DC..11T3..	23	20	13	180	42	18	5	M3.5×9	T15
S25R-SDQCR11	S25R-SDQCL11		29	25	17	200	42.5	23	4		
S32S-SDQCR11	S32S-SDQCL11		40	32	22	250	45	30	4		

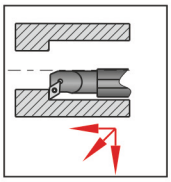
SDUCR/L



DC□□

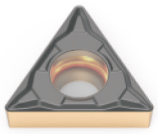




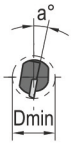


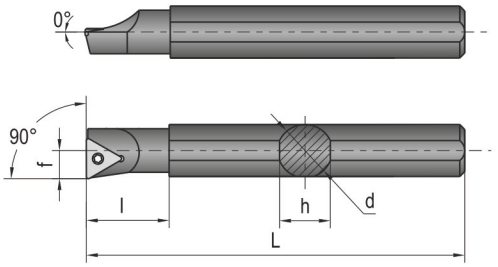
Specification		Insert available	Dimension(mm)							Screw	Wrench
Right hand	Left hand		Dmin	Φd	f	L	l	h	α °		
S10K-SDUCR07	S10K-SDUCL07	DC..0702..	15	10	8	125	25	9	10	M2.5×6	T8
S12M-SDUCR07	S12M-SDUCL07		17	12	9	150	25	11	8		
S16Q-SDUCR07	S16Q-SDUCL07		22	16	11	180	30	15	6		
S16Q-SDUCR11	S16Q-SDUCL11	DC..11T3..	19	16	11	180	34	15	6	M3.5×9	T15
S20Q-SDUCR11	S20Q-SDUCL11		23	20	13	180	40	18	6		
S25R-SDUCR11	S25R-SDUCL11		29	25	17	200	42	23	4		
S32S-SDUCR11	S32S-SDUCL11		38	32	22	250	45	30	4		
S40T-SDUCR11	S40T-SDUCL11		45	40	25	300	50	38	2		
S50U-SDUCR11	S50U-SDUCL11		60	50	31	350	55	48	0		

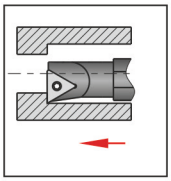
STFCR/L



TC□□



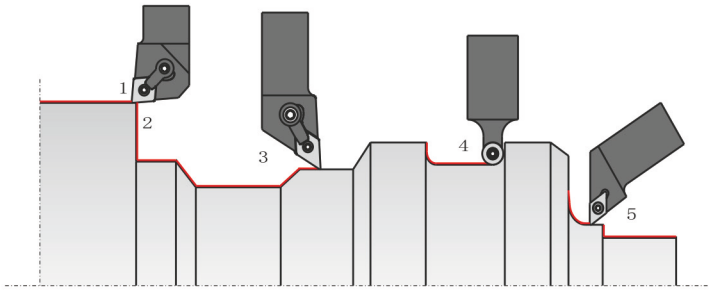




Specification		Insert available	Dimension(mm)							Screw	Wrench
Right hand	Left hand		Dmin	Φd	f	L	l	h	α °		
S08K-STFCR09	S08K-STFCL09	TC..0902..	9	8	5.5	125	20	7	15	M2.2×5	T6
S10K-STFCR09	S10K-STFCL09		11	10	6	125	24	9	13		
S12M-STFCR09	S12M-STFCL09		13	12	7	150	27	11	10		
S10K-STFCR11	S10K-STFCL11	TC..1102..	11	10	6	125	24	9	12	M2.5×6	T8
S12M-STFCR11	S12M-STFCL11		13	12	7	150	26	11	10		
S16Q-STFCR11	S16Q-STFCL11		17	16	9	180	32	15	8	M2.5×8	T8
S20Q-STFCR11	S20Q-STFCL11		21	20	11	180	40	18	6		
S20Q-STFCR16	S20Q-STFCL16	TC..16T3..	22	20	11.5	180	42	18	8	M3.5×9	T15
S25R-STFCR16	S25R-STFCL16		26	25	14	200	42	23	6		
S32S-STFCR16	S32S-STFCL16		33	32	17.5	250	45	30	6		
S40T-STFCR16	S40T-STFCL16		43	40	23.5	300	60	38	4		
S50U-STFCR16	S50U-STFCL16		51	50	26.5	350	65	48	4		

Technical data

External turning tool



1-Turning

2-Face turning

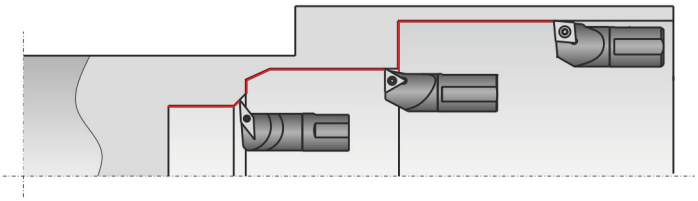
3-Profiled turning

4-Plunge turning

5-External turning of minor diameter and slender shaft parts

Insert shape		Negative inserts		Positive inserts
Clamping		M type	P type	S Type
Processing	General turning and endface turning	●	●	●
	Profiling turning	●	●	●
	Endface turning	●●	●●	●
	Plunge Turning			●●

Boring tool



Insert shape		Negative inserts		Positive inserts
Clamping		M type	P type	S Type
Processing	General turning and endface turning	●	●	●
	Profiling turning	●	●	●
	Endface turning	●	●	●

●● = Recommended

● = Optional

Technical data

The Nose radius and feed

The nose radius has an impact on the following:

-Cutting edge strength in rough processing

-Surface roughness in finishing processing

Rough processing

-To improve the cutting edge strength, the insert with big nose radiu will be selected as much as possible

-Big nose radius allows large feed

-If there is vibration tendency,choosing a smaller nose radius.

When choosing the feed for roughing, the recommended value should not be exceeded the following chart. Based on the experiences,the feed can be choosen as follows:

f_n =0. 5XNose radius

Guide of the maximun feed for different nose radius

Nose radiusr (mm)	0.4	0.8	1.2	1.6	2.4
The maximum feed recommendedf_n(mm/rev)	0.25-0.35	0.4-0.7	0.5-1.0	0.7-1.3	1.0-1.8

The nose radius of the frequently used insert is 1.2-1.6mm in roughing processing

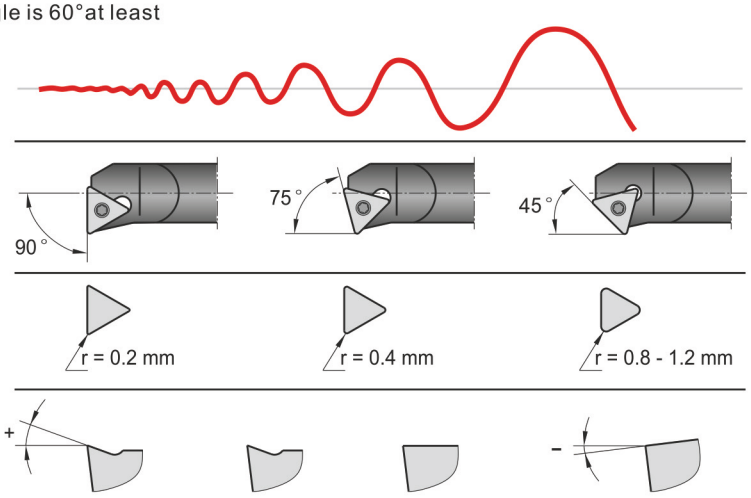
The maximum recommended feed is 2/3 of the nose radius

The following inserts are suitable for high feed cutting:

-High strength cutting edge and the tool included angle is 60°at least

-The tool cutting edge angle is less than 90°

-The workpiece has good machinanility and can be machined at medium and low cutting speed



The favorable and negative factors that affect the vibration trendency, and it trends to increase at the right side

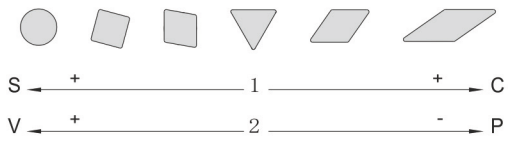
The factors to be considered when choosing a boring bar

The factors to be considered when choosing a boring tool for operations sensitive to vibration:

-Choose the tool cutting edge angle close to 90°, but not less than 75°

-Choose the insert with small nose radius

-Choose the insert with correct rake angle



S:Cutting edge strength C:Versatility

V:Vibration tendency P:Power required

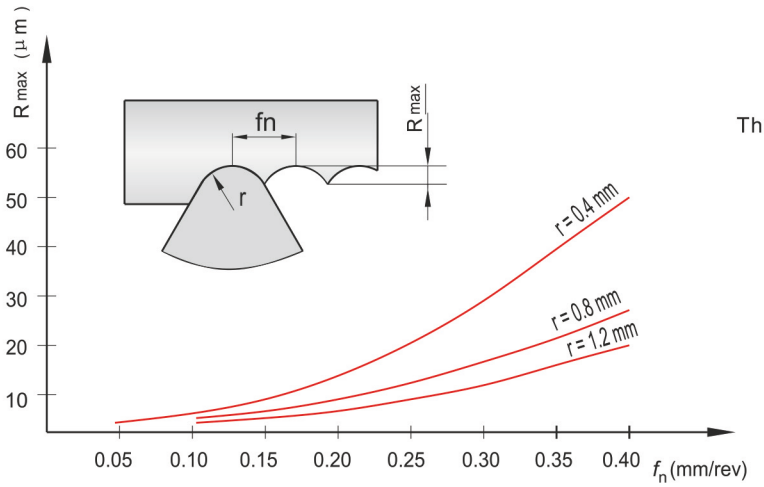
The common shape of the insert is shown as picture from right to the left , and the insert with better strength leads to larger vibration.From left to right, the stength become weaker and weaker but with enhanced versatility and less machine power.

Technical data

Finishing processing

Surface roughness and tolerance are not only affected by the nose radius and feed rate,but also by the stability of the workpiece clamping, the overall condition of the fixture and the machine tool

If there is vibration tendency when improving the surface accuracy by increasing the cutting speed and using non-negative rake angles, choose the insert with smaller nose radius.



The theoretical calculation formula of surface roughness

$$Rmax=\frac{f_n^2}{8r}\times 1000\ ,\mu m$$

max=Residual area height,

r= Nose radius,mm

f_n=Feed per revolution,mm/rev

The relationship of the surface roughness, nose radius,and feed

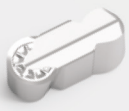
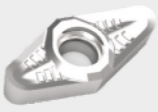
Rt	Ra	ISO 1302	The radius and feed(mm/rev)			
			r = 0.4	r = 0.8	r = 1.2	r = 1.6
▽Rt100	12.5-25	25 ▽	-	0.51	0.69	0.88
▽Rt63	6.3-25	12.5 ▽	0.27	0.43	0.56	0.68
▽Rt40	4.9-6.3	6.3 ▽	0.25	0.37	0.49	0.57
▽Rt31.5	4.0-4.9		0.22	0.32	0.41	0.47
▽Rt25	2.5-4.0	3.2 ▽	0.20	0.28	0.36	0.39
▽Rt16	1.6-2.5		0.15	0.22	0.29	0.31
▽Rt10	1.0-1.6	1.6 ▽	0.10	0.13	0.18	0.20

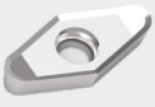
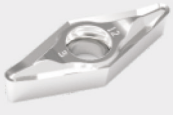
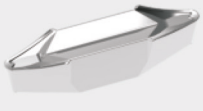
Aluminum hub processing

Bangpu cutting tool solutions - the leader in aluminum wheel machining

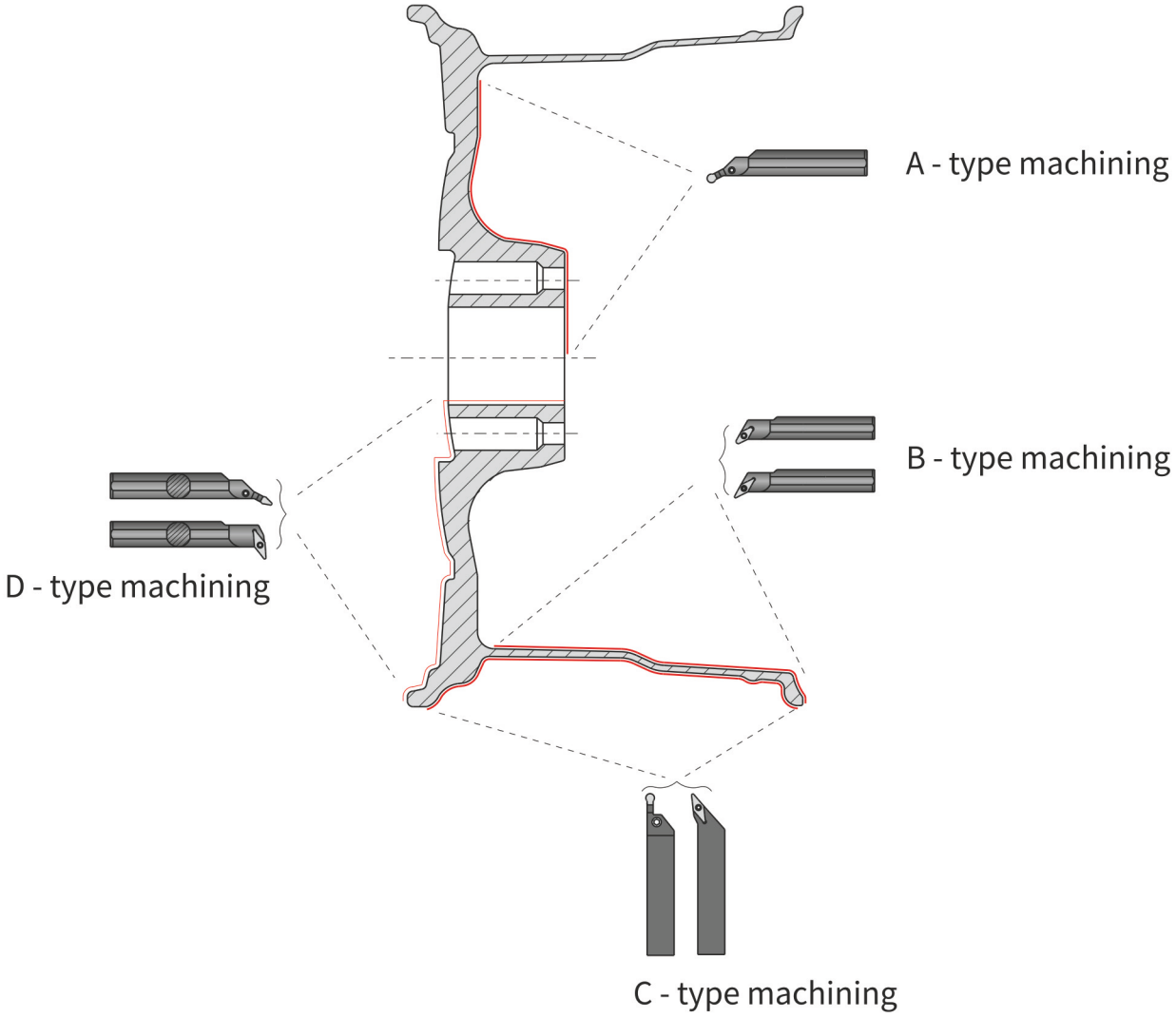
The aluminum wheel is required to be machined with tools of high hardness at higher cutting speed since a huge centrifugal force will be generated during the Process. Bangpu has been offering comprehensive solutions for decades with optimized indexable inserts to machine the aluminum wheel.Today we are a full service manufacturer providing the excellent tools for every process in Wheel hub manufacturing. At present, it is used for automobile, motorcycle and other aluminum wheel machining

GDMA840E-AF (Ordinary processing)	GDMA840E-AN (Semi-finishing)	GDMA840E-AL (Semi-finishing)
		
Large rake angle,sharp cutting edge with open type chip breaker	Large rake angle,sharp cutting edge with enclosed type chip breaker	Big front angle and rake angle, sharp cutting edge, enclosed chipbreaker

GIP600-300-LHC (Ordinary processing)	GIP600-300-AL (Semi-finishing)	VCGT...-LHC (Ordinary processing)
		
Large rake angle,sharp cutting edge with open type chip breaker	Large rake angle,sharp cutting edge with enclosed type chip breaker	Waved chip pocket and sharp cutting edge

VCGT...-AL（Roughing）	VCGT...-LHK (Chip-breaking processing)	GIPATYZ-35V-1.2-LHC（Finishing）
		
Sharp cutting edge with wide chip pocket	Large rake angle,sharp cutting edge with open type chip breaker	Big rake angle and clearance angle

Application for aluminum wheel hub machining



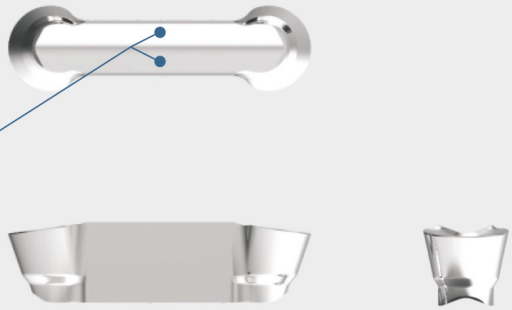
Recomended cutting condition

ISO	Material	Condition	Kc(Mpa)	Cutting Speed V_c(m/min)		
				Uncoated		
				BU810	BH3110	BU811
N	Aluminum Alloy (casting)	Not Hardened	500-600	1000-2500	1000-2500	800-2200
		Hardened	700-900	400-1200	400-1200	400-1000
	Aluminum Alloy (forging)	Not Hardened	700-800	1000-2500	1000-2500	800-2200
		Hardened	800-950	400-1200	400-1200	400-1000
	Copper Alloy		700-900	400-1000	400-1000	400-1000
	Magnesium Alloy		700-800	300-1000	300-1000	300-1000

Characteristics

Chipbreaker AF

- Excellent Chip breaker design for general machining of aluminum
- Large rake angle and clearance angle design helps faster and smoother cutting
- Unique installation mode makes it more stable.

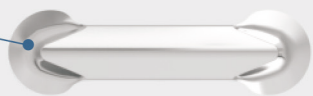


Designed with included angle 20° between the top and bottom side

- Ensure that the insert is installed in the best way

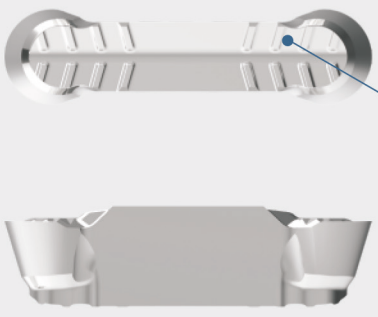
Open chipbreaker design

- Special rake angle and cutting edge inclination angle to reduce cutting resistance
- Ensure stable chip control when cutting depth and feed is unstable
- Sharp edge and wide pocket to reduce chip sticky tendency in unstable boring condition



Characteristics of Chipbreaker AN

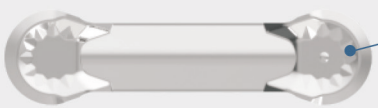
- Excellent chip breaker design for forging aluminum wheel hub
- Large rake angle and clearance angle design helps faster and smoother cutting
- Unique installation mode makes it more stable.



Innovative anti-skid slot design

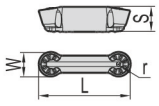
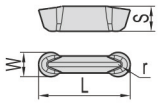
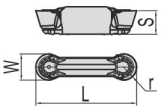
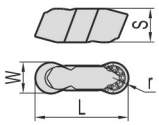
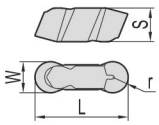
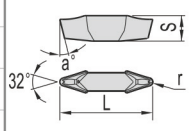
- Anti-skid slot design increased friction
- Ensure more stable installation
- Improve safety during high speed machining

Enclosed chipbreaker design



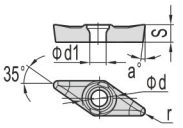
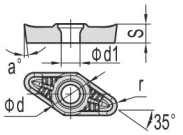
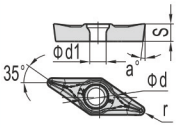
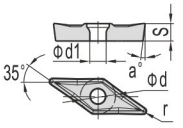
- The chips leaves the insert faster to prevent from sticking
- Special design for machining high strength aluminum alloy with smoother chip evacuation
- Improve automated efficiency

Insert for aluminum wheel hub series

Application	Shape		Uncocnted Grade		Dimensions(mm)							Geometry
			BU810	BU811	L	W	d	s	d1	r	a°	
Processing of aluminum wheel hub		GDMA840E-AL		▲	30.00	8.00	-	6.89	-	4	-	
		GDMA840E-AF		▲	30.00	8.00	-	6.89	-	4	-	
		GDMA840E-AN		▲	30.00	8.00	-	6.89	-	4	-	
		GIP600-300-AL		▲	18.00	6.00	-	6.50	-	3	-	
		GIP600E-300-LHC	▲	▲	18.00	6.00	-	6.50	-	3	-	
		GIPATYZ-35V-1.2-LHC	▲	▲	30.00	6.00	-	7.00	-	1.2	-	

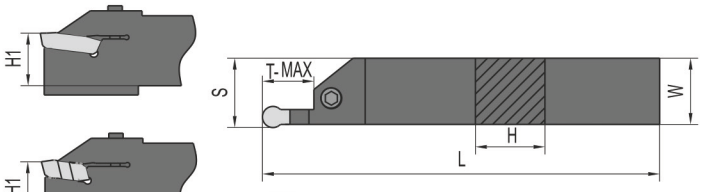
Recommended: ▲

Insert for aluminum wheel hub series

Application	Shape		Uncocnted Grade			Dimensions(mm)							Geometry
			BH3110	BU810	BU811	L	W	d	s	d1	r	a°	
Processing of Aluminum Wheel Hub		VCGT160408-AL	▲			-	-	9.53	4.76	4.40	0.80	7	
		VCGT160412-AL	▲			-	-	9.53	4.76	4.40	1.20	7	
		VCGT220530-AL	▲			-	-	12.70	5.56	5.50	3.00	7	
		VCGT220530E-AL	▲		▲	-	-	12.70	5.56	5.50	3.00	7	
		VCGT160408-LHC		▲		-	-	9.53	4.76	4.40	0.80	7	
		VCGT160412-LHC		▲		-	-	9.53	4.76	4.40	1.20	7	
		VCGT220520-LHC		▲		-	-	12.70	5.56	5.50	2.00	7	
		VCGT220530-LHC		▲	▲	-	-	12.70	5.56	5.50	3.00	7	
		VCGT220530E-LHC		▲	▲	-	-	12.70	5.56	5.50	3.00	7	
		VCGT160412-LHK		▲		-	-	9.53	4.76	4.40	1.20	7	
		VCGT220530-LHK		▲	▲	-	-	12.70	5.56	5.50	3.00	7	
		VPGT220516-LHK			▲	-	-	12.70	5.56	5.50	1.60	7	
		VPGT220612E-LHC		▲		-	-	12.70	6.35	5.50	1.20	11	

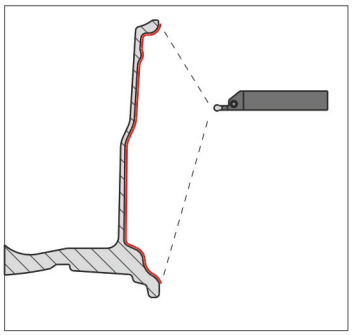
Recommended: ▲

Holder for aluminum wheel hub processing



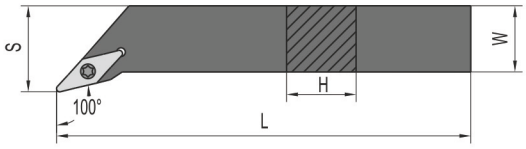
R/L:
R Right hand holder
L Left hand holder

The picture shows R



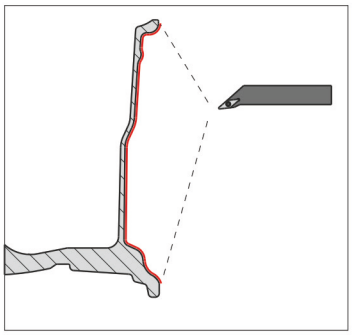
Type	Dimensions(mm)					Inserts	Screw	Wrench
	L	B	H=H1	T-MAX	S			
BUMPR/L 2525-R3-150	150	25	25	24	24	GIP600-300**	M6x30	L5.0
BUMPR/L 2525-R4-150	150	25	25	24	24	GDMA840**		
BUMPR/L 3232-R4-170	170	32	32	24	31.5			

Holder for aluminum wheel hub processing



R/L:
R Right hand holder
L Left hand holder

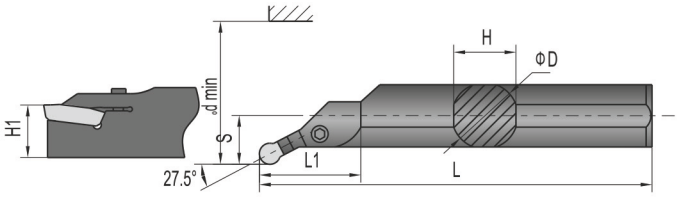
The picture shows R



Type	Dimensions(mm)					Inserts	Screw	Wrench
	L	B	H	S				
SVJCR/L-2525-M16	150	25	25	32		VCGT1604**	S040L09	HT15
SVHCR/L-2525-M16	150	25	25	32				

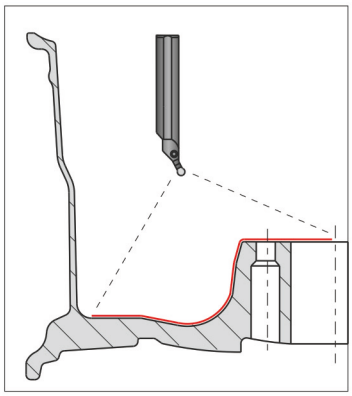
Holder for aluminum wheel hub processing

GDMA□□



R/L:
R Right hand holder
L Left hand holder

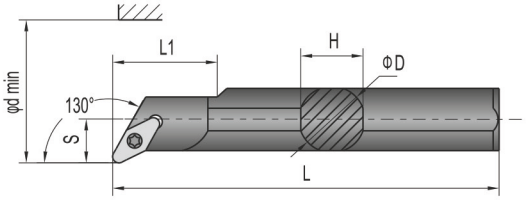
The picture shows R



Type	Dimensions(mm)						Inserts	Screw	Wrench
	L	ΦD	H	L1	S	φdmin			
BUMPR/L 50C-05A-R4-300	300	50	47	87	27	65			
BUMPR/L 50C-08A-R4-300	300	50	47	87	27	65			
BUMPR/L 50C-15A-R4-300	300	50	47	87	27	65			
BUMPR/L 50C-05A-R4-350	350	50	47	87	27	65			
BUMPR/L 50C-08A-R4-350	350	50	47	87	27	65			
BUMPR/L 50C-15A-R4-350	350	50	47	87	27	65			
BUMPR/L 40C-05A-230	230	40	37	87	22	55			
BUMPR/L 40C-08A-230	230	40	37	87	22	55	GDMA840**	M6x30	L5.0
BUMPR/L 40C-15A-230	230	40	37	87	22	55			
BUMPR/L 40C-05A-250	250	40	37	87	22	55			
BUMPR/L 40C-08A-250	250	40	37	87	22	55			
BUMPR/L 40C-15A-250	250	40	37	87	22	55			
BUMPR/L 40C-05A-300	300	40	37	87	22	55			
BUMPR/L 40C-08A-300	300	40	37	87	22	55			
BUMPR/L 40C-15A-300	300	40	37	87	22	55			

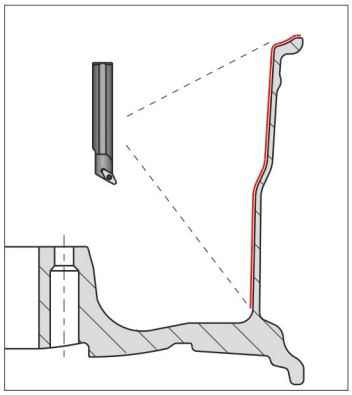
Holder for aluminum wheel hub processing

VCGT□□



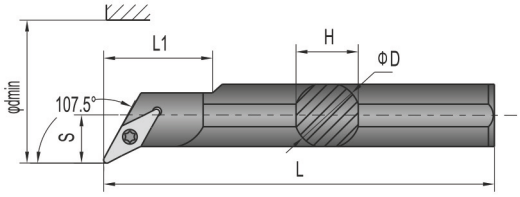
R/L:
R Right hand holder
L Left hand holder

The picture shows R



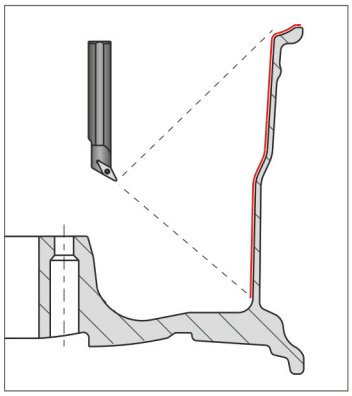
Type	Dimensions(mm)						Inserts	Screw	Wrench
	L	ΦD	H	L1	S	φdmin			
A40T-SVQCR/L22-20	300	40	37	80	27	45			
A40S-SVQCR/L22-230	230	40	37	80	27	45			
A40S-SVQCR/L22-250	250	40	37	80	27	45	VCGT2205**	S050L12	HT20
A40T-SVQCR/L22	300	40	37	80	27	45			
A50T-SVQCR/L22	300	50	47	80	32	55			
A50U-SVQCR/L22	350	50	47	80	32	55			

Holder for aluminum wheel hub processing



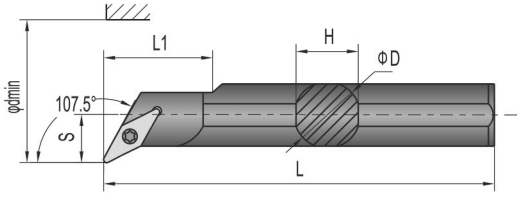
R/L:
R Right hand holder
L Left hand holder

The picture shows R



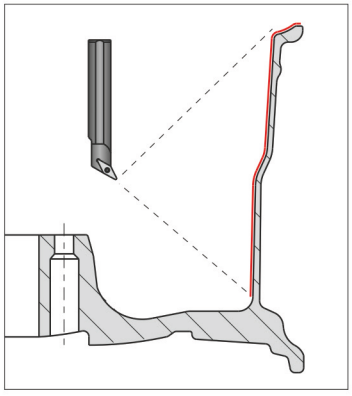
Type	Dimensions(mm)						Inserts	Screw	Wrench
	L	ΦD	H	L1	φ dmin	S			
A40S-SVUCR/L 16-230	230	40	37	80	45	27	VCGT1604**	S040L09	HT15
A40S-SVUCR/L 16-250	250	40	37	80	45	27			
A40T-SVUCR/L 16	300	40	37	80	45	27			
A50T-SVUCR/L 16	300	50	47	80	55	32			
A50U-SVUCR/L 16	350	50	47	80	55	32			
A32S-SVUCR/L 16	230	32	30	60	38	22			

Holder for aluminum wheel hub processing



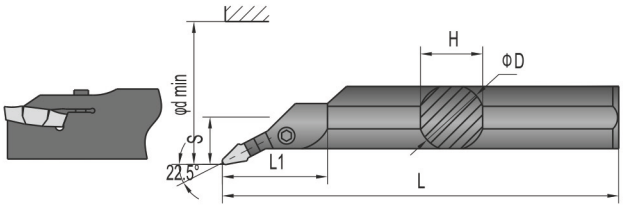
R/L:
R Right hand holder
L Left hand holder

The picture shows R



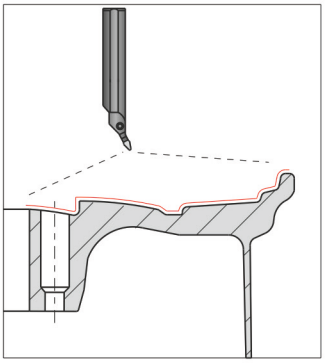
Type	Dimensions(mm)						Inserts	Screw	Wrench
	L	ΦD	H	L1	φ dmin	S			
A40T-SVQPR/L 22-300	300	40	37	80	45	27	VPGT2206**	S040L09	HT15
A40S-SVQPR/L 22-230	230	40	37	80	45	27			
A40S-SVQPR/L 22-250	250	40	37	80	45	27			
A40T-SVQPR/L 22	300	40	37	80	45	27			
A50T-SVQPR/L 22	300	50	47	80	55	32			
A50U-SVQPR/L 22	350	50	47	80	55	32			

Holder for Aluminum Wheel Hub Processing



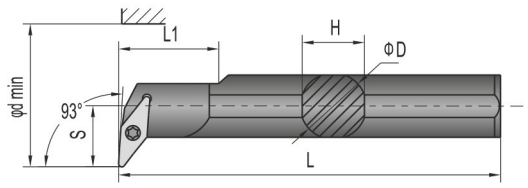
R/L:
R Right hand holder
L Left hand holder

The picture shows R



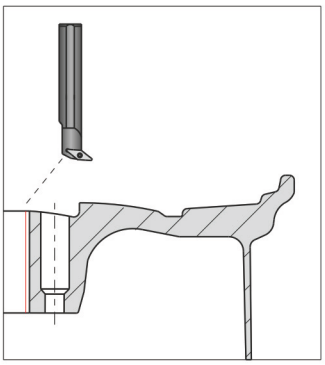
Type	Dimensions(mm)						Inserts	Screw	Wrench
	L	ΦD	H	L1	S	φdmin			
BUMPR/L 40C-112.5A-R1.2-300	300	40	37	87	27	45	GIPATYZ-35V-1.2**	M6x30	L5.0
BUMPR/L 50C-112.5A-R1.2-300	300	50	47	87	27	45			

Holder for Aluminum Wheel Hub Processing



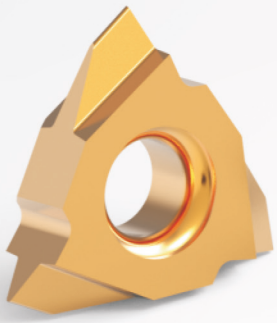
R/L:
R Right hand holder
L Left hand holder

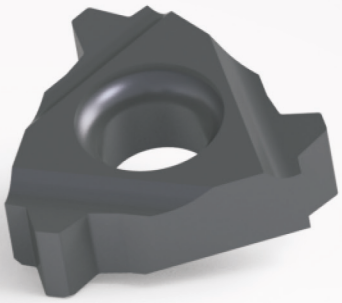
The picture shows R

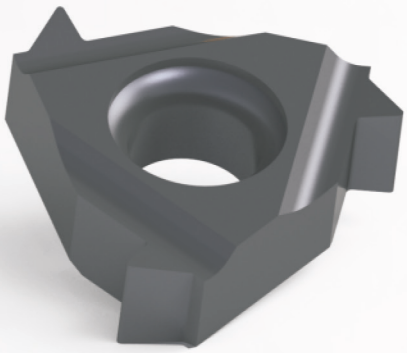


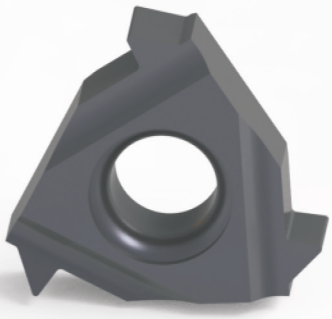
Type	Dimensions(mm)						Inserts	Screw	Wrench
	L	ΦD	H	L1	φdmin	S			
A40S-SVUCR/L 16-230	230	40	37	80	45	27	VCGT1604**	S040L09	HT15
A40S-SVUCR/L 16-250	250	40	37	80	45	27			
A40T-SVUCR/L 16	300	40	37	80	45	27			
A50T-SVUCR/L 16	300	50	47	80	55	32			
A50U-SVUCR/L 16	350	50	47	80	55	32			
A32S-SVUCR/L 16	230	32	30	60	38	22			

Threading Tools





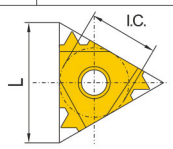




Threading insert coding rule

16	I	R	1.75	ISO	BPP252
1	2	3	4	5	6

1 Insert dimension	
L(mm)	I.C.
06	3.97mm=5/32″
08	4.76mm=3/16″
11	6.35mm=1/4″
16	9.525mm=3/8″
22	12.7mm=1/2″
27	15.875mm=5/8″



（profile/hour）

2 Cutting type	
	
E	External
I	Internal

3 RH/LH insert	
R	Right Hand Insert
L	Left Hand Insert

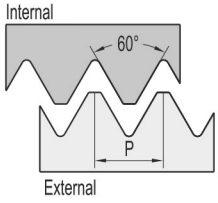
4 Pitch code
Full thread profile
(Number for pitch)
0.35~9.0mm
72-2 TPI
72-2TPI (profile/inch)
V type
(Letters for scope)
mm TPI (profile/inch)
A 0.5~1.5 48~16
AG 0.5~3.0 48~8
G 1.75~3.0 14~8
N 3.5~5.0 7~5
U 5.5~9.0 4.5~2.75
Q 5.5~6.0 4.5~4

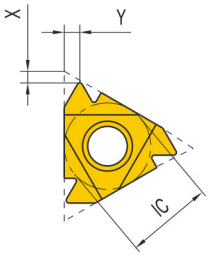
5 Thread profiles type	
60	Partial Profile 60°
55	Partial Profile 55°
ISO	ISO metric

6 Insert material	
BPP252	Steel Stainless steel
BPG308	Steel Stainless steel Cast iron

Partial profile 60°

External





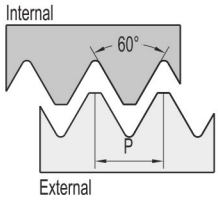
Standard

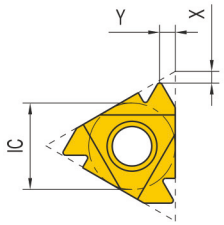
Insert	IC	Lead&Pitch		Type		Dimensions(mm)		Coating	
		mm	TPI	Right hand	Left hand	X	Y	BPP252	BPG308
	1/4"	0.5~1.5	48~16	11ER A 60	11EL A 60	0.8	0.9	▲	▲
	3/8"	0.5~1.5	48~16	16ER A 60	16EL A 60	0.8	0.9	▲	▲
		0.5~3.0	48~8	16ER AG 60	16EL AG 60	1.2	1.7	▲	▲
		1.75~3.0	14~8	16ER G 60	16EL G 60	1.2	1.7	▲	▲

Recommended: ▲

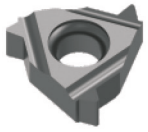
Partial profile 60°

Internal





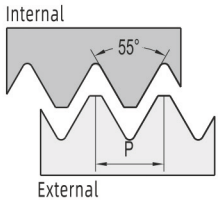
Standard

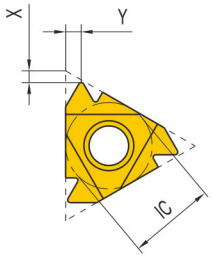
Insert	IC	Lead&Pitch		Type		Dimensions(mm)		Coating	
		mm	TPI	Right hand	Left hand	X	Y	BPP252	BPG308
	3/16"	0.5~1.5	48~16	08IR A 60	08IL A 60	0.8	0.6	▲	▲
	1/4"	0.5~1.5	48~16	11IR A 60	11IL A 60	0.8	0.9	▲	▲
	3/8"	0.5~1.5	48~16	16IR A 60	16IL A 60	0.8	0.9	▲	▲
		0.5~3.0	48~8	16IR AG 60	16IL AG 60	1.2	1.7	▲	▲
		1.75~3.0	14~8	16IR G 60	16IL G 60	1.2	1.7	▲	▲

Recommended: ▲

Partial profile 55°

External





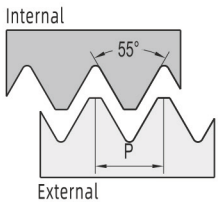
Standard

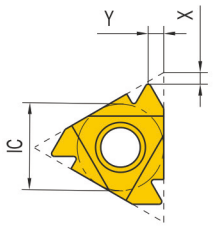
Insert	IC	Lead&Pitch		Type		Dimension (mm)		Coating	
		mm	TPI	Right hand	Left hand	X	Y	BPP252	BPG308
	1/4"	0.5~1.5	48~16	11ER A 55	11EL A 55	0.8	0.9	▲	▲
	3/8"	0.5~1.5	48~16	16ER A 55	16EL A 55	0.8	0.9	▲	▲
		0.5~3.0	48~8	16ER AG 55	16EL AG 55	1.2	1.7	▲	▲
		1.75~3.0	14~8	16ER G 55	16EL G 55	1.2	1.7	▲	▲

Recommended: ▲

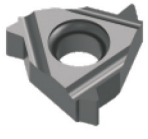
Partial profile 55°

Internal



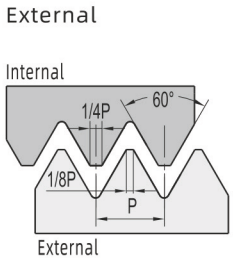


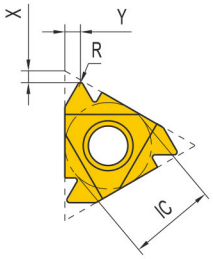
Standard

Insert	IC	Lead&Pitch		Type		Dimensions(mm)		Coating	
		mm	TPI	Right hand	Left hand	X	Y	BPP252	BPG308
	1/4"	0.5~1.5	48~16	11IR A 55	11IL A 55	0.8	0.9	▲	▲
	3/8"	0.5~1.5	48~16	16IR A 55	16IL A 55	0.8	0.9	▲	▲
		0.5~3.0	48~8	16IR AG 55	16IL AG 55	1.2	1.7	▲	▲
		1.75~3.0	14~8	16IR G 55	16IL G 55	1.2	1.7	▲	▲

Recommended: ▲

ISO metric





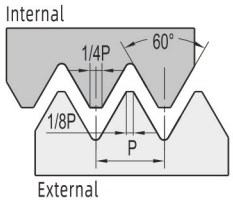
Standard

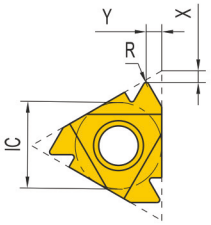
Insert	IC	Pitch	Type		Dimension (mm)				Coating	
		(mm)	Right hand	Left hand	hmin	X	Y	R	BPP252	BPG308
	1/4"	0.5	11ER 0.50ISO	11EL 0.50ISO	0.29	0.6	0.4	0.072	▲	▲
		0.75	11ER 0.75ISO	11EL 0.75ISO	0.45	0.6	0.6	0.11	▲	▲
		0.8	11ER 0.80ISO	11EL 0.80ISO	0.49	0.6	0.6	0.12	▲	▲
		1.0	11ER 1.00ISO	11EL 1.00ISO	0.6	0.6	0.7	0.14	▲	▲
		1.25	11ER 1.25ISO	11EL 1.25ISO	0.74	0.6	0.9	0.18	▲	▲
		1.5	11ER 1.50ISO	11EL 1.50ISO	0.9	0.6	1.0	0.22	▲	▲
	3/8"	0.5	16ER 0.50ISO	16EL 0.50ISO	0.29	0.6	0.6	0.072	▲	▲
		0.75	16ER 0.75ISO	16EL 0.75ISO	0.45	0.6	0.6	0.11	▲	▲
		1.0	16ER 1.00ISO	16EL 1.00ISO	0.6	0.7	0.7	0.14	▲	▲
		1.25	16ER 1.25ISO	16EL 1.25ISO	0.74	0.8	0.9	0.18	▲	▲
		1.50	16ER 1.50ISO	16EL 1.50ISO	0.9	0.8	1.0	0.22	▲	▲
		1.75	16ER 1.75ISO	16EL 1.75ISO	1.06	0.9	1.2	0.25	▲	▲
		2.0	16ER 2.00ISO	16EL 2.00ISO	1.21	1.0	1.3	0.29	▲	▲
		2.5	16ER 2.50ISO	16EL 2.50ISO	1.51	1.1	1.5	0.36	▲	▲
		3.0	16ER 3.00ISO	16EL 3.00ISO	1.83	1.2	1.6	0.43	▲	▲
	1/2"	3.5	22ER 3.50ISO	22EL 3.50ISO	2.13	1.6	2.3	0.505	▲	▲
		4.0	22ER 4.00ISO	22EL 4.00ISO	2.44	1.6	2.3	0.577	▲	▲
		4.5	22ER 4.50ISO	22EL 4.50ISO	2.74	1.7	2.4	0.65	▲	▲
		5.0	22ER 5.00ISO	22EL 5.00ISO	3.05	1.7	2.5	0.722	▲	▲
	5/8"	5.5	27ER 5.50ISO	27EL 5.50ISO	3.34	1.9	2.7	0.79	▲	▲
		6.0	27ER 6.00ISO	27EL 6.00ISO	3.65	2.0	2.9	0.866	▲	▲

Recommended: ▲

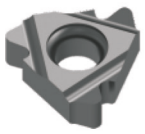
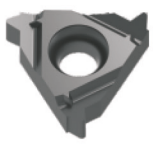
ISO metric

Internal



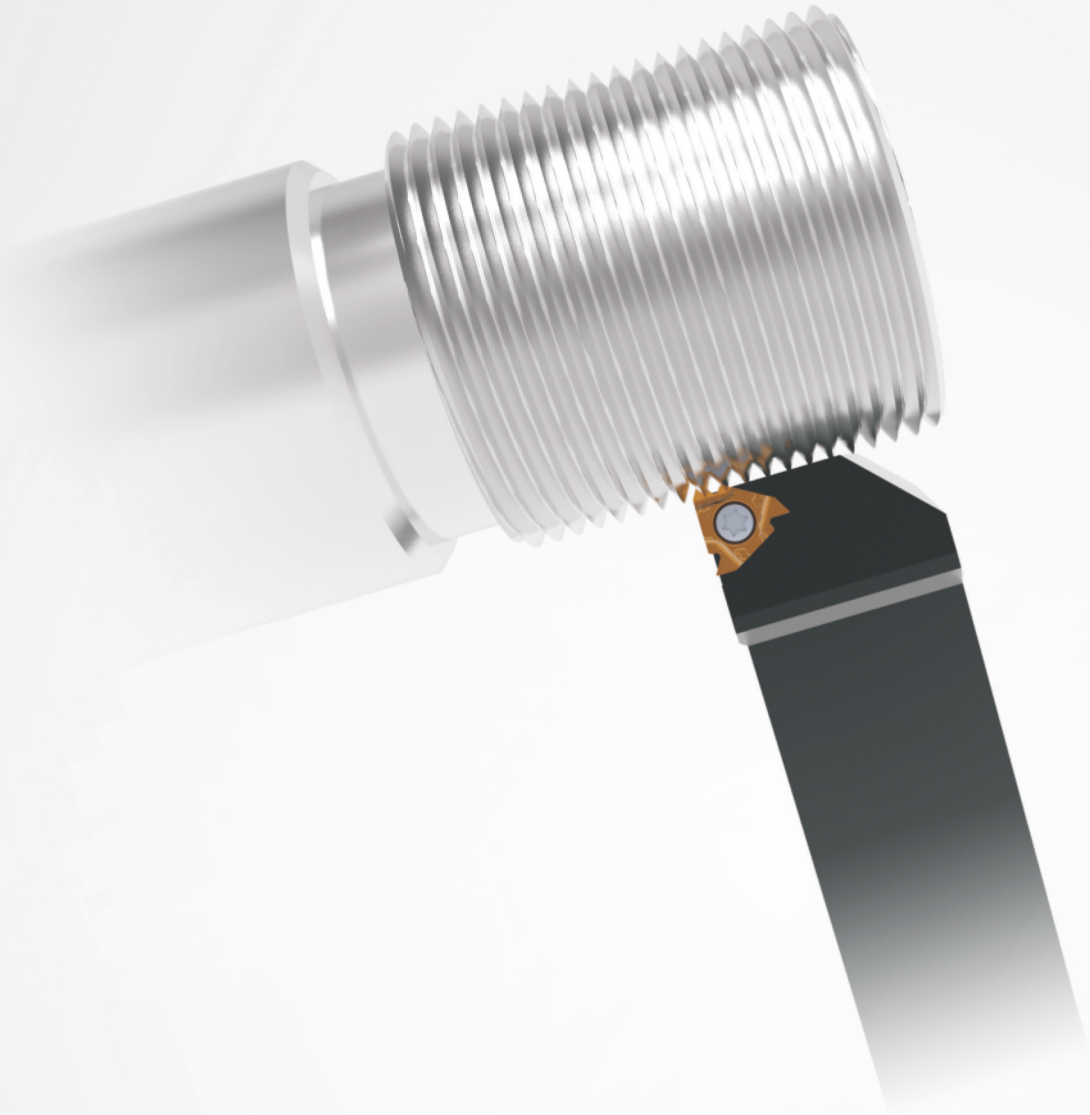


Standard

Insert	IC	Pitch	Type		Dimension (mm)				Coating	
		Pitch	Right hand	Left hand	hmin	X	Y	R	BPP252	BPG308
	1/4"	0.50	11IR 0.50ISO	11IL 0.50ISO	0.29	0.6	0.6	0.036	▲	▲
		0.75	11IR 0.75ISO	11IL 0.75ISO	0.43	0.6	0.6	0.05	▲	▲
		1.00	11IR 1.00ISO	11IL 1.00ISO	0.58	0.6	0.6	0.07	▲	▲
		1.25	11IR 1.25ISO	11IL 1.25ISO	0.72	0.7	0.7	0.09	▲	▲
		1.50	11IR 1.50ISO	11IL 1.50ISO	0.87	0.8	0.9	0.11	▲	▲
		1.75	11IR 1.75ISO	11IL 1.75ISO	1	0.8	1.0	0.13	▲	▲
		2.00	11IR 2.00 ISO	11IL 2.00 ISO	1.15	0.9	1.2	0.14	▲	▲
	3/8"	0.50	16IR 0.50ISO	16IL 0.50ISO	0.29	1.0	1.3	0.036	▲	▲
		0.75	16IR 0.75ISO	16IL 0.75ISO	0.43	0.6	0.6	0.05	▲	▲
		1.00	16IR 1.00ISO	16IL 1.00ISO	0.58	0.7	0.7	0.07	▲	▲
		1.25	16IR 1.25ISO	16IL 1.25ISO	0.72	0.8	0.9	0.09	▲	▲
		1.50	16IR 1.50ISO	16IL 1.50ISO	0.87	0.8	1.0	0.11	▲	▲
		1.75	16IR 1.75ISO	16IL 1.75ISO	1	0.9	1.2	0.13	▲	▲
		2.00	16IR 2.00ISO	16IL 2.00ISO	1.15	1.0	1.3	0.14	▲	▲
		2.50	16IR 2.50ISO	16IL 2.50ISO	1.43	1.1	1.5	0.18	▲	▲
		3.00	16IR 3.00ISO	16IL 3.00ISO	1.73	1.1	1.5	0.22	▲	▲
	1/2"	3.50	22IR 3.50ISO	22IL 3.50ISO	1.98	1.6	2.3	0.25	▲	▲
		4.00	22IR 4.00ISO	22IL 4.00ISO	2.26	1.6	2.3	0.29	▲	▲
		4.50	22IR 4.50ISO	22IL 4.50ISO	2.56	1.6	2.4	0.325	▲	▲
		5.00	22IR 5.00ISO	22IL 5.00ISO	2.83	1.6	2.5	0.36	▲	▲
	5/8"	5.50	27IR 5.50ISO	27IL 5.50ISO	3.14	1.6	2.3	0.4	▲	▲
		6.00	27IR 6.00ISO	27IL 6.00ISO	3.39	1.8	2.5	0.433	▲	▲

Recommended: ▲

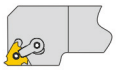
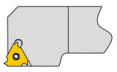
Threading Turning Insert



Naming System for threading tools

S	U	E	R	25	25	M	16
1	2	3	4	5	6	7	8

1 Clamping

C	 Top clamping
S	 Screw

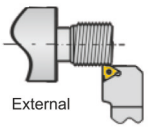
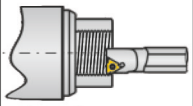
2 Blade form

none:Flat

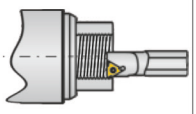
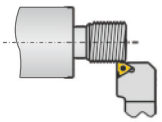
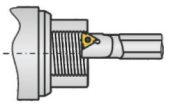
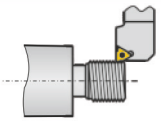
V: Vertical

U: type

3 Type

E	 External
I	 Internal

4 Cutting direction

R	Internal	
	External	
L	Internal	
	External	

5 Tool tip height

Internal	 Interenal threading code:00
External	 Tool tip height

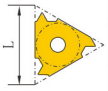
6 Insert width

Internal	 Tool shank diameter
External	 Insert width

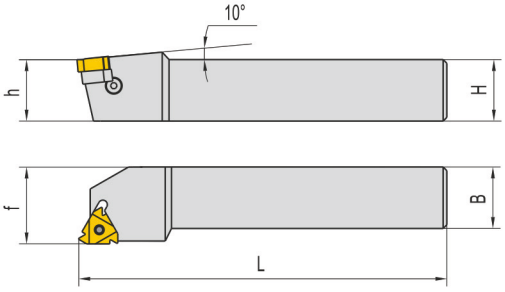
7 Tool rod length

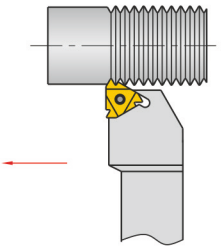
Code	Length
F	80
H	100
K	125
M	150
P	170
R	200

8 Dimension

Legend	Code	Triangle side L	Incircle
	08	4.76	8
	11	6.35	11
	16	9.525	16
	22	12.7	22
	27	15.875	27

Screw clamping holder for external threading

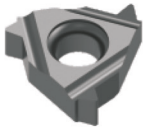


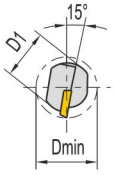


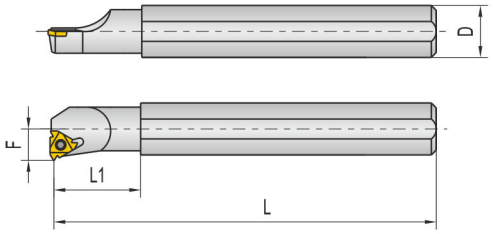
Type		Available inserts	Dimension (mm)					Shim	Screw	Shim screw	Ring spanner	Wrench
Right hand	Left hand		h	L	H	B	f					
SER0808H11	SEL0808H11	11ER/L...	8	100	8	8	11	—	SC2.5	—	—	—
SER1010H11	SEL1010H11		10	100	10	10	11					
SER1212K11	SEL1212K11		12	125	12	12	12					
SER1212F16	SEL1212F16	16ER/L...	16	80	12	12	16	ANE/I16	SC3.5	M3*5	T15	S2.5
SER1616H16	SEL1616H16		16	100	16	16	16					
SER2020K16	SEL2020K16		20	125	20	20	20					
SER2525M16	SEL2525M16		25	150	25	25	25					
SER3232P16	SEL3232P16		32	170	32	32	32					
SER2525M22	SEL2525M22	22ER/L...	25	150	25	25	25	ANE/I22	SC4.0	M3*5	T15	S2.5
SER3232P22	SEL3232P22		32	170	32	32	32					
SER4040R22	SEL4040R22		40	200	40	40	40					
SER2525M27	SEL2525M27	27ER/L...	25	150	25	25	27	ANE/I27	SC6.0	M3*5	T15	S2.5
SER3232P27	SEL3232P27		32	170	32	32	32					
SER4040R27	SEL4040R27		40	200	40	40	40					

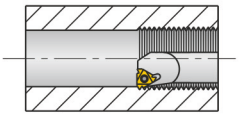
note: All the tool holders above have a 1.5° helix angel ,Please choose proper shim for different helix angel reference to the technical documents.

Screw clamping holder for Internal threading









Type		Available inserts	Dimension (mm)						Shim screw	Ring spanner	Shim
Right hand	Left hand		D	DI	L	L1	F	Dmin			
SIR0007H08	SIL0007H08	08IR/L...	16	6.6	100	18	5.3	7.8	SC2.0	T6	—
SIR0010H11	SIL0010H11	11IR/L...	10	10	100	—	7.4	12	SC2.5	T8	—
SIR0010K11	SIL0010K11		16	10	125	25	7.4	12			—
SIR0013M11	SIL0013M11		16	13	150	32	8.9	15			—
SIR0013M16	SIL0013M16	16IR/L...	16	13	150	32	10.2	16	SC3.5	T15	—
SIR0016P16	SIL0016P16		20	16	170	40	11.7	19			—
SIR0020P16	SIL0020P16		20	20	170	—	13.7	24			ANI/E16
SIR0025R16	SIL0025R16		25	25	200	—	16.2	29			
SIR0032S16	SIL0032S16		32	32	250	—	19.7	36			
SIR0040T16	SIL0040T16		40	40	300	—	23.7	44			
SIR0020P22	SIL0020P22	22IR/L...	20	20	170	—	15.6	24	SC4.0	T15	—
SIR0025R22	SIL0025R22		25	25	200	—	18.1	29			ANI/E22
SIR0032S22	SIL0032S22		32	32	250	—	21.6	38			
SIR0040T22	SIL0040T22		40	40	300	—	25.6	46			
SIR0032S27	SIL0032S27	27IR/L...	32	32	250	—	22.6	40	SC6.0	T20	ANI/E27
SIR0040T27	SIL0040T27		40	40	300	—	26.6	48			

note: All the tool holders above have a 1.5° helix angel ,Please choose proper shim for different helix angel reference to the technical documents.

Multifunctional Tools

CDBP multifunctional tool can be used in different applications, such as parting, grooving, turning, end face and profiling machining.

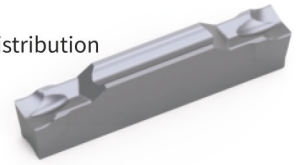
Unique installation and chip-breaker can ensure excellent performance and production efficiency.

Technical data of parting, grooving and turning

Insert Selection Guide

1.Feeding rate

- The maximum feeding rate is determined by insert specification and machine performance
- The maximum feeding rate can't exceed the insert radius R.
- In grooving application, the chip evacuation problem can be solved by using small cutting depth distribution

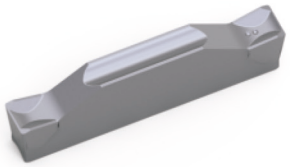


2.Cutting depth

- The minimum cutting depth shall not be less than the insert radius R
- The maximum cutting depth depends on the cutting load of the machine tool
- Different shape inserts application can improve the deviation and gap angle of the workpiece.

3. To make the insert match cutting conditions properly, following factors should be considered:

- Insert width
- Insert chip breaker
- Insert material
- Insert radius R



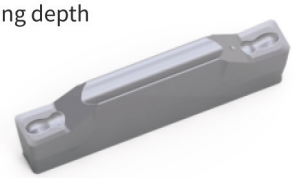
4.The relation between cutting depth and cutting width

-Nondirectional inserts guide angle is 0 °, which is most suitable for processing fields with large cutting depth

-Ordinary alloy steel, maximum cutting depth = cutting width X 0.8

5. With guide angle insert

- To reduce the burr, the guide angle insert is recommended
- Large guide angle insert can reduce burr, but it will also reduce the tool life
- If the burr is acceptable, nondirectional insert is recommended



Parting and grooving tools middle height instruction

· Whatever cutting tool you choose only when the insert and workpiece centerline are installed at 90 degrees can obtain the reasonable processing position and reduce vibration.

· To introduce the tool life, reduce the cutting force and burrs, particularly for pipe parting and small diameter workpiece grooving, the tolerance between the cutting edge and workpiece middle height should be +-0.1mm.

Notes:

- Parting: When insert approaches the workpiece center, the feed speed should be reduced by 30%,It is good for improving the insert tool life and surface roughness quality trying to decrease the overhang value of tool holder can improve the tool stability.
- Grooving: The angular radius of workpiece shall be less than the insert radius;If the workpiece angle bigger than the insert radius;With stable shear resistance, the tool produces a synthetic load with unbalanced radial and axial depth, may damage the inserts and holder.
- Ensure cutting speed and feed are consistent
- Use cutting fluid appropriately for better cutting performance
- Clean the insert and locator bofore installation of insert
- Exchange the insert immediately while the insert worn out to avoid the damage of workpiece
- Exchange the tool holder while it's broken to maitain stable clamping
- Never grind the insert locator seat

PVD coating material characteristics

Coating grade	ISO	Characterstic
BP2220	M15~M30 S15-S30	·A new PVD coating ·Excellent anti-adhesion features ·High working temperature, high red-hardness ·Optimize and integrate coating structure and performance, Enhance insert cutting edge toughness ·Suitable for titanium alloy, nickel alloy, stainless steel and iron-based superalloy processing
BPG20B	P20-P30 K20-K30 M20-M30	·General material for parting and grooving processing ·A nanocomposite coating of a AlTiSi base ·High temperature stability, good hardness ·Small friction coefficient, reducing the adhesion between workpiece and insert cutting edge

Uncoating material characteristics

Grade	ISO	Characterstic
BU810	N01-N10	·Subfine grain material ensures wear resistance and anti-crack of insert ·Special surface treatment to reduce the built-up edge ·Suitable for non-ferrous metals such as aluminum, copper and magnesium

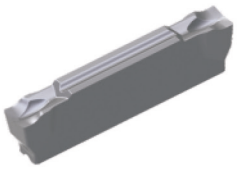
Material and processing range

Workpiece material		Grade	Recommended cutting speed V_c(m/min) 50 100 150 200 600
P	Mild steel	BPG20B	80 – 220
P	Carbon steel alloy steel	BPG20B	80 – 220
P	Pre-hard steel	BP2220	80 – 180
M	Stainless steel	BP2220	60 – 200
M	Stainless steel	BPG20B	80 – 200
K	Cast iron	BPG20B	80 – 220
N	Nonferrous metal	BU810	400 – 800
S	Heat-resistant alloy	BP2220	20 – 50

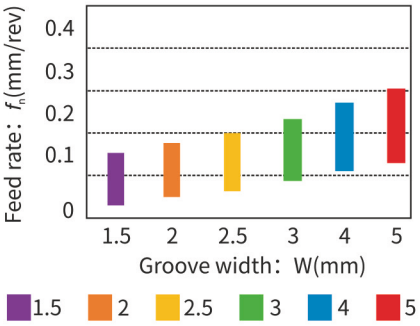
Chip breaker characteristics

Parting, grooving and turning applications data

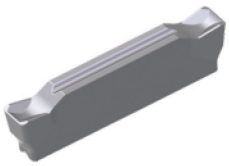
MGMN..-L



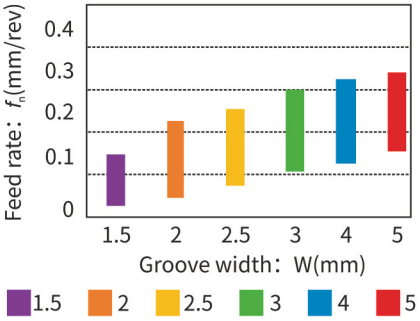
- Soft material parting processing is preferred
- Sharp cutting edge, low cutting force
- Low and medium-speed feed processing
- Pipe fittings, thin-wall parts and small parts processing
- Suitable for stainless steel, carbon steel and heat-resistant steel processing



MGMN..-H

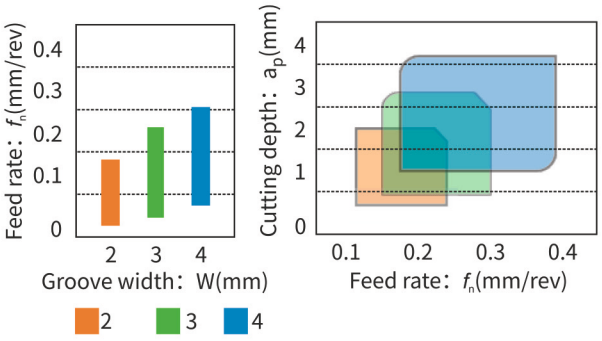


- External deep groove processing is preferred
- High-strength cutting edge, suitable for interrupted cutting
- Medium and high-speed feed processing
- Suitable for carbon steel, alloy steel and cast iron processing
- Suitable for hard material processing

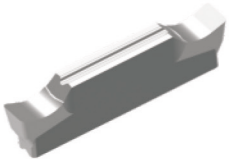


MGMN..-T

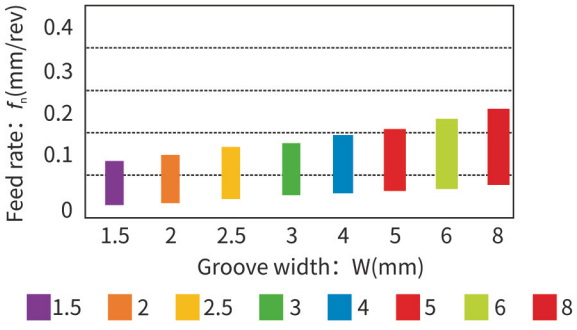
- General grooving is preferred
- Application for external, internal grooving and turning processing
- Special chip-breaker design can realize low cutting resistance
- Low and medium-speed feed processing
- Suitable for hard material processing
- Suitable for carbon steel, alloy steel and cast iron processing



MGGN..-LH



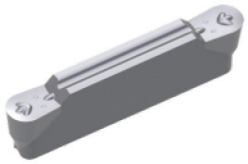
- Large rake angle, sharp cutting edge
- For soft materials, elongated parts and universal parting and grooving



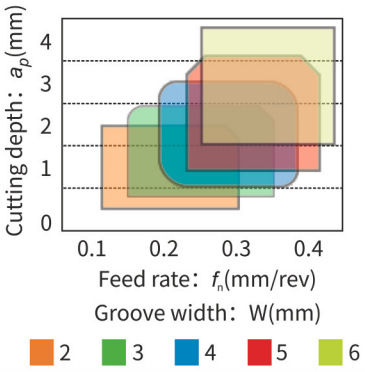
Chip breaker Characteristics

Profiling undercut application date

MRMN..



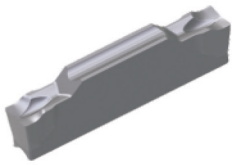
- Improved chip control for better chip evacuation
- High feeding rate and low cutting depth
- Suitable for steel, stainless steel and cast iron processing



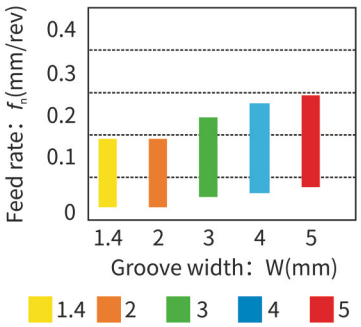
Chip breaker characteristics

Parting, grooving and turning applications data

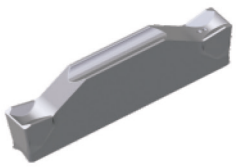
TDJ..



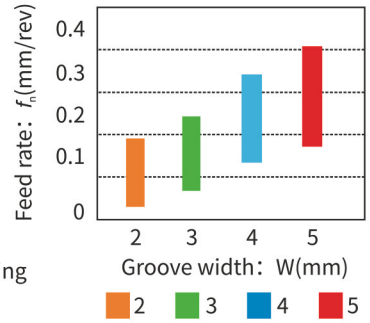
- Positive-rake angle insert, with sharp cutting edge, low cutting resistance
- Priority for pipe cutting, soft metal materials and small diameter thin wall parts
- Low and medium-speed feed processing
- For CNC, multi-spindle



TDC..

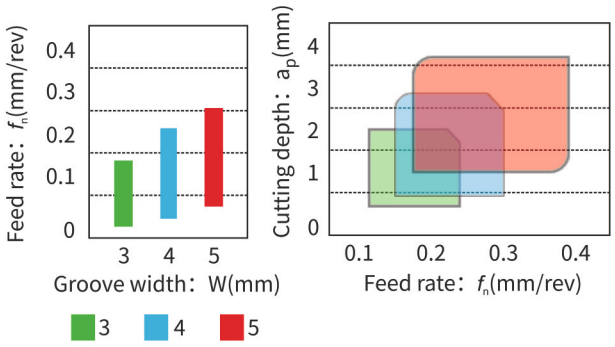


- Positive-rake angle insert, circular arc chip breaker on insert rake face; The design of minor cutting edge and the reinforcement on both cutting edge sides ensures that the insert has sufficient cutting edge strength
- Priority for parting off rod material, hard material and tough material processing
- Medium and high-speed feed processing
- Suitable for harsh working conditions or interrupted cutting



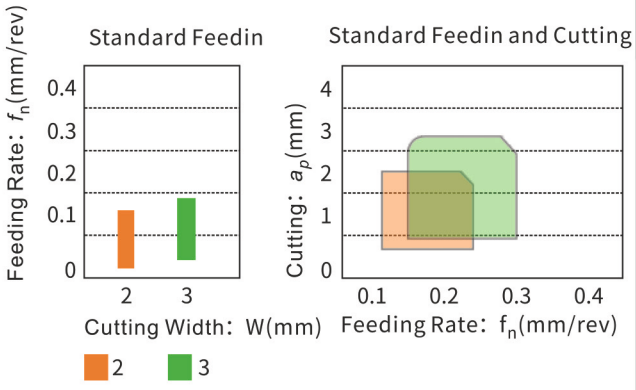
TDT..

- Priority insert for turning application
- Application for external, internal grooving and turning processing
- Special chip-breaker design obtains low cutting force and excellent chip control
- High feeding rate
- Suitable for steel, stainless steel and cast iron processing



TDF..

- Big positive rake angle design, suitable for pipe cutting, thin wall parts and small diameter parts processing
- Excellent performance in bearing steel and stainlesss steel processing
- Excellent performance in low, medium feeding processing
- Sharp cutting edge can reduce cutting cutting force

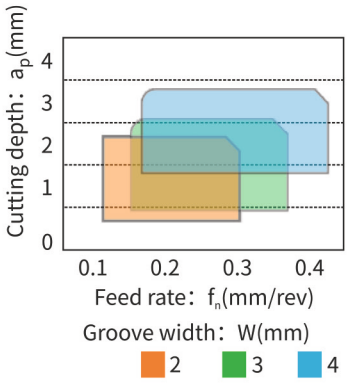


Chip breaker Characteristics

Profiling undercut application data

TDR..

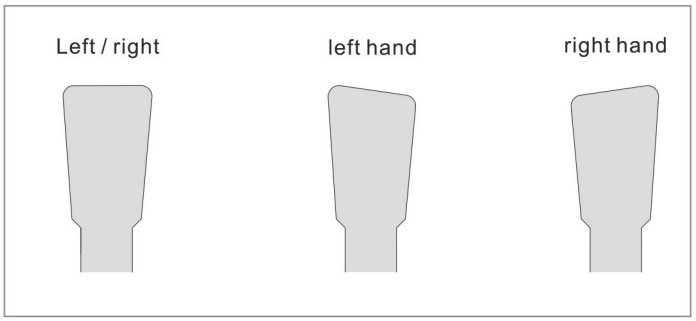
- Full radius type
- Profiling processing for steel and cast iron
- High feeding rate and low cutting depth
- Excellent chip evacuation performance



Chip breaker characteristics

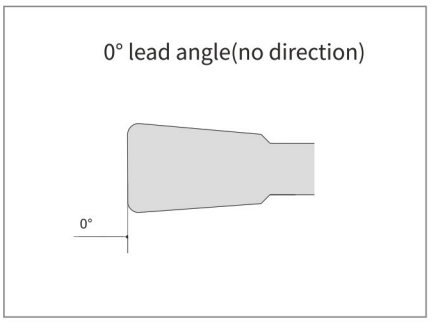
Parting application data

When parting, the insert cutting edge angle(K) can control the size of burr remaining on the workpiece.
Increasing the cutting edge angle can reduce the burr on workpiece surface, but squeeze the tool feed and the tool life. So Bangpu Tools is recommended to machine the workpiece with burr remained on its end surface.

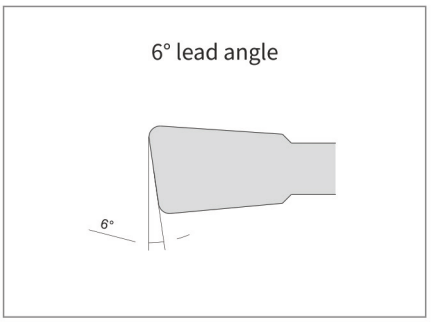


Applications with different lead-angle

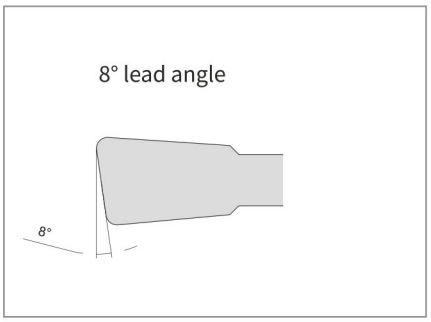
0° -Parting, grooving
6° -Pipe material and hollow rod
8° -Solid rod
15° -Small diameter and free-cutting solid rod



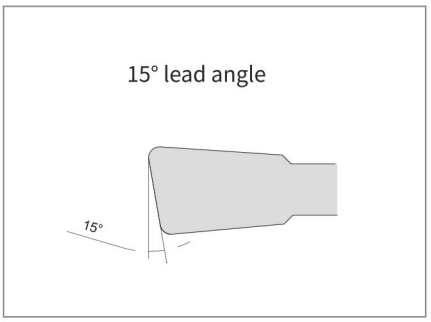
- Parting processing for solid rod
- Residue in the center after parting
- Prevent deviation from workpiece when parting
- Suitable for large diameter parting



- With reduced remainings in the center when solid rod parting
- With reduced burr when pipe and hollow rod parting



- With reduced remainings in the center when solid rod parting
- Suitable for the workpiece with small diameter



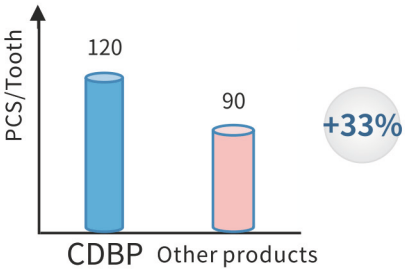
- Small diameter hollow rod parting
- With reduced remainings in the center when solid rod parting

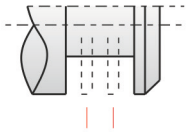
Application case

Multifunctional processing

Perfect chip breaker design for turning and grooving, save procedure and improve efficiency in processing

Workpiece material	45#
Cutting condition	V_c=160(m/min)
	f_n=0.15(mm/rev)
	a_p=1.80(mm)
	W=3(mm)
Item code	TDT3(BPG20B)

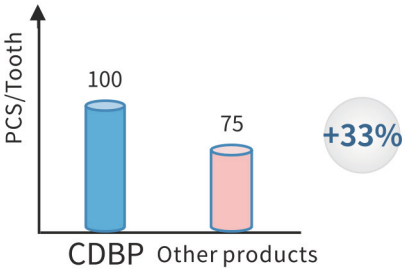


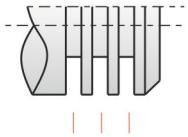


Grooving processing

Enhanced chip breaker to ensure stability in large feed and deep groove processing

Workpiece material	S.S.304
Cutting condition	V_c=120(m/min)
	f_n=0.12(mm/rev)
	W=4(mm)
Item code	TDC3 (BPG20B)

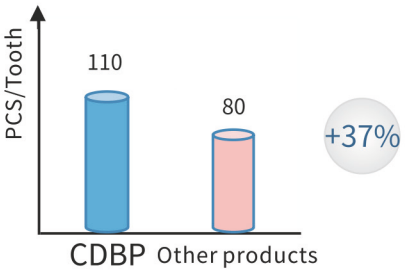


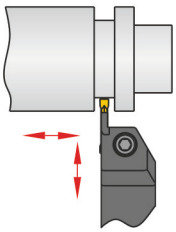


Axis processing

With improved chip breaking performance and high working efficiency

Workpiece material	42CrMn
Cutting condition	V_c=140(m/min)
	f_n=0.13(mm/rev)
	a_p=3(mm)
	W=4(mm)
Item code	MGMN400-T (BPG20B)

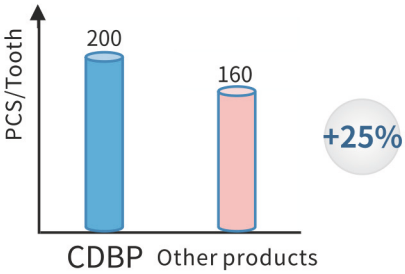


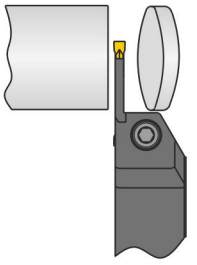


Parting processing

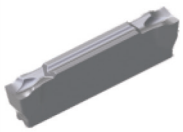
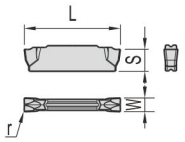
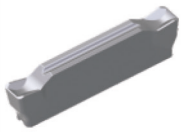
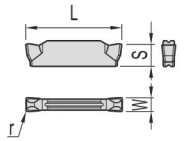
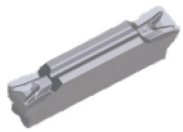
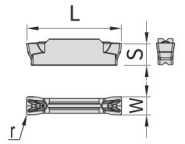
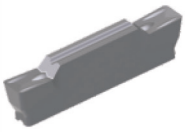
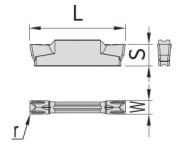
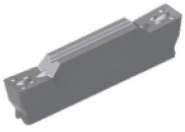
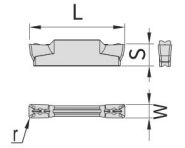
Special designed chip breaker with sharp cutting edge to improve tool life and avoid burr

Workpiece material	S.S.304
Cutting condition	V_c=150(m/min)
	f_n=0.15(mm/rev)
	W=3(mm)
Item code	TDJ3 (BP2220)



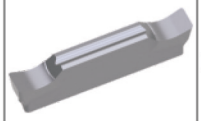
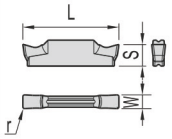
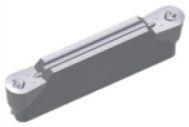
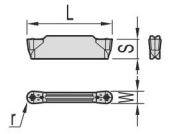
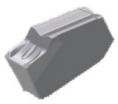
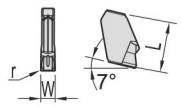
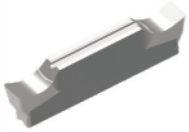
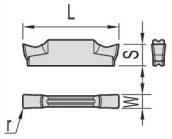
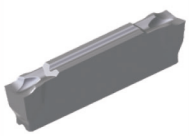
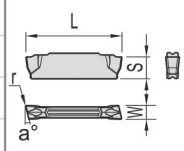


Grooving inserts

Application	Insert	Specification		Coating			Dimension（mm）					Insert structure
				BP2220	BPG20B	BP6225A	W	L	r	S	a°	
Grooving.Parting		MGMN	150-L	▲	▲		1.50	16.00	0.20	3.50	-	
			200-L	▲	▲		2.00	16.00	0.20	3.50	-	
			250-L	▲	▲		2.50	18.50	0.20	3.80	-	
			300-L	▲	▲		3.00	21.00	0.20	4.80	-	
			400-L	▲	▲		4.00	21.00	0.30	4.80	-	
			500-L	▲	▲		5.00	26.00	0.30	5.80	-	
Grooving		MGMN	150-H	▲	▲		1.50	16.00	0.20	3.60	-	
			200-H	▲	▲		2.00	16.00	0.20	3.50	-	
			250-H	▲	▲		2.50	18.50	0.20	3.95	-	
			300-H	▲	▲		3.00	21.00	0.40	4.90	-	
			400-H	▲	▲		4.00	21.00	0.40	4.90	-	
			500-H	▲	▲		5.00	26.00	0.30	5.90	-	
Grooving.Turning		MGMN	200-T		▲		2.00	16.00	0.20	3.50	-	
			300-T		▲		3.00	21.00	0.40	4.80	-	
			400-T		▲		4.00	21.00	0.40	4.80	-	
Grooving		MGMN	150-G		▲		1.50	16.00	0.15	3.50	-	
			200-G		▲		2.00	16.00	0.20	3.50	-	
			250-G		▲		2.50	18.35	0.40	3.85	-	
			300-G		▲		3.00	21.00	0.40	4.80	-	
			400-G		▲		4.00	21.00	0.40	4.80	-	
Grooving.Turning		MGMN	200-M		▲	▲	2.00	16.00	0.20	3.50	-	
			250-M		▲	▲	2.50	18.50	0.20	3.85	-	
			300-M		▲	▲	3.00	21.00	0.40	4.80	-	
			400-M		▲	▲	4.00	21.00	0.40	4.80	-	
			500-M		▲	▲	5.00	26.00	0.80	5.80	-	
			600-M		▲	▲	6.00	26.00	0.80	5.80	-	
			800-M		▲	▲	8.00	31.00	0.80	6.50	-	

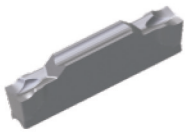
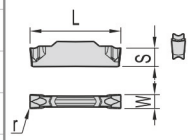
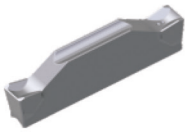
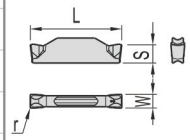
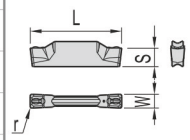
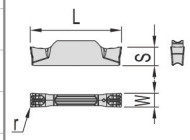
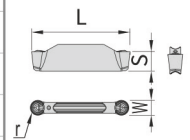
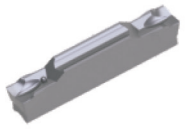
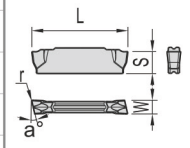
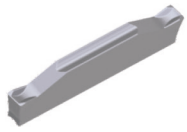
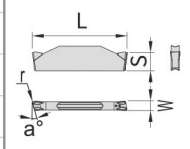
Recommended：▲

Grooving inserts

Application	Insert	Specification		Coating				Uncoating	Dimension (mm)					Insert structure
				BP2220	BPG05B	BPG20B	BP6225A	BU810	W	L	r	S	a°	
Grooving		MGGN	150E-LH		▲	▲			1.50	16.00	0.10	3.60	-	
			200E-LH		▲	▲			2.00	16.00	0.20	3.50	-	
			250E-LH		▲	▲			2.50	18.40	0.20	3.95	-	
			300E-LH		▲	▲			3.00	21.00	0.40	4.90	-	
			400E-LH		▲	▲			4.00	21.00	0.40	4.90	-	
			500E-LH		▲	▲			5.00	26.00	0.80	5.80	-	
Profiling		MRMN	200-M			▲	▲		2.00	16.00	1.00	3.50	-	
			300-M			▲	▲		3.00	21.00	1.50	4.80	-	
			400-M			▲	▲		4.00	21.00	2.00	4.80	-	
			500-M			▲	▲		5.00	25.85	2.50	5.80	-	
			600-M			▲	▲		6.00	26.00	3.00	5.80	-	
Single head grooving		BP	200			▲	▲		2.18	8.90	0.20	-	-	
			300			▲	▲		3.14	11.00	0.20	-	-	
			400			▲	▲		4.14	11.00	0.25	-	-	
			500			▲	▲		5.12	11.04	0.30	-	-	
Aul.grooving.Parting		MGGN	150-LH					▲	1.50	16.00	0.10	3.50	-	
			200-LH					▲	2.00	16.00	0.20	3.50	-	
			250-LH					▲	2.50	18.50	0.20	3.80	-	
			300-LH					▲	3.00	21.00	0.40	4.80	-	
			400-LH					▲	4.00	21.00	0.40	4.80	-	
			500-LH					▲	5.00	26.00	0.80	5.80	-	
			600-LH					▲	6.00	26.00	0.80	5.80	-	
			800-LH					▲	8.00	31.00	0.80	6.53	-	
Parting		MGMR	1502-6D	▲		▲			1.50	16.00	0.20	3.50	-	
			2002-6D	▲		▲			2.00	16.00	0.20	3.50	-	
			3002-6D	▲		▲			3.00	21.00	0.20	4.80	-	

Recommended: ▲

Grooving inserts

Application	Insert	Specification		Coating		Dimension (mm)					Insert structure
				BP2220	BPG20B	W	L	r	S	a°	
Grooving.Parting		TDJ	1.4	▲	▲	1.40	16.00	0.16	4.42	-	
			2	▲	▲	2.00	20.00	0.20	3.90	-	
			3	▲	▲	3.00	20.00	0.20	4.00	-	
			4	▲	▲	4.00	20.00	0.30	4.05	-	
			5	▲	▲	5.00	25.00	0.30	4.95	-	
Grooving		TDC	2	▲	▲	2.00	20.00	0.20	4.00	-	
			3	▲	▲	3.00	20.00	0.20	4.10	-	
			4	▲	▲	4.00	20.00	0.30	4.15	-	
			5	▲	▲	5.00	25.00	0.30	5.05	-	
Grooving.Turning		TDT	3	▲	▲	3.00	20.00	0.40	4.00	-	
			4	▲	▲	4.00	20.00	0.40	4.05	-	
			5	▲	▲	5.00	25.00	0.40	4.95	-	
Grooving.Parting		TDF	2	▲	▲	2.00	20.00	0.20	3.90	-	
			3	▲	▲	3.00	20.00	0.20	4.05	-	
Profiling		TDR	2	▲	▲	2.00	20.00	1.00	3.90	-	
			3	▲	▲	3.00	20.00	1.50	4.00	-	
			4	▲	▲	4.00	20.00	2.00	4.05	-	
Parting		TDJR	2002-6D	▲	▲	2.00	20.00	0.20	3.90	6	
			3002-8D	▲	▲	3.00	20.00	0.20	4.00	8	
Parting		TDCR	2002-6D	▲	▲	2.00	20.00	0.20	3.90	6	
			3002-8D	▲	▲	3.00	20.00	0.20	4.10	8	

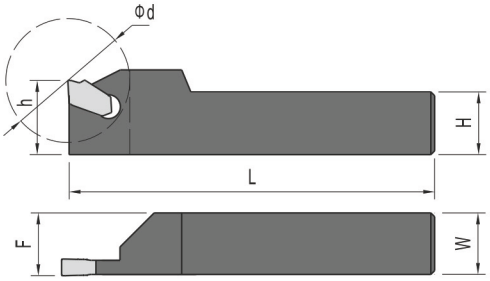
Recommended: ▲

Recommended cutting parameter - grooving

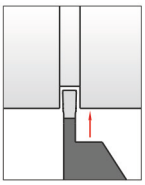
Inserts	Grooving, Parting		Turning			
	Recommended Feed f_n=mm/rev		Recommended Cutting Depth a_p=mm		Recommended Feed f_n=mm/rev	
	Min.	Max.	Min.	Max.	Min.	Max.
MGMN200-L	0.04	0.12	-	-	-	-
MGMN250-L	0.04	0.14	-	-	-	-
MGMN300-L	0.04	0.16	-	-	-	-
MGMN400-L	0.05	0.18	-	-	-	-
MGMN500-L	0.05	0.20	-	-	-	-
MGMN200-H	0.05	0.18	-	-	-	-
MGMN250-H	0.06	0.22	-	-	-	-
MGMN300-H	0.07	0.25	-	-	-	-
MGMN400-H	0.08	0.30	-	-	-	-
MGMN500-H	0.09	0.35	-	-	-	-
MGGN200-LH	0.02	0.13	-	-	-	-
MGGN250-LH	0.03	0.15	-	-	-	-
MGGN300-LH	0.05	0.15	-	-	-	-
MGGN400-LH	0.08	0.18	-	-	-	-
MGGN500-LH	0.08	0.20	-	-	-	-
TDJ2	0.04	0.12	-	-	-	-
TDJ3	0.04	0.16	0.16	-	-	-
TDJ4	0.05	0.18	0.18	-	-	-
TDJ5	0.05	0.20	0.20	-	-	-
TDC2	0.05	0.18	0.18	-	-	-
TDC3	0.07	0.25	0.25	-	-	-
TDC4	0.08	0.30	0.30	-	-	-
TDC5	0.09	0.35	-	-	-	-
TDT3	0.07	0.15	0.50	1.80	0.15	0.22
TDT4	0.09	0.18	0.50	2.40	0.18	0.30
TDT5	0.11	0.20	0.50	3.00	0.20	0.35
TDR2	0.04	0.12	-	-	-	-
TDR3	0.04	0.16	-	-	-	-
TDJR2002-6D	0.05	0.18	-	-	-	-
TDJR3002-8D	0.05	0.20	-	-	-	-
TDCR2002-6D	0.04	0.12	-	-	-	-
TDCR3002-8D	0.04	0.16	-	-	-	-
MRMN200-M	0.05	0.15	0.10	1.00	0.10	0.25
MRMN300-M	0.08	0.18	0.10	1.50	0.15	0.28
MRMN400-M	0.10	0.2	0.10	2.00	0.18	0.35
MRMN500-M	0.12	0.23	0.10	2.50	0.20	0.42
MRMN600-M	0.15	0.27	0.10	3.00	0.25	0.54
BP200	0.02	0.15	-	-	-	-
BP300	0.03	0.20	-	-	-	-
BP400	0.08	0.30	-	-	-	-
BP500	0.10	0.40	-	-	-	-

Single head holder - SPH

BP□□



R/L
R right hand
L left had

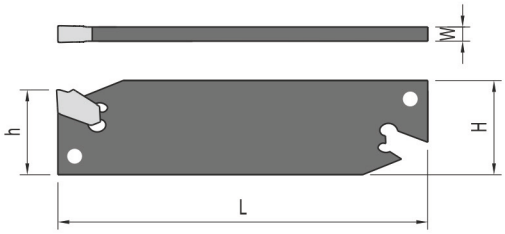


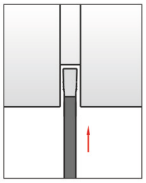
Right hand is shown in the picture

Holder Type		Insert available	Available condition					Wrench
			External grooving、 parting					
			H=(h)	W	L	Φ d	F	
SPH	316R/L	BP300	16	16	100	32	16.30	SW15-L
	320R/L		20	20	120	40	20.30	
	420R/L	BP400	20	20	120	50	20.40	
	520R/L	BP500	20	20	120	60	20.50	
	325R/L	BP300	25	25	150	50	25.30	
	425R/L	BP400	25	25	150	60	25.40	
	525R/L	BP500	25	25	150	70	25.50	

Single - head blade - SPB

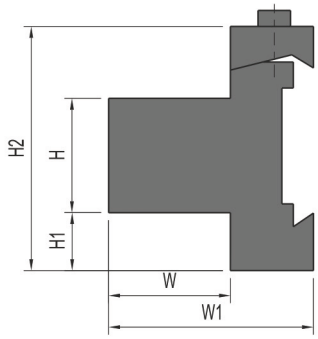
BP□□

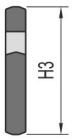


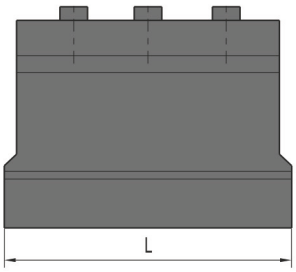


Holder type		Insert available	Available condition				Wrench
			External grooving、 parting				
			H	W	L	h	
SPB	226-S	BP200	26	1.60	110	21	HW50-L
	326-S	BP300	26	2.40	110	21	
	426-S	BP400	26	3.20	110	21	
	526-S	BP500	26	4.00	110	21	
	232-S	BP200	32	1.60	150	25	
	332-S	BP300	32	2.40	150	25	
	432-S	BP400	32	3.20	150	25	
	532-S	BP500	32	4.00	150	25	

Single - head locator-SMBB



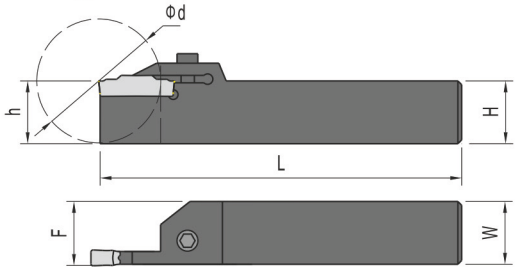




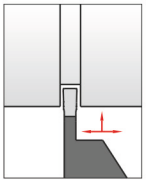
Holder Type		Insert available	Available condition							Wrench
			External grooving、 parting							
			H	W	W1	H1	H2	L	H3	
SMBB	1626	SPB*26	16	12	30	13	43	86	26	HW50-L
	2026		20	19	38	9	43	86	26	
	2526		25	23	42	4	43	86	26	
	2032	SPB*32	20	19	38	13	50	100	32	
	2532		25	23	42	8	50	110	32	
	3232		32	30	48	5	54	110	32	

MGMN Series grooving holder

M□MN□-□



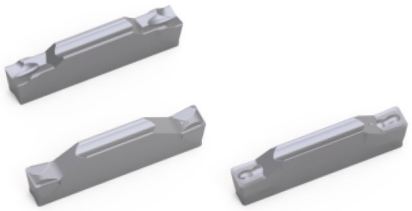
R/L
R right hand
L left hand



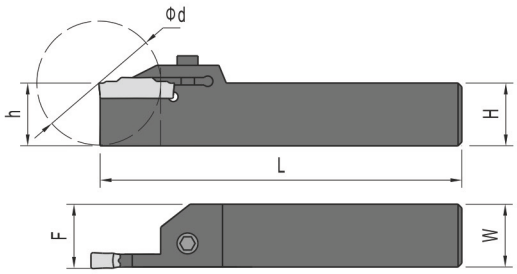
Right hand is shown in the picture

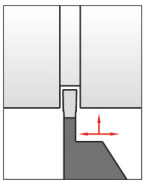
Holder Type		Insert available	Available condition					Screw	Wrench
			External grooving、turning						
			H=(h)	W	L	F	T(max)		
MGEHR/L	1616-1.5	MGMN150-G/M/L/H	16	16	100	16.25	14.5	LTX0512	L2.0
	2020-1.5		20	20	125	20.25	14.5		
	2525-1.5		25	25	150	25.25	14.5		
	1212-2.0	MGMN200-G	12	12	100	14.25	14.5	BHA0616	L5.0
	1616-2.0		16	16	100	16.25	14.5		
	2020-2.0		20	20	125	20.25	14.5		
	2525-2.0		25	25	150	25.25	14.5		
	1616-2.5	MGMN250-G	16	16	100	16.30	16.5	MHA0512	L4.0
	2020-2.5		20	20	125	20.30	16.5		
	2525-2.5		25	25	150	25.30	16.5		
	1616-3.0	MGMN300-M MRMN300-M	16	16	100	16.35	18.5		
	2020-3.0		20	20	125	20.40	18		
	2020-3.0-T10		20	20	125	20.40	10		
	2525-3.0		25	25	150	25.40	18		
	2525-3.0-T10		25	25	150	25.40	10		
	3232-3.0		32	32	170	32.40	18		
	3233-3.0-T10		32	32	170	32.40	10		
	2020-4.0	MGMN400-M MRMN400-M	20	20	125	20.40	18		
	2020-4.0-T10		20	20	125	20.50	10		
	2525-4.0		25	25	150	25.40	18		
	2525-4.0-T10		25	25	150	25.40	10		
	3232-4.0		32	32	170	32.40	18		
	3232-4.0-T10		32	32	170	32.40	10		
	2020-5.0	MGMN500-M MRMN500-M	20	20	150	20.50	23		
	2020-5.0-T15		20	20	150	20.50	15		
	2525-5.0		25	25	150	25.50	23		
	2525-5.0-T15		25	25	170	25.50	15		
	3232-5.0		32	32	170	32.50	23		
	3232-5.0-T15		32	32	170	32.50	15	BHA0616	L5.0
	2020-6.0	MGMN600-M MRMN600-M	20	20	125	20.60	23		
	2020-6.0-T15		20	20	125	20.60	15		
	2525-6.0		25	25	150	25.60	23		
	2525-6.0-T15		25	25	150	25.60	15		
	3232-6.0		32	32	170	32.60	23		
	3232-6.0-T15		32	32	170	32.60	15		
	2525-8.0	MRMN800-M	25	25	150	26.10	28		
	2525-8.0-T15		25	25	150	26.10	15		
	3232-8.0		32	32	170	33.10	28		
	3232-8.0-T15		32	32	170	33.10	16		

TD Series grooving holder



TD□□





R/L
R right hand
L left hand

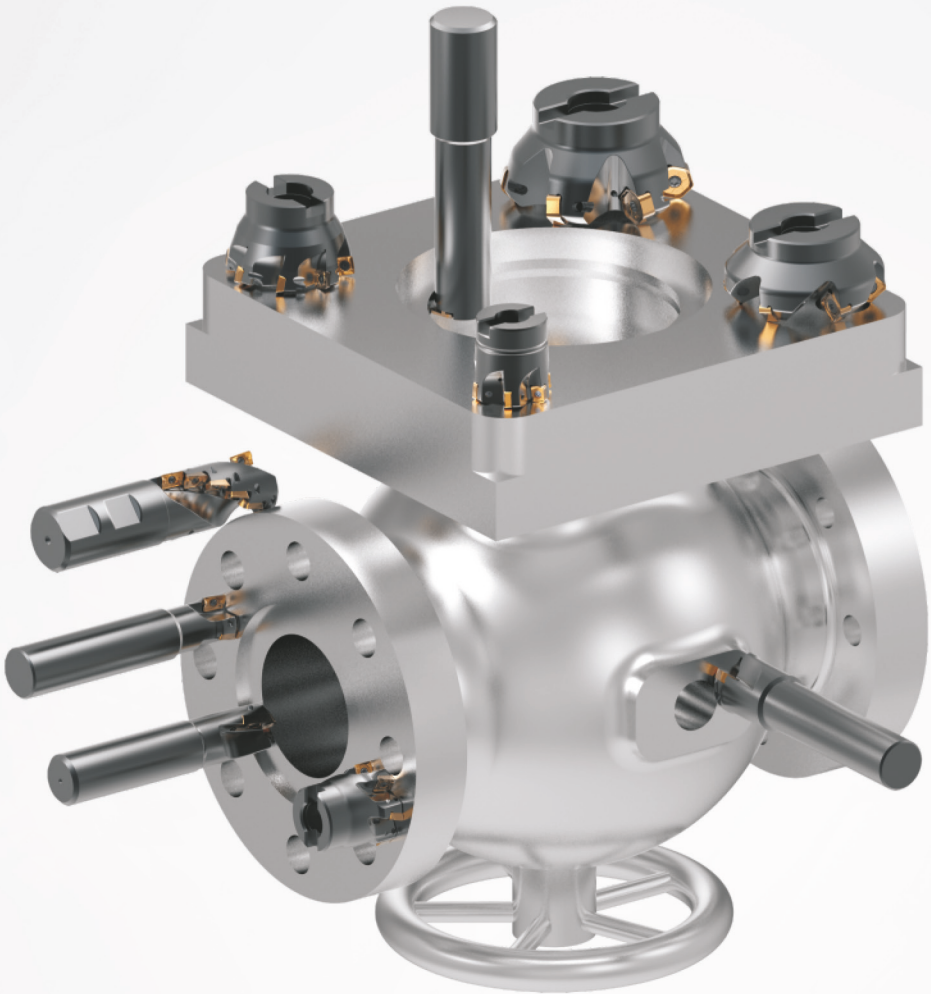
Right hand is shown in the picture

Holder Type		Insert available	Available condition					Screw	Wrench
			Grooving、 turning						
			L	H=h	F	W	Φd		
TTER/L	1616-2	TDJ2/TDC2/TDT2/TDF2/TDR2	110	16	16.10	16	24	BHA0616	L5.0
	2020-2		125	20	20.10	20			
	2525-2		150	25	25.10	25			
	1616-3	TDJ3/TDC3/TDT3/TDF3/TDR3	110	16	16.30	16	24		
	2020-3		125	20	20.30	20			
	2525-3		150	25	25.30	25			
	1616-4	TDJ4/TDC4/TDT4/TDR4	110	16	16.50	16	30		
	2020-4		125	20	20.50	20			
	2525-4		150	25	25.50	25			
	2020-5	TDJ5/TDC5/TDT5	125	20	20.60	20	40		
	2525-5		150	25	25.60	25			

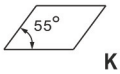
B

Milling Inserts

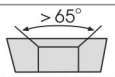
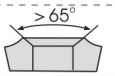
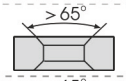
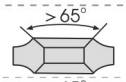
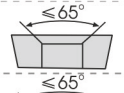
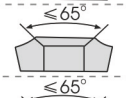
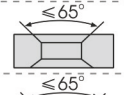
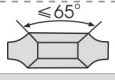
CDBP Tools developed a series of indexable milling inserts which can provide the highest working efficiency and optimal surface quality for customer.



Milling insert identification system

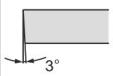
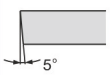
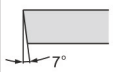
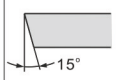
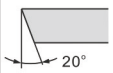
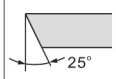
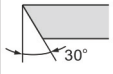
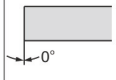
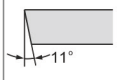
Insert shape		
 A	 B	 C
 D	 E	 H
 K	 L	 M
 O	 P	 R
 S		 V
 W	Others Z	

Insert shape code

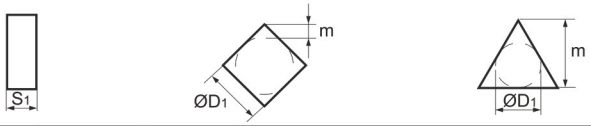
Metric							
Code	With/ Without hole	With/Without chip breaker	Insert section plane	Code	With/ Without hole	With/Without chip breaker	Insert section plane
B	With	Without		N	Without	Without	
H	With	Single-side		R	Without	Single-side	
C	With	Without		F	Without	Double-side	
J	With	Single-side		A	With	Without	
W	With	Without		M	With	Single-side	
T	With			G	With	Double-side	
Q	With	Without		X	---	---	Others
U	With	Single-side					

Chip breaker and clamping system

S P K N

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

Allowed tolerance



Code	Tolerance range(mm)	Inscribed(ΦD) tolerance(mm)	Thickness S1 Tolerance (mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05-±0.13	±0.025
K	±0.013	±0.05-±0.13	±0.025
L	±0.025	±0.05-±0.13	±0.025
M	±0.08-±0.18	±0.05-±0.13	±0.13
N	±0.08-±0.18	±0.05-±0.13	±0.025
U	±0.13-±0.38	±0.08-±0.25	±0.13

Ref.Details of M-class tolerance (identified by shape and size)

● Insert nose height tolerance(mm)

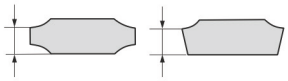
Inscribed circle	T	S	C	K	V	R
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
12.7	±0.13	±0.13	±0.13	±0.15	---	---
15.875	±0.15	±0.15	±0.15	±0.18	---	---
19.05	±0.15	±0.15	±0.15	±0.18	---	---
25.4	---	±0.18	---	---	---	---

● Inscribed(ΦD1) tolerance(mm) Inscribed circle

Inscribed circle	T	S	C	K	V	R
6.35	±0.05	±0.05	±0.05	±0.05	±0.05	---
9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08
15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
25.4	---	±0.13	---	---	---	±0.13

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

Cutting edge length



The thickness is defined as height from insert bottom to its highest part of cutting edge

Code	Thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
02	2.38
T2	2.78
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

Insert thickness

12 04 AF T N -

Wiper

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

Cutting edge chamfer(mm)

F	0-5°	0-0.10	K
E	1-10°	1-0.15	P
	2-15°	2-0.20	
	3-20°	3-0.25	
T	4-25°	4-0.30	W
	5-30°	5-0.35	
		6-0.40	
S		7-0.45	

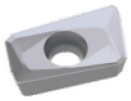
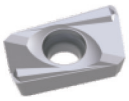
Chip breaker code

Cutting direction

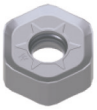
R	Right
L	Left
N	Middle

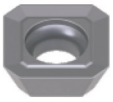
Milling inserts overview

Inserts for square shoulder milling

						
APMT**PDER-M2	APMT**PDER-H2	APMT**R-EM				
P143页	P143页	P143页				

Inserts for face milling

						
SNMX**-MM	SNMX**ANEN-FM	HNMX**ANSN-M	HNMX**ANSN-R			
P144页	P144页	P144页	P144页			

						
SPKN**EDSR-SU	SDKN**AESN-SU	TPKN**PDSR-SU	SEKT**ASFN	SPMT**-D51	SEMT**-JM	
P145页	P145页	P145页	P146页	P146页	P146页	

Milling inserts overview

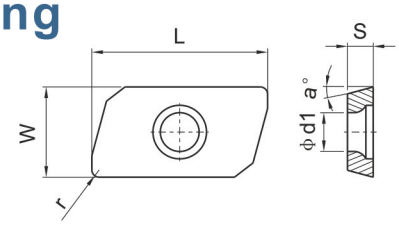
Inserts for pofile milling

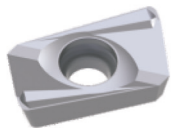
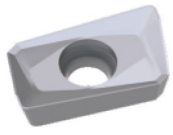
						
RPMW**MOT	RPMT**MOE-BDL	ROMT**MOE-MM	RPMT**MOE-BJS			
P147页	P147页	P147页	P147页			

High-feed milling inserts

						
LNGU**-GM	SDMT**-SM	SDMW**SN				
P148页	P148页	P148页				

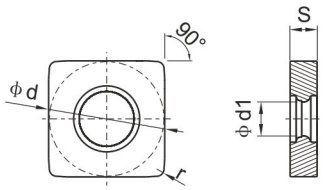
Inserts for square shoulder milling



Shape	Specification	Coating		Dimension (mm)						
		BPG20B	BPG21A	L	W	d	s	d1	r	a°
	APMT1135PDER-H2	▲		11.20	6.20	-	3.50	2.80	0.80	11
	APMT1604PDER-H2	▲		17.15	9.30	-	4.76	4.40	0.80	11
	APMT1135PDER-M2	▲		11.20	6.20	-	3.50	2.80	0.80	11
	APMT1604PDER-M2	▲		17.15	9.30	-	4.76	4.40	0.80	11
	APMT1135PDER-EM	▲	▲	11.20	6.20	-	3.50	2.80	0.80	11
	APMT1604PDER-EM	▲	▲	17.25	9.30	-	5.30	4.40	0.80	11
	APMT170508R-EM	▲		18.52	10.63	-	5.60	4.40	0.80	11
	APMT170516R-EM	▲		18.52	10.63	-	5.60	4.40	1.60	11
	APMT170524R-EM	▲		18.52	10.63	-	5.60	4.40	2.40	11

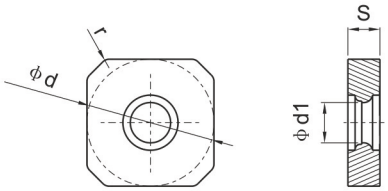
Recommended: ▲

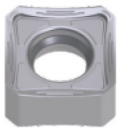
Inserts for face milling



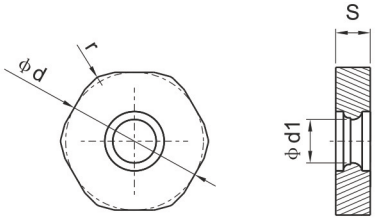
Shape	Specification	Coating		Dimension (mm)						
		BPG20B	BPS411	L	W	d	s	d1	r	a°
	SNMX120508-MM	▲	▲	-	-	12.70	6.46	6.00	0.80	0
	SNMX120512-MM	▲	▲	-	-	12.70	6.46	6.00	1.20	0

Recommended: ▲



Shape	Specification	Coating		Dimension (mm)						
		BPG20B	BPS411	L	W	d	s	d1	r	a°
	SNMX1205ANEN-FM	▲	▲	-	-	12.70	6.35	6.00	0.80	0

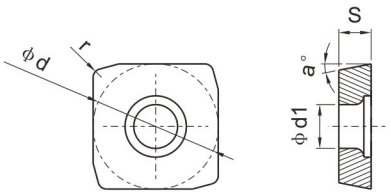
Recommended: ▲



Shape	Specification	Coating		Dimension (mm)						
		BPG20B	BPS411	L	W	d	s	d1	r	a°
	HNMX0906ANSN-M	▲	▲	-	-	16.50	7.12	4.90	1.00	0
	HNMX0906ANSN-R	▲	▲	-	-	16.50	7.12	4.90	1.00	0

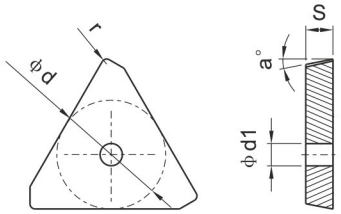
Recommended: ▲

Inserts for face milling



Shape	Specification	Coating	Dimension（mm）						
		BPG20E	L	W	d	s	d1	r	a°
	SPKN1203EDSR-SU	▲	-	-	12.70	3.18	2.60	1.00	11
	SPKN1504EDSR-SU	▲	-	-	15.875	4.76	2.60	1.20	11
	SDKN1203AESN-SU	▲	-	-	12.70	3.18	2.60	-	15
	SDKN1504AESN-SU	▲	-	-	15.875	4.76	2.60	-	15

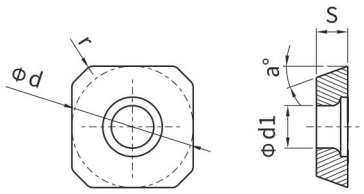
Recommended：▲

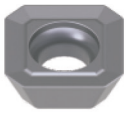


Shape	Specification	Coating	Dimension（mm）						
		BPG20E	L	W	d	s	d1	r	a°
	TPKN1603PDSR-SU	▲	-	-	9.525	3.18	2.60	0.70	11
	TPKN2204PDSR-SU	▲	-	-	12.70	4.76	2.60	0.60	11

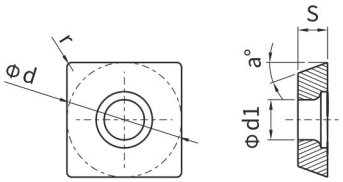
Recommended：▲

Inserts for face milling



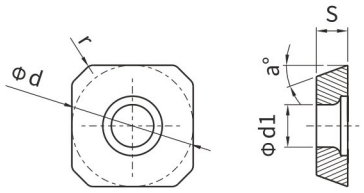
Shape	Specification	Coating	Dimension (mm)						
		BPG20B	L	W	d	s	d1	r	a°
	SEKT1204AFSN	▲	-	-	12.70	4.76	5.50	0.80	20

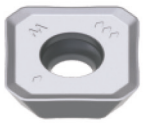
Recommended: ▲



Shape	Specification	Coating		Dimension (mm)						
		BPG20B	BPS411	L	W	d	s	d1	r	a°
	SPMT09T308-D51	▲	▲	-	-	9.525	3.97	4.40	0.80	11
	SPMT120408-D51	▲	▲	-	-	12.70	4.76	5.50	0.80	11

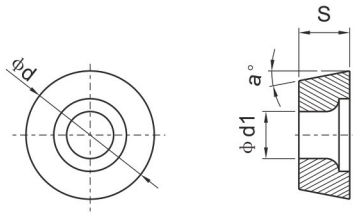
Recommended: ▲

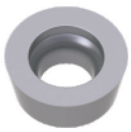


Shape	Specification	Coating	Dimension (mm)						
		BPG20B	L	W	d	s	d1	r	a°
	SEMT13T3AGSN-JM	▲	-	-	13.40	3.97	4.40	1.50	20

Recommended: ▲

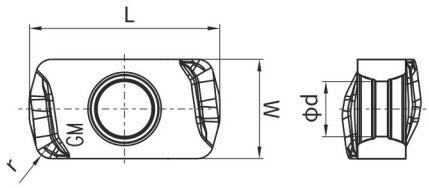
Inserts for profile milling



Shape	Specification	Coating			Dimension (mm)						
		BPG20B	BP2235	BPG20A	L	W	d	s	d1	r	a°
	RPMW0803MOT	▲			-	-	8.00	3.18	4.40	-	11
	RPMW1003MOT	▲			-	-	10.00	3.18	4.40	-	11
	RPMW1204MOT	▲			-	-	12.00	4.76	4.40	-	11
	RDMW10T3MOT	▲			-	-	10.00	3.97	4.40	-	15
	RDMW1204MOT	▲			-	-	12.00	4.76	4.40	-	15
	RDMW1604MOT	▲			-	-	16.00	4.76	5.50	-	15
	RPMT0827MOE-BJS	▲			-	-	8.00	2.70	3.40	-	11
	RPMT10T3MOE-BJS	▲			-	-	10.00	3.97	4.40	-	11
	RPMT1204MOE-BJS	▲			-	-	12.00	4.76	4.40	-	11
	ROMT10T3MOE-MM		▲		-	-	10.00	3.97	4.40	-	11
	ROMT1204MOE-MM		▲		-	-	12.00	4.76	4.40	-	11
	RPMT1204MOE-BDL			▲	-	-	12.00	4.76	4.40	-	11

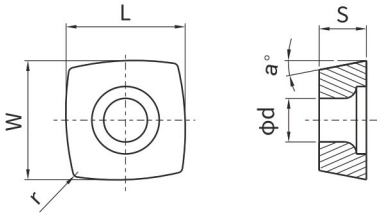
Recommended: ▲

Inserts for high feed milling



Shape	Specification	Coating		Dimension (mm)						
		BPG20E	BP2235	L	W	d	s	d1	r	a°
NEW 	LNGU030310R-GM	▲	▲	11.90	6.20	-	3.96	3.45	1.00	-

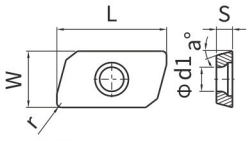
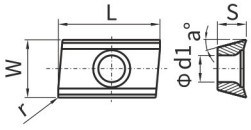
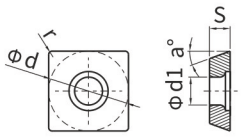
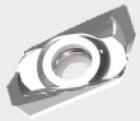
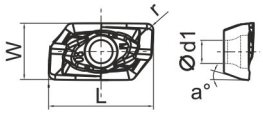
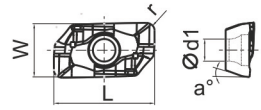
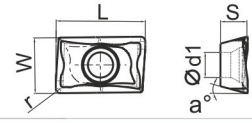
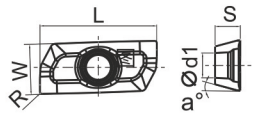
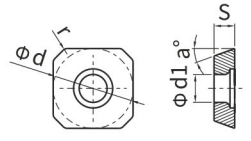
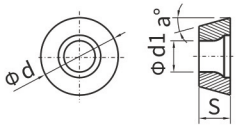
Recommended: ▲



Shape	Specification	Coating		Dimension (mm)						
		BPG217	BP2235	L	W	d	s	d1	r	a°
	SDMT090307-SM		▲	9.00	9.00	-	3.50	3.50	0.70	15
	SDMW09T307SN	▲	▲	9.00	9.00	-	3.50	3.50	0.70	15

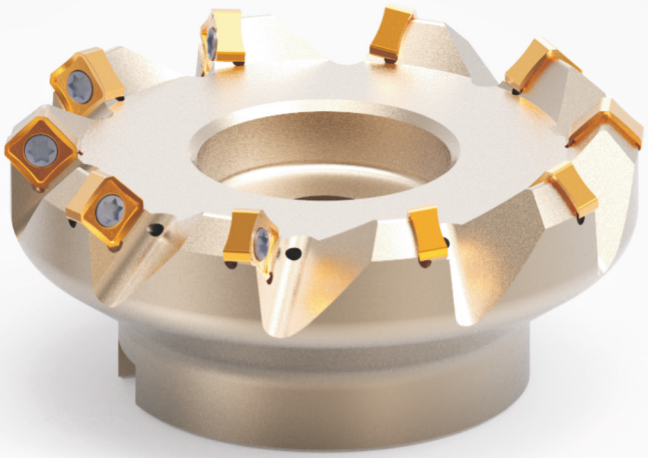
Recommended: ▲

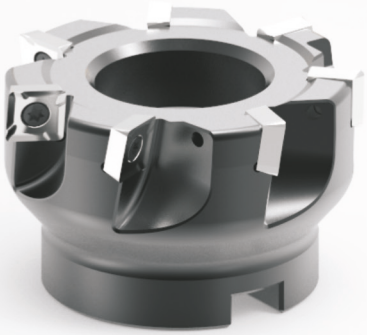
Milling - Non-ferrous metal processing

Application	Shape			Uncoating		Dimensions(mm)							Insert structure
				BU810	BU811	d	W	L	r	S	d1	a°	
Shoulder milling for aluminum		APKT	113502PDFR-G2C	▲		-	6.17	11.31	0.20	3.50	2.80	11	
			113504PDFR-G2C	▲		-	6.17	11.31	0.40	3.50	2.80	11	
			113508PDFR-G2C	▲		-	6.17	11.31	0.80	3.50	2.80	11	
			1604PDFR-G2C	▲		-	9.62	17.00	0.80	4.76	4.40	11	
		APKT	160402FR-LHC	▲		-	9.525	16.88	0.20	4.76	4.40	11	
			160404FR-LHC	▲		-	9.525	16.88	0.40	4.76	4.40	11	
			160408FR-LHC	▲		-	9.525	16.88	0.80	4.76	4.40	11	
			160412FR-LHC	▲		-	9.525	16.88	1.20	4.76	4.40	11	
			160416FR-LHC	▲		-	9.525	16.88	1.60	4.76	4.40	11	
		SDGT	120408PDFR-LHC		▲	12.70	-	-	0.80	4.76	4.40	15	
			120412PDFR-LHC		▲	12.70	-	-	1.20	4.76	4.40	15	
Face milling for aluminum		ADGT	113502FR-AL		▲	-	6.60	12.58	0.20	3.55	2.80	-	
			113504FR-AL		▲	-	6.60	12.58	0.40	3.55	2.80	-	
			113508FR-AL		▲	-	6.60	12.58	0.80	3.55	2.80	-	
		ADGT	113520PDFR-LHC		▲	-	6.60	12.46	2.00	3.50	2.80	15	
			113530PDFR-LHC		▲	-	6.60	12.46	3.00	3.50	2.80	15	
		ADGT	150408FR-AL		▲	-	9.70	15.60	0.80	4.76	4.40	15	
			150412FR-AL		▲	-	9.70	15.60	1.20	4.76	4.40	15	
		ADGT	190404FR-AL		▲	-	9.52	22.10	0.40	4.76	4.70	15	
			190408FR-AL		▲	-	9.52	22.10	0.80	4.76	4.70	15	
			190412FR-AL		▲	-	9.52	22.10	1.20	4.76	4.70	15	
			190420FR-AL		▲	-	9.52	22.10	2.00	4.76	4.70	15	
			190424FR-AL		▲	-	9.52	22.10	2.40	4.76	4.70	15	
			190430FR-AL		▲	-	9.52	22.10	3.00	4.76	4.70	15	
			190432FR-AL		▲	-	9.52	22.10	3.20	4.76	4.70	15	
		SEKT	120404AFFN-LH-2C	▲		12.70	-	-	0.40	4.76	5.50	20	
			1204AFFN-LH-2C	▲		12.70	-	-	0.80	4.76	5.50	20	
			13T3AZFN-LHC	▲		13.40	-	-	0.40	3.97	4.40	20	
Profiling for aluminum		RPGT	1003MO-LHC	▲		10.00	-	-	-	3.18	4.40	11	
			10T3MO-LHC	▲		10.00	-	-	-	3.97	4.40	11	
			1204MO-LHC	▲		12.00	-	-	-	4.76	4.40	11	

Recommended: ▲

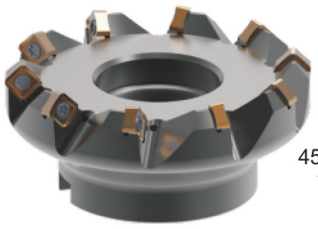
Milling Cuters

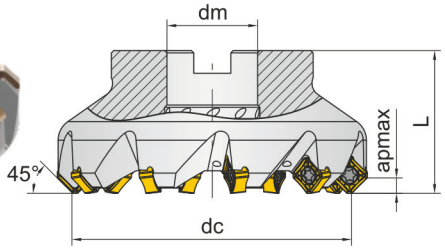




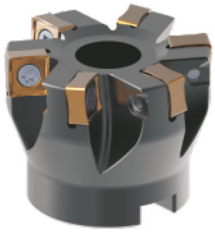
P145/P190 series face milling cutter

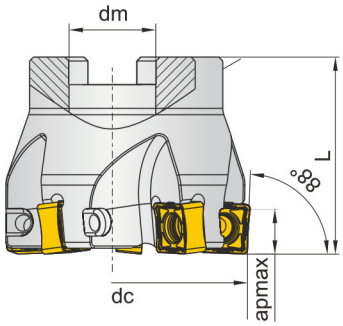
Kr:45°





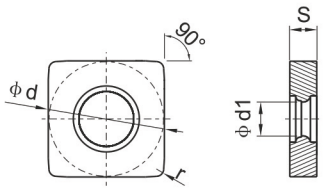
Kr:88°





Type	Dimension					Inserts	Screw	Wrench
	dc	dm	apmax	L	L1			
P145-50Z04SN12-A22	50	22	6.5	40		SNMX12	S050L12S	WT-20T
P145-63Z06SN12-A22	63	22	6.5	40				
P145-80Z07SN12-A27	80	27	6.5	50				
P145-100Z08SN12-A32	100	32	6.5	50				
P145-125Z10SN12-A40	125	40	6.5	63				
P145-160Z12SN12-B40	160	40	6.5	63				
P145-200Z18SN12-B60	200	60	6.5	63				
P190-63Z05SN12-A22	63	22	10	50				
P190-80Z06SN12-A27	80	27	10	50				
P190-100Z08SN12-A32	100	32	10	50				
P190-125Z10SN12-A40	125	40	10	63				
P190-160Z12SN12-B40	160	40	10	63				

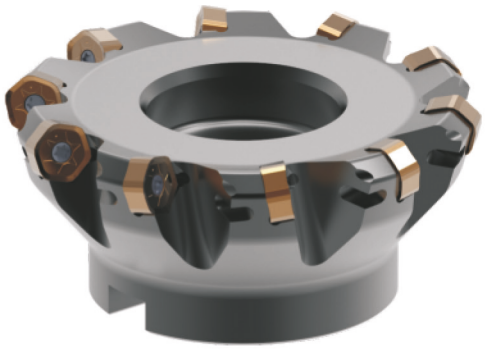
Inserts

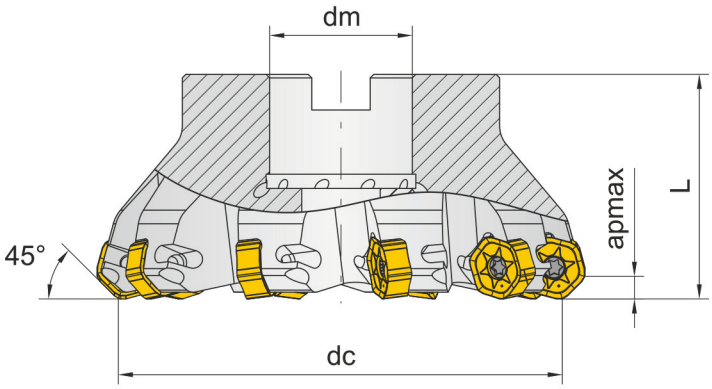


Type	Dimension						Grade	
	L	W	d	s	d1	r	BPG20B	BPS411
SNMX120508-MM	-	-	12.70	6.46	6.00	0.80	▲	▲
SNMX120512-MM	-	-	12.70	6.46	6.00	1.20	▲	▲
SNMX1205ANEN-FM	-	-	12.70	6.35	6.00	0.80	▲	▲

Recommended: ▲

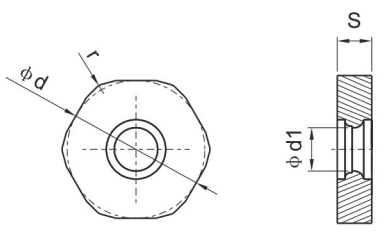
P145 series face milling cutter





Type	Dimension					Inserts	Screw	Wrench
	dc	dm	apmax	L	L1			
P145-50Z04HN09-A22	50	22	5	40		HNMX09	S045L12T	WT-20T
P145-63Z06HN09-A22	63	22	5	40				
P145-80Z06HN09-A27	80	27	5	50				
P145-100Z08HN09-A32	100	32	5	50				
P145-125Z10HN09-A40	125	40	5	63				
P145-160Z12HN09-B40	160	40	5	63				
P145-200Z10HN09-B60	200	60	5	63				
P145-250Z14HN09-B60	250	60	5	63				

Inserts



Type	Dimension						Grade	
	L	W	d	s	d1	r	BPG20B	BPS411
HNMX0906ANSN-M	-	-	16.50	7.12	4.90	1.00	▲	▲
HNMX0906ANSN-R	-	-	16.50	7.12	4.90	1.00	▲	▲

Recommended: ▲

New grade

BPG217-Strong commonality

A general PVD coated grade, suitable for milling of most materials.
It has excellent wear-resistance and strength,can be used for wide cutting conditions and fast cutting speed.

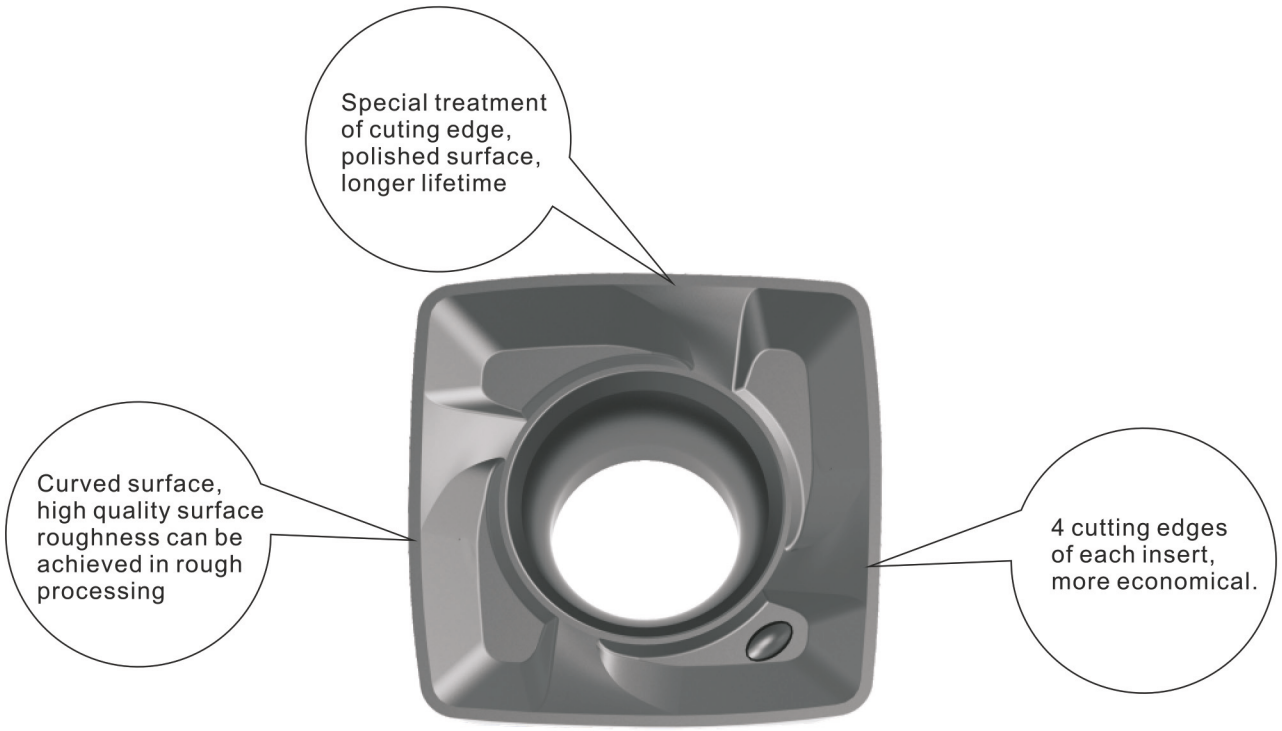
BP2225-Super high wear-resistance and anti-plastic deformation.

PVD coated grade for high-strength stainless steel and difficult-to-process materials.

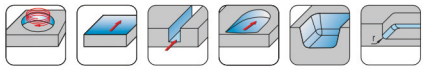
Recommend cutting parameter

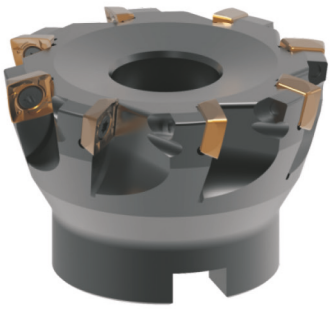
ISO specification	Grade	Cutting speed(m/min)	Feed rate(mm/z)
P:Steel	BPG217	50(30-70)	0.8-1.5
M:Stainless steel	BPG217	50(30-70)	0.8-1.5
S:Heat-resistance alloy	BP2235	50(30-70)	0.8-1.5
S:Titanium	BP2235	50(30-70)	0.8-1.5

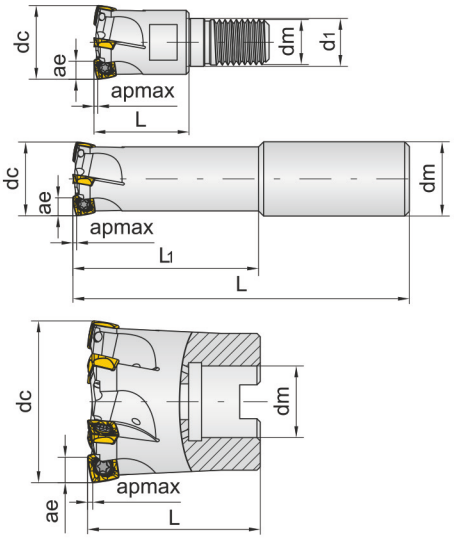
Large feed milling inserts-Advantages



P110 series large feed milling cutter

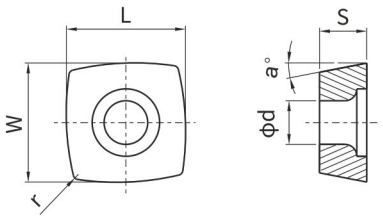






Type	Dimension					Inserts	Screw	Wrench
	dc	dm	apmax	L	L1			
P110-22Z02SD09-M10	22	M10	1.5	30		SDMT09	S030L08S	WT-T08
P110-25Z03SD09-M12	25	M12	1.5	35				
P110-30Z04SD09-M16	30	M16	1.5	42				
P110-32Z04SD09-M16	32	M16	1.5	42				
P110-35Z05SD09-M16	35	M16	1.5	42				
P110-40Z05SD09-M16	40	M16	1.5	42				
P110-22Z02SD09-C20	22	20	1.5	140	65			
P110-25Z03SD09-C25	25	25	1.5	145	80			
P110-30Z04SD09-C25	30	25	1.5	145	80			
P110-32Z04SD09-C32	32	32	1.5	145	80			
P110-40Z05SD09-C32	40	32	1.5	145	80			
P110-50Z06SD09-A22	50	22	1.5	40				
P110-63Z08SD09-A22	63	22	1.5	50				

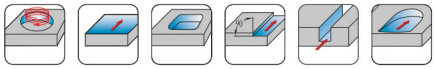
Inserts

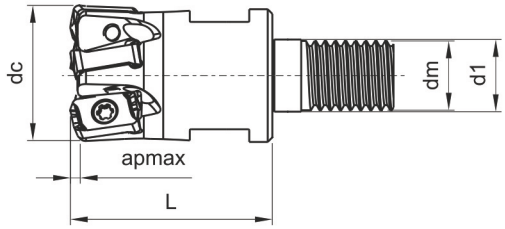


Type	Dimension						Grade	
	L	W	d	s	d1	r	BPG217	BP2235
SDMT090307-SM	-	-	9.00	3.50	3.50	0.70		▲
SDMW09T307SN	-	-	9.00	3.50	3.50	0.70	▲	▲

Recommended: ▲

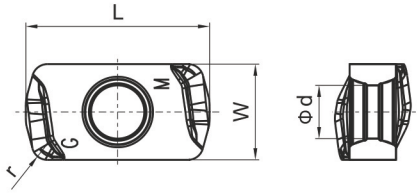
P110 series large feed milling cutter





Type	Dimension					Inserts	Screw	Wrench
	dc	dm	apmax	L	L1			
P110-16Z02LO03-M08	16	M08	1	25		LNGU03	S030L65	T08
P110-20Z03LO03-M10	20	M10	1	30				
P110-25Z04LO03-M12	25	M12	1	35				
P110-32Z05LO03-M16	32	M16	1	40				
P110-16Z02LO03-C16	16	16	1	30	100			
P110-20Z03LO03-C20	20	20	1	50	130			
P110-25Z04LO03-C25	25	25	1	60	140			
P110-32Z05LO03-C32	32	32	1	70	150			

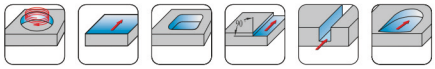
Inserts

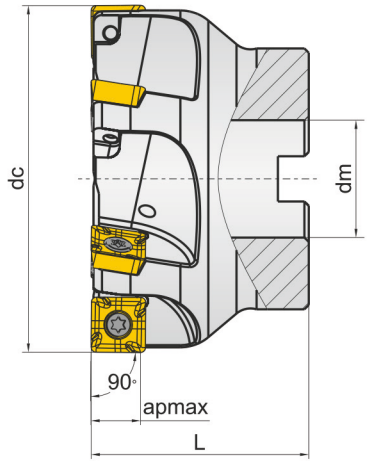


Type	Dimension						Grade	
	L	W	d	s	d1	r	BPG20E	BP2235
LNGU030310R-GM	11.90	6.20	-	3.96	3.45	1.00	▲	▲

Recommended: ▲

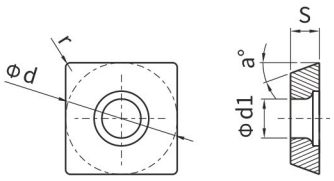
P990 series face milling cutter for aluminum





Type	Dimension					Inserts	Screw	Wrench
	dc	dm	apmax	L	L1			
P990-63Z05SD12-A22	63	22	10	50		SDGT12	S040L10T	T15-T
P990-80Z06SD12-A27	80	27	10	50				
P990-100Z07SD12-A32	100	32	10	50				
P990-125Z08SD12-A40	125	40	10	63				

Inserts



Type	Dimension						Grade
	L	W	d	s	d1	r	BU811
SDGT120408PDFR-LHC	-	-	12.70	4.76	4.40	0.80	▲
SDGT120412PDFR-LHC	-	-	12.70	4.76	4.40	1.20	▲

Recommended: ▲

The 2nd generation high speed AL milling

High performance and high speed milling tools for aluminum

Features

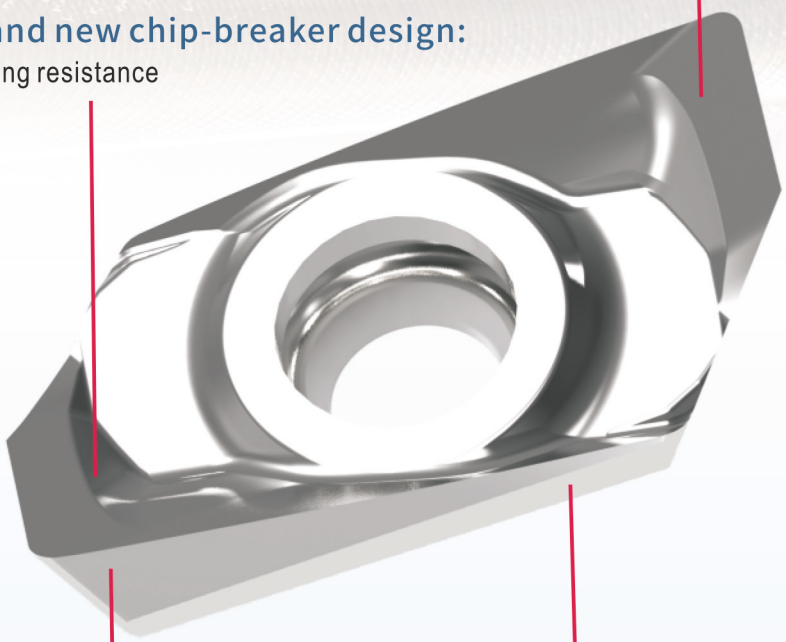
- Mirror treatment of chip breaker to ensure excellent chip breaking and reduce built-up edges
- Large rake angle design, lower cutting load,improve processing quality
- Special locating surface design, suitable for high speed processing.

Cutting edge design:

Large rake ange design, lower cutting force,improve surface roughness

The 2nd Generation, brand new chip-breaker design:

Sharper cutting edge,smaller cutting resistance



The 1st generation chipbreaker design

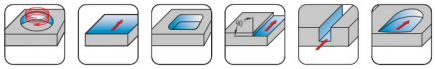
Double rake angle design:

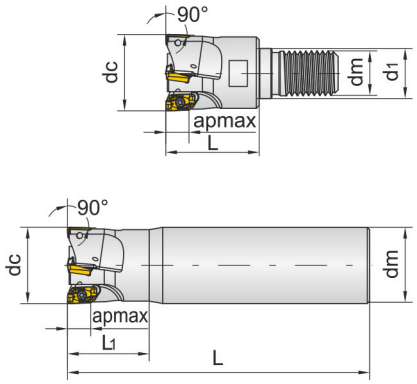
Provide stable clamping force for high cutting speed and large feed processing

High precision grinding technique:

Ensure the tolerance and sharpness of inserts

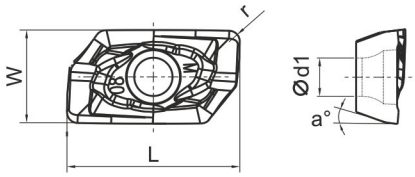
P990 series face milling cutter for aluminum





Type	Dimension					Inserts	Screw	Wrench
	dc	dm	apmax	L	L1			
P990-16Z02AD11-M08	16	M08	10	25		ADGT11	S025L06S	WT07-F
P990-20Z03AD11-M10	20	M10	10	30				
P990-25Z04AD11-M12	25	M12	10	35				
P990-32Z05AD11-M16	32	M16	10	43				
P990-16Z02AD11-C16	16	16	10	165	32			
P990-20Z03AD11-C20	20	20	10	165	40			
P990-25Z04AD11-C25	25	25	10	225	50			
P990-32Z05AD11-C32	32	32	10	225	50			
P990-40Z05AD11-A16	40	16	10	40				
P990-50Z06AD11-A22	50	22	10	40				

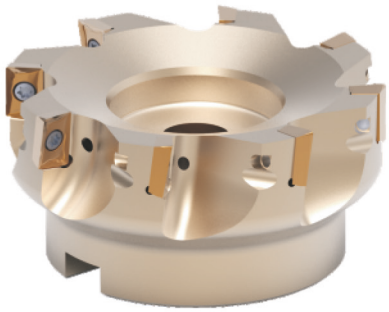
Inserts

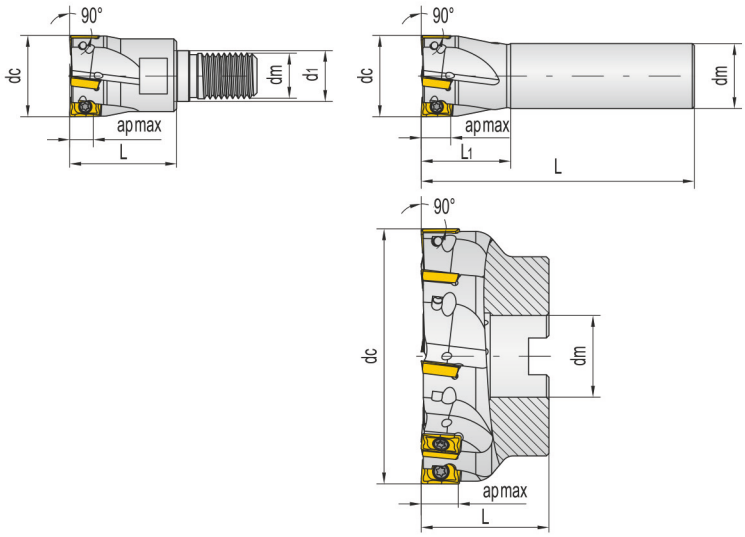


Type	Dimension						Grade
	L	W	d	s	d1	r	BU811
ADGT113502FR-AL	12.58	6.60	-	3.55	2.80	0.20	▲
ADGT113504FR-AL	12.58	6.60	-	3.55	2.80	0.40	▲
ADGT113508FR-AL	12.58	6.60	-	3.55	2.80	0.80	▲

Recommended: ▲

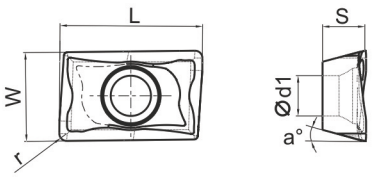
P990 series face milling cutter for aluminum





Type	Dimension					Inserts	Screw	Wrench
	dc	dm	apmax	L	L1			
P990-25Z02AD15-M12	25	M12	13	45		ADGT15	S035L08T	T15-F
P990-32Z02AD15-M16	32	M16	13	52				
P990-40Z03AD15-M16	40	M16	13	52				
P990-25Z02AD15-C25	25	25	13	100	40			
P990-32Z02AD15-C32	32	32	13	110	40			
P990-40Z03AD15-C32	40	32	13	110	40			
P990-40Z04AD15-A16	40	16	13	40				
P990-50Z05AD15-A22	50	22	13	40				
P990-63Z06AD15-A22	63	22	13	40				
P990-80Z07AD15-A27	80	27	13	50				
P990-100Z08AD15-A32	100	32	13	50				
P990-125Z10AD15-A40	125	40	13	63				

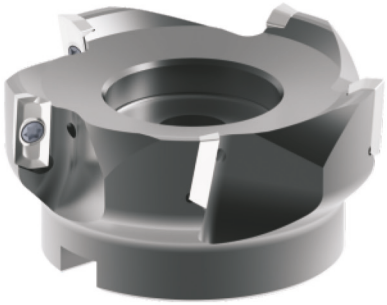
Inserts

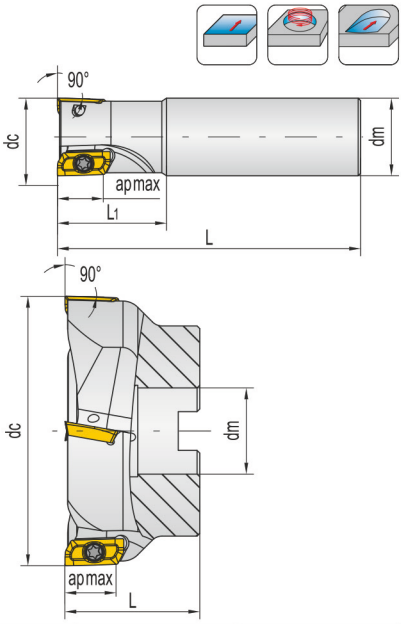


Type	Dimension						Grade
	L	W	d	s	d1	r	BU811
ADGT150408FR-AL	15.60	9.70	-	3.55	2.80	0.80	▲
ADGT150412FR-AL	15.60	9.70	-	3.55	2.80	1.20	▲

Recommended: ▲

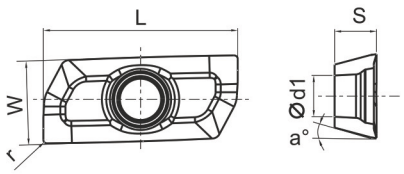
P990 series face milling cutter for aluminum





Type	Dimension					Inserts	Screw	Wrench
	dc	dm	apmax	L	L1			
P990-25Z02AD19-C25	25	25	18	125	45	ADGT19	S040L09T	T15-F
P990-32Z03AD19-C32	32	32	18	125	45			
P990-40Z03AD19-A16	40	16	18	50				
P990-50Z04AD19-A22	50	22	18	50				
P990-63Z05AD19-A22	63	22	18	50				
P990-80Z05AD19-A27	80	27	18	50				
P990-100Z05AD19-A32	100	32	18	50				
P990-125Z06AD19-A40	125	40	18	63				

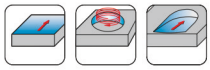
Inserts

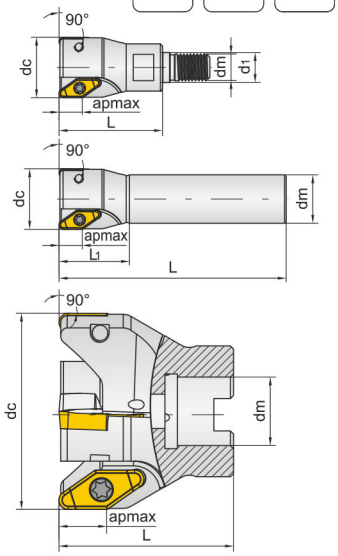


Type	Dimension						Grade
	L	W	d	s	d1	r	BU811
ADGT190404FR-AL	22.10	9.52	-	4.76	4.70	0.40	▲
ADGT190408FR-AL	22.10	9.52	-	4.76	4.70	0.80	▲
ADGT190412FR-AL	22.10	9.52	-	4.76	4.70	1.20	▲
ADGT190420FR-AL	22.10	9.52	-	4.76	4.70	2.00	▲
ADGT190424FR-AL	22.10	9.52	-	4.76	4.70	2.40	▲
ADGT190430FR-AL	22.10	9.52	-	4.76	4.70	3.00	▲
ADGT190432FR-AL	22.10	9.52	-	4.76	4.70	3.20	▲

Recommended: ▲

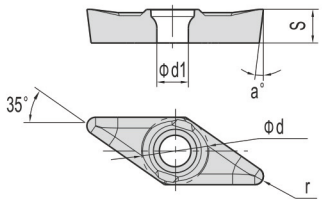
P990 series face milling cutter for aluminum





Type	Dimension					Inserts	Screw	Wrench
	dc	dm	apmax	L	L1			
P990-32Z02VC22-M16	32	M16	16	43		VCGT22	S050L12	HT20
P990-40Z03VC22-M16	40	M16	16	43				
P990-32Z02VC22-C25	32	25	16	120	45			
P990-40Z03VC22-C32	40	32	16	150	45			
P990-50Z03VC22-A22	50	22	16	56				
P990-63Z04VC22-A22	63	22	16	56				
P990-80Z05VC22-A27	80	27	16	56				

Inserts



Type	Dimension						Grade
	L	W	d	s	d1	r	BH3110
VCGT220530E-AL	-	-	12.7	5.56	5.5	3.00	▲

Recommended: ▲

C

Drilling Application

CDBP Tools can provide customized drilling solutions based on the continuous development and technology accumulation

Guide for drilling

Relying on excellent cutting balance, we can achieve stable drilling processing from ordinary steel to stainless steel and aluminum and provide wide selections for customers.
Furthermore, the special designed chip breaker supports better control of the chips with decreased cutting resistance and improved tool life even for machining with low rigidity.

Application

- Designed with balanced force

  The cutting resistance is evenly distributed through the central edge and peripheral edge with optimized locations, which can realize stable drilling process.

- Excellent chip evacuation performance

  The chip control groove designed in the middle part of the chip breaker can effectively control the evacuation direction of the chips to make the chips remove smoothly.

- Apply four insert tips to lower down cost.

  Apply the insert suitable for both central and peripheral processing in the way that two tips in the central edge and another two tips in the peripheral edge are used to machine, thus improving the economical efficiency.

Product characteristics

- Optimized insert design for maximum hole drilling efficiency
- Optimized design of central and peripheral inserts to improve tool life.

Processing power requirements

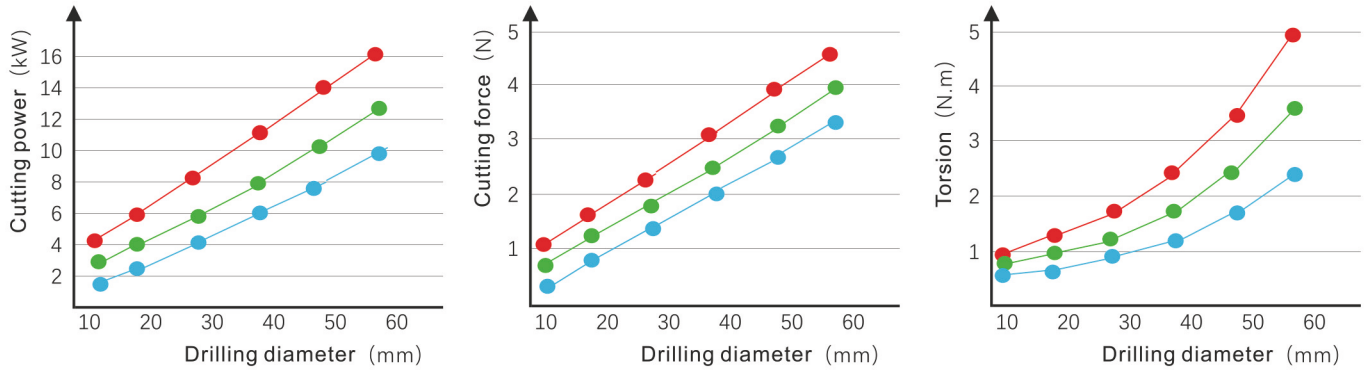
·The following chart shows the cutting force required for drill processing

·Workpiece material: 42CrMo (230HB)

·Cutting parameter: V_c=120(m/min)

·Inner-coolant system

f_n=0.13(mm/rev) f_n=0.1(mm/rev) f_n=0.08(mm/rev)

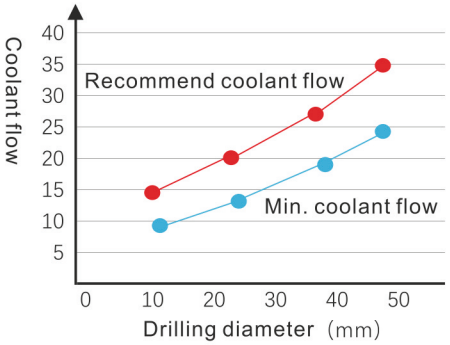


Coolant flow

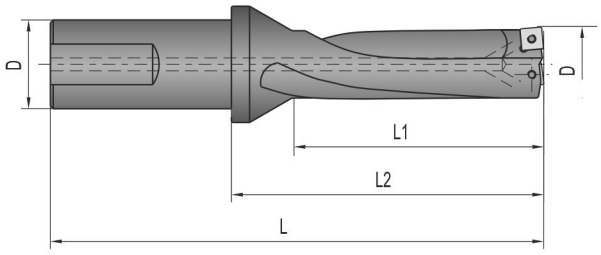
·Workpiece material: 42CrMo (240HB)

·Cutting parameter: V_c=120(m/min), Internal cooling system

·The data in the chart can be changed according to the workpiece material and cutting conditions



Drill tolerance and hole tolerance



Diameter of the drilling hole		ϕ12~ϕ29	ϕ30~ϕ45	ϕ46~ϕ60.5
2D-3D	Diameter of the drilling hole(ΦD)	0.00～-0.15	0.00～-0.15	0.00～-0.15
2D-3D	Hole tolerance	0.20～-0.10	0.25～-0.10	0.28～-0.10
4D-5D	Diameter of the drilling hole(ΦD)	0.00～-0.15	0.00～-0.15	0.00～-0.15
4D-5D	Hole tolerance	0.25～-0.05	0.30～-0.05	0.33～-0.05

Characteristics of PVD coating

Grade	ISO	Characteriscs
BPG20B	P20-P30 K20-K30 M20-M30	• Grade prefered for drilling materials for general purpose • AlTiSi nanocrystalline composite structures coating • Stable high temperature resistance and good hardness • Low coefficient of friction to reduce contact between scrap chips and the insert
BPU200	P15-P25 M10-M25	• Prefered for high speed machining • AlTiSiN nanocrystalline composite coating • High temperature resistance and good hardness • Low coefficient of friction to reduce contact between scrap chips and the insert

Characteriscs of uncoated grade

Grade	ISO	Features
BU810	N01-N10	• Sub-micron grain material ensure high wear resistance and minor crack resistance • Special surface treatment to reduce the build-up edge • Suitable for aluminum,copper,brass,magnesium etc non-ferrous metals

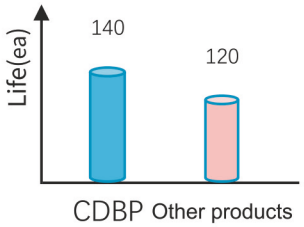
Grade and processing range

Workpiece Material		Hardness	Chip breaker	Grade	Recommended cutting speed V_c(m/min) 50 100 150 200 600
P	Carbon steel	80-180	ZV	BPG20B	60 – 170
P	Low-alloy steel, cast steel	140-260	ZV/ZS	BPG20B BPU200	120 – 170
P	High-alloy steel	260-310	ZS	BPU200	50 – 160
M	Stainless steel	130-280	ZV	BPG20B	80 – 140
M	Stainless steel	130-280	ZS	BPU200	100 – 160
K	Grey cast iron	150-240	ZV	BPG20B	150 – 260
K	Nodular cast iron	150-240	ZS	BPU200	100 – 160
N	Aluminum	30-150	AF	BU810	240 – 600
N	Copper	150-160	AF	BU810	200 – 300
S	Heat resistant alloy	130-400	ZV	BPG20B	40 – 80

Application case

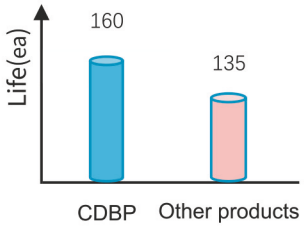
Bearing

Workpiece	Bearing
Cutting parameter	V_c=120(m/min)
	f_n=0.12(mm/rev)
Insert	WCGX050308-ZV (BPG20B)
Cutter	C32-3D26-81WC05



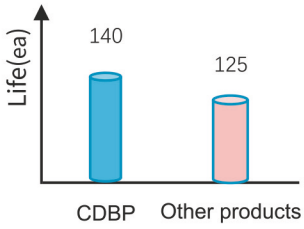
Clapboard

Workpiece	Clapboard
Cutting parameter	V_c=120(m/min)
	f_n=0.12(mm/rev)
	Internal cooling
Insert	WCGX030208-ZS (BPU200)
Cutter	C25-3D19.5-62WC03



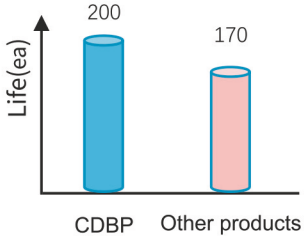
Flange

Workpiece	Flange
Cutting parameter	V_c=160(m/min)
	f_n=0.14(mm/rev)
	Internal cooling
Insert	SPMG050204-ZV (BPG20B)
Cutter	C20-4D13-55SP05



Sleeve

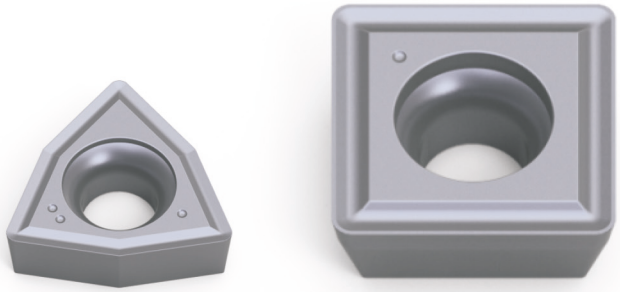
Workpiece	Sleeve
Cutting parameter	V_c=220(m/min)
	f_n=0.11(mm/rev)
	Internal cooling
Insert	WCGT040208-AF (BU810)
Cutter	C25-3D21-66WC04

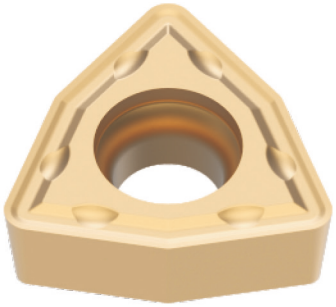


Chipbreaker characteristics

Characterisitcs of chipbreaker ZV

- Excellent chip breaker design provides enough space for chip breaking
- High precision surface, sharp cutting edge, high strength and good impact resistance
- The insert meets the demand for processing various materials and is suitable for austenitic stainless steel, alloy steel etc materials machining.



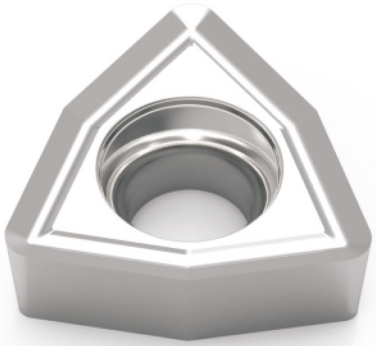


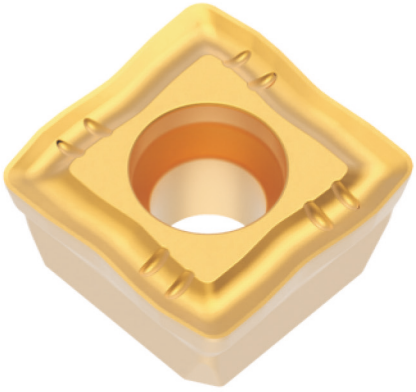
Characteristics of chipbreaker ZS

- Special chip breaker design to evacuate chips easily and to avoid chips clogging
- High strength chip breaker design to ensure strength of the cutting edge and good chip breaking performance
- It can stably handle the chips which are easy to extend and prevent the chips from wrapping around the toolholder
- Suitable for steel and stainless drilling

Characteristics of chipbreaker AF

- Sharp cutting edge to obtain a higher surface quality
- With a wide chip pocket for chip evacuation smoothly
- Suitable for aluminum alloy driling

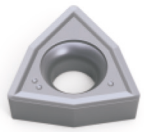
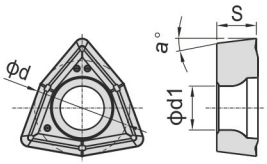
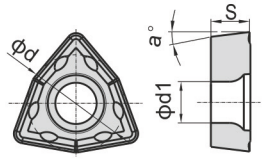
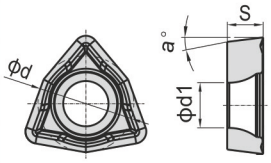
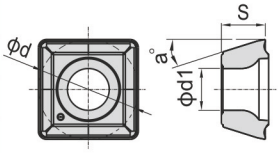
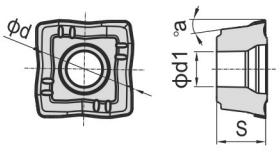




Characteristics of chipbreaker ZP

- Suitable for steel, stainless steel, cast iron and other materials drilling processing
- Wide material range can be used for a variety of working conditions
- Wide material range can be used for a variety of working conditions

Insert available

Shape	Specification		Coating			Uncoating	Dimension (mm)			Geometry
			BPG20B	BPU200	BPG217	BU810	d	s	d1	
	WCGX	030204-ZV	▲				5.56	2.38	2.50	
		030208-ZV	▲				5.56	2.38	2.50	
		040204-ZV	▲				6.35	2.38	2.80	
		040208-ZV	▲				6.35	2.38	2.80	
		050304-ZV	▲				7.94	3.18	3.40	
		050308-ZV	▲				7.94	3.18	3.40	
		06T304-ZV	▲				9.525	3.97	4.40	
		06T308-ZV	▲				9.525	3.97	4.40	
		080408-ZV	▲				12.70	4.76	5.50	
		080412-ZV	▲				12.70	4.76	5.50	
	WCGX	030208-ZS		▲			5.50	2.38	2.80	
		040208-ZS		▲			6.35	2.38	3.00	
		050308-ZS		▲			8.00	3.18	3.40	
		06T308-ZS		▲			9.525	3.97	3.80	
		080412-ZS		▲			12.70	4.76	4.40	
	WCGT	030208-AF				▲	5.56	2.38	2.90	
		040208-AF				▲	6.35	2.38	3.00	
		050308-AF				▲	7.94	3.18	3.40	
		06T308-AF				▲	9.525	3.97	4.00	
		080408-AF				▲	12.70	4.76	4.40	
	SPMG	050204-ZV	▲				5.00	2.38	2.25	
		060204-ZV	▲				6.00	2.38	2.50	
		07T308-ZV	▲				7.94	3.97	2.80	
		090408-ZV	▲				9.80	4.30	4.10	
		110408-ZV	▲				11.50	4.80	4.40	
		140512-ZV	▲				14.30	5.20	5.50	
	SOMT	050204-ZP			▲		4.90	2.38	2.25	
		060204-ZP			▲		5.70	2.38	2.60	
		070306-ZP			▲		6.80	2.80	2.60	
		08T306-ZP			▲		7.90	3.97	2.85	
		09T308-ZP			▲		9.20	3.97	3.80	
		11T308-ZP			▲		11.00	3.97	3.80	
		130408-ZP			▲		12.80	4.40	4.40	
		150510-ZP			▲		15.00	4.80	5.40	

Recommended: ▲

Recommended cutting data for U - drill

	ISO	Workpiece materials		Condition	tensile strength Rm (N/mm²)	Hardness HB	Cutting Speed V_c(m/min)	Feed rate fn f_n(mm/rev)				
								φ 13.0～ φ 18.0	φ 18.5～ φ 29.0	φ 29.5～ φ 36.0	φ 37.0～ φ 55.0	φ 56.0～ φ 68.0
2D	P	Non-alloyed steel,carbon steel, free-cutting steel	0.1-0.25%C	Annealed	420	125	250-350	0.04-0.07-0.09	0.04-0.07-0.09	0.04-0.07-0.10	0.04-0.07-0.11	0.05-0.08-0.12
			0.25-0.55%C	Annealed	650	190	180-250	0.07-0.12-0.22	0.07-0.12-0.22	0.07-0.13-0.24	0.08-0.15-0.27	0.09-0.16-0.30
			0.25-0.55%C	Quenched and tempered	850	250	160-220	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.07-0.13-0.22
			0.55-0.80%C	Annealed	750	220	160-220	0.07-0.12-0.20	0.07-0.12-0.20	0.07-0.13-0.21	0.08-0.15-0.24	0.09-0.16-0.27
			0.55-0.80%C	Quenched and tempered	1000	300	160-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
		Low-alloy steel, cast steel(Less than 5% alloying elements)		Annealed	600	200	150-220	0.04-0.09-0.13	0.04-0.07-0.13	0.04-0.07-0.15	0.05-0.08-0.16	0.06-0.09-0.18
				Quenched and tempered	930	275	120-160	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
					1000	300	120-160	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
					1200	350	120-160	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
		High-alloy steel, cast steel and tool steel		Annealed	680	200	140-180	0.07-0.12-0.22	0.07-0.12-0.22	0.07-0.13-0.24	0.08-0.15-0.27	0.09-0.16-0.30
				Quenched and tempered	1100	325	120-180	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.07-0.13-0.22
	M	Stainless steel, cast steel		Ferritic/ Martensitic	680	200	150-240	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.08-0.13-0.22
				Martensitic	820	240	150-240	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.08-0.13-0.22
				Austenitic	600	180	150-240	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.08-0.13-0.22
	K	Grey cast iron(GG)		Ferritic		160	160-260	0.08-0.19-0.30	0.09-0.20-0.34	0.10-0.22-0.37	0.11-0.24-0.41	0.12-0.27-0.45
				Perlitic		250	160-260	0.08-0.19-0.30	0.09-0.20-0.34	0.10-0.22-0.37	0.11-0.24-0.41	0.12-0.27-0.45
		Nodular cast iron (GGG)		Ferritic		180	160-260	0.08-0.19-0.30	0.09-0.20-0.34	0.10-0.22-0.37	0.11-0.24-0.41	0.12-0.27-0.45
				Perlitic		260	160-260	0.08-0.19-0.30	0.09-0.20-0.34	0.10-0.22-0.37	0.11-0.24-0.41	0.12-0.27-0.45
		Forgeable cast-iron		Ferritic		130	130-220	0.08-0.19-0.30	0.09-0.20-0.34	0.10-0.22-0.37	0.11-0.24-0.41	0.12-0.27-0.45
				Perlitic		230	130-220	0.08-0.19-0.30	0.09-0.20-0.34	0.10-0.22-0.37	0.11-0.24-0.41	0.12-0.27-0.45
	N	Forging AL-alloy		Uncured		60	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Cured		100	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
		Casting aluminium alloy	〈=12%Si	Uncured		75	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Cured		90	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
			〉=12%Si	High temperature treatment		130	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
		Copper Alloy	〉=1%Pb	Free cutting		110	120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Brass		90	120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Electrolytic copper		100	120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
		Non-ferrous metals		Hard plastic, Fiber			120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Hard rubber			120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
	S	Superalloys	Iron-based	Annealed		200	22-60	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.07-0.13-0.22
				Cured		280	22-60	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.07-0.13-0.22
			Nickel or cobalt base	Annealed		250	22-60	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.07-0.13-0.22
				Cured		350	22-60	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.07-0.13-0.22
				forging		320	22-60	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.07-0.13-0.22
		Titanium, titanium alloy			400		22-60	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.07-0.13-0.22
				α+β Alloy cured	1050		22-60	0.05-0.10-0.17	0.05-0.10-0.17	0.05-0.11-0.18	0.06-0.12-0.20	0.07-0.13-0.22

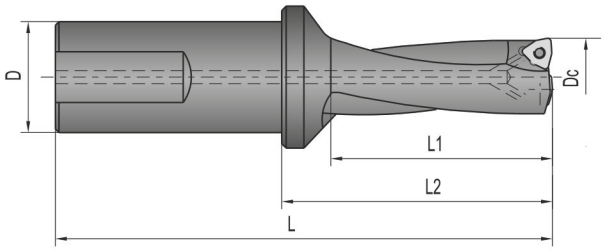
Recommended cutting data for U - drill

	ISO	Workpiece materials		Condition	tensile strength Rm (N/mm²)	Hardness HB	Cutting Speed V_c(m/min)	Feed rate fn f_n(mm/rev)				
								ϕ 13.0～ ϕ 18.0	ϕ 18.5～ ϕ 29.0	ϕ 29.5～ ϕ 36.0	ϕ 37.0～ ϕ 55.0	ϕ 56.0～ ϕ 68.0
3D	P	Non-alloyed steel,carbon steel, free-cutting steel	0.1-0.25%C	Annealed	420	125	250-350	0.04-0.06-0.09	0.04-0.06-0.09	0.04-0.07-0.10	0.04-0.07-0.11	0.05-0.08-0.12
			0.25-0.55%C	Annealed	650	190	180-250	0.07-0.11-0.19	0.07-0.11-0.19	0.07-0.12-0.20	0.08-0.13-0.22	0.09-0.15-0.25
			0.25-0.55%C	Quenched and tempered	850	250	160-220	0.06-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
			0.55-0.80%C	Annealed	750	220	160-220	0.08-0.11-0.17	0.07-0.11-0.17	0.07-0.12-0.18	0.08-0.13-0.20	0.09-0.15-0.22
			0.55-0.80%C	Quenched and tempered	1000	300	160-220	0.06-0.09-0.13	0.05-0.09-0.13	0.05-0.10-0.14	0.06-0.11-0.16	0.07-0.12-0.18
		Low-alloy steel, cast steel(Less than 5% alloying elements)		Annealed	600	200	150-220	0.04-0.06-0.11	0.04-0.06-0.11	0.04-0.07-0.12	0.05-0.07-0.14	0.06-0.08-0.15
				Quenched and tempered	930	275	120-160	0.05-0.09-0.13	0.05-0.09-0.13	0.05-0.10-0.14	0.06-0.11-0.16	0.07-0.12-0.18
					1000	300	120-160	0.05-0.09-0.13	0.05-0.09-0.13	0.05-0.10-0.14	0.06-0.11-0.16	0.07-0.12-0.18
					1200	350	120-160	0.05-0.09-0.13	0.05-0.09-0.13	0.05-0.10-0.14	0.06-0.11-0.16	0.07-0.12-0.18
		High-alloy steel, cast steel and tool steel		Annealed	680	200	140-180	0.07-0.11-0.19	0.07-0.11-0.19	0.07-0.12-0.20	0.08-0.13-0.22	0.09-0.15-0.25
				Quenched and tempered	1100	325	120-180	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
	M	Stainless steel, cast steel		Ferritic/ Martensitic	680	200	150-240	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.10	0.06-0.11-0.17	0.07-0.12-0.19
				Martensitic	820	240	150-240	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
				Austenitic	600	180	150-240	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
	K	Grey cast iron(GG)		Ferritic		160	160-260	0.08-0.17-0.25	0.09-0.19-0.28	0.10-0.20-0.30	0.11-0.22-0.34	0.12-0.24-0.38
				Perlitic		250	160-260	0.08-0.17-0.25	0.09-0.19-0.28	0.10-0.20-0.30	0.11-0.22-0.34	0.12-0.24-0.38
		Nodular cast iron (GGG)		Ferritic		180	160-260	0.08-0.17-0.25	0.09-0.19-0.28	0.10-0.20-0.30	0.11-0.22-0.34	0.12-0.24-0.38
				Perlitic		260	160-260	0.08-0.17-0.25	0.09-0.19-0.28	0.10-0.20-0.30	0.11-0.22-0.34	0.12-0.24-0.38
		Forgeable cast-iron		Ferritic		130	130-220	0.08-0.17-0.25	0.09-0.19-0.28	0.10-0.20-0.30	0.11-0.22-0.34	0.12-0.24-0.38
				Perlitic		230	130-220	0.08-0.17-0.25	0.09-0.19-0.28	0.10-0.20-0.30	0.11-0.22-0.34	0.12-0.24-0.38
	N	Forging AL-alloy		Uncured		60	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Cured		100	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
		Casting aluminium alloy	〈=12%Si	Uncured		75	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Cured		90	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
			〉=12%Si	High temperature treatment		130	300-400	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
		Copper Alloy	〉=1%Pb	Free cutting		110	120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Brass		90	120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Electrolytic copper		100	120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
		Non-ferrous metals		Hard plastic, Fiber			120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
				Hard rubber			120-220	0.05-0.10-0.16	0.05-0.10-0.16	0.05-0.11-0.17	0.06-0.12-0.19	0.07-0.13-0.20
	S	Superalloys	Iron-based	Annealed		200	22-60	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
				Cured		280	22-60	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
			Nickel or cobalt base	Annealed		250	22-60	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
				Cured		350	22-60	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
				forging		320	22-60	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
		Titanium, titanium alloy			400		22-60	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19
				α+β Alloy cured	1050		22-60	0.05-0.09-0.14	0.05-0.09-0.14	0.05-0.10-0.15	0.06-0.11-0.17	0.07-0.12-0.19

Recommended cutting data for U - drill

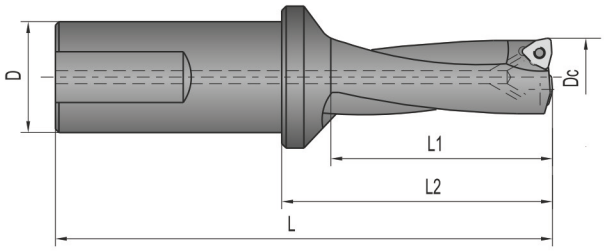
	ISO	Workpiece materials		Condition	tensile strength Rm (N/mm²)	Hardness HB	Cutting speed V_c(m/min)	Feed rate fn f_n(mm/rev)				
								ϕ 13.0～ ϕ 18.0	ϕ 18.5～ ϕ 29.0	ϕ 29.5～ ϕ 36.0	ϕ 37.0～ ϕ 55.0	ϕ 56.0～ ϕ 68.0
4D	P	Non-alloyed steel,carbon steel, free-cutting steel	0.1-0.25%C	Annealed	420	125	250-350	0.04-0.06-0.09	0.04-0.06-0.09	0.04-0.06-0.09	0.04-0.07-0.09	0.05-0.08-0.10
			0.25-0.55%C	Annealed	650	190	180-250	0.07-0.10-0.16	0.07-0.10-0.16	0.07-0.11-0.17	0.08-0.13-0.20	0.09-0.14-0.21
			0.25-0.55%C	Quenched and tempered	850	250	160-220	0.05-0.09-0.12	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
			0.55-0.80%C	Annealed	750	220	160-220	0.07-0.10-0.14	0.07-0.10-0.14	0.07-0.11-0.16	0.08-0.13-0.18	0.09-0.14-0.19
			0.55-0.80%C	Quenched and tempered	1000	300	160-220	0.05-0.09-0.11	0.05-0.09-0.11	0.05-0.09-0.12	0.06-0.10-0.13	0.07-0.11-0.15
		Low-alloy steel, cast steel(Less than 5% alloying elements)		Annealed	600	200	150-220	0.04-0.06-0.09	0.04-0.06-0.09	0.04-0.06-0.10	0.05-0.07-0.11	0.06-0.08-0.13
				Quenched and tempered	930	275	120-160	0.05-0.09-0.11	0.05-0.09-0.11	0.05-0.09-0.12	0.06-0.10-0.13	0.07-0.11-0.15
					1000	300	120-160	0.05-0.09-0.11	0.05-0.09-0.11	0.05-0.09-0.12	0.06-0.10-0.13	0.07-0.11-0.15
					1200	350	120-160	0.05-0.09-0.11	0.05-0.09-0.11	0.05-0.09-0.12	0.06-0.10-0.13	0.07-0.11-0.15
		High-alloy steel, cast steel and tool steel		Annealed	680	200	140-180	0.07-0.10-0.16	0.07-0.10-0.16	0.07-0.11-0.17	0.08-0.13-0.20	0.09-0.14-0.21
				Quenched and tempered	1100	325	120-180	0.05-0.09-0.12	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
	M	Stainless steel, cast steel		Ferritic/ Martensitic	680	200	150-240	0.05-0.09-0.12	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
				Martensitic	820	240	150-240	0.05-0.09-0.12	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
				Austenitic	600	180	150-240	0.05-0.09-0.12	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
	K	Grey cast iron(GG)		Ferritic		160	160-260	0.08-0.16-0.21	0.09-0.18-0.24	0.10-0.20-0.26	0.11-0.21-0.29	0.12-0.23-0.32
				Perlitic		250	160-260	0.08-0.16-0.21	0.09-0.18-0.24	0.10-0.20-0.26	0.11-0.21-0.29	0.12-0.23-0.32
		Nodular cast iron (GGG)		Ferritic		180	160-260	0.08-0.16-0.21	0.09-0.18-0.24	0.10-0.20-0.26	0.11-0.21-0.29	0.12-0.23-0.32
				Perlitic		260	160-260	0.08-0.16-0.21	0.09-0.18-0.24	0.10-0.20-0.26	0.11-0.21-0.29	0.12-0.23-0.32
		Forgeable cast-iron		Ferritic		130	130-220	0.08-0.16-0.21	0.09-0.18-0.24	0.10-0.20-0.26	0.11-0.21-0.29	0.12-0.23-0.32
				Perlitic		230	130-220	0.08-0.16-0.21	0.09-0.18-0.24	0.10-0.20-0.26	0.11-0.21-0.29	0.12-0.23-0.32
	N	Forging AL-alloy		Uncured		60	300-400	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
				Cured		100	300-400	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
		Casting aluminium alloy	〈=12%Si	Uncured		75	300-400	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
				Cured		90	300-400	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
			〉=12%Si	High temperature treatment		130	300-400	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
		Copper Alloy	〉=1%Pb	Free cutting		110	120-220	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
				Brass		90	120-220	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
				Electrolytic copper		100	120-220	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
		Non-ferrous metals		Hard plastic, Fiber			120-220	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
				Hard rubber			120-220	0.04-0.09-0.14	0.04-0.09-0.14	0.05-0.10-0.15	0.05-0.11-0.17	0.06-0.12-0.19
	S	Superalloys	Iron-based	Annealed		200	22-60	0.06-0.10-0.13	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
				Cured		280	22-60	0.06-0.10-0.13	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
			Nickel or cobalt base	Annealed		250	22-60	0.06-0.10-0.13	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
				Cured		350	22-60	0.06-0.10-0.13	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
				forging		320	22-60	0.06-0.10-0.13	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
		Titanium, titanium alloy			400		22-60	0.06-0.10-0.13	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16
				α+β Alloy cured	1050		22-60	0.06-0.10-0.13	0.05-0.09-0.12	0.05-0.09-0.13	0.06-0.10-0.14	0.07-0.11-0.16

U - drill WC type (3D)



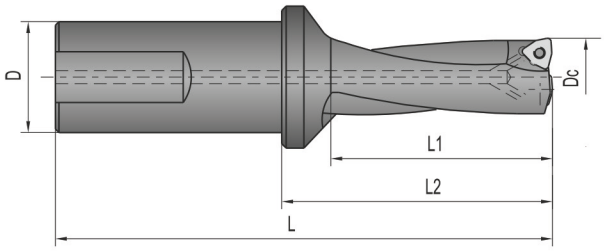
Type	Cutting diameter ΦDc	Arbor Diameter ΦD	Size(mm)			Available inserts	Screw	Wrench
			L	L1	L2			
C20-3D15-48WC03	15	20	107	48	63	WC...030208	M2.5*6	T8
C20-3D15.5-50WC03	15.5		109	50	65			
C20-3D16-51WC03	16		110	51	66			
C20-3D16.5-53WC03	16.5		112	53	68			
C20-3D17-54WC03	17		113	54	69			
C25-3D17.5-56WC03	17.5	25	127	56	71			
C25-3D18-57WC03	18		128	57	72			
C25-3D18.5-59WC03	18.5		130	59	74			
C25-3D19-60WC03	19		131	60	75			
C25-3D19.5-62WC03	19.5		133	62	77			
C25-3D20-63WC03	20		134	63	78			
C25-3D20.5-65WC03	20.5		136	65	80			
C25-3D21-66WC04	21		137	66	81	WC...040208	M2.5*6	T8
C25-3D21.5-68WC04	21.5		139	68	83			
C25-3D22-69WC04	22		140	69	84			
C25-3D22.5-71WC04	22.5		142	71	86			
C25-3D23-72WC04	23		146	72	90			
C25-3D23.5-74WC04	23.5		148	74	92			
C25-3D24-75WC04	24		149	75	93			
C25-3D24.5-77WC04	24.5		151	77	95			
C25-3D25-78WC05	25		152	78	96	WC...050308	M3*8	T8
C32-3D25.5-80WC05	25.5	32	160	80	100			
C32-3D26-81WC05	26		161	81	101			
C32-3D26.5-83WC05	26.5		163	83	103			
C32-3D27-84WC05	27		164	84	104			
C32-3D27.5-86WC05	27.5		166	86	106			
C32-3D28-87WC05	28		167	87	107			
C32-3D28.5-89WC05	28.5		169	89	109			
C32-3D29-91WC05	29		172	91	112			
C32-3D29.5-93WC05	29.5		174	93	114			
C32-3D30-94WC05	30		178	94	118			
C32-3D30.5-96WC05	30.5		180	96	120			

U - drill WC type (3D)



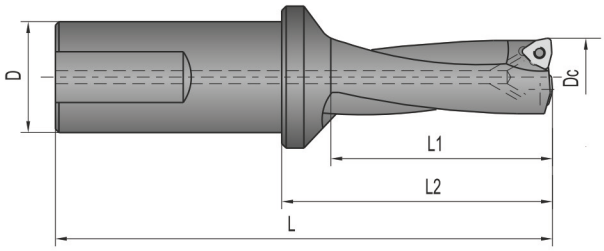
Type	Cutting diameter ΦDc	Arbor diameter ΦD	Size(mm)			Available inserts	Screw	Wrench
			L	L1	L2			
C32-3D31-97WC06	31	32	181	97	121	WC...06T308	M3.5*8	T15
C32-3D31.5-99WC06	31.5		183	99	123			
C32-3D32-100WC06	32		184	100	124			
C32-3D32.5-102WC06	32.5		186	102	126			
C32-3D33-103WC06	33		187	103	127			
C32-3D33.5-105WC06	33.5		189	105	129			
C32-3D34-106WC06	34		190	106	130			
C32-3D34.5-108WC06	34.5		192	108	132			
C32-3D35-109WC06	35		193	109	133			
C32-3D36-112WC06	36		196	112	136			
C32-3D37-116WC06	37		206	116	146			
C32-3D38-119WC06	38		209	119	149			
C40-3D40-125WC06	40	40	225	125	155			
C40-3D41-128WC06	41		228	128	158			
C40-3D42-131WC08	42		231	131	161	WC...080412	M4*10	T15
C40-3D43-134WC08	43		234	134	164			
C40-3D44-137WC08	44		237	137	167			
C40-3D45-140WC08	45		240	140	170			
C40-3D46-143WC08	46		243	143	173			
C40-3D47-146WC08	47		246	146	176			
C40-3D48-149WC08	48		249	149	179			
C40-3D49-152WC08	49		252	152	182			
C40-3D50-155WC08	50		255	155	185			
C40-3D54-167WC08	54		267	167	197			
C40-3D55-170WC08	55		270	170	200			

U - drill WC type (4D)



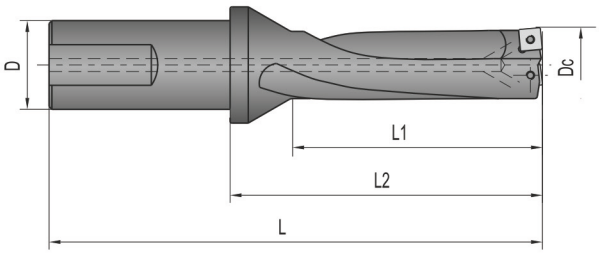
Type	Cutting diameter ΦDc	Arbor diameter ΦD	Size(mm)			Available inserts	Screw	Wrench
			L	L1	L2			
C20-4D15-63WC03	15	20	122	63	78	WC...030208	M2.5*6	T8
C20-4D15.5-65WC03	15.5		124	65	80			
C20-4D16-67WC03	16		126	67	82			
C20-4D16.5-69WC03	16.5		128	69	84			
C20-4D17-71WC03	17		130	71	86			
C25-4D17.5-73WC03	17.5	25	144	73	88			
C25-4D18-75WC03	18		146	75	90			
C25-4D18.5-77WC03	18.5		148	77	92			
C25-4D19-79WC03	19		150	79	94			
C25-4D19.5-81WC03	19.5		152	81	96			
C25-4D20-83WC03	20		154	83	98			
C25-4D20.5-85WC03	20.5		156	85	100			
C25-4D21-87WC04	21		158	87	102	WC...040208	M2.5*6	T8
C25-4D21.5-89WC04	21.5		160	89	104			
C25-4D22-91WC04	22		162	91	106			
C25-4D22.5-93WC04	22.5		164	93	108			
C25-4D23-95WC04	23		169	95	113			
C25-4D23.5-97WC04	23.5		171	97	115			
C25-4D24-99WC04	24		173	99	117			
C25-4D24.5-101WC04	24.5		175	101	119			
C25-4D25-103WC05	25		177	103	121	WC...050308	M3*8	T8
C32-4D25.5-105WC05	25.5	32	185	105	125			
C32-4D26-107WC05	26		187	107	127			
C32-4D26.5-109WC05	26.5		189	109	129			
C32-4D27-111WC05	27		191	111	131			
C32-4D27.5-113WC05	27.5		193	113	133			
C32-4D28-115WC05	28		195	115	135			
C32-4D28.5-117WC05	28.5		197	117	137			
C32-4D29-120WC05	29		201	120	141			
C32-4D29.5-122WC05	29.5		203	122	143			
C32-4D30-124WC05	30		208	124	148			
C32-4D30.5-126WC05	30.5		210	126	150			

U - drill WC type (4D)



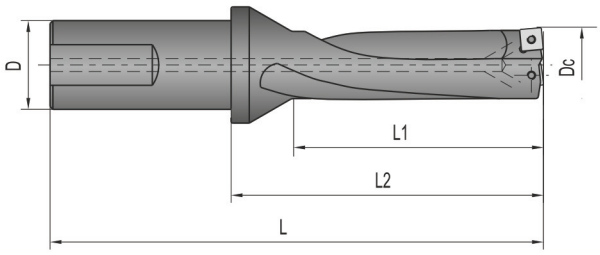
Type	Cutting diameter ΦDc	Arbor diameter ΦD	Size(mm)			Available inserts	Screw	Wrench
			L	L1	L2			
C32-4D31-128WC06	31	32	212	128	152	WC...06T308	M3.5*8	T15
C32-4D31.5-130WC06	31.5		214	130	154			
C32-4D32-132WC06	32		216	132	156			
C32-4D32.5-134WC06	32.5		218	134	158			
C32-4D33-136WC06	33		220	136	160			
C32-4D33.5-138WC06	33.5		222	138	162			
C32-4D34-140WC06	34		224	140	164			
C32-4D34.5-142WC06	34.5		226	142	166			
C32-4D35-144WC06	35		228	144	168			
C32-4D36-148WC06	36		232	148	172			
C40-4D40-165WC06	40	40	265	165	195			
C40-4D41-169WC06	41		269	169	199			
C40-4D42-173WC08	42		273	173	203	WC...080412	M4*10	T15
C40-4D43-177WC08	43		277	177	207			
C40-4D44-181WC08	44		281	181	211			
C40-4D45-185WC08	45		285	185	215			
C40-4D49-201WC08	49		301	201	231			
C40-4D50-205WC08	50		305	205	235			
C40-4D55-225WC08	55		325	225	255			

U - drill SP type (3D)



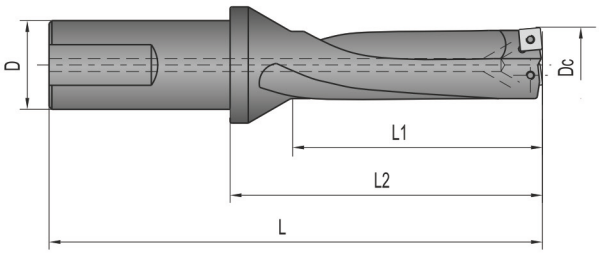
Type	Cutting diameter ΦDc	Arbor diameter ΦD	Size(mm)			Available inserts	Screw	Wrench
			L	L1	L2			
C20-3D15-48SP05	15	20	107	48	63	SP...050204	M2*5	T6
C20-3D15.5-50SP05	15.5		109	50	65			
C20-3D16-51SP06	16		110	51	66	SP...060204	M2.2*6	T6
C20-3D16.5-53SP06	16.5		112	53	68			
C20-3D17-54SP06	17		113	54	69			
C25-3D17.5-56SP06	17.5	25	127	56	71			
C25-3D18-57SP06	18		128	57	72			
C25-3D18.5-59SP06	18.5		130	59	74			
C25-3D19-60SP06	19		131	60	75			
C25-3D19.5-62SP06	19.5		133	62	77			
C25-3D20-63SP06	20		134	63	78			
C25-3D20.5-65SP06	20.5		136	65	80			
C25-3D21-66SP06	21		137	66	81			
C25-3D21.5-68SP06	21.5		139	68	83			
C25-3D22-69SP07	22		140	69	84	SP..07T308	M2.5*6	T8
C25-3D22.5-71SP07	22.5		142	71	86			
C25-3D23-72SP07	23		146	72	90			
C25-3D23.5-74SP07	23.5		148	74	92			
C25-3D24-75SP07	24		149	75	93			
C25-3D24.5-77SP07	24.5		151	77	95			
C25-3D25-78SP07	25		152	78	96			
C32-3D25.5-80SP07	25.5	32	160	80	100			
C32-3D26-81SP07	26		161	81	101			
C32-3D26.5-83SP07	26.5		163	83	103			
C32-3D27-84SP07	27		164	84	104			
C32-3D27.5-86SP07	27.5		166	86	106			
C32-3D28-87SP09	28		167	87	107	SP...090408	M3.5*8	T15
C32-3D28.5-88SP09	28.5		169	89	109			
C32-3D29-91SP09	29		172	91	112			
C32-3D29.5-93SP09	29.5		174	93	114			
C32-3D30-94SP09	30		178	94	118			
C32-3D30.5-96SP09	30.5		180	96	120			
C32-3D31-97SP09	31		181	97	121			
C32-3D31.5-99SP09	31.5		183	99	123			
C32-3D32-100SP09	32		184	100	124			
C32-3D32.5-102SP09	32.5		186	102	126			
C32-3D33-103SP09	33		187	103	127			
C32-3D33.5-105SP09	33.5		189	105	129			

U - drill SP type (3D)



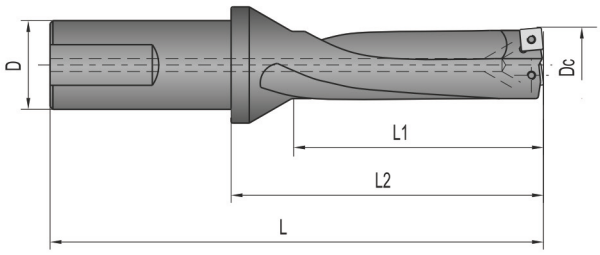
Type	Cutting diameter ΦDc	Arbor diameter ΦD	Size(mm)			Available inserts	Screw	Wrench
			L	L1	L2			
C32-3D34-106SP11	34	32	190	106	130	SP...110408	M4*10	T15
C32-3D34.5-108SP11	34.5		192	108	132			
C32-3D35-109SP11	35		193	109	133			
C32-3D36-112SP11	36		196	112	136			
C32-3D37-116SP11	37		206	116	146			
C32-3D38-119SP11	38		209	119	149			
C32-3D39-122SP11	39		222	122	152			
C40-3D40-125SP11	40	40	225	125	155			
C40-3D41-128SP11	41		228	128	158			
C40-3D42-131SP14	42		231	131	161	SP...140512	M5*10	T20
C40-3D43-134SP14	43		234	134	164			
C40-3D44-137SP14	44		237	137	167			
C40-3D45-140SP14	45		240	140	170			
C40-3D46-143SP14	46		243	143	173			
C40-3D47-146SP14	47		246	146	176			
C40-3D48-149SP14	48		249	149	179			
C40-3D49-152SP14	49		252	152	182			
C40-3D50-155SP14	50		255	155	185			
C40-3D54-167SP09	54		267	167	197	SP...090408	M3.5*8	T15
C40-3D55-170SP09	55		270	170	200			

U - drill SP type (4D)



Type	Cutting diameter ΦDc	Arbor diameter ΦD	Size(mm)			Available inserts	Screw	Wrench
			L	L1	L2			
C20-4D15-63SP05	15	20	122	63	78	SP...050204	M2*5	T6
C20-4D15.5-65SP05	15.5		124	65	80			
C20-4D16-67SP06	16		126	67	82	SP...060204	M2.2*6	T6
C20-4D16.5-69SP06	16.5		128	69	84			
C20-4D17-71SP06	17		130	71	86			
C25-4D17.5-73SP06	17.5	25	144	73	88			
C25-4D18-75SP06	18		146	75	90			
C25-4D18.5-77SP06	18.5		148	77	92			
C25-4D19-79SP06	19		150	79	94			
C25-4D19.5-81SP06	19.5		152	81	96			
C25-4D20-83SP06	20		154	83	98			
C25-4D20.5-85SP06	20.5		156	85	100			
C25-4D21-87SP06	21		158	87	102			
C25-4D21.5-89SP06	21.5		160	89	104			
C25-4D22-91SP07	22		162	91	106	SP..07T308	M2.5*6	T8
C25-4D22.5-93SP07	22.5		164	93	108			
C25-4D23-95SP07	23		169	95	113			
C25-4D23.5-97SP07	23.5		171	97	115			
C25-4D24-99SP07	24		173	99	117			
C25-4D24.5-101SP07	24.5		175	101	119			
C25-4D25-103SP07	25		177	103	121			
C32-4D25.5-105SP07	25.5	32	185	105	125			
C32-4D26-107SP07	26		187	107	127			
C32-4D26.5-109SP07	26.5		189	109	129			
C32-4D27-111SP07	27		191	111	131			
C32-4D27.5-113SP07	27.5		193	113	133			
C32-4D28-115SP09	28		195	115	135	SP...090408	M3.5*8	T15
C32-4D28.5-117SP09	28.5		197	117	137			
C32-4D29-120SP09	29		201	120	141			
C32-4D29.5-122SP09	29.5		203	122	143			
C32-4D30-124SP09	30		208	124	148			
C32-4D30.5-126SP09	30.5		210	126	150			
C32-4D31-128SP09	31		212	128	152			
C32-4D31.5-130SP09	31.5		214	130	154			
C32-4D32-132SP09	32		216	132	156			
C32-4D32.5-134SP09	32.5		218	134	158			
C32-4D33-136SP09	33		220	136	160			
C32-4D33.5-138SP09	33.5		222	138	162			

U - drill SP type (4D)



Type	Cutting diameter ΦDc	Arbor diameter ΦD	Size(mm)			Available inserts	Screw	Wrench
			L	L1	L2			
C32-4D34-140SP11	34	32	224	140	164	SP...110408	M4*10	T15
C32-4D34.5-142SP11	34.5		226	142	166			
C32-4D35-144SP11	35		228	144	168			
C32-4D36-148SP11	36		232	148	172			
C40-4D40-165SP11	40	40	265	165	195			
C40-4D41-169SP11	41		269	169	199			
C40-4D42-171SP14	42		273	173	203	SP...140512	M5*10	T20
C40-4D43-177SP14	43		277	177	207			
C40-4D44-181SP14	44		281	181	211			
C40-4D45-185SP14	45		285	185	215			
C40-4D49-201SP14	49		301	201	231			
C40-4D50-205SP14	50		305	205	235			
C40-4D55-225SP09	55		325	225	255	SP...090408	M3.5*8	T15

D

Comparision table of metal materials

High-quality carbon structural steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
10	S10C	1010	1.0301	C10
15	S15C	1015	1.0401	C15
20	S20C	1020	1.0402	C22
25	S25C	1025	1.0406	C25
30	S30C	1030	1.0528	C30
35	S35C	1035	1.0501	C35
40	S40C	1040	1.0511	C40
45	S45C	1045	1.0503	C45
50	S50C	1049	1.0540	C50
55	S55C	1055	1.0535	C55
58	S58C	1060	1.0601	C58

Structural alloy steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
40CrNi	SNC236	3135	1.571	36NiCr6
12CrNi2	SNC415	3415	1.5732	14NiCr10
30CrNi3	SNC631	-	-	-
12CrNi3	SNC815	3310	1.5752	14NiCr14
37CrNi3	SNC836	-	-	-

Structural alloy steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
20CrNiMo	SNCM220	8620	1.6523	21NiCrMo2
	SNCM240	8640	1.6546	40NiCrMo22
	SNCM415	-	-	-
	SNCM420	4320	-	-
40CrNiMoA	SNCM439	4340	1.6582	35CrNiMo6
45CrNiMoVA	SNCM447	-	-	-
	SNCM630	-	-	-
	SNCM815	-	-	-

Structural alloy steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
15Cr	SCr415	5015	1.7015	15Cr3
20Cr	SCr420	5120	1.7020	20Cr4
30Cr	SCr430	5130	1.7033	34Cr4
35Cr	SCr435	5132	1.7034	37Cr4
40Cr	SCr440	5140	1.7045	42Cr4
45Cr	SCr445	5147	-	-

Structural alloy steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
	SUH31	-	-	-
5Cr21Mn9Ni4n	SUH35	-	-	-
Y5Cr21Mn9Ni4N	SUH36	-	-	-
2Cr22Ni11N	SUH37	-	-	-
3Cr20Ni11Mo2PB	SUH38	-	-	-
2Cr23Ni13	309	AISI 309	-	-
2Cr25Ni20	310	AISI 310	1.4845	CrNi2520
1Cr16Ni35	330	AISI 330	-	-

Structural alloy steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
20Mn2	SMn420	1522	-	-
35Mn2	SMn433	1536	-	-
40Mn2	SMn438	1541	-	-
45Mn2	SMn443	1541	-	-
20CrMn	SMnC420	-	-	-
40CrMn	SMnC443	-	-	-

Carbon tool steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
T13	SK1	W1-13	-	-
T12	SK2	W1-11 1/2	-	-
T11	SK3	W1-10	1.1545	C105W1
T9	SK4	W1-9	-	-
T8MnA	SK5	W1-8	1.1525	C80W1
T8	SK6	W1-7	1.1525	C80W1
T7	SK7	-	1.1620	C70W2

High-speed steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
W18Cr4V	SKH2	T1	-	-
W18Cr4VCo5	SKH3	T4	-	-
W12Cr4V5CoV	SKH10	T15	-	-
W6Mo5Cr4V2	SKH51	M2	1.334	S6-5-2
W6Mo5Cr4V3	SKH52	M3-1	-	-
CW6Mo5Cr4V3	SKH53	M3-2	1.3344	S6-5-3
	SKH54	M4	-	-
	SKH56	M36	-	-

Alloy tool steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
	SKS11	F2	-	-
	SKS51	L6	-	-
	SKS43	W2-9 1/2	-	-
	SKS45	W2-8 1/2	-	-
Cr12	SKD1	D3	1.2080	X210Cr12
Cr12MoV	SKD11	D2	1.2379	X100CrMoV5
	SKD12	A2	1.2363	X100CrMoV51
	SKD2	-	1.2436	X210CrW12
3Cr2W8V	SKD5	H21	1.2581	C30WCrV9
4Cr5W2VSi	SKD61	H13	1.2344	X40CrMoV5

Structural alloy steel				
China	Japan	USA	Gernmany	
GB	JIS	AISI / SAE	W.nr	DIN
15CrMo	SCM415	-	1.7262	15CrMo5
20CrMo	SCM420	-	-	-
30CrMo	SCM430	4130	1.7218	25CrMo4
35CrMo	SCM435	4137	1.7220	34CrMo4
42CrMo	SCM440	4140	1.7223	41CrMo4
45CrMo	SCM4415	4145	-	-

Surface roughness

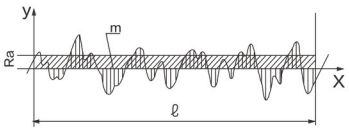
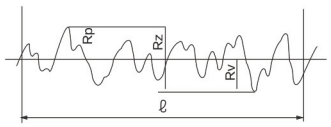
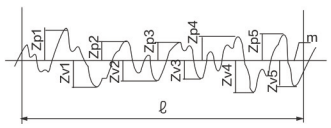
Theoretical roughness

The surface roughness of the theoretical value can be expressed as follows in terms of the cutting shape of the tip

$$R(max) \approx \frac{f_n^2}{8r} \times 1{,}000(\mu m) \qquad [f_n: \text{Feed rate(mm/rev)} \quad r: \text{Corner radius(mm)}]$$

From the formula we can see in the theoretical ponit of view that it is consistent with the actual processing experience, namely the feed to a great extent has impact on the surface roughness and the increase of the nose radius also has positive impact to improve roughness.

Measured roughness

Type	Code	Solving method	Examples of solving methods (Figure)	Representation method	
				Code	Significance
Geometric mean roughness	Ra	Take one standard length in the avaerage line from the roughness curve measured as horizontal axis and its perpendicular direction as vertical axis. When the roughness curve is expressed as Y=f(X), its geometric mean value is obtained from the formular below in Micron(μm). $Ra=\frac{1}{\ell}\int_0^{\ell}[f_n(\times)]dx$		3.2	For the surface roughness obtained by any method, the upper limit of Ra is 3.2μm
				3.2	For the surface roughness obtained by the method of material removal, the upper limit of Ra is 3.2μm
				3.2	For the surface roughness obtained by the method of without material removal, the upper limit of Ra is 3.2μm
				3.2 / 1.6	For the surface roughness obtained by the method of material removal, the upper limit of Ra is 3.2μm, Ra lower limit of Ra is 1.6μm
Maximum height	Rmax	Take one standard length in the avaerage line from the roughness curve measured to measure the distance between the peak and the bottom. The distance is expressed in micron (μm). $Rmax=Rp+Rv$ generally speaking: $Ra \approx \frac{1}{10} Rmax$		3.2max	For the surface roughness obtained by any method, the upper limit of Ra is 3.2μm
				3.2max	For the surface roughness obtained by the method of material removal, the upper limit of Ra is 3.2μm
				3.2max	For the surface roughness obtained by the method of without material removal, the upper limit of Ra is 3.2μm
				3.2max / 1.6min	For the surface roughness obtained by the method of material removal, the upper limit of Ra is 3.2μm, the lower limit of Ra is 1.6μm
Ten point average roughness	Rz	Take one standard length in the avaerage line from the roughness curve measured to calculate the arithmetic mean value between the absolute values of the elevation(Zp) from the average line to five peak values and the elevation(Zv) to five botton values. The arithmetic mean value is expressed in micron (μm). $RzJIS=\frac{[Zp1+Zp2+Zp3+Zp4+Zp5]+[Zv1+Zv2+Zv3+Zv4+Zv5]}{5}$ generally speaking: $Ra \approx \frac{1}{4} Rz$	 Zp1、Zp2、Zp3、Zp4、Zp5: Take five elevations in the peak from the corresponding standard length. Zv1、Zv2、Zv3、Zv4、Zv5: Take five elevations in the valley from the corresponding standard length.	Ry3.2	For the surface roughness obtained by any method, the upper limit of Ra is 3.2μm
				Rz200	For the surface roughness obtained by the method of without material removal, the upper limit of Ra is 200μm
				Rz3.2 / Rz1.6	For the surface roughness obtained by the method of material removal, the upper limit of Ra is 3.2μm, Ra lower limit of Ra is 1.6μm
				3.2 / Ry12.5	For the surface roughness obtained by the method of material removal, the upper limit of Ra is 3.2μm, Ra lower limit of Ra is 12.5μm
				Ry3.2max	For the surface roughness obtained by any method, the upper limit of Ra is 3.2μm

Maximum height Rz	Maximum height RzJIS	The average number of Ra	Standard value of standard length	Triangle mark
(0.05S)、0.1S、0.2S、0.4S	(0.05Z)、0.1Z、0.2Z、0.4Z	(0.012a)、0.025a、0.05a、0.10a	–	▽▽▽▽
0.8S	0.8Z	0.20a	0.25	
1.6S、3.2S、6.3S	1.6Z、3.2Z、6.3Z	0.40a、0.80a、1.6a	0.80	▽▽▽
12.5S、(18S)、25S	12.5Z、(18Z)、25Z	3.2a、6.3a	2.5	▽▽
(35S)、50S、(70S)、100S	(35Z)、50Z、(70Z)、100Z	12.5a、25a	–	▽
(140S)、200S、(280S)、400S、(560S)	(140Z)、200Z、(280Z)、400Z、(560Z)	(50a)、(100a)	–	–
[Pro froma] from () the rank value, unless it is necessary, please try not to use.				

Lateral comparison table of metal materials

Carbon steel

China	Japan	Germany		U.K		France	Italy	Spain	Sweden	USA
GB	JIS	W.-nr.	DIN	BS	EN	AFNOR	UNI	UNE	SS	AISI/SAE
15	STKM12A/STKM12C/S15C	1.0038/1.0401/1.1141	RSt.37-2/C15/Ck15	4360 40 C/080M15	- /32C	E24-2Ne/CC12/XC12	- /C15, C16/C16	- /F.111/C15K	1311/1350/1370	A570.36/1015
20	-	1.0402	C22	050A20	2C	CC20	C20,C21	F.112	1450	1020
Y13	-	1.0736	9SMn36	240M07	1B	S300	CF9SMn36	12SMn35	-	1215
Y15	SUM22	1.0715	9SMn28	230M07	1A	S250	CF9SMn28	F.2111/11SMn28	1912	1213
25	S25C	1.1158	Ck25	-	-	-	-	-	-	1025
35	-	1.0501	C35	060A35	-	CC35	C35	F.113	1550	1035
45	-	1.0503	C45	080M46	-	CC45	C45	F.114	1650	1045
40Mn	-	1.1157	40Mn4	150M36	15	35M5	-	-	-	1039
35Mn2	SMn438(H)	1.1167	36Mn5	-	-	40M5	-	36Mn5	2120	1335
30Mn	SCMn1	1.117	28Mn6	150M28	14A	20M5	C28Mn	-	-	1330
35Mn	S35C	1.1183	Cf35	060A35	-	XC38TS	C36	-	1572	1035
Ck45	S45C	1.1191	Ck45	080M46	-	XC42	C45	C45K	1672	1045
50	S50C	1.1213	Cf53	060A52	-	XC48TS	C53	-	1674	1050
55	- /S55C	1.0535/1.1203	C55/Ck55	070M55	9/ -	- /XC55	C55/C50	- /C55K	1655/ -	1055
60	-	1.0601	C60	080A62	43D	CC55	C60	-	-	1060
60Mn	S58C	1.1221	Ck60	080A62	43D	XC60	C60	-	1678	1060

Lateral comparison table of metal materials

Alloy steel

China	Japan	Germany		U.K		France	Italy	Spain	Sweden	USA
GB	JIS	W.-nr.	DIN	BS	EN	AFNOR	UNI	UNE	SS	AISI/SAE
55Si2Mn	-	1.0904	55Si7	250A53	45	55S7	55Si8	56Si7	2085	9255
Gr15 45G	SUJ2	1.3505	100Cr6	534A99	31	100C6	100Cr6	F.131	2258	ASTM52100
15Cr	SCr415(H)	1.7015	15Cr3	523M15	-	12C3	-	-	-	5015
40Cr	SCr440	1.7045	42Cr4	-	-	-	-	42Cr4	2245	5140
20CrMn	SUP9(A)	1.7176	55Cr3	527A60	48	55C3	-	-	-	5155
40CrNiMoA	-	1.6582	34CrNiMo6	817M40	24	35NCD6	35NiCrMo6(KB)	-	2541	4340
35Cr	SCr430(H)	1.7033	34Cr4	530A32	18B	32C4	34Cr4(KB)	35Cr4	-	5132
40Cr	SCr440(H)	1.7035	41Cr4	530M40	18	42C4	41Cr4	42Cr4	-	5140
18CrMn	-	1.7131	16MnCr5	(527M20)	-	16MC5	16MnCr5	16MnCr5	2511	5115
30CrMn	SCM420/SCM430	1.7218	25CrMo4	1717CDS110/708M20	-	25CD4	25CrMo4(KB)	55Cr3	2225	4130
35CrMo	SCM432/SCCRM3	1.722	34CrMo4	708A37	19B	35CD4	35CrMo4	34CrMo4	2234	4137/4135
40CrMoA	SCM440	1.7223	41CrMo4	708M40	19A	42CD4TS	41CrMo4	42CrMo4	2244	4140/4142
42CrMo/42CrMnMo	SCM440(H)	1.7225	42CrMo4	708M40	19A	42CD4	42CrMo4	42CrMo4	2244	4140
50CrVA	SUP10	1.8159	50CrV4	735A50	47	50CV4	50CrV4	51CrV4	2230	6150
CrV,/9SiCr	-	1.2067	100Cr6	BL3	-	Y100C6	-	100Cr6	-	L3
CrWMo	SKS31/SKS2,/SKS3	1.2419	105WCr6	-	-	105WC13	100WCr6/107WCr5KU	105WCr5	2140	-
5CrNiMo	SKT4	1.2713	55NiCrMoV6	BH224/5	-	55NCDV7	-	F.520.S	-	L6
Cr12	SKD1	1.208	X210Cr12	BD3	-	Z200C12	X210Cr13KU/X250Cr12KU	X210Cr12	-	D3 /ASTM D3
40CrMoV5	SKD61	1.2344	X40CrMoV51/X40CrMoV51	BH13	-	Z40CDV5	X35CrMoV05KU/X40CrMoV51KU	X40CrMoV5	2242	H13/ASTM H13
100CrMoV5	SKD12	1.2363	X100CrMoV51	BA2	-	Z100CDV5	X100CrMoV51KU	X100CrMoV5	2260	A2
30WCrV9	SKD5	1.2581	X30WCrV93	BH21	-	Z30WCV9	X28W09KU	X30WCrV9	-	H21
V	SKS43	1.2833	100V1	BW2	-	Y1105V	-	-	-	W210
W18Cr4VCo5	SKH3	1.3255	S18-1-2-5	BT4	-	Z80WKCV	X78WCo1805KU	HS18-1-1-5	-	T4
X45CrSi93	SUH1	1.4718	X45CrSi93	401S45	52	Z45CS9	X45CrSi8	F.322	-	HW3
M2	SKH9,	SKH51	1.3343	S6/5/2	BM2	-	Z85WDCV	HS6-5-2-2	F.5603	2722
M7	-	1.3348	S	2002/9/2	-	-	-	HS2-9-2	HS2-9-2	2782

Heat resistant steel

China	Japan	Germany		U.K		France	Italy	Spain	Sweden	USA
GB	JIS	W.-nr.	DIN	BS	EN	AFNOR	UNI	UNE	SS	AISI/SAE
-	SUH330	1.4864	X12NiCrSi3616	-	-	Z12NCS35.16	-	-	-	330
-	SCH15	1.4865	G-X40NiCrSi3818	330C11	-	-	XG50NiCr3919	-	-	HT,HT50

Horizontal comparison table of metal materials

Stainless steel (Ferritic/Martensitic)

China	Japan	Germany		U.K		France	Italy	Spain	Sweden	USA
GB	JIS	W.-nr.	DIN	BS	EN	AFNOR	UNI	UNE	SS	AISI/SAE
OCr13/1Cr12	SUS403	1.4	X7Cr13	403S17	-	Z6C13	X6Cr13	F.3110	2301	403
1Cr13	SUS410	1.4006	X10Cr13	410S21	56A	Z10C14	X12Cr13	F.3401	2302	410
1Cr17	SUS430	1.4016	X8Cr17	430S15	60	Z8C17	X8Cr17	F.3113	2320	430
4Cr13	SUS420J2	1.4034	X46Cr13	420S45	56D	Z40CM/Z38C13M	X40Cr14	F.3405	2304	-
1Cr17Ni2	SUS431	1.4057	X22CrNi17	431S29	57	Z15CNi6.02	X16CrNi16	F.3427	2321	431
Y1Cr17	SUS430F	1.4104	X12CrMoS17	-	-	Z10CF17	X10CrS17	F.3117	2383	430F
1Cr17Mo	SUS434	1.4113	X6CrMo17	434S17	-	Z8CD17.01	X8CrMo17	-	2325	434
OCr13Al	SUS405	1.4724	X10CrA113	403S17	-	Z10C13	X10CrA112	F.311	-	405
Cr17	SUS430	1.4742	X10CrA118	430S15	60	Z10CAS18	X8Cr17	F.3113	-	430
5Cr2Mn9Ni4N	SUH35	1.4871	X53CrMnNiN219	349S54	-	Z52CMN21.09	X53CrMnNiN219	-	-	EV8

Grey cast iron

China	Japan	Germany		U.K		France	Italy	Spain	Sweden	USA
GB	JIS	W.-nr.	DIN	BS	EN	AFNOR	UNI	UNE	SS	AISI/SAE
HT150	FC150	0.6015	GG15	Grade150	-	Ft15 D	G15	FG15	115	No 25 B
HT200	FC200	0.602	GG20	Grade220	-	Ft20 D	G20	-	120	No 30 B
HT250	FC250	0.6025	GG25	Grade260	-	Ft25 D	G25	FG25	125	No 35 B
HT300	FC300	0.603	GG30	Grade300	-	Ft30 D	G30	FG30	130	No 45 B
HT350	FC350	0.6035	GG35	Grade350	-	Ft35 D	G35	FG35	135	No 50 B
HT400	-	0.604	GG40	Grade400	-	Ft40 D	-	-	140	No 55 B

Comparison table for CVD coating grade

China	Japan	Germany		U.K		France	Italy	Spain	Sweden	USA
GB	JIS	W.-nr.	DIN	BS	EN	AFNOR	UNI	UNE	SS	AISI/SAE
QT400-18	FCD400	0.704	GGG 40	SNG 420/12	-	FCS 400-12	GS 370-17	FGE 38-17	07 17-02	60-40-18
QT500-7	FCD500	0.705	GGG 50	SNG 500/7	-	FGS 500-7	GS 500	FGE 50-7	07 27-02	80-55-06
QT600-3	FCD600	-	GGG 60	SNG 600/3	-	FGS 600-3	-	-	07 32-03	-
QT700-18	FCD700	0.707	GGG 70	SNG 700/2	-	FGS 700-2	GS 700-2	FGS 70-2	07 37-01	100-70-03

Comparison table for CVD coating grade

ISO Usage	ISO code	CDBP	TUNGALOY	MITSUBISHI	SUMITOMO	SANDVIK	KYOCERA	HITACHI	DIJET	SECO	Kennametal	ISCAR	TAEGUTEC	WIDIA	WALTER	CERATIZIT
P	P01			UE6105	AC810P	GC4205	CA5505	HG8010	JC110V	TP0500	KC9105	IC8150	TT8115	TN10P	WPP01	
			T9105			GC4305	CA510			TP0501	KCP05	IC9150		TN20K	WPP05	
												IC9015			WPP05S	
	P10		T9105	UE6105	AC810P	GC4205	CA5515	HG8010	JC110V	TP0500	KC9110	IC8150	TT8115	TN10P	WPP05	CTC3110
		BP6215	T9115	UE6110	AC820P	GC4215	CA515	GM8020	JC215V	TP1500	KC9105	IC9150		TN20K	WPP10	CTCK120
						GC4305				TP0501	KCP10	IC8080		WP15CT	WAK20	
						GC4315				TP1501		IC9080			WPP05S	
												IC9015			WPP10S	
	P20	BP6215	T9115	UE6110	AC820P	GC4215	CA5515	HG8025	JC110V	TP1500	KC9215	IC8150	TT8125	TN10P	WPP20	CTCP115
		BP6215	T9125	UE6020	AC830P	GC4315	CA515	GM8020	JC215V	TP2500	KC9225	IC9150	TT5100	TN15M	WPP20S	CTCP125
		BP6225		MC6025	AC8025P	GC4225	CA5525	GM25		TP1501	KC9325	IC9015		WP25CT		CTC1425
						GC4325	CA525			TP2501	KCP25	IC8250				
												IC9250				
	P30	BP6225	T9125	MC6025	AC8025P	GC4225	CA5525	HG8025	JC215V	TP2500	KC9140	IC8080	TT8125	TN30P	WPP30	CTCP125
			T9135	UE6035	AC830P	GC4235	CA5535	GM8035	JC325V	TP3500	KC9240	IC656	TT5100	TN30M	WAK30	CTC1425
			T6130			GC4325	CA530	GM25		TP2501	KCP30	IC9350	TT8135	WP35CT	WPP30S	CTC1135
																CTC1435
																CTC2135
	P40		T9135	UE6035	AC830P	GC4235	CA5535	GM8035	JC325V	TP3500	KC9140	IC9350	TT8135	TN30P	WPP30	CTC1135
			T6130	UH6400	AC630M		CA530	GX30			KC9240	IC635	TT7100	TN30M	WAK30	CTC1435
											KCP40				WPP30S	CTC2135
M	M10		T9115	MC7015	AC610M	GC2015	CA6515		JC110V		KCM15	IC9250	TT9215	TN15M		CTCP115
												IC520M		WM15CT		
	M20		T6120	MC7015	AC6030M	GC2015	CA6525	HG8025	JC110V	TM2000	KCM15	IC9025	TT9215	TN15M		CTC1425
			T9125	US7020		GC2025		GM25			KCM25	IC9350	TT9225	WM25CT		CTCP125
				MC7025								IC4050				CTC1135
	M30		T6130	MC7025	AC6030M	GC2025		GM8035	JC215V	TM2000	KCM25	IC9350	TT9225	TN30M		CTC1435
				US735	AC630M	GC235		GM25		TM4000	KCM35	IC4050	TT9235	WM35CT		CTC2135
								GX30				IC635				
	M40			US735		GC235		GC30		TM4000	KCM35	IC635	TT9235			
											KCP40					
K	K01		T5105	MC5005	AC405K	GC3205	CA4505	HX3505	JC050W	TK1001	KCK05	IC8080		WK05CT	WAK10	
				UC5105					JC105V	TK1000					WPP01	
	K10		T5105	MC5015	AC415K	GC3210	CA4515	HX3515	JC105V	TK1001	KCK05	IC9150	TT7005	WK05CT	WAK10	CTC3110
		BPC13K	T515	UC5115				GM10	JC110V	TK1000	KCK15	IC5100			WPP10	CTC1425
			T5115					HG8010				IC4100			WKK10S	
	K20		T515	MC5015	AC420K	GC3215	CA4515	HX3515	JC100V	TK2000	KCK15	IC9150	TT7310	WK20CT	WAK20	CTC1435
			T5115	UC5115				GM8020	JC215V	TK2001	KCK20	IC5100			WPP20	CTCK120
			T5125									IC4100			WKK20S	CTCP115
												IC9080				
	K30		T5125					HG8025	JC215V		KCP25	IC520M			WAK30	CTCP125
			T9115									IC4050			WKP30S	

Comparison table for PVD coating grade

ISO Usage	ISO code	CDBP	TUNGALOY	MITSUBISHI	SUMITOMO	SANDVIK	KYOCERA	HITACHI	DIJET	SECO	Kennametal	ISCAR	TAEGUTEC	WIDIA	WALTER	CERATIZIT
P	P01						PR1005								WXN10	
	P10		AH710	VP10RT		GC1525	PR930	IP2000	JC5003	TS2000	KC5010	IC507		WS10PT	WSM10	
							PR1005		JC5030	CP200	KC5510	IC807			WSM21	
							PR1115				KCU10	IC907				
							PR1215									
							PR1425									
	P20	BPG20B	AH120	VP10RT	AC520U	GC1525	PR930	IP2000	JC5030	TS2500	KC5025	IC507	TT9030	WS10PT	WSM20	
		BPG20B	AH725	VP15TF		GC1125	PR1025	IP3000	JC5040	CP200	KC5525	IC807		WS25PT	WSM21	
		BPG20B	AH730	VP20MF			PR1115				KCU25	IC907				
			SH725	VP20RT			PR1215									
			SH730	UP20M			PR1425									
			J740				PR1225									
	P30		AH120	VP15TF	AC530U	GC1125	PR1025	IP3000	JC5040	CP500	KC5025	IC328	TT9030	WS25PT	WSM30	CTP1235
		BPU200	AH725	VP20MF			PR1225				KC5525	IC928	TT8020			CTP1625
			SH725	VP20RT							KCU25	IC3028				CTP2235
			AH730	UP20M												
			SH730													
			GH730													
			GH330													
			J740													
	P40		AH120		AC530U					CP500		IC328	TT8020			CTP1235
			AH725									IC3028				CTP2235
			AH645													
M	M01											IC520			WXM10	
	M10		AH630	VP10RT		GC1105	PR1025	IP100S	JC5003	TS2000	KC5010	IC520		WS10PT	WSM10	
						GC1115	PR1215	IP050S	JC8015	TS2500	KC5510	IC507			WSM10S	
						GC1525				CP200	KCU10	IC807				
												IC907				
	M20	BP2220	AH630	CP10RT	AC520U	GC1115	PR930	IP100S	JC5015	TS2500	KC5025	IC520	TT9030	WS10PT	WSM20	CTP1235
		BP2220	AH120	VP15TF		GC1125	PR1025	IP050S	JC5030	CP200	KC5525	IC507	TT8010	WS25PT	WSM21	CTP2120
		BP2220	AH725	VP20MF		GC1525	PR1125		JC8015	CP500	KCU25	IC807			WSM20S	
			SH725	VP20RT			PR1215					IC907				
			SH730	UP20M			PR1425					IC308				
							PR1225					IC3028				
	M30	BPG20B	AH645	VP15TF	AC530U	GC1125	PR1125	IP100S	JC5015	CP500	KC5025	IC3028	TT8020	WS25PT	WSM30	CTP1235
		BPG20B	AH120	VP20MF	AC6040M	GC2035			JC5030		KC5525	IC308			WSM30S	CTP2120
		BPU200	AH725	VP20RT					JC5040		KCU25	IC908				CTP2235
			SH725	UP20M								IC928				CTP1625
			SH730	MP7035												
			J740													
	M40		AH645	MP7035	AC530U	GC2035						IC228				
					AC6040M							IC328				
K	K01		AH110									IC910				
	K10		GH110	VP10RT	AC510U		PR905		JC5003	TS2000	KC5010	IC910	TT9030	WS10PT		CTP6215
			AH110				PR1215		JC5015	CP200	KC5510	IC308				
											KCU10	IC508				
	K20	BPG20B	AH120	VP10RT			PR905		JC5015	TS2500	KC5025	IC910	TT9030	WS10PT		CTP6215
		BPG20B		VP20RT			PR1215			CP200	KC5525	IC308		WS25PT		
		BPU200		VP15TF						CP250	KCU25	IC508				
												IC928				
												IC1008				
	K30		AH120	VP20RT						CP500		IC928	TT9030	WS25PT		CTP1625
			GH130	VP15TF								IC1008				
S	S01		AH8005	VP05RT					JC8003						WSM10	
				MP9005												
	S10		AH8005	VP10RT	AC510U	GC1105	PR1305		JC8015	TS2000	KC5010	IC507	TT8010	WS10PT	WSM10	CTP2235
			AH8015	MP9015	AC520U		PR1310		JC5015	TS2500	KC5510	IC807			WSM10S	
										CP200	KCU10	IC808				
										CP500		IC907				
												IC908				
	S20	BP2220	AH8015	VP15TF	AC520U	GC1115	PR1310		JC8015	TS2000	KC5025	IC507	TT8020	WS10PT	WSM20	CTP2235
				MP9015		GC1125			JC5015	TS2500	KC5525	IC807		WS25PT	WSM21	
		BP2220		VP20RT						CP200	KCU25	IC808			WSM20S	
										CP500		IC907				
												IC908				
	S30	BP2220	AH630	VP15TF	AC520U	GC1125	PR1325					IC830		WS25PT	WSM30	
			AH7025	VP20RT								IC928			WSM30S	

Comparision table for carbide grade

ISO Usage	code	CDBP	TUNGALOY	MITSUBISHI	SUMITOMO	SANDVIK	KYOCERA	HITACHI	DIJET	SECO	Kennametal	ISCAR	INGERSOLL	TAEGUTEC	WIDIA	WALTER	CERATIZIT
P	P01																
	P10		TH10		ST10P			WS10	SRT		P10	IC70		P10	TN15U		
	P20		KS20	UTi20T	ST20E	SMA		EX35	SRT	S10M	K125M		P40	P20	TN15U		
											TTM	IC70					
	P30		KS15F	UTi20T	A30	SM30	PW30		DX30	S25M	GK	IC28	P40	P30			S40T
			UX30		A30N	H10F		EX40	SR30		K600	IC54					
											TTR						
	P40		TX40		ST40E			EX45	SR30	S60M	G13	IC28		P40			S40T
												IC54					
M	M01																
	M10		TH10		U10E	H10A		WA10B	UMN	890	K313	IC20		M10	TN15U		
					EH510										WU10HT		
	M20		KS20	UTi20T	U2	H13A		EX35	DX25	HX	K68	IC20	IN30M	M20	TN15U		CTW7120
					EH520				UMS	883	KMF				WU10HT		H210T
											K125M						
											TTM						
	M30		UX30	UTi20T	A30	H10F			UMS		GK	IC28	IN30M				
					A30N	SM30		EX45			K600						
											TTR						
	M40		TU40						UM40		G13	IC28	IN30M	M40			S40T
K	K01		KS05F	HTi05T	H2			WH01	KG03		K605			UF1	TN15U		
					H1			WH05							WU10HT		
	K10		TH10	HTi10	H1	H10	KW10	WH10	KG10	890	K313	IC20	IN05S	K10	TN15U		H210T
					EH10				KT9		K110M	IC09T			WU10HT		H216T
					EH510				CR1		THM						H10T
											THM-U						
	K20		KS15F	UTi20T	G10E	H13A	KW10	WH20	KT9	890	K715	IC20	IN05S	K20	TN15U		CTW7120
			KS20		EH20	H10F	GW15		CR1	HX	KMF	IC09T	IN10K		WU10HT		H210T
					EH520				KG20	883	K600		IN15K				H216T
									FB15				IN30M				H10T
	K30			UTi20T	G10E	H13A	GW25		KG30	883	THR	IC28	IN10K	K30			
						H10F							IN15K				
													IN30M				
	K40										G13		IN30M				
N	N01		KS05F			H10	KW10				K605	IC20					
					H1												
	N10	BU810	TH10	HTi10	H1	H10	GW15	WH10	KT9	890	K313	IC20	IN05S	K10	TN15U	WK1	H210T
						H10F			CR1	HX	K110M	IC28	IN10K		WU10HT	WK10	H216T
										KX	THM						H10T
										H15	THM-U						
	N20	BU811	KS15F			H10F		WH20	KT9	890	K715	IC20	IN10K	K20	TN15U	WK1	CTW7120
						H13A			CR1	HX	KMF	IC28	IN15K		WU10HT	WK10	H210T
										KX	K600						H216T
										883							H10T
	N30									883	G13		IN15K			WK40	
										H25	THR		IN30M			WMG40	
S	S01			RT9005								IC20					
	S10		KS05F	RT9005		H10	KW10	WH10	KG10	890	K10	IC20	IN05S	K10	TN15U	WK1	H210T
			TH10	RT9010	EH510	H10A				883	K313		IN10K		WU10HT		H216T
											THM						H10T
	S20		KS15F	RT9010		H10F	GW25	WH20	KG20	890	K715	IC20	IN10K	K20	TN15U	WK1	CTW7120
			KS20	TF15	EH520	H13A				883	KMF	IC28	IN15K		WU10HT	WMG40	H210T
										H25							H216T
																	H10T
	S30			TF15						883	G13		IN15K			WMG40	
											K600		IN30M				
											THR						

Comparison table for chipbreaker - Negative Insert

ISO classify	Cutting type	CDBP	TUNGALOY	MITSUBISHI	SUMITOMO	KYOCERA	SANDVIK	HITACHI	Kennametal	DIJET	ISCAR	TAEGUTEC	WIDIA	WALTER	CERATIZIT
P	High precision finishing		01	PK	FA	DP	QF	FE	FS,LF	PF					
			TF	FH							SF,PP,TF	FA			
	Finishing and Light cutting	P1	TS,TSF	SA	SU	PQ,VF	PF,QF	BE,BH	FF,FN	UA,FT	F3P	FG	4	NF3	CF,TF
		P3	ZF	FY	FL	CJ	LC			UR,UT	NF,SF	VF,EA		NS6	
			11，NS	C		PQ,VF	MF	AB,CT				FC			
		P3	AS	SH	SE,SX	GP,PP	R/L-K					MC	AP		
			TQ			HQ									
			NM	MP		GS									
			CB			CQ		CE				ML,MP			
			C												
	Finishing and Light cutting (Wiper)		AFW,FW		LUW	WP	WL,WF		FW		WF	WS	FW	NF	TFQ
			ASW,SW	SW	SEW	WQ	WMX		MW		WG	WT	MW	NM	TMQ
							WM,WR		RW						
					GUW										
	Semi-finishing	P3	TM,AM	MA	GUW	HS,PT,GT	PM,QM	AH	P	PG,UB	M3P,M3M	PC,MT	48	NMT,NM4	TMF,TMM
			DM,ZM	MH,MP	GE,UX	CS,PS	XM,XRM	AE,AY,B	MN	GN	PP,TF,GN	MC,MG-			M50
			box type							GNP					
	Semi-finishing and heavy cutting	P6	TH	RP,GH	MU,ME	PH	HM,PR	RE	RN,RP	GG,UD	NR	RT	49	NM5,NM6	TM
			THS	HZ,HL	HG	box type	MR		MR		MR			NM9	TRM
	Heavy cutting	RM	TU	HM,HX	HG,HP	PX	PR,MR	TE,UE	RM	UC	R3P	HT,HD		NR6	TRR,TR
		RH	TRS		HU,HW		HR,QR	HX,HE	RH		NM	RX,RH		NRF	R28,R58
		RS	TUS	HV	HF			H				HY,HZ		NRR	R88
M	Finishing and Light cutting	MS	SF,SA	GM,MS	EX,EG	GU	MF,XF	MP	FP	SF	TF,VL	EA,SF,SU		NF4	CF,F30,M34
			SS	SH,LM	SU,EF	MQ	LC,R/L-K	BH,AB				FG		NMS	F32,TF
	Semi-finishing	MA	SM	MM,MA	GU	TK	MM,QM	PV,SE		SZ	M3M,PP	EM,ET		NM4	TMF,M42
			S	ES	HM	MU	XM,XRM	DE	MP,P						M30,M52
	Heavy cutting		TH,SH	GH,RM,HZ	EM,MU	MS	MR	AH,AE	UP,RP	SG	MR,MH			NR4	TM,M60
			TU				HM,PR						SR	NRT,NRS	TRM,TMR,TRR
															R80
K	Finishing		CF	LK,MA	UZ	C	KF,XF	Y,AH	FN		GN	FG			CF
	Semi-finishing		CM	MK	GZ	ZS	KM,QM	V,VE	RP,UN	PG		MT		NM5	M50
		K3	box type	GK		box type	XM,XRM	VA				MG			
	Heavy cutting	K6	GH	RK		GC	KR	RE	No chip breaker	GG,UD		RT		No chip breaker	TMR,TR
			No	No chip breaker	No chip breaker	No chip breaker	No chip breaker	No chip breaker		No chip breaker					
			No chip breaker												R28
															R58,R88
N	Non ferrous metal cutting	LHC/TF3	P		AX	AH,A3	MF	No chip breaker	MS,MP		PP	ML			F32
							QM		MG						
S	Finishing	TF3	HRF	FJ,LS	EF	MQ	SF		FS,LS			SF		NFT	
					EX,EG		01		MS					NF4	
	Semi-finishing		HRM	MS	EG	TK,MS,MU	MM,QM		UP,P,NGP		PP	SU	SM	NMS	M34,M52
			HMM		MU		SMR		RP						
			SA	RS,GJ										NM4,NRS,NR4	

Comparison table for chipbreaker - Positive Insert

ISO classify	Cutting type	CDBP	TUNGALOY	MITSUBISHI	SUMITOMO	KYOCERA	SANDVIK	HITACHI	Kennametal	DIJET	ISCAR	TAEGUTEC	WIDIA	WALTER	CERATIZIT
P	High precision finishing		01	FV,SMG	FC,FW	CF			UF		SF		2	PF2	F32
						CK		MP							
	Finishing and Light cutting		PSF,PF,SS	FP,FV,SV	FP,FZ,LU	CQ,GK	R/L-K	JQ	11,GM	FT	PF	FA	41	PF5	SF
		P1	PS,PSS,TS	LP	FK,SS,SC	GP,HQ	PF,XF		LF		SM,14,17	FG		PF4	SMF
					SU,SK,SF	XP,XQ	UF,PM				19,XL			PS5	
					US										
			TSW	SW,MW	LUW,SDW		WF,WK,WM				R/L	GF		PF,PM	SMQ,25Q
			W08~20	R/L,R/L-FD	W,SD						RF,LF				
				R/L-FS	FX,FY										
				R/L-MV											
				R/L-F,R/L-L											
	Semi-finishing	P3	PM	MP	SU,MU	box type	PM,XM	JE	GM,MP,MR		DT,HQ	MT		PM5	SM
							UM,PR,XR								
			23	MV	UJ	VF,MF	UR								
			24		SC										
					G class insert excluded.										
			box type												
			RS									MT			
		P6			RP					GG			43		
	High feed and Small depth cutting		61												
								WE			14				
M	Finishing		PSF,SS	FM,FV,SV	FC		R/L-K	MP	GM,LF			FG	41		
							UF,MF								
	Finishing to semi-finishing		PSS	LM		MQ	MM,XM	JQ	MF					PF4	SF,SMF
		MX	PS	SV			UM								
	Semi-finishing		PM	MM,MV	MU		MR,XR	JE						PM5	F23,F43
							UR								SM
K	Cast iron cutting		CM	MK			KF,XF				19	MT		PS5,PM5	SF
		MX	No chip breaker	No chip breaker	No chip breaker	No chip breaker	KM,XM	JQ,JE	No chip breaker	No chip breaker		No chip breaker		No chip breaker	25P
							UM,KR,XR								27,29
N	Non ferrous metal cutting	LHC	AL	AZ	AG	AH,A3	AL		GT-HP		AS	FL	AL1	PF2	23P
		AL	PP		AX,AY								AL2,AL3	PM2	25P
															27,29
			导向型	R/L-F											
				R/L											
S	Finishing	SL	PSF	FJ	FC	MQ	MF,UF,R/L-K								SF
	Finishing to semi-finishing	TF3	PSS		FX,FY		MM,XM								
			PS												F23
	Semi-finishing		box type		SI		UM,MR,UR,XR					FG		PF2,PF4	SM,25P,29
P	For small lathe		01	R/L-SR	W,SD	R/L-F,R/L-FSF	F,M			MF,MM		GF,GW		PM5	
			W08,W15,W20	R/L-SN		ER/L-U									
			J10	R/L-SS		FR/L-U				ALU,MM1					
M				FS,F	FX,FY	R/L-U									
						FR/L-U,R/L-USF				ASF					
			JRP,JSP,JPP							FT,ACB					
N		SL	TS,JTS			MF,R/L-FSF									
			TSW												
			SS,JSS	SW,MW	LUW,SDW										
					LU,FP,FK,SU										
S			JS		FB,LB										
					FC,SI.SC	GK									
				SMG		E-GK									

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