



CUTTING TOOLS

# G-PAK

# 17.1

新产品  
New Products

# 切削刀具

切削刀具  
CUTTING TOOLS



厦门金鹭特种合金有限公司  
Xiamen Golden Egret Special Alloy Co.,Ltd.

## 公司简介

厦门金鹭特种合金有限公司，是一家中外合资的国家级高新技术企业，是国有上市公司厦门钨业股份有限公司（股票代码：SH600549）的骨干成员。成立于1989年，主要从事钨粉、碳化钨粉、硬质合金、切削刀具等钨系列产品的生产；是中国最大的钨粉、碳化钨粉供应商和出口商；是高品质合金及其精密切削工具的制造商。

公司拥有一支自强不息的、高素质员工团队，拥有国际一流的工艺技术、生产设备和检测仪器；其生产的“金鹭”牌系列产品以优良的品质和完善的服务，享誉国内外；客户遍布全球四十多个工业发达国家和地区。

公司建立了国家级技术中心，独立承担并完成了多项“国家科技支撑计划”项目、“国家科技重大专项”项目、“国家科技攻关计划”项目、“国家火炬计划”项目、“国家重点新产品”开发项目及省市重点研究课题，被评为“国家重点高新技术企业”、“先进技术企业”、“出口型企业”。

公司坚持以诚信为本的理念，致力于不断创新、发展成为“设备一流”、“技术一流”、“管理一流”、“质量一流”、“服务一流”的现代化企业。

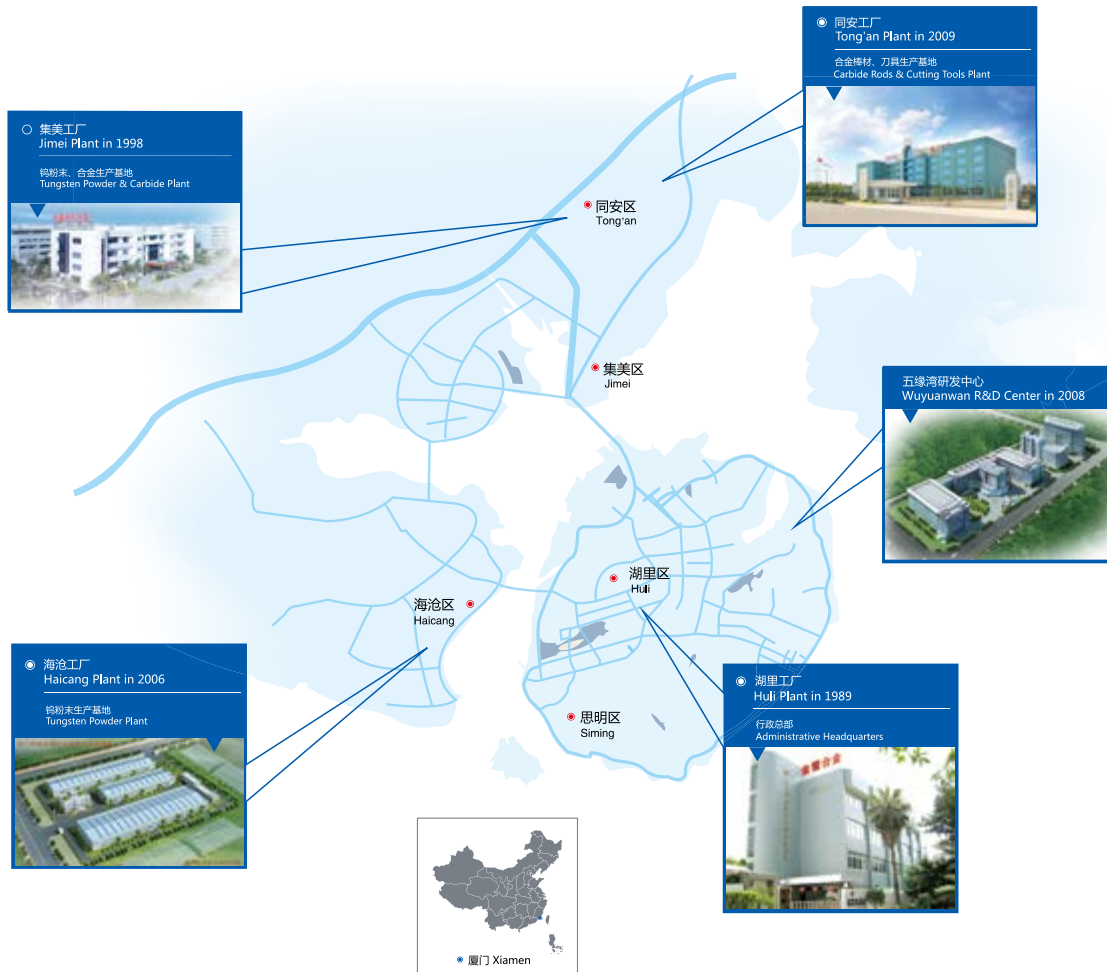
## ABOUT GESAC

Xiamen Golden Egret Special Alloy Co., Ltd. (GESAC) is a Sino-foreign joint venture company established in 1989. It is designated by the State as a high-tech enterprise. GESAC is the largest subsidiary of the Shanghai Stock Exchange listed company: Xiamen Tunsten Co., LTD. (Stock code: SH600549). Its main products are tungsten metal powder, tungsten carbide powder, cemented carbide, cutting tools and other tungsten related products. GESAC is the largest producer and exporter of tungsten metal powder and tungsten carbide powder in China and also enjoys good reputation in manufacturing high quality cemented carbide and precision cutting tools.

GESAC has a team of talented staff constantly striving to be stronger. GESAC is equipped with the world's most advanced technologies, manufacturing equipment and testing facilities. The "Golden Egret" brand products are renowned for high quality and excellent service. Our clients are spread across more than forty developed countries and regions all over the world.

GESAC owns a national level R&D center, and has undertaken and finished many national and provincial research projects independently, such as National Science and Technology Support Plan project, National major special science and technology project, National Key Technologies R&D Program, National Torch Program, National Important New Products project etc. GESAC has received numerous awards such as "National Standard High-tech Enterprise", "Enterprise with Advanced Technology" and "Export-oriented Enterprise" from the state government.

GESAC adheres to the philosophy of "sincerity and dependability are our essence" and strives to develop into a modern enterprise with "first class equipment, first class technology, first class management, first class quality and first class service".



● 金鹭工厂分布 | GESAC Facilities

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# 不锈钢负型车削新品

## New Negative Turning Tools for Stainless Steel

广泛应用于阀门、管件、法兰、卫浴及通用机械行业 •  
Widely used in valve, pipe fitting, flange, bathroom and general machinery industry.

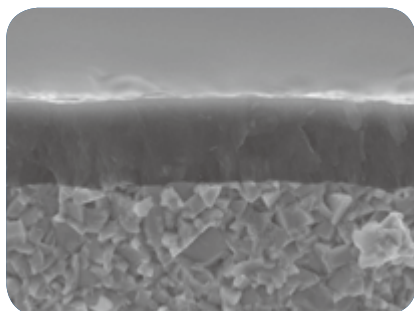
特殊的半精-粗加工槽型设计, 切削锋利性与强度的双向保证, 断屑效果优异 •  
Special chip-breaker design for semi-finishing to roughing, guarantee for both edge sharpness and intensity, and with wide applicable range.

包括LM、LR槽型系列, 搭配全新升级的不锈钢车削 •  
GM3225、GM3215、GM1115牌号, 可涵盖不锈钢车削常用工况  
Including LM series and LR series, with new grades for stainless steel such as GM3225、  
GM3215、GM1115, cover most working conditions of stainless steel turning.



## 不锈钢车削牌号应用一览表

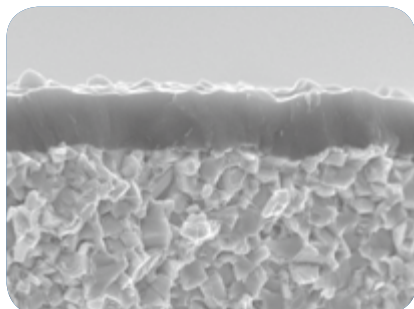
### Application Summary of Grades for Stainless Steel



**NEW**

高通用性不锈钢车削PVD牌号 GM3225  
PVD Grade for Stainless Steel Turning with High versatility : GM3225

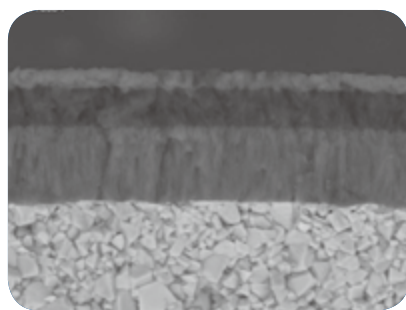
- 全新纳米结构TiAlN涂层与高Co含量的亚微细晶硬质合金基体相结合，具有优异的抗积屑瘤特性和抗崩刃性。  
Optimized combination of TiAlN coating and micro-grain carbide substrate with high Co content provide superior adhesion resistance and toughness.
- 适合于不锈钢车削半精到粗加工。  
Suitable for semi-finishing to roughing of stainless steel with medium or low speed.



**NEW**

高耐磨性不锈钢车削PVD牌号 GM3215  
PVD Grade for Stainless Steel Turning with High abrasive wear resistance : GM3215

- 全新PVD TiAlN涂层与亚微细晶基体相结合，具有优异的膜基结合力、耐磨性和耐热性。  
New TiAlN coating on submicron substrate with strong adhesion, superior wear resistance and good heat resistance.
- 适合于稳定工况下不锈钢、难加工材料中等速度加工。  
Suitable for ISO M & S in stable condition with medium speed.



**NEW**

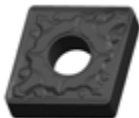













高耐磨性不锈钢车削CVD牌号 GM1115  
CVD Grade for Stainless Steel Turning with High abrasive wear resistance : GM1115

- 全新薄Al<sub>2</sub>O<sub>3</sub>和纳米柱状结构的MT-TiCN涂层，与高韧性的梯度硬质合金基体相结合，耐磨性优异，特殊表面处理技术有效降低切削阻力并抑制积屑瘤的产生，延长刀具寿命。  
Brand New Thinner Al<sub>2</sub>O<sub>3</sub> and Nano MT-TiCN coating, on good toughness gradient carbide substrate, with good wear resistance, superior adhesion resistance and longer tool life.
- 适合于稳定工况下不锈钢高速连续加工。  
Suitable for ISO M in stable condition with high speed.

## 不锈钢车削新品一览表

Overview of Negative Turning Inserts for Stainless steel

槽型 Geometry	特点 Features	加工范围 Application Range	槽型截面 Cross Section Geometry
LM	<ul style="list-style-type: none"> <li>• 不锈钢、高温合金半精加工用</li> <li>• 变前角+变刃宽，锋利性与强度的双向保证</li> <li>• 心形断屑台，断屑效果好</li> <li>• For semi-finishing of stainless steel and HRSA</li> <li>• Variable rake angle &amp; variable edge width design, guarantee for both edge sharpness and intensity</li> <li>• Heart-shaped chip breaker, with wide applicable range</li> </ul>		
LR	<ul style="list-style-type: none"> <li>• 不锈钢粗加工用</li> <li>• 小前角+大刃宽，刀尖强度高</li> <li>• 大槽宽+浅槽深，排屑顺畅</li> <li>• For roughing of stainless steel</li> <li>• Small rake angle &amp; large edge width design, improved the strength of the tip</li> <li>• Wide groove width &amp; shallow groove depth design, smooth chip evacuation</li> </ul>		
LF	<ul style="list-style-type: none"> <li>• 不锈钢精到半精加工用</li> <li>• 小刃宽+大前角，提高刀尖强度</li> <li>• 曲线刃设计，切削流向控制稳定</li> <li>• For finishing to semi-finishing of stainless steel</li> <li>• Small cutting edge width &amp; large rake angle design, improved the strength of the tip</li> <li>• Curved cutting edge design, good chip control</li> </ul>		
LV	<ul style="list-style-type: none"> <li>• 不锈钢半精到粗加工用</li> <li>• 无刃宽+开口式槽，刀刃锋利，切削阻力低</li> <li>• 大容屑槽，适合于余量较大的工况</li> <li>• For semi-finishing to roughing of stainless steel</li> <li>• Zero edge width &amp; throughout groove design, shape cutting edge, low cutting forces</li> <li>• Large chip groove design, smooth chip evacuation in large cutting depth</li> </ul>		

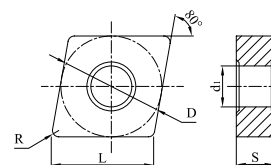
	80°菱形 80° Rhombic	55°菱形 55° Rhombic	90°正方形 90° Square	60°正三角形 60° Triangle	35°菱形 35° Rhombic	80°六边形 80° Trigon
						
	CNMG-LM	DNMG-LM	SNMG-LM	TNMG-LM	VNMG-LM	WNMG-LM
						
	CNMG-LR	DNMG-LR	SNMG-LR	TNMG-LR		WNMG-LR
						
				TNMG-LF		WNMG-LF
						
				TNMG <sup>R/L</sup> -LV		


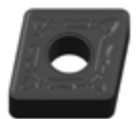
## 车削刀片(负型) / Turning Inserts (Negative)

**CN□□**

菱形80°有孔

Rhombic80°,with Hole



订货号 Ordering Code		尺寸 Dimension(mm)					涂层硬质合金 Coated				
		L	D	S	d1	R	GM1115	GM1125	GM3215	GM3225	GS3125
	CNMG090304-LM	9.7	9.525	3.18	3.81	0.4	○	○	○	○	○
	CNMG090308-LM	9.7	9.525	3.18	3.81	0.8	○	○	○	○	○
	CNMG120404-LM	12.9	12.7	4.76	5.16	0.4	○	●	●	●	○
	CNMG120408-LM	12.9	12.7	4.76	5.16	0.8	○	●	●	●	○
	CNMG120412-LM	12.9	12.7	4.76	5.16	1.2	○	○	●	●	○
	CNMG120416-LM	12.9	12.7	4.76	5.16	1.6	○	○	○	○	○
	CNMG120408-LR	12.9	12.7	4.76	5.16	0.8	○	●	●	●	
	CNMG120412-LR	12.9	12.7	4.76	5.16	1.2	○	○	●	●	
	CNMG160608-LR	16.1	15.875	6.35	6.35	0.8	○	○	●	●	
	CNMG160612-LR	16.1	15.875	6.35	6.35	1.2	○	○	●	●	
	CNMG160616-LR	16.1	15.875	6.35	6.35	1.6	○	○	○	○	
	CNMG190608-LR	19.3	19.05	6.35	7.94	0.8	○	○	○	○	
	CNMG190612-LR	19.3	19.05	6.35	7.94	1.2	○	○	●	●	
	CNMG190616-LR	19.3	19.05	6.35	7.94	1.6	○	○	●	●	

● 标准库存 Stock ○ 需预定 Available upon order

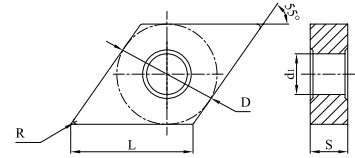




## 车削刀片(负型) / Turning Inserts (Negative)

**DN**□□

菱形55°有孔

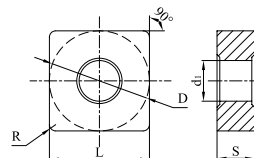
Rhombic 55°, with Hole





订货号 Ordering Code	尺寸 Dimension(mm)					涂层硬质合金 Coated					
	L	D	S	d1	R	GM1115	GM1125	GM3215	GM3225	GS3125	
	DNMG110404-LM	11.6	9.525	4.76	3.81	0.4	○	○	●	●	○
	DNMG110408-LM	11.6	9.525	4.76	3.81	0.8	○	○	●	●	○
	DNMG150404-LM	15.5	12.7	4.76	5.16	0.4	○	○	●	●	○
	DNMG150408-LM	15.5	12.7	4.76	5.16	0.8	○	○	●	●	○
	DNMG150412-LM	15.5	12.7	4.76	5.16	1.2	○	○	●	●	○
	DNMG150604-LM	15.5	12.7	6.35	5.16	0.4	○	○	●	●	○
	DNMG150608-LM	15.5	12.7	6.35	5.16	0.8	○	○	●	●	○
	DNMG150612-LM	15.5	12.7	6.35	5.16	1.2	○	○	●	●	○
	DNMG150408-LR	15.5	12.7	4.76	5.16	0.8	○	○	●	●	
	DNMG150412-LR	15.5	12.7	4.76	5.16	1.2	○	○	●	●	
	DNMG150608-LR	15.5	12.7	6.35	5.16	0.8	○	○	●	●	
	DNMG150612-LR	15.5	12.7	6.35	5.16	1.2	○	○	●	●	

● 标准库存 Stock ○ 需预定 Available upon order

## 车削刀片(负型) / Turning Inserts (Negative)

**SN□□**正方形90° 有孔  
Square 90°,with Hole

订货号 Ordering Code		尺寸 Dimension(mm)					涂层硬质合金 Coated				
		L	D	S	d1	R	GM1115	GM1125	GM3215	GM3225	GS3125
	SNMG120404-LM	12.7	12.7	4.76	5.16	0.4	○	●	●	●	○
	SNMG120408-LM	12.7	12.7	4.76	5.16	0.8	○	●	●	●	○
	SNMG120412-LM	12.7	12.7	4.76	5.16	1.2	○	○	●	●	○
	SNMG120416-LM	12.7	12.7	4.76	5.16	1.6	○	○	○	○	○
	SNMG120408-LR	12.7	12.7	4.76	5.16	0.8	○	○	●	●	
	SNMG120412-LR	12.7	12.7	4.76	5.16	1.2	○	○	●	●	
	SNMG150608-LR	15.875	15.875	6.35	6.35	0.8	○	○	●	●	
	SNMG150612-LR	15.875	15.875	6.35	6.35	1.2	○	○	●	●	
	SNMG150616-LR	15.875	15.875	6.35	6.35	1.6	○	○	●	●	
	SNMG190608-LR	19.05	19.05	6.35	7.94	0.8	○	○	○	○	
	SNMG190612-LR	19.05	19.05	6.35	7.94	1.2	○	○	●	●	
	SNMG190616-LR	19.05	19.05	6.35	7.94	1.6	○	○	●	●	

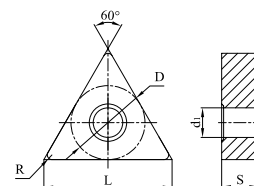
● 标准库存 Stock ○ 需预定 Available upon order

## 车削刀片(负型) / Turning Inserts (Negative)

**TN□□**

三角形60° 有孔

Triangle 60°,with Hole



订货号 Ordering Code		尺寸 Dimension(mm)					涂层硬质合金 Coated				
		L	D	S	d1	R	GM1115	GM1125	GM3215	GM3225	GS3125
	TNMG160404-LM	16.5	9.525	4.76	3.81	0.4	○	●	●	●	○
	TNMG160408-LM	16.5	9.525	4.76	3.81	0.8	○	●	●	●	○
	TNMG160412-LM	16.5	9.525	4.76	3.81	1.2	○	○	●	●	○
	TNMG160408-LR	16.5	9.525	4.76	3.81	0.8	○	●	●	●	
	TNMG160412-LR	16.5	9.525	4.76	3.81	1.2	○	○	●	●	
	TNMG220408-LR	22	12.7	4.76	5.16	0.8	○	○	○	○	
	TNMG220412-LR	22	12.7	4.76	5.16	1.2	○	○	○	○	
	TNMG220416-LR	22	12.7	4.76	5.16	1.6	○	○	○	○	
	TNMG160404-LF	16.5	9.525	4.76	3.81	0.4			●	●	
	TNMG160408-LF	16.5	9.525	4.76	3.81	0.8			●	●	
	TNMG160404R-LV	16.5	9.525	4.76	3.81	0.4			○	●	
	TNMG160404L-LV	16.5	9.525	4.76	3.81	0.4			○	●	
	TNMG160408R-LV	16.5	9.525	4.76	3.81	0.8			○	●	
	TNMG160408L-LV	16.5	9.525	4.76	3.81	0.8			○	●	

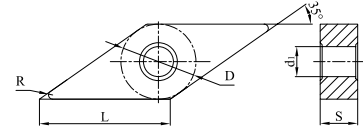
● 标准库存 Stock ○ 需预定 Available upon order

## 车削刀片(负型) / Turning Inserts (Negative)

**VN□□**

菱形35° 有孔

Rhombic35°,with Hole



订货号 Ordering Code		尺寸 Dimension(mm)					涂层硬质合金 Coated				
		L	D	S	d1	R	GM1115	GM1125	GM3215	GM3225	GS3125
	VNMG160404-LM	12.7	12.7	4.76	5.16	0.4	○	○	●	●	○
	VNMG160408-LM	12.7	12.7	4.76	5.16	0.8	○	○	●	●	○

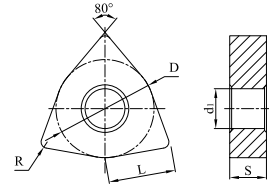
● 标准库存 Stock ○ 需预定 Available upon order




## 车削刀片(负型) / Turning Inserts (Negative)

**WN□□**

六边形80°有孔

Hexagon 80°, with Hole



订货号 Ordering Code	尺寸 Dimension(mm)					涂层硬质合金 Coated					
	L	D	S	d1	R	GM1115	GM1125	GM3215	GM3225	GS3125	
	WNMG06T304-LM	6.5	9.525	3.97	3.81	0.4	○	○	●	●	○
	WNMG06T308-LM	6.5	9.525	3.97	3.81	0.8	○	○	●	●	○
	WNMG06T312-LM	6.5	9.525	3.97	3.81	1.2	○	○	●	●	○
	WNMG060404-LM	6.5	9.525	4.76	3.81	0.4	○	○	●	●	○
	WNMG060408-LM	6.5	9.525	4.76	3.81	0.8	○	●	●	●	○
	WNMG060412-LM	6.5	9.525	4.76	3.81	1.2	○	○	●	●	○
	WNMG080404-LM	8.7	12.7	4.76	5.16	0.4	○	●	●	●	○
	WNMG080408-LM	8.7	12.7	4.76	5.16	0.8	○	●	●	●	○
	WNMG080412-LM	8.7	12.7	4.76	5.16	1.2	○	○	●	●	○
	WNMG080408-LR	8.7	12.7	4.76	5.16	0.8	○	●	●	●	
	WNMG080412-LR	8.7	12.7	4.76	5.16	1.2	○	○	●	●	
	WNMG080404-LF	8.7	12.7	4.76	5.16	0.4			●	●	
	WNMG080408-LF	8.7	12.7	4.76	5.16	0.8			●	●	

● 标准库存 Stock ○ 需预定 Available upon order

## 主流厂家不锈钢车削产品对照表

Comparison of Stainless Steel Turning Products from Mainstream Manufacture

### 槽型匹配

Geometry Matching

应用 Application			金鹭 GESAC	山特 维克 SANDVIK	伊斯卡 ISCAR	肯纳金属 KENNAMETAL	瓦尔特 WALTER	三菱 MITSUBISHI	特固克 TAEGU Tec	住友电气 SUMITOMO	泰珂洛 TUNGALOY	京瓷 KYOCERA	克洛伊 KORLOY	株硬 刀具 ZCC.CT
M	负型 Negative	精加工 Finishing	SF LF	MF	SF F3P	FP	NF4	LM	EA	SU EF	SF	MQ GU	HA VP2	EF
		半精 Semi- finishing	SM LM LV	23 MM	TF PP M3M	MS MP	NM4	MM MS MA	EM MP	EX GU	SM	MS MU HU	GS HS	EM
		粗加工 Roughing	LR	MR	R3M	RP	NR4	RM	ET	HM MU	SH TH	TK ST	VM	ER
	正型 Positive	精加工 Finishing	MM	KF	PF	LF	PM	FM LM	FG	SU	PSF	CF GF GQ	HFP VP1	EF
		半精-粗 Semi- finishing to Roughing	GP	KM	SM	MF	PM5	MM MV	SA	MU	PS PM	MQ	HMP C25	EM

### 牌号匹配

Grades Matching

应用 Application			金鹭 GESAC	山特 维克 SANDVIK	伊斯卡 ISCAR	肯纳金属 KENNAMETAL	瓦尔特 WALTER	三菱 MITSUBISHI	特固克 TAEGU Tec	住友电气 SUMITOMO	泰珂洛 TUNGALOY	京瓷 KYOCERA	克洛伊 KORLOY	株硬 刀具 ZCC.CT
M	PVD	M10	GM3215	GC1105 GC1115	IC807 IC907	KC5010 KCU10	WSM10 WSM10S	VP10RT	TT5080	AC510U	AH630 AH710	PR915 PR930	PC8110	YBG202
		M20	GM3225	GC1025 GC1125	IC808 IC908	KC5025 KCU25	WSM20 WSM20S	VP15TF VP20MF	TT9080 TT9020 TT8080	AC530U AC6040M	AH120 AH725	PR1125 PR1225	PC5300 PC9030	YBG205 YB9320
	CVD	M10	GM1115	GC2015	IC6015 IC8250 IC9250	KCM15B	WAM10	MC7015 US7020	TT9215	AC610M	T6020	CA6515	NC9020	YBM153 YBM153F
		M20	GM1125	GC2025	IC6025 IC8350 IC9350	KCM25B	WAM20	MC7025 US735	TT9225	AC6030M AC630M	T6030	CA6525	NC9025 NC5330	YBM251 YBM253 YBM253F

## 推荐切削参数

Recommended Cutting Data

槽型 Geometry	工件材料 Workpiece Materials	硬度 Hardness	用途 Application	牌号 Grade	下限-推荐-上限 Min-Optimum-Max		
					切削速度 Cutting Speed Vc(m/min)	进给量 Feed Rate f(mm/rev)	切深 Depth of Cut ap(mm)
LM	M	马氏体 铁素体 Martensite Ferrite	稳定切削 Continuous	GM1115	180-250-300	0.08-0.20-0.40	0.8-1.8-3.5
			一般切削 General	GM1125	180-230-300	0.08-0.20-0.40	0.8-2.0-3.5
				GM3215	100-180-220	0.08-0.20-0.40	0.8-1.8-3.5
			不稳定切削 Interruption	GM3225	80-150-200	0.08-0.20-0.40	0.8-2.0-3.5
		奥氏体 Austenitic	稳定切削 Continuous	GM1115	180-230-300	0.08-0.18-0.40	0.8-1.8-3.5
			一般切削 General	GM1125	180-210-300	0.08-0.18-0.40	0.8-2.0-3.5
	GM3215			100-150-200	0.12-0.20-0.30	0.8-1.8-3.5	
	不稳定切削 Interruption	GM3225	80-130-180	0.12-0.20-0.30	0.8-2.0-3.5		
		S	高温合金 Heat-resistant Alloys	稳定切削 Continuous	GM3215	35-45-60	0.12-0.20-0.30
	不稳定切削 Interruption			GS3125	35-45-60	0.12-0.20-0.30	0.5-1.2-2.0
	钛合金 Titanium		稳定切削 Continuous	GM3215	50-70-100	0.12-0.20-0.30	0.5-1.5-2.5
			不稳定切削 Interruption	GS3125	40-60-80	0.12-0.20-0.30	0.5-1.5-2.5
LR	M	马氏体 铁素体 Martensite Ferrite	稳定切削 Continuous	GM1115	180-200-230	0.15-0.30-0.50	1.5-3.0-5.0
			一般切削 General	GM1125	160-180-200	0.15-0.30-0.50	1.5-3.0-5.0
				GM3215	120-160-200	0.15-0.30-0.50	1.5-3.0-5.0
			不稳定切削 Interruption	GM3225	80-140-180	0.15-0.30-0.50	1.5-3.0-5.0
		奥氏体 Austenitic	稳定切削 Continuous	GM1115	160-180-220	0.15-0.30-0.50	1.5-3.0-5.0
			一般切削 General	GM1125	140-160-200	0.15-0.30-0.50	1.5-3.0-5.0
	GM3215			120-140-180	0.15-0.30-0.50	1.5-3.0-5.0	
	不稳定切削 Interruption		GM3225	80-120-160	0.15-0.30-0.50	1.5-3.0-5.0	

# 可转位高精度曲线刃方肩铣削刀具

## Indexable High Precision Curved Edge Shoulder Milling Tools

### 螺旋刃方肩铣刀具-APKT+MEB190/MHB190

Helical Edge Shoulder Milling-APKT+MEB190/MHB190

- APKT系列是一款曲线刃方肩铣刀具，具有高精度，低切削阻力的特点。  
APKT is a Helical edge shoulder milling tool.  
Helical edge contribute to low cutting force and high accuracy.

### 螺旋刃双比方肩铣刀具-ANKX+MEC190/MHC190

Helical Edges Double Side Tools-ANKX+MEC190/MHC190

- ANKX系列是一款双面4刃方肩铣刀具，具有刀刃强度高，经济性高的特点。  
ANKX is a double side 4 edges shoulder milling tool. Negative insert contribute to strong edge and high economical.

- 适用范围广，可满足面铣，型腔铣，方肩铣，槽铣，仿形铣等多种加工方式。  
A variety of applications can be achieved ,such as face milling,cavity milling,shoulder milling,slot milling,profile milling.



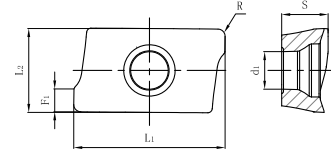


## 方肩铣削 / General Shoulder Milling

**APKT**

## 曲线刃方肩铣刀片

## Helical Edge Shoulder Milling Inserts











订货号 Ordering Code	尺寸 Dimensions(mm)						涂层硬质合金 Coated							硬质合金 Uncoated	金属陶瓷 Cermet	
	L1	L2	S	F1	d1	R	GA4225	GA4230	GP4225	GP2115	GM2140	GK4125	GK2115	GS4130	GN9125	GP01TM
	APKT113504R-GL	11.31	7	3.5	2	3.21	0.4	●	●	●	●	●	●	●		
	APKT113508R-GL	11.31	7	3.5	2	3.21	0.8	●	●	●	●	●	●	●		
	APKT113504R-GM	11.31	7	3.5	2	3.21	0.4	●	●	●	●	●	●	●		
	APKT113508R-GM	11.31	7	3.5	2	3.21	0.8	●	●	●	●	●	●	●		
	APKT113532R-GM	10.16	7	3.44	3.6	3.21	3.2	●	●	●	●	●	●	●		
	APKT160408R-GM	16.96	9.4	5.2	2.57	4.21	0.8	●	●	●	●	●	●	●		
	APKT160412R-GM	16.96	9.4	5.2	2.57	4.21	1.2	●	●	●	●	●	●	●		
	APKT160416R-GM	16.96	9.4	5.2	2.57	4.21	1.6	●	●	●	●	●	●	●		
	APKT160432R-GM	15	9.4	5.2	2.57	4.21	3.2	●	●	●	●	●	●	●		
	APKT113516R-GH	11.31	7	3.5	2	3.21	1.6	●	●	●	●	●	●	●		
	APKT160416R-GH	16.96	9.4	5.2	2.57	4.21	1.6	●	●	●	●	●	●	●		
	APET113504R-NL	11.39	7	3.8	1.92	2	0.4								○	
	APET160408R-NL	16.97	9.51	5.85	2.2	2	0.8								○	

● 标准库存 Stock ○ 需预定 Available upon order

方肩铣削 / General Shoulder Milling

APKT系列槽型

APKT Geometry

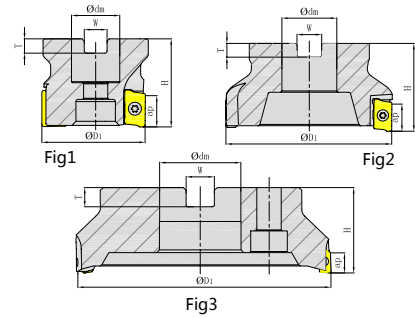
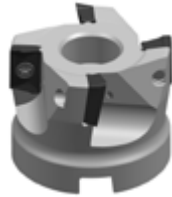
通用材料轻切削 Light cutting for general material	通用材料中切削 Medium cutting for general material	通用材料重切削 Rough cutting for general material	铝材通用切削 General cutting for aluminum alloys
			
<p>GL</p>	<p>GM</p>	<p>GH</p>	<p>NL</p>
			
<p>低切削阻力的轻载切削，获得更好的加工质量 Light cutting with low force to achieve excellent performance</p>	<p>一般工况下实现高稳定性加工 High stability cutting in general condition</p>	<p>刀刃强度更好，适合粗加工 More stronger edge for rough cutting</p>	<p>锋利刃配合镜面抛光适合铝合金材料加工 Shape edge with excellent polishing for aluminum material cutting</p>

## 方肩铣削 / General Shoulder Milling

**MEB190**

心轴式

Arbor



订货号 Ordering Code	直径 Diameters	刃数 Teeth	尺寸 (mm) Dimensions					最大切深 $a_{pmax}$	匹配刀片 Gauge Insert	内冷 Coolant	图示 Shape	库存 Stock
			$\Phi D_1$	$\Phi dm$	H	W	T					
MEB190040R05A16AP11	40	5	40	16	40	8.4	5.6	9	AP*T1135	×	Fig1	○
MEB190050R07A22AP11	50	7	50	22	40	10.4	6.3	9	AP*T1135	×	Fig1	○
MEB190050R04A22AP16	50	4	50	22	40	10.4	6.3	14	AP*T1604	×	Fig1	●
MEB190063R05A22AP16	63	5	63	22	40	10.4	6.3	14	AP*T1604	×	Fig1	●
MEB190080R07A27AP16	80	7	80	27	50	12.4	7	14	AP*T1604	×	Fig1	●
MEB190100R08B32AP16	100	8	100	32	63	14.4	8	14	AP*T1604	×	Fig2	●
MEB190125R09A32AP16	125	9	125	40	63	16.4	9	14	AP*T1604	×	Fig2	○
MEB190160R10C40AP16	160	10	160	40	63	25.7	14	14	AP*T1604	×	Fig3	○
MEB190200R12C60AP16	200	12	200	60	63	25.7	14	14	AP*T1604	×	Fig3	○

● 标准库存 Stock ○ 需预定 Available upon order

方肩铣削 / General Shoulder Milling

# MEB190

侧固式  
Shank

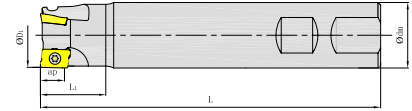


Fig4

订货号 Ordering Code	直径 Diameters	刃数 Teeth	尺寸 (mm) Dimensions					最大切深 $a_{pmax}$	匹配刀片 Gauge Insert	内冷 Coolant	图示 Shape	库存 Stock
			$\Phi D_1$	$\Phi d_m$	L	$L_1$	T					
MEB190016R02W16AP11	16	2	16	16	130	25	-	9	AP*T1135	×	Fig4	●
MEB190020R02W20AP11	20	2	20	20	130	25	-	9	AP*T1135	●	Fig4	●
MEB190020R03W20AP11	20	3	20	20	130	25	-	9	AP*T1135	●	Fig4	●
MEB190025R03W25AP11	25	3	25	25	130	30	-	9	AP*T1135	●	Fig4	●
MEB190025R02W25AP16	25	2	25	25	130	45	-	14	AP*T1604	●	Fig4	●
MEB190032R03W32AP16	32	3	32	32	130	45	-	14	AP*T1604	●	Fig4	●
MEB190032R03W32AP16L	32	3	32	32	200	54	-	14	AP*T1604	●	Fig4	●

● 标准库存 Stock ○ 需预定 Available upon order

## 方肩铣削 / General Shoulder Milling

## 玉米铣

Helical Tools

## MHB190

侧固式

Shank

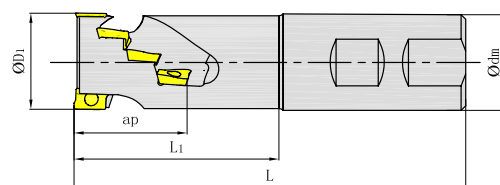


Fig5

订货号 Ordering Code	直径 Diameters	刃数 Teeth	尺寸 (mm) Dimensions					最大切深 $a_{pmax}$	匹配刀片 Gauge Insert	内冷 Coolant	图示 Shape	库存 Stock
			$\Phi D_1$	$\Phi_{dm}$	L	$L_1$	T					
MHB190032R02W32AP11	32	2/8	32	32	130	68	-	39.9	AP*T1135	●	Fig5	●
MHB190040R03W32AP11	40	3/12	40	32	130	65	-	39.9	AP*T1135	●	Fig5	●

● 标准库存 Stock ○ 需预定 Available upon order

## MHB190

心轴式

Arbor

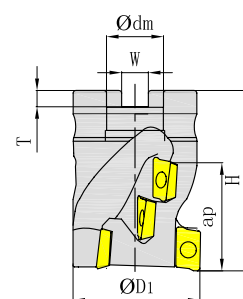



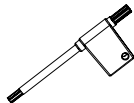
Fig6

订货号 Ordering Code	直径 Diameters	刃数 Teeth	尺寸 (mm) Dimensions					最大切深 $a_{pmax}$	匹配刀片 Gauge Insert	内冷 Coolant	图示 Shape	库存 Stock
			$\Phi D_1$	$\Phi_{dm}$	H	W	T					
MHB190050R04A22AP11	50	4/16	50	22	70	10.4	6.3	39.9	AP*T1135	●	Fig6	●
MHB190063R05A27AP11	63	5/20	63	27	70	12.4	7.0	39.9	AP*T1135	●	Fig6	●
MHB190050R03A22AP16	50	3/9	50	22	70	10.4	6.3	43	AP*T1604	●	Fig6	●
MHB190063R04A27AP16	63	4/16	63	27	85	12.4	7.0	57	AP*T1604	●	Fig6	●
MHB190080R05A32AP16	80	5/20	80	32	85	14.4	8.0	57	AP*T1604	●	Fig6	●

● 标准库存 Stock ○ 需预定 Available upon order

## 刀体配件列表

Spare Parts

零件名称 Parts	刀片螺钉 Insert Screw	刀片螺钉扳手 Insert Spanner
形状 Shape		
适用刀片 Insert		
AP*T1135	SI60M3X7.2	TT09P
AP*T1604	SI60M3.5X8	TT15P

## 推荐切削参数

## Recommended Cutting Data

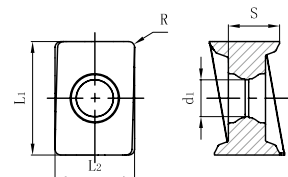
	工件材料 Workpiece Material	材料硬度 Material Hardness	牌号 Grade	切削速度 Cutting Speed	进给 / 刃 ( fz ) mm/tooth		
					轻切削 ( L ) Light Cutting	中切削 ( M ) Medium Cutting	重切削 ( H ) Heavy Cutting
				Vc ( m/min )	GL/NL	GM/NL	GH/NL
P	软钢 Low Carbon Steel	≤ HB180	GA4225 GA4230 GP4225	180 ( 150-220 )	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	碳钢、合金钢 Carbon Steel, Alloy Steel	HB180-350	GA4225 GA4230 GP4225	150 ( 120-200 )	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	预硬钢 Per-hardened Steel	HRC35-45	GA4225 GA4230 GP4225	150 ( 120-200 )	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
M	不锈钢 ( 铁素体、马氏体 ) Stainless Steel ( Ferrite, Martensite )	≤ HB270	GS4130 GM2140	140 ( 100-160 )	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
	不锈钢 ( 奥氏体、双相 ) Stainless Steel ( Austenite, Diphasic )	≤ HB270	GS4130 GM2140	120 ( 100-160 )	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
K	灰铸铁 Grey Cast Iron	≤ HB280	GA4230 GK4125 GK2115	180 (150-220)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	球墨铸铁、蠕墨铸铁 Nodular Cast Iron Vermicular Cast Iron	≤ HB350	GA4230 GK4125 GK2115	120 (100-180)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
N	铝合金 Aluminum Alloy	≤ HB260	GN9125	500 (200-900)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.15 (0.1-0.25)
S	耐热合金、钛合金 Heat-resistant Alloy and Titanium Alloy	HRC25-35	GA4230 GM2140 GS4130	60 (50-100)	0.1 (0.05-0.15)	0.1 (0.05-0.15)	0.15 (0.1-0.2)
H	淬火钢 Quenching Steel	HRC48-55	GH4125	80 ( 60-120 )	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)




方肩铣削 / General Shoulder Milling

# ANKX

## 双面4刃曲线刃方肩铣刀片

### Double-Side 4 Edges Shoulder Milling Inserts



订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated								硬质合金 Uncoated	金属陶瓷 Cermet
	L1	L2	S	d1	R	GA4225	GA4230	GP4225	GP2115	GM2140	GK4125	GK2115	GS4130	GN9125	GP01TM
	ANKX120704R-GL	12	10	8	4.62	0.4	●	●	●	●	●	●	●		
	ANKX160708R-GL	16	11.21	7.92	5.2	0.8	●	●	○	○	○	○	○		
	ANKX120708R-GM	12	10	8	4.62	0.4	●	●	●	●	●	●	●		
	ANKX160708R-GM	16	11.21	7.92	5.2	0.8	●	●	●	●	●	●	●		
	ANKX160716R-GM	16	11.21	7.92	5.2	1.6	●	●	●	●	●	●	●		
	ANKX160716R-GH	16	11.21	7.92	5.2	1.6	●	●	●	●	●	●	●		







● 标准库存 Stock ○ 需预定 Available upon order



## 方肩铣削 / General Shoulder Milling

## ANKX系列槽型

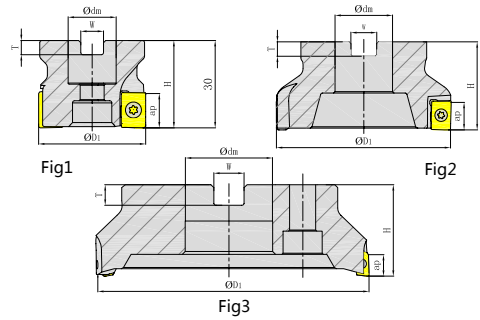
## ANKX Geometry

通用材料轻切削 Light cutting for general material	通用材料中切削 Medium cutting for general material	通用材料重切削 Rough cutting for general material
		
GL	GM	GH
		
低切削阻力切削，获得更好的加工质量 Light cutting with low force to achieve excellent performance	一般工况下实现高稳定性加工 High stability cutting in general condition	刀刃强度更好，适合粗加工 More stronger edge for rough cutting

方肩铣削 / General Shoulder Milling

# MEC190

心轴式  
Arbor



订货号 Ordering Code	直径 Diameters	刃数 Teeth	尺寸 (mm) Dimensions					最大切深 ap <sub>max</sub>	匹配刀片 Gauge Insert	内冷 Coolant	图示 Shape	库存 Stock
			ΦD <sub>1</sub>	Φdm	H	W	T					
MEC190050R04A22AN12	50	4	50	22	40	10.4	6.3	9	ANKX1207	●	Fig1	●
MEC190063R05A22AN12	63	5	63	22	40	10.4	6.3	9	ANKX1207	●	Fig1	●
MEC190050R04A22AN16	50	4	50	22	40	10.4	6.3	14	ANKX1607	●	Fig1	●
MEC190063R05A22AN16	63	5	63	22	40	10.4	6.3	14	ANKX1607	●	Fig1	●
MEC190080R05A27AN16	80	5	80	27	50	12.4	7	14	ANKX1607	●	Fig1	●
MEC190080R06A27AN16	80	6	80	27	50	12.4	7	14	ANKX1607	●	Fig1	●
MEC190100R07B32AN16	100	7	100	32	50	14.4	8	14	ANKX1607	●	Fig2	●
MEC190100R08A32AN16	100	8	100	32	50	14.4	8	14	ANKX1607	●	Fig1	●
MEC190125R10B40AN16	125	10	125	40	63	16.4	9	14	ANKX1607	●	Fig2	●
MEC190160R12C40AN16	160	12	160	60	63	16.4	9	14	ANKX1607	●	Fig3	○
MEC190200R14C60AN16	200	14	200	60	63	25.7	14	14	ANKX1607	●	Fig3	○

● 标准库存 Stock ○ 需预定 Available upon order

## 方肩铣削 / General Shoulder Milling

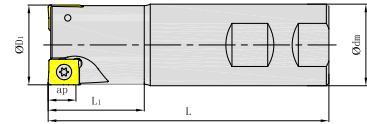
**MEC190**侧固式  
Shank

Fig4

订货号 Ordering Code	直径 Diameters	刃数 Teeth	尺寸 (mm) Dimensions					最大切深 $a_{pmax}$	匹配刀片 Gauge Insert	内冷 Coolant	图示 Shape	库存 Stock
			$\Phi D_1$	$\Phi d_m$	L	$L_1$	T					
MEC190032R02W32AN12	32	2	32	32	130	40	-	9	ANKX1207	×	Fig4	●
MEC190040R03W32AN12	40	3	40	32	130	40	-	9	ANKX1207	●	Fig4	○
MEC190032R02W32AN16	32	2	32	32	130	40	-	14	ANKX1607	×	Fig4	●
MEC190032R02W32AN16L	32	2	32	32	200	50	-	14	ANKX1607	×	Fig4	●
MEC190032R03W32AN16	32	3	32	32	130	40	-	14	ANKX1607	×	Fig4	●
MEC190032R03W32AN16L	32	3	32	32	200	50	-	14	ANKX1607	×	Fig4	●
MEC190040R03W32AN16	40	3	40	32	130	50	-	14	ANKX1607	●	Fig4	●

● 标准库存 Stock ○ 需预定 Available upon order

方肩铣削 / General Shoulder Milling

玉米铣  
Helical Tools

**MHC190**

侧固式  
Shank

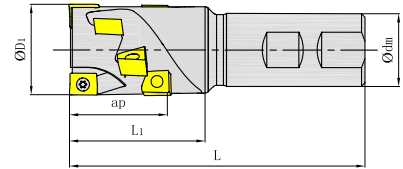


Fig5

订货号 Ordering Code	直径 Diameters	刃数 Teeth	尺寸 (mm) Dimensions					最大切深 $ap_{max}$	匹配刀片 Gauge Insert	内冷 Coolant	图示 Shape	库存 Stock
			$\Phi D_1$	$\Phi dm$	L	$L_1$	T					
MHC190040R02W32AN12	40	2/8	40	32	130	60	-	43	ANKX1207	●	Fig5	●

● 标准库存 Stock ○ 需预定 Available upon order

**MHC190**

心轴式  
Arbor

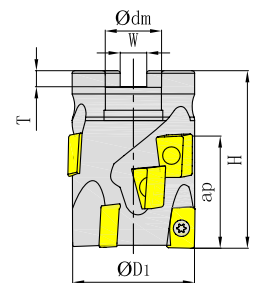


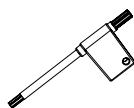
Fig6

订货号 Ordering Code	直径 Diameters	刃数 Teeth	尺寸 (mm) Dimensions					最大切深 $Ap_{max}$	匹配刀片 Gauge Insert	内冷 Coolant	图示 Shape	库存 Stock
			$\Phi D_1$	$\Phi dm$	H	W	T					
MHC190050R03A22AN12	50	3/12	50	22	70	10.4	6.3	43	ANKX1207	●	Fig6	●
MHC190063R04A27AN12	63	4/16	63	27	70	12.4	7.0	43	ANKX1207	●	Fig6	●
MHC190050R03A22AN16	50	3/9	50	22	70	10.4	6.3	43	ANKX1607	●	Fig6	●
MHC190063R04A27AN16	63	4/16	63	27	85	10.4	7.0	57	ANKX1607	●	Fig6	●
MHC190080R05A32AN16	80	5/20	80	32	85	14.4	8.0	57	ANKX1607	●	Fig6	●

● 标准库存 Stock ○ 需预定 Available upon order

## 刀体配件列表

Spare Parts

零件名称 Parts	刀片螺钉 Insert Screw	刀片螺钉扳手 Insert Spanner
形状 Shape		
适用刀片 Insert		
ANKX1207	SI60M3.5X12	TT15P
ANKX1607	SI60M4.5X10	TT20P

## 推荐切削参数

### Recommended Cutting Data

	工件材料 Workpiece Material	材料硬度 Material Hardness	牌号 Grade	切削速度 Cutting Speed  Vc ( m/min )	进给 / 刃 ( fz ) mm/tooth		
					轻切削 ( L ) Light Cutting	中切削 ( M ) Medium Cutting	重切削 ( H ) Heavy Cutting
					GL	GM	GH
<b>P</b>	软钢 Low Carbon Steel	≤ HB180	GA4225 GA4230 GP4225	180 ( 150-220 )	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	碳钢、合金钢 Carbon Steel、 Alloy Steel	HB180- 350	GA4225 GA4230 GP4225	150 ( 120-200 )	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	预硬钢 Per-hardened Steel	HRC35-45	GA4225 GA4230 GP4225	150 ( 120-200 )	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
<b>M</b>	不锈钢 ( 铁素体、马氏体 ) Stainless Steel ( Ferrite、 Martensite )	≤ HB270	GS4130 GM2140	140 ( 100-160 )	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
	不锈钢 ( 奥氏体、双相 ) Stainless Steel ( Austenite、Diphasic )	≤ HB270	GS4130 GM2140	120 ( 100-160 )	0.12 (0.1-0.2)	0.15 (0.1-0.2)	0.2 (0.1-0.3)
<b>K</b>	灰铸铁 Grey Cast Iron	≤ HB280	GA4230 GK4125 GK2115	180 (150-220)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
	球墨铸铁、蠕墨铸铁 Nodular Cast Iron Vermicular Cast Iron	≤ HB350	GA4230 GK4125 GK2115	120 (100-180)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.2 (0.1-0.25)
<b>N</b>	铝合金 Aluminum Alloy	≤ HB260	GN9125	500 (200-900)	0.1 (0.05-0.15)	0.15 (0.1-0.2)	0.15 (0.1-0.25)
<b>S</b>	耐热合金、钛合金 Heat-resistant Alloy and Titanium Alloy	HRC25-35	GA4230 GM2140 GS4130	60 (50-100)	0.1 (0.05-0.15)	0.1 (0.05-0.15)	0.15 (0.1-0.2)
<b>H</b>	淬火钢 Quenching Steel	HRC48-55	GH4125	80 ( 60-120 )	0.08 (0.05-0.15)	0.10 (0.08-0.15)	0.12 (0.08-0.20)

# SPM200-RN4 小径深加工立铣刀

SPM200-RN4 End Mill for Small & Cavity Milling

适用于碳钢、合金钢、淬硬钢、铜、铝合金等材料（硬度 $\leq$ HRC55）的高精度深腔加工 •  
Suitable for deep cavity high-accuracy machining of carbon steels, alloy steels, hardened steels, copper & aluminium alloys etc. ,which hardness is less HRC55.

采用GU类超细晶基体+AlCrSiN高性能纳米涂层 •  
GU series ultra-fine cemented carbide substrate  
+ High performance nano coating AlCrSiN.













































特殊的角度及长避空设计，搭配不等分割、不等螺旋设计 •  
Special angle with reduced neck design , unequal spacing of  
teeth and unequal helix angle design.

高精度的刃径精度，高精度的R弧轮廓，高精度的刀柄(h5) •  
High precision diameter and high precision R profile ,  
high precision shank (h5).



# 标记说明

## Guidelines to Icons

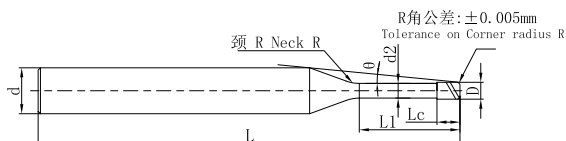
标示 Mark		说明 Description	标示 Mark		说明 Description	标示 Mark		说明 Description
柄部形状 Shank		ISO 标准柄部 ISO Standard Shank	螺旋角 Helix		28°螺旋角 28° Helix	底刃形状 Endteeth Type		平头 Square
		ISO 标准柄部 ISO Standard Shank			30°螺旋角 30° Helix			圆角头 Corner Radius
涂层 Coating		AlCrN涂层 AlCrN Coating			35°螺旋角 35° Helix			球头 Ball Nose
		AlCrSiN涂层 AlCrSiN Coating			40°螺旋角 40° Helix			刀尖倒角 Square with Chamfer
		TiAlN涂层 TiAlN Coating			45°螺旋角 45° Helix	工件材料 Workpiece Material		钢 Steels
		AlTiN纳米涂层 Nano Coating AlTiN			双螺旋角 Variable Helix			不锈钢 Stainless Steels
		AlCrN/TiSiN多层 AlCrN/TiSiN Coating			双螺旋角 Variable Helix			铸铁 Cast Iron
		AlTiN/TiSiN纳米多层 Nano Coating AlTiN/ TiSiN			双螺旋角 Variable Helix			非铁材料 Non-ferrous Materials
		TiAlCrSiN涂层 TiAlCrSiN Coating			双螺旋角 Variable Helix			高温合金、钛合金 Heat-resistant Super Alloys, Titanium Alloys
		粗晶金刚石涂层 Normal Diamond Coating			不等螺旋角 Variable Helix		高硬度材料 High Hardened Materials	
		超细晶金刚石涂层 Ultra-Fine Grain Diamond Coating	刃数 No. of Flutes		1 刃立铣刀 1 Flute Endmills			
切削方式 Cutting Condition		侧铣 For Side Milling			2 刃立铣刀 2 Flute Endmills			
		槽铣 For Slotting			3 刃立铣刀 3 Flute Endmills			
		仿形切削 For Profile Milling			4 刃立铣刀 4 Flute Endmills			
螺旋角 Helix		左20°螺旋角 -20° Helix			5 刃立铣刀 5 Flute Endmills			
		15°螺旋角 15° Helix			6 刃立铣刀 6 Flute Endmills			
		20°螺旋角 20° Helix			12 刃立铣刀 12 Flute Endmills			



# SPM200-RN4

## 小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill



标记说明请参考P30页 See page 30 for guidelines to icons

订货号 Ordering Code	外径 D Mill Dia.	圆角 半径 R	颈长 L1 Under Neck Length	刃长 Lc Flute Length	颈径 d2 Neck Dia.	全长 L Overall Length	柄径 d Shank Dia.	颈 R Neck R	干涉角 ∅ Interference Angle	对应拔模角的有效颈长 The effective under-neck length for the various draft angles					库存 Stock								
										0.5°	1°	1.5°	2°	3°									
SPM200-RN4-1-4-0.05-V	1	0.05	4	0.8	0.96	50	4	4	8.75	4.27	4.47	4.65	4.82	5.21	●								
SPM200-RN4-1-6-0.05-V			6			50			7.28	6.37	6.63	6.86	7.12	7.69	●								
SPM200-RN4-1-8-0.05-V			8			50			6.23	8.45	8.76	9.08	9.42	10.18	●								
SPM200-RN4-1-10-0.05-V			10			50			5.45	10.53	10.90	11.30	11.72	12.67	●								
SPM200-RN4-1-12-0.05-V			12			60			4.84	12.61	13.04	13.51	14.02	15.15	●								
SPM200-RN4-1-16-0.05-V			16			60			3.95	16.74	17.32	17.95	18.62	20.12	●								
SPM200-RN4-1-20-0.05-V		20	60			3.34			20.88	21.60	22.38	23.22	25.10	●									
SPM200-RN4-1-4-0.1-V		0.1	4			1.2			1.44	50	4	4	8.80	4.26	4.47	4.64	4.81	5.19	●				
SPM200-RN4-1-6-0.1-V			6							50			7.31	6.37	6.62	6.86	7.11	7.68	●				
SPM200-RN4-1-8-0.1-V			8							50			6.25	8.45	8.76	9.07	9.41	10.17	●				
SPM200-RN4-1-10-0.1-V			10							50			5.46	10.53	10.90	11.29	11.71	12.65	●				
SPM200-RN4-1-12-0.1-V			12							60			4.85	12.60	13.04	13.51	14.01	15.14	●				
SPM200-RN4-1-16-0.1-V			16							60			3.96	16.74	17.32	17.94	18.61	20.11	●				
SPM200-RN4-1-20-0.1-V		20	60							3.35			20.87	21.60	22.37	23.21	25.08	●					
SPM200-RN4-1.5-4-0.05-V	1.5	0.05	4	1.2	1.44		50	4		4			8.12	4.23	4.42	4.59	4.76	5.14	●				
SPM200-RN4-1.5-8-0.05-V			8				50						5.60	8.41	8.71	9.02	9.36	10.11	●				
SPM200-RN4-1.5-12-0.05-V			12				60						4.27	12.55	12.99	13.46	13.96	15.09	●				
SPM200-RN4-1.5-15-0.05-V			15				60						3.62	15.65	16.20	16.78	17.41	18.82	●				
SPM200-RN4-1.5-20-0.05-V		20	60				2.89						20.82	21.55	22.32	23.16	-	●					
SPM200-RN4-1.5-4-0.1-V		0.1	4				1.2						1.44	50	4	4	8.17	4.23	4.42	4.58	4.75	5.13	●
SPM200-RN4-1.5-8-0.1-V			8											50			5.62	8.41	8.71	9.02	9.35	10.10	●
SPM200-RN4-1.5-12-0.1-V			12			60			4.28		12.55	12.98		13.45			13.95	15.07	●				
SPM200-RN4-1.5-15-0.1-V			15			60			3.63		15.65	16.19		16.77			17.40	18.80	●				
SPM200-RN4-1.5-20-0.1-V			20			60			2.90		20.82	21.54		22.32			23.15	-	●				

●标准库存 Stock  
○需预定 Available upon Order

公差Tol.	
R	±0.005
D	0 -0.01

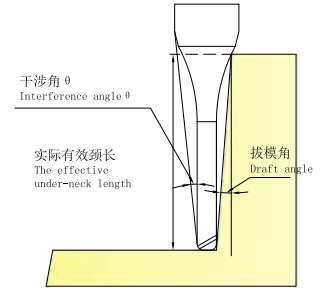
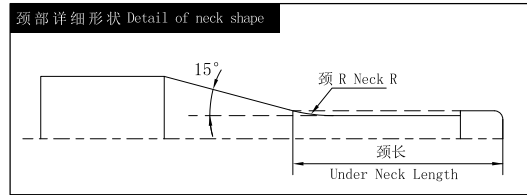
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推荐切削参数 Cutting Parameters ※ P37

# SPM200-RN4

## 小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill



标记说明请参考P30页 See page 30 for guidelines to icons

» 续前 Continue

订货号 Ordering Code	外径 D Mill Dia.	圆角 半径 R	颈长 L1 Under Neck Length	刃长 Lc Flute Length	颈径 d2 Neck Dia.	全长 L Overall Length	柄径d Shank Dia.	颈 R Neck R	干涉角 θ Interference Angle	对应拔模角的有效颈长 The effective under-neck length for the various draft angles					库存 Stock
										0.5°	1°	1.5°	2°	3°	
SPM200-RN4-2-4-0-0.05-V	2	0.05	4	1.6	1.92	50	4	4	7.32	4.21	4.39	4.55	4.72	5.09	●
SPM200-RN4-2-6-0-0.05-V			6			50			5.84	6.30	6.53	6.76	7.01	7.58	●
SPM200-RN4-2-8-0-0.05-V			8			50			4.85	8.37	8.67	8.98	9.31	10.07	●
SPM200-RN4-2-12-0-0.05-V			12			60			3.63	12.51	12.95	13.41	13.91	15.04	●
SPM200-RN4-2-16-0-0.05-V			16			60			2.90	16.65	17.23	17.85	18.51	-	●
SPM200-RN4-2-20-0-0.05-V			20			60			2.41	20.78	21.50	22.28	23.11	-	●
SPM200-RN4-2-4-0-0.1-V		0.1	4	50	7.36	4.21	4.38	4.54	4.71	5.08	●				
SPM200-RN4-2-6-0-0.1-V			6	50	5.86	6.29	6.53	6.76	7.01	7.57	●				
SPM200-RN4-2-8-0-0.1-V			8	50	4.87	8.37	8.66	8.97	9.31	10.05	●				
SPM200-RN4-2-12-0-0.1-V			12	60	3.64	12.51	12.94	13.41	13.91	15.03	●				
SPM200-RN4-2-16-0-0.1-V			16	60	2.90	16.65	17.22	17.84	18.51	-	●				
SPM200-RN4-2-20-0-0.1-V			20	60	2.42	20.78	21.50	22.27	23.11	-	●				
SPM200-RN4-2-4-0-0.2-V		0.2	4	50	7.46	4.20	4.37	4.53	4.69	5.06	●				
SPM200-RN4-2-6-0-0.2-V			6	50	5.93	6.29	6.52	6.75	6.99	7.54	●				
SPM200-RN4-2-8-0-0.2-V			8	50	4.91	8.37	8.66	8.96	9.29	10.03	●				
SPM200-RN4-2-12-0-0.2-V			12	60	3.66	12.51	12.94	13.40	13.89	15.00	●				
SPM200-RN4-2-16-0-0.2-V			16	60	2.92	16.64	17.22	17.83	18.49	-	●				
SPM200-RN4-2-20-0-0.2-V			20	60	2.43	20.78	21.49	22.26	23.09	-	●				
SPM200-RN4-2-25-0-0.2-V		25	70	2.00	25.95	26.84	27.80	-	-	●					
SPM200-RN4-2-30-0-0.2-V		30	70	1.71	31.11	32.19	33.35	-	-	●					
SPM200-RN4-2-4-0-0.3-V	0.3	4	50	7.56	4.20	4.37	4.52	4.68	5.03	●					
SPM200-RN4-2-8-0-0.3-V		8	50	4.96	8.36	8.65	8.95	9.28	10.01	●					
SPM200-RN4-2-12-0-0.3-V		12	60	3.69	12.50	12.93	13.39	13.88	14.98	●					
SPM200-RN4-2-16-0-0.3-V		16	60	2.93	16.64	17.21	17.82	18.48	-	●					
SPM200-RN4-2-20-0-0.3-V		20	60	2.44	20.77	21.49	22.25	23.08	-	●					

●标准库存 Stock  
○需预定 Available upon Order

公差Tol.	
R	±0.005
D	0 -0.01

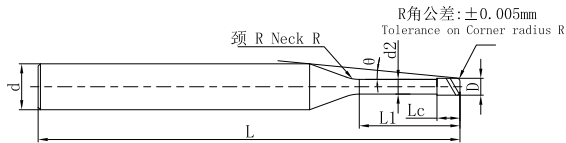
(mm)

推荐切削参数 Cutting Parameters ※ P37

# SPM200-RN4

## 小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill



标记说明请参考P30页 See page 30 for guidelines to icons

» 续前 Continue

订货号 Ordering Code	外径 D Mill Dia.	圆角 半径 R	颈长 L1 Under Neck Length	刃长 Lc Flute Length	颈径 d2 Neck Dia.	全长 L Overall Length	柄径d Shank Dia.	颈R Neck R	干涉角 ∅ Interference Angle	对应拔模角的有效颈长 The effective under-neck length for the various draft angles					库存 Stock			
										0.5°	1°	1.5°	2°	3°				
SPM200-RN4-2-4-0.5-V	2	0.5	4	1.6	1.92	50	4	4	7.76	4.19	4.35	4.50	4.65	4.98	●			
SPM200-RN4-2-6-0.5-V			6			50			6.11	6.28	6.50	6.71	6.95	7.47	●			
SPM200-RN4-2-8-0.5-V			8			50			5.04	8.36	8.64	8.93	9.25	9.96	●			
SPM200-RN4-2-12-0.5-V			12			60			3.73	12.50	12.92	13.36	13.85	14.93	●			
SPM200-RN4-2-16-0.5-V			16			60			2.96	16.63	17.19	17.80	18.45	-	●			
SPM200-RN4-2-20-0.5-V			20			60			2.46	20.77	21.47	22.23	23.05	-	●			
SPM200-RN4-2-25-0.5-V			25			70			2.03	25.94	26.82	27.77	28.79	-	●			
SPM200-RN4-2-30-0.5-V			30			70			1.72	31.10	32.17	33.31	-	-	●			
SPM200-RN4-2.5-8-0.1-V	2.5	0.1	8	2	2.4	50	4	4	3.98	8.34	8.63	8.94	9.27	10.02	●			
SPM200-RN4-2.5-16-0.1-V			16			60			2.29	16.62	17.19	17.81	18.47	-	●			
SPM200-RN4-2.5-20-0.1-V			20			60			1.89	20.75	21.47	22.24	-	-	●			
SPM200-RN4-2.5-8-0.2-V			8			50			4.02	8.34	8.63	8.93	9.26	9.99	●			
SPM200-RN4-2.5-16-0.2-V		16	60	2.30	16.61	17.18			17.80	18.46	-	●						
SPM200-RN4-2.5-20-0.2-V		20	60	1.90	20.75	21.46			22.23	-	-	●						
SPM200-RN4-2.5-12-0.3-V		0.3	12	60	2.95	12.47			12.90	13.35	13.84	-	●					
SPM200-RN4-2.5-20-0.3-V			20	60	1.91	20.74			21.46	22.22	-	-	●					
SPM200-RN4-2.5-12-0.5-V			0.5	12	60	2.99			12.47	12.88	13.33	13.81	-	●				
SPM200-RN4-2.5-20-0.5-V				20	60	1.92			20.74	21.44	22.20	-	-	●				
SPM200-RN4-3-8-0.1-V		3	0.1	8	2.4	2.88			60	6	6	6.32	8.32	8.61	8.92	9.25	9.99	●
SPM200-RN4-3-16-0.1-V				16					60			3.99	16.59	17.17	17.78	18.45	19.94	●
SPM200-RN4-3-25-0.1-V				25					70			2.82	25.90	26.79	27.76	28.80	-	●
SPM200-RN4-3-30-0.1-V				30					80			2.42	31.06	32.14	33.30	34.55	-	●
SPM200-RN4-3-8-0.2-V			0.2	8	60	6.36			8.32			8.60	8.91	9.23	9.97	●		
SPM200-RN4-3-12-0.2-V				12	60	4.92			12.45			12.88	13.34	13.83	14.94	●		

●标准库存 Stock  
○需预定 Available upon Order

公差Tol.	
R	±0.005
D	0 -0.01

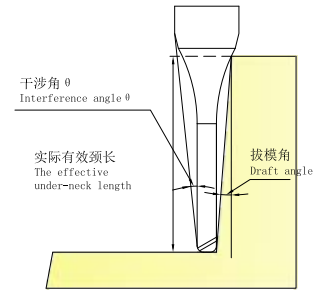
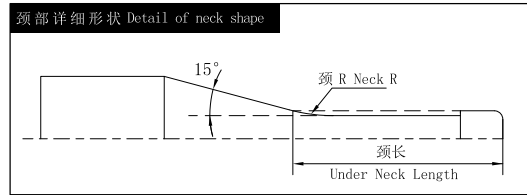
(mm)

推荐切削参数 Cutting Parameters ※ P37

# SPM200-RN4

## 小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill



标记说明请参考P30页 See page 30 for guidelines to icons

» 续前 Continue

订货号 Ordering Code	外径 D Mill Dia.	圆角 半径 R	颈长 L1 Under Neck Length	刃长 Lc Flute Length	颈径 d2 Neck Dia.	全长 L Overall Length	柄径d Shank Dia.	颈 R Neck R	干涉角 θ Interference Angle	对应拔模角的有效颈长 The effective under-neck length for the various draft angles					库存 Stock
										0.5°	1°	1.5°	2°	3°	
SPM200-RN4-3-16-0.2-V	3	0.2	16	2.4	2.88	60	6	4	4.00	16.59	17.16	17.77	18.43	19.91	●
SPM200-RN4-3-20-0.2-V			20			70			3.38	20.72	21.44	22.21	23.03	24.88	●
SPM200-RN4-3-25-0.2-V			25			70			2.82	25.89	26.79	27.75	28.78	-	●
SPM200-RN4-3-30-0.2-V			30			80			2.43	31.06	32.14	33.29	34.53	-	●
SPM200-RN4-3-8-0.3-V			0.3			8			60	6.41	8.32	8.60	8.90	9.22	9.94
SPM200-RN4-3-16-0.3-V		16				60			4.02	16.59	17.15	17.76	18.42	19.89	●
SPM200-RN4-3-20-0.3-V		20				70			3.39	20.72	21.43	22.20	23.02	24.86	●
SPM200-RN4-3-25-0.3-V		25				70			2.83	25.89	26.78	27.74	28.77	-	●
SPM200-RN4-3-30-0.3-V		30				80			2.43	31.06	32.13	33.28	34.52	-	●
SPM200-RN4-3-8-0.5-V		0.5	8			60			6.51	8.31	8.58	8.87	9.19	9.89	●
SPM200-RN4-3-12-0.5-V			12			60			5.00	12.44	12.86	13.31	13.79	14.87	●
SPM200-RN4-3-16-0.5-V			16			60			4.06	16.58	17.14	17.74	18.39	19.84	●
SPM200-RN4-3-20-0.5-V			20			70			3.42	20.71	21.42	22.17	22.99	24.81	●
SPM200-RN4-3-25-0.5-V			25			70			2.85	25.88	26.77	27.72	28.74	-	●
SPM200-RN4-3-30-0.5-V		30	80			2.45			31.05	32.12	33.26	34.49	-	●	
SPM200-RN4-3-35-0.5-V	35	80	2.14	36.22	37.46	38.80	40.23	-	●						
SPM200-RN4-4-12-0.1-V	4	0.1	12	3.2	3.86	60	6	4	3.66	12.44	12.87	13.33	13.83	14.94	●
SPM200-RN4-4-20-0.1-V			20			60			2.42	20.71	21.43	22.20	23.03	-	●
SPM200-RN4-4-30-0.1-V			30			80			1.71	31.05	32.12	33.28	-	-	●
SPM200-RN4-4-40-0.1-V			40			80			1.32	41.38	42.82	-	-	-	●
SPM200-RN4-4-12-0.2-V		0.2	12			60			3.68	12.44	12.86	13.32	13.81	14.92	●
SPM200-RN4-4-20-0.2-V			20			60			2.43	20.71	21.42	22.19	23.01	-	●
SPM200-RN4-4-30-0.2-V			30			80			1.71	31.04	32.12	33.27	-	-	●
SPM200-RN4-4-40-0.2-V			40			80			1.32	41.38	42.81	-	-	-	●

●标准库存 Stock  
○需预定 Available upon Order

公差Tol.	
R	±0.005
D	0 -0.01

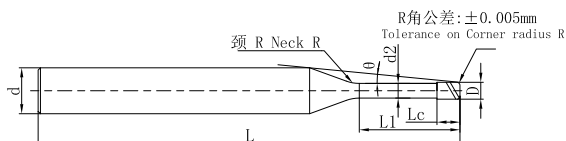
(mm)

推荐切削参数 Cutting Parameters ※ P37

# SPM200-RN4

## 小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill



标记说明请参考P30页 See page 30 for guidelines to icons

» 续前 Continue

订货号 Ordering Code	外径 D Mill Dia.	圆角 半径 R	颈长 L1 Under Neck Length	刃长 Lc Flute Length	颈径 d2 Neck Dia.	全长 L Overall Length	柄径d Shank Dia.	颈R Neck R	干涉角 ∅ Interference Angle	对应拔模角的有效颈长 The effective under-neck length for the various draft angles					库存 Stock
										0.5°	1°	1.5°	2°	3°	
SPM200-RN4-4-12-0.3-V	4	0.5	12	3.2	3.86	60	6	4	3.70	12.43	12.86	13.31	13.80	14.89	●
SPM200-RN4-4-20-0.3-V			20			60			2.44	20.70	21.41	22.18	23.00	-	●
SPM200-RN4-4-30-0.3-V			30			80			1.72	31.04	32.11	33.26	-	-	●
SPM200-RN4-4-40-0.3-V			40			80			1.32	41.38	42.81	-	-	-	●
SPM200-RN4-4-12-0.5-V			12			60			3.75	12.43	12.84	13.29	13.77	14.84	●
SPM200-RN4-4-20-0.5-V			20			60			2.47	20.70	21.40	22.15	22.97	-	●
SPM200-RN4-4-30-0.5-V			30			80			1.73	31.03	32.10	33.24	-	-	●
SPM200-RN4-4-40-0.5-V			40			80			1.33	41.37	42.79	-	-	-	●
SPM200-RN4-5-20-0.1-V	5	0.1	20	4	4.85	70	6	4	1.32	20.70	21.42	-	-	-	●
SPM200-RN4-5-40-0.1-V			40			90			0.69	41.38	-	-	-	-	●
SPM200-RN4-5-20-0.2-V		0.2	20			70			1.32	20.70	21.41	-	-	-	●
SPM200-RN4-5-40-0.2-V			40			90			0.69	41.37	-	-	-	-	●
SPM200-RN4-5-20-0.3-V		0.3	20			70			1.33	20.69	21.41	-	-	-	●
SPM200-RN4-5-40-0.3-V			40			90			0.69	41.37	-	-	-	-	●
SPM200-RN4-5-20-0.5-V		0.5	20			70			1.34	20.69	21.39	-	-	-	●
SPM200-RN4-5-40-0.5-V			40			90			0.70	41.36	-	-	-	-	●
SPM200-RN4-5-20-1-V		1	20			70			1.38	20.67	21.36	-	-	-	●
SPM200-RN4-5-40-1-V			40			90			0.71	41.34	-	-	-	-	●
SPM200-RN4-6-30-0.2-V	6	0.2	30	4.8	5.85	80	-	-	-	-	-	-	●		
SPM200-RN4-6-54-0.2-V			54			100	-	-	-	-	-	-	●		
SPM200-RN4-6-72-0.2-V			72			120	-	-	-	-	-	-	●		
SPM200-RN4-6-30-0.3-V		0.3	30			80	-	-	-	-	-	-	●		
SPM200-RN4-6-54-0.3-V			54			100	-	-	-	-	-	-	●		
SPM200-RN4-6-72-0.3-V			72			120	-	-	-	-	-	-	●		

●标准库存 Stock  
○需预定 Available upon Order

公差Tol.	
R	±0.005
D	0 -0.01

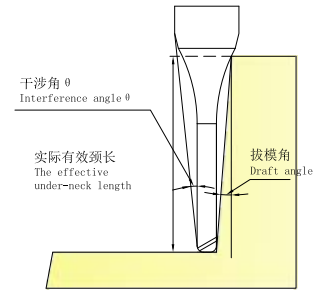
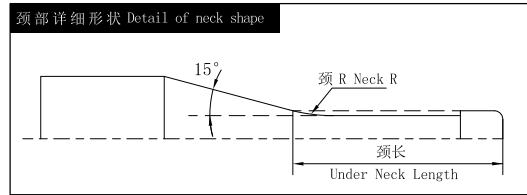
(mm)

推荐切削参数 Cutting Parameters ※ P37

# SPM200-RN4

## 小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill



标记说明请参考P30页 See page 30 for guidelines to icons

》续前 Continue

订货号 Ordering Code	外径 D Mill Dia.	圆角 半径 R	颈长 L1 Under Neck Length	刃长 Lc Flute Length	颈径 d2 Neck Dia.	全长 L Overall Length	柄径d Shank Dia.	颈 R Neck R	干涉角 $\theta$ Interference Angle	对应拔模角的有效颈长 The effective under-neck length for the various draft angles					库存 Stock
										0.5°	1°	1.5°	2°	3°	
SPM200-RN4-6-30-0.5-V	6	0.5	30	4.8	5.85	80	6	4	-	-	-	-	-	-	●
SPM200-RN4-6-54-0.5-V			54			100			-	-	-	-	-	●	
SPM200-RN4-6-72-0.5-V			72			120			-	-	-	-	-	●	
SPM200-RN4-6-30-1-V		1	30			80			-	-	-	-	-	●	
SPM200-RN4-6-54-1-V			54			100			-	-	-	-	-	●	
SPM200-RN4-6-72-1-V			72			120			-	-	-	-	-	●	

- 标准库存 Stock
- 需预定 Available upon Order

公差Tol.	
R	±0.005
D	0 -0.01

(mm)

推荐切削参数 Cutting Parameters ※ P37

## 推荐切削参数 (高精度)

Recommended cutting datas to high accuracy machining

## SPM200-RN4

小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill

工件材料 Workpiece Materials				P						N		H			
				碳钢, 合金钢 Carbon Steels, Alloy Steels (180~250HB)		合金钢, 工具钢 Alloy Steels, Tool Steels (25~35HRC)		PH与铁素体/ 马氏体钢 PH, Ferrite, Martensite Steels (35~45HRC)		铜, 铜合金 Copper, Copper Alloys		淬硬钢 Hardened Steels (45~55HRC)		淬硬钢 Hardened Steels (55~65HRC)	
切削深度 (ap) 比例系数 Ratio to standard depth of cut(ap)				1.00		0.90		0.70		1.20		0.50		0.45	
外径 Mill Dia. (mm)	圆角 半径 r (mm)	颈长 Under Neck Length (mm)	ap	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min
1	0.05	4	0.012	31,120	1,952	28,008	1,757	26,608	1,669	38,900	2,440	23,947	1,230	22,749	1,000
		6	0.01	25,200	1,424	22,680	1,282	21,546	1,218	31,500	1,780	19,391	990	18,422	810
		8	0.008	22,400	1,264	20,160	1,138	19,152	1,081	28,000	1,580	17,237	880	16,375	720
		10	0.005	19,600	1,112	17,640	1,001	16,758	951	24,500	1,390	15,082	770	14,328	630
		12	0.004	17,440	880	15,696	792	14,911	752	21,800	1,100	13,420	600	12,749	480
		16	0.003	17,440	768	15,696	691	14,911	657	21,800	960	13,420	510	12,749	400
		20	0.002	13,040	576	11,736	518	11,149	492	16,300	720	10,034	385	9,533	300
	0.1	4	0.02	31,120	1,952	28,008	1,757	26,608	1,669	38,900	2,440	23,947	1,230	22,749	1,000
		6	0.018	25,200	1,424	22,680	1,282	21,546	1,218	31,500	1,780	19,391	990	18,422	810
		8	0.014	22,400	1,264	20,160	1,138	19,152	1,081	28,000	1,580	17,237	880	16,375	720
		10	0.01	19,600	1,112	17,640	1,001	16,758	951	24,500	1,390	15,082	770	14,328	630
		12	0.008	17,440	880	15,696	792	14,911	752	21,800	1,100	13,420	600	12,749	480
		16	0.006	17,440	768	15,696	691	14,911	657	21,800	960	13,420	510	12,749	400
		20	0.004	13,040	576	11,736	518	11,149	492	16,300	720	10,034	385	9,533	300
1.5	0.05	4	0.02	23,920	1,624	21,528	1,462	20,452	1,389	29,900	2,030	18,406	1,020	17,486	830
		8	0.014	21,760	1,480	19,584	1,332	18,605	1,265	27,200	1,850	16,744	1,030	15,907	840
		12	0.007	17,440	1,184	15,696	1,066	14,911	1,012	21,800	1,480	13,420	820	12,749	670
		15	0.006	13,520	816	12,168	734	11,560	698	16,900	1,020	10,404	560	9,883	450
		20	0.004	13,520	816	12,168	734	11,560	698	16,900	1,020	10,404	560	9,883	450
	0.1	4	0.027	23,920	1,624	21,528	1,462	20,452	1,389	29,900	2,030	18,406	1,020	17,486	830
		8	0.02	21,760	1,480	19,584	1,332	18,605	1,265	27,200	1,850	16,744	1,030	15,907	840
		12	0.017	17,440	1,184	15,696	1,066	14,911	1,012	21,800	1,480	13,420	820	12,749	670
		15	0.014	13,520	816	12,168	734	11,560	698	16,900	1,020	10,404	560	9,883	450
		20	0.01	13,520	816	12,168	734	11,560	698	16,900	1,020	10,404	560	9,883	450
2	0.05	4	0.035	20,800	2,450	18,700	2,210	17,700	2,080	24,900	2,940	15,600	1,470	14,600	1,200
		6	0.03	20,800	2,450	18,700	2,210	17,700	2,080	24,900	2,940	15,600	1,470	14,600	1,200
		8	0.025	18,900	2,230	17,000	2,010	16,100	1,890	22,700	2,670	14,200	1,340	13,200	1,090
		12	0.02	15,300	1,620	13,800	1,460	13,000	1,380	18,400	1,950	11,500	1,080	10,700	890
		16	0.015	13,600	1,440	12,200	1,300	11,600	1,230	16,300	1,730	10,200	960	9,500	790
		20	0.01	11,900	1,260	10,700	1,140	10,100	1,070	14,300	1,520	8,900	840	8,300	690
	0.1	4	0.042	20,800	2,450	18,700	2,210	17,700	2,080	24,900	2,940	15,600	1,470	14,600	1,200
		6	0.042	20,800	2,450	18,700	2,210	17,700	2,080	24,900	2,940	15,600	1,470	14,600	1,200

【注意】请参照 P41页 【Note】 Please refer to P41

### 推荐切削参数 (高精度)

Recommended cutting datas to high accuracy machining

## SPM200-RN4

小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill

» 续前 Continue

工件材料 Workpiece Materials				P						N		H				
				碳钢, 合金钢 Carbon Steels, Alloy Steels (180~250HB)		合金钢, 工具钢 Alloy Steels, Tool Steels (25~35HRC)		PH与铁素体/ 马氏体钢 PH, Ferrite, Martensite Steels (35~45HRC)		铜, 铜合金 Copper, Copper Alloys		淬硬钢 Hardened Steels (45~55HRC)		淬硬钢 Hardened Steels (55~65HRC)		
切削深度 (ap) 比例系数 Ratio to standard depth of cut(ap)				1.00		0.90		0.70		1.20		0.50		0.45		
外径 Mill Dia. (mm)	圆角半径 r (mm)	颈长 Under Neck Length (mm)	ap	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	
2	0.1	8	0.036	18,900	2,230	17,000	2,010	16,100	1,890	22,700	2,670	14,200	1,340	13,200	1,090	
		12	0.036	15,300	1,620	13,800	1,460	13,000	1,380	18,400	1,950	11,500	1,080	10,700	890	
		16	0.023	13,600	1,440	12,200	1,300	11,600	1,230	16,300	1,730	10,200	960	9,500	790	
		20	0.018	11,900	1,260	10,700	1,140	10,100	1,070	14,300	1,520	8,900	840	8,300	690	
	0.2	4	0.08	20,800	2,450	18,700	2,210	17,700	2,080	24,900	2,940	15,600	1,470	14,600	1,200	
		6	0.08	20,800	2,450	18,700	2,210	17,700	2,080	24,900	2,940	15,600	1,470	14,600	1,200	
		8	0.07	18,900	2,230	17,000	2,010	16,100	1,890	22,700	2,670	14,200	1,340	13,200	1,090	
		12	0.04	15,300	1,620	13,800	1,460	13,000	1,380	18,400	1,950	11,500	1,080	10,700	890	
		16	0.04	13,600	1,440	12,200	1,300	11,600	1,230	16,300	1,730	10,200	960	9,500	790	
		20	0.035	11,900	1,260	10,700	1,140	10,100	1,070	14,300	1,520	8,900	840	8,300	690	
	0.3	25	0.025	11,900	1,260	10,700	1,140	10,100	1,070	14,300	1,520	8,900	840	8,300	690	
		30	0.017	11,300	1,200	10,200	1,080	9,600	1,020	13,600	1,440	8,500	800	7,900	650	
		4	0.11	20,800	2,450	18,700	2,210	17,700	2,080	24,900	2,940	15,600	1,470	14,600	1,200	
		8	0.09	18,900	2,350	17,000	2,100	16,100	1,950	22,700	2,850	14,200	1,490	13,200	1,210	
	0.5	12	0.06	15,300	1,810	13,800	1,620	13,000	1,530	18,400	2,170	11,500	1,200	10,700	980	
		16	0.06	13,600	1,610	12,200	1,440	11,600	1,360	16,300	1,930	10,200	1,070	9,500	870	
		20	0.037	11,900	1,400	10,700	1,260	10,100	1,190	14,300	1,680	8,900	940	8,300	770	
		4	0.17	20,800	2,450	18,700	2,210	17,700	2,080	24,900	2,940	15,600	1,470	14,600	1,200	
		6	0.17	20,800	2,450	18,700	2,210	17,700	2,080	24,900	2,940	15,600	1,470	14,600	1,200	
		8	0.14	18,900	2,350	17,000	2,100	16,100	1,950	22,700	2,850	14,200	1,490	13,200	1,210	
		12	0.08	15,300	1,810	13,800	1,620	13,000	1,530	18,400	2,170	11,500	1,200	10,700	980	
		16	0.08	13,600	1,610	12,200	1,440	11,600	1,360	16,300	1,930	10,200	1,070	9,500	870	
	2.5	0.1	20	0.05	11,900	1,400	10,700	1,260	10,100	1,190	14,300	1,680	8,900	940	8,300	770
			25	0.05	11,900	1,400	10,700	1,260	10,100	1,190	14,300	1,680	8,900	940	8,300	770
30			0.03	11,300	1,330	10,200	1,200	9,600	1,130	13,600	1,600	8,500	850	7,900	730	
0.2		8	0.047	18,900	2,480	17,000	2,230	16,100	2,100	22,700	2,970	14,200	1,490	13,200	1,210	
		16	0.037	13,600	1,610	12,200	1,440	11,600	1,360	16,300	1,930	10,200	1,070	9,500	870	
		20	0.025	11,900	1,400	10,700	1,260	10,100	1,190	14,300	1,680	8,900	940	8,300	770	
0.3		8	0.08	16,200	2,140	14,600	1,920	13,800	1,820	19,400	2,570	12,200	1,280	11,300	1,100	
		16	0.045	14,100	1,770	12,700	1,600	12,000	1,510	16,900	2,130	10,600	1,110	9,900	960	
		20	0.042	11,800	1,410	10,600	1,270	10,000	1,200	14,100	1,750	8,800	930	8,200	790	
0.3		12	0.09	14,800	1,960	13,300	1,760	12,500	1,660	17,700	2,350	11,100	1,230	10,300	1,010	
		20	0.052	11,800	1,560	10,600	1,400	10,000	1,330	14,100	1,870	8,800	1,040	8,200	850	

【注意】请参照 P41页 【Note】 Please refer to P41



## 推荐切削参数 (高精度)

Recommended cutting datas to high accuracy machining

## SPM200-RN4

小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill

» 续前 Continue

工件材料 Workpiece Materials				P						N		H			
				碳钢, 合金钢 Carbon Steels, Alloy Steels (180 ~ 250HB)		合金钢, 工具钢 Alloy Steels, Tool Steels (25 ~ 35HRC)		PH与铁素体/ 马氏体钢 PH, Ferrite, Martensite Steels (35 ~ 45HRC)		铜, 铜合金 Copper, Copper Alloys		淬硬钢 Hardened Steels (45 ~ 55HRC)		淬硬钢 Hardened Steels (55 ~ 65HRC)	
切削深度 (ap) 比例系数 Ratio to standard depth of cut(ap)				1.00		0.90		0.70		1.20		0.50		0.45	
外径 Mill Dia. (mm)	圆角 半径 r (mm)	颈长 Under Neck Length (mm)	ap	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min
2.5	0.5	12	0.1	14,800	1,960	13,300	1,760	12,500	1,660	17,700	2,350	11,100	1,230	10,300	1,010
		20	0.07	11,800	1,560	10,600	1,400	10,000	1,330	14,100	1,870	8,800	1,040	8,200	850
3	0.1	8	0.055	14,400	2,120	13,000	1,910	12,200	1,800	17,300	2,550	10,800	1,270	10,100	1,040
		16	0.035	14,400	2,120	13,000	1,910	12,200	1,800	17,300	2,550	10,800	1,270	10,100	1,040
		25	0.022	11,700	1,720	10,500	1,550	9,900	1,460	14,000	2,060	8,700	1,150	8,200	940
		30	0.014	9,100	1,720	8,200	1,550	7,700	1,460	10,900	2,060	6,800	1,150	6,400	940
	0.2	8	0.09	14,400	2,120	13,000	1,910	12,200	1,800	17,300	2,550	10,800	1,270	10,100	1,040
		12	0.07	14,400	2,120	13,000	1,910	12,200	1,800	17,300	2,550	10,800	1,270	10,100	1,040
		16	0.05	14,400	2,120	13,000	1,910	12,200	1,800	17,300	2,550	10,800	1,270	10,100	1,040
		20	0.05	11,700	1,720	10,500	1,550	9,900	1,460	14,000	2,060	8,700	1,150	8,200	940
	0.3	25	0.045	11,700	1,720	10,500	1,550	9,900	1,460	14,000	2,060	8,700	1,150	8,200	940
		30	0.04	9,100	1,720	8,200	1,550	7,700	1,460	10,900	2,060	6,800	1,150	6,400	940
		8	0.13	14,400	2,360	13,000	2,120	12,200	2,010	17,300	2,830	10,800	1,410	10,100	1,160
		16	0.075	14,400	2,360	13,000	2,120	12,200	2,010	17,300	2,830	10,800	1,410	10,100	1,160
0.5	20	0.075	11,700	1,910	10,500	1,720	9,900	1,620	14,000	2,290	8,700	1,270	8,200	1,040	
	25	0.067	11,700	1,910	10,500	1,720	9,900	1,620	14,000	2,290	8,700	1,270	8,200	1,040	
	30	0.06	9,100	1,910	8,200	1,720	7,700	1,620	10,900	2,290	6,800	1,270	6,400	1,040	
	8	0.18	14,400	2,360	13,000	2,120	12,200	2,010	17,300	2,830	10,800	1,410	10,100	1,160	
	12	0.13	14,400	2,360	13,000	2,120	12,200	2,010	17,300	2,830	10,800	1,410	10,100	1,160	
	16	0.1	14,400	2,360	13,000	2,120	12,200	2,010	17,300	2,830	10,800	1,410	10,100	1,160	
0.5	20	0.1	11,700	1,910	10,500	1,720	9,900	1,620	14,000	2,290	8,700	1,270	8,200	1,040	
	25	0.09	11,700	1,910	10,500	1,720	9,900	1,620	14,000	2,290	8,700	1,270	8,200	1,040	
	30	0.08	9,100	1,910	8,200	1,720	7,700	1,620	10,900	2,290	6,800	1,270	6,400	1,040	
	35	0.065	9,100	1,910	8,200	1,720	7,700	1,620	10,900	2,290	6,800	1,270	6,400	1,040	

【注意】请参照 P41页 【Note】 Please refer to P.41

## 推荐切削参数 (高精度)

Recommended cutting datas to high accuracy machining

### SPM200-RN4

小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill

» 续前 Continue

工件材料 Workpiece Materials				P						N		H			
				碳钢, 合金钢 Carbon Steels, Alloy Steels (180~250HB)		合金钢, 工具钢 Alloy Steels, Tool Steels (25~35HRC)		PH与铁素体/ 马氏体钢 PH, Ferrite, Martensite Steels (35~45HRC)		铜, 铜合金 Copper, Copper Alloys		淬硬钢 Hardened Steels (45~55HRC)		淬硬钢 Hardened Steels (55~65HRC)	
切削深度 (ap) 比例系数 Ratio to standard depth of cut(ap)				1.00		0.90		0.70		1.20		0.50		0.45	
外径 Mill Dia. (mm)	圆角半径 r (mm)	颈长 Under Neck Length (mm)	ap	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min
4	0.1	12	0.065	10,400	2,790	9,300	2,520	8,800	2,240	12,400	3,350	7,800	1,750	7,200	1,300
		20	0.055	10,400	2,790	9,300	2,520	8,800	2,240	12,400	3,350	7,800	1,750	7,200	1,300
		30	0.045	9,300	2,520	8,400	2,010	7,900	1,830	11,200	3,020	7,000	1,470	6,500	1,170
		40	0.03	9,300	2,520	8,400	2,010	7,900	1,830	11,200	3,020	7,000	1,470	6,500	1,170
	0.2	12	0.13	10,400	2,790	9,300	2,520	8,800	2,240	12,400	3,350	7,800	1,750	7,200	1,300
		20	0.1	10,400	2,790	9,300	2,520	8,800	2,240	12,400	3,350	7,800	1,750	7,200	1,300
		30	0.08	9,300	2,520	8,400	2,010	7,900	1,830	11,200	3,020	7,000	1,470	6,500	1,170
		40	0.06	9,300	2,520	8,400	2,010	7,900	1,830	11,200	3,020	7,000	1,470	6,500	1,170
	0.3	12	0.17	10,400	2,790	9,300	2,520	8,800	2,380	12,400	3,350	7,800	1,860	7,200	1,410
		20	0.13	10,400	2,790	9,300	2,520	8,800	2,380	12,400	3,350	7,800	1,860	7,200	1,410
		30	0.1	9,300	2,520	8,400	2,260	7,900	1,900	11,200	3,020	7,000	1,570	6,500	1,170
		40	0.08	9,300	2,520	8,400	2,260	7,900	1,900	11,200	3,020	7,000	1,570	6,500	1,170
	0.5	12	0.24	10,400	2,790	9,300	2,520	8,800	2,380	12,400	3,350	7,800	1,860	7,200	1,410
		20	0.2	10,400	2,790	9,300	2,520	8,800	2,380	12,400	3,350	7,800	1,860	7,200	1,410
		30	0.17	9,300	2,520	8,400	2,260	7,900	1,900	11,200	3,020	7,000	1,570	6,500	1,170
		40	0.1	9,300	2,520	8,400	2,260	7,900	1,900	11,200	3,020	7,000	1,570	6,500	1,170
5	0.1	20	0.07	8,100	2,190	7,300	1,970	6,900	1,760	9,700	2,620	6,100	1,370	5,700	1,020
		40	0.035	7,300	1,970	6,600	1,570	6,200	1,430	8,700	2,360	5,500	1,150	5,100	920
	0.2	20	0.15	8,100	2,190	7,300	1,970	6,900	1,760	9,700	2,620	6,100	1,370	5,700	1,020
		40	0.08	7,300	1,970	6,600	1,570	6,200	1,430	8,700	2,360	5,500	1,150	5,100	920
	0.3	20	0.21	8,100	2,190	7,300	1,970	6,900	1,860	9,700	2,620	6,100	1,460	5,700	1,110
		40	0.1	7,300	1,970	6,600	1,770	6,200	1,490	8,700	2,360	5,500	1,230	5,100	920
	0.5	20	0.28	8,100	2,190	7,300	1,970	6,900	1,860	9,700	2,620	6,100	1,460	5,700	1,110
		40	0.14	7,300	1,970	6,600	1,770	6,200	1,490	8,700	2,360	5,500	1,230	5,100	920

【注意】请参照 P41页 【Note】 Please refer to P41

## 推荐切削参数 (高精度)

Recommended cutting datas to high accuracy machining

## SPM200-RN4

小径深加工4刃圆角头立铣刀

4 Flute, Extended Neck-Corner Radius Endmill

» 续前 Continue

工件材料 Workpiece Materials				P				N		H					
				碳钢, 合金钢 Carbon Steels, Alloy Steels (180~250HB)		合金钢, 工具钢 Alloy Steels, Tool Steels (25~35HRC)		PH与铁素体/ 马氏体钢 PH, Ferrite, Martensite Steels (35~45HRC)		铜, 铜合金 Copper, Copper Alloys		淬硬钢 Hardened Steels (45~55HRC)		淬硬钢 Hardened Steels (55~65HRC)	
切削深度 (ap) 比例系数 Ratio to standard depth of cut(ap)				1.00		0.90		0.70		1.20		0.50		0.45	
外径 Mill Dia. (mm)	圆角 半径 r (mm)	颈长 Under Neck Length (mm)	ap	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min	转速 n r/min	进给速度 Vf mm/min
5	1	20	0.35	8,100	2,190	7,300	1,970	6,900	1,860	9,700	2,620	6,100	1,460	5,700	1,110
		40	0.18	7,300	1,970	6,600	1,770	6,200	1,490	8,700	2,360	5,500	1,230	5,100	920
6	0.2	30	0.15	7,200	1,940	6,500	1,750	6,100	1,560	8,600	2,330	5,400	1,220	5,000	910
		54	0.1	6,500	1,750	5,800	1,400	5,500	1,270	7,800	2,100	4,900	1,020	4,500	820
		72	0.07	6,500	1,750	5,800	1,400	5,500	1,270	7,800	2,100	4,900	1,020	4,500	820
	0.3	30	0.25	7,200	1,940	6,500	1,750	6,100	1,560	8,600	2,330	5,400	1,300	5,000	980
		54	0.18	6,500	1,750	5,800	1,570	5,500	1,270	7,800	2,100	4,900	1,090	4,500	820
		72	0.1	6,500	1,750	5,800	1,570	5,500	1,270	7,800	2,100	4,900	1,090	4,500	820
	0.5	30	0.35	7,200	1,940	6,500	1,750	6,100	1,650	8,600	2,330	5,400	1,300	5,000	980
		54	0.25	6,500	1,750	5,800	1,570	5,500	1,320	7,800	2,100	4,900	1,090	4,500	820
		72	0.15	6,500	1,750	5,800	1,570	5,500	1,320	7,800	2,100	4,900	1,090	4,500	820
	1	30	0.55	7,200	1,940	6,500	1,750	6,100	1,650	8,600	2,330	5,400	1,300	5,000	980
		54	0.4	6,500	1,750	5,800	1,570	5,500	1,320	7,800	2,100	4,900	1,090	4,500	820
		72	0.22	6,500	1,750	5,800	1,570	5,500	1,320	7,800	2,100	4,900	1,090	4,500	820

## 【注意】

- 对于不同工件材料, ap请按上表切削深度比例系数进行调整, 如: 淬硬钢 (45~55HRC), ap需\*0.5。
- 请结合工件材料、加工形状、使用合适的冷却液, 推荐气冷或水冷。
- 实际加工中, 请考虑加工形状、目的、使用机床等因素, 对切削条件进行调整。
- 如果机床转速低于表中所列数值, 则进给速度应与转速按同一比例降低。

## 【Note】

- For different materials, adjust the cutting depth (ap) according to the cutting depth factors in the above table. E.g. for hardened steels (45~55HRC), ap\*0.5.
- Use the appropriate coolant such as air cooling or emulsion for the work material and machining shape.
- In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
- If the rpm of the machine is low, lower the feed rate also to put the rpm and feed rate in the same ratio.

# UPR210/UPN210粗加工立铣刀

## UPR210 & UPN210 Roughing Endmill

- 适用于普通钢、铸铁材料( $\leq 48\text{HRC}$ )的半精加工、粗加工，金属去除率高  
Suitable for semi finishing and roughing in steel and cast iron( $\leq 48\text{HRC}$ ), provides high metal removal rate.
- GU类细晶基底搭配AlCr系高性能纳米涂层，实现了高耐磨性与高韧性的完美结合  
GU series fine carbide substrate and AlCr series high performance nano coating provide superior wear resistance and toughness.
- 采用标准型波形齿设计和断屑齿设计，加工过程中产生细短切屑，排屑顺畅，实现了高质量稳定加工  
Standard knuckle-type teeth design and flat knuckle-type teeth design give fine and short chip, smooth chip removing, raise quality of production by suppressing chattering.
- UPR210系列采用 $45^\circ$ 大螺旋角及独特的U型槽设计，实现平稳切削  
 $45^\circ$  helix angle design and unique U type chip pocket design of UPR210 give stable machining.
- UPN210系列采用独特的大R槽型设计，实现良好的排屑性能  
Unique large R type chip pocket design of UPN210 creates big chip pocket space and excellent chip removing performance.



# UPR210-S4

## 4刃粗加工平头

4 Flute Square with Roughing Geometry

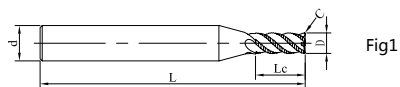


Fig1

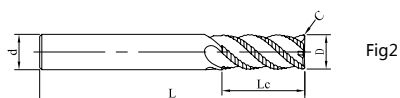


Fig2



标记说明请参考P30页 See page 30 for guidelines to icons

订货号 Ordering Code	D	Lc	C	L	d	图号 Figure No.	库存 Stock
UPR210-S4-06016	6	16	0.2	50	6	2	●
UPR210-S4-08020	8	20	0.2	60	8	2	●
UPR210-S4-10025	10	25	0.3	75	10	2	●
UPR210-S4-12030	12	30	0.3	75	12	2	●
UPR210-S4-16036	16	36	0.4	100	16	2	●
UPR210-S4-20045	20	45	0.5	100	20	2	●

- 标准库存 Stock
- 需预定 Available upon Order

D	公差
D 6	$\begin{matrix} 0 \\ -0.03 \end{matrix}$
6 < D 10	$\begin{matrix} 0 \\ -0.04 \end{matrix}$
D > 10	$\begin{matrix} 0 \\ -0.05 \end{matrix}$

单位unit ( mm )

### 工件材料 Workpiece Material

P		M	K	H	
1 2 3 4	5	1 2 3	1 2 3	1	2 3
碳钢、合金钢 ( < 35HRC ) Carbon Steel, Alloy Steel (< 35 HRC)	合金钢 ( 35-48HRC ) Alloy Steel, Tool Steel ( 35-48HRC )	不锈钢 Stainless Steel	铸铁 Cast Iron	高硬钢 Hardened Steel ( 45-55HRC )	高硬钢 Hardened Steel ( > 55HRC )
◎	◎	○	◎	○	

◎ 最适合 Most Suitable ○ 适合 Suitable

推荐切削参数 Cutting Parameters ※ P044

## 推荐切削参数

Recommended Cutting Data

### UPR210- S4

钢件、铸铁——侧铣

For Steels, Cast Iron——Side Milling



工件材料 Workpiece Material		切削量 (mm)	Vc m/min	刃径 Tool Diameter(mm)	6	8	10	12	16	20
P	碳钢 合金钢 Carbon Steel, Alloy Steel ( < 35 HRC )	ap ≤ 1.5D ae ≤ 0.3D	140	转速 ( min <sup>-1</sup> )	7430	5570	4460	3720	2790	2230
				进给速度 ( mm/min )	1070	1070	1070	1070	1000	900
	合金钢 Alloy Steel, Tool Steel ( 35-48HRC )	ap ≤ 1D ae ≤ 0.25D	120	转速 ( min <sup>-1</sup> )	6370	4780	3820	3190	2390	1910
				进给速度 ( mm/min )	630	660	690	700	570	535
M	不锈钢 Stainless Steel	ap ≤ 1.5D ae ≤ 0.3D	110	转速 ( min <sup>-1</sup> )	5840	4380	3500	2920	2190	1750
				进给速度 ( mm/min )	580	610	630	640	525	490
K	灰铸铁 球墨铸铁 Grey Iron, Spher. Graph. Iron ( < 32HRC )	ap ≤ 1.5D ae ≤ 0.3D	140	转速 ( min <sup>-1</sup> )	7430	5570	4460	3720	2790	2230
				进给速度 ( mm/min )	1070	1070	1070	1070	1000	900
	高合金铸铁 High Alloy Steel ( 35-45HRC )	ap ≤ 1D ae ≤ 0.25D	120	转速 ( min <sup>-1</sup> )	6370	4780	3820	3190	2390	1910
				进给速度 ( mm/min )	630	660	690	700	570	535
H	高硬钢 Hardened Steel ( < 55HRC )	ap ≤ 1D ae ≤ 0.125D	100	转速 ( min <sup>-1</sup> )	5300	3980	3190	2650	1990	1590
				进给速度 ( mm/min )	530	480	450	420	400	380

- 1、请使用刚性较高的机床和刀柄。  
Make sure machine are stable and use a precision holder.
- 2、请根据具体加工工况，适当调整转速、进给、切深和切宽。  
Please adjust the speed, feed, cutting depth and width according to actual cutting conditions.
- 3、上表切削参数是按照刀具悬长为直径4倍以下时制定，若刀具悬长过长，加工时易产生振动，请适当调整转速、进给和切深。  
The milling conditions are for endmill that overhang length is less than 4\*D(mill dia.).  
When the tool overhang length is longer, please adjust the speed, feed and cutting depth.

## 推荐切削参数

Recommended Cutting Data

## UPR210- S4

钢件、铸铁——槽铣

For Steels, Cast Iron——Slotting



工件材料 Workpiece Material		切削量 (mm)	Vc m/min	刃径 Tool Diameter(mm)	6	8	10	12	16	20
P	碳钢 合金钢 Carbon Steel, Alloy Steel ( <35 HRC )	ap ≤ 1D	120	转速 ( min <sup>-1</sup> )	6370	4780	3820	3190	2390	1910
				进给速度 ( mm/min )	640	630	610	640	570	535
	合金钢 Alloy Steel, Tool Steel ( 35-48HRC )	ap ≤ 0.75D	100	转速 ( min <sup>-1</sup> )	5310	4000	3190	2650	1990	1590
				进给速度 ( mm/min )	430	400	450	425	360	320
M	不锈钢 Stainless Steel	ap ≤ 0.75D	90	转速 ( min <sup>-1</sup> )	4770	3580	2860	2390	1790	1430
				进给速度 ( mm/min )	380	360	400	380	320	285
K	灰铸铁 球墨铸铁 Grey Iron, Spher. Graph. Iron ( < 32HRC )	ap ≤ 1D	120	转速 ( min <sup>-1</sup> )	6370	4780	3820	3190	2390	1910
				进给速度 ( mm/min )	640	630	610	640	570	535
	高合金铸铁 High Alloy Steel ( 35-45HRC )	ap ≤ 0.75D	100	转速 ( min <sup>-1</sup> )	5310	4000	3190	2650	1990	1590
				进给速度 ( mm/min )	430	400	450	425	360	320

1、请使用刚性较高的机床和刀柄。

Make sure machine are stable and use a precision holder.

2、请根据具体加工工况，适当调整转速、进给、切深和切宽。

Please adjust the speed, feed, cutting depth and width according to actual cutting conditions.

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The milling conditions are for endmill that overhang length is less than 4\*D(mill dia.).

When the tool overhang length is longer, please adjust the speed, feed and cutting depth.

# UPN210-S4

## 4刃粗加工平头

4 Flute Square with Roughing Geometry

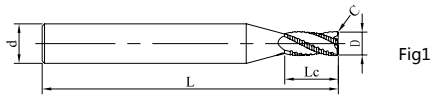


Fig1

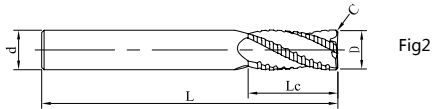


Fig2



标记说明请参考P30页 See page 30 for guidelines to icons

订货号 Ordering Code	D	Lc	C	L	d	图号 Figure No.	库存 Stock
UPN210-S4-06016	6	16	0.2	50	6	2	●
UPN210-S4-08020	8	20	0.2	60	8	2	●
UPN210-S4-10025	10	25	0.3	75	10	2	●
UPN210-S4-12030	12	30	0.3	75	12	2	●
UPN210-S4-16036	16	36	0.4	100	16	2	●
UPN210-S4-20045	20	45	0.5	100	20	2	●

- 标准库存 Stock
- 需预定 Available upon Order

D	公差
D 6	$\begin{matrix} 0 \\ -0.03 \end{matrix}$
6 < D 10	$\begin{matrix} 0 \\ -0.04 \end{matrix}$
D > 10	$\begin{matrix} 0 \\ -0.05 \end{matrix}$

单位unit ( mm )

### 工件材料 Workpiece Material

P		M	K	H	
1 2 3 4	5	1 2 3	1 2 3	1	2 3
碳钢、合金钢 ( < 35HRC ) Carbon Steel, Alloy Steel ( < 35 HRC )	合金钢 ( 35-48HRC ) Alloy Steel, Tool Steel ( 35-48HRC )	不锈钢 Stainless Steel	铸铁 Cast Iron	高硬钢 Hardened Steel ( 45-55HRC )	高硬钢 Hardened Steel ( > 55HRC )
⊙	⊙	○	⊙	○	

⊙ 最适合 Most Suitable ○ 适合 Suitable

推荐切削参数 Cutting Parameters ※ P047



## 推荐切削参数

Recommended Cutting Data

## UPN210-S4

钢件、铸铁——侧铣

For Steels, Cast Iron——Side Milling



工件材料 Workpiece Material		切削量 (mm)	Vc m/min	刃径 Tool Diameter(mm)	6	8	10	12	16	20
P	碳钢 合金钢 Carbon Steel, Alloy Steel(<35 HRC)	ap ≤ 1.5D ae ≤ 0.3D	130	转速 (min <sup>-1</sup> )	6900	5180	4140	3450	2590	2070
				进给速度 (mm/min)	990	990	990	990	930	830
	合金钢 Alloy Steel, Tool Steel(35- 48HRC)	ap ≤ 1D ae ≤ 0.25D	110	转速 (min <sup>-1</sup> )	5840	4380	3500	2920	2190	1750
				进给速度 (mm/min)	580	610	630	640	525	490
M	不锈钢 Stainless Steel	ap ≤ 1.5D ae ≤ 0.3D	110	转速 (min <sup>-1</sup> )	5840	4380	3500	2920	2190	1750
				进给速度 (mm/min)	580	610	630	640	525	490
K	灰铸铁 球墨铸铁 Grey Iron, Spher. Graph. Iron (< 32HRC)	ap ≤ 1.5D ae ≤ 0.3D	130	转速 (min <sup>-1</sup> )	6900	5180	4140	3450	2590	2070
				进给速度 (mm/min)	990	990	990	990	930	830
	高合金铸铁 High Alloy Steel (35-45HRC)	ap ≤ 1D ae ≤ 0.25D	110	转速 (min <sup>-1</sup> )	5840	4380	3500	2920	2190	1750
				进给速度 (mm/min)	580	610	630	640	525	490
H	高硬钢 Hardened Steel ( < 55HRC)	ap ≤ 1D ae ≤ 0.125D	90	转速 (min <sup>-1</sup> )	4780	3580	2870	2390	1790	1430
				进给速度 (mm/min)	480	430	400	380	360	345

1、请使用刚性较高的机床和刀柄。

Make sure machine are stable and use a precision holder.

2、请根据具体加工工况，适当调整转速、进给、切深和切宽。

Please adjust the speed, feed, cutting depth and width according to actual cutting conditions.

3、上表切削参数是按照刀具悬长为直径4倍以下时制定，若刀具悬长过长，加工时易产生振动，请适当调整转速、进给和切深。

The milling conditions are for endmill that overhang length is less than 4\*D(mill dia.).

When the tool overhang length is longer, please adjust the speed, feed and cutting depth.

## 推荐切削参数

Recommended Cutting Data

### UPN210- S4

钢件、铸铁——槽铣

For Steels, Cast Iron——Slotting



工件材料 Workpiece Material		切削量 (mm)	Vc m/min	刃径 Tool Diameter(mm)	6	8	10	12	16	20
<b>P</b>	碳钢 合金钢 Carbon Steel, Alloy Steel ( <35 HRC )	ap ≤ 0.5D	120	转速 ( min <sup>-1</sup> )	6370	4780	3820	3190	2390	1910
				进给速度 ( mm/min )	640	630	610	640	570	535
	合金钢 Alloy Steel, Tool Steel ( 35-48HRC )	ap ≤ 0.3D	100	转速 ( min <sup>-1</sup> )	5310	4000	3190	2650	1990	1590
				进给速度 ( mm/min )	430	400	450	425	360	320
<b>M</b>	不锈钢 Stainless Steel	ap ≤ 0.5D	90	转速 ( min <sup>-1</sup> )	4770	3580	2860	2390	1790	1430
				进给速度 ( mm/min )	380	360	400	380	320	285
<b>K</b>	灰铸铁 球墨铸铁 Grey Iron, Spher. Graph. Iron ( < 32HRC )	ap ≤ 0.5D	120	转速 ( min <sup>-1</sup> )	6370	4780	3820	3190	2390	1910
				进给速度 ( mm/min )	640	630	610	640	570	535
	高合金铸铁 High Alloy Steel ( 35-45HRC )	ap ≤ 0.3D	100	转速 ( min <sup>-1</sup> )	5310	4000	3190	2650	1990	1590
				进给速度 ( mm/min )	430	400	450	425	360	320

- 1、请使用刚性较高的机床和刀柄。  
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The milling conditions are for endmill that overhang length is less than 4\*D(mill dia.).  
When the tool overhang length is longer, please adjust the speed, feed and cutting depth.

## 3C行业手机外壳及零部件加工解决方案 —高效、高精、高光加工刀具

3C Industry Mobile Phone Shell And Parts Processing Solutions  
-High Efficiency, High Precision, High Surface Quality Cutting Tools

**高效 Efficient**

**型腔高效铣削**  
Inner Chamber

铝合金高效刀具-SA100  
Aluminum Alloy-SA100

**背面加工**  
Backside

PCD飞刀  
PCD Face Milling

**不锈钢高效面铣加工**  
Charging Port

不锈钢高效面铣刀具  
Face Milling For Stainless Steel

**高精 Precision**

**侧孔、防水面加工**  
Side hole

铝合金涂层刀具-SA160-C  
Coating Milling for Aluminum Alloy-SA160-C

**高光 Surface quality**

**中框外观加工**  
Appearance

铝合金外观刀具  
Aluminum Alloy For Appearance

**高光倒角加工**  
Small Chamfer

不锈钢高光刀  
High Surface Quality

根据客户需求提供非标定制  
Provide Non-standard Customization According To Customer Requirements

# GD600/601/602B高效BTA深孔钻系列

GD600/601/602B High Efficiency BTA Deep Drills

• 焊接式钻头刀体采用专用涂层，确保钻头能满足长时间稳定深孔加工的需求，孔公差等级  
最高可达IT9，粗糙度达到Ra 2 $\mu$ m

Brazed drills use special coating to meet stable deep drilling for a long time, and can achieve IT9 and Ra 2 $\mu$ m.

• 机夹式钻头满足 $\varnothing$ 38 ~ 107mm范围深孔加工需求，刀片断屑性能优异  
Indexable drills meet deep drilling ranging from  $\varnothing$ 38 to  $\varnothing$ 107mm and get excellent performance in chip form.

• 适用于能源、液压、航空、军工和造船等行业零件的深孔加工，典型零件包括热交换管板、液压缸、飞机起落架、炮管和传动轴等  
Suitable for deep drilling in industries such as energy, hydraulic, aviation, military and shipbuilding, etc. Typical representative parts include tube sheet, hydro-cylinder, landing chassis, gun tube and drive shaft, etc.



## 可转位深孔钻型号表示规则

Indexable Deep Hole Drill Identification System

GD 602 B - 016.10 S E 4



① 刀具类型 Drill type	
GD	可转位深孔钻 Indexable Deep Drill

② 系列主码 Major series code	
602	602 系列 602 series

③ 系列辅助码 Minor series code	
B	子系列 B Minor series B
省略 Blank	默认 Default

④ 钻头直径 Drill diameter	
016.10	钻头直径 $\varnothing$ 16.10 Drill dia.= $\varnothing$ 16.10

⑤ 通道类型 Tube type	
S	单通道 Single tube
D	双通道 Double tube

⑥ 接口类型 Interface type	
E	外螺纹 External thread
I	内螺纹 Internal thread
省略 Blank	默认 (双通道) Default (double tube)

⑦ 螺纹条数 Thread number	
4	4道螺纹 4 Start thread

## 可转位深孔钻削产品一览表

Product List of Indexable Deep Hole Drill

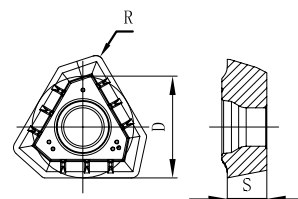
类别 Type	系列 Series	产品外形 Figure	应用 Application	特点 Advantage
可转位 深孔钻头 Indexable Deep Drill	GD600		通用深孔钻削 Deep hole drilling for general materials 加工孔径 Dia. : $\varnothing$ 38 ~ $\varnothing$ 107mm 最大钻深 Max. Depth : 100xD	机夹式 Screw Locking 高生产率首选, 单孔成本最低, 性能 一致性好 High productivity, Lower cost per hole, better performance consistence
	GD601		通用深孔钻削 Deep hole drilling for general materials 加工孔径 Dia. : $\varnothing$ 25 ~ $\varnothing$ 28.7mm 最大钻深 Max. Depth : 100xD	机夹式 Screw Locking 高生产率首选, 单孔成本最低, 性能 一致性好 High productivity, Lower cost per hole, better performance consistence
	GD602A		通用深孔钻削 Deep hole drilling for general materials 加工孔径 Dia. : $\leq \varnothing$ 25mm 最大钻深 Max. Depth : 100xD	焊接式 Brazed 单刃设计, 孔加工精度高 Single-edge design, superior hole machining accuracy
	GD602B		通用深孔钻削 Deep hole drilling for general materials 加工孔径 Dia. : $\varnothing$ 16 ~ $\varnothing$ 36mm 最大钻深 Max. Depth : 100xD	焊接式 Brazed 3刃组合设计, 孔加工精度高 切削轻快 Muti-edge design, superior hole machining accuracy

GD600 系列 / GD600 Series

# TPMT

## 深孔钻削刀片

Indexable deep drill insert



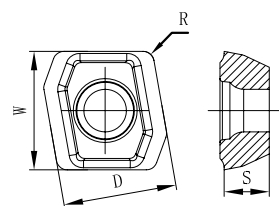
型号 Type	牌号 Grade	尺寸 Dimension(mm)				库存 Stock
		D	S	R	W	
TPMT140308-ED	GA4230	8.45	3.50	0.80	-	●
TPMT1704DD	GA4230	10.30	4.00	0.80	-	●
TPMT2405DD	GA4230	14.20	5.50	1.20	-	●
TPMT280716-ED	GA4230	17.00	7.50	1.60	-	●

●标准库存 Stock ○需预订 Order

# NPMT

## 深孔钻削刀片

Indexable deep drill insert



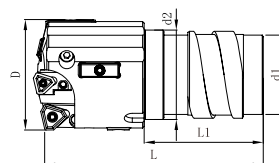
型号 Type	牌号 Grade	尺寸 Dimension(mm)				库存 Stock
		D	S	R	W	
NPMT080308-DD	GA4230	8.00	3.18	0.80	8.36	●

●标准库存 Stock ○需预订 Order

# GD600

## 机夹式深孔钻

Indexable deep drill



订货号 Type	D	L	L1	d1	d2
GD600-XXX.XXSE4	Ø38.00-39.60	85	37	27	30
GD600-XXX.XXSE4	Ø39.61-43.00	85	37	30	33
GD600-XXX.XXSE4	Ø43.01-47.00	95	37	33	36
GD600-XXX.XXSE4	Ø47.01-51.70	95	37	36	39
GD600-XXX.XXSE4	Ø51.71-56.20	100	41	39.5	43
GD600-XXX.XXSE4	Ø56.21-60.60	110	41	43.5	47
GD600-XXX.XXSE4	Ø60.61-65.00	110	77	47	52
GD600-XXX.XXSE4	Ø65.01-66.99	150	77	47	52
GD600-XXX.XXSE4	Ø67.00-72.99	150	77	53	58
GD600-XXX.XXSE4	Ø73.00-79.99	150	77	58	63
GD600-XXX.XXSE4	Ø80.00-86.99	180	100	64	70
GD600-XXX.XXSE4	Ø87.00-99.99	180	100	71	77
GD600-XXX.XXSE4	Ø100.00-106.99	180	100	83	89

## GD600 系列刀片组合

GD600 Series Insert Assembly

刀片组合 Insert Assembly		直径 Diameter ( mm )						
		Ø38.00-39.99	Ø40.00-44.99	Ø45.00-47.99	Ø48.00-51.99	Ø52.00-54.99	Ø55.00-57.99	Ø58.00-59.99
刀片 Insert	外侧 Peripheral	NPMT080308-DD	TPMT140308-ED	TPMT140308-ED	TPMT140308-ED	TPMT1704DD	TPMT1704DD	TPMT1704DD
	中间 Inner	NPMT080308-DD	NPMT080308-DD	NPMT080308-DD	TPMT140308-ED	TPMT140308-ED	TPMT140308-ED	TPMT1704DD
	中心 Center	NPMT080308-DD	NPMT080308-DD	TPMT140308-ED	TPMT140308-ED	TPMT140308-ED	TPMT1704DD	TPMT1704DD

刀片组合 Insert Assembly		直径 Diameter ( mm )						
		Ø60.00-63.99	Ø64.00-67.99	Ø68.00-77.99	Ø78.00-84.99	Ø85.00-91.99	Ø92.00-98.99	Ø99.00-106.99
刀片 Insert	外侧 Peripheral	TPMT1704DD	TPMT2405DD	TPMT1704DD	TPMT2405DD	TPMT280716-ED	TPMT2405DD	TPMT280716-ED
	中间 Inner	TPMT1704DD	TPMT1704DD	TPMT2405DD	TPMT2405DD	TPMT2405DD	TPMT280716-ED	TPMT280716-ED
	中心 Center	TPMT1704DD	TPMT1704DD	TPMT2405DD	TPMT2405DD	TPMT2405DD	TPMT280716-ED	TPMT280716-ED

## 推荐切削参数

Recommended Cutting Parameters

### 可转位深孔钻GD600

Indexable deep drill GD600

ISO	工件材料 Workpiece Material		特征 Feature	硬度 HB	切削速度 Vc (m/min)	进给 Feed (mm/rev)				
						Ø38.00 -39.99	Ø40.00 -51.99	Ø52.00 -63.99	Ø64.00 -84.99	Ø85.00 -106.99
P	非合金钢、 铸钢、易 切钢 Non-alloy steel, cast steel, free cutting steel	0.1-0.25%C	退火 Annealed	125	60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
		0.25-0.55%C	退火 Annealed	190	60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
		0.25-0.55%C	淬火和调质 Quenched and tempered	250	60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
		0.55-0.80%C	退火 Annealed	220	60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
		0.55-0.80%C	淬火和调质 Quenched and tempered	300	60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
	低碳钢、 铸钢合金元素少于 5% Low alloy steel and cast steel (less than 5% of alloying elements)	退火 Annealed	200	60-100	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3	
		淬火和调质 Quenched and tempered	275	60-100	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3	
			300	50-100	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3	
			350	50-100	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3	
	高碳合金钢、铸钢及工具钢 High alloy steel, cast steel and tool steel	退火 Annealed	200	60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3	
淬火和调质 Quenched and tempered		325	60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3		
M	不锈钢、铸钢 Stainless steel and cast steel	铁素体 / 马氏体 Ferritic/Matensite	200	60-110	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3	
		马氏体 Matensite	240	60-110	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3	
		奥氏体 Austenite	180	60-110	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3	
K	可锻铸铁 Malleable cast iron	铁素体 / 珠光体 Ferritic/Matensite	130	60-100	0.08-0.13	0.1-0.15	0.13-0.18	0.15-0.2	0.18-0.23	
		珠光体 Pearlitic	230	60-100	0.08-0.13	0.1-0.15	0.13-0.18	0.15-0.2	0.18-0.23	
	灰铸铁 Gray cast iron(GG)	铁素体 Ferritic	160	60-100	0.08-0.13	0.1-0.15	0.13-0.18	0.15-0.2	0.18-0.23	
		珠光体 Pearlitic	250	60-100	0.08-0.13	0.1-0.15	0.13-0.18	0.15-0.2	0.18-0.23	
	球墨铸铁 Cast iron nodular(GGG)	铁素体 Ferritic	180	60-100	0.08-0.13	0.1-0.15	0.13-0.18	0.15-0.2	0.18-0.23	
		珠光体 Pearlitic	260	60-100	0.08-0.13	0.1-0.15	0.13-0.18	0.15-0.2	0.18-0.23	
N	铝 - 精炼合金 Aluminum - wrought alloy	未固化 Not cureable	60	60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33	
		固化 Cured	100	60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33	
	铝 - 铸造合金 Aluminum-cast , alloyed	未固化 Not cureable	75	60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33	
		未固化 Not cureable	90	60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33	
		高温合金 High temp	130	60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33	
		易切铜 Free cutting	110	60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33	
	铜合金 Copper alloys	黄铜 Brass	90	60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33	
		电解铜 Electrolytic copper	100	60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33	

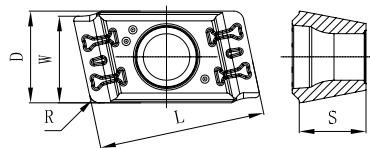


GD601 系列 / GD601 Series

# NPMT

## 深孔钻削刀片

Indexable deep drill insert



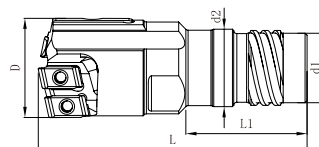
型号 Type	牌号 Grade	尺寸 Dimension(mm)					库存
		D	S	R	W	L	
NPMT05504R1	GA4230	5.50	4.00	0.60	5.20	10.00	●

●标准库存 Stock ○需预订 Order

# GD601

## 机夹式深孔钻

Indexable deep drill



型号 Type	D	L	L1	d1	d2
GD601-XXX.XXSE4	Ø25.00-26.40	65.00	21.50	19.00	21.00
GD601-XXX.XXSE4	Ø 26.41-28.70	70.00	24.50	21.00	23.50

## GD601 系列刀片组合

GD601 Series Insert Assembly

刀片组合 Insert Assembly		直径 Diameter ( mm )	
		Ø25.00-26.40	Ø 26.41-28.70
刀片 Insert	外侧 Peripheral	NPMT05504R1	NPMT05504R1
	中间 Inner	NPMT05504R1	NPMT05504R1
	中心 Center	NPMT05504R1	NPMT05504R1

## 推荐切削参数

Recommended Cutting Parameters

### 可转位深孔钻GD601

Indexable deep drill GD601

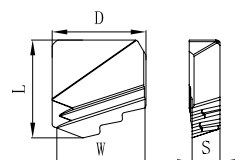
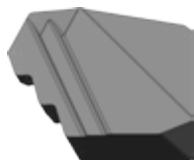
ISO	工件材料 Workpiece Material		特征 Feature	硬度 HB	切削速度 Vc (m/min)	进给 Feed (mm/rev)
						Ø25.00-28.7
P	非合金钢、铸钢、易切钢 Non-alloy steel, cast steel, free cutting steel	0.1-0.25%C	退火 Annealed	125	70-130	0.1-0.20
		0.25-0.55%C	退火 Annealed	190	70-130	0.1-0.20
		0.25-0.55%C	淬火和调质 Quenched and tempered	250	70-130	0.1-0.20
		0.55-0.80%C	退火 Annealed	220	70-130	0.1-0.20
		0.55-0.80%C	淬火和调质 Quenched and tempered	300	70-130	0.1-0.20
	低碳钢、铸钢合金元素少于 5% Low alloy steel and cast steel (less than 5% of alloying elements)		退火 Annealed	200	70-110	0.1-0.20
		淬火和调质 Quenched and tempered	275	60-110	0.1-0.20	
			300	60-110	0.1-0.20	
	高碳合金钢、铸钢及工具钢 High alloy steel, cast steel and tool steel		退火 Annealed	200	70-130	0.1-0.20
		淬火和调质 Quenched and tempered	325	70-130	0.1-0.20	
350			60-110	0.1-0.20		
M	不锈钢、铸钢 Stainless steel and cast steel	铁素体 / 马氏体 Ferritic/Martensite	200	40-110	0.1-0.20	
		马氏体 Martensite	240	40-110	0.1-0.20	
		奥氏体 Austenite	180	40-110	0.1-0.20	
K	可锻铸铁 Malleable cast iron	铁素体 / 珠光体 Ferritic/Martensite	130	70-110	0.1-0.20	
		珠光体 Pearlitic	230	70-110	0.1-0.20	
	灰铸铁 Gray cast iron (GG)	铁素体 Ferritic	160	60-110	0.1-0.20	
		珠光体 Pearlitic	250	60-110	0.1-0.20	
	球墨铸铁 Cast iron nodular (GGG)	铁素体 Ferritic	180	50-110	0.1-0.20	
		珠光体 Pearlitic	260	50-110	0.1-0.20	
N	铝 - 精炼合金 Aluminum - wrought alloy	未固化 Not cureable	60	65-130	0.1-0.20	
		固化 Cured	100	65-130	0.08-0.18	
	铝 - 铸造合金 Aluminum-cast, alloyed	未固化 Not cureable	75	65-130	0.08-0.18	
		未固化 Not cureable	90	65-130	0.08-0.18	
		高温合金 High temp.	130	65-130	0.08-0.18	
	铜合金 Copper alloys	易切铜 Free cutting	110	65-130	0.08-0.18	
		黄铜 Brass	90	65-130	0.08-0.18	
		电解铜 Electrolytic copper	100	65-130	0.08-0.18	

GD602A 系列 / GD602A Series

# ZOMR

焊接式深孔钻刀片

Brazed deep drill insert



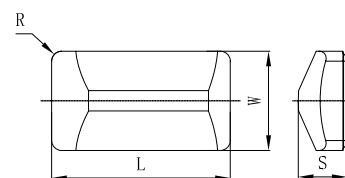
型号 Type	牌号 Grade	尺寸 Dimension(mm)				库存 Stock
		D	S	W	L	
ZOMR0903PA	GN9125	9.45	2.8	8.89	9.84	●

● 标准库存 Stock ○ 需预订 Order

# PAD

焊接式导条

Brazed guide pad



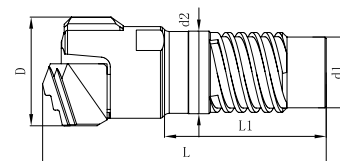
型号 Type	牌号 Grade	尺寸 Dimension(mm)				库存 Stock
		W	S	L	R	
PAD-05085A	GT20A	5.00	2.45	9.00	0.5	○

● 标准库存 Stock ○ 需预订 Order

# GD602A

焊接式深孔钻

Brazed deep drill

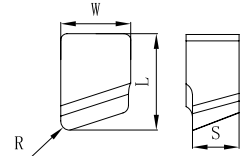


型号 Type	尺寸 Dimension(mm)				
	D	L	L1	d1	d2
GD602A-XXX.XXSE4	16.10	43.30	25.00	10.80	12.60

GD602B 系列 / GD602B Series

# ZOMR

焊接式深孔钻刀片  
Braze deep drill insert

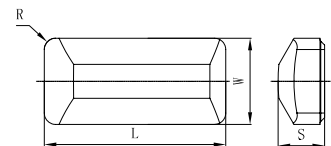


型号 Type	牌号 Grade	尺寸 Dimension(mm)				库存 Stock
		S	R	W	L	
ZOMR0502-PA	GN9125	2.2	0.35	4.0	5.0	○
ZOMR0402-PA	GN9125	2.2	0.4	4.1	6.1	○
ZOMR0302-PA	GN9125	2.2	0.4	3.3	4.5	○

●标准库存 Stock ○需预订 Order

# PAD

焊接式导条  
Braze guide pad



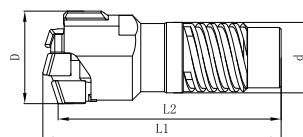
型号 Type	牌号 Grade	尺寸 Dimension(mm)				库存 Stock
		W	S	L	R	
PAD-04080A	GT20A	3.8	2.05	8.00	0.5	○

●标准库存 Stock ○需预订 Order

# GD602B

## 焊接式深孔钻

Brazed deep drill



型号 Type	尺寸 Dimension(mm)					
	D	L1	L2	d		
GD602B-XXX.XXSE4	15.6-16.2	43	40.3	12.6		
	16.21-16.7					
GD602B-XXX.XXSE4	16.71-17.2			47	44.2	13.6
	17.21-17.7					
GD602B-XXX.XXSE4	17.71-18.4	52.5	44.1	14.5		
	18.41-18.9		44.1			
GD602B-XXX.XXSE4	18.91-19.2		56	44	15.5	
	19.21-20.0					
GD602B-XXX.XXSE4	20.01-20.9	57.5	49.4	16		
	20.91-21.8		49.2			
GD602B-XXX.XXSE4	21.81-22.9	63.5	52.8	18		
	22.91-24.1		52.6			
GD602B-XXX.XXSE4	24.11-25.2		54	53.8	19.5	
	25.21-26.4					
GD602B-XXX.XXSE4	26.41-27.5	59.5	59.3	21		
	27.51-28.7					
GD602B-XXX.XXSE4	28.71-29.8			59.4	59.1	23.5
	29.81-31					
GD602B-XXX.XXSE4	31.01-32.1	59	58.9	25.5		
	32.11-33.3					
GD602B-XXX.XXSE4	33.31-34.8			59	58.9	28
	34.81-36.2					

注：其他直径规格可以定制

Note: Drills of other diameters can be customized

## 推荐切削参数

Recommended Cutting Parameters

### 焊接式深孔钻 GD602A/B

Brazed deep drill GD602A/B

ISO	工件材料 Workpiece Material		特征 Feature	硬度 HB	切削速度 Vc (m/min)	进给 Feed (mm/rev)			
						Ø8.00 -15.60	Ø15.61 -20.00	Ø20.01 -31.00	Ø31.01 -36.00
P	非合金钢、铸钢、易切钢 Non-alloy steel, cast steel, free cutting steel	0.1-0.25%C	退火 Annealed	125	70-120	0.05-0.13	0.08-0.15	0.1-0.17	0.13-0.2
		0.25-0.55%C	退火 Annealed	190	70-120	0.05-0.13	0.08-0.15	0.1-0.17	0.13-0.2
		0.25-0.55%C	淬火和调质 Quenched and tempered	250	40-70	0.05-0.13	0.08-0.15	0.1-0.17	0.13-0.2
		0.55-0.80%C	退火 Annealed	220	70-120	0.05-0.13	0.08-0.15	0.1-0.17	0.13-0.2
		0.55-0.80%C	淬火和调质 Quenched and tempered	300	55-100	0.05-0.1	0.08-0.12	0.1-0.15	0.13-0.17
	低碳钢、铸钢合金元素少于5% Low alloy steel and cast steel (less than 5% of alloying elements)		退火 Annealed	200	70-100	0.05-0.13	0.08-0.15	0.1-0.17	0.13-0.2
			淬火和调质 Quenched and tempered	275	55-100	0.05-0.1	0.08-0.12	0.1-0.15	0.13-0.17
				300	55-100	0.05-0.1	0.08-0.12	0.1-0.15	0.13-0.17
				350	55-100	0.05-0.1	0.08-0.12	0.1-0.15	0.13-0.17
	高碳合金钢、铸钢及工具钢 High alloy steel, cast steel and tool steel		退火 Annealed	200	50-85	0.05-0.13	0.08-0.15	0.1-0.17	0.13-0.2
淬火和调质 Quenched and tempered			325	55-100	0.05-0.1	0.08-0.12	0.1-0.15	0.13-0.17	
M	不锈钢、铸钢 Stainless steel and cast steel	铁素体 / 马氏体 Ferritic/Martensite	200	60-100	0.05-0.13	0.08-0.15	0.1-0.28	0.13-0.3	
		马氏体 Martensite	240	60-100	0.05-0.13	0.08-0.15	0.1-0.28	0.13-0.3	
		奥氏体 Austenite	180	60-100	0.05-0.12	0.05-0.12	0.08-0.25	0.1-0.28	
K	可锻铸铁 Malleable cast iron	铁素体 / 珠光体 Ferritic/Martensite	130	80-100	0.05-0.13	0.08-0.15	0.1-0.17	0.13-0.2	
		珠光体 Pearlitic	230	80-100	0.05-0.13	0.08-0.15	0.1-0.17	0.13-0.2	
	灰铸铁 Gray cast iron (GG)	铁素体 Ferritic	160	60-100	0.05-0.13	0.06-0.13	0.08-0.18	0.1-0.2	
		珠光体 Pearlitic	250	60-100	0.05-0.13	0.06-0.13	0.08-0.18	0.1-0.2	
	球墨铸铁 Cast iron nodular (GGG)	铁素体 Ferritic	180	50-100	0.05-0.13	0.06-0.13	0.08-0.18	0.1-0.2	
		珠光体 Pearlitic	260	50-100	0.05-0.13	0.06-0.13	0.08-0.18	0.1-0.2	
N	铝 - 精炼合金 Aluminum - wrought alloy	未固化 Not cureable	60	65-130	0.05-0.13	0.08-0.15	0.1-0.2	0.15-0.25	
		固化 Cured	100	65-130	0.05-0.13	0.08-0.15	0.1-0.2	0.15-0.25	
	铝 - 铸造合金 Aluminum-cast, alloyed	未固化 Not cureable	75	65-130	0.05-0.13	0.08-0.15	0.1-0.2	0.15-0.25	
		未固化 Not cureable	90	65-130	0.05-0.13	0.08-0.15	0.1-0.2	0.15-0.25	
		高温合金 High temp.	130	65-130	0.05-0.13	0.08-0.15	0.1-0.2	0.15-0.25	
	铜合金 Copper alloys	易切铜 Free cutting	110	65-130	0.05-0.13	0.08-0.15	0.1-0.2	0.15-0.25	
		黄铜 Brass	90	65-130	0.05-0.13	0.08-0.15	0.1-0.2	0.15-0.25	
		电解铜 Electrolytic copper	100	65-130	0.05-0.13	0.08-0.15	0.1-0.2	0.15-0.25	

# 可转位镗削系统

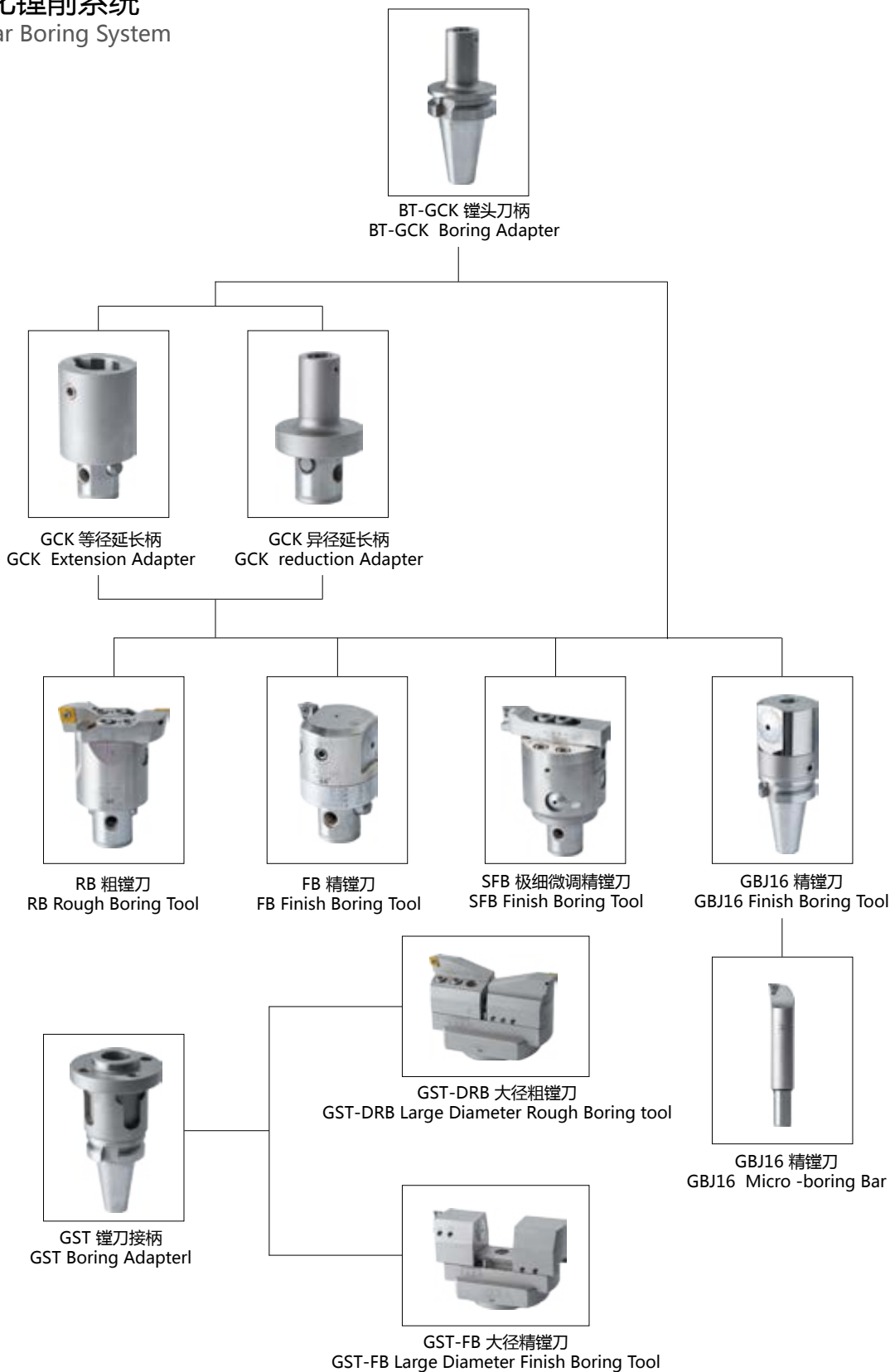
INDEXABLE BORING SYSTEM

广泛应用于汽车、管道阀门、航空航天、模具模架等行业 •  
Widely Used in Auto industry, Mechanical flange, Aerospace industry, Mould industry

镗削系统具备模块化系统,调节精度高,加工表面质量好 •  
Boring System Has Modular System ,High-adjusting accuracy and high surface quality



# 模块化镗削系统 Modular Boring System

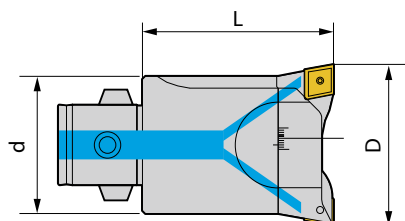




# RB

## 粗镗刀

### RB Rough Boring Tool

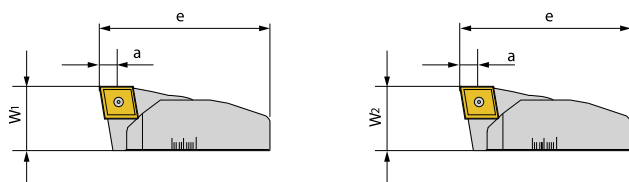


订货号 Ordering Code	d	L	镗孔范围 Boring Range D	组合刀柄 Adapter Size	刀片座 Insert Holder	重量 Weight
GCK1-GRB-20	19	32.5	20-26	GCK1	DZA2026 DZB2026	0.06
GCK2-GRB-25	24	35.5	25-33	GCK2	DZA2533 DZB2533	0.12
GCK2-RB25-M	25	50	29-36	GCK2	DZA2936 DZB2936	0.17
GCK2-RB25-L	25	50	35-42	GCK2	DZA3542 DZB3542	0.19
GCK3-RB32-M	32	65	36-45	GCK3	DZA3645 DZB3645	0.37
GCK3-RB32-L	32	65	44-53	GCK3	DZA4453 DZB4453	0.37
GCK4-RB40-M	40	63	45-56	GCK4	DZA4556 DZB4556	0.56
GCK4-RB40-L	40	63	55-66	GCK4	DZA5566 DZB5566	0.58
GCK5-RB50-M	50	80	56-74	GCK5	DZA5674 DZB5674	1.10
GCK5-RB50-L	50	80	74-92	GCK5	DZA7492 DZB7492	1.14
GCK6-RB63-M	64	82	70-90	GCK6	DZA7090 DZB7090	1.78
GCK6-RB63-L	64	82	90-110	GCK6	DZA90110 DZB90110	1.90
GCK6-RB80-M	80	82	90-130	GCK6	DZA90130 DZB90130	2.30
GCK6-RB80-L	80	82	130-170	GCK6	DZA130170 DZB130170	2.44
GCK7-RB160-L	90	71	160-204	GCK7	DZACC160204 DZB160204	5.80

# DZA/DZB

## 粗镗刀片座

DZA/DZB Insert Holder

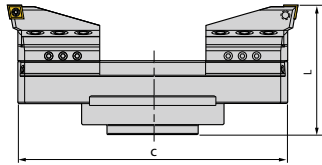


订货号 Ordering Code		e	W1	W2	a	镗孔范围 Boring range	组合镗头 Boring body	刀片 Insert	螺钉 Insert screw	扳手 Wrench	重量 Weight
刀片座 A Holder A	刀片座 B Holder B										
DZA2026	DZB2026	17.0	13.2	13.0	0.5-2	20-26	GRB20	CCMT0602	M025W060	Q08	0.01
DZA2533	DZB2533	20.9	13.2	13.0	0.5-2	25-33	GRB25	CCMT0602	M025W060	Q08	0.01
DZA2936	DZB2936	25	11.7	11.5	0.5-2	29-36	RB25	CCMT0602	M025W060	Q08	0.01
DZA3542	DZB3542	30	11.7	11.5	0.5-2	35-42	RB25	CCMT0602	M025W060	Q08	0.02
DZA3645	DZB3645	32	11.7	11.5	0.5-2	36-45	RB32	CCMT0602	M025W060	Q08	0.02
DZA4453	DZB4453	38	11.7	11.5	0.5-2	44-53	RB32	CCMT0602	M025W060	Q08	0.02
DZA4556	DZB4556	40	15.6	15.4	0.5-3	45-56	RB40	CCMT09T3	M040S1100-1	Q15	0.04
DZA5566	DZB5566	40.5	15.6	15.4	0.5-3	55-66	RB40	CCMT09T3	M040S1100-1	Q15	0.05
DZA5674	DZB5674	49	17.6	17.4	0.5-3	56-74	RB50	CCMT09T3	M040S1100-1	Q15	0.06
DZA7492	DZB7492	62	17.6	17.4	0.5-3	74-92	RB50	CCMT09T3	M040S1100-1	Q15	0.09
DZA7090	DZB7090	60	22.6	22.4	0.5-4	70-90	RB63	CCMT1204	M050Y110-1	Q20	0.12
DZA90110	DZB90110	78	22.6	22.4	0.5-4	90-110	RB63	CCMT1204	M050Y110-1	Q20	0.18
DZA90130	DZB90130	82	22.6	22.4	0.5-4	90-130	RB80	CCMT1204	M050Y110-1	Q20	0.18
DZA130170	DZB130170	99.5	22.6	22.4	0.5-4	130-170	RB80	CCMT1204	M050Y110-1	Q20	0.23
DZA160204	DZB160204	120.5	29.7	29.4	0.5-4	160-204	GRB160	CCMT1204	M050Y110-1	Q20	0.23

# DRB

## 粗镗刀

DRB Large Diameter Rough Boring Tool

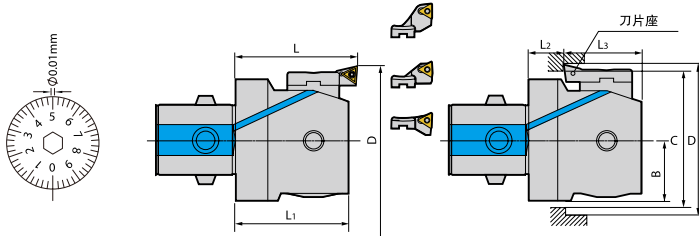


订货号 Ordering Code	C	L	镗孔范围 Boring Range	组合刀柄 Adapter Size	反镗范围 B-Boring Range	反镗 深度 Work depth	刀片座及刀片 Insert& Insert Holder	螺钉 Screw	扳手 Wrench	重量 Weight	
GST	DRB200310	180	130	200-310	GST	-	55	GB200-C12	M060U500-0	L03	11.40
	DRB300410	280	130	300-410	GST	0-93	55	( CCMT1204 )	M060U500-0	L03	13.45
	DRB400510	380	130	400-510	GST	93-193	55	GB200-T16	M060U500-0	L03	15.60
	DRB500610	480	130	500-610	GST	193-293	55	( TCMT16T3 )	M060U500-0	L03	17.71
	DRB600710	580	130	600-710	GST	293-393	55	GB200-T22	M060U500-0	L03	19.83
	DRB700810	680	130	700-810	GST	393-493	55	( TCMT2204 )	M060U500-0	L03	21.95
	DRB800910	780	130	800-910	GST	493-593	55	GB200-S12	M060U500-0	L03	24.07
							( SCMT1204 )	M060U500-0	L03	24.07	

# FB

## 精镗刀

FB Finish Boring Tool



订货号 Ordering Code	刀片座 Insert Holder	正镗 Boring		范围 Range	反镗 Back Boring			范围 Range	刀片 Insert	螺钉 Screw	扳手 Wrench	重量 Weight
		L1	L		B	L2	L3					
GCK1-FB20-36	DPZFB1-A			20-26				-	TPET080202	M020W050	Q06	0.06
	DPZFB1-B	29.5	32.5	25-31	10	10.5	19	-				0.06
	DPZFB1-C			30-36				30-36				0.06
GCK2-FB25-47	DPZFB2-A			25-33				-	TPET080202	M020W050	Q06	0.12
	DPZFB2-B	32.5	35.5	32-40	12.5	11.5	21	36-40				0.12
	DPZFB2-C			39-47				39-47				0.12
GCK3-FB32-60	DPZFB3-A			32-42				-	TPET080202	M020W050	Q06	0.20
	DPZFB3-B	35	40	41-51	16	10	25	46-51				0.20
	DPZFB3-C			50-60				50-60				0.20
GCK4-FB41-74	DPZFB4-A			41-54				-	TPET080202	M020W050	Q06	0.39
	DPZFB4-B	43	47	50-63	20	14	29	53-63				0.39
	DPZFB4-C			61-74				61-74				0.39
GCK5-FB53-95	DPZFB5-A			53-70				62-70	TCMT110204 (标配) TPEH110304 (选配)	M025W060 M030W070	Q08	0.80
	DPZFB5-B	53	57	65-82	25.5	19	34	65-82				0.80
	DPZFB5-C			78-95				78-95				0.80
GCK6-FB68-150	DPZFB6-A			68-100				80-100	TCMT110204 (标配) TPEH110304 (选配)	M025W060 M030W070	Q08	1.75
	DPZFB6-B	67.2	71	94-126	32.5	22	45.2	94-126				1.75
	DPZFB6-C			118-150				118-150				1.75
GCK7-FB100-203	DPZFB6-A			110-153				112-153	TCMT110204 (标配) TPEH110304 (选配)	M025W060 M030W070	Q08	2.47
	DPZFB6-B	67.2	71	126-179	45.5	22	45.2	126-179				2.47
	DPZFB6-C			150-203				150-203				2.47

备注：反镗加工需满足条件：

$C > B + D/2$

C: 最小过孔直径 B: 镗刀头半径 D: 反镗加工

反镗加工时主轴反转

Notice: In order to check the feasibility of the back boring operation and to select the best possible tool combination, these values can be calculated as follow:

$C > B + D/2$

C: Minimum entry bore diameter D: Back bore diameter

B: 1/2 diameter of tool body

Anti-clockwise spindle rotation required

# DPZFB

## 精镗刀片座

DPZFB Insert Holder



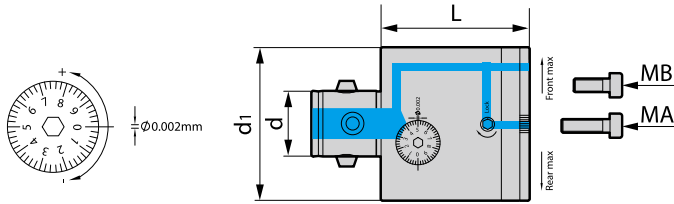
订货号 Ordering Code	形状图 Figure	刀片 Insert	对应镗头 Boring Head
DPZFB		TPEH080202	1-A
			1-B
			1-C
			2-A
			2-B
			2-C
			3-A
			3-B
			3-C
		TCMT110204 (标配 With) TPEH110304 (选配 For Choice)	4-A-TP/TC
			4-B-TP/TC
			4-C-TP/TC
			5-A-TP/TC
			5-B-TP/TC
			5-C-TP/TC
			6-A-TP/TC
			6-B-TP/TC
			6-C-TP/TC

备注：标准报价含 DPZFBX-1 号刀片座一个，DPZFBX-2 和 DPZFBX-3 需要单独购买  
 Notice: Quotation with insert holder DPZFBX-1 include, while DPZFBX-2 And DPZFBX-3 shall be ordered separately.

# SFB

## 极细微调精镗刀

SFB Micro-boring Tool

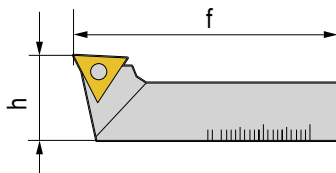


型号 Ordering Code	d1	L	镗孔范围 Boring Range	组合刀柄 Adapter Size	精镗刀座 Insert Holder	螺钉 Screw	扳手 Wrench	重量 Weight
GCK2-SFB25-M	25	50	29-38	GCK2	DPZ2938	M040U050-D	T02	0.15
GCK3-SFB32-M	32	63	36-52	GCK3	DPZ3652	M040U060-D	T02	0.33
GCK4-SFB40-M	40	63	48-68	GCK4	DPZ4868	M050U080-D	T025	0.53
GCK5-SFB50-BM	50	80	57-80	GCK5	DPZ5780	M060U080-D	T03	1.02
GCK6-SFB63-BMA	64	8	70-110	GCK6	DPZ70110	M060U0120-D	T03	1.70
GCK6-SFB80-BMB	80	100	110-150	GCK6	DPZ110150	M060U0200-D	T03	3.50

# SFB

## 精镗刀片座

SFB Boring Tool Insert Holder

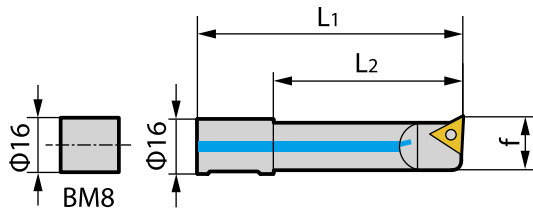


订货号 Ordering Code	h	f	镗孔范围 Boring Range	组合镗头 Boring body	刀片 Insert	螺钉 Screw	扳手 Wrench	重量 Weight	
DPZ	2938	11	27	29-38	GCK2-SFB25	TPEH0902..L	M025W050	Q08	0.01
	3652	13	35	36-52	GCK3-SFB32	TPEH0902..L	M025W060	Q08	0.02
	4868	13	43	48-68	GCK4-SFB40	TPEH0902..L	M025W060	Q08	0.03
	5780	20	54	57-80	GCK5-SFB50	TPEH1103..L	M030W070	Q08	0.09
	70110	20	66	70-110	GCK6-SFB63	TPEH1103..L	M030W070	Q08	0.14
	110150	20	106	110-150	GCK6-SFB80	TPEH1103..L	M030W070	Q08	0.25

# SFB

## 精镗刀杆

SFB Micro -boring Bar

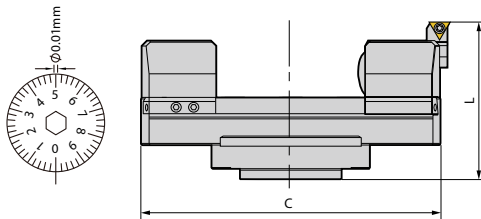


订货号 Ordering Code	L1	L2	镗孔范围 Boring Range	组合镗头 Boring body	刀片 Insert	螺钉 Screw	扳手 Wrench	重量 Weight
DG1606-21	65	21	6-9	GCK5-SFB50 GCK6-SFB63 GCK6-SFB80	WBGT0601..L	M020W040	Q06	0.04
DG1608-28	63	28	8-11		TBGT0601..L	M020W040	Q06	0.04
DG1610-35	63	35	10-13		TBGT0601..L	M020W040	Q06	0.05
DG1612-42	73	42	12-15		TPEH0902..L	M020W040	Q08	0.06
DG1614-50	78.5	50	14-17		TPEH0902..L	M020W040	Q08	0.08
DG1616-60	88	60	16-20		TPEH0902..L	M020W040	Q08	0.11
DG1620-65	92	65	20-24		TPEH1103..L	M020W040	Q08	0.06
DG1624-68	95	68	24-28		TPEH1103..L	M020W040	Q08	0.20
BM5	60+DPZ2938 or DPZ3652 or DPZ4868					E050U160	-	0.25
BM8	+DPZ5780 or DPZ70110 or DPZ110150					E100U250	-	0.04

# GST-FB

## 大径精镗刀

GST-FB Large Diameter Finish Boring Tool



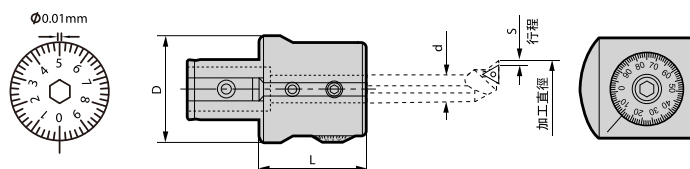
订货号 Ordering Code	刀片座 Insert holder	C	L	范围 range	组合刀柄 Adapter	反镗范围 B-Boring range	反镗深度 Work depth	刀片 Insert	螺钉 Screw	扳手 Wrench	重量 Weight
GST-FB200329	DPZFB6-A	180	130	200-305	GST	0-25	53	TCMT11 (标配) TPEH11 (选配)	35W060	L04 L05 Q08	11.85
	DPZFB6-B	180	130	224-329	GST	-	53				11.85
GST-FB300429	DPZFB6-A	280	130	300-405	GST	25-125	53				13.86
	DPZFB6-B	280	130	324-429	GST	25-100	53				13.86
GST-FB400529	DPZFB6-A	380	130	400-505	GST	125-225	53				15.87
	DPZFB6-B	380	130	424-529	GST	100-200	53				15.87
GST-FB500629	DPZFB6-A	480	130	500-605	GST	225-325	53				17.88
	DPZFB6-B	480	130	524-629	GST	200-300	53				17.88
GST-FB600729	DPZFB6-A	580	130	600-705	GST	325-425	53				19.89
	DPZFB6-B	580	130	624-729	GST	300-400	53				19.89
GST-FB700829	DPZFB6-A	680	130	700-805	GST	425-525	53				21.91
	DPZFB6-B	680	130	724-829	GST	400-500	53				21.91
GST-FB800929	DPZFB6-A	780	130	800-905	GST	525-625	53				23.94
	DPZFB6-B	780	130	824-929	GST	500-600	53				23.94



# GBJ16

## 微调精密镗头

GBJ16 Micro-boring Head

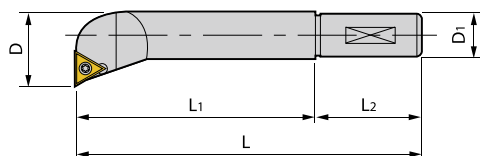


订货号 Ordering Code	D	d	L	微调精度 Dial Distance	微调行程 Micro Distance	组合刀柄 Adapter Size	镗孔范围 Boring Range	微调螺钉 Adjusting Screw	固定螺钉 Screw	扳手 Wrench	重量 Weight
GBJ16	63	16	50	0.01	5	GCK6	8-50	M0100U100-D	M100U140-D	T05	1.14

# GBJ16

## 微调精密镗刀杆

GBJ16 Micro-boring Bar



订货号 Ordering Code	D	D1	L1	L2	L	刀片型号 Insert	镗孔范围 Boring Range	固定螺钉 Screw	扳手 Wrench	重量 Weight	
GBJ	1608-32	8	16	32	32	64	TBGH0601L	8-11	M020W040	Q06	0.07
	1610-40	10	16	40	32	72	TBGH0601L	10-13	M020W040	Q06	0.07
	1612-53	12	16	53	32	85	TPEH0902L	12-17	M025W060	Q08	0.09
	1616-68	16	16	68	32	100	TPEH0902L	16-21	M025W060	Q08	0.13
	1620-83	20	16	83	32	115	TPEH1103L	20-26	M030W070	Q08	0.20
	1625-90	25	16	90	32	122	TPEH1103L	25-32	M030W070	Q08	0.25
	1630-90	30	16	90	32	122	TPEH1103L	30-42	M030W070	Q08	0.25
	1640-90	40	16	90	32	122	TPEH1103L	40-50	M030W070	Q08	0.26

# GBJ16

## 精镗套装

GBJ16 Micro-boring Tool Kit

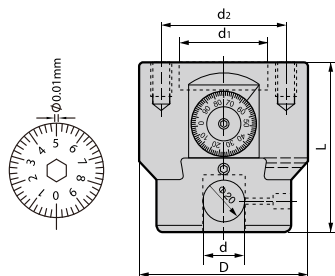


订货号 Ordering Code	镗孔范围 Boring Range	组合刀柄 Adapter	重量 Weigh
BT40-GBJ16-8PCS	8-50	BT40-GCK6-55	3.68
BT50-GBJ16-8PCS	8-50	BT50-GCK6-85	6.74

# GBH2084

## 微调精密镗头

GBH2084 Micro-boring head

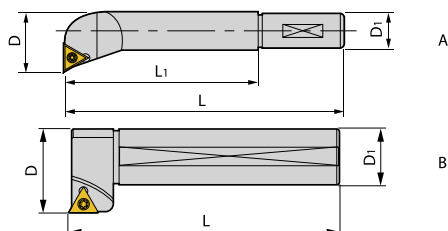


订货号 Ordering Code	D	d	d1	d2	L	微调行程 Micro Distance	镗孔范围 Boring Range	微调精度 (直径) Dial Precision	组合刀柄 Adapter	重量 Weigh
GBH2084	84	20	35	60	80	28	8-280	0.01	GBH-A.B	2.74
						微调锁紧螺纹 Adjusting screw	T型扳手 Wrench	刀杆固定螺钉 Locking screw	T型扳手 Wrench	
						M080U120-D	T04	M120U140-D	T06	

# GBH2084

## 微调精密镗刀杆

GBH2084 Micro-boring Bar



订货号 Ordering Code	D	D1	L1	L	图示 Figure	刀片型号 Insert	镗孔范围 Boring Range	固定螺钉 Screw	扳手 Wrench	重量 Weight	
GBH	2008-32	8	20	32	74	A	TBGH0601L	8-11	M020W040	Q06	0.09
	2010-40	10	20	40	75	A	TBGH0601L	10-13	M020W040	Q06	0.10
	2012-53	12	20	53	88	A	TPEH0902L	12-17	M025W060	Q08	0.12
	2016-68	16	20	68	103	A	TPEH0902L	16-21	M025W060	Q08	0.16
	2020-83	20	20	83	115	A	TPEH1103L	20-26	M025W070	Q08	0.22
	2025-96	25	20	96	131	A	TPEH1103L	25-135	M025W070	Q08	0.35
	2030-115	30	20	115	159	A	TPEH1103L	30-140	M025W060	Q08	0.52
	20120-97	30	20	-	97	B	TPEH1103L	120-280	M025W070	Q08	0.25

# GBH2084

## 微调精镗套装组合

GBH2084 Micro-boring Tool Kit

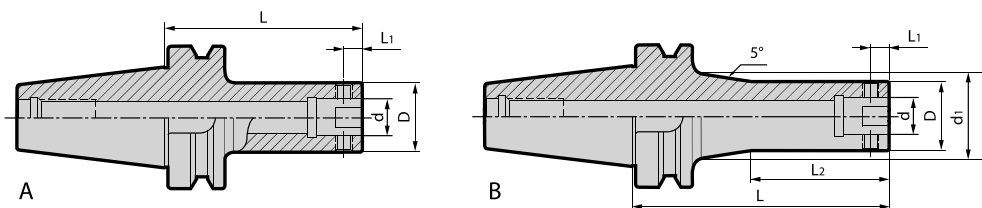


订货号 Ordering Code	镗孔范围 Boring Range	组合刀柄 Adapter	重量 Weight
BT40-GBH2084-8PCS	8-280	BT40- GBH-A50	6.44
BT50-GBH2084-8PCS	8-280	BT50- GBH-A50	8.89

# BT-GCK

## 镗头刀柄

BT-GCK Boring Adapter

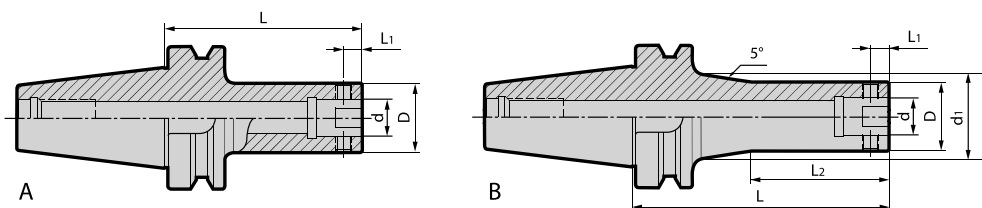


订货号 Ordering Code	图示 Figure	D	d1	d	L1	L2	L	螺钉 Screw	扳手 Wrench	重量 Weight
GCK1-70	A	19	-	11	5.05	-	70	M050Z050-30P-D	L025	1.03
GCK1-100L	B	19	20.7	11	5.05	60	100	M050Z050-30P-D	L025	1.10
GCK1-130L	B	19	25.5	11	5.05	60	130	M050Z050-30P-D	L025	1.18
GCK2-75	A	24	-	14	6.62	-	75	M050Z060-30P-D	L025	1.10
GCK2-100	A	24	-	14	6.62	-	100	M050Z060-30P-D	L025	1.18
GCK2-130L	B	24	28.3	14	6.62	75	130	M050Z060-30P-D	L025	1.33
GCK2-160L	B	24	33.6	14	6.62	75	160	M050Z060-30P-D	L025	1.49
GCK3-80	A	31	-	18	8	-	80	M060Z090-30P-D	L03	1.22
GCK3-100	A	31	-	18	8	-	100	M060Z090-30P-D	L03	1.32
GCK3-135L	B	31	34.5	18	8	75	135	M060Z090-30P-D	L03	1.54
GCK3-165L	B	31	39.7	18	8	85	165	M060Z090-30P-D	L03	1.76
GCK4-70	A	39	-	22	10	-	70	M080Z120-30P-D	L04	1.21
GCK4-100	A	39	-	22	10	-	100	M080Z120-30P-D	L04	1.46
GCK4-150L	B	39	43.4	22	10	85	150	M080Z120-30P-D	L04	1.90
GCK4-170L	B	39	46.9	22	10	95	170	M080Z120-30P-D	L04	2.16
GCK5-60	A	50	-	28	13	-	60	M100Z160-30P-D	L05	1.22
GCK5-80	A	50	-	28	13	-	80	M100Z160-30P-D	L05	1.52
GCK5-100	A	50	-	28	13	-	100	M100Z160-30P-D	L05	1.80
GCK5-150	A	50	-	28	13	-	150	M100Z160-30P-D	L05	2.52
GCK5-180	A	50	-	28	13	-	180	M100Z160-30P-D	L05	2.90
GCK6-55	A	64	-	36	16	-	55	M120Z200-30P-D	L06	1.22
GCK6-100	A	64	-	36	16	-	100	M120Z200-30P-D	L06	2.29
GCK6-150	A	64	-	36	16	-	150	M120Z200-30P-D	L06	3.50
GCK6-180	A	64	-	36	16	-	180	M120Z200-30P-D	L06	4.22
GCK5-100	A	50	-	28	13	-	100	M100Z160-30P-D	L05	1.80
GCK5-150	A	50	-	28	13	-	150	M100Z160-30P-D	L05	2.52
GCK5-180	A	50	-	28	13	-	180	M100Z160-30P-D	L05	2.90
GCK6-55	A	64	-	36	16	-	55	M120Z200-30P-D	L06	1.22
GCK6-100	A	64	-	36	16	-	100	M120Z200-30P-D	L06	2.29
GCK6-150	A	64	-	36	16	-	150	M120Z200-30P-D	L06	3.50
GCK6-180	A	64	-	36	16	-	180	M120Z200-30P-D	L06	4.22

# BT-GCK

## 镗头刀柄

BT-GCK Boring Adapter



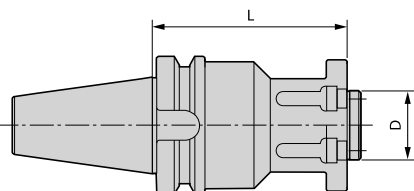
订货号 Ordering Code	图示 Figure	D	d1	d	L1	L2	L	螺钉 Screw	扳手 Wrench	重量 Weight
GCK1-80	A	19	-	11	5.05	-	80	M050Z050-30P-D	L025	3.20
GCK1-115L	B	19	20.7	11	5.05	50	115	M050Z050-30P-D	L025	3.73
GCK1-145L	B	19	26	11	5.05	60	145	M050Z050-30P-D	L025	4.20
GCK2-105	A	24	-	14	6.62	-	105	M050Z060-30P-D	L025	3.78
GCK2-135L	B	24	26.6	14	6.62	65	135	M050Z060-30P-D	L025	3.89
GCK2-165L	B	24	31.9	14	6.62	75	165	M050Z060-30P-D	L025	4.08
GCK3-110	A	31	-	18	8	-	110	M060Z090-30P-D	L03	3.95
GCK3-140L	B	31	32.7	18	8	75	140	M060Z090-30P-D	L03	4.09
GCK3-170L	B	31	38	18	8	85	170	M060Z090-30P-D	L03	4.31
GCK4-100	A	39	-	22	10	-	100	M080Z120-30P-D	L04	3.98
GCK4-160L	B	39	42.5	22	10	85	160	M080Z120-30P-D	L04	4.50
GCK4-205L	B	39	50	22	10	95	205	M080Z120-30P-D	L04	5.13
GCK5-90	A	50	-	28	13	-	90	M100Z160-30P-D	L05	4.30
GCK5-165	A	50	-	28	13	-	165	M100Z160-30P-D	L05	5.20
GCK5-210L	B	50	57.8	28	13	120	210	M100Z160-30P-D	L05	5.92
GCK5-270L	B	50	68.4	28	13	120	270	M100Z160-30P-D	L05	7.23
GCK6-85	A	64	-	36	16	-	85	M120Z200-30P-D	L06	4.28
GCK6-155	A	64	-	36	16	-	155	M120Z200-30P-D	L06	5.97
GCK6-215	A	64	-	36	16	-	215	M120Z200-30P-D	L06	7.43
GCK6-250	A	64	-	36	16	-	250	M120Z200-30P-D	L06	8.27
GCK6-300L	B	64	80.5	36	16	160	300	M120Z200-30P-D	L06	10.21
GCK6-350L	B	64	90	36	16	160	350	M120Z200-30P-D	L06	12.90
GCK7-85	A	90	-	46	19.15	-	85	M200Z290-30P-D	L10	4.96
GCK7-150	A	90	-	46	19.15	-	-	M200Z290-30P-D	L10	6.52
GCK7-210	A	90	-	46	19.15	-	-	M200Z290-30P-D	L10	8.55
GCK7-250	A	90	-	46	19.15	-	-	M200Z290-30P-D	L10	10.35
GCK7-300	A	90	-	46	19.15	-	-	M200Z290-30P-D	L10	12.55
GCK7-350	A	90	-	46	19.15	-	-	M200Z290-30P-D	L10	13.25

BT50

# BT-GST

## 镗头刀柄

BT-GST Boring Adapter

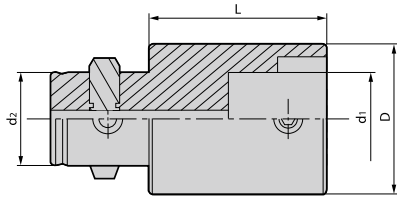


订货号 Ordering Code		D	L	螺钉 Screw	重量 Weight
BT40-	GST-100	50	100	E120U400-D	2.90
	GST-150	50	150	E120U400-D	4.24
BT50-	GST-100	50	100	E120U400-D	5.50
	GST-150	50	150	E120U400-D	6.38
	GST-200	50	200	E120U400-D	7.61
	GST-250	50	250	E120U400-D	10.44
	GST-300	50	300	E120U400-D	12.37
	GST-350	50	350	E120U400-D	14.33

# GCK

## 等径延长接柄

GCK Extension Adapter

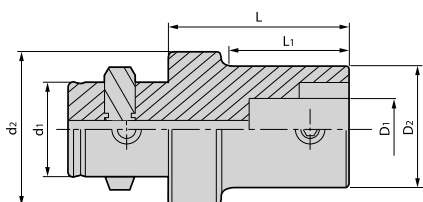


订货号 Ordering Code	D	d1	d2	L	螺钉 Screw	扳手 Wrench	重量 Weight	
GCK	1-1-30	19	11	11	30	M050Z050-30P-D	L025	0.06
	2-2-30	24	14	14	30	M050Z060-30P-D	L025	0.09
	3-3-30	31	18	18	30	M060Z090-30P-D	L03	0.14
	4-4-45	39	22	22	45	M080Z120-30P-D	L04	0.29
	4-4-60	39	22	22	60	M080Z120-30P-D	L04	0.47
	5-5-60	50	28	28	60	M100Z160-30P-D	L05	0.75
	5-5-90	50	28	28	90	M100Z160-30P-D	L05	1.18
	6-6-60	64	36	36	60	M120Z200-30P-D	L06	1.46
6-6-100	64	36	36	100	M120Z200-30P-D	L06	2.35	

# GCK

## 异径延长接柄

GCK Reduction Adapter



订货号 Ordering Code	D1	D2	d1	d2	L1	L	螺钉 Screw	扳手 Wrench	重量 Weight
2-1-36	11	19	14	24	30	36	M050Z050-30P-D	L025	0.08
3-1-41	11	19	18	31	30	41	M050Z050-30P-D	L025	0.12
3-2-37	14	24	18	31	25	37	M050Z060-30P-D	L025	0.13
4-1-58	11	19	22	39	40	58	M050Z050-30P-D	L025	0.24
4-2-50	14	24	22	39	36	50	M050Z060-30P-D	L025	0.22
4-3-50	18	31	22	39	37	50	M060Z090-30P-D	L03	0.30
5-1-60	11	19	28	50	40	60	M050Z050-30P-D	L025	0.38
5-2-54	14	24	28	50	35	54	M050Z060-30P-D	L025	0.38
5-2-74	14	24	28	50	55	74	M050Z060-30P-D	L025	0.45
5-3-47	18	31	28	50	29	47	M060Z090-30P-D	L03	0.46
5-3-72	18	31	28	50	54	72	M060Z090-30P-D	L03	0.54
5-4-42	22	39	28	50	25	42	M080Z120-30P-D	L04	0.43
5-4-67	22	39	28	50	50	67	M080Z120-30P-D	L04	0.62
6-1-70	11	19	36	64	40	70	M050Z050-30P-D	L025	0.90
6-2-63	14	24	36	64	45	63	M050Z060-30P-D	L025	0.66
6-2-93	14	24	36	64	75	93	M050Z060-30P-D	L025	0.71
6-3-56	18	31	36	64	39	56	M060Z090-30P-D	L03	0.70
6-3-96	18	31	36	64	79	96	M060Z090-30P-D	L03	0.91
6-4-51	22	39	36	64	35	51	M080Z120-30P-D	L04	0.76
6-4-101	22	39	36	64	85	101	M080Z120-30P-D	L04	1.19
6-5-41	28	50	36	64	25	41	M100Z160-30P-D	L05	0.72
6-5-91	28	50	36	64	75	91	M100Z160-30P-D	L05	1.46



## 推荐切削参数

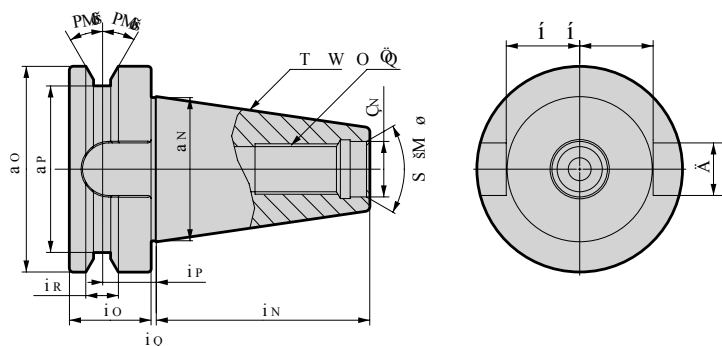
## Recommended Cutting Data

工件材料 Workpiece Materials	镗孔直径 Dia	精镗 Finish Boring			粗镗 Rough Boring			
		线速度 Speed (m/min)	进给 Feed (mm/rev)	切削深度 Depth (mm)	线速度 Speed (m/min)	进给 Feed (mm/rev)	切削深度 Depth (mm)	
P 碳钢 Carbon Steel	25-33	110-140	0.05-0.15	0.05-0.3	100-300	0.15-0.25	2.2	
	32-42	115-150	0.05-0.15	0.05-0.3	105-140	0.15-0.3	2.7	
	40-55	115-150	0.05-0.15	0.06-0.35	105-150	0.15-0.3	2.7	
	52-90	115-150	0.15-0.2	0.06-0.35	105-150	0.25-0.35	4.3	
	90-164	115-150	0.15-0.2	0.7-0.5	105-150	0.3-0.4	4.3	
	160-204	115-150	0.15-0.2	0.7-0.5	105-150	0.3-0.4	4.3	
	合金钢 Alloy Steel	25-33	100-130	0.05-0.15	0.05-0.15	90-120	0.15-0.25	2.2
		32-42	110-140	0.05-0.15	0.05-0.15	100-130	0.15-0.3	3.7
		40-55	110-150	0.05-0.15	0.05-0.15	100-130	0.2-0.3	3.7
		52-90	110-150	0.15-0.2	0.15-0.2	100-130	0.25-0.35	4.3
		90-164	110-150	0.15-0.2	0.15-0.2	100-130	0.3-0.4	4.3
		160-204	110-150	0.15-0.2	0.15-0.2	100-130	0.3-0.4	4.3
M 不锈钢 Stainless Steel	25-33	70-100	0.07-0.15	0.07-0.15	60-90	0.12-0.2	2.2	
	32-42	80-110	0.07-0.15	0.07-0.15	70-100	0.15-0.25	3.7	
	40-55	80-110	0.07-0.15	0.07-0.15	70-100	0.15-0.25	3.7	
	52-90	80-110	0.1-0.2	0.1-0.2	70-100	0.2-0.3	4.3	
	90-164	80-110	0.1-0.2	0.1-0.2	70-100	0.25-0.35	4.3	
	160-204	80-110	0.1-0.2	0.1-0.2	70-100	0.25-0.35	4.3	
K 铸铁 Cast iron	25-33	70-100	0.07-0.15	0.12-0.35	60-110	0.2-0.3	2.2	
	32-42	80-110	0.07-0.15	0.12-0.35	60-110	0.25-0.35	3.7	
	40-55	80-110	0.07-0.15	0.2-0.5	60-110	0.25-0.35	3.7	
	52-90	80-110	0.12-0.2	0.2-0.5	60-110	0.3-0.4	4.3	
	90-164	80-110	0.12-0.2	0.25-0.75	60-110	0.3-0.45	4.3	
	160-204	80-110	0.12-0.2	0.25-0.75	60-110	0.3-0.45	4.3	
N 铝合金 Aluminium Alloy	25-33	150-300	0.05-0.15	0.12-0.35	120-300	0.2-0.3	2.2	
	32-42	150-360	0.1-0.2	0.12-0.35	150-370	0.25-0.35	3.7	
	40-55	150-360	0.1-0.2	0.2-0.5	150-370	0.25-0.35	3.7	
	52-90	150-360	0.1-0.2	0.2-0.5	150-370	0.3-0.4	4.3	
	90-164	150-360	0.1-0.25	0.25-0.75	150-370	0.3-0.45	4.3	
	160-204	150-360	0.1-0.25	0.25-0.75	150-370	0.3-0.45	4.3	
S 高温合金及 耐热合金 Hightemperature alloys&Heat	25-33	30-40	0.07-0.15	0.12-0.35	25-35	0.12-0.2	2.2	
	32-42	40-45	0.07-0.15	0.12-0.35	30-40	0.15-0.25	3.7	
	40-55	40-45	0.07-0.15	0.2-0.5	30-40	0.15-0.25	3.7	
	52-90	40-45	0.1-0.2	0.2-0.5	30-40	0.2-0.3	4.3	
	90-164	40-45	0.1-0.2	0.25-0.75	30-40	0.25-0.35	4.3	
	160-204	40-45	0.1-0.2	0.25-0.75	30-40	0.25-0.35	4.3	

# BT

## 柄详细图

BT Tool Holder Specification –JIS MAS403



型号 Specification	D1	d1	L1	D2	D3	L2	L3	L4	L5	b	t	g
BT30	31.75	12.5	48.4	46	38	20	13.6	2	8	16.1	16.3	M12
BT40	44.45	17	65.4	63	53	25	16.6	2	10	16.1	22.6	M16
BT50	69.85	25	101.8	100	85	35	23.2	3	v15	25.7	35.4	M24

# D938系列12D-15D深孔麻花钻

## D938 Series 12D-15D Deep-hole Inner Cooling Twist Drill

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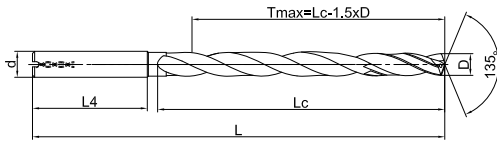
- 适用于钢件、铸铁及不锈钢的高效钻削加工  
Suitable for efficient drilling of Steel, Cast Iron and Stainless steel
- 全新的基体材质，韧性和耐磨性的完美平衡  
New substrate material, toughness and wear resistance of perfect balance
- 采用AlTiN基纳米涂层和独特的涂层后处理  
Using AlTiN-nano coating and unique post-processing of coating
- 优化槽型和钻尖设计，超强的自定心性能和断屑性能、具有良好的排屑性能  
Optimize the groove profile and design of drill point, With super self-centering performance and chip breaking performance, good chip evacuation performance



# D938-A12C/A15C

## D938系列 12D-15D深孔内冷麻花钻

D938 Series 12D-15D Deep-hole Inner Cooling Twist Drill



Tmax-最大推荐钻深 Recommended Maximum Depth

订货号 Ordering Code	D(h7)	Lc	L4	L	d(h6)
D938-A12C-0300	3	50	36	90	6
D938-A12C-0350	3.5	54	36	92	6
D938-A12C-0400	4	64	36	102	6
D938-A12C-0450	4.5	64	36	102	6
D938-A12C-0500	5	83	36	121	6
D938-A12C-0550	5.5	83	36	121	6
D938-A12C-0600	6	83	36	121	6
D938-A12C-0620	6.2	110	36	148	8
D938-A12C-0650	6.5	110	36	148	8
D938-A12C-0700	7	110	36	148	8
D938-A12C-0750	7.5	110	36	148	8
D938-A12C-0800	8	110	36	148	8
D938-A12C-0830	8.3	138	40	180	10
D938-A12C-0850	8.5	138	40	180	10
D938-A12C-0900	9	138	40	180	10
D938-A12C-0950	9.5	138	40	180	10
D938-A12C-1000	10	138	40	180	10
D938-A12C-1100	11	158	45	206	12
D938-A12C-1200	12	158	45	206	12

订货号 Ordering Code	D(h7)	Lc	L4	L	d(h6)
D938-A15C-0300	3	55	36	95	6
D938-A15C-0350	3.5	76	36	116	6
D938-A15C-0400	4	76	36	116	6
D938-A15C-0450	4.5	93	36	133	6
D938-A15C-0500	5	93	36	133	6
D938-A15C-0550	5.5	110	36	150	6
D938-A15C-0600	6	110	36	150	6
D938-A15C-0620	6.2	127	36	167	8
D938-A15C-0650	6.5	127	36	167	8
D938-A15C-0700	7	127	36	167	8
D938-A15C-0750	7.5	143	36	183	8
D938-A15C-0800	8	143	36	183	8
D938-A15C-0830	8.3	160	40	204	10
D938-A15C-0850	8.5	160	40	204	10
D938-A15C-0900	9	160	40	204	10
D938-A15C-0950	9.5	177	40	221	10
D938-A15C-1000	10	177	40	221	10
D938-A15C-1100	11	198	45	247	12
D938-A15C-1200	12	214	45	263	12

单位unit(mm)

尺寸范围 nominal size range	D(h7)	d(h6)
> 3—6	0.000/-0.012	0.000/-0.008
> 6—10	0.000/-0.015	0.000/-0.009
> 10—18	0.000/-0.018	0.000/-0.011
> 18—20	0.000/-0.021	0.000/-0.013

### 工件材料 Workpiece Material

P			M	K	
1 2 3 4	5	6 7	1 2 3	1 2	3
碳钢、合金钢 Steel, Alloy Steel ( < 35HRC)	合金钢、工具钢 Alloy Steel, Tool Steel (35-48HRC)	PH 与铁素体 / 马氏体不锈钢 PH, Ferritic, Martensitic Stainless Steel( < 48HRC)	不锈钢 Stainless Steel	灰铸铁、球墨铸铁 Grey Cast Iron, Nodular Cast Iron ( < 32HRC)	高合金铸铁 High-alloy Cast Iron (35-45HRC)
◎	◎	○	○	○	○

◎ 最适合 Most suitable ○ 适合 Suitable

## 推荐切削参数

## Recommended Cutting Data

工件材料 Workpiece Material		切削速度 Cutting Speed Vc ( m/min )	进给量 Feed fn ( mm/rev )				
			4	6	8	10	12
P	碳钢、合金钢 Steel, Alloy Steel ( < 35HRC)	60-100-140	0.09-0.13-0.16	0.12-0.17-0.23	0.14-0.2-0.28	0.14-0.2-0.3	0.15-0.23-0.34
	合金钢、工具钢 Alloy Steel, Tool Steel (35-48HRC)	60-80-100	0.08-0.11-0.14	0.08-0.14-0.2	0.09-0.16-0.25	0.09-0.16-0.28	0.11-0.19-0.3
	PH 与铁素体、 马氏体不锈钢 PH, Ferritic, Martensitic Stainless Steel ( < 48HRC)	40-60-80	0.04-0.06-0.08	0.06-0.1-0.14	0.08-0.13-0.18	0.08-0.16-0.22	0.1-0.18-0.28
M	不锈钢 Stainless Steel	40-50-60	0.04-0.08-0.1	0.06-0.1-0.12	0.06-0.1-0.14	0.08-0.12-0.16	0.08-0.12-0.16
K	灰铸铁、球墨铸铁 Grey Cast Iron, Nodular Cast Iron ( < 32HRC)	60-100-140	0.13-0.17-0.2	0.15-0.2-0.25	0.17-0.25-0.32	0.2-0.28-0.36	0.22-0.3-0.42
	高合金铸铁 High-alloy Cast Iron (35-45HRC)	60-80-100	0.08-0.1-0.13	0.1-0.13-0.16	0.12-0.16-0.2	0.14-0.2-0.26	0.16-0.22-0.28

1. 请使用刚性较高的机床，建议采用液压刀柄、热缩刀柄、带弹簧夹头的强力刀柄

2. 刀具安装时需确保钻头刀尖径向跳动小于0.02mm

3. 此标准切削条件表适用于水溶性切削液

4. 对于表中没有的刀具刃径规格，请参照表中最接近的刃径规格选择切削参数，同时加工时请根据实际加工情况适当调整切削参数

1. Make sure work piece and machine are stable and use a precision holder, Use hydraulic chucks, high quality collet chucks.

2. Make sure total indicated run-out (TIR) is less than 0.02mm.

3. The Recommended Cutting condition is suitable for apply water soluble.

4. If the tool size is not in the table, Please refer to the table closest to the blade diameter size selection of cutting parameters, adjust cutting parameters according to actual working conditions during processing.







**免费**  
咨询热线

**400-998-6858**

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