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株洲华锐精密工具股份有限公司
Zhuzhou Huarui Precision Cutting Tools Co., Ltd.

Add:No.68 Chuangye 2nd RD,Lusong District,Zhuzhou,412000,Hunan P .R.China
Tel:+86-731-22286602 Fax:+86-731-22286653
E-mail:sales@hardstone.com.cn
Web:www.chinacuttingtools.cn

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2021-2022
产品样本

COMPREHENSIVE CATALOGUE

株洲华锐精密工具股份有限公司
Zhuzhou Huarui Precision Cutting Tools Co., Ltd.

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Company Profile

Zhuzhou Huarui Precision Cutting tools Co. , Ltd. (Stock symbol: 688059) was established in March 2007 with a registered capital of 44, 008, 000 CNY. As an advanced cutting tool manufacturer in China, HUARUI upholding the development strategy of "Independent Research & Development, Continuous Innovation", focus on the R&D, manufacture, sales and application of cemented carbide CNC cutting insert, constantly pursuing the improvement in overall performance and optimization in fabrication technology.

Relying on the multi-year technological accumulation and skilled talents, together with the import, digest assimilate of advanced equipment, HUARUI has formed their own independent core technology in the fields of "Substrate material", "Chip-breaker geometry", "Precision forming" and "Surface coating", and developed "Turning series", "Milling series" and "Drilling series" as the three major product range.

HUARUI is proud of their core product being the domestic leading level for their efficiency, long service life and cutting accuracy, successfully entered the high end markets which long time dominated by Europe, USA, Japan and Korea companies, Especially the milling series, it has formed a significant competitive advantage.

HUARUI has been awarded as the "National High-tech Enterprise", "National Small Giant Enterprise", "Hunan Province Recognized Enterprise Technology Center" and "100 Major Scientific and Technological Innovation Project 2020 Implementation Plan enterprise". Their "HARDSTONE" brand has been selected as the "Customer Satisfaction Brand" in the 4th Cutting Tool User Survey. And the independently developed FM series milling inserts has been awarded the "Golden Edge Awards" and "Ringier Technology Innovation Awards".

HONOR

EQUIPMENT

HUARUI has a full set of process equipment and complete production line for CNC cutting insert manufacturing from powder material preparation, mould making, compression forming, pressure sintering, grinding, coating, post coating treatment, etc. At the meantime, HUARUI adopt the R&D strategy of "Concentrate advantages to breakthrough each single product", focusing on the research and innovation of cemented carbide CNC cutting insert at the areas of substrate materials, chip breaker geometry, precision molding and surface coating, continuously improving the machining accuracy, efficiency and extend the service life. After more than ten years scientific research innovation, HUARUI has mastered lots of independent core technologies, possess strong independent R&D and design capabilities, and the overall technical strength has achieved the national advanced level.


Spray drying


Forming

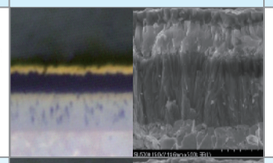
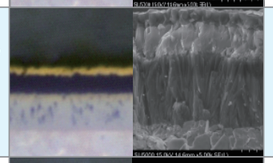
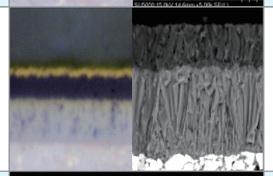
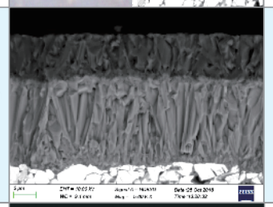
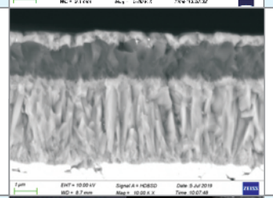
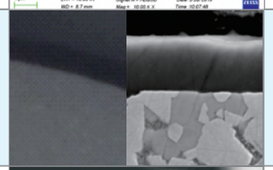
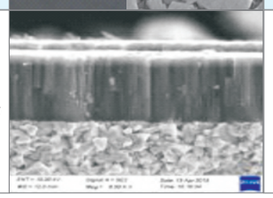

Sintering


Grinding

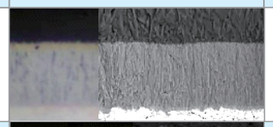
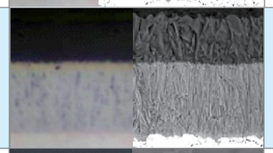
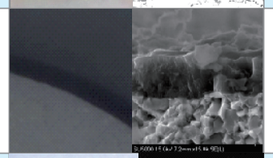
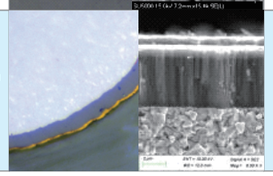

Coating

CATALOGUE

The instruction of grade

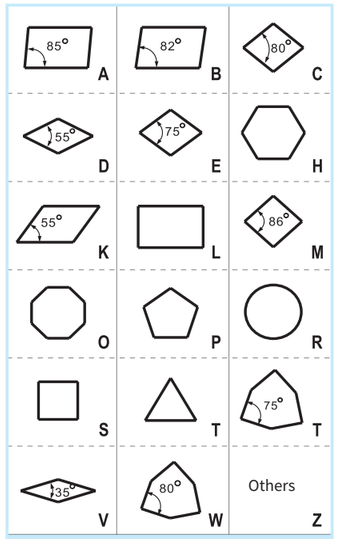
Grade	Coating Composition					Characteristics	Application	ISO	Wear Resistance ⟷ Toughness									
	Coating Type	Coating Color	Pictures	Component	Range				01	05	10	15	20	25	30	35	40	45
HS8115	CVD	Double color black-yellow		TiN+MT -TiCN+Al2O3 +TiN	Thick	The proprietary substrate of gradient alloy structure formed by special sintering process, together with thick TiCN, thick Al2O3, and sophisticated coating post treatment, not only makes the coating more beautiful, but also greatly improves the wear resistance. It is very suitable for finishing and semi-finishing of carbon steel and alloy steel.	Suitable for stable turning environment pursuit high wear resistance. For ordinary steel processing with good cooling, the linear velocity can be over 350m/min	P10~P20									
HS8125	CVD	Double color black-yellow		TiN+MT -TiCN+Al2O3 +TiN	Thick	Cemented carbide substrate with rich cobalt surface structure, with uniform particle size and high bending strength, The unique sintering technology create a gradient alloy structure, widely used for various steel machining.	It is a preferred grade for general purpose steel turning, it has strong comprehensive performance no matter from finishing to roughing, or from low speed to high speed machining, it can also used for general-purpose interrupted machining.	P15~P30									
HS8123	CVD	Golden yellow		TiN+MT -TiCN+Al2O3 +TiN	Thick	Medium-thick TiCN combined with thinner alumina, greatly reduced the processing impact, in the mean time, take both toughness and wear resistance into account.	It is used for high speed parting and grooving of general-purpose steel parts.	P15~P30									
HS8133	CVD	Golden yellow		TiN+MT -TiCN+Al2O3 +TiN	Thick -	It has adopted the strengthen binder phase which can effectively inhibit the high temperature plastic deformation of the substrate; The fabrication of high binder phase content functional gradient layer effectively controlled the crack propagation of the coating; Uniform distributed hard phase particles considered both the toughness and wear resistance of the substrate; The medium thick TiCN coupled with thin alumina coat, provide superior performance for parting and grooving process of steel material.	It is an upgraded grade with better stability, design for high speed parting off and grooving of general-purpose steel parts.	P15-P35									
HS7120	CVD	yellow		TiN+MT -TiCN+Al2O3 +TiN	Thick-	It has adopted the substrate with better high temperature hardness which provide good plastic deformation resistance under high speed cutting process; The compound multi-layer coating effectively blocked the longitudinal expansion of the coating cracks during the cutting process; Coupled with the fine coating post-treatment technology, provide a much more better, delicate and smooth coating surface. Suitable for roughing and semi-finishing of various types of stainless steel.	It is suitable for high speed and high efficiency roughing of stainless steel.	M15-M30									
HS7125	PVD	Gray black		AlTiN	Thin	The precise and unique coating formulations, together with innovative high-performance coating processes, provide a delicate, smooth and dropletless coating, which has the advantages of low coefficient of friction, high antioxidant temperature, high nano hardness, etc. This coating can match different edge requirements to ensure optimum comprehensive performance for various chip breaker design.	Preferred grade for stainless steel parting off and grooving. It can also meet the requirements of medium and low speed parting and grooving of steel and cast iron.	P15~P30 M15~M30 K15~K30									
HS7225	PVD	Brass -yellow		TiAlSiN	Thin	The precise and unique coating formulation with Si+ elements added, together with innovative high-performance coating processes, provide a delicate, smooth and dropletless coating, which has the advantages of low coefficient of friction, high antioxidant temperature, high nano hardness, etc. This coating can match different edge requirements to ensure optimum comprehensive performance for various chip breaker design.	It is an exclusive grade for stainless steel turning.	M15-M30									

The instruction of grade

Grade	Coating Composition					Characteristics	Application	ISO	Wear Resistance ⟷ Toughness									
	Coating Type	Coating Color	Pictures	Component	Range				01	05	10	15	20	25	30	35	40	45
HS6115	CVD	Black		TiN+MT -TiCN+Al2O3	Thick+	The thickened CVD black coating with special coating post-treatment, provide excellent wear resistance and toughness. Combined with the corresponding substrate, it has better universality and widely used in all kinds of cast iron machining.	It is a preferred grade for the turning of gray iron and ductile cast iron, with excellent comprehensive performance, it is also suitable for general interrupted machining, and low speed roughing of quenched steel and high strength steel.	K10-K20			●	●	●					
HS6120	CVD	Hole Yellow		TiN+MT -TiCN+Al2O3	Thick	The thick CVD black coating with special coating post-treatment, provide excellent wear resistance and toughness. Combined with the corresponding substrate, it has better universality and widely used in all kinds of cast iron machining.	It is a preferred grade for the turning of gray iron and ductile cast iron, with excellent comprehensive performance, it is also suitable for general interrupted machining, and low speed roughing of quenched steel and high strength steel.	K10-K20			●	●	●					
HS5125	PVD	Gray		AlTiN	Thick	The special proportion of ingredients, with rare metals added, actively improves bending strength and heat-cack resistance of the substrate, together with the highest level cutting nose and cutting edge treatment technology, combined with latest nano coating, greatly ensured the high hardness, wear resistance and sharpness of the cutting insert.	It is an exclusive grade for thread machining of various materials like steel, stainless steel, cast iron, etc.	P10-P25 M10-M25 K10-K25			●	●	●	●				
HS5131	PVD	Golden yellow		AlTiN+TiN	Thick	The ultra-fine particle substrate material and special ingredient ratio actively improves the bending strength and wear resistance of the substrate, greatly reduced the crack risk of cutting edge. The latest PVD nano coating, present small friction coefficient and strong sticking resistance.	It is a general-purpose grade for drilling.	P20-P35 M20-M35 K20-K35					●	●	●	●		

Insert identification system

Insert Shape



Chip-breaker and Clamping system

Code	Hole	Chip-breaker	Section Plane of insert	Code	Hole	Chip-breaker	Section Plane of insert
B	With	Without	>65°	N	Without	Without	
H	With	Single-Side	>65°	R	Without	Single-Side	
C	With	Wihout	>65°	F	Without	Double-Side	
J	With	Double-side	>65°	A	With	Without	
W	With	Without	≤65°	M	With	Single-Side	
T	With	Single-Side	≤65°	G	With	Double-Side	
Q	With	Without	≤65°	X	—	---	Special
U	With	Double-side	≤65°				

Length of Cutting Edge

Diameter of IC(mm)	C	D	R	S	T	V	W	K
32.00			32					
31.75			31					
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	16	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 Thickness

Code	Thickness(mm)
12	12.70
10	11.11
T9	9.72
09	9.52
07	7.94
T6	6.75
06	6.35
T5	5.95
05	5.56
T4	4.96
04	4.76
T3	3.97
03	3.18
T2	2.58
02	2.38
T1	1.98
01	1.59
T0	0.99
00	0.79

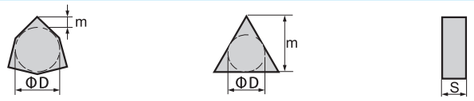
C N M G - 12 04 08 - GT (ISO)

4 3 2 (inch)

Clearance angle of main cutting edge

Code	Clearance angle	Code	Clearance angle
A	3°	B	5°
C	7°	D	15°
E	20°	F	25°
G	30°	N	0°
P	11°	O	Others

Tolerance (mm)



Code	Nose height Tolerance(m)	Inscribed circle(ΦD)	Thickness Tolerance(s)
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

◆ M-level tolerance(Idertifled by shape)

◆ Tolerance of tool tip height (mm)

Inscribed circle	Regular triangle	Square	Rhombus with80°	Rhombus with 55°	Rhombus with 35°	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
12.7	±0.13	±0.13	±0.13	±0.15	---	---
15.875	±0.15	±0.15	±0.15	±0.18	---	---
19.05	±0.15	±0.15	±0.15	±0.18	---	---
25.4	---	±0.18	---	---	---	---

◆Inscribed circle(ΦD)Tolerance

Inscribed circle	Regular triangle	Square	Rhombus with80°	Rhombus with 55°	Rhombus with 35°	Round
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

Code	Diameter 0f IC(mm)
2	6.35
3	9.525
4	12.7
5	15.875
6	19.05
8	25.4

Thickness

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

Nose Radius

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

Nose Radius Code

Code	Nose Radius (mm)
00	No Radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	Ohers
Diameter of Inserts (Meric)	Round Inserts

Chip-Breaker Code

GT	M	MT
		
BR	**BM**	**BF**
		
AK	**Universal**	**Non**
		

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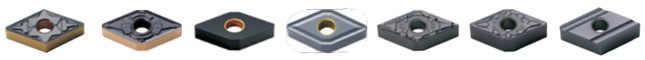
Overview

● Negative insert

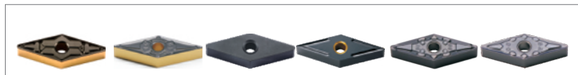
CNMG*-MT CMNG*-M CNMG*-GT CNMA* CNMG* CNMG*-GH CNMG*-BF CNMG*-BM CNMG*-S CNMG*-MA CNMG*-MS



DNMG*-MT DNMG*-GT DNMA* DNMG* DNMG*-BF DNMG*-BM DNMG*-S

SNMG*-MT SNMG*-M SNMG*-GT SNMA* SNMG* SNMG*-BF SNMG*-BM SNMG*-S SNMG*-MA SNMG*-MS

TNMG*-MT TNMG*-M TNMG*-GT TNMA* TNMG* TNMG*-BF TNMG*-BM TNMG*-S TNMG*-MA TNMG*-MS



VNMG*-MT VNMG*-GT VNMA* VNMG* VNMG*-BF VNMG*-BM

WNMG*-MT WNMG*-M WNMG*-GT WNMA* WNMG* WNMG*-GH WNMG*-BF WNMG*-BM

● Positive Insert

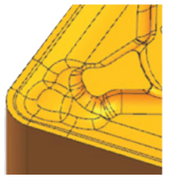
E-CCMT* E-DCMT-MV E-SCMT E-TCMT E-VBMT-MV

A1

Introduction of chip-breaker

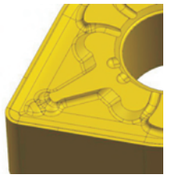
Inserts For Steel Machining

GT



- Used for semi-finishing and roughing
- Cutting edge is designed to combine sharpness and strength.
- Variable rake angles designed with spherical chip-breaker, it is suitable for a wide range of cutting.
- Good chip breaking performance and versatility.

MT



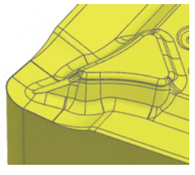
- Smooth connection of +6° rake angles and rake face makes the chip removal fluently. High cutting edge strength and good versatility.
- Recommended cutting parameters: ap:1.00-5.00 fn:0.20-0.50

R/L-M

- Used for light-load semi-fnishing, enables it to cut lightly and easily and stablely, which is suitable for turning of poor rigidity at moderate or low speed.
- Improves edge security and reliability in interrupted and rough machining.
- Good chip breaking performance and versatility.

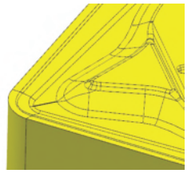
Stainless Steel Machining

BF



- Used for finishing and semi-finishing.
- Sharp cutting edge, small cutting resistance.
- Good chip breaking performance at small depth of cut.
- Special edge treatment reduce the occurrence of built-up edges.

BM



- Used for semi-finishing and roughing.
- Cutting edge is designed to combine sharpness and strength with a wide range of cutting.
- Good chip breaking performance, small cutting resistance.

Stainless Steel Machining

R/L-S

- Used for semi-finishing and roughing, with M-type materials, double-sided chip-breaker , sharp cutting edge and proper chip-breaker width.
- It is suitable for the adhesive materials such as stainless steel, mild steel, and difficult-to-process materials machining at low speed.
- Recommended cutting parameters: ap:0.8-4.5 fn:0.15-0.35

MA

- Used for semi-finishing and roughing, with M-type materials, double-sided chip-breaker , it is suitable for machining of steel, stainless steel,cast iron, etc.
- aterials with good versatility. Impact resistance of cutting edge is improved in addition to high cutting edge strength.
- Recommended cutting parameters: ap:0.50-4.00 fn:0.20-0.50

MS

- M-type materials, double-sided chip-breaker with good versatility.
- The all round chip-breaker is used for stainless steel, mild steel and difficult-to-machine materials with good versatility. Sharp cutting edge, lightly and easily cutting enables it to rough and finish at low speed.
- Recommended cutting parameters: ap:0.20-4.00 fn:0.15-0.40

MV

- The combination of 0.1mm land and large rake angle, with the sharp cutting edge and spherical chip-breaker and good chip breaking performance.
- Used for steel and stainless steel general machining.
- Recommended cutting parameters:ap:0.1~2.0 fn:0.06~2.0

Non (no chip breaker code)

- The combination of 0.1mm land and large rake angle, is designed to combine sharpness and strength. It is suitable for machining of steel, stainless steel,cast iron, etc.
- Recommended cutting parameters ap:0.2~2.0 fn:0.08~2.0

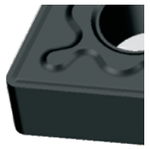
Introduction of chip-breaker

Cast iron machining

All round

- Double-sided chip-breaker with good versatility for K-type materials.
- Recommended cutting parameters: ap:0.20-8.00 fn:0.15-0.60

GH



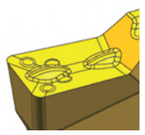
- The combination of wide land and chip-breaker is suitable for interrupted turning at high feed.
- Recommended cutting parameters: ap:1.50~ 6.00, fn: 0.24~ 0.6

Without chip-breaker

- Brittle and high hardness materials with high cutting edge strength ensure a perfect fit of holder.
  It is suitable for machining cast iron under unstable working conditions.

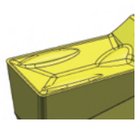
Parting and grooving

M



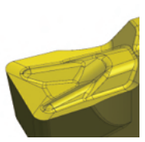
- Special designed chip-breaker for parting , makes the chip narrow down and
  controlling the chipping flow direction valid.

G



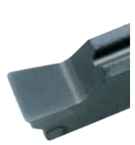
- Used for parting, grooving and turning etc. Enables it to cut lightly and easily,
  unobstructed chip fow and improve the surface quality.

T



- With specially designed flank, the cutting resistance can reduce by 20% and
  also reduces the vibration in machining and improve the surface quality.
  Specially designed cutting edge provides excellent chip breaking performance and can be transverse cutting feed.

No

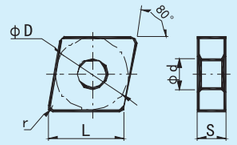


- Without chip-breaker
- It is suitable for machining of poor rigidity and easy to shake at low speed,
  with large rake angle, wide chip-breaker , lightly and easily cutting and small vibration.

Negative inser

80° CN** With Hole

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description						CVD Coating						PVD Coating								Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap	Fn
		L	IC	S	ød	Re															(mm)	(mm/r)
	CNMG120404-MT	12.9	12.7	4.76	5.16	0.4	●	◕													0.80-5.0	0.15-0.25
	CNMG120408-MT	12.9	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.2-0.4
	CNMG120412-MT	12.9	12.7	4.76	5.16	1.2	●	◕													1.00-5.00	0.25-0.5
	CNMG120404R-M	12.9	12.7	4.76	5.16	0.4	●	◕													0.80-5.00	0.2-0.5
	CNMG120408R-M	12.9	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.25-0.5
	CNMG120404L-M	12.9	12.7	4.76	5.16	0.4	●	◕													0.80-5.00	0.2-0.5
	CNMG120408L-M	12.9	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.25-0.5
	CNMG120404-GT	12.9	12.7	4.76	5.16	0.4	●	◕													0.80-5.00	0.2-0.25
	CNMG120408-GT	12.9	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.2-0.4
	CNMG120412-GT	12.9	12.7	4.76	5.16	1.2	●	◕													1.00-5.00	0.2-0.5
	CNMA120404	12.9	12.7	4.76	5.16	0.4						◕									1.0-4.5	0.15-0.25
	CNMA120408	12.9	12.7	4.76	5.16	0.8						◕									1.0-4.5	0.15-0.4
	CNMA120412	12.9	12.7	4.76	5.16	1.2						◕									1.0-4.5	0.15-0.55
	CNMA120416	12.9	12.7	4.76	5.16	1.6						◕									1.0-4.5	0.15-0.60
	CNMA160608	16.1	15.875	6.35	6.35	0.8						◕									2.0-6.0	0.15-0.4
	CNMA160612	16.1	15.875	6.35	6.35	1.2						◕									2.0-6.0	0.15-0.55
	CNMA160616	16.1	15.875	6.35	6.35	1.6						◕									2.0-6.0	0.15-0.7
	CNMA190612	19.3	19.05	6.35	7.94	1.2						◕									3.0-8.0	0.15-0.55
	CNMA190616	19.3	19.05	6.35	7.94	1.6						◕									3.0-8.0	0.15-0.8
	CNMG120404	12.9	12.7	4.76	5.16	0.4						◕									1.0-4.5	0.15-0.25
	CNMG120408	12.9	12.7	4.76	5.16	0.8						◕									1.0-4.5	0.15-0.4
	CNMG120412	12.9	12.7	4.76	5.16	1.2						◕									1.0-4.5	0.15-0.55
	CNMG120416	12.9	12.7	4.76	5.16	1.6						◕									1.0-4.5	0.15-0.60
	CNMG160608	16.1	15.875	6.35	6.35	0.8						◕									2-6.0	0.15-0.4
	CNMG160612	16.1	15.875	6.35	6.35	1.2						◕									2-6.0	0.15-0.55
	CNMG160616	16.1	15.875	6.35	6.35	1.6						◕									2-6.0	0.15-0.7
	CNMG190612	19.3	19.05	6.35	7.94	1.2						◕									3-8.0	0.15-0.55
	CNMG190616	19.3	19.05	6.35	7.94	1.6						◕									3-8.0	0.15-0.8
	CNMG120408-GH	12.9	12.7	4.76	5.16	0.4						◕									1-4.5	0.15-0.4
	CNMG120412-GH	12.9	12.7	4.76	5.16	0.8						●									1-4.5	0.15-0.55

Negative insert

80° CN** With Hole

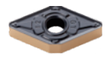
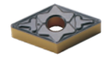
● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	ϕD / r / L / S / ϕd / 80°					CVD Coating							PVD Coating								Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap	Fn
		L	IC	S	ød	Re															(mm)	(mm/r)
	CNMG120404-BF	12.9	12.7	4.76	5.16	0.4												●			0.10-2.00	0.08-0.18
	CNMG120408-BF	12.9	12.7	4.76	5.16	0.8												●			0.10-2.00	0.08-0.18
	CNMG120404-BM	12.9	12.7	4.76	5.16	0.4							◕					◕			0.40-5.50	0.10-0.25
	CNMG120408-BM	12.9	12.7	4.76	5.16	0.8							◕					◕			0.50-5.50	0.10-0.40
	CNMG120412-BM	12.9	12.7	4.76	5.16	1.2							◕					◕			0.80-5.50	0.10-0.55
	CNMG120404R-S	12.9	12.7	4.76	5.16	0.4												◕	◕		0.5~4.0	0.05~0.25
	CNMG120408R-S	12.9	12.7	4.76	5.16	0.8												◕	◕		0.5~4.5	0.05~0.35
	CNMG120404L-S	12.9	12.7	4.76	5.16	0.4												◕	◕		0.5~4.0	0.05~0.25
	CNMG120408L-S	12.9	12.7	4.76	5.16	0.8												◕	◕		0.5~4.5	0.05~0.35
	CNMG120404-MA	12.9	12.7	4.76	5.16	0.4												◕			0.80-4.00	0.15-0.25
	CNMG120408-MA	12.9	12.7	4.76	5.16	0.8												◕			0.80-5.00	0.20-0.5
	CNMG120404-MS	12.9	12.7	4.76	5.16	0.4												◕	◕		0.50-4.00	0.10-0.25
	CNMG120408-MS	12.9	12.7	4.76	5.16	0.8												◕	◕		0.50-5.00	0.10-0.4

Negative insert

55° DN** With Hole

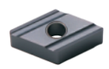
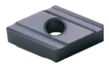
● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	ϕD / r / L / S / ϕd / 55°					CVD Coating							PVD Coating								Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap	Fn
		L	IC	S	ød	Re															(mm)	(mm/r)
	DNMG150604-GT	15.5	12.7	6.35	5.16	0.4	●	◕													0.80-5.00	0.2-0.25
	DNMG150608-GT	15.5	12.7	6.35	5.16	0.8	●	◕													1.00-5.00	0.2-0.4
	DNMG150612-GT	15.5	12.7	6.35	5.16	1.2	●	◕													1.00-5.00	0.2-0.5
	DNMG150404-GT	15.5	12.7	4.76	5.16	0.4	●	◕													0.80-4.00	0.2-0.25
	DNMG150408-GT	15.5	12.7	4.76	5.16	0.8	●	◕													1.00-4.00	0.2-0.4
	DNMG150412-GT	15.5	12.7	4.76	5.16	1.2	●	◕													1.00-4.00	0.2-0.5
	DNMG150404-MT	15.5	12.7	4.76	5.16	0.4	●	◕													0.80-4.00	0.2-0.25
	DNMG150408-MT	15.5	12.7	4.76	5.16	0.8	●	◕													1.00-4.00	0.2-0.4
	DNMG150412-MT	15.5	12.7	4.76	5.16	1.2	●	◕													1.00-4.00	0.2-0.5
	DNMG150604-MT	15.5	12.7	6.35	5.16	0.4	●	◕													0.80-5.00	0.2-0.25
	DNMG150608-MT	15.5	12.7	6.35	5.16	0.8	●	◕													1.00-5.00	0.2-0.4
	DNMG150612-MT	15.5	12.7	6.35	5.16	1.2	●	◕													1.00-5.00	0.2-0.5
	DNMA150404	15.5	12.7	4.76	5.16	0.4					◕										1-4.5	0.15-0.25
	DNMA150408	15.5	12.7	4.76	5.16	0.8					◕										1-4.5	0.15-0.4
	DNMA150412	15.5	12.7	4.76	5.16	1.2					◕										1-4.5	0.15-0.55
	DNMA150604	15.5	12.7	6.35	5.16	0.4					◕										1-4.5	0.15-0.25
	DNMA150608	15.5	12.7	6.35	5.16	0.8					◕										1-4.5	0.15-0.4
	DNMA150612	15.5	12.7	6.35	5.16	1.2					◕										1-4.5	0.15-0.55
	DNMG150404	15.5	12.7	4.76	5.16	0.4					◕										1-4.5	0.15-0.25
	DNMG150408	15.5	12.7	4.76	5.16	0.8					◕										1-4.5	0.15-0.4
	DNMG150412	15.5	12.7	4.76	5.16	1.2					◕										1-4.5	0.15-0.55
	DNMG150604	15.5	12.7	6.35	5.16	0.4					◕										1-4.5	0.15-0.25
	DNMG150608	15.5	12.7	6.35	5.16	0.8					◕										1-4.5	0.15-0.4
	DNMG150612	15.5	12.7	6.35	5.16	1.2					◕										1-4.5	0.15-0.55
	DNMG150404-BF	15.5	12.7	4.76	5.16	0.4														●	0.10-2.00	0.08-0.18
	DNMG150408-BF	15.5	12.7	4.76	5.16	0.8														●	0.10-2.00	0.08-0.18

Negative insert

55° DN** With Hole

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	ΦD	L	IC	S	Ød	Re	CVD Coating						PVD Coating							Cutting Parameters	
								HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	DNMG150404-BM		15.5	12.7	4.76	5.16	0.4							◕						◕		0.40-5.50	0.10-0.25
	DNMG150408-BM		15.5	12.7	4.76	5.16	0.8							◕						◕		0.50-5.50	0.10-0.40
	DNMG150412-BM		15.5	12.7	4.76	5.16	1.2							◕						◕		0.80-5.50	0.10-0.55
	DNMG150604-BM		15.5	12.7	6.35	5.16	0.4							◕						◕		0.40-5.50	0.10-0.25
	DNMG150608-BM		15.5	12.7	6.35	5.16	0.8							◕						◕		0.50-5.50	0.10-0.40
	DNMG150612-BM		15.5	12.7	6.35	5.16	1.2							◕						◕		0.80-5.50	0.10-0.55
	DNMG150404L-S		15.5	12.7	4.76	5.16	0.4													◕	◕	0.5~4.0	0.05~0.25
	DNMG150408L-S		15.5	12.7	4.76	5.16	0.8													◕	◕	0.5~4.0	0.05~0.35
	DNMG150604L-S		15.5	12.7	6.35	5.16	0.4													◕	◕	0.5~4.0	0.05~0.25
	DNMG150608L-S		15.5	12.7	6.35	5.16	0.8													◕	◕	0.5~4.0	0.05~0.35
	DNMG150404R-S		15.5	12.7	4.76	5.16	0.4													◕	◕	0.5~4.0	0.05~0.25
	DNMG150408R-S		15.5	12.7	4.76	5.16	0.8													◕	◕	0.5~4.0	0.05~0.35
	DNMG150604R-S		15.5	12.7	6.35	5.16	0.4													◕	◕	0.5~4.0	0.05~0.25
	DNMG150608R-S		15.5	12.7	6.35	5.16	0.8													◕	◕	0.5~4.0	0.05~0.35

Negative insert

90° SN** With Hole

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	ΦD	L	IC	S	Ød	Re	CVD Coating						PVD Coating							Cutting Parameters	
								HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	SNMG120404-MT		12.7	12.7	4.76	5.16	0.4	●	◕													0.80-5.0	0.15-0.25
	SNMG120408-MT		12.7	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.2-0.4
	SNMG120404R-M		12.7	12.7	4.76	5.16	0.4	●	◕													0.80-5.00	0.2-0.5
	SNMG120408R-M		12.7	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.25-0.5
	SNMG120404L-M		12.7	12.7	4.76	5.16	0.4	●	◕													0.80-5.00	0.2-0.5
	SNMG120408L-M		12.7	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.25-0.5
	SNMG120404-GT		12.7	12.7	4.76	5.16	0.4	●	◕													0.80-5.00	0.2-0.25
	SNMG120408-GT		12.7	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.2-0.4
	SNMG120412-GT		12.7	12.7	4.76	5.16	1.2	●	◕													1.00-5.00	0.2-0.5
	SNMA120404		12.7	12.7	4.76	5.16	0.4						◕									1-4.5	0.15-0.25
	SNMA120408		12.7	12.7	4.76	5.16	0.8						◕									1-4.5	0.15-0.4
	SNMA120412		12.7	12.7	4.76	5.16	1.2						◕									1-4.5	0.15-0.55
	SNMA150608		15.875	15.875	6.35	6.35	0.8						◕									2-6.0	0.15-0.4
	SNMA150612		15.875	15.875	6.35	6.35	1.2						◕									2-6.0	0.15-0.55
	SNMA150616		15.875	15.875	6.35	6.35	1.6						◕									2-6.0	0.15-0.7
	SNMA190612		19.05	19.05	6.35	7.94	1.2						◕									3-8.0	0.15-0.55
	SNMA190616		19.05	19.05	6.35	7.94	1.6						◕									3-8.0	0.15-0.8
	SNMG120404		12.7	12.7	4.76	5.16	0.4						◕									1-4.5	0.15-0.25
	SNMG120408		12.7	12.7	4.76	5.16	0.8						◕									1-4.5	0.15-0.4
	SNMG120412		12.7	12.7	4.76	5.16	1.2						◕									1-4.5	0.15-0.55
	SNMG150608		15.875	15.875	6.35	6.35	0.8						◕									2-6.0	0.15-0.4
	SNMG150612		15.875	15.875	6.35	6.35	1.2						◕									2-6.0	0.15-0.55
	SNMG150616		15.875	15.875	6.35	6.35	1.6						◕									2-6.0	0.15-0.7
	SNMG190612		19.05	19.05	6.35	7.94	1.2						◕									3-8.0	0.15-0.55
	SNMG190616		19.05	19.05	6.35	7.94	1.6						◕									3-8.0	0.15-0.8
	SNMG120404-BF		12.7	12.7	4.76	5.16	0.4														●	0.10-2.00	0.08-0.18
	SNMG120408-BF		12.7	12.7	4.76	5.16	0.8														●	0.10-2.00	0.08-0.18
	SNMG120404-BM		12.7	12.7	4.76	5.16	0.4							◕							◕	0.40-5.50	0.10-0.25
	SNMG120408-BM		12.7	12.7	4.76	5.16	0.8							◕							◕	0.50-5.50	0.10-0.40
	SNMG120412-BM		12.7	12.7	4.76	5.16	1.2							◕							◕	0.80-5.50	0.10-0.55

Negative insert

90° SN** With Hole

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	SNMG120404L-S	12.7	12.7	4.76	5.16	0.4												◕	◕		0.5~4.0	0.05~0.25
	SNMG120408L-S	12.7	12.7	4.76	5.16	0.8												◕	◕		0.5~4.5	0.05~0.35
	SNMG120404R-S	12.7	12.7	4.76	5.16	0.4												◕	◕		0.5~4.0	0.05~0.25
	SNMG120408R-S	12.7	12.7	4.76	5.16	0.8												◕	◕		0.5~4.5	0.05~0.35
	SNMG120404-MA	12.7	12.7	4.76	5.16	0.4												◕			0.80-4.00	0.15-0.25
	SNMG120408-MA	12.7	12.7	4.76	5.16	0.8												◕			0.80-5.00	0.2-0.5
	SNMG120408-MS	12.7	12.7	4.76	5.16	0.8												◕	◕		0.50-5.00	0.10-0.4

60° TN** With Hole

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	TNMG160404-MT	16.5	9.525	4.76	3.81	0.4	●	◕													0.80-5.0	0.15-0.25
	TNMG160408-MT	16.5	9.525	4.76	3.81	0.8	●	◕													1.00-5.00	0.2-0.4
	TNMG160412-MT	16.5	9.525	4.76	3.81	1.2	●	◕													0.80-5.00	0.2-0.5
	TNMG160404R-M	16.5	9.525	4.76	3.81	0.4	●	◕													1.00-5.00	0.25-0.5
	TNMG160408R-M	16.5	9.525	4.76	3.81	0.4	●	◕													0.80-5.00	0.2-0.5
	TNMG160404L-M	16.5	9.525	4.76	3.81	0.8	●	◕													1.00-5.00	0.25-0.5
	TNMG160408L-M	16.5	9.525	4.76	3.81	0.8	●	◕													0.80-5.00	0.2-0.25

Negative insert

60° TN** With Hole

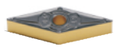
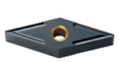
● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	TNMG160404-GT	16.5	9.525	4.76	3.81	0.4	●	◕													1.00-5.00	0.2-0.4
	TNMG160408-GT	16.5	9.525	4.76	3.81	0.8	●	◕													1.00-5.00	0.2-0.5
	TNMG160412-GT	16.5	9.525	4.76	3.81	1.2	●	◕													1-4.5	0.15-0.25
	TNMA160404	16.5	9.525	4.76	3.81	0.4						◕									1-4.5	0.15-0.4
	TNMA160408	16.5	9.525	4.76	3.81	0.8						◕									1-4.5	0.15-0.55
	TNMA160412	16.5	9.525	4.76	3.81	1.2						◕									2-6.0	0.15-0.4
	TNMA220408	22	12.7	4.76	5.16	0.8						◕									2-6.0	0.15-0.55
	TNMA220412	22	12.7	4.76	5.16	1.2						◕									2-6.0	0.15-0.7
	TNMA220416	22	12.7	4.76	5.16	1.6						◕									3-8.0	0.15-0.55
	TNMG160404	16.5	9.525	4.76	3.81	0.4						◕									3-8.0	0.15-0.8
	TNMG160408	16.5	9.525	4.76	3.81	0.8						◕									1-4.5	0.15-0.25
	TNMG160412	16.5	9.525	4.76	3.81	1.2						◕									1-4.5	0.15-0.4
	TNMG220408	22	12.7	4.76	5.16	0.8						◕									1-4.5	0.15-0.55
	TNMG220412	22	12.7	4.76	5.16	1.2						◕									2-6.0	0.15-0.4
	TNMG220416	22	12.7	4.76	5.16	1.6						◕									2-6.0	0.15-0.55
	TNMG160404-BF	16.5	9.525	4.76	3.81	0.4														●	2-6.0	0.15-0.7
	TNMG160408-BF	16.5	9.525	4.76	3.81	0.8														●	3-8.0	0.15-0.55
	TNMG160404-BM	16.5	9.525	4.76	3.81	0.4						◕								◕	3-8.0	0.15-0.8
	TNMG160408-BM	16.5	9.525	4.76	3.81	0.8						◕								◕	0.10-2.00	0.08-0.18
	TNMG160412-BM	16.5	9.525	4.76	3.81	1.2						◕								◕	0.10-2.00	0.08-0.18
	TNMG160404L-S	16.5	9.525	4.76	3.81	0.4														◕ ◕	0.40-5.50	0.10-0.25
	TNMG160408L-S	16.5	9.525	4.76	3.81	0.8														◕ ◕	0.50-5.50	0.10-0.40
	TNMG160404R-S	16.5	9.525	4.76	3.81	0.4														◕ ◕	0.80-5.50	0.10-0.55
	TNMG160408R-S	16.5	9.525	4.76	3.81	0.8														◕ ◕	0.5~4.0	0.05~0.25
	TNMG160404-MA	16.5	9.525	4.76	3.81	0.4														◕	0.80-4.00	0.05~0.35
	TNMG160408-MA	16.5	9.525	4.76	3.81	0.8														◕	0.80-4.00	0.20-0.4
	TNMG160404-MS	16.5	9.525	4.76	3.81	0.4														◕ ◕	0.50-4.00	0.10-0.25
	TNMG160408-MS	16.5	9.525	4.76	3.81	0.8														◕ ◕	0.50-4.00	0.10-0.4

Negative insert

35° VN** With Hole

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	CVD Coating						PVD Coating										Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	VNMG160404-MT	16.6	9.525	4.76	3.81	0.4	●	◕													0.80-3.00	0.15-0.25
	VNMG160408-MT	16.6	9.525	4.76	3.81	0.8	●	◕													1.00-3.00	0.2-0.4
	VNMG160412-MT	16.6	9.525	4.76	3.81	1.2	●	◕													1.00-3.00	0.25-0.5
	VNMG160404-GT	16.6	9.525	4.76	3.81	0.4	●	◕													0.80-4.00	0.2-0.25
	VNMG160408-GT	16.6	9.525	4.76	3.81	0.8	●	◕													1.00-4.00	0.2-0.4
	VNMG160412-GT	16.6	9.525	4.76	3.81	1.2	●	◕													1.00-4.00	0.2-0.5
	VNMA160404	16.6	9.525	4.76	3.81	0.4						◕									1-4.5	0.15-0.25
	VNMA160408	16.6	9.525	4.76	3.81	0.8						◕									1-4.5	0.15-0.4
	VNMG160404	16.6	9.525	4.76	3.81	0.4						◕									1-4.5	0.15-0.25
	VNMG160408	16.6	9.525	4.76	3.81	0.8						◕									1-4.5	0.15-0.4
	VNMG160404-BF	16.6	9.525	4.76	3.81	0.4												●			0.10-2.00	0.08-0.18
	VNMG160408-BF	16.6	9.525	4.76	3.81	0.8												●			0.10-2.00	0.08-0.18
	VNMG160404-BM	16.6	9.525	4.76	3.81	0.4						◕						◕			0.40-5.50	0.10-0.25
	VNMG160408-BM	16.6	9.525	4.76	3.81	0.8						◕						◕			0.50-5.50	0.10-0.40
	VNMG160412-BM	16.6	9.525	4.76	3.81	1.2						◕						◕			0.80-5.50	0.10-0.55

80° WN** With Hole

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	CVD Coating						PVD Coating										Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	WNMG080404-MT	8.7	12.7	4.76	5.16	0.4	●	◕													0.80-5.0	0.15-0.25
	WNMG080408-MT	8.7	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.2-0.4
	WNMG080412-MT	8.7	12.7	4.76	5.16	1.2	●	◕													1.00-5.00	0.25-0.5

Negative insert

80° WN** With Hole

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	CVD Coating						PVD Coating										Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	WNMG080404R-M	8.7	12.7	4.76	5.16	0.4	●	◕													0.80-5.00	0.2-0.5
	WNMG080408R-M	8.7	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.25-0.5
	WNMG080404L-M	8.7	12.7	4.76	5.16	0.4	●	◕													0.80-5.00	0.2-0.5
	WNMG080408L-M	8.7	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.25-0.5
	WNMG060408-GT	6.6	9.525	4.76	3.81	0.8	●	◕													1.00-3.00	0.2-0.4
	WNMG080404-GT	8.7	12.7	4.76	5.16	0.4	●	◕													0.80-5.00	0.2-0.25
	WNMG080408-GT	8.7	12.7	4.76	5.16	0.8	●	◕													1.00-5.00	0.2-0.4
	WNMG080412-GT	8.7	12.7	4.76	5.16	1.2	●	◕													1.00-5.00	0.2-0.5
	WNMA060404	6.6	9.525	4.76	3.81	0.4						◕									0.5-3	0.15-0.25
	WNMA060408	6.6	9.525	4.76	3.81	0.8						◕									0.5-3	0.15-0.4
	WNMA080404	8.7	12.7	4.76	5.16	0.4						◕									1-4.5	0.15-0.25
	WNMA080408	8.7	12.7	4.76	5.16	0.8						◕									1-4.5	0.15-0.4
	WNMA080412	8.7	12.7	4.76	5.16	1.2						◕									1-4.5	0.15-0.55
	WNMA080416	8.7	12.7	4.76	5.16	1.6						◕									1-4.5	0.15-0.60
	WNMG080404	8.7	12.7	4.76	5.16	0.4						◕									1-4.5	0.15-0.25
	WNMG080408	8.7	12.7	4.76	5.16	0.8						◕									1-4.5	0.15-0.4
	WNMG080412	8.7	12.7	4.76	5.16	1.2						◕									1-4.5	0.15-0.55
	WNMG080408-GH	8.7	12.7	4.76	5.16	0.8						◕									1-4.5	0.15-0.4
	WNMG080412-GH	8.7	12.7	4.76	5.16	1.2						◕									1-4.5	0.15-0.55
	WNMG080404-BF	8.7	12.7	4.76	5.16	0.4														●	0.10-2.00	0.08-0.18
	WNMG080408-BF	8.7	12.7	4.76	5.16	0.8														●	0.10-2.00	0.08-0.18
	WNMG06T312-BM	6.6	9.525	3.97	3.81	0.8						◕								◕	0.80-3.00	0.10-0.55
	WNMG060412-BM	6.6	9.525	4.76	3.81	0.8						◕								◕	0.80-3.00	0.10-0.55
	WNMG080404-BM	8.7	12.7	4.76	5.16	0.4						◕								◕	0.40-5.50	0.10-0.25
	WNMG080408-BM	8.7	12.7	4.76	5.16	0.8						◕								◕	0.50-5.50	0.10-0.40
	WNMG080412-BM	8.7	12.7	4.76	5.16	1.2						◕								◕	0.80-5.50	0.10-0.55
	WNMG080404-MA	8.7	12.7	4.76	5.16	0.4														◕	0.80-4.00	0.15-0.25
	WNMG080408-MA	8.7	12.7	4.76	5.16	0.8														◕	0.80-5.00	0.20-0.5
	WNMG080404-MS	8.7	12.7	4.76	5.16	0.4														◕ ◕	0.50-4.00	0.10-0.25
	WNMG080408-MS	8.7	12.7	4.76	5.16	0.8														◕ ◕	0.50-5.00	0.10-0.4

Positive insert

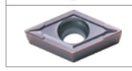
80° CC** Positive Inserts

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	CVD Coating							PVD Coating								Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	CCMT060202	6.4	6.35	2.38	2.8	0.2	●	◕				◕						◕	◕		0.20-2.00	0.05-0.12
	CCMT060204	6.4	6.35	2.38	2.8	0.4	●	◕				◕						◕	◕		0.20-2.00	0.06-0.2
	CCMT060208	6.4	6.35	2.38	2.8	0.8	●	◕				◕						◕	◕		0.20-2.00	0.08-0.3
	CCMT09T304	9.7	9.525	3.97	4.4	0.4	●	◕				◕						◕	◕		0.30-3.00	0.08-0.25
	CCMT09T308	9.7	9.525	3.97	4.4	0.8	●	◕				◕						◕	◕		0.30-3.00	0.10-0.3
	CCMT120404	12.9	12.7	4.76	5.56	0.4	●	◕				◕						◕	◕		0.30-3.50	0.10-0.25
	CCMT120408	12.9	12.7	4.76	5.56	0.8	●	◕				◕						◕	◕		0.80-3.50	0.20-0.4

55° DC** Positive Inserts

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	CVD Coating							PVD Coating								Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	DCMT070204-MV	7.8	6.35	2.38	2.8	0.4	●	◕				◕						◕	◕		0.20-2.00	0.06-0.2
	DCMT070208-MV	7.8	6.35	2.38	2.8	0.8	●	◕				◕						◕	◕		0.20-2.00	0.06-0.25
	DCMT11T304	11.6	9.525	3.97	4.4	0.4	●	◕				◕						◕	◕		0.30-3.00	0.08-0.25
	DCMT11T308	11.6	9.525	3.97	4.4	0.8	●	◕				◕						◕	◕		0.30-3.00	0.10-0.3

90° SC** Positive Inserts

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	CVD Coating							PVD Coating								Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	SCMT09T304	9.525	9.525	3.97	4.4	0.4	●	◕				◕						◕	◕		0.30-3.00	0.08-0.25
	SCMT09T308	9.525	9.525	3.97	4.4	0.8	●	◕				◕						◕	◕		0.30-3.00	0.10-0.3

Positive insert

60° TC** Positive Inserts

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	CVD Coating							PVD Coating								Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	TCMT090204	9.6	5.56	2.38	2.5	0.4	●	◕				◕							◕	◕	0.20-2.00	0.06-0.2
	TCMT110202	11	6.35	2.38	2.8	0.2	●	◕				◕							◕	◕	0.20-2.00	0.06-0.2
	TCMT110204	11	6.35	2.38	2.8	0.4	●	◕				◕							◕	◕	0.20-2.00	0.08-0.25
	TCMT110208	11	6.35	2.38	2.8	0.8	●	◕				◕							◕	◕	0.20-2.00	0.08-0.3
	TCMT16T304	16.5	9.525	3.97	4.4	0.4	●	◕				◕							◕	◕	0.30-3.50	0.10-0.25
	TCMT16T308	16.5	9.525	3.97	4.4	0.8	●	◕				◕							◕	◕	0.80-3.50	0.20-0.4

35° VB/VC** Positive Inserts

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	IC	S	ød	Re	CVD Coating							PVD Coating								Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	VBMT110304-MV	11	6.35	3.18	2.8	0.4	●	◕				◕							◕	◕		
	VBMT110308-MV	11	6.35	3.18	2.8	0.8	●	◕				◕							◕	◕		
	VBMT160404-MV	16.5	9.525	4.76	4.4	0.4	●	◕				◕							◕	◕		
	VBMT160408-MV	16.5	9.525	4.76	4.4	0.8	●	◕				◕							◕	◕		
	VCMT110304-MV	11	6.35	3.18	2.8	0.4	●	◕				◕							◕	◕		
	VCMT160404-MV	16.5	9.525	4.76	4.4	0.4	●	◕				◕							◕	◕		
	VCMT160408-MV	16.5	9.525	4.76	4.4	0.8	●	◕				◕							◕	◕		

Application Cases

Continuous and interrupted turning - Wheel Hub Bearing Seat

- **Workpiece** 55# Steel, Wheel hub bearing seat
- **Processing Methods** Wet-type semi-finish turning and fine machining on continuous external cylindrical surface & interrupted end face
- **Insert** WNMG080408-GT HS8125
- **Cutting Parameters** Vc=259m/min，f=0.18~0.275mm/r，ap=0.5~1mm

Optimized HS8125 with GT chip breaker, provide excellent performance and stability for medium and high speed semi finish turning with both continuous and interrupted machining requirement.

Cutting Life	
HADSTO	78pcs/edge
Brand A	40~50pcs/edge

Interrupted and continuous turning - Wheel Hub Bearing Seat

- **Workpiece** 65Mn Steel, Wheel hub bearing seat
- **Processing Methods** Wet-type semi-finish turning on continuous external cylindrical surface & interrupted end face
- **Insert** WNMG080408-GT HS8125
- **Cutting Parameters** Vc=230m/min, f=0.22mm/r, ap=0.8mm

HS8125 with GT chip breaker, Provide good performance for medium speed semi-finish turning of workpiece with both interrupted and continuous machining requirement.

Cutting Life	
HADSTO	55~65pcs/edge
Brand A	50~60pcs/edge

Inner hole continuous turning - Wheel Hub Unit

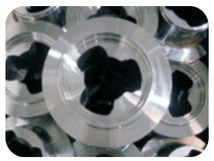
- **Workpiece** 65Mn steel, Wheel hub unit
- **Processing Methods** Wet-type continuous semi-finish turning on innner hole
- **Insert** VNMG160408-MT HS8115
- **Cutting Parameters** Vc=300m/min, f=0.24mm/r, ap=0.5mm

HS8115 with MT chip breaker, has good performance for high speed continuous turning of inner hole with poor cooling effect.

Cutting Life	
HADSTO	160~180pcs/edge
Brand A	160~180pcs/edge

End face Interrupted rough turning - Three-column Shell

- **Workpiece** 55# Steel, Three-column shell
- **Processing Methods** Interrupted rough turning on end face
- **Insert** WNMG080408-GT HS8125
- **Cutting Parameters** Vc=209m/min, f=0.25mm/r, ap=1.8mm



HS8125 with GT chip breaker, provide strong versatility for medium speed rough turning of interrupted workpiece.

Cutting Life	
HADSTO	100~130pcs/edge
Brand A	110~140pcs/edge

Application Cases

End face interrupted rough turning - Flange

- **Workpiece** 35# Steel, Flange
- **Processing Methods** Interrupted rough turning on end face
- **Insert** WMG080408-GT HS8125
- **Cutting Parameters** Vc=182-489m/min, f=0.1mm/r, ap=1.0mm

HS8125 with GM chip breaker, provide strong versitality for heavy interrupted rough turning from fixed speed to variable speed .

Cutting Life	
HADSTO	12~16pcs/edge
Brand A	5~10pcs/edge

High speed interrupted and continuous turning - Ring Flange

- **Workpiece** 55# steel, Ring flange
- **Processing Methods** Wet-type continuous finish turning on axle journal switching , and interrupted finish turning on end face groove.
- **Insert** VNMG160408-MT HS8115
- **Cutting Parameters** Vc=230~510m/min, f=0.167mm/r, ap=0.45mm

HS8115 with MT chip beaker, provide obvious advantage for super high speed interrupted finish turning of steel material.

Cutting Life	
HADSTO	20~21pcs/edge
Brand A	15~16pcs/edge

High speed interrupted/continuous turning - Wheel Hub Unit

- **Workpiece** 55# Steel, Wheel hub unit
- **Processing Methods** Wet-type semi-finish turning on continuous external cylindrical surface / interrupted end face
- **Insert** WNMG080408-MT HS8125
- **Cutting Parameters** Vc=200-300m/min, f=0.15~0.28mm

HS8125 with MT chip breaker, provide strong universality for semi-finish turning with both Interrupted and continuous machining requirement

Cutting Life	
HADSTO	80~100pcs/edge
Brand A	70~90pcs/edge

Interrupted rough turning - Three-column Shell

- **Workpiece** CF53 Steel, Three-column shell
- **Processing Methods** Wet-type interrupted rough turning on axle journal
- **Insert** CNMG120408-MT HS8125
- **Cutting Parameters** Vc=220m/min, f=0.2mm/r, ap=1.5mm

HS8125 with MT chip breaker, provide strong versatility for medium speed rough turning of interrupted workpiece.

Cutting Life	
HADSTO	40~50pcs/edge
Brand A	30~40pcs/edge

Application Cases

Continuous & interrupted turning - Three-column Shell

- **Workpiece** Cf53, Three-column shell
- **Processing Methods** Wet-type continuous & interrupted semi-finished turning on external cylindrical surface
- **Insert** DNMG150408-GT HS8125
- **Cutting Parameters** Vc=286m/min, f=0.33mm/r, ap=0.2mm

HS8125 with GT chip breaker, provide good applicability for interrupted rough turning from fixed speed to variable speed.

Cutting Life	
HADSTO	48~63pcs/edge
Brand A	40~50pcs/edge

External turning - Bearing

- **Workpiece** GCR15, Bearing
- **Processing Methods** Wet-type rough & finish turning on external cylindrical surface of face A, and Chamfer
- **Insert** WNMG080408-GT HS8115
- **Cutting Parameters** Vc=380m/min, f=0.18~0.33mm/r, ap=1mm

HS8115 with GT chip breaker, provide obvious abrasion resistance advantage, good chip evacuation for high speed machining.

Cutting Life	
HADSTO	150pcs/edge
Brand A	120pcs/edge

Rough & finish turning - Bearing

- **Workpiece** GCR15, Bearing
- **Processing Methods** Wet-type rough / finish turning of the end face A / chamfer
- **Insert** WNMG080408-MT HS8125
- **Cutting Parameters** Vc=369m/min, f=0.31mm/r, ap=1mm

HS8125 with MT chip breaker, provide very good abrasion resistance for high speed rough turning of continuous workpiece.

Cutting Life	
HADSTO	65~72pcs/edge
Brand A	60~70pcs/edge

Rough turning - Piston Rod

- **Workpiece** 27SiMn, Piston rod
- **Processing Methods** Dry-type rough turning
- **Insert** TNMG160408R-M HS8125
- **Cutting Parameters** Vc=100m/min, f=0.4mm/r, ap=2.5mm

Suitable for low speed rough turning with large cutting depth and high feed. typically used to solve the low toughness problem of long slender rod machining, or low speed hard material machining, or soft material with large cutting depth.

Cutting Life	
HADSTO	50~60pcs/edge
Brand A	Too vibrate,to cut properly

Application Cases

Rough and finish turning - Valve Ball

- **Workpiece** SUS304 Stainless steel, Valve ball
- **Processing Methods** Wet-type rough / finish turning
- **Insert** TNMG160408-MS HS7125
- **Cutting Parameters** Vc=188-314m/min, f=0.22-0.13mm/r, ap=2-0.05mm

MS chip breaker, suitable for low feed rate rough & finish turning of hard material, i.e. stainless steel.

Cutting Life	
HADSTO	92pcs/edge
Brand A	96pcs/edge

Finish turning - Stainless Steel

- **Workpiece** SUS304 Stainless steel,
- **Processing Methods** Continuous finish turning on taper surface & end face
- **Insert** WNMG080408-BF HS7125
- **Cutting Parameters** Vc=220m/min, f=0.14mm/r, ap=0.1mm, (Ra≤0.8)

BF chip breaker, with sharp edge, landless design, big and wide rake angle, provide small chip deformation and small cutting vibration, suitable for fine machining with high surface quality requirement only.

Cutting Life	
HADSTO	242pcs/edge
Brand A	212pcs/edge

Finish turning - Sealing Ring

- **Workpiece** SUS304 Stainless steel, Sealing ring
- **Processing Methods** Continuous finish turning on end face & external cylindrical surface
- **Insert** WNMG080408-BF HS7125
- **Cutting Parameters** Vc=210m/min, f=0.1mm/r, ap=0.1mm, (Ra≤0.8)

BF chip breaker, compare with other domestic competitors, provide significantly lower surface roughness for finish turning.

Cutting Life	
HADSTO	740pcs/edge
Brand A	450pcs/edge

Rough turning - Ring Flange

- **Workpiece** SUS201 Stainless steel, Ring flange
- **Processing Methods** Continuous turning on end face & external cylindrical surface
- **Insert** WNMG080408-BM HS7125
- **Cutting Parameters** Vc=273m/min, f=0.3mm/r, ap=1.0mm

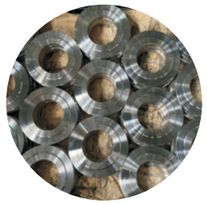
BM chip breaker, belongs to general-purpose chip-breaker, provide very good performance under various environment, except for rough turning on oxide coating which has no obvious advantage.

Cutting Life	
HADSTO	37~42pcs/edge
Brand A	38~42pcs/edge

Application Cases

Rough turning - Ring Flange

- **Workpiece** SUS316, Ring flange
- **Processing Methods** Continuous rough turning on end face & external cylindrical surface
- **Insert** WNMG080408-BM HS7125
- **Cutting Parameters** Vc=211m/min, f=0.23~0.35mm/r, ap=1.0~1.2mm



BM chip breaker, belongs to general-purpose chip-breaker, provide very good performance under various environment, except for rough turning of oxide coating which has no obvious advantage.

Cutting Life	
HADSTO	18pcs/edge
Brand A	17pcs/edge

Rough Turning - Ring Flange

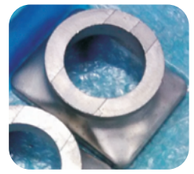
- **Workpiece** SUS316, Ring flange
- **Processing Methods** Continuous rough turning on end face & external cylindrical surface, OD 190, ID 90.5
- **Insert** SNMG120408-BM HS7120
- **Cutting Parameters** Vc=256m/min, f=0.3mm/r, ap=0.8mm

Grade HS7120, provide obvious advantage for high speed and fast feeding rate rough turning of oxide coating.

Cutting Life	
HADSTO	84pcs/edge
Brand A	50~60pcs/edge

End face rough turning - Shell

- **Workpiece** CF-3M, Shell
- **Processing Methods** Interrupted end face rough / finish turning
- **Insert** WNMG080408-MA HS7125
- **Cutting Parameters** Vc=160m/min, f=0.2mm/r, ap=1-2mm

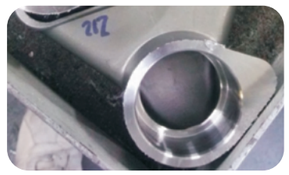


MA chip breaker, provide obvious advantage under the working condition of significant cutting force change.

Cutting Life	
HADSTO	15pcs/edge
Brand A	10pcs/edge

End Face rough turning - Shell

- **Workpiece** CF-8C, Shell
- **Processing Methods** Interrupted end face turning
- **Insert** WNMG080408-MA HS7125
- **Cutting Parameters** Vc=160m/min, f=0.15mm/r , ap=0.5-1mm



MA chip breaker, provide obvious advantage for interrupted turning of soft and sticky material.

Cutting Life	
HADSTO	14pcs/edge
Brand A	11pcs/edge

Application Cases

Inner hole rough & finish turning - Seat

- **Workpiece** SUS304,Valve stem
- **Processing Methods** Wet-type inner hole turning
- **Insert** CCMT09T308 HS7125
- **Cutting Parameters** Vc=81m/min, f=0.14mm/r, ap=0.5mm

Non-code chip breaker, a sharp and wide chip-breaker, provide strong universality for medium & low speed machining of various material.

Cutting Life	
HADSTO	541pcs/edge
Brand A	367pcs/edge

External cylindrical surface & end face turning - Belt Pulley

- **Workpiece** HT200, Belt pulley
- **Processing Methods** Dry-type continuous rough turning on external cylindrical surface / end face
- **Insert** CNMG12408 HS6120
- **Cutting Parameters** Vc=438m/min, f=0.3mm/r, ap=1.2mm

For high speed turning of ductile cast iron, it provide equivalent life time and stability compare with overseas high end cutting tools.

Cutting Life	
HADSTO	130~140pcs/edge
Brand A	130~140pcs/edge

External cylindrical surface & end face turning - Crankshaft

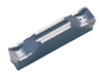
- **Workpiece** QT600, Crankshaft
- **Processing Methods** Wet-type rough turning on continuous external cylindrical surface & interrupted end face
- **Insert** DNMG150408 HS6120
- **Cutting Parameters** Vc=220m/min，f=0.4mm/r，ap=1.0mm

HS6120 provide long life time and high stability for medium and low speed turning of ductile cast iron.

Cutting Life	
HADSTO	120~130pcs/edge
Brand A	100pcs/edge

Parting and Grooving Insert

● Good working condition ◕ Normal working condition ⌗ Bad working condition

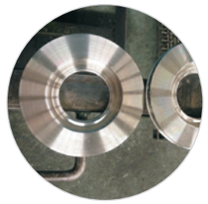
Shape	Description	L	W	S	R	CVD Coating						PVD Coating							Cutting Parameters	
						HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	MGMN150-G	16	1.5	4	0.15			◕	◕	●									◕	~14	0.05-0.15
	MGMN200-G	16	2	4	0.2			◕	◕	●									◕	~14	0.05-0.15
	MGMN250-G	18.5	2.5	4.5	0.2			◕	◕	●									◕	~16	0.05-0.15
	MGMN300-G	21	3	5.6	0.3			◕	◕	●									◕	~18	0.05-0.15
	MGMN200-M	16	2	4	0.2			◕	◕	●									◕	~14	0.05-0.13
	MGMN250-M	18.5	2.5	4.5	0.2			◕	◕	●									◕	~16	0.05-0.13
	MGMN300-M	21	3	5.6	0.4			◕	◕	●									◕	~18	0.06-0.13
	MGMN400-M	21	4	5.8	0.4			◕	◕	●									◕	~18	0.06-0.15
	MGMN500-M	26	5	5.8	0.8			◕	◕	●									◕	~23	0.07-0.15
	MGMN600-M	26	6	5.9	0.8			◕	◕	●									◕	~23	0.08-0.18
	MGMN200-T	16	2	3.55	0.2			◕	◕	●									◕	~14	0.05-0.12
	MGMN250-T	18.5	2.5	4.5	0.2			◕	◕	●									◕	~16	0.05-0.15
	MGMN300-T	21	3	4.86	0.4			◕	◕	●									◕	~18	0.07-0.15
	MGMN400-T	21	4	4.86	0.4			◕	◕	●									◕	~18	0.07-0.18
	MGMN500-T	26	5	5.8	0.8			◕	◕	●									◕	~23	0.10-0.18
	MGMN200	16	2	3.55	0.2														◕	~14	0.05-0.12
	MGMN300	21	3	4.86	0.4														◕	~18	0.05-0.12
	MGMN400	21	4	4.86	0.4														◕	~18	0.05-0.12
	MGMN500	26	5	5.8	0.8														◕	~23	0.05-0.12
	MRMN200-M	16	2	3.5	1			◕	◕	●									◕	~14	0.05-0.12
	MRMN300-M	21	3	4.8	1.5			◕	◕	●									◕	~18	0.07-0.12
	MRMN400-M	21	4	4.8	2			◕	◕	●									◕	~23	0.07-0.15
	MRMN500-M	26	5	5.8	2.5			◕	◕	●									◕	~23	0.08-0.15
	MRMN600-M	26	6	5.9	2.5			◕	◕	●									◕	~23	0.08-0.15
	SP200		2					◕											◕		0.05-0.15
	SP300		3					◕											◕		0.05-0.20
	SP400		4					◕											◕		0.05-0.30
	TDC2	20	2	3.9	0.2														◕	~22	0.05-0.18
	TDC3	20	3	4.2	0.2														◕	~22	0.07-0.25
	TDC4	20	4	4.2	0.3														◕	~22	0.08-0.30
	TDC5	25	5	5	0.3														◕	~25	0.09-0.35

哈德斯通 HADSTO

Application Cases

End face grooving

- **Workpiece** SUS304,Sealing groove
- **Processing Methods** Continuous end face grooving
- **Insert** MGMN400-M HS7225
- **Cutting Parameters** Vc=150m/min, f=0.04mm/r, ap=1.6mm



M chip breaker, provide strong universality, very good chip evacuation effect for various material and different grooving methods.

Cutting Life	
HADSTO	352pcs/edge
Brand A	218pcs/edge

End face grooving

- **Workpiece** SUS304,Sealing groove
- **Processing Methods** Continuous end face grooving
- **Insert** QCMB3004-T HS7225
- **Cutting Parameters** Vc=130m/min, f=0.05mm/r

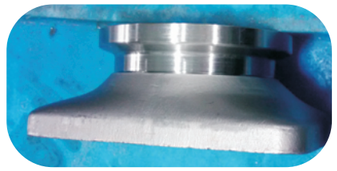
T chip breaker provide excellent chip evacuation control for stainless steel machining.

Cutting Life	
HADSTO	1300pcs/edge
Brand A	1100pcs/edge

Application Cases

Grooving and turning

- **Workpiece** CF-3M,forged stainless steel
- **Processing Methods** Continuous grooving and external cylindrical surface turning
- **Insert** QCMB3004-M HS7225
- **Cutting Parameters** Vc=120m/min, f=0.1mm/r

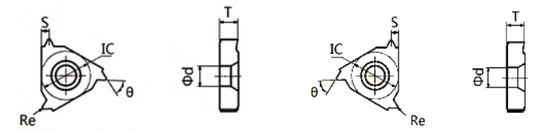


M chip-breaker provide strong universality, very good chip evacuation control for various material and different grooving method.

Cutting Life	
HADSTO	11pcs/edge
Brand A	10pcs/edge

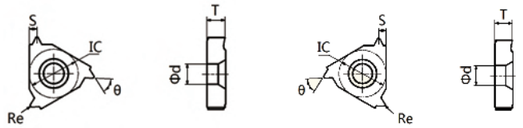
哈德斯通 HADSTO

60° ISO metric thread



● Good working condition ◕ Normal working condition ⌗ Bad working condition

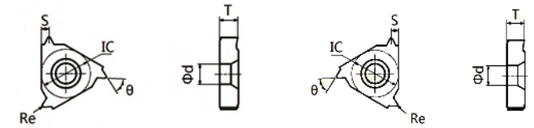
Shape	Description	Thread Pitch	Specification						Grade	
			IC	S	T	Re	ød	θ	HS5125	
	16ER100ISO	1	9.525	0.7	3.52	0.13	4	60°	◕	
	16ER125ISO	1.25	9.525	0.9	3.52	0.16	4	60°	◕	
	16ER150ISO	1.5	9.525	1	3.52	0.1	4	60°	◕	
	16ER175ISO	1.75	9.525	1.2	3.52	0.22	4	60°	◕	
	16ER200ISO	2	9.525	1.3	3.52	0.26	4	60°	◕	
	16ER250ISO	2.5	9.525	1.5	3.52	0.33	4	60°	◕	
	16ER300ISO	3	9.525	1.6	3.52	0.44	4	60°	◕	
	11IR100ISO	1	6.35	0.7	3.05	0.06	3.2	60°	◕	
	11IR125ISO	1.25	6.35	0.9	3.05	0.08	3.2	60°	◕	
	11IR150ISO	1.5	6.35	1	3.05	0.1	3.2	60°	◕	
	11IR250ISO	2.5	6.35	1.5	3.05	0.08	3.2	60°	◕	
	16IR100ISO	1	9.525	0.7	3.52	0.06	4	60°	◕	
	16IR125ISO	1.25	9.525	0.9	3.52	0.08	4	60°	◕	
	16IR150ISO	1.5	9.525	1	3.52	0.1	4	60°	◕	
	16IR175ISO	1.75	9.525	1.2	3.52	0.11	4	60°	◕	
	16IR200ISO	2	9.525	1.3	3.52	0.13	4	60°	◕	
	16IR250ISO	2.5	9.525	1.5	3.52	0.17	4	60°	◕	
	16IR300ISO	3	9.525	1.5	3.52	0.22	4	60°	◕	



55°Whitworth thread

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	Thread Pitch	Specification						Grade	
			IC	S	T	Re	ød	θ	HS5125	
	16ER11W	11	9.525	1.5	3.52	0.3	4	55°	◕	
	16ER14W	14	9.525	1.2	3.52	0.23	4	55°	◕	
	16ER19W	19	9.525	1	3.52	0.17	4	55°	◕	
	16IR11W	11	9.525	1.5	3.52	0.3	4	55°	◕	
	16IR12W	12	9.525	1.4	3.52	0.296	4	55°	◕	
	16IR14W	14	9.525	1.2	3.52	0.23	4	55°	◕	
	16IR19W	19	9.525	1	3.52	0.17	4	55°	◕	



British standard taper piper thread

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	Thread Pitch	Specification						Grade	
			IC	S	T	Re	ød	θ	HS5125	
	16ER11BSPT	11	9.525	1.5	3.52	0.32	4	55°	◕	
	16ER14BSPT	14	9.525	1.2	3.52	0.23	4	55°	◕	
	16ER19BSPT	19	9.525	0.9	3.52	0.19	4	55°	◕	
	16IR11BSPT	11	9.525	1.5	3.52	0.32	4	55°	◕	
	16IR14BSPT	14	9.525	1.2	3.52	0.23	4	55°	◕	
	16IR19BSPT	19	9.525	0.9	3.52	0.19	4	55°	◕	

General pitch thread

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	Thread Pitch	Specification						Grade	
			IC	S	T	Re	ød	θ	HS5125	
	16ERAG55	0.5-3.0	9.525	1.7	3.52	0.06	4	55°	◕	
	16ERA55	0.5-1.5	9.525	0.9	3.52	0.05	4	55°	◕	
	16ERG55	1.75-3.0	9.525	1.7	3.52	0.23	4	55°	◕	
	16ERAG60	0.5-3.0	9.525	1.7	3.52	0.07	4	60°	◕	
	16ERA60	0.5-1.5	9.525	0.9	3.52	0.06	4	60°	◕	
	16ERG60	1.75-3.0	9.525	1.7	3.52	0.18	4	60°	◕	
	16IRAG55	0.5-3.0	9.525	1.7	3.52	0.06	4	55°	◕	
	16IRA55	0.5-1.5	9.525	0.9	3.52	0.05	4	55°	◕	
	16IRG55	1.75-3.0	9.525	1.7	3.52	0.21	4	55°	◕	
	16IRAG60	0.5-3.0	9.525	1.7	3.52	0.076	4	60°	◕	
	16IRA60	0.5-1.5	9.525	0.9	3.52	0.05	4	60°	◕	
	16IRG60	1.75-3.0	9.525	1.7	3.52	0.1	4	60°	◕	

American standard taper piper thread

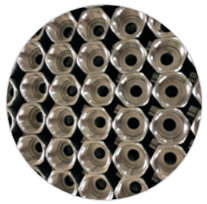
● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	Thread Pitch	Specification						Grade	
			IC	S	T	Re	ød	θ	HS5125	
	16ER14NPT	14	9.525	1.2	3.52	0.07	4	60°	◕	
	16ER115NPT	11.5	9.525	1.5	3.52	0.08	4	60°	◕	
	16ER18NPT	18	9.525	1	3.52	0.06	4	60°	◕	
	16IR14NPT	14	9.525	1.2	3.52	0.07	4	60°	◕	
	16IR115NPT	11.5	9.525	1.5	3.52	0.08	4	60°	◕	
	16IR18NPT	18	9.525	1	3.52	0.06	4	60°	◕	

Application Cases

Internal thread turning - Valve Stem

- **Workpiece** SUS304, Valve stem
- **Processing Methods** Internal thread turning, M20
- **Insert** 16IR14W HS5125
- **Cutting Parameters** Vc=75m/min, feed time = 12 times



Precision-shaped sharp edge with outstanding edge quality, provide excellent property and performance for small size thread machining.

Cutting Life	
HADSTO	460pcs/edge
Brand A	390pcs/edge

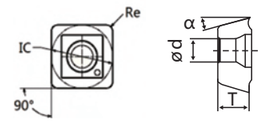
Internal thread turning - Valve Cover

- **Workpiece** SUS201,Valve cover
- **Processing Methods** Internal thread turning, M45
- **Insert** 16IR11W HS5125
- **Cutting Parameters** Vc=98.9m/min, feed time = 6 times

Precision-shaped sharp edge with high property threading material HS5125, provide strong cutting versatility.

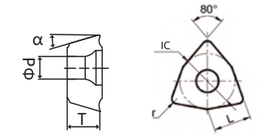
Cutting Life	
HADSTO	WS5125 Slight wear(70 pcs)
Brand A	Wear a lot(70pcs)

Drilling



● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	Specification					CVD Coating							PVD Coating							Cutting Parameters	
		IC	T	r	ød	α	HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	SPMG050204DG	11.5	4.3	0.8	4.5	16.5°											◕					0.04-0.15
	SPMG060204DG	9.8	4.3	0.8	4.05	17.5°											◕					0.04-0.16
	SPMG07T308DG	7.94	3.97	0.8	2.85	15.5°											◕					0.04-0.20
	SPMG090408DG	6	2.38	0.4	2.61	14°											◕					0.06-0.25
	SPMG110408DG	5	2.38	0.4	2.25	14°											◕					0.06-0.28



● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	Specification					CVD Coating							PVD Coating							Cutting Parameters	
		IC	T	r	ød	α	HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5131	HS5125	HS7125	HS7225	Ap (mm)	Fn (mm/r)
	WCMX030204	5.56	2.38	0.8	2.8	7											◕					0.04-0.15
	WCMX030208	5.56	2.38	0.8	2.8	7											◕					0.04-0.15
	WCMX040204	6.35	2.38	0.8	3	7											◕					0.04-0.16
	WCMX040208	6.35	2.38	0.8	3	7											◕					0.04-0.16
	WCMX050308	7.94	3.18	0.8	3.4	7											◕					0.04-0.20
	WCMX06T308	9.525	3.97	0.8	3.8	7											◕					0.06-0.25
	WCMX080412	12.7	4.76	1.2	4.4	7											◕					0.06-0.28

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Application Cases

Through-hole drilling - Coupling

- **Workpiece** Coupling material
- **Processing Methods** External cooling double head through-hole drilling
- **Insert** WCMX0080412 HS5131
- **Cutting Parameters** Vc=76.3m/min, f=0.133mm/r

HS5131, excellent abrasion resistance, provide very good chip evacuation in low speed and high feed machining. meantime, the low cutting temperature work condition together with our high toughness insert gives full play of our high-property coating.

Cutting Life	
HADSTO	60pcs/edge
Brand A	50pcs/ edge

End face drilling - Ring Flange

- **Workpiece** SUS304
- **Processing Methods** mate surface pin-hole drilling, D14.5, Depth 25
- **Insert** SPMG050204 HS5131
- **Cutting Parameters** Vc=159.4m/min, f=0.034mm/r, (≤Ra1.6)

SPMG series insert, high forming accuracy, sharp edge, easy and fast cutting, provide high surface quality.

Cutting Life	
HADSTO	240pcs/edge
Brand A	200pcs/edge

Drilling - Condenser Tubsheet

- **Workpiece** SUS304, Condenser tubsheet
- **Processing Methods** Inner hole drilling, D23.5
- **Insert** SPMG07T308 HS5131
- **Cutting Parameters** Vc=140m/min, fn=0.10mm/r

SPMG series insert, high forming accuracy, sharp edge, easy and fast cutting, provide good stability for thin wall workpiece machining.

Cutting Life	
HADSTO	3.0M/edge
Brand A	2.5~3.0M/edge

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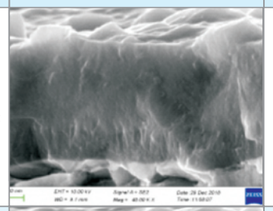
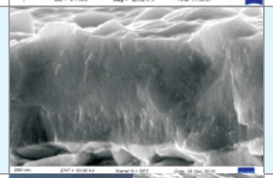
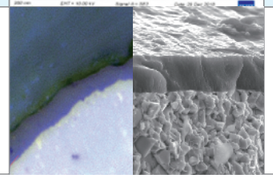
The Instruction Of Grade

Grade	Coating Composition					Characteristics	Application	ISO	Wear Resistance ⟷ Toughness									
	Coating Type	Coating Color	Pictures	Component	Range				01	05	10	15	20	25	30	35	40	45
HS5115	PVD	Purple Bronze		TiAlN+CrAlN +TiSiN	Thin	The evenly distributed sub-micro WC crystal grain provide a high hardness, and the reasonably adjusted alloy composition enhanced the solution of binder phase which ensured high toughness of the substrate; It has a multi-layer composite coating, the bottom layer TiAlN increased the binding force with substrate, the functional layer AlCrN with superior high temperature performance, while the surface layer TiSiN reduced friction coefficient to the work piece; The elastic modulus of the coating and substrate are well matched and firmly integrated.	Extremely suitable for the milling of hardened steel, excellent in performance, particularly for the machining of hardness range HRC45-HRC62.	P15-P30 M15-M30 K15-K30									
HS5120	PVD	Purple Bronze		TiAlN+CrAlN +TiSiN	Thin	Special designed substrate with better wear resistance and toughness, suitable for the milling process of high hardness materials, Match up with the latest diversified nano-coating, It can provide better high temperature hardness, excellent in the machining of high-hardness material. It's comprehensive performance can be in the leading level for hard-material milling application field.	It is suitable for the general milling of steel, stainless steel and cast iron materials, with outstanding performance, particularly for the machining of hardness range HRC35-HRC50.	P20-P30 M20-M30 K20-K30									
HS5130	PVD	Gray		AlTiN	Thin	Newly developed substrate dedicated for mould milling cutter, the ultra fine particle and special ratio improved the wear resistance and toughness of the substrate, greatly reduced the risk of edge collapse. Match up with the latest nano-coating, it's comprehensive performance can be top No.1 in segmented application field.	It is suitable for the general milling of steel, stainless steel and cast iron materials, with outstanding performance, particularly for the machining of hardness range HRC30-HRC50.	P20-P35 M20-M35 K20-K35									

(这里用Top No.1 是否合适？)

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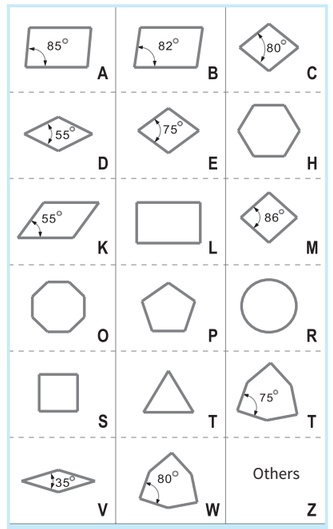
Insert Identification System



Insert Shape

Code	Hole	Chip-breaker	Section Plane ~~of insert~~	Code	Hole	Chip-breaker	Section Plane ~~of insert~~
B	With	Without	>65°	N	Without	Without	
H	With	Single-Side	>65°	R	Without	Single-Side	
C	With	Wihout	>65°	F	Without	Double-Side	
J	With	Double-side	>65°	A	With	Without	
W	With	Without	≤65°	M	With	Single-Side	
T	With	Single-Side	≤65°	G	With	Double-Side	
Q	With	Without	≤65°	X	_	---	Special
U	With	Double-side	≤65°				

Chip-breaker and Clamping system

Diameter of IC(mm)	C	D	R	S	T	V	W	K
32.00			32					
31.75			31					
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	16	27			
12.70	12	15	12		22	22	08	
12.00			12					
10.00			10					
9.525	09	11	09	19	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

Length of Cutting Edge

Code	Thickness(mm)
12	12.70
10	11.11
T9	9.72
09	9.52
07	7.94
T6	6.75
06	6.35
T5	5.95
05	5.56
T4	4.96
04	4.76
T3	3.97
03	3.18
T2	2.58
02	2.38
T1	1.98
01	1.59
T0	0.99
00	0.79

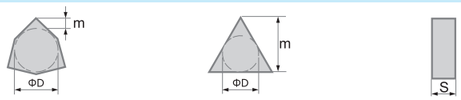
Insert Thickness

A P M T 16 05 PD E R - FM

Clearance angle of main cutting edge

Code	Clearance angle	Code	Clearance angle
A	3°	B	5°
C	7°	D	15°
E	20°	F	25°
G	30°	N	0°
P	11°	O	其他

Tolerance (mm)



Code	Nose height Tolerance(m)	Inscribed circle(ΦD)	Thickness Tolerance(s)
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

◆M-level tolerance(Idertifled by shape)

◆Tolerance of tool tip height (mm)

Inscribed circle	Regular triangle	Square	Rhombus with80°	Rhombus with 55°	Rhombus with 35°	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
12.7	±0.13	±0.13	±0.13	±0.15	---	---
15.875	±0.15	±0.15	±0.15	±0.18	---	---
19.05	±0.15	±0.15	±0.15	±0.18	---	---
25.4	---	±0.18	---	---	---	---

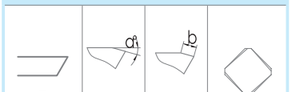
◆Inscribed circle(ΦD)Tolerance

Inscribed circle	Regular triangle	Square	Rhombus with80°	Rhombus with 55°	Rhombus with 35°	Round
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

Wiper

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

Chamfer



F	0-5°	0-0.10	K(or no mark)
E	1-10°	1-0.15	P
	2-15°	2-0.20	
T	3-20°	3-0.25	W
	4-25°	4-0.30	
S	5-30°	5-0.35	Q
	1-10°	6-0.40	
	1-10°	7-0.45	

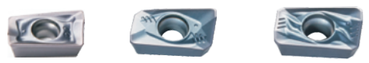
Chip-breaker Code

Cutting Direction

Code	Direction
R	Right
L	Left
N	Double side

Overview

- Square shoulder milling



APKT*-FM APMT*-FM APMT11**FM

- Profile milling

RPMT*-FM RDMW*-FM

- Face milling

SEMT*-FM SEMR*

- High-feed milling

SDMW* SDMT*-FM WDMT*-GM WPMT*

- End face milling

SPKN*

- Doulbe-side chip-breaker milling

LNGX*-M SNMX*-M HNMX*-M XNGX*-R

Square shoulder milling

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L1	L2	Re	φd	S	CVD Coating: HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	PVD Coating: HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Cutting Parameters: Ap (mm)	Fn (mm/r)
	APKT113604PEER-FM	11.30	6.25	0.40	2.80	3.60								●	◕						0.1~3.0	0.10-0.50
	APKT1136PEER-FM	11.30	6.25	0.80	2.80	3.60								●	◕						0.1~3.0	0.10-0.80
	APKT113612PEER-FM	11.30	6.25	1.20	2.80	3.60								●	◕						0.1~3.0	0.10-1.00
	APKT113620PEER-FM	11.30	6.25	0.60	2.80	3.60								●	◕						0.1~3.0	0.10-1.20
	APKT1605PDER-FM	17.42	9.33	0.80	4.50	5.20								●	◕						0.1~5.0	0.10-1.00
	APKT160512PDER-FM	17.42	9.33	1.20	4.50	5.20								●	◕						0.1~5.0	0.10-1.10
	APKT160520PDER-FM	17.42	9.33	2.00	4.50	5.20								●	◕						0.1~5.0	0.10-1.20
	APMT1135PDER-FM	11.30	6.25	0.80	2.80	**3.50**								●	◕						0.1~3.0	0.10-0.80
	APMT1605PDER-FM	17.25	9.22	0.80	4.40	**4.76**								●	◕						0.1~5.0	0.10-1.00
	APMT1604PDER-FM	17.42	9.33	0.80	4.50	**5.22**								●	◕						0.1~5.0	0.10-1.00

Profile milling

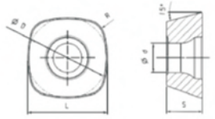
● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	Specification: D1	D2	T	CVD Coating: HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	PVD Coating: HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Cutting Parameters: Ap (mm)	Fn (mm/r)
	RPMT1003MO-FM	10.00	4.50	3.18								◕	◕						0.10~0.5	0.20-0.8
	RPMW1003MO-FM	10.00	4.50	3.18								◕	◕						0.10~0.5	0.20-0.8
	RPMT08T2MO-FM	8.00	3.50	2.78								◕	◕						0.10~0.5	0.15-0.6
	RPMT10T3MO-FM	10.00	4.50	3.97								◕	◕						0.10~1.0	0.15-0.7
	RPMT1204MO-FM	12.00	5.50	4.76								◕	◕						0.20~2.0	0.30-0.8
	RDMW10T3MO-FM	10.00	4.50	3.97								◕	◕						0.10~0.5	0.20-1.0
	RDMW1204MO-FM	12.00	5.50	4.76								◕	◕						0.20~1.0	0.30-1.0
	RDMW1605MO-FM	16.00	5.50	5.56								◕	◕						0.50~2.0	0.30-1.2

Face milling

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L	ϕD	S	ϕd	CVD Coating							PVD Coating							Cutting Parameters	
						HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Ap (mm)	Fn (mm/r)
	SEMT13T3AGTN-FM	13.40	13.40	3.97	4.10									◕	◕					0.10~3.0	0.10-0.30
	SEMT1204AFTN-FM	12.70	12.70	4.76	5.50									◕	◕					0.10~3.0	0.10-0.30
	SEMR1203AFTN	12.70	12.70	3.18										◕	◕					0.10~3.0	0.10-0.30



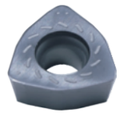
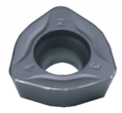
High-feed milling

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	Specification L	S	ϕd	R	CVD Coating							PVD Coating							Cutting Parameters	
						HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Ap (mm)	Fn (mm/r)
	SDMW1205ZTN	12.70	5.56	4.60	3.00									◕	◕					0.50~1.5	0.50-2.5
	SDMW1505ZTN	15.875	5.56	5.50	3.00									◕	◕					0.75~2.0	0.50-3.5
	SDMT1205ZTN-FM	12.70	5.56	4.60	3.00									◕	◕					0.50~1.5	0.50-2.5
	SDMT1505ZTN-FM	15.875	5.56	5.5	3.00									◕	◕					0.75~2.0	0.50-3.5

High-feed milling

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	ϕD	s	ϕd	r	CVD Coating							PVD Coating							Cutting Parameters	
						HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Ap (mm)	Fn (mm/r)
	WDMT080520ZTR-GM	13	5.5	5	2									◕	◕					0.50~2.0	0.50-3.0
	WDMW080520ZTR	13	5.5	5	2									◕	◕					0.50~2.0	0.50-3.0
	WPMT080615ZSR	12.85	6.35	5.5	1.5									◕	◕					0.50~2.0	0.50-3.0

End face milling

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	L1	L2	s	a	b	CVD Coating							PVD Coating							Cutting Parameters	
							HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Ap (mm)	Fn (mm/r)
	SPKN1504EDTL	15.875	15.875	4.76	1	1.4									◕	◕					0.10~10.0	0.05-0.30
	SPKN1504EDTR	15.875	15.875	4.76	1	1.4									◕	◕					0.10~10.0	0.05-0.30

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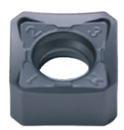
Double-side chip-breaker milling

● Good working condition ◕ Normal working condition ⌗ Bad working condition

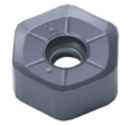
Shape	Description	L1	L2	Re	ϕd	T	HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Ap (mm)	Fn (mm/r)
	LNGX120508ER-M	11.10	9.50	0.80	4.50	5.78									◕	◕					~9	0.05~0.25

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	IC	Re	ϕd	T	HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Ap (mm)	Fn (mm/r)
	SNMX1205ANN-M	12.70	0.80	6.00	5.51									◕	◕					~6	0.05~0.35

Doulbe-side chip-breaker milling

● Good working condition ◕ Normal working condition ⌗ Bad working condition

Shape	Description	IC	Re	ϕd	T	HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Ap (mm)	Fn (mm/r)
	HNMX0906ANSN-M	16.50	1.20	4.90	6.34									◕	◕					~5	0.05~0.35

● Good working condition ◕ Normal working condition ⌗ Bad working condition

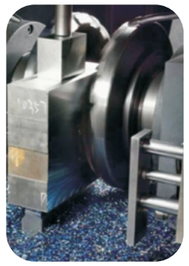
Shape	Description	IC	Re	ϕd	T	HS8115	HS8125	HS8123	HS8133	HS6115	HS6120	HS7120	HS5115	HS5120	HS5130	HS5125	HS7125	HS7225	HS5131	Ap (mm)	Fn (mm/r)
	XNGX0705ANN-R	14.5	0.80	4.00	5.02									◕	◕					~4	0.08~0.35

哈德斯通 HADSTO

Application Cases

Face milling - Die Blank

- **Workpiece** NAK80 (HRC35), Die blank
- **Processing Methods** Dry-type face milling
- **Insert** SEMR1203AFTN/HS5120
- **Cutting Parameters** Vc=118m/min, N=150r/min, F=200mm/r, Ap=1mm



HS5120 with our new developed chip-breaker, provide easy and fast cutting, smooth chip evacuation, stable and reliable life time, even for high hardness / strength material machining.

Cutting Life	
HADSTO	10pcs/edge
Brand A	7 pcs/edge

Face milling - Die Blank

- **Workpiece** 718H, Die blank
- **Processing Methods** Face milling, Dry-type cutting
- **Insert** SEMR1203AFTN/HS5120
- **Cutting Parameters** N=240r/min, F=100mm/r, Ap=1.5mm

HS5120 with our new developed chip-breaker, provide easy and fast cutting, smooth chip evacuation and high surface quality for the machining of pre-hardened mold, enjoys an obvious life time advantage.

Cutting Life	
HADSTO	30 pcs/edge
Brand A	20 pcs/edge

Cavity rough milling - Bulb Mold

- **Workpiece** 718H（HRC 38-42）, Bulb mold
- **Processing Methods** Dry-type cavity rough milling, D17-Z2-L65, BT40
- **Insert** APMT1135PDER-FM HS5130
- **Cutting Parameters** Vc=160m/min, fz=0.8mm/z, ap=0.25mm, ae=10mm

Supper strong AlTiN coating, high hardness, strong bonding force. provide perfect performance for short time machining of pre-hardened steel.

Cutting Life	
HADSTO	91 min/edge, normal worn
Brand A	80 min/edge, normal worn

Rough milling - Prehardened Steel 738H

- **Workpiece** 738H (HRC30~5), Prehardened steel
- **Processing Methods** Dry-type rough milling, 35-Z3-L80, BT40
- **Insert** RPMT1003MO-FM HS5130
- **Cutting Parameters** Vc=165m/min, fz=0.67mm/z, ap=0.3mm, ae=22mm

Supper strong AlTiN coating, high hardness, strong bonding force. provide perfect performance for short time machining of pre-hardened steel.

Cutting Life	
HADSTO	164min/edge, normal worn
Brand A	95min/edge, normal worn

Application Cases

Rough milling - Mirror Polishing Mold steel

- **Workpiece** NAK80 (HRC37~43), Mirror polishing mold steel
- **Processing Methods** Dry-type rough milling,D6-Z2-L60,BT40
- **Insert** APMT1135PDER-FM HS5130
- **Cutting Parameters** Vc=125m/min, fz=0.4mm/z, ap=0.25mm, ae=20mm

Supper strong AlTiN coating, high hardness, strong bonding force. provide perfect performance for short time machining of pre-hardened steel.

Cutting Life	
HADSTO	46min/edge, normal wear
Brand A	38min/edge, normal wear

Rough milling - S136 Mold Steel

- **Workpiece** S136 corrosion-resistant mold steel
- **Processing Methods** Dry-type rough milling, D17-Z2-L70~105,BT40
- **Insert** APMT1135PDER-FM HS5130
- **Cutting Parameters** Vc=160m/min，fz=0.6mm/z，ap=0.

Comparative low cutting temperature, HS5130, provide strong wear resistance and anti-sticking property when cutting temperature is not high, it can still smoothly cut even with a worn out coating.

Cutting Life	
HADSTO	287min/edge, normal wear
Brand A	223min/edge, normal wear

Rough milling - Die Casting Mold

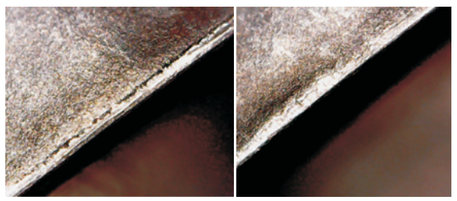
- **Workpiece** H13 hardened steel, Die casting mold
- **Processing Methods** Dry-type rough milling (life time calculate flat surface only)， D21-Z2-L60，BT40
- **Insert** APMT1135PDER-FM HS5130
- **Cutting Parameters** Vc=148m/min, fz=0.44mm/z, ap=0.2mm, ae=13mm

Supper strong AlTiN coating, high hardness, strong bonding force. provide obvious advantage compare same level dry hardened material from other competitors. However, for long time and high cutting temperature application, the substrate may cause plastic deformation and result in burns.

Cutting Life	
HADSTO	17min/edge, wear and flaking
Brand A	11min/edge, Severe wear

Rough milling holes - Stamping Die

- **Workpiece** CR12, Stamping die
- **Processing Methods** Dry-type rough milling,D30-Z2-L75,BT40
- **Insert** RPMT1003MO-FM HS5130
- **Cutting Parameters** Vc=170m/min，fz=0.89mm/z，ap=0.3mm



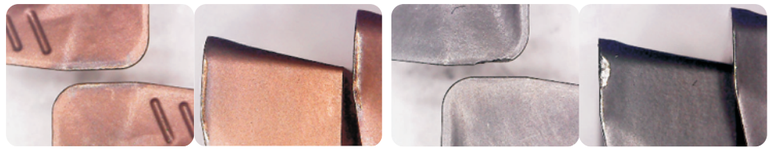
Cutting Life	
HADSTO	58min/edge, slight wear
Brand A	58min/edge, Obvious wear in coating

Application Cases

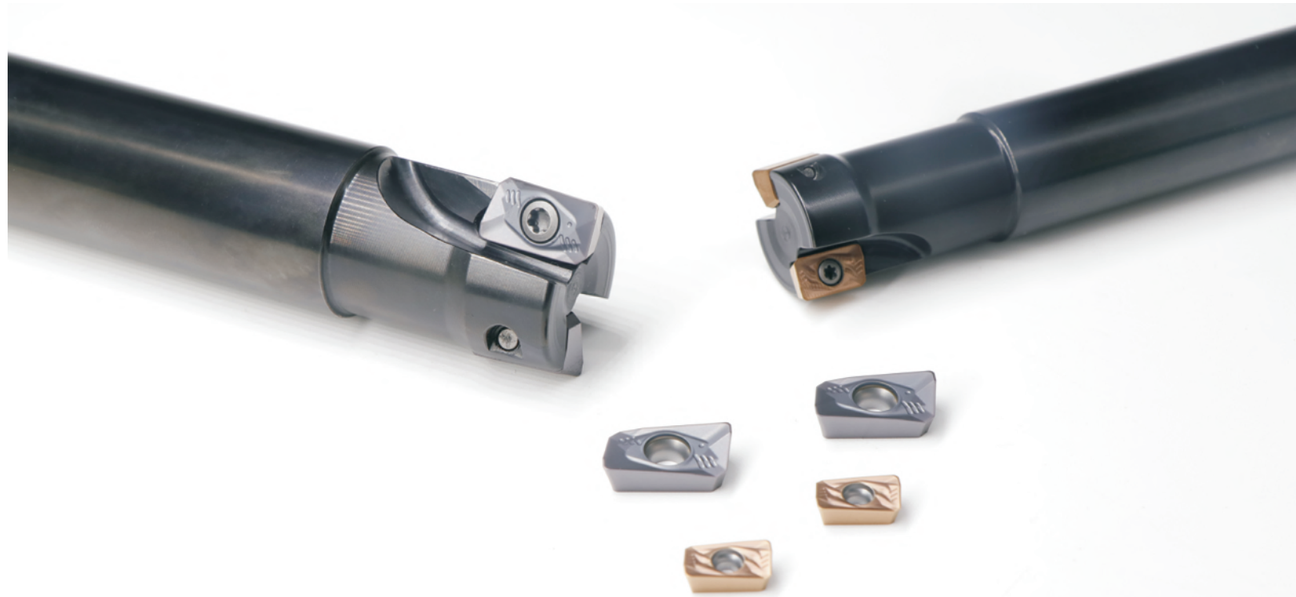
Hardened steel milling - Punch Die

- **Workpiece** 440C(9Cr18MoVS) hardened steel (HRC56), Cold work die / Punch die
- **Processing Methods** Dry-type interrupted rough milling end faces (W/hole), D21-Z2-L70, BT40
- **Insert** APMT1135PDER-FM HS5115
- **Cutting Parameters** Vc=132m/min, fz=0.7mm/z, ap=0.1mm, ae=5mm
- **Cutting performance** Wear comparison after 13 min: HS5115 still have coating and shows grinding trace only

HS5115 provide high surface quality, uniform wear, stable and reliable life time for hardened steel machining.



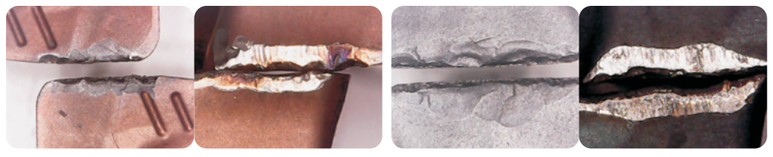
HS5115 Overseas Competitor A



Hardened steel milling - Punch Die

- **Workpiece** 440C(9Cr18MoVS) hardened steel (HRC56), Cold work die
- **Processing Methods** Dry-type medium speed rough milling interrupted faces (W/hole), D21-Z2-L70, BT40
- **Insert** APMT1135PDER-FM HS5115
- **Cutting Parameters** Vc=132m/min, fz=0.7mm/z, ap=0.1mm, ae=5mm
- **Cutting performance** Blade crack after 29 min, Brand A cracks on 22 min

HS5115 provide comparativly longer life time compare other brand with good reputation in the market



HS5115 Overseas Competitor A

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Hadsto Efficient Cutting tools

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