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多功能钨钢模具铣刀

HRC56 SOLID CARBIDE END MILL



EMA Series

广东优能特五金科技有限公司

Guangdong UNT Cutting Tools Co., Ltd.

INTRODUCTION

公司简介

广东优能特五金科技有限公司

优能特是一家CNC铣削刀具的大型制造商。

优能特在中国东莞拥有一个9,000平方米的工业园区，进口了35台澳大利亚ANCA数控磨床，5台Walter数控磨床、55个工程师和35个销售员。

我们建立了ISO9001质量控制体系，使用优质稳定的德国硬质合金棒，SWISS SOERLIKON新涂层技术以提高抗氧化性和热硬度。我们进口德国ZOLLER数字测量仪器等精密测试设备，以确保稳定的尺寸精度和优良的表面质量。

我们已经成为知名品牌工具的OEM合作伙伴15年，我们的仓库1500 SQM拥有数百万库存，可在24小时内发货给立铣刀。

优能特切削刀具已分布在欧洲，亚洲，北美和许多其他城市，热销产品包括高性能硬质合金立铣刀EMC /X5070系列，HRC55硬质合金立铣刀，EMF金刚石涂层刀具，螺纹和丝锥，冷却液钻头，超微型立铣刀，用于不锈钢的EMD等，以及各种定制尺寸的CNC铣削工具。

我们拥有提供全方位服务的设计和工程人员，以及Markets销售人员，可以根据您的特定规格构建自定义工具的多层次结构。

我们的目标是帮助每个客户获得最大的利益，建立世界一流的优质切削刀具品牌。

选择好的工具，选择“优能特”精密工具！

Guangdong UNT Cutting Tools Co., Ltd.

UNT' is a big manufacturer of CNC Milling tools.

UNT' owned an industrial park 9,000 SQM in Dongguan China, imported Australian ANCA CNC grinding machines 35 sets, Walter CNC Cutter Grinders 5 sets, and 55 engineer design teams and 30 salesmen.

We established an ISO9001 quality control system, use high-quality and stable German Carbide Rods, SWISS OERLIKON new coating technologies, to improve the oxidation resistance and hot hardness. We import Germany ZOLLER Digital Measuring Instruments, such as precision testing equipment, to ensure stable dimensional accuracy and fine surface quality.

We have been an OEM Partner for Well-known brand tools for 15 years, Our warehouse 1500 SQM with millions of in-stock, ready to shipping end mills in 24 hours.

UNT Cutting tools have been distributed in Europe, Asia, North America, and many other cities, Hot sales products include High-performance Carbide end mills EMC/X5070 series, HRC55 Carbide end mills, EMF Diamond Coated Tools, Thread & tap, Coolant drills, Super-micro end mills, EMD for Stainless steels, etc, and all kinds of custom-sized CNC Milling tools.

We have a full-service design and engineering staff, and Markets sales to build a multilevel of variations of custom tools to your specific specifications.

Our aim is to help every customer achieve maximum benefits, to build a world-class quality cutting tool brand.

Choose the good Tools, Choose "UNT" Precision Tools.





Guangdong UNT Cutting Tools Co., Ltd.

Garbide For Hardened Steel

Carbide Thread Taps

Diamond Coated For Graphite, Fibre

Carbide For Alu, Acrylic, PVC



**CUSTOMIZED MILLING TOOLS
OEM & ODM**



<http://www.unt-tools.com/>



**Professional production
Diverse inventory**



GRAPHITE END MILL











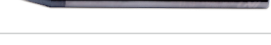
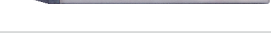











THREAD MILLING CUTTERS



CARBIDE DRILL

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硬质合金铣刀 Carbide End Mills

Standard size

标准铣刀

- 2/4 Flute Square · 2/4刀平角刀
- 2/4 Flute Ball End · 2/4刀球头刀
- 2/4 Flute Corner Radius · 2/4刀圆角刀
- 3/4/5 Flute Roughing · 3/4/5刀粗皮刀

Long Reach Milling

深沟刀

- Hard Milling · 硬精铣深沟刀
- Imperial · 英制长颈刀
- Metric · 公制深沟刀
- Variable Helix · 不等分螺旋刀

Tapered End Mills

锥度刀

- Standard · 标准刀
- Long Reach · 加长深沟锥度刀
- Runner Cutter · 通道加工刀

Micro End mills

超微型刀

➢ 0.01mm~0.1mm (范围)

Specialty Profiles & Custom Tools & ODM

非标定形刀& 客户定制刀&代加工

- Backing Deburring Mill · 倒角刀
- Chamfer Cutter · 定型刀
- Concave Radius End Mills · 半圆弧定形刀
- Corner Rounding End Mills · 圆角定形刀
- Double Angle Shank Cutter · 双角定形刀
- Dovetail Cutter · 燕尾刀
- Drill Mills · 钻铣刀
- Engraving Cutters · 雕刻刀
- T Slot & Keyseat Cutter · T形键位刀
- Undercutting End Mills · 底切铣刀

图标说明 — ILLUSTRATED GUIDE

材质 — MATERIALS



极细超微粒硬质合金
ULTRA MICRO GRAIN CARBIDE

螺旋角度 — HELIX ANGLE



刃数 — NUMBER OF FLUTES



涂层 — COATING



机械加工方式 — MACHINING DIRECTOR



侧铣、轮廓铣、插削铣
SIDE, PROFILE, SLOT

柄部类型 — SHANK TYPE



直柄
SHANK HA



键槽柄部
SHANK HB

刀具可加工硬度 — WORK MATERIAL HARDNESS



切削条件 — CUTTING CONDITION



切削条件 — CUTTING CONDITION



圆弧半径公差 — CUTTING RADIUS TOLERANCE





EMA Series

HRC56 Carbide

Carbide Roughing end mills

粗皮刀

- Unique flute design for excellent chip evacuation and vibration reduction.
- Special tool geometry for high feed rate and heavy cutting.
- Strong end tooth design for plunge and pocket milling.
- Custom engineered coating @Balzars AlTiN to allow long tool life and excellent chip evacuation.
- 独特的排屑槽设计，排屑和减振效果更佳。
- 特殊的刀具几何形，可实现高进给率和重切削加工。
- 坚固的端面齿设计，可进行插铣和型腔铣削。
- 巴尔查斯涂层，可延长刀具寿命并排屑。

Long Reach End Mills

深沟刀

- Long reach design for deep cavities
- Reduced neck diameter to avoid heeling
- Variable helix design (approx 37°) reduces chatter and harmonics and increases material removal rates
- @Balzars AlTiN coated for improved lubricity and heat resistance.
- 深孔加工的长距离设计
- 缩小颈部直径，避免损伤工件。
- 可变螺旋设计（约37°）减少了颤动和谐波，并提高了材料去除率
- 巴尔查斯涂层可改善润滑性和耐热性。

X-Long Length Carbide

0.1mm Micro End Mill



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Find out more on our website

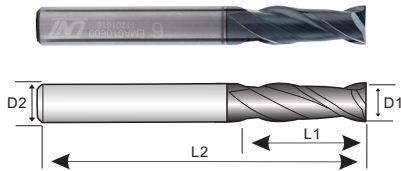


EMA 多功能钨钢二刃平底铣刀

Carbide, Square 2 Flute End Mill, 35° Helix, Regular Length

- ★ 设计适用于加工预硬钢、碳钢、合金钢、模具钢、≤HRC56的机械零件。
- ★ 同样适用于加工不锈钢，钛，铬镍铁合金和其他高温合金。
- ★ 适合高速切割。冷却液及干式切削条件。
- ★ 深槽切削可以通过减小颈径解决。
- ★ 选用进口的欧瑞康巴尔查斯涂层，提升刀具的硬度与耐热性。
- ★ 适用中心槽切削、插削加工。

- Designed to Cutting Prehardened steel, carbon steel, alloy steels of molds and dies, up to HRC56 and machine parts.
- Also excellent for stainless steel, titanium, inconel, and other high temperature alloys.
- High speed cutting, dry and wet cut recommended together.
- Deep slotting is possible by reduced neck.
- Oerlikon Balzers coating offer superior hardness and heat resistance.
- Center & Slotting Cutting.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC55-70							
○	○		○	○			○		○	○	

◎ 非常适合 ○ 适合

EMA01 SERIES

Unit:mm

优能特订货代码	刃径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA010103	1.0	3	3	50	2
EMA010153	1.5	3	4	50	2
EMA010203	2.0	3	6	50	2
EMA010253	2.5	3	6	50	2
EMA010303	3.0	3	8	50	2
EMA010104	1.0	4	3	50	2
EMA010154	1.5	4	4	50	2
EMA010204	2.0	4	6	50	2
EMA010254	2.5	4	6	50	2
EMA010304	3.0	4	8	50	2
EMA010354	3.5	4	10	50	2
EMA010404	4.0	4	11	50	2
EMA010106	1.0	6	3	50	2
EMA010156	1.5	6	4	50	2
EMA010206	2.0	6	6	50	2
EMA010256	2.5	6	6	50	2
EMA010306	3.0	6	8	50	2
EMA010356	3.5	6	10	50	2
EMA010406	4.0	6	11	50	2
EMA010450	4.5	6	13	50	2
EMA010500	5.0	6	13	50	2
EMA010550	5.5	6	16	50	2
EMA010600	6.0	6	16	50	2
EMA010650	6.5	8	20	60	2
EMA010700	7.0	8	20	60	2
EMA010750	7.5	8	20	60	2
EMA010800	8.0	8	20	60	2
EMA010850	8.5	10	25	75	2
EMA010900	9.0	10	25	75	2
EMA010950	9.5	10	25	75	2
EMA011000	10.0	10	25	75	2
EMA011050	10.5	12	30	75	2
EMA011100	11.0	12	30	75	2
EMA011200	12.0	12	30	75	2
EMA011400	14.0	14	40	100	2
EMA011600	16.0	16	40	100	2
EMA011800	18.0	18	40	100	2
EMA012000	20.0	20	40	100	2

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Non-standard size or product parameters not listed above, can be customized according to customer needs.

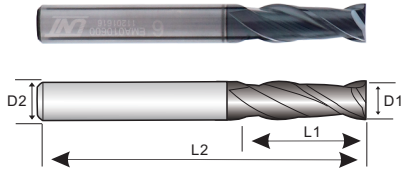
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA 多功能钨钢二刃加长平底铣刀

Carbide, Square 2 Flute End Mill, 35° Helix, Long Length

- ★ 设计适用于加工预硬钢、碳钢、合金钢、模具钢、≤HRC56 的机械零件。
- ★ 同样适用于加工不锈钢，钛，铬镍铁合金和其他高温合金。
- ★ 适合高速切割。冷却液及干式切削条件。
- ★ 深槽切削可以通过减小颈径解决
- ★ 选用进口的欧瑞康巴尔查斯涂层，提升刀具的硬度与耐热性。
- ★ 适用中心槽切削、插削加工

- Designed to Cutting Prehardened steel, carbon steel, alloy steels of molds and dies, up to HRC56 and machine parts.
- Also excellent for stainless steel, titanium, inconel, and other high temperature alloys.
- High speed cutting, dry and wet cut recommended together.
- Deep slotting is possible by reduced neck.
- Oerlikon Balzers coating offer superior hardness and heat resistance.
- Center & Slotting Cutting.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels		Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC45-55	HRC55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA02 SERIES

Unit:mm

优能特订货代码	刃径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA02010075	1.0	4	5	75	2
EMA02015075	1.5	4	6	75	2
EMA02020075	2.0	4	8	75	2
EMA02025075	2.5	4	8	75	2
EMA02030075	3.0	4	10	75	2
EMA02040075	4.0	4	12	75	2
EMA02040100	4.0	4	12	100	2
EMA020100756	1.0	6	5	75	2
EMA020150756	1.5	6	6	75	2
EMA020200756	2.0	6	8	75	2
EMA020250756	2.5	6	8	75	2
EMA020300756	3.0	6	10	75	2
EMA020400756	4.0	6	12	75	2
EMA02050075	5.0	6	16	75	2
EMA02060075	6.0	6	25	75	2
EMA02060100	6.0	6	30	100	2
EMA02080100	8.0	8	35	100	2
EMA02100100	10.0	10	40	100	2
EMA02120100	12.0	12	45	100	2
EMA02060150	6.0	6	35	150	2
EMA02080150	8.0	8	40	150	2
EMA02100150	10.0	10	50	150	2
EMA02120150	12.0	12	50	150	2
EMA02160150	16.0	16	70	150	2
EMA02200150	20.0	20	70	150	2

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

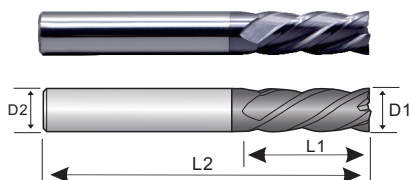
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Non-standard size or product parameters not listed above, can be customized according to customer needs.

EMA 多功能钨钢四刃平底铣刀

4D Flute Carbide End Mill ,35°Helix, Regular Length

- ★ 设计适用于加工预硬钢、碳钢、合金钢、模具钢、≤HRC56 的机械零件。
- ★ 同样适用于加工不锈钢，钛，铬镍铁合金和其他高温合金。
- ★ 为了提高开槽与粗加工，采用4D刃部设计与灵活的螺旋角（约35°）设计。
- ★ 选用进口的欧瑞康巴尔查斯涂层，提升刀具的硬度与耐热性。
- ★ 切割直径低至0.01mm
- ★ 适合用于轮廓加工、插削加工、倒角加工。

- Designed to Cutting Prehardened steel, carbon steel, alloy steels of molds and dies, up to HRC56 and machine parts.
- Also excellent for stainless steel,titanium, inconel, and other high temperature alloys.
- 4D flute, variable helix design (Approx 35°)for improved slotting and roughing.
- Oerlikon Balzers coating offer superior hardness and heat resistance.
- High speed cutting, dry and wet cut recommended together.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC55-70							
○	○	○	○	○			○		○	○	

◎ 非常适合 ○ 适合

EMA03 SERIES

Unit:mm

优能特订货代码	刃径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA 030103	1.0	3	3	50	4
EMA 030153	1.5	3	4	50	4
EMA 030203	2.0	3	6	50	4
EMA 030253	2.5	3	6	50	4
EMA 030303	3.0	3	8	50	4
EMA 030104	1.0	4	3	50	4
EMA 030114	1.1	4	4	50	4
EMA 030124	1.2	4	4	50	4
EMA 030134	1.3	4	4	50	4
EMA 030144	1.4	4	4	50	4
EMA 030154	1.5	4	4	50	4
EMA 030164	1.6	4	6	50	4
EMA 030174	1.7	4	6	50	4
EMA 030184	1.8	4	6	50	4
EMA 030194	1.9	4	6	50	4
EMA 030204	2.0	4	6	50	4
EMA 030254	2.5	4	6	50	4
EMA 030304	3.0	4	8	50	4
EMA 030354	3.5	4	10	50	4
EMA 030404	4.0	4	11	50	4
EMA 030106	1.0	6	3	50	4
EMA 030156	1.5	6	4	50	4
EMA 030206	2.0	6	6	50	4
EMA 030216	2.1	6	6	50	4
EMA 030226	2.2	6	6	50	4
EMA 030236	2.3	6	6	50	4
EMA 030246	2.4	6	6	50	4
EMA 030256	2.5	6	6	50	4
EMA 030266	2.6	6	8	50	4
EMA 030276	2.7	6	8	50	4
EMA 030286	2.8	6	8	50	4
EMA 030296	2.9	6	8	50	4
EMA 030306	3.0	6	8	50	4
EMA 030326	3.2	6	8	50	4
EMA 030356	3.5	6	10	50	4
EMA 030406	4.0	6	11	50	4
EMA 030450	4.5	6	13	50	4
EMA 030480	4.8	6	13	50	4

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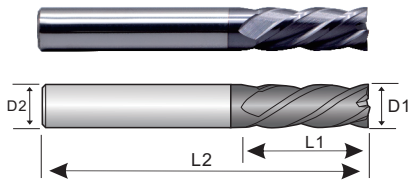
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA 多功能钨钢四刃平底铣刀

4D Flute Carbide End Mill ,35° Helix, Regular Length

- ★ 设计适用于加工预硬钢、碳钢、合金钢、模具钢、≤HRC56的机械零件。
- ★ 同样适用于加工不锈钢，钛，铬镍铁合金和其他高温合金。
- ★ 为了提高开槽与粗加工，采用4D刃部设计与灵活的螺旋角(约35°)设计。
- ★ 选用进口的欧瑞康巴尔查斯涂层，提升刀具的硬度与耐热性。
- ★ 切割直径低至0.01mm
- ★ 加长的沟槽设计，优化了刀具的排屑效果，提升了刀具的刚性。

- Designed to Cutting Prehardened steel, carbon steel, alloy steels of molds and dies, up to HRC56 and machine parts.
- Also excellent for stainless steel,titanium, inconel, and other high temperature alloys.
- 4D flute, variable helix design (Approx 35°)for improved slotting and roughing.
- Oerlikon Balzers coating offer superior hardness and heat resistance.
- Specialized flute shape for improved chip evacuation and maximum rigidity.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	-HB225-325	-HRC30-40	HRC40-45	HRC55-70							
○	○		○	○			○		○	○	

○ 非常适合 ○ 适合

EMA03 SERIES

Unit:mm

优能特订货代码	刃径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA030501	5.0	5	13	50	4
EMA030500	5.0	6	13	50	4
EMA030550	5.5	6	16	50	4
EMA030600	6.0	6	16	50	4
EMA030650	6.5	8	20	60	4
EMA030700	7.0	8	20	60	4
EMA030750	7.5	8	20	60	4
EMA030800	8.0	8	20	60	4
EMA030850	8.5	10	25	75	4
EMA030900	9.0	10	25	75	4
EMA030950	9.5	10	25	75	4
EMA031000	10.0	10	25	75	4
EMA031050	10.5	12	30	75	4
EMA031100	11.0	12	30	75	4
EMA031200	12.0	12	30	75	4
EMA031400	14.0	14	40	100	4
EMA031601	16.0	16	40	100	4
EMA031800	18.0	18	40	100	4
EMA032000	20.0	20	40	100	4
EMA036408	1/8"	1/8"	1/2"	1-1/2"	4
EMA036410	5/32"	3/16"	9/16"	2"	4
EMA036412	3/16"	3/16"	5/8"	2"	4
EMA036416	1/4"	1/4"	3/4"	2-1/2"	4
EMA036420	5/16"	5/16"	13/16"	2-1/2"	4
EMA036424	3/8"	3/8"	1"	2-1/2"	4
EMA036432	1/2"	1/2"	1"	3"	4
EMA036440	5/8"	5/8"	1-1/4"	3-1/2"	4
EMA036448	3/4"	3/4"	1-1/2"	4"	4

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

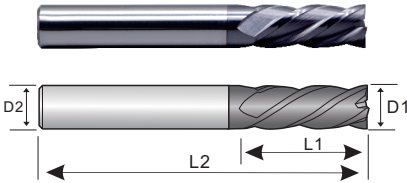
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EMA 多功能钨钢四刃加长平底铣刀

4D Flute Carbide End Mill ,35° Helix, Long Length

- ★ 设计适用于加工预硬钢、碳钢、合金钢、模具钢、≤HRC56的机械零件。
- ★ 同样适用于加工不锈钢，钛，铬镍铁合金和其他高温合金。
- ★ 为了提高插削加工与粗加工，采用4D刃部设计与灵活的螺旋角（约35°）设计。
- ★ 选用进口的欧瑞康巴尔查斯涂层，提升刀具的硬度与耐热性。
- ★ 加长的沟槽设计，优化了刀具的排屑效果，提升了刀具的刚性。

- Designed to Cutting Prehardened steel, carbon steel, alloy steels of molds and dies, up to HRC56 and machine parts.
- Also excellent for stainless steel, titanium, inconel, and other high temperature alloys.
- 4D flute, variable helix design (Approx 35°) for improved slotting and roughing.
- Oerlikon Balzers coating offer superior hardness and heat resistance.
- Specialized flute shape for improved chip evacuation and maximum rigidity.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC45-55	HRC55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA04 SERIES

Unit:mm

优能特订货代码	刃径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA04010075	1.0	4	5	75	4
EMA04015075	1.5	4	6	75	4
EMA04020075	2.0	4	8	75	4
EMA04025075	2.5	4	8	75	4
EMA04033075	3.0	3	8	75	4
EMA04030075	3.0	4	10	75	4
EMA04040075	4.0	4	12	75	4
EMA04040100	4.0	4	12	100	4
EMA04100756	1.0	6	5	75	4
EMA04150756	1.5	6	6	75	4
EMA04200756	2.0	6	8	75	4
EMA04250756	2.5	6	8	75	4
EMA04300756	3.0	6	10	75	4
EMA04400756	4.0	6	12	75	4
EMA04050100	5.0	6	16	100	4
EMA04060075	6.0	6	25	75	4
EMA04060100	6.0	6	30	100	4
EMA04080075	8.0	8	25	75	4
EMA04080100	8.0	8	35	100	4
EMA04100100	10.0	10	40	100	4
EMA04120100	12.0	12	45	100	4
EMA04060150	6.0	6	35	150	4
EMA04080150	8.0	8	40	150	4
EMA04100150	10.0	10	50	150	4
EMA04120150	12.0	12	50	150	4
EMA04160150	16.0	16	70	150	4
EMA04200150	20.0	20	70	150	4

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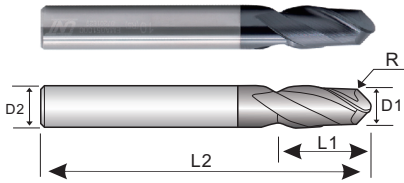
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA 多功能钨钢二刃球头铣刀

Carbide, 2 Flute Ball nose End Mills, 35° Helix, Regular Length

- ★ 设计适用于加工预硬钢、碳钢、合金钢、模具钢、≤HRC56的机械零件。
- ★ 同样适用于加工不锈钢，钛，铬镍铁合金和其他高温合金。
- ★ 为了提高开槽与粗加工，采用4D刃部设计与灵活的螺旋角（约35°）设计
- ★ 选用进口的欧瑞康巴尔查斯涂层，提升刀具的硬度与耐热性。
- ★ 切割直径低至0.01mm
- ★ 适用于轮廓加工、插削加工、倒角加工。

- Designed to Cutting Prehardened steel, carbon steel, alloy steels of molds and dies, up to HRC56 and machine parts.
- Also excellent for stainless steel, titanium, inconel, and other high temperature alloys.
- 4D flute, variable helix design (Approx 35°) for improved slotting and roughing.
- Oerlikon Balzers coating offer superior hardness and high performance.
- Cutter diameter down to 0.01mm.
- Profile, Slot, Chamfer design, easy to install.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钨铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC45-55	HRC55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA05 SERIES

Unit:mm

优能特订货代码	刃径	球半径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Radius of Ball R	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA050103	1.0	R0.5	3	2	50	2
EMA050153	1.5	R0.75	3	3	50	2
EMA050203	2.0	R1.0	3	4	50	2
EMA050303	3.0	R1.5	3	6	50	2
EMA050104	1.0	R0.5	4	2	50	2
EMA050154	1.5	R0.75	4	3	50	2
EMA050204	2.0	R1.0	4	4	50	2
EMA050254	2.5	R1.25	4	5	50	2
EMA050304	3.0	R1.5	4	6	50	2
EMA050404	4.0	R2.0	4	8	50	2
EMA050106	1.0	R0.5	6	2	50	2
EMA050156	1.5	R0.75	6	3	50	2
EMA050206	2.0	R1.0	6	4	50	2
EMA050256	2.5	R1.25	6	5	50	2
EMA050306	3.0	R1.5	6	6	50	2
EMA050406	4.0	R2.0	6	8	50	2
EMA050500	5.0	R2.5	6	10	50	2
EMA050600	6.0	R3.0	6	12	50	2
EMA050700	7.0	R3.5	8	14	60	2
EMA050800	8.0	R4.0	8	16	60	2
EMA051000	10.0	R5.0	10	20	75	2
EMA051200	12.0	R6.0	12	24	75	2
EMA051600	16.0	R8.0	16	32	100	2
EMA052000	20.0	R10.0	20	40	100	2

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

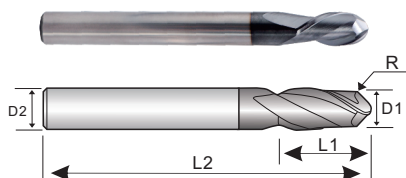
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EMA 多功能钨钢二刃加长球头铣刀

Carbide, 2 Flute Ball nose End Mills, 35° Helix, Long Length

- ★ 设计适用于加工预硬钢、碳钢、合金钢、模具钢、≤HRC56的机械零件。
- ★ 同样适用于加工不锈钢，钛，铬镍铁合金和其他高温合金。
- ★ 为了提高开槽与粗加工，采用4D刃部设计与灵活的螺旋角(约35°)设计
- ★ 选用进口的欧瑞康巴尔查斯涂层，提升刀具的硬度与耐热性。
- ★ 切割直径低至0.01mm
- ★ 适用于轮廓加工、插削加工、倒角加工。

- Designed to Cutting Prehardened steel, carbon steel, alloy steels of molds and dies, up to HRC56 and machine parts.
- Also excellent for stainless steel, titanium, inconel, and other high temperature alloys.
- 4D flute, variable helix design (Approx 35°) for improved slotting and roughing.
- Oerlikon Balzers coating offer superior hardness and high performance.
- Cutter diameter down to 0.01mm.
- Profile, Slot, Chamfer design, easy to install.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC45-55							
○	○		○	○				○		○	○

◎ 非常合适 ○ 适合

EMA06 SERIES

Unit:mm

优能特订货代码	刃径	球半径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Radius of Ball R	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA06010075	1.0	R0.5	4	2	75	2
EMA06015075	1.5	R0.75	4	3	75	2
EMA06020075	2.0	R1.0	4	4	75	2
EMA06025075	2.5	R1.25	4	5	75	2
EMA06033075	3.0	R1.5	3	6	75	2
EMA06030075	3.0	R1.5	4	6	75	2
EMA06040075	4.0	R2.0	4	8	75	2
EMA06040100	4.0	R2.0	4	8	100	2
EMA060100756	1.0	R0.5	6	2	75	2
EMA060150756	1.5	R0.75	6	3	75	2
EMA060200756	2.0	R1.0	6	4	75	2
EMA060300756	3.0	R1.25	6	6	75	2
EMA060400756	4.0	R1.5	6	8	75	2
EMA060401006	4.0	R2.0	6	8	100	2
EMA06050100	5.0	R2.0	6	10	100	2
EMA06060075	6.0	R2.5	6	12	75	2
EMA06060100	6.0	R3.0	6	12	100	2
EMA06080075	8.0	R3.0	8	16	75	2
EMA06080100	8.0	R4.0	8	16	100	2
EMA06100100	10.0	R4.0	10	20	100	2
EMA06120100	12.0	R5.0	12	24	100	2
EMA06060150	6.0	R6.0	6	12	150	2
EMA06080150	8.0	R3.0	8	16	150	2
EMA06100150	10.0	R4.0	10	20	150	2
EMA06120150	12.0	R5.0	12	24	150	2
EMA06160150	16.0	R6.0	16	32	150	2
EMA06200150	20.0	R8.0	20	40	150	2

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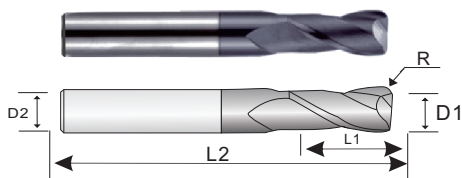
MILL DIA. TOLERANCE (mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE (mm) 柄径公差 (mm)
0 -0.030	H6

EMA 多功能钨钢二刃圆角铣刀

Carbide, AlTiN Coating, 2 Flute Corner Radius, Regular Lengths

- ★ 设计适用于加工预硬钢、碳钢、合金钢、模具钢、≤HRC56的机械零件。
- ★ 同样适用于加工不锈钢，钛，铬镍铁合金和其他高温合金。
- ★ 锋利的前角设计，减少切割阻力。
- ★ 选用进口的欧瑞康巴尔查斯涂层，提升刀具的硬度与耐热性。
- ★ 适用于R角从0.02mm至5.0mm的各种圆角刀。
- ★ 适用于轮廓加工、中心槽加工、粗加工。

- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRC56 and machine parts.
- Also excellent for stainless steel, titanium, inconel, and other high temperature alloys.
- Positive Rake Angle design, reduces Cutting Force.
- Oerlikon Balzers coating offer superior hardness and high performance.
- Available various corner radius end mills, from 0.02mm to 5.0mm corner radius.
- Profile, Center, Roughing Milling, easy to install.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC55-70							
○	○		○	○			○		○	○	

◎ 非常适合 ○ 适合

EMA07 SERIES

Unit:mm

优能特订货代码	刃径	R角	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Corner radius R	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA070101	1.0	R0.1	4	3	50	2
EMA070102	1.0	R0.2	4	3	50	2
EMA070201	2.0	R0.1	4	6	50	2
EMA070202	2.0	R0.2	4	6	50	2
EMA070203	2.0	R0.3	4	6	50	2
EMA070301	3.0	R0.1	4	8	50	2
EMA070302	3.0	R0.2	4	8	50	2
EMA070303	3.0	R0.3	4	8	50	2
EMA070305	3.0	R0.5	4	8	50	2
EMA070310	3.0	R1.0	4	8	50	2
EMA070402	4.0	R0.2	4	11	50	2
EMA070403	4.0	R0.3	4	11	50	2
EMA070405	4.0	R0.5	4	11	50	2
EMA070410	4.0	R1.0	4	11	50	2
EMA070505	5.0	R0.5	6	13	50	2
EMA070510	5.0	R1.0	6	13	50	2
EMA070602	6.0	R0.2	6	16	50	2
EMA070603	6.0	R0.3	6	16	50	2
EMA070605	6.0	R0.5	6	16	50	2
EMA070610	6.0	R1.0	6	16	50	2
EMA070615	6.0	R1.5	6	16	50	2
EMA070620	6.0	R2.0	6	16	50	2
EMA070802	8.0	R0.2	8	20	60	2
EMA070803	8.0	R0.3	8	20	60	2
EMA070805	8.0	R0.5	8	20	60	2
EMA070810	8.0	R1.0	8	20	60	2
EMA070815	8.0	R1.5	8	20	60	2
EMA070820	8.0	R2.0	8	20	60	2
EMA071005	10.0	R0.5	10	25	75	2
EMA071010	10.0	R1.0	10	25	75	2
EMA071015	10.0	R1.5	10	25	75	2
EMA071020	10.0	R2.0	10	25	75	2
EMA071030	10.0	R3.0	10	25	75	2
EMA071205	12.0	R0.5	12	30	75	2
EMA071210	12.0	R1.0	12	30	75	2
EMA071215	12.0	R1.5	12	30	75	2
EMA071220	12.0	R2.0	12	30	75	2
EMA071230	12.0	R3.0	12	30	75	2

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

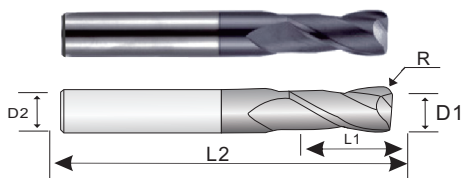
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Non-standard size or product parameters not listed above, can be customized according to customer needs.

EMA 多功能钨钢二刃加长圆角铣刀

Carbide, AlTiN Coating, 2 Flute Corner Radius, Long Shank

- ★ 设计适用于加工预硬钢、碳钢、合金钢、模具钢、≤HRC56的机械零件。
- ★ 同样适用于加工不锈钢，钛，铬镍铁合金和其他高温合金。
- ★ 锋利的前角设计，减少切割阻力。
- ★ 选用进口的欧瑞康巴尔查斯涂层，提升刀具的硬度与耐热性。
- ★ 适用于R角从0.02mm至5.0mm的各种圆角刀。
- ★ 适用于轮廓加工、中心槽加工、粗加工。

- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRC56 and machine parts.
- Also excellent for stainless steel, titanium, inconel, and other high temperature alloys.
- Positive Rake Angle design, reduces Cutting Force.
- Oerlikon Balzers coating offer superior hardness and high performance.
- Available various corner radius end mills, from 0.02mm to 5.0mm corner radius.
- Profile, Center, Roughing Milling, easy to install.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	-HB225-325	-HRC30-40	HRC40-45	HRC45-55	HRC55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA08 SERIES

Unit:mm

优能特订货代码	刃径	R角	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Corner radius R	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA080605	6	R0.5	6	16	100	2
EMA080610	6	R1.0	6	16	100	2
EMA080615	6	R1.5	6	16	100	2
EMA080620	6	R2.0	6	16	100	2
EMA080805	8	R0.5	8	20	100	2
EMA080810	8	R1.0	8	20	100	2
EMA080815	8	R1.5	8	20	100	2
EMA080820	8	R2.0	8	20	100	2
EMA081005	10	R0.5	10	25	100	2
EMA081010	10	R1.0	10	25	100	2
EMA081015	10	R1.5	10	25	100	2
EMA081020	10	R2.0	10	25	100	2
EMA081030	10	R3.0	10	25	100	2
EMA081205	12	R0.5	12	30	100	2
EMA081210	12	R1.0	12	30	100	2
EMA081215	12	R1.5	12	30	100	2
EMA081220	12	R2.0	12	30	100	2
EMA081230	12	R3.0	12	30	100	2
EMA081605	16	R0.5	16	40	150	2
EMA081610	16	R1.0	16	40	150	2
EMA081615	16	R1.5	16	40	150	2
EMA081620	16	R2.0	16	40	150	2
EMA081630	16	R3.0	16	40	150	2

以上产品未列明细的非标规格尺寸或产品参数，可根据客户需求订制作。
Non-standard size or product parameters not listed above, can be customized according to customer needs.

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA 多功能钨钢四刃圆角铣刀

Carbide, 4 Flute Corner Radius, Regular Length

- ★ UNT特殊的4-6刃设计提供较小的切削阻力, 促使刀具排屑速度更快、更锋利。
- ★ 适用于加工预硬钢、≤HRc56的模具。
- ★ 适用于进行加工由粗加工到精加工的 (≤HRc56)产品,减少更换刀具的次数。
- ★ 使用欧瑞康巴尔查斯的新涂层和新的刀具形状, 具有出色的切削能力和耐磨性。
- ★ 4刃设计可以更好地加工产品。

- UNT' Special 4~6 flutes design provides small chip loads and quicker removal, more sharp.
- Excellent performance when cutting prehardened steels, up to HRc56 which are used for molds & dies.
- Fit for milling from roughing to finishing one time(≤HRc56), reduce tool changing times.
- Oerlikon Balzers New coating and new tool geometry, outstanding cutting ability and wear resistance.
- 4 flute allows for better workpieces finishes.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened Steels		Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
○	○	○	○	○	○	○	○	○	○	○	○	○

◎ 非常适合 ○ 适合

EMA09 SERIES

Unit:mm

优能特订货代码	刃径	R角	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Corner Radius R	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA090101	1	R0.1	4	3	50	4
EMA090102	1	R0.2	4	3	50	4
EMA090201	2	R0.1	4	6	50	4
EMA090202	2	R0.2	4	6	50	4
EMA090203	2	R0.3	4	6	50	4
EMA090302	3	R0.2	4	8	50	4
EMA090303	3	R0.3	4	8	50	4
EMA090305	3	R0.5	4	8	50	4
EMA090310	3	R1.0	4	8	50	4
EMA090402	4	R0.2	4	11	50	4
EMA090403	4	R0.3	4	11	50	4
EMA090405	4	R0.5	4	11	50	4
EMA090410	4	R1.0	4	11	50	4
EMA090505	5	R0.5	6	13	50	4
EMA090510	5	R1.0	6	13	50	4
EMA090602	6	R0.2	6	16	50	4
EMA090603	6	R0.3	6	16	50	4
EMA090605	6	R0.5	6	16	50	4
EMA090610	6	R1.0	6	16	50	4
EMA090615	6	R1.5	6	16	50	4
EMA090620	6	R2.0	6	16	50	4
EMA090802	8	R0.2	8	20	60	4
EMA090803	8	R0.3	8	20	60	4
EMA090805	8	R0.5	8	20	60	4
EMA090810	8	R1.0	8	20	60	4
EMA090815	8	R1.5	8	20	60	4
EMA090820	8	R2.0	8	20	60	4
EMA091005	10	R0.5	10	25	75	4
EMA091010	10	R1.0	10	25	75	4
EMA091015	10	R1.5	10	25	75	4
EMA091020	10	R2.0	10	25	75	4
EMA091030	10	R3.0	10	25	75	4
EMA091205	12	R0.5	12	30	75	4
EMA091210	12	R1.0	12	30	75	4
EMA091215	12	R1.5	12	30	75	4
EMA091220	12	R2.0	12	30	75	4
EMA091230	12	R3.0	12	30	75	4

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

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Non-standard size or product parameters not listed above, can be customized according to customer needs.

EMA 多功能钨钢四刃加长圆角铣刀

Carbide, 4 Flute Corner Radius, Long Length

- ★ UNT特殊的4-6刃设计提供较小的切削阻力, 促使刀具排屑速度更快、更锋利。
- ★ 适用于加工预硬钢、≤HRC56的模具。
- ★ 适用于进行加工由粗加工到精加工的 (≤HRC56)产品,减少更换刀具的次数。
- ★ 使用欧瑞康巴尔查斯的新涂层和新的刀具形状, 具有出色的切削能力和耐磨性。
- ★ 4刃设计可以更好地加工产品。

- UNT' Special 4~6 flutes design provides small chip loads and quicker removal, more sharp.
- Excellent performance when cutting prehardened steels, up to HRC56 which are used for molds & dies.
- Fit for milling from roughing to finishing one time(≤HRC56), reduce tool changing times.
- Oerlikon Balzers New coating and new tool geometry, outstanding cutting ability and wear resistance.
- 4 flute allows for better workpieces finishes.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC45-55	HRC55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA10 SERIES

Unit:mm

优能特订货代码	刃径	R角	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Corner Radius R	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA1004075	4.0	R0.5	4	11	75	4
EMA1004100	4.0	R0.5	4	11	100	4
EMA1006075	6.0	R0.5	6	16	75	4
EMA100605	6.0	R0.5	6	16	100	4
EMA100610	6.0	R1.0	6	16	100	4
EMA100615	6.0	R1.5	6	16	100	4
EMA100620	6.0	R2.0	6	16	100	4
EMA1008051	8.0	R0.5	8	20	75	4
EMA100805	8.0	R0.5	8	20	100	4
EMA100810	8.0	R1.0	8	20	100	4
EMA100815	8.0	R1.5	8	20	100	4
EMA100820	8.0	R2.0	8	20	100	4
EMA101005	10.0	R0.5	10	25	100	4
EMA101010	10.0	R1.0	10	25	100	4
EMA101015	10.0	R1.5	10	25	100	4
EMA101020	10.0	R2.0	10	25	100	4
EMA101030	10.0	R3.0	10	25	100	4
EMA101205	12.0	R0.5	12	30	100	4
EMA101210	12.0	R1.0	12	30	100	4
EMA101215	12.0	R1.5	12	30	100	4
EMA101220	12.0	R2.0	12	30	100	4
EMA101230	12.0	R3.0	12	30	100	4
EMA101605	16.0	R0.5	16	40	100	4
EMA101610	16.0	R1.0	16	40	100	4
EMA101615	16.0	R1.5	16	40	100	4
EMA101620	16.0	R2.0	16	40	100	4
EMA101630	16.0	R3.0	16	40	100	4

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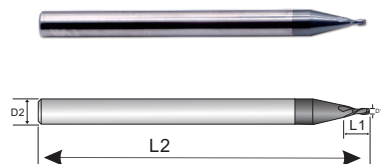
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA 2刃小径平底铣刀

Carbide, 2 Flute Micro Square End Mill, Regular Length

- ★ 优能特在刀具末端的几何设计, 提供较小的切屑载荷, 促使刀具排屑速度更快、刀刃更锋利。
- ★ 出色加工预硬钢, 及高达HRc56硬度的模具。
- ★ 极超细立铣刀, 直径范围为0.02~2.9mm半径。
- ★ 2刃, 微型刀具, 应用于医疗, 光学, 电子和航空航天行业的高精度铣削。

- UNT' Special edge geometry at the end, provides small chip loads and quicker removal, more sharp.
- Excellent performance when cutting prehardened steels, up to HRc56 which are used for molds & dies.
- Super Micro end mill, Diameters Range from 0.02~2.9mm Radius
- 2 flute, Miniature tools, High precision milling in medical, optical, electronics and aerospace industries.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels		Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRc30-40	HRc40-45	HRc45-55	HRc55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA11 SERIES

Unit:mm

优能特订货代码	刃径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA11002	0.2	4	0.4	50	2
EMA11003	0.3	4	0.6	50	2
EMA11004	0.4	4	0.8	50	2
EMA11005	0.5	4	1.0	50	2
EMA11006	0.6	4	1.2	50	2
EMA11007	0.7	4	1.4	50	2
EMA11008	0.8	4	1.6	50	2
EMA11009	0.9	4	1.8	50	2
EMA11011	1.1	4	4.0	50	2
EMA11012	1.2	4	4.0	50	2
EMA11013	1.3	4	4.0	50	2
EMA11014	1.4	4	6.0	50	2
EMA11016	1.6	4	6.0	50	2
EMA11017	1.7	4	6.0	50	2
EMA11018	1.8	4	6.0	50	2
EMA11019	1.9	4	6.0	50	2
EMA11021	2.1	4	6.0	50	2
EMA11022	2.2	4	6.0	50	2
EMA11023	2.3	4	6.0	50	2
EMA11024	2.4	4	6.0	50	2
EMA11026	2.6	4	8.0	50	2
EMA11027	2.7	4	8.0	50	2
EMA11028	2.8	4	8.0	50	2
EMA11029	2.9	4	8.0	50	2

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

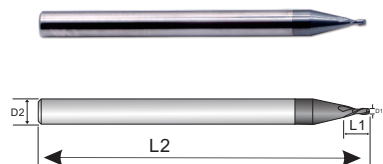
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EMA 2刃小径球形铣刀

Carbide, 2 Flute Micro Ball End Mill, Regular Length

- ★ 优能特在刀具末端的几何设计，提供较小的切屑载荷，促使刀具排屑速度更快、刀刃更锋利。
- ★ 出色加工预硬钢，及高达HRc56硬度的模具。
- ★ 极超细立铣刀，直径范围为0.02~2.9mm半径。
- ★ 2刃，微型刀具，应用于医疗，光学，电子和航空航天行业的高精度铣削。

- UNT' Special edge geometry at the end, provides small chip loads and quicker removal, more sharp.
- Excellent performance when cutting prehardened steels, up to HRc56 which are used for molds & dies.
- Super Micro end mill, Diameters Range from 0.02~2.9mm Radius
- 2 flute, Miniature tools, High precision milling in medical, optical, electronics and aerospace industries.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels		Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRc30-40	HRc40-45	HRc45-55	HRc55-70							
○	○	○	○	○	○	○		○		○	○	

◎ 非常适合 ○ 适合

EMA12 SERIES

Unit:mm

优能特订货代码	刃径	球半径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Radius of Ball R	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA12003	0.3	R0.15	4	0.6	50	2
EMA12004	0.4	R0.20	4	0.8	50	2
EMA12005	0.5	R0.25	4	1.0	50	2
EMA12006	0.6	R0.30	4	1.2	50	2
EMA12007	0.7	R0.35	4	1.4	50	2
EMA12008	0.8	R0.40	4	1.6	50	2
EMA12009	0.9	R0.45	4	1.8	50	2
EMA12011	1.1	R0.55	4	2.2	50	2
EMA12012	1.2	R0.60	4	2.4	50	2
EMA12013	1.3	R0.65	4	2.6	50	2
EMA12014	1.4	R0.70	4	2.8	50	2
EMA12016	1.6	R0.80	4	3.2	50	2
EMA12017	1.7	R0.85	4	3.4	50	2
EMA12018	1.8	R0.90	4	3.6	50	2
EMA12019	1.9	R0.95	4	3.8	50	2
EMA12021	2.1	R1.05	4	4.2	50	2
EMA12022	2.2	R1.10	4	4.4	50	2
EMA12023	2.3	R1.15	4	4.6	50	2
EMA12024	2.4	R1.20	4	4.8	50	2
EMA12026	2.6	R1.30	4	5.2	50	2
EMA12027	2.7	R1.35	4	5.4	50	2
EMA12028	2.8	R1.40	4	5.6	50	2
EMA12029	2.9	R1.45	4	5.8	50	2

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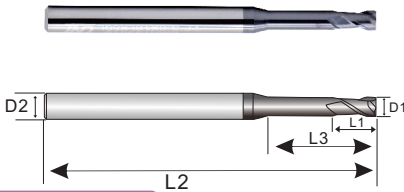
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA 2刃深沟平底铣刀

Carbide, 2 Flute Micro Square End Mills, Long Neck

- ★ 适用于加工预硬钢、≤HRC56的模具。
- ★ 特殊的加长设计适用于深沟加工、插削加工、轮廓加工。
- ★ 超微粒刀具，直径可达到0.02-2.9mm。
- ★ 超微2刃铣刀适用于医疗，光学，电子和航空航天行业的切削加工。

- Excellent performance when cutting prehardened steels, up to HRC56 which are used for molds & dies.
- Special Long neck design for deep cavity machining near walls, for deep slotting and pocketing.
- Super Micro end mill, Diameters Range from 0.02~2.9mm Radius.
- 2 flute, Miniature tools, High precision milling in medical, optical, electronics and aerospace industries.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC45-55							
○	○		○	○			○		○	○	

◎ 非常适合 ○ 适合

EMA13 SERIES

Unit:mm

优能特订货代码	刃径	有效长	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Effective length L3	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA130402	0.4	2	4	0.6	50	2
EMA130404	0.4	4	4	0.6	50	2
EMA130406	0.4	6	4	0.6	50	2
EMA130502	0.5	2	4	0.8	50	2
EMA130504	0.5	4	4	0.8	50	2
EMA130506	0.5	6	4	0.8	50	2
EMA130508	0.5	8	4	0.8	50	2
EMA130602	0.6	2	4	1.0	50	2
EMA130604	0.6	4	4	1.0	50	2
EMA130606	0.6	6	4	1.0	50	2
EMA130608	0.6	8	4	1.0	50	2
EMA130610	0.6	10	4	1.0	50	2
EMA130804	0.8	4	4	1.2	50	2
EMA130806	0.8	6	4	1.2	50	2
EMA130808	0.8	8	4	1.2	50	2
EMA130810	0.8	10	4	1.2	50	2
EMA130812	0.8	12	4	1.2	50	2
EMA131006	1.0	6	4	1.5	50	2
EMA131008	1.0	8	4	1.5	50	2
EMA131010	1.0	10	4	1.5	50	2
EMA131012	1.0	12	4	1.5	50	2
EMA131014	1.0	14	4	1.5	50	2
EMA131016	1.0	16	4	1.5	50	2
EMA131018	1.0	18	4	1.5	50	2
EMA131020	1.0	20	4	1.5	50	2
EMA131206	1.2	6	4	1.8	50	2
EMA131208	1.2	8	4	1.8	50	2
EMA131210	1.2	10	4	1.8	50	2
EMA131212	1.2	12	4	1.8	50	2
EMA131214	1.2	14	4	1.8	50	2
EMA131216	1.2	16	4	1.8	50	2
EMA131218	1.2	18	4	1.8	50	2
EMA131220	1.2	20	4	1.8	50	2
EMA131506	1.5	6	4	2.5	50	2
EMA131508	1.5	8	4	2.5	50	2
EMA131510	1.5	10	4	2.5	50	2
EMA131512	1.5	12	4	2.5	50	2

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

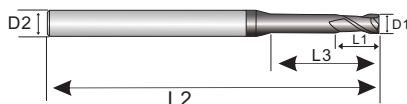
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Non-standard size or product parameters not listed above, can be customized according to customer needs.

EMA 2刃深沟平底铣刀

Carbide, 2 Flute Micro Square End Mills, Long Neck

- ★ 适用于加工预硬钢、≤HRC56的模具。
- ★ 特殊的加长设计适用于深沟加工、插削加工、轮廓加工。
- ★ 超微粒刀具，直径可达到0.02-2.9mm。
- ★ 超微2刃铣刀适用于医疗，光学，电子和航空航天行业的切削加工。

- Excellent performance when cutting prehardened steels, up to HRC56 which are used for molds & dies.
- Special Long neck design for deep cavity machining near walls, for deep slotting and pocketing.
- Super Micro end mill, Diameters Range from 0.02~2.9mm Radius.
- 2 flute, Miniature tools, High precision milling in medical, optical, electronics and aerospace industries.



加工材料 Material Description

碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Harden Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC45-55 HRC55-70							
○	○		○	○			○		○	○	

◎ 非常适合 ○ 适合

EMA13 SERIES

Unit:mm

优能特订货代码	刃径	有效长	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Effective length L3	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA131514	1.5	14	4	2.5	50	2
EMA131516	1.5	16	4	2.5	50	2
EMA131518	1.5	18	4	2.5	50	2
EMA131520	1.5	20	4	2.5	50	2
EMA132006	2	6	4	3.0	50	2
EMA132008	2	8	4	3.0	50	2
EMA132010	2	10	4	3.0	50	2
EMA132012	2	12	4	3.0	50	2
EMA132014	2	14	4	3.0	50	2
EMA132016	2	16	4	3.0	50	2
EMA132018	2	18	4	3.0	50	2
EMA132020	2	20	4	3.0	50	2
EMA133008	3	8	4	4.5	50	2
EMA133010	3	10	4	4.5	50	2
EMA133012	3	12	4	4.5	50	2
EMA133014	3	14	4	4.5	50	2
EMA133016	3	16	4	4.5	50	2
EMA133018	3	18	4	4.5	50	2
EMA133020	3	20	4	4.5	50	2

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Non-standard size or product parameters not listed above, can be customized according to customer needs.

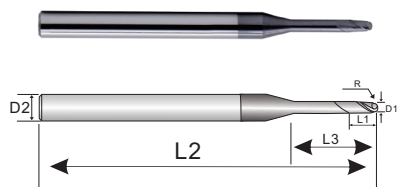
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA 2刃深沟球形铣刀

Carbide, 2 Flute Micro Ball End Mills, Long Neck

- ★ 适用于加工预硬钢、≤HRc56的模具
- ★ 特殊的加长设计适用于深沟加工、插削加工、轮廓加工。
- ★ 超微粒刀具，直径可达到0.02-2.9mm。
- ★ 超微2刃铣刀适用于医疗，光学，电子和航空航天行业的切削加工。

- Excellent performance when cutting prehardened steels, up to HRc56 which are used for molds & dies.
- Special Long neck design for deep cavity machining near walls, for deep slotting and pocketing.
- Super Micro end mill, Diameters Range from 0.02~2.9mm Radius.
- 2 flute, Miniature tools, High precision milling in medical, optical, electronics and aerospace industries.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRc30-40	HRc40-45 HRc45-55	HRc55-70							
⊙	⊙		⊙	⊙			○		○	○	

⊙ 非常合适 ○ 合适

EMA14 SERIES

Unit:mm

优能特订货代码	球头半径	有效长	柄径	刃长	全长	刃数
UNT EDP NO.	Radius of Ball R	Effective length L3	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA140402	R0.2	2	4	0.6	50	2
EMA140404	R0.2	4	4	0.6	50	2
EMA140406	R0.2	6	4	0.6	50	2
EMA140502	R0.25	2	4	0.8	50	2
EMA140504	R0.25	4	4	0.8	50	2
EMA140506	R0.25	6	4	0.8	50	2
EMA140508	R0.25	8	4	0.8	50	2
EMA140602	R0.3	2	4	1.0	50	2
EMA140604	R0.3	4	4	1.0	50	2
EMA140606	R0.3	6	4	1.0	50	2
EMA140608	R0.3	8	4	1.0	50	2
EMA140610	R0.3	10	4	1.0	50	2
EMA140804	R0.4	4	4	1.2	50	2
EMA140806	R0.4	6	4	1.2	50	2
EMA140808	R0.4	8	4	1.2	50	2
EMA140810	R0.4	10	4	1.2	50	2
EMA141006	R0.5	6	4	1.5	50	2
EMA141008	R0.5	8	4	1.5	50	2
EMA141010	R0.5	10	4	1.5	50	2
EMA141012	R0.5	12	4	1.5	50	2
EMA141014	R0.5	14	4	1.5	50	2
EMA141016	R0.5	16	4	1.5	50	2
EMA141018	R0.5	18	4	1.5	50	2
EMA141020	R0.5	20	4	1.5	50	2
EMA141506	R0.75	6	4	2.5	50	2
EMA141508	R0.75	8	4	2.5	50	2
EMA141510	R0.75	10	4	2.5	50	2
EMA141512	R0.75	12	4	2.5	50	2
EMA141514	R0.75	14	4	2.5	50	2
EMA141516	R0.75	16	4	2.5	50	2
EMA141518	R0.75	18	4	2.5	50	2
EMA141520	R0.75	20	4	2.5	50	2
EMA142006	R1.0	6	4	3.0	50	2
EMA142008	R1.0	8	4	3.0	50	2
EMA142010	R1.0	10	4	3.0	50	2

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

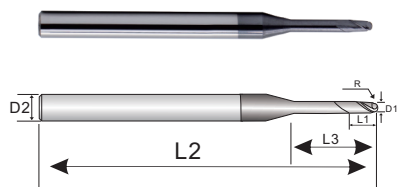
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Non-standard size or product parameters not listed above, can be customized according to customer needs.

EMA 2刃深沟球形铣刀

Carbide, 2 Flute Micro Ball End Mills, Long Neck

- ★ 适用于加工预硬钢、≤HRC56的模具
- ★ 特殊的加长设计适用于深沟加工、插削加工、轮廓加工。
- ★ 超微粒刀具，直径可达到0.02-2.9mm。
- ★ 超微2刃铣刀适用于医疗，光学，电子和航空航天行业的切削加工。

- Excellent performance when cutting prehardened steels, up to HRC56 which are used for molds & dies.
- Special Long neck design for deep cavity machining near walls, for deep slotting and pocketing.
- Super Micro end mill, Diameters Range from 0.02~2.9mm Radius.
- 2 flute, Miniature tools, High precision milling in medical, optical, electronics and aerospace industries.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	-HB225-325	-HRC30-40	HRC40-45	HRC45-55	HRC55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA14 SERIES

Unit:mm

优能特订货代码	球头半径	有效长	柄径	刃长	全长	刃数
UNT EDP NO.	Radius of Ball R	Effective length L3	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA142012	R1.0	12	4	3.0	50	2
EMA142014	R1.0	14	4	3.0	50	2
EMA142016	R1.0	16	4	3.0	50	2
EMA142018	R1.0	18	4	3.0	50	2
EMA142020	R1.0	20	4	3.0	50	2
EMA143008	R1.5	8	4	4.5	50	2
EMA143010	R1.5	10	4	4.5	50	2
EMA143012	R1.5	12	4	4.5	50	2
EMA143014	R1.5	14	4	4.5	50	2
EMA143016	R1.5	16	4	4.5	50	2
EMA143018	R1.5	18	4	4.5	50	2
EMA143020	R1.5	20	4	4.5	50	2

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Non-standard size or product parameters not listed above, can be customized according to customer needs.

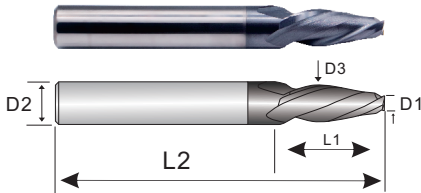
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA 2刃锥度平底铣刀

Carbide, 2 Flute Square End Mills with TAPER NECK

- ★ 设计用于深沟轮廓加工、槽切削、凹槽加工。
- ★ 适用于加工预硬钢、≤HRC56的模具。
- ★ 颈部锥度为0.5°~15°。
- ★ 硬质合金锥度2刃平底铣刀，适用于数控机床，2D / 3D雕刻机。

- Designed for deep cavity profiling, deep slotting and pocketing.
- Excellent performance when cutting prehardened steels, up to HRC56 which are used for molds & dies.
- Taper Neck Angle from 0.5°~15°.
- 2 flute Tapered Carbide Carving bits suit For CNC, Engraving Carving 2D/3D machine.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	-HB225-325	-HRC30-40	HRC40-45	HRC45-55	HRC55-70						
○	○	○	○	○			○		○	○	

◎ 非常合适 ○ 适合

EMA15 SERIES

Unit:mm

优能特订货代码	先瑞刃径	锥度	柄径	刃长	粗端径	全长	刃数
UNT EDP NO.	Bladetip dia D1	Taper (°)	Shank Dia D2	Flute length L1	Rough side trails D3	O. A. L. L2	Flutes
EMA15010005	1.0	0.5°	4	4	1.07	50	2F
EMA15010010	1.0	1°	4	4	1.14	50	2F
EMA15010015	1.0	1.5°	4	4	1.21	50	2F
EMA15010020	1.0	2°	4	4	1.28	50	2F
EMA15010030	1.0	3°	4	4	1.42	50	2F
EMA15010050	1.0	5°	4	4	1.7	50	2F
EMA15015005	1.5	0.5°	4	5	1.59	50	2F
EMA15015010	1.5	1°	4	5	1.67	50	2F
EMA15015015	1.5	1.5°	4	5	1.76	50	2F
EMA15015020	1.5	2°	4	5	1.85	50	2F
EMA15015030	1.5	3°	4	5	2.02	50	2F
EMA15015050	1.5	5°	4	5	2.1	50	2F
EMA15020005	2.0	0.5°	4	6	2.37	50	2F
EMA15020010	2.0	1°	4	6	2.21	50	2F
EMA15020015	2.0	1.5°	4	6	2.31	50	2F
EMA15020020	2.0	2°	4	6	2.41	50	2F
EMA15020030	2.0	3°	4	6	2.62	50	2F
EMA15020050	2.0	5°	6	6	3.05	50	2F
EMA15025005	2.5	0.5°	4	8	2.64	50	2F
EMA15025010	2.5	1°	4	8	2.78	50	2F
EMA15025015	2.5	1.5°	4	8	2.91	50	2F
EMA15025020	2.5	2°	4	8	3.05	50	2F
EMA15025030	2.5	3°	4	8	3.33	50	2F
EMA15025050	2.5	5°	6	8	3.9	50	2F
EMA15030005	3.0	0.5°	4	10	3.17	50	2F/4F
EMA15030010	3.0	1°	4	10	3.35	50	2F/4F
EMA15030015	3.0	1.5°	4	10	3.52	50	2F/4F
EMA15030020	3.0	2°	4	10	3.69	50	2F/4F
EMA15030030	3.0	3°	6	10	4.05	50	2F/4F
EMA15030050	3.0	5°	6	10	4.75	50	2F/4F
EMA15040005	4.0	0.5°	6	15	4.26	50	2F/4F
EMA15040010	4.0	1°	6	15	4.52	50	2F/4F
EMA15040015	4.0	1.5°	6	15	4.79	50	2F/4F
EMA15040020	4.0	2°	6	15	5.04	50	2F/4F
EMA15040030	4.0	3°	6	15	5.57	50	2F/4F

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

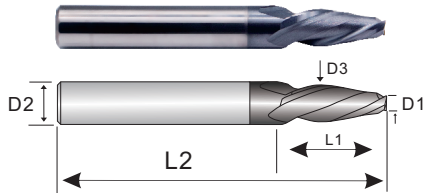
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Non-standard size or product parameters not listed above, can be customized according to customer needs.

EMA 2刃锥度平底铣刀

Carbide, 2 Flute Square End Mills with TAPER NECK

- ★ 设计用于深沟轮廓加工、槽切削、凹槽加工。
- ★ 适用于加工预硬钢、≤HRC56的模具。
- ★ 颈部锥度为0.5°~15°。
- ★ 硬质合金锥度2刃平底铣刀，适用于数控机床，2D / 3D雕刻机。

- Designed for deep cavity profiling, deep slotting and pocketing.
- Excellent performance when cutting prehardened steels, up to HRC56 which are used for molds & dies.
- Taper Neck Angle from 0.5°~15°.
- 2 flute Tapered Carbide Carving bits suit For CNC, Engraving Carving 2D/3D machine.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC45-55							
○	○	○	○	○	○	○	○	○	○	○	○

◎ 非常适合 ○ 适合

EMA15 SERIES

Unit:mm

优能特订货代码	先瑞刃径	锥度	柄径	刃长	粗端径	全长	刃数
UNT EDP NO.	Bladetip dia D1	Taper (°)	Shank Dia D2	Flute length L1	Rough side trails D3	O. A. L. L2	Flutes
EMA15040050	4.0	5°	8	15	6.62	60	2F/4F
EMA15050005	5.0	0.5°	6	20	5.34	50	2F/4F
EMA15050010	5.0	1°	6	20	5.7	50	2F/4F
EMA15050015	5.0	1.5°	6	20	6.04	60	2F/4F
EMA15050020	5.0	2°	8	20	6.39	60	2F/4F
EMA15050030	5.0	3°	8	20	7.1	60	2F/4F
EMA15050050	5.0	5°	10	20	8.5	75	2F/4F
EMA15050070	5.0	7°	10	20	9.91	75	2F/4F
EMA15050100	5.0	10°	12	20	12.05	75	2F/4F
EMA15060005	6.0	0.5°	8	20	6.35	60	2F/4F
EMA15060010	6.0	1°	8	20	6.7	60	2F/4F
EMA15060015	6.0	1.5°	8	20	7.05	60	2F/4F
EMA15060020	6.0	2°	8	20	7.4	60	2F/4F
EMA15060030	6.0	3°	8	20	8.1	75	2F/4F
EMA15060050	6.0	5°	10	20	9.5	75	2F/4F
EMA15060070	6.0	7°	12	20	10.91	75	2F/4F
EMA15060100	6.0	10°	12	20	13.05	75	2F/4F
EMA15080005	8.0	0.5°	10	25	8.44	75	2F/4F
EMA15080010	8.0	1°	10	25	8.87	75	2F/4F
EMA15080015	8.0	1.5°	10	25	9.31	75	2F/4F
EMA15080020	8.0	2°	10	25	9.74	75	2F/4F
EMA15080030	8.0	3°	12	25	10.62	75	2F/4F
EMA15080050	8.0	5°	12	25	12.37	75	2F/4F
EMA15080070	8.0	7°	12	25	14.14	75	2F/4F
EMA15080100	8.0	10°	16	25	16.82	100	2F/4F
EMA15100005	10.0	0.5°	12	35	10.61	100	2F/4F
EMA15100010	10.0	1°	12	35	11.22	100	2F/4F
EMA15100015	10.0	1.5°	12	35	11.83	100	2F/4F
EMA15100020	10.0	2°	12	35	12.44	100	2F/4F
EMA15100030	10.0	3°	12	35	13.67	100	2F/4F
EMA15100050	10.0	5°	16	35	16.12	100	2F/4F
EMA15100070	10.0	7°	16	35	18.6	100	2F/4F

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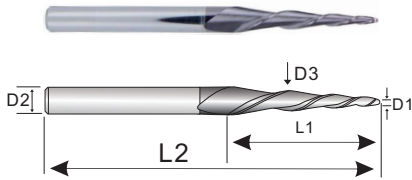
MILL DIA. TOLERANCE(mm)	SHANK DIA. TOLERANCE(mm)
刃径公差 (mm)	柄径公差 (mm)
0 -0.030	H6

EMA 2刃锥度球形铣刀

Carbide, 2 Flute Ball End Mills with TAPER NEC

- ★ 设计用于深沟轮廓加工、槽切削、凹槽加工。
- ★ 适用于加工预硬钢、≤HRC56的模具。
- ★ 颈部锥度为0.5°~15°。
- ★ 硬质合金锥度2刃平底铣刀，适用于数控机床，2D / 3D雕刻机。

- Designed for deep cavity profiling, deep slotting and pocketing.
- Excellent performance when cutting prehardened steels, up to HRC56 which are used for molds & dies.
- Taper Neck Angle from 0.5°~15°.
- 2 flute Tapered Carbide Carving bits suit For CNC, Engraving Carving 2D/3D machine.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	-HB225-325	-HRC30-40	HRC40-45	HRC45-55	HRC55-70							
○	○		○	○				○		○	○	

◎ 非常合适 ○ 适合

EMA16 SERIES

Unit:mm

优能特订货代码	先瑞刃径	锥度	柄径	刃长	粗端径	全长	刃数
UNT EDP NO.	Bladetip dia D1	Taper (°)	Shank Dia D2	Flute length L1	Rough side trails D3	O. A. L. L2	Flutes
EMA1605005	R0.5	0.5°	4	4	1.07	50	2F
EMA1605010	R0.5	1°	4	4	1.14	50	2F
EMA1605015	R0.5	1.5°	4	4	1.21	50	2F
EMA1605020	R0.5	2°	4	4	1.28	50	2F
EMA1605030	R0.5	3°	4	4	1.42	50	2F
EMA1605050	R0.5	5°	4	4	1.7	50	2F
EMA1607505	R0.75	0.5°	4	5	1.59	50	2F
EMA1607510	R0.75	1°	4	5	1.67	50	2F
EMA1607515	R0.75	1.5°	4	5	1.76	50	2F
EMA1607520	R0.75	2°	4	5	1.85	50	2F
EMA1607530	R0.75	3°	4	5	2.02	50	2F
EMA1607550	R0.75	5°	4	5	2.1	50	2F
EMA1610005	R1.0	0.5°	4	6	2.37	50	2F
EMA1610010	R1.0	1°	4	6	2.21	50	2F
EMA1610015	R1.0	1.5°	4	6	2.31	50	2F
EMA1610020	R1.0	2°	4	6	2.41	50	2F
EMA1610030	R1.0	3°	4	6	2.62	50	2F
EMA1610050	R1.0	5°	6	6	3.05	50	2F
EMA1612505	R1.25	0.5°	4	8	2.64	50	2F
EMA1612510	R1.25	1°	4	8	2.78	50	2F
EMA1612515	R1.25	1.5°	4	8	2.91	50	2F
EMA1612520	R1.25	2°	4	8	3.05	50	2F
EMA1612530	R1.25	3°	4	8	3.33	50	2F
EMA1612550	R1.25	5°	6	8	3.9	50	2F
EMA1615005	R1.5	0.5°	4	10	3.17	50	2F/4F
EMA1615010	R1.5	1°	4	10	3.35	50	2F/4F
EMA1615015	R1.5	1.5°	4	10	3.52	50	2F/4F
EMA1615020	R1.5	2°	4	10	3.69	50	2F/4F
EMA1615030	R1.5	3°	6	10	4.05	50	2F/4F
EMA1615050	R1.5	5°	6	10	4.75	50	2F/4F
EMA1620005	R2.0	0.5°	6	15	4.26	50	2F/4F
EMA1620010	R2.0	1°	6	15	4.52	50	2F/4F

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

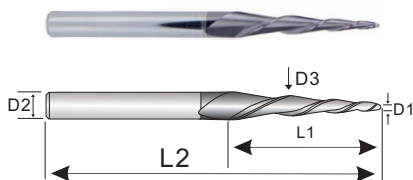
以上产品未列明细的非标规格尺寸或产品参数，可根据客户需求订制作。
Non-standard size or product parameters not listed above, can be customized according to customer needs.

EMA 2刃锥度球形铣刀

Carbide, 2 Flute Ball End Mills with TAPER NEC

- ★ 设计用于深沟轮廓加工、槽切削、凹槽加工。
- ★ 适用于加工预硬钢、≤HRC56的模具。
- ★ 颈部锥度为0.5°~15°。
- ★ 硬质合金锥度2刃平底铣刀，适用于数控机床，2D / 3D雕刻机。

- Designed for deep cavity profiling, deep slotting and pocketing.
- Excellent performance when cutting prehardened steels, up to HRC56 which are used for molds & dies.
- Taper Neck Angle from 0.5°~15°.
- 2 flute Tapered Carbide Carving bits suit For CNC, Engraving Carving 2D/3D machine.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钨合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRC30-40	HRC40-45	HRC45-55	HRC55-70						
○	○	○	○	○			○		○	○	

○ 非常合适 ○ 适合

EMA16 SERIES

Unit:mm

优能特订货代码	先端刃径	锥度	柄径	刃长	粗端径	全长	刃数
UNT EDP NO.	Bladetip dia D1	Taper (°)	Shank Dia D2	Flute length L1	Rough side trails D3	O. A. L. L2	Flutes
EMA1620015	R2.0	1.5°	6	15	4.79	50	2F/4F
EMA1620020	R2.0	2°	6	15	5.04	50	2F/4F
EMA1620030	R2.0	3°	6	15	5.57	50	2F/4F
EMA1620050	R2.0	5°	8	15	6.62	60	2F/4F
EMA1625005	R2.5	0.5°	6	20	5.34	50	2F/4F
EMA1625010	R2.5	1°	6	20	5.7	50	2F/4F
EMA1625015	R2.5	1.5°	6	20	6.04	60	2F/4F
EMA1625020	R2.5	2°	8	20	6.39	60	2F/4F
EMA1625030	R2.5	3°	8	20	7.1	60	2F/4F
EMA1625050	R2.5	5°	10	20	8.5	75	2F/4F
EMA1625070	R2.5	7°	10	20	9.91	75	2F/4F
EMA1630005	R3.0	0.5°	8	20	6.35	60	2F/4F
EMA1630010	R3.0	1°	8	20	6.7	60	2F/4F
EMA1630015	R3.0	1.5°	8	20	7.05	60	2F/4F
EMA1630020	R3.0	2°	8	20	7.4	60	2F/4F
EMA1630030	R3.0	3°	8	20	8.1	75	2F/4F
EMA1630050	R3.0	5°	10	20	9.5	75	2F/4F
EMA1640005	R4.0	0.5°	10	25	8.44	75	2F/4F
EMA1640010	R4.0	1°	10	25	8.87	75	2F/4F
EMA1640015	R4.0	1.5°	10	25	9.31	75	2F/4F
EMA1640020	R4.0	2°	10	25	9.74	75	2F/4F
EMA1640030	R4.0	3°	12	25	10.62	75	2F/4F
EMA1640050	R4.0	5°	12	25	12.37	75	2F/4F
EMA1640070	R4.0	7°	12	25	14.14	75	2F/4F
EMA1650005	R5.0	0.5°	12	35	10.61	100	2F/4F
EMA1650010	R5.0	1°	12	35	11.22	100	2F/4F
EMA1650015	R5.0	1.5°	12	35	11.83	100	2F/4F
EMA1650020	R5.0	2°	12	35	12.44	100	2F/4F
EMA1650030	R5.0	3°	12	35	13.67	100	2F/4F
EMA1650050	R5.0	5°	16	35	16.12	100	2F/4F

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Non-standard size or product parameters not listed above, can be customized according to customer needs.

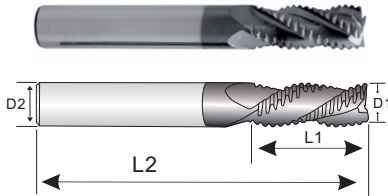
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA 4刀粗皮铣刀

Carbide, Multi Flute Roughing end mills

- ★ 设计用于加工预硬钢，碳素钢，合金钢，≤HRc56的机械零件。
- ★ 特殊的刀具形状，可实现高进给率和稳定切削。
- ★ 合理的前角设计，适用于插削铣和凹槽铣削。
- ★ 适合与冷却液及干式切削条件。
- ★ 具有快速排屑能力。

- Designed to Cutting Prehardened steel, carbon steel, alloy steels of molds and dies, up to HRc56 and machine parts.
- Special tool geometry for high feed rate and heavy cutting.
- Strong end tooth design for the plunge and pocket milling.
- For dry and wet milling.
- Fast chip ejection.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels		Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	-HB225-325	-HRc30-40	HRc40-45	HRc45-55	HRc55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA17 SERIES

Unit:mm

优能特订货代码	刀径	柄径	刃长	全长	刃数
UNT EDP NO.	Mill Dia D1	Shank Dia D2	Flute length L1	O. A. L. L2	Flutes
EMA17030050	3.0	4	8	50	3F/4F
EMA17040050	4.0	4	11	50	3F/4F
EMA17050050	5.0	6	13	50	3F/4F
EMA17060050	6.0	6	16	50	3F/4F
EMA17080060	6.0	6	30	100	3F/4F
EMA17100075	8.0	8	20	60	3F/4F
EMA17120075	8.0	8	35	100	3F/4F
EMA17140100	10.0	10	25	75	3F/4F
EMA17160100	10.0	10	40	100	3F/4F
EMA17180100	12.0	12	30	75	3F/4F
EMA17200100	12.0	12	45	100	3F/4F
EMA17060100	14.0	14	40	100	3F/4F
EMA17080100	16.0	16	40	100	3F/4F
EMA17100100	16.0	16	60	150	3F/4F
EMA17120120	18.0	18	40	100	3F/4F
EMA17160160	20.0	20	40	100	3F/4F

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

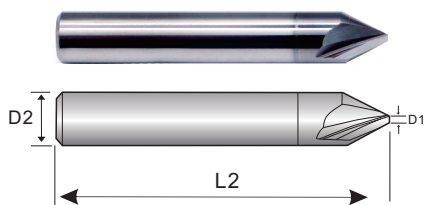
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多功能钨钢涂层高光倒角刀

Carbide, Chamfer milling cutter

- ★ 专门为倒角切削，去毛刺和“V形槽”铣削
- ★ 前角弧形设计可提高刀具的稳定性、精准性、光洁度和排屑效果。
- ★ 硬质合金倒角铣刀，30°/40°/60°/90°/120°。

- Design for back chamfering, chamfering, deburring, and milling a "V-groove"
- Radiused tip design for improved strength, superior performance, surface finish, and chip evacuation.
- Carbide, Chamfer milling cutter, 30°/40°/60°/90°/120°.



加工材料 Material Description											
碳钢	合金钢	预硬钢	硬化钢	高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	-HB225-325	-HRC30-40	HRC40-45	HRC45-55							
○	○	○	○	○	○	○	○	○	○	○	○

◎ 非常适合 ○ 适合

EMA18 高光刀

Unit:mm

涂层	光铝	刃角	柄径	R角度	刃长	全长	
ALTIN/TiN-Coated	Non-Coated	UNT Mill Beam	Shank Dia	Radius	Flute length	O. A. L.	
UNT EDP NO.	UNT EDP NO.	A	D2			L2	
EMA18185-C	EMA18185	30°	1/8	.0050	.218	1-1/2	
EMA18184-C	EMA18184		1/8	.0100	.204	1-1/2	
EMA18189-C	EMA18189		1/8	.0150	.190	1-1/2	
EMA18336-C	EMA18336		3/16	.0050	.335	2	
EMA18326-C	EMA18326		3/16	.0100	.321	2	
EMA18452-C	EMA18452		1/4	.0150	.452	2-1/2	
EMA18437-C	EMA18437		1/4	.0100	.437	2-1/2	
EMA18486-C	EMA18486	40°	1/8	.0050	.162	1-1/2	
EMA18485-C	EMA18485		1/8	.0100	.152	1-1/2	
EMA18481-C	EMA18481		1/8	.0150	.142	1-1/2	
EMA18813-C	EMA18813	60°	1/8	.0050	.103	1-1/2	
EMA18810-C	EMA18810		1/8	.0075	.100	1-1/2	
EMA18809-C	EMA18809		1/8	.0100	.098	1-1/2	
EMA18803-C	EMA18803		1/8	.0150	.093	1-1/2	
EMA18808-C	EMA18808		1/8	.0200	.088	1-1/2	
EMA18357-C	EMA18357		3/16	.0050	.157	2	
EMA18352-C	EMA18352		3/16	.0100	.152	2	
EMA18347-C	EMA18347		3/16	.0150	.147	2	
EMA18411-C	EMA18411		1/4	.0050	.211	2-1/2	
EMA18406-C	EMA18406		1/4	.0100	.206	2-1/2	
EMA18401-C	EMA18401		1/4	.0150	.201	2-1/2	
EMA18860-C	EMA18860		90°	1/8	.0050	.060	1-1/2
EMA18859-C	EMA18859			1/8	.0075	.059	1-1/2
EMA18858-C	EMA18858			1/8	.0100	.058	1-1/2
EMA18856-C	EMA18856			1/8	.0150	.056	1-1/2
EMA18854-C	EMA18854	1/8		.0200	.054	1-1/2	
EMA18391-C	EMA18391	3/16		.0050	.091	2	
EMA18389-C	EMA18389	3/16		.0100	.089	2	
EMA18387-C	EMA18387	3/16		.0150	.087	2	
EMA18422-C	EMA18422	1/4		.0050	.122	2-1/2	
EMA18420-C	EMA18420	1/4		.0100	.120	2-1/2	
EMA18418-C	EMA18418	1/4		.0150	.118	2-1/2	
EMA18835-C	EMA18835	120°		1/8	.0050	.035	1-1/2
EMA18834-C	EMA18834		1/8	.0100	.034	1-1/2	

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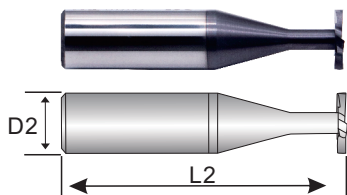
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

多功能钨钢涂层高光T型刀 (英制)

Carbide, Keyseat Cutter, T-slot cutting (Inch)

- ★ 经过优化的UNT, 具有多刃数和特殊的形状, 适用于HRc45-68的淬火钢。
- ★ 新型涂层具有出色的硬度和耐热性。
- ★ 刀具的两面都为碟形间隙设计。
- ★ 切割直径小至1.0mm。

- UNT Optimized for hardened steels HRC 45-68 with high flute count and specialized internal geometry.
- New coating offer superior hardness and heat resistance.
- Both sides of the cutter are dished for clearance.
- Keyseat cutters down to 1.0mm diameter.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	-HB225-325	-HRC30-40	HRC40-45	HRC45-55	HRC55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA19 SERIES

Unit:mm

涂层	光铝	刃径	刀长	颈径	颈长	角度	柄径	全长	刃数
ALTIN/TIN-Coated	Non-Coated	Cutter Dia		Neck Dia	Neck Length	Radial Doc	Shank Dia	O. A. L.	Flutes
UNT EDP NO.	UNT EDP NO.	D1	L1						
EMA19815-C	EMA19815	1/8	.015(1/64)	1/16	3/16 (1.5x)	.022	.1/8	1—1/2	8
EMA19831-C	EMA19831		.031(1/32)	1/16	3/16 (1.5x)	.022	1/8	1—1/2	8
EMA19862-C	EMA19862		.062(1/16)	1/16	3/16 (1.5x)	.022	1/8	1—1/2	8
EMA19893-C	EMA19893		.093(3/32)	1/16	3/16 (1.5x)	.022	1/8	1—1/2	8
EMA19331-C	EMA19331	3/16	.031(1/32)	3/32	9/32 (1.5x)	.037	3/16	2	8
EMA19362-C	EMA19362		.062(1/16)	3/32	9/32 (1.5x)	.037	3/16	2	8
EMA19393-C	EMA19393		.093(3/32)	3/32	9/32 (1.5x)	.037	3/16	2	8
EMA19415-C	EMA19415	1/4	.015(1/64)	1/8	3/8 (1.5x)	.048	1/4	2—1/2	8
EMA19431-C	EMA19431		.031(1/32)	1/8	3/8 (1.5x)	.048	1/4	2—1/2	8
EMA19447-C	EMA19447		.047(3/64)	1/8	3/8 (1.5x)	.048	1/4	2—1/2	8
EMA19462-C	EMA19462		.062(1/16)	1/8	3/8 (1.5x)	.048	1/4	2—1/2	8
EMA19478-C	EMA19478		.078(5/64)	1/8	3/8 (1.5x)	.048	1/4	2—1/2	8
EMA19493-C	EMA19493		.093(3/32)	1/8	3/8 (1.5x)	.048	1/4	2—1/2	8
EMA19425-C	EMA19425		.125(1/8)	1/8	3/8 (1.5x)	.048	1/4	2—1/2	8
EMA19562-C	EMA19562	5/16	.062(1/16)	5/32	15/32 (1.5x)	.063	5/16	2—1/2	8
EMA19593-C	EMA19593		.093(3/32)	5/32	15/32 (1.5x)	.063	5/16	2—1/2	8
EMA19525-C	EMA19525		.125(1/8)	5/32	15/32 (1.5x)	.063	5/16	2—1/2	8
EMA19831-C	EMA19831	3/8	.031(1/32)	3/16	9/16 (1.5x)	.074	3/8	2—1/2	10
EMA19862-C	EMA19862		.062(1/16)	3/16	9/16 (1.5x)	.074	3/8	2—1/2	10
EMA19893-C	EMA19893		.093(3/32)	3/16	9/16 (1.5x)	.074	3/8	2—1/2	10
EMA19812-C	EMA19812		.125(1/8)	3/16	9/16 (1.5x)	.074	3/8	2—1/2	10
EMA19887-C	EMA19887		.187(3/16)	3/16	9/16 (1.5x)	.074	3/8	2—1/2	10
EMA19825-C	EMA19825		.250(1/4)	3/16	9/16 (1.5x)	.074	3/8	2—1/2	10
EMA19231-C	EMA19231	1/2	.031(1/32)	1/4	3/4 (1.5x)	.105	1/2	3	10
EMA19247-C	EMA19247		.047(3/64)	1/4	3/4 (1.5x)	.105	1/2	3	10
EMA19262-C	EMA19262		.062(1/16)	1/4	3/4 (1.5x)	.105	1/2	3	10
EMA19278-C	EMA19278		.078(5/64)	1/4	3/4 (1.5x)	.105	1/2	3	10
EMA19293-C	EMA19293		.093(3/32)	1/4	3/4 (1.5x)	.105	1/2	3	10
EMA19212-C	EMA19212		.125(1/8)	1/4	3/4 (1.5x)	.105	1/2	3	10
EMA19256-C	EMA19256		.156(5/32)	1/4	3/4 (1.5x)	.105	1/2	3	10
EMA19287-C	EMA19287		.187(3/16)	1/4	3/4 (1.5x)	.105	1/2	3	10
EMA19225-C	EMA19225		.250(1/4)	1/4	3/4 (1.5x)	.105	1/2	3	10

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

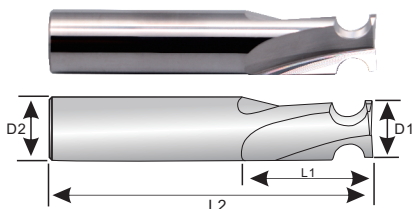
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Non-standard size or product parameters not listed above, can be customized according to customer needs.

多功能钨钢涂层内R定形刀 (英制/公制)

Carbide, Inner R Corner Radius Router Bit, (Inch/Metric)

- ★ 经过优化的UNT, 具有多刃数和特殊的形状, 适用于HRc45-68的淬火钢。
- ★ 新型涂层具有出色的硬度和耐热性。
- ★ 适用于切割加工半径和末端 (不适用于中心切割)。
- ★ 尖端设计, 适用于加工微型孔, 窄槽和较小的内角。
- ★ 内R刀≈内R半径+.005英寸

- UNT Optimized for hardened steels HRc 45-68 with high flute count and specialized internal geometry.
- New coating offers superior hardness and heat resistance.
- Cutting on radius and end only (not center cutting)
- Small Tipped design for miniature holes, narrow slots, and small inside corners.
- R cutter ≈ radius plus .005"



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	
~HB225	~HB225-325	~HRc30-40	HRc40-45	HRc45-55	HRc55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA20 SERIES

Unit:mm

涂层	光铝	内R		R 直径	柄径	全长	刃数
ALTiN/TiN-Coated	Non-Coated	Radius		Pilot Diameter	Shank Dia	O. A. L.	Flutes
UNT EDP NO.	UNT EDP NO.	R	+0005" -0005"	D1	D2	L2	
EMA20815-C	EMA20815	.015(1/64)		.058	1/8	1-1/2	3F/4F
EMA20831-C	EMA20831	.031(1/32)		.058	1/8	1-1/2	3F/4F
EMA20362-C	EMA20362	.062(1/16)		.058	3/16	2	3F/4F
EMA20562-C	EMA20562	.062(1/16)		.154	5/16	2-1/2	3F/4F
EMA20593-C	EMA20593	.093(3/32)		.058	1/4	2	3F/4F
EMA20193-C	EMA20193	.093(3/32)		.154	3/8	2-1/2	3F/4F
EMA20162-C	EMA20162	.125(1/8)		.058	5/16	2-1/2	3F/4F
EMA20182-C	EMA20182	.125(1/8)		.248	5/8	3-1/2	3F/4F
EMA20787-C	EMA20787	.187(3/16)		.058	7/16	2-1/2	3F/4F
EMA20587-C	EMA20587	.187(3/16)		.248	5/8	3-1/2	3F/4F

涂层	光铝	刃径	内R	柄径	刃长	全长	刃数
ALTiN/TiN-Coated	Non-Coated	Mill Dia	In the	Shank Dia	Flutes Length	O. A. L.	Flutes
UNT EDP NO.	UNT EDP NO.	D1	R	D2	L1	L2	
EMA20405-C	EMA20405	4.0	R0.5	4	11	50L	4F/6F
EMA20410-C	EMA20410	4.0	R1	4	11	50L	4F/6F
EMA20415-C	EMA20415	4.0	R1.5	4	11	50L	4F/6F
EMA20460-C	EMA20460	4.0	R6	4	8	50L	4F/6F
EMA20630-C	EMA20630	6.0	R3	6	12	50L	4F/6F
EMA20840-C	EMA20840	8.0	R4	8	16	60L	4F/6F
EMA201050-C	EMA201050	10.0	R5	10	20	75L	4F/6F

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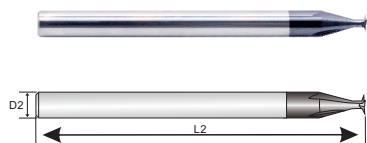
MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

多功能钨钢涂层燕尾刀 (英制/公制)

Carbide, Dovetail Cutter, Backside Corner End Mills. (Inch/Metric)

- ★ 经过优化的UNT, 具有多刃数和特殊的形状, 适用于HRc45-68的淬火钢。
- ★ 专门用于设计加工部件背面的半径。
- ★ 出色的圆角设计, 提供刀具的稳定性。
- ★ 适用于角半径为.005 "或.010"
- ★ 可加工为短款, 常规款和长款铣刀。

- UNT Optimized for hardened steels HRc 45-68 with high flute count and specialized internal geometry.
- Designed to mill radius on the backside of workpiece.
- Corner radius for improved strength.
- Offered with sharp corner, .005", or .010" Corner Radius
- Available in short, regular and long reach end mills.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	~HB225-325	~HRc30-40	HRc40-45	HRc45-55	HRc55-70							
○	○		○	○				○		○	○	

○ 非常适合 ○ 适合

EMA21 SERIES

Unit:mm

涂层 ALTiN/TiN-Coated UNT EDP NO.	光铝 Non-Coated UNT EDP NO.	R 角		刃径		颈径 Neck Dia	颈长 L1	中心点		柄径 D2	全长 L2	刃数 Flutes
		R	R	D1	D1			C	C			
EMA210517-C	EMA210517	.005	.005	.030	.030	.017	.062	.025	.025	1/8	1—1/2	3
EMA210547-C	EMA210547	.005	.005	.060	.060	.047	.250	.025	.025	1/8	1—1/2	3
EMA210510-C	EMA210510	.005	.005	.115	.115	.102	.875	.025	.025	1/8	2	3
EMA210856-C	EMA210856	.008	.008	.075	.075	.056	.312	.028	.028	1/8	1—1/2	3
EMA211022-C	EMA211022	.010	.010	.045	.045	.022	.078	.030	.030	1/8	1—1/2	3
EMA211052-C	EMA211052	.010	.010	.075	.075	.052	.281	.030	.030	1/8	1—1/2	3
EMA211248-C	EMA211248	.012	.012	.075	.075	.048	.250	.032	.032	1/8	1—1/2	3
EMA211527-C	EMA211527	.015(1/64)	.015(1/64)	.060	.060	.027	.093	.035	.035	1/8	1—1/2	3
EMA211557-C	EMA211557	.015(1/64)	.015(1/64)	.090	.090	.057	.312	.035	.035	1/8	1—1/2	3
EMA211530-C	EMA211530	.015(1/64)	.015(1/64)	.187	.187	.130	1.000	.077	.077	3/16	2—1/2	3
EMA212032-C	EMA212032	.020	.020	.075	.075	.032	.109	.040	.040	1/8	1—1/2	3
EMA212072-C	EMA212072	.020	.020	.115	.115	.072	.375	.040	.040	1/8	1—1/2	3
EMA212020-C	EMA212020	.020	.020	.187	.187	.120	.500	.082	.082	3/16	2	3
EMA212216-C	EMA212216	.022	.022	.187	.187	.116	.500	.084	.084	3/16	2	3
EMA212537-C	EMA212537	.025	.025	.090	.090	.037	.125	.055	.055	1/8	1—1/2	3
EMA212510-C	EMA212510	.025	.025	.187	.187	.110	.500	.087	.087	3/16	2	3
EMA212710-C	EMA212710	.027	.027	.187	.187	.106	.500	.089	.089	3/16	2	3
EMA213052-C	EMA213052	.030	.030	.115	.115	.052	.187	.060	.060	1/8	1—1/2	3
EMA213010-C	EMA213010	.030	.030	.187	.187	.100	.500	.092	.092	3/16	2	3
EMA213011-C	EMA213011	.030	.030	.187	.187	.100	1.000	.092	.092	3/16	2—1/2	3
EMA213150-C	EMA213150	.031(1/32)	.031(1/32)	.115	.115	.050	.156	.061	.061	1/8	1—1/2	3
EMA213198-C	EMA213198	.031(1/32)	.031(1/32)	.187	.187	.098	1.000	.093	.093	3/16	2—1/2	3
EMA213553-C	EMA213553	.035	.035	.250	.250	.153	.500	.097	.097	1/4	2—1/2	3
EMA213945-C	EMA213945	.039(1mm)	.039(1mm)	.250	.250	.145	.500	.101	.101	1/4	2—1/2	3
EMA213941-C	EMA213941	.039(1mm)	.039(1mm)	.250	.250	.145	1.000	.101	.101	1/4	2—1/2	3
EMA214043-C	EMA214043	.040	.040	.250	.250	.143	.500	.102	.102	1/4	2—1/2	3
EMA214533-C	EMA214533	.045	.045	.250	.250	.133	.500	.107	.107	1/4	2—1/2	3
EMA214712-C	EMA214712	.047(3/64)	.047(3/64)	.250	.250	.128	.625	.109	.109	1/4	2—1/2	3
EMA214728-C	EMA214728	.047(3/64)	.047(3/64)	.250	.250	.128	1.250	.109	.109	1/4	3	3

MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

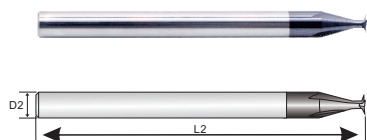
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多功能钨钢涂层燕尾刀 (英制/公制)

Carbide, Dovetail Cutter, Backside Corner End Mills. (Inch/Metric)

- ★ 经过优化的UNT,具有多刃数和特殊的形状,适用于HRc45-68的淬火钢。
- ★ 专门用于设计加工部件背面的半径。
- ★ 出色的圆角设计,提供刀具的稳定性。
- ★ 适用于角半径为.005 "或.010"
- ★ 可加工为短款,常规款和长款铣刀。

- UNT Optimized for hardened steels HRc 45-68 with high flute count and specialized internal geometry.
- Designed to mill radius on the backside of workpiece.
- Corner radius for improved strength.
- Offered with sharp corner, .005", or .010" Corner Radius
- Available in short, regular and long reach end mills.



加工材料 Material Description												
碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	镍钴钛合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels	High Hardened Steels	High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	+HB225-325	+HRc30-40	HRc40-45	HRc45-55	HRc55-70							
○	○		○	○				○		○	○	

◎ 非常适合 ○ 适合

EMA21 SERIES

Unit:mm

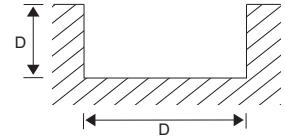
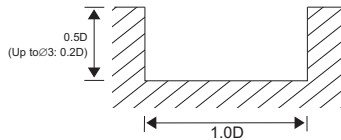
涂层	光铝	R 角	刃径	颈径	颈长	中心点	柄径	全长	刃数
ALTIN/TIN-Coated UNT EDP NO.	Non-Coated UNT EDP NO.	Radius R	Head Diameter D1	Neck Dia	Neck Dia L1	Radius Center C	Shank Dia D2	O. A. L. L2	Flutes
		+0005" -0005"	+000" -002"			+003" -001"			
EMA2150375-C	EMA2150375	.050	.250	.122	.375	.112	1/4	2—1/2	3
EMA2150625-C	EMA2150625	.050	.250	.122	.625	.112	1/4	2—1/2	3
EMA2150125-C	EMA2150125	.050	.250	.122	1.250	.112	1/4	3	3
EMA2155625-C	EMA2155625	.055	.250	.113	.625	.117	1/4	2—1/2	3
EMA2160437-C	EMA2160437	.060	.312	.164	.437	.122	5/16	2—1/2	3
EMA2160875-C	EMA2160875	.060	.312	.164	.875	.122	5/16	2—1/2	3
EMA2162437-C	EMA2162437	.062(1/16)	.312	.160	.437	.124	5/16	2—1/2	3
EMA2162875-C	EMA2162875	.062(1/16)	.312	.160	.875	.124	5/16	2—1/2	3
EMA2162125-C	EMA2162125	.062(1/16)	.312	.160	1.250	.124	5/16	3	3
EMA2107875-C	EMA2107875	.070	.375	.207	.875	.132	3/8	2—1/2	3
EMA2178500-C	EMA2178500	.078(5/64)	.375	.191	.500	.171	3/8	2—1/2	3
EMA2178100-C	EMA2178100	.078(5/64)	.375	.191	1.000	.171	3/8	2—1/2	3
EMA2178150-C	EMA2178150	.078(5/64)	.375	.191	1.500	.171	3/8	3	3
EMA2108100-C	EMA2108100	.080	.375	.187	1.000	.173	3/8	2—1/2	3
EMA2109100-C	EMA2109100	.090	.375	.167	1.000	.183	3/8	2—1/2	3
EMA2193500-C	EMA2193500	.093(3/32)	.375	.161	.500	.186	3/8	2—1/2	3
EMA2193100-C	EMA2193100	.093(3/32)	.375	.161	1.000	.186	3/8	2—1/2	3
EMA2193150-C	EMA2193150	.093(3/32)	.375	.161	1.500	.186	3/8	3	3
EMA2110500-C	EMA2110500	.100	.500	.272	.500	.193	1/2	3	4
EMA2110100-C	EMA2110100	.100	.500	.272	1.000	.193	1/2	3	4
EMA2118100-C	EMA2118100	.118(3mm)	.500	.236	1.000	.211	1/2	3	4
EMA2112500-C	EMA2112500	.125(1/8)	.500	.222	.500	.218	1/2	3	4
EMA2112100-C	EMA2112100	.125(1/8)	.500	.222	1.500	.218	1/2	3—1/2	4
EMA2115100-C	EMA2115100	.156(5/32)	.625	.284	1.000	.250	5/8	3—1/2	4
EMA21187100-C	EMA21187100	.187(3/16)	.625	.222	1.000	.281	5/8	3—1/2	4
EMA21251500-C	EMA21251500	.250(1/4)	1.000	.471	1.500	.376	1	4	4

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MILL DIA. TOLERANCE(mm) 刃径公差 (mm)	SHANK DIA. TOLERANCE(mm) 柄径公差 (mm)
0 -0.030	H6

EMA01 SERIES

材质	碳钢合、金钢、工具钢		合金钢、预硬度钢		不锈钢		铸铁		铝合金	
MATERIAL	CARBON STEEL ALLOY STEEL TOOL STEEL		ALLOY STEEL PRE-HARDENED STEEL		STALNLESS STEEL		CAST IRON		ALUMINUM ALLOY	
HARDNESS	~HRC30		HRC30-HRC50							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	14300	105	8500	65	7150	50	18700	205	44000	330
1.5	9350	150	5550	85	5600	80	12100	205	27500	385
2	7850	160	5150	100	4300	80	9350	220	22000	460
3	6100	180	3800	120	3150	100	6050	220	15400	460
4	5150	255	3150	155	2650	130	4600	220	11000	460
5	4300	270	2550	160	2150	135	3650	220	9150	460
6	3800	300	2300	190	1950	155	2950	255	7600	485
8	2850	325	1700	170	1450	155	2200	275	5700	485
10	2200	280	1350	135	1150	135	1850	285	4600	485
12	1850	240	1150	110	950	110	1450	295	3750	485
14	1700	215	1050	100	850	100	1300	310	3300	485
16	1500	185	950	95	700	95	1100	320	2850	485
20	1150	145	700	70	550	70	900	340	2200	485

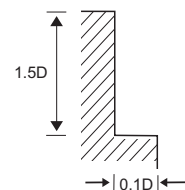
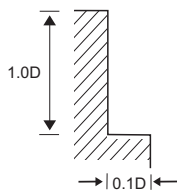


The FEED, in long & extra long types, should be reduced by around 50%
进给量、LONG&EX-ong的时个, 应该大约减少50%

RPM=rev/mn.(转速/分钟)
FEED=mm/min.(进给量)
D= DIAMETER(刃部直径)

EMA03 SERIES

材质	碳钢合、金钢、工具钢		合金钢、预硬度钢		不锈钢		铸铁		铝合金	
MATERIAL	CARBON STEEL ALLOY STEEL TOOL STEEL		ALLOY STEEL PRE-HARDENED STEEL		STALNLESS STEEL		CAST IRON		ALUMINUM ALLOY	
HARDNESS	~HRC30		HRC30-HRC50							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	17600	150	10250	85	8650	75	18700	620	44000	1050
1.5	11800	215	7050	115	7050	120	12100	620	27500	1160
2	9850	240	6450	145	5350	120	9350	640	22000	1320
3	7600	270	4750	170	3950	145	6050	640	15400	1320
4	6450	485	3950	300	3300	240	4600	640	11000	1320
5	5350	510	3200	305	2700	255	3650	640	9150	1320
6	4750	560	2850	350	2400	280	2950	770	7600	1430
8	3550	605	2150	325	1800	300	2200	815	5700	1430
10	2750	520	1700	255	1450	255	1850	860	4600	1430
12	2350	440	1450	215	1150	205	1450	900	3750	1430
14	2100	395	1300	195	1050	190	1300	945	3300	1430
16	1850	350	1150	170	950	170	1100	970	2850	1430
20	1450	270	900	135	700	130	900	1035	2200	1430



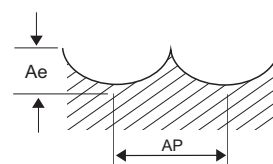
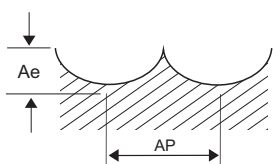
The FEED, in long & extra long types, should be reduced by around 50%
进给量、LONG&EX-ong的时个, 应该大约减少50%

RPM=rev/mn.(转速/分钟)
FEED=mm/min.(进给量)
D= DIAMETER(刃部直径)

以上产品未列明细的非标规格尺寸或产品参数, 可根据客户需求订制制作。
Non-standard size or product parameters not listed above, can be customized according to customer needs.

EMA05 SERIES

材质	碳钢合、金钢、工具钢		碳钢、合金钢、预硬度钢		不锈钢		铸铁		铝合金	
MATERIAL	CARBON STEEL ALLOY STEEL TOOL STEEL		ALLOY STEEL PRE-HARDENED STEEL		STALNLESS STEEL		CAST IRON		ALUMINUM ALLOY	
HARDNESS	~HRc30		HRC30-HRC50		1500N/mm ²					
STRENGTH	~1000N/mm ²		~1000~1500N/mm ²		1500N/mm ²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	12350	640	9150	415	4000	125	10500	200	30800	395
3	11400	575	8550	390	3800	125	7050	230	20500	395
4	8950	630	7150	450	3600	150	5150	285	15400	395
5	7800	700	6200	490	3100	150	4150	330	12100	470
6	7250	870	5900	705	2700	160	3400	360	10300	470
8	6100	1090	4900	785	2050	190	2500	460	7900	540
10	5450	1330	4350	870	1750	190	2050	460	6150	540
12	4990	1500	3950	950	1500	210	1750	460	5150	630
14	4530	1495	3600	925	1300	210	1400	460	4300	630
16	4085	1470	3200	905	1150	210	1300	460	3850	540
18	3800	1425	3000	890	1050	210	1100	460	3400	540
20	3550	1425	2800	885	950	210	1050	420	2950	540

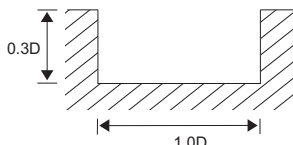


The FEED, in long & extra long types, should be reduced by around 50%
进给量、LONG&EX-ong的时个, 应该大约减少50%

RPM=rev/mn.(转速/分钟)
FEED=mm/min.(进给量)
D= DIAMETER(刃部直径)

EMA07 SERIES

材质	非合金钢、合金钢、铸铁		合金钢、耐热钢		硬化钢	
MATERIAL	NON ALLOYED STEEL ALLOY STEEL CAST IRON		ALLOY STEEL HEAT RESISTANT STEEL		HARDENED STEEL	
HARDNESS	~HRc 30		HRc 30~HRc 45		HRc 45~HRc 55	
STRENGTH	~1000N/mm ²		~1000~1500N/mm ²		~1500~2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3	6255	140	4050	70	2970	50
4	5040	180	3240	90	2430	50
5	4320	220	2745	100	2115	70
6	3735	260	2385	130	1845	80
8	2835	190	1800	130	1440	80
10	1935	225	1530	130	1125	80
12	1620	180	1350	120	945	70
16	1620	190	990	90	670	50
20	1170	140	770	60	560	40

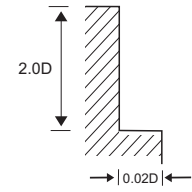
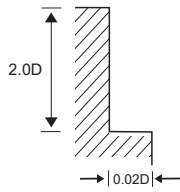


RPM=rev/mn.(转速/分钟)
FEED=mm/min.(进给量)
D= DIAMETER(刃部直径)

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EMA07 SERIES

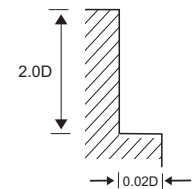
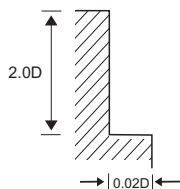
材质	非合金钢、合金钢、铸铁		合金钢、耐热钢		硬化钢	
MATERIAL	NON ALLOYED STEEL ALLOY STEEL CAST IRON		ALLOY STEEL HEAT RESISTANT STEEL		HARDENED STEEL	
HARDNESS	~HRc 30		HRc 30~HRc 45		HRc 45~HRc 55	
STRENGTH	~1000N/mm ²		~1000~1500N/mm ²		~1500~2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3	6255	180	4050	135	2970	90
4	5040	220	3240	150	2430	95
5	4320	225	2745	190	2115	11
6	3735	225	2385	190	1845	110
8	2835	240	1800	190	1440	110
10	1935	240	1530	190	1125	110
12	1620	190	1350	170	945	95
16	1620	170	990	125	670	80
20	1170	120	770	95	560	60



RPM=rev/mn.(转速/分钟)
FEED=mm/min.(进给量)
D= DIAMETER(刃部直径)

EMA09 SERIES

材质	非合金钢、合金钢、铸铁		合金钢、耐热钢		硬化钢	
MATERIAL	NON ALLOYED STEEL ALLOY STEEL CAST IRON		ALLOY STEEL HEAT RESISTANT STEEL		HARDENED STEEL	
HARDNESS	~HRc 30		HRc 30~HRc 45		HRc 45~HRc 55	
STRENGTH	~1000N/mm ²		~1000~1500N/mm ²		~1500~2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3	6255	180	4050	135	2970	90
4	5040	220	3240	150	2430	95
5	4320	225	2745	190	2115	11
6	3735	225	2385	190	1845	110
8	2835	240	1800	190	1440	110
10	1935	240	1530	190	1125	110
12	1620	190	1350	170	945	95
16	1620	170	990	125	670	80
20	1170	120	770	95	560	60

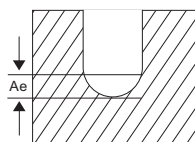


RPM=rev/mn.(转速/分钟)
FEED=mm/min.(进给量)
D= DIAMETER(刃部直径)

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EMA13 SERIES

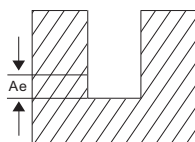
材质	非合金钢、合金钢、铸铁			合金钢、耐热钢			硬化钢		
MATERIAL	NON ALLOYED STEEL ALLOY STEEL CAST IRON			ALLOY STEEL HEAT RESISTANT STEEL			HARDENED STEEL		
HARDNESS	~HRc 30			HRc 30~HRc 45			HRc 45~HRc 55		
STRENGTH	~1000N/mm ²			~1000~1500N/mm ²			~1500~2000N/mm ²		
DIAMETER	RPM	FEED	Ae(mm)	RPM	FEED	Ae(mm)	RPM	FEED	Ae(mm)
0.4	29700-37800	200-440	0.007-0.018	21600-27000	90-340	0.007-0.018	13500-16200	30-90	0.004-0.008
0.5	29700-37800	200-440	0.009-0.022	21600-27000	90-340	0.009-0.022	13500-16200	30-90	0.004-0.008
0.6	29700-37800	250-570	0.011-0.026	21600-27000	110-440	0.11-0.026	13500-16200	40-110	0.005-0.011
0.7	29700-37800	250-570	0.012-0.031	21600-27000	110-440	0.012-0.031	13500-16200	40-110	0.006-0.013
0.8	25650-33300	280-630	0.014-0.035	18450-23400	120-480	0.014-0.035	11700-13950	45-130	0.007-0.015
0.9	23400-29700	280-720	0.030-0.060	17100-21600	160-540	0.030-0.060	10350-12150	50-130	0.008-0.016
1	21600-27000	280-810	0.045-0.090	14850-18900	190-590	0.045-0.090	9450-12150	70-130	0.009-0.018
1.2	17550-21600	280-890	0.055-0.100	12600-15300	190-590	0.055-0.100	8100-9900	70-130	0.010-0.022
1.4	15300-18900	280-890	0.063-0.125	10800-13500	190-590	0.060-0.125	6750-8550	70-130	0.012-0.025
1.5	13950-18000	280-890	0.070-0.135	9900-13050	190-590	0.070-0.135	6300-7650	70-130	0.014-0.028
1.6	13500-17100	280-890	0.175-0.145	9900-12150	190-590	0.075-0.145	5850-7650	70-130	0.015-0.030
1.8	12600-16200	280-890	0.080-0.160	9000-10800	190-590	0.080-0.160	5400-6750	70-130	0.016-0.032
2	11250-13950	280-890	0.090-0.180	8100-9900	190-590	0.090-0.180	4950-6300	70-130	0.018-0.035
2.5	9000-11700	280-890	0.112-0.235	6300-8100	190-590	0.112-0.235	4050-4950	70-130	0.022-0.045
3	7650-9450	280-890	0.135-0.0270	5400-6750	190-590	0.135-0.270	3150-4050	70-130	0.028-0.055
4	5850-7200	280-890	0.180-0.360	4050-4950	190-590	0.180-0.360	2430-3150	70-130	0.036-0.072
5	4500-5850	280-890	0.225-0.450	3150-4050	190-590	0.225-0.450	1980-2520	70-130	0.045-0.090
6	4500-4950	280-890	0.7270-0.540	2700-3600	190-590	0.270-0.540	1800-2700	70-130	0.054-0.108



RPM=rev/mn.(转速/分钟)
FEED=mm/min.(进给量)

EMA14 SERIES

材质	非合金钢、合金钢、铸铁			合金钢、耐热钢			硬化钢		
MATERIAL	NON ALLOYED STEEL ALLOY STEEL CAST IRON			ALLOY STEEL HEAT RESISTANT STEEL			HARDENED STEEL		
HARDNESS	~HRc 30			HRc 30~HRc 45			HRc 45~HRc 55		
STRENGTH	~1000N/mm ²			~1000~1500N/mm ²			~1500~2000N/mm ²		
DIAMETER	RPM	FEED	Ae(mm)	RPM	FEED	Ae(mm)	RPM	FEED	Ae(mm)
R0.2	29700-37800	180-490	0.018-0.036	210600-2700	90-270	0.018-0.036	13500-17100	90-180	0.004-0.007
R0.25	29700-37800	180-490	0.023-0.045	21600-27000	90-270	0.023-0.045	13500-17100	90-180	0.005-0.009
R0.3	29700-37800	225-630	0.027-0.054	210600-2700	110-350	0.027-0.054	13500-17100	110-225	0.005-0.011
R0.4	29700-37800	225-630	0.036-0.072	21600-27000	110-350	0.036-0.072	13500-17100	110-225	0.007-0.014
R0.5	27000-34200	250-690	0.045-0.090	19800-24300	130-390	0.045-0.090	12150-17100	130-250	0.009-0.018
R0.6	22500-28800	250-770	0.055-0.100	16200-20700	130-390	0.055-0.100	10350-13050	130-250	0.010-0.022
R0.7	19700-24300	250-770	0.062-0.125	14400-17100	130-390	0.062-0.125	900-11250	130-250	0.012-0.025
R0.75	18000-22500	250-770	0.070-0.135	13050-16650	130-390	0.070-0.135	8550-10350	130-250	0.014-0.028
R0.8	17100-22500	250-770	0.075-0.145	12600-15750	130-390	0.075-0.145	8100-9900	130-250	0.015-0.030
R0.9	16200-20700	250-770	0.080-0.160	11250-14400	130-390	0.080-0.160	7200-9000	130-250	0.016-0.032
R1	14400-18000	250-770	0.090-0.180	10350-13050	130-390	0.090-0.180	5750-8100	130-250	0.018-0.035
R1.5	9900-12600	250-770	0.135-0.270	6750-8550	130-390	0.135-0.270	4500-5400	130-250	0.028-0.055
R2	8100-10800	250-770	0.180-0.360	5490-7380	130-390	0.180-0.360	3600-4500	130-250	0.035-0.070
R2.5	6300-8100	250-770	0.225-0.450	4500-5850	130-390	0.225-0.450	2930-3690	130-250	0.044-0.088
R3	5400-7200	250-770	0.270-0.540	3600-4950	130-390	0.270-0.540	2250-3150	130-250	0.053-0.105



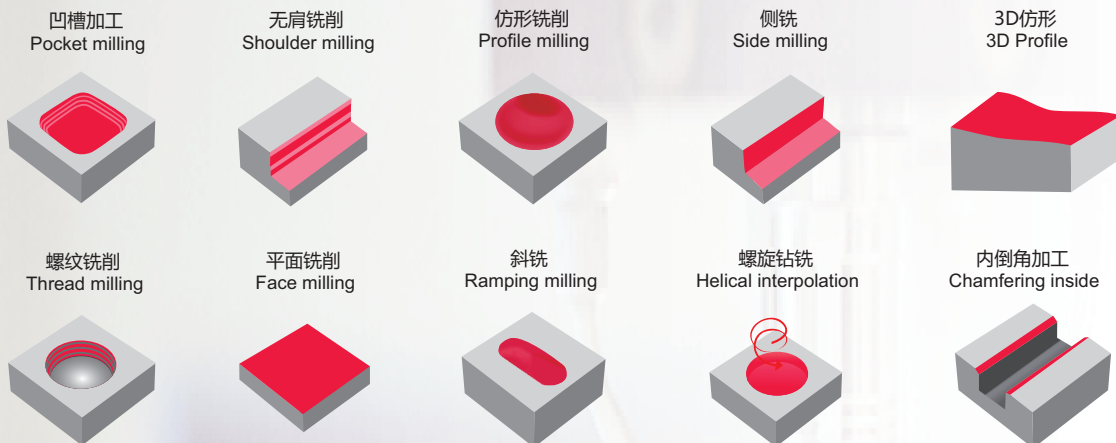
RPM=rev/mn.(转速/分钟)
FEED=mm/min.(进给量)

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加工形态 PROCESSING FORM

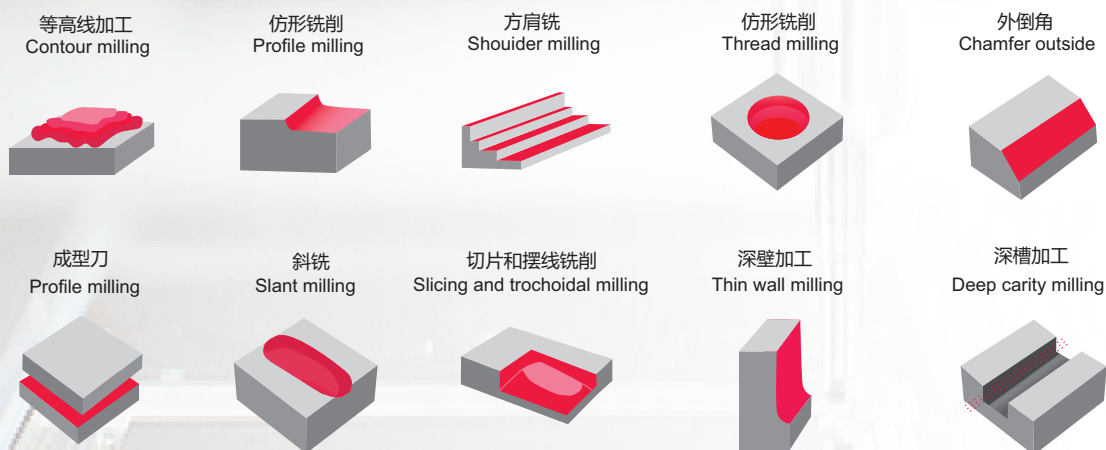
常见加工形态

Common processing forms



深度加工形态

Deep processing forms



涂层加工服务 COATING SERVICE

涂层种类与特性

PVD 涂层种类	涂层特点	涂层硬度 HV	涂层厚度 um	摩擦系数	耐热温度	涂层颜色	应用范围 Application range
TiN	单层 Single layer	2300	2-3	0.6	600	金黄 Golden	应用最普遍，具有高硬度高耐磨及抗氧化性；适合大多数切削刀具。 The most common application, with high hardness, high wear resistance and oxidation resistance; suitable for most cutting tools.
TiCN	单层 Single layer	2800	2-3	0.3	500	棕灰 Brown grey	具有较低的内应力，较高的韧性以及良好的润滑性能；适合要求较低的摩擦系数而高硬度的加工环境。 With lower internal stress, higher toughness and good lubricating performance; Suitable for lower requirements Friction coefficient and high hardness processing environment.
TiAlN	单层 Single layer	3100	2-3	0.3	750	紫蓝 Purple Blue	化学稳定性好，具有高热硬性，极好的抗氧化和耐磨性，适合干切削场合。 Good chemical stability, high thermal hardness, excellent oxidation resistance and wear resistance, suitable for dry cutting occasions.
CrN	单层 Single layer	1800	2-3	0.2	700	银灰 Silver grey	有着显著的强润滑性和耐高温特性，最适合铜类金属的切削刀具。 With remarkable strong lubricity and high temperature resistance, it is most suitable for cutting tools of copper metals.
DLC	单层 Single layer	2500	1-2	0.1-0.2	300	黑灰 Black gray	优良的耐磨、耐腐蚀性能，摩擦系数极低，与基本结合力强。 用于刀具时，通常以TiAlN为基体配合使用，用以加工有色金属，石墨等材料。 Excellent wear resistance and corrosion resistance, very low coefficient of friction, and strong binding force with the basic. When used for tools, TiAlN is usually used as a matrix to process non-ferrous metals, graphite and other materials.
超 A (AHNO)	多层 Multi layer	3100	2-3	0.3	800	蓝紫 Blue violet	AHNO 独特涂层配方，属于多层复合高铝涂层，具有高硬度，高耐磨性，较低的摩擦系数等优点。 在高温下稳定性强，特别适合高速切削场合。 AHNO's unique coating formula is a multi-layer composite high-aluminum coating, which has the advantages of high hardness, high wear resistance, and low coefficient of friction. Strong stability at high temperature, especially suitable for high-speed cutting occasions.

公差

ISO TOLERANCES

 $(\mu M=1/1000mm)$

	>1≤3	>3≤6	>6≤10	>10≤18	>18≤30	>30≤50	>50≤80	>80≤120
d8	-20 -34	-30 -48	-40 -62	-50 -77	-65 -98	-80 -119	-100 -146	-120 -174
d9	-20 -45	-30 -60	-40 -76	-50 -93	-65 -117	-80 -142	-100 -174	-120 -207
d11	-20 -80	-30 -105	-40 -130	-50 -160	-65 -195	-80 -240	-100 -290	-120 -340
e8	-14 -28	-20 -38	-25 -47	-32 -59	-40 -73	-50 -89	-60 -106	-72 -126
f10	-6 -46	-10 -58	-13 -71	-16 -86	-20 -104	-25 -125	-30 -150	-36 -176
h6	0 -6	0 -8	0 -9	0 -11	0 -13	0 -16	0 -19	0 -22
h7	0 -10	0 -12	0 -15	0 -18	0 -21	0 -25	0 -30	0 -35
h8	0 -14	0 -18	0 -22	0 -27	0 -33	0 -39	0 -46	0 -54
h10	0 -40	0 -48	0 -58	0 -70	0 -84	0 -100	0 -120	0 -140
h11	0 -60	0 -75	0 -90	0 -110	0 -130	0 -160	0 -190	0 -220
h12	0 -100	0 -120	0 -150	0 -180	0 -210	0 -250	0 -300	0 -350
h13	0 -140	0 -180	0 -220	0 -270	0 -330	0 -390	0 -460	0 -540
h14	0 -250	0 -300	0 -360	0 -430	0 -520	0 -620	0 -740	0 -870
js11	±30	±37.5	±45	±55	±65	±80	±95	±110
js12	±50	±60	±75	±90	±105	±125	±150	±175
js14	±125	±150	±180	±215	±260	±310	±370	±435
k8	+14 0	+18 0	+22 0	+27 0	+33 0	+39 0	+46 0	+54 0
k9	+25 0	+30 0	+36 0	+43 0	+52 0	+62 0	+74 0	+87 0
k10	+40 0	+48 0	+58 0	+70 0	+84 0	+100 0	+120 0	+140 0
k11	+60 0	+75 0	+90 0	+110 0	+130 0	+160 0	+190 0	+220 0
k12	+100 0	+120 0	+150 0	+180 0	+210 0	+250 0	+300 0	+350 0
k14	+250 0	+300 0	+360 0	+430 0	+520 0	+620 0	+740 0	+870 0

问题解决指南

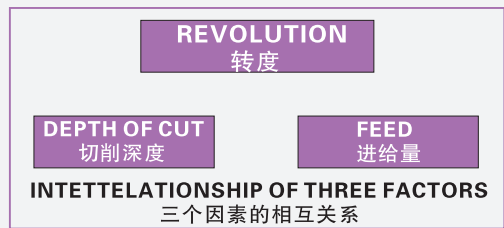
TROUBLE SHOOTING IN MILLING

具体问题 SPECIFIC PROBLEM	原因 CAUSE	解决方法 SOLUTION
崩刃Chipping	进给太快 Feed too fast	减慢到适合的进给速度 Slow down to proper feed
	切削开始时进给太快 Feed too fast on first cut	切削开始时减慢进给速度 Slow down on first bite
	机床和刀柄刚性不足 Not enough rigidity of machine tool&holder	用刚性好的机床和刀柄 Change rigid machine tool or holder
	夹紧松(刀具) Loose hole(tool)	夹紧 Correct to tight holding
	夹紧松(工件) Loose hole(work oiece)	夹紧 Correct to tight holding
	刚性不足(刀具) Lack of rigidity(too slow)	用允许的最短的刀，柄部夹的深一点 Use shortest end mikk available hold shank deeper
		试一下顺铣 Try down cut
切削刃太尖 Teeth too fast	改变脆弱的切削刃角，一次刃 Change weaker cutting angle, primary relie	
磨损Wear	速度太快 Speed too fas	减慢，加足够的冷却液 low down, use enough coolant
	硬化材料 Hard material	用高级刀具，工具材料，增加表面处理方式 Use higher grade, tool material, add surfacetreatment
	切屑粘附 Biting chips	改变进给速度以改变切屑大小或用冷却油或鼓风清理切屑 Change feed speed to change chip size or clear chipswith coolant or air blow
	进给速度不当(太低) Improper feed speed (too slow)	增加进给速度 Increase feed speed
		试一下顺铣 Try down cut
	切削角度不合适 Improper cutting snngle	改变为适当的切削角度 Change to correct cutting angle
一次后角太小 Too small primary relief angle	改变成较大的后角 Change to larger relief angle	
破坏Breakage	进给太快 Feed too fast	减慢进给速度 Slow down feed
	切削量太大 Too larger cutting amount	用较小的每刃切削量 Make smaller cutting amount per teeth
	刃长和全长太大 Tooling flute length or ling overall	柄部夹的深一点，用短的刀，试一下顺铣 length Hold shank deeper, use shorter endmill
	磨磨损太大 Too much wear	在初期再研 Regrind at earlier stage
振纹Chattering	进给和切削速度太快 Feed and speed too fast	修正进给和切削速度 Correct feed and speed
	刚性不足(机床和刀柄) Not enough rigidity (machine &holder)	用较好的机床刀柄或改变切削条件 Use better machine tool or holder or change condition
	后角后角太大 Too much relief angle	该变成较小的后角 Change to smaller relief angle
		加工刃带(用油石磨一次刃) Putmargin(touvh primary with oil stone)
夹紧松(工件) Loose hold (woke piece)	夹紧工件 Hold work piece tight	

SPEED & FEED CALCULATION

考虑速度&进给量

Speed, feed and depth of cut are the most important factors to consider for best results in milling. Improper feeds and speeds often cause low production, poor work quality and damage to the cutter. 速度, 进给量和切削深度是决定切削效果最重要的因素. 不合适的进给量和速度常常导致生产量降低, 工作质量差和刀具的损坏.



Use Lower Speed Ranges For	使用低速度范围用于
Hard materials	高硬度材料
Tough materials	任性大的材料
Abrasive materials	难切削材料
Heavy cuts	重切削
Minimum tool wear	最小的刀具磨损
Maximum cutter life	最长的刀具寿命

Use Higher Speed Ranges For	使用高速度范围用于
Softer materials	软质材料
Better finishes	较好的表面质量
Smaller diameter cutters	较小的刀具外径
Light cuts	轻切削
Frail work pieces or set-ups	脆性大的工作
Hand feed operations	手动操作
Maximum production rates	最大的加工效率
Non-metallics	非金属材料

Use Higher Feeds For	使用高进给量用于
Heavy, roughing cuts	重, 粗切削
Rigid set-ups	刚性结构
Easy-to-machine work materials	易加工材料
Rugged cutters	粗加工刀具
Slab milling cuts	平面切削
Low tensile strength materials	低抗拉强度材料
Coarse tooth cutters	粗齿铣刀

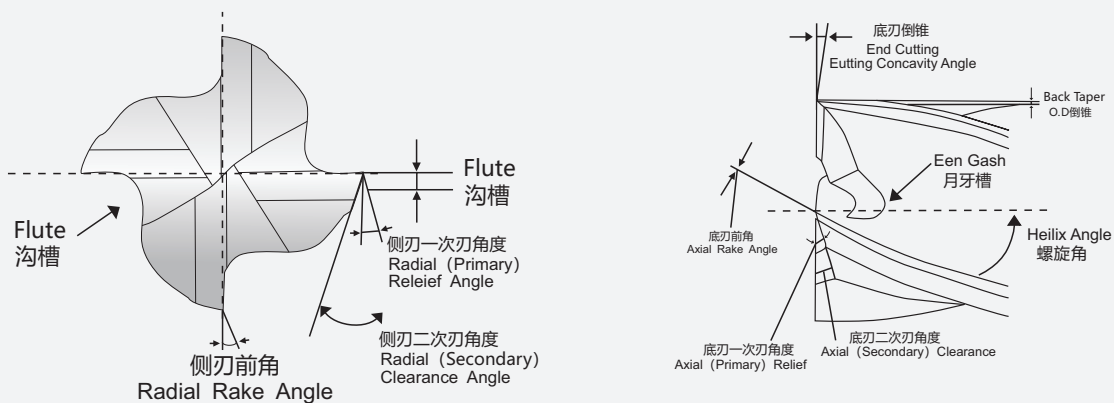
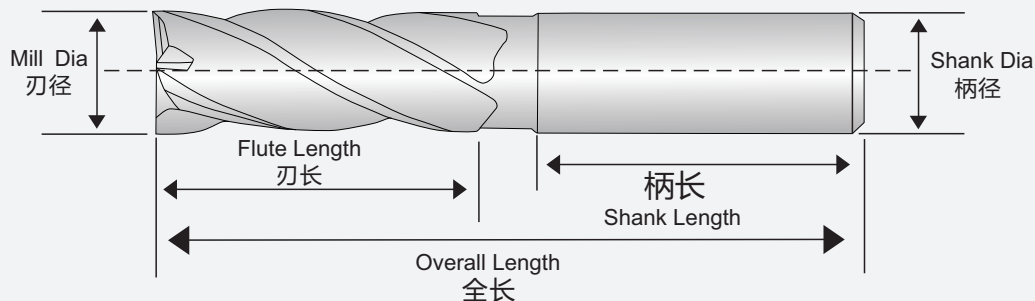
Use Lower Feeds For	使用低进给量用于
Light, and finishing cuts	轻加工, 精切削
Frail set-ups	脆性结构
Hard to machine work materials	难加工材料
Frail and small cutters	细小刀具
Deep slots	深立槽加工
High tensile strength materials	高抗拉强度材料
Fine tooth cutters	精加工刀具

SPEED & FEED CALCULATIONS FOR MILLING CUTTERS AND OTHER ROTATING TOOLS

TO FIND	HAVING	FORMULA
Surface (or Periphery) Speed in meter Per Minute = S.F.M	Diameter of Tool in millimeters = D Revolution per Minute = R. P. M.	$V = \frac{D \times 3.146 \times R.P.M.}{D \times 3.146}$
Revolutions per Minute = R. P. M	Surface Speed in meter Minute = S. F. M. Diameter of Tool in millimeters = D	$R. P. M = \frac{V \times 1.000}{D \times 3.146}$
Feed per Revolution in millimeters = F.M.	Feed in millimeters per Minute = F.M Revolution per Minute = R. P. M.	$F.R = \frac{F.M}{R.P.M}$
Feed in millimeters per Minute = F.M.	Feed in millimeters per Minute = F.M Revolution per Minute = R. P. M.	$F.M = T \times R.P. M.$
Feed in millimeters per Minute = T.M.	Number of teeth tool = T Revolution per Minute = R. P. M.	$F.M = T \times R.P. M.$
Feed per tooth = F.T.	Number of teeth tool = T Feed per Revolution in millimeters = R. P. M.	$F.T = \frac{F.M}{T}$
Feed per tooth = F.T.	Number of teeth tool = T Feed in millimeters per Minute = F.M Speed in Revolution per Minute = R. P. M.	$F.T = \frac{F.M}{T \times R.P. M.}$

NAMES OF END MILL PARTS

铣刀各部分的名称



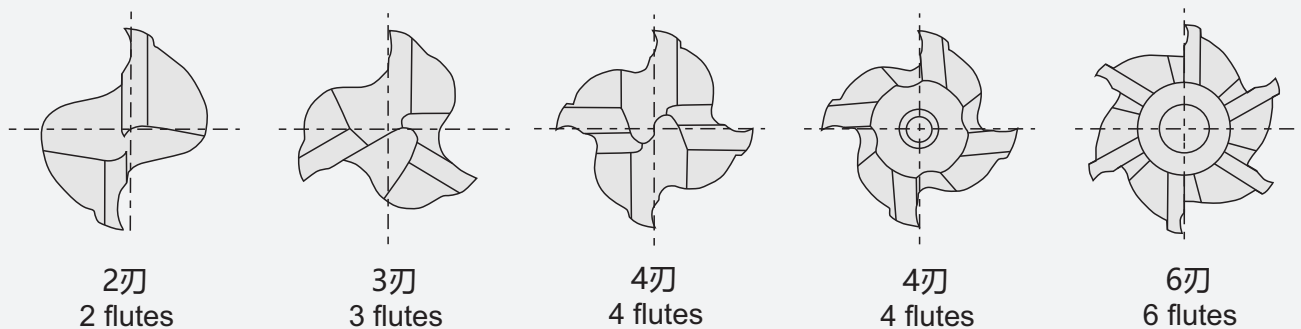
FULTE OF END MILL

铣刀刃数 (Flute)

切削刃数是影响铣刀性能的重要因素之一。

一般来讲刃数少、容屑槽大的话切屑的排出可以较顺畅。但是同时，工具的横截面面积较小，刀体刚性较低，切削中容易产生刀体弯曲。相反，刃数增多工具横截面面积增大的话刀体刚性会提高，但容屑槽会变小，切屑收容力会降低，容易导致切屑堵塞。

The number of flutes should be determined by the work material, dimensions of the work piece and milling conditions. In general, an end mill with a small number of flutes and large chip room is used for roughing, and an end mill with a large number of flutes is used for finishing.

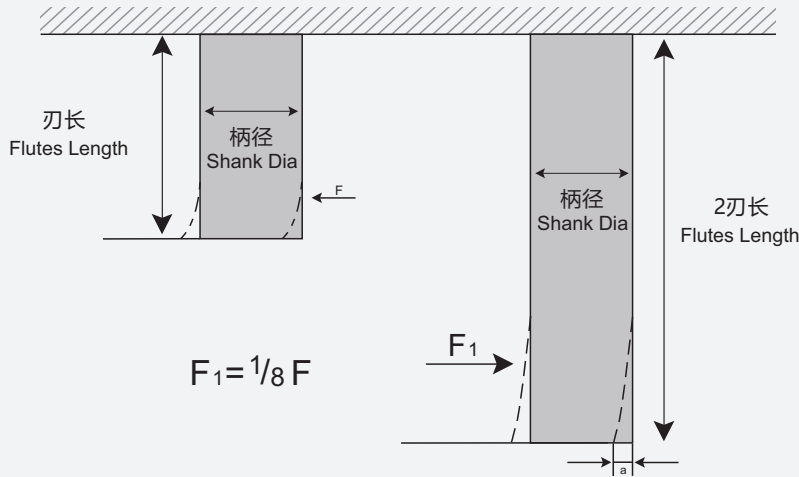


FULTE LENGTH OF END MILL

铣刀刃长 (Flute Length)

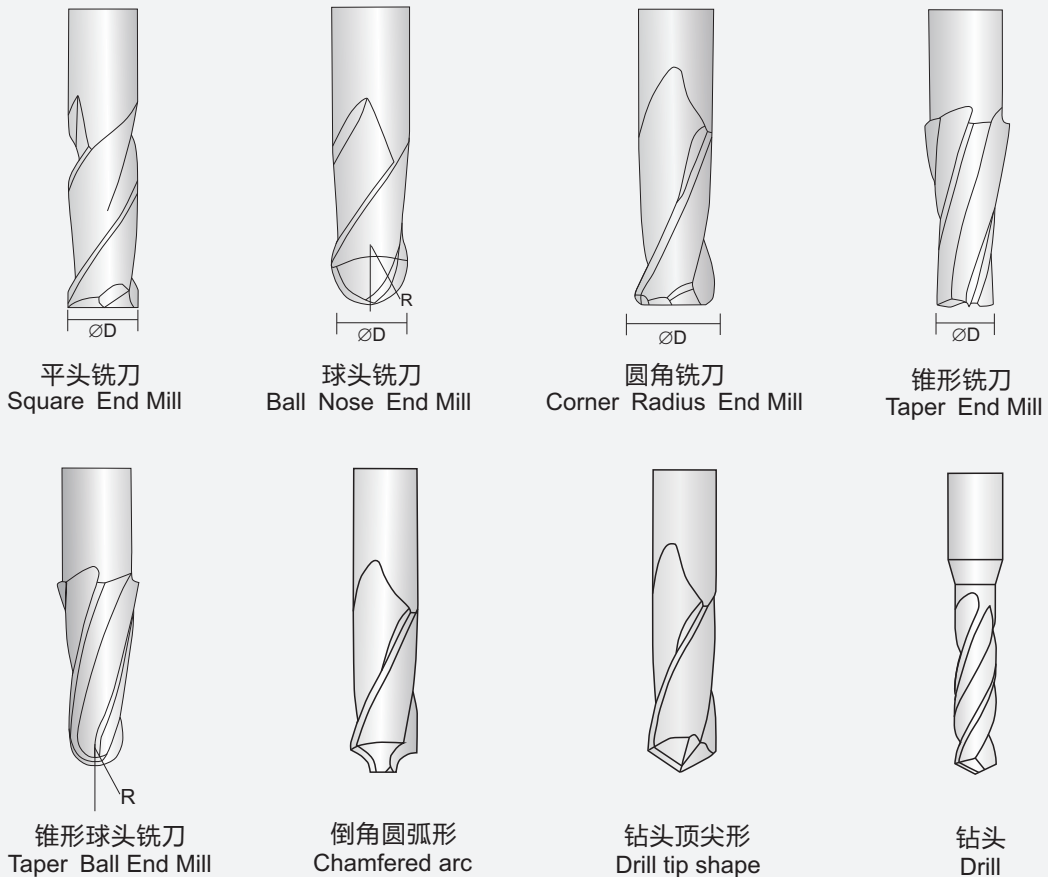
刃长越短刀体刚性越大，切削性能也越好。铣刀的刚性与刃长（悬长）的3次方成反比。因此，刃长（悬长）如果增大为2倍，刀体刚性就会降到原来的1/8。铣刀是径向使用的工具，这一点非常重要。铣刀的刃长如果大大超过了必要的切削长度，那么会对铣刀的性能有负面影响。请按照加工内容选择最适合的刀具。

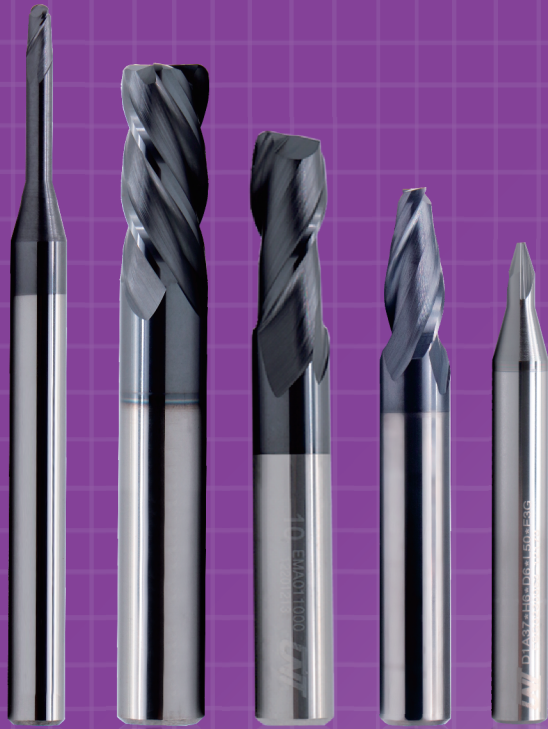
The shorter the end mill, the smaller the deflection and the stronger the rigidity. Because rigidity varies in proportion to length of cut by a factor to the power of 3 (for example, when the length of cut doubles, the rigidity decreases to 1/8), it is necessary to keep the length of cut as short as possible.



TYPE OF END MILL

铣刀种类





CARBIDE FOR MULTI PURPOSE

SUS316, 316L, heat-treated 45 # steel, P20, 65Mn, 718, NAK80, S136 and other die steel, carbon steel, cast iron materials

SUS316、316L、热处理后的45#钢、P20、65Mn、718、NAK80、S136等模具钢、碳素钢、铸铁材料

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