

Milling Inserts  
铣削刀片



### HOJIAFA COMPANY LIMITED

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HOJIAFA COMPANY LIMITED

# 公司简介 INTRODUCTION

HOJIAFA—拥有工具行业20多年经验的公司，是世界知名的车削，铣削刀具的制造商。

HOJIAFA隶属于英国NFI集团，总部位于加的夫，是一家著名的工业企业，NFI主要经营各种轴承，减速机，刀具等工业粮食。

从公司创立开始，HOJIAFA的工程师就不断推出突破性的产品，过硬的切削性能在金属加工领域获得了超高的声誉。

在今天，作为能够提供上万种车削、铣削、钻削的标准产品与定制产品的公司，HOJIAFA已是行业的领先者，并将产品推广到全球各处，通过全球的各办事处销售及提供技术服务，以其专业的经验为用户提供快速有效的解决方案。

Hojiafa – At the forefront of the tooling industry for more than 20 years. Hojiafa is a world-leading manufacturer of high quality cutting, milling tools for the metal industry.

Hojiafa is the tooling division of NFI Group, one of famous enterprise of cutting tool, bearing, and reducer and so on.

Since the company's inception, Hojiafa engineers have pioneered breakthrough tooling solutions, super cutting performance win a high reputation.

Today, Hojiafa is a leading manufacturer to supply more than ten thousand kinds of standard and customized turning, milling, drilling tools. Hojiafa marketed and supported worldwide through representatives and independent agencies to offer the fast and effective solution.

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Milling Inserts

铣削刀体  
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# MILLING INSERTS

## 铣削刀片

### 铣削刀片牌号简介

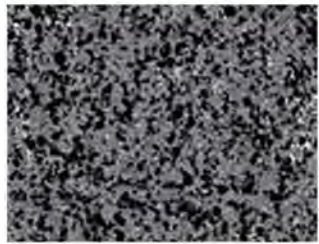
Milling Insert Grades

牌号 Grade	加工类型 Cutting Range	涂层构成 Coating	特点 Advantages
GA4230	半精、粗加工 Semi-finishing and Roughing		<p>全新升级TiAlN+涂层具有优异的耐热性和耐氧化性，与高耐磨损性与耐破损性的硬质合金基体结合强度高，实现不同工况下的稳定加工。</p> <ul style="list-style-type: none"> <li>The new upgrade TiAlN+ coating has excellent heat resistance and oxidation resistance.</li> <li>Due to the high adhesion strength to the substrate, GA4230 can achieve a reliable tool life in various cutting conditions.</li> </ul>
GA4225	半精、轻微粗加工 Semi-finishing to Light Roughing		<p>纳米结构的AlCrN涂层与微细晶粒硬质合金基体相结合，适合中等到低速工况下，钢材、铸铁等材料加工。</p> <ul style="list-style-type: none"> <li>Nano-structure AlCrN coating on super micro-grain carbide.</li> <li>Application: Suitable for medium milling of P&amp;K materials under dry and wet cutting conditions.</li> </ul>
GK0115	半精加工 Semi-finishing		<p>非涂层硬质合金牌号，具有良好的耐磨性和韧性，适合于中等到低速工况下各类工件的铣削加工。</p> <ul style="list-style-type: none"> <li>Uncoated cemented carbides grade for milling.</li> <li>Application: Suitable for general purpose cutting of various types of workpiece material.</li> </ul>
GP0135	半精、粗加工 Semi-finishing and Roughing		<p>非涂层硬质合金牌号，富含添加剂，具有良好的耐磨性和韧性，适合于中等到低速工况下钢材的铣削加工。</p> <ul style="list-style-type: none"> <li>Uncoated cemented carbides grade for milling.</li> <li>Application: Suitable for general purpose cutting of steel workpiece material.</li> </ul>
GA0115	半精加工 Semi-finishing		<p>非涂层细晶粒硬质合金牌号，耐磨性优异，主要适用于锋利刃的铝合金以及部分钢材的铣削加工。</p> <ul style="list-style-type: none"> <li>Uncoated cemented carbides grade for milling.</li> <li>Application: Suitable for general purpose cutting of AL workpiece material and steel workpiece material.</li> </ul>



### 铣削刀片牌号简介

Milling Insert Grades

牌号 Grade	加工类型 Cutting Range	涂层构成 Coating	特点 Advantages
GP01TM	精、半精加工 Finishing and Semi-finishing		无涂层金属陶瓷铣削牌号，优良的工艺处理后，具备高韧性、高耐磨性以及优异的抗崩刃性，适用于各类材料的的铣削加工，主推钢材加工。 • Uncoated cemented grade for milling • Application: Suitable for general purpose cutting of various types of workpiece material.

### 铣削牌号应用一览表

Application Summary of Milling Grades

工件材质 Workpiece	ISO	涂层硬质合金 Coated		硬质合金 Uncoated	金属陶瓷 Cermets
		CVD	PVD		
<b>P</b> 钢 Steel	01				GP01TM
	10		GA4225	GA0115	
	20		GA4230		
	30			GP0135	
	40				
<b>M</b> 不锈钢 Stainless Steel	01				GP01TM
	10	GM2125	GA4225		
	20		GA4230		
	30				
	40				
<b>K</b> 铸铁 Cast Iron	01				GP01TM
	10			GK0115	
	20		GK4125		
	30		GA4230		
	40				
<b>N</b> 有色金属 Nonferrous Metal	01				
	10			GA0115	
	20			GN9125	
	30				
	40				
<b>S</b> 耐热合金、钛合金 Heat-resistant Alloy and Titanium Alloy	01				
	10	GM2125			
	20		GA4230		
	30				
	40				
<b>H</b> 高硬度材料 High Hardness Material	01				
	10				
	20		GA4230		
	30				



### 铣削刀片加工工况汇总

Summary for the Working Conditions of Milling Inserts

工件材质 Workpiece	槽型 Geometry	加工工况 Working conditions		
		● 稳定切削 Continuous	● 一般切削 Light Interrupted	✱ 不稳定切削 Interrupted
<b>P</b>	PL*(SEET)		GA4225/GA4230/GA0115/GP0135/GP01TM	
	PL(SEET)		GA4225/GA4230/GA0115/GP0135/GP01TM	
	PM(SEET)		GA4225/GA4230/GA0115/GP0135/GP01TM	GA4225/GA4230
	PH(SEET)		GA4225/GA4230/GA0115/GP0135	GA4225/GA4230
	KM(SEET)		GA4225/GA4230/GA0115/GP0135	GA4225/GA4230
	KH(SEET)		GA4225/GA4230	GA4225/GA4230
	GL(ODKT)	GA4225/GA4230	GA4225/GA4230	
	GM(ODKT)		GA4225/GA4230	GA4225/GA4230
	GH(ODKT)		GA4225/GA4230	GA4225/GA4230
	DM(OFKT)		GA4225/GA4230	GA4225/GA4230
	BL(RDET)	GA4225/GA4230		
	GM(RDET)		GA4225/GA4230	GA4225/GA4230
	MM(RDET)		GA4225/GA4230	GA4225/GA4230
	BM(RDET)			GA4225/GA4230
	PM(RDET)			GA4225/GA4230
	GL(RPET)	GA4225/GA4230		
	GM(RPET)		GA4225/GA4230/GM2125	GA4225/GA4230/GM2125
	PM(APMT)		GA4225/GA4230/GP01TM	GA4225/GA4230
	PR(APMT)		GA4225/GA4230	GA4225/GA4230
	PM(CNEN)		GA4225/GA4230	GA4225/GA4230
PK(CNEN)		GA4225/GA4230	GA4225/GA4230	
WB(ODKT)	GA4225/GA4230	GA4225/GA4230		
<b>M</b>	PL*(SEET)		GA4225/GA4230/GM2125	
	PL(SEET)		GA4225/GA4230/GM2125	
	PM(SEET)		GA4225/GA4230/GM2125	
	MR(TPER)		GM2125	
	EM(RCET)		GA4225/GA4230/GM2125/GP01TM	GA4225/GA4230/GM2125
	MM(RCET)		GA4225/GA4230/GM2125/GP01TM	GA4225/GA4230/GM2125
	KM(RCET)		GA4225/GA4230/GM2125	
	KH(RCET)		GA4225/GA4230/GM2125	
	GL(ODKT)	GA4225/GA4230	GA4225/GA4230	
	GM(ODKT)		GA4225/GA4230	GA4225/GA4230
	GH(ODKT)		GA4225/GA4230	GA4225/GA4230
	WB(ODKT)	GA4225/GA4230	GA4225/GA4230	
	DM(OFKT)		GA4225/GA4230	GA4225/GA4230

### 铣削刀片加工工况汇总

Summary for the Working Conditions of Milling Inserts

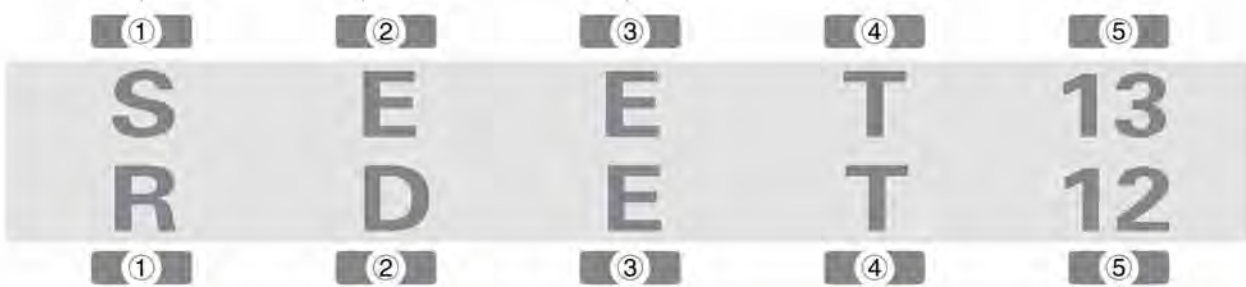
工件材质 Workpiece	槽型 Geometry	加工工况 Working conditions		
		● 稳定切削 Continuous	● 一般切削 Light Interrupted	✱ 不稳定切削 Interrupted
<b>M</b>	BL(RDET)	GA4225/GA4230		
	GL(RPET)	GA4225/GA4230		
	GM(RPET)		GA4225/GA4230/GM2125	GA4225/GA4230/GM2125
	SM(RPET)		GM2125	
<b>K</b>	PL(SEET)	GP01TM/GK1105	GA4225/GA4230/GA0115/GK4125/GK0115	
	PM(SEET)	GP01TM/GK1105	GA4225/GA4230/GA0115/GK4125/GK0115	GK4125/GA4230
	PH(SEET)	GP01TM/GK1105	GA4225/GA4230/GA0115/GK4125/GK0115	GK4125/GA4230
	KM(SEET)	GP01TM/GK1105	GA4225/GA4230/GA0115/GK4125/GK0115	GK4125/GA4230
	KH(SEET)	GP01TM/GK1105	GA4225/GA4230/GA0115/GK4125/GK0115	GK4125/GA4230
	KF(HNEX)	GK1105	GK4125	GK4125
	KM(HNEX)	GK1105	GK4125	GK4125
	KR(HNEX)	GK1105	GK4125	GK4125
	WC(HNEX)	GK1105	GK4125	GK4125
	GL(ODKT)	GA4225/GA4230	GA4225/GA4230	
	GM(ODKT)		GA4225/GA4230/GK4125	GA4225/GA4230/GK4125
	GH(ODKT)		GA4225/GA4230	GA4225/GA4230
	WB(ODKT)	GA4225/GA4230	GA4225/GA4230	
	DM(OFKT)		GA4225/GA4230	GA4225/GA4230
	NL(ODKT)	GK0115		
	PM(CNEU)		GA4225/GA4230/GK4125	GA4225/GA4230/GK4125
PK(CNEU)		GA4225/GA4230/GK4125	GA4225/GA4230/GK4125	
<b>N</b>	AL(SEET)	GA0115/GN9125		
	PL*(SEET)	GA0115/GN9125		
	AL(ODKT)	GN9125		
<b>S</b>	PL(SEET)		GA4230/GM2125	
	PM(SEET)		GA4230/GM2125	
	PH(SEET)		GA4230/GM2125	
	KM(SEET)		GA4230/GM2125	
	MR(TPER)		GM2125	
	EM(RCET)		GA4225/GA4230/GM2125/GP01TM	GA4225/GA4230/GM2125
	MM(RCET)		GA4225/GA4230/GM2125/GP01TM	GA4225/GA4230/GM2125
	KM(RCET)		GA4225/GA4230/GM2125	GA4225/GA4230/GM2125
	(GL)ODKT	GA4230	GA4230	
	GM(RPET)		GA4225/GA4230/GM2125	GA4225/GA4230/GM2125
SM(RPET)		GM2125		



# ISO铣削刀片型号表示规则

## ISO Milling Indexable Inserts Identification System

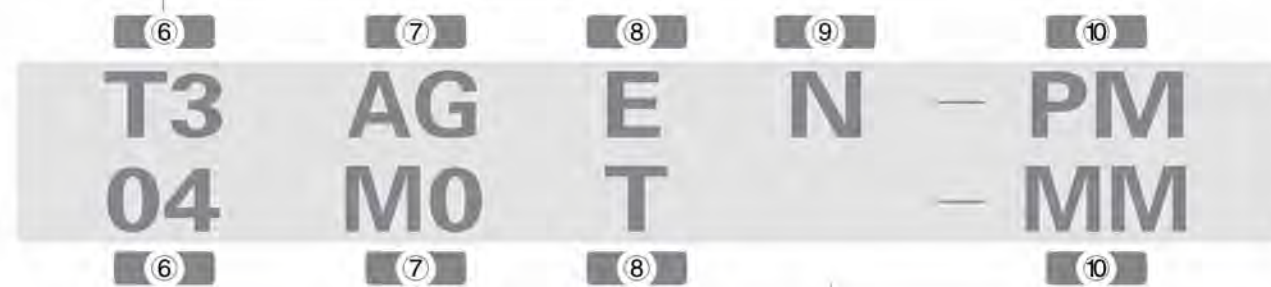
代号 Symbol	形状 Shape	刀尖角(度) Corner Angle	图形 Figure	代号 Symbol	后角(度) Relief Angle	公差 Tolerance (mm)			公差 Tolerance (inch)			
						刀尖高 Corner Height(m)	厚度 Thickness(s)	内切圆 I.C.Size(Ød)	刀尖高 Corner Height(m)	厚度 Thickness(s)	内切圆 I.C.Size(Ød)	
H	正六边形 Hexagon	120°		A	3°	A	±0.005	±0.025	±0.025	±0.0002	±0.001	±0.001
O	正八边形 Octagon	135°		B	5°	F	±0.005	±0.025	±0.013	±0.0002	±0.001	±0.0005
P	正五边形 Pentagon	108°		C	7°	C	±0.013	±0.025	±0.025	±0.0005	±0.001	±0.001
S	正方形 Square	90°		D	15°	H	±0.013	±0.025	±0.013	±0.0005	±0.001	±0.0005
T	正三角形 Triangle	60°		E	20°	E	±0.025	±0.025	±0.025	±0.001	±0.001	±0.001
C	菱形 Rhombic	80°		F	25°	G	±0.025	±0.13	±0.025	±0.001	±0.005	±0.001
D		55°		N	0°	L	±0.025	±0.025	±0.05-±0.13	±0.001	±0.001	±0.002-±0.005
E		75°		P	11°	M	±0.08-±0.18	±0.13	±0.05-±0.13	±0.003-±0.007	±0.005	±0.002-±0.005
F		50°		O	其他 Others	N	±0.08-±0.18	±0.025	±0.05-±0.13	±0.003-±0.007	±0.001	±0.002-±0.005
M		86°				U	±0.13-±0.38	±0.13	±0.08-±0.25	±0.005-±0.015	±0.005	±0.003-±0.01
V	35°											
W	六边形 Trigon	80°										
L	长方形 Rectangle	90°										
A	平行四边形 Parallelogram	85°										
B		82°										
K		55°										
R	圆形 Round	—										



代号 Symbol	有无孔 Hole	孔的形状 Hole Shape	断屑槽 Chipbreaker	形状 Shape
N	无	—	无	
R	无	—	单面	
F	无	—	双面	
A	有孔	圆柱孔	无	
M			单面	
G			双面	
W			无	
T	有孔	部分圆柱孔	单面	
Q	有孔	部分圆柱孔	无	
U	有孔	部分圆柱孔	双面	
B	有孔	部分圆柱孔	无	
H	有孔	部分圆柱孔	单面	
C	有孔	部分圆柱孔	无	
J	有孔	部分圆柱孔	双面	

代号 Symbol		尺寸 Length	代号 Symbol		尺寸 Length	代号 Symbol		尺寸 Length	代号 Symbol		尺寸 Length	代号 Symbol		尺寸 Length	内切圆 I.C.Size (mm)
03	04	3.97	03	04	4.0	06	08	6.9	4	4.8				3.97	
05	05	5.56	05	05	5.6	03	08	8.2	5	5.8				4.76	
06	06	6.35	06	06	6.5	04	09	9.6	6	6.8				5.56	
07	07	7.94	08	08	8.1	05	13	13.8	9	9.7				6	
08	08	—	—	—	—	—	—	—	—	—				6.35	
09	09	9.525	09	09	9.7	06	16	16.5	11	11.6	16	16.6	16	19.7	9.525
10	10	—	—	—	—	—	—	—	—	—				—	10
12	12	—	—	—	—	—	—	—	—	—				—	12
12	12	12.7	12	12.7	12	12.9	08	8.7	22	22	15	15.5	22	22.1	12.7
15	15	15.875	15	15.875	16	16.1	10	10.9	27	27.5	19	19.4			15.875
16	16	—	—	—	—	—	—	—	—	—				—	16
19	19	19.05	19	19.05	19	19.3	13	13	33	33	23	23.3			19.05
20	20	—	—	—	—	—	—	—	—	—				—	20
22	22	22.225	22	22.6											22.225
25	25	—	—	—	—	—	—	—	—	—				—	25
25	25	25.4	25	25.4	25	15.8									25.4
31	31	31.75	31	31.75	32	32.2									31.75
31	32	—	—	—	—	—	—	—	—	—				—	32

通用刀片形状: H,O,P,S,T,C,E,M,W,R Insert Shape: H,O,P,S,T,C,E,M,W,R											
标准 内切圆 I.C. Size (mm)	内切圆(Ød)的公差 Tolerance of I.C. Size(Ød)(mm)		刀尖高(m)的公差 Tolerance of Corner Height(m)(mm)		标准 内切圆 I.C. Size (inch)	内切圆(Ød)的公差 Tolerance of I.C. Size(Ød)(mm)		刀尖高(m)的公差 Tolerance of Corner Height(m)(mm)			
	J,K,L, M,N(级)	U (级)	M,N(级)	U (级)		Class J,K, L,M,N	Class U	Class J,K, L,M,N	Class U		
6.35					0.250						
9.525	±0.05	±0.08	±0.08	±0.13	0.375	±0.002	±0.003	±0.003	±0.005		
12.7	±0.08	±0.13	±0.13	±0.2	0.500	±0.003	±0.005	±0.005	±0.008		
15.875					0.625	±0.004	±0.007	±0.006	±0.011		
19.05	±0.1	±0.18	±0.15	±0.27	0.750	±0.004	±0.007	±0.006	±0.011		
25.4	±0.13	±0.25	±0.18	±0.38	1.000	±0.005	±0.010	±0.007	±0.015		
31.75					1.250	±0.006	±0.010	±0.008	±0.015		
32	±0.15	±0.25	±0.2	±0.38	1.260	±0.006	±0.010	±0.008	±0.015		



内切圆 Inscribed Circle Size(Ød)	厚度 Thickness(s)	刀尖高 Corner Height(m)

7 修光刃角度或形状刀尖号 Wiper Angle or Nose Radius						
I			II			
代号 Symbol	余偏角 Approach Angle	主偏角 Cutting Edge Angle	代号 Symbol	修光刃 后角 Relief Angle of Wiper	圆弧半径 Corner-R (mm)	
A	45°	45°	D	15°	00	0.03
D	30°	60°	E	20°	02	0.2
E	15°	75°	F	25°	04	0.4
F	5°	85°	G	30°	08	0.8
P	0°	90°	P	11°	12	1.2
Z	其他角度 Others		Z	其他角度 Others	16	1.6
修光刃类型 Wiper						
WA	直线型 Linear			A	28	2.8
WB	大圆弧型 Largearc-shaped			B	32	3.2
WC	大圆弧型 Convexarc-shaped			C	圆刀片圆弧半径 Nose Radius for Insert	
WZ	其他修光刃型 Others			00 英制尺寸 inch Size M0 公制尺寸 Metric Size		

8 主切削刃代号 Edge Preparation		
代号 Symbol	切削刃类型 Description	形状 Shape
F	锋利刃 Sharp Edge	
E	圆弧刃 R-Honed	
T	负倒棱角 Chamfer	
S	复合圆弧刃 Chamfer and R-Honed	
10 断屑槽代号 Chipbreaker Symbol		
代号 Symbol	工况 Machining Condition	
PL	钢材轻切削 Light Cutting for Steel	
PM	钢材中切削 Medium Cutting for Steel	
PR	钢材重切削 Rough Cutting for Steel	
KM	铸铁中切削 Medium Cutting for Cast Iron	
KR	铸铁重切削 Rough Cutting for Cast Iron	
MM	不锈钢中切削 Medium Cutting for Stainless Steel	
详细参见 铣削断屑槽命名规则 Designation System for Milling Chipbreaker		

9 切削方向代号 Direction	
代号 Symbol	方向 Hand
R	右旋 Right
L	左旋 Left
N	无 Neutral
中性 Neutral (右旋与左旋)	



铣削刀片一览表  
Features of Milling Inserts

面铣刀片  
Face Milling Inserts

SBEX	SEEN	SEEX				
Page14	Page14	Page15				
SPEN	SPEN-WC	SPKN SPMN	SPEN-W	SPER-MR	SPNR	SPCW
Page15	Page15	Page16	Page16	Page17	Page18	Page18
SEET-PL*	SEET-PL	SEET-PM	SEET-KM	SEET-PH	SEET-KH	SEET-AL
Page19	Page19	Page19	Page19	Page19	Page19	Page19
HNEX-KF	HNEX-KM	HNEX-KR	HNEX-WC			
Page20	Page20	Page20	Page20			
ODKT-GL	ODKT-GM	ODKT-GH	ODKT-AL	ODKT-NL	ODKW-WB	OFKT-DM
Page21	Page21	Page21	Page21	Page21	Page21	Page22
TPKN	TPER-MR	TPNR	TPKR			
Page23	Page23	Page23	Page23			

仿形铣刀片  
Profiling Milling Inserts

RCET-EM	RCET-EM	RCET-KM	RCET-MM	RCET-KH		
Page25	Page25	Page25	Page25	Page25		
RDET-BL	RDET-GM RDMT-GM	RDET-MM	RDEW-BM RDMW-BM	RDEW	RDEW RDMW	
Page26	Page26	Page26	Page27	Page27	Page27	
RPET-GL	RPET-GM RPMT-GM	RPET-GM	RPET-SM	RPET-GH	RPEW RPMW	
Page28	Page28	Page28	Page28	Page28	Page29	

方肩铣刀片  
Shouldering Inserts

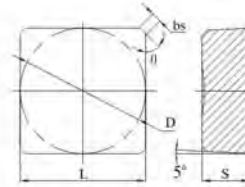
APMT-PM	APMT-PR	APGT-AL	XPHT			
Page30	Page30	Page30	Page31			

三面刃铣削刀片  
Side and Face Milling Inserts

CNEU-PM	CNEU-KM					
Page32	Page32					

面铣削刀片  
Face Milling Inserts

SBEX

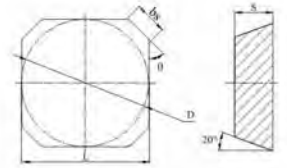


订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L	D	S	$\theta$	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
SBEX1204ZZFN	12.7	12.7	4.76	45°	0.8						●				

●标准库存 Stock ○需预定 Available upon Order

面铣削刀片  
Face Milling Inserts

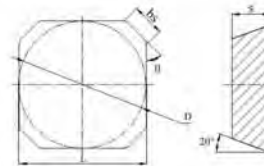
SEEX



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	
	L	D	S	$\theta$	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
SEEX1203AFTN	12.7	12.7	3.18	45°	3		○			○					

●标准库存 Stock ○需预定 Available upon Order

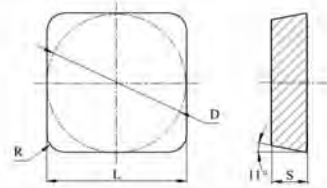
SEEN



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	
	L	D	S	$\theta$	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
SEEN1203AFTN	12.7	12.7	3.18	45°	2.3								●		●
SEEN1204AFTN	12.7	12.7	4.76	45°	2.4						●		○		○
SEEN1504AFTN	15.875	15.875	4.76	45°	2.4		○				○		○		○

●标准库存 Stock ○需预定 Available upon Order

SPEN



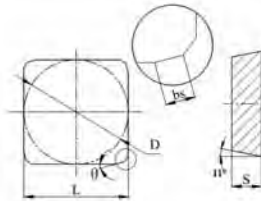
订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L	D	S	R		GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
SPEN150420T	15.875	15.875	4.76	2.0							○				
SPEN150430T	15.875	15.875	4.76	3.0							●		○		
SPEN190424T	19.05	19.05	4.76	2.4							○				
SPEN250730T	25.4	25.4	7.94	3.0							●				
SPEN190424-WC	19.05	19.05	4.76	2.4							○				

●标准库存 Stock ○需预定 Available upon Order



面铣削刀片  
Face Milling Inserts

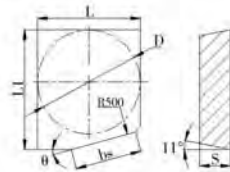
### SPKN



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	
	L	D	S	θ	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
SPKN1203EDL	12.7	12.7	3.18	15°	1.4						○	○	○		
SPKN1203EDTL	12.7	12.7	3.18	15°	1.4						○	○	○		
SPKN1203EDR	12.7	12.7	3.18	15°	1.4						●	○	●		○
SPKN1203EDTR	12.7	12.7	3.18	15°	1.4						●	○	●		
SPKN1504EDL	15.875	15.875	4.76	15°	1.4						●	○	●		
SPKN1504EDTL	15.875	15.875	4.76	15°	1.4						●	○	●		
SPKN1504EDR	15.875	15.875	4.76	15°	1.4						●	○	●		○
SPKN1504EDTR	15.875	15.875	4.76	15°	1.4						●	○	●		○
SPKN1905EDL	19.05	19.05	5.56	15°	2.7						○	○	○		
SPKN1905EDTL	19.05	19.05	5.56	15°	2.7						○	○	○		
SPKN1905EDR	19.05	19.05	5.56	15°	2.7						●	○	●		
SPKN1905EDTR	19.05	19.05	5.56	15°	2.7						●	○	●		

●标准库存 Stock ○需预定 Available upon Order

### SPEN-W

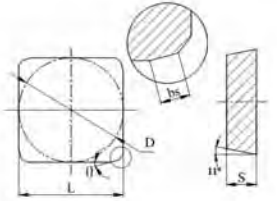


订货号 Ordering Code	尺寸 Dimensions(mm)						涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L	L1	D	S	θ	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
SPEN1504EDR-W	15.875	18.2	15.875	4.76	15°	10.2								○		
SPEN1504EDL-W	15.875	18.2	15.875	4.76	15°	10.2								○		

●标准库存 Stock ○需预定 Available upon Order

面铣削刀片  
Face Milling Inserts

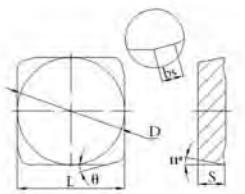
### SPMN



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	
	L	D	S	θ	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
<b>NEW</b> SPMN1504EDR	15.875	15.875	4.76	15°	1.4								●		
SPMN1504EDL	15.875	15.875	4.76	15°	1.4								○		

●标准库存 Stock ○需预定 Available upon Order

### SPER



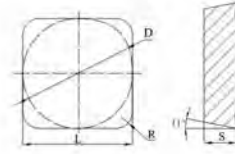
订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L	D	S	θ	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
<b>NEW</b> SPER1203EDTR-MR	12.7	12.7	3.18	15°	1.3			●							
SPER1203EDTL-MR	12.7	12.7	3.18	15°	1.3			●							

●标准库存 Stock ○需预定 Available upon Order



面铣削刀片  
Face Milling Inserts

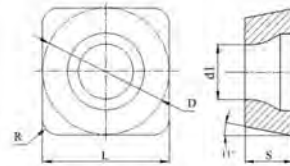
SPNR



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	
	L	D	S	R	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
<b>NEW</b> SPNR150424T	15.875	15.875	4.76	2.4			●							

●标准库存 Stock ○需预定 Available upon Order

SPCW

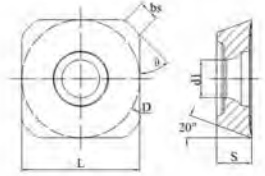


订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L	D	S	d1	R	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
SPCW120412	12.7	12.7	4.76	5.5	1.2						●				○
SPCW120416	12.7	12.7	4.76	5.5	1.6	●	○			○	●				○
SPCW150516	15.875	15.875	5.56	5.5	1.6						○				

●标准库存 Stock ○需预定 Available upon Order

面铣削刀片  
Face Milling Inserts

SEET



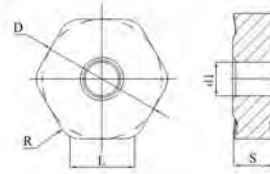
订货号 Ordering Code	尺寸 Dimensions(mm)						涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet		
	L	D	S	d1	θ	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM	
<b>NEW</b> SEET1204AFEN-PL*	12.7	12.7	4.76	5.5	45°	2.5	○		○							○	●
<b>NEW</b> SEET13T3AGEN-PL	13.4	13.4	3.97	4.4	45°	1.7	○		●								
<b>NEW</b> SEET13T3AGEN-PM	13.4	13.4	3.97	4.4	45°	1.2	○		●	○							○
<b>NEW</b> SEET13T3AGSN-KM	13.4	13.4	3.97	4.4	45°	1.3	○		●		○						
<b>NEW</b> SEET13T3AGSN-PH	13.4	13.4	3.97	4.4	45°	1.3	○		●								
<b>NEW</b> SEET13T3AGSN-KH	13.4	13.4	3.97	4.4	45°	1.3	○		●		○						
<b>NEW</b> SEET13T3AGFN-AL	13.4	13.4	3.97	4.4	45°	2.2										●	

●标准库存 Stock ○需预定 Available upon Order  
\*非标规格 Tailormade



面铣削刀片  
Face Milling Inserts

**HNEX**

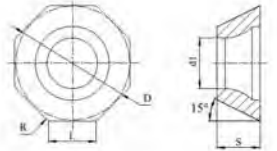


订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated				金属陶瓷 Cermet
	L	D	S	d1	R	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
HNEX090520-KF	9.5	16.2	5.56	-	2.0				○	●					
<b>NEW</b> HNEX090510-KF	9.5	16.2	5.56	-	1.0				○	○					
<b>NEW</b> HNEX090520-KM	9.5	16.2	5.56	-	2.0				○	○					
HNEX090516-KR	9.5	16.2	5.56	4.56	1.6				○	●					
<b>NEW</b> HNEX090530-KR	9.5	16.2	5.56	4.56	3.0				○	○					
HNEX090502-WC	9.5	15.875	5.56	-	0.2				○	●					

●标准库存 Stock ○需预定 Available upon Order

面铣削刀片  
Face Milling Inserts

**ODKT**



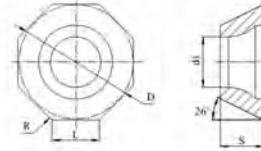
订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated				金属陶瓷 Cermet
	L	D	S	d1	R	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
<b>NEW</b> ODKT060508-GL	6.5	15.875	5.56	5.56	0.8	○	○								
ODKT060508-GM	6.5	15.875	5.56	5.56	0.8	○	●			●					
<b>NEW</b> ODKT060508-GH	6.5	15.875	5.56	5.56	0.8	○	○								
<b>NEW</b> ODKT060508-AL	6.5	15.875	5.56	5.56	0.8									○	
ODKT060508-NL	6.5	15.875	5.56	5.56	0.8										●
<b>NEW</b> ODKW060508-WB	6.5	15.875	5.56	5.56	0.8	○	○								

●标准库存 Stock ○需预定 Available upon Order



面铣削刀片  
Face Milling Inserts

OFKT

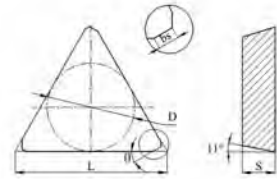


订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L	D	S	d1	R	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
OFKT05T3AFTN-DM	5.2	12.7	3.97	4.4	0.5	○	○								



●标准库存 Stock ○需预定 Available upon Order

TPKN



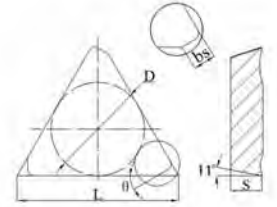
订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L	D	S	θ	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
TPKN1603PDL	16.5	9.525	3.18	30°	1.3						○	○	○		
TPKN1603PDTL	16.5	9.525	3.18	30°	1.3						○	○	○		
TPKN1603PDR	16.5	9.525	3.18	30°	1.3						●	○	●		
TPKN1603PDTR	16.5	9.525	3.18	30°	1.3						●	○	●		
TPKN2204PDL	22	12.7	4.76	30°	1.4						○	○	○		
TPKN2204PDTL	22	12.7	4.76	30°	1.4						○	○	○		
TPKN2204PDR	22	12.7	4.76	30°	1.4						●	○	●		
TPKN2204PDTR	22	12.7	4.76	30°	1.4						●	○	●		



●标准库存 Stock ○需预定 Available upon Order

面铣削刀片  
Face Milling Inserts

TPER

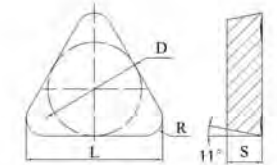


订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L	D	S	θ	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
NEW TPER1603PDTR-MR	16.5	9.525	3.18	30°	1.3			○							
TPER1603PDTL-MR	16.5	9.525	3.18	30°	1.3			○							



●标准库存 Stock ○需预定 Available upon Order

TPNR



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	
	L	D	S	R	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
NEW TPNR220424T	18.5	12.7	4.76	2.4			●							

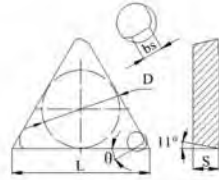


●标准库存 Stock ○需预定 Available upon Order



面铣削刀片  
Face Milling Inserts

TPKR

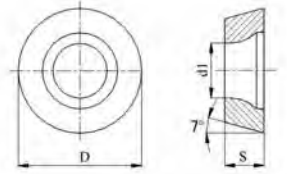








订货号 Ordering Code	尺寸 Dimensions(mm)					涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L	D	S	θ	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
 TPKR1603PPTR	16.4	9.48	3.18	30°	1.2	○									

●标准库存 Stock ○需预定 Available upon Order

仿形铣削刀片  
Profiling Milling Inserts

RCET



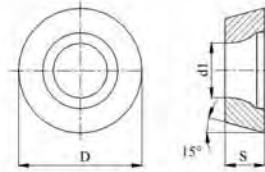
订货号 Ordering Code	尺寸 Dimensions(mm)			涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	D	S	dt	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
 RCET10T3M0-EM	10	3.97	4.4	●	○	○							○
 RCET1204M0-EM	12	4.76	4	●	○	○							○
 RCET1204M0-MM	12	4.76	4	●	●	●							○
 RCET1204M0-KM	12	4.76	4	○	○	○							
 RCET1606M0-KM	16	6.35	5.5	○	○	○							
 RCET1606M0T-KH	16	6.35	5.5	●	○	○							

●标准库存 Stock ○需预定 Available upon Order



仿形铣削刀片  
Profiling Milling Inserts

## RDET/RDMT

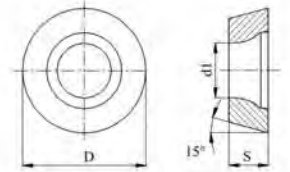


订货号 Ordering Code	尺寸 Dimensions(mm)			涂层硬质合金 Coated					硬质合金 Uncoated				金属陶瓷 Cemet
	D	S	d1	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
<b>NEW</b> 	RDET0803M0-BL	8	3.18	2.94	○	○							
	RDET10T3M0-BL	10	3.97	4.4	●	●							
	RDET1204M0-BL	12	4.76	4.4	●	●							
	RDET1604M0-BL	16	4.76	5.5	○	○							
<b>NEW</b> 	RDET0802M0-GM*	8	2.38	2.94	○								
	RDET0803M0-GM	8	3.18	2.94	○	○							
	RDET10T3M0-GM	10	3.97	4.4	●	●						○	
	RDET1204M0-GM	12	4.76	4.4	○	○							
	RDET1604M0-GM	16	4.76	5.5	○	○							
	RDET1204M0T-MM	12	4.76	4.4	●								
<b>NEW</b> 	RDMT10T3M0-GM	10	3.97	4.4	●	●							
	RDMT1204M0-GM	12	4.76	4.4	●	●							

●标准库存 Stock ○需预定 Available upon Order  
\*非标规格 Tailormade

仿形铣削刀片  
Profiling Milling Inserts

## RDEW/RDMW



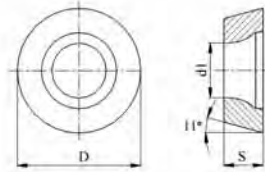
订货号 Ordering Code	尺寸 Dimensions(mm)			涂层硬质合金 Coated					硬质合金 Uncoated				金属陶瓷 Cemet
	D	S	d1	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
	RDEW0501M0	5	1.51	2.2	●	●							○
	RDEW0702M0	7	2.38	2.8	●	●							○
	RDEW1003M0*	10	3.18	4.4	○								○
	RDEW0702M0T	7	2.38	2.8	●	●							
	RDEW0803M0T	8	3.18	2.94	●	●							
	RDEW10T3M0T	10	3.97	4.4	●	●							
	RDEW12T3M0T*	12	3.97	4.4	○								
	RDEW1204M0T	12	4.76	4.4	●	●							
	RDEW1604M0T	16	4.76	5	●	●							
<b>NEW</b> 	RDEW1204M0T-BM	12	4.76	4.4	●	●							
	RDMW1204M0T-BM	12	4.76	4.4	●	●							
<b>NEW</b> 	RDMW1605M0T-BM*	16	5.56	5.5	●	○							
	RDMW10T3M0T	10	3.97	4.4	●	○							
<b>NEW</b> 	RDMW1604M0T	16	4.76	5.5	●	○							

●标准库存 Stock ○需预定 Available upon Order  
\*非标规格 Tailormade



仿形铣削刀片  
Profiling Milling Inserts

RPET/RPMT

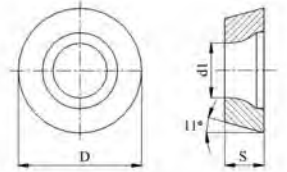


订货号 Ordering Code	尺寸 Dimensions(mm)			涂层硬质合金 Coated					硬质合金 Uncoated				金属陶瓷 Cermet
	D	S	dt	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
NEW RPET1003M0-GL	10	3.18	4.4	○	○								
	RPET1204M0-GL	12	4.76	4.4	○	○							
NEW RPET08T2M0-GM	8	2.78	2.94	○	○	●							
	RPET1003M0T-GM	10	3.18	4.4	●	●							
	RPET1204M0-GM	12	4.76	4.4	●	●	●						
	RPET1204M0T-GM	12	4.76	4.4	●	●	●						
NEW RPET1606M0T-GM	16	6.35	5.5	○	○								
	RPET1606M0-SM	16	6.35	5.5			●						
NEW RPET1606M0T-GH	16	6.35	5.5	○	○	○							
NEW RPMT1003M0T-GM	10	3.18	4.4	●	●								
	RPMT1204M0-GM	12	4.76	4.4	●	○							

●标准库存 Stock ○需预定 Available upon Order

仿形铣削刀片  
Profiling Milling Inserts

RPEW/RPMW



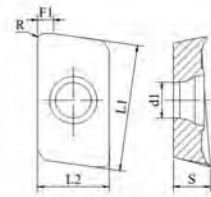
订货号 Ordering Code	尺寸 Dimensions(mm)			涂层硬质合金 Coated					硬质合金 Uncoated				金属陶瓷 Cermet
	D	S	dt	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
RPEW08T2M0	8	2.78	2.94	○	○								
	RPBW1003M0	10	3.18	4.4	●	●							
	RPBW10T3M0*	10	3.97	4.4	○								○
RPEW1003M0T	10	3.18	4.4	●	●								
	RPBW1204M0T	12	4.76	4.4	●	●							
NEW RPMW1003M0T	10	3.18	4.4	●	●								
	RPMW1204M0T	12	4.76	4.4	●	●							

●标准库存 Stock ○需预定 Available upon Order  
\*非标规格 Tailormade



方肩铣削刀片  
Shoulder Milling Inserts

APMT

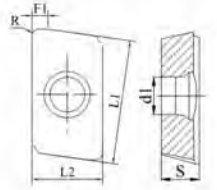


订货号 Ordering Code	尺寸 Dimensions(mm)						涂层硬质合金 Coated					硬质合金 Uncoated				金属陶瓷 Cermet
	L1	L2	S	F1	d1	R	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
	APMT1135PDER-PM	10.83	6.16	3.5	1.92	2.8	0.8	●	●							○
	APMT1604PDER-PM	16.26	9.26	4.76	2	4.6	0.8	●	●							○
	APMT1135PDER-PR	10.84	6.15	3.5	1.87	2.8	0.8	●	●							○
	APMT1604PDER-PR	16.26	9.24	4.76	2.2	4.4	0.8	●	●							○
	APGT1135PDFR-AL	10.83	6.16	3.5	1.92	2.8	0.8									○
	APGT1604PDFR-AL	16.26	9.24	4.76	2.2	4.4	0.8									○

●标准库存 Stock ○需预定 Available upon Order

方肩铣削刀片  
Shoulder Milling Inserts

XPHT



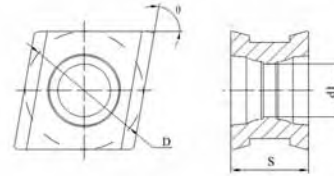
订货号 Ordering Code	尺寸 Dimensions(mm)						涂层硬质合金 Coated					硬质合金 Uncoated			金属陶瓷 Cermet	
	L1	L2	S	F1	d1	R	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
	XPHT160408T	15.6	9.525	4.76	2	4.65	0.8									○
	XPHT160412T	15.6	9.525	4.76	2	4.65	1.2									○

●标准库存 Stock ○需预定 Available upon Order



三面刃铣削刀片  
Side and Face Milling Inserts

CNEU



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	
	D	θ	S	d1	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
<b>NEW</b>  CNEU070508-PM	7.6	80°	5	3.4	●	●			●					
<b>NEW</b>  CNEU070508-KM	7.6	80°	5	3.4	○	●			●					

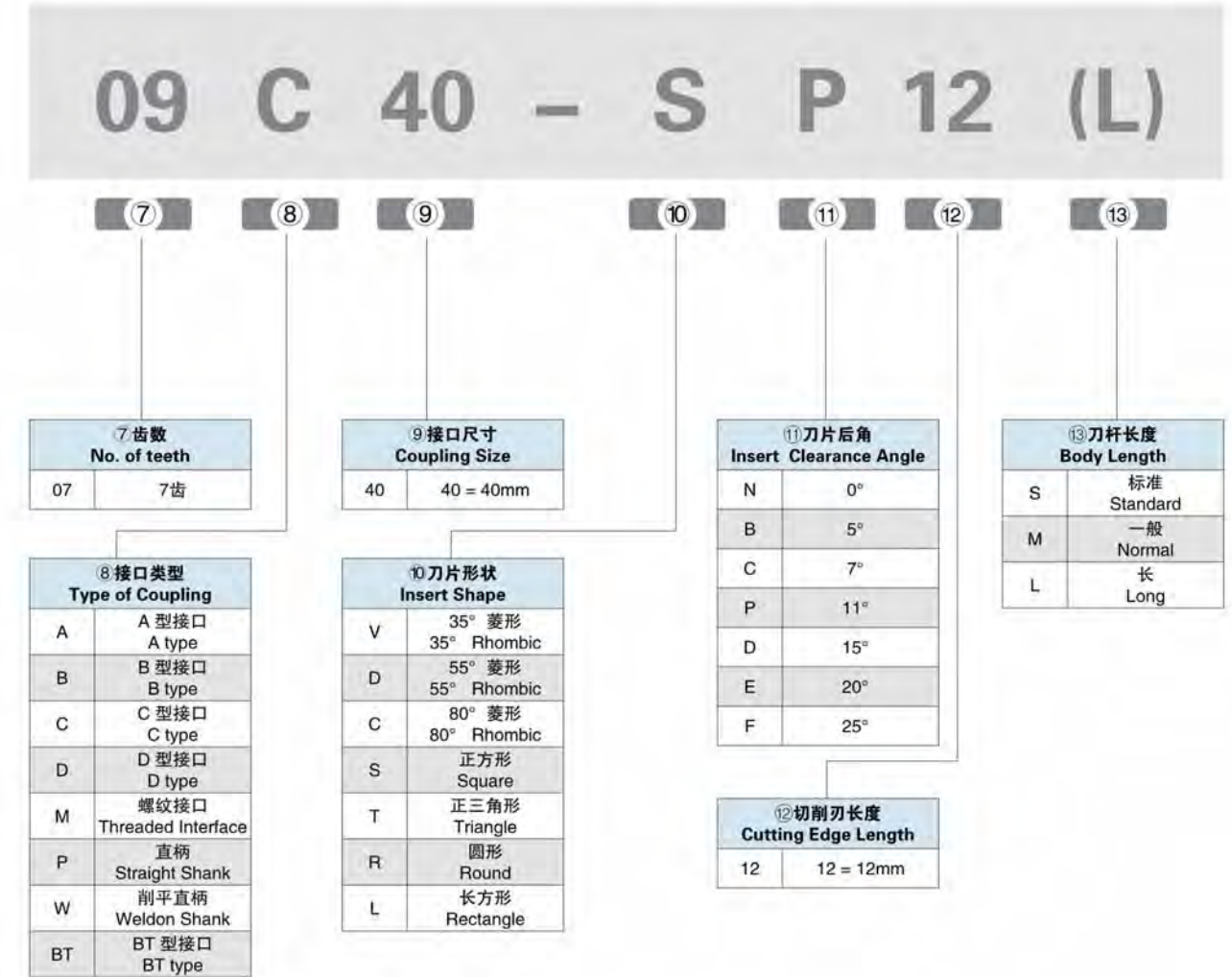
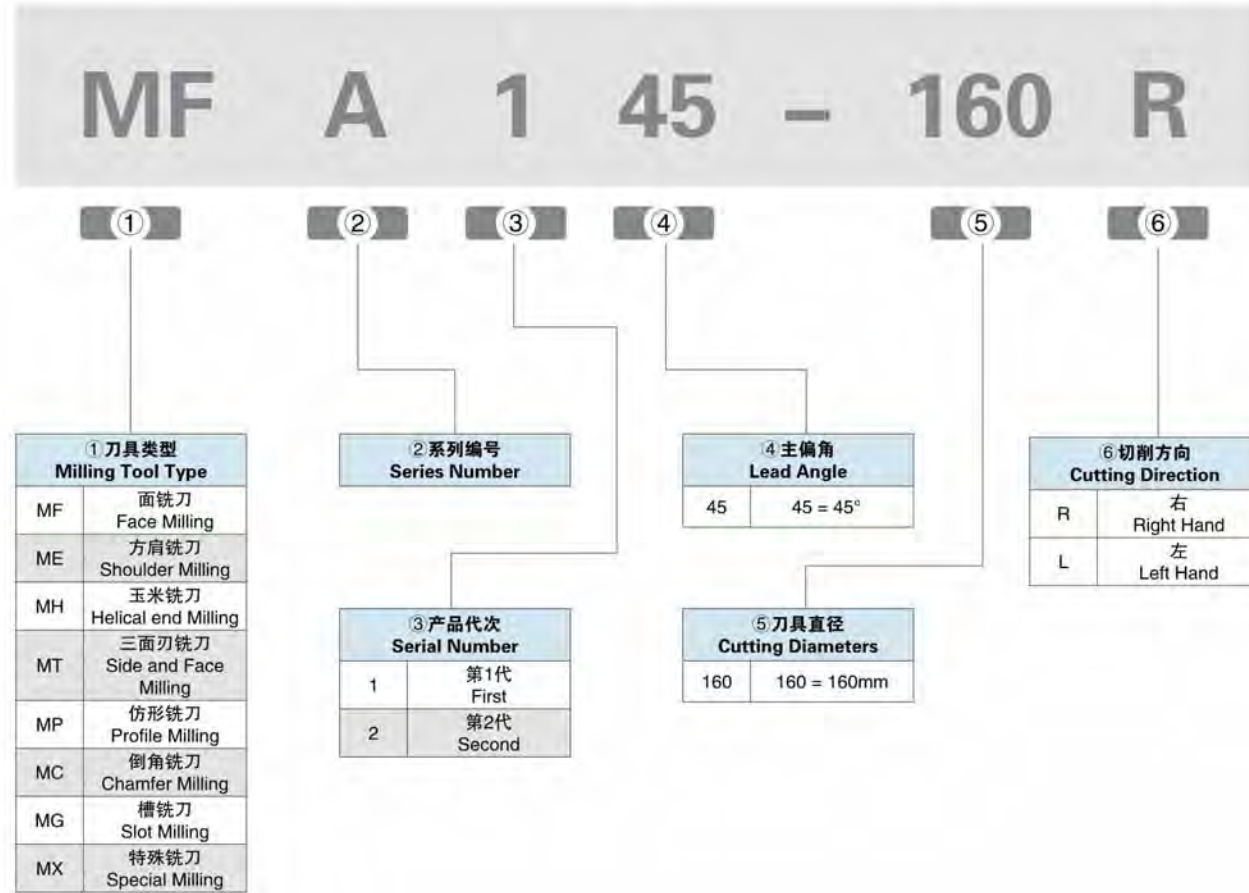
●标准库存 Stock ○需预定 Available upon Order



MILLING  
CUTTER BODIES  
铣削刀体






铣削刀体型号表示规则  
Milling Tools Identification System





## 铣削刀体一览表

Features of Milling Cutter Bodies

用途 Purpose	主偏角 Lead Angle	刀体系列 Series	产品外形 Shape	规格 Specification	简介 Profile	特点 Features																					
面铣 Face Milling	45°	MFA145	 Page 38	Φ50 Φ63 Φ80 Φ100 Φ125	通用轻快切削，适用于各种材料的机械结构部件接触面高效面铣加工 Smoothly cutting with universal property, specially suit for efficiency face milling for connection face of mechanical components with different material.	<ul style="list-style-type: none"> <li>● 优质合金钢材料 High quality alloy steel material</li> <li>● 闭口容屑槽设计 Close chip-room design</li> <li>● 高精定位槽 High precision locating slot</li> <li>● 喷丸强化处 Blasting process</li> <li>● 最大切深：6mm A<sub>pmax</sub>:6mm</li> </ul>																					
			 Page 39	Φ50 Φ63			仿形铣 Profile Milling	-	MPA100	 Page 43	Φ50 Φ63	用于模具行业的模架平面铣削和型腔铣、机械加工平面及型腔加工 Mainly used for the face milling and pocket milling in mold and die、general machining.	<ul style="list-style-type: none"> <li>● 双重夹紧 Double clamping</li> <li>● 精确的定位槽 Accurate locating slot</li> <li>● 大容屑槽设计 Big chip-room</li> <li>● 表面特殊处理 Special surface treatment</li> <li>● 最大切深：6mm A<sub>pmax</sub>:6mm</li> </ul>	 Page 43	Φ20 Φ25 Φ32	-	MPB100	 Page 46	Φ40 Φ50 Φ63	用于模具行业的模架平面铣削和型腔铣、机械加工平面及型腔加工 Mainly used for the face milling and pocket milling in mold and die、general machining.	<ul style="list-style-type: none"> <li>● 双重夹紧 Double clamping</li> <li>● 精确的定位槽 Accurate locating slot</li> <li>● 大容屑槽设计 Big chip-room</li> <li>● 表面特殊处理 Special surface treatment</li> <li>● 最大切深：6mm A<sub>pmax</sub>:6mm</li> </ul>	 Page 46	Φ20 Φ25 Φ32	方肩铣 Shoulder Milling	90°	MEA190	 Page 51
仿形铣 Profile Milling	-	MPA100	 Page 43	Φ50 Φ63	用于模具行业的模架平面铣削和型腔铣、机械加工平面及型腔加工 Mainly used for the face milling and pocket milling in mold and die、general machining.	<ul style="list-style-type: none"> <li>● 双重夹紧 Double clamping</li> <li>● 精确的定位槽 Accurate locating slot</li> <li>● 大容屑槽设计 Big chip-room</li> <li>● 表面特殊处理 Special surface treatment</li> <li>● 最大切深：6mm A<sub>pmax</sub>:6mm</li> </ul>																					
			 Page 43	Φ20 Φ25 Φ32				-	MPB100	 Page 46	Φ40 Φ50 Φ63	用于模具行业的模架平面铣削和型腔铣、机械加工平面及型腔加工 Mainly used for the face milling and pocket milling in mold and die、general machining.	<ul style="list-style-type: none"> <li>● 双重夹紧 Double clamping</li> <li>● 精确的定位槽 Accurate locating slot</li> <li>● 大容屑槽设计 Big chip-room</li> <li>● 表面特殊处理 Special surface treatment</li> <li>● 最大切深：6mm A<sub>pmax</sub>:6mm</li> </ul>	 Page 46	Φ20 Φ25 Φ32	方肩铣 Shoulder Milling	90°	MEA190	 Page 51	Φ50 Φ63	通用方肩铣、通槽铣、仿形铣、和螺旋斜坡铣等 General purpose end mill for shouldering, slotting, contouring and ramping operations.	<ul style="list-style-type: none"> <li>● 刀体强度高 High intensity</li> <li>● 制造工艺出色 Excellent body manufacturing technology</li> <li>● 适合大切深 Suitable for large cutting depth</li> <li>● 11° 正型刀片 11° positive insert</li> <li>● 最大切深：14mm A<sub>pmax</sub>:14mm</li> </ul>	 Page 51	Φ16 Φ20 Φ25 Φ32			
	-	MPB100	 Page 46	Φ40 Φ50 Φ63	用于模具行业的模架平面铣削和型腔铣、机械加工平面及型腔加工 Mainly used for the face milling and pocket milling in mold and die、general machining.	<ul style="list-style-type: none"> <li>● 双重夹紧 Double clamping</li> <li>● 精确的定位槽 Accurate locating slot</li> <li>● 大容屑槽设计 Big chip-room</li> <li>● 表面特殊处理 Special surface treatment</li> <li>● 最大切深：6mm A<sub>pmax</sub>:6mm</li> </ul>																					
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			 Page 51	Φ16 Φ20 Φ25 Φ32																							



面铣

Face Milling

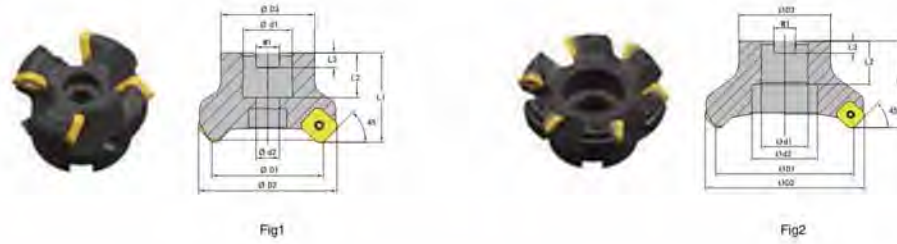
通用45° 面铣削—MFA145

45° Double Positive Face Milling—MFA145

MFA145

心轴式

Arbor



疏齿型

Coarse Pitch

订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts			图示 Shape	库存 Stock
			ΦD1	Φd1	L1	W1	L3			刀垫 Shim	螺钉 Screw	扳手 Wrench		
MFA145-050R03A22-SE13	50	3	50	22	40	10.4	6.3	6	SEET13T3	-	S60M4*10	T15P	Fig1	●
MFA145-063R04A22-SE13	63	4	50	22	40	10.4	6.3	6	SEET13T3	-	S60M4*10	T15P	Fig1	●

密齿型

Close Pitch

订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts			图示 Shape	库存 Stock
			ΦD1	Φd1	L1	W1	L3			刀垫 Shim	螺钉 Screw	扳手 Wrench		
MFA145-050R04A22-SE13	50	4	50	22	40	10.4	6.3	6	SEET13T3	-	S60M4*10	T15P	Fig1	●
MFA145-063R05A22-SE13	63	5	63	22	40	10.4	6.3	6	SEET13T3	-	S60M4*10	T15P	Fig1	●
MFA145-080R06B27-SE13	80	6	80	27	50	12.4	7	6	SEET13T3	✓	S60M4*10	T15P	Fig2	●
MFA145-100R07B32-SE13	100	7	100	32	50	14.4	8.3	6	SEET13T3	✓	S60M4*10	T15P	Fig2	●
MFA145-125R08B40-SE13	125	8	125	40	50	16.4	8.3	6	SEET13T3	✓	S60M4*10	T15P	Fig2	●

●标准库存 Stock ○需预定 Available upon Order

面铣

Face Milling

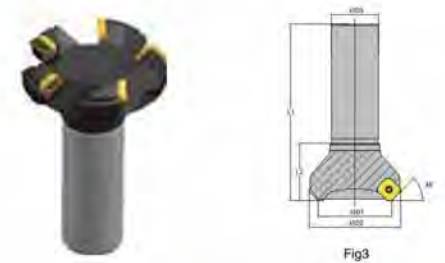
通用45° 面铣削—MFA145

45° Double Positive Face Milling—MFA145

MFA145

圆柱直柄式

Sank



疏齿型

Coarse Pitch

订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts			图示 Shape	库存 Stock
			ΦD1	ΦD2	ΦD3	L1	L2			刀垫 Shim	螺钉 Screw	扳手 Wrench		
MFA145-050R03P32-SE13	50	3	50	63	32	120	39	6	SEET13T3	-	S60M4*10	T15P	Fig3	●
MFA145-063R04P32-SE13	63	4	63	76	32	120	39	6	SEET13T3	-	S60M4*10	T15P	Fig3	●

密齿型

Close Pitch

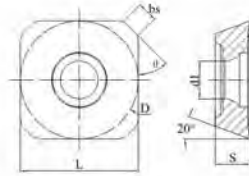
订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts			图示 Shape	库存 Stock
			ΦD1	ΦD2	ΦD3	L1	L2			刀垫 Shim	螺钉 Screw	扳手 Wrench		
MFA145-050R04P32-SE13	50	4	50	63	32	120	39	6	SEET13T3	-	S60M4*10	T15P	Fig3	●
MFA145-063R05P32-SE13	63	5	63	76	32	120	39	6	SEET13T3	-	S60M4*10	T15P	Fig3	●

●标准库存 Stock ○需预定 Available upon Order



面铣  
Face Milling  
刀片  
Insert

SEET



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	
	L	D	S	d1	θ	bs	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
SEET13T3AGEN-PL	13.4	13.4	3.97	4.4	45°	1.7	○	●								
SEET13T3AGEN-PM	13.4	13.4	3.97	4.4	45°	1.2	○	●	○							○
SEET13T3AGSN-KM	13.4	13.4	3.97	4.4	45°	1.3	○	●		○						
SEET13T3AGSN-PH	13.4	13.4	3.97	4.4	45°	1.3	○	●								
SEET13T3AGSN-KH	13.4	13.4	3.97	4.4	45°	1.3	○	●		○						
SEET13T3AGFN-AL	13.4	13.4	3.97	4.4	45°	2.2						●				

●标准库存 Stock ○需预定 Available upon Order

SEET13T3系列槽型  
SEET13T3 Series Geometry

PL槽型 PL Geometry	PM槽型 PM Geometry	KM槽型 KM Geometry	PH槽型 PH Geometry	KH槽型 KH Geometry	AL槽型 AL Geometry
通用材料 轻载切削 Light cutting for general material	通用材料 中载切削 Medium cutting for general material	铸铁 中载切削 Medium cutting for cast iron	通用材料 重载切削 Rough cutting for general material	铸铁 重载切削 Rough cutting for cast iron	铝合金 通用切削 General cutting for aluminum alloys
大前角窄刃宽设计， 最适于低切削力、 低进给率的 轻载加工。 Large rake angle with Narrow edge width. Suit for light milling of low cutting speed and low feed.	大前角设计， 切削轻快， 大多数一般工况下可 实现高稳定性加工。 Smoothly cutting. High stability milling can be achieved under general cutting conditions.	铸铁一般工况 专用槽型， 可应对绝大多数的铸 铁中载切削。 The chipbreaker specially applicable for cast iron under general cutting conditions. Most medium milling can be achieved.	高强度刃口， 断续切削、 去黑皮加工时 性能优异。 Strong cutting edge for intermittent cutting condition.	铸铁重载切削 专用槽型， 断续、带黑皮粗 加工时表现优越。 Special chipbreaker for cast iron cutting and heavy cutting. Suitable for rough cutting	大前角锋利刃， 切削轻快， 镜面抛光处理， 排屑良好。 Large rake angle, sharp cutting edge with smoothly cutting. Suitable for high feed cutting



### 推荐切削条件

#### Recommended Cutting Conditions

	工件材料 Workpiece Materials	材料硬度 Materials Hardness	牌号 Grade	切削速度 (mm/min) Recommended Cutting Speed	轻载切削 Light Cutting		中载切削 Medium Cutting		重载切削 Heavy Cutting	
					进给/刃 (mm/tooth)	槽型 chipbreaker	进给/刃 (mm/tooth)	槽型 chipbreaker	进给/刃 (mm/tooth)	槽型 chipbreaker
P	软钢 Low Carbon Steel (SS400、S10C等)	≤HB180	GA4225 GA4230	250 (210-350)	0.15 (0.1-0.2)	PL	0.2 (0.1-0.3)	PM	0.3 (0.2-0.4)	PH
	碳钢、合金钢 Carbon Steel Alloy Steel (S45C、 SCM440等)	HB180-280	GA4225 GA4230	220 (170-270)	0.15 (0.1-0.2)	PL	0.2 (0.1-0.3)	PM	0.3 (0.2-0.4)	PH
		HB280-350	GA4230	140 (100-180)	0.15 (0.1-0.2)	PL	0.2 (0.1-0.3)	PM	0.3 (0.2-0.4)	PH
M	不锈钢 Stainless Steel (SUS304等)	≤HB275	GA4225 GA4230	180 (130-250)	0.15 (0.1-0.2)	PL	0.2 (0.1-0.3)	PM	0.3 (0.2-0.4)	PH
K	铸铁、球墨铸铁 Gray Cast Iron Nodular Cast Iron (FC250、 FCD400等)	≤HB350	GA4225 GA4230	180 (130-250)	0.15 (0.1-0.2)	PL	0.2 (0.1-0.3)	KM	0.3 (0.2-0.4)	KH
N	铝材 Aluminum	HB60-210	GA0115	≥300	0.15 (0.1-0.2)	AL	0.2 (0.1-0.3)	AL	0.3 (0.2-0.4)	AL
S	耐热合金 Heat-resistant Alloy	HRC25-35	GA4230	40 (20-50)	0.15 (0.1-0.2)	PL	0.2 (0.1-0.3)	PM	—	—
H	高硬度钢 High Hardness Steel	HRC48-55	GA4230	80 (60-100)	0.1 (0.05-0.15)	PL	0.15 (0.1-0.2)	PM	—	—

★ 刀具转速 (min<sup>-1</sup>) = (1000x切削速度) ÷ (3.14x刀具切削刃直径)  
 Tool RPM (min<sup>-1</sup>) = (1000xCutting Speed) ÷ (3.14x Diameters Of Cutter)  
 ★ 机床工作台进给量 (mm/min) = 每刃进给量x刀具刃数x刀具转速  
 Workpiece Feed (mm/min) = Feed Per Tooth x Number of Tooth x Tool RPM

### 仿形铣

Profile Milling

### 通用仿形铣削--MPA100

General Profiling Milling—MPA100

## MPA100

### 心轴式

Arbor

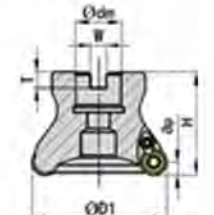


Fig1

### 疏齿型

Coarse Pitch

订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts			图示 Shape	库存 Stock
			ΦD1	Φdm	H	W	T			压板 Clamp	螺钉 Screw	扳手 Wrench		
MPA100-050R04A22-RD10	50	4	50	22	50	10.4	6.3	5	RD□□10T3	DC1007	S60M4*9 S60M3.5*10	T15P	Fig1	●
MPA100-050R04A22-RD12	50	4	50	22	50	10.4	6.3	6	RD□□1204	DC1208	S60M4*10	T15P	Fig1	●
MPA100-063R05A22-RD12	63	5	63	22	50	10.4	6.3	6	RD□□1204	DC1208	S60M4*10	T15P	Fig1	●

●标准库存 Stock ○需预定 Available upon Order

## MPA100

### 圆柱直柄式

Shank

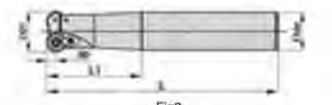


Fig2



Fig3

### 疏齿型

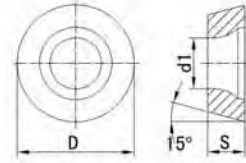
Coarse Pitch

订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts			图示 Shape	库存 Stock
			ΦD1	Φdm	L	L1	—			压板 Clamp	螺钉 Screw	扳手 Wrench		
MPA100-020R02P20-RD10M	20	2	20	20	160	50	—	5	RD□□10T3	DC1007	S60M4*9 S60M3.5*10	T15P	Fig2	○
MPA100-025R02P20-RD10M	25	2	25	20	160	50	—	5	RD□□10T3	DC1007	S60M4*9 S60M3.5*10	T15P	Fig3	●
MPA100-032R02P25-RD12M	32	2	32	25	200	60	—	6	RD□□1204	DC1208	S60M4*10	T15P	Fig3	●

●标准库存 Stock ○需预定 Available upon Order

仿形铣  
Profile Milling  
刀片  
Insert

## RDET/RDMT/RDEW/RDMW



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
	D	S	d1	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
	RDET10T3M0-BL	10	3.97	4.4	●	●							
	RDET1204M0-BL	12	4.76	4.4	●	●							
	RDET10T3M0-GM	10	3.97	4.4	●	●							○
	RDMT10T3M0-GM	10	3.97	4.4	●	●							
	RDET1204M0-GM	12	4.76	4.4	○	○							
	RDMT1204M0-GM	12	4.76	4.4	●	●							
	RDEW10T3M0T	10	3.97	4.4	●	●							○
	RDMW10T3M0T	10	3.97	4.4	●	○							
	RDEW1204M0T	12	4.76	4.4	●	●							○
	RDEW1204M0T-BM	12	4.76	4.4	●	●							○
	RDMW1204M0T-BM	12	4.76	4.4	●	●							

●标准库存 Stock ○需预定 Available upon Order

## MPA100系列槽型 MPA100 Series Geometry

加工工况 Working Condition	轻切削 Light Cutting	中切削 Medium Cutting	重切削 Heavy Cutting	
	槽型代码 Chipbreaker Code	BL	GM	T-BM
基本形状 Basic Shape				
槽型特点 Chipbreaker feature	BL:适用于P、M类材料的轻切削， 20-22° 大前角设计 BL: Suitable for light cutting steel and stainless steel, big front rake angle of 20-22° .	GM: 适用于P、M、K类材料的中切 削，前角14-18°。 GM: Suitable for medium cutting steel, stainless steel and cast iron, front rake angle of 14-18° .	T-BM: 带修饰花纹的平板槽型， 适用于P、M、K类材料的重切削， 主要用于半精到粗加工。 T-BM: Flat chipbreaker with decorative pattern, Suitable for heavy cutting steel and stainless steel, semi-finishing to roughing.	



仿形铣

Profile Milling

通用仿形铣削--MPB100

General Profiling Milling--MPB100

MPB100

心轴式

Arbor



Fig1

疏齿型

Coarse Pitch

订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts			图示 Shape	库存 Stock
			ØD1	Ødm	H	W	T			压板 Clamp	螺钉 Screw	扳手 Wrench		
MPB100-040R04A16-RP10	40	4	40	16	50	8.4	6.3	5	RP□□1003	DC1007	S60M4*9 S60M3.5*10	T15P	Fig1	●
MPB100-050R04A22-RP10	50	4	50	22	50	10.4	6.3	5	RP□□1003	DC1007	S60M4*9 S60M3.5*10	T15P	Fig1	●
MPB100-050R04A22-RP12	50	4	50	22	50	10.4	6.3	6	RP□□1204	DC1208	S60M4*10	T15P	Fig1	●
MPB100-063R05A22-RP12	63	5	63	22	50	10.4	6.3	6	RP□□1204	DC1208	S60M4*10	T15P	Fig1	●

●标准库存 Stock ○需预定 Available upon Order

MPB100

圆柱直柄式

Shank



Fig2

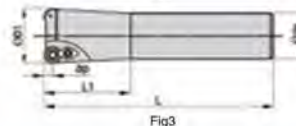


Fig3

疏齿型

Coarse Pitch

订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts			图示 Shape	库存 Stock
			ØD1	Ødm	L	L1	-			压板 Clamp	螺钉 Screw	扳手 Wrench		
MPB100-020R02P20-RP10M	20	2	20	20	160	50	-	5	RP□□10T3	DC1007	S60M4*9 S60M3.5*10	T15P	Fig2	○
MPB100-025R02P20-RP10M	25	2	25	20	160	50	-	5	RP□□10T3	DC1007	S60M4*9 S60M3.5*10	T15P	Fig3	●
MPB100-025R02P20-RP10L	25	2	25	20	200	50	-	5	RP□□10T3	DC1007	S60M4*9 S60M3.5*10	T15P	Fig3	●
MPB100-025R02P25-RP12M	25	2	25	25	160	50	-	6	RP□□1204	DC1208	S60M4*10	T15P	Fig2	●
MPB100-032R02P25-RP12M	32	2	32	25	160	50	-	6	RP□□1204	DC1208	S60M4*10	T15P	Fig3	●
MPB100-032R02P25-RP12L	32	2	32	25	200	60	-	6	RP□□1204	DC1208	S60M4*10	T15P	Fig3	●

●标准库存 Stock ○需预定 Available upon Order

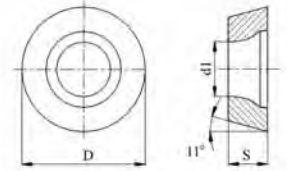
仿形铣

Profile Milling

刀片

Insert

RPET/RPMT/RPEW/RPMW



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	
	D	S	d1	GA4225	GA4230	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
	RPET1003M0-GL	10	3.18	4.4	○	○							
	RPET1204M0-GL	12	4.76	4.4	○	○							
	RPET1003M0T-GM	10	3.18	4.4	●	●							
	RPMT1003M0T-GM	10	3.18	4.4	●	●							
	RPET1204M0-GM	12	4.76	4.4	●	●	●						
	RPMT1204M0-GM	12	4.76	4.4	●	○							
	RPET1204M0T-GM	12	4.76	4.4	●	●	●						
	RPEW1003M0	10	3.18	4.4	●	●							○
	RPEW1003M0T	10	3.18	4.4	●	●							○
	RPMW1003M0T	10	3.18	4.4	●	●							
	RPEW1204M0T	12	4.76	4.4	●	●							
	RPMW1204M0T	12	4.76	4.4	●	●							

●标准库存 Stock ○需预定 Available upon Order



### MPB100系列槽型 MPB100 Series Geometry

加工工况 Working Condition	轻切削 Light Cutting	中切削 Medium Cutting	重切削 Heavy Cutting	
槽型代码 Chipbreaker Code	GL	GM	T-BM	T- (平板型)
基本形状 Basic Shape				
槽型特点 Chipbreaker feature	GL: 适用于P、M类材料的轻切削, 20-22° 大前角设计 GL: Suitable for light cutting steel and stainless steel, big front rake angle of 20-22° .	GM: 适用于P、M、K类材料的中切削, 前角14-18°。 GM: Suitable for medium cutting steel, stainless steel and cast iron, front rake angle of 14-18° .	T- (平板): 无花纹的平板槽型, 适于P、M、K类材料的重切削, 主要用于半精到粗加工。 T-(None): Flat chipbreaker, Suitable for heavy cutting steel and stainless steel, semi-finishing to roughing.	

### 推荐切削条件 Recommended Cutting Conditions

	工件材料 Workpiece Material	材料硬度 Material Hardness	牌号 Grade	切削速度 Cutting Speed Vc ( m/min )	每齿进给fz ( mm/min ) Feed per Tooth(mm/min)		
					轻切削 ( L ) Light	中切削 ( M ) Medium	重切削 ( H ) Heavy
P	软钢 Low Carbon Steel	≤HB180	GA4225 GA4230	180 ( 150-220 )	0.15 ( 0.1-0.25 )	0.2 ( 0.15-0.3 )	0.25 ( 0.2-0.35 )
	碳钢、合金钢 Carbon Steel Alloy Steel	HB180-350	GA4225 GA4230	160 ( 140-200 )	0.15 ( 0.1-0.25 )	0.2 ( 0.15-0.3 )	0.25 ( 0.2-0.35 )
	预硬钢 Pre-hardened Steel	HRC35-45	GA4230	120 ( 100-160 )	0.15 ( 0.1-0.25 )	0.2 ( 0.15-0.3 )	0.25 ( 0.2-0.35 )
M	不锈钢 ( 铁素体、马氏体 ) Stainless Steel ( Ferrite, Martensite)	≤HB270	GA4225 GA4230	140 ( 120-180 )	0.15 ( 0.1-0.25 )	0.2 ( 0.15-0.3 )	0.25 ( 0.2-0.35 )
	不锈钢 ( 奥氏体、双相 ) Stainless Steel ( Austenite, Diphasic)	≤HB270	GA4225 GA4230	120 ( 100-160 )	0.15 ( 0.1-0.25 )	0.2 ( 0.15-0.3 )	0.25 ( 0.2-0.35 )
K	灰铸铁 Grey Cast Iron	≤HB280	GA4225 GA4230	180 ( 150-220 )	0.15 ( 0.1-0.25 )	0.2 ( 0.15-0.3 )	0.25 ( 0.2-0.35 )
	球墨铸铁、蠕墨铸铁 Nodular Cast Iron Vermicular Cast Iron	≤HB350	GA4225 GA4230	160 ( 140-200 )	0.15 ( 0.1-0.25 )	0.2 ( 0.15-0.3 )	0.25 ( 0.2-0.35 )
S	耐热合金、钛合金 Heat-resistant Alloy and Titanium Alloy	HRC25-35	GA4230	40 ( 30-60 )	0.1 ( 0.05-0.15 )	0.12 ( 0.08-0.2 )	--
H	淬火钢 Quenching Steel	HRC48-55	GA4230	80 ( 60-120 )	0.12 ( 0.08-0.2 )	0.15 ( 0.1-0.25 )	0.2 ( 0.15-0.3 )

★ 刀具转速 ( min<sup>-1</sup> ) = ( 1000x切削速度 ) ÷ ( 3.14x刀具切削刃直径 )  
 Tool RPM ( min<sup>-1</sup> ) = ( 1000xCutting Speed ) ÷ ( 3.14x Diameters Of Cutter )  
 ★ 机床工作台进给量 ( mm/min ) = 每刃进给量x刀具刃数x刀具转速  
 Workpiece Feed ( mm/min ) = Feed Per Tooth x Number of Tooth x Tool RPM



### R5/R6刀片推荐进给量fz与切深ap关系

The Relationship of recommended Feed and Deep of R5 or R6 inserts

刀片IC Insert(mm)	工况 Cutting Condition	切深ap Deep(mm)						
		0.1	0.5	1	1.5	2	2.5	3
10	轻切削 (L) Light Cutting	0.75 (0.25-0.90)	0.34 (0.11-0.41)	0.25 (0.08-0.30)	0.21(0.07-0.25)	0.19 (0.06-0.23)	0.17 (0.05-0.21)	-
	中切削 (M) Medium Cutting	0.90 (0.25-1.26)	0.41 (0.11-0.57)	0.30 (0.08-0.42)	0.25(0.07-0.35)	0.23 (0.06-0.31)	0.21 (0.05-0.28)	-
	重切削 (H) Heavy Cutting	1.01 (0.35-1.51)	0.46 (0.16-0.69)	0.33 (0.12-0.50)	0.28(0.10-0.42)	0.25 (0.09-0.38)	0.23 (0.08-0.35)	-
12	轻切削 (L) Light Cutting	0.83 (0.28-1.10)	0.38 (0.13-0.50)	0.27 (0.09-0.36)	0.23(0.08-0.30)	0.20 (0.07-0.27)	0.18 (0.06-0.25)	0.17 (0.06-0.23)
	中切削 (M) Medium Cutting	0.99 (0.28-1.38)	0.45 (0.13-0.63)	0.33 (0.09-0.45)	0.27(0.08-0.38)	0.24 (0.07-0.34)	0.22 (0.06-0.31)	0.21 (0.06-0.29)
	重切削 (H) Heavy Cutting	1.10 (0.39-1.65)	0.50 (0.18-0.75)	0.36 (0.13-0.54)	0.30 (0.11-0.45)	0.27 (0.09-0.40)	0.25 (0.08-0.37)	0.23 (0.08-0.35)

备注：圆刀片切削加工，一般情况ap<25%IC，当超过此切深时推荐用Kr=45°的SEET系刀片。  
Remarks: In general, when the cutting depth is less than 25%IC using screw cutting tool. If the cutting depth exceeds the Kr=45° series of SEET inserts are recommended.

### 方肩铣

Shoulder Milling

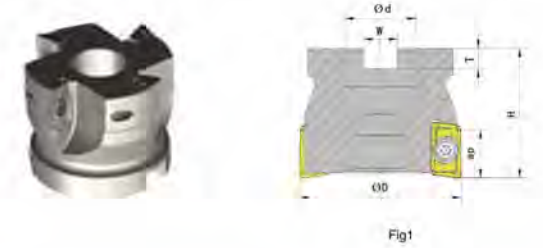
### 通用方肩铣削--MEA190

General Shoulder Milling—MEA190

## MEA190

### 心轴式

Arbor



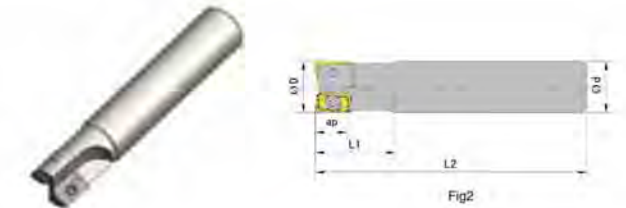
订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts		图示 Shape	库存 Stock
			ΦD	Φd	H	W	T			螺钉 Screw	扳手 Wrench		
MEA190-050R04A22-AP16	50	4	50	22	50	10.4	6.3	14	APMT1604PDER	S60M4*10	T15P	Fig1	●
MEA190-063R05A22-AP16	63	5	63	22	50	10.4	6.3	14	APMT1604PDER	S60M4*10	T15P	Fig1	●

●标准库存 Stock ○需预定 Available upon Order

## MEA190

### 圆柱直柄式

Shank

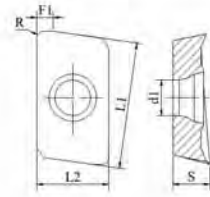


订货号 Ordering Code	直径 Diameters	刃数 Z	尺寸 (mm) Dimensions					切深 Ap	匹配刀片 Gauge Insert	配件 Spare Parts		图示 Shape	库存 Stock
			ΦD	Φd	L2	L1	-			螺钉 Screw	扳手 Wrench		
MEA190-016R02P16-AP11	16	2	16	16	120	40	-	9	APMT1135PDER	S60M2.5*6	T8P	Fig2	●
MEA190-020R03P20-AP11	20	3	20	20	160	50	-	9	APMT1135PDER	S60M2.5*6	T8P	Fig2	●
MEA190-025R03P25-AP11	25	3	25	25	160	50	-	9	APMT1135PDER	S60M2.5*6	T8P	Fig2	●
MEA190-025R02P25-AP16	25	2	25	25	160	50	-	14	APMT1604PDER	S60M4*9	T15P	Fig2	●
MEA190-032R03P32-AP16	32	3	32	32	160	80	-	14	APMT1604PDER	S60M4*9	T15P	Fig2	●

●标准库存 Stock ○需预定 Available upon Order

方肩铣  
Shoulder Milling  
刀片  
Insert

APMT



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	GM2125	GK1105	GK4125	GA0115	GP0135	GK0115	GN9125	GP01TM
	APMT1135PDER-PM	10.83	6.16	3.5	1.92	2.8	0.8	●	●							○
	APMT1604PDER-PM	16.26	9.26	4.76	2	4.6	0.8	●	●		○					○
	APMT1135PDER-PR	10.84	6.15	3.5	1.87	2.8	0.8	●	●							○
	APMT1604PDER-PR	16.26	9.24	4.76	2.2	4.4	0.8	●	●		○					○

●标准库存 Stock ○需预定 Available upon Order

MEA190系列槽型  
MEA190 Series Geometry

用途 application	外形 shape	槽型 Geometry	性能介绍 Introduction
通用材料 中载切削 Medium Cutting		PM  Fig.1	大多数一般工况可实现 高稳定性半精加工 Most general conditions can achieve high stability semi-finishing.
通用材料 重载切削 Rough Cutting		PR  Fig.2	可以实现高效经济粗加工， 具有高的强度 Roughing can be achieved efficiently and economically, with high strength.



