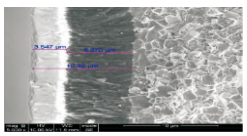
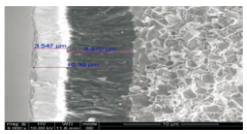
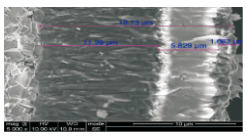
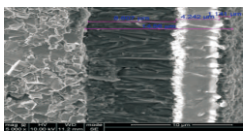
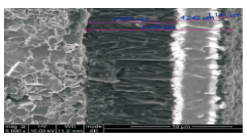
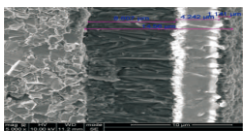
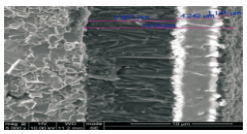
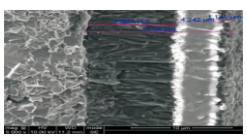
INSERTS

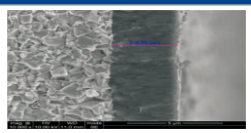
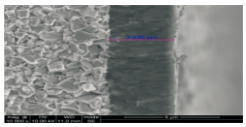
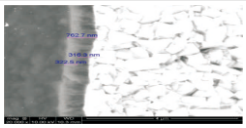
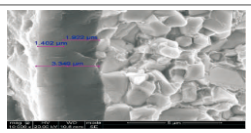
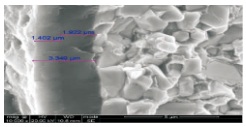
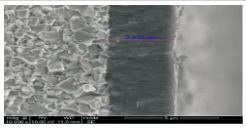
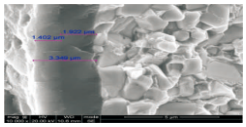
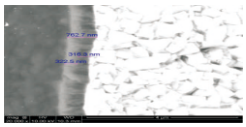
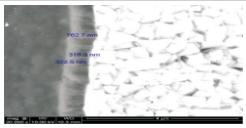
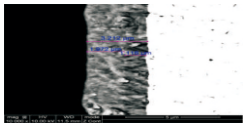
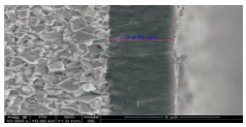
The Features of CVD Coating

ISO	Grade	Colour	Coating Structure
K Cast Iron	BK3020	Black	$TiCN+Al_2O_3$
	BK3040	Black	$TiCN+Al_2O_3$
	BK3115	Black	$TiCN+Al_2O_3$
P Steel	BP4215	Yellow Black	$TiCN+Al_2O_3+(TiN)$
	BP4225	Yellow Black	$TiCN+Al_2O_3+(TiN)$
	BP4235	Yellow Black	$TiCN+Al_2O_3+(TiN)$
	NEW BP4213	Yellow Black	$TiCN+Al_2O_3+TiN$
	NEW BP4223	Yellow Black	$TiCN+Al_2O_3+TiN$

Electron Microscopy Images	Features.Application
	High hardness matrix, thinned CVD coating, excellent wear resistance.Milling gray cast iron and ductile iron under stable working conditions.
	High toughness matrix, thinned CVD coating, excellent resistance to chipping.Rough milling of cast iron, especially in harsh working conditions.
	Optimized and extremely wear-resistant material, nano thick film CVD coating.Continuous or light intermittent turning of gray cast iron and ductile iron.
	Wear-resistant substrate with resistance to plastic deformation, strongand tough coating with excellent bonding force.High-speed, high-efficiency turning of finishing-roughing steel.
	A matrix with both wear resistance and chipping resistance, and a toughcoating with excellent adhesion.The first choice for Intermittent – general turning of steel.
	High toughness matrix, strong and tough coating with excellentbonding force, extremely high processing safetyHeavy-duty machining of steel and interrupted turning.
	High toughness matrix, strong and tough coating with excellent bonding strength, and extremely high processing safety.Heavy load machining and intermittent turning of steel parts.
	Upgraded product performance, with a matrix that combines wear resistance and blade collapse resistance, and a strong and tough coating with excellent bonding strength, the resistance to plastic deformation and crescent pit wear is improved.Longer lifespan for intermittent-general turning steel parts, also for heavy-duty machining.

The Features of PVD Coating

ISO	Grade	Colour	Coating Structure
P Steel	BP1015	Black	AlTiN
	BP1025	Black	AlTiN
	BP1825	Bronze	AlTiMeN
M Stainless Steel	BM1820	Bronze	AlTiMeN
	BM1824	Bronze	AlTiMeN
	BM1525	Purple Black	AlTiMeN
	BM1828	Bronze	AlTiMeN
S Heat Resistant Alloy	BS1605	Bronze	AlTiSiN
	BS1610	Bronze	AlTiSiN
	BS1525	Purple Black	AlTiMeN
	BS1029	Black	AlTiN

Electron Microscopy Images	Features.Application
	Submicron matrix resistant to abrasive wear and a coating with higher aluminum content.Stable milling of cast iron and steel parts.
	The Matrix balances hardness and toughness, and the coating with higher aluminum content.Suitable for general milling of cast iron, steel, and stainless steel, with high processing safety.
	Ultra fine grain matrix, newly upgraded nano composite coating with high heat resistance and high toughness.Suitable for general milling of cast iron, steel, and stainless steel, with superior wear resistance,Additional grade for stainless steel turning.
	Medium cobalt and ultra fine grain hard alloy matrix.High hardness nano composite PVD coating.The perfect fusion of high-strength, high toughness matrix and wear-resistant surface coating, comprehensive excellent performance.
	Special ultra-fine grain matrix with enhanced toughness and red hardness, and the latest high wear-resistant coating.General high-performance machining for efficient milling of steel, stainless steel, and heat-resistant alloys, as well asfor stainless steel turning.
	Nano multilayer coating with ultra-fine grain matrix, good wear resistance and oxidation resistance.Stable and long-life milling of steel and stainless steel.
	Submicron matrix, newly upgraded nano composite coating with high heat resistance and toughness.Preferred grade for stainless steel turning, supplementary machining of softer steel.
	Low cobalt, fine-grained wear-resistant and heat-resistant matrix.High hardness coatings deposited by high-energy pulse magnetron sputtering, with higher coating adhesion andHas good wear resistance and heat resistance.Suitable for high-temperature alloy and titanium alloy turning, continuous and stable working conditions processing;
	Superfine grain matrix reinforced with adhesive phase, excellent heat resistance and wear resistance.The high hardness coating deposited by HIPIMS has higher coating adhesion and good wear resistance and heat resistance.Suitable for finishing – semi-finishing turning of heat-resistant alloys and high hardness materials, and general milling.
	Superfine grain matrix optimized for heat resistance and toughness of heat-resistant alloys, with wear resistance and oxidation resistance Good nano multilayer coating. The preferred grade for general machining of heat-resistant alloys.
	Specially reinforced super tough matrix, high aluminum coating, higher cost-effectiveness. Efficient rough milling for steam turbine blades, long-life dry cutting, and also suitable for heat resistance Alloy.

Recommended Turning Insert Grade

ISO		CVD			PVD		
K Cast Iron	01						
	10		BK3115				
	20						
	30						
	40						
P Steel	01	BP4215		BP4213			
	10						
	20	BP4225		BP4223			
	30		BP4235				
	40						
M Stainless Steel	01				BM1820		
	10					BM1824	
	20						BM1525
	30						
	40						BM1828
S Heat Resistant Alloy	01				BS1605		
	10					BS1610	
	20						BS1029
	30						
	40						BS1525

General Turning Insert

Item No.	Application	Chipbreaker	Feature/Shape of Insert
1	Steel Finishing	AF	P–type Material Finishing
			M–level double–sided chipbreaker, two–stage bump effect for stable chip handling in a wide range of feeds.
2	Steel Semi–finishing	AS	P–type Material Semi–finishing
			M–level double–sided chipbreaker, negative chamfer design, high edge strength, suitable for semi–finishing occasions with unstable working conditions.
3	Steel Roughing	AG	P–type Material Roughing
			The preferred chip breaker for lightload roughing, wide margin design, good edge strength, high metal removal rate, good wear resistance and cutting life.
4	Steel Heavy–duty	AG (Single Side)	P–type Material Heavy–duty
			M–level single–sided chipbreaker, negative chamfer design, under the large cutting depth and large feed processing parameters, high edge strength and high metal removal rate can be obtained.

General Turning Insert

Item No.	Application	Chipbreaker	Feature/Shape of Insert
5	Stainless steel finishing	BF	M type material finishing
			M–level double–sided chipbreaker, small edge width + double positive rake angle, sharp blade edge, low cutting resistance, special edge inclination design, can obtain high–quality machined surface.
6	Stainless steel semi–finishing	BM	M type material semi–finishing
			M–level double–sided chipbreaker, double positive rake angle, higher edge strength , widely application for the general processing of stainless steel.
7	Stainless steel roughing	BR	M type materail roughing
			M–level double–sided chipbreaker, variable blade width and variable rake angle design,suitable for semi–finishing and roughing of stainless steel
8	High temperature alloy semi–finishing	DM	S type material semi–finishing
			M–level double–sided chipbreaker.Adopting the double positive rake angle combines the sharpness and strength of the insert;the cutting resistance is small, and the wider chipbreaker ensures enough space for chip deformation,reducing groove wear.

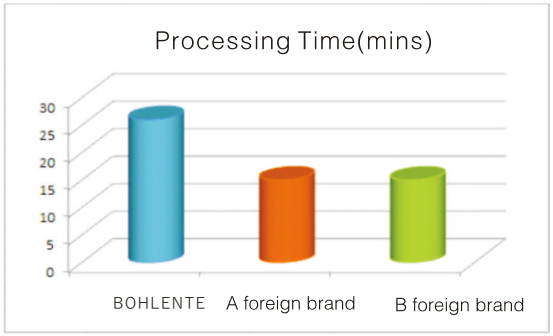
General Inner Hole Turning Insert

Item No.	Application	Chipbreaker	Feature/Shape of Insert
9	General semi–finishing	GM	General chipbreaker
			M–level single–sided chipbreaker, suitable forsemi–finishing of inner holes and outer circles of P, M and K type materials
10	Stainless steel finishing	GF	M type material finishing
			M–level single–sided chipbreaker, suitable for innerhole and outer circle finishing of stainless steel.

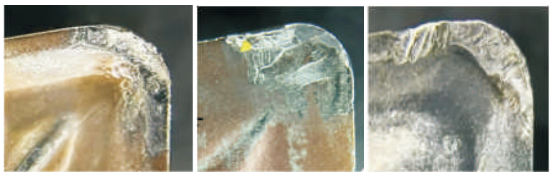
Special Turning Insert

Item No.	Application	Chipbreaker	Feature/Shape of Insert
11	Train wheel hub machining	175.32 series	Chipbreaker for finishing of P type materal
			M–level double–sided chipbreaker, vertical cutting inserts, especially suitable for the trimming of train wheels.
12		RCMX series	Chipbreaker for heavy–load machining of P type material
			M–level single–sided chipbreaker, negative chamfer design,high edge strength, first choice for profiling.

Case No.1



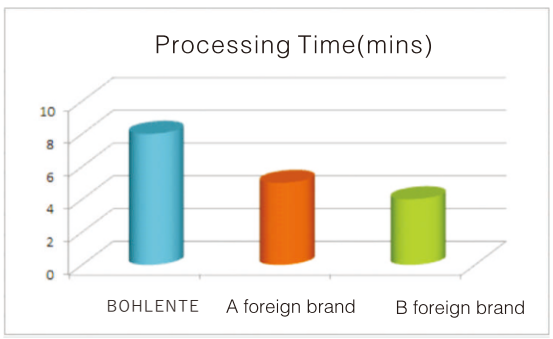
Workpiece: Aircraft Components
Workpiece material: Inconel 718
Processing equipment: vertical lathe
WeCan insert: CNMG120408-DM BS1610
Comparison insert: CNMG120408, a foreign brand
Comparison insert: CNMG120408, b foreign brand
Processing: Turning
Cutting parameters: Vc: 55m/min
f: 0.23mm/rev
ap: 0.5mm
Conclusion: Our insert takes 26 minutes to process, while the two competitors take 15 minutes to process.



From the perspective of insert wear, WeCan's insert wear is relatively small, and the cost-effectiveness is extremely high.

BOHLENTE

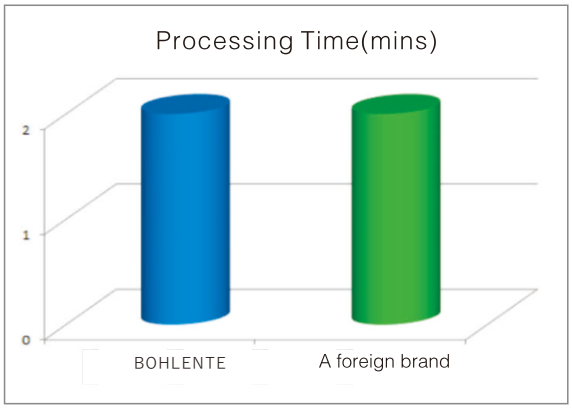
Case No.2



Workpiece: Aircraft Components
Workpiece material: Inconel 718
Processing equipment: horizontal lathe
WeCan insert: CNMG120408-DM BS1610
Comparison insert: CNMG120408, a foreign brand
Comparison insert: CNMG120408, b foreign brand
Processing: Turning
Cutting parameters: Vc: 55m/min
f: 0.28mm/rev
ap: 3.8mm
Conclusion: Our insert processing takes 8 minutes, while our two competitors process for 4 and 5 minutes respectively. Our insert life is better than our competitors, and the cost-effectiveness is higher.

Case No.3

Workpiece material: cast steel Inconel 718
Workpiece: Top Wire
Cooling type: Fluid cooling
Comparision insert: a foreign brand
WeCan Insert: WNMG080408–DM BS1525
Cutting parameters: Vc: 40m/min, ap: 2mm, f: 0.21mm/rev
Conclusion: Our insert cutting is light and fast, with good chip breaking and low cutting resistance, which is comparable to the lifespan of a foreign brand. However, our insert has a high cost performance ratio.

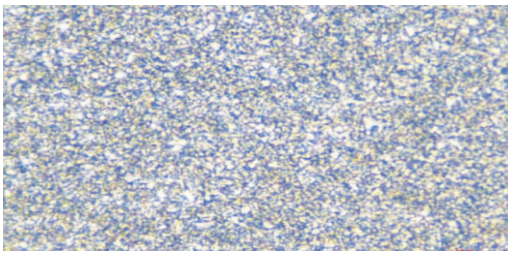


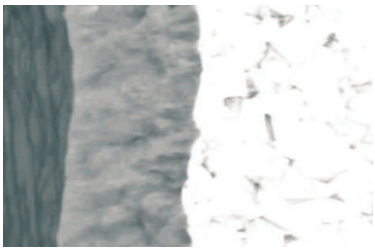
Heat Resistant Alloys / Titanium Alloys

Finishing Series

BS1605

New

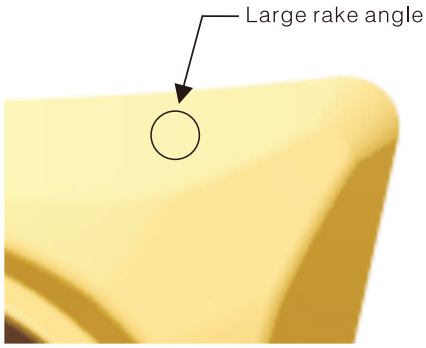




★ ISO:S05–S15 H05–H15 N05–N15
★ Low cobalt, ultra–fine grain hard alloy matrix, excellent wear resistance and heat resistance;
★ Paired with PVD High Power Impulse Magnetron Sputtering (HIPIMS) nano composite coating, the strongest coating adhesion and smooth surface;
1. High hardness turning grade for small parts;
2. Suitable for turning of P, M, and S type materials;
3. Longer processing life and higher surface smoothness.

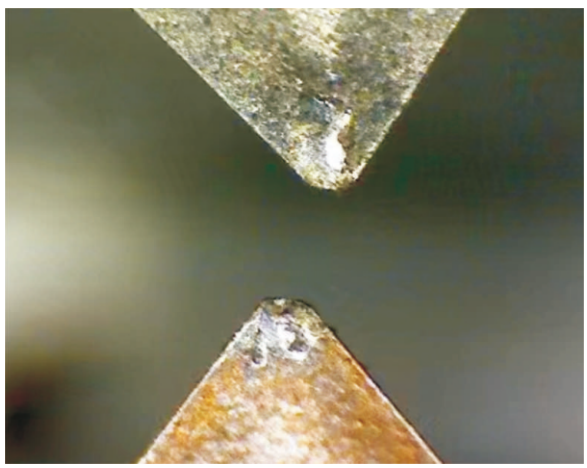
Chip Breaker Features of -FL

- Precision grinding of the periphery, with high indexing accuracy.
- The large rake angle design makes a very sharp edge structure.
- The sharp cutting edge design ensures low cutting force and wide edge band further ensuring the sharpness of the cutting edge and ensuring good chip breaking.
- Surface polishing treatment and smooth chip discharge lead to excellent surface processing quality.



Case No.1

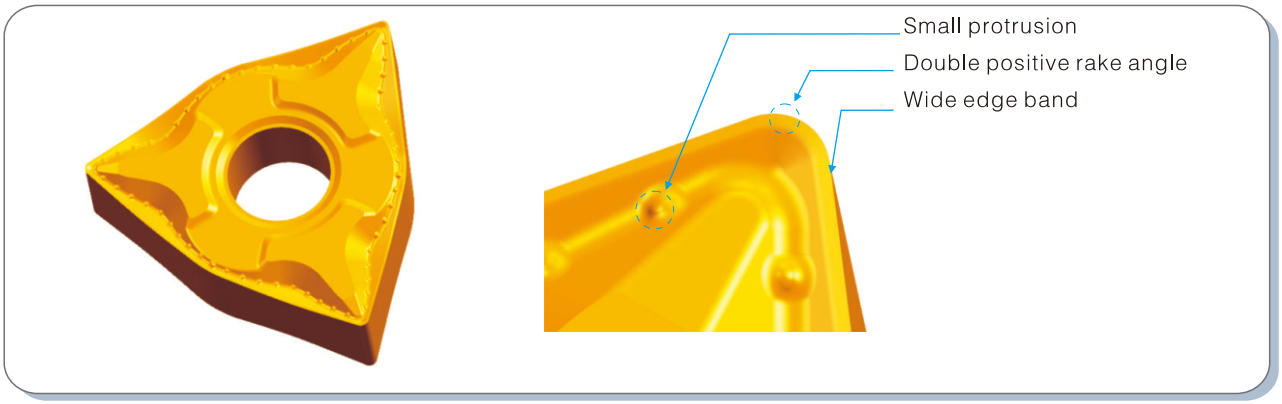
Workpiece: Aircraft Components
Workpiece material: GH4169
Processing equipment: horizontal lathe
WeCan insert: CCGT09T302–FL BS1605
Comparison insert: CCGT09T302 a foreign brand
Processing: Turning
Cutting parameters: Vc: 40m/min f: 0.15mm/rev ap: 0.1mm
Conclusion: Under the same parameter conditions, after processing for 1 hour, the wear of our insert and the safety insert are relatively similar, with a similar lifespan. Our insert has a high cost performance ratio.



Processing Sword for Stainless Steel

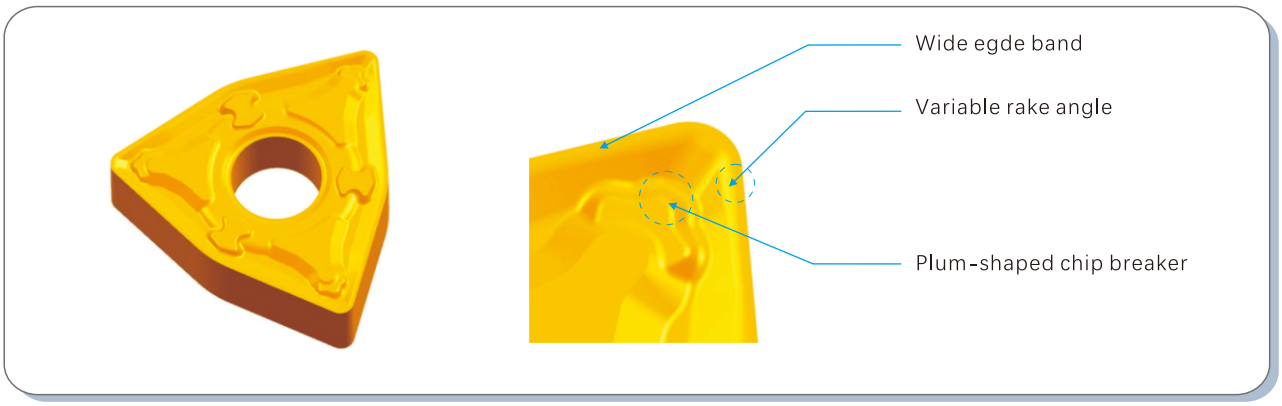
1 Chip Breaker Features of Stainless Steel Finishing -BF

- Double large positive rake angle, fully ensure the sharpness of the edge
- Small protrusions are more conducive to chip breaks
- Large cutting edge inclination can guide the chip flow very well
- Low cutting resistance, high surface finish of machined parts



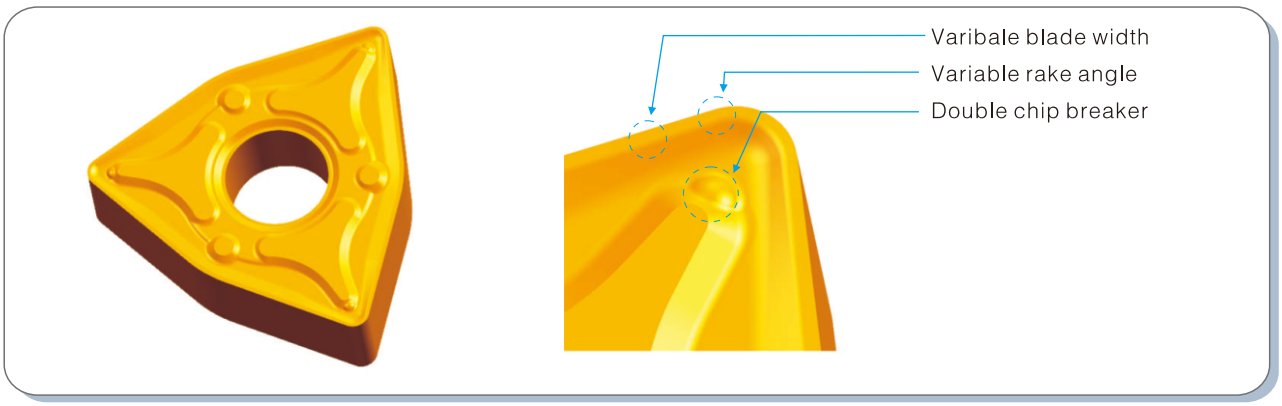
2 Chip Breaker Features of Stainless Steel Semi-Finishing -BM

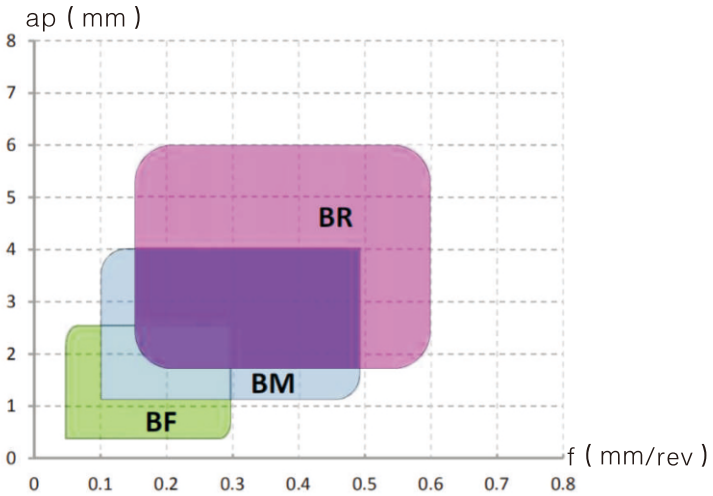
- The combination of variable blade width and variable rake angle takes into account the sharpness and strength of the cutting edge.
- Plum-shaped chip breaker structure, widen the chip breaking range of the insert
- Suitable for semi-finishing of stainless steel.



3 Chip Breaker Features of Stainless Steel Finishing -BR

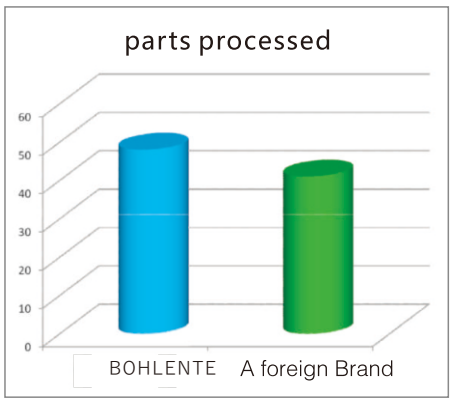
- Variable blade width and variable rake angle design, taking into account the sharpness and strength of the blade
- Large chip breaker and chip pocket design provides excellent chip breaking effect.
- Double chip breaker design expands the backbreaking range.
- Suitable for semi–finishing to rough machining of stainless steel





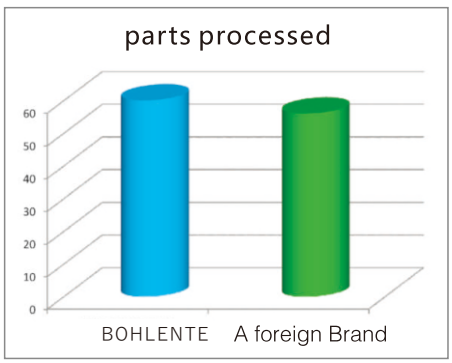
Case No.1

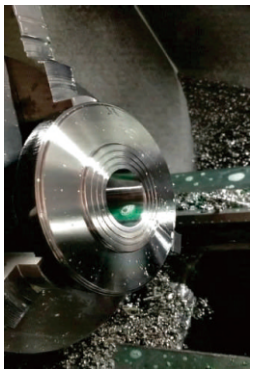
Workpiece material:stainless steel SUS304
Workpiece: Flange
Cooling type:Fluid cooling
Original blade:A foreign brand
WeCan insert:WNMG080408–BR BM1828
Cutting parameter:Vc:153m/min, f:0.2mm/rev , ap:1 –2mm
Conclusion: Used for boring, uneven cutting allowance, our inserts processed 48 pieces, a foreign brand processed 41 pieces, tool life increased by 17%, and has the advantage of cost performance.



Case No.2

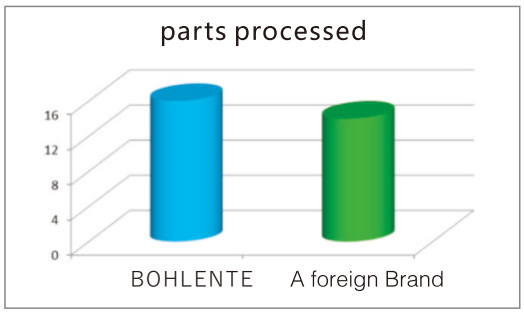
Workpiece material:stainless steel SUS304
Workpiece:Flange
Cooling type:Fluid cooling
Original blade:A foreign brand
WeCan insert:WNMG080408–BR BM1828
Cutting parameter:Vc:170m/min , f:0.2mm/rev, ap:1–1.5mm
Conclusion: Processing stainless steel flange end face, our inserts processed 69 pieces, a foreign brand processed 56 pieces, tool life increased by 23%, the advantage is obvious and the customer is very satisfied.





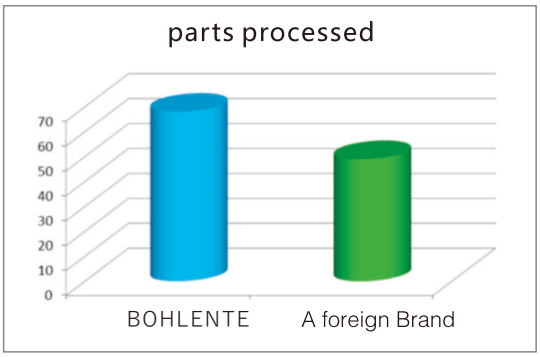
Case No.3

Workpiece material:stainless steel SUS304
Workpiece: Flange
Cooling type:Fluid cooling
Original blade:A foreign brand
WeCan insert:WNMG080408–BM BM1828
Cutting parameter:Vc:220m/min f:0.2–0.3mm/rev ap:0.8–1.5mm
Conclusion: processing flange outer circle, our inserts processed 16 pieces, a foreign brand processed 14 pieces, tool life increased by 14%, and our inserts processing work piece surface finish better than competitors.



Case No.4

Workpiece material:stainless steel SUS304
Workpiece:pipe joint
Cooling type:Fluid cooling
Original blade:A foreign brand
WeCan insert:TNMG160404–BF BM1828
Cutting parameter:Vc:47m/min f:0.1mm/rev ap:1mm
Conclusion: Machining the outer circle of pipe joint, our inserts processed 68 pieces, a foreign brand processed 49 pieces, the tool life increased by 39%, the cost performance advantage is obvious.

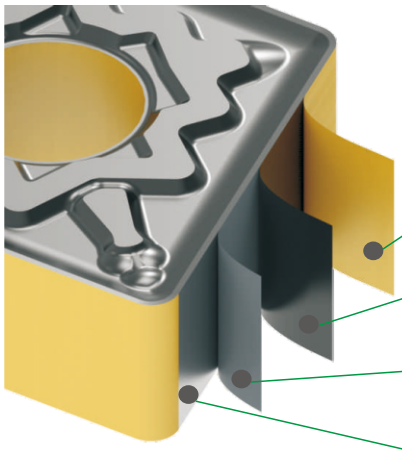


BP4213/BP4223

NEW

Upgraded Material for Steel Processing

Vc up to 300m/min



TiN	Wear status recognition layer, yellow coating makes it easier to observe the wear of the front and rear cutting surfaces of the insert.
AL_2O_3	Excellent heat insulation and high temperature resistance layer, especially suitable for high-speed processing.
Ti(C,N)	Stronger wear resistance and high-temperature stability can significantly improve tool life.
Matrix	The matrix is designed specifically for steel processing, reduced the defects in alloys and improves the toughness of inserts.

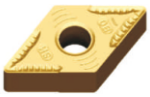
BP4213

★Medium temperature CVD coating, used for finishing to semi-finishing turning of steel, continuous and light intermittent processing;
★Optimization of matrix composition to enhance plastic deformation resistance and blade safety;
★Excellent wear resistance enables long service life processing at high speed under good working conditions.

BP4223

★Medium temperature CVD coating, preferred grade for steel turning, used for semi-finishing to roughing;
★Improve the high-temperature strength and red hardness of the matrix, achieving excellent comprehensive performance;
★Stable processing under intermittent and harsh working conditions.

Recommendation of Inserts and Chip Breakers

Finishing						
	CNMG–AF	DNMG–AF	SNMG–AF	TNMG–AF	VNMG–AF	WNMG–AF
Length	09/12	11/15	12	16/22	16	06/08
Finishing						
	CNMG–BF	DNMG–BF	SNMG–BF	TNMG–BF	VNMG–BF	WNMG–BF
Length	09/12	15	12	16	16	06/08
Semi–finishing						
	CNMG–AS	CNMG–BM	CNMG–CM	CNMG–DM	DNMG–AS	DNMG–BM
Length	12/16/19	12/16	12/16	12	15	15
Semi–finishing						
	DNMG–CM	DNMG–DM	SNMG–AS	SNMG–BM	SNMG–CM	SNMG–DM
Length	15	15	12/15	12/15	12/16	12/15
Semi–finishing						
	TNMG–AS	TNMG–BM	TNMG–CM	VNMG–AS	VNMG–CM	WNMG–AS
Length	16/22	16/22	16	11/16	16	08

Recommendation of Inserts and Chip Breakers

Semi–finishing						
	WNMG–BM	WNMG–CM	WNMG–DM			
Length	06/08	06/08	08			
Roughing						
	CNMG–AG	CNMG–BR	DNMG–AG	DNMG–BR	SNMG–AG	SNMG–BR
Length	12/16/19	12/16	15	15	12/15/19	12/15
Roughing						
	TNMG–AG	TNMG–BR	WNMG–AG	WNMG–BR		
Length	16/22	16/22	06/08	06/08		
Heavy –duty						
	CNMM–AG	SNMM–AG				
Length	19/25	19/25				
Semi–finishing						
	CCMT–GM	DCMT–GM	SCMT–GM	TCMT–GM		
Length	06/09/12	07/11	09/12	09/11/16		

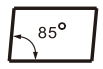
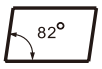
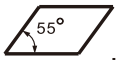
Recommendation of Inserts and Chip Breakers

M Finishing						
	CCMT–GF	DCMT–GF	SCMT–GF	TCMT–GF		
Length	06/09	07/11	09	09/11/16		
NEW Small Parts Machining						
	TNGG–FS	VNGG–FS	DCGT–FS	VBGT–FS	VCGT–FS	
Length	11	16	11	11	11	
GRINDED Small Parts Machining						
	CCGT–UF	DCGT–UF	TCGT–UF	VCGT–UF		
Length	09	07/11	11	08/11		
GRINDED Small Parts Machining						
	TNGG–F	TNGG–M	TPGH			
Length	16	16	08/09/11			
Semi–finishing						
	CCMT–DM	DCMT–DM	SCMT–DM	TCMT–DM		
Length	12	07/11	09	11		

Train Wheel Hub Machining						
	RCMX	175.32-22	175.32-24	175.32-28		
Length	08/32	19	19	19		

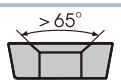
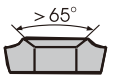
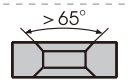
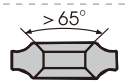
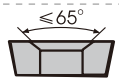
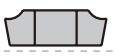
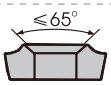
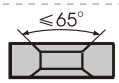
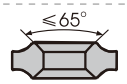
Turning Insert Code Key

1.Shape

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

1.Shape

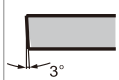
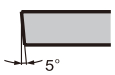
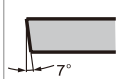
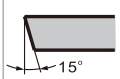
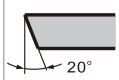
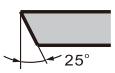
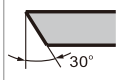
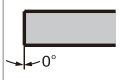
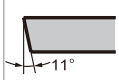
4.Chip Breaker and Hole

Code	Center Hole	Chip Breaker	Insert Profile	Code	Center Hole	Chip Breaker	Insert Profile
B	Y	N		N	N	N	
H	Y	Single		R	N	Single	
C	Y	N		F	N	Double	
J	Y	Double		A	Y	N	
W	Y	N		M	Y	Single	
T	Y	Single		G	Y	Double	
Q	Y	N		X	---	---	Special Type
U	Y	Double					

4.Chip Breaker and Hole

C N M G

2.Clearance Angle

Code	Clearance Angle	Code	Clearance Angle
A		B	
C		D	
E		F	
G		N	
P		O	Others

3.Tolerance

Code	m(mm)	d=I.C	S (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

Inscribed Circle	Regular Triangle	Square	80° Rhombus	55° Rhombus	35° Rhombus	
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
12.7	±0.13	±0.13	±0.13	±0.15	---	---
15.875	±0.15	±0.15	±0.15	±0.18	---	---
19.05	±0.15	±0.15	±0.15	±0.18	---	---
25.4	---	±0.18	---	---	---	---

◆ Tolerance of Inscribed Circle(mm)

Inscribed Circle	Regular Triangle	Square	80° Rhombus	55° Rhombus	35° Rhombus	
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 Circle diameter (mm)	C	D	R	S	T	V	W	K
32.00			32					
31.75			31	32				
25.40			25	25				
25.00	25	25	25					
20.00			20					
19.05	19		19	19	33			
16.00		19	16					
15.875	16		15	15	27			
12.70	12	15	12	12	22	22	08	
12.00			12					
10.00			10					
9.525	09	11	09	09	16	16	06	16
8.00			08					
6.35	06	07			11	11		
6.00			06					
5.56					09			
5.50			05					
3.97					06			

Insert Shape

5.Cutting Edge Length

Code	Thickness(mm)
12	12.70
10	11.11
T9	9.72
09	9.52
07	7.94
T6	6.75
06	6.35
05	5.56
T4	4.96
04	4.76
T3	3.97
03	3.18
T2	2.78
02	2.38
T1	1.98
01	1.59
T0	0.99
00	0.79

6.Thickness

12 04 12 - AS (ISO)

4 4 3 (Inch)

5.Inscribed Circle

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

6.Thickness

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

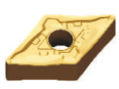
7.Corner Radius

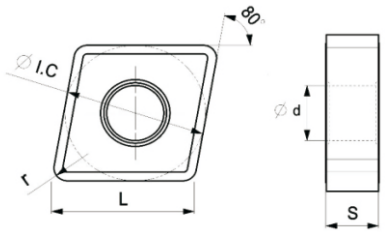
Code	Corner Radius (mm)
0	0.2
1	0.4
2	0.8
3	1.2
4	1.6
5	2.0
6	2.4

7.Corner Radius

Code	Corner Radius (mm)
00	
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	
Insert Diameter (Metric)	Circle Insert

8.Chi Breaker

AF	AS	AG
		
BF	BM	BR
		
CM	DM	AG (single-side)
		

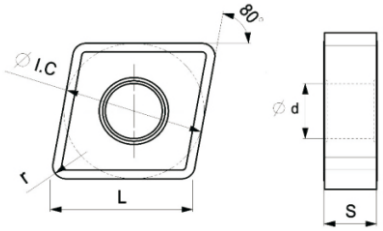


Length	Size(mm)			
	IC	S	d	r
9	9.525	3.18	3.81	0.4–0.8
12	12.7	4.76	5.16	0.4–1.2

80° CN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Finishing	CNMG090304–AF	0.26–3.2	0.05–0.15				●	○								
	CNMG090308–AF	0.52–3.2	0.1–0.30				●	○								
	CNMG120404–AF	0.26–3.2	0.05–0.15				●	○								
	CNMG120408–AF	0.52–3.2	0.1–0.30				●	○								
	CNMG120412–AF	0.78–3.2	0.15–0.45				●	○								

Note: ●Recommended grade ready to stock

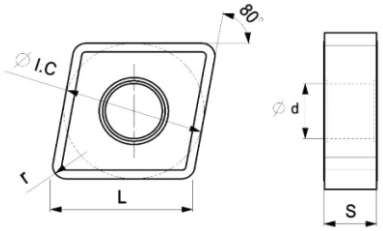


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.6
16	15.875	6.35	6.35	0.8–1.6
19	19.05	6.35	7.94	0.8–1.6

80° CN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD					
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Semi -finishing	CNMG120404-AS	0.60–6.40	0.10–0.30				○	●	○							
	CNMG120408-AS	1.20–6.40	0.20–0.60				○	●	○							
	CNMG120412-AS	1.80–6.40	0.30–0.90				○	●	○							
	CNMG120416-AS	2.40–6.40	0.12–0.40				○	●	○							
	CNMG160608-AS	1.20–8.10	0.10–0.30				○	●	○							
	CNMG160612-AS	1.80–8.10	0.20–0.60				○	●	○							
	CNMG160616-AS	2.40–8.10	0.30–0.90				○	●	○							
	CNMG190608-AS	1.20–9.70	0.20–0.60				○	●	○							
	CNMG190612-AS	1.80–9.70	0.30–0.90				○	●	○							
	CNMG190616-AS	2.40–9.70	0.40–1.20				○	●	○							

Note: ●Recommended grade ready to stock

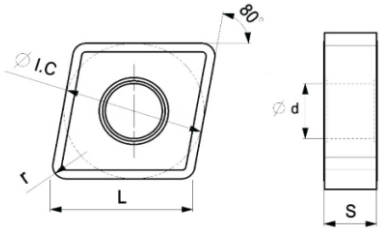


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.8–1.6
16	15.875	6.35	6.35	0.8–1.6
19	19.05	6.35	7.94	0.8–2.4

80° CN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD					
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Roughing	CNMG120408–AG	1.45–5.20	0.15–0.32				○	●	●							
	CNMG120412–AG	2.15–5.20	0.25–0.50				○	●	●							
	CNMG120416–AG	2.90–5.20	0.30–0.65				○	●	●							
	CNMG160608–AG	1.45–6.40	0.15–6.35				○	●	●							
	CNMG160612–AG	2.15–6.40	0.24–0.50				○	●	●							
	CNMG160616–AG	2.90–6.40	0.30–0.65				○	●	●							
	CNMG190608–AG	1.45–7.70	0.15–0.35				○	●	●							
	CNMG190612–AG	2.15–7.70	0.25–0.50				○	●	●							
	CNMG190616–AG	2.90–7.70	0.30–0.65				○	●	●							
	CNMG190624–AG	4.30–7.70	0.45–0.95				○	●	●							

Note: ●Recommended grade ready to stock

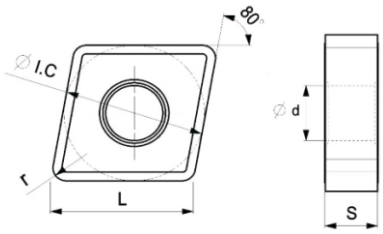


Length	Size(mm)			
	IC	S	d	r
19	19.05	6.35	7.94	1.2–2.4
25	25.4	7.94–9.52	9.12	2.4–3.2

80° CN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Heavy -duty	CNMM190612–AG	2.40–9.70	0.25–0.60				○	●	●							
	CNMM190616–AG	3.20–9.70	0.35–0.80				○	●	●							
	CNMM190624–AG	4.80–9.70	0.50–1.20				○	●	●							
	CNMM250724–AG	4.80–12.90	0.50–1.20				○	●	●							
	CNMM250924–AG	4.80–12.90	0.50–1.20				○	●	●							
	CNMM250932–AG	4.80–12.90	0.50–1.20				○	●	●							

Note: ●Recommended grade ready to stock

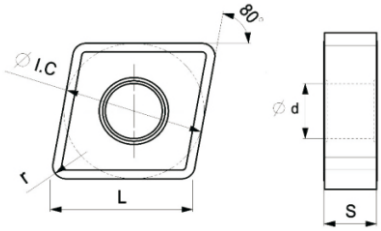


Length	Size(mm)			
	IC	S	d	r
9	9.525	3.18	3.81	0.4–0.8
12	12.7	4.76	5.16	0.4–1.2
16	15.875	6.35	6.35	0.8–1.6

80° CN□□

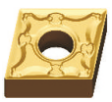
Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Finishing	CNMG090304-BF	0.25–2.40	0.05–0.15								○	●	○	●		
	CNMG090308-BF	0.50–2.40	0.10–0.30								○	●	○	●		
	CNMG120404-BF	0.25–3.20	0.05–0.15								○	●	○	●		
	CNMG120408-BF	0.50–3.20	0.10–0.30								○	●	○	●		
	CNMG120412-BF	0.75–3.20	0.15–0.45								○	●	○	●		

Note: ●Recommended grade ready to stock

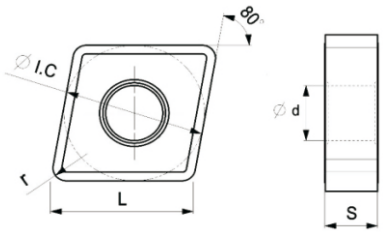


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.2
16	15.875	6.35	6.35	0.8–1.6

80° CN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Semi-finishing	CNMG120404-BM	0.30–4.30	0.08–0.25								○	○	○	●		
	CNMG120408-BM	0.65–4.30	0.15–0.45								○	○	○	●		
	CNMG120412-BM	0.95–4.30	0.20–0.65								○	○	○	●		
	CNMG160608-BM	0.65–5.30	0.15–0.45								○	○	○	●		
	CNMG160612-BM	0.95–5.30	0.25–0.65								○	○	○	●		
	CNMG160616-BM	1.30–5.30	0.30–0.90								○	○	○	●		

Note: ●Recommended grade ready to stock

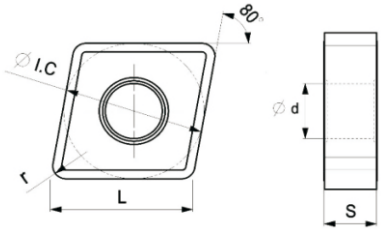


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.6
16	15.875	6.35	6.35	0.8–1.6
19	19.05	6.35	7.94	0.8–1.6

80° CN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 K Semi-finishing	CNMG120404-CM	0.40–4.30	0.08–0.25			●	○	○								
	CNMG120408-CM	0.80–4.30	0.15–0.45			●	○	○								
	CNMG120412-CM	1.20–4.30	0.20–0.65			●	○	○								
	CNMG160612-CM	1.20–5.30	0.25–0.65			●	○	○								
	CNMG160616-CM	1.60–5.30	0.30–0.90			●	○	○								
	CNMG190612-CM	1.20–6.40	0.25–0.65			●	○	○								

Note: ●Recommended grade ready to stock

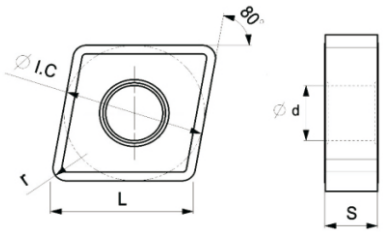


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.2
16	15.875	6.35	6.35	0.8–1.6

80° CN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Roughing	CNMG120404-BR	0.30–4.30	0.08–0.25							○	○		○	●		
	CNMG120408-BR	0.65–4.30	0.15–0.45							○	○		○	●		
	CNMG120412-BR	0.95–4.30	0.25–0.65							○	○		○	●		
	CNMG160608-BR	0.65–5.30	0.15–0.45							○	○		○	●		
	CNMG160612-BR	0.95–5.30	0.25–0.65							○	○		○	●		
	CNMG160616-BR	1.25–5.30	0.30–0.90							○	○		○	●		

Note: ●Recommended grade ready to stock

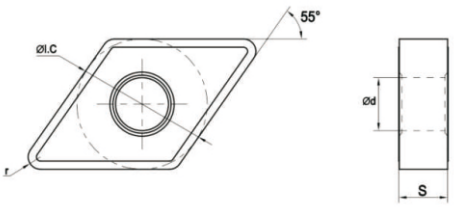


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–0.8
16	15.875	6.35	6.35	0.8–1.6
19	19.05	6.35	7.94	0.8–1.6

80° CN□□

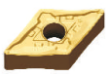
Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 S Semi-finishing	CNMG120404-DM	0.40–4.30	0.08–0.25						○			○		●	○	●
	CNMG120408-DM	0.80–4.30	0.15–0.45						○			○		●	○	●
	CNMG120412-DM	1.20–4.30	0.25–0.65						○			○		●	○	●
	CNMG120416-DM	1.60–4.30	0.30–0.90						○			○		●	○	●
	CNMG160408-DM	0.65–5.30	0.15–0.45						○			○		●	○	●
	CNMG160412-DM	0.95–5.30	0.25–0.65						○			○		●	○	●
	CNMG160416-DM	1.25–5.30	0.30–0.90						○			○		●	○	●
	CNMG190408-DM	0.65–5.30	0.15–0.45						○			○		●	○	●
	CNMG190412-DM	0.95–5.30	0.25–0.65						○			○		●	○	●
	CNMG190416-DM	1.25–5.30	0.30–0.90						○			○		●	○	●

Note: ●Recommended grade ready to stock

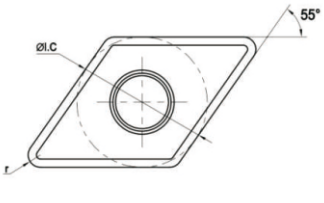


Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76	5.16	0.8–1.2
15	12.7	6.35	5.16	0.4–1.2

55° DN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Finishing	DNMG150404–AF	0.26–3.1	0.05–0.15				●	○								
	DNMG150408–AF	0.52–3.1	0.10–0.30				●	○								
	DNMG150412–AF	0.78–3.1	0.15–0.45				●	○								
	DNMG150604–AF	0.26–3.1	0.05–0.15				●	○								
	DNMG150608–AF	0.52–3.1	0.10–0.30				●	○								
	DNMG150612–AF	0.78–3.1	0.15–0.45				●	○								

Note: ●Recommended grade ready to stock

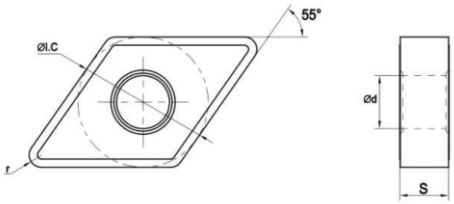


Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.4–1.2

55° DN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Semi-finishing	DNMG150404–AS	0.60–5.40	0.10–0.30				○	●	○							
	DNMG150408–AS	1.20–5.40	0.20–0.60				○	●	○							
	DNMG150412–AS	1.80–5.40	0.30–0.90				○	●	○							
	DNMG150604–AS	0.60–5.40	0.10–0.30				○	●	○							
	DNMG150608–AS	1.20–5.40	0.20–0.60				○	●	○							
	DNMG150612–AS	1.80–5.40	0.30–0.90				○	●	○							

Note: ●Recommended grade ready to stock

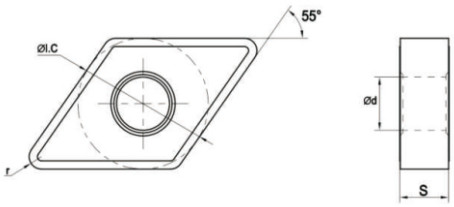


Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.8–1.2

55° DN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Roughing	DNMG150408–AG	0.80–4.0	0.15–0.50				○	●	●							
	DNMG150412–AG	1.20–4.0	0.15–0.65				○	●	●							
	DNMG150608–AG	0.80–4.0	0.15–0.50				○	●	●							
	DNMG150612–AG	1.20–4.0	0.15–0.65				○	●	●							

Note: ●Recommended grade ready to stock

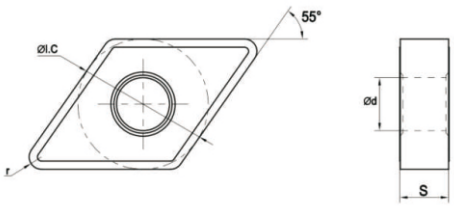


Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.4–1.2

55° DN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD					
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Finishing	DNMG150404–BF	0.25–2.90	0.05–0.15								○	●	○	●		
	DNMG150408–BF	0.50–2.90	0.10–0.30								○	●	○	●		
	DNMG150412–BF	0.75–2.90	0.15–0.45								○	●	○	●		
	DNMG150604–BF	0.25–2.90	0.05–0.15								○	●	○	●		
	DNMG150608–BF	0.50–2.90	0.10–0.30								○	●	○	●		
	DNMG150612–BF	0.75–2.90	0.15–0.45								○	●	○	●		

Note: ●Recommended grade ready to stock

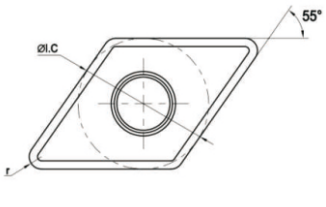


Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.4–1.2

55° DN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Semi-finishing	DNMG150404–BM	0.30–3.90	0.08–0.25								○	○	○	●		
	DNMG150408–BM	0.65–3.90	0.15–0.45								○	○	○	●		
	DNMG150412–BM	0.95–3.90	0.25–0.65								○	○	○	●		
	DNMG150604–BM	0.30–3.90	0.08–0.20								○	○	○	●		
	DNMG150608–BM	0.65–3.90	0.15–0.45								○	○	○	●		
	DNMG150612–BM	0.95–3.90	0.25–0.65								○	○	○	●		

Note: ●Recommended grade ready to stock

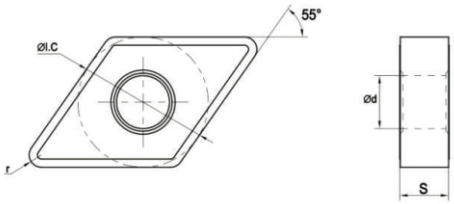


Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.4–1.2

55° DN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Roughing	DNMG150404–BR	0.30–3.90	0.08–0.25							○	○		○	●		
	DNMG150408–BR	0.65–3.90	0.15–0.45							○	○		○	●		
	DNMG150412–BR	0.95–3.90	0.25–0.65							○	○		○	●		
	DNMG150604–BR	0.30–3.90	0.08–0.20							○	○		○	●		
	DNMG150608–BR	0.65–3.90	0.15–0.45							○	○		○	●		
	DNMG150612–BR	0.95–3.90	0.25–0.65							○	○		○	●		

Note: ●Recommended grade ready to stock

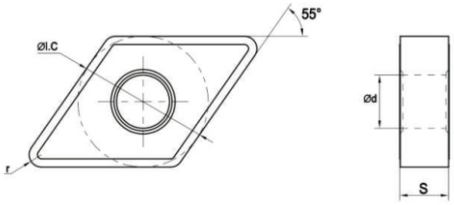


Length	Size(mm)			
	IC	S	d	r
15	12.7	6.35	5.16	0.8–1.2

55° DN□□

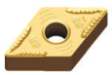
Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
K Semi-finishing	DNMG150404-CM	0.40–3.90	0.08–0.25			●	○	○								
	DNMG150408-CM	0.80–3.90	0.15–0.45			●	○	○								
	DNMG150412-CM	1.20–3.90	0.25–0.65			●	○	○								
	DNMG150604-CM	0.40–3.90	0.08–0.20			●	○	○								
	DNMG150608-CM	0.80–3.90	0.15–0.45			●	○	○								
	DNMG150612-CM	1.20–3.90	0.25–0.65			●	○	○								

Note: ●Recommended grade ready to stock

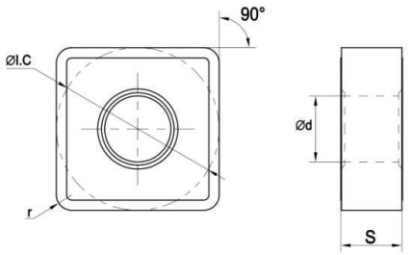


Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.4–1.2

55° DN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 S Semi-finishing	DNMG150404–DM	0.40–3.90	0.08–0.25						○			○		●	○	●
	DNMG150408–DM	0.80–3.90	0.15–0.45						○			○		●	○	●
	DNMG150412–DM	1.20–3.90	0.25–0.65						○			○		●	○	●
	DNMG150604–DM	0.40–3.90	0.08–0.20						○			○		●	○	●
	DNMG150608–DM	0.80–3.90	0.15–0.45						○			○		●	○	●
	DNMG150612–DM	1.20–3.90	0.25–0.65						○			○		●	○	●

Note: ●Recommended grade ready to stock

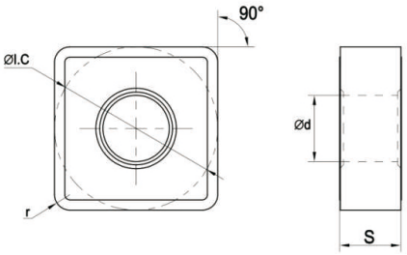


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.8–1.2

90° SN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Finishing	SNMG120404–AF	0.26–3.2	0.05–0.15				●	○								
	SNMG120408–AF	0.52–3.2	0.10–0.30				●	○								
	SNMG120412–AF	0.78–3.2	0.15–0.45				●	○								

Note: ●Recommended grade ready to stock

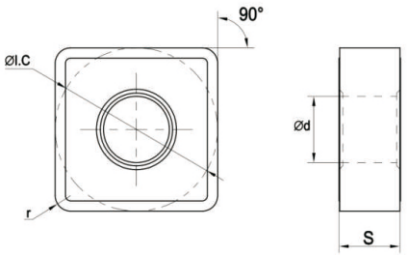


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.8–1.6
15	15.875	6.35	6.35	0.8–1.2

90° SN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Semi-finishing	SNMG120404–AS	1.00–5.00	0.12–0.40				○	●	○							
	SNMG120408–AS	1.20–5.00	0.15–0.55				○	●	○							
	SNMG120412–AS	1.50–5.00	0.20–0.55				○	●	○							
	SNMG150612–AS	2.00–7.00	0.30–0.65				○	●	○							

Note: ●Recommended grade ready to stock

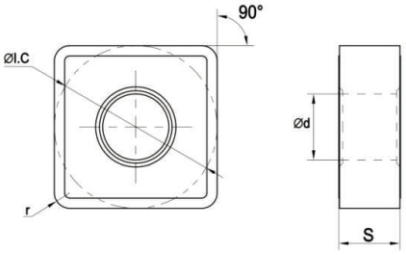


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.8–1.6
15	15.875	6.35	6.35	0.8–1.2
19	19.05	6.35	7.94	1.2–1.6

90° SN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Roughing	SNMG120408–AG	2.50–6.00	0.25–0.70				○	●	●							
	SNMG120412–AG	2.50–6.00	0.30–0.70				○	●	●							
	SNMG120416–AG	2.50–6.00	0.40–0.70				○	●	●							
	SNMG150612–AG	2.15–6.40	0.25–0.50				○	●	●							
	SNMG190612–AG	2.15–6.40	0.25–0.50				○	●	●							
	SNMG190616–AG	2.85–7.60	0.30–0.65				○	●	●							

Note: ●Recommended grade ready to stock

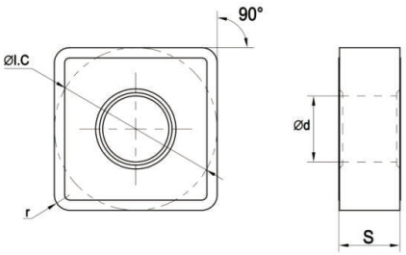


Length	Size(mm)			
	IC	S	d	r
19	19.05	6.35	7.94	1.2–2.4
25	25.4	7.94–9.52	9.12	2.4–3.2

90° SN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Heavy-duty	SNMM190612–AG	2.40–9.50	0.25–0.60				○	●	●							
	SNMM190616–AG	3.20–9.50	0.35–0.80				○	●	●							
	SNMM190624–AG	4.80–9.50	0.53–1.20				○	●	●							
	SNMM250724–AG	4.80–12.70	0.53–1.20				○	●	●							
	SNMM250732–AG	4.80–12.70	0.53–1.20				○	●	●							
	SNMM250924–AG	4.35–12.70	0.53–1.20				○	●	●							
	SNMM250932–AG	4.35–12.70	0.53–1.20				○	●	●							

Note: ●Recommended grade ready to stock

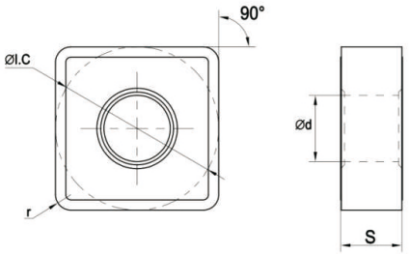


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.2

90° SN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Finishing	SNMG120404–BF	0.25–3.20	0.05–0.15								○	●	○	●		
	SNMG120408–BF	0.50–3.20	0.10–0.30								○	●	○	●		
	SNMG120412–BF	0.75–3.20	0.15–0.45								○	●	○	●		

Note: ●Recommended grade ready to stock

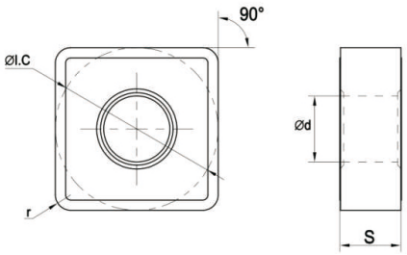


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.2
15	15.875	6.35	6.35	0.8–1.2

90° SN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD					
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Semi-finishing	SNMG120404–BM	0.30–4.20	0.08–0.25								○	○	○	●		
	SNMG120408–BM	0.65–4.20	0.15–0.45								○	○	○	●		
	SNMG120412–BM	0.95–4.20	0.25–0.65								○	○	○	●		
	SNMG150608–BM	0.65–5.20	0.15–0.45								○	○	○	●		
	SNMG150612–BM	0.95–5.20	0.25–0.65								○	○	○	●		

Note: ●Recommended grade ready to stock

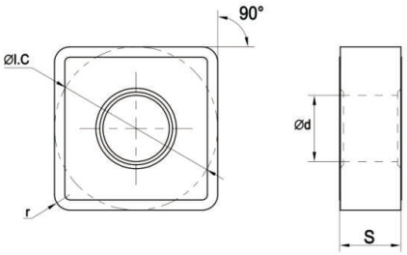


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.2
15	15.875	6.35	6.35	0.8–1.2

90° SN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Roughing	SNMG120404–BR	0.30–4.20	0.08–0.25							○	○		○	●		
	SNMG120408–BR	0.65–4.20	0.15–0.45							○	○		○	●		
	SNMG120412–BR	0.95–4.20	0.23–0.66							○	○		○	●		
	SNMG150608–BR	0.65–5.20	0.15–0.44							○	○		○	●		
	SNMG150612–BR	0.95–5.20	0.23–0.66							○	○		○	●		

Note: ●Recommended grade ready to stock

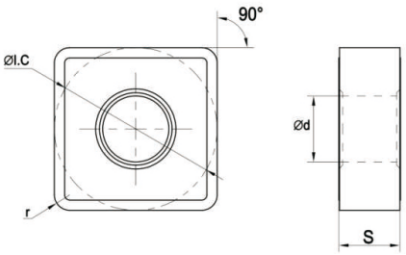


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.6
15	15.875	6.35	6.35	0.8–1.6
19	19.05	6.35	7.94	1.2–1.6

90° SN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 K Semi-finishing	SNMG120404–CM	0.40–4.20	0.08–0.25			●	○	○								
	SNMG120408–CM	0.80–4.20	0.15–0.45			●	○	○								
	SNMG120412–CM	1.20–4.20	0.25–0.65			●	○	○								

Note: ●Recommended grade ready to stock

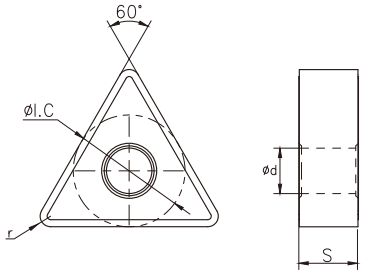


Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.6
15	15.875	6.35	6.35	0.8–1.6

90° SN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 S Semi-finishing	SNMG120404–DM	0.40–3.90	0.08–0.25						○			○		●	○	●
	SNMG120408–DM	0.80–3.90	0.15–0.45						○			○		●	○	●
	SNMG120412–DM	1.20–3.90	0.25–0.65						○			○		●	○	●
	SNMG120416–DM	1.80–3.90	0.30–0.90						○			○		●	○	●
	SNMG150608–DM	0.80–3.90	0.15–0.45						○			○		●	○	●
	SNMG150612–DM	1.20–3.90	0.25–0.65						○			○		●	○	●
	SNMG150616–DM	1.80–3.90	0.30–0.90						○			○		●	○	●

Note: ●Recommended grade ready to stock

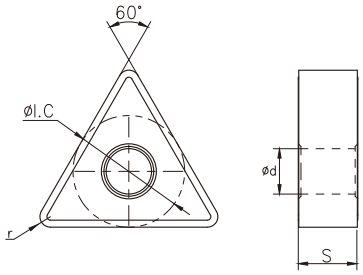


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Finishing	TNMG160404–AF	0.26–3.1	0.05–0.15				●	○								
	TNMG160408–AF	0.52–3.1	0.10–0.30				●	○								
	TNGG160412–AF	0.78–3.1	0.15–0.45				●	○								

Note: ●Recommended grade ready to stock

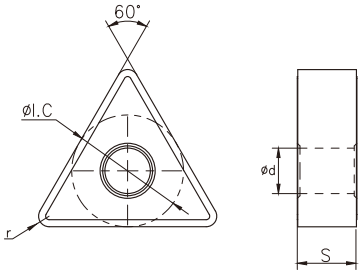


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2
22	12.7	4.76	5.16	0.8–1.6

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Semi-finishing	TNMG160404–AS	0.60–5.80	0.10–0.30				○	●	○							
	TNMG160408–AS	1.20–5.80	0.20–0.60				○	●	○							
	TNMG160412–AS	1.80–5.80	0.30–0.90				○	●	○							
	TNMG220408–AS	1.20–7.70	0.20–0.60				○	●	○							
	TNMG220412–AS	1.80–7.70	0.30–0.90				○	●	○							
	TNMG220416–AS	2.40–7.70	0.40–1.20				○	●	○							

Note: ●Recommended grade ready to stock

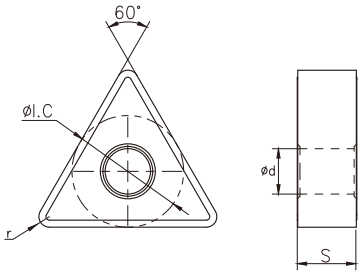


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.8–1.2
22	12.7	4.76	5.16	0.8–1.6

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
P Roughing	TNMG160408–AG	2.00–5.00	0.25–0.65				○	●	●							
	TNMG220408–AG	2.50–7.00	0.25–0.65				○	●	●							
	TNMG220412–AG	2.50–7.00	0.25–0.65				○	●	●							

Note: ●Recommended grade ready to stock

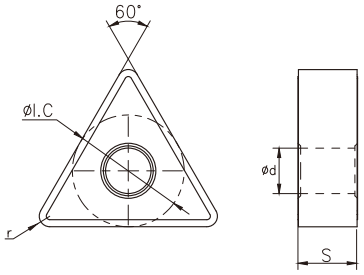


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Finishing	TNMG160404–BF	0.25–3.10	0.05–0.15								○	●	○	●		
	TNMG160408–BF	0.50–3.10	0.10–0.30								○	●	○	●		
	TNMG160412–BF	0.75–3.10	0.10–0.30								○	●	○	●		

Note: ●Recommended grade ready to stock

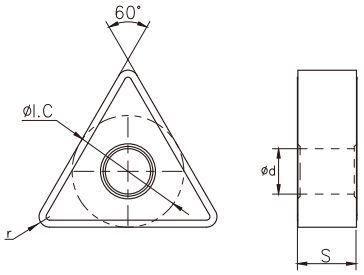


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2
22	12.7	4.76	5.16	0.8–1.6

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Semi-finishing	TNMG160404–BM	0.30–4.10	0.08–0.25								○	○	○	●		
	TNMG160408–BM	0.65–4.10	0.15–0.45								○	○	○	●		
	TNMG160412–BM	0.95–4.10	0.25–0.65								○	○	○	●		
	TNMG220408–BM	0.65–4.90	0.15–0.45								○	○	○	●		
	TNMG220412–BM	0.95–4.90	0.25–0.65								○	○	○	●		

Note: ●Recommended grade ready to stock

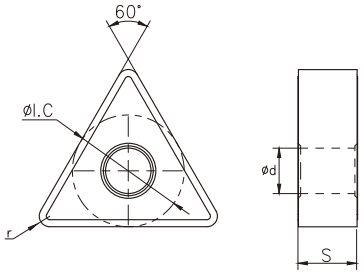


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2
22	12.7	4.76	5.16	0.8–1.6

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 K Semi-finishing	TNMG160404–CM	0.40–4.10	0.08–0.25			●	○	○								
	TNMG160408–CM	0.80–4.10	0.15–0.45			●	○	○								
	TNMG160412–CM	1.20–4.10	0.25–0.65			●	○	○								
	TNMG220412–CM	1.20–4.90	0.25–0.65			●	○	○								

Note: ●Recommended grade ready to stock

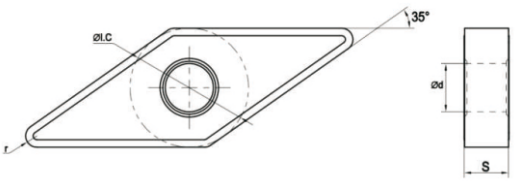


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2
22	12.7	4.76	5.16	0.8–1.2

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Roughing	TNMG160404-BR	0.30–4.10	0.08–0.25							○	○		○	●		
	TNMG160408-BR	0.65–4.10	0.15–0.45							○	○		○	●		
	TNMG160412-BR	0.95–4.10	0.25–0.65							○	○		○	●		
	TNMG220408-BR	0.65–4.90	0.15–0.45							○	○		○	●		
	TNMG220412-BR	0.95–4.90	0.25–0.65							○	○		○	●		

Note: ●Recommended grade ready to stock

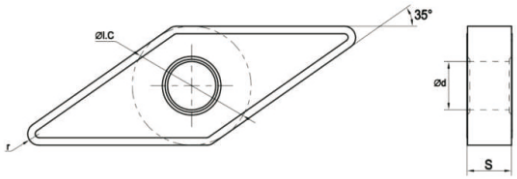


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2

35° VN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 K Semi-finishing	VNMG160404–CM	0.40–3.30	0.08–0.25			●	○	○								
	VNMG160408–CM	0.80–3.30	0.15–0.45			●	○	○								
	VNMG160412–CM	1.20–3.30	0.25–0.65			●	○	○								

Note: ●Recommended grade ready to stock

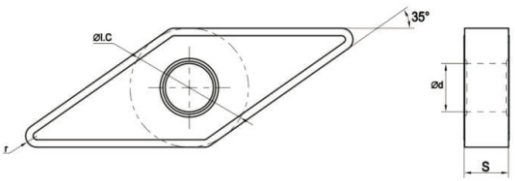


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2

35° VN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Finishing	VNMG160404–AF	0.26–2.1	0.05–0.15				●	○								
	VNMG160408–AF	0.52–2.1	0.10–0.30				●	○								
	VNMG160412–AF	0.78–2.1	0.15–0.45				●	○								

Note: ●Recommended grade ready to stock

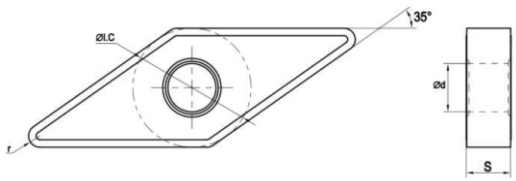


Length	Size(mm)			
	IC	S	d	r
11	6.35	4.76	2.26	0.4–0.8
16	9.525	4.76	3.81	0.4–0.8

35° VN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Semi-finishing	VNMG110404–AS	0.80–2.50	0.15–0.36				○	●	○							
	VNMG110408–AS	1.00–2.50	0.17–0.36				○	●	○							
	VNMG160404–AS	0.80–3.00	0.15–0.36				○	●	○							
	VNMG160408–AS	1.00–2.50	0.17–0.36				○	●	○							

Note: ●Recommended grade ready to stock

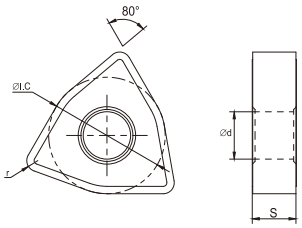


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2

35° VN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD					
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
M Finishing	VNMG160404–BF	0.25–3.30	0.05–0.15								○	●	○	●		
	VNMG160408–BF	0.55–3.30	0.10–0.30								○	●	○	●		
	VNMG160412–BF	0.75–3.30	0.15–0.45								○	●	○	●		

Note: ●Recommended grade ready to stock

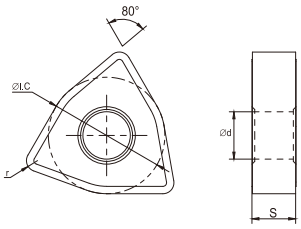


Length	Size(mm)			
	IC	S	d	r
8	12.7	4.76	5.16	0.4–1.2

80° WN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Finishing	WNMG080404–AF	0.26–2.2	0.05–0.15				●	○								
	WNMG080408–AF	0.52–2.2	0.10–0.30				●	○								
	WNMG080412–AF	0.78–2.2	0.15–0.45				●	○								

Note: ●Recommended grade ready to stock

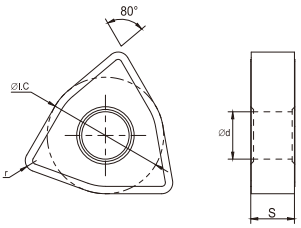


Length	Size(mm)			
	IC	S	d	r
8	12.7	4.76	5.16	0.4–1.6

80° WN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Semi-finishing	WNMG080404–AS	0.60–4.30	0.10–0.30				○	●	○							
	WNMG080408–AS	1.20–4.30	0.20–0.60				○	●	○							
	WNMG080412–AS	1.80–4.30	0.30–0.90				○	●	○							
	WNMG080416–AS	2.40–4.30	0.40–1.20				○	●	○							

Note: ●Recommended grade ready to stock

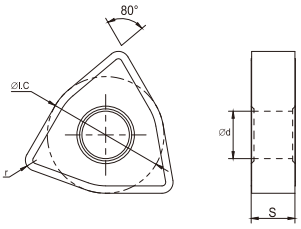


Length	Size(mm)			
	IC	S	d	r
6	9.525	4.76	3.81	0.8–1.2
8	12.7	4.76	5.16	0.8–1.2

80° WN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 P Roughing	WNMG060408–AG	0.80–4.00	0.15–0.50				○	●	●							
	WNMG060412–AG	0.80–4.00	0.15–0.50				○	●	●							
	WNMG080408–AG	0.80–4.50	0.15–0.55				○	●	●							
	WNMG080412–AG	0.80–4.50	0.20–0.55				○	●	●							

Note: ●Recommended grade ready to stock

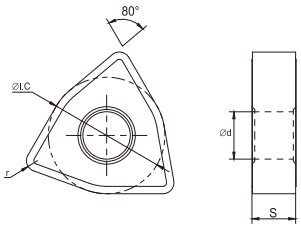


Length	Size(mm)			
	IC	S	d	r
6	9.525	4.76	3.81	0.4–0.8
8	12.7	4.76	5.16	0.4–1.6

80° WN□□

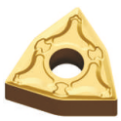
Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Finishing	WNMG060404-BF	0.25–2.40	0.05–0.15								○	●	○	●		
	WNMG060408-BF	0.50–2.40	0.10–0.30								○	●	○	●		
	WNMG080404-BF	0.25–3.20	0.05–0.15								○	●	○	●		
	WNMG080408-BF	0.50–3.20	0.10–0.30								○	●	○	●		
	WNMG080412-BF	0.75–3.20	0.15–0.45								○	●	○	●		
	WNMG080416-BF	1.05–3.20	0.20–0.60								○	●	○	●		

Note: ●Recommended grade ready to stock

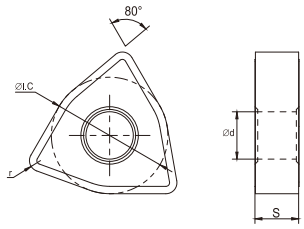


Length	Size(mm)			
	IC	S	d	r
6	9.525	4.76	3.81	0.4–0.8
8	12.7	4.76	5.16	0.4–1.6

80° WN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Semi-finishing	WNMG060404–BM	0.30–2.10	0.10–0.30								○	○	○	●		
	WNMG060408–BM	0.65–2.10	0.15–0.45								○	○	○	●		
	WNMG080404–BM	0.30–2.90	0.10–0.30								○	○	○	●		
	WNMG080408–BM	0.65–2.90	0.15–0.45								○	○	○	●		
	WNMG080412–BM	0.95–2.90	0.20–0.60								○	○	○	●		
	WNMG080416–BM	1.25–2.90	0.25–0.75								○	○	○	●		

Note: ●Recommended grade ready to stock

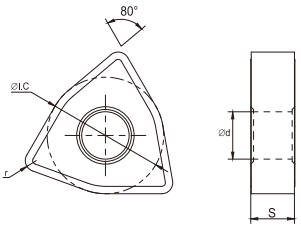


Length	Size(mm)			
	IC	S	d	r
6	9.525	4.76	3.81	0.4–0.8
8	12.7	4.76	5.16	0.4–1.6

80° WN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Roughing	WNMG060404–BR	0.30–2.10	0.10–0.30							○	○		○	●		
	WNMG060408–BR	0.65–2.10	0.15–0.45							○	○		○	●		
	WNMG080404–BR	0.30–2.90	0.10–0.30							○	○		○	●		
	WNMG080408–BR	0.65–2.90	0.15–0.45							○	○		○	●		
	WNMG080412–BR	0.95–2.90	0.20–0.60							○	○		○	●		
	WNMG080416–BR	1.25–2.90	0.25–0.75							○	○		○	●		

Note: ●Recommended grade ready to stock

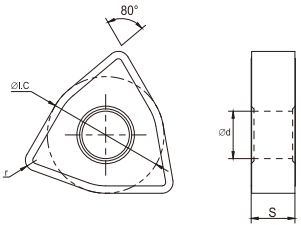


Length	Size(mm)			
	IC	S	d	r
8	12.7	4.76	5.16	0.4–1.6

80° WN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 K Semi-finishing	WNMG080404-CM	0.08–0.25	0.40–2.90			●	○	○								
	WNMG080408-CM	0.15–0.45	0.80–2.90			●	○	○								
	WNMG080412-CM	0.25–0.66	1.20–2.90			●	○	○								

Note: ●Recommended grade ready to stock

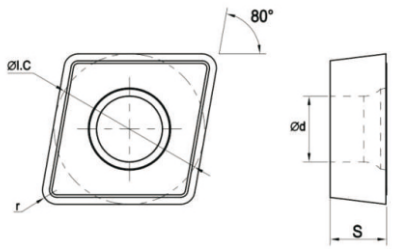


Length	Size(mm)			
	IC	S	d	r
8	12.7	4.76	5.16	0.4–1.6

80° WN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
S Semi-finishing	WNMG080404–DM	0.40–4.30	0.08–0.25						○			○		●	○	●
	WNMG080408–DM	0.80–4.30	0.15–0.45						○			○		●	○	●
	WNMG080412–DM	1.20–4.30	0.25–0.66						○			○		●	○	●
	WNMG080416–DM	1.60–4.30	0.30–0.90						○			○		●	○	●

Note: ●Recommended grade ready to stock

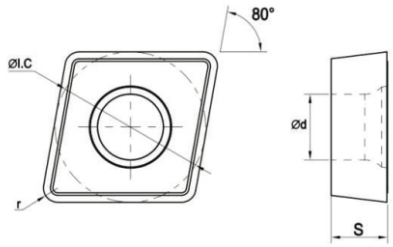


Length	Size(mm)			
	IC	S	d	r
6	3.65	2.38	2.8	0.4–0.8
9	9.525	3.97	4.4	0.4–0.8
12	12.7	4.76	5.56	0.4–1.2

80° CC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 General Semi-finishing	CCMT060204–GM	0.40–2.10	0.05–0.18		●	●		○		●		○				○
	CCMT060208–GM	0.80–2.10	0.10–0.35		●	●		○		●		○				○
	CCMT09T304–GM	0.40–3.80	0.05–0.18		●	●		○		●		○				○
	CCMT09T308–GM	0.80–3.20	0.10–0.35		●	●		○		●		○				○
	CCMT120404–GM	0.40–4.30	0.05–0.18		●	●		○		●		○				○
	CCMT120408–GM	0.80–4.30	0.10–0.35		●	●		○		●		○				○
	CCMT120412–GM	1.20–4.30	0.15–0.55		●	●		○		●		○				○

Note: ●Recommended grade ready to stock

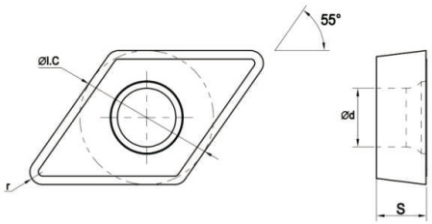


Length	Size(mm)			
	IC	S	d	r
6	3.65	2.38	2.8	0.4–0.8
9	9.525	3.97	4.4	0.4–0.8

80° CC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD					
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Finishing	CCMT060204-GF	0.30–1.60	0.05–0.15								○	●	○	●		
	CCMT060208-GF	0.60–1.60	0.10–0.30								○	●	○	●		
	CCMT09T304-GF	0.30–2.20	0.05–0.15								○	●	○	●		
	CCMT09T308-GF	0.60–2.40	0.10–0.30								○	●	○	●		

Note: ●Recommended grade ready to stock

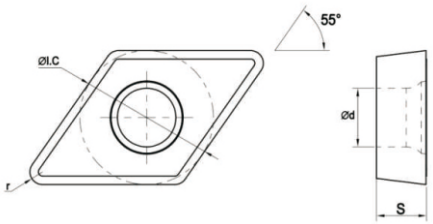


Length	Size(mm)			
	IC	S	d	r
7	6.35	2.38	2.8	0.4–0.8
11	9.525	3.97	4.4	0.4–1.2

55° DC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 General Semi-finishing	DCMT070204–GM	0.40–2.30	0.05–0.20		●	●		○		●		○				○
	DCMT070208–GM	0.80–2.30	0.10–0.35		●	●		○		●		○				○
	DCMT11T304–GM	0.40–3.50	0.05–0.20		●	●		○		●		○				○
	DCMT11T308–GM	0.80–3.50	0.20–0.35		●	●		○		●		○				○
	DCMT11T312–GM	1.20–3.50	0.25–0.55		●	●		○		●		○				○

Note: ●Recommended grade ready to stock

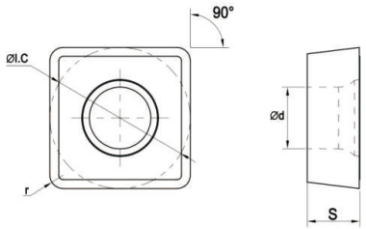


Length	Size(mm)			
	IC	S	d	r
7	6.35	2.38	2.8	0.4–0.8
11	9.525	3.97	4.4	0.4–1.2

55° DC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD					
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Finishing	DCMT070204-GF	0.30–1.50	0.05–0.15								○	●	○	●		
	DCMT070208-GF	0.60–1.50	0.05–0.20								○	●	○	●		
	DCMT11T304-GF	0.30–2.30	0.02–0.10								○	●	○	●		
	DCMT11T308-GF	0.60–2.30	0.05–0.26								○	●	○	●		
	DCMT11T312-GF	0.90–2.30	0.20–0.30								○	●	○	●		

Note: ●Recommended grade ready to stock

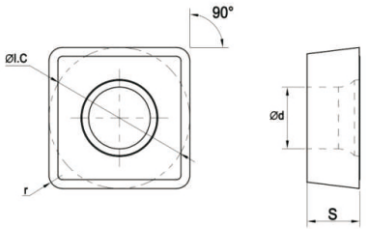


Length	Size(mm)			
	IC	S	d	r
9	9.525	3.97	4.4	0.4–0.8
12	12.7	4.76	5.56	0.4–1.2

90° SC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 General Semi-finishing	SCMT09T304–GM	0.40–3.10	0.05–0.20		●	●		○		●		○				○
	SCMT09T308–GM	0.80–3.10	0.10–0.35		●	●		○		●		○				○
	SCMT120404–GM	0.40–4.20	0.05–0.20		●	●		○		●		○				○
	SCMT120408–GM	0.80–4.20	0.10–0.30		●	●		○		●		○				○
	SCMT120412–GM	1.20–4.20	0.15–0.55		●	●		○		●		○				○

Note: ●Recommended grade ready to stock

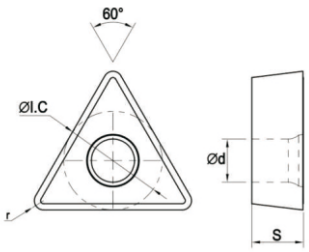


Length	Size(mm)			
	IC	S	d	r
9	9.525	3.97	4.4	0.4–0.8

90° SC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD					
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Finishing	SCMT09T304–GF	0.30–2.40	0.05–0.15								○	●	○	●		
	SCMT09T308–GF	0.60–2.40	0.10–0.30								○	●	○	●		

Note: ●Recommended grade ready to stock

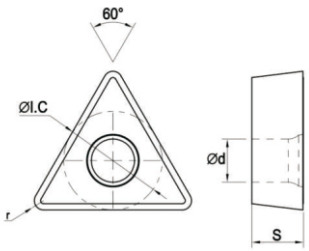


Length	Size(mm)			
	IC	S	d	r
9	5.56	2.38	2.2	0.4–0.8
11	6.35	2.38	2.8	0.4–1.2
16	9.525	3.97	4.4	0.4–1.2

60° TC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Gereral Semi-finishing	TCMT090204-GM	0.40–2.90	0.05–0.20		●	●		○		●		○				○
	TCMT090208-GM	0.80–2.90	0.10–0.35		●	●		○		●		○				○
	TCMT110204-GM	0.40–3.30	0.05–0.20		●	●		○		●		○				○
	TCMT110208-GM	0.80–3.30	0.10–0.35		●	●		○		●		○				○
	TCMT110212-GM	1.20–3.30	0.15–0.55		●	●		○		●		○				○
	TCMT16T304-GM	0.40–4.90	0.05–0.20		●	●		○		●		○				○
	TCMT16T308-GM	0.80–4.90	0.10–0.35		●	●		○		●		○				○
	TCMT16T312-GM	1.20–4.90	0.15–0.55		●	●		○		●		○				○

Note: ●Recommended grade ready to stock

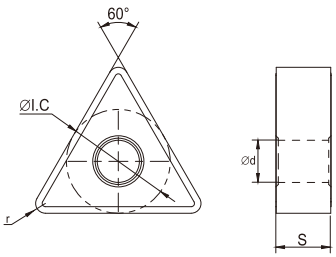


Length	Size(mm)			
	IC	S	d	r
9	5.56	2.38	2.2	0.4–0.8
11	6.35	2.38	2.8	0.4–1.2
16	9.525	3.97	4.4	0.4–1.2

60° TC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 M Finishing	TCMT090204–GF	0.30–1.80	0.05–0.15								○	●	○	●		
	TCMT090208–GF	0.60–2.20	0.10–0.30								○	●	○	●		
	TCMT110204–GF	0.30–2.20	0.05–0.15								○	●	○	●		
	TCMT110208–GF	0.60–3.30	0.10–0.30								○	●	○	●		
	TCMT110212–GF	1.20–3.30	0.20–0.40								○	●	○	●		
	TCMT16T304–GF	0.30–3.30	0.05–0.15								○	●	○	●		
	TCMT16T308–GF	0.60–3.30	0.10–0.30								○	●	○	●		
	TCMT16T312–GF	1.20–3.30	0.10–0.40								○	●	○	●		

Note: ●Recommended grade ready to stock

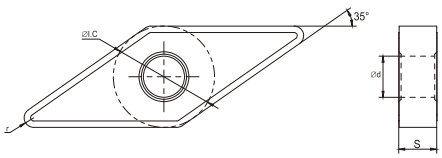


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.1–0.4

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Small Parts Machining	TNGG160401–FS	0.4–1.5	0.02–0.06							○	●	●	○			
	TNGG160402–FS	0.6–2.0	0.04–0.08							○	●	●	○			
	TNGG160404–FS	0.8–2.5	0.06–0.10							○	●	●	○			

Note: ●Recommended grade ready to stock

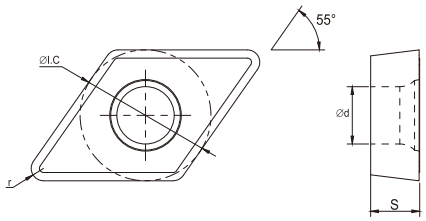


Length	Size(mm)			
	IC	S	d	r
16	6.35	4.76	3.81	0.2–0.8

35° VN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Small Parts Machining	VNGG160402–FS	0.4–2.0	0.02–0.06							○	●	●	○			
	VNGG160404–FS	0.8–2.5	0.04–0.08							○	●	●	○			
	VNGG160408–FS	1.0–3.0	0.06–0.12							○	●	●	○			

Note: ●Recommended grade ready to stock

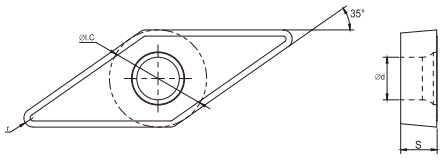


Length	Size(mm)			
	IC	S	d	r
9	9.525	3.97	4.4	0.1–0.8

55° DC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Small Parts Machining	DCGT11T301–FS	0.10–1.50	0.02–0.06							○	●	●	○			
	DCGT11T302–FS	0.20–2.00	0.05–0.12							○	●	●	○			
	DCGT11T304–FS	0.20–2.50	0.08–0.25							○	●	●	○			
	DCGT11T308–FS	0.30–3.00	0.10–0.30							○	●	●	○			

Note: ●Recommended grade ready to stock

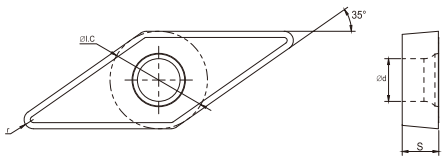


Length	Size(mm)			
	IC	S	d	r
11	6.35	3.18	2.81	0.1–0.4

35° VB□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
Small Parts Machining	VBGT110301–FS	0.1–1.5	0.02–0.06							○	●	●	○			
	VBGT110302–FS	0.2–2.0	0.05–0.12							○	●	●	○			
	VBGT110304–FS	0.2–2.5	0.08–0.25							○	●	●	○			

Note: ●Recommended grade ready to stock

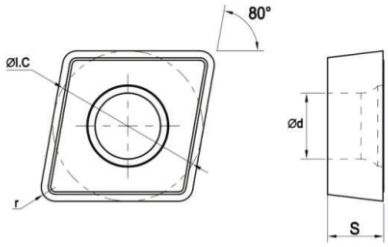


Length	Size(mm)			
	IC	S	d	r
11	6.35	3.18	2.81	0.1–0.4

35° VC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
Small Parts Machining	VCGT110301–FS	0.1–1.5	0.02–0.06							○	●	●	○			
	VCGT110302–FS	0.2–2.0	0.05–0.12							○	●	●	○			
	VCGT110304–FS	0.2–2.5	0.08–0.25							○	●	●	○			

Note: ●Recommended grade ready to stock

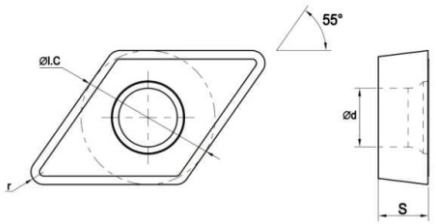


Length	Size(mm)			
	IC	S	d	r
9	9.525	3.97	4.4	0.1
9	9.525	3.97	4.4	0.2
9	9.525	3.97	4.4	0.4

80° CC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
Small Parts Machining	CCGT09T301R/L-UF	0.1-1.5	0.05-0.15							○	●	●	○			
	CCGT09T302R/L-UF	0.2-2	0.05-0.2							○	●	●	○			
	CCGT09T304R/L-UF	0.4-2.5	0.05-0.25							○	●	●	○			

Note: ●Recommended grade ready to stock

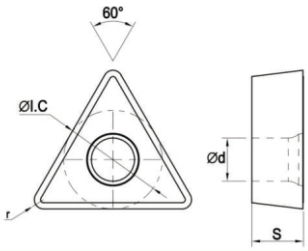


Length	Size(mm)			
	IC	S	d	r
7	6.35	2.38	2.8	0.05–0.2
11	9.525	3.97	4.4	0.1–0.2

55° DC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
Small Parts Machining	DCGT0702005R/L–UF	0.1–1	0–0.1							○	●	●	○			
	DCGT070201R/L–UF	0.1–1.5	0.05–0.15							○	●	●	○			
	DCGT070202R/L–UF	0.2–2	0.05–0.2							○	●	●	○			
	DCGT11T301R/F–UF	0.1–1.5	0.05–0.15							○	●	●	○			
	DCGT11T302R/F–UF	0.2–2	0.05–0.2							○	●	●	○			

Note: ●Recommended grade ready to stock

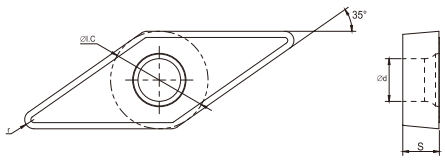


Length	Size(mm)			
	IC	S	d	r
11	6.35	3.18	2.8	0.1–0.2

60° TC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD						PVD					
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Small Parts Machining	TCGT110301R/L–UF	0.1–1.5	0.05–0.15							○	●	●	○			
	TCGT110302R/L–UF	0.2–2	0.05–0.2							○	●	●	○			

Note: ●Recommended grade ready to stock

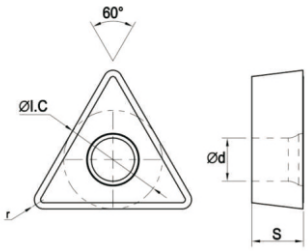


Length	Size(mm)			
	IC	S	d	r
8	4.76	2.38	2.3	0.1–0.2
11	6.35	3.18	2.8	0.1–0.2

35° VC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
Small Parts Machining	VCGT080201R/L-UF	0.1–1.5	0.05–0.15							○	●	●	○			
	VCGT080202R/L-UF	0.2–2	0.05–0.2							○	●	●	○			
	VCGT110301R/L-UF	0.1–1.5	0.05–0.15							○	●	●	○			
	VCGT110302R/L-UF	0.2–2	0.05–0.2							○	●	●	○			

Note: ●Recommended grade ready to stock

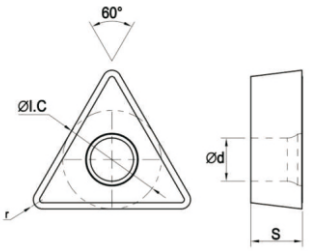


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.2–0.8

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
Small Parts Machining	TNGG160402R/L-F	0.1–1.5	0.05–0.15							○	●	●	○			
	TNGG160404R/L-F	0.2–2	0.05–0.2							○	●	●	○			
	TNGG160408R/L-F	0.4–2.5	0.05–0.2							○	●	●	○			

Note: ●Recommended grade ready to stock

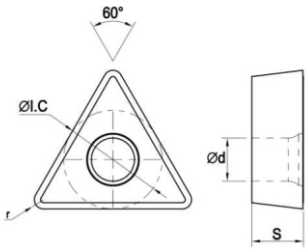


Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.2–0.8

60° TN□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
Small Parts Machining	TNGG160402R/L–M	0.2–2	0.05–0.12							○	●	●	○			
	TNGG160404R/L–M	0.2–2.5	0.08–0.25							○	●	●	○			
	TNGG160408R/L–M	0.3–3	0.1–0.3							○	●	●	○			

Note: ●Recommended grade ready to stock

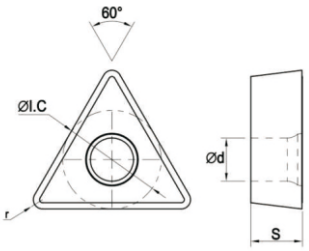


Length	Size(mm)			
	IC	S	d	r
08	4.76	2.38	2.3	0.2–0.4
09	5.56	2.38	2.8	0.2–0.4
11	6.35	3.18	3.18	0.2–0.4

60° TP□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Small Parts Machining	TPGH080202R/L	0.2–1	0.02–0.1							○	●	●	○			
	TPGH080204R/L	0.4–1.5	0.05–0.1							○	●	●	○			
	TPGH090202R/L	0.2–1	0.02–0.1							○	●	●	○			
	TPGH090204R/L	0.4–1.5	0.05–0.1							○	●	●	○			
	TPGH110302R/L	0.2–1.5	0.02–0.15							○	●	●	○			
	TPGH110304R/L	0.4–1.5	0.05–0.15							○	●	●	○			

Note: ●Recommended grade ready to stock

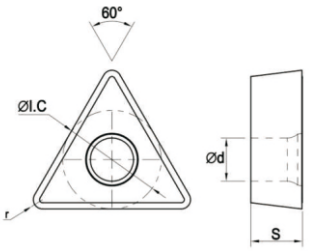


Length	Size(mm)			
	IC	S	d	RE
09	9.525	3.97	4.15	0.4
12	12.7	4.76	5.16	0.8

80° CC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD				PVD								
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Semi-finishing	CCMT09T304-DM	0.3–2.2	0.05–0.15						○			○	○	●		●
	CCMT120408-DM	0.7–3.2	0.1–0.30						○			○	○	●		●

Note: ●Recommended grade ready to stock

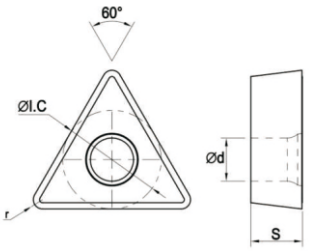


Length	Size(mm)			
	IC	S	d	RE
07	6.35	2.38	2.56	0.4–0.8
11	9.525	3.97	4.15	0.4–0.8

55° DC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Semi-finishing	DCMT070204–DM	0.3–1.5	0.05–0.15						○			○	○	●		●
	DCMT070208–DM	0.6–1.5	0.05–0.2						○			○	○	●		●
	DCMT11T304–DM	0.2–2.3	0.02–0.1						○			○	○	●		●
	DCMT11T308–DM	0.6–2.3	0.05–0.26						○			○	○	●		●

Note: ●Recommended grade ready to stock

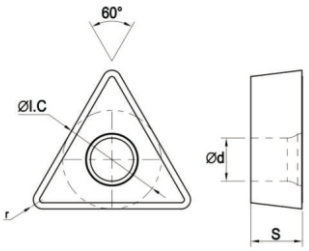


Length	Size(mm)			
	IC	S	d	RE
09	9.525	3.97	4.15	0.4–0.8

90° SC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD				PVD								
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Semi-finishing	SCMT09T304–DM	0.3–2.4	0.05–0.15						○			○	○	●		●
	SCMT09T308–DM	0.6–2.4	0.1–0.30						○			○	○	●		●

Note: ●Recommended grade ready to stock

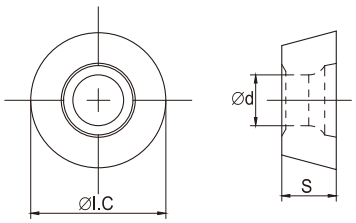


Length	Size(mm)			
	IC	S	d	RE
11	9.525	2.38	2.56	0.4–0.8

60° TC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade											
				CVD				PVD							
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Semi-finishing	TCMT110204–DM	0.2–2.2	0.05–0.15						○			○	○	●		●
	TCMT110208–DM	0.6–3.3	0.1–0.3						○			○	○	●		●

Note: ●Recommended grade ready to stock

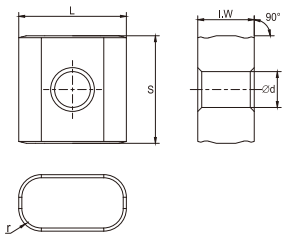


Length	Size(mm)		
	IC	S	d
8	8	3.18	3.36
10	10	3.18	4.4
12	12.7	4.76	4.4
16	16	6.35	5.5
20	20	6.35	6.5
25	25	7.94	7.2
32	32	9.52	9.5

RC□□

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Train Wheel Profiling	RCMX0803MO	0.50–3.00	0.15–0.40				●	○								
	RCMX1003MO	1.50–4.00	0.25–0.50				●	○								
	RCMX1204MO	2.50–5.00	0.30–0.60				●	○								
	RCMX1606MO	3.00–7.00	0.40–0.75				●	○								
	RCMX2006MO	3.50–9.00	0.48–0.90				●	○								
	RCMX2507MO	4.00–12.00	0.55–1.20				●	○								
	RCMX3209MO	5.00–15.00	0.65–1.50				●	○								

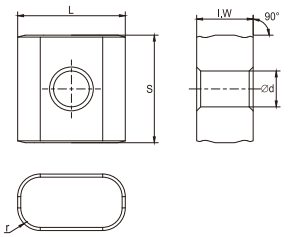
Note: ●Recommended grade ready to stock



Length	Size(mm)				
	L	l.W	S	d	r
19	19.05	10	19.05	6.35	4

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Train Wheel Trimming	175.32-191940-22	2.00-5.00	0.20-0.60				●	○								

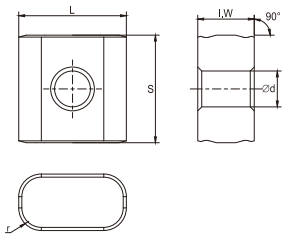
Note: ●Recommended grade ready to stock



Length	Size(mm)				
	L	I.W	S	d	r
19	19.05	10	19.05	6.35	4

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Train Wheel Trimming	175.32-191940-24	2.00-5.00	0.20-0.60				●	○								

Note: ●Recommended grade ready to stock



Length	Size(mm)				
	L	I.W	S	d	r
19	19.05	10	19.05	6.35	4

Shape	Type	ap (mm)	f (mm/rev)	Grade												
				CVD						PVD						
				BK3020	BK3040	BK3115	BP4213	BP4223	BP4235	BP1025	BM1525	BP1825	BM1824	BM1828	BS1610	BS1525
 Train Wheel Trimming	175.32-191940-28	2.00-5.00	0.20-0.60				●	○								

Note: ●Recommended grade ready to stock