



CUTTING TOOLS เครื่องมือตัด





truly partner

กลุ่มโซลิแมค | SOLIMAC GROUP

ก่อตั้งขึ้นเมื่อปี พ.ศ. 2523 โดยปัจจุบันมีบริษัทภายใต้กลุ่มโซลิแมค ดังนี้

- บริษัท บีแอนด์บี โซลิแมค จำกัด (B&B Solimec Co.,Ltd.)
ก่อตั้งเมื่อปี พ.ศ. 2523
- บริษัท โซลิแมค จำกัด (Solimac Co.,Ltd.)
ก่อตั้งขึ้นเมื่อปี พ.ศ. 2523
- บริษัท โซลิแมค ออโตเมชัน จำกัด (Solimac Automation Co.,Ltd.)
ก่อตั้งขึ้นเมื่อปี พ.ศ. 2552

วิสัยทัศน์ | VISION

เราตั้งเป้าที่จะเป็น “พันธมิตรทางอุตสาหกรรมที่แท้จริง”
ด้วยจุดมุ่งหมายที่จะนำเสนอผลิตภัณฑ์และงานบริการที่เป็นเลิศ
แก่ผู้มีส่วนได้ส่วนเสีย

พันธกิจ | MISSION

เพื่อจะเป็นที่หนึ่งตามวิสัยทัศน์ที่เราตั้งเป้าหมายไว้ เราจะต้องเป็นเลิศ
ทางด้านดังต่อไปนี้

- สร้างคุณค่าให้แก่ทุกฝ่าย
- เสริมสร้างคุณภาพของผลิตภัณฑ์และงานบริการ
- เพิ่มประสิทธิภาพของกระบวนการดำเนินงาน การประยุกต์ใช้
เทคโนโลยีและความคิดสร้างสรรค์
- ขยายตลาดและสายงานธุรกิจ

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B&B Solimec Co.,Ltd.



Solimac Co.,Ltd.



Solimac Automation Co.,Ltd.



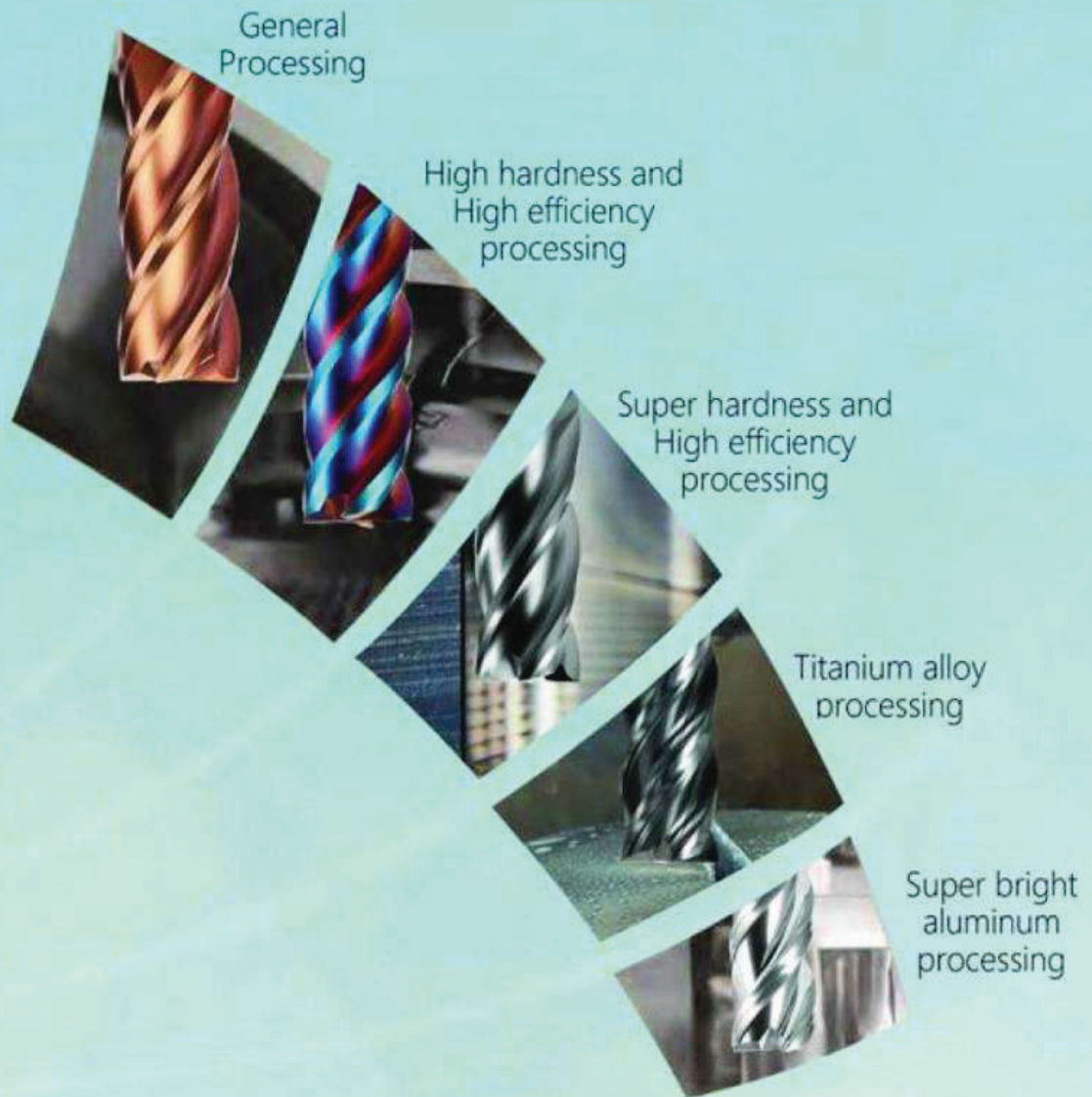


ENDMILL



ดอกกัด





ALL KINDS OF SOLID CARBIDE END MILLS

- **General Series**

High performance products with high flexibility, high economy and complete specifications.

- **Special Series**

A unique quality tool that meets specific needs and has high efficiency, reliability, and durability.

- **Customized Solutions**

Specially designed to meet high performance requirements of custom products and advanced non-standard products.



ST-H

Suitable for hard steel, mold steel, and heat-treated steel material
high-speed and efficient processing

the special tool design is very suitable for high-efficiency and high-speed cutting of hard steel, mold steel, and heat-treated material processing

Cutting parameters: P38-41



ST-U

Suitable for stainless steel, titanium alloy, mold steel material
high-speed and efficient processing

the special tool design is very suitable for processing stainless steel, titanium alloy, and mold steel materials

Cutting parameters: P44-45



AL

Super bright aluminum processing series

Applicable to aluminum alloy material efficient ultra-bright processing

Cutting parameters: P48-55



P R O D U C T APPLICATIONS

		Material Grouping	General Machining	Roughing	Efficient Machining	Micro Machining
P	1 2 3 4	Carbon Steel, Alloy Steel (<45HRC)	HRC55 HRC65 ST-H ST-U	CPD	ST-H ST-U	SGXJ
	5	Alloy Steel (HRC50)				
	6	PH Ferritic, Martensitic Steel (<45HRC)				
M	1 2 3	Stainless Steel	HRC65		ST-H ST-U	
K	1 2	Grey Cast Iron (<32HRC)	HRC45 HRC55 HRC65 ST-H ST-U	CPD	ST-H ST-U	SGXJ
	3	High-Alloy Cast Iron (35-45HRC)				
N	1 2	Wrought Aluminium Alloys/Cast Aluminium Alloys (Si<12%)	AL		AL	AL
	3	Cast Aluminium Alloys (Si>12%)				
	4	Copper Alloys (<200HB)				
S	1 2 3	Heat-Resistant Alloys (<450HB)			ST-H ST-U	
	4	Titanium Alloys (<450HB)				
H	1	High hardness steel (63HRC)	HRC45 HRC55 HRC65 ST-H ST-U		ST-H	
	2	Superhard Material (65HRC)			ST-U	



ST-H SERIES ENDMILL

GENERAL MACHINING END MILL PMHK



Multifunctional tool, applicable to the widest range of materials, the best adaptability to working conditions, the king of cost performance, high-speed machining, both fine and rough, high-efficiency machining



High hardness and high toughness base material



WORLDWIDERELIABLE PARTNERS

General machining, strong anti-sticking ability, extended tool life

◆ Stable chip evacuation. Large core thickness, high rigidity.

Play a powerful role in slotting and high feed processing

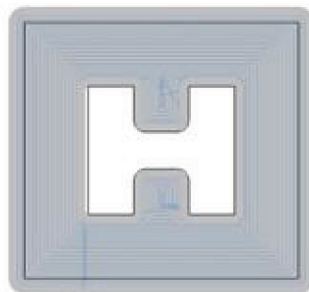
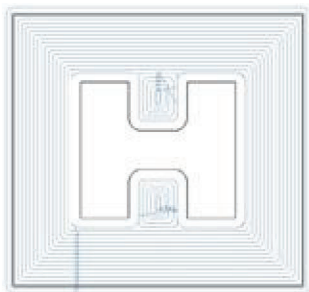
Vibration resistance strong bending resistance

Large capacity tank



ST-H SERIES CASE

Side milling

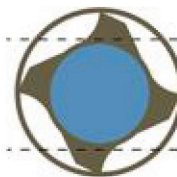


After die casting heat treatment: H13 steel HRC55-60

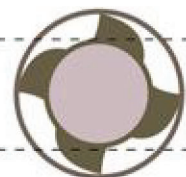
Application specifications: 8R0.5x60mm

Rotation speed: 7700 Feed: 2500 Depth of cut: 10pm

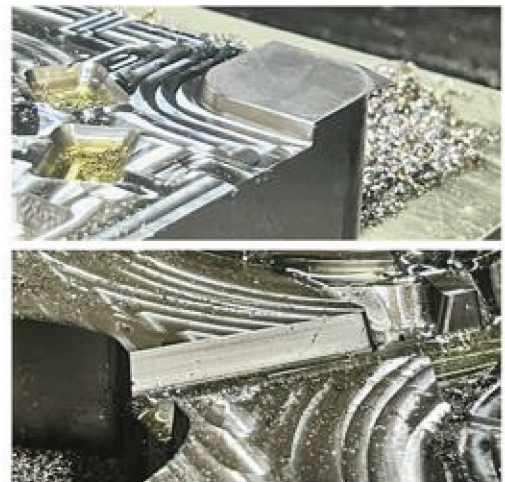
The core thickness contrast



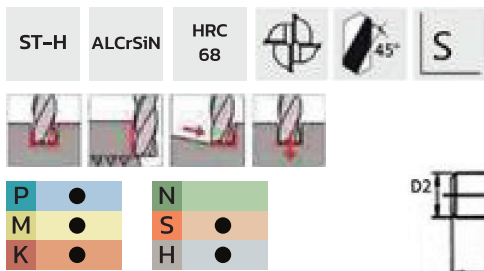
S4



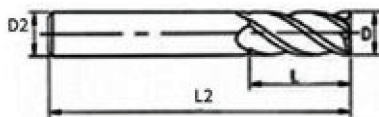
Other company products B



(Processing effect)



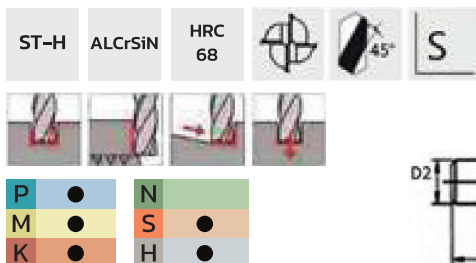
Unit	(mm)	
D	D<12	D>12
Tol	0	0
	-0.005	-0.005



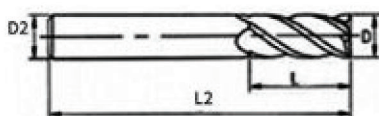
Diameter D	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm
1	3	4	50
1.5	5	4	50
2	6	4	50
2.5	8	4	50
3	9	4	50
4	12	4	50
5	13	6	50
6	18	6	50
8	20	8	60
10	30	10	75
12	36	12	75
14	40	14	100
16	45	16	100
18	50	18	100
20	50	20	100

Ordering Code

ST-H-4F-01030450
ST-H-4F-015050450
ST-H-4F-02060450
ST-H-4F-025080450
ST-H-4F-03090450
ST-H-4F-04120450
ST-H-4F-05130650
ST-H-4F-06180650
ST-H-4F-08200860
ST-H-4F-10301075
ST-H-4F-12361275
ST-H-4F-144014100
ST-H-4F-164516100
ST-H-4F-185018100
ST-H-4F-205020100



Unit	(mm)	
D	D<12	D>12
Tol	0	0
	-0.005	-0.005

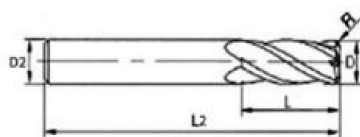
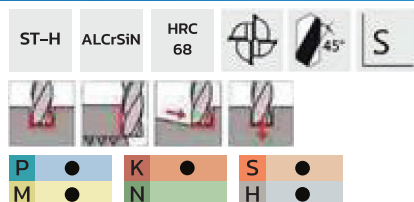


Diameter D	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm
3	12	4	75
4	16	4	75
5	20	6	75
6	25	6	75
8	32	8	75
3	12	4	100
4	16	4	100
6	25	6	100
8	32	8	100
10	40	10	100
12	50	12	100
6	45	10	150
8	50	6	150
10	55	8	150
12	60	12	150
16	65	16	150
20	80	20	150

Ordering Code

ST-H-4F-03120475
ST-H-4F-04160475
ST-H-4F-05200675
ST-H-4F-06250675
ST-H-4F-08320875
ST-H-4F-031204100
ST-H-4F-041604100
ST-H-4F-062506100
ST-H-4F-083208100
ST-H-4F-104010100
ST-H-4F-125012100
ST-H-4F-064506150
ST-H-4F-085008150
ST-H-4F-105510150
ST-H-4F-126012150
ST-H-4F-166516150
ST-H-4F-208020150





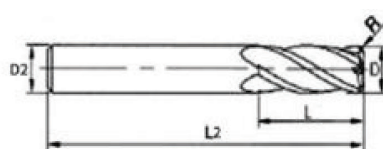
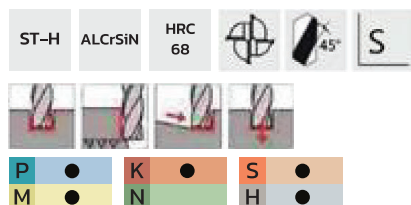
Unit	(mm)	
D	D<12	D>12
Tol	0	0
	-0.005	-0.005



Diameter D mm	Radius R mm	Cutting Length L mm	Shank D2 mm	Overall Length L2 mm
1	RO.2	3	4	50
1.5	RO.2	4	4	50
2	RO.2	5	4	50
2.5	RO.2	7	4	50
2.5	RO.5	7	4	50
3	RO.2	8	4	50
3	RO.5	8	4	50
3	RO.1	8	4	50
3.5	RO.5	8	4	50
4	RO.2	10	4	50
4	R1	10	4	50
5	RO.2	13	6	50
5	RO.5	13	5	50
5	RO.5	13	6	50
5	R1	13	6	50
6	RO.2	15	6	50
6	RO.5	15	6	50
6	R1	15	6	50
8	RO.5	20	8	60
8	R1	20	8	60
10	RO.5	25	10	75
10	R1	25	10	75
12	RO.5	30	12	75
12	R1	30	12	75

Ordering Code

ST-H-4F-YB01002030450
ST-H-4F-YB015002040450
ST-H-4F-YB02002050450
ST-H-4F-YB025002074050
ST-H-4F-YB025005070450
ST-H-4F-YB03002080450
ST-H-4F-YB03005080450
ST-H-4F-YB0301080450
ST-H-4F-YB035005080450
ST-H-4F-YB04002100450
ST-H-4F-YB0401100450
ST-H-4F-YB05002130650
ST-H-4F-YB05005130550
ST-H-4F-YB05005130650
ST-H-4F-YB0501130650
ST-H-4F-YB06002150650
ST-H-4F-YB06005150650
ST-H-4F-YB0601150650
ST-H-4F-YB08005200860
ST-H-4F-YB0801200860
ST-H-4F-YB10005251075
ST-H-4F-YB1001251075
ST-H-4F-YB12005301275
ST-H-4F-YB1201301275



Unit	(mm)	
D	D<12	D>12
Tol	0	0
	-0.005	-0.005



Diameter D mm	Radius R mm	Cutting Length L mm	Shank D2 mm	Overall Length L2 mm
4	RO.5	10	4	75
4	R1	10	4	75
5	RO.5	13	5	75
6	RO.5	15	6	75
6	R1	15	6	75
8	RO.5	50	8	75
8	R1	20	8	75
4	RO.5	10	4	100
4	R1	10	4	100
6	RO.5	15	6	100
6	R1	15	6	100
8	RO.5	20	8	100
8	R1	20	8	100
10	RO.5	25	10	100
10	R1	25	10	100
12	RO.5	30	12	100
12	R1	30	12	100
10	RO.5	40	10	150
10	R1	40	10	150
12	RO.5	48	12	150

Ordering Code

ST-H-4F-YB04005100475
ST-H-4F-YB0401100475
ST-H-4F-YB05005130575
ST-H-4F-YB06005150675
ST-H-4F-YB0601150675
ST-H-4F-YB08005500875
ST-H-4F-YB0801200875
ST-H-4F-YB040051004100
ST-H-4F-YB04011004100
ST-H-4F-YB060051506100
ST-H-4F-YB06011506100
ST-H-4F-YB080052008100
ST-H-4F-YB08012008100
ST-H-4F-YB100052510100
ST-H-4F-YB10012510100
ST-H-4F-YB120053012100
ST-H-4F-YB12013012100
ST-H-4F-YB100054010150
ST-H-4F-YB10014010150
ST-H-4F-YB120054812150

HIGH PERFORMANCE ST-U SERIES ENDMILL

EXTREMELY HIGH HARDNESS AND
HIGH PERFORMANCE END MILL

Variable bottom edges and large helix angle to reduce vibration and improve surface finish.

The tool design is especially suitable for machining high hardness steel.



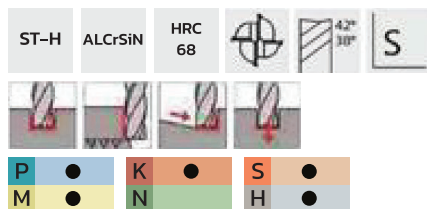
Specially uneven blade shape,
reduced vibration, high surface gloss



WORLDWIDE RELIABLE PARTNERS

Carbide 4Flutes Square End Mill (Standard)

Titanium alloy, Molybdenum alloy, High temperature alloy



Unit	(mm)	
D	D<12	D>12
Tol	0	0
	-0.005	-0.005



Diameter D	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm
1	3	4	50
1.5	5	4	50
2	6	4	50
2.5	8	4	50
3	9	4	50
4	11	4	50
5	13	6	50
6	15	6	50
8	20	8	60
10	25	10	75
12	30	12	75
16	45	16	100

Ordering Code

ST-U-4F-01030450
ST-U-4F-015050450
ST-U-4F-02060450
ST-U-4F-025080450
ST-U-4F-03090450
ST-U-4F-04110450
ST-U-4F-051360550
ST-U-4F-06150650
ST-U-4F-08200860
ST-U-4F-10251075
ST-U-4F-12301275
ST-U-4F-164516100

Carbide 4Flutes Square End Mill (Extra Long)

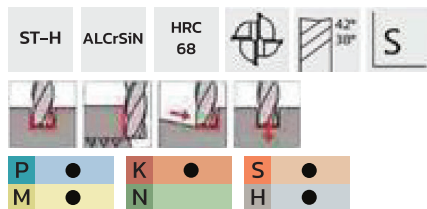
Diameter D	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm
4	12	4	75
6	18	6	75
8	24	8	75
6	18	6	100
8	24	8	100
10	30	10	100
12	36	12	100

Ordering Code

ST-U-4F-04120475
ST-U-4F-06180675
ST-U-4F-08240875
ST-U-4F-061806100
ST-U-4F-082408100
ST-U-4F-103010100
ST-U-4F-123612100

Carbide Corner Radius End Mill (Standard)

Titanium alloy, Molybdenum alloy, High temperature alloy



Unit	(mm)	
D	D<12	D>12
Tol	0	0
	-0.005	-0.005



Diameter D	Radius R	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm	mm
1	RO.2	3	4	50
1.5	RO.2	4	4	50
2	RO.2	5	4	50
3	RO.2	9	4	50
3	RO.5	9	4	50
4	RO.2	11	4	50
4	RO.5	11	4	50
5	RO.5	13	6	50
5	RO.1	13	6	50
5	RO.2	13	6	50
6	RO.2	15	15	50
6	RO.5	15	15	50
6	R1	15	15	50
8	RO.5	20	20	60
8	R1	20	20	60
10	RO.5	25	25	75
10	R1	25	25	75
12	RO.5	30	30	75
12	R1	30	30	75

Ordering Code

ST-U-4F-YB0100200450
ST-U-4F-YB015002040450
ST-U-4F-YB02002050450
ST-U-4F-YB03002090450
ST-U-4F-YB03005090450
ST-U-4F-YB04002110450
ST-U-4F-YB04005110450
ST-U-4F-YB05005130650
ST-U-4F-YB0501130650
ST-U-4F-YB05002130650
ST-U-4F-YB06002150650
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ST-U-4F-YB12005301275
ST-U-4F-YB120131275



AL

Super Bright Aluminum Processing Series



HIGHLIGHT

- It is suitable for high-efficiency super bright processing of aluminum alloy materials.
- The variable indexing of the bottom edge, the unique design of the helix angle, has excellent anti-seismic performance and high precision of the processed surface.

Special edge design, effectively solve the problem of sticky



WORLDWIDE RELIABLE PARTNERS

Aluminum alloy material efficient ultra-bright processing



Inhibition of burr

Large front angle and small edge achieve excellent cutting effect.

Large Chip flute

The cutting and chip removal are more smooth and stable in the high feed processing.

Sharp cutting edge

Sharp cutting edge and large spiral angle design can effectively prevent the generation of built-up edge.



Special edge design
Effectively solve the sticking

·HIGHLIGHT



Special chip flute shape, can show excellent performance even in groove and cavity machining.

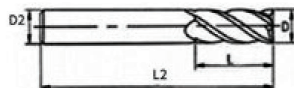


① Large chip removal space, not easy to accumulate chips

② Anti-seismic technology, sharp crescent edge

Full-edge anti-vibration design can suppress vibration during processing and improve the quality of the processed surface.





Unit	(mm)		
D	D<12	D>12	
Tol	0	0	
	-0.015	-0.02	



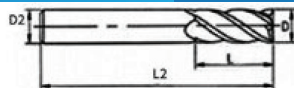
Diameter D	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm
1	3	4	50
1.5	5	4	50
2	6	4	50
2.5	8	4	50
3	9	3	50
3	9	4	50
3.5	11	4	50
4	12	4	50
5	15	5	50
5	15	6	50
6	18	6	50
7	24	8	60
8	24	8	60
9	30	10	75
10	30	10	75
11	35	12	75
12	35	12	75
14	45	14	100
16	45	16	100
18	45	18	100
20	45	20	100

Ordering Code

LYD-3F-01030450
 LYD-3F-015050450
 LYD-3F-02060450
 LYD-3F-025080450
 LYD-3F-03090350
 LYD-3F-03090450
 LYD-3F-035110450
 LYD-3F-04120450
 LYD-3F-05150550
 LYD-3F-05150650
 LYD-3F-06180650
 LYD-3F-07240860
 LYD-3F-08240860
 LYD-3F-09301075
 LYD-3F-10301075
 LYD-3F-11351275
 LYD-3F-12351275
 LYD-3F-144514100
 LYD-3F-164516100
 LYD-3F-184518100
 LYD-3F-204520100

3Flutes Square End Mill For Aluminum (Extra Long)

Aluminum Alloy, Super Bright High Efficient



Unit	(mm)		
D	D<12	D>12	
Tol	0	0	
	-0.015	-0.02	

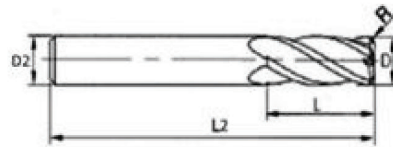
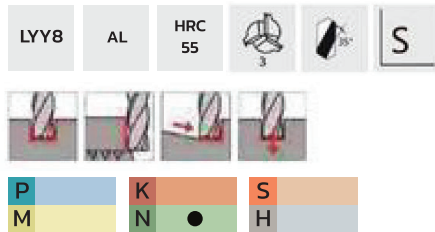


Diameter D	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm
2	6	4	75
3	9	4	75
3	12	3	75
3.5	11	4	75
4	16	4	75
5	18	5	75
6	25	6	75
8	30	8	75
3	12	3	100
4	20	4	100
5	30	5	100
6	30	6	100
8	35	8	100
10	40	10	100
12	45	12	100
6	45	6	150
8	50	8	150
10	55	10	150
12	55	12	150
14	70	14	150
16	80	16	150
18	80	18	150
20	80	20	150
6	50	6	200
8	60	8	200
10	65	10	200
12	70	12	200
14	80	14	200
16	85	16	200
20	90	20	200

Ordering Code

LYD-3F-02060475
 LYD-3F-03090475
 LYD-3F-03120375
 LYD-3F-035110475
 LYD-3F-04160475
 LYD-3F-05180575
 LYD-3F-06250675
 LYD-3F-08300875
 LYD-3F-031203100
 LYD-3F-042004100
 LYD-3F-053005100
 LYD-3F-063006100
 LYD-3F-083508100
 LYD-3F-104010100
 LYD-3F-124512100
 LYD-3F-064506150
 LYD-3F-085008150
 LYD-3F-105510150
 LYD-3F-125512150
 LYD-3F-147014150
 LYD-3F-168016150
 LYD-3F-188018150
 LYD-3F-208020150
 LYD-3F-065006200
 LYD-3F-086008200
 LYD-3F-106510200
 LYD-3F-127012200
 LYD-3F-148014200
 LYD-3F-168516200
 LYD-3F-209020200





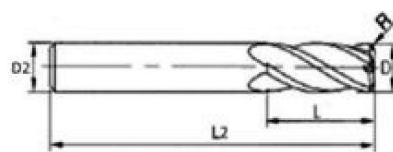
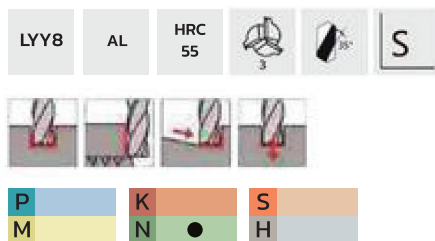
Unit	(mm)	
D	D<12	D>12
Tol	0	0
	-0.015	-0.02



Diameter D	Radius R	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm	mm
1	0.2	3	4	50
1.5	0.2	4.5	4	50
2	0.2	6	4	50
2	0.5	6	4	50
3	0.2	9	4	50
3	0.5	9	4	50
3	1	9	4	50
4	0.5	12	4	50
4	1	12	4	50
5	0.5	18	6	50
5	0.5	18	5	50
5	1	18	5	50
5	1	18	6	50
6	0.5	18	6	50
6	1	18	6	50
8	0.5	24	8	60
8	1	24	8	60
8	2	24	8	60
10	0.5	30	10	75
10	1	30	10	75
12	0.5	35	12	75
12	1	35	12	75

Ordering Code

LYYB-3F-0102030450
 LYYB-3F-01502050450
 LYYB-3F-0202060450
 LYYB-3F-0205060450
 LYYB-3F-0302090450
 LYYB-3F-0305090450
 LYYB-3F-031090450
 LYYB-3F-0405120450
 LYYB-3F-041120450
 LYYB-3F-0505130650
 LYYB-3F-0505130550
 LYYB-3F-051130550
 LYYB-3F-051130650
 LYYB-3F-0605150650
 LYYB-3F-061150650
 LYYB-3F-0805200860
 LYYB-3F-081200860
 LYYB-3F-082200860
 LYYB-3F-1005251075
 LYYB-3F-101251075
 LYYB-3F-1205301275
 LYYB-3F-121301275



Unit	(mm)	
D	D<12	D>12
Tol	0	0
	-0.015	-0.02



Diameter D	Radius R	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm	mm
4	0.5	20	4	75
4	1	20	4	75
6	0.5	25	6	75
6	1	25	6	75
8	0.5	30	8	75
8	1	30	8	75
4	0.5	25	4	100
4	1	25	4	100
6	0.5	30	6	100
6	1	30	6	100
8	0.5	35	8	100
8	1	35	8	100
10	0.5	40	10	100
10	1	40	10	100
12	0.5	45	12	100
12	1	45	12	100

Ordering Code

LYYB-3F-0405160475
 LYYB-3F-041160475
 LYYB-3F-0605240675
 LYYB-3F-061240675
 LYYB-3F-0805250875
 LYYB-3F-081250875
 LYYB-3F-04052004100
 LYYB-3F-0412004100
 LYYB-3F-06053006100
 LYYB-3F-061300610
 LYYB-3F-08053508100
 LYYB-3F-0813508100
 LYYB-3F-10054010100
 LYYB-3F-1014010100
 LYYB-3F-12054512100
 LYYB-3F-1214512100





SUITABLE FOR MICRO DIAMETER POCKET MILLING SERIES

TiSiN
TiSiN coating
High temperature
and wear
resistance

- Suitable for deep groove processing various steel and cast iron.
- High-performance TiSiN coating for high temperature and wear resistance.
- Long neck design avoids collision with workpiece, Suitable for deep pocket milling of mold rib.



Fine grinding, high precise sizes



WORLDWIDE RELIABLE PARTNERS

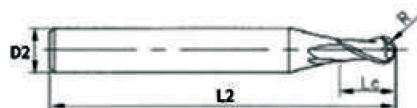
Micro Diameter Ball Nose End Mill (Standard)



Unit	(mm)
R	R
Tol	0.015



P	●
M	●
K	●
N	●
S	●
H	●



Diameter D	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm
0.3	0.15	4	50
0.4	0.2	4	50
0.5	0.25	4	50
0.7	0.35	4	50
0.8	0.4	4	50
0.9	0.45	4	50

Ordering Code

WXJQD-2F-0030060450
 WXJQD-2F-0040080450
 WXJQD-2F-005010450
 WXJQD-2F-0070140450
 WXJQD-2F-0080160450
 WXJQD-2F-0090180450

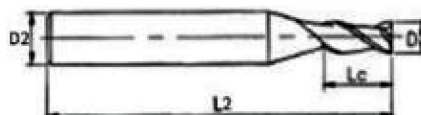
Micro Diameter Square End Mill (Standard)



Unit	(mm)
D	D
Tol	0 -0.015



P	●
M	●
K	●
N	●
S	●
H	●



Diameter D	Cutting Length L	Shank D2	Overall Length L2
mm	mm	mm	mm
0.2	0.4	4	50
0.3	0.6	4	50
0.4	0.8	4	50
0.5	1	4	50
0.6	1.2	4	50
0.7	1.4	4	50
0.8	1.6	4	50
0.9	1.8	4	50

Ordering Code

WXJPD-2F-0020040450
 WXJPD-2F-0030060450
 WXJPD-2F-0040080450
 WXJPD-2F-005010450
 WXJPD-2F-0060120450
 WXJPD-2F-00740140450
 WXJPD-2F-0080160450
 WXJPD-2F-0090180450



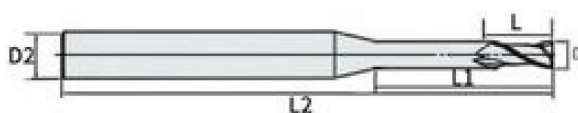
Long Neck Square End Mill (Standard)



Unit	(mm)	
D	D<12	D>12
Tol	0	0
	-0.015	-0.02



P	●
M	●
K	●
N	●
S	●
H	●



Diameter D	Cutting Length L	Shank D2	Effective cutting Length R	Overall Length L2
mm	mm	mm	mm	mm
0.3	0.6	4	2/3	50
0.4	0.8	4	3/4/5/6	50
0.5	1	4	2/3/4/6/8	50
0.6	1.2	4	2/3/4/6/8	50
0.7	1.4	4	3/4/6/8/10	50
0.8	1.6	4	3/4/6/8/10	50
0.9	1.8	4	3/4/6/8/10	50
1	3	4	6/8/10/12/16/20	50
1.5	4.5	4	6/8/10/12/16/20	50
2	6	4	8/10/12/16/20	50
2.5	8	4	10/12/16/20	50
3	9	4	12/16/20	50

Ordering Code

SGPD-2F-00302040250
SGPD-2F-00402040350
SGPD-2F-00502040250
SGPD-2F-00602040250
SGPD-2F-00703040350
SGPD-2F-00803040350
SGPD-2F-00903040350
SGPD-4F-0103040650
SGPD-4F-01506040650
SGPD-4F-0206040850
SGPD-4F-025080410450
SGPD-4F-030904125

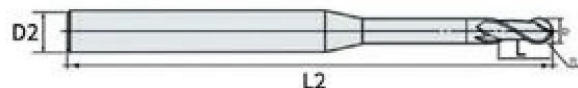
Micro Diameter Square End Mill (Standard)



Unit	(mm)
R	R
Tol	0.015



P	●
M	●
K	●
N	●
S	●
H	●



Diameter D	Cutting Length L	Shank D2	Effective cutting Length R	Overall Length L2
mm	mm	mm	mm	mm
0.15	4	0.6	2/3/4	50
0.2	4	0.8	2/3/4/5/6	50
0.25	4	1	2/3/4/6/8	50
0.3	4	1.2	2/3/4/6/8	50
0.35	4	1.4	3/4/6/8/10	50
0.4	4	1.6	3/4/6/8/10	50
0.5	4	2	6/8/10/12/16/20	50
0.75	4	3	6/8/10/12/16/20	50
1	4	4	6/8/10/12/16/20	50

Ordering Code

SGQD-2F-001504020250
SGOD-2F-00204020250
SGOD-2F-002504020250
SGQD-2F-00304020250
SGQD-2F-003504030350
SGOD-2F-00404030350
SGQD-2F-00504060650
SGQD-2F-007504060650
SGQD-4F-0104060650





CNC

imported solid tungsten steel drill



- 0.4pm micro-particle tungsten steel raw material has higher wear resistance and higher hardness for high-speed cutting.
- Suitable for steel, aluminum alloy, stainless steel, cast iron, short-chip non-ferrous metals, nickel-based alloys, and titanium alloys.

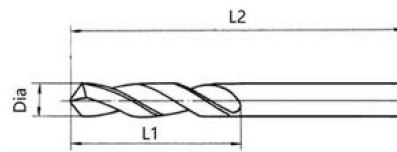
Special edge design, effectively solve the problem of sticky

WORLDWIDE RELIABLE PARTNERS





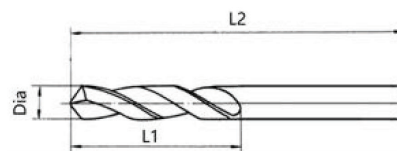
Unit	(mm)
D	D
Tol	0
	-0.015



Diameter D	Cutting Length L	Shank D2	Overall Length L2	Ordering Code
mm	mm	mm	mm	
1-2	LOC=1/2 OAL	1-2	40	MHZ-2F-010140
2.1-2.9		2.1-2.9	40	MHZ-2F-02102140
3-4		3-4	50	MHZ-2F-03203250
4.1-5		4.1-5	50	MHZ-2F-04104150
5.1-6		5.1-6	50	MHZ-2F-05105150
6.1-7.1		6.1-7.1	50	MHZ-2F-06106150
7.2-8.1		7.2-8.1	60	MHZ-2F-07207260
8.2-9.1		8.2-9.1	75	MHZ-2F-08208275
9.2-10.1		9.2-10.1	75	MHZ-2F-09209275
10.2-11.1		10.2-11.1	75	MHZ-2F-10210275
11.2-12.1		11.2-12.1	75	MHZ-2F-11211275
12.2-13.1		12.2-13.1	75	MHZ-2F-12212275
13.2-14		13.2-14	100	MHZ-2F-132132100
14.1-15.1		14.1-15.1	100	MHZ-2F-141141100
15.2-16.1		15.2-16.1	100	MHZ-2F-152152100
16.2-17.1		16.2-17.1	100	MHZ-2F-162162100
17.2-18.1		17.2-18.1	100	MHZ-2F-172172100
18.2-19.1		18.2-19.1	100	MHZ-2F-182182100
19.2-20		19.2-20	100	MHZ-2F-192192100



Unit	(mm)
D	D
Tol	0
	-0.015



Diameter D	Cutting Length L	Shank D2	Overall Length L2	Ordering Code
mm	mm	mm	mm	
3-4	LOC=1/2 OAL	3-4	100	MHZ-2F-0303100
4.1-5		4.1-5	100	MHZ-2F-041041100
5.1-6		5.1-6	100	MHZ-2F-051051100
6.1-7.1		6.1-7.1	100	MHZ-2F-061061100
7.2-8.1		7.2-8.1	100	MHZ-2F-072072100
8.2-9.1		8.2-9.1	100	MHZ-2F-082082100
9.2-10.1		9.2-10.1	100	MHZ-2F-092092100
10.2-11.1		10.2-11.1	100	MHZ-2F-102102100
11.2-12.1		11.2-12.1	100	MHZ-2F-112112100
12.2-13.1		12.2-13.1	100	MHZ-2F-122122100



TURNING INSERTS

เม็ดมิด

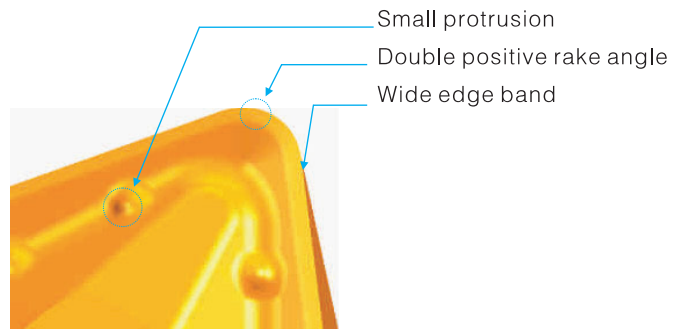


Processing Sword for Stainless Steel

New

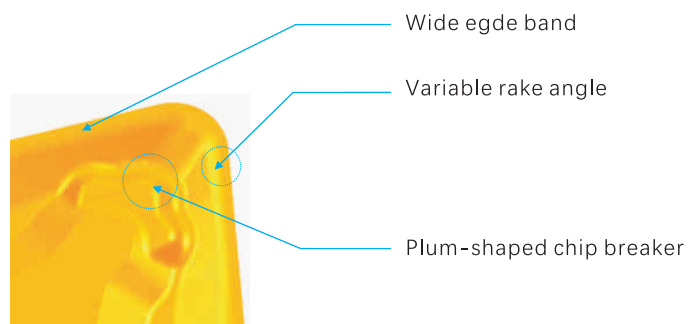
1 Chip Breaker Features of Stainless Steel Finishing -BF

- 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



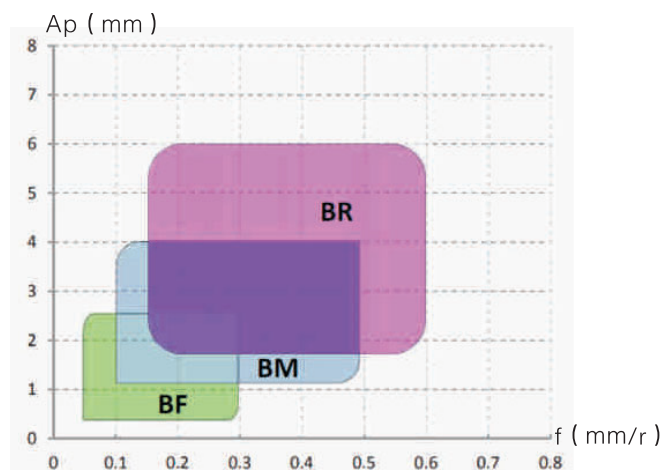
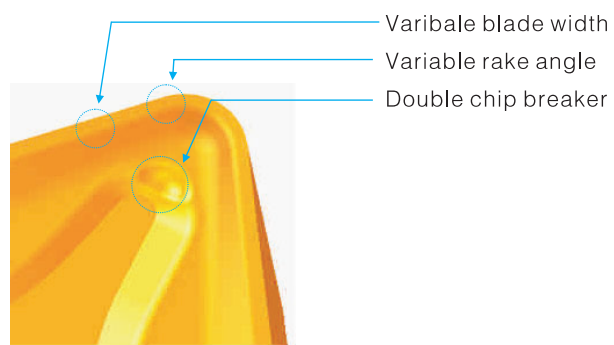
2 Chip Breaker Features of Stainless Steel Semi-Finishing -BM

- 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



Turning Inserts

Case No.1

Workpiece material:stainless steel SUS304

Workpiece: Flange

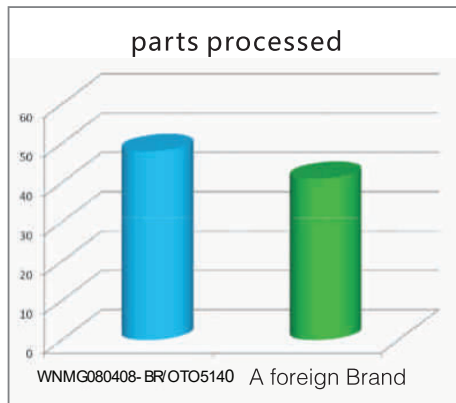
Cooling type:Fluid cooling

Original blade:A foreign brand

OTO insert:WNMG080408- BR/OTO5140

Cutting parameter: V_c :153m/min, F :0.2mm/r , A_p :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

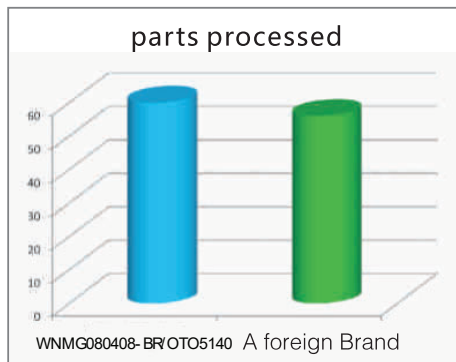
Cooling type:Fluid cooling

Original blade:A foreign brand

OTO insert:WNMG080408- BR/OTO5140

Cutting parameter: V_c :170m/min , F :0.2mm/r, A_p :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

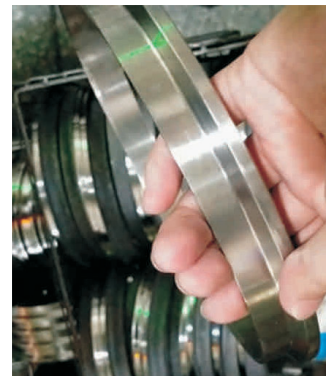
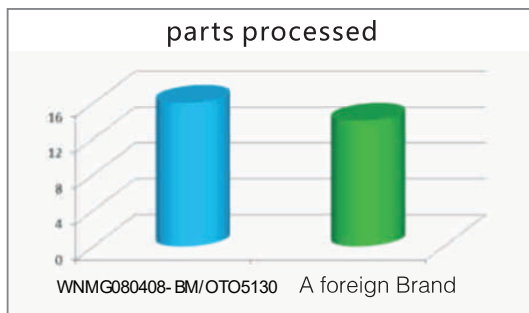
Cooling type:Fluid cooling

Original blade:A foreign brand

OTO insert:WNMG080408- BM/OTO5130

Cutting parameter: V_c :220m/min F :0.2–0.3mm/r A_p :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

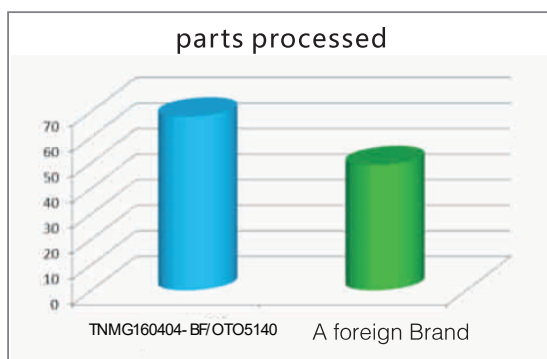
Cooling type:Fluid cooling

Original blade:A foreign brand

OTO insert:TNMG160404- BF/OTO5140

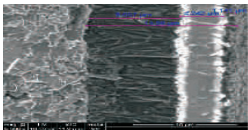
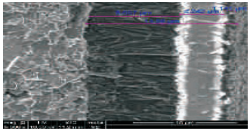
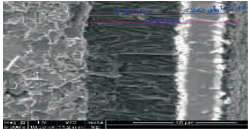
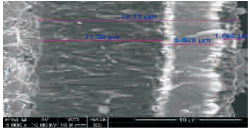
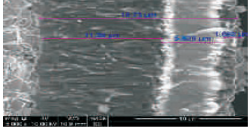
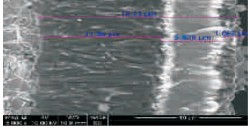
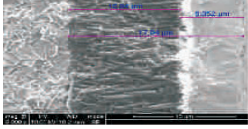
Cutting parameter: V_c :47m/min F :0.1mm/r A_p :1mm

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.



The Features of CVD Coating

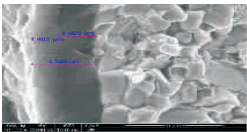
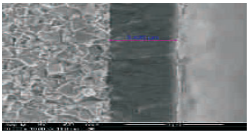
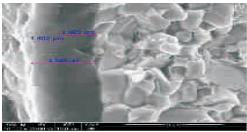
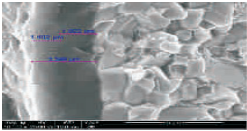
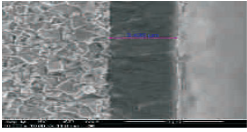
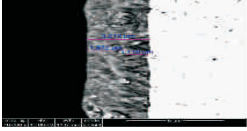
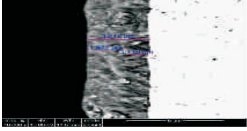
ISO	Grade	Colour	Coating structure	
P Steel	OTO8215	Yellow Black	TiCN+Al ₂ O ₃ + (TiN)	
				
	OTO8225	Yellow Black	TiCN+Al ₂ O ₃ + (TiN)	
				
	OTO8235	Yellow Black	TiCN+Al ₂ O ₃ + (TiN)	
				
K Cast Iron	OTO8315	Yellow	TiCN+Al ₂ O ₃ +TiN	
				
	OTO8325	Yellow	TiCN+Al ₂ O ₃ +TiN	
				
	OTO3315	Yellow	TiCN+Al ₂ O ₃ +TiN	
				
K Cast Iron	OTO3415	Yellow Black	TiCN+Al ₂ O ₃ + (TiN)	
				

	Electron microscopy images	Features.Application
		Wear-resistant substrate with resistance to plastic deformation, strong and 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 tough coating with excellent adhesion. Intermittent steel – the first choice for general turning operations.
		High toughness substrate, strong and tough coating with excellent bonding force, extremely high processing safety. Heavy-duty machining of steel and interrupted turning.
		Wear-resistant substrate that resists plastic deformation, thickened high-hardness and tough coating. High-speed, high-efficiency turning of finishing roughing steel.
		Both wear-resistant and chipping-resistant substrate, thickened high-hardness and tough coating. Longer life steel interruptions – general turning, easy to use for heavy duty machining.
		Extremely wear-resistant material after Optimized, nano thick film CVD coating. Continuous or lightly interrupted turning of Grey and Ductile cast iron, easy to wear to identify the yellow surface.
		Extremely wear-resistant material after Optimized, nano-thick film CVD coating. Continuous or lightly interrupted turning of Grey and Ductile cast iron.



The Features of PVD Coating

ISO	Grade	Colour	Coating structure	
M Stainless Steel	OTO5133	Bronze	AlTiMeN	
	OTO5525	Purple Black	AlTiMeN	
	OTO5130	Bronze	AlTiMeN	
	OTO5140	Bronze	AlTiMeN	
S Heat Resistant Alloy	OTO1010	Black	AlTiN	
	OTO1520	Purple Black	AlTiMeN	
	OTO1525	Purple Black	AlTiMeN	

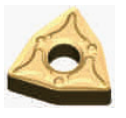
	Electron microscopy images	Features.Application
		Ultra-fine grain matrix with special strength and toughness, enhanced red hardness, and the latest high wear-resistant coating. Universal high-performance machining for efficient milling of steel, stainless steel and heat-resistant alloys, as well as turning of stainless steel.
		Ultra-fine grain matrix, nano-multilayer coating with good wear resistance and oxidation resistance. Stable, long-life milling of steel and stainless steel.
		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 better wear resistance. Supplementary grade for stainless steel turning.
		Submicron matrix, newly upgraded nanocomposite coating with high heat resistance and high toughness. The grade of choice for turning stainless steels and can also be used for complementary machining of milder steels.
		The ultra-fine grain matrix strengthened by the bonding phase has excellent heat resistance and wear resistance. It is suitable for finishing/semi-finishing turning of heat-resistant alloys and hardened materials, and general-purpose milling.
		Improved thermal conductivity and toughness of the substrate, nano multilayer coating with good wear resistance and oxidation resistance . It is suitable for machining turbine shell, as well as titanium alloys and high-temp alloys.
		Ultra-fine grain matrix with optimized heat resistance and toughness, nano-multilayer coating with good wear resistance and oxidation resistance. The first choice for general processing of heat-resistant alloys.



Product and Chip Breaker

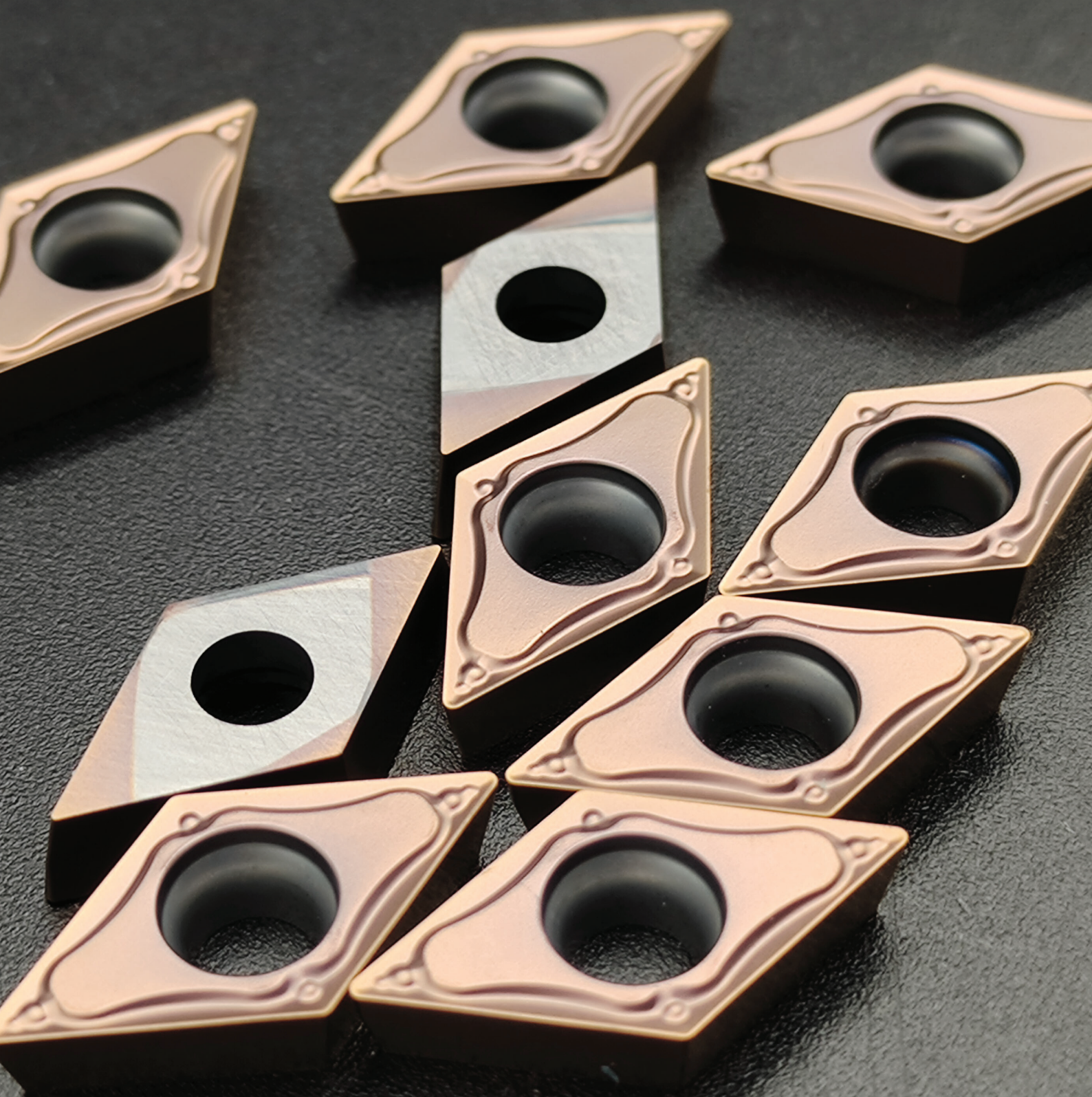
Finishing						
	CNMG-AF	DNMG-AF	SNMG-AF	TNMG-AF	VNMG-AF	WNMG-AF
Length	09、12	15	12	16	16	08
		-	-	-	-	-
Finishing						
	CNMG-BF	DNMG-BF	SNMG-BF	TNMG-BF	VNMG-BF	WNMG-BF
Length	09、12	15	12	16	16	06、08
Semi-finishing						
	CNMG-AS	CNMG-BM	CNMG-CM	CNMG-DM	DNMG-AS	DNMG-BM
Length	12、16、19	12、16	12、16、19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

Product and Chip Breaker

Semi-finingishing						
	WNUMG-BM	WNUMG-CM	WNUMG-DM			
Length	06、08	08	08			
	-	-	-			
Roughing						
	CNMG-AR	CNMG-BR	DNMG-AR	DNMG-BR	SNMG-AR	SNMG-BR
Length	12、16、19	12、16	15	15	12、15、19	12、15
Roughing						
	TNMG-AR	TNMG-BR	WNUMG-AR	WNUMG-BR		
Length	16、22	16、22	06、08	06、08		
Heavy-load						
	CNMM-AR	SNMM-AR				
Length	19、25	19、25				
Semi-finingishing						
	CCMT-GM	DCMT-GM	SCMT-GM	TCMT-GM		
Length	06、09、12	07、11	09、12	09、11、16		

Product and Chip Breaker

M Finishing						
	CCMT-GF	DCMT-GF	SCMT-GF	TCMT-GF		
Length	06、09	07、11	09	09、11、16		
Train Wheel Hub Machining						
	RCMX	175.32-22	175.32-24	175.32-28		
Length	08-32	19	19	19		



Recommended Turning Insert Grade

ISO	Classification	CVD			PVD		
P Steel	01						
	10	OT08215		OT08315			
	20	OT08225		OT08325			
	30		OT08235				
	40						
M Stainless Steel	01						
	10				OT05133	OT05525	OT05140
	20						
	30						
	40						
K Cast Iron	01						
	10	OT03315		OT03415			
	20						
	30						
	40						
S Heat Resistant Alloy	01				OT01010		
	10						
	20					OT05133	OT01525
	30						
	40						



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	AR	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-load	AR (Single Side)	P-type Material Heavy-load
			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 material roughing
			M-level double-sided chipbreaker, variable blade width + 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.



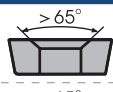
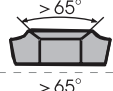
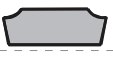
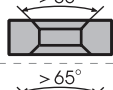
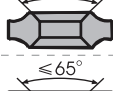
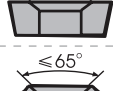
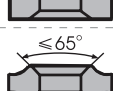
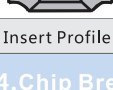
General Inner Hole Turning Insert

Item No.	Application	Chipbreaker	Feature/Shape of insert
9	General semi-finishing	GM	General chipbreaker
			M-level single-sided chipbreaker, suitable for semi-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 inner hole and outer circle finishing of stainless steel.

Special Turning Insert

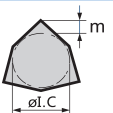
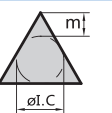
Item No.	Application	Chipbreaker	Feature/Shape of insert
11	Train wheel hub machining	175.32 series	Chipbreaker for finishing of P type material
			M-level double-sided chipbreaker, vertical cutting inserts, especially suitable for the trimming of train wheels.
12		RCMX series	Chipbreaker for heavy-load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

Turning Inserts Code Key

	A		B		C	B	Y	N		N	N	N	
	D		E		H	H	Y	Single		R	N	Single	
	K		L		M	C	Y	N		F	N	Double	
	O		P		M	J	Y	Double		A	Y	N	
	S		T		T	W	Y	N		M	Y	Single	
	V		W	Others	Z	T	Y	Single		G	Y	Double	
	V		W	Others	Z	Q	Y	N		X	---	---	Special Type
	V		W	Others	Z	U	Y	Double					
1.Shape					4.Chip Breaker and Hole								
					Code	Center Hole	Chip Breaker	Insert Profile	Code	Center Hole	Chip Breaker	Insert Profile	

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	Inscribed Circle	Regular Triangle	Square	80° Rhombus	55° Rhombus	35° Rhombus			
F	±0.005	±0.013	±0.025	6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---		
C	±0.013	±0.025	±0.025	9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---		
H	±0.013	±0.013	±0.025	12.7	±0.13	±0.13	±0.13	±0.15	---	---		
E	±0.025	±0.025	±0.025	15.875	±0.15	±0.15	±0.15	±0.18	---	---		
G	±0.025	±0.025	±0.13	19.05	±0.15	±0.15	±0.15	±0.18	---	---		
J	±0.005	±0.05-±0.13	±0.025	25.4	---	±0.18	---	---	---	---		
				♦ Tolerance of Inscribed Circle(mm)								
K	±0.013	±0.05-±0.13	±0.025	Inscribed Circle	Regular Triangle	Square	80° Rhombus	55° Rhombus	35° Rhombus			
L	±0.025	±0.05-±0.13	±0.025	6.35	±0.05	±0.05	±0.05	±0.05	±0.05	---		
M	±0.08-±0.18	±0.05-±0.13	±0.13	9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05		
N	±0.08-±0.18	±0.05-±0.13	±0.025	12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08		
U	±0.13-±0.38	±0.08-±0.25	±0.13	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		

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			
Inscribed Circle diameter (mm)								
Insert Shape								
5.Cutting Edge Length								

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
Code	Thickness(mm)
	
6.Thickness	

12 04 12 - MA (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

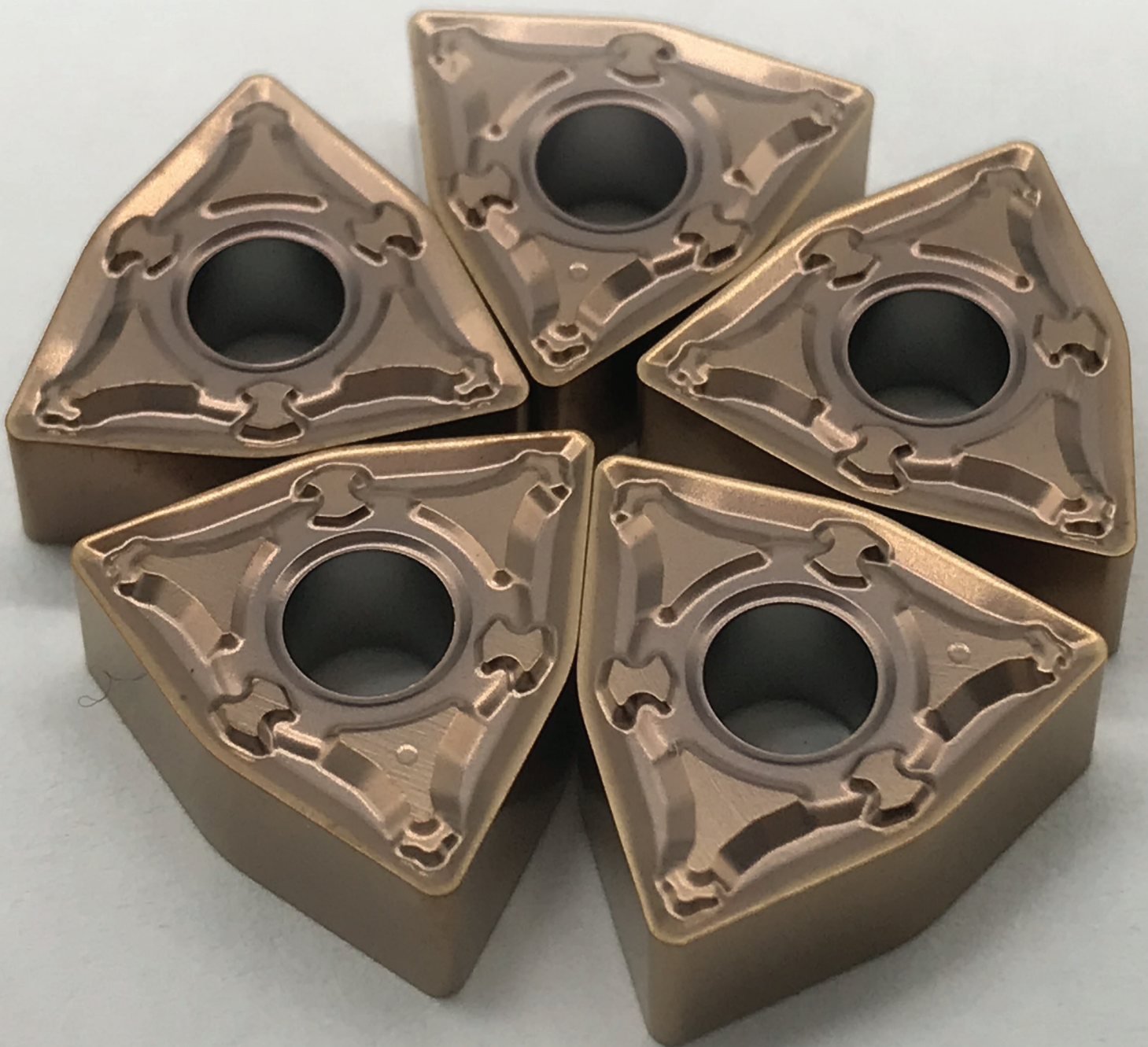
6.Thickness	
Code	Thickness (mm)
2	3.18
3	4.76
4	6.35
5	7.94
6	9.52

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

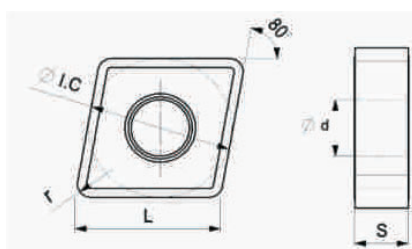
7.Corner Radius	
Code	Corner Radius (mm)
00	
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	
Insert Diameter (Metric)	Circle Insert

8.Chip Breaker		
AF	AS	AR
		
BF	BM	BR
		
CM	DM	AR (single-side)
		

Turning Inserts



Negative Inserts



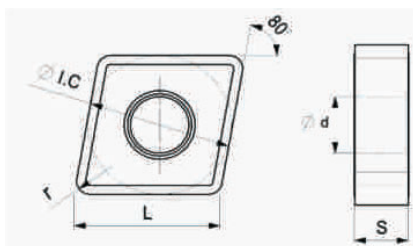
Length	Size(mm)			
	IC	S	d	r
9	9.525	3.18	3.81	0.4–0.8
12	12.7	4.76	5.16	0.4–1.2

80° CN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade										
				CVD						PVD				
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5130	OTO1010	OTO1525
 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

Negative Inserts



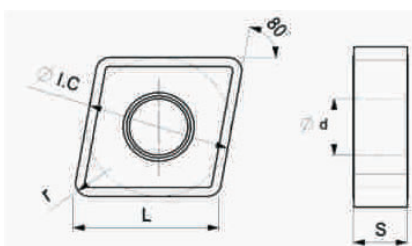
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.6
16	15.875	6.35	6.35	0.8–1.6
19	19.05	6.35	7.94	0.8–1.6

80° CN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 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

Negative Inserts



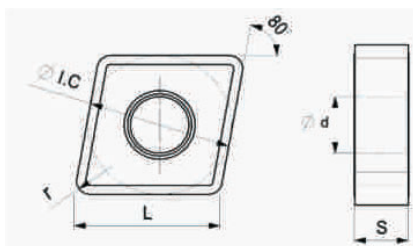
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.8–1.6
16	15.875	6.35	6.35	0.8–1.6
19	19.05	6.35	7.94	0.8–2.4

80° CN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 P Roughing	CNMG120408-AR	1.45–5.20	0.15–0.32			●	○								
	CNMG120412-AR	2.15–5.20	0.25–0.50			●	○								
	CNMG120416-AR	2.90–5.20	0.30–0.65			●	○								
	CNMG160608-AR	1.45–6.40	0.15–6.35			●	○								
	CNMG160612-AR	2.15–6.40	0.24–0.50			●	○								
	CNMG160616-AR	2.90–6.40	0.30–0.65			●	○								
	CNMG190608-AR	1.45–7.70	0.15–0.35			●	○								
	CNMG190612-AR	2.15–7.70	0.25–0.50			●	○								
	CNMG190616-AR	2.90–7.70	0.30–0.65			●	○								
	CNMG190624-AR	4.30–7.70	0.45–0.95			●	○								

Note: ● Recommended grade ready to stock

Negative Inserts



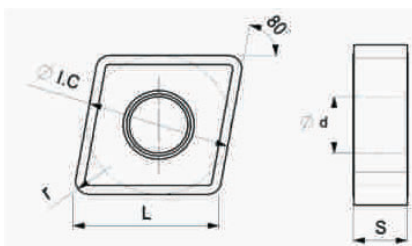
Length	Size(mm)			
	IC	S	d	r
19	19.05	6.35	7.94	1.2–2.4
25	25.4	7.94–9.52	9.12	2.4–3.2

80° CN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 P Heavy -load	CNMM190612-AR	2.40-9.70	0.25-0.60			●	○	●							
	CNMM190616-AR	3.20-9.70	0.35-0.80			●	○	●							
	CNMM190624-AR	4.80-9.70	0.50-1.20			●	○	●							
	CNMM250724-AR	4.80-12.90	0.50-1.20			●	○	●							
	CNMM250924-AR	4.80-12.90	0.50-1.20			●	○	●							
	CNMM250932-AR	4.80-12.90	0.50-1.20			●	○	●							

Note: ● Recommended grade ready to stock

Negative Inserts



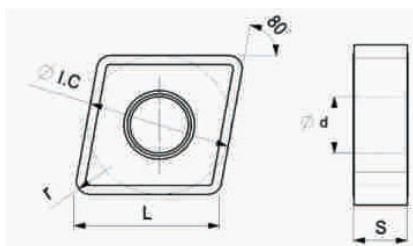
Length	Size(mm)			
	IC	S	d	r
9	9.525	3.18	3.81	0.4-0.8
12	12.7	4.76	5.16	0.4-1.2

80° CN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



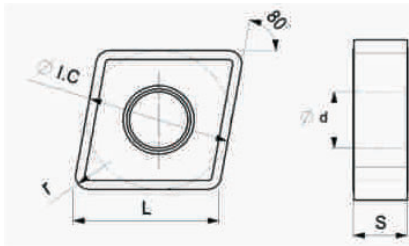
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.2
16	15.875	6.35	6.35	0.8–1.6

80° CN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



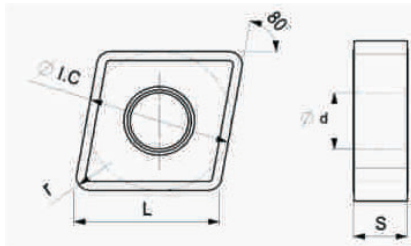
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.6
16	15.875	6.35	6.35	0.8–1.6
19	19.05	6.35	7.94	0.8–1.6

80° CN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade									
				CVD									
						OTO3315	OTO3415						
 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

Negative Inserts



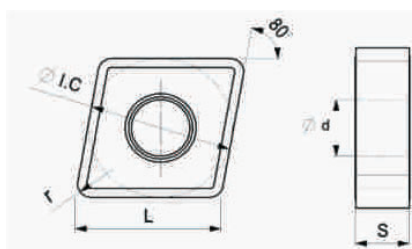
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.2
16	15.875	6.35	6.35	0.8–1.6

80° CN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade									
				CVD				PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5140	OTO1010	OTO1525
 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

Negative Inserts



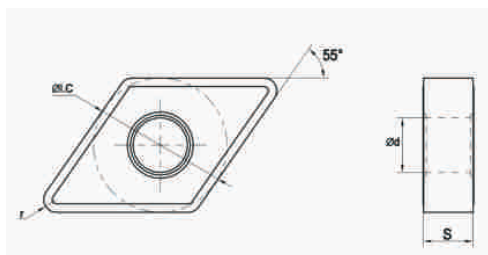
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.6

80° CN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade										
				CVD				PVD						
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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					○			○	○		●

Note: ● Recommended grade ready to stock

Negative Inserts



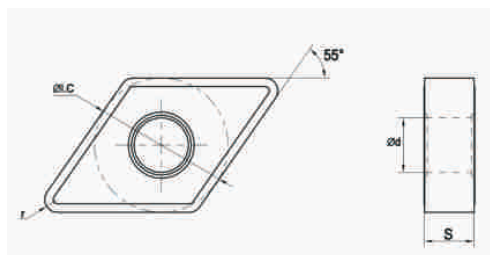
Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76	5.16	0.8–1.2
15	12.7	6.35	5.16	0.4–1.2

55° DN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade										
				CVD						PVD				
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5130	OTO1010	OTO1525
 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

Negative Inserts



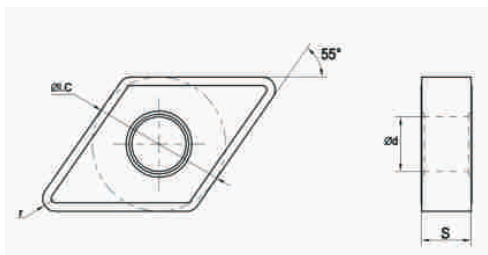
Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.4–1.2

55° DN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 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

Negative Inserts



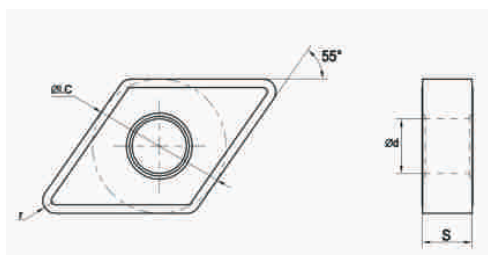
Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.8–1.2

55° DN With Hole

[illegible][illegible]

Note: ● Recommended grade ready to stock

Negative Inserts



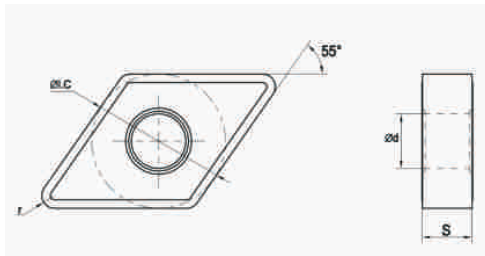
Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76-6.35	5.16	0.4-1.2

55° DN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



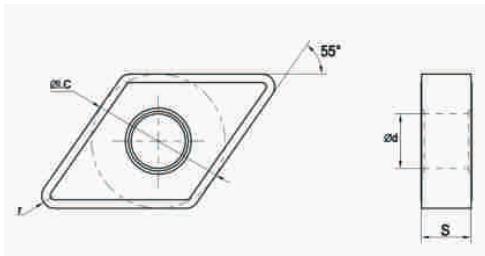
Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.4–1.2

55° DN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



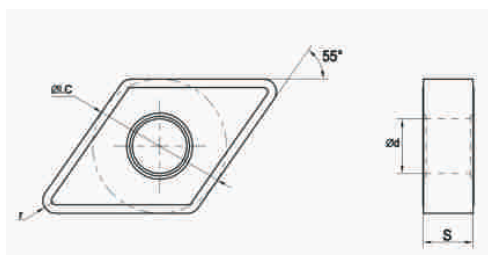
Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76–6.35	5.16	0.4–1.2

55° DN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade									
				CVD				PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5140	OTO1010	OTO1525
 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

Negative Inserts



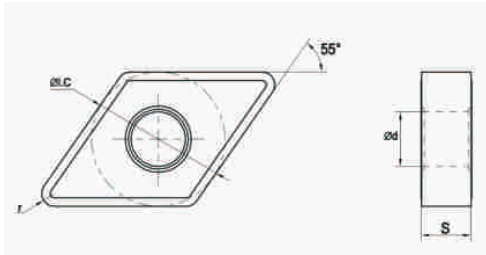
Length	Size(mm)			
	IC	S	d	r
15	12.7	6.35	5.16	0.8–1.2

55° DN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade									
				CVD				PVD					
						OTO3315	OTO3415						
 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

Negative Inserts



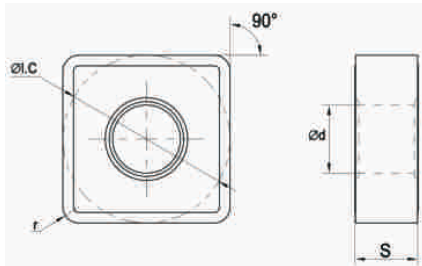
Length	Size(mm)			
	IC	S	d	r
15	12.7	4.76-6.35	5.16	0.4-1.2

55° DN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525	
 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

Negative Inserts



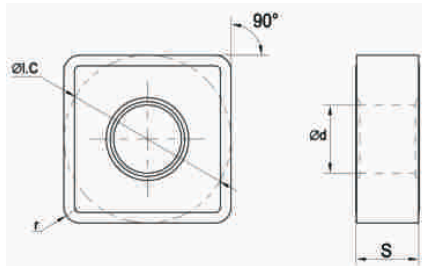
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.8–1.2

90° SN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade										
				CVD						PVD				
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5130	OTO1010	OTO1525
 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

Negative Inserts



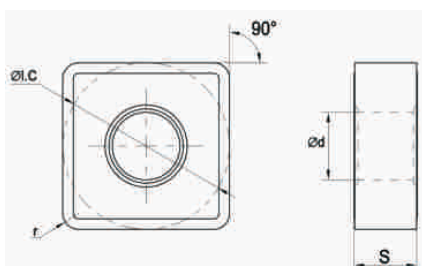
Length	Size(mm)			
	IC	S	d	r
12	12,7	4,76	5,16	0,8–1,6
15	15,875	6,35	6,35	0,8–1,2

90° SN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 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

Negative Inserts



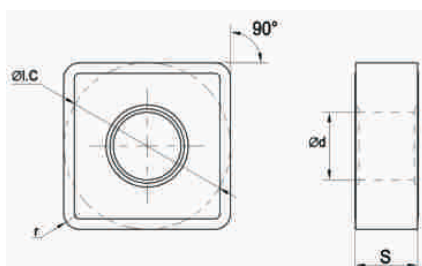
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.8–1.6
15	15.875	6.35	6.35	0.8–1.2
19	19.05	6.35	7.94	1.2–1.6

90° SN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 P Roughing	SNMG120408-AR	2.50–6.00	0.25–0.70			●	○								
	SNMG120412-AR	2.50–6.00	0.30–0.70			●	○								
	SNMG120416-AR	2.50–6.00	0.40–0.70			●	○								
	SNMG150612-AR	2.15–6.40	0.25–0.50			●	○								
	SNMG190612-AR	2.15–6.40	0.25–0.50			●	○								
	SNMG190616-AR	2.85–7.60	0.30–0.65			●	○								

Note: ● Recommended grade ready to stock

Negative Inserts



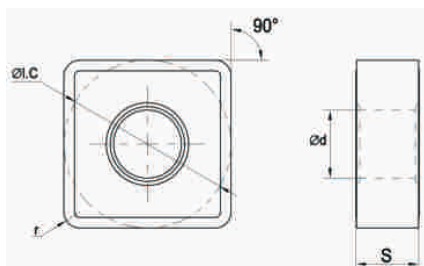
Length	Size(mm)			
	IC	S	d	r
19	19.05	6.35	7.94	1.2-2.4
25	25.4	7.94-9.52	9.12	2.4-3.2

90° SN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 P Heavy-load	SNMM190612-AR	2.40-9.50	0.25-0.60			●	○								
	SNMM190616-AR	3.20-9.50	0.35-0.80			●	○								
	SNMM190624-AR	4.80-9.50	0.53-1.20			●	○								
	SNMM250724-AR	4.80-12.70	0.53-1.20			●	○								
	SNMM250732-AR	4.80-12.70	0.53-1.20			●	○								
	SNMM250924-AR	4.35-12.70	0.53-1.20			●	○								
	SNMM250932-AR	4.35-12.70	0.53-1.20			●	○								

Note: ● Recommended grade ready to stock

Negative Inserts



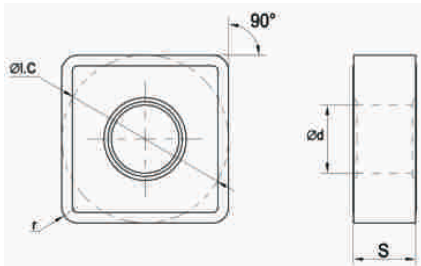
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.2

90° SN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)												
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



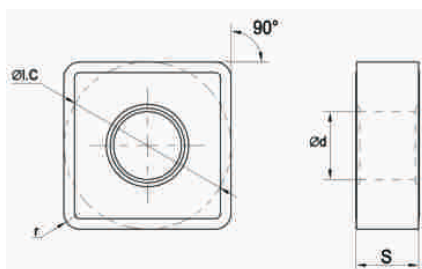
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4-1.2
15	15.875	6.35	6.35	0.8-1.2

90° SN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)												
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



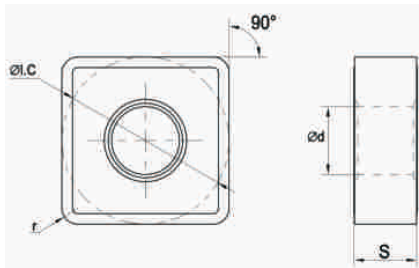
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4-1.2
15	15.875	6.35	6.35	0.8-1.2

90° SN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade									
				CVD				PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5140	OTO1010	OTO1525
 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

Negative Inserts



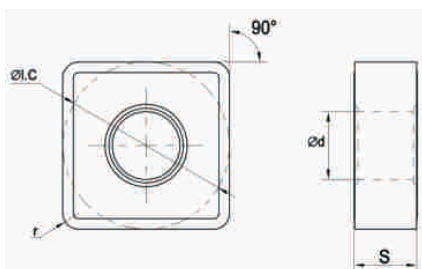
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.6

90° SN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD											
						OTO3315	OTO3415								
 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

Negative Inserts



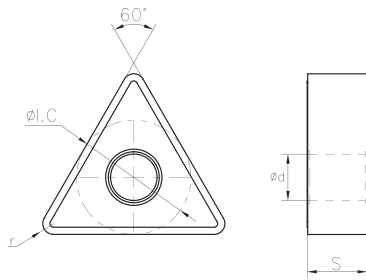
Length	Size(mm)			
	IC	S	d	r
12	12.7	4.76	5.16	0.4–1.6
15	15.875	6.35	6.35	0.8–1.6

90° SN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5140	OTO1010	OTO1520	OTO1525	
 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

Negative Inserts



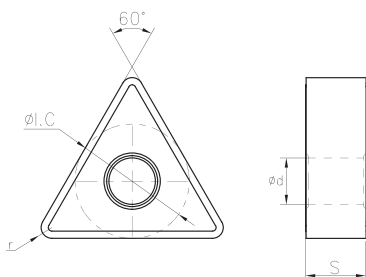
Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2

60° TN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade										
				CVD						PVD				
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5130	OTO1010	OTO1525
 P Finishing	TNMG160404–AF	0.26–3.1	0.05–0.15	●	○	●		○	○					
	TNMG160408–AF	0.52–3.1	0.10–0.30	●	○	●		○	○					
	TNMG160412–AF	0.78–3.1	0.15–0.45	●	○	●		○	○					

Note: ●Recommended grade ready to stock

Negative Inserts



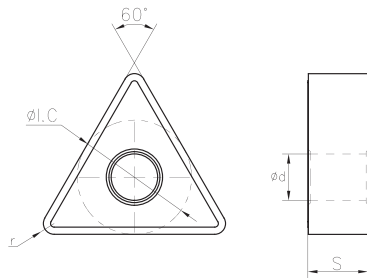
Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2
22	12.7	4.76	5.16	0.8–1.6

60° TN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 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

Negative Inserts



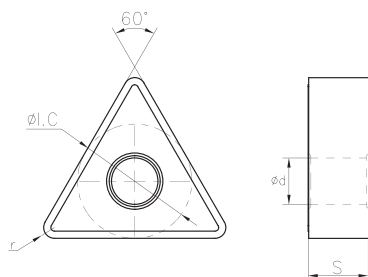
Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.8–1.2
22	12.7	4.76	5.16	0.8–1.6

60° TN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 P Roughing	TNMG160408-AR	2.00-5.00	0.25-0.65			●	○								
	TNMG220408-AR	2.50-7.00	0.25-0.65			●	○								
	TNMG220412-AR	2.50-7.00	0.25-0.65			●	○								

Note: ● Recommended grade ready to stock

Negative Inserts



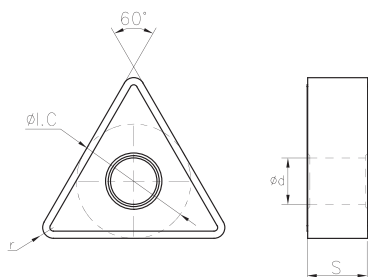
Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2

60° TN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



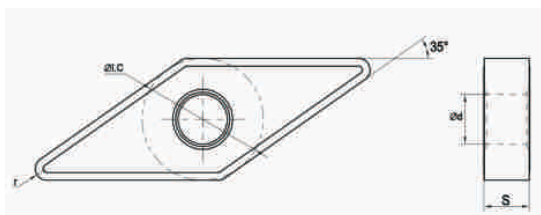
Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2
22	12.7	4.76	5.16	0.8–1.6

60° TN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade												
				CVD				PVD								
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5125	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525	
 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

Negative Inserts



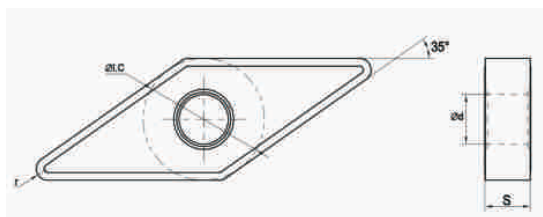
Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2

35° VN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade									
				CVD									
						OTO3315	OTO3415						
 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

Negative Inserts



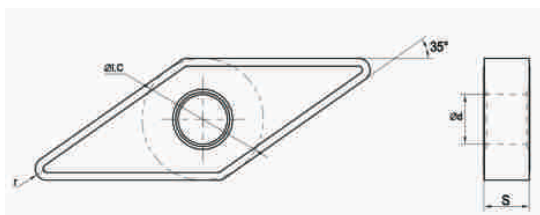
Length	Size(mm)			
	IC	S	d	r
16	9,525	4,76	3,81	0,4–1,2

35° VN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 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

Negative Inserts



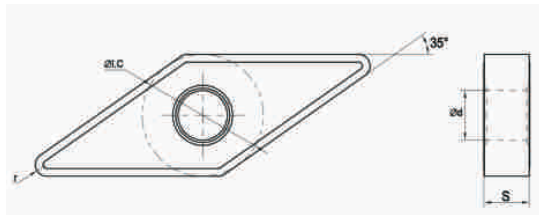
Length	Size(mm)			
	IC	S	d	r
11	6.35	4.76	2.26	0.4-0.8
16	9.525	4.76	3.81	0.4-0.8

35° VN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 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

Negative Inserts



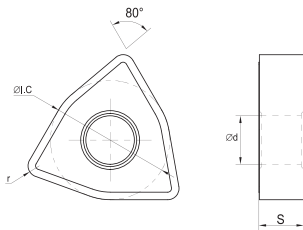
Length	Size(mm)			
	IC	S	d	r
16	9.525	4.76	3.81	0.4–1.2

35° VN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



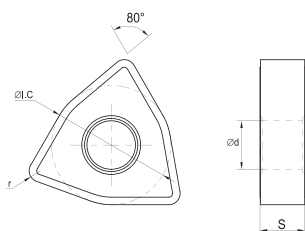
Length	Size(mm)			
	IC	S	d	r
8	12.7	4.76	5.16	0.4–1.2

80° WN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 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

Negative Inserts



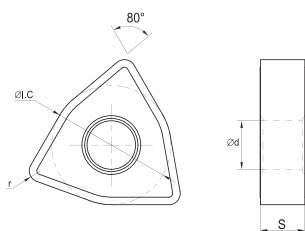
Length	Size(mm)			
	IC	S	d	r
8	12.7	4.76	5.16	0.4-1.6

80° WN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade												
				CVD						PVD						
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	
 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

Negative Inserts



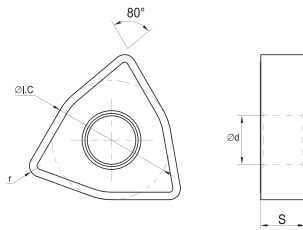
Length	Size(mm)			
	IC	S	d	r
6	9.525	4.76	3.81	0.8–1.2
8	12.7	4.76	5.16	0.8–1.2

80° WN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010
 P Roughing	WNMG060408-AR	0.80-4.00	0.15-0.50			●	○								
	WNMG060412-AR	0.80-4.00	0.15-0.50			●	○								
	WNMG080408-AR	0.80-4.50	0.15-0.55			●	○								
	WNMG080412-AR	0.80-4.50	0.20-0.55			●	○								

Note: ● Recommended grade ready to stock

Negative Inserts



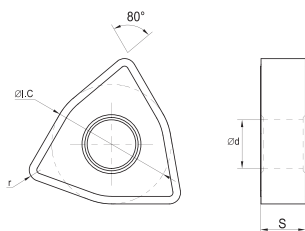
Length	Size(mm)			
	IC	S	d	r
6	9.525	4.76	3.81	0.4-0.8
8	12.7	4.76	5.16	0.4-1.6

80° WN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



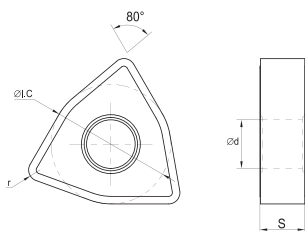
Length	Size(mm)			
	IC	S	d	r
6	9.525	4.76	3.81	0.4–0.8
8	12.7	4.76	5.16	0.4–1.6

80° WN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Negative Inserts



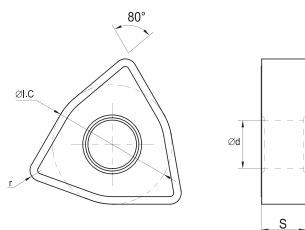
Length	Size(mm)			
	IC	S	d	r
6	9.525	4.76	3.81	0.4–0.8
8	12.7	4.76	5.16	0.4–1.6

80° WN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade									
				CVD				PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5140	OTO1010	OTO1525
 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

Negative Inserts



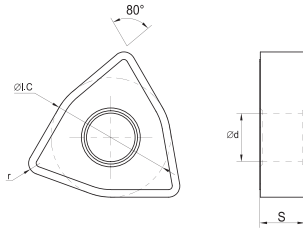
Length	Size(mm)			
	IC	S	d	r
8	12.7	4.76	5.16	0.4–1.6

80° WN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade									
				CVD									
						OTO3315	OTO3415						
 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

Negative Inserts



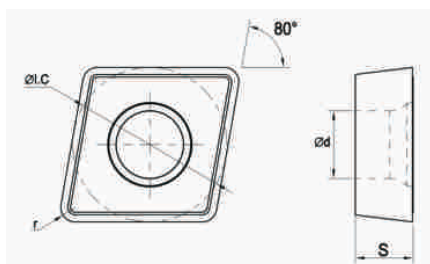
Length	Size(mm)			
	IC	S	d	r
8	12.7	4.76	5.16	0.4–1.6

80° WN With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5140	OTO1010	OTO1520	OTO1525	
 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

Positive Inserts



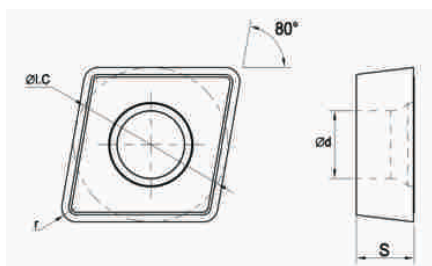
Length	Size(mm)			
	IC	S	d	r
6	3.65	2.38	2.8	0.4–0.8
9	9.525	3.97	4.4	0.4–0.8
12	12.7	4.76	5.56	0.4–1.2

80° CC With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade										
				CVD					PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8335	OTO5120	OTO5525	OTO5130	OTO5140	OTO1010	OTO1525
 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

Positive Inserts



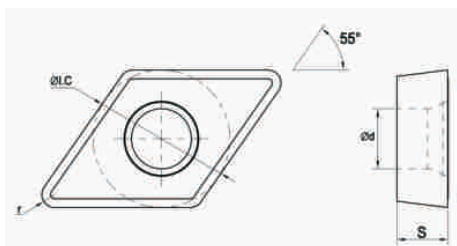
Length	Size(mm)			
	IC	S	d	r
6	3.65	2.38	2.8	0.4-0.8
9	9.525	3.97	4.4	0.4-0.8

80° CC With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Positive Inserts



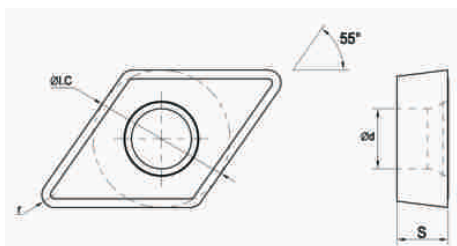
Length	Size(mm)			
	IC	S	d	r
7	6.35	2.38	2.8	0.4–0.8
11	9.525	3.97	4.4	0.4–1.2

55° DC With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade										
				CVD					PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8335	OTO5120	OTO5525	OTO5130	OTO5140	OTO1010	OTO1525
	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	●	○	●		○	○		●	○		○
General Semi- finishing														

Note: ● Recommended grade ready to stock

Positive Inserts



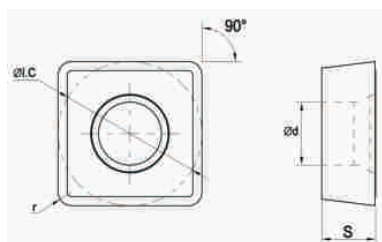
Length	Size(mm)			
	IC	S	d	r
7	6.35	2.38	2.8	0.4-0.8
11	9.525	3.97	4.4	0.4-1.2

55° DC With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Positive Inserts



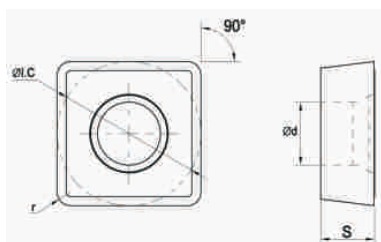
Length	Size(mm)			
	IC	S	d	r
9	9.525	3.97	4.4	0.4–0.8
12	12.7	4.76	5.56	0.4–1.2

90° SC With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade										
				CVD					PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8335	OTO5120	OTO5525	OTO5130	OTO5140	OTO1010	OTO1525
 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

Positive Inserts



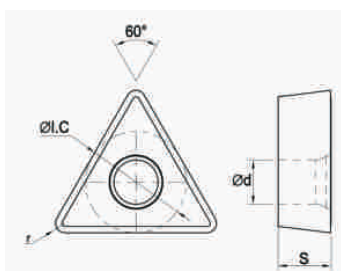
Length	Size(mm)			
	IC	S	d	r
9	9.525	3.97	4.4	0.4-0.8

90° SC With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Positive Inserts



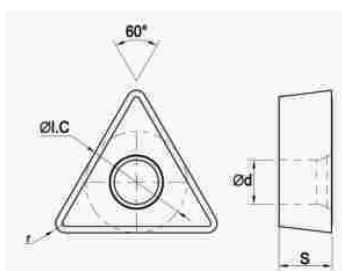
Length	Size(mm)			
	IC	S	d	r
9	5.56	2.38	2.2	0.4–0.8
11	6.35	2.38	2.8	0.4–1.2
16	9.525	3.97	4.4	0.4–1.2

60° TC With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade										
				CVD					PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8335	OTO5120	OTO5525	OTO5130	OTO5140	OTO1010	OTO1525
 General 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

Positive Inserts



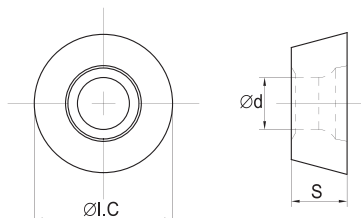
Length	Size(mm)			
	IC	S	d	r
9	5.56	2.38	2.2	0.4–0.8
11	6.35	2.38	2.8	0.4–1.2
16	9.525	3.97	4.4	0.4–1.2

60° TC With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD				PVD							
				OTO8215	OTO8315	OTO8225	OTO8325	OTO5120	OTO5525	OTO5133	OTO5130	OTO5140	OTO1010	OTO1520	OTO1525
 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

Train Wheel Turning Inserts



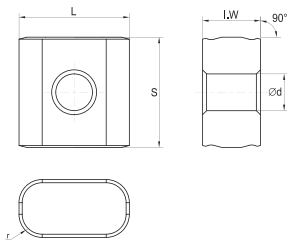
Length	Size(mm)		
	IC	S	d
8	8	3.18	3.36
10	10	3.18	4.4
12	12.7	4.76	4.4
16	16	6.35	5.5
20	20	6.35	6.5
25	25	7.94	7.2
32	32	9.52	9.5

RC With Hole

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO8235	OTO8335	OTO5120	OTO5525	OTO5130	OTO5140
 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

Train Wheel Turning Inserts

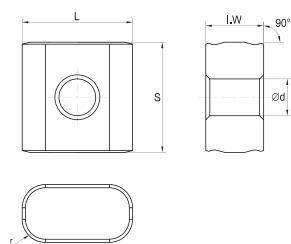


Length	Size(mm)				
	L	I.W	S	d	r
19	19.05	10	19.05	6.35	4

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO8235	OTO8335	OTO5120	OTO5525	OTO5130	OTO5140
 Train Wheel Trimming	175.32-191940-28	2.00-5.00	0.20-0.60	●		●									

Note: ● Recommended grade ready to stock

Train Wheel Turning Inserts

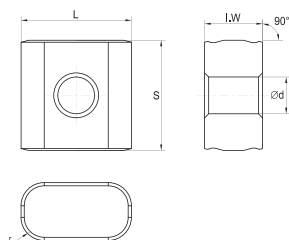


Length	Size(mm)				
	L	I.W	S	d	r
19	19.05	10	19.05	6.35	4

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO8235	OTO8335	OTO5120	OTO5525	OTO5130	OTO5140
 Train Wheel Trimming	175.32–191940–22	2.00–5.00	0.20–0.60	●		●									

Note: ● Recommended grade ready to stock

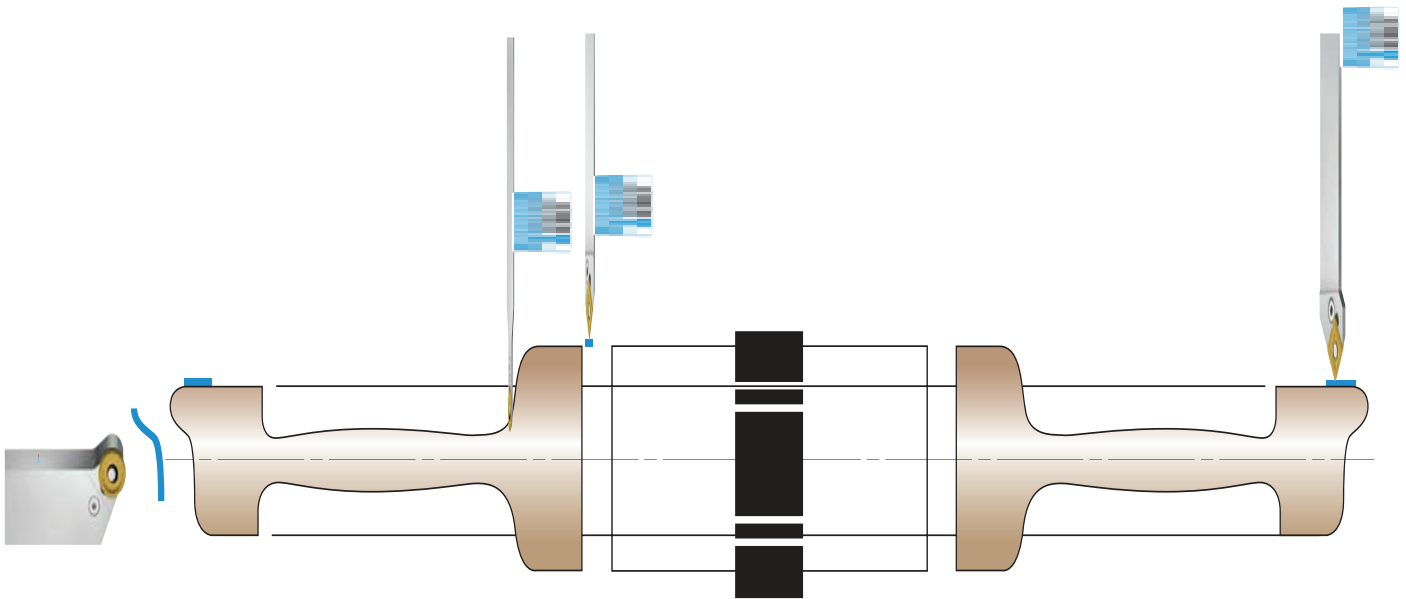
Train Wheel Turning Inserts



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

Shape	Type	Ap (mm)	Fn (mm/rev)	Grade											
				CVD						PVD					
				OTO8215	OTO8315	OTO8225	OTO8325	OTO8235	OTO8335	OTO8235	OTO8335	OTO5120	OTO5525	OTO5130	OTO5140
 Train Wheel Trimming	175.32–191940–24	2.00–5.00	0.20–0.60	●		●									

Note: ● Recommended grade ready to stock



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