NS TOOL 「匠」心创先

日進工具株式会社

NS TOOL
ENDMILL CATALOG
21



2024.9—

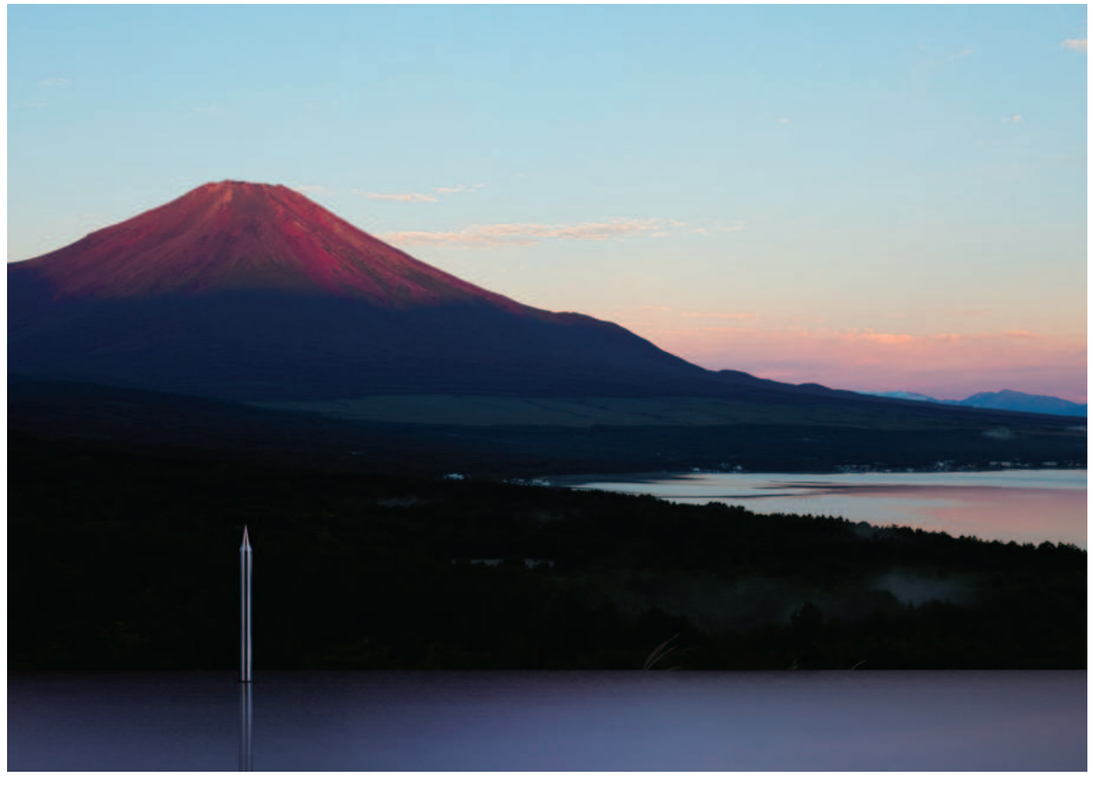
NS TOOL

“匠”心创先

日进刀具素来以“为制造业的明天贡献出自己的一份力”为己任。
作为日本超硬小径铣刀的龙头企业，
不断制造出满足客户和社会需求的高附加值产品。
我们将坚持不懈地挑战现有技术水平，
不断开发领先时代的革命性解决方案。
为未来和世界提供最尖端前沿的技术、品质和服务。
日进刀具将把无止境的制造梦想和可能性付诸现实。

For Crafting Tomorrow

In any time of period, we have always been proud to support Japan's *monozukuri* (manufacturing) and the commitment has been our basis since foundation.
As a leading company specialized in small-diameter cemented carbide end mills, NS TOOL manufactures high value-added products by responding to needs and expectations of customers and society.
NS TOOL strives constantly to enhance its own technological standards and create cutting-edge solutions.
Wishing for delivering unseen innovation in technology, quality and service for the future and the world, we, NS TOOL, will open up the infinite dreams and possibilities of *monozukuri*.



制造品质精益求精

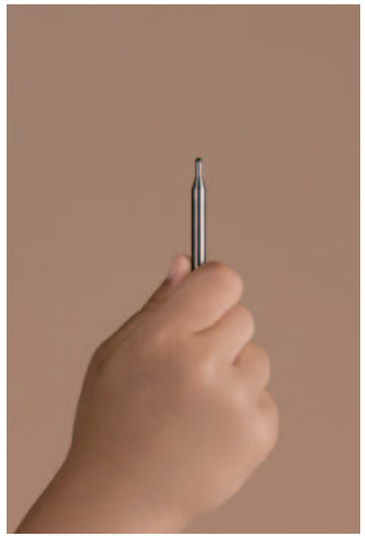
Particular about quality in Monozukuri

Japan's Monozukuri

作为小径铣刀的龙头企业，通过提供高附加值产品实现与社会共存及可持续发展的目标。

As a leading manufacturer of small diameter end mills, we aim to achieve sustainable growth in harmony with society by providing high value-added products that have never been seen before.
We aim to coexist with society and achieve sustainable growth.





志在成为创造未来的刀具

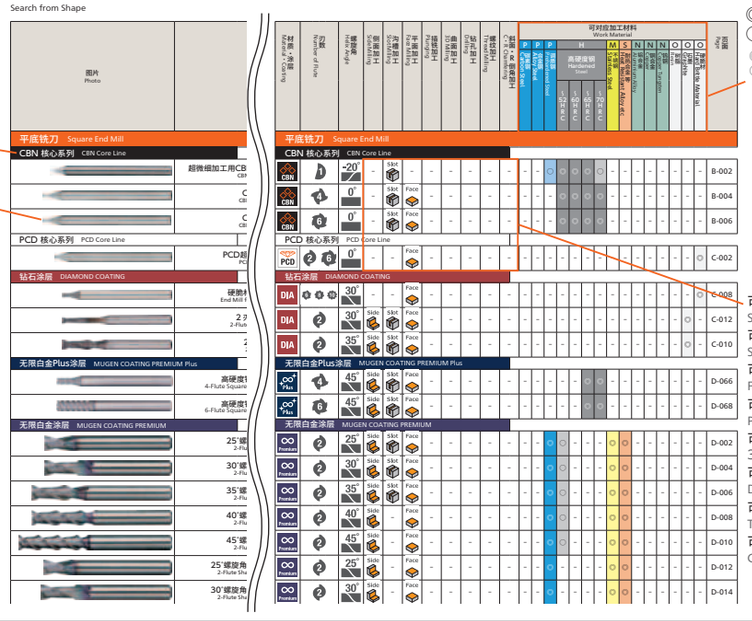
Be a TOOL for our future

综合目录的使用方法
How to use NS catalog

目录页
Index page

用◎、○标记可加工的材料
Machinable indication by ◎ , ○

按［形状］搜索
Search from Shape



◎ 第一推荐
○ 第二推荐

◎ Strongly recommended
○ Recommended

系列名称
Name of Series

外观图片
Tool image

可进行侧面加工…Side
Side milling
可进行沟槽加工…Slot
Slotting
可进行平面加工…Face
Face milling
可进行插铣加工…Plunge
Plunging
可进行曲面加工…3D
3D milling
可进行钻孔加工…Drill
Drilling
可进行螺纹切削加工…Thread
Thread Milling
可进行倒角加工…C・R
Chamfering

产品页
Product page



刀刃形状
Shape of cutting edge

用◎、○标记可对应的材料
Machinable indication by ◎ , ○ .

刀具材质
Material
刃数
Number of Flute
螺旋角
Helix Angle
尖角造型
Sharp Edge
球头公差
R Tolerance
柄径公差
Shank Tolerance
Side…可进行侧面加工
Side milling
Slot…可进行沟槽加工
Slotting
Face…可进行平面加工
Face milling
Plunge…可进行插铣加工
Plunging
3D…可进行曲面加工
3D milling
可进行钻孔加工…Drill
Drilling
可进行螺纹切削加工…Thread
Thread Milling
可进行倒角加工…C・R
Chamfering

标准图
Tool drawing

规格尺寸
Standard size

切削参数参考表页
Recommended milling condition page

MSBH230

切削参数参考表
Recommended Milling Conditions

① 可对应加工材料
Select work material

② 选择使用刀具规格
Select tool size

加工材料 Work Material	高硬度钢 Hardened Steels SKD61・STAVAX・HPM38(～52HRC)				高硬度钢 Hardened Steels SKD11(～62HRC)				高速钢 High Speed Steels SKH(～65HRC)			
(R)球头半径 Radius	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min⁻¹	ap mm	ae mm	mm/min	min⁻¹	ap mm	ae mm	mm/min	min⁻¹
0.05	0.005	0.005	150	40,000	0.003	0.005	100	40,000	0.002	0.005	60	40,000
0.075	0.005	0.005	180	40,000	0.003	0.005	150	40,000	0.002	0.005	100	40,000
0.1	0.01	0.02	360	40,000	0.01	0.01	320	40,000	0.003	0.005	240	40,000
0.15	0.01	0.03	420	40,000	0.01	0.02	360	40,000	0.005	0.01	300	40,000
0.2	0.02	0.06	1,000	40,000	0.02	0.05	820	40,000	0.01	0.02	480	40,000
0.25	0.03	0.07	1,200	40,000	0.025	0.05	1,000	40,000	0.015	0.03	600	40,000
0.3	0.05	0.1	1,600	40,000	0.03	0.06	1,200	40,000	0.02	0.05	720	30,000
0.4	0.1	0.15	2,200	40,000	0.07	0.1	1,800	40,000	0.05	0.1	1,200	30,000
0.5	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000
0.75	0.15	0.3	3,000	30,000	0.1	0.3	2,500	30,000	0.1	0.2	2,000	25,000
1	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000
1.25	0.2	0.6	3,000	25,000	0.2	0.5	2,500	20,000	0.15	0.3	2,000	16,000
1.5	0.2	0.8	3,000	20,000	0.2	0.6	2,500	18,000	0.2	0.5	2,000	14,000
2	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000
2.5	0.3	1.5	3,000	18,000	0.2	1.2	2,500	12,000	0.2	0.7	2,000	9,200
3	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
4	0.5	2	2,500	10,000	0.4	1.2	1,800	7,000	0.3	1	1,200	5,000
5	0.7	2.5	2,000	7,000	0.5	1.5	1,500	5,000	0.4	1.2	1,000	4,000
6	1	3	1,500	5,000	0.6	2	1,200	4,000	0.5	1.5	800	3,000

备 注 Notes

※1 切深量的 ap表示轴向切深量，ae表示步距量。
※2 建议使用油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※5 请根据需要控制刀具的伸出量。
※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 We recommend using oil mist coolant.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of depth of cut and rigidity of machine.
※5 Length of tool overhang must be as short as possible.

全刃长 Full Cutting Length
球头 Ball
涂层 Coating
P 调质钢 Prehardened Steel

③ 仅供参考的切削参数
It is a reference of cutting conditions

④ 请确认备注内容
Please check notes

备注栏的共同内容
Common notes for all products

说明 Explanation	本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。 Recommended cutting conditions indicate just for reference. It should be adjusted according to milling shape and machine tool.
事前准备 Preparation	如果担心加工材料和铣刀会干涉时，请务必实际测量进行确认。 Tool measurement required. In order to avoid interference to the work material.
	建议加工前充分考虑主轴的伸缩量和机床的特性。 Recommend to assess the machine characters, such as expansion of the spindle and others before using the tool.
	建议采用顺铣加工方式（螺纹铣刀除外）。 Down-cut is recommended (except Thread mill).
	请尽量抑制刀具的偏摆量（可能的话，请确认所用主轴转速下的动态偏摆精度）。 Minimize chucking runout. (Recommend to measure actual runout at activated spindle speed.)
	请使用刚性较大的铣刀刀柄和机床。 Use a rigid machine and holder.
	拆装刀具或者测量刀具长度时请务必小心。 Extra care of handling when tool setting and measuring.
	请根据需要控制刀具的伸出量在最短状态（不干涉的前提下）。 Minimize a possible tool overhang length.
	请在考虑加工材料及加工形状等的基础上，选用合适的切削油。 Select a cutting fluid appropriate to work material, milling shape and machining content.
调整参数 Milling condition adjustment	加工 R 角等负载大的部位或复杂的形状时，请特别注意参数设定和刀路轨迹等。 When cutting high load sections or complex shapes, it requires attention to condition setting and tool path.
	如果刀具发生崩刃，或者需要高精度加工时，请降低进给速度。 Reduce the feed for high accurate machining to avoid breakage of work piece.
	发生振刀或加工声音较吵等问题时，请以相同的比率降低主轴转速和进给速度。 此外，机床主轴转速不足时，也请以相同的比率降低。 Reduce both spindle speed and feed at same rate for chattering, and also for insufficient spindle speed of a machine.
	请根据机床刚性和工件的夹持状态等调整切削参数。 实际加工时请根据加工形状、目的以及所用的机床等调整切削参数。 Adjust milling condition conforming with machine rigidity and clamping condition. Final milling conditions are subject to machining profile, purpose and machine status.
	主轴转速和进给速度会根据刀具伸出量和切深量的不同时，会有大幅度变更的可能。 Spindle speed and feed are changed according to overhang length and depth of cut.
	精加工时，请根据要求精度等调整切削参数。 For finishing process, please adjust to the optimized condition to meet the requirement of machining accuracy.
	加工过程中切屑卡入、缠绕可能会有损加工面品质，因此请注意排屑。 Care for chip removal to avoid being stuck or caught during process for better surface quality.

NS Connect 的介绍
Information of NS Connect

NS TOOL × Connect For Crafting Tomorrow

产品信息
Connect to information



请扫一扫刀盒背面的二维码。
From 2D code on back of product case

可查看产品信息（仅特定产品可对应）
Always browse updated cloud data information all at once easily（From some products）

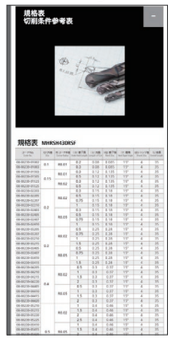
产品的特点
Feature of Product



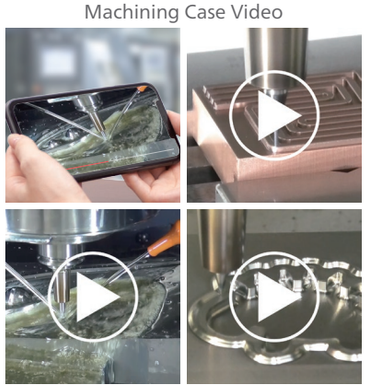
加工视频等
Video etc.



规格和切削参数
Size and Milling Conditions



加工案例视频
Machining Case Video



其它
Others

网站 Corporate Web Site



咨询邮件 Contact Us



宣传册资讯 Product Leaflet



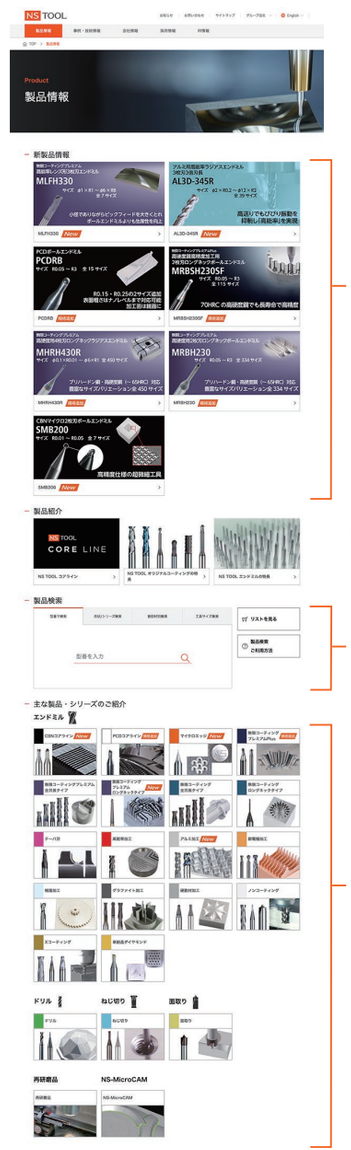
联系电话 Contact Us by Phone

X（原 Twitter） X (Former Twitter)

Facebook

网站信息介绍
Information of NS TOOL web site

产品信息页
Product information



新产品信息
New product information

产品搜索
Product search

按型号搜索
Model
按形状 / 系列搜索
Shape/Series
按加工材料搜索
Work material
按刀具规格搜索
Size

产品 / 系列介绍
Product / Series information

日进工具　产品信息

详情请扫描这里
For details

加工案例页
Machining case



按加工材料分类
Work material

按加工领域分类
Machining category

加工视频
With video

日进工具　案例和技术

详情请扫描这里
For details

SNS
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中文手机官网

微信公众号

图标的识别方法 Description of Icons

材质 Material

表示所使用铣刀的材质
Material of end mill

- SMG — 极超微粒硬质合金 Super Micro Grain Carbide
- MG — 超微粒子硬质合金 Micro Grain Carbide
- WC — 硬质合金 Regular Grain Carbide
- CBN — CBN（立方氮化硼） Cubic Boron Nitride
- PCD — PCD Polycrystalline Diamond

表面处理 Coating

表示刃部的涂层
Coating on cutting edge

- Plus — 无限白金Plus涂层 MUGEN COATING PREMIUM Plus
- Premium — 无限白金涂层 MUGEN COATING PREMIUM
- ∞ — 无限涂层 MUGEN COATING
- Micro — 无限微细涂层 MUGEN MICRO COATING
- DLC — DLC涂层 DLC COATING
- DIA — 钻石涂层 DIAMOND COATING

刃数 Number of Flute

表示铣刀的刃数
Flute number of end mill

- 1 — 1刃 1-Flute
- 2 — 2刃 2-Flute
- 3 — 3刃 3-Flute
- 4 — 4刃 4-Flute
- 6 — 6刃 6-Flute
- 8 — 8刃 8-Flute
- 10 — 10刃 10-Flute

螺旋角 Helix Angle

表示刃部的螺旋角
Helix angle of flute

- -20° — 左20° Left 20°
- -11° — 左11° Left 11°
- 0° — 0°
- 12° — 12°
- 20° — 20°
- 25° — 25°
- 30° — 30°
- 35° — 35°
- 35°/38° — 35°/38°
- 37.5° — 37.5°
- 40° — 40°
- 40°/42° — 40°/42°
- 45° — 45°

角部形状 Corner Shape

表示刃部尖角的形状
Corner profile of cutting edge

- 90° — 尖角造型 Sharp Edge

加工用途 Applications

表示主要可对应的加工
Cutting shape

- Side — 侧面加工 Side milling
- Slot — 沟槽加工 Slotting
- 3D — 曲面加工 3D milling
- Face — 平面加工 Face milling
- Plunge — 插铣加工 Plunging
- Flat Drill — 钻孔加工（底部平面） Drilling (Flat Bottom Surface)
- Drill — 钻孔加工 Drilling
- Thread — 螺纹加工 Thread milling
- C — 斜面加工 C Chamfering
- R — R倒角加工 R Chamfering

可对应的硬度 Cutting Possibility of Work Material Hardness

表示高硬度材料的可加工硬度
Machinable hardness of high hard materials

- ≦40 HRC — 可对应的硬度～40HRC Possible to cut up to 40HRC
- ≦50 HRC — 可对应的硬度～50HRC Possible to cut up to 50HRC
- ≦52 HRC — 可对应的硬度～52HRC Possible to cut up to 52HRC
- ≦55 HRC — 可对应的硬度～55HRC Possible to cut up to 55HRC
- ≦65 HRC — 可对应的硬度～65HRC Possible to cut up to 65HRC
- ≦70 HRC — 可对应的硬度～70HRC Possible to cut up to 70HRC
- ≦92.5 HRA — 可对应的硬度～92.5HRA Possible to cut up to 92.5HRA

图标的识别方法 Description of Icons

公差 柄径 Tolerance Shank Dia.

表示铣刀的柄径公差
Tolerance of shank diameter

- φd -0.001 -0.003 — φd - 0.001 - 0.003
- φd h3 — φd h3
- φd h4 — φd h4
- φd h5 — φd h5

公差 球头半径 Tolerance Ball Radius

表示球头铣刀的R公差
Tolerance of R for ball end mill

- R ±0.002 — R ±0.002
- R ±0.003 — R ±0.003
- R ±0.004 — R ±0.004
- R ±0.005 — R ±0.005

公差 圆鼻R半径 Tolerance Corner Radius

表示圆鼻铣刀的R公差
Tolerance of corner R for corner radius end mill

- Corner R ±0.002 — R角 ±0.002 Corner Radius
- Corner R ±0.003 — R角 ±0.003 Corner Radius
- Corner R ±0.005 — R角 ±0.005 Corner Radius

NS Connect

可通过刀盒背面的二维码查看各种信息。
Always browse updated cloud data information all from 2D code on back of product case

- Connect — 可查看产品的特点、规格表、切削参数表、加工案例视频等。 Always browse feature of products, standard size table, recommended milling conditions and machining case video.



新产品的介绍 New Products

New 超微细加工用 CBN2刃球头铣刀
CBN Micro 2-Flute Ball End Mill

SMB200



R0.01～R0.05

共有7种规格 Total 7 Sizes

●从R0.01起采用2刃造型可较以往实现更高效率加工。通过最大限度活用CBN的材料特点来实现锋利的刀刃。
●Adopting 2-flute shape from R0.01 enables more efficient machining than conventional product. Realized sharp edge by maximizing features of CBN.

Page ▶ B-010

增加规格 PCD球头铣刀
PCD Ball End Mill

PCDRB



R0.05～R3

共有15种规格 Total 15 Sizes

●切削加工成各种形状，大幅缩短研磨时间。
●Polishing time is greatly reduced by machining into various shape.

Page ▶ C-004

增加规格 无限白金Plus涂层 高硬度钢材高精度加工用2刃长颈球头铣刀可对应热缩刀柄的短柄造型
MUGEN COATING PREMIUM Plus 2-Flute Long Neck Ball End Mill with Short Shank for Hardened Steel and High Accuracy Cutting

MRBSH230SF



R0.05～R3

共有 115种规格 Total 115 Sizes

●对70HRC的高硬度钢也可实现长寿命和稳定的切削性能。新开发的无限白金涂层Plus提高了耐氧化性和耐磨损性。采用耐崩损性更强的新材质和可减小切削阻力的切刃形状。
●Realize stable cutting performance even for 70 HRC hardened steels. Developed new MUGEN COATING PREMIUM Plus to upgrade oxidation resistance and abration resistance. Adopt optimized new tool material and tool design to reduce cutting load.

Page ▶ E-026

增加规格 无限白金Plus涂层 高硬度钢材高效率加工用小径3刃长颈球头铣刀
MUGEN COATING PREMIUM Plus High Efficient 3-Flute Small-Diameter Long Neck Ball End Mill for Hardened Steel

MRBSH330



R0.1～R3

共有 31种规格 Total 31 Sizes

●优化了中心刃造型，可实现高切深量和高进给的高效率3刃球头铣刀。对60 ～ 70HRC的高硬度钢也兼具锋利度和耐磨损性，可实现长寿命、高效率加工。
●High-eciency 3-flute ball end mill optimizes a shape of central edge and enables high depth of cutting. Even hardened steel of 60 to 70HRC can be machining with long tool life and high eciency.

Page ▶ E-032

增加规格 无限白金涂层 高硬度钢材高效率椭圆弧形3刃球头铣刀
MUGEN COATING PREMIUM High Efficiency Lens Form 3-Flute End Mill

MRBH230



R0.05～R3

共有 334种规格 Total 334 Sizes

●采用高硬度钢用无限白金涂层与独特的刀刃形状，耐崩刃性优异并可有效抑制振刀，从而提高了加工面的加工精度。可对应～65HRC的高硬度钢。
●MUGEN COATING PREMIUM for hardened steel and unique cutting edge realize excellent chipping resistance and suppress chattering to improve finishing surface. Support hardened steels up to 65HRC.

Page ▶ E-034

New 无限白金涂层 高效率椭圆弧形3刃球头铣刀
MUGEN COATING PREMIUM High Efficiency Lens Form 3-Flute End Mill

MLFH330



φ1×R1～φ6×R8

共有 7种规格 Total 7 Sizes

●即使是小径铣刀，也能设定大的步距量相比普通球头铣刀更具备生产性能的椭圆弧形3刃球头铣刀。
●Realizes large pick feed even with small size diameter. Specialized lens form 3-flute end mill improves productivity compared to ball end mills.

Page ▶ E-052

增加规格 无限白金Plus涂层 高硬度钢材高精度加工用4刃长颈圆鼻铣刀
MUGEN COATING PREMIUM Plus 4-Flute Long Neck Corner Radius End Mill with Short Shank for Hardened Steel and High Accuracy Cutting

MHRSH430RSF



φ0.1×R0.01～φ6×R1

共有 205 种规格 Total 205 Sizes

●规格标准扩大到φ0.1～φ6，提高表面粗糙度的刀刃形状和高精度角部R，可改善高硬度钢的精加工精度。
●Lineup extended from φ0.1 to φ6, combining specialized tool design and high accuracy corner R enhance finishing performance on hardened steels.

Page ▶ F-016

增加规格 无限白金涂层 高硬度钢材4刃长颈圆鼻铣刀
MUGEN COATING PREMIUM 4-Flute Long Neck Corner Radius End Mill for Hardened Steel

MHRH430R



φ0.1×R0.01～φ6×R1

共有 450 种规格 Total 450 Sizes

●采用高硬度钢用的无限白金涂层与新刀具设计提升耐崩损性、抑制振刀现象进而提升精加工面品质。可进行高效率加工的4刃造型铣刀。
●MUGEN COATING PREMIUM for hardened steels and unique new design excel in chippingprevention and resolve chattering to realize excellent finished surface. 4-flute end mill for high efficiency machining.

Page ▶ F-030

新产品的介绍 New Products

New 铝合金用高效率圆鼻铣刀3刃3倍刃长
High Efficient 3-Flute Corner Radius End Mill for Aluminium L/D=3

AL3D-345R



ϕ2×R0.2～ϕ12×R2

共有 39 种规格 Total 39 Sizes

●NS TOOL的AL系列在任何条件下都可实现稳定的高效率加工。即使高进给也能抑制振刀，实现“高效率”加工。采用3刃形，实现高效率加工！

●AL-series realized a stable and high efficient machining. Achieves high efficiency by suppressing chattering even at high feed machining. Realized high efficiency machining by adopting 3-flutes.

Page ▶ F-014

1

以使用目的搜索产品

根据使用目的查找产品

Search

按[形状]搜索 A-002
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按［形状］搜索
Search from Shape

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
平底铣刀 Square End Mill			
CBN 核心系列 CBN Core Line			
	超微细加工用CBN平底铣刀“Micro Edge Z” CBN “MICRO EDGE Z”	SMEZ120	ϕ0.03 ～ ϕ0.1
	CBN平底铣刀 CBN Square End Mill	SSE400	ϕ0.1
	CBN平底铣刀 CBN Square End Mill	SSE600	ϕ0.2 ～ ϕ1
PCD 核心系列 PCD Core Line			
	PCD超精加工用平底铣刀 PCD Square End Mill	PCDSE	ϕ0.1 ～ ϕ1
钻石涂层 DIAMOND COATING			
	硬脆材加工用平底铣刀 End Mill for Hard Brittle Materials	DCMS	ϕ0.3 ～ ϕ2
	2 刃长颈平底铣刀 2-Flute Long Neck End Mill	DCHR230	ϕ0.5 ～ ϕ6
	2 刃平底铣刀 2-Flute End Mill	DCSE235	ϕ0.5 ～ ϕ6
无限白金Plus涂层 MUGEN COATING PREMIUM Plus			
	高硬度钢材用4刃平底铣刀 4-Flute Square End Mill for Hardened Steel	MHDSH445	ϕ1 ～ ϕ4
	高硬度钢材用6刃平底铣刀 6-Flute Square End Mill for Hardened Steel	MHDSH645	ϕ5 ～ ϕ6
无限白金涂层 MUGEN COATING PREMIUM			
	25°螺旋角2刃平底铣刀 2-Flute LEAD25 End Mill	MXH225	ϕ0.1 ～ ϕ6
	30°螺旋角2刃平底铣刀 2-Flute LEAD30 End Mill	MXH230	ϕ0.1 ～ ϕ6
	35°螺旋角2刃平底铣刀 2-Flute LEAD35 End Mill	MXH235	ϕ0.1 ～ ϕ6
	40°螺旋角2刃平底铣刀 2-Flute LEAD40 End Mill	MXH240	ϕ0.3 ～ ϕ6
	45°螺旋角2刃平底铣刀 2-Flute LEAD45 End Mill	MXH245	ϕ0.3 ～ ϕ6
	25°螺旋角2刃尖角造型平底铣刀 2-Flute Sharp Edge LEAD25 End Mill	MXH225P	ϕ0.1 ～ ϕ6
	30°螺旋角2刃尖角造型平底铣刀 2-Flute Sharp Edge LEAD30 End Mill	MXH230P	ϕ0.1 ～ ϕ6
	35°螺旋角2刃尖角造型平底铣刀 2-Flute Sharp Edge LEAD35 End Mill	MXH235P	ϕ0.1 ～ ϕ6

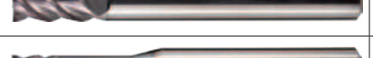
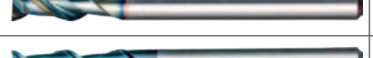
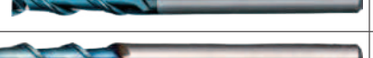
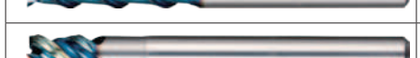
材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material: P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
平底铣刀 Square End Mill																										
CBN 核心系列 CBN Core Line																										
CBN	1	-20°	-	Slot	-	-	-	-	-	-	-	-	○	◎	◎	◎	○	-	-	-	-	-	-	-	-	B-002
CBN	4	0°	-	Slot	Face	-	-	-	-	-	-	-	-	◎	◎	◎	◎	-	-	-	-	-	-	-	-	B-004
CBN	6	0°	-	Slot	Face	-	-	-	-	-	-	-	-	◎	◎	◎	◎	-	-	-	-	-	-	-	-	B-006
PCD 核心系列 PCD Core Line																										
PCD	2 6	0°	-	-	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	C-002
钻石涂层 DIAMOND COATING																										
DIA	6 8 10	30°	-	-	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	C-008
DIA	2	30°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	-	C-012
DIA	2	35°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	-	C-010
无限白金Plus涂层 MUGEN COATING PREMIUM Plus																										
∞ Plus	4	45°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	◎	◎	-	-	-	-	-	-	-	-	-	D-066
∞ Plus	6	45°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	◎	◎	-	-	-	-	-	-	-	-	-	D-068
无限白金涂层 MUGEN COATING PREMIUM																										
∞ Premium	2	25°	Side	Slot	Face	-	-	-	-	-	-	-	◎	○	-	-	-	◎	◎	-	-	-	-	-	-	D-002
∞ Premium	2	30°	Side	Slot	Face	-	-	-	-	-	-	-	◎	○	-	-	-	◎	◎	-	-	-	-	-	-	D-004
∞ Premium	2	35°	Side	Slot	Face	-	-	-	-	-	-	-	◎	○	-	-	-	◎	◎	-	-	-	-	-	-	D-006
∞ Premium	2	40°	Side	-	Face	-	-	-	-	-	-	-	◎	○	-	-	-	◎	◎	-	-	-	-	-	-	D-008
∞ Premium	2	45°	Side	-	Face	-	-	-	-	-	-	-	◎	○	-	-	-	◎	◎	-	-	-	-	-	-	D-010
∞ Premium	2	25°	Side	-	Face	-	-	-	-	-	-	-	◎	-	-	-	-	◎	◎	-	-	-	-	-	-	D-012
∞ Premium	2	30°	Side	-	Face	-	-	-	-	-	-	-	◎	-	-	-	-	◎	◎	-	-	-	-	-	-	D-014
∞ Premium	2	35°	Side	-	Face	-	-	-	-	-	-	-	◎	-	-	-	-	◎	◎	-	-	-	-	-	-	D-016

按［形状］搜索
Search from Shape

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
平底铣刀 Square End Mill			
无限白金涂层 MUGEN COATING PREMIUM			
	高硬度钢材用4刃平底铣刀 4-Flute Square End Mill for Hardened Steel	MHDH445	φ1 ～ φ4
	高硬度钢材用6刃平底铣刀 6-Flute Square End Mill for Hardened Steel	MHDH645	φ5 ～ φ12
	高硬度钢材用2刃长颈平底铣刀 2-Flute Long Neck End Mill for Hardened Steel	MHRH230	φ0.1 ～ φ3
	高硬度钢材用4刃长颈平底铣刀 4-Flute Long Neck End Mill for Hardened Steel	MHRH430	φ1 ～ φ6
	SUS用高效率“Z”铣刀 4-Flute High Efficient “Z” End Mill for Stainless Steels	MSUSZ440	φ1 ～ φ6
	SUS用高效率“Z”长颈铣刀 4-Flute Long Neck High Efficient “Z” End Mill for Stainless Steels	MSUSZ440-LN	φ1 ～ φ6
无限涂层 MUGEN COATING			
	25°螺旋角2刃平底铣刀 2-Flute LEAD25 End Mill	MX225	φ0.3 ～ φ12
	30°螺旋角2刃平底铣刀 2-Flute LEAD30 End Mill	MX230	φ0.1 ～ φ12
	35°螺旋角2刃平底铣刀 2-Flute LEAD35 End Mill	MX235	φ0.1 ～ φ12
	40°螺旋角2刃平底铣刀 2-Flute LEAD40 End Mill	MX240	φ0.3 ～ φ12
	45°螺旋角2刃平底铣刀 2-Flute LEAD45 End Mill	MX245	φ0.3 ～ φ12
	25°螺旋角4刃平底铣刀 4-Flute LEAD25 End Mill	MX425	φ1 ～ φ12
	30°螺旋角4刃平底铣刀 4-Flute LEAD30 End Mill	MX430	φ1 ～ φ12
	35°螺旋角4刃平底铣刀 4-Flute LEAD35 End Mill	MX435	φ1 ～ φ12
	40°螺旋角4刃平底铣刀 4-Flute LEAD40 End Mill	MX440	φ1 ～ φ12
	45°螺旋角4刃平底铣刀 4-Flute LEAD45 End Mill	MX445	φ1 ～ φ12
	短刃尖角造型2刃平底铣刀 2-Flute Sharp Edge Short End Mill	MSES230P	φ0.1 ～ φ12
	2刃平底铣刀 2-Flute End Mill	MSE230	φ0.1 ～ φ12
	2刃中刃平底铣刀 2-Flute Medium End Mill	MSEM230	φ0.5 ～ φ12

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H 高硬度钢 Hardened Steel ～60 HRC	H 高硬度钢 Hardened Steel ～65 HRC	H 高硬度钢 Hardened Steel ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
平底铣刀 Square End Mill																											
无限白金涂层 MUGEN COATING PREMIUM																											
∞ Premium	4	45°	Side	Slot	Face	-	-	-	-	-	-	-	○	◎	◎	○	-	-	-	-	-	-	-	-	-	D-070
∞ Premium	6	45°	Side	Slot	Face	-	-	-	-	-	-	-	○	◎	◎	○	-	-	-	-	-	-	-	-	-	D-072
∞ Premium	2	30°	Side	Slot	Face	-	-	-	-	-	-	-	◎	◎	◎	○	-	○	○	-	-	-	-	-	-	D-078
∞ Premium	4	30°	Side	Slot	Face	-	-	-	-	-	-	-	◎	◎	◎	○	-	○	○	-	-	-	-	-	-	D-084
∞ Premium	4	40°/42°	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	-	◎	◎	-	-	-	-	-	-	D-018
∞ Premium	4	40°/42°	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	-	◎	◎	-	-	-	-	-	-	D-088
无限涂层 MUGEN COATING																											
∞	2	25°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-020
∞	2	30°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-022
∞	2	35°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-024
∞	2	40°	Side	-	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-026
∞	2	45°	Side	-	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-028
∞	4	25°	Side	-	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-040
∞	4	30°	Side	-	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-042
∞	4	35°	Side	-	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-044
∞	4	40°	Side	-	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-046
∞	4	45°	Side	-	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-048
∞	2	30°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	-	-	-	-	○	-	○	○	-	○	-	-	D-030
∞	2	30°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-032
∞	2	30°	Side	-	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	D-038

按［形状］搜索
Search from Shape

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
平底铣刀 Square End Mill			
无限涂层 MUGEN COATING			
	外径标识2刃平底铣刀 2-Flute End Mill with Measured Diameter	MSE230M	ϕ0.1 ～ ϕ6
	2刃平底铣刀 2-Flute End Mill	MSE245	ϕ2 ～ ϕ12
	3刃平底铣刀 3-Flute End Mill	MSE345	ϕ3 ～ ϕ20
	重切削高效率平底铣刀“Power Z” 3-Flute POWER “Z” End Mill	MSZ345	ϕ1 ～ ϕ12
	4刃尖角造型平底铣刀 4-Flute Sharp Edge End Mill	MSE430P	ϕ1 ～ ϕ12
	4刃平底铣刀 4-Flute End Mill	MSE430	ϕ1 ～ ϕ20
	4刃平底铣刀 4-Flute End Mill	MSE445	ϕ2 ～ ϕ20
	4刃中刃平底铣刀 4-Flute Medium End Mill	MSEM430	ϕ1 ～ ϕ20
	高硬度材料用4刃平底铣刀 4-Flute End Mill for Hardened Steel	MHD445	ϕ1 ～ ϕ4
	高硬度材料用6刃平底铣刀 6-Flute End Mill for Hardened Steel	MHD645	ϕ5 ～ ϕ12
	2刃长颈平底铣刀（深沟加工用） 2-Flute Long Neck End Mill	MHR230	ϕ0.1 ～ ϕ6
	4刃长颈平底铣刀（深沟加工用） 4-Flute Long Neck End Mill	MHR430	ϕ1 ～ ϕ10
	SC用高效率“Z”铣刀 4-Flute High Efficient “Z” End Mill for Carbon Steels	MSCZ440	ϕ1 ～ ϕ6
	SC用高效率“Z”长颈铣刀 4-Flute Long Neck High Efficient “Z” End Mill for Carbon Steels	MSCZ440-LN	ϕ1 ～ ϕ6
DLC涂层 DLC COATING			
	铝合金加工用2刃平底铣刀2倍刃长型 2-Flute L/D=2 End Mill for Aluminium	AL2D-2DLC	ϕ0.5 ～ ϕ12
	铝合金加工用2刃平底铣刀3倍刃长型 2-Flute L/D=3 End Mill for Aluminium	AL3D-2DLC	ϕ1 ～ ϕ12
	铝合金加工用2刃平底铣刀4倍刃长型 2-Flute L/D=4 End Mill for Aluminium	AL4D-2DLC	ϕ1 ～ ϕ12
	铝合金加工用2刃平底铣刀5倍刃长型 2-Flute L/D=5 End Mill for Aluminium	AL5D-2DLC	ϕ1 ～ ϕ12
	铝合金用高效率铣刀3刃1.5倍刃长 High efficient 3-Flute End Mill for Aluminium L/D=1.5	ALZ345-DLC	ϕ1 ～ ϕ12

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																		页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
平底铣刀 Square End Mill																													
无限涂层 MUGEN COATING																													
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-036
∞	2	45°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	D-056
∞	3	45°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	D-058
∞	3	45°	Side	Slot	Face	Plunge	–	–	–	–	◎	◎	◎	–	–	–	–	○	–	–	–	–	–	–	–	D-062
∞	4	30°	Side	–	Face	–	–	–	–	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	D-050
∞	4	30°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-052
∞	4	45°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	D-060
∞	4	30°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-054
∞	4	45°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	–	–	–	–	–	–	–	–	–	–	–	D-074
∞	6	45°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	–	–	–	–	–	–	–	–	–	–	–	D-076
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-090
∞	4	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-102
∞	4	40°/42°	Side	Slot	Face	Plunge	–	–	–	–	◎	◎	◎	–	–	–	–	–	–	–	–	–	–	–	–	D-064
∞	4	40°/42°	Side	Slot	Face	Plunge	–	–	–	–	◎	◎	◎	–	–	–	–	–	–	–	–	–	–	–	–	D-110
DLC涂层 DLC COATING																													
DLC	2	45°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-126
DLC	2	45°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-128
DLC	2	45°	Side	–	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-130
DLC	2	45°	Side	–	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-132
DLC	3	45°	Side	Slot	Face	Plunge	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-136

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图片 Photo	产品名称 Product Name	型号 Model	规格 Size	材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material: P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ~52HRC	H ~60HRC	H ~65HRC	H ~70HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
平底铣刀 Square End Mill																														
DLC涂层 DLC COATING																														
	铜电极加工用长颈平底铣刀 Long Neck Square End Mill for Copper Electrode	DHR237	ϕ0.1 ～ ϕ6	DLC	2	37.5°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	○	◎	◎	○	–	–	D-154
无涂层 Non-COATING																														
	铝合金加工用2刃平底铣刀2倍刃长型 2-Flute L/D=2 End Mill for Aluminium	AL2D-2	ϕ0.5 ～ ϕ12	WC	2	45°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-116
	铝合金加工用2刃平底铣刀3倍刃长型 2-Flute L/D=3 End Mill for Aluminium	AL3D-2	ϕ1 ～ ϕ12	WC	2	45°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-118
	铝合金加工用2刃平底铣刀4倍刃长型 2-Flute L/D=4 End Mill for Aluminium	AL4D-2	ϕ1 ～ ϕ12	WC	2	45°	Side	–	Face	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-120
	铝合金加工用2刃平底铣刀5倍刃长型 2-Flute L/D=5 End Mill for Aluminium	AL5D-2	ϕ1 ～ ϕ12	WC	2	45°	Side	–	Face	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-122
	铝合金用高效率铣刀3刃1.5倍刃长 High efficient 3-Flute End Mill for Aluminium L/D=1.5	ALZ345	ϕ1 ～ ϕ12	WC	3	45°	Side	Slot	Face	Plunge	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-134
	铝合金用高效率铣刀3刃3倍刃长 High efficient 3-Flute End Mill for Aluminium L/D=3	AL3D-345	ϕ1 ～ ϕ12	WC	3	45°	Side	Slot	Face	Plunge	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-124
	铝合金加工用长柄铣刀（刀柄内缩型） 3-Flute Long Shank End Mill for Aluminium	AL-3LS	ϕ5 ～ ϕ12	WC	3	45°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	D-138
	超微细加工用平底铣刀“Micro Edge” Micro End Mill “MICRO EDGE”	NSME100	ϕ0.01 ～ ϕ0.05	SMG	1	0°	–	Slot	Face	–	–	–	–	–	○	○	○	–	–	–	○	–	○	○	–	○	–	–	D-112
	超微细加工用平底铣刀“Micro Edge” Micro End Mill “MICRO EDGE”	NSME230	ϕ0.03 ～ ϕ0.09	SMG	2	30°	–	Slot	Face	–	–	–	–	–	○	○	○	–	–	–	○	–	○	○	–	○	–	–	D-114
	树脂加工用平底铣刀“Clear Cut” 短刃造型 Short Flute End Mill for Resin	RSES230	ϕ0.1 ～ ϕ6	MG	2	30°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	○	○	–	◎	–	–	D-140
	树脂加工用平底铣刀“Clear Cut” End Mill for Resin	RSE230	ϕ0.1 ～ ϕ6	MG	2	30°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	○	○	–	◎	–	–	D-146
球头铣刀 Ball End Mill																														
CBN 核心系列 CBN Core Line																														
	超微细加工用CBN球头铣刀“CBN Micro Ball” CBN Ball End Mill for Precision Machining “CBN Micro Ball”	SMB120	R0.01 ～ R0.05	CBN	1	-20°	–	–	–	–	3D	–	–	–	–	–	○	◎	◎	◎	○	–	–	–	–	–	–	–	B-008
	超微细加工用CBN2刃球头铣刀 CBN Micro 2-Flute Ball End Mill	SMB200	R0.01 ～ R0.05	CBN	2	0°	–	–	–	–	3D	–	–	–	–	–	○	◎	◎	◎	○	–	–	–	–	–	–	–	B-010
	CBN超精加工用球头铣刀 CBN Super Finish Ball End Mill	SFB200	R0.1 ～ R1	CBN	2	0°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	B-012
	CBN超精加工用螺旋球头铣刀 CBN Super Spiral Ball End Mill	SSPB220	R0.1 ～ R3	CBN	2	20°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	B-014
	CBN超精加工用长颈螺旋球头铣刀 CBN Super Spiral Long Neck Ball End Mill	SSPBL220	R0.1 ～ R1	CBN	2	20°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	B-016

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图片 Photo	产品名称 Product Name	型号 Model	规格 Size
球头铣刀 Ball End Mill			
CBN 核心系列 CBN Core Line			
	CBN超精加工用长颈锥形螺旋球头铣刀 CBN Super Spiral Long Taper Neck Ball End Mill	SSPBTN220	R0.1 × 颈角30′ ～ R1 × 颈角2°
	CBN超高速加工用球头铣刀 CBN Super Speed Ball End Mill	SSB200	R0.1 ～ R1
	CBN超高速加工用长颈球头铣刀 CBN Super Speed Long Neck Ball End Mill	SSBL200	R0.05 ～ R1
PCD 核心系列 PCD Core Line			
	PCD超精加工用球头铣刀 PCD Ball End Mill	PCDRB	R0.05 ～ R3
钻石涂层 DIAMOND COATING			
	硬脆材加工用球头铣刀 Ball End Mill for Hard Brittle Materials	DCMB	R0.1 ～ R1
	长颈球头铣刀 2-Flute Long Neck Ball End Mill	DCRB230	R0.2 ～ R3
无限白金Plus涂层 MUGEN COATING PREMIUM Plus			
	5轴MC加工用3刃球头铣刀 3-Flute Ball End Mill for 5-Axis Machining	MSBSH330-5X	R0.1 ～ R1
	高硬度钢材高精度加工用2刃长颈球头铣刀 可对应热缩刀柄的短柄造型 2-Flute Long Neck Ball End Mill with Short Shank for Hardened Steel and High Accuracy Cutting	MRBSH230SF	R0.05 ～ R3
	高硬度钢材高效率加工用 小径3刃长颈球头铣刀 High Efficient 3-Flute Small-Diameter Long Neck Ball End Mill for Hardened Steel	MRBSH330	R0.1 ～ R3
无限白金涂层 MUGEN COATING PREMIUM			
	高硬度钢材用2刃球头铣刀 2-Flute Ball End Mill for Hardened Steel	MSBH230	R0.05 ～ R6
	高硬度钢材用3刃球头铣刀 3-Flute Ball End Mill for Hardened Steel	MSBH345	R0.5 ～ R3
	高硬度钢材用2刃长颈球头铣刀 2-Flute Long Neck Ball End Mill for Hardened Steel	MRBH230	R0.05 ～ R3
	短柄造型高速·高硬度钢材用球头铣刀（热缩刀柄用） 2-Flute High Speed Ball End Mill with Short Shank for Hardened Steel	MACH225SF	R0.1 ～ R3
	高速·高硬度钢材用球头铣刀 2-Flute High Speed Ball End Mill for Hardened Steel	MACH225	R0.1 ～ R3
	高效率椭圆弧形3刃球头铣刀 High Efficiency Lens Form 3-Flute End Mil	MLFH330	φ1 × R1 ～ φ6 × R8
	长颈锥形2刃球头铣刀 2-Flute Long Taper Neck Ball End Mill	MRBTNH230	R0.05 × 颈角3° ～ R2 × 颈角1°
	长颈锥形3刃球头铣刀 3-Flute Long Taper Neck Ball End Mill	MRBTNH345	R0.5 × 颈角30' ～ R2 × 颈角1°

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜·铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
球头铣刀 Ball End Mill																											
CBN 核心系列 CBN Core Line																											
CBN	2	20°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-018
CBN	2	0°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-022
CBN	2	0°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-024
PCD 核心系列 PCD Core Line																											
PCD	–	–	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	◎	C-004
钻石涂层 DIAMOND COATING																											
DIA	2	20°	–	–	–	–	3D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	C-014
DIA	2	30°	–	–	–	–	3D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	–	C-016
无限白金Plus涂层 MUGEN COATING PREMIUM Plus																											
Plus	3	30°	–	–	–	–	3D	–	–	–	–	–	–	○	◎	◎	–	–	–	–	–	–	–	–	–	E-002
Plus	2	30°	–	–	–	–	3D	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	–	–	–	E-026
Plus	3	30°	–	–	–	–	3D	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	–	–	–	E-032
无限白金涂层 MUGEN COATING PREMIUM																											
Premium	2	30°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	E-004
Premium	3	45°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	E-006
Premium	2	30°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	E-034
Premium	2	25°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	E-048
Premium	2	25°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	E-050
Premium	3	30°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	–	–	–	–	–	–	–	–	E-052
Premium	2	30°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	E-070
Premium	3	45°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	E-078

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图片 Photo	产品名称 Product Name	型号 Model	规格 Size
球头铣刀 Ball End Mill			
无限涂层 MUGEN COATING			
	2刃球头铣刀 2-Flute Ball End Mill	MSB230	R0.05 ～ R10
	3刃球头铣刀 3-Flute Ball End Mill	MSB345	R0.5 ～ R6
	超高精度加工用球头铣刀 Profit Ball End Mill	MSB230G2	R0.05 ～ R3
	短刃造型球头铣刀 2-Flute Short Flute Ball End Mill	MSB230S	R0.1 ～ R6
	短柄造型球头铣刀（热缩刀柄用） 2-Flute Ball End Mill with Short Shank	MSB230SF	R0.1 ～ R6
	长柄造型球头铣刀 2-Flute Long Ball End Mill	MSBL230	R0.5 ～ R5
	长颈球头铣刀（深沟加工用） 2-Flute Long Neck Ball End Mill	MRB230	R0.05 ～ R3
	短柄造型长颈球头铣刀（热缩刀柄用） 2-Flute Long Neck Ball End Mill with Short Shank	MRB230SF	R0.1 ～ R1.5
	长颈锥形球头铣刀 2-Flute Long Taper Neck Ball End Mill	MRBTN230	R0.1 × 颈角30' ～ R2 × 颈角1°
DLC涂层 DLC COATING			
	铝合金加工用球头铣刀 Ball End Mill for Aluminium	ALB225-DLC	R0.3 ～ R6
	铜电极加工用长颈球头铣刀 Long Neck Ball End Mill for Copper Electrode	DRB230	R0.05 ～ R3
无涂层 Non-COATING			
	超微细加工用球头铣刀“Micro Ball” Ball End Mill for Precision Machining “Micro Ball”	NSMB100	R0.005 ～ R0.05
	铝合金加工用球头铣刀 Ball End Mill for Aluminium	ALB225	R0.3 ～ R6
	树脂加工用球头铣刀“Clear Cut” Ball End Mill for Resin	RSB230	R0.1 ～ R3
圆鼻铣刀 Corner Radius End Mill			
CBN 核心系列 CBN Core Line			
	CBN超高速加工用圆鼻铣刀 CBN Super Speed Corner Radius End Mill	SSR200	φ0.1 × R0.02 ～ φ2 × R0.5
	CBN高效率圆鼻铣刀 CBN High Efficient Corner Radius End Mill	SHR320	φ0.5 × R0.1 ～ φ2 × R0.3
	CBN超高精度圆鼻铣刀 CBN Super High Precision Corner Radius End Mill	SHPR400	φ0.1 × R0.01 ～ φ3 × R0.2

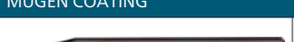
材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
球头铣刀 Ball End Mill																											
无限涂层 MUGEN COATING																											
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-018
∞	3	45°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-022
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-008
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-010
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-014
∞	2	30°	–	–	–	–	3D	–	–	–	○	○	–	–	–	–	–	–	–	○	○	–	○	–	–	E-024
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-058
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-054
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-082
DLC涂层 DLC COATING																											
DLC	2	25°	–	–	–	–	3D	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	E-096
DLC	2	30°	–	–	–	–	3D	–	–	–	–	–	–	–	–	–	–	–	–	○	◎	◎	○	–	–	E-102
无涂层 Non-COATING																											
SMG	1	0°	–	–	–	–	3D	–	–	–	○	○	○	–	–	–	–	○	–	○	○	–	○	–	–	E-092
WC	2	25°	–	–	–	–	3D	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	E-094
MG	2	30°	–	–	–	–	3D	–	–	–	–	–	–	–	–	–	–	–	–	○	○	–	◎	–	–	E-098
圆鼻铣刀 Corner Radius End Mill																											
CBN 核心系列 CBN Core Line																											
CBN	2	0°	–	Slot	Face	–	–	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-026
CBN	3	20°	–	Slot	Face	–	–	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-032
CBN	4	0°	–	Slot	Face	–	–	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-034

按［形状］搜索
Search from Shape

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
圆鼻铣刀 Corner Radius End Mill			
CBN 核心系列 CBN Core Line			
	CBN超精加工用圆鼻铣刀 CBN Super Surface End Mill	SSF120	ϕ0.2 × R0.05 ～ ϕ2 × R0.1
PCD 核心系列 PCD Core Line			
	PCD超精加工用圆鼻铣刀 PCD Corner Radius End Mill	PCDRS	ϕ0.3 × R0.05 ～ ϕ1 × R0.1
无限白金Plus涂层 MUGEN COATING PREMIUM Plus			
	高硬度钢材高精度加工用4刃长颈圆鼻铣刀 4-Flute Long Neck Corner Radius End Mill with Short Shank for Hardened Steel and High Accuracy Cutting	MHRSH430RSF	ϕ0.1 × R0.01 ～ ϕ6 × R1
无限白金涂层 MUGEN COATING PREMIUM			
	高硬度钢材用4刃圆鼻铣刀 4-Flute Corner Radius End Mill for Hardened Steel	MHDH445R	ϕ3 × R0.2 ～ ϕ4 × R0.5
	高硬度钢材用6刃圆鼻铣刀 6-Flute Corner Radius End Mill for Hardened Steel	MHDH645R	ϕ5 × R0.2 ～ ϕ12 × R2
	高硬度钢材用2刃长颈圆鼻铣刀 2-Flute Long Neck Corner Radius End Mill for Hardened Steel	MHRH230R	ϕ0.2 × R0.02 ～ ϕ0.9 × R0.1
	高硬度钢材用4刃长颈圆鼻铣刀 4-Flute Long Neck Corner Radius End Mill for Hardened Steel	MHRH430R	ϕ0.1 × R0.01 ～ ϕ6 × R1
	强力重切削用4刃圆鼻铣刀 Power Corner Radius End Mill	MSXH440R	ϕ3 × R0.3 ～ϕ12 × R2
无限涂层 MUGEN COATING			
	2刃圆鼻铣刀 2-Flute Corner Radius End Mill	MSRS230	ϕ1 × R0.1 ～ ϕ5 × R1.5
	4刃圆鼻铣刀 4-Flute Corner Radius End Mill	MSRS430	ϕ6 × R0.1 ～ ϕ12 × R3
	强力重切削用4刃圆鼻铣刀 Power Corner Radius End Mill	MSX440	ϕ3 × R0.2 ～ ϕ20 × R1
	2刃长颈圆鼻铣刀 2-Flute Long Neck Corner Radius End Mill	MHR230R	ϕ0.2 × R0.05 ～ ϕ6 × R1
	4刃长颈圆鼻铣刀 4-Flute Long Neck Corner Radius End Mill	MHR430R	ϕ1 × R0.05 ～ ϕ6 × R1
	长颈锥形圆鼻铣刀 2-Flute Long Taper Neck Corner Radius End Mill	MSTNR230	ϕ0.2 × R0.05 × 颈角1° ～ ϕ3 × R0.5 × 颈角1°
DLC涂层 DLC COATING			
	铜电极加工用长颈圆鼻铣刀 Long Neck Corner Radius End Mill for Copper Electrode	DHR237R	ϕ0.2 × R0.02 ～ϕ6 × R1
无涂层 Non-COATING			
	铝合金用高效率圆鼻铣刀3刃3倍刃长 High Efficient 3-Flute Corner Radius End Mill for Aluminium L/D=3	AL3D-345R	ϕ2 × R0.2 ～ϕ12 × R2

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material: P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜・铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
圆鼻铣刀 Corner Radius End Mill																										
CBN 核心系列 CBN Core Line																										
CBN	1	-20°	-	-	Face	-	-	-	-	-	-	-	-	◎	◎	◎	◎	-	-	-	-	-	-	-	-	B-040
PCD 核心系列 PCD Core Line																										
PCD	2 4 6	0°	-	-	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	C-006
无限白金Plus涂层 MUGEN COATING PREMIUM Plus																										
Plus	4	30°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	◎	◎	-	-	-	-	-	-	-	-	F-016
无限白金涂层 MUGEN COATING PREMIUM																										
Premium	4	45°	Side	Slot	Face	-	-	-	-	-	-	-	○	◎	◎	○	-	-	-	-	-	-	-	-	-	F-006
Premium	6	45°	Side	Slot	Face	-	-	-	-	-	-	-	○	◎	◎	○	-	-	-	-	-	-	-	-	-	F-008
Premium	2	30°	Side	Slot	Face	-	-	-	-	-	-	-	◎	◎	◎	○	-	○	○	-	-	-	-	-	-	F-026
Premium	4	30°	Side	Slot	Face	-	-	-	-	-	-	-	◎	◎	◎	○	-	○	○	-	-	-	-	-	-	F-030
Premium	4	40°/42°	Side	Slot	Face	-	-	-	-	-	-	◎	◎	-	-	-	-	◎	◎	-	-	-	-	-	-	F-002
无限涂层 MUGEN COATING																										
∞	2	30°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	F-010
∞	4	30°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	F-012
∞	4	35°/38°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	-	-	-	-	◎	-	-	-	-	-	-	-	F-004
∞	2	30°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	F-042
∞	4	30°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	F-056
∞	2	30°	Side	Slot	Face	-	-	-	-	-	◎	◎	◎	○	-	-	-	○	-	○	○	-	○	-	-	F-062
DLC涂层 DLC COATING																										
DLC	2	37.5°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	◎	◎	○	-	-	F-070
无涂层 Non-COATING																										
WC	3	45°	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	F-014

按［形状］搜索
Search from Shape

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
锥刃平底铣刀 Tapered End Mill			
无限涂层 MUGEN COATING			
	锥刃平底铣刀 2-Flute Taper End Mill	MTE230	前端刃径φ0.2 × 锥度半角30° ～ 前端刃径φ10 × 锥度半角5°
	深沟加工用锥刃铣刀 4-Flute Taper End Mill for Deep Rib	MRT425	前端刃径φ0.2 × 锥度半角30° ～ 前端刃径φ3 × 锥度半角2°
锥刃球头铣刀 Tapered Ball End Mill			
无限涂层 MUGEN COATING			
	锥刃球头铣刀 2-Flute Taper Ball End Mill	MTB230	前端刃径R0.1 × 锥度半角1° ～ 前端刃径R2 × 锥度半角15°
钻头 Drill			
无限白金涂层 MUGEN COATING PREMIUM			
	高硬度钢材加工用小径钻头 Precision Drill for Hardened Steel	MSDH	φ0.1 ～ φ1
无限微细涂层 MUGEN MICRO COATING			
	微径钻头 Micro Drill	NSMD-M	φ0.01 ～ φ0.1
	微径钻头 短刃造型 Micro Drill Short	NSMD-MS	φ0.01 ～ φ0.05
	微径定位钻头（底孔加工用） Micro Point Drill (Drill for Guide Hole)	NSPD-M	φ0.01 ～ φ0.1
无限涂层 MUGEN COATING			
	平底钻头 Flat Drill	MFD	φ0.1 ～ φ6
	小径钻头 Miniature Drill	MDR-R	φ0.1 ～ φ1
	小径定位钻头（底孔加工用） Point Drill (Drill for Guide Hole)	MDR-PD	φ0.1 ～ φ1
无涂层 Non-COATING			
	微径钻头 Micro Drill	NSMD	φ0.01 ～ φ0.1
	微径钻头 短刃造型 Micro Drill Short	NSMD-S	φ0.01 ～ φ0.05
	微径定位钻头（底孔加工用） Micro Point Drill (Drill for Guide Hole)	NSPD	φ0.01 ～ φ0.1
螺纹铣刀 Thread Mill			
无限涂层 MUGEN COATING			
	公制规格螺纹铣刀（内螺纹用） M-Thread Mill (for Internal Thread)	MMTM	M1 ～ M6

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
锥刃平底铣刀 Tapered End Mill																											
无限涂层 MUGEN COATING																											
∞	2	30°	Side	Slot	-	-	-	-	-	-	◎	◎	◎	○	-	-	-	-	-	○	○	-	○	-	-	G-002
∞	4	25°	-	Slot	-	-	-	-	-	-	◎	◎	◎	○	-	-	-	-	-	-	-	-	-	-	-	G-008
锥刃球头铣刀 Tapered Ball End Mill																											
无限涂层 MUGEN COATING																											
∞	2	30°	Side	Slot	-	-	3D	-	-	-	◎	◎	◎	○	-	-	-	-	-	○	○	-	○	-	-	G-012
钻头 Drill																											
无限白金涂层 MUGEN COATING PREMIUM																											
∞ Premium	2	20°	-	-	-	-	-	Drill	-	-	-	-	○	◎	◎	◎	-	-	-	-	-	-	-	-	-	H-002
无限微细涂层 MUGEN MICRO COATING																											
∞ Micro	2	30°	-	-	-	-	-	Drill	-	-	○	○	○	-	-	-	-	○	○	○	-	-	-	-	-	H-004
∞ Micro	2	30°	-	-	-	-	-	Drill	-	-	○	○	○	-	-	-	-	○	○	○	-	-	-	-	-	H-006
∞ Micro	2	30°	-	-	-	-	-	Drill	-	-	○	○	○	-	-	-	-	○	○	○	-	-	-	-	-	H-008
无限涂层 MUGEN COATING																											
∞	2	20°・30° (D(0.5)・(D≥0.5)	-	-	-	-	-	Flat Drill	-	-	◎	◎	○	-	-	-	-	○	-	○	○	-	-	-	-	H-016
∞	2	30°	-	-	-	-	-	Drill	-	-	◎	◎	○	-	-	-	-	○	-	○	○	-	-	-	-	H-020
∞	2	25°	-	-	-	-	-	Drill	-	-	◎	◎	○	-	-	-	-	○	-	○	○	-	-	-	-	H-024
无涂层 Non-COATING																											
SMG	2	30°	-	-	-	-	-	Drill	-	-	-	-	-	-	-	-	-	○	-	○	○	-	○	-	-	H-010
SMG	2	30°	-	-	-	-	-	Drill	-	-	-	-	-	-	-	-	-	○	-	○	○	-	○	-	-	H-012
SMG	2	30°	-	-	-	-	-	Drill	-	-	-	-	-	-	-	-	-	○	-	○	○	-	○	-	-	H-014
螺纹铣刀 Thread Mill																											
无限涂层 MUGEN COATING																											
∞	4 6	-	-	-	-	-	-	-	Thread	-	◎	◎	◎	-	-	-	-	○	-	○	○	-	○	-	-	I-004

按［形状］搜索
Search from Shape

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
螺纹铣刀 Thread Mill			
无限涂层 MUGEN COATING			
	微径螺纹铣刀（内螺纹用） Micro Thread Cutting Tool (for Internal Thread)	MMTS	S0.1 ～ S1.4
倒角刀 Chamfering			
无限涂层 MUGEN COATING			
	无限涂层 斜面加工用倒角刀 MUGEN COATING Chamfer Cutter	NSCV-M	ϕ4 ϕ6
无涂层 Non-COATING			
	斜面加工用倒角刀 Chamfer Cutter	NSCV	ϕ4 ϕ6
倒角 内圆弧倒角刀 Inner Radius Cutter Chamfering			
无限涂层 MUGEN COATING			
	无限涂层 内圆弧R角刀 MUGEN COATING 2-Flute Inner Radius Cutter	MIR200	R0.1 ～ R5

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
螺纹铣刀 Thread Mill																											
无限涂层 MUGEN COATING																											
∞	2	–	–	–	–	–	–	–	Thread	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	I-002
倒角刀 Chamfering																											
无限涂层 MUGEN COATING																											
∞	3	–	–	–	–	–	–	–	–	C	◎	◎	◎	–	–	–	–	○	–	–	–	–	–	–	–	J-002
无涂层 Non-COATING																											
MG	3	–	–	–	–	–	–	–	–	C	–	–	–	–	–	–	–	–	–	◎	◎	–	◎	–	–	J-004
倒角 内圆弧倒角刀 Inner Radius Cutter Chamfering																											
无限涂层 MUGEN COATING																											
∞	2	–	–	–	–	–	–	–	–	R	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	J-006

按［平底规格］搜索

Search from Square Dia.

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
ϕ0.01				
NSME100	ϕ0.01	0.01	45	D-112
ϕ0.02				
NSME100	ϕ0.02	0.02	45	D-112
ϕ0.03				
NSME100	ϕ0.03	0.03	45	D-112
SMEZ120	ϕ0.03	0.03	50	B-002
NSME230	ϕ0.03	0.045	45	D-114
ϕ0.04				
NSME100	ϕ0.04	0.04	45	D-112
SMEZ120	ϕ0.04	0.04	50	B-002
NSME230	ϕ0.04	0.06	45	D-114
ϕ0.05				
NSME100	ϕ0.05	0.05	45	D-112
SMEZ120	ϕ0.05	0.05	50	B-002
NSME230	ϕ0.05	0.075	45	D-114
ϕ0.06				
SMEZ120	ϕ0.06	0.06	50	B-002
NSME230	ϕ0.06	0.09	45	D-114
ϕ0.07				
SMEZ120	ϕ0.07	0.07	50	B-002
NSME230	ϕ0.07	0.105	45	D-114
ϕ0.08				
SMEZ120	ϕ0.08	0.08	50	B-002
NSME230	ϕ0.08	0.12	45	D-114
ϕ0.09				
SMEZ120	ϕ0.09	0.09	50	B-002
NSME230	ϕ0.09	0.135	45	D-114
ϕ0.1				
MXH225	ϕ0.1	0.1	45	D-002
MXH225P	ϕ0.1	0.1	45	D-012
SMEZ120	ϕ0.1	0.1	50	B-002
MSES230P	ϕ0.1	0.15	45	D-030
MSE230	ϕ0.1	0.15	45	D-032
MSE230M	ϕ0.1	0.15	45	D-036
RSES230	ϕ0.1	0.15	50	D-140
MXH230	ϕ0.1	0.2	45	D-004
MXH230P	ϕ0.1	0.2	45	D-014
MX230	ϕ0.1	0.2	45	D-022
MXH235	ϕ0.1	0.3	45	D-006
MXH235P	ϕ0.1	0.3	45	D-016
MX235	ϕ0.1	0.3	45	D-024
RSE230	ϕ0.1	0.3	45	D-146
PCDSE	ϕ0.1×0.1	0.02	48	C-002
SSE400	ϕ0.1×0.2	0.04	53	B-004
MHRH230	ϕ0.1×0.3	0.08	45	D-078
MHR230	ϕ0.1×0.3	0.15	45	D-090
RSES230	ϕ0.1×0.3	0.15	50	D-140
DHR237	ϕ0.1×0.3	0.2	45	D-154
SSE400	ϕ0.1×0.5	0.04	53	B-004
MHRH230	ϕ0.1×0.5	0.08	45	D-078

单位[规格：mm] Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR230	ϕ0.1×0.5	0.15	45	D-090
RSES230	ϕ0.1×0.5	0.15	50	D-140
DHR237	ϕ0.1×0.5	0.2	45	D-154
MHRH230	ϕ0.1×0.75	0.08	45	D-078
MHR230	ϕ0.1×0.75	0.15	45	D-090
DHR237	ϕ0.1×0.75	0.2	45	D-154
RSES230	ϕ0.1×0.8	0.15	50	D-140
RSE230	ϕ0.1×0.8	0.3	45	D-146
MHRH230	ϕ0.1×1	0.08	45	D-078
MHR230	ϕ0.1×1	0.15	45	D-090
RSES230	ϕ0.1×1	0.15	50	D-140
DHR237	ϕ0.1×1	0.2	45	D-154
RSE230	ϕ0.1×1	0.3	45	D-146
ϕ0.15				
MSES230P	ϕ0.15	0.2	45	D-030
MSE230	ϕ0.15	0.2	45	D-032
RSES230	ϕ0.15	0.23	50	D-140
RSE230	ϕ0.15	0.45	45	D-146
MHRH230	ϕ0.15×0.3	0.12	45	D-078
MHR230	ϕ0.15×0.3	0.2	45	D-090
MHRH230	ϕ0.15×0.5	0.12	45	D-078
MHR230	ϕ0.15×0.5	0.2	45	D-090
RSES230	ϕ0.15×0.5	0.23	50	D-140
MHRH230	ϕ0.15×0.75	0.12	45	D-078
MHR230	ϕ0.15×0.75	0.2	45	D-090
RSES230	ϕ0.15×0.8	0.23	50	D-140
MHRH230	ϕ0.15×1	0.12	45	D-078
MHR230	ϕ0.15×1	0.2	45	D-090
RSES230	ϕ0.15×1	0.23	50	D-140
RSE230	ϕ0.15×1	0.45	45	D-146
MHRH230	ϕ0.15×1.5	0.12	45	D-078
MHR230	ϕ0.15×1.5	0.2	45	D-090
RSES230	ϕ0.15×1.5	0.23	50	D-140
RSE230	ϕ0.15×1.5	0.45	45	D-146
ϕ0.2				
MXH225	ϕ0.2	0.2	45	D-002
MXH225P	ϕ0.2	0.2	45	D-012
MSES230P	ϕ0.2	0.3	45	D-030
RSES230	ϕ0.2	0.3	50	D-140
MXH230	ϕ0.2	0.4	45	D-004
MXH230P	ϕ0.2	0.4	45	D-014
MX230	ϕ0.2	0.4	45	D-022
MSE230	ϕ0.2	0.4	45	D-032
MSE230M	ϕ0.2	0.4	45	D-036
MXH235	ϕ0.2	0.6	45	D-006
MXH235P	ϕ0.2	0.6	45	D-016
MX235	ϕ0.2	0.6	45	D-024
RSE230	ϕ0.2	0.6	45	D-146
RSE230	ϕ0.2	1	45	D-146
PCDSE	ϕ0.2×0.2	0.04	48	C-002
SSE600	ϕ0.2×0.4	0.08	53	B-006

按［平底规格］搜索

Search from Square Dia.

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH230	ϕ0.2×0.5	0.15	45	D-078
MHR230	ϕ0.2×0.5	0.3	45	D-090
DHR237	ϕ0.2×0.5	0.4	45	D-154
RSES230	ϕ0.2×0.6	0.3	50	D-140
MHRH230	ϕ0.2×0.75	0.15	45	D-078
MHR230	ϕ0.2×0.75	0.3	45	D-090
SSE600	ϕ0.2×1	0.08	53	B-006
MHRH230	ϕ0.2×1	0.15	45	D-078
MHR230	ϕ0.2×1	0.3	45	D-090
RSES230	ϕ0.2×1	0.3	50	D-140
DHR237	ϕ0.2×1	0.4	45	D-154
RSE230	ϕ0.2×1	0.6	45	D-146
MHRH230	ϕ0.2×1.5	0.15	45	D-078
MHR230	ϕ0.2×1.5	0.3	45	D-090
RSES230	ϕ0.2×1.5	0.3	50	D-140
DHR237	ϕ0.2×1.5	0.4	45	D-154
RSE230	ϕ0.2×1.5	0.6	45	D-146
MHRH230	ϕ0.2×2	0.15	45	D-078
MHR230	ϕ0.2×2	0.3	45	D-090
RSES230	ϕ0.2×2	0.3	50	D-140
DHR237	ϕ0.2×2	0.4	45	D-154
RSE230	ϕ0.2×2	0.6	45	D-146
MHRH230	ϕ0.2×2.5	0.15	45	D-078
MHR230	ϕ0.2×2.5	0.3	45	D-090
MHRH230	ϕ0.2×3	0.15	45	D-078
MHR230	ϕ0.2×3	0.3	45	D-090
MHR230	ϕ0.2×3.5	0.3	45	D-090
MHR230	ϕ0.2×4	0.3	45	D-090
ϕ0.25				
MSES230P	ϕ0.25	0.3	45	D-030
ϕ0.3				
MXH225	ϕ0.3	0.3	45	D-002
MXH225P	ϕ0.3	0.3	45	D-012
MX225	ϕ0.3	0.3	45	D-020
MSES230P	ϕ0.3	0.4	45	D-030
RSES230	ϕ0.3	0.45	50	D-140
MXH230	ϕ0.3	0.6	45	D-004
MXH230P	ϕ0.3	0.6	45	D-014
MX230	ϕ0.3	0.6	45	D-022
MSE230	ϕ0.3	0.6	45	D-032
MSE230M	ϕ0.3	0.6	45	D-036
MXH235	ϕ0.3	0.9	45	D-006
MXH235P	ϕ0.3	0.9	45	D-016
MX235	ϕ0.3	0.9	45	D-024
RSE230	ϕ0.3	0.9	45	D-146
MXH240	ϕ0.3	1.2	45	D-008
MX240	ϕ0.3	1.2	45	D-026
MXH245	ϕ0.3	1.5	45	D-010
MX245	ϕ0.3	1.5	45	D-028
RSE230	ϕ0.3	1.5	45	D-146
RSE230	ϕ0.3	2	45	D-146

单位[规格：mm] Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
PCDSE	ϕ0.3×0.3	0.06	48	C-002
SSE600	ϕ0.3×0.5	0.12	49	B-006
DCMS	ϕ0.3×0.6	0.15	45	C-008
MHRH230	ϕ0.3×1	0.25	45	D-078
MHR230	ϕ0.3×1	0.4	45	D-090
RSES230	ϕ0.3×1	0.45	50	D-140
DHR237	ϕ0.3×1	0.6	45	D-154
DCMS	ϕ0.3×1.2	0.15	45	C-008
SSE600	ϕ0.3×1.5	0.12	50	B-006
MHRH230	ϕ0.3×1.5	0.25	45	D-078
MHR230	ϕ0.3×1.5	0.4	45	D-090
RSES230	ϕ0.3×1.5	0.45	50	D-140
DHR237	ϕ0.3×1.5	0.6	45	D-154
RSE230	ϕ0.3×1.5	0.9	45	D-146
MHRH230	ϕ0.3×2	0.25	45	D-078
MHR230	ϕ0.3×2	0.4	45	D-090
RSES230	ϕ0.3×2	0.45	50	D-140
DHR237	ϕ0.3×2	0.6	45	D-154
RSE230	ϕ0.3×2	0.9	45	D-146
MHRH230	ϕ0.3×2.5	0.25	45	D-078
MHR230	ϕ0.3×2.5	0.4	45	D-090
RSES230	ϕ0.3×2.5	0.45	50	D-140
RSE230	ϕ0.3×2.5	0.9	45	D-146
MHRH230	ϕ0.3×3	0.25	45	D-078
MHR230	ϕ0.3×3	0.4	45	D-090
RSES230	ϕ0.3×3	0.45	50	D-140
DHR237	ϕ0.3×3	0.6	45	D-154
RSE230	ϕ0.3×3	0.9	45	D-146
MHR230	ϕ0.3×4	0.4	45	D-090
MHR230	ϕ0.3×5	0.4	45	D-090
MHR230	ϕ0.3×6	0.4	45	D-090
MHR230	ϕ0.3×9	0.4	45	D-090
ϕ0.35				
MSES230P	ϕ0.35	0.4	45	D-030
ϕ0.4				
MXH225	ϕ0.4	0.4	45	D-002
MXH225P	ϕ0.4	0.4	45	D-012
MX225	ϕ0.4	0.4	45	D-020
MSES230P	ϕ0.4	0.6	45	D-030
RSES230	ϕ0.4	0.6	60	D-140
MXH230	ϕ0.4	0.8	45	D-004
MXH230P	ϕ0.4	0.8	45	D-014
MX230	ϕ0.4	0.8	45	D-022
MSE230	ϕ0.4	0.8	45	D-032
MSE230M	ϕ0.4	0.8	45	D-036
MXH235	ϕ0.4	1.2	45	D-006
MXH235P	ϕ0.4	1.2	45	D-016
MX235	ϕ0.4	1.2	45	D-024
RSE230	ϕ0.4	1.2	45	D-146
MXH240	ϕ0.4	1.6	45	D-008
MX240	ϕ0.4	1.6	45	D-026

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Search from Square Dia.

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MXH245	ϕ0.4	2	45	D-010
MX245	ϕ0.4	2	45	D-028
RSE230	ϕ0.4	2	45	D-146
RSE230	ϕ0.4	3	45	D-146
PCDSE	ϕ0.4×0.4	0.08	48	C-002
SSE600	ϕ0.4×0.8	0.16	49	B-006
DCMS	ϕ0.4×0.8	0.2	45	C-008
MHRH230	ϕ0.4×1	0.3	45	D-078
MHR230	ϕ0.4×1	0.6	45	D-090
DHR237	ϕ0.4×1	0.8	45	D-154
MHRH230	ϕ0.4×1.5	0.3	45	D-078
MHR230	ϕ0.4×1.5	0.6	45	D-090
RSES230	ϕ0.4×1.5	0.6	60	D-140
DCMS	ϕ0.4×1.6	0.2	45	C-008
SSE600	ϕ0.4×2	0.16	50	B-006
MHRH230	ϕ0.4×2	0.3	45	D-078
MHR230	ϕ0.4×2	0.6	45	D-090
RSES230	ϕ0.4×2	0.6	60	D-140
DHR237	ϕ0.4×2	0.8	45	D-154
RSE230	ϕ0.4×2	1.2	45	D-146
MHRH230	ϕ0.4×2.5	0.3	45	D-078
MHR230	ϕ0.4×2.5	0.6	45	D-090
RSES230	ϕ0.4×2.5	0.6	60	D-140
RSE230	ϕ0.4×2.5	1.2	45	D-147
MHRH230	ϕ0.4×3	0.3	45	D-078
MHR230	ϕ0.4×3	0.6	45	D-090
RSES230	ϕ0.4×3	0.6	60	D-141
DHR237	ϕ0.4×3	0.8	45	D-154
RSE230	ϕ0.4×3	1.2	45	D-147
MHRH230	ϕ0.4×3.5	0.3	45	D-078
MHR230	ϕ0.4×3.5	0.6	45	D-091
RSES230	ϕ0.4×3.5	0.6	60	D-141
MHRH230	ϕ0.4×4	0.3	45	D-078
MHR230	ϕ0.4×4	0.6	45	D-091
RSES230	ϕ0.4×4	0.6	60	D-141
DHR237	ϕ0.4×4	0.8	45	D-154
RSE230	ϕ0.4×4	1.2	45	D-147
MHRH230	ϕ0.4×5	0.3	45	D-078
MHR230	ϕ0.4×5	0.6	45	D-091
RSE230	ϕ0.4×5	1.2	45	D-147
MHRH230	ϕ0.4×6	0.3	45	D-078
MHR230	ϕ0.4×6	0.6	45	D-091
MHR230	ϕ0.4×7	0.6	45	D-091
MHRH230	ϕ0.4×8	0.3	45	D-078
MHR230	ϕ0.4×8	0.6	45	D-091
MHR230	ϕ0.4×9	0.6	45	D-091
MHRH230	ϕ0.4×10	0.3	45	D-078
MHR230	ϕ0.4×10	0.6	45	D-091
MHR230	ϕ0.4×12	0.6	45	D-091
ϕ0.45				
MSES230P	ϕ0.45	0.6	45	D-030

单位[规格：mm] Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
ϕ0.5				
MXH225	ϕ0.5	0.5	45	D-002
MXH225P	ϕ0.5	0.5	45	D-012
MX225	ϕ0.5	0.5	45	D-020
MSES230P	ϕ0.5	0.7	45	D-030
RSES230	ϕ0.5	0.75	60	D-141
MXH230	ϕ0.5	1	45	D-004
MXH230P	ϕ0.5	1	45	D-014
MX230	ϕ0.5	1	45	D-022
AL2D-2	ϕ0.5	1	45	D-116
AL2D-2DLC	ϕ0.5	1	45	D-126
MSE230	ϕ0.5	1.25	45	D-032
MSE230M	ϕ0.5	1.25	45	D-036
DCSE235	ϕ0.5	1.5	45	C-010
MXH235	ϕ0.5	1.5	45	D-006
MXH235P	ϕ0.5	1.5	45	D-016
MX235	ϕ0.5	1.5	45	D-024
RSE230	ϕ0.5	1.5	45	D-147
MXH240	ϕ0.5	2	45	D-008
MX240	ϕ0.5	2	45	D-026
MSEM230	ϕ0.5	2	50	D-038
MXH245	ϕ0.5	2.5	45	D-010
MX245	ϕ0.5	2.5	45	D-028
RSE230	ϕ0.5	2.5	45	D-147
RSE230	ϕ0.5	5	45	D-147
PCDSE	ϕ0.5×0.5	0.1	48	C-002
SSE600	ϕ0.5×1	0.2	49	B-006
DCMS	ϕ0.5×1	0.25	45	C-008
MHRH230	ϕ0.5×1	0.4	45	D-078
MHR230	ϕ0.5×1	0.7	45	D-091
MHRH230	ϕ0.5×1.5	0.4	45	D-078
MHR230	ϕ0.5×1.5	0.7	45	D-091
DHR237	ϕ0.5×1.5	1	45	D-154
DCMS	ϕ0.5×2	0.25	45	C-008
MHRH230	ϕ0.5×2	0.4	45	D-078
MHR230	ϕ0.5×2	0.7	45	D-091
RSES230	ϕ0.5×2	0.75	60	D-141
DCHR230	ϕ0.5×2	1	45	C-012
DHR237	ϕ0.5×2	1	45	D-154
SSE600	ϕ0.5×2.5	0.2	50	B-006
MHRH230	ϕ0.5×2.5	0.4	45	D-078
MHR230	ϕ0.5×2.5	0.7	45	D-091
MHRH230	ϕ0.5×3	0.4	45	D-079
MHR230	ϕ0.5×3	0.7	45	D-091
RSES230	ϕ0.5×3	0.75	60	D-141
DHR237	ϕ0.5×3	1	45	D-154
RSE230	ϕ0.5×3	1.5	45	D-147
MHRH230	ϕ0.5×3.5	0.4	45	D-079
MHR230	ϕ0.5×3.5	0.7	45	D-091
MHRH230	ϕ0.5×4	0.4	45	D-079
MHR230	ϕ0.5×4	0.7	45	D-091

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Search from Square Dia.

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
RSES230	ϕ0.5×4	0.75	60	D-141
DCHR230	ϕ0.5×4	1	45	C-012
DHR237	ϕ0.5×4	1	45	D-154
RSE230	ϕ0.5×4	1.5	45	D-147
MHRH230	ϕ0.5×4.5	0.4	45	D-079
MHR230	ϕ0.5×4.5	0.7	45	D-091
MHRH230	ϕ0.5×5	0.4	45	D-079
MHR230	ϕ0.5×5	0.7	45	D-091
MHRH230	ϕ0.5×6	0.4	45	D-079
MHR230	ϕ0.5×6	0.7	45	D-091
RSES230	ϕ0.5×6	0.75	60	D-141
DCHR230	ϕ0.5×6	1	45	C-012
DHR237	ϕ0.5×6	1	45	D-154
RSE230	ϕ0.5×6	1.5	45	D-147
MHRH230	ϕ0.5×7	0.4	45	D-079
MHR230	ϕ0.5×7	0.7	45	D-091
MHRH230	ϕ0.5×8	0.4	50	D-079
MHR230	ϕ0.5×8	0.7	50	D-091
RSES230	ϕ0.5×8	0.75	60	D-141
RSE230	ϕ0.5×8	1.5	50	D-147
MHRH230	ϕ0.5×9	0.4	50	D-079
MHR230	ϕ0.5×9	0.7	50	D-091
MHRH230	ϕ0.5×10	0.4	50	D-079
MHR230	ϕ0.5×10	0.7	50	D-091
RSES230	ϕ0.5×10	0.75	60	D-141
RSE230	ϕ0.5×10	1.5	50	D-147
MHR230	ϕ0.5×12	0.7	50	D-091
RSES230	ϕ0.5×12	0.75	60	D-141
RSE230	ϕ0.5×12	1.5	50	D-147
MHR230	ϕ0.5×15	0.7	50	D-091
RSE230	ϕ0.5×15	1.5	50	D-147
RSE230	ϕ0.5×20	1.5	50	D-147
ϕ0.6				
MXH225	ϕ0.6	0.6	45	D-002
MXH225P	ϕ0.6	0.6	45	D-012
RSES230	ϕ0.6	0.9	60	D-141
MSES230P	ϕ0.6	1	45	D-030
MXH230	ϕ0.6	1.2	45	D-004
MXH230P	ϕ0.6	1.2	45	D-014
MX230	ϕ0.6	1.2	45	D-022
AL2D-2	ϕ0.6	1.2	45	D-116
AL2D-2DLC	ϕ0.6	1.2	45	D-126
MSE230	ϕ0.6	1.5	45	D-032
MXH235	ϕ0.6	1.8	45	D-006
MXH235P	ϕ0.6	1.8	45	D-016
MX235	ϕ0.6	1.8	45	D-024
RSE230	ϕ0.6	1.8	45	D-147
MX240	ϕ0.6	2.4	45	D-026
MSEM230	ϕ0.6	2.4	50	D-038
RSE230	ϕ0.6	3	45	D-147
RSE230	ϕ0.6	4	45	D-147

单位[规格：mm] Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
PCDSE	ϕ0.6×0.6	0.12	48	C-002
SSE600	ϕ0.6×1.2	0.24	49	B-006
MHRH230	ϕ0.6×1.5	0.5	45	D-079
MHR230	ϕ0.6×1.5	0.9	45	D-091
MHRH230	ϕ0.6×2	0.5	45	D-079
MHR230	ϕ0.6×2	0.9	45	D-091
DHR237	ϕ0.6×2	1.2	45	D-154
SSE600	ϕ0.6×3	0.24	50	B-006
MHRH230	ϕ0.6×3	0.5	45	D-079
MHR230	ϕ0.6×3	0.9	45	D-091
RSES230	ϕ0.6×3	0.9	60	D-141
DHR237	ϕ0.6×3	1.2	45	D-154
MHRH230	ϕ0.6×4	0.5	45	D-079
MHR230	ϕ0.6×4	0.9	45	D-091
RSES230	ϕ0.6×4	0.9	60	D-141
DHR237	ϕ0.6×4	1.2	45	D-154
RSE230	ϕ0.6×4	1.8	45	D-147
MHRH230	ϕ0.6×5	0.5	45	D-079
MHR230	ϕ0.6×5	0.9	45	D-091
MHRH230	ϕ0.6×6	0.5	45	D-079
MHR230	ϕ0.6×6	0.9	45	D-091
RSES230	ϕ0.6×6	0.9	60	D-141
DHR237	ϕ0.6×6	1.2	45	D-154
RSE230	ϕ0.6×6	1.8	45	D-147
MHR230	ϕ0.6×7	0.9	45	D-091
MHR230	ϕ0.6×8	0.9	50	D-092
RSES230	ϕ0.6×8	0.9	60	D-141
RSE230	ϕ0.6×8	1.8	50	D-147
MHR230	ϕ0.6×9	0.9	50	D-092
MHR230	ϕ0.6×10	0.9	50	D-092
RSES230	ϕ0.6×10	0.9	60	D-141
RSE230	ϕ0.6×10	1.8	50	D-147
MHR230	ϕ0.6×12	0.9	50	D-092
RSE230	ϕ0.6×12	1.8	50	D-147
MHR230	ϕ0.6×15	0.9	50	D-092
MHR230	ϕ0.6×18	0.9	50	D-092
ϕ0.7				
MXH225	ϕ0.7	0.7	45	D-002
MXH225P	ϕ0.7	0.7	45	D-012
RSES230	ϕ0.7	1.05	60	D-141
MSES230P	ϕ0.7	1.2	45	D-030
MXH230	ϕ0.7	1.4	45	D-004
MXH230P	ϕ0.7	1.4	45	D-014
MX230	ϕ0.7	1.4	45	D-022
AL2D-2	ϕ0.7	1.4	45	D-116
AL2D-2DLC	ϕ0.7	1.4	45	D-126
MSE230	ϕ0.7	1.8	45	D-032
MXH235	ϕ0.7	2.1	45	D-006
MXH235P	ϕ0.7	2.1	45	D-016
MX235	ϕ0.7	2.1	45	D-024
MX240	ϕ0.7	2.8	45	D-026

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Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH230	φ0.7×2	0.55	45	D-079
MHR230	φ0.7×2	1	45	D-092
MHRH230	φ0.7×4	0.55	45	D-079
MHR230	φ0.7×4	1	45	D-092
RSES230	φ0.7×4	1.05	60	D-141
MHRH230	φ0.7×6	0.55	45	D-079
MHR230	φ0.7×6	1	45	D-092
RSES230	φ0.7×6	1.05	60	D-141
MHRH230	φ0.7×8	0.55	50	D-079
MHR230	φ0.7×8	1	50	D-092
MHRH230	φ0.7×10	0.55	50	D-079
MHR230	φ0.7×10	1	50	D-092
φ0.8				
MXH225	φ0.8	0.8	45	D-002
MXH225P	φ0.8	0.8	45	D-012
MX225	φ0.8	0.8	45	D-020
RSES230	φ0.8	1.2	60	D-141
MSES230P	φ0.8	1.5	45	D-030
MXH230	φ0.8	1.6	45	D-004
MXH230P	φ0.8	1.6	45	D-014
MX230	φ0.8	1.6	45	D-022
AL2D-2	φ0.8	1.6	45	D-116
AL2D-2DLC	φ0.8	1.6	45	D-126
MSE230	φ0.8	2	45	D-032
MSE230M	φ0.8	2	45	D-036
MXH235	φ0.8	2.4	45	D-006
MXH235P	φ0.8	2.4	45	D-016
MX235	φ0.8	2.4	45	D-024
RSE230	φ0.8	2.4	45	D-147
MXH240	φ0.8	3.2	45	D-008
MX240	φ0.8	3.2	45	D-026
MSEM230	φ0.8	3.2	50	D-038
MXH245	φ0.8	4	45	D-010
MX245	φ0.8	4	45	D-028
RSE230	φ0.8	4	45	D-147
RSE230	φ0.8	6	45	D-147
PCDSE	φ0.8×0.8	0.16	48	C-002
SSE600	φ0.8×1.5	0.32	49	B-006
DCMS	φ0.8×1.6	0.4	45	C-008
MHRH230	φ0.8×3	0.65	45	D-079
MHR230	φ0.8×3	1.2	45	D-092
DHR237	φ0.8×3	1.6	45	D-155
DCMS	φ0.8×3.2	0.4	45	C-008
SSE600	φ0.8×4	0.32	52	B-006
MHRH230	φ0.8×4	0.65	45	D-079
MHR230	φ0.8×4	1.2	45	D-092
RSES230	φ0.8×4	1.2	60	D-141
DHR237	φ0.8×4	1.6	45	D-155
MHRH230	φ0.8×5	0.65	45	D-079
MHR230	φ0.8×5	1.2	45	D-092
MHRH230	φ0.8×6	0.65	45	D-079
MHR230	φ0.8×6	1.2	45	D-092
RSES230	φ0.8×6	1.2	60	D-141
DHR237	φ0.8×6	1.6	45	D-155
RSE230	φ0.8×6	2.4	45	D-147
MHRH230	φ0.8×8	0.65	50	D-079
MHR230	φ0.8×8	1.2	50	D-092
RSES230	φ0.8×8	1.2	60	D-141
DHR237	φ0.8×8	1.6	50	D-155
RSE230	φ0.8×8	2.4	50	D-147
MHRH230	φ0.8×10	0.65	50	D-079
MHR230	φ0.8×10	1.2	50	D-092
RSES230	φ0.8×10	1.2	60	D-141
RSE230	φ0.8×10	2.4	50	D-147
MHRH230	φ0.8×12	0.65	50	D-079
MHR230	φ0.8×12	1.2	50	D-092
RSES230	φ0.8×12	1.2	60	D-141
RSE230	φ0.8×12	2.4	50	D-147
MHR230	φ0.8×14	1.2	50	D-092
RSES230	φ0.8×14	1.2	60	D-141
MHR230	φ0.8×16	1.2	50	D-092
RSES230	φ0.8×16	1.2	60	D-141
RSE230	φ0.8×16	2.4	60	D-147
MHR230	φ0.8×20	1.2	60	D-092
MHR230	φ0.8×24	1.2	60	D-092
φ0.9				
MXH225	φ0.9	0.9	45	D-002
MXH225P	φ0.9	0.9	45	D-012
RSES230	φ0.9	1.35	60	D-141
MXH230	φ0.9	1.8	45	D-004
MXH230P	φ0.9	1.8	45	D-014
MX230	φ0.9	1.8	45	D-022
AL2D-2	φ0.9	1.8	45	D-116
AL2D-2DLC	φ0.9	1.8	45	D-126
MSE230	φ0.9	2	45	D-032
MXH235	φ0.9	2.7	45	D-006
MXH235P	φ0.9	2.7	45	D-016
MX235	φ0.9	2.7	45	D-024
MX240	φ0.9	3.6	45	D-026
MHR230	φ0.9×4	1.4	45	D-092
RSES230	φ0.9×6	1.35	60	D-141
MHR230	φ0.9×6	1.4	45	D-092
RSES230	φ0.9×8	1.35	60	D-141
MHR230	φ0.9×8	1.4	50	D-092
MHR230	φ0.9×10	1.4	50	D-092
MHR230	φ0.9×12	1.4	50	D-092
MHR230	φ0.9×15	1.4	60	D-092
φ1				
MXH225	φ1	1	45	D-002
MXH225P	φ1	1	45	D-012
MX225	φ1	1	45	D-020
MX425	φ1	1	45	D-040

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSZ345	φ1	1.5	45	D-062
MHD445	φ1	1.5	60	D-074
RSES230	φ1	1.5	70	D-141
MXH230	φ1	2	45	D-004
MXH230P	φ1	2	45	D-014
MX230	φ1	2	45	D-022
MSES230P	φ1	2	45	D-030
MX430	φ1	2	45	D-042
AL2D-2	φ1	2	45	D-116
AL2D-2DLC	φ1	2	45	D-126
MSUSZ440	φ1	2	50	D-018
MSCZ440	φ1	2	50	D-064
MHDSH445	φ1	2	60	D-066
MHDH445	φ1	2	60	D-070
MSE230	φ1	2.5	45	D-032
MSE230M	φ1	2.5	45	D-036
MSE430P	φ1	2.5	45	D-050
MSE430	φ1	2.5	45	D-052
DCSE235	φ1	3	45	C-010
MXH235	φ1	3	45	D-006
MXH235P	φ1	3	45	D-016
MX235	φ1	3	45	D-024
MX435	φ1	3	45	D-044
AL3D-2	φ1	3	45	D-118
AL3D-2DLC	φ1	3	45	D-128
RSE230	φ1	3	45	D-147
MSUSZ440	φ1	3	50	D-018
MSCZ440	φ1	3	50	D-064
MHDSH445	φ1	3	60	D-066
AL3D-345	φ1	3	60	D-124
MXH240	φ1	4	45	D-008
MX240	φ1	4	45	D-026
MX440	φ1	4	45	D-046
MSEM230	φ1	4	50	D-038
MSEM430	φ1	4	50	D-054
AL4D-2	φ1	4	50	D-120
AL4D-2DLC	φ1	4	50	D-130
MXH245	φ1	5	45	D-010
MX245	φ1	5	45	D-028
MX445	φ1	5	45	D-048
AL5D-2	φ1	5	50	D-122
AL5D-2DLC	φ1	5	50	D-132
RSE230	φ1	5	50	D-147
RSE230	φ1	7.5	50	D-147
RSE230	φ1	10	50	D-148
PCDSE	φ1×1	0.2	48	C-002
SSE600	φ1×2	0.4	49	B-006
DCMS	φ1×2	0.5	45	C-008
MHRH230	φ1×2	0.8	50	D-079
MHR230	φ1×2	1.5	50	D-092
MHRH230	φ1×3	0.8	50	D-079
ALZ345	φ1×3	1.5	45	D-134
ALZ345-DLC	φ1×3	1.5	45	D-136
MSUSZ440-LN	φ1×3	1.5	50	D-088
MHR230	φ1×3	1.5	50	D-092
MSCZ440-LN	φ1×3	1.5	50	D-110
DHR237	φ1×3	2	45	D-155
DCMS	φ1×4	0.5	45	C-008
MHRH230	φ1×4	0.8	50	D-079
MHRH430	φ1×4	0.8	50	D-084
MSUSZ440-LN	φ1×4	1.5	50	D-088
MHR230	φ1×4	1.5	50	D-092
MHR430	φ1×4	1.5	50	D-102
MSCZ440-LN	φ1×4	1.5	50	D-110
RSES230	φ1×4	1.5	70	D-141
DHR237	φ1×4	2	45	D-155
DCHR230	φ1×4	2	50	C-012
SSE600	φ1×5	0.4	52	B-006
MHRH230	φ1×5	0.8	50	D-079
MSUSZ440-LN	φ1×5	1.5	50	D-088
MHR230	φ1×5	1.5	50	D-092
MSCZ440-LN	φ1×5	1.5	50	D-110
ALZ345	φ1×5	1.5	60	D-134
DHR237	φ1×5	2	45	D-155
MHRH230	φ1×6	0.8	50	D-079
MHRH430	φ1×6	0.8	50	D-084
MHR230	φ1×6	1.5	50	D-093
MHR430	φ1×6	1.5	50	D-102
RSES230	φ1×6	1.5	70	D-141
DHR237	φ1×6	2	45	D-155
DCHR230	φ1×6	2	50	C-012
RSE230	φ1×6	3	50	D-148
MHRH230	φ1×7	0.8	50	D-079
MHR230	φ1×7	1.5	50	D-093
MHRH230	φ1×8	0.8	50	D-079
MHRH430	φ1×8	0.8	50	D-084
MHR230	φ1×8	1.5	50	D-093
MHR430	φ1×8	1.5	50	D-102
RSES230	φ1×8	1.5	70	D-141
DCHR230	φ1×8	2	50	C-012
DHR237	φ1×8	2	50	D-155
RSE230	φ1×8	3	50	D-148
MHRH230	φ1×9	0.8	50	D-079
MHR230	φ1×9	1.5	50	D-093
MHRH230	φ1×10	0.8	50	D-079
MHRH430	φ1×10	0.8	50	D-084
MHR230	φ1×10	1.5	50	D-093
MHR430	φ1×10	1.5	50	D-102
RSES230	φ1×10	1.5	70	D-141
DCHR230	φ1×10	2	50	C-012
DHR237	φ1×10	2	50	D-155
RSE230	φ1×10	3	50	D-148

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH230	ϕ1×12	0.8	50	D-079
MHR230	ϕ1×12	1.5	50	D-093
MHR430	ϕ1×12	1.5	50	D-102
RSES230	ϕ1×12	1.5	70	D-141
DHR237	ϕ1×12	2	50	D-155
RSE230	ϕ1×12	3	50	D-148
MHRH230	ϕ1×14	0.8	50	D-079
MHR230	ϕ1×14	1.5	50	D-093
RSES230	ϕ1×14	1.5	70	D-141
RSES230	ϕ1×15	1.5	70	D-141
RSE230	ϕ1×15	3	60	D-148
MHRH230	ϕ1×16	0.8	60	D-079
MHR430	ϕ1×16	1.5	50	D-102
MHR230	ϕ1×16	1.5	60	D-093
MHRH230	ϕ1×18	0.8	60	D-079
MHR230	ϕ1×18	1.5	60	D-093
RSES230	ϕ1×18	1.5	70	D-141
MHRH230	ϕ1×20	0.8	60	D-079
MHR230	ϕ1×20	1.5	60	D-093
RSES230	ϕ1×20	1.5	70	D-141
RSE230	ϕ1×20	3	60	D-148
MHRH230	ϕ1×22	0.8	60	D-079
MHR230	ϕ1×22	1.5	60	D-093
MHR230	ϕ1×25	1.5	70	D-093
RSE230	ϕ1×25	3	70	D-148
MHR230	ϕ1×30	1.5	70	D-093
RSE230	ϕ1×30	3	70	D-148
RSE230	ϕ1×35	3	80	D-148
ϕ1.1				
MXH225	ϕ1.1	1.1	45	D-002
MXH225P	ϕ1.1	1.1	45	D-012
MXH230	ϕ1.1	2.2	45	D-004
MXH230P	ϕ1.1	2.2	45	D-014
MX230	ϕ1.1	2.2	45	D-022
AL2D-2	ϕ1.1	2.2	45	D-116
MSUSZ440	ϕ1.1	2.2	50	D-018
MSCZ440	ϕ1.1	2.2	50	D-064
MSE230	ϕ1.1	2.5	45	D-032
MXH235	ϕ1.1	3.3	45	D-006
MXH235P	ϕ1.1	3.3	45	D-016
MX235	ϕ1.1	3.3	45	D-024
MX240	ϕ1.1	4.4	45	D-026
MHR430	ϕ1.1×6	1.7	50	D-102
MHR430	ϕ1.1×10	1.7	50	D-102
MHR430	ϕ1.1×16	1.7	60	D-102
ϕ1.2				
MXH225	ϕ1.2	1.2	45	D-002
MXH225P	ϕ1.2	1.2	45	D-012
MX225	ϕ1.2	1.2	45	D-020
MXH230	ϕ1.2	2.4	45	D-004
MXH230P	ϕ1.2	2.4	45	D-014

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MX230	ϕ1.2	2.4	45	D-022
AL2D-2	ϕ1.2	2.4	45	D-116
MSUSZ440	ϕ1.2	2.4	50	D-018
MSCZ440	ϕ1.2	2.4	50	D-064
MSES230P	ϕ1.2	2.5	45	D-030
MSE230	ϕ1.2	3	45	D-032
MXH235	ϕ1.2	3.6	45	D-006
MXH235P	ϕ1.2	3.6	45	D-016
MX235	ϕ1.2	3.6	45	D-024
MXH240	ϕ1.2	4.8	45	D-008
MX240	ϕ1.2	4.8	45	D-026
MXH245	ϕ1.2	6	45	D-010
MX245	ϕ1.2	6	45	D-028
MHR230	ϕ1.2×4	1.8	50	D-093
MHRH230	ϕ1.2×6	1	50	D-079
MHRH430	ϕ1.2×6	1	50	D-084
MHR230	ϕ1.2×6	1.8	50	D-093
MHR430	ϕ1.2×6	1.8	50	D-102
MHRH230	ϕ1.2×8	1	50	D-079
MHRH430	ϕ1.2×8	1	50	D-084
MHR230	ϕ1.2×8	1.8	50	D-093
MHR430	ϕ1.2×8	1.8	50	D-102
MHRH230	ϕ1.2×10	1	50	D-079
MHRH430	ϕ1.2×10	1	50	D-084
MHR230	ϕ1.2×10	1.8	50	D-093
MHR430	ϕ1.2×10	1.8	50	D-102
MHRH230	ϕ1.2×12	1	50	D-079
MHRH430	ϕ1.2×12	1	50	D-084
MHR230	ϕ1.2×12	1.8	50	D-093
MHR430	ϕ1.2×12	1.8	50	D-102
MHRH230	ϕ1.2×16	1	60	D-079
MHR230	ϕ1.2×16	1.8	60	D-093
MHR430	ϕ1.2×16	1.8	60	D-102
MHR230	ϕ1.2×20	1.8	60	D-093
ϕ1.3				
MXH225	ϕ1.3	1.3	45	D-002
MXH225P	ϕ1.3	1.3	45	D-012
MXH230	ϕ1.3	2.6	45	D-004
MXH230P	ϕ1.3	2.6	45	D-014
MX230	ϕ1.3	2.6	45	D-022
AL2D-2	ϕ1.3	2.6	45	D-116
MSUSZ440	ϕ1.3	2.6	50	D-018
MSCZ440	ϕ1.3	2.6	50	D-064
MSE230	ϕ1.3	3	45	D-032
MXH235	ϕ1.3	3.9	45	D-006
MXH235P	ϕ1.3	3.9	45	D-016
MX235	ϕ1.3	3.9	45	D-024
MX240	ϕ1.3	5.2	45	D-026
MHR430	ϕ1.3×6	1.9	50	D-102
MHR430	ϕ1.3×12	1.9	50	D-102
MHR430	ϕ1.3×18	1.9	60	D-102

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
ϕ1.4				
MXH225	ϕ1.4	1.4	45	D-002
MXH225P	ϕ1.4	1.4	45	D-012
MXH230	ϕ1.4	2.8	45	D-004
MXH230P	ϕ1.4	2.8	45	D-014
MX230	ϕ1.4	2.8	45	D-022
AL2D-2	ϕ1.4	2.8	45	D-116
MSUSZ440	ϕ1.4	2.8	50	D-018
MSCZ440	ϕ1.4	2.8	50	D-064
MSE230	ϕ1.4	3.5	45	D-032
MXH235	ϕ1.4	4.2	45	D-006
MXH235P	ϕ1.4	4.2	45	D-016
MX235	ϕ1.4	4.2	45	D-024
MX240	ϕ1.4	5.6	45	D-026
MHRH230	ϕ1.4×6	1.1	50	D-079
MHR230	ϕ1.4×6	2.1	50	D-093
MHR430	ϕ1.4×6	2.1	50	D-102
MHR230	ϕ1.4×8	2.1	50	D-093
MHR430	ϕ1.4×8	2.1	50	D-102
MHR230	ϕ1.4×10	2.1	50	D-093
MHR430	ϕ1.4×10	2.1	50	D-102
MHRH230	ϕ1.4×12	1.1	50	D-079
MHR230	ϕ1.4×12	2.1	50	D-093
MHR430	ϕ1.4×12	2.1	50	D-102
MHR230	ϕ1.4×14	2.1	60	D-093
MHR430	ϕ1.4×14	2.1	60	D-102
MHR230	ϕ1.4×16	2.1	60	D-093
MHR430	ϕ1.4×16	2.1	60	D-102
MHR230	ϕ1.4×22	2.1	60	D-093
MHR430	ϕ1.4×22	2.1	60	D-102
ϕ1.5				
MXH225	ϕ1.5	1.5	45	D-002
MXH225P	ϕ1.5	1.5	45	D-012
MX225	ϕ1.5	1.5	45	D-020
MX425	ϕ1.5	1.5	45	D-040
RSES230	ϕ1.5	2.25	70	D-142
MSZ345	ϕ1.5	2.3	45	D-062
MHD445	ϕ1.5	2.5	60	D-074
MXH230	ϕ1.5	3	45	D-004
MXH230P	ϕ1.5	3	45	D-014
MX230	ϕ1.5	3	45	D-022
MSES230P	ϕ1.5	3	45	D-030
MX430	ϕ1.5	3	45	D-042
AL2D-2	ϕ1.5	3	45	D-116
AL2D-2DLC	ϕ1.5	3	45	D-126
MSUSZ440	ϕ1.5	3	50	D-018
MSCZ440	ϕ1.5	3	50	D-064
MHDSH445	ϕ1.5	3	60	D-066
MHDH445	ϕ1.5	3	60	D-070
MSE230	ϕ1.5	4	45	D-032
MSE230M	ϕ1.5	4	45	D-036

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSE430P	ϕ1.5	4	45	D-050
MSE430	ϕ1.5	4	45	D-052
DCSE235	ϕ1.5	4.5	45	C-010
MXH235	ϕ1.5	4.5	45	D-006
MXH235P	ϕ1.5	4.5	45	D-016
MX235	ϕ1.5	4.5	45	D-024
MX435	ϕ1.5	4.5	45	D-044
AL3D-2	ϕ1.5	4.5	45	D-118
AL3D-2DLC	ϕ1.5	4.5	45	D-128
RSE230	ϕ1.5	4.5	45	D-148
MSUSZ440	ϕ1.5	4.5	50	D-018
MSCZ440	ϕ1.5	4.5	50	D-064
MHDSH445	ϕ1.5	4.5	60	D-066
MXH240	ϕ1.5	6	45	D-008
MX240	ϕ1.5	6	45	D-026
MX440	ϕ1.5	6	45	D-046
MSEM230	ϕ1.5	6	50	D-038
MSEM430	ϕ1.5	6	50	D-054
AL4D-2	ϕ1.5	6	50	D-120
AL4D-2DLC	ϕ1.5	6	50	D-130
MXH245	ϕ1.5	7.5	45	D-010
MX245	ϕ1.5	7.5	45	D-028
MX445	ϕ1.5	7.5	45	D-048
AL5D-2	ϕ1.5	7.5	50	D-122
AL5D-2DLC	ϕ1.5	7.5	50	D-132
RSE230	ϕ1.5	7.5	50	D-148
RSE230	ϕ1.5	15	60	D-148
DCMS	ϕ1.5×3	0.75	45	C-008
MHRH230	ϕ1.5×4	1.2	50	D-080
MHR230	ϕ1.5×4	2.3	50	D-093
DHR237	ϕ1.5×4	3	45	D-155
ALZ345	ϕ1.5×4.5	2.3	45	D-134
ALZ345-DLC	ϕ1.5×4.5	2.3	45	D-136
MSUSZ440-LN	ϕ1.5×4.5	2.3	50	D-088
MSCZ440-LN	ϕ1.5×4.5	2.3	50	D-110
DCMS	ϕ1.5×6	0.75	45	C-008
MHRH230	ϕ1.5×6	1.2	50	D-080
MHRH430	ϕ1.5×6	1.2	50	D-084
RSES230	ϕ1.5×6	2.25	70	D-142
MSUSZ440-LN	ϕ1.5×6	2.3	50	D-088
MHR230	ϕ1.5×6	2.3	50	D-093
MHR430	ϕ1.5×6	2.3	50	D-102
MSCZ440-LN	ϕ1.5×6	2.3	50	D-110
DCHR230	ϕ1.5×6	3	50	C-012
DHR237	ϕ1.5×6	3	50	D-155
MSUSZ440-LN	ϕ1.5×7.5	2.3	50	D-088
MSCZ440-LN	ϕ1.5×7.5	2.3	50	D-110
MHRH230	ϕ1.5×8	1.2	50	D-080
MHRH430	ϕ1.5×8	1.2	50	D-084
RSES230	ϕ1.5×8	2.25	70	D-142
MHR230	ϕ1.5×8	2.3	50	D-093

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR430	φ1.5×8	2.3	50	D-102
DHR237	φ1.5×8	3	50	D-155
MHRH230	φ1.5×10	1.2	50	D-080
MHRH430	φ1.5×10	1.2	50	D-084
RSES230	φ1.5×10	2.25	70	D-142
MHR230	φ1.5×10	2.3	50	D-093
MHR430	φ1.5×10	2.3	50	D-102
DHR237	φ1.5×10	3	50	D-155
RSE230	φ1.5×10	4.5	50	D-148
MHRH230	φ1.5×12	1.2	50	D-080
MHRH430	φ1.5×12	1.2	50	D-084
RSES230	φ1.5×12	2.25	70	D-142
MHR230	φ1.5×12	2.3	50	D-093
MHR430	φ1.5×12	2.3	50	D-102
DCHR230	φ1.5×12	3	50	C-012
DHR237	φ1.5×12	3	50	D-155
RSE230	φ1.5×12	4.5	50	D-148
MHRH230	φ1.5×14	1.2	60	D-080
MHRH430	φ1.5×14	1.2	60	D-084
MHR230	φ1.5×14	2.3	60	D-094
MHR430	φ1.5×14	2.3	60	D-102
RSES230	φ1.5×15	2.25	70	D-142
RSE230	φ1.5×15	4.5	60	D-148
MHRH230	φ1.5×16	1.2	60	D-080
MHRH430	φ1.5×16	1.2	60	D-084
MHR230	φ1.5×16	2.3	60	D-094
MHR430	φ1.5×16	2.3	60	D-102
DHR237	φ1.5×16	3	60	D-155
MHRH230	φ1.5×18	1.2	60	D-080
RSES230	φ1.5×18	2.25	70	D-142
MHR230	φ1.5×18	2.3	60	D-094
MHR430	φ1.5×18	2.3	60	D-102
RSE230	φ1.5×18	4.5	60	D-148
MHRH230	φ1.5×20	1.2	60	D-080
RSES230	φ1.5×20	2.25	70	D-142
MHR230	φ1.5×20	2.3	60	D-094
MHR430	φ1.5×20	2.3	60	D-102
DCHR230	φ1.5×20	3	60	C-012
RSES230	φ1.5×23	2.25	70	D-142
RSE230	φ1.5×23	4.5	70	D-148
MHRH230	φ1.5×25	1.2	70	D-080
RSES230	φ1.5×25	2.25	70	D-142
MHR230	φ1.5×25	2.3	70	D-094
MHRH230	φ1.5×30	1.2	70	D-080
RSES230	φ1.5×30	2.25	70	D-142
MHR230	φ1.5×30	2.3	70	D-094
RSE230	φ1.5×30	4.5	70	D-148
MHRH230	φ1.5×35	1.2	80	D-080
MHR230	φ1.5×35	2.3	80	D-094
MHR230	φ1.5×38	2.3	80	D-094
RSE230	φ1.5×38	4.5	80	D-148
MHR230	φ1.5×40	2.3	80	D-094
MHR230	φ1.5×45	2.3	80	D-094
RSE230	φ1.5×45	4.5	90	D-148
RSE230	φ1.5×53	4.5	90	D-148
φ1.6				
MXH225	φ1.6	1.6	45	D-002
MXH225P	φ1.6	1.6	45	D-012
MSES230P	φ1.6	3	45	D-030
MXH230	φ1.6	3.2	45	D-004
MXH230P	φ1.6	3.2	45	D-014
MX230	φ1.6	3.2	45	D-022
AL2D-2	φ1.6	3.2	45	D-116
MSUSZ440	φ1.6	3.2	50	D-018
MSCZ440	φ1.6	3.2	50	D-064
MSE230	φ1.6	4	45	D-032
MXH235	φ1.6	4.8	45	D-006
MXH235P	φ1.6	4.8	45	D-016
MX235	φ1.6	4.8	45	D-024
MX240	φ1.6	6.4	45	D-026
MHRH230	φ1.6×6	1.3	50	D-080
MHR230	φ1.6×6	2.4	50	D-094
MHR430	φ1.6×6	2.4	50	D-103
MHRH230	φ1.6×8	1.3	50	D-080
MHR230	φ1.6×8	2.4	50	D-094
MHR430	φ1.6×8	2.4	50	D-103
MHR230	φ1.6×10	2.4	50	D-094
MHR430	φ1.6×10	2.4	50	D-103
MHR230	φ1.6×12	2.4	50	D-094
MHR430	φ1.6×12	2.4	50	D-103
MHR230	φ1.6×14	2.4	60	D-094
MHR430	φ1.6×14	2.4	60	D-103
MHR230	φ1.6×16	2.4	60	D-094
MHR430	φ1.6×16	2.4	60	D-103
MHR230	φ1.6×18	2.4	60	D-094
MHR430	φ1.6×18	2.4	60	D-103
MHR230	φ1.6×20	2.4	60	D-094
MHR430	φ1.6×20	2.4	60	D-103
MHR230	φ1.6×26	2.4	60	D-094
MHR430	φ1.6×26	2.4	70	D-103
φ1.7				
MXH225	φ1.7	1.7	45	D-002
MXH225P	φ1.7	1.7	45	D-012
MXH230	φ1.7	3.4	45	D-004
MXH230P	φ1.7	3.4	45	D-014
MX230	φ1.7	3.4	45	D-022
AL2D-2	φ1.7	3.4	45	D-116
MSUSZ440	φ1.7	3.4	50	D-018
MSCZ440	φ1.7	3.4	50	D-064
MSE230	φ1.7	4.5	45	D-032
MXH235	φ1.7	5.1	45	D-006
MXH235P	φ1.7	5.1	45	D-016

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MX235	φ1.7	5.1	45	D-024
MX240	φ1.7	6.8	45	D-026
MHR430	φ1.7×6	2.5	50	D-103
MHR430	φ1.7×14	2.5	60	D-103
MHR430	φ1.7×24	2.5	70	D-103
φ1.8				
MXH225	φ1.8	1.8	45	D-002
MXH225P	φ1.8	1.8	45	D-012
MX225	φ1.8	1.8	45	D-020
MSES230P	φ1.8	3.5	45	D-030
MXH230	φ1.8	3.6	45	D-004
MXH230P	φ1.8	3.6	45	D-014
MX230	φ1.8	3.6	45	D-022
AL2D-2	φ1.8	3.6	45	D-116
MSUSZ440	φ1.8	3.6	50	D-018
MSCZ440	φ1.8	3.6	50	D-064
MSE230	φ1.8	4.5	45	D-032
MXH235	φ1.8	5.4	45	D-006
MXH235P	φ1.8	5.4	45	D-016
MX235	φ1.8	5.4	45	D-024
MXH240	φ1.8	7.2	45	D-008
MX240	φ1.8	7.2	45	D-026
MXH245	φ1.8	9	50	D-010
MX245	φ1.8	9	50	D-028
MHRH230	φ1.8×6	1.4	50	D-080
MHRH430	φ1.8×6	1.4	50	D-084
MHR230	φ1.8×6	2.7	50	D-094
MHR430	φ1.8×6	2.7	50	D-103
MHRH230	φ1.8×8	1.4	50	D-080
MHRH430	φ1.8×8	1.4	50	D-084
MHR230	φ1.8×8	2.7	50	D-094
MHR430	φ1.8×8	2.7	50	D-103
MHRH230	φ1.8×10	1.4	50	D-080
MHRH430	φ1.8×10	1.4	50	D-084
MHR230	φ1.8×10	2.7	50	D-094
MHR430	φ1.8×10	2.7	50	D-103
MHRH230	φ1.8×12	1.4	50	D-080
MHRH430	φ1.8×12	1.4	50	D-084
MHR230	φ1.8×12	2.7	50	D-094
MHR430	φ1.8×12	2.7	50	D-103
MHRH230	φ1.8×14	1.4	50	D-080
MHRH430	φ1.8×14	1.4	60	D-084
MHR230	φ1.8×14	2.7	50	D-094
MHR430	φ1.8×14	2.7	60	D-103
MHRH230	φ1.8×16	1.4	60	D-080
MHRH430	φ1.8×16	1.4	60	D-084
MHR230	φ1.8×16	2.7	60	D-094
MHR430	φ1.8×16	2.7	60	D-103
MHRH230	φ1.8×18	1.4	60	D-080
MHRH430	φ1.8×18	1.4	60	D-084
MHR230	φ1.8×18	2.7	60	D-094
MHR430	φ1.8×18	2.7	60	D-103
MHR230	φ1.8×20	2.7	60	D-094
MHR430	φ1.8×20	2.7	60	D-103
MHR230	φ1.8×25	2.7	70	D-094
MHR430	φ1.8×25	2.7	70	D-103
φ1.9				
MXH225	φ1.9	1.9	45	D-002
MXH225P	φ1.9	1.9	45	D-012
MXH230	φ1.9	3.8	45	D-004
MXH230P	φ1.9	3.8	45	D-014
MX230	φ1.9	3.8	45	D-022
AL2D-2	φ1.9	3.8	45	D-116
MSUSZ440	φ1.9	3.8	50	D-018
MSCZ440	φ1.9	3.8	50	D-064
MSE230	φ1.9	5	45	D-032
MXH235	φ1.9	5.7	45	D-006
MXH235P	φ1.9	5.7	45	D-016
MX235	φ1.9	5.7	45	D-024
MX240	φ1.9	7.6	45	D-026
MHR430	φ1.9×6	2.8	50	D-103
MHR430	φ1.9×16	2.8	60	D-103
MHR430	φ1.9×28	2.8	70	D-103
φ2				
MXH225	φ2	2	45	D-002
MXH225P	φ2	2	45	D-012
MX225	φ2	2	45	D-020
MX425	φ2	2	45	D-040
MSZ345	φ2	3	45	D-062
RSES230	φ2	3	60	D-142
MXH230	φ2	4	45	D-004
MXH230P	φ2	4	45	D-014
MX230	φ2	4	45	D-022
MSES230P	φ2	4	45	D-030
MX430	φ2	4	45	D-042
AL2D-2	φ2	4	45	D-116
AL2D-2DLC	φ2	4	45	D-126
MSUSZ440	φ2	4	50	D-018
MSCZ440	φ2	4	50	D-064
MHDSH445	φ2	4	60	D-066
MHDH445	φ2	4	60	D-070
MHD445	φ2	4	60	D-074
MSE230	φ2	5	45	D-032
MSE230M	φ2	5	45	D-036
MSE430P	φ2	5	45	D-050
MSE430	φ2	5	45	D-052
MSE245	φ2	5	45	D-056
MSE445	φ2	5	45	D-060
DCSE235	φ2	6	45	C-010
MXH235	φ2	6	45	D-006
MXH235P	φ2	6	45	D-016
MX235	φ2	6	45	D-024

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MX435	ϕ2	6	45	D-044
AL3D-2	ϕ2	6	45	D-118
AL3D-2DLC	ϕ2	6	45	D-128
RSE230	ϕ2	6	50	D-148
MSUSZ440	ϕ2	6	60	D-018
MSCZ440	ϕ2	6	60	D-064
MHDSH445	ϕ2	6	60	D-066
AL3D-345	ϕ2	6	60	D-124
MXH240	ϕ2	8	45	D-008
MX240	ϕ2	8	45	D-026
MX440	ϕ2	8	45	D-046
MSEM230	ϕ2	8	50	D-038
MSEM430	ϕ2	8	50	D-054
AL4D-2	ϕ2	8	50	D-120
AL4D-2DLC	ϕ2	8	50	D-130
MXH245	ϕ2	10	50	D-010
MX245	ϕ2	10	50	D-028
MX445	ϕ2	10	50	D-048
AL5D-2	ϕ2	10	50	D-122
AL5D-2DLC	ϕ2	10	50	D-132
RSE230	ϕ2	10	50	D-148
RSE230	ϕ2	15	60	D-148
RSE230	ϕ2	20	60	D-148
DCMS	ϕ2×4	1	45	C-008
MHRH230	ϕ2×4	1.6	50	D-080
MHR230	ϕ2×4	3	50	D-094
MHRH230	ϕ2×6	1.6	50	D-080
MHRH430	ϕ2×6	1.6	50	D-085
ALZ345	ϕ2×6	3	45	D-134
ALZ345-DLC	ϕ2×6	3	45	D-136
MSUSZ440-LN	ϕ2×6	3	50	D-088
MHR230	ϕ2×6	3	50	D-094
MHR430	ϕ2×6	3	50	D-103
MSCZ440-LN	ϕ2×6	3	50	D-110
RSES230	ϕ2×6	3	60	D-142
DCHR230	ϕ2×6	4	50	C-012
DHR237	ϕ2×6	4	50	D-155
DCMS	ϕ2×8	1	45	C-008
MHRH230	ϕ2×8	1.6	50	D-080
MHRH430	ϕ2×8	1.6	50	D-085
MSUSZ440-LN	ϕ2×8	3	50	D-088
MHR230	ϕ2×8	3	50	D-094
MHR430	ϕ2×8	3	50	D-103
MSCZ440-LN	ϕ2×8	3	50	D-110
RSES230	ϕ2×8	3	60	D-142
DHR237	ϕ2×8	4	50	D-155
MHRH230	ϕ2×10	1.6	50	D-080
MHRH430	ϕ2×10	1.6	50	D-085
MSUSZ440-LN	ϕ2×10	3	50	D-088
MHR230	ϕ2×10	3	50	D-094
MHR430	ϕ2×10	3	50	D-103

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSCZ440-LN	ϕ2×10	3	50	D-110
ALZ345	ϕ2×10	3	60	D-134
RSES230	ϕ2×10	3	60	D-142
DCHR230	ϕ2×10	4	50	C-012
DHR237	ϕ2×10	4	50	D-155
MHRH230	ϕ2×12	1.6	50	D-080
MHRH430	ϕ2×12	1.6	50	D-085
MHR230	ϕ2×12	3	50	D-095
MHR430	ϕ2×12	3	50	D-103
RSES230	ϕ2×12	3	60	D-142
DHR237	ϕ2×12	4	50	D-155
RSE230	ϕ2×12	6	60	D-148
MHRH230	ϕ2×14	1.6	60	D-080
MHRH430	ϕ2×14	1.6	60	D-085
MHR230	ϕ2×14	3	60	D-095
MHR430	ϕ2×14	3	60	D-103
DHR237	ϕ2×14	4	50	D-155
RSES230	ϕ2×15	3	60	D-142
RSE230	ϕ2×15	6	60	D-148
MHRH230	ϕ2×16	1.6	60	D-080
MHRH430	ϕ2×16	1.6	60	D-085
MHR230	ϕ2×16	3	60	D-095
MHR430	ϕ2×16	3	60	D-103
DCHR230	ϕ2×16	4	60	C-012
DHR237	ϕ2×16	4	60	D-155
MHRH230	ϕ2×18	1.6	60	D-080
MHRH430	ϕ2×18	1.6	60	D-085
MHR230	ϕ2×18	3	60	D-095
MHR430	ϕ2×18	3	60	D-103
MHRH230	ϕ2×20	1.6	60	D-080
MHRH430	ϕ2×20	1.6	60	D-085
MHR230	ϕ2×20	3	60	D-095
MHR430	ϕ2×20	3	60	D-103
RSES230	ϕ2×20	3	80	D-142
DCHR230	ϕ2×20	4	60	C-012
DHR237	ϕ2×20	4	60	D-155
RSE230	ϕ2×20	6	60	D-148
RSES230	ϕ2×24	3	80	D-142
RSE230	ϕ2×24	6	70	D-148
MHRH230	ϕ2×25	1.6	70	D-080
MHR230	ϕ2×25	3	70	D-095
MHR430	ϕ2×25	3	70	D-104
MHRH230	ϕ2×30	1.6	70	D-080
MHR230	ϕ2×30	3	70	D-095
MHR430	ϕ2×30	3	70	D-104
RSES230	ϕ2×30	3	80	D-142
RSE230	ϕ2×30	6	80	D-148
MHRH230	ϕ2×35	1.6	80	D-080
MHR230	ϕ2×35	3	80	D-095
MHRH230	ϕ2×40	1.6	90	D-080
MHR230	ϕ2×40	3	90	D-095

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
RSES230	ϕ2×40	3	100	D-142
RSE230	ϕ2×40	6	90	D-148
MHRH230	ϕ2×50	1.6	100	D-080
MHR230	ϕ2×50	3	100	D-095
RSE230	ϕ2×50	6	110	D-148
MHR230	ϕ2×60	3	110	D-095
RSE230	ϕ2×60	6	110	D-148
RSE230	ϕ2×70	6	110	D-148
ϕ2.1				
MXH230	ϕ2.1	4.2	45	D-004
MXH230P	ϕ2.1	4.2	45	D-014
MX230	ϕ2.1	4.2	45	D-022
AL2D-2	ϕ2.1	4.2	45	D-116
MSUSZ440	ϕ2.1	4.2	50	D-018
MSCZ440	ϕ2.1	4.2	50	D-064
MSE230	ϕ2.1	5.5	45	D-032
MXH235	ϕ2.1	6.3	45	D-006
MXH235P	ϕ2.1	6.3	45	D-016
MX235	ϕ2.1	6.3	45	D-024
MX240	ϕ2.1	8.4	45	D-026
ϕ2.2				
MXH230	ϕ2.2	4.4	45	D-004
MXH230P	ϕ2.2	4.4	45	D-014
MX230	ϕ2.2	4.4	45	D-022
AL2D-2	ϕ2.2	4.4	45	D-116
MSUSZ440	ϕ2.2	4.4	50	D-018
MSCZ440	ϕ2.2	4.4	50	D-064
MSE230	ϕ2.2	5.5	45	D-032
MXH235	ϕ2.2	6.6	45	D-006
MXH235P	ϕ2.2	6.6	45	D-016
MX235	ϕ2.2	6.6	45	D-024
MX240	ϕ2.2	8.8	45	D-026
ϕ2.3				
MXH230	ϕ2.3	4.6	45	D-004
MXH230P	ϕ2.3	4.6	45	D-014
MX230	ϕ2.3	4.6	45	D-022
AL2D-2	ϕ2.3	4.6	45	D-116
MSUSZ440	ϕ2.3	4.6	50	D-018
MSCZ440	ϕ2.3	4.6	50	D-064
MSE230	ϕ2.3	6	45	D-032
MXH235	ϕ2.3	6.9	45	D-006
MXH235P	ϕ2.3	6.9	45	D-016
MX235	ϕ2.3	6.9	45	D-024
MX240	ϕ2.3	9.2	45	D-026
ϕ2.4				
MXH230	ϕ2.4	4.8	45	D-004
MXH230P	ϕ2.4	4.8	45	D-014
MX230	ϕ2.4	4.8	45	D-022
AL2D-2	ϕ2.4	4.8	45	D-116
MSUSZ440	ϕ2.4	4.8	50	D-018
MSCZ440	ϕ2.4	4.8	50	D-064

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSE230	ϕ2.4	6	45	D-032
MXH235	ϕ2.4	7.2	45	D-006
MXH235P	ϕ2.4	7.2	45	D-016
MX235	ϕ2.4	7.2	45	D-024
MX240	ϕ2.4	9.6	45	D-026
ϕ2.5				
MXH225	ϕ2.5	2.5	45	D-002
MXH225P	ϕ2.5	2.5	45	D-012
MX225	ϕ2.5	2.5	45	D-020
MX425	ϕ2.5	2.5	45	D-040
MSZ345	ϕ2.5	3.8	45	D-062
MXH230	ϕ2.5	5	45	D-004
MXH230P	ϕ2.5	5	45	D-014
MX230	ϕ2.5	5	45	D-022
MSES230P	ϕ2.5	5	45	D-030
MX430	ϕ2.5	5	45	D-042
AL2D-2	ϕ2.5	5	45	D-116
AL2D-2DLC	ϕ2.5	5	45	D-126
MSUSZ440	ϕ2.5	5	50	D-018
MSCZ440	ϕ2.5	5	50	D-064
MSE230	ϕ2.5	7	45	D-032
MSE230M	ϕ2.5	7	45	D-036
MSE430P	ϕ2.5	7	45	D-050
MSE430	ϕ2.5	7	45	D-052
MSE245	ϕ2.5	7	45	D-056
MSE445	ϕ2.5	7	45	D-060
MXH235	ϕ2.5	7.5	45	D-006
MXH235P	ϕ2.5	7.5	45	D-016
MX235	ϕ2.5	7.5	45	D-024
MX435	ϕ2.5	7.5	45	D-044
AL3D-2	ϕ2.5	7.5	45	D-118
AL3D-2DLC	ϕ2.5	7.5	45	D-128
MSUSZ440	ϕ2.5	7.5	60	D-018
MSCZ440	ϕ2.5	7.5	60	D-064
MXH240	ϕ2.5	10	45	D-008
MX240	ϕ2.5	10	45	D-026
MX440	ϕ2.5	10	45	D-046
MSEM230	ϕ2.5	10	50	D-038
MSEM430	ϕ2.5	10	50	D-054
AL4D-2	ϕ2.5	10	50	D-120
AL4D-2DLC	ϕ2.5	10	50	D-130
MXH245	ϕ2.5	12.5	50	D-010
MX245	ϕ2.5	12.5	50	D-028
MX445	ϕ2.5	12.5	50	D-048
AL5D-2	ϕ2.5	12.5	50	D-122
AL5D-2DLC	ϕ2.5	12.5	50	D-132
DHR237	ϕ2.5×6	5	45	D-155
ALZ345	ϕ2.5×7.5	3.8	45	D-134
ALZ345-DLC	ϕ2.5×7.5	3.8	45	D-136
MSUSZ440-LN	ϕ2.5×7.5	3.8	50	D-088
MSCZ440-LN	ϕ2.5×7.5	3.8	50	D-110

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH230	ϕ2.5×8	2	50	D-080
MHRH430	ϕ2.5×8	2	50	D-085
MHR230	ϕ2.5×8	3.7	50	D-095
MHR430	ϕ2.5×8	3.7	50	D-104
DHR237	ϕ2.5×8	5	50	D-155
MHR230	ϕ2.5×10	3.7	50	D-095
MSUSZ440-LN	ϕ2.5×10	3.8	50	D-088
MSCZ440-LN	ϕ2.5×10	3.8	50	D-110
DHR237	ϕ2.5×10	5	50	D-155
MHRH230	ϕ2.5×12	2	50	D-080
MHRH430	ϕ2.5×12	2	50	D-085
MHR230	ϕ2.5×12	3.7	50	D-095
MHR430	ϕ2.5×12	3.7	50	D-104
DHR237	ϕ2.5×12	5	50	D-155
MSUSZ440-LN	ϕ2.5×12.5	3.8	60	D-088
MSCZ440-LN	ϕ2.5×12.5	3.8	60	D-110
MHR230	ϕ2.5×14	3.7	50	D-095
DHR237	ϕ2.5×14	5	50	D-155
MHRH230	ϕ2.5×16	2	60	D-080
MHRH430	ϕ2.5×16	2	60	D-085
MHR230	ϕ2.5×16	3.7	60	D-095
MHR430	ϕ2.5×16	3.7	60	D-104
DHR237	ϕ2.5×16	5	50	D-155
MHR230	ϕ2.5×18	3.7	60	D-095
MHRH230	ϕ2.5×20	2	60	D-080
MHRH430	ϕ2.5×20	2	60	D-085
MHR230	ϕ2.5×20	3.7	60	D-095
MHR430	ϕ2.5×20	3.7	60	D-104
DHR237	ϕ2.5×20	5	60	D-155
MHRH430	ϕ2.5×25	2	70	D-085
MHR230	ϕ2.5×25	3.7	70	D-095
MHR430	ϕ2.5×25	3.7	70	D-104
MHRH230	ϕ2.5×30	2	70	D-080
MHR230	ϕ2.5×30	3.7	70	D-095
MHRH230	ϕ2.5×40	2	90	D-080
MHR230	ϕ2.5×40	3.7	90	D-095
MHRH230	ϕ2.5×50	2	100	D-080
MHR230	ϕ2.5×50	3.7	100	D-095
ϕ2.6				
MXH230	ϕ2.6	5.2	45	D-004
MXH230P	ϕ2.6	5.2	45	D-014
MX230	ϕ2.6	5.2	45	D-022
AL2D-2	ϕ2.6	5.2	45	D-116
MSUSZ440	ϕ2.6	5.2	50	D-018
MSCZ440	ϕ2.6	5.2	50	D-064
MSE230	ϕ2.6	7	45	D-032
MXH235	ϕ2.6	7.8	45	D-006
MXH235P	ϕ2.6	7.8	45	D-016
MX235	ϕ2.6	7.8	45	D-024
MX240	ϕ2.6	10.4	50	D-026
ϕ2.7				
MXH230	ϕ2.7	5.4	45	D-004
MXH230P	ϕ2.7	5.4	45	D-014
MX230	ϕ2.7	5.4	45	D-022
AL2D-2	ϕ2.7	5.4	45	D-116
MSUSZ440	ϕ2.7	5.4	50	D-018
MSCZ440	ϕ2.7	5.4	50	D-064
MSE230	ϕ2.7	7	45	D-032
MXH235	ϕ2.7	8.1	45	D-006
MXH235P	ϕ2.7	8.1	45	D-016
MX235	ϕ2.7	8.1	45	D-024
MX240	ϕ2.7	10.8	50	D-026
ϕ2.8				
MXH230	ϕ2.8	5.6	45	D-004
MXH230P	ϕ2.8	5.6	45	D-014
MX230	ϕ2.8	5.6	45	D-022
AL2D-2	ϕ2.8	5.6	45	D-116
MSUSZ440	ϕ2.8	5.6	50	D-018
MSCZ440	ϕ2.8	5.6	50	D-064
MSE230	ϕ2.8	7	45	D-032
MXH235	ϕ2.8	8.4	45	D-006
MXH235P	ϕ2.8	8.4	45	D-016
MX235	ϕ2.8	8.4	45	D-024
MX240	ϕ2.8	11.2	50	D-026
ϕ2.9				
MXH230	ϕ2.9	5.8	45	D-004
MXH230P	ϕ2.9	5.8	45	D-014
MX230	ϕ2.9	5.8	45	D-022
MSUSZ440	ϕ2.9	5.8	50	D-018
MSCZ440	ϕ2.9	5.8	50	D-064
AL2D-2	ϕ2.9	5.8	50	D-116
MSE230	ϕ2.9	8	50	D-032
MXH235	ϕ2.9	8.7	45	D-006
MXH235P	ϕ2.9	8.7	45	D-016
MX235	ϕ2.9	8.7	45	D-024
MX240	ϕ2.9	11.6	50	D-026
ϕ3				
MXH225	ϕ3	3	45	D-002
MXH225P	ϕ3	3	45	D-012
MX225	ϕ3	3	45	D-020
MX425	ϕ3	3	45	D-040
RSES230	ϕ3	4.5	80	D-142
MXH230	ϕ3	6	45	D-004
MXH230P	ϕ3	6	45	D-014
MX230	ϕ3	6	45	D-022
MX430	ϕ3	6	45	D-042
MSUSZ440	ϕ3	6	50	D-018
MSES230P	ϕ3	6	50	D-030
MSZ345	ϕ3	6	50	D-062
MSCZ440	ϕ3	6	50	D-064
AL2D-2	ϕ3	6	50	D-116
AL2D-2DLC	ϕ3	6	50	D-126

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHDSH445	ϕ3	6	60	D-066
MHDH445	ϕ3	6	60	D-070
MHD445	ϕ3	6	60	D-074
MSE230	ϕ3	8	50	D-033
MSE230M	ϕ3	8	50	D-036
MSE430P	ϕ3	8	50	D-050
MSE430	ϕ3	8	50	D-052
MSE245	ϕ3	8	50	D-056
MSE345	ϕ3	8	50	D-058
MSE445	ϕ3	8	50	D-060
DCSE235	ϕ3	9	45	C-010
MXH235	ϕ3	9	45	D-006
MXH235P	ϕ3	9	45	D-016
MX235	ϕ3	9	45	D-024
MX435	ϕ3	9	45	D-044
AL3D-2	ϕ3	9	50	D-118
AL3D-2DLC	ϕ3	9	50	D-128
RSE230	ϕ3	9	50	D-149
MSUSZ440	ϕ3	9	60	D-018
MSCZ440	ϕ3	9	60	D-064
MHDSH445	ϕ3	9	60	D-066
AL3D-345	ϕ3	9	60	D-124
RSE230	ϕ3	9	100	D-149
MXH240	ϕ3	12	50	D-008
MX240	ϕ3	12	50	D-026
MX440	ϕ3	12	50	D-046
MSEM230	ϕ3	12	55	D-038
MSEM430	ϕ3	12	55	D-054
AL4D-2	ϕ3	12	55	D-120
AL4D-2DLC	ϕ3	12	55	D-130
MXH245	ϕ3	15	55	D-010
MX245	ϕ3	15	55	D-028
MX445	ϕ3	15	55	D-048
AL5D-2	ϕ3	15	55	D-122
AL5D-2DLC	ϕ3	15	55	D-132
RSE230	ϕ3	15	60	D-149
RSE230	ϕ3	15	100	D-149
RSE230	ϕ3	20	60	D-149
RSE230	ϕ3	25	70	D-149
RSE230	ϕ3	30	70	D-149
MHRH230	ϕ3×8	4.5	50	D-080
MHRH430	ϕ3×8	4.5	50	D-085
MHR230	ϕ3×8	4.5	50	D-095
MHR430	ϕ3×8	4.5	50	D-104
DHR237	ϕ3×8	6	50	D-155
MSUSZ440-LN	ϕ3×9	4.5	50	D-088
MSCZ440-LN	ϕ3×9	4.5	50	D-110
ALZ345	ϕ3×9	4.5	55	D-134
ALZ345-DLC	ϕ3×9	4.5	55	D-136
MHR230	ϕ3×10	4.5	50	D-095
RSES230	ϕ3×10	4.5	80	D-142
DHR237	ϕ3×10	6	50	D-155
MHRH230	ϕ3×12	4.5	50	D-080
MHRH430	ϕ3×12	4.5	50	D-085
MSUSZ440-LN	ϕ3×12	4.5	50	D-088
MHR230	ϕ3×12	4.5	50	D-095
MHR430	ϕ3×12	4.5	50	D-104
MSCZ440-LN	ϕ3×12	4.5	50	D-110
RSES230	ϕ3×12	4.5	80	D-142
MHR230	ϕ3×14	4.5	50	D-095
MSUSZ440-LN	ϕ3×15	4.5	60	D-088
MSCZ440-LN	ϕ3×15	4.5	60	D-110
ALZ345	ϕ3×15	4.5	60	D-134
RSES230	ϕ3×15	4.5	80	D-142
DHR237	ϕ3×15	6	60	D-155
RSE230	ϕ3×15	9	60	D-149
MHRH230	ϕ3×16	4.5	60	D-080
MHRH430	ϕ3×16	4.5	60	D-085
MHR230	ϕ3×16	4.5	60	D-095
MHR430	ϕ3×16	4.5	60	D-104
DCHR230	ϕ3×16	6	60	C-012
MHR230	ϕ3×18	4.5	60	D-095
MHRH230	ϕ3×20	4.5	60	D-080
MHRH430	ϕ3×20	4.5	60	D-085
MHR230	ϕ3×20	4.5	60	D-095
MHR430	ϕ3×20	4.5	60	D-104
RSES230	ϕ3×20	4.5	80	D-142
DHR237	ϕ3×20	6	60	D-155
RSE230	ϕ3×20	9	60	D-149
RSES230	ϕ3×24	4.5	80	D-142
RSE230	ϕ3×24	9	70	D-149
MHRH230	ϕ3×25	4.5	70	D-080
MHRH430	ϕ3×25	4.5	70	D-085
MHR230	ϕ3×25	4.5	70	D-095
MHR430	ϕ3×25	4.5	70	D-104
DHR237	ϕ3×25	6	70	D-155
MHRH230	ϕ3×30	4.5	70	D-080
MHRH430	ϕ3×30	4.5	70	D-085
MHR230	ϕ3×30	4.5	70	D-095
MHR430	ϕ3×30	4.5	70	D-104
RSES230	ϕ3×30	4.5	80	D-142
DCHR230	ϕ3×30	6	70	C-012
RSE230	ϕ3×30	9	70	D-149
MHR230	ϕ3×35	4.5	80	D-095
RSES230	ϕ3×36	4.5	80	D-142
RSE230	ϕ3×36	9	80	D-149
MHR230	ϕ3×40	4.5	90	D-096
RSE230	ϕ3×45	9	90	D-149
MHR230	ϕ3×50	4.5	100	D-096
RSE230	ϕ3×60	9	110	D-149
RSE230	ϕ3×75	9	120	D-149
ϕ3.1				

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MX230	ϕ3.1	6.2	45	D-022
MSUSZ440	ϕ3.1	6.2	50	D-018
MSCZ440	ϕ3.1	6.2	50	D-064
MSE230	ϕ3.1	8	50	D-033
MX235	ϕ3.1	9.3	45	D-024
MX240	ϕ3.1	12.4	50	D-026
ϕ3.2				
MX230	ϕ3.2	6.4	45	D-022
MSUSZ440	ϕ3.2	6.4	50	D-018
MSCZ440	ϕ3.2	6.4	50	D-064
MSE230	ϕ3.2	8	50	D-033
MX235	ϕ3.2	9.6	45	D-024
MX240	ϕ3.2	12.8	50	D-026
ϕ3.3				
MX230	ϕ3.3	6.6	45	D-022
MSUSZ440	ϕ3.3	6.6	50	D-018
MSCZ440	ϕ3.3	6.6	50	D-064
MSE230	ϕ3.3	9	50	D-033
MX235	ϕ3.3	9.9	45	D-024
MX240	ϕ3.3	13.2	50	D-026
ϕ3.4				
MX230	ϕ3.4	6.8	45	D-022
MSUSZ440	ϕ3.4	6.8	50	D-018
MSCZ440	ϕ3.4	6.8	50	D-064
MSE230	ϕ3.4	9	50	D-033
MX235	ϕ3.4	10.2	45	D-024
MX240	ϕ3.4	13.6	50	D-026
ϕ3.5				
MX425	ϕ3.5	3.5	45	D-040
MXH230	ϕ3.5	7	45	D-004
MXH230P	ϕ3.5	7	45	D-014
MX230	ϕ3.5	7	45	D-022
MX430	ϕ3.5	7	45	D-042
MSUSZ440	ϕ3.5	7	50	D-018
MSCZ440	ϕ3.5	7	50	D-064
AL2D-2	ϕ3.5	7	50	D-116
AL2D-2DLC	ϕ3.5	7	50	D-126
MSE230	ϕ3.5	9	50	D-033
MSE430	ϕ3.5	9	50	D-052
MXH235	ϕ3.5	10.5	45	D-006
MXH235P	ϕ3.5	10.5	45	D-016
MX235	ϕ3.5	10.5	45	D-024
MX435	ϕ3.5	10.5	45	D-044
MSUSZ440	ϕ3.5	10.5	60	D-018
MSCZ440	ϕ3.5	10.5	60	D-064
MX240	ϕ3.5	14	50	D-026
MX440	ϕ3.5	14	50	D-046
MX445	ϕ3.5	17.5	60	D-048
MSUSZ440-LN	ϕ3.5×10.5	5.3	50	D-088
MSCZ440-LN	ϕ3.5×10.5	5.3	50	D-110
ALZ345	ϕ3.5×10.5	5.3	55	D-134
ALZ345-DLC	ϕ3.5×10.5	5.3	55	D-136
MSUSZ440-LN	ϕ3.5×14	5.3	60	D-088
MSCZ440-LN	ϕ3.5×14	5.3	60	D-110
MHR430	ϕ3.5×15	5.5	60	D-104
MSUSZ440-LN	ϕ3.5×17.5	5.3	60	D-088
MSCZ440-LN	ϕ3.5×17.5	5.3	60	D-110
MHR430	ϕ3.5×25	5.5	70	D-104
MHR430	ϕ3.5×35	5.5	80	D-104
ϕ3.6				
MX230	ϕ3.6	7.2	45	D-022
MSUSZ440	ϕ3.6	7.2	50	D-018
MSCZ440	ϕ3.6	7.2	50	D-064
MSE230	ϕ3.6	9	50	D-033
MX235	ϕ3.6	10.8	45	D-024
MX240	ϕ3.6	14.4	50	D-026
ϕ3.7				
MX230	ϕ3.7	7.4	45	D-022
MSUSZ440	ϕ3.7	7.4	50	D-018
MSCZ440	ϕ3.7	7.4	50	D-064
MSE230	ϕ3.7	10	50	D-033
MX235	ϕ3.7	11.1	45	D-024
MX240	ϕ3.7	14.8	50	D-026
ϕ3.8				
MX230	ϕ3.8	7.6	45	D-022
MSUSZ440	ϕ3.8	7.6	50	D-018
MSCZ440	ϕ3.8	7.6	50	D-064
MSE230	ϕ3.8	10	50	D-033
MX235	ϕ3.8	11.4	45	D-024
MX240	ϕ3.8	15.2	50	D-026
ϕ3.9				
MX230	ϕ3.9	7.8	45	D-022
MSUSZ440	ϕ3.9	7.8	50	D-018
MSCZ440	ϕ3.9	7.8	50	D-064
MSE230	ϕ3.9	10	50	D-033
MX235	ϕ3.9	11.7	45	D-024
MX240	ϕ3.9	15.6	50	D-026
ϕ4				
MXH225	ϕ4	4	45	D-002
MXH225P	ϕ4	4	45	D-012
MX225	ϕ4	4	45	D-020
MX425	ϕ4	4	45	D-040
RSES230	ϕ4	6	80	D-142
MXH230	ϕ4	8	45	D-004
MXH230P	ϕ4	8	45	D-014
MX230	ϕ4	8	45	D-022
MX430	ϕ4	8	45	D-042
MSUSZ440	ϕ4	8	50	D-018
MSES230P	ϕ4	8	50	D-030
MSZ345	ϕ4	8	50	D-062
MSCZ440	ϕ4	8	50	D-064
AL2D-2	ϕ4	8	50	D-116
AL2D-2DLC	ϕ4	8	50	D-126
MHDSH445	ϕ4	8	60	D-066
MHDH445	ϕ4	8	60	D-070
MHD445	ϕ4	8	60	D-074
MSE230	ϕ4	10	50	D-033
MSE230M	ϕ4	10	50	D-036
MSE430P	ϕ4	10	50	D-050
MSE430	ϕ4	10	50	D-052
MSE245	ϕ4	10	50	D-056
MSE345	ϕ4	10	50	D-058
MSE445	ϕ4	10	50	D-060
DCSE235	ϕ4	12	50	C-010
MXH235	ϕ4	12	50	D-006
MXH235P	ϕ4	12	50	D-016
MX235	ϕ4	12	50	D-024
MX435	ϕ4	12	50	D-044
AL3D-2	ϕ4	12	50	D-118
AL3D-2DLC	ϕ4	12	50	D-128
RSE230	ϕ4	12	50	D-149
MSUSZ440	ϕ4	12	60	D-018
MSCZ440	ϕ4	12	60	D-064
MHDSH445	ϕ4	12	60	D-066
AL3D-345	ϕ4	12	70	D-124
RSE230	ϕ4	12	120	D-149
MXH240	ϕ4	16	55	D-008
MX240	ϕ4	16	55	D-026
MX440	ϕ4	16	55	D-046
MSEM230	ϕ4	16	60	D-038
MSEM430	ϕ4	16	60	D-054
AL4D-2	ϕ4	16	60	D-120
AL4D-2DLC	ϕ4	16	60	D-130
MXH245	ϕ4	20	60	D-010
MX245	ϕ4	20	60	D-028
MX445	ϕ4	20	60	D-048
AL5D-2	ϕ4	20	60	D-122
AL5D-2DLC	ϕ4	20	60	D-132
RSE230	ϕ4	20	60	D-149
RSE230	ϕ4	20	120	D-149
RSE230	ϕ4	30	70	D-149
RSE230	ϕ4	40	90	D-149
RSES230	ϕ4×10	6	80	D-142
DHR237	ϕ4×10	8	50	D-155
MHRH430	ϕ4×12	6	50	D-085
MSUSZ440-LN	ϕ4×12	6	50	D-088
MHR230	ϕ4×12	6	50	D-096
MHR430	ϕ4×12	6	50	D-104
MSCZ440-LN	ϕ4×12	6	50	D-110
ALZ345	ϕ4×12	6	55	D-134
ALZ345-DLC	ϕ4×12	6	55	D-136
RSES230	ϕ4×15	6	80	D-142
DHR237	ϕ4×15	8	60	D-155
MHRH430	ϕ4×16	6	60	D-085
MSUSZ440-LN	ϕ4×16	6	60	D-088
MHR230	ϕ4×16	6	60	D-096
MHR430	ϕ4×16	6	60	D-104
MSCZ440-LN	ϕ4×16	6	60	D-110
MHRH430	ϕ4×20	6	60	D-085
MSUSZ440-LN	ϕ4×20	6	60	D-088
MHR230	ϕ4×20	6	60	D-096
MHR430	ϕ4×20	6	60	D-104
MSCZ440-LN	ϕ4×20	6	60	D-110
ALZ345	ϕ4×20	6	70	D-134
RSES230	ϕ4×20	6	80	D-142
DCHR230	ϕ4×20	8	60	C-012
DHR237	ϕ4×20	8	60	D-155
RSE230	ϕ4×20	12	60	D-149
MHRH430	ϕ4×25	6	70	D-085
MHR230	ϕ4×25	6	70	D-096
MHR430	ϕ4×25	6	70	D-104
DHR237	ϕ4×25	8	70	D-155
MHRH430	ϕ4×30	6	70	D-085
MHR230	ϕ4×30	6	70	D-096
MHR430	ϕ4×30	6	70	D-104
RSES230	ϕ4×30	6	80	D-142
DHR237	ϕ4×30	8	70	D-155
RSE230	ϕ4×30	12	70	D-149
MHRH430	ϕ4×35	6	80	D-085
MHR230	ϕ4×35	6	80	D-096
MHR430	ϕ4×35	6	80	D-104
MHRH430	ϕ4×40	6	90	D-085
MHR230	ϕ4×40	6	90	D-096
MHR430	ϕ4×40	6	90	D-104
RSES230	ϕ4×40	6	100	D-142
DCHR230	ϕ4×40	8	90	C-012
RSE230	ϕ4×40	12	90	D-149
MHR230	ϕ4×45	6	90	D-096
MHR430	ϕ4×45	6	90	D-104
MHR230	ϕ4×50	6	100	D-096
MHR430	ϕ4×50	6	100	D-104
RSE230	ϕ4×55	12	110	D-149
MHR230	ϕ4×60	6	110	D-096
RSE230	ϕ4×70	12	120	D-149
ϕ4.1				
MX230	ϕ4.1	8.2	45	D-022
MSUSZ440	ϕ4.1	8.2	50	D-018
MSCZ440	ϕ4.1	8.2	50	D-064
MSE230	ϕ4.1	11	50	D-033
MX235	ϕ4.1	12.3	50	D-024
MX240	ϕ4.1	16.4	55	D-026
ϕ4.2				
MX230	ϕ4.2	8.4	45	D-022
MSUSZ440	ϕ4.2	8.4	50	D-018

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSCZ440	ϕ4.2	8.4	50	D-064
MSE230	ϕ4.2	11	50	D-033
MX235	ϕ4.2	12.6	50	D-024
MX240	ϕ4.2	16.8	55	D-026
ϕ4.3				
MX230	ϕ4.3	8.6	45	D-022
MSUSZ440	ϕ4.3	8.6	50	D-018
MSCZ440	ϕ4.3	8.6	50	D-064
MSE230	ϕ4.3	11	50	D-033
MX235	ϕ4.3	12.9	50	D-024
MX240	ϕ4.3	17.2	55	D-026
ϕ4.4				
MX230	ϕ4.4	8.8	45	D-022
MSUSZ440	ϕ4.4	8.8	50	D-018
MSCZ440	ϕ4.4	8.8	50	D-064
MSE230	ϕ4.4	11	50	D-033
MX235	ϕ4.4	13.2	50	D-024
MX240	ϕ4.4	17.6	55	D-026
ϕ4.5				
MX425	ϕ4.5	4.5	50	D-040
MXH230	ϕ4.5	9	50	D-004
MXH230P	ϕ4.5	9	50	D-014
MSUSZ440	ϕ4.5	9	50	D-018
MX230	ϕ4.5	9	50	D-022
MX430	ϕ4.5	9	50	D-042
MSCZ440	ϕ4.5	9	50	D-064
AL2D-2	ϕ4.5	9	55	D-116
AL2D-2DLC	ϕ4.5	9	55	D-126
MSE230	ϕ4.5	12	55	D-033
MSE430	ϕ4.5	12	55	D-052
MXH235	ϕ4.5	13.5	50	D-006
MXH235P	ϕ4.5	13.5	50	D-016
MX235	ϕ4.5	13.5	50	D-024
MX435	ϕ4.5	13.5	50	D-044
MSUSZ440	ϕ4.5	13.5	60	D-018
MSCZ440	ϕ4.5	13.5	60	D-064
MX240	ϕ4.5	18	55	D-026
MX440	ϕ4.5	18	55	D-046
MX445	ϕ4.5	22.5	65	D-048
MSUSZ440-LN	ϕ4.5×13.5	6.8	50	D-088
MSCZ440-LN	ϕ4.5×13.5	6.8	50	D-110
ALZ345	ϕ4.5×13.5	6.8	55	D-134
ALZ345-DLC	ϕ4.5×13.5	6.8	55	D-136
MSUSZ440-LN	ϕ4.5×18	6.8	60	D-088
MSCZ440-LN	ϕ4.5×18	6.8	60	D-110
MSUSZ440-LN	ϕ4.5×22.5	6.8	60	D-088
MSCZ440-LN	ϕ4.5×22.5	6.8	60	D-110
ϕ4.6				
MSUSZ440	ϕ4.6	9.2	50	D-018
MX230	ϕ4.6	9.2	50	D-022
MSCZ440	ϕ4.6	9.2	50	D-064
MSE230	ϕ4.6	12	55	D-033
MX235	ϕ4.6	13.8	55	D-024
MX240	ϕ4.6	18.4	55	D-026
ϕ4.7				
MSUSZ440	ϕ4.7	9.4	50	D-018
MX230	ϕ4.7	9.4	50	D-022
MSCZ440	ϕ4.7	9.4	50	D-064
MSE230	ϕ4.7	12	55	D-033
MX235	ϕ4.7	14.1	55	D-024
MX240	ϕ4.7	18.8	55	D-026
ϕ4.8				
MSUSZ440	ϕ4.8	9.6	50	D-018
MX230	ϕ4.8	9.6	50	D-022
MSCZ440	ϕ4.8	9.6	50	D-064
MSE230	ϕ4.8	12	55	D-033
MX235	ϕ4.8	14.4	55	D-024
MX240	ϕ4.8	19.2	55	D-026
ϕ4.9				
MSUSZ440	ϕ4.9	9.8	50	D-018
MX230	ϕ4.9	9.8	50	D-022
MSCZ440	ϕ4.9	9.8	50	D-064
MSE230	ϕ4.9	13	55	D-033
MX235	ϕ4.9	14.7	55	D-024
MX240	ϕ4.9	19.6	55	D-026
ϕ5				
MXH225	ϕ5	5	50	D-002
MXH225P	ϕ5	5	50	D-012
MX225	ϕ5	5	50	D-020
MX425	ϕ5	5	50	D-040
AL-3LS	ϕ5	7.5	80	D-138
RSES230	ϕ5	7.5	80	D-142
MXH230	ϕ5	10	50	D-004
MXH230P	ϕ5	10	50	D-014
MSUSZ440	ϕ5	10	50	D-018
MX230	ϕ5	10	50	D-022
MX430	ϕ5	10	50	D-042
MSZ345	ϕ5	10	50	D-062
MSCZ440	ϕ5	10	50	D-064
MSES230P	ϕ5	10	55	D-030
AL2D-2	ϕ5	10	55	D-116
AL2D-2DLC	ϕ5	10	55	D-126
MHDSH645	ϕ5	10	60	D-068
MHDH645	ϕ5	10	60	D-072
MHD645	ϕ5	10	60	D-076
RSE230	ϕ5	10	60	D-149
MSE230	ϕ5	13	55	D-033
MSE230M	ϕ5	13	55	D-036
MSE430P	ϕ5	13	55	D-050
MSE430	ϕ5	13	55	D-052
MSE245	ϕ5	13	55	D-056
MSE345	ϕ5	13	55	D-058

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSE445	ϕ5	13	55	D-060
DCSE235	ϕ5	15	55	C-010
MXH235	ϕ5	15	55	D-006
MXH235P	ϕ5	15	55	D-016
MX235	ϕ5	15	55	D-024
MX435	ϕ5	15	55	D-044
AL3D-2	ϕ5	15	55	D-118
AL3D-2DLC	ϕ5	15	55	D-128
MSUSZ440	ϕ5	15	60	D-018
MSCZ440	ϕ5	15	60	D-064
MHDSH645	ϕ5	15	65	D-068
MHDH645	ϕ5	15	65	D-072
RSE230	ϕ5	15	70	D-149
AL3D-345	ϕ5	15	80	D-124
MXH240	ϕ5	20	60	D-008
MX240	ϕ5	20	60	D-026
MX440	ϕ5	20	60	D-046
MSEM230	ϕ5	20	65	D-038
MSEM430	ϕ5	20	65	D-054
AL4D-2	ϕ5	20	65	D-120
AL4D-2DLC	ϕ5	20	65	D-130
MXH245	ϕ5	25	65	D-010
MX245	ϕ5	25	65	D-028
MX445	ϕ5	25	65	D-048
AL5D-2	ϕ5	25	65	D-122
AL5D-2DLC	ϕ5	25	65	D-132
RSE230	ϕ5	25	80	D-149
RSE230	ϕ5	35	90	D-149
RSE230	ϕ5	40	100	D-149
MSUSZ440-LN	ϕ5×15	7.5	50	D-088
MSCZ440-LN	ϕ5×15	7.5	50	D-110
ALZ345	ϕ5×15	7.5	55	D-134
ALZ345-DLC	ϕ5×15	7.5	55	D-136
DHR237	ϕ5×15	10	50	D-155
MHRH430	ϕ5×16	7.5	60	D-085
MHR230	ϕ5×16	7.5	60	D-096
MHR430	ϕ5×16	7.5	60	D-104
MSUSZ440-LN	ϕ5×20	7.5	60	D-088
MHR230	ϕ5×20	7.5	60	D-096
MSCZ440-LN	ϕ5×20	7.5	60	D-110
DHR237	ϕ5×20	10	60	D-155
MSUSZ440-LN	ϕ5×25	7.5	60	D-088
MSCZ440-LN	ϕ5×25	7.5	60	D-110
MHRH430	ϕ5×25	7.5	70	D-085
MHR230	ϕ5×25	7.5	70	D-096
MHR430	ϕ5×25	7.5	70	D-104
ALZ345	ϕ5×25	7.5	80	D-134
DHR237	ϕ5×25	10	60	D-155
MHR230	ϕ5×30	7.5	80	D-096
RSES230	ϕ5×30	7.5	80	D-142
DHR237	ϕ5×30	10	70	D-155
RSE230	ϕ5×30	15	90	D-149
MHRH430	ϕ5×35	7.5	80	D-085
MHR230	ϕ5×35	7.5	80	D-096
MHR430	ϕ5×35	7.5	80	D-104
MHR230	ϕ5×40	7.5	90	D-096
RSES230	ϕ5×40	7.5	100	D-142
RSE230	ϕ5×40	15	100	D-149
MHRH430	ϕ5×50	7.5	110	D-085
MHR230	ϕ5×50	7.5	110	D-096
MHR430	ϕ5×50	7.5	110	D-104
RSE230	ϕ5×55	15	120	D-149
MHR230	ϕ5×60	7.5	120	D-096
RSE230	ϕ5×70	15	130	D-149
ϕ5.1				
MSUSZ440	ϕ5.1	10.2	50	D-018
MX230	ϕ5.1	10.2	50	D-022
MSCZ440	ϕ5.1	10.2	50	D-064
MSE230	ϕ5.1	13	55	D-033
MX235	ϕ5.1	15.3	55	D-024
MX240	ϕ5.1	20.4	60	D-026
ϕ5.2				
MSUSZ440	ϕ5.2	10.4	50	D-018
MX230	ϕ5.2	10.4	50	D-022
MSCZ440	ϕ5.2	10.4	50	D-064
MSE230	ϕ5.2	13	55	D-033
MX235	ϕ5.2	15.6	55	D-024
MX240	ϕ5.2	20.8	60	D-026
ϕ5.3				
MSUSZ440	ϕ5.3	10.6	50	D-018
MX230	ϕ5.3	10.6	50	D-022
MSCZ440	ϕ5.3	10.6	50	D-064
MSE230	ϕ5.3	14	55	D-033
MX235	ϕ5.3	15.9	55	D-024
MX240	ϕ5.3	21.2	60	D-026
ϕ5.4				
MSUSZ440	ϕ5.4	10.8	50	D-018
MX230	ϕ5.4	10.8	50	D-022
MSCZ440	ϕ5.4	10.8	50	D-064
MSE230	ϕ5.4	14	55	D-033
MX235	ϕ5.4	16.2	55	D-024
MX240	ϕ5.4	21.6	60	D-026
ϕ5.5				
MX425	ϕ5.5	5.5	50	D-040
MXH230	ϕ5.5	11	50	D-004
MXH230P	ϕ5.5	11	50	D-014
MSUSZ440	ϕ5.5	11	50	D-018
MX230	ϕ5.5	11	50	D-022
MX430	ϕ5.5	11	50	D-042
MSCZ440	ϕ5.5	11	50	D-064
AL2D-2	ϕ5.5	11	55	D-116
AL2D-2DLC	ϕ5.5	11	55	D-126

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSE230	ϕ5.5	14	55	D-033
MSE430	ϕ5.5	14	55	D-052
MXH235	ϕ5.5	16.5	60	D-006
MXH235P	ϕ5.5	16.5	60	D-016
MSUSZ440	ϕ5.5	16.5	60	D-018
MX235	ϕ5.5	16.5	60	D-024
MX435	ϕ5.5	16.5	60	D-044
MSCZ440	ϕ5.5	16.5	60	D-064
MX240	ϕ5.5	22	65	D-026
MX440	ϕ5.5	22	65	D-046
MX445	ϕ5.5	27.5	75	D-048
MSUSZ440-LN	ϕ5.5×16.5	8.3	50	D-088
MSCZ440-LN	ϕ5.5×16.5	8.3	50	D-110
ALZ345	ϕ5.5×16.5	8.3	55	D-134
ALZ345-DLC	ϕ5.5×16.5	8.3	55	D-136
MSUSZ440-LN	ϕ5.5×22	8.3	60	D-088
MSCZ440-LN	ϕ5.5×22	8.3	60	D-110
MSUSZ440-LN	ϕ5.5×27.5	8.3	60	D-088
MSCZ440-LN	ϕ5.5×27.5	8.3	60	D-110
ϕ5.6				
MSUSZ440	ϕ5.6	11.2	50	D-018
MX230	ϕ5.6	11.2	50	D-022
MSCZ440	ϕ5.6	11.2	50	D-064
MSE230	ϕ5.6	14	55	D-033
MX235	ϕ5.6	16.8	60	D-024
MX240	ϕ5.6	22.4	65	D-026
ϕ5.7				
MSUSZ440	ϕ5.7	11.4	50	D-018
MX230	ϕ5.7	11.4	50	D-022
MSCZ440	ϕ5.7	11.4	50	D-064
MSE230	ϕ5.7	15	55	D-033
MX235	ϕ5.7	17.1	60	D-024
MX240	ϕ5.7	22.8	65	D-026
ϕ5.8				
MSUSZ440	ϕ5.8	11.6	50	D-018
MX230	ϕ5.8	11.6	50	D-022
MSCZ440	ϕ5.8	11.6	50	D-064
MSE230	ϕ5.8	15	55	D-033
MX235	ϕ5.8	17.4	60	D-024
MX240	ϕ5.8	23.2	65	D-026
ϕ5.9				
MSUSZ440	ϕ5.9	11.8	50	D-018
MX230	ϕ5.9	11.8	50	D-022
MSCZ440	ϕ5.9	11.8	50	D-064
MSE230	ϕ5.9	15	55	D-033
MX235	ϕ5.9	17.7	60	D-024
MX240	ϕ5.9	23.6	65	D-026
ϕ6				
MXH225	ϕ6	6	50	D-002
MXH225P	ϕ6	6	50	D-012
MX225	ϕ6	6	50	D-020

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MX425	ϕ6	6	50	D-040
AL-3LS	ϕ6	9	80	D-138
RSES230	ϕ6	9	90	D-142
ALZ345	ϕ6	9	110	D-134
MXH230	ϕ6	12	50	D-004
MXH230P	ϕ6	12	50	D-014
MX230	ϕ6	12	50	D-022
MX430	ϕ6	12	50	D-042
MSES230P	ϕ6	12	55	D-030
AL2D-2	ϕ6	12	55	D-116
AL2D-2DLC	ϕ6	12	55	D-126
MSUSZ440	ϕ6	12	60	D-018
MSCZ440	ϕ6	12	60	D-064
MHDSH645	ϕ6	12	60	D-068
MHDH645	ϕ6	12	60	D-072
RSE230	ϕ6	12	70	D-149
MSZ345	ϕ6	13	55	D-062
MSE230	ϕ6	15	55	D-033
MSE230M	ϕ6	15	55	D-036
MSE430P	ϕ6	15	55	D-050
MSE430	ϕ6	15	55	D-052
MSE245	ϕ6	15	55	D-056
MSE345	ϕ6	15	55	D-058
MSE445	ϕ6	15	55	D-060
MHD645	ϕ6	15	60	D-076
DCSE235	ϕ6	18	60	C-010
MXH235	ϕ6	18	60	D-006
MXH235P	ϕ6	18	60	D-016
MSUSZ440	ϕ6	18	60	D-018
MX235	ϕ6	18	60	D-024
MX435	ϕ6	18	60	D-044
MSCZ440	ϕ6	18	60	D-064
AL3D-2	ϕ6	18	60	D-118
AL3D-2DLC	ϕ6	18	60	D-128
MHDSH645	ϕ6	18	65	D-068
MHDH645	ϕ6	18	65	D-072
AL3D-345	ϕ6	18	80	D-124
RSE230	ϕ6	18	80	D-149
MXH240	ϕ6	24	65	D-008
MX240	ϕ6	24	65	D-026
MX440	ϕ6	24	65	D-046
MSEM230	ϕ6	24	75	D-038
MSEM430	ϕ6	24	75	D-054
AL4D-2	ϕ6	24	75	D-120
AL4D-2DLC	ϕ6	24	75	D-130
RSE230	ϕ6	25	80	D-149
MXH245	ϕ6	30	75	D-010
MX245	ϕ6	30	75	D-028
MX445	ϕ6	30	75	D-048
AL5D-2	ϕ6	30	75	D-122
AL5D-2DLC	ϕ6	30	75	D-132

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
RSE230	ϕ6	30	90	D-149
RSE230	ϕ6	40	100	D-149
RSE230	ϕ6	50	120	D-149
DHR237	ϕ6×15	12	50	D-155
MSUSZ440-LN	ϕ6×18	9	60	D-088
MSCZ440-LN	ϕ6×18	9	60	D-110
ALZ345	ϕ6×18	9	60	D-134
ALZ345-DLC	ϕ6×18	9	60	D-136
MHRH430	ϕ6×20	9	80	D-085
MHR230	ϕ6×20	9	80	D-096
MHR430	ϕ6×20	9	80	D-104
DHR237	ϕ6×20	12	60	D-155
MSUSZ440-LN	ϕ6×24	9	60	D-088
MSCZ440-LN	ϕ6×24	9	60	D-110
MSUSZ440-LN	ϕ6×30	9	70	D-088
MSCZ440-LN	ϕ6×30	9	70	D-110
ALZ345	ϕ6×30	9	80	D-134
MHRH430	ϕ6×30	9	90	D-085
MHR230	ϕ6×30	9	90	D-096
MHR430	ϕ6×30	9	90	D-104
DHR237	ϕ6×30	12	70	D-155
DCHR230	ϕ6×30	12	90	C-012
RSES230	ϕ6×40	9	90	D-142
MHRH430	ϕ6×40	9	100	D-085
MHR230	ϕ6×40	9	100	D-096
MHR430	ϕ6×40	9	100	D-104
RSE230	ϕ6×40	18	100	D-149
MHRH430	ϕ6×50	9	110	D-085
MHR230	ϕ6×50	9	110	D-096
MHR430	ϕ6×50	9	110	D-105
DHR237	ϕ6×50	12	90	D-155
MHR230	ϕ6×60	9	120	D-096
RSES230	ϕ6×60	9	120	D-142
RSE230	ϕ6×60	18	120	D-149
RSES230	ϕ6×80	9	150	D-142
RSE230	ϕ6×80	18	130	D-149
ϕ6.5				
MSE230	ϕ6.5	17	60	D-033
MSE430	ϕ6.5	17	60	D-052
ϕ7				
MX225	ϕ7	7	65	D-020
MX230	ϕ7	14	65	D-022
AL2D-2	ϕ7	14	70	D-116
AL2D-2DLC	ϕ7	14	70	D-126
MSZ345	ϕ7	16	65	D-062
MSE230	ϕ7	18	65	D-033
MSE430	ϕ7	18	65	D-052
MX235	ϕ7	21	65	D-024
AL3D-2	ϕ7	21	70	D-118
AL3D-2DLC	ϕ7	21	70	D-128
MX240	ϕ7	28	90	D-026

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
AL4D-2	ϕ7	28	90	D-120
AL4D-2DLC	ϕ7	28	90	D-130
MX245	ϕ7	35	90	D-028
AL5D-2	ϕ7	35	90	D-122
AL5D-2DLC	ϕ7	35	90	D-132
ALZ345	ϕ7×21	10.5	70	D-134
ALZ345-DLC	ϕ7×21	10.5	70	D-136
ϕ7.5				
MSE230	ϕ7.5	19	65	D-033
MSE430	ϕ7.5	19	65	D-052
ϕ8				
MX225	ϕ8	8	65	D-020
MX425	ϕ8	8	65	D-040
AL-3LS	ϕ8	12	110	D-138
ALZ345	ϕ8	12	120	D-134
MX230	ϕ8	16	65	D-022
MSES230P	ϕ8	16	65	D-030
MX430	ϕ8	16	65	D-042
MHDH645	ϕ8	16	65	D-072
AL2D-2	ϕ8	16	70	D-116
AL2D-2DLC	ϕ8	16	70	D-126
MSZ345	ϕ8	19	65	D-062
MSE230	ϕ8	20	65	D-033
MSE430P	ϕ8	20	65	D-050
MSE430	ϕ8	20	65	D-052
MSE245	ϕ8	20	65	D-056
MSE345	ϕ8	20	65	D-058
MSE445	ϕ8	20	65	D-060
MHD645	ϕ8	20	65	D-076
MX235	ϕ8	24	65	D-024
MX435	ϕ8	24	65	D-044
MHDH645	ϕ8	24	70	D-072
AL3D-2	ϕ8	24	70	D-118
AL3D-2DLC	ϕ8	24	70	D-128
AL3D-345	ϕ8	24	90	D-124
MX240	ϕ8	32	90	D-026
MSEM230	ϕ8	32	90	D-038
MX440	ϕ8	32	90	D-046
MSEM430	ϕ8	32	90	D-054
AL4D-2	ϕ8	32	90	D-120
AL4D-2DLC	ϕ8	32	90	D-130
MX245	ϕ8	40	90	D-028
MX445	ϕ8	40	90	D-048
AL5D-2	ϕ8	40	90	D-122
AL5D-2DLC	ϕ8	40	90	D-132
ALZ345	ϕ8×24	12	70	D-134
ALZ345-DLC	ϕ8×24	12	70	D-136
MHR430	ϕ8×30	12	100	D-105
ALZ345	ϕ8×40	12	90	D-134
MHR430	ϕ8×50	12	120	D-105
MHR430	ϕ8×60	12	130	D-105

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径(×颈长) Dia.(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
ϕ8.5				
MSE230	ϕ8.5	22	70	D-033
MSE430	ϕ8.5	22	70	D-052
ϕ9				
MX225	ϕ9	9	75	D-020
MX230	ϕ9	18	75	D-022
AL2D-2	ϕ9	18	75	D-116
AL2D-2DLC	ϕ9	18	75	D-126
MSZ345	ϕ9	19	75	D-062
MSE230	ϕ9	23	70	D-033
MSE430	ϕ9	23	70	D-052
MX235	ϕ9	27	75	D-024
AL3D-2	ϕ9	27	75	D-118
AL3D-2DLC	ϕ9	27	75	D-128
MX240	ϕ9	36	100	D-026
AL4D-2	ϕ9	36	100	D-120
AL4D-2DLC	ϕ9	36	100	D-130
MX245	ϕ9	45	100	D-028
AL5D-2	ϕ9	45	100	D-122
AL5D-2DLC	ϕ9	45	100	D-132
ALZ345	ϕ9×27	13.5	75	D-134
ALZ345-DLC	ϕ9×27	13.5	75	D-136
ϕ9.5				
MSE230	ϕ9.5	24	75	D-033
MSE430	ϕ9.5	24	75	D-052
ϕ10				
MX225	ϕ10	10	75	D-020
MX425	ϕ10	10	75	D-040
ALZ345	ϕ10	15	130	D-134
AL-3LS	ϕ10	15	130	D-138
MX230	ϕ10	20	75	D-022
MSES230P	ϕ10	20	75	D-030
MX430	ϕ10	20	75	D-042
MHDH645	ϕ10	20	75	D-072
AL2D-2	ϕ10	20	75	D-116
AL2D-2DLC	ϕ10	20	75	D-126
MSZ345	ϕ10	22	75	D-062
MSE230	ϕ10	25	75	D-033
MSE430P	ϕ10	25	75	D-050
MSE430	ϕ10	25	75	D-052
MSE245	ϕ10	25	75	D-056
MSE345	ϕ10	25	75	D-058
MSE445	ϕ10	25	75	D-060
MHD645	ϕ10	25	75	D-076
MX235	ϕ10	30	75	D-024
MX435	ϕ10	30	75	D-044
AL3D-2	ϕ10	30	75	D-118
AL3D-2DLC	ϕ10	30	75	D-128
MHDH645	ϕ10	30	80	D-072
AL3D-345	ϕ10	30	100	D-124
MX240	ϕ10	40	100	D-026
MSEM230	ϕ10	40	100	D-038
MX440	ϕ10	40	100	D-046
MSEM430	ϕ10	40	100	D-054
AL4D-2	ϕ10	40	100	D-120
AL4D-2DLC	ϕ10	40	100	D-130
MX245	ϕ10	50	100	D-028
MX445	ϕ10	50	100	D-048
AL5D-2	ϕ10	50	100	D-122
AL5D-2DLC	ϕ10	50	100	D-132
ALZ345	ϕ10×30	15	75	D-134
ALZ345-DLC	ϕ10×30	15	75	D-136
MHR430	ϕ10×40	15	110	D-105
ALZ345	ϕ10×50	15	100	D-134
MHR430	ϕ10×60	15	130	D-105
MHR430	ϕ10×80	15	150	D-105
ϕ10.5				
MSE230	ϕ10.5	27	80	D-033
ϕ11				
MSZ345	ϕ11	22	80	D-062
AL2D-2	ϕ11	22	80	D-116
AL2D-2DLC	ϕ11	22	80	D-126
MSE230	ϕ11	28	80	D-033
AL3D-2	ϕ11	33	90	D-118
AL3D-2DLC	ϕ11	33	90	D-128
AL4D-2	ϕ11	44	110	D-120
AL4D-2DLC	ϕ11	44	110	D-130
AL5D-2	ϕ11	55	110	D-122
AL5D-2DLC	ϕ11	55	110	D-132
ALZ345	ϕ11×33	16.5	80	D-134
ALZ345-DLC	ϕ11×33	16.5	80	D-136
ϕ11.5				
MSE230	ϕ11.5	29	80	D-033
ϕ12				
MX225	ϕ12	12	80	D-020
MX425	ϕ12	12	80	D-040
ALZ345	ϕ12	18	150	D-134
AL-3LS	ϕ12	18	150	D-138
MX230	ϕ12	24	80	D-022
MSES230P	ϕ12	24	80	D-030
MX430	ϕ12	24	80	D-042
MHDH645	ϕ12	24	80	D-072
AL2D-2	ϕ12	24	80	D-116
AL2D-2DLC	ϕ12	24	80	D-126
MSZ345	ϕ12	26	80	D-062
MSE230	ϕ12	30	80	D-033
MSE430P	ϕ12	30	80	D-050
MSE430	ϕ12	30	80	D-052
MSE245	ϕ12	30	80	D-056
MSE345	ϕ12	30	80	D-058
MSE445	ϕ12	30	80	D-060
MHD645	ϕ12	30	80	D-076
MX235	ϕ12	36	80	D-024
MX435	ϕ12	36	80	D-044
MHDH645	ϕ12	36	90	D-072
AL3D-2	ϕ12	36	90	D-118
AL3D-2DLC	ϕ12	36	90	D-128
AL3D-345	ϕ12	36	110	D-124
MX240	ϕ12	48	105	D-026
MX440	ϕ12	48	105	D-046
MSEM230	ϕ12	48	110	D-038
MSEM430	ϕ12	48	110	D-054
AL4D-2	ϕ12	48	110	D-120
AL4D-2DLC	ϕ12	48	110	D-130
MX245	ϕ12	60	105	D-028
MX445	ϕ12	60	105	D-048
AL5D-2	ϕ12	60	110	D-122
AL5D-2DLC	ϕ12	60	110	D-132
ALZ345	ϕ12×36	18	80	D-134
ALZ345-DLC	ϕ12×36	18	80	D-136
ALZ345	ϕ12×60	18	110	D-134
ϕ14				
MSE430	ϕ14	35	100	D-052
ϕ15				
MSE430	ϕ15	40	110	D-052
ϕ16				
MSE430	ϕ16	40	110	D-052
MSE345	ϕ16	40	110	D-058
MSE445	ϕ16	40	110	D-060
MSEM430	ϕ16	64	130	D-054
ϕ18				
MSE430	ϕ18	45	120	D-052
ϕ20				
MSE430	ϕ20	50	135	D-052
MSE345	ϕ20	50	135	D-058
MSE445	ϕ20	50	135	D-060
MSEM430	ϕ20	80	140	D-054

按［平底规格］搜索

Search from Square Dia.

单位[规格：mm]
Unit [Size : mm]

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
R0.005				
NSMB100	R0.005	0.01	45	E-092
R0.01				
SMB200	R0.01	0.015	48	B-010
NSMB100	R0.01	0.02	45	E-092
SMB120	R0.01	0.02	50	B-008
R0.015				
SMB200	R0.015	0.025	48	B-010
NSMB100	R0.015	0.03	45	E-092
SMB120	R0.015	0.03	50	B-008
R0.02				
SMB200	R0.02	0.03	48	B-010
NSMB100	R0.02	0.04	45	E-092
SMB120	R0.02	0.04	50	B-008
R0.025				
SMB200	R0.025	0.04	48	B-010
NSMB100	R0.025	0.05	45	E-092
SMB120	R0.025	0.05	50	B-008
R0.03				
SMB200	R0.03	0.045	48	B-010
NSMB100	R0.03	0.06	45	E-092
SMB120	R0.03	0.06	50	B-008
R0.04				
SMB200	R0.04	0.06	48	B-010
NSMB100	R0.04	0.08	45	E-092
SMB120	R0.04	0.08	50	B-008
R0.05				
SMB200	R0.05	0.075	48	B-010
NSMB100	R0.05	0.1	45	E-092
SMB120	R0.05	0.1	50	B-008
MSBH230	R0.05	0.1	50	E-004
MSB230G2	R0.05	0.1	50	E-008
MSB230	R0.05	0.1	50	E-018
PCDRB	R0.05×0.15	0.05	48	C-004
MRBSH230SF	R0.05×0.2	0.07	35	E-026
MRBH230	R0.05×0.2	0.07	45	E-034
PCDRB	R0.05×0.25	0.05	48	C-004
MRBSH230SF	R0.05×0.25	0.07	35	E-026
MRBH230	R0.05×0.25	0.07	45	E-034
MRBSH230SF	R0.05×0.3	0.07	35	E-026
MRBH230	R0.05×0.3	0.07	45	E-034
MRB230	R0.05×0.3	0.07	45	E-058
DRB230	R0.05×0.3	0.07	45	E-102
SSBL200	R0.05×0.3	0.08	50	B-024
MRBH230	R0.05×0.35	0.07	45	E-034
MRBSH230SF	R0.05×0.4	0.07	35	E-026
MRBH230	R0.05×0.4	0.07	45	E-034
MRBH230	R0.05×0.45	0.07	45	E-034
MRBSH230SF	R0.05×0.5	0.07	35	E-026
MRBH230	R0.05×0.5	0.07	45	E-034
MRB230	R0.05×0.5	0.07	45	E-058
DRB230	R0.05×0.5	0.07	45	E-102
MRBTNH230	R0.05×0.5	0.07	50	E-070
SSBL200	R0.05×0.5	0.08	50	B-024
MRBTNH230	R0.05×0.75	0.07	50	E-070
R0.075				
MSBH230	R0.075	0.15	50	E-004
MSB230	R0.075	0.15	50	E-018
PCDRB	R0.075×0.23	0.075	48	C-004
MRBSH230SF	R0.075×0.25	0.1	35	E-026
MRBH230	R0.075×0.25	0.1	45	E-034
MRBSH230SF	R0.075×0.3	0.1	35	E-026
MRBH230	R0.075×0.3	0.1	45	E-034
MRB230	R0.075×0.3	0.1	45	E-058
DRB230	R0.075×0.3	0.1	45	E-102
MRBH230	R0.075×0.35	0.1	45	E-034
PCDRB	R0.075×0.38	0.075	48	C-004
MRBSH230SF	R0.075×0.4	0.1	35	E-026
MRBH230	R0.075×0.4	0.1	45	E-034
MRBH230	R0.075×0.45	0.1	45	E-034
SSBL200	R0.075×0.45	0.12	50	B-024
MRBSH230SF	R0.075×0.5	0.1	35	E-026
MRBH230	R0.075×0.5	0.1	45	E-034
MRB230	R0.075×0.5	0.1	45	E-058
DRB230	R0.075×0.5	0.1	45	E-102
MRBSH230SF	R0.075×0.6	0.1	35	E-026
MRBH230	R0.075×0.6	0.1	45	E-034
MRBSH230SF	R0.075×0.7	0.1	35	E-026
MRBH230	R0.075×0.75	0.1	45	E-034
SSBL200	R0.075×0.75	0.12	50	B-024
MRBH230	R0.075×1	0.1	45	E-034
MRB230	R0.075×1	0.1	45	E-058
DRB230	R0.075×1	0.1	45	E-102
MRBTNH230	R0.075×1	0.1	50	E-070
MRBTNH230	R0.075×1.5	0.1	50	E-070
R0.1				
MSBSH330-5X	R0.1	0.12	50	E-002
DCMB	R0.1	0.15	45	C-014
MSB230SF	R0.1	0.2	35	E-014
MSBH230	R0.1	0.2	50	E-004
MSB230G2	R0.1	0.2	50	E-008
MSB230S	R0.1	0.2	50	E-010
MSB230	R0.1	0.2	50	E-018
RSB230	R0.1	0.6	50	E-098
RSB230	R0.1	1	50	E-098
MRBSH230SF	R0.1×0.3	0.15	35	E-026
MRBSH330	R0.1×0.3	0.15	45	E-032
MRBH230	R0.1×0.3	0.15	45	E-034
SSPB220	R0.1×0.3	0.15	50	B-014
SSB200	R0.1×0.3	0.15	50	B-022
MRBSH230SF	R0.1×0.4	0.15	35	E-026
MRBH230	R0.1×0.4	0.15	45	E-034
PCDRB	R0.1×0.5	0.1	48	C-004
DCMB	R0.1×0.5	0.12	45	C-014
MRBSH230SF	R0.1×0.5	0.15	35	E-026
MRB230SF	R0.1×0.5	0.15	35	E-054
MRBSH330	R0.1×0.5	0.15	45	E-032
MRBH230	R0.1×0.5	0.15	45	E-034
MRB230	R0.1×0.5	0.15	45	E-058
DRB230	R0.1×0.5	0.15	45	E-102
SFB200	R0.1×0.5	0.15	50	B-012
MRB230	R0.1×0.5	0.15	50	E-058
MACH225SF	R0.1×0.5	0.2	35	E-048
MACH225	R0.1×0.5	0.2	50	E-050
MRBSH230SF	R0.1×0.6	0.15	35	E-026
MRBH230	R0.1×0.6	0.15	45	E-034
SSPB220	R0.1×0.6	0.15	50	B-014
SSBL200	R0.1×0.6	0.15	50	B-024
MRBSH230SF	R0.1×0.75	0.15	35	E-026
MRB230SF	R0.1×0.75	0.15	35	E-054
MRBH230	R0.1×0.75	0.15	45	E-034
MRB230	R0.1×0.75	0.15	45	E-058
DRB230	R0.1×0.75	0.15	45	E-102
MRBSH230SF	R0.1×0.85	0.15	35	E-026
MRBH230	R0.1×0.85	0.15	45	E-034
MRBSH230SF	R0.1×1	0.15	35	E-026
MRB230SF	R0.1×1	0.15	35	E-054
MRBH230	R0.1×1	0.15	45	E-034
MRB230	R0.1×1	0.15	45	E-058
DRB230	R0.1×1	0.15	45	E-102
SSPBL220	R0.1×1	0.15	50	B-016
SSBL200	R0.1×1	0.15	50	B-024
MRBH230	R0.1×1	0.15	50	E-034
MRB230	R0.1×1	0.15	50	E-058
MRBTN230	R0.1×1	0.2	50	E-082
MRB230SF	R0.1×1.25	0.15	35	E-054
MRBH230	R0.1×1.25	0.15	45	E-034
MRB230	R0.1×1.25	0.15	45	E-058
MRBH230	R0.1×1.5	0.15	45	E-034
MRB230	R0.1×1.5	0.15	45	E-058
DRB230	R0.1×1.5	0.15	45	E-102
SSPBTN220	R0.1×1.5	0.15	50	B-018
MRB230	R0.1×1.5	0.15	50	E-058
MRBTNH230	R0.1×1.5	0.15	50	E-070
MRBTN230	R0.1×1.5	0.2	50	E-082
MRBH230	R0.1×1.75	0.15	45	E-034
MRB230	R0.1×1.75	0.15	45	E-058
MRBH230	R0.1×2	0.15	45	E-034
MRB230	R0.1×2	0.15	45	E-058
DRB230	R0.1×2	0.15	45	E-102
SSPBTN220	R0.1×2	0.15	50	B-018
MRB230	R0.1×2	0.15	50	E-058
MRBTNH230	R0.1×2	0.15	50	E-070
MRBTN230	R0.1×2	0.2	50	E-082
RSB230	R0.1×2	0.6	50	E-098
MRBH230	R0.1×2.25	0.15	45	E-034
MRBH230	R0.1×2.5	0.15	45	E-034
MRB230	R0.1×2.5	0.15	45	E-058
MRBH230	R0.1×2.75	0.15	45	E-034
MRBH230	R0.1×3	0.15	45	E-034
MRB230	R0.1×3	0.15	45	E-058
MRBTNH230	R0.1×3	0.15	50	E-070
MRBTNH230	R0.1×5	0.15	50	E-070
R0.15				
MSBSH330-5X	R0.15	0.18	50	E-002
MSBH230	R0.15	0.3	50	E-004
MSB230G2	R0.15	0.3	50	E-008
MSB230S	R0.15	0.3	50	E-010
MSB230	R0.15	0.3	50	E-018
RSB230	R0.15	0.9	50	E-098
RSB230	R0.15	1.5	50	E-098
MRBH230	R0.15×0.2	0.2	45	E-035
SSPB220	R0.15×0.3	0.23	50	B-014
SSB200	R0.15×0.3	0.23	50	B-022
MRBSH230SF	R0.15×0.5	0.2	35	E-026
MRB230SF	R0.15×0.5	0.2	35	E-054
MRBSH330	R0.15×0.5	0.2	45	E-032
MRBH230	R0.15×0.5	0.2	45	E-035
MRB230	R0.15×0.5	0.2	45	E-058
DRB230	R0.15×0.5	0.2	45	E-102
SSPB220	R0.15×0.5	0.23	50	B-014
SSB200	R0.15×0.5	0.23	50	B-022
MRBSH230SF	R0.15×0.6	0.2	35	E-026
MRB230SF	R0.15×0.6	0.2	35	E-054
MRBSH330	R0.15×0.6	0.2	45	E-032
MRBH230	R0.15×0.6	0.2	45	E-035
MRB230	R0.15×0.6	0.2	45	E-058
PCDRB	R0.15×0.75	0.15	48	C-004
MRBSH230SF	R0.15×0.75	0.2	35	E-026
MRB230SF	R0.15×0.75	0.2	35	E-054
MRBSH330	R0.15×0.75	0.2	45	E-032
MRBH230	R0.15×0.75	0.2	45	E-035
MRB230	R0.15×0.75	0.2	45	E-058
SSPB220	R0.15×0.75	0.23	50	B-014
SSB200	R0.15×0.75	0.23	50	B-022
SSPBL220	R0.15×0.9	0.23	50	B-016
SSBL200	R0.15×0.9	0.23	50	B-024
MRBSH230SF	R0.15×1	0.2	35	E-026
MRB230SF	R0.15×1	0.2	35	E-054
MRBSH330	R0.15×1	0.2	45	E-032
MRBH230	R0.15×1	0.2	45	E-035
MRB230	R0.15×1	0.2	45	E-058
DRB230	R0.15×1	0.2	45	E-102
MRB230	R0.15×1	0.2	50	E-058

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRBSH230SF	R0.15×1.25	0.2	35	E-026
MRB230SF	R0.15×1.25	0.2	35	E-054
MRBH230	R0.15×1.25	0.2	45	E-035
MRB230	R0.15×1.25	0.2	45	E-058
MRBSH230SF	R0.15×1.5	0.2	35	E-026
MRB230SF	R0.15×1.5	0.2	35	E-054
MRBH230	R0.15×1.5	0.2	45	E-035
MRB230	R0.15×1.5	0.2	45	E-058
DRB230	R0.15×1.5	0.2	45	E-102
MRBH230	R0.15×1.5	0.2	50	E-035
MRB230	R0.15×1.5	0.2	50	E-058
SSPBL220	R0.15×1.5	0.23	50	B-016
SSBL200	R0.15×1.5	0.23	50	B-024
MRB230SF	R0.15×1.75	0.2	35	E-054
MRBH230	R0.15×1.75	0.2	45	E-035
MRB230	R0.15×1.75	0.2	45	E-058
MRBH230	R0.15×2	0.2	45	E-035
MRB230	R0.15×2	0.2	45	E-058
DRB230	R0.15×2	0.2	45	E-102
MRB230	R0.15×2	0.2	50	E-058
MRBTNH230	R0.15×2	0.2	50	E-070
SSPBTN220	R0.15×2	0.23	50	B-018
MRBTN230	R0.15×2	0.3	50	E-082
MRBH230	R0.15×2.25	0.2	45	E-035
MRB230	R0.15×2.25	0.2	45	E-058
MRBH230	R0.15×2.5	0.2	45	E-035
MRB230	R0.15×2.5	0.2	45	E-058
MRB230	R0.15×2.75	0.2	45	E-058
MRBH230	R0.15×3	0.2	45	E-035
MRB230	R0.15×3	0.2	45	E-059
MRBTNH230	R0.15×3	0.2	50	E-070
SSPBTN220	R0.15×3	0.23	52	B-018
MRBTN230	R0.15×3	0.3	50	E-082
RSB230	R0.15×3	0.9	50	E-098
MRBH230	R0.15×3.5	0.2	45	E-035
MRB230	R0.15×3.5	0.2	45	E-059
MRBH230	R0.15×4	0.2	45	E-035
MRB230	R0.15×4	0.2	45	E-059
MRBH230	R0.15×4.5	0.2	45	E-035
MRB230	R0.15×4.5	0.2	45	E-059
MRB230	R0.15×5	0.2	45	E-059
MRBTNH230	R0.15×5	0.2	50	E-070
MRBTNH230	R0.15×7	0.2	50	E-070
R0.2				
MSBSH330-5X	R0.2	0.24	50	E-002
DCMB	R0.2	0.3	45	C-014
MSB230SF	R0.2	0.4	35	E-014
MSB230S	R0.2	0.4	50	E-010
MSBH230	R0.2	0.6	50	E-004
MSB230G2	R0.2	0.6	50	E-008
MSB230	R0.2	0.6	50	E-018

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
RSB230	R0.2	1.2	50	E-098
RSB230	R0.2	2	50	E-098
MRBH230	R0.2×0.3	0.3	45	E-035
MRBSH230SF	R0.2×0.5	0.3	35	E-027
MRBSH330	R0.2×0.5	0.3	45	E-032
MRBH230	R0.2×0.5	0.3	45	E-035
MRB230	R0.2×0.5	0.3	45	E-059
DRB230	R0.2×0.5	0.3	45	E-102
SSPB220	R0.2×0.5	0.3	50	B-014
SSB200	R0.2×0.5	0.3	50	B-022
MRBSH230SF	R0.2×0.65	0.3	35	E-027
MRBH230	R0.2×0.65	0.3	45	E-035
MRB230SF	R0.2×0.75	0.3	35	E-054
MRB230	R0.2×0.75	0.3	45	E-059
SSPB220	R0.2×0.75	0.3	50	B-014
SSB200	R0.2×0.75	0.3	50	B-022
MRBSH230SF	R0.2×0.8	0.3	35	E-027
MRBSH330	R0.2×0.8	0.3	45	E-032
MRBH230	R0.2×0.8	0.3	45	E-035
PCDRB	R0.2×1	0.2	48	C-004
DCMB	R0.2×1	0.25	45	C-014
MRBSH230SF	R0.2×1	0.3	35	E-027
MRB230SF	R0.2×1	0.3	35	E-054
DCRB230	R0.2×1	0.3	45	C-016
MRBSH330	R0.2×1	0.3	45	E-032
MRBH230	R0.2×1	0.3	45	E-035
MRB230	R0.2×1	0.3	45	E-059
DRB230	R0.2×1	0.3	45	E-102
SFB200	R0.2×1	0.3	50	B-012
SSPB220	R0.2×1	0.3	50	B-014
SSB200	R0.2×1	0.3	50	B-022
MRBH230	R0.2×1	0.3	50	E-035
MRB230	R0.2×1	0.3	50	E-059
MACH225SF	R0.2×1	0.4	35	E-048
MACH225	R0.2×1	0.4	50	E-050
SSPB220	R0.2×1.2	0.3	50	B-014
SSBL200	R0.2×1.2	0.3	50	B-024
MRBSH230SF	R0.2×1.25	0.3	35	E-027
MRBH230	R0.2×1.25	0.3	45	E-035
MRBSH230SF	R0.2×1.5	0.3	35	E-027
MRB230SF	R0.2×1.5	0.3	35	E-054
MRBH230	R0.2×1.5	0.3	45	E-035
MRB230	R0.2×1.5	0.3	45	E-059
DRB230	R0.2×1.5	0.3	45	E-102
MRB230	R0.2×1.5	0.3	50	E-059
MRBSH230SF	R0.2×1.75	0.3	35	E-027
MRBH230	R0.2×1.75	0.3	45	E-035
MRBSH230SF	R0.2×2	0.3	35	E-027
MRB230SF	R0.2×2	0.3	35	E-054
DCRB230	R0.2×2	0.3	45	C-016
MRBH230	R0.2×2	0.3	45	E-035

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRB230	R0.2×2	0.3	45	E-059
DRB230	R0.2×2	0.3	45	E-102
SSPBL220	R0.2×2	0.3	50	B-016
SSBL200	R0.2×2	0.3	50	B-024
MRBH230	R0.2×2	0.3	50	E-035
MRB230	R0.2×2	0.3	50	E-059
MRBTN230	R0.2×2	0.4	50	E-082
MRBSH230SF	R0.2×2.25	0.3	35	E-027
MRBH230	R0.2×2.25	0.3	45	E-035
MRBSH230SF	R0.2×2.5	0.3	35	E-027
MRB230SF	R0.2×2.5	0.3	35	E-054
MRBH230	R0.2×2.5	0.3	45	E-035
MRB230	R0.2×2.5	0.3	45	E-059
MRB230	R0.2×2.5	0.3	50	E-059
MRBH230	R0.2×2.75	0.3	45	E-035
MRBH230	R0.2×3	0.3	45	E-035
MRB230	R0.2×3	0.3	45	E-059
DRB230	R0.2×3	0.3	45	E-102
SSPBTN220	R0.2×3	0.3	50	B-018
MRB230	R0.2×3	0.3	50	E-059
MRBTNH230	R0.2×3	0.3	50	E-070
SSPBL220	R0.2×3	0.3	52	B-016
MRBTN230	R0.2×3	0.4	50	E-082
MRBH230	R0.2×3.5	0.3	45	E-035
MRB230	R0.2×3.5	0.3	45	E-059
DCRB230	R0.2×4	0.3	45	C-016
MRBH230	R0.2×4	0.3	45	E-035
MRB230	R0.2×4	0.3	45	E-059
DRB230	R0.2×4	0.3	45	E-102
MRBTNH230	R0.2×4	0.3	50	E-070
SSPBTN220	R0.2×4	0.3	52	B-018
MRBTN230	R0.2×4	0.4	50	E-082
RSB230	R0.2×4	1.2	50	E-098
MRBH230	R0.2×4.5	0.3	45	E-035
MRB230	R0.2×4.5	0.3	45	E-059
MRBH230	R0.2×5	0.3	45	E-035
MRB230	R0.2×5	0.3	45	E-059
DRB230	R0.2×5	0.3	45	E-102
MRBTNH230	R0.2×5	0.3	50	E-071
RSB230	R0.2×5	1.2	50	E-098
MRBH230	R0.2×5.5	0.3	45	E-035
MRB230	R0.2×5.5	0.3	45	E-059
DCRB230	R0.2×6	0.3	45	C-016
MRBH230	R0.2×6	0.3	45	E-035
MRB230	R0.2×6	0.3	45	E-059
DRB230	R0.2×6	0.3	45	E-102
MRBTNH230	R0.2×6	0.3	50	E-070
MRBTNH230	R0.2×7	0.3	50	E-071
R0.25				
MSBSH330-5X	R0.25	0.3	50	E-002
MSB230S	R0.25	0.5	50	E-010

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSBH230	R0.25	0.8	50	E-004
MSB230G2	R0.25	0.8	50	E-008
MSB230	R0.25	0.8	50	E-018
RSB230	R0.25	1.5	50	E-098
RSB230	R0.25	2.5	50	E-098
RSB230	R0.25	5	50	E-098
MRBH230	R0.25×0.35	0.35	45	E-035
MRBSH230SF	R0.25×0.5	0.35	35	E-027
MRBH230	R0.25×0.5	0.35	45	E-035
MRBH230	R0.25×0.75	0.35	45	E-035
MRBSH230SF	R0.25×1	0.35	35	E-027
MRB230SF	R0.25×1	0.35	35	E-054
MRBSH330	R0.25×1	0.35	45	E-032
MRBH230	R0.25×1	0.35	45	E-035
MRB230	R0.25×1	0.35	45	E-059
DRB230	R0.25×1	0.35	45	E-103
SSPB220	R0.25×1	0.38	50	B-014
SSB200	R0.25×1	0.38	50	B-022
PCDRB	R0.25×1.25	0.25	48	C-004
MRBH230	R0.25×1.25	0.35	45	E-035
SFB200	R0.25×1.25	0.38	50	B-012
MACH225	R0.25×1.25	0.5	50	E-050
MRBSH230SF	R0.25×1.5	0.35	35	E-027
MRB230SF	R0.25×1.5	0.35	35	E-054
MRBSH330	R0.25×1.5	0.35	45	E-032
MRBH230	R0.25×1.5	0.35	45	E-035
MRB230	R0.25×1.5	0.35	45	E-059
DRB230	R0.25×1.5	0.35	45	E-103
MRB230	R0.25×1.5	0.35	50	E-059
SSPBL220	R0.25×1.5	0.38	50	B-016
SSBL200	R0.25×1.5	0.38	50	B-024
MRBH230	R0.25×1.75	0.35	45	E-035
MRBSH230SF	R0.25×2	0.35	35	E-027
MRB230SF	R0.25×2	0.35	35	E-054
MRBH230	R0.25×2	0.35	45	E-035
MRB230	R0.25×2	0.35	45	E-059
DRB230	R0.25×2	0.35	45	E-103
MRB230	R0.25×2	0.35	50	E-059
MRBH230	R0.25×2.25	0.35	45	E-036
MRBSH230SF	R0.25×2.5	0.35	35	E-027
MRB230SF	R0.25×2.5	0.35	35	E-054
MRBH230	R0.25×2.5	0.35	45	E-036
MRB230	R0.25×2.5	0.35	45	E-059
SSPBL220	R0.25×2.5	0.38	50	B-016
SSBL200	R0.25×2.5	0.38	50	B-024
MRBSH230SF	R0.25×3	0.35	35	E-027
MRB230SF	R0.25×3	0.35	35	E-054
MRBH230	R0.25×3	0.35	45	E-036
MRB230	R0.25×3	0.35	45	E-059
DRB230	R0.25×3	0.35	45	E-103
MRBTN230	R0.25×3	0.5	50	E-083

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRBH230	R0.25×3.5	0.35	45	E-036
MRB230	R0.25×3.5	0.35	45	E-059
SSPBL220	R0.25×3.5	0.38	52	B-016
MRBH230	R0.25×4	0.35	45	E-036
MRB230	R0.25×4	0.35	45	E-059
DRB230	R0.25×4	0.35	45	E-103
MRB230	R0.25×4	0.35	50	E-059
MRBTNH230	R0.25×4	0.35	50	E-071
SSPBTN220	R0.25×4	0.38	52	B-019
MRBH230	R0.25×4.5	0.35	45	E-036
MRB230	R0.25×4.5	0.35	45	E-059
MRBH230	R0.25×5	0.35	45	E-036
MRB230	R0.25×5	0.35	45	E-059
DRB230	R0.25×5	0.35	45	E-103
MRB230	R0.25×5	0.35	50	E-059
MRBTNH230	R0.25×5	0.35	50	E-071
SSPBTN220	R0.25×5	0.38	52	B-019
MRBTN230	R0.25×5	0.5	50	E-083
MRBH230	R0.25×5.5	0.35	45	E-036
MRB230	R0.25×5.5	0.35	45	E-059
MRBH230	R0.25×6	0.35	45	E-036
MRB230	R0.25×6	0.35	45	E-059
DRB230	R0.25×6	0.35	45	E-103
MRB230	R0.25×6	0.35	50	E-059
MRBH230	R0.25×7	0.35	45	E-036
MRB230	R0.25×7	0.35	45	E-059
MRBH230	R0.25×8	0.35	45	E-036
MRB230	R0.25×8	0.35	45	E-059
MRB230	R0.25×8	0.35	50	E-059
MRBH230	R0.25×9	0.35	45	E-036
MRB230	R0.25×9	0.35	55	E-059
MRBH230	R0.25×10	0.35	45	E-036
MRB230	R0.25×10	0.35	55	E-059
RSB230	R0.25×10	1.5	50	E-098
RSB230	R0.25×15	1.5	50	E-098
RSB230	R0.25×20	1.5	60	E-098
R0.3				
MSBSH330-5X	R0.3	0.36	50	E-002
DCMB	R0.3	0.45	45	C-014
MSB230SF	R0.3	0.6	35	E-014
MSB230S	R0.3	0.6	50	E-010
MSBH230	R0.3	0.9	50	E-004
MSB230G2	R0.3	0.9	50	E-008
MSB230	R0.3	0.9	50	E-018
RSB230	R0.3	1.8	50	E-098
RSB230	R0.3	3	50	E-098
MRBH230	R0.3×0.45	0.45	45	E-036
MRBSH230SF	R0.3×0.6	0.45	35	E-027
MRBH230	R0.3×0.6	0.45	45	E-036
MRBH230	R0.3×0.8	0.45	45	E-036
MRBSH230SF	R0.3×1	0.45	35	E-027
MRBSH330	R0.3×1	0.45	35	E-032
MRBH230	R0.3×1	0.45	45	E-036
MRB230	R0.3×1	0.45	45	E-060
DRB230	R0.3×1	0.45	45	E-103
SSPB220	R0.3×1.2	0.5	50	B-014
MRBH230	R0.3×1.25	0.45	45	E-036
PCDRB	R0.3×1.5	0.3	48	C-004
DCMB	R0.3×1.5	0.35	45	C-014
MRBSH230SF	R0.3×1.5	0.45	35	E-027
MRB230SF	R0.3×1.5	0.45	35	E-054
MRBSH330	R0.3×1.5	0.45	45	E-032
MRBH230	R0.3×1.5	0.45	45	E-036
MRB230	R0.3×1.5	0.45	45	E-060
DRB230	R0.3×1.5	0.45	45	E-103
SFB200	R0.3×1.5	0.5	50	B-012
SSPB220	R0.3×1.5	0.5	50	B-014
SSB200	R0.3×1.5	0.5	50	B-022
MACH225SF	R0.3×1.5	0.6	35	E-048
MACH225	R0.3×1.5	0.6	50	E-050
MRBH230	R0.3×1.75	0.45	45	E-036
MRBSH230SF	R0.3×2	0.45	35	E-027
MRB230SF	R0.3×2	0.45	35	E-054
MRBSH330	R0.3×2	0.45	45	E-032
MRBH230	R0.3×2	0.45	45	E-036
MRB230	R0.3×2	0.45	45	E-060
MRBH230	R0.3×2	0.45	45	E-036
MRB230	R0.3×2	0.45	45	E-060
DRB230	R0.3×2	0.45	45	E-103
MRBH230	R0.3×2	0.45	50	E-036
MRB230	R0.3×2	0.45	50	E-060
MRBH230	R0.3×2.25	0.45	45	E-036
MRBSH230SF	R0.3×2.5	0.45	35	E-027
MRB230SF	R0.3×2.5	0.45	35	E-054
MRBH230	R0.3×2.5	0.45	45	E-036
MRB230	R0.3×2.5	0.45	45	E-060
MRBH230	R0.3×2.75	0.45	45	E-036
MRBSH230SF	R0.3×3	0.45	35	E-027
MRB230SF	R0.3×3	0.45	35	E-054
DCRB230	R0.3×3	0.45	45	C-016
MRBH230	R0.3×3	0.45	45	E-036
MRB230	R0.3×3	0.45	45	E-060
DRB230	R0.3×3	0.45	45	E-103
MRBH230	R0.3×3	0.45	50	E-036
MRB230	R0.3×3	0.45	50	E-060
ALB225	R0.3×3	0.45	60	E-094
ALB225-DLC	R0.3×3	0.45	60	E-096
SSPBL220	R0.3×3	0.5	50	B-016
SSBL200	R0.3×3	0.5	50	B-024
MRBSH230SF	R0.3×3.5	0.45	35	E-027
MRB230SF	R0.3×3.5	0.45	35	E-054
MRBH230	R0.3×3.5	0.45	45	E-036
MRB230	R0.3×3.5	0.45	45	E-060
MRBSH230SF	R0.3×4	0.45	40	E-027
MRB230SF	R0.3×4	0.45	40	E-054
MRBH230	R0.3×4	0.45	45	E-036
MRB230	R0.3×4	0.45	45	E-060
DRB230	R0.3×4	0.45	45	E-103
MRBH230	R0.3×4	0.45	50	E-036
MRB230	R0.3×4	0.45	50	E-060
MRBTNH230	R0.3×4	0.45	50	E-071
SSBL200	R0.3×4	0.5	52	B-024
SSPBL220	R0.3×4	0.5	53	B-016
MRBTN230	R0.3×4	0.6	50	E-083
MRB230SF	R0.3×4.5	0.45	40	E-054
MRBH230	R0.3×4.5	0.45	45	E-036
MRB230	R0.3×4.5	0.45	45	E-060
MRB230SF	R0.3×5	0.45	40	E-054
MRBH230	R0.3×5	0.45	45	E-036
MRB230	R0.3×5	0.45	45	E-060
DRB230	R0.3×5	0.45	45	E-103
MRBTNH230	R0.3×5	0.45	50	E-071
SSBL200	R0.3×5	0.5	52	B-024
SSPBL220	R0.3×5	0.5	53	B-016
SSPBTN220	R0.3×5	0.5	53	B-019
MRBTN230	R0.3×5	0.6	50	E-083
MRB230SF	R0.3×5.5	0.45	40	E-054
MRBH230	R0.3×5.5	0.45	45	E-036
MRB230	R0.3×5.5	0.45	45	E-060
MRB230SF	R0.3×6	0.45	40	E-054
DCRB230	R0.3×6	0.45	45	C-016
MRBH230	R0.3×6	0.45	45	E-036
MRB230	R0.3×6	0.45	45	E-060
DRB230	R0.3×6	0.45	45	E-103
MRB230	R0.3×6	0.45	50	E-060
MRBTNH230	R0.3×6	0.45	50	E-071
SSPBL220	R0.3×6	0.5	53	B-016
SSPBTN220	R0.3×6	0.5	53	B-019
MRBTN230	R0.3×6	0.6	50	E-083
RSB230	R0.3×6	1.8	50	E-098
MRBH230	R0.3×6.5	0.45	45	E-036
MRB230	R0.3×6.5	0.45	45	E-060
MRBH230	R0.3×7	0.45	45	E-036
MRB230	R0.3×7	0.45	45	E-060
MRBTNH230	R0.3×7	0.45	50	E-071
MRBH230	R0.3×7.5	0.45	45	E-036
MRB230	R0.3×7.5	0.45	45	E-060
MRBH230	R0.3×8	0.45	45	E-036
MRB230	R0.3×8	0.45	45	E-060
DRB230	R0.3×8	0.45	45	E-103
MRB230	R0.3×8	0.45	50	E-060
MRBTNH230	R0.3×8	0.45	50	E-071
MRBTN230	R0.3×8	0.6	50	E-083
MRB230	R0.3×8.5	0.45	45	E-060
DCRB230	R0.3×9	0.45	45	C-016
MRBH230	R0.3×9	0.45	45	E-036
MRB230	R0.3×9	0.45	45	E-060
MRBH230	R0.3×9.5	0.45	45	E-060
MRBH230	R0.3×10	0.45	45	E-036
MRB230	R0.3×10	0.45	45	E-060
MRB230	R0.3×10	0.45	50	E-060
DRB230	R0.3×10	0.45	50	E-103
RSB230	R0.3×10	1.8	50	E-098
MRB230	R0.3×11	0.45	45	E-060
DCRB230	R0.3×12	0.45	45	C-016
MRBH230	R0.3×12	0.45	45	E-036
MRB230	R0.3×12	0.45	45	E-060
R0.35				
MSB230S	R0.35	0.7	50	E-010
MSB230	R0.35	1.1	50	E-018
MRBH230	R0.35×0.5	0.5	45	E-037
MRBH230	R0.35×1	0.5	45	E-037
MRBH230	R0.35×2	0.5	45	E-037
MRB230	R0.35×2	0.5	45	E-060
MRBH230	R0.35×4	0.5	45	E-037
MRB230	R0.35×4	0.5	45	E-060
MRBH230	R0.35×6	0.5	45	E-037
MRB230	R0.35×6	0.5	45	E-060
MRBH230	R0.35×8	0.5	45	E-037
MRB230	R0.35×8	0.5	45	E-060
R0.4				
MSB230SF	R0.4	0.8	35	E-014
MSB230S	R0.4	0.8	50	E-010
MSBH230	R0.4	1.2	50	E-004
MSB230G2	R0.4	1.2	50	E-008
MSB230	R0.4	1.2	50	E-018
RSB230	R0.4	2.4	50	E-098
RSB230	R0.4	4	50	E-098
MRBH230	R0.4×0.6	0.6	45	E-037
MRBSH230SF	R0.4×1	0.6	35	E-027
MRBH230	R0.4×1	0.6	45	E-037
MRBH230	R0.4×1.5	0.6	45	E-037
DRB230	R0.4×1.5	0.6	45	E-103
SSPB220	R0.4×1.6	0.6	50	B-014
MRBSH230SF	R0.4×2	0.6	35	E-027
MRB230SF	R0.4×2	0.6	35	E-055
MRBH230	R0.4×2	0.6	45	E-037
MRB230	R0.4×2	0.6	45	E-060
DRB230	R0.4×2	0.6	45	E-103
SFB200	R0.4×2	0.6	50	B-012
SSPB220	R0.4×2	0.6	50	B-014
SSB200	R0.4×2	0.6	50	B-022
MRBH230	R0.4×2	0.6	50	E-037
MRB230	R0.4×2	0.6	50	E-060
MACH225SF	R0.4×2	0.8	35	E-048
MACH225	R0.4×2	0.8	50	E-050

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(×颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRBH230	R0.4×2.5	0.6	45	E-037
MRBSH230SF	R0.4×3	0.6	35	E-027
MRB230SF	R0.4×3	0.6	35	E-055
MRBH230	R0.4×3	0.6	45	E-037
MRB230	R0.4×3	0.6	45	E-060
DRB230	R0.4×3	0.6	45	E-103
MRB230	R0.4×3	0.6	50	E-060
MRBH230	R0.4×3.5	0.6	45	E-037
MRBSH230SF	R0.4×4	0.6	35	E-027
MRB230SF	R0.4×4	0.6	40	E-055
MRBH230	R0.4×4	0.6	45	E-037
MRB230	R0.4×4	0.6	45	E-060
DRB230	R0.4×4	0.6	45	E-103
MRB230	R0.4×4	0.6	50	E-060
SSPBL220	R0.4×4	0.6	53	B-016
SSBL200	R0.4×4	0.6	53	B-024
ALB225	R0.4×4	0.6	60	E-094
ALB225-DLC	R0.4×4	0.6	60	E-096
MRBH230	R0.4×4.5	0.6	45	E-037
MRBSH230SF	R0.4×5	0.6	40	E-027
MRB230SF	R0.4×5	0.6	40	E-055
MRBH230	R0.4×5	0.6	45	E-037
MRB230	R0.4×5	0.6	45	E-060
DRB230	R0.4×5	0.6	45	E-103
MRBH230	R0.4×6	0.6	45	E-037
MRB230	R0.4×6	0.6	45	E-060
DRB230	R0.4×6	0.6	45	E-103
MRB230	R0.4×6	0.6	50	E-060
SSPBL220	R0.4×6	0.6	53	B-016
MRBH230	R0.4×7	0.6	45	E-037
MRB230	R0.4×7	0.6	45	E-060
MRBH230	R0.4×8	0.6	45	E-037
MRB230	R0.4×8	0.6	45	E-060
DRB230	R0.4×8	0.6	45	E-103
MRB230	R0.4×8	0.6	50	E-060
MRBTNH230	R0.4×8	0.6	60	E-071
MRBTN230	R0.4×8	0.8	50	E-083
RSB230	R0.4×8	2.4	50	E-098
MRBH230	R0.4×9	0.6	45	E-037
MRB230	R0.4×9	0.6	45	E-060
MRBH230	R0.4×10	0.6	45	E-037
MRB230	R0.4×10	0.6	45	E-061
MRB230	R0.4×10	0.6	50	E-061
DRB230	R0.4×10	0.6	50	E-103
MRBH230	R0.4×12	0.6	45	E-037
MRB230	R0.4×12	0.6	45	E-061
MRBTNH230	R0.4×12	0.6	60	E-071
MRBTN230	R0.4×12	0.8	60	E-083
RSB230	R0.4×12	2.4	50	E-098
MRBH230	R0.4×16	0.6	50	E-037
R0.45				
MSB230S	R0.45	0.9	50	E-010
MSB230	R0.45	1.4	50	E-018
MRBH230	R0.45×0.65	0.65	45	E-037
MRBH230	R0.45×1	0.65	45	E-037
MRBH230	R0.45×2	0.65	45	E-037
MRB230	R0.45×2	0.65	45	E-061
MRBH230	R0.45×4	0.65	45	E-037
MRB230	R0.45×4	0.65	45	E-061
MRBH230	R0.45×6	0.65	45	E-037
MRB230	R0.45×6	0.65	45	E-061
MRBH230	R0.45×8	0.65	45	E-037
MRB230	R0.45×8	0.65	45	E-061
R0.5				
MSBSH330-5X	R0.5	0.6	50	E-002
DCMB	R0.5	0.75	45	C-014
MSB230SF	R0.5	1	40	E-014
MSB230S	R0.5	1	50	E-010
MSBH230	R0.5	1.5	50	E-004
MSB230G2	R0.5	1.5	50	E-008
MSB230	R0.5	1.5	50	E-018
MSBH345	R0.5	1.5	60	E-006
MSB345	R0.5	1.5	60	E-022
ALB225	R0.5	2	60	E-094
ALB225-DLC	R0.5	2	60	E-096
MSBL230	R0.5	2.5	70	E-024
RSB230	R0.5	3	50	E-098
RSB230	R0.5	5	50	E-098
RSB230	R0.5	10	50	E-098
MRBH230	R0.5×0.75	0.75	45	E-037
MRBSH230SF	R0.5×1	0.75	35	E-027
MRBH230	R0.5×1	0.75	45	E-037
MRBSH230SF	R0.5×1.5	0.75	35	E-027
MRBH230	R0.5×1.5	0.75	45	E-037
SSPB220	R0.5×2	0.7	50	B-014
MRBSH230SF	R0.5×2	0.75	35	E-027
MRBSH330	R0.5×2	0.75	45	E-032
MRBH230	R0.5×2	0.75	45	E-037
MRB230	R0.5×2	0.75	45	E-061
DRB230	R0.5×2	0.75	45	E-103
PCDRB	R0.5×2.5	0.5	50	C-004
DCMB	R0.5×2.5	0.6	45	C-014
SFB200	R0.5×2.5	0.7	50	B-012
SSPB220	R0.5×2.5	0.7	50	B-014
SSB200	R0.5×2.5	0.7	50	B-022
MRBSH230SF	R0.5×2.5	0.75	35	E-027
MRBSH330	R0.5×2.5	0.75	45	E-032
MRBH230	R0.5×2.5	0.75	45	E-037
MRB230	R0.5×2.5	0.75	45	E-061
MACH225SF	R0.5×2.5	1	40	E-048
MACH225	R0.5×2.5	1	50	E-050
MRBSH230SF	R0.5×3	0.75	35	E-027

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(×颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRB230SF	R0.5×3	0.75	35	E-055
MRBSH330	R0.5×3	0.75	45	E-032
MRBH230	R0.5×3	0.75	45	E-037
MRB230	R0.5×3	0.75	45	E-061
DRB230	R0.5×3	0.75	45	E-103
MRBH230	R0.5×3	0.75	50	E-037
MRB230	R0.5×3	0.75	50	E-061
MRBH230	R0.5×3.5	0.75	45	E-037
SSPBL220	R0.5×4	0.7	51	B-016
SSBL200	R0.5×4	0.7	53	B-024
MRBSH230SF	R0.5×4	0.75	35	E-027
MRB230SF	R0.5×4	0.75	35	E-055
DCRB230	R0.5×4	0.75	45	C-016
MRBH230	R0.5×4	0.75	45	E-037
MRB230	R0.5×4	0.75	45	E-061
DRB230	R0.5×4	0.75	45	E-103
MRBH230	R0.5×4	0.75	50	E-037
MRB230	R0.5×4	0.75	50	E-061
MRBH230	R0.5×4.5	0.75	45	E-037
SSBL200	R0.5×5	0.7	53	B-024
MRBSH230SF	R0.5×5	0.75	40	E-027
MRB230SF	R0.5×5	0.75	40	E-055
MRBH230	R0.5×5	0.75	45	E-038
MRB230	R0.5×5	0.75	45	E-061
DRB230	R0.5×5	0.75	45	E-103
MRBH230	R0.5×5	0.75	50	E-038
MRB230	R0.5×5	0.75	50	E-061
ALB225	R0.5×5	0.75	60	E-094
ALB225-DLC	R0.5×5	0.75	60	E-096
SSPBL220	R0.5×6	0.7	53	B-016
SSBL200	R0.5×6	0.7	53	B-024
MRBSH230SF	R0.5×6	0.75	40	E-027
MRB230SF	R0.5×6	0.75	40	E-055
DCRB230	R0.5×6	0.75	45	C-016
MRBH230	R0.5×6	0.75	45	E-038
MRB230	R0.5×6	0.75	45	E-061
DRB230	R0.5×6	0.75	45	E-103
MRBH230	R0.5×6	0.75	50	E-038
MRB230	R0.5×6	0.75	50	E-061
MRBTNH230	R0.5×6	0.75	60	E-071
MRBTN230	R0.5×6	1	60	E-084
MRBH230	R0.5×7	0.75	45	E-038
MRB230	R0.5×7	0.75	45	E-061
MRBH230	R0.5×7	0.75	50	E-038
SSPBL220	R0.5×8	0.7	53	B-016
SSPBTN220	R0.5×8	0.7	53	B-019
SSBL200	R0.5×8	0.7	53	B-024
MRB230SF	R0.5×8	0.75	40	E-055
MRBH230	R0.5×8	0.75	45	E-038
MRB230	R0.5×8	0.75	45	E-061
DRB230	R0.5×8	0.75	45	E-103
MRBH230	R0.5×8	0.75	50	E-038
MRB230	R0.5×8	0.75	50	E-061
MRBTNH230	R0.5×8	0.75	60	E-071
MRBTN230	R0.5×8	1	60	E-084
MRBH230	R0.5×9	0.75	45	E-038
MRB230	R0.5×9	0.75	45	E-061
SSPBL220	R0.5×10	0.7	53	B-016
SSPBTN220	R0.5×10	0.7	53	B-019
SSBL200	R0.5×10	0.7	53	B-024
MRB230SF	R0.5×10	0.75	40	E-055
MRBH230	R0.5×10	0.75	45	E-038
MRB230	R0.5×10	0.75	45	E-061
DRB230	R0.5×10	0.75	45	E-103
DCRB230	R0.5×10	0.75	50	C-016
MRBH230	R0.5×10	0.75	50	E-038
MRB230	R0.5×10	0.75	50	E-061
MRBTNH230	R0.5×10	0.75	60	E-071
ALB225	R0.5×10	0.75	60	E-094
ALB225-DLC	R0.5×10	0.75	60	E-096
MRBTN230	R0.5×10	1	60	E-084
RSB230	R0.5×10	3	50	E-098
MRBH230	R0.5×12	0.75	45	E-038
MRB230	R0.5×12	0.75	45	E-061
DRB230	R0.5×12	0.75	45	E-103
MRB230	R0.5×12	0.75	50	E-061
MRBTNH230	R0.5×12	0.75	60	E-071
MRBTNH345	R0.5×12	0.75	60	E-078
MRBTN230	R0.5×12	1	60	E-084
MRBH230	R0.5×13	0.75	45	E-038
MRB230	R0.5×13	0.75	45	E-061
MRBH230	R0.5×14	0.75	50	E-038
MRB230	R0.5×14	0.75	50	E-061
DRB230	R0.5×14	0.75	50	E-103
MRBTN230	R0.5×15	1	60	E-084
RSB230	R0.5×15	3	60	E-099
DCRB230	R0.5×16	0.75	50	C-016
MRBH230	R0.5×16	0.75	50	E-038
MRB230	R0.5×16	0.75	50	E-061
DRB230	R0.5×16	0.75	50	E-103
MRB230	R0.5×16	0.75	60	E-061
MRBTNH230	R0.5×16	0.75	60	E-071
MRBTNH345	R0.5×16	0.75	60	E-078
MRBTN230	R0.5×16	1	60	E-084
MRBH230	R0.5×18	0.75	55	E-038
MRB230	R0.5×18	0.75	55	E-061
DCRB230	R0.5×20	0.75	55	C-016
MRBH230	R0.5×20	0.75	55	E-038
MRB230	R0.5×20	0.75	55	E-061
MRB230	R0.5×20	0.75	60	E-061
MRBTNH230	R0.5×20	0.75	70	E-071
MRBTNH345	R0.5×20	0.75	70	E-078

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRBTN230	R0.5×20	1	70	E-084
RSB230	R0.5×20	3	60	E-099
MRBH230	R0.5×22	0.75	60	E-038
MRB230	R0.5×22	0.75	60	E-061
MRBTN230	R0.5×22	1	70	E-084
MRBTNH230	R0.5×25	0.75	70	E-071
MRBTNH345	R0.5×25	0.75	70	E-078
MRBTN230	R0.5×25	1	70	E-084
MRBTNH230	R0.5×30	0.75	70	E-071
MRBTNH345	R0.5×30	0.75	70	E-078
RSB230	R0.5×30	3	70	E-099
MRBTN230	R0.5×36	1	70	E-084
R0.55				
MSB230	R0.55	1.7	50	E-018
R0.6				
MSB230SF	R0.6	1.2	40	E-014
MSB230S	R0.6	1.2	50	E-010
MSB230	R0.6	1.8	50	E-018
MRBH230	R0.6×1.2	0.9	45	E-038
SSPB220	R0.6×2.4	0.8	50	B-014
MRBSH230SF	R0.6×2.4	0.9	35	E-027
MRBH230	R0.6×2.4	0.9	45	E-038
MRB230	R0.6×2.4	0.9	45	E-061
SFB200	R0.6×3	0.8	50	B-012
SSPB220	R0.6×3	0.8	50	B-014
SSB200	R0.6×3	0.8	50	B-022
MACH225SF	R0.6×3	1.2	40	E-048
MRBSH230SF	R0.6×4	0.9	35	E-027
MRBH230	R0.6×4	0.9	45	E-038
MRB230	R0.6×4	0.9	45	E-061
SSPBL220	R0.6×6	0.8	53	B-016
MRBSH230SF	R0.6×6	0.9	40	E-027
MRBH230	R0.6×6	0.9	45	E-038
MRB230	R0.6×6	0.9	45	E-061
MRB230	R0.6×6	0.9	50	E-061
MRBSH230SF	R0.6×8	0.9	40	E-027
MRBH230	R0.6×8	0.9	45	E-038
MRB230	R0.6×8	0.9	45	E-061
MRB230	R0.6×8	0.9	50	E-061
MRBH230	R0.6×10	0.9	45	E-038
MRB230	R0.6×10	0.9	45	E-061
MRB230	R0.6×10	0.9	50	E-061
MRBH230	R0.6×12	0.9	45	E-038
MRB230	R0.6×12	0.9	45	E-061
MRB230	R0.6×12	0.9	50	E-061
MRBTN230	R0.6×12	1.2	60	E-084
MRBH230	R0.6×14	0.9	50	E-038
MRB230	R0.6×14	0.9	50	E-061
MRBH230	R0.6×16	0.9	50	E-038
MRB230	R0.6×16	0.9	50	E-062
MRB230	R0.6×16	0.9	60	E-062
MRB230	R0.6×18	0.9	55	E-062
MRB230	R0.6×20	0.9	55	E-062
MRB230	R0.6×24	0.9	60	E-062
MRBTN230	R0.6×24	1.2	70	E-084
R0.65				
MSB230	R0.65	2	50	E-018
R0.7				
MSB230S	R0.7	1.4	50	E-010
MSB230	R0.7	2.1	50	E-018
MRBH230	R0.7×2	1	45	E-038
SFB200	R0.7×3.5	1	52	B-012
MRBH230	R0.7×4	1	45	E-038
MRBH230	R0.7×6	1	45	E-038
MRBH230	R0.7×8	1	45	E-038
MRB230	R0.7×8	1	45	E-062
MRBH230	R0.7×12	1	50	E-038
MRB230	R0.7×12	1	50	E-062
MRBH230	R0.7×16	1	50	E-038
MRB230	R0.7×16	1	50	E-062
R0.75				
MSBSH330-5X	R0.75	0.9	50	E-002
DCMB	R0.75	1.1	45	C-014
MSB230SF	R0.75	1.5	40	E-014
MSB230S	R0.75	1.5	50	E-010
MSBH230	R0.75	2.3	50	E-004
MSB230G2	R0.75	2.3	50	E-008
MSB230	R0.75	2.3	50	E-018
ALB225	R0.75	3	60	E-094
ALB225-DLC	R0.75	3	60	E-096
RSB230	R0.75	4.5	50	E-099
RSB230	R0.75	7.5	50	E-099
RSB230	R0.75	15	60	E-099
MRBSH230SF	R0.75×2	1.1	35	E-027
MRBH230	R0.75×2	1.1	45	E-038
SSPB220	R0.75×3	1	52	B-014
MRBSH230SF	R0.75×3	1.1	35	E-027
MRB230SF	R0.75×3	1.1	35	E-055
MRBSH330	R0.75×3	1.1	45	E-032
MRBH230	R0.75×3	1.1	45	E-038
MRB230	R0.75×3	1.1	45	E-062
PCDRB	R0.75×3.8	0.75	48	C-004
DCMB	R0.75×3.8	0.9	45	C-014
SFB200	R0.75×3.8	1	52	B-012
SSPB220	R0.75×3.8	1	52	B-014
SSB200	R0.75×3.8	1	52	B-022
MACH225SF	R0.75×3.8	1.5	40	E-048
MACH225	R0.75×3.8	1.5	50	E-050
MRBSH230SF	R0.75×4	1.1	35	E-027
MRB230SF	R0.75×4	1.1	35	E-055
MRBSH330	R0.75×4	1.1	45	E-032
MRBH230	R0.75×4	1.1	45	E-038

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRB230	R0.75×4	1.1	45	E-062
DRB230	R0.75×4	1.1	50	E-103
MRBH230	R0.75×5	1.1	45	E-038
MRBSH230SF	R0.75×6	1.1	40	E-027
MRB230SF	R0.75×6	1.1	40	E-055
MRBH230	R0.75×6	1.1	45	E-038
MRB230	R0.75×6	1.1	45	E-062
MRBH230	R0.75×6	1.1	50	E-038
DRB230	R0.75×6	1.1	50	E-103
SSPBL220	R0.75×7.5	1	52	B-016
SSBL200	R0.75×7.5	1	52	B-024
ALB225	R0.75×7.5	1.1	60	E-094
ALB225-DLC	R0.75×7.5	1.1	60	E-096
MRBSH230SF	R0.75×8	1.1	40	E-027
MRB230SF	R0.75×8	1.1	40	E-055
MRBH230	R0.75×8	1.1	45	E-038
MRB230	R0.75×8	1.1	45	E-062
MRBH230	R0.75×8	1.1	50	E-038
MRB230	R0.75×8	1.1	50	E-062
DRB230	R0.75×8	1.1	50	E-103
SSPBL220	R0.75×10	1	52	B-016
SSPBTN220	R0.75×10	1	52	B-019
MRBSH230SF	R0.75×10	1.1	40	E-027
MRB230SF	R0.75×10	1.1	40	E-055
MRBH230	R0.75×10	1.1	45	E-039
MRB230	R0.75×10	1.1	45	E-062
DRB230	R0.75×10	1.1	50	E-103
MRBTNH230	R0.75×10	1.1	60	E-072
MRBTN230	R0.75×10	1.5	60	E-085
MRBH230	R0.75×12	1.1	45	E-039
MRB230	R0.75×12	1.1	45	E-062
MRB230	R0.75×12	1.1	50	E-062
DRB230	R0.75×12	1.1	50	E-103
MRBTNH345	R0.75×12	1.1	60	E-078
MRBH230	R0.75×14	1.1	50	E-039
MRB230	R0.75×14	1.1	50	E-062
DRB230	R0.75×14	1.1	50	E-103
SSPBL220	R0.75×15	1	52	B-016
SSPBTN220	R0.75×15	1	52	B-019
MRBTNH230	R0.75×15	1.1	60	E-072
ALB225	R0.75×15	1.1	60	E-094
ALB225-DLC	R0.75×15	1.1	60	E-096
MRBTN230	R0.75×15	1.5	60	E-085
RSB230	R0.75×15	4.5	60	E-099
MRBH230	R0.75×16	1.1	50	E-039
MRB230	R0.75×16	1.1	50	E-062
DRB230	R0.75×16	1.1	50	E-103
MRB230	R0.75×16	1.1	60	E-062
MRBTNH345	R0.75×16	1.1	60	E-078
DRB230	R0.75×18	1.1	50	E-103
MRBH230	R0.75×18	1.1	55	E-039
MRB230	R0.75×18	1.1	55	E-062
MRBH230	R0.75×20	1.1	55	E-039
MRB230	R0.75×20	1.1	55	E-062
MRB230	R0.75×20	1.1	60	E-062
MRBTNH230	R0.75×20	1.1	70	E-072
MRBTNH345	R0.75×20	1.1	70	E-078
MRBTN230	R0.75×20	1.5	60	E-085
MRB230	R0.75×22	1.1	55	E-062
MRBH230	R0.75×22	1.1	60	E-039
MRBH230	R0.75×25	1.1	65	E-039
MRBTNH230	R0.75×25	1.1	70	E-072
MRBTNH345	R0.75×25	1.1	70	E-078
MRBTN230	R0.75×28.7	1.5	70	E-085
MRBH230	R0.75×30	1.1	70	E-039
MRB230	R0.75×30	1.1	70	E-062
MRBTNH230	R0.75×30	1.1	70	E-072
MRBTNH345	R0.75×30	1.1	70	E-078
MRBTN230	R0.75×30	1.5	70	E-085
RSB230	R0.75×30	4.5	70	E-099
RSB230	R0.75×45	4.5	90	E-099
R0.8				
MSB230S	R0.8	1.6	50	E-010
MSB230	R0.8	2.4	50	E-018
MRBH230	R0.8×2	1.2	45	E-039
SFB200	R0.8×4	1	52	B-012
MRBH230	R0.8×4	1.2	45	E-039
MRB230	R0.8×4	1.2	45	E-062
MRBH230	R0.8×6	1.2	45	E-039
MRBSH230SF	R0.8×8	1.2	40	E-027
MRBH230	R0.8×8	1.2	45	E-039
MRB230	R0.8×8	1.2	45	E-062
MRBH230	R0.8×12	1.2	45	E-039
MRB230	R0.8×12	1.2	45	E-062
MRBH230	R0.8×16	1.2	50	E-039
MRB230	R0.8×16	1.2	50	E-062
MRBH230	R0.8×20	1.2	55	E-039
MRB230	R0.8×20	1.2	55	E-062
R0.85				
MSB230	R0.85	2.6	50	E-018
R0.9				
MSB230S	R0.9	1.8	50	E-010
MSB230	R0.9	2.7	50	E-018
MRBSH230SF	R0.9×3	1.3	35	E-027
MRBH230	R0.9×3	1.3	45	E-039
MRBSH230SF	R0.9×4	1.3	35	E-027
MRBH230	R0.9×4	1.3	45	E-039
SFB200	R0.9×4.5	1.2	52	B-012
MRBSH230SF	R0.9×6	1.3	40	E-027
MRBH230	R0.9×6	1.3	45	E-039
MRBSH230SF	R0.9×8	1.3	40	E-027
MRBH230	R0.9×8	1.3	45	E-039

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRB230	R0.9×8	1.3	45	E-062
MRBSH230SF	R0.9×10	1.3	40	E-027
MRBH230	R0.9×10	1.3	45	E-039
MRBH230	R0.9×12	1.3	45	E-039
MRB230	R0.9×12	1.3	45	E-062
MRBH230	R0.9×16	1.3	50	E-039
MRB230	R0.9×16	1.3	50	E-062
MRBH230	R0.9×18	1.3	55	E-039
MRBH230	R0.9×20	1.3	55	E-039
MRB230	R0.9×20	1.3	55	E-062
MRBH230	R0.9×22	1.3	60	E-039
MRBH230	R0.9×25	1.3	65	E-039
MRBH230	R0.9×30	1.3	70	E-039
R0.95				
MSB230	R0.95	2.9	50	E-018
R1				
MSBSH330-5X	R1	1.2	50	E-002
DCMB	R1	1.5	45	C-014
MSB230SF	R1	2	40	E-014
MSB230S	R1	2	60	E-010
MSBH230	R1	3	60	E-004
MSBH345	R1	3	60	E-006
MSB230G2	R1	3	60	E-008
MSB230	R1	3	60	E-018
MSB345	R1	3	60	E-022
ALB225	R1	4	60	E-094
ALB225-DLC	R1	4	60	E-096
MSBL230	R1	5	70	E-024
RSB230	R1	6	50	E-099
RSB230	R1	10	50	E-099
RSB230	R1	20	60	E-099
MRBSH230SF	R1×2	1.5	35	E-027
MRBH230	R1×2	1.5	45	E-039
MRBSH230SF	R1×3	1.5	35	E-027
MRB230SF	R1×3	1.5	35	E-055
MRBSH330	R1×3	1.5	45	E-032
MRBH230	R1×3	1.5	45	E-039
MRB230	R1×3	1.5	45	E-062
MRBH230	R1×3	1.5	50	E-039
DRB230	R1×3	1.5	50	E-104
SSPB220	R1×4	1.2	52	B-014
SSB200	R1×4	1.2	52	B-022
MRBSH230SF	R1×4	1.5	35	E-027
MRB230SF	R1×4	1.5	35	E-055
MRBSH330	R1×4	1.5	45	E-032
MRBH230	R1×4	1.5	45	E-039
MRB230	R1×4	1.5	45	E-062
MRBH230	R1×4	1.5	50	E-039
MRB230	R1×4	1.5	50	E-062
DRB230	R1×4	1.5	50	E-104
PCDRB	R1×5	1	48	C-004

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
DCMB	R1×5	1.2	45	C-014
SFB200	R1×5	1.2	52	B-012
SSPB220	R1×5	1.2	52	B-014
SSB200	R1×5	1.2	52	B-022
MACH225SF	R1×5	2	40	E-048
MACH225	R1×5	2	50	E-050
SSBL200	R1×6	1.2	52	B-024
SSPBL220	R1×6	1.2	53	B-016
MRBSH230SF	R1×6	1.5	35	E-027
MRB230SF	R1×6	1.5	35	E-055
DCRB230	R1×6	1.5	45	C-016
MRBSH330	R1×6	1.5	45	E-032
MRBH230	R1×6	1.5	45	E-039
MRB230	R1×6	1.5	45	E-062
MRBH230	R1×6	1.5	50	E-039
MRB230	R1×6	1.5	50	E-062
DRB230	R1×6	1.5	50	E-104
SSBL200	R1×8	1.2	52	B-024
SSPBL220	R1×8	1.2	53	B-016
MRBSH230SF	R1×8	1.5	40	E-027
MRB230SF	R1×8	1.5	40	E-055
MRBH230	R1×8	1.5	45	E-039
MRB230	R1×8	1.5	45	E-062
MRBH230	R1×8	1.5	50	E-039
MRB230	R1×8	1.5	50	E-062
DRB230	R1×8	1.5	50	E-104
SSBL200	R1×10	1.2	52	B-024
SSPBL220	R1×10	1.2	53	B-016
MRBSH230SF	R1×10	1.5	40	E-027
MRB230SF	R1×10	1.5	40	E-055
DCRB230	R1×10	1.5	45	C-016
MRBH230	R1×10	1.5	45	E-039
MRB230	R1×10	1.5	45	E-062
MRBH230	R1×10	1.5	50	E-039
MRB230	R1×10	1.5	50	E-062
DRB230	R1×10	1.5	50	E-104
ALB225	R1×10	1.5	60	E-094
ALB225-DLC	R1×10	1.5	60	E-096
MRBSH230SF	R1×12	1.5	45	E-027
MRBH230	R1×12	1.5	45	E-039
MRB230SF	R1×12	1.5	45	E-055
MRB230	R1×12	1.5	45	E-062
MRBH230	R1×12	1.5	50	E-039
MRB230	R1×12	1.5	50	E-062
DRB230	R1×12	1.5	50	E-104
MRBTNH230	R1×12	1.5	60	E-072
MRBTNH345	R1×12	1.5	60	E-079
MRBTN230	R1×12	2	60	E-085
MRBH230	R1×13	1.5	45	E-040
MRB230	R1×13	1.5	45	E-063
SSPBL220	R1×14	1.2	53	B-016

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRB230SF	R1×14	1.5	45	E-055
MRBH230	R1×14	1.5	50	E-040
MRB230	R1×14	1.5	50	E-063
DRB230	R1×14	1.5	50	E-104
SSPBTN220	R1×16	1.2	53	B-019
MRB230SF	R1×16	1.5	45	E-055
DCRB230	R1×16	1.5	50	C-016
MRBH230	R1×16	1.5	50	E-040
MRB230	R1×16	1.5	50	E-063
DRB230	R1×16	1.5	50	E-104
MRBH230	R1×16	1.5	60	E-040
MRB230	R1×16	1.5	60	E-063
MRBTNH230	R1×16	1.5	60	E-072
MRBTNH345	R1×16	1.5	60	E-079
MRBTN230	R1×16	2	60	E-085
MRB230SF	R1×18	1.5	50	E-055
MRBH230	R1×18	1.5	55	E-040
MRB230	R1×18	1.5	55	E-063
MRBH230	R1×18	1.5	60	E-040
SSPBL220	R1×20	1.2	53	B-016
SSPBTN220	R1×20	1.2	53	B-019
MRB230SF	R1×20	1.5	50	E-055
MRBH230	R1×20	1.5	55	E-040
MRB230	R1×20	1.5	55	E-063
MRBH230	R1×20	1.5	60	E-040
MRB230	R1×20	1.5	60	E-063
ALB225	R1×20	1.5	60	E-094
ALB225-DLC	R1×20	1.5	60	E-096
DRB230	R1×20	1.5	60	E-104
DCRB230	R1×20	1.5	70	C-016
MRBTNH230	R1×20	1.5	70	E-072
MRBTNH345	R1×20	1.5	70	E-079
MRBTN230	R1×20	2	60	E-085
MRBTN230	R1×20	2	70	E-086
RSB230	R1×20	6	60	E-099
MRBH230	R1×22	1.5	60	E-040
MRB230	R1×22	1.5	60	E-063
DRB230	R1×25	1.5	60	E-104
MRBH230	R1×25	1.5	65	E-040
MRB230	R1×25	1.5	65	E-063
MRBTNH230	R1×25	1.5	70	E-072
MRBTNH345	R1×25	1.5	70	E-079
MRB230	R1×25	1.5	80	E-063
MRBTN230	R1×25	2	60	E-085
MRBTN230	R1×26.8	2	70	E-086
MRBH230	R1×27	1.5	70	E-040
DCRB230	R1×30	1.5	70	C-016
MRBH230	R1×30	1.5	70	E-040
MRB230	R1×30	1.5	70	E-063
MRBTNH230	R1×30	1.5	70	E-072
MRBTNH345	R1×30	1.5	70	E-079

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRB230	R1×30	1.5	80	E-063
MRBTN230	R1×30	2	70	E-085
RSB230	R1×30	6	80	E-099
MRBH230	R1×32	1.5	70	E-040
MRBH230	R1×35	1.5	70	E-040
MRB230	R1×35	1.5	70	E-063
MRBH230	R1×35	1.5	80	E-040
MRB230	R1×35	1.5	80	E-063
MRBTNH230	R1×35	1.5	80	E-072
MRBTN230	R1×35	2	80	E-085
MRBTN230	R1×38.2	2	80	E-086
MRBTNH230	R1×40	1.5	80	E-072
MRBTNH345	R1×40	1.5	80	E-079
MRBH230	R1×40	1.5	90	E-040
MRB230	R1×40	1.5	90	E-063
MRBTN230	R1×40	2	80	E-085
MRBTNH230	R1×50	1.5	90	E-072
RSB230	R1×50	6	110	E-099
RSB230	R1×70	6	110	E-099
R1.05				
MSB230	R1.05	3.2	60	E-018
R1.1				
MSB230	R1.1	3.3	60	E-018
R1.15				
MSB230	R1.15	3.5	60	E-018
R1.2				
MSB230	R1.2	3.6	60	E-018
R1.25				
MSB230S	R1.25	2.5	60	E-010
MSBH230	R1.25	3.8	60	E-004
MSB230	R1.25	3.8	60	E-018
MRBSH230SF	R1.25×4	2.3	35	E-028
MRBH230	R1.25×4	2.3	45	E-040
MRBSH230SF	R1.25×6	2.3	35	E-028
MRBH230	R1.25×6	2.3	45	E-040
MRB230	R1.25×6	2.3	45	E-063
MRBSH230SF	R1.25×8	2.3	40	E-028
MRBH230	R1.25×8	2.3	45	E-040
MRBSH230SF	R1.25×10	2.3	40	E-028
MRBH230	R1.25×10	2.3	45	E-040
MRB230	R1.25×10	2.3	45	E-063
MRBSH230SF	R1.25×15	2.3	45	E-028
MRBH230	R1.25×15	2.3	50	E-040
MRB230	R1.25×15	2.3	50	E-063
MRBH230	R1.25×20	2.3	55	E-040
MRB230	R1.25×20	2.3	55	E-063
MRBH230	R1.25×25	2.3	65	E-040
MRB230	R1.25×25	2.3	65	E-063
MRBH230	R1.25×30	2.3	70	E-040
MRB230	R1.25×30	2.3	70	E-063
MRBH230	R1.25×35	2.3	70	E-040

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRB230	R1.25×35	2.3	70	E-063
R1.3				
MSB230	R1.3	3.9	60	E-018
R1.35				
MSB230	R1.35	4.1	60	E-018
R1.4				
MSB230	R1.4	4.2	60	E-018
R1.45				
MSB230	R1.45	4.4	60	E-018
R1.5				
MSB230SF	R1.5	3	40	E-014
MSB230S	R1.5	3	60	E-010
MSBH230	R1.5	5	60	E-004
MSBH345	R1.5	5	60	E-006
MSB230G2	R1.5	5	60	E-008
MSB230	R1.5	5	60	E-018
MSB345	R1.5	5	60	E-022
ALB225	R1.5	6	60	E-094
ALB225-DLC	R1.5	6	60	E-096
MSBL230	R1.5	7.5	80	E-024
RSB230	R1.5	9	50	E-099
RSB230	R1.5	9	100	E-099
RSB230	R1.5	15	60	E-099
SSPB220	R1.5×6	1.8	50	B-014
MRB230SF	R1.5×6	2.5	40	E-055
MRBSH230SF	R1.5×6	2.5	45	E-028
MRBSH330	R1.5×6	2.5	60	E-032
MRBH230	R1.5×6	2.5	60	E-040
MRB230	R1.5×6	2.5	60	E-063
DRB230	R1.5×6	2.5	60	E-104
PCDRB	R1.5×7.5	1.5	59	C-004
MRB230SF	R1.5×8	2.5	40	E-055
MRBSH230SF	R1.5×8	2.5	45	E-028
MRBSH330	R1.5×8	2.5	60	E-032
MRBH230	R1.5×8	2.5	60	E-040
MRB230	R1.5×8	2.5	60	E-063
DRB230	R1.5×8	2.5	60	E-104
MACH225SF	R1.5×8	3	40	E-048
MACH225	R1.5×8	3	60	E-050
SSPB220	R1.5×9	1.8	70	B-014
MRB230SF	R1.5×10	2.5	40	E-055
MRBSH230SF	R1.5×10	2.5	45	E-028
MRBSH330	R1.5×10	2.5	60	E-032
MRBH230	R1.5×10	2.5	60	E-040
MRB230	R1.5×10	2.5	60	E-063
DRB230	R1.5×10	2.5	60	E-104
MRB230SF	R1.5×12	2.5	40	E-055
MRBSH230SF	R1.5×12	2.5	45	E-028
MRBH230	R1.5×12	2.5	60	E-040
MRB230	R1.5×12	2.5	60	E-063
DRB230	R1.5×12	2.5	60	E-104

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRBSH230SF	R1.5×14	2.5	50	E-028
MRBH230	R1.5×14	2.5	60	E-040
MRB230	R1.5×14	2.5	60	E-063
MRB230	R1.5×15	2.5	60	E-063
ALB225	R1.5×15	2.5	60	E-094
ALB225-DLC	R1.5×15	2.5	60	E-096
MRBTNH230	R1.5×15	2.5	70	E-073
DRB230	R1.5×15	2.5	70	E-104
MRBTN230	R1.5×15	3	70	E-086
MRBTNH345	R1.5×15	4.5	70	E-079
MRBSH230SF	R1.5×16	2.5	50	E-028
MRBH230	R1.5×16	2.5	60	E-040
MRB230	R1.5×16	2.5	60	E-063
MRBSH230SF	R1.5×18	2.5	55	E-028
MRBH230	R1.5×18	2.5	60	E-040
MRBSH230SF	R1.5×20	2.5	55	E-028
DCRB230	R1.5×20	2.5	65	C-016
MRBH230	R1.5×20	2.5	65	E-040
MRB230	R1.5×20	2.5	65	E-063
MRBTNH230	R1.5×20	2.5	70	E-073
DRB230	R1.5×20	2.5	70	E-104
MRBTN230	R1.5×20	3	70	E-086
MRBTNH345	R1.5×20	4.5	70	E-079
MRBH230	R1.5×22	2.5	65	E-040
MRBTN230	R1.5×23.1	3	70	E-086
MRBH230	R1.5×25	2.5	65	E-040
MRB230	R1.5×25	2.5	65	E-063
MRBTNH230	R1.5×25	2.5	70	E-073
DRB230	R1.5×25	2.5	70	E-104
MRBTNH345	R1.5×25	4.5	70	E-079
MRBH230	R1.5×27	2.5	70	E-040
MRBH230	R1.5×30	2.5	70	E-040
MRB230	R1.5×30	2.5	70	E-063
MRBTNH230	R1.5×30	2.5	70	E-073
ALB225	R1.5×30	2.5	70	E-094
ALB225-DLC	R1.5×30	2.5	70	E-096
DRB230	R1.5×30	2.5	70	E-104
MRBTN230	R1.5×30	3	70	E-086
MRBTNH345	R1.5×30	4.5	70	E-079
RSB230	R1.5×30	9	70	E-099
MRBH230	R1.5×35	2.5	80	E-040
MRB230	R1.5×35	2.5	80	E-063
MRBTNH230	R1.5×40	2.5	80	E-073
DCRB230	R1.5×40	2.5	90	C-016
MRBH230	R1.5×40	2.5	90	E-040
MRB230	R1.5×40	2.5	90	E-063
MRBTN230	R1.5×40	3	80	E-086
MRBTNH345	R1.5×40	4.5	80	E-079
RSB230	R1.5×45	9	90	E-099
MRBTN230	R1.5×48.9	3	90	E-086
MRBTNH230	R1.5×50	2.5	90	E-073

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MRBTN230	R1.5×50	3	90	E-086
MRBTNH345	R1.5×50	4.5	100	E-079
RSB230	R1.5×60	9	110	E-099
R1.55				
MSB230	R1.55	5	60	E-018
R1.6				
MSB230	R1.6	5	60	E-018
R1.65				
MSB230	R1.65	5	60	E-018
R1.7				
MSB230	R1.7	5.1	60	E-018
R1.75				
MSB230S	R1.75	3.5	60	E-010
MSB230	R1.75	5.3	60	E-018
MRBH230	R1.75×5	2.8	60	E-040
MRBH230	R1.75×10	2.8	60	E-040
MRB230	R1.75×10	2.8	60	E-063
MRBH230	R1.75×15	2.8	60	E-040
MRB230	R1.75×15	2.8	60	E-063
MRBH230	R1.75×20	2.8	65	E-040
MRB230	R1.75×20	2.8	65	E-063
MRBH230	R1.75×25	2.8	65	E-041
MRB230	R1.75×25	2.8	65	E-063
MRBH230	R1.75×30	2.8	70	E-041
MRB230	R1.75×30	2.8	70	E-063
MRBH230	R1.75×35	2.8	80	E-041
MRB230	R1.75×35	2.8	80	E-063
MRBH230	R1.75×40	2.8	90	E-041
MRB230	R1.75×40	2.8	90	E-063
MRBH230	R1.75×45	2.8	90	E-041
MRB230	R1.75×45	2.8	90	E-063
R1.8				
MSB230	R1.8	5.4	60	E-019
R1.85				
MSB230	R1.85	5.6	60	E-019
R1.9				
MSB230	R1.9	5.7	60	E-019
R1.95				
MSB230	R1.95	5.9	60	E-019
R2				
MSB230SF	R2	4	40	E-014
MSB230S	R2	4	60	E-010
MSBH230	R2	6	70	E-004
MSBH345	R2	6	70	E-006
MSB230G2	R2	6	70	E-008
MSB230	R2	6	70	E-019
MSB345	R2	6	70	E-022
ALB225	R2	8	70	E-094
ALB225-DLC	R2	8	70	E-096
MSBL230	R2	10	120	E-024
RSB230	R2	12	50	E-099

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
RSB230	R2	12	120	E-099
RSB230	R2	20	60	E-099
MRBH230	R2×6	3	65	E-041
SSPB220	R2×8	2.4	50	B-014
MRBSH230SF	R2×8	3	45	E-028
MRBSH330	R2×8	3	65	E-032
MRBH230	R2×8	3	65	E-041
PCDRB	R2×10	2	60	C-004
MRBSH230SF	R2×10	3	45	E-028
DRB230	R2×10	3	60	E-104
MRBSH330	R2×10	3	65	E-032
MRBH230	R2×10	3	65	E-041
MRB230	R2×10	3	65	E-064
MACH225SF	R2×10	4	40	E-048
MACH225	R2×10	4	60	E-050
SSPB220	R2×12	2.4	70	B-014
MRBSH230SF	R2×12	3	45	E-028
DRB230	R2×12	3	60	E-104
MRBSH330	R2×12	3	65	E-032
MRBH230	R2×12	3	65	E-041
MRB230	R2×12	3	65	E-064
MRBH230	R2×14	3	65	E-041
MRB230	R2×14	3	65	E-064
MRBSH230SF	R2×15	3	50	E-028
DRB230	R2×15	3	60	E-104
DCRB230	R2×15	3	65	C-016
MRBH230	R2×15	3	65	E-041
MRB230	R2×15	3	65	E-064
MRBH230	R2×16	3	65	E-041
MRB230	R2×16	3	65	E-064
MRBH230	R2×18	3	65	E-041
MRBSH230SF	R2×20	3	55	E-028
DRB230	R2×20	3	60	E-104
MRBH230	R2×20	3	65	E-041
MRB230	R2×20	3	65	E-064
MRBTNH230	R2×20	3	80	E-073
ALB225	R2×20	3	80	E-094
ALB225-DLC	R2×20	3	80	E-096
MRBTN230	R2×20	4	70	E-086
MRBH230	R2×22	3	70	E-041
MRBSH230SF	R2×25	3	60	E-028
MRBH230	R2×25	3	70	E-041
MRB230	R2×25	3	70	E-064
DRB230	R2×25	3	70	E-104
MRBH230	R2×27	3	70	E-041
DCRB230	R2×30	3	70	C-016
MRBH230	R2×30	3	70	E-041
MRB230	R2×30	3	70	E-064
DRB230	R2×30	3	70	E-104
MRBTNH230	R2×30	3	80	E-073
MRBTNH345	R2×30	6	80	E-079

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
RSB230	R2×30	12	70	E-099
MRBH230	R2×35	3	80	E-041
MRB230	R2×35	3	80	E-064
MRBTNH230	R2×40	3	80	E-073
DRB230	R2×40	3	80	E-104
MRBH230	R2×40	3	85	E-041
MRB230	R2×40	3	85	E-064
DCRB230	R2×40	3	90	C-016
ALB225	R2×40	3	90	E-094
ALB225-DLC	R2×40	3	90	E-096
MRBTN230	R2×40	4	90	E-086
MRBTNH345	R2×40	6	80	E-079
RSB230	R2×40	12	90	E-099
MRBH230	R2×45	3	90	E-041
MRB230	R2×45	3	90	E-064
MRBTNH230	R2×50	3	90	E-073
MRBH230	R2×50	3	100	E-041
MRB230	R2×50	3	100	E-064
MRBTNH345	R2×50	6	100	E-079
MRBTN230	R2×60	4	110	E-086
MRBTNH230	R2×61.1	3	110	E-073
MRBTNH345	R2×65.2	6	110	E-079
RSB230	R2×70	12	120	E-099
R2.05				
MSB230	R2.05	6.2	70	E-019
R2.1				
MSB230	R2.1	6.3	70	E-019
R2.15				
MSB230	R2.15	6.5	70	E-019
R2.2				
MSB230	R2.2	6.6	70	E-019
R2.25				
MSB230	R2.25	6.8	70	E-019
R2.3				
MSB230	R2.3	6.9	70	E-019
R2.35				
MSB230	R2.35	7.1	70	E-019
R2.4				
MSB230	R2.4	7.2	70	E-019
R2.45				
MSB230	R2.45	7.4	70	E-019
R2.5				
MSB230SF	R2.5	5	50	E-014
MSB230S	R2.5	5	70	E-010
MSBH230	R2.5	8	70	E-004
MSBH345	R2.5	8	70	E-006
MSB230G2	R2.5	8	70	E-008
MSB230	R2.5	8	70	E-019
MSB345	R2.5	8	70	E-022
ALB225	R2.5	10	80	E-094
ALB225-DLC	R2.5	10	80	E-096
RSB230	R2.5	15	70	E-099

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
RSB230	R2.5	25	80	E-099
SSPB220	R2.5×10	3	60	B-014
MRBSH230SF	R2.5×10	3.5	45	E-028
MRBH230	R2.5×10	3.5	70	E-041
MRB230	R2.5×10	3.5	70	E-064
MACH225SF	R2.5×12	5	45	E-048
MACH225	R2.5×12	5	60	E-050
SSPB220	R2.5×15	3	80	B-014
MRBSH230SF	R2.5×15	3.5	45	E-028
MRBH230	R2.5×15	3.5	70	E-041
MRB230	R2.5×15	3.5	70	E-064
MRBSH230SF	R2.5×20	3.5	50	E-028
MRBH230	R2.5×20	3.5	70	E-041
MRB230	R2.5×20	3.5	70	E-064
MRBSH230SF	R2.5×25	3.5	55	E-028
MRBH230	R2.5×25	3.5	70	E-041
MRB230	R2.5×25	3.5	70	E-064
ALB225	R2.5×25	3.5	80	E-094
ALB225-DLC	R2.5×25	3.5	80	E-096
MRBSH230SF	R2.5×30	3.5	60	E-028
MRBH230	R2.5×30	3.5	80	E-041
MRB230	R2.5×30	3.5	80	E-064
MRBH230	R2.5×35	3.5	80	E-041
MRB230	R2.5×35	3.5	80	E-064
MRBH230	R2.5×40	3.5	90	E-041
MRB230	R2.5×40	3.5	90	E-064
MRBH230	R2.5×45	3.5	100	E-041
MRB230	R2.5×45	3.5	100	E-064
MRBH230	R2.5×50	3.5	100	E-041
MRB230	R2.5×50	3.5	100	E-064
ALB225	R2.5×50	3.5	100	E-094
ALB225-DLC	R2.5×50	3.5	100	E-096
R2.55				
MSB230	R2.55	8	70	E-019
R2.6				
MSB230	R2.6	8	70	E-019
R2.65				
MSB230	R2.65	8	70	E-019
R2.7				
MSB230	R2.7	8.1	70	E-019
R2.75				
MSB230	R2.75	8.3	70	E-019
R2.8				
MSB230	R2.8	8.4	70	E-019
R2.85				
MSB230	R2.85	8.6	70	E-019
R2.9				
MSB230	R2.9	8.7	70	E-019
R2.95				
MSB230	R2.95	8.9	70	E-019
R3				
MSB230SF	R3	6	50	E-014

按［球头规格］搜索

Search from Ball R

单位[规格：mm]
Unit [Size : mm]

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSB230S	R3	6	80	E-010
MSBH230	R3	10	80	E-004
MSBH345	R3	10	80	E-006
MSB230G2	R3	10	80	E-008
MSB230	R3	10	80	E-019
MSB345	R3	10	80	E-022
ALB225	R3	12	90	E-094
ALB225-DLC	R3	12	90	E-096
MSBL230	R3	15	150	E-024
RSB230	R3	18	80	E-099
RSB230	R3	30	90	E-099
MRBH230	R3×8	6	70	E-041
MRBSH230SF	R3×10	6	45	E-028
MRBSH330	R3×10	6	65	E-032
MRBH230	R3×10	6	70	E-041
MRB230	R3×10	6	70	E-064
SSPB220	R3×12	3.6	60	B-014
MRBH230	R3×12	6	70	E-041
PCDRB	R3×15	3	62	C-004
MRBSH230SF	R3×15	6	45	E-028
MACH225SF	R3×15	6	45	E-048
MACH225	R3×15	6	60	E-050
MRBSH330	R3×15	6	65	E-032
MRBH230	R3×15	6	70	E-041
MRB230	R3×15	6	70	E-064
SSPB220	R3×18	3.6	80	B-014
MRBH230	R3×18	6	70	E-041
MRBSH230SF	R3×20	6	50	E-028
MRBSH330	R3×20	6	65	E-032
MRBH230	R3×20	6	70	E-041
MRB230	R3×20	6	70	E-064
DRB230	R3×20	6	70	E-104
MRBSH230SF	R3×25	6	55	E-028
MRBH230	R3×25	6	70	E-041
MRB230	R3×25	6	70	E-064
DRB230	R3×25	6	70	E-104
MRBSH230SF	R3×30	6	60	E-028
DCRB230	R3×30	6	80	C-016
MRBH230	R3×30	6	80	E-041
MRB230	R3×30	6	80	E-064
DRB230	R3×30	6	80	E-104
ALB225	R3×30	6	90	E-094
ALB225-DLC	R3×30	6	90	E-096
MRBSH230SF	R3×35	6	65	E-028
MRB230	R3×35	6	80	E-064
MRBH230	R3×35	6	85	E-041
MRBSH230SF	R3×40	6	70	E-028
DRB230	R3×40	6	80	E-104
MRBH230	R3×40	6	90	E-041
MRB230	R3×40	6	90	E-064
RSB230	R3×40	18	100	E-099
MRB230	R3×45	6	100	E-064

型　号 Model	球头半径(X颈长) Radius(xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
DRB230	R3×50	6	100	E-104
MRBH230	R3×50	6	120	E-041
MRB230	R3×50	6	120	E-064
DCRB230	R3×60	6	120	C-016
MRBH230	R3×60	6	120	E-041
ALB225	R3×60	6	120	E-094
ALB225-DLC	R3×60	6	120	E-096
RSB230	R3×60	18	120	E-099
RSB230	R3×80	18	130	E-099
R3.5				
MSB230	R3.5	10.5	80	E-019
R4				
MSB230SF	R4	8	60	E-014
MSB230S	R4	8	90	E-010
MSBH230	R4	12	90	E-004
MSB230	R4	12	90	E-019
MSB345	R4	12	90	E-022
ALB225	R4	16	90	E-094
ALB225-DLC	R4	16	90	E-096
MSBL230	R4	20	160	E-024
R4.5				
MSB230	R4.5	13.5	90	E-019
R5				
MSB230SF	R5	10	60	E-014
MSB230S	R5	10	100	E-010
MSBH230	R5	15	100	E-004
MSB230	R5	15	100	E-019
MSB345	R5	15	100	E-022
ALB225	R5	20	100	E-094
ALB225-DLC	R5	20	100	E-096
MSBL230	R5	25	200	E-024
R5.5				
MSB230	R5.5	16.5	100	E-019
R6				
MSB230SF	R6	12	60	E-014
MSB230S	R6	12	110	E-010
MSBH230	R6	20	100	E-004
MSB230	R6	20	110	E-019
MSB345	R6	20	110	E-022
ALB225	R6	24	110	E-094
ALB225-DLC	R6	24	110	E-096
R7				
MSB230	R7	21	160	E-019
R8				
MSB230	R8	25	160	E-019
R9				
MSB230	R9	27	170	E-019
R10				
MSB230	R10	30	170	E-019

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
ϕ0.1				
SHPR400	ϕ0.1×R0.01×0.2	0.04	50	B-034
MHRSH430RSF	ϕ0.1×R0.01×0.2	0.08	35	F-016
SHPR400	ϕ0.1×R0.01×0.3	0.04	50	B-034
MHRSH430RSF	ϕ0.1×R0.01×0.3	0.08	35	F-016
MHRH430R	ϕ0.1×R0.01×0.3	0.08	45	F-030
SHPR400	ϕ0.1×R0.01×0.5	0.04	50	B-034
MHRH430R	ϕ0.1×R0.01×0.5	0.08	45	F-030
SSR200	ϕ0.1×R0.02×0.2	0.04	50	B-026
SHPR400	ϕ0.1×R0.02×0.2	0.04	50	B-034
SSR200	ϕ0.1×R0.02×0.3	0.04	50	B-026
SHPR400	ϕ0.1×R0.02×0.3	0.04	50	B-034
SSR200	ϕ0.1×R0.02×0.5	0.04	50	B-026
SHPR400	ϕ0.1×R0.02×0.5	0.04	50	B-034
SSR200	ϕ0.1×R0.03×0.2	0.04	50	B-026
SSR200	ϕ0.1×R0.03×0.3	0.04	50	B-026
SSR200	ϕ0.1×R0.03×0.5	0.04	50	B-026
ϕ0.15				
MHRSH430RSF	ϕ0.15×R0.01×0.3	0.12	35	F-016
MHRH430R	ϕ0.15×R0.01×0.3	0.12	45	F-030
MHRSH430RSF	ϕ0.15×R0.01×0.5	0.12	35	F-016
MHRH430R	ϕ0.15×R0.01×0.5	0.12	45	F-030
MHRH430R	ϕ0.15×R0.01×0.75	0.12	45	F-030
MHRH430R	ϕ0.15×R0.01×1	0.12	45	F-030
SSR200	ϕ0.15×R0.02×0.2	0.06	50	B-026
SHPR400	ϕ0.15×R0.02×0.2	0.06	50	B-034
SSR200	ϕ0.15×R0.02×0.3	0.06	50	B-026
SHPR400	ϕ0.15×R0.02×0.3	0.06	50	B-034
MHRSH430RSF	ϕ0.15×R0.02×0.3	0.12	35	F-016
MHRH430R	ϕ0.15×R0.02×0.3	0.12	45	F-030
SSR200	ϕ0.15×R0.02×0.5	0.06	50	B-026
SHPR400	ϕ0.15×R0.02×0.5	0.06	50	B-034
MHRSH430RSF	ϕ0.15×R0.02×0.5	0.12	35	F-016
MHRH430R	ϕ0.15×R0.02×0.5	0.12	45	F-030
MHRH430R	ϕ0.15×R0.02×0.75	0.12	45	F-030
MHRH430R	ϕ0.15×R0.02×1	0.12	45	F-030
SSR200	ϕ0.15×R0.03×0.2	0.06	50	B-026
SHPR400	ϕ0.15×R0.03×0.2	0.06	50	B-034
SSR200	ϕ0.15×R0.03×0.3	0.06	50	B-026
SHPR400	ϕ0.15×R0.03×0.3	0.06	50	B-034
SSR200	ϕ0.15×R0.03×0.5	0.06	50	B-026
SHPR400	ϕ0.15×R0.03×0.5	0.06	50	B-034
ϕ0.2				
SSR200	ϕ0.2×R0.02×0.3	0.08	50	B-026
SHPR400	ϕ0.2×R0.02×0.3	0.08	50	B-034
MHRSH430RSF	ϕ0.2×R0.02×0.3	0.15	35	F-016
MHRH430R	ϕ0.2×R0.02×0.3	0.15	45	F-030
SSR200	ϕ0.2×R0.02×0.5	0.08	50	B-026
SHPR400	ϕ0.2×R0.02×0.5	0.08	50	B-034
MHRSH430RSF	ϕ0.2×R0.02×0.5	0.15	35	F-016
MHRH230R	ϕ0.2×R0.02×0.5	0.15	45	F-026
MHRH430R	ϕ0.2×R0.02×0.5	0.15	45	F-030
DHR237R	ϕ0.2×R0.02×0.5	0.4	45	F-070
MHRSH430RSF	ϕ0.2×R0.02×0.75	0.15	35	F-016
SSR200	ϕ0.2×R0.02×1	0.08	50	B-026
SHPR400	ϕ0.2×R0.02×1	0.08	50	B-034
MHRSH430RSF	ϕ0.2×R0.02×1	0.15	35	F-016
MHRH230R	ϕ0.2×R0.02×1	0.15	45	F-026
MHRH430R	ϕ0.2×R0.02×1	0.15	45	F-030
DHR237R	ϕ0.2×R0.02×1	0.4	45	F-070
MHRH230R	ϕ0.2×R0.02×1.5	0.15	45	F-026
MHRH430R	ϕ0.2×R0.02×1.5	0.15	45	F-030
DHR237R	ϕ0.2×R0.02×1.5	0.4	45	F-070
MHRH230R	ϕ0.2×R0.02×2	0.15	45	F-026
MHRH430R	ϕ0.2×R0.02×2	0.15	45	F-030
SSR200	ϕ0.2×R0.03×0.3	0.08	50	B-026
SHPR400	ϕ0.2×R0.03×0.3	0.08	50	B-034
SSR200	ϕ0.2×R0.03×0.5	0.08	50	B-026
SHPR400	ϕ0.2×R0.03×0.5	0.08	50	B-034
SSR200	ϕ0.2×R0.03×1	0.08	50	B-026
SHPR400	ϕ0.2×R0.03×1	0.08	50	B-034
SSR200	ϕ0.2×R0.05×0.3	0.08	50	B-026
MHRSH430RSF	ϕ0.2×R0.05×0.3	0.15	35	F-016
MHRH430R	ϕ0.2×R0.05×0.3	0.15	45	F-030
SSR200	ϕ0.2×R0.05×0.5	0.08	50	B-026
SSF120	ϕ0.2×R0.05×0.5	0.1	50	B-040
MHRSH430RSF	ϕ0.2×R0.05×0.5	0.15	35	F-016
MHRH230R	ϕ0.2×R0.05×0.5	0.15	45	F-026
MHRH430R	ϕ0.2×R0.05×0.5	0.15	45	F-030
MHR230R	ϕ0.2×R0.05×0.5	0.15	45	F-042
MHR230R	ϕ0.2×R0.05×0.5	0.15	50	F-042
DHR237R	ϕ0.2×R0.05×0.5	0.4	45	F-070
MHRSH430RSF	ϕ0.2×R0.05×0.75	0.15	35	F-016
SSR200	ϕ0.2×R0.05×1	0.08	50	B-026
MHRSH430RSF	ϕ0.2×R0.05×1	0.15	35	F-016
MHRH230R	ϕ0.2×R0.05×1	0.15	45	F-026
MHRH430R	ϕ0.2×R0.05×1	0.15	45	F-030
MHR230R	ϕ0.2×R0.05×1	0.15	45	F-042
MHR230R	ϕ0.2×R0.05×1	0.15	50	F-042
MSTNR230	ϕ0.2×R0.05×1	0.15	50	F-062
DHR237R	ϕ0.2×R0.05×1	0.4	45	F-070
MHRH230R	ϕ0.2×R0.05×1.5	0.15	45	F-026
MHRH430R	ϕ0.2×R0.05×1.5	0.15	45	F-030
MHR230R	ϕ0.2×R0.05×1.5	0.15	45	F-042
DHR237R	ϕ0.2×R0.05×1.5	0.4	45	F-070
MHRH230R	ϕ0.2×R0.05×2	0.15	45	F-026
MHRH430R	ϕ0.2×R0.05×2	0.15	45	F-030
MHR230R	ϕ0.2×R0.05×2	0.15	45	F-042
MSTNR230	ϕ0.2×R0.05×2	0.15	50	F-062
ϕ0.3				

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
SSR200	ϕ0.3×R0.02×0.5	0.13	50	B-026
SHPR400	ϕ0.3×R0.02×0.5	0.13	50	B-034
MHRSH430RSF	ϕ0.3×R0.02×0.5	0.25	35	F-016
MHRH430R	ϕ0.3×R0.02×0.5	0.25	45	F-030
SSR200	ϕ0.3×R0.02×0.75	0.13	50	B-026
SHPR400	ϕ0.3×R0.02×0.75	0.13	50	B-034
MHRSH430RSF	ϕ0.3×R0.02×0.75	0.25	35	F-016
SSR200	ϕ0.3×R0.02×1	0.13	50	B-026
SHPR400	ϕ0.3×R0.02×1	0.13	50	B-034
MHRSH430RSF	ϕ0.3×R0.02×1	0.25	35	F-016
MHRH230R	ϕ0.3×R0.02×1	0.25	45	F-026
MHRH430R	ϕ0.3×R0.02×1	0.25	45	F-030
DHR237R	ϕ0.3×R0.02×1	0.6	45	F-070
SSR200	ϕ0.3×R0.02×1.5	0.13	50	B-026
SHPR400	ϕ0.3×R0.02×1.5	0.13	50	B-034
MHRSH430RSF	ϕ0.3×R0.02×1.5	0.25	35	F-016
MHRH230R	ϕ0.3×R0.02×1.5	0.25	45	F-026
MHRH430R	ϕ0.3×R0.02×1.5	0.25	45	F-030
DHR237R	ϕ0.3×R0.02×1.5	0.6	45	F-070
SSR200	ϕ0.3×R0.02×2	0.13	50	B-026
SHPR400	ϕ0.3×R0.02×2	0.13	50	B-034
MHRH230R	ϕ0.3×R0.02×2	0.25	45	F-026
MHRH430R	ϕ0.3×R0.02×2	0.25	45	F-030
DHR237R	ϕ0.3×R0.02×2	0.6	45	F-070
MHRH230R	ϕ0.3×R0.02×2.5	0.25	45	F-026
MHRH430R	ϕ0.3×R0.02×2.5	0.25	45	F-030
MHRH230R	ϕ0.3×R0.02×3	0.25	45	F-026
MHRH430R	ϕ0.3×R0.02×3	0.25	45	F-030
SSR200	ϕ0.3×R0.03×0.5	0.13	50	B-027
SSR200	ϕ0.3×R0.03×0.75	0.13	50	B-027
SSR200	ϕ0.3×R0.03×1	0.13	50	B-027
SSR200	ϕ0.3×R0.03×1.5	0.13	50	B-027
SSR200	ϕ0.3×R0.03×2	0.13	50	B-027
PCDRS	ϕ0.3×R0.05×0.3	0.09	48	C-006
SSR200	ϕ0.3×R0.05×0.5	0.13	50	B-027
SHPR400	ϕ0.3×R0.05×0.5	0.13	50	B-035
MHRSH430RSF	ϕ0.3×R0.05×0.5	0.25	35	F-016
MHRH430R	ϕ0.3×R0.05×0.5	0.25	45	F-030
SSR200	ϕ0.3×R0.05×0.75	0.13	50	B-027
SHPR400	ϕ0.3×R0.05×0.75	0.13	50	B-035
SSF120	ϕ0.3×R0.05×0.75	0.15	50	B-040
MHRSH430RSF	ϕ0.3×R0.05×0.75	0.25	35	F-016
SSR200	ϕ0.3×R0.05×1	0.13	50	B-027
SHPR400	ϕ0.3×R0.05×1	0.13	50	B-035
MHRSH430RSF	ϕ0.3×R0.05×1	0.25	35	F-016
MHRH230R	ϕ0.3×R0.05×1	0.25	45	F-026
MHRH430R	ϕ0.3×R0.05×1	0.25	45	F-030
MHR230R	ϕ0.3×R0.05×1	0.25	45	F-042
MHR230R	ϕ0.3×R0.05×1	0.25	50	F-042
DHR237R	ϕ0.3×R0.05×1	0.6	45	F-070
SSR200	ϕ0.3×R0.05×1.5	0.13	50	B-027
SHPR400	ϕ0.3×R0.05×1.5	0.13	50	B-035
MHRSH430RSF	ϕ0.3×R0.05×1.5	0.25	35	F-016
MHRH230R	ϕ0.3×R0.05×1.5	0.25	45	F-026
MHRH430R	ϕ0.3×R0.05×1.5	0.25	45	F-030
MHR230R	ϕ0.3×R0.05×1.5	0.25	45	F-042
DHR237R	ϕ0.3×R0.05×1.5	0.6	45	F-070
SSR200	ϕ0.3×R0.05×2	0.13	50	B-027
SHPR400	ϕ0.3×R0.05×2	0.13	50	B-035
MHRH230R	ϕ0.3×R0.05×2	0.25	45	F-026
MHRH430R	ϕ0.3×R0.05×2	0.25	45	F-030
MHR230R	ϕ0.3×R0.05×2	0.25	45	F-042
MHR230R	ϕ0.3×R0.05×2	0.25	50	F-042
MSTNR230	ϕ0.3×R0.05×2	0.25	50	F-062
DHR237R	ϕ0.3×R0.05×2	0.6	45	F-070
MHRH230R	ϕ0.3×R0.05×2.5	0.25	45	F-026
MHRH430R	ϕ0.3×R0.05×2.5	0.25	45	F-030
MHR230R	ϕ0.3×R0.05×2.5	0.25	45	F-042
MHRH230R	ϕ0.3×R0.05×3	0.25	45	F-026
MHRH430R	ϕ0.3×R0.05×3	0.25	45	F-030
MHR230R	ϕ0.3×R0.05×3	0.25	45	F-042
MSTNR230	ϕ0.3×R0.05×3	0.25	50	F-062
ϕ0.4				
SSR200	ϕ0.4×R0.02×0.5	0.24	50	B-027
SHPR400	ϕ0.4×R0.02×0.5	0.24	50	B-035
MHRSH430RSF	ϕ0.4×R0.02×0.5	0.3	35	F-017
MHRH430R	ϕ0.4×R0.02×0.5	0.3	45	F-031
SSR200	ϕ0.4×R0.02×1	0.24	50	B-027
SHPR400	ϕ0.4×R0.02×1	0.24	50	B-035
MHRSH430RSF	ϕ0.4×R0.02×1	0.3	35	F-017
MHRH230R	ϕ0.4×R0.02×1	0.3	45	F-026
MHRH430R	ϕ0.4×R0.02×1	0.3	45	F-031
DHR237R	ϕ0.4×R0.02×1	0.8	45	F-070
SSR200	ϕ0.4×R0.02×1.5	0.24	50	B-027
SHPR400	ϕ0.4×R0.02×1.5	0.24	50	B-035
MHRSH430RSF	ϕ0.4×R0.02×1.5	0.3	35	F-017
MHRH230R	ϕ0.4×R0.02×1.5	0.3	45	F-026
MHRH430R	ϕ0.4×R0.02×1.5	0.3	45	F-031
SSR200	ϕ0.4×R0.02×2	0.24	50	B-027
SHPR400	ϕ0.4×R0.02×2	0.24	50	B-035
MHRSH430RSF	ϕ0.4×R0.02×2	0.3	35	F-017
MHRH230R	ϕ0.4×R0.02×2	0.3	45	F-026
MHRH430R	ϕ0.4×R0.02×2	0.3	45	F-031
DHR237R	ϕ0.4×R0.02×2	0.8	45	F-070
SHPR400	ϕ0.4×R0.02×2.5	0.24	50	B-035
MHRH230R	ϕ0.4×R0.02×2.5	0.3	45	F-026
MHRH430R	ϕ0.4×R0.02×2.5	0.3	45	F-031
MHRH230R	ϕ0.4×R0.02×3	0.3	45	F-026
MHRH430R	ϕ0.4×R0.02×3	0.3	45	F-031
DHR237R	ϕ0.4×R0.02×3	0.8	45	F-070

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径X角半径(X颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH230R	ϕ0.4×R0.02×4	0.3	45	F-026
MHRH430R	ϕ0.4×R0.02×4	0.3	45	F-031
DHR237R	ϕ0.4×R0.02×4	0.8	45	F-070
SSR200	ϕ0.4×R0.03×0.5	0.24	50	B-027
SSR200	ϕ0.4×R0.03×1	0.24	50	B-027
SSR200	ϕ0.4×R0.03×1.5	0.24	50	B-027
SSR200	ϕ0.4×R0.03×2	0.24	50	B-027
PCDRS	ϕ0.4×R0.05×0.4	0.12	48	C-006
SSR200	ϕ0.4×R0.05×0.5	0.24	50	B-027
SHPR400	ϕ0.4×R0.05×0.5	0.24	50	B-035
MHRSH430RSF	ϕ0.4×R0.05×0.5	0.3	35	F-017
MHRH430R	ϕ0.4×R0.05×0.5	0.3	45	F-031
SSF120	ϕ0.4×R0.05×1	0.2	50	B-040
SSR200	ϕ0.4×R0.05×1	0.24	50	B-027
SHPR400	ϕ0.4×R0.05×1	0.24	50	B-035
MHRSH430RSF	ϕ0.4×R0.05×1	0.3	35	F-017
MHRH230R	ϕ0.4×R0.05×1	0.3	45	F-026
MHRH430R	ϕ0.4×R0.05×1	0.3	45	F-031
MHR230R	ϕ0.4×R0.05×1	0.3	45	F-042
DHR237R	ϕ0.4×R0.05×1	0.8	45	F-070
SSR200	ϕ0.4×R0.05×1.5	0.24	50	B-027
SHPR400	ϕ0.4×R0.05×1.5	0.24	50	B-035
MHRSH430RSF	ϕ0.4×R0.05×1.5	0.3	35	F-017
MHRH230R	ϕ0.4×R0.05×1.5	0.3	45	F-026
MHRH430R	ϕ0.4×R0.05×1.5	0.3	45	F-031
MHR230R	ϕ0.4×R0.05×1.5	0.3	45	F-042
SSR200	ϕ0.4×R0.05×2	0.24	50	B-027
SHPR400	ϕ0.4×R0.05×2	0.24	50	B-035
MHRSH430RSF	ϕ0.4×R0.05×2	0.3	35	F-017
MHRH230R	ϕ0.4×R0.05×2	0.3	45	F-026
MHRH430R	ϕ0.4×R0.05×2	0.3	45	F-031
MHR230R	ϕ0.4×R0.05×2	0.3	45	F-042
MHR230R	ϕ0.4×R0.05×2	0.3	50	F-042
DHR237R	ϕ0.4×R0.05×2	0.8	45	F-070
SHPR400	ϕ0.4×R0.05×2.5	0.24	50	B-035
MHRH230R	ϕ0.4×R0.05×2.5	0.3	45	F-026
MHRH430R	ϕ0.4×R0.05×2.5	0.3	45	F-031
MHRH230R	ϕ0.4×R0.05×3	0.3	45	F-026
MHRH430R	ϕ0.4×R0.05×3	0.3	45	F-031
MHR230R	ϕ0.4×R0.05×3	0.3	45	F-042
MHR230R	ϕ0.4×R0.05×3	0.3	50	F-042
MSTNR230	ϕ0.4×R0.05×3	0.3	50	F-062
DHR237R	ϕ0.4×R0.05×3	0.8	45	F-070
MHRH230R	ϕ0.4×R0.05×4	0.3	45	F-026
MHRH430R	ϕ0.4×R0.05×4	0.3	45	F-031
MHR230R	ϕ0.4×R0.05×4	0.3	45	F-042
MHR230R	ϕ0.4×R0.05×4	0.3	50	F-042
MSTNR230	ϕ0.4×R0.05×4	0.3	50	F-062
DHR237R	ϕ0.4×R0.05×4	0.8	45	F-070
SSR200	ϕ0.4×R0.1×0.5	0.24	50	B-027
SHPR400	ϕ0.4×R0.1×0.5	0.24	50	B-035
SSR200	ϕ0.4×R0.1×1	0.24	50	B-027
SHPR400	ϕ0.4×R0.1×1	0.24	50	B-035
MHRH230R	ϕ0.4×R0.1×1	0.3	45	F-026
MHRH430R	ϕ0.4×R0.1×1	0.3	45	F-031
MHR230R	ϕ0.4×R0.1×1	0.3	45	F-042
DHR237R	ϕ0.4×R0.1×1	0.8	45	F-070
SSR200	ϕ0.4×R0.1×1.5	0.24	50	B-027
SHPR400	ϕ0.4×R0.1×1.5	0.24	50	B-035
MHR230R	ϕ0.4×R0.1×1.5	0.3	45	F-042
SSR200	ϕ0.4×R0.1×2	0.24	50	B-027
SHPR400	ϕ0.4×R0.1×2	0.24	50	B-035
MHRH230R	ϕ0.4×R0.1×2	0.3	45	F-026
MHRH430R	ϕ0.4×R0.1×2	0.3	45	F-031
MHR230R	ϕ0.4×R0.1×2	0.3	45	F-042
MHR230R	ϕ0.4×R0.1×2	0.3	50	F-042
DHR237R	ϕ0.4×R0.1×2	0.8	45	F-070
SHPR400	ϕ0.4×R0.1×2.5	0.24	50	B-035
MHRH230R	ϕ0.4×R0.1×3	0.3	45	F-026
MHRH430R	ϕ0.4×R0.1×3	0.3	45	F-031
MHR230R	ϕ0.4×R0.1×3	0.3	45	F-042
MHR230R	ϕ0.4×R0.1×3	0.3	50	F-042
MSTNR230	ϕ0.4×R0.1×3	0.3	50	F-062
DHR237R	ϕ0.4×R0.1×3	0.8	45	F-070
MHRH230R	ϕ0.4×R0.1×4	0.3	45	F-026
MHRH430R	ϕ0.4×R0.1×4	0.3	45	F-031
MHR230R	ϕ0.4×R0.1×4	0.3	45	F-042
MHR230R	ϕ0.4×R0.1×4	0.3	50	F-042
MSTNR230	ϕ0.4×R0.1×4	0.3	50	F-062
DHR237R	ϕ0.4×R0.1×4	0.8	45	F-070
ϕ0.5				
SSR200	ϕ0.5×R0.02×0.5	0.3	48	B-027
SHPR400	ϕ0.5×R0.02×0.5	0.3	48	B-035
SSR200	ϕ0.5×R0.02×1	0.3	50	B-027
SHPR400	ϕ0.5×R0.02×1	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.02×1	0.4	35	F-017
MHRH230R	ϕ0.5×R0.02×1	0.4	45	F-026
MHRH430R	ϕ0.5×R0.02×1	0.4	45	F-031
SSR200	ϕ0.5×R0.02×1.5	0.3	50	B-027
SHPR400	ϕ0.5×R0.02×1.5	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.02×1.5	0.4	35	F-017
SHPR400	ϕ0.5×R0.02×2	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.02×2	0.4	35	F-017
MHRH230R	ϕ0.5×R0.02×2	0.4	45	F-026
MHRH430R	ϕ0.5×R0.02×2	0.4	45	F-031
DHR237R	ϕ0.5×R0.02×2	1	45	F-071
SSR200	ϕ0.5×R0.02×2.5	0.3	50	B-027
SHPR400	ϕ0.5×R0.02×2.5	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.02×2.5	0.4	35	F-017
MHRH230R	ϕ0.5×R0.02×3	0.4	45	F-026

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径X角半径(X颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH430R	ϕ0.5×R0.02×3	0.4	45	F-031
DHR237R	ϕ0.5×R0.02×3	1	45	F-071
MHRH230R	ϕ0.5×R0.02×4	0.4	45	F-026
MHRH430R	ϕ0.5×R0.02×4	0.4	45	F-031
DHR237R	ϕ0.5×R0.02×4	1	45	F-071
MHRH230R	ϕ0.5×R0.02×5	0.4	45	F-026
MHRH430R	ϕ0.5×R0.02×5	0.4	45	F-031
DHR237R	ϕ0.5×R0.02×5	1	45	F-071
MHRH230R	ϕ0.5×R0.02×6	0.4	45	F-026
MHRH430R	ϕ0.5×R0.02×6	0.4	45	F-031
SSR200	ϕ0.5×R0.03×0.5	0.3	48	B-027
SSR200	ϕ0.5×R0.03×1	0.3	50	B-027
SSR200	ϕ0.5×R0.03×1.5	0.3	50	B-027
SSR200	ϕ0.5×R0.03×2.5	0.3	50	B-027
PCDRS	ϕ0.5×R0.05×0.5	0.15	48	C-006
SSR200	ϕ0.5×R0.05×0.5	0.3	48	B-027
SHPR400	ϕ0.5×R0.05×0.5	0.3	48	B-035
SSR200	ϕ0.5×R0.05×1	0.3	50	B-027
SHPR400	ϕ0.5×R0.05×1	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.05×1	0.4	35	F-017
MHRH230R	ϕ0.5×R0.05×1	0.4	45	F-026
MHRH430R	ϕ0.5×R0.05×1	0.4	45	F-031
MHR230R	ϕ0.5×R0.05×1	0.4	45	F-043
SSF120	ϕ0.5×R0.05×1.25	0.25	50	B-040
SSR200	ϕ0.5×R0.05×1.5	0.3	50	B-027
SHPR400	ϕ0.5×R0.05×1.5	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.05×1.5	0.4	35	F-017
SHPR400	ϕ0.5×R0.05×2	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.05×2	0.4	35	F-017
MHRH230R	ϕ0.5×R0.05×2	0.4	45	F-026
MHRH430R	ϕ0.5×R0.05×2	0.4	45	F-031
MHR230R	ϕ0.5×R0.05×2	0.4	45	F-043
MHR230R	ϕ0.5×R0.05×2	0.4	50	F-043
DHR237R	ϕ0.5×R0.05×2	1	45	F-071
SSR200	ϕ0.5×R0.05×2.5	0.3	50	B-027
SHPR400	ϕ0.5×R0.05×2.5	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.05×2.5	0.4	35	F-017
MHRH230R	ϕ0.5×R0.05×3	0.4	45	F-026
MHRH430R	ϕ0.5×R0.05×3	0.4	45	F-031
MHR230R	ϕ0.5×R0.05×3	0.4	45	F-043
MHR230R	ϕ0.5×R0.05×3	0.4	50	F-043
MSTNR230	ϕ0.5×R0.05×3	0.4	50	F-062
DHR237R	ϕ0.5×R0.05×3	1	45	F-071
MHRH230R	ϕ0.5×R0.05×4	0.4	45	F-026
MHRH430R	ϕ0.5×R0.05×4	0.4	45	F-031
MHR230R	ϕ0.5×R0.05×4	0.4	45	F-043
MHR230R	ϕ0.5×R0.05×4	0.4	50	F-043
DHR237R	ϕ0.5×R0.05×4	1	45	F-071
MHRH230R	ϕ0.5×R0.05×5	0.4	45	F-026
MHRH430R	ϕ0.5×R0.05×5	0.4	45	F-031
MHR230R	ϕ0.5×R0.05×5	0.4	45	F-043
MHR230R	ϕ0.5×R0.05×5	0.4	50	F-043
DHR237R	ϕ0.5×R0.05×5	1	45	F-071
MHRH230R	ϕ0.5×R0.05×6	0.4	45	F-026
MHRH430R	ϕ0.5×R0.05×6	0.4	45	F-031
MHR230R	ϕ0.5×R0.05×6	0.4	45	F-043
MSTNR230	ϕ0.5×R0.05×8	0.4	50	F-062
MSTNR230	ϕ0.5×R0.05×10	0.4	50	F-062
MSTNR230	ϕ0.5×R0.05×12	0.4	50	F-062
PCDRS	ϕ0.5×R0.1×0.5	0.15	48	C-006
SSR200	ϕ0.5×R0.1×0.5	0.3	48	B-027
SHPR400	ϕ0.5×R0.1×0.5	0.3	48	B-035
SSR200	ϕ0.5×R0.1×1	0.3	50	B-027
SHPR400	ϕ0.5×R0.1×1	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.1×1	0.4	35	F-017
MHRH230R	ϕ0.5×R0.1×1	0.4	45	F-027
MHRH430R	ϕ0.5×R0.1×1	0.4	45	F-031
MHR230R	ϕ0.5×R0.1×1	0.4	45	F-043
SHR320	ϕ0.5×R0.1×1.5	0.25	50	B-032
SSR200	ϕ0.5×R0.1×1.5	0.3	50	B-027
SHPR400	ϕ0.5×R0.1×1.5	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.1×1.5	0.4	35	F-017
SHPR400	ϕ0.5×R0.1×2	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.1×2	0.4	35	F-017
MHRH230R	ϕ0.5×R0.1×2	0.4	45	F-027
MHRH430R	ϕ0.5×R0.1×2	0.4	45	F-031
MHR230R	ϕ0.5×R0.1×2	0.4	45	F-043
MHR230R	ϕ0.5×R0.1×2	0.4	50	F-043
DHR237R	ϕ0.5×R0.1×2	1	45	F-071
SHR320	ϕ0.5×R0.1×2.5	0.25	50	B-032
SSR200	ϕ0.5×R0.1×2.5	0.3	50	B-027
SHPR400	ϕ0.5×R0.1×2.5	0.3	50	B-035
MHRSH430RSF	ϕ0.5×R0.1×2.5	0.4	35	F-017
MHRH230R	ϕ0.5×R0.1×3	0.4	45	F-027
MHRH430R	ϕ0.5×R0.1×3	0.4	45	F-031
MHR230R	ϕ0.5×R0.1×3	0.4	45	F-043
MHR230R	ϕ0.5×R0.1×3	0.4	50	F-043
MSTNR230	ϕ0.5×R0.1×3	0.4	50	F-063
DHR237R	ϕ0.5×R0.1×3	1	45	F-071
MHRH230R	ϕ0.5×R0.1×4	0.4	45	F-027
MHRH430R	ϕ0.5×R0.1×4	0.4	45	F-031
MHR230R	ϕ0.5×R0.1×4	0.4	45	F-043
MHR230R	ϕ0.5×R0.1×4	0.4	50	F-043
DHR237R	ϕ0.5×R0.1×4	1	45	F-071
MHRH230R	ϕ0.5×R0.1×5	0.4	45	F-027
MHRH430R	ϕ0.5×R0.1×5	0.4	45	F-031
MHR230R	ϕ0.5×R0.1×5	0.4	45	F-043
MHR230R	ϕ0.5×R0.1×5	0.4	50	F-043
MSTNR230	ϕ0.5×R0.1×5	0.4	50	F-063

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径X角半径(X颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
DHR237R	ϕ0.5×R0.1×5	1	45	F-071
MHRH230R	ϕ0.5×R0.1×6	0.4	45	F-027
MHRH430R	ϕ0.5×R0.1×6	0.4	45	F-031
MHR230R	ϕ0.5×R0.1×6	0.4	45	F-043
MSTNR230	ϕ0.5×R0.1×8	0.4	50	F-063
MSTNR230	ϕ0.5×R0.1×10	0.4	50	F-063
MSTNR230	ϕ0.5×R0.1×12	0.4	50	F-063
ϕ0.6				
SSR200	ϕ0.6×R0.02×0.5	0.3	48	B-027
SHPR400	ϕ0.6×R0.02×0.5	0.3	48	B-035
SSR200	ϕ0.6×R0.02×1	0.3	50	B-027
SHPR400	ϕ0.6×R0.02×1	0.3	50	B-035
MHRSH430RSF	ϕ0.6×R0.02×1	0.5	35	F-017
SSR200	ϕ0.6×R0.02×1.5	0.3	50	B-027
SHPR400	ϕ0.6×R0.02×1.5	0.3	50	B-035
SHPR400	ϕ0.6×R0.02×2	0.3	50	B-035
MHRSH430RSF	ϕ0.6×R0.02×2	0.5	35	F-017
MHRH230R	ϕ0.6×R0.02×2	0.5	45	F-027
MHRH430R	ϕ0.6×R0.02×2	0.5	45	F-031
DHR237R	ϕ0.6×R0.02×2	1.2	45	F-071
SSR200	ϕ0.6×R0.02×2.5	0.3	50	B-027
SHPR400	ϕ0.6×R0.02×2.5	0.3	50	B-035
MHRSH430RSF	ϕ0.6×R0.02×3	0.5	35	F-017
MHRH230R	ϕ0.6×R0.02×4	0.5	45	F-027
MHRH430R	ϕ0.6×R0.02×4	0.5	45	F-031
DHR237R	ϕ0.6×R0.02×4	1.2	45	F-071
MHRH230R	ϕ0.6×R0.02×6	0.5	45	F-027
MHRH430R	ϕ0.6×R0.02×6	0.5	45	F-031
DHR237R	ϕ0.6×R0.02×6	1.2	45	F-071
MHRH230R	ϕ0.6×R0.02×8	0.5	50	F-027
MHRH430R	ϕ0.6×R0.02×8	0.5	50	F-031
MHRH230R	ϕ0.6×R0.02×10	0.5	50	F-027
MHRH430R	ϕ0.6×R0.02×10	0.5	50	F-031
SSR200	ϕ0.6×R0.03×0.5	0.3	48	B-027
SSR200	ϕ0.6×R0.03×1	0.3	50	B-027
SSR200	ϕ0.6×R0.03×1.5	0.3	50	B-027
SSR200	ϕ0.6×R0.03×2.5	0.3	50	B-027
SSR200	ϕ0.6×R0.05×0.5	0.3	48	B-027
SHPR400	ϕ0.6×R0.05×0.5	0.3	48	B-035
PCDRS	ϕ0.6×R0.05×0.6	0.18	48	C-006
SSR200	ϕ0.6×R0.05×1	0.3	50	B-027
SHPR400	ϕ0.6×R0.05×1	0.3	50	B-035
MHRSH430RSF	ϕ0.6×R0.05×1	0.5	35	F-017
SSR200	ϕ0.6×R0.05×1.5	0.3	50	B-027
SHPR400	ϕ0.6×R0.05×1.5	0.3	50	B-035
SSF120	ϕ0.6×R0.05×1.5	0.3	50	B-040
SHPR400	ϕ0.6×R0.05×2	0.3	50	B-035
MHRSH430RSF	ϕ0.6×R0.05×2	0.5	35	F-017
MHRH230R	ϕ0.6×R0.05×2	0.5	45	F-027
MHRH430R	ϕ0.6×R0.05×2	0.5	45	F-031
MHRH230R	ϕ0.6×R0.05×2	0.5	50	F-027
MHRH430R	ϕ0.6×R0.05×2	0.5	50	F-031
MHR230R	ϕ0.6×R0.05×2	0.5	45	F-043
MHR230R	ϕ0.6×R0.05×2	0.5	50	F-043
DHR237R	ϕ0.6×R0.05×2	1.2	45	F-071
SSR200	ϕ0.6×R0.05×2.5	0.3	50	B-027
SHPR400	ϕ0.6×R0.05×2.5	0.3	50	B-035
MHRSH430RSF	ϕ0.6×R0.05×3	0.5	35	F-017
MHR230R	ϕ0.6×R0.05×3	0.5	45	F-043
MHRH230R	ϕ0.6×R0.05×4	0.5	45	F-027
MHRH430R	ϕ0.6×R0.05×4	0.5	45	F-031
MHR230R	ϕ0.6×R0.05×4	0.5	45	F-043
MHR230R	ϕ0.6×R0.05×4	0.5	50	F-043
DHR237R	ϕ0.6×R0.05×4	1.2	45	F-071
MHRH230R	ϕ0.6×R0.05×6	0.5	45	F-027
MHRH430R	ϕ0.6×R0.05×6	0.5	45	F-031
MHR230R	ϕ0.6×R0.05×6	0.5	45	F-043
MHR230R	ϕ0.6×R0.05×6	0.5	50	F-043
DHR237R	ϕ0.6×R0.05×6	1.2	45	F-071
MHRH230R	ϕ0.6×R0.05×8	0.5	50	F-027
MHRH430R	ϕ0.6×R0.05×8	0.5	50	F-031
MHR230R	ϕ0.6×R0.05×8	0.5	50	F-043
MHRH230R	ϕ0.6×R0.05×10	0.5	50	F-027
MHRH430R	ϕ0.6×R0.05×10	0.5	50	F-031
SSR200	ϕ0.6×R0.1×0.5	0.3	48	B-027
SHPR400	ϕ0.6×R0.1×0.5	0.3	48	B-035
PCDRS	ϕ0.6×R0.1×0.6	0.18	48	C-006
SSR200	ϕ0.6×R0.1×1	0.3	50	B-027
SHPR400	ϕ0.6×R0.1×1	0.3	50	B-035
MHRSH430RSF	ϕ0.6×R0.1×1	0.5	35	F-017
SSR200	ϕ0.6×R0.1×1.5	0.3	50	B-027
SHPR400	ϕ0.6×R0.1×1.5	0.3	50	B-035
SHPR400	ϕ0.6×R0.1×2	0.3	50	B-035
MHRSH430RSF	ϕ0.6×R0.1×2	0.5	35	F-017
MHRH230R	ϕ0.6×R0.1×2	0.5	45	F-027
MHRH430R	ϕ0.6×R0.1×2	0.5	45	F-031
MHR230R	ϕ0.6×R0.1×2	0.5	45	F-043
DHR237R	ϕ0.6×R0.1×2	1.2	45	F-071
SSR200	ϕ0.6×R0.1×2.5	0.3	50	B-027
SHPR400	ϕ0.6×R0.1×2.5	0.3	50	B-035
MHRSH430RSF	ϕ0.6×R0.1×3	0.5	35	F-017
MHR230R	ϕ0.6×R0.1×3	0.5	45	F-043
MHRH230R	ϕ0.6×R0.1×4	0.5	45	F-027
MHRH430R	ϕ0.6×R0.1×4	0.5	45	F-031
MHR230R	ϕ0.6×R0.1×4	0.5	45	F-043
MHR230R	ϕ0.6×R0.1×4	0.5	50	F-043
DHR237R	ϕ0.6×R0.1×4	1.2	45	F-071
MHRH230R	ϕ0.6×R0.1×6	0.5	45	F-027
MHRH430R	ϕ0.6×R0.1×6	0.5	45	F-031
MHR230R	ϕ0.6×R0.1×6	0.5	45	F-043
MHR230R	ϕ0.6×R0.1×6	0.5	50	F-043
DHR237R	ϕ0.6×R0.1×6	1.2	45	F-071

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径X角半径(X颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH230R	ϕ0.6×R0.1×8	0.5	50	F-027
MHRH430R	ϕ0.6×R0.1×8	0.5	50	F-031
MHR230R	ϕ0.6×R0.1×8	0.5	50	F-043
MHRH230R	ϕ0.6×R0.1×10	0.5	50	F-027
MHRH430R	ϕ0.6×R0.1×10	0.5	50	F-031
MHR230R	ϕ0.6×R0.2×2	0.5	45	F-043
MHR230R	ϕ0.6×R0.2×3	0.5	45	F-043
MHR230R	ϕ0.6×R0.2×4	0.5	45	F-044
MHR230R	ϕ0.6×R0.2×6	0.5	45	F-044
MHR230R	ϕ0.6×R0.2×8	0.5	50	F-044
ϕ0.7				
MHRH230R	ϕ0.7×R0.02×2	0.55	45	F-027
MHRH430R	ϕ0.7×R0.02×2	0.55	45	F-031
MHRH230R	ϕ0.7×R0.02×4	0.55	45	F-027
MHRH430R	ϕ0.7×R0.02×4	0.55	45	F-031
MHRH230R	ϕ0.7×R0.02×6	0.55	45	F-027
MHRH430R	ϕ0.7×R0.02×6	0.55	45	F-031
MHRH230R	ϕ0.7×R0.05×2	0.55	45	F-027
MHRH430R	ϕ0.7×R0.05×2	0.55	45	F-031
MHRH230R	ϕ0.7×R0.05×4	0.55	45	F-027
MHRH430R	ϕ0.7×R0.05×4	0.55	45	F-031
MHR230R	ϕ0.7×R0.05×4	0.55	45	F-044
MHR230R	ϕ0.7×R0.05×4	0.55	50	F-044
MHRH230R	ϕ0.7×R0.05×6	0.55	45	F-027
MHRH430R	ϕ0.7×R0.05×6	0.55	45	F-031
MHR230R	ϕ0.7×R0.05×6	0.55	45	F-044
MHR230R	ϕ0.7×R0.05×6	0.55	50	F-044
MHRH230R	ϕ0.7×R0.1×2	0.55	45	F-027
MHRH430R	ϕ0.7×R0.1×2	0.55	45	F-031
MHRH230R	ϕ0.7×R0.1×4	0.55	45	F-027
MHRH430R	ϕ0.7×R0.1×4	0.55	45	F-031
MHR230R	ϕ0.7×R0.1×4	0.55	45	F-044
MHR230R	ϕ0.7×R0.1×4	0.55	50	F-044
MHRH230R	ϕ0.7×R0.1×6	0.55	45	F-027
MHRH430R	ϕ0.7×R0.1×6	0.55	45	F-031
MHR230R	ϕ0.7×R0.1×6	0.55	45	F-044
MHR230R	ϕ0.7×R0.1×6	0.55	50	F-044
ϕ0.8				
SSR200	ϕ0.8×R0.02×1.5	0.56	50	B-027
SHPR400	ϕ0.8×R0.02×1.5	0.56	50	B-035
MHRSH430RSF	ϕ0.8×R0.02×2	0.65	35	F-017
MHRH230R	ϕ0.8×R0.02×2	0.65	45	F-027
MHRH430R	ϕ0.8×R0.02×2	0.65	45	F-032
SSR200	ϕ0.8×R0.02×2.5	0.56	50	B-027
SHPR400	ϕ0.8×R0.02×2.5	0.56	50	B-035
MHRSH430RSF	ϕ0.8×R0.02×3	0.65	35	F-017
MHRSH430RSF	ϕ0.8×R0.02×4	0.65	35	F-017
MHRH230R	ϕ0.8×R0.02×4	0.65	45	F-027
MHRH430R	ϕ0.8×R0.02×4	0.65	45	F-032
DHR237R	ϕ0.8×R0.02×4	1.6	45	F-071
SSR200	ϕ0.8×R0.02×5	0.56	53	B-027
SHPR400	ϕ0.8×R0.02×5	0.56	53	B-035
MHRH230R	ϕ0.8×R0.02×6	0.65	45	F-027
MHRH430R	ϕ0.8×R0.02×6	0.65	45	F-032
DHR237R	ϕ0.8×R0.02×6	1.6	45	F-071
MHRH230R	ϕ0.8×R0.02×8	0.65	50	F-027
MHRH430R	ϕ0.8×R0.02×8	0.65	50	F-032
DHR237R	ϕ0.8×R0.02×8	1.6	50	F-071
SSR200	ϕ0.8×R0.03×1.5	0.56	50	B-028
SSR200	ϕ0.8×R0.03×2.5	0.56	50	B-028
SSR200	ϕ0.8×R0.03×5	0.56	53	B-028
PCDRS	ϕ0.8×R0.05×0.8	0.24	48	C-006
SSR200	ϕ0.8×R0.05×1.5	0.56	50	B-028
SHPR400	ϕ0.8×R0.05×1.5	0.56	50	B-035
SSF120	ϕ0.8×R0.05×2	0.4	50	B-040
MHRSH430RSF	ϕ0.8×R0.05×2	0.65	35	F-017
MHRH230R	ϕ0.8×R0.05×2	0.65	45	F-027
MHRH430R	ϕ0.8×R0.05×2	0.65	45	F-032
SSR200	ϕ0.8×R0.05×2.5	0.56	50	B-028
SHPR400	ϕ0.8×R0.05×2.5	0.56	50	B-035
MHRSH430RSF	ϕ0.8×R0.05×3	0.65	35	F-017
MHRSH430RSF	ϕ0.8×R0.05×4	0.65	35	F-017
MHRH230R	ϕ0.8×R0.05×4	0.65	45	F-027
MHRH430R	ϕ0.8×R0.05×4	0.65	45	F-032
MHR230R	ϕ0.8×R0.05×4	0.65	45	F-044
MHR230R	ϕ0.8×R0.05×4	0.65	50	F-044
DHR237R	ϕ0.8×R0.05×4	1.6	45	F-071
SSR200	ϕ0.8×R0.05×5	0.56	53	B-028
SHPR400	ϕ0.8×R0.05×5	0.56	53	B-035
MSTNR230	ϕ0.8×R0.05×5	0.65	50	F-063
MHRH230R	ϕ0.8×R0.05×6	0.65	45	F-027
MHRH430R	ϕ0.8×R0.05×6	0.65	45	F-032
MHR230R	ϕ0.8×R0.05×6	0.65	45	F-044
MHR230R	ϕ0.8×R0.05×6	0.65	50	F-044
DHR237R	ϕ0.8×R0.05×6	1.6	45	F-071
MHRH230R	ϕ0.8×R0.05×8	0.65	50	F-027
MHRH430R	ϕ0.8×R0.05×8	0.65	50	F-032
MHR230R	ϕ0.8×R0.05×8	0.65	50	F-044
MSTNR230	ϕ0.8×R0.05×8	0.65	50	F-063
DHR237R	ϕ0.8×R0.05×8	1.6	50	F-071
MHRH230R	ϕ0.8×R0.05×12	0.65	50	F-027
MHRH430R	ϕ0.8×R0.05×12	0.65	50	F-032
PCDRS	ϕ0.8×R0.1×0.8	0.24	48	C-006
SSR200	ϕ0.8×R0.1×1.5	0.56	50	B-028
SHPR400	ϕ0.8×R0.1×1.5	0.56	50	B-035
MHRSH430RSF	ϕ0.8×R0.1×2	0.65	35	F-017
MHRH230R	ϕ0.8×R0.1×2	0.65	45	F-027
MHRH430R	ϕ0.8×R0.1×2	0.65	45	F-032
SSR200	ϕ0.8×R0.1×2.5	0.56	50	B-028
SHPR400	ϕ0.8×R0.1×2.5	0.56	50	B-035

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRSH430RSF	ϕ0.8×R0.1×3	0.65	35	F-017
MHRSH430RSF	ϕ0.8×R0.1×4	0.65	35	F-017
MHRH230R	ϕ0.8×R0.1×4	0.65	45	F-027
MHRH430R	ϕ0.8×R0.1×4	0.65	45	F-032
MHR230R	ϕ0.8×R0.1×4	0.65	45	F-044
MHR230R	ϕ0.8×R0.1×4	0.65	50	F-044
DHR237R	ϕ0.8×R0.1×4	1.6	45	F-071
SSR200	ϕ0.8×R0.1×5	0.56	53	B-028
SHPR400	ϕ0.8×R0.1×5	0.56	53	B-035
MSTNR230	ϕ0.8×R0.1×5	0.65	50	F-063
MHRH230R	ϕ0.8×R0.1×6	0.65	45	F-027
MHRH430R	ϕ0.8×R0.1×6	0.65	45	F-032
MHR230R	ϕ0.8×R0.1×6	0.65	45	F-044
MHR230R	ϕ0.8×R0.1×6	0.65	50	F-044
DHR237R	ϕ0.8×R0.1×6	1.6	45	F-071
MHRH230R	ϕ0.8×R0.1×8	0.65	50	F-027
MHRH430R	ϕ0.8×R0.1×8	0.65	50	F-032
MHR230R	ϕ0.8×R0.1×8	0.65	50	F-044
MSTNR230	ϕ0.8×R0.1×8	0.65	50	F-063
DHR237R	ϕ0.8×R0.1×8	1.6	50	F-071
MHRH230R	ϕ0.8×R0.1×12	0.65	50	F-027
MHRH430R	ϕ0.8×R0.1×12	0.65	50	F-032
MHRSH430RSF	ϕ0.8×R0.2×2	0.65	35	F-017
MHRH230R	ϕ0.8×R0.2×2	0.65	45	F-027
MHRH430R	ϕ0.8×R0.2×2	0.65	45	F-032
MHRSH430RSF	ϕ0.8×R0.2×3	0.65	35	F-017
MHRSH430RSF	ϕ0.8×R0.2×4	0.65	35	F-017
MHRH230R	ϕ0.8×R0.2×4	0.65	45	F-027
MHRH430R	ϕ0.8×R0.2×4	0.65	45	F-032
MHR230R	ϕ0.8×R0.2×4	0.65	45	F-044
MHR230R	ϕ0.8×R0.2×4	0.65	50	F-044
MSTNR230	ϕ0.8×R0.2×5	0.65	50	F-063
MHRH230R	ϕ0.8×R0.2×6	0.65	45	F-027
MHRH430R	ϕ0.8×R0.2×6	0.65	45	F-032
MHR230R	ϕ0.8×R0.2×6	0.65	45	F-044
MHR230R	ϕ0.8×R0.2×6	0.65	50	F-044
MHRH230R	ϕ0.8×R0.2×8	0.65	50	F-027
MHRH430R	ϕ0.8×R0.2×8	0.65	50	F-032
MHR230R	ϕ0.8×R0.2×8	0.65	50	F-044
MSTNR230	ϕ0.8×R0.2×8	0.65	50	F-063
MHRH230R	ϕ0.8×R0.2×12	0.65	50	F-027
MHRH430R	ϕ0.8×R0.2×12	0.65	50	F-032
ϕ0.9				
MHRH230R	ϕ0.9×R0.1×4	0.7	45	F-027
MHRH430R	ϕ0.9×R0.1×4	0.7	45	F-032
MHR230R	ϕ0.9×R0.1×4	0.7	45	F-044
MHR230R	ϕ0.9×R0.1×4	0.7	50	F-044
MHRH230R	ϕ0.9×R0.1×8	0.7	50	F-027
MHRH430R	ϕ0.9×R0.1×8	0.7	50	F-032
MHR230R	ϕ0.9×R0.1×8	0.7	50	F-044

单位[规格 :mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
ϕ1				
SSR200	ϕ1×R0.02×1	0.7	49	B-028
SHPR400	ϕ1×R0.02×1	0.7	49	B-035
MHRH430R	ϕ1×R0.02×1.5	0.8	50	F-032
SSR200	ϕ1×R0.02×2	0.7	50	B-028
SHPR400	ϕ1×R0.02×2	0.7	50	B-035
MHRSH430RSF	ϕ1×R0.02×2	0.8	35	F-017
MHRH430R	ϕ1×R0.02×2	0.8	50	F-032
MHRH430R	ϕ1×R0.02×2.5	0.8	50	F-032
SSR200	ϕ1×R0.02×3	0.7	50	B-028
SHPR400	ϕ1×R0.02×3	0.7	50	B-035
MHRSH430RSF	ϕ1×R0.02×3	0.8	35	F-017
MHRH430R	ϕ1×R0.02×3	0.8	50	F-032
MHRSH430RSF	ϕ1×R0.02×4	0.8	35	F-017
MHRH430R	ϕ1×R0.02×4	0.8	50	F-032
SSR200	ϕ1×R0.02×5	0.7	53	B-028
SHPR400	ϕ1×R0.02×5	0.7	53	B-035
MHRSH430RSF	ϕ1×R0.02×5	0.8	40	F-017
MHRH430R	ϕ1×R0.02×5	0.8	50	F-032
MHRH430R	ϕ1×R0.02×6	0.8	50	F-032
MHRH430R	ϕ1×R0.02×8	0.8	50	F-032
MHRH430R	ϕ1×R0.02×10	0.8	50	F-032
SSR200	ϕ1×R0.03×1	0.7	49	B-028
SSR200	ϕ1×R0.03×2	0.7	50	B-028
SSR200	ϕ1×R0.03×3	0.7	50	B-028
SSR200	ϕ1×R0.03×5	0.7	53	B-028
PCDRS	ϕ1×R0.05×1	0.3	48	C-006
SSR200	ϕ1×R0.05×1	0.7	49	B-028
SHPR400	ϕ1×R0.05×1	0.7	49	B-036
MHRH430R	ϕ1×R0.05×1.5	0.8	50	F-032
SSR200	ϕ1×R0.05×2	0.7	50	B-028
SHPR400	ϕ1×R0.05×2	0.7	50	B-036
MHRSH430RSF	ϕ1×R0.05×2	0.8	35	F-017
MHRH430R	ϕ1×R0.05×2	0.8	50	F-032
MHR230R	ϕ1×R0.05×2	0.8	50	F-044
MHRH430R	ϕ1×R0.05×2.5	0.8	50	F-032
SSR200	ϕ1×R0.05×3	0.7	50	B-028
SHPR400	ϕ1×R0.05×3	0.7	50	B-036
MHRSH430RSF	ϕ1×R0.05×3	0.8	35	F-017
MHRH430R	ϕ1×R0.05×3	0.8	50	F-032
MHR230R	ϕ1×R0.05×3	0.8	50	F-044
MHR430R	ϕ1×R0.05×3	0.8	50	F-056
DHR237R	ϕ1×R0.05×3	2	45	F-071
MHRSH430RSF	ϕ1×R0.05×4	0.8	35	F-017
MHRH430R	ϕ1×R0.05×4	0.8	50	F-032
MHR230R	ϕ1×R0.05×4	0.8	50	F-044
MHR430R	ϕ1×R0.05×4	0.8	50	F-056
DHR237R	ϕ1×R0.05×4	2	45	F-071
SSR200	ϕ1×R0.05×5	0.7	53	B-028
SHPR400	ϕ1×R0.05×5	0.7	53	B-036

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格 :mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRSH430RSF	ϕ1×R0.05×5	0.8	40	F-017
MHRH430R	ϕ1×R0.05×5	0.8	50	F-032
MHR230R	ϕ1×R0.05×5	0.8	50	F-045
MHR430R	ϕ1×R0.05×5	0.8	50	F-056
DHR237R	ϕ1×R0.05×5	2	45	F-071
MHRH430R	ϕ1×R0.05×6	0.8	50	F-032
MHR230R	ϕ1×R0.05×6	0.8	50	F-045
MHR430R	ϕ1×R0.05×6	0.8	50	F-056
MSTNR230	ϕ1×R0.05×6	0.8	50	F-063
DHR237R	ϕ1×R0.05×6	2	45	F-071
MHRH430R	ϕ1×R0.05×8	0.8	50	F-032
MHR230R	ϕ1×R0.05×8	0.8	50	F-045
MHR430R	ϕ1×R0.05×8	0.8	50	F-056
DHR237R	ϕ1×R0.05×8	2	50	F-071
MHRH430R	ϕ1×R0.05×10	0.8	50	F-032
MHR230R	ϕ1×R0.05×10	0.8	50	F-045
MHR430R	ϕ1×R0.05×10	0.8	50	F-056
MSTNR230	ϕ1×R0.05×10	0.8	60	F-063
DHR237R	ϕ1×R0.05×10	2	50	F-071
MHR230R	ϕ1×R0.05×12	0.8	50	F-045
MHR430R	ϕ1×R0.05×12	0.8	50	F-056
MSTNR230	ϕ1×R0.05×15	0.8	60	F-063
MHR230R	ϕ1×R0.05×16	0.8	60	F-045
MHR230R	ϕ1×R0.05×20	0.8	60	F-045
MSTNR230	ϕ1×R0.05×20	0.8	60	F-063
MSTNR230	ϕ1×R0.05×25	0.8	70	F-064
MSTNR230	ϕ1×R0.05×30	0.8	80	F-064
MSTNR230	ϕ1×R0.05×35	0.8	80	F-064
MSRS230	ϕ1×R0.1	2	60	F-010
PCDRS	ϕ1×R0.1×1	0.3	48	C-006
SSR200	ϕ1×R0.1×1	0.7	49	B-028
SHPR400	ϕ1×R0.1×1	0.7	49	B-036
MHRH430R	ϕ1×R0.1×1.5	0.8	50	F-032
SSR200	ϕ1×R0.1×2	0.7	50	B-028
SHPR400	ϕ1×R0.1×2	0.7	50	B-036
MHRSH430RSF	ϕ1×R0.1×2	0.8	35	F-017
MHRH430R	ϕ1×R0.1×2	0.8	50	F-032
MHR230R	ϕ1×R0.1×2	0.8	50	F-045
SSF120	ϕ1×R0.1×2.5	0.5	50	B-040
MHRH430R	ϕ1×R0.1×2.5	0.8	50	F-032
SHR320	ϕ1×R0.1×3	0.5	50	B-032
SSR200	ϕ1×R0.1×3	0.7	50	B-028
SHPR400	ϕ1×R0.1×3	0.7	50	B-036
MHRSH430RSF	ϕ1×R0.1×3	0.8	35	F-017
MHRH430R	ϕ1×R0.1×3	0.8	50	F-032
MHR230R	ϕ1×R0.1×3	0.8	50	F-045
MHR430R	ϕ1×R0.1×3	0.8	50	F-056
DHR237R	ϕ1×R0.1×3	2	45	F-071
MHRSH430RSF	ϕ1×R0.1×4	0.8	35	F-017
MHRH430R	ϕ1×R0.1×4	0.8	50	F-032

单位[规格 :mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR230R	ϕ1×R0.1×4	0.8	50	F-045
MHR430R	ϕ1×R0.1×4	0.8	50	F-056
DHR237R	ϕ1×R0.1×4	2	45	F-071
SHR320	ϕ1×R0.1×5	0.5	52	B-032
SSR200	ϕ1×R0.1×5	0.7	53	B-028
SHPR400	ϕ1×R0.1×5	0.7	53	B-036
MHRSH430RSF	ϕ1×R0.1×5	0.8	40	F-017
MHRH430R	ϕ1×R0.1×5	0.8	50	F-032
MHR230R	ϕ1×R0.1×5	0.8	50	F-045
MHR430R	ϕ1×R0.1×5	0.8	50	F-056
DHR237R	ϕ1×R0.1×5	2	45	F-071
MHRH430R	ϕ1×R0.1×6	0.8	50	F-032
MHR230R	ϕ1×R0.1×6	0.8	50	F-045
MHR430R	ϕ1×R0.1×6	0.8	50	F-056
MSTNR230	ϕ1×R0.1×6	0.8	50	F-064
DHR237R	ϕ1×R0.1×6	2	45	F-071
MHRH430R	ϕ1×R0.1×8	0.8	50	F-032
MHR230R	ϕ1×R0.1×8	0.8	50	F-045
MHR430R	ϕ1×R0.1×8	0.8	50	F-056
DHR237R	ϕ1×R0.1×8	2	50	F-071
MHRH430R	ϕ1×R0.1×10	0.8	50	F-032
MHR230R	ϕ1×R0.1×10	0.8	50	F-045
MHR430R	ϕ1×R0.1×10	0.8	50	F-056
MSTNR230	ϕ1×R0.1×10	0.8	60	F-064
DHR237R	ϕ1×R0.1×10	2	50	F-071
MHR230R	ϕ1×R0.1×12	0.8	50	F-045
MHR430R	ϕ1×R0.1×12	0.8	50	F-056
MSTNR230	ϕ1×R0.1×15	0.8	60	F-064
MHR230R	ϕ1×R0.1×16	0.8	60	F-045
MHR230R	ϕ1×R0.1×20	0.8	60	F-045
MSTNR230	ϕ1×R0.1×20	0.8	60	F-064
MSTNR230	ϕ1×R0.1×25	0.8	70	F-064
MSTNR230	ϕ1×R0.1×30	0.8	80	F-064
MSTNR230	ϕ1×R0.1×35	0.8	80	F-064
MSRS230	ϕ1×R0.2	2	60	F-010
SSR200	ϕ1×R0.2×1	0.7	49	B-028
SHPR400	ϕ1×R0.2×1	0.7	49	B-036
MHRH430R	ϕ1×R0.2×1.5	0.8	50	F-032
SSR200	ϕ1×R0.2×2	0.7	50	B-028
SHPR400	ϕ1×R0.2×2	0.7	50	B-036
MHRSH430RSF	ϕ1×R0.2×2	0.8	35	F-018
MHRH430R	ϕ1×R0.2×2	0.8	50	F-032
MHR230R	ϕ1×R0.2×2	0.8	50	F-045
MHRH430R	ϕ1×R0.2×2.5	0.8	50	F-032
SHR320	ϕ1×R0.2×3	0.5	50	B-032
SSR200	ϕ1×R0.2×3	0.7	50	B-028
SHPR400	ϕ1×R0.2×3	0.7	50	B-036
MHRSH430RSF	ϕ1×R0.2×3	0.8	35	F-018
MHRH430R	ϕ1×R0.2×3	0.8	50	F-032
MHR230R	ϕ1×R0.2×3	0.8	50	F-045

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR430R	ϕ1×R0.2×3	0.8	50	F-056
DHR237R	ϕ1×R0.2×3	2	45	F-071
MHRSH430RSF	ϕ1×R0.2×4	0.8	35	F-018
MHRH430R	ϕ1×R0.2×4	0.8	50	F-032
MHR230R	ϕ1×R0.2×4	0.8	50	F-045
MHR430R	ϕ1×R0.2×4	0.8	50	F-056
DHR237R	ϕ1×R0.2×4	2	45	F-071
SHR320	ϕ1×R0.2×5	0.5	52	B-032
SSR200	ϕ1×R0.2×5	0.7	53	B-028
SHPR400	ϕ1×R0.2×5	0.7	53	B-036
MHRSH430RSF	ϕ1×R0.2×5	0.8	40	F-018
MHRH430R	ϕ1×R0.2×5	0.8	50	F-032
MHR230R	ϕ1×R0.2×5	0.8	50	F-045
MHR430R	ϕ1×R0.2×5	0.8	50	F-056
DHR237R	ϕ1×R0.2×5	2	45	F-071
MHRH430R	ϕ1×R0.2×6	0.8	50	F-032
MHR230R	ϕ1×R0.2×6	0.8	50	F-046
MHR430R	ϕ1×R0.2×6	0.8	50	F-056
MSTNR230	ϕ1×R0.2×6	0.8	50	F-064
DHR237R	ϕ1×R0.2×6	2	45	F-071
MHRH430R	ϕ1×R0.2×8	0.8	50	F-032
MHR230R	ϕ1×R0.2×8	0.8	50	F-046
MHR430R	ϕ1×R0.2×8	0.8	50	F-056
DHR237R	ϕ1×R0.2×8	2	50	F-071
MHRH430R	ϕ1×R0.2×10	0.8	50	F-032
MHR230R	ϕ1×R0.2×10	0.8	50	F-046
MHR430R	ϕ1×R0.2×10	0.8	50	F-056
MSTNR230	ϕ1×R0.2×10	0.8	60	F-064
DHR237R	ϕ1×R0.2×10	2	50	F-071
MHR230R	ϕ1×R0.2×12	0.8	50	F-046
MHR430R	ϕ1×R0.2×12	0.8	50	F-056
MSTNR230	ϕ1×R0.2×15	0.8	60	F-064
MHR230R	ϕ1×R0.2×16	0.8	60	F-046
MHR230R	ϕ1×R0.2×20	0.8	60	F-046
MSTNR230	ϕ1×R0.2×20	0.8	60	F-064
MSTNR230	ϕ1×R0.2×25	0.8	70	F-064
MSTNR230	ϕ1×R0.2×30	0.8	80	F-064
MSTNR230	ϕ1×R0.2×35	0.8	80	F-064
MSRS230	ϕ1×R0.3	2	60	F-010
SSR200	ϕ1×R0.3×1	0.7	49	B-028
MHRH430R	ϕ1×R0.3×1.5	0.8	50	F-033
SSR200	ϕ1×R0.3×2	0.7	50	B-028
MHRSH430RSF	ϕ1×R0.3×2	0.8	35	F-018
MHRH430R	ϕ1×R0.3×2	0.8	50	F-033
MHR230R	ϕ1×R0.3×2	0.8	50	F-046
MHRH430R	ϕ1×R0.3×2.5	0.8	50	F-033
SSR200	ϕ1×R0.3×3	0.7	50	B-028
MHRSH430RSF	ϕ1×R0.3×3	0.8	35	F-018
MHRH430R	ϕ1×R0.3×3	0.8	50	F-033
MHR230R	ϕ1×R0.3×3	0.8	50	F-046

単位[规格 :mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR430R	ϕ1×R0.3×3	0.8	50	F-056
MHRSH430RSF	ϕ1×R0.3×4	0.8	35	F-018
MHRH430R	ϕ1×R0.3×4	0.8	50	F-033
MHR230R	ϕ1×R0.3×4	0.8	50	F-046
MHR430R	ϕ1×R0.3×4	0.8	50	F-056
SSR200	ϕ1×R0.3×5	0.7	53	B-028
MHRSH430RSF	ϕ1×R0.3×5	0.8	40	F-018
MHRH430R	ϕ1×R0.3×5	0.8	50	F-033
MHR230R	ϕ1×R0.3×5	0.8	50	F-046
MHR430R	ϕ1×R0.3×5	0.8	50	F-056
MHRH430R	ϕ1×R0.3×6	0.8	50	F-033
MHR230R	ϕ1×R0.3×6	0.8	50	F-046
MHR430R	ϕ1×R0.3×6	0.8	50	F-056
MSTNR230	ϕ1×R0.3×6	0.8	50	F-064
MHRH430R	ϕ1×R0.3×8	0.8	50	F-033
MHR230R	ϕ1×R0.3×8	0.8	50	F-046
MHR430R	ϕ1×R0.3×8	0.8	50	F-056
MHRH430R	ϕ1×R0.3×10	0.8	50	F-033
MHR230R	ϕ1×R0.3×10	0.8	50	F-046
MHR430R	ϕ1×R0.3×10	0.8	50	F-056
MSTNR230	ϕ1×R0.3×10	0.8	60	F-064
MHR230R	ϕ1×R0.3×12	0.8	50	F-046
MHR430R	ϕ1×R0.3×12	0.8	50	F-056
MSTNR230	ϕ1×R0.3×15	0.8	60	F-064
MHR230R	ϕ1×R0.3×16	0.8	60	F-046
MHR230R	ϕ1×R0.3×20	0.8	60	F-046
MSTNR230	ϕ1×R0.3×20	0.8	60	F-064
MSTNR230	ϕ1×R0.3×25	0.8	70	F-064
MSTNR230	ϕ1×R0.3×30	0.8	80	F-064
MSTNR230	ϕ1×R0.3×35	0.8	80	F-064
ϕ1.2				
MHRH430R	ϕ1.2×R0.1×5	1	50	F-033
MHR230R	ϕ1.2×R0.1×5	1	50	F-046
MHR430R	ϕ1.2×R0.1×5	1	50	F-056
MHR230R	ϕ1.2×R0.1×6	1	50	F-046
MHR230R	ϕ1.2×R0.1×8	1	50	F-046
MHRH430R	ϕ1.2×R0.1×10	1	50	F-033
MHR230R	ϕ1.2×R0.1×10	1	50	F-046
MHR430R	ϕ1.2×R0.1×10	1	50	F-056
MHR230R	ϕ1.2×R0.1×12	1	50	F-046
MHR230R	ϕ1.2×R0.1×15	1	60	F-046
MHR430R	ϕ1.2×R0.1×15	1	60	F-056
MHR230R	ϕ1.2×R0.1×16	1	60	F-046
MHR230R	ϕ1.2×R0.1×20	1	60	F-046
MHRH430R	ϕ1.2×R0.2×5	1	50	F-033
MHR230R	ϕ1.2×R0.2×5	1	50	F-046
MHR430R	ϕ1.2×R0.2×5	1	50	F-057
MHR230R	ϕ1.2×R0.2×6	1	50	F-047
MHR230R	ϕ1.2×R0.2×8	1	50	F-047
MHRH430R	ϕ1.2×R0.2×10	1	50	F-033

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR230R	ϕ1.2×R0.2×10	1	50	F-047
MHR430R	ϕ1.2×R0.2×10	1	50	F-057
MHR230R	ϕ1.2×R0.2×12	1	50	F-047
MHR230R	ϕ1.2×R0.2×15	1	60	F-047
MHR430R	ϕ1.2×R0.2×15	1	60	F-057
MHR230R	ϕ1.2×R0.2×16	1	60	F-047
MHR230R	ϕ1.2×R0.2×20	1	60	F-047
MHRH430R	ϕ1.2×R0.3×5	1	50	F-033
MHR230R	ϕ1.2×R0.3×5	1	50	F-047
MHR430R	ϕ1.2×R0.3×5	1	50	F-057
MHR230R	ϕ1.2×R0.3×6	1	50	F-047
MHR230R	ϕ1.2×R0.3×8	1	50	F-047
MHRH430R	ϕ1.2×R0.3×10	1	50	F-033
MHR230R	ϕ1.2×R0.3×10	1	50	F-047
MHR430R	ϕ1.2×R0.3×10	1	50	F-057
MHR230R	ϕ1.2×R0.3×12	1	50	F-047
MHR230R	ϕ1.2×R0.3×15	1	60	F-047
MHR430R	ϕ1.2×R0.3×15	1	60	F-057
MHR230R	ϕ1.2×R0.3×16	1	60	F-047
MHR230R	ϕ1.2×R0.3×20	1	60	F-047
ϕ1.5				
SSR200	ϕ1.5×R0.02×2	1	52	B-028
SHPR400	ϕ1.5×R0.02×2	1	52	B-036
SSR200	ϕ1.5×R0.02×3	1	52	B-028
SHPR400	ϕ1.5×R0.02×3	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.02×3	1.2	35	F-018
MHRH430R	ϕ1.5×R0.02×3	1.2	50	F-033
MHRSH430RSF	ϕ1.5×R0.02×4	1.2	35	F-018
MHRH430R	ϕ1.5×R0.02×4	1.2	50	F-033
SSR200	ϕ1.5×R0.02×4.5	1	52	B-028
SHPR400	ϕ1.5×R0.02×4.5	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.02×6	1.2	40	F-018
MHRH430R	ϕ1.5×R0.02×6	1.2	50	F-033
SSR200	ϕ1.5×R0.02×7.5	1	52	B-028
SHPR400	ϕ1.5×R0.02×7.5	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.02×8	1.2	40	F-018
MHRH430R	ϕ1.5×R0.02×8	1.2	50	F-033
MHRH430R	ϕ1.5×R0.02×10	1.2	50	F-033
MHRH430R	ϕ1.5×R0.02×12	1.2	50	F-033
MHRH430R	ϕ1.5×R0.02×15	1.2	50	F-033
SSR200	ϕ1.5×R0.03×2	1	52	B-028
SSR200	ϕ1.5×R0.03×3	1	52	B-028
SSR200	ϕ1.5×R0.03×4.5	1	52	B-028
SSR200	ϕ1.5×R0.03×7.5	1	52	B-028
SSR200	ϕ1.5×R0.05×2	1	52	B-028
SHPR400	ϕ1.5×R0.05×2	1	52	B-036
SSR200	ϕ1.5×R0.05×3	1	52	B-028
SHPR400	ϕ1.5×R0.05×3	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.05×3	1.2	35	F-018
MHRH430R	ϕ1.5×R0.05×3	1.2	50	F-033

单位[规格 :mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRSH430RSF	ϕ1.5×R0.05×4	1.2	35	F-018
MHRH430R	ϕ1.5×R0.05×4	1.2	50	F-033
SSR200	ϕ1.5×R0.05×4.5	1	52	B-028
SHPR400	ϕ1.5×R0.05×4.5	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.05×6	1.2	40	F-018
MHRH430R	ϕ1.5×R0.05×6	1.2	50	F-033
SSR200	ϕ1.5×R0.05×7.5	1	52	B-028
SHPR400	ϕ1.5×R0.05×7.5	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.05×8	1.2	40	F-018
MHRH430R	ϕ1.5×R0.05×8	1.2	50	F-033
MHRH430R	ϕ1.5×R0.05×10	1.2	50	F-033
MHRH430R	ϕ1.5×R0.05×12	1.2	50	F-033
MHRH430R	ϕ1.5×R0.05×15	1.2	50	F-033
MSRS230	ϕ1.5×R0.1	3	60	F-010
SSR200	ϕ1.5×R0.1×2	1	52	B-028
SHPR400	ϕ1.5×R0.1×2	1	52	B-036
SSR200	ϕ1.5×R0.1×3	1	52	B-028
SHPR400	ϕ1.5×R0.1×3	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.1×3	1.2	35	F-018
MHRH430R	ϕ1.5×R0.1×3	1.2	50	F-033
SSF120	ϕ1.5×R0.1×3.8	0.75	52	B-040
MHRSH430RSF	ϕ1.5×R0.1×4	1.2	35	F-018
MHRH430R	ϕ1.5×R0.1×4	1.2	50	F-033
MHR230R	ϕ1.5×R0.1×4	1.2	50	F-047
SHR320	ϕ1.5×R0.1×4.5	0.75	52	B-032
SSR200	ϕ1.5×R0.1×4.5	1	52	B-028
SHPR400	ϕ1.5×R0.1×4.5	1	52	B-036
DHR237R	ϕ1.5×R0.1×5	3	45	F-072
MHRSH430RSF	ϕ1.5×R0.1×6	1.2	40	F-018
MHRH430R	ϕ1.5×R0.1×6	1.2	50	F-033
MHR230R	ϕ1.5×R0.1×6	1.2	50	F-047
MHR430R	ϕ1.5×R0.1×6	1.2	50	F-057
SHR320	ϕ1.5×R0.1×7.5	0.75	52	B-032
SSR200	ϕ1.5×R0.1×7.5	1	52	B-028
SHPR400	ϕ1.5×R0.1×7.5	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.1×8	1.2	40	F-018
MHRH430R	ϕ1.5×R0.1×8	1.2	50	F-033
MHR230R	ϕ1.5×R0.1×8	1.2	50	F-047
MHRH430R	ϕ1.5×R0.1×10	1.2	50	F-033
MHR230R	ϕ1.5×R0.1×10	1.2	50	F-047
MSTNR230	ϕ1.5×R0.1×10	1.2	60	F-064
DHR237R	ϕ1.5×R0.1×10	3	50	F-072
MHRH430R	ϕ1.5×R0.1×12	1.2	50	F-033
MHR230R	ϕ1.5×R0.1×12	1.2	50	F-047
MHR430R	ϕ1.5×R0.1×12	1.2	50	F-057
MHRH430R	ϕ1.5×R0.1×15	1.2	60	F-033
MSTNR230	ϕ1.5×R0.1×15	1.2	60	F-064
DHR237R	ϕ1.5×R0.1×15	3	50	F-072
MHR230R	ϕ1.5×R0.1×16	1.2	60	F-047
MHR230R	ϕ1.5×R0.1×18	1.2	60	F-047

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Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR430R	ϕ1.5×R0.1×18	1.2	60	F-057
MHR230R	ϕ1.5×R0.1×20	1.2	60	F-047
MSTNR230	ϕ1.5×R0.1×20	1.2	60	F-064
MSTNR230	ϕ1.5×R0.1×25	1.2	70	F-064
MSTNR230	ϕ1.5×R0.1×30	1.2	80	F-064
MSRS230	ϕ1.5×R0.2	3	60	F-010
SSR200	ϕ1.5×R0.2×2	1	52	B-029
SHPR400	ϕ1.5×R0.2×2	1	52	B-036
SSR200	ϕ1.5×R0.2×3	1	52	B-029
SHPR400	ϕ1.5×R0.2×3	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.2×3	1.2	35	F-018
MHRH430R	ϕ1.5×R0.2×3	1.2	50	F-033
MHRSH430RSF	ϕ1.5×R0.2×4	1.2	35	F-018
MHRH430R	ϕ1.5×R0.2×4	1.2	50	F-033
MHR230R	ϕ1.5×R0.2×4	1.2	50	F-047
SHR320	ϕ1.5×R0.2×4.5	0.75	52	B-032
SSR200	ϕ1.5×R0.2×4.5	1	52	B-029
SHPR400	ϕ1.5×R0.2×4.5	1	52	B-036
DHR237R	ϕ1.5×R0.2×5	3	45	F-072
MHRSH430RSF	ϕ1.5×R0.2×6	1.2	40	F-018
MHRH430R	ϕ1.5×R0.2×6	1.2	50	F-033
MHR230R	ϕ1.5×R0.2×6	1.2	50	F-047
MHR430R	ϕ1.5×R0.2×6	1.2	50	F-057
SHR320	ϕ1.5×R0.2×7.5	0.75	52	B-032
SSR200	ϕ1.5×R0.2×7.5	1	52	B-029
SHPR400	ϕ1.5×R0.2×7.5	1	52	B-036
MHRSH430RSF	ϕ1.5×R0.2×8	1.2	40	F-018
MHRH430R	ϕ1.5×R0.2×8	1.2	50	F-033
MHR230R	ϕ1.5×R0.2×8	1.2	50	F-047
MHRH430R	ϕ1.5×R0.2×10	1.2	50	F-033
MHR230R	ϕ1.5×R0.2×10	1.2	50	F-047
MSTNR230	ϕ1.5×R0.2×10	1.2	60	F-065
DHR237R	ϕ1.5×R0.2×10	3	50	F-072
MHRH430R	ϕ1.5×R0.2×12	1.2	50	F-033
MHR230R	ϕ1.5×R0.2×12	1.2	50	F-047
MHR430R	ϕ1.5×R0.2×12	1.2	50	F-057
MHRH430R	ϕ1.5×R0.2×15	1.2	60	F-033
MSTNR230	ϕ1.5×R0.2×15	1.2	60	F-065
DHR237R	ϕ1.5×R0.2×15	3	50	F-072
MHR230R	ϕ1.5×R0.2×16	1.2	60	F-047
MHR230R	ϕ1.5×R0.2×18	1.2	60	F-047
MHR430R	ϕ1.5×R0.2×18	1.2	60	F-057
MHR230R	ϕ1.5×R0.2×20	1.2	60	F-048
MSTNR230	ϕ1.5×R0.2×20	1.2	60	F-065
MSTNR230	ϕ1.5×R0.2×25	1.2	70	F-065
MSTNR230	ϕ1.5×R0.2×30	1.2	80	F-065
MSRS230	ϕ1.5×R0.3	3	60	F-010
SSR200	ϕ1.5×R0.3×2	1	52	B-029
SSR200	ϕ1.5×R0.3×3	1	52	B-029
MHRSH430RSF	ϕ1.5×R0.3×3	1.2	35	F-018

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH430R	ϕ1.5×R0.3×3	1.2	50	F-033
MHRSH430RSF	ϕ1.5×R0.3×4	1.2	35	F-018
MHRH430R	ϕ1.5×R0.3×4	1.2	50	F-033
MHR230R	ϕ1.5×R0.3×4	1.2	50	F-048
SSR200	ϕ1.5×R0.3×4.5	1	52	B-029
DHR237R	ϕ1.5×R0.3×5	3	45	F-072
MHRSH430RSF	ϕ1.5×R0.3×6	1.2	40	F-018
MHRH430R	ϕ1.5×R0.3×6	1.2	50	F-033
MHR230R	ϕ1.5×R0.3×6	1.2	50	F-048
MHR430R	ϕ1.5×R0.3×6	1.2	50	F-057
SSR200	ϕ1.5×R0.3×7.5	1	52	B-029
MHRSH430RSF	ϕ1.5×R0.3×8	1.2	40	F-018
MHRH430R	ϕ1.5×R0.3×8	1.2	50	F-033
MHR230R	ϕ1.5×R0.3×8	1.2	50	F-048
MHRH430R	ϕ1.5×R0.3×10	1.2	50	F-033
MHR230R	ϕ1.5×R0.3×10	1.2	50	F-048
MSTNR230	ϕ1.5×R0.3×10	1.2	60	F-065
DHR237R	ϕ1.5×R0.3×10	3	50	F-072
MHRH430R	ϕ1.5×R0.3×12	1.2	50	F-033
MHR230R	ϕ1.5×R0.3×12	1.2	50	F-048
MHR430R	ϕ1.5×R0.3×12	1.2	50	F-057
MHRH430R	ϕ1.5×R0.3×15	1.2	60	F-033
MSTNR230	ϕ1.5×R0.3×15	1.2	60	F-065
DHR237R	ϕ1.5×R0.3×15	3	50	F-072
MHR230R	ϕ1.5×R0.3×16	1.2	60	F-048
MHR230R	ϕ1.5×R0.3×18	1.2	60	F-048
MHR430R	ϕ1.5×R0.3×18	1.2	60	F-057
MHR230R	ϕ1.5×R0.3×20	1.2	60	F-048
MSTNR230	ϕ1.5×R0.3×20	1.2	60	F-065
MSTNR230	ϕ1.5×R0.3×25	1.2	70	F-065
MSTNR230	ϕ1.5×R0.3×30	1.2	80	F-065
MSRS230	ϕ1.5×R0.5	3	60	F-010
MHRSH430RSF	ϕ1.5×R0.5×3	1.2	35	F-018
MHRH430R	ϕ1.5×R0.5×3	1.2	50	F-033
MHRSH430RSF	ϕ1.5×R0.5×4	1.2	35	F-018
MHRH430R	ϕ1.5×R0.5×4	1.2	50	F-033
MHR230R	ϕ1.5×R0.5×4	1.2	50	F-048
DHR237R	ϕ1.5×R0.5×5	3	45	F-072
MHRSH430RSF	ϕ1.5×R0.5×6	1.2	40	F-018
MHRH430R	ϕ1.5×R0.5×6	1.2	50	F-033
MHR230R	ϕ1.5×R0.5×6	1.2	50	F-048
MHR430R	ϕ1.5×R0.5×6	1.2	50	F-057
MHRSH430RSF	ϕ1.5×R0.5×8	1.2	40	F-018
MHRH430R	ϕ1.5×R0.5×8	1.2	50	F-033
MHR230R	ϕ1.5×R0.5×8	1.2	50	F-048
MHRH430R	ϕ1.5×R0.5×10	1.2	50	F-033
MHR230R	ϕ1.5×R0.5×10	1.2	50	F-048
DHR237R	ϕ1.5×R0.5×10	3	50	F-072
MHRH430R	ϕ1.5×R0.5×12	1.2	50	F-033
MHR230R	ϕ1.5×R0.5×12	1.2	50	F-048

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Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR430R	ϕ1.5×R0.5×12	1.2	50	F-057
MHRH430R	ϕ1.5×R0.5×15	1.2	60	F-033
DHR237R	ϕ1.5×R0.5×15	3	50	F-072
MHR230R	ϕ1.5×R0.5×16	1.2	60	F-048
MHR230R	ϕ1.5×R0.5×18	1.2	60	F-048
MHR430R	ϕ1.5×R0.5×18	1.2	60	F-057
MHR230R	ϕ1.5×R0.5×20	1.2	60	F-048
DHR237R	ϕ1.5×R0.5×20	3	60	F-072
ϕ2				
SSR200	ϕ2×R0.02×3	1.2	53	B-029
SHPR400	ϕ2×R0.02×3	1.2	53	B-036
MHRH430R	ϕ2×R0.02×3	1.6	50	F-034
SSR200	ϕ2×R0.02×4	1.2	53	B-029
SHPR400	ϕ2×R0.02×4	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.02×4	1.6	35	F-018
MHRH430R	ϕ2×R0.02×4	1.6	50	F-034
SSR200	ϕ2×R0.02×6	1.2	53	B-029
SHPR400	ϕ2×R0.02×6	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.02×6	1.6	35	F-018
MHRH430R	ϕ2×R0.02×6	1.6	50	F-034
MHRSH430RSF	ϕ2×R0.02×8	1.6	40	F-018
MHRH430R	ϕ2×R0.02×8	1.6	50	F-034
SSR200	ϕ2×R0.02×10	1.2	53	B-029
SHPR400	ϕ2×R0.02×10	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.02×10	1.6	40	F-018
MHRH430R	ϕ2×R0.02×10	1.6	50	F-034
MHRH430R	ϕ2×R0.02×12	1.6	50	F-034
MHRH430R	ϕ2×R0.02×16	1.6	60	F-034
MHRH430R	ϕ2×R0.02×20	1.6	60	F-034
SSR200	ϕ2×R0.03×3	1.2	53	B-029
SSR200	ϕ2×R0.03×4	1.2	53	B-029
SSR200	ϕ2×R0.03×6	1.2	53	B-029
SSR200	ϕ2×R0.03×10	1.2	53	B-029
SSR200	ϕ2×R0.05×3	1.2	53	B-029
SHPR400	ϕ2×R0.05×3	1.2	53	B-036
MHRH430R	ϕ2×R0.05×3	1.6	50	F-034
SSR200	ϕ2×R0.05×4	1.2	53	B-029
SHPR400	ϕ2×R0.05×4	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.05×4	1.6	35	F-018
MHRH430R	ϕ2×R0.05×4	1.6	50	F-034
SSR200	ϕ2×R0.05×6	1.2	53	B-029
SHPR400	ϕ2×R0.05×6	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.05×6	1.6	35	F-018
MHRH430R	ϕ2×R0.05×6	1.6	50	F-034
MHRSH430RSF	ϕ2×R0.05×8	1.6	40	F-018
MHRH430R	ϕ2×R0.05×8	1.6	50	F-034
SSR200	ϕ2×R0.05×10	1.2	53	B-029
SHPR400	ϕ2×R0.05×10	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.05×10	1.6	40	F-018
MHRH430R	ϕ2×R0.05×10	1.6	50	F-034

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH430R	ϕ2×R0.05×12	1.6	50	F-034
MHRH430R	ϕ2×R0.05×16	1.6	60	F-034
MHRH430R	ϕ2×R0.05×20	1.6	60	F-034
MSRS230	ϕ2×R0.1	4	60	F-010
SSR200	ϕ2×R0.1×3	1.2	53	B-029
SHPR400	ϕ2×R0.1×3	1.2	53	B-036
MHRH430R	ϕ2×R0.1×3	1.6	50	F-034
SSR200	ϕ2×R0.1×4	1.2	53	B-029
SHPR400	ϕ2×R0.1×4	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.1×4	1.6	35	F-018
MHRH430R	ϕ2×R0.1×4	1.6	50	F-034
MHR230R	ϕ2×R0.1×4	1.6	50	F-048
SSF120	ϕ2×R0.1×5	1	52	B-040
DHR237R	ϕ2×R0.1×5	4	45	F-072
SHR320	ϕ2×R0.1×6	1	52	B-032
SSR200	ϕ2×R0.1×6	1.2	52	B-029
SHPR400	ϕ2×R0.1×6	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.1×6	1.6	35	F-018
MHRH430R	ϕ2×R0.1×6	1.6	50	F-034
MHR230R	ϕ2×R0.1×6	1.6	50	F-048
MHRSH430RSF	ϕ2×R0.1×8	1.6	40	F-018
MHRH430R	ϕ2×R0.1×8	1.6	50	F-034
MHR230R	ϕ2×R0.1×8	1.6	50	F-048
MHR430R	ϕ2×R0.1×8	1.6	50	F-057
DHR237R	ϕ2×R0.1×8	4	50	F-072
SHR320	ϕ2×R0.1×10	1	52	B-032
SSR200	ϕ2×R0.1×10	1.2	52	B-029
SHPR400	ϕ2×R0.1×10	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.1×10	1.6	40	F-018
MHRH430R	ϕ2×R0.1×10	1.6	50	F-034
MHR230R	ϕ2×R0.1×10	1.6	50	F-048
DHR237R	ϕ2×R0.1×10	4	50	F-072
MHRH430R	ϕ2×R0.1×12	1.6	50	F-034
MHR230R	ϕ2×R0.1×12	1.6	50	F-048
MHR430R	ϕ2×R0.1×12	1.6	50	F-057
MSTNR230	ϕ2×R0.1×15	1.6	60	F-065
DHR237R	ϕ2×R0.1×15	4	50	F-072
MHRH430R	ϕ2×R0.1×16	1.6	60	F-034
MHR230R	ϕ2×R0.1×16	1.6	60	F-048
MHR430R	ϕ2×R0.1×16	1.6	60	F-057
MHRH430R	ϕ2×R0.1×20	1.6	60	F-034
MHR230R	ϕ2×R0.1×20	1.6	60	F-048
MHR430R	ϕ2×R0.1×20	1.6	60	F-057
MSTNR230	ϕ2×R0.1×20	1.6	60	F-065
DHR237R	ϕ2×R0.1×20	4	60	F-072
MHR230R	ϕ2×R0.1×24	1.6	70	F-048
MHR430R	ϕ2×R0.1×24	1.6	70	F-057
MSTNR230	ϕ2×R0.1×25	1.6	70	F-065
MHR230R	ϕ2×R0.1×26	1.6	70	F-049
MHR230R	ϕ2×R0.1×30	1.6	70	F-049

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Search from Dia. & Corner Radius

单位[规格 :mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSTNR230	ϕ2×R0.1×30	1.6	80	F-065
MSTNR230	ϕ2×R0.1×40	1.6	80	F-065
MSTNR230	ϕ2×R0.1×50	1.6	100	F-065
MSRS230	ϕ2×R0.2	4	60	F-010
AL3D-345R	ϕ2×R0.2	6	60	F-014
SSR200	ϕ2×R0.2×3	1.2	53	B-029
SHPR400	ϕ2×R0.2×3	1.2	53	B-036
MHRH430R	ϕ2×R0.2×3	1.6	50	F-034
SSR200	ϕ2×R0.2×4	1.2	53	B-029
SHPR400	ϕ2×R0.2×4	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.2×4	1.6	35	F-018
MHRH430R	ϕ2×R0.2×4	1.6	50	F-034
MHR230R	ϕ2×R0.2×4	1.6	50	F-049
DHR237R	ϕ2×R0.2×5	4	45	F-072
SSR200	ϕ2×R0.2×6	1.2	52	B-029
SHPR400	ϕ2×R0.2×6	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.2×6	1.6	35	F-018
MHRH430R	ϕ2×R0.2×6	1.6	50	F-034
MHR230R	ϕ2×R0.2×6	1.6	50	F-049
MHRSH430RSF	ϕ2×R0.2×8	1.6	40	F-018
MHRH430R	ϕ2×R0.2×8	1.6	50	F-034
MHR230R	ϕ2×R0.2×8	1.6	50	F-049
MHR430R	ϕ2×R0.2×8	1.6	50	F-057
DHR237R	ϕ2×R0.2×8	4	50	F-072
SSR200	ϕ2×R0.2×10	1.2	52	B-029
SHPR400	ϕ2×R0.2×10	1.2	53	B-036
MHRSH430RSF	ϕ2×R0.2×10	1.6	40	F-018
MHRH430R	ϕ2×R0.2×10	1.6	50	F-034
MHR230R	ϕ2×R0.2×10	1.6	50	F-049
DHR237R	ϕ2×R0.2×10	4	50	F-072
MHRH430R	ϕ2×R0.2×12	1.6	50	F-034
MHR230R	ϕ2×R0.2×12	1.6	50	F-049
MHR430R	ϕ2×R0.2×12	1.6	50	F-057
MSTNR230	ϕ2×R0.2×15	1.6	60	F-065
DHR237R	ϕ2×R0.2×15	4	50	F-072
MHRH430R	ϕ2×R0.2×16	1.6	60	F-034
MHR230R	ϕ2×R0.2×16	1.6	60	F-049
MHR430R	ϕ2×R0.2×16	1.6	60	F-057
MHRH430R	ϕ2×R0.2×20	1.6	60	F-034
MHR230R	ϕ2×R0.2×20	1.6	60	F-049
MHR430R	ϕ2×R0.2×20	1.6	60	F-057
MSTNR230	ϕ2×R0.2×20	1.6	60	F-065
DHR237R	ϕ2×R0.2×20	4	60	F-072
MHR230R	ϕ2×R0.2×24	1.6	70	F-049
MHR430R	ϕ2×R0.2×24	1.6	70	F-057
MSTNR230	ϕ2×R0.2×25	1.6	70	F-065
MHR230R	ϕ2×R0.2×26	1.6	70	F-049
MHR230R	ϕ2×R0.2×30	1.6	70	F-049
MSTNR230	ϕ2×R0.2×30	1.6	80	F-065
MSTNR230	ϕ2×R0.2×40	1.6	80	F-065

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSTNR230	ϕ2×R0.2×50	1.6	100	F-065
MSRS230	ϕ2×R0.3	4	60	F-010
AL3D-345R	ϕ2×R0.3	6	60	F-014
SSR200	ϕ2×R0.3×3	1.2	53	B-029
MHRH430R	ϕ2×R0.3×3	1.6	50	F-034
SSR200	ϕ2×R0.3×4	1.2	53	B-029
MHRSH430RSF	ϕ2×R0.3×4	1.6	35	F-018
MHRH430R	ϕ2×R0.3×4	1.6	50	F-034
MHR230R	ϕ2×R0.3×4	1.6	50	F-049
DHR237R	ϕ2×R0.3×5	4	45	F-072
SHR320	ϕ2×R0.3×6	1	52	B-032
SSR200	ϕ2×R0.3×6	1.2	52	B-029
MHRSH430RSF	ϕ2×R0.3×6	1.6	35	F-018
MHRH430R	ϕ2×R0.3×6	1.6	50	F-034
MHR230R	ϕ2×R0.3×6	1.6	50	F-049
MHRSH430RSF	ϕ2×R0.3×8	1.6	40	F-018
MHRH430R	ϕ2×R0.3×8	1.6	50	F-034
MHR230R	ϕ2×R0.3×8	1.6	50	F-049
MHR430R	ϕ2×R0.3×8	1.6	50	F-057
DHR237R	ϕ2×R0.3×8	4	50	F-072
SHR320	ϕ2×R0.3×10	1	52	B-032
SSR200	ϕ2×R0.3×10	1.2	52	B-029
MHRSH430RSF	ϕ2×R0.3×10	1.6	40	F-018
MHRH430R	ϕ2×R0.3×10	1.6	50	F-034
MHR230R	ϕ2×R0.3×10	1.6	50	F-049
DHR237R	ϕ2×R0.3×10	4	50	F-072
MHRH430R	ϕ2×R0.3×12	1.6	50	F-034
MHR230R	ϕ2×R0.3×12	1.6	50	F-049
MHR430R	ϕ2×R0.3×12	1.6	50	F-057
MSTNR230	ϕ2×R0.3×15	1.6	60	F-065
DHR237R	ϕ2×R0.3×15	4	50	F-072
MHRH430R	ϕ2×R0.3×16	1.6	60	F-034
MHR230R	ϕ2×R0.3×16	1.6	60	F-049
MHR430R	ϕ2×R0.3×16	1.6	60	F-057
MHRH430R	ϕ2×R0.3×20	1.6	60	F-034
MHR230R	ϕ2×R0.3×20	1.6	60	F-049
MHR430R	ϕ2×R0.3×20	1.6	60	F-057
MSTNR230	ϕ2×R0.3×20	1.6	60	F-065
DHR237R	ϕ2×R0.3×20	4	60	F-072
MHR230R	ϕ2×R0.3×24	1.6	70	F-049
MHR430R	ϕ2×R0.3×24	1.6	70	F-057
MSTNR230	ϕ2×R0.3×25	1.6	70	F-065
MHR230R	ϕ2×R0.3×26	1.6	70	F-049
MHR230R	ϕ2×R0.3×30	1.6	70	F-049
MSTNR230	ϕ2×R0.3×30	1.6	80	F-065
MSTNR230	ϕ2×R0.3×40	1.6	80	F-065
MSTNR230	ϕ2×R0.3×50	1.6	100	F-065
AL3D-345R	ϕ2×R0.4	6	60	F-014
MSRS230	ϕ2×R0.5	4	60	F-010
SSR200	ϕ2×R0.5×3	1.2	53	B-029

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单位[规格 :mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH430R	ϕ2×R0.5×3	1.6	50	F-034
SSR200	ϕ2×R0.5×4	1.2	53	B-029
MHRSH430RSF	ϕ2×R0.5×4	1.6	35	F-018
MHRH430R	ϕ2×R0.5×4	1.6	50	F-034
MHR230R	ϕ2×R0.5×4	1.6	50	F-049
DHR237R	ϕ2×R0.5×5	4	45	F-072
SSR200	ϕ2×R0.5×6	1.2	52	B-029
MHRSH430RSF	ϕ2×R0.5×6	1.6	35	F-018
MHRH430R	ϕ2×R0.5×6	1.6	50	F-034
MHR230R	ϕ2×R0.5×6	1.6	50	F-049
MHRSH430RSF	ϕ2×R0.5×8	1.6	40	F-018
MHRH430R	ϕ2×R0.5×8	1.6	50	F-034
MHR230R	ϕ2×R0.5×8	1.6	50	F-049
MHR430R	ϕ2×R0.5×8	1.6	50	F-057
DHR237R	ϕ2×R0.5×8	4	50	F-072
SSR200	ϕ2×R0.5×10	1.2	52	B-029
MHRSH430RSF	ϕ2×R0.5×10	1.6	40	F-018
MHRH430R	ϕ2×R0.5×10	1.6	50	F-034
MHR230R	ϕ2×R0.5×10	1.6	50	F-049
DHR237R	ϕ2×R0.5×10	4	50	F-072
MHRH430R	ϕ2×R0.5×12	1.6	50	F-034
MHR230R	ϕ2×R0.5×12	1.6	50	F-050
MHR430R	ϕ2×R0.5×12	1.6	50	F-057
MSTNR230	ϕ2×R0.5×15	1.6	60	F-066
DHR237R	ϕ2×R0.5×15	4	50	F-072
MHRH430R	ϕ2×R0.5×16	1.6	60	F-034
MHR230R	ϕ2×R0.5×16	1.6	60	F-050
MHR430R	ϕ2×R0.5×16	1.6	60	F-057
MHRH430R	ϕ2×R0.5×20	1.6	60	F-034
MHR230R	ϕ2×R0.5×20	1.6	60	F-050
MHR430R	ϕ2×R0.5×20	1.6	60	F-057
MSTNR230	ϕ2×R0.5×20	1.6	60	F-066
DHR237R	ϕ2×R0.5×20	4	60	F-072
MHR230R	ϕ2×R0.5×24	1.6	70	F-050
MHR430R	ϕ2×R0.5×24	1.6	70	F-057
MSTNR230	ϕ2×R0.5×25	1.6	70	F-066
MHR230R	ϕ2×R0.5×26	1.6	70	F-050
MHR230R	ϕ2×R0.5×30	1.6	70	F-050
MSTNR230	ϕ2×R0.5×30	1.6	80	F-066
MSTNR230	ϕ2×R0.5×40	1.6	80	F-066
MSTNR230	ϕ2×R0.5×50	1.6	100	F-066
ϕ2.5				
MSRS230	ϕ2.5×R0.1	5	60	F-010
MHRH430R	ϕ2.5×R0.1×5	2	50	F-034
MHRH430R	ϕ2.5×R0.1×10	2	50	F-034
MHR230R	ϕ2.5×R0.1×10	2	50	F-050
MHR430R	ϕ2.5×R0.1×10	2	50	F-058
MHRH430R	ϕ2.5×R0.1×15	2	60	F-034
MHRH430R	ϕ2.5×R0.1×20	2	60	F-058
MHR230R	ϕ2.5×R0.1×20	2	60	F-050

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR430R	ϕ2.5×R0.1×20	2	60	F-058
MHRH430R	ϕ2.5×R0.1×30	2	70	F-034
MHR230R	ϕ2.5×R0.1×30	2	70	F-050
MHR430R	ϕ2.5×R0.1×30	2	70	F-058
MSRS230	ϕ2.5×R0.2	5	60	F-010
MHRH430R	ϕ2.5×R0.2×5	2	50	F-035
DHR237R	ϕ2.5×R0.2×8	5	50	F-072
MHRH430R	ϕ2.5×R0.2×10	2	50	F-035
MHR230R	ϕ2.5×R0.2×10	2	50	F-050
MHR430R	ϕ2.5×R0.2×10	2	50	F-058
DHR237R	ϕ2.5×R0.2×14	5	50	F-072
MHRH430R	ϕ2.5×R0.2×15	2	60	F-035
MHRH430R	ϕ2.5×R0.2×20	2	60	F-035
MHR230R	ϕ2.5×R0.2×20	2	60	F-050
MHR430R	ϕ2.5×R0.2×20	2	60	F-058
DHR237R	ϕ2.5×R0.2×20	5	60	F-072
MHRH430R	ϕ2.5×R0.2×30	2	70	F-035
MHR230R	ϕ2.5×R0.2×30	2	70	F-050
MHR430R	ϕ2.5×R0.2×30	2	70	F-058
MSRS230	ϕ2.5×R0.3	5	60	F-010
MHRH430R	ϕ2.5×R0.3×5	2	50	F-035
MHRH430R	ϕ2.5×R0.3×10	2	50	F-035
MHR230R	ϕ2.5×R0.3×10	2	50	F-050
MHR430R	ϕ2.5×R0.3×10	2	50	F-058
MHRH430R	ϕ2.5×R0.3×15	2	60	F-035
MHRH430R	ϕ2.5×R0.3×20	2	60	F-035
MHR230R	ϕ2.5×R0.3×20	2	60	F-050
MHR430R	ϕ2.5×R0.3×20	2	60	F-058
MHRH430R	ϕ2.5×R0.3×30	2	70	F-035
MHR230R	ϕ2.5×R0.3×30	2	70	F-050
MHR430R	ϕ2.5×R0.3×30	2	70	F-058
MSRS230	ϕ2.5×R0.5	5	60	F-010
MHRH430R	ϕ2.5×R0.5×5	2	50	F-035
DHR237R	ϕ2.5×R0.5×8	5	50	F-072
MHRH430R	ϕ2.5×R0.5×10	2	50	F-035
MHR230R	ϕ2.5×R0.5×10	2	50	F-050
MHR430R	ϕ2.5×R0.5×10	2	50	F-058
DHR237R	ϕ2.5×R0.5×14	5	50	F-072
MHRH430R	ϕ2.5×R0.5×15	2	60	F-035
MHRH430R	ϕ2.5×R0.5×20	2	60	F-035
MHR230R	ϕ2.5×R0.5×20	2	60	F-050
MHR430R	ϕ2.5×R0.5×20	2	60	F-058
DHR237R	ϕ2.5×R0.5×20	5	60	F-072
MHRH430R	ϕ2.5×R0.5×30	2	70	F-035
MHR230R	ϕ2.5×R0.5×30	2	70	F-050
MHR430R	ϕ2.5×R0.5×30	2	70	F-058
ϕ3				
MHRSH430RSF	ϕ3×R0.05×4	2.5	45	F-019
MHRH430R	ϕ3×R0.05×4	2.5	50	F-035
SHPR400	ϕ3×R0.05×6	1.8	53	B-036

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单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRSH430RSF	ϕ3×R0.05×6	2.5	45	F-019
MHRH430R	ϕ3×R0.05×6	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.05×8	2.5	45	F-019
MHRH430R	ϕ3×R0.05×8	2.5	50	F-035
SHPR400	ϕ3×R0.05×9	1.8	53	B-036
MHRSH430RSF	ϕ3×R0.05×10	2.5	50	F-019
MHRH430R	ϕ3×R0.05×10	2.5	50	F-035
SHPR400	ϕ3×R0.05×12	1.8	63	B-036
MHRSH430RSF	ϕ3×R0.05×12	2.5	50	F-019
MHRH430R	ϕ3×R0.05×12	2.5	50	F-035
MHRH430R	ϕ3×R0.05×14	2.5	50	F-035
SHPR400	ϕ3×R0.05×15	1.8	63	B-036
MHRSH430RSF	ϕ3×R0.05×15	2.5	55	F-019
MHRH430R	ϕ3×R0.05×16	2.5	60	F-035
MHRH430R	ϕ3×R0.05×20	2.5	60	F-035
MSRS230	ϕ3×R0.1	6	60	F-010
MHRSH430RSF	ϕ3×R0.1×4	2.5	45	F-019
MHRH430R	ϕ3×R0.1×4	2.5	50	F-035
SHPR400	ϕ3×R0.1×6	1.8	53	B-036
MHRSH430RSF	ϕ3×R0.1×6	2.5	45	F-019
MHRH430R	ϕ3×R0.1×6	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.1×8	2.5	45	F-019
MHRH430R	ϕ3×R0.1×8	2.5	50	F-035
SHPR400	ϕ3×R0.1×9	1.8	53	B-036
MHRH430R	ϕ3×R0.1×8	2.5	50	F-035
SHPR400	ϕ3×R0.1×9	1.8	53	B-036
MHRSH430RSF	ϕ3×R0.1×10	2.5	50	F-019
MHRH430R	ϕ3×R0.1×10	2.5	50	F-035
SHPR400	ϕ3×R0.1×12	1.8	63	B-036
MHRSH430RSF	ϕ3×R0.1×12	2.5	50	F-019
MHRH430R	ϕ3×R0.1×12	2.5	50	F-035
MHR430R	ϕ3×R0.1×12	2.5	50	F-058
MHR230R	ϕ3×R0.1×12	4.5	50	F-051
DHR237R	ϕ3×R0.1×12	6	50	F-073
MHRH430R	ϕ3×R0.1×14	2.5	50	F-035
SHPR400	ϕ3×R0.1×15	1.8	63	B-036
MHRSH430RSF	ϕ3×R0.1×15	2.5	55	F-019
MHRH430R	ϕ3×R0.1×16	2.5	60	F-035
MHR430R	ϕ3×R0.1×18	2.5	60	F-058
MHR230R	ϕ3×R0.1×18	4.5	60	F-051
DHR237R	ϕ3×R0.1×18	6	60	F-073
MHRH430R	ϕ3×R0.1×20	2.5	60	F-035
MHR430R	ϕ3×R0.1×24	2.5	70	F-058
MHR230R	ϕ3×R0.1×24	4.5	70	F-051
DHR237R	ϕ3×R0.1×24	6	70	F-073
MHRH430R	ϕ3×R0.1×25	2.5	70	F-035
MHRH430R	ϕ3×R0.1×30	2.5	70	F-035
MHR430R	ϕ3×R0.1×30	2.5	70	F-058
MHR230R	ϕ3×R0.1×30	4.5	70	F-051
MHR430R	ϕ3×R0.1×36	2.5	80	F-058
MHR230R	ϕ3×R0.1×36	4.5	80	F-051
MHDH445R	ϕ3×R0.2	6	60	F-006

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSRS230	ϕ3×R0.2	6	60	F-010
MSX440	ϕ3×R0.2	8	55	F-004
AL3D-345R	ϕ3×R0.2	9	60	F-014
MHRSH430RSF	ϕ3×R0.2×4	2.5	45	F-019
MHRH430R	ϕ3×R0.2×4	2.5	50	F-035
SHPR400	ϕ3×R0.2×6	1.8	53	B-036
MHRSH430RSF	ϕ3×R0.2×6	2.5	45	F-019
MHRH430R	ϕ3×R0.2×6	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.2×8	2.5	45	F-019
MHRH430R	ϕ3×R0.2×8	2.5	50	F-035
SHPR400	ϕ3×R0.2×9	1.8	53	B-036
MHRSH430RSF	ϕ3×R0.2×10	2.5	50	F-019
MHRH430R	ϕ3×R0.2×10	2.5	50	F-035
SHPR400	ϕ3×R0.2×12	1.8	63	B-036
MHRSH430RSF	ϕ3×R0.2×12	2.5	50	F-019
MHRH430R	ϕ3×R0.2×12	2.5	50	F-035
MHR430R	ϕ3×R0.2×12	2.5	50	F-058
MHR230R	ϕ3×R0.2×12	4.5	50	F-051
DHR237R	ϕ3×R0.2×12	6	50	F-073
MHRH430R	ϕ3×R0.2×14	2.5	50	F-035
SHPR400	ϕ3×R0.2×15	1.8	63	B-036
MHRSH430RSF	ϕ3×R0.2×15	2.5	55	F-019
MSTNR230	ϕ3×R0.2×15	2.5	60	F-066
MHRH430R	ϕ3×R0.2×16	2.5	60	F-035
MHR430R	ϕ3×R0.2×18	2.5	60	F-058
MHR230R	ϕ3×R0.2×18	4.5	60	F-051
DHR237R	ϕ3×R0.2×18	6	60	F-073
MHRH430R	ϕ3×R0.2×20	2.5	60	F-035
MSTNR230	ϕ3×R0.2×20	2.5	60	F-066
MHR430R	ϕ3×R0.2×24	2.5	70	F-058
MHR230R	ϕ3×R0.2×24	4.5	70	F-051
DHR237R	ϕ3×R0.2×24	6	70	F-073
MHRH430R	ϕ3×R0.2×25	2.5	70	F-035
MHRH430R	ϕ3×R0.2×30	2.5	70	F-035
MHR430R	ϕ3×R0.2×30	2.5	70	F-058
MSTNR230	ϕ3×R0.2×30	2.5	80	F-066
MHR230R	ϕ3×R0.2×30	4.5	70	F-051
MHR430R	ϕ3×R0.2×36	2.5	80	F-058
MHR230R	ϕ3×R0.2×36	4.5	80	F-051
MSTNR230	ϕ3×R0.2×40	2.5	80	F-066
MSTNR230	ϕ3×R0.2×50	2.5	100	F-066
MSTNR230	ϕ3×R0.2×60	2.5	110	F-066
MHDH445R	ϕ3×R0.3	6	60	F-006
MSRS230	ϕ3×R0.3	6	60	F-010
MSXH440R	ϕ3×R0.3	8	60	F-002
AL3D-345R	ϕ3×R0.3	9	60	F-014
MHRSH430RSF	ϕ3×R0.3×4	2.5	45	F-019
MHRH430R	ϕ3×R0.3×4	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.3×6	2.5	45	F-019
MHRH430R	ϕ3×R0.3×6	2.5	50	F-035

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Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRSH430RSF	ϕ3×R0.3×8	2.5	45	F-019
MHRH430R	ϕ3×R0.3×8	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.3×10	2.5	50	F-019
MHRH430R	ϕ3×R0.3×10	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.3×12	2.5	50	F-019
MHRH430R	ϕ3×R0.3×12	2.5	50	F-035
MHR430R	ϕ3×R0.3×12	2.5	50	F-058
MHR230R	ϕ3×R0.3×12	4.5	50	F-051
DHR237R	ϕ3×R0.3×12	6	50	F-073
MHRH430R	ϕ3×R0.3×14	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.3×15	2.5	55	F-019
MHRH430R	ϕ3×R0.3×16	2.5	60	F-035
MHR230R	ϕ3×R0.3×18	4.5	60	F-051
DHR237R	ϕ3×R0.3×18	6	60	F-073
MHRH430R	ϕ3×R0.3×20	2.5	60	F-035
MHR430R	ϕ3×R0.3×20	2.5	60	F-058
MHR430R	ϕ3×R0.3×24	2.5	70	F-058
MHR230R	ϕ3×R0.3×24	4.5	70	F-051
DHR237R	ϕ3×R0.3×24	6	70	F-073
MHRH430R	ϕ3×R0.3×25	2.5	70	F-035
MHRH430R	ϕ3×R0.3×30	2.5	70	F-035
MHR430R	ϕ3×R0.3×30	2.5	70	F-058
MHR230R	ϕ3×R0.3×30	4.5	70	F-051
MHR430R	ϕ3×R0.3×36	2.5	80	F-058
MHR230R	ϕ3×R0.3×36	4.5	80	F-051
AL3D-345R	ϕ3×R0.4	9	60	F-014
MHDH445R	ϕ3×R0.5	6	60	F-006
MSRS230	ϕ3×R0.5	6	60	F-010
MSXH440R	ϕ3×R0.5	8	60	F-002
AL3D-345R	ϕ3×R0.5	9	60	F-014
MHRSH430RSF	ϕ3×R0.5×4	2.5	45	F-019
MHRH430R	ϕ3×R0.5×4	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.5×6	2.5	45	F-019
MHRH430R	ϕ3×R0.5×6	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.5×8	2.5	45	F-019
MHRH430R	ϕ3×R0.5×8	2.5	50	F-035
MHRSH430RSF	ϕ3×R0.5×10	2.5	50	F-019
MHRH430R	ϕ3×R0.5×10	2.5	50	F-036
MHRSH430RSF	ϕ3×R0.5×12	2.5	50	F-019
MHRH430R	ϕ3×R0.5×12	2.5	50	F-036
MHR430R	ϕ3×R0.5×12	2.5	50	F-058
MHR230R	ϕ3×R0.5×12	4.5	50	F-051
DHR237R	ϕ3×R0.5×12	6	50	F-073
MHRH430R	ϕ3×R0.5×14	2.5	50	F-036
MHRSH430RSF	ϕ3×R0.5×15	2.5	55	F-019
MSTNR230	ϕ3×R0.5×15	2.5	60	F-066
DHR237R	ϕ3×R0.5×15	6	60	F-073
MHRH430R	ϕ3×R0.5×16	2.5	60	F-036
MHR230R	ϕ3×R0.5×18	4.5	60	F-051
DHR237R	ϕ3×R0.5×18	6	60	F-073

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH430R	ϕ3×R0.5×20	2.5	60	F-036
MHR430R	ϕ3×R0.5×20	2.5	60	F-058
MSTNR230	ϕ3×R0.5×20	2.5	60	F-066
MHR430R	ϕ3×R0.5×24	2.5	70	F-058
MHR230R	ϕ3×R0.5×24	4.5	70	F-051
DHR237R	ϕ3×R0.5×24	6	70	F-073
MHRH430R	ϕ3×R0.5×25	2.5	70	F-036
MHRH430R	ϕ3×R0.5×30	2.5	70	F-036
MHR430R	ϕ3×R0.5×30	2.5	70	F-058
MSTNR230	ϕ3×R0.5×30	2.5	80	F-066
MHR230R	ϕ3×R0.5×30	4.5	70	F-051
DHR237R	ϕ3×R0.5×30	6	70	F-073
MHR430R	ϕ3×R0.5×36	2.5	80	F-058
MHR230R	ϕ3×R0.5×36	4.5	80	F-051
MSTNR230	ϕ3×R0.5×40	2.5	80	F-066
MSTNR230	ϕ3×R0.5×50	2.5	100	F-066
MSTNR230	ϕ3×R0.5×60	2.5	110	F-066
MSRS230	ϕ3×R1	6	60	F-010
MHRH430R	ϕ3×R1×6	2.5	50	F-036
MHRH430R	ϕ3×R1×8	2.5	50	F-036
MHRH430R	ϕ3×R1×10	2.5	50	F-036
MHRH430R	ϕ3×R1×12	2.5	50	F-036
MHR430R	ϕ3×R1×12	2.5	50	F-058
MHR230R	ϕ3×R1×12	4.5	50	F-051
MHR430R	ϕ3×R1×12	2.5	50	F-058
MHR230R	ϕ3×R1×12	4.5	50	F-051
MHRH430R	ϕ3×R1×14	2.5	50	F-036
MHRH430R	ϕ3×R1×16	2.5	60	F-036
MHR230R	ϕ3×R1×18	4.5	60	F-051
MHRH430R	ϕ3×R1×20	2.5	60	F-036
MHR430R	ϕ3×R1×20	2.5	60	F-058
MHR430R	ϕ3×R1×24	2.5	70	F-058
MHR230R	ϕ3×R1×24	4.5	70	F-051
MHRH430R	ϕ3×R1×25	2.5	70	F-036
MHRH430R	ϕ3×R1×30	2.5	70	F-036
MHR430R	ϕ3×R1×30	2.5	70	F-058
MHR230R	ϕ3×R1×30	4.5	70	F-051
MHR430R	ϕ3×R1×36	2.5	80	F-058
MHR230R	ϕ3×R1×36	4.5	80	F-051
ϕ4				
MHRH430R	ϕ4×R0.05×8	3.2	60	F-036
MHRH430R	ϕ4×R0.05×12	3.2	60	F-036
MHRH430R	ϕ4×R0.05×16	3.2	60	F-036
MHRH430R	ϕ4×R0.05×20	3.2	65	F-036
MHRH430R	ϕ4×R0.05×24	3.2	70	F-036
MHRH430R	ϕ4×R0.05×28	3.2	70	F-036
MHRH430R	ϕ4×R0.05×32	3.2	70	F-036
MSRS230	ϕ4×R0.1	8	65	F-010
MHRSH430RSF	ϕ4×R0.1×8	3.2	45	F-019
MHRH430R	ϕ4×R0.1×8	3.2	60	F-036
MHRH430R	ϕ4×R0.1×10	3.2	60	F-036
MHRSH430RSF	ϕ4×R0.1×12	3.2	50	F-019

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Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH430R	ϕ4×R0.1×12	3.2	60	F-036
MHRSH430RSF	ϕ4×R0.1×16	3.2	55	F-019
MHRH430R	ϕ4×R0.1×16	3.2	60	F-036
MHR430R	ϕ4×R0.1×16	3.2	60	F-059
MHR230R	ϕ4×R0.1×16	6	60	F-051
DHR237R	ϕ4×R0.1×16	8	60	F-073
MHRSH430RSF	ϕ4×R0.1×20	3.2	55	F-019
MHRH430R	ϕ4×R0.1×20	3.2	65	F-036
MHRH430R	ϕ4×R0.1×24	3.2	70	F-036
MHR430R	ϕ4×R0.1×24	3.2	70	F-059
MHR230R	ϕ4×R0.1×24	6	70	F-051
DHR237R	ϕ4×R0.1×24	8	60	F-073
MHRH430R	ϕ4×R0.1×28	3.2	70	F-036
MHRH430R	ϕ4×R0.1×32	3.2	70	F-036
MHR430R	ϕ4×R0.1×32	3.2	70	F-059
MHR230R	ϕ4×R0.1×32	6	70	F-051
DHR237R	ϕ4×R0.1×32	8	70	F-073
MHRH430R	ϕ4×R0.1×40	3.2	80	F-036
MHR430R	ϕ4×R0.1×48	3.2	100	F-059
MHR230R	ϕ4×R0.1×48	6	100	F-051
MHDH445R	ϕ4×R0.2	8	60	F-006
MSRS230	ϕ4×R0.2	8	65	F-010
MSX440	ϕ4×R0.2	11	55	F-004
AL3D-345R	ϕ4×R0.2	12	70	F-014
MHRSH430RSF	ϕ4×R0.2×8	3.2	45	F-019
MHRH430R	ϕ4×R0.2×8	3.2	60	F-036
MHRH430R	ϕ4×R0.2×10	3.2	60	F-036
MHRSH430RSF	ϕ4×R0.2×12	3.2	50	F-019
MHRH430R	ϕ4×R0.2×12	3.2	60	F-036
MHRSH430RSF	ϕ4×R0.2×16	3.2	55	F-019
MHRH430R	ϕ4×R0.2×16	3.2	60	F-036
MHR430R	ϕ4×R0.2×16	3.2	60	F-059
MHR230R	ϕ4×R0.2×16	6	60	F-051
DHR237R	ϕ4×R0.2×16	8	60	F-073
MHRSH430RSF	ϕ4×R0.2×20	3.2	55	F-019
MHRH430R	ϕ4×R0.2×20	3.2	65	F-036
MHRH430R	ϕ4×R0.2×24	3.2	70	F-036
MHR430R	ϕ4×R0.2×24	3.2	70	F-059
MHR230R	ϕ4×R0.2×24	6	70	F-051
DHR237R	ϕ4×R0.2×24	8	60	F-073
MHRH430R	ϕ4×R0.2×28	3.2	70	F-036
MHRH430R	ϕ4×R0.2×32	3.2	70	F-036
MHR430R	ϕ4×R0.2×32	3.2	70	F-059
MHR230R	ϕ4×R0.2×32	6	70	F-051
DHR237R	ϕ4×R0.2×32	8	70	F-073
MHRH430R	ϕ4×R0.2×40	3.2	80	F-036
MHR430R	ϕ4×R0.2×48	3.2	100	F-059
MHR230R	ϕ4×R0.2×48	6	100	F-051
MHDH445R	ϕ4×R0.3	8	60	F-006
MSRS230	ϕ4×R0.3	8	65	F-010
MSXH440R	ϕ4×R0.3	11	60	F-002
AL3D-345R	ϕ4×R0.3	12	70	F-014
MHRSH430RSF	ϕ4×R0.3×8	3.2	45	F-019
MHRH430R	ϕ4×R0.3×8	3.2	60	F-036
MHRH430R	ϕ4×R0.3×10	3.2	60	F-036
MHRSH430RSF	ϕ4×R0.3×12	3.2	50	F-019
MHRH430R	ϕ4×R0.3×12	3.2	60	F-036
MHRSH430RSF	ϕ4×R0.3×16	3.2	55	F-019
MHRH430R	ϕ4×R0.3×16	3.2	60	F-036
MHR430R	ϕ4×R0.3×16	3.2	60	F-059
MHR230R	ϕ4×R0.3×16	6	60	F-051
DHR237R	ϕ4×R0.3×16	8	60	F-073
MHRSH430RSF	ϕ4×R0.3×20	3.2	55	F-019
MHRH430R	ϕ4×R0.3×20	3.2	65	F-036
MHRH430R	ϕ4×R0.3×24	3.2	70	F-036
MHR430R	ϕ4×R0.3×24	3.2	70	F-059
MHR230R	ϕ4×R0.3×24	6	70	F-051
DHR237R	ϕ4×R0.3×24	8	60	F-073
MHRH430R	ϕ4×R0.3×28	3.2	70	F-036
MHRH430R	ϕ4×R0.3×32	3.2	70	F-036
MHR430R	ϕ4×R0.3×32	3.2	70	F-059
MHR230R	ϕ4×R0.3×32	6	70	F-051
DHR237R	ϕ4×R0.3×32	8	70	F-073
MHRH430R	ϕ4×R0.3×40	3.2	80	F-036
MHR430R	ϕ4×R0.3×48	3.2	100	F-059
MHR230R	ϕ4×R0.3×48	6	100	F-051
AL3D-345R	ϕ4×R0.4	12	70	F-014
MHDH445R	ϕ4×R0.5	8	60	F-006
MSRS230	ϕ4×R0.5	8	65	F-010
MSXH440R	ϕ4×R0.5	11	60	F-002
AL3D-345R	ϕ4×R0.5	12	70	F-014
MHRSH430RSF	ϕ4×R0.5×8	3.2	45	F-019
MHRH430R	ϕ4×R0.5×8	3.2	60	F-036
MHRH430R	ϕ4×R0.5×10	3.2	60	F-036
MHRSH430RSF	ϕ4×R0.5×12	3.2	50	F-019
MHRH430R	ϕ4×R0.5×12	3.2	60	F-036
MHRSH430RSF	ϕ4×R0.5×16	3.2	55	F-019
MHRH430R	ϕ4×R0.5×16	3.2	60	F-036
MHR430R	ϕ4×R0.5×16	3.2	60	F-059
MHR230R	ϕ4×R0.5×16	6	60	F-052
DHR237R	ϕ4×R0.5×16	8	60	F-073
MHRSH430RSF	ϕ4×R0.5×20	3.2	55	F-019
MHRH430R	ϕ4×R0.5×20	3.2	65	F-036
MHRH430R	ϕ4×R0.5×24	3.2	70	F-036
MHR430R	ϕ4×R0.5×24	3.2	70	F-059
MHR230R	ϕ4×R0.5×24	6	70	F-052
DHR237R	ϕ4×R0.5×24	8	60	F-073
MHRH430R	ϕ4×R0.5×28	3.2	70	F-036
MHRH430R	ϕ4×R0.5×32	3.2	70	F-036
MHR430R	ϕ4×R0.5×32	3.2	70	F-059

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Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHR230R	ϕ4×R0.5×32	6	70	F-052
DHR237R	ϕ4×R0.5×32	8	70	F-073
MHRH430R	ϕ4×R0.5×40	3.2	80	F-036
MHR430R	ϕ4×R0.5×48	3.2	100	F-059
MHR230R	ϕ4×R0.5×48	6	100	F-052
AL3D-345R	ϕ4×R0.8	12	70	F-014
MSRS230	ϕ4×R1	8	65	F-010
MSXH440R	ϕ4×R1	11	60	F-002
MHRH430R	ϕ4×R1×8	3.2	60	F-036
MHRH430R	ϕ4×R1×10	3.2	60	F-036
MHRH430R	ϕ4×R1×12	3.2	60	F-036
MHRH430R	ϕ4×R1×16	3.2	60	F-036
MHR430R	ϕ4×R1×16	3.2	60	F-059
MHR230R	ϕ4×R1×16	6	60	F-052
DHR237R	ϕ4×R1×16	8	60	F-073
MHRH430R	ϕ4×R1×20	3.2	65	F-036
MHRH430R	ϕ4×R1×24	3.2	70	F-036
MHR430R	ϕ4×R1×24	3.2	70	F-059
MHR230R	ϕ4×R1×24	6	70	F-052
DHR237R	ϕ4×R1×24	8	60	F-073
MHRH430R	ϕ4×R1×28	3.2	70	F-036
MHRH430R	ϕ4×R1×32	3.2	70	F-036
MHR430R	ϕ4×R1×32	3.2	70	F-059
MHR230R	ϕ4×R1×32	6	70	F-052
DHR237R	ϕ4×R1×32	8	70	F-073
MHRH430R	ϕ4×R1×40	3.2	80	F-036
MHR430R	ϕ4×R1×48	3.2	100	F-059
MHR230R	ϕ4×R1×48	6	100	F-052
ϕ5				
MSRS230	ϕ5×R0.1	10	70	F-010
MHRH430R	ϕ5×R0.1×10	4	70	F-037
MHRSH430RSF	ϕ5×R0.1×15	4	50	F-019
MHRH430R	ϕ5×R0.1×15	4	70	F-037
MHRSH430RSF	ϕ5×R0.1×20	4	55	F-019
MHRH430R	ϕ5×R0.1×20	4	70	F-037
MHR430R	ϕ5×R0.1×20	4	70	F-059
MHR230R	ϕ5×R0.1×20	7.5	70	F-052
DHR237R	ϕ5×R0.1×20	10	60	F-073
MHRH430R	ϕ5×R0.1×30	4	80	F-037
MHRH430R	ϕ5×R0.1×40	4	90	F-037
MHR430R	ϕ5×R0.1×40	4	90	F-059
MHR230R	ϕ5×R0.1×40	7.5	90	F-052
DHR237R	ϕ5×R0.1×40	10	80	F-073
MHDH645R	ϕ5×R0.2	10	60	F-008
MSRS230	ϕ5×R0.2	10	70	F-010
MSX440	ϕ5×R0.2	13	55	F-004
AL3D-345R	ϕ5×R0.2	15	80	F-014
MHRH430R	ϕ5×R0.2×10	4	70	F-037
MHRSH430RSF	ϕ5×R0.2×15	4	50	F-019
MHRH430R	ϕ5×R0.2×15	4	70	F-037
MHRSH430RSF	ϕ5×R0.2×20	4	55	F-019
MHRH430R	ϕ5×R0.2×20	4	70	F-037
MHR430R	ϕ5×R0.2×20	4	70	F-059
MHR230R	ϕ5×R0.2×20	7.5	70	F-052
MHRH430R	ϕ5×R0.2×30	4	80	F-037
MHRH430R	ϕ5×R0.2×40	4	90	F-037
MHR430R	ϕ5×R0.2×40	4	90	F-059
MHR230R	ϕ5×R0.2×40	7.5	90	F-052
MHDH645R	ϕ5×R0.3	10	60	F-008
MSRS230	ϕ5×R0.3	10	70	F-010
MSXH440R	ϕ5×R0.3	13	60	F-002
AL3D-345R	ϕ5×R0.3	15	80	F-014
MHRH430R	ϕ5×R0.3×10	4	70	F-037
MHRSH430RSF	ϕ5×R0.3×15	4	50	F-019
MHRH430R	ϕ5×R0.3×15	4	70	F-037
MHRSH430RSF	ϕ5×R0.3×20	4	55	F-019
MHRH430R	ϕ5×R0.3×20	4	70	F-037
MHR430R	ϕ5×R0.3×20	4	70	F-059
MHR230R	ϕ5×R0.3×20	7.5	70	F-052
MHRH430R	ϕ5×R0.3×30	4	80	F-037
MHRH430R	ϕ5×R0.3×40	4	90	F-037
MHR430R	ϕ5×R0.3×40	4	90	F-059
MHR230R	ϕ5×R0.3×40	7.5	90	F-052
AL3D-345R	ϕ5×R0.4	15	80	F-014
MHDH645R	ϕ5×R0.5	10	60	F-008
MSRS230	ϕ5×R0.5	10	70	F-010
MSXH440R	ϕ5×R0.5	13	60	F-002
AL3D-345R	ϕ5×R0.5	15	80	F-014
MHRH430R	ϕ5×R0.5×10	4	70	F-037
MHRSH430RSF	ϕ5×R0.5×15	4	50	F-019
MHRH430R	ϕ5×R0.5×15	4	70	F-037
MHRSH430RSF	ϕ5×R0.5×20	4	55	F-019
MHRH430R	ϕ5×R0.5×20	4	70	F-037
MHR430R	ϕ5×R0.5×20	4	70	F-059
MHR230R	ϕ5×R0.5×20	7.5	70	F-052
MHRH430R	ϕ5×R0.5×30	4	80	F-037
MHRH430R	ϕ5×R0.5×40	4	90	F-037
MHR430R	ϕ5×R0.5×40	4	90	F-059
MHR230R	ϕ5×R0.5×40	7.5	90	F-052
AL3D-345R	ϕ5×R0.8	15	80	F-014
MHDH645R	ϕ5×R1	10	60	F-008
MSRS230	ϕ5×R1	10	70	F-010
MSXH440R	ϕ5×R1	13	60	F-002
AL3D-345R	ϕ5×R1	15	80	F-014
MHRH430R	ϕ5×R1×10	4	70	F-037
MHRH430R	ϕ5×R1×15	4	70	F-037
MHRH430R	ϕ5×R1×20	4	70	F-037
MHR430R	ϕ5×R1×20	4	70	F-059
MHR230R	ϕ5×R1×20	7.5	70	F-052
MHRH430R	ϕ5×R1×30	4	80	F-037

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH430R	ϕ5×R1×40	4	90	F-037
MHR430R	ϕ5×R1×40	4	90	F-059
MHR230R	ϕ5×R1×40	7.5	90	F-052
MSRS230	ϕ5×R1.5	10	70	F-010
ϕ6				
MHRH430R	ϕ6×R0.05×12	5	70	F-037
MHRH430R	ϕ6×R0.05×15	5	70	F-037
MHRH430R	ϕ6×R0.05×18	5	90	F-037
MHRH430R	ϕ6×R0.05×24	5	90	F-037
MHRH430R	ϕ6×R0.05×30	5	90	F-037
MHRH430R	ϕ6×R0.05×40	5	100	F-037
MHRH430R	ϕ6×R0.05×48	5	110	F-037
MSRS430	ϕ6×R0.1	12	80	F-012
MHRSH430RSF	ϕ6×R0.1×12	5	45	F-020
MHRH430R	ϕ6×R0.1×12	5	70	F-037
MHRH430R	ϕ6×R0.1×15	5	70	F-037
MHRSH430RSF	ϕ6×R0.1×18	5	50	F-020
MHRH430R	ϕ6×R0.1×18	5	90	F-037
MHRSH430RSF	ϕ6×R0.1×24	5	60	F-020
MHRH430R	ϕ6×R0.1×24	5	90	F-037
MHR430R	ϕ6×R0.1×24	5	90	F-059
MHR230R	ϕ6×R0.1×24	9	90	F-052
DHR237R	ϕ6×R0.1×24	12	60	F-073
MHRSH430RSF	ϕ6×R0.1×30	5	65	F-020
MHRH430R	ϕ6×R0.1×30	5	90	F-037
MHRH430R	ϕ6×R0.1×40	5	100	F-037
MHRH430R	ϕ6×R0.1×48	5	110	F-037
MHR430R	ϕ6×R0.1×48	5	110	F-059
MHR230R	ϕ6×R0.1×48	9	110	F-052
DHR237R	ϕ6×R0.1×48	12	90	F-073
MHDH645R	ϕ6×R0.2	12	60	F-008
MSRS430	ϕ6×R0.2	12	80	F-012
AL3D-345R	ϕ6×R0.2	18	80	F-014
MHRSH430RSF	ϕ6×R0.2×12	5	45	F-020
MHRH430R	ϕ6×R0.2×12	5	70	F-037
MHRH430R	ϕ6×R0.2×15	5	70	F-037
MHRSH430RSF	ϕ6×R0.2×18	5	50	F-020
MHRH430R	ϕ6×R0.2×18	5	90	F-037
MHRSH430RSF	ϕ6×R0.2×24	5	60	F-020
MHRH430R	ϕ6×R0.2×24	5	90	F-037
MHR430R	ϕ6×R0.2×24	5	90	F-059
MHR230R	ϕ6×R0.2×24	9	90	F-052
DHR237R	ϕ6×R0.2×24	12	60	F-073
MHRSH430RSF	ϕ6×R0.2×30	5	65	F-020
MHRH430R	ϕ6×R0.2×30	5	90	F-037
MHRH430R	ϕ6×R0.2×40	5	100	F-037
MHRH430R	ϕ6×R0.2×48	5	110	F-037
MHR430R	ϕ6×R0.2×48	5	110	F-059
MHR230R	ϕ6×R0.2×48	9	110	F-052
DHR237R	ϕ6×R0.2×48	12	90	F-073

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHDH645R	ϕ6×R0.3	12	60	F-008
MSRS430	ϕ6×R0.3	12	80	F-012
MSX440	ϕ6×R0.3	13	55	F-004
AL3D-345R	ϕ6×R0.3	18	80	F-014
MHRSH430RSF	ϕ6×R0.3×12	5	45	F-020
MHRH430R	ϕ6×R0.3×12	5	70	F-037
MHRH430R	ϕ6×R0.3×15	5	70	F-037
MHRSH430RSF	ϕ6×R0.3×18	5	50	F-020
MHRH430R	ϕ6×R0.3×18	5	90	F-037
MHRSH430RSF	ϕ6×R0.3×24	5	60	F-020
MHRH430R	ϕ6×R0.3×24	5	90	F-037
MHR430R	ϕ6×R0.3×24	5	90	F-059
MHR230R	ϕ6×R0.3×24	9	90	F-052
DHR237R	ϕ6×R0.3×24	12	60	F-073
MHRSH430RSF	ϕ6×R0.3×30	5	65	F-020
MHRH430R	ϕ6×R0.3×30	5	90	F-037
MHRH430R	ϕ6×R0.3×40	5	100	F-037
MHRH430R	ϕ6×R0.3×48	5	110	F-037
MHR430R	ϕ6×R0.3×48	5	110	F-059
MHR230R	ϕ6×R0.3×48	9	110	F-052
DHR237R	ϕ6×R0.3×48	12	90	F-073
AL3D-345R	ϕ6×R0.4	18	80	F-014
MHDH645R	ϕ6×R0.5	12	60	F-008
MSRS430	ϕ6×R0.5	12	80	F-012
MSXH440R	ϕ6×R0.5	13	60	F-002
AL3D-345R	ϕ6×R0.5	18	80	F-014
MHRSH430RSF	ϕ6×R0.5×12	5	45	F-020
MHRH430R	ϕ6×R0.5×12	5	70	F-037
MHRH430R	ϕ6×R0.5×15	5	70	F-037
MHRSH430RSF	ϕ6×R0.5×18	5	50	F-020
MHRH430R	ϕ6×R0.5×18	5	90	F-037
MHRSH430RSF	ϕ6×R0.5×24	5	60	F-020
MHRH430R	ϕ6×R0.5×24	5	90	F-037
MHR430R	ϕ6×R0.5×24	5	90	F-059
MHR230R	ϕ6×R0.5×24	9	90	F-052
DHR237R	ϕ6×R0.5×24	12	60	F-073
MHRSH430RSF	ϕ6×R0.5×30	5	65	F-020
MHRH430R	ϕ6×R0.5×30	5	90	F-037
DHR237R	ϕ6×R0.5×30	12	70	F-073
MHRH430R	ϕ6×R0.5×40	5	100	F-037
MHRH430R	ϕ6×R0.5×48	5	110	F-037
MHR430R	ϕ6×R0.5×48	5	110	F-059
MHR230R	ϕ6×R0.5×48	9	110	F-052
DHR237R	ϕ6×R0.5×48	12	90	F-073
AL3D-345R	ϕ6×R0.8	18	80	F-014
MHDH645R	ϕ6×R1	12	60	F-008
MSRS430	ϕ6×R1	12	80	F-012
MSXH440R	ϕ6×R1	13	60	F-002
AL3D-345R	ϕ6×R1	18	80	F-014
MHRSH430RSF	ϕ6×R1×12	5	45	F-020

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格：mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHRH430R	ϕ6×R1×12	5	70	F-037
MHRH430R	ϕ6×R1×15	5	70	F-037
MHRSH430RSF	ϕ6×R1×18	5	50	F-020
MHRH430R	ϕ6×R1×18	5	90	F-037
MHRSH430RSF	ϕ6×R1×24	5	60	F-020
MHRH430R	ϕ6×R1×24	5	90	F-037
MHR430R	ϕ6×R1×24	5	90	F-059
MHR230R	ϕ6×R1×24	9	90	F-052
DHR237R	ϕ6×R1×24	12	60	F-073
MHRSH430RSF	ϕ6×R1×30	5	65	F-020
MHRH430R	ϕ6×R1×30	5	90	F-037
MHRH430R	ϕ6×R1×40	5	100	F-037
MHRH430R	ϕ6×R1×48	5	110	F-037
MHR430R	ϕ6×R1×48	5	110	F-059
MHR230R	ϕ6×R1×48	9	110	F-052
DHR237R	ϕ6×R1×48	12	90	F-073
MSRS430	ϕ6×R1.5	12	80	F-012
MSRS430	ϕ6×R2	12	80	F-012
ϕ7				
MSX440	ϕ7×R0.3	19	60	F-004
ϕ8				
MSRS430	ϕ8×R0.1	16	90	F-012
MSRS430	ϕ8×R0.2	16	90	F-012
MHDH645R	ϕ8×R0.3	16	65	F-008
MSX440	ϕ8×R0.3	19	60	F-004
AL3D-345R	ϕ8×R0.3	24	90	F-014
MHDH645R	ϕ8×R0.5	16	65	F-008
MSRS430	ϕ8×R0.5	16	90	F-012
MSXH440R	ϕ8×R0.5	19	65	F-002
AL3D-345R	ϕ8×R0.5	24	90	F-014
MHDH645R	ϕ8×R1	16	65	F-008
MSRS430	ϕ8×R1	16	90	F-012
MSXH440R	ϕ8×R1	19	65	F-002
AL3D-345R	ϕ8×R1	24	90	F-014
MHDH645R	ϕ8×R1.5	16	65	F-008
MSRS430	ϕ8×R1.5	16	90	F-012
AL3D-345R	ϕ8×R1.5	24	90	F-014
MSRS430	ϕ8×R2	16	90	F-012
AL3D-345R	ϕ8×R2	24	90	F-014
MSRS430	ϕ8×R2.5	16	90	F-012
MSRS430	ϕ8×R3	16	90	F-012
ϕ9				
MSX440	ϕ9×R0.3	22	70	F-004
ϕ10				
MSRS430	ϕ10×R0.1	20	100	F-012
MSRS430	ϕ10×R0.2	20	100	F-012
MHDH645R	ϕ10×R0.3	20	75	F-008
MSRS430	ϕ10×R0.3	20	100	F-012
MSX440	ϕ10×R0.3	22	70	F-004
AL3D-345R	ϕ10×R0.3	30	100	F-014

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MHDH645R	ϕ10×R0.5	20	75	F-008
MSRS430	ϕ10×R0.5	20	100	F-012
MSXH440R	ϕ10×R0.5	22	75	F-002
AL3D-345R	ϕ10×R0.5	30	100	F-014
MHDH645R	ϕ10×R1	20	75	F-008
MSRS430	ϕ10×R1	20	100	F-012
MSXH440R	ϕ10×R1	22	75	F-002
AL3D-345R	ϕ10×R1	30	100	F-014
MHDH645R	ϕ10×R1.5	20	75	F-008
MSRS430	ϕ10×R1.5	20	100	F-012
AL3D-345R	ϕ10×R1.5	30	100	F-014
MHDH645R	ϕ10×R2	20	75	F-008
MSRS430	ϕ10×R2	20	100	F-012
MSXH440R	ϕ10×R2	22	75	F-002
AL3D-345R	ϕ10×R2	30	100	F-014
MSRS430	ϕ10×R2.5	20	100	F-012
MSRS430	ϕ10×R3	20	100	F-012
MSXH440R	ϕ10×R3	22	75	F-002
ϕ11				
MSX440	ϕ11×R0.3	26	80	F-004
ϕ12				
MSRS430	ϕ12×R0.1	24	110	F-012
MSRS430	ϕ12×R0.2	24	110	F-012
MSRS430	ϕ12×R0.3	24	110	F-012
MSX440	ϕ12×R0.3	26	80	F-004
AL3D-345R	ϕ12×R0.3	36	110	F-014
MHDH645R	ϕ12×R0.5	24	80	F-008
MSRS430	ϕ12×R0.5	24	110	F-012
MSXH440R	ϕ12×R0.5	26	80	F-002
AL3D-345R	ϕ12×R0.5	36	110	F-014
MHDH645R	ϕ12×R1	24	80	F-008
MSRS430	ϕ12×R1	24	110	F-012
MSXH440R	ϕ12×R1	26	80	F-002
AL3D-345R	ϕ12×R1	36	110	F-014
MHDH645R	ϕ12×R1.5	24	80	F-008
MSRS430	ϕ12×R1.5	24	110	F-012
AL3D-345R	ϕ12×R1.5	36	110	F-014
MHDH645R	ϕ12×R2	24	80	F-008
MSRS430	ϕ12×R2	24	110	F-012
MSXH440R	ϕ12×R2	26	80	F-002
AL3D-345R	ϕ12×R2	36	110	F-014
MSRS430	ϕ12×R2.5	24	110	F-012
MSRS430	ϕ12×R3	24	110	F-012
ϕ13				
MSX440	ϕ13×R0.7	26	90	F-004
ϕ14				
MSX440	ϕ14×R0.7	26	90	F-004
ϕ15				
MSX440	ϕ15×R1	32	90	F-004
ϕ16				

按［圆鼻规格］搜索

Search from Dia. & Corner Radius

单位[规格 :mm]
Unit [Size : mm]

型　号 Model	外径x角半径(x颈长) Dia.xCorner Radius (xUnder neck Length)	刃长 Length of Cut	全长 Overall Length	页面 Page
MSX440	ϕ16×R1	32	90	F-004
ϕ18				
MSX440	ϕ18×R1	32	105	F-004
ϕ20				
MSX440	ϕ20×R1	38	105	F-004

按［系列］搜索

Search from Series

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
CBN 核心系列 CBN Core Line			
平底 Square			
	超微细加工用CBN平底铣刀“Micro Edge Z” CBN “MICRO EDGE Z”	SMEZ120	ϕ0.03 ～ ϕ0.1
长颈平底 Long Neck Square			
	CBN平底铣刀 CBN Square End Mill	SSE400	ϕ0.1
	CBN平底铣刀 CBN Square End Mill	SSE600	ϕ0.2 ～ ϕ1
球头 Ball			
	超微细加工用CBN球头铣刀“CBN Micro Ball” CBN Ball End Mill for Precision Machining “CBN Micro Ball”	SMB120	R0.01 ～ R0.05
	超微细加工用 CBN2刃球头铣刀 CBN Micro 2-Flute Ball End Mill	SMB200	R0.01 ～ R0.05
长颈球头 Long Neck Ball			
	CBN超精加工用球头铣刀 CBN Super Finish Ball End Mill	SFB200	R0.1 ～ R1
	CBN超精加工用螺旋球头铣刀 CBN Super Spiral Ball End Mill	SSPB220	R0.1 ～ R3
	CBN超高速加工用球头铣刀 CBN Super Speed Ball End Mill	SSB200	R0.1 ～ R1
	CBN超精加工用长颈螺旋球头铣刀 CBN Super Spiral Long Neck Ball End Mill	SSPBL220	R0.1 ～ R1
	CBN超高速加工用长颈球头铣刀 CBN Super Speed Long Neck Ball End Mill	SSBL200	R0.05 ～ R1
长颈锥形球头 Long Neck Tapered Ball			
	CBN超精加工用长颈锥形螺旋球头铣刀 CBN Super Spiral Long Taper Neck Ball End Mill	SSPBTN220	R0.1 × 颈角30′ ～ R1 × 颈角2°
长颈圆鼻 Long Neck Corner Radius			
	CBN超高速加工用圆鼻铣刀 CBN Super Speed Corner Radius End Mill	SSR200	ϕ0.1 × R0.02 ～ ϕ2 × R0.5
	CBN高效率圆鼻铣刀 CBN High EfficientCornerRadius End Mill	SHR320	ϕ0.5 × R0.1 ～ ϕ2 × R0.3
	CBN超高精度圆鼻铣刀 CBN Super High Precision Corner Radius End Mill	SHPR400	ϕ0.1 × R0.01 ～ ϕ3 × R0.2
	CBN超精加工用圆鼻铣刀 CBN Super Surface End Mill	SSF120	ϕ0.2 × R0.05 ～ ϕ2 × R0.1
PCD 核心系列 PCD Core Line			
长颈平底 Long Neck Square			
	PCD超精加工用平底铣刀 PCD Square End Mill	PCDSE	ϕ0.1 ～ ϕ1
长颈球头 Long Neck Ball			
	PCD超精加工用球头铣刀 PCD Ball End Mill	PCDRB	R0.05 ～ R3

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金 等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜 Copper	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
CBN 核心系列 CBN Core Line																											
平底 Square																											
CBN	1	-20°	–	Slot	–	–	–	–	–	–	–	–	○	◎	◎	◎	○	–	–	–	–	–	–	–	–	B-002
长颈平底 Long Neck Square																											
CBN	4	0°	–	Slot	Face	–	–	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-004
CBN	6	0°	–	Slot	Face	–	–	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-006
球头 Ball																											
CBN	1	-20°	–	–	–	–	3D	–	–	–	–	–	○	◎	◎	◎	○	–	–	–	–	–	–	–	–	B-008
CBN	2	0°	–	–	–	–	3D	–	–	–	–	–	○	◎	◎	◎	○	–	–	–	–	–	–	–	–	B-010
长颈球头 Long Neck Ball																											
CBN	2	0°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-012
CBN	2	20°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-014
CBN	2	0°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-022
CBN	2	20°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-016
CBN	2	0°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-024
长颈锥形球头 Long Neck Tapered Ball																											
CBN	2	20°	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-018
长颈圆鼻 Long Neck Corner Radius																											
CBN	2	0°	–	Slot	Face	–	–	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-026
CBN	3	20°	–	Slot	Face	–	–	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-032
CBN	4	0°	–	Slot	Face	–	–	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-034
CBN	1	-20°	–	–	Face	–	–	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-040
PCD 核心系列 PCD Core Line																											
长颈平底 Long Neck Square																											
PCD	2	6	0°	–	–	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	C-002
长颈球头 Long Neck Ball																											
PCD	–		–	–	–	–	–	3D	–	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	◎	C-004

按［系列］搜索

Search from Series

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
PCD 核心系列 PCD Core Line			
长颈圆鼻 Long Neck Corner Radius			
	PCD超精加工用圆鼻铣刀 PCD Corner Radius End Mill	PCDRS	φ0.3 × R0.05 ～φ1 × R0.1
微米系列 Micro Edge			
平底 Square			
	超微细加工用平底铣刀“Micro Edge” Micro End Mill “MICRO EDGE”	NSME100	φ0.01 ～ φ0.05
	超微细加工用平底铣刀“Micro Edge” Micro End Mill “MICRO EDGE”	NSME230	φ0.03 ～ φ0.09
球头 Ball			
	超微细加工用球头铣刀“Micro Ball” Ball End Mill for Precision Machining “Micro Ball”	NSMB100	R0.005 ～ R0.05
常规系列 无限白金Plus涂层 Regular Line MUGEN COATING PREMIUM Plus			
平底 Square			
	无限白金Plus涂层 高硬度钢材用4刃平底铣刀 MUGEN COATING PREMIUM Plus 4-Flute Square End Mill for Hardened Steel	MHDSH445	φ1 ～ φ4
	无限白金Plus涂层 高硬度钢材用6刃平底铣刀 MUGEN COATING PREMIUM Plus 6-Flute Square End Mill for Hardened Steel	MHDSH645	φ5 ～ φ6
球头 Ball			
	无限白金Plus涂层 5轴MC加工用3刃球头铣刀 MUGEN COATING PREMIUM Plus 3-Flute Ball End Mill for 5-Axis Machining	MSBSH330-5X	R0.1 ～ R1
长颈球头 Long Neck Ball			
	无限白金Plus涂层高硬度钢材高精度加工用2刃长颈 球头铣刀 可对应热缩刀柄的短柄造型 MUGEN COATING PREMIUM Plus 2-Flute Long Neck Ball End Mill with Short Shank for Hardened Steel and High Accuracy Cutting	MRBSH230SF	R0.05 ～ R3
	无限白金涂层Plus 高硬度钢材高效率加工用 小径3刃长颈球头铣刀 MUGEN COATING PREMIUM Plus High Efficient 3-Flute Small-Diameter Long Neck Ball End Mill for Hardened Steel	MRBSH330	R0.1 ～ R3
长颈圆鼻 Long Neck Corner Radius			
	无限白金Plus涂层 高硬度钢材高精度加工用 4刃长颈圆鼻铣刀 MUGEN COATING PREMIUM Plus 4-Flute Long Neck Corner Radius End Mill with Short Shank for Hardened Steel and High Accuracy Cutting	MHRSH430RSF	φ0.1 × R0.01 ～φ6 × R1
常规系列 无限白金涂层 Regular Line MUGEN COATING PREMIUM			
平底 Square			
	无限白金涂层 25°螺旋角2刃平底铣刀 MUGEN COATING PREMIUM 2-Flute LEAD25 End Mill	MXH225	φ0.1 ～ φ6
	无限白金涂层 30°螺旋角2刃平底铣刀 MUGEN COATING PREMIUM 2-Flute LEAD30 End Mill	MXH230	φ0.1 ～ φ6
	无限白金涂层 35°螺旋角2刃平底铣刀 MUGEN COATING PREMIUM 2-Flute LEAD35 End Mill	MXH235	φ0.1 ～ φ6
	无限白金涂层 40°螺旋角2刃平底铣刀 MUGEN COATING PREMIUM 2-Flute LEAD40 End Mill	MXH240	φ0.3 ～ φ6
	无限白金涂层 45°螺旋角2刃平底铣刀 MUGEN COATING PREMIUM 2-Flute LEAD45 End Mill	MXH245	φ0.3 ～ φ6
	无限白金涂层 25°螺旋角2刃尖角造型平底铣刀 MUGEN COATING PREMIUM 2-Flute Sharp Edge LEAD25 End Mill	MXH225P	φ0.1 ～ φ6

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H 高硬度钢 Hardened Steel ～60 HRC	H 高硬度钢 Hardened Steel ～65 HRC	H 高硬度钢 Hardened Steel ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金 等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
PCD核心系列 PCD Core Line																											
长颈圆鼻 Long Neck Corner Radius																											
PCD	2 4 6	0°	–	–	Face	–	–	–	–	–	–	–	–	–	–	–	○	–	○	○	–	○	–	–	◎		C-006
微米系列 Micro Edge																											
平底 Square																											
SMG	1	0°	–	Slot	Face	–	–	–	–	–	○	○	○	–	–	–	–	○	–	○	○	–	○	–	–		D-112
SMG	2	30°	–	Slot	Face	–	–	–	–	–	○	○	○	–	–	–	–	○	–	○	○	–	○	–	–		D-114
球头 Ball																											
SMG	1	0°	–	–	–	–	3D	–	–	–	○	○	○	–	–	–	–	○	–	○	○	–	○	–	–		E-092
常规系列 无限白金Plus涂层 Regular Line MUGEN COATING PREMIUM Plus																											
平底 Square																											
∞ Plus	4	45°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	–	–			D-066
∞ Plus	6	45°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	–	–			D-068
球头 Ball																											
∞ Plus	3	30°	–	–	–	–	3D	–	–	–	–	–	–	○	◎	◎	–	–	–	–	–	–	–	–			E-002
长颈球头 Long Neck Ball																											
∞ Plus	2	30°	–	–	–	–	3D	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	–	–			E-026
∞ Plus	3	30°	–	–	–	–	3D	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	–	–			E-032
长颈圆鼻 Long Neck Corner Radius																											
∞ Plus	4	30°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	–	–			F-016
常规系列 无限白金涂层 Regular Line MUGEN COATING PREMIUM																											
平底 Square																											
∞ Premium	2	25°	Side	Slot	Face	–	–	–	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–		D-002
∞ Premium	2	30°	Side	Slot	Face	–	–	–	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–		D-004
∞ Premium	2	35°	Side	Slot	Face	–	–	–	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–		D-006
∞ Premium	2	40°	Side	–	Face	–	–	–	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–		D-008
∞ Premium	2	45°	Side	–	Face	–	–	–	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–		D-010
∞ Premium	2	25°	Side	–	Face	–	–	–	–	–	–	–	◎	–	–	–	–	◎	◎	–	–	–	–	–	–		D-012

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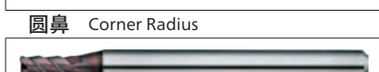
图片 Photo	产品名称 Product Name	型号 Model	规格 Size
常规系列 无限白金涂层 Regular Line MUGEN COATING PREMIUM			
平底 Square			
	无限白金涂层 30°螺旋角2刃尖角造型平底铣刀 MUGEN COATING PREMIUM 2-Flute Sharp Edge LEAD30 End Mill	MXH230P	ϕ0.1 ～ ϕ6
	无限白金涂层 35°螺旋角2刃尖角造型平底铣刀 MUGEN COATING PREMIUM 2-Flute Sharp Edge LEAD35 End Mill	MXH235P	ϕ0.1 ～ ϕ6
	无限白金涂层 高硬度钢材用4刃平底铣刀 MUGEN COATING PREMIUM 4-Flute Square End Mill for Hardened Steel	MHDH445	ϕ1 ～ ϕ4
	无限白金涂层 高硬度钢材用6刃平底铣刀 MUGEN COATING PREMIUM 6-Flute Square End Mill for Hardened Steel	MHDH645	ϕ5 ～ ϕ12
球头 Ball			
	无限白金涂层 高硬度钢材用2刃球头铣刀 MUGEN COATING PREMIUM 2-Flute Ball End Mill for Hardened Steel	MSBH230	R0.05 ～ R6
	无限白金涂层 高硬度钢材用3刃球头铣刀 MUGEN COATING PREMIUM 3-Flute Ball End Mill for Hardened Steel	MSBH345	R0.5 ～ R3
圆鼻 Corner Radius			
	无限白金涂层 高硬度钢材用4刃圆鼻铣刀 MUGEN COATING PREMIUM 4-Flute Corner Radius End Mill for Hardened Steel	MHDH445R	ϕ3 × R0.2 ～ ϕ4 × R0.5
	无限白金涂层 高硬度钢材用6刃圆鼻铣刀 MUGEN COATING PREMIUM 6-Flute Corner Radius End Mill for Hardened Steel	MHDH645R	ϕ5 × R0.2 ～ ϕ12 × R2
长颈平底 Long Neck Square			
	无限白金涂层 高硬度钢材用2刃长颈平底铣刀 MUGEN COATING PREMIUM 2-Flute Long Neck End Mill for Hardened Steel	MHRH230	ϕ0.1 ～ ϕ3
	无限白金涂层 高硬度钢材用4刃长颈平底铣刀 MUGEN COATING PREMIUM 4-Flute Long Neck End Mill for Hardened Steel	MHRH430	ϕ1 ～ ϕ6
长颈球头 Long Neck Ball			
	无限白金涂层 高硬度钢材用2刃长颈球头铣刀 MUGEN COATING PREMIUM 2-Flute Long Neck Ball End Mill for Hardened Steel	MRBH230	R0.05 ～ R3
	无限白金涂层 短柄造型高速·高硬度钢材用球头铣刀（热缩刀柄用） MUGEN COATING PREMIUM 2-Flute High Speed Ball End Mill with Short Shank for Hardened Steel	MACH225SF	R0.1 ～ R3
	无限白金涂层 高速·高硬度钢材用球头铣刀 MUGEN COATING PREMIUM 2-Flute High Speed Ball End Mill for Hardened Steel	MACH225	R0.1 ～ R3
	无限白金涂层 高效率椭圆弧形3刃球头铣刀 MUGEN COATING PREMIUM High Efficiency Lens Form 3-Flute End Mill	MLFH330	ϕ1 × R1 ～ ϕ6 × R8
长颈锥形球头 Long Neck Tapered Ball			
	无限白金涂层 长颈锥形2刃球头铣刀 MUGEN COATING PREMIUM 2-Flute Long Taper Neck Ball End Mill	MRBTNH230	R0.05 × 颈角3° ～ R2 × 颈角1°
	无限白金涂层 长颈锥形3刃球头铣刀 MUGEN COATING PREMIUM 3-Flute Long Taper Neck Ball End Mill	MRBTNH345	R0.5 × 颈角30' ～ R2 × 颈角1°
长颈圆鼻 Long Neck Corner Radius			
	无限白金涂层 高硬度钢材用2刃长颈圆鼻铣刀 MUGEN COATING PREMIUM 2-Flute Long Neck Corner Radius End Mill for Hardened Steel	MHRH230R	ϕ0.2 × R0.02 ～ ϕ0.9 × R0.1
	无限白金涂层 高硬度钢材用4刃长颈圆鼻铣刀 MUGEN COATING PREMIUM 4-Flute Long Neck Corner Radius End Mill for Hardened Steel	MHRH430R	ϕ0.1 × R0.01 ～ ϕ6 × R1

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material: P 调质钢 Prehardened Steel	P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金 等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜 Copper	N 铜合金	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
常规系列 无限白金涂层 Regular Line MUGEN COATING PREMIUM																											
平底 Square																											
∞ Premium	2	30°	Side	–	Face	–	–	–	–	–	–	–	◎	–	–	–	–	◎	◎	–	–	–	–	–	–	–	D-014
∞ Premium	2	35°	Side	–	Face	–	–	–	–	–	–	–	◎	–	–	–	–	◎	◎	–	–	–	–	–	–	–	D-016
∞ Premium	4	45°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	◎	○	–	–	–	–	–	–	–	–	–	–	D-070
∞ Premium	6	45°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	◎	○	–	–	–	–	–	–	–	–	–	–	D-072
球头 Ball																											
∞ Premium	2	30°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	–	E-004
∞ Premium	3	45°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	–	E-006
圆鼻 Corner Radius																											
∞ Premium	4	45°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	◎	○	–	–	–	–	–	–	–	–	–	–	F-006
∞ Premium	6	45°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	◎	○	–	–	–	–	–	–	–	–	–	–	F-008
长颈平底 Long Neck Square																											
∞ Premium	2	30°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	◎	○	–	○	○	–	–	–	–	–	–	–	D-078
∞ Premium	4	30°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	◎	○	–	○	○	–	–	–	–	–	–	–	D-084
长颈球头 Long Neck Ball																											
∞ Premium	2	30°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	–	E-034
∞ Premium	2	25°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	–	E-048
∞ Premium	2	25°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	–	E-050
∞ Premium	3	30°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	–	–	–	–	–	–	–	–	–	E-052
长颈锥形球头 Long Neck Tapered Ball																											
∞ Premium	2	30°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	–	E-070
∞ Premium	3	45°	–	–	–	–	3D	–	–	–	–	–	◎	◎	◎	○	–	○	○	–	–	–	–	–	–	–	E-078
长颈圆鼻 Long Neck Corner Radius																											
∞ Premium	2	30°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	◎	○	–	○	○	–	–	–	–	–	–	–	F-026
∞ Premium	4	30°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	◎	○	–	○	○	–	–	–	–	–	–	–	F-030

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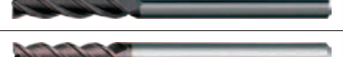
图片 Photo	产品名称 Product Name	型号 Model	规格 Size
常规系列 无限涂层 Regular Line MUGEN COATING			
平底 Square			
	无限涂层 25°螺旋角2刃平底铣刀 MUGEN COATING 2-Flute LEAD25 End Mill	MX225	ϕ0.3 ～ ϕ12
	无限涂层 30°螺旋角2刃平底铣刀 MUGEN COATING 2-Flute LEAD30 End Mill	MX230	ϕ0.1 ～ ϕ12
	无限涂层 35°螺旋角2刃平底铣刀 MUGEN COATING 2-Flute LEAD35 End Mill	MX235	ϕ0.1 ～ ϕ12
	无限涂层 40°螺旋角2刃平底铣刀 MUGEN COATING 2-Flute LEAD40 End Mill	MX240	ϕ0.3 ～ ϕ12
	无限涂层 45°螺旋角2刃平底铣刀 MUGEN COATING 2-Flute LEAD45 End Mill	MX245	ϕ0.3 ～ ϕ12
	无限涂层 25°螺旋角4刃平底铣刀 MUGEN COATING 4-Flute LEAD25 End Mill	MX425	ϕ1 ～ ϕ12
	无限涂层 30°螺旋角4刃平底铣刀 MUGEN COATING 4-Flute LEAD30 End Mill	MX430	ϕ1 ～ ϕ12
	无限涂层 35°螺旋角4刃平底铣刀 MUGEN COATING 4-Flute LEAD35 End Mill	MX435	ϕ1 ～ ϕ12
	无限涂层 40°螺旋角4刃平底铣刀 MUGEN COATING 4-Flute LEAD40 End Mill	MX440	ϕ1 ～ ϕ12
	无限涂层 45°螺旋角4刃平底铣刀 MUGEN COATING 4-Flute LEAD45 End Mill	MX445	ϕ1 ～ ϕ12
	无限涂层 短刃尖角造型2刃平底铣刀 MUGEN COATING 2-Flute Sharp Edge Short End Mill	MSES230P	ϕ0.1 ～ ϕ12
	无限涂层 2刃平底铣刀 MUGEN COATING 2-Flute End Mill	MSE230	ϕ0.1 ～ ϕ12
	无限涂层 2刃中刃平底铣刀 MUGEN COATING 2-Flute Medium End Mill	MSEM230	ϕ0.5 ～ ϕ12
	无限涂层 外径标识2刃平底铣刀 MUGEN COATING 2-Flute End Mill with Measured Diameter	MSE230M	ϕ0.1 ～ ϕ6
	无限涂层 2刃平底铣刀 MUGEN COATING 2-Flute End Mill	MSE245	ϕ2 ～ ϕ12
	无限涂层 3刃平底铣刀 MUGEN COATING 3-Flute End Mill	MSE345	ϕ3 ～ ϕ20
	无限涂层 4刃尖角造型平底铣刀 MUGEN COATING 4-Flute Sharp Edge End Mill	MSE430P	ϕ1 ～ ϕ12
	无限涂层 4刃平底铣刀 MUGEN COATING 4-Flute End Mill	MSE430	ϕ1 ～ ϕ20
	无限涂层 4刃中刃平底铣刀 MUGEN COATING 4-Flute Medium End Mill	MSEM430	ϕ1 ～ ϕ20
	无限涂层 4刃平底铣刀 MUGEN COATING 4-Flute End Mill	MSE445	ϕ2 ～ ϕ20
	无限涂层 高硬度材料用4刃平底铣刀 MUGEN COATING 4-Flute End Mill for Hardened Steel	MHD445	ϕ1 ～ ϕ4

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P	P	P	H				M	S	N	N	N	O	O	O	
											碳素钢 Carbon Steel	合金钢 Alloy Steel	调质钢 Prehardened Steel	高硬度钢 Hardened Steel				不锈钢 Stainless Steel	耐热合金 等 Heat Resistant Alloy etc	铝合金 Aluminium Alloy	铜合金 Copper	钨铜 Copper Tungsten	树脂 Resin	石墨 Graphite	硬脆材 Hard Brittle Material		
														～52 HRC	～60 HRC	～65 HRC	～70 HRC										
常规系列 无限涂层 Regular Line MUGEN COATING																											
平底 Square																											
∞	2	25°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-020
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-022
∞	2	35°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-024
∞	2	40°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-026
∞	2	45°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-028
∞	4	25°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-040
∞	4	30°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-042
∞	4	35°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-044
∞	4	40°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-046
∞	4	45°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-048
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	D-030
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-032
∞	2	30°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-038
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-036
∞	2	45°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	D-056
∞	3	45°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	D-058
∞	4	30°	Side	–	Face	–	–	–	–	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	D-050
∞	4	30°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-052
∞	4	30°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-054
∞	4	45°	Side	–	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	D-060
∞	4	45°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	–	–	–	–	–	–	–	–	–	–	–	D-074

按［系列］搜索

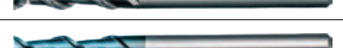
Search from Series

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
常规系列 无限涂层　Regular Line MUGEN COATING			
平底　Square			
	无限涂层 高硬度材料用6刃平底铣刀 MUGEN COATING 6-Flute End Mill for Hardened Steel	MHD645	ϕ5 ～ ϕ12
球头　Ball			
	无限涂层 2刃球头铣刀 MUGEN COATING 2-Flute Ball End Mill	MSB230	R0.05 ～ R10
	无限涂层 3刃球头铣刀 MUGEN COATING 3-Flute Ball End Mill	MSB345	R0.5 ～ R6
	无限涂层 超高精度加工用球头铣刀 MUGEN COATING Profit Ball End Mill	MSB230G2	R0.05 ～ R3
	无限涂层 短刃造型球头铣刀 MUGEN COATING 2-Flute Short Flute Ball End Mill	MSB230S	R0.1 ～ R6
	无限涂层 短柄造型球头铣刀（热缩刀柄用） MUGEN COATING 2-Flute Ball End Mill with Short Shank	MSB230SF	R0.1 ～ R6
	无限涂层 长柄造型球头铣刀 MUGEN COATING 2-Flute Long Ball End Mill	MSBL230	R0.5 ～ R5
圆鼻　Corner Radius			
	无限涂层 2刃圆鼻铣刀 MUGEN COATING 2-Flute Corner Radius End Mill	MSRS230	ϕ1 × R0.1 ～ ϕ5 × R1.5
	无限涂层 4刃圆鼻铣刀 MUGEN COATING 4-Flute Corner Radius End Mill	MSRS430	ϕ6 × R0.1 ～ ϕ12 × R3
长颈平底　Long Neck Square			
	无限涂层 2刃长颈平底铣刀（深沟加工用） MUGEN COATING 2-Flute Long Neck End Mill	MHR230	ϕ0.1 ～ ϕ6
	无限涂层 4刃长颈平底铣刀（深沟加工用） MUGEN COATING 4-Flute Long Neck End Mill	MHR430	ϕ1 ～ ϕ10
长颈球头　Long Neck Ball			
	无限涂层 长颈球头铣刀（深沟加工用） MUGEN COATING 2-Flute Long Neck Ball End Mill	MRB230	R0.05 ～ R3
	无限涂层 短柄造型长颈球头铣刀（热缩刀柄用） MUGEN COATING 2-Flute Long Neck Ball End Mill with Short Shank	MRB230SF	R0.1 ～ R1.5
长颈锥形球头　Long Neck Tapered Ball			
	无限涂层 长颈锥形球头铣刀 MUGEN COATING 2-Flute Long Taper Neck Ball End Mill	MRBTN230	R0.1 × 颈角30' ～ R2 × 颈角1°
长颈圆鼻　Long Neck Corner Radius			
	无限涂层 2刃长颈圆鼻铣刀 MUGEN COATING 2-Flute Long Neck Corner Radius End Mill	MHR230R	ϕ0.2 × R0.05 ～ ϕ6 × R1
	无限涂层 4刃长颈圆鼻铣刀 MUGEN COATING 4-Flute Long Neck Corner Radius End Mill	MHR430R	ϕ1 × R0.05 ～ ϕ6 × R1
长颈锥形圆鼻　Long Neck Tapered Corner Radius			
	无限涂层 长颈锥形圆鼻铣刀 MUGEN COATING 2-Flute Long Taper Neck Corner Radius End Mill	MSTNR230	ϕ0.2 × R0.05 × 颈角1° ～ ϕ3 × R0.5 × 颈角1°

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material														页面 Page
											P	P	P	H				M	S	N	N	N	O	O	O	
											碳素钢 Carbon Steel	合金钢 Alloy Steel	调质钢 Prehardened Steel	高硬度钢 Hardened Steel ～52 HRC	高硬度钢 Hardened Steel ～60 HRC	高硬度钢 Hardened Steel ～65 HRC	高硬度钢 Hardened Steel ～70 HRC	不锈钢 Stainless Steel	耐热合金 等 Heat Resistant Alloy etc	铝合金 Aluminium Alloy	铜・铜合金 Copper	钨铜 Copper Tungsten	树脂 Resin	石墨 Graphite	硬脆材 Hard Brittle Material	
常规系列 无限涂层　Regular Line MUGEN COATING																									
平底　Square																									
∞	6	45°	Side	Slot	Face	–	–	–	–	–	–	–	○	◎	–	–	–	–	–	–	–	–	–	–	D-076
球头　Ball																									
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-018
∞	3	45°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-022
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-008
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-010
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-014
∞	2	30°	–	–	–	–	3D	–	–	–	○	○	–	–	–	–	–	–	–	○	○	–	○	–	–	E-024
圆鼻　Corner Radius																									
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-010
∞	4	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-012
长颈平底　Long Neck Square																									
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-090
∞	4	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-102
长颈球头　Long Neck Ball																									
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-058
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-054
长颈锥形球头　Long Neck Tapered Ball																									
∞	2	30°	–	–	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-082
长颈圆鼻　Long Neck Corner Radius																									
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-042
∞	4	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-056
长颈锥形圆鼻　Long Neck Tapered Corner Radius																									
∞	2	30°	Side	Slot	Face	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-062

按［系列］搜索

Search from Series

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
锥刃 Tapered			
锥刃 Tapered			
	无限涂层 锥刃平底铣刀 MUGEN COATING 2-Flute Taper End Mill	MTE230	前端刀径φ0.2 × 锥度半角30' ～前端刀径φ10 × 锥度半角5°
	无限涂层 深沟加工用锥刃铣刀 MUGEN COATING 4-Flute Taper End Mill for Deep Rib	MRT425	前端刀径φ0.2 × 锥度半角30' ～前端刀径φ3 × 锥度半角2°
锥刃球头 Tapered Ball			
	无限涂层 锥刃球头铣刀 MUGEN COATING 2-Flute Taper Ball End Mill	MTB230	前端刀径R0.1 × 锥度半角1° ～前端刀径R2 × 锥度半角15°
高效率加工 High Efficient Milling			
平底 Square			
	无限白金涂层 SUS用高效率“Z”铣刀 MUGEN COATING PREMIUM 4-Flute High Efficient “Z” End Mill for Stainless Steels	MSUSZ440	φ1 ～ φ6
	无限涂层 SC用高效率“Z”铣刀 MUGEN COATING 4-Flute High Efficient “Z” End Mill for Carbon Steels	MSCZ440	φ1 ～ φ6
	无限涂层 重切削高效率平底铣刀“Power Z” MUGEN COATING 3-Flute POWER “Z” End Mill	MSZ345	φ1 ～ φ12
长颈平底 Long Neck Square			
	无限白金涂层 SUS用高效率“Z”长颈铣刀 MUGEN COATING PREMIUM 4-Flute Long Neck High Efficient “Z” End Mill for Stainless Steels	MSUSZ440-LN	φ1 ～ φ6
	无限涂层 SC用高效率“Z”长颈铣刀 MUGEN COATING 4-Flute Long Neck High Efficient “Z” End Mill for Carbon Steels	MSCZ440-LN	φ1 ～ φ6
圆鼻 Corner Radius			
	无限白金涂层 强力重切削用4刃圆鼻铣刀 MUGEN COATING PREMIUM Power Corner Radius End Mill	MSXH440R	φ3 × R0.3 ～φ12 × R2
	无限涂层 强力重切削用4刃圆鼻铣刀 MUGEN COATING Power Corner Radius End Mill	MSX440	φ3 × R0.2 ～φ20 × R1
铝合金加工 Aluminium Milling			
平底 Square			
	铝合金加工用2刃平底铣刀2倍刃长型 2-Flute L/D=2 End Mill for Aluminium	AL2D-2	φ0.5 ～ φ12
	DLC涂层 铝合金加工用2刃平底铣刀2倍刃长型 DLC COATING 2-Flute L/D=2 End Mill for Aluminium	AL2D-2DLC	φ0.5 ～ φ12
	铝合金加工用2刃平底铣刀3倍刃长型 2-Flute L/D=3 End Mill for Aluminium	AL3D-2	φ1 ～ φ12
	DLC涂层 铝合金加工用2刃平底铣刀3倍刃长型 DLC COATING 2-Flute L/D=3 End Mill for Aluminium	AL3D-2DLC	φ1 ～ φ12
	铝合金加工用2刃平底铣刀4倍刃长型 2-Flute L/D=4 End Mill for Aluminium	AL4D-2	φ1 ～ φ12
	DLC涂层 铝合金加工用2刃平底铣刀4倍刃长型 DLC COATING 2-Flute L/D=4 End Mill for Aluminium	AL4D-2DLC	φ1 ～ φ12
	铝合金加工用2刃平底铣刀5倍刃长型 2-Flute L/D=5 End Mill for Aluminium	AL5D-2	φ1 ～ φ12

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																		页面 Page
											P	P	P	H				M	S	N	N	N	O	O	O		
											碳素钢 Carbon Steel	合金钢 Alloy Steel	调质钢 Prehardened Steel	高硬度钢 Hardened Steel ～52 HRC	高硬度钢 Hardened Steel ～60 HRC	高硬度钢 Hardened Steel ～65 HRC	高硬度钢 Hardened Steel ～70 HRC	不锈钢 Stainless Steel	耐热合金 等 Heat Resistant Alloy etc	铝合金 Aluminium Alloy	铜・铜合金 Copper	钨铜 Copper Tungsten	树脂 Resin	石墨 Graphite	硬脆材 Hard Brittle Material		
锥刃 Tapered																													
锥刃 Tapered																													
∞	2	30°	Side	Slot	–	–	–	–	–	–	◎	◎	◎	○	–	–	–	–	–	○	○	–	○	–	–	–		G-002
∞	4	25°	–	Slot	–	–	–	–	–	–	◎	◎	◎	○	–	–	–	–	–	–	–	–	–	–	–	–		G-008
锥刃球头 Tapered Ball																													
∞	2	30°	Side	Slot	–	–	3D	–	–	–	◎	◎	◎	○	–	–	–	–	–	○	○	–	○	–	–	–		G-012
高效率加工 High Efficient Milling																													
平底 Square																													
∞ Premium	4	40°/42°	Side	Slot	Face	Plunge	–	–	–	–	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	–		D-018
∞	4	40°/42°	Side	Slot	Face	Plunge	–	–	–	–	◎	◎	◎	–	–	–	–	–	–	–	–	–	–	–	–	–		D-064
∞	3	45°	Side	Slot	Face	Plunge	–	–	–	–	◎	◎	◎	–	–	–	–	○	–	–	–	–	–	–	–	–		D-062
长颈平底 Long Neck Square																													
∞ Premium	4	40°/42°	Side	Slot	Face	Plunge	–	–	–	–	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	–		D-088
∞	4	40°/42°	Side	Slot	Face	Plunge	–	–	–	–	◎	◎	◎	–	–	–	–	–	–	–	–	–	–	–	–	–		D-110
圆鼻 Corner Radius																													
∞ Premium	4	40°/42°	Side	Slot	Face		–	–	–	–	–	◎	◎	–	–	–	–	◎	◎	–	–	–	–	–	–	–		F-002
∞	4	35°/38°	Side	Slot	Face		–	–	–	–	◎	◎	◎	–	–	–	–	◎	–	–	–	–	–	–	–	–		F-004
铝合金加工 Aluminium Milling																													
平底 Square																													
WC	2	45°	Side	Slot	Face		–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	–		D-116
DLC	2	45°	Side	Slot	Face		–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	–		D-126
WC	2	45°	Side	Slot	Face		–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	–		D-118
DLC	2	45°	Side	Slot	Face		–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	–		D-128
WC	2	45°	Side	–	Face		–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	–		D-120
DLC	2	45°	Side	–	Face		–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	–		D-130
WC	2	45°	Side	–	Face		–	–	–	–	–	–	–	–	–	–	–	–	–	◎	○	–	○	–	–	–		D-122

按［系列］搜索

Search from Series

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
铝合金加工 Aluminium Milling			
平底 Square			
	DLC涂层 铝合金加工用2刃平底铣刀5倍刃长型 DLC COATING 2-Flute L/D=5 End Mill for Aluminium	AL5D-2DLC	ϕ1 ～ ϕ12
	铝合金用高效率铣刀3刃3倍刃长 High efficient 3-Flute End Mill for Aluminium L/D=3	AL3D-345	ϕ1 ～ ϕ12
	铝合金加工用长柄铣刀（刀柄内缩造型） 3-Flute Long Shank End Mill for Aluminium	AL-3LS	ϕ5 ～ ϕ12
平底 Square / 长颈平底 Long Nek Square			
	铝合金用高效率铣刀3刃1.5倍刃长 High efficient 3-Flute End Mill for Aluminium L/D=1.5	ALZ345	ϕ1 ～ ϕ12
长颈平底 Long Neck Square			
	DLC涂层 铝合金用高效率铣刀3刃1.5倍刃长 DLC COATING high efficient 3-Flute End Mill for Aluminium L/D=1.5	ALZ345-DLC	ϕ1 ～ ϕ12
球头 Ball / 长颈球头 Long Neck Ball			
	铝合金加工用球头铣刀 Ball End Mill for Aluminium	ALB225	R0.3 ～ R6
	DLC涂层 铝合金加工用球头铣刀 DLC COATING Ball End Mill for Aluminium	ALB225-DLC	R0.3 ～ R6
圆鼻 Corner Radius			
	铝合金用高效率圆鼻铣刀3刃3倍刃长 High Efficient 3-Flute Corner Radius End Mill for Aluminium L/D=3	AL3D-345R	ϕ2 × R0.2 ～ ϕ12 × R2
铜电极加工 Copper Electrode Milling			
长颈平底 Long Neck Square			
	铜电极加工用长颈平底铣刀 Long Neck Square End Mill for Copper Electrode	DHR237	ϕ0.1 ～ ϕ6
长颈球头 Long Neck Ball			
	铜电极加工用长颈球头铣刀 Long Neck Ball End Mill for Copper Electrode	DRB230	R0.05 ～ R3
长颈圆鼻 Long Neck Corner Radius			
	铜电极加工用长颈圆鼻铣刀 Long Neck Corner Radius End Mill for Copper Electrode	DHR237R	ϕ0.2 × R0.02 ～ϕ6 × R1
树脂加工 Resin Milling			
平底 Square / 长颈平底 Long Neck Square			
	树脂加工用平底铣刀“Clear Cut”短刃造型 Short Flute End Mill for Resin	RSES230	ϕ0.1 ～ ϕ6
	树脂加工用平底铣刀“Clear Cut” End Mill for Resin	RSE230	ϕ0.1 ～ ϕ6
球头 Ball / 长颈球头 Long Neck Ball			
	树脂加工用球头铣刀“Clear Cut” Ball End Mill for Resin	RSB230	R0.1 ～ R3

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material: P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金 等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
铝合金加工 Aluminium Milling																										
平底 Square																										
DLC	2	45°	Side	-	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-132
WC	3	45°	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-124
WC	3	45°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-138
平底 Square / 长颈平底 Long Neck Square																										
WC	3	45°	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-134
长颈平底 Long Neck Square																										
DLC	3	45°	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-136
球头 Ball / 长颈球头 Long Neck Ball																										
WC	2	25°	-	-	-	-	3D	-	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	E-094
DLC	2	25°	-	-	-	-	3D	-	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	E-096
圆鼻 Corner Radius																										
WC	3	45°	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	F-014
铜电极加工 Copper Electrode Milling																										
长颈平底 Long Neck Square																										
DLC	2	37.5°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	◎	◎	○	-	-	D-154
长颈球头 Long Neck Ball																										
DLC	2	30°	-	-	-	-	3D	-	-	-	-	-	-	-	-	-	-	-	-	○	◎	◎	○	-	-	E-102
长颈圆鼻 Long Neck Corner Radius																										
DLC	2	37.5°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	◎	◎	○	-	-	F-070
树脂加工 Resin Milling																										
平底 Square / 长颈平底 Long Neck Square																										
MG	2	30°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	○	-	◎	-	-	D-140
MG	2	30°	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	○	-	◎	-	-	D-146
球头 Ball / 长颈球头 Long Neck Ball																										
MG	2	30°	-	-	-	-	3D	-	-	-	-	-	-	-	-	-	-	-	-	○	○	-	◎	-	-	E-098

按［系列］搜索

Search from Series

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
硬脆材加工 Hard Brittle Material Milling			
长颈平底 Long Neck Square			
	硬脆材加工用平底铣刀 End Mill for Hard Brittle Materials	DCMS	ϕ0.3 ～ ϕ2
球头 Ball / 长颈球头 Long Neck Ball			
	硬脆材加工用球头铣刀 Ball End Mill for Hard Brittle Materials	DCMB	R0.1 ～ R1
石墨加工 Graphite Milling			
平底 Square			
	钻石涂层 2 刃平底铣刀 DIAMOND COATING 2-Flute End Mill	DCSE235	ϕ0.5 ～ ϕ6
长颈平底 Long Neck Square			
	钻石涂层 2 刃长颈平底铣刀 DIAMOND COATING 2-Flute Long Neck End Mill	DCHR230	ϕ0.5 ～ ϕ6
长颈球头 Long Neck Ball			
	钻石涂层 长颈球头铣刀 DIAMOND COATING 2-Flute Long Neck Ball End Mill	DCRB230	R0.2 ～ R3
钻头 Drill			
平底钻头 Flat Drill			
	无限涂层平底钻头 MUGEN COATING Flat Drill	MFD	ϕ0.1 ～ ϕ6
微径钻头 Micro Drill			
	无限微细涂层 微径短刃造型钻头 MUGEN MICRO COATING Micro Drill Short	NSMD-MS	ϕ0.01 ～ ϕ0.05
	微径钻头 短刃造型 Micro Drill Short	NSMD-S	ϕ0.01 ～ ϕ0.05
	无限微细涂层 微径钻头 MUGEN MICRO COATING Micro Drill	NSMD-M	ϕ0.01 ～ ϕ0.1
	微径钻头 Micro Drill	NSMD	ϕ0.01 ～ ϕ0.1
	无限微细涂层 微径定位钻头（底孔加工用） MUGEN MICRO COATING Micro Point Drill (Drill for Guide Hole)	NSPD-M	ϕ0.01 ～ ϕ0.1
	微径定位钻头（底孔加工用） Micro Point Drill (Drill for Guide Hole)	NSPD	ϕ0.01 ～ ϕ0.1
钻头 Drill			
	无限涂层 小径钻头 MUGEN COATING Miniature Drill	MDR-R	ϕ0.1 ～ ϕ1
	无限涂层 小径定位钻头（底孔加工用） MUGEN COATING Point Drill (Drill for Guide Hole)	MDR-PD	ϕ0.1 ～ ϕ1
	无限白金涂层 高硬度钢材加工用小径钻头 MUGEN COATING PREMIUM Precision Drill for Hardened Steel	MSDH	ϕ0.1 ～ ϕ1

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ~52 HRC	H ~60 HRC	H ~65 HRC	H ~70 HRC	M 不锈钢 Stainless Steel	S 耐热合金 等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜 Copper	N 铜合金 Copper Alloy	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
硬脆材加工 Hard Brittle Material Milling																											
长颈平底 Long Neck Square																											
DIA 6 8 10	2	30°	–	–	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	C-008
球头 Ball / 长颈球头 Long Neck Ball																											
DIA	2	20°	–	–	–	–	3D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	C-014
石墨加工 Graphite Milling																											
平底 Square																											
DIA	2	35°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	–	C-010
长颈平底 Long Neck Square																											
DIA	2	30°	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	–	C-012
长颈球头 Long Neck Ball																											
DIA	2	30°	–	–	–	–	3D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	–	C-016
钻头 Drill																											
平底钻头 Flat Drill																											
∞	2	20°·30° (Ø0.3 - Ø3) (Ø3 - Ø20.5)	–	–	–	–	–	Flat Drill	–	–	◎	◎	○	–	–	–	○	–	○	○	–	–	–	–	H-016
微径钻头 Micro Drill																											
∞ Micro	2	30°	–	–	–	–	–	Drill	–	–	○	○	○	–	–	–	○	○	○	–	–	–	–	–	H-006
SMG	2	30°	–	–	–	–	–	Drill	–	–	–	–	–	–	–	–	○	–	○	○	–	○	–	–	H-012
∞ Micro	2	30°	–	–	–	–	–	Drill	–	–	○	○	○	–	–	–	○	○	○	–	–	–	–	–	H-004
SMG	2	30°	–	–	–	–	–	Drill	–	–	–	–	–	–	–	–	○	–	○	○	–	○	–	–	H-010
∞ Micro	2	30°	–	–	–	–	–	Drill	–	–	○	○	○	–	–	–	○	○	○	–	–	–	–	–	H-008
SMG	2	30°	–	–	–	–	–	Drill	–	–	–	–	–	–	–	–	○	–	○	○	–	○	–	–	H-014
钻头 Drill																											
∞	2	30°	–	–	–	–	–	Drill	–	–	◎	◎	○	–	–	–	○	–	○	○	–	–	–	–	H-020
∞	2	25°	–	–	–	–	–	Drill	–	–	◎	◎	○	–	–	–	○	–	○	○	–	–	–	–	H-024
∞ Premium	2	20°	–	–	–	–	–	Drill	–	–	–	–	○	◎	◎	◎	–	–	–	–	–	–	–	–	H-002

按［系列］搜索

Search from Series

图片 Photo	产品名称 Product Name	型号 Model	规格 Size
螺纹铣刀 Thread Mill			
螺纹铣刀 Thread Mill			
	无限涂层 公制规格螺纹铣刀(内螺纹用) MUGEN COATING M-Thread Mill (for Internal Thread)	MMTM	M1 ～ M6
	无限涂层 微径螺纹铣刀(内螺纹用) MUGEN COATING Micro Thread Cutting Tool (for Internal Thread)	MMTS	S0.1 ～ S1.4
倒角刀 Chamfering			
倒角刀 Chamfering			
	无限涂层 内圆弧倒角刀 MUGEN COATING 2-Flute Inner Radius Cutter	MIR200	R0.1 ～ R5
	斜面加工用倒角刀 Chamfer Cutter	NSCV	ϕ4 ϕ6
	无限涂层 斜面加工用倒角刀 MUGEN COATING Chamfer Cutter	NSCV-M	ϕ4 ϕ6

材质・涂层 Material・Coating	刃数 Number of Flute	螺旋角 Helix Angle	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	钻孔加工 Drilling	螺纹加工 Thread Milling	斜面・R 倒角加工 C・R Chamfering	可对应加工材料 Work Material																页面 Page
											P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金 等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜/铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
螺纹铣刀 Thread Mill																											
螺纹铣刀 Thread Mill																											
∞	4 6	–	–	–	–	–	–	–	Thread	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	I-004
∞	2	–	–	–	–	–	–	–	Thread	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	I-002
倒角刀 Chamfering																											
倒角刀 Chamfering																											
∞	2	–	–	–	–	–	–	–	–	R	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	J-006
MG	3	–	–	–	–	–	–	–	–	C	–	–	–	–	–	–	–	–	–	◎	◎	–	◎	–	–	J-004
∞	3	–	–	–	–	–	–	–	–	C	◎	◎	◎	–	–	–	–	○	–	–	–	–	–	–	–	J-002

按［型号］搜索
Search from Model

型号 Model	形状 Shape	规格 Size	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	可对应加工材料 Work Material: P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Preharded Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
AL-3LS	平底 Square	ϕ5 ～ ϕ12	WC	3	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-138
AL2D-2	平底 Square	ϕ0.5 ～ ϕ12	WC	2	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-116
AL2D-2DLC	平底 Square	ϕ0.5 ～ ϕ12	DLC	2	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-126
AL3D-2	平底 Square	ϕ1 ～ ϕ12	WC	2	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-118
AL3D-2DLC	平底 Square	ϕ1 ～ ϕ12	DLC	2	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-128
AL3D-345	平底 Square	ϕ1 ～ ϕ12	WC	3	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-124
AL3D-345R	圆鼻 Corner Radius	ϕ2 × R0.2 ～ ϕ12 × R2	WC	3	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	F-014
AL4D-2	平底 Square	ϕ1 ～ ϕ12	WC	2	Side	-	Face	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-120
AL4D-2DLC	平底 Square	ϕ1 ～ ϕ12	DLC	2	Side	-	Face	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-130
AL5D-2	平底 Square	ϕ1 ～ ϕ12	WC	2	Side	-	Face	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-122
AL5D-2DLC	平底 Square	ϕ1 ～ ϕ12	DLC	2	Side	-	Face	-	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-132
ALB225	球头 / 长颈球头 Ball / Long Neck Ball	R0.3 ～ R6	WC	2	-	-	-	-	3D	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	E-094
ALB225-DLC	球头 / 长颈球头 Ball / Long Neck Ball	R0.3 ～ R6	DLC	2	-	-	-	-	3D	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	E-096
ALZ345	平底 / 长颈平底 Square / Long Neck Square	ϕ1 ～ ϕ12	WC	3	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-134
ALZ345-DLC	长颈平底 Long Neck Square	ϕ1 ～ ϕ12	DLC	3	Side	Slot	Face	Plunge	-	-	-	-	-	-	-	-	-	-	◎	○	-	○	-	-	D-136
DCHR230	长颈平底 Long Neck Square	ϕ0.5 ～ ϕ6	DIA	2	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	-	C-012
DCMB	球头 / 长颈球头 Ball / Long Neck Ball	R0.1 ～ R1	DIA	2	-	-	-	-	3D	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	-	C-014

按［型号］搜索
Search from Model

型号 Model	形状 Shape	规格 Size	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	可对应加工材料 Work Material: P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Preharded Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
DCMS	长颈平底 Long Neck Square	ϕ0.3 ～ ϕ2	DIA	6 8 10	-	-	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	C-008
DCRB230	长颈球头 Long Neck Ball	R0.2 ～ R3	DIA	2	-	-	-	-	3D	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	-	C-016
DCSE235	平底 Square	ϕ0.5 ～ ϕ6	DIA	2	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	◎	-	C-010
DHR237	长颈平底 Long Neck Square	ϕ0.1 ～ ϕ6	DLC	2	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	○	◎	◎	○	-	-	D-154
DHR237R	长颈圆鼻 Long Neck Corner Radius	ϕ0.2 × R0.02 ～ϕ6 × R1	DLC	2	Side	Slot	Face	-	-	-	-	-	-	-	-	-	-	-	○	◎	◎	○	-	-	F-070
DRB230	长颈球头 Long Neck Ball	R0.05 ～ R3	DLC	2	-	-	-	-	3D	-	-	-	-	-	-	-	-	-	○	◎	◎	○	-	-	E-102
MACH225	长颈球头 Long Neck Ball	R0.1 ～ R3	Premium	2	-	-	-	-	3D	-	-	◎	◎	◎	◎	○	-	○	○	-	-	-	-	-	E-050
MACH225SF	长颈球头 Long Neck Ball	R0.1 ～ R3	Premium	2	-	-	-	-	3D	-	-	◎	◎	◎	◎	○	-	○	○	-	-	-	-	-	E-048
MDR-PD	钻头 Drill	ϕ0.1 ～ ϕ1	∞	2	-	-	-	-	-	◎	◎	○	-	-	-	-	○	-	○	○	-	-	-	-	H-024
MDR-R	钻头 Drill	ϕ0.1 ～ ϕ1	∞	2	-	-	-	-	-	◎	◎	○	-	-	-	-	○	-	○	○	-	-	-	-	H-020
MFD	平底钻头 Flat Drill	ϕ0.1 ～ ϕ6	∞	2	-	-	-	-	-	◎	◎	○	-	-	-	-	○	-	○	○	-	-	-	-	H-016
MHD445	平底 Square	ϕ1 ～ ϕ4	∞	4	Side	Slot	Face	-	-	-	-	○	◎	-	-	-	-	-	-	-	-	-	-	-	D-074
MHD645	平底 Square	ϕ5 ～ ϕ12	∞	6	Side	Slot	Face	-	-	-	-	○	◎	-	-	-	-	-	-	-	-	-	-	-	D-076
MHDH445	平底 Square	ϕ1 ～ ϕ4	Premium	4	Side	Slot	Face	-	-	-	-	○	◎	◎	◎	○	-	-	-	-	-	-	-	-	D-070
MHDH445R	圆鼻 Corner Radius	ϕ3 × R0.2 ～ ϕ4 × R0.5	Premium	4	Side	Slot	Face	-	-	-	-	○	◎	◎	◎	○	-	-	-	-	-	-	-	-	F-006
MHDH645	平底 Square	ϕ5 ～ ϕ12	Premium	6	Side	Slot	Face	-	-	-	-	○	◎	◎	◎	○	-	-	-	-	-	-	-	-	D-072
MHDH645R	圆鼻 Corner Radius	ϕ5 × R0.2 ～ ϕ12 × R2	Premium	6	Side	Slot	Face	-	-	-	-	○	◎	◎	◎	○	-	-	-	-	-	-	-	-	F-008

按［型号］搜索

Search from Model

型号 Model	形状 Shape	规格 Size	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	可对应加工材料 Work Material: P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Preharden Steel	H 高硬度钢 Hardened Steel ～52 HRC	～60 HRC	～65 HRC	～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
MHDSH445	平底 Square	ϕ1 ～ ϕ4	Plus	4	Side	Slot	Face	–	–	–	–	–	–	–	○	○	–	–	–	–	–	–	–	–	D-066
MHDSH645	平底 Square	ϕ5 ～ ϕ6	Plus	6	Side	Slot	Face	–	–	–	–	–	–	–	○	○	–	–	–	–	–	–	–	–	D-068
MHR230	长颈平底 Long Neck Square	ϕ0.1 ～ ϕ6	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-090
MHR230R	长颈圆鼻 Long Neck Corner Radius	ϕ0.2 × R0.05 ～ ϕ6 × R1	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-042
MHR430	长颈平底 Long Neck Square	ϕ1 ～ ϕ10	∞	4	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-102
MHR430R	长颈圆鼻 Long Neck Corner Radius	ϕ1 × R0.05 ～ ϕ6 × R1	∞	4	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-056
MHRH230	长颈平底 Long Neck Square	ϕ0.1 ～ ϕ3	Premium	2	Side	Slot	Face	–	–	–	–	○	○	○	○	–	○	○	–	–	–	–	–	–	D-078
MHRH230R	长颈圆鼻 Long Neck Corner Radius	ϕ0.2 × R0.02 ～ ϕ0.9 × R0.1	Premium	2	Side	Slot	Face	–	–	–	–	○	○	○	○	–	○	○	–	–	–	–	–	–	F-026
MHRH430	长颈平底 Long Neck Square	ϕ1 ～ ϕ6	Premium	4	Side	Slot	Face	–	–	–	–	○	○	○	○	–	○	○	–	–	–	–	–	–	D-084
MHRH430R	长颈圆鼻 Long Neck Corner Radius	ϕ0.1 × R0.01 ～ ϕ6 × R1	Premium	4	Side	Slot	Face	–	–	–	–	○	○	○	○	–	○	○	–	–	–	–	–	–	F-030
MHRSH430RSF	长颈圆鼻 Long Neck Corner Radius	ϕ0.1 × R0.01 ～ ϕ6 × R1	Plus	4	Side	Slot	Face	–	–	–	–	–	–	–	○	○	–	–	–	–	–	–	–	–	F-016
MIR200	倒角 Chamfering	R0.1 ～ R5	∞	2	–	–	–	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	J-006
MLFH330	椭圆弧形 Lens Form	ϕ1 × R1 ～ ϕ6 × R8	Premium	3	–	–	–	–	3D	–	–	◎	○	○	○	–	–	–	–	–	–	–	–	–	E-052
MMTM	螺纹铣刀 Thread Mill	M1 ～ M6	∞	4 6	–	–	–	–	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	I-004
MMTS	螺纹铣刀 Thread Mill	S0.1 ～ S1.4	∞	2	–	–	–	–	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	I-002
MRB230	长颈球头 Long Neck Ball	R0.05 ～ R3	∞	2	–	–	–	–	3D	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-058
MRB230SF	长颈球头 Long Neck Ball	R0.1 ～ R1.5	∞	2	–	–	–	–	3D	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-054

按［型号］搜索

Search from Model

型号 Model	形状 Shape	规格 Size	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	可对应加工材料 Work Material: P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Preharden Steel	H 高硬度钢 Hardened Steel ～52 HRC	～60 HRC	～65 HRC	～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
MRBH230	长颈球头 Long Neck Ball	R0.05 ～ R3	Premium	2	–	–	–	–	3D	–	–	◎	○	○	○	–	○	○	–	–	–	–	–	–	E-034
MRBSH230SF	长颈球头 Long Neck Ball	R0.05 ～ R3	Plus	2	–	–	–	–	3D	–	–	–	–	–	○	○	–	–	–	–	–	–	–	–	E-026
MRBSH330	长颈球头 Long Neck Ball	R0.1 ～ R3	Plus	3	–	–	–	–	3D	–	–	–	–	–	○	○	–	–	–	–	–	–	–	–	E-032
MRBTN230	长颈锥形球头 Long Neck Tapered Ball	R0.1 × 颈角30' ～ R2 × 颈角1°	∞	2	–	–	–	–	3D	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	E-082
MRBTNH230	长颈锥形球头 Long Neck Tapered Ball	R0.05 × 颈角3° ～ R2 × 颈角1°	Premium	2	–	–	–	–	3D	–	–	◎	○	○	○	–	○	○	–	–	–	–	–	–	E-070
MRBTNH345	长颈锥形球头 Long Neck Tapered Ball	R0.5 × 颈角30' ～ R2 × 颈角1°	Premium	3	–	–	–	–	3D	–	–	◎	○	○	○	–	○	○	–	–	–	–	–	–	E-078
MRT425	锥形 Tapered	前端刃径ϕ0.2 × 锥度半角30' ～ 前端刃径ϕ3 × 锥度半角2°	∞	4	–	Slot	–	–	–	◎	◎	◎	○	–	–	–	–	–	–	–	–	–	–	–	G-008
MSB230	球头 Ball	R0.05 ～ R10	∞	2	–	–	–	–	3D	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-018
MSB230G2	球头 Ball	R0.05 ～ R3	∞	2	–	–	–	–	3D	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-008
MSB230S	球头 Ball	R0.1 ～ R6	∞	2	–	–	–	–	3D	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-010
MSB230SF	球头 Ball	R0.1 ～ R6	∞	2	–	–	–	–	3D	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-014
MSB345	球头 Ball	R0.5 ～ R6	∞	3	–	–	–	–	3D	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	E-022
MSBH230	球头 Ball	R0.05 ～ R6	Premium	2	–	–	–	–	3D	–	–	◎	○	○	○	–	○	○	–	–	–	–	–	–	E-004
MSBH345	球头 Ball	R0.5 ～ R3	Premium	3	–	–	–	–	3D	–	–	◎	○	○	○	–	○	○	–	–	–	–	–	–	E-006
MSBL230	球头 Ball	R0.5 ～ R5	∞	2	–	–	–	–	3D	○	○	–	–	–	–	–	–	–	○	○	–	○	–	–	E-024
MSBSH330-5X	球头 Ball	R0.1 ～ R1	Plus	3	–	–	–	–	3D	–	–	–	–	–	○	○	–	–	–	–	–	–	–	–	E-002
MSCZ440	平底 Square	ϕ1 ～ ϕ6	∞	4	Side	Slot	Face	Plunge	–	◎	◎	◎	–	–	–	–	–	–	–	–	–	–	–	–	D-064

按［型号］搜索
Search from Model

型号 Model	形状 Shape	规格 Size	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	可对应加工材料 Work Material: P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Preharden Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
MSCZ440-LN	长颈平底 Long Neck Square	ϕ1 ～ ϕ6	∞	4	Side	Slot	Face	Plunge	–	◎	◎	◎	–	–	–	–	–	–	–	–	–	–	–	–	D-110
MSDH	钻头 Drill	ϕ0.1 ～ ϕ1	∞ Premium	2	–	–	–	–	–	–	–	○	○	○	○	–	–	–	–	–	–	–	–	–	H-002
MSE230	平底 Square	ϕ0.1 ～ ϕ12	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-032
MSE230M	平底 Square	ϕ0.1 ～ ϕ6	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-036
MSE245	平底 Square	ϕ2 ～ ϕ12	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	D-056
MSE345	平底 Square	ϕ3 ～ ϕ20	∞	3	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	D-058
MSE430	平底 Square	ϕ1 ～ ϕ20	∞	4	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-052
MSE430P	平底 Square	ϕ1 ～ ϕ12	∞	4	Side	–	Face	–	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	D-050
MSE445	平底 Square	ϕ2 ～ ϕ20	∞	4	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	○	○	○	–	○	–	–	D-060
MSEM230	平底 Square	ϕ0.5 ～ ϕ12	∞	2	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-038
MSEM430	平底 Square	ϕ1 ～ ϕ20	∞	4	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-054
MSES230P	平底 Square	ϕ0.1 ～ ϕ12	∞	2	Side	Slot	Face	–	–	◎	◎	◎	–	–	–	–	○	–	○	○	–	○	–	–	D-030
MSRS230	圆鼻 Corner Radius	ϕ1 × R0.1 ～ ϕ5 × R1.5	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-010
MSRS430	圆鼻 Corner Radius	ϕ6 × R0.1 ～ ϕ12 × R3	∞	4	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-012
MSTNR230	长颈锥形圆鼻 Long Neck Tapered Corner Radius	ϕ0.2 × R0.05 × 颈角1° ～ ϕ3 × R0.5 ×颈角1°	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	F-062
MSUSZ440	平底 Square	ϕ1 ～ ϕ6	∞ Premium	4	Side	Slot	Face	Plunge	–	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	D-018
MSUSZ440-LN	长颈平底 Long Neck Square	ϕ1 ～ ϕ6	∞ Premium	4	Side	Slot	Face	Plunge	–	–	–	–	–	–	–	–	◎	◎	–	–	–	–	–	–	D-088

按［型号］搜索
Search from Model

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MSX440	圆鼻 Corner Radius	ϕ3 × R0.2 ～ ϕ20 × R1	∞	4	Side	Slot	Face	–	–	◎	◎	◎	–	–	–	–	◎	–	–	–	–	–	–	–	F-004
MSXH440R	圆鼻 Corner Radius	ϕ3 × R0.3 ～ ϕ12 × R2	∞ Premium	4	Side	Slot	Face	–	–	–	◎	◎	–	–	–	–	◎	◎	–	–	–	–	–	–	F-002
MSZ345	平底 Square	ϕ1 ～ ϕ12	∞	3	Side	Slot	Face	Plunge	–	◎	◎	◎	–	–	–	–	○	–	–	–	–	–	–	–	D-062
MTB230	锥刃球头 Tapered Ball	前端刀径R0.1 × 锥度半角1° ～ 前端刀径R2 × 锥度半角15°	∞	2	Side	Slot	–	–	3D	◎	◎	◎	○	–	–	–	–	–	○	○	–	○	–	–	G-012
MTE230	锥形 Tapered	前端刀径ϕ0.2 × 锥度半角30' ～ 前端刀径ϕ10 × 锥度半角5°	∞	2	Side	Slot	–	–	–	◎	◎	◎	○	–	–	–	–	–	○	○	–	○	–	–	G-002
MX225	平底 Square	ϕ0.3 ～ ϕ12	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-020
MX230	平底 Square	ϕ0.1 ～ ϕ12	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-022
MX235	平底 Square	ϕ0.1 ～ ϕ12	∞	2	Side	Slot	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-024
MX240	平底 Square	ϕ0.3 ～ ϕ12	∞	2	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-026
MX245	平底 Square	ϕ0.3 ～ ϕ12	∞	2	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-028
MX425	平底 Square	ϕ1 ～ ϕ12	∞	4	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-040
MX430	平底 Square	ϕ1 ～ ϕ12	∞	4	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-042
MX435	平底 Square	ϕ1 ～ ϕ12	∞	4	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-044
MX440	平底 Square	ϕ1 ～ ϕ12	∞	4	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-046
MX445	平底 Square	ϕ1 ～ ϕ12	∞	4	Side	–	Face	–	–	◎	◎	◎	○	–	–	–	○	–	○	○	–	○	–	–	D-048
MXH225	平底 Square	ϕ0.1 ～ ϕ6	∞ Premium	2	Side	Slot	Face	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–	D-002
MXH225P	平底 Square	ϕ0.1 ～ ϕ6	∞ Premium	2	Side	–	Face	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–	D-012

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Search from Model

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MXH230	平底 Square	ϕ0.1 ～ ϕ6	Premium	2	Side	Slot	Face	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–	D-004
MXH230P	平底 Square	ϕ0.1 ～ ϕ6	Premium	2	Side	–	Face	–	–	–	–	◎	–	–	–	–	◎	◎	–	–	–	–	–	–	D-014
MXH235	平底 Square	ϕ0.1 ～ ϕ6	Premium	2	Side	Slot	Face	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–	D-006
MXH235P	平底 Square	ϕ0.1 ～ ϕ6	Premium	2	Side	–	Face	–	–	–	–	◎	–	–	–	–	◎	◎	–	–	–	–	–	–	D-016
MXH240	平底 Square	ϕ0.3 ～ ϕ6	Premium	2	Side	–	Face	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–	D-008
MXH245	平底 Square	ϕ0.3 ～ ϕ6	Premium	2	Side	–	Face	–	–	–	–	◎	○	–	–	–	◎	◎	–	–	–	–	–	–	D-010
NSCV	倒角 Chamfering	ϕ4 ϕ6	MG	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	◎	–	◎	–	–	J-004
NSCV-M	倒角 Chamfering	ϕ4 ϕ6	∞	3	–	–	–	–	–	◎	◎	◎	–	–	–	–	○	–	–	–	–	–	–	–	J-002
NSMB100	球头 Ball	R0.005 ～ R0.05	SMG	1	–	–	–	–	3D	○	○	○	–	–	–	–	○	–	○	○	–	○	–	–	E-092
NSMD	微径钻头 Micro Drill	ϕ0.01 ～ ϕ0.1	SMG	2	–	–	–	–	–	–	–	–	–	–	–	–	○	–	○	○	–	○	–	–	H-010
NSMD-M	微径钻头 Micro Drill	ϕ0.01 ～ ϕ0.1	∞ Micro	2	–	–	–	–	–	○	○	○	–	–	–	–	○	○	○	–	–	–	–	–	H-004
NSMD-MS	微径钻头 Micro Drill	ϕ0.01 ～ ϕ0.05	∞ Micro	2	–	–	–	–	–	○	○	○	–	–	–	–	○	○	○	–	–	–	–	–	H-006
NSMD-S	微径钻头 Micro Drill	ϕ0.01 ～ ϕ0.05	SMG	2	–	–	–	–	–	–	–	–	–	–	–	–	○	–	○	○	–	○	–	–	H-012
NSME100	平底 Square	ϕ0.01 ～ ϕ0.05	SMG	1	–	Slot	Face	–	–	○	○	○	–	–	–	–	○	–	○	○	–	○	–	–	D-112
NSME230	平底 Square	ϕ0.03 ～ ϕ0.09	SMG	2	–	Slot	Face	–	–	○	○	○	–	–	–	–	○	–	○	○	–	○	–	–	D-114
NSPD	微径钻头 Micro Drill	ϕ0.01 ～ ϕ0.1	SMG	2	–	–	–	–	–	–	–	–	–	–	–	–	○	–	○	○	–	○	–	–	H-014
NSPD-M	微径钻头 Micro Drill	ϕ0.01 ～ ϕ0.1	∞ Micro	2	–	–	–	–	–	○	○	○	–	–	–	–	○	○	○	–	–	–	–	–	H-008

按［型号］搜索

Search from Model

型号 Model	形状 Shape	规格 Size	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	可对应加工材料 Work Material P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Preharded Steel	H 高硬度钢 Hardened Steel ～52 HRC	～60 HRC	～65 HRC	～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	页面 Page
PCDRB	长颈球头 Long Neck Ball	R0.05 ～ R3	PCD	–	–	–	–	–	3D	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	◎	C-004
PCDRS	长颈圆鼻 Long Neck Corner Radius	ϕ0.3 × R0.05 ～ ϕ1 × R0.1	PCD	2 4 6	–	–	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	C-006
PCDSE	长颈平底 Long Neck Square	ϕ0.1 ～ ϕ1	PCD	2 6	–	–	Face	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	◎	C-002
RSB230	球头／长颈球头 Ball／Long Neck Ball	R0.1 ～ R3	MG	2	–	–	–	–	3D	–	–	–	–	–	–	–	–	–	○	○	–	◎	–	–	E-098
RSE230	平底／长颈平底 Square／Long Neck Square	ϕ0.1 ～ ϕ6	MG	2	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	○	○	–	◎	–	–	D-146
RSES230	平底／长颈平底 Square／Long Neck Square	ϕ0.1 ～ ϕ6	MG	2	Side	Slot	Face	–	–	–	–	–	–	–	–	–	–	–	○	○	–	◎	–	–	D-140
SFB200	长颈球头 Long Neck Ball	R0.1 ～ R1	CBN	2	–	–	–	–	3D	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-012
SHPR400	长颈圆鼻 Long Neck Corner Radius	ϕ0.1 × R0.01 ～ ϕ3 × R0.2	CBN	4	–	Slot	Face	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-034
SHR320	长颈圆鼻 Long Neck Corner Radius	ϕ0.5 × R0.1 ～ ϕ2 × R0.3	CBN	3	–	Slot	Face	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-032
SMB120	球头 Ball	R0.01 ～ R0.05	CBN	1	–	–	–	–	3D	–	–	○	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-008
SMB200	球头 Ball	R0.01 ～ R0.05	CBN	2	–	–	–	–	3D	–	–	○	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-010
SMEZ120	平底 Square	ϕ0.03 ～ ϕ0.1	CBN	1	–	Slot	–	–	–	–	–	○	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-002
SSB200	长颈球头 Long Neck Ball	R0.1 ～ R1	CBN	2	–	–	–	–	3D	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-022
SSBL200	长颈球头 Long Neck Ball	R0.05 ～ R1	CBN	2	–	–	–	–	3D	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-024
SSE400	长颈平底 Long Neck Square	ϕ0.1	CBN	4	–	Slot	Face	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-004
SSE600	长颈平底 Long Neck Square	ϕ0.2 ～ ϕ1	CBN	6	–	Slot	Face	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-006
SSF120	长颈圆鼻 Long Neck Corner Radius	ϕ0.2 × R0.05 ～ ϕ2 × R0.1	CBN	1	–	–	Face	–	–	–	–	–	◎	◎	◎	◎	–	–	–	–	–	–	–	–	B-040

按［型号］搜索
Search from Model

型号 Model	形状 Shape	规格 Size	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	可对应加工材料 Work Material														页面 Page
										P 碳素钢 Carbon Steel	P 合金钢 Alloy Steel	P 调质钢 Prehardened Steel	H 高硬度钢 Hardened Steel ～52 HRC	H ～60 HRC	H ～65 HRC	H ～70 HRC	M 不锈钢 Stainless Steel	S 耐热合金 等 Heat Resistant Alloy etc	N 铝合金 Aluminium Alloy	N 铜合金 Copper	N 钨铜 Copper Tungsten	O 树脂 Resin	O 石墨 Graphite	O 硬脆材 Hard Brittle Material	
SSPB220	长颈球头 Long Neck Ball	R0.1 ～ R3	CBN	2	–	–	–	–	3D	–	–	–	○	○	○	○	–	–	–	–	–	–	–	–	B-014
SSPBL220	长颈球头 Long Neck Ball	R0.1 ～ R1	CBN	2	–	–	–	–	3D	–	–	–	○	○	○	○	–	–	–	–	–	–	–	–	B-016
SSPBTN220	长颈锥形球头 Long Neck Tapered Ball	R0.1 × 颈角30' ～ R1 × 颈角2°	CBN	2	–	–	–	–	3D	–	–	–	○	○	○	○	–	–	–	–	–	–	–	–	B-018
SSR200	长颈圆鼻 Long Neck Corner Radius	ϕ0.1 × R0.02 ～ ϕ2 × R0.5	CBN	2	–	Slot	Face	–	–	–	–	–	○	○	○	○	–	–	–	–	–	–	–	–	B-026

按［产品代码］搜索
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产品代码 Code No.	型号 Model	规格 Size	形状 Shape	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	页面 Page
01-00001	NSME100	ϕ0.01～ϕ0.05	平底 Square	SMG	1	–	Slot	Face	–	–	D-112
01-00002	NSME230	ϕ0.03～ϕ0.09	平底 Square	SMG	2	–	Slot	Face	–	–	D-114
01-00003	NSMB100	R0.005～R0.05	球头 Ball	SMG	1	–	–	–	–	3D	E-092
01-00440	SSE400	ϕ0.1	长颈平底 Long Neck Square	CBN	4	–	Slot	Face	–	–	B-004
01-00450	SSE600	ϕ0.2～ϕ1	长颈平底 Long Neck Square	CBN	6	–	Slot	Face	–	–	B-006
01-00460	SMB120	R0.01～R0.05	球头 Ball	CBN	1	–	–	–	–	3D	B-008
01-00461	SMB200	R0.01～R0.05	球头 Ball	CBN	2	–	–	–	–	3D	B-010
01-00470	SSF120	ϕ0.2×R0.05 ～ϕ2×R0.1	长颈圆鼻 Long Neck Corner Radius	CBN	1	–	–	Face	–	–	B-040
01-00480	SMEZ120	ϕ0.03～ϕ0.1	平底 Square	CBN	1	–	Slot	–	–	–	B-002
01-00485	SHPR400	ϕ0.1×R0.01 ～ϕ3×R0.2	长颈圆鼻 Long Neck Corner Radius	CBN	4	–	Slot	Face	–	–	B-034
01-00490	SSR200	ϕ0.1×R0.02 ～ϕ2×R0.5	长颈圆鼻 Long Neck Corner Radius	CBN	2	–	Slot	Face	–	–	B-026
01-00495	SHR320	ϕ0.5×R0.1 ～ϕ2×R0.3	长颈圆鼻 Long Neck Corner Radius	CBN	3	–	Slot	Face	–	–	B-032
01-00500	SFB200	R0.1～R1	长颈球头 Long Neck Ball	CBN	2	–	–	–	–	3D	B-012
01-00505	SSPB220	R0.1～R3	长颈球头 Long Neck Ball	CBN	2	–	–	–	–	3D	B-014
01-00506	SSPBL220	R0.1～R1	长颈球头 Long Neck Ball	CBN	2	–	–	–	–	3D	B-016
01-00507	SSPBTN220	R0.1×颈角30' ～R1×颈角2°	长颈锥形球头 Long Neck Tapered Ball	CBN	2	–	–	–	–	3D	B-018
01-00510	SSB200	R0.1～R1	长颈球头 Long Neck Ball	CBN	2	–	–	–	–	3D	B-022

按［产品代码］搜索
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产品代码 Code No.	型号 Model	规格 Size	形状 Shape	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	页面 Page
01-00511	SSBL200	R0.05～R1	长颈球头 Long Neck Ball	CBN	2	-	-	-	-	3D	B-024
01-00630	AL3D-345R	ϕ2×R0.2 ～ϕ12×R2	圆鼻 Corner Radius	WC	3	Side	Slot	Face	Plunge	-	F-014
01-00631	AL2D-2	ϕ0.5～ϕ12	平底 Square	WC	2	Side	Slot	Face	-	-	D-116
01-00632	AL3D-2	ϕ1～ϕ12	平底 Square	WC	2	Side	Slot	Face	-	-	D-118
01-00633	AL4D-2	ϕ1～ϕ12	平底 Square	WC	2	Side	-	Face	-	-	D-120
01-00634	AL5D-2	ϕ1～ϕ12	平底 Square	WC	2	Side	-	Face	-	-	D-122
01-00635	AL3D-2DLC	ϕ1～ϕ12	平底 Square	DLC	2	Side	Slot	Face	-	-	D-128
01-00636	ALZ345	ϕ1～ϕ12	平底 / 长颈平底 Square / Long Neck Square	WC	3	Side	Slot	Face	Plunge	-	D-134
01-00637	AL-3LS	ϕ5～ϕ12	平底 Square	WC	3	Side	Slot	Face	-	-	D-138
01-00638	ALB225	R0.3～R6	球头 / 长颈球头 Ball / Long Neck Ball	WC	2	-	-	-	-	3D	E-094
01-00639	AL3D-345	ϕ1～ϕ12	平底 Square	WC	3	Side	Slot	Face	Plunge	-	D-124
01-00640	RSES230	ϕ0.1～ϕ6	平底 / 长颈平底 Square / Long Neck Square	MG	2	Side	Slot	Face	-	-	D-140
01-00644	RSE230	ϕ0.1～ϕ6	平底 / 长颈平底 Square / Long Neck Square	MG	2	Side	Slot	Face	-	-	D-146
01-00654	RSB230	R0.1～R3	球头 / 长颈球头 Ball / Long Neck Ball	MG	2	-	-	-	-	3D	E-098
01-00661	AL2D-2DLC	ϕ0.5～ϕ12	平底 Square	DLC	2	Side	Slot	Face	-	-	D-126
01-00663	AL4D-2DLC	ϕ1～ϕ12	平底 Square	DLC	2	Side	-	Face	-	-	D-130
01-00664	AL5D-2DLC	ϕ1～ϕ12	平底 Square	DLC	2	Side	-	Face	-	-	D-132

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产品代码 Code No.	型号 Model	规格 Size	形状 Shape	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	页面 Page
01-00666	ALZ345-DLC	ϕ1～ϕ12	长颈平底 Long Neck Square	DLC	3	Side	Slot	Face	Plunge	-	D-136
01-00668	ALB225-DLC	R0.3～R6	球头 / 长颈球头 Ball / Long Neck Ball	DLC	2	-	-	-	-	3D	E-096
04-00001	NSMD	ϕ0.01～ϕ0.1	钻头 Drill	SMG	2	-	-	-	-	-	H-010
04-00002	NSMD-M	ϕ0.01～ϕ0.1	钻头 Drill	Micro	2	-	-	-	-	-	H-004
04-00005	NSMD-S	ϕ0.01～ϕ0.05	钻头 Drill	SMG	2	-	-	-	-	-	H-012
04-00006	NSMD-MS	ϕ0.01～ϕ0.05	钻头 Drill	Micro	2	-	-	-	-	-	H-006
04-00010	NSPD	ϕ0.01～ϕ0.1	钻头 Drill	SMG	2	-	-	-	-	-	H-014
04-00012	NSPD-M	ϕ0.01～ϕ0.1	钻头 Drill	Micro	2	-	-	-	-	-	H-008
04-00050	MSDH	ϕ0.1～ϕ1	钻头 Drill	Premium	2	-	-	-	-	-	H-002
04-00200	MDR-R	ϕ0.1～ϕ1	钻头 Drill		2	-	-	-	-	-	H-020
04-00210	MDR-PD	ϕ0.1～ϕ1	钻头 Drill		2	-	-	-	-	-	H-024
04-00230	MFD	ϕ0.1～ϕ6	平底钻头 Flat Drill		2	-	-	-	-	-	H-016
04-00250	NSCV	ϕ4　ϕ6	倒角 Chamfering	MG	3	-	-	-	-	-	J-004
04-00260	NSCV-M	ϕ4　ϕ6	倒角 Chamfering		3	-	-	-	-	-	J-002
04-00300	PCDSE	ϕ0.1～ϕ1	长颈平底 Long Neck Square	PCD	2 6	-	-	Face	-	-	C-002
04-00500	PCDRB	R0.05～R3	长颈球头 Long Neck Ball	PCD	-	-	-	-	-	3D	C-004
04-00700	PCDRS	ϕ0.3×R0.05 ～ϕ1×R0.1	长颈圆鼻 Long Neck Corner Radius	PCD	2 4 6	-	-	Face	-	-	C-006

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产品代码 Code No.	型号 Model	规格 Size	形状 Shape	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	页面 Page
05-00035	DCSE235	ϕ0.5～ϕ6	平底 Square	DIA	2	Side	Slot	Face	-	-	C-010
05-00100	DCMS	ϕ0.3～ϕ2	长颈平底 Long Neck Square	DIA	6 8 10	-	-	Face	-	-	C-008
05-00200	DCHR230	ϕ0.5～ϕ6	长颈平底 Long Neck Square	DIA	2	Side	Slot	Face	-	-	C-012
05-00500	DCMB	R0.1～R1	球头 / 长颈球头 Ball / Long Neck Ball	DIA	2	-	-	-	-	3D	C-014
05-00520	DCRB230	R0.2～R3	长颈球头 Long Neck Ball	DIA	2	-	-	-	-	3D	C-016
06-00001	MMTS	S0.1～S1.4	螺纹铣刀 Thread Mill	∞	2	-	-	-	-	-	I-002
06-00002	MMTM	M1～M6	螺纹铣刀 Thread Mill	∞	4 6	-	-	-	-	-	I-004
07-00100	DHR237	ϕ0.1～ϕ6	长颈平底 Long Neck Square	DLC	2	Side	Slot	Face	-	-	D-154
07-00110	DHR237R	ϕ0.2×R0.02 ～ϕ6×R1	长颈圆鼻 Long Neck Corner Radius	DLC	2	Side	Slot	Face	-	-	F-070
07-00530	DRB230	R0.05～R3	长颈球头 Long Neck Ball	DLC	2	-	-	-	-	3D	E-102
08-00005	MXH225	ϕ0.1～ϕ6	平底 Square	∞ Premium	2	Side	Slot	Face	-	-	D-002
08-00006	MXH230	ϕ0.1～ϕ6	平底 Square	∞ Premium	2	Side	Slot	Face	-	-	D-004
08-00007	MXH235	ϕ0.1～ϕ6	平底 Square	∞ Premium	2	Side	Slot	Face	-	-	D-006
08-00008	MXH240	ϕ0.3～ϕ6	平底 Square	∞ Premium	2	Side	-	Face	-	-	D-008
08-00009	MXH245	ϕ0.3～ϕ6	平底 Square	∞ Premium	2	Side	-	Face	-	-	D-010
08-00015	MXH225P	ϕ0.1～ϕ6	平底 Square	∞ Premium	2	Side	-	Face	-	-	D-012
08-00016	MXH230P	ϕ0.1～ϕ6	平底 Square	∞ Premium	2	Side	-	Face	-	-	D-014

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产品代码 Code No.	型号 Model	规格 Size	形状 Shape	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	页面 Page
08-00017	MXH235P	ϕ0.1～ϕ6	平底 Square	∞ Premium	2	Side	-	Face	-	-	D-016
08-00025	MX225	ϕ0.3～ϕ12	平底 Square	∞	2	Side	Slot	Face	-	-	D-020
08-00030	MX230	ϕ0.1～ϕ12	平底 Square	∞	2	Side	Slot	Face	-	-	D-022
08-00035	MX235	ϕ0.1～ϕ12	平底 Square	∞	2	Side	Slot	Face	-	-	D-024
08-00040	MX240	ϕ0.3～ϕ12	平底 Square	∞	2	Side	-	Face	-	-	D-026
08-00045	MX245	ϕ0.3～ϕ12	平底 Square	∞	2	Side	-	Face	-	-	D-028
08-00075	MX425	ϕ1～ϕ12	平底 Square	∞	4	Side	-	Face	-	-	D-040
08-00080	MX430	ϕ1～ϕ12	平底 Square	∞	4	Side	-	Face	-	-	D-042
08-00085	MX435	ϕ1～ϕ12	平底 Square	∞	4	Side	-	Face	-	-	D-044
08-00090	MX440	ϕ1～ϕ12	平底 Square	∞	4	Side	-	Face	-	-	D-046
08-00095	MX445	ϕ1～ϕ12	平底 Square	∞	4	Side	-	Face	-	-	D-048
08-00100	MSE230	ϕ0.1～ϕ12	平底 Square	∞	2	Side	Slot	Face	-	-	D-032
08-00101	MSEM230	ϕ0.5～ϕ12	平底 Square	∞	2	Side	-	Face	-	-	D-038
08-00102	MSES230P	ϕ0.1～ϕ12	平底 Square	∞	2	Side		Face	-	-	D-030
08-00105	MSE230M	ϕ0.1～ϕ6	平底 Square	∞	2	Side	Slot	Face	-	-	D-036
08-00110	MSE430	ϕ1～ϕ20	平底 Square	∞	4	Side	-	Face	-	-	D-052
08-00111	MSEM430	ϕ1～ϕ20	平底 Square	∞	4	Side	-	Face	-	-	D-054

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08-00112	MSE430P	ϕ1～ϕ12	平底 Square	∞	4	Side	-	Face	-	-	D-050
08-00120	MSE245	ϕ2～ϕ12	平底 Square	∞	2	Side	Slot	Face	-	-	D-056
08-00130	MSE345	ϕ3～ϕ20	平底 Square	∞	3	Side	Slot	Face	-	-	D-058
08-00133	MSZ345	ϕ1～ϕ12	平底 Square	∞	3	Side	Slot	Face	Plunge	-	D-062
08-00135	MSCZ440	ϕ1～ϕ6	平底 Square	∞	4	Side	Slot	Face	Plunge	-	D-064
08-00136	MSCZ440-LN	ϕ1～ϕ6	长颈平底 Long Neck Square	∞	4	Side	Slot	Face	Plunge	-	D-110
08-00140	MSE445	ϕ2～ϕ20	平底 Square	∞	4	Side	-	Face	-	-	D-060
08-00144	MSX440	ϕ3×R0.2 ～ϕ20×R1	圆鼻 Corner Radius	∞	4	Side	Slot	Face	-	-	F-004
08-00150	MSXH440R	ϕ3×R0.3 ～ϕ12×R2	圆鼻 Corner Radius	∞ Premium	4	Side	Slot	Face	-	-	F-002
08-00152	MSUSZ440	ϕ1～ϕ6	平底 Square	∞ Premium	4	Side	Slot	Face	Plunge	-	D-018
08-00153	MSUSZ440-LN	ϕ1～ϕ6	长颈平底 Long Neck Square	∞ Premium	4	Side	Slot	Face	Plunge	-	D-088
08-00200	MHR230	ϕ0.1～ϕ6	长颈平底 Long Neck Square	∞	2	Side	Slot	Face	-	-	D-090
08-00207	MHRH230	ϕ0.1～ϕ3	长颈平底 Long Neck Square	∞ Premium	2	Side	Slot	Face	-	-	D-078
08-00210	MHR430	ϕ1～ϕ10	长颈平底 Long Neck Square	∞	4	Side	Slot	Face	-	-	D-102
08-00217	MHRH430	ϕ1～ϕ6	长颈平底 Long Neck Square	∞ Premium	4	Side	Slot	Face	-	-	D-084
08-00220 08-00221	MHR230R	ϕ0.2×R0.05 ～ϕ6×R1	长颈圆鼻 Long Neck Corner Radius	∞	2	Side	Slot	Face	-	-	F-042
08-00227	MHRH230R	ϕ0.2×R0.02 ～ϕ0.9×R0.1	长颈圆鼻 Long Neck Corner Radius	∞ Premium	2	Side	Slot	Face	-	-	F-026

按［产品代码］搜索
Search from Code No.

产品代码 Code No.	型号 Model	规格 Size	形状 Shape	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	页面 Page
08-00230	MHR430R	ϕ1×R0.05 ～ϕ6×R1	长颈圆鼻 Long Neck Corner Radius	∞	4	Side	Slot	Face	-	-	F-056
08-00237	MHRH430R	ϕ0.1×R0.01 ～ϕ6×R1	长颈圆鼻 Long Neck Corner Radius	∞ Premium	4	Side	Slot	Face	-	-	F-030
08-00239	MHRSH430RSF	ϕ0.1×R0.01 ～ϕ6×R1	长颈圆鼻 Long Neck Corner Radius	∞ Plus	4	Side	Slot	Face	-	-	F-016
08-00300	MTE230	前端刃径ϕ0.2×锥度半角30' ～前端刃径ϕ10×锥度半角5°	锥形 Tapered	∞	2	Side	Slot	-	-	-	G-002
08-00310	MRT425	前端刃径ϕ0.2×锥度半角30' ～前端刃径ϕ3×锥度半角2°	锥形 Tapered	∞	4	-	Slot	-	-	-	G-008
08-00400	MHD445	ϕ1～ϕ4	平底 Square	∞	4	Side	Slot	Face	-	-	D-074
08-00410	MHD645	ϕ5～ϕ12	平底 Square	∞	6	Side	Slot	Face	-	-	D-076
08-00427	MHDH445	ϕ1～ϕ4	平底 Square	∞ Premium	4	Side	Slot	Face	-	-	D-070
08-00428	MHDH645	ϕ5～ϕ12	平底 Square	∞ Premium	6	Side	Slot	Face	-	-	D-072
08-00429 08-00431	MHDSH445	ϕ1～ϕ4	平底 Square	∞ Plus	4	Side	Slot	Face	-	-	D-066
08-00430 08-00432	MHDSH645	ϕ5～ϕ6	平底 Square	∞ Plus	6	Side	Slot	Face	-	-	D-068
08-00437	MHDH445R	ϕ3×R0.2 ～ϕ4×R0.5	圆鼻 Corner Radius	∞ Premium	4	Side	Slot	Face	-	-	F-006
08-00438	MHDH645R	ϕ5×R0.2 ～ϕ12×R2	圆鼻 Corner Radius	∞ Premium	6	Side	Slot	Face	-	-	F-008
08-00500 08-00501	MSB230	R0.05～R10	球头 Ball	∞	2	-	-	-	-	3D	E-018
08-00504	MSB230SF	R0.1～R6	球头 Ball	∞	2	-	-	-	-	3D	E-014
08-00505	MSB230G2	R0.05～R3	球头 Ball	∞	2	-	-	-	-	3D	E-008
08-00507	MSBH230	R0.05～R6	球头 Ball	∞ Premium	2	-	-	-	-	3D	E-004

按［产品代码］搜索
Search from Code No.

产品代码 Code No.	型号 Model	规格 Size	形状 Shape	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	页面 Page
08-00510	MSBL230	R0.5～R5	球头 Ball	∞	2	–	–	–	–	3D	E-024
08-00520 08-00521	MRB230	R0.05～R3	长颈球头 Long Neck Ball	∞	2	–	–	–	–	3D	E-058
08-00525	MRB230SF	R0.1～R1.5	长颈球头 Long Neck Ball	∞	2	–	–	–	–	3D	E-054
08-00527 08-00528	MRBH230	R0.05～R3	长颈球头 Long Neck Ball	∞ Premium	2	–	–	–	–	3D	E-034
08-00530	MSB230S	R0.1～R6	球头 Ball	∞	2	–	–	–	–	3D	E-010
08-00537	MRBSH230SF	R0.05～R3	长颈球头 Long Neck Ball	∞ Plus	2	–	–	–	–	3D	E-026
08-00540	MTB230	前端刃径R0.1×锥度半角1° ～前端刃径R2×锥度半角15°	锥刃球头 Tapered Ball	∞	2	Side	Slot	–	–	3D	G-012
08-00554	MACH225SF	R0.1～R3	长颈球头 Long Neck Ball	∞ Premium	2	–	–	–	–	3D	E-048
08-00555	MACH225	R0.1～R3	长颈球头 Long Neck Ball	∞ Premium	2	–	–	–	–	3D	E-050
08-00570	MRBTN230	R0.1×颈角30′ ～R2×颈角1°	长颈锥形球头 Long Neck Tapered Ball	∞	2	–	–	–	–	3D	E-082
08-00588	MRBTNH230	R0.05×颈角3° ～R2×颈角1°	长颈锥形球头 Long Neck Tapered Ball	∞ Premium	2	–	–	–	–	3D	E-070
08-00590	MRBTNH345	R0.5×颈角30′ ～R2×颈角1°	长颈锥形球头 Long Neck Tapered Ball	∞ Premium	3	–	–	–	–	3D	E-078
08-00600	MSB345	R0.5～R6	球头 Ball	∞	3	–	–	–	–	3D	E-022
08-00607	MSBH345	R0.5～R3	球头 Ball	∞ Premium	3	–	–	–	–	3D	E-006
08-00610	MSBSH330-5X	R0.1～R1	球头 Ball	∞ Plus	3	–	–	–	–	3D	E-002
08-00634	MRBSH330	R0.1～R3	长颈球头 Long Neck Ball	∞ Plus	3	–	–	–	–	3D	E-032
08-00700	MSRS230	φ1×R0.1 ～φ5×R1.5	圆鼻 Corner Radius	∞	2	Side	Slot	Face	–	–	F-010

按［产品代码］搜索
Search from Code No.

产品代码 Code No.	型号 Model	规格 Size	形状 Shape	材质・涂层 Material・Coating	刃数 Number of Flute	侧面加工 Side Milling	沟槽加工 Slot Milling	平面加工 Face Milling	插铣加工 Plunging	曲面加工 3D Milling	页面 Page
08-00710	MSRS430	φ6×R0.1 ～φ12×R3	圆鼻 Corner Radius	∞	4	Side	Slot	Face	–	–	F-012
08-00770	MSTNR230	φ0.2×R0.05×颈角1° ～φ3×R0.5×颈角1°	长颈锥刃圆鼻 Long Neck Tapered Corner Radius	∞	2	Side	Slot	Face	–	–	F-062
08-00790	MLFH330	φ1×R1 ～φ6×R8	椭圆弧形 Lens Form	∞ Premium	3	–	–	–	–	3D	E-052

2

铣刀
End Mill

SMEZ120

规格 Size ϕ0.03 ～ ϕ0.1

CBN ≦70 HRC

超微细加工用CBN平底铣刀 “Micro Edge Z”

CBN “MICRO EDGE Z”

共有8种规格
Total 8 sizes

SMEZ120

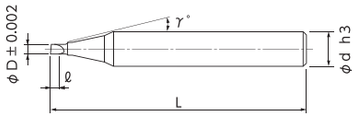
切削参数参考表
Recommended Milling Conditions

将外径ϕ0.1以下标准化的微米级CBN平底铣刀

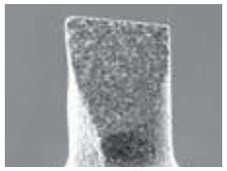
CBN micro end mill with standardized of Dia.0.1mm or smaller

1 -20° 90° ϕd h3 Slot





- NS的加工技术与精选CBN材质的完美结合而产生的锋利刀刃。
- 外径精度±2μm。
- 柄径公差h3（0～-0.0025）。
- NS engineering technology and selected CBN material realize sharp edge.
- Tolerance of flute diameter is ±2μm.
- Tolerance of shank diameter is h3 (0～-0.0025).



刀刃形状
Cutting edge shape

加工材料 Work Material	调质钢・高硬度钢 Prehardened Steels・Hardened Steels NAK・STAVAX・SKD11・PD613 (～62HRC)			
外径 Dia.	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min^{-1}
0.03	0.0005	0.003	10	60,000
0.04	0.001	0.003	20	60,000
0.05	0.001	0.005	30	60,000
0.06	0.002	0.005	40	60,000
0.07	0.002	0.01	50	60,000
0.08	0.003	0.015	65	60,000
0.09	0.003	0.02	80	60,000
0.1	0.003	0.025	100	60,000

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示径向切深量。
※2 拆装或者预调刀具时请务必小心。
※3 建议使用油雾冷却方式。
※4 请尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※5 增加切深量会导致刀具折断。特别须注意ap值的设定。
※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Handle with care when exchanging and presetting tool.
※3 We recommend using oil mist coolant.
※4 Minimize chucking runout.
(Recommend to measure actual runout at activated spindle speed.)
※5 Increase of Depth of Cut may cause a tool breakage, especially careful for Axial Depth of Cut.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00480-00030	0.03	0.03	15°	4	50	60,000
01-00480-00040	0.04	0.04	15°	4	50	50,000
01-00480-00050	0.05	0.05	15°	4	50	45,000
01-00480-00060	0.06	0.06	15°	4	50	42,000
01-00480-00070	0.07	0.07	15°	4	50	42,000
01-00480-00080	0.08	0.08	15°	4	50	39,000
01-00480-00090	0.09	0.09	15°	4	50	39,000
01-00480-00100	0.1	0.1	15°	4	50	34,000

订购方法 How to Order

请指定SMEZ120 外径(D)。
When you order, indicate SMEZ120 (D).

※(γ)为参考值。
※(γ) is reference value.

使用注意事项 Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) *Advice on Finishing Allowance (stock amount)*

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要**。
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要**。
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



SSE400

规格 Size φ0.1

CBN ≦70 HRC

CBN平底铣刀
CBN Square End Mill

共有2种规格
Total 2 sizes

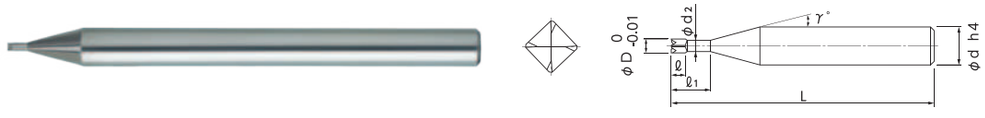
SSE400

切削参数参考表
Recommended Milling Conditions

最适合精密连接器等需要微细直角部的加工

Best applicable for precise machining on minute corners of the narrow pitch connectors and etc

4 | 0° | φd h4
Slot | Face



- 可进行高硬度钢的内角棱边部位的加工。
- 采用NS TOOL独创的多刃形状，提高了耐磨损性能。
- Possible to machine the corner edge of hardened steels.
- Intensified wear resistance by NS TOOL original design of cutting edge.



刀刃形状
Cutting edge shape

加工材料 Work Material		高硬度钢 Hardened Steels HPM-38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
		ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
0.1	0.2	0.001	0.002	250	40,000	0.001	0.002	200	40,000	0.001	0.002	150	40,000
	0.5	0.001	0.002	200	40,000	0.001	0.002	150	40,000	0.001	0.001	100	40,000

备 注 Notes

※1 切深量是指进行等高线精加工时的最大值。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 建议使用油雾冷却方式。
※4 请根据需要控制刀具的伸出量。
※5 请尽量抑制刀具的偏摆量。（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※6 进行底面精加工时，进给速度请取切削参数参考表的约50%，切深量ap取φ0.1：0.001mm，切深量ae取外径×0.05mm作为参考值。
※1 Depth of Cut is the maximum effective value for the contour line tool path.
※2 ap: Axial Depth of Cut, ae: Radial Depth of Cut.
※3 Recommended oil mist coolant.
※4 Minimize a possible tool overhang length.
※5 Minimize chucking runout. (Recommend to measure actual runout of activated spindle speed.)
※6 For the reference value, when finishing process of bottom surface, reduce the feed approx. 50% of the recommended milling conditions and Depth of Cut (ap): 0.001mm for Dia. 0.1mm, (ae): Dia. x 0.05mm.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00440-01002	0.1	0.2	0.04	0.075	15°	4	53	33,000
01-00440-01005		0.5	0.04	0.08	15°	4	53	35,000

订购方法 How to Order
请指定SSE400 外径(D)×颈长(ℓ1)。
When you order, indicate SSE400 (D)×(ℓ1).
※(γ)为参考值。
※(γ) is reference value.

使用注意事项

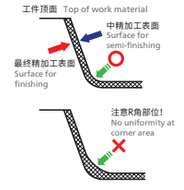
Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量（余量） *Advice on Finishing Allowance (stock amount)*

- 使用小径CBN铣刀时，**精加工量（余量）均匀性非常重要**。
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要**。
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



SSE600

规格 Size ϕ0.2 ～ ϕ1

CBN ≦70 HRC

CBN平底铣刀
CBN Square End Mill

共有14种规格
Total 14 sizes

最适合精密连接器等需要微细直角部的加工

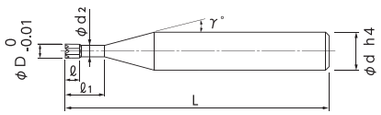
Best applicable for precise machining on minute corners of the narrow pitch connectors and etc

6 / 0° / φd h4

Slot Face







- 可进行高硬度钢的内角棱边部位的加工。
- 采用NS TOOL独创的多刃形状，提高了耐磨损性能。
- Possible to machine the corner edge of hardened steels.
- Intensified wear resistance by NS TOOL original design of cutting edge.



刀刃形状
Cutting edge shape

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00450-02004	0.2	0.4	0.08	0.175	15°	4	53	31,000
01-00450-02010		1	0.08	0.175	15°	4	53	32,500
01-00450-03005	0.3	0.5	0.12	0.275	15°	4	49	31,000
01-00450-03015		1.5	0.12	0.275	15°	4	50	32,000
01-00450-04008	0.4	0.8	0.16	0.37	15°	4	49	29,500
01-00450-04020		2	0.16	0.37	15°	4	50	31,000
★ 01-00450-05010	0.5	1	0.2	0.46	15°	4	49	25,600
★ 01-00450-05025		2.5	0.2	0.46	15°	4	50	28,000
★ 01-00450-06012	0.6	1.2	0.24	0.56	15°	4	49	25,600
★ 01-00450-06030		3	0.24	0.56	15°	4	50	28,000
★ 01-00450-08015	0.8	1.5	0.32	0.76	15°	4	49	25,600
★ 01-00450-08040		4	0.32	0.76	15°	4	52	28,000
★ 01-00450-10020	1	2	0.4	0.95	15°	4	49	23,000
★ 01-00450-10050		5	0.4	0.95	15°	4	52	25,400

订购方法 How to Order
请指定SSE600 外径(D)×颈长(ℓ1)。
When you order, indicate SSE600 (D)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case M-002

加工案例1 Machining Case 1

流道造型模具 Flow channel model



工件尺寸：40×20mm（加工深度0.5mm）
Work Size : 40×20mm　Cutting depth : 0.5mm

- 加工材料：HAP40 64HRC　Work material : HAP40 64HRC
- 冷却方式：油雾　Coolant : Oil mist
- 总加工时间：7小时30分钟　Total machining time : 7hr 30min

加工工序 Process	预加工 Pre-roughing	粗加工（2支） Roughing (2 pcs)	中精加工 Semi-finishing	等高线精加工 Contour line finishing	底面精加工 Bottom finishing
使用刀具 Tool	MHRH430 φ2.5×8	MHRH430 φ1×4	SSR200 φ1×R0.02×1	SSE600 φ1×2	
主轴转速 [min-1] Spindle speed	8,000	20,000	30,000		
进给速度 [mm/min] Feed	1,000		600	300	90
切深量 ap×ae[mm] Depth of cut	0.03×0.75	0.02×0.3	0.005×0.01～0.05	0.005×0.005	0.001×0.5
加工时间 Machining time	13分钟 13min	1小时44分钟 1hr44min	1小时18分钟 1hr18min	4小时15分钟 4hr15min	

加工材料 Work Material		高硬度钢 Hardened Steels HPM-38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
		ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
0.2	0.4	0.003	0.002	400	40,000	0.002	0.002	300	40,000	0.002	0.002	200	40,000
	1	0.003	0.002	300	40,000	0.002	0.002	200	40,000	0.002	0.002	100	40,000
0.3	0.5	0.005	0.003	600	40,000	0.004	0.003	400	40,000	0.003	0.003	400	40,000
	1.5	0.005	0.002	500	40,000	0.004	0.002	300	40,000	0.003	0.002	200	40,000
0.4	0.8	0.007	0.004	700	40,000	0.005	0.003	600	40,000	0.003	0.003	600	40,000
	2	0.007	0.003	600	40,000	0.005	0.002	400	40,000	0.003	0.002	400	40,000
0.5	1	0.01	0.005	800	40,000	0.007	0.003	700	40,000	0.005	0.003	600	40,000
	2.5	0.01	0.004	800	40,000	0.007	0.002	500	40,000	0.005	0.002	400	40,000
0.6	1.2	0.01	0.005	800	40,000	0.007	0.003	700	40,000	0.005	0.003	600	40,000
	3	0.01	0.004	800	40,000	0.007	0.002	500	40,000	0.005	0.002	400	40,000
0.8	1.5	0.01	0.005	800	40,000	0.007	0.004	800	40,000	0.005	0.004	700	40,000
	3.5	0.01	0.004	800	40,000	0.007	0.003	600	40,000	0.005	0.003	500	40,000
1	2	0.01	0.006	800	40,000	0.007	0.006	800	40,000	0.005	0.006	800	40,000
	5	0.01	0.005	800	40,000	0.007	0.005	600	40,000	0.005	0.005	600	40,000

备 注 Notes

※1 切深量是指进行等高线精加工时的最大值。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 建议使用油雾冷却方式。
※4 请根据需要控制刀具的伸出量。
※5 请尽量抑制刀具的偏摆量。（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※6 进行底面精加工时，进给速度请取切削参数参考表的约50%，切深量ap取φ0.2・φ0.3：～0.002mm、φ0.4 ～φ1：～0.003mm，切深量ae取外径×0.05mm作为参考值。

※1 Depth of Cut is the maximum effective value for the contour line tool path.
※2 ap: Axial Depth of Cut, ae: Radial Depth of Cut.
※3 Recommended oil mist coolant.
※4 Minimize a possible tool overhang length.
※5 Minimize chucking runout. (Recommend to measure actual runout of activated spindle speed.)
※6 For the reference value, when finishing process of bottom surface, reduce the feed approx. 50% of the recommended milling conditions and Depth of Cut (ap): 0.002mm for Dia. 0.2mm and 0.3mm, for Dia. 0.4 to 1mm, up to 0.003mm, (ae): Dia. x 0.05mm.

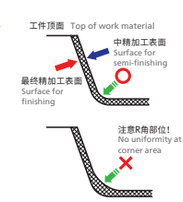
使用注意事项 Points in Use

加工环境 Advice on Cutting Environment

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) Advice on Finishing Allowance (stock amount)

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要。**
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要。**
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



规格 Size R0.01 ～ R0.05

CBN ≦70 HRC

超微细加工用CBN球头铣刀 “CBN Micro Ball”

CBN Ball End Mill for precision machining “CBN Micro Ball”

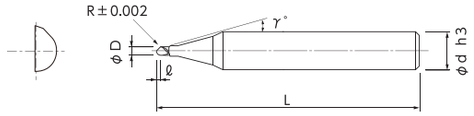
共有7种规格
Total 7 sizes

球头 Ball
全刃长 Full Cutting Length
无涂层 Non-Coating

尺寸规格从R0.01～R0.05，实现超精细加工

Realized micro milling by size line up R0.01 - R0.05





- 行业前列！CBN材质的微米级球头铣刀。
- 开拓精细切削加工的新领域。
- 球头半径从R0.01起实现标准化。
- 从调质钢到高硬度钢，均可长时间加工。
- The world’s first CBN Micro Ball End Mill.
- CBN Micro Ball develops new machining capability in high-precision technology.
- Standarized sizes from R0.01.
- Long machining on pre-hardened to high-hardened steels.



刀刃形状
Cutting edge shape

单位 [规格：mm／价格：日元]

Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00460-00010	R0.01	0.02	0.02	15°	4	50	72,000
01-00460-00015	R0.015	0.03	0.03	15°	4	50	62,000
01-00460-00020	R0.02	0.04	0.04	15°	4	50	51,600
01-00460-00025	R0.025	0.05	0.05	15°	4	50	47,400
01-00460-00030	R0.03	0.06	0.06	15°	4	50	43,200
01-00460-00040	R0.04	0.08	0.08	15°	4	50	39,600
01-00460-00050	R0.05	0.1	0.1	15°	4	50	36,000

订购方法 How to Order
请指定SMB120 球头半径(R)。
When you order, indicate SMB120 (R).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-003

加工材料 Work Material	调质钢・高硬度钢 Prehardened Steels・Hardened Steels NAK・STAVAX・SKD11・PD613 (～62HRC)				
(R)球头半径 Radius	切深量 Depth of Cut		进给速度 Feed	进刀速度 Approaching Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	mm/min	min^{-1}
0.01	0.0005	0.001	5	3	80,000
0.02	0.001	0.001	30	5	80,000
0.03	0.001	0.002	70	10	80,000
0.04	0.002	0.003	100	30	80,000
0.05	0.002	0.005	200	30	80,000
备 注 Notes	※1 切深量的ap表示轴向切深量，ae表示步距量。 ※2 拆装或者预调刀具时请务必小心。 ※3 建议使用油雾冷却方式。 ※4 请尽量抑制刀具的偏摆量。 （可能的话，请确认所用主轴转速下的动态偏摆精度。） ※5 进刀角度请设在3°以下。 ※6 增加切深量会导致刀具折断。特别须注意ap值的设定。 ※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut. ※2 Handle with care when exchanging and presetting tool. ※3 We recommend using oil mist coolant. ※4 Minimize chucking runout. (Recommend to measure actual runout at activated spindle speed.) ※5 Tool approaching angle must be 3 degrees or below. ※6 Increase of Depth of Cut may cause a tool breakage, especially careful for Axial Depth of Cut.				

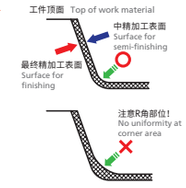
使用注意事项 Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) *Advice on Finishing Allowance (stock amount)*

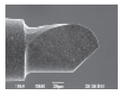
- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要**。
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要**。
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



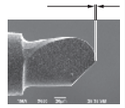
加工案例1 Machining Case 1

R0.05 NS 文字加工 NS logo

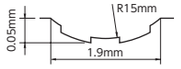




切削前
Before machining



切削后
After machining

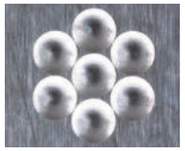


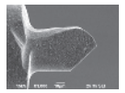
加工材料 Work material	STAVAX 52HRC	
主轴转速 Spindle speed	80,000min^{-1}	
进给速度 Feed	粗加工：200mm/min Roughing	精加工：50mm/min Finishing
切深量 Depth of cut	粗加工：2μm×5μm Roughing (ap×ae)	精加工：2μm×2μm Finishing (ap×ae)
加工时间 Machining time	1小时50分钟 1hr 50min	
加工长度 Machining length	7.7m	
冷却方式 Coolant	油雾 Oil mist	

●粗加工和精加工使用同一刀具进行。
Full process done by one tool.

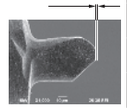
加工案例2 Machining Case 2

R0.03 透镜阵列模型 Lens array model

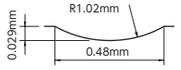




切削前
Before machining



切削后
After machining



加工材料 Work material	PD613 60HRC	
主轴转速 Spindle speed	80,000min^{-1}	
进给速度 Feed	粗加工：50mm/min Roughing	精加工：30mm/min Finishing
切深量 Depth of cut	粗加工：1μm×2μm Roughing (ap×ae)	精加工：1μm×1μm Finishing (ap×ae)
加工时间 Machining time	4小时 4hr	
加工长度 Machining length	10.4m	
冷却方式 Coolant	油雾 Oil mist	

●粗加工和精加工使用同一刀具进行。
Full process done by one tool.

SMB200 New

规格 Size R0.01 ～ R0.05

CBN ≦70 HRC

超微细加工用CBN2刃球头铣刀
CBN Micro 2-Flute Ball End Mill

共有7种规格
Total 7 sizes

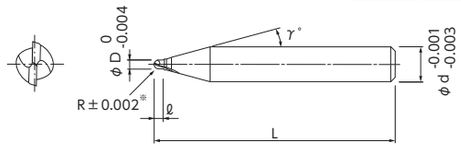
球头 Ball
全刃长 Full Cutting Length
无涂层 Non-Coating

R角规格从R0.01起的2刃造型 高精度造型的超微细切削工具

2-flute shape specialized from R0.01
High precise specific micro end mill

2 | 0° | R ±0.002 | φd 0 -0.001 -0.003 | Connect | 3D





※R角精度以实际外径的1/2为基准
R accuracy is based on a half value of actual diameter

- 从R0.01起采用2刃造型可较以往实现更高效率加工。
- 通过最大限度活用CBN的材料特点来实现锋利的刀刃。
- 柄径公差为-0.001mm至-0.003mm的高精度造型。
- Adopting 2-flute shape from R0.01 enables more efficient machining than conventional product.
- Realized sharp edge by maximizing features of CBN.
- Shank diameter tolerance is high accuracy type between -0.001mm and -0.003mm.



刀刃形状
Cutting edge shape

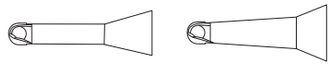
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00461-00010	R0.01	0.015	0.02	15°	4	48	78,000
01-00461-00015	R0.015	0.025	0.03	15°	4	48	68,000
01-00461-00020	R0.02	0.03	0.04	15°	4	48	57,500
01-00461-00025	R0.025	0.04	0.05	15°	4	48	53,000
01-00461-00030	R0.03	0.045	0.06	15°	4	48	51,000
01-00461-00040	R0.04	0.06	0.08	15°	4	48	46,500
01-00461-00050	R0.05	0.075	0.1	15°	4	48	39,500

订购方法 How to Order
请指定SMB200 球头半径(R)。 ※(γ)为参考值。
When you order, indicate SMB200 (R). ※(γ) is reference value.

加工案例 Machining case
M-004, M-006

可进行颈部追加工
Neck modification is available.



长颈造型 Long neck shape
锥颈造型 Taper neck shape

SMB200可对颈部进行追加工。
详情请咨询本公司。
Neck modification is available.
Please ask for details.

加工材料 Work Material	调质钢·高硬度钢 Prehardened Steels·Hardened Steels NAK·STAVAX (～52HRC)					调质钢·高硬度钢 Prehardened Steels·Hardened Steels SKD11·PD613·ELMAX (～60HRC)					高速钢 High Speed Steels SKH·HAP (～68HRC)				
(R)球头半径 Radius	切深量 Depth of Cut		进给速度 Feed	进刀速度 Approaching Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	进刀速度 Approaching Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	进刀速度 Approaching Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	mm/min	min^{-1}	ap mm	ae mm	mm/min	mm/min	min^{-1}	ap mm	ae mm	mm/min	mm/min	min^{-1}
0.01	0.0005	0.001	5	3	60,000	0.0005	0.001	5	3	60,000	0.0005	0.0005	3	1	60,000
0.015	0.001	0.001	30	5	60,000	0.001	0.001	20	5	60,000	0.0005	0.001	10	3	60,000
0.02	0.001	0.002	80	5	60,000	0.001	0.001	60	5	60,000	0.001	0.001	40	5	60,000
0.025	0.001	0.002	120	10	60,000	0.001	0.0015	100	10	60,000	0.001	0.001	60	5	60,000
0.03	0.002	0.002	180	10	60,000	0.001	0.002	140	10	60,000	0.001	0.001	80	10	60,000
0.04	0.003	0.003	280	30	60,000	0.002	0.003	200	30	60,000	0.002	0.002	120	20	60,000
0.05	0.005	0.005	400	30	60,000	0.003	0.005	300	30	60,000	0.002	0.003	180	20	60,000

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示步距量。
※2 拆装或者预调刀具时请务必小心。
※3 建议使用油雾冷却方式。
※4 请尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※5 进刀角度请设在3°以下。
※6 增加切深量会导致刀具折断。特别须注意ap值的设定。

※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Handle with care when exchanging and presetting tool.
※3 We recommend using oil mist coolant.
※4 Minimize chucking runout.
(Recommend to measure actual runout at activated spindle speed.)
※5 Tool approaching angle must be 3 degrees or below.
※6 Increase of Depth of Cut may cause a tool breakage, especially careful for Axial Depth of Cut.

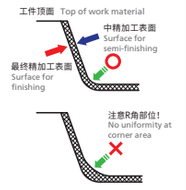
使用注意事项 Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) *Advice on Finishing Allowance (stock amount)*

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要**。
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要**。
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
H ～60高硬度钢 HRC Hardened Steel
H ～65高硬度钢 HRC Hardened Steel
H ～70高硬度钢 HRC Hardened Steel

规格 Size R0.1 ～ R1

CBN ≦70 HRC

CBN超精加工用球头铣刀
CBN Super Finish Ball End Mill

共有12种规格
Total 12 sizes

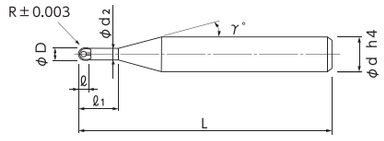
切削参数参考表
Recommended Milling Conditions

使用R中心刃的加工也可实现纳米级精加工面

Realized nano level surface roughness even for milling with its R-center

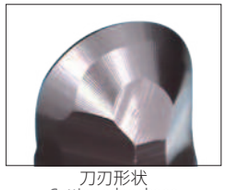
2 | 0° | R ±0.003 | φd h4 | 3D





- 采用新开发的刀刃形状，从刃口到R中心部均具有超强的锋利度。
- 60HRC的高硬度钢可实现连续10小时以上的精加工。
- 加工面精度可长时间保持Rz1.0μm。
- 大幅减少模具的研磨加工时间。

- Sharpened edge at R-center improves shearing ability.
- Continuous 10 hours machining on hardened steel of 60HRC.
- Long-lasting high surface accuracy Rz1.0μm.
- Save significant time at polishing process.



刀刃形状
Cutting edge shape

R 中心刃具有超强的锋利度。最适合长时间的超精密精加工。
Sharp tooth edge guarantees long and consistent accuracy.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00500-00100	R0.1	0.5	0.15	0.2	0.19	12°	4	50	39,300
★ 01-00500-00200	R0.2	1	0.3	0.4	0.37	12°	4	50	36,000
★ 01-00500-00250	R0.25	1.25	0.38	0.5	0.46	12°	4	50	36,000
★ 01-00500-00300	R0.3	1.5	0.5	0.6	0.56	12°	4	50	32,900
★ 01-00500-00400	R0.4	2	0.6	0.8	0.76	12°	4	50	34,800
★ 01-00500-00500	R0.5	2.5	0.7	1	0.95	12°	4	50	31,700
★ 01-00500-00600	R0.6	3	0.8	1.2	1.15	12°	4	50	33,600
★ 01-00500-00700	R0.7	3.5	1	1.4	1.35	12°	4	52	35,800
★ 01-00500-00750	R0.75	3.8	1	1.5	1.45	12°	4	52	33,400
★ 01-00500-00800	R0.8	4	1	1.6	1.55	12°	4	52	35,300
★ 01-00500-00900	R0.9	4.5	1.2	1.8	1.75	12°	4	52	35,000
★ 01-00500-01000	R1	5	1.2	2	1.94	12°	4	52	30,000

订购方法 How to Order
请指定SFB200 球头半径(R)。
When you order, indicate SFB200 (R).

※(γ)为参考值。
※(γ) is reference value.

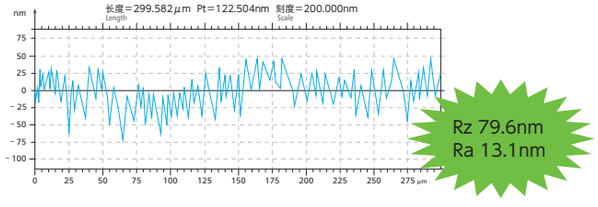
加工材料 Work Material	高硬度钢・高速钢 Hardened Steels・High Speed Steels SKD・SKH・HAP (～68HRC)					
(R)球头半径 Radius	切深量 Depth of Cut		一般参数 Normal Speed		高速参数 High Speed	
			进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min-1	mm/min	min-1
0.1 ～0.2	0.005	0.01	600	20,000	1,500	50,000
0.25～0.3	0.01	0.01	800		2,000	
0.4 ～0.6	0.01	0.02	1,200		3,000	
0.7 ～0.8	0.01	0.02	1,600		4,000	
0.9 ～1	0.02	0.05	2,000		5,000	
备 注 Notes	※1 切深量的ap表示轴向切深量，ae表示步距量。 ※2 超精密加工专用的铣刀。请在完成钨钢铣刀的精加工后使用。 ※3 请将切深量固定为切削参数参考表内的数值使用。 ※4 R角加工时请特别注意参数设定（刀路轨迹等）。 ※5 建议使用油雾冷却方式。 ※6 建议使用刚性较大的铣刀刀柄和机床。 ※1 Depth of Cut：ap=Axial Depth of Cut / ae=Radial Depth of Cut. ※2 SFB200 is a Super-Finish Ball End Mill recommended to use after the finish process of carbide end mill. ※3 Cutting depth must be fixed all through the milling process according to the recommended milling conditions. ※4 Pay a special attention when choosing tool path and deciding a milling condition for corner milling. ※5 We recommend using oil mist coolant. ※6 Machine, tool chuck must be sufficiently accurate.					

加工案例1 Machining Case 1

反射板 Reflector

- 加工材料：ELMAX 60HRC　Work material : ELMAX 60HRC
- 冷却方式：油雾　Coolant : Oil mist
- 总加工时间：19小时10分钟　Total machining time : 19hr 10min

加工工序 Process	粗加工 Roughing	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	MSBH230 R0.2	SSBL200 R0.2×1.2	SFB200 R0.2
主轴转速 [min-1] Spindle speed	40,000		
进给速度 [mm/min] Feed	800	700	400
切深量 ap×ae[mm] Depth of cut	0.015×0.05	0.005×0.01	0.004×0.002
加工时间 Machining time	3小时23分钟 3hr 23min	2小时10分钟 2hr 10min	13小时37分钟 13hr 37min





工件尺寸：20×20mm
Work size : 20×20mm

使用注意事项 Points in Use

加工环境 Advice on Cutting Environment

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) Advice on Finishing Allowance (stock amount)

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要。**
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要。**
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



规格 Size R0.1 ～ R3

CBN ≦70 HRC

CBN超精加工用螺旋球头铣刀
CBN Super Spiral Ball End Mill

共有30种规格
Total 30 sizes

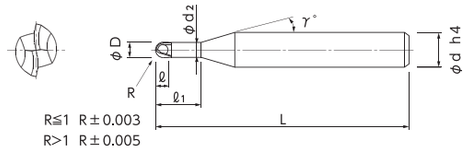
球头 Ball
长颈 Long Neck
无涂层 Non-Coating

实现具有光泽的精加工面

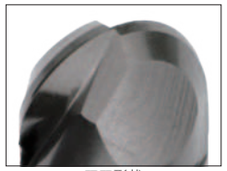
Realized glossy finished surface

2 | 20° | R ±0.003 (R≦1) | R ±0.005 (R>1) | φd h4 | 3D





- 采用螺旋球头形状，提高了刀刃的锋利度。
- 采用独特的刀刃形状，提高了耐崩刃性能。
- 外周刃与加工面接触，切削阻力增加会发生振力，影响刀具的使用寿命和加工面的品质。通过采用增强型的倒锥形状，可以减轻该影响。
- 规格标准扩大到R3，进一步扩展了加工范围。
- Adopted spiral ball shape to improve sharpness of cutting edge.
- Adopted cutting edge shape to improve the chipping resistance of cutting edge.
- When peripheral cutting edge makes contact with cutting surface, vibration occurs by an increase in cutting resistance and it affects tool life and cutting surface quality. The influence can be reduced by adoption of the strong back taper shape.
- Enlarged standard tool size up to R3 to extend application range.



刀刃形状
Cutting edge shape

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00505-00101	R0.1	0.3	0.15	0.2	0.19	15°	4	50	30,500
01-00505-00100		0.6	0.15	0.2	0.19	15°	4	50	31,500
01-00505-00150	R0.15	0.3	0.23	0.3	0.28	15°	4	50	30,000
01-00505-00151		0.5	0.23	0.3	0.28	15°	4	50	30,500
01-00505-00152		0.75	0.23	0.3	0.28	15°	4	50	31,000
★ 01-00505-00201	R0.2	0.5	0.3	0.4	0.37	15°	4	50	27,100
★ 01-00505-00202		0.75	0.3	0.4	0.37	15°	4	50	27,600
★ 01-00505-00203		1	0.3	0.4	0.37	15°	4	50	28,100
★ 01-00505-00200		1.2	0.3	0.4	0.37	15°	4	50	28,600
★ 01-00505-00251	R0.25	1	0.38	0.5	0.46	15°	4	50	28,100
★ 01-00505-00301	R0.3	1.2	0.5	0.6	0.56	15°	4	50	25,900
★ 01-00505-00300		1.5	0.5	0.6	0.56	15°	4	50	26,400
★ 01-00505-00401	R0.4	1.6	0.6	0.8	0.76	15°	4	50	25,900
★ 01-00505-00400		2	0.6	0.8	0.76	15°	4	50	26,400
★ 01-00505-00501	R0.5	2	0.7	1	0.95	15°	4	50	25,900
★ 01-00505-00500		2.5	0.7	1	0.95	15°	4	50	26,400
★ 01-00505-00601	R0.6	2.4	0.8	1.2	1.15	15°	4	50	27,000
★ 01-00505-00600		3	0.8	1.2	1.15	15°	4	50	27,500
★ 01-00505-00751	R0.75	3	1	1.5	1.45	15°	4	52	27,000
★ 01-00505-00750		3.8	1	1.5	1.45	15°	4	52	27,500
★ 01-00505-01000	R1	4	1.2	2	1.94	15°	4	52	27,500
★ 01-00505-01001		5	1.2	2	1.94	15°	4	52	27,500
★ 01-00505-01506	R1.5	6	1.8	3	2.85	12°	6	50	29,000
★ 01-00505-01509		9	1.8	3	2.85	12°	6	70	30,000
★ 01-00505-02008	R2	8	2.4	4	3.8	12°	6	50	35,000
★ 01-00505-02012		12	2.4	4	3.8	12°	6	70	36,000
★ 01-00505-02510	R2.5	10	3	5	4.8	12°	6	60	41,000
★ 01-00505-02515		15	3	5	4.8	12°	6	80	42,000
★ 01-00505-03012	R3	12	3.6	6	5.8	–	6	60	48,000
★ 01-00505-03018		18	3.6	6	5.8	–	6	80	49,000

订购方法 How to Order
请指定SSPB220 球头半径(R)×颈长(ℓ1)。
When you order, indicate SSPB220 (R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-007

加工材料 Work Material		高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)				高硬度钢 Hardened Steels SKD11・ELMAX (～62HRC)				高速钢 High Speed Steels SKH・HAP (～68HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
		ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
0.1	0.3	0.005	0.005	600	40,000	0.005	0.005	450	40,000	0.003	0.003	300	40,000
	0.6	0.005	0.005	500	40,000	0.005	0.005	350	40,000	0.003	0.003	250	40,000
0.15	0.3	0.005	0.005	800	40,000	0.005	0.005	600	40,000	0.003	0.003	450	40,000
	0.5	0.005	0.005	750	40,000	0.005	0.005	550	40,000	0.003	0.003	400	40,000
	0.75	0.005	0.005	700	40,000	0.005	0.005	500	40,000	0.003	0.003	400	40,000
0.2	0.5	0.005	0.01	1,200	40,000	0.005	0.01	900	40,000	0.005	0.005	600	40,000
	0.75	0.005	0.01	1,100	40,000	0.005	0.01	850	40,000	0.005	0.005	550	40,000
	1	0.005	0.01	1,000	40,000	0.005	0.01	800	40,000	0.005	0.005	500	40,000
	1.2	0.005	0.01	1,000	40,000	0.005	0.01	800	40,000	0.005	0.005	500	40,000
0.25	1	0.01	0.01	1,200	40,000	0.01	0.01	1,000	40,000	0.005	0.005	700	40,000
0.3	1.2	0.01	0.02	1,800	40,000	0.01	0.02	1,500	40,000	0.005	0.01	1,000	40,000
	1.5	0.01	0.02	1,500	40,000	0.01	0.02	1,200	40,000	0.005	0.01	800	40,000
0.4	1.6	0.01	0.02	1,800	40,000	0.01	0.02	1,500	40,000	0.005	0.01	1,000	40,000
	2	0.01	0.02	1,500	40,000	0.01	0.02	1,200	40,000	0.005	0.01	800	40,000
0.5	2	0.02	0.04	2,500	40,000	0.02	0.03	1,800	40,000	0.01	0.02	1,200	40,000
	2.5	0.02	0.04	2,000	40,000	0.02	0.03	1,500	40,000	0.01	0.02	1,000	40,000
0.6	2.4	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000
	3	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000
0.75	3	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.02	0.03	2,000	30,000
	3.8	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.02	0.03	2,000	30,000
1	4	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000
	5	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000
1.5	6	0.08	0.15	2,300	20,000	0.05	0.075	2,100	20,000	0.04	0.06	1,300	15,000
	9	0.06	0.12	2,200	20,000	0.04	0.06	2,000	20,000	0.04	0.05	1,200	15,000
2	8	0.1	0.18	2,300	17,000	0.06	0.09	2,100	15,000	0.05	0.07	1,300	12,000
	12	0.08	0.15	2,000	17,000	0.05	0.08	1,700	15,000	0.04	0.06	1,200	12,000
2.5	10	0.11	0.21	2,200	13,000	0.08	0.12	1,800	12,000	0.07	0.1	1,300	11,000
	15	0.1	0.18	1,900	13,000	0.06	0.1	1,500	12,000	0.06	0.08	1,100	11,000
3	12	0.13	0.24	2,000	10,000	0.09	0.15	1,600	10,000	0.08	0.12	1,200	10,000
	18	0.11	0.21	1,700	10,000	0.08	0.12	1,400	10,000	0.07	0.1	1,000	10,000

备 注 Notes

※1 切深量为中精加工、精加工时的最大值。请根据机床刚性和要求精度进行调整。
※2 预加工（中精加工）时请注意精加工余量相对于加工面需保持均匀。
※3 R角等负载大的加工部位，请注意参数设定和刀路轨迹等。
※4 需要高品质的加工面时，加工时请将切深量调整为70%，进给速度调整为约70%。
※5 建议使用油雾冷却方式。
※6 因加工机床的原因要调整主轴转速时，必须按照相同的比率调整进给速度。

※1 Max. Depth of Cut for semi-finishing and finishing. Adjust milling conditions depending on the rigidity of the machine and desired accuracy.
※2 Obtain uniform stock amount on the cutting surface in the pre-stage cutting (semi-finishing).
※3 Required careful set up of milling conditions, tool path and etc. at cutting parts, such as corners where will become overloaded.
※4 Adjust both Depth of Cut and feed rate at 70% of the recommended milling conditions for high quality milling surface.
※5 Oil mist coolant is recommended.
※6 Adjust feed rate at same rate as spindle speed if necessary to adjust spindle speed from recommended milling conditions.

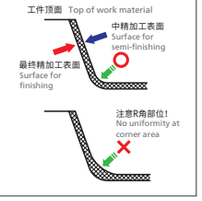
使用注意事项 Points in Use

加工环境 Advice on Cutting Environment

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) Advice on Finishing Allowance (stock amount)

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要。**
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要。**
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



高硬度钢～52 Hardened Steel HRC H
高硬度钢～60 Hardened Steel HRC H
高硬度钢～65 Hardened Steel HRC H
高硬度钢～70 Hardened Steel HRC H

H ～52高硬度钢 HRC Hardened Steel
H ～60高硬度钢 HRC Hardened Steel
H ～65高硬度钢 HRC Hardened Steel
H ～70高硬度钢 HRC Hardened Steel

CBN 核心系列 CBN Core Line

SSPBL220

规格 Size R0.1 ～ R1

CBN ≦70 HRC

CBN超精加工用长颈螺旋球头铣刀
CBN Super Spiral Long Neck Ball End Mill

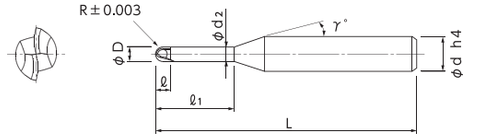
共有27种规格
Total 27 sizes

L/D最大10倍，可实现具有光泽的精加工面

Realized glossy finished surface by maximum L/D=10

2 | 20° | R ±0.003 | φd h4 | 3D





- 进一步延长了SSPB220的颈长，规格实现了标准化。
- 采用兼具锋利度和耐崩刃性的螺旋球头形状以及较强的倒锥形状，在发挥SSPB220特长的同时能够对应深沟精加工。
- Added longer under neck length type to SSPB220 series.
- Realized deeper milling by adoption of spiral ball shape and strong back taper shape to improve both sharpness and the chipping resistance of cutting edges.



刀刃形状
Cutting edge shape

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00506-00101	R0.1	1	0.15	0.2	0.19	15°	4	50	33,000
01-00506-00151	R0.15	0.9	0.23	0.3	0.28	15°	4	50	31,500
01-00506-00152		1.5	0.23	0.3	0.28	15°	4	50	31,500
★ 01-00506-00201	R0.2	2	0.3	0.4	0.37	15°	4	50	30,000
★ 01-00506-00202		3	0.3	0.4	0.37	15°	4	52	30,000
★ 01-00506-00251	R0.25	1.5	0.38	0.5	0.46	15°	4	50	29,000
★ 01-00506-00252		2.5	0.38	0.5	0.46	15°	4	50	29,000
★ 01-00506-00253		3.5	0.38	0.5	0.46	15°	4	52	29,000
★ 01-00506-00301	R0.3	3	0.5	0.6	0.56	15°	4	50	28,000
★ 01-00506-00302		4	0.5	0.6	0.56	15°	4	53	28,000
★ 01-00506-00303		5	0.5	0.6	0.56	15°	4	53	28,500
★ 01-00506-00304		6	0.5	0.6	0.56	15°	4	53	28,500
★ 01-00506-00401	R0.4	4	0.6	0.8	0.76	15°	4	53	28,000
★ 01-00506-00402		6	0.6	0.8	0.76	15°	4	53	28,000
★ 01-00506-00501	R0.5	4	0.7	1	0.95	15°	4	51	28,000
★ 01-00506-00502		6	0.7	1	0.95	15°	4	53	28,000
★ 01-00506-00503		8	0.7	1	0.95	15°	4	53	28,500
★ 01-00506-00504		10	0.7	1	0.95	15°	4	53	28,500
★ 01-00506-00601	R0.6	6	0.8	1.2	1.15	15°	4	53	29,000
★ 01-00506-00751	R0.75	7.5	1	1.5	1.45	15°	4	52	29,000
★ 01-00506-00752		10	1	1.5	1.45	15°	4	52	29,000
★ 01-00506-00753		15	1	1.5	1.45	15°	4	52	29,000
★ 01-00506-01001	R1	6	1.2	2	1.94	15°	4	53	29,000
★ 01-00506-01002		8	1.2	2	1.94	15°	4	53	29,000
★ 01-00506-01003		10	1.2	2	1.94	15°	4	53	29,500
★ 01-00506-01004		14	1.2	2	1.94	15°	4	53	29,500
★ 01-00506-01005		20	1.2	2	1.94	15°	4	53	29,500

订购方法 How to Order

请指定SSPBL220 球头半径(R)×颈长(ℓ1)。
When you order, indicate SSPBL220 (R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material		高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)				高硬度钢 Hardened Steels SKD11・ELMAX (～62HRC)				高速钢 High Speed Steels SKH・HAP (～68HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
		ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
0.1	1	0.005	0.005	200	40,000	0.005	0.005	150	40,000	0.003	0.003	100	40,000
0.15	0.9	0.005	0.005	600	40,000	0.005	0.005	400	40,000	0.003	0.005	300	40,000
	1.5	0.005	0.005	320	40,000	0.005	0.005	240	40,000	0.003	0.005	160	40,000
0.2	2	0.005	0.01	500	40,000	0.005	0.01	400	40,000	0.005	0.005	320	40,000
	3	0.005	0.005	250	40,000	0.005	0.005	200	40,000	0.003	0.005	120	40,000
0.25	1.5	0.01	0.01	1,200	40,000	0.01	0.01	1,000	40,000	0.005	0.01	600	40,000
	2.5	0.01	0.01	720	40,000	0.01	0.01	600	40,000	0.005	0.01	480	40,000
	3.5	0.01	0.01	400	36,000	0.005	0.01	320	36,000	0.005	0.005	240	36,000
0.3	3	0.01	0.02	1,200	40,000	0.01	0.02	800	40,000	0.01	0.01	600	40,000
	4	0.01	0.01	540	36,000	0.01	0.01	400	36,000	0.005	0.01	320	36,000
	5	0.01	0.01	360	30,000	0.005	0.01	320	30,000	0.005	0.005	240	30,000
	6	0.005	0.005	240	24,000	0.005	0.005	200	24,000	0.003	0.003	160	24,000
0.4	4	0.01	0.015	1,000	40,000	0.01	0.015	800	40,000	0.005	0.01	600	40,000
	6	0.005	0.01	720	30,000	0.005	0.01	540	30,000	0.005	0.005	400	30,000
0.5	4	0.02	0.03	1,600	40,000	0.02	0.02	1,200	40,000	0.01	0.015	800	40,000
	6	0.015	0.02	1,200	30,000	0.015	0.015	900	30,000	0.01	0.01	600	30,000
	8	0.01	0.015	720	20,000	0.01	0.01	540	20,000	0.005	0.01	400	20,000
	10	0.01	0.01	540	16,000	0.005	0.01	400	16,000	0.005	0.005	300	16,000
0.6	6	0.02	0.02	1,400	32,000	0.015	0.02	1,000	32,000	0.01	0.015	720	32,000
0.75	7.5	0.02	0.03	1,600	32,000	0.015	0.03	1,400	32,000	0.01	0.01	1,000	32,000
	10	0.015	0.02	900	20,000	0.01	0.02	720	20,000	0.01	0.01	540	20,000
	15	0.01	0.02	480	12,000	0.01	0.01	400	12,000	0.005	0.01	300	12,000
1	6	0.03	0.05	2,400	40,000	0.03	0.03	2,000	40,000	0.02	0.02	1,600	40,000
	8	0.03	0.03	2,000	36,000	0.02	0.03	1,400	36,000	0.01	0.02	1,000	36,000
	10	0.02	0.03	1,600	32,000	0.015	0.03	800	32,000	0.01	0.015	600	32,000
	14	0.02	0.02	900	20,000	0.01	0.02	720	20,000	0.01	0.01	540	20,000
	20	0.02	0.02	360	8,000	0.01	0.02	320	8,000	0.01	0.01	240	8,000

备 注 Notes

※1 切深量为中精加工、精加工时的最大值。请根据机床刚性和要求精度进行调整。
※2 预加工（中精加工）时请注意精加工余量相对于加工面需保持均匀。
※3 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※4 R角等负载大的加工部位，请特别注意参数设定和刀路轨迹等。
※5 加工深沟时，请充分注意冷却液的供油及排屑是否顺畅。
※6 建议使用油雾冷却方式。
※1 Max. Depth of Cut for semi-finishing and finishing. Adjust milling conditions depending on the rigidity of the machine and desired accuracy.
※2 Obtain uniform stock amount on the cutting surface in the pre-stage cutting (semi-finishing).
※3 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※4 Required careful set up of milling conditions, tool path and etc. at cutting parts, such as corners where will become overloaded.
※5 Coolant supply and chip disposal in the deep portion are very important.
※6 Oil mist coolant is recommended.

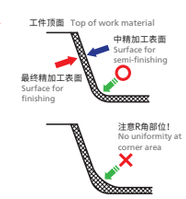
使用注意事项 Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) *Advice on Finishing Allowance (stock amount)*

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要。**
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要。**
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



SSPBTN220

规格 R0.1 × 颈角30′ ～ R1 × 颈角2°
Size R0.1 × neck taper angle30′～ R1×neck taper angle2°

CBN ≦70 HRC

CBN超精加工用长颈锥形螺旋球头铣刀
CBN Super Spiral Long Taper Neck Ball End Mill

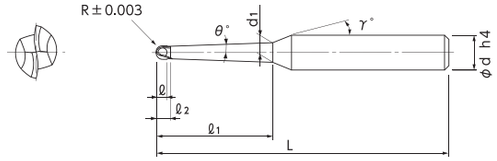
共有64种规格
Total 64 sizes

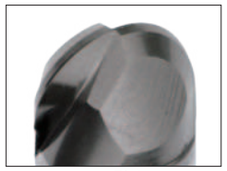
采用锥颈造型，具有高刚性
适用于高精度深沟加工

Taper neck design for high rigidity.
Suitable for deep and high accurate finishing

2 | 20° | R ±0.003 | φd h4 | 3D

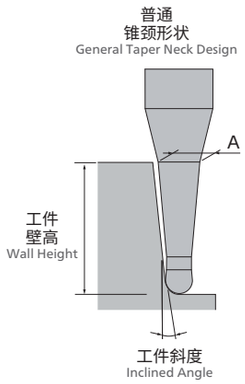


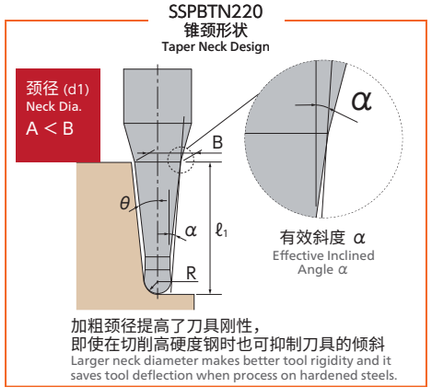




刀刃形状
Cutting edge shape

- CBN长颈球头铣刀采用锥颈形状，可实现高刚性。
- 搭配螺旋球头形状，提高了锋利度，提升了深沟精加工的精度与效率。
- To realize more rigid, CBN long neck ball end mill with taper neck are adopted.
- Both efficiency and accuracy are increasing by taper neck design and spiral ball shape with improved sharpness in finish machining on deep milling.





单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(α)有效斜度 Effective Inclined Angle	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长 Under Neck Length2	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 01-00507-02520	R0.25	30′	4	0°18′	0.54	0.38	0.62	15°	4	52	33,500
★ 01-00507-02521			5	0°18′	0.55	0.38	0.62	15°	4	52	34,000
★ 01-00507-02530		1°	4	0°48′	0.61	0.38	0.62	15°	4	52	33,500
★ 01-00507-02531			5	0°48′	0.64	0.38	0.62	15°	4	52	34,000
★ 01-00507-02540		1°30′	4	1°18′	0.67	0.38	0.62	15°	4	52	33,500
★ 01-00507-02541			5	1°18′	0.72	0.38	0.62	15°	4	52	34,000
★ 01-00507-02550		2°	4	1°48′	0.74	0.38	0.62	15°	4	52	33,500
★ 01-00507-02551			5	1°48′	0.8	0.38	0.62	15°	4	52	34,000
★ 01-00507-03020	R0.3	30′	5	0°18′	0.65	0.5	0.75	15°	4	53	32,500
★ 01-00507-03021			6	0°18′	0.66	0.5	0.75	15°	4	53	33,000
★ 01-00507-03030		1°	5	0°48′	0.74	0.5	0.75	15°	4	53	32,500
★ 01-00507-03031			6	0°48′	0.76	0.5	0.75	15°	4	53	33,000
★ 01-00507-03040		1°30′	5	1°18′	0.82	0.5	0.75	15°	4	53	32,500
★ 01-00507-03041			6	1°18′	0.86	0.5	0.75	15°	4	53	33,000
★ 01-00507-03050		2°	5	1°48′	0.9	0.5	0.75	15°	4	53	32,500
★ 01-00507-03051			6	1°48′	0.96	0.5	0.75	15°	4	53	33,000
★ 01-00507-05020	R0.5	30′	8	0°21′	1.1	0.7	1.25	15°	4	53	32,000
★ 01-00507-05021			10	0°21′	1.12	0.7	1.25	15°	4	53	32,500
★ 01-00507-05030		1°	8	0°51′	1.23	0.7	1.25	15°	4	53	32,000
★ 01-00507-05031			10	0°51′	1.29	0.7	1.25	15°	4	53	32,500
★ 01-00507-05040		1°30′	8	1°21′	1.36	0.7	1.25	15°	4	53	32,000
★ 01-00507-05041			10	1°21′	1.45	0.7	1.25	15°	4	53	32,500
★ 01-00507-05050		2°	8	1°51′	1.49	0.7	1.25	15°	4	53	32,000
★ 01-00507-05051			10	1°51′	1.62	0.7	1.25	15°	4	53	32,500
★ 01-00507-07520	R0.75	30′	10	0°22′	1.62	1	1.9	15°	4	52	33,500
★ 01-00507-07521			15	0°22′	1.69	1	1.9	15°	4	52	34,000
★ 01-00507-07530		1°	10	0°52′	1.78	1	1.9	15°	4	52	33,500
★ 01-00507-07531			15	0°52′	1.94	1	1.9	15°	4	52	34,000
★ 01-00507-07540		1°30′	10	1°22′	1.95	1	1.9	15°	4	52	33,500
★ 01-00507-07541			15	1°22′	2.18	1	1.9	15°	4	52	34,000
★ 01-00507-07550		2°	10	1°52′	2.11	1	1.9	15°	4	52	33,500
★ 01-00507-07551			15	1°52′	2.43	1	1.9	15°	4	52	34,000
★ 01-00507-10020	R1	30′	16	0°24′	2.21	1.2	2.5	15°	4	53	33,500
★ 01-00507-10021			20	0°24′	2.27	1.2	2.5	15°	4	53	34,000
★ 01-00507-10030		1°	16	0°54′	2.48	1.2	2.5	15°	4	53	33,500
★ 01-00507-10031			20	0°54′	2.6	1.2	2.5	15°	4	53	34,000
★ 01-00507-10040		1°30′	16	1°24′	2.74	1.2	2.5	15°	4	53	33,500
★ 01-00507-10041			20	1°24′	2.93	1.2	2.5	15°	4	53	34,000
★ 01-00507-10050		2°	16	1°54′	3	1.2	2.5	15°	4	53	33,500
★ 01-00507-10051			20	1°54′	3.26	1.2	2.5	15°	4	53	34,000

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(α)有效斜度 Effective Inclined Angle	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长 Under Neck Length2	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00507-01020	R0.1	30′	1.5	0°15′	0.22	0.15	0.25	15°	4	50	38,000
01-00507-01021			2	0°15′	0.22	0.15	0.25	15°	4	50	38,500
01-00507-01030		1°	1.5	0°45′	0.24	0.15	0.25	15°	4	50	38,000
01-00507-01031			2	0°45′	0.25	0.15	0.25	15°	4	50	38,500
01-00507-01040		1°30′	1.5	1°15′	0.27	0.15	0.25	15°	4	50	38,000
01-00507-01041			2	1°15′	0.29	0.15	0.25	15°	4	50	38,500
01-00507-01050		2°	1.5	1°45′	0.29	0.15	0.25	15°	4	50	38,000
01-00507-01051			2	1°45′	0.32	0.15	0.25	15°	4	50	38,500
01-00507-01520	R0.15	30′	2	0°16′	0.32	0.23	0.38	15°	4	50	36,000
01-00507-01521			3	0°16′	0.33	0.23	0.38	15°	4	52	36,500
01-00507-01530		1°	2	0°46′	0.35	0.23	0.38	15°	4	50	36,000
01-00507-01531			3	0°46′	0.38	0.23	0.38	15°	4	52	36,500
01-00507-01540		1°30′	2	1°16′	0.39	0.23	0.38	15°	4	50	36,000
01-00507-01541			3	1°16′	0.43	0.23	0.38	15°	4	52	36,500
01-00507-01550		2°	2	1°46′	0.42	0.23	0.38	15°	4	50	36,000
01-00507-01551			3	1°46′	0.48	0.23	0.38	15°	4	52	36,500
★ 01-00507-02020	R0.2	30′	3	0°18′	0.43	0.3	0.5	15°	4	50	34,500
★ 01-00507-02021			4	0°18′	0.44	0.3	0.5	15°	4	52	35,000
★ 01-00507-02030		1°	3	0°48′	0.48	0.3	0.5	15°	4	50	34,500
★ 01-00507-02031			4	0°48′	0.51	0.3	0.5	15°	4	52	35,000
★ 01-00507-02040		1°30′	3	1°18′	0.53	0.3	0.5	15°	4	50	34,500
★ 01-00507-02041			4	1°18′	0.58	0.3	0.5	15°	4	52	35,000
★ 01-00507-02050		2°	3	1°48′	0.58	0.3	0.5	15°	4	50	34,500
★ 01-00507-02051			4	1°48′	0.64	0.3	0.5	15°	4	52	35,000

订购方法 How to Order

请指定SSPBTN220 球头半径(R)×颈角(θ)×颈长(ℓ1)。
When you order, indicate SSPBTN220 (R)×(θ)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

SSPBTN220

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			高硬度钢 Hardened Steels STAVAX・SKD61 (~52HRC)				高硬度钢 Hardened Steels SKD11・ELMAX (~62HRC)				高速钢 High Speed Steels SKH・HAP (~68HRC)			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.1	30′	1.5	0.003	0.005	140	40,000	0.003	0.003	120	40,000	0.002	0.003	100	40,000
		2	0.003	0.003	120	40,000	0.002	0.003	100	40,000	0.002	0.002	80	40,000
	1°	1.5	0.003	0.005	160	40,000	0.003	0.003	140	40,000	0.002	0.003	120	40,000
		2	0.003	0.003	140	40,000	0.002	0.003	120	40,000	0.002	0.002	90	40,000
	1° 30′	1.5	0.003	0.005	200	40,000	0.003	0.003	160	40,000	0.002	0.003	140	40,000
		2	0.003	0.003	160	40,000	0.002	0.003	140	40,000	0.002	0.002	100	40,000
	2°	1.5	0.003	0.005	240	40,000	0.003	0.003	200	40,000	0.002	0.003	160	40,000
		2	0.003	0.003	200	40,000	0.002	0.003	160	40,000	0.002	0.002	120	40,000
0.15	30′	2	0.005	0.005	200	40,000	0.005	0.005	160	40,000	0.003	0.005	120	40,000
		3	0.003	0.005	160	40,000	0.003	0.003	120	40,000	0.002	0.003	100	40,000
	1°	2	0.005	0.005	240	40,000	0.005	0.005	200	40,000	0.003	0.005	160	40,000
		3	0.003	0.005	200	40,000	0.003	0.003	160	40,000	0.002	0.003	120	40,000
	1° 30′	2	0.005	0.005	320	40,000	0.005	0.005	240	40,000	0.003	0.005	200	40,000
		3	0.003	0.005	240	40,000	0.003	0.003	200	40,000	0.002	0.003	160	40,000
	2°	2	0.005	0.005	400	40,000	0.005	0.005	300	40,000	0.003	0.005	240	40,000
		3	0.003	0.005	300	40,000	0.003	0.003	240	40,000	0.002	0.003	180	40,000
0.2	30′	3	0.007	0.01	320	40,000	0.005	0.01	240	40,000	0.005	0.005	160	40,000
		4	0.005	0.005	240	36,000	0.005	0.005	180	36,000	0.003	0.005	120	36,000
	1°	3	0.007	0.01	400	40,000	0.005	0.01	300	40,000	0.005	0.005	200	40,000
		4	0.005	0.005	320	36,000	0.005	0.005	240	36,000	0.003	0.005	160	36,000
	1° 30′	3	0.007	0.01	480	40,000	0.005	0.01	360	40,000	0.005	0.005	240	40,000
		4	0.005	0.005	400	36,000	0.005	0.005	320	36,000	0.003	0.005	200	36,000
	2°	3	0.007	0.01	540	40,000	0.005	0.01	400	40,000	0.005	0.005	300	40,000
		4	0.005	0.005	480	36,000	0.005	0.005	360	36,000	0.003	0.005	240	36,000
0.25	30′	4	0.01	0.01	400	36,000	0.005	0.01	320	36,000	0.005	0.005	240	36,000
		5	0.005	0.01	320	32,000	0.005	0.005	240	32,000	0.003	0.005	160	32,000
	1°	4	0.01	0.01	480	36,000	0.005	0.01	400	36,000	0.005	0.005	300	36,000
		5	0.005	0.01	400	32,000	0.005	0.005	320	32,000	0.003	0.005	240	32,000
	1° 30′	4	0.01	0.01	640	36,000	0.005	0.01	480	36,000	0.005	0.005	360	36,000
		5	0.005	0.01	540	32,000	0.005	0.005	400	32,000	0.003	0.005	300	32,000
	2°	4	0.01	0.01	720	36,000	0.005	0.01	540	36,000	0.005	0.005	400	36,000
		5	0.005	0.01	640	32,000	0.005	0.005	480	32,000	0.003	0.005	360	32,000
0.3	30′	5	0.01	0.01	480	36,000	0.005	0.01	400	36,000	0.005	0.005	300	36,000
		6	0.005	0.01	400	32,000	0.005	0.005	360	32,000	0.003	0.005	240	32,000
	1°	5	0.01	0.01	640	36,000	0.005	0.01	480	36,000	0.005	0.005	400	36,000
		6	0.005	0.01	540	32,000	0.005	0.005	400	32,000	0.003	0.005	300	32,000
	1° 30′	5	0.01	0.01	800	36,000	0.005	0.01	640	36,000	0.005	0.005	480	36,000
		6	0.005	0.01	720	32,000	0.005	0.005	540	32,000	0.003	0.005	400	32,000
	2°	5	0.01	0.01	900	36,000	0.005	0.01	720	36,000	0.005	0.005	540	36,000
		6	0.005	0.01	800	32,000	0.005	0.005	640	32,000	0.003	0.005	480	32,000

加工材料 Work Material			高硬度钢 Hardened Steels STAVAX・SKD61 (~52HRC)				高硬度钢 Hardened Steels SKD11・ELMAX (~62HRC)				高速钢 High Speed Steels SKH・HAP (~68HRC)			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.5	30′	8	0.01	0.02	900	20,000	0.01	0.02	800	20,000	0.01	0.01	640	20,000
		10	0.01	0.02	720	16,000	0.005	0.01	640	16,000	0.005	0.005	480	16,000
	1°	8	0.01	0.02	1,000	20,000	0.01	0.02	900	20,000	0.01	0.01	800	20,000
		10	0.01	0.02	800	16,000	0.005	0.01	720	16,000	0.005	0.005	640	16,000
	1° 30′	8	0.01	0.02	1,200	20,000	0.01	0.02	1,000	20,000	0.01	0.01	900	20,000
		10	0.01	0.02	900	16,000	0.005	0.01	800	16,000	0.005	0.005	720	16,000
	2°	8	0.01	0.02	1,400	20,000	0.01	0.02	1,200	20,000	0.01	0.01	1,000	20,000
		10	0.01	0.02	1,000	16,000	0.005	0.01	900	16,000	0.005	0.005	800	16,000
0.75	30′	10	0.02	0.02	800	16,000	0.015	0.02	900	16,000	0.01	0.015	600	16,000
		15	0.01	0.02	540	12,000	0.01	0.01	480	12,000	0.005	0.01	400	12,000
	1°	10	0.02	0.02	900	16,000	0.015	0.02	1,000	16,000	0.01	0.015	720	16,000
		15	0.01	0.02	680	12,000	0.01	0.01	600	12,000	0.005	0.01	540	12,000
	1° 30′	10	0.02	0.02	1,200	20,000	0.015	0.02	1,000	20,000	0.01	0.015	900	20,000
		15	0.01	0.02	900	16,000	0.01	0.01	800	16,000	0.005	0.01	720	16,000
	2°	10	0.02	0.02	1,400	20,000	0.015	0.02	1,200	20,000	0.01	0.015	1,000	20,000
		15	0.01	0.02	1,000	16,000	0.01	0.01	900	16,000	0.005	0.01	800	16,000
1	30′	16	0.02	0.03	720	12,000	0.015	0.03	540	12,000	0.01	0.02	400	12,000
		20	0.02	0.02	400	8,000	0.01	0.02	360	8,000	0.01	0.01	240	8,000
	1°	16	0.02	0.03	1,000	16,000	0.015	0.03	800	16,000	0.01	0.02	600	16,000
		20	0.02	0.02	600	12,000	0.01	0.02	540	12,000	0.01	0.01	400	12,000
	1° 30′	16	0.02	0.03	1,200	20,000	0.015	0.03	1,000	20,000	0.01	0.02	800	20,000
		20	0.02	0.02	900	16,000	0.01	0.02	800	16,000	0.01	0.01	600	16,000
	2°	16	0.02	0.03	1,400	20,000	0.015	0.03	1,200	20,000	0.01	0.02	1,000	20,000
		20	0.02	0.02	1,000	16,000	0.01	0.02	900	16,000	0.01	0.01	800	16,000

备 注 Notes

※1 切深量为中精加工、精加工时的最大值。请根据机床刚性和要求精度进行调整。
※2 预加工（中精加工）时请注意精加工余量相对于加工面需保持均匀。
※3 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※4 R角等负载大的加工部位，请特别注意参数设定和刀路轨迹等。
※5 加工深沟时，请充分注意冷却液的供油及排屑是否顺畅。
※6 建议使用油雾冷却方式。
※1 Max. Depth of Cut for semi-finishing and finishing. Adjust milling conditions depending on the rigidity of the machine and desired accuracy.
※2 Obtain uniform stock amount on the cutting surface in the pre-stage cutting (semi-finishing).
※3 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※4 Required careful set up of milling conditions, tool path and etc. at cutting parts, such as corners where will become overloaded.
※5 Coolant supply and chip disposal in the deep portion are very important.
※6 Oil mist coolant is recommended.

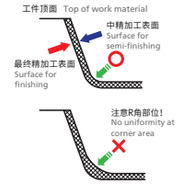
使用注意事项 Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量（余量） *Advice on Finishing Allowance (stock amount)*

- 使用小径CBN铣刀时，**精加工量（余量）均匀性非常重要。**
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要。**
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



SSB200

规格 Size R0.1 ～ R1

CBN ≦70 HRC

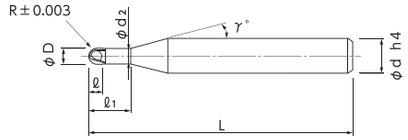
CBN超高速加工用球头铣刀
CBN Super Speed Ball End Mill

共有15种规格
Total 15 sizes

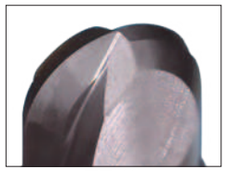
可设定与钨钢铣刀精加工同等的切深量进行加工

Capable to machine with the same depth of cut as carbide tool finishing





- 是高效率的CBN球头铣刀，兼具CBN的延长刀具寿命高精度和钨钢的使用便利性。
- 可使用与钨钢铣刀精加工同等的切深。
- 采用独创的刀刃形状，R角精度达±0.003，并提高了耐崩刃性能！
- R刃和外周刃的接线平滑无段差。
- ～70HRC的高硬度材料也能加工！
- This CBN Ball End Mill has realized both advantages of CBN and Carbide.
- Depth of Cut can be increased at the equivalent level to Carbide.
- Unique flute design with R-accuracy ±0.003 prevents chipping!
- Flute is smoothly tangent from straight line to R-curve.
- Applicable for hardened materials up to 70HRC!



刀刃形状
Cutting edge shape

加工材料 Work Material		高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)				高速钢 High Speed Steels SKH・HAP (～68HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
		ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
0.1	0.3	0.005	0.005	720		0.005	0.005	540		0.003	0.003	360	
0.15	0.3	0.005	0.01	1,400		0.005	0.01	800		0.005	0.005	500	
	0.5	0.005	0.005	1,200		0.005	0.005	640		0.003	0.005	460	
	0.75	0.005	0.005	1,000		0.005	0.005	540		0.003	0.005	400	
0.2	0.5	0.01	0.01	1,800		0.01	0.01	1,200		0.005	0.01	640	
	0.75	0.005	0.01	1,600		0.005	0.01	1,000		0.005	0.01	540	
	1	0.005	0.01	1,400		0.005	0.01	900		0.005	0.005	460	
0.25	1	0.015	0.015	1,800	50,000	0.01	0.015	1,500	50,000	0.01	0.01	1,100	50,000
0.3	1.5	0.02	0.03	2,000		0.01	0.02	2,000		0.01	0.02	1,500	
0.4	2	0.03	0.05	2,000		0.02	0.03	2,000		0.01	0.03	1,500	
0.5	2.5	0.05	0.05	3,000		0.03	0.05	3,000		0.02	0.03	2,000	
0.6	3	0.05	0.05	3,000		0.03	0.05	3,000		0.02	0.03	2,000	
0.75	3.8	0.05	0.1	4,000		0.05	0.05	4,000		0.02	0.05	3,000	
1	4	0.1	0.1	5,000		0.05	0.05	5,000		0.03	0.05	3,000	
	5	0.1	0.1	5,000		0.05	0.05	5,000		0.03	0.05	3,000	

备 注 Notes

※1 切深量为中精加工、精加工时的最大值。
※2 切深量的ap表示轴向切深量，ae表示步距量。
※3 建议使用油雾冷却方式。
※4 请以相同的比率调整主轴转速和进给速度。
※5 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※6 请根据需要控制刀具的伸出量。

※1 Depth of Cut shows the maximum value for semi-finishing and finishing.
※2 Depth of Cut: ap = Axial Depth of Cut / ae = Radial Depth of Cut.
※3 We recommend using oil mist coolant.
※4 Adjust both spindle speed and feed at the same rate.
※5 Adjust milling conditions according to the volume of Depth of Cut and rigidity of machine.
※6 Length of tool overhang must be as short as possible.

使用注意事项 Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) *Advice on Finishing Allowance (stock amount)*

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要。**
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要。**
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00510-00100	R0.1	0.3	0.15	0.2	0.19	15°	4	50	26,000
01-00510-00150	R0.15	0.3	0.23	0.3	0.28	15°	4	50	26,000
01-00510-00151		0.5	0.23	0.3	0.28	15°	4	50	26,000
01-00510-00152		0.75	0.23	0.3	0.28	15°	4	50	26,500
★ 01-00510-00200	R0.2	0.5	0.3	0.4	0.37	15°	4	50	25,000
★ 01-00510-00201		0.75	0.3	0.4	0.37	15°	4	50	25,500
★ 01-00510-00202		1	0.3	0.4	0.37	15°	4	50	25,500
★ 01-00510-00250	R0.25	1	0.38	0.5	0.46	15°	4	50	25,000
★ 01-00510-00300	R0.3	1.5	0.5	0.6	0.56	15°	4	50	24,000
★ 01-00510-00400	R0.4	2	0.6	0.8	0.76	15°	4	50	24,000
★ 01-00510-00500	R0.5	2.5	0.7	1	0.95	15°	4	50	24,000
★ 01-00510-00600	R0.6	3	0.8	1.2	1.15	15°	4	50	25,000
★ 01-00510-00750	R0.75	3.8	1	1.5	1.45	15°	4	52	25,000
★ 01-00510-01001	R1	4	1.2	2	1.94	15°	4	52	25,000
★ 01-00510-01000		5	1.2	2	1.94	15°	4	52	25,000

订购方法 How to Order
请指定SSB200 球头半径(R)×颈长(ℓ1)。
When you order, indicate SSB200 (R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-008

SSBL200

规格 Size R0.05 ～ R1

CBN ≦70 HRC

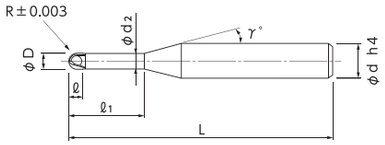
CBN超高速加工用长颈球头铣刀
CBN Super Speed Long Neck Ball End Mill

共有25种规格
Total 25 sizes

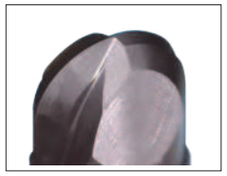
L/D最大10倍，适用于深沟精加工

Capable to machine at deep area finishing by maximum L/D=10





- 可适用于深沟加工。长颈型已经实现系列化!共有25种规格!
- 最大颈长10mm。适用于更深的沟槽加工。
- CBN的延长刀具寿命及长颈设计扩大了加工领域。
- 极小径规格从R0.05起已经实现标准化!
- 采用独创的刀刃形状，R角精度达±0.003，并提高了耐崩刃性能!
- Lineup of CBN tool with long neck applicable to deep milling, available 25 sizes in total.
- Enables milling more deeply by long under neck length up to 10mm.
- Enables wider application for milling by long neck in addition to long life and accurate finishing.
- Standardized in R0.05 at smallest.
- Unique flute design with R-accuracy ±0.003 prevents chipping!



刀刃形状
Cutting edge shape

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00511-00051	R0.05	0.3	0.08	0.1	0.09	15°	4	50	38,200
01-00511-00052		0.5	0.08	0.1	0.09	15°	4	50	39,800
01-00511-00075	R0.075	0.45	0.12	0.15	0.14	15°	4	50	38,200
01-00511-00076		0.75	0.12	0.15	0.14	15°	4	50	39,800
01-00511-00101	R0.1	0.6	0.15	0.2	0.19	15°	4	50	28,600
01-00511-00102		1	0.15	0.2	0.19	15°	4	50	30,000
01-00511-00151	R0.15	0.9	0.23	0.3	0.28	15°	4	50	28,600
01-00511-00152		1.5	0.23	0.3	0.28	15°	4	50	30,000
★ 01-00511-00201	R0.2	1.2	0.3	0.4	0.37	15°	4	50	26,000
★ 01-00511-00202		2	0.3	0.4	0.37	15°	4	50	27,600
★ 01-00511-00251	R0.25	1.5	0.38	0.5	0.46	15°	4	50	26,000
★ 01-00511-00252		2.5	0.38	0.5	0.46	15°	4	50	27,600
★ 01-00511-00301	R0.3	3	0.5	0.6	0.56	15°	4	50	25,600
★ 01-00511-00302		4	0.5	0.6	0.56	15°	4	52	25,600
★ 01-00511-00303		5	0.5	0.6	0.56	15°	4	52	26,000
★ 01-00511-00401	R0.4	4	0.6	0.8	0.76	12°	4	53	25,600
★ 01-00511-00501	R0.5	4	0.7	1	0.95	12°	4	53	25,600
★ 01-00511-00502		5	0.7	1	0.95	12°	4	53	25,600
★ 01-00511-00504		6	0.7	1	0.95	15°	4	53	25,600
★ 01-00511-00506		8	0.7	1	0.95	15°	4	53	26,000
★ 01-00511-00508		10	0.7	1	0.95	15°	4	53	26,600
★ 01-00511-00751	R0.75	7.5	1	1.5	1.45	15°	4	52	27,600
★ 01-00511-01001	R1	6	1.2	2	1.94	15°	4	52	25,000
★ 01-00511-01003		8	1.2	2	1.94	15°	4	52	27,600
★ 01-00511-01005		10	1.2	2	1.94	15°	4	52	27,600

订购方法 How to Order

请指定SSBL200 球头半径(R)×颈长(ℓ1)。
When you order, indicate SSBL200 (R)×(ℓ1).

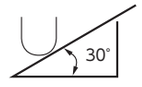
※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material			高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)				高速钢 High Speed Steels SKH (～68HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
0.05	0.3	3	0.005	0.005	200	50,000	0.003	0.005	150	50,000	0.002	0.003	120	50,000
	0.5	5	0.003	0.003	120	50,000	0.003	0.003	100	50,000	0.002	0.003	80	50,000
0.075	0.45	3	0.005	0.005	300	50,000	0.003	0.005	200	50,000	0.002	0.003	150	50,000
	0.75	5	0.003	0.003	200	50,000	0.003	0.003	150	50,000	0.002	0.003	100	50,000
0.1	0.6	3	0.005	0.005	500	50,000	0.005	0.005	380	50,000	0.003	0.003	280	50,000
	1	5	0.005	0.005	300	50,000	0.005	0.005	260	50,000	0.003	0.003	120	50,000
0.15	0.9	3	0.005	0.005	800	50,000	0.005	0.005	460	50,000	0.003	0.005	360	50,000
	1.5	5	0.005	0.005	480	50,000	0.005	0.005	320	50,000	0.003	0.005	280	50,000
0.2	1.2	3	0.005	0.01	1,200	50,000	0.005	0.01	820	50,000	0.005	0.005	580	50,000
	2	5	0.005	0.01	620	50,000	0.005	0.01	580	50,000	0.005	0.005	380	50,000
0.25	1.5	3	0.01	0.01	1,500	50,000	0.01	0.01	1,200	50,000	0.005	0.01	860	50,000
	2.5	5	0.01	0.01	800	50,000	0.01	0.01	680	50,000	0.005	0.01	540	50,000
0.3	3	5	0.01	0.02	1,600	40,000	0.01	0.02	1,200	40,000	0.01	0.01	920	40,000
	4	6.7	0.01	0.01	1,200	30,000	0.01	0.01	960	30,000	0.005	0.01	640	30,000
	5	8.3	0.01	0.01	800	30,000	0.005	0.01	680	30,000	0.005	0.005	480	30,000
0.4	4	5	0.01	0.03	1,500	30,000	0.01	0.02	1,200	30,000	0.01	0.01	920	30,000
0.5	4	4	0.03	0.05	2,400	40,000	0.02	0.03	2,400	40,000	0.02	0.02	1,500	40,000
	5	5	0.02	0.05	2,000	32,000	0.02	0.03	2,000	32,000	0.01	0.02	1,200	32,000
	6	6	0.02	0.03	1,500	25,000	0.01	0.02	1,500	25,000	0.01	0.01	1,000	25,000
	8	8	0.01	0.03	1,200	16,000	0.01	0.02	1,000	16,000	0.01	0.01	840	16,000
	10	10	0.01	0.02	800	12,000	0.005	0.01	720	12,000	0.005	0.005	620	12,000
0.75	7.5	5	0.02	0.03	2,000	32,000	0.01	0.03	1,800	32,000	0.01	0.01	1,200	32,000
1	6	3	0.05	0.05	4,000	40,000	0.03	0.03	4,000	40,000	0.02	0.03	2,600	40,000
	8	4	0.03	0.05	3,000	32,000	0.02	0.03	2,600	32,000	0.01	0.02	1,800	32,000
	10	5	0.02	0.03	2,000	24,000	0.01	0.03	1,600	24,000	0.01	0.02	1,200	24,000

备 注 Notes

※1 切深量为中精加工、精加工时的最大值。
※2 切深量的ap表示轴向切深量，ae表示步距量。
※3 建议使用油雾冷却方式。
※4 请以相同的比率调整主轴转速和进给速度。
※5 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※6 请根据需要控制刀具的伸出量。
※1 Depth of Cut shows the maximum value for semi-finishing and finishing.
※2 Depth of Cut: ap = Axial Depth of Cut / ae = Radial Depth of Cut.
※3 We recommend using oil mist coolant.
※4 Adjust both spindle speed and feed at the same rate.
※5 Adjust milling conditions according to the volume of Depth of Cut and rigidity of machine.
※6 Length of tool overhang must be as short as possible.

※7 外径与颈长之比（L/D）为5以上时，以加工面的倾斜角为30°以下为参考条件。
※7 Recommended milling conditions for the sizes L/D (Effective length / Diameter) = 5 or longer are based on machining inclined angle 30 deg. or lower.



使用注意事项 Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) *Advice on Finishing Allowance (stock amount)*

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要。**
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要。**
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



SSR200

规格 Size φ0.1 × R0.02 ～ φ2 × R0.5

CBN ≦70 HRC

CBN超高速加工用圆鼻铣刀
CBN Super Speed Corner Radius End Mill

共有172种规格
Total 172 sizes

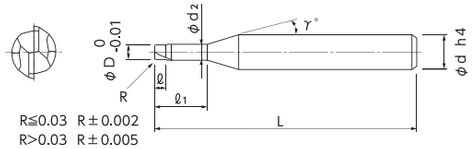
SSR200
CBN超高速加工用圆鼻铣刀
CBN Super Speed Corner Radius End Mill

刀刃采用CBN材质的圆鼻铣刀 共有172个规格，适用于加工各种形状

Corner radius end mill with CBN material at the cutting edge.
Total 172 sizes. Applicable for various machining profiles







- CBN超群的耐磨性实现了对角部R的高效加工。
- 整个切削刃为连续平滑的刀刃设计！实现高品质的加工表面精度。
- 适用于～70HRC的高硬度钢。
- 从φ0.1起共有172个规格。
- Realized high efficient machining with radius flute along with excellent wear resistance of CBN.
- Realized excellent surface roughness by introducing smooth tangent on all over flute.
- Compatible with hardened steels up to 70HRC.
- Lineup from Dia.0.1mm. 172 sizes in total.



刀刃形状
Cutting edge shape

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00490-01022	0.1	R0.02	0.2	0.04	0.09	15°	4	50	40,200
01-00490-01023			0.3	0.04	0.09	15°	4	50	40,800
01-00490-01024			0.5	0.04	0.09	15°	4	50	42,000
01-00490-01032		R0.03	0.2	0.04	0.09	15°	4	50	38,400
01-00490-01033			0.3	0.04	0.09	15°	4	50	39,000
01-00490-01034			0.5	0.04	0.09	15°	4	50	40,200
01-00490-01522	0.15	R0.02	0.2	0.06	0.14	15°	4	50	40,200
01-00490-01523			0.3	0.06	0.14	15°	4	50	40,800
01-00490-01524			0.5	0.06	0.14	15°	4	50	42,000
01-00490-01532		R0.03	0.2	0.06	0.14	15°	4	50	38,400
01-00490-01533			0.3	0.06	0.14	15°	4	50	39,000
01-00490-01534			0.5	0.06	0.14	15°	4	50	40,200
01-00490-02020	0.2	R0.02	0.3	0.08	0.19	15°	4	50	30,600
01-00490-02021			0.5	0.08	0.19	15°	4	50	30,600
01-00490-02022			1	0.08	0.19	15°	4	50	31,500
01-00490-02030		R0.03	0.3	0.08	0.19	15°	4	50	27,500
01-00490-02031			0.5	0.08	0.19	15°	4	50	27,500
01-00490-02032			1	0.08	0.19	15°	4	50	28,300
01-00490-02050		R0.05	0.3	0.08	0.19	15°	4	50	27,500
01-00490-02051			0.5	0.08	0.19	15°	4	50	27,500
01-00490-02052			1	0.08	0.19	15°	4	50	28,300
01-00490-03021	0.3	R0.02	0.5	0.13	0.28	15°	4	50	30,200
01-00490-03020			0.75	0.13	0.28	15°	4	50	30,400
01-00490-03022			1	0.13	0.28	15°	4	50	30,600
01-00490-03023			1.5	0.13	0.28	15°	4	50	31,000
01-00490-03024			2	0.13	0.28	15°	4	50	31,500
01-00490-03031	0.3	R0.03	0.5	0.13	0.28	15°	4	50	27,200
01-00490-03030			0.75	0.13	0.28	15°	4	50	27,400
01-00490-03032			1	0.13	0.28	15°	4	50	27,500
01-00490-03033			1.5	0.13	0.28	15°	4	50	27,900
01-00490-03034			2	0.13	0.28	15°	4	50	28,300
01-00490-03051		R0.05	0.5	0.13	0.28	15°	4	50	27,200
01-00490-03050			0.75	0.13	0.28	15°	4	50	27,400
01-00490-03052			1	0.13	0.28	15°	4	50	27,500
01-00490-03053			1.5	0.13	0.28	15°	4	50	27,900
01-00490-03054			2	0.13	0.28	15°	4	50	28,300
★ 01-00490-04021	0.4	R0.02	0.5	0.24	0.37	15°	4	50	28,700
★ 01-00490-04022			1	0.24	0.37	15°	4	50	28,900
★ 01-00490-04023			1.5	0.24	0.37	15°	4	50	29,200
★ 01-00490-04024			2	0.24	0.37	15°	4	50	29,600
★ 01-00490-04031		R0.03	0.5	0.24	0.37	15°	4	50	25,800
★ 01-00490-04032			1	0.24	0.37	15°	4	50	26,000
★ 01-00490-04033			1.5	0.24	0.37	15°	4	50	26,200
★ 01-00490-04034			2	0.24	0.37	15°	4	50	26,600
★ 01-00490-04051		R0.05	0.5	0.24	0.37	15°	4	50	25,800
★ 01-00490-04052			1	0.24	0.37	15°	4	50	26,000
★ 01-00490-04053			1.5	0.24	0.37	15°	4	50	26,000
★ 01-00490-04054			2	0.24	0.37	15°	4	50	26,600
★ 01-00490-04101		R0.1	0.5	0.24	0.37	15°	4	50	25,800
★ 01-00490-04102			1	0.24	0.37	15°	4	50	26,000
★ 01-00490-04103			1.5	0.24	0.37	15°	4	50	26,000
★ 01-00490-04104			2	0.24	0.37	15°	4	50	26,000
★ 01-00490-05020	0.5	R0.02	0.5	0.3	0.46	15°	4	48	23,600
★ 01-00490-05022			1	0.3	0.46	15°	4	50	23,800
★ 01-00490-05021			1.5	0.3	0.46	15°	4	50	24,000
★ 01-00490-05023			2.5	0.3	0.46	15°	4	50	26,300
★ 01-00490-05030		R0.03	0.5	0.3	0.46	15°	4	48	21,200
★ 01-00490-05032			1	0.3	0.46	15°	4	50	21,400
★ 01-00490-05031			1.5	0.3	0.46	15°	4	50	21,600
★ 01-00490-05033			2.5	0.3	0.46	15°	4	50	23,600
★ 01-00490-05050		R0.05	0.5	0.3	0.46	15°	4	48	21,200
★ 01-00490-05052			1	0.3	0.46	15°	4	50	21,400
★ 01-00490-05051			1.5	0.3	0.46	15°	4	50	21,600
★ 01-00490-05053			2.5	0.3	0.46	15°	4	50	23,600
★ 01-00490-05100		R0.1	0.5	0.3	0.46	15°	4	48	21,200
★ 01-00490-05102			1	0.3	0.46	15°	4	50	21,400
★ 01-00490-05101			1.5	0.3	0.46	15°	4	50	21,600
★ 01-00490-05103			2.5	0.3	0.46	15°	4	50	23,600
★ 01-00490-06021	0.6	R0.02	0.5	0.3	0.56	15°	4	48	23,600
★ 01-00490-06022			1	0.3	0.56	15°	4	50	23,800
★ 01-00490-06023			1.5	0.3	0.56	15°	4	50	24,000
★ 01-00490-06024			2.5	0.3	0.56	15°	4	50	26,300
★ 01-00490-06031		R0.03	0.5	0.3	0.56	15°	4	48	21,200
★ 01-00490-06032			1	0.3	0.56	15°	4	50	21,400
★ 01-00490-06033			1.5	0.3	0.56	15°	4	50	21,600
★ 01-00490-06034			2.5	0.3	0.56	15°	4	50	23,600
★ 01-00490-06051		R0.05	0.5	0.3	0.56	15°	4	48	21,200
★ 01-00490-06052			1	0.3	0.56	15°	4	50	21,400
★ 01-00490-06053			1.5	0.3	0.56	15°	4	50	21,600
★ 01-00490-06054			2.5	0.3	0.56	15°	4	50	23,600
★ 01-00490-06101		R0.1	0.5	0.3	0.56	15°	4	48	21,200
★ 01-00490-06102			1	0.3	0.56	15°	4	50	21,400
★ 01-00490-06103			1.5	0.3	0.56	15°	4	50	21,600
★ 01-00490-06104			2.5	0.3	0.56	15°	4	50	23,600
★ 01-00490-08021	0.8	R0.02	1.5	0.56	0.76	15°	4	50	24,000
★ 01-00490-08022			2.5	0.56	0.76	15°	4	50	26,300
★ 01-00490-08023			5	0.56	0.76	15°	4	53	27,200

高硬度钢～52 HRC Hardened Steel H
高硬度钢～60 HRC Hardened Steel H
高硬度钢～65 HRC Hardened Steel H
高硬度钢～70 HRC Hardened Steel H

订购方法 How to Order
请指定SSR200 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate SSR200 (D)×(R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-009, M-010

CBN 核心系列 CBN Core Line

H ～52高硬度钢 HRC Hardened Steel
H ～60高硬度钢 HRC Hardened Steel
H ～65高硬度钢 HRC Hardened Steel
H ～70高硬度钢 HRC Hardened Steel
CBN 核心系列 CBN Core Line

SSR200
CBN超高速加工用圆鼻铣刀
CBN Super Speed Corner Radius End Mill

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 01-00490-08031	0.8	R0.03	1.5	0.56	0.76	15°	4	50	21,600
★ 01-00490-08032			2.5	0.56	0.76	15°	4	50	23,600
★ 01-00490-08033			5	0.56	0.76	15°	4	53	24,400
★ 01-00490-08051		R0.05	1.5	0.56	0.76	15°	4	50	21,600
★ 01-00490-08052			2.5	0.56	0.76	15°	4	50	23,600
★ 01-00490-08053			5	0.56	0.76	15°	4	53	24,400
★ 01-00490-08101		R0.1	1.5	0.56	0.76	15°	4	50	21,600
★ 01-00490-08102			2.5	0.56	0.76	15°	4	50	23,600
★ 01-00490-08103			5	0.56	0.76	15°	4	53	24,400
★ 01-00490-10020	1	R0.02	1	0.7	0.95	15°	4	49	22,000
★ 01-00490-10022			2	0.7	0.95	15°	4	50	22,000
★ 01-00490-10021			3	0.7	0.95	15°	4	50	22,000
★ 01-00490-10023			5	0.7	0.95	15°	4	53	24,900
★ 01-00490-10030		R0.03	1	0.7	0.95	15°	4	49	19,800
★ 01-00490-10032			2	0.7	0.95	15°	4	50	19,800
★ 01-00490-10031			3	0.7	0.95	15°	4	50	19,800
★ 01-00490-10033			5	0.7	0.95	15°	4	53	22,400
★ 01-00490-10050		R0.05	1	0.7	0.95	15°	4	49	19,800
★ 01-00490-10052			2	0.7	0.95	15°	4	50	19,800
★ 01-00490-10051			3	0.7	0.95	15°	4	50	19,800
★ 01-00490-10053			5	0.7	0.95	15°	4	53	22,400
★ 01-00490-10100		R0.1	1	0.7	0.95	15°	4	49	19,800
★ 01-00490-10102			2	0.7	0.95	15°	4	50	19,800
★ 01-00490-10101			3	0.7	0.95	15°	4	50	19,800
★ 01-00490-10103			5	0.7	0.95	15°	4	53	22,400
★ 01-00490-10200		R0.2	1	0.7	0.95	15°	4	49	19,800
★ 01-00490-10202			2	0.7	0.95	15°	4	50	19,800
★ 01-00490-10201			3	0.7	0.95	15°	4	50	19,800
★ 01-00490-10203			5	0.7	0.95	15°	4	53	22,400
★ 01-00490-10300		R0.3	1	0.7	0.95	15°	4	49	19,800
★ 01-00490-10302			2	0.7	0.95	15°	4	50	19,800
★ 01-00490-10301			3	0.7	0.95	15°	4	50	19,800
★ 01-00490-10303			5	0.7	0.95	15°	4	53	22,400
★ 01-00490-15022	1.5	R0.02	2	1	1.45	15°	4	52	25,900
★ 01-00490-15020			3	1	1.45	15°	4	52	25,900
★ 01-00490-15021			4.5	1	1.45	15°	4	52	25,900
★ 01-00490-15023			7.5	1	1.45	15°	4	52	29,400
★ 01-00490-15032		R0.03	2	1	1.45	15°	4	52	23,300
★ 01-00490-15030			3	1	1.45	15°	4	52	23,300
★ 01-00490-15031			4.5	1	1.45	15°	4	52	23,300
★ 01-00490-15033			7.5	1	1.45	15°	4	52	26,400
★ 01-00490-15052		R0.05	2	1	1.45	15°	4	52	23,300
★ 01-00490-15050			3	1	1.45	15°	4	52	23,300
★ 01-00490-15051			4.5	1	1.45	15°	4	52	23,300
★ 01-00490-15053			7.5	1	1.45	15°	4	52	26,400
★ 01-00490-15102		R0.1	2	1	1.45	15°	4	52	23,300
★ 01-00490-15100			3	1	1.45	15°	4	52	23,300
★ 01-00490-15101			4.5	1	1.45	15°	4	52	23,300
★ 01-00490-15103			7.5	1	1.45	15°	4	52	26,400

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 01-00490-15202	1.5	R0.2	2	1	1.45	15°	4	52	23,300
★ 01-00490-15200			3	1	1.45	15°	4	52	23,300
★ 01-00490-15201			4.5	1	1.45	15°	4	52	23,300
★ 01-00490-15203			7.5	1	1.45	15°	4	52	26,400
★ 01-00490-15302		R0.3	2	1	1.45	15°	4	52	23,300
★ 01-00490-15300			3	1	1.45	15°	4	52	23,300
★ 01-00490-15301			4.5	1	1.45	15°	4	52	23,300
★ 01-00490-15303			7.5	1	1.45	15°	4	52	26,400
★ 01-00490-20022	2	R0.02	3	1.2	1.94	15°	4	53	26,700
★ 01-00490-20020			4	1.2	1.94	15°	4	53	26,700
★ 01-00490-20021			6	1.2	1.94	15°	4	53	26,700
★ 01-00490-20023			10	1.2	1.94	15°	4	53	29,800
★ 01-00490-20032		R0.03	3	1.2	1.94	15°	4	53	24,000
★ 01-00490-20030			4	1.2	1.94	15°	4	53	24,000
★ 01-00490-20031			6	1.2	1.94	15°	4	53	24,000
★ 01-00490-20033			10	1.2	1.94	15°	4	53	26,800
★ 01-00490-20052		R0.05	3	1.2	1.94	15°	4	53	24,000
★ 01-00490-20050			4	1.2	1.94	15°	4	53	24,000
★ 01-00490-20051			6	1.2	1.94	15°	4	53	24,000
★ 01-00490-20053			10	1.2	1.94	15°	4	53	26,800
★ 01-00490-20102		R0.1	3	1.2	1.94	15°	4	53	24,000
★ 01-00490-20100			4	1.2	1.94	15°	4	53	24,000
★ 01-00490-20101			6	1.2	1.94	15°	4	52	24,000
★ 01-00490-20103			10	1.2	1.94	15°	4	52	26,800
★ 01-00490-20202		R0.2	3	1.2	1.94	15°	4	53	24,000
★ 01-00490-20200			4	1.2	1.94	15°	4	53	24,000
★ 01-00490-20201			6	1.2	1.94	15°	4	52	24,000
★ 01-00490-20203			10	1.2	1.94	15°	4	52	26,700
★ 01-00490-20302		R0.3	3	1.2	1.94	15°	4	53	24,000
★ 01-00490-20300			4	1.2	1.94	15°	4	53	24,000
★ 01-00490-20301			6	1.2	1.94	15°	4	52	24,000
★ 01-00490-20303			10	1.2	1.94	15°	4	52	26,700
★ 01-00490-20502		R0.5	3	1.2	1.94	15°	4	53	24,000
★ 01-00490-20500			4	1.2	1.94	15°	4	53	24,000
★ 01-00490-20501			6	1.2	1.94	15°	4	52	24,000
★ 01-00490-20503			10	1.2	1.94	15°	4	52	26,700

订购方法 How to Order
请指定SSR200 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate SSR200 (D)×(R)×(ℓ1).
※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-009, M-010

使用注意事项 Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) *Advice on Finishing Allowance (stock amount)*

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要。**
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要。**
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



CBN 核心系列 CBN Core Line
B-029

SSR200

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX (~52HRC)				高硬度钢 Hardened Steels DC53・ELMAX・PD613 (~62HRC)				高速钢 High Speed Steels DRM3・YXR3 (~68HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.1	0.02・0.03	0.2	0.002	0.015	200	50,000	0.002	0.01	150	50,000	0.001	0.01	100	50,000
		0.3	0.002	0.015	150	50,000	0.001	0.01	100	50,000	0.001	0.01	50	50,000
		0.5	0.002	0.01	150	50,000	0.001	0.01	100	50,000	0.001	0.01	50	50,000
0.15	0.02・0.03	0.2	0.003	0.02	250	50,000	0.003	0.02	200	50,000	0.002	0.015	150	50,000
		0.3	0.003	0.02	200	50,000	0.003	0.02	150	50,000	0.002	0.015	100	50,000
		0.5	0.002	0.02	200	50,000	0.002	0.02	150	50,000	0.001	0.015	100	50,000
0.2	0.02・0.03・0.05	0.3	0.003	0.03	400	50,000	0.003	0.03	350	50,000	0.002	0.02	250	50,000
		0.5	0.003	0.03	300	50,000	0.003	0.03	300	50,000	0.002	0.02	200	50,000
		1	0.003	0.02	200	50,000	0.003	0.02	200	50,000	0.002	0.01	100	50,000
0.3	0.02・0.03・0.05	0.5・0.75・1	0.003	0.05	500	50,000	0.003	0.05	400	50,000	0.002	0.03	300	50,000
		1.5・2	0.003	0.03	400	50,000	0.003	0.03	300	50,000	0.002	0.02	200	50,000
0.4	0.02・0.03・0.05・0.1	0.5・1	0.005	0.1	700	50,000	0.005	0.1	600	50,000	0.003	0.03	400	50,000
		1.5・2	0.005	0.05	500	50,000	0.005	0.05	400	50,000	0.003	0.02	300	50,000
0.5	0.02・0.03	0.5・1・1.5	0.005	0.2	600	50,000	0.005	0.2	600	50,000	0.003	0.1	500	50,000
		2.5	0.005	0.1	600	50,000	0.005	0.1	600	50,000	0.003	0.05	500	50,000
	0.05	0.5・1・1.5	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.005	0.2	500	50,000
		2.5	0.01	0.1	600	50,000	0.01	0.1	600	50,000	0.005	0.1	500	50,000
	0.1	0.5・1・1.5	0.02	0.2	800	50,000	0.02	0.2	800	50,000	0.01	0.1	700	50,000
		2.5	0.01	0.1	800	50,000	0.01	0.1	800	50,000	0.01	0.05	700	50,000
0.6	0.02・0.03	0.5・1・1.5	0.005	0.2	600	50,000	0.005	0.2	600	50,000	0.003	0.1	500	50,000
		2.5	0.005	0.1	600	50,000	0.005	0.1	600	50,000	0.003	0.05	500	50,000
	0.05	0.5・1・1.5	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.005	0.2	500	50,000
		2.5	0.01	0.1	600	50,000	0.01	0.1	600	50,000	0.005	0.1	500	50,000
	0.1	0.5・1・1.5	0.02	0.2	1,000	50,000	0.02	0.2	1,000	50,000	0.01	0.1	700	50,000
		2.5	0.01	0.1	1,000	50,000	0.01	0.1	1,000	50,000	0.01	0.05	700	50,000
0.8	0.02・0.03	1.5・2.5	0.005	0.2	800	50,000	0.005	0.2	800	50,000	0.003	0.1	600	40,000
		5	0.005	0.1	800	50,000	0.005	0.1	800	50,000	0.003	0.05	600	40,000
	0.05	1.5・2.5	0.02	0.3	1,000	50,000	0.02	0.2	1,000	50,000	0.01	0.1	700	40,000
		5	0.01	0.2	1,000	50,000	0.01	0.1	1,000	50,000	0.01	0.05	700	40,000
	0.1	1.5・2.5	0.02	0.3	1,400	50,000	0.02	0.2	1,200	50,000	0.01	0.1	1,000	40,000
		5	0.01	0.2	1,400	50,000	0.01	0.1	1,200	50,000	0.01	0.05	1,000	40,000

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX (~52HRC)				高硬度钢 Hardened Steels DC53・ELMAX・PD613 (~62HRC)				高速钢 High Speed Steels DRM3・YXR3 (~68HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
1	0.02・0.03	1・2	0.005	0.4	800	48,000	0.005	0.3	800	48,000	0.005	0.2	600	32,000
	0.05		0.01	0.4	1,000	48,000	0.01	0.3	1,000	48,000	0.01	0.2	800	32,000
	0.1・0.2・0.3		0.03	0.4	1,500	48,000	0.03	0.3	1,200	48,000	0.01	0.2	1,000	32,000
	0.02・0.03	3・5	0.005	0.3	800	48,000	0.005	0.2	800	48,000	0.005	0.1	600	32,000
	0.05		0.01	0.3	1,000	48,000	0.01	0.2	1,000	48,000	0.01	0.1	800	32,000
	0.1・0.2・0.3		0.02	0.3	1,500	48,000	0.02	0.2	1,200	48,000	0.01	0.1	1,000	32,000
1.5	0.02・0.03	2	0.005	0.7	1,200	32,000	0.005	0.6	1,100	32,000	0.005	0.3	900	20,000
	0.05		0.02	0.7	1,200	32,000	0.01	0.6	1,100	32,000	0.01	0.3	900	20,000
	0.1・0.2・0.3		0.04	0.7	2,400	32,000	0.04	0.6	1,800	32,000	0.01	0.3	1,300	20,000
	0.02・0.03	3・4.5	0.005	0.7	1,000	32,000	0.005	0.6	1,000	32,000	0.005	0.3	800	20,000
	0.05		0.02	0.7	1,000	32,000	0.01	0.6	1,000	32,000	0.01	0.3	800	20,000
	0.1・0.2・0.3		0.04	0.7	2,000	32,000	0.04	0.6	1,500	32,000	0.01	0.3	1,200	20,000
	0.02・0.03	7.5	0.005	0.5	1,000	32,000	0.005	0.4	1,000	32,000	0.005	0.2	800	20,000
	0.05		0.02	0.5	1,000	32,000	0.01	0.4	1,000	32,000	0.01	0.2	800	20,000
	0.1・0.2・0.3		0.03	0.5	2,000	32,000	0.03	0.4	1,500	32,000	0.01	0.2	1,200	20,000
2	0.02・0.03	3	0.005	0.8	1,200	24,000	0.005	0.7	1,100	24,000	0.005	0.5	900	16,000
	0.05		0.02	0.8	1,200	24,000	0.01	0.7	1,100	24,000	0.01	0.5	900	16,000
	0.1・0.2・0.3・0.5		0.05	0.8	2,400	24,000	0.05	0.7	1,800	24,000	0.01	0.5	1,300	16,000
	0.02・0.03	4・6	0.005	0.8	1,000	24,000	0.005	0.7	1,000	24,000	0.005	0.5	800	16,000
	0.05		0.02	0.8	1,000	24,000	0.01	0.7	1,000	24,000	0.01	0.5	800	16,000
	0.1・0.2・0.3・0.5		0.05	0.8	2,000	24,000	0.05	0.7	1,500	24,000	0.01	0.5	1,200	16,000
	0.02・0.03	10	0.005	0.6	1,000	24,000	0.005	0.5	1,000	24,000	0.005	0.3	800	16,000
	0.05		0.02	0.6	1,000	24,000	0.01	0.5	1,000	24,000	0.01	0.3	800	16,000
	0.1・0.2・0.3・0.5		0.03	0.6	2,000	24,000	0.03	0.5	1,500	24,000	0.01	0.3	1,200	16,000

备 注 Notes	
	※1 切深量为中精加工、精加工时的最大值。请根据机床刚性和要求精度进行调整。 ※2 切深量的ap表示轴向切深量，ae表示径向切深量。 ※3 轴向进刀建议采用螺旋进刀及倾斜进刀方式。 ※4 建议使用油雾冷却方式。 ※5 请以相同的比率调整主轴转速和进给速度。 ※6 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※7 请根据需要控制刀具的伸出量。 ※8 建议使用刚性较大的铣刀刀柄和机床。 ※1 Depth of Cut shows the maximum value for semi-finishing and finishing. Adjust milling conditions depending on the rigidity of the machine and desired accuracy. ※2 Depth of Cut: ap = Axial Depth of Cut / ae = Radial Depth of Cut. ※3 Recommend to apply helical or ramping for approaching into axial direction. ※4 We recommend using oil mist coolant. ※5 Adjust both spindle speed and feed at the same rate. ※6 Adjust milling conditions according to the volume of Depth of Cut and rigidity of machine. ※7 Length of tool overhang must be as short as possible. ※8 Machine, tool chuck must be sufficiently accurate.

圆鼻 Corner Radius
长颈 Long Neck
无涂层 Non-Coating
H ~52高硬度钢 HRC Hardened Steel ◎
H ~60高硬度钢 HRC Hardened Steel ◎
H ~65高硬度钢 HRC Hardened Steel ◎
H ~70高硬度钢 HRC Hardened Steel ◎
CBN 核心系列 CBN Core Line

SHR320

规格 Size φ0.5 × R0.1 ～ φ2 × R0.3

CBN ≦70 HRC

CBN高效率圆鼻铣刀
CBN High Efficient Corner Radius End Mill

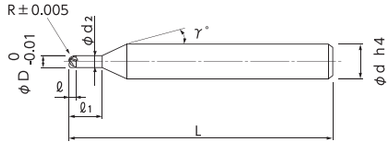
共有14种规格
Total 14 sizes

CBN材质的3刃圆鼻铣刀 可实现高效率的高精度加工

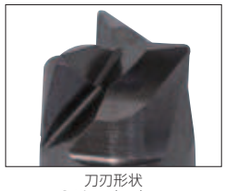
3-flute CBN corner radius end mill.
Realized high efficient and high accurate machining







- 采用3刃和螺旋形状圆角R，实现高精度・高效率的加工。
- Realized high accuracy and high efficiency machining by adopting 3 flutes and corner R with spiral shape.



刀刃形状
Cutting edge shape

加工材料 Work Material			高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)				高硬度钢 Hardened Steels SKD11・ELMAX (～62HRC)				高速钢 High Speed Steels SKH ・HAP (～68HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.5	0.1	1.5	0.008	0.2	1,500	50,000	0.005	0.15	800	50,000	0.003	0.1	600	50,000
		2.5	0.006	0.15	1,000	40,000	0.005	0.1	500	40,000	0.003	0.05	300	40,000
1	0.1	3	0.012	0.4	2,000	40,000	0.007	0.25	1,000	40,000	0.006	0.15	800	35,000
	0.2	5	0.008	0.3	1,500	30,000	0.005	0.15	800	30,000	0.004	0.1	400	25,000
1.5	0.1	4.5	0.015	0.6	2,500	35,000	0.008	0.4	1,200	35,000	0.007	0.2	1,000	30,000
	0.2	7.5	0.012	0.4	1,800	25,000	0.006	0.3	1,000	25,000	0.005	0.15	500	20,000
2	0.1	6	0.02	0.8	3,000	30,000	0.01	0.6	1,500	30,000	0.008	0.3	1,200	25,000
	0.3	10	0.015	0.6	2,000	20,000	0.008	0.4	1,000	20,000	0.006	0.2	600	18,000

备 注 Notes

※1 切深量是指进行等高线加工时的大概标准。请根据机床刚性和加工方法进行调整。
※2 建议以倾斜切入方式进刀。请将此时的切入角度设定在3°以内。
※3 预加工（中精加工）时请注意精加工余量相对于加工面需保持均匀。
※4 加工R角等负载大的部位或复杂的形状时，请特别注意参数设定和刀路轨迹等。
※5 请以相同的比率调整主轴转速和进给速度。
※6 建议使用油雾冷却方式。

※1 Depth of Cut is for contour line milling as the value of reference. Please adjust it depending on machine rigidity and machining method.
※2 Ramping approach with angle 3° or smaller is recommended.
※3 Recommend leaving uniform finishing allowance on the machined surface in the pre-stage cutting (semi-finishing).
※4 When cutting high load sections or complex shapes, it requires attention to condition setting and tool path.
※5 Adjust both spindle speed and feed at the same rate.
※6 Oil mist coolant is recommended.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00495-05011	0.5	R0.1	1.5	0.25	0.46	15°	4	50	26,000
01-00495-05012			2.5	0.25	0.46	15°	4	50	29,000
01-00495-10011	1	R0.1	3	0.5	0.95	15°	4	50	24,000
01-00495-10012			5	0.5	0.95	15°	4	52	27,000
01-00495-10021		R0.2	3	0.5	0.95	15°	4	50	24,000
01-00495-10022			5	0.5	0.95	15°	4	52	27,000
★ 01-00495-15011	1.5	R0.1	4.5	0.75	1.45	15°	4	52	28,000
★ 01-00495-15012			7.5	0.75	1.45	15°	4	52	31,000
★ 01-00495-15021		R0.2	4.5	0.75	1.45	15°	4	52	28,000
★ 01-00495-15022			7.5	0.75	1.45	15°	4	52	31,000
★ 01-00495-20011	2	R0.1	6	1	1.94	15°	4	52	29,000
★ 01-00495-20012			10	1	1.94	15°	4	52	32,000
★ 01-00495-20031		R0.3	6	1	1.94	15°	4	52	29,000
★ 01-00495-20032			10	1	1.94	15°	4	52	32,000

订购方法 How to Order

请指定SHR320 外径(D)×角半径(R)×颈长(ℓ1)。 ※(γ)为参考值。
When you order, indicate SHR320 (D)×(R)×(ℓ1). ※(γ) is reference value.

使用注意事项 Points in Use

加工环境 *Advice on Cutting Environment*

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

精加工量(余量) *Advice on Finishing Allowance (stock amount)*

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要。**
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要。**
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



SHPR400

规格 Size φ0.1 × R0.01 ～ φ3 × R0.2

CBN ≦70 HRC

CBN超高精度圆鼻铣刀
CBN Super High Precision Corner Radius End Mill

共有142种规格
Total 142 sizes

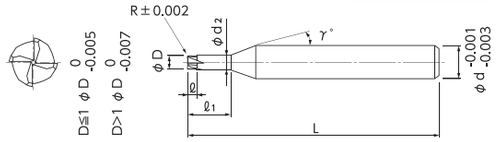
SHPR400
CBN超高精度圆鼻铣刀
CBN Super High Precision Corner Radius End Mill

最小刃径φ0.1起的4刃圆鼻铣刀 追求加工精度的高精度规格

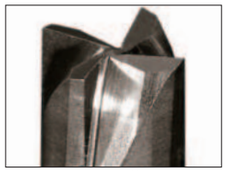
4-flute corner radius end mill from Dia.0.1mm.
High precise type to pursue machining accuracy

4 | 0° | Corner R ±0.002 | φd −0.001 −0.003 | Slot | Face





- 采用新开发的刀刃形状，减轻了切削阻力！成功提高了精加工精度。
- 刃径φ0.1起的4刃！提高了微细切削的加工效率和寿命的稳定性。
- 柄径公差在-0.001mm至-0.003mm的2μm范围内，支持超高精度型的热缩刀柄。
- New tool design has been developed to reduce the cutting resistance and upgrade the finishing accuracy!
- Realized 4-Flute type from φ0.1! Achieved higher efficient machining and more stable tool life in micro machining!
- The shank diameter accuracy is 2μm (-0.001~-0.003), and also supports high precision shrink fit holders.



刀刃形状
Cutting edge shape

φ0.1及φ0.15的底刃的轴中心为止都没有刀刃。请注意切削余部。
Beware of stocks because there is no blade to the shaft center of endteeth of φ0.1 and φ0.15.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00485-01002	0.1	R0.01	0.2	0.04	0.09	15°	4	50	48,300
01-00485-01003			0.3	0.04	0.09	15°	4	50	48,900
01-00485-01005			0.5	0.04	0.09	15°	4	50	49,800
01-00485-01022		R0.02	0.2	0.04	0.09	15°	4	50	48,300
01-00485-01023			0.3	0.04	0.09	15°	4	50	48,900
01-00485-01025			0.5	0.04	0.09	15°	4	50	49,800
01-00485-01522	0.15	R0.02	0.2	0.06	0.14	15°	4	50	48,300
01-00485-01523			0.3	0.06	0.14	15°	4	50	48,900
01-00485-01525			0.5	0.06	0.14	15°	4	50	49,800
01-00485-01532		R0.03	0.2	0.06	0.14	15°	4	50	46,100
01-00485-01533			0.3	0.06	0.14	15°	4	50	46,800
01-00485-01535			0.5	0.06	0.14	15°	4	50	48,300
01-00485-02203	0.2	R0.02	0.3	0.08	0.19	15°	4	50	36,800
01-00485-02205			0.5	0.08	0.19	15°	4	50	36,800
01-00485-02210			1	0.08	0.19	15°	4	50	37,800
01-00485-02303		R0.03	0.3	0.08	0.19	15°	4	50	33,000
01-00485-02305			0.5	0.08	0.19	15°	4	50	33,000
01-00485-02310			1	0.08	0.19	15°	4	50	34,000
01-00485-03205	0.3	R0.02	0.5	0.13	0.285	15°	4	50	36,300
01-00485-03207			0.75	0.13	0.285	15°	4	50	36,500
01-00485-03210			1	0.13	0.285	15°	4	50	36,800
01-00485-03215			1.5	0.13	0.285	15°	4	50	37,200
01-00485-03220			2	0.13	0.285	15°	4	50	37,800
01-00485-03405	0.3	R0.05	0.5	0.13	0.285	15°	4	50	32,700
01-00485-03407			0.75	0.13	0.285	15°	4	50	32,900
01-00485-03410			1	0.13	0.285	15°	4	50	33,000
01-00485-03415			1.5	0.13	0.285	15°	4	50	33,500
01-00485-03420			2	0.13	0.285	15°	4	50	34,000
★ 01-00485-04205	0.4	R0.02	0.5	0.24	0.37	15°	4	50	34,400
★ 01-00485-04210			1	0.24	0.37	15°	4	50	34,700
★ 01-00485-04215			1.5	0.24	0.37	15°	4	50	35,000
★ 01-00485-04220			2	0.24	0.37	15°	4	50	35,400
★ 01-00485-04225			2.5	0.24	0.37	15°	4	50	36,000
★ 01-00485-04405		R0.05	0.5	0.24	0.37	15°	4	50	31,000
★ 01-00485-04410			1	0.24	0.37	15°	4	50	31,200
★ 01-00485-04415			1.5	0.24	0.37	15°	4	50	31,200
★ 01-00485-04420			2	0.24	0.37	15°	4	50	31,900
★ 01-00485-04425			2.5	0.24	0.37	15°	4	50	32,400
★ 01-00485-04505		R0.1	0.5	0.24	0.37	15°	4	50	31,000
★ 01-00485-04510			1	0.24	0.37	15°	4	50	31,200
★ 01-00485-04515			1.5	0.24	0.37	15°	4	50	31,200
★ 01-00485-04520			2	0.24	0.37	15°	4	50	31,900
★ 01-00485-04525			2.5	0.24	0.37	15°	4	50	32,400
★ 01-00485-05205	0.5	R0.02	0.5	0.3	0.46	15°	4	48	28,400
★ 01-00485-05210			1	0.3	0.46	15°	4	50	28,600
★ 01-00485-05215			1.5	0.3	0.46	15°	4	50	28,800
★ 01-00485-05220			2	0.3	0.46	15°	4	50	30,200
★ 01-00485-05225			2.5	0.3	0.46	15°	4	50	31,600
★ 01-00485-05405		R0.05	0.5	0.3	0.46	15°	4	48	25,500
★ 01-00485-05410			1	0.3	0.46	15°	4	50	25,700
★ 01-00485-05415			1.5	0.3	0.46	15°	4	50	26,000
★ 01-00485-05420			2	0.3	0.46	15°	4	50	27,200
★ 01-00485-05425			2.5	0.3	0.46	15°	4	50	28,400
★ 01-00485-05505		R0.1	0.5	0.3	0.46	15°	4	48	25,500
★ 01-00485-05510			1	0.3	0.46	15°	4	50	25,700
★ 01-00485-05515			1.5	0.3	0.46	15°	4	50	26,000
★ 01-00485-05520			2	0.3	0.46	15°	4	50	27,200
★ 01-00485-05525			2.5	0.3	0.46	15°	4	50	28,400
★ 01-00485-06205	0.6	R0.02	0.5	0.3	0.56	15°	4	48	28,400
★ 01-00485-06210			1	0.3	0.56	15°	4	50	28,600
★ 01-00485-06215			1.5	0.3	0.56	15°	4	50	28,800
★ 01-00485-06220			2	0.3	0.56	15°	4	50	31,200
★ 01-00485-06225			2.5	0.3	0.56	15°	4	50	31,500
★ 01-00485-06405		R0.05	0.5	0.3	0.56	15°	4	48	25,500
★ 01-00485-06410			1	0.3	0.56	15°	4	50	25,700
★ 01-00485-06415			1.5	0.3	0.56	15°	4	50	26,000
★ 01-00485-06420			2	0.3	0.56	15°	4	50	27,000
★ 01-00485-06425			2.5	0.3	0.56	15°	4	50	28,400
★ 01-00485-06505		R0.1	0.5	0.3	0.56	15°	4	48	25,500
★ 01-00485-06510			1	0.3	0.56	15°	4	50	25,700
★ 01-00485-06515			1.5	0.3	0.56	15°	4	50	26,000
★ 01-00485-06520			2	0.3	0.56	15°	4	50	27,000
★ 01-00485-06525			2.5	0.3	0.56	15°	4	50	28,400
★ 01-00485-08215	0.8	R0.02	1.5	0.56	0.76	15°	4	50	28,800
★ 01-00485-08225			2.5	0.56	0.76	15°	4	50	31,600
★ 01-00485-08250			5	0.56	0.76	15°	4	53	32,700
★ 01-00485-08415		R0.05	1.5	0.56	0.76	15°	4	50	26,000
★ 01-00485-08425			2.5	0.56	0.76	15°	4	50	28,400
★ 01-00485-08450			5	0.56	0.76	15°	4	53	29,300
★ 01-00485-08515		R0.1	1.5	0.56	0.76	15°	4	50	26,000
★ 01-00485-08525			2.5	0.56	0.76	15°	4	50	28,400
★ 01-00485-08550			5	0.56	0.76	15°	4	53	29,300
★ 01-00485-10201	1	R0.02	1	0.7	0.95	15°	4	49	26,400
★ 01-00485-10202			2	0.7	0.95	15°	4	50	26,400
★ 01-00485-10203			3	0.7	0.95	15°	4	50	26,400
★ 01-00485-10205			5	0.7	0.95	15°	4	53	29,900

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

订购方法 How to Order
请指定SHPR400 外径(D)×角半径(R)×颈长(ℓ1)。 ※(γ)为参考值。
When you order, indicate SHPR400 (D)×(R)×(ℓ1). ※(γ) is reference value.

加工案例 Machining case
M-011

圆鼻 长颈 Long Neck
Corner Radius 无涂层 Non-Coating
H ～52高硬度钢 HRC Hardened Steel
H ～60高硬度钢 HRC Hardened Steel
H ～65高硬度钢 HRC Hardened Steel
H ～70高硬度钢 HRC Hardened Steel
CBN 核心系列 CBN Core Line

CBN超高精度圆鼻铣刀
CBN Super High Precision Corner Radius End Mill

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元] Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 01-00485-10401	1	R0.05	1	0.7	0.95	15°	4	49	23,800
★ 01-00485-10402			2	0.7	0.95	15°	4	50	23,800
★ 01-00485-10403			3	0.7	0.95	15°	4	50	23,800
★ 01-00485-10405			5	0.7	0.95	15°	4	53	26,900
★ 01-00485-10501		R0.1	1	0.7	0.95	15°	4	49	23,800
★ 01-00485-10502			2	0.7	0.95	15°	4	50	23,800
★ 01-00485-10503			3	0.7	0.95	15°	4	50	23,800
★ 01-00485-10505			5	0.7	0.95	15°	4	53	26,900
★ 01-00485-10601		R0.2	1	0.7	0.95	15°	4	49	23,800
★ 01-00485-10602			2	0.7	0.95	15°	4	50	23,800
★ 01-00485-10603			3	0.7	0.95	15°	4	50	23,800
★ 01-00485-10605			5	0.7	0.95	15°	4	53	26,900
★ 01-00485-15202	1.5	R0.02	2	1	1.45	15°	4	52	31,100
★ 01-00485-15203			3	1	1.45	15°	4	52	31,100
★ 01-00485-15204			4.5	1	1.45	15°	4	52	31,100
★ 01-00485-15207			7.5	1	1.45	15°	4	52	35,300
★ 01-00485-15402		R0.05	2	1	1.45	15°	4	52	28,000
★ 01-00485-15403			3	1	1.45	15°	4	52	28,000
★ 01-00485-15404			4.5	1	1.45	15°	4	52	28,000
★ 01-00485-15407			7.5	1	1.45	15°	4	52	31,700
★ 01-00485-15502		R0.1	2	1	1.45	15°	4	52	28,000
★ 01-00485-15503			3	1	1.45	15°	4	52	28,000
★ 01-00485-15504			4.5	1	1.45	15°	4	52	28,000
★ 01-00485-15507			7.5	1	1.45	15°	4	52	31,700
★ 01-00485-15602		R0.2	2	1	1.45	15°	4	52	28,000
★ 01-00485-15603			3	1	1.45	15°	4	52	28,000
★ 01-00485-15604			4.5	1	1.45	15°	4	52	28,000
★ 01-00485-15607			7.5	1	1.45	15°	4	52	31,700
★ 01-00485-20203	2	R0.02	3	1.2	1.94	15°	4	53	32,100
★ 01-00485-20204			4	1.2	1.94	15°	4	53	32,100
★ 01-00485-20206			6	1.2	1.94	15°	4	53	32,100
★ 01-00485-20210			10	1.2	1.94	15°	4	53	35,800
★ 01-00485-20403		R0.05	3	1.2	1.94	15°	4	53	28,800
★ 01-00485-20404			4	1.2	1.94	15°	4	53	28,800
★ 01-00485-20406			6	1.2	1.94	15°	4	53	28,800
★ 01-00485-20410			10	1.2	1.94	15°	4	53	32,200
★ 01-00485-20503		R0.1	3	1.2	1.94	15°	4	53	28,800
★ 01-00485-20504			4	1.2	1.94	15°	4	53	28,800
★ 01-00485-20506			6	1.2	1.94	15°	4	53	28,800
★ 01-00485-20510			10	1.2	1.94	15°	4	53	32,200
★ 01-00485-20603		R0.2	3	1.2	1.94	15°	4	53	28,800
★ 01-00485-20604			4	1.2	1.94	15°	4	53	28,800
★ 01-00485-20606			6	1.2	1.94	15°	4	53	28,800
★ 01-00485-20610			10	1.2	1.94	15°	4	53	32,100
★ 01-00485-30406	3	R0.05	6	1.8	2.85	15°	6	53	37,200
★ 01-00485-30409			9	1.8	2.85	15°	6	53	38,000
★ 01-00485-30412			12	1.8	2.85	15°	6	63	38,800
★ 01-00485-30415			15	1.8	2.85	15°	6	63	39,600
★ 01-00485-30506		R0.1	6	1.8	2.85	15°	6	53	37,200
★ 01-00485-30509			9	1.8	2.85	15°	6	53	38,000
★ 01-00485-30512			12	1.8	2.85	15°	6	63	38,800
★ 01-00485-30515			15	1.8	2.85	15°	6	63	39,600
★ 01-00485-30606		R0.2	6	1.8	2.85	15°	6	53	37,200
★ 01-00485-30609			9	1.8	2.85	15°	6	53	38,000
★ 01-00485-30612			12	1.8	2.85	15°	6	63	38,800
★ 01-00485-30615			15	1.8	2.85	15°	6	63	39,600

订购方法 How to Order
请指定SHPR400 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate SHPR400 (D)×(R)×(ℓ1).
※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-011

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)				高硬度钢 Hardened Steels SKD11・ELMAX (～62HRC)				高速钢 High Speed Steels SKH・HAP (～68HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
				ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
0.1	R0.01	0.2	2	0.002	0.015	320	50,000	0.002	0.01	240	50,000	0.001	0.01	120	50,000
		0.3	3	0.002	0.015	240	50,000	0.001	0.01	160	50,000	0.001	0.01	60	50,000
		0.5	5	0.002	0.01	240	50,000	0.001	0.01	160	50,000	0.001	0.01	60	50,000
	R0.02	0.2	2	0.002	0.015	400	50,000	0.002	0.01	300	50,000	0.001	0.01	200	50,000
		0.3	3	0.002	0.015	300	50,000	0.001	0.01	200	50,000	0.001	0.01	100	50,000
		0.5	5	0.002	0.01	300	50,000	0.001	0.01	200	50,000	0.001	0.01	100	50,000
0.15	R0.02	0.2	1.3	0.003	0.02	500	50,000	0.003	0.02	400	50,000	0.002	0.015	300	50,000
		0.3	2	0.003	0.02	400	50,000	0.003	0.02	300	50,000	0.002	0.015	200	50,000
		0.5	3.3	0.002	0.02	400	50,000	0.002	0.02	300	50,000	0.001	0.015	200	50,000
	R0.03	0.2	1.3	0.003	0.02	500	50,000	0.003	0.02	400	50,000	0.002	0.015	300	50,000
		0.3	2	0.003	0.02	400	50,000	0.003	0.02	300	50,000	0.002	0.015	200	50,000
		0.5	3.3	0.002	0.02	400	50,000	0.002	0.02	300	50,000	0.001	0.015	200	50,000
0.2	R0.02	0.3	1.5	0.003	0.03	800	50,000	0.003	0.03	700	50,000	0.002	0.02	500	50,000
		0.5	2.5	0.003	0.03	600	50,000	0.003	0.03	600	50,000	0.002	0.02	400	50,000
		1	5	0.003	0.02	400	50,000	0.003	0.02	400	50,000	0.002	0.01	200	50,000
	R0.03	0.3	1.5	0.003	0.03	800	50,000	0.003	0.03	700	50,000	0.002	0.02	500	50,000
		0.5	2.5	0.003	0.03	600	50,000	0.003	0.03	600	50,000	0.002	0.02	400	50,000
		1	5	0.003	0.02	400	50,000	0.003	0.02	400	50,000	0.002	0.01	200	50,000
0.3	R0.02	0.5	1.7	0.003	0.05	800	50,000	0.003	0.05	700	50,000	0.002	0.03	500	50,000
		0.75	2.5	0.003	0.05	800	50,000	0.003	0.05	640	50,000	0.002	0.03	480	50,000
		1	3.3	0.003	0.05	800	50,000	0.003	0.05	640	50,000	0.002	0.03	480	50,000
		1.5	5	0.003	0.03	640	50,000	0.003	0.03	480	50,000	0.002	0.02	320	50,000
		2	6.7	0.003	0.03	640	50,000	0.003	0.03	480	50,000	0.002	0.02	320	50,000
	R0.05	0.5	1.7	0.003	0.05	1,000	50,000	0.003	0.05	800	50,000	0.002	0.03	600	50,000
		0.75	2.5	0.003	0.05	1,000	50,000	0.003	0.05	800	50,000	0.002	0.03	600	50,000
		1	3.3	0.003	0.05	1,000	50,000	0.003	0.05	800	50,000	0.002	0.03	600	50,000
		1.5	5	0.003	0.03	800	50,000	0.003	0.03	600	50,000	0.002	0.02	400	50,000
		2	6.7	0.003	0.03	800	50,000	0.003	0.03	600	50,000	0.002	0.02	400	50,000
0.4	R0.02	0.5	1.3	0.004	0.1	900	50,000	0.004	0.1	800	50,000	0.003	0.08	600	50,000
		1	2.5	0.004	0.1	900	50,000	0.004	0.1	800	50,000	0.003	0.08	600	50,000
		1.5	3.8	0.004	0.1	900	50,000	0.004	0.1	800	50,000	0.003	0.08	600	50,000
		2	5	0.004	0.08	800	50,000	0.004	0.08	700	50,000	0.003	0.05	500	50,000
		2.5	6.3	0.004	0.08	800	50,000	0.004	0.08	700	50,000	0.003	0.05	500	50,000
	R0.05	0.5	1.3	0.005	0.1	1,100	50,000	0.005	0.1	1,000	50,000	0.004	0.08	800	50,000
		1	2.5	0.005	0.1	1,100	50,000	0.005	0.1	1,000	50,000	0.004	0.08	800	50,000
		1.5	3.8	0.005	0.1	1,100	50,000	0.005	0.1	1,000	50,000	0.004	0.08	800	50,000
		2	5	0.005	0.08	1,000	50,000	0.005	0.08	800	50,000	0.004	0.05	600	50,000
		2.5	6.3	0.005	0.08	1,000	50,000	0.005	0.08	800	50,000	0.004	0.05	600	50,000
	R0.1	0.5	1.3	0.008	0.1	1,200	50,000	0.008	0.1	1,100	50,000	0.005	0.08	900	50,000
		1	2.5	0.008	0.1	1,200	50,000	0.008	0.1	1,100	50,000	0.005	0.08	900	50,000
		1.5	3.8	0.008	0.1	1,200	50,000	0.008	0.1	1,100	50,000	0.005	0.08	900	50,000
		2	5	0.005	0.08	1,200	50,000	0.005	0.08	1,100	50,000	0.004	0.05	900	50,000
		2.5	6.3	0.005	0.08	1,200	50,000	0.005	0.08	1,100	50,000	0.004	0.05	900	50,000
0.5	R0.02	0.5	1	0.005	0.15	1,000	50,000	0.005	0.15	1,000	50,000	0.003	0.1	800	50,000
		1	2	0.005	0.15	1,000	50,000	0.005	0.15	1,000	50,000	0.003	0.1	800	50,000
		1.5	3	0.005	0.15	1,000	50,000	0.005	0.15	1,000	50,000	0.003	0.1	800	50,000
		2	4	0.005	0.1	1,000	50,000	0.005	0.1	1,000	50,000	0.003	0.08	800	50,000
		2.5	5	0.005	0.08	1,000	50,000	0.005	0.08	1,000	50,000	0.003	0.05	800	50,000
	R0.05	0.5	1	0.01	0.15	1,200	50,000	0.01	0.15	1,200	50,000	0.007	0.1	1,000	50,000
		1	2	0.01	0.15	1,200	50,000	0.01	0.15	1,200	50,000	0.007	0.1	1,000	50,000
		1.5	3	0.01	0.15	1,200	50,000	0.01	0.15	1,200	50,000	0.007	0.1	1,000	50,000
		2	4	0.007	0.12	1,200	50,000	0.007	0.12	1,200	50,000	0.005	0.08	1,000	50,000
		2.5	5	0.007	0.1	1,200	50,000	0.007	0.1	1,200	50,000	0.005	0.07	1,000	50,000

SHPR400

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				高硬度钢 Hardened Steels STAVAX・SKD61 (~52HRC)				高硬度钢 Hardened Steels SKD11・ELMAX (~62HRC)				高速钢 High Speed Steels SKH・HAP (~68HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
				ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
0.5	R0.1	0.5	1	0.02	0.15	1,600	50,000	0.02	0.15	1,500	50,000	0.01	0.1	1,400	50,000
		1	2	0.02	0.15	1,600	50,000	0.02	0.15	1,500	50,000	0.01	0.1	1,400	50,000
		1.5	3	0.02	0.15	1,600	50,000	0.02	0.15	1,500	50,000	0.01	0.1	1,400	50,000
		2	4	0.01	0.12	1,600	50,000	0.01	0.12	1,500	50,000	0.008	0.08	1,400	50,000
		2.5	5	0.008	0.1	1,600	50,000	0.008	0.1	1,500	50,000	0.005	0.07	1,400	50,000
0.6	R0.02	0.5	0.8	0.005	0.18	1,200	50,000	0.005	0.18	1,200	50,000	0.003	0.15	1,000	50,000
		1	1.7	0.005	0.18	1,200	50,000	0.005	0.18	1,200	50,000	0.003	0.15	1,000	50,000
		1.5	2.5	0.005	0.18	1,200	50,000	0.005	0.18	1,200	50,000	0.003	0.15	1,000	50,000
		2	3.3	0.005	0.18	1,200	50,000	0.005	0.18	1,200	50,000	0.003	0.15	1,000	50,000
		2.5	4.2	0.005	0.15	1,200	50,000	0.005	0.15	1,200	50,000	0.003	0.12	1,000	50,000
	R0.05	0.5	0.8	0.01	0.18	1,400	50,000	0.01	0.18	1,400	50,000	0.007	0.15	1,200	50,000
		1	1.7	0.01	0.18	1,400	50,000	0.01	0.18	1,400	50,000	0.007	0.15	1,200	50,000
		1.5	2.5	0.01	0.18	1,400	50,000	0.01	0.18	1,400	50,000	0.007	0.15	1,200	50,000
		2	3.3	0.01	0.18	1,400	50,000	0.01	0.18	1,400	50,000	0.007	0.15	1,200	50,000
		2.5	4.2	0.01	0.15	1,400	50,000	0.01	0.15	1,400	50,000	0.007	0.12	1,200	50,000
	R0.1	0.5	0.8	0.02	0.2	1,800	50,000	0.02	0.18	1,600	50,000	0.01	0.15	1,400	50,000
		1	1.7	0.02	0.2	1,800	50,000	0.02	0.18	1,600	50,000	0.01	0.15	1,400	50,000
		1.5	2.5	0.02	0.2	1,800	50,000	0.02	0.18	1,600	50,000	0.01	0.15	1,400	50,000
		2	3.3	0.02	0.2	1,800	50,000	0.02	0.18	1,600	50,000	0.01	0.15	1,400	50,000
		2.5	4.2	0.02	0.18	1,800	50,000	0.02	0.15	1,600	50,000	0.01	0.12	1,400	50,000
0.8	R0.02	1.5	1.9	0.005	0.2	1,400	45,000	0.005	0.2	1,400	45,000	0.003	0.1	1,000	40,000
		2.5	3.1	0.005	0.2	1,400	45,000	0.005	0.2	1,400	45,000	0.003	0.1	1,000	40,000
		5	6.3	0.005	0.1	1,400	45,000	0.005	0.1	1,400	45,000	0.003	0.05	1,000	40,000
	R0.05	1.5	1.9	0.01	0.25	1,800	45,000	0.01	0.2	1,600	45,000	0.007	0.1	1,200	40,000
		2.5	3.1	0.01	0.25	1,800	45,000	0.01	0.2	1,600	45,000	0.007	0.1	1,200	40,000
		5	6.3	0.01	0.2	1,800	45,000	0.01	0.15	1,600	45,000	0.005	0.1	1,200	40,000
	R0.1	1.5	1.9	0.02	0.3	2,200	45,000	0.02	0.2	1,800	45,000	0.01	0.1	1,400	40,000
		2.5	3.1	0.02	0.3	2,200	45,000	0.02	0.2	1,800	45,000	0.01	0.1	1,400	40,000
		5	6.3	0.01	0.2	2,200	45,000	0.01	0.15	1,800	45,000	0.005	0.1	1,400	40,000
1	R0.02	1	1	0.005	0.4	1,400	40,000	0.005	0.3	1,400	40,000	0.005	0.2	1,200	36,000
		2	2	0.005	0.4	1,400	40,000	0.005	0.3	1,400	40,000	0.005	0.2	1,200	36,000
		3	3	0.005	0.3	1,400	40,000	0.005	0.2	1,400	40,000	0.005	0.1	1,200	36,000
		5	5	0.005	0.3	1,400	40,000	0.005	0.2	1,400	40,000	0.005	0.1	1,200	36,000
	R0.05	1	1	0.015	0.4	2,000	40,000	0.01	0.3	1,600	40,000	0.01	0.2	1,200	36,000
		2	2	0.015	0.4	2,000	40,000	0.01	0.3	1,600	40,000	0.01	0.2	1,200	36,000
		3	3	0.015	0.3	2,000	40,000	0.01	0.2	1,600	40,000	0.01	0.1	1,200	36,000
		5	5	0.01	0.3	1,800	40,000	0.01	0.2	1,600	40,000	0.005	0.1	1,200	36,000
	R0.1	1	1	0.02	0.4	2,200	40,000	0.02	0.3	2,000	40,000	0.01	0.2	1,500	36,000
		2	2	0.02	0.4	2,200	40,000	0.02	0.3	2,000	40,000	0.01	0.2	1,500	36,000
		3	3	0.02	0.3	2,200	40,000	0.02	0.2	2,000	40,000	0.01	0.1	1,500	36,000
		5	5	0.015	0.3	2,200	40,000	0.015	0.2	2,000	40,000	0.007	0.1	1,500	36,000
	R0.2	1	1	0.03	0.4	2,500	40,000	0.03	0.3	2,000	40,000	0.01	0.2	1,500	36,000
		2	2	0.03	0.4	2,500	40,000	0.03	0.3	2,000	40,000	0.01	0.2	1,500	36,000
		3	3	0.02	0.3	2,500	40,000	0.02	0.2	2,000	40,000	0.01	0.1	1,500	36,000
		5	5	0.02	0.3	2,500	40,000	0.02	0.2	2,000	40,000	0.007	0.1	1,500	36,000
1.5	R0.02	2	1.3	0.005	0.6	2,200	36,000	0.005	0.5	1,800	30,000	0.005	0.3	1,300	24,000
		3	2	0.005	0.6	2,200	36,000	0.005	0.5	1,800	30,000	0.005	0.3	1,300	24,000
		4.5	3	0.005	0.6	2,200	36,000	0.005	0.5	1,800	30,000	0.005	0.3	1,200	24,000
		7.5	5	0.005	0.5	2,000	36,000	0.005	0.4	1,700	30,000	0.005	0.2	1,200	24,000
	R0.05	2	1.3	0.02	0.6	2,500	36,000	0.02	0.5	2,000	30,000	0.01	0.3	1,500	24,000
		3	2	0.02	0.6	2,500	36,000	0.02	0.5	2,000	30,000	0.01	0.3	1,500	24,000
		4.5	3	0.02	0.6	2,500	36,000	0.01	0.5	2,000	30,000	0.01	0.3	1,500	24,000
		7.5	5	0.02	0.5	2,400	36,000	0.01	0.4	2,000	30,000	0.01	0.2	1,400	24,000

加工材料 Work Material				高硬度钢 Hardened Steels STAVAX・SKD61 (~52HRC)				高硬度钢 Hardened Steels SKD11・ELMAX (~62HRC)				高速钢 High Speed Steels SKH・HAP (~68HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
				ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
1.5	R0.1	2	1.3	0.04	0.6	4,000	36,000	0.03	0.5	3,200	30,000	0.015	0.3	2,000	24,000
		3	2	0.04	0.6	3,500	36,000	0.03	0.5	2,800	30,000	0.015	0.3	1,800	24,000
		4.5	3	0.04	0.6	3,500	36,000	0.03	0.5	2,800	30,000	0.01	0.3	1,800	24,000
		7.5	5	0.03	0.5	3,000	36,000	0.02	0.4	2,500	30,000	0.01	0.2	1,600	24,000
	R0.2	2	1.3	0.04	0.6	4,000	36,000	0.03	0.5	3,200	30,000	0.015	0.3	2,000	24,000
		3	2	0.04	0.6	3,500	36,000	0.03	0.5	2,800	30,000	0.015	0.3	1,800	24,000
		4.5	3	0.04	0.6	3,500	36,000	0.03	0.5	2,800	30,000	0.01	0.3	1,800	24,000
		7.5	5	0.03	0.5	3,000	36,000	0.02	0.4	2,500	30,000	0.01	0.2	1,600	24,000
2	R0.02	3	1.5	0.005	0.8	2,500	30,000	0.005	0.7	2,000	24,000	0.005	0.4	1,200	16,000
		4	2	0.005	0.8	2,300	30,000	0.005	0.7	1,800	24,000	0.005	0.4	1,100	16,000
		6	3	0.005	0.8	2,300	30,000	0.005	0.7	1,800	24,000	0.005	0.4	1,100	16,000
		10	5	0.005	0.6	2,200	30,000	0.005	0.5	1,700	24,000	0.005	0.3	1,000	16,000
	R0.05	3	1.5	0.025	0.8	2,700	30,000	0.02	0.7	2,200	24,000	0.015	0.4	1,300	16,000
		4	2	0.025	0.8	2,700	30,000	0.02	0.7	2,200	24,000	0.015	0.3	1,300	16,000
		6	3	0.025	0.8	2,700	30,000	0.02	0.7	2,200	24,000	0.015	0.3	1,300	16,000
		10	5	0.02	0.6	2,500	30,000	0.015	0.5	2,000	24,000	0.01	0.3	1,200	16,000
	R0.1	3	1.5	0.05	0.8	4,000	30,000	0.04	0.7	3,200	24,000	0.02	0.4	1,500	16,000
		4	2	0.05	0.8	3,500	30,000	0.04	0.7	2,800	24,000	0.02	0.3	1,500	16,000
		6	3	0.04	0.8	3,500	30,000	0.03	0.7	2,800	24,000	0.02	0.3	1,500	16,000
		10	5	0.03	0.6	3,000	30,000	0.02	0.5	2,400	24,000	0.01	0.3	1,300	16,000
	R0.2	3	1.5	0.05	0.8	4,000	30,000	0.04	0.7	3,200	24,000	0.02	0.4	1,500	16,000
		4	2	0.05	0.8	3,500	30,000	0.04	0.7	2,800	24,000	0.02	0.3	1,500	16,000
		6	3	0.04	0.8	3,500	30,000	0.03	0.7	2,800	24,000	0.02	0.3	1,500	16,000
		10	5	0.03	0.6	3,000	30,000	0.02	0.5	2,400	24,000	0.01	0.3	1,300	16,000
3	R0.05	6	2	0.03	1	2,700	24,000	0.02	0.85	2,200	20,000	0.015	0.6	1,300	12,000
		9	3	0.03	1	2,700	24,000	0.02	0.85	2,200	20,000	0.015	0.6	1,300	12,000
		12	4	0.03	0.85	2,700	24,000	0.02	0.7	2,200	20,000	0.015	0.5	1,300	12,000
		15	5	0.02	0.85	2,500	24,000	0.02	0.7	2,000	20,000	0.01	0.5	1,200	12,000
	R0.1	6	2	0.05	1	4,000	24,000	0.04	0.85	3,200	20,000	0.02	0.6	1,500	12,000
		9	3	0.05	1	3,500	24,000	0.04	0.85	2,800	20,000	0.02	0.6	1,500	12,000
		12	4	0.04	0.85	3,500	24,000	0.04	0.7	2,800	20,000	0.02	0.5	1,500	12,000
		15	5	0.03	0.85	3,000	24,000	0.03	0.7	2,400	20,000	0.02	0.6	1,500	12,000
	R0.2	6	2	0.05	1	4,000	24,000	0.04	0.85	3,200	20,000	0.02	0.6	1,500	12,000
		9	3	0.05	1	3,500	24,000	0.04	0.85	2,800	20,000	0.02	0.6	1,500	12,000
		12	4	0.04	0.85	3,500	24,000	0.04	0.7	2,800	20,000	0.02	0.5	1,500	12,000
		15	5	0.03	0.85	3,000	24,000	0.03	0.7	2,400	20,000	0.015	0.5	1,300	12,000

备 注 Notes

※1 切深量为中精加工、精加工时的参考值。请根据机床刚性、要求精度和加工形状进行适当调整。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 为了获得优质的加工面，预加工（中精加工）时请注意精加工余量需保持均匀。
※4 R角等切削阻力大的部位，请特别注意参数设定和刀路轨迹等。
※5 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※6 发生振刀时，请以相同的比率降低主轴转速和进给速度。主轴转速过低时，也以相同的比率降低。
※7 建议使用油雾冷却方式。

※1 Depth of Cut shows maximum value for semi-finishing and finishing. Adjust milling conditions depending on rigidity of machine, desired accuracy and milling shape.
※2 Depth of Cut: ap = Axial Depth of Cut / ae = Radial Depth of Cut.
※3 To achieve better cutting surface, obtain uniform stock amount on cutting surface in semi-finishing.
※4 When machining at high load area, such as corners, please pay attention to set cutting condition and tool paths.
※5 Recommend to apply helical or ramping for approaching into axial direction.
※6 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※7 We recommend using oil mist coolant.

SSF120

规格 Size φ0.2 × R0.05 ～ φ2 × R0.1

CBN ≦70 HRC

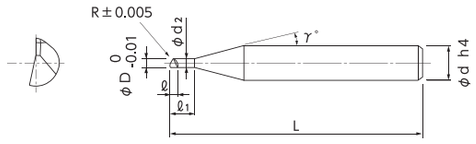
CBN超精加工用圆鼻铣刀
CBN Super Surface End Mill

共有9种规格
Total 9 sizes

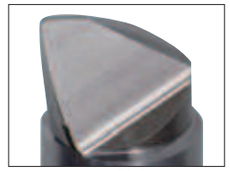
高硬度钢用单刃平面加工用铣刀
适用于高精度的平面精加工

Single flute end mill for hardened steels
Specialized for accurate finishing on flat surface





- 最适合精细加工时的基准面加工。
- 采用NS独创的形状和圆角R，实现稳定的加工表面。
- Appropriate for datum plane machining on precision machining.
- NS original design and corner R to realize stable machining surface.



刀刃形状
Cutting edge shape

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00470-00020	0.2	R0.05	0.1	0.5	0.19	15°	4	50	35,000
01-00470-00030	0.3	R0.05	0.15	0.75	0.28	15°	4	50	30,000
01-00470-00040	0.4	R0.05	0.2	1	0.37	15°	4	50	25,000
01-00470-00050	0.5	R0.05	0.25	1.25	0.46	15°	4	50	22,000
01-00470-00060	0.6	R0.05	0.3	1.5	0.56	15°	4	50	24,000
01-00470-00080	0.8	R0.05	0.4	2	0.76	15°	4	50	23,000
01-00470-00100	1	R0.1	0.5	2.5	0.95	15°	4	50	22,000
01-00470-00150	1.5	R0.1	0.75	3.8	1.45	15°	4	52	23,000
01-00470-00200	2	R0.1	1	5	1.94	15°	4	52	25,000

订购方法 How to Order

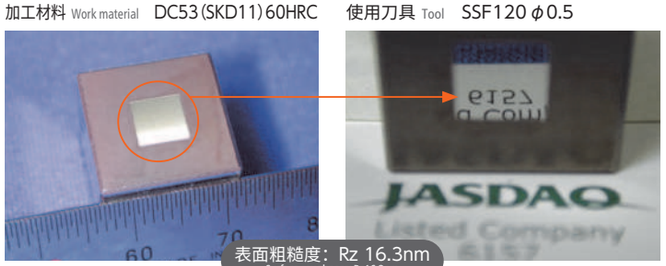
请指定SSF120 外径(D)。
When you order, indicate SSF120 (D).

※(γ)为参考值。
※(γ) is reference value.

加工案例1 Machining Case 1

加工材料 Work material DC53(SKD11)60HRC

使用刀具 Tool SSF120 φ0.5



表面粗糙度：Rz 16.3nm
Surface roughness: Rz16.3nm

(1nm=0.001μm)

精加工参数 Conditions (Finishing process)

主轴转速 Spindle speed	120,000min-1
进给速度 Feed	300mm/min
切深量 Depth of cut	2μm×5μm (ap×ae)
冷却方式 Coolant	油雾 Oil mist
加工时间 Machining time	30分钟 30min

使用Sodick公司制的纳米级加工中心AZ150
Sodick Nano Machining Center AZ150

测量仪：泰勒・霍普森公司制表面轮廓仪
Taylor Hobson Talysurf Measurement System

加工材料 Work Material	高硬度钢・高速钢 Hardened Steels・High Speed Steels STAVAX・SKD11・SKH (～68HRC)			
外径 Dia.	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min-1
0.2	0.002	0.003	50	60,000
0.3	0.002	0.003	100	60,000
0.4	0.002	0.003	150	60,000
0.5	0.003	0.005	200	60,000
0.6	0.003	0.005	240	60,000
0.8	0.003	0.008	280	60,000
1	0.005	0.01	300	60,000
1.5	0.005	0.02	400	60,000
2	0.005	0.03	500	60,000
备 注 Notes	※1 切深量的ap表示轴向切深量，ae表示径向切深量。 ※2 建议使用油雾冷却方式。 ※3 建议使用刚性较大的铣刀刀柄和机床。 ※4 请根据需要控制刀具的伸出量。 ※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut. ※2 We recommend using oil mist coolant. ※3 Machine, tool chuck must be sufficiently accurate. ※4 Length of tool overhang must be as short as possible.			

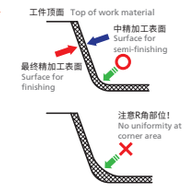
使用注意事项 Points in Use

加工环境 Advice on Cutting Environment

- 刀具偏摆量越小越好。
  Minimize the deflection of cutting edge.
- 掌握机床主轴的伸缩量以及机床的水平状态，需要时采取恰当的措施。
  To understand the nature of the expansion of the main spindle and machine posture transformation, and take measures against them.

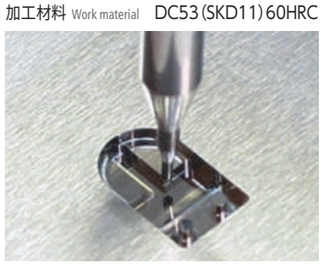
精加工量(余量) Advice on Finishing Allowance (stock amount)

- 使用小径CBN铣刀时，**精加工量(余量)均匀性非常重要**。
  When using small CBN End Mill, uniform finishing allowance (stock amount) is important.
- 粗加工・中精加工使用刀具磨损过大时，中精加工和精加工的余量会变大，从而影响刀具寿命和加工精度，所以**预加工时留有均匀的加工余量非常重要**。
  When tool is used on roughing and semi-finishing and it has a big abrasion, finishing allowance (stock amount) on semi-finishing and finishing is increasing and it affects tool life and cutting accurary. Therefore, it is important to get uniform stock amount in the pre-stage cutting.



加工案例2 Machining Case 2

加工材料 Work material DC53(SKD11)60HRC



使用刀具 Tool
SSF120 φ0.8
工件尺寸
10×6×2mm
Work size
10×6×2mm

表面粗糙度：Rz 70nm
Surface roughness: Rz70nm

(1nm=0.001μm)

精加工参数 Conditions (Finishing process)

	底面加工 Bottom face milling	侧面加工 Side face milling
主轴转速 Spindle speed	35,000min-1	
进给速度 Feed	150mm/min	
切深量 Depth of cut	3μm×8μm (ap×ae)	10μm×10μm (ap×ae)
冷却方式 Coolant	油雾 Oil mist	
加工时间 Machining time	1 小时 30 分钟 1hr 30min	

测量仪：泰勒・霍普森公司制表面轮廓仪
Taylor Hobson Talysurf Measurement System

PCDSE

规格 Size ϕ 0.1 ～ ϕ 1

PCD ≦92.5 HRA

PCD超精加工用平底铣刀
PCD Square End Mill

共有8种规格
Total 8 sizes

PCDSE

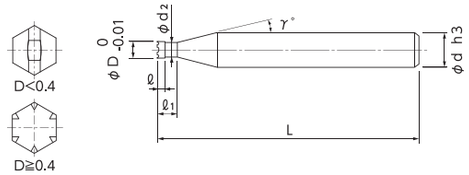
切削参数参考表
Recommended Milling Conditions

PCD材质的平底铣刀
在硬脆材料的精加工中，可实现纳米级表面粗糙度

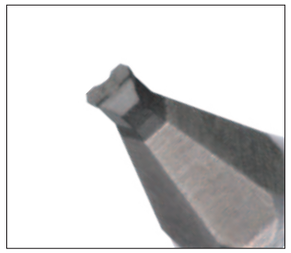
PCD square end mill. Realized nano level finishined surface roughness on hard brittle materials

2 | 6 | 0° | ϕd h3 | Face

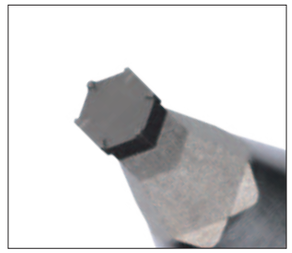




- 可在硬质合金的切削加工中获得稳定而优良的切削表面。
- 可获得超精密加工所需的纳米级表面粗糙度。
- 采用兼具耐磨损性和耐崩损性的NS TOOL独创的刀刃形状。
- Fine and stable milling surface realized on cemented carbide material.
- Possible to get the nano-level surface roughness required on ultra-high precision machining.
- NS original flute design of cutting edge enabled a strong resistance against wear and chipping.



刀刃形状 2刃
Cutting edge shape 2-Flute



刀刃形状 6刃
Cutting edge shape 6-Flute



可在产品标签上以1微米为单位标识实测外径，从而进行高精度加工。
Actual diameter is indicated in 1 micron units on product label, and enables high precision machining.
※无法以微米为单位指定尺寸。
Micron units dimensions cannot be specified.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	刃数 Number of Flute	定价(日元) Retail Price
04-00300-00100	0.1	0.1	0.02	0.09	15°	4	48	2	70,000
04-00300-00200	0.2	0.2	0.04	0.18	15°	4	48	2	70,000
04-00300-00300	0.3	0.3	0.06	0.27	15°	4	48	2	60,000
04-00300-00400	0.4	0.4	0.08	0.36	15°	4	48	6	60,000
04-00300-00500	0.5	0.5	0.1	0.45	15°	4	48	6	60,000
04-00300-00600	0.6	0.6	0.12	0.54	15°	4	48	6	50,000
04-00300-00800	0.8	0.8	0.16	0.72	15°	4	48	6	50,000
04-00300-01000	1	1	0.2	0.9	15°	4	48	6	50,000

订购方法 How to Order
请指定PCDSE 外径(D)。
When you order, indicate PCDSE (D).

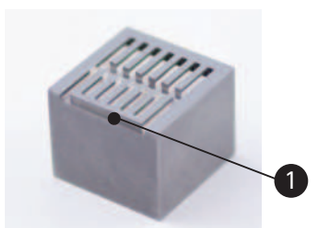
※(γ)为参考值。
※(γ) is reference value.

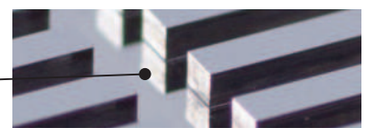
加工案例 Machining case
M-012, M-013

加工材料 Work Material	硬质合金 Cemented Carbide		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
	min^{-1}	mm/min	ap mm
0.1	40,000	25	0.0002
0.2	40,000	25	0.0002
0.3	40,000	25	0.0002
0.4	40,000	50	0.0005
0.5	40,000	50	0.0005
0.6	40,000	50	0.0005
0.8	40,000	50	0.0005
1	40,000	50	0.0005
备 注 Notes	※1 尽量将刀具的偏摆量抑制到最小，以免因刀具崩损或折断而影响加工精度。 ※2 因为切深量ap极小，建议加工前充分掌握主轴的伸缩量和机床的特性。 ※3 建议使用油冷冷却方式。 ※4 使用油冷冷却方式时，加工时产生的火花及破损有引发起火甚至火灾的危险。请务必采取防火措施。 ※5 切深量的ap表示轴向切深量。 ※1 Minimum tool runout is required to avoid the tool breakage and to increase the work accuracy. ※2 Due to infinitesimal Depth of Cut (ap), recommend to assess the machine characters, such as expansion of the spindle and others before using the tool. ※3 Water-insoluble fluid is recommended. ※4 Using water-insoluble fluid could lead to fires due to sparks generated during machining or heat caused by breakage. Ensure that you take proper fire-prevention measures. ※5 ap : Axial Depth of Cut.		

加工案例1 Machining Case 1

连接器造型模具 Connector model





・加工材料：硬质合金 92.5HRA Work material : Cemented carbide 92.5HRA
・冷却方式：油冷 Coolant : Water-insoluble fluid

加工工序 Process	等高线精加工 Contour line finishing	底面精加工 Bottom finishing
使用刀具 Tool	PCDSE φ0.5	
主轴转速 [min^{-1}] Spindle speed	120,000	
进给速度 [mm/min] Feed	100	50
切深量 ap×ae[mm] Depth of cut	0.002×0.001	0.0005×0.002
加工长度(m) Cutting length	64	
加工时间 Machining time	11小时2分钟 11hr 2min	

工件尺寸：10×10mm Work size : 10×10mm
加工深度：0.5mm Cutting depth 0.5mm

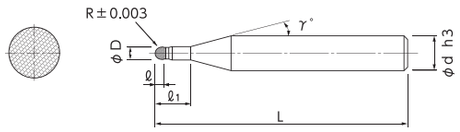
表面粗糙度 Surface roughness	
1 侧面 Side	Ra0.017μm / Rz0.096μm
2 底面 Bottom	Ra0.0007μm / Rz0.008μm

可获得纳米级的表面粗糙度 实现镜面般的加工面

Capable to machine nano level surface roughness, and mirror finishing

R ±0.003　φd h3　3D





- 独特的刀具刃口设计，实现稳定的加工表面。
- 3D精加工时可获得纳米级的表面粗糙度，无需进行抛光。
- 升级版的刀刃设计，实现了更加稳定的加工表面的精度。
- Unique tool geometry makes stable surface.
- Polish-less machining become reality by nano-level roughness on profiling finish.
- Upgraded tool edge design makes stable high quality surface.



可在产品标签上以1微米为单位标识实测的球头半径，从而进行高精度加工。
Actual diameter is indicated in 1 micron units on product label, and enables high precision machining.
※无法以微米为单位指定尺寸。
Micron units dimensions cannot be specified.



刀刃形状
Cutting edge shape

◆ 新增加规格
★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00500-00501	R0.05	0.15	0.05	0.1	15°	4	48	65,000
04-00500-00502		0.25	0.05	0.1	15°	4	48	65,000
04-00500-00751	R0.075	0.23	0.075	0.15	15°	4	48	65,000
04-00500-00752		0.38	0.075	0.15	15°	4	48	65,000
04-00500-01001	R0.1	0.5	0.1	0.2	15°	4	48	56,000
◆ 04-00500-01501	R0.15	0.75	0.15	0.3	15°	4	48	56,000
04-00500-02001	R0.2	1	0.2	0.4	15°	4	48	54,000
◆ 04-00500-02501	R0.25	1.25	0.25	0.5	15°	4	48	54,000
★ 04-00500-03001	R0.3	1.5	0.3	0.6	15°	4	48	50,000
★ 04-00500-05001	R0.5	2.5	0.5	1	15°	4	50	56,000
★ 04-00500-07501	R0.75	3.8	0.75	1.5	15°	4	48	60,000
★ 04-00500-10001	R1	5	1	2	15°	4	48	60,000
◆★ 04-00500-15001	R1.5	7.5	1.5	3	15°	6	59	75,000
◆★ 04-00500-20001	R2	10	2	4	15°	6	60	85,000
◆★ 04-00500-30001	R3	15	3	6	-	6	62	99,800

订购方法 How to Order　请指定PCDRB 球头半径(R)×颈长(ℓ1)。 ※(γ)为参考值。
When you order, indicate PCDRB (R)×(ℓ1). ※(γ) is reference Value.

加工案例 Machining case　M-014, M-016

加工材料 Work Material		高硬度钢・高速钢 Hardened Steels・High Speed Tool Steels (～70HRC)					硬质合金 Cemented Carbide (～92.5HRA)				
(R)球头半径 Radius	颈长 Under Neck Length	余量 Stock	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	余量 Stock	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed
		mm	ap mm	ae mm	min-1	mm/min	mm	ap mm	ae mm	min-1	mm/min
0.05	0.15	0.001	0.001	0.001	40,000	50	0.001	0.001	0.001	40,000	50
	0.25	0.001	0.001	0.001	40,000	25	0.001	0.001	0.001	40,000	25
0.075	0.23	0.001	0.001	0.001	40,000	100	0.001	0.001	0.001	40,000	100
	0.38	0.001	0.001	0.001	40,000	50	0.001	0.001	0.001	40,000	50
0.1	0.5	0.001	0.001	0.001	40,000	100	0.001	0.001	0.001	40,000	100
0.15	0.75	0.001	0.001	0.001	40,000	150	0.001	0.001	0.001	40,000	120
0.2	1	0.002	0.002	0.002	40,000	200	0.002	0.002	0.002	40,000	150
0.25	1.25	0.002	0.002	0.002	40,000	300	0.002	0.002	0.002	40,000	170
0.3	1.5	0.003	0.003	0.003	40,000	400	0.002	0.002	0.002	40,000	200
0.5	2.5	0.005	0.005	0.005	40,000	500	0.003	0.003	0.003	40,000	300
0.75	3.8	0.005	0.005	0.005	40,000	600	0.004	0.004	0.004	40,000	400
1	5	0.005	0.005	0.005	40,000	800	0.005	0.005	0.005	40,000	500
1.5	7.5	0.005	0.006	0.006	30,000	800	0.005	0.005	0.005	30,000	500
2	10	0.005	0.007	0.007	22,000	800	0.005	0.006	0.006	20,000	500
3	15	0.005	0.009	0.009	16,000	800	0.005	0.007	0.007	12,000	500

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示径向切深量。
※2 切深量为最大值。请根据机床刚性、主轴刚性或要求精度进行调整。
※3 预加工（中精加工）时请注意精加工余量相对于加工面需保持均匀。
※4 请注意所注入的冷却液必须到达加工点，避免导致加工时的润滑性、排出性降低。
※5 R角、沟槽等负载大的加工部位，请特别注意参数设定和刀路轨迹等。
※6 建议使用油冷冷却方式。
※7 使用油冷冷却方式时，加工时产生的火花及破损有引发起火甚至火灾的危险。请务必采取防火措施。
※1 ap: Axial Depth of Cut, ae: Radial Depth of Cut.
※2 Described Depth of Cut is max value. Adjust it depending on machine rigidity, main spindle rigidty, and required precision.
※3 Obtain uniform stock amount on the cutting surface in the pre-stage cutting (semi-finishing).
※4 In order to perform lubricity and chip flow well, coolant must be always reached cutting points.
※5 Careful set up for milling condition and tool path are required especially when operate with high cutting load such as corner area and slotting.
※6 Water-insoluble fluid is recommended.
※7 Using water-insoluble fluid could lead to fires due to sparks generated during machining or heat caused by breakage. Ensure that you take proper fire-prevention measures.

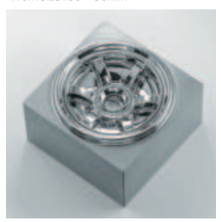
加工案例1 Machining Case 1

轮形模型 Wheel model

- 加工材料：ELMAX 60HRC
- 冷却方式：油冷
- 总加工时间：50 小时 13 分钟

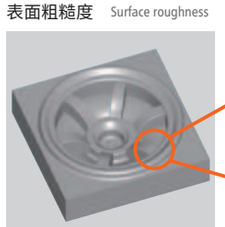
Work material : ELMAX 60HRC
Coolant : Water-insoluble fluid
Total machining time : 50hr 13min

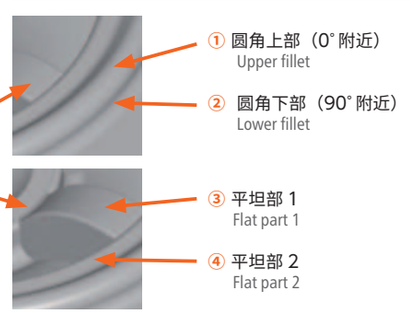
工件尺寸：50×50mm
Work size : 50×50mm



加工工序 Process	粗加工① Roughing①	粗加工② Roughing②	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	MRBH230 R1×6	MRBH230 R1×6	SSPB220 R1×5	PCDRB R1×5
主轴转速 [min-1] Spindle speed	25,000	25,000	40,000	40,000
进给速度 [mm/min] Feed	2,000	1,000	800	500
切深量[mm] Depth of cut	ap 0.15 ae 0.3	ap 0.02 ae 0.05	ap 0.01 ae 0.01	ap 0.003 ae 0.003
余量[mm] Stock	0.033	0.013	0.003	0
加工时间 Machining time	2小时17分钟 2hr 17min	1小时45分钟 1hr 45min	7小时12分钟 7hr 12min	38小时58分钟 38hr 58min

表面粗糙度 Surface roughness





	Rz[μm]
①	0.209
②	0.212
③	0.159
④	0.330

●持续进行精加工约39小时，可获得镜面般光泽的精加工面，表面粗糙度（Rz）达到次微米级别。
●进行精加工之前，使用CBN刀具进行中精加工。预加工中加工余量的均匀性会很大程度影响到精加工的结果。
●PCDRB can realize mirror like finishing on full surface machining and achieve the sub-micro level surface roughness, even for approx. 39hrs finishing process.
●Before finishing, use CBN to process semi-finishing. Leaving constant stock amount on semi-finished surface will have great affects in the finishing process.

规格 Size φ 0.3 × R0.05 ～ φ 1 × R0.1

PCD ≦92.5 HRA

PCD超精加工用圆鼻铣刀
PCD Corner Radius End Mill

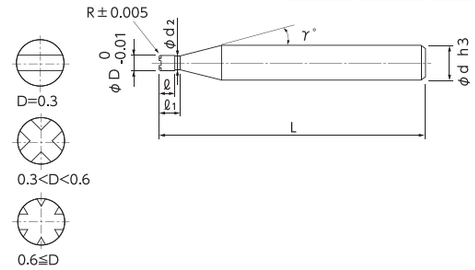
共有10种规格
Total 10 sizes

切削参数参考表
Recommended Milling Conditions

PCD材质的圆鼻铣刀 在硬脆材料的精加工中，可实现纳米级表面粗糙度

PCD corner radius end mill.
Realized nano level finishined surface roughness on hard brittle materials





- 兼具球头形状的曲面切削性能和平底形状的平面切削性能的圆鼻形状，实现极致的高品位加工表面！
- Ultimate high quality surface is realized in the corner radius shape with superior cutting performance on curved and plane surface!



刀刃形状 2刃
Cutting edge shape 2-Flute



刀刃形状 4刃
Cutting edge shape 4-Flute



刀刃形状 6刃
Cutting edge shape 6-Flute



可在产品标签上以1微米为单位标识实测外径，从而进行高精度加工。
Actual diameter is indicated in 1 micron units on product label, and enables high precision machining.
※无法以微米为单位指定尺寸。
Micron units dimensions cannot be specified.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	刃数 Number of Flute	定价(日元) Retail Price
04-00700-03050	0.3	R0.05	0.3	0.09	0.27	15°	4	48	2	60,000
04-00700-04050	0.4	R0.05	0.4	0.12	0.36	15°	4	48	4	60,000
04-00700-05050	0.5	R0.05	0.5	0.15	0.45	15°	4	48	4	60,000
04-00700-05100		R0.1	0.5	0.15	0.45	15°	4	48	4	60,000
04-00700-06050	0.6	R0.05	0.6	0.18	0.54	15°	4	48	6	50,000
04-00700-06100		R0.1	0.6	0.18	0.54	15°	4	48	6	50,000
04-00700-08050	0.8	R0.05	0.8	0.24	0.72	15°	4	48	6	50,000
04-00700-08100		R0.1	0.8	0.24	0.72	15°	4	48	6	50,000
04-00700-10050	1	R0.05	1	0.3	0.9	15°	4	48	6	50,000
04-00700-10100		R0.1	1	0.3	0.9	15°	4	48	6	50,000

订购方法 How to Order　请指定PCDRS 外径(D)×角半径(R)。 When you order, indicate PCDRS (D)×(R).　※(γ)为参考值。 ※(γ) is reference value.

加工案例 Machining case　M-017

加工材料 Work Material		硬质合金 Cemented Carbide			
外径 Dia.	角半径 Corner Radius	主轴转速 Spindle Speed	进给速度 Feed	精加工切深量 Depth of Cut for Finishing	
		min-1	mm/min	ap mm	ae mm
0.3	R0.05	50,000	50	0.001	0.005
0.4	R0.05	50,000	100	0.001	0.01
0.5	R0.05	50,000	100	0.001	0.01
	R0.1	50,000	150	0.001	0.015
0.6	R0.05	50,000	100	0.001	0.01
	R0.1	50,000	150	0.001	0.015
0.8	R0.05	50,000	150	0.001	0.015
	R0.1	50,000	200	0.001	0.03
1	R0.05	50,000	150	0.001	0.015
	R0.1	50,000	200	0.001	0.03
备 注 Notes		※1 尽量将刀具的偏摆量抑制到最小，以免因刀具崩损或折断而影响加工精度。 ※2 因为切深量ap极小，建议加工前充分掌握主轴的伸缩量和机床的特性。 ※3 建议使用油冷冷却方式。 ※4 使用油冷冷却方式时，加工时产生的火花及破损有引发起火甚至火灾的危险。请务必采取防火措施。 ※1 Minimal tool runout is required to avoid the tool breakage and to increase the work accuracy. ※2 Due to infinitesimal Depth of Cut (ap), recommend to assess the machine characters, such as expansion of the spindle and others before using the tool. ※3 Water-insoluble fluid is recommended. ※4 Using water-insoluble fluid could lead to fires due to sparks generated during machining or heat caused by breakage. Ensure that you take proper fire-prevention measures.			

加工案例1 Machining Case 1

- 加工材料：硬质合金 92.5HRA　Work material : Cemented carbide 92.5HRA
- 冷却方式：油冷　Coolant : Water-insoluble fluid
- 总加工时间：9小时48分钟　Total machining time : 9hr 48min

工件尺寸:φ15mm Work size : φ15mm　加工深度:0.924mm Machining depth : 0.924mm



加工工序 Process	精加工 Finishing	
	等高线 Contour line milling	扫描线 Scanning line milling
使用刀具 Tool	PCDRS φ0.3×R0.05×0.3	
主轴转速[min-1] Spindle speed	40,000	
进给速度[mm/min] Feed	70	
切深量 ap×ae[mm] Depth of cut	0.002～0.006×0.002	0.001×0.005～0.01
精加工量[mm] Stock allowance	0.002	0.001
加工长度 Cutting length	28m	12m
加工时间 Machining time	6小时23分钟 6hr23min	3小时25分钟 3hr25min

DCMS

规格 Size ϕ 0.3 ～ ϕ 2

DIA ≦92.5 HRA

硬脆材加工用平底铣刀
End Mill for Hard Brittle Materials

共有14种规格
Total 14 sizes

DCMS

切削参数参考表
Recommended Milling Conditions

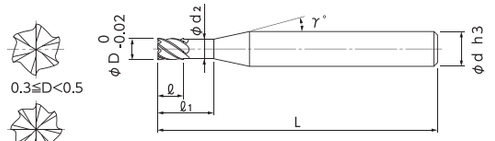
平底 Square
长颈 Long Neck
涂层 Coating

可对硬质合金、陶瓷、玻璃进行直接加工的平底铣刀

Square end mill for direct milling on cemented carbide, ceramic and glass

MG | 6 | 8 | 10 | 30° | φd h3 | Face





- 可以对硬质合金或陶瓷等硬脆材料进行直接切削。
- 采用高粘合性钻石涂层，可实现长时间加工。
- Machinable on hard brittle materials such as cemented carbide and ceramic.
- High adhered DIAMOND COATING makes tool life long.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	刃数 Number of Flute	定价(日元) Retail Price
05-00100-03006	0.3	0.6	0.15	0.28	12°	4	45	6	33,800
05-00100-03012		1.2	0.15	0.28	12°	4	45	6	33,800
05-00100-04008	0.4	0.8	0.2	0.38	12°	4	45	6	33,100
05-00100-04016		1.6	0.2	0.38	12°	4	45	6	33,100
05-00100-05010	0.5	1	0.25	0.46	12°	4	45	8	32,300
05-00100-05020		2	0.25	0.46	12°	4	45	8	32,300
05-00100-08016	0.8	1.6	0.4	0.76	12°	4	45	8	30,900
05-00100-08032		3.2	0.4	0.76	12°	4	45	8	30,900
05-00100-10020	1	2	0.5	0.95	12°	4	45	10	32,300
05-00100-10040		4	0.5	0.95	12°	4	45	10	32,300
05-00100-15030	1.5	3	0.75	1.45	12°	4	45	10	31,600
05-00100-15060		6	0.75	1.45	12°	4	45	10	31,600
05-00100-20040	2	4	1	1.94	12°	4	45	10	30,900
05-00100-20080		8	1	1.94	12°	4	45	10	30,900

订购方法 How to Order
请指定DCMS 外径(D)×颈长(ℓ1)。 ※(γ)为参考值。
When you order, indicate DCMS (D)×(ℓ1). ※(γ) is reference value.

加工案例 Machining Case
M-039

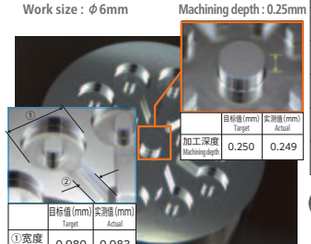
加工案例 1 Machining Case 1

加工材料：硬质合金（硬度：92.5HRA）
Work Material : Cemented Carbide (92.5HRA)

刀具规格：ϕ0.3
Tool size

工件尺寸：ϕ6mm
Work size : ϕ6mm

加工深度：0.25mm
Machining depth : 0.25mm



	目标值(mm) Target	实测值(mm) Actual
加工深度 Machining depth	0.250	0.249

主轴转速 Spindle speed	40,000min-1
进给速度 Feed	80mm/min
切深量 Depth of cut	0.001mm×0.13mm (ap×ae)
加工长度 Cutting length	39.2m
加工时间 Machining time	8小时30分钟 8hr 30min
冷却方式 Coolant	油冷 Water-insoluble fluid

表面粗糙度(Rz)：0.12μm Surface roughness

	目标值(mm) Target	实测值(mm) Actual
①宽度 Width	0.980	0.983
②槽宽 Width of groove	0.335	0.334

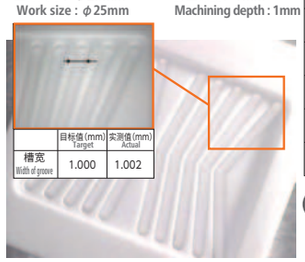
加工案例 2 Machining Case 2

加工材料：氧化铝（96%）
Work Material : Aluminium Oxide (96%)

刀具规格：ϕ1
Tool size

工件尺寸：ϕ25mm
Work size : ϕ25mm

加工深度：1mm
Machining depth : 1mm



	目标值(mm) Target	实测值(mm) Actual
槽宽 Width of groove	1.000	1.002

主轴转速 Spindle speed	20,000min-1
进给速度 Feed	100mm/min
切深量 Depth of cut	0.002mm×0.6mm (ap×ae)
加工长度 Cutting length	91.3m
加工时间 Machining time	17小时50分钟 17hr 50min
冷却方式 Coolant	水溶性切削油 Water-soluble fluid

表面粗糙度(Rz)：1μm Surface roughness

加工材料 Work Material		硬质合金 Cemented Carbide				氧化铝 Al_2O_3				耐热玻璃 Heat-resistant Glass			
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm
0.3	0.6	40,000	50	0.001	0.15	40,000	80	0.002	0.15	40,000	80	0.002	0.15
	1.2	40,000	50	0.001	0.15	40,000	80	0.002	0.15	40,000	80	0.002	0.15
0.4	0.8	30,000	50	0.001	0.25	30,000	80	0.002	0.25	30,000	80	0.002	0.25
	1.6	30,000	50	0.001	0.25	30,000	80	0.002	0.25	30,000	80	0.002	0.25
0.5	1	20,000	80	0.001	0.3	20,000	120	0.002	0.3	20,000	120	0.002	0.3
	2	20,000	80	0.001	0.3	20,000	120	0.002	0.3	20,000	120	0.002	0.3
0.8	1.6	20,000	80	0.001	0.5	20,000	120	0.002	0.5	20,000	120	0.002	0.5
	3.2	20,000	80	0.001	0.5	20,000	120	0.002	0.5	20,000	120	0.002	0.5
1	2	20,000	100	0.001	0.6	20,000	150	0.002	0.6	20,000	150	0.002	0.6
	4	20,000	100	0.001	0.6	20,000	150	0.002	0.6	20,000	150	0.002	0.6
1.5	3	20,000	100	0.001	0.9	20,000	150	0.002	0.9	20,000	150	0.002	0.9
	6	15,000	100	0.001	0.9	15,000	150	0.002	0.9	15,000	150	0.002	0.9
2	4	20,000	100	0.001	1.2	20,000	150	0.002	1.2	20,000	150	0.002	1.2
	8	15,000	100	0.001	1.2	15,000	150	0.002	1.2	15,000	150	0.002	1.2

备 注 Notes

※1 请按照切削参数表设定切削参数，否则可能会导致刀具折断、崩损或涂层剥离。
※2 尽量将刀具的偏摆量抑制到最小，以免因刀具崩损或折断而影响加工精度。
※3 因为切深量ap极小，建议加工前充分掌握主轴的伸缩量和机床的特性。
※4 建议使用油冷冷却方式。
※1 Follow the recommended milling conditions to prevent possible tool breakage and coating flake.
※2 Minimize tool rotation runout for machining accuracy and to prevent tool breakage.
※3 Control characteristic of machine and spindle extension amount for such small cutting depth(ap) process.
※4 Recommend use water-insoluble fluid is recommended.

0 硬脆材 Hard Brittle Material
硬脆材加工 Hard Brittle Material Milling

DCSE235

规格 Size φ 0.5 ～ φ 6

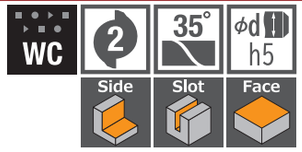
DIA ≦92.5 HRA

钻石涂层 2刃平底铣刀
DIAMOND COATING 2-Flute End Mill

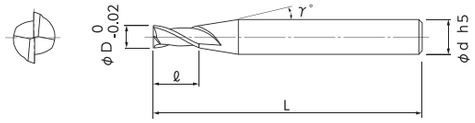
共有8种规格
Total 8 sizes

可对应石墨和复合材料加工的 钻石涂层2刃35°螺旋角平底铣刀

2-flute with helix angle 35° end mill applied diamond coating suitable for graphite, composite material







- 采用独创的钻石涂层，在加工石墨或高硅铝合金时可提高刀具的寿命。
- 3倍刃长的平底铣刀适合加工深沟形状。
- Original DIAMOND COATING realized a long tool life for the machining of graphite, silicon-aluminum alloy and brittle materials.
- Square design of L/D=3 is suited for the machining of narrow and deep area.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

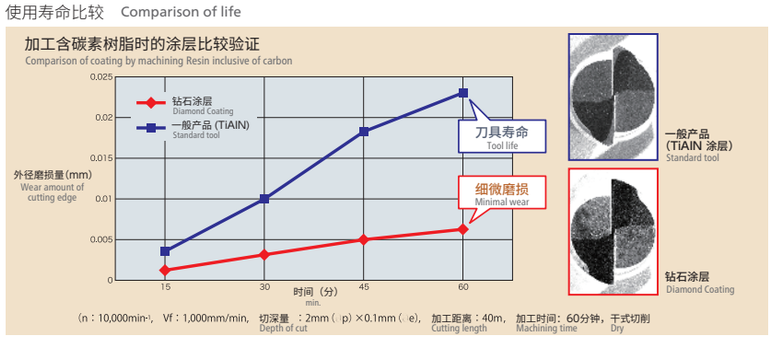
产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
05-00035-00050	0.5	1.5	12°	4	45	17,400
05-00035-00100	1	3	12°	4	45	17,400
05-00035-00150	1.5	4.5	12°	4	45	17,400
05-00035-00200	2	6	12°	4	45	17,400
05-00035-00300	3	9	12°	6	45	23,200
05-00035-00400	4	12	12°	6	50	24,800
05-00035-00500	5	15	12°	6	55	26,400
05-00035-00600	6	18	–	6	60	26,400

订购方法 How to Order

请指定DCSE235 外径(D)。
When you order, indicate DCSE235 (D).

※(γ)为参考值。
※(γ) is reference value.

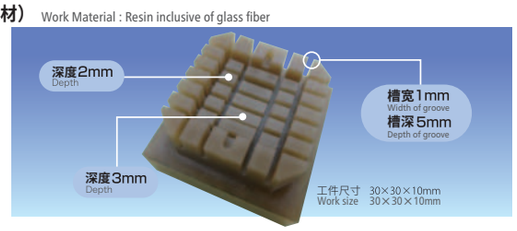
使用寿命比较 Comparison of life



加工案例 1 Machining Case 1

加工材料：含玻璃纤维的树脂（PES材） Work Material : Resin inclusive of glass fiber

加工工序 Process	外框部 Outer profile	沟槽部 Slot
使用刀具 Tool	DCSE235 φ6	DCHR230 φ1×6
主轴转速 Spindle speed	10,000 min-1	10,000 min-1
进给速度 Feed	2,000 mm/min	1,000 mm/min
切深量 Depth of cut	10mm×0.5mm (ap× ae)	0.1mm(ap)
加工长度 Cutting length	2.3m	28m
加工时间 Machining time	3分钟 3min	50分钟 50min



加工材料 Work Material	石墨 Graphite							铝合金压铸件 Aluminium Alloy Die Casting						
	侧面 Side Milling				沟槽 Slotting			侧面 Side Milling				沟槽 Slotting		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
	min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm
0.5	30,000	1,000	1.5	0.03	30,000	800	0.05	20,000	600	1.5	0.01	20,000	500	0.03
1	30,000	1,200	3	0.05	30,000	1,000	0.1	20,000	1,000	3	0.02	20,000	800	0.1
1.5	25,000	1,500	4.5	0.07	25,000	1,200	0.2	20,000	1,000	4.5	0.05	20,000	800	0.2
2	25,000	2,000	6	0.1	25,000	1,500	0.3	20,000	1,500	6	0.07	20,000	1,200	0.3
3	20,000	2,500	9	0.1	20,000	1,500	0.4	20,000	1,500	9	0.07	20,000	1,200	0.4
4	18,000	2,500	12	0.2	18,000	2,000	0.5	18,000	2,000	12	0.15	18,000	1,500	0.5
5	14,000	3,000	15	0.2	14,000	2,000	0.7	14,000	2,500	15	0.15	14,000	2,000	0.7
6	12,000	3,000	18	0.3	12,000	2,000	1	12,000	2,500	18	0.2	12,000	2,000	1

备 注 Notes

※1 加工石墨时，请使用石墨专用的加工机床。
此外，进行加工或者操作时为了防止粉尘飞扬或者被吸入身体，请使用吸尘器和防尘口罩。
※2 石墨加工建议采用干式切削。
※3 如果刀具发生崩刃，或者需要高精度加工时，请降低进给速度。
※4 发生振刀时，请以相同的比率降低主轴转速和进给速度。
此外，主轴转速过低时，也以相同的比率降低。
※1 Graphite should be machined by the machining center designed for graphite machining.
When handling with graphite material, dust collector and respirator are recommended to protect against graphite dust.
※2 Air blow cooling is recommended for the machining of graphite.
※3 Slow down the feed for high accurate machining to avoid breakage of work piece.
※4 Adjust both spindle speed and feed at the same rate when chattering.

DCHR230

规格 Size φ 0.5 ～ φ 6

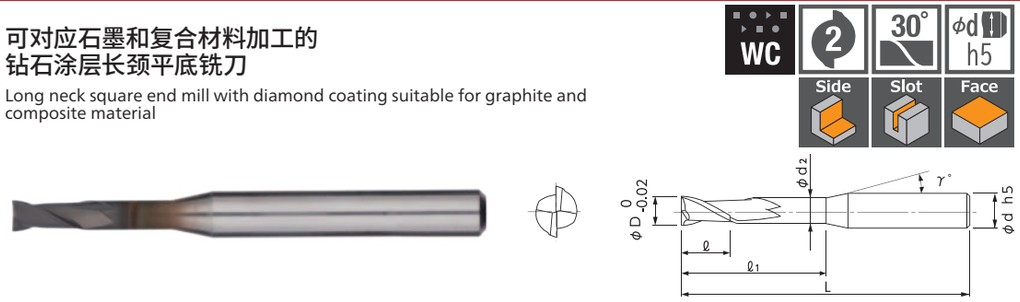
DIA ≦92.5 HRA

钻石涂层 2刃长颈平底铣刀
DIAMOND COATING 2-Flute Long Neck End Mill

共有19种规格
Total 19 sizes

可对应石墨和复合材料加工的钻石涂层长颈平底铣刀

Long neck square end mill with diamond coating suitable for graphite and composite material



- 采用独创的钻石涂层，在加工石墨或高硅铝合金时可提高刀具的寿命。
- 适用于深沟加工的长颈避空型。
- Original DIAMOND COATING realized a long tool life for the machining of graphite, silicon-aluminium alloy and brittle materials.
- Long neck design is suited for the machining of narrow and deep area.

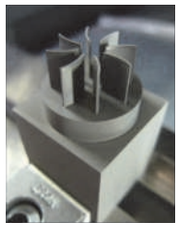
单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
05-00200-00502	0.5	2	1	0.46	12°	4	45	18,900
05-00200-00504		4	1	0.46	12°	4	45	18,900
05-00200-00506		6	1	0.46	12°	4	45	18,900
05-00200-01004	1	4	2	0.95	12°	4	50	18,900
05-00200-01006		6	2	0.95	12°	4	50	18,900
05-00200-01008		8	2	0.95	12°	4	50	18,900
05-00200-01010		10	2	0.95	12°	4	50	18,900
05-00200-01506	1.5	6	3	1.45	12°	4	50	18,900
05-00200-01512		12	3	1.45	12°	4	50	18,900
05-00200-01520		20	3	1.45	12°	4	60	18,900
05-00200-02006	2	6	4	1.94	12°	4	50	18,900
05-00200-02010		10	4	1.94	12°	4	50	18,900
05-00200-02016		16	4	1.94	12°	4	60	18,900
05-00200-02020		20	4	1.94	12°	4	60	18,900
05-00200-03016	3	16	6	2.85	12°	6	60	24,300
05-00200-03030		30	6	2.85	12°	6	70	27,900
05-00200-04020	4	20	8	3.8	12°	6	60	27,000
05-00200-04040		40	8	3.8	12°	6	90	30,400
05-00200-06030	6	30	12	5.8	–	6	90	27,900

订购方法 How to Order
请指定DCHR230 外径(D)×颈长(ℓ1)。 ※(γ)为参考值。
When you order, indicate DCHR230 (D)×(ℓ1). ※(γ) is reference value.

加工案例 Machining Case M-040

加工案例 1 Machining Case 1



螺旋叶轮 Propeller
- 加工材料：石墨（TTK-5）
  Work material : Graphite (TTK-5)
- 总加工时间：1小时20分钟
  Total machining time : 1hr 20min
- 冷却方式：吹气
  Coolant : Air blow
- 工件尺寸：φ14mm（叶片高度：6mm）
  Work size : φ14mm (Height of blade : 6mm)

加工工程 Process	圆柱部粗加工 Roughing (Cylinder)	粗加工 Roughing	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	DCSE235 φ6	DCHR230 φ1×10		
主轴转速 [min-1] Spindle speed	8,000	20,000		
进给速度 [mm/min] Feed	600	2,000	1,000	800
切深量 ap×ae[mm] Depth of cut	8×0.5	0.2×0.6	0.05×0.2	
加工长度 [m] Machining length	7	67		18
加工时间 Machining time	5分钟 5min	1小时5分钟 1hr 5min		10分钟 10min

加工材料 Work Material		石墨 Graphite							铝合金压铸件 Aluminium Alloy Die Casting					
		等高线粗加工 Contour Line Roughing				沟槽切削 Slotting			等高线粗加工 Contour Line Roughing				沟槽切削 Slotting	
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
		min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm
0.5	2	30,000	1,200	0.1	0.3	30,000	800	0.1	20,000	1,000	0.03	0.3	20,000	500	0.03
	4	30,000	1,000	0.05	0.3	30,000	600	0.05	20,000	800	0.01	0.3	20,000	400	0.01
	6	25,000	800	0.03	0.3	25,000	500	0.03	20,000	600	0.01	0.3	20,000	300	0.01
1	4	30,000	2,500	0.2	0.6	30,000	1,500	0.2	20,000	2,000	0.15	0.6	20,000	1,200	0.15
	6	25,000	2,000	0.2	0.6	25,000	1,200	0.2	20,000	1,500	0.1	0.6	20,000	1,000	0.1
	8	20,000	1,500	0.1	0.6	20,000	1,000	0.1	20,000	1,000	0.07	0.6	20,000	700	0.07
	10	20,000	1,000	0.1	0.6	20,000	600	0.1	20,000	800	0.05	0.6	20,000	500	0.05
1.5	6	25,000	2,500	0.3	1	25,000	1,600	0.3	20,000	2,000	0.2	1	20,000	1,500	0.2
	12	16,000	1,800	0.2	1	16,000	1,000	0.2	16,000	1,500	0.05	1	16,000	1,000	0.05
	20	12,000	1,000	0.1	1	12,000	600	0.1	12,000	800	0.02	1	12,000	500	0.02
2	6	20,000	3,000	0.5	1.2	20,000	2,000	0.5	20,000	2,000	0.5	1.2	20,000	1,500	0.5
	10	20,000	2,500	0.5	1.2	20,000	1,600	0.5	20,000	1,500	0.3	1.2	20,000	1,000	0.3
	16	18,000	1,800	0.3	1.2	18,000	1,200	0.3	15,000	1,200	0.07	1.2	15,000	800	0.07
	20	15,000	1,200	0.2	1.2	15,000	800	0.2	10,000	1,000	0.03	1.2	10,000	600	0.03
3	16	20,000	3,000	0.5	2	20,000	2,000	0.5	18,000	2,000	0.5	2	18,000	1,500	0.5
	30	15,000	1,500	0.3	2	15,000	1,000	0.3	10,000	1,000	0.2	2	10,000	600	0.2
4	20	18,000	3,000	0.8	2.5	18,000	2,000	0.8	16,000	2,000	0.8	2.5	16,000	1,500	0.8
	40	9,000	1,500	0.4	2.5	9,000	1,000	0.4	8,000	1,000	0.4	2.5	8,000	600	0.4
6	30	16,000	3,000	1	4	16,000	2,000	1	12,000	2,000	1	4	12,000	1,500	1

备 注 Notes

※1 加工石墨时，请使用石墨专用的加工机床。
此外，进行加工或者操作时为了防止粉尘飞扬或者被吸入身体，请使用吸尘器和防尘口罩。
※2 石墨加工建议采用干式切削。
※3 如果刀具发生崩刃，或者需要高精度加工时，请降低进给速度。
※4 发生振刀时，请以相同的比率降低主轴转速和进给速度。
此外，主轴转速过低时，也以相同的比率降低。

※1 Graphite should be machined by the machining center designed for graphite machining.
When handling with graphite material, dust collector and respirator are recommended to protect against graphite dust.
※2 Air blow cooling is recommended for the machining of graphite.
※3 Slow down the feed for high accurate machining to avoid breakage of work piece.
※4 Adjust both spindle speed and feed at the same rate when chattering.

规格 Size R0.1 ～ R1

DIA ≦92.5 HRA

硬脆材加工用球头铣刀
Ball End Mill for Hard Brittle Material

共有12种规格
Total 12 sizes

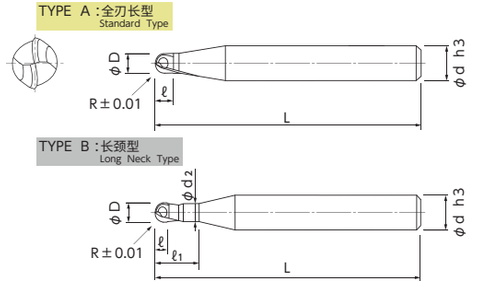
切削参数参考表
Recommended Milling Conditions

可对硬质合金、陶瓷、玻璃进行直接加工的球头铣刀

Ball end mill for direct milling on cemented carbide, ceramic and glass

WC 2 20° φd h3 3D





- 采用了刃口的强度和锋利度兼具的螺旋球头形状，以及新开发的高粘合性钻石涂层。
- Spiral ball shape with balanced strength and sharpness of cutting edges adopted newly-developed DIAMOND COATING with enhanced sticking force.

[颈部形状]

颈部干涉角度的基准为12°。
如果担心加工材料和颈部会干涉时，请务必实际测量进行确认。

(Neck Profile)

Reference value of interference angle after length of cut is 12°.
Actual measurement required, in order to avoid interference between tool and work material.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

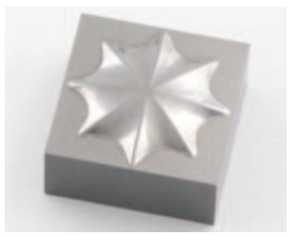
产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	形状 Type	(d2)颈径 Neck Dia.	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
05-00500-00100	R0.1	–	0.15	A	–	4	45	39,900
05-00500-00101		0.5	0.12	B	0.18	4	45	40,300
05-00500-00200	R0.2	–	0.3	A	–	4	45	36,800
05-00500-00201		1	0.25	B	0.37	4	45	37,200
05-00500-00300	R0.3	–	0.45	A	–	4	45	32,700
05-00500-00301		1.5	0.35	B	0.56	4	45	33,100
05-00500-00500	R0.5	–	0.75	A	–	4	45	32,700
05-00500-00501		2.5	0.6	B	0.95	4	45	33,100
05-00500-00750	R0.75	–	1.1	A	–	4	45	32,700
05-00500-00751		3.8	0.9	B	1.45	4	45	33,100
05-00500-01000	R1	–	1.5	A	–	4	45	32,700
05-00500-01001		5	1.2	B	1.94	4	45	33,100

订购方法 How to Order

请指定DCMB 球头半径(R)[×颈长(ℓ1)]。
When you order, indicate DCMB (R)[×(ℓ1)].

加工案例 1 Machining Case 1

加工材料：硬质合金（硬度：89HRA）
Work Material : Cemented Carbide (89HRA)



工件尺寸：20×20×10mm
Work size : 20×20×10mm

使用刀具：DCMB R1
Tool

精加工
Finishing

主轴转速 Spindle speed	20,000min-1
进给速度 Feed	200mm/min
切深量 Depth of cut	0.005mm×0.01mm (ap×ae)
加工时间 Machining time	3小时55分钟 3hr 55min
冷却方式 Coolant	油雾 Oil mist

表面粗糙度(Rz)：0.51μm～1.04μm
Surface roughness

加工材料 Work Material		硬质合金 Cemented Carbide			
(R)球头半径 Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min-1	mm/min	ap mm	ae mm
R0.1	–	30,000	100	0.004	0.004
	0.5	30,000	30	0.002	0.003
R0.2	–	30,000	150	0.008	0.03
	1	30,000	100	0.006	0.025
R0.3	–	30,000	200	0.01	0.05
	1.5	30,000	200	0.01	0.05
R0.5	–	30,000	300	0.02	0.10
	2.5	30,000	300	0.02	0.10
R0.75	–	30,000	300	0.03	0.15
	3.8	30,000	300	0.03	0.15
R1	–	20,000	300	0.04	0.15
	5	20,000	300	0.04	0.15

备 注 Notes

※1 请按照切削参数表设定切削参数，否则可能会导致刀具折断、崩损或涂层剥离。
※2 尽量将刀具的偏摆量抑制到最小，以免因刀具崩损或折断而影响加工精度。
※3 建议加工前充分考虑主轴的伸缩量和机床的特性。
※4 请充分考虑减轻切削负载，设定高精度的刀路轨迹。(进刀方式和公差的设定等)

※1 Follow the recommended milling conditions to prevent tool breakage and coating peeling.
※2 Minimal tool runout is required to avoid the tool breakage and to increase the work accuracy.
※3 Recommend to assess the machine characters, such as expansion of the spindle and others before using the tool.
※4 Accurate tool path for approach method, tolerance setting and etc. is required to reduce the cutting load.

DCRB230

规格 Size R0.2 ～ R3

DIA ≦92.5 HRA

钻石涂层 长颈球头铣刀
DIAMOND COATING 2-Flute Long Neck Ball End Mill

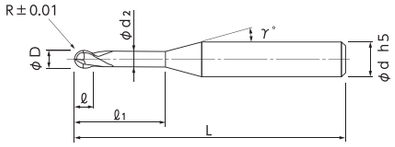
共有25种规格
Total 25 sizes

可对应石墨和复合材料加工的钻石涂层长颈球头铣刀

Long neck ball end mill with diamond coating suitable for graphite and composite material

WC | 2 | 30° | φd h5 | 3D





- 采用独创的钻石涂层，在加工石墨或高硅铝合金时可提高刀具的寿命。
- 适用于深沟加工的长颈避空型。
- Original DIAMOND COATING realized a long tool life for the machining of graphite, silicon-aluminium alloy and brittle materials.
- Long neck design is suited for the machining of narrow and deep area.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
05-00520-00201	R0.2	1	0.3	0.4	0.37	12°	4	45	15,600
05-00520-00202		2	0.3	0.4	0.37	12°	4	45	15,600
05-00520-00204		4	0.3	0.4	0.37	12°	4	45	15,600
05-00520-00206		6	0.3	0.4	0.37	12°	4	45	15,600
05-00520-00303	R0.3	3	0.45	0.6	0.56	12°	4	45	15,600
05-00520-00306		6	0.45	0.6	0.56	12°	4	45	15,600
05-00520-00309		9	0.45	0.6	0.56	12°	4	45	15,600
05-00520-00312		12	0.45	0.6	0.56	12°	4	45	15,600
05-00520-00504	R0.5	4	0.75	1	0.95	12°	4	45	15,600
05-00520-00506		6	0.75	1	0.95	12°	4	45	15,600
05-00520-00510		10	0.75	1	0.95	12°	4	50	15,600
05-00520-00516		16	0.75	1	0.95	12°	4	50	15,600
05-00520-00520		20	0.75	1	0.95	12°	4	55	15,600
05-00520-01006	R1	6	1.5	2	1.94	12°	4	45	15,600
05-00520-01010		10	1.5	2	1.94	12°	4	45	15,600
05-00520-01016		16	1.5	2	1.94	12°	4	50	15,600
05-00520-01020		20	1.5	2	1.94	12°	4	70	15,600
05-00520-01030		30	1.5	2	1.94	12°	4	70	15,600
05-00520-01520	R1.5	20	2.5	3	2.85	12°	6	65	23,200
05-00520-01540		40	2.5	3	2.85	12°	6	90	25,200
05-00520-02015	R2	15	3	4	3.8	12°	6	65	22,400
05-00520-02030		30	3	4	3.8	12°	6	70	22,400
05-00520-02040		40	3	4	3.8	12°	6	90	25,200
05-00520-03030	R3	30	6	6	5.8	–	6	80	23,200
05-00520-03060		60	6	6	5.8	–	6	120	27,000

订购方法 How to Order

请指定DCRB230 球头半径(R)×颈长(ℓ1)。
When you order, indicate DCRB230 (R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material		石墨 Graphite				铝合金压铸件 Aluminium Alloy Die Casting			
(R)球头半径 Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm
0.2	1	40,000	1,500	0.08	0.1	20,000	800	0.05	0.08
	2	40,000	1,200	0.05	0.1	20,000	600	0.02	0.05
	4	30,000	1,000	0.05	0.1	20,000	200	0.01	0.02
	6	30,000	800	0.03	0.1	20,000	120	0.01	0.01
0.3	3	30,000	1,500	0.1	0.2	20,000	1,000	0.05	0.1
	6	30,000	1,200	0.08	0.2	20,000	600	0.03	0.05
	9	25,000	1,000	0.07	0.15	18,000	400	0.01	0.02
	12	20,000	800	0.05	0.1	15,000	200	0.01	0.01
0.5	4	30,000	2,500	0.2	0.3	20,000	2,000	0.2	0.3
	6	25,000	2,000	0.15	0.3	20,000	1,500	0.1	0.3
	10	20,000	1,800	0.1	0.3	15,000	800	0.05	0.1
	16	18,000	1,200	0.08	0.2	12,000	500	0.03	0.08
	20	15,000	1,000	0.07	0.2	8,000	300	0.02	0.05
1	6	20,000	3,000	0.5	0.6	20,000	2,000	0.3	0.6
	10	20,000	2,500	0.3	0.6	20,000	1,500	0.3	0.6
	16	18,000	2,000	0.2	0.6	15,000	1,200	0.2	0.5
	20	15,000	1,500	0.2	0.5	10,000	1,000	0.1	0.2
	30	12,000	1,000	0.2	0.5	8,000	500	0.05	0.1
1.5	20	20,000	2,500	0.5	1	15,000	1,500	0.5	1
	40	12,000	1,400	0.3	0.7	7,000	600	0.1	0.3
2	15	20,000	3,000	0.5	1.5	16,000	2,000	0.5	1.5
	30	15,000	2,500	0.5	1.5	12,000	1,500	0.5	1.2
	40	12,000	2,000	0.3	1	8,000	1,000	0.2	0.7
3	30	16,000	3,000	0.6	2	12,000	2,000	0.6	2
	60	8,000	2,000	0.4	2	7,000	1,000	0.3	1

备 注 Notes

※1 加工石墨时，请使用石墨专用的加工机床。
此外，进行加工或者操作时为了防止粉尘飞扬或者被吸入身体，请使用吸尘器和防尘口罩。
※2 石墨加工建议采用干式切削。
※3 如果刀具发生崩刃，或者需要高精度加工时，请降低进给速度。
※4 发生振刀时，请以相同的比率降低主轴转速和进给速度。
此外，主轴转速过低时，也以相同的比率降低。

※1 Graphite should be machined by the machining center designed for graphite machining.
When handling with graphite material, dust collector and respirator are recommended to protect against graphite dust.
※2 Air blow cooling is recommended for the machining of graphite.
※3 Reduce the feed for high accurate machining and to avoid breakage of work piece.
※4 Adjust both spindle speed and feed at the same rate when chattering.

MXH225

规格 Size ϕ 0.1 ～ ϕ 6

Premium ≦52 HRC

无限白金涂层 25° 螺旋角2刃平底铣刀

MUGEN COATING PREMIUM 2-Flute LEAD25 End Mill

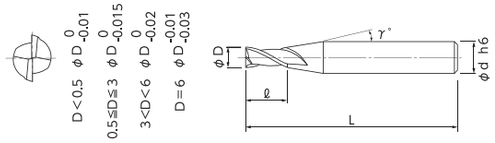
共有25种规格 Total 25 sizes

MG Side | 2 Slot | 25° Face

可对应不锈钢和钛合金　刃长为外径的1倍
刃长短、刚性高，最适用于沟槽加工

Applicable to stainless steels and titanium alloy. L/D=1. High rigidity with short length of cut. Suitable for slotting process





- 采用无限白金涂层，可适用于不锈钢、钛等耐热合金钢。
- 刃长为外径的1倍，采用25°螺旋角。
- 采用刚性更高的设计，将沟槽加工时的振刀和倾斜抑制到最小。
- Applicable for heat resistance alloy such as stainless steels and titanium alloy by MUGEN COATING PREMIUM.
- L/D=1 and helix 25° to increase rigidity and realize high efficient machining.
- Suppress chattering and deflection in slotting process.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00005-00010	0.1	0.1	12°	4	45	7,900
08-00005-00020	0.2	0.2	12°	4	45	5,100
08-00005-00030	0.3	0.3	12°	4	45	4,100
08-00005-00040	0.4	0.4	12°	4	45	4,500
08-00005-00050	0.5	0.5	12°	4	45	2,800
08-00005-00060	0.6	0.6	12°	4	45	2,800
08-00005-00070	0.7	0.7	12°	4	45	2,800
08-00005-00080	0.8	0.8	12°	4	45	2,800
08-00005-00090	0.9	0.9	12°	4	45	2,800
08-00005-00100	1	1	12°	4	45	2,400
08-00005-00110	1.1	1.1	12°	4	45	2,800
08-00005-00120	1.2	1.2	12°	4	45	2,800
08-00005-00130	1.3	1.3	12°	4	45	2,800
08-00005-00140	1.4	1.4	12°	4	45	2,800
08-00005-00150	1.5	1.5	12°	4	45	2,500
08-00005-00160	1.6	1.6	12°	4	45	2,800
08-00005-00170	1.7	1.7	12°	4	45	2,800
08-00005-00180	1.8	1.8	12°	4	45	2,800
08-00005-00190	1.9	1.9	12°	4	45	2,800
08-00005-00200	2	2	12°	4	45	2,500
08-00005-00250	2.5	2.5	12°	4	45	2,500
★ 08-00005-00300	3	3	12°	6	45	3,500
★ 08-00005-00400	4	4	12°	6	45	3,700
★ 08-00005-00500	5	5	12°	6	50	4,100
★ 08-00005-00600	6	6	–	6	50	4,200

订购方法 How to Order

请指定MXH225 外径(D)。
When you order, indicate MXH225 (D).

※(γ)为参考值。
※(γ) is reference value.

◎ 调质钢 Prehardened Steel P
○ 高硬度钢～52 Hardened Steel HRC H
◎ 不锈钢 Stainless Steel M
◎ 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy S

常规系列 无限白金涂层 全刃长造型
Regular Line MUGEN PREMIUM Full Cutting Length Type

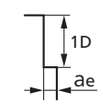
MXH225

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material	不锈钢 Stainless Steels SUS304			钛合金 Titanium Alloy Ti-6Al-4V			超耐热合金 Heat Resistance Alloy Inconel®718			高硬度钢 Hardened Steels SKD61（～52HRC）		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min⁻¹	mm/min		min⁻¹	mm/min		min⁻¹	mm/min		min⁻¹	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
0.1	50,000	30	15	48,000	30	15	25,000	10	10	50,000	–	15
0.2	50,000	50	25	48,000	50	25	25,000	15	10	47,700	–	20
0.3	50,000	90	35	48,000	90	35	25,000	30	15	31,800	–	20
0.4	47,700	130	50	45,000	130	50	23,000	40	20	23,900	50	25
0.5	38,200	130	50	37,000	130	50	19,000	40	20	19,100	60	30
0.6	34,000	130	50	33,000	130	50	17,000	40	20	16,000	60	30
0.7	30,000	130	50	29,000	130	50	15,000	40	20	13,700	60	30
0.8	26,000	140	50	25,000	140	50	13,000	45	20	12,000	60	30
0.9	22,000	140	55	21,000	140	55	11,000	45	25	10,700	60	30
1	19,100	150	55	18,000	150	55	9,500	50	25	9,500	75	40
1.1	17,500	150	55	16,000	150	55	8,500	50	25	8,700	75	40
1.2	16,000	150	55	15,000	150	55	8,000	50	25	8,000	75	40
1.3	14,500	150	55	13,500	150	55	7,200	50	25	7,400	75	40
1.4	13,000	150	55	12,500	150	55	6,500	50	25	6,900	75	40
1.5	12,700	150	55	12,000	150	55	6,200	50	25	6,400	75	40
1.6	11,900	150	55	11,500	150	55	6,000	50	25	6,000	75	40
1.7	11,300	160	55	10,900	160	55	5,500	50	25	5,700	75	40
1.8	10,700	160	55	10,300	160	55	5,200	50	25	5,300	75	40
1.9	10,100	170	60	9,700	170	60	5,000	55	30	5,000	75	40
2	9,500	170	60	9,100	170	60	4,800	55	30	4,800	75	40
2.5	7,600	180	65	7,200	180	65	3,800	60	30	3,800	75	40
3	6,400	190	70	6,000	190	70	3,200	65	35	3,200	80	40
4	4,800	190	70	4,400	190	70	2,400	65	35	2,400	95	50
5	3,800	230	75	3,400	230	75	1,900	75	40	1,900	95	50
6	3,200	260	85	2,800	260	85	1,600	80	40	1,600	100	50

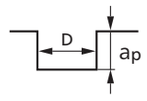
切深量 Depth of Cut（D：外径 Dia.）

侧面 Side Milling



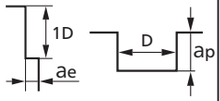
ae
φ0.1～0.9=0.05D
φ1～2.5=0.1D
φ3～6=0.2D

沟槽 Slotting



ap
φ0.1～0.4=0.05D
φ0.5～1.4=0.2D
φ1.5～3=0.7D
φ4～6=1D

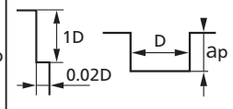
侧面 Side Milling　沟槽 Slotting



ae
φ0.1～0.9=0.01D
φ1～2.5=0.02D
φ3～6=0.04D

ap
φ0.1～0.4=0.01D
φ0.5～1.4=0.1D
φ1.5～3=0.3D
φ4～6=0.5D

侧面 Side Milling　沟槽 Slotting



ap
φ0.1～0.4=0.05D
φ0.5～6=0.2D

备　注 Notes

※ 1 请根据机床刚性和“一”工件的夹持状态等调整切削参数。
※ 2 请使用发烟性低的油冷冷却方式。
※ 3 请使用刚性较大的铣刀刀柄和机床。
※ 4 使用油冷冷却方式进行加工时，根据排屑和发烟的状况调整切削参数。
※1 Adjust milling condition conforming to machine rigidity and clamping condition.
※2 Use cutting fluid with smoke retardant.
※3 Use rigid and precise machine and chuck holder.
※4 Adjust milling condition with caution for chip evacuation and smoke generation when milling with water-insoluble fluid.

P 调质钢 Prehardened Steel ◎
H ～52 高硬度钢 HRC Hardened Steel ○
M 不锈钢 Stainless Steel ◎
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy ◎

常规系列 无限白金涂层 全刃长造型
Regular Line MUGEN PREMIUM Full Cutting Length Type

MXH230

规格 Size φ 0.1 ～ φ 6

Premium ≦52 HRC

无限白金涂层 30° 螺旋角2刃平底铣刀

MUGEN COATING PREMIUM 2-Flute LEAD30 End Mill

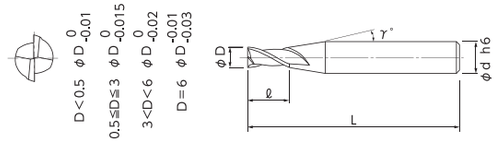
共有36种规格 Total 36 sizes

MG Side | 2 Slot | 30° Face

可对应不锈钢和钛合金　刃长为外径的2倍
可适用于沟槽、侧面加工的全能型

Applicable to stainless steels and titanium alloy. L/D=2.
Applicable to both slotting and side milling





- 采用无限白金涂层，可适用于不锈钢、钛等耐热合金钢。
- 刃长为外径的2倍，采用30°螺旋角，可支持沟槽、侧面切削的标准型。
- Applicable for heat resistance alloy such as stainless steels and titanium alloy by MUGEN COATING PREMIUM.
- L/D=2 and helix 30°standard type, applicable for both slotting and side milling.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00006-00010	0.1	0.2	12°	4	45	7,900
08-00006-00020	0.2	0.4	12°	4	45	5,100
08-00006-00030	0.3	0.6	12°	4	45	4,000
08-00006-00040	0.4	0.8	12°	4	45	4,600
08-00006-00050	0.5	1	12°	4	45	2,800
08-00006-00060	0.6	1.2	12°	4	45	3,900
08-00006-00070	0.7	1.4	12°	4	45	4,200
08-00006-00080	0.8	1.6	12°	4	45	2,800
08-00006-00090	0.9	1.8	12°	4	45	4,200
08-00006-00100	1	2	12°	4	45	2,400
08-00006-00110	1.1	2.2	12°	4	45	4,300
08-00006-00120	1.2	2.4	12°	4	45	2,800
08-00006-00130	1.3	2.6	12°	4	45	4,300
08-00006-00140	1.4	2.8	12°	4	45	4,300
08-00006-00150	1.5	3	12°	4	45	2,500
08-00006-00160	1.6	3.2	12°	4	45	4,300
08-00006-00170	1.7	3.4	12°	4	45	4,300
08-00006-00180	1.8	3.6	12°	4	45	2,800
08-00006-00190	1.9	3.8	12°	4	45	4,300
08-00006-00200	2	4	12°	4	45	2,500
08-00006-00210	2.1	4.2	12°	4	45	4,300
08-00006-00220	2.2	4.4	12°	4	45	4,300
08-00006-00230	2.3	4.6	12°	4	45	4,300
08-00006-00240	2.4	4.8	12°	4	45	4,300
08-00006-00250	2.5	5	12°	4	45	2,500
08-00006-00260	2.6	5.2	12°	4	45	5,500
08-00006-00270	2.7	5.4	12°	4	45	5,500
08-00006-00280	2.8	5.6	12°	4	45	5,500
08-00006-00290	2.9	5.8	12°	4	45	5,500
★ 08-00006-00300	3	6	12°	6	45	3,200
★ 08-00006-00350	3.5	7	12°	6	45	4,800
★ 08-00006-00400	4	8	12°	6	45	3,500
★ 08-00006-00450	4.5	9	12°	6	50	5,500
★ 08-00006-00500	5	10	12°	6	50	3,700
★ 08-00006-00550	5.5	11	12°	6	50	5,500
★ 08-00006-00600	6	12	–	6	50	4,100

订购方法 How to Order

请指定MXH230 外径(D)。
When you order, indicate MXH230 (D)

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	不锈钢 Stainless Steels SUS304			钛合金 Titanium Alloy Ti-6Al-4V			超耐热合金 Heat Resistance Alloy Inconel®718			高硬度钢 Hardened Steels SKD61(～52HRC)		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min⁻¹	mm/min		min⁻¹	mm/min		min⁻¹	mm/min		min⁻¹	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
0.1	50,000	30	15	48,000	30	15	25,000	10	10	50,000	–	15
0.2	50,000	50	25	48,000	50	25	25,000	15	10	47,700	–	20
0.3	50,000	90	35	48,000	90	35	25,000	30	15	31,800	–	20
0.4	47,700	130	50	45,000	130	50	23,000	40	20	23,900	50	25
0.5	38,200	130	50	37,000	130	50	19,000	40	20	19,100	60	30
0.6	34,500	130	50	32,000	130	50	17,000	40	20	16,000	60	30
0.7	30,500	130	50	28,000	130	50	15,000	40	20	13,700	60	30
0.8	26,000	140	50	24,000	140	50	13,000	45	20	12,000	60	30
0.9	22,000	140	55	20,000	140	55	11,000	45	25	10,700	60	30
1	19,100	150	55	18,000	150	55	9,500	50	25	9,500	75	40
1.1	17,500	150	55	16,000	150	55	8,700	50	25	8,700	75	40
1.2	16,300	150	55	15,000	150	55	8,100	50	25	8,000	75	40
1.3	15,100	150	55	14,000	150	55	7,500	50	25	7,400	75	40
1.4	13,900	150	55	13,000	150	55	7,000	50	25	6,900	75	40
1.5	12,700	150	55	12,000	150	55	6,200	50	25	6,400	75	40
1.6	12,000	150	55	11,500	150	55	6,000	50	25	6,000	75	40
1.7	11,300	160	55	10,900	160	55	5,500	50	25	5,700	75	40
1.8	10,600	160	55	10,200	160	55	5,300	50	25	5,300	75	40
1.9	9,900	170	60	9,500	170	60	5,000	55	30	5,000	75	40
2	9,500	170	60	9,100	170	60	4,800	55	30	4,800	75	40
2.1	9,100	170	60	8,700	170	60	4,500	55	30	4,600	75	40
2.2	8,700	170	60	8,300	170	60	4,300	55	30	4,400	75	40
2.3	8,300	170	60	7,900	170	60	4,100	55	30	4,200	75	40
2.4	7,900	180	65	7,500	180	65	4,000	60	30	4,000	75	40
2.5	7,600	180	65	7,200	180	65	3,800	60	30	3,800	75	40
2.6	7,400	180	65	7,000	180	65	3,700	60	30	3,700	75	40
2.7	7,200	180	65	6,800	180	65	3,600	60	30	3,600	75	40
2.8	7,000	180	65	6,500	180	65	3,500	60	30	3,500	75	40
2.9	6,700	190	70	6,200	190	70	3,300	60	30	3,300	75	40
3	6,400	190	70	6,000	190	70	3,200	65	35	3,200	80	40
3.5	5,500	190	70	5,100	190	70	2,700	65	35	2,700	85	45
4	4,800	190	70	4,400	190	70	2,400	65	35	2,400	95	50
4.5	4,200	210	75	3,800	210	75	2,100	70	35	2,100	95	50
5	3,800	230	75	3,400	230	75	1,900	75	40	1,900	95	50
5.5	3,500	240	80	3,100	240	80	1,700	75	40	1,700	95	50
6	3,200	260	85	2,800	260	85	1,600	80	40	1,600	100	50

切深量 Depth of Cut

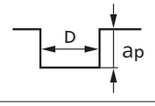
(D：外径 Dia.)

侧面 Side Milling



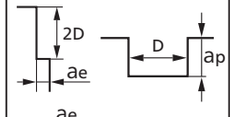
ae
φ0.1～0.9=0.05D
φ1～2.9=0.07D
φ3～6=0.15D

沟槽 Slotting



ap
φ0.1～0.4=0.05D
φ0.5～1.4=0.15D
φ1.5～3.5=0.5D
φ4～6=0.75D

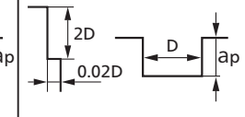
侧面 Side Milling　沟槽 Slotting



ae
φ0.1～0.9=0.01D
φ1～2.9=0.015D
φ3～6=0.03D

ap
φ0.1～0.4=0.02D
φ0.5～1.4=0.07D
φ1.5～3.5=0.2D
φ4～6=0.3D

侧面 Side Milling　沟槽 Slotting



ap
φ0.1～0.4=0.05D
φ0.5～6=0.15D

备　注 Notes

※ 1 请根据机床刚性和工件的夹持状态等调整切削参数。
※ 2 请使用发烟性低的油冷冷却方式。
※ 3 请使用刚性较大的铣刀刀柄和机床。
※ 4 使用油冷冷却方式进行加工时，根据排屑和发烟的状况调整切削参数。
※1 Adjust milling condition conforming to machine rigidity and clamping condition.
※2 Use cutting fluid with smoke retardant.
※3 Use rigid and precise machine and chuck holder.
※4 Adjust milling condition with caution for chip evacuation and smoke generation when milling with water-insoluble fluid.

MXH235

规格 Size φ 0.1 ～ φ 6

Premium ≦52 HRC

无限白金涂层 35° 螺旋角2刃平底铣刀

MUGEN COATING PREMIUM 2-Flute LEAD35 End Mill

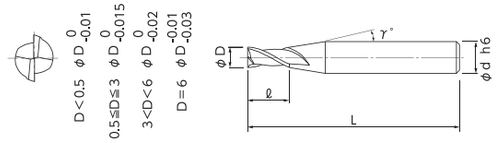
共有36种规格 Total 36 sizes

MG Side / 2 Slot / 35° Face

可对应不锈钢和钛合金　刃长为外径的3倍 可适用于沟槽、侧面加工的全能型

Applicable to stainless steels and titanium alloy. L/D=3.
Applicable to both slotting and side milling





- 采用无限白金涂层，可适用于不锈钢、钛等耐热合金钢。
- 刃长为外径的3倍，采用35°螺旋角。
- 可解决2倍刃长不够长，4倍刃长又太长的烦恼。
- Applicable for heat resistance alloy such as stainless steels and titanium alloy by MUGEN COATING PREMIUM.
- L/D=3 and helix 35°for appropriate length of cut to avoid the inconveniences in size selection.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00007-00010	0.1	0.3	12°	4	45	7,900
08-00007-00020	0.2	0.6	12°	4	45	5,200
08-00007-00030	0.3	0.9	12°	4	45	4,200
08-00007-00040	0.4	1.2	12°	4	45	4,600
08-00007-00050	0.5	1.5	12°	4	45	2,800
08-00007-00060	0.6	1.8	12°	4	45	4,100
08-00007-00070	0.7	2.1	12°	4	45	4,400
08-00007-00080	0.8	2.4	12°	4	45	2,800
08-00007-00090	0.9	2.7	12°	4	45	4,400
08-00007-00100	1	3	12°	4	45	2,400
08-00007-00110	1.1	3.3	12°	4	45	4,300
08-00007-00120	1.2	3.6	12°	4	45	2,800
08-00007-00130	1.3	3.9	12°	4	45	4,300
08-00007-00140	1.4	4.2	12°	4	45	4,300
08-00007-00150	1.5	4.5	12°	4	45	2,400
08-00007-00160	1.6	4.8	12°	4	45	4,300
08-00007-00170	1.7	5.1	12°	4	45	4,300
08-00007-00180	1.8	5.4	12°	4	45	2,800
08-00007-00190	1.9	5.7	12°	4	45	4,300
08-00007-00200	2	6	12°	4	45	2,500
08-00007-00210	2.1	6.3	12°	4	45	4,300
08-00007-00220	2.2	6.6	12°	4	45	4,300
08-00007-00230	2.3	6.9	12°	4	45	4,300
08-00007-00240	2.4	7.2	12°	4	45	4,300
08-00007-00250	2.5	7.5	12°	4	45	2,500
08-00007-00260	2.6	7.8	12°	4	45	5,500
08-00007-00270	2.7	8.1	12°	4	45	5,500
08-00007-00280	2.8	8.4	12°	4	45	5,500
08-00007-00290	2.9	8.7	12°	4	45	5,500
★ 08-00007-00300	3	9	12°	6	45	3,700
★ 08-00007-00350	3.5	10.5	12°	6	45	5,300
★ 08-00007-00400	4	12	12°	6	50	4,000
★ 08-00007-00450	4.5	13.5	12°	6	50	5,500
★ 08-00007-00500	5	15	12°	6	55	4,200
★ 08-00007-00550	5.5	16.5	12°	6	60	5,500
★ 08-00007-00600	6	18	–	6	60	4,400

订购方法 How to Order

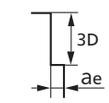
请指定MXH235 外径(D)。
When you order, indicate MXH235 (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	不锈钢 Stainless Steels SUS304			钛合金 Titanium Alloy Ti-6Al-4V			超耐热合金 Heat Resistance Alloy Inconel®718			高硬度钢 Hardened Steels SKD61 (～52HRC)		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min⁻¹	mm/min 侧面 Side Milling	mm/min 沟槽 Slotting	min⁻¹	mm/min 侧面 Side Milling	mm/min 沟槽 Slotting	min⁻¹	mm/min 侧面 Side Milling	mm/min 沟槽 Slotting	min⁻¹	mm/min 侧面 Side Milling	mm/min 沟槽 Slotting
0.1	50,000	30	15	40,000	30	15	25,000	10	10	50,000	–	15
0.2	50,000	50	25	40,000	50	25	25,000	15	10	39,800	–	20
0.3	50,000	90	35	40,000	90	35	25,000	30	15	26,500	–	20
0.4	43,800	120	50	35,000	120	50	22,000	40	20	19,900	–	20
0.5	35,000	120	50	28,000	120	50	17,000	40	20	15,900	50	25
0.6	31,500	120	50	25,000	120	50	15,000	40	20	13,300	50	25
0.7	28,000	120	50	22,500	120	50	14,000	40	20	11,400	50	25
0.8	24,500	130	50	19,600	130	50	12,000	45	20	10,000	50	25
0.9	21,000	130	50	17,000	130	50	10,500	45	20	8,900	50	25
1	17,500	140	50	14,000	140	50	8,700	45	20	8,000	65	30
1.1	16,400	140	50	13,000	140	50	8,200	45	20	7,300	65	30
1.2	15,300	140	50	12,000	140	50	7,500	45	20	6,700	65	30
1.3	14,100	140	50	11,000	140	50	7,000	45	20	6,200	65	30
1.4	12,900	140	50	10,000	140	50	6,400	45	20	5,700	65	30
1.5	11,700	140	50	9,400	140	50	5,800	45	20	5,300	65	30
1.6	11,200	140	50	8,900	140	50	5,500	45	20	5,000	65	30
1.7	10,600	140	50	8,500	140	50	5,300	45	20	4,700	65	30
1.8	10,000	150	50	8,000	150	50	5,000	50	20	4,500	65	30
1.9	9,400	160	55	7,500	160	55	4,700	50	25	4,200	65	30
2	8,800	160	55	7,000	160	55	4,400	50	25	4,000	65	30
2.1	8,500	160	55	6,800	160	55	4,200	50	25	3,800	65	30
2.2	8,100	160	55	6,500	160	55	4,000	50	25	3,700	65	30
2.3	7,800	160	55	6,200	160	55	3,900	50	25	3,500	65	30
2.4	7,400	160	55	5,900	160	55	3,700	50	25	3,300	65	30
2.5	7,000	170	60	5,600	170	60	3,500	55	30	3,200	70	35
2.6	6,700	170	60	5,400	170	60	3,300	55	30	3,100	70	35
2.7	6,400	170	60	5,100	170	60	3,200	55	30	3,000	70	35
2.8	6,200	170	60	4,900	170	60	3,100	55	30	2,900	70	35
2.9	6,000	170	60	4,800	170	60	3,000	55	30	2,800	70	35
3	5,800	170	60	4,600	170	60	2,900	55	30	2,700	70	35
3.5	5,000	180	60	4,000	180	60	2,500	60	30	2,300	75	35
4	4,400	180	60	3,500	180	60	2,200	60	30	2,000	80	40
4.5	3,900	200	65	3,100	200	65	1,900	65	30	1,800	80	40
5	3,500	210	70	2,800	210	70	1,700	70	35	1,600	80	40
5.5	3,200	220	70	2,500	220	70	1,600	75	35	1,400	80	40
6	2,900	230	75	2,300	230	75	1,400	75	35	1,300	80	40

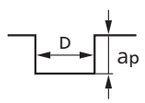
切深量 Depth of Cut

侧面 Side Milling



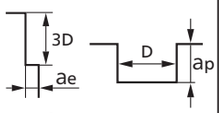
ae
φ0.1～0.9＝0.04D
φ1～2.9＝0.05D
φ3～6＝0.1D

沟槽 Slotting



ap
φ0.1～0.4＝0.05D
φ0.5～1.4＝0.08D
φ1.5～3.5＝0.25D
φ4～6＝0.4D

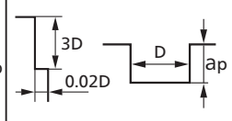
侧面 Side Milling　沟槽 Slotting



ae
φ0.1～0.9＝0.01D
φ1～2.9＝0.02D
φ3～6＝0.05D

ap
φ0.1～0.4＝0.02D
φ0.5～1.4＝0.04D
φ1.5～3.5＝0.1D
φ4～6＝0.2D

侧面 Side Milling　沟槽 Slotting



ap
φ0.1～0.4＝0.05D
φ0.5～6＝0.1D

(D：外径 Dia.)

备　注 Notes

※ 1 请根据机床刚性和工件的夹持状态等调整切削参数。
※ 2 请使用发烟性低的油冷冷却方式。
※ 3 请使用刚性较大的铣刀刀柄和机床。
※ 4 使用油冷冷却方式进行加工时，根据排屑和发烟的状况调整切削参数。
※1 Adjust milling condition conforming to machine rigidity and clamping condition.
※2 Use cutting fluid with smoke retardant.
※3 Use rigid and precise machine and chuck holder.
※4 Adjust milling condition with caution for chip evacuation and smoke generation when milling with water-insoluble fluid.

P 调质钢 Prehardened Steel
H 高硬度钢～52 Hardened Steel HRC
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列 无限白金涂层 全刃长造型 Regular Line MUGEN PREMIUM Full Cutting Length Type

MXH240

规格 Size φ 0.3 ～ φ 6

Premium ≦52 HRC

无限白金涂层 40° 螺旋角2刃平底铣刀

MUGEN COATING PREMIUM 2-Flute LEAD40 End Mill

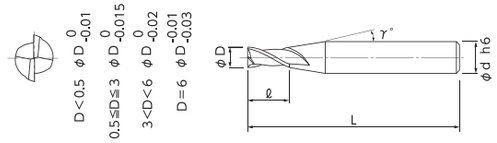
共有14种规格
Total 14 sizes

可对应不锈钢和钛合金　刃长为外径的4倍

Applicable to stainless steels and titanium alloy. L/D=4

MG　2　40°
Side　Face





- 采用无限白金涂层，可适用于不锈钢、钛等耐热合金钢。
- 刃长为外径的4倍，采用40°螺旋角。
- 深沟形状也能平稳加工，虽然是长刃，也能将刀具对加工面的倾斜抑制到最小。
- Applicable for heat resistance alloy such as stainless steels and titanium alloy by MUGEN COATING PREMIUM.
- L/D=4 and helix 40° is suitable for deep machining with minimum deflection of cutting up-right surface.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00008-00030	0.3	1.2	12°	4	45	6,200
08-00008-00040	0.4	1.6	12°	4	45	6,200
08-00008-00050	0.5	2	12°	4	45	3,900
08-00008-00080	0.8	3.2	12°	4	45	4,000
08-00008-00100	1	4	12°	4	45	3,500
08-00008-00120	1.2	4.8	12°	4	45	4,200
08-00008-00150	1.5	6	12°	4	45	3,500
08-00008-00180	1.8	7.2	12°	4	45	4,200
08-00008-00200	2	8	12°	4	45	3,500
08-00008-00250	2.5	10	12°	4	45	3,500
★ 08-00008-00300	3	12	12°	6	50	4,700
★ 08-00008-00400	4	16	12°	6	55	4,700
★ 08-00008-00500	5	20	12°	6	60	5,800
★ 08-00008-00600	6	24	–	6	65	5,900

订购方法 How to Order

请指定MXH240 外径(D)。
When you order, indicate MXH240 (D).

※(γ)为参考值。
※(γ) is reference value.

P 调质钢 Prehardened Steel
H 高硬度钢～52 Hardened Steel HRC
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列
无限白金涂层
全刃长造型
Regular Line
MUGEN PREMIUM
Full Cutting Length Type

加工材料 Work Material	不锈钢 Stainless Steels SUS304		钛合金 Titanium Alloy Ti-6Al-4V		超耐热合金 Heat Resistance Alloy Inconel®718	
外　径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.3	21,200	40	20,000	40	10,500	20
0.4	15,900	45	14,000	40	8,000	20
0.5	12,700	45	11,000	40	6,300	20
0.8	9,600	45	8,000	40	4,800	20
1	6,400	50	4,400	50	3,200	25
1.2	4,800	50	3,300	50	2,400	25
1.5	4,200	50	2,900	50	2,100	25
1.8	3,700	55	2,600	50	1,800	25
2	3,200	60	2,200	55	1,600	30
2.5	2,500	60	1,700	55	1,200	30
3	2,100	60	1,600	60	1,000	30
4	1,600	65	1,100	65	800	35
5	1,300	80	900	80	750	40
6	1,100	90	700	90	600	45
切深量 Depth of Cut (D：外径 Dia.)	侧面 Side Milling  ae φ0.3～0.8＝0.03D φ1～2.5＝0.04D φ3～6＝0.08D		侧面 Side Milling  ae φ0.3～0.8＝0.01D φ1～2.5＝0.015D φ3～6＝0.02D			
备　注 Notes	※ 1 请根据机床刚性和工件的夹持状态等调整切削参数。 ※ 2 请使用发烟性低的油冷冷却方式。 ※ 3 请使用刚性较大的铣刀刀柄和机床。 ※1 Adjust milling condition conforming to machine rigidity and clamping condition. ※2 Use cutting fluid with smoke retardant. ※3 Use a rigid and precise machine and chuck holder.					

P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列
无限白金涂层
全刃长造型
Regular Line
MUGEN PREMIUM
Full Cutting Length Type

MXH245

规格 Size φ 0.3 ～ φ 6

Premium ≦52 HRC

无限白金涂层 45° 螺旋角2刃平底铣刀

MUGEN COATING PREMIUM 2-Flute LEAD45 End Mill

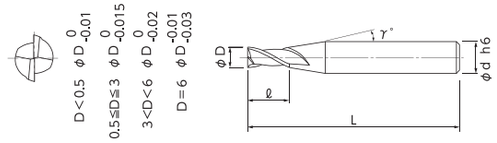
共有14种规格
Total 14 sizes

可对应不锈钢和钛合金　刃长为外径的5倍

Applicable to stainless steels and titanium alloy. L/D=5

MG　2　45°
Side　Face





●采用无限白金涂层，可适用于不锈钢、钛等耐热合金钢。
●刃长为外径的5倍，采用45°螺旋角，虽然是超长刃，也能将加工表面的倾斜抑制到最小。
●Applicable for heat resistance alloy such as stainless steels and titanium alloy by MUGEN COATING PREMIUM.
●L/D=5 and helix 45°to minimize the milling deflection even though the long cutting length design.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00009-00030	0.3	1.5	12°	4	45	8,600
08-00009-00040	0.4	2	12°	4	45	8,600
08-00009-00050	0.5	2.5	12°	4	45	5,400
08-00009-00080	0.8	4	12°	4	45	5,400
08-00009-00100	1	5	12°	4	45	4,800
08-00009-00120	1.2	6	12°	4	45	5,400
08-00009-00150	1.5	7.5	12°	4	45	4,800
08-00009-00180	1.8	9	12°	4	50	5,400
08-00009-00200	2	10	12°	4	50	4,800
08-00009-00250	2.5	12.5	12°	4	50	4,800
★ 08-00009-00300	3	15	12°	6	55	6,400
★ 08-00009-00400	4	20	12°	6	60	6,700
★ 08-00009-00500	5	25	12°	6	65	7,500
★ 08-00009-00600	6	30	–	6	75	7,800

订购方法 How to Order

请指定MXH245 外径(D)。
When you order, indicate MXH245 (D).

※(γ)为参考值。
※(γ) is reference value.

P 调质钢 Prehardened Steel
H 高硬度钢～52 Hardened Steel HRC
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列
无限白金涂层
全刃长造型
Regular Line
MUGEN PREMIUM
Full Cutting Length Type

加工材料 Work Material	不锈钢 Stainless Steels SUS304		钛合金 Titanium Alloy Ti-6Al-4V		超耐热合金 Heat Resistance Alloy Inconel®718	
外　径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.3	15,900	30	14,000	30	8,000	15
0.4	11,900	35	10,000	35	6,000	15
0.5	9,500	35	8,000	35	4,700	15
0.8	7,100	35	6,000	35	3,500	15
1	4,800	40	3,400	40	2,400	20
1.2	4,000	40	2,800	40	2,000	20
1.5	3,200	40	2,200	40	1,600	20
1.8	2,800	40	1,900	40	1,400	20
2	2,400	45	1,700	45	1,200	20
2.5	1,900	45	1,300	45	950	20
3	1,600	50	1,100	50	800	25
4	1,200	50	840	50	600	25
5	1,000	60	700	60	500	30
6	800	65	550	65	400	30
切深量 Depth of Cut (D：外径 Dia.)	侧面 Side Milling  ae φ0.3～0.8＝0.02D φ1～2.5＝0.03D φ3～6＝0.06D		侧面 Side Milling  ae φ0.3～0.8＝0.005D φ1～2.5＝0.007D φ3～6＝0.015D			
备　注 Notes	※ 1 请根据机床刚性和工件的夹持状态等调整切削参数。 ※ 2 请使用发烟性低的油冷冷却方式。 ※ 3 请使用刚性较大的铣刀刀柄和机床。 ※1 Adjust milling condition conforming to machine rigidity and clamping condition. ※2 Use cutting fluid with smoke retardant. ※3 Use a rigid and precise machine and chuck holder.					

P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列
无限白金涂层
全刃长造型
Regular Line
MUGEN PREMIUM
Full Cutting Length Type

MXH225P

规格 Size φ 0.1 ～ φ 6

Premium

无限白金涂层 25° 螺旋角2刃尖角造型平底铣刀

MUGEN COATING PREMIUM 2-Flute Sharp Edge LEAD25 End Mill

共有25种规格 Total 25 sizes

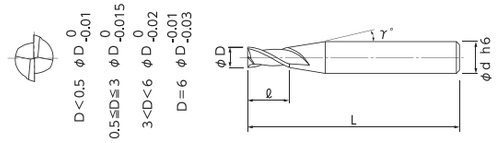
MG | 2 | 25° | 90°

Side | Face

可对应不锈钢和钛合金　刃长为外径的1倍 尖角造型

Applicable to stainless steels and titanium alloy. L/D=1. Sharp edge type





- 采用无限白金涂层，适用于不锈钢、钛等耐热合金钢的尖角造型。
- 刃长为外径的1倍，采用25°螺旋角。
- Applicable for heat resistance alloy such as stainless steels and titanium alloy by MUGEN COATING PREMIUM with sharp edge type.
- L/D=1 and helix 25°.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

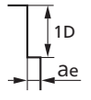
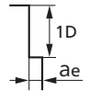
产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00015-00010	0.1	0.1	12°	4	45	7,900
08-00015-00020	0.2	0.2	12°	4	45	5,100
08-00015-00030	0.3	0.3	12°	4	45	4,100
08-00015-00040	0.4	0.4	12°	4	45	4,500
08-00015-00050	0.5	0.5	12°	4	45	2,800
08-00015-00060	0.6	0.6	12°	4	45	2,800
08-00015-00070	0.7	0.7	12°	4	45	2,800
08-00015-00080	0.8	0.8	12°	4	45	2,800
08-00015-00090	0.9	0.9	12°	4	45	2,800
08-00015-00100	1	1	12°	4	45	2,400
08-00015-00110	1.1	1.1	12°	4	45	2,800
08-00015-00120	1.2	1.2	12°	4	45	2,800
08-00015-00130	1.3	1.3	12°	4	45	2,800
08-00015-00140	1.4	1.4	12°	4	45	2,800
08-00015-00150	1.5	1.5	12°	4	45	2,500
08-00015-00160	1.6	1.6	12°	4	45	2,800
08-00015-00170	1.7	1.7	12°	4	45	2,800
08-00015-00180	1.8	1.8	12°	4	45	2,800
08-00015-00190	1.9	1.9	12°	4	45	2,800
08-00015-00200	2	2	12°	4	45	2,500
08-00015-00250	2.5	2.5	12°	4	45	2,500
★ 08-00015-00300	3	3	12°	6	45	3,500
★ 08-00015-00400	4	4	12°	6	45	3,700
★ 08-00015-00500	5	5	12°	6	50	4,100
★ 08-00015-00600	6	6	–	6	50	4,200

订购方法 How to Order

请指定MXH225P 外径(D)。
When you order, indicate MXH225P (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	不锈钢 Stainless Steels SUS304		钛合金 Titanium Alloy Ti-6Al-4V		超耐热合金 Heat Resistance Alloy Inconel®718	
外　径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.1	50,000	30	48,000	30	25,000	10
0.2	50,000	50	48,000	50	25,000	15
0.3	50,000	90	48,000	90	25,000	30
0.4	47,700	130	45,000	130	23,000	40
0.5	38,200	130	37,000	130	19,000	40
0.6	34,000	130	33,000	130	17,000	40
0.7	30,000	130	29,000	130	15,000	40
0.8	26,000	140	25,000	140	13,000	45
0.9	22,000	140	21,000	140	11,000	45
1	19,100	150	18,000	150	9,500	50
1.1	17,500	150	16,000	150	8,500	50
1.2	16,000	150	15,000	150	8,000	50
1.3	14,500	150	13,500	150	7,200	50
1.4	13,000	150	12,500	150	6,500	50
1.5	12,700	150	12,000	150	6,200	50
1.6	11,900	150	11,500	150	6,000	50
1.7	11,300	160	10,900	160	5,500	50
1.8	10,700	160	10,300	160	5,200	50
1.9	10,100	170	9,700	170	5,000	55
2	9,500	170	9,100	170	4,800	55
2.5	7,600	180	7,200	180	3,800	60
3	6,400	190	6,000	190	3,200	65
4	4,800	190	4,400	190	2,400	65
5	3,800	230	3,400	230	1,900	75
6	3,200	260	2,800	260	1,600	80

切深量 Depth of Cut (D：外径 Dia.)	侧面 Side Milling  ae φ0.1～0.9=0.05D φ1～2.5=0.1D φ3～6=0.2D	侧面 Side Milling  ae φ0.1～0.9=0.01D φ1～2.5=0.02D φ3～6=0.04D
备　注 Notes	※ 1 请根据机床刚性和工件的夹持状态等调整切削参数。 ※ 2 请使用发烟性低的油冷冷却方式。 ※ 3 请使用刚性较大的铣刀刀柄和机床。 ※1 Adjust milling condition conforming to machine rigidity and clamping condition. ※2 Use cutting fluid with smoke retardant. ※3 Use a rigid and precise machine and chuck holder.	

MXH230P

规格 Size ϕ 0.1 ～ ϕ 6

Premium

无限白金涂层 30° 螺旋角2刃尖角造型平底铣刀

MUGEN COATING PREMIUM 2-Flute Sharp Edge LEAD30 End Mill

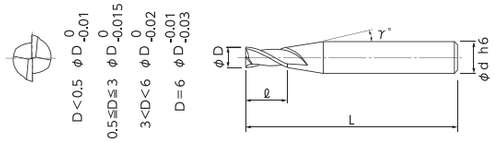
共有36种规格 Total 36 sizes

MG | 2 | 30° | 90° | Side | Face

可对应不锈钢和钛合金　刃长为外径的2倍尖角造型

Applicable to stainless steels and titanium alloy. L/D=2. Sharp edge type





- 采用无限白金涂层，适用于不锈钢、钛等耐热合金钢的尖角造型。
- 刃长为外径的2倍，采用30°螺旋角。
- Applicable for heat resistance alloy such as stainless steels and titanium alloy by MUGEN COATING PREMIUM with sharp edge type.
- L/D=2 and helix 30°.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00016-00010	0.1	0.2	12°	4	45	7,900
08-00016-00020	0.2	0.4	12°	4	45	5,100
08-00016-00030	0.3	0.6	12°	4	45	4,000
08-00016-00040	0.4	0.8	12°	4	45	4,600
08-00016-00050	0.5	1	12°	4	45	2,800
08-00016-00060	0.6	1.2	12°	4	45	3,900
08-00016-00070	0.7	1.4	12°	4	45	4,200
08-00016-00080	0.8	1.6	12°	4	45	2,800
08-00016-00090	0.9	1.8	12°	4	45	4,200
08-00016-00100	1	2	12°	4	45	2,400
08-00016-00110	1.1	2.2	12°	4	45	4,300
08-00016-00120	1.2	2.4	12°	4	45	2,800
08-00016-00130	1.3	2.6	12°	4	45	4,300
08-00016-00140	1.4	2.8	12°	4	45	4,300
08-00016-00150	1.5	3	12°	4	45	2,500
08-00016-00160	1.6	3.2	12°	4	45	4,300
08-00016-00170	1.7	3.4	12°	4	45	4,300
08-00016-00180	1.8	3.6	12°	4	45	2,800
08-00016-00190	1.9	3.8	12°	4	45	4,300
08-00016-00200	2	4	12°	4	45	2,500
08-00016-00210	2.1	4.2	12°	4	45	4,300
08-00016-00220	2.2	4.4	12°	4	45	4,300
08-00016-00230	2.3	4.6	12°	4	45	4,300
08-00016-00240	2.4	4.8	12°	4	45	4,300
08-00016-00250	2.5	5	12°	4	45	2,500
08-00016-00260	2.6	5.2	12°	4	45	5,500
08-00016-00270	2.7	5.4	12°	4	45	5,500
★ 08-00016-00280	2.8	5.6	12°	4	45	5,500
08-00016-00290	2.9	5.8	12°	4	45	5,500
★ 08-00016-00300	3	6	12°	6	45	3,200
★ 08-00016-00350	3.5	7	12°	6	45	4,800
★ 08-00016-00400	4	8	12°	6	45	3,500
★ 08-00016-00450	4.5	9	12°	6	50	5,500
★ 08-00016-00500	5	10	12°	6	50	3,700
★ 08-00016-00550	5.5	11	12°	6	50	5,500
★ 08-00016-00600	6	12	–	6	50	4,100

订购方法 How to Order

请指定MXH230P 外径(D)。
When you order, indicate MXH230P (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	不锈钢 Stainless Steels SUS304		钛合金 Titanium Alloy Ti-6Al-4V		超耐热合金 Heat Resistance Alloy Inconel®718	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.1	50,000	30	48,000	30	25,000	10
0.2	50,000	50	48,000	50	25,000	15
0.3	50,000	90	48,000	90	25,000	30
0.4	47,700	130	45,000	130	23,000	40
0.5	38,200	130	37,000	130	19,000	40
0.6	34,500	130	32,000	130	17,000	40
0.7	30,500	130	28,000	130	15,000	40
0.8	26,000	140	24,000	140	13,000	45
0.9	22,000	140	20,000	140	11,000	45
1	19,100	150	18,000	150	9,500	50
1.1	17,500	150	16,000	150	8,700	50
1.2	16,300	150	15,000	150	8,100	50
1.3	15,100	150	14,000	150	7,500	50
1.4	13,900	150	13,000	150	7,000	50
1.5	12,700	150	12,000	150	6,200	50
1.6	12,000	150	11,500	150	6,000	50
1.7	11,300	160	10,900	160	5,500	50
1.8	10,600	160	10,200	160	5,300	50
1.9	9,900	170	9,500	170	5,000	55
2	9,500	170	9,100	170	4,800	55
2.1	9,100	170	8,700	170	4,500	55
2.2	8,700	170	8,300	170	4,300	55
2.3	8,300	170	7,900	170	4,100	55
2.4	7,900	180	7,500	180	4,000	60
2.5	7,600	180	7,200	180	3,800	60
2.6	7,400	180	7,000	180	3,700	60
2.7	7,200	180	6,800	180	3,600	60
2.8	7,000	180	6,500	180	3,500	60
2.9	6,700	190	6,200	190	3,300	60
3	6,400	190	6,000	190	3,200	65
3.5	5,500	190	5,100	190	2,700	65
4	4,800	190	4,400	190	2,400	65
4.5	4,200	210	3,800	210	2,100	70
5	3,800	230	3,400	230	1,900	75
5.5	3,500	240	3,100	240	1,700	75
6	3,200	260	2,800	260	1,600	80

切深量 Depth of Cut
(D：外径 Dia.)

侧面 Side Milling



ae
φ0.1～0.9=0.05D
φ1～2.9=0.07D
φ3～=0.15D

侧面 Side Milling



ae
φ0.1～0.9=0.01D
φ1～2.9=0.015D
φ3～6=0.03D

备　注 Notes

※ 1 请根据机床刚性和工件的夹持状态等调整切削参数。
※ 2 请使用发烟性低的油冷冷却方式。
※ 3 请使用刚性较大的铣刀刀柄和机床。
※1 Adjust milling condition conforming to machine rigidity and clamping condition.
※2 Use cutting fluid with smoke retardant.
※3 Use a rigid and precise machine and chuck holder.

MXH235P

规格 Size ϕ 0.1 ～ ϕ 6

Premium

无限白金涂层 35° 螺旋角2刃尖角造型平底铣刀

MUGEN COATING PREMIUM 2-Flute Sharp Edge LEAD35 End Mill

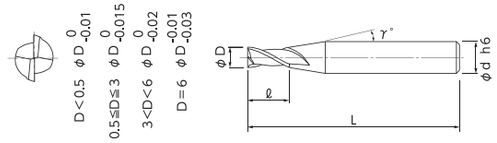
共有36种规格 Total 36 sizes

MG | 2 | 35° | 90° | Side | Face

可对应不锈钢和钛合金　刃长为外径的3倍尖角造型

Applicable to stainless steels and titanium alloy. L/D=3. Sharp edge type





- 采用无限白金涂层，适用于不锈钢、钛等耐热合金钢的尖角造型。
- 刃长为外径的3倍，采用35°螺旋角。
- Applicable for heat resistance alloy such as stainless steels and titanium alloy by MUGEN COATING PREMIUM with sharp edge type.
- L/D=3 and helix 35°.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00017-00010	0.1	0.3	12°	4	45	7,900
08-00017-00020	0.2	0.6	12°	4	45	5,200
08-00017-00030	0.3	0.9	12°	4	45	4,200
08-00017-00040	0.4	1.2	12°	4	45	4,600
08-00017-00050	0.5	1.5	12°	4	45	2,800
08-00017-00060	0.6	1.8	12°	4	45	4,100
08-00017-00070	0.7	2.1	12°	4	45	4,400
08-00017-00080	0.8	2.4	12°	4	45	2,800
08-00017-00090	0.9	2.7	12°	4	45	4,400
08-00017-00100	1	3	12°	4	45	2,400
08-00017-00110	1.1	3.3	12°	4	45	4,300
08-00017-00120	1.2	3.6	12°	4	45	2,800
08-00017-00130	1.3	3.9	12°	4	45	4,300
08-00017-00140	1.4	4.2	12°	4	45	4,300
08-00017-00150	1.5	4.5	12°	4	45	2,400
08-00017-00160	1.6	4.8	12°	4	45	4,300
08-00017-00170	1.7	5.1	12°	4	45	4,300
08-00017-00180	1.8	5.4	12°	4	45	2,800
08-00017-00190	1.9	5.7	12°	4	45	4,300
08-00017-00200	2	6	12°	4	45	2,500
08-00017-00210	2.1	6.3	12°	4	45	4,300
08-00017-00220	2.2	6.6	12°	4	45	4,300
08-00017-00230	2.3	6.9	12°	4	45	4,300
08-00017-00240	2.4	7.2	12°	4	45	4,300
08-00017-00250	2.5	7.5	12°	4	45	2,500
08-00017-00260	2.6	7.8	12°	4	45	5,500
08-00017-00270	2.7	8.1	12°	4	45	5,500
08-00017-00280	2.8	8.4	12°	4	45	5,500
08-00017-00290	2.9	8.7	12°	4	45	5,500
★ 08-00017-00300	3	9	12°	6	45	3,700
★ 08-00017-00350	3.5	10.5	12°	6	45	5,300
★ 08-00017-00400	4	12	12°	6	50	4,000
★ 08-00017-00450	4.5	13.5	12°	6	50	5,500
★ 08-00017-00500	5	15	12°	6	55	4,200
★ 08-00017-00550	5.5	16.5	12°	6	60	5,500
★ 08-00017-00600	6	18	–	6	60	4,400

订购方法 How to Order

请指定MXH235P 外径(D)。
When you order, indicate MXH235P (D).

※(γ)为参考值。
※(γ) is reference value.

◎ 调质钢 Prehardened Steel P
◎ 不锈钢 Stainless Steel M
◎ 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy S

常规系列 无限白金涂层 全刃长造型 Regular Line MUGEN PREMIUM Full Cutting Length Type

MXH235P

切削参数参考表

Recommended Milling Conditions

加工材料 Work Material	不锈钢 Stainless Steels SUS304		钛合金 Titanium Alloy Ti-6Al-4V		超耐热合金 Heat Resistance Alloy Inconel®718	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.1	50,000	30	40,000	30	25,000	10
0.2	50,000	50	40,000	50	25,000	15
0.3	50,000	90	40,000	90	25,000	30
0.4	43,800	120	35,000	120	22,000	40
0.5	35,000	120	28,000	120	17,000	40
0.6	31,500	120	25,000	120	15,000	40
0.7	28,000	120	22,500	120	14,000	40
0.8	24,500	130	19,600	130	12,000	45
0.9	21,000	130	17,000	130	10,500	45
1	17,500	140	14,000	140	8,700	45
1.1	16,400	140	13,000	140	8,200	45
1.2	15,300	140	12,000	140	7,500	45
1.3	14,100	140	11,000	140	7,000	45
1.4	12,900	140	10,000	140	6,400	45
1.5	11,700	140	9,400	140	5,800	45
1.6	11,200	140	8,900	140	5,500	45
1.7	10,600	140	8,500	140	5,300	45
1.8	10,000	150	8,000	150	5,000	50
1.9	9,400	160	7,500	160	4,700	50
2	8,800	160	7,000	160	4,400	50
2.1	8,500	160	6,800	160	4,200	50
2.2	8,100	160	6,500	160	4,000	50
2.3	7,800	160	6,200	160	3,900	50
2.4	7,400	160	5,900	160	3,700	50
2.5	7,000	170	5,600	170	3,500	55
2.6	6,700	170	5,400	170	3,300	55
2.7	6,400	170	5,100	170	3,200	55
2.8	6,200	170	4,900	170	3,100	55
2.9	6,000	170	4,800	170	3,000	55
3	5,800	170	4,600	170	2,900	55
3.5	5,000	180	4,000	180	2,500	60
4	4,400	180	3,500	180	2,200	60
4.5	3,900	200	3,100	200	1,900	65
5	3,500	210	2,800	210	1,700	70
5.5	3,200	220	2,500	220	1,600	75
6	2,900	230	2,300	230	1,400	75
切深量 Depth of Cut (D：外径 Dia.)	侧面 Side Milling  ae φ0.1～0.9＝0.04D φ1～2.9＝0.05D φ3～6＝0.1D		侧面 Side Milling  ae φ0.1～0.9＝0.01D φ1～2.9＝0.02D φ3～6＝0.05D			
备注 Notes	※ 1 请根据机床刚性和工件的夹持状态等调整切削参数。 ※ 2 请使用发烟性低的油冷冷却方式。 ※ 3 请使用刚性较大的铣刀刀柄和机床。 ※1 Adjust milling condition conforming to machine rigidity and clamping condition. ※2 Use cutting fluid with smoke retardant. ※3 Use a rigid and precise machine and chuck holder.					

P 调质钢 Prehardened Steel ◎
M 不锈钢 Stainless Steel ◎
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy ◎

常规系列 无限白金涂层 全刃长造型 Regular Line MUGEN PREMIUM Full Cutting Length Type

MSUSZ440

规格 Size φ1 ～ φ6

Premium ≦40 HRC

无限白金涂层 SUS用高效率 “Z” 铣刀

MUGEN COATING PREMIUM 4-Flute High Efficient "Z" End Mill for Stainless Steels

共有62种规格 Total 62 sizes

不锈钢・耐热合金加工用
可进行插铣～沟槽的连续加工　不等分割和不等螺旋形状

For machining on stainless steels and heat resistant alloy　Continuous machining from plunging to slotting　Unequal flute spacing and unequal helix angle design

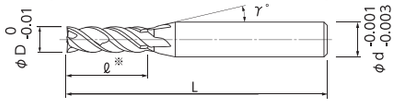
MG | 4 | 40°/42° | φd -0.001 -0.003

Side | Slot | Face | Plunge



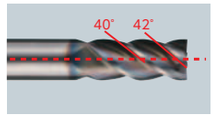


插铣深度参照切削参数表
Plunge depth is refered to recommended milling conditions

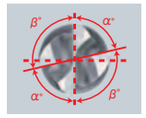


※ 刃长比规格表中的数值长0.1mm。
The practical Length of Cut is 0.1mm longer than the specification table.

- 采用不等分割、不等螺旋角和提高刃部刚性的设计，可最大限度地抑制振刀，实现高效率加工！
- 采用新开发的特殊刀刃形状，可实现应对不锈钢侧面加工、沟槽加工、插铣加工进刀的多种性能。
- 采用耐热性高的无限白金涂层，可进行延长刀具寿命的稳定加工。
- 共有62种规格，刃长有外径的2倍和3倍（部分规格）两种。
- Unequal flute spacing, unequal helix angle and high rigid end profile design to minimize chatter realize high efficient machining.
- New developed special edge profile realized multi-functional performance of side milling, slot milling and plunging approaches on stainless steel.
- Optimized high heat-resistance MUGEN COATING PREMIUM to realize stable long time machining.
- Total 62 sizes, some sizes line up with L/D=2 or 3.



不等螺旋角
Unequal Helix Angle



不等分割
Unequal Flute Spacing

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00152-01020	1	2	12°	4	50	5,300
08-00152-01030		3	12°	4	50	5,500
08-00152-01120	1.1	2.2	12°	4	50	6,300
08-00152-01220	1.2	2.4	12°	4	50	6,300
08-00152-01320	1.3	2.6	12°	4	50	6,300
08-00152-01420	1.4	2.8	12°	4	50	6,300
08-00152-01520	1.5	3	12°	4	50	6,300
08-00152-01530		4.5	12°	4	50	6,700
08-00152-01620	1.6	3.2	12°	6	50	6,900
08-00152-01720	1.7	3.4	12°	6	50	6,900
08-00152-01820	1.8	3.6	12°	6	50	6,900
08-00152-01920	1.9	3.8	12°	6	50	6,900
08-00152-02020	2	4	12°	6	50	6,900
08-00152-02030		6	12°	6	60	7,400
08-00152-02120	2.1	4.2	12°	6	50	6,900
08-00152-02220	2.2	4.4	12°	6	50	6,900
08-00152-02320	2.3	4.6	12°	6	50	6,900
08-00152-02420	2.4	4.8	12°	6	50	6,900
08-00152-02520	2.5	5	12°	6	50	6,900
08-00152-02530		7.5	12°	6	60	7,500
08-00152-02620	2.6	5.2	12°	6	50	6,900
08-00152-02720	2.7	5.4	12°	6	50	6,900
08-00152-02820	2.8	5.6	12°	6	50	6,900
08-00152-02920	2.9	5.8	12°	6	50	6,900
★ 08-00152-03020	3	6	12°	6	50	6,900
★ 08-00152-03030		9	12°	6	60	7,400
★ 08-00152-03120	3.1	6.2	12°	6	50	7,300
★ 08-00152-03220	3.2	6.4	12°	6	50	7,300
★ 08-00152-03320	3.3	6.6	12°	6	50	7,300
★ 08-00152-03420	3.4	6.8	12°	6	50	7,300
★ 08-00152-03520	3.5	7	12°	6	50	7,300
★ 08-00152-03530		10.5	12°	6	60	7,800
★ 08-00152-03620	3.6	7.2	12°	6	50	7,300
★ 08-00152-03720	3.7	7.4	12°	6	50	7,300
★ 08-00152-03820	3.8	7.6	12°	6	50	7,300
★ 08-00152-03920	3.9	7.8	12°	6	50	7,300
★ 08-00152-04020	4	8	12°	6	50	7,300
★ 08-00152-04030		12	12°	6	60	7,700
★ 08-00152-04120	4.1	8.2	12°	6	50	7,700
★ 08-00152-04220	4.2	8.4	12°	6	50	7,700
★ 08-00152-04320	4.3	8.6	12°	6	50	7,700
★ 08-00152-04420	4.4	8.8	12°	6	50	7,700
★ 08-00152-04520	4.5	9	12°	6	50	7,700
★ 08-00152-04530		13.5	12°	6	60	8,300
★ 08-00152-04620	4.6	9.2	12°	6	50	7,700
★ 08-00152-04720	4.7	9.4	12°	6	50	7,700
★ 08-00152-04820	4.8	9.6	12°	6	50	7,700
★ 08-00152-04920	4.9	9.8	12°	6	50	7,700
★ 08-00152-05020	5	10	12°	6	50	7,700
★ 08-00152-05030		15	12°	6	60	8,300
★ 08-00152-05120	5.1	10.2	12°	6	50	8,400
★ 08-00152-05220	5.2	10.4	12°	6	50	8,400
★ 08-00152-05320	5.3	10.6	12°	6	50	8,400
★ 08-00152-05420	5.4	10.8	12°	6	50	8,400
★ 08-00152-05520	5.5	11	12°	6	50	8,400
★ 08-00152-05530		16.5	12°	6	60	9,000
★ 08-00152-05620	5.6	11.2	12°	6	50	8,400
★ 08-00152-05720	5.7	11.4	12°	6	50	8,400
★ 08-00152-05820	5.8	11.6	12°	6	50	8,400
★ 08-00152-05920	5.9	11.8	12°	6	50	8,400
★ 08-00152-06020	6	12	–	6	60	8,000
★ 08-00152-06030		18	–	6	60	8,400

订购方法 How to Order
请指定MSUSZ440 外径(D)×刃长(ℓ)。
When you order, indicate MSUSZ440 (D)×(ℓ).
※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-032

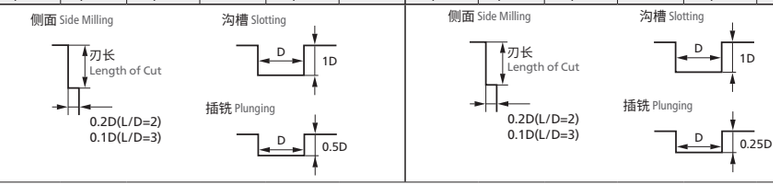
◎ 不锈钢 Stainless Steel M
◎ 钦合金 耐热合金 Titanium Alloy Heat Resistant Alloy S

高效率加工 High Efficient Milling

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			不锈钢 Stainless Steels SUS304						钛合金 Titanium Alloy Ti-6Al-4V					
			侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging	
外径 Dia.	刃长 Length of Cut	L(刃长)/D(刃径) L/D	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
			min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min
1	2	2	18,000	600	15,000	200	15,000	50	16,800	600	13,500	200	13,500	50
	3	3	16,000	500	12,000	150	12,000	30	14,900	500	10,800	150	10,800	30
1.5	3	2	12,500	700	11,000	220	11,000	50	11,700	700	10,000	220	10,000	50
	4.5	3	11,000	550	8,500	160	8,500	30	10,300	550	7,700	160	7,700	30
2	4	2	10,000	850	8,600	240	8,600	50	9,300	850	7,800	240	7,800	50
	6	3	8,500	650	7,300	180	7,300	30	7,900	650	6,600	180	6,600	30
2.5	5	2	8,200	1,000	7,600	280	7,600	50	7,600	1,000	6,900	280	6,900	50
	7.5	3	7,100	750	6,300	200	6,300	30	6,600	750	5,700	200	5,700	30
3	6	2	7,200	1,100	6,800	300	6,800	50	6,700	1,100	6,200	300	6,200	50
	9	3	6,000	800	5,400	220	5,400	30	5,600	800	4,900	220	4,900	30
3.5	7	2	6,700	1,150	5,700	330	5,700	50	6,200	1,150	5,200	330	5,200	50
	10.5	3	5,500	900	4,800	230	4,800	30	5,100	900	4,400	230	4,400	30
4	8	2	6,400	1,200	5,300	330	5,300	50	6,000	1,200	4,800	330	4,800	50
	12	3	5,400	920	4,400	230	4,400	30	5,000	920	4,000	230	4,000	30
4.5	9	2	6,000	1,200	4,900	350	4,900	50	5,600	1,200	4,500	350	4,500	50
	13.5	3	5,200	1,000	4,000	240	4,000	30	4,800	1,000	3,700	240	3,700	30
5	10	2	5,600	1,200	4,600	360	4,600	50	5,200	1,200	4,200	360	4,200	50
	15	3	5,000	1,000	3,700	240	3,700	30	4,700	1,000	3,400	240	3,400	30
5.5	11	2	5,300	1,200	4,400	380	4,400	50	4,900	1,200	4,000	380	4,000	50
	16.5	3	4,800	1,000	3,400	250	3,400	30	4,500	1,000	3,100	250	3,100	30
6	12	2	5,000	1,200	4,200	400	4,200	50	4,600	1,200	3,800	400	3,800	50
	18	3	4,500	1,000	3,200	250	3,200	30	4,200	1,000	2,900	250	2,900	30

切深量 Depth of Cut
(D:外径 Dia.)



备注 Notes

※ 1 测量刀具长度时请测量子刃。
※ 2 请根据机床刚性和工件的夹持状态等调整切削参数。
　实际加工时请根据加工形状、目的以及所用的机床等调整切削参数。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 建议使用水溶性切削方式。
※ 5 供应冷却液时请尽量增大流量、加高压力，以排出切屑。
※ 6 插铣时若排屑不佳，请调整轴向切深量和进给速度。
※ 7 排屑不佳可能会导致刀具崩刃和折断，敬请注意。
※ 8 建议使用刚性较大的铣刀刀柄和机床。
※ 9 请尽量缩短刀具的伸出量。

※1 Please choose the short end tooth when measure the tool length.
※2 Adjust milling condition conforming with machine rigidity and clamping condition.
　Final milling conditions are subject to machining profile, purpose and machine status.
※3 Adjust both Spindle Speed and Feed at the same rate.
※4 Water-soluble fluid is recommended.
※5 Please increasing the coolant flow rate and pressure as much as possible, and supply it sufficiently to the machining point and flute.
※6 Please change the Depth of Cut or Feed when chips could not remove smoothly during plunging.
※7 Please be noted there would be a possible tool chipping or breakage when the chip removal is insufficient.
※8 Use a rigid and precise machine and chuck holder.
※9 Overhang of end mill should be as short as possible from spindle nose.

M 不锈钢 Stainless Steel ◎
S 钦合金 耐热合金 Titanium Alloy Heat Resistant Alloy ◎
高效率加工 High Efficient Milling

MX225

规格 Size ϕ 0.3 ～ ϕ 12

≦52 HRC

无限涂层 25° 螺旋角2刃平底铣刀
MUGEN COATING 2-Flute LEAD25 End Mill

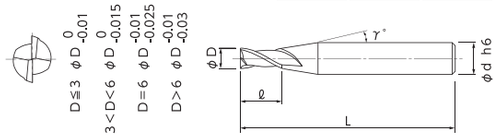
共有19种规格
Total 19 sizes

刃长为外径的1倍。刃长短、刚性高，适用于沟槽加工 可对应各种加工材料

For various work materials. L/D=1.
Best for slotting with high rigidity short length of cut

MG Side | 2 Slot | 25° Face





- 刃长为外径的1倍，采用25° 螺旋角。
- 采用刚性更高的设计，将沟槽加工时的振刀和倾斜抑制到最小。
- L/D=1 and helix 25° to increase rigidity and realize high efficient machining.
- Suppress chattering and deflection in slotting process.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

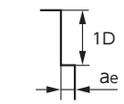
产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00025-00030	0.3	0.3	12°	4	45	3,700
08-00025-00040	0.4	0.4	12°	4	45	4,200
08-00025-00050	0.5	0.5	12°	4	45	2,100
08-00025-00080	0.8	0.8	12°	4	45	2,100
08-00025-00100	1	1	12°	4	45	1,900
08-00025-00120	1.2	1.2	12°	4	45	2,100
08-00025-00150	1.5	1.5	12°	4	45	1,900
08-00025-00180	1.8	1.8	12°	4	45	2,100
08-00025-00200	2	2	12°	4	45	1,900
08-00025-00250	2.5	2.5	12°	4	45	1,900
08-00025-00300	3	3	12°	6	45	2,400
08-00025-00400	4	4	12°	6	45	2,600
08-00025-00500	5	5	12°	6	50	2,900
08-00025-00600	6	6	–	6	50	3,100
08-00025-00700	7	7	12°	8	65	9,600
08-00025-00800	8	8	–	8	65	7,900
08-00025-00900	9	9	12°	10	75	14,000
08-00025-01000	10	10	–	10	75	10,300
08-00025-01200	12	12	–	12	80	14,000

订购方法 How to Order
请指定MX225 外径(D)。
When you order, indicate MX225 (D).

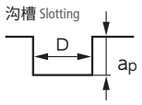
※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK			高硬度钢 Hardened Steels SKD61 (～52HRC)			铜合金 Copper		
切削速度 Cutting Speed	50～80m/min			50～70m/min			40～60m/min			20～40m/min			60～80m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
0.3	50,000	100	50	50,000	90	35	50,000	85	40	31,800	–	20	50,000	150	60
0.4	50,000	150	75	47,700	130	50	39,800	110	55	23,900	50	25	50,000	200	80
0.5	41,400	170	85	38,200	130	50	31,800	110	55	19,100	60	30	44,600	220	90
1	20,700	210	100	19,100	150	55	15,900	130	65	9,500	75	40	22,300	270	95
1.5	13,800	210	100	12,700	150	55	10,600	130	65	6,400	75	40	14,900	300	100
2	10,300	210	100	9,500	170	60	8,000	150	75	4,800	75	40	11,100	330	120
2.5	8,300	250	120	7,600	180	65	6,400	160	80	3,800	75	40	8,900	360	120
3	6,900	280	140	6,400	190	70	5,300	170	85	3,200	80	40	7,400	370	130
4	5,200	310	160	4,800	190	70	4,000	170	85	2,400	95	50	5,600	390	130
5	4,100	330	160	3,800	230	75	3,200	210	110	1,900	95	50	4,500	410	130
6	3,400	340	170	3,200	260	85	2,700	240	120	1,600	100	50	3,700	410	130
7	3,000	330	170	2,700	250	80	2,300	230	120	1,400	100	50	3,200	380	130
8	2,600	320	160	2,400	240	75	2,000	220	110	1,200	100	50	2,800	360	120
9	2,300	310	150	2,100	230	75	1,800	220	110	1,100	100	50	2,500	350	120
10	2,100	300	150	1,900	230	75	1,600	210	100	1,000	100	50	2,200	330	110
12	1,700	270	140	1,600	220	70	1,300	200	100	800	100	50	1,900	320	110

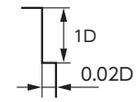
切深量 Depth of Cut (D:外径 Dia.)

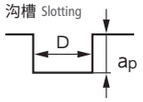
侧面 Side Milling


ae
φ0.3～0.8=0.05D
φ1～2.5=0.1D
φ3～6=0.2D
φ7～12=0.25D

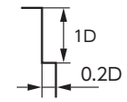
沟槽 Slotting


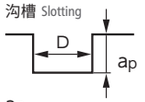
ap
φ0.3～0.4=0.05D
φ0.5～1.2=0.2D
φ1.5～3=0.7D
φ4～12=1D

侧面 Side Milling


沟槽 Slotting


ap
φ0.3～0.4=0.05D
φ0.5～12=0.2D

侧面 Side Milling


沟槽 Slotting


ap
φ0.3～0.4=0.1D
φ0.5～1=0.5D
φ1.5～12=1D

备 注 Notes

※ 1 请使用切削油。
※ 2 请使用发烟性低的油冷冷却方式。
※ 3 切削高硬度钢时，建议使用油雾冷却方式。
※ 4 请以相同的比率调整主轴转速和进给速度。
※ 5 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid.
※2 Use cutting fluid with smoke retardant.
※3 Recommend to use oil mist coolant for machining hardened steels.
※4 Adjust both spindle speed and feed at the same rate.
※5 Adjust milling conditions according to the volume of depth of cut and rigidity of the machine.

MX230

规格 Size ϕ 0.1 ～ ϕ 12

≦52 HRC

无限涂层 30° 螺旋角2刃平底铣刀

MUGEN COATING 2-Flute LEAD30 End Mill

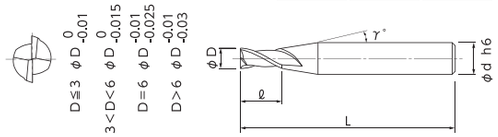
共有65种规格
Total 65 sizes

刃长为外径的2倍。适用于侧面、沟槽切削的全能型，可对应各种加工材料

For various work materials. L/D=2.
Applicable to both slotting and side milling

MG Side | 2 Slot | 30° Face





- 刃长为外径的2倍，采用30°螺旋角。
- 可支持沟槽、侧面切削的万能的标准型。
- L/D=2 and helix 30° standard type applicable for both slotting and side milling.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00030-00010	0.1	0.2	12°	4	45	7,200
08-00030-00020	0.2	0.4	12°	4	45	4,300
08-00030-00030	0.3	0.6	12°	4	45	3,700
08-00030-00040	0.4	0.8	12°	4	45	4,200
08-00030-00050	0.5	1	12°	4	45	2,100
08-00030-00060	0.6	1.2	12°	4	45	3,200
08-00030-00070	0.7	1.4	12°	4	45	3,500
08-00030-00080	0.8	1.6	12°	4	45	2,100
08-00030-00090	0.9	1.8	12°	4	45	3,500
08-00030-00100	1	2	12°	4	45	1,900
08-00030-00110	1.1	2.2	12°	4	45	4,000
08-00030-00120	1.2	2.4	12°	4	45	2,100
08-00030-00130	1.3	2.6	12°	4	45	4,000
08-00030-00140	1.4	2.8	12°	4	45	4,000
08-00030-00150	1.5	3	12°	4	45	1,900
08-00030-00160	1.6	3.2	12°	4	45	4,000
08-00030-00170	1.7	3.4	12°	4	45	4,000
08-00030-00180	1.8	3.6	12°	4	45	2,100
08-00030-00190	1.9	3.8	12°	4	45	4,100
08-00030-00200	2	4	12°	4	45	1,900
08-00030-00210	2.1	4.2	12°	4	45	4,000
08-00030-00220	2.2	4.4	12°	4	45	4,000
08-00030-00230	2.3	4.6	12°	4	45	4,000
08-00030-00240	2.4	4.8	12°	4	45	4,000
08-00030-00250	2.5	5	12°	4	45	1,900
08-00030-00260	2.6	5.2	12°	4	45	5,100
08-00030-00270	2.7	5.4	12°	4	45	5,100
08-00030-00280	2.8	5.6	12°	4	45	5,100
08-00030-00290	2.9	5.8	12°	4	45	5,100
08-00030-00300	3	6	12°	6	45	2,400
08-00030-00310	3.1	6.2	12°	6	45	5,300
08-00030-00320	3.2	6.4	12°	6	45	5,300
08-00030-00330	3.3	6.6	12°	6	45	5,300
08-00030-00340	3.4	6.8	12°	6	45	5,300
08-00030-00350	3.5	7	12°	6	45	4,300
08-00030-00360	3.6	7.2	12°	6	45	5,300
08-00030-00370	3.7	7.4	12°	6	45	5,300
08-00030-00380	3.8	7.6	12°	6	45	5,300
08-00030-00390	3.9	7.8	12°	6	45	5,300
08-00030-00400	4	8	12°	6	45	2,600
08-00030-00410	4.1	8.2	12°	6	45	5,300
08-00030-00420	4.2	8.4	12°	6	45	5,300
08-00030-00430	4.3	8.6	12°	6	45	5,300
08-00030-00440	4.4	8.8	12°	6	45	5,300
08-00030-00450	4.5	9	12°	6	50	5,000
08-00030-00460	4.6	9.2	12°	6	50	6,100
08-00030-00470	4.7	9.4	12°	6	50	6,100
08-00030-00480	4.8	9.6	12°	6	50	6,100
08-00030-00490	4.9	9.8	12°	6	50	6,100
08-00030-00500	5	10	12°	6	50	2,900
08-00030-00510	5.1	10.2	12°	6	50	6,100
08-00030-00520	5.2	10.4	12°	6	50	6,100
08-00030-00530	5.3	10.6	12°	6	50	6,100
08-00030-00540	5.4	10.8	12°	6	50	6,100
08-00030-00550	5.5	11	12°	6	50	5,200
08-00030-00560	5.6	11.2	12°	6	50	6,300
08-00030-00570	5.7	11.4	12°	6	50	6,300
08-00030-00580	5.8	11.6	12°	6	50	6,300
08-00030-00590	5.9	11.8	12°	6	50	6,300
08-00030-00600	6	12	–	6	50	3,100
08-00030-00700	7	14	12°	8	65	9,500
08-00030-00800	8	16	–	8	65	7,700
08-00030-00900	9	18	12°	10	75	13,300
08-00030-01000	10	20	–	10	75	9,700
08-00030-01200	12	24	–	12	80	13,300

订购方法 How to Order

请指定MX230 外径(D)。
When you order, indicate MX230 (D).

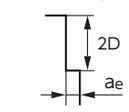
※(γ)为参考值。
※(γ) is reference value.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H 高硬度钢～52 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 全刃长造型 Regular Line MUGEN COATING Full Cutting Length Type

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK			高硬度钢 Hardened Steels SKD61 (～52HRC)			铜合金 Copper		
切削速度 Cutting Speed	50～80m/min			50～70m/min			40～60m/min			20～40m/min			60～80m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min 侧面 Side Milling	mm/min 沟槽 Slotting	min^{-1}	mm/min 侧面 Side Milling	mm/min 沟槽 Slotting	min^{-1}	mm/min 侧面 Side Milling	mm/min 沟槽 Slotting	min^{-1}	mm/min 侧面 Side Milling	mm/min 沟槽 Slotting	min^{-1}	mm/min 侧面 Side Milling	mm/min 沟槽 Slotting
0.1	50,000	–	25	50,000	–	15	50,000	–	20	50,000	–	15	50,000	60	25
0.2	50,000	–	40	50,000	–	25	50,000	–	30	47,700	–	20	50,000	90	35
0.3	50,000	100	50	50,000	90	35	50,000	85	40	31,800	–	20	50,000	150	60
0.4	50,000	150	75	47,700	130	50	39,800	110	55	23,900	50	25	50,000	200	80
0.5	41,400	170	85	38,200	130	50	31,800	110	55	19,100	60	30	44,600	220	90
1	20,700	210	100	19,100	150	55	15,900	130	65	9,500	75	40	22,300	270	95
1.5	13,800	210	100	12,700	150	55	10,600	130	65	6,400	75	40	14,900	300	100
2	10,300	210	100	9,500	170	60	8,000	150	75	4,800	75	40	11,100	330	120
2.5	8,300	250	120	7,600	180	65	6,400	160	80	3,800	75	40	8,900	360	120
3	6,900	280	140	6,400	190	70	5,300	170	85	3,200	80	40	7,400	370	130
3.5	5,900	300	150	5,500	190	70	4,500	170	85	2,700	85	45	6,400	380	130
4	5,200	310	160	4,800	190	70	4,000	170	85	2,400	95	50	5,600	390	130
4.5	4,600	320	160	4,200	210	75	3,500	190	95	2,100	95	50	5,000	400	130
5	4,100	330	160	3,800	230	75	3,200	210	110	1,900	95	50	4,500	410	130
5.5	3,800	330	160	3,500	240	80	2,900	220	110	1,700	95	50	4,100	410	130
6	3,400	340	170	3,200	260	85	2,700	240	120	1,600	100	50	3,700	410	130
7	3,000	330	170	2,700	250	80	2,300	230	120	1,400	100	50	3,200	380	130
8	2,600	320	160	2,400	240	75	2,000	220	110	1,200	100	50	2,800	360	120
9	2,300	310	150	2,100	230	75	1,800	220	110	1,100	100	50	2,500	350	120
10	2,100	300	150	1,900	230	75	1,600	210	100	1,000	100	50	2,200	330	110
12	1,700	270	140	1,600	220	70	1,300	200	100	800	100	50	1,900	320	110

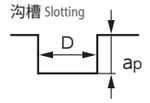
切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



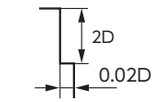
ae
ϕ0.3～0.9=0.05D
ϕ1～2.9=0.07D
ϕ3～12=0.15D

沟槽 Slotting

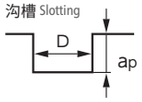


ap
ϕ0.1～0.4=0.05D
ϕ0.5～1.4=0.15D
ϕ1.5～3.9=0.5D
ϕ4～12=0.75D

侧面 Side Milling

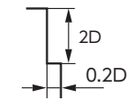


沟槽 Slotting

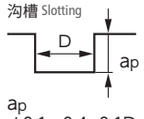


ap
ϕ0.1～0.4=0.05D
ϕ0.5～12=0.15D

侧面 Side Milling



沟槽 Slotting



ap
ϕ0.1～0.4=0.1D
ϕ0.5～1.4=0.4D
ϕ1.5～12=0.75D

备注 Notes

※ 1 请使用切削油。
※ 2 请使用发烟性低的油冷冷却方式。
※ 3 切削高硬度钢时，建议使用油雾冷却方式。
※ 4 请以相同的比率调整主轴转速和进给速度。
※ 5 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid.
※2 Use cutting fluid with smoke retardant.
※3 Recommend to use oil mist coolant for machining hardened steels.
※4 Adjust both spindle speed and feed at the same rate.
※5 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 全刃长造型 Regular Line MUGEN COATING Full Cutting Length Type

MX235

规格 Size ϕ 0.1 ～ ϕ 12

≦52 HRC

无限涂层 35° 螺旋角2刃平底铣刀

MUGEN COATING 2-Flute LEAD35 End Mill

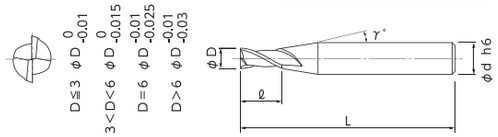
共有65种规格
Total 65 sizes

刃长为外径的3倍。适用于侧面、沟槽切削的全能型，可对应各种加工材料

For various work materials. L/D=3.
Applicable to both slotting and side milling

MG Side | 2 Slot | 35° Face





- 刃长为外径的3倍，采用35°螺旋角。
- 可解决2倍刃长不够长，4倍刃长又太长的烦恼。
- L/D=3 and helix 35° for appropriate length of cut to avoid the inconveniences in size selection.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00035-00010	0.1	0.3	12°	4	45	7,200
08-00035-00020	0.2	0.6	12°	4	45	4,300
08-00035-00030	0.3	0.9	12°	4	45	3,700
08-00035-00040	0.4	1.2	12°	4	45	4,200
08-00035-00050	0.5	1.5	12°	4	45	2,100
08-00035-00060	0.6	1.8	12°	4	45	3,200
08-00035-00070	0.7	2.1	12°	4	45	3,500
08-00035-00080	0.8	2.4	12°	4	45	2,100
08-00035-00090	0.9	2.7	12°	4	45	3,500
08-00035-00100	1	3	12°	4	45	1,900
08-00035-00110	1.1	3.3	12°	4	45	4,000
08-00035-00120	1.2	3.6	12°	4	45	2,100
08-00035-00130	1.3	3.9	12°	4	45	4,000
08-00035-00140	1.4	4.2	12°	4	45	4,000
08-00035-00150	1.5	4.5	12°	4	45	1,900
08-00035-00160	1.6	4.8	12°	4	45	4,000
08-00035-00170	1.7	5.1	12°	4	45	4,000
08-00035-00180	1.8	5.4	12°	4	45	2,100
08-00035-00190	1.9	5.7	12°	4	45	4,000
08-00035-00200	2	6	12°	4	45	1,900
08-00035-00210	2.1	6.3	12°	4	45	4,000
08-00035-00220	2.2	6.6	12°	4	45	4,000
08-00035-00230	2.3	6.9	12°	4	45	4,000
08-00035-00240	2.4	7.2	12°	4	45	4,000
08-00035-00250	2.5	7.5	12°	4	45	1,900
08-00035-00260	2.6	7.8	12°	4	45	5,100
08-00035-00270	2.7	8.1	12°	4	45	5,100
08-00035-00280	2.8	8.4	12°	4	45	5,100
08-00035-00290	2.9	8.7	12°	4	45	5,100
08-00035-00300	3	9	12°	6	45	2,400
08-00035-00310	3.1	9.3	12°	6	45	5,300
08-00035-00320	3.2	9.6	12°	6	45	5,300
08-00035-00330	3.3	9.9	12°	6	45	5,300

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00035-00340	3.4	10.2	12°	6	45	5,300
08-00035-00350	3.5	10.5	12°	6	45	4,400
08-00035-00360	3.6	10.8	12°	6	45	5,300
08-00035-00370	3.7	11.1	12°	6	45	5,300
08-00035-00380	3.8	11.4	12°	6	45	5,300
08-00035-00390	3.9	11.7	12°	6	45	5,300
08-00035-00400	4	12	12°	6	50	2,600
08-00035-00410	4.1	12.3	12°	6	50	5,300
08-00035-00420	4.2	12.6	12°	6	50	5,300
08-00035-00430	4.3	12.9	12°	6	50	5,300
08-00035-00440	4.4	13.2	12°	6	50	5,300
08-00035-00450	4.5	13.5	12°	6	50	5,100
08-00035-00460	4.6	13.8	12°	6	55	6,100
08-00035-00470	4.7	14.1	12°	6	55	6,100
08-00035-00480	4.8	14.4	12°	6	55	6,100
08-00035-00490	4.9	14.7	12°	6	55	6,100
08-00035-00500	5	15	12°	6	55	2,900
08-00035-00510	5.1	15.3	12°	6	55	6,100
08-00035-00520	5.2	15.6	12°	6	55	6,100
08-00035-00530	5.3	15.9	12°	6	55	6,100
08-00035-00540	5.4	16.2	12°	6	55	6,100
08-00035-00550	5.5	16.5	12°	6	60	5,100
08-00035-00560	5.6	16.8	12°	6	60	6,300
08-00035-00570	5.7	17.1	12°	6	60	6,300
08-00035-00580	5.8	17.4	12°	6	60	6,300
08-00035-00590	5.9	17.7	12°	6	60	6,300
08-00035-00600	6	18	–	6	60	3,100
08-00035-00700	7	21	12°	8	65	10,300
08-00035-00800	8	24	–	8	65	8,500
08-00035-00900	9	27	12°	10	75	14,500
08-00035-01000	10	30	–	10	75	10,700
08-00035-01200	12	36	–	12	80	14,500

订购方法 How to Order

请指定MX235 外径(D)。
When you order, indicate MX235 (D).

※(γ)为参考值。
※(γ) is reference value.

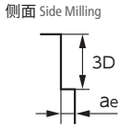
- P 碳素钢 Carbon Steel
- P 合金钢 Alloy Steel
- P 调质钢 Prehardened Steel
- H 高硬度钢～52 HRC Hardened Steel
- M 不锈钢 Stainless Steel
- N 铝合金 Aluminium Alloy
- N 铜合金 Copper
- O 树脂 Resin

常规系列 无限涂层 全刃长造型
Regular Line MUGEN COATING Full Cutting Length Type

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK			高硬度钢 Hardened Steels SKD61 (～52HRC)			铜合金 Copper		
切削速度 Cutting Speed	45～75m/min			45～65m/min			35～55m/min			15～35m/min			55～75m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
0.1	50,000	–	25	50,000	–	15	50,000	–	20	50,000	–	15	50,000	60	25
0.2	50,000	–	40	50,000	–	25	50,000	–	30	39,800	–	20	50,000	90	40
0.3	50,000	100	50	50,000	90	35	47,700	80	40	26,500	–	20	50,000	150	60
0.4	47,700	140	70	43,800	120	50	35,800	100	50	19,900	–	20	50,000	200	80
0.5	38,200	150	75	35,000	120	50	28,600	100	50	15,900	50	25	41,400	210	85
1	19,100	190	95	17,500	140	50	14,300	110	60	8,000	65	30	20,700	250	90
1.5	12,700	190	95	11,700	140	50	9,500	110	60	5,300	65	30	13,800	280	100
2	9,500	190	95	8,800	160	55	7,200	140	70	4,000	65	30	10,300	310	110
2.5	7,600	230	110	7,000	170	60	5,700	140	70	3,200	70	35	8,300	330	120
3	6,400	260	130	5,800	170	60	4,800	150	80	2,700	70	35	6,900	350	120
3.5	5,500	270	135	5,000	180	60	4,100	150	80	2,300	75	35	5,900	350	120
4	4,800	280	140	4,400	180	60	3,600	150	80	2,000	80	40	5,200	360	120
4.5	4,200	290	145	3,900	200	65	3,200	170	90	1,800	80	40	4,600	360	120
5	3,800	300	150	3,500	210	70	2,900	190	95	1,600	80	40	4,100	370	120
5.5	3,500	310	155	3,200	220	70	2,600	200	100	1,400	80	40	3,800	370	120
6	3,200	320	160	2,900	230	75	2,400	210	110	1,300	80	40	3,400	370	120
7	2,700	300	150	2,500	220	70	2,000	200	100	1,100	80	40	3,000	360	120
8	2,400	280	140	2,200	220	70	1,800	200	100	1,000	80	40	2,600	340	110
9	2,100	270	135	1,900	210	65	1,600	190	95	900	80	40	2,300	330	100
10	1,900	260	130	1,800	210	65	1,400	180	90	800	80	40	2,100	320	100
12	1,600	260	130	1,500	210	65	1,200	170	85	700	80	40	1,700	290	95

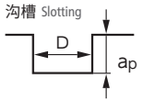
切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



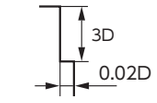
ae
ϕ0.3～0.9=0.04D
ϕ1～2.9=0.05D
ϕ3～12=0.1D

沟槽 Slotting

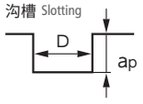


ap
ϕ0.1～0.4=0.05D
ϕ0.5～1.4=0.08D
ϕ1.5～3.9=0.25D
ϕ4～12=0.4D

侧面 Side Milling

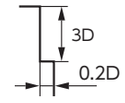


沟槽 Slotting

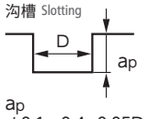


ap
ϕ0.1～0.4=0.05D
ϕ0.5～12=0.1D

侧面 Side Milling



沟槽 Slotting



ap
ϕ0.1～0.4=0.05D
ϕ0.5～1.4=0.3D
ϕ1.5～12=0.5D

备注 Notes

※ 1 请使用切削油。
※ 2 请使用发烟性低的油冷冷却方式。
※ 3 切削高硬度钢时，建议使用油雾冷却方式。
※ 4 请以相同的比率调整主轴转速和进给速度。
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- O 树脂 Resin

常规系列 无限涂层 全刃长造型
Regular Line MUGEN COATING Full Cutting Length Type

MX240

规格 Size φ 0.3 ～ φ 12

≦52 HRC

无限涂层 40° 螺旋角2刃平底铣刀

MUGEN COATING 2-Flute LEAD40 End Mill

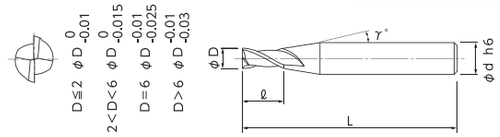
共有63种规格
Total 63 sizes

刃长为外径的4倍
可对应各种加工材料

For various work materials. L/D=4. For side milling only

MG | 2 Side | 40° Face





- 刃长为外径的4倍，采用40°螺旋角。
- 深沟形状也能实现安定加工，虽然是长刃，也能将刀具对加工直壁的倾斜量抑制到最小。
- L/D=4 and helix 40° is suitable for deep machining with minimum deflection of cutting up-right surface.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00040-00030	0.3	1.2	12°	4	45	5,600
08-00040-00040	0.4	1.6	12°	4	45	5,600
08-00040-00050	0.5	2	12°	4	45	3,500
08-00040-00060	0.6	2.4	12°	4	45	3,200
08-00040-00070	0.7	2.8	12°	4	45	3,500
08-00040-00080	0.8	3.2	12°	4	45	3,500
08-00040-00090	0.9	3.6	12°	4	45	3,500
08-00040-00100	1	4	12°	4	45	3,200
08-00040-00110	1.1	4.4	12°	4	45	4,700
08-00040-00120	1.2	4.8	12°	4	45	3,900
08-00040-00130	1.3	5.2	12°	4	45	4,800
08-00040-00140	1.4	5.6	12°	4	45	4,800
08-00040-00150	1.5	6	12°	4	45	3,200
08-00040-00160	1.6	6.4	12°	4	45	4,800
08-00040-00170	1.7	6.8	12°	4	45	4,800
08-00040-00180	1.8	7.2	12°	4	45	3,900
08-00040-00190	1.9	7.6	12°	4	45	4,800
08-00040-00200	2	8	12°	4	45	3,200
08-00040-00210	2.1	8.4	12°	4	45	4,800
08-00040-00220	2.2	8.8	12°	4	45	4,800
08-00040-00230	2.3	9.2	12°	4	45	4,800
08-00040-00240	2.4	9.6	12°	4	45	4,800
08-00040-00250	2.5	10	12°	4	45	3,200
08-00040-00260	2.6	10.4	12°	4	50	5,500
08-00040-00270	2.7	10.8	12°	4	50	5,500
08-00040-00280	2.8	11.2	12°	4	50	5,500
08-00040-00290	2.9	11.6	12°	4	50	5,500
08-00040-00300	3	12	12°	6	50	4,000
08-00040-00310	3.1	12.4	12°	6	50	5,800
08-00040-00320	3.2	12.8	12°	6	50	5,800
08-00040-00330	3.3	13.2	12°	6	50	5,800
08-00040-00340	3.4	13.6	12°	6	50	5,800
08-00040-00350	3.5	14	12°	6	50	5,200
08-00040-00360	3.6	14.4	12°	6	50	5,800
08-00040-00370	3.7	14.8	12°	6	50	5,800
08-00040-00380	3.8	15.2	12°	6	50	5,800
08-00040-00390	3.9	15.6	12°	6	50	5,800
08-00040-00400	4	16	12°	6	55	4,300
08-00040-00410	4.1	16.4	12°	6	55	5,800
08-00040-00420	4.2	16.8	12°	6	55	5,800
08-00040-00430	4.3	17.2	12°	6	55	5,800
08-00040-00440	4.4	17.6	12°	6	55	5,800
08-00040-00450	4.5	18	12°	6	55	5,900
08-00040-00460	4.6	18.4	12°	6	55	6,600
08-00040-00470	4.7	18.8	12°	6	55	6,600
08-00040-00480	4.8	19.2	12°	6	55	6,600
08-00040-00490	4.9	19.6	12°	6	55	6,600
08-00040-00500	5	20	12°	6	60	4,800
08-00040-00510	5.1	20.4	12°	6	60	6,600
08-00040-00520	5.2	20.8	12°	6	60	6,600
08-00040-00530	5.3	21.2	12°	6	60	6,600
08-00040-00540	5.4	21.6	12°	6	60	6,600
08-00040-00550	5.5	22	12°	6	65	5,900
08-00040-00560	5.6	22.4	12°	6	65	6,900
08-00040-00570	5.7	22.8	12°	6	65	6,900
08-00040-00580	5.8	23.2	12°	6	65	6,900
08-00040-00590	5.9	23.6	12°	6	65	6,900
08-00040-00600	6	24	–	6	65	5,000
08-00040-00700	7	28	12°	8	90	12,800
08-00040-00800	8	32	–	8	90	11,700
08-00040-00900	9	36	12°	10	100	21,800
08-00040-01000	10	40	–	10	100	12,800
08-00040-01200	12	48	–	12	105	21,800

订购方法 How to Order

请指定MX240 外径 (D)。
When you order, indicate MX240 (D).

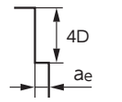
※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		铜合金 Copper	
切削速度 Cutting Speed	20～30m/min		15～25m/min		15～20m/min		20～40m/min	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.3	26,500	50	21,200	40	18,600	30	31,800	100
0.4	19,900	60	15,900	45	13,900	40	23,900	100
0.5	15,900	65	12,700	45	11,100	40	19,100	100
1	8,000	80	6,400	50	5,600	45	9,500	110
1.5	5,300	80	4,200	50	3,700	45	6,400	130
2	4,000	80	3,200	60	2,800	50	4,800	140
2.5	3,200	100	2,500	60	2,200	55	3,800	150
3	2,700	110	2,100	60	1,900	60	3,200	160
3.5	2,300	120	1,800	60	1,600	60	2,700	170
4	2,000	120	1,600	65	1,400	60	2,400	170
4.5	1,800	130	1,400	70	1,200	65	2,100	170
5	1,600	130	1,300	80	1,100	70	1,900	170
5.5	1,400	130	1,200	90	1,000	80	1,700	180
6	1,300	130	1,100	90	900	80	1,600	180
7	1,100	120	900	90	800	80	1,400	170
8	1,000	120	800	80	700	75	1,200	160
9	900	110	700	80	650	75	1,100	155
10	800	110	600	70	600	75	1,000	150
12	700	110	500	70	500	75	800	140

切深量 Depth of Cut

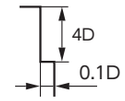
(D:外径 Dia.)

侧面 Side Milling



ae
φ0.3～0.9=0.03D
φ1～2.9=0.04D
φ3～12=0.08D

侧面 Side Milling



备注 Notes

※ 1 请使用切削油。
※ 2 请使用发烟性低的油冷冷却方式。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid.
※2 Use cutting fluid with smoke retardant.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

MX245

规格 Size ϕ 0.3 ～ ϕ 12

≦52 HRC

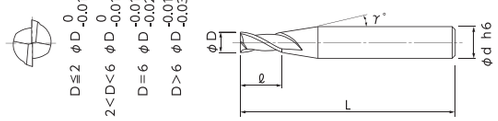
无限涂层 45° 螺旋角2刃平底铣刀
MUGEN COATING 2-Flute LEAD45 End Mill

共有19种规格
Total 19 sizes

MG 2 45° Side Face

刃长为外径的5倍
可对应各种加工材料
For various work materials. L/D=5. For side milling only





- 刃长为外径的5倍，采用45° 螺旋角。
- 虽然是超长刃，也能将加工直壁的倾斜量抑制到最小。
- L/D=5 and helix 45° to minimize the milling deflection even though the long cutting length design.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00045-00030	0.3	1.5	12°	4	45	7,800
08-00045-00040	0.4	2	12°	4	45	7,800
08-00045-00050	0.5	2.5	12°	4	45	5,000
08-00045-00080	0.8	4	12°	4	45	5,000
08-00045-00100	1	5	12°	4	45	4,400
08-00045-00120	1.2	6	12°	4	45	5,000
08-00045-00150	1.5	7.5	12°	4	45	4,400
08-00045-00180	1.8	9	12°	4	50	5,000
08-00045-00200	2	10	12°	4	50	4,400
08-00045-00250	2.5	12.5	12°	4	50	4,400
08-00045-00300	3	15	12°	6	55	5,800
08-00045-00400	4	20	12°	6	60	6,200
08-00045-00500	5	25	12°	6	65	6,800
08-00045-00600	6	30	–	6	75	7,200
08-00045-00700	7	35	12°	8	90	14,500
08-00045-00800	8	40	–	8	90	12,800
08-00045-00900	9	45	12°	10	100	24,200
08-00045-01000	10	50	–	10	100	14,500
08-00045-01200	12	60	–	12	105	24,200

订购方法 How to Order
请指定MX245 外径(D)。
When you order, indicate MX245 (D).

※(γ)为参考值。
※(γ) is reference value.

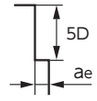
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		铜合金 Copper	
切削速度 Cutting Speed	15～25m/min		10～20m/min		10～15m/min		15～35m/min	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.3	21,200	40	15,900	30	13,300	25	26,500	80
0.4	15,900	50	11,900	35	9,900	30	19,900	80
0.5	12,700	50	9,500	35	8,000	30	15,900	80
1	6,400	65	4,800	40	4,000	35	8,000	100
1.5	4,200	65	3,200	40	2,700	35	5,300	110
2	3,200	65	2,400	45	2,000	40	4,000	120
2.5	2,500	75	1,900	45	1,600	40	3,200	130
3	2,100	85	1,600	50	1,300	45	2,700	140
4	1,600	95	1,200	50	1,000	45	2,000	140
5	1,300	100	1,000	60	800	55	1,600	140
6	1,100	110	800	65	700	60	1,300	140
7	900	100	700	60	600	55	1,100	135
8	800	95	600	60	500	55	1,000	130
9	700	90	550	60	450	50	900	125
10	600	85	500	60	400	50	800	120
12	500	80	400	55	300	45	700	120

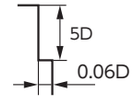
切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



ae
φ0.3～0.8=0.02D
φ1～2.5=0.03D
φ3～12=0.06D

侧面 Side Milling



备注 Notes

※ 1 请使用切削油。
※ 2 请使用发烟性低的油冷冷却方式。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid.
※2 Use cutting fluid with smoke retardant.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

MSES230P

规格 Size ϕ 0.1 ～ ϕ 12

∞

无限涂层 短刃尖角造型2刃平底铣刀
MUGEN COATING 2-Flute Sharp Edge Short End Mill

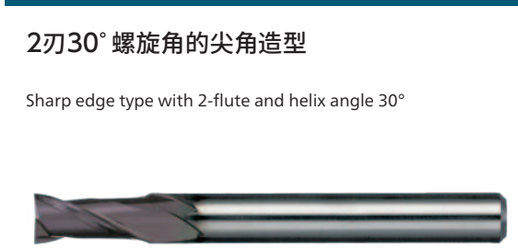
共有26种规格
Total 26 sizes

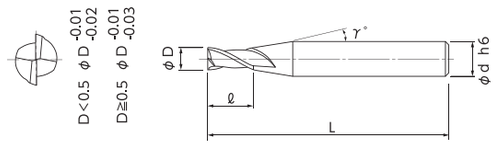
MSES230P

切削参数参考表
Recommended Milling Conditions

2刃30° 螺旋角的尖角造型

Sharp edge type with 2-flute and helix angle 30°





- 采用带刚性的短刃造型。
- 尖角造型锋利度好，可实现倾斜少的切削加工。
- It is very suitable for high speed cutting due to the length of cut is short and rigid.
- Sharp edge profile guarantees high shearing ability.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00102-00010	0.1	0.15	9°	4	45	8,000
08-00102-00015	0.15	0.2	9°	4	45	8,300
08-00102-00020	0.2	0.3	9°	4	45	5,000
08-00102-00025	0.25	0.3	9°	4	45	8,300
08-00102-00030	0.3	0.4	9°	4	45	4,400
08-00102-00035	0.35	0.4	9°	4	45	8,300
08-00102-00040	0.4	0.6	9°	4	45	4,800
08-00102-00045	0.45	0.6	9°	4	45	8,300
08-00102-00050	0.5	0.7	9°	4	45	2,500
08-00102-00060	0.6	1	9°	4	45	3,800
08-00102-00070	0.7	1.2	9°	4	45	4,100
08-00102-00080	0.8	1.5	9°	4	45	2,500
08-00102-00100	1	2	9°	4	45	2,100
08-00102-00120	1.2	2.5	9°	4	45	2,500
08-00102-00150	1.5	3	9°	4	45	2,100
08-00102-00160	1.6	3	9°	4	45	2,800
08-00102-00180	1.8	3.5	9°	4	45	2,500
08-00102-00200	2	4	9°	4	45	2,100
08-00102-00250	2.5	5	9°	4	45	2,100
08-00102-00300	3	6	9°	4	50	2,800
08-00102-00400	4	8	–	4	50	3,200
08-00102-00500	5	10	9°	6	55	3,500
08-00102-00600	6	12	–	6	55	3,900
08-00102-00800	8	16	–	8	65	8,300
08-00102-01000	10	20	–	10	75	9,400
08-00102-01200	12	24	–	12	80	15,400

订购方法 How to Order

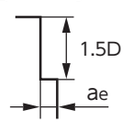
请指定MSES230P 外径(D)。
When you order, indicate MSES230P (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK			高硬度钢 Hardened Steels SKD61 (～52HRC)			铝合金 Aluminium Alloy			铜合金 Copper		
切削速度 Cutting Speed	50～80m/min			50～70m/min			40～60m/min			20～40m/min			100～200m/min			60～80m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
0.1	50,000	–	25	50,000	–	15	50,000	–	20	50,000	–	15	50,000	60	25	50,000	60	25
0.2	50,000	–	40	50,000	–	25	50,000	–	30	47,700	–	20	50,000	90	35	50,000	90	35
0.3	50,000	100	50	50,000	90	35	50,000	85	40	31,800	–	20	50,000	150	60	50,000	150	60
0.4	50,000	150	75	47,700	130	50	39,800	110	55	23,900	50	25	50,000	200	80	50,000	200	80
0.5	41,400	170	85	38,200	130	50	31,800	110	55	19,100	60	30	50,000	250	100	44,600	220	90
0.8	25,900	210	100	23,900	150	55	19,900	130	65	11,900	70	35	50,000	450	180	27,900	250	95
1	20,700	210	100	19,100	150	55	15,900	130	65	9,500	75	40	47,700	570	200	22,300	270	95
1.5	13,800	210	100	12,700	150	55	10,600	130	65	6,400	75	40	31,800	640	220	14,900	300	100
2	10,300	210	100	9,500	170	60	8,000	150	75	4,800	75	40	23,900	720	250	11,100	330	120
2.5	8,300	250	120	7,600	180	65	6,400	160	80	3,800	75	40	19,100	760	270	8,900	360	120
3	6,900	280	140	6,400	190	70	5,300	170	85	3,200	80	40	15,900	800	270	7,400	370	130
4	5,200	310	160	4,800	190	70	4,000	170	85	2,400	95	50	11,900	830	270	5,600	390	130
5	4,100	330	160	3,800	230	75	3,200	210	110	1,900	95	50	9,500	860	280	4,500	410	130
6	3,400	340	170	3,200	260	85	2,700	240	120	1,600	100	50	8,000	880	290	3,700	410	130
8	2,600	310	160	2,400	240	80	2,000	220	110	1,200	100	50	6,000	780	260	2,800	360	120
10	2,100	290	150	1,900	230	75	1,600	210	100	1,000	100	50	4,800	720	240	2,200	330	110
12	1,700	270	140	1,600	220	75	1,300	200	100	800	100	50	4,000	680	220	1,900	320	110

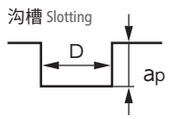
切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



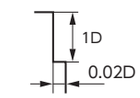
ae
φ0.3～0.95=0.05D
φ1～2.55=0.07D
φ2.6～6=0.1D
φ6.5～12=0.15D

沟槽 Slotting

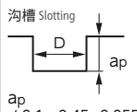


ap
φ0.1～0.45=0.05D
φ0.5～1.45=0.1D
φ1.5～3.9=0.35D
φ4～12=0.5D

侧面 Side Milling

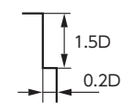


沟槽 Slotting

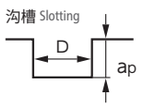


ap
φ0.1～0.45=0.05D
φ0.5～12=0.1D

侧面 Side Milling



沟槽 Slotting



ap
φ0.1～0.45=0.05D
φ0.5～1.45=0.3D
φ1.5～12=0.5D

备注 Notes

※1 请使用发烟性低的油冷冷却方式。
※2 切削高硬度钢时，建议使用油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid with smoke retardant.
※2 Recommend to use oil mist coolant for machining hardened steels.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

MSE230

规格 Size φ 0.1 ～ φ 12

≦52 HRC

无限涂层 2刃平底铣刀
MUGEN COATING 2-Flute End Mill

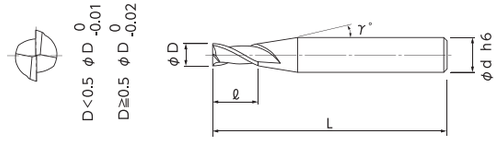
共有73种规格
Total 73 sizes

MSE230
无限涂层 2刃平底铣刀
MUGEN COATING 2-Flute End Mill

标准2刃30°螺旋角造型
适用于从粗加工到精加工的各种加工
Standard type of 2-flute with helix angle 30°
For multi-purpose from roughing to finishing

MG Side | 2 Slot | 30° Face





- 2刃平底铣刀采用NS TOOL独创的无限涂层。
- 用途广泛，可用于从粗加工到精加工等不同切削。
- Our original MUGEN COATING has been put on 2-flute end mill.
- It covers all-round cutting from roughing to finishing.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00100-00010	0.1	0.15	9°	4	45	7,600
08-00100-00015	0.15	0.2	9°	4	45	7,900
08-00100-00020	0.2	0.4	9°	4	45	4,700
08-00100-00030	0.3	0.6	9°	4	45	4,100
08-00100-00040	0.4	0.8	9°	4	45	4,500
08-00100-00050	0.5	1.25	9°	4	45	2,300
08-00100-00060	0.6	1.5	9°	4	45	3,600
08-00100-00070	0.7	1.8	9°	4	45	3,900
08-00100-00080	0.8	2	9°	4	45	2,300
08-00100-00090	0.9	2	9°	4	45	3,900
08-00100-00100	1	2.5	9°	4	45	2,000
08-00100-00110	1.1	2.5	9°	4	45	6,300
08-00100-00120	1.2	3	9°	4	45	2,300
08-00100-00130	1.3	3	9°	4	45	6,300
08-00100-00140	1.4	3.5	9°	4	45	6,300
08-00100-00150	1.5	4	9°	4	45	2,000
08-00100-00160	1.6	4	9°	4	45	6,300
08-00100-00170	1.7	4.5	9°	4	45	6,300
08-00100-00180	1.8	4.5	9°	4	45	2,300
08-00100-00190	1.9	5	9°	4	45	6,300
08-00100-00200	2	5	9°	4	45	2,000
08-00100-00210	2.1	5.5	9°	4	45	6,300
08-00100-00220	2.2	5.5	9°	4	45	6,300
08-00100-00230	2.3	6	9°	4	45	6,300
08-00100-00240	2.4	6	9°	4	45	6,300
08-00100-00250	2.5	7	9°	4	45	2,000
08-00100-00260	2.6	7	9°	4	45	6,300
08-00100-00270	2.7	7	9°	4	45	6,300
08-00100-00280	2.8	7	9°	4	45	6,300
08-00100-00290	2.9	8	9°	6	50	6,600

订购方法 How to Order

请指定MSE230 外径(D)。
When you order, indicate MSE230 (D).

※(γ)为参考值。
※(γ) is reference value.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00100-00300	3	8	9°	6	50	2,800
08-00100-00310	3.1	8	9°	6	50	7,700
08-00100-00320	3.2	8	9°	6	50	7,700
08-00100-00330	3.3	9	9°	6	50	7,700
08-00100-00340	3.4	9	9°	6	50	7,700
08-00100-00350	3.5	9	9°	6	50	5,000
08-00100-00360	3.6	9	9°	6	50	7,700
08-00100-00370	3.7	10	9°	6	50	7,700
08-00100-00380	3.8	10	9°	6	50	7,700
08-00100-00390	3.9	10	9°	6	50	7,700
08-00100-00400	4	10	9°	6	50	3,100
08-00100-00410	4.1	11	9°	6	50	8,300
08-00100-00420	4.2	11	9°	6	50	8,300
08-00100-00430	4.3	11	9°	6	50	8,300
08-00100-00440	4.4	11	9°	6	50	8,300
08-00100-00450	4.5	12	9°	6	55	5,700
08-00100-00460	4.6	12	9°	6	55	8,300
08-00100-00470	4.7	12	9°	6	55	8,300
08-00100-00480	4.8	12	9°	6	55	8,300
08-00100-00490	4.9	13	9°	6	55	8,300
08-00100-00500	5	13	9°	6	55	3,300
08-00100-00510	5.1	13	9°	6	55	8,800
08-00100-00520	5.2	13	9°	6	55	8,800
08-00100-00530	5.3	14	9°	6	55	8,800
08-00100-00540	5.4	14	9°	6	55	8,800
08-00100-00550	5.5	14	9°	6	55	5,700
08-00100-00560	5.6	14	9°	6	55	8,800
08-00100-00570	5.7	15	9°	6	55	8,800
08-00100-00580	5.8	15	9°	6	55	8,800
08-00100-00590	5.9	15	9°	6	55	8,800
08-00100-00600	6	15	–	6	55	3,600
08-00100-00650	6.5	17	9°	8	60	12,700
08-00100-00700	7	18	9°	8	65	11,800
08-00100-00750	7.5	19	9°	8	65	14,100
08-00100-00800	8	20	–	8	65	7,700
08-00100-00850	8.5	22	9°	10	70	16,900
08-00100-00900	9	23	9°	10	70	15,500
08-00100-00950	9.5	24	9°	10	75	18,500
08-00100-01000	10	25	–	10	75	9,000
08-00100-01050	10.5	27	9°	12	80	24,200
08-00100-01100	11	28	9°	12	80	23,500
08-00100-01150	11.5	29	9°	12	80	25,900
08-00100-01200	12	30	–	12	80	14,900

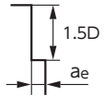
切削参数参考表
Recommended Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK		
切削速度 Cutting Speed	50～80m/min			50～70m/min			40～60m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
0.1	50,000	–	25	50,000	–	15	50,000	–	20
0.2	50,000	–	40	50,000	–	25	50,000	–	30
0.3	50,000	100	50	50,000	90	35	50,000	85	40
0.4	50,000	150	75	47,700	130	50	39,800	110	55
0.5	41,400	170	85	38,200	130	50	31,800	110	55
0.8	25,900	210	100	23,900	150	55	19,900	130	65
1	20,700	210	100	19,100	150	55	15,900	130	65
1.5	13,800	210	100	12,700	150	55	10,600	130	65
2	10,300	210	100	9,500	170	60	8,000	150	75
2.5	8,300	250	120	7,600	180	65	6,400	160	80
3	6,900	280	140	6,400	190	70	5,300	170	85
3.5	5,900	300	150	5,500	190	70	4,500	170	85
4	5,200	310	160	4,800	190	70	4,000	170	85
5	4,100	330	160	3,800	230	75	3,200	210	110
6	3,400	340	170	3,200	260	85	2,700	240	120
7	3,000	330	170	2,700	240	80	2,300	230	120
8	2,600	310	160	2,400	240	80	2,000	220	110
9	2,300	300	150	2,100	230	80	1,800	220	110
10	2,100	290	150	1,900	230	75	1,600	210	100
11	1,900	290	140	1,700	220	75	1,400	200	100
12	1,700	270	140	1,600	220	75	1,300	200	100

切深量 Depth of Cut

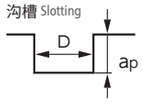
(D:外径 Dia.)

侧面 Side Milling



ae
ϕ0.3～0.95=0.05D
ϕ1～2.55=0.07D
ϕ2.6～6=0.1D
ϕ6.5～12=0.15D

沟槽 Slotting



ap
ϕ0.1～0.45=0.05D
ϕ0.5～1.45=0.1D
ϕ1.5～3.9=0.35D
ϕ4～12=0.5D

备注 Notes

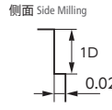
※ 1 请使用发烟性低的油冷冷却方式。
※ 2 切削高硬度钢时，建议使用油雾冷却方式。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid with smoke retardant.
※2 Recommend to use oil mist coolant for machining hardened steels.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

加工材料 Work Material	高硬度钢 Hardened Steels SKD61 (～52HRC)			铝合金 Aluminium Alloy			铜合金 Copper		
切削速度 Cutting Speed	20～40m/min			100～200m/min			60～80m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
0.1	50,000	–	15	50,000	60	25	50,000	60	25
0.2	47,700	–	20	50,000	90	35	50,000	90	35
0.3	31,800	–	20	50,000	150	60	50,000	150	60
0.4	23,900	50	25	50,000	200	80	50,000	200	80
0.5	19,100	60	30	50,000	250	100	44,600	220	90
0.8	11,900	70	35	50,000	450	180	27,900	250	95
1	9,500	75	40	47,700	570	200	22,300	270	95
1.5	6,400	75	40	31,800	640	220	14,900	300	100
2	4,800	75	40	23,900	720	250	11,100	330	120
2.5	3,800	75	40	19,100	760	270	8,900	360	120
3	3,200	80	40	15,900	800	270	7,400	370	130
3.5	2,700	85	45	13,600	820	270	6,400	380	130
4	2,400	95	50	11,900	830	270	5,600	390	130
5	1,900	95	50	9,500	860	280	4,500	410	130
6	1,600	100	50	8,000	880	290	3,700	410	130
7	1,400	100	50	6,800	820	270	3,200	380	130
8	1,200	100	50	6,000	780	260	2,800	360	120
9	1,100	100	50	5,300	740	240	2,500	350	120
10	1,000	100	50	4,800	720	240	2,200	330	110
11	900	100	50	4,300	690	230	2,000	320	110
12	800	100	50	4,000	680	220	1,900	320	110

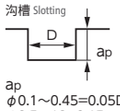
切深量 Depth of Cut

(D:外径 Dia.)

侧面 Side Milling

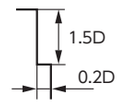


沟槽 Slotting

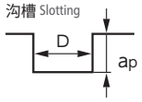


ap
ϕ0.1～0.45=0.05D
ϕ0.5～12=0.1D

侧面 Side Milling



沟槽 Slotting



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备注 Notes

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◎ 碳素钢 Carbon Steel P
◎ 合金钢 Alloy Steel P
◎ 调质钢 Prehardened Steel P
○ 高硬度钢～52 Hardened Steel HRC H
○ 不锈钢 Stainless Steel M
○ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O

平底 Square
全刃长 Full Cutting Length
涂层 Coating
MSE230
切削参数参考表
Recommended Milling Conditions

P 碳素钢 Carbon Steel ◎
P 合金钢 Alloy Steel ◎
P 调质钢 Prehardened Steel ◎
H ～52高硬度钢 HRC Hardened Steel ○
M 不锈钢 Stainless Steel ○
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ○

MSE230M

规格 Size φ 0.1 ～ φ 6

≦52 HRC

无限涂层 外径标识2刃平底铣刀

MUGEN COATING 2-Flute End Mill with Measured Diameter

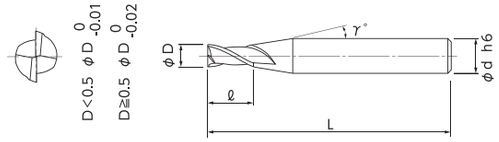
共有14种规格
Total 14 sizes

在刀盒上以0.001mm为单位标注实测外径 实现精加工的高精度化

Indicated actual mesuremed diameter in micron on the label
Suitable for high accurate finishing

MG Side | 2 Slot | 30° Face





●以1微米为单位标注外径尺寸。
● Printed actual measurement of diameter in micron.



可在产品标签上以1微米为单位标注实测外径，从而进行高精度加工。
Actual diameter is indicated in 1 micron units on product label, and enables high precision machining.
※无法以微米为单位指定尺寸。
Micron units dimensions cannot be specified.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00105-00010	0.1	0.15	9°	4	45	8,600
08-00105-00020	0.2	0.4	9°	4	45	5,800
08-00105-00030	0.3	0.6	9°	4	45	5,100
08-00105-00040	0.4	0.8	9°	4	45	5,600
08-00105-00050	0.5	1.25	9°	4	45	3,400
08-00105-00080	0.8	2	9°	4	45	3,400
08-00105-00100	1	2.5	9°	4	45	3,000
08-00105-00150	1.5	4	9°	4	45	3,000
08-00105-00200	2	5	9°	4	45	3,000
08-00105-00250	2.5	7	9°	4	45	3,000
08-00105-00300	3	8	9°	6	50	3,900
08-00105-00400	4	10	9°	6	50	4,200
08-00105-00500	5	13	9°	6	55	4,400
08-00105-00600	6	15	–	6	55	4,700

订购方法 How to Order

请指定MSE230M 外径(D)。
When you order, indicate MSE230M (D).

※(γ)为参考值。
※(γ) is reference value.

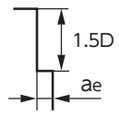
切削参数参考表

Recommended Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK			高硬度钢 Hardened Steels SKD61 (～52HRC)			铝合金 Aluminium Alloy			铜合金 Copper		
切削速度 Cutting Speed	50～80m/min			50～70m/min			40～60m/min			20～40m/min			100～200m/min			60～80m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
0.1	50,000	–	25	50,000	–	15	50,000	–	20	50,000	–	15	50,000	60	25	50,000	60	25
0.2	50,000	–	40	50,000	–	25	50,000	–	30	47,700	–	20	50,000	90	35	50,000	90	35
0.3	50,000	100	50	50,000	90	35	50,000	85	40	31,800	–	20	50,000	150	60	50,000	150	60
0.4	50,000	150	75	47,700	130	50	39,800	110	55	23,900	50	25	50,000	200	80	50,000	200	80
0.5	41,400	170	85	38,200	130	50	31,800	110	55	19,100	60	30	50,000	250	100	44,600	220	90
0.8	25,900	210	100	23,900	150	55	19,900	130	65	11,900	70	35	50,000	450	180	27,900	250	95
1	20,700	210	100	19,100	150	55	15,900	130	65	9,500	75	40	47,700	570	200	22,300	270	95
1.5	13,800	210	100	12,700	150	55	10,600	130	65	6,400	75	40	31,800	640	220	14,900	300	100
2	10,300	210	100	9,500	170	60	8,000	150	75	4,800	75	40	23,900	720	250	11,100	330	120
2.5	8,300	250	120	7,600	180	65	6,400	160	80	3,800	75	40	19,100	760	270	8,900	360	120
3	6,900	280	140	6,400	190	70	5,300	170	85	3,200	80	40	15,900	800	270	7,400	370	130
4	5,200	310	160	4,800	190	70	4,000	170	85	2,400	95	50	11,900	830	270	5,600	390	130
5	4,100	330	160	3,800	230	75	3,200	210	110	1,900	95	50	9,500	860	280	4,500	410	130
6	3,400	340	170	3,200	260	85	2,700	240	120	1,600	100	50	8,000	880	290	3,700	410	130

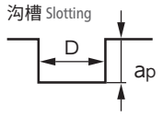
切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



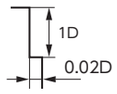
ae
φ0.3～0.95=0.05D
φ1～2.55=0.07D
φ2.6～6=0.1D
φ6.5～12=0.15D

沟槽 Slotting

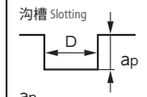


ap
φ0.1～0.45=0.05D
φ0.5～1.45=0.1D
φ1.5～3.9=0.35D
φ4～12=0.5D

侧面 Side Milling

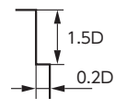


沟槽 Slotting

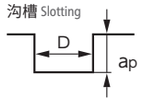


ap
φ0.1～0.45=0.05D
φ0.5～12=0.1D

侧面 Side Milling



沟槽 Slotting



ap
φ0.1～0.45=0.05D
φ0.5～1.45=0.3D
φ1.5～12=0.5D

备注 Notes

※1 请使用发烟性低的油冷冷却方式。
※2 切削高硬度钢时，建议使用油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid with smoke retardant.
※2 Recommend to use oil mist coolant for machining hardened steels.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

MSEM230

规格 Size ϕ 0.5 ～ ϕ 12

≦52 HRC

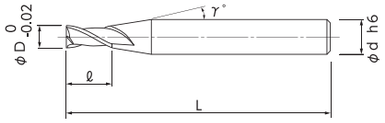
无限涂层 2刃中刃平底铣刀
MUGEN COATING 2-Flute Medium End Mill

共有14种规格
Total 14 sizes

标准2刃30°螺旋角造型 刃长为外径的4倍
Standard type of 2-flute with helix angle 30°. L/D=4

MG | 2 Side | 30° Face





- 刃长为外径的4倍，采用30°螺旋角。
- L/D=4 and helix 30°.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00101-00050	0.5	2	9°	4	50	5,000
08-00101-00060	0.6	2.4	9°	4	50	5,000
08-00101-00080	0.8	3.2	9°	4	50	5,000
08-00101-00100	1	4	9°	4	50	4,500
08-00101-00150	1.5	6	9°	4	50	4,500
08-00101-00200	2	8	9°	4	50	4,500
08-00101-00250	2.5	10	9°	4	50	4,500
08-00101-00300	3	12	9°	6	55	6,100
08-00101-00400	4	16	9°	6	60	6,500
08-00101-00500	5	20	9°	6	65	7,400
08-00101-00600	6	24	–	6	75	7,500
08-00101-00800	8	32	–	8	90	14,900
08-00101-01000	10	40	–	10	100	16,800
08-00101-01200	12	48	–	12	110	28,200

订购方法 How to Order

请指定MSEM230 外径(D)。
When you order, indicate MSEM230 (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢・调质钢 Alloy Steels・Prehardened Steels SCM・SKD・SUS・HPM・NAK		铜合金 Copper	
切削速度 Cutting Speed	20～30m/min		15～25m/min		20～40m/min	
外 径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.5	16,000	65	12,800	45	19,100	100
0.6	13,500	75	10,800	45	16,000	100
0.8	10,000	80	8,000	50	12,000	100
1	8,000	80	6,400	50	9,600	110
1.5	5,350	80	4,300	50	6,400	130
2	4,000	80	3,200	60	4,800	140
2.5	3,200	100	2,600	60	3,850	150
3	2,700	110	2,200	60	3,200	160
4	2,000	120	1,600	65	2,400	170
5	1,600	130	1,300	80	1,950	170
6	1,350	130	1,100	90	1,600	180
8	1,000	120	800	80	1,200	160
10	800	110	650	70	960	150
12	670	110	550	70	800	140
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling  ae φ0.5～0.8=0.03D φ1～2.9=0.04D φ3～12=0.08D				侧面 Side Milling 	
备 注 Notes	※1 请使用发烟性低的油冷冷却方式。 ※2 请以相同的比率调整主轴转速和进给速度。 ※3 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※1 Use cutting fluid with smoke retardant. ※2 Adjust both spindle speed and feed at the same rate. ※3 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.					

MX425

规格 Size φ 1 ～ φ 12

≦52 HRC

无限涂层 25° 螺旋角4刃平底铣刀

MUGEN COATING 4-Flute LEAD25 End Mill

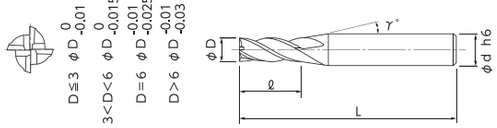
共有14种规格
Total 14 sizes

MG | 4 | 25° | Side | Face

刃长为外径的1倍。采用4刃设计，适用于侧面加工
可对应各种加工材料

For various work materials. L/D=1.
Suitable for side milling with 4-flute





- 刃长为外径的1倍，采用25°螺旋角。
- 采用刚性更高的设计，将加工面的振刀现象和倾斜量抑制到最小。
- L/D=1 and helix 25° type, increased the rigidity to suppress chattering and minimized milling deflection.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00075-00100	1	1	12°	4	45	4,700
08-00075-00150	1.5	1.5	12°	4	45	4,700
08-00075-00200	2	2	12°	4	45	3,100
08-00075-00250	2.5	2.5	12°	4	45	3,100
08-00075-00300	3	3	12°	6	45	3,500
08-00075-00350	3.5	3.5	12°	6	45	6,400
08-00075-00400	4	4	12°	6	45	4,000
08-00075-00450	4.5	4.5	12°	6	50	7,700
08-00075-00500	5	5	12°	6	50	4,300
08-00075-00550	5.5	5.5	12°	6	50	7,900
08-00075-00600	6	6	–	6	50	4,600
08-00075-00800	8	8	–	8	65	11,600
08-00075-01000	10	10	–	10	75	13,300
08-00075-01200	12	12	–	12	80	20,000

订购方法 How to Order

请指定MX425 外径(D)。
When you order, indicate MX425 (D).

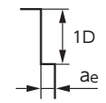
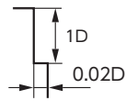
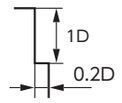
※(γ)为参考值。
※(γ) is reference value.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H 高硬度钢～52 Hardened Steel HRC
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)		铜合金 Copper	
切削速度 Cutting Speed	50～80m/min		50～70m/min		40～60m/min		20～40m/min		60～80m/min	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min
1	20,700	320	19,100	230	15,900	200	9,500	120	22,300	410
1.5	13,800	320	12,700	230	10,600	200	6,400	120	14,900	450
2	10,300	320	9,500	260	8,000	230	4,800	120	11,100	500
2.5	8,300	380	7,600	270	6,400	240	3,800	120	8,900	540
3	6,900	420	6,400	290	5,300	260	3,200	120	7,400	560
3.5	5,900	450	5,500	290	4,500	260	2,700	130	6,400	570
4	5,200	530	4,800	320	4,000	290	2,400	160	5,600	660
4.5	4,600	540	4,200	360	3,500	320	2,100	160	5,000	680
5	4,100	560	3,800	390	3,200	360	1,900	160	4,500	700
5.5	3,800	560	3,500	410	2,900	370	1,700	160	4,100	700
6	3,400	580	3,200	440	2,700	410	1,600	170	3,700	700
8	2,600	540	2,400	410	2,000	370	1,200	170	2,800	610
10	2,100	510	1,900	390	1,600	360	1,000	170	2,200	560
12	1,700	460	1,600	370	1,300	340	800	170	1,900	540

切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling	侧面 Side Milling	侧面 Side Milling
	 ae φ1～2.5=0.1D φ3～6=0.2D φ8～12=0.25D		

备 注 Notes

※ 1 请使用发烟性低的油冷冷却方式。
※ 2 切削高硬度钢时，建议使用油雾冷却方式。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid with smoke retardant.
※2 Recommend to use oil mist coolant for machining hardened steels.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 全刃长造型 Regular Line MUGEN COATING Full Cutting Length Type

MX430

规格 Size φ1 ～ φ12

≦52 HRC

无限涂层 30° 螺旋角4刃平底铣刀

MUGEN COATING 4-Flute LEAD30 End Mill

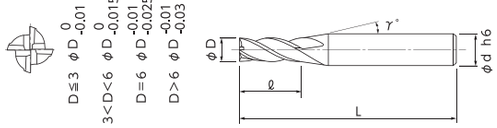
共有14种规格
Total 14 sizes

MG | 4 | 30° | Side | Face

刃长为外径的2倍。采用4刃设计，适用于侧面加工
可对应各种加工材料

For various work materials. L/D=2.
Suitable for side milling with 4-flute





- 刃长为外径的2倍，采用30° 螺旋角。
- 万能的标准型。
- L/D=2 and helix 30° standard type, applicable to any milling process.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00080-00100	1	2	12°	4	45	3,300
08-00080-00150	1.5	3	12°	4	45	3,300
08-00080-00200	2	4	12°	4	45	2,800
08-00080-00250	2.5	5	12°	4	45	2,800
08-00080-00300	3	6	12°	6	45	2,900
08-00080-00350	3.5	7	12°	6	45	5,300
08-00080-00400	4	8	12°	6	45	3,300
08-00080-00450	4.5	9	12°	6	50	6,200
08-00080-00500	5	10	12°	6	50	3,300
08-00080-00550	5.5	11	12°	6	50	6,200
08-00080-00600	6	12	–	6	50	3,900
08-00080-00800	8	16	–	8	65	8,300
08-00080-01000	10	20	–	10	75	11,200
08-00080-01200	12	24	–	12	80	15,200

订购方法 How to Order

请指定MX430 外径(D)。
When you order, indicate MX430 (D).

※(γ)为参考值。
※(γ) is reference value.

- 碳素钢 Carbon Steel P
- 合金钢 Alloy Steel P
- 调质钢 Prehardened Steel P
- 高硬度钢～52 Hardened Steel HRC H
- 不锈钢 Stainless Steel M
- 铝合金 Aluminium Alloy N
- 铜合金 Copper N
- 树脂 Resin O

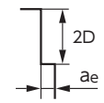
常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)		铜合金 Copper	
切削速度 Cutting Speed	50～80m/min		50～70m/min		40～60m/min		20～40m/min		60～80m/min	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,700	320	19,100	230	15,900	200	9,500	120	22,300	410
1.5	13,800	320	12,700	230	10,600	200	6,400	120	14,900	450
2	10,300	320	9,500	260	8,000	230	4,800	120	11,100	500
2.5	8,300	380	7,600	270	6,400	240	3,800	120	8,900	540
3	6,900	420	6,400	290	5,300	260	3,200	120	7,400	560
3.5	5,900	450	5,500	290	4,500	260	2,700	130	6,400	570
4	5,200	530	4,800	320	4,000	290	2,400	160	5,600	660
4.5	4,600	540	4,200	360	3,500	320	2,100	160	5,000	680
5	4,100	560	3,800	390	3,200	360	1,900	160	4,500	700
5.5	3,800	560	3,500	410	2,900	370	1,700	160	4,100	700
6	3,400	580	3,200	440	2,700	410	1,600	170	3,700	700
8	2,600	540	2,400	410	2,000	370	1,200	170	2,800	610
10	2,100	510	1,900	390	1,600	360	1,000	170	2,200	560
12	1,700	460	1,600	370	1,300	340	800	170	1,900	540

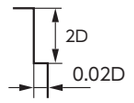
切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling

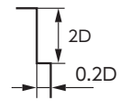


ae
φ1～2.5=0.07D
φ3～6=0.15D
φ8～12=0.2D

侧面 Side Milling



侧面 Side Milling



备 注 Notes

※ 1 请使用发烟性低的油冷冷却方式。
※ 2 切削高硬度钢时，建议使用油雾冷却方式。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid with smoke retardant.
※2 Recommend to use oil mist coolant for machining hardened steels.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

- P 碳素钢 Carbon Steel
- P 合金钢 Alloy Steel
- P 调质钢 Prehardened Steel
- H ～52 HRC 高硬度钢 Hardened Steel
- M 不锈钢 Stainless Steel
- N 铝合金 Aluminium Alloy
- N 铜合金 Copper
- O 树脂 Resin

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

MX435

规格 Size ϕ 1 ～ ϕ 12

≦52 HRC

无限涂层 35° 螺旋角4刃平底铣刀

MUGEN COATING 4-Flute LEAD35 End Mill

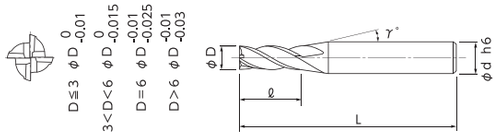
共有14种规格
Total 14 sizes

MG | 4 | 35° | Side | Face

刃长为外径的3倍。采用4刃设计，适用于侧面加工
可对应各种加工材料

For various work materials. L/D=3.
Suitable for side milling with 4-flute





- 刃长为外径的3倍，采用35°螺旋角。
- 可解决2倍刃长不够长，4倍刃长又太长的烦恼。
- L/D=3 and helix 35° for appropriate length of cut to avoid the inconveniences in size selection.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00085-00100	1	3	12°	4	45	4,700
08-00085-00150	1.5	4.5	12°	4	45	4,700
08-00085-00200	2	6	12°	4	45	3,300
08-00085-00250	2.5	7.5	12°	4	45	3,300
08-00085-00300	3	9	12°	6	45	3,600
08-00085-00350	3.5	10.5	12°	6	45	6,600
08-00085-00400	4	12	12°	6	50	4,000
08-00085-00450	4.5	13.5	12°	6	50	7,900
08-00085-00500	5	15	12°	6	55	4,300
08-00085-00550	5.5	16.5	12°	6	60	8,300
08-00085-00600	6	18	–	6	60	4,200
08-00085-00800	8	24	–	8	65	10,900
08-00085-01000	10	30	–	10	75	12,800
08-00085-01200	12	36	–	12	80	18,200

订购方法 How to Order

请指定MX435 外径(D)。
When you order, indicate MX435 (D).

※(γ)为参考值。
※(γ) is reference value.

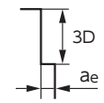
碳素钢 Carbon Steel P
合金钢 Alloy Steel P
调质钢 Prehardened Steel P
高硬度钢～52 Hardened Steel HRC H
不锈钢 Stainless Steel M
铝合金 Aluminium Alloy N
铜合金 Copper N
树脂 Resin O

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)		铜合金 Copper	
切削速度 Cutting Speed	45～75m/min		45～65m/min		35～55m/min		15～35m/min		55～75m/min	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	19,100	290	17,500	210	14,300	170	8,000	100	20,700	380
1.5	12,700	290	11,700	210	9,500	170	5,300	100	13,800	420
2	9,500	290	8,800	240	7,200	210	4,000	100	10,300	470
2.5	7,600	350	7,000	260	5,700	210	3,200	110	8,300	500
3	6,400	390	5,800	260	4,800	230	2,700	110	6,900	530
3.5	5,500	410	5,000	270	4,100	230	2,300	120	5,900	530
4	4,800	480	4,400	310	3,600	260	2,000	140	5,200	610
4.5	4,200	490	3,900	340	3,200	290	1,800	140	4,600	610
5	3,800	510	3,500	360	2,900	320	1,600	140	4,100	630
5.5	3,500	530	3,200	370	2,600	340	1,400	140	3,800	630
6	3,200	540	2,900	390	2,400	360	1,300	140	3,400	630
8	2,400	480	2,200	370	1,800	340	1,000	140	2,600	580
10	1,900	440	1,800	360	1,400	310	800	140	2,100	540
12	1,600	440	1,500	360	1,200	290	700	140	1,700	490

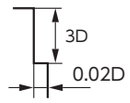
切深量 Depth of Cut
(D:外径 Dia.)

侧面 Side Milling

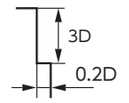


ae
φ1～2.5=0.05D
φ3～6=0.1D
φ8～12=0.15D

侧面 Side Milling



侧面 Side Milling



备注 Notes

※ 1 请使用发烟性低的油冷冷却方式。
※ 2 切削高硬度钢时，建议使用油雾冷却方式。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid with smoke retardant.
※2 Recommend to use oil mist coolant for machining hardened steels.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

MX440

规格 Size φ 1 ～ φ 12

≦52 HRC

无限涂层 40° 螺旋角4刃平底铣刀

MUGEN COATING 4-Flute LEAD40 End Mill

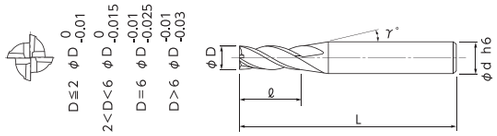
共有14种规格
Total 14 sizes

MG | 4 | 40° | Side | Face

刃长为外径的4倍。采用4刃设计，适用于侧面加工 可对应各种加工材料

For various work materials. L/D=4.
Suitable for side milling with 4-flute





- 刃长为外径的4倍，采用40° 螺旋角。
- 深沟形状也能实现安定加工，虽然是长刃，也能将刀具对加工直壁的倾斜量抑制到最小。
- L/D=4 and helix 40° is suitable for deep machining with minimum deflection of cutting up-right surface.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00090-00100	1	4	12°	4	45	5,000
08-00090-00150	1.5	6	12°	4	45	5,000
08-00090-00200	2	8	12°	4	45	4,100
08-00090-00250	2.5	10	12°	4	45	4,100
08-00090-00300	3	12	12°	6	50	4,400
08-00090-00350	3.5	14	12°	6	50	7,200
08-00090-00400	4	16	12°	6	55	4,700
08-00090-00450	4.5	18	12°	6	55	8,400
08-00090-00500	5	20	12°	6	60	5,100
08-00090-00550	5.5	22	12°	6	65	8,800
08-00090-00600	6	24	–	6	65	5,500
08-00090-00800	8	32	–	8	90	15,200
08-00090-01000	10	40	–	10	100	16,700
08-00090-01200	12	48	–	12	105	25,400

订购方法 How to Order

请指定MX440 外径(D)。
When you order, indicate MX440 (D).

※(γ)为参考值。
※(γ) is reference value

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		铜合金 Copper	
切削速度 Cutting Speed	20～30m/min		15～25m/min		15～20m/min		20～40m/min	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	8,000	120	6,400	80	5,600	70	9,500	170
1.5	5,300	120	4,200	80	3,700	70	6,400	200
2	4,000	120	3,200	90	2,800	75	4,800	210
2.5	3,200	150	2,500	90	2,200	85	3,800	230
3	2,700	170	2,100	90	1,900	90	3,200	240
3.5	2,300	180	1,800	90	1,600	90	2,700	260
4	2,000	200	1,600	110	1,400	100	2,400	290
4.5	1,800	220	1,400	120	1,200	110	2,100	290
5	1,600	220	1,300	140	1,100	120	1,900	290
5.5	1,400	220	1,200	150	1,000	140	1,700	310
6	1,300	220	1,100	150	900	140	1,600	310
8	1,000	200	800	140	700	130	1,200	270
10	800	190	600	120	600	130	1,000	260
12	700	190	500	120	500	130	800	240
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling 4D ae ae φ1～2.5=0.04D φ3～6=0.08D φ8～12=0.1D						侧面 Side Milling 4D 0.1D	
备注 Notes	※ 1 请使用发烟性低的油冷冷却方式。 ※ 2 请以相同的比率调整主轴转速和进给速度。 ※ 3 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※1 Use cutting fluid with smoke retardant. ※2 Adjust both spindle speed and feed at the same rate. ※3 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.							

MX445

规格 Size φ 1 ～ φ 12

≦52 HRC

无限涂层 45° 螺旋角4刃平底铣刀

MUGEN COATING 4-Flute LEAD45 End Mill

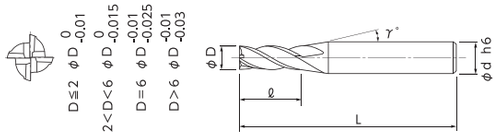
共有14种规格
Total 14 sizes

刃长为外径的5倍。采用4刃设计，适用于侧面加工
可对应各种加工材料

For various work materials. L/D=5.
Suitable for side milling with 4-flute

MG | 4 | 45°
Side | Face





- 刃长为外径的5倍，采用45°螺旋角。
- 虽然是超长刃，也能将加工直壁的倾斜量抑制到最小。
- L/D=5 and helix 45° to minimize the milling deflection even though the long cutting length design.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00095-00100	1	5	12°	4	45	6,600
08-00095-00150	1.5	7.5	12°	4	45	6,600
08-00095-00200	2	10	12°	4	50	5,500
08-00095-00250	2.5	12.5	12°	4	50	5,500
08-00095-00300	3	15	12°	6	55	6,600
08-00095-00350	3.5	17.5	12°	6	60	8,800
08-00095-00400	4	20	12°	6	60	7,300
08-00095-00450	4.5	22.5	12°	6	65	9,900
08-00095-00500	5	25	12°	6	65	7,600
08-00095-00550	5.5	27.5	12°	6	75	10,800
08-00095-00600	6	30	–	6	75	8,300
08-00095-00800	8	40	–	8	90	18,200
08-00095-01000	10	50	–	10	100	20,600
08-00095-01200	12	60	–	12	105	29,000

订购方法 How to Order
请指定MX445 外径(D)。 When you order, indicate MX445 (D).
※(γ)为参考值。 ※(γ) is reference value.

- 碳素钢 Carbon Steel P
- 合金钢 Alloy Steel P
- 调质钢 Prehardened Steel P
- 高硬度钢～52 Hardened Steel HRC H
- 不锈钢 Stainless Steel M
- 铝合金 Aluminium Alloy N
- 铜合金 Copper N
- 树脂 Resin O

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		铜合金 Copper	
切削速度 Cutting Speed	15～25m/min		10～20m/min		10～15m/min		15～35m/min	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	6,400	100	4,800	60	4,000	55	8,000	150
1.5	4,200	100	3,200	60	2,700	55	5,300	170
2	3,200	100	2,400	70	2,000	60	4,000	190
2.5	2,500	120	1,900	70	1,600	60	3,200	200
3	2,100	130	1,600	75	1,300	70	2,700	210
3.5	1,800	140	1,400	75	1,100	70	2,300	210
4	1,600	160	1,200	90	1,000	80	2,000	240
4.5	1,400	170	1,100	90	900	85	1,800	240
5	1,300	170	1,000	100	800	90	1,600	240
5.5	1,200	170	900	100	700	95	1,400	240
6	1,100	190	800	110	700	100	1,300	240
8	800	160	600	100	500	90	1,000	220
10	600	150	500	100	400	85	800	200
12	500	140	400	90	300	80	700	200
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling: 5D, ae; ae φ1～2.5=0.03D φ3～6=0.06D φ8～12=0.08D						侧面 Side Milling: 5D, 0.06D	
备注 Notes	※ 1 请使用发烟性低的油冷冷却方式。 ※ 2 请以相同的比率调整主轴转速和进给速度。 ※ 3 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※1 Use cutting fluid with smoke retardant. ※2 Adjust both spindle speed and feed at the same rate. ※3 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.							

- P 碳素钢 Carbon Steel
- P 合金钢 Alloy Steel
- P 调质钢 Prehardened Steel
- H ～52 HRC 高硬度钢 Hardened Steel
- M 不锈钢 Stainless Steel
- N 铝合金 Aluminium Alloy
- N 铜合金 Copper
- O 树脂 Resin

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

MSE430P

规格 Size ϕ 1 ～ ϕ 12

∞

无限涂层 4刃尖角造型平底铣刀
MUGEN COATING 4-Flute Sharp Edge End Mill

共有11种规格
Total 11 sizes

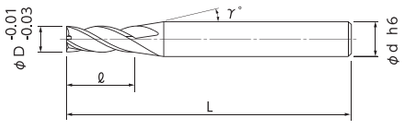
4刃30° 螺旋角的尖角造型

4-flute sharp edge type with helix angle 30°

MG | 4 | 30° | 90° | Side | Face







- 尖角造型，可广泛应用于从非铁金属到钢材的切削。
- 可实现倾斜少的精加工。
- It can be cut from nonferrous to steels due to the sharp edges.
- Minimize tool deflection for accurate finishing.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00112-00100	1	2.5	9°	4	45	5,500
08-00112-00150	1.5	4	9°	4	45	5,500
08-00112-00200	2	5	9°	4	45	3,900
08-00112-00250	2.5	7	9°	4	45	3,900
★ 08-00112-00300	3	8	9°	4	50	4,400
★ 08-00112-00400	4	10	–	4	50	4,500
★ 08-00112-00500	5	13	9°	6	55	5,000
★ 08-00112-00600	6	15	–	6	55	5,200
★ 08-00112-00800	8	20	–	8	65	8,900
★ 08-00112-01000	10	25	–	10	75	11,800
★ 08-00112-01200	12	30	–	12	80	16,600

订购方法 How to Order

请指定MSE430P 外径(D)。
When you order, indicate MSE430P (D).

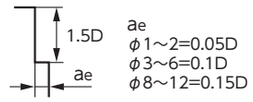
※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61(～52HRC)	
切削速度 Cutting Speed	60～100m/min		50～70m/min		35～60m/min		20～40m/min	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,700	330	19,100	210	14,300	150	9,600	160
2	10,300	330	9,600	270	7,200	160	4,800	180
3	6,900	440	6,400	320	4,800	180	3,200	210
4	5,200	500	4,800	380	3,600	180	2,400	230
5	4,100	520	3,800	380	2,900	200	1,900	250
6	3,400	540	3,200	380	2,400	200	1,600	250
8	2,700	520	2,400	380	1,800	200	1,200	250
10	2,100	470	1,900	380	1,400	200	1,000	250
12	1,700	440	1,600	380	1,200	200	800	250

切深量 Depth of Cut

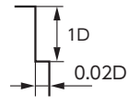
(D:外径 Dia.)

侧面 Side Milling



ae
ϕ1～2=0.05D
ϕ3～6=0.1D
ϕ8～12=0.15D

侧面 Side Milling



备 注 Notes

※ 1 请使用发烟性低的油冷冷却方式。
※ 2 切削高硬度钢时，建议使用油雾冷却方式。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid with smoke retardant.
※2 Recommend to use oil mist coolant for machining hardened steels.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

MSE430

规格 Size φ 1 ～ φ 20

≦52 HRC

无限涂层 4刃平底铣刀
MUGEN COATING 4-Flute End Mill

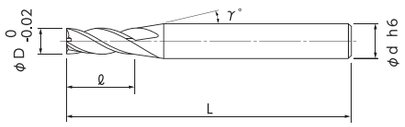
共有25种规格
Total 25 sizes

MG | 4 | 30° | Side | Face

标准4刃30°螺旋角造型
适用于从粗加工到精加工的各种加工
4-flute standard type with helix angle 30°
For multi-purpose, from roughing to finishing







- 4刃平底铣刀采用NS TOOL独创的无限涂层。
- 可广泛应用于从生材到调质钢的切削。
- Our original MUGEN COATING has been put on 4-flute end mill.
- It can be cut from non-hardened materials to hardened materials.

▲停产产品 Discontinued Products

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

	产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
	08-00110-00100	1	2.5	9°	4	45	5,100
	08-00110-00150	1.5	4	9°	4	45	5,100
	08-00110-00200	2	5	9°	4	45	3,200
	08-00110-00250	2.5	7	9°	4	45	3,200
★	08-00110-00300	3	8	9°	6	50	3,400
★	08-00110-00350	3.5	9	9°	6	50	7,200
★	08-00110-00400	4	10	9°	6	50	3,900
★	08-00110-00450	4.5	12	9°	6	55	7,700
★	08-00110-00500	5	13	9°	6	55	4,000
★	08-00110-00550	5.5	14	9°	6	55	8,300
★	08-00110-00600	6	15	–	6	55	4,200
★	08-00110-00650	6.5	17	9°	8	60	14,100
★	08-00110-00700	7	18	9°	8	65	11,800
★	08-00110-00750	7.5	19	9°	8	65	14,900
★	08-00110-00800	8	20	–	8	65	8,500
★	08-00110-00850	8.5	22	9°	10	70	18,500
★	08-00110-00900	9	23	9°	10	70	18,500
★	08-00110-00950	9.5	24	9°	10	75	21,300
★	08-00110-01000	10	25	–	10	75	11,300
★	08-00110-01200	12	30	–	12	80	15,500
▲	08-00110-01400	14	35	–	12	100	38,400
▲	08-00110-01500	15	40	9°	16	110	46,000
▲	08-00110-01600	16	40	–	16	110	46,000
▲	08-00110-01800	18	45	–	16	120	63,900
▲	08-00110-02000	20	50	–	20	135	71,600

订购方法 How to Order

请指定MSE430 外径(D)。
When you order, indicate MSE430 (D).

※(γ)为参考值。
※(γ) is reference value.

▲符号表示停产产品。在库存售完之后将不再贩卖。
▲Discontinued products. The marked sizes will no longer be on sale after the stock runs out.

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61(～52HRC)	
切削速度 Cutting Speed	60～100m/min		50～70m/min		35～60m/min		20～40m/min	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,700	330	19,100	210	14,300	150	9,600	160
2	10,300	330	9,600	270	7,200	160	4,800	180
3	6,900	440	6,400	320	4,800	180	3,200	210
4	5,200	500	4,800	380	3,600	180	2,400	230
5	4,100	520	3,800	380	2,900	200	1,900	250
6	3,400	540	3,200	380	2,400	200	1,600	250
7	3,000	530	2,700	380	2,000	200	1,400	250
8	2,700	520	2,400	380	1,800	200	1,200	250
9	2,300	480	2,100	380	1,600	200	1,100	250
10	2,100	470	1,900	380	1,400	200	1,000	250
12	1,700	440	1,600	380	1,200	200	800	250
14	1,500	430	1,400	360	1,000	190	700	230
15	1,400	430	1,300	350	1,000	180	600	210
16	1,300	420	1,200	330	900	160	600	200
18	1,150	400	1,100	330	800	160	500	200
20	1,050	400	1,000	330	700	160	500	200
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling 1.5D, ae; ae: φ1～2=0.05D, φ3～6=0.1D, φ7～20=0.15D						侧面 Side Milling 1D, 0.02D	

高速切削参数参考表
Recommended Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61(～52HRC)	
切削速度 Cutting Speed	250m/min		200m/min		160m/min		80m/min	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
6	13,300	2,600	10,600	2,000	8,500	1,600	4,200	500
8	10,000	2,600	8,000	2,000	6,400	1,600	3,200	500
10	8,000	2,600	6,400	2,000	5,100	1,600	2,500	500
12	6,600	2,600	5,300	2,000	4,200	1,600	2,100	500
16	5,000	2,000	4,000	1,500	3,200	1,200	1,600	380
20	4,000	2,000	3,200	1,500	2,500	1,200	1,300	380
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling φ6～9.5: 1D, 0.01D; φ10～20: 1.5D, 0.02D						侧面 Side Milling 1D, 0.01D	
备注 Notes	※1 请使用发烟性低的油冷冷却方式。 ※2 切削高硬度钢时，建议使用油雾冷却方式。 ※3 请以相同的比率调整主轴转速和进给速度。 ※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※1 Use cutting fluid with smoke retardant. ※2 Recommend to use oil mist coolant for machining hardened steels. ※3 Adjust both spindle speed and feed at the same rate. ※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.							

MSEM430

规格 Size ϕ 1 ～ ϕ 20

≦52 HRC

无限涂层 4刃中刃平底铣刀
MUGEN COATING 4-Flute Medium End Mill

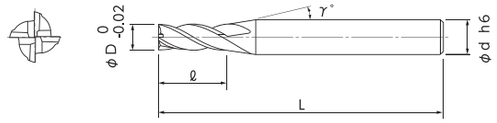
共有13种规格
Total 13 sizes

4刃30° 螺旋角造型。刃长为外径的4倍

4-flute with helix angle 30°. L/D=4

MG | 4 | 30° | Side | Face





- 刃长为外径的4倍，采用30° 螺旋角。
- 可对应侧面精加工。
- L/D=4 and helix 30°.
- It is very suitable for finishing side milling.

▲ 停产产品 Discontinued Products
★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

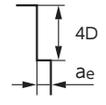
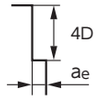
产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00111-00100	1	4	9°	4	50	8,900
08-00111-00150	1.5	6	9°	4	50	8,900
08-00111-00200	2	8	9°	4	50	6,300
08-00111-00250	2.5	10	9°	4	50	6,300
★ 08-00111-00300	3	12	9°	6	55	6,900
★ 08-00111-00400	4	16	9°	6	60	7,400
★ 08-00111-00500	5	20	9°	6	65	7,600
★ 08-00111-00600	6	24	–	6	75	8,000
★ 08-00111-00800	8	32	–	8	90	16,400
★ 08-00111-01000	10	40	–	10	100	20,100
★ 08-00111-01200	12	48	–	12	110	30,300
▲ 08-00111-01600	16	64	–	16	130	65,900
▲ 08-00111-02000	20	80	–	20	140	102,300

订购方法 How to Order
请指定MSEM430 外径(D)。
When you order, indicate MSEM430 (D).

※(γ)为参考值。
※(γ) is reference value.

▲符号表示停产产品。在库存售完之后将不再贩卖。
▲Discontinued products. The marked sizes will no longer be on sale after the stock runs out.

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		铜合金 Copper	
切削速度 Cutting Speed	20～30m/min		15～25m/min		15～25m/min		20～40m/min	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	8,000	120	6,400	80	6,400	80	9,500	170
1.5	5,300	120	4,300	80	4,300	80	6,400	200
2	4,000	120	3,200	90	3,200	90	4,800	210
2.5	3,200	150	2,600	90	2,600	90	3,800	230
3	2,700	170	2,200	90	2,200	90	3,200	240
4	2,000	200	1,600	110	1,600	110	2,400	290
5	1,600	220	1,300	140	1,300	140	1,900	290
6	1,300	220	1,100	150	1,100	150	1,600	310
8	1,000	200	800	140	800	140	1,200	270
10	800	190	650	120	650	120	1,000	260
12	650	190	550	120	550	120	800	240
16	500	160	400	120	400	120	600	240
20	400	140	320	100	320	100	480	200

切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling  ae φ1～2.5=0.04D φ3～6=0.08D φ8～12=0.1D φ16～20=0.12D	侧面 Side Milling  ae φ1～12=0.1D φ16～20=0.15D
备注 Notes	※ 1 请使用发烟性低的油冷冷却方式。 ※ 2 请以相同的比率调整主轴转速和进给速度。 ※ 3 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※1 Use cutting fluid with smoke retardant. ※2 Adjust both spindle speed and feed at the same rate. ※3 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.	

MSE245

规格 Size ϕ 2 ～ ϕ 12

≦52 HRC

无限涂层 2刃平底铣刀
MUGEN COATING 2-Flute End Mill

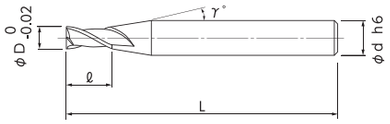
共有9种规格
Total 9 sizes

2刃强螺旋角造型。可对应高韧性材料的加工

2-flute with high helix angle 45°. Applicable to tough work materials

MG Side | 2 Slot | 45° Face





- 2刃平底铣刀采用NS TOOL独创的无限涂层。
- 切削阻力比30°螺旋角小。
- Our original MUGEN COATING has been put on 2-flute end mill.
- Compared with 30° helix angle, it can be reduced cutting load.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00120-00200	2	5	9°	4	45	5,000
08-00120-00250	2.5	7	9°	4	45	5,000
08-00120-00300	3	8	9°	6	50	6,800
08-00120-00400	4	10	9°	6	50	7,200
08-00120-00500	5	13	9°	6	55	7,700
08-00120-00600	6	15	–	6	55	7,900
08-00120-00800	8	20	–	8	65	12,000
08-00120-01000	10	25	–	10	75	14,100
08-00120-01200	12	30	–	12	80	22,900

订购方法 How to Order

请指定MSE245 外径(D)。
When you order, indicate MSE245 (D).

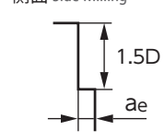
※(γ)为参考值。
※(γ) is reference value.

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK			高硬度钢 Hardened Steels SKD61 (～52HRC)			耐热合金 Heat Resistance Alloy			铝合金 Aluminium Alloy			铜合金 Copper		
切削速度 Cutting Speed	60～100m/min			50～70m/min			40～60m/min			20～40m/min			15～25m/min			100～200m/min			80～150m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
2	12,700	330	160	9,600	250	80	8,000	130	65	4,800	100	50	3,200	60	30	31,800	1,300	450	24,000	1,200	400
2.5	10,200	400	200	7,600	250	80	6,400	130	65	3,800	100	50	2,500	60	30	25,400	1,300	450	19,000	1,200	400
3	8,500	440	220	6,400	300	100	5,300	170	85	3,200	130	65	2,100	70	35	21,200	1,300	450	16,000	1,200	400
4	6,400	500	250	4,800	300	100	4,000	170	85	2,400	130	65	1,600	70	35	16,000	1,300	450	12,000	1,200	400
5	5,100	530	260	3,800	360	120	3,200	220	110	1,900	150	75	1,300	80	40	12,700	1,300	450	9,600	1,200	400
6	4,200	550	270	3,200	360	120	2,700	220	110	1,600	150	75	1,100	80	40	10,600	1,300	450	8,000	1,200	400
8	3,200	500	250	2,400	360	120	2,000	220	110	1,200	150	75	800	80	40	8,000	1,100	380	6,000	1,200	400
10	2,500	460	230	1,900	360	120	1,600	220	110	1,000	150	75	600	80	40	6,300	1,000	350	4,800	1,200	400
12	2,100	440	220	1,600	360	120	1,300	220	110	800	150	75	500	80	40	5,300	1,000	350	4,000	1,200	400

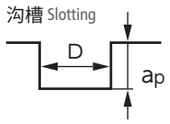
切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



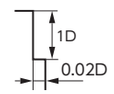
ae
ϕ2～2.5=0.1D
ϕ3～6=0.15D
ϕ8～12=0.2D

沟槽 Slotting

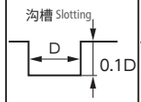


ap
ϕ2～3=0.35D
ϕ4～12=0.5D

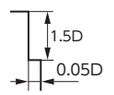
侧面 Side Milling



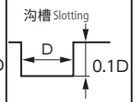
沟槽 Slotting



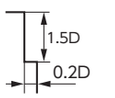
侧面 Side Milling



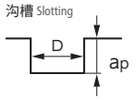
沟槽 Slotting



侧面 Side Milling



沟槽 Slotting



ap
ϕ2～3=0.3D
ϕ4～12=0.5D

备注 Notes

※ 1 请使用发烟性低的油冷冷却方式。
※ 2 切削高硬度钢时，建议使用油雾冷却方式。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid with smoke retardant.
※2 Recommend to use oil mist coolant for machining hardened steels.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 全刃长造型 Regular Line MUGEN COATING Full Cutting Length Type

MSE345

规格 Size ϕ 3 ～ ϕ 20

≦52 HRC

无限涂层 3刃平底铣刀
MUGEN COATING 3-Flute End Mill

共有9种规格
Total 9 sizes

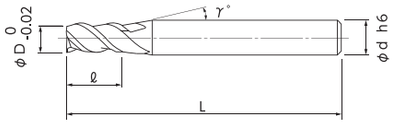
3刃强螺旋角造型。提高进给速度

3-flute with high helix angle 45°. For high feed rate milling

MG | 3 | 45° | Side | Slot | Face







- 3刃平底铣刀采用NS TOOL独创的无限涂层。
- 切削阻力比30°螺旋角小。
- Our original MUGEN COATING has been put on 3-flute end mill.
- Compared with 30°helix angle, it can be reduced cutting load.

▲停产产品 Discontinued Products

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00130-00300	3	8	9°	6	50	6,800
08-00130-00400	4	10	9°	6	50	7,200
08-00130-00500	5	13	9°	6	55	7,700
08-00130-00600	6	15	—	6	55	7,900
08-00130-00800	8	20	—	8	65	12,000
08-00130-01000	10	25	—	10	75	14,100
08-00130-01200	12	30	—	12	80	22,900
▲ 08-00130-01600	16	40	—	16	110	48,600
▲ 08-00130-02000	20	50	—	20	135	75,500

订购方法 How to Order

请指定MSE345 外径(D)。
When you order, indicate MSE345 (D).

※(γ)为参考值。
※(γ) is reference value.

▲符号表示停产产品。在库存售完之后将不再贩卖。
▲Discontinued products. The marked sizes will no longer be on sale after the stock runs out.

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK			高硬度钢 Hardened Steels SKD61 (～52HRC)			耐热合金 Heat Resistance Alloy			铝合金 Aluminium Alloy			铜合金 Copper		
切削速度 Cutting Speed	60～100m/min			50～70m/min			40～60m/min			20～40m/min			15～25m/min			150～200m/min			80～150m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
3	8,500	510	250	6,400	340	110	5,300	220	100	3,200	190	85	2,100	80	40	21,200	1,900	650	15,900	1,500	500
4	6,400	690	340	4,800	340	110	4,000	220	100	2,400	190	85	1,600	80	40	16,000	1,900	650	11,900	1,500	500
5	5,100	730	360	3,800	410	140	3,200	250	115	1,900	220	110	1,300	100	50	12,700	1,900	650	9,600	1,500	500
6	4,200	750	370	3,200	410	140	2,700	250	115	1,600	220	110	1,100	100	50	10,600	1,900	650	8,000	1,500	500
8	3,200	690	340	2,400	410	140	2,000	250	115	1,200	220	110	800	100	50	8,000	1,700	600	6,000	1,500	500
10	2,500	630	310	1,900	410	140	1,600	250	115	1,000	220	110	600	100	50	6,300	1,500	520	4,800	1,500	500
12	2,100	600	300	1,600	410	140	1,300	250	115	800	220	110	500	100	50	5,300	1,400	500	4,000	1,500	500
16	1,600	570	280	1,200	340	110	1,000	220	100	600	190	85	400	80	40	4,000	1,200	420	3,000	1,500	500
20	1,300	560	280	1,000	340	110	800	220	100	500	190	85	300	80	40	3,200	1,200	420	2,400	1,500	500

切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling
1.5D
ae
ae
φ3～6=0.15D
φ8～20=0.2D

沟槽 Slotting
D
ap
ap
φ3=0.35D
φ4～20=0.5D

侧面 Side Milling
1D
0.02D

沟槽 Slotting
D
0.1D

侧面 Side Milling
1.5D
0.05D

沟槽 Slotting
D
0.1D

侧面 Side Milling
1.5D
0.2D

沟槽 Slotting
D
ap
ap
φ3=0.3D
φ4～20=0.5D

备注 Notes

※ 1 请使用发烟性低的油冷冷却方式。
※ 2 切削高硬度钢时，建议使用油雾冷却方式。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 建议使用刚性较大的铣刀刀柄和机床。
※ 5 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 Use cutting fluid with smoke retardant.
※2 Recommend to use oil mist coolant for machining hardened steels.
※3 Adjust both spindle speed and feed at the same rate.
※4 Use rigid and precise machine and chuck holder.
※5 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.

MSE445

规格 Size φ 2 ～ φ 20

≦52 HRC

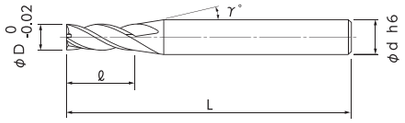
无限涂层 4刃平底铣刀
MUGEN COATING 4-Flute End Mill

共有11种规格
Total 11 sizes

MG | 4 | 45° | Side | Face

4刃强螺旋角造型
可有效用于高韧性材料的侧面加工
4-flute with high helix angle 45°
Suitable for side milling of tough work materials





- 4刃平底铣刀采用NS TOOL独创的无限涂层。
- 切削阻力比30°螺旋角小。
- Our original MUGEN COATING has been put on 4-flute end mill.
- Compared with 30° helix angle, it can be reduced cutting load.

▲ 停产产品 Discontinued Products
★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00140-00200	2	5	9°	4	45	5,000
08-00140-00250	2.5	7	9°	4	45	5,000
★ 08-00140-00300	3	8	9°	6	50	6,800
★ 08-00140-00400	4	10	9°	6	50	7,200
★ 08-00140-00500	5	13	9°	6	55	7,700
★ 08-00140-00600	6	15	–	6	55	7,900
★ 08-00140-00800	8	20	–	8	65	12,000
★ 08-00140-01000	10	25	–	10	75	14,100
★ 08-00140-01200	12	30	–	12	80	22,900
▲ 08-00140-01600	16	40	–	16	110	48,600
▲ 08-00140-02000	20	50	–	20	135	75,500

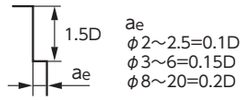
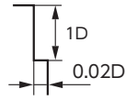
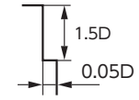
订购方法 How to Order
请指定MSE445 外径(D)。
When you order, indicate MSE445 (D).

※(γ)为参考值。
※(γ) is reference value.

▲符号表示停产产品。在库存售完之后将不再贩卖。
▲Discontinued products. The marked sizes will no longer be on sale after the stock runs out.

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61(～52HRC)		耐热合金 Heat Resistance Alloy	
切削速度 Cutting Speed	60～100m/min		50～70m/min		40～60m/min		20～40m/min		15～25m/min	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
2	12,700	560	9,600	325	8,000	220	4,800	210	3,200	100
2.5	10,200	670	7,600	325	6,400	220	3,800	210	2,500	100
3	8,500	750	6,400	390	5,300	240	3,200	260	2,100	130
4	6,400	840	4,800	390	4,000	240	2,400	260	1,600	130
5	5,100	900	3,800	470	3,200	260	1,900	300	1,300	150
6	4,200	920	3,200	470	2,700	260	1,600	300	1,100	150
8	3,200	840	2,400	470	2,000	260	1,200	300	800	150
10	2,500	770	1,900	470	1,600	260	1,000	300	600	150
12	2,100	740	1,600	470	1,300	260	800	300	500	150
16	1,600	700	1,200	390	1,000	220	600	260	400	130
20	1,300	690	1,000	390	800	220	500	260	300	130
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling  ae φ2～2.5=0.1D φ3～6=0.15D φ8～20=0.2D						侧面 Side Milling 		侧面 Side Milling 	

高速切削参数参考表
Recommended High Speed Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61(～52HRC)	
切削速度 Cutting Speed	250m/min		200m/min		160m/min		80m/min	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
6	13,300	2,900	10,600	2,250	8,500	1,800	4,250	600
8	10,000	2,900	8,000	2,250	6,400	1,800	3,200	600
10	8,000	2,900	6,400	2,250	5,100	1,800	2,550	600
12	6,600	2,900	5,300	2,250	4,200	1,800	2,100	600
16	5,000	2,300	4,000	1,700	3,200	1,350	1,600	450
20	4,000	2,300	3,200	1,700	2,500	1,350	1,300	450
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling φ6～8 1D 0.01D φ10～20 1.5D 0.02D						侧面 Side Milling 1D 0.01D	
备注 Notes	※1 请使用发烟性低的油冷冷却方式。 ※2 切削高硬度钢时，建议使用油雾冷却方式。 ※3 请以相同的比率调整主轴转速和进给速度。 ※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※1 Use cutting fluid with smoke retardant. ※2 Recommend to use oil mist coolant for machining hardened steels. ※3 Adjust both spindle speed and feed at the same rate. ※4 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.							

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 全刃长造型 Regular Line MUGEN COATING Full Cutting Length Type

MSZ345

规格 Size φ 1 ～ φ 12

≦40 HRC

无限涂层 重切削高效率平底铣刀 “Power Z”

MUGEN COATING 3-Flute POWER “Z” End Mill

共有14种规格
Total 14 sizes

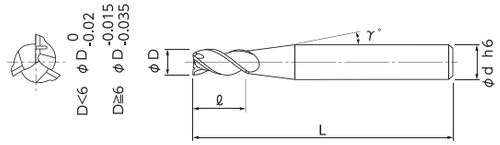
钢加工用　可无底孔、无停顿地进行插铣到沟槽加工的连续加工

MG　3　45°

Side　Slot　Face　Plunge

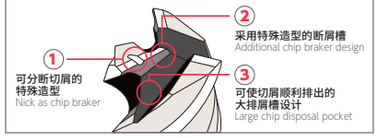
For machining on steels　Continuous machining from plunging without guide-hole and stepping to slotting





- 新开发的特殊刀刃形状，大幅提高了加工效率。
- 可应用于从插铣加工到沟槽加工的切削，实现前所未有的高效率！
- New flute design brought a remarkable shearing ability.
- High efficient machining is realized both for plunge cutting and slotting.

在插铣加工时可发挥超群威力的尖端形状
Unique end teeth design for plunging



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00133-00100	1	1.5	9°	4	45	6,300
08-00133-00150	1.5	2.3	9°	4	45	6,300
08-00133-00200	2	3	9°	4	45	6,100
08-00133-00250	2.5	3.8	9°	4	45	6,100
★ 08-00133-00300	3	6	9°	6	50	7,600
★ 08-00133-00400	4	8	9°	6	50	7,900
★ 08-00133-00500	5	10	9°	6	50	8,500
★ 08-00133-00600	6	13	–	6	55	8,800
★ 08-00133-00700	7	16	9°	8	65	12,700
★ 08-00133-00800	8	19	–	8	65	12,700
★ 08-00133-00900	9	19	9°	10	75	14,700
★ 08-00133-01000	10	22	–	10	75	14,700
★ 08-00133-01100	11	22	9°	12	80	21,600
★ 08-00133-01200	12	26	–	12	80	21,600

订购方法 How to Order

请指定MSZ345 外径(D)。
When you order, indicate MSZ345 (D).

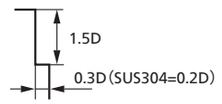
※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C				合金钢 Alloy Steels SKD・SCM				不锈钢 Stainless Steels SUS304				调质钢 Prehardened Steels HPM・NAK(～40HRC)			
切削速度 Cutting Speed	90m/min				50m/min				35m/min				55m/min			
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed			主轴转速 Spindle Speed	进给速度 Feed			主轴转速 Spindle Speed	进给速度 Feed			主轴转速 Spindle Speed	进给速度 Feed		
		插铣 Plunging	沟槽 Slotting	侧面 Side Milling		插铣 Plunging	沟槽 Slotting	侧面 Side Milling		插铣 Plunging	沟槽 Slotting	侧面 Side Milling		插铣 Plunging	沟槽 Slotting	侧面 Side Milling
	min^{-1}	mm/min			min^{-1}	mm/min			min^{-1}	mm/min			min^{-1}	mm/min		
1	15,000	70	200	400	15,000	40	100	210	10,000	20	70	200	15,000	50	100	200
1.5	13,000	70	250	500	13,000	40	120	270	7,000	20	70	250	13,000	50	130	250
2	11,000	100	300	600	8,000	50	140	290	5,000	20	75	250	10,000	70	150	300
2.5	10,000	100	400	700	7,000	60	160	330	4,000	20	75	250	8,000	90	170	350
3	9,600	200	550	800	5,300	80	200	400	3,600	20	100	250	5,800	100	250	400
4	7,200	210	650	900	4,000	100	250	400	2,800	30	100	250	4,400	110	250	400
5	5,700	260	700	1,000	3,200	100	250	450	2,200	40	120	300	3,500	120	300	500
6	4,800	300	720	1,200	2,700	130	300	450	1,800	40	120	300	3,000	130	330	600
7	4,100	300	740	1,100	2,300	120	300	450	1,600	40	120	300	2,500	110	330	600
8	3,600	300	760	1,000	2,000	100	300	400	1,400	30	120	300	2,200	100	330	600
9	3,200	300	770	900	1,800	80	250	380	1,200	20	100	300	1,900	90	250	500
10	3,000	300	800	900	1,600	80	200	350	1,100	20	100	300	1,700	80	200	400
11	2,800	300	760	850	1,500	80	200	350	1,000	20	100	280	1,600	80	200	400
12	2,600	280	740	850	1,400	70	180	340	900	20	100	270	1,500	70	180	340

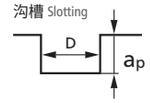
切深量 Depth of Cut

(D:外径 Dia.)

侧面 Side Milling



沟槽 Slotting



a_p
φ1～2.9=0.5D(SKD・SCM・SUS304=0.25D)
φ3～12=1D(SKD・SCM・SUS304=0.5D)

备　注 Notes

※ 1 请根据机床刚性调整切深量。
　　实际加工时请根据加工形状、目的以及所用的机床等调整切削参数。
※ 2 请以相同的比率调整主轴转速和进给速度。
※ 3 建议使用吹气冷却方式。
※ 4 对于不锈钢工件，建议使用油冷冷却方式。
※ 5 使用油冷冷却方式进行加工时，根据排屑和发烟的状况调整切削参数。
※ 6 使用油冷冷却方式时，加工时产生的火花及破损有引发起火甚至火灾的危险。请务必采取防火措施。
※ 7 不锈钢的插铣加工时建议采用分级加工方式。
※ 8 请注意排屑状况。
※ 9 建议使用刚性较大的铣刀刀柄和机床。
※ 10 请尽量缩短刀具的伸出量。

※1 Adjust Depth of Cut according to machine rigidity.
　Final milling conditions are subject to machining profile, purpose and machine status.
※2 Adjust both spindle speed and feed at the same rate.
※3 Air blow is recommended.
※4 Water-insoluble fluid is recommended for cutting stainless steels.
※5 Adjust milling condition with caution for chip evacuation and smoke generation when milling with water-insoluble fluid.
※6 Using water-insoluble fluid could lead to fires due to sparks generated during machining or heat caused by breakage.
　Ensure that you take proper fire-prevention measures.
※7 Step machining is recommended for plunging stainless steels.
※8 Chip disposal is important.
※9 Use a rigid and precise machine and chuck holder.
※10 Overhang of end mill should be as short as possible from spindle nose.

MSCZ440

规格 Size φ1 ～ φ6

≦40 HRC

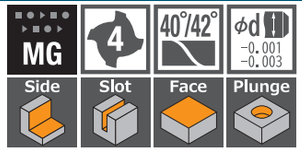
无限涂层 SC用高效率 “Z” 铣刀

MUGEN COATING 4-Flute High Efficient “Z” End Mill for Carbon Steels

共有62种规格 Total 62 sizes

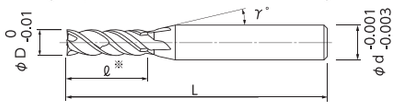
可对应碳素钢的高效率加工！ 可进行插铣进刀到沟槽加工的连续加工

High efficient machining on carbon steels !
Continuous machining from plunging approach to slotting





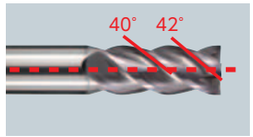




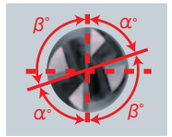
插铣深度参照切削参数表
Plunge depth is refered to recommended milling conditions

- 采用不等分割、不等螺旋角和提高刃部刚性的设计，可最大限度地抑制振刀，实现高效率加工！
- 采用新开发的特殊刀刃形状，可实现应对侧面加工、沟槽加工、插铣加工进刀的多种性能。
- 采用无限涂层，可进行延长刀具寿命的稳定加工。
- 共有62种规格，刀长有外径的2倍和3倍（部分规格）两种。
- Unequal flute spacing, unequal helix angle and high rigid end profile design to minimize chatter realize high efficient machining.
- New developed special edge profile realized multi-functional performance of side milling, slot milling and plunging approaches on carbon steels.
- Long time stable machining is realized by adopting MUGEN COATING.
- Total 62 sizes, some sizes line up with L/D=2 or 3.

※ 刃长比规格表中的数值长0.1mm。
The practical Length of Cut is 0.1mm longer than the specification table.



不等螺旋角
Unequal Helix Angle



不等分割
Unequal Flute Spacing

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

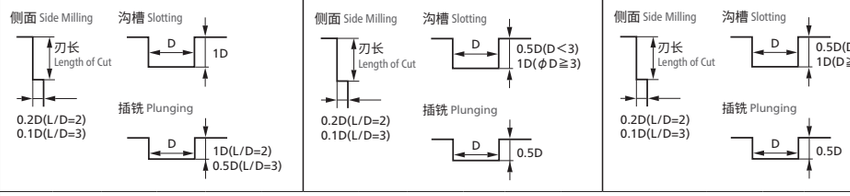
产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00135-01020	1	2	12°	4	50	4,700
08-00135-01030		3	12°	4	50	4,900
08-00135-01120	1.1	2.2	12°	4	50	5,800
08-00135-01220	1.2	2.4	12°	4	50	5,800
08-00135-01320	1.3	2.6	12°	4	50	5,800
08-00135-01420	1.4	2.8	12°	4	50	5,800
08-00135-01520	1.5	3	12°	4	50	5,800
08-00135-01530		4.5	12°	4	50	6,200
08-00135-01620	1.6	3.2	12°	6	50	6,400
08-00135-01720	1.7	3.4	12°	6	50	6,400
08-00135-01820	1.8	3.6	12°	6	50	6,400
08-00135-01920	1.9	3.8	12°	6	50	6,400
08-00135-02020	2	4	12°	6	50	6,400
08-00135-02030		6	12°	6	60	6,800
08-00135-02120	2.1	4.2	12°	6	50	6,400
08-00135-02220	2.2	4.4	12°	6	50	6,400
08-00135-02320	2.3	4.6	12°	6	50	6,400
08-00135-02420	2.4	4.8	12°	6	50	6,400
08-00135-02520	2.5	5	12°	6	50	6,400
08-00135-02530		7.5	12°	6	60	6,900
08-00135-02620	2.6	5.2	12°	6	50	6,400
08-00135-02720	2.7	5.4	12°	6	50	6,400
08-00135-02820	2.8	5.6	12°	6	50	6,400
08-00135-02920	2.9	5.8	12°	6	50	6,400
★ 08-00135-03020	3	6	12°	6	50	6,400
★ 08-00135-03030		9	12°	6	60	6,800
★ 08-00135-03120	3.1	6.2	12°	6	50	6,700
★ 08-00135-03220	3.2	6.4	12°	6	50	6,700
★ 08-00135-03320	3.3	6.6	12°	6	50	6,700
★ 08-00135-03420	3.4	6.8	12°	6	50	6,700
★ 08-00135-03520	3.5	7	12°	6	50	6,700
★ 08-00135-03530		10.5	12°	6	60	7,300
★ 08-00135-03620	3.6	7.2	12°	6	50	6,700
★ 08-00135-03720	3.7	7.4	12°	6	50	6,700
★ 08-00135-03820	3.8	7.6	12°	6	50	6,700
★ 08-00135-03920	3.9	7.8	12°	6	50	6,700
★ 08-00135-04020	4	8	12°	6	50	6,700
★ 08-00135-04030		12	12°	6	60	7,200
★ 08-00135-04120	4.1	8.2	12°	6	50	7,200
★ 08-00135-04220	4.2	8.4	12°	6	50	7,200
★ 08-00135-04320	4.3	8.6	12°	6	50	7,200
★ 08-00135-04420	4.4	8.8	12°	6	50	7,200
★ 08-00135-04520	4.5	9	12°	6	50	7,200
★ 08-00135-04530		13.5	12°	6	60	7,700
★ 08-00135-04620	4.6	9.2	12°	6	50	7,200
★ 08-00135-04720	4.7	9.4	12°	6	50	7,200
★ 08-00135-04820	4.8	9.6	12°	6	50	7,200
★ 08-00135-04920	4.9	9.8	12°	6	50	7,200
★ 08-00135-05020	5	10	12°	6	50	7,200
★ 08-00135-05030		15	12°	6	60	7,700
★ 08-00135-05120	5.1	10.2	12°	6	50	7,800
★ 08-00135-05220	5.2	10.4	12°	6	50	7,800
★ 08-00135-05320	5.3	10.6	12°	6	50	7,800
★ 08-00135-05420	5.4	10.8	12°	6	50	7,800
★ 08-00135-05520	5.5	11	12°	6	50	7,800
★ 08-00135-05530		16.5	12°	6	60	8,500
★ 08-00135-05620	5.6	11.2	12°	6	50	7,800
★ 08-00135-05720	5.7	11.4	12°	6	50	7,800
★ 08-00135-05820	5.8	11.6	12°	6	50	7,800
★ 08-00135-05920	5.9	11.8	12°	6	50	7,800
★ 08-00135-06020	6	12	–	6	60	7,500
★ 08-00135-06030		18	–	6	60	7,800

订购方法 How to Order
请指定MSCZ440 外径(D)×刃长(ℓ)。
When you order, indicate MSCZ440 (D)×(ℓ).
※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case M-033

加工材料 Work Material			碳素钢 Carbon Steels S50C						合金钢 Alloy Steels SCM・SKD						调质钢 Prehardened Steels (～40HRC)					
外径 Dia.	刃长 Length of Cut	L(刃长)/D(刃径) L/D	侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging	
			主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
			min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	2	2	20,000	800	18,000	450	18,000	150	19,000	700	16,000	360	16,000	100	16,200	500	12,800	290	12,800	100
	3	3	17,500	700	16,000	350	16,000	100	16,800	580	14,500	250	14,500	50	14,300	430	11,600	200	11,600	50
1.5	3	2	14,800	900	13,500	560	13,500	150	13,500	800	12,500	450	12,500	120	11,500	600	10,100	360	10,100	120
	4.5	3	12,800	770	11,500	420	11,500	100	12,000	650	10,300	300	10,300	75	10,200	500	8,300	240	8,300	75
2	4	2	12,500	1,100	11,000	650	11,000	150	11,000	1,000	9,500	520	9,500	150	9,400	750	7,700	420	7,700	150
	6	3	11,000	900	10,000	500	10,000	100	9,600	750	8,400	360	8,400	100	8,200	580	6,800	290	6,800	100
2.5	5	2	10,900	1,300	9,000	850	9,000	200	9,000	1,120	8,000	680	8,000	150	7,700	850	6,400	540	6,400	150
	7.5	3	9,600	1,050	8,200	600	8,200	150	7,800	920	7,200	430	7,200	120	6,600	700	5,800	340	5,800	120
3	6	2	10,000	1,600	8,600	1,000	8,600	250	8,000	1,300	7,500	720	7,500	200	6,800	900	6,000	580	6,000	200
	9	3	9,000	1,300	7,800	730	7,800	200	6,600	1,000	6,400	530	6,400	150	5,600	720	5,300	420	5,300	150
3.5	7	2	9,200	1,650	7,900	1,000	7,900	250	7,400	1,340	6,900	800	6,900	200	6,300	920	5,500	640	5,500	200
	10.5	3	8,100	1,400	6,900	820	6,900	200	6,000	1,050	5,800	590	5,800	150	5,300	730	4,700	440	4,700	150
4	8	2	8,500	1,700	7,000	1,100	7,000	300	7,200	1,400	6,300	850	6,300	200	6,100	950	5,000	700	5,000	200
	12	3	7,500	1,400	6,100	850	6,100	250	5,900	1,100	5,600	610	5,600	150	5,100	760	4,300	470	4,300	150
4.5	9	2	7,600	1,700	6,300	1,100	6,300	300	6,600	1,500	5,700	880	5,700	200	5,600	1,000	4,600	700	4,600	200
	13.5	3	7,100	1,550	5,500	900	5,500	250	5,800	1,150	5,000	650	5,000	150	4,900	780	3,900	500	3,900	150
5	10	2	7,000	1,900	5,700	1,100	5,700	300	6,300	1,600	5,200	880	5,200	200	5,400	1,100	4,200	700	4,200	200
	15	3	6,500	1,700	5,000	900	5,000	250	5,700	1,250	4,600	650	4,600	150	4,800	800	3,600	520	3,600	150
5.5	11	2	6,400	2,000	5,300	1,100	5,300	300	6,100	1,600	4,800	880	4,800	200	5,200	1,100	3,900	700	3,900	200
	16.5	3	6,000	1,800	4,600	900	4,600	250	5,600	1,250	4,300	650	4,300	150	4,700	800	3,300	520	3,300	150
6	12	2	6,000	2,000	4,900	1,100	4,900	300	5,700	1,600	4,500	880	4,500	200	4,800	1,100	3,600	700	3,600	200
	18	3	5,600	1,800	4,300	900	4,300	250	5,300	1,250	4,000	650	4,000	150	4,500	800	3,100	520	3,100	150

切深量 Depth of Cut (D:外径 Dia.)



备 注 Notes

※ 1 测量刀具长度时请测量子刃。
※ 2 请根据机床刚性和工件的夹持状态等调整切削参数。
实际加工时请根据加工形状、目的以及所用的机床等调整切削参数。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 使用冷却液时请尽量增大流量、加高压力，以排出切屑。
※ 5 插铣时若排屑不佳，请调整轴向切深量和进给速度。
※ 6 排屑不佳可能会导致刀具崩刃和折断，敬请注意。
※ 7 建议使用刚性较大的铣刀刀柄和机床。
※ 8 请尽量缩短刀具的伸出量。

※1 Please choose the short end tooth when measure the tool length.
※2 Adjust milling condition conforming with machine rigidity and clamping condition.
Final milling conditions are subject to machining profile, purpose and machine status.
※3 Adjust both Spindle Speed and Feed at the same rate.
※4 Please increasing the coolant flow rate and pressure as much as possible, and supply it sufficiently to the machining point and flute.
※5 Please change the Depth of Cut or Feed when chips could not remove smoothly during plunging.
※6 Please be noted there would be a possible tool chipping or breakage when the chip removal is insufficient.
※7 Use a rigid and precise machine and chuck holder.
※8 Overhang of end mill should be as short as possible from spindle nose.

MHDSH445

规格 Size φ1 ～ φ4

Plus ≦70 HRC

无限白金Plus涂层 高硬度钢材用4刃平底铣刀

MUGEN COATING PREMIUM Plus 4-Flute Square End Mill for Hardened Steel

共有10种规格 Total 10 sizes

MHDSH445

切削参数参考表 Recommended Milling Conditions

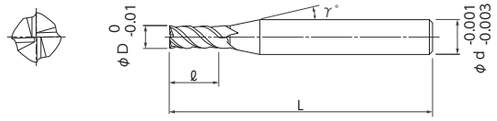
平底 全刃长 Full Cutting Length
Square 涂层 Coating

采用可抑制倾斜的高刚性设计，加工最高70HRC的淬火钢时也可实现延长刀具寿命

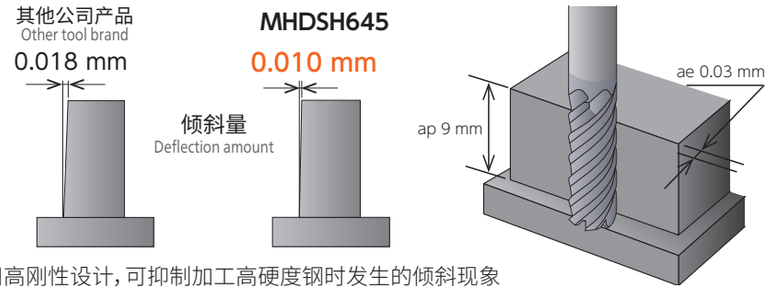
High rigidity tool design suppresses deflection and realizes long tool life on machining 70HRC hardened steel

MG Connect | 4 Side | 45° Slot | φd 0 -0.001 -0.003 Face





- 4刃铣刀为刃长2D、3D造型的产品。
- 采用无限白金Plus涂层，加工70HRC的高硬度钢时也可实现延长刀具寿命。
- 采用高刚性设计，可提高加工精度。
- 4-flute is lineup of length of cut expands 2D and 3D.
- MUGEN COATING PREMIUM Plus realizes long tool life even for hardened steel up to 70HRC.
- High rigidity tool design improves machining accuracy.



采用高刚性设计，可抑制加工高硬度钢时发生的倾斜现象

Unequal spacing suppresses chattering even high feed rate machining

单位[规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00429-00102	1	2	12°	6	60	7,500
08-00429-00103		3	12°	6	60	7,700
08-00429-00152	1.5	3	12°	6	60	7,500
08-00429-00153		4.5	12°	6	60	7,700
08-00429-00202	2	4	12°	6	60	7,500
08-00429-00203		6	12°	6	60	7,700
08-00429-00302	3	6	12°	6	60	8,700
08-00429-00303		9	12°	6	60	8,900
08-00429-00402	4	8	12°	6	60	9,400
08-00429-00403		12	12°	6	60	9,700

订购方法 How to Order

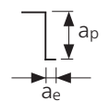
请指定MHDSH445 外径(D)×刃长(ℓ)。 ※(γ)为参考值。

When you order, indicate MHDSH445(D)x(ℓ). ※(γ) is reference value.

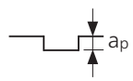
加工材料 Work Material			高速钢·高硬度钢 High Speed Steels / Hardened Steels SKH51·SKD11 (～62HRC)				高速钢 High Speed Steels SKH55·HAP40 (～66HRC)				高速钢 High Speed Steels SKH57·HAP72 (～70HRC)			
	外径 Dia.	刃长 Length of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
侧面加工 Side Milling	1	2	25,000	500	1.5	0.02	20,000	240	1.5	0.02	16,000	160	1.5	0.02
		3	22,000	360	1.5	0.02	18,000	200	1.5	0.02	14,000	120	1.5	0.02
	1.5	3	16,000	560	2.25	0.03	14,000	330	2.25	0.03	10,000	240	2.25	0.03
		4.5	14,000	420	2.25	0.03	12,000	240	2.25	0.03	8,000	160	2.25	0.03
	2	4	12,000	630	3	0.04	10,000	480	3	0.04	8,000	320	3	0.04
		6	10,000	500	3	0.04	8,000	330	3	0.04	6,000	240	3	0.04
	3	6	8,000	700	4.5	0.06	7,000	560	4.5	0.06	5,600	400	4.5	0.06
		9	7,600	600	4.5	0.06	6,400	480	4.5	0.06	5,000	320	4.5	0.06
	4	8	7,000	800	6	0.08	6,000	600	6	0.08	5,000	400	6	0.08
		12	6,600	700	6	0.08	5,600	560	6	0.08	4,600	320	6	0.08
沟槽加工 Slotting	1	2	20,000	300	0.02	-	16,000	120	0.01	-	14,000	100	0.01	-
		3	18,000	240	0.02	-	14,000	80	0.01	-	12,000	50	0.01	-
	1.5	3	12,000	380	0.03	-	10,000	160	0.015	-	8,000	120	0.015	-
		4.5	10,000	260	0.03	-	9,000	100	0.015	-	7,500	60	0.015	-
	2	4	10,000	420	0.04	-	8,000	240	0.02	-	7,000	160	0.02	-
		6	8,000	300	0.04	-	7,000	120	0.02	-	6,000	80	0.02	-
	3	6	7,500	500	0.06	-	6,000	280	0.03	-	5,000	180	0.03	-
		9	7,000	320	0.06	-	5,600	140	0.03	-	4,500	100	0.03	-
	4	8	6,000	540	0.08	-	5,000	300	0.04	-	4,500	180	0.04	-
		12	5,600	360	0.08	-	4,800	160	0.04	-	4,000	100	0.04	-

备 注 Notes

侧面加工 Side Milling



沟槽加工 Slotting



※1 请使用刚性好、精度高的机床和夹具。
※2 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※3 请以相同的比率调整主轴转速和进给速度。
※4 建议使用油雾冷却方式。
※1 Use a rigid and precise machine and chuck holder.
※2 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.
※3 Adjust both spindle speed and feed at the same rate.
※4 Use oil mist coolant.

◎ 高硬度钢～65 Hardened Steel HRC H
◎ 高硬度钢～70 Hardened Steel HRC H
H ～65高硬度钢 HRC Hardened Steel ◎
H ～70高硬度钢 HRC Hardened Steel ◎

常规系列 无限白金Plus涂层 Regular Line MUGEN PREMIUM Plus

常规系列 无限白金Plus涂层 Regular Line MUGEN PREMIUM Plus

MHDSH645

规格 Size φ5～φ6

Plus ≦70 HRC

无限白金Plus涂层 高硬度钢材用6刃平底铣刀

MUGEN COATING PREMIUM Plus 6-Flute Square End Mill for Hardened Steel

共有4种规格 Total 4 sizes

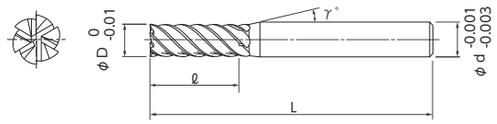
采用可抑制倾斜的高刚性设计，加工最高70HRC的淬火钢时也可实现延长刀具寿命

High rigidity tool design suppresses deflection and realizes long tool life on machining 70HRC hardened steel

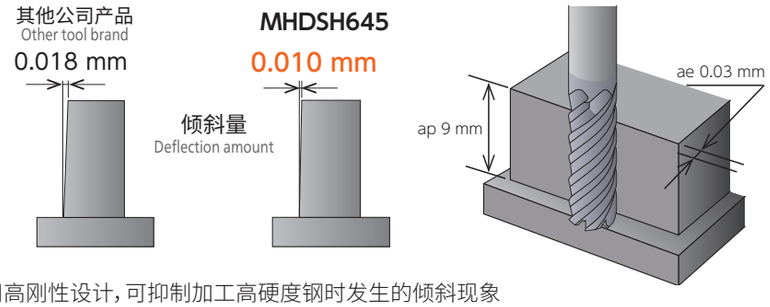
MG | 6 | 45° | φd 0 -0.001 -0.003

Connect | Side | Slot | Face





- 6刃铣刀为刃长2D、3D造型的产品。
- 采用无限白金Plus涂层，加工70HRC的高硬度钢时也可实现延长刀具寿命。
- 采用高刚性设计，可提高加工精度。
- 6-flute is lineup of length of cut expands 2D and 3D.
- MUGEN COATING PREMIUM Plus realizes long tool life even for hardened steel up to 70HRC.
- High rigidity tool design improves machining accuracy.



采用高刚性设计，可抑制加工高硬度钢时发生的倾斜现象

Unequal spacing suppresses chattering even high feed rate machining

单位[规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00430-00502	5	10	12°	6	60	9,900
08-00430-00503		15	12°	6	65	10,900
08-00430-00602	6	12	-	6	60	10,800
08-00430-00603		18	-	6	65	11,900

订购方法 How to Order

请指定MHDSH645 外径(D)×刃长(ℓ)。 ※(γ)为参考值。

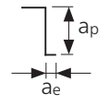
When you order, indicate MHDSH645(D)x(ℓ). ※(γ) is reference value.

加工案例 Machining case

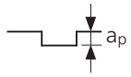
M-018

加工材料 Work Material			高速钢·高硬度钢 High Speed Steels / Hardened Steels SKH51·SKD11(～62HRC)				高速钢 High Speed Steels SKH55·HAP40(～66HRC)				高速钢 High Speed Steels SKH57·HAP72(～70HRC)			
	外径 Dia.	刃长 Length of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
侧面加工 Side milling	5	10	6,200	1,200	7.5	0.1	5,300	800	7.5	0.1	4,600	560	7.5	0.1
		15	5,600	1,000	7.5	0.1	4,800	600	7.5	0.1	4,200	480	7.5	0.1
	6	12	5,300	1,200	9	0.12	4,600	800	9	0.12	4,000	560	9	0.12
		18	4,800	1,000	9	0.12	4,200	600	9	0.12	3,600	480	9	0.12
沟槽加工 Slotting	5	10	5,600	600	0.1	-	4,800	350	0.05	-	4,000	200	0.05	-
		15	5,000	400	0.1	-	4,200	200	0.05	-	3,600	120	0.05	-
	6	12	4,800	600	0.12	-	4,200	350	0.06	-	3,600	200	0.06	-
		18	4,200	400	0.12	-	3,600	200	0.06	-	3,200	120	0.06	-

侧面加工 Side Milling



沟槽加工 Slotting



备 注 Notes

※1 请使用刚性好、精度高的机床和夹具。
※2 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※3 请以相同的比率调整主轴转速和进给速度。
※4 建议使用油雾冷却方式。
※1 Use a rigid and precise machine and chuck holder.
※2 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine.
※3 Adjust both spindle speed and feed at the same rate.
※4 Use oil mist coolant.

◎ 高硬度钢～65 Hardened Steel HRC H
◎ 高硬度钢～70 Hardened Steel HRC H
H ～65高硬度钢 HRC Hardened Steel ◎
H ～70高硬度钢 HRC Hardened Steel ◎

MHDH445

规格 Size φ1 ～ φ4

Premium ≦65 HRC

无限白金涂层 高硬度钢材用4刃平底铣刀

MUGEN COATING PREMIUM 4-Flute Square End Mill For Hardened Steel

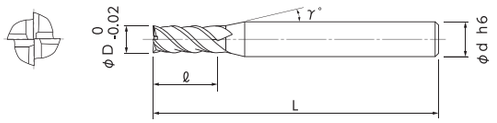
共有5种规格 Total 5 sizes

MG Side | 4 Slot | 45° Face

4刃强螺旋角，可对应高硬度钢（～65HRC）的精加工

4-flute with high helix angle. For finishing of hardened steels (～ 65HRC)





- 在高硬度领域（48～65HRC）的长时间加工中也可实现稳定的延长刀具寿命。
- 改进了刀刃形状，改善了倾斜量和加工精度。
- Realized stably long tool life against high hardened steels (48～65HRC).
- Improved milling deflection and accuracy by advanced flute design.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00427-00100	1	2	12°	6	60	6,900
08-00427-00150	1.5	3	12°	6	60	6,900
08-00427-00200	2	4	12°	6	60	6,900
★ 08-00427-00300	3	6	12°	6	60	8,000
★ 08-00427-00400	4	8	12°	6	60	8,700

订购方法 How to Order

请指定MHDH445 外径(D)。
When you order, indicate MHDH445 (D).

※(γ)为参考值。
※(γ) is reference value.

○ 调质钢 Prehardened Steel P
◎ 高硬度钢～52 Hardened Steel HRC H
◎ 高硬度钢～60 Hardened Steel HRC H
○ 高硬度钢～65 Hardened Steel HRC H

常规系列 无限白金涂层 全刃长造型
Regular Line MUGEN PREMIUM Full Cutting Length Type

切削参数参考表

Recommended Milling Conditions

加工材料 Work Material		高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	刃长 Length of Cut	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
		主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
		min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	2	30,000	800	24,000	400	25,000	500	20,000	300	20,000	240	16,000	120
1.5	3	20,000	860	16,000	460	16,000	560	12,000	380	14,000	330	10,000	160
2	4	15,000	920	12,000	500	12,000	630	10,000	420	10,000	480	8,000	240
3	6	10,000	1,000	8,000	580	8,000	700	7,500	500	7,000	560	6,000	280
4	8	8,500	1,200	7,500	620	7,000	800	6,000	540	6,000	600	5,000	300
切深量 Depth of Cut (D：外径 Dia.)		侧面 Side Milling 1.5D / 0.03D　沟槽 Slotting D / 0.03D				侧面 Side Milling 1.5D / 0.02D　沟槽 Slotting D / 0.02D				侧面 Side Milling 1.5D / 0.02D　沟槽 Slotting D / 0.01D			
备注 Notes		※1 请使用刚性好、精度高的机床和夹具。 ※2 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※3 请以相同的比率调整主轴转速和进给速度。 ※4 建议使用油雾冷却方式。 ※1 Use a rigid and precise machine and chuck holder. ※2 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine. ※3 Adjust both spindle speed and feed at the same rate. ※4 Use oilmist coolant.												

P 调质钢 Prehardened Steel ○
H ～52 HRC 高硬度钢 Hardened Steel ◎
H ～60 HRC 高硬度钢 Hardened Steel ◎
H ～65 HRC 高硬度钢 Hardened Steel ○

常规系列 无限白金涂层 全刃长造型
Regular Line MUGEN PREMIUM Full Cutting Length Type

MHDH645

规格 Size φ5 ～ φ12

Premium ≦65 HRC

无限白金涂层 高硬度钢材用6刃平底铣刀
MUGEN COATING PREMIUM 6-Flute Square End Mill For Hardened Steel

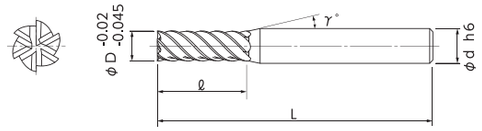
共有10种规格
Total 10 sizes

6刃强螺旋角，可对应高硬度钢（～65HRC）的精加工

6-flute with high helix angle. For finishing of hardened steels (～ 65HRC)

MG Side | 6 Slot | 45° Face





- 刃长有2D和3D类型。
- 在高硬度领域（48～65HRC）的长时间加工中也可实现稳定的延长刀具寿命。
- 改进了刀刃形状，改善了倾斜量和加工精度。
- L/D=2 and L/D=3 length of cut selection.
- Realized stably long tool life against high hardened steels (48～65HRC).
- Improved milling deflection and accuracy by advanced flute design.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00428-00500	5	10	12°	6	60	9,200
★ 08-00428-00501		15	12°	6	65	10,200
★ 08-00428-00600	6	12	–	6	60	10,000
★ 08-00428-00601		18	–	6	65	11,100
★ 08-00428-00800	8	16	–	8	65	13,600
★ 08-00428-00801		24	–	8	70	15,200
★ 08-00428-01000	10	20	–	10	75	18,200
★ 08-00428-01001		30	–	10	80	20,200
★ 08-00428-01200	12	24	–	12	80	23,200
★ 08-00428-01201		36	–	12	90	25,700

订购方法 How to Order

请指定MHDH645 外径(D)×刃长(ℓ)。
When you order, indicate MHDH645 (D)×(ℓ).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material		高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	刃长 Length of Cut	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
		主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
		min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
5	10	7,600	1,600	6,800	900	6,200	1,200	5,600	600	5,300	800	4,800	350
	15	6,800	1,400	6,000	600	5,600	1,000	5,000	400	4,800	600	4,200	200
6	12	6,400	1,800	5,800	950	5,300	1,200	4,800	600	4,600	800	4,200	350
	18	5,800	1,600	5,000	600	4,800	1,000	4,200	400	4,200	600	3,600	200
8	16	4,800	2,000	4,300	1,000	4,000	1,400	3,600	700	3,400	1,000	3,000	400
	24	4,300	1,800	3,800	700	3,600	1,200	3,200	500	3,000	800	2,700	250
10	20	3,800	2,000	3,400	1,000	3,200	1,600	2,800	800	2,600	1,000	2,300	500
	30	3,400	1,800	3,000	800	2,800	1,400	2,500	600	2,300	800	2,000	300
12	24	3,200	2,000	2,800	1,000	2,600	1,600	2,300	800	2,200	1,000	2,000	500
	36	2,800	1,800	2,500	800	2,300	1,400	2,000	600	2,000	800	1,800	300
切深量 Depth of Cut (D：外径 Dia.)		侧面 Side Milling 1.5D 0.03D		沟槽 Slotting D 0.03D		侧面 Side Milling 1.5D 0.02D		沟槽 Slotting D 0.02D		侧面 Side Milling 1.5D 0.02D		沟槽 Slotting D 0.01D	
备注 Notes		※ 1 请使用刚性好、精度高的机床和夹具。 ※ 2 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※ 3 请以相同的比率调整主轴转速和进给速度。 ※ 4 建议使用油雾冷却方式。 ※1 Use a rigid and precise machine and chuck holder. ※2 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine. ※3 Adjust both spindle speed and feed at the same rate. ※4 Use oil mist coolant.												

MHD445

规格 Size φ1 ～ φ4

≦55 HRC

无限涂层 高硬度材料用4刃平底铣刀

MUGEN COATING 4-Flute End Mill For Hardened Steel

共有5种规格 Total 5 sizes

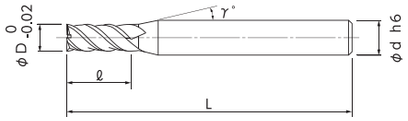
4刃强螺旋角，可对应调质钢到高硬度钢（～55HRC）的精加工

4-flute with high helix angle. For finishing of prehardened steels and hardened steels (~55HRC)

MG | 4 | 45°

Side | Slot | Face





- 可对应高硬度领域（48 ～ 55HRC）的精加工。
- 可实现倾斜少的精密精加工。
- Machineable to high hardened steels (48～55HRC).
- Realized high precision finishing without the deflection.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00400-00100	1	1.5	12°	6	60	6,900
08-00400-00150	1.5	2.5	12°	6	60	6,900
08-00400-00200	2	4	12°	6	60	6,900
★ 08-00400-00300	3	6	12°	6	60	9,000
★ 08-00400-00400	4	8	12°	6	60	9,400

订购方法 How to Order

请指定MHD445 外径(D)。
When you order, indicate MHD445 (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	高硬度钢 Hardened Steels SKD61 (45～50HRC)				高硬度钢 Hardened Steels SKD61・STAVAX・HPM-38 (50～55HRC)				高硬度钢 Hardened Steels SKD11 (55HRC)			
外 径 Dia.	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	6,400	280	3,200	140	5,400	240	2,700	120	4,800	200	2,400	100
1.5	4,200	300	2,100	150	3,600	230	1,800	120	3,200	180	1,600	90
2	3,200	320	1,600	160	2,700	230	1,400	120	2,400	180	1,200	90
3	3,700	520	1,900	260	3,200	380	1,600	140	2,600	260	1,300	130
4	2,800	450	1,400	230	2,400	360	1,200	180	2,000	260	1,000	130
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling: ap, 0.02D; ap φ1～2=1D φ3～4=1.5D		沟槽 Slotting: D, 0.05D		沟槽 Slotting: D, 0.03D				侧面 Side Milling: ap, 0.01D; ap φ1～2=1D φ3～4=1.5D		沟槽 Slotting: D, 0.01D	

高速切削参数参考表
Recommended High Speed Milling Conditions

加工材料 Work Material	高硬度钢 Hardened Steels SKD61 (45～50HRC)				高硬度钢 Hardened Steels SKD61・STAVAX・HPM-38 (50～55HRC)				高硬度钢 Hardened Steels SKD11 (55HRC)			
外 径 Dia.	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,000	950	10,000	480	17,500	770	8,800	390	12,700	510	6,400	260
1.5	13,800	1,000	6,900	500	11,700	750	5,900	380	8,500	480	4,300	240
2	10,400	1,000	5,200	500	8,700	730	4,400	370	6,400	460	3,200	230
3	10,600	1,500	5,300	750	9,500	1,100	4,800	550	7,400	740	3,700	370
4	8,000	1,300	4,000	650	7,200	1,100	3,600	550	5,600	740	2,800	370
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling: ap, 0.02D; ap φ1～2=1D φ3～4=1.5D		沟槽 Slotting: D, 0.05D		沟槽 Slotting: D, 0.03D				侧面 Side Milling: ap, 0.01D; ap φ1～2=1D φ3～4=1.5D		沟槽 Slotting: D, 0.01D	
备 注 Notes	※ 1 请使用刚性好、精度高的机床和夹具。 ※ 2 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※ 3 请以相同的比率调整主轴转速和进给速度。 ※ 4 建议使用油雾冷却方式。 ※1 Use a rigid and precise machine and chuck holder. ※2 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine. ※3 Adjust both spindle speed and feed at the same rate. ※4 Use oilmist coolant.											

MHD645

规格 Size φ5 ～ φ12

≦55 HRC

无限涂层 高硬度材料用6刃平底铣刀

MUGEN COATING 6-Flute End Mill For Hardened Steel

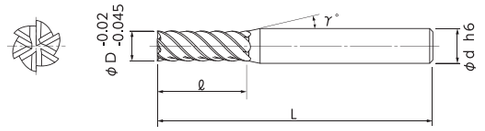
共有5种规格 Total 5 sizes

MG Side | 6 Slot | 45° Face

6刃强螺旋角，可对应调质钢到高硬度钢（～55HRC）的精加工

6-flute with high helix angle. For finishing of prehardened steels and hardened steels (~55HRC)





- 可对应高硬度领域（48 ～ 55HRC）的精加工。
- 可实现倾斜少的精密精加工。
- Machineable to high hardened steels (48～55HRC).
- Realized high precision finishing without the deflection.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00410-00500	5	10	12°	6	60	10,200
★ 08-00410-00600	6	15	–	6	60	10,500
★ 08-00410-00800	8	20	–	8	65	15,700
★ 08-00410-01000	10	25	–	10	75	18,600
★ 08-00410-01200	12	30	–	12	80	29,900

订购方法 How to Order

请指定MHD645 外径(D)。
When you order, indicate MHD645 (D).

※(γ)为参考值。
※(γ) is reference value.

常规系列 无限涂层 全刃长造型 Regular Line MUGEN COATING Full Cutting Length Type

加工材料 Work Material	高硬度钢 Hardened Steels SKD61 (45～50HRC)				高硬度钢 Hardened Steels SKD61・STAVAX・HPM-38 (50～55HRC)				高硬度钢 Hardened Steels SKD11 (55HRC)			
外径 Dia.	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
5	5,100	1,200	2,600	600	4,500	1,000	2,300	500	3,800	800	1,900	400
6	4,200	1,300	2,500	780	3,700	1,100	2,200	660	3,200	680	1,600	340
8	3,200	1,500	1,900	900	2,800	1,300	1,700	780	2,400	750	1,200	380
10	2,600	1,500	1,600	900	2,200	1,300	1,300	780	1,900	900	950	450
12	2,100	1,300	1,300	780	1,900	1,100	1,150	660	1,600	960	800	480
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling: a_p = 0.02D; a_p φ5～12=1.5D 沟槽 Slotting: D, 0.05D				侧面 Side Milling: a_p = 0.02D; a_p φ5～12=1.5D 沟槽 Slotting: D, 0.03D				侧面 Side Milling: a_p = 0.01D; a_p φ5～12=1.5D 沟槽 Slotting: D, 0.01D			

高速切削参数参考表 Recommended High Speed Milling Conditions

加工材料 Work Material	高硬度钢 Hardened Steels SKD61 (45～50HRC)				高硬度钢 Hardened Steels SKD61・STAVAX・HPM-38 (50～55HRC)				高硬度钢 Hardened Steels SKD11 (55HRC)			
外径 Dia.	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
5	8,900	2,100	4,500	1,100	7,600	1,800	3,800	900	5,100	1,100	2,600	550
6	7,400	2,200	4,500	1,320	6,400	1,900	3,900	1,150	5,300	1,100	2,700	550
8	5,600	2,600	3,400	1,560	4,800	2,200	2,900	1,320	4,000	1,300	2,000	650
10	4,500	2,600	2,700	1,560	3,800	2,200	2,300	1,320	3,200	1,500	1,600	750
12	3,700	2,200	2,200	1,320	3,200	1,900	2,000	1,150	2,600	1,600	1,300	800
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling: a_p = 0.02D; a_p φ5～12=1.5D 沟槽 Slotting: D, 0.05D				侧面 Side Milling: a_p = 0.02D; a_p φ5～12=1.5D 沟槽 Slotting: D, 0.03D				侧面 Side Milling: a_p = 0.01D; a_p φ5～12=1.5D 沟槽 Slotting: D, 0.01D			
备注 Notes	※ 1 请使用刚性好、精度高的机床和夹具。 ※ 2 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※ 3 请以相同的比率调整主轴转速和进给速度。 ※ 4 建议使用油雾冷却方式。 ※1 Use a rigid and precise machine and chuck holder. ※2 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine. ※3 Adjust both spindle speed and feed at the same rate. ※4 Use oilmist coolant.											

常规系列 无限涂层 全刃长造型 Regular Line MUGEN COATING Full Cutting Length Type

MHRH230

规格 Size ϕ0.1 ～ ϕ3

Premium ∞ ≦65 HRC

无限白金涂层 高硬度钢材用2刃长颈平底铣刀

MUGEN COATING PREMIUM 2-Flute Long Neck End Mill for Hardened Steel

共有134种规格
Total 134 sizes

MHRH230

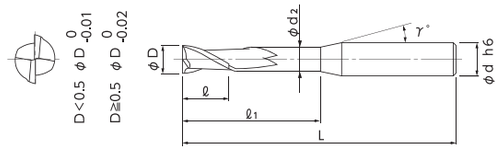
无限白金涂层 高硬度钢材用2刃长颈平底铣刀
MUGEN COATING PREMIUM 2-Flute Long Neck End Mill for Hardened Steel

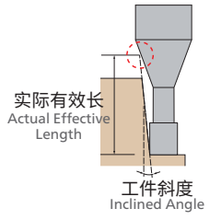
可对应调质钢、高硬度钢（～65HRC）的长颈平底铣刀。L/D最大25倍

Long neck square end mill for hardened steels up to 65HRC. Maximum L/D=25

MG Side | 2 Slot | 30° Face







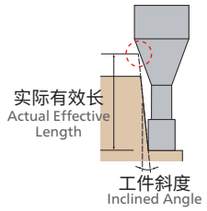
- 采用无限白金涂层，加工高硬度钢时可保持延长刀具寿命！并能提高加工精度！
- 共有134种规格！
- MUGEN COATING PREMIUM to improve accuracy and tool life on machining hardened steels!
- Total 134 sizes!

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00207-01003	0.1	0.3	0.08	0.085	12°	4	45	11,000	0.34	0.36	0.38	0.40	0.44
08-00207-01005		0.5					45	12,000	0.55	0.58	0.61	0.64	0.71
08-00207-01007		0.75					45	13,100	0.81	0.85	0.89	0.93	1.04
08-00207-01010		1					45	14,700	1.07	1.12	1.18	1.23	1.37
08-00207-01503	0.15	0.3	0.12	0.13	12°	4	45	10,200	0.36	0.37	0.39	0.41	0.46
08-00207-01505		0.5					45	11,000	0.57	0.59	0.62	0.65	0.72
08-00207-01507		0.75					45	12,100	0.83	0.86	0.90	0.95	1.05
08-00207-01510		1					45	12,100	1.09	1.14	1.19	1.25	1.38
08-00207-01515		1.5					45	13,100	1.61	1.68	1.76	1.85	2.05
08-00207-02005	0.2	0.5	0.15	0.18	12°	4	45	7,600	0.57	0.59	0.62	0.65	0.72
08-00207-02007		0.75					45	7,800	0.83	0.86	0.90	0.95	1.05
08-00207-02010		1					45	8,200	1.09	1.14	1.19	1.25	1.38
08-00207-02015		1.5					45	9,900	1.61	1.68	1.76	1.85	2.05
08-00207-02020		2					45	11,100	2.13	2.23	2.33	2.44	2.71
08-00207-02025		2.5					45	11,100	2.65	2.77	2.90	3.04	3.38
08-00207-02030		3					45	11,600	3.17	3.31	3.47	3.64	4.04
08-00207-03010	0.3	1	0.25	0.28	12°	4	45	6,600	1.09	1.14	1.19	1.25	1.38
08-00207-03015		1.5					45	6,600	1.61	1.68	1.76	1.85	2.05
08-00207-03020		2					45	8,200	2.13	2.23	2.33	2.44	2.71
08-00207-03025		2.5					45	8,500	2.65	2.77	2.90	3.04	3.38
08-00207-03030		3					45	8,500	3.17	3.31	3.47	3.64	4.04
08-00207-04010	0.4	1	0.3	0.37	12°	4	45	4,800	1.11	1.16	1.22	1.28	1.42
08-00207-04015		1.5					45	4,800	1.63	1.71	1.79	1.87	2.08
08-00207-04020		2					45	4,800	2.15	2.25	2.36	2.47	2.74
08-00207-04025		2.5					45	4,800	2.68	2.80	2.93	3.07	3.41
08-00207-04030		3					45	4,800	3.20	3.34	3.50	3.67	4.07
08-00207-04035		3.5					45	4,800	3.72	3.89	4.07	4.27	4.73
08-00207-04040		4					45	4,800	4.24	4.43	4.64	4.87	5.40
08-00207-04050		5					45	4,800	5.28	5.52	5.78	6.06	6.72
08-00207-04060		6					45	6,000	6.33	6.61	6.92	7.26	8.05
08-00207-04080		8					45	10,500	8.41	8.79	9.20	9.65	10.71
08-00207-04100		10					45	11,600	10.50	10.97	11.48	12.05	13.36
08-00207-05010	0.5	1	0.4	0.46	12°	4	45	3,500	1.14	1.19	1.24	1.30	1.45
08-00207-05015		1.5					45	3,500	1.66	1.73	1.81	1.90	2.11
08-00207-05020		2					45	3,500	2.18	2.28	2.38	2.50	2.77
08-00207-05025		2.5					45	3,500	2.70	2.82	2.95	3.10	3.44

订购方法 How to Order

请指定MHRH230 外径(D)×颈长(ℓ1)。 ※(γ)为参考值。
When you order, indicate MHRH230 (D)×(ℓ1). ※(γ) is reference value.



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

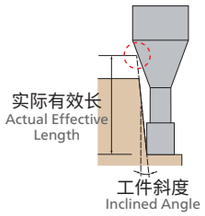
产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00207-05030	0.5	3	0.4	0.46	12°	4	45	3,500	3.22	3.37	3.52	3.70	4.10
08-00207-05035		3.5					45	3,500	3.74	3.91	4.09	4.30	4.77
08-00207-05040		4					45	3,500	4.26	4.46	4.66	4.89	5.43
08-00207-05045		4.5					45	3,500	4.79	5.00	5.23	5.49	6.09
08-00207-05050		5					45	3,500	5.31	5.54	5.80	6.09	6.76
08-00207-05060		6					45	3,500	6.35	6.63	6.95	7.29	8.08
08-00207-05070		7					45	5,800	7.39	7.72	8.09	8.48	9.41
08-00207-05080		8					50	5,800	8.44	8.81	9.23	9.68	10.74
08-00207-05090		9					50	5,800	9.48	9.90	10.37	10.88	12.07
08-00207-05100		10					50	5,800	10.52	10.99	11.51	12.07	13.39
08-00207-06015	0.6	1.5	0.5	0.56	12°	4	45	3,700	1.66	1.73	1.81	1.90	2.11
08-00207-06020		2					45	3,700	2.18	2.28	2.38	2.50	2.77
08-00207-06030		3					45	3,700	3.22	3.37	3.52	3.70	4.10
08-00207-06040		4					45	3,700	4.26	4.46	4.66	4.89	5.43
08-00207-06050		5					45	3,700	5.31	5.54	5.80	6.09	6.76
08-00207-06060		6					45	3,700	6.35	6.63	6.95	7.29	8.08
08-00207-07020	0.7	2	0.55	0.66	12°	4	45	4,200	2.18	2.28	2.38	2.50	2.77
08-00207-07040		4					45	4,200	4.26	4.46	4.66	4.89	5.43
08-00207-07060		6					45	4,200	6.35	6.63	6.95	7.29	8.08
08-00207-07080		8					50	6,800	8.44	8.81	9.23	9.68	10.74
08-00207-07100		10					50	9,000	10.52	10.99	11.51	12.07	13.39
08-00207-08030	0.8	3	0.65	0.76	12°	4	45	4,100	3.22	3.37	3.52	3.70	4.10
08-00207-08040		4					45	4,100	4.26	4.46	4.66	4.89	5.43
08-00207-08050		5					45	4,100	5.31	5.54	5.80	6.09	6.76
08-00207-08060		6					45	4,100	6.35	6.63	6.95	7.29	8.08
08-00207-08080		8					50	4,100	8.44	8.81	9.23	9.68	10.74
08-00207-08100		10					50	6,000	10.52	10.99	11.51	12.07	13.39
08-00207-08120		12					50	6,800	12.61	13.17	13.79	14.47	16.05
08-00207-10020	1	2	0.8	0.95	12°	4	50	3,700	2.20	2.30	2.41	2.53	2.81
08-00207-10030		3					50	3,700	3.25	3.39	3.55	3.73	4.13
08-00207-10040		4					50	3,700	4.29	4.48	4.69	4.92	5.46
08-00207-10050		5					50	3,700	5.33	5.57	5.83	6.12	6.79
08-00207-10060		6					50	3,700	6.37	6.66	6.97	7.32	8.11
08-00207-10070		7					50	3,700	7.42	7.75	8.11	8.51	9.44
08-00207-10080		8					50	3,700	8.46	8.84	9.25	9.71	10.77
08-00207-10090		9					50	3,700	9.50	9.93	10.39	10.91	12.10
08-00207-10100		10					50	3,700	10.55	11.02	11.53	12.10	13.42
08-00207-10120		12					50	3,700	12.63	13.20	13.82	14.49	16.08
08-00207-10140		14					50	3,700	14.72	15.38	16.10	16.89	18.73
08-00207-10160		16					60	6,000	16.80	17.55	18.38	19.28	21.39
08-00207-10180		18					60	6,000	18.89	19.73	20.66	21.67	24.04
08-00207-10200		20					60	6,000	20.97	21.91	22.94	24.07	26.70
08-00207-10220		22					60	6,900	23.06	24.09	25.22	26.46	Free
08-00207-12060	1.2	6	1	1.15	12°	4	50	3,900	6.37	6.66	6.97	7.32	8.11
08-00207-12080		8					50	3,900	8.46	8.84	9.25	9.71	10.77
08-00207-12100		10					50	3,900	10.55	11.02	11.53	12.10	13.42
08-00207-12120		12					50	3,900	12.63	13.20	13.82	14.49	16.08
08-00207-12160		16					60	6,200	16.80	17.55	18.38	19.28	21.39
08-00207-14060	1.4	6	1.1	1.35	12°	4	50	4,000	6.37	6.66	6.97	7.32	8.11
08-00207-14120		12					50	4,000	12.63	13.20	13.82	14.49	16.08

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

MHRH230

无限白金涂层 高硬度钢材用2刃长颈平底铣刀

MUGEN COATING PREMIUM 2-Flute Long Neck End Mill for Hardened Steel



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
									30´	1°	1°30´	2°	3°
08-00207-15040	1.5	4	1.2	1.45	12°	4	50	3,900	4.29	4.48	4.69	4.92	5.46
08-00207-15060		6					50	3,900	6.37	6.66	6.97	7.32	8.11
08-00207-15080		8					50	3,900	8.46	8.84	9.25	9.71	10.77
08-00207-15100		10					50	3,900	10.55	11.02	11.53	12.10	13.42
08-00207-15120		12					50	3,900	12.63	13.20	13.82	14.49	16.08
08-00207-15140		14					60	4,000	14.72	15.38	16.10	16.89	18.73
08-00207-15160		16					60	4,000	16.80	17.55	18.38	19.28	21.39
08-00207-15180		18					60	4,000	18.89	19.73	20.66	21.67	Free
08-00207-15200		20					60	4,000	20.97	21.91	22.94	24.07	Free
08-00207-15250		25					70	6,000	26.19	27.36	28.64	30.05	Free
08-00207-15300		30					70	6,000	31.40	32.81	34.34	Free	Free
08-00207-15350		35					80	6,800	36.62	38.25	40.05	Free	Free
08-00207-16060	1.6	6	1.3	1.55	12°	4	50	4,000	6.37	6.66	6.97	7.32	8.11
08-00207-16080		8					50	4,000	8.46	8.84	9.25	9.71	10.77
08-00207-18060	1.8	6	1.4	1.75	12°	4	50	4,000	6.37	6.66	6.97	7.32	8.11
08-00207-18080		8					50	4,000	8.46	8.84	9.25	9.71	10.77
08-00207-18100		10					50	4,000	10.55	11.02	11.53	12.10	13.42
08-00207-18120		12					50	4,000	12.63	13.20	13.82	14.49	16.08
08-00207-18140		14					50	4,000	14.72	15.38	16.10	16.89	18.73
08-00207-18160		16					60	4,000	16.80	17.55	18.38	19.28	Free
08-00207-18180		18					60	4,000	18.89	19.73	20.66	21.67	Free
08-00207-20040	2	4	1.6	1.94	12°	4	50	3,900	4.31	4.51	4.72	4.95	5.49
08-00207-20060		6					50	3,900	6.40	6.69	7.00	7.34	8.15
08-00207-20080		8					50	3,900	8.48	8.86	9.28	9.74	10.80
08-00207-20100		10					50	3,900	10.57	11.04	11.56	12.13	13.45
08-00207-20120		12					50	3,900	12.66	13.22	13.84	14.52	16.11
08-00207-20140		14					60	3,900	14.74	15.40	16.12	16.92	18.76
08-00207-20160		16					60	3,900	16.83	17.58	18.40	19.31	Free
08-00207-20180		18					60	3,900	18.91	19.76	20.69	21.70	Free
08-00207-20200		20					60	3,900	21.00	21.94	22.97	24.10	Free
08-00207-20250		25					70	3,900	26.21	27.39	28.67	Free	Free
08-00207-20300		30					70	4,800	31.43	32.83	34.37	Free	Free
08-00207-20350		35					80	5,800	36.64	38.28	Free	Free	Free
08-00207-20400		40					90	7,200	41.85	43.73	Free	Free	Free
08-00207-20500		50					100	8,700	52.28	54.62	Free	Free	Free
08-00207-25080	2.5	8	2	2.4	12°	4	50	4,100	8.58	8.97	9.39	9.85	10.93
08-00207-25120		12					50	4,100	12.75	13.32	13.95	14.64	Free
08-00207-25160		16					60	4,100	16.93	17.68	18.51	19.42	Free
08-00207-25200		20					60	4,100	21.10	22.04	23.07	Free	Free
08-00207-25300		30					70	4,400	31.52	32.94	Free	Free	Free
08-00207-25400		40					90	6,200	41.95	Free	Free	Free	Free
08-00207-25500		50					100	7,700	52.38	Free	Free	Free	Free
08-00207-30080	3	8	4.5	2.85	12°	6	50	5,500	8.71	9.10	9.52	9.99	11.08
08-00207-30120		12					50	5,500	12.88	13.45	14.08	14.78	16.39
08-00207-30160		16					60	5,500	17.05	17.81	18.65	19.56	21.70
08-00207-30200		20					60	5,500	21.22	22.17	23.21	24.35	27.01
08-00207-30250		25					70	5,500	26.43	27.62	28.91	30.33	Free
08-00207-30300		30					70	6,600	31.65	33.06	34.61	36.31	Free

订购方法 How to Order

请指定MHRH230 外径(D)×颈长(ℓ1)。 ※(γ)为参考值。
When you order, indicate MHRH230 (D)×(ℓ1). ※(γ) is reference value.

◎ 调质钢 Prehardened Steel P
◎ 高硬度钢~52 Hardened Steel HRC H
◎ 高硬度钢~60 Hardened Steel HRC H
○ 高硬度钢~65 Hardened Steel HRC H
○ 不锈钢 Stainless Steel M
○ 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy S

常规系列 无限白金涂层 长颈造型 Regular Line MUGEN PREMIUM Long Neck Type

MHRH230

切削参数参考表

Recommended Milling Conditions

加工材料 Work Material		碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm
0.1	0.3	40,000	150	0.005	0.06	40,000	120	0.003	0.05	40,000	100	0.002	0.04	40,000	70	0.002	0.03
	0.5	40,000	100	0.005	0.06	40,000	80	0.003	0.05	40,000	60	0.002	0.04	40,000	50	0.002	0.03
	0.75	40,000	80	0.003	0.06	40,000	70	0.002	0.05	40,000	50	0.001	0.04	40,000	30	0.001	0.03
	1	40,000	60	0.002	0.06	40,000	50	0.001	0.05	40,000	40	0.001	0.04	40,000	20	0.001	0.03
0.15	0.3	40,000	180	0.005	0.09	40,000	150	0.003	0.07	40,000	120	0.002	0.06	40,000	100	0.002	0.04
	0.5	40,000	150	0.005	0.09	40,000	120	0.003	0.07	40,000	100	0.002	0.06	40,000	80	0.002	0.04
	0.75	40,000	120	0.003	0.09	40,000	100	0.002	0.07	40,000	80	0.001	0.06	40,000	60	0.001	0.04
	1	40,000	100	0.002	0.09	40,000	80	0.001	0.07	40,000	60	0.001	0.06	40,000	40	0.001	0.04
	1.5	40,000	80	0.002	0.09	40,000	60	0.001	0.07	40,000	40	0.001	0.06	40,000	20	0.001	0.04
0.2	0.5	30,000	240	0.005	0.12	30,000	200	0.003	0.1	30,000	160	0.003	0.08	30,000	120	0.003	0.06
	0.75	30,000	200	0.005	0.12	30,000	180	0.003	0.1	30,000	140	0.003	0.08	30,000	100	0.003	0.06
	1	30,000	180	0.005	0.12	30,000	150	0.003	0.1	30,000	120	0.003	0.08	30,000	80	0.003	0.06
	1.5	30,000	120	0.003	0.12	30,000	100	0.002	0.1	30,000	80	0.002	0.08	30,000	60	0.002	0.06
	2	30,000	80	0.003	0.12	30,000	50	0.002	0.1	30,000	40	0.002	0.08	30,000	30	0.002	0.06
	2.5	30,000	60	0.002	0.12	30,000	50	0.001	0.1	25,000	40	0.001	0.08	25,000	30	0.001	0.06
	3	30,000	40	0.002	0.12	25,000	40	0.001	0.1	25,000	30	0.001	0.08	22,000	20	0.001	0.06
0.3	1	30,000	350	0.007	0.18	30,000	300	0.003	0.15	30,000	250	0.003	0.12	30,000	200	0.003	0.09
	1.5	30,000	260	0.007	0.18	30,000	200	0.003	0.15	30,000	160	0.003	0.12	30,000	120	0.003	0.09
	2	30,000	180	0.005	0.18	30,000	150	0.003	0.15	30,000	120	0.003	0.12	25,000	100	0.003	0.09
	2.5	30,000	150	0.004	0.18	25,000	100	0.002	0.15	25,000	80	0.002	0.12	20,000	60	0.002	0.09
	3	30,000	70	0.004	0.18	25,000	50	0.002	0.15	25,000	40	0.002	0.12	20,000	30	0.002	0.09
0.4	1	30,000	450	0.01	0.24	30,000	400	0.005	0.2	30,000	350	0.005	0.16	25,000	300	0.005	0.12
	1.5	30,000	400	0.01	0.24	30,000	360	0.005	0.2	30,000	330	0.005	0.16	25,000	250	0.005	0.12
	2	30,000	360	0.01	0.24	30,000	320	0.005	0.2	25,000	280	0.005	0.16	25,000	220	0.005	0.12
	2.5	30,000	340	0.008	0.24	25,000	280	0.005	0.2	25,000	250	0.004	0.16	20,000	200	0.004	0.12
	3	30,000	320	0.008	0.24	25,000	260	0.004	0.2	20,000	220	0.003	0.16	18,000	180	0.003	0.12
	3.5	30,000	280	0.007	0.24	25,000	220	0.004	0.2	20,000	180	0.003	0.16	18,000	150	0.002	0.12
	4	30,000	250	0.006	0.24	25,000	200	0.003	0.2	20,000	160	0.002	0.16	18,000	120	0.002	0.12
	5	25,000	250	0.005	0.24	22,000	180	0.003	0.2	20,000	150	0.002	0.16	18,000	90	0.002	0.12
	6	25,000	200	0.004	0.24	22,000	150	0.002	0.2	18,000	130	0.002	0.16	16,000	70	0.001	0.12
	8	20,000	150	0.002	0.24	16,000	120	0.001	0.2	14,000	90	0.001	0.16	12,000	40	0.001	0.12
	10	16,000	100	0.002	0.24	13,000	80	0.001	0.2	12,000	50	0.001	0.16	10,000	20	0.001	0.12
0.5	1	30,000	550	0.02	0.3	25,000	500	0.01	0.25	23,000	450	0.007	0.2	20,000	400	0.005	0.15
	1.5	30,000	520	0.02	0.3	25,000	450	0.01	0.25	23,000	400	0.007	0.2	20,000	360	0.005	0.15
	2	30,000	500	0.02	0.3	25,000	420	0.01	0.25	23,000	380	0.007	0.2	20,000	320	0.005	0.15
	2.5	30,000	480	0.015	0.3	25,000	400	0.008	0.25	23,000	360	0.006	0.2	20,000	300	0.004	0.15
	3	30,000	420	0.015	0.3	25,000	350	0.007	0.25	23,000	320	0.005	0.2	20,000	280	0.003	0.15
	3.5	25,000	400	0.012	0.3	25,000	320	0.006	0.25	23,000	280	0.003	0.2	20,000	240	0.003	0.15
	4	25,000	380	0.01	0.3	25,000	280	0.005	0.25	23,000	240	0.003	0.2	20,000	200	0.002	0.15
	4.5	25,000	350	0.008	0.3	25,000	230	0.004	0.25	20,000	200	0.003	0.2	18,000	160	0.002	0.15
	5	25,000	320	0.007	0.3	20,000	200	0.003	0.25	18,000	150	0.003	0.2	16,000	100	0.002	0.15
	6	25,000	300	0.005	0.3	20,000	200	0.003	0.25	18,000	150	0.002	0.2	16,000	100	0.002	0.15
	7	20,000	250	0.005	0.3	16,000	180	0.003	0.25	14,000	140	0.002	0.2	14,000	80	0.002	0.15
	8	20,000	200	0.005	0.3	16,000	160	0.002	0.25	14,000	130	0.002	0.2	12,000	60	0.001	0.15
	9	20,000	200	0.003	0.3	16,000	150	0.002	0.25	14,000	120	0.001	0.2	12,000	50	0.001	0.15
	10	16,000	170	0.003	0.3	13,000	130	0.002	0.25	12,000	110	0.001	0.2	10,000	40	0.001	0.15
0.6	1.5	30,000	650	0.02	0.35	25,000	550	0.01	0.3	23,000	450	0.007	0.25	20,000	400	0.005	0.18
	2	30,000	550	0.02	0.35	25,000	500	0.01	0.3	23,000	400	0.007	0.25	20,000	350	0.005	0.18
	3	30,000	500	0.015	0.35	25,000	450	0.007	0.3	23,000	350	0.005	0.25	20,000	300	0.003	0.18
	4	25,000	450	0.01	0.35	25,000	400	0.005	0.3	23,000	300	0.003	0.25	20,000	250	0.002	0.18

P 调质钢 Prehardened Steel ◎
H ~52 高硬度钢 HRC Hardened Steel ◎
H ~60 高硬度钢 HRC Hardened Steel ◎
H ~65 高硬度钢 HRC Hardened Steel ○
M 不锈钢 Stainless Steel ○
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy ○

常规系列 无限白金涂层 长颈造型 Regular Line MUGEN PREMIUM Long Neck Type

MHRH230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material		碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
0.6	5	25,000	400	0.007	0.35	20,000	350	0.003	0.3	18,000	250	0.003	0.25	16,000	200	0.002	0.18
	6	25,000	350	0.005	0.35	20,000	300	0.002	0.3	18,000	200	0.002	0.25	16,000	150	0.001	0.18
0.7	2	30,000	750	0.04	0.4	25,000	600	0.03	0.35	23,000	450	0.02	0.28	20,000	400	0.012	0.21
	4	25,000	690	0.03	0.4	25,000	560	0.02	0.35	23,000	400	0.015	0.28	20,000	320	0.007	0.21
	6	25,000	550	0.02	0.4	20,000	410	0.015	0.35	18,000	300	0.012	0.28	16,000	240	0.007	0.21
	8	20,000	430	0.012	0.4	16,000	330	0.01	0.35	14,000	230	0.007	0.28	12,000	180	0.005	0.21
	10	16,000	300	0.008	0.4	13,000	200	0.005	0.35	12,000	180	0.003	0.28	10,000	120	0.002	0.21
0.8	3	25,000	850	0.04	0.45	25,000	780	0.03	0.4	23,000	650	0.02	0.32	20,000	550	0.012	0.24
	4	25,000	800	0.03	0.45	25,000	700	0.025	0.4	23,000	600	0.015	0.32	20,000	500	0.007	0.24
	5	25,000	700	0.03	0.45	23,000	630	0.02	0.4	20,000	530	0.012	0.32	18,000	450	0.006	0.24
	6	20,000	620	0.025	0.45	20,000	550	0.02	0.4	18,000	450	0.01	0.32	16,000	350	0.005	0.24
	8	16,000	500	0.015	0.45	16,000	400	0.007	0.4	14,000	300	0.005	0.32	12,000	200	0.003	0.24
	10	16,000	400	0.012	0.45	16,000	350	0.007	0.4	12,000	180	0.005	0.32	10,000	150	0.003	0.24
	12	16,000	300	0.007	0.45	13,000	220	0.005	0.4	12,000	120	0.003	0.32	10,000	120	0.002	0.24
1	2	25,000	1,200	0.07	0.6	23,000	1,000	0.06	0.5	18,000	900	0.05	0.4	14,000	600	0.035	0.3
	3	25,000	1,200	0.06	0.6	23,000	1,000	0.05	0.5	18,000	900	0.04	0.4	14,000	600	0.03	0.3
	4	25,000	1,000	0.05	0.6	23,000	900	0.04	0.5	18,000	800	0.03	0.4	14,000	500	0.02	0.3
	5	22,000	1,000	0.04	0.6	20,000	800	0.03	0.5	16,000	700	0.02	0.4	12,000	450	0.012	0.3
	6	20,000	900	0.03	0.6	18,000	700	0.02	0.5	14,000	600	0.01	0.4	10,000	400	0.007	0.3
	7	20,000	900	0.03	0.6	18,000	650	0.02	0.5	14,000	550	0.01	0.4	10,000	370	0.006	0.3
	8	18,000	800	0.03	0.6	16,000	600	0.02	0.5	12,000	500	0.01	0.4	8,000	340	0.005	0.3
	9	18,000	700	0.02	0.6	16,000	550	0.015	0.5	12,000	450	0.007	0.4	8,000	300	0.005	0.3
	10	16,000	600	0.02	0.6	14,000	500	0.01	0.5	10,000	400	0.007	0.4	6,000	250	0.005	0.3
	12	16,000	500	0.02	0.6	13,000	400	0.01	0.5	10,000	300	0.005	0.4	6,000	180	0.004	0.3
	14	16,000	450	0.015	0.6	13,000	360	0.008	0.5	10,000	280	0.005	0.4	5,500	160	0.004	0.3
	16	14,000	400	0.012	0.6	12,000	320	0.006	0.5	9,000	250	0.004	0.4	5,500	150	0.003	0.3
	18	14,000	300	0.01	0.6	12,000	240	0.006	0.5	8,000	200	0.004	0.4	5,000	120	0.002	0.3
	20	12,000	200	0.007	0.6	10,000	160	0.005	0.5	7,000	130	0.003	0.4	4,500	90	0.001	0.3
	22	12,000	180	0.005	0.6	10,000	150	0.003	0.5	6,000	100	0.002	0.4	4,200	60	0.001	0.3
1.2	6	20,000	900	0.04	0.7	18,000	700	0.03	0.6	14,000	600	0.02	0.5	10,000	400	0.01	0.4
	8	18,000	800	0.04	0.7	16,000	600	0.02	0.6	12,000	500	0.01	0.5	8,000	340	0.007	0.4
	10	16,000	600	0.03	0.7	12,000	500	0.02	0.6	10,000	430	0.01	0.5	8,000	300	0.005	0.4
	12	14,000	600	0.02	0.7	10,000	500	0.01	0.6	9,000	400	0.007	0.5	7,000	250	0.005	0.4
	16	12,000	400	0.018	0.7	9,000	300	0.01	0.6	8,000	260	0.005	0.5	6,000	180	0.003	0.4
1.4	6	22,000	1,000	0.06	0.8	20,000	800	0.04	0.7	18,000	700	0.03	0.56	12,000	450	0.02	0.42
	12	16,000	700	0.03	0.8	13,000	500	0.01	0.7	11,000	400	0.007	0.56	8,000	280	0.005	0.42
1.5	4	23,000	1,200	0.07	0.9	20,000	900	0.05	0.75	18,000	800	0.04	0.6	14,000	600	0.03	0.45
	6	23,000	1,000	0.06	0.9	20,000	800	0.04	0.75	18,000	700	0.03	0.6	14,000	500	0.02	0.45
	8	20,000	900	0.06	0.9	18,000	600	0.03	0.75	14,000	600	0.03	0.6	10,000	380	0.01	0.45
	10	20,000	800	0.04	0.9	16,000	500	0.03	0.75	14,000	500	0.02	0.6	10,000	350	0.01	0.45
	12	16,000	700	0.04	0.9	14,000	500	0.02	0.75	12,000	430	0.02	0.6	8,000	310	0.007	0.45
	14	14,000	600	0.03	0.9	12,000	400	0.02	0.75	10,000	380	0.01	0.6	7,500	250	0.007	0.45
	16	12,000	500	0.02	0.9	10,000	360	0.01	0.75	9,000	300	0.007	0.6	6,800	200	0.005	0.45
	18	10,000	400	0.02	0.9	9,000	330	0.008	0.75	8,000	260	0.005	0.6	6,000	170	0.004	0.45
	20	9,000	320	0.014	0.9	8,000	280	0.005	0.75	7,000	200	0.004	0.6	5,500	150	0.003	0.45
	25	8,000	250	0.01	0.9	7,000	200	0.004	0.75	6,000	150	0.003	0.6	4,500	100	0.002	0.45
	30	7,000	200	0.005	0.9	6,000	150	0.003	0.75	5,000	110	0.002	0.6	4,000	80	0.002	0.45
	35	6,000	150	0.003	0.9	5,000	110	0.002	0.75	4,500	90	0.002	0.6	3,500	60	0.002	0.45
1.6	6	22,000	1,000	0.06	0.96	19,000	850	0.04	0.8	17,000	750	0.03	0.64	13,000	600	0.025	0.48
	8	20,000	900	0.06	0.96	17,000	750	0.03	0.8	14,000	600	0.03	0.64	10,000	430	0.015	0.48

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切削参数参考表
Recommended Milling Conditions

加工材料 Work Material		碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
1.8	6	20,000	1,000	0.07	1	18,000	900	0.05	0.9	15,000	750	0.04	0.7	12,000	600	0.03	0.5
	8	18,000	900	0.06	1	16,000	800	0.04	0.9	12,000	600	0.03	0.7	9,500	500	0.02	0.5
	10	16,000	800	0.06	1	14,000	700	0.04	0.9	12,000	500	0.03	0.7	9,500	450	0.02	0.5
	12	14,000	700	0.05	1	12,000	600	0.03	0.9	10,000	500	0.02	0.7	8,200	400	0.01	0.5
	14	14,000	700	0.05	1	12,000	600	0.03	0.9	10,000	430	0.02	0.7	8,200	360	0.01	0.5
	16	12,000	600	0.04	1	10,000	500	0.02	0.9	9,200	400	0.01	0.7	7,500	340	0.007	0.5
	18	10,000	500	0.04	1	9,200	410	0.02	0.9	8,500	370	0.01	0.7	6,000	320	0.007	0.5
2	4	20,000	1,200	0.1	1.2	18,000	1,000	0.08	1	15,000	800	0.06	0.8	12,000	600	0.04	0.6
	6	20,000	1,000	0.08	1.2	18,000	900	0.06	1	15,000	750	0.05	0.8	12,000	600	0.03	0.6
	8	18,000	900	0.07	1.2	16,000	800	0.05	1	12,000	600	0.04	0.8	9,500	500	0.02	0.6
	10	16,000	800	0.06	1.2	14,000	700	0.05	1	12,000	500	0.04	0.8	9,500	450	0.02	0.6
	12	14,000	700	0.05	1.2	12,000	600	0.04	1	10,000	500	0.03	0.8	8,200	400	0.01	0.6
	14	14,000	700	0.04	1.2	12,000	600	0.03	1	10,000	430	0.02	0.8	8,200	360	0.007	0.6
	16	12,000	600	0.04	1.2	10,000	500	0.03	1	9,200	400	0.02	0.8	7,500	340	0.007	0.6
	18	10,000	500	0.03	1.2	9,200	410	0.02	1	8,500	370	0.01	0.8	6,000	320	0.005	0.6
	20	10,000	400	0.03	1.2	9,200	380	0.02	1	8,500	340	0.01	0.8	6,000	260	0.005	0.6
	25	9,000	350	0.02	1.2	8,500	330	0.015	1	8,000	300	0.008	0.8	5,000	180	0.004	0.6
	30	8,000	300	0.015	1.2	7,500	280	0.01	1	7,000	250	0.006	0.8	4,500	150	0.004	0.6
	35	7,000	250	0.012	1.2	6,500	230	0.008	1	6,000	200	0.005	0.8	4,000	120	0.003	0.6
	40	6,000	200	0.008	1.2	5,500	180	0.005	1	5,000	150	0.004	0.8	3,500	100	0.003	0.6
	50	5,000	120	0.005	1.2	4,500	100	0.004	1	4,000	80	0.003	0.8	3,000	55	0.002	0.6
2.5	8	16,000	1,000	0.08	1.5	14,000	800	0.07	1.25	10,000	700	0.05	1	8,000	500	0.03	0.75
	12	14,000	800	0.07	1.5	12,000	700	0.06	1.25	9,600	600	0.04	1	7,500	480	0.02	0.75
	16	12,000	700	0.06	1.5	10,000	600	0.05	1.25	8,500	500	0.02	1	7,000	400	0.01	0.75
	20	10,000	600	0.06	1.5	8,200	500	0.05	1.25	7,500	500	0.02	1	5,000	400	0.01	0.75
	30	8,000	400	0.03	1.5	7,000	300	0.025	1.25	6,000	250	0.015	1	4,000	150	0.008	0.75
	40	6,000	250	0.015	1.5	5,500	200	0.012	1.25	5,000	180	0.01	1	3,500	110	0.005	0.75
	50	5,000	150	0.01	1.5	4,500	120	0.008	1.25	4,000	100	0.005	1	3,000	70	0.004	0.75
3	8	16,000	1,000	0.15	1.8	14,000	900	0.1	1.5	10,000	800	0.07	1.2	8,000	600	0.05	0.9
	12	14,000	900	0.1	1.8	12,000	800	0.08	1.5	9,200	700	0.06	1.2	7,200	500	0.04	0.9
	16	12,000	800	0.08	1.8	10,000	700	0.07	1.5	8,500	600	0.05	1.2	6,500	400	0.03	0.9
	20	10,000	800	0.08	1.8	9,000	700	0.07	1.5	7,800	600	0.04	1.2	5,800	400	0.02	0.9
	25	9,000	700	0.07	1.8	8,200	600	0.06	1.5	7,000	500	0.03	1.2	5,000	360	0.01	0.9
	30	8,000	700	0.05	1.8	7,000	600	0.03	1.5	6,500	500	0.02	1.2	4,500	330	0.007	0.9

备 注 Notes

※1 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 切削高硬度钢时，建议使用油雾冷却方式。
※4 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※5 L(颈长)/D(外径)超过8倍时，立面附近的进给速度须调整至50%以下，切深量：ae调整至30%以下。
※6 沟槽切削时建议参考切削参数表，切深量ap及进给速度设定为50%以下，并采用来回切削加工方式。
※7 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※8 L(颈长)/D(外径)为5倍以上时，建议先使用颈长较短的刀具切削初期定位槽。
※9 ϕ0.5以下或L(颈长)/D(外径)为15倍以上时，根据加工形状及使用机床等，有时必须对加工参数进行大幅调整。

※1 These recommended cutting conditions indicate just reference. It should be adjusted according to milling shape and machine type.
※2 ap:Axial Depth of Cut, ae:Radial Depth of Cut.
※3 Recommend to use oil mist coolant for machining hardened steel.
※4 Recommend to apply herical or ramping for approaching into axial direction.
※5 Adjust feed rate 50% lower and cutting depth(ae) 30% lower for milling deep wall area. When L/D exceeds 8 for stable milling.
※6 For slotting, recommend reciprocating milling by adjusting feed & ap in below 50% of recommended milling condition.
※7 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※8 Recommend guide slotting process with short neck tool before milling with L/D 5 time or longer neck tool.
※9 Major adjustment of milling conditions appropriately on milling profile, machine tool and etc. required for the tools smaller than Dia. 0.5mm, or L/D 15 times longer.

◎ 调质钢 Prehardened Steel P
◎ 高硬度钢～52 Hardened Steel HRC H
◎ 高硬度钢～60 Hardened Steel HRC H
○ 高硬度钢～65 Hardened Steel HRC H
○ 不锈钢 Stainless Steel M
○ 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy S

P 调质钢 Prehardened Steel ◎
H ～52高硬度钢 HRC Hardened Steel ◎
H ～60高硬度钢 HRC Hardened Steel ◎
H ～65高硬度钢 HRC Hardened Steel ○
M 不锈钢 Stainless Steel ○
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy ○

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

MHRH430

规格 Size φ1～φ6

Premium ∞ ≦65 HRC

无限白金涂层 高硬度钢材用4刃长颈平底铣刀

MUGEN COATING PREMIUM 4 -Flute Long Neck End Mill for Hardened Steel

共有55种规格 Total 55 sizes

MHRH430

无限白金涂层 高硬度钢材用4刃长颈平底铣刀

MUGEN COATING PREMIUM 4-Flute Long Neck End Mill for Hardened Steel

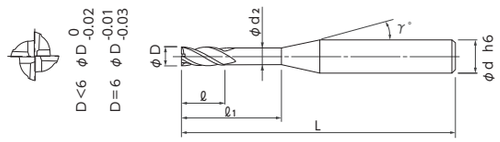
长颈 Long Neck / 平底 Square 涂层 Coating

可对应调质钢、高硬度钢（～65HRC）的4刃长颈平底铣刀。L/D最大10倍

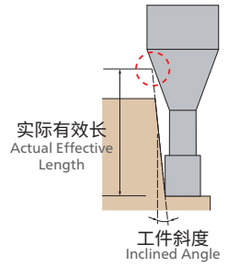
4-flute long neck square end mill for prehardened steels and hardened steels up to 65HRC
Maximum L/D=10

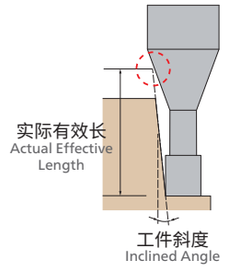
MG Side | 4 Slot | 30° Face





- 采用无限白金涂层，加工高硬度钢时可保持延长刀具寿命！并能提高加工精度！
- 可提高微细加工时的刀具刚性！
- 共有55种规格！
- MUGEN COATING PREMIUM to improve accuracy and tool life on machining hardened steels!
- Improve tool rigidity for precision machining!
- Total 55 sizes!





单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00217-01004	1	4	0.8	0.95	12°	4	50	5,200	4.29	4.48	4.69	4.92	5.46
08-00217-01006		6					50	5,200	6.37	6.66	6.97	7.32	8.11
08-00217-01008		8					50	5,200	8.46	8.84	9.25	9.71	10.77
08-00217-01010		10					50	5,200	10.55	11.02	11.53	12.10	13.42
08-00217-01206	1.2	6	1	1.15	12°	4	50	5,200	6.37	6.66	6.97	7.32	8.11
08-00217-01208		8					50	5,200	8.46	8.84	9.25	9.71	10.77
08-00217-01210		10					50	5,200	10.55	11.02	11.53	12.10	13.42
08-00217-01212		12					50	5,200	12.63	13.20	13.82	14.49	16.08
08-00217-01506	1.5	6	1.2	1.45	12°	4	50	5,200	6.37	6.66	6.97	7.32	8.11
08-00217-01508		8					50	5,200	8.46	8.84	9.25	9.71	10.77
08-00217-01510		10					50	5,200	10.55	11.02	11.53	12.10	13.42
08-00217-01512		12					50	5,200	12.63	13.20	13.82	14.49	16.08
08-00217-01514		14					60	5,200	14.72	15.38	16.10	16.89	18.73
08-00217-01516		16					60	5,200	16.80	17.55	18.38	19.28	21.39
08-00217-01806	1.8	6	1.4	1.74	12°	4	50	5,200	6.40	6.69	7.00	7.34	8.15
08-00217-01808		8					50	5,200	8.48	8.86	9.28	9.74	10.80
08-00217-01810		10					50	5,200	10.57	11.04	11.56	12.13	13.45
08-00217-01812		12					50	5,200	12.66	13.22	13.84	14.52	16.11
08-00217-01814		14					60	5,200	14.74	15.40	16.12	16.92	18.76
08-00217-01816		16					60	5,200	16.83	17.58	18.40	19.31	Free
08-00217-01818		18					60	5,200	18.91	19.76	20.69	21.70	Free
08-00217-02006	2	6	1.6	1.94	12°	4	50	5,200	6.40	6.69	7.00	7.34	8.15
08-00217-02008		8					50	5,200	8.48	8.86	9.28	9.74	10.80
08-00217-02010		10					50	5,200	10.57	11.04	11.56	12.13	13.45
08-00217-02012		12					50	5,200	12.66	13.22	13.84	14.52	16.11
08-00217-02014		14					60	5,200	14.74	15.40	16.12	16.92	18.76
08-00217-02016		16					60	5,200	16.83	17.58	18.40	19.31	Free
08-00217-02018		18					60	5,200	18.91	19.76	20.69	21.70	Free
08-00217-02020		20					60	5,200	21.00	21.94	22.97	24.10	Free
08-00217-02508	2.5	8	2	2.4	12°	4	50	5,200	8.58	8.97	9.39	9.85	10.93
08-00217-02512		12					50	5,200	12.75	13.32	13.95	14.64	Free
08-00217-02516		16					60	5,200	16.93	17.68	18.51	19.42	Free
08-00217-02520		20					60	5,200	21.10	22.04	23.07	Free	Free
08-00217-02525		25					70	5,600	26.31	27.49	Free	Free	Free
★ 08-00217-03008	3	8	4.5	2.85	12°	6	50	7,700	8.71	9.10	9.52	9.99	11.08
★ 08-00217-03012		12					50	7,700	12.88	13.45	14.08	14.78	16.39
★ 08-00217-03016		16					60	7,700	17.05	17.81	18.65	19.56	21.70
★ 08-00217-03020		20					60	7,700	21.22	22.17	23.21	24.35	27.01
★ 08-00217-03025		25					70	8,100	26.43	27.62	28.91	30.33	Free
★ 08-00217-03030		30					70	8,800	31.65	33.06	34.61	36.31	Free
★ 08-00217-04012	4	12	6	3.8	12°	6	50	8,000	13.00	13.58	14.22	14.92	16.55
★ 08-00217-04016		16					60	8,000	17.17	17.94	18.78	19.70	Free
★ 08-00217-04020		20					60	8,000	21.34	22.30	23.34	24.49	Free
★ 08-00217-04025		25					70	8,500	26.56	27.74	29.04	Free	Free
★ 08-00217-04030		30					70	9,400	31.77	33.19	34.75	Free	Free
★ 08-00217-04035		35					80	10,100	36.98	38.64	Free	Free	Free
★ 08-00217-04040		40					90	10,700	42.20	44.09	Free	Free	Free
★ 08-00217-05016	5	16	7.5	4.8	12°	6	60	10,100	17.17	17.94	18.78	Free	Free
★ 08-00217-05025		25					70	10,600	26.56	27.74	Free	Free	Free
★ 08-00217-05035		35					80	11,000	36.98	Free	Free	Free	Free
★ 08-00217-05050		50					110	15,400	52.63	Free	Free	Free	Free
★ 08-00217-06020	6	20	9	5.8	–	6	80	10,100	Free	Free	Free	Free	Free
★ 08-00217-06030		30					90	10,600	Free	Free	Free	Free	Free
★ 08-00217-06040		40					100	11,000	Free	Free	Free	Free	Free
★ 08-00217-06050		50					110	15,400	Free	Free	Free	Free	Free

订购方法 How to Order

请指定MHRH430 外径(D)×颈长(ℓ1)。
When you order, indicate MHRH430 (D)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

P 调质钢 Prehardened Steel ◎
H ～52高硬度钢 HRC Hardened Steel ◎
H ～60高硬度钢 HRC Hardened Steel ◎
H ～65高硬度钢 HRC Hardened Steel ○
M 不锈钢 Stainless Steel ○
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy ○
常规系列 无限白金涂层 长颈造型 Regular Line MUGEN PREMIUM Long Neck Type

加工材料 Work Material		碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
1	4	25,000	2,000	0.05	0.6	23,000	1,800	0.04	0.5	18,000	1,600	0.03	0.4	14,000	1,000	0.02	0.3
	6	20,000	1,800	0.03	0.6	18,000	1,400	0.02	0.5	14,000	1,200	0.01	0.4	10,000	800	0.007	0.3
	8	18,000	1,600	0.03	0.6	16,000	1,200	0.02	0.5	12,000	1,000	0.01	0.4	8,000	680	0.005	0.3
	10	16,000	1,200	0.02	0.6	14,000	1,000	0.01	0.5	10,000	800	0.007	0.4	6,000	500	0.005	0.3
1.2	6	20,000	1,800	0.04	0.7	18,000	1,400	0.03	0.6	14,000	1,200	0.02	0.5	10,000	800	0.01	0.4
	8	18,000	1,600	0.04	0.7	16,000	1,200	0.02	0.6	12,000	1,000	0.01	0.5	8,000	680	0.007	0.4
	10	16,000	1,200	0.03	0.7	12,000	1,000	0.02	0.6	10,000	850	0.01	0.5	8,000	600	0.005	0.4
	12	14,000	1,200	0.02	0.7	10,000	1,000	0.01	0.6	9,000	800	0.007	0.5	7,000	500	0.005	0.4
1.5	6	23,000	2,000	0.06	0.9	20,000	1,600	0.04	0.75	18,000	1,400	0.03	0.6	14,000	1,000	0.02	0.45
	8	20,000	1,800	0.06	0.9	18,000	1,200	0.03	0.75	14,000	1,200	0.03	0.6	10,000	750	0.01	0.45
	10	20,000	1,600	0.04	0.9	16,000	1,000	0.03	0.75	14,000	1,000	0.02	0.6	10,000	700	0.01	0.45
	12	16,000	1,400	0.04	0.9	14,000	1,000	0.02	0.75	12,000	850	0.02	0.6	8,000	620	0.007	0.45
	14	14,000	1,200	0.03	0.9	12,000	800	0.02	0.75	10,000	750	0.01	0.6	7,500	500	0.007	0.45
	16	12,000	1,000	0.02	0.9	10,000	720	0.01	0.75	9,000	600	0.007	0.6	6,800	400	0.005	0.45
1.8	6	20,000	2,000	0.07	1	18,000	1,800	0.05	0.9	15,000	1,500	0.04	0.7	12,000	1,200	0.03	0.5
	8	18,000	1,800	0.06	1	16,000	1,600	0.04	0.9	12,000	1,200	0.03	0.7	9,500	1,000	0.02	0.5
	10	16,000	1,600	0.06	1	14,000	1,400	0.04	0.9	12,000	1,000	0.03	0.7	9,500	900	0.02	0.5
	12	14,000	1,400	0.05	1	12,000	1,200	0.03	0.9	10,000	1,000	0.02	0.7	8,200	800	0.01	0.5
	14	14,000	1,400	0.05	1	12,000	1,200	0.03	0.9	10,000	860	0.02	0.7	8,200	720	0.01	0.5
	16	12,000	1,200	0.04	1	10,000	1,000	0.02	0.9	9,200	800	0.01	0.7	7,500	680	0.007	0.5
	18	10,000	1,000	0.04	1	9,200	820	0.02	0.9	8,500	740	0.01	0.7	6,000	640	0.007	0.5
2	6	20,000	2,000	0.08	1.2	18,000	1,800	0.06	1	15,000	1,500	0.05	0.8	12,000	1,200	0.03	0.6
	8	18,000	1,800	0.07	1.2	16,000	1,600	0.05	1	12,000	1,200	0.04	0.8	9,500	1,000	0.02	0.6
	10	16,000	1,600	0.06	1.2	14,000	1,400	0.05	1	12,000	1,000	0.04	0.8	9,500	900	0.02	0.6
	12	14,000	1,400	0.05	1.2	12,000	1,200	0.04	1	10,000	1,000	0.03	0.8	8,200	800	0.01	0.6
	14	14,000	1,400	0.04	1.2	12,000	1,200	0.03	1	10,000	860	0.02	0.8	8,200	720	0.007	0.6
	16	12,000	1,200	0.04	1.2	10,000	1,000	0.03	1	9,200	800	0.02	0.8	7,500	680	0.007	0.6
	18	10,000	1,000	0.03	1.2	9,200	820	0.02	1	8,500	740	0.01	0.8	6,000	640	0.005	0.6
	20	10,000	800	0.03	1.2	9,200	760	0.02	1	8,500	680	0.01	0.8	6,000	520	0.005	0.6
2.5	8	16,000	2,000	0.08	1.5	14,000	1,600	0.07	1.25	10,000	1,400	0.05	1	8,000	1,000	0.03	0.75
	12	14,000	1,600	0.07	1.5	12,000	1,400	0.06	1.25	9,600	1,200	0.04	1	7,500	960	0.02	0.75
	16	12,000	1,400	0.06	1.5	10,000	1,200	0.05	1.25	8,500	1,000	0.02	1	7,000	800	0.01	0.75
	20	10,000	1,200	0.06	1.5	8,200	1,000	0.05	1.25	7,500	1,000	0.02	1	5,000	800	0.01	0.75
	25	8,000	1,000	0.05	1.5	7,000	800	0.03	1.25	6,500	680	0.01	1	4,500	550	0.005	0.75

加工材料 Work Material		碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80 HPM1 (～43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
3	8	16,000	2,000	0.15	1.8	14,000	1,800	0.1	1.5	10,000	1,600	0.07	1.2	8,000	1,200	0.05	0.9
	12	14,000	1,800	0.1	1.8	12,000	1,600	0.08	1.5	9,200	1,400	0.06	1.2	7,200	1,000	0.04	0.9
	16	12,000	1,600	0.08	1.8	10,000	1,400	0.07	1.5	8,500	1,200	0.05	1.2	6,500	800	0.03	0.9
	20	10,000	1,600	0.08	1.8	9,000	1,400	0.07	1.5	7,800	1,200	0.04	1.2	5,800	800	0.02	0.9
	25	9,000	1,400	0.07	1.8	8,200	1,200	0.06	1.5	7,000	1,000	0.03	1.2	5,000	720	0.01	0.9
	30	8,000	1,400	0.05	1.8	7,000	1,200	0.03	1.5	6,500	1,000	0.02	1.2	4,500	650	0.007	0.9
4	12	12,000	2,000	0.2	2.5	9,500	2,000	0.15	2	8,000	1,600	0.08	1.6	7,000	1,000	0.06	1.2
	16	10,000	2,000	0.15	2.5	8,000	1,800	0.1	2	7,000	1,400	0.06	1.6	6,000	1,200	0.05	1.2
	20	8,500	1,800	0.12	2.5	7,000	1,600	0.08	2	6,500	1,200	0.05	1.6	5,500	1,000	0.04	1.2
	25	8,000	1,600	0.1	2.5	6,000	1,400	0.07	2	5,200	1,200	0.04	1.6	4,500	1,000	0.03	1.2
	30	6,800	1,400	0.08	2.5	4,800	1,000	0.05	2	4,200	850	0.03	1.6	3,500	620	0.02	1.2
	35	5,500	1,000	0.07	2.5	4,200	880	0.04	2	3,800	720	0.02	1.6	3,000	550	0.01	1.2
	40	4,000	860	0.05	2.5	3,600	720	0.03	2	3,000	600	0.01	1.6	2,500	400	0.007	1.2
5	16	10,000	2,000	0.2	3	7,000	1,800	0.12	2.5	5,500	1,600	0.08	2	4,500	1,000	0.06	1.5
	25	8,000	1,600	0.15	3	5,800	1,400	0.07	2.5	4,200	1,200	0.05	2	3,000	800	0.03	1.5
	35	6,000	1,200	0.1	3	4,200	900	0.05	2.5	3,500	800	0.03	2	2,500	600	0.02	1.5
	50	3,500	750	0.07	3	2,800	620	0.03	2.5	2,500	500	0.02	2	1,500	350	0.01	1.5
6	20	8,000	2,000	0.25	4	6,500	1,600	0.18	3	4,500	1,400	0.08	2.4	3,500	920	0.06	1.8
	30	7,000	1,600	0.2	4	4,500	1,200	0.12	3	3,500	1,000	0.06	2.4	2,500	660	0.04	1.8
	40	4,500	1,200	0.15	4	3,000	1,000	0.08	3	2,500	800	0.03	2.4	2,000	550	0.02	1.8
	50	3,000	850	0.1	4	2,500	700	0.05	3	2,000	500	0.02	2.4	1,500	380	0.01	1.8

备 注 Notes

※1 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 切削高硬度钢时，建议使用油雾冷却方式。
※4 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※5 L(颈长)/D(外径)超过8倍时，立面附近的进给速度须调整至50%以下，切深量：ae调整至30%以下。
※6 沟槽切削时建议参考切削参数表，切深量ap及进给速度设定为50%以下，并采用来回切削加工方式。
※7 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。

※1 These recommended cutting conditions indicate just reference. It should be adjusted according to milling shape and machine type.
※2 ap:Axial Depth of Cut, ae:Radial Depth of Cut.
※3 Recommend to use oil mist coolant for machining hardened steel.
※4 Recommend to apply herical or ramping for approaching into axial direction.
※5 Adjust feed rate 50% lower and cutting depth (ae) 30% lower for milling deep wall area. When L/D exceeds 8 for stable milling.
※6 For slotting, recommend reciprocating milling by adjusting feed & ap in below 50% of recommended milling condition.
※7 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.

MHRH430
切削参数参考表
Recommended Milling Conditions

P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
H ～60 HRC 高硬度钢 Hardened Steel
H ～65 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy
常规系列 无限白金涂层 长颈造型 Regular Line MUGEN PREMIUM Long Neck Type

MSUSZ440-LN

规格 Size φ1 ～ φ6

Premium ≦40 HRC

无限白金涂层 SUS用高效率 “Z” 长颈铣刀

MUGEN COATING PREMIUM 4-Flute Long Neck High Efficient "Z" End Mill for Stainless Steels

共有33种规格 Total 33 sizes



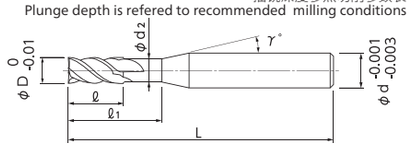
不锈钢・耐热合金加工用
可进行插铣～沟槽的连续加工　不等分割和不等螺旋形状

For machining on stainless steels and heat resistant alloy. Continuous machining from Plunging to slotting　Unequal flute spacing and unequal helix angle design

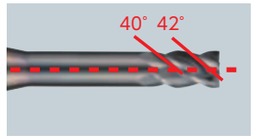




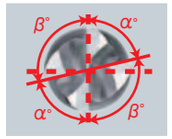
插铣深度参照切削参数表
Plunge depth is refered to recommended milling conditions



- ●采用不等分割、不等螺旋角和提高刃部刚性的设计，可最大限度地抑制振刀，实现高效率加工！
- ●采用新开发的特殊刃刃形状，可实现应对不锈钢侧面加工、沟槽加工、插铣加工进刀的多种性能。
- ●采用耐热性高的无限白金涂层，可进行延长刀具寿命的稳定加工。
- ●防止干涉加工材料的长颈型，颈长备有外径的3倍、4倍、5倍可选。
- ●Unequal flute spacing, unequal helix angle and high rigid end profile design to minimize chatter realize high efficient machining.
- ●New developed special edge profile realized multi-functional performance of side milling, slot milling and plunging approaches on stainless steel.
- ●Optimized high heat-resistance MUGEN COATING PREMIUM to realize stable long time machining.
- ●Long neck type prevent interference with work material, the Under Neck length lined up with L/D=3 to 5.



不等螺旋角
Unequal Helix Angle



不等分割
Unequal Flute Spacing

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00153-01013	1	1.5	3	0.95	12°	4	50	5,400
08-00153-01014			4	0.95	12°	4	50	5,500
08-00153-01015			5	0.95	12°	4	50	5,700
08-00153-01513	1.5	2.3	4.5	1.45	12°	4	50	6,300
08-00153-01514			6	1.45	12°	4	50	6,600
08-00153-01515			7.5	1.45	12°	4	50	6,900
08-00153-02013	2	3	6	1.94	12°	6	50	6,900
08-00153-02014			8	1.94	12°	6	50	7,300
08-00153-02015			10	1.94	12°	6	50	7,600
08-00153-02513	2.5	3.8	7.5	2.4	12°	6	50	6,900
08-00153-02514			10	2.4	12°	6	50	7,400
08-00153-02515			12.5	2.4	12°	6	60	7,900
★ 08-00153-03013	3	4.5	9	2.85	12°	6	50	6,900
★ 08-00153-03014			12	2.85	12°	6	50	7,300
★ 08-00153-03015			15	2.85	12°	6	60	7,600
★ 08-00153-03513	3.5	5.3	10.5	3.35	12°	6	50	7,300
★ 08-00153-03514			14	3.35	12°	6	60	7,900
★ 08-00153-03515			17.5	3.35	12°	6	60	8,400
★ 08-00153-04013	4	6	12	3.8	12°	6	50	7,300
★ 08-00153-04014			16	3.8	12°	6	60	7,700
★ 08-00153-04015			20	3.8	12°	6	60	8,000
★ 08-00153-04513	4.5	6.8	13.5	4.3	12°	6	50	7,700
★ 08-00153-04514			18	4.3	12°	6	60	8,400
★ 08-00153-04515			22.5	4.3	12°	6	60	8,800
★ 08-00153-05013	5	7.5	15	4.8	12°	6	50	7,700
★ 08-00153-05014			20	4.8	12°	6	60	8,100
★ 08-00153-05015			25	4.8	12°	6	60	8,500
★ 08-00153-05513	5.5	8.3	16.5	5.3	12°	6	50	8,400
★ 08-00153-05514			22	5.3	12°	6	60	9,000
★ 08-00153-05515			27.5	5.3	12°	6	60	9,500
★ 08-00153-06013	6	9	18	5.8	–	6	60	8,400
★ 08-00153-06014			24	5.8	–	6	60	8,800
★ 08-00153-06015			30	5.8	–	6	70	9,200

订购方法 How to Order

请指定MSUSZ440-LN 外径(D)×刃长(ℓ)×颈长(ℓ1)。
When you order, indicate MSUSZ440-LN (D)×(ℓ)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

◎ 不锈钢 Stainless Steel M

◎ 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy S

高效率加工 High Efficient Milling

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			不锈钢 Stainless Steels SUS304						钛合金 Titanium Alloy Ti-6Al-4V					
外径 Dia.	颈长 Under Neck Length	L(颈长)/D(刃径) L/D	侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging	
			主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
			min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min
1	3	3	17,000	600	14,000	180	14,000	30	15,300	600	12,600	180	12,600	30
	4	4	15,000	450	12,000	150	12,000	20	13,500	450	10,800	150	10,800	20
	5	5	12,000	200	10,000	110	10,000	20	10,800	200	9,000	110	9,000	20
1.5	4.5	3	12,000	650	9,600	200	9,600	30	10,800	650	8,700	200	8,700	30
	6	4	10,300	480	8,500	160	8,500	20	9,300	480	7,700	160	7,700	20
	7.5	5	8,500	250	7,300	120	7,300	20	7,700	250	6,600	120	6,600	20
2	6	3	9,400	780	8,000	210	8,000	30	8,500	780	7,200	210	7,200	30
	8	4	8,000	520	7,200	170	7,200	20	7,200	520	6,500	170	6,500	20
	10	5	7,000	280	6,000	140	6,000	20	6,300	280	5,400	140	5,400	20
2.5	7.5	3	7,700	900	6,800	240	6,800	30	7,000	900	6,100	240	6,100	30
	10	4	6,500	580	6,100	180	6,100	20	5,900	580	5,500	180	5,500	20
	12.5	5	5,800	330	5,200	140	5,200	20	5,200	330	4,700	140	4,700	20
3	9	3	6,500	950	6,200	270	6,200	30	5,900	950	5,600	270	5,600	30
	12	4	5,500	650	5,200	200	5,200	20	5,000	650	4,700	200	4,700	20
	15	5	5,000	350	4,400	150	4,400	20	4,500	350	4,000	150	4,000	20
3.5	10.5	3	6,000	1,000	5,400	300	5,400	30	5,400	1,000	4,900	300	4,900	30
	14	4	5,000	700	4,500	210	4,500	20	4,500	700	4,000	210	4,000	20
	17.5	5	4,500	350	3,800	150	3,800	20	4,100	350	3,400	150	3,400	20
4	12	3	5,800	1,050	4,800	300	4,800	30	5,300	1,050	4,300	300	4,300	30
	16	4	4,600	700	4,000	210	4,000	20	4,200	700	3,600	210	3,600	20
	20	5	4,200	380	3,400	150	3,400	20	6,800	380	3,100	150	3,100	20
4.5	13.5	3	5,600	1,100	4,500	300	4,500	30	5,000	1,100	4,000	300	4,000	30
	18	4	4,400	720	3,600	220	3,600	20	4,000	720	3,200	220	3,200	20
	22.5	5	4,000	380	3,100	150	3,100	20	3,600	380	2,800	150	2,800	20
5	15	3	5,400	1,100	4,100	300	4,100	30	4,900	1,100	3,700	300	3,700	30
	20	4	4,300	720	3,300	220	3,300	20	3,900	720	3,000	220	3,000	20
	25	5	3,900	400	2,800	150	2,800	20	3,500	400	2,500	150	2,500	20
5.5	16.5	3	5,100	1,100	3,900	300	3,900	30	4,600	1,100	3,500	300	3,500	30
	22	4	4,200	750	3,000	220	3,000	20	3,800	750	2,700	220	2,700	20
	27.5	5	3,700	400	2,600	150	2,600	20	3,300	400	2,300	150	2,300	20
6	18	3	4,800	1,100	3,600	300	3,600	30	4,300	1,100	3,200	300	3,200	30
	24	4	4,000	750	2,800	220	2,800	20	3,600	750	2,500	220	2,500	20
	30	5	3,600	400	2,400	150	2,400	20	3,200	400	2,200	150	2,200	20

切深量 Depth of Cut

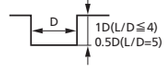
(D:外径 Dia.)

侧面 Side Milling



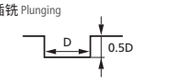
0.12D(L/D=3)
0.09D(L/D=4)
0.075D(L/D=5)

沟槽 Slotting



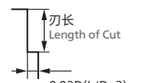
1D(L/D≦4)
0.5D(L/D=5)

插铣 Plunging



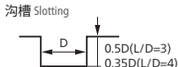
0.5D

侧面 Side Milling



0.03D(L/D=3)
0.025D(L/D=4)
0.02D(L/D=5)

沟槽 Slotting



0.5D(L/D=3)
0.35D(L/D=4)
0.25D(L/D=5)

插铣 Plunging



0.25D

备注 Notes

※1 测量刀具长度时请测量子刃。
※2 请根据机床刚性和工件的夹持状态等调整切削参数。
　实际加工时请根据加工形状、目的以及所用的机床等调整切削参数。
※3 请以相同的比率调整主轴转速和进给速度。
※4 建议使用水溶性切削方式。
※5 供应冷却液时请尽量增大流量、加高压力，以排出切屑。
※6 插铣时若排屑不佳，请调整轴向切深量和进给速度。
※7 排屑不佳可能会导致刀具崩刃和折断，敬请注意。
※8 建议使用刚性较大的铣刀刀柄和机床。
※9 请尽量缩短刀具的伸出量。

※1 Please choose the short end tooth when measure the tool length.
※2 Adjust milling condition conforming with machine rigidity and clamping condition.
　Final milling conditions are subject to machining profile, purpose and machine status.
※3 Adjust both Spindle Speed and Feed at the same rate.
※4 Water-soluble fluid is recommended.
※5 Please increasing the coolant flow rate and pressure as much as possible, and supply it sufficiently to the machining point and flute.
※6 Please change the Depth of Cut or Feed when chips could not remove smoothly during plunging.
※7 Please be noted there would be a possible tool chipping or breakage when the chip removal is insufficient.
※8 Use a rigid and precise machine and chuck holder.
※9 Overhang of end mill should be as short as possible from spindle nose.

长颈 Long Neck 平底
涂层 Coating Square

M 不锈钢 Stainless Steel ◎

S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy ◎

高效率加工 High Efficient Milling

MHR230

规格 Size ϕ 0.1 ～ ϕ 6

≦52 HRC

无限涂层 2刃长颈平底铣刀（深沟加工用）
MUGEN COATING 2 -Flute Long Neck End Mill

共有217种规格
Total 217 sizes

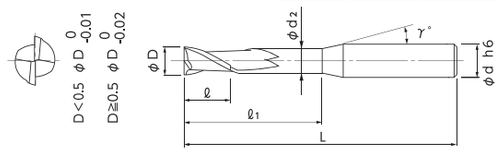
MHR230
无限涂层 2刃长颈平底铣刀（深沟加工用）
MUGEN COATING 2 -Flute Long Neck End Mill

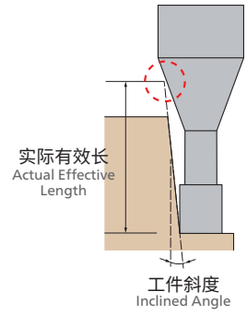
2刃长颈平底铣刀。L/D最大30倍

2-flute long neck square end mill. Maximum L/D=30

MG Side | 2 Slot | 30° Face







- NS TOOL独创的深沟用铣刀，采用无限涂层。
- 适用于深沟加工的长颈避空造型。
- MUGEN COATING has been put on our original end mill for deep rib.
- The Long Neck type is suitable for narrow and deep machining.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00200-01003	0.1	0.3	0.15	0.085	12°	4	45	9,800	0.34	0.36	0.38	0.40	0.44
08-00200-01005		0.5					45	10,700	0.55	0.58	0.61	0.64	0.71
08-00200-01007		0.75					45	11,900	0.81	0.85	0.89	0.93	1.04
08-00200-01010		1					45	13,300	1.07	1.12	1.18	1.23	1.37
08-00200-01503	0.15	0.3	0.2	0.13	12°	4	45	9,100	0.36	0.37	0.39	0.41	0.46
08-00200-01505		0.5					45	10,000	0.57	0.59	0.62	0.65	0.72
08-00200-01507		0.75					45	11,000	0.83	0.86	0.90	0.95	1.05
08-00200-01510		1					45	11,000	1.09	1.14	1.19	1.25	1.38
08-00200-01515		1.5					45	12,100	1.61	1.68	1.76	1.85	2.05
08-00200-02005	0.2	0.5	0.3	0.18	12°	4	45	6,400	0.57	0.59	0.62	0.65	0.72
08-00200-02007		0.75					45	6,400	0.83	0.86	0.90	0.95	1.05
08-00200-02010		1					45	6,900	1.09	1.14	1.19	1.25	1.38
08-00200-02015		1.5					45	8,400	1.61	1.68	1.76	1.85	2.05
08-00200-02020		2					45	9,500	2.13	2.23	2.33	2.44	2.71
08-00200-02025		2.5					45	9,500	2.65	2.77	2.90	3.04	3.38
08-00200-02030		3					45	9,800	3.17	3.31	3.47	3.64	4.04
08-00200-02035		3.5					45	10,800	3.69	3.86	4.04	4.24	4.70
08-00200-02040		4					45	11,800	4.22	4.40	4.61	4.84	5.37
08-00200-03010	0.3	1	0.4	0.28	12°	4	45	5,700	1.09	1.14	1.19	1.25	1.38
08-00200-03015		1.5					45	5,700	1.61	1.68	1.76	1.85	2.05
08-00200-03020		2					45	6,900	2.13	2.23	2.33	2.44	2.71
08-00200-03025		2.5					45	7,200	2.65	2.77	2.90	3.04	3.38
08-00200-03030		3					45	7,200	3.17	3.31	3.47	3.64	4.04
08-00200-03040		4					45	8,300	4.22	4.40	4.61	4.84	5.37
08-00200-03050		5					45	8,300	5.26	5.49	5.75	6.03	6.69
08-00200-03060		6					45	9,200	6.30	6.58	6.89	7.23	8.02
08-00200-03090		9					45	9,800	9.43	9.85	10.31	10.82	12.00
08-00200-04010	0.4	1	0.6	0.37	12°	4	45	4,100	1.11	1.16	1.22	1.28	1.42
08-00200-04015		1.5					45	4,100	1.63	1.71	1.79	1.87	2.08
08-00200-04020		2					45	4,100	2.15	2.25	2.36	2.47	2.74
08-00200-04025		2.5					45	4,100	2.68	2.80	2.93	3.07	3.41
08-00200-04030		3					45	4,100	3.20	3.34	3.50	3.67	4.07

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00200-04035	0.4	3.5	0.6	0.37	12°	4	45	4,100	3.72	3.89	4.07	4.27	4.73
08-00200-04040		4					45	4,100	4.24	4.43	4.64	4.87	5.40
08-00200-04050		5					45	4,100	5.28	5.52	5.78	6.06	6.72
08-00200-04060		6					45	5,100	6.33	6.61	6.92	7.26	8.05
08-00200-04070		7					45	6,300	7.37	7.70	8.06	8.46	9.38
08-00200-04080		8					45	8,900	8.41	8.79	9.20	9.65	10.71
08-00200-04090		9					45	8,900	9.45	9.88	10.34	10.85	12.03
08-00200-04100		10					45	9,800	10.50	10.97	11.48	12.05	13.36
08-00200-04120		12					45	9,800	12.58	13.15	13.76	14.44	16.02
08-00200-05010	0.5	1	0.7	0.46	12°	4	45	2,900	1.14	1.19	1.24	1.30	1.45
08-00200-05015		1.5					45	2,900	1.66	1.73	1.81	1.90	2.11
08-00200-05020		2					45	2,900	2.18	2.28	2.38	2.50	2.77
08-00200-05025		2.5					45	2,900	2.70	2.82	2.95	3.10	3.44
08-00200-05030		3					45	2,900	3.22	3.37	3.52	3.70	4.10
08-00200-05035		3.5					45	2,900	3.74	3.91	4.09	4.30	4.77
08-00200-05040		4					45	2,900	4.26	4.46	4.66	4.89	5.43
08-00200-05045		4.5					45	2,900	4.79	5.00	5.23	5.49	6.09
08-00200-05050		5					45	2,900	5.31	5.54	5.80	6.09	6.76
08-00200-05060		6					45	2,900	6.35	6.63	6.95	7.29	8.08
08-00200-05070		7					45	4,900	7.39	7.72	8.09	8.48	9.41
08-00200-05080		8					50	4,900	8.44	8.81	9.23	9.68	10.74
08-00200-05090		9					50	4,900	9.48	9.90	10.37	10.88	12.07
08-00200-05100		10					50	4,900	10.52	10.99	11.51	12.07	13.39
08-00200-05120		12					50	5,900	12.61	13.17	13.79	14.47	16.05
08-00200-05150		15					50	6,300	15.74	16.44	17.21	18.06	20.03
08-00200-06015	0.6	1.5	0.9	0.56	12°	4	45	3,200	1.66	1.73	1.81	1.90	2.11
08-00200-06020		2					45	3,200	2.18	2.28	2.38	2.50	2.77
08-00200-06030		3					45	3,200	3.22	3.37	3.52	3.70	4.10
08-00200-06040		4					45	3,200	4.26	4.46	4.66	4.89	5.43
08-00200-06050		5					45	3,200	5.31	5.54	5.80	6.09	6.76
08-00200-06060		6					45	3,200	6.35	6.63	6.95	7.29	8.08
08-00200-06070		7					45	4,000	7.39	7.72	8.09	8.48	9.41

订购方法 How to Order

请指定MHR230外径(D)×颈长(ℓ1)。
When you order, indicate MHR230 (D)×(ℓ1).

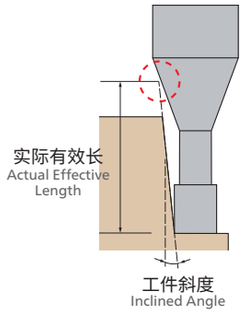
※(γ)为参考值。
※(γ) is reference value.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

MHR230

无限涂层 2刃长颈平底铣刀（深沟加工用）

MUGEN COATING 2 -Flute Long Neck End Mill



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
									30´	1°	1°30´	2°	3°
08-00200-06080	0.6	8	0.9	0.56	12°	4	50	5,100	8.44	8.81	9.23	9.68	10.74
08-00200-06090		9					50	5,900	9.48	9.90	10.37	10.88	12.07
08-00200-06100		10					50	5,900	10.52	10.99	11.51	12.07	13.39
08-00200-06120		12					50	6,600	12.61	13.17	13.79	14.47	16.05
08-00200-06150		15					50	7,600	15.74	16.44	17.21	18.06	20.03
08-00200-06180		18					50	8,000	18.86	19.71	20.63	21.65	24.01
08-00200-07020	0.7	2	1	0.66	12°	4	45	3,600	2.18	2.28	2.38	2.50	2.77
08-00200-07040		4					45	3,600	4.26	4.46	4.66	4.89	5.43
08-00200-07060		6					45	3,600	6.35	6.63	6.95	7.29	8.08
08-00200-07080		8					50	5,800	8.44	8.81	9.23	9.68	10.74
08-00200-07100		10					50	7,600	10.52	10.99	11.51	12.07	13.39
08-00200-08030	0.8	3	1.2	0.76	12°	4	45	3,500	3.22	3.37	3.52	3.70	4.10
08-00200-08040		4					45	3,500	4.26	4.46	4.66	4.89	5.43
08-00200-08050		5					45	3,500	5.31	5.54	5.80	6.09	6.76
08-00200-08060		6					45	3,500	6.35	6.63	6.95	7.29	8.08
08-00200-08080		8					50	3,500	8.44	8.81	9.23	9.68	10.74
08-00200-08100		10					50	5,100	10.52	10.99	11.51	12.07	13.39
08-00200-08120		12					50	5,800	12.61	13.17	13.79	14.47	16.05
08-00200-08140		14					50	6,600	14.69	15.35	16.07	16.86	18.70
08-00200-08160		16					50	6,600	16.78	17.53	18.35	19.25	21.36
08-00200-08200		20					60	7,400	20.95	21.89	22.91	24.04	26.66
08-00200-08240		24					60	8,100	25.12	26.24	27.47	28.83	Free
08-00200-09040	0.9	4	1.4	0.86	12°	4	45	4,000	4.26	4.46	4.66	4.89	5.43
08-00200-09060		6					45	4,000	6.35	6.63	6.95	7.29	8.08
08-00200-09080		8					50	4,000	8.44	8.81	9.23	9.68	10.74
08-00200-09100		10					50	4,000	10.52	10.99	11.51	12.07	13.39
08-00200-09120		12					50	4,600	12.61	13.17	13.79	14.47	16.05
08-00200-09150		15					60	7,600	15.74	16.44	17.21	18.06	20.03
08-00200-10020	1	2	1.5	0.95	12°	4	50	3,200	2.20	2.30	2.41	2.53	2.81
08-00200-10030		3					50	3,200	3.25	3.39	3.55	3.73	4.13
08-00200-10040		4					50	3,200	4.29	4.48	4.69	4.92	5.46
08-00200-10050		5					50	3,200	5.33	5.57	5.83	6.12	6.79

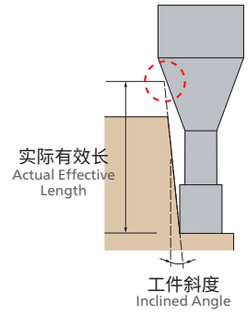
订购方法 How to Order

请指定MHR230外径 (D)×颈长 (ℓ1)。 ※(γ)为参考值。
When you order, indicate MHR230 (D)×(ℓ1). ※(γ) is reference value.

MHR230

无限涂层 2刃长颈平底铣刀（深沟加工用）

MUGEN COATING 2 -Flute Long Neck End Mill



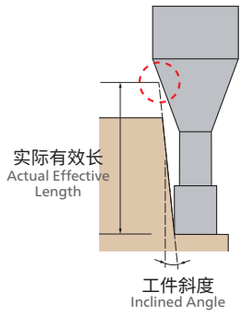
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
									30´	1°	1°30´	2°	3°
08-00200-10060	1	6	1.5	0.95	12°	4	50	3,200	6.37	6.66	6.97	7.32	8.11
08-00200-10070		7					50	3,200	7.42	7.75	8.11	8.51	9.44
08-00200-10080		8					50	3,200	8.46	8.84	9.25	9.71	10.77
08-00200-10090		9					50	3,200	9.50	9.93	10.39	10.91	12.10
08-00200-10100		10					50	3,200	10.55	11.02	11.53	12.10	13.42
08-00200-10120		12					50	3,200	12.63	13.20	13.82	14.49	16.08
08-00200-10140		14					50	3,200	14.72	15.38	16.10	16.89	18.73
08-00200-10160		16					60	5,100	16.80	17.55	18.38	19.28	21.39
08-00200-10180		18					60	5,100	18.89	19.73	20.66	21.67	24.04
08-00200-10200		20					60	5,100	20.97	21.91	22.94	24.07	26.70
08-00200-10220		22					60	5,900	23.06	24.09	25.22	26.46	Free
08-00200-10250		25					70	5,900	26.19	27.36	28.64	30.05	Free
08-00200-10300		30					70	6,600	31.40	32.81	34.34	36.03	Free
08-00200-12040	1.2	4	1.8	1.15	12°	4	50	3,400	4.29	4.48	4.69	4.92	5.46
08-00200-12060		6					50	3,400	6.37	6.66	6.97	7.32	8.11
08-00200-12080		8					50	3,400	8.46	8.84	9.25	9.71	10.77
08-00200-12100		10					50	3,400	10.55	11.02	11.53	12.10	13.42
08-00200-12120		12					50	3,400	12.63	13.20	13.82	14.49	16.08
08-00200-12160		16					60	5,300	16.80	17.55	18.38	19.28	21.39
08-00200-12200		20					60	5,300	20.97	21.91	22.94	24.07	26.70
08-00200-14060	1.4	6	2.1	1.35	12°	4	50	3,500	6.37	6.66	6.97	7.32	8.11
08-00200-14080		8					50	3,500	8.46	8.84	9.25	9.71	10.77
08-00200-14100		10					50	3,500	10.55	11.02	11.53	12.10	13.42
08-00200-14120		12					50	3,500	12.63	13.20	13.82	14.49	16.08
08-00200-14140		14					60	3,500	14.72	15.38	16.10	16.89	18.73
08-00200-14160		16					60	4,000	16.80	17.55	18.38	19.28	21.39
08-00200-14220		22					60	5,400	23.06	24.09	25.22	26.46	Free
08-00200-15040	1.5	4	2.3	1.45	12°	4	50	3,400	4.29	4.48	4.69	4.92	5.46
08-00200-15060		6					50	3,400	6.37	6.66	6.97	7.32	8.11
08-00200-15080		8					50	3,400	8.46	8.84	9.25	9.71	10.77
08-00200-15100		10					50	3,400	10.55	11.02	11.53	12.10	13.42
08-00200-15120		12					50	3,400	12.63	13.20	13.82	14.49	16.08

MHR230

无限涂层 2刃长颈平底铣刀（深沟加工用）

MUGEN COATING 2 -Flute Long Neck End Mill



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
									30´	1°	1°30´	2°	3°
08-00200-15140	1.5	14	2.3	1.45	12°	4	60	3,500	14.72	15.38	16.10	16.89	18.73
08-00200-15160		16					60	3,500	16.80	17.55	18.38	19.28	21.39
08-00200-15180		18					60	3,500	18.89	19.73	20.66	21.67	Free
08-00200-15200		20					60	3,500	20.97	21.91	22.94	24.07	Free
08-00200-15250		25					70	5,100	26.19	27.36	28.64	30.05	Free
08-00200-15300		30					70	5,100	31.40	32.81	34.34	Free	Free
08-00200-15350		35					80	5,800	36.62	38.25	40.05	Free	Free
08-00200-15380		38					80	5,900	39.74	41.52	43.47	Free	Free
08-00200-15400		40					80	6,500	41.83	43.70	45.75	Free	Free
08-00200-15450		45					80	6,500	47.04	49.15	Free	Free	Free
08-00200-16060	1.6	6	2.4	1.55	12°	4	50	3,500	6.37	6.66	6.97	7.32	8.11
08-00200-16080		8					50	3,500	8.46	8.84	9.25	9.71	10.77
08-00200-16100		10					50	3,500	10.55	11.02	11.53	12.10	13.42
08-00200-16120		12					50	3,500	12.63	13.20	13.82	14.49	16.08
08-00200-16140		14					60	3,500	14.72	15.38	16.10	16.89	18.73
08-00200-16160		16					60	3,500	16.80	17.55	18.38	19.28	21.39
08-00200-16180		18					60	3,500	18.89	19.73	20.66	21.67	Free
08-00200-16200		20					60	3,500	20.97	21.91	22.94	24.07	Free
08-00200-16260		26					60	5,400	27.23	28.45	29.78	31.25	Free
08-00200-18060	1.8	6	2.7	1.75	12°	4	50	3,500	6.37	6.66	6.97	7.32	8.11
08-00200-18080		8					50	3,500	8.46	8.84	9.25	9.71	10.77
08-00200-18100		10					50	3,500	10.55	11.02	11.53	12.10	13.42
08-00200-18120		12					50	3,500	12.63	13.20	13.82	14.49	16.08
08-00200-18140		14					50	3,500	14.72	15.38	16.10	16.89	18.73
08-00200-18160		16					60	3,500	16.80	17.55	18.38	19.28	Free
08-00200-18180		18					60	3,500	18.89	19.73	20.66	21.67	Free
08-00200-18200		20					60	3,500	20.97	21.91	22.94	24.07	Free
08-00200-18250		25					70	4,800	26.19	27.36	28.64	30.05	Free
08-00200-20040	2	4	3	1.94	12°	4	50	3,400	4.31	4.51	4.72	4.95	5.49
08-00200-20060		6					50	3,400	6.40	6.69	7.00	7.34	8.15
08-00200-20080		8					50	3,400	8.48	8.86	9.28	9.74	10.80
08-00200-20100		10					50	3,400	10.57	11.04	11.56	12.13	13.45

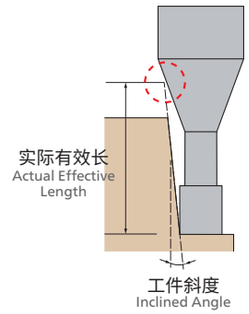
订购方法 How to Order

请指定MHR230外径(D)×颈长(ℓ1)。 ※(γ)为参考值。
When you order, indicate MHR230 (D)×(ℓ1). ※(γ) is reference value.

MHR230

无限涂层 2刃长颈平底铣刀（深沟加工用）

MUGEN COATING 2 -Flute Long Neck End Mill



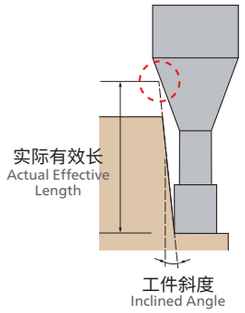
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
									30´	1°	1°30´	2°	3°
08-00200-20120	2	12	3	1.94	12°	4	50	3,400	12.66	13.22	13.84	14.52	16.11
08-00200-20140		14					60	3,400	14.74	15.40	16.12	16.92	18.76
08-00200-20160		16					60	3,400	16.83	17.58	18.40	19.31	Free
08-00200-20180		18					60	3,400	18.91	19.76	20.69	21.70	Free
08-00200-20200		20					60	3,400	21.00	21.94	22.97	24.10	Free
08-00200-20250		25					70	3,400	26.21	27.39	28.67	Free	Free
08-00200-20300		30					70	4,100	31.43	32.83	34.37	Free	Free
08-00200-20350		35					80	4,900	36.64	38.28	Free	Free	Free
08-00200-20400		40					90	6,200	41.85	43.73	Free	Free	Free
08-00200-20500		50					100	7,500	52.28	54.62	Free	Free	Free
08-00200-20600		60					110	8,900	62.71	Free	Free	Free	Free
08-00200-25080	2.5	8	3.7	2.4	12°	4	50	3,500	8.58	8.97	9.39	9.85	10.93
08-00200-25100		10					50	3,500	10.67	11.15	11.67	12.24	13.58
08-00200-25120		12					50	3,500	12.75	13.32	13.95	14.64	Free
08-00200-25140		14					50	3,500	14.84	15.50	16.23	17.03	Free
08-00200-25160		16					60	3,500	16.93	17.68	18.51	19.42	Free
08-00200-25180		18					60	3,500	19.01	19.86	20.79	Free	Free
08-00200-25200		20					60	3,500	21.10	22.04	23.07	Free	Free
08-00200-25250		25					70	3,800	26.31	27.49	Free	Free	Free
08-00200-25300		30					70	3,800	31.52	32.94	Free	Free	Free
08-00200-25400		40					90	5,300	41.95	Free	Free	Free	Free
08-00200-25500		50					100	6,500	52.38	Free	Free	Free	Free
08-00200-30080	3	8	4.5	2.85	12°	6	50	4,700	8.71	9.10	9.52	9.99	11.08
08-00200-30100		10					50	4,700	10.79	11.27	11.80	12.38	13.74
08-00200-30120		12					50	4,700	12.88	13.45	14.08	14.78	16.39
08-00200-30140		14					50	4,700	14.96	15.63	16.36	17.17	19.04
08-00200-30160		16					60	4,700	17.05	17.81	18.65	19.56	21.70
08-00200-30180		18					60	4,700	19.13	19.99	20.93	21.96	24.35
08-00200-30200		20					60	4,700	21.22	22.17	23.21	24.35	27.01
08-00200-30250		25					70	4,700	26.43	27.62	28.91	30.33	Free
08-00200-30300		30					70	5,600	31.65	33.06	34.61	36.31	Free
08-00200-30350		35					80	5,800	36.86	38.51	40.32	42.30	Free

MHR230

无限涂层 2刃长颈平底铣刀（深沟加工用）

MUGEN COATING 2 -Flute Long Neck End Mill



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
									30´	1°	1°30´	2°	3°
08-00200-30400	3	40	4.5	2.85	12°	6	90	5,800	42.08	43.96	46.02	Free	Free
08-00200-30500		50					100	8,100	52.50	54.85	Free	Free	Free
08-00200-40120	4	12	6	3.8	12°	6	50	5,400	13.00	13.58	14.22	14.92	16.55
08-00200-40160		16					60	5,400	17.17	17.94	18.78	19.70	Free
08-00200-40200		20					60	5,400	21.34	22.30	23.34	24.49	Free
08-00200-40250		25					70	5,400	26.56	27.74	29.04	Free	Free
08-00200-40300		30					70	5,400	31.77	33.19	34.75	Free	Free
08-00200-40350		35					80	5,400	36.98	38.64	Free	Free	Free
08-00200-40400		40					90	6,800	42.20	44.09	Free	Free	Free
08-00200-40450		45					90	8,300	47.41	49.53	Free	Free	Free
08-00200-40500		50					100	10,100	52.63	54.98	Free	Free	Free
08-00200-40600		60					110	12,500	63.05	Free	Free	Free	Free
08-00200-50160	5	16	7.5	4.8	12°	6	60	6,800	17.17	17.94	18.78	Free	Free
08-00200-50200		20					60	6,800	21.34	22.30	Free	Free	Free
08-00200-50250		25					70	6,800	26.56	27.74	Free	Free	Free
08-00200-50300		30					80	6,800	31.77	Free	Free	Free	Free
08-00200-50350		35					80	6,800	36.98	Free	Free	Free	Free
08-00200-50400		40					90	6,800	42.20	Free	Free	Free	Free
08-00200-50500		50					110	10,800	52.63	Free	Free	Free	Free
08-00200-50600		60					120	13,200	Free	Free	Free	Free	Free
08-00200-60200	6	20	9	5.8	–	6	80	7,000	Free	Free	Free	Free	Free
08-00200-60300		30					90	7,300	Free	Free	Free	Free	Free
08-00200-60400		40					100	8,500	Free	Free	Free	Free	Free
08-00200-60500		50					110	10,800	Free	Free	Free	Free	Free
08-00200-60600		60					120	13,800	Free	Free	Free	Free	Free

订购方法 How to Order

请指定MHR230外径(D)×颈长(ℓ1)。
When you order, indicate MHR230 (D)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

- 碳素钢 Carbon Steel P
- 合金钢 Alloy Steel P
- 调质钢 Prehardened Steel P
- 高硬度钢～52 Hardened Steel HRC H
- 不锈钢 Stainless Steel M
- 铝合金 Aluminium Alloy N
- 铜合金 Copper N
- 树脂 Resin O

常规系列 无限涂层 长颈造型
Regular Line MUGEN COATING Long Neck Type

切削参数参考表

Recommended Milling Conditions

加工材料 Work Material		碳素钢・合金钢*1・不锈钢*1 Carbon Steels・Alloy Steels*1・Stainless Steels*1 S50C・SCM*1・SKD*1・SUS*1			调质钢 Prehardened Steels NAK55・NAK80・HPM1 (～43HRC)			铜合金・铝合金 Copper・Aluminium Alloy		
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
		min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
0.1	0.3	40,000	150	0.005	40,000	120	0.004	40,000	150	0.006
	0.5	40,000	100	0.004	40,000	75	0.003	40,000	100	0.005
	0.75	40,000	60	0.003	40,000	50	0.002	40,000	60	0.003
	1	40,000	40	0.002	40,000	30	0.002	40,000	40	0.002
0.15	0.3	40,000	200	0.005	40,000	150	0.004	40,000	200	0.008
	0.5	40,000	150	0.005	40,000	120	0.004	40,000	150	0.008
	0.75	40,000	100	0.004	40,000	90	0.003	40,000	100	0.006
	1	40,000	80	0.003	40,000	60	0.002	40,000	80	0.004
	1.5	40,000	50	0.002	35,000	40	0.002	40,000	50	0.003
0.2	0.5	40,000	330	0.01	40,000	250	0.007	40,000	330	0.012
	0.75	40,000	280	0.008	40,000	220	0.006	40,000	280	0.01
	1	40,000	250	0.007	40,000	180	0.005	40,000	250	0.008
	1.5	40,000	180	0.005	35,000	120	0.004	40,000	180	0.006
	2	40,000	100	0.003	35,000	65	0.002	40,000	100	0.004
	2.5	35,000	80	0.003	30,000	50	0.002	40,000	90	0.003
	3	30,000	60	0.002	25,000	40	0.002	35,000	70	0.002
	3.5	25,000	40	0.002	22,000	30	0.002	30,000	50	0.002
	4	23,000	30	0.001	20,000	20	0.001	25,000	35	0.001
0.3	1	40,000	400	0.02	35,000	260	0.015	40,000	400	0.024
	1.5	40,000	350	0.015	35,000	230	0.01	40,000	350	0.018
	2	35,000	300	0.01	30,000	180	0.007	40,000	320	0.012
	2.5	30,000	250	0.007	25,000	160	0.005	35,000	280	0.008
	3	30,000	200	0.005	25,000	130	0.004	35,000	250	0.006
	4	25,000	120	0.004	22,000	80	0.003	30,000	150	0.004
	5	22,000	80	0.003	20,000	55	0.002	25,000	90	0.003
	6	20,000	60	0.002	18,000	40	0.002	22,000	65	0.002
	9	18,000	30	0.001	16,000	20	0.001	20,000	35	0.001
0.4	1	35,000	500	0.025	30,000	330	0.018	40,000	600	0.03
	1.5	35,000	450	0.02	30,000	280	0.014	40,000	500	0.026
	2	35,000	400	0.02	30,000	260	0.014	40,000	450	0.024
	2.5	30,000	350	0.015	25,000	230	0.01	40,000	400	0.02
	3	30,000	300	0.015	25,000	190	0.01	35,000	350	0.018
	3.5	25,000	250	0.01	25,000	160	0.008	35,000	280	0.015
	4	25,000	200	0.01	22,000	140	0.007	30,000	240	0.012
	5	22,000	160	0.008	20,000	110	0.005	25,000	180	0.01
	6	20,000	120	0.005	18,000	80	0.003	22,000	130	0.006
	7	18,000	100	0.003	16,000	70	0.002	20,000	110	0.003
	8	18,000	80	0.002	16,000	60	0.002	20,000	85	0.002
	9	18,000	70	0.002	16,000	50	0.002	20,000	75	0.002
	10	18,000	60	0.002	16,000	40	0.002	20,000	65	0.002
	12	18,000	40	0.002	16,000	30	0.002	20,000	45	0.002
0.5	1	30,000	550	0.03	25,000	350	0.022	35,000	650	0.036
	1.5	30,000	520	0.028	25,000	330	0.02	35,000	630	0.033
	2	30,000	500	0.025	25,000	320	0.018	35,000	600	0.03
	2.5	30,000	470	0.023	25,000	290	0.016	35,000	580	0.027
	3	30,000	450	0.02	25,000	280	0.014	35,000	550	0.024
	3.5	30,000	420	0.018	22,000	250	0.012	30,000	500	0.021
	4	25,000	350	0.015	22,000	230	0.01	30,000	420	0.018
	4.5	25,000	320	0.013	20,000	200	0.008	30,000	380	0.015
	5	25,000	300	0.01	20,000	180	0.007	30,000	350	0.012

*1 切削合金钢、不锈钢时，请将主轴转速及进给速度降低至80%时的值作为参考值。
*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

- P 碳素钢 Carbon Steel
- P 合金钢 Alloy Steel
- P 调质钢 Prehardened Steel
- H ～52高硬度钢 HRC Hardened Steel
- M 不锈钢 Stainless Steel
- N 铝合金 Aluminium Alloy
- N 铜合金 Copper
- O 树脂 Resin

常规系列 无限涂层 长颈造型
Regular Line MUGEN COATING Long Neck Type

加工材料 Work Material		碳素钢・合金钢*1・不锈钢*1 Carbon Steels・Alloy Steels*1・Stainless Steels*1 S50C・SCM*1・SKD*1・SUS*1			调质钢 Prehardened Steels NAK55・NAK80・HPM1 (～43HRC)			铜合金・铝合金 Copper・Aluminium Alloy		
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
		min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
0.5	6	20,000	200	0.008	18,000	140	0.005	25,000	250	0.01
	7	20,000	180	0.005	16,000	110	0.003	22,000	200	0.006
	8	18,000	150	0.003	14,000	90	0.002	20,000	160	0.003
	9	16,000	120	0.003	14,000	80	0.002	18,000	135	0.003
	10	16,000	100	0.002	14,000	65	0.002	18,000	110	0.002
	12	16,000	80	0.002	14,000	50	0.002	18,000	90	0.002
	15	16,000	50	0.002	14,000	35	0.002	18,000	55	0.002
0.6	1.5	30,000	600	0.035	25,000	400	0.025	35,000	700	0.04
	2	30,000	600	0.035	25,000	380	0.025	35,000	700	0.04
	3	30,000	550	0.03	25,000	350	0.02	35,000	650	0.035
	4	25,000	450	0.025	22,000	300	0.018	30,000	550	0.03
	5	25,000	400	0.02	20,000	240	0.014	30,000	480	0.024
	6	20,000	300	0.015	18,000	200	0.01	25,000	380	0.018
	7	20,000	250	0.012	16,000	150	0.008	22,000	280	0.014
	8	18,000	200	0.01	15,000	130	0.007	20,000	230	0.012
	9	18,000	180	0.008	15,000	110	0.005	20,000	200	0.009
	10	16,000	150	0.005	14,000	100	0.003	18,000	170	0.006
	12	14,000	120	0.003	12,000	80	0.002	16,000	130	0.003
	15	14,000	90	0.002	12,000	60	0.002	16,000	100	0.002
	18	14,000	60	0.002	12,000	40	0.002	16,000	70	0.002
0.7	2	30,000	650	0.04	25,000	400	0.03	35,000	750	0.05
	4	25,000	500	0.03	22,000	330	0.02	30,000	600	0.04
	6	20,000	350	0.02	18,000	240	0.015	25,000	450	0.03
	8	18,000	280	0.015	15,000	180	0.01	22,000	350	0.02
	10	16,000	220	0.008	14,000	150	0.005	20,000	280	0.01
0.8	3	25,000	700	0.05	22,000	500	0.03	35,000	850	0.06
	4	25,000	600	0.045	22,000	400	0.03	30,000	720	0.055
	5	22,000	500	0.035	20,000	350	0.025	30,000	650	0.05
	6	20,000	450	0.03	18,000	300	0.02	25,000	560	0.04
	8	18,000	350	0.02	15,000	240	0.015	22,000	430	0.025
	10	16,000	300	0.01	14,000	200	0.007	20,000	380	0.012
	12	14,000	250	0.008	12,000	170	0.005	16,000	290	0.01
	14	12,000	200	0.005	10,000	140	0.003	14,000	230	0.006
	16	12,000	150	0.003	10,000	110	0.002	14,000	170	0.003
	20	12,000	120	0.002	10,000	80	0.002	14,000	140	0.002
	24	12,000	80	0.002	10,000	50	0.002	14,000	90	0.002
0.9	4	25,000	900	0.05	22,000	600	0.035	30,000	1,000	0.06
	6	20,000	600	0.04	18,000	400	0.03	25,000	750	0.05
	8	18,000	500	0.03	16,000	330	0.02	22,000	620	0.04
	10	16,000	400	0.02	14,000	260	0.015	20,000	500	0.025
	12	14,000	300	0.01	12,000	200	0.008	16,000	400	0.015
	15	12,000	250	0.008	10,000	160	0.005	14,000	300	0.01
1	2	25,000	1,500	0.07	22,000	1,000	0.06	30,000	1,800	0.08
	3	25,000	1,200	0.06	22,000	800	0.05	30,000	1,500	0.07
	4	25,000	1,100	0.055	22,000	700	0.045	30,000	1,300	0.065
	5	22,000	900	0.05	20,000	600	0.04	27,000	1,100	0.06
	6	20,000	800	0.045	18,000	500	0.035	25,000	1,000	0.055
	7	20,000	800	0.04	18,000	500	0.03	25,000	1,000	0.05
	8	18,000	700	0.035	15,000	400	0.025	22,000	850	0.045
	9	18,000	700	0.03	15,000	400	0.02	22,000	850	0.04

*1 切削合金钢、不锈钢时，请将主轴转速及进给速度降低至80%时的值作为参考值。
*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

碳素钢 Carbon Steel P
合金钢 Alloy Steel P
调质钢 Prehardened Steel P
高硬度钢～52 Hardened Steel HRC H
不锈钢 Stainless Steel M
铝合金 Aluminium Alloy N
铜合金 Copper N
树脂 Resin O
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

MHR230
切削参数参考表
Recommended Milling Conditions

加工材料 Work Material		碳素钢・合金钢*1・不锈钢*1 Carbon Steels・Alloy Steels*1・Stainless Steels*1 S50C・SCM*1・SKD*1・SUS*1			调质钢 Prehardened Steels NAK55・NAK80・HPM1 (～43HRC)			铜合金・铝合金 Copper・Aluminium Alloy		
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
		min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
1	10	16,000	600	0.025	14,000	350	0.018	20,000	750	0.03
	12	14,000	500	0.02	12,000	300	0.014	18,000	650	0.025
	14	13,000	400	0.015	11,000	250	0.01	15,000	450	0.018
	16	12,000	300	0.01	10,000	200	0.007	14,000	350	0.012
	18	12,000	250	0.008	10,000	150	0.005	14,000	300	0.01
	20	11,000	200	0.005	9,000	120	0.003	13,000	230	0.006
	22	11,000	160	0.003	9,000	100	0.002	13,000	190	0.003
	25	10,000	120	0.002	8,500	80	0.002	12,000	140	0.002
	30	10,000	80	0.002	8,500	50	0.002	12,000	100	0.002
1.2	4	23,000	1,200	0.06	20,000	800	0.05	27,000	1,400	0.07
	6	20,000	900	0.05	18,000	600	0.04	25,000	1,200	0.06
	8	18,000	800	0.04	15,000	500	0.03	22,000	1,000	0.05
	10	16,000	700	0.03	14,000	450	0.02	20,000	850	0.04
	12	14,000	600	0.025	12,000	350	0.018	17,000	700	0.03
	16	12,000	400	0.015	10,000	250	0.01	14,000	450	0.02
	20	10,000	300	0.01	8,000	180	0.007	12,000	360	0.012
1.4	6	20,000	1,200	0.07	16,000	720	0.06	24,000	1,500	0.08
	8	18,000	1,000	0.06	14,000	580	0.05	22,000	1,300	0.07
	10	16,000	850	0.05	13,000	520	0.04	20,000	1,100	0.06
	12	14,000	700	0.04	12,000	450	0.03	17,000	850	0.05
	14	13,000	600	0.035	11,000	350	0.025	15,000	700	0.04
	16	12,000	500	0.025	10,000	300	0.018	13,000	550	0.03
	22	10,000	350	0.015	8,000	210	0.01	10,000	350	0.012
1.5	4	22,000	1,400	0.09	18,000	860	0.08	26,000	1,700	0.1
	6	20,000	1,200	0.08	16,000	720	0.07	24,000	1,500	0.09
	8	18,000	1,000	0.07	14,000	580	0.06	22,000	1,300	0.08
	10	16,000	850	0.06	13,000	520	0.05	20,000	1,100	0.07
	12	14,000	700	0.05	12,000	450	0.04	17,000	850	0.06
	14	13,000	600	0.04	11,000	380	0.03	16,000	750	0.05
	16	12,000	500	0.035	10,000	320	0.025	15,000	650	0.04
	18	11,000	450	0.03	9,000	280	0.02	13,000	530	0.035
	20	10,000	400	0.02	8,000	240	0.014	12,000	480	0.025
	25	9,000	350	0.015	7,000	200	0.01	9,000	350	0.018
	30	8,000	300	0.008	6,000	170	0.005	8,000	300	0.01
	35	7,000	200	0.005	5,500	130	0.003	7,000	200	0.006
	38	6,700	170	0.003	5,200	110	0.002	6,700	170	0.003
	40	6,500	150	0.002	5,000	90	0.002	6,500	150	0.002
	45	6,000	100	0.002	4,500	60	0.002	6,000	100	0.002
1.6	6	20,000	1,200	0.09	16,000	720	0.08	24,000	1,500	0.1
	8	18,000	1,000	0.08	14,000	580	0.07	22,000	1,300	0.09
	10	16,000	850	0.07	13,000	520	0.06	20,000	1,100	0.08
	12	14,000	700	0.06	12,000	450	0.05	18,000	900	0.07
	14	13,000	600	0.05	11,000	380	0.04	16,000	750	0.06
	16	12,000	500	0.04	10,000	320	0.03	14,000	620	0.05
	18	11,000	450	0.03	9,000	280	0.025	13,000	530	0.035
	20	10,000	400	0.025	8,000	240	0.018	12,000	480	0.03
	26	9,000	350	0.02	7,000	200	0.014	9,000	350	0.025

*1 切削合金钢、不锈钢时，请将主轴转速及进给速度降低至80%时的值作为参考值。
*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material		碳素钢・合金钢*1・不锈钢*1 Carbon Steels・Alloy Steels*1・Stainless Steels*1 S50C・SCM*1・SKD*1・SUS*1			调质钢 Prehardened Steels NAK55・NAK80・HPM1 (～43HRC)			铜合金・铝合金 Copper・Aluminium Alloy		
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
		min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
1.8	6	18,000	1,300	0.1	14,000	760	0.09	22,000	1,600	0.12
	8	18,000	1,100	0.09	14,000	640	0.08	22,000	1,400	0.11
	10	16,000	900	0.08	13,000	550	0.07	20,000	1,200	0.1
	12	14,000	750	0.07	12,000	480	0.06	17,000	900	0.085
	14	13,000	650	0.06	11,000	420	0.05	16,000	800	0.07
	16	12,000	550	0.05	10,000	350	0.04	15,000	700	0.06
	18	11,000	500	0.04	9,000	310	0.03	13,000	600	0.05
	20	10,000	450	0.035	8,000	270	0.025	12,000	540	0.04
	25	9,000	400	0.025	7,000	230	0.018	11,000	480	0.03
2	4	16,000	1,500	0.13	13,000	900	0.12	20,000	1,850	0.15
	6	16,000	1,400	0.12	13,000	850	0.1	20,000	1,750	0.14
	8	16,000	1,300	0.11	13,000	800	0.09	20,000	1,650	0.13
	10	16,000	1,200	0.1	13,000	750	0.08	20,000	1,500	0.12
	12	14,000	1,000	0.09	12,000	650	0.07	17,000	1,200	0.11
	14	13,000	900	0.08	11,000	570	0.06	16,000	1,100	0.1
	16	12,000	800	0.07	10,000	500	0.05	15,000	1,000	0.085
	18	11,000	700	0.06	9,000	430	0.04	13,000	800	0.07
	20	10,000	600	0.05	8,000	360	0.035	12,000	720	0.06
	25	9,000	500	0.03	7,000	300	0.02	11,000	600	0.035
	30	8,000	400	0.02	6,000	220	0.014	9,000	450	0.025
	35	7,000	300	0.01	5,500	180	0.007	7,000	300	0.012
	40	6,000	200	0.005	5,000	140	0.003	6,000	200	0.006
	50	5,000	150	0.003	4,000	90	0.002	5,000	150	0.003
	60	4,500	100	0.002	3,500	60	0.002	4,500	100	0.002
2.5	8	13,000	1,400	0.15	11,000	900	0.12	16,000	1,700	0.18
	10	13,000	1,300	0.14	11,000	800	0.11	16,000	1,600	0.17
	12	13,000	1,200	0.13	11,000	750	0.1	16,000	1,500	0.16
	14	12,000	1,000	0.12	10,000	650	0.09	14,000	1,200	0.15
	16	11,000	900	0.1	9,000	550	0.07	13,000	1,100	0.12
	18	10,000	800	0.09	8,000	480	0.06	12,000	950	0.11
	20	9,000	700	0.08	7,000	400	0.05	11,000	850	0.1
	25	8,000	600	0.05	6,000	330	0.035	10,000	750	0.06
	30	7,000	500	0.03	5,500	280	0.02	8,500	600	0.035
	40	6,000	300	0.015	4,500	180	0.01	6,000	300	0.018
	50	5,000	200	0.01	4,000	120	0.007	5,000	200	0.012
3	8	11,000	1,500	0.2	9,000	1,000	0.16	13,000	1,800	0.24
	10	11,000	1,400	0.18	9,000	900	0.14	13,000	1,700	0.22
	12	11,000	1,300	0.16	9,000	800	0.12	13,000	1,600	0.2
	14	11,000	1,200	0.14	9,000	700	0.1	13,000	1,400	0.17
	16	10,000	1,000	0.12	8,000	600	0.09	12,000	1,200	0.15
	18	10,000	900	0.11	8,000	550	0.08	12,000	1,100	0.13
	20	9,000	800	0.1	7,000	450	0.07	11,000	1,000	0.12
	25	8,000	700	0.08	6,000	380	0.06	10,000	900	0.1
	30	7,000	600	0.06	5,000	300	0.045	8,500	730	0.07
	35	6,000	500	0.03	4,500	260	0.02	7,200	600	0.035
	40	5,000	400	0.025	4,000	220	0.018	6,000	480	0.03
	50	4,500	300	0.015	3,500	180	0.01	4,500	300	0.018

*1 切削合金钢、不锈钢时，请将主轴转速及进给速度降低至80%时的值作为参考值。
*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

MHR230
切削参数参考表
Recommended Milling Conditions

加工材料 Work Material		碳素钢・合金钢*1・不锈钢*1 Carbon Steels・Alloy Steels*1・Stainless Steels*1 S50C・SCM*1・SKD*1・SUS*1			调质钢 Prehardened Steels NAK55・NAK80・HPM1 (～43HRC)			铜合金・铝合金 Copper・Aluminium Alloy		
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
		min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
4	12	8,000	1,500	0.3	6,000	850	0.25	10,000	1,900	0.36
	16	8,000	1,400	0.25	6,000	800	0.2	10,000	1,800	0.3
	20	8,000	1,300	0.2	6,000	730	0.15	10,000	1,600	0.24
	25	7,000	1,100	0.15	5,000	600	0.1	8,500	1,300	0.18
	30	7,000	1,000	0.12	5,000	540	0.08	8,500	1,200	0.15
	35	6,000	800	0.1	4,500	450	0.07	7,200	1,000	0.12
	40	5,000	600	0.08	4,000	360	0.06	6,000	720	0.1
	45	4,500	500	0.06	3,500	300	0.04	5,400	600	0.07
	50	4,000	400	0.04	3,000	220	0.03	4,800	480	0.05
	60	3,500	300	0.02	2,500	160	0.014	4,200	360	0.025
5	16	6,000	1,400	0.35	4,500	800	0.3	7,200	1,700	0.42
	20	6,000	1,300	0.3	4,500	730	0.25	7,200	1,600	0.36
	25	6,000	1,200	0.25	4,500	680	0.2	7,200	1,500	0.3
	30	5,000	900	0.2	4,000	540	0.15	6,000	1,100	0.24
	35	5,000	800	0.15	3,500	420	0.1	6,000	1,000	0.18
	40	4,000	600	0.1	3,000	340	0.07	4,800	720	0.12
	50	3,500	450	0.07	2,500	240	0.05	4,200	540	0.085
	60	3,000	350	0.04	2,200	200	0.03	3,600	420	0.05
6	20	5,000	1,200	0.4	3,500	630	0.35	6,000	1,500	0.48
	30	4,000	900	0.35	3,000	500	0.3	4,800	1,100	0.42
	40	3,500	650	0.25	2,700	380	0.2	4,200	780	0.3
	50	3,000	500	0.15	2,200	280	0.1	3,600	600	0.18
	60	2,700	400	0.05	2,000	220	0.04	3,200	480	0.06

备 注 Notes

※1 切削合金钢、不锈钢时，请将主轴转速及进给速度降低至80%时的值作为参考值。
※2 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。
※3 切深量的ap表示轴向切深量。
※4 请在考虑加工材料及加工形状等的基础上，选用合适的切削油。
※5 加工深沟时，请充分注意切削油的供油及排屑是否顺畅。
※6 轴向进刀建议采用倾斜进刀方式。
※7 建议采用来回切削加工方式。
※8 L（颈长）/D（外径）为5倍以上时，建议先使用颈长较短的刀具切削初期定位槽。
※9 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※10 φ0.5以下或L（颈长）/D（外径）为15倍以上时，根据加工形状及使用机床等，有时必须对加工参数进行大幅调整。
※11 刀具的伸出量超过柄径的5倍时，受铣刀刀柄跳动精度等的影响，有时必须对加工参数进行大幅调整。
此时请按相同的比率降低主轴转速和进给速度等，调整切削参数。

※1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.
※2 These recommended cutting conditions indicate just reference. It should be adjusted according to milling shape and machine type.
※3 ap:Axial Depth of Cut.
※4 Select a cutting fluid appropriate to work material, milling shape and machining content.
※5 Coolant supply and chip disposal in the deep portion are very important.
※6 Recommend to apply ramping for approaching into axial direction.
※7 Recommend reciprocating cutting.
※8 Recommend guide slotting process with short neck tool before milling with L/D 5 times or longer neck tool.
※9 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※10 Major adjustment of milling conditions appropriately on milling profile, machine tool and etc. required for the tools smaller than Dia. 0.5mm, or L/D 15 times longer.
※11 Major adjustment of milling conditions, e.g. adjust spindle and feed speed at same rate, required on condition of a tool overhang length exceeding a shank diameter 5 times due to possible accuracy impact by chuck runout etc.

MHR430

规格 Size ϕ1～ϕ10

≦52 HRC

无限涂层 4刃长颈平底铣刀（深沟加工用）

MUGEN COATING 4 -Flute Long Neck End Mill

共有103种规格
Total 103 sizes

MHR430

无限涂层 4刃长颈平底铣刀（深沟加工用）
MUGEN COATING 4 -Flute Long Neck End Mill

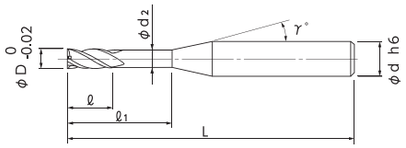
长颈 Long Neck
平底 Square
涂层 Coating

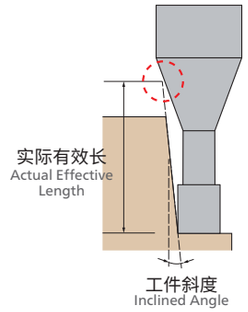
4刃长颈平底铣刀。L/D最大20倍

4-flute long neck sqaure end mill. Maximum L/D=20

MG | 4 | 30°
Side | Slot | Face







- NS TOOL独创的深沟用铣刀，采用无限涂层。
- 适用于深沟加工的长颈避空造型。
- MUGEN COATING has been put on our original end mill for deep rib.
- The Long Neck type is suitable for narrow and deep machining.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00210-01004	1	4	1.5	0.95	12°	4	50	4,200	4.29	4.48	4.69	4.92	5.46
08-00210-01006		6					50	4,200	6.37	6.66	6.97	7.32	8.11
08-00210-01008		8					50	4,200	8.46	8.84	9.25	9.71	10.77
08-00210-01010		10					50	4,200	10.55	11.02	11.53	12.10	13.42
08-00210-01012		12					50	4,200	12.63	13.20	13.82	14.49	16.08
08-00210-01016		16					50	6,700	16.80	17.55	18.38	19.28	21.39
08-00210-01106	1.1	6	1.7	1.05	12°	4	50	7,400	6.37	6.66	6.97	7.32	8.11
08-00210-01110		10					50	7,400	10.55	11.02	11.53	12.10	13.42
08-00210-01116		16					60	9,500	16.80	17.55	18.38	19.28	21.39
08-00210-01206	1.2	6	1.8	1.15	12°	4	50	4,200	6.37	6.66	6.97	7.32	8.11
08-00210-01208		8					50	4,200	8.46	8.84	9.25	9.71	10.77
08-00210-01210		10					50	4,200	10.55	11.02	11.53	12.10	13.42
08-00210-01212		12					50	4,200	12.63	13.20	13.82	14.49	16.08
08-00210-01216		16					60	5,900	16.80	17.55	18.38	19.28	21.39
08-00210-01306	1.3	6	1.9	1.25	12°	4	50	7,400	6.37	6.66	6.97	7.32	8.11
08-00210-01312		12					50	7,400	12.63	13.20	13.82	14.49	16.08
08-00210-01318		18					60	9,500	18.89	19.73	20.66	21.67	24.04
08-00210-01406	1.4	6	2.1	1.35	12°	4	50	4,200	6.37	6.66	6.97	7.32	8.11
08-00210-01408		8					50	4,200	8.46	8.84	9.25	9.71	10.77
08-00210-01410		10					50	4,200	10.55	11.02	11.53	12.10	13.42
08-00210-01412		12					50	4,200	12.63	13.20	13.82	14.49	16.08
08-00210-01414		14					60	4,200	14.72	15.38	16.10	16.89	18.73
08-00210-01416		16					60	5,900	16.80	17.55	18.38	19.28	21.39
08-00210-01422		22					60	7,600	23.06	24.09	25.22	26.46	Free
08-00210-01506	1.5	6	2.3	1.45	12°	4	50	4,200	6.37	6.66	6.97	7.32	8.11
08-00210-01508		8					50	4,200	8.46	8.84	9.25	9.71	10.77
08-00210-01510		10					50	4,200	10.55	11.02	11.53	12.10	13.42
08-00210-01512		12					50	4,200	12.63	13.20	13.82	14.49	16.08
08-00210-01514		14					60	4,200	14.72	15.38	16.10	16.89	18.73
08-00210-01516		16					60	4,200	16.80	17.55	18.38	19.28	21.39
08-00210-01518		18					60	4,200	18.89	19.73	20.66	21.67	Free
08-00210-01520		20					60	4,200	20.97	21.91	22.94	24.07	Free

订购方法 How to Order

请指定MHR430 外径(D)×颈长(ℓ1)。
When you order, indicate MHR430 (D)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

◎ 碳素钢 Carbon Steel P
◎ 合金钢 Alloy Steel P
◎ 调质钢 Prehardened Steel P
○ 高硬度钢～52 Hardened Steel HRC H
○ 不锈钢 Stainless Steel M
○ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00210-01606	1.6	6	2.4	1.55	12°	4	50	4,200	6.37	6.66	6.97	7.32	8.11
08-00210-01608		8					50	4,200	8.46	8.84	9.25	9.71	10.77
08-00210-01610		10					50	4,200	10.55	11.02	11.53	12.10	13.42
08-00210-01612		12					50	4,200	12.63	13.20	13.82	14.49	16.08
08-00210-01614		14					60	4,200	14.72	15.38	16.10	16.89	18.73
08-00210-01616		16					60	4,200	16.80	17.55	18.38	19.28	21.39
08-00210-01618		18					60	4,200	18.89	19.73	20.66	21.67	Free
08-00210-01620		20					60	4,200	20.97	21.91	22.94	24.07	Free
08-00210-01626		26					70	9,700	27.23	28.45	29.78	31.25	Free
08-00210-01706	1.7	6	2.5	1.65	12°	4	50	5,300	6.37	6.66	6.97	7.32	8.11
08-00210-01714		14					60	5,300	14.72	15.38	16.10	16.89	18.73
08-00210-01724		24					70	12,600	25.15	26.27	27.50	28.85	Free
08-00210-01806	1.8	6	2.7	1.74	12°	4	50	4,200	6.40	6.69	7.00	7.34	8.15
08-00210-01808		8					50	4,200	8.48	8.86	9.28	9.74	10.80
08-00210-01810		10					50	4,200	10.57	11.04	11.56	12.13	13.45
08-00210-01812		12					50	4,200	12.66	13.22	13.84	14.52	16.11
08-00210-01814		14					60	4,200	14.74	15.40	16.12	16.92	18.76
08-00210-01816		16					60	4,200	16.83	17.58	18.40	19.31	Free
08-00210-01818		18					60	4,200	18.91	19.76	20.69	21.70	Free
08-00210-01820		20					60	4,200	21.00	21.94	22.97	24.10	Free
08-00210-01825		25					70	5,900	26.21	27.39	28.67	30.08	Free
08-00210-01906	1.9	6	2.8	1.84	12°	4	50	7,400	6.40	6.69	7.00	7.34	8.15
08-00210-01916		16					60	7,400	16.83	17.58	18.40	19.31	Free
08-00210-01928		28					70	9,500	29.34	30.65	32.09	Free	Free
08-00210-02006	2	6	3	1.94	12°	4	50	4,200	6.40	6.69	7.00	7.34	8.15
08-00210-02008		8					50	4,200	8.48	8.86	9.28	9.74	10.80
08-00210-02010		10					50	4,200	10.57	11.04	11.56	12.13	13.45
08-00210-02012		12					50	4,200	12.66	13.22	13.84	14.52	16.11
08-00210-02014		14					60	4,200	14.74	15.40	16.12	16.92	18.76
08-00210-02016		16					60	4,200	16.83	17.58	18.40	19.31	Free
08-00210-02018		18					60	4,200	18.91	19.76	20.69	21.70	Free
08-00210-02020		20					60	4,200	21.00	21.94	22.97	24.10	Free

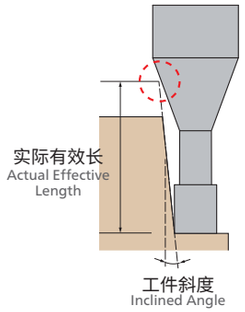
P 碳素钢 Carbon Steel ◎
P 合金钢 Alloy Steel ◎
P 调质钢 Prehardened Steel ◎
H ～52高硬度钢 HRC Hardened Steel ○
M 不锈钢 Stainless Steel ○
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ○

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

MHR430

无限涂层 4刃长颈平底铣刀（深沟加工用）

MUGEN COATING 4 -Flute Long Neck End Mill



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
									30´	1°	1°30´	2°	3°
08-00210-02025	2	25	3	1.94	12°	4	70	4,600	26.21	27.39	28.67	Free	Free
08-00210-02030		30					70	5,900	31.43	32.83	34.37	Free	Free
08-00210-02508	2.5	8	3.7	2.4	12°	4	50	4,200	8.58	8.97	9.39	9.85	10.93
08-00210-02512		12					50	4,200	12.75	13.32	13.95	14.64	Free
08-00210-02516		16					60	4,200	16.93	17.68	18.51	19.42	Free
08-00210-02520		20					60	4,200	21.10	22.04	23.07	Free	Free
08-00210-02525		25					70	4,600	26.31	27.49	Free	Free	Free
★ 08-00210-03008	3	8	4.5	2.85	12°	6	50	6,200	8.71	9.10	9.52	9.99	11.08
★ 08-00210-03012		12					50	6,200	12.88	13.45	14.08	14.78	16.39
★ 08-00210-03016		16					60	6,200	17.05	17.81	18.65	19.56	21.70
★ 08-00210-03020		20					60	6,200	21.22	22.17	23.21	24.35	27.01
★ 08-00210-03025		25					70	6,200	26.43	27.62	28.91	30.33	Free
★ 08-00210-03030		30					70	7,900	31.65	33.06	34.61	36.31	Free
★ 08-00210-03515	3.5	15	5.5	3.35	12°	6	60	6,900	16.01	16.72	17.50	18.37	20.37
★ 08-00210-03525		25					70	6,900	26.43	27.62	28.91	30.33	Free
★ 08-00210-03535		35					80	8,800	36.86	38.51	40.32	Free	Free
★ 08-00210-04012	4	12	6	3.8	12°	6	50	6,900	13.00	13.58	14.22	14.92	16.55
★ 08-00210-04016		16					60	6,900	17.17	17.94	18.78	19.70	Free
★ 08-00210-04020		20					60	6,900	21.34	22.30	23.34	24.49	Free
★ 08-00210-04025		25					70	6,900	26.56	27.74	29.04	Free	Free
★ 08-00210-04030		30					70	6,900	31.77	33.19	34.75	Free	Free
★ 08-00210-04035		35					80	6,900	36.98	38.64	Free	Free	Free
★ 08-00210-04040		40					90	8,800	42.20	44.09	Free	Free	Free
★ 08-00210-04045		45					90	10,600	47.41	49.53	Free	Free	Free
★ 08-00210-04050		50					100	13,300	52.63	54.98	Free	Free	Free
★ 08-00210-05016	5	16	7.5	4.8	12°	6	60	8,800	17.17	17.94	18.78	Free	Free
★ 08-00210-05025		25					70	8,800	26.56	27.74	Free	Free	Free
★ 08-00210-05035		35					80	8,800	36.98	Free	Free	Free	Free
★ 08-00210-05050		50					110	13,300	52.63	Free	Free	Free	Free
★ 08-00210-06020	6	20	9	5.8	–	6	80	8,800	Free	Free	Free	Free	Free
★ 08-00210-06030		30					90	8,800	Free	Free	Free	Free	Free
★ 08-00210-06040		40					100	10,600	Free	Free	Free	Free	Free

订购方法 How to Order

请指定MHR430 外径 (D)×颈长 (ℓ1)。
When you order, indicate MHR430 (D)×(ℓ1).

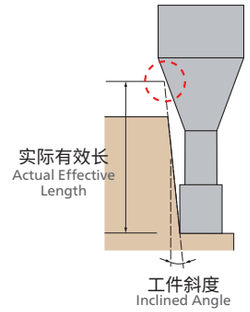
※(γ)为参考值。
※(γ) is reference value.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ~52 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

MHR430

无限涂层 4刃长颈平底铣刀（深沟加工用）
MUGEN COATING 4 -Flute Long Neck End Mill



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
									30´	1°	1°30´	2°	3°
★ 08-00210-06050	6	50	9	5.8	–	6	110	13,300	Free	Free	Free	Free	Free
★ 08-00210-08030	8	30	12	7.8	–	8	100	15,400	Free	Free	Free	Free	Free
★ 08-00210-08050		50					120	19,100	Free	Free	Free	Free	Free
★ 08-00210-08060		60					130	20,500	Free	Free	Free	Free	Free
★ 08-00210-10040	10	40	15	9.8	–	10	110	16,600	Free	Free	Free	Free	Free
★ 08-00210-10060		60					130	23,000	Free	Free	Free	Free	Free
★ 08-00210-10080		80					150	25,600	Free	Free	Free	Free	Free

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ~52 HRC 高硬度钢 Hardened Steel
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常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

加工材料 Work Material		碳素钢・合金钢*1・不锈钢*1 Carbon Steels・Alloy Steels*1・Stainless Steels*1 S50C・SCM*1・SKD*1・SUS*1				调质钢 Prehardened Steels NAK55・NAK80・HPM1 (～43HRC)			
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm
1	4	25,000	1,700	0.055	0.6	22,000	1,100	0.045	0.6
	6	20,000	1,200	0.045	0.6	18,000	750	0.035	0.6
	8	18,000	1,050	0.035	0.6	15,000	600	0.025	0.6
	10	16,000	900	0.025	0.6	14,000	520	0.018	0.6
	12	14,000	750	0.02	0.6	12,000	450	0.014	0.6
	16	12,000	450	0.01	0.6	10,000	300	0.007	0.6
1.1	6	20,000	1,300	0.05	0.66	18,000	820	0.04	0.66
	10	16,000	1,000	0.03	0.66	14,000	600	0.02	0.66
	16	12,000	550	0.015	0.66	10,000	330	0.01	0.66
1.2	6	20,000	1,400	0.05	0.72	18,000	900	0.04	0.72
	8	18,000	1,200	0.04	0.72	15,000	750	0.03	0.72
	10	16,000	1,050	0.03	0.72	14,000	670	0.02	0.72
	12	14,000	900	0.025	0.72	12,000	530	0.018	0.72
	16	12,000	600	0.015	0.72	10,000	380	0.01	0.72
1.3	6	20,000	1,500	0.06	0.78	17,000	1,000	0.05	0.78
	12	14,000	1,000	0.03	0.78	12,000	600	0.025	0.78
	18	11,000	600	0.015	0.78	9,000	380	0.01	0.78
1.4	6	20,000	1,800	0.07	0.84	16,000	1,100	0.06	0.84
	8	18,000	1,500	0.06	0.84	14,000	900	0.05	0.84
	10	16,000	1,300	0.05	0.84	13,000	780	0.04	0.84
	12	14,000	1,050	0.04	0.84	12,000	670	0.03	0.84
	14	13,000	900	0.035	0.84	11,000	530	0.025	0.84
	16	12,000	750	0.025	0.84	10,000	450	0.018	0.84
	22	10,000	550	0.015	0.84	8,000	320	0.01	0.84
1.5	6	20,000	1,800	0.08	0.9	16,000	1,100	0.07	0.9
	8	18,000	1,500	0.07	0.9	14,000	900	0.06	0.9
	10	16,000	1,300	0.06	0.9	13,000	780	0.05	0.9
	12	14,000	1,050	0.05	0.9	12,000	670	0.04	0.9
	14	13,000	900	0.04	0.9	11,000	570	0.03	0.9
	16	12,000	750	0.035	0.9	10,000	480	0.025	0.9
	18	11,000	680	0.03	0.9	9,000	420	0.02	0.9
	20	10,000	600	0.02	0.9	8,000	360	0.014	0.9
1.6	6	20,000	1,800	0.09	0.96	16,000	1,100	0.08	0.96
	8	18,000	1,500	0.08	0.96	14,000	900	0.07	0.96
	10	16,000	1,300	0.07	0.96	13,000	780	0.06	0.96
	12	14,000	1,050	0.06	0.96	12,000	670	0.05	0.96
	14	13,000	900	0.05	0.96	11,000	570	0.04	0.96
	16	12,000	750	0.04	0.96	10,000	480	0.03	0.96
	18	11,000	680	0.03	0.96	9,000	420	0.025	0.96
	20	10,000	600	0.025	0.96	8,000	360	0.018	0.96
	26	9,000	530	0.02	0.96	7,000	300	0.014	0.96
1.7	6	19,000	1,900	0.095	1.02	15,000	1,150	0.085	1.02
	14	13,000	950	0.055	1.02	11,000	630	0.045	1.02
	24	9,000	550	0.025	1.02	7,000	330	0.018	1.02

*1 切削合金钢、不锈钢时，请将主轴转速及进给速度降低至80%时的值作为参考值。
*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

碳素钢 Carbon Steel P
合金钢 Alloy Steel P
调质钢 Prehardened Steel P
高硬度钢～52 Hardened Steel HRC H
不锈钢 Stainless Steel M
铝合金 Aluminium Alloy N
铜合金 Copper N
树脂 Resin O

MHR430
切削参数参考表
Recommended Milling Conditions

加工材料 Work Material		碳素钢・合金钢*1・不锈钢*1 Carbon Steels・Alloy Steels*1・Stainless Steels*1 S50C・SCM*1・SKD*1・SUS*1				调质钢 Prehardened Steels NAK55・NAK80・HPM1 (～43HRC)			
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm
1.8	6	18,000	2,000	0.1	1.08	14,000	1,200	0.09	1.08
	8	18,000	1,700	0.09	1.08	14,000	1,000	0.08	1.08
	10	16,000	1,400	0.08	1.08	13,000	850	0.07	1.08
	12	14,000	1,100	0.07	1.08	12,000	720	0.06	1.08
	14	13,000	1,000	0.06	1.08	11,000	630	0.05	1.08
	16	12,000	850	0.05	1.08	10,000	530	0.04	1.08
	18	11,000	750	0.04	1.08	9,000	470	0.03	1.08
	20	10,000	680	0.035	1.08	8,000	400	0.025	1.08
	25	9,000	600	0.025	1.08	7,000	340	0.018	1.08
1.9	6	17,000	2,100	0.11	1.14	14,000	1,250	0.095	1.14
	16	12,000	1,000	0.06	1.14	10,000	630	0.045	1.14
	28	8,000	550	0.02	1.14	6,000	300	0.014	1.14
2	6	16,000	2,100	0.12	1.2	13,000	1,300	0.1	1.2
	8	16,000	2,000	0.11	1.2	13,000	1,200	0.09	1.2
	10	16,000	1,800	0.1	1.2	13,000	1,100	0.08	1.2
	12	14,000	1,500	0.09	1.2	12,000	1,000	0.07	1.2
	14	13,000	1,350	0.08	1.2	11,000	850	0.06	1.2
	16	12,000	1,200	0.07	1.2	10,000	750	0.05	1.2
	18	11,000	1,000	0.06	1.2	9,000	650	0.04	1.2
	20	10,000	900	0.05	1.2	8,000	550	0.035	1.2
	25	9,000	750	0.03	1.2	7,000	450	0.02	1.2
	30	8,000	600	0.02	1.2	6,000	330	0.014	1.2
2.5	8	13,000	2,100	0.15	1.5	11,000	1,400	0.12	1.5
	12	13,000	1,800	0.13	1.5	11,000	1,100	0.1	1.5
	16	11,000	1,400	0.1	1.5	9,000	850	0.07	1.5
	20	9,000	1,100	0.08	1.5	7,000	600	0.05	1.5
	25	8,000	900	0.05	1.5	6,000	500	0.035	1.5
3	8	11,000	2,300	0.2	1.8	9,000	1,500	0.16	1.8
	12	11,000	2,000	0.16	1.8	9,000	1,200	0.12	1.8
	16	10,000	1,500	0.12	1.8	8,000	900	0.09	1.8
	20	9,000	1,200	0.1	1.8	7,000	680	0.07	1.8
	25	8,000	1,050	0.08	1.8	6,000	570	0.06	1.8
	30	7,000	900	0.06	1.8	5,000	450	0.045	1.8
3.5	15	9,000	2,000	0.18	2.1	7,000	1,200	0.15	2.1
	25	7,500	1,500	0.12	2.1	6,000	850	0.08	2.1
	35	6,000	1,000	0.07	2.1	4,500	520	0.05	2.1
4	12	8,000	2,200	0.3	2.4	6,000	1,300	0.25	2.4
	16	8,000	2,100	0.25	2.4	6,000	1,200	0.2	2.4
	20	8,000	2,000	0.2	2.4	6,000	1,100	0.15	2.4
	25	7,000	1,700	0.15	2.4	5,000	900	0.1	2.4
	30	7,000	1,500	0.12	2.4	5,000	800	0.08	2.4
	35	6,000	1,200	0.1	2.4	4,500	670	0.07	2.4
	40	5,000	900	0.08	2.4	4,000	540	0.06	2.4
	45	4,500	750	0.06	2.4	3,500	450	0.04	2.4
	50	4,000	600	0.04	2.4	3,000	330	0.03	2.4
5	16	6,000	2,100	0.35	3	4,500	1,200	0.3	3
	25	6,000	1,800	0.25	3	4,500	1,000	0.2	3
	35	5,000	1,200	0.15	3	3,500	630	0.1	3
	50	3,500	680	0.07	3	2,500	360	0.05	3

*1 切削合金钢、不锈钢时，请将主轴转速及进给速度降低至80%时的值作为参考值。
*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

加工材料 Work Material		碳素钢・合金钢※1・不锈钢※1 Carbon Steels・Alloy Steels※1・Stainless Steels※1 S50C・SCM※1・SKD※1・SUS※1				调质钢 Prehardened Steels NAK55・NAK80・HPM1 (～43HRC)			
外径 Dia.	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
		min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm
6	20	5,000	1,800	0.4	3.6	3,500	1,000	0.35	3.6
	30	4,000	1,400	0.35	3.6	3,000	750	0.3	3.6
	40	3,500	1,000	0.25	3.6	2,700	570	0.2	3.6
	50	3,000	750	0.15	3.6	2,200	420	0.1	3.6
8	30	3,800	1,400	0.6	4.8	2,800	900	0.45	4.8
	50	2,800	820	0.4	4.8	2,100	600	0.3	4.8
	60	2,400	680	0.3	4.8	1,800	450	0.2	4.8
10	40	3,000	1,200	0.8	6	2,200	750	0.55	6
	60	2,200	750	0.6	6	1,600	520	0.45	6
	80	1,800	520	0.4	6	1,300	360	0.3	6

备 注 Notes

※1 切削合金钢、不锈钢时，请将主轴转速及进给速度降低至80%时的值作为参考值。
※2 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。
※3 切深量的ap表示轴向切深量，ae表示径向切深量。
※4 请在考虑加工材料及加工形状等的基础上，选用合适的切削油。
※5 加工深沟时，请充分注意切削油的供油及排屑是否顺畅。
※6 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※7 由于立面附近的刀具负荷会增大，必须降低进给速度和切深量。
※8 沟槽切削时建议将切削参数表的切深量降低至80%时的值作为参考值，并采用来回切削加工方式。
L（颈长）/D（外径）为5倍以上时，建议先使用颈长较短的刀具切削初期定位槽。
※9 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※10 刀具的伸出量超过柄径的5倍时，受铣刀刀柄跳动精度等的影响，有时必须对加工参数进行大幅调整。
此时请按相同的比率降低主轴转速和进给速度等，调整切削参数。

※1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.
※2 These recommended cutting conditions indicate just reference. It should be adjusted according to milling shape and machine type.
※3 ap:Axial Depth of Cut, ae:Radial Depth of Cut.
※4 Select a cutting fluid appropriate to work material, milling shape and machining content.
※5 Coolant supply and chip disposal in the deep portion are very important.
※6 Recommend to apply herical or ramping for approaching into axial direction.
※7 Reduction of feed and Depth of Cut to reduce machining load around side wall.
※8 For slotting, recommend reciprocating milling by adjusting feed at 80% of recommended milling conditions as a reference value. Recommend guide slotting process with short neck tool before milling with L/D 5 time or longer neck tool.
※9 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※10 Major adjustment of milling conditions, e.g. adjust spindle and feed speed at same rate, required on condition of a tool overhang length exceeding a shank diameter 5 times due to possible accuracy impact by chuck runout etc.

◎ 碳素钢 Carbon Steel P
◎ 合金钢 Alloy Steel P
◎ 调质钢 Prehardened Steel P
○ 高硬度钢～52 Hardened Steel HRC H
○ 不锈钢 Stainless Steel M
○ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O



MHR430
切削参数参考表
Recommended Milling Conditions
平底 Square
长颈 Long Neck
涂层 Coating
P 碳素钢 Carbon Steel ◎
P 合金钢 Alloy Steel ◎
P 调质钢 Prehardened Steel ◎
H ～52 HRC 高硬度钢 Hardened Steel ○
M 不锈钢 Stainless Steel ○
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ○
常规系列 无限涂层 长颈造型
Regular Line MUGEN COATING Long Neck Type

MSCZ440-LN

规格 Size φ1 ～ φ6

≦40 HRC

无限涂层 SC用高效率 “Z” 长颈铣刀

MUGEN COATING 4-Flute Long Neck High Efficient “Z” End Mill for Carbon Steels

共有33种规格 Total 33 sizes



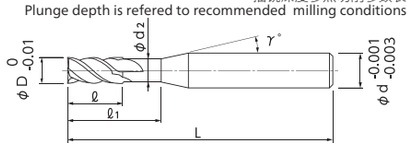
可对应碳素钢的高效率加工！可进行插铣进刀到沟槽加工的连续加工。防干涉的长颈型

High efficient machining on carbon steels. Continuous machining from plunging approach to slotting. Long neck type to prevent interference

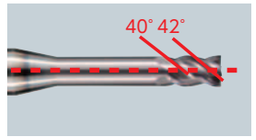




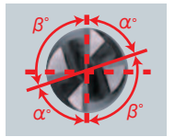
插铣深度参照切削参数表
Plunge depth is refered to recommended milling conditions



- 采用不等分割、不等螺旋角和提高刃部刚性的设计，可最大限度地抑制振刀，实现高效率加工！
- 采用新开发的特殊刀刃形状，可实现应对侧面加工、沟槽加工、插铣加工进刀的多种性能。
- 采用无限涂层，可进行延长刀具寿命的稳定加工。
- 防止干涉加工材料的长颈型，颈长备有外径的3倍、4倍、5倍可选。
- Unequal flute spacing, unequal helix angle and high rigid end profile design to minimize chatter realize high efficient machining.
- New developed special edge profile realized multi-functional performance of side milling, slot milling and plunging approaches on carbon steels.
- Long time stable machining is realized by adopting MUGEN COATING.
- Long neck type prevent interference with work material, the Under neck length lined up with L/D=3 to 5.



不等螺旋角
Unequal Helix Angle



不等分割
Unequal Flute Spacing

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00136-01013	1	1.5	3	0.95	12°	4	50	4,800
08-00136-01014			4	0.95	12°	4	50	4,900
08-00136-01015			5	0.95	12°	4	50	5,100
08-00136-01513	1.5	2.3	4.5	1.45	12°	4	50	5,800
08-00136-01514			6	1.45	12°	4	50	6,100
08-00136-01515			7.5	1.45	12°	4	50	6,400
08-00136-02013	2	3	6	1.94	12°	6	50	6,400
08-00136-02014			8	1.94	12°	6	50	6,700
08-00136-02015			10	1.94	12°	6	50	7,000
08-00136-02513	2.5	3.8	7.5	2.4	12°	6	50	6,400
08-00136-02514			10	2.4	12°	6	50	6,800
08-00136-02515			12.5	2.4	12°	6	60	7,400
★ 08-00136-03013	3	4.5	9	2.85	12°	6	50	6,400
★ 08-00136-03014			12	2.85	12°	6	50	6,700
★ 08-00136-03015			15	2.85	12°	6	60	7,000
★ 08-00136-03513	3.5	5.3	10.5	3.35	12°	6	50	6,700
★ 08-00136-03514			14	3.35	12°	6	60	7,400
★ 08-00136-03515			17.5	3.35	12°	6	60	7,800
★ 08-00136-04013	4	6	12	3.8	12°	6	50	6,700
★ 08-00136-04014			16	3.8	12°	6	60	7,200
★ 08-00136-04015			20	3.8	12°	6	60	7,500
★ 08-00136-04513	4.5	6.8	13.5	4.3	12°	6	50	7,200
★ 08-00136-04514			18	4.3	12°	6	60	7,800
★ 08-00136-04515			22.5	4.3	12°	6	60	8,300
★ 08-00136-05013	5	7.5	15	4.8	12°	6	50	7,200
★ 08-00136-05014			20	4.8	12°	6	60	7,600
★ 08-00136-05015			25	4.8	12°	6	60	7,900
★ 08-00136-05513	5.5	8.3	16.5	5.3	12°	6	50	7,800
★ 08-00136-05514			22	5.3	12°	6	60	8,500
★ 08-00136-05515			27.5	5.3	12°	6	60	8,900
★ 08-00136-06013	6	9	18	5.8	–	6	60	7,800
★ 08-00136-06014			24	5.8	–	6	60	8,300
★ 08-00136-06015			30	5.8	–	6	70	8,700

订购方法 How to Order

请指定MSCZ440-LN 外径(D)×刃长(ℓ)×颈长(ℓ1)。
When you order, indicate MSCZ440-LN (D)×(ℓ)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel

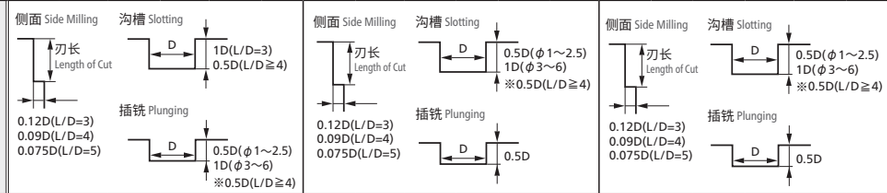
高效率加工 High Efficient Milling

切削参数参考表

Recommended Milling Conditions

加工材料 Work Material			碳素钢 Carbon Steels S50C						合金钢 Alloy Steels SCM・SKD						调质钢 Prehardened Steels (～40HRC)					
外径 Dia.	颈长 Under Neck Length	L(颈长)/D(刃径) L/D	侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging	
			主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
			min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min
1	3	3	18,900	760	17,000	400	17,000	100	18,100	650	15,300	300	15,300	50	15,400	470	12,300	240	12,300	50
	4	4	16,700	600	15,000	320	15,000	70	16,200	520	13,500	220	13,500	40	13,800	400	10,800	170	10,800	40
	5	5	13,300	400	12,000	200	12,000	50	12,900	350	10,900	130	10,900	30	11,000	180	8,800	100	8,800	30
1.5	4.5	3	14,200	860	12,500	480	12,500	120	13,000	750	11,300	360	11,300	100	11,100	560	9,100	290	9,100	100
	6	4	12,200	660	11,000	380	11,000	100	11,600	580	9,500	260	9,500	70	9,900	430	7,600	210	7,600	70
	7.5	5	10,000	450	9,000	240	9,000	70	9,600	400	7,600	160	7,600	50	8,200	200	6,100	130	6,100	50
2	6	3	11,800	1,000	10,600	580	10,600	150	10,400	870	8,900	440	8,900	100	8,900	680	7,200	350	7,200	100
	8	4	10,400	810	9,400	460	9,400	120	9,100	660	8,000	310	8,000	70	7,700	460	6,400	250	6,400	70
	10	5	8,400	560	7,600	290	7,600	100	8,000	480	6,500	190	6,500	50	6,800	230	5,200	150	5,200	50
2.5	7.5	3	10,100	1,200	8,600	770	8,600	200	8,400	1,000	7,600	580	7,600	150	7,200	780	6,100	460	6,100	150
	10	4	8,600	900	7,400	530	7,400	150	7,400	780	6,600	360	6,600	100	6,300	500	5,300	290	5,300	100
	12.5	5	7,100	650	6,200	370	6,200	120	6,800	560	5,400	240	5,400	70	5,800	270	4,300	190	4,300	70
3	9	3	9,600	1,500	8,300	840	8,300	250	7,100	1,150	7,200	620	7,200	150	6,200	800	5,800	500	5,800	150
	12	4	8,000	1,150	6,900	640	6,900	200	6,200	900	6,000	440	6,000	120	5,300	530	4,800	350	4,800	120
	15	5	6,800	740	5,900	420	5,900	150	5,800	620	5,100	270	5,100	100	4,900	300	4,100	220	4,100	100
3.5	10.5	3	8,700	1,540	7,500	920	7,500	250	6,800	1,200	6,600	690	6,600	150	5,800	840	5,200	530	5,200	150
	14	4	7,500	1,180	6,400	720	6,400	200	5,600	950	5,400	490	5,400	120	4,800	540	4,300	380	4,300	120
	17.5	5	6,300	820	5,400	460	5,400	150	5,200	650	4,700	300	4,700	100	4,400	300	3,600	230	3,600	100
4	12	3	8,100	1,600	6,800	1,000	6,800	250	6,600	1,250	5,900	750	5,900	150	5,600	860	4,700	600	4,700	150
	16	4	6,800	1,200	5,600	760	5,600	200	5,500	950	5,000	520	5,000	120	4,700	560	3,900	400	3,900	120
	20	5	5,700	850	4,800	500	4,800	150	4,800	700	4,200	320	4,200	100	4,100	320	3,300	250	3,300	100
4.5	13.5	3	7,400	1,640	6,100	1,000	6,100	250	6,400	1,300	5,300	750	5,300	150	5,400	900	4,300	600	4,300	150
	18	4	6,500	1,200	5,100	800	5,100	200	5,400	950	4,500	550	4,500	120	4,600	600	3,600	400	3,600	120
	22.5	5	5,200	850	4,300	520	4,300	150	4,600	700	3,800	340	3,800	100	3,900	320	3,000	270	3,000	100
5	15	3	6,800	1,840	5,500	1,000	5,500	250	6,100	1,400	4,800	750	4,800	150	5,200	950	3,900	600	3,900	150
	20	4	6,000	1,250	4,800	800	4,800	200	5,200	1,000	4,200	550	4,200	120	4,400	600	3,300	400	3,300	120
	25	5	4,900	850	3,900	520	3,900	150	4,400	700	3,500	340	3,500	100	3,700	340	2,800	270	2,800	100
5.5	16.5	3	6,200	1,900	5,100	1,000	5,100	250	5,900	1,400	4,400	750	4,400	150	5,000	950	3,600	600	3,600	150
	22	4	5,600	1,250	4,400	800	4,400	200	4,900	1,000	3,900	550	3,900	120	4,200	620	3,100	400	3,100	120
	27.5	5	4,600	850	3,700	550	3,700	150	4,200	700	3,200	340	3,200	100	3,600	350	2,600	270	2,600	100
6	18	3	5,800	1,900	4,700	1,000	4,700	250	5,500	1,400	4,100	750	4,100	150	4,700	950	3,400	600	3,400	150
	24	4	5,200	1,250	4,100	800	4,100	200	4,600	1,000	3,700	550	3,700	120	3,900	620	2,900	400	2,900	120
	30	5	4,300	850	3,400	550	3,400	150	4,000	700	3,000	340	3,000	100	3,400	350	2,400	270	2,400	100

切深量 Depth of Cut (D:外径 Dia.)



备 注 Notes

※ 1 测量刀具长度时请测量子刃。
※ 2 请根据机床刚性和工件的夹持状态等调整切削参数。
实际加工时请根据加工形状、目的以及所用的机床等调整切削参数。
※ 3 请以相同的比率调整主轴转速和进给速度。
※ 4 使用冷却液时请尽量增大流量、加高压力，以排出切屑。
※ 5 插铣时若排屑不佳，请调整轴向切深量和进给速度。
※ 6 排屑不佳可能会导致刀具崩刃和折断，敬请注意。
※ 7 建议使用刚性较大的铣刀刀柄和机床。
※ 8 请尽量缩短刀具的伸出量。

※1 Please choose the short end tooth when measure the tool length.
※2 Adjust milling condition conforming with machine rigidity and clamping condition.
Final milling conditions are subject to machining profile, purpose and machine status.
※3 Adjust both Spindle Speed and Feed at the same rate.
※4 Please increasing the coolant flow rate and pressure as much as possible, and supply it sufficiently to the machining point and flute.
※5 Please change the Depth of Cut or Feed when chips could not remove smoothly during plunging.
※6 Please be noted there would be a possible tool chipping or breakage when the chip removal is insufficient.
※7 Use a rigid and precise machine and chuck holder.
※8 Overhang of end mill should be as short as possible from spindle nose.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
高效率加工 High Efficient Milling

NSME100

规格 Size ϕ 0.01 ～ ϕ 0.05

SMG ≦40 HRC

超微细加工用平底铣刀 “Micro Edge”

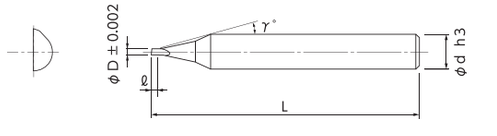
Micro End Mill “MICRO EDGE”

共有5种规格
Total 5 sizes

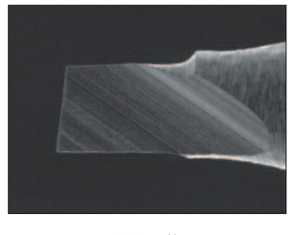
最小外径ϕ0.01
超微细加工用单刃直刃造型平底铣刀

Smallest Dia.0.01mm
Single straight flute end mill for ultra micro milling





- 超高精度规格，外径公差±2μm，柄径公差h3（真圆度0.1μm）。
- 单刃直刃造型，备有ϕ0.01～ϕ0.05的5个规格。
- Ultra-high-precision accuracy is guaranteed with ±2μm tolerance of flute diameter and h3 tolerance of shank diameter (circularity 0.1μm).
- One straight flute, 5 items from 0.01 to 0.05mm diameter.



刀刃形状
Cutting edge shape

加工材料 Work Material	紫铜(TPC)・铝合金 Tough Pitch Copper・Aluminium Alloy			
外径 Dia	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min^{-1}
0.01	0.0001	0.0005	10	60,000
0.02	0.0003	0.001	15	60,000
0.03	0.0005	0.001	20	60,000
0.04	0.001	0.001	20	60,000
0.05	0.001	0.002	30	60,000

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示径向切深量。
※2 拆装或者预调刀具时请务必小心。
※3 建议使用油雾冷却方式。
※4 请尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※5 增加切深量会导致刀具折断。特别须注意ap值的设定。
※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Handle with care when exchanging and presetting tool.
※3 We recommend using oil mist coolant.
※4 Minimize chucking runout.
(Recommend to measure actual runout at activated spindle speed.)
※5 Increase of Depth of Cut may cause a tool breakage, especially careful for Axial Depth of Cut.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00001-00010	0.01	0.01	15°	4	45	36,800
01-00001-00020	0.02	0.02	15°	4	45	29,400
01-00001-00030	0.03	0.03	15°	4	45	25,200
01-00001-00040	0.04	0.04	15°	4	45	21,000
01-00001-00050	0.05	0.05	15°	4	45	18,900

订购方法 How to Order
请指定NSME100 外径(D)。 When you order, indicate NSME100 (D).
※(γ)为参考值。 ※(γ) is reference value.

NSME230

规格 Size ϕ 0.03 ～ ϕ 0.09

SMG ≦40 HRC

超微细加工用平底铣刀 “Micro Edge”
Micro End Mill “MICRO EDGE”

共有7种规格
Total 7 sizes

NSME230

切削参数参考表
Recommended Milling Conditions

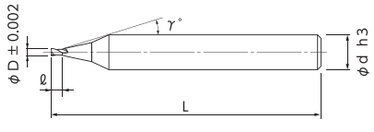
2刃30° 螺旋角外径ϕ0.03～ϕ0.09的微米级平底铣刀

2-flute 30° square end mill for micro milling. Dia.0.03mm to Dia.0.09mm

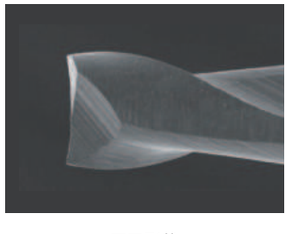
2 | 30° | ϕd h3
Slot | Face







- 超高精度规格，外径公差±2μm，柄径公差h3（真圆度0.1μm）。
- 2刃30° 螺旋角型，备有ϕ0.03～ϕ0.09的7个规格。
- Ultra-high-precision accuracy is guaranteed with ±2μm tolerance of flute diameter and h3 tolerance of shank diameter (circularity 0.1μm).
- Two flutes in 30 deg. 7 items from 0.03 to 0.09mm diameter.



刀刃形状
Cutting edge shape

加工材料 Work Material	紫铜(TPC)・铝合金 Tough Pitch Copper・Aluminium Alloy			
外径 Dia	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min^{-1}
0.03	0.0015	0.002	20	60,000
0.04	0.0015	0.002	25	60,000
0.05	0.002	0.003	30	60,000
0.06	0.002	0.004	40	60,000
0.07	0.0025	0.005	50	60,000
0.08	0.003	0.005	70	60,000
0.09	0.004	0.01	80	60,000

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示径向切深量。
※2 拆装或者预调刀具时请务必小心。
※3 建议使用油雾冷却方式。
※4 请尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※5 增加切深量会导致刀具折断。特别须注意ap值的设定。
※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Handle with care when exchanging and presetting tool.
※3 We recommend using oil mist coolant.
※4 Minimize chucking runout.
(Recommend to measure actual runout at activated spindle speed.)
※5 Increase of Depth of Cut may cause a tool breakage, especially careful for Axial Depth of Cut.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00002-00030	0.03	0.045	15°	4	45	25,200
01-00002-00040	0.04	0.060	15°	4	45	21,000
01-00002-00050	0.05	0.075	15°	4	45	18,900
01-00002-00060	0.06	0.090	15°	4	45	16,800
01-00002-00070	0.07	0.105	15°	4	45	14,700
01-00002-00080	0.08	0.120	15°	4	45	12,600
01-00002-00090	0.09	0.135	15°	4	45	11,600

订购方法 How to Order
请指定NSME230 外径(D)。
When you order, indicate NSME230 (D).
※(γ)为参考值。
※(γ) is reference value.

平底 Square
全刃长 Full Cutting Length
无涂层 Non-Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
微米系列 Micro Edge

AL2D-2

规格 Size φ 0.5 ～ φ 12

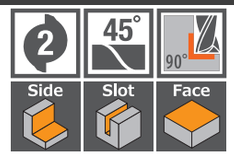
WC

铝合金加工用2刃平底铣刀2倍刃长型
2-Flute L/D=2 End Mill for Aluminium

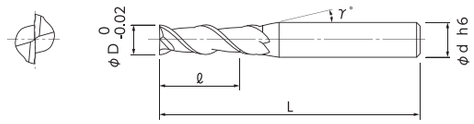
共有38种规格
Total 38 sizes

铝合金加工用铣刀。刃长为外径的2倍
针对铝合金加工用的刃口设计，可减少振刀和毛刺

2-flute end mill for aluminium. L/D=2
Reducing chattering and burr by specialized cutting edge design for aluminium







- NS TOOL的AL系列在任何条件下都可实现稳定的高效率加工。
- 性价比优异的高刚性设计。2倍刃长造型。
- AL-series realized a stable and high efficient machining.
- L/D=2 to increase rigidity and realize best cost performance.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00631-00050	0.5	1	9°	4	45	4,000
01-00631-00060	0.6	1.2	9°	4	45	4,800
01-00631-00070	0.7	1.4	9°	4	45	4,800
01-00631-00080	0.8	1.6	9°	4	45	4,800
01-00631-00090	0.9	1.8	9°	4	45	4,800
01-00631-00100	1	2	9°	4	45	3,000
01-00631-00110	1.1	2.2	9°	4	45	4,800
01-00631-00120	1.2	2.4	9°	4	45	4,800
01-00631-00130	1.3	2.6	9°	4	45	4,800
01-00631-00140	1.4	2.8	9°	4	45	4,800
01-00631-00150	1.5	3	9°	4	45	3,000
01-00631-00160	1.6	3.2	9°	4	45	4,800
01-00631-00170	1.7	3.4	9°	4	45	4,800
01-00631-00180	1.8	3.6	9°	4	45	4,800
01-00631-00190	1.9	3.8	9°	4	45	4,800
01-00631-00200	2	4	9°	4	45	3,000
01-00631-00210	2.1	4.2	9°	4	45	5,600
01-00631-00220	2.2	4.4	9°	4	45	5,600
01-00631-00230	2.3	4.6	9°	4	45	5,600
01-00631-00240	2.4	4.8	9°	4	45	5,600
01-00631-00250	2.5	5	9°	4	45	4,000
01-00631-00260	2.6	5.2	9°	4	45	5,600
01-00631-00270	2.7	5.4	9°	4	45	5,600
01-00631-00280	2.8	5.6	9°	4	45	5,600
01-00631-00290	2.9	5.8	9°	6	50	5,800
01-00631-00300	3	6	9°	6	50	4,200
01-00631-00350	3.5	7	9°	6	50	5,100
01-00631-00400	4	8	9°	6	50	4,300
01-00631-00450	4.5	9	9°	6	55	5,600
01-00631-00500	5	10	9°	6	55	4,700
01-00631-00550	5.5	11	9°	6	55	5,800
01-00631-00600	6	12	–	6	55	5,000
01-00631-00700	7	14	9°	8	70	9,200
01-00631-00800	8	16	–	8	70	9,200
01-00631-00900	9	18	9°	10	75	12,000
01-00631-01000	10	20	–	10	75	12,000
01-00631-01100	11	22	9°	12	80	17,500
01-00631-01200	12	24	–	12	80	17,500

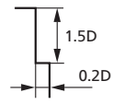
订购方法 How to Order
请指定AL2D-2 外径(D)。
When you order, indicate AL2D-2 (D).

※(γ)为参考值。
※(γ) is reference value.

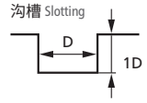
加工材料 Work Material	铝 Aluminium A1070				铝合金 Aluminium Alloy A2017・A5052・A7075				铸铝 Aluminium Cast AC8C			
切削速度 Cutting Speed	340m/min		270m/min		380m/min		300m/min		280m/min		200m/min	
外径 Dia.	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.5	20,000	400	20,000	200	20,000	400	20,000	300	20,000	400	20,000	300
1	20,000	700	20,000	400	20,000	700	20,000	400	20,000	700	20,000	400
1.5	20,000	800	20,000	500	20,000	800	20,000	500	20,000	800	20,000	500
2	20,000	1,000	20,000	600	20,000	1,000	20,000	600	20,000	1,000	20,000	600
2.5	20,000	1,200	20,000	700	20,000	1,200	20,000	700	20,000	1,200	20,000	700
3	20,000	1,300	20,000	800	20,000	1,500	20,000	900	20,000	1,500	20,000	800
4	20,000	1,500	20,000	900	20,000	1,700	20,000	1,100	20,000	1,700	15,900	800
5	20,000	1,700	17,200	900	20,000	2,000	19,100	1,300	17,800	1,700	12,700	800
6	18,000	1,800	14,300	900	20,000	2,200	15,900	1,300	14,900	1,700	10,600	800
7	15,500	1,800	12,300	900	17,300	2,300	13,600	1,300	12,700	1,700	9,100	800
8	13,500	1,800	10,700	1,000	15,100	2,400	11,900	1,300	11,100	1,800	8,000	800
9	12,000	1,800	9,600	1,000	13,400	2,400	10,600	1,300	9,900	1,800	7,100	800
10	10,800	1,800	8,600	1,000	12,100	2,400	9,600	1,300	8,900	1,800	6,400	800
11	9,800	1,900	7,800	1,000	11,000	2,500	8,700	1,300	8,100	1,800	5,800	800
12	9,000	2,000	7,200	1,100	10,100	2,500	8,000	1,400	7,400	1,800	5,300	900

切深量 Depth of Cut
(D:外径 Dia.)

侧面 Side Milling



沟槽 Slotting



备 注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 请使用刚性好、精度高的机床和夹具。
※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※4 建议使用水溶性切削方式。
※ 1 Adjust both the spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※ 2 Use a rigid and precise machine and chuck holder.
※ 3 Adjust milling conditions when vibration and abnormal sounds occur according to the rigidity of the machine and the chuck holder, or work clamping condition.
※ 4 Water-soluble fluid is recommended.

◎ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O
铝合金加工 Aluminium Milling

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○
铝合金加工 Aluminium Milling

AL3D-2

规格 Size ϕ 1 ～ ϕ 12

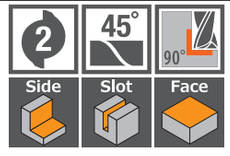
WC

铝合金加工用2刃平底铣刀3倍刃长型
2-Flute L/D=3 End Mill for Aluminium

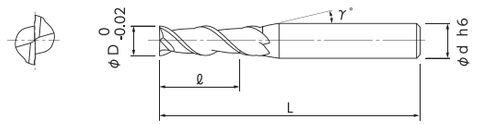
共有14种规格
Total 14 sizes

铝合金加工用铣刀。刃长为外径的3倍
针对铝合金加工用的刃口设计，可减少振刀和毛刺

2-flute end mill for aluminium. L/D=3
Reducing chattering and burr cutting edge design for aluminium







- NS TOOL的AL系列在任何条件下都可实现稳定的高效率加工。
- 可在多个领域中获得稳定的加工面精度，即使高速加工也可抑制振刀。
- AL-series realized a stable and high efficient machining.
- It exhibits stable excellent surface on a wide area and no chattering occurs even during high speed cutting.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00632-00100	1	3	9°	4	45	4,800
01-00632-00150	1.5	4.5	9°	4	45	4,800
01-00632-00200	2	6	9°	4	45	4,800
01-00632-00250	2.5	7.5	9°	4	45	4,800
01-00632-00300	3	9	9°	6	50	6,200
01-00632-00400	4	12	9°	6	50	6,400
01-00632-00500	5	15	9°	6	55	6,800
01-00632-00600	6	18	–	6	60	7,200
01-00632-00700	7	21	9°	8	70	11,600
01-00632-00800	8	24	–	8	70	11,600
01-00632-00900	9	27	9°	10	75	14,500
01-00632-01000	10	30	–	10	75	14,500
01-00632-01100	11	33	9°	12	90	20,000
01-00632-01200	12	36	–	12	90	20,000

订购方法 How to Order

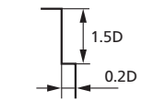
请指定AL3D-2 外径(D)。
When you order, indicate AL3D-2 (D).

※(γ)为参考值。
※(γ) is reference value.

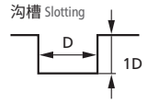
加工材料 Work Material	铝 Aluminium A1070				铝合金 Aluminium Alloy A2017・A5052・A7075				铸铝 Aluminium Cast AC8C			
切削速度 Cutting Speed	300m/min		220m/min		330m/min		240m/min		250m/min		160m/min	
外径 Dia.	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,000	400	20,000	300	20,000	400	20,000	300	20,000	400	20,000	300
1.5	20,000	500	20,000	400	20,000	500	20,000	400	20,000	500	20,000	400
2	20,000	600	20,000	400	20,000	600	20,000	400	20,000	600	20,000	400
2.5	20,000	700	20,000	500	20,000	700	20,000	500	20,000	700	20,000	500
3	20,000	900	20,000	600	20,000	900	20,000	600	20,000	900	17,000	500
4	20,000	1,000	17,500	700	20,000	1,000	19,000	750	20,000	1,000	13,000	500
5	19,000	1,000	14,000	700	20,000	1,200	15,500	750	16,000	1,000	10,000	500
6	16,000	1,100	11,500	700	17,500	1,400	12,500	750	13,500	1,000	8,500	500
7	13,500	1,100	10,000	750	15,000	1,500	11,000	800	11,500	1,100	7,300	500
8	12,000	1,100	8,800	750	13,000	1,600	9,600	800	9,900	1,200	6,400	500
9	11,000	1,100	7,800	750	11,700	1,600	8,500	800	8,800	1,200	5,700	500
10	9,600	1,100	7,000	800	10,500	1,700	7,600	850	8,000	1,300	5,100	550
11	8,700	1,100	6,400	800	9,600	1,700	6,900	850	7,200	1,300	4,600	550
12	8,000	1,200	5,800	800	8,800	1,700	6,400	900	6,600	1,300	4,200	600

切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



沟槽 Slotting



备 注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 请使用刚性好、精度高的机床和夹具。
※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※4 建议使用水溶性切削方式。

※ 1 Adjust both spindle speed and feed at the same rate.
（When using spindle speed 20,000 or more, the same adjustment is required.）
※ 2 Use a rigid and precise machine and chuck holder.
※ 3 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.
※ 4 Water-soluble fluid is recommended.

◎ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○

铝合金加工 Aluminium Milling

AL4D-2

规格 Size φ 1 ～ φ 12

WC

铝合金加工用2刃平底铣刀4倍刃长型
2-Flute L/D=4 End Mill for Aluminium

共有14种规格
Total 14 sizes

AL4D-2

切削参数参考表
Recommended Milling Conditions

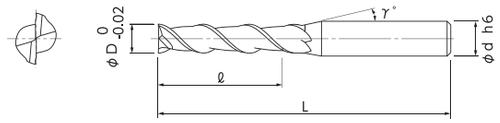
全刃长 Full Cutting Length 平底
无涂层 Non-Coating Square

铝合金加工用铣刀。刃长为外径的4倍
针对铝合金加工用的刃口设计，可减少振刀和毛刺

2-flute end mill for aluminium. L/D=4
Reducing chattering and burr by cutting edge design for aluminium







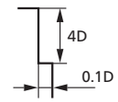
- 可在多个领域中获得稳定的加工面精度，即使高速加工也可抑制振刀。
- It exhibits stable excellent surface on a wide area and no chattering occurs even during high speed cutting.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00633-00100	1	4	9°	4	50	6,300
01-00633-00150	1.5	6	9°	4	50	6,300
01-00633-00200	2	8	9°	4	50	6,300
01-00633-00250	2.5	10	9°	4	50	6,300
01-00633-00300	3	12	9°	6	55	7,700
01-00633-00400	4	16	9°	6	60	8,000
01-00633-00500	5	20	9°	6	65	8,600
01-00633-00600	6	24	–	6	75	9,600
01-00633-00700	7	28	9°	8	90	14,500
01-00633-00800	8	32	–	8	90	14,500
01-00633-00900	9	36	9°	10	100	19,800
01-00633-01000	10	40	–	10	100	19,800
01-00633-01100	11	44	9°	12	110	25,100
01-00633-01200	12	48	–	12	110	25,100

订购方法 How to Order

请指定AL4D-2 外径(D)。 ※(γ)为参考值。
When you order, indicate AL4D-2 (D). ※(γ) is reference value.

加工材料 Work Material	铝 Aluminium A1070		铝合金 Aluminium Alloy A2017・A5052・A7075		铸铝 Aluminium Cast AC8C	
切削速度 Cutting Speed	190m/min		280m/min		150m/min	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,000	220	20,000	220	20,000	220
1.5	20,000	270	20,000	270	20,000	320
2	20,000	320	20,000	320	20,000	340
2.5	20,000	430	20,000	430	18,500	400
3	20,000	570	20,000	570	15,000	520
4	15,500	650	20,000	840	11,500	520
5	12,000	840	17,500	900	9,100	520
6	10,200	840	14,500	1,050	7,700	520
7	8,800	840	12,600	1,150	6,600	580
8	7,700	840	11,000	1,150	5,800	650
9	6,800	900	9,700	1,300	5,200	720
10	6,100	900	8,800	1,300	4,600	720
11	5,500	980	8,000	1,450	4,200	720
12	5,200	1,050	7,300	1,450	3,800	780
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling 					
备注 Notes	※1 请以相同的比率调整主轴转速和进给速度。 （主轴转速使用20,000转以上时，请进行相同的调整。） ※2 请使用刚性好、精度高的机床和夹具。 ※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。 ※4 建议使用水溶性切削方式。 ※ 1 Adjust both spindle speed and feed at the same rate. (When using spindle speed 20,000 or more, the same adjustment is required.) ※ 2 Use a rigid and precise machine and chuck holder. ※ 3 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping. ※ 4 Water-soluble fluid is recommended.					

◎ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○

AL5D-2

规格 Size φ 1 ～ φ 12

WC

铝合金加工用2刃平底铣刀5倍刃长型
2-Flute L/D=5 End Mill for Aluminium

共有14种规格
Total 14 sizes

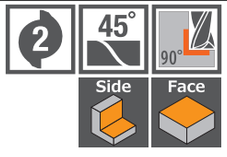
AL5D-2

切削参数参考表
Recommended Milling Conditions

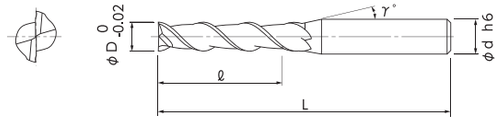
平底 全刃长 Full Cutting Length
Square 无涂层 Non-Coating

铝合金加工用铣刀。刃长为外径的5倍
针对铝合金加工用的刃口设计，可减少振刀和毛刺

2-flute end mill for aluminium. L/D=5
Reducing chattering and burr by cutting edge design for aluminium







- NS TOOL的AL系列在任何条件下都可实现稳定的高效率加工。
- 可在多个领域中获得稳定的加工面精度，即使高速加工也可抑制振刀。
- AL-series realized a stable and high efficient machining.
- It exhibits stable excellent surface on a wide area and no chattering occurs even during high speed cutting.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00634-00100	1	5	9°	4	50	7,800
01-00634-00150	1.5	7.5	9°	4	50	7,800
01-00634-00200	2	10	9°	4	50	7,800
01-00634-00250	2.5	12.5	9°	4	50	7,800
01-00634-00300	3	15	9°	6	55	9,100
01-00634-00400	4	20	9°	6	60	9,600
01-00634-00500	5	25	9°	6	65	10,100
01-00634-00600	6	30	–	6	75	11,900
01-00634-00700	7	35	9°	8	90	17,600
01-00634-00800	8	40	–	8	90	17,600
01-00634-00900	9	45	9°	10	100	24,900
01-00634-01000	10	50	–	10	100	24,900
01-00634-01100	11	55	9°	12	110	30,000
01-00634-01200	12	60	–	12	110	30,000

订购方法 How to Order

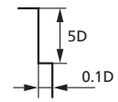
请指定AL5D-2 外径(D)。
When you order, indicate AL5D-2 (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	铝 Aluminium A1070		铝合金 Aluminium Alloy A2017・A5052・A7075		铸铝 Aluminium Cast AC8C	
切削速度 Cutting Speed	160m/min		230m/min		120m/min	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,000	200	20,000	200	20,000	200
1.5	20,000	250	20,000	250	20,000	300
2	20,000	300	20,000	300	19,000	300
2.5	20,000	400	20,000	400	15,300	300
3	17,000	450	20,000	450	12,700	400
4	12,700	500	18,000	700	9,600	400
5	10,000	650	14,600	700	7,600	400
6	8,500	650	12,000	800	6,400	400
7	7,300	650	10,500	900	5,500	450
8	6,400	650	9,100	900	4,800	500
9	5,700	700	8,100	1,000	4,300	550
10	5,100	700	7,300	1,000	3,800	550
11	4,600	750	6,700	1,100	3,500	550
12	4,300	800	6,100	1,100	3,200	600

切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



备注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 请使用刚性好、精度高的机床和夹具。
※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※4 建议使用水溶性切削方式。
※ 1 Adjust both spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※ 2 Use a rigid and precise machine and chuck holder.
※ 3 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.
※ 4 Water-soluble fluid is recommended.

◎ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○

铝合金加工
Aluminium Milling

铝合金加工
Aluminium Milling

AL3D-345

规格 Size ϕ 1 ～ ϕ 12

WC

铝合金用高效率铣刀3刃3倍刃长

High efficient 3-Flute End Mill for Aluminium L/D=3

共有9种规格
Total 9 sizes

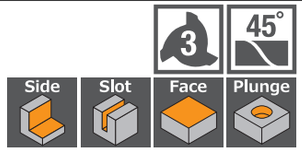
AL3D-345

切削参数参考表
Recommended Milling Conditions

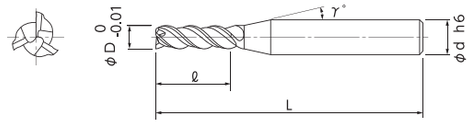
全刃长 Full Cutting Length 平底
无涂层 Non-Coating Square

铝合金加工用　可无底孔、无停顿地进行插铣到沟槽加工的连续加工

For machining on Aluminium alloy. Continuous machining from plunging without guide-hole and stepping to slotting







- AL系列在任何条件下都可实现稳定的高效率加工。
- 可在多个领域中获得稳定的加工面精度，即使高速加工也可抑制振刀。
- 3刃造型，实现高效率加工。
- AL-series realized a stable and high efficient machining.
- It exhibits stable excellent surface on a wide area and no chattering occurs even during high speed cutting.
- Realized high efficiency machining by adopting 3 flutes.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00639-00100	1	3	12°	4	60	6,700
01-00639-00200	2	6	12°	4	60	6,700
01-00639-00300	3	9	12°	6	60	8,500
01-00639-00400	4	12	12°	6	70	9,800
01-00639-00500	5	15	12°	6	80	10,600
01-00639-00600	6	18	–	6	80	11,000
01-00639-00800	8	24	–	8	90	17,400
01-00639-01000	10	30	–	10	100	23,800
01-00639-01200	12	36	–	12	110	28,200

订购方法 How to Order
请指定AL3D-345 外径(D)。
When you order, indicate AL3D-345 (D).

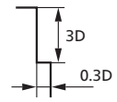
※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-034

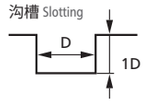
加工材料 Work Material	铝 Aluminium A1070						铝合金 Aluminium Alloy A2017・A5052・A7075						铸铝 Aluminium Cast AC8C					
切削速度 Cutting Speed	300m/min		220m/min		220m/min		330m/min		240m/min		240m/min		250m/min		160m/min		160m/min	
	侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,000	1,200	20,000	500	20,000	100	20,000	1,200	20,000	500	20,000	100	20,000	1,200	20,000	500	20,000	80
2	20,000	1,800	20,000	700	20,000	150	20,000	1,800	20,000	700	20,000	150	20,000	1,800	20,000	700	20,000	130
3	20,000	2,000	20,000	1,000	20,000	150	20,000	2,000	20,000	1,000	20,000	150	20,000	2,000	17,000	850	17,000	130
4	20,000	2,200	17,500	1,100	17,500	150	20,000	2,200	19,000	1,100	19,000	200	20,000	2,200	13,000	850	13,000	100
5	19,000	2,200	14,000	1,100	14,000	150	20,000	2,700	15,500	1,200	15,500	200	16,000	2,200	10,000	850	10,000	80
6	16,000	2,200	11,500	1,100	11,500	150	17,500	3,000	12,500	1,300	12,500	200	13,500	2,200	8,500	850	8,500	80
8	12,000	2,200	9,000	1,200	9,000	100	13,000	3,000	9,500	1,400	9,500	200	10,000	2,300	6,500	850	6,500	60
10	9,500	2,200	7,000	1,300	7,000	70	10,500	3,250	7,500	1,500	7,500	150	8,000	2,500	5,000	900	5,000	50
12	8,000	2,400	6,000	1,400	6,000	70	9,000	3,350	6,500	1,600	6,500	150	6,500	2,600	4,000	1,000	4,000	50

切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



沟槽 Slotting



备　注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 请使用刚性好、精度高的机床和夹具。
※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※4 进行插铣加工时如果切屑容易堵塞，则请进行分级式铣削。
※5 建议使用水溶性切削方式。
※ 1 Adjust both spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※ 2 Use a rigid and precise machine and chuck holder.
※ 3 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.
※ 4 When tending to have chip packing during plunging, step milling is recommended.
※ 5 Water-soluble fluid is recommended.

◎ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○

铝合金加工 Aluminium Milling

铝合金加工 Aluminium Milling

AL2D-2DLC

规格 Size φ 0.5 ～ φ 12

DLC

DLC涂层 铝合金加工用2刃平底铣刀2倍刃长型

DLC COATING 2-Flute L/D=2 End Mill for Aluminium

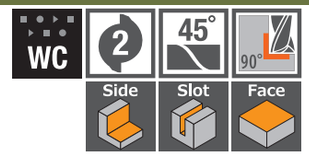
共有22种规格
Total 22 sizes

AL2D-2DLC

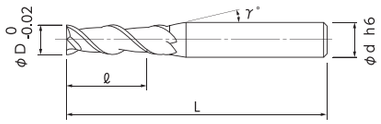
切削参数参考表
Recommended Milling Conditions

铝合金加工用铣刀。刃长为外径的2倍
采用DLC涂层，可延长刀具寿命

2-flute end mill for aluminium. L/D=2. DLC coating applied for longer tool life







- 采用NS TOOL独创的高粘合性DLC涂层，适用于长时间加工。
- Adopted NS TOOL original DLC COATING that suitable for long time machining.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00661-00050	0.5	1	9°	4	45	4,800
01-00661-00060	0.6	1.2	9°	4	45	5,900
01-00661-00070	0.7	1.4	9°	4	45	5,900
01-00661-00080	0.8	1.6	9°	4	45	5,900
01-00661-00090	0.9	1.8	9°	4	45	5,900
01-00661-00100	1	2	9°	4	45	3,700
01-00661-00150	1.5	3	9°	4	45	3,700
01-00661-00200	2	4	9°	4	45	3,700
01-00661-00250	2.5	5	9°	4	45	4,800
01-00661-00300	3	6	9°	6	50	5,100
01-00661-00350	3.5	7	9°	6	50	6,200
01-00661-00400	4	8	9°	6	50	5,200
01-00661-00450	4.5	9	9°	6	55	6,800
01-00661-00500	5	10	9°	6	55	5,700
01-00661-00550	5.5	11	9°	6	55	7,000
01-00661-00600	6	12	–	6	55	5,900
01-00661-00700	7	14	9°	8	70	11,200
01-00661-00800	8	16	–	8	70	11,200
01-00661-00900	9	18	9°	10	75	14,400
01-00661-01000	10	20	–	10	75	14,400
01-00661-01100	11	22	9°	12	80	21,000
01-00661-01200	12	24	–	12	80	21,000

订购方法 How to Order

请指定AL2D-2DLC 外径(D)。
When you order, indicate AL2D-2DLC (D).

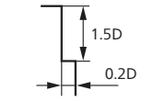
※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	铝 Aluminium A1070				铝合金 Aluminium Alloy A2017·A5052·A7075				铸铝 Aluminium Cast AC8C			
切削速度 Cutting Speed	340m/min		270m/min		380m/min		300m/min		280m/min		200m/min	
外径 Dia.	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.5	20,000	400	20,000	200	20,000	400	20,000	300	20,000	400	20,000	300
1	20,000	700	20,000	400	20,000	700	20,000	400	20,000	700	20,000	400
1.5	20,000	800	20,000	500	20,000	800	20,000	500	20,000	800	20,000	500
2	20,000	1,000	20,000	600	20,000	1,000	20,000	600	20,000	1,000	20,000	600
2.5	20,000	1,200	20,000	700	20,000	1,200	20,000	700	20,000	1,200	20,000	700
3	20,000	1,300	20,000	800	20,000	1,500	20,000	900	20,000	1,500	20,000	800
4	20,000	1,500	20,000	900	20,000	1,700	20,000	1,100	20,000	1,700	15,900	800
5	20,000	1,700	17,200	900	20,000	2,000	19,100	1,300	17,800	1,700	12,700	800
6	18,000	1,800	14,300	900	20,000	2,200	15,900	1,300	14,900	1,700	10,600	800
7	15,500	1,800	12,300	900	17,300	2,300	13,600	1,300	12,700	1,700	9,100	800
8	13,500	1,800	10,700	1,000	15,100	2,400	11,900	1,300	11,100	1,800	8,000	800
9	12,000	1,800	9,600	1,000	13,400	2,400	10,600	1,300	9,900	1,800	7,100	800
10	10,800	1,800	8,600	1,000	12,100	2,400	9,600	1,300	8,900	1,800	6,400	800
11	9,800	1,900	7,800	1,000	11,000	2,500	8,700	1,300	8,100	1,800	5,800	800
12	9,000	2,000	7,200	1,100	10,100	2,500	8,000	1,400	7,400	1,800	5,300	900

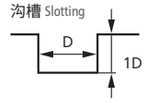
切深量 Depth of Cut

(D:外径 Dia.)

侧面 Side Milling



沟槽 Slotting



备 注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 请使用刚性好、精度高的机床和夹具。
※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※4 建议使用水溶性切削方式。

※ 1 Adjust both the spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※ 2 Use a rigid and precise machine and chuck holder.
※ 3 Adjust milling conditions when vibration and abnormal sounds occur according to the rigidity of the machine and the chuck holder, or work clamping condition.
※ 4 Water-soluble fluid is recommended.

◎ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O
铝合金加工 Aluminium Milling

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○
铝合金加工 Aluminium Milling

AL3D-2DLC

规格 Size ϕ 1 ～ ϕ 12

DLC

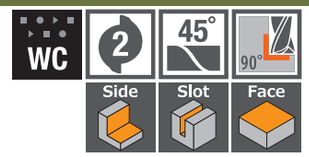
DLC涂层 铝合金加工用2刃平底铣刀3倍刃长型

DLC COATING 2-Flute L/D=3 End Mill for Aluminium

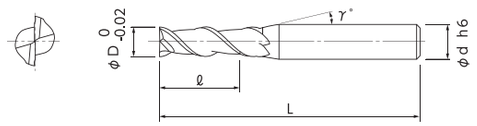
共有14种规格
Total 14 sizes

铝合金加工用铣刀。刃长为外径的3倍
采用DLC涂层，可延长刀具寿命

2-flute end mill for aluminium. L/D=3. DLC coating applied for longer tool life







- NS TOOL的AL系列在任何条件下都可实现稳定的高效率加工。
- 采用NS TOOL独创的高粘合性DLC涂层，适用于长时间加工。
- AL-series realized a stable and high efficient machining.
- Adopted NS TOOL original DLC COATING that suitable for long time machining.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00635-00100	1	3	9°	4	45	5,900
01-00635-00150	1.5	4.5	9°	4	45	5,900
01-00635-00200	2	6	9°	4	45	5,900
01-00635-00250	2.5	7.5	9°	4	45	5,900
01-00635-00300	3	9	9°	6	50	7,500
01-00635-00400	4	12	9°	6	50	7,700
01-00635-00500	5	15	9°	6	55	8,300
01-00635-00600	6	18	–	6	60	8,600
01-00635-00700	7	21	9°	8	70	13,900
01-00635-00800	8	24	–	8	70	13,900
01-00635-00900	9	27	9°	10	75	17,500
01-00635-01000	10	30	–	10	75	17,500
01-00635-01100	11	33	9°	12	90	24,000
01-00635-01200	12	36	–	12	90	24,000

订购方法 How to Order

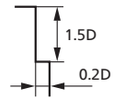
请指定AL3D-2DLC 外径(D)。
When you order, indicate AL3D-2DLC (D).

※(γ)为参考值。
※(γ) is reference value.

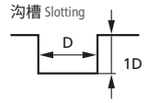
加工材料 Work Material	铝 Aluminium A1070				铝合金 Aluminium Alloy A2017・A5052・A7075				铸铝 Aluminium Cast AC8C			
切削速度 Cutting Speed	300m/min		220m/min		330m/min		240m/min		250m/min		160m/min	
外径 Dia.	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,000	400	20,000	300	20,000	400	20,000	300	20,000	400	20,000	300
1.5	20,000	500	20,000	400	20,000	500	20,000	400	20,000	500	20,000	400
2	20,000	600	20,000	400	20,000	600	20,000	400	20,000	600	20,000	400
2.5	20,000	700	20,000	500	20,000	700	20,000	500	20,000	700	20,000	500
3	20,000	900	20,000	600	20,000	900	20,000	600	20,000	900	17,000	500
4	20,000	1,000	17,500	700	20,000	1,000	19,000	750	20,000	1,000	13,000	500
5	19,000	1,000	14,000	700	20,000	1,200	15,500	750	16,000	1,000	10,000	500
6	16,000	1,100	11,500	700	17,500	1,400	12,500	750	13,500	1,000	8,500	500
7	13,500	1,100	10,000	750	15,000	1,500	11,000	800	11,500	1,100	7,300	500
8	12,000	1,100	8,800	750	13,000	1,600	9,600	800	9,900	1,200	6,400	500
9	11,000	1,100	7,800	750	11,700	1,600	8,500	800	8,800	1,200	5,700	500
10	9,600	1,100	7,000	800	10,500	1,700	7,600	850	8,000	1,300	5,100	550
11	8,700	1,100	6,400	800	9,600	1,700	6,900	850	7,200	1,300	4,600	550
12	8,000	1,200	5,800	800	8,800	1,700	6,400	900	6,600	1,300	4,200	600

切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



沟槽 Slotting



备 注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 请使用刚性好、精度高的机床和夹具。
※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※4 建议使用水溶性切削方式。
※ 1 Adjust both spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※ 2 Use a rigid and precise machine and chuck holder.
※ 3 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.
※ 4 Water-soluble fluid is recommended.

◎ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O
N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○

AL4D-2DLC

规格 Size φ 1 ～ φ 12

DLC

DLC涂层 铝合金加工用2刃平底铣刀4倍刃长型
DLC COATING 2-Flute L/D=4 End Mill for Aluminium

共有14种规格
Total 14 sizes

AL4D-2DLC

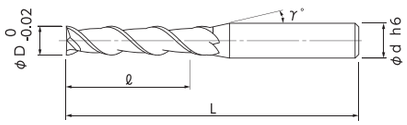
切削参数参考表
Recommended Milling Conditions

铝合金加工用铣刀。刃长为外径的4倍 采用DLC涂层，可延长刀具寿命

2-flute end mill for aluminium. L/D=4. DLC coating applied for longer tool life

WC | 2 | 45° | 90° | Side | Face





- 采用NS TOOL独创的高粘合性DLC涂层，适用于长时间加工。
- Adopted NS TOOL original DLC COATING that suitable for long time machining.

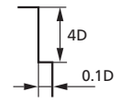
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00663-00100	1	4	9°	4	50	7,600
01-00663-00150	1.5	6	9°	4	50	7,600
01-00663-00200	2	8	9°	4	50	7,600
01-00663-00250	2.5	10	9°	4	50	7,600
01-00663-00300	3	12	9°	6	55	9,200
01-00663-00400	4	16	9°	6	60	9,700
01-00663-00500	5	20	9°	6	65	10,300
01-00663-00600	6	24	–	6	75	11,600
01-00663-00700	7	28	9°	8	90	17,500
01-00663-00800	8	32	–	8	90	17,500
01-00663-00900	9	36	9°	10	100	23,800
01-00663-01000	10	40	–	10	100	23,800
01-00663-01100	11	44	9°	12	110	30,100
01-00663-01200	12	48	–	12	110	30,100

订购方法 How to Order

请指定AL4D-2DLC 外径(D)。
When you order, indicate AL4D-2DLC (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	铝 Aluminium A1070		铝合金 Aluminium Alloy A2017・A5052・A7075		铸铝 Aluminium Cast AC8C	
切削速度 Cutting Speed	190m/min		280m/min		150m/min	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,000	220	20,000	220	20,000	220
1.5	20,000	270	20,000	270	20,000	320
2	20,000	320	20,000	320	20,000	340
2.5	20,000	430	20,000	430	18,500	400
3	20,000	570	20,000	570	15,000	520
4	15,500	650	20,000	840	11,500	520
5	12,000	840	17,500	900	9,100	520
6	10,200	840	14,500	1,050	7,700	520
7	8,800	840	12,600	1,150	6,600	580
8	7,700	840	11,000	1,150	5,800	650
9	6,800	900	9,700	1,300	5,200	720
10	6,100	900	8,800	1,300	4,600	720
11	5,500	980	8,000	1,450	4,200	720
12	5,200	1,050	7,300	1,450	3,800	780
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling 					
备注 Notes	※1 请以相同的比率调整主轴转速和进给速度。（主轴转速使用20,000转以上时，请进行相同的调整。） ※2 请使用刚性好、精度高的机床和夹具。 ※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。 ※4 建议使用水溶性切削方式。 ※ 1 Adjust both spindle speed and feed at the same rate. (When using spindle speed 20,000 or more, the same adjustment is required.) ※ 2 Use a rigid and precise machine and chuck holder. ※ 3 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping. ※ 4 Water-soluble fluid is recommended.					

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○
铝合金加工 Aluminium Milling

AL5D-2DLC

规格 Size φ 1 ～ φ 12

DLC

DLC涂层 铝合金加工用2刃平底铣刀5倍刃长型
DLC COATING 2-Flute L/D=5 End Mill for Aluminium

共有14种规格
Total 14 sizes

AL5D-2DLC

切削参数参考表
Recommended Milling Conditions

全刃长 Full Cutting Length 平底
涂层 Coating Square

铝合金加工用铣刀。刃长为外径的5倍 采用DLC涂层，可延长刀具寿命

2-flute end mill for aluminium. L/D=5. DLC coating applied for longer tool life



- 采用NS TOOL独创的高粘合性DLC涂层，适用于长时间加工。
- Adopted NS TOOL original DLC COATING that suitable for long time machining.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00664-00100	1	5	9°	4	50	9,300
01-00664-00150	1.5	7.5	9°	4	50	9,300
01-00664-00200	2	10	9°	4	50	9,300
01-00664-00250	2.5	12.5	9°	4	50	9,300
01-00664-00300	3	15	9°	6	55	11,000
01-00664-00400	4	20	9°	6	60	11,600
01-00664-00500	5	25	9°	6	65	12,200
01-00664-00600	6	30	–	6	75	14,300
01-00664-00700	7	35	9°	8	90	21,100
01-00664-00800	8	40	–	8	90	21,100
01-00664-00900	9	45	9°	10	100	29,800
01-00664-01000	10	50	–	10	100	29,800
01-00664-01100	11	55	9°	12	110	36,100
01-00664-01200	12	60	–	12	110	36,100

订购方法 How to Order

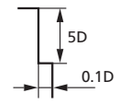
请指定AL5D-2DLC 外径(D)。
When you order, indicate AL5D-2DLC (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	铝 Aluminium A1070		铝合金 Aluminium Alloy A2017・A5052・A7075		铸铝 Aluminium Cast AC8C	
切削速度 Cutting Speed	160m/min		230m/min		120m/min	
外径 Dia.	侧面 Side Milling		侧面 Side Milling		侧面 Side Milling	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1	20,000	200	20,000	200	20,000	200
1.5	20,000	250	20,000	250	20,000	300
2	20,000	300	20,000	300	19,000	300
2.5	20,000	400	20,000	400	15,300	300
3	17,000	450	20,000	450	12,700	400
4	12,700	500	18,000	700	9,600	400
5	10,000	650	14,600	700	7,600	400
6	8,500	650	12,000	800	6,400	400
7	7,300	650	10,500	900	5,500	450
8	6,400	650	9,100	900	4,800	500
9	5,700	700	8,100	1,000	4,300	550
10	5,100	700	7,300	1,000	3,800	550
11	4,600	750	6,700	1,100	3,500	550
12	4,300	800	6,100	1,100	3,200	600

切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling



备 注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 请使用刚性好、精度高的机床和夹具。
※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※4 建议使用水溶性切削方式。
※ 1 Adjust both spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※ 2 Use a rigid and precise machine and chuck holder.
※ 3 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.
※ 4 Water-soluble fluid is recommended.

◎ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○

铝合金加工
Aluminium Milling

铝合金加工
Aluminium Milling

ALZ345

规格 Size φ1 ～ φ12

WC

铝合金用高效率铣刀3刃1.5倍刃长
High efficient 3-Flute End Mill for Aluminium L/D=1.5

共有30种规格
Total 30 sizes

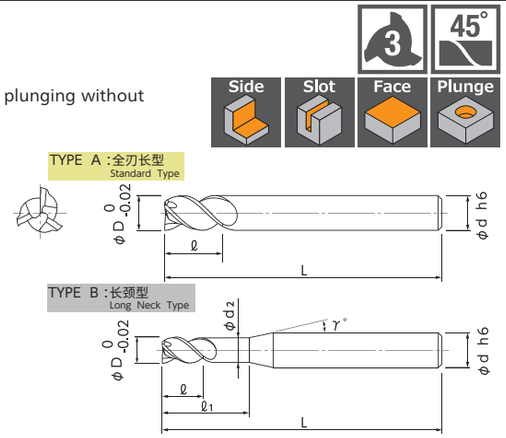
ALZ345

切削参数参考表
Recommended Milling Conditions

铝合金加工用　可无底孔、无停顿地进行插铣到沟槽加工的连续加工

For machining on aluminium alloy. Continuous machining from plunging without guide-hole and stepping to slotting





- AL系列在任何条件下都可实现稳定的高效率加工。
- 插铣性能大幅提高！
- 提高了切屑排放性能的高效率型。
- AL-series realized a stable and high efficient machining.
- Improved plunging capacity!
- High performance with better chip disposal.

★返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under neck Length	(ℓ)刃长 Length of Cut	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00636-00100	1	3	1.5	B	0.95	12°	4	45	5,100
01-00636-00102	1	5	1.5		0.95	12°	4	60	5,900
01-00636-00150	1.5	4.5	2.3		1.45	12°	4	45	5,100
01-00636-00200	2	6	3		1.94	12°	4	45	5,100
01-00636-00202	2	10	3		1.94	12°	4	60	5,900
01-00636-00250	2.5	7.5	3.8		2.4	12°	4	45	5,100
★ 01-00636-00300	3	9	4.5		2.85	12°	6	55	6,500
★ 01-00636-00302	3	15	4.5		2.85	12°	6	60	7,500
01-00636-00350	3.5	10.5	5.3		3.35	12°	6	55	7,900
★ 01-00636-00400	4	12	6		3.8	12°	6	55	6,700
★ 01-00636-00402	4	20	6		3.8	12°	6	70	8,400
01-00636-00450	4.5	13.5	6.8		4.3	12°	6	55	8,400
★ 01-00636-00500	5	15	7.5		4.8	12°	6	55	7,300
★ 01-00636-00502	5	25	7.5		4.8	12°	6	80	9,200
01-00636-00550	5.5	16.5	8.3		5.3	12°	6	55	9,100
★ 01-00636-00603	6	–	9	A	–	–	6	110	10,600
★ 01-00636-00600	6	18	9	B	5.8	–	6	60	7,600
★ 01-00636-00602	6	30	9		5.8	–	6	80	9,700
★ 01-00636-00700	7	21	10.5		6.8	12°	8	70	11,200
★ 01-00636-00803	8	–	12	A	–	–	8	120	16,800
★ 01-00636-00800	8	24	12	B	7.8	–	8	70	11,200
★ 01-00636-00802	8	40	12		7.8	–	8	90	14,500
★ 01-00636-00900	9	27	13.5		8.8	12°	10	75	14,100
★ 01-00636-01003	10	–	15	A	–	–	10	130	24,500
★ 01-00636-01000	10	30	15	B	9.8	–	10	75	14,100
★ 01-00636-01002	10	50	15		9.8	–	10	100	18,400
★ 01-00636-01100	11	33	16.5		10.8	12°	12	80	19,800
★ 01-00636-01203	12	–	18	A	–	–	12	150	32,800
★ 01-00636-01200	12	36	18	B	11.8	–	12	80	19,800
★ 01-00636-01202	12	60	18		11.8	–	12	110	24,600

订购方法 How to Order

请指定ALZ345 外径(D)[×颈长(ℓ1)]。(仅形状A请指定全长(L)。)
When you order, indicate ALZ345 (D) [×(ℓ1)] . Indicate (L) for Type A.

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material		铝 Aluminium A1070				铝合金 Aluminium Alloy A2017・A5052・A7075				铸铝 Aluminium Cast AC8C			
切削速度 Cutting Speed		310m/min				350m/min				230m/min			
外径 Dia.	颈长 Under neck Length	主轴转速 Spindle Speed	进给速度 Feed 插铣 Plunging	沟槽 Slotting	侧面 Side Milling	主轴转速 Spindle Speed	进给速度 Feed 插铣 Plunging	沟槽 Slotting	侧面 Side Milling	主轴转速 Spindle Speed	进给速度 Feed 插铣 Plunging	沟槽 Slotting	侧面 Side Milling
		min-1	mm/min			min-1	mm/min			min-1	mm/min		
1	3	20,000	200	600	1,100	20,000	200	600	1,100	20,000	150	600	1,100
	5	16,000	160	500	900	16,000	160	500	900	16,000	120	500	900
2	6	20,000	300	900	1,500	20,000	300	900	1,500	20,000	250	900	1,500
	10	16,000	240	800	1,200	16,000	240	800	1,200	16,000	200	800	1,200
3	9	20,000	300	1,200	2,000	20,000	300	1,400	2,200	20,000	250	1,200	2,200
	15	16,000	240	1,000	1,600	16,000	240	1,200	1,800	16,000	200	1,000	1,800
4	12	20,000	300	1,400	2,200	20,000	400	1,800	2,500	18,300	200	1,400	2,300
	20	16,000	240	1,200	1,800	16,000	320	1,500	2,000	14,600	160	1,200	1,900
5	15	19,700	300	1,500	2,500	20,000	400	2,200	3,100	14,600	150	1,400	2,100
	25	15,700	240	1,200	2,000	16,000	320	1,800	2,500	11,700	120	1,200	1,700
6	–	16,500	300	1,600	2,500	18,600	400	2,500	3,500	12,200	150	1,400	2,100
	18	16,500	300	1,600	2,500	18,600	400	2,500	3,500	12,200	150	1,400	2,100
	30	13,200	240	1,300	2,000	14,800	320	2,000	2,800	9,700	120	1,200	1,700
7	21	14,100	200	1,600	2,500	15,900	400	2,500	3,500	10,500	140	1,400	2,100
8	–	12,300	200	1,700	2,500	13,900	400	2,600	3,500	9,200	120	1,400	2,200
	24	12,300	200	1,700	2,500	13,900	400	2,600	3,500	9,200	120	1,400	2,200
	40	9,800	160	1,400	2,000	11,100	320	2,100	2,800	7,300	100	1,200	1,800
9	27	11,000	200	1,700	2,500	12,400	300	2,600	3,500	8,100	120	1,400	2,200
10	–	9,900	100	1,700	2,500	11,100	300	2,600	3,800	7,300	80	1,400	2,200
	30	9,900	100	1,700	2,500	11,100	300	2,600	3,800	7,300	80	1,400	2,200
	50	7,900	80	1,400	2,000	8,800	240	2,100	3,000	5,800	70	1,200	1,800
11	33	9,000	100	1,800	2,600	10,100	300	2,600	4,100	6,700	80	1,400	2,200
12	–	8,200	100	1,900	2,700	9,300	300	2,600	4,100	6,100	60	1,500	2,200
	36	8,200	100	1,900	2,700	9,300	300	2,600	4,100	6,100	60	1,500	2,200
	60	6,500	80	1,500	2,200	7,400	240	2,100	3,200	4,800	50	1,200	1,800

切深量 Depth of Cut

(D:外径 Dia.)



备　注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 形状 A：全刃长型请参考伸出量为3D时的参数。伸出量为5D时，请将上述的转速和进给速度调至80%，7D时调至50%。
※3 请使用刚性好、精度高的机床和夹具。
※4 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※5 进行插铣加工时如果切屑容易堵塞，则请进行分级式铣削。
※6 建议使用水溶性切削方式。
※1 Adjust both spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※2 TYPE A : Recommended milling conditions for standard type are at overhang 3D. Adjust spindle speed and feed rate at 80% for overhang 5D, and 50% for 7D.
※3 Use a rigid and precise machine and chuck holder.
※4 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.
※5 When tending to have chip packing during plunging, step milling is recommended.
※6 Water-soluble fluid is recommended.

◎ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
○ 树脂 Resin O
铝合金加工 Aluminium Milling

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○
铝合金加工 Aluminium Milling

ALZ345-DLC

规格 Size φ 1 ～ φ 12

DLC

DLC涂层　铝合金用高效率铣刀3刃1.5倍刃长

DLC COATING High Efficient 3-Flute End Mill for Aluminium L/D=1.5

共有17种规格
Total 17 sizes

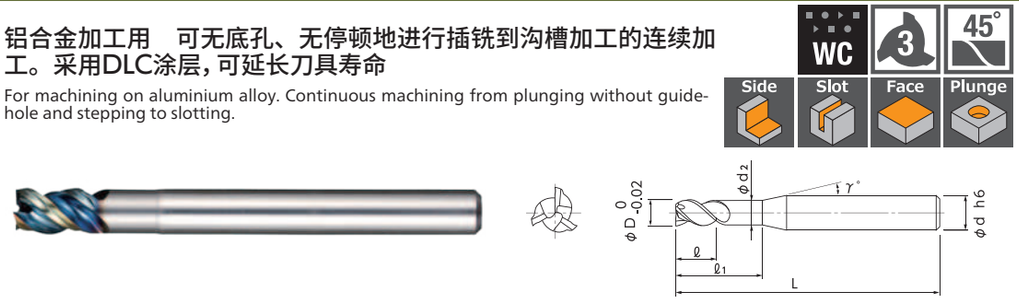
ALZ345-DLC

切削参数参考表
Recommended Milling Conditions

长颈 Long Neck
平底 Square
涂层 Coating

铝合金加工用　可无底孔、无停顿地进行插铣到沟槽加工的连续加工。采用DLC涂层，可延长刀具寿命

For machining on aluminium alloy. Continuous machining from plunging without guide-hole and stepping to slotting.



- 采用NS TOOL独创的高粘合性DLC涂层，适用于长时间加工。
- Adopted NS TOOL original DLC COATING that suitable for long time machining.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00666-00100	1	3	1.5	0.95	12°	4	45	6,200
01-00666-00150	1.5	4.5	2.3	1.45	12°	4	45	6,200
01-00666-00200	2	6	3	1.94	12°	4	45	6,200
01-00666-00250	2.5	7.5	3.8	2.4	12°	4	45	6,200
01-00666-00300	3	9	4.5	2.85	12°	6	55	7,800
01-00666-00350	3.5	10.5	5.3	3.35	12°	6	55	9,600
01-00666-00400	4	12	6	3.8	12°	6	55	8,100
01-00666-00450	4.5	13.5	6.8	4.3	12°	6	55	10,100
01-00666-00500	5	15	7.5	4.8	12°	6	55	8,800
01-00666-00550	5.5	16.5	8.3	5.3	12°	6	55	11,000
01-00666-00600	6	18	9	5.8	–	6	60	9,100
01-00666-00700	7	21	10.5	6.8	12°	8	70	13,500
01-00666-00800	8	24	12	7.8	–	8	70	13,500
01-00666-00900	9	27	13.5	8.8	12°	10	75	16,900
01-00666-01000	10	30	15	9.8	–	10	75	16,900
01-00666-01100	11	33	16.5	10.8	12°	12	80	23,800
01-00666-01200	12	36	18	11.8	–	12	80	26,100

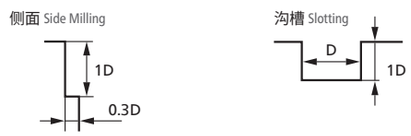
订购方法 How to Order

请指定ALZ345-DLC 外径(D)。
When you order, indicate ALZ345-DLC (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	铝 Aluminium A1070				铝合金 Aluminium Alloy A2017・A5052・A7075				铸铝 Aluminium Cast AC8C			
切削速度 Cutting Speed	310m/min				350m/min				230m/min			
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed 插铣 Plunging	沟槽 Slotting	侧面 Side Milling	主轴转速 Spindle Speed	进给速度 Feed 插铣 Plunging	沟槽 Slotting	侧面 Side Milling	主轴转速 Spindle Speed	进给速度 Feed 插铣 Plunging	沟槽 Slotting	侧面 Side Milling
	min-1	mm/min			min-1	mm/min			min-1	mm/min		
1	20,000	200	600	1,100	20,000	200	600	1,100	20,000	150	600	1,100
2	20,000	300	900	1,500	20,000	300	900	1,500	20,000	250	900	1,500
3	20,000	300	1,200	2,000	20,000	300	1,400	2,200	20,000	250	1,200	2,200
4	20,000	300	1,400	2,200	20,000	400	1,800	2,500	18,300	200	1,400	2,300
5	19,700	300	1,500	2,500	20,000	400	2,200	3,100	14,600	150	1,400	2,100
6	16,500	300	1,600	2,500	18,600	400	2,500	3,500	12,200	150	1,400	2,100
7	14,100	200	1,600	2,500	15,900	400	2,500	3,500	10,500	140	1,400	2,100
8	12,300	200	1,700	2,500	13,900	400	2,600	3,500	9,200	120	1,400	2,200
9	11,000	200	1,700	2,500	12,400	300	2,600	3,500	8,100	120	1,400	2,200
10	9,900	100	1,700	2,500	11,100	300	2,600	3,800	7,300	80	1,400	2,200
11	9,000	100	1,800	2,600	10,100	300	2,600	4,100	6,700	80	1,400	2,200
12	8,200	100	1,900	2,700	9,300	300	2,600	4,100	6,100	60	1,500	2,200

切深量 Depth of Cut
(D:外径 Dia.)



备　注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 请使用刚性好、精度高的机床和夹具。
※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※4 进行插铣加工时如果切屑容易堵塞，则请进行分级式铣削。
※5 建议使用水溶性切削方式。

※1 Adjust both spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※2 Use a rigid and precise machine and chuck holder.
※3 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.
※4 When tending to have chip packing during plunging, step milling is recommended.
※5 Water-soluble fluid is recommended.

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○
铝合金加工 Aluminium Milling

AL-3LS

规格 Size ϕ 5 ～ ϕ 12

WC

铝合金加工用长柄铣刀（刀柄内缩造型）
3-Flute Long Shank End Mill for Aluminium

共有5种规格
Total 5 sizes

AL-3LS

切削参数参考表
Recommended Milling Conditions

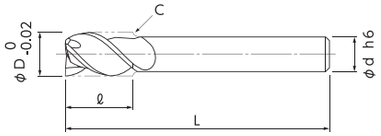
全刃长 Full Cutting Length 平底
无涂层 Non-Coating Square

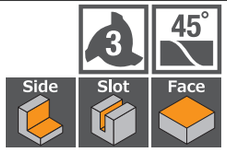
在铝合金加工时，适用于更深处加工的长柄造型

3-flute long shank end mill for aluminium for deeper area milling









- 柄部比外径更细的刀柄内缩型，适用于立面加工。
- 刃部后端经过斜面倒角加工，可将分级加工段差控制到最小。
- Slimmed shank suits side milling.
- Corner-C at flute end effects an accurate side step milling.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00637-00500	5	7.5	4	80	8,900
01-00637-00600	6	9	4	80	8,900
01-00637-00800	8	12	6	110	19,400
01-00637-01000	10	15	8	130	23,700
01-00637-01200	12	18	10	150	35,100

订购方法 How to Order

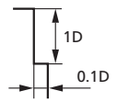
请指定AL-3LS 外径(D)。
When you order, indicate AL-3LS (D).

加工材料 Work Material	铝 Aluminium A1070			铝合金 Aluminium Alloy A2017・A5052・A7075			铸铝 Aluminium Cast AC8C		
切削速度 Cutting Speed	100～250m/min			150～300m/min			100～200m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed 沟槽 Slotting	进给速度 Feed 侧面 Side Milling	主轴转速 Spindle Speed	进给速度 Feed 沟槽 Slotting	进给速度 Feed 侧面 Side Milling	主轴转速 Spindle Speed	进给速度 Feed 沟槽 Slotting	进给速度 Feed 侧面 Side Milling
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
5	16,000	1,200	1,700	19,000	1,700	2,300	13,000	1,200	1,600
6	13,000	1,000	1,400	16,000	1,400	1,900	10,600	900	1,100
8	10,000	1,350	1,800	12,000	2,000	2,500	8,000	1,200	1,500
10	8,000	1,450	1,900	9,500	1,850	2,500	6,300	1,200	1,700
12	6,600	1,400	1,700	7,900	1,750	2,800	5,300	1,200	1,600

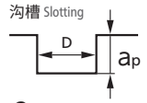
切深量 Depth of Cut

(D:外径 Dia.)

侧面 Side Milling



沟槽 Slotting



ap
ϕ5、6=0.1D
ϕ8=0.2D
ϕ10、12=0.3D

此切削参数表中，平底铣刀伸出量的标准定为4D。
伸出量超出长度标准时，请参照下列数值。
Above recommended milling conditions are based on 4D overhang.
In case of more than 4D overhang, refer to the below table.

伸出量 Overhang	主轴转速 Spindle Speed	进给速度 Feed 沟槽 Slotting	进给速度 Feed 侧面 Side Milling	切深量 Depth of Cut 沟槽 Slotting	切深量 Depth of Cut 侧面 Side Milling
5D	70%	70%		60%	ap 1D×ae 0.05D
6D	50%	50%		40%	ap 1D×ae 0.03D
7D	30%	30%		20%	ap 1D×ae 0.015D

备注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
※2 请使用刚性好、精度高的机床和夹具。
※3 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※4 建议使用水溶性切削方式。
※1 Adjust both spindle speed and feed at the same rate.
※2 Use a rigid and precise machine and chuck holder.
※3 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.
※4 Water-soluble fluid is recommended.

RSES230

规格 Size ϕ 0.1 ～ ϕ 6

MG

树脂加工用平底铣刀 “Clear Cut” 短刃造型

Short Flute End Mill for Resin

共有109种规格
Total 109 sizes

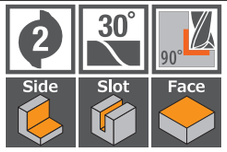
RSES230

树脂加工用平底铣刀 “Clear Cut” 短刃造型
Short Flute End Mill for Resin

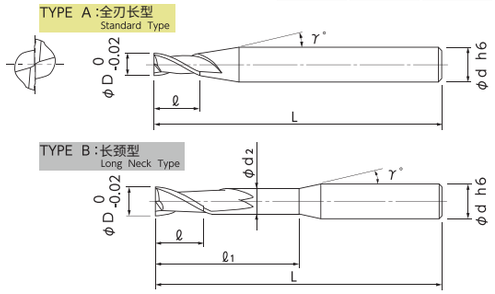
全刃长 Full Cutting Length
长颈 Long Neck
无涂层 Non-Coating
平底 Square

树脂加工用平底铣刀。刃长短，刚性高

Square end mill for resin. High rigidity with short length of cut







- 也可用于铝、铜等非铁金属材料。
- 采用短刃造型长，消除了传统产品刃长过长所带来的烦恼。
- Applicable to nonferrous material such as Aluminium and Copper.
- Eliminate the conventional problem of the long flute length.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00640-01000	0.1	0.15	–	A	–	9°	4	50	7,400
01-00640-01003			0.3	B	0.085	12°	4	50	8,000
01-00640-01005			0.5		0.085	12°	4	50	8,400
01-00640-01008			0.8		0.085	12°	4	50	9,200
01-00640-01010			1		0.085	12°	4	50	11,600
01-00640-01500	0.15	0.23	–	A	–	9°	4	50	6,700
01-00640-01505			0.5	B	0.13	12°	4	50	7,100
01-00640-01508			0.8		0.13	12°	4	50	7,900
01-00640-01510			1		0.13	12°	4	50	8,400
01-00640-01515			1.5		0.13	12°	4	50	10,500
01-00640-02000	0.2	0.3	–	A	–	9°	4	50	6,400
01-00640-02006			0.6	B	0.18	12°	4	50	7,400
01-00640-02010			1		0.18	12°	4	50	7,800
01-00640-02015			1.5		0.18	12°	4	50	9,500
01-00640-02020			2		0.18	12°	4	50	12,600
01-00640-03000	0.3	0.45	–	A	–	9°	4	50	5,700
01-00640-03010			1	B	0.28	12°	4	50	6,600
01-00640-03015			1.5		0.28	12°	4	50	6,800
01-00640-03020			2		0.28	12°	4	50	7,600
01-00640-03025			2.5		0.28	12°	4	50	9,200
01-00640-03030			3		0.28	12°	4	50	11,600
01-00640-04000	0.4	0.6	–	A	–	9°	4	60	6,200
01-00640-04015			1.5	B	0.37	12°	4	60	6,800
01-00640-04020			2		0.37	12°	4	60	6,800
01-00640-04025			2.5		0.37	12°	4	60	6,800

订购方法 How to Order

请指定RSES230 外径(D)×刃长(ℓ)[×颈长(ℓ1)]。(ϕ4的形状 A(全刃长型)需指定柄径(d)。)
When you order, indicate RSES230 (D)×(ℓ) [×(ℓ1)]. Choose Shank Dia. (d) for TypeA of Dia. 4.
※(γ)为参考值。
※(γ) is reference value.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00640-04030	0.4	0.6	3	B	0.37	12°	4	60	7,400
01-00640-04035			3.5		0.37	12°	4	60	7,400
01-00640-04040			4		0.37	12°	4	60	8,400
01-00640-05000	0.5	0.75	–	A	–	9°	4	60	4,500
01-00640-05020			2	B	0.46	12°	4	60	4,700
01-00640-05030			3		0.46	12°	4	60	4,700
01-00640-05040			4		0.46	12°	4	60	4,700
01-00640-05060			6		0.46	12°	4	60	4,700
01-00640-05080			8		0.46	12°	4	60	7,100
01-00640-05100			10		0.46	12°	4	60	8,400
01-00640-05120			12		0.46	12°	4	60	8,900
01-00640-06000	0.6	0.9	–	A	–	9°	4	60	5,100
01-00640-06030			3	B	0.56	12°	4	60	5,300
01-00640-06040			4		0.56	12°	4	60	5,300
01-00640-06060			6		0.56	12°	4	60	5,600
01-00640-06080			8		0.56	12°	4	60	7,900
01-00640-06100			10		0.56	12°	4	60	8,500
01-00640-07000	0.7	1.05	–	A	–	9°	4	60	5,100
01-00640-07040			4	B	0.66	12°	4	60	5,300
01-00640-07060			6		0.66	12°	4	60	5,300
01-00640-08000	0.8	1.2	–	A	–	9°	4	60	5,100
01-00640-08040			4	B	0.76	12°	4	60	5,300
01-00640-08060			6		0.76	12°	4	60	5,300
01-00640-08080			8		0.76	12°	4	60	5,500
01-00640-08100			10		0.76	12°	4	60	6,000
01-00640-08120			12		0.76	12°	4	60	6,700
01-00640-08140			14		0.76	12°	4	60	6,700
01-00640-08160			16		0.76	12°	4	60	6,700
01-00640-09000	0.9	1.35	–	A	–	9°	4	60	5,100
01-00640-09060			6	B	0.86	12°	4	60	5,300
01-00640-09080			8		0.86	12°	4	60	5,300
01-00640-10000	1	1.5	–	A	–	9°	4	70	4,200
01-00640-10040			4	B	0.95	12°	4	70	4,400
01-00640-10060			6		0.95	12°	4	70	4,400
01-00640-10080			8		0.95	12°	4	70	4,400
01-00640-10100			10		0.95	12°	4	70	5,000
01-00640-10120			12		0.95	12°	4	70	5,000
01-00640-10140			14		0.95	12°	4	70	5,000
01-00640-10150			15		0.95	12°	4	70	5,000
01-00640-10180			18		0.95	12°	4	70	5,700
01-00640-10200			20		0.95	12°	4	70	6,300

N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ◎
树脂加工 Resin Milling

RSES230

树脂加工用平底铣刀 “Clear Cut” 短刃造型
Short Flute End Mill for Resin

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00640-15000	1.5	2.25	–	A	–	9°	4	70	4,200
01-00640-15060			6	B	1.45	12°	4	70	4,700
01-00640-15080			8		1.45	12°	4	70	4,700
01-00640-15100			10		1.45	12°	4	70	5,100
01-00640-15120			12		1.45	12°	4	70	5,100
01-00640-15150			15		1.45	12°	4	70	5,100
01-00640-15180			18		1.45	12°	4	70	5,100
01-00640-15200			20		1.45	12°	4	70	6,100
01-00640-15230			23		1.45	12°	4	70	6,100
01-00640-15250			25		1.45	12°	4	70	7,400
01-00640-15300			30		1.45	12°	4	70	7,400
01-00640-20000	2	3	–	A	–	9°	4	60	3,700
01-00640-20060			6	B	1.94	12°	4	60	4,000
01-00640-20080			8		1.94	12°	4	60	4,000
01-00640-20100			10		1.94	12°	4	60	4,000
01-00640-20120			12		1.94	12°	4	60	4,000
01-00640-20150			15		1.94	12°	4	60	4,000
01-00640-20200			20		1.94	12°	4	80	5,000
01-00640-20240			24		1.94	12°	4	80	5,400
01-00640-20300			30		1.94	12°	4	80	5,400
01-00640-20400			40		1.94	12°	4	100	8,900
01-00640-30000	3	4.5	–	A	–	–	3	80	6,300
01-00640-30100			10	B	2.85	12°	6	80	6,100
01-00640-30120			12		2.85	12°	6	80	6,100
01-00640-30150			15		2.85	12°	6	80	6,100
01-00640-30200			20		2.85	12°	6	80	6,600
01-00640-30240			24		2.85	12°	6	80	7,200
01-00640-30300			30		2.85	12°	6	80	7,200
01-00640-30360			36		2.85	12°	6	80	7,200
01-00640-40000	4	6	–	A	–	–	4	80	7,800
01-00640-40001			–		–	9°	6	80	6,600
01-00640-40100			10	B	3.8	12°	6	80	6,600
01-00640-40150			15		3.8	12°	6	80	6,600
01-00640-40200			20		3.8	12°	6	80	6,600
01-00640-40300			30		3.8	12°	6	80	7,200
01-00640-40400			40		3.8	12°	6	100	8,000
01-00640-50000	5	7.5	–	A	–	9°	6	80	6,400
01-00640-50300			30	B	4.8	12°	6	80	7,200
01-00640-50400			40		4.8	12°	6	100	7,500
01-00640-60000	6	9	–	A	–	–	6	90	6,400
01-00640-60400			40	B	5.8	–	6	90	8,000
01-00640-60600			60		5.8	–	6	120	10,600
01-00640-60800			80		5.8	–	6	150	17,600

订购方法 How to Order

请指定RSES230 外径(D)×刃长(ℓ)[×颈长(ℓ1)]。(φ4的形状 A(全刃长型)需指定柄径(d)。)
When you order, indicate RSES230 (D)×(ℓ) [×(ℓ1)]. Choose Shank Dia. (d) for TypeA of Dia. 4.
※(γ)为参考值。
※(γ) is reference value.

○ 铝合金 Aluminium Alloy N
○ 铜合金 Copper N
◎ 树脂 Resin O

树脂加工 Resin Milling

RSES230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				ABS・MC尼龙・PTFE ABS・MC nylon・PTFE						聚碳酸酯・POM・PEEK Polycarbonate・POM・PEEK						亚克力・电木 Acrylic・Bakelite					
外径 Dia.	刃长 Length of Cut	颈长 Under neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut		
					侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting
				min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm
0.1	0.15	–	1.5	20,000	190	90	0.15	0.02	0.1	20,000	160	80	0.15	0.02	0.1	20,000	120	60	0.15	0.02	0.1
		0.3	3	20,000	190	90	0.15	0.02	0.1	20,000	160	80	0.15	0.02	0.1	20,000	120	60	0.15	0.02	0.1
		0.5	5	19,000	150	70	0.15	0.01	0.05	19,000	120	60	0.15	0.01	0.05	19,000	100	50	0.15	0.01	0.05
		0.8	8	17,000	120	60	0.15	0.005	0.025	17,000	100	50	0.15	0.005	0.025	17,000	80	40	0.15	0.005	0.025
		1	10	15,600	80	40	0.15	0.003	0.012	15,600	60	30	0.15	0.003	0.012	15,600	50	20	0.15	0.003	0.012
0.15	0.23	–	1.5	20,000	400	200	0.22	0.03	0.15	20,000	340	170	0.22	0.03	0.15	20,000	270	130	0.22	0.03	0.15
		0.5	3.3	19,800	390	190	0.22	0.028	0.13	19,800	320	160	0.22	0.028	0.13	19,800	260	130	0.22	0.028	0.13
		0.8	5.3	18,700	320	160	0.22	0.015	0.071	18,700	260	130	0.22	0.015	0.071	18,700	210	100	0.22	0.015	0.071
		1	6.7	17,800	280	140	0.22	0.011	0.055	17,800	240	120	0.22	0.011	0.055	17,800	190	90	0.22	0.011	0.055
		1.5	10	15,600	170	80	0.22	0.004	0.018	15,600	140	70	0.22	0.004	0.018	15,600	110	50	0.22	0.004	0.018
0.2	0.3	–	1.5	20,000	620	310	0.3	0.04	0.2	20,000	520	260	0.3	0.04	0.2	20,000	410	200	0.3	0.04	0.2
		0.6	3	20,000	620	310	0.3	0.04	0.2	20,000	520	260	0.3	0.04	0.2	20,000	410	200	0.3	0.04	0.2
		1	5	19,000	500	250	0.3	0.02	0.1	19,000	410	200	0.3	0.02	0.1	19,000	330	160	0.3	0.02	0.1
		1.5	7.5	17,300	410	200	0.3	0.012	0.059	17,300	340	170	0.3	0.012	0.059	17,300	270	130	0.3	0.012	0.059
		2	10	15,600	260	130	0.3	0.005	0.024	15,600	220	110	0.3	0.005	0.024	15,600	170	80	0.3	0.005	0.024
0.3	0.45	–	1.5	20,000	1,050	520	0.45	0.06	0.3	20,000	880	440	0.45	0.06	0.3	20,000	700	350	0.45	0.06	0.3
		1	3.3	19,800	1,020	510	0.45	0.055	0.27	19,800	850	420	0.45	0.055	0.27	19,800	680	340	0.45	0.055	0.27
		1.5	5	19,000	850	420	0.45	0.03	0.15	19,000	710	350	0.45	0.03	0.15	19,000	560	280	0.45	0.03	0.15
		2	6.7	17,800	750	370	0.45	0.022	0.1	17,800	620	310	0.45	0.022	0.1	17,800	500	250	0.45	0.022	0.1
		2.5	8.3	16,700	630	310	0.45	0.014	0.069	16,700	520	260	0.45	0.014	0.069	16,700	420	210	0.45	0.014	0.069
		3	10	15,600	450	220	0.45	0.008	0.036	15,600	370	180	0.45	0.008	0.036	15,600	300	150	0.45	0.008	0.036
0.4	0.6	–	1.5	20,000	1,480	740	0.6	0.08	0.4	20,000	1,240	620	0.6	0.08	0.4	20,000	990	490	0.6	0.08	0.4
		1.5	3.8	19,600	1,370	680	0.6	0.065	0.32	19,600	1,140	570	0.6	0.065	0.32	19,600	910	450	0.6	0.065	0.32
		2	5	19,000	1,200	600	0.6	0.04	0.2	19,000	1,000	500	0.6	0.04	0.2	19,000	800	400	0.6	0.04	0.2
		2.5	6.3	18,100	1,090	540	0.6	0.032	0.15	18,100	910	450	0.6	0.032	0.15	18,100	720	360	0.6	0.032	0.15
		3	7.5	17,300	980	490	0.6	0.024	0.11	17,300	820	410	0.6	0.024	0.11	17,300	650	320	0.6	0.024	0.11
		3.5	8.8	16,400	820	410	0.6	0.017	0.081	16,400	680	340	0.6	0.017	0.081	16,400	550	270	0.6	0.017	0.081
		4	10	15,600	630	310	0.6	0.01	0.048	15,600	530	260	0.6	0.01	0.048	15,600	420	210	0.6	0.01	0.048
0.5	0.75	–	1.5	20,000	1,920	960	0.75	0.1	0.5	20,000	1,600	800	0.75	0.1	0.5	20,000	1,280	640	0.75	0.1	0.5
		2	4	19,500	1,730	860	0.75	0.075	0.37	19,500	1,440	720	0.75	0.075	0.37	19,500	1,150	570	0.75	0.075	0.37
		3	6	18,300	1,430	710	0.75	0.042	0.2	18,300	1,190	590	0.75	0.042	0.2	18,300	950	470	0.75	0.042	0.2
		4	8	17,000	1,220	610	0.75	0.025	0.12	17,000	1,020	510	0.75	0.025	0.12	17,000	810	400	0.75	0.025	0.12
		6	12	15,100	740	370	0.75	0.011	0.052	15,100	610	300	0.75	0.011	0.052	15,100	490	240	0.75	0.011	0.052
		8	16	14,300	590	290	0.75	0.008	0.036	14,300	490	240	0.75	0.008	0.036	14,300	390	190	0.75	0.008	0.036
		10	20	13,500	450	220	0.75	0.004	0.02	13,500	370	180	0.75	0.004	0.02	13,500	300	150	0.75	0.004	0.02
0.6	0.9	–	1.5	20,000	2,160	1,080	0.9	0.12	0.6	20,000	1,800	900	0.9	0.12	0.6	20,000	1,440	720	0.9	0.12	0.6
		3	5	19,000	1,740	870	0.9	0.06	0.3	19,000	1,450	720	0.9	0.06	0.3	19,000	1,160	580	0.9	0.06	0.3
		4	6.7	17,800	1,530	760	0.9	0.044	0.21	17,800	1,270	630	0.9	0.044	0.21	17,800	1,020	510	0.9	0.044	0.21
		6	10	15,000	890	440	0.9	0.015	0.072	15,000	740	370	0.9	0.015	0.072	15,000	590	290	0.9	0.015	0.072
		8	13.3	14,400	750	370	0.9	0.012	0.056	14,400	620	310	0.9	0.012	0.056	14,400	500	250	0.9	0.012	0.056
		10	16.7	13,700	610	300	0.9	0.008	0.04	13,700	510	250	0.9	0.008	0.04	13,700	410	200	0.9	0.008	0.04
0.7	1.05	–	1.5	20,000	2,400	1,200	1.05	0.14	0.7	20,000	2,000	1,000	1.05	0.14	0.7	20,000	1,600	800	1.05	0.14	0.7
		4	5.7	18,500	1,830	910	1.05	0.062	0.3	18,500	1,530	760	1.05	0.062	0.3	18,500	1,220	610	1.05	0.062	0.3
		6	8.6	14,500	1,200	600	1.05	0.03	0.14	14,500	1,000	500	1.05	0.03	0.14	14,500	800	400	1.05	0.03	0.14

N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ◎

树脂加工 Resin Milling

加工材料 Work Material				ABS・MC尼龙・PTFE ABS・MC nylon・PTFE						聚碳酸酯・POM・PEEK Polycarbonate・POM・PEEK						亚克力・电木 Acrylic・Bakelite					
外径 Dia.	刃长 Length of Cut	颈长 Under neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut		
					侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting
				min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm
0.8	1.2	–	1.5	20,000	2,640	1,320	1.2	0.16	0.8	20,000	2,200	1,100	1.2	0.16	0.8	20,000	1,760	880	1.2	0.16	0.8
		4	5	19,000	2,130	1,060	1.2	0.08	0.4	19,000	1,770	880	1.2	0.08	0.4	19,000	1,420	710	1.2	0.08	0.4
		6	7.5	17,300	1,750	870	1.2	0.047	0.23	17,300	1,460	730	1.2	0.047	0.23	17,300	1,160	580	1.2	0.047	0.23
		8	10	14,000	1,010	500	1.2	0.02	0.096	14,000	840	420	1.2	0.02	0.096	14,000	670	330	1.2	0.02	0.096
		10	12.5	13,400	880	440	1.2	0.016	0.08	13,400	730	360	1.2	0.016	0.08	13,400	580	290	1.2	0.016	0.08
		12	15	12,700	750	370	1.2	0.013	0.064	12,700	620	310	1.2	0.013	0.064	12,700	500	250	1.2	0.013	0.064
		14	17.5	12,300	640	320	1.2	0.01	0.048	12,300	540	270	1.2	0.01	0.048	12,300	430	210	1.2	0.01	0.048
		16	20	12,000	550	270	1.2	0.007	0.032	12,000	460	230	1.2	0.007	0.032	12,000	360	180	1.2	0.007	0.032
0.9	1.35	–	1.5	18,500	2,660	1,330	1.35	0.18	0.9	18,500	2,220	1,110	1.35	0.18	0.9	18,500	1,770	880	1.35	0.18	0.9
		6	6.7	16,500	1,890	940	1.35	0.065	0.32	16,500	1,570	780	1.35	0.065	0.32	16,500	1,260	630	1.35	0.065	0.32
		8	8.9	13,500	1,280	640	1.35	0.035	0.17	13,500	1,070	530	1.35	0.035	0.17	13,500	850	420	1.35	0.035	0.17
1	1.5	–	1.5	17,000	2,650	1,320	1.5	0.2	1	17,000	2,210	1,100	1.5	0.2	1	17,000	1,760	880	1.5	0.2	1
		4	4	16,500	2,390	1,190	1.5	0.15	0.75	16,500	1,990	990	1.5	0.15	0.75	16,500	1,590	790	1.5	0.15	0.75
		6	6	15,500	1,980	990	1.5	0.084	0.41	15,500	1,650	820	1.5	0.084	0.41	15,500	1,320	660	1.5	0.084	0.41
		8	8	14,400	1,690	840	1.5	0.05	0.25	14,400	1,400	700	1.5	0.05	0.25	14,400	1,120	560	1.5	0.05	0.25
		10	10	13,000	1,110	550	1.5	0.024	0.12	13,000	920	460	1.5	0.024	0.12	13,000	740	370	1.5	0.024	0.12
		12	12	12,400	980	490	1.5	0.021	0.1	12,400	820	410	1.5	0.021	0.1	12,400	650	320	1.5	0.021	0.1
		14	14	12,000	870	430	1.5	0.018	0.088	12,000	730	360	1.5	0.018	0.088	12,000	580	290	1.5	0.018	0.088
		15	15	11,700	820	410	1.5	0.016	0.08	11,700	680	340	1.5	0.016	0.08	11,700	540	270	1.5	0.016	0.08
		18	18	11,300	680	340	1.5	0.012	0.056	11,300	570	280	1.5	0.012	0.056	11,300	450	220	1.5	0.012	0.056
		20	20	11,000	600	300	1.5	0.008	0.04	11,000	500	250	1.5	0.008	0.04	11,000	400	200	1.5	0.008	0.04
1.5	2.25	–	1.5	13,300	2,590	1,290	2.25	0.3	1.5	13,300	2,150	1,070	2.25	0.3	1.5	13,300	1,720	860	2.25	0.3	1.5
		6	4	12,800	2,350	1,170	2.25	0.22	1.1	12,800	1,950	970	2.25	0.22	1.1	12,800	1,560	780	2.25	0.22	1.1
		8	5.3	12,200	2,060	1,030	2.25	0.14	0.7	12,200	1,720	860	2.25	0.14	0.7	12,200	1,370	680	2.25	0.14	0.7
		10	6.7	11,400	1,850	920	2.25	0.1	0.54	11,400	1,540	770	2.25	0.1	0.54	11,400	1,230	610	2.25	0.1	0.54
		12	8	10,600	1,650	820	2.25	0.075	0.37	10,600	1,380	690	2.25	0.075	0.37	10,600	1,100	550	2.25	0.075	0.37
		15	10	9,400	1,150	570	2.25	0.036	0.18	9,400	960	480	2.25	0.036	0.18	9,400	770	380	2.25	0.036	0.18
		18	12	9,000	1,050	520	2.25	0.032	0.15	9,000	870	430	2.25	0.032	0.15	9,000	700	350	2.25	0.032	0.15
		20	13.3	8,700	980	490	2.25	0.028	0.14	8,700	810	400	2.25	0.028	0.14	8,700	650	320	2.25	0.028	0.14
		23	15.3	8,300	880	440	2.25	0.024	0.11	8,300	730	360	2.25	0.024	0.11	8,300	580	290	2.25	0.024	0.11
		25	16.7	8,100	820	410	2.25	0.02	0.1	8,100	680	340	2.25	0.02	0.1	8,100	550	270	2.25	0.02	0.1
		30	20	7,500	690	340	2.25	0.012	0.06	7,500	570	280	2.25	0.012	0.06	7,500	460	230	2.25	0.012	0.06
2	3	–	1.5	9,900	2,320	1,160	3	0.4	2	9,900	1,930	960	3	0.4	2	9,900	1,550	770	3	0.4	2
		6	3	9,900	2,320	1,160	3	0.4	2	9,900	1,930	960	3	0.4	2	9,900	1,550	770	3	0.4	2
		8	4	9,500	2,140	1,070	3	0.3	1.5	9,500	1,780	890	3	0.3	1.5	9,500	1,420	710	3	0.3	1.5
		10	5	9,100	1,960	980	3	0.2	1	9,100	1,640	820	3	0.2	1	9,100	1,310	650	3	0.2	1
		12	6	8,600	1,800	900	3	0.16	0.83	8,600	1,500	750	3	0.16	0.83	8,600	1,200	600	3	0.16	0.83
		15	7.5	7,700	1,560	780	3	0.11	0.58	7,700	1,300	650	3	0.11	0.58	7,700	1,040	520	3	0.11	0.58
		20	10	6,200	1,050	520	3	0.048	0.24	6,200	870	430	3	0.048	0.24	6,200	700	350	3	0.048	0.24
		24	12	5,900	950	470	3	0.042	0.2	5,900	790	390	3	0.042	0.2	5,900	630	310	3	0.042	0.2
		30	15	5,300	810	400	3	0.032	0.16	5,300	680	340	3	0.032	0.16	5,300	540	270	3	0.032	0.16
		40	20	4,500	620	310	3	0.016	0.08	4,500	510	250	3	0.016	0.08	4,500	410	200	3	0.016	0.08

RSES230
切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				ABS・MC尼龙・PTFE ABS・MC nylon・PTFE						聚碳酸酯・POM・PEEK Polycarbonate・POM・PEEK						亚克力・电木 Acrylic・Bakelite					
外径 Dia.	刃长 Length of Cut	颈长 Under neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut		
					侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting
				min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm
3	4.5	–	1.5	6,600	2,060	1,030	4.5	0.6	3	6,600	1,710	850	4.5	0.6	3	6,600	1,370	680	4.5	0.6	3
		10	3.3	6,500	2,010	1,000	4.5	0.55	2.7	6,500	1,670	830	4.5	0.55	2.7	6,500	1,340	670	4.5	0.55	2.7
		12	4	6,300	1,910	950	4.5	0.45	2.2	6,300	1,590	790	4.5	0.45	2.2	6,300	1,270	630	4.5	0.45	2.2
		15	5	5,900	1,760	880	4.5	0.3	1.5	5,900	1,460	730	4.5	0.3	1.5	5,900	1,170	580	4.5	0.3	1.5
		20	6.7	5,200	1,500	750	4.5	0.21	1	5,200	1,250	620	4.5	0.21	1	5,200	1,000	500	4.5	0.21	1
		24	8	4,600	1,290	640	4.5	0.15	0.75	4,600	1,080	540	4.5	0.15	0.75	4,600	860	430	4.5	0.15	0.75
		30	10	3,700	920	460	4.5	0.072	0.36	3,700	770	380	4.5	0.072	0.36	3,700	610	300	4.5	0.072	0.36
		36	12	3,400	830	410	4.5	0.063	0.31	3,400	690	340	4.5	0.063	0.31	3,400	550	270	4.5	0.063	0.31
4	6(d4)	–	1.5	4,900	1,910	950	6	0.8	4	4,900	1,590	790	6	0.8	4	4,900	1,270	630	6	0.8	4
	6(d6)	–	1.5	4,900	1,910	950	6	0.8	4	4,900	1,590	790	6	0.8	4	4,900	1,270	630	6	0.8	4
	6	10	2.5	4,900	1,910	950	6	0.8	4	4,900	1,590	790	6	0.8	4	4,900	1,270	630	6	0.8	4
		15	3.8	4,800	1,810	900	6	0.65	3.2	4,800	1,510	750	6	0.65	3.2	4,800	1,200	600	6	0.65	3.2
		20	5	4,400	1,640	820	6	0.4	2	4,400	1,360	680	6	0.4	2	4,400	1,090	540	6	0.4	2
		30	7.5	3,600	1,270	630	6	0.23	1.1	3,600	1,060	530	6	0.23	1.1	3,600	850	420	6	0.23	1.1
		40	10	2,700	850	420	6	0.096	0.48	2,700	710	350	6	0.096	0.48	2,700	570	280	6	0.096	0.48
5	7.5	–	1.5	3,900	1,820	910	7.5	1	5	3,900	1,510	750	7.5	1	5	3,900	1,210	600	7.5	1	5
		30	6	3,300	1,410	700	7.5	0.41	2	3,300	1,180	590	7.5	0.41	2	3,300	940	470	7.5	0.41	2
		40	8	2,700	1,140	570	7.5	0.25	1.2	2,700	950	470	7.5	0.25	1.2	2,700	760	380	7.5	0.25	1.2
6	9	–	1.5	3,300	1,750	870	9	1.2	6	3,300	1,460	730	9	1.2	6	3,300	1,170	580	9	1.2	6
		40	6.7	2,600	1,270	630	9	0.43	2.1	2,600	1,060	530	9	0.43	2.1	2,600	850	420	9	0.43	2.1
		60	10	1,800	780	390	9	0.14	0.72	1,800	650	320	9	0.14	0.72	1,800	520	260	9	0.14	0.72
		80	13.3	1,600	650	320	9	0.11	0.56	1,600	540	270	9	0.11	0.56	1,600	430	210	9	0.11	0.56

备 注 Notes	
	※1 本切削参数为粗加工时的参考值。请根据实际的加工形状和所使用机床的刚性等调整切削参数。 ※2 精加工时，请根据要求精度等调整切削参数。 ※3 内角等刀具负载增大的部位可能需要调整切削参数。 ※4 L/D较大的刀具（L/D≥10）发生倾斜时，必须降低进给速度或切深量。 ※5 L/D＞20的刀具请根据L/D＝20左右的切削参数参考值，充分降低主轴转速、进给速度、切深量，调整切削参数。 ※6 建议使用吹气冷却方式。 ※7 加工过程中切屑卡入、缠绕可能会有损加工面品质，因此请注意排屑。 ※8 请尽量抑制刀具的偏摆量。 ※9 采用接触方式测量刀具长度时，尤其是φ1以下的尺寸，请注意避免发生崩刃。 ※10 发生振刀时，请以相同的比率降低主轴转速和进给速度。 此外，主轴转速过低时，也以相同的比率降低。 ※1 These recommended cutting conditions indicate just reference for roughing. It should be adjusted according to milling shape and machine type. ※2 For finishing process, please adjust to the optimized condition to meet the requirement of machining accuracy. ※3 Necessary to adjust the cutting condition at the parts overloading against the tools such as inner corner parts. ※4 When a tool with L/D 10 times and longer deflects on milling, please reduce Feed or Depth of Cut. ※5 For a tool with L/D longer than 20 times, reduce spindle speed, feed rate and depth of cut at sufficient values by referring the cutting conditions of L/D 20 times. ※6 Air blow is recommended. ※7 Care for chip removal to avoid being stuck or caught during process for better surface quality. ※8 Minimize chucking runout. ※9 Pay keen attention for tool length measurement with contact-type equipment for the tools under φ1 to avoid cutting edge damage. ※10 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.

RSE230

规格 Size ϕ 0.1 ～ ϕ 6

MG

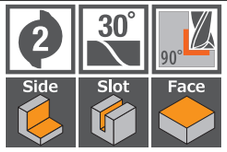
树脂加工用平底铣刀 “Clear Cut”
End Mill for Resin

共有135种规格
Total 135 sizes

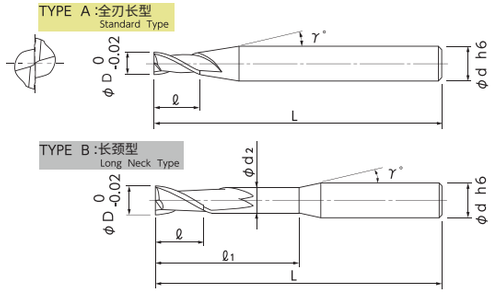
RSE230
树脂加工用平底铣刀 “Clear Cut”
End Mill for Resin

树脂加工用平底铣刀。全刃长造型的L/D为最大10倍 长颈造型为最大35倍

Square end mill for resin. Maximum L/D=10 for standard type
Maximum L/D=35 for long neck type







- 可根据加工形状选择3倍刃长、5倍刃长、10倍刃长、超长颈及同径型!
- 也可用于铝、铜等非铁金属材料。
- Available for the suitable L/D (3D, 5D and 10D) Length of cut with Extra Long Neck or without Under Neck Length!
- Applicable to nonferrous material such as Aluminium and Copper.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00644-00100	0.1	0.3	–	A	–	9°	4	45	7,400
01-00644-00108			0.8	B	0.085	12°	4	45	8,800
01-00644-00110			1		0.085	12°	4	45	11,600
01-00644-00150	0.15	0.45	–	A	–	9°	4	45	6,700
01-00644-00151			1	B	0.13	12°	4	45	8,400
01-00644-00152			1.5		0.13	12°	4	45	10,500
01-00644-00200	0.2	0.6	–	A	–	9°	4	45	6,400
01-00644-00201		1	–		–	9°	4	45	7,400
01-00644-00203		0.6	1	B	0.18	12°	4	45	7,800
01-00644-00204			1.5		0.18	12°	4	45	9,500
01-00644-00202			2		0.18	12°	4	45	12,600
01-00644-00300	0.3	0.9	–	A	–	9°	4	45	5,700
01-00644-00301		1.5	–		–	9°	4	45	6,300
01-00644-00302		2	–		–	9°	4	45	7,000
01-00644-00304		0.9	1.5	B	0.28	12°	4	45	6,800
01-00644-00305			2		0.28	12°	4	45	7,600
01-00644-00306			2.5		0.28	12°	4	45	9,200
01-00644-00303			3		0.28	12°	4	45	12,100
01-00644-00400	0.4	1.2	–	A	–	9°	4	45	6,200
01-00644-00401		2	–		–	9°	4	45	7,400
01-00644-00402		3	–		–	9°	4	45	8,400
01-00644-00403		1.2	2	B	0.37	12°	4	45	6,500

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00644-00406	0.4	1.2	2.5	B	0.37	12°	4	45	6,500
01-00644-00407			3		0.37	12°	4	45	6,500
01-00644-00404			4		0.37	12°	4	45	7,100
01-00644-00405			5		0.37	12°	4	45	7,900
01-00644-00500	0.5	1.5	–	A	–	9°	4	45	4,200
01-00644-00501		2.5	–		–	9°	4	45	5,000
01-00644-00502		5	–		–	9°	4	45	6,300
01-00644-00503		1.5	3	B	0.46	12°	4	45	4,400
01-00644-00504			4		0.46	12°	4	45	4,400
01-00644-00506			6		0.46	12°	4	45	4,400
01-00644-00508			8		0.46	12°	4	50	6,800
01-00644-00510			10		0.46	12°	4	50	8,400
01-00644-00512			12		0.46	12°	4	50	8,900
01-00644-00515			15		0.46	12°	4	50	9,500
01-00644-00520			20		0.46	12°	4	50	11,000
01-00644-00600	0.6	1.8	–	A	–	9°	4	45	4,800
01-00644-00601		3	–		–	9°	4	45	5,900
01-00644-00602		4	–		–	9°	4	45	6,300
01-00644-00604		1.8	4	B	0.56	12°	4	45	4,900
01-00644-00606			6		0.56	12°	4	45	5,300
01-00644-00608			8		0.56	12°	4	50	7,600
01-00644-00610			10		0.56	12°	4	50	8,200
01-00644-00612			12		0.56	12°	4	50	8,900
01-00644-00800	0.8	2.4	–	A	–	9°	4	45	4,800
01-00644-00801		4	–		–	9°	4	45	5,900
01-00644-00802		6	–		–	9°	4	45	6,300
01-00644-00806		2.4	6	B	0.76	12°	4	45	4,900
01-00644-00808			8		0.76	12°	4	50	5,100
01-00644-00810			10		0.76	12°	4	50	5,700
01-00644-00812			12		0.76	12°	4	50	6,200
01-00644-00816			16		0.76	12°	4	60	6,700
01-00644-01000	1	3	–	A	–	9°	4	45	3,400
01-00644-01001		5	–		–	9°	4	50	4,200
01-00644-01003		7.5	–		–	9°	4	50	4,800

订购方法 How to Order

请指定RSE230 外径(D)×刃长(ℓ)[×颈长(ℓ1)]。
(仅形状A(全刃长型)的φ3刃长9、15和φ4刃长12、20需指定柄径(d)。)
When you order, indicate RSE230 (D)×(ℓ) [×(ℓ1)]. Choose Shank Dia. (d) for TypeA of Dia. 3×9ℓ・15ℓ and Dia. 4×12ℓ・20ℓ.
※(γ)为参考值。
※(γ) is reference value.

全刃长 Full Cutting Length
长颈 Long Neck
无涂层 Non-Coating
平底 Square
RSE230
树脂加工用平底铣刀 “Clear Cut”
End Mill for Resin
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
树脂加工 Resin Milling

RSE230

树脂加工用平底铣刀 “Clear Cut”

End Mill for Resin

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00644-01002	1	10	–	A	–	9°	4	50	8,000
01-00644-01006		3	6	B	0.95	12°	4	50	3,800
01-00644-01008			8		0.95	12°	4	50	3,800
01-00644-01010			10		0.95	12°	4	50	4,400
01-00644-01012			12		0.95	12°	4	50	4,400
01-00644-01015			15		0.95	12°	4	60	4,400
01-00644-01020			20		0.95	12°	4	60	5,300
01-00644-01025			25		0.95	12°	4	70	6,300
01-00644-01030			30		0.95	12°	4	70	7,900
01-00644-01035			35		0.95	12°	4	80	10,500
01-00644-01500	1.5	4.5	–	A	–	9°	4	45	3,700
01-00644-01501		7.5	–		–	9°	4	50	4,400
01-00644-01502		15	–		–	9°	4	60	8,200
01-00644-01510		4.5	10	B	1.45	12°	4	50	4,000
01-00644-01512			12		1.45	12°	4	50	4,000
01-00644-01515			15		1.45	12°	4	60	4,500
01-00644-01518			18		1.45	12°	4	60	4,500
01-00644-01523			23		1.45	12°	4	70	6,100
01-00644-01530			30		1.45	12°	4	70	7,400
01-00644-01538			38		1.45	12°	4	80	8,900
01-00644-01545			45		1.45	12°	4	90	10,500
01-00644-01553			53		1.45	12°	4	90	11,600
01-00644-02000	2	6	–	A	–	9°	4	50	3,700
01-00644-02001		10	–		–	9°	4	50	4,400
01-00644-02003		15	–		–	9°	4	60	6,900
01-00644-02002		20	–		–	9°	4	60	8,200
01-00644-02012		6	12	B	1.94	12°	4	60	4,000
01-00644-02015			15		1.94	12°	4	60	4,000
01-00644-02020			20		1.94	12°	4	60	4,400
01-00644-02024			24		1.94	12°	4	70	5,300
01-00644-02030			30		1.94	12°	4	80	5,400
01-00644-02040			40		1.94	12°	4	90	8,300
01-00644-02050			50		1.94	12°	4	110	10,300
01-00644-02060			60		1.94	12°	4	110	11,600
01-00644-02070			70		1.94	12°	4	110	12,600

订购方法 How to Order

请指定RSE230 外径(D)×刃长(ℓ)[×颈长(ℓ1)]。
(仅形状A(全刃长型)的φ3刃长9、15和φ4刃长12、20需指定柄径(d)。)
When you order, indicate RSE230 (D)×(ℓ) [×(ℓ1)]. Choose Shank Dia. (d) for TypeA of Dia. 3×9ℓ・15ℓ and Dia. 4×12ℓ・20ℓ.
※(γ)为参考值。
※(γ) is reference value.

RSE230
树脂加工用平底铣刀 “Clear Cut”
End Mill for Resin

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 01-00644-03000	3	9	–	A	–	–	3	100	6,800
★ 01-00644-03001			–		–	9°	6	50	5,000
★ 01-00644-03003		15	–		–	–	3	100	7,400
★ 01-00644-03002			–		–	9°	6	60	5,500
★ 01-00644-03004		20	–		–	9°	6	60	6,600
★ 01-00644-03005		25	–		–	9°	6	70	6,900
★ 01-00644-03006		30	–		–	9°	6	70	7,200
★ 01-00644-03015		9	15	B	2.85	12°	6	60	5,500
★ 01-00644-03020			20		2.85	12°	6	60	6,100
★ 01-00644-03024			24		2.85	12°	6	70	6,600
★ 01-00644-03030			30		2.85	12°	6	70	6,600
★ 01-00644-03036			36		2.85	12°	6	80	7,200
★ 01-00644-03045			45		2.85	12°	6	90	7,700
★ 01-00644-03060			60		2.85	12°	6	110	12,100
★ 01-00644-03075			75		2.85	12°	6	120	14,900
★ 01-00644-04000	4	12	–	A	–	–	4	120	8,200
★ 01-00644-04001			–		–	9°	6	50	5,000
★ 01-00644-04003		20	–		–	–	4	120	10,500
★ 01-00644-04002			–		–	9°	6	60	6,400
★ 01-00644-04004		30	–		–	9°	6	70	6,900
★ 01-00644-04005		40	–		–	9°	6	90	7,500
★ 01-00644-04020		12	20	B	3.8	12°	6	60	5,900
★ 01-00644-04030			30		3.8	12°	6	70	6,600
★ 01-00644-04040			40		3.8	12°	6	90	6,900
★ 01-00644-04055			55		3.8	12°	6	110	12,100
★ 01-00644-04070			70		3.8	12°	6	120	14,900
★ 01-00644-05002	5	10	–	A	–	9°	6	60	5,300
★ 01-00644-05000		15	–		–	9°	6	70	5,700
★ 01-00644-05001		25	–		–	9°	6	80	7,700
★ 01-00644-05003		35	–		–	9°	6	90	8,100
★ 01-00644-05004		40	–		–	9°	6	100	9,400
★ 01-00644-05030		15	30	B	4.8	12°	6	90	7,200
★ 01-00644-05040			40		4.8	12°	6	100	7,500
★ 01-00644-05055			55		4.8	12°	6	120	11,000
★ 01-00644-05070			70		4.8	12°	6	130	15,400
★ 01-00644-06002	6	12	–	A	–	–	6	70	5,500
★ 01-00644-06000		18	–		–	–	6	80	6,100
★ 01-00644-06003		25	–		–	–	6	80	7,200
★ 01-00644-06001		30	–		–	–	6	90	7,700
★ 01-00644-06004		40	–		–	–	6	100	8,600
★ 01-00644-06005		50	–		–	–	6	120	9,900
★ 01-00644-06040		18	40	B	5.8	–	6	100	8,000
★ 01-00644-06060			60		5.8	–	6	120	10,600
★ 01-00644-06080			80		5.8	–	6	130	16,000

加工材料 Work Material				ABS・MC尼龙・PTFE ABS・MC nylon・PTFE						聚碳酸酯・POM・PEEK Polycarbonate・POM・PEEK						亚克力・电木 Acrylic・Bakelite					
外径 Dia.	刃长 Length of Cut	颈长 Under neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut		
					侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting
				min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm
0.1	0.3	–	3	20,000	190	90	0.2	0.02	0.1	20,000	160	80	0.2	0.02	0.1	20,000	120	60	0.2	0.02	0.1
		0.8	8	17,000	120	60	0.2	0.005	0.025	17,000	100	50	0.2	0.005	0.025	17,000	80	40	0.2	0.005	0.025
		1	10	15,600	80	40	0.2	0.003	0.012	15,600	60	30	0.2	0.003	0.012	15,600	50	20	0.2	0.003	0.012
0.15	0.45	–	3	20,000	400	200	0.3	0.03	0.15	20,000	340	170	0.3	0.03	0.15	20,000	270	130	0.3	0.03	0.15
		1	6.7	17,800	280	140	0.3	0.011	0.055	17,800	240	120	0.3	0.011	0.055	17,800	190	90	0.3	0.011	0.055
		1.5	10	15,600	170	80	0.3	0.004	0.018	15,600	140	70	0.3	0.004	0.018	15,600	110	50	0.3	0.004	0.018
0.2	0.6	–	3	20,000	620	310	0.4	0.04	0.2	20,000	520	260	0.4	0.04	0.2	20,000	410	200	0.4	0.04	0.2
	1	–	5	17,100	400	200	0.4	0.02	0.1	17,100	340	170	0.4	0.02	0.1	17,100	270	130	0.4	0.02	0.1
	0.6	1	5	19,000	500	250	0.4	0.02	0.1	19,000	410	200	0.4	0.02	0.1	19,000	330	160	0.4	0.02	0.1
		1.5	7.5	17,300	410	200	0.4	0.012	0.059	17,300	340	170	0.4	0.012	0.059	17,300	270	130	0.4	0.012	0.059
		2	10	15,600	260	130	0.4	0.005	0.024	15,600	220	110	0.4	0.005	0.024	15,600	170	80	0.4	0.005	0.024
0.3	0.9	–	3	20,000	1,050	520	0.6	0.06	0.3	20,000	880	440	0.6	0.06	0.3	20,000	700	350	0.6	0.06	0.3
	1.5	–	5	17,100	690	340	0.6	0.03	0.15	17,100	570	280	0.6	0.03	0.15	17,100	460	230	0.6	0.03	0.15
	2	–	6.7	16,100	600	300	0.6	0.022	0.1	16,100	500	250	0.6	0.022	0.1	16,100	400	200	0.6	0.022	0.1
		1.5	5	19,000	850	420	0.6	0.03	0.15	19,000	710	350	0.6	0.03	0.15	19,000	560	280	0.6	0.03	0.15
	0.9	2	6.7	17,800	750	370	0.6	0.022	0.1	17,800	620	310	0.6	0.022	0.1	17,800	500	250	0.6	0.022	0.1
		2.5	8.3	16,700	630	310	0.6	0.014	0.069	16,700	520	260	0.6	0.014	0.069	16,700	420	210	0.6	0.014	0.069
		3	10	15,600	450	220	0.6	0.008	0.036	15,600	370	180	0.6	0.008	0.036	15,600	300	150	0.6	0.008	0.036
0.4	1.2	–	3	20,000	1,480	740	0.8	0.08	0.4	20,000	1,240	620	0.8	0.08	0.4	20,000	990	490	0.8	0.08	0.4
	2	–	5	17,100	970	480	0.8	0.04	0.2	17,100	810	400	0.8	0.04	0.2	17,100	640	320	0.8	0.04	0.2
	3	–	7.5	15,600	800	400	0.8	0.024	0.11	15,600	660	330	0.8	0.024	0.11	15,600	530	260	0.8	0.024	0.11
		2	5	19,000	1,200	600	0.8	0.04	0.2	19,000	1,000	500	0.8	0.04	0.2	19,000	800	400	0.8	0.04	0.2
		2.5	6.3	18,100	1,090	540	0.8	0.032	0.15	18,100	910	450	0.8	0.032	0.15	18,100	720	360	0.8	0.032	0.15
	1.2	3	7.5	17,300	980	490	0.8	0.024	0.11	17,300	820	410	0.8	0.024	0.11	17,300	650	320	0.8	0.024	0.11
		4	10	15,600	630	310	0.8	0.01	0.048	15,600	530	260	0.8	0.01	0.048	15,600	420	210	0.8	0.01	0.048
		5	12.5	15,000	550	270	0.8	0.008	0.04	15,000	460	230	0.8	0.008	0.04	15,000	370	180	0.8	0.008	0.04
0.5	1.5	–	3	20,000	1,920	960	1	0.1	0.5	20,000	1,600	800	1	0.1	0.5	20,000	1,280	640	1	0.1	0.5
	2.5	–	5	17,100	1,250	620	1	0.05	0.25	17,100	1,040	520	1	0.05	0.25	17,100	830	410	1	0.05	0.25
	5	–	10	13,000	610	300	1	0.012	0.06	13,000	510	250	1	0.012	0.06	13,000	410	200	1	0.012	0.06
		3	6	18,300	1,430	710	1	0.042	0.2	18,300	1,190	590	1	0.042	0.2	18,300	950	470	1	0.042	0.2
		4	8	16,000	1,150	570	1	0.025	0.12	16,000	960	480	1	0.025	0.12	16,000	760	380	1	0.025	0.12
	1.5	6	12	15,200	740	370	1	0.011	0.052	15,200	620	310	1	0.011	0.052	15,200	490	240	1	0.011	0.052
		8	16	14,300	590	290	1	0.008	0.036	14,300	490	240	1	0.008	0.036	14,300	390	190	1	0.008	0.036
		10	20	13,500	450	220	1	0.004	0.02	13,500	370	180	1	0.004	0.02	13,500	300	150	1	0.004	0.02
0.6	1.8	–	3	20,000	2,160	1,080	1.2	0.12	0.6	20,000	1,800	900	1.2	0.12	0.6	20,000	1,440	720	1.2	0.12	0.6
	3	–	5	17,100	1,410	700	1.2	0.06	0.3	17,100	1,170	580	1.2	0.06	0.3	17,100	940	470	1.2	0.06	0.3
	4	–	6.7	16,100	1,240	620	1.2	0.044	0.21	16,100	1,030	510	1.2	0.044	0.21	16,100	820	410	1.2	0.044	0.21
		4	6.7	17,800	1,530	760	1.2	0.044	0.21	17,800	1,270	630	1.2	0.044	0.21	17,800	1,020	510	1.2	0.044	0.21
		6	10	15,000	890	440	1.2	0.015	0.072	15,000	740	370	1.2	0.015	0.072	15,000	590	290	1.2	0.015	0.072
	1.8	8	13.3	14,400	750	370	1.2	0.012	0.056	14,400	620	310	1.2	0.012	0.056	14,400	500	250	1.2	0.012	0.056
		10	16.7	13,700	610	300	1.2	0.008	0.04	13,700	510	250	1.2	0.008	0.04	13,700	410	200	1.2	0.008	0.04
		12	20	13,000	490	240	1.2	0.005	0.024	13,000	400	200	1.2	0.005	0.024	13,000	320	160	1.2	0.005	0.024
0.8	2.4	–	3	20,000	2,640	1,320	1.6	0.16	0.8	20,000	2,200	1,100	1.6	0.16	0.8	20,000	1,760	880	1.6	0.16	0.8
	4	–	5	17,100	1,720	860	1.6	0.08	0.4	17,100	1,430	710	1.6	0.08	0.4	17,100	1,150	570	1.6	0.08	0.4
	6	–	7.5	15,600	1,420	710	1.6	0.047	0.23	15,600	1,180	590	1.6	0.047	0.23	15,600	940	470	1.6	0.047	0.23
		6	7.5	17,300	1,750	870	1.6	0.047	0.23	17,300	1,460	730	1.6	0.047	0.23	17,300	1,160	580	1.6	0.047	0.23
		8	10	14,000	1,010	500	1.6	0.02	0.096	14,000	840	420	1.6	0.02	0.096	14,000	670	330	1.6	0.02	0.096
	2.4	10	12.5	13,400	880	440	1.6	0.016	0.08	13,400	730	360	1.6	0.016	0.08	13,400	580	290	1.6	0.016	0.08
		12	15	12,700	750	370	1.6	0.013	0.064	12,700	620	310	1.6	0.013	0.064	12,700	500	250	1.6	0.013	0.064
		16	20	12,000	550	270	1.6	0.007	0.032	12,000	460	230	1.6	0.007	0.032	12,000	360	180	1.6	0.007	0.032

RSE230
切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				ABS・MC尼龙・PTFE ABS・MC nylon・PTFE						聚碳酸酯・POM・PEEK Polycarbonate・POM・PEEK						亚克力・电木 Acrylic・Bakelite					
外径 Dia.	刃长 Length of Cut	颈长 Under neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut		
					侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting
				min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm
1	3	–	3	17,000	2,650	1,320	2	0.2	1	17,000	2,210	1,100	2	0.2	1	17,000	1,760	880	2	0.2	1
	5	–	5	14,500	1,730	860	2	0.1	0.5	14,500	1,440	720	2	0.1	0.5	14,500	1,150	570	2	0.1	0.5
	7.5	–	7.5	13,200	1,420	710	2	0.059	0.29	13,200	1,180	590	2	0.059	0.29	13,200	940	470	2	0.059	0.29
	10	–	10	12,000	920	460	2	0.024	0.12	12,000	770	380	2	0.024	0.12	12,000	610	300	2	0.024	0.12
	3	6	6	15,500	1,980	990	2	0.084	0.41	15,500	1,650	820	2	0.084	0.41	15,500	1,320	660	2	0.084	0.41
		8	8	14,400	1,690	840	2	0.05	0.25	14,400	1,400	700	2	0.05	0.25	14,400	1,120	560	2	0.05	0.25
		10	10	13,000	1,110	550	2	0.024	0.12	13,000	920	460	2	0.024	0.12	13,000	740	370	2	0.024	0.12
		12	12	12,400	980	490	2	0.021	0.1	12,400	820	410	2	0.021	0.1	12,400	650	320	2	0.021	0.1
		15	15	11,700	820	410	2	0.016	0.08	11,700	680	340	2	0.016	0.08	11,700	540	270	2	0.016	0.08
		20	20	11,000	600	300	2	0.008	0.04	11,000	500	250	2	0.008	0.04	11,000	400	200	2	0.008	0.04
1.5	4.5	–	3	13,300	2,590	1,290	3	0.3	1.5	13,300	2,150	1,070	3	0.3	1.5	13,300	1,720	860	3	0.3	1.5
	7.5	–	5	11,100	1,710	850	3	0.15	0.75	11,100	1,430	710	3	0.15	0.75	11,100	1,140	570	3	0.15	0.75
	15	–	10	8,500	930	460	3	0.036	0.18	8,500	780	390	3	0.036	0.18	8,500	620	310	3	0.036	0.18
	4.5	10	6.7	11,400	1,850	920	3	0.1	0.54	11,400	1,540	770	3	0.1	0.54	11,400	1,230	610	3	0.1	0.54
		12	8	10,600	1,650	820	3	0.075	0.37	10,600	1,380	690	3	0.075	0.37	10,600	1,100	550	3	0.075	0.37
		15	10	9,400	1,150	570	3	0.036	0.18	9,400	960	480	3	0.036	0.18	9,400	770	380	3	0.036	0.18
		18	12	9,000	1,050	520	3	0.032	0.15	9,000	870	430	3	0.032	0.15	9,000	700	350	3	0.032	0.15
		23	15.3	8,300	880	440	3	0.024	0.11	8,300	730	360	3	0.024	0.11	8,300	580	290	3	0.024	0.11
		30	20	7,500	690	340	3	0.012	0.06	7,500	570	280	3	0.012	0.06	7,500	460	230	3	0.012	0.06
2	6	–	3	9,900	2,320	1,160	4	0.4	2	9,900	1,930	960	4	0.4	2	9,900	1,550	770	4	0.4	2
	10	–	5	8,200	1,590	790	4	0.2	1	8,200	1,320	660	4	0.2	1	8,200	1,060	530	4	0.2	1
	15	–	7.5	7,000	1,260	630	4	0.11	0.58	7,000	1,050	520	4	0.11	0.58	7,000	840	420	4	0.11	0.58
	20	–	10	5,600	850	420	4	0.048	0.24	5,600	710	350	4	0.048	0.24	5,600	560	280	4	0.048	0.24
	6	12	6	8,600	1,800	900	4	0.16	0.83	8,600	1,500	750	4	0.16	0.83	8,600	1,200	600	4	0.16	0.83
		15	7.5	7,700	1,560	780	4	0.11	0.58	7,700	1,300	650	4	0.11	0.58	7,700	1,040	520	4	0.11	0.58
		20	10	6,200	1,050	520	4	0.048	0.24	6,200	870	430	4	0.048	0.24	6,200	700	350	4	0.048	0.24
		24	12	5,900	950	470	4	0.042	0.2	5,900	790	390	4	0.042	0.2	5,900	630	310	4	0.042	0.2
		30	15	5,300	810	400	4	0.032	0.16	5,300	680	340	4	0.032	0.16	5,300	540	270	4	0.032	0.16
		40	20	4,500	620	310	4	0.016	0.08	4,500	510	250	4	0.016	0.08	4,500	410	200	4	0.016	0.08
3	9(d3)	–	3	6,600	2,060	1,030	6	0.6	3	6,600	1,710	850	6	0.6	3	6,600	1,370	680	6	0.6	3
	9(d6)	–	3	6,600	2,060	1,030	6	0.6	3	6,600	1,710	850	6	0.6	3	6,600	1,370	680	6	0.6	3
	15(d3)	–	5	5,300	1,420	710	6	0.3	1.5	5,300	1,190	590	6	0.3	1.5	5,300	950	470	6	0.3	1.5
	15(d6)	–	5	5,300	1,420	710	6	0.3	1.5	5,300	1,190	590	6	0.3	1.5	5,300	950	470	6	0.3	1.5
	20	–	6.7	4,700	1,210	600	6	0.21	1	4,700	1,010	500	6	0.21	1	4,700	810	400	6	0.21	1
	25	–	8.3	4,000	990	490	6	0.13	0.68	4,000	830	410	6	0.13	0.68	4,000	660	330	6	0.13	0.68
	30	–	10	3,300	740	370	6	0.072	0.36	3,300	620	310	6	0.072	0.36	3,300	490	240	6	0.072	0.36
	9	15	5	5,900	1,760	880	6	0.3	1.5	5,900	1,460	730	6	0.3	1.5	5,900	1,170	580	6	0.3	1.5
		20	6.7	5,200	1,500	750	6	0.21	1	5,200	1,250	620	6	0.21	1	5,200	1,000	500	6	0.21	1
		24	8	4,600	1,290	640	6	0.15	0.75	4,600	1,080	540	6	0.15	0.75	4,600	860	430	6	0.15	0.75
		30	10	3,700	920	460	6	0.072	0.36	3,700	770	380	6	0.072	0.36	3,700	610	300	6	0.072	0.36
		36	12	3,400	830	410	6	0.063	0.31	3,400	690	340	6	0.063	0.31	3,400	550	270	6	0.063	0.31
		45	15	2,900	690	340	6	0.048	0.24	2,900	580	290	6	0.048	0.24	2,900	460	230	6	0.048	0.24
		60	20	2,300	500	250	6	0.024	0.12	2,300	420	210	6	0.024	0.12	2,300	330	160	6	0.024	0.12
4	12(d4)	–	3	4,900	1,910	950	8	0.8	4	4,900	1,590	790	8	0.8	4	4,900	1,270	630	8	0.8	4
	12(d6)	–	3	4,900	1,910	950	8	0.8	4	4,900	1,590	790	8	0.8	4	4,900	1,270	630	8	0.8	4
	20(d4)	–	5	4,000	1,320	660	8	0.4	2	4,000	1,100	550	8	0.4	2	4,000	880	440	8	0.4	2
	20(d6)	–	5	4,000	1,320	660	8	0.4	2	4,000	1,100	550	8	0.4	2	4,000	880	440	8	0.4	2
	30	–	7.5	3,200	1,030	510	8	0.23	1.1	3,200	860	430	8	0.23	1.1	3,200	690	340	8	0.23	1.1
	40	–	10	2,500	690	340	8	0.096	0.48	2,500	580	290	8	0.096	0.48	2,500	460	230	8	0.096	0.48
	12	20	5	4,400	1,640	820	8	0.4	2	4,400	1,360	680	8	0.4	2	4,400	1,090	540	8	0.4	2
		30	7.5	3,600	1,270	630	8	0.23	1.1	3,600	1,060	530	8	0.23	1.1	3,600	850	420	8	0.23	1.1
		40	10	2,700	850	420	8	0.096	0.48	2,700	710	350	8	0.096	0.48	2,700	570	280	8	0.096	0.48
		55	13.8	2,300	690	340	8	0.072	0.36	2,300	580	290	8	0.072	0.36	2,300	460	230	8	0.072	0.36
		70	17.5	1,900	550	270	8	0.048	0.24	1,900	460	230	8	0.048	0.24	1,900	370	180	8	0.048	0.24

RSE230

RSE230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				ABS・MC尼龙・PTFE ABS・MC nylon・PTFE						聚碳酸酯・POM・PEEK Polycarbonate・POM・PEEK						亚克力・电木 Acrylic・Bakelite					
外径 Dia.	刃长 Length of Cut	颈长 Under neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut			主轴转速 Spindle Speed	进给速度 Feed		切深量 Depth of Cut		
					侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting		侧面 Side Milling	沟槽 Slot-ting	侧面 Side Milling		沟槽 Slot-ting
				min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm	min^{-1}	mm/min		ap mm	ae mm	ap mm
5	10	–	2	3,900	1,820	910	10	1	5	3,900	1,510	750	10	1	5	3,900	1,210	600	10	1	5
	15	–	3	3,900	1,820	910	10	1	5	3,900	1,510	750	10	1	5	3,900	1,210	600	10	1	5
	25	–	5	3,200	1,260	630	10	0.5	2.5	3,200	1,050	520	10	0.5	2.5	3,200	840	420	10	0.5	2.5
	35	–	7	2,700	1,030	510	10	0.33	1.6	2,700	860	430	10	0.33	1.6	2,700	690	340	10	0.33	1.6
	40	–	8	2,500	930	460	10	0.25	1.2	2,500	770	380	10	0.25	1.2	2,500	620	310	10	0.25	1.2
	15	30	6	3,300	1,410	700	10	0.41	2	3,300	1,180	590	10	0.41	2	3,300	940	470	10	0.41	2
		40	8	2,700	1,140	570	10	0.25	1.2	2,700	950	470	10	0.25	1.2	2,700	760	380	10	0.25	1.2
		55	11	2,100	770	380	10	0.11	0.56	2,100	640	320	10	0.11	0.56	2,100	510	250	10	0.11	0.56
		70	14	1,800	650	320	10	0.088	0.44	1,800	540	270	10	0.088	0.44	1,800	430	210	10	0.088	0.44
6	12	–	2	3,300	1,750	870	12	1.2	6	3,300	1,460	730	12	1.2	6	3,300	1,170	580	12	1.2	6
	18	–	3	3,300	1,750	870	12	1.2	6	3,300	1,460	730	12	1.2	6	3,300	1,170	580	12	1.2	6
	25	–	4.2	2,800	1,300	650	12	0.85	4.2	2,800	1,080	540	12	0.85	4.2	2,800	860	430	12	0.85	4.2
	30	–	5	2,600	1,210	600	12	0.6	3	2,600	1,010	500	12	0.6	3	2,600	810	400	12	0.6	3
	40	–	6.7	2,300	1,030	510	12	0.43	2.1	2,300	860	430	12	0.43	2.1	2,300	690	340	12	0.43	2.1
	50	–	8.3	2,000	850	420	12	0.27	1.3	2,000	700	350	12	0.27	1.3	2,000	560	280	12	0.27	1.3
	18	40	6.7	2,600	1,270	630	12	0.43	2.1	2,600	1,060	530	12	0.43	2.1	2,600	850	420	12	0.43	2.1
		60	10	1,800	780	390	12	0.14	0.72	1,800	650	320	12	0.14	0.72	1,800	520	260	12	0.14	0.72
		80	13.3	1,600	650	320	12	0.11	0.56	1,600	540	270	12	0.11	0.56	1,600	430	210	12	0.11	0.56

备 注 Notes

※1 本切削参数为粗加工时的参考值。请根据实际的加工形状和所使用机床的刚性等调整切削参数。
※2 主轴转速过低时，请以相同的比率降低主轴转速和进给速度。
※3 精加工时，请根据要求精度等调整切削参数。
※4 内角等刀具负载增大的部位可能需要调整切削参数。
※5 发生振刀或加工声音较吵等问题时，请以相同的比率降低主轴转速和进给速度。
※6 L/D较大的刀具（L/D≥10）发生倾斜时，必须降低进给速度或切深量。
※7 L/D＞20的刀具请根据L/D＝20左右的切削参数参考值，充分降低主轴转速、进给速度、切深量，调整切削参数。
※8 建议使用吹气冷却方式。
※9 加工过程中切屑卡入、缠绕可能会有损加工面品质，因此请注意排屑。
※10 请尽量抑制刀具的偏摆量。
※11 采用接触方式测量刀具长度时，尤其是φ1以下的尺寸，请注意避免发生崩刃。

※1 These recommended cutting conditions indicate just reference for roughing. It should be adjusted according to milling shape and machine type.
※2 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※3 For finishing process, please adjust to the optimized condition to meet the requirement of machining accuracy.
※4 Necessary to adjust the cutting condition at the parts overloading against the tools such as inner corner parts.
※5 Adjust both spindle speed and feed at the same rate when chattering or abnormal sounds occurred.
※6 When a tool with L/D 10 times and longer deflects on milling, please reduce Feed or Depth of Cut.
※7 For a tool with L/D longer than 20 times, reduce spindle speed, feed rate and depth of cut at sufficient values by referring the cutting conditions of L/D 20 times.
※8 Air blow is recommended.
※9 Care for chip removal to avoid being stuck or caught during process for better surface quality.
※10 Minimize chucking runout.
※11 Pay keen attention for tool length measurement with contact-type equipment for the tools under φ1 to avoid cutting edge damage.



全刃长 Full Cutting Length 平底
长颈 Long Neck
无涂层 Non-Coating Square
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ◎
树脂加工 Resin Milling

DHR237

规格 Size ϕ 0.1 ～ ϕ 6

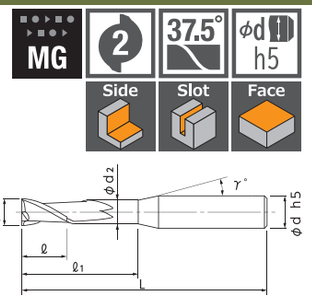
DLC

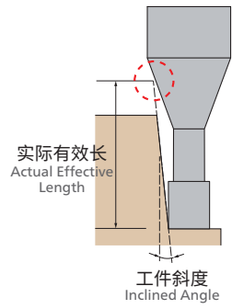
铜电极加工用长颈平底铣刀
Long Neck Square End Mill for Copper Electrode

共有74种规格
Total 74 sizes

针对铜电极加工用的长颈平底铣刀 刀刃锋利，可减少毛刺，实现优质的加工面

Long neck square end mill specialized for machining copper alloy
Sharpe cutting edge makes less burr and high quality surface





- 针对铜电极加工用的长颈平底铣刀。
- 采用锋利度和精加工表面品质兼具的螺旋角【37.5°】，可抑制加工面产生水平条纹。
- 采用优化的刀刃形状和DLC涂层，可确保长时间进行持续稳定的高品质加工。
- 对钨铜电极的加工也很有效。
- Long neck square end mill specialized for machining copper electrode.
- Helix angle 37.5 degrees to achieve both sharpness and finished surface quality that prevents scratches on cutting surface.
- High quality and stable milling performance with long tool life by optimized design and DLC COATING.
- Machining copper tungsten electrodes is also effective.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30	1°	1°30	2°	3°
07-00100-01003	0.1	0.3	0.2	0.085	12°	4	45	12,700	0.34	0.36	0.38	0.40	0.44
07-00100-01005		0.5	0.2	0.085	12°	4	45	13,300	0.55	0.58	0.61	0.64	0.71
07-00100-01007		0.75	0.2	0.085	12°	4	45	14,000	0.81	0.85	0.89	0.93	1.04
07-00100-01010		1	0.2	0.085	12°	4	45	14,800	1.07	1.12	1.18	1.23	1.37
07-00100-02005	0.2	0.5	0.4	0.18	12°	4	45	9,500	0.57	0.59	0.62	0.65	0.72
07-00100-02010		1	0.4	0.18	12°	4	45	10,000	1.09	1.14	1.19	1.25	1.38
07-00100-02015		1.5	0.4	0.18	12°	4	45	10,500	1.61	1.68	1.76	1.85	2.05
07-00100-02020		2	0.4	0.18	12°	4	45	11,000	2.13	2.23	2.33	2.44	2.71
07-00100-03010	0.3	1	0.6	0.28	12°	4	45	10,000	1.09	1.14	1.19	1.25	1.38
07-00100-03015		1.5	0.6	0.28	12°	4	45	10,500	1.61	1.68	1.76	1.85	2.05
07-00100-03020		2	0.6	0.28	12°	4	45	11,000	2.13	2.23	2.33	2.44	2.71
07-00100-03030		3	0.6	0.28	12°	4	45	11,600	3.17	3.31	3.47	3.64	4.04
07-00100-04010	0.4	1	0.8	0.37	12°	4	45	8,700	1.11	1.16	1.22	1.28	1.42
07-00100-04020		2	0.8	0.37	12°	4	45	8,900	2.15	2.25	2.36	2.47	2.74
07-00100-04030		3	0.8	0.37	12°	4	45	9,100	3.20	3.34	3.50	3.67	4.07
07-00100-04040		4	0.8	0.37	12°	4	45	9,300	4.24	4.43	4.64	4.87	5.40
07-00100-05015	0.5	1.5	1	0.46	12°	4	45	8,500	1.66	1.73	1.81	1.90	2.11
07-00100-05020		2	1	0.46	12°	4	45	8,700	2.18	2.28	2.38	2.50	2.77
07-00100-05030		3	1	0.46	12°	4	45	8,900	3.22	3.37	3.52	3.70	4.10
07-00100-05040		4	1	0.46	12°	4	45	9,100	4.26	4.46	4.66	4.89	5.43
07-00100-05060		6	1	0.46	12°	4	45	9,400	6.35	6.63	6.95	7.29	8.08
07-00100-06020	0.6	2	1.2	0.56	12°	4	45	9,400	2.18	2.28	2.38	2.50	2.77
07-00100-06030		3	1.2	0.56	12°	4	45	9,600	3.22	3.37	3.52	3.70	4.10
07-00100-06040		4	1.2	0.56	12°	4	45	9,800	4.26	4.46	4.66	4.89	5.43
07-00100-06060		6	1.2	0.56	12°	4	45	10,100	6.35	6.63	6.95	7.29	8.08

订购方法 How to Order

请指定DHR237 外径(D)×颈长(ℓ1)。
When you order, indicate DHR237 (D)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case

M-036

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30	1°	1°30	2°	3°
07-00100-08030	0.8	3	1.6	0.76	12°	4	45	9,600	3.22	3.37	3.52	3.70	4.10
07-00100-08040		4	1.6	0.76	12°	4	45	9,800	4.26	4.46	4.66	4.89	5.43
07-00100-08060		6	1.6	0.76	12°	4	45	10,100	6.35	6.63	6.95	7.29	8.08
07-00100-08080		8	1.6	0.76	12°	4	50	10,300	8.44	8.81	9.23	9.68	10.74
07-00100-10030	1	3	2	0.95	12°	4	45	9,100	3.25	3.39	3.55	3.73	4.13
07-00100-10040		4	2	0.95	12°	4	45	9,200	4.29	4.48	4.69	4.92	5.46
07-00100-10050		5	2	0.95	12°	4	45	9,400	5.33	5.57	5.83	6.12	6.79
07-00100-10060		6	2	0.95	12°	4	45	9,600	6.37	6.66	6.97	7.32	8.11
07-00100-10080		8	2	0.95	12°	4	50	9,800	8.46	8.84	9.25	9.71	10.77
07-00100-10100		10	2	0.95	12°	4	50	10,000	10.55	11.02	11.53	12.10	13.42
07-00100-10120		12	2	0.95	12°	4	50	10,000	12.63	13.20	13.82	14.49	16.08
07-00100-15040	1.5	4	3	1.45	12°	4	45	9,400	4.29	4.48	4.69	4.92	5.46
07-00100-15060		6	3	1.45	12°	4	50	9,400	6.37	6.66	6.97	7.32	8.11
07-00100-15080		8	3	1.45	12°	4	50	9,600	8.46	8.84	9.25	9.71	10.77
07-00100-15100		10	3	1.45	12°	4	50	9,900	10.55	11.02	11.53	12.10	13.42
07-00100-15120		12	3	1.45	12°	4	50	9,900	12.63	13.20	13.82	14.49	16.08
07-00100-15160		16	3	1.45	12°	4	60	10,200	16.80	17.55	18.38	19.28	21.39
07-00100-20060	2	6	4	1.94	12°	4	50	9,200	6.40	6.69	7.00	7.34	8.15
07-00100-20080		8	4	1.94	12°	4	50	9,200	8.48	8.86	9.28	9.74	10.80
07-00100-20100		10	4	1.94	12°	4	50	9,300	10.57	11.04	11.56	12.13	13.45
07-00100-20120		12	4	1.94	12°	4	50	9,300	12.66	13.22	13.84	14.52	16.11
07-00100-20140		14	4	1.94	12°	4	50	9,300	14.74	15.40	16.12	16.92	18.76
07-00100-20160		16	4	1.94	12°	4	60	9,500	16.83	17.58	18.40	19.31	Free
07-00100-20200		20	4	1.94	12°	4	60	9,500	21.00	21.94	22.97	24.10	Free
07-00100-25060	2.5	6	5	2.4	12°	4	45	9,400	6.50	6.79	7.11	7.46	8.27
07-00100-25080		8	5	2.4	12°	4	50	9,400	8.58	8.97	9.39	9.85	10.93
07-00100-25100		10	5	2.4	12°	4	50	9,600	10.67	11.15	11.67	12.24	13.58
07-00100-25120		12	5	2.4	12°	4	50	10,000	12.75	13.32	13.95	14.64	Free
07-00100-25140		14	5	2.4	12°	4	50	10,000	14.84	15.50	16.23	17.03	Free
07-00100-25160		16	5	2.4	12°	4	50	10,200	16.93	17.68	18.51	19.42	Free
07-00100-25200		20	5	2.4	12°	4	60	10,800	21.10	22.04	23.07	Free	Free
07-00100-30080	3	8	6	2.85	12°	6	50	9,500	8.71	9.10	9.52	9.99	11.08
07-00100-30100		10	6	2.85	12°	6	50	9,700	10.79	11.27	11.80	12.38	13.74
07-00100-30150		15	6	2.85	12°	6	60	10,100	16.01	16.72	17.50	18.37	20.37
07-00100-30200		20	6	2.85	12°	6	60	10,500	21.22	22.17	23.21	24.35	27.01
07-00100-30250		25	6	2.85	12°	6	70	11,500	26.43	27.62	28.91	30.33	Free
07-00100-40100	4	10	8	3.8	12°	6	50	8,800	10.91	11.40	11.94	12.52	13.89
07-00100-40150		15	8	3.8	12°	6	60	9,000	16.13	16.85	17.64	18.51	Free
07-00100-40200		20	8	3.8	12°	6	60	9,600	21.34	22.30	23.34	24.49	Free
07-00100-40250		25	8	3.8	12°	6	70	10,700	26.56	27.74	29.04	Free	Free
07-00100-40300		30	8	3.8	12°	6	70	11,100	31.77	33.19	34.75	Free	Free
07-00100-50150	5	15	10	4.8	12°	6	50	9,000	16.13	16.85	17.64	Free	Free
07-00100-50200		20	10	4.8	12°	6	60	9,600	21.34	22.30	Free	Free	Free
07-00100-50250		25	10	4.8	12°	6	60	10,700	26.56	27.74	Free	Free	Free
07-00100-50300		30	10	4.8	12°	6	70	11,100	31.77	Free	Free	Free	Free
07-00100-60150	6	15	12	5.8	–	6	50	9,600	Free	Free	Free	Free	Free
07-00100-60200		20	12	5.8	–	6	60	11,000	Free	Free	Free	Free	Free
07-00100-60300		30	12	5.8	–	6	70	12,000	Free	Free	Free	Free	Free
07-00100-60500		50	12	5.8	–	6	90	18,000	Free	Free	Free	Free	Free

加工材料 Work Material			铜合金 Copper							钨铜 Copper Tungsten (W70%-Cu30%)						
外径 Dia.	颈长 Under Neck Length	L(颈长)/D(外径) L/D	侧面 Side Milling				沟槽 Slotting			侧面 Side Milling				沟槽 Slotting		
			主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm
0.1	0.3	3	40,000	180	0.1	0.006	40,000	170	0.01	30,000	120	0.05	0.004	30,000	110	0.006
	0.5	5	40,000	140	0.1	0.004	40,000	130	0.007	30,000	80	0.05	0.003	30,000	70	0.004
	0.75	7.5	40,000	100	0.1	0.003	40,000	90	0.005	30,000	50	0.05	0.003	30,000	45	0.003
	1	10	40,000	80	0.1	0.003	40,000	70	0.003	30,000	40	0.05	0.003	30,000	35	0.002
0.2	0.5	2.5	40,000	400	0.2	0.008	40,000	380	0.02	30,000	260	0.1	0.006	30,000	250	0.01
	1	5	40,000	350	0.2	0.006	40,000	320	0.015	30,000	220	0.1	0.004	30,000	200	0.008
	1.5	7.5	40,000	300	0.2	0.004	40,000	250	0.01	30,000	200	0.1	0.003	30,000	130	0.005
	2	10	40,000	250	0.2	0.003	40,000	180	0.005	30,000	150	0.1	0.003	30,000	90	0.003
0.3	1	3.3	40,000	500	0.3	0.01	40,000	450	0.035	30,000	350	0.15	0.008	30,000	280	0.014
	1.5	5	40,000	450	0.3	0.008	40,000	400	0.025	30,000	300	0.15	0.006	30,000	250	0.012
	2	6.7	40,000	380	0.3	0.006	40,000	350	0.017	30,000	250	0.15	0.004	30,000	220	0.008
	3	10	35,000	300	0.3	0.004	35,000	250	0.01	30,000	200	0.15	0.003	30,000	150	0.005
0.4	1	2.5	40,000	700	0.4	0.02	40,000	650	0.045	30,000	500	0.2	0.014	30,000	450	0.025
	2	5	40,000	600	0.4	0.015	40,000	550	0.03	30,000	450	0.2	0.01	30,000	400	0.02
	3	7.5	35,000	500	0.4	0.01	35,000	450	0.02	26,000	350	0.2	0.007	26,000	300	0.015
	4	10	28,000	350	0.4	0.006	28,000	300	0.015	24,000	220	0.2	0.004	22,000	200	0.01
0.5	1.5	3	40,000	900	0.5	0.025	40,000	800	0.07	30,000	650	0.3	0.02	30,000	550	0.05
	2	4	38,000	800	0.5	0.02	35,000	700	0.055	28,000	550	0.3	0.016	26,000	450	0.04
	3	6	35,000	700	0.5	0.015	32,000	600	0.04	26,000	500	0.3	0.012	25,000	400	0.03
	4	8	28,000	550	0.5	0.008	26,000	500	0.03	24,000	400	0.3	0.005	22,000	300	0.02
	6	12	18,000	350	0.5	0.005	18,000	300	0.015	15,000	220	0.3	0.003	15,000	180	0.01
0.6	2	3.3	38,000	1,000	0.6	0.025	35,000	850	0.1	28,000	700	0.4	0.018	26,000	650	0.08
	3	5	32,000	800	0.6	0.02	30,000	700	0.08	24,000	550	0.4	0.014	22,000	500	0.06
	4	6.7	28,000	700	0.6	0.015	26,000	600	0.06	22,000	500	0.4	0.012	20,000	400	0.04
	6	10	20,000	450	0.6	0.01	20,000	400	0.03	18,000	350	0.4	0.008	16,000	300	0.02
0.8	3	3.8	30,000	1,300	0.8	0.04	28,000	1,200	0.15	24,000	1,000	0.6	0.03	22,000	900	0.1
	4	5	26,000	1,100	0.8	0.03	24,000	1,000	0.12	22,000	850	0.6	0.02	18,000	650	0.08
	6	7.5	22,000	900	0.8	0.02	18,000	650	0.08	16,000	600	0.6	0.014	14,000	500	0.06
	8	10	16,000	600	0.8	0.01	16,000	500	0.05	14,000	450	0.6	0.01	13,000	350	0.03
1	3	3	24,000	2,200	1	0.06	24,000	2,000	0.22	20,000	1,600	0.8	0.04	20,000	1,400	0.16
	4	4	24,000	2,000	1	0.05	22,000	1,800	0.2	20,000	1,400	0.8	0.035	18,000	1,100	0.14
	5	5	22,000	1,700	1	0.04	20,000	1,500	0.16	18,000	1,200	0.8	0.028	16,000	950	0.12
	6	6	20,000	1,500	1	0.03	18,000	1,200	0.14	16,000	1,000	0.8	0.02	14,000	800	0.1
	8	8	16,000	1,200	1	0.025	15,000	1,000	0.1	14,000	800	0.8	0.018	12,000	650	0.08
	10	10	14,000	1,000	1	0.02	12,000	800	0.07	12,000	650	0.8	0.014	11,000	550	0.05
	12	12	10,000	700	1	0.01	10,000	650	0.05	9,000	450	0.8	0.007	8,000	400	0.035
1.5	4	2.7	20,000	2,500	1.5	0.08	18,000	2,000	0.35	17,000	1,850	1	0.06	15,000	1,300	0.22
	6	4	18,000	2,200	1.5	0.08	16,000	1,800	0.3	15,000	1,600	1	0.05	14,000	1,200	0.2
	8	5.3	16,000	1,700	1.5	0.06	14,000	1,400	0.25	13,000	1,200	1	0.04	12,000	950	0.18
	10	6.7	14,000	1,450	1.5	0.05	12,000	1,150	0.2	11,000	950	1	0.035	10,000	750	0.15
	12	8	12,000	1,200	1.5	0.04	11,000	1,000	0.15	10,000	800	1	0.03	9,000	650	0.1
	16	10.7	10,000	900	1.5	0.02	10,000	800	0.08	8,000	600	1	0.015	7,000	500	0.06

DHR237
切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			铜合金 Copper							钨铜 Copper Tungsten (W70%-Cu30%)						
外径 Dia.	颈长 Under Neck Length	L(颈长)/D(外径) L/D	侧面 Side Milling				沟槽 Slotting			侧面 Side Milling				沟槽 Slotting		
			主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm
2	6	3	18,000	2,500	2	0.1	16,000	2,200	0.45	14,000	1,800	1.5	0.08	12,000	1,500	0.3
	8	4	16,000	2,200	2	0.09	14,000	1,900	0.4	12,000	1,500	1.5	0.07	12,000	1,400	0.28
	10	5	14,000	1,900	2	0.08	12,000	1,600	0.35	10,000	1,200	1.5	0.06	10,000	1,000	0.24
	12	6	12,000	1,600	2	0.07	11,000	1,400	0.28	10,000	1,100	1.5	0.05	9,000	900	0.2
	14	7	11,000	1,400	2	0.06	10,000	1,200	0.24	9,000	950	1.5	0.04	8,000	800	0.16
	16	8	10,000	1,200	2	0.045	9,000	1,000	0.18	8,000	800	1.5	0.03	7,000	650	0.12
	20	10	9,000	1,000	2	0.03	8,000	850	0.12	7,000	700	1.5	0.02	6,000	550	0.08
2.5	6	2.4	17,000	2,450	2.5	0.13	15,000	2,100	0.55	13,000	1,800	2	0.1	12,000	1,600	0.4
	8	3.2	16,000	2,300	2.5	0.12	14,000	1,950	0.5	12,000	1,650	2	0.09	11,000	1,450	0.35
	10	4	15,000	2,100	2.5	0.1	13,000	1,700	0.4	11,000	1,500	2	0.07	10,000	1,300	0.3
	12	4.8	14,000	1,900	2.5	0.08	12,000	1,550	0.35	10,000	1,300	2	0.065	9,000	1,100	0.25
	14	5.6	13,000	1,700	2.5	0.07	11,000	1,350	0.3	10,000	1250	2	0.06	9,000	1050	0.2
	16	6.4	11,000	1,400	2.5	0.06	10,000	1,200	0.25	9,000	1100	2	0.05	8,000	850	0.15
	20	8	10,000	1,250	2.5	0.05	9,000	1000	0.2	8,000	950	2	0.04	7,000	700	0.12
3	8	2.7	16,000	2,400	3	0.15	14,000	2,000	0.75	12,000	1,800	2.4	0.11	11,000	1500	0.55
	10	3.3	16,000	2,400	3	0.12	14,000	2,000	0.7	12,000	1,800	2.4	0.08	11,000	1,500	0.5
	15	5	14,000	2,100	3	0.1	12,000	1,600	0.6	11,000	1,600	2.4	0.07	9,000	1,100	0.4
	20	6.7	11,000	1,500	3	0.07	10,000	1,200	0.4	9,000	1,100	2.4	0.05	8,000	900	0.3
	25	8.3	10,000	1,300	3	0.05	9,000	1,000	0.2	8,000	900	2.4	0.03	7,000	700	0.15
4	10	2.5	12,000	2,400	4	0.2	10,000	2,000	1	9,000	1,600	3	0.15	8,000	1,400	0.8
	15	3.8	12,000	2,400	4	0.2	10,000	2,000	0.9	9,000	1,600	3	0.15	8,000	1,400	0.7
	20	5	10,000	2,000	4	0.15	8,000	1,600	0.7	8,000	1,400	3	0.1	6,000	1,000	0.5
	25	6.3	9,000	1,700	4	0.1	8,000	1,500	0.5	7,000	1,200	3	0.07	6,000	1,000	0.3
	30	7.5	8,000	1,500	4	0.07	7,000	1,300	0.3	6,000	1,000	3	0.05	5,000	800	0.2
5	15	3	9,500	2,600	5	0.25	8,500	2,200	1.1	7,000	1,800	3.5	0.18	6,000	1,400	0.8
	20	4	8,000	2,150	5	0.2	7,000	1,750	1	6,500	1,650	3.5	0.15	5,500	1,150	0.6
	25	5	7,000	1,800	5	0.15	6,000	1,400	0.9	5,800	1,300	3.5	0.12	4,800	1,000	0.5
	30	6	6,000	1,500	5	0.1	5,000	1,100	0.7	5,000	1,000	3.5	0.1	4,000	830	0.4
6	15	2.5	8,000	2,750	6	0.3	7,000	2,350	1.2	6,000	1,950	4	0.2	5,000	1400	0.9
	20	3.3	7,000	2,400	6	0.3	6,000	2,000	1.2	5,000	1,600	4	0.2	4,500	1,200	0.8
	30	5	5,000	1,600	6	0.2	4,000	1,200	1	4,000	1,100	4	0.15	3,500	900	0.6
	50	8.3	3,500	800	6	0.1	3,000	650	0.4	3,000	600	4	0.07	3,000	500	0.25

备 注 Notes

※1 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 发生振刀时，请以相同的比率降低主轴转速和进给速度。
此外，主轴转速过低时，也以相同的比率降低。
※4 建议使用油冷冷却方式。
※1 Recommend to use the milling condition as just reference. Adjust milling conditions according to machining shape and machine status.
※2 Depth of Cut : ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※3 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※4 Water-insoluble fluid is recommended.

铝合金 Aluminium Alloy N
铜合金 Copper 钨铜 Copper Tungsten N
树脂 Resin O
铜电极加工 Copper Electrode Milling

MSBSH330-5X

规格 Size R0.1 ～ R1

Plus ≦70 HRC

无限白金Plus涂层 5轴MC加工用3刃球头铣刀

MUGEN COATING PREMIUM Plus 3-Flute Ball End Mill for 5-Axis Machining

共有8种规格 Total 8 sizes

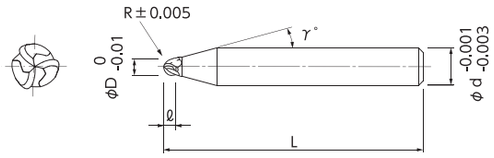
球头 Ball　全刃长 Full Cutting Length　涂层 Coating

SMG　3　30°　R ±0.005　φd 0 -0.001 -0.003　Connect　3D

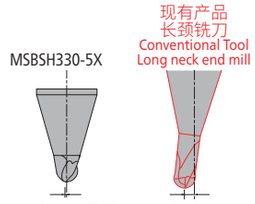
利用5轴加工机床的特点，采用3刃和高刚性的球头造型，实现高精度的高效率加工，进而降低总成本

3-flute high rigidity ball design conforms features of 5-axis machine to reduce total manufacturing cost with high precision and high efficiency machining

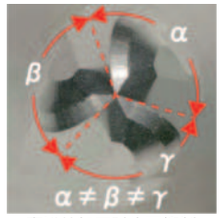




- 利用5轴加工机床的特点，采用3刃和高刚性的球头造型，实现高精度的高效率加工，进而降低总成本。
- 对45 ～ 70HRC的高硬度钢材也可实现延长刀具寿命、高效率加工。
- 利用3刃和不等分割设计抑制振刀现象，在注重耐崩损性的钨钢材质上采用锐角刃口，减小切削阻力，从而实现了高效加工。
- R精度达 ±0.005mm（R精度以实际外径的1/2为基准）。
- 柄径公差为-0.001mm至-0.003mm的高精度规格。
- 3-flute high rigidity ball design conforms features of 5-axis machine to reduce total manufacturing cost with high precision and high efficiency machining.
- Even hardened steel of 45 to 70HRC can be machining with long tool life and high efficiency.
- By adopting positive cutting edge for carbide material emphasized breakage resistance that suppresses chattering by 3-flute and unequal flute.
- R accuracy is ±0.005mm (R accuracy is based on a half value of actual diameter).
- Shank diameter tolerance , high accuracy type, is - 0.001 ～ - 0.003.



抑制刀具歪斜的刀具设计
Tool design suppressing the amount of deflection



高进给加工时也可抑制振刀现象的不等分割
Unequal spacing suppresses chattering even high feed rate machining



加工案例
Machining case

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00610-00100	R0.1	0.12	0.2	15°	6	50	10,800
08-00610-00150	R0.15	0.18	0.3	15°	6	50	9,200
08-00610-00200	R0.2	0.24	0.4	15°	6	50	6,700
08-00610-00250	R0.25	0.3	0.5	15°	6	50	6,400
08-00610-00300	R0.3	0.36	0.6	15°	6	50	6,100
08-00610-00500	R0.5	0.6	1	15°	6	50	5,700
08-00610-00750	R0.75	0.9	1.5	15°	6	50	6,600
08-00610-01000	R1	1.2	2	15°	6	50	5,200

订购方法 How to Order　请指定MSBSH330-5X 球头半径(R)。When you order, indicate MSBSH330-5X(R).

※(γ)为参考值。※(γ) is reference value.

加工案例 Machining Case　M-019, M-020

加工材料 Work Material	高硬度钢 Hardened Steels STAVAX・SKD11(～60HRC)				高速钢 High Speed Steels SKH51・HAP40(～65HRC)				高速钢 High Speed Steels SKH57・HAP72(～70HRC)			
(R)球头半径 Radius	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
R0.1	0.005 ～ 0.007	0.005	400	40,000	0.003 ～ 0.005	0.003	300	40,000	0.003 ～ 0.005	0.003	220	40,000
R0.15	0.005 ～ 0.007	0.007	450	40,000	0.003 ～ 0.005	0.005	400	40,000	0.003 ～ 0.005	0.005	270	40,000
R0.2	0.02 ～ 0.03	0.03	1,100	40,000	0.008 ～ 0.012	0.02	850	40,000	0.008 ～ 0.012	0.02	650	35,000
R0.25	0.02 ～ 0.03	0.03	1,300	40,000	0.01 ～ 0.015	0.02	1,000	35,000	0.01 ～ 0.015	0.02	700	30,000
R0.3	0.03 ～ 0.045	0.06	1,500	40,000	0.02 ～ 0.03	0.05	1,100	30,000	0.02 ～ 0.03	0.05	800	25,000
R0.5	0.1 ～ 0.15	0.2	3,000	30,000	0.08 ～ 0.12	0.1	2,000	25,000	0.05 ～ 0.075	0.1	1,500	20,000
R0.75	0.1 ～ 0.15	0.3	3,800	30,000	0.1 ～ 0.15	0.2	3,000	25,000	0.06 ～ 0.09	0.2	2,200	20,000
R1	0.2 ～ 0.3	0.5	3,800	25,000	0.15 ～ 0.22	0.3	3,000	20,000	0.1 ～ 0.15	0.3	2,200	16,000

备 注 Notes

※1 切深量的ap 表示轴向切深量，ae表示径向切深量。
※2 请根据机床刚性和工件的夹持状态等调整切削参数。
※3 颈角为15°，设定倾斜角时请注意避免与颈部发生干涉。
※4 刀具、加工材料的倾斜角和刀具的行进方向导致切削阻力较大时，请根据需要调整切削参数。
※5 切深量 ap 是基于刀具、加工材料倾斜角的参考数值。
※6 发生振刀等情况时，请根据需要调整切削参数。
※7 R角等切削阻力大的部位，请特别注意参数设定和刀路轨迹等。
※8 请以相同的比率调整主轴转速和进给速度。
※9 排屑不佳可能会导致刀具崩刃和折断，敬请注意。
※10 建议使用油雾冷却方式。

※1 Depth of cut ap indicates Axial Depth of Cut, ae indicates Radial Depth of Cut.
※2 Adjust milling condition according to machine rigidity and clamp condition of work material.
※3 Since the neck angle is 15 °, please be careful to set the inclined angle to avoid interfering.
※4 Adjust milling condition with necessity when high cutting load occurred by angle of tool or work material and feed direction.
※5 The depth of cut ap is a guideline value according to the inclined angle of the tool or work material.
※6 In case of chattering etc., please adjust cutting conditions if necessary.
※7 At point where cutting load is high such as at corners, pay attention to setting cutting conditions and tool paths particularly.
※8 Adjust both spindle speed and feed at the same rate.
※9 Attention to a risk of chipping and breakage when insufficient chip flow.
※10 We recommend using oil mist coolant.

MSBH230

规格 Size R0.05 ～ R6

Premium ≦65 HRC

无限白金涂层 高硬度钢材用2刃球头铣刀

MUGEN COATING PREMIUM 2-Flute Ball End Mill for Hardened Steel

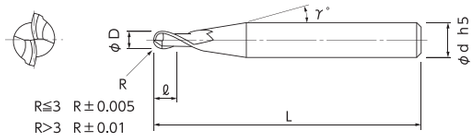
共有20种规格
Total 20 sizes

MG | 2 | 30° | R ±0.005 (R≦3) | φd h5 | 3D

可对应调质钢、高硬度钢（～65HRC）的球头铣刀
适用于从粗加工到精加工的各种加工

Ball end mill for prehardened steels and hardened steels up to 65HRC
For multi-purpose from roughing to finishing





- 高硬度材料用标准型球头铣刀。最适用于精加工。
- 适用于～ 65HRC的高硬度钢。
- Standard ball end mill for hardened steels and suitable for finishing process.
- Applicable for hardened steels up to 65HRC.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00507-00005	R0.05	0.1	0.1	12°	4	50	11,300
08-00507-00007	R0.075	0.15	0.15	12°	4	50	11,000
08-00507-00010	R0.1	0.2	0.2	12°	4	50	9,000
08-00507-00015	R0.15	0.3	0.3	12°	4	50	6,500
08-00507-00020	R0.2	0.6	0.4	12°	4	50	4,400
08-00507-00025	R0.25	0.8	0.5	12°	4	50	4,100
08-00507-00030	R0.3	0.9	0.6	12°	4	50	4,000
08-00507-00040	R0.4	1.2	0.8	12°	4	50	4,000
★ 08-00507-00050	R0.5	1.5	1	12°	4	50	3,700
★ 08-00507-00075	R0.75	2.3	1.5	12°	4	50	4,400
★ 08-00507-00100	R1	3	2	12°	4	60	3,300
★ 08-00507-00125	R1.25	3.8	2.5	12°	6	60	5,800
★ 08-00507-00150	R1.5	5	3	12°	6	60	4,200
★ 08-00507-00201	R2	6	4	–	4	70	4,500
★ 08-00507-00200	R2	6	4	12°	6	70	5,400
★ 08-00507-00250	R2.5	8	5	12°	6	70	5,700
★ 08-00507-00300	R3	10	6	–	6	80	5,900
★ 08-00507-00400	R4	12	8	–	8	90	15,100
★ 08-00507-00500	R5	15	10	–	10	100	19,400
★ 08-00507-00600	R6	20	12	–	12	100	27,800

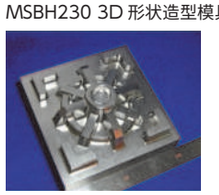
订购方法 How to Order

请指定MSBH230 球头半径(R)×柄径(d)。
When you order, indicate MSBH230 (R)×(d).

※(γ)为参考值。
※(γ) is reference value.

加工案例1 Machining case 1

MSBH230 3D 形状造型模具 3D Shape Model



- 加工材料：STAVAX 52HRC
  Work material: STAVAX 52HRC
- 总加工时间：9 小时 23 分钟
  Total machining time : 9hr 23min
- 冷却方式：油雾
  Coolant : Oil mist

工件尺寸：
100×100mm(加工深度 20mm)
Work Size : 100 x 100mm (Machining depth 20mm)

加工工序 Process	粗加工 Roughing	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	MSBH230 R3	MSBH230 R2	MSBH230 R2
主轴转速 [min⁻¹] Spindle speed	14,000	15,000	
进给速度 [mm/min] Feed	3,000	2,000	1,800
切深量 ap×ae[mm] Depth of cut	0.3 × 2	0.2 × 0.3	0.08 × 0.05
加工时间 Machining time	2 小时 30 分钟 2hr 30min	2 小时 23 分钟 2hr 23min	4 小时 30 分钟 4hr 30min

加工材料 Work Material	高度钢 Hardened Steels SKD61・STAVAX・HPM38(～52HRC)				高硬度钢 Hardened Steels SKD11(～62HRC)				高速钢 High Speed Steels SKH(～65HRC)			
(R)球头半径 Radius	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min⁻¹	ap mm	ae mm	mm/min	min⁻¹	ap mm	ae mm	mm/min	min⁻¹
0.05	0.005	0.005	150	40,000	0.003	0.005	100	40,000	0.002	0.005	60	40,000
0.075	0.005	0.005	180	40,000	0.003	0.005	150	40,000	0.002	0.005	100	40,000
0.1	0.01	0.02	360	40,000	0.01	0.01	320	40,000	0.003	0.005	240	40,000
0.15	0.01	0.03	420	40,000	0.01	0.02	360	40,000	0.005	0.01	300	40,000
0.2	0.02	0.06	1,000	40,000	0.02	0.05	820	40,000	0.01	0.02	480	40,000
0.25	0.03	0.07	1,200	40,000	0.025	0.05	1,000	40,000	0.015	0.03	600	40,000
0.3	0.05	0.1	1,600	40,000	0.03	0.06	1,200	40,000	0.02	0.05	720	30,000
0.4	0.1	0.15	2,200	40,000	0.07	0.1	1,800	40,000	0.05	0.1	1,200	30,000
0.5	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000
0.75	0.15	0.3	3,000	30,000	0.1	0.3	2,500	30,000	0.1	0.2	2,000	25,000
1	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000
1.25	0.2	0.6	3,000	25,000	0.2	0.5	2,500	20,000	0.15	0.3	2,000	16,000
1.5	0.2	0.8	3,000	20,000	0.2	0.6	2,500	18,000	0.2	0.5	2,000	14,000
2	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000
2.5	0.3	1.5	3,000	18,000	0.2	1.2	2,500	12,000	0.2	0.7	2,000	9,200
3	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
4	0.5	2	2,500	10,000	0.4	1.2	1,800	7,000	0.3	1	1,200	5,000
5	0.7	2.5	2,000	7,000	0.5	1.5	1,500	5,000	0.4	1.2	1,000	4,000
6	1	3	1,500	5,000	0.6	2	1,200	4,000	0.5	1.5	800	3,000

备 注 Notes

※1 切深量的 ap表示轴向切深量，ae表示步距量。
※2 建议使用油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※5 请根据需要控制刀具的伸出量。
※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 We recommend using oil mist coolant.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of depth of cut and rigidity of machine.
※5 Length of tool overhang must be as short as possible.

MSBH345

规格 Size R0.5 ～ R3

Premium ≦65 HRC

无限白金涂层 高硬度钢材用3刃球头铣刀

MUGEN COATING PREMIUM 3-Flute Ball End Mill for Hardened Steel

共有6种规格 Total 6 sizes

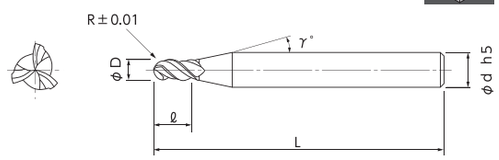
切削参数参考表 Recommended Milling Conditions

MG | 3 | 45° | φd h5 | 3D

可对应调质钢、高硬度钢（～65HRC）的3刃强螺旋角球头铣刀

3-flute high helix angle ball end mill
for prehardened steels and hardened steels up to 65HRC





- 采用高硬度钢用无限白金涂层，实现了延长刀具寿命化。
- 采用独创的3刃形状与不等分割设计，可减少振刀现象实现高效率加工。
- MUGEN COATING PREMIUM realizes long tool life for machining on high-hardened steel.
- Original 3-flute design and unequal flute spacing to suppress chattering realize high efficient machining.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00607-00050	R0.5	1.5	1	12°	6	60	10,100
08-00607-00100	R1	3	2	12°	6	60	10,100
★ 08-00607-00150	R1.5	5	3	12°	6	60	11,000
★ 08-00607-00200	R2	6	4	12°	6	70	11,000
★ 08-00607-00250	R2.5	8	5	12°	6	70	11,900
★ 08-00607-00300	R3	10	6	–	6	80	12,800

订购方法 How to Order

请指定MSBH345 球头半径(R)。
When you order, indicate MSBH345 (R).

※(γ)为参考值。
※(γ) is reference value.

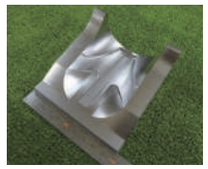
加工材料 Work Material	高硬度钢 Hardened Steels SKD61・STAVAX（～52HRC）				高硬度钢 Hardened Steels SKD11（～62HRC）				高速钢 High Speed Steels SKH（～65HRC）			
(R)球头半径 Radius	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.5	0.1	0.3	2,500	30,000	0.1	0.2	2,500	30,000	0.08	0.1	2,000	30,000
1	0.2	0.6	3,000	20,000	0.2	0.6	3,000	20,000	0.15	0.3	2,500	20,000
1.5	0.2	1	3,000	18,000	0.2	0.8	3,000	16,000	0.2	0.5	2,000	14,000
2	0.3	1.5	3,000	15,000	0.2	1	3,000	12,000	0.2	0.6	2,000	10,000
2.5	0.3	2	3,000	12,000	0.2	1.2	3,000	10,000	0.2	0.7	2,000	8,000
3	0.4	2	3,000	9,000	0.3	1.2	3,000	7,200	0.2	1	2,000	6,800

备 注 Notes

※1 切深量的 ap表示轴向切深量，ae表示步距量。
※2 建议使用油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※5 刀具伸出量请以4～5D为标准，伸出量超出该标准时请调整切削参数。
※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 We recommend using oil mist coolant.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of depth of cut and rigidity of machine.
※5 Length of overhang is 4 to 5 times Dia. When it is longer than 4 to 5 times Dia., adjust the conditions listed above.

加工案例1 Machining case 1

固定器造型模具 Binding sample



- 加工材料：DC53 60HRC
  Work material : DC53 60HRC
- 总加工时间：15 小时 16 分钟
  Total machining time : 15hr 16min
- 冷却方式：油雾
  Coolant : Oil mist
- 工件尺寸：
  100×100mm(加工深度 50mm)
  Work Size : 100 x 100mm (Machining depth 50mm)

加工工序 Process	粗加工 Roughing	中精加工 Semi-finishing	精加工 Finishing	清角加工 Stock removal
使用刀具 Tool	MSBH345 R3	MSBH345 R3	MSBH345 R3	MSBH345 R2
主轴转速 [min^{-1}] Spindle speed	7,200			12,000
进给速度 [mm/min] Feed	3,000	3,000	2,200	2,200
切深量 ap×ae[mm] Depth of cut	0.3 × 1.5	0.3 × 0.5	0.1 × 0.1	0.1 × 0.1
加工时间 Machining time	6小时40分钟 6hr 40min	49分钟 49min	7小时20分钟 7hr20min	27分钟 27min

规格 Size R0.05 ～ R3

≦52 HRC

无限涂层 超高精度加工用球头铣刀
MUGEN COATING Profit Ball End Mill

共有14种规格
Total 14 sizes

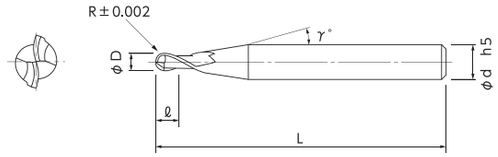
球头 Ball
全刃长 Full Cutting Length
涂层 Coating

R精度±0.002mm的高精度2刃球头铣刀

Radius tolerance ±0.002mm. 2-flute high accurate end mill

MG | 2 | 30° | R ±0.002 | φd h5 | 3D





- 超高精度！R精度±0.002mm。
- 升级版的无限涂层可确保长时间持续进行高精度的加工。
- Utmost accuracy！R-tolerance：±0.002mm
- Improved MUGEN COATING guarantees long-lasting machining.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00505-00005	R0.05	0.1	0.1	15°	4	50	20,800
08-00505-00010	R0.1	0.2	0.2	15°	4	50	11,900
08-00505-00015	R0.15	0.3	0.3	15°	4	50	11,300
08-00505-00020	R0.2	0.6	0.4	15°	4	50	7,600
08-00505-00025	R0.25	0.8	0.5	15°	4	50	7,100
08-00505-00030	R0.3	0.9	0.6	15°	4	50	7,100
08-00505-00040	R0.4	1.2	0.8	15°	4	50	7,100
08-00505-00050	R0.5	1.5	1	15°	4	50	7,100
08-00505-00075	R0.75	2.3	1.5	15°	4	50	8,400
08-00505-00100	R1	3	2	9°	4	60	6,100
08-00505-00150	R1.5	5	3	9°	6	60	8,100
08-00505-00200	R2	6	4	9°	6	70	8,100
08-00505-00250	R2.5	8	5	9°	6	70	9,700
08-00505-00300	R3	10	6	–	6	80	10,300

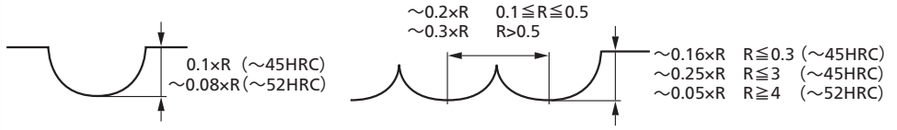
订购方法 How to Order

请指定MSB230G2 球头半径(R)。
When you order, indicate MSB230G2 (R).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢・调质钢 Alloy Steels Prehardened Steels SCM・SKD・SUS・HPM・NAK		高硬度钢 Hardened Steels SKD61(～52HRC)		铝合金 Aluminium Alloy		铜合金 Copper	
切削速度 Cutting Speed	150m/min		120～150m/min		80～100m/min		150m/min～		100～150m/min	
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.05	50,000	200	50,000	150	50,000	100	50,000	250	50,000	250
0.1	50,000	400	50,000	340	50,000	200	50,000	500	50,000	500
0.2	50,000	630	50,000	600	50,000	630	50,000	600	50,000	600
0.3	50,000	930	50,000	940	48,000	900	50,000	750	50,000	750
0.4	50,000	1,200	48,000	1,200	36,000	900	50,000	1,000	50,000	1,000
0.5	48,000	1,430	38,000	1,200	29,000	900	50,000	1,250	48,000	1,000
1	24,000	1,160	19,000	800	14,300	600	48,000	2,400	24,000	1,200
1.5	16,000	930	13,000	600	9,600	460	32,000	2,400	16,000	1,200
2	12,000	930	10,000	570	7,200	450	24,000	2,400	12,000	1,200
2.5	9,600	930	8,000	560	5,700	450	19,000	2,400	9,600	1,200
3	8,000	930	6,400	540	4,800	450	16,000	2,400	8,000	1,200

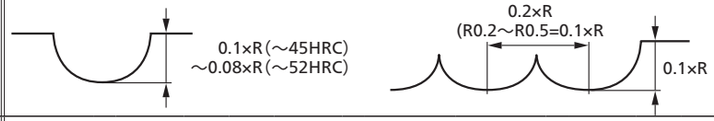
切深量 Depth of Cut (R:球头半径 Radius)



高速切削参数参考表
Recommended High Speed Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61(～52HRC)	
切削速度 Cutting Speed	250m/min		200m/min		180m/min		100m/min	
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.2	～50,000	～1,500	～50,000	～1,200	～50,000	～1,000	～50,000	600
0.3	～50,000	～1,500	～50,000	～1,200	～50,000	～1,000	～50,000	700
0.4	～50,000	～3,000	～50,000	～2,500	～50,000	～2,200	40,000	1,000
0.5	～50,000	～3,000	～50,000	～2,500	～50,000	～2,200	32,000	1,500
1	40,000	5,000	32,000	3,200	29,000	2,900	16,000	1,500
1.5	27,000	5,000	21,000	3,200	19,000	2,900	10,600	1,500
2	20,000	5,000	16,000	3,200	14,000	2,900	8,000	1,500
3	13,500	3,000	10,600	2,000	9,500	1,800	5,300	1,200

切深量 Depth of Cut (R:球头半径 Radius)



备 注 Notes

※1 沟槽加工时，请将进给速度调为上述参数的60%。
※2 建议使用吹气或油雾冷却方式。
※3 通常切削时的刀具伸出量请以4D为标准，伸出量超出该标准时请调整切削参数。
※4 请以相同的比率调整主轴转速和进给速度。
※5 建议使用刚性较大的铣刀刀柄和机床。
※6 高速切削时建议使用刚性较大的铣刀刀柄和机床。
※7 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 When slotting, reduce the feed by 60% from the above values.
※2 Recommended air blow or oil mist.
※3 Under normal speed milling condition, length of overhang is 4 times Dia. as standard. When it is longer than 4 times Dia., adjust the conditions listed above.
※4 Adjust both spindle speed and feed at the same rate.
※5 Under high speed milling condition, recommend to use a rigid machine and chuck holder.
※6 Adjust milling conditions according to the volume of depth of cut and rigidity of the machine.
※7 Use a rigid machine and chuck holder.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

规格 Size R0.1 ～ R6

≦52 HRC

MSB230S

无限涂层 短刃造型球头铣刀

MUGEN COATING 2-Flute Short Flute Ball End Mill

共有24种规格
Total 24 sizes

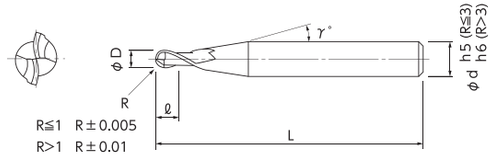
切削参数参考表
Recommended Milling Conditions

标准2刃30°螺旋角造型 刃长为外径1倍的短刃造型，具有高刚性

2-flute standard type with helix angle 30°. L/D=1 to increase rigidity

MG | 2 | 30° | R ±0.005 (R≦1) | φd h5 (R≦3) | 3D





- 采用高刚性设计，实现了无振刀高速加工。
- High rigid design reduced chatter in high speed cutting.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00530-00010	R0.1	0.2	0.2	9°	4	50	10,000
08-00530-00015	R0.15	0.3	0.3	9°	4	50	8,200
08-00530-00020	R0.2	0.4	0.4	9°	4	50	6,100
08-00530-00025	R0.25	0.5	0.5	9°	4	50	5,800
08-00530-00030	R0.3	0.6	0.6	9°	4	50	5,800
08-00530-00035	R0.35	0.7	0.7	9°	4	50	6,200
08-00530-00040	R0.4	0.8	0.8	9°	4	50	5,500
08-00530-00045	R0.45	0.9	0.9	9°	4	50	6,200
08-00530-00050	R0.5	1	1	9°	4	50	5,100
08-00530-00060	R0.6	1.2	1.2	9°	4	50	6,000
08-00530-00070	R0.7	1.4	1.4	9°	4	50	6,000
08-00530-00075	R0.75	1.5	1.5	9°	4	50	6,000
08-00530-00080	R0.8	1.6	1.6	9°	4	50	6,000
08-00530-00090	R0.9	1.8	1.8	9°	4	50	6,200
08-00530-00100	R1	2	2	9°	4	60	4,500
08-00530-00125	R1.25	2.5	2.5	9°	4	60	6,800
08-00530-00150	R1.5	3	3	9°	4	60	6,000
08-00530-00175	R1.75	3.5	3.5	9°	4	60	7,700
08-00530-00200	R2	4	4	9°	6	60	5,500
08-00530-00250	R2.5	5	5	9°	6	70	6,400
08-00530-00300	R3	6	6	–	6	80	6,800
08-00530-00400	R4	8	8	–	8	90	10,600
08-00530-00500	R5	10	10	–	10	100	13,500
08-00530-00600	R6	12	12	–	12	110	20,900

订购方法 How to Order

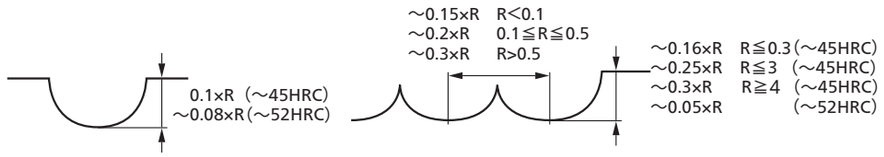
请指定MSB230S 球头半径(R)。
When you order, indicate MSB230S (R).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢・调质钢 Alloy Steels Prehardened Steels SCM・SKD・SUS・HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)		铝合金 Aluminium Alloy		铜合金 Copper	
切削速度 Cutting Speed	150m/min		120～150m/min		80～100m/min		150m/min～		100～150m/min	
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.1	50,000	400	50,000	340	50,000	200	50,000	500	50,000	500
0.2	50,000	630	50,000	600	50,000	630	50,000	600	50,000	600
0.3	50,000	930	50,000	940	48,000	900	50,000	750	50,000	750
0.4	50,000	1,200	48,000	1,200	36,000	900	50,000	1,000	50,000	1,000
0.5	48,000	1,430	38,000	1,200	29,000	900	50,000	1,250	48,000	1,000
0.6	40,000	1,430	32,000	1,200	24,000	810	50,000	1,480	40,000	1,080
0.8	30,000	1,270	24,000	1,000	18,000	670	50,000	1,900	30,000	1,160
1	24,000	1,160	19,000	800	14,300	600	48,000	2,400	24,000	1,200
1.5	16,000	930	13,000	600	9,600	460	32,000	2,400	16,000	1,200
2	12,000	930	10,000	570	7,200	450	24,000	2,400	12,000	1,200
2.5	9,600	930	8,000	560	5,700	450	19,000	2,400	9,600	1,200
3	8,000	930	6,400	540	4,800	450	16,000	2,400	8,000	1,200
4	6,000	900	4,800	540	3,600	450	12,000	2,400	6,000	1,200
5	4,800	900	3,800	540	2,900	450	9,600	2,300	4,800	1,150
6	4,000	900	3,200	540	2,400	450	8,000	2,100	4,000	1,050

切深量 Depth of Cut

(R:球头半径 Radius)



备 注 Notes

※1 沟槽加工时，请将进给速度调为上述参数的60%。
※2 刀具伸出量请以4D为标准，伸出量超出该标准时请调整切削参数。
※3 建议使用吹气或油雾冷却方式。
※4 请以相同的比率调整主轴转速和进给速度。
※1 When slotting, reduce the feed by 60% from the above values.
※2 Length of overhang is 4 times Dia. as standard. When it is longer than 4 times Dia., adjust the conditions listed above.
※3 Recommended oil mistair or blow.
※4 Adjust both spindle speed and feed at the same rate.

MSB230S

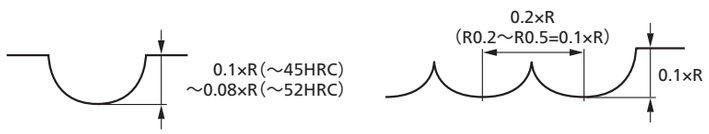
高速切削参数参考表
Recommended High Speed Milling Conditions

球头 Ball
全刃长 Full Cutting Length
涂层 Coating

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)	
切削速度 Cutting Speed	250m/min		200m/min		180m/min		100m/min	
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.2	～50,000	～1,500	～50,000	～1,200	～50,000	～1,000	～50,000	600
0.3	～50,000	～1,500	～50,000	～1,200	～50,000	～1,000	～50,000	700
0.4	～50,000	～3,000	～50,000	～2,500	～50,000	～2,200	40,000	1,000
0.5	～50,000	～3,000	～50,000	～2,500	～50,000	～2,200	32,000	1,500
1	40,000	5,000	32,000	3,200	29,000	2,900	16,000	1,500
1.5	27,000	5,000	21,000	3,200	19,000	2,900	10,600	1,500
2	20,000	5,000	16,000	3,200	14,000	2,900	8,000	1,500
3	13,500	3,000	10,600	2,000	9,500	1,800	5,300	1,200
4	10,000	3,000	8,000	2,000	7,200	1,800	4,000	1,200
5	8,000	3,000	6,400	2,000	5,700	1,800	3,200	1,200
6	6,700	2,500	5,300	1,800	4,800	1,600	2,700	1,200

切深量 Depth of Cut

(R:球头半径 Radius)

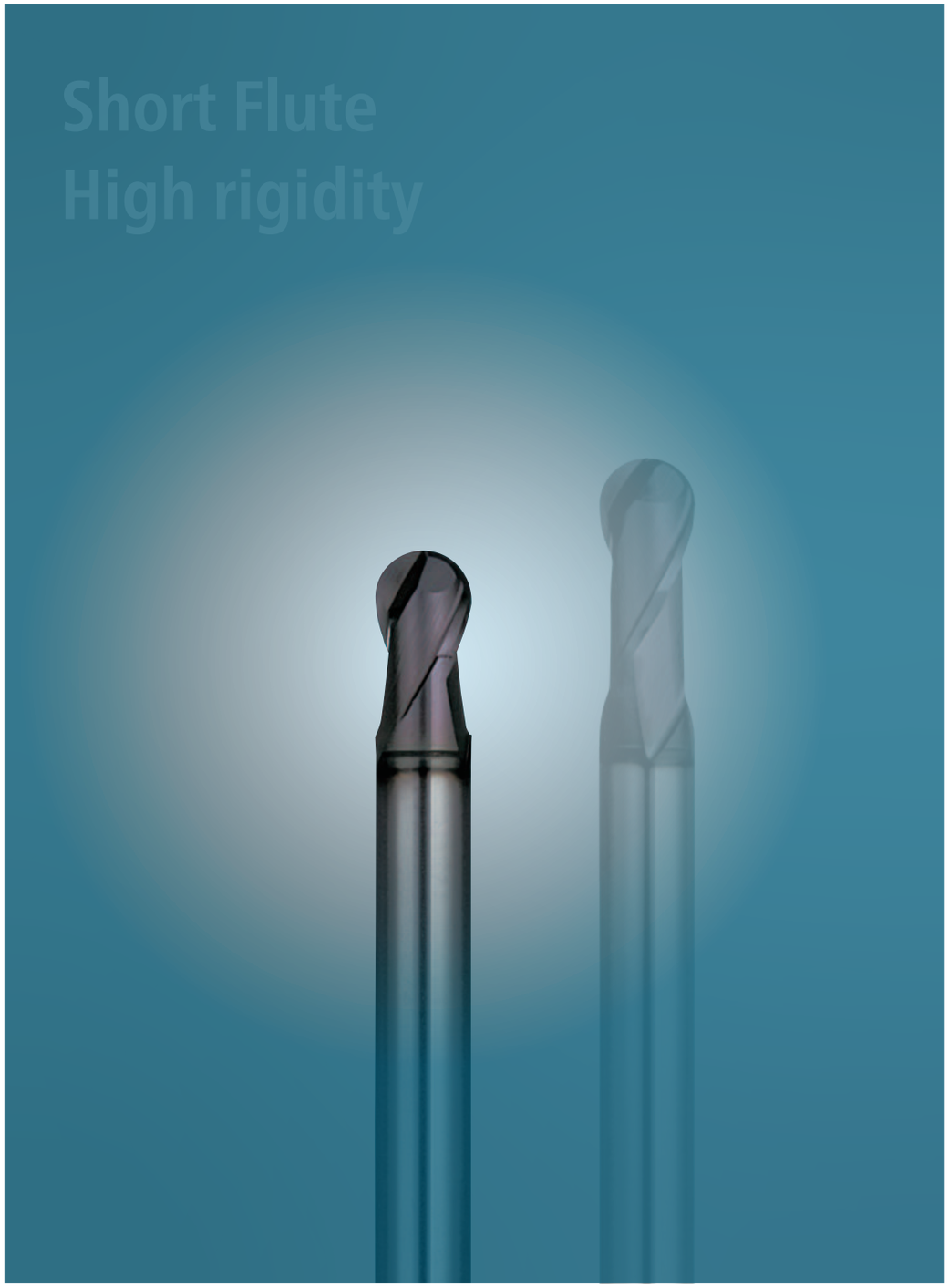


备 注 Notes

※1 沟槽加工时，请将进给速度调为上述参数的60%。
※2 建议使用吹气或油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 建议使用刚性较大的铣刀刀柄和机床。
※5 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 When slotting, reduce the feed by 60% from the above values.
※2 Recommended oil mist or air blow .
※3 Adjust both spindle speed and feed at the same rate.
※4 Use a rigid machine and chuck holder.
※5 Adjust milling conditions according to the volume of depth of cut and rigidity of the machine.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type



全刃长 Full Cutting Length
球头 Ball
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

MSB230SF

规格 Size R0.1 ～ R6

≦52 HRC

无限涂层 短柄造型球头铣刀（热缩刀柄用）

MUGEN COATING 2-Flute Ball End Mill with Short Shank

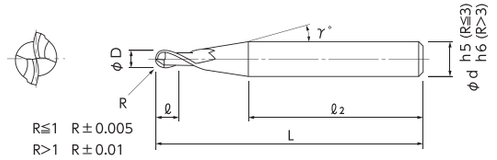
共有15种规格
Total 15 sizes

MG | 2 | 30° | R ±0.005 (R≦1) | φd h5 (R≦3) | 3D

标准2刃30°螺旋角造型
支持热缩刀柄的短柄造型

2-flute standard type with helix angle 30°. Suitable for shrink fit holder





- 短柄造型（热缩刀柄用）。
- It fits for Shrink Chuck System.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(ℓ2)柄长 Shank Length	(L)全长 Overall Length	定价(日元) Retail Price
08-00504-00010	R0.1	0.2	0.2	15°	4	27.3	35	8,500
08-00504-00020	R0.2	0.4	0.4	15°	4	27.2	35	4,700
08-00504-00030	R0.3	0.6	0.6	15°	4	27.3	35	4,200
08-00504-00040	R0.4	0.8	0.8	15°	4	27.4	35	4,200
08-00504-00050	R0.5	1	1	15°	4	32.5	40	3,900
08-00504-00060	R0.6	1.2	1.2	15°	4	32.5	40	4,700
08-00504-00075	R0.75	1.5	1.5	15°	4	32.6	40	4,700
08-00504-00100	R1	2	2	9°	4	30.1	40	3,500
08-00504-00150	R1.5	3	3	9°	4	31.8	40	4,200
08-00504-00200	R2	4	4	9°	6	27.6	40	4,700
08-00504-00250	R2.5	5	5	9°	6	39.8	50	5,700
08-00504-00300	R3	6	6	–	6	34.9	50	6,100
08-00504-00400	R4	8	8	–	8	41.1	60	10,100
08-00504-00500	R5	10	10	–	10	36.6	60	12,100
08-00504-00600	R6	12	12	–	12	33.6	60	16,600

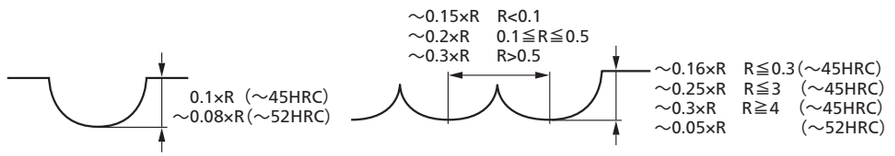
订购方法 How to Order

请指定MSB230SF 球头半径(R)。
When you order, indicate MSB230SF (R).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢・调质钢 Alloy Steels Prehardened Steels SCM・SKD・SUS・HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)		铝合金 Aluminium Alloy		铜合金 Copper	
切削速度 Cutting Speed	150m/min		120～150m/min		80～100m/min		150m/min～		100～150m/min	
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.1	50,000	400	50,000	340	50,000	200	50,000	500	50,000	500
0.2	50,000	630	50,000	600	50,000	630	50,000	600	50,000	600
0.3	50,000	930	50,000	940	48,000	900	50,000	750	50,000	750
0.4	50,000	1,200	48,000	1,200	36,000	900	50,000	1,000	50,000	1,000
0.5	48,000	1,430	38,000	1,200	29,000	900	50,000	1,250	48,000	1,000
0.6	40,000	1,430	32,000	1,200	24,000	810	50,000	1,480	40,000	1,080
1	24,000	1,160	19,000	800	14,300	600	48,000	2,400	24,000	1,200
1.5	16,000	930	13,000	600	9,600	460	32,000	2,400	16,000	1,200
2	12,000	930	10,000	570	7,200	450	24,000	2,400	12,000	1,200
2.5	9,600	930	8,000	560	5,700	450	19,000	2,400	9,600	1,200
3	8,000	930	6,400	540	4,800	450	16,000	2,400	8,000	1,200
4	6,000	900	4,800	540	3,600	450	12,000	2,400	6,000	1,200
5	4,800	900	3,800	540	2,900	450	9,600	2,300	4,800	1,150
6	4,000	900	3,200	540	2,400	450	8,000	2,100	4,000	1,050

切深量 Depth of Cut (R:球头半径 Radius)



备 注 Notes

※1 沟槽加工时，请将进给速度调为上述参数的60%。
※2 刀具伸出量请以4D为标准，伸出量超出该标准时请调整切削参数。
※3 建议使用吹气或油雾冷却方式。
※4 请以相同的比率调整主轴转速和进给速度。
※1 When slotting, reduce the feed by 60% from the above values.
※2 Length of overhang is 4 times Dia. as standard. When it is longer than 4 times Dia., adjust the conditions listed above.
※3 Recommended oil mist or airblow.
※4 Adjust both spindle speed and feed at the same rate.

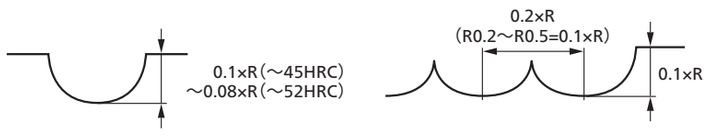
MSB230SF

高速切削参数参考表
Recommended High Speed Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)	
切削速度 Cutting Speed	250m/min		200m/min		180m/min		100m/min	
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.2	～50,000	～1,500	～50,000	～1,200	～50,000	～1,000	～50,000	600
0.3	～50,000	～1,500	～50,000	～1,200	～50,000	～1,000	～50,000	700
0.4	～50,000	～3,000	～50,000	～2,500	～50,000	～2,200	40,000	1,000
0.5	～50,000	～3,000	～50,000	～2,500	～50,000	～2,200	32,000	1,500
1	40,000	5,000	32,000	3,200	29,000	2,900	16,000	1,500
1.5	27,000	5,000	21,000	3,200	19,000	2,900	10,600	1,500
2	20,000	5,000	16,000	3,200	14,000	2,900	8,000	1,500
3	13,500	3,000	10,600	2,000	9,500	1,800	5,300	1,200
4	10,000	3,000	8,000	2,000	7,200	1,800	4,000	1,200
5	8,000	3,000	6,400	2,000	5,700	1,800	3,200	1,200
6	6,700	2,500	5,300	1,800	4,800	1,600	2,700	1,200

切深量 Depth of Cut

(R:球头半径 Radius)



备 注 Notes

※1 沟槽加工时，请将进给速度调为上述参数的60%。
※2 建议使用吹气或油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 建议使用刚性较大的铣刀刀柄和机床。
※5 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 When slotting, reduce the feed by 60% from the above values.
※2 Recommended air blow or oil mist.
※3 Adjust both spindle speed and feed at the same rate.
※4 Use a rigid machine and chuck holder.
※5 Adjust milling conditions according to the volume of depth of cut and rigidity of the machine.



全刃长 Full Cutting Length
球头 Ball
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type
E-017

MSB230

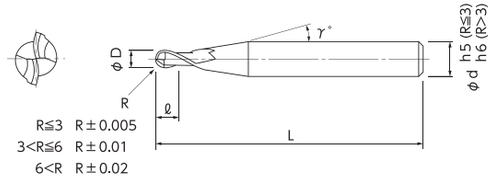
无限涂层 2刃球头铣刀
MUGEN COATING 2-Flute Ball End Mill

标准2刃30°螺旋角造型
适用于从粗加工到精加工的各种加工

2-flute standard type with helix angle 30°
For multi-purpose, from roughing to finishing

MG | 2 | 30° | R ±0.005 (R≦3) | φd h5 (R≦3) | 3D





- 适用于从低速到高速的精密3D形状加工。
- Suitable for precision three-dimensional cutting in the low to high speed range.

▲ 停产产品 Discontinued Products

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00501-00005	R0.05	0.1	0.1	15°	4	50	10,600
08-00500-00005	R0.05	0.1	0.1	15°	6	50	12,200
08-00501-00007	R0.075	0.15	0.15	15°	4	50	9,900
08-00500-00007	R0.075	0.15	0.15	15°	6	50	11,600
08-00501-00010	R0.1	0.2	0.2	15°	4	50	7,500
08-00500-00010	R0.1	0.2	0.2	15°	6	50	9,000
08-00501-00015	R0.15	0.3	0.3	15°	4	50	6,100
08-00500-00015	R0.15	0.3	0.3	15°	6	50	7,700
08-00501-00020	R0.2	0.6	0.4	15°	4	50	4,100
08-00500-00020	R0.2	0.6	0.4	15°	6	50	5,600
08-00501-00025	R0.25	0.8	0.5	15°	4	50	3,800
08-00500-00025	R0.25	0.8	0.5	15°	6	50	5,300
08-00501-00030	R0.3	0.9	0.6	15°	4	50	3,700
08-00500-00030	R0.3	0.9	0.6	15°	6	50	5,100
08-00500-00035	R0.35	1.1	0.7	15°	6	50	8,600
08-00501-00040	R0.4	1.2	0.8	15°	4	50	3,700
08-00500-00040	R0.4	1.2	0.8	15°	6	50	5,100
08-00500-00045	R0.45	1.4	0.9	15°	6	50	8,600
08-00501-00050	R0.5	1.5	1	15°	4	50	3,400
08-00500-00050	R0.5	1.5	1	15°	6	50	4,700
08-00500-00055	R0.55	1.7	1.1	15°	6	50	8,600
08-00501-00060	R0.6	1.8	1.2	15°	4	50	4,700
08-00500-00060	R0.6	1.8	1.2	15°	6	50	6,100
08-00500-00065	R0.65	2	1.3	15°	6	50	8,600
08-00501-00070	R0.7	2.1	1.4	15°	4	50	4,700
08-00500-00070	R0.7	2.1	1.4	15°	6	50	6,100
08-00501-00075	R0.75	2.3	1.5	15°	4	50	4,100
08-00500-00075	R0.75	2.3	1.5	15°	6	50	5,500
08-00501-00080	R0.8	2.4	1.6	15°	4	50	4,700
08-00500-00080	R0.8	2.4	1.6	15°	6	50	6,100
08-00500-00085	R0.85	2.6	1.7	15°	6	50	8,600
08-00500-00090	R0.9	2.7	1.8	15°	6	50	8,600
08-00500-00095	R0.95	2.9	1.9	15°	6	50	8,600
08-00501-00100	R1	3	2	9°	4	60	3,000
08-00500-00100	R1	3	2	9°	6	60	4,300
08-00500-00105	R1.05	3.2	2.1	9°	6	60	8,600
08-00500-00110	R1.1	3.3	2.2	9°	6	60	8,600
08-00500-00115	R1.15	3.5	2.3	9°	6	60	8,600
08-00500-00120	R1.2	3.6	2.4	9°	6	60	8,600
08-00501-00125	R1.25	3.8	2.5	9°	4	60	5,300
08-00500-00125	R1.25	3.8	2.5	9°	6	60	6,600
08-00500-00130	R1.3	3.9	2.6	9°	6	60	8,600
08-00500-00135	R1.35	4.1	2.7	9°	6	60	8,600
08-00500-00140	R1.4	4.2	2.8	9°	6	60	8,600
08-00500-00145	R1.45	4.4	2.9	9°	6	60	8,600
08-00501-00150	R1.5	5	3	9°	4	60	3,700
08-00500-00150	R1.5	5	3	9°	6	60	3,900
08-00500-00155	R1.55	5	3.1	9°	6	60	9,000
08-00500-00160	R1.6	5	3.2	9°	6	60	9,000
08-00500-00165	R1.65	5	3.3	9°	6	60	9,000
08-00500-00170	R1.7	5.1	3.4	9°	6	60	9,000
08-00500-00175	R1.75	5.3	3.5	9°	6	60	7,200
08-00500-00180	R1.8	5.4	3.6	9°	6	60	9,000
08-00500-00185	R1.85	5.6	3.7	9°	6	60	9,000
08-00500-00190	R1.9	5.7	3.8	9°	6	60	9,000
08-00500-00195	R1.95	5.9	3.9	9°	6	60	9,000
08-00500-00200	R2	6	4	9°	6	70	4,400
08-00500-00205	R2.05	6.2	4.1	9°	6	70	11,000
08-00500-00210	R2.1	6.3	4.2	9°	6	70	11,000
08-00500-00215	R2.15	6.5	4.3	9°	6	70	11,000
08-00500-00220	R2.2	6.6	4.4	9°	6	70	11,000
08-00500-00225	R2.25	6.8	4.5	9°	6	70	11,000
08-00500-00230	R2.3	6.9	4.6	9°	6	70	11,000
08-00500-00235	R2.35	7.1	4.7	9°	6	70	11,000
08-00500-00240	R2.4	7.2	4.8	9°	6	70	11,000
08-00500-00245	R2.45	7.4	4.9	9°	6	70	11,000
08-00500-00250	R2.5	8	5	9°	6	70	5,300
08-00500-00255	R2.55	8	5.1	9°	6	70	11,000
08-00500-00260	R2.6	8	5.2	9°	6	70	11,000
08-00500-00265	R2.65	8	5.3	9°	6	70	11,000
08-00500-00270	R2.7	8.1	5.4	9°	6	70	11,000
08-00500-00275	R2.75	8.3	5.5	9°	6	70	11,000
08-00500-00280	R2.8	8.4	5.6	9°	6	70	11,000
08-00500-00285	R2.85	8.6	5.7	9°	6	70	11,000
08-00500-00290	R2.9	8.7	5.8	9°	6	70	11,000
08-00500-00295	R2.95	8.9	5.9	9°	6	70	11,000
08-00500-00300	R3	10	6	–	6	80	5,500
08-00500-00350	R3.5	10.5	7	–	6	80	11,800
08-00500-00400	R4	12	8	–	8	90	10,700
08-00500-00450	R4.5	13.5	9	–	8	90	16,400
08-00500-00500	R5	15	10	–	10	100	14,000
08-00500-00550	R5.5	16.5	11	–	10	100	27,300
08-00500-00600	R6	20	12	–	12	110	23,500
▲08-00500-00700	R7	21	14	–	12	160	48,600
▲08-00500-00800	R8	25	16	–	16	160	57,600
▲08-00500-00900	R9	27	18	–	16	170	86,900
▲08-00500-01000	R10	30	20	–	20	170	89,500

订购方法 How to Order

请指定MSB230 球头半径(R)×柄径(d)。 ※(γ)为参考值。
When you order, indicate MSB230 (R)×(d). ※(γ) is reference value.

▲符号表示停产产品。在库存售完之后将不再贩卖。
▲Discontinued products. The marked sizes will no longer be on sale after the stock runs out.

常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

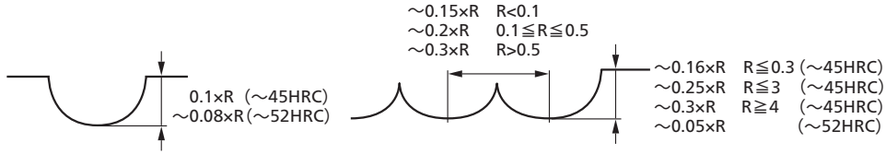
E-019

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢・调质钢 Alloy Steels Prehardened Steels SCM・SKD・SUS・HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)		铝合金 Aluminium Alloy		铜合金 Copper	
切削速度 Cutting Speed	150m/min		120～150m/min		80～100m/min		150m/min～		100～150m/min	
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.05	50,000	200	50,000	150	50,000	100	50,000	250	50,000	250
0.1	50,000	400	50,000	340	50,000	200	50,000	500	50,000	500
0.2	50,000	630	50,000	600	50,000	630	50,000	600	50,000	600
0.3	50,000	930	50,000	940	48,000	900	50,000	750	50,000	750
0.4	50,000	1,200	48,000	1,200	36,000	900	50,000	1,000	50,000	1,000
0.5	48,000	1,430	38,000	1,200	29,000	900	50,000	1,250	48,000	1,000
0.6	40,000	1,430	32,000	1,200	24,000	810	50,000	1,480	40,000	1,080
0.8	30,000	1,270	24,000	1,000	18,000	670	50,000	1,900	30,000	1,160
1	24,000	1,160	19,000	800	14,300	600	48,000	2,400	24,000	1,200
1.5	16,000	930	13,000	600	9,600	460	32,000	2,400	16,000	1,200
2	12,000	930	10,000	570	7,200	450	24,000	2,400	12,000	1,200
2.5	9,600	930	8,000	560	5,700	450	19,000	2,400	9,600	1,200
3	8,000	930	6,400	540	4,800	450	16,000	2,400	8,000	1,200
4	6,000	900	4,800	540	3,600	450	12,000	2,400	6,000	1,200
5	4,800	900	3,800	540	2,900	450	9,600	2,300	4,800	1,150
6	4,000	900	3,200	540	2,400	450	8,000	2,100	4,000	1,050
7	3,400	900	2,750	540	2,050	450	6,800	2,000	3,400	1,000
8	3,000	900	2,400	540	1,800	450	6,000	2,000	3,000	1,000
9	2,650	900	2,100	520	1,600	450	5,300	2,000	2,650	1,000
10	2,400	900	1,900	520	1,450	450	4,800	2,000	2,400	1,000

切深量 Depth of Cut

(R:球头半径 Radius)



备 注 Notes

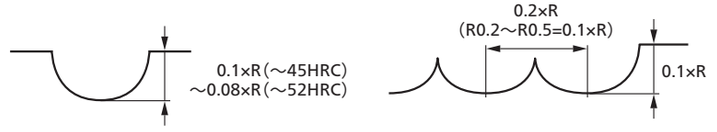
※1 沟槽加工时，请将进给速度调为上述参数的60%。
※2 刀具伸出量请以4D为标准，伸出量超出该标准时请调整切削参数。
※3 建议使用吹气或油雾冷却方式。
※4 请以相同的比率调整主轴转速和进给速度。
※1 When slotting, reduce the feed by 60% from the above values.
※2 Length of overhang is 4 times Dia. as standard. When it is longer than 4 times Dia., adjust the conditions listed above.
※3 Recommended oil mist or airblow.
※4 Adjust both spindle speed and feed at the same rate.

高速切削参数参考表
Recommended High Speed Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)	
切削速度 Cutting Speed	250m/min		200m/min		180m/min		100m/min	
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.2	～50,000	～1,500	～50,000	～1,200	～50,000	～1,000	～50,000	600
0.3	～50,000	～1,500	～50,000	～1,200	～50,000	～1,000	～50,000	700
0.4	～50,000	～3,000	～50,000	～2,500	～50,000	～2,200	40,000	1,000
0.5	～50,000	～3,000	～50,000	～2,500	～50,000	～2,200	32,000	1,500
1	40,000	5,000	32,000	3,200	29,000	2,900	16,000	1,500
1.5	27,000	5,000	21,000	3,200	19,000	2,900	10,600	1,500
2	20,000	5,000	16,000	3,200	14,000	2,900	8,000	1,500
3	13,500	3,000	10,600	2,000	9,500	1,800	5,300	1,200
4	10,000	3,000	8,000	2,000	7,200	1,800	4,000	1,200
5	8,000	3,000	6,400	2,000	5,700	1,800	3,200	1,200
6	6,700	2,500	5,300	1,800	4,800	1,600	2,700	1,200
8	5,000	2,000	4,000	1,500	3,600	1,300	2,000	800
10	4,000	1,500	3,200	1,200	2,900	1,000	1,600	800

切深量 Depth of Cut

(R:球头半径 Radius)



备 注 Notes

※1 沟槽加工时，请将进给速度调为上述参数的60%。
※2 建议使用吹气或油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 建议使用刚性较大的铣刀刀柄和机床。
※5 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※1 When slotting, reduce the feed by 60% from the above values.
※2 Recommended air blow or oil mist.
※3 Adjust both spindle speed and feed at the same rate.
※4 Use a rigid machine and chuck holder.
※5 Adjust milling conditions according to the volume of depth of cut and rigidity of the machine.

MSB345

规格 Size R0.5 ～ R6

≦52 HRC

无限涂层 3刃球头铣刀
MUGEN COATING 3-Flute Ball End Mill

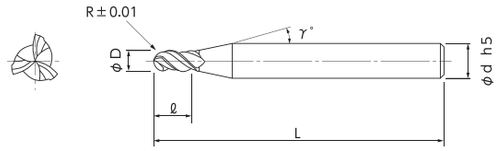
共有9种规格
Total 9 sizes

切削参数参考表
Recommended Milling Conditions

MG | 3 | 45° | φd h5 | 3D

3刃型球头铣刀
采用不等分割，可抑制高进给时的振刀现象
3-flute ball end mill. Realized to control chattering by unequal flute spacing





- 采用独创的3刃形状与不等分割设计，可减少振刀实现高效加工。
- Original 3-flute design and unequal flute spacing to suppress chattering realize high efficient machining.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00600-00050	R0.5	1.5	1	12°	6	60	7,500
08-00600-00100	R1	3	2	12°	6	60	7,500
★ 08-00600-00150	R1.5	5	3	12°	6	60	8,000
★ 08-00600-00200	R2	6	4	12°	6	70	8,000
★ 08-00600-00250	R2.5	8	5	12°	6	70	8,800
★ 08-00600-00300	R3	10	6	–	6	80	9,400
★ 08-00600-00400	R4	12	8	–	8	90	16,200
★ 08-00600-00500	R5	15	10	–	10	100	21,800
★ 08-00600-00600	R6	20	12	–	12	110	30,600

订购方法 How to Order

请指定MSB345 球头半径(R)。
When you order, indicate MSB345 (R).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C				合金钢・调质钢 Alloy Steels・Prehardened Steels SKD・HPM・NAK				高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)			
(R)球头半径 Radius	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.5	0.1	0.3	4,000	40,000	0.1	0.3	3,500	40,000	0.1	0.3	2,500	30,000
1	0.2	0.6	4,500	30,000	0.2	0.6	4,000	30,000	0.2	0.6	3,000	20,000
1.5	0.3	1	4,500	24,000	0.3	1	4,000	24,000	0.2	1	3,000	18,000
2	0.4	1.5	4,500	20,000	0.4	1.5	4,000	20,000	0.3	1.5	3,000	15,000
2.5	0.5	1.7	4,500	16,000	0.5	1.7	4,000	16,000	0.3	2	3,000	12,000
3	0.6	2	4,500	10,000	0.6	2	4,000	10,000	0.4	2	3,000	9,000
4	0.8	2.5	4,500	8,000	0.8	2.5	4,000	8,000	0.5	2	3,000	7,000
5	1.2	3	4,500	6,500	1.2	3	4,000	6,500	0.7	2.5	3,000	5,500
6	1.5	4	4,500	5,000	1.5	4	4,000	5,000	1	3	3,000	4,000

备 注 Notes

※1 切深量的 ap表示轴向切深量，ae表示步距量。
※2 请以相同的比率调整主轴转速和进给速度。
※3 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※4 刀具伸出量请以4 ～ 5D为标准，伸出量超出该标准时请调整切削参数。
※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Adjust both spindle speed and feed at the same rate.
※3 Adjust milling conditions according to the volume of depth of cut and rigidity of machine.
※4 Length of overhang is 4 to 5 times Dia. as standard. When it is longer than 4 to 5 times Dia., adjust the conditions listed above.

MSBL230

规格 Size R0.5 ～ R5

≦40 HRC

无限涂层 长柄造型球头铣刀
MUGEN COATING 2-Flute Long Ball End Mill

共有7种规格
Total 7 sizes

MG | 2 | 30° | 3D

长柄造型2刃球头铣刀 R3的全长为150L
2-flute long ball end mill. Overall length is 150mm at R3



- 采用无限涂层的长柄造型球头铣刀。
- 尺寸为R0.5 ～ R5。
- 加工时，可充分发挥长柄铣刀的优势。
- Our original MUGEN COATING has been put on 2-flute long ball end mill.
- The available sizes are from radius 0.5 to 5.
- Take advantage of long shank feature.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00510-00050	R0.5	2.5	1	9°	3	70	11,600
08-00510-00100	R1	5	2	9°	3	70	12,600
08-00510-00150	R1.5	7.5	3	–	3	80	13,700
08-00510-00200	R2	10	4	–	4	120	13,700
08-00510-00300	R3	15	6	–	6	150	19,800
08-00510-00400	R4	20	8	–	8	160	32,000
08-00510-00500	R5	25	10	–	10	200	38,300

订购方法 How to Order

请指定MSBL230 球头半径(R)。
When you order, indicate MSBL230 (R).

※(γ)为参考值。
※(γ) is reference value.

MSBL230
全刃长 Full Cutting Length
球头 Ball
涂层 Coating
P 碳素钢 Carbon Steel ○
P 合金钢 Alloy Steel ○
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ○
常规系列
无限涂层
全刃长造型
Regular Line
MUGEN COATING
Full Cutting Length Type

MRBSH230SF

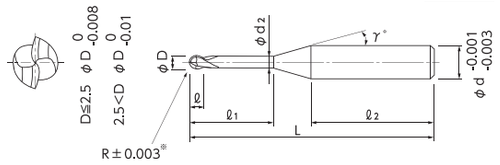
无限白金Plus涂层高硬度钢高精度加工用2刃长颈球头铣刀
可对应热缩刀柄的短柄造型
MUGEN COATING PREMIUM Plus 2-Flute Long Neck Ball End Mill with Short Shank for Hardened Steel and High Accuracy Cutting

对70HRC的高硬度钢材加工也可实现延长刀具寿命和高精度加工

High precision and long tool life even for hardened steels up to 70HRC

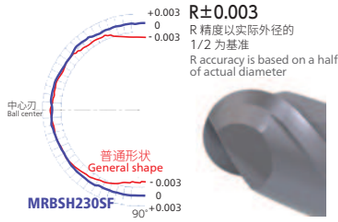
SMG 2 30° R ±0.003 φd -0.001 -0.003 3D



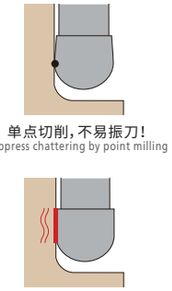


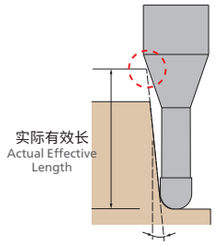
※R精度以实际外径的1/2为基准
※ R accuracy is based on a half value of actual diameter

- 对70HRC的高硬度钢也可实现延长刀具寿命和稳定的切削性能。
- 新开发的无限白金Plus涂层提高了耐氧化性和耐磨损性。
- 采用耐崩损性更强的新材质和可减小切削阻力的刀刃设计。
- R精度达±0.003mm（R精度以实际外径的1/2为基准）。
- 柄径公差为-0.001mm至-0.003mm的高精度规格。
- Realize stable cutting performance even for 70 HRC hardened steels.
- Developed new MUGEN COATING PREMIUM Plus to upgrade oxidation resistance and abrasion resistance.
- Adopt optimized new tool material and tool design to reduce cutting load.
- R accuracy is ±0.003mm (R accuracy is based on a half value of actual diameter).
- Shank diameter tolerance, high accuracy type, is - 0.001mm / - 0.003mm.



从R角到侧刃的接续位置，刀面都采用无段差设计，实现R精度的高精度化。
Seamless design on rake face and flank face from R-curve to peripheral cutting edge. Realized high precision R accuracy





◆ 新增加规格

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(ℓ2)柄长 Shank Length	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00537-00052	R0.05	0.2	0.07	0.1	0.085	15°	4	27.4	35	9,500	0.23	0.24	0.24	0.25	0.27
◆ 08-00537-00056		0.25	0.07	0.1	0.085	15°	4	27.4	35	9,500	0.28	0.29	0.30	0.31	0.33
08-00537-00053		0.3	0.07	0.1	0.085	15°	4	27.3	35	9,700	0.33	0.34	0.35	0.36	0.39
◆ 08-00537-00054		0.4	0.07	0.1	0.085	15°	4	27.2	35	9,700	0.44	0.45	0.46	0.48	0.52
08-00537-00055		0.5	0.07	0.1	0.085	15°	4	27.1	35	10,400	0.54	0.56	0.57	0.59	0.64
◆ 08-00537-00076	R0.075	0.25	0.1	0.15	0.13	15°	4	27.5	35	10,000	0.29	0.30	0.31	0.31	0.33
08-00537-00072		0.3	0.1	0.15	0.13	15°	4	27.4	35	10,000	0.34	0.35	0.36	0.37	0.40
◆ 08-00537-00077		0.4	0.1	0.15	0.13	15°	4	27.3	35	10,000	0.44	0.46	0.47	0.49	0.52
08-00537-00073		0.5	0.1	0.15	0.13	15°	4	27.2	35	10,400	0.55	0.56	0.58	0.60	0.65
◆ 08-00537-00074		0.6	0.1	0.15	0.13	15°	4	27.1	35	10,400	0.65	0.67	0.69	0.72	0.77
◆ 08-00537-00075		0.7	0.1	0.15	0.13	15°	4	27.0	35	10,400	0.75	0.78	0.80	0.83	0.89
08-00537-00101	R0.1	0.3	0.15	0.2	0.18	15°	4	27.5	35	7,600	0.34	0.35	0.36	0.37	0.39
◆ 08-00537-00106		0.4	0.15	0.2	0.18	15°	4	27.4	35	7,600	0.44	0.46	0.47	0.48	0.51
08-00537-00102		0.5	0.15	0.2	0.18	15°	4	27.3	35	7,600	0.55	0.56	0.58	0.60	0.64
◆ 08-00537-00107		0.6	0.15	0.2	0.18	15°	4	27.2	35	7,600	0.65	0.67	0.69	0.71	0.76
08-00537-00103		0.75	0.15	0.2	0.18	15°	4	27.1	35	7,600	0.81	0.83	0.86	0.89	0.95
◆ 08-00537-00104		0.85	0.15	0.2	0.18	15°	4	27.0	35	7,600	0.91	0.94	0.97	1.00	1.07
08-00537-00105		1	0.15	0.2	0.18	15°	4	26.8	35	7,600	1.06	1.10	1.13	1.17	1.26
08-00537-00150	R0.15	0.5	0.2	0.3	0.28	15°	4	27.5	35	7,500	0.55	0.56	0.57	0.59	0.63
08-00537-00151		0.6	0.2	0.3	0.28	15°	4	27.4	35	7,500	0.65	0.67	0.69	0.71	0.75
08-00537-00152		0.75	0.2	0.3	0.28	15°	4	27.3	35	7,500	0.80	0.83	0.85	0.88	0.94
08-00537-00153		1	0.2	0.3	0.28	15°	4	27.0	35	7,500	1.06	1.09	1.13	1.17	1.25
◆ 08-00537-00154		1.25	0.2	0.3	0.28	15°	4	26.8	35	7,500	1.32	1.36	1.41	1.45	1.56
08-00537-00155		1.5	0.2	0.3	0.28	15°	4	26.5	35	8,000	1.58	1.63	1.68	1.74	1.87
◆ 08-00537-00201	R0.2	0.5	0.3	0.4	0.37	15°	4	27.7	35	5,500	0.56	0.58	0.59	0.60	0.64
◆ 08-00537-00207		0.65	0.3	0.4	0.37	15°	4	27.6	35	5,500	0.72	0.74	0.76	0.78	0.83
08-00537-00202		0.8	0.3	0.4	0.37	15°	4	27.4	35	5,500	0.87	0.90	0.92	0.95	1.01
08-00537-00203		1	0.3	0.4	0.37	15°	4	27.2	35	5,500	1.08	1.11	1.14	1.18	1.26
◆ 08-00537-00208		1.25	0.3	0.4	0.37	15°	4	27.0	35	5,700	1.34	1.38	1.42	1.47	1.57
08-00537-00204		1.5	0.3	0.4	0.37	15°	4	26.7	35	5,700	1.60	1.65	1.70	1.75	1.88
◆ 08-00537-00209		1.75	0.3	0.4	0.37	15°	4	26.5	35	5,800	1.86	1.91	1.98	2.04	2.19
08-00537-00205		2	0.3	0.4	0.37	15°	4	26.2	35	5,800	2.11	2.18	2.25	2.33	2.50
◆ 08-00537-00210		2.25	0.3	0.4	0.37	15°	4	26.0	35	6,000	2.37	2.45	2.53	2.62	2.81
08-00537-00206		2.5	0.3	0.4	0.37	15°	4	25.7	35	6,000	2.63	2.72	2.81	2.90	3.13
◆ 08-00537-00251	R0.25	0.5	0.35	0.5	0.46	15°	4	27.8	35	5,500	0.58	0.59	0.61	0.62	0.65
08-00537-00252		1	0.35	0.5	0.46	15°	4	27.3	35	5,500	1.10	1.13	1.16	1.19	1.27
08-00537-00253		1.5	0.35	0.5	0.46	15°	4	26.8	35	5,500	1.61	1.66	1.71	1.77	1.89
08-00537-00254		2	0.35	0.5	0.46	15°	4	26.3	35	5,500	2.13	2.20	2.27	2.34	2.51
08-00537-00255		2.5	0.35	0.5	0.46	15°	4	25.8	35	5,500	2.65	2.73	2.82	2.92	3.14
08-00537-00256		3	0.35	0.5	0.46	15°	4	25.3	35	5,500	3.16	3.27	3.38	3.49	3.76
◆ 08-00537-00307	R0.3	0.6	0.45	0.6	0.56	15°	4	27.9	35	4,700	0.68	0.70	0.71	0.73	0.76
08-00537-00300		1	0.45	0.6	0.56	15°	4	27.5	35	4,700	1.10	1.12	1.15	1.19	1.26
08-00537-00301		1.5	0.45	0.6	0.56	15°	4	27.0	35	4,300	1.61	1.66	1.71	1.76	1.88
08-00537-00302		2	0.45	0.6	0.56	15°	4	26.5	35	4,300	2.13	2.19	2.26	2.34	2.50
08-00537-00303		2.5	0.45	0.6	0.56	15°	4	26.0	35	4,400	2.65	2.73	2.82	2.91	3.12
08-00537-00304		3	0.45	0.6	0.56	15°	4	25.5	35	4,400	3.16	3.26	3.37	3.49	3.75
08-00537-00305		3.5	0.45	0.6	0.56	15°	4	25.0	35	4,500	3.68	3.80	3.92	4.06	4.37
08-00537-00306		4	0.45	0.6	0.56	15°	4	29.5	40	4,500	4.20	4.33	4.48	4.64	4.99
◆ 08-00537-00401	R0.4	1	0.6	0.8	0.76	15°	4	27.9	35	4,300	1.09	1.12	1.14	1.17	1.24
08-00537-00402		2	0.6	0.8	0.76	15°	4	26.9	35	4,300	2.13	2.19	2.25	2.32	2.48
08-00537-00403		3	0.6	0.8	0.76	15°	4	25.9	35	4,500	3.16	3.26	3.36	3.47	3.72
08-00537-00405		4	0.6	0.8	0.76	15°	4	24.9	35	4,500	4.19	4.33	4.47	4.62	4.97
08-00537-00406		5	0.6	0.8	0.76	15°	4	28.9	40	4,500	5.23	5.40	5.58	5.77	6.21
◆ 08-00537-00507	R0.5	1	0.75	1	0.95	15°	4	28.3	35	3,700	1.11	1.13	1.15	1.18	1.24
◆ 08-00537-00508		1.5	0.75	1	0.95	15°	4	27.8	35	3,700	1.63	1.66	1.71	1.75	1.86
08-00537-00501		2	0.75	1	0.95	15°	4	27.3	35	3,700	2.14	2.20	2.26	2.33	2.48
08-00537-00502		2.5	0.75	1	0.95	15°	4	26.8	35	3,700	2.66	2.73	2.82	2.90	3.10
08-00537-00503		3	0.75	1	0.95	15°	4	26.3	35	3,700	3.18	3.27	3.37	3.48	3.72
08-00537-00504		4	0.75	1	0.95	15°	4	25.3	35	4,100	4.21	4.34	4.48	4.63	4.97
08-00537-00505		5	0.75	1	0.95	15°	4	29.3	40	4,100	5.24	5.41	5.59	5.78	6.21
08-00537-00506		6	0.75	1	0.95	15°	4	28.3	40	4,500	6.28	6.48	6.69	6.93	7.45
08-00537-00602	R0.6	2.4	0.9	1.2	1.15	15°	4	27.2	35	5,400	2.55	2.62	2.69	2.77	2.95
08-00537-00603		4	0.9	1.2	1.15	15°	4	25.6	35	5,400	4.21	4.33	4.47	4.61	4.94
08-00537-00605		6	0.9	1.2	1.15	15°	4	28.6	40	5,900	6.27	6.47	6.68	6.91	7.43
08-00537-00606		8	0.9	1.2	1.15	15°	4	26.6	40	5,900	8.34	8.61	8.90	9.21	9.91
◆ 08-00537-00751	R0.75	2	1.1	1.5	1.45	15°	4	28.2	35	4,200	2.13	2.18	2.23	2.29	2.42
08-00537-00752		3	1.1	1.5	1.45	15°	4	27.2	35	4,200	3.17	3.25	3.34	3.44	3.66
08-00537-00753		4	1.1	1.5	1.45	15°	4	26.2	35	4,200	4.20	4.32	4.45	4.59	4.91
08-00537-00754		6	1.1	1.5	1.45	15°	4	29.2	40	4,200	6.27	6.46	6.67	6.89	7.39
08-00537-00755		8	1.1	1.5	1.45	15°	4	27.2	40	4,400	8.34	8.60	8.88	9.19	9.88
08-00537-00756		10	1.1	1.5	1.45	15°	4	25.2	40	4,700	10.40	10.74	11.10	11.49	12.36
08-00537-00805	R0.8	8	1.2	1.6	1.55	15°	4	27.4	40	5,900	8.33	8.60	8.88	9.18	9.87
◆ 08-00537-00901	R0.9	3	1.3	1.8	1.74	15°	4	27.8	35	5,600	3.18	3.26	3.35	3.44	3.65
◆ 08-00537-00902		4	1.3	1.8	1.74	15°	4	26.8	35	5,600	4.22	4.33	4.46	4.59	4.89
◆ 08-00537-00903		6	1.3	1.8	1.74	15°	4	29.8	40	6,200	6.28	6.47	6.67	6.89	7.38
◆ 08-00537-00904		8	1.3	1.8	1.74	15°	4	27.8	40	6,600	8.35	8.61	8.89	9.19	9.87
◆ 08-00537-00905		10	1.3	1.8	1.74	15°	4	25.8	40	6,600	10.42	10.75	11.11	11.49	12.35
◆ 08-00537-01006	R1	2	1.5	2	1.94	15°	4	29.1	35	3,700	2.14	2.19	2.23	2.28	2.38
08-00537-01000		3	1.5	2	1.94	15°	4	28.1	35	3,700	3.18	3.25	3.34	3.43	3.63
08-00537-01001		4	1.5	2	1.94	15°	4	27.1	35	3,700	4.21	4.32	4.45	4.58	4.87
08-00537-01002		6	1.5	2	1.94	15°	4	25.1	35	4,100	6.28	6.46	6.66	6.88	7.36
08-00537-01003		8	1.5	2	1.94	15°	4	28.1	40	4,400	8.35	8.60	8.88	9.18	9.84
08-00537-01004		10	1.5	2	1.94	15°	4	26.1	40	4,400	10.41	10.74	11.10	11.48	12.33
08-00537-01005		12	1.5	2	1.94	15°	4	29.1	45	4,400	12.48	12.88	13.31	13.77	14.82

订购方法 How to Order
请指定MRBSH230SF 球头半径(R)×颈长(ℓ1)。
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※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining Case
M-022, M-023

高硬度钢～65 Hardened Steel HRC H
高硬度钢～70 Hardened Steel HRC H
常规系列 无限白金Plus涂层 Regular Line MUGEN PREMIUM Plus

长颈 Long Neck
球头 Ball
涂层 Coating
H ～65高硬度钢 HRC Hardened Steel
H ～70高硬度钢 HRC Hardened Steel
常规系列 无限白金Plus涂层 Regular Line MUGEN PREMIUM Plus

无限白金Plus涂层高硬度钢材高精度加工用2刃长颈球头铣刀 可对应热缩刀柄的短柄造型

MUGEN COATING PREMIUM Plus 2-Flute Long Neck Ball End Mill with Short Shank for Hardened Steel and High Accuracy Cutting

切削参数参考表
Recommended Milling Conditions

◆ 新增加规格

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(ℓ2)柄长 Shank Length	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00537-01251	R1.25	4	2.3	2.5	2.4	15°	4	28.0	35	5,500	4.28	4.39	4.50	4.62	4.90
08-00537-01252		6	2.3	2.5	2.4	15°	4	26.0	35	5,500	6.35	6.53	6.72	6.92	7.39
08-00537-01253		8	2.3	2.5	2.4	15°	4	29.0	40	4,800	8.42	8.67	8.93	9.22	9.88
08-00537-01254		10	2.3	2.5	2.4	15°	4	27.0	40	5,800	10.48	10.81	11.15	11.52	12.36
08-00537-01256		15	2.3	2.5	2.4	15°	4	27.0	45	5,900	15.65	16.15	16.69	17.27	Free
08-00537-01500	R1.5	6	2.5	3	2.85	15°	6	33.1	45	4,600	6.44	6.61	6.79	7.00	7.45
08-00537-01501		8	2.5	3	2.85	15°	6	31.1	45	4,600	8.50	8.75	9.01	9.29	9.93
08-00537-01502		10	2.5	3	2.85	15°	6	29.1	45	5,300	10.57	10.89	11.23	11.59	12.42
08-00537-01503		12	2.5	3	2.85	15°	6	27.1	45	5,500	12.64	13.03	13.44	13.89	14.91
08-00537-01504		14	2.5	3	2.85	15°	6	30.1	50	6,200	14.71	15.17	15.66	16.19	17.39
08-00537-01505		16	2.5	3	2.85	15°	6	28.1	50	6,200	16.77	17.31	17.88	18.49	19.88
◆ 08-00537-01507		18	2.5	3	2.85	15°	6	31.1	55	6,200	18.84	19.45	20.09	20.79	22.36
08-00537-01506		20	2.5	3	2.85	15°	6	29.1	55	5,900	20.91	21.58	22.31	23.09	24.85
08-00537-02000	R2	8	3	4	3.8	15°	6	32.8	45	4,700	8.58	8.81	9.06	9.33	9.93
08-00537-02001		10	3	4	3.8	15°	6	30.8	45	4,700	10.65	10.95	11.28	11.63	12.42
08-00537-02002		12	3	4	3.8	15°	6	28.8	45	6,200	12.72	13.09	13.49	13.93	14.90
08-00537-02004		15	3	4	3.8	15°	6	30.8	50	6,200	15.82	16.30	16.82	17.38	18.63
08-00537-02005		20	3	4	3.8	15°	6	30.8	55	6,200	20.99	21.65	22.36	23.13	Free
08-00537-02006		25	3	4	3.8	15°	6	30.8	60	6,200	26.16	27.00	27.90	28.88	Free
08-00537-02502	R2.5	10	3.5	5	4.8	15°	6	32.7	45	7,200	10.63	10.92	11.22	11.55	Free
08-00537-02503		15	3.5	5	4.8	15°	6	27.7	45	9,900	15.80	16.27	16.77	Free	Free
08-00537-02504		20	3.5	5	4.8	15°	6	27.7	50	10,000	20.97	21.62	Free	Free	Free
◆ 08-00537-02505		25	3.5	5	4.8	15°	6	27.7	55	10,500	26.14	26.96	Free	Free	Free
◆ 08-00537-02506		30	3.5	5	4.8	15°	6	27.7	60	11,000	31.31	Free	Free	Free	Free
08-00537-03000	R3	10	6	6	5.7	–	6	34.4	45	7,700	Free	Free	Free	Free	Free
08-00537-03001		15	6	6	5.7	–	6	29.4	45	7,700	Free	Free	Free	Free	Free
08-00537-03002		20	6	6	5.7	–	6	29.4	50	7,700	Free	Free	Free	Free	Free
08-00537-03003		25	6	6	5.7	–	6	29.4	55	7,700	Free	Free	Free	Free	Free
08-00537-03004		30	6	6	5.7	–	6	29.4	60	7,900	Free	Free	Free	Free	Free
◆ 08-00537-03005		35	6	6	5.7	–	6	29.4	65	8,700	Free	Free	Free	Free	Free
◆ 08-00537-03006		40	6	6	5.7	–	6	29.4	70	9,200	Free	Free	Free	Free	Free

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※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining Case
M-022, M-023

◎ 高硬度钢～65 Hardened Steel HRC H
◎ 高硬度钢～70 Hardened Steel HRC H

加工材料 Work Material			高速钢・高硬度钢 High Speed Steels/Hardened Steels SKH51・SKD11(～62HRC)				高速钢 High Speed Steels SKH55・HAP40(～66HRC)				高速钢 High Speed Steels SKH57・HAP72(～70HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
R0.05	0.2	2	0.002	0.005	100	40,000	0.002	0.003	70	40,000	0.002	0.003	50	40,000
	0.25	2.5	0.002	0.005	80	40,000	0.002	0.003	50	40,000	0.002	0.003	40	40,000
	0.3	3	0.002	0.005	70	40,000	0.002	0.003	50	40,000	0.002	0.003	40	40,000
	0.4	4	0.001	0.005	70	40,000	0.001	0.003	50	40,000	0.001	0.002	30	40,000
	0.5	5	0.001	0.003	50	40,000	0.001	0.002	30	40,000	0.001	0.002	20	40,000
R0.075	0.25	1.7	0.002	0.005	160	40,000	0.002	0.003	120	40,000	0.002	0.003	100	40,000
	0.3	2	0.002	0.005	150	40,000	0.002	0.003	100	40,000	0.002	0.003	80	40,000
	0.4	2.7	0.002	0.005	120	40,000	0.002	0.003	70	40,000	0.002	0.003	50	40,000
	0.5	3.3	0.002	0.005	120	40,000	0.002	0.003	70	40,000	0.002	0.003	50	40,000
	0.6	4	0.001	0.003	100	40,000	0.001	0.002	50	40,000	0.001	0.002	40	40,000
	0.7	4.7	0.001	0.003	80	40,000	0.001	0.002	40	40,000	0.001	0.002	30	40,000
R0.1	0.3	1.5	0.005	0.005	300	40,000	0.003	0.003	200	40,000	0.003	0.003	150	40,000
	0.4	2	0.005	0.005	290	40,000	0.003	0.003	200	40,000	0.003	0.003	150	40,000
	0.5	2.5	0.005	0.005	280	40,000	0.003	0.003	180	40,000	0.003	0.003	130	40,000
	0.6	3	0.003	0.005	250	40,000	0.002	0.003	160	40,000	0.002	0.003	120	40,000
	0.75	3.75	0.003	0.005	200	40,000	0.002	0.003	150	40,000	0.002	0.003	110	40,000
	0.85	4.3	0.002	0.005	180	40,000	0.001	0.003	130	40,000	0.001	0.002	100	40,000
	1	5	0.002	0.003	160	40,000	0.001	0.002	120	40,000	0.001	0.002	90	40,000
R0.15	0.5	1.7	0.007	0.01	300	40,000	0.003	0.005	280	40,000	0.003	0.005	210	40,000
	0.6	2	0.005	0.007	300	40,000	0.003	0.005	250	40,000	0.003	0.005	180	40,000
	0.75	2.5	0.005	0.007	280	40,000	0.003	0.005	230	40,000	0.003	0.005	170	40,000
	1	3.3	0.005	0.007	250	40,000	0.003	0.005	200	40,000	0.003	0.005	150	40,000
	1.25	4.2	0.003	0.005	200	40,000	0.002	0.003	160	40,000	0.002	0.003	120	40,000
	1.5	5	0.003	0.005	180	40,000	0.002	0.003	120	40,000	0.002	0.003	90	40,000
R0.2	0.5	1.25	0.03	0.03	720	40,000	0.009	0.02	580	40,000	0.009	0.02	420	35,000
	0.65	1.6	0.025	0.03	720	40,000	0.009	0.02	580	40,000	0.009	0.02	420	35,000
	0.8	2	0.02	0.03	720	40,000	0.008	0.02	580	40,000	0.008	0.02	420	35,000
	1	2.5	0.02	0.03	720	40,000	0.008	0.02	580	40,000	0.008	0.02	400	35,000
	1.25	3.1	0.015	0.02	620	40,000	0.006	0.02	470	40,000	0.006	0.02	320	35,000
	1.5	3.75	0.01	0.02	500	40,000	0.005	0.01	400	40,000	0.005	0.01	280	35,000
	1.75	4.4	0.01	0.02	450	40,000	0.005	0.01	340	40,000	0.005	0.01	250	35,000
	2	5	0.007	0.01	380	40,000	0.005	0.007	300	40,000	0.005	0.007	220	35,000
	2.25	5.6	0.005	0.01	330	40,000	0.003	0.005	280	40,000	0.003	0.005	200	35,000
	2.5	6.25	0.005	0.007	300	40,000	0.003	0.005	260	40,000	0.003	0.005	190	35,000
R0.25	0.5	1	0.03	0.04	860	40,000	0.015	0.03	650	40,000	0.015	0.02	450	30,000
	1	2	0.02	0.03	860	40,000	0.01	0.02	650	35,000	0.01	0.02	450	30,000
	1.5	3	0.01	0.03	720	40,000	0.007	0.02	520	35,000	0.007	0.02	350	30,000
	2	4	0.01	0.02	650	40,000	0.007	0.01	400	35,000	0.007	0.01	270	30,000
	2.5	5	0.007	0.01	530	40,000	0.005	0.007	360	35,000	0.005	0.007	240	30,000
	3	6	0.007	0.01	420	35,000	0.005	0.007	320	35,000	0.005	0.007	220	30,000
R0.3	0.6	1	0.03	0.08	1,000	40,000	0.02	0.05	720	35,000	0.02	0.05	540	28,000
	1	1.7	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000	0.02	0.05	540	25,000
	1.5	2.5	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000	0.02	0.05	540	25,000
	2	3.3	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000	0.02	0.05	540	25,000
	2.5	4.1	0.02	0.04	840	40,000	0.02	0.03	640	30,000	0.02	0.03	480	25,000
	3	5	0.02	0.04	840	40,000	0.02	0.03	600	30,000	0.02	0.03	450	25,000
	3.5	5.9	0.01	0.03	600	30,000	0.01	0.02	420	30,000	0.01	0.02	310	25,000
	4	6.7	0.01	0.03	600	30,000	0.01	0.02	420	30,000	0.01	0.02	310	25,000
R0.4	1	1.3	0.08	0.12	1,600	38,000	0.06	0.1	1,200	35,000	0.035	0.1	900	28,000
	2	2.5	0.07	0.1	1,600	35,000	0.05	0.1	1,200	30,000	0.03	0.1	900	25,000
	3	3.75	0.05	0.1	1,600	35,000	0.05	0.05	1,200	30,000	0.03	0.05	900	25,000
	4	5	0.04	0.06	1,200	30,000	0.03	0.05	860	25,000	0.02	0.05	640	20,000
	5	6.25	0.03	0.05	1,000	25,000	0.02	0.03	620	25,000	0.015	0.03	460	20,000

H ～65高硬度钢 HRC Hardened Steel ◎
H ～70高硬度钢 HRC Hardened Steel ◎

加工材料 Work Material			高速钢・高硬度钢 High Speed Steels/Hardened Steels SKH51・SKD11(～62HRC)				高速钢 High Speed Steels SKH55・HAP40(～66HRC)				高速钢 High Speed Steels SKH57・HAP72(～70HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
R0.5	1	1	0.1	0.2	2,000	30,000	0.08	0.12	1,400	25,000	0.05	0.12	1,000	20,000
	1.5	1.5	0.1	0.2	2,000	30,000	0.08	0.12	1,400	25,000	0.05	0.12	1,000	20,000
	2	2	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000	0.05	0.1	1,000	20,000
	2.5	2.5	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000	0.05	0.1	1,000	20,000
	3	3	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000	0.05	0.1	1,000	20,000
	4	4	0.05	0.15	1,600	28,000	0.05	0.1	1,200	25,000	0.03	0.1	900	20,000
	5	5	0.04	0.1	1,400	25,000	0.03	0.05	920	20,000	0.02	0.05	700	16,000
	6	6	0.04	0.05	1,200	22,000	0.02	0.05	740	20,000	0.015	0.05	550	16,000
R0.6	2.4	2	0.1	0.2	2,000	30,000	0.08	0.1	1,600	25,000	0.05	0.1	1,200	20,000
	4	3.3	0.1	0.2	2,000	30,000	0.06	0.1	1,600	25,000	0.05	0.1	1,200	20,000
	6	5	0.05	0.1	1,400	25,000	0.03	0.07	1,000	20,000	0.02	0.07	750	16,000
	8	6.7	0.03	0.07	1,200	22,000	0.02	0.05	850	20,000	0.015	0.05	650	16,000
R0.75	2	1.3	0.1	0.3	2,500	30,000	0.1	0.2	2,000	25,000	0.06	0.2	1,500	20,000
	3	2	0.1	0.3	2,500	30,000	0.1	0.2	2,000	25,000	0.06	0.2	1,500	20,000
	4	2.7	0.1	0.3	2,000	25,000	0.1	0.2	1,600	22,000	0.06	0.2	1,200	18,000
	6	4	0.1	0.2	1,600	22,000	0.1	0.1	1,200	20,000	0.06	0.1	950	16,000
	8	5.3	0.05	0.2	1,400	20,000	0.05	0.1	1,000	18,000	0.03	0.1	700	13,000
	10	6.7	0.05	0.1	1,200	18,000	0.05	0.05	850	16,000	0.03	0.05	650	13,000
R0.8	8	5	0.07	0.2	1,400	20,000	0.05	0.1	1,000	16,000	0.03	0.1	750	13,000
R0.9	3	1.7	0.12	0.3	2,500	25,000	0.1	0.25	2,000	20,000	0.08	0.2	1,500	16,000
	4	2.2	0.12	0.25	2,500	25,000	0.1	0.2	1,800	20,000	0.08	0.2	1,500	16,000
	6	3.3	0.12	0.25	2,500	25,000	0.1	0.2	1,600	18,000	0.08	0.2	1,200	16,000
	8	4.4	0.08	0.2	2,300	23,000	0.08	0.15	1,400	17,000	0.06	0.1	750	13,000
	10	5.6	0.08	0.2	1,700	18,000	0.08	0.12	1,100	14,000	0.03	0.1	750	11,000
R1	2	1	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000	0.1	0.3	1,500	16,000
	3	1.5	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000	0.1	0.3	1,500	16,000
	4	2	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000	0.1	0.3	1,500	16,000
	6	3	0.2	0.3	2,000	22,000	0.15	0.3	1,600	20,000	0.1	0.3	1,200	16,000
	8	4	0.1	0.2	1,600	18,000	0.1	0.15	1,200	16,000	0.06	0.15	950	13,000
	10	5	0.1	0.2	1,400	16,000	0.1	0.1	1,000	14,000	0.06	0.1	750	11,000
	12	6	0.07	0.1	1,200	14,000	0.05	0.1	850	12,000	0.03	0.1	650	9,500
R1.25	4	1.6	0.2	0.5	2,500	20,000	0.15	0.4	2,000	18,000	0.1	0.4	1,500	14,000
	6	2.4	0.2	0.5	2,500	20,000	0.15	0.4	2,000	18,000	0.1	0.4	1,500	14,000
	8	3.2	0.2	0.3	2,100	20,000	0.15	0.3	1,800	18,000	0.1	0.3	1,300	14,000
	10	4	0.15	0.2	1,800	18,000	0.1	0.15	1,500	16,000	0.06	0.15	1,100	13,000
	15	6	0.07	0.15	1,200	14,000	0.05	0.1	900	12,000	0.03	0.1	700	9,500

MRBSH230SF

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			高速钢・高硬度钢 High Speed Steels/Hardened Steels SKH51・SKD11(～62HRC)				高速钢 High Speed Steels SKH55・HAP40(～66HRC)				高速钢 High Speed Steels SKH57・HAP72(～70HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
R1.5	6	2	0.2	0.6	2,500	18,000	0.2	0.5	2,000	15,000	0.12	0.5	1,500	12,000
	8	2.7	0.2	0.6	2,500	18,000	0.2	0.5	2,000	15,000	0.12	0.5	1,500	12,000
	10	3.3	0.2	0.4	2,100	18,000	0.15	0.3	1,800	15,000	0.1	0.3	1,300	12,000
	12	4	0.2	0.4	2,000	18,000	0.1	0.3	1,500	15,000	0.06	0.3	1,100	12,000
	14	4.7	0.1	0.3	1,600	16,000	0.1	0.2	1,200	12,000	0.06	0.2	900	10,000
	16	5.3	0.1	0.3	1,600	16,000	0.1	0.2	1,200	12,000	0.06	0.2	900	10,000
	18	6	0.1	0.2	1,400	16,000	0.1	0.15	960	12,000	0.06	0.15	750	9,500
	20	6.7	0.08	0.2	1,200	14,000	0.08	0.1	850	12,000	0.06	0.1	650	9,500
R2	8	2	0.2	0.8	2,500	15,000	0.2	0.6	2,000	12,000	0.15	0.6	1,500	9,500
	10	2.5	0.2	0.8	2,500	15,000	0.2	0.6	2,000	12,000	0.15	0.6	1,500	9,500
	12	3	0.2	0.8	2,500	15,000	0.2	0.6	2,000	12,000	0.15	0.6	1,500	9,500
	15	3.75	0.2	0.8	2,000	15,000	0.15	0.6	1,600	12,000	0.12	0.6	1,200	9,500
	20	5	0.1	0.6	1,700	14,000	0.1	0.4	1,200	10,000	0.08	0.4	900	8,000
	25	6.25	0.1	0.4	1,200	14,000	0.1	0.2	850	10,000	0.08	0.2	650	8,000
R2.5	10	2	0.2	1.2	2,500	12,000	0.2	0.7	2,000	10,000	0.15	0.7	1,500	8,000
	15	3	0.2	1.2	2,500	12,000	0.2	0.7	2,000	10,000	0.15	0.7	1,500	8,000
	20	4	0.2	1	2,000	10,000	0.15	0.6	1,600	8,500	0.12	0.6	1,200	6,500
	25	5	0.15	0.8	1,800	8,600	0.1	0.3	1,200	7,200	0.08	0.3	1,000	6,500
	30	6	0.15	0.5	1,500	7,600	0.1	0.2	860	6,400	0.08	0.2	750	6,000
R3	10	1.7	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000	0.15	1	1,500	5,500
	15	2.5	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000	0.15	1	1,500	5,500
	20	3.3	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000	0.15	1	1,500	5,500
	25	4.1	0.2	1	2,200	8,000	0.15	0.7	1,600	7,000	0.12	0.7	1,200	5,500
	30	5	0.2	1	1,800	7,000	0.15	0.7	1,300	6,500	0.12	0.7	950	5,000
	35	5.8	0.17	0.8	1,600	6,800	0.12	0.5	1,200	5,800	0.1	0.5	800	4,500
	40	6.7	0.15	0.6	1,200	6,400	0.1	0.4	1,000	5,200	0.08	0.4	650	4,000

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示径向切深量。
※2 发生振刀等情况时，请根据需要调整切削参数。
※3 R角等切削阻力大的部位，请特别注意参数设定和刀路轨迹等。
※4 请以相同的比率调整主轴转速和进给速度。
※5 刀具的夹持方法建议采用热缩刀柄型。使用弹簧筒夹型等夹持方法时，请确认最小夹持长度。
※6 建议使用油雾冷却方式。

※1 Depth of Cut ap indicates Axial Depth of Cut, ae indicates Radial Depth of Cut.
※2 In case of chattering etc., please adjust cutting conditions if necessary.
※3 At point where cutting load is high such as at corners, pay attention to setting cutting conditions and tool paths particularly.
※4 Adjust both spindle speed and feed at the same rate.
※5 A shrink fit type is recommended for tool holder. When using collet type or others, strictly adhere to minimum gripping length.
※6 We recommend using oil mist coolant.

无限白金Plus涂层 高硬度钢材高效率加工用小径3刃长颈球头铣刀

MUGEN COATING PREMIUM Plus High Efficient 3-Flute Small-Diameter Long Neck Ball End Mill for Hardened Steel

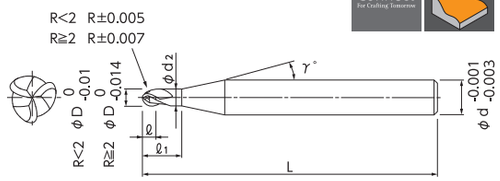
共有31种规格 Total 31 sizes

提升刀刃刚性和排屑性能，进而实现“高效率・高精度”的模具加工

High efficiency high-precision die machining with improved cutting edge rigidity and chip evacuation

MG | 3 | 30° | R ±0.005 (R<2) | φd -0.001 -0.003 | Connect | 3D

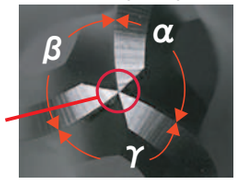




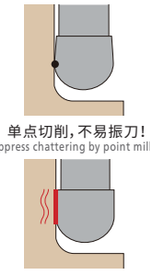
- 优化了中心刃形状，可实现高切深的高效3刃球头铣刀。
- 对60 ～ 70HRC的高硬度钢材也兼具锋利度和耐磨损性，可实现延长刀具寿命、高效率加工。
- 柄径公差为-0.001mm至-0.003mm的高精度规格。
- High-efficiency 3-flute ball end mill optimizes a shape of central edge and enables high depth of cutting.
- Even hardened steel of 60 to 70HRC can be machining with long tool life and high efficiency.
- Shank diameter tolerance , high accuracy type, is - 0.001 ～ - 0.003.

高进给加工时也可抑制振刀现象的不等分割造型
Unequal spacing suppresses chattering even high feed rate machining

$\alpha \neq \beta \neq \gamma$

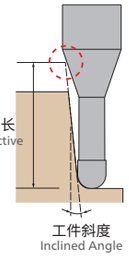


优化了中心形状，可实现高进给和高切深的刀刃形状
Optimizes center edge shape enables high depth of cut and high feed machining



单点切削，不易振刀！
Suppress chattering by point milling

普通铣刀 General End Mill



工件斜度 Inclined Angle

◆ 新增加规格

单位 [规格：mm／价格：日元] Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00634-01003	R0.1	0.3	0.15	0.2	0.18	12°	4	45	10,500	0.35	0.36	0.38	0.39	0.42
08-00634-01005		0.5	0.15	0.2	0.18	12°	4	45	10,500	0.56	0.58	0.61	0.63	0.69
08-00634-01505	R0.15	0.5	0.2	0.3	0.28	12°	4	45	10,400	0.56	0.58	0.60	0.62	0.67
08-00634-01506		0.6	0.2	0.3	0.28	12°	4	45	10,400	0.66	0.69	0.71	0.74	0.81
08-00634-01507		0.75	0.2	0.3	0.28	12°	4	45	10,400	0.82	0.85	0.88	0.92	1.01
08-00634-01510		1	0.2	0.3	0.28	12°	4	45	10,400	1.08	1.12	1.17	1.22	1.34
08-00634-02005	R0.2	0.5	0.3	0.4	0.37	12°	4	45	7,100	0.58	0.60	0.62	0.64	0.69
08-00634-02008		0.8	0.3	0.4	0.37	12°	4	45	7,100	0.89	0.93	0.96	1.00	1.09
08-00634-02010		1	0.3	0.4	0.37	12°	4	45	7,100	1.1	1.14	1.19	1.24	1.35
08-00634-02510	R0.25	1	0.35	0.5	0.46	12°	4	45	7,100	1.13	1.16	1.21	1.26	1.37
08-00634-02515		1.5	0.35	0.5	0.46	12°	4	45	7,100	1.65	1.71	1.78	1.85	2.03
08-00634-03010	R0.3	1	0.45	0.6	0.56	12°	4	45	6,100	1.12	1.16	1.20	1.25	1.35
08-00634-03015		1.5	0.45	0.6	0.56	12°	4	45	6,100	1.64	1.71	1.77	1.84	2.02
08-00634-03020		2	0.45	0.6	0.56	12°	4	45	6,100	2.17	2.25	2.34	2.44	2.68
08-00634-05020	R0.5	2	0.75	1	0.95	12°	4	45	5,700	2.18	2.26	2.34	2.43	2.65
08-00634-05025		2.5	0.75	1	0.95	12°	4	45	5,700	2.7	2.80	2.91	3.03	3.31
08-00634-05030		3	0.75	1	0.95	12°	4	45	5,700	3.22	3.35	3.48	3.63	3.97
08-00634-07503	R0.75	3	1.1	1.5	1.45	12°	4	45	6,500	3.21	3.33	3.45	3.58	3.89
08-00634-07504		4	1.1	1.5	1.45	12°	4	45	6,500	4.26	4.41	4.59	4.78	5.22
08-00634-10003	R1	3	1.5	2	1.94	12°	4	45	5,100	3.23	3.33	3.44	3.56	3.85
08-00634-10004		4	1.5	2	1.94	12°	4	45	5,100	4.27	4.42	4.58	4.76	5.17
08-00634-10006		6	1.5	2	1.94	12°	4	45	5,100	6.36	6.60	6.86	7.15	7.83
◆ 08-00634-15006	R1.5	6	2.5	3	2.85	12°	6	60	7,000	6.56	6.78	7.03	7.31	7.95
◆ 08-00634-15008		8	2.5	3	2.85	12°	6	60	7,000	8.64	8.96	9.31	9.70	10.6
◆ 08-00634-15010		10	2.5	3	2.85	12°	6	60	7,000	10.73	11.14	11.59	12.09	13.26
◆ 08-00634-20008	R2	8	3	4	3.8	12°	6	65	7,400	8.74	9.05	9.38	9.74	10.6
◆ 08-00634-20010		10	3	4	3.8	12°	6	65	7,400	10.83	11.22	11.66	12.14	13.25
◆ 08-00634-20012		12	3	4	3.8	12°	6	65	7,400	12.91	13.40	13.94	14.53	15.91
◆ 08-00634-30010	R3	10	6	6	5.7	-	6	65	8,800	Free	Free	Free	Free	Free
◆ 08-00634-30015		15	6	6	5.7	-	6	65	8,800	Free	Free	Free	Free	Free
◆ 08-00634-30020		20	6	6	5.7	-	6	65	8,800	Free	Free	Free	Free	Free

订购方法 How to Order

请指定MRBSH330 球头半径(R)×颈长(ℓ1)。 When you order, indicate MRBSH330(R)×(ℓ1).

※(γ)为参考值。 ※(γ) is reference value.

加工案例 Machining Case M-024, M-026

加工材料 Work Material			高速钢・高硬度钢 High Speed Steels/Hardened Steels SKH51・SKD11(～62HRC)				高速钢 High Speed Steels SKH55・HAP40(～66HRC)				高速钢 High Speed Steels SKH57・HAP72(～70HRC)			
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			ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
R0.1	0.3	1.5	0.006	0.007	450	40,000	0.004	0.005	300	40,000	0.004	0.005	220	40,000
	0.5	2.5	0.006	0.007	400	40,000	0.004	0.005	250	40,000	0.004	0.005	190	40,000
R0.15	0.5	1.7	0.01	0.01	450	40,000	0.005	0.005	400	40,000	0.005	0.005	300	40,000
	0.6	2	0.007	0.007	450	40,000	0.005	0.005	350	40,000	0.005	0.005	270	40,000
	0.75	2.5	0.007	0.007	400	40,000	0.005	0.005	350	40,000	0.005	0.005	250	40,000
	1	3.3	0.007	0.007	350	40,000	0.005	0.005	300	40,000	0.005	0.005	220	40,000
R0.2	0.5	1.25	0.035	0.04	1,100	40,000	0.013	0.02	850	40,000	0.013	0.02	650	35,000
	0.8	2	0.03	0.03	1,000	40,000	0.012	0.02	850	40,000	0.012	0.02	600	35,000
	1	2.5	0.03	0.03	1,000	40,000	0.012	0.02	850	40,000	0.012	0.02	600	35,000
R0.25	1	2	0.03	0.03	1,300	40,000	0.015	0.02	1,000	35,000	0.015	0.02	700	30,000
	1.5	3	0.015	0.03	1,000	40,000	0.01	0.02	800	35,000	0.01	0.02	500	30,000
R0.3	1	1.7	0.045	0.06	1,500	40,000	0.03	0.05	1,100	30,000	0.03	0.05	800	25,000
	1.5	2.5	0.045	0.06	1,500	40,000	0.03	0.05	1,100	30,000	0.03	0.05	800	25,000
	2	3.3	0.045	0.06	1,500	40,000	0.03	0.05	1,100	30,000	0.03	0.05	800	25,000
R0.5	2	2	0.15	0.2	3,000	30,000	0.12	0.1	2,000	25,000	0.075	0.1	1,500	20,000
	2.5	2.5	0.15	0.2	3,000	30,000	0.12	0.1	2,000	25,000	0.075	0.1	1,500	20,000
	3	3	0.15	0.2	3,000	30,000	0.12	0.1	2,000	25,000	0.075	0.1	1,500	20,000
R0.75	3	2	0.15	0.3	3,800	30,000	0.15	0.2	3,000	25,000	0.09	0.2	2,200	20,000
	4	2.7	0.15	0.3	3,000	25,000	0.15	0.2	2,400	22,000	0.09	0.2	1,800	18,000
R1	3	1.5	0.3	0.5	3,800	25,000	0.22	0.3	3,000	20,000	0.15	0.3	2,200	16,000
	4	2	0.3	0.5	3,800	25,000	0.22	0.3	3,000	20,000	0.15	0.3	2,200	16,000
	6	3	0.3	0.3	3,000	22,000	0.22	0.3	2,400	20,000	0.15	0.3	1,800	16,000
R1.5	6	2	0.3	0.6	3,800	18,000	0.25	0.5	3,000	15,000	0.15	0.5	2,250	12,000
	8	2.7	0.3	0.6	3,800	18,000	0.25	0.5	3,000	15,000	0.15	0.5	2,250	12,000
	10	3.3	0.3	0.6	3,200	18,000	0.25	0.5	2,600	15,000	0.15	0.5	2,000	12,000
R2	8	2	0.3	0.8	3,800	15,000	0.25	0.6	3,000	12,000	0.18	0.6	2,250	9,500
	10	2.5	0.3	0.8	3,800	15,000	0.25	0.6	3,000	12,000	0.18	0.6	2,250	9,500
	12	3	0.3	0.8	3,800	15,000	0.25	0.6	3,000	12,000	0.18	0.6	2,250	9,500
R3	10	1.7	0.38	1.2	3,800	8,000	0.25	1	3,000	7,000	0.18	1	2,250	5,500
	15	2.5	0.38	1.2	3,800	8,000	0.25	1	3,000	7,000	0.18	1	2,250	5,500
	20	3.3	0.38	1.2	3,800	8,000	0.25	1	3,000	7,000	0.18	1	2,250	5,500

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示步距量。
※2 请根据机床刚性和工件的夹持状态等调整切削参数。
※3 发生振刀等情况时，请根据需要调整切削参数。
※4 R角等切削阻力大的部位，请特别注意参数设定和刀路轨迹等。
※5 加工过程中的机械振动较大时，请根据需要调整进给速度。
※6 排屑不佳可能会导致刀具崩刃和折断，敬请注意。
※7 请以相同的比率调整主轴转速和进给速度。
※8 请尽量缩短刀具的伸出量。
※9 建议使用油雾冷却方式。

※1 Depth of Cut：ap = Axial Depth of Cut / ae = Radial Depth of Cut.
※2 Adjust milling condition according to machine rigidity and clamp condition of work material.
※3 In case of chattering etc., please adjust cutting conditions if necessary.
※4 At point where cutting load is high such as at corners, pay attention to setting cutting conditions and tool paths particularly.
※5 If machine tool vibration is high during machining, adjust the feed rate as necessary.
※6 Attention to a risk of chipping and breakage when insufficient chip flow.
※7 Adjust both spindle speed and feed at the same rate.
※8 Overhang of end mill should be as short as possible form spindle nose.
※9 We recommend using oil mist coolant.

MRBH230 增加规格

规格 Size R0.05 ～ R3

Premium ≦65 HRC

无限白金涂层 高硬度钢材用2刃长颈球头铣刀

MUGEN COATING PREMIUM 2-Flute Long Neck Ball End Mill for Hardened Steel

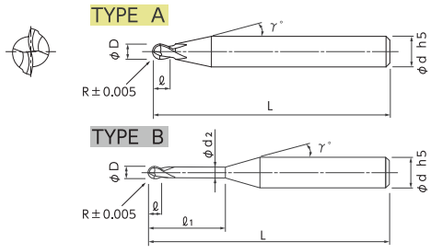
共有334种规格
Total 334 sizes

MG | 2 | 30° | R ±0.005 | φd h5 | 3D

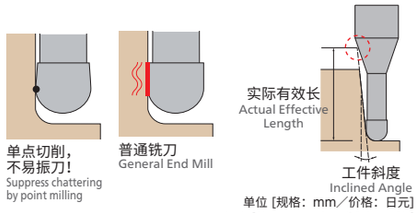
可对应从调质钢到高硬度钢（～65HRC）的长颈球头铣刀 品种丰富齐全，规格多达334种

Long neck ball end mill supports machining from prehardened steels to hardened steels(~ 65HRC)
Abundant size variations with total 334 sizes





- 采用高硬度钢用无限白金涂层与独特的刀刃形状，耐崩刃性优异并可有效抑制振刀，从而提高了加工面的加工精度。
- 可对应～ 65HRC的高硬度钢。
- 规格扩大到334种！
- MUGEN COATING PREMIUM for hardened steel and unique cutting edge realize excellent chipping resistance and suppress chattering to improve finishing surface.
- Applicable for hardened steels up to 65HRC.
- Lineup to total 334 sizes.



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

◆ 新增加规格

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00527-00050	R0.05	0.2	0.07	B	0.1	0.085	12°	4	45	12,300	0.24	0.25	0.26	0.27	0.29
◆ 08-00527-00054		0.25	0.07	B	0.1	0.085	12°	4	45	10,800	0.29	0.30	0.31	0.33	0.36
08-00527-00051		0.3	0.07	B	0.1	0.085	12°	4	45	10,800	0.34	0.36	0.37	0.39	0.42
◆ 08-00527-00055		0.35	0.07	B	0.1	0.085	12°	4	45	10,800	0.39	0.41	0.43	0.45	0.49
◆ 08-00527-00052		0.4	0.07	B	0.1	0.085	12°	4	45	10,800	0.45	0.46	0.48	0.51	0.56
◆ 08-00527-00056		0.45	0.07	B	0.1	0.085	12°	4	45	10,800	0.50	0.52	0.54	0.57	0.62
08-00527-00053		0.5	0.07	B	0.1	0.085	12°	4	45	11,800	0.55	0.57	0.60	0.63	0.69
◆ 08-00527-00070	R0.075	0.25	0.1	B	0.15	0.13	12°	4	45	12,600	0.30	0.31	0.32	0.34	0.37
08-00527-00071		0.3	0.1	B	0.15	0.13	12°	4	45	12,600	0.35	0.37	0.38	0.40	0.43
◆ 08-00527-00076		0.35	0.1	B	0.15	0.13	12°	4	45	12,600	0.41	0.42	0.44	0.46	0.50
◆ 08-00527-00072		0.4	0.1	B	0.15	0.13	12°	4	45	12,600	0.46	0.48	0.49	0.52	0.56
◆ 08-00527-00077		0.45	0.1	B	0.15	0.13	12°	4	45	12,600	0.51	0.53	0.55	0.58	0.63
08-00527-00073		0.5	0.1	B	0.15	0.13	12°	4	45	13,300	0.56	0.58	0.61	0.64	0.70
◆ 08-00527-00074		0.6	0.1	B	0.15	0.13	12°	4	45	13,300	0.67	0.69	0.72	0.75	0.83
◆ 08-00527-00078		0.75	0.1	B	0.15	0.13	12°	4	45	13,300	0.82	0.86	0.89	0.93	1.03
08-00527-00075		1	0.1	B	0.15	0.13	12°	4	45	14,200	1.08	1.13	1.18	1.23	1.36
08-00527-00100	R0.1	0.3	0.15	B	0.2	0.18	12°	4	45	7,600	0.35	0.36	0.38	0.39	0.42
◆ 08-00527-00110		0.4	0.15	B	0.2	0.18	12°	4	45	7,600	0.46	0.47	0.49	0.51	0.56
08-00527-00101		0.5	0.15	B	0.2	0.18	12°	4	45	7,600	0.56	0.58	0.61	0.63	0.69
◆ 08-00527-00111		0.6	0.15	B	0.2	0.18	12°	4	45	7,600	0.67	0.69	0.72	0.75	0.82
08-00527-00102		0.75	0.15	B	0.2	0.18	12°	4	45	7,600	0.82	0.85	0.89	0.93	1.02
◆ 08-00527-00112		0.85	0.15	B	0.2	0.18	12°	4	45	7,600	0.93	0.96	1.00	1.05	1.15
08-00527-00103		1	0.15	B	0.2	0.18	12°	4	45	7,600	1.08	1.13	1.18	1.23	1.35
08-00528-00103		1	0.15	B	0.2	0.18	12°	6	50	11,200	1.08	1.13	1.18	1.23	1.35
08-00527-00104		1.25	0.15	B	0.2	0.18	12°	4	45	8,200	1.34	1.40	1.46	1.53	1.68
08-00527-00105		1.5	0.15	B	0.2	0.18	12°	4	45	8,200	1.60	1.67	1.75	1.83	2.02
08-00527-00106		1.75	0.15	B	0.2	0.18	12°	4	45	9,100	1.86	1.94	2.03	2.13	2.35
08-00527-00107		2	0.15	B	0.2	0.18	12°	4	45	9,100	2.13	2.22	2.32	2.43	2.68
◆ 08-00527-00113		2.25	0.15	B	0.2	0.18	12°	4	45	9,100	2.39	2.49	2.60	2.72	3.01
08-00527-00108		2.5	0.15	B	0.2	0.18	12°	4	45	10,000	2.65	2.76	2.89	3.02	3.34
◆ 08-00527-00114		2.75	0.15	B	0.2	0.18	12°	4	45	10,000	2.91	3.03	3.17	3.32	3.68
08-00527-00109		3	0.15	B	0.2	0.18	12°	4	45	10,700	3.17	3.31	3.46	3.62	4.01

订购方法 How to Order

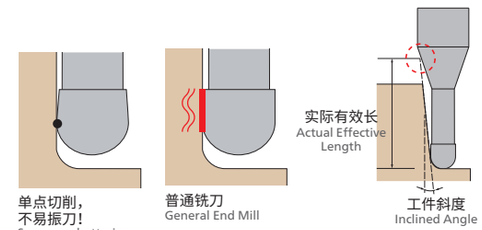
请指定MRBH230 球头半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MRBH230 (R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.

MRBH230

无限白金涂层 高硬度钢材用2刃长颈球头铣刀
MUGEN COATING PREMIUM 2-Flute Long Neck Ball End Mill for Hardened Steel

长颈 Long Neck
球头 Ball
涂层 Coating

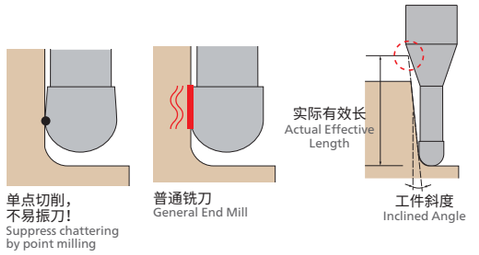


单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00527-00164	R0.15	0.2※	0.2	A	0.3	–	12°	4	45	7,500	0.20	0.20	0.20	0.20	0.20
08-00527-00162		0.5	0.2	B	0.3	0.28	12°	4	45	7,500	0.56	0.58	0.60	0.62	0.67
08-00527-00150		0.6	0.2	B	0.3	0.28	12°	4	45	7,500	0.66	0.69	0.71	0.74	0.81
08-00527-00163		0.75	0.2	B	0.3	0.28	12°	4	45	7,500	0.82	0.85	0.88	0.92	1.01
08-00527-00151		1	0.2	B	0.3	0.28	12°	4	45	7,500	1.08	1.12	1.17	1.22	1.34
08-00527-00152		1.25	0.2	B	0.3	0.28	12°	4	45	8,000	1.34	1.39	1.45	1.52	1.67
08-00527-00153		1.5	0.2	B	0.3	0.28	12°	4	45	8,000	1.60	1.67	1.74	1.82	2.00
08-00528-00153		1.5	0.2	B	0.3	0.28	12°	6	50	11,800	1.60	1.67	1.74	1.82	2.00
08-00527-00154		1.75	0.2	B	0.3	0.28	12°	4	45	8,000	1.86	1.94	2.02	2.12	2.33
08-00527-00155		2	0.2	B	0.3	0.28	12°	4	45	8,000	2.12	2.21	2.31	2.42	2.66
08-00527-00156		2.25	0.2	B	0.3	0.28	12°	4	45	8,200	2.38	2.48	2.59	2.71	3.00
08-00527-00157		2.5	0.2	B	0.3	0.28	12°	4	45	8,200	2.64	2.76	2.88	3.01	3.33
08-00527-00159		3	0.2	B	0.3	0.28	12°	4	45	8,200	3.17	3.30	3.45	3.61	3.99
08-00527-00160		3.5	0.2	B	0.3	0.28	12°	4	45	8,600	3.69	3.85	4.02	4.21	4.65
08-00527-00161		4	0.2	B	0.3	0.28	12°	4	45	8,600	4.21	4.39	4.59	4.81	5.32
◆ 08-00527-00165		4.5	0.2	B	0.3	0.28	12°	4	45	8,600	4.73	4.94	5.16	5.41	5.98
◆ 08-00527-00200	R0.2	0.3※	0.3	A	0.4	–	12°	4	45	4,800	0.30	0.30	0.30	0.30	0.30
08-00527-00211		0.5	0.3	B	0.4	0.37	12°	4	45	5,100	0.58	0.60	0.62	0.64	0.69
◆ 08-00527-00213		0.65	0.3	B	0.4	0.37	12°	4	45	5,100	0.74	0.76	0.79	0.82	0.89
08-00527-00201		0.8	0.3	B	0.4	0.37	12°	4	45	5,100	0.89	0.93	0.96	1.00	1.09
08-00527-00202		1	0.3	B	0.4	0.37	12°	4	45	5,100	1.10	1.14	1.19	1.24	1.35
08-00528-00202		1	0.3	B	0.4	0.37	12°	6	50	7,900	1.10	1.14	1.19	1.24	1.35
◆ 08-00527-00214		1.25	0.3	B	0.4	0.37	12°	4	45	5,100	1.36	1.42	1.47	1.54	1.68
08-00527-00203		1.5	0.3	B	0.4	0.37	12°	4	45	5,300	1.62	1.69	1.76	1.84	2.02
◆ 08-00527-00215		1.75	0.3	B	0.4	0.37	12°	4	45	5,300	1.88	1.96	2.04	2.13	2.35
08-00527-00204		2	0.3	B	0.4	0.37	12°	4	45	5,400	2.15	2.23	2.33	2.43	2.68
08-00528-00204		2	0.3	B	0.4	0.37	12°	6	50	8,300	2.15	2.23	2.33	2.43	2.68
◆ 08-00527-00216		2.25	0.3	B	0.4	0.37	12°	4	45	5,400	2.41	2.51	2.61	2.73	3.01
08-00527-00205		2.5	0.3	B	0.4	0.37	12°	4	45	5,600	2.67	2.78	2.90	3.03	3.34
◆ 08-00527-00217		2.75	0.3	B	0.4	0.37	12°	4	45	5,600	2.93	3.05	3.18	3.33	3.67
08-00527-00206		3	0.3	B	0.4	0.37	12°	4	45	5,900	3.19	3.32	3.47	3.63	4.01
08-00527-00207		3.5	0.3	B	0.4	0.37	12°	4	45	6,400	3.71	3.87	4.04	4.23	4.67
08-00527-00208		4	0.3	B	0.4	0.37	12°	4	45	6,400	4.23	4.41	4.61	4.83	5.33
08-00527-00209		4.5	0.3	B	0.4	0.37	12°	4	45	6,700	4.75	4.96	5.18	5.43	6.00
08-00527-00210		5	0.3	B	0.4	0.37	12°	4	45	6,700	5.27	5.50	5.75	6.02	6.66
◆ 08-00527-00218		5.5	0.3	B	0.4	0.37	12°	4	45	7,600	5.80	6.05	6.32	6.62	7.32
08-00527-00212		6	0.3	B	0.4	0.37	12°	4	45	7,900	6.32	6.59	6.89	7.22	7.99
◆ 08-00527-00265	R0.25	0.35※	0.35	A	0.5	–	12°	4	45	4,800	0.35	0.35	0.35	0.35	0.35
◆ 08-00527-00266		0.5	0.35	B	0.5	0.46	12°	4	45	5,100	0.60	0.62	0.64	0.66	0.70
◆ 08-00527-00267		0.75	0.35	B	0.5	0.46	12°	4	45	5,100	0.86	0.89	0.92	0.96	1.04
08-00527-00250		1	0.35	B	0.5	0.46	12°	4	45	5,100	1.13	1.16	1.21	1.26	1.37
◆ 08-00527-00268		1.25	0.35	B	0.5	0.46	12°	4	45	5,100	1.39	1.44	1.49	1.56	1.70
08-00527-00251		1.5	0.35	B	0.5	0.46	12°	4	45	5,100	1.65	1.71	1.78	1.85	2.03
◆ 08-00527-00269		1.75	0.35	B	0.5	0.46	12°	4	45	5,100	1.91	1.98	2.06	2.15	2.36
08-00527-00252		2	0.35	B	0.5	0.46	12°	4	45	5,100	2.17	2.25	2.35	2.45	2.69

无限白金涂层 高硬度钢材用2刃长颈球头铣刀

MUGEN COATING PREMIUM 2-Flute Long Neck Ball End Mill for Hardened Steel



◆ 新增加规格

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00527-00270	R0.25	2.25	0.35	B	0.5	0.46	12°	4	45	5,100	2.43	2.53	2.63	2.75	3.03
08-00527-00253		2.5	0.35	B	0.5	0.46	12°	4	45	5,100	2.69	2.80	2.92	3.05	3.36
08-00527-00254		3	0.35	B	0.5	0.46	12°	4	45	5,100	3.21	3.34	3.49	3.65	4.02
08-00527-00255		3.5	0.35	B	0.5	0.46	12°	4	45	5,100	3.73	3.89	4.06	4.25	4.69
08-00527-00256		4	0.35	B	0.5	0.46	12°	4	45	5,100	4.25	4.43	4.63	4.85	5.35
08-00527-00257		4.5	0.35	B	0.5	0.46	12°	4	45	5,300	4.78	4.98	5.20	5.44	6.01
08-00527-00258		5	0.35	B	0.5	0.46	12°	4	45	5,300	5.30	5.52	5.77	6.04	6.68
08-00527-00259		5.5	0.35	B	0.5	0.46	12°	4	45	5,400	5.82	6.07	6.34	6.64	7.34
08-00527-00260		6	0.35	B	0.5	0.46	12°	4	45	5,400	6.34	6.61	6.91	7.24	8.00
◆ 08-00527-00261		7	0.35	B	0.5	0.46	12°	4	45	5,900	7.38	7.70	8.05	8.44	9.33
08-00527-00262		8	0.35	B	0.5	0.46	12°	4	45	6,400	8.42	8.79	9.19	9.63	10.66
◆ 08-00527-00263		9	0.35	B	0.5	0.46	12°	4	45	7,200	9.47	9.88	10.33	10.83	11.99
08-00527-00264		10	0.35	B	0.5	0.46	12°	4	45	8,100	10.51	10.97	11.47	12.03	13.31
◆ 08-00527-00323	R0.3	0.45※	0.45	A	0.6	–	12°	4	45	4,200	0.45	0.45	0.45	0.45	0.45
◆ 08-00527-00324		0.6	0.45	B	0.6	0.56	12°	4	45	4,400	0.71	0.72	0.75	0.77	0.82
◆ 08-00527-00325		0.8	0.45	B	0.6	0.56	12°	4	45	4,400	0.91	0.94	0.97	1.01	1.09
08-00527-00300		1	0.45	B	0.6	0.56	12°	4	45	4,400	1.12	1.16	1.20	1.25	1.35
◆ 08-00527-00326		1.25	0.45	B	0.6	0.56	12°	4	45	4,400	1.38	1.43	1.49	1.55	1.68
08-00527-00301		1.5	0.45	B	0.6	0.56	12°	4	45	4,000	1.64	1.71	1.77	1.84	2.02
◆ 08-00527-00327		1.75	0.45	B	0.6	0.56	12°	4	45	4,000	1.91	1.98	2.06	2.14	2.35
08-00527-00302		2	0.45	B	0.6	0.56	12°	4	45	4,000	2.17	2.25	2.34	2.44	2.68
08-00528-00302		2	0.45	B	0.6	0.56	12°	6	50	6,400	2.17	2.25	2.34	2.44	2.68
◆ 08-00527-00328		2.25	0.45	B	0.6	0.56	12°	4	45	4,000	2.43	2.52	2.63	2.74	3.01
08-00527-00303		2.5	0.45	B	0.6	0.56	12°	4	45	4,100	2.69	2.79	2.91	3.04	3.34
◆ 08-00527-00329		2.75	0.45	B	0.6	0.56	12°	4	45	4,100	2.95	3.07	3.20	3.34	3.67
08-00527-00304		3	0.45	B	0.6	0.56	12°	4	45	4,100	3.21	3.34	3.48	3.64	4.01
08-00528-00304		3	0.45	B	0.6	0.56	12°	6	50	6,500	3.21	3.34	3.48	3.64	4.01
08-00527-00305		3.5	0.45	B	0.6	0.56	12°	4	45	4,200	3.73	3.88	4.05	4.24	4.67
08-00527-00306		4	0.45	B	0.6	0.56	12°	4	45	4,200	4.25	4.43	4.62	4.84	5.33
08-00528-00306		4	0.45	B	0.6	0.56	12°	6	50	6,700	4.25	4.43	4.62	4.84	5.33
08-00527-00321		4.5	0.45	B	0.6	0.56	12°	4	45	4,200	4.77	4.97	5.19	5.43	6.00
08-00527-00308		5	0.45	B	0.6	0.56	12°	4	45	4,200	5.29	5.52	5.76	6.03	6.66
08-00527-00322		5.5	0.45	B	0.6	0.56	12°	4	45	4,200	5.82	6.06	6.33	6.63	7.32
08-00527-00310		6	0.45	B	0.6	0.56	12°	4	45	4,200	6.34	6.61	6.90	7.23	7.99
◆ 08-00527-00311		6.5	0.45	B	0.6	0.56	12°	4	45	4,100	6.86	7.15	7.47	7.83	8.65
08-00527-00312		7	0.45	B	0.6	0.56	12°	4	45	4,700	7.38	7.70	8.04	8.43	9.31
◆ 08-00527-00313		7.5	0.45	B	0.6	0.56	12°	4	45	4,700	7.90	8.24	8.61	9.02	9.98
08-00527-00314		8	0.45	B	0.6	0.56	12°	4	45	5,600	8.42	8.79	9.18	9.62	10.64
08-00527-00316		9	0.45	B	0.6	0.56	12°	4	45	5,900	9.47	9.88	10.33	10.82	11.97
08-00527-00318		10	0.45	B	0.6	0.56	12°	4	45	5,700	10.51	10.97	11.47	12.02	13.30
08-00527-00320		12	0.45	B	0.6	0.56	12°	4	45	6,400	12.59	13.14	13.75	14.41	15.95

订购方法 How to Order

请指定MRBH230 球头半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MRBH230 (R)×(ℓ1)×(d).

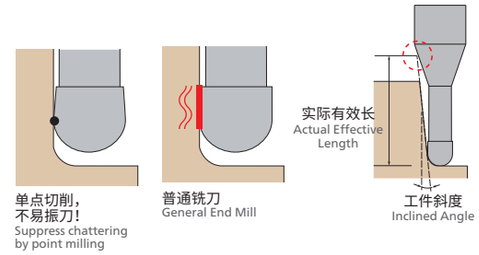
※(γ)为参考值。
※(γ) is reference value.

MRBH230

无限白金涂层 高硬度钢材用2刃长颈球头铣刀

MUGEN COATING PREMIUM 2-Flute Long Neck Ball End Mill for Hardened Steel

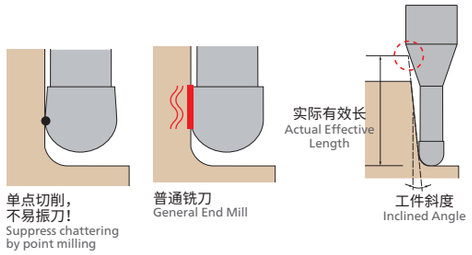
长颈 Long Neck
球头 Ball
涂层 Coating



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00527-00354	R0.35	0.5※	0.5	A	0.7	–	12°	4	45	4,500	0.50	0.50	0.50	0.50	0.50
◆ 08-00527-00355		1	0.5	B	0.7	0.66	12°	4	45	4,500	1.12	1.16	1.19	1.24	1.34
08-00527-00350		2	0.5	B	0.7	0.66	12°	4	45	4,500	2.16	2.25	2.33	2.43	2.66
08-00527-00351		4	0.5	B	0.7	0.66	12°	4	45	4,800	4.25	4.42	4.62	4.83	5.32
08-00527-00352		6	0.5	B	0.7	0.66	12°	4	45	4,800	6.34	6.60	6.90	7.22	7.97
08-00527-00353		8	0.5	B	0.7	0.66	12°	4	45	4,800	8.42	8.78	9.18	9.61	10.63
◆ 08-00527-00400	R0.4	0.6※	0.6	A	0.8	–	12°	4	45	4,000	0.60	0.60	0.60	0.60	0.60
◆ 08-00527-00411		1	0.6	B	0.8	0.76	12°	4	45	4,000	1.12	1.15	1.19	1.23	1.32
◆ 08-00527-00412		1.5	0.6	B	0.8	0.76	12°	4	45	4,000	1.64	1.70	1.76	1.83	1.98
08-00527-00401		2	0.6	B	0.8	0.76	12°	4	45	4,000	2.16	2.24	2.33	2.42	2.65
08-00528-00401		2	0.6	B	0.8	0.76	12°	6	50	6,400	2.16	2.24	2.33	2.42	2.65
◆ 08-00527-00413		2.5	0.6	B	0.8	0.76	12°	4	45	4,000	2.68	2.79	2.90	3.02	3.31
08-00527-00402		3	0.6	B	0.8	0.76	12°	4	45	4,200	3.20	3.33	3.47	3.62	3.97
◆ 08-00527-00414		3.5	0.6	B	0.8	0.76	12°	4	45	4,200	3.73	3.88	4.04	4.22	4.64
08-00527-00403		4	0.6	B	0.8	0.76	12°	4	45	4,200	4.25	4.42	4.61	4.82	5.30
◆ 08-00527-00415		4.5	0.6	B	0.8	0.76	12°	4	45	4,200	4.77	4.96	5.18	5.41	5.97
08-00527-00404		5	0.6	B	0.8	0.76	12°	4	45	4,200	5.29	5.51	5.75	6.01	6.63
08-00527-00405		6	0.6	B	0.8	0.76	12°	4	45	4,200	6.33	6.60	6.89	7.21	7.96
08-00527-00406		7	0.6	B	0.8	0.76	12°	4	45	4,200	7.38	7.69	8.03	8.41	9.28
08-00527-00407		8	0.6	B	0.8	0.76	12°	4	45	4,200	8.42	8.78	9.17	9.60	10.61
◆ 08-00527-00408		9	0.6	B	0.8	0.76	12°	4	45	4,200	9.46	9.87	10.31	10.80	11.94
08-00527-00409		10	0.6	B	0.8	0.76	12°	4	45	5,600	10.50	10.96	11.45	12.00	13.26
08-00527-00410		12	0.6	B	0.8	0.76	12°	4	45	6,100	12.59	13.14	13.73	14.39	15.92
◆ 08-00527-00416		16	0.6	B	0.8	0.76	12°	4	50	8,100	16.76	17.49	18.29	19.18	21.23
◆ 08-00527-00454	R0.45	0.65※	0.65	A	0.9	–	12°	4	45	4,500	0.65	0.65	0.65	0.65	0.65
◆ 08-00527-00455		1	0.65	B	0.9	0.86	12°	4	45	4,500	1.12	1.15	1.18	1.22	1.30
08-00527-00450		2	0.65	B	0.9	0.86	12°	4	45	4,500	2.16	2.24	2.32	2.41	2.63
08-00527-00451		4	0.65	B	0.9	0.86	12°	4	45	4,800	4.25	4.42	4.60	4.81	5.29
08-00527-00452		6	0.65	B	0.9	0.86	12°	4	45	4,800	6.33	6.59	6.88	7.20	7.94
08-00527-00453		8	0.65	B	0.9	0.86	12°	4	45	4,800	8.42	8.77	9.16	9.59	10.59
◆★ 08-00527-00517	R0.5	0.75※	0.75	A	1	–	12°	4	45	3,400	0.75	0.75	0.75	0.75	0.75
◆★ 08-00527-00518		1	0.75	B	1	0.95	12°	4	45	3,400	1.14	1.17	1.20	1.24	1.32
◆★ 08-00527-00519		1.5	0.75	B	1	0.95	12°	4	45	3,400	1.66	1.71	1.77	1.83	1.98
★ 08-00527-00500		2	0.75	B	1	0.95	12°	4	45	3,400	2.18	2.26	2.34	2.43	2.65
★ 08-00527-00514		2.5	0.75	B	1	0.95	12°	4	45	3,400	2.70	2.80	2.91	3.03	3.31
★ 08-00527-00501		3	0.75	B	1	0.95	12°	4	45	3,400	3.22	3.35	3.48	3.63	3.97
★ 08-00528-00501		3	0.75	B	1	0.95	12°	6	50	5,600	3.22	3.35	3.48	3.63	3.97
◆★ 08-00527-00520		3.5	0.75	B	1	0.95	12°	4	45	3,400	3.75	3.89	4.05	4.23	4.64
★ 08-00527-00502		4	0.75	B	1	0.95	12°	4	45	3,800	4.27	4.44	4.62	4.83	5.30
★ 08-00528-00502		4	0.75	B	1	0.95	12°	6	50	6,200	4.27	4.44	4.62	4.83	5.30
◆★ 08-00527-00521		4.5	0.75	B	1	0.95	12°	4	45	3,800	4.79	4.98	5.19	5.42	5.96

无限白金涂层 高硬度钢材用2刃长颈球头铣刀
MUGEN COATING PREMIUM 2-Flute Long Neck Ball End Mill for Hardened Steel



◆ 新增加规格

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
											30´	1°	1°30´	2°	3°
★ 08-00527-00503	R0.5	5	0.75	B	1	0.95	12°	4	45	3,800	5.31	5.53	5.76	6.02	6.63
★ 08-00528-00503		5	0.75	B	1	0.95	12°	6	50	6,200	5.31	5.53	5.76	6.02	6.63
★ 08-00527-00504		6	0.75	B	1	0.95	12°	4	45	4,100	6.35	6.62	6.90	7.22	7.96
★ 08-00528-00504		6	0.75	B	1	0.95	12°	6	50	6,500	6.35	6.62	6.90	7.22	7.96
★ 08-00527-00505		7	0.75	B	1	0.95	12°	4	45	4,100	7.40	7.71	8.04	8.42	9.28
★ 08-00528-00505		7	0.75	B	1	0.95	12°	6	50	6,500	7.40	7.71	8.04	8.42	9.28
★ 08-00527-00506		8	0.75	B	1	0.95	12°	4	45	4,100	8.44	8.79	9.18	9.61	10.61
★ 08-00528-00506		8	0.75	B	1	0.95	12°	6	50	6,500	8.44	8.79	9.18	9.61	10.61
★ 08-00527-00507		9	0.75	B	1	0.95	12°	4	45	4,100	9.48	9.88	10.32	10.81	11.94
★ 08-00527-00508		10	0.75	B	1	0.95	12°	4	45	4,100	10.52	10.97	11.46	12.01	13.26
★ 08-00528-00508		10	0.75	B	1	0.95	12°	6	50	6,500	10.52	10.97	11.46	12.01	13.26
★ 08-00527-00509		12	0.75	B	1	0.95	12°	4	45	4,100	12.61	13.15	13.75	14.40	15.92
★ 08-00527-00515		13	0.75	B	1	0.95	12°	4	45	4,700	13.65	14.24	14.89	15.59	17.25
★ 08-00527-00510		14	0.75	B	1	0.95	12°	4	50	4,700	14.70	15.33	16.03	16.79	18.57
★ 08-00527-00511		16	0.75	B	1	0.95	12°	4	50	5,600	16.78	17.51	18.31	19.18	21.23
★ 08-00527-00512		18	0.75	B	1	0.95	12°	4	55	5,600	18.87	19.69	20.59	21.58	23.88
★ 08-00527-00513		20	0.75	B	1	0.95	12°	4	55	6,700	20.95	21.87	22.87	23.97	26.54
★ 08-00528-00516		22	0.75	B	1	0.95	12°	6	60	10,600	23.04	24.05	25.15	26.36	29.19
◆★ 08-00527-00608	R0.6	1.2	0.9	B	1.2	1.15	12°	4	45	5,000	1.34	1.38	1.41	1.46	1.55
★ 08-00527-00600		2.4	0.9	B	1.2	1.15	12°	4	45	5,000	2.59	2.68	2.78	2.89	3.15
★ 08-00527-00601		4	0.9	B	1.2	1.15	12°	4	45	5,000	4.26	4.43	4.61	4.81	5.27
★ 08-00527-00602		6	0.9	B	1.2	1.15	12°	4	45	5,500	6.35	6.61	6.89	7.20	7.92
★ 08-00527-00603		8	0.9	B	1.2	1.15	12°	4	45	5,500	8.43	8.79	9.17	9.59	10.58
★ 08-00527-00604		10	0.9	B	1.2	1.15	12°	4	45	5,500	10.52	10.96	11.45	11.99	13.23
★ 08-00527-00605		12	0.9	B	1.2	1.15	12°	4	45	5,500	12.61	13.14	13.73	14.38	15.89
★ 08-00527-00606		14	0.9	B	1.2	1.15	12°	4	50	6,000	14.69	15.32	16.01	16.77	18.54
★ 08-00527-00607		16	0.9	B	1.2	1.15	12°	4	50	6,500	16.78	17.50	18.29	19.17	21.20
◆★ 08-00527-00703	R0.7	2	1	B	1.4	1.35	12°	4	45	4,700	2.17	2.24	2.31	2.39	2.58
◆★ 08-00527-00704		4	1	B	1.4	1.35	12°	4	45	4,700	4.26	4.42	4.59	4.79	5.24
◆★ 08-00527-00705		6	1	B	1.4	1.35	12°	4	45	4,700	6.34	6.60	6.88	7.18	7.89
★ 08-00527-00700		8	1	B	1.4	1.35	12°	4	45	4,700	8.43	8.78	9.16	9.57	10.55
★ 08-00527-00701		12	1	B	1.4	1.35	12°	4	50	4,700	12.60	13.13	13.72	14.36	15.85
★ 08-00527-00702		16	1	B	1.4	1.35	12°	4	50	4,700	16.77	17.49	18.28	19.15	21.16
◆★ 08-00527-00765	R0.75	2	1.1	B	1.5	1.45	12°	4	45	3,900	2.17	2.24	2.31	2.38	2.57
★ 08-00527-00750		3	1.1	B	1.5	1.45	12°	4	45	3,900	3.21	3.33	3.45	3.58	3.89
★ 08-00527-00751		4	1.1	B	1.5	1.45	12°	4	45	3,900	4.26	4.41	4.59	4.78	5.22
◆★ 08-00527-00752		5	1.1	B	1.5	1.45	12°	4	45	3,900	5.30	5.50	5.73	5.97	6.55
★ 08-00527-00753		6	1.1	B	1.5	1.45	12°	4	45	3,900	6.34	6.59	6.87	7.17	7.88
★ 08-00528-00753		6	1.1	B	1.5	1.45	12°	6	50	6,600	6.34	6.59	6.87	7.17	7.88
★ 08-00527-00755		8	1.1	B	1.5	1.45	12°	4	45	4,100	8.43	8.77	9.15	9.56	10.53
★ 08-00528-00755		8	1.1	B	1.5	1.45	12°	6	50	6,600	8.43	8.77	9.15	9.56	10.53

订购方法 How to Order

请指定MRBH230 球头半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MRBH230 (R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.

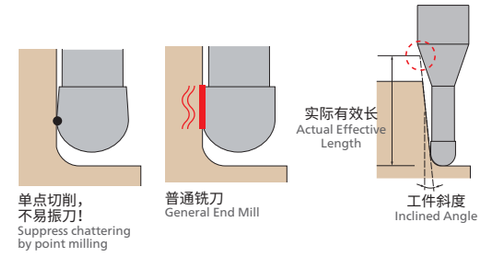
◎ 调质钢 Prehardened Steel P
◎ 高硬度钢~52 Hardened Steel HRC H
◎ 高硬度钢~60 Hardened Steel HRC H
○ 高硬度钢~65 Hardened Steel HRC H
○ 不锈钢 Stainless Steel M
○ 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy S

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

MRBH230

无限白金涂层 高硬度钢材用2刃长颈球头铣刀
MUGEN COATING PREMIUM 2-Flute Long Neck Ball End Mill for Hardened Steel

长颈 Long Neck
球头 Ball
涂层 Coating



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
											30´	1°	1°30´	2°	3°
★ 08-00527-00757	R0.75	10	1.1	B	1.5	1.45	12°	4	45	4,400	10.51	10.95	11.43	11.96	13.18
★ 08-00527-00758		12	1.1	B	1.5	1.45	12°	4	45	4,700	12.60	13.13	13.71	14.35	15.84
★ 08-00527-00759		14	1.1	B	1.5	1.45	12°	4	50	4,700	14.69	15.31	15.99	16.74	18.49
★ 08-00527-00760		16	1.1	B	1.5	1.45	12°	4	50	4,700	16.77	17.49	18.27	19.14	21.15
★ 08-00527-00761		18	1.1	B	1.5	1.45	12°	4	55	4,700	18.86	19.67	20.55	21.53	23.80
★ 08-00527-00762		20	1.1	B	1.5	1.45	12°	4	55	4,700	20.94	21.85	22.84	23.92	Free
★ 08-00527-00763		22	1.1	B	1.5	1.45	12°	4	60	4,700	23.03	24.02	25.12	26.32	Free
◆★ 08-00527-00766		25	1.1	B	1.5	1.45	12°	4	65	4,700	26.16	27.29	28.54	29.91	Free
★ 08-00527-00764		30	1.1	B	1.5	1.45	12°	4	70	4,700	31.37	32.74	34.24	35.89	Free
◆★ 08-00527-00800	R0.8	2	1.2	B	1.6	1.55	12°	4	45	5,500	2.17	2.23	2.30	2.37	2.55
◆★ 08-00527-00801		4	1.2	B	1.6	1.55	12°	4	45	5,500	4.25	4.41	4.58	4.77	5.21
◆★ 08-00527-00802		6	1.2	B	1.6	1.55	12°	4	45	5,500	6.34	6.59	6.86	7.16	7.86
★ 08-00527-00803		8	1.2	B	1.6	1.55	12°	4	45	5,500	8.43	8.77	9.14	9.55	10.51
★ 08-00527-00805		12	1.2	B	1.6	1.55	12°	4	45	5,500	12.60	13.13	13.70	14.34	15.82
★ 08-00527-00807		16	1.2	B	1.6	1.55	12°	4	50	5,500	16.77	17.48	18.27	19.13	21.13
★ 08-00527-00809		20	1.2	B	1.6	1.55	12°	4	55	5,500	20.94	21.84	22.83	23.91	Free
◆★ 08-00527-00901	R0.9	3	1.3	B	1.8	1.74	12°	4	45	5,000	3.23	3.34	3.45	3.58	3.88
◆★ 08-00527-00902		4	1.3	B	1.8	1.74	12°	4	45	5,000	4.28	4.43	4.59	4.78	5.20
◆★ 08-00527-00903		6	1.3	B	1.8	1.74	12°	4	45	5,000	6.36	6.61	6.87	7.17	7.86
◆★ 08-00527-00904		8	1.3	B	1.8	1.74	12°	4	45	5,000	8.45	8.78	9.16	9.56	10.51
◆★ 08-00527-00905		10	1.3	B	1.8	1.74	12°	4	45	5,000	10.53	10.96	11.44	11.96	13.17
◆★ 08-00527-00906		12	1.3	B	1.8	1.74	12°	4	45	5,000	12.62	13.14	13.72	14.35	15.82
◆★ 08-00527-00907		16	1.3	B	1.8	1.74	12°	4	50	5,000	16.79	17.50	18.28	19.14	21.13
◆★ 08-00527-00908		18	1.3	B	1.8	1.74	12°	4	55	5,000	18.87	19.68	20.56	21.53	Free
◆★ 08-00527-00909		20	1.3	B	1.8	1.74	12°	4	55	5,000	20.96	21.86	22.84	23.92	Free
◆★ 08-00527-00910		22	1.3	B	1.8	1.74	12°	4	60	5,500	23.05	24.04	25.12	26.31	Free
◆★ 08-00527-00911		25	1.3	B	1.8	1.74	12°	4	65	6,300	26.17	27.31	28.54	29.90	Free
◆★ 08-00527-00912		30	1.3	B	1.8	1.74	12°	4	70	6,800	31.39	32.75	34.25	Free	Free
◆★ 08-00527-01000	R1	2	1.5	B	2	1.94	12°	4	45	3,400	2.19	2.24	2.30	2.36	2.52
★ 08-00527-01001		3	1.5	B	2	1.94	12°	4	45	3,400	3.23	3.33	3.44	3.56	3.85
◆★ 08-00528-01001		3	1.5	B	2	1.94	12°	6	50	5,600	3.23	3.33	3.44	3.56	3.85
★ 08-00527-01002		4	1.5	B	2	1.94	12°	4	45	3,400	4.27	4.42	4.58	4.76	5.17
★ 08-00528-01002		4	1.5	B	2	1.94	12°	6	50	5,600	4.27	4.42	4.58	4.76	5.17
★ 08-00527-01004		6	1.5	B	2	1.94	12°	4	45	3,800	6.36	6.60	6.86	7.15	7.83
★ 08-00528-01004		6	1.5	B	2	1.94	12°	6	50	6,100	6.36	6.60	6.86	7.15	7.83
★ 08-00527-01006		8	1.5	B	2	1.94	12°	4	45	4,100	8.44	8.78	9.14	9.54	10.48
★ 08-00528-01006		8	1.5	B	2	1.94	12°	6	50	6,500	8.44	8.78	9.14	9.54	10.48
★ 08-00527-01008		10	1.5	B	2	1.94	12°	4	45	4,100	10.53	10.95	11.42	11.94	13.14
★ 08-00528-01008		10	1.5	B	2	1.94	12°	6	50	6,500	10.53	10.95	11.42	11.94	13.14
★ 08-00527-01010		12	1.5	B	2	1.94	12°	4	45	4,100	12.61	13.13	13.70	14.33	15.79
◆★ 08-00528-01010		12	1.5	B	2	1.94	12°	6	50	6,500	12.61	13.13	13.70	14.33	15.79

P 调质钢 Prehardened Steel ◎
H ~52 高硬度钢 HRC Hardened Steel ◎
H ~60 高硬度钢 HRC Hardened Steel ◎
H ~65 高硬度钢 HRC Hardened Steel ○
M 不锈钢 Stainless Steel ○
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy ○

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

MRBH230

无限白金涂层 高硬度钢材用2刃长颈球头铣刀
MUGEN COATING PREMIUM 2-Flute Long Neck Ball End Mill for Hardened Steel

◆ 新增加规格
★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
★ 08-00527-01020	R1	13	1.5	B	2	1.94	12°	4	45	4,100	13.66	14.22	14.84	15.53	17.12
★ 08-00527-01011		14	1.5	B	2	1.94	12°	4	50	4,100	14.70	15.31	15.98	16.72	18.45
◆★ 08-00528-01011		14	1.5	B	2	1.94	12°	6	50	6,500	14.70	15.31	15.98	16.72	18.45
★ 08-00527-01012		16	1.5	B	2	1.94	12°	4	50	4,100	16.78	17.49	18.27	19.12	Free
★ 08-00528-01012		16	1.5	B	2	1.94	12°	6	60	6,500	16.78	17.49	18.27	19.12	21.10
★ 08-00527-01013		18	1.5	B	2	1.94	12°	4	55	4,100	18.87	19.67	20.55	21.51	Free
◆★ 08-00528-01013		18	1.5	B	2	1.94	12°	6	60	6,900	18.87	19.67	20.55	21.51	23.75
★ 08-00527-01014		20	1.5	B	2	1.94	12°	4	55	4,100	20.96	21.85	22.83	23.90	Free
◆★ 08-00528-01014		20	1.5	B	2	1.94	12°	6	60	6,900	20.96	21.85	22.83	23.90	26.41
★ 08-00527-01015		22	1.5	B	2	1.94	12°	4	60	5,600	23.04	24.03	25.11	26.30	Free
★ 08-00527-01016		25	1.5	B	2	1.94	12°	4	65	5,700	26.17	27.30	28.53	Free	Free
★ 08-00528-01016		25	1.5	B	2	1.94	12°	6	65	6,100	26.17	27.30	28.53	29.89	33.04
◆★ 08-00527-01021		27	1.5	B	2	1.94	12°	4	70	6,100	28.26	29.48	30.81	Free	Free
★ 08-00527-01017		30	1.5	B	2	1.94	12°	4	70	6,400	31.38	32.74	34.23	Free	Free
◆★ 08-00528-01017		30	1.5	B	2	1.94	12°	6	70	7,900	31.38	32.74	34.23	35.87	Free
◆★ 08-00527-01022		32	1.5	B	2	1.94	12°	4	70	7,900	33.47	34.92	36.51	Free	Free
★ 08-00527-01018		35	1.5	B	2	1.94	12°	4	70	8,700	36.60	38.19	Free	Free	Free
◆★ 08-00528-01018		35	1.5	B	2	1.94	12°	6	80	10,300	36.60	38.19	39.93	41.85	Free
★ 08-00527-01019		40	1.5	B	2	1.94	12°	4	90	8,700	41.81	43.64	Free	Free	Free
◆★ 08-00528-01019		40	1.5	B	2	1.94	12°	6	90	10,300	41.81	43.64	45.64	47.83	Free
◆★ 08-00527-01258	R1.25	4	2.3	B	2.5	2.4	12°	4	45	5,000	4.36	4.50	4.65	4.82	5.22
★ 08-00527-01250		6	2.3	B	2.5	2.4	12°	4	45	5,000	6.44	6.68	6.93	7.21	7.87
★ 08-00527-01251		8	2.3	B	2.5	2.4	12°	4	45	4,400	8.53	8.86	9.21	9.61	10.53
★ 08-00527-01252		10	2.3	B	2.5	2.4	12°	4	45	5,400	10.62	11.04	11.49	12.00	13.18
★ 08-00527-01253		15	2.3	B	2.5	2.4	12°	4	50	5,500	15.83	16.48	17.20	17.98	Free
★ 08-00527-01254		20	2.3	B	2.5	2.4	12°	4	55	6,400	21.04	21.93	22.90	Free	Free
★ 08-00527-01255		25	2.3	B	2.5	2.4	12°	4	65	6,800	26.26	27.38	28.60	Free	Free
★ 08-00527-01256		30	2.3	B	2.5	2.4	12°	4	70	7,900	31.47	32.82	Free	Free	Free
★ 08-00527-01257		35	2.3	B	2.5	2.4	12°	4	70	9,800	36.69	38.27	Free	Free	Free
★ 08-00527-01501	R1.5	6	2.5	B	3	2.85	12°	6	60	4,300	6.56	6.78	7.03	7.31	7.95
★ 08-00527-01502		8	2.5	B	3	2.85	12°	6	60	4,300	8.64	8.96	9.31	9.70	10.60
★ 08-00527-01503		10	2.5	B	3	2.85	12°	6	60	5,000	10.73	11.14	11.59	12.09	13.26
★ 08-00527-01504		12	2.5	B	3	2.85	12°	6	60	5,200	12.81	13.32	13.88	14.49	15.91
★ 08-00527-01505		14	2.5	B	3	2.85	12°	6	60	5,700	14.90	15.50	16.16	16.88	18.57
★ 08-00527-01506		16	2.5	B	3	2.85	12°	6	60	5,700	16.98	17.68	18.44	19.27	21.22
◆★ 08-00527-01507		18	2.5	B	3	2.85	12°	6	60	5,700	19.07	19.86	20.72	21.67	23.88
★ 08-00527-01508		20	2.5	B	3	2.85	12°	6	65	5,500	21.16	22.04	23.00	24.06	26.53
◆★ 08-00527-01513		22	2.5	B	3	2.85	12°	6	65	5,500	23.24	24.21	25.28	26.45	29.18
★ 08-00527-01509		25	2.5	B	3	2.85	12°	6	65	5,500	26.37	27.48	28.70	30.04	Free
◆★ 08-00527-01514		27	2.5	B	3	2.85	12°	6	70	6,300	28.46	29.66	30.98	32.44	Free
★ 08-00527-01510		30	2.5	B	3	2.85	12°	6	70	6,300	31.58	32.93	34.40	36.03	Free
★ 08-00527-01511		35	2.5	B	3	2.85	12°	6	80	7,900	36.80	38.38	40.11	42.01	Free
★ 08-00527-01512		40	2.5	B	3	2.85	12°	6	90	9,900	42.01	43.83	45.81	Free	Free
◆★ 08-00527-01757	R1.75	5	2.8	B	3.5	3.35	12°	6	60	7,300	5.50	5.67	5.86	6.06	6.54
◆★ 08-00527-01758		10	2.8	B	3.5	3.35	12°	6	60	7,300	10.72	11.12	11.56	12.05	13.18
★ 08-00527-01750		15	2.8	B	3.5	3.35	12°	6	60	7,300	15.93	16.57	17.26	18.03	19.81
★ 08-00527-01754		20	2.8	B	3.5	3.35	12°	6	65	7,300	21.14	22.01	22.96	24.01	Free

订购方法 How to Order

请指定MRBH230 球头半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MRBH230 (R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
★ 08-00527-01751	R1.75	25	2.8	B	3.5	3.35	12°	6	65	7,700	26.36	27.46	28.67	29.99	Free
★ 08-00527-01755		30	2.8	B	3.5	3.35	12°	6	70	7,700	31.57	32.91	34.37	35.98	Free
★ 08-00527-01752		35	2.8	B	3.5	3.35	12°	6	80	9,900	36.79	38.36	40.07	Free	Free
★ 08-00527-01756		40	2.8	B	3.5	3.35	12°	6	90	9,900	42.00	43.80	45.77	Free	Free
★ 08-00527-01753		45	2.8	B	3.5	3.35	12°	6	90	12,100	47.22	49.25	Free	Free	Free
◆★ 08-00527-02015	R2	6	3	B	4	3.8	–	4	65	4,000	Free	Free	Free	Free	Free
◆★ 08-00527-02016		6	3	B	4	3.8	12°	6	65	4,400	6.66	6.87	7.10	7.35	7.95
★ 08-00527-02000		8	3	B	4	3.8	–	4	65	4,000	Free	Free	Free	Free	Free
★ 08-00527-02001		8	3	B	4	3.8	12°	6	65	4,400	8.74	9.05	9.38	9.74	10.60
◆★ 08-00527-02017		10	3	B	4	3.8	–	4	65	4,400	Free	Free	Free	Free	Free
★ 08-00527-02002		10	3	B	4	3.8	12°	6	65	4,400	10.83	11.22	11.66	12.14	13.25
★ 08-00527-02003		12	3	B	4	3.8	12°	6	65	5,700	12.91	13.40	13.94	14.53	15.91
★ 08-00527-02101		14	3	B	4	3.8	12°	6	65	5,700	15.00	15.58	16.22	16.92	18.56
★ 08-00527-02004		15	3	B	4	3.8	12°	6	65	5,700	16.04	16.67	17.36	18.12	19.89
◆★ 08-00527-02005		16	3	B	4	3.8	12°	6	65	5,700	17.09	17.76	18.50	19.32	Free
◆★ 08-00527-02018		18	3	B	4	3.8	12°	6	65	5,700	19.17	19.94	20.78	21.71	Free
★ 08-00527-02006		20	3	B	4	3.8	12°	6	65	5,700	21.26	22.12	23.06	24.10	Free
◆★ 08-00527-02007		22	3	B	4	3.8	12°	6	70	5,700	23.34	24.30	25.35	26.50	Free
★ 08-00527-02008		25	3	B	4	3.8	12°	6	70	5,700	26.47	27.57	28.77	30.09	Free
◆★ 08-00527-02009		27	3	B	4	3.8	12°	6	70	5,700	28.56	29.75	31.05	Free	Free
★ 08-00527-02010		30	3	B	4	3.8	12°	6	70	5,700	31.68	33.01	34.47	Free	Free
★ 08-00527-02011		35	3	B	4	3.8	12°	6	80	6,600	36.90	38.46	Free	Free	Free
★ 08-00527-02012		40	3	B	4	3.8	12°	6	85	7,400	42.11	43.91	Free	Free	Free
★ 08-00527-02013		45	3	B	4	3.8	12°	6	90	9,600	47.33	49.36	Free	Free	Free
★ 08-00527-02014		50	3	B	4	3.8	12°	6	100	10,500	52.54	54.80	Free	Free	Free
★ 08-00527-02500	R2.5	10	3.5	B	5	4.8	12°	6	70	6,700	10.81	11.18	11.59	12.04	Free
★ 08-00527-02501		15	3.5	B	5	4.8	12°	6	70	9,500	16.02	16.63	17.29	Free	Free
★ 08-00527-02502		20	3.5	B	5	4.8	12°	6	70	9,600	21.24	22.08	Free	Free	Free
★ 08-00527-02503		25	3.5	B	5	4.8	12°	6	70	9,600	26.45	27.52	Free	Free	Free
★ 08-00527-02504		30	3.5	B	5	4.8	12°	6	80	10,200	31.66	Free	Free	Free	Free
◆★ 08-00527-02505		35	3.5	B	5	4.8	12°	6	80	11,000	36.88	Free	Free	Free	Free
★ 08-00527-02506		40	3.5	B	5	4.8	12°	6	90	12,800	42.09	Free	Free	Free	Free
◆★ 08-00527-02507		45	3.5	B	5	4.8	12°	6	100	13,500	47.31	Free	Free	Free	Free
◆★ 08-00527-02508		50	3.5	B	5	4.8	12°	6	100	14,000	52.52	Free	Free	Free	Free
◆★ 08-00527-03009	R3	8	6	B	6	5.7	–	6	70	7,200	Free	Free	Free	Free	Free
★ 08-00527-03000		10	6	B	6	5.7	–	6	70	7,200	Free	Free	Free	Free	Free
◆★ 08-00527-03010		12	6	B	6	5.7	–	6	70	7,200	Free	Free	Free	Free	Free
★ 08-00527-03001		15	6	B	6	5.7	–	6	70	7,200	Free	Free	Free	Free	Free
◆★ 08-00527-03011		18	6	B	6	5.7	–	6	70	7,200	Free	Free	Free	Free	Free
★ 08-00527-03002		20	6	B	6	5.7	–	6	70	7,200	Free	Free	Free	Free	Free
★ 08-00527-03003		25	6	B	6	5.7	–	6	70	7,200	Free	Free	Free	Free	Free
★ 08-00527-03004		30	6	B	6	5.7	–	6	80	7,400	Free	Free	Free	Free	Free
★ 08-00527-03007		35	6	B	6	5.7	–	6	85	7,400	Free	Free	Free	Free	Free
★ 08-00527-03005		40	6	B	6	5.7	–	6	90	8,000	Free	Free	Free	Free	Free
★ 08-00527-03006		50	6	B	6	5.7	–	6	120	8,700	Free	Free	Free	Free	Free
★ 08-00527-03008		60	6	B	6	5.7	–	6	120	9,400	Free	Free	Free	Free	Free

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切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX・HPM38(～52HRC)				高硬度钢 Hardened Steels SKD11(～62HRC)				高速钢 High Speed Steels SKH(～65HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}
0.05	0.2	2.0	0.003	0.005	120	40,000	0.002	0.005	100	40,000	0.002	0.003	70	40,000
	0.25	2.5	0.003	0.005	110	40,000	0.002	0.005	80	40,000	0.002	0.003	50	40,000
	0.3	3.0	0.003	0.005	100	40,000	0.002	0.005	70	40,000	0.002	0.003	50	40,000
	0.35	3.5	0.002	0.005	100	40,000	0.001	0.005	70	40,000	0.001	0.003	50	40,000
	0.4	4.0	0.002	0.005	90	40,000	0.001	0.005	70	40,000	0.001	0.003	50	40,000
	0.45	4.5	0.002	0.003	80	40,000	0.001	0.003	60	40,000	0.001	0.002	40	40,000
	0.5	5.0	0.002	0.003	70	40,000	0.001	0.003	50	40,000	0.001	0.002	30	40,000
0.075	0.25	1.7	0.003	0.005	200	40,000	0.002	0.005	160	40,000	0.002	0.003	120	40,000
	0.3	2.0	0.003	0.005	180	40,000	0.002	0.005	150	40,000	0.002	0.003	100	40,000
	0.35	2.3	0.003	0.005	180	40,000	0.002	0.005	150	40,000	0.002	0.003	100	40,000
	0.4	2.6	0.003	0.005	150	40,000	0.002	0.005	120	40,000	0.002	0.003	70	40,000
	0.45	3.0	0.003	0.005	150	40,000	0.002	0.005	120	40,000	0.002	0.003	70	40,000
	0.5	3.3	0.003	0.005	150	40,000	0.002	0.005	120	40,000	0.002	0.003	70	40,000
	0.6	4.0	0.002	0.003	120	40,000	0.001	0.003	100	40,000	0.001	0.002	50	40,000
	0.75	5.0	0.002	0.003	100	40,000	0.001	0.003	80	40,000	0.001	0.002	40	40,000
	1	6.7	0.002	0.003	70	40,000	0.001	0.003	50	40,000	0.001	0.002	30	40,000
0.1	0.3	1.5	0.01	0.01	350	40,000	0.006	0.005	300	40,000	0.003	0.003	200	40,000
	0.4	2.0	0.008	0.01	330	40,000	0.005	0.005	290	40,000	0.003	0.003	200	40,000
	0.5	2.5	0.008	0.01	320	40,000	0.005	0.005	280	40,000	0.003	0.003	180	40,000
	0.6	3.0	0.005	0.01	300	40,000	0.003	0.005	250	40,000	0.002	0.003	160	40,000
	0.75	3.8	0.005	0.01	280	40,000	0.003	0.005	200	40,000	0.002	0.003	150	40,000
	0.85	4.3	0.003	0.005	260	40,000	0.002	0.005	180	40,000	0.001	0.003	130	40,000
	1	5.0	0.003	0.005	250	40,000	0.002	0.003	160	40,000	0.001	0.002	120	40,000
	1.25	6.3	0.003	0.005	180	40,000	0.002	0.003	140	40,000	0.001	0.002	100	40,000
	1.5	7.5	0.003	0.005	150	40,000	0.002	0.003	120	40,000	0.001	0.002	80	40,000
	1.75	8.8	0.002	0.003	120	40,000	0.001	0.002	100	40,000	0.001	0.002	60	40,000
	2	10.0	0.002	0.003	100	40,000	0.001	0.002	80	40,000	0.001	0.001	50	40,000
	2.25	11.3	0.001	0.002	80	40,000	0.001	0.001	70	40,000	0.001	0.001	45	40,000
	2.5	12.5	0.001	0.002	70	40,000	0.001	0.001	60	40,000	0.001	0.001	40	40,000
	2.75	13.8	0.001	0.001	60	40,000	0.001	0.001	50	40,000	0.001	0.001	35	40,000
	3	15.0	0.001	0.001	50	40,000	0.001	0.001	40	40,000	0.001	0.001	30	40,000
0.15	–	–	0.01	0.015	450	40,000	0.007	0.01	380	40,000	0.003	0.005	320	40,000
	0.5	1.6	0.01	0.015	350	40,000	0.007	0.01	300	40,000	0.003	0.005	280	40,000
	0.6	2.0	0.007	0.01	350	40,000	0.005	0.007	300	40,000	0.003	0.005	250	40,000
	0.75	2.5	0.007	0.01	330	40,000	0.005	0.007	280	40,000	0.003	0.005	230	40,000
	1	3.3	0.007	0.01	320	40,000	0.005	0.007	250	40,000	0.003	0.005	200	40,000
	1.25	4.2	0.005	0.007	280	40,000	0.003	0.005	200	40,000	0.002	0.003	160	40,000
	1.5	5.0	0.005	0.007	230	40,000	0.003	0.005	180	40,000	0.002	0.003	120	40,000
	1.75	5.8	0.003	0.005	180	40,000	0.002	0.003	150	40,000	0.002	0.002	100	40,000
	2	6.6	0.003	0.005	150	40,000	0.002	0.003	120	40,000	0.002	0.002	90	40,000
	2.25	7.5	0.002	0.003	120	40,000	0.001	0.002	100	40,000	0.001	0.001	80	40,000
	2.5	8.3	0.002	0.003	100	40,000	0.001	0.002	80	40,000	0.001	0.001	70	40,000
	3	10.0	0.001	0.003	80	40,000	0.001	0.002	70	40,000	0.001	0.001	60	40,000
	3.5	11.7	0.001	0.002	70	40,000	0.001	0.001	60	40,000	0.001	0.001	50	40,000
	4	13.3	0.001	0.002	60	40,000	0.001	0.001	50	40,000	0.001	0.001	40	40,000
	4.5	15.0	0.001	0.001	50	40,000	0.001	0.001	40	40,000	0.001	0.001	30	40,000
0.2	–	–	0.03	0.05	800	40,000	0.03	0.03	720	40,000	0.009	0.02	580	40,000
	0.5	1.3	0.03	0.05	800	40,000	0.03	0.03	720	40,000	0.009	0.02	580	40,000
	0.65	1.6	0.025	0.05	800	40,000	0.025	0.03	720	40,000	0.009	0.02	580	40,000
	0.8	2.0	0.02	0.05	800	40,000	0.02	0.03	720	40,000	0.008	0.02	580	40,000
	1	2.5	0.02	0.05	800	40,000	0.02	0.03	720	40,000	0.008	0.02	580	40,000
	1.25	3.1	0.015	0.04	700	40,000	0.015	0.02	620	40,000	0.006	0.02	470	40,000
	1.5	3.8	0.01	0.03	620	40,000	0.01	0.02	500	40,000	0.005	0.01	400	40,000
	1.75	4.4	0.01	0.025	580	40,000	0.01	0.02	450	40,000	0.005	0.01	340	40,000
	2	5.0	0.01	0.02	500	40,000	0.01	0.01	380	40,000	0.005	0.007	300	40,000

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX・HPM38(～52HRC)				高硬度钢 Hardened Steels SKD11(～62HRC)				高速钢 High Speed Steels SKH(～65HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}
0.2	2.25	5.6	0.01	0.015	460	40,000	0.005	0.01	330	40,000	0.003	0.005	280	40,000
	2.5	6.3	0.007	0.01	420	40,000	0.005	0.007	300	40,000	0.003	0.005	260	40,000
	2.75	6.9	0.007	0.01	350	40,000	0.005	0.007	280	40,000	0.003	0.005	220	40,000
	3	7.5	0.007	0.01	300	40,000	0.005	0.007	240	40,000	0.003	0.005	200	40,000
	3.5	8.8	0.005	0.007	230	40,000	0.003	0.005	160	40,000	0.002	0.003	120	40,000
	4	10.0	0.005	0.005	160	30,000	0.003	0.003	120	30,000	0.002	0.003	90	30,000
	4.5	11.3	0.003	0.005	100	30,000	0.002	0.003	80	30,000	0.001	0.002	60	30,000
	5	12.5	0.002	0.003	70	30,000	0.001	0.002	50	30,000	0.001	0.002	40	30,000
	5.5	13.8	0.001	0.002	60	30,000	0.001	0.002	40	30,000	0.001	0.001	40	30,000
	6	15.0	0.001	0.002	50	30,000	0.001	0.001	40	30,000	0.001	0.001	30	30,000
0.25	–	–	0.04	0.07	1,000	40,000	0.03	0.05	860	40,000	0.015	0.03	650	40,000
	0.5	1.0	0.04	0.07	1,000	40,000	0.03	0.04	860	40,000	0.015	0.03	650	40,000
	0.75	1.5	0.03	0.06	1,000	40,000	0.025	0.03	860	40,000	0.012	0.02	650	40,000
	1	2.0	0.03	0.05	1,000	40,000	0.02	0.03	860	40,000	0.01	0.02	650	40,000
	1.25	2.5	0.025	0.05	920	40,000	0.02	0.03	780	40,000	0.01	0.02	580	40,000
	1.5	3.0	0.02	0.05	850	40,000	0.01	0.03	720	40,000	0.007	0.02	520	40,000
	1.75	3.5	0.02	0.04	800	40,000	0.01	0.03	680	40,000	0.007	0.02	480	40,000
	2	4.0	0.02	0.03	720	40,000	0.01	0.02	650	40,000	0.007	0.01	400	40,000
	2.25	4.5	0.015	0.03	650	40,000	0.007	0.02	580	40,000	0.005	0.01	380	40,000
	2.5	5.0	0.01	0.02	600	40,000	0.007	0.01	530	40,000	0.005	0.007	360	40,000
	3	6.0	0.01	0.02	500	40,000	0.007	0.01	420	40,000	0.005	0.007	320	40,000
	3.5	7.0	0.007	0.01	420	40,000	0.005	0.007	360	40,000	0.003	0.005	280	40,000
	4	8.0	0.007	0.01	350	40,000	0.005	0.007	300	40,000	0.003	0.005	260	40,000
	4.5	9.0	0.005	0.005	300	40,000	0.003	0.003	260	40,000	0.002	0.003	220	40,000
	5	10.0	0.005	0.005	240	33,000	0.003	0.003	200	33,000	0.002	0.003	180	33,000
	5.5	11.0	0.003	0.005	200	30,000	0.002	0.003	160	30,000	0.001	0.002	120	30,000
	6	12.0	0.002	0.003	120	30,000	0.001	0.002	80	30,000	0.001	0.002	70	30,000
	7	14.0	0.002	0.002	90	30,000	0.001	0.002	70	30,000	0.001	0.002	60	30,000
	8	16.0	0.002	0.002	75	30,000	0.001	0.002	60	30,000	0.001	0.002	50	30,000
	9	18.0	0.001	0.002	60	25,000	0.001	0.002	50	25,000	0.001	0.001	35	22,000
	10	20.0	0.001	0.002	40	20,000	0.001	0.002	30	20,000	0.001	0.001	20	20,000
0.3	–	–	0.05	0.1	1,400	40,000	0.03	0.08	1,000	40,000	0.02	0.05	720	35,000
	0.6	1.0	0.05	0.1	1,400	40,000	0.03	0.08	1,000	40,000	0.02	0.05	720	35,000
	0.8	1.3	0.05	0.1	1,400	40,000	0.03	0.08	1,000	40,000	0.02	0.05	720	35,000
	1	1.7	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000
	1.25	2.1	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000
	1.5	2.5	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000
	1.75	2.9	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000
	2	3.3	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000
	2.25	3.8	0.03	0.05	1,400	40,000	0.02	0.04	900	40,000	0.02	0.03	670	30,000
	2.5	4.2	0.03	0.05	1,200	40,000	0.02	0.04	840	40,000	0.02	0.03	640	30,000
	2.75	4.6	0.03	0.05	1,200	40,000	0.02	0.04	840	40,000	0.02	0.03	640	30,000
	3	5.0	0.03	0.05	1,200	40,000	0.02	0.04	840	40,000	0.02	0.03	640	30,000
	3.5	5.8	0.02	0.03	1,000	40,000	0.01	0.03	620	40,000	0.01	0.02	480	30,000
	4	6.7	0.02	0.03	1,000	40,000	0.01	0.03	620	40,000	0.01	0.02	480	30,000
	4.5	7.5	0.02	0.03	900	35,000	0.01	0.02	580	35,000	0.008	0.015	430	30,000
	5	8.3	0.01	0.02	720	30,000	0.007	0.015	500	30,000	0.007	0.01	400	30,000
	5.5	9.2	0.01	0.015	700	30,000	0.007	0.01	450	30,000	0.005	0.008	360	30,000
	6	10.0	0.007	0.01	500	30,000	0.005	0.007	380	30,000	0.004	0.006	320	30,000
	6.5	10.8	0.006	0.007	460	30,000	0.004	0.005	350	30,000	0.003	0.005	290	26,000
	7	11.7	0.005	0.007	400	25,000	0.003	0.005	300	25,000	0.003	0.003	260	20,000
	7.5	12.5	0.004	0.006	360	25,000	0.003	0.004	280	25,000	0.002	0.003	240	20,000
	8	13.3	0.003	0.005	320	25,000	0.003	0.003	260	25,000	0.002	0.003	220	20,000
	9	15.0	0.003	0.003	280	25,000	0.003	0.002	220	25,000	0.001	0.002	160	20,000
	10	16.6	0.002	0.003	150	20,000	0.002	0.002	120	20,000	0.001	0.002	100	18,000
	12	20.0	0.002	0.002	80	20,000	0.002	0.002	60	20,000	0.001	0.002	50	18,000

长颈 Long Neck
球头 Ball
涂层 Coating
调质钢 Prehardened Steel P
高硬度钢～52 Hardened Steel HRC H
高硬度钢～60 Hardened Steel HRC H
高硬度钢～65 Hardened Steel HRC H
不锈钢 Stainless Steel M
钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy S
常规系列 无限白金涂层 长颈造型 Regular Line MUGEN PREMIUM Long Neck Type

MRBH230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX・HPM38(～52HRC)				高硬度钢 Hardened Steels SKD11(～62HRC)				高速钢 High Speed Steels SKH(～65HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}
0.35	–	–	0.07	0.1	1,600	40,000	0.05	0.08	1,300	40,000	0.03	0.07	1,000	35,000
	1	1.4	0.07	0.1	1,600	40,000	0.05	0.08	1,300	40,000	0.03	0.07	1,000	35,000
	2	2.9	0.07	0.1	1,600	40,000	0.05	0.08	1,300	40,000	0.03	0.07	1,000	30,000
	4	5.7	0.04	0.06	1,300	40,000	0.03	0.04	820	40,000	0.015	0.02	600	30,000
	6	8.6	0.01	0.03	800	30,000	0.01	0.015	500	30,000	0.006	0.01	420	25,000
	8	11.4	0.006	0.01	520	25,000	0.005	0.006	380	20,000	0.004	0.006	250	20,000
0.4	–	–	0.1	0.15	2,000	40,000	0.08	0.12	1,600	40,000	0.06	0.1	1,200	35,000
	1	1.3	0.1	0.15	2,000	40,000	0.08	0.12	1,600	40,000	0.06	0.1	1,200	35,000
	1.5	1.9	0.1	0.15	2,000	40,000	0.08	0.12	1,600	40,000	0.06	0.1	1,200	35,000
	2	2.5	0.1	0.15	2,000	40,000	0.07	0.1	1,600	40,000	0.05	0.1	1,200	30,000
	2.5	3.1	0.1	0.15	2,000	40,000	0.07	0.1	1,600	40,000	0.05	0.08	1,200	30,000
	3	3.8	0.1	0.15	2,000	40,000	0.07	0.1	1,600	40,000	0.05	0.05	1,200	30,000
	3.5	4.4	0.08	0.12	2,000	40,000	0.06	0.08	1,600	40,000	0.04	0.05	1,200	30,000
	4	5.0	0.05	0.1	1,600	40,000	0.05	0.05	1,200	40,000	0.03	0.05	860	30,000
	4.5	5.6	0.05	0.08	1,600	40,000	0.04	0.05	1,200	40,000	0.02	0.04	860	30,000
	5	6.3	0.05	0.05	1,600	40,000	0.03	0.05	1,000	40,000	0.02	0.03	620	30,000
	6	7.5	0.03	0.05	1,200	30,000	0.02	0.03	760	30,000	0.01	0.02	560	25,000
	7	8.8	0.02	0.03	1,000	30,000	0.01	0.02	680	30,000	0.007	0.01	520	25,000
	8	10.0	0.01	0.02	820	30,000	0.007	0.01	600	30,000	0.005	0.01	480	25,000
	9	11.3	0.008	0.01	700	30,000	0.005	0.005	550	30,000	0.003	0.005	420	25,000
	10	12.5	0.005	0.005	450	25,000	0.003	0.003	380	25,000	0.002	0.003	320	20,000
	12	15.0	0.003	0.005	320	20,000	0.002	0.003	260	20,000	0.002	0.002	200	20,000
	16	20.0	0.002	0.003	250	18,000	0.002	0.002	200	18,000	0.001	0.002	140	16,000
0.45	–	–	0.1	0.2	2,200	40,000	0.08	0.15	1,800	32,000	0.06	0.1	1,300	30,000
	1	1.1	0.1	0.2	2,200	40,000	0.08	0.15	1,800	32,000	0.06	0.1	1,300	30,000
	2	2.2	0.1	0.2	2,200	40,000	0.08	0.15	1,800	30,000	0.06	0.1	1,300	30,000
	4	4.4	0.05	0.12	1,800	40,000	0.04	0.08	1,400	30,000	0.03	0.05	900	25,000
	6	6.7	0.035	0.05	1,200	30,000	0.025	0.035	800	25,000	0.015	0.025	600	20,000
	8	8.9	0.025	0.04	1,000	30,000	0.015	0.025	700	23,000	0.008	0.015	500	20,000
0.5	–	–	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.12	1,400	25,000
	1	1.0	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.12	1,400	25,000
	1.5	1.5	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.12	1,400	25,000
	2	2.0	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000
	2.5	2.5	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000
	3	3.0	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000
	3.5	3.5	0.1	0.25	2,500	40,000	0.07	0.15	1,800	30,000	0.06	0.1	1,300	25,000
	4	4.0	0.1	0.2	2,500	40,000	0.05	0.15	1,800	30,000	0.05	0.1	1,200	25,000
	4.5	4.5	0.08	0.2	2,000	30,000	0.05	0.1	1,600	25,000	0.04	0.07	950	20,000
	5	5.0	0.05	0.15	2,000	30,000	0.04	0.1	1,600	25,000	0.03	0.05	920	20,000
	6	6.0	0.05	0.1	1,800	30,000	0.04	0.05	1,200	25,000	0.02	0.05	740	20,000
	7	7.0	0.04	0.06	1,200	30,000	0.03	0.04	950	25,000	0.02	0.03	680	20,000
	8	8.0	0.04	0.06	1,000	30,000	0.03	0.04	860	25,000	0.02	0.03	560	20,000
	9	9.0	0.03	0.05	820	25,000	0.02	0.03	750	20,000	0.01	0.02	500	18,000
	10	10.0	0.03	0.05	750	25,000	0.02	0.03	620	20,000	0.01	0.02	450	18,000
	12	12.0	0.01	0.03	600	20,000	0.007	0.02	520	18,000	0.005	0.01	400	16,000
	13	13.0	0.008	0.02	500	20,000	0.005	0.01	420	18,000	0.003	0.006	350	16,000
	14	14.0	0.005	0.01	420	20,000	0.003	0.007	360	18,000	0.002	0.005	320	16,000
	16	16.0	0.005	0.005	300	18,000	0.003	0.005	250	16,000	0.002	0.003	200	14,000
	18	18.0	0.003	0.005	180	18,000	0.002	0.005	120	16,000	0.002	0.002	85	14,000
	20	20.0	0.003	0.003	100	16,000	0.002	0.003	75	14,000	0.002	0.002	60	12,000
	22	22.0	0.002	0.003	50	14,000	0.002	0.002	40	12,000	0.001	0.002	35	10,000

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX・HPM38(～52HRC)				高硬度钢 Hardened Steels SKD11(～62HRC)				高速钢 High Speed Steels SKH(～65HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}
0.6	1.2	1.0	0.1	0.3	2,500	30,000	0.1	0.2	2,000	30,000	0.05	0.1	1,600	25,000
	2.4	2.0	0.1	0.3	2,500	30,000	0.1	0.2	2,000	30,000	0.05	0.1	1,600	25,000
	4	3.3	0.1	0.2	2,500	30,000	0.07	0.2	2,000	30,000	0.05	0.1	1,600	25,000
	6	5.0	0.07	0.1	2,000	30,000	0.05	0.1	1,600	25,000	0.03	0.07	1,200	20,000
	8	6.7	0.05	0.1	1,600	30,000	0.03	0.07	1,200	25,000	0.02	0.05	920	20,000
	10	8.3	0.03	0.07	1,200	20,000	0.02	0.05	860	20,000	0.01	0.03	680	18,000
	12	10.0	0.02	0.05	860	20,000	0.01	0.03	620	20,000	0.007	0.02	480	18,000
	14	11.7	0.02	0.03	600	18,000	0.01	0.02	400	18,000	0.005	0.01	300	16,000
	16	13.3	0.01	0.02	350	16,000	0.005	0.01	250	16,000	0.003	0.007	130	14,000
0.7	2	1.4	0.12	0.3	2,500	30,000	0.1	0.25	2,200	30,000	0.08	0.15	1,800	25,000
	4	2.9	0.12	0.25	2,500	30,000	0.1	0.2	2,200	30,000	0.05	0.15	1,800	25,000
	6	4.3	0.12	0.2	2,500	30,000	0.08	0.15	2,000	27,000	0.05	0.1	1,300	22,000
	8	5.7	0.12	0.2	2,500	30,000	0.08	0.15	1,800	20,000	0.03	0.08	1,000	20,000
	12	8.6	0.07	0.12	1,400	20,000	0.04	0.08	1,100	18,000	0.015	0.05	700	18,000
	16	11.4	0.02	0.05	700	17,000	0.01	0.03	600	17,000	0.008	0.02	450	16,000
0.75	2	1.3	0.15	0.3	3,000	30,000	0.1	0.3	2,500	30,000	0.1	0.2	2,000	25,000
	3	2.0	0.15	0.3	3,000	30,000	0.1	0.3	2,500	30,000	0.1	0.2	2,000	25,000
	4	2.7	0.15	0.3	3,000	30,000	0.1	0.3	2,500	30,000	0.1	0.2	2,000	25,000
	5	3.3	0.15	0.25	3,000	30,000	0.1	0.25	2,300	30,000	0.1	0.15	1,800	25,000
	6	4.0	0.15	0.2	3,000	30,000	0.1	0.2	2,000	30,000	0.1	0.1	1,600	25,000
	8	5.3	0.1	0.2	2,500	25,000	0.05	0.2	1,600	25,000	0.05	0.1	1,200	20,000
	10	6.7	0.1	0.1	2,500	25,000	0.05	0.1	1,200	25,000	0.05	0.05	860	20,000
	12	8.0	0.05	0.1	1,800	20,000	0.03	0.1	920	20,000	0.02	0.05	780	18,000
	14	9.3	0.05	0.07	1,200	20,000	0.03	0.05	820	20,000	0.02	0.03	650	18,000
	16	10.7	0.03	0.05	720	18,000	0.02	0.03	650	18,000	0.01	0.02	580	16,000
	18	12.0	0.02	0.04	550	16,000	0.012	0.025	400	16,000	0.008	0.015	400	14,000
	20	13.3	0.01	0.03	450	16,000	0.01	0.02	360	16,000	0.007	0.01	300	14,000
	22	14.7	0.01	0.02	330	14,000	0.01	0.01	250	14,000	0.007	0.007	200	12,000
	25	16.7	0.008	0.01	180	12,000	0.005	0.005	140	12,000	0.004	0.004	110	10,000
	30	20.0	0.005	0.005	80	10,000	0.003	0.005	60	10,000	0.003	0.003	40	8,000
0.8	2	1.3	0.15	0.3	3,000	30,000	0.1	0.25	2,500	25,000	0.1	0.2	2,000	20,000
	4	2.5	0.15	0.3	3,000	30,000	0.1	0.2	2,300	25,000	0.08	0.15	1,800	20,000
	6	3.8	0.15	0.25	3,000	30,000	0.1	0.2	2,000	23,000	0.07	0.12	1,600	20,000
	8	5.0	0.1	0.2	2,500	25,000	0.07	0.15	2,000	20,000	0.05	0.1	1,600	18,000
	12	7.5	0.07	0.1	1,800	20,000	0.05	0.07	1,500	16,000	0.03	0.05	1,200	14,000
	16	10.0	0.03	0.05	720	16,000	0.02	0.03	600	14,000	0.015	0.02	480	12,000
	20	12.5	0.01	0.03	500	14,000	0.01	0.02	380	12,000	0.01	0.01	300	10,000
0.9	3	1.7	0.15	0.35	3,000	27,000	0.12	0.3	2,500	25,000	0.1	0.25	2,000	20,000
	4	2.2	0.15	0.35	3,000	27,000	0.12	0.25	2,500	25,000	0.1	0.2	1,800	20,000
	6	3.3	0.15	0.35	3,000	27,000	0.12	0.25	2,500	25,000	0.1	0.2	1,600	18,000
	8	4.4	0.1	0.3	2,500	25,000	0.08	0.2	2,300	23,000	0.08	0.15	1,400	17,000
	10	5.6	0.1	0.3	2,000	20,000	0.08	0.2	1,700	18,000	0.08	0.12	1,100	14,000
	12	6.7	0.07	0.2	1,600	20,000	0.05	0.15	1,300	17,000	0.05	0.12	900	13,000
	16	8.9	0.07	0.15	1,200	18,000	0.05	0.1	1,000	16,000	0.03	0.1	720	12,000
	18	10.0	0.05	0.1	1,000	15,000	0.03	0.08	800	14,000	0.02	0.08	600	11,000
	20	11.1	0.05	0.08	800	15,000	0.03	0.05	640	13,000	0.02	0.05	430	9,000
	22	12.2	0.03	0.05	650	15,000	0.02	0.03	520	12,000	0.015	0.03	340	8,000
	25	13.9	0.02	0.03	480	12,000	0.015	0.02	340	10,000	0.01	0.02	230	7,000
	30	16.7	0.01	0.02	300	12,000	0.007	0.01	210	10,000	0.005	0.01	120	6,000

P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
H ～60高硬度钢 HRC Hardened Steel
H ～65高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

MRBH230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX・HPM38(～52HRC)				高硬度钢 Hardened Steels SKD11(～62HRC)				高速钢 High Speed Steels SKH(～65HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
1	2	1.0	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000
	3	1.5	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000
	4	2.0	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000
	6	3.0	0.2	0.4	2,500	25,000	0.2	0.3	2,000	25,000	0.15	0.3	1,600	20,000
	8	4.0	0.2	0.3	2,000	20,000	0.1	0.2	1,600	18,000	0.1	0.2	1,200	16,000
	10	5.0	0.1	0.3	2,000	18,000	0.1	0.2	1,600	16,000	0.1	0.1	1,200	14,000
	12	6.0	0.1	0.2	1,600	16,000	0.1	0.1	1,200	14,000	0.05	0.1	940	12,000
	13	6.5	0.08	0.2	1,600	16,000	0.06	0.1	1,200	14,000	0.04	0.08	940	12,000
	14	7.0	0.07	0.15	1,600	16,000	0.05	0.08	1,200	14,000	0.03	0.07	940	12,000
	16	8.0	0.07	0.15	1,600	16,000	0.05	0.08	1,200	14,000	0.03	0.07	940	12,000
	18	9.0	0.05	0.1	1,400	14,000	0.03	0.05	1,000	12,000	0.02	0.03	850	10,000
	20	10.0	0.05	0.1	1,000	14,000	0.03	0.05	820	12,000	0.02	0.03	720	10,000
	22	11.0	0.03	0.08	850	14,000	0.02	0.06	700	12,000	0.02	0.02	600	10,000
	25	12.5	0.03	0.05	680	12,000	0.02	0.03	560	10,000	0.01	0.02	420	8,500
	27	13.5	0.02	0.05	500	12,000	0.015	0.03	410	10,000	0.01	0.02	330	8,500
	30	15.0	0.02	0.03	360	12,000	0.01	0.02	300	10,000	0.008	0.01	240	8,500
	32	16.0	0.02	0.02	230	10,000	0.01	0.015	180	8,000	0.008	0.01	150	6,800
	35	17.5	0.01	0.02	150	10,000	0.007	0.01	120	8,000	0.005	0.007	100	6,800
	40	20.0	0.005	0.01	100	10,000	0.003	0.005	80	8,000	0.002	0.003	50	6,800
1.25	4	1.6	0.3	0.5	3,000	20,000	0.2	0.5	2,500	20,000	0.15	0.4	2,000	18,000
	6	2.4	0.3	0.4	2,800	20,000	0.2	0.5	2,300	20,000	0.15	0.4	2,000	18,000
	8	3.2	0.25	0.3	2,600	20,000	0.15	0.3	2,100	20,000	0.12	0.25	1,800	18,000
	10	4.0	0.2	0.3	2,500	20,000	0.15	0.2	2,000	20,000	0.1	0.15	1,600	18,000
	15	6.0	0.1	0.2	2,000	18,000	0.07	0.15	1,600	16,000	0.05	0.1	1,200	14,000
	20	8.0	0.07	0.15	1,500	16,000	0.05	0.1	1,200	14,000	0.03	0.05	1,000	10,000
	25	10.0	0.05	0.1	1,000	14,000	0.03	0.07	850	12,000	0.02	0.03	720	8,000
	30	12.0	0.03	0.07	720	12,000	0.02	0.05	640	10,000	0.01	0.02	580	7,000
	35	14.0	0.02	0.03	450	10,000	0.01	0.02	400	8,500	0.007	0.01	320	6,200
1.5	6	2.0	0.2	0.8	3,000	20,000	0.2	0.6	2,500	18,000	0.2	0.5	2,000	14,000
	8	2.7	0.2	0.8	3,000	20,000	0.2	0.6	2,500	18,000	0.2	0.5	2,000	14,000
	10	3.3	0.2	0.6	2,500	20,000	0.2	0.4	2,000	18,000	0.1	0.3	1,500	14,000
	12	4.0	0.2	0.6	2,500	20,000	0.2	0.4	2,000	18,000	0.1	0.3	1,500	14,000
	14	4.7	0.1	0.4	2,000	18,000	0.1	0.3	1,600	16,000	0.1	0.2	1,200	12,000
	16	5.3	0.1	0.4	2,000	18,000	0.1	0.3	1,600	16,000	0.1	0.2	1,200	12,000
	18	6.0	0.1	0.3	1,800	18,000	0.1	0.2	1,400	16,000	0.1	0.15	1,100	12,000
	20	6.7	0.1	0.3	1,600	18,000	0.1	0.2	1,200	16,000	0.1	0.1	960	12,000
	22	7.3	0.1	0.2	1,400	17,000	0.07	0.15	1,000	15,000	0.07	0.07	880	11,000
	25	8.3	0.1	0.2	1,200	16,000	0.07	0.15	920	14,000	0.05	0.07	800	10,000
	27	9.0	0.07	0.1	1,000	14,000	0.05	0.08	800	12,000	0.03	0.05	700	9,000
	30	10.0	0.07	0.1	750	14,000	0.05	0.07	640	12,000	0.03	0.05	600	8,600
	35	11.7	0.05	0.1	620	12,000	0.03	0.07	500	10,000	0.02	0.05	420	7,200
	40	13.3	0.03	0.07	450	10,000	0.02	0.05	320	8,200	0.01	0.03	260	6,400
1.75	5	1.4	0.3	1	3,000	20,000	0.25	0.8	2,500	18,000	0.2	0.6	1,800	14,000
	10	2.9	0.25	1	3,000	20,000	0.2	0.6	2,500	18,000	0.15	0.5	1,700	14,000
	15	4.3	0.25	1	3,000	20,000	0.15	0.5	2,300	16,000	0.13	0.4	1,500	14,000
	20	5.7	0.18	0.6	2,500	18,000	0.1	0.3	1,800	15,000	0.1	0.2	1,200	12,000
	25	7.1	0.12	0.35	1,800	16,000	0.1	0.2	1,600	14,000	0.06	0.12	1,000	10,000
	30	8.6	0.1	0.25	1,500	14,000	0.07	0.15	950	11,000	0.05	0.08	800	9,000
	35	10.0	0.08	0.2	1,200	13,000	0.07	0.12	800	10,000	0.03	0.06	650	7,500
	40	11.4	0.07	0.1	800	11,000	0.04	0.07	720	9,000	0.02	0.05	450	7,000
	45	12.9	0.06	0.07	700	10,000	0.035	0.05	600	7,500	0.015	0.03	320	6,000

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX・HPM38(～52HRC)				高硬度钢 Hardened Steels SKD11(～62HRC)				高速钢 High Speed Steels SKH(～65HRC)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径)	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
2	6	1.5	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000
	8	2.0	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000
	10	2.5	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000
	12	3.0	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000
	14	3.5	0.3	1.5	3,000	20,000	0.2	0.8	2,000	16,000	0.2	0.6	1,600	12,000
	15	3.8	0.3	1.5	3,000	20,000	0.2	0.8	2,000	16,000	0.2	0.6	1,600	12,000
	16	4.0	0.3	1	2,700	18,000	0.2	0.6	2,000	16,000	0.15	0.5	1,600	12,000
	18	4.5	0.2	1	2,700	18,000	0.15	0.6	1,800	14,000	0.12	0.4	1,400	10,000
	20	5.0	0.2	1	2,400	16,000	0.1	0.6	1,800	14,000	0.1	0.4	1,400	10,000
	22	5.5	0.2	0.8	2,000	16,000	0.1	0.5	1,500	14,000	0.1	0.3	1,200	10,000
	25	6.3	0.2	0.8	1,600	16,000	0.1	0.4	1,200	14,000	0.1	0.2	1,000	10,000
	27	6.8	0.15	0.5	1,600	16,000	0.1	0.3	1,200	14,000	0.07	0.2	1,000	10,000
	30	7.5	0.1	0.3	1,600	14,000	0.07	0.2	1,200	10,000	0.05	0.15	1,000	8,200
	35	8.8	0.1	0.2	1,200	14,000	0.07	0.15	1,000	10,000	0.05	0.1	820	8,200
	40	10.0	0.07	0.15	1,200	12,000	0.05	0.1	1,000	8,600	0.03	0.07	820	6,800
	45	11.3	0.07	0.1	750	12,000	0.05	0.07	620	8,600	0.03	0.05	500	6,800
	50	12.5	0.05	0.08	550	10,000	0.03	0.05	500	7,500	0.02	0.03	420	5,500
2.5	10	2.0	0.3	1.5	3,000	18,000	0.2	1.2	2,500	12,000	0.2	0.7	2,000	9,200
	15	3.0	0.3	1.5	3,000	18,000	0.2	1.2	2,500	12,000	0.2	0.7	2,000	9,200
	20	4.0	0.3	1.2	3,000	15,000	0.2	1	2,000	10,000	0.15	0.5	1,600	8,000
	25	5.0	0.2	1	2,500	15,000	0.15	0.8	1,800	8,600	0.1	0.3	1,200	7,200
	30	6.0	0.2	0.8	2,000	12,000	0.15	0.5	1,500	7,600	0.1	0.2	860	6,400
	35	7.0	0.15	0.5	1,500	10,000	0.1	0.3	1,100	7,300	0.07	0.15	750	6,000
	40	8.0	0.1	0.2	1,200	10,000	0.07	0.15	1,000	6,800	0.05	0.1	650	5,500
	45	9.0	0.1	0.15	1,000	10,000	0.07	0.1	760	6,400	0.05	0.07	550	4,800
	50	10.0	0.08	0.1	800	9,000	0.05	0.07	530	6,000	0.03	0.05	360	4,000
3	8	1.3	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
	10	1.7	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
	12	2.0	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
	15	2.5	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
	18	3.0	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
	20	3.3	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
	25	4.2	0.3	1.5	3,000	16,000	0.2	1	2,000	8,000	0.15	0.7	1,500	7,000
	30	5.0	0.2	1.5	3,000	14,000	0.2	1	2,000	7,200	0.15	0.7	1,500	6,500
	35	5.8	0.2	1.2	2,400	13,000	0.17	0.8	1,600	6,800	0.12	0.5	1,200	5,800
	40	6.7	0.2	1	1,800	12,000	0.15	0.6	1,200	6,400	0.1	0.4	1,000	5,200
	50	8.3	0.1	0.6	1,200	8,200	0.1	0.3	860	4,800	0.05	0.2	620	4,000
	60	10.0	0.07	0.3	600	6,000	0.05	0.15	450	3,200	0.03	0.07	300	2,500

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示步距量。
※2 建议使用油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※5 请根据需要控制刀具的伸出量。

※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 We recommend using oil mist coolant.
※3 Adjust both spindle speed and feed at the same rate.
※4 Adjust milling conditions according to the volume of depth of cut and rigidity of machine.
※5 Length of tool overhang must be as short as possible.

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

长颈 Long Neck
球头 Ball
涂层 Coating
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
H ～60 HRC 高硬度钢 Hardened Steel
H ～65 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy
常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

MACH225SF

规格 Size R0.1 ～ R3

Premium ≦65 HRC

无限白金涂层 短柄造型高速・高硬度钢材用球头铣刀（热缩刀柄用）

MUGEN COATING PREMIUM 2-Flute High Speed Ball End Mill with Short Shank for Hardened Steel

共有12种规格 Total 12 sizes

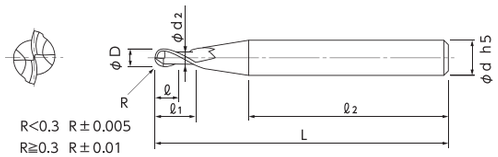
切削参数参考表 Recommended Milling Conditions

刀刃锋利，减轻了切削阻力，适用于高韧性的加工材料 支持热缩刀柄的短柄造型

Sharp cutting edge reduces cutting load for tough materials.
Suitable for shrink fit holder

MG | 2 | 25° | R ±0.005 (R<0.3) | φd h5 | 3D





- 短柄造型（热缩刀柄用）。
- 高速・高硬度钢加工专用的球头铣刀。
- It fits for Shrink Chuck System.
- It is designed for high speed cutting of hardened steels.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(d)柄径 Shank Dia.	(ℓ2)柄长 Shank Length	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
08-00554-01011	R0.1	0.5	0.2	0.2	0.175	4	28.2	35	10,300	0.57	0.60	0.62	0.64	0.71
08-00554-02011	R0.2	1	0.4	0.4	0.365	4	27.9	35	6,800	1.12	1.16	1.20	1.25	1.37
08-00554-03011	R0.3	1.5	0.6	0.6	0.56	4	27.6	35	5,900	1.65	1.71	1.77	1.85	2.02
08-00554-04011	R0.4	2	0.8	0.8	0.76	4	27.3	35	5,900	2.16	2.24	2.33	2.42	2.65
08-00554-05011	R0.5	2.5	1	1	0.95	4	32.1	40	5,500	3.51	3.78	4.02	4.26	4.70
08-00554-06011	R0.6	3	1.2	1.2	1.15	4	31.8	40	6,000	4.04	4.34	4.60	4.85	5.32
08-00554-07511	R0.75	3.8	1.5	1.5	1.45	4	31.3	40	6,000	4.90	5.23	5.52	5.79	6.29
08-00554-10011	R1	5	2	2	1.94	4	30.5	40	4,800	6.22	6.59	6.91	7.21	7.74
★ 08-00554-15011	R1.5	8	3	3	2.85	4	28.7	40	5,900	9.70	10.11	10.47	10.80	Free
★ 08-00554-20012	R2	10	4	4	3.8	6	24.8	40	6,600	10.83	11.23	11.66	12.14	13.26
★ 08-00554-25012	R2.5	12	5	5	4.8	6	30.1	45	8,000	12.89	13.36	13.87	14.43	Free
★ 08-00554-30012	R3	15	6	6	5.7	6	29	45	8,500	Free	Free	Free	Free	Free

订购方法 How to Order

请指定MACH225SF 球头半径(R)。
When you order, indicate MACH225SF (R).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・HPM・NAK (～43HRC)					高硬度钢 Hardened Steels SKD61・STAVAX・HPM38 (～55HRC)					高硬度钢 Hardened Steels SKD11 (～62HRC)				
	一般参数 Normal Speed		高速参数 High Speed		切深量 Depth of Cut	一般参数 Normal Speed		高速参数 High Speed		切深量 Depth of Cut	一般参数 Normal Speed		高速参数 High Speed		切深量 Depth of Cut
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	ap×ae	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	ap×ae	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	ap×ae
	min-1	mm/min	min-1	mm/min	mm	min-1	mm/min	min-1	mm/min	mm	min-1	mm/min	min-1	mm/min	mm
0.1	20,000	400	50,000	800	0.01×0.02	20,000	250	50,000	500	0.01×0.02	20,000	250	50,000	500	0.01×0.02
0.2	20,000	600	50,000	1,000	0.02×0.05	20,000	320	50,000	680	0.02×0.05	20,000	320	50,000	680	0.02×0.05
0.3	20,000	1,200	50,000	2,000	0.05×0.1	20,000	460	50,000	1,000	0.03×0.05	20,000	460	50,000	1,000	0.03×0.05
0.4	20,000	1,600	50,000	2,500	0.1×0.2	20,000	580	50,000	1,200	0.05×0.1	20,000	580	50,000	1,200	0.05×0.1
0.5	20,000	2,000	50,000	5,000	0.2×0.3	20,000	1,200	50,000	3,000	0.1×0.2	20,000	800	50,000	2,000	0.1×0.2
0.75	20,000	2,000	50,000	5,000	0.2×0.3	20,000	1,600	42,000	3,000	0.1×0.2	20,000	1,200	32,000	2,000	0.1×0.2
1	20,000	3,200	50,000	8,000	0.3×0.5	20,000	2,500	32,000	3,500	0.2×0.5	20,000	2,000	24,000	2,400	0.2×0.5
1.5	16,000	2,800	32,000	6,000	0.3×0.5	16,000	2,500	21,000	3,500	0.2×0.5	13,000	2,000	16,000	2,400	0.2×0.5
2	12,000	2,400	24,000	5,000	0.5×1	12,000	2,000	16,000	3,000	0.2×0.7	9,600	1,600	12,000	2,000	0.2×0.7
2.5	9,600	2,000	20,000	5,000	0.5×1	9,600	2,000	13,000	3,000	0.2×0.7	7,600	1,300	9,600	1,600	0.2×0.7
3	8,000	2,000	16,000	4,000	0.5×1.5	8,000	1,600	10,000	2,500	0.2×1	6,400	1,000	8,000	1,300	0.2×1

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示步距量。
※2 建议使用油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※5 请根据需要控制刀具的伸出量。

※1 Depth of Cut : ap = Axial Depth of Cut / ae = Radial Depth of Cut.
※2 We recommend using oil mist coolant.
※3 Adjust milling conditions according to the volume of depth of cut and rigidity of machine.
※4 Adjust both spindle speed and feed at the same rate.
※5 Length of tool overhang must be as short as possible.

规格 Size R0.1 ～ R3

Premium ≦65 HRC

无限白金涂层 高速·高硬度钢材用球头铣刀

MUGEN COATING PREMIUM 2-Flute High Speed Ball End Mill for Hardened Steel

共有20种规格
Total 20 sizes

切削参数参考表
Recommended Milling Conditions

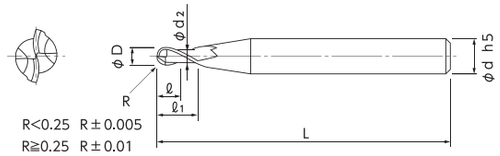
球头 Ball / 长颈 Long Neck / 涂层 Coating

刀刃锋利，减轻了切削阻力，适用于高韧性的加工材料

Sharp cutting edge reduces cutting load for tough materials

MG | 2 | 25° | R ±0.005 (R<0.25) | φd h5 | 3D





- 高速・高硬度钢加工专用的球头铣刀。
- 可设定大切深量，在高速进给状态下发挥效果。
- It is designed for high speed cutting of hardened steels.
- Perform efficiently under high feed condition and able to take large depth of cut.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
									30′	1°	1°30′	2°	3°
08-00555-01011	R0.1	0.5	0.2	0.2	0.175	4	50	10,500	0.57	0.60	0.62	0.64	0.71
08-00555-01012		0.5	0.2	0.2	0.175	6	50	13,800	0.57	0.60	0.62	0.64	0.71
08-00555-02011	R0.2	1	0.4	0.4	0.365	4	50	9,500	1.12	1.16	1.20	1.25	1.37
08-00555-02012		1	0.4	0.4	0.365	6	50	12,700	1.12	1.16	1.20	1.25	1.37
08-00555-02511	R0.25	1.25	0.5	0.5	0.46	4	50	8,400	1.39	1.44	1.49	1.56	1.70
08-00555-02512		1.25	0.5	0.5	0.46	6	50	11,600	1.39	1.44	1.49	1.56	1.70
08-00555-03011	R0.3	1.5	0.6	0.6	0.56	4	50	7,400	1.65	1.71	1.77	1.85	2.02
08-00555-03012		1.5	0.6	0.6	0.56	6	50	10,500	1.65	1.71	1.77	1.85	2.02
08-00555-04011	R0.4	2	0.8	0.8	0.76	4	50	6,800	2.16	2.24	2.33	2.42	2.65
08-00555-04012		2	0.8	0.8	0.76	6	50	9,900	2.16	2.24	2.33	2.42	2.65
08-00555-05011	R0.5	2.5	1	1	0.95	4	50	6,100	3.51	3.78	4.02	4.26	4.70
08-00555-05012		2.5	1	1	0.95	6	50	9,100	3.51	3.78	4.02	4.26	4.70
08-00555-07511	R0.75	3.8	1.5	1.5	1.45	4	50	6,100	4.90	5.23	5.52	5.79	6.29
08-00555-07512		3.8	1.5	1.5	1.45	6	50	9,100	4.90	5.23	5.52	5.79	6.29
08-00555-10011	R1	5	2	2	1.94	4	50	5,500	6.22	6.59	6.91	7.21	7.74
08-00555-10012		5	2	2	1.94	6	50	9,100	6.22	6.59	6.91	7.21	7.74
★ 08-00555-15012	R1.5	8	3	3	2.85	6	60	10,000	8.88	9.33	9.85	10.45	11.94
★ 08-00555-20012	R2	10	4	4	3.8	6	60	10,000	11.13	11.70	12.34	13.08	14.92
★ 08-00555-25012	R2.5	12	5	5	4.8	6	60	11,000	13.22	13.88	14.64	15.50	Free
★ 08-00555-30012	R3	15	6	6	5.7	6	60	11,000	Free	Free	Free	Free	Free

订购方法 How to Order

请指定MACH225 球头半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MACH225 (R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・HPM・NAK (～43HRC)					高硬度钢 Hardened Steels SKD61・STAVAX・HPM38 (～55HRC)					高硬度钢 Hardened Steels SKD11 (～62HRC)				
	一般参数 Normal Speed		高速参数 High Speed		切深量 Depth of Cut	一般参数 Normal Speed		高速参数 High Speed		切深量 Depth of Cut	一般参数 Normal Speed		高速参数 High Speed		切深量 Depth of Cut
(R)球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	$a_p \times a_e$	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	$a_p \times a_e$	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	$a_p \times a_e$
	min⁻¹	mm/min	min⁻¹	mm/min	mm	min⁻¹	mm/min	min⁻¹	mm/min	mm	min⁻¹	mm/min	min⁻¹	mm/min	mm
0.1	20,000	400	50,000	800	0.01×0.02	20,000	250	50,000	500	0.01×0.02	20,000	250	50,000	500	0.01×0.02
0.2	20,000	600	50,000	1,000	0.02×0.05	20,000	320	50,000	680	0.02×0.05	20,000	320	50,000	680	0.02×0.05
0.25	20,000	800	50,000	1,200	0.03×0.05	20,000	400	50,000	800	0.02×0.05	20,000	400	50,000	800	0.02×0.05
0.3	20,000	1,200	50,000	2,000	0.05×0.1	20,000	460	50,000	1,000	0.03×0.05	20,000	460	50,000	1,000	0.03×0.05
0.4	20,000	1,600	50,000	2,500	0.1×0.2	20,000	580	50,000	1,200	0.05×0.1	20,000	580	50,000	1,200	0.05×0.1
0.5	20,000	2,000	50,000	5,000	0.2×0.3	20,000	1,200	50,000	3,000	0.1×0.2	20,000	800	50,000	2,000	0.1×0.2
0.75	20,000	2,000	50,000	5,000	0.2×0.3	20,000	1,600	42,000	3,000	0.1×0.2	20,000	1,200	32,000	2,000	0.1×0.2
1	20,000	3,200	50,000	8,000	0.3×0.5	20,000	2,500	32,000	3,500	0.2×0.5	20,000	2,000	24,000	2,400	0.2×0.5
1.5	16,000	2,800	32,000	6,000	0.3×0.5	16,000	2,500	21,000	3,500	0.2×0.5	13,000	2,000	16,000	2,400	0.2×0.5
2	12,000	2,400	24,000	5,000	0.5×1	12,000	2,000	16,000	3,000	0.2×0.7	9,600	1,600	12,000	2,000	0.2×0.7
2.5	9,600	2,000	20,000	5,000	0.5×1	9,600	2,000	13,000	3,000	0.2×0.7	7,600	1,300	9,600	1,600	0.2×0.7
3	8,000	2,000	16,000	4,000	0.5×1.5	8,000	1,600	10,000	2,500	0.2×1	6,400	1,000	8,000	1,300	0.2×1

备 注 Notes

※1 切深量的a_p表示轴向切深量，a_e表示步距量。
※2 建议使用油雾冷却方式。
※3 请以相同的比率调整主轴转速和进给速度。
※4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。
※5 请根据需要控制刀具的伸出量。

※1 Depth of Cut : a_p = Axial Depth of Cut / a_e = Radial Depth of Cut.
※2 We recommend using oil mist coolant.
※3 Adjust milling conditions according to the volume of depth of cut and rigidity of machine.
※4 Adjust both spindle speed and feed at the same rate.
※5 Length of tool overhang must be as short as possible.

P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
H ～60 HRC 高硬度钢 Hardened Steel
H ～65 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列 无限白金涂层 长颈造型 Regular Line MUGEN PREMIUM Long Neck Type

MLFH330 New

规格 Size φ1 × R1 ～ φ6 × R8

Premium ≦65 HRC

无限白金涂层 高效率椭圆弧形3刃球头铣刀

MUGEN COATING PREMIUM High Efficiency Lens Form 3-Flute End Mill

共有7种规格 Total 7 sizes

即使是小径铣刀，也能设定大的步距量
相比普通球头铣刀更具备生产性能的椭圆弧形3刃球头铣刀

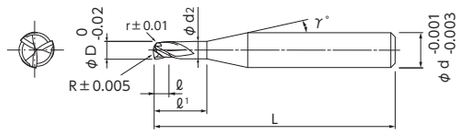
Realizes large pick feed even with small size diameter
Specialized lens form 3-Flute end mill improves productivity compared to ball end mills

SMG | 3 | 30° | R ±0.005 | φd -0.001 -0.003

小R角半径精度为± 0.01mm
R accuracy on corner radius is ±0.01mm

Connect for Crafting Tomorrow | 3D





- 采用针对高硬度钢材加工用的无限白金涂层，可对应至65HRC的高硬度钢材。
- 3刃造型球头铣刀可以设置大步距量，提高加工效率。
- 使用5轴加工机可以在固定切削角度的情况下设定大步距量，实现高生产性。
- Adopt MUGEN COATING PREMUIM for hardened steel to support machining hardened steel up to 65HRC.
- 3-flute lens form combines larger pick feed than ball end mills improve machining efficiency.
- High productivity can be achieved by using the 5-axis machining to take large pick feeds while keeping the cut point constant.

单位[规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)底刃半径 End Tooth Bottom Radius	(ℓ1)颈长 Under Neck Length	(r)角半径 Corner Radius	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00790-10103	1	R1	3	R0.03	1	0.95	12°	6	50	9,000
08-00790-20206	2	R2	6	R0.05	2	1.91	12°	6	50	9,500
08-00790-30309	3	R3	9	R0.1	3	2.85	12°	6	60	10,000
08-00790-40412	4	R4	12	R0.1	4	3.8	12°	6	60	10,500
08-00790-50515	5	R5	15	R0.2	5	4.75	12°	6	60	11,000
08-00790-60620	6	R6	20	R0.3	6	5.7	-	6	60	11,000
08-00790-60820	6	R8	20	R0.3	6	5.7	-	6	60	11,000

订购方法 How to Order

请指定MLFH330 外径(D)×底刃半径(R)×颈长(ℓ1)。
When you order, indicate MLFH330 (D)×(R)×(ℓ1).

※(γ)为参考值。
※ (γ) is reference value.

■如果您的CAM可以直接使用椭圆弧形刀具，请直接使用。

有关特殊刀型能否生成路径，请咨询各CAM制造商。

If your CAM can use lens form end mills, please use it as is.
Make an inquiry to CAM manufacturer regarding the availability of tool registration and tool path generation.

■如果您使用的CAM软件无法定义本产品的形状，请扫描右侧二维码查看操作步骤示例。

Example of procedure shown on web when the shape of this tool cannot be defined with the CAM are using.

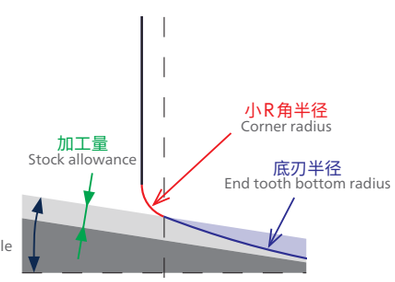
日进工具 MLFH330

■最大倾斜角

依照在切削参数参考表中所标示的加工量，可以进行正常加工的工件倾斜角度。

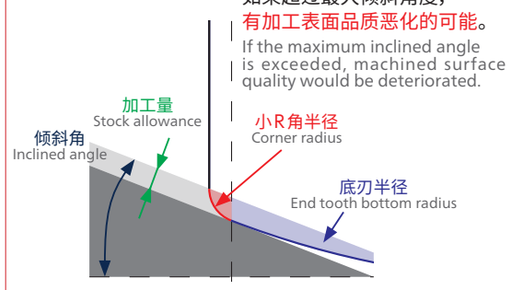
Maximum inclined angle means the workpiece that can be machined without problems with the machining allowance shown in the cutting conditions above.

最大倾斜角度以内的情况 **(推荐)**
Within the maximum inclined angle



超过最大倾斜角度的情况 **(NG)**
Exceed the maximum inclined angle

如果超过最大倾斜角度，
有加工表面品质恶化的可能。
If the maximum inclined angle is exceeded, machined surface quality would be deteriorated.



切削参数参考表
Recommended Milling Conditions

粗加工 Roughing

加工材料 Work Material			调质钢·高硬度钢 Prehadened Steels·Hardened Steels HPM·NAK(～42HRC) HPM38·STAVAX·SKD61(～55HRC)				高硬度钢 Hardened Steels SKD11·PD613(～62HRC)				高速钢 High Speed Steels SKH(～65HRC)			
外径 Dia.	底刃半径 End Tooth Bottom Radius	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
1	1	3	0.1	0.4	3,500	26,000	0.1	0.28	2,400	21,000	0.08	0.15	1,500	14,000
2	2	6	0.2	0.7	3,500	16,000	0.2	0.5	2,400	12,000	0.15	0.45	1,800	10,000
3	3	9	0.2	1.1	4,200	13,000	0.2	0.85	3,000	10,000	0.2	0.7	2,200	7,600
4	4	12	0.3	2.1	4,200	11,000	0.2	1.2	3,000	9,000	0.2	1	2,200	6,600
5	5	15	0.3	2.4	4,200	10,000	0.2	1.6	3,000	8,200	0.2	1.2	2,200	6,000
6	6	20	0.3	2.8	4,200	9,500	0.3	1.8	3,000	7,000	0.2	1.6	2,200	5,600
6	8	20	0.3	3.2	4,200	9,000	0.3	2	3,000	6,500	0.2	1.8	2,200	5,000

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示径向切深量。
※2 请根据机床刚性和工件的夹持状态等调整切削参数。
※3 发生振刀等情况时，请根据需要调整切削参数。
※4 R角等切削阻力大的部位，请特别注意参数设定和刀路轨迹等。
※5 加工过程中的机械振动较大时，请根据需要调整进给速度。
※6 排屑不佳可能会导致刀具崩刃和折断，敬请注意。
※7 请以相同的比率调整主轴转速和进给速度。
※8 请根据需要控制刀具的伸出量。
※9 建议使用油雾冷却方式。
※10 使用CAM软件绘制刀路轨迹时，建议按透镜形铣刀来定义刀具。
※11 测量刀具长度时，请从本公司网站下载刀具形状的DXF文件，在确认刀具形状后进行测量。

※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Adjust milling condition according to machine rigidity and clamp condition of work material.
※3 In case of chattering etc., please adjust cutting conditions if necessary.
※4 Required careful set up of milling conditions, tool path and etc. at cutting parts, such as corners where will become overloaded.
※5 If machine tool vibration is high during machining, adjust the feed rate as necessary.
※6 Attention to a risk of chipping and breakage when insucient chip flow.
※7 Adjust both spindle speed and feed at the same rate.
※8 Overhang of end mill should be as short as possible form spindle nose.
※9 Oil mist coolant is recommended.
※10 When creating toolpaths in CAM software, tool difinition is recommended by using a lens-shaped end mill.
※11 When measuring tool lengths, download the DXF of the tool geometry from our website and check the tool geometry before measuring.

精加工 Finishing

加工材料 Work Material							调质钢·高硬度钢 Prehadened Steels· Hardened Steels HPM·NAK(～42HRC) HPM38·STAVAX· SKD61(～55HRC)		高硬度钢 Hardened Steels SKD11·PD613 (～62HRC)		高速钢 High Speed Steels SKH (～65HRC)	
外径 Dia.	底刃半径 End Tooth Bottom Radius	颈长 Under Neck Length	最大倾斜角 Maximum Inclined Angle	尖点高度 Cusp Height μm	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed
					余量 Stock Allowance mm	步距 Pick Feed mm	mm/min	min-1	mm/min	min-1	mm/min	min-1
1	1	3	17°	0.1	0.02	0.025	2,000	26,000	1,700	21,000	1,100	14,000
2	2	6	20°	0.1	0.02	0.04	1,900	16,000	1,400	12,000	1,100	10,000
3	3	9	20°	0.1	0.03	0.05	1,900	13,000	1,400	10,000	1,100	7,600
4	4	12	21°	0.1	0.03	0.055	1,800	11,000	1,400	9,000	1,100	6,600
5	5	15	21°	0.1	0.04	0.06	1,800	10,000	1,400	8,200	1,100	6,000
6	6	20	21°	0.1	0.04	0.065	1,800	9,500	1,400	7,000	1,100	5,600
6	8	20	14°	0.1	0.04	0.08	2,100	9,000	1,500	6,500	1,200	5,000

备 注 Notes

※1 设定切削条件时，使每刃进给量与步距等同，从而使步距的尖点高度为0.1μm。
请根据机床刚性和要求精度进行调整。
※2 R角等切削阻力大的部位，请特别注意参数设定和刀路轨迹等。
※3 请尽量缩短刀具的伸出量。
※4 建议使用油雾冷却方式。
※5 请以相同的比率调整主轴转速和进给速度。
※6 加工余量越大，最大倾斜角越小。敬请注意。
※7 使用CAM软件绘制刀路轨迹时，建议按透镜形铣刀来定义刀具。
※8 测量刀具长度时，请从本公司网站下载刀具形状的DXF文件，在确认刀具形状后进行测量。

※1 The cutting condition is set that the pick feed achieves a cusp height of 0.1 μm, feed per tooth achieves as same amount as pick feed. Adjust according to machine rigidity and accuracy requirements.
※2 Adjust milling condition according to machine rigidity and clamp condition of work material.
※3 Overhang of end mill should be as short as possible form spindle nose.
※4 Oil mist coolant is recommended.
※5 Adjust both spindle speed and feed at the same rate.
※6 Cutting depth set with care, as the larger the depth of cut, the smaller the maximum inclination angle.
※7 When creating toolpaths in CAM software, tool difinition is recommended by using a lens-shaped end mill.
※8 When measuring tool lengths, download the DXF of the tool geometry from our website and check the tool geometry before measuring.

MRB230SF

规格 Size R0.1 ～ R1.5

≦52 HRC

无限涂层 短柄造型长颈球头铣刀（热缩刀柄用）
MUGEN COATING 2-Flute Long Neck Ball End Mill with Short Shank

共有60种规格
Total 60 sizes

MRB230SF

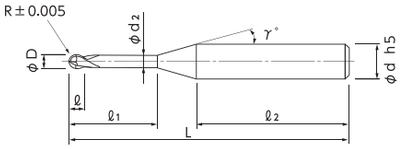
无限涂层 短柄造型长颈球头铣刀（热缩刀柄用）
MUGEN COATING 2-Flute Long Neck Ball End Mill with Short Shank

标准长颈球头铣刀
支持热缩刀柄的短柄造型

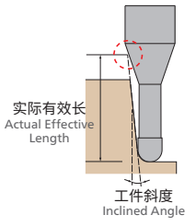
Standard type long neck ball end mill. Suitable for shrink fit holder

MG | 2 | 30° | R ±0.005 | φd h5 | 3D





● 短柄造型（热缩刀柄用）。
● It fits for shrink chuck system.



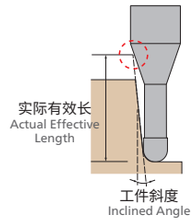
单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(ℓ2)柄长 Shank Length	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00525-00103	R0.1	0.5	0.15	0.2	0.18	15°	4	27.3	35	8,800	0.55	0.56	0.58	0.60	0.64
08-00525-00105		0.75	0.15	0.2	0.18	15°	4	27.1	35	8,800	0.81	0.83	0.86	0.89	0.95
08-00525-00107		1	0.15	0.2	0.18	15°	4	26.8	35	8,800	1.06	1.10	1.13	1.17	1.26
08-00525-00109		1.25	0.15	0.2	0.18	15°	4	26.6	35	9,600	1.32	1.37	1.41	1.46	1.57
08-00525-00151	R0.15	0.5	0.2	0.3	0.28	15°	4	27.5	35	8,600	0.55	0.56	0.57	0.59	0.63
08-00525-00152		0.6	0.2	0.3	0.28	15°	4	27.4	35	8,600	0.65	0.67	0.69	0.71	0.75
08-00525-00153		0.75	0.2	0.3	0.28	15°	4	27.3	35	8,600	0.80	0.83	0.85	0.88	0.94
08-00525-00154		1	0.2	0.3	0.28	15°	4	27	35	8,600	1.06	1.09	1.13	1.17	1.25
08-00525-00155		1.25	0.2	0.3	0.28	15°	4	26.8	35	8,600	1.32	1.36	1.41	1.45	1.56
08-00525-00156		1.5	0.2	0.3	0.28	15°	4	26.5	35	9,200	1.58	1.63	1.68	1.74	1.87
08-00525-00157		1.75	0.2	0.3	0.28	15°	4	26.3	35	9,200	1.84	1.90	1.96	2.03	2.18
08-00525-00202	R0.2	0.75	0.3	0.4	0.37	15°	4	27.4	35	5,900	0.82	0.84	0.87	0.89	0.95
08-00525-00203		1	0.3	0.4	0.37	15°	4	27.2	35	5,900	1.08	1.11	1.14	1.18	1.26
08-00525-00204		1.5	0.3	0.4	0.37	15°	4	26.7	35	6,000	1.60	1.65	1.70	1.75	1.88
08-00525-00205		2	0.3	0.4	0.37	15°	4	26.2	35	6,200	2.11	2.18	2.25	2.33	2.50
08-00525-00206		2.5	0.3	0.4	0.37	15°	4	25.7	35	6,400	2.63	2.72	2.81	2.90	3.13
08-00525-00251	R0.25	1	0.35	0.5	0.46	15°	4	27.3	35	5,900	1.10	1.13	1.16	1.19	1.27
08-00525-00252		1.5	0.35	0.5	0.46	15°	4	26.8	35	5,900	1.61	1.66	1.71	1.77	1.89
08-00525-00253		2	0.35	0.5	0.46	15°	4	26.3	35	5,900	2.13	2.20	2.27	2.34	2.51
08-00525-00254		2.5	0.35	0.5	0.46	15°	4	25.8	35	5,900	2.65	2.73	2.82	2.92	3.14
08-00525-00255		3	0.35	0.5	0.46	15°	4	25.3	35	5,900	3.16	3.27	3.38	3.49	3.76
08-00525-00301	R0.3	1.5	0.45	0.6	0.56	15°	4	27	35	4,500	1.61	1.66	1.71	1.76	1.88
08-00525-00302		2	0.45	0.6	0.56	15°	4	26.5	35	4,500	2.13	2.19	2.26	2.34	2.50
08-00525-00303		2.5	0.45	0.6	0.56	15°	4	26	35	4,600	2.65	2.73	2.82	2.91	3.12
08-00525-00304		3	0.45	0.6	0.56	15°	4	25.5	35	4,600	3.16	3.26	3.37	3.49	3.75
08-00525-00305		3.5	0.45	0.6	0.56	15°	4	25	35	4,800	3.68	3.80	3.92	4.06	4.37
08-00525-00306		4	0.45	0.6	0.56	15°	4	29.5	40	4,800	4.20	4.33	4.48	4.64	4.99
08-00525-00307		4.5	0.45	0.6	0.56	15°	4	29	40	4,800	4.71	4.87	5.03	5.21	5.61
08-00525-00308		5	0.45	0.6	0.56	15°	4	28.5	40	4,800	5.23	5.40	5.59	5.79	6.23
08-00525-00309		5.5	0.45	0.6	0.56	15°	4	28	40	4,800	5.75	5.94	6.14	6.36	6.85
08-00525-00310		6	0.45	0.6	0.56	15°	4	27.5	40	4,800	6.26	6.47	6.70	6.94	7.48

订购方法 How to Order

请指定MRB230SF 球头半径(R)×颈长(ℓ1)。
When you order, indicate MRB230SF (R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(ℓ2)柄长 Shank Length	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00525-00401	R0.4	2	0.6	0.8	0.76	15°	4	26.9	35	4,500	2.13	2.19	2.25	2.32	2.48
08-00525-00402		3	0.6	0.8	0.76	15°	4	25.9	35	4,800	3.16	3.26	3.36	3.47	3.72
08-00525-00403		4	0.6	0.8	0.76	15°	4	29.9	40	4,800	4.19	4.33	4.47	4.62	4.97
08-00525-00404		5	0.6	0.8	0.76	15°	4	28.9	40	4,800	5.23	5.40	5.58	5.77	6.21
08-00525-00501	R0.5	3	0.75	1	0.95	15°	4	26.3	35	3,800	3.18	3.27	3.37	3.48	3.72
08-00525-00502		4	0.75	1	0.95	15°	4	25.3	35	4,300	4.21	4.34	4.48	4.63	4.97
08-00525-00503		5	0.75	1	0.95	15°	4	29.3	40	4,300	5.24	5.41	5.59	5.78	6.21
08-00525-00504		6	0.75	1	0.95	15°	4	28.3	40	4,600	6.28	6.48	6.69	6.93	7.45
08-00525-00505		8	0.75	1	0.95	15°	4	26.3	40	4,600	8.34	8.62	8.91	9.23	9.94
08-00525-00506		10	0.75	1	0.95	15°	4	24.3	40	4,600	10.41	10.76	11.13	11.53	12.42
08-00525-00751	R0.75	3	1.1	1.5	1.45	15°	4	27.2	35	4,400	3.17	3.25	3.34	3.44	3.66
08-00525-00752		4	1.1	1.5	1.45	15°	4	26.2	35	4,400	4.20	4.32	4.45	4.59	4.91
08-00525-00754		6	1.1	1.5	1.45	15°	4	29.2	40	4,400	6.27	6.46	6.67	6.89	7.39
08-00525-00755		8	1.1	1.5	1.45	15°	4	27.2	40	4,400	8.34	8.60	8.88	9.19	9.88
08-00525-00756		10	1.1	1.5	1.45	15°	4	25.2	40	4,400	10.40	10.74	11.10	11.49	12.36
08-00525-01001	R1	3	1.5	2	1.94	15°	4	28.1	35	3,800	3.18	3.25	3.34	3.43	3.63
08-00525-01002		4	1.5	2	1.94	15°	4	27.1	35	3,800	4.21	4.32	4.45	4.58	4.87
08-00525-01003		6	1.5	2	1.94	15°	4	25.1	35	4,300	6.28	6.46	6.66	6.88	7.36
08-00525-01004		8	1.5	2	1.94	15°	4	28.1	40	4,600	8.35	8.60	8.88	9.18	9.84
08-00525-01005		10	1.5	2	1.94	15°	4	26.1	40	4,600	10.41	10.74	11.10	11.48	12.33
08-00525-01006		12	1.5	2	1.94	15°	4	29.1	45	4,600	12.48	12.88	13.31	13.77	14.82
08-00525-01007		14	1.5	2	1.94	15°	4	27.1	45	4,600	14.55	15.02	15.53	16.07	17.30
08-00525-01008		16	1.5	2	1.94	15°	4	25.1	45	4,600	16.62	17.16	17.75	18.37	19.79
08-00525-01009		18	1.5	2	1.94	15°	4	28.1	50	4,600	18.68	19.30	19.96	20.67	Free
08-00525-01010		20	1.5	2	1.94	15°	4	26.1	50	4,600	20.75	21.44	22.18	22.97	Free
08-00525-01501	R1.5	6	2.5	3	2.85	15°	4	31.8	40	4,300	6.44	6.61	6.79	7.00	7.45
08-00525-01502		8	2.5	3	2.85	15°	4	29.8	40	4,300	8.50	8.75	9.01	9.29	9.93
08-00525-01503		10	2.5	3	2.85	15°	4	27.8	40	4,600	10.57	10.89	11.23	11.59	Free
08-00525-01504		12	2.5	3	2.85	15°	4	25.8	40	4,600	12.64	13.03	13.44	13.89	Free

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

切削参数参考表
Recommended Milling Conditions

MRB230SF

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material		碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK・HPM1 (～44HRC)				高硬度钢 Hardened Steels SKD・STAVAX・HPM38 (～55HRC)				铜合金 Copper			
(R)球头半径 Radius	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
		ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.1	0.5	0.01	0.02	250	20,000～50,000	0.01	0.01	210	20,000～50,000	0.01	0.02	250	20,000～50,000
	0.75	0.007	0.01	250	20,000～50,000	0.005	0.01	210	20,000～50,000	0.01	0.015	250	20,000～50,000
	1	0.005	0.01	250	20,000～50,000	0.003	0.005	210	20,000～50,000	0.008	0.015	250	20,000～50,000
	1.25	0.003	0.01	150	20,000～50,000	0.003	0.005	120	20,000～50,000	0.005	0.015	150	20,000～50,000
0.15	0.5	0.01	0.02	250	20,000～50,000	0.01	0.015	210	20,000～50,000	0.012	0.025	250	20,000～50,000
	0.6	0.01	0.02	250	20,000～50,000	0.01	0.015	210	20,000～50,000	0.012	0.025	250	20,000～50,000
	0.75	0.008	0.02	250	20,000～50,000	0.007	0.012	210	20,000～50,000	0.011	0.02	250	20,000～50,000
	1	0.007	0.01	250	20,000～50,000	0.005	0.01	210	20,000～50,000	0.01	0.02	250	20,000～50,000
	1.25	0.005	0.01	250	20,000～50,000	0.005	0.005	210	20,000～50,000	0.008	0.015	250	20,000～50,000
	1.5	0.005	0.01	200	20,000～50,000	0.005	0.005	170	20,000～50,000	0.008	0.015	200	20,000～50,000
	1.75	0.005	0.01	200	20,000～50,000	0.005	0.005	170	20,000～50,000	0.008	0.015	200	20,000～50,000
0.2	0.75	0.02	0.05	800	20,000～50,000	0.02	0.03	650	20,000～50,000	0.03	0.07	800	20,000～50,000
	1	0.02	0.05	800	20,000～50,000	0.02	0.03	650	20,000～50,000	0.03	0.07	800	20,000～50,000
	1.5	0.02	0.03	700	20,000～50,000	0.01	0.02	600	20,000～50,000	0.03	0.05	700	20,000～50,000
	2	0.015	0.02	600	20,000～50,000	0.01	0.015	500	20,000～50,000	0.02	0.03	600	20,000～50,000
	2.5	0.015	0.02	450	20,000～50,000	0.01	0.015	380	20,000～50,000	0.02	0.03	450	20,000～50,000
0.25	1	0.03	0.05	800	20,000～50,000	0.02	0.05	680	20,000～50,000	0.045	0.07	800	20,000～50,000
	1.5	0.03	0.05	700	20,000～50,000	0.02	0.04	600	20,000～50,000	0.04	0.07	700	20,000～50,000
	2	0.02	0.04	600	20,000～50,000	0.02	0.03	510	20,000～50,000	0.03	0.06	600	20,000～50,000
	2.5	0.015	0.04	600	20,000～50,000	0.01	0.03	510	20,000～50,000	0.02	0.06	600	20,000～50,000
	3	0.015	0.035	500	20,000～50,000	0.01	0.025	420	20,000～50,000	0.02	0.05	500	20,000～50,000
0.3	1.5	0.05	0.1	1,200	20,000～50,000	0.05	0.07	1,000	20,000～50,000	0.07	0.12	1,200	20,000～50,000
	2	0.05	0.1	1,200	20,000～50,000	0.04	0.07	1,000	20,000～50,000	0.07	0.12	1,200	20,000～50,000
	2.5	0.035	0.1	1,200	20,000～50,000	0.03	0.06	1,000	20,000～50,000	0.05	0.12	1,200	20,000～50,000
	3	0.025	0.1	1,000	20,000～50,000	0.03	0.05	850	20,000～50,000	0.04	0.1	1,000	20,000～50,000
	3.5	0.025	0.08	1,000	20,000～50,000	0.02	0.05	850	20,000～50,000	0.04	0.1	1,000	20,000～50,000
	4	0.025	0.05	800	20,000～50,000	0.02	0.04	680	20,000～50,000	0.035	0.08	800	20,000～50,000
	4.5	0.025	0.05	750	20,000～50,000	0.01	0.03	630	20,000～50,000	0.035	0.08	750	20,000～50,000
	5	0.02	0.04	500	20,000～30,000	0.01	0.02	420	20,000～30,000	0.03	0.06	500	20,000～30,000
	5.5	0.013	0.02	500	20,000～30,000	0.01	0.01	420	20,000～30,000	0.02	0.03	500	20,000～30,000
	6	0.01	0.02	450	20,000～30,000	0.005	0.01	380	20,000～30,000	0.015	0.03	450	20,000～30,000
0.4	2	0.1	0.15	2,000	20,000～50,000	0.1	0.12	1,700	20,000～50,000	0.15	0.2	2,000	20,000～50,000
	3	0.08	0.13	1,700	20,000～50,000	0.08	0.1	1,500	20,000～50,000	0.12	0.2	1,700	20,000～50,000
	4	0.05	0.12	1,500	20,000～50,000	0.05	0.08	1,300	20,000～50,000	0.1	0.2	1,500	20,000～50,000
	5	0.05	0.1	1,200	20,000～50,000	0.04	0.07	1,000	20,000～50,000	0.08	0.15	1,200	20,000～50,000

加工材料 Work Material		碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK・HPM1 (～44HRC)				高硬度钢 Hardened Steels SKD・STAVAX・HPM38 (～55HRC)				铜合金 Copper			
(R)球头半径 Radius	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
		ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.5	3	0.2	0.3	3,000	20,000～50,000	0.12	0.3	2,500	20,000～50,000	0.25	0.4	3,000	20,000～50,000
	4	0.15	0.25	2,500	20,000～50,000	0.1	0.2	2,100	20,000～50,000	0.2	0.4	2,500	20,000～50,000
	5	0.1	0.25	2,000	20,000～50,000	0.08	0.17	1,700	20,000～50,000	0.15	0.35	2,000	20,000～50,000
	6	0.1	0.2	1,500	20,000～50,000	0.07	0.12	1,200	20,000～50,000	0.15	0.3	1,500	20,000～50,000
	8	0.05	0.1	1,200	20,000～30,000	0.05	0.08	1,000	20,000～30,000	0.08	0.15	1,200	20,000～30,000
	10	0.03	0.05	800	20,000～30,000	0.03	0.05	680	20,000～30,000	0.05	0.08	800	20,000～30,000
0.75	3	0.2	0.35	4,000	20,000～30,000	0.15	0.3	3,400	20,000～30,000	0.3	0.5	4,000	20,000～30,000
	4	0.2	0.3	4,000	20,000～30,000	0.15	0.25	3,400	20,000～30,000	0.3	0.45	4,000	20,000～30,000
	6	0.15	0.3	3,000	20,000～30,000	0.12	0.2	2,500	20,000～30,000	0.2	0.45	3,000	20,000～30,000
	8	0.1	0.25	2,400	20,000～30,000	0.08	0.18	2,000	20,000～30,000	0.15	0.4	2,400	20,000～30,000
	10	0.08	0.2	1,800	20,000～30,000	0.06	0.12	1,500	20,000～30,000	0.12	0.3	1,800	20,000～30,000
1	3	0.3	0.5	4,000	20,000～30,000	0.2	0.5	3,400	20,000～30,000	0.45	0.7	4,000	20,000～30,000
	4	0.3	0.5	4,000	20,000～30,000	0.2	0.45	3,400	20,000～30,000	0.45	0.7	4,000	20,000～30,000
	6	0.25	0.5	3,000	20,000～30,000	0.2	0.4	2,500	20,000～30,000	0.38	0.7	3,000	20,000～30,000
	8	0.2	0.3	2,500	16,000～20,000	0.15	0.3	2,100	16,000～20,000	0.3	0.45	2,500	16,000～20,000
	10	0.15	0.3	2,500	16,000～20,000	0.1	0.2	2,100	16,000～20,000	0.23	0.45	2,500	16,000～20,000
	12	0.13	0.2	1,800	12,000～16,000	0.1	0.15	1,500	12,000～16,000	0.2	0.3	1,800	12,000～16,000
	14	0.1	0.2	1,800	12,000～16,000	0.07	0.13	1,500	12,000～16,000	0.15	0.3	1,800	12,000～16,000
	16	0.1	0.15	1,600	10,000～14,000	0.06	0.11	1,400	10,000～14,000	0.15	0.25	1,600	10,000～14,000
	18	0.07	0.12	1,600	10,000～14,000	0.05	0.1	1,400	10,000～14,000	0.1	0.2	1,600	10,000～14,000
	20	0.06	0.1	1,000	8,000～12,000	0.05	0.07	850	8,000～12,000	0.1	0.15	1,000	8,000～12,000
1.5	6	0.35	0.6	4,000	16,000～20,000	0.25	0.5	3,400	16,000～20,000	0.5	1	4,000	16,000～20,000
	8	0.3	0.5	4,000	16,000～20,000	0.2	0.5	3,400	16,000～20,000	0.45	0.8	4,000	16,000～20,000
	10	0.3	0.5	4,000	16,000～20,000	0.2	0.45	3,400	16,000～20,000	0.45	0.8	4,000	16,000～20,000
	12	0.2	0.4	3,000	16,000～20,000	0.2	0.4	2,500	16,000～20,000	0.3	0.6	3,000	16,000～20,000

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示步距量。
※2 请以相同的比率调整主轴转速和进给速度。
※3 加工高硬度钢时，建议使用油雾冷却方式。
※1 Depth of Cut : ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Adjust both spindle speed and feed at the same rate.
※3 Oil mist coolant is recommended for the machining of hardened steels.

P 碳素钢 Carbon Steel ◎
P 合金钢 Alloy Steel ◎
P 调质钢 Prehardened Steel ◎
H ～52高硬度钢 HRC Hardened Steel ○
M 不锈钢 Stainless Steel ○
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ○

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

规格
Size R0.05 ～ R3

≦52 HRC

无限涂层 长颈球头铣刀（深沟加工用）
MUGEN COATING 2-Flute Long Neck Ball End Mill

共有282种规格
Total 282 sizes

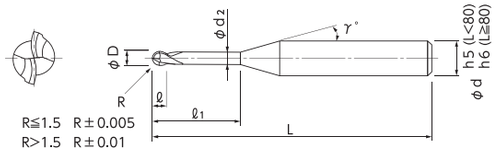
无限涂层 长颈球头铣刀（深沟加工用）
MUGEN COATING 2-Flute Long Neck Ball End Mill

标准长颈球头铣刀
种类丰富，共有282种规格

Standard type long neck ball end mill. Sufficient variations with 282 sizes

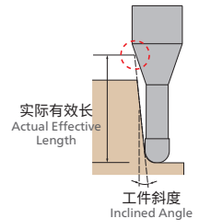
MG | 2 | 30° | R ±0.005 (R≦1.5) | φd h5 (L<80) | 3D





R≦1.5 R±0.005
R>1.5 R±0.01

- 适用于深沟加工的长颈避空造型。
- 适用于从低速到高速的深沟精密3D形状加工。
- The Long Neck type is suitable for narrow and deep machining.
- It is possible to have deep and precision three-dimensional cutting in the low to high speed range.



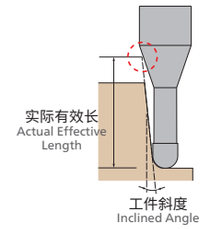
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00520-20051	R0.05	0.3	0.07	0.1	0.085	12°	4	45	10,700	0.34	0.36	0.37	0.39	0.42
08-00520-20052		0.5	0.07	0.1	0.085	12°	4	45	11,600	0.55	0.57	0.60	0.63	0.69
08-00520-40075	R0.075	0.3	0.1	0.15	0.13	12°	4	45	12,400	0.35	0.37	0.38	0.40	0.43
08-00520-40076		0.5	0.1	0.15	0.13	12°	4	45	13,100	0.56	0.58	0.61	0.64	0.70
08-00520-40077		1	0.1	0.15	0.13	12°	4	45	13,700	1.08	1.13	1.18	1.23	1.36
08-00520-00101	R0.1	0.5	0.15	0.2	0.18	12°	4	45	7,500	0.56	0.58	0.61	0.63	0.69
08-00521-00101		0.5	0.15	0.2	0.18	12°	6	50	10,900	0.56	0.58	0.61	0.63	0.69
08-00520-10101		0.75	0.15	0.2	0.18	12°	4	45	7,500	0.82	0.85	0.89	0.93	1.02
08-00520-00102		1	0.15	0.2	0.18	12°	4	45	7,500	1.08	1.13	1.18	1.23	1.35
08-00521-00102		1	0.15	0.2	0.18	12°	6	50	10,900	1.08	1.13	1.18	1.23	1.35
08-00520-10102		1.25	0.15	0.2	0.18	12°	4	45	8,100	1.34	1.40	1.46	1.53	1.68
08-00520-00103		1.5	0.15	0.2	0.18	12°	4	45	8,100	1.60	1.67	1.75	1.83	2.02
08-00521-00103		1.5	0.15	0.2	0.18	12°	6	50	11,800	1.60	1.67	1.75	1.83	2.02
08-00520-10103		1.75	0.15	0.2	0.18	12°	4	45	8,900	1.86	1.94	2.03	2.13	2.35
08-00520-00104		2	0.15	0.2	0.18	12°	4	45	8,900	2.13	2.22	2.32	2.43	2.68
08-00521-00104		2	0.15	0.2	0.18	12°	6	50	12,800	2.13	2.22	2.32	2.43	2.68
08-00520-00105		2.5	0.15	0.2	0.18	12°	4	45	9,800	2.65	2.76	2.89	3.02	3.34
08-00520-00106		3	0.15	0.2	0.18	12°	4	45	10,500	3.17	3.31	3.46	3.62	4.01
08-00520-40151	R0.15	0.5	0.2	0.3	0.28	12°	4	45	7,400	0.56	0.58	0.60	0.62	0.67
08-00520-10151		0.6	0.2	0.3	0.28	12°	4	45	7,400	0.66	0.69	0.71	0.74	0.81
08-00520-40152		0.75	0.2	0.3	0.28	12°	4	45	7,400	0.82	0.85	0.88	0.92	1.01
08-00520-00151		1	0.2	0.3	0.28	12°	4	45	7,400	1.08	1.12	1.17	1.22	1.34
08-00521-00151		1	0.2	0.3	0.28	12°	6	50	10,500	1.08	1.12	1.17	1.22	1.34
08-00520-30153		1.25	0.2	0.3	0.28	12°	4	45	7,900	1.34	1.39	1.45	1.52	1.67
08-00520-10152		1.5	0.2	0.3	0.28	12°	4	45	7,900	1.60	1.67	1.74	1.82	2.00
08-00521-00152		1.5	0.2	0.3	0.28	12°	6	50	11,400	1.60	1.67	1.74	1.82	2.00
08-00520-30154		1.75	0.2	0.3	0.28	12°	4	45	7,900	1.86	1.94	2.02	2.12	2.33
08-00520-00152		2	0.2	0.3	0.28	12°	4	45	7,900	2.12	2.21	2.31	2.42	2.66
08-00521-00153		2	0.2	0.3	0.28	12°	6	50	11,400	2.12	2.21	2.31	2.42	2.66
08-00520-30155		2.25	0.2	0.3	0.28	12°	4	45	8,100	2.38	2.48	2.59	2.71	3.00
08-00520-10153		2.5	0.2	0.3	0.28	12°	4	45	8,100	2.64	2.76	2.88	3.01	3.33
08-00520-30156		2.75	0.2	0.3	0.28	12°	4	45	8,100	2.91	3.03	3.16	3.31	3.66

订购方法 How to Order

请指定MRB230 球头半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MRB230 (R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00520-10154	R0.15	3	0.2	0.3	0.28	12°	4	45	8,100	3.17	3.30	3.45	3.61	3.99
08-00520-30157		3.5	0.2	0.3	0.28	12°	4	45	8,100	3.69	3.85	4.02	4.21	4.65
08-00520-20151		4	0.2	0.3	0.28	12°	4	45	8,400	4.21	4.39	4.59	4.81	5.32
08-00520-30158		4.5	0.2	0.3	0.28	12°	4	45	8,400	4.73	4.94	5.16	5.41	5.98
08-00520-20152		5	0.2	0.3	0.28	12°	4	45	9,500	5.25	5.48	5.73	6.01	6.65
08-00520-40201	R0.2	0.5	0.3	0.4	0.37	12°	4	45	5,000	0.58	0.60	0.62	0.64	0.69
08-00520-10201		0.75	0.3	0.4	0.37	12°	4	45	5,000	0.84	0.87	0.90	0.94	1.02
08-00520-00201		1	0.3	0.4	0.37	12°	4	45	5,000	1.10	1.14	1.19	1.24	1.35
08-00521-00201		1	0.3	0.4	0.37	12°	6	50	7,700	1.10	1.14	1.19	1.24	1.35
08-00520-00204		1.5	0.3	0.4	0.37	12°	4	45	5,100	1.62	1.69	1.76	1.84	2.02
08-00521-00202		1.5	0.3	0.4	0.37	12°	6	50	7,800	1.62	1.69	1.76	1.84	2.02
08-00520-00202		2	0.3	0.4	0.37	12°	4	45	5,300	2.15	2.23	2.33	2.43	2.68
08-00521-00203		2	0.3	0.4	0.37	12°	6	50	8,000	2.15	2.23	2.33	2.43	2.68
08-00520-00205		2.5	0.3	0.4	0.37	12°	4	45	5,500	2.67	2.78	2.90	3.03	3.34
08-00521-00204		2.5	0.3	0.4	0.37	12°	6	50	8,300	2.67	2.78	2.90	3.03	3.34
08-00520-00203		3	0.3	0.4	0.37	12°	4	45	5,800	3.19	3.32	3.47	3.63	4.01
08-00521-00205		3	0.3	0.4	0.37	12°	6	50	8,800	3.19	3.32	3.47	3.63	4.01
08-00520-10202		3.5	0.3	0.4	0.37	12°	4	45	6,300	3.71	3.87	4.04	4.23	4.67
08-00520-00206		4	0.3	0.4	0.37	12°	4	45	6,300	4.23	4.41	4.61	4.83	5.33
08-00520-10203		4.5	0.3	0.4	0.37	12°	4	45	6,600	4.75	4.96	5.18	5.43	6.00
08-00520-00207		5	0.3	0.4	0.37	12°	4	45	6,600	5.27	5.50	5.75	6.02	6.66
08-00520-10204		5.5	0.3	0.4	0.37	12°	4	45	7,700	5.80	6.05	6.32	6.62	7.32
08-00520-10205		6	0.3	0.4	0.37	12°	4	45	7,700	6.32	6.59	6.89	7.22	7.99
08-00520-30251	R0.25	1	0.35	0.5	0.46	12°	4	45	5,000	1.13	1.16	1.21	1.26	1.37
08-00520-10251		1.5	0.35	0.5	0.46	12°	4	45	5,000	1.65	1.71	1.78	1.85	2.03
08-00521-00251		1.5	0.35	0.5	0.46	12°	6	50	7,700	1.65	1.71	1.78	1.85	2.03
08-00520-00251		2	0.35	0.5	0.46	12°	4	45	5,000	2.17	2.25	2.35	2.45	2.69
08-00521-00252		2	0.35	0.5	0.46	12°	6	50	7,700	2.17	2.25	2.35	2.45	2.69
08-00520-10252		2.5	0.35	0.5	0.46	12°	4	45	5,000	2.69	2.80	2.92	3.05	3.36
08-00520-10253		3	0.35	0.5	0.46	12°	4	45	5,000	3.21	3.34	3.49	3.65	4.02
08-00520-10254		3.5	0.35	0.5	0.46	12°	4	45	5,000	3.73	3.89	4.06	4.25	4.69
08-00520-00252		4	0.35	0.5	0.46	12°	4	45	5,000	4.25	4.43	4.63	4.85	5.35
08-00521-00253		4	0.35	0.5	0.46	12°	6	50	7,700	4.25	4.43	4.63	4.85	5.35
08-00520-10255		4.5	0.35	0.5	0.46	12°	4	45	5,100	4.78	4.98	5.20	5.44	6.01
08-00520-00255		5	0.35	0.5	0.46	12°	4	45	5,100	5.30	5.52	5.77	6.04	6.68
08-00521-00254		5	0.35	0.5	0.46	12°	6	50	7,800	5.30	5.52	5.77	6.04	6.68
08-00520-10256		5.5	0.35	0.5	0.46	12°	4	45	5,300	5.82	6.07	6.34	6.64	7.34
08-00520-00253		6	0.35	0.5	0.46	12°	4	45	5,300	6.34	6.61	6.91	7.24	8.00
08-00521-00255		6	0.35	0.5	0.46	12°	6	50	8,000	6.34	6.61	6.91	7.24	8.00
08-00520-10257		7	0.35	0.5	0.46	12°	4	45	6,300	7.38	7.70	8.05	8.44	9.33
08-00520-00254		8	0.35	0.5	0.46	12°	4	45	6,300	8.42	8.79	9.19	9.63	10.66
08-00521-00256		8	0.35	0.5	0.46	12°	6	50	9,200	8.42	8.79	9.19	9.63	10.66
08-00521-30251		9	0.35	0.5	0.46	12°	6	55	7,700	9.47	9.88	10.33	10.83	11.99
08-00521-30252		10	0.35	0.5	0.46	12°	6	55	8,500	10.51	10.97	11.47	12.03	13.31

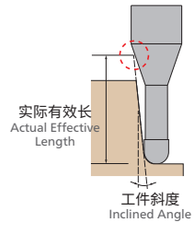
碳素钢 Carbon Steel P
合金钢 Alloy Steel P
调质钢 Prehardened Steel P
高硬度钢～52 Hardened Steel HRC H
不锈钢 Stainless Steel M
铝合金 Aluminium Alloy N
铜合金 Copper N
树脂 Resin O

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

无限涂层 长颈球头铣刀（深沟加工用）

MUGEN COATING 2-Flute Long Neck Ball End Mill



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
08-00520-40301	R0.3	1	0.45	0.6	0.56	12°	4	45	4,300	1.12	1.16	1.20	1.25	1.35
08-00520-10301		1.5	0.45	0.6	0.56	12°	4	45	3,900	1.64	1.71	1.77	1.84	2.02
08-00520-00301		2	0.45	0.6	0.56	12°	4	45	3,900	2.17	2.25	2.34	2.44	2.68
08-00521-00301		2	0.45	0.6	0.56	12°	6	50	6,200	2.17	2.25	2.34	2.44	2.68
08-00520-10302		2.5	0.45	0.6	0.56	12°	4	45	4,000	2.69	2.79	2.91	3.04	3.34
08-00520-00305		3	0.45	0.6	0.56	12°	4	45	4,000	3.21	3.34	3.48	3.64	4.01
08-00521-00302		3	0.45	0.6	0.56	12°	6	50	6,300	3.21	3.34	3.48	3.64	4.01
08-00520-10303		3.5	0.45	0.6	0.56	12°	4	45	4,100	3.73	3.88	4.05	4.24	4.67
08-00520-00302		4	0.45	0.6	0.56	12°	4	45	4,100	4.25	4.43	4.62	4.84	5.33
08-00521-00303		4	0.45	0.6	0.56	12°	6	50	6,500	4.25	4.43	4.62	4.84	5.33
08-00520-10304		4.5	0.45	0.6	0.56	12°	4	45	4,100	4.77	4.97	5.19	5.43	6.00
08-00520-00306		5	0.45	0.6	0.56	12°	4	45	4,100	5.29	5.52	5.76	6.03	6.66
08-00520-10305		5.5	0.45	0.6	0.56	12°	4	45	4,100	5.82	6.06	6.33	6.63	7.32
08-00520-00303		6	0.45	0.6	0.56	12°	4	45	4,100	6.34	6.61	6.90	7.23	7.99
08-00521-00304		6	0.45	0.6	0.56	12°	6	50	6,500	6.34	6.61	6.90	7.23	7.99
08-00520-10306		6.5	0.45	0.6	0.56	12°	4	45	4,600	6.86	7.15	7.47	7.83	8.65
08-00520-00307		7	0.45	0.6	0.56	12°	4	45	4,600	7.38	7.70	8.04	8.43	9.31
08-00520-10307		7.5	0.45	0.6	0.56	12°	4	45	5,500	7.90	8.24	8.61	9.02	9.98
08-00520-00304		8	0.45	0.6	0.56	12°	4	45	5,500	8.42	8.79	9.18	9.62	10.64
08-00521-00305		8	0.45	0.6	0.56	12°	6	50	8,300	8.42	8.79	9.18	9.62	10.64
08-00520-10308		8.5	0.45	0.6	0.56	12°	4	45	5,800	8.94	9.33	9.76	10.22	11.31
08-00520-10309		9	0.45	0.6	0.56	12°	4	45	5,800	9.47	9.88	10.33	10.82	11.97
08-00520-10310		9.5	0.45	0.6	0.56	12°	4	45	5,800	9.99	10.42	10.90	11.42	12.63
08-00520-10311		10	0.45	0.6	0.56	12°	4	45	5,600	10.51	10.97	11.47	12.02	13.30
08-00521-00306		10	0.45	0.6	0.56	12°	6	50	8,800	10.51	10.97	11.47	12.02	13.30
08-00520-10312		11	0.45	0.6	0.56	12°	4	45	6,300	11.55	12.06	12.61	13.21	14.62
08-00520-10313		12	0.45	0.6	0.56	12°	4	45	6,300	12.59	13.14	13.75	14.41	15.95
08-00520-40351	R0.35	2	0.5	0.7	0.66	12°	4	45	3,900	2.16	2.25	2.33	2.43	2.66
08-00520-40352		4	0.5	0.7	0.66	12°	4	45	4,100	4.25	4.42	4.62	4.83	5.32
08-00520-40353		6	0.5	0.7	0.66	12°	4	45	4,100	6.34	6.60	6.90	7.22	7.97
08-00520-40354		8	0.5	0.7	0.66	12°	4	45	4,100	8.42	8.78	9.18	9.61	10.63
08-00520-00400	R0.4	2	0.6	0.8	0.76	12°	4	45	3,900	2.16	2.24	2.33	2.42	2.65
08-00521-00401		2	0.6	0.8	0.76	12°	6	50	6,200	2.16	2.24	2.33	2.42	2.65
08-00520-10401		3	0.6	0.8	0.76	12°	4	45	4,100	3.20	3.33	3.47	3.62	3.97
08-00521-00402		3	0.6	0.8	0.76	12°	6	50	6,500	3.20	3.33	3.47	3.62	3.97
08-00520-00401		4	0.6	0.8	0.76	12°	4	45	4,100	4.25	4.42	4.61	4.82	5.30
08-00521-00403		4	0.6	0.8	0.76	12°	6	50	6,500	4.25	4.42	4.61	4.82	5.30
08-00520-00405		5	0.6	0.8	0.76	12°	4	45	4,100	5.29	5.51	5.75	6.01	6.63
08-00520-00402		6	0.6	0.8	0.76	12°	4	45	4,100	6.33	6.60	6.89	7.21	7.96
08-00521-00404		6	0.6	0.8	0.76	12°	6	50	6,500	6.33	6.60	6.89	7.21	7.96
08-00520-00406		7	0.6	0.8	0.76	12°	4	45	4,100	7.38	7.69	8.03	8.41	9.28
08-00520-00403		8	0.6	0.8	0.76	12°	4	45	4,100	8.42	8.78	9.17	9.60	10.61
08-00521-00405		8	0.6	0.8	0.76	12°	6	50	6,500	8.42	8.78	9.17	9.60	10.61
08-00520-30401		9	0.6	0.8	0.76	12°	4	45	5,500	9.46	9.87	10.31	10.80	11.94

订购方法 How to Order

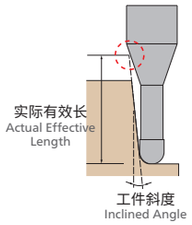
请指定MRB230 球头半径 (R)×颈长 (ℓ1)×柄径 (d)。
When you order, indicate MRB230 (R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.

MRB230

无限涂层 长颈球头铣刀（深沟加工用）
MUGEN COATING 2-Flute Long Neck Ball End Mill

球头 Ball
长颈 Long Neck
涂层 Coating

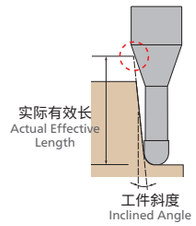


单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
08-00520-00404	R0.4	10	0.6	0.8	0.76	12°	4	45	5,500	10.50	10.96	11.45	12.00	13.26
08-00521-00406		10	0.6	0.8	0.76	12°	6	50	8,300	10.50	10.96	11.45	12.00	13.26
08-00520-20401		12	0.6	0.8	0.76	12°	4	45	6,700	12.59	13.14	13.73	14.39	15.92
08-00520-40451	R0.45	2	0.65	0.9	0.86	12°	4	45	3,900	2.16	2.24	2.32	2.41	2.63
08-00520-40452		4	0.65	0.9	0.86	12°	4	45	4,100	4.25	4.42	4.60	4.81	5.29
08-00520-40453		6	0.65	0.9	0.86	12°	4	45	4,100	6.33	6.59	6.88	7.20	7.94
08-00520-40454		8	0.65	0.9	0.86	12°	4	45	4,100	8.42	8.77	9.16	9.59	10.59
08-00520-40501	R0.5	2	0.75	1	0.95	12°	4	45	3,300	2.18	2.26	2.34	2.43	2.65
08-00520-40502		2.5	0.75	1	0.95	12°	4	45	3,300	2.70	2.80	2.91	3.03	3.31
08-00520-00505		3	0.75	1	0.95	12°	4	45	3,300	3.22	3.35	3.48	3.63	3.97
08-00521-00501		3	0.75	1	0.95	12°	6	50	5,400	3.22	3.35	3.48	3.63	3.97
08-00520-00506		4	0.75	1	0.95	12°	4	45	3,700	4.27	4.44	4.62	4.83	5.30
08-00521-00502		4	0.75	1	0.95	12°	6	50	5,900	4.27	4.44	4.62	4.83	5.30
08-00520-00510		5	0.75	1	0.95	12°	4	45	3,700	5.31	5.53	5.76	6.02	6.63
08-00521-00503		5	0.75	1	0.95	12°	6	50	5,900	5.31	5.53	5.76	6.02	6.63
08-00520-00501		6	0.75	1	0.95	12°	4	45	4,000	6.35	6.62	6.90	7.22	7.96
08-00521-00504		6	0.75	1	0.95	12°	6	50	6,300	6.35	6.62	6.90	7.22	7.96
08-00520-00511		7	0.75	1	0.95	12°	4	45	4,000	7.40	7.71	8.04	8.42	9.28
08-00520-00502		8	0.75	1	0.95	12°	4	45	4,000	8.44	8.79	9.18	9.61	10.61
08-00521-00505		8	0.75	1	0.95	12°	6	50	6,300	8.44	8.79	9.18	9.61	10.61
08-00520-00512		9	0.75	1	0.95	12°	4	45	4,000	9.48	9.88	10.32	10.81	11.94
08-00520-00507		10	0.75	1	0.95	12°	4	45	4,000	10.52	10.97	11.46	12.01	13.26
08-00521-00506		10	0.75	1	0.95	12°	6	50	6,300	10.52	10.97	11.46	12.01	13.26
08-00520-00504		12	0.75	1	0.95	12°	4	45	4,000	12.61	13.15	13.75	14.40	15.92
08-00521-00507		12	0.75	1	0.95	12°	6	50	6,300	12.61	13.15	13.75	14.40	15.92
08-00520-40503		13	0.75	1	0.95	12°	4	45	4,600	13.65	14.24	14.89	15.59	17.25
08-00520-00513		14	0.75	1	0.95	12°	4	50	4,600	14.70	15.33	16.03	16.79	18.57
08-00520-00508		16	0.75	1	0.95	12°	4	50	5,500	16.78	17.51	18.31	19.18	21.23
08-00521-00508		16	0.75	1	0.95	12°	6	60	8,300	16.78	17.51	18.31	19.18	21.23
08-00520-00514		18	0.75	1	0.95	12°	4	55	5,500	18.87	19.69	20.59	21.58	23.88
08-00520-00509		20	0.75	1	0.95	12°	4	55	6,600	20.95	21.87	22.87	23.97	26.54
08-00521-00509		20	0.75	1	0.95	12°	6	60	9,800	20.95	21.87	22.87	23.97	26.54
08-00521-00510		22	0.75	1	0.95	12°	6	60	10,200	23.04	24.05	25.15	26.36	29.19
08-00520-40601	R0.6	2.4	0.9	1.2	1.15	12°	4	45	4,900	2.59	2.68	2.78	2.89	3.15
08-00520-20601		4	0.9	1.2	1.15	12°	4	45	4,900	4.26	4.43	4.61	4.81	5.27
08-00520-00600		6	0.9	1.2	1.15	12°	4	45	5,400	6.35	6.61	6.89	7.20	7.92
08-00521-00601		6	0.9	1.2	1.15	12°	6	50	8,000	6.35	6.61	6.89	7.20	7.92
08-00520-00601		8	0.9	1.2	1.15	12°	4	45	5,400	8.43	8.79	9.17	9.59	10.58
08-00521-00602		8	0.9	1.2	1.15	12°	6	50	8,000	8.43	8.79	9.17	9.59	10.58
08-00520-00602		10	0.9	1.2	1.15	12°	4	45	5,400	10.52	10.96	11.45	11.99	13.23
08-00521-00603		10	0.9	1.2	1.15	12°	6	50	8,000	10.52	10.96	11.45	11.99	13.23
08-00520-00603		12	0.9	1.2	1.15	12°	4	45	5,400	12.61	13.14	13.73	14.38	15.89
08-00521-00604		12	0.9	1.2	1.15	12°	6	50	8,000	12.61	13.14	13.73	14.38	15.89
08-00520-10601		14	0.9	1.2	1.15	12°	4	50	5,800	14.69	15.32	16.01	16.77	18.54

无限涂层 长颈球头铣刀（深沟加工用）

MUGEN COATING 2-Flute Long Neck Ball End Mill



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
08-00520-10602	R0.6	16	0.9	1.2	1.15	12°	4	50	6,300	16.78	17.50	18.29	19.17	21.20
08-00521-00605		16	0.9	1.2	1.15	12°	6	60	9,100	16.78	17.50	18.29	19.17	21.20
08-00520-20602		18	0.9	1.2	1.15	12°	4	55	6,800	18.86	19.68	20.58	21.56	23.85
08-00520-30601		20	0.9	1.2	1.15	12°	4	55	6,800	20.95	21.86	22.86	23.95	26.50
08-00520-20603		24	0.9	1.2	1.15	12°	4	60	8,900	25.12	26.22	27.42	28.74	Free
08-00520-30701	R0.7	8	1	1.4	1.35	12°	4	45	4,600	8.43	8.78	9.16	9.57	10.55
08-00520-30702		12	1	1.4	1.35	12°	4	50	4,600	12.60	13.13	13.72	14.36	15.85
08-00520-30703		16	1	1.4	1.35	12°	4	50	4,600	16.77	17.49	18.28	19.15	21.16
08-00520-30751	R0.75	3	1.1	1.5	1.45	12°	4	45	3,800	3.21	3.33	3.45	3.58	3.89
08-00520-20751		4	1.1	1.5	1.45	12°	4	45	3,800	4.26	4.41	4.59	4.78	5.22
08-00520-20752		6	1.1	1.5	1.45	12°	4	45	3,800	6.34	6.59	6.87	7.17	7.88
08-00520-00751		8	1.1	1.5	1.45	12°	4	45	4,000	8.43	8.77	9.15	9.56	10.53
08-00521-00751		8	1.1	1.5	1.45	12°	6	50	6,400	8.43	8.77	9.15	9.56	10.53
08-00520-00752		10	1.1	1.5	1.45	12°	4	45	4,300	10.51	10.95	11.43	11.96	13.18
08-00520-00753		12	1.1	1.5	1.45	12°	4	45	4,600	12.60	13.13	13.71	14.35	15.84
08-00521-00752		12	1.1	1.5	1.45	12°	6	50	7,300	12.60	13.13	13.71	14.35	15.84
08-00520-00754		14	1.1	1.5	1.45	12°	4	50	4,600	14.69	15.31	15.99	16.74	18.49
08-00520-00755		16	1.1	1.5	1.45	12°	4	50	4,600	16.77	17.49	18.27	19.14	21.15
08-00521-00755		16	1.1	1.5	1.45	12°	6	60	7,300	16.77	17.49	18.27	19.14	21.15
08-00520-00756		18	1.1	1.5	1.45	12°	4	55	4,600	18.86	19.67	20.55	21.53	23.80
08-00520-00757		20	1.1	1.5	1.45	12°	4	55	4,600	20.94	21.85	22.84	23.92	Free
08-00521-00757		20	1.1	1.5	1.45	12°	6	60	7,300	20.94	21.85	22.84	23.92	26.46
08-00520-10751		22	1.1	1.5	1.45	12°	4	55	4,600	23.03	24.02	25.12	26.32	Free
08-00520-20753		30	1.1	1.5	1.45	12°	4	70	7,600	31.37	32.74	34.24	35.89	Free
08-00520-20801	R0.8	4	1.2	1.6	1.55	12°	4	45	5,300	4.25	4.41	4.58	4.77	5.21
08-00520-00801		8	1.2	1.6	1.55	12°	4	45	5,400	8.43	8.77	9.14	9.55	10.51
08-00520-00803		12	1.2	1.6	1.55	12°	4	45	5,400	12.60	13.13	13.70	14.34	15.82
08-00520-00805		16	1.2	1.6	1.55	12°	4	50	5,400	16.77	17.48	18.27	19.13	21.13
08-00520-00807		20	1.2	1.6	1.55	12°	4	55	5,400	20.94	21.84	22.83	23.91	Free
08-00520-30901	R0.9	8	1.3	1.8	1.75	12°	4	45	4,600	8.42	8.76	9.13	9.53	10.48
08-00520-30902		12	1.3	1.8	1.75	12°	4	45	4,600	12.59	13.12	13.69	14.32	15.79
08-00520-30903		16	1.3	1.8	1.75	12°	4	50	4,600	16.76	17.47	18.25	19.11	21.10
08-00520-30904		20	1.3	1.8	1.75	12°	4	55	4,600	20.94	21.83	22.81	23.89	Free
08-00520-31001	R1	3	1.5	2	1.94	12°	4	45	3,300	3.23	3.33	3.44	3.56	3.85
08-00520-01000		4	1.5	2	1.94	12°	4	45	3,300	4.27	4.42	4.58	4.76	5.17
08-00521-01000		4	1.5	2	1.94	12°	6	50	5,400	4.27	4.42	4.58	4.76	5.17
08-00520-01001		6	1.5	2	1.94	12°	4	45	3,700	6.36	6.60	6.86	7.15	7.83
08-00521-01001		6	1.5	2	1.94	12°	6	50	5,800	6.36	6.60	6.86	7.15	7.83
08-00520-01002		8	1.5	2	1.94	12°	4	45	4,000	8.44	8.78	9.14	9.54	10.48
08-00521-01002		8	1.5	2	1.94	12°	6	50	6,300	8.44	8.78	9.14	9.54	10.48
08-00520-01003		10	1.5	2	1.94	12°	4	45	4,000	10.53	10.95	11.42	11.94	13.14
08-00521-01003		10	1.5	2	1.94	12°	6	50	6,300	10.53	10.95	11.42	11.94	13.14
08-00520-01004		12	1.5	2	1.94	12°	4	45	4,000	12.61	13.13	13.70	14.33	15.79
08-00521-01004		12	1.5	2	1.94	12°	6	50	6,300	12.61	13.13	13.70	14.33	15.79

订购方法 How to Order

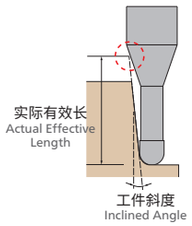
请指定MRB230 球头半径 (R)×颈长 (ℓ1)×柄径 (d)。
When you order, indicate MRB230 (R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.

MRB230

无限涂层 长颈球头铣刀（深沟加工用）
MUGEN COATING 2-Flute Long Neck Ball End Mill

球头 Ball
长颈 Long Neck
涂层 Coating



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
08-00520-41001	R1	13	1.5	2	1.94	12°	4	45	4,000	13.66	14.22	14.84	15.53	17.12
08-00520-01005		14	1.5	2	1.94	12°	4	50	4,000	14.70	15.31	15.98	16.72	18.45
08-00520-01006		16	1.5	2	1.94	12°	4	50	4,000	16.78	17.49	18.27	19.12	Free
08-00521-01005		16	1.5	2	1.94	12°	6	60	6,300	16.78	17.49	18.27	19.12	21.10
08-00520-01007		18	1.5	2	1.94	12°	4	55	4,000	18.87	19.67	20.55	21.51	Free
08-00520-01008		20	1.5	2	1.94	12°	4	55	4,000	20.96	21.85	22.83	23.90	Free
08-00521-01008		20	1.5	2	1.94	12°	6	60	6,300	20.96	21.85	22.83	23.90	26.41
08-00520-01009		22	1.5	2	1.94	12°	4	60	5,500	23.04	24.03	25.11	26.30	Free
08-00520-01010		25	1.5	2	1.94	12°	4	65	5,600	26.17	27.30	28.53	Free	Free
08-00521-01010		25	1.5	2	1.94	12°	6	80	8,300	26.17	27.30	28.53	29.89	33.04
08-00520-01011		30	1.5	2	1.94	12°	4	70	6,300	31.38	32.74	34.23	Free	Free
08-00521-01012		30	1.5	2	1.94	12°	6	80	9,400	31.38	32.74	34.23	35.87	Free
08-00520-11001		35	1.5	2	1.94	12°	4	70	8,600	36.60	38.19	Free	Free	Free
08-00521-01014		35	1.5	2	1.94	12°	6	80	12,200	36.60	38.19	39.93	41.85	Free
08-00520-31002		40	1.5	2	1.94	12°	4	90	8,600	41.81	43.64	Free	Free	Free
08-00521-01015		40	1.5	2	1.94	12°	6	90	12,200	41.81	43.64	45.64	47.83	Free
08-00520-21251	R1.25	6	2.3	2.5	2.4	12°	4	45	4,300	6.44	6.68	6.93	7.21	7.87
08-00520-11251		10	2.3	2.5	2.4	12°	4	45	4,500	10.62	11.04	11.49	12.00	13.18
08-00520-11252		15	2.3	2.5	2.4	12°	4	50	5,400	15.83	16.48	17.20	17.98	Free
08-00520-11253		20	2.3	2.5	2.4	12°	4	55	6,300	21.04	21.93	22.90	Free	Free
08-00520-11254		25	2.3	2.5	2.4	12°	4	65	6,700	26.26	27.38	28.60	Free	Free
08-00520-11255		30	2.3	2.5	2.4	12°	4	70	6,700	31.47	32.82	Free	Free	Free
08-00520-21252		35	2.3	2.5	2.4	12°	4	70	7,800	36.69	38.27	Free	Free	Free
08-00520-31502	R1.5	6	2.5	3	2.85	12°	4	60	3,700	6.56	6.78	7.03	7.31	7.95
08-00520-31503		6	2.5	3	2.85	12°	6	60	4,200	6.56	6.78	7.03	7.31	7.95
08-00520-01500		8	2.5	3	2.85	12°	6	60	4,200	8.64	8.96	9.31	9.70	10.60
08-00520-01501		10	2.5	3	2.85	12°	6	60	4,800	10.73	11.14	11.59	12.09	13.26
08-00520-31504		12	2.5	3	2.85	12°	6	60	5,100	12.81	13.32	13.88	14.49	15.91
08-00520-31505		14	2.5	3	2.85	12°	6	60	5,600	14.90	15.50	16.16	16.88	18.57
08-00520-01503		15	2.5	3	2.85	12°	6	60	5,500	15.94	16.59	17.30	18.08	19.89
08-00520-31506		16	2.5	3	2.85	12°	6	60	5,600	16.98	17.68	18.44	19.27	21.22
08-00520-01505		20	2.5	3	2.85	12°	6	65	5,400	21.16	22.04	23.00	24.06	26.53
08-00520-01506		25	2.5	3	2.85	12°	6	65	5,400	26.37	27.48	28.70	30.04	Free
08-00520-01507		30	2.5	3	2.85	12°	6	70	6,200	31.58	32.93	34.40	36.03	Free
08-00520-01508		35	2.5	3	2.85	12°	6	80	7,800	36.80	38.38	40.11	42.01	Free
08-00520-11501		40	2.5	3	2.85	12°	6	90	9,700	42.01	43.83	45.81	Free	Free
08-00520-11751	R1.75	10	2.8	3.5	3.35	12°	6	60	6,200	10.72	11.12	11.56	12.05	13.18
08-00520-11752		15	2.8	3.5	3.35	12°	6	60	6,200	15.93	16.57	17.26	18.03	19.81
08-00520-11753		20	2.8	3.5	3.35	12°	6	65	6,600	21.14	22.01	22.96	24.01	Free
08-00520-11754		25	2.8	3.5	3.35	12°	6	65	6,600	26.36	27.46	28.67	29.99	Free
08-00520-11755		30	2.8	3.5	3.35	12°	6	70	7,000	31.57	32.91	34.37	35.98	Free
08-00520-11756		35	2.8	3.5	3.35	12°	6	80	8,500	36.79	38.36	40.07	Free	Free
08-00520-11757		40	2.8	3.5	3.35	12°	6	90	9,400	42.00	43.80	45.77	Free	Free
08-00520-11758		45	2.8	3.5	3.35	12°	6	90	10,200	47.22	49.25	Free	Free	Free

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H 高硬度钢～52 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
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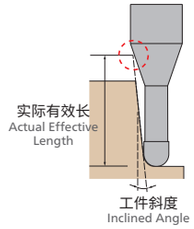
常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

MRB230

无限涂层 长颈球头铣刀（深沟加工用）
MUGEN COATING 2-Flute Long Neck Ball End Mill

切削参数参考表
Recommended Milling Conditions



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
08-00520-02000	R2	10	3	4	3.8	12°	6	65	4,300	10.83	11.22	11.66	12.14	13.25
08-00520-32001		12	3	4	3.8	12°	6	65	5,600	12.91	13.40	13.94	14.53	15.91
08-00520-32002		14	3	4	3.8	12°	6	65	5,600	15.00	15.58	16.22	16.92	18.56
08-00520-02001		15	3	4	3.8	12°	6	65	5,600	16.04	16.67	17.36	18.12	19.89
08-00520-32003		16	3	4	3.8	12°	6	65	5,600	17.09	17.76	18.50	19.32	Free
08-00520-02003		20	3	4	3.8	12°	6	65	5,600	21.26	22.12	23.06	24.10	Free
08-00520-02004		25	3	4	3.8	12°	6	70	5,600	26.47	27.57	28.77	30.09	Free
08-00520-02005		30	3	4	3.8	12°	6	70	5,600	31.68	33.01	34.47	Free	Free
08-00520-02006		35	3	4	3.8	12°	6	80	6,500	36.90	38.46	Free	Free	Free
08-00520-02007		40	3	4	3.8	12°	6	85	7,300	42.11	43.91	Free	Free	Free
08-00520-02008		45	3	4	3.8	12°	6	90	9,400	47.33	49.36	Free	Free	Free
08-00520-02009		50	3	4	3.8	12°	6	100	10,000	52.54	54.80	Free	Free	Free
08-00520-32501	R2.5	10	3.5	5	4.8	12°	6	70	6,600	10.81	11.18	11.59	12.04	Free
08-00520-12501		15	3.5	5	4.8	12°	6	70	9,400	16.02	16.63	17.29	Free	Free
08-00520-02501		20	3.5	5	4.8	12°	6	70	9,400	21.24	22.08	Free	Free	Free
08-00520-02502		25	3.5	5	4.8	12°	6	70	9,400	26.45	27.52	Free	Free	Free
08-00520-02503		30	3.5	5	4.8	12°	6	80	10,000	31.66	Free	Free	Free	Free
08-00520-02504		35	3.5	5	4.8	12°	6	80	10,000	36.88	Free	Free	Free	Free
08-00520-12502		40	3.5	5	4.8	12°	6	90	12,700	42.09	Free	Free	Free	Free
08-00520-12503		45	3.5	5	4.8	12°	6	100	13,200	47.31	Free	Free	Free	Free
08-00520-12504		50	3.5	5	4.8	12°	6	100	14,300	52.52	Free	Free	Free	Free
08-00520-33001	R3	10	6	6	5.8	–	6	70	7,000	Free	Free	Free	Free	Free
08-00520-43001		15	6	6	5.8	–	6	70	7,000	Free	Free	Free	Free	Free
08-00520-13001		20	6	6	5.8	–	6	70	7,000	Free	Free	Free	Free	Free
08-00520-13002		25	6	6	5.8	–	6	70	7,000	Free	Free	Free	Free	Free
08-00520-03001		30	6	6	5.8	–	6	80	7,300	Free	Free	Free	Free	Free
08-00520-13003		35	6	6	5.8	–	6	80	7,500	Free	Free	Free	Free	Free
08-00520-13004		40	6	6	5.8	–	6	90	7,900	Free	Free	Free	Free	Free
08-00520-13005		45	6	6	5.8	–	6	100	8,500	Free	Free	Free	Free	Free
08-00520-03003		50	6	6	5.8	–	6	120	8,600	Free	Free	Free	Free	Free

订购方法 How to Order

请指定MRB230 球头半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MRB230 (R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK・HPM1 (～45HRC)				高硬度钢 Hardened Steels SKD・STAVAX・HPM38 (～55HRC)				铜合金 Copper			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(刃径) L/D	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1	ap mm	ae mm	mm/min	min-1
0.05	0.3	3	0.005	0.005	80	20,000～50,000	0.003	0.003	60	20,000～50,000	0.005	0.005	80	20,000～50,000
	0.5	5	0.003	0.003	70	20,000～50,000	0.003	0.003	40	20,000～50,000	0.005	0.005	70	20,000～50,000
0.075	0.3	2	0.005	0.015	150	20,000～50,000	0.003	0.005	120	20,000～50,000	0.008	0.01	150	20,000～50,000
	0.5	3.33	0.004	0.007	150	20,000～50,000	0.003	0.005	120	20,000～50,000	0.007	0.008	150	20,000～50,000
	1	6.67	0.003	0.005	100	20,000～50,000	0.002	0.003	70	20,000～50,000	0.005	0.007	100	20,000～50,000
0.1	0.5	2.5	0.01	0.02	250	20,000～50,000	0.01	0.01	210	20,000～50,000	0.01	0.02	250	20,000～50,000
	0.75	3.75	0.007	0.01	250	20,000～50,000	0.005	0.01	210	20,000～50,000	0.01	0.015	250	20,000～50,000
	1	5	0.005	0.01	250	20,000～50,000	0.003	0.005	210	20,000～50,000	0.008	0.015	250	20,000～50,000
	1.25	6.25	0.003	0.01	150	20,000～50,000	0.003	0.005	120	20,000～50,000	0.005	0.015	150	20,000～50,000
	1.5	7.5	0.003	0.01	150	20,000～50,000	0.003	0.005	120	20,000～50,000	0.005	0.015	150	20,000～50,000
	1.75	8.75	0.003	0.007	150	20,000～50,000	0.002	0.005	120	20,000～50,000	0.005	0.01	150	20,000～50,000
	2	10	0.003	0.005	100	20,000～50,000	0.002	0.003	80	20,000～50,000	0.005	0.007	100	20,000～50,000
	2.5	12.5	0.003	0.005	100	20,000～50,000	0.002	0.003	80	20,000～50,000	0.005	0.007	100	20,000～50,000
	3	15	0.002	0.003	80	20,000～50,000	0.002	0.002	60	20,000～50,000	0.003	0.004	80	20,000～50,000
0.15	0.5	1.7	0.01	0.02	250	20,000～50,000	0.01	0.015	210	20,000～50,000	0.012	0.025	250	20,000～50,000
	0.6	2	0.01	0.02	250	20,000～50,000	0.01	0.015	210	20,000～50,000	0.012	0.025	250	20,000～50,000
	0.75	2.5	0.008	0.015	250	20,000～50,000	0.007	0.01	210	20,000～50,000	0.01	0.02	250	20,000～50,000
	1	3.3	0.007	0.01	250	20,000～50,000	0.005	0.01	210	20,000～50,000	0.01	0.02	250	20,000～50,000
	1.25	4.2	0.005	0.01	250	20,000～50,000	0.005	0.005	210	20,000～50,000	0.008	0.015	250	20,000～50,000
	1.5	5	0.005	0.01	200	20,000～50,000	0.005	0.005	170	20,000～50,000	0.008	0.015	200	20,000～50,000
	1.75	5.8	0.005	0.01	200	20,000～50,000	0.005	0.005	170	20,000～50,000	0.008	0.015	200	20,000～50,000
	2	6.7	0.003	0.01	150	20,000～50,000	0.003	0.005	120	20,000～50,000	0.005	0.012	150	20,000～50,000
	2.25	7.5	0.003	0.01	150	20,000～50,000	0.003	0.005	120	20,000～50,000	0.005	0.012	150	20,000～50,000
	2.5	8.3	0.003	0.007	150	20,000～50,000	0.003	0.003	120	20,000～50,000	0.005	0.01	150	20,000～50,000
	2.75	9.2	0.003	0.007	150	20,000～50,000	0.003	0.003	120	20,000～50,000	0.005	0.01	150	20,000～50,000
	3	10	0.003	0.005	150	20,000～50,000	0.003	0.003	120	20,000～50,000	0.005	0.007	150	20,000～50,000
	3.5	11.7	0.003	0.005	100	20,000～50,000	0.003	0.003	80	20,000～50,000	0.005	0.007	100	20,000～50,000
	4	13.3	0.003	0.005	100	20,000～50,000	0.003	0.003	80	20,000～50,000	0.005	0.007	100	20,000～50,000
	4.5	15	0.003	0.003	80	20,000～50,000	0.003	0.003	80	20,000～50,000	0.005	0.005	80	20,000～50,000
	5	16.7	0.003	0.003	80	20,000～50,000	0.003	0.003	80	20,000～50,000	0.005	0.005	80	20,000～50,000
0.2	0.5	1.25	0.02	0.05	800	20,000～50,000	0.02	0.03	650	20,000～50,000	0.03	0.07	800	20,000～50,000
	0.75	1.9	0.02	0.05	800	20,000～50,000	0.02	0.03	650	20,000～50,000	0.03	0.07	800	20,000～50,000
	1	2.5	0.02	0.05	800	20,000～50,000	0.02	0.03	650	20,000～50,000	0.03	0.07	800	20,000～50,000
	1.5	3.8	0.02	0.03	700	20,000～50,000	0.01	0.02	600	20,000～50,000	0.03	0.05	700	20,000～50,000
	2	5	0.015	0.02	600	20,000～50,000	0.01	0.015	500	20,000～50,000	0.02	0.03	600	20,000～50,000
	2.5	6.3	0.015	0.02	450	20,000～50,000	0.01	0.015	380	20,000～50,000	0.02	0.03	450	20,000～50,000
	3	7.5	0.01	0.02	400	20,000～30,000	0.01	0.01	340	20,000～30,000	0.015	0.03	400	20,000～30,000
	3.5	8.8	0.01	0.015	350	20,000～30,000	0.01	0.01	300	20,000～30,000	0.015	0.02	350	20,000～30,000
	4	10	0.005	0.01	250	20,000～30,000	0.005	0.007	210	20,000～30,000	0.008	0.015	250	20,000～30,000
	4.5	11.3	0.005	0.007	200	20,000～30,000	0.005	0.005	170	20,000～30,000	0.008	0.01	200	20,000～30,000
	5	12.5	0.003	0.005	150	20,000～30,000	0.003	0.005	120	20,000～30,000	0.005	0.007	150	20,000～30,000
	5.5	13.8	0.003	0.005	100	20,000～30,000	0.003	0.005	80	20,000～30,000	0.005	0.007	100	20,000～30,000
	6	15	0.003	0.003	80	20,000～30,000	0.003	0.003	60	20,000～30,000	0.005	0.005	80	20,000～30,000
0.25	1	2	0.03	0.05	800	20,000～50,000	0.02	0.05	680	20,000～50,000	0.045	0.07	800	20,000～50,000
	1.5	3	0.03	0.05	700	20,000～50,000	0.02	0.04	600	20,000～50,000	0.04	0.07	700	20,000～50,000
	2	4	0.02	0.04	600	20,000～50,000	0.02	0.03	510	20,000～50,000	0.03	0.06	600	20,000～50,000
	2.5	5	0.015	0.04	600	20,000～50,000	0.01	0.03	510	20,000～50,000	0.02	0.06	600	20,000～50,000
	3	6	0.015	0.035	500	20,000～50,000	0.01	0.025	420	20,000～50,000	0.02	0.05	500	20,000～50,000
	3.5	7	0.015	0.03	400	20,000～50,000	0.01	0.02	340	20,000～50,000	0.02	0.045	400	20,000～50,000

长颈 Long Neck 球头 Ball
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

切削参数参考表
Recommended Milling Conditions

MRB230

切削参数参考表
Recommended Milling Conditions

球头 Ball
长颈 Long Neck
涂层 Coating

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK・HPM1 (～45HRC)				高硬度钢 Hardened Steels SKD・STAVAX・HPM38 (～55HRC)				铜合金 Copper			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(刃径) L/D	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.25	4	8	0.012	0.02	400	20,000～50,000	0.005	0.01	340	20,000～50,000	0.018	0.03	400	20,000～50,000
	4.5	9	0.008	0.01	320	20,000～50,000	0.005	0.005	270	20,000～50,000	0.012	0.015	320	20,000～50,000
	5	10	0.005	0.01	250	20,000～30,000	0.005	0.005	210	20,000～30,000	0.008	0.015	250	20,000～30,000
	5.5	11	0.005	0.007	200	20,000～30,000	0.003	0.003	170	20,000～30,000	0.008	0.01	200	20,000～30,000
	6	12	0.005	0.005	150	20,000～30,000	0.003	0.003	120	20,000～30,000	0.008	0.008	150	20,000～30,000
	7	14	0.003	0.005	120	20,000～30,000	0.003	0.003	100	20,000～30,000	0.005	0.008	120	20,000～30,000
	8	16	0.003	0.003	120	20,000～30,000	0.002	0.002	100	20,000～30,000	0.005	0.005	120	20,000～30,000
	9	18	0.002	0.002	100	18,000～24,000	0.002	0.002	80	18,000～24,000	0.003	0.003	100	18,000～24,000
	10	20	0.002	0.002	80	18,000～24,000	0.002	0.002	60	18,000～24,000	0.003	0.003	80	18,000～24,000
0.3	1	1.7	0.05	0.1	1,200	20,000～50,000	0.05	0.07	1,000	20,000～50,000	0.07	0.12	1,200	20,000～50,000
	1.5	2.5	0.05	0.1	1,200	20,000～50,000	0.05	0.07	1,000	20,000～50,000	0.07	0.12	1,200	20,000～50,000
	2	3.3	0.05	0.1	1,200	20,000～50,000	0.04	0.07	1,000	20,000～50,000	0.07	0.12	1,200	20,000～50,000
	2.5	4.2	0.035	0.1	1,200	20,000～50,000	0.03	0.06	1,000	20,000～50,000	0.05	0.12	1,200	20,000～50,000
	3	5	0.025	0.1	1,000	20,000～50,000	0.03	0.05	850	20,000～50,000	0.04	0.1	1,000	20,000～50,000
	3.5	5.8	0.025	0.08	1,000	20,000～50,000	0.02	0.05	850	20,000～50,000	0.04	0.1	1,000	20,000～50,000
	4	6.7	0.025	0.05	800	20,000～50,000	0.02	0.04	680	20,000～50,000	0.035	0.08	800	20,000～50,000
	4.5	7.5	0.025	0.05	750	20,000～50,000	0.01	0.03	630	20,000～50,000	0.035	0.08	750	20,000～50,000
	5	8.3	0.02	0.04	500	20,000～30,000	0.01	0.02	420	20,000～30,000	0.03	0.06	500	20,000～30,000
	5.5	9.2	0.013	0.02	500	20,000～30,000	0.01	0.01	420	20,000～30,000	0.02	0.03	500	20,000～30,000
	6	10	0.01	0.02	450	20,000～30,000	0.005	0.01	380	20,000～30,000	0.015	0.03	450	20,000～30,000
	6.5	10.8	0.008	0.02	450	20,000～30,000	0.005	0.005	380	20,000～30,000	0.012	0.03	450	20,000～30,000
	7	11.7	0.008	0.02	400	20,000～30,000	0.005	0.005	340	20,000～30,000	0.012	0.03	400	20,000～30,000
	7.5	12.5	0.005	0.02	350	20,000～30,000	0.003	0.005	300	20,000～30,000	0.008	0.03	350	20,000～30,000
	8	13.3	0.005	0.01	300	18,000～24,000	0.003	0.005	250	18,000～24,000	0.008	0.015	300	18,000～24,000
	8.5	14.2	0.005	0.01	250	18,000～24,000	0.003	0.003	210	18,000～24,000	0.008	0.015	250	18,000～24,000
	9	15	0.005	0.01	250	18,000～24,000	0.003	0.003	210	18,000～24,000	0.007	0.015	250	18,000～24,000
	9.5	15.8	0.005	0.005	200	18,000～24,000	0.003	0.003	170	18,000～24,000	0.007	0.008	200	18,000～24,000
	10	16.7	0.003	0.005	150	18,000～24,000	0.002	0.003	120	18,000～24,000	0.005	0.008	150	18,000～24,000
	11	18.3	0.003	0.003	110	16,000～20,000	0.002	0.002	90	16,000～20,000	0.005	0.005	110	16,000～20,000
	12	20	0.003	0.003	80	16,000～20,000	0.002	0.002	60	16,000～20,000	0.005	0.005	80	16,000～20,000
0.35	2	2.9	0.08	0.12	1,800	20,000～50,000	0.07	0.08	1,300	20,000～50,000	0.1	0.15	1,500	20,000～30,000
	4	5.7	0.05	0.11	1,300	20,000～50,000	0.03	0.06	1,100	20,000～50,000	0.06	0.12	1,200	20,000～30,000
	6	8.6	0.03	0.05	700	20,000～30,000	0.01	0.02	600	20,000～30,000	0.04	0.07	600	20,000～30,000
	8	11.4	0.005	0.01	400	18,000～24,000	0.003	0.005	330	18,000～24,000	0.008	0.01	400	18,000～24,000
0.4	2	2.5	0.1	0.15	2,000	20,000～50,000	0.1	0.12	1,700	20,000～50,000	0.15	0.2	2,000	20,000～50,000
	3	3.8	0.07	0.15	1,800	20,000～50,000	0.07	0.1	1,500	20,000～50,000	0.12	0.2	1,800	20,000～50,000
	4	5	0.05	0.12	1,500	20,000～50,000	0.05	0.08	1,300	20,000～50,000	0.1	0.2	1,500	20,000～50,000
	5	6.3	0.05	0.1	1,200	20,000～50,000	0.04	0.07	1,000	20,000～50,000	0.08	0.15	1,200	20,000～50,000
	6	7.5	0.05	0.08	900	20,000～30,000	0.03	0.05	750	20,000～30,000	0.07	0.12	900	20,000～30,000
	7	8.8	0.03	0.05	700	20,000～30,000	0.02	0.03	600	20,000～30,000	0.05	0.08	700	20,000～30,000
	8	10	0.015	0.03	500	18,000～24,000	0.01	0.01	420	18,000～24,000	0.02	0.05	500	18,000～24,000
	9	11.3	0.005	0.01	400	18,000～24,000	0.003	0.005	340	18,000～24,000	0.008	0.01	400	18,000～24,000
	10	12.5	0.005	0.01	350	18,000～24,000	0.003	0.005	300	18,000～24,000	0.008	0.008	350	18,000～24,000
	12	15	0.005	0.005	250	16,000～20,000	0.003	0.003	210	16,000～20,000	0.008	0.008	250	16,000～20,000
0.45	2	2.2	0.15	0.2	2,500	20,000～50,000	0.1	0.2	2,000	20,000～50,000	0.2	0.3	2,800	20,000～50,000
	4	4.4	0.1	0.2	2,000	20,000～50,000	0.05	0.12	1,500	20,000～50,000	0.15	0.25	2,000	20,000～50,000
	6	6.7	0.07	0.15	1,300	20,000～30,000	0.035	0.05	1,000	20,000～30,000	0.1	0.2	1,300	20,000～30,000
	8	8.9	0.035	0.05	800	20,000～30,000	0.025	0.04	700	20,000～30,000	0.055	0.08	800	18,000～24,000

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK・HPM1 (～45HRC)				高硬度钢 Hardened Steels SKD・STAVAX・HPM38 (～55HRC)				铜合金 Copper			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(刃径) L/D	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.5	2	2	0.25	0.35	3,200	20,000～50,000	0.12	0.3	2,500	20,000～50,000	0.25	0.4	3,500	20,000～50,000
	2.5	2.5	0.25	0.3	3,000	20,000～50,000	0.12	0.3	2,500	20,000～50,000	0.25	0.4	3,200	20,000～50,000
	3	3	0.2	0.3	3,000	20,000～50,000	0.12	0.3	2,500	20,000～50,000	0.25	0.4	3,000	20,000～50,000
	4	4	0.15	0.25	2,500	20,000～50,000	0.1	0.2	2,100	20,000～50,000	0.2	0.4	2,500	20,000～50,000
	5	5	0.1	0.25	2,000	20,000～50,000	0.08	0.17	1,700	20,000～50,000	0.15	0.35	2,000	20,000～50,000
	6	6	0.1	0.2	1,500	20,000～50,000	0.07	0.12	1,200	20,000～50,000	0.15	0.3	1,500	20,000～50,000
	7	7	0.08	0.2	1,300	20,000～30,000	0.06	0.1	1,100	20,000～30,000	0.12	0.3	1,300	20,000～30,000
	8	8	0.05	0.1	1,200	20,000～30,000	0.05	0.08	1,000	20,000～30,000	0.08	0.15	1,200	20,000～30,000
	9	9	0.04	0.06	1,000	20,000～30,000	0.05	0.05	850	20,000～30,000	0.06	0.1	1,000	20,000～30,000
	10	10	0.03	0.05	800	20,000～30,000	0.03	0.05	680	20,000～30,000	0.05	0.08	800	20,000～30,000
	12	12	0.015	0.025	600	16,000～20,000	0.01	0.03	510	16,000～20,000	0.02	0.04	600	16,000～20,000
	13	13	0.012	0.025	600	16,000～20,000	0.007	0.02	450	16,000～20,000	0.015	0.03	600	16,000～20,000
	14	14	0.01	0.02	500	16,000～20,000	0.005	0.01	420	16,000～20,000	0.015	0.03	500	16,000～20,000
	16	16	0.005	0.01	250	12,000～16,000	0.005	0.01	210	12,000～16,000	0.01	0.015	250	12,000～16,000
	18	18	0.005	0.005	150	12,000～16,000	0.003	0.003	120	12,000～16,000	0.008	0.01	150	12,000～16,000
	20	20	0.005	0.005	100	12,000～16,000	0.003	0.003	80	12,000～16,000	0.008	0.008	100	12,000～16,000
	22	22	0.003	0.005	80	12,000～16,000	0.002	0.003	60	12,000～16,000	0.005	0.008	80	12,000～16,000
0.6	2.4	2	0.25	0.35	3,400	20,000～30,000	0.12	0.3	2,500	20,000～30,000	0.3	0.45	3,400	20,000～30,000
	4	3.3	0.2	0.3	3,000	20,000～30,000	0.12	0.3	2,500	20,000～30,000	0.28	0.45	3,000	20,000～30,000
	6	5	0.1	0.25	2,000	20,000～30,000	0.08	0.17	1,700	20,000～30,000	0.15	0.4	2,000	20,000～30,000
	8	6.7	0.08	0.2	1,300	20,000～30,000	0.06	0.15	1,100	20,000～30,000	0.12	0.3	1,300	20,000～30,000
	10	8.3	0.05	0.1	1,200	14,000～20,000	0.03	0.08	1,000	14,000～20,000	0.08	0.15	1,200	14,000～20,000
	12	10	0.03	0.05	800	14,000～20,000	0.02	0.04	680	14,000～20,000	0.05	0.08	800	14,000～20,000
	14	11.7	0.015	0.025	600	14,000～20,000	0.01	0.02	510	14,000～20,000	0.02	0.04	600	14,000～20,000
	16	13.3	0.01	0.02	400	14,000～20,000	0.01	0.01	340	14,000～20,000	0.015	0.03	400	14,000～20,000
	18	15	0.005	0.01	250	12,000～18,000	0.005	0.01	210	12,000～18,000	0.012	0.015	250	12,000～18,000
	20	16.7	0.005	0.007	200	12,000～18,000	0.005	0.005	170	12,000～18,000	0.01	0.01	200	12,000～18,000
	24	20	0.005	0.005	100	12,000～18,000	0.003	0.003	80	12,000～18,000	0.008	0.01	100	12,000～18,000
0.7	8	5.7	0.1	0.3	2,500	20,000～30,000	0.1	0.2	2,100	20,000～30,000	0.15	0.45	2,500	20,000～30,000
	12	8.6	0.07	0.12	1,200	14,000～20,000	0.05	0.1	1,000	14,000～20,000	0.1	0.18	1,200	14,000～20,000
	16	11.4	0.03	0.05	600	14,000～20,000	0.015	0.03	510	14,000～20,000	0.05	0.08	600	14,000～20,000
0.75	3	2	0.2	0.35	4,000	20,000～30,000	0.15	0.3	3,400	20,000～30,000	0.3	0.5	4,000	20,000～30,000
	4	2.7	0.2	0.3	4,000	20,000～30,000	0.15	0.25	3,400	20,000～30,000	0.3	0.45	4,000	20,000～30,000
	6	4	0.15	0.3	3,000	20,000～30,000	0.12	0.2	2,500	20,000～30,000	0.2	0.45	3,000	20,000～30,000
	8	5.3	0.1	0.25	2,400	20,000～30,000	0.08	0.18	2,000	20,000～30,000	0.15	0.4	2,400	20,000～30,000
	10	6.7	0.08	0.2	1,800	20,000～30,000	0.06	0.12	1,500	20,000～30,000	0.12	0.3	1,800	20,000～30,000
	12	8	0.07	0.13	1,200	18,000～24,000	0.05	0.09	1,000	18,000～24,000	0.1	0.2	1,200	18,000～24,000
	14	9.3	0.06	0.1	1,200	18,000～24,000	0.04	0.07	1,000	18,000～24,000	0.1	0.15	1,200	18,000～24,000
	16	10.7	0.05	0.08	800	12,000～18,000	0.035	0.06	680	12,000～18,000	0.07	0.12	800	12,000～18,000
	18	12	0.03	0.05	500	12,000～18,000	0.02	0.04	420	12,000～18,000	0.05	0.08	500	12,000～18,000
	20	13.3	0.02	0.04	400	12,000～18,000	0.015	0.03	340	12,000～18,000	0.03	0.06	400	12,000～18,000
	22	14.7	0.01	0.02	250	10,000～14,000	0.005	0.005	210	10,000～14,000	0.02	0.03	250	10,000～14,000
	30	20	0.005	0.005	100	10,000～14,000	0.003	0.005	80	10,000～14,000	0.01	0.008	100	10,000～14,000
0.8	4	2.5	0.2	0.3	4,000	18,000～24,000	0.17	0.25	3,400	18,000～24,000	0.3	0.45	4,000	18,000～24,000
	8	5	0.1	0.3	3,000	18,000～24,000	0.09	0.2	2,500	18,000～24,000	0.15	0.45	3,000	18,000～24,000
	12	7.5	0.07	0.15	1,800	18,000～24,000	0.06	0.12	1,500	18,000～24,000	0.1	0.25	1,800	18,000～24,000
	16	10	0.05	0.1	650	12,000～18,000	0.035	0.07	550	12,000～18,000	0.08	0.15	650	12,000～18,000
	20	12.5	0.03	0.05	450	12,000～18,000	0.02	0.04	380	12,000～18,000	0.05	0.08	450	12,000～18,000

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

切削参数参考表
Recommended Milling Conditions

MRB230

切削参数参考表
Recommended Milling Conditions

球头 Ball
长颈 Long Neck
涂层 Coating

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK・HPM1 (～45HRC)				高硬度钢 Hardened Steels SKD・STAVAX・HPM38 (～55HRC)				铜合金 Copper			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(刃径) L/D	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.9	8	4.4	0.15	0.3	2,500	16,000～20,000	0.12	0.2	2,100	16,000～20,000	0.2	0.45	2,500	16,000～20,000
	12	6.7	0.1	0.2	1,800	12,000～16,000	0.07	0.15	1,500	12,000～16,000	0.15	0.3	1,800	12,000～16,000
	16	8.9	0.08	0.13	1,600	10,000～14,000	0.06	0.1	1,400	10,000～14,000	0.12	0.2	1,600	10,000～14,000
	20	11.1	0.05	0.1	1,000	8,000～12,000	0.04	0.08	850	8,000～12,000	0.08	0.15	1,000	8,000～12,000
1	3	1.5	0.3	0.5	4,000	20,000～30,000	0.2	0.5	3,400	20,000～30,000	0.45	0.7	4,000	20,000～30,000
	4	2	0.3	0.5	4,000	20,000～30,000	0.2	0.45	3,400	20,000～30,000	0.45	0.7	4,000	20,000～30,000
	6	3	0.25	0.5	3,000	20,000～30,000	0.2	0.4	2,500	20,000～30,000	0.38	0.7	3,000	20,000～30,000
	8	4	0.2	0.3	2,500	16,000～20,000	0.15	0.3	2,100	16,000～20,000	0.3	0.45	2,500	16,000～20,000
	10	5	0.15	0.3	2,500	16,000～20,000	0.1	0.2	2,100	16,000～20,000	0.23	0.45	2,500	16,000～20,000
	12	6	0.13	0.2	1,800	12,000～16,000	0.1	0.15	1,500	12,000～16,000	0.2	0.3	1,800	12,000～16,000
	13	6.5	0.12	0.2	1,800	12,000～16,000	0.08	0.13	1,500	12,000～16,000	0.2	0.3	1,800	12,000～16,000
	14	7	0.1	0.2	1,800	12,000～16,000	0.07	0.13	1,500	12,000～16,000	0.15	0.3	1,800	12,000～16,000
	16	8	0.1	0.15	1,600	10,000～14,000	0.06	0.11	1,400	10,000～14,000	0.15	0.25	1,600	10,000～14,000
	18	9	0.07	0.12	1,600	10,000～14,000	0.05	0.1	1,400	10,000～14,000	0.1	0.2	1,600	10,000～14,000
	20	10	0.06	0.1	1,000	8,000～12,000	0.05	0.07	850	8,000～12,000	0.1	0.15	1,000	8,000～12,000
	22	11	0.05	0.1	1,000	8,000～12,000	0.04	0.06	850	8,000～12,000	0.08	0.15	1,000	8,000～12,000
	25	12.5	0.03	0.05	800	8,000～12,000	0.03	0.04	680	8,000～12,000	0.05	0.08	800	8,000～12,000
	30	15	0.02	0.04	420	6,000～10,000	0.02	0.04	360	6,000～10,000	0.03	0.06	420	6,000～10,000
	35	17.5	0.02	0.03	140	6,000～10,000	0.015	0.02	120	6,000～10,000	0.03	0.04	140	6,000～10,000
	40	20	0.007	0.01	100	6,000～10,000	0.004	0.007	80	6,000～10,000	0.01	0.015	100	6,000～10,000
1.25	6	2.4	0.35	0.5	4,000	16,000～20,000	0.3	0.4	3,400	16,000～20,000	0.5	0.8	4,000	16,000～20,000
	10	4	0.2	0.5	3,000	16,000～20,000	0.25	0.35	2,500	16,000～20,000	0.3	0.8	3,000	16,000～20,000
	15	6	0.15	0.3	2,500	16,000～20,000	0.1	0.2	2,100	16,000～20,000	0.25	0.45	2,500	16,000～20,000
	20	8	0.1	0.2	1,800	12,000～16,000	0.08	0.15	1,500	12,000～16,000	0.15	0.3	1,800	12,000～16,000
	25	10	0.075	0.14	1,100	10,000～14,000	0.05	0.1	930	10,000～14,000	0.1	0.2	1,100	10,000～14,000
	30	12	0.04	0.08	800	8,000～12,000	0.02	0.06	680	8,000～12,000	0.06	0.15	800	8,000～12,000
	35	14	0.03	0.07	450	6,000～10,000	0.01	0.03	380	6,000～10,000	0.05	0.1	450	6,000～10,000
1.5	6	2	0.35	0.6	4,000	16,000～20,000	0.25	0.5	3,400	16,000～20,000	0.5	1	4,000	16,000～20,000
	8	2.7	0.3	0.5	4,000	16,000～20,000	0.2	0.5	3,400	16,000～20,000	0.45	0.8	4,000	16,000～20,000
	10	3.3	0.3	0.5	4,000	16,000～20,000	0.2	0.45	3,400	16,000～20,000	0.45	0.8	4,000	16,000～20,000
	12	4	0.2	0.4	3,000	16,000～20,000	0.2	0.4	2,500	16,000～20,000	0.3	0.6	3,000	16,000～20,000
	14	4.7	0.2	0.4	3,000	16,000～20,000	0.15	0.35	2,500	16,000～20,000	0.3	0.6	3,000	16,000～20,000
	15	5	0.15	0.4	3,000	16,000～20,000	0.13	0.35	2,500	16,000～20,000	0.23	0.6	3,000	16,000～20,000
	16	5.3	0.15	0.35	3,000	16,000～20,000	0.13	0.35	2,500	16,000～20,000	0.23	0.5	3,000	16,000～20,000
	20	6.7	0.15	0.3	1,800	12,000～16,000	0.1	0.2	1,500	12,000～16,000	0.23	0.45	1,800	12,000～16,000
	25	8.3	0.13	0.27	1,200	12,000～16,000	0.1	0.16	1,000	12,000～16,000	0.2	0.4	1,200	12,000～16,000
	30	10	0.1	0.2	800	8,000～12,000	0.07	0.12	680	8,000～12,000	0.15	0.3	800	8,000～12,000
	35	11.7	0.07	0.15	600	8,000～12,000	0.05	0.1	510	8,000～12,000	0.1	0.2	600	8,000～12,000
	40	13.3	0.05	0.1	460	6,000～10,000	0.05	0.07	390	6,000～10,000	0.08	0.15	460	6,000～10,000
1.75	10	2.9	0.35	0.6	4,000	16,000～20,000	0.25	0.5	3,400	16,000～20,000	0.5	1	4,000	16,000～20,000
	15	4.3	0.3	0.4	4,000	16,000～20,000	0.2	0.45	3,400	16,000～20,000	0.45	0.6	4,000	16,000～20,000
	20	5.7	0.2	0.3	2,400	14,000～18,000	0.13	0.35	2,000	14,000～18,000	0.3	0.45	2,400	14,000～18,000
	25	7.1	0.17	0.3	2,000	14,000～18,000	0.1	0.3	1,800	14,000～18,000	0.25	0.42	2,000	14,000～18,000
	30	8.6	0.15	0.27	1,600	8,000～12,000	0.1	0.2	1,400	8,000～12,000	0.23	0.4	1,600	8,000～12,000
	35	10	0.1	0.2	1,200	8,000～12,000	0.07	0.15	1,000	8,000～12,000	0.15	0.3	1,200	8,000～12,000
	40	11.4	0.07	0.13	800	6,000～10,000	0.05	0.1	680	6,000～10,000	0.1	0.2	800	6,000～10,000
	45	12.9	0.05	0.1	800	6,000～10,000	0.05	0.05	680	6,000～10,000	0.08	0.15	800	6,000～10,000

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK・HPM1 (～45HRC)				高硬度钢 Hardened Steels SKD・STAVAX・HPM38 (～55HRC)				铜合金 Copper			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(刃径) L/D	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
2	10	2.5	0.35	0.8	4,000	16,000～20,000	0.25	0.7	3,400	16,000～20,000	0.55	1.2	4,000	16,000～20,000
	12	3	0.35	0.7	4,000	16,000～20,000	0.25	0.7	3,400	16,000～20,000	0.53	1	4,000	16,000～20,000
	14	3.5	0.3	0.6	4,000	16,000～20,000	0.2	0.5	3,400	16,000～20,000	0.45	1	4,000	16,000～20,000
	15	3.8	0.25	0.55	3,500	16,000～20,000	0.2	0.4	3,000	16,000～20,000	0.38	0.8	3,500	16,000～20,000
	16	4	0.2	0.5	3,500	16,000～20,000	0.2	0.3	3,000	16,000～20,000	0.3	0.8	3,500	16,000～20,000
	20	5	0.2	0.35	3,300	16,000～20,000	0.15	0.3	2,800	16,000～20,000	0.3	0.5	3,300	16,000～20,000
	25	6.3	0.15	0.3	2,600	12,000～16,000	0.12	0.25	2,200	12,000～16,000	0.23	0.45	2,600	12,000～16,000
	30	7.5	0.12	0.25	2,600	12,000～16,000	0.1	0.2	2,200	12,000～16,000	0.2	0.4	2,600	12,000～16,000
	35	8.8	0.12	0.2	1,800	10,000～14,000	0.07	0.15	1,500	10,000～14,000	0.18	0.3	1,800	10,000～14,000
	40	10	0.1	0.15	1,200	10,000～14,000	0.07	0.12	1,000	10,000～14,000	0.15	0.2	1,200	10,000～14,000
	45	11.3	0.07	0.12	800	10,000～14,000	0.05	0.1	700	10,000～14,000	0.1	0.17	800	10,000～14,000
	50	12.5	0.07	0.1	600	6,000～10,000	0.05	0.07	500	6,000～10,000	0.1	0.15	600	6,000～10,000
2.5	10	2	0.4	1.2	4,000	16,000～20,000	0.3	1	3,400	16,000～20,000	0.6	1.8	4,000	16,000～20,000
	15	3	0.35	1	4,000	16,000～20,000	0.3	0.9	3,400	16,000～20,000	0.55	1.5	4,000	16,000～20,000
	20	4	0.3	0.7	4,000	16,000～20,000	0.25	0.7	3,400	16,000～20,000	0.45	1	4,000	16,000～20,000
	25	5	0.25	0.6	3,000	14,000～16,000	0.2	0.5	2,500	14,000～16,000	0.38	0.9	3,000	14,000～16,000
	30	6	0.2	0.5	2,400	14,000～16,000	0.15	0.4	2,000	14,000～16,000	0.3	0.8	2,400	14,000～16,000
	35	7	0.15	0.4	1,600	10,000～14,000	0.15	0.3	1,400	10,000～14,000	0.23	0.6	1,600	10,000～14,000
	40	8	0.15	0.3	1,200	8,000～12,000	0.12	0.2	1,000	8,000～12,000	0.23	0.45	1,200	8,000～12,000
	45	9	0.12	0.2	1,000	8,000～12,000	0.1	0.15	850	8,000～12,000	0.18	0.3	1,000	8,000～12,000
	50	10	0.1	0.15	680	6,000～10,000	0.07	0.1	570	6,000～10,000	0.15	0.25	680	6,000～10,000
3	10	1.7	0.5	1.5	4,000	14,000～18,000	0.35	1.2	3,400	14,000～18,000	0.75	2.3	4,000	14,000～18,000
	15	2.5	0.5	1.3	4,000	14,000～18,000	0.35	1.2	3,400	14,000～18,000	0.75	2	4,000	14,000～18,000
	20	3.3	0.5	1.2	4,000	14,000～18,000	0.35	1.1	3,400	14,000～18,000	0.75	1.8	4,000	14,000～18,000
	25	4.2	0.4	1	4,000	14,000～18,000	0.3	0.8	3,400	14,000～18,000	0.6	1.5	4,000	14,000～18,000
	30	5	0.35	0.7	3,000	8,000～12,000	0.25	0.6	2,500	8,000～12,000	0.53	1	3,000	8,000～12,000
	35	5.8	0.35	0.5	2,500	8,000～12,000	0.2	0.5	2,100	8,000～12,000	0.53	0.8	2,500	8,000～12,000
	40	6.7	0.25	0.4	2,300	8,000～12,000	0.2	0.4	1,900	8,000～12,000	0.38	0.6	2,300	8,000～12,000
	45	7.5	0.25	0.4	1,500	6,000～ 8,000	0.2	0.35	1,200	6,000～ 8,000	0.38	0.6	1,500	6,000～ 8,000
	50	8.3	0.2	0.4	1,500	6,000～ 8,000	0.2	0.3	1,200	6,000～ 8,000	0.3	0.6	1,500	6,000～ 8,000

备 注 Notes

※1 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示步距量。
※3 发生振刀时，请以相同的比率降低主轴转速和进给速度。
此外，主轴转速过低时，也以相同的比率降低。
※4 L（颈长）/D（外径）超过15倍时，受加工形状等因素的影响可能会较大，必须进行调整。
※5 加工高硬度钢时，建议使用油雾冷却方式。

※1 Recommend to use the milling condition as just reference. Adjust milling conditions according to machining shape and machine status.
※2 Depth of Cut : ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※3 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※4 In case L/D exceeds 15, find an adequate condition considering machining profile.
※5 Oil mist coolant is recommended for the machining of hardened steels.

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H 高硬度钢～52 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

MRBTNH230

规格 R0.05×颈角3° ～ R2×颈角1°
Size R0.05×neck taper angle3° ～ R2×neck taper angle1°

Premium ≦65 HRC

无限白金涂层 长颈锥形2刃球头铣刀
MUGEN COATING PREMIUM 2-Flute Long Taper Neck Ball End Mill

共有187种规格
Total 187 sizes

无限白金涂层 长颈锥形2刃球头铣刀
MUGEN COATING PREMIUM 2-Flute Long Taper Neck Ball End Mill

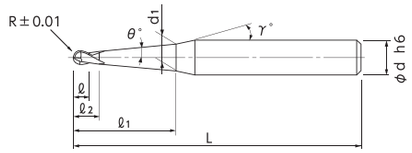
球头 Ball
锥颈 Taper Neck
涂层 Coating

MG | 2 | 30° | 3D

采用锥颈形状，大幅提高刀具刚性。
可使用与加工面倾斜角角度相同的颈角

Taper neck to improve tool rigidity.
Opition of same taper angle as inclined working angle





- 锥颈形状的球头铣刀，能实现深沟加工的高精度化。
- 采用优化的锥颈形状和无限白金涂层，加工高硬度钢时可更充分发挥特长。
- 采用通用性高的2刃设计，共有187种规格。
- Taper neck type ball end mill improves accuracy for deep milling.
- Optimized taper neck design and MUGEN COATING PREMIUM realized to show its higher ability for hardened steels.
- Lineup of total 187 size with high versatility 2-flute end mills.

※可选择颈角（θ）与加工面倾斜角角度相同的刀具。
※Please select the tool with the same neck angle as the inclined angle of the milling surface.

[颈部形状]
所述的颈角2（γ）的值仅为参考值。如果担心加工材料和颈部会干涉时，请务必实际测量进行确认。
（Neck Shape）
（γ）is reference value. Tool measurement required in order to avoid interference to the work material.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

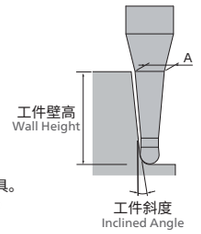
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角※ Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00588-00571	R0.05	3°	0.5	0.14	0.07	0.2	12°	2°59′	4	50	12,100
08-00588-00573			0.75	0.17	0.07	0.2	12°	2°59′	4	50	12,500
08-00588-00771	R0.075	3°	1	0.24	0.1	0.3	12°	2°59′	4	50	13,700
08-00588-00773			1.5	0.29	0.1	0.3	12°	2°59′	4	50	14,200
08-00588-01021	R0.1	30′	1.5	0.21	0.15	0.3	12°	0°29′	4	50	10,400
08-00588-01023			2	0.22	0.15	0.3	12°	0°28′	4	50	10,900
08-00588-01031		1°	1.5	0.24	0.15	0.3	12°	0°58′	4	50	10,400
08-00588-01033			2	0.25	0.15	0.3	12°	0°58′	4	50	10,900
08-00588-01041		1°30′	1.5	0.26	0.15	0.3	12°	1°29′	4	50	10,400
08-00588-01043			2	0.29	0.15	0.3	12°	1°28′	4	50	10,900
08-00588-01051		2°	1.5	0.29	0.15	0.3	12°	1°59′	4	50	10,400
08-00588-01053			2	0.32	0.15	0.3	12°	1°59′	4	50	10,900
08-00588-01073		3°	3	0.49	0.15	0.3	12°	2°59′	4	50	10,400
08-00588-01075			5	0.7	0.15	0.3	12°	2°59′	4	50	10,900
08-00588-01093		5°	3	0.7	0.15	0.3	12°	4°59′	4	50	10,400
08-00588-01095			5	1.05	0.15	0.3	12°	4°59′	4	50	10,900
08-00588-01521	R0.15	30′	2	0.32	0.2	0.45	12°	0°28′	4	50	10,400
08-00588-01523			3	0.34	0.2	0.45	12°	0°29′	4	50	10,900
08-00588-01531		1°	2	0.35	0.2	0.45	12°	0°59′	4	50	10,400
08-00588-01533			3	0.39	0.2	0.45	12°	0°59′	4	50	10,900
08-00588-01541		1°30′	2	0.38	0.2	0.45	12°	1°29′	4	50	10,400
08-00588-01543			3	0.44	0.2	0.45	12°	1°29′	4	50	10,900
08-00588-01551		2°	2	0.42	0.2	0.45	12°	1°58′	4	50	10,400
08-00588-01553			3	0.49	0.2	0.45	12°	1°59′	4	50	10,900
08-00588-01572		3°	2	0.48	0.2	0.45	12°	2°59′	4	50	10,400
08-00588-01573			3	0.59	0.2	0.45	12°	2°59′	4	50	10,600
08-00588-01575			5	0.8	0.2	0.45	12°	2°59′	4	50	10,900
08-00588-01577			7	1.01	0.2	0.45	12°	2°59′	4	50	11,100
08-00588-01593		5°	3	0.79	0.2	0.45	12°	4°59′	4	50	10,600
08-00588-01595			5	1.14	0.2	0.45	12°	4°59′	4	50	10,900
08-00588-01597			7	1.49	0.2	0.45	12°	4°59′	4	50	11,100
08-00588-02021	R0.2	30′	3	0.43	0.3	0.6	12°	0°29′	4	50	8,100
08-00588-02023			4	0.45	0.3	0.6	12°	0°29′	4	50	8,100
08-00588-02025			6	0.48	0.3	0.6	12°	0°29′	4	50	8,500
08-00588-02031		1°	3	0.48	0.3	0.6	12°	0°59′	4	50	8,100
08-00588-02033			4	0.51	0.3	0.6	12°	0°59′	4	50	8,100
08-00588-02035			6	0.58	0.3	0.6	12°	0°59′	4	50	8,500
08-00588-02041		1°30′	3	0.53	0.3	0.6	12°	1°29′	4	50	8,100
08-00588-02043			4	0.58	0.3	0.6	12°	1°29′	4	50	8,100
08-00588-02045			6	0.68	0.3	0.6	12°	1°29′	4	50	8,500
08-00588-02051		2°	3	0.58	0.3	0.6	12°	1°59′	4	50	8,100
08-00588-02053			4	0.65	0.3	0.6	12°	1°59′	4	50	8,100
08-00588-02055			6	0.79	0.3	0.6	12°	1°59′	4	50	8,500

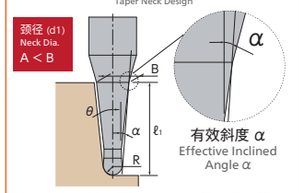
订购方法 How to Order
请指定MRBTNH230 球头半径(R)×颈角(θ)×颈长(ℓ1)。
When you order, indicate MRBTNH230 (R)×(θ)×(ℓ1).

加工案例 Machining case M-030

普通锥颈形状
General Taper Neck Design



MRBTNH230
锥颈形状
Taper Neck Design



加粗颈径提高了刀具刚性，即使在切削高硬度钢时也可抑制刀具的倾斜
Larger neck diameter makes better tool rigidity and it saves tool deflection when process on hardened steels.

※可选择颈角（θ）与加工面倾斜角角度相同的刀具。
※Please select the tool with the same neck angle as the inclined angle of the milling surface.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角※ Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00588-02073	R0.2	3°	5	0.88	0.3	0.6	12°	2°59′	4	50	8,100
08-00588-02075			7	1.09	0.3	0.6	12°	2°59′	4	50	8,500
08-00588-02093		5°	5	1.22	0.3		12°	4°59′	4	50	8,100
08-00588-02095			7	1.57	0.3	0.6	12°	4°59′	4	50	8,500
08-00588-02521	R0.25	30′	4	0.54	0.35	0.75	12°	0°29′	4	50	7,700
08-00588-02523			5	0.56	0.35	0.75	12°	0°29′	4	50	7,900
08-00588-02531		1°	4	0.61	0.35	0.75	12°	0°59′	4	50	7,700
08-00588-02533			5	0.64	0.35	0.75	12°	0°59′	4	50	7,900
08-00588-02541		1°30′	4	0.67	0.35	0.75	12°	1°29′	4	50	7,700
08-00588-02543			5	0.73	0.35	0.75	12°	1°29′	4	50	7,900
08-00588-02551		2°	4	0.74	0.35	0.75	12°	1°59′	4	50	7,700
08-00588-02553			5	0.81	0.35	0.75	12°	1°59′	4	50	7,900
08-00588-03021	R0.3	30′	4	0.64	0.45	0.9	12°	0°29′	4	50	7,100
08-00588-03023			5	0.66	0.45	0.9	12°	0°29′	4	50	7,500
08-00588-03025			6	0.67	0.45	0.9	12°	0°29′	4	50	7,500
08-00588-03027			8	0.71	0.45	0.9	12°	0°29′	4	50	7,700
08-00588-03031		1°	4	0.7	0.45	0.9	12°	0°59′	4	50	7,100
08-00588-03033			5	0.74	0.45	0.9	12°	0°59′	4	50	7,500
08-00588-03035			6	0.77	0.45	0.9	12°	0°59′	4	50	7,500
08-00588-03037			8	0.84	0.45	0.9	12°	0°59′	4	50	7,700
08-00588-03041		1°30′	4	0.77	0.45	0.9	12°	1°29′	4	50	7,100
08-00588-03043			5	0.82	0.45	0.9	12°	1°29′	4	50	7,500
08-00588-03045			6	0.87	0.45	0.9	12°	1°29′	4	50	7,500
08-00588-03047			8	0.98	0.45	0.9	12°	1°29′	4	50	7,700
08-00588-03053		2°	5	0.9	0.45	0.9	12°	1°59′	4	50	7,500
08-00588-03055			6	0.97	0.45	0.9	12°	1°59′	4	50	7,500
08-00588-03057			8	1.11	0.45	0.9	12°	1°59′	4	50	7,700
08-00588-03072		3°	4	0.96	0.45	0.9	12°	2°59′	4	50	7,500
08-00588-03073			5	1.07	0.45	0.9	12°	2°59′	4	50	7,500
08-00588-03075			7	1.28	0.45	0.9	12°	2°59′	4	50	7,700
08-00588-03092		5°	5	1.4	0.45	0.9	12°	4°59′	4	50	7,500
08-00588-03094			7	1.75	0.45	0.9	12°	4°59′	4	50	7,700
08-00588-04021	R0.4	30′	8	0.89	0.6	1.2	12°	0°29′	4	60	8,000
08-00588-04023			12	0.96	0.6	1.2	12°	0°29′	4	60	8,400
08-00588-04031		1°	8	1.03	0.6	1.2	12°	0°59′	4	60	8,000
08-00588-04033			12	1.17	0.6	1.2	12°	0°59′	4	60	8,400
08-00588-04041		1°30′	8	1.16	0.6	1.2	12°	1°29′	4	60	8,000
08-00588-04043			12	1.37	0.6	1.2	12°	1°29′	4	60	8,400
08-00588-04051		2°	8	1.29	0.6	1.2	12°	1°59′	4	60	8,000
08-00588-04053			12	1.57	0.6	1.2	12°	1°59′	4	60	8,400
★ 08-00588-05021	R0.5	30′	6	1.05	0.75	1.5	12°	0°29′	4	60	5,700
★ 08-00588-05022			8	1.08	0.75	1.5	12°	0°29′	4	60	6,200
★ 08-00588-05023			10	1.12	0.75	1.5	12°	0°29′	4	60	6,800
★ 08-00588-05024			12	1.15	0.75	1.5	12°	0°29′	4	60	6,800
★ 08-00588-05025			16	1.22	0.75	1.5	12°	0°29′	4	60	7,100
★ 08-00588-05026			20	1.29	0.75	1.5	12°	0°29′	4	70	8,600

P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
H ～60 高硬度钢 HRC Hardened Steel
H ～65 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

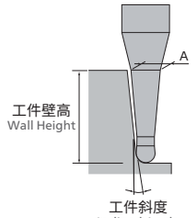
常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

无限白金涂层 长颈锥形2刃球头铣刀

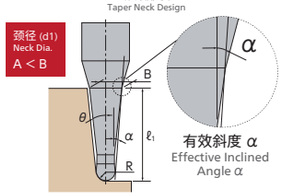
MUGEN COATING PREMIUM 2-Flute Long Taper Neck Ball End Mill

[颈部形状]
所述的颈角2(γ)的值仅为参考值。如果担心加工材料和颈部会干涉时，请务必实际测量进行确认。
〔Neck Shape〕
(γ) is reference value. Tool measurement required in order to avoid interference to the work material.

普通锥颈形状
General Taper Neck Design



MRBTNH230
锥颈形状
Taper Neck Design



加粗颈径提高了刀具刚性，即使在切削高硬度钢时也可抑制刀具的倾斜
Larger neck diameter makes better tool rigidity and it saves tool deflection when process on hardened steels.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元] Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角※ Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00588-05027	R0.5	30′	25	1.38	0.75	1.5	12°	0°29′	4	70	9,100
★ 08-00588-05028			30	1.47	0.75	1.5	12°	0°29′	4	70	9,500
★ 08-00588-05031		1°	6	1.15	0.75	1.5	12°	0°59′	4	60	5,700
★ 08-00588-05032			8	1.22	0.75	1.5	12°	0°59′	4	60	6,200
★ 08-00588-05033			10	1.29	0.75	1.5	12°	0°59′	4	60	6,800
★ 08-00588-05034			12	1.36	0.75	1.5	12°	0°59′	4	60	6,800
★ 08-00588-05035			16	1.5	0.75	1.5	12°	0°59′	4	60	7,100
★ 08-00588-05036			20	1.63	0.75	1.5	12°	0°59′	4	70	8,600
★ 08-00588-05037			25	1.81	0.75	1.5	12°	0°59′	4	70	9,100
★ 08-00588-05038			30	1.98	0.75	1.5	12°	0°59′	4	70	9,500
★ 08-00588-05041		1°30′	6	1.24	0.75	1.5	12°	1°29′	4	60	5,700
★ 08-00588-05042			8	1.35	0.75	1.5	12°	1°29′	4	60	6,200
★ 08-00588-05043			10	1.45	0.75	1.5	12°	1°29′	4	60	6,800
★ 08-00588-05044			12	1.56	0.75	1.5	12°	1°29′	4	60	6,800
★ 08-00588-05045			16	1.77	0.75	1.5	12°	1°29′	4	60	7,100
★ 08-00588-05046			20	1.98	0.75	1.5	12°	1°29′	4	70	8,600
★ 08-00588-05047			25	2.24	0.75	1.5	12°	1°29′	4	70	9,100
★ 08-00588-05048			30	2.5	0.75	1.5	12°	1°29′	4	70	9,500
★ 08-00588-05052		2°	8	1.48	0.75	1.5	12°	1°59′	4	60	6,200
★ 08-00588-05053			10	1.62	0.75	1.5	12°	1°59′	4	60	6,800
★ 08-00588-05056			20	2.32	0.75	1.5	12°	1°59′	4	70	8,600
★ 08-00588-05058			30	3.01	0.75	1.5	12°	1°59′	4	70	9,500
★ 08-00588-05073		3°	10	1.95	0.75	1.5	12°	2°59′	4	60	6,800
★ 08-00588-05076			20	3	0.75	1.5	12°	2°59′	4	70	8,600
★ 08-00588-05078			30	4.05	0.75	1.5	12°	2°59′	6	70	9,900
★ 08-00588-07521	R0.75	30′	10	1.61	1.1	2.25	12°	0°29′	4	60	7,100
★ 08-00588-07523			15	1.69	1.1	2.25	12°	0°29′	4	60	7,800
★ 08-00588-07525			20	1.78	1.1	2.25	12°	0°29′	4	70	8,600
★ 08-00588-07527			25	1.87	1.1	2.25	12°	0°29′	4	70	9,500
★ 08-00588-07529			30	1.96	1.1	2.25	12°	0°29′	4	70	10,800
★ 08-00588-07531		1°	10	1.77	1.1	2.25	12°	0°59′	4	60	7,100
★ 08-00588-07533			15	1.94	1.1	2.25	12°	0°59′	4	60	7,800
★ 08-00588-07535			20	2.12	1.1	2.25	12°	0°59′	4	70	8,600
★ 08-00588-07537			25	2.29	1.1	2.25	12°	0°59′	4	70	9,500
★ 08-00588-07539			30	2.47	1.1	2.25	12°	0°59′	4	70	10,800
★ 08-00588-07541		1°30′	10	1.93	1.1	2.25	12°	1°29′	4	60	7,100
★ 08-00588-07543			15	2.19	1.1	2.25	12°	1°29′	4	60	7,800
★ 08-00588-07545			20	2.45	1.1	2.25	12°	1°29′	4	70	8,600
★ 08-00588-07551		2°	10	2.09	1.1	2.25	12°	1°59′	4	60	7,100
★ 08-00588-07553			15	2.44	1.1	2.25	12°	1°59′	4	60	7,800
★ 08-00588-07555			20	2.79	1.1	2.25	12°	1°59′	4	70	9,500
★ 08-00588-10021	R1	30′	12	2.14	1.5	3	12°	0°29′	4	60	6,300
★ 08-00588-10022			16	2.21	1.5	3	12°	0°29′	4	60	6,500

订购方法 How to Order

请指定MRBTNH230 球头半径 (R)×颈角 (θ)×颈长 (ℓ1)。
When you order, indicate MRBTNH230 (R)×(θ)×(ℓ1).

加工案例 Machining case M-030

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

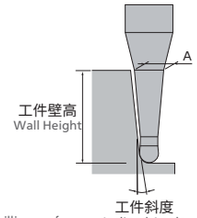
MRBTNH230

无限白金涂层 长颈锥形2刃球头铣刀

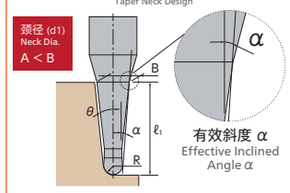
MUGEN COATING PREMIUM 2-Flute Long Taper Neck Ball End Mill

锥颈 Taper Neck
球头 Ball
涂层 Coating

普通锥颈形状
General Taper Neck Design



MRBTNH230
锥颈形状
Taper Neck Design



加粗颈径提高了刀具刚性，即使在切削高硬度钢时也可抑制刀具的倾斜
Larger neck diameter makes better tool rigidity and it saves tool deflection when process on hardened steels.

※可选择颈角 (θ) 与加工面倾斜角角度相同的刀具。
※Please select the tool with the same neck angle as the inclined angle of the milling surface.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元] Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角※ Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00588-10023	R1	30′	20	2.28	1.5	3	12°	0°29′	4	70	7,800
★ 08-00588-10024			25	2.37	1.5	3	12°	0°29′	4	70	8,600
★ 08-00588-10025			30	2.46	1.5	3	12°	0°29′	4	70	9,500
★ 08-00588-10026			35	2.54	1.5	3	12°	0°29′	4	80	10,300
★ 08-00588-10027			40	2.63	1.5	3	12°	0°29′	4	80	11,100
★ 08-00588-10028			50	2.81	1.5	3	12°	0°30′	4	90	12,600
★ 08-00588-10031		1°	12	2.33	1.5	3	12°	0°59′	4	60	6,300
★ 08-00588-10032			16	2.47	1.5	3	12°	0°59′	4	60	6,500
★ 08-00588-10033			20	2.61	1.5	3	12°	0°59′	4	70	7,800
★ 08-00588-10034			25	2.79	1.5	3	12°	0°59′	4	70	8,600
★ 08-00588-10035			30	2.96	1.5	3	12°	0°59′	4	70	9,500
★ 08-00588-10036			35	3.14	1.5	3	12°	0°59′	6	80	12,800
★ 08-00588-10037			40	3.31	1.5	3	12°	0°59′	6	80	13,400
★ 08-00588-10038			50	3.66	1.5	3	12°	0°59′	6	90	14,900
★ 08-00588-10041		1°30′	12	2.53	1.5	3	12°	1°29′	4	60	6,300
★ 08-00588-10042			16	2.74	1.5	3	12°	1°29′	4	60	6,500
★ 08-00588-10043			20	2.95	1.5	3	12°	1°29′	4	70	7,800
★ 08-00588-10044			25	3.21	1.5	3	12°	1°29′	4	70	8,600
★ 08-00588-10045			30	3.47	1.5	3	12°	1°29′	6	70	11,700
★ 08-00588-10046			35	3.73	1.5	3	12°	1°29′	6	80	12,800
★ 08-00588-10047			40	3.99	1.5	3	12°	1°29′	6	80	13,400
★ 08-00588-10048			50	4.52	1.5	3	12°	1°30′	6	90	14,900
★ 08-00588-10051		2°	12	2.72	1.5	3	12°	1°59′	4	60	6,300
★ 08-00588-10052			16	3	1.5	3	12°	1°59′	4	60	6,500
★ 08-00588-10053			20	3.28	1.5	3	12°	1°59′	4	70	8,200
★ 08-00588-10054			25	3.63	1.5	3	12°	1°59′	6	70	9,500
★ 08-00588-10055			30	3.98	1.5	3	12°	1°59′	6	70	11,700
★ 08-00588-10057			40	4.67	1.5	3	12°	1°59′	6	80	13,400
★ 08-00588-10058			50	5.37	1.5	3	12°	2°00′	6	90	14,900
★ 08-00588-15021	R1.5	30′	15	3.13	2.5	4.5	12°	0°29′	6	70	9,000
★ 08-00588-15022			20	3.22	2.5	4.5	12°	0°29′	6	70	9,600
★ 08-00588-15023			25	3.31	2.5	4.5	12°	0°29′	6	70	10,300
★ 08-00588-15024			30	3.4	2.5	4.5	12°	0°29′	6	70	11,100
★ 08-00588-15025			40	3.57	2.5	4.5	12°	0°29′	6	80	12,300
★ 08-00588-15026			50	3.74	2.5	4.5	12°	0°29′	6	90	14,300
★ 08-00588-15031		1°	15	3.37	2.5	4.5	12°	0°59′	6	70	9,000
★ 08-00588-15032			20	3.54	2.5	4.5	12°	0°59′	6	70	9,600
★ 08-00588-15033			25	3.72	2.5	4.5	12°	0°59′	6	70	10,300
★ 08-00588-15034			30	3.89	2.5	4.5	12°	0°59′	6	70	11,100
★ 08-00588-15035			40	4.24	2.5	4.5	12°	0°59′	6	80	12,300
★ 08-00588-15036			50	4.59	2.5	4.5	12°	0°59′	6	90	14,300
★ 08-00588-15041		1°30′	15	3.61	2.5	4.5	12°	1°29′	6	70	9,000
★ 08-00588-15042			20	3.87	2.5	4.5	12°	1°29′	6	70	9,600
★ 08-00588-15043			25	4.13	2.5	4.5	12°	1°29′	6	70	10,300
★ 08-00588-15044			30	4.39	2.5	4.5	12°	1°29′	6	70	11,100
★ 08-00588-15045			40	4.91	2.5	4.5	12°	1°29′	6	80	12,300
★ 08-00588-15046			50	5.44	2.5	4.5	12°	1°29′	6	90	14,300
★ 08-00588-15051		2°	15	3.84	2.5	4.5	12°	1°59′	6	70	9,000
★ 08-00588-15052			20	4.19	2.5	4.5	12°	1°59′	6	70	9,600
★ 08-00588-15054			30	4.89	2.5	4.5	12°	1°59′	6	70	12,900
★ 08-00588-20031	R2	1°	20	4.57	3	6	12°	0°59′	6	80	11,900
★ 08-00588-20033			30	4.92	3	6	12°	0°59′	6	80	11,900
★ 08-00588-20035			40	5.26	3	6	12°	0°59′	6	80	15,600
★ 08-00588-20036			50	5.62	3	6	12°	0°59′	6	90	16,500
★ 08-00588-20037			61.1	6	3	6	–	0°59′	6	110	17,800

P 调质钢 Prehardened Steel
H ~52高硬度钢 HRC Hardened Steel
H ~60高硬度钢 HRC Hardened Steel
H ~65高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

切削参数参考表
Recommended Milling Conditions

MRBTNH230

切削参数参考表
Recommended Milling Conditions

球头 Ball / 锥颈 Taper Neck / 涂层 Coating

加工材料 Work Material			调质钢 Prehardened Steels HPM・NAK (～41HRC)				高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH・HAP (～65HRC)			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}
0.05	3°	0.5	0.005	0.005	120	40,000	0.003	0.005	100	40,000	0.002	0.005	70	40,000	0.002	0.003	50	40,000
		0.75	0.003	0.005	100	40,000	0.002	0.003	70	40,000	0.001	0.003	50	40,000	0.001	0.002	30	40,000
0.075	3°	1	0.005	0.005	180	40,000	0.003	0.005	150	40,000	0.002	0.005	120	40,000	0.002	0.003	70	40,000
		1.5	0.003	0.005	100	40,000	0.002	0.003	70	40,000	0.001	0.003	50	40,000	0.001	0.002	30	40,000
0.1	30′	1.5	0.003	0.01	200	40,000	0.003	0.005	180	40,000	0.002	0.003	140	40,000	0.001	0.002	100	40,000
		2	0.003	0.005	150	40,000	0.002	0.003	120	40,000	0.001	0.002	100	40,000	0.001	0.002	60	40,000
	1°	1.5	0.003	0.007	200	40,000	0.003	0.005	180	40,000	0.002	0.003	140	40,000	0.001	0.002	100	40,000
		2	0.003	0.007	160	40,000	0.003	0.005	140	40,000	0.002	0.003	120	40,000	0.001	0.002	80	40,000
	1°30′	1.5	0.005	0.01	230	40,000	0.003	0.005	200	40,000	0.002	0.003	160	40,000	0.001	0.002	120	40,000
		2	0.003	0.01	200	40,000	0.003	0.005	160	40,000	0.002	0.003	140	40,000	0.001	0.002	100	40,000
	2°	1.5	0.007	0.01	250	40,000	0.005	0.01	230	40,000	0.003	0.005	180	40,000	0.002	0.003	140	40,000
		2	0.003	0.01	230	40,000	0.003	0.005	180	40,000	0.002	0.003	140	40,000	0.001	0.002	100	40,000
	3°	3	0.005	0.01	230	40,000	0.003	0.005	180	40,000	0.002	0.003	140	40,000	0.001	0.002	100	40,000
		5	0.003	0.005	200	40,000	0.002	0.003	160	40,000	0.001	0.002	120	40,000	0.001	0.002	80	40,000
	5°	3	0.007	0.01	250	40,000	0.005	0.01	200	40,000	0.003	0.005	160	40,000	0.002	0.003	120	40,000
		5	0.005	0.01	230	40,000	0.003	0.005	180	40,000	0.002	0.003	140	40,000	0.001	0.002	100	40,000
0.15	30′	2	0.003	0.007	230	40,000	0.003	0.005	200	40,000	0.002	0.003	160	40,000	0.002	0.002	120	40,000
		3	0.003	0.005	180	40,000	0.002	0.003	140	40,000	0.001	0.002	120	40,000	0.001	0.002	70	40,000
	1°	2	0.003	0.01	230	40,000	0.003	0.005	200	40,000	0.002	0.003	160	40,000	0.002	0.002	120	40,000
		3	0.003	0.007	200	40,000	0.003	0.005	160	40,000	0.002	0.003	140	40,000	0.001	0.002	90	40,000
	1°30′	2	0.005	0.01	250	40,000	0.003	0.005	230	40,000	0.002	0.003	180	40,000	0.002	0.002	140	40,000
		3	0.003	0.01	220	40,000	0.003	0.005	180	40,000	0.002	0.003	150	40,000	0.001	0.002	110	40,000
	2°	2	0.007	0.01	280	40,000	0.005	0.01	250	40,000	0.003	0.005	200	40,000	0.002	0.003	160	40,000
		3	0.003	0.01	250	40,000	0.003	0.005	200	40,000	0.002	0.003	160	40,000	0.002	0.002	120	40,000
	3°	2	0.01	0.015	300	40,000	0.007	0.01	280	40,000	0.005	0.007	230	40,000	0.003	0.005	200	40,000
		3	0.007	0.015	280	40,000	0.005	0.01	250	40,000	0.003	0.007	200	40,000	0.002	0.005	180	40,000
		5	0.007	0.01	250	40,000	0.005	0.007	230	40,000	0.003	0.005	180	40,000	0.002	0.003	160	40,000
		7	0.005	0.007	230	40,000	0.003	0.005	200	40,000	0.002	0.003	160	40,000	0.001	0.002	140	40,000
	5°	3	0.01	0.015	300	40,000	0.007	0.01	280	40,000	0.005	0.007	230	40,000	0.003	0.005	200	40,000
		5	0.007	0.015	280	40,000	0.005	0.01	250	40,000	0.003	0.007	200	40,000	0.002	0.005	180	40,000
		7	0.007	0.01	250	40,000	0.005	0.007	230	40,000	0.003	0.005	180	40,000	0.002	0.003	160	40,000
0.2	30′	3	0.01	0.02	360	40,000	0.007	0.01	300	40,000	0.005	0.007	240	40,000	0.003	0.005	160	40,000
		4	0.007	0.01	240	40,000	0.005	0.005	160	40,000	0.003	0.003	120	40,000	0.002	0.003	100	40,000
		6	0.005	0.01	160	40,000	0.003	0.005	120	40,000	0.002	0.003	100	40,000	0.001	0.003	70	40,000
	1°	3	0.01	0.02	400	40,000	0.007	0.01	320	40,000	0.005	0.007	260	40,000	0.003	0.005	200	40,000
		4	0.01	0.015	320	40,000	0.005	0.007	240	40,000	0.003	0.005	180	40,000	0.002	0.003	120	40,000
		6	0.005	0.007	200	40,000	0.005	0.005	160	40,000	0.003	0.003	120	40,000	0.002	0.002	90	40,000
	1°30′	3	0.015	0.02	450	40,000	0.007	0.01	360	40,000	0.005	0.007	280	40,000	0.003	0.005	240	40,000
		4	0.01	0.02	400	40,000	0.007	0.01	300	40,000	0.005	0.007	240	40,000	0.003	0.005	160	40,000
		6	0.007	0.01	300	40,000	0.005	0.007	240	40,000	0.003	0.005	160	40,000	0.002	0.003	120	40,000
	2°	3	0.015	0.02	480	40,000	0.007	0.01	400	40,000	0.005	0.007	320	40,000	0.003	0.005	280	40,000
		4	0.01	0.02	400	40,000	0.007	0.01	320	40,000	0.005	0.007	260	40,000	0.003	0.005	220	40,000
		6	0.01	0.015	320	40,000	0.005	0.007	240	40,000	0.003	0.005	180	40,000	0.002	0.003	140	40,000
	3°	5	0.01	0.02	400	40,000	0.007	0.01	320	40,000	0.005	0.007	240	40,000	0.003	0.005	220	40,000
		7	0.01	0.015	320	40,000	0.005	0.007	240	40,000	0.003	0.005	160	40,000	0.002	0.003	140	40,000
	5°	5	0.015	0.02	420	40,000	0.01	0.015	360	40,000	0.007	0.01	300	40,000	0.005	0.007	260	40,000
		7	0.015	0.015	400	40,000	0.007	0.01	320	40,000	0.005	0.007	240	40,000	0.003	0.005	220	40,000
0.25	30′	4	0.012	0.02	500	40,000	0.007	0.01	450	40,000	0.005	0.007	360	40,000	0.003	0.005	280	40,000
		5	0.008	0.01	460	40,000	0.005	0.005	400	40,000	0.003	0.003	300	40,000	0.002	0.003	240	40,000
	1°	4	0.015	0.03	580	40,000	0.007	0.01	520	40,000	0.005	0.007	400	40,000	0.003	0.005	320	40,000
		5	0.012	0.02	500	40,000	0.007	0.01	440	40,000	0.005	0.007	360	40,000	0.003	0.005	260	40,000
	1°30′	4	0.015	0.035	640	40,000	0.01	0.02	560	40,000	0.007	0.01	480	40,000	0.005	0.007	360	40,000
		5	0.012	0.02	500	40,000	0.007	0.01	460	40,000	0.005	0.007	380	40,000	0.003	0.005	280	40,000
	2°	4	0.015	0.035	700	40,000	0.01	0.02	640	40,000	0.007	0.01	540	40,000	0.005	0.007	400	40,000
		5	0.015	0.03	600	40,000	0.007	0.015	520	40,000	0.005	0.01	420	40,000	0.003	0.007	300	40,000
0.3	30′	4	0.025	0.07	900	40,000	0.02	0.03	800	40,000	0.01	0.03	580	40,000	0.01	0.02	450	30,000
		5	0.025	0.05	750	40,000	0.02	0.03	700	35,000	0.01	0.02	500	35,000	0.008	0.015	420	30,000
		6	0.015	0.02	500	35,000	0.01	0.015	460	30,000	0.007	0.01	400	30,000	0.005	0.008	360	30,000

加工材料 Work Material			调质钢 Prehardened Steels HPM・NAK (～41HRC)				高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH・HAP (～65HRC)			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}
0.3	30′	8	0.008	0.015	400	30,000	0.005	0.007	360	25,000	0.003	0.005	300	25,000	0.003	0.003	260	20,000
	1°	4	0.025	0.07	900	40,000	0.02	0.03	800	40,000	0.01	0.03	580	40,000	0.01	0.02	450	30,000
		5	0.025	0.05	750	40,000	0.02	0.03	700	35,000	0.01	0.02	500	35,000	0.008	0.015	420	30,000
		6	0.02	0.04	540	35,000	0.01	0.02	500	30,000	0.007	0.015	460	30,000	0.007	0.01	400	30,000
		8	0.01	0.02	460	35,000	0.007	0.01	400	30,000	0.005	0.007	360	30,000	0.003	0.005	320	30,000
	1°30′	4	0.025	0.07	1,000	40,000	0.02	0.03	900	40,000	0.01	0.03	620	40,000	0.01	0.02	480	30,000
		5	0.025	0.05	800	40,000	0.02	0.03	750	40,000	0.01	0.03	560	40,000	0.01	0.02	440	30,000
		6	0.025	0.04	750	40,000	0.02	0.025	700	35,000	0.01	0.02	500	35,000	0.008	0.015	420	30,000
		8	0.013	0.02	500	35,000	0.01	0.015	460	30,000	0.007	0.01	400	30,000	0.005	0.008	360	30,000
	2°	5	0.025	0.07	1,000	40,000	0.02	0.03	900	40,000	0.01	0.03	620	40,000	0.01	0.02	480	30,000
		6	0.025	0.05	800	40,000	0.02	0.03	750	35,000	0.01	0.02	560	35,000	0.008	0.015	440	30,000
		8	0.02	0.03	540	35,000	0.01	0.02	500	30,000	0.007	0.015	460	30,000	0.007	0.01	400	30,000
	3°	4	0.03	0.1	1,200	40,000	0.03	0.05	1,200	40,000	0.025	0.03	800	40,000	0.02	0.025	600	30,000
		5	0.03	0.07	1,000	40,000	0.03	0.05	1,000	40,000	0.025	0.03	600	40,000	0.02	0.025	500	30,000
		7	0.025	0.05	800	40,000	0.02	0.03	900	35,000	0.015	0.025	500	35,000	0.01	0.02	400	30,000
	5°	5	0.03	0.1	1,200	40,000	0.03	0.05	1,200	40,000	0.025	0.03	800	40,000	0.02	0.025	600	30,000
		7	0.03	0.07	1,000	40,000	0.03	0.05	1,000	35,000	0.025	0.03	600	35,000	0.02	0.025	500	30,000
0.4	30′	8	0.015	0.03	720	35,000	0.012	0.02	600	30,000	0.007	0.015	540	30,000	0.005	0.01	480	25,000
		12	0.005	0.01	460	30,000	0.005	0.005	400	25,000	0.003	0.003	360	25,000	0.002	0.003	320	25,000
	1°	8	0.03	0.05	800	35,000	0.02	0.03	700	30,000	0.01	0.02	680	30,000	0.007	0.01	520	25,000
		12	0.005	0.01	480	30,000	0.005	0.005	420	25,000	0.003	0.003	380	25,000	0.002	0.003	340	25,000
	1°30′	8	0.05	0.07	900	35,000	0.03	0.05	800	30,000	0.02	0.03	760	30,000	0.01	0.02	560	25,000
		12	0.015	0.03	640	35,000	0.01	0.02	500	30,000	0.007	0.01	500	30,000	0.005	0.01	480	25,000
	2°	8	0.05	0.08	1,000	35,000	0.03	0.05	900	30,000	0.02	0.03	760	30,000	0.01	0.02	560	25,000
		12	0.03	0.05	800	35,000	0.02	0.03	700	30,000	0.01	0.02	600	30,000	0.007	0.01	520	25,000
0.5	30′	6	0.1	0.2	1,600	35,000	0.05	0.1	1,400	30,000	0.04	0.05	1,200	25,000	0.02	0.05	740	20,000
		8	0.08	0.2	1,300	35,000	0.04	0.06	1,200	30,000	0.03	0.04	950	25,000	0.02	0.03	680	20,000
		10	0.03	0.06	1,000	30,000	0.03	0.05	820	25,000	0.015	0.03	750	20,000	0.01	0.02	500	18,000
		12	0.03	0.06	820	30,000	0.03	0.05	720	25,000	0.015	0.03	620	20,000	0.01	0.02	450	18,000
		16	0.012	0.025	540	25,000	0.008	0.02	500	20,000	0.005	0.01	420	18,000	0.003	0.006	350	16,000
		20	0.005	0.01	300	20,000	0.005	0.005	250	18,000	0.003	0.005	200	16,000	0.002	0.003	150	14,000
		25	0.005	0.005	180	20,000	0.003	0.005	150	18,000	0.002	0.005	120	16,000	0.002	0.002	85	14,000
		30	0.003	0.005	120	16,000	0.003	0.003	100	16,000	0.002	0.003	75	14,000	0.001	0.002	60	12,000
	1°	6	0.1	0.25	2,000	35,000	0.05	0.15	1,800	30,000	0.04	0.1	1,600	25,000	0.03	0.05	920	20,000
		8	0.1	0.2	1,600	35,000	0.05	0.1	1,400	30,000	0.04	0.05	1,200	25,000	0.02	0.05	740	20,000
		10	0.05	0.1	1,200	35,000	0.04	0.06	1,000	30,000	0.03	0.04	800	25,000	0.02	0.03	560	20,000
		12	0.04	0.06	1,000	30,000	0.03	0.05	820	25,000	0.02	0.03	700	20,000	0.01	0.02	500	18,000
		16	0.015	0.025	600	25,000	0.01	0.025	500	20,000	0.007	0.02	450	18,000	0.005	0.01	400	16,000
		20	0.012	0.025	500	25,000	0.008	0.02	400	20,000	0.005	0.01	360	18,000	0.003	0.006	320	16,000
		25	0.005	0.01	300	20,000	0.005	0.005	250	18,000	0.003	0.005	200	16,000	0.002	0.003	150	14,000
		30	0.005	0.005	200	20,000	0.003	0.005	150	18,000	0.002	0.005	120	16,000	0.002	0.002	85	14,000
	1°30′	6	0.15	0.25	2,000	40,000	0.1	0.2	2,000	40,000	0.05	0.15	1,600	30,000	0.05	0.1	1,200	25,000
		8	0.1	0.2	1,800	35,000	0.05	0.1	1,600	30,000	0.04	0.05	1,200	25,000	0.02	0.05	800	20,000
		10	0.08	0.2	1,400	35,000	0.04	0.06	1,200	30,000	0.03	0.04	900	25,000	0.02	0.03	700	20,000
		12	0.05	0.1	1,200	35,000	0.04	0.06	1,000	30,000	0.03	0.04	800	25,000	0.02	0.03	550	20,000
		16	0.03	0.05	800	30,000	0.02	0.05	700	25,000	0.02	0.03	600	20,000	0.01	0.02	500	18,000
		20	0.015	0.025	600	25,000	0.01	0.025	500	20,000	0.007	0.02	450	18,000	0.005	0.01	400	16,000
		25	0.012	0.025	500	25,000	0.008	0.02	400	20,000	0.005	0.01	350	18,000	0.003	0.006	300	16,000
		30	0.01	0.02	400	20,000	0.005	0.01	300	20,000	0.003	0.007	250	18,000	0.002	0.005	200	16,000
	2°	8	0.1	0.2	2,000	35,000	0.05	0.1	1,600	30,000	0.04	0.05	1,200	25,000	0.02	0.05	900	20,000
		10	0.05	0.2	1,600	35,000	0.04	0.1	1,200	30,000	0.03	0.05	1,000	25,000	0.02	0.05	700	20,000
		20	0.03	0.05	800	30,000	0.02	0.05	700	25,000	0.02	0.03	600	20,000	0.01	0.02	450	18,000
		30	0.015	0.03	600	20,000	0.01	0.03	500	20,000	0.007	0.02	400	18,000	0.005	0.01	350	16,000
	3°	10	0.1	0.2	2,000	35,000	0.05	0.1	1,600	30,000	0.03	0.07	1,200	25,000	0.025	0.05	800	20,000
		20	0.04	0.1	1,200	30,000	0.03	0.05	1,000	25,000	0.02	0.03	800	20,000	0.015	0.025	500	18,000
		30	0.02	0.05	700	20,000	0.015	0.03	700	20,000	0.01	0.025	600	18,000	0.01	0.02	400	16,000

调质钢 Prehardened Steel P
高硬度钢～52 Hardened Steel HRC H
高硬度钢～60 Hardened Steel HRC H
高硬度钢～65 Hardened Steel HRC H
不锈钢 Stainless Steel M
钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy S

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

球头 Ball / 锥颈 Taper Neck / 涂层 Coating

P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
H ～60 HRC 高硬度钢 Hardened Steel
H ～65 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

切削参数参考表
Recommended Milling Conditions

MRBTNH230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			调质钢 Prehardened Steels HPM・NAK (～41HRC)				高硬度钢 Hardened Steels STAVAX・SKD61 (～52HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH・HAP (～65HRC)			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min⁻¹	ap mm	ae mm	mm/min	min⁻¹	ap mm	ae mm	mm/min	min⁻¹	ap mm	ae mm	mm/min	min⁻¹
0.75	30′	10	0.15	0.2	2,000	30,000	0.1	0.15	1,600	25,000	0.05	0.15	1,400	25,000	0.05	0.07	1,000	20,000
		15	0.07	0.15	1,400	25,000	0.05	0.08	1,000	20,000	0.03	0.07	800	20,000	0.02	0.04	600	18,000
		20	0.03	0.05	800	18,000	0.02	0.04	600	16,000	0.012	0.025	450	16,000	0.008	0.015	360	14,000
		25	0.02	0.04	540	18,000	0.01	0.03	450	16,000	0.01	0.02	360	16,000	0.007	0.01	300	14,000
		30	0.01	0.03	360	14,000	0.007	0.02	320	14,000	0.005	0.01	240	14,000	0.003	0.005	200	12,000
	1°	10	0.15	0.25	2,000	30,000	0.1	0.2	1,800	25,000	0.05	0.2	1,400	25,000	0.05	0.1	1,000	20,000
		15	0.08	0.15	1,600	25,000	0.05	0.1	1,200	20,000	0.03	0.1	920	20,000	0.02	0.05	780	18,000
		20	0.05	0.1	1,000	20,000	0.03	0.07	800	18,000	0.02	0.05	600	18,000	0.015	0.03	550	16,000
		25	0.03	0.05	700	18,000	0.02	0.04	550	16,000	0.012	0.025	400	16,000	0.008	0.015	350	14,000
		30	0.02	0.04	450	16,000	0.01	0.03	360	16,000	0.01	0.02	300	16,000	0.007	0.01	250	14,000
	1°30′	10	0.15	0.25	2,000	30,000	0.1	0.2	2,000	25,000	0.05	0.2	1,600	25,000	0.05	0.1	1,200	20,000
		15	0.08	0.15	1,800	25,000	0.05	0.1	1,400	20,000	0.03	0.1	920	20,000	0.02	0.05	780	18,000
		20	0.06	0.1	1,200	25,000	0.05	0.07	1,000	20,000	0.03	0.05	820	20,000	0.02	0.03	650	18,000
	2°	10	0.2	0.3	2,000	30,000	0.1	0.2	2,000	25,000	0.05	0.2	1,600	25,000	0.05	0.1	1,200	20,000
		15	0.1	0.2	2,000	30,000	0.1	0.1	1,600	25,000	0.05	0.1	1,200	25,000	0.05	0.05	900	20,000
		20	0.07	0.12	1,400	25,000	0.05	0.1	1,200	20,000	0.03	0.1	900	20,000	0.02	0.05	750	18,000
1	30′	12	0.15	0.3	2,400	20,000	0.1	0.3	2,000	18,000	0.1	0.2	1,600	16,000	0.1	0.1	1,200	14,000
		16	0.1	0.2	1,800	18,000	0.07	0.15	1,600	16,000	0.05	0.08	1,200	14,000	0.03	0.07	800	12,000
		20	0.07	0.12	1,600	16,000	0.05	0.1	1,400	14,000	0.03	0.06	1,000	12,000	0.02	0.04	700	10,000
		25	0.05	0.1	1,000	14,000	0.03	0.08	850	14,000	0.02	0.05	700	12,000	0.02	0.02	600	10,000
		30	0.03	0.08	800	12,000	0.03	0.05	700	12,000	0.02	0.03	540	10,000	0.01	0.02	420	8,500
		35	0.03	0.05	600	12,000	0.025	0.04	500	12,000	0.015	0.025	420	10,000	0.008	0.015	320	8,500
		40	0.02	0.04	420	12,000	0.02	0.03	360	12,000	0.01	0.02	300	10,000	0.008	0.01	240	8,500
		50	0.01	0.03	300	10,000	0.01	0.02	240	10,000	0.005	0.01	200	8,500	0.005	0.005	160	7,000
	1°	12	0.15	0.3	2,400	20,000	0.15	0.3	2,000	18,000	0.1	0.2	1,600	16,000	0.1	0.1	1,200	14,000
		16	0.12	0.2	1,800	18,000	0.1	0.15	1,600	16,000	0.1	0.1	1,400	14,000	0.05	0.1	900	12,000
		20	0.1	0.15	1,600	18,000	0.07	0.1	1,400	16,000	0.05	0.08	1,200	14,000	0.03	0.05	800	12,000
		25	0.07	0.12	1,400	14,000	0.05	0.1	1,200	14,000	0.03	0.05	1,000	12,000	0.02	0.03	700	10,000
		30	0.05	0.1	1,000	14,000	0.035	0.08	850	14,000	0.025	0.05	700	12,000	0.02	0.02	600	10,000
		35	0.05	0.1	800	12,000	0.035	0.06	700	12,000	0.02	0.05	600	10,000	0.015	0.02	500	8,500
		40	0.03	0.05	700	12,000	0.03	0.05	600	12,000	0.02	0.04	540	10,000	0.01	0.02	400	8,500
		50	0.025	0.04	420	12,000	0.02	0.03	360	12,000	0.01	0.02	300	10,000	0.008	0.01	240	8,500
	1°30′	12	0.2	0.35	2,400	20,000	0.15	0.35	2,000	18,000	0.12	0.2	1,600	16,000	0.1	0.15	1,200	14,000
		16	0.15	0.2	1,800	18,000	0.1	0.2	1,600	16,000	0.1	0.15	1,400	14,000	0.05	0.1	1,000	12,000
		20	0.1	0.2	1,800	18,000	0.07	0.15	1,600	16,000	0.05	0.1	1,200	14,000	0.03	0.1	900	12,000
		25	0.1	0.15	1,600	16,000	0.07	0.12	1,400	16,000	0.05	0.08	1,200	14,000	0.03	0.07	900	12,000
		30	0.07	0.12	1,400	14,000	0.05	0.1	1,200	14,000	0.03	0.06	1,000	12,000	0.02	0.03	850	10,000
		35	0.06	0.12	1,000	14,000	0.05	0.1	900	14,000	0.03	0.05	800	12,000	0.02	0.03	700	10,000
		40	0.05	0.1	900	14,000	0.03	0.08	800	14,000	0.02	0.05	700	12,000	0.02	0.02	600	10,000
		50	0.04	0.07	800	12,000	0.03	0.05	700	12,000	0.02	0.04	600	10,000	0.01	0.02	420	8,500
	2°	12	0.2	0.4	2,400	20,000	0.2	0.3	2,000	20,000	0.15	0.25	1,600	18,000	0.1	0.2	1,200	16,000
		16	0.15	0.3	2,400	20,000	0.1	0.3	2,000	18,000	0.1	0.2	1,600	16,000	0.1	0.1	1,200	14,000
		20	0.12	0.2	2,000	18,000	0.1	0.2	1,800	16,000	0.1	0.1	1,400	14,000	0.05	0.1	1,100	12,000
		25	0.1	0.2	1,800	16,000	0.07	0.15	1,600	16,000	0.05	0.1	1,200	14,000	0.03	0.07	1,000	12,000
		30	0.1	0.15	1,600	16,000	0.07	0.15	1,400	16,000	0.05	0.08	1,100	14,000	0.03	0.07	900	12,000
		40	0.07	0.12	1,400	14,000	0.05	0.1	1,200	14,000	0.03	0.05	1,000	12,000	0.02	0.03	800	10,000
		50	0.05	0.12	1,000	14,000	0.05	0.1	900	14,000	0.03	0.05	800	12,000	0.02	0.03	600	10,000
1.5	30′	15	0.2	0.4	2,400	18,000	0.1	0.4	2,000	18,000	0.1	0.3	1,600	14,000	0.1	0.2	1,200	12,000
		20	0.15	0.3	2,000	18,000	0.1	0.3	1,600	18,000	0.1	0.2	1,400	14,000	0.08	0.1	1,000	12,000
		25	0.12	0.3	1,800	16,000	0.1	0.25	1,400	16,000	0.07	0.15	1,200	12,000	0.05	0.07	900	10,000
		30	0.12	0.25	1,200	16,000	0.08	0.2	1,200	14,000	0.05	0.1	1,000	12,000	0.035	0.06	700	10,000
		40	0.07	0.15	800	14,000	0.04	0.1	720	12,000	0.025	0.06	600	10,000	0.02	0.04	480	8,000
		50	0.05	0.1	600	12,000	0.025	0.04	540	10,000	0.015	0.02	480	7,000	0.01	0.02	360	5,000
	1°	15	0.2	0.5	2,400	20,000	0.15	0.5	2,000	20,000	0.15	0.4	1,600	18,000	0.1	0.3	1,400	14,000
		20	0.15	0.4	2,000	18,000	0.1	0.4	1,800	18,000	0.1	0.2	1,400	16,000	0.08	0.2	1,200	12,000
		25	0.15	0.3	1,800	18,000	0.1	0.3	1,600	16,000	0.1	0.15	1,200	12,000	0.06	0.1	1,000	10,000
		30	0.12	0.3	1,600	16,000	0.08	0.2	1,200	14,000	0.05	0.1	1,000	12,000	0.035	0.07	700	10,000
		40	0.07	0.15	1,000	16,000	0.04	0.1	800	12,000	0.03	0.06	600	10,000	0.02	0.04	500	8,000
		50	0.05	0.12	700	12,000	0.025	0.04	580	10,000	0.015	0.02	480	7,000	0.01	0.02	360	5,000
	1°30′	15	0.25	0.5	3,000	20,000	0.2	0.5	2,400	20,000	0.2	0.4	2,000	18,000	0.15	0.3	1,400	14,000
		20	0.15	0.4	2,400	18,000	0.1	0.4	2,000	18,000	0.1	0.3	1,600	16,000	0.1	0.2	1,200	12,000
		25	0.15	0.3	2,000	18,000	0.1	0.3	1,600	18,000	0.1	0.2	1,400	16,000	0.1	0.1	1,000	12,000
		30	0.12	0.3	1,800	16,000	0.1	0.25	1,400	16,000	0.07	0.15	1,200	14,000	0.05	0.07	900	10,000
		40	0.1	0.25	1,200	16,000	0.06	0.2	1,000	14,000	0.04	0.1	800	12,000	0.03	0.05	520	10,000
		50	0.07	0.15	800	12,000	0.035	0.1	600	10,000	0.02	0.07	500	8,000	0.02	0.05	400	6,000
	2°	15	0.25	0.6	3,000	20,000	0.2	0.6	2,400	20,000	0.2	0.4	2,000	18,000	0.15	0.3	1,600	14,000
		20	0.2	0.5	2,400	18,000	0.15	0.4	2,000	18,000	0.12	0.3	1,600	16,000	0.1	0.2	1,200	12,000
		30	0.2	0.4	2,000	16,000	0.15	0.3	1,800	16,000	0.1	0.2	1,400	14,000	0.07	0.12	1,000	12,000
2	1°	20	0.5	1.5	3,000	18,000	0.4	1	2,400	18,000	0.2	0.8	2,000	16,000	0.15	0.6	1,600	12,000
		30	0.3	1	2,400	16,000	0.2	0.7	1,600	14,000	0.1	0.3	1,200	12,000	0.06	0.15	1,000	10,000
		40	0.2	0.3	2,000	12,000	0.1	0.15	1,200	9,000	0.06	0.1	1,000	6,000	0.035	0.07	800	5,000
		50	0.1	0.2	1,600	10,000	0.07	0.1	900	7,000	0.04	0.07	750	5,000	0.02	0.05	550	4,000
		61.1	0.05	0.1	1,200	8,000	0.025	0.04	600	5,000	0.015	0.025	480	3,500	0.01	0.02	360	3,000

备 注 Notes

※ 1 切削参数参考表列出等高线粗加工时的参数。
※ 2 切深量的 ap表示轴向切深量，ae表示步距量。
※ 3 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※ 4 加工深沟时，请充分注意冷却液的供油及排屑是否顺畅。
※ 5 建议使用油雾冷却方式。
※ 6 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。

※1 Above conditions are for contour line roughing process.
※2 Depth of Cut : ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※3 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※4 Coolant supply and chip disposal in the deep portion are very important.
※5 Recommended oil mist coolant.
※6 Adjust milling conditions according to the volume of Depth of Cut and rigidity of machine.

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

MRBTNH345

规格 R0.5×颈角30′ ～ R2×颈角1°
Size R0.5×neck taper angle30′～ R2×neck taper angle1°

Premium ≦65 HRC

无限白金涂层 长颈锥形3刃球头铣刀
MUGEN COATING PREMIUM 3-Flute Long Taper Neck Ball End Mill

共有69种规格
Total 69 sizes

MRBTNH345

无限白金涂层 长颈锥形3刃球头铣刀
MUGEN COATING PREMIUM 3-Flute Long Taper Neck Ball End Mill

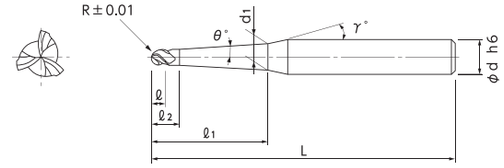
球头 Ball
锥颈 Taper Neck
涂层 Coating

采用3刃强螺旋角和锥颈形状，可对深沟部位进行高效率加工

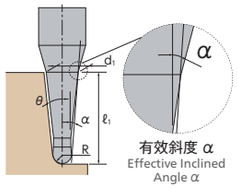
MG 3 45° 3D

3-flute with high helix angle and taper neck design for deep area milling with high efficiency





- 颈部为锥形设计，与传统长颈型刀具相比刚性更高。
- 采用耐热性优异的无限白金涂层，即使加工高硬度钢也能保持延长刀具寿命。
- 采用NS TOOL自主研发的3刃造型，实现高效加工。
- Higher rigidity brought by taper neck than existing long neck.
- MUGEN COATING PREMIUM because of high heat resistance, realized long tool life for hardened steels.
- High effective machining achieved by NS original 3-flute design.



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

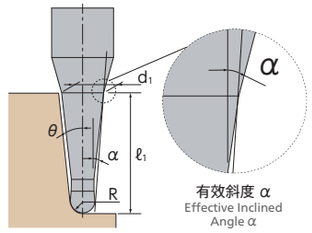
产品代码 Code No.	(R)球头半径 Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00590-05020	R0.5	30′	12	1.11	0.75	1.25	12°	0°15′	6	60	8,100
08-00590-05021			16	1.18	0.75	1.25	12°	0°19′	6	60	8,100
08-00590-05022			20	1.25	0.75	1.25	12°	0°21′	6	70	10,300
08-00590-05023			25	1.34	0.75	1.25	12°	0°23′	6	70	10,900
08-00590-05024			30	1.42	0.75	1.25	12°	0°24′	6	70	11,400
08-00590-05030		1°	12	1.30	0.75	1.25	12°	0°42′	6	60	8,100
08-00590-05031			16	1.44	0.75	1.25	12°	0°46′	6	60	8,100
08-00590-05032			20	1.58	0.75	1.25	12°	0°49′	6	70	10,300
08-00590-05033			25	1.75	0.75	1.25	12°	0°51′	6	70	10,900
08-00590-05034			30	1.93	0.75	1.25	12°	0°53′	6	70	11,400
08-00590-05040		1°30′	12	1.48	0.75	1.25	12°	1°09′	6	60	8,100
08-00590-05041			16	1.69	0.75	1.25	12°	1°14′	6	60	8,100
08-00590-05042			20	1.90	0.75	1.25	12°	1°17′	6	70	10,300
08-00590-05043			25	2.17	0.75	1.25	12°	1°20′	6	70	10,900
08-00590-05044			30	2.43	0.75	1.25	12°	1°21′	6	70	11,400
08-00590-05050		2°	20	2.23	0.75	1.25	12°	1°45′	6	70	10,300
08-00590-05051			30	2.93	0.75	1.25	12°	1°50′	6	70	11,400
08-00590-07520	R0.75	30′	12	1.58	1.1	1.85	12°	0°12′	6	60	8,600
08-00590-07521			16	1.65	1.1	1.85	12°	0°16′	6	60	9,400
08-00590-07523			20	1.72	1.1	1.85	12°	0°19′	6	70	9,400
08-00590-07524			25	1.81	1.1	1.85	12°	0°21′	6	70	10,100
08-00590-07525			30	1.90	1.1	1.85	12°	0°22′	6	70	10,100
08-00590-07530		1°	12	1.76	1.1	1.85	12°	0°37′	6	60	8,600
08-00590-07531			16	1.90	1.1	1.85	12°	0°43′	6	60	9,400
08-00590-07532			20	2.04	1.1	1.85	12°	0°46′	6	70	9,400
08-00590-07533			25	2.22	1.1	1.85	12°	0°49′	6	70	10,100
08-00590-07534			30	2.39	1.1	1.85	12°	0°51′	6	70	10,100
08-00590-07540		1°30′	20	2.36	1.1	1.85	12°	1°13′	6	70	9,400
08-00590-07541			30	2.88	1.1	1.85	12°	1°19′	6	70	10,100
08-00590-07552		2°	30	3.37	1.1	1.85	12°	1°47′	6	70	10,100

订购方法 How to Order

请指定MRBTNH345 球头半径(R)×颈角(θ)×颈长(ℓ1)。
When you order, indicate MRBTNH345 (R)×(θ)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case M-031



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00590-10020	R1	30′	12	2.06	1.5	2.5	12°	0°08′	6	60	8,600
★ 08-00590-10021			16	2.13	1.5	2.5	12°	0°13′	6	60	8,800
★ 08-00590-10022			20	2.20	1.5	2.5	12°	0°16′	6	70	9,400
★ 08-00590-10023			25	2.28	1.5	2.5	12°	0°19′	6	70	10,300
★ 08-00590-10024			30	2.37	1.5	2.5	12°	0°21′	6	70	11,400
★ 08-00590-10025			40	2.54	1.5	2.5	12°	0°23′	6	80	13,400
★ 08-00590-10030		1°	12	2.22	1.5	2.5	12°	0°31′	6	60	8,600
★ 08-00590-10031			16	2.36	1.5	2.5	12°	0°38′	6	60	8,800
★ 08-00590-10032			20	2.50	1.5	2.5	12°	0°43′	6	70	9,400
★ 08-00590-10033			25	2.68	1.5	2.5	12°	0°46′	6	70	10,300
★ 08-00590-10034			30	2.85	1.5	2.5	12°	0°48′	6	70	11,400
★ 08-00590-10035			40	3.20	1.5	2.5	12°	0°51′	6	80	14,200
★ 08-00590-10040		1°30′	20	2.81	1.5	2.5	12°	1°09′	6	70	9,400
★ 08-00590-10041			25	3.07	1.5	2.5	12°	1°13′	6	70	11,200
★ 08-00590-10042			30	3.33	1.5	2.5	12°	1°16′	6	70	12,900
★ 08-00590-10043			40	3.85	1.5	2.5	12°	1°19′	6	80	14,300
★ 08-00590-10050		2°	20	3.11	1.5	2.5	12°	1°35′	6	70	9,400
★ 08-00590-10051			25	3.46	1.5	2.5	12°	1°40′	6	70	11,200
★ 08-00590-10052			30	3.81	1.5	2.5	12°	1°43′	6	70	12,900
★ 08-00590-10053			40	4.51	1.5	2.5	12°	1°47′	6	80	14,300
★ 08-00590-15020	R1.5	30′	15	3.16	4.5	6	12°	0°18′	6	70	10,300
★ 08-00590-15021			20	3.24	4.5	6	12°	0°21′	6	70	10,600
★ 08-00590-15022			25	3.33	4.5	6	12°	0°22′	6	70	11,200
★ 08-00590-15023			30	3.42	4.5	6	12°	0°24′	6	70	12,900
★ 08-00590-15024			40	3.59	4.5	6	12°	0°25′	6	80	14,300
★ 08-00590-15030		1°	15	3.31	4.5	6	12°	0°36′	6	70	10,300
★ 08-00590-15031			20	3.49	4.5	6	12°	0°42′	6	70	10,600
★ 08-00590-15032			25	3.66	4.5	6	12°	0°45′	6	70	11,200
★ 08-00590-15033			30	3.84	4.5	6	12°	0°48′	6	70	12,900
★ 08-00590-15034			40	4.19	4.5	6	12°	0°51′	6	80	14,300
★ 08-00590-15040		1°30′	30	4.26	4.5	6	12°	1°12′	6	70	12,900
★ 08-00590-15041			40	4.78	4.5	6	12°	1°16′	6	80	14,300
★ 08-00590-15042			50	5.30	4.5	6	12°	1°19′	6	100	16,600
★ 08-00590-15050		2°	30	4.68	4.5	6	12°	1°36′	6	70	12,900
★ 08-00590-15051			40	5.37	4.5	6	12°	1°42′	6	80	14,300
★ 08-00590-20031	R2	1°	30	4.77	6	8	12°	0°44′	6	80	12,900
★ 08-00590-20032			40	5.12	6	8	12°	0°48′	6	80	16,200
★ 08-00590-20033			50	5.47	6	8	12°	0°50′	6	100	19,300
★ 08-00590-20034			65.2	–	6	8	–	0°53′	6	110	20,700

切削参数参考表
Recommended Milling Conditions

MRBTNH345

切削参数参考表
Recommended Milling Conditions

球头 Ball
锥颈 Taper Neck
涂层 Coating

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX (～52HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}
0.5	30′	12	0.02	0.1	1,000	16,000	0.01	0.07	800	14,000
		16	0.01	0.1	600	12,000	0.005	0.07	500	10,000
		20	0.01	0.07	400	10,000	0.005	0.05	300	8,000
		25	0.005	0.05	300	8,000	0.003	0.03	250	6,000
		30	0.005	0.02	200	6,000	0.003	0.01	150	4,000
	1°	12	0.03	0.15	1,200	16,000	0.02	0.1	1,000	14,000
		16	0.02	0.15	700	12,000	0.01	0.1	600	10,000
		20	0.02	0.1	500	10,000	0.01	0.08	400	8,000
		25	0.01	0.08	400	8,000	0.008	0.06	300	6,000
		30	0.01	0.06	300	6,000	0.005	0.04	200	4,000
	1°30′	12	0.03	0.15	1,200	16,000	0.02	0.1	1,000	14,000
		16	0.02	0.15	700	12,000	0.01	0.1	600	10,000
		20	0.02	0.1	500	10,000	0.01	0.08	400	8,000
		25	0.01	0.08	400	8,000	0.008	0.06	300	6,000
		30	0.01	0.06	300	6,000	0.005	0.04	200	4,000
	2°	20	0.03	0.2	700	12,000	0.02	0.15	600	10,000
		30	0.02	0.1	500	8,000	0.01	0.08	400	6,000
0.75	30′	12	0.06	0.2	1,500	18,000	0.04	0.15	1,200	16,000
		16	0.04	0.2	1,200	16,000	0.02	0.15	950	14,000
		20	0.02	0.1	700	12,000	0.015	0.07	600	10,000
		25	0.01	0.1	500	9,000	0.01	0.07	350	7,000
		30	0.01	0.05	300	7,000	0.01	0.04	200	5,000
	1°	12	0.06	0.2	1,500	18,000	0.05	0.15	1,300	16,000
		16	0.04	0.2	1,200	16,000	0.04	0.15	1,000	14,000
		20	0.04	0.15	700	12,000	0.04	0.1	700	10,000
		25	0.03	0.15	600	9,000	0.01	0.1	400	7,000
		30	0.02	0.1	400	7,000	0.015	0.08	270	5,000
	1°30′	20	0.05	0.2	800	12,000	0.04	0.15	800	10,000
		30	0.03	0.1	400	7,000	0.02	0.1	350	5,000
	2°	30	0.04	0.2	500	7,000	0.03	0.15	400	6,000
1	30′	12	0.1	0.3	1,500	16,000	0.08	0.2	1,400	14,000
		16	0.1	0.3	1,200	12,000	0.08	0.2	1,000	10,000
		20	0.07	0.25	800	10,000	0.05	0.2	600	8,000
		25	0.07	0.2	600	8,500	0.05	0.15	500	6,500
		30	0.04	0.1	400	7,000	0.02	0.07	300	5,000
		40	0.02	0.07	300	5,000	0.01	0.05	200	4,000
	1°	12	0.1	0.3	1,500	16,000	0.08	0.25	1,400	14,000
		16	0.1	0.3	1,200	12,000	0.08	0.25	1,000	10,000
		20	0.08	0.25	1,000	10,000	0.06	0.2	800	8,000
		25	0.08	0.2	800	8,500	0.06	0.15	600	6,500
		30	0.07	0.15	600	7,000	0.04	0.1	400	5,000
		40	0.04	0.08	400	5,000	0.02	0.06	300	4,000
	1°30′	20	0.08	0.3	1,000	10,000	0.06	0.25	800	8,000
		25	0.08	0.2	800	8,500	0.06	0.15	600	6,500
		30	0.07	0.15	600	7,000	0.04	0.1	400	5,000
		40	0.04	0.08	400	5,000	0.02	0.06	300	4,000

加工材料 Work Material			高硬度钢 Hardened Steels SKD61・STAVAX (～52HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}	a_p mm	a_e mm	mm/min	min^{-1}
1	2°	20	0.1	0.35	1,200	10,000	0.08	0.25	1,000	8,000
		25	0.1	0.3	1,000	8,000	0.08	0.2	800	6,500
		30	0.08	0.25	800	6,000	0.06	0.15	600	5,000
		40	0.05	0.1	500	4,000	0.03	0.08	400	4,000
1.5	30′	15	0.2	0.4	2,000	18,000	0.1	0.3	1,600	15,000
		20	0.1	0.3	1,500	14,000	0.07	0.2	1,200	12,000
		25	0.1	0.3	1,200	12,000	0.07	0.2	1,000	10,000
		30	0.07	0.2	1,000	8,500	0.05	0.1	700	7,000
		40	0.05	0.2	600	6,000	0.02	0.1	400	4,200
	1°	15	0.2	0.4	2,000	18,000	0.1	0.3	1,600	15,000
		20	0.1	0.3	1,500	16,000	0.08	0.2	1,200	12,000
		25	0.1	0.3	1,200	14,000	0.08	0.2	1,000	10,000
		30	0.08	0.2	1,000	10,000	0.06	0.15	800	7,000
		40	0.07	0.1	700	7,000	0.04	0.08	500	4,200
	1°30′	30	0.08	0.2	1,000	12,000	0.06	0.15	800	7,000
		40	0.07	0.1	700	8,000	0.04	0.08	500	4,200
		50	0.05	0.1	400	6,000	0.03	0.08	300	3,500
	2°	30	0.1	0.3	1,500	12,000	0.08	0.3	1,200	10,000
		40	0.08	0.2	800	8,000	0.06	0.2	600	7,000
2	1°	30	0.3	0.5	1,500	8,500	0.2	0.4	1,200	7,000
		40	0.2	0.5	1,200	6,000	0.1	0.4	1,000	5,000
		50	0.1	0.3	700	5,000	0.05	0.2	600	4,000
		65.2	0.07	0.2	400	4,000	0.03	0.1	300	3,000

备 注 Notes

※ 1 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※ 2 加工深沟时，请充分注意冷却液的供油及排屑是否顺畅。
※ 3 建议使用油雾冷却方式。
※ 4 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。

※1 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※2 Coolant supply and chip disposal are important for machining deep-rib.
※3 We recommend using oil mist coolant.
※4 Adjust milling conditions according to the volume of depth of cut and rigidity of machine.

P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
H ～60 高硬度钢 HRC Hardened Steel
H ～65 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

MRBTN230

规格 R0.1×颈角30′～R2×颈角1°
Size R0.1×neck taper angle30′～R2×neck taper angle1°

≦52 HRC

无限涂层 长颈锥形球头铣刀
MUGEN COATING 2-Flute Long Taper Neck Ball End Mill

共有196种规格
Total 196 sizes

无限涂层 长颈锥形球头铣刀
MUGEN COATING 2-Flute Long Taper Neck Ball End Mill

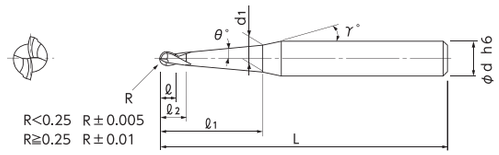
球头 Ball
锥颈 Taper Neck
涂层 Coating

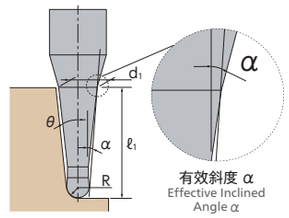
MG | 2 | 30° | R ±0.005 (R<0.25) | 3D

采用锥颈形状，大幅提高刀具刚性！L/D最大36倍
可使用与加工面倾斜角角度相同的颈角

Taper neck to improve tool rigidity. L/D up to 36.
Option of same taper angle as inclined working angle







- 颈部为锥形设计，提高了刀具刚性。
- 与传统产品相比，可设定较大的切深量。
- It is possible to increase rigidity with the neck taper.
- The volume of depth of cut will be more than conventional end mills.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00570-01020	R0.1	30′	1	0.21	0.2	0.4	12°	0°19′	4	50	9,500
08-00570-01021			1.5	0.22	0.2	0.4	12°	0°23′	4	50	10,100
08-00570-01022			2	0.23	0.2	0.4	12°	0°25′	4	50	10,600
08-00570-01040		1°	1	0.22	0.2	0.4	12°	0°38′	4	50	9,500
08-00570-01041			1.5	0.24	0.2	0.4	12°	0°47′	4	50	10,100
08-00570-01042			2	0.26	0.2	0.4	12°	0°51′	4	50	10,600
08-00570-01050		1°30′	1	0.23	0.2	0.4	12°	0°57′	4	50	9,500
08-00570-01051			1.5	0.26	0.2	0.4	12°	1°11′	4	50	10,100
08-00570-01052			2	0.28	0.2	0.4	12°	1°16′	4	50	10,600
08-00570-01060		2°	1	0.24	0.2	0.4	12°	1°16′	4	50	9,500
08-00570-01061			1.5	0.28	0.2	0.4	12°	1°35′	4	50	10,100
08-00570-01062			2	0.31	0.2	0.4	12°	1°41′	4	50	10,600
08-00570-01080		3°	1	0.26	0.2	0.4	12°	1°54′	4	50	9,500
08-00570-01081			1.5	0.32	0.2	0.4	12°	2°21′	4	50	10,100
08-00570-01082			2	0.37	0.2	0.4	12°	2°32′	4	50	10,600
08-00570-01092		5°	2	0.48	0.2	0.4	12°	4°13′	4	50	10,600
08-00570-01521	R0.15	30′	3	0.34	0.3	0.6	12°	0°25′	4	50	10,600
08-00570-01540		1°	2	0.35	0.3	0.6	12°	0°45′	4	50	10,100
08-00570-01541			3	0.38	0.3	0.6	12°	0°51′	4	50	10,600
08-00570-01550		1°30′	2	0.37	0.3	0.6	12°	1°08′	4	50	10,100
08-00570-01551			3	0.43	0.3	0.6	12°	1°16′	4	50	10,600
08-00570-01561		2°	3	0.47	0.3	0.6	12°	1°41′	4	50	10,600
08-00570-01581		3°	3	0.55	0.3	0.6	12°	2°32′	4	50	10,600
08-00570-01591		5°	3	0.72	0.3	0.6	12°	4°13′	4	50	10,600
08-00570-02021	R0.2	30′	2	0.42	0.4	0.8	12°	0°20′	4	50	7,800
08-00570-02023			3	0.44	0.4	0.8	12°	0°24′	4	50	7,800
08-00570-02022			4	0.46	0.4	0.8	12°	0°25′	4	50	7,800
08-00570-02041		1°	2	0.44	0.4	0.8	12°	0°40′	4	50	7,800
08-00570-02043			3	0.48	0.4	0.8	12°	0°47′	4	50	7,800
08-00570-02042			4	0.51	0.4	0.8	12°	0°51′	4	50	7,800

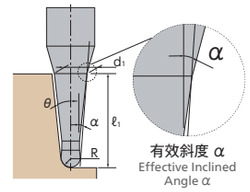
订购方法 How to Order

请指定MRBTN230 球头半径(R)×颈角(θ)×颈长(ℓ1)。
When you order, indicate MRBTN230 (R)×(θ)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

碳素钢 Carbon Steel P
合金钢 Alloy Steel P
调质钢 Prehardened Steel P
高硬度钢～52 Hardened Steel HRC H
不锈钢 Stainless Steel M
铝合金 Aluminium Alloy N
铜合金 Copper N
树脂 Resin O

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

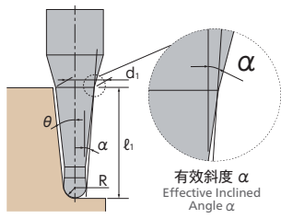
产品代码 Code No.	(R)球头半径 Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00570-02051	R0.2	1°30′	2	0.46	0.4	0.8	12°	1°00′	4	50	7,800
08-00570-02053			3	0.52	0.4	0.8	12°	1°11′	4	50	7,800
08-00570-02052			4	0.57	0.4	0.8	12°	1°16′	4	50	7,800
08-00570-02061		2°	2	0.48	0.4	0.8	12°	1°20′	4	50	7,800
08-00570-02063			3	0.55	0.4	0.8	12°	1°34′	4	50	7,800
08-00570-02062			4	0.62	0.4	0.8	12°	1°41′	4	50	7,800
08-00570-02081		3°	2	0.53	0.4	0.8	12°	2°00′	4	50	7,800
08-00570-02082			4	0.74	0.4	0.8	12°	2°31′	4	50	7,800
08-00570-02092		5°	4	0.96	0.4	0.8	12°	4°13′	4	50	7,800
08-00570-02521	R0.25	30′	3	0.53	0.5	1	12°	0°22′	4	50	7,400
08-00570-02522			5	0.57	0.5	1	12°	0°25′	4	50	7,600
08-00570-02541		1°	3	0.57	0.5	1	12°	0°44′	4	50	7,400
08-00570-02542			5	0.64	0.5	1	12°	0°51′	4	50	7,600
08-00570-02551		1°30′	3	0.6	0.5	1	12°	1°06′	4	50	7,400
08-00570-02552			5	0.71	0.5	1	12°	1°16′	4	50	7,600
08-00570-02561		2°	3	0.64	0.5	1	12°	1°27′	4	50	7,400
08-00570-02562			5	0.78	0.5	1	12°	1°41′	4	50	7,600
08-00570-02581		3°	3	0.71	0.5	1	12°	2°11′	4	50	7,400
08-00570-02582			5	0.92	0.5	1	12°	2°32′	4	50	7,600
08-00570-02592		5°	5	1.2	0.5	1	12°	4°13′	4	50	7,600
08-00570-03021	R0.3	30′	5	0.67	0.6	1.2	12°	0°24′	4	50	7,200
08-00570-03022			8	0.72	0.6	1.2	12°	0°27′	4	50	7,500
08-00570-03040		1°	4	0.7	0.6	1.2	12°	0°45′	4	50	6,900
08-00570-03041			5	0.73	0.6	1.2	12°	0°49′	4	50	7,200
08-00570-03043			6	0.77	0.6	1.2	12°	0°51′	4	50	7,200
08-00570-03042			8	0.84	0.6	1.2	12°	0°53′	4	50	7,500
08-00570-03051		1°30′	5	0.8	0.6	1.2	12°	1°13′	4	50	7,200
08-00570-03052			8	0.96	0.6	1.2	12°	1°19′	4	50	7,500
08-00570-03061		2°	6	0.94	0.6	1.2	12°	1°41′	4	50	7,200
08-00570-03062			8	1.07	0.6	1.2	12°	1°46′	4	50	7,500
08-00570-03081		3°	6	1.1	0.6	1.2	12°	2°32′	4	50	7,200
08-00570-03082			8	1.31	0.6	1.2	12°	2°39′	4	50	7,500
08-00570-03092		5°	8	1.79	0.6	1.2	12°	4°25′	4	50	7,500
08-00570-04021	R0.4	30′	8	0.91	0.8	1.6	12°	0°25′	4	50	7,800
08-00570-04022			12	0.98	0.8	1.6	12°	0°27′	4	60	8,200
08-00570-04041		1°	8	1.02	0.8	1.6	12°	0°50′	4	50	7,800
08-00570-04042			12	1.16	0.8	1.6	12°	0°54′	4	60	8,200
08-00570-04051		1°30′	8	1.14	0.8	1.6	12°	1°16′	4	50	7,800
08-00570-04052			12	1.34	0.8	1.6	12°	1°21′	4	60	8,200
08-00570-04061		2°	8	1.25	0.8	1.6	12°	1°42′	4	50	7,800
08-00570-04062			12	1.53	0.8	1.6	12°	1°48′	4	60	8,200

锥颈 Taper Neck
球头 Ball
涂层 Coating

碳素钢 Carbon Steel P
合金钢 Alloy Steel P
调质钢 Prehardened Steel P
～52高硬度钢 HRC Hardened Steel H
不锈钢 Stainless Steel M
铝合金 Aluminium Alloy N
铜合金 Copper N
树脂 Resin O

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

无限涂层 长颈锥形球头铣刀
MUGEN COATING 2-Flute Long Taper Neck Ball End Mill



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

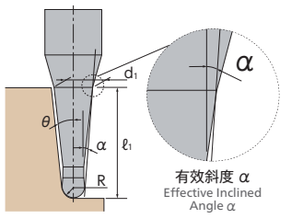
产品代码 Code No.	(R)球头半径 Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00570-04081	R0.4	3°	8	1.47	0.8	1.6	12°	2°31′	4	50	7,800
08-00570-04082			12	1.89	0.8	1.6	12°	2°41′	4	60	8,200
★ 08-00570-05021	R0.5	30′	10	1.14	1	2	12°	0°25′	4	60	6,600
★ 08-00570-05022			15	1.23	1	2	12°	0°27′	4	60	6,900
★ 08-00570-05023			20	1.31	1	2	12°	0°28′	4	70	8,400
★ 08-00570-05024			25	1.41	1	2	12°	0°29′	4	70	8,900
★ 08-00570-05039		1°	6	1.14	1	2	12°	0°43′	4	60	5,500
★ 08-00570-05040			8	1.21	1	2	12°	0°48′	4	60	6,000
★ 08-00570-05041			10	1.28	1	2	12°	0°50′	4	60	6,600
★ 08-00570-05044			12	1.35	1	2	12°	0°52′	4	60	6,600
★ 08-00570-05042			15	1.45	1	2	12°	0°54′	4	60	6,900
★ 08-00570-05045			16	1.49	1	2	12°	0°54′	4	60	6,900
★ 08-00570-05043			20	1.63	1	2	12°	0°55′	4	70	8,400
★ 08-00570-05046			22	1.7	1	2	12°	0°56′	4	70	8,600
★ 08-00570-05047			25	1.8	1	2	12°	0°56′	4	70	8,900
★ 08-00570-05049		1°30′	6	1.21	1	2	12°	1°05′	4	60	5,500
★ 08-00570-05050			8	1.31	1	2	12°	1°12′	4	60	6,000
★ 08-00570-05051			10	1.42	1	2	12°	1°16′	4	60	6,600
★ 08-00570-05054			12	1.52	1	2	12°	1°18′	4	60	6,600
★ 08-00570-05052			15	1.68	1	2	12°	1°21′	4	60	6,900
★ 08-00570-05055			16	1.73	1	2	12°	1°21′	4	60	6,900
★ 08-00570-05053			20	1.94	1	2	12°	1°23′	4	70	8,400
★ 08-00570-05056			22	2.05	1	2	12°	1°24′	4	70	8,600
★ 08-00570-05057			25	2.2	1	2	12°	1°24′	4	70	8,900
★ 08-00570-05059			36	2.78	1	2	12°	1°26′	4	70	9,800
★ 08-00570-05061		2°	10	1.56	1	2	12°	1°41′	4	60	6,600
★ 08-00570-05062			15	1.91	1	2	12°	1°48′	4	60	6,900
★ 08-00570-05063			20	2.26	1	2	12°	1°51′	4	70	8,400
★ 08-00570-05081		3°	10	1.84	1	2	12°	2°31′	4	60	6,600
★ 08-00570-05082			15	2.36	1	2	12°	2°41′	4	60	6,900
★ 08-00570-05083			20	2.89	1	2	12°	2°46′	4	70	8,400
★ 08-00570-05092		5°	15	3.27	1	2	12°	4°28′	6	60	9,400
★ 08-00570-05093			20	4.15	1	2	12°	4°37′	6	70	10,700
★ 08-00570-06021	R0.6	30′	12	1.37	1.2	2.4	12°	0°25′	4	60	7,600
★ 08-00570-06022			24	1.58	1.2	2.4	12°	0°28′	4	70	9,300
★ 08-00570-06041		1°	12	1.54	1.2	2.4	12°	0°51′	4	60	7,600
★ 08-00570-06042			24	1.95	1.2	2.4	12°	0°55′	4	70	9,300
★ 08-00570-06051		1°30′	12	1.7	1.2	2.4	12°	1°16′	4	60	7,600
★ 08-00570-06052			24	2.33	1.2	2.4	12°	1°23′	4	70	9,300
★ 08-00570-06061		2°	12	1.87	1.2	2.4	12°	1°41′	4	60	7,600
★ 08-00570-06062			24	2.71	1.2	2.4	12°	1°51′	4	70	9,300

订购方法 How to Order

请指定MRBTN230 球头半径(R)×颈角(θ)×颈长(ℓ1)。 ※(γ)为参考值。
When you order, indicate MRBTN230 (R)×(θ)×(ℓ1). ※(γ) is reference value.

MRBTN230

无限涂层 长颈锥形球头铣刀
MUGEN COATING 2-Flute Long Taper Neck Ball End Mill



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00570-06081	R0.6	3°	12	2.21	1.2	2.4	12°	2°32′	4	60	7,600
★ 08-00570-06082			24	3.46	1.2	2.4	12°	2°46′	6	70	10,700
★ 08-00570-06091		5°	12	2.88	1.2	2.4	12°	4°13′	4	60	7,600
★ 08-00570-06092			24	4.98	1.2	2.4	12°	4°37′	6	70	10,700
★ 08-00570-07520	R0.75	30′	10	1.62	1.5	3	12°	0°23′	4	60	6,900
★ 08-00570-07521			15	1.71	1.5	3	12°	0°25′	4	60	7,600
★ 08-00570-07522			30	1.97	1.5	3	12°	0°28′	4	70	10,600
★ 08-00570-07540		1°	10	1.74	1.5	3	12°	0°45′	4	60	6,900
★ 08-00570-07541			15	1.92	1.5	3	12°	0°51′	4	60	7,600
★ 08-00570-07543			20	2.09	1.5	3	12°	0°53′	4	60	8,400
★ 08-00570-07542			30	2.44	1.5	3	12°	0°55′	4	70	10,600
★ 08-00570-07550		1°30′	10	1.87	1.5	3	12°	1°08′	4	60	6,900
★ 08-00570-07551			15	2.13	1.5	3	12°	1°16′	4	60	7,600
★ 08-00570-07552			30	2.91	1.5	3	12°	1°23′	4	70	10,600
★ 08-00570-07560		2°	10	1.99	1.5	3	12°	1°31′	4	60	6,900
★ 08-00570-07561			15	2.34	1.5	3	12°	1°41′	4	60	7,600
★ 08-00570-07563			20	2.69	1.5	3	12°	1°46′	4	60	9,200
★ 08-00570-07562			30	3.39	1.5	3	12°	1°51′	6	70	12,300
★ 08-00570-07581		3°	15	2.76	1.5	3	12°	2°32′	4	60	7,600
★ 08-00570-07583			20	3.28	1.5	3	12°	2°39′	4	60	9,200
★ 08-00570-07582			30	4.33	1.5	3	12°	2°46′	6	70	12,300
★ 08-00570-07591		5°	15	3.6	1.5	3	12°	4°13′	6	60	8,800
★ 08-00570-07592			28.7	6	1.5	3	–	4°36′	6	70	12,300
★ 08-00570-10019	R1	30′	12	2.14	2	4	12°	0°21′	4	60	6,100
★ 08-00570-10020			16	2.21	2	4	12°	0°24′	4	60	6,300
★ 08-00570-10021			20	2.28	2	4	12°	0°25′	4	60	7,600
★ 08-00570-10022			30	2.45	2	4	12°	0°27′	4	70	9,200
★ 08-00570-10023			40	2.63	2	4	12°	0°28′	4	80	10,900
★ 08-00570-10039		1°	12	2.28	2	4	12°	0°43′	4	60	6,100
★ 08-00570-10040			16	2.42	2	4	12°	0°48′	4	60	6,300
★ 08-00570-10041			20	2.56	2	4	12°	0°51′	4	60	7,600
★ 08-00570-10044			25	2.73	2	4	12°	0°53′	4	60	8,400
★ 08-00570-10042			30	2.91	2	4	12°	0°54′	4	70	9,200
★ 08-00570-10045			35	3.08	2	4	12°	0°55′	4	80	12,000
★ 08-00570-10043			40	3.26	2	4	12°	0°55′	6	80	13,200
★ 08-00570-10049		1°30′	12	2.42	2	4	12°	1°05′	4	60	6,100
★ 08-00570-10050			16	2.63	2	4	12°	1°12′	4	60	6,300
★ 08-00570-10051			20	2.84	2	4	12°	1°16′	4	60	7,600
★ 08-00570-10054			25	3.1	2	4	12°	1°19′	4	60	8,400
★ 08-00570-10052			30	3.36	2	4	12°	1°21′	6	70	11,400
★ 08-00570-10055			35	3.62	2	4	12°	1°22′	6	80	12,500
★ 08-00570-10053			40	3.89	2	4	12°	1°23′	6	80	13,200

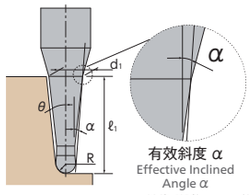
无限涂层 长颈锥形球头铣刀

MUGEN COATING 2-Flute Long Taper Neck Ball End Mill

MRBTN230

切削参数参考表

Recommended Milling Conditions



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00570-10059	R1	2°	12	2.56	2	4	12°	1°27′	4	60	6,100
★ 08-00570-10060			16	2.84	2	4	12°	1°36′	4	60	6,300
★ 08-00570-10061			20	3.12	2	4	12°	1°41′	4	60	8,000
★ 08-00570-10062			30	3.82	2	4	12°	1°48′	6	70	11,400
★ 08-00570-10063			40	4.51	2	4	12°	1°51′	6	80	13,200
★ 08-00570-10079		3°	12	2.84	2	4	12°	2°11′	4	60	6,100
★ 08-00570-10080			16	3.26	2	4	12°	2°24′	4	60	6,300
★ 08-00570-10081			20	3.68	2	4	12°	2°31′	6	70	8,800
★ 08-00570-10082			30	4.73	2	4	12°	2°41′	6	70	11,400
★ 08-00570-10083			40	5.77	2	4	12°	2°46′	6	80	13,200
★ 08-00570-10091		5°	20	4.8	2	4	12°	4°13′	6	70	12,100
★ 08-00570-10092			26.8	6	2	4	–	4°25′	6	70	13,000
★ 08-00570-10093			38.2	8	2	4	–	4°36′	8	80	24,200
★ 08-00570-15018	R1.5	30′	15	3.16	3	6	12°	0°20′	6	70	8,800
★ 08-00570-15019			20	3.24	3	6	12°	0°22′	6	70	9,400
★ 08-00570-15020			30	3.43	3	6	12°	0°26′	6	70	10,900
★ 08-00570-15022			40	3.6	3	6	12°	0°27′	6	80	12,100
★ 08-00570-15021			50	3.77	3	6	12°	0°27′	6	90	14,100
★ 08-00570-15038		1°	15	3.31	3	6	12°	0°39′	6	70	8,800
★ 08-00570-15039			20	3.49	3	6	12°	0°45′	6	70	9,400
★ 08-00570-15040			30	3.84	3	6	12°	0°51′	6	70	10,900
★ 08-00570-15042			40	4.19	3	6	12°	0°53′	6	80	12,100
★ 08-00570-15041			50	4.54	3	6	12°	0°54′	6	90	14,100
★ 08-00570-15048		1°30′	15	3.47	3	6	12°	1°00′	6	70	8,800
★ 08-00570-15049			20	3.73	3	6	12°	1°07′	6	70	9,400
★ 08-00570-15050			30	4.26	3	6	12°	1°16′	6	70	10,900
★ 08-00570-15052			40	4.78	3	6	12°	1°19′	6	80	12,100
★ 08-00570-15051			50	5.3	3	6	12°	1°22′	6	90	14,100
★ 08-00570-15058		2°	15	3.63	3	6	12°	1°20′	6	70	8,800
★ 08-00570-15059			20	3.98	3	6	12°	1°31′	6	70	9,400
★ 08-00570-15060			30	4.68	3	6	12°	1°41′	6	70	12,700
★ 08-00570-15061			48.9	6	3	6	–	1°49′	6	90	14,100
★ 08-00570-15079		3°	20	4.47	3	6	12°	2°16′	6	70	9,900
★ 08-00570-15080			30	5.52	3	6	12°	2°32′	6	70	12,700
★ 08-00570-15081			50	7.61	3	6	12°	2°43′	8	90	25,600
★ 08-00570-15091		5°	23.1	6	3	6	–	3°58′	6	70	14,100
★ 08-00570-20019	R2	30′	20	4.21	4	8	12°	0°19′	6	70	11,700
★ 08-00570-20020			40	4.56	4	8	12°	0°25′	6	90	15,400
★ 08-00570-20021			60	4.91	4	8	12°	0°27′	6	110	17,600
★ 08-00570-20039		1°	20	4.42	4	8	12°	0°40′	6	70	11,700
★ 08-00570-20040			40	5.12	4	8	12°	0°50′	6	90	15,400
★ 08-00570-20041			60	5.82	4	8	12°	0°54′	6	110	17,600

订购方法 How to Order

请指定MRBTN230 球头半径(R)×颈角(θ)×颈长(ℓ1)。
When you order, indicate MRBTN230 (R)×(θ)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material			碳素钢・合金钢・调质钢 Carbon Steels・Alloy Steels・Prehardened Steels S50C・SCM・SKD・SUS・HPM・NAK			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min-1
0.1	30′	1	0.01	0.01	～300	20,000
		1.5	0.005	0.005		
		2	0.005	0.005		
	1°	1	0.01	0.01		
		1.5	0.005	0.005		
		2	0.005	0.005		
	1°30′	1	0.01	0.01		
		1.5	0.005	0.01		
		2	0.005	0.01		
	2°	1	0.01	0.01		
		1.5	0.01	0.01		
		2	0.01	0.01		
	3°	1	0.01	0.02		
		1.5	0.01	0.02		
		2	0.01	0.02		
	5°	2	0.01	0.02		
0.15	30′	3	0.005	0.01	～300	20,000
	1°	2	0.005	0.01		
		3	0.005	0.01		
	1°30′	2	0.005	0.01		
		3	0.005	0.01		
	2°	3	0.01	0.02		
	3°	3	0.01	0.02		
	5°	3	0.01	0.02		
0.2	30′	2	0.01	0.02	～500	20,000
		3	0.01	0.02		
		4	0.01	0.02		
	1°	2	0.01	0.02		
		3	0.01	0.02		
		4	0.01	0.02		
	1°30′	2	0.01	0.03		
		3	0.01	0.03		
		4	0.01	0.03		
	2°	2	0.02	0.03		
		3	0.02	0.03		
		4	0.02	0.03		
	3°	2	0.02	0.05		
		4	0.02	0.05		
	5°	4	0.03	0.05		
0.25	30′	3	0.01	0.02	～500	20,000
		5	0.01	0.02		
	1°	3	0.01	0.02		
		5	0.01	0.02		
	1°30′	3	0.01	0.03		
		5	0.01	0.03		
	2°	3	0.02	0.03		
		5	0.02	0.03		
	3°	3	0.02	0.05		
		5	0.02	0.05		
	5°	5	0.03	0.05		
0.3	30′	5	0.01	0.02	～800	20,000
		8	0.01	0.02		
	1°	4	0.01	0.02		
		5	0.01	0.02		
		6	0.01	0.02		
		8	0.01	0.02		
	1°30′	5	0.01	0.03		
		8	0.01	0.03		
	2°	6	0.02	0.03		
		8	0.02	0.03		
	3°	6	0.02	0.05		
		8	0.02	0.05		
	5°	8	0.03	0.05		

锥颈 Taper Neck
球头 Ball
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

切削参数参考表
Recommended Milling Conditions

MRBTN230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			碳素钢・合金钢・调质钢 Carbon Steels・Alloy Steels・Prehardened Steels S50C・SCM・SKD・SUS・HPM・NAK			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}
0.4	30′	8	0.01	0.02	～1,000	20,000
		12	0.01	0.02		
	1°	8	0.01	0.02		
		12	0.01	0.02		
	1°30′	8	0.02	0.03		
		12	0.02	0.03		
	2°	8	0.03	0.05		
		12	0.03	0.05		
	3°	8	0.03	0.05		
		12	0.03	0.05		
0.5	30′	10	0.01	0.03	～1,200	16,000～20,000
		15	0.01	0.02		
		20	0.01	0.01		
		25	0.005	0.005		
	1°	6	0.05	0.07		
		8	0.03	0.06		
		10	0.02	0.05		
		12	0.02	0.05		
		15	0.02	0.03		
		16	0.01	0.03		
		20	0.01	0.02		
		22	0.01	0.01		
		25	0.005	0.01		
	1°30′	6	0.07	0.15		
		8	0.05	0.1		
		10	0.03	0.05		
		12	0.02	0.05		
		15	0.02	0.03		
		16	0.02	0.03		
		20	0.01	0.05		
		22	0.01	0.01		
		25	0.005	0.01		
		36	0.003	0.005		
	2°	10	0.05	0.1		
		15	0.02	0.05		
		20	0.01	0.03		
	3°	10	0.07	0.15		
		15	0.03	0.05		
		20	0.02	0.05		
	5°	15	0.07	0.2		
		20	0.03	0.05		
0.6	30′	12	0.03	0.05	～1,200	16,000～20,000
		24	0.01	0.01		
	1°	12	0.03	0.05		
		24	0.01	0.02		
	1°30′	12	0.03	0.05		
		24	0.02	0.02		
	2°	12	0.04	0.05		
		24	0.02	0.03		
	3°	12	0.04	0.07		
		24	0.03	0.03		
	5°	12	0.05	0.1		
		24	0.03	0.05		

加工材料 Work Material			碳素钢・合金钢・调质钢 Carbon Steels・Alloy Steels・Prehardened Steels S50C・SCM・SKD・SUS・HPM・NAK			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			a_p mm	a_e mm	mm/min	min^{-1}
0.75	30′	10	0.1	0.2	～1,200	16,000～20,000
		15	0.05	0.1		
		30	0.01	0.01		
	1°	10	0.1	0.2		
		15	0.05	0.1		
		20	0.02	0.05		
		30	0.01	0.01		
	1°30′	10	0.1	0.2		
		15	0.05	0.1		
		30	0.01	0.02		
	2°	10	0.1	0.3		
		15	0.05	0.12		
		20	0.03	0.05		
		30	0.02	0.03		
	3°	15	0.1	0.15		
		20	0.05	0.07		
		30	0.03	0.05		
	5°	15	0.1	0.2		
		28.7	0.05	0.07		
1	30′	12	0.1	0.2	～1,600	16,000～20,000
		16	0.07	0.15		
		20	0.05	0.1		
		30	0.02	0.05		
		40	0.01	0.015		
	1°	12	0.1	0.25		
		16	0.08	0.15		
		20	0.05	0.1		
		25	0.03	0.05		
		30	0.02	0.05		
		35	0.02	0.05		
		40	0.01	0.02		
	1°30′	12	0.15	0.3		
		16	0.1	0.15		
		20	0.05	0.12		
		25	0.03	0.07		
		30	0.03	0.05		
		35	0.02	0.05		
		40	0.01	0.02		
	2°	12	0.2	0.3		
		16	0.1	0.2		
		20	0.07	0.15		
		30	0.03	0.1		
		40	0.02	0.03		
	3°	12	0.2	0.5		
		16	0.1	0.3		
		20	0.07	0.2		
		30	0.05	0.1		
		40	0.02	0.05		
	5°	20	0.1	0.3		
		26.8	0.08	0.2		
		38.2	0.05	0.12		

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

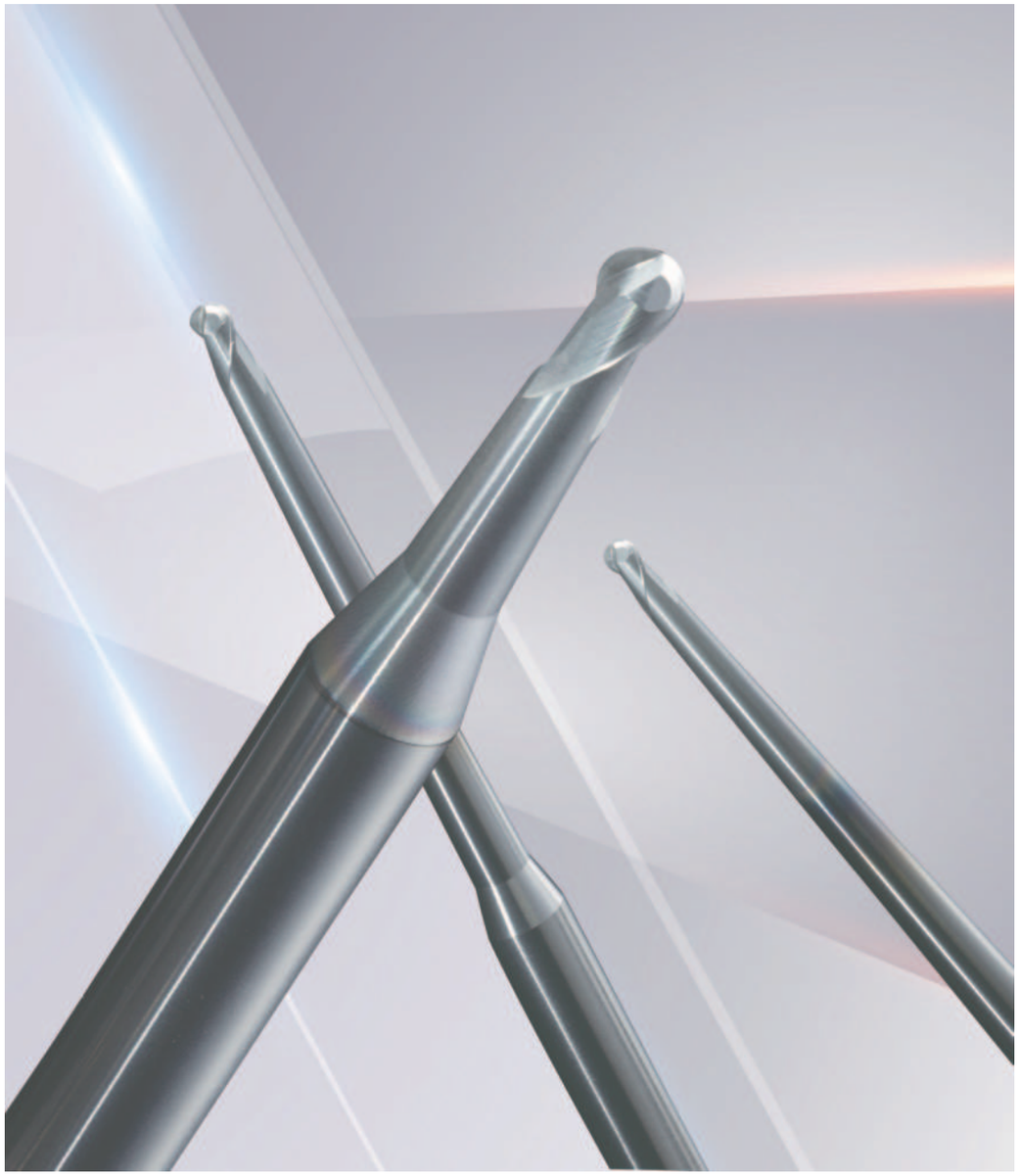
MRBTN230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			碳素钢・合金钢・调质钢 Carbon Steels・Alloy Steels・Prehardened Steels S50C・SCM・SKD・SUS・HPM・NAK			
(R)球头半径 Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	切深量 Depth of Cut ap mm	切深量 Depth of Cut ae mm	进给速度 Feed mm/min	主轴转速 Spindle Speed min^{-1}
1.5	30′	15	0.15	0.3	～1,600	16,000
		20	0.08	0.1		
		30	0.03	0.05		
		40	0.02	0.03		
		50	0.01	0.01		
	1°	15	0.15	0.3		
		20	0.1	0.15		
		30	0.05	0.07		
		40	0.02	0.05		
		50	0.01	0.02		
	1°30′	15	0.2	0.3		
		20	0.15	0.2		
		30	0.07	0.1		
		40	0.03	0.05		
		50	0.02	0.03		
	2°	15	0.2	0.3		
		20	0.15	0.2		
		30	0.1	0.1		
		48.9	0.03	0.05		
	3°	20	0.2	0.3		
		30	0.1	0.15		
		50	0.05	0.1		
	5°	23.1	0.2	0.3		
2	30′	20	0.2	0.3	～1,400	14,000
		40	0.05	0.1		
		60	0.01	0.02		
	1°	20	0.2	0.5		
		40	0.07	0.2		
		60	0.01	0.03		

备 注 Notes

※ 1 设定切削参数时，各种规格中有效长的较长型和颈角的较小型，必须设为上述切削参数表范围之内的较低值。
※ 2 请以相同的比率调整主轴转速和进给速度。
※ 3 请使用发烟性低的油冷冷却方式。
※ 4 切削高硬度钢时，建议使用油雾冷却方式。
※1 When deciding milling condition in case the effective length is long and/or the neck taper angle is small, it is recommended both axial depth of cut and radial depth of cut values are chosen at lower level within the specified range.
※2 Adjust both spindle speed and feed at the same rate.
※3 Use cutting fluid with smoke retardant.
※4 We recommend using oil mist coolant for hardened steels.



锥颈 Taper Neck
球头 Ball
涂层 Coating
P 碳素钢 Carbon Steel ◎
P 合金钢 Alloy Steel ◎
P 调质钢 Prehardened Steel ◎
H ～52高硬度钢 HRC Hardened Steel ○
M 不锈钢 Stainless Steel ○
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ○
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

规格 Size R0.005 ～ R0.05

SMG ≦40 HRC

超微细加工用球头铣刀 “Micro Ball”
Ball End Mill for precision machining “Micro Ball”

共有8种规格
Total 8 sizes

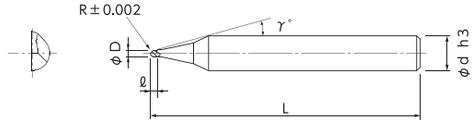
切削参数参考表
Recommended Milling Conditions

最小规格R0.005标准化的超微细加工用球头铣刀

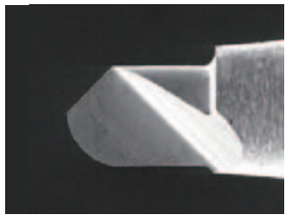
Standardized from the smallest R0.005 for ultra micro milling

1 | 0° | R ±0.002 | φd h3 | 3D





- 行业前列！球头半径从R0.005起实现标准化。
- 微米级球头铣刀“Micro Ball”！拓展了精细加工领域。
- 采用NS TOOL独创的R部形状，实现优质的加工面。
- The world’s first standardization of Ball size R0.005. Micro Ball develops new machining field in high-precision technology.
- The world’s smallest ball end mill “Micro Ball” extends precision machining field.
- NS original R design exercises fine finishing surface.



刀刃形状
Cutting edge shape

加工材料 Work Material	紫铜(TPC)・铝合金 Tough Pitch Copper・Aluminium Alloy				
(R)球头半径 Radius	切深量 Depth of Cut		进给速度 Feed	进刀速度 Approaching Feed	主轴转速 Spindle Speed
	ap mm	ae mm	mm/min	mm/min	min^{-1}
0.005	0.0003	0.0005	5	2	60,000
0.01	0.0005	0.001	10	3	60,000
0.02	0.001	0.002	20	5	60,000
0.03	0.002	0.003	80	10	60,000
0.04	0.002	0.004	200	30	60,000
0.05	0.003	0.005	300	30	60,000

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示步距量。
※2 拆装或者预调刀具时请务必小心。
※3 请使用适合加工材料和加工内容的冷却方式。
※4 请尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※5 进刀角度请设在3°以下。
※6 增加切深量会导致刀具折断。特别须注意ap值的设定。
※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Handle with care when exchanging and presetting tool.
※3 Use proper type of coolant for material and machining process.
※4 Minimize chucking runout
(Recommend to measure actual runout at activated spindle speed.)
※5 Tool approaching angle must be 3 degrees or below.
※6 Increase of Depth of Cut may cause a tool breakage, especially careful for Axial Depth of Cut.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00003-00005	R0.005	0.01	0.01	15°	4	45	36,400
01-00003-00010	R0.01	0.02	0.02	15°	4	45	29,200
01-00003-00015	R0.015	0.03	0.03	15°	4	45	25,000
01-00003-00020	R0.02	0.04	0.04	15°	4	45	21,000
01-00003-00025	R0.025	0.05	0.05	15°	4	45	18,900
01-00003-00030	R0.03	0.06	0.06	15°	4	45	13,500
01-00003-00040	R0.04	0.08	0.08	15°	4	45	11,300
01-00003-00050	R0.05	0.1	0.1	15°	4	45	9,500

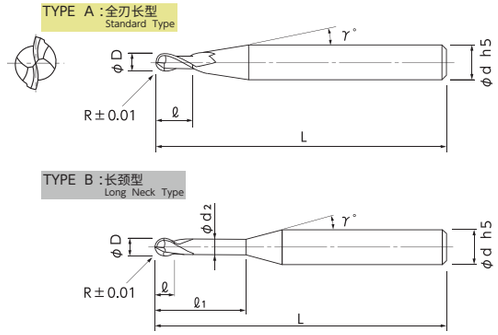
订购方法 How to Order

请指定NSMB100 球头半径(R)。 ※(γ)为参考值。
When you order, indicate NSMB100 (R). ※(γ) is reference value.

铝合金加工用球头铣刀
在加工R角、曲面形状时也可抑制振刀

Ball end mill for aluminium.
Reducing chattering even for milling at corner and curved surface





- 采用NS TOOL独创的刃形，可抑制角部或侧面加工时的振刀。
- NS TOOL unique flute design reduces chattering at corner and side milling.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under neck Length	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00638-03001	R0.3	0.45	3	B	0.6	0.56	12°	4	60	4,900
01-00638-04001	R0.4	0.6	4	B	0.8	0.76	12°	4	60	5,400
01-00638-05001	R0.5	2	–	A	1	–	12°	4	60	3,700
01-00638-05011		0.75	5	B	1	0.95	12°	4	60	4,700
01-00638-05013			10	B	1	0.95	12°	4	60	5,000
01-00638-07501	R0.75	3	–	A	1.5	–	12°	4	60	4,400
01-00638-07511		1.1	7.5	B	1.5	1.45	12°	4	60	4,800
01-00638-07513			15	B	1.5	1.45	12°	4	60	6,000
01-00638-10001	R1	4	–	A	2	–	12°	4	60	3,600
01-00638-10011		1.5	10	B	2	1.94	12°	4	60	4,400
01-00638-10013			20	B	2	1.94	12°	4	60	4,800
01-00638-15001	R1.5	6	–	A	3	–	12°	6	60	4,600
01-00638-15011		2.5	15	B	3	2.85	12°	6	60	5,900
01-00638-15013			30	B	3	2.85	12°	6	70	6,900
01-00638-20001	R2	8	–	A	4	–	12°	6	70	5,200
01-00638-20011		3	20	B	4	3.8	12°	6	80	6,600
01-00638-20013			40	B	4	3.8	12°	6	90	8,300
01-00638-25001	R2.5	10	–	A	5	–	12°	6	80	5,700
01-00638-25011		3.5	25	B	5	4.8	12°	6	80	7,500
01-00638-25013			50	B	5	4.8	12°	6	100	9,700
01-00638-30001	R3	12	–	A	6	–	–	6	90	6,400
01-00638-30011		6	30	B	6	5.8	–	6	90	8,300
01-00638-30013			60	B	6	5.8	–	6	120	10,600
01-00638-40001	R4	16	–	A	8	–	–	8	90	12,000
01-00638-50001	R5	20	–	A	10	–	–	10	100	15,300
01-00638-60001	R6	24	–	A	12	–	–	12	110	21,800

订购方法 How to Order

请指定ALB225 球头半径(R)×刃长(ℓ)[×颈长(ℓ1)]。
When you order, indicate ALB225 (R)×(ℓ) [×(ℓ1)].

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material			铝合金 Aluminium Alloy A2017・A5052・A7075							
			一般参数 Normal Speed				高速参数 High Speed			
刀具伸出量 Tool Overhung			L/D≧10				L/D＜10			
(R)球头半径 Radius	刃长 Length of Cut	颈长 Under neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm
0.3	0.45	3	20,000	1,000	0.1	0.2	40,000	2,000	0.1	0.2
0.4	0.6	4	20,000	1,000	0.1	0.2	40,000	2,000	0.1	0.2
0.5	2	–	20,000	2,000	0.3	0.3	40,000	4,000	0.3	0.3
	0.75	5	20,000	1,500	0.3	0.3	30,000	3,000	0.3	0.3
	0.75	10	10,000	1,000	0.2	0.2	20,000	2,000	0.2	0.2
0.75	3	–	20,000	2,000	0.3	0.5	40,000	4,000	0.3	0.5
	1.1	7.5	16,000	1,600	0.3	0.5	30,000	3,000	0.3	0.5
	1.1	15	10,000	1,000	0.2	0.3	20,000	2,000	0.2	0.3
1	4	–	20,000	2,000	0.5	0.5	30,000	4,000	0.5	0.5
	1.5	10	15,000	1,500	0.3	0.5	20,000	3,000	0.3	0.5
	1.5	20	12,000	1,200	0.2	0.5	15,000	2,000	0.2	0.5
1.5	6	–	18,000	2,000	0.6	1	25,000	4,000	0.6	1
	2.5	15	15,000	1,600	0.6	1	20,000	3,000	0.6	1
	2.5	30	12,000	1,200	0.3	1	15,000	2,000	0.3	1
2	8	–	14,000	2,000	0.5	1.5	20,000	4,000	0.5	1.5
	3	20	12,000	1,500	0.5	1.5	16,000	3,000	0.5	1.5
	3	40	8,000	1,000	0.3	1.5	12,000	2,000	0.3	1.5
2.5	10	–	12,000	3,000	0.8	1.8	20,000	5,000	0.8	1.8
	3.5	25	8,000	2,000	0.8	1.8	15,000	3,000	0.8	1.8
	3.5	50	5,000	1,500	0.5	1.8	10,000	2,000	0.5	1.8
3	12	–	12,000	3,000	1	2	20,000	5,000	1	2
	6	30	8,000	2,000	1	2	15,000	4,000	1	2
	6	60	5,000	1,200	0.6	2	10,000	2,000	0.6	2
4	16	–	10,000	2,000	1	2	15,000	3,000	1	2
5	20	–	8,000	2,000	2	3	12,000	3,000	2	3
6	24	–	6,000	2,000	3	4	10,000	3,000	3	4

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示步距量。
※2 请以相同的比率调整主轴转速和进给速度。
（机床主轴转速使用20,000转以上时，请进行相同的调整。）
※3 请使用刚性好、精度高的机床和夹具。
※4 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※5 建议使用水溶性切削方式。

※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Adjust both spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※3 Use a rigid and precise machine and chuck holder.
※4 Adjust milling conditions when vibration and abnormal sounds occur according to the rigidity of the machine and the chuck holder, or work clamping condition.
※5 Water-soluble fluid is recommended.

ALB225-DLC

规格 Size R0.3 ～ R6

DLC

DLC涂层 铝合金加工用球头铣刀
DLC COATING Ball End Mill for Aluminium

共有26种规格
Total 26 sizes

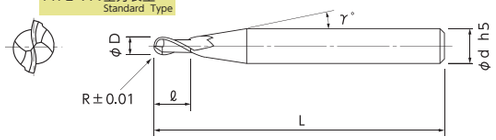
铝合金加工用球头铣刀
采用DLC涂层，可延长刀具寿命

Ball end mill for aluminium. DLC coating applied for longer tool life

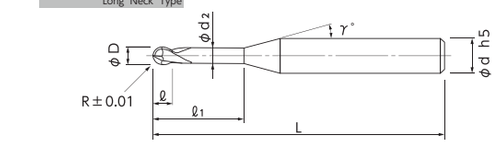
WC | 2 | 25° | φd h5 | 3D



TYPE A：全刃长型 Standard Type



TYPE B：长颈型 Long Neck Type



- 采用NS TOOL独创的高粘合性DLC涂层，适用于长时间加工。
- Adopted NS TOOL original DLC COATING that suitable for long time machining.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under neck Length	形状 Type	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00668-03001	R0.3	0.45	3	B	0.6	0.56	12°	4	60	7,100
01-00668-04001	R0.4	0.6	4	B	0.8	0.76	12°	4	60	7,600
01-00668-05001	R0.5	2	–	A	1	–	12°	4	60	5,900
01-00668-05011		0.75	5	B	1	0.95	12°	4	60	6,900
01-00668-05013			10	B	1	0.95	12°	4	60	7,200
01-00668-07501	R0.75	3	–	A	1.5	–	12°	4	60	6,600
01-00668-07511		1.1	7.5	B	1.5	1.45	12°	4	60	7,000
01-00668-07513			15	B	1.5	1.45	12°	4	60	8,200
01-00668-10001	R1	4	–	A	2	–	12°	4	60	5,800
01-00668-10011		1.5	10	B	2	1.94	12°	4	60	6,600
01-00668-10013			20	B	2	1.94	12°	4	60	7,000
01-00668-15001	R1.5	6	–	A	3	–	12°	6	60	6,900
01-00668-15011		2.5	15	B	3	2.85	12°	6	60	8,300
01-00668-15013			30	B	3	2.85	12°	6	70	9,600
01-00668-20001	R2	8	–	A	4	–	12°	6	70	7,800
01-00668-20011		3	20	B	4	3.8	12°	6	80	9,200
01-00668-20013			40	B	4	3.8	12°	6	90	10,900
01-00668-25001	R2.5	10	–	A	5	–	12°	6	80	8,400
01-00668-25011		3.5	25	B	5	4.8	12°	6	80	10,100
01-00668-25013			50	B	5	4.8	12°	6	100	12,800
01-00668-30001	R3	12	–	A	6	–	–	6	90	9,500
01-00668-30011		6	30	B	6	5.8	–	6	90	11,300
01-00668-30013			60	B	6	5.8	–	6	120	13,900
01-00668-40001	R4	16	–	A	8	–	–	8	90	15,600
01-00668-50001	R5	20	–	A	10	–	–	10	100	19,100
01-00668-60001	R6	24	–	A	12	–	–	12	110	26,100

订购方法 How to Order

请指定ALB225-DLC 球头半径(R)×刃长(ℓ)[×颈长(ℓ1)]。
When you order, indicate ALB225-DLC (R)×(ℓ) [×(ℓ1)].

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material			铝合金 Aluminium Alloy A2017・A5052・A7075							
			一般参数 Normal Speed				高速参数 High Speed			
刀具伸出量 Tool Overhung			L/D≧10				L/D＜10			
(R)球头半径 Radius	刃长 Length of Cut	颈长 Under neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm
0.3	0.45	3	20,000	1,000	0.1	0.2	40,000	2,000	0.1	0.2
0.4	0.6	4	20,000	1,000	0.1	0.2	40,000	2,000	0.1	0.2
0.5	2	–	20,000	2,000	0.3	0.3	40,000	4,000	0.3	0.3
	0.75	5	20,000	1,500	0.3	0.3	30,000	3,000	0.3	0.3
	0.75	10	10,000	1,000	0.2	0.2	20,000	2,000	0.2	0.2
0.75	3	–	20,000	2,000	0.3	0.5	40,000	4,000	0.3	0.5
	1.1	7.5	16,000	1,600	0.3	0.5	30,000	3,000	0.3	0.5
	1.1	15	10,000	1,000	0.2	0.3	20,000	2,000	0.2	0.3
1	4	–	20,000	2,000	0.5	0.5	30,000	4,000	0.5	0.5
	1.5	10	15,000	1,500	0.3	0.5	20,000	3,000	0.3	0.5
	1.5	20	12,000	1,200	0.2	0.5	15,000	2,000	0.2	0.5
1.5	6	–	18,000	2,000	0.6	1	25,000	4,000	0.6	1
	2.5	15	15,000	1,600	0.6	1	20,000	3,000	0.6	1
	2.5	30	12,000	1,200	0.3	1	15,000	2,000	0.3	1
2	8	–	14,000	2,000	0.5	1.5	20,000	4,000	0.5	1.5
	3	20	12,000	1,500	0.5	1.5	16,000	3,000	0.5	1.5
	3	40	8,000	1,000	0.3	1.5	12,000	2,000	0.3	1.5
2.5	10	–	12,000	3,000	0.8	1.8	20,000	5,000	0.8	1.8
	3.5	25	8,000	2,000	0.8	1.8	15,000	3,000	0.8	1.8
	3.5	50	5,000	1,500	0.5	1.8	10,000	2,000	0.5	1.8
3	12	–	12,000	3,000	1	2	20,000	5,000	1	2
	6	30	8,000	2,000	1	2	15,000	4,000	1	2
	6	60	5,000	1,200	0.6	2	10,000	2,000	0.6	2
4	16	–	10,000	2,000	1	2	15,000	3,000	1	2
5	20	–	8,000	2,000	2	3	12,000	3,000	2	3
6	24	–	6,000	2,000	3	4	10,000	3,000	3	4

备 注 Notes

※1 切深量的ap表示轴向切深量，ae表示步距量。
※2 请以相同的比率调整主轴转速和进给速度。
（机床主轴转速使用20,000转以上时，请进行相同的调整。）
※3 请使用刚性好、精度高的机床和夹具。
※4 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※5 建议使用水溶性切削方式。

※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Adjust both spindle speed and feed at the same rate.
(When using spindle speed 20,000 or more, the same adjustment is required.)
※3 Use a rigid and precise machine and chuck holder.
※4 Adjust milling conditions when vibration and abnormal sounds occur according to the rigidity of the machine and the chuck holder, or work clamping condition.
※5 Water-soluble fluid is recommended.

RSB230

树脂加工用球头铣刀 “Clear Cut”
Ball End Mill for Resin

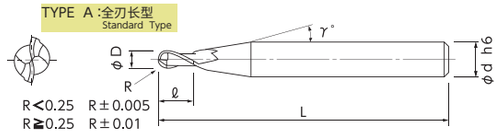
树脂加工用球头铣刀。全刃长造型的L/D为最大10倍 长颈造型为最大35倍

Ball end mill for resin. Maximum L/D=10 for standard type, maximum L/D=35 for long neck type

2 | 30° | R ±0.005 (R<0.25) | 3D

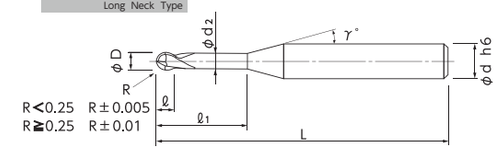


TYPE A :全刃长型 Standard Type



R<0.25 R±0.005
R≧0.25 R±0.01

TYPE B :长颈型 Long Neck Type



R<0.25 R±0.005
R≧0.25 R±0.01

- 可根据加工形状选择3倍刃长、5倍刃长、10倍刃长、超长颈及同径型!
- 也可用于铝、铜等非铁金属材料。
- Select the right one for your job, 3D or 5D or 10D Length of cut, with Extra Long-neck or without Under neck length.
- Applicable to nonferrous material such as Aluminium and copper.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	形状 Type	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d2)颈径 Neck Dia.	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00654-01000	R0.1	0.6	–	A	0.2	9°	–	4	50	7,800
01-00654-01001		1	–	A	0.2	9°	–	4	50	8,800
01-00654-01002		0.6	2	B	0.2	12°	0.18	4	50	15,100
01-00654-01500	R0.15	0.9	–	A	0.3	9°	–	4	50	6,800
01-00654-01501		1.5	–	A	0.3	9°	–	4	50	7,600
01-00654-01503		0.9	3	B	0.3	12°	0.28	4	50	14,500
01-00654-02000	R0.2	1.2	–	A	0.4	9°	–	4	50	7,500
01-00654-02001		2	–	A	0.4	9°	–	4	50	8,800
01-00654-02004		1.2	4	B	0.4	12°	0.37	4	50	8,600
01-00654-02005			5	B	0.4	12°	0.37	4	50	9,500
01-00654-02500	R0.25	1.5	–	A	0.5	9°	–	4	50	5,000
01-00654-02501		2.5	–	A	0.5	9°	–	4	50	6,100
01-00654-02502		5	–	A	0.5	9°	–	4	50	7,600
01-00654-02510		1.5	10	B	0.5	12°	0.46	4	50	10,100
01-00654-02515			15	B	0.5	12°	0.46	4	50	11,300
01-00654-02520			20	B	0.5	12°	0.46	4	60	13,200
01-00654-03000	R0.3	1.8	–	A	0.6	9°	–	4	50	5,900
01-00654-03001		3	–	A	0.6	9°	–	4	50	7,100
01-00654-03006		1.8	6	B	0.6	12°	0.56	4	50	6,300
01-00654-03010			10	B	0.6	12°	0.56	4	50	9,900
01-00654-04000	R0.4	2.4	–	A	0.8	9°	–	4	50	5,900
01-00654-04001		4	–	A	0.8	9°	–	4	50	7,100
01-00654-04008		2.4	8	B	0.8	12°	0.76	4	50	6,200
01-00654-04012			12	B	0.8	12°	0.76	4	50	7,500
★ 01-00654-05000	R0.5	3	–	A	1	9°	–	4	50	4,100
★ 01-00654-05001		5	–	A	1	9°	–	4	50	5,000
★ 01-00654-05002		10	–	A	1	9°	–	4	50	9,700
★ 01-00654-05010		3	10	B	1	12°	0.95	4	50	5,400

订购方法 How to Order

请指定RSB230 球头半径(R)×刃长(ℓ)[×颈长(ℓ1)]。
(仅形状A(全刃长型)的R1.5刃长9和R2刃长12需指定柄径(d)。)
When you order, indicate RSB230 (R)×(ℓ) [×(ℓ1)]. Choose Shank Dia. (d) for typeA of R1.5×9ℓ and R2×12ℓ.
※(γ)为参考值。
※(γ) is reference value.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ)刃长 Length of Cut	(ℓ1)颈长 Under Neck Length	形状 Type	(D)外径 Dia.	(γ)颈角 Neck Taper Angle	(d2)颈径 Neck Dia.	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 01-00654-05015	R0.5	3	15	B	1	12°	0.95	4	60	5,400
★ 01-00654-05020			20	B	1	12°	0.95	4	60	6,300
★ 01-00654-05030			30	B	1	12°	0.95	4	70	9,500
★ 01-00654-07500	R0.75	4.5	–	A	1.5	9°	–	4	50	4,400
★ 01-00654-07501		7.5	–	A	1.5	9°	–	4	50	5,400
★ 01-00654-07502		15	–	A	1.5	9°	–	4	60	9,900
★ 01-00654-07515		4.5	15	B	1.5	12°	1.45	4	60	5,500
★ 01-00654-07530			30	B	1.5	12°	1.45	4	70	8,800
★ 01-00654-07545			45	B	1.5	12°	1.45	4	90	12,600
★ 01-00654-10000	R1	6	–	A	2	9°	–	4	50	4,400
★ 01-00654-10001		10	–	A	2	9°	–	4	50	5,400
★ 01-00654-10002		20	–	A	2	9°	–	4	60	9,900
★ 01-00654-10020		6	20	B	2	12°	1.94	4	60	5,400
★ 01-00654-10030			30	B	2	12°	1.94	4	80	6,500
★ 01-00654-10050			50	B	2	12°	1.94	4	110	12,400
★ 01-00654-10070			70	B	2	12°	1.94	4	110	15,100
★ 01-00654-15000	R1.5	9	–	A	3	–	–	3	100	8,200
★ 01-00654-15001			–	A	3	9°	–	6	50	5,900
★ 01-00654-15002		15	–	A	3	9°	–	6	60	6,600
★ 01-00654-15030		9	30	B	3	12°	2.85	6	70	7,900
★ 01-00654-15045			45	B	3	12°	2.85	6	90	9,200
★ 01-00654-15060			60	B	3	12°	2.85	6	110	14,500
★ 01-00654-20000	R2	12	–	A	4	–	–	4	120	9,900
★ 01-00654-20001			–	A	4	9°	–	6	50	5,900
★ 01-00654-20002		20	–	A	4	9°	–	6	60	7,700
★ 01-00654-20030		12	30	B	4	12°	3.8	6	70	7,900
★ 01-00654-20040			40	B	4	12°	3.8	6	90	8,400
★ 01-00654-20070			70	B	4	12°	3.8	6	120	17,800
★ 01-00654-25000	R2.5	15	–	A	5	9°	–	6	70	6,900
★ 01-00654-25001		25	–	A	5	9°	–	6	80	9,200
★ 01-00654-30000	R3	18	–	A	6	–	–	6	80	7,300
★ 01-00654-30001		30	–	A	6	–	–	6	90	9,200
★ 01-00654-30040		18	40	B	6	–	5.8	6	100	9,700
★ 01-00654-30060			60	B	6	–	5.8	6	120	12,800
★ 01-00654-30080			80	B	6	–	5.8	6	130	19,100

切削参数参考表
Recommended Milling Conditions

RSB230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				ABS・MC尼龙・PTFE ABS・MC nylon・PTFE			聚碳酸酯・POM・PEEK Polycarbonate・POM・PEEK			亚克力・电木 Acrylic・Bakelite		
球头半径 Radius	刃长 Length of Cut	颈长 Under neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
				min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
R0.1	0.6	–	3	20,000	620	0.1	20,000	520	0.1	20,000	410	0.1
	1	–	5	17,100	400	0.05	17,100	340	0.05	17,100	270	0.05
	0.6	2	10	15,600	260	0.012	15,600	220	0.012	15,600	170	0.012
R0.15	0.9	–	3	20,000	1,050	0.15	20,000	880	0.15	20,000	700	0.15
	1.5	–	5	17,100	690	0.075	17,100	570	0.075	17,100	460	0.075
	0.9	3	10	15,600	450	0.018	15,600	370	0.018	15,600	300	0.018
R0.2	1.2	–	3	20,000	1,480	0.2	20,000	1,240	0.2	20,000	990	0.2
	2	–	5	17,100	970	0.1	17,100	810	0.1	17,100	640	0.1
	1.2	4	10	15,600	630	0.024	15,600	530	0.024	15,600	420	0.024
		5	12.5	15,000	550	0.02	15,000	460	0.02	15,000	370	0.02
R0.25	1.5	–	3	20,000	1,920	0.25	20,000	1,600	0.25	20,000	1,280	0.25
	2.5	–	5	17,100	1,250	0.12	17,100	1,040	0.12	17,100	830	0.12
	5	–	10	14,000	660	0.03	14,000	550	0.03	14,000	440	0.03
	1.5	10	20	13,500	450	0.01	13,500	370	0.01	13,500	300	0.01
R0.3	1.8	–	3	20,000	2,160	0.3	20,000	1,800	0.3	20,000	1,440	0.3
	3	–	5	17,100	1,410	0.15	17,100	1,170	0.15	17,100	940	0.15
	1.8	6	10	15,000	890	0.036	15,000	740	0.036	15,000	590	0.036
		10	16.7	13,700	610	0.02	13,700	510	0.02	13,700	410	0.02
R0.4	2.4	–	3	20,000	2,640	0.4	20,000	2,200	0.4	20,000	1,760	0.4
	4	–	5	17,100	1,720	0.2	17,100	1,430	0.2	17,100	1,150	0.2
	2.4	8	10	14,000	1,010	0.048	14,000	840	0.048	14,000	670	0.048
		12	15	12,700	750	0.032	12,700	620	0.032	12,700	500	0.032
R0.5	3	–	3	17,000	2,650	0.5	17,000	2,210	0.5	17,000	1,760	0.5
	5	–	5	14,500	1,730	0.25	14,500	1,440	0.25	14,500	1,150	0.25
	10	–	10	12,000	920	0.06	12,000	770	0.06	12,000	610	0.06
	3	10	10	13,000	1,110	0.06	13,000	920	0.06	13,000	740	0.06
		15	15	11,700	820	0.04	11,700	680	0.04	11,700	540	0.04
		20	20	11,000	600	0.02	11,000	500	0.02	11,000	400	0.02
R0.75	4.5	–	3	13,300	2,590	0.75	13,300	2,150	0.75	13,300	1,720	0.75
	7.5	–	5	11,100	1,710	0.37	11,100	1,430	0.37	11,100	1,140	0.37
	15	–	10	8,500	930	0.09	8,500	780	0.09	8,500	620	0.09
	4.5	15	10	9,400	1,150	0.09	9,400	960	0.09	9,400	770	0.09
		30	20	7,500	690	0.03	7,500	570	0.03	7,500	460	0.03
R1	6	–	3	9,900	2,320	1	9,900	1,930	1	9,900	1,550	1
	10	–	5	8,200	1,590	0.5	8,200	1,320	0.5	8,200	1,060	0.5
	20	–	10	5,600	850	0.12	5,600	710	0.12	5,600	560	0.12
	6	20	10	6,200	1,050	0.12	6,200	870	0.12	6,200	700	0.12
		30	15	5,300	810	0.08	5,300	680	0.08	5,300	540	0.08
R1.5	9(d3)	–	3	6,600	2,060	1.5	6,600	1,710	1.5	6,600	1,370	1.5
	9(d6)	–	3	6,600	2,060	1.5	6,600	1,710	1.5	6,600	1,370	1.5
	15	–	5	5,300	1,420	0.75	5,300	1,190	0.75	5,300	950	0.75
	9	30	10	3,700	920	0.18	3,700	770	0.18	3,700	610	0.18
		45	15	2,900	690	0.12	2,900	580	0.12	2,900	460	0.12
		60	20	2,300	500	0.06	2,300	420	0.06	2,300	330	0.06

加工材料 Work Material				ABS・MC尼龙・PTFE ABS・MC nylon・PTFE			聚碳酸酯・POM・PEEK Polycarbonate・POM・PEEK			亚克力・电木 Acrylic・Bakelite		
球头半径 Radius	刃长 Length of Cut	颈长 Under neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
				min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
R2	12(d4)	–	3	4,900	1,910	2	4,900	1,590	2	4,900	1,270	2
	12(d6)	–	3	4,900	1,910	2	4,900	1,590	2	4,900	1,270	2
	20	–	5	4,000	1,320	1	4,000	1,100	1	4,000	880	1
	12	30	7.5	3,600	1,270	0.58	3,600	1,060	0.58	3,600	850	0.58
		40	10	2,700	850	0.24	2,700	710	0.24	2,700	570	0.24
		70	17.5	1,900	550	0.12	1,900	460	0.12	1,900	370	0.12
R2.5	15	–	3	3,900	1,820	2.5	3,900	1,510	2.5	3,900	1,210	2.5
	25	–	5	3,200	1,260	1.2	3,200	1,050	1.2	3,200	840	1.2
R3	18	–	3	3,300	1,750	3	3,300	1,460	3	3,300	1,170	3
	30	–	5	2,600	1,210	1.5	2,600	1,010	1.5	2,600	810	1.5
	18	40	6.7	2,600	1,270	1	2,600	1,060	1	2,600	850	1
		60	10	1,800	780	0.36	1,800	650	0.36	1,800	520	0.36
		80	13.3	1,600	650	0.28	1,600	540	0.28	1,600	430	0.28

备 注 Notes

※1 本切削参数为粗加工时的参考值。请根据实际的加工形状和所使用机床的刚性等调整切削参数。
※2 主轴转速过低时，请以相同的比率降低主轴转速和进给速度。
※3 精加工时，请根据要求精度等调整切削参数。
※4 内角等刀具负载增大的部位可能需要调整切削参数。
※5 发生振刀或加工声音较吵等问题时，请以相同的比率降低主轴转速和进给速度。
※6 L/D较大的刀具(L/D≥10)发生倾斜时，必须降低进给速度或切深量。
※7 L/D＞20的刀具请根据L/D＝20左右的切削参数参考值，充分降低主轴转速、进给速度、切深量，调整切削参数。
※8 建议使用吹气冷却方式。
※9 加工过程中切屑卡入、缠绕可能会有损加工面品质，因此请注意排屑。
※10 请尽量抑制刀具的偏摆量。

※1 These recommended cutting conditions indicate just reference for roughing. It should be adjusted according to milling shape and machine type.
※2 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※3 For finishing process, please adjust to the optimized condition to meet the requirement of machining accuracy.
※4 Necessary to adjust the cutting condition at the parts overloading against the tools such as inner corner parts.
※5 Adjust both spindle speed and feed at the same rate when chattering or abnormal sounds occurred.
※6 When a tool with L/D 10 times and longer deflects on milling, please reduce Feed or Depth of Cut.
※7 For a tool with L/D longer than 20 times, reduce spindle speed, feed rate and depth of cut at sufficient values by referring the cutting conditions of L/D 20 times.
※8 Air blow is recommended.
※9 Care for chip removal to avoid being stuck or caught during process for better surface quality.
※10 Minimize chucking runout.

全刃长 Full Cutting Length
长颈 Long Neck
无涂层 Non-Coating
球头 Ball
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
树脂加工 Resin Milling

铜电极加工用长颈球头铣刀
Long Neck Ball End Mill for Copper Electrode

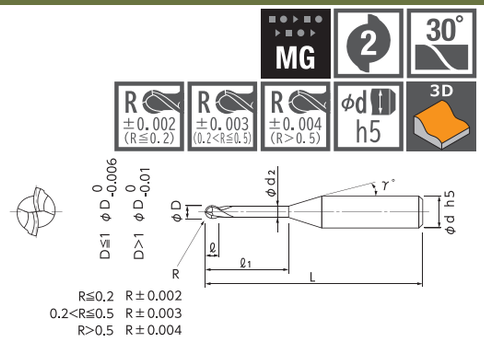
共有94种规格
Total 94 sizes

铜电极加工用长颈球头铣刀
Long Neck Ball End Mill for Copper Electrode

针对铜电极加工用的长颈球头铣刀 刀刃锋利，可减少毛刺，实现优质的加工面

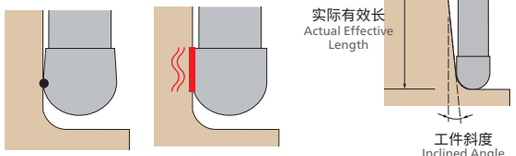
Long neck ball end mill specialized for machining copper alloy
Sharpe cutting edge makes less burr and high quality surface





※DRB230的R精度以实际外径的1/2为基准。
R accuracy of DRB230 is based on a half value.

- 针对铜电极加工用的长颈球头铣刀。
- 采用锋利的刀刃形状和DLC涂层，可确保长时间进行持续稳定的高品质加工。
- 对钨铜电极的加工也很有效。
- Long neck ball end mill specialized for machining copper electrode.
- Sharp edge shearing ability and DLC coating realized high quality and stable a long life machining.
- Machining copper tungsten electrodes is also effective.



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

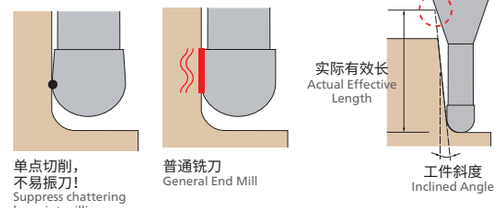
产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30	1°	1°30	2°	3°
07-00530-00503	R0.05	0.3	0.07	0.1	0.085	12°	4	45	13,900	0.34	0.36	0.37	0.39	0.42
07-00530-00505		0.5	0.07	0.1	0.085	12°	4	45	14,500	0.55	0.57	0.60	0.63	0.69
07-00530-00703	R0.075	0.3	0.1	0.15	0.13	12°	4	45	14,000	0.35	0.37	0.38	0.40	0.43
07-00530-00705		0.5	0.1	0.15	0.13	12°	4	45	14,400	0.56	0.58	0.61	0.64	0.70
07-00530-00710		1	0.1	0.15	0.13	12°	4	45	15,000	1.08	1.13	1.18	1.23	1.36
07-00530-01005	R0.1	0.5	0.15	0.2	0.18	12°	4	45	11,100	0.56	0.58	0.61	0.63	0.69
07-00530-01007		0.75	0.15	0.2	0.18	12°	4	45	11,400	0.82	0.85	0.89	0.93	1.02
07-00530-01010		1	0.15	0.2	0.18	12°	4	45	11,600	1.08	1.13	1.18	1.23	1.35
07-00530-01015		1.5	0.15	0.2	0.18	12°	4	45	12,100	1.60	1.67	1.75	1.83	2.02
07-00530-01020		2	0.15	0.2	0.18	12°	4	45	12,600	2.13	2.22	2.32	2.43	2.68
07-00530-01505	R0.15	0.5	0.2	0.3	0.28	12°	4	45	11,100	0.56	0.58	0.60	0.62	0.67
07-00530-01510		1	0.2	0.3	0.28	12°	4	45	11,600	1.08	1.12	1.17	1.22	1.34
07-00530-01515		1.5	0.2	0.3	0.28	12°	4	45	12,100	1.60	1.67	1.74	1.82	2.00
07-00530-01520		2	0.2	0.3	0.28	12°	4	45	12,600	2.12	2.21	2.31	2.42	2.66
07-00530-02005	R0.2	0.5	0.3	0.4	0.37	12°	4	45	10,100	0.58	0.60	0.62	0.64	0.69
07-00530-02010		1	0.3	0.4	0.37	12°	4	45	10,100	1.10	1.14	1.19	1.24	1.35
07-00530-02015		1.5	0.3	0.4	0.37	12°	4	45	10,300	1.62	1.69	1.76	1.84	2.02
07-00530-02020		2	0.3	0.4	0.37	12°	4	45	10,300	2.15	2.23	2.33	2.43	2.68
07-00530-02030		3	0.3	0.4	0.37	12°	4	45	10,500	3.19	3.32	3.47	3.63	4.01
07-00530-02040		4	0.3	0.4	0.37	12°	4	45	10,700	4.23	4.41	4.61	4.83	5.33
07-00530-02050		5	0.3	0.4	0.37	12°	4	45	10,900	5.27	5.50	5.75	6.02	6.66
07-00530-02060		6	0.3	0.4	0.37	12°	4	45	11,100	6.32	6.59	6.89	7.22	7.99

订购方法 How to Order
请指定DRB230 球头半径(R)×颈长(ℓ1)。
When you order, indicate DRB230 (R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-035

铝合金 Aluminium Alloy N
铜合金 Copper 钨铜 Copper Tungsten N
树脂 Resin O
铜电极加工 Copper Electrode Milling

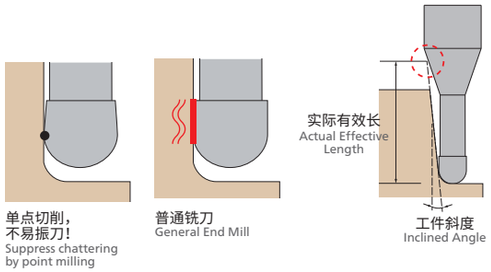


单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30	1°	1°30	2°	3°
07-00530-02510	R0.25	1	0.35	0.5	0.46	12°	4	45	9,800	1.13	1.16	1.21	1.26	1.37
07-00530-02515		1.5	0.35	0.5	0.46	12°	4	45	9,800	1.65	1.71	1.78	1.85	2.03
07-00530-02520		2	0.35	0.5	0.46	12°	4	45	9,900	2.17	2.25	2.35	2.45	2.69
07-00530-02530		3	0.35	0.5	0.46	12°	4	45	10,100	3.21	3.34	3.49	3.65	4.02
07-00530-02540		4	0.35	0.5	0.46	12°	4	45	10,300	4.25	4.43	4.63	4.85	5.35
07-00530-02550		5	0.35	0.5	0.46	12°	4	45	10,500	5.30	5.52	5.77	6.04	6.68
07-00530-02560		6	0.35	0.5	0.46	12°	4	45	10,700	6.34	6.61	6.91	7.24	8.00
07-00530-03010	R0.3	1	0.45	0.6	0.56	12°	4	45	7,500	1.12	1.16	1.20	1.25	1.35
07-00530-03015		1.5	0.45	0.6	0.56	12°	4	45	7,700	1.64	1.71	1.77	1.84	2.02
07-00530-03020		2	0.45	0.6	0.56	12°	4	45	7,700	2.17	2.25	2.34	2.44	2.68
07-00530-03030		3	0.45	0.6	0.56	12°	4	45	7,900	3.21	3.34	3.48	3.64	4.01
07-00530-03040		4	0.45	0.6	0.56	12°	4	45	8,100	4.25	4.43	4.62	4.84	5.33
07-00530-03050		5	0.45	0.6	0.56	12°	4	45	8,300	5.29	5.52	5.76	6.03	6.66
07-00530-03060		6	0.45	0.6	0.56	12°	4	45	8,500	6.34	6.61	6.90	7.23	7.99
07-00530-03080		8	0.45	0.6	0.56	12°	4	45	9,000	8.42	8.79	9.18	9.62	10.64
07-00530-03100		10	0.45	0.6	0.56	12°	4	50	9,500	10.51	10.97	11.47	12.02	13.30
07-00530-04015	R0.4	1.5	0.6	0.8	0.76	12°	4	45	7,700	1.64	1.70	1.76	1.83	1.98
07-00530-04020		2	0.6	0.8	0.76	12°	4	45	7,700	2.16	2.24	2.33	2.42	2.65
07-00530-04030		3	0.6	0.8	0.76	12°	4	45	7,900	3.20	3.33	3.47	3.62	3.97
07-00530-04040		4	0.6	0.8	0.76	12°	4	45	8,100	4.25	4.42	4.61	4.82	5.30
07-00530-04050		5	0.6	0.8	0.76	12°	4	45	8,300	5.29	5.51	5.75	6.01	6.63
07-00530-04060		6	0.6	0.8	0.76	12°	4	45	8,300	6.33	6.60	6.89	7.21	7.96
07-00530-04080		8	0.6	0.8	0.76	12°	4	45	8,500	8.42	8.78	9.17	9.60	10.61
07-00530-04100		10	0.6	0.8	0.76	12°	4	50	9,000	10.50	10.96	11.45	12.00	13.26
07-00530-05020	R0.5	2	0.75	1	0.95	12°	4	45	7,400	2.18	2.26	2.34	2.43	2.65
07-00530-05030		3	0.75	1	0.95	12°	4	45	7,500	3.22	3.35	3.48	3.63	3.97
07-00530-05040		4	0.75	1	0.95	12°	4	45	7,500	4.27	4.44	4.62	4.83	5.30
07-00530-05050		5	0.75	1	0.95	12°	4	45	7,700	5.31	5.53	5.76	6.02	6.63
07-00530-05060		6	0.75	1	0.95	12°	4	45	7,700	6.35	6.62	6.90	7.22	7.96
07-00530-05080		8	0.75	1	0.95	12°	4	45	8,100	8.44	8.79	9.18	9.61	10.61
07-00530-05100		10	0.75	1	0.95	12°	4	45	8,100	10.52	10.97	11.46	12.01	13.26
07-00530-05120		12	0.75	1	0.95	12°	4	45	8,100	12.61	13.15	13.75	14.40	15.92
07-00530-05140		14	0.75	1	0.95	12°	4	50	8,500	14.70	15.33	16.03	16.79	18.57
07-00530-05160		16	0.75	1	0.95	12°	4	50	8,500	16.78	17.51	18.31	19.18	21.23
07-00530-07504	R0.75	4	1.1	1.5	1.45	12°	4	50	7,700	4.26	4.41	4.59	4.78	5.22
07-00530-07506		6	1.1	1.5	1.45	12°	4	50	7,700	6.34	6.59	6.87	7.17	7.88
07-00530-07508		8	1.1	1.5	1.45	12°	4	50	8,300	8.43	8.77	9.15	9.56	10.53
07-00530-07510		10	1.1	1.5	1.45	12°	4	50	8,300	10.51	10.95	11.43	11.96	13.18
07-00530-07512		12	1.1	1.5	1.45	12°	4	50	8,700	12.60	13.13	13.71	14.35	15.84
07-00530-07514		14	1.1	1.5	1.45	12°	4	50	8,700	14.69	15.31	15.99	16.74	18.49
07-00530-07516		16	1.1	1.5	1.45	12°	4	50	9,300	16.77	17.49	18.27	19.14	21.15
07-00530-07518		18	1.1	1.5	1.45	12°	4	50	9,700	18.86	19.67	20.55	21.53	23.80

长颈 Long Neck 球头 Ball 涂层 Coating
铝合金 Aluminium Alloy N
铜合金 Copper 钨铜 Copper Tungsten N
树脂 Resin O
铜电极加工 Copper Electrode Milling

铜电极加工用长颈球头铣刀
Long Neck Ball End Mill for Copper Electrode



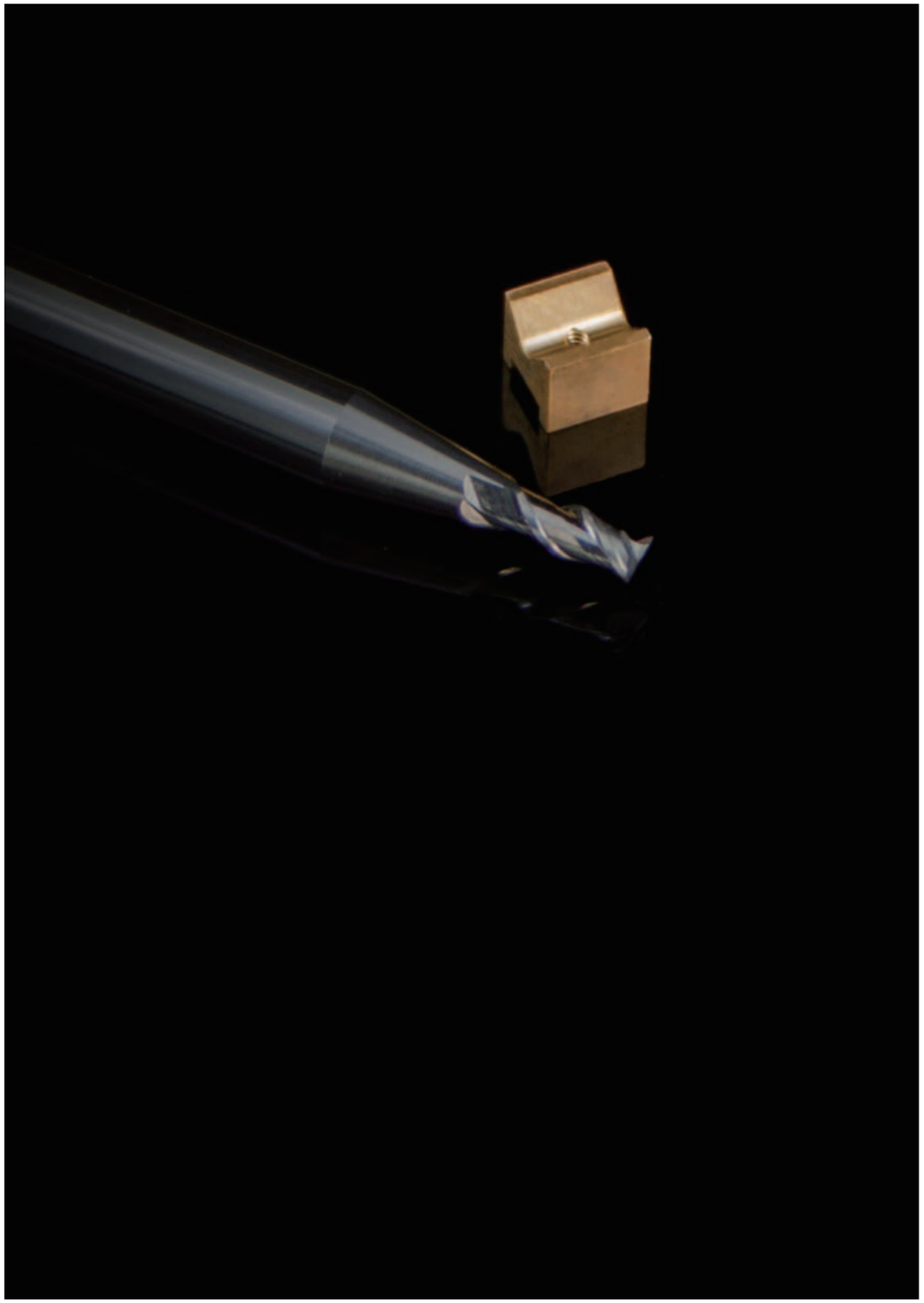
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(D)外径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
07-00530-10030	R1	3	1.5	2	1.94	12°	4	50	7,900	3.23	3.33	3.44	3.56	3.85
07-00530-10040		4	1.5	2	1.94	12°	4	50	7,900	4.27	4.42	4.58	4.76	5.17
07-00530-10060		6	1.5	2	1.94	12°	4	50	7,900	6.36	6.60	6.86	7.15	7.83
07-00530-10080		8	1.5	2	1.94	12°	4	50	8,100	8.44	8.78	9.14	9.54	10.48
07-00530-10100		10	1.5	2	1.94	12°	4	50	8,100	10.53	10.95	11.42	11.94	13.14
07-00530-10120		12	1.5	2	1.94	12°	4	50	8,100	12.61	13.13	13.70	14.33	15.79
07-00530-10140		14	1.5	2	1.94	12°	4	50	8,100	14.70	15.31	15.98	16.72	18.45
07-00530-10160		16	1.5	2	1.94	12°	4	50	8,100	16.78	17.49	18.27	19.12	Free
07-00530-10200		20	1.5	2	1.94	12°	4	60	9,000	20.96	21.85	22.83	23.90	Free
07-00530-10250		25	1.5	2	1.94	12°	4	60	10,000	26.17	27.30	28.53	Free	Free
07-00530-15060	R1.5	6	2.5	3	2.85	12°	6	60	10,000	6.56	6.78	7.03	7.31	7.95
07-00530-15080		8	2.5	3	2.85	12°	6	60	10,300	8.64	8.96	9.31	9.70	10.60
07-00530-15100		10	2.5	3	2.85	12°	6	60	10,300	10.73	11.14	11.59	12.09	13.26
07-00530-15120		12	2.5	3	2.85	12°	6	60	10,300	12.81	13.32	13.88	14.49	15.91
07-00530-15150		15	2.5	3	2.85	12°	6	70	10,500	15.94	16.59	17.30	18.08	19.89
07-00530-15200		20	2.5	3	2.85	12°	6	70	11,000	21.16	22.04	23.00	24.06	26.53
07-00530-15250		25	2.5	3	2.85	12°	6	70	11,000	26.37	27.48	28.70	30.04	Free
07-00530-15300		30	2.5	3	2.85	12°	6	70	12,000	31.58	32.93	34.40	36.03	Free
07-00530-20100	R2	10	3	4	3.8	12°	6	60	9,500	10.83	11.22	11.66	12.14	13.25
07-00530-20120		12	3	4	3.8	12°	6	60	9,500	12.91	13.40	13.94	14.53	15.91
07-00530-20150		15	3	4	3.8	12°	6	60	9,500	16.04	16.67	17.36	18.12	19.89
07-00530-20200		20	3	4	3.8	12°	6	60	11,300	21.26	22.12	23.06	24.10	Free
07-00530-20250		25	3	4	3.8	12°	6	70	12,000	26.47	27.57	28.77	30.09	Free
07-00530-20300		30	3	4	3.8	12°	6	70	12,500	31.68	33.01	34.47	Free	Free
07-00530-20400		40	3	4	3.8	12°	6	80	13,500	42.11	43.91	Free	Free	Free
07-00530-30200	R3	20	6	6	5.7	–	6	70	12,500	Free	Free	Free	Free	Free
07-00530-30250		25	6	6	5.7	–	6	70	12,700	Free	Free	Free	Free	Free
07-00530-30300		30	6	6	5.7	–	6	80	13,100	Free	Free	Free	Free	Free
07-00530-30400		40	6	6	5.7	–	6	80	14,000	Free	Free	Free	Free	Free
07-00530-30500		50	6	6	5.7	–	6	100	15,200	Free	Free	Free	Free	Free

订购方法 How to Order
请指定DRB230 球头半径(R)×颈长(ℓ1)。
When you order, indicate DRB230 (R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-035



DRB230

长颈 Long Neck 球头 Ball
涂层 Coating

N 铝合金 Aluminium Alloy
N 铜合金 Copper 钨铜 Copper Tungsten
O 树脂 Resin

铜电极加工
Copper Electrode Milling

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			铜合金 Copper				钨铜 Copper Tungsten (W70% - Cu30%)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径) L/D	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.05	0.3	3	0.01	0.01	200	40,000	0.008	0.008	150	30,000
	0.5	5	0.007	0.007	150	40,000	0.005	0.005	100	30,000
0.075	0.3	2	0.015	0.02	250	40,000	0.01	0.015	180	30,000
	0.5	3.3	0.015	0.02	200	40,000	0.008	0.015	150	30,000
	1	6.7	0.007	0.01	150	40,000	0.005	0.008	100	30,000
0.1	0.5	2.5	0.025	0.05	500	40,000	0.02	0.04	350	30,000
	0.75	3.75	0.025	0.05	450	40,000	0.02	0.04	300	30,000
	1	5	0.02	0.04	400	40,000	0.015	0.03	250	30,000
	1.5	7.5	0.015	0.03	300	40,000	0.008	0.02	150	30,000
	2	10	0.008	0.015	200	40,000	0.005	0.01	100	30,000
0.15	0.5	1.7	0.03	0.07	700	40,000	0.03	0.07	500	30,000
	1	3.3	0.03	0.07	700	40,000	0.03	0.07	500	30,000
	1.5	5	0.025	0.05	500	40,000	0.02	0.05	300	30,000
	2	6.7	0.015	0.03	400	40,000	0.01	0.02	200	30,000
0.2	0.5	1.3	0.05	0.1	1,000	40,000	0.04	0.08	700	30,000
	1	2.5	0.05	0.1	1,000	40,000	0.04	0.08	700	30,000
	1.5	3.8	0.04	0.08	1,000	40,000	0.03	0.06	700	30,000
	2	5	0.035	0.06	600	40,000	0.02	0.05	350	30,000
	3	7.5	0.02	0.04	400	30,000	0.01	0.03	200	25,000
	4	10	0.008	0.015	250	25,000	0.005	0.01	100	18,000
	5	12.5	0.005	0.015	200	25,000	0.005	0.01	80	16,000
	6	15	0.005	0.015	150	22,000	0.005	0.01	70	14,000
0.25	1	2	0.08	0.15	800	40,000	0.08	0.15	500	30,000
	1.5	3	0.08	0.15	800	40,000	0.08	0.15	500	30,000
	2	4	0.08	0.15	800	40,000	0.08	0.15	500	30,000
	3	6	0.06	0.1	600	35,000	0.06	0.08	400	27,000
	4	8	0.04	0.08	400	30,000	0.025	0.05	200	22,000
	5	10	0.02	0.04	300	25,000	0.01	0.02	150	18,000
	6	12	0.015	0.03	250	22,000	0.005	0.01	120	16,000
0.3	1	1.7	0.12	0.2	1,600	40,000	0.12	0.2	1,200	30,000
	1.5	2.5	0.12	0.2	1,600	40,000	0.12	0.2	1,200	30,000
	2	3.3	0.12	0.2	1,600	40,000	0.12	0.2	1,200	30,000
	3	5	0.1	0.14	1,000	40,000	0.08	0.1	700	30,000
	4	6.7	0.07	0.1	700	30,000	0.04	0.06	400	25,000
	5	8.3	0.05	0.08	600	27,000	0.02	0.04	300	22,000
	6	10	0.04	0.06	500	25,000	0.01	0.03	200	20,000
	8	13.3	0.015	0.05	400	22,000	0.005	0.02	150	18,000
	10	16.7	0.015	0.03	350	20,000	0.005	0.01	120	16,000
0.4	1.5	1.9	0.15	0.3	2,000	40,000	0.15	0.3	1,400	30,000
	2	2.5	0.15	0.3	2,000	40,000	0.15	0.3	1,400	30,000
	3	3.8	0.15	0.3	2,000	40,000	0.15	0.3	1,400	30,000
	4	5	0.12	0.2	1,600	35,000	0.1	0.16	1,000	27,000
	5	6.3	0.1	0.18	1,200	32,000	0.08	0.12	750	24,000
	6	7.5	0.08	0.15	1,000	30,000	0.05	0.1	500	20,000
	8	10	0.05	0.06	700	22,000	0.02	0.025	300	16,000
	10	12.5	0.02	0.05	600	20,000	0.01	0.02	200	14,000
0.5	2	2	0.25	0.4	2,800	40,000	0.25	0.4	2,000	30,000
	3	3	0.25	0.4	2,800	40,000	0.25	0.4	2,000	30,000
	4	4	0.2	0.4	2,400	40,000	0.2	0.4	1,600	30,000
	5	5	0.16	0.3	2,000	35,000	0.12	0.25	1,400	27,000
	6	6	0.14	0.3	1,600	30,000	0.1	0.25	1,000	25,000

○ 铝合金 Aluminium Alloy N
◎ 铜合金 Copper 钨铜 Copper Tungsten N
○ 树脂 Resin O

铜电极加工
Copper Electrode Milling

DRB230

切削参数参考表
Recommended Milling Conditions

长颈 Long Neck
球头 Ball
涂层 Coating

加工材料 Work Material			铜合金 Copper				钨铜 Copper Tungsten (W70% - Cu30%)			
(R)球头半径 Radius	颈长 Under Neck Length	L(颈长)/D(外径) L/D	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed	切深量 Depth of Cut		进给速度 Feed	主轴转速 Spindle Speed
			ap mm	ae mm	mm/min	min^{-1}	ap mm	ae mm	mm/min	min^{-1}
0.5	8	8	0.12	0.2	1,000	25,000	0.06	0.1	500	18,000
	10	10	0.08	0.15	800	20,000	0.03	0.05	300	16,000
	12	12	0.06	0.1	600	16,000	0.015	0.04	200	12,000
	14	14	0.04	0.08	500	14,000	0.01	0.04	160	10,000
	16	16	0.02	0.06	400	12,000	0.005	0.03	120	8,000
0.75	4	2.7	0.3	0.6	2,800	35,000	0.3	0.6	2,200	30,000
	6	4	0.3	0.6	2,400	30,000	0.3	0.6	1,800	25,000
	8	5.3	0.25	0.5	1,800	25,000	0.2	0.4	1,200	20,000
	10	6.7	0.2	0.4	1,400	20,000	0.15	0.3	800	16,000
	12	8	0.15	0.3	1,000	16,000	0.1	0.2	500	12,000
	14	9.3	0.12	0.2	800	14,000	0.08	0.1	350	10,000
	16	10.7	0.1	0.15	650	12,000	0.05	0.08	280	9,000
	18	12	0.08	0.12	500	10,000	0.02	0.06	200	8,000
1	3	1.5	0.45	0.8	4,000	30,000	0.45	0.8	2,400	25,000
	4	2	0.45	0.8	4,000	30,000	0.45	0.8	2,400	22,000
	6	3	0.45	0.8	3,000	27,000	0.45	0.8	1,800	20,000
	8	4	0.4	0.8	2,400	25,000	0.4	0.8	1,600	18,000
	10	5	0.3	0.6	2,000	22,000	0.25	0.5	1,400	16,000
	12	6	0.3	0.6	1,400	16,000	0.25	0.5	900	12,000
	14	7	0.25	0.6	1,200	14,000	0.2	0.5	700	10,000
	16	8	0.25	0.5	1,000	12,000	0.12	0.25	500	9,000
	20	10	0.15	0.3	800	10,000	0.06	0.1	350	8,000
	25	12.5	0.08	0.15	600	8,000	0.03	0.05	200	6,000
1.5	6	2	0.7	1.5	3,400	20,000	0.6	1.2	2,400	16,000
	8	2.7	0.7	1.5	3,400	20,000	0.6	1.2	2,400	16,000
	10	3.3	0.7	1.5	3,400	20,000	0.6	1.2	2,400	16,000
	12	4	0.6	1.2	3,400	20,000	0.6	1	2,400	16,000
	15	5	0.6	1	3,000	18,000	0.5	0.8	2,000	14,000
	20	6.7	0.5	0.8	2,400	16,000	0.4	0.6	1,400	12,000
	25	8.3	0.4	0.6	1,800	12,000	0.2	0.3	900	10,000
	30	10	0.2	0.4	1,200	8,000	0.08	0.15	500	6,000
2	10	2.5	1	1.6	4,000	16,000	0.8	1.6	2,800	12,000
	12	3	1	1.6	3,600	16,000	0.8	1.6	2,800	12,000
	15	3.8	0.8	1.6	3,400	16,000	0.8	1.6	2,400	12,000
	20	5	0.8	1.6	3,000	14,000	0.8	1.6	2,000	10,000
	25	6.3	0.6	1.2	3,000	14,000	0.5	1	2,000	10,000
	30	7.5	0.5	1	2,400	12,000	0.3	0.5	1,200	7,000
	40	10	0.4	0.8	1,200	8,000	0.15	0.3	500	5,000
3	20	3.3	1	2	3,600	12,000	1	2	2,400	9,000
	25	4.2	1	1.8	3,300	11,000	0.8	1.2	2,100	8,000
	30	5	0.8	1.6	3,000	10,000	0.4	0.8	1,800	7,000
	40	6.7	0.6	1.2	2,400	8,000	0.3	0.6	1,250	5,500
	50	8.3	0.5	1	1,800	6,000	0.25	0.5	800	4,000

备 注 Notes

※1 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示步距量。
※3 发生振刀时，请以相同的比率降低主轴转速和进给速度。
此外，主轴转速过低时，也以相同的比率降低。
※4 建议使用油冷冷却方式。
※1 These recommended cutting conditions indicate just reference. It should be adjusted according to milling shape and machine type.
※2 Depth of Cut : ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※3 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※4 Water-insoluble fluid is recommended.

N 铝合金 Aluminium Alloy ○
N 铜合金 Copper 钨铜 Copper Tungsten ◎
O 树脂 Resin ○

铜电极加工
Copper Electrode Milling

MSXH440R

规格 Size φ3 × R0.3 ～ φ12 × R2

Premium ≦40 HRC

无限白金涂层 强力重切削用4刃圆鼻铣刀

MUGEN COATING PREMIUM Power Corner Radius End Mill

共有19种规格 Total 19 sizes

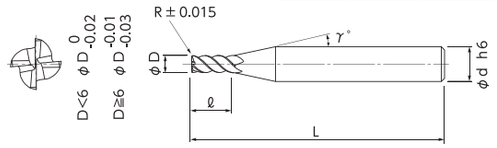
切削参数参考表 Recommended Milling Conditions

不锈钢・耐热合金加工用 利用不等分割和不等螺旋角抑制振刀，实现高效率加工

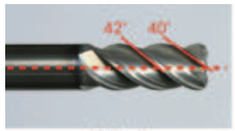
For machining on stainless steels and heat resistant alloy. High efficient machining with unequal flute spacing and unequal helix angle design to suppress chattering

MG Side | 4 Slot | 40°/42° Face





- 采用增强型的不等螺旋角和不等分割，可抑制振刀，实现稳定加工。
- 采用NS TOOL独创的螺旋形状的圆角设计，相比传统形状，刀刃更加锋利!
- 采用高刚性形状，在粗加工时也能抑制拐角部的崩刃。
- 采用无限白金涂层，提升了耐热性和刃部强度，并且可以承受加工中的切削热。
- Improved designs of unequal helix angle and flute spacing.Suppression from chattering to realize stable milling progression.
- Original spiral design at corner radius flutes improves cutting edge performance!
- Designed for high rigidity to suppress corner radius flute breakage even on rough milling stresses.
- Adopted MUGEN COATING PREMIUM for improvement heat resistance and cutting edge strength to protect from milling heat influence.



不等螺旋角 Unequal Helix Angle



不等分割 Unequal Flute Spacing

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元] Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00150-03003	3	R0.3	8	12°	6	60	7,600
★ 08-00150-03005		R0.5	8	12°	6	60	7,600
★ 08-00150-04003	4	R0.3	11	12°	6	60	8,300
★ 08-00150-04005		R0.5	11	12°	6	60	8,300
★ 08-00150-04010		R1	11	12°	6	60	8,300
★ 08-00150-05003	5	R0.3	13	12°	6	60	8,600
★ 08-00150-05005		R0.5	13	12°	6	60	8,600
★ 08-00150-05010		R1	13	12°	6	60	8,600
★ 08-00150-06005	6	R0.5	13	–	6	60	8,900
★ 08-00150-06010		R1	13	–	6	60	8,900
★ 08-00150-08005	8	R0.5	19	–	8	65	14,900
★ 08-00150-08010		R1	19	–	8	65	14,900
★ 08-00150-10005	10	R0.5	22	–	10	75	17,300
★ 08-00150-10010		R1	22	–	10	75	17,300
★ 08-00150-10020		R2	22	–	10	75	17,300
★ 08-00150-10030		R3	22	–	10	75	17,300
★ 08-00150-12005	12	R0.5	26	–	12	80	22,800
★ 08-00150-12010		R1	26	–	12	80	22,800
★ 08-00150-12020		R2	26	–	12	80	22,800

订购方法 How to Order

请指定MSXH440R 外径(D)×角半径(R)。 When you order, indicate MSXH440R (D)×(R).

※(γ)为参考值。 ※(γ) is reference value.

加工材料 Work Material		合金钢 Alloy Steels SKD・SCM				不锈钢 Stainless Steels SUS304				钛合金 Titanium Alloy Ti-6Al-4V				超耐热合金 Heat Resistance Alloy Inconel®718			
外径 Dia.	角半径 Corner Radius	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
		主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
		min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min
3	0.3	17,600	1,430	8,600	700	6,000	750	6,000	600	5,600	750	5,600	600	3,600	250	2,500	140
	0.5	17,600	1,430	8,600	700	6,000	750	6,000	550	5,600	750	5,600	550	3,600	250	2,500	140
4	0.3	13,200	1,540	6,500	780	5,200	800	5,200	650	4,800	800	4,800	650	3,100	250	2,200	150
	0.5	13,200	1,540	6,500	780	5,200	800	5,200	600	4,800	800	4,800	600	3,100	250	2,200	150
	1	13,200	1,540	6,500	780	5,200	800	5,200	550	4,800	800	4,800	550	3,100	250	2,200	150
5	0.3	10,500	1,650	5,500	760	4,600	900	4,600	700	4,200	900	4,200	700	2,600	300	1,900	160
	0.5	10,500	1,650	5,500	760	4,600	900	4,600	650	4,200	900	4,200	650	2,600	300	1,900	160
	1	10,500	1,650	5,500	760	4,600	900	4,600	600	4,200	900	4,200	600	2,600	300	1,900	160
6	0.5	8,800	2,420	4,300	630	4,200	1,000	4,000	400	3,800	1,000	3,600	400	2,100	300	1,300	170
	1	8,800	2,420	4,300	630	4,200	1,000	4,000	350	3,800	1,000	3,600	350	2,100	300	1,300	170
8	0.5	6,600	1,980	3,300	560	3,600	850	3,200	350	3,200	850	2,800	350	1,700	300	1,100	170
	1	6,600	1,980	3,300	560	3,600	850	3,200	300	3,200	850	2,800	300	1,700	300	1,100	170
10	0.5	5,300	1,430	2,600	550	3,000	600	2,500	300	2,600	600	2,100	300	1,300	250	900	160
	1	5,300	1,430	2,600	550	3,000	600	2,500	300	2,600	600	2,100	300	1,300	250	900	160
	2	5,300	1,430	2,600	550	3,000	600	2,500	250	2,600	600	2,100	250	1,300	250	900	160
	3	5,300	1,430	2,600	550	3,000	600	2,500	200	2,600	600	2,100	200	1,300	250	900	160
12	0.5	4,400	1,100	2,200	480	2,500	500	2,000	200	2,100	500	1,600	200	900	200	700	150
	1	4,400	1,100	2,200	480	2,500	500	2,000	200	2,100	500	1,600	200	900	200	700	150
	2	4,400	1,100	2,200	480	2,500	500	2,000	150	2,100	500	1,600	150	900	200	700	150
切深量 Depth of Cut (D:外径 Dia.)		0.2D 1.5D		D φ3～5=0.5D φ6～12=1D		0.2D 1.5D		D φ3～5=0.5D φ6～12=1D		0.2D 1.5D		D φ3～5=0.5D φ6～12=1D		0.05D 1.5D		D 0.2D	

备 注 Notes

※1 请根据机床刚性和工件的夹持状态等调整切削参数。
※2 上述的切削参数是使用水溶性切削油时的参考值。
※3 使用油冷冷却方式进行加工时，根据排屑和发烟的状况调整切削参数。
※4 请使用刚性较大的铣刀刀柄和机床。
※5 请尽量缩短刀具的伸出量。
（上述的切削参数是φ3～5的刀具伸出量为5D、φ6～8的刀具伸出量为4D、φ10～12的刀具伸出量为3D时的参考值。）

※1 Adjust milling condition conforming with machine rigidity and clamping condition.
※2 The recommended milling conditions are based on milling with water-soluble fluid.
※3 Adjust milling condition with caution for chip evacuation and smoke generation when milling with water-insoluble fluid.
※4 Use a rigid machine and holder.
※5 Overhang of end mill should be as short as possible from spindle nose.
(The recommended milling conditions are reference values under the overhang L/D: 5D(φ3～5), 4D(φ6～8), 3D(φ10～12)

圆鼻 Corner Radius
全刃长 Full Cutting Length
涂层 Coating
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy
高效率加工 High Efficient Milling

规格 Size φ3 × R0.2 ～ φ20 × R1

≦40 HRC

无限涂层 强力重切削用4刃圆鼻铣刀

MUGEN COATING Power Corner Radius End Mill

共有16种规格
Total 16 sizes

切削参数参考表
Recommended Milling Conditions

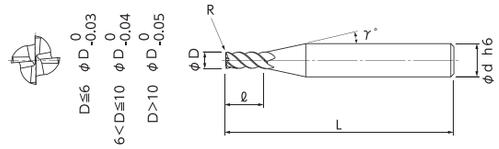
MG | 4 | 35°/38°

Side | Slot | Face

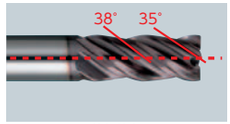
不等分割和不等螺旋角可将振刀现象抑制到最小 从钢材到不锈钢皆可应对。

Unequal helix angle and flute spacing to minimize chattering
Suitable for steels to stainless steels

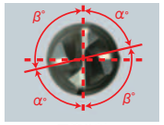




- 采用不等螺旋角，可对应不锈钢、难削材料的粗加工。
- 有助于缩短粗加工时间。
- It is very suitable for roughing and semi-finishing on stainless steels and tough materials by unequal flute design.
- High performance for reducing roughing time.



不等螺旋角
Unequal Helix Angle



不等分割
Unequal Flute Spacing

▲ 停产产品 Discontinued Products
★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(ℓ)刃长 Length of Cut	(R)角半径 Corner Radius	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00144-00300	3	8	R0.2	12°	6	55	6,800
★ 08-00144-00400	4	11	R0.2	12°	6	55	7,200
★ 08-00144-00500	5	13	R0.2	12°	6	55	7,800
★ 08-00144-00600	6	13	R0.3	–	6	55	7,900
★ 08-00144-00700	7	19	R0.3	12°	8	60	11,400
★ 08-00144-00800	8	19	R0.3	–	8	60	11,400
★ 08-00144-00900	9	22	R0.3	12°	10	70	13,300
★ 08-00144-01000	10	22	R0.3	–	10	70	13,300
★ 08-00144-01100	11	26	R0.3	12°	12	80	21,800
★ 08-00144-01200	12	26	R0.3	–	12	80	19,700
▲ 08-00144-01300	13	26	R0.7	12°	16	90	35,700
▲ 08-00144-01400	14	26	R0.7	12°	16	90	35,700
▲ 08-00144-01500	15	32	R1	12°	16	90	35,700
▲ 08-00144-01600	16	32	R1	–	16	90	35,700
▲ 08-00144-01800	18	32	R1	12°	20	105	59,900
▲ 08-00144-02000	20	38	R1	–	20	105	58,700

订购方法 How to Order

请指定MSX440 外径(D)。
When you order, indicate MSX440 (D).

※(γ)为参考值。
※(γ) is reference value.

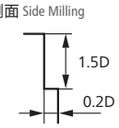
▲符号表示停产产品。在库存售完之后将不再贩卖。
▲Discontinued products. The marked sizes will no longer be on sale after the stock runs out.

加工材料 Work Material	碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM-1				不锈钢 Stainless Steels SUS304			
切削速度 Cutting Speed	100～150m/min		50～70m/min		50～70m/min		30～55m/min	
外径 Dia.	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min	min⁻¹	mm/min
3	16,000	1,300	7,000	300	8,500	680	5,600	100
4	12,000	1,400	5,300	300	6,400	770	4,000	100
5	9,500	1,500	4,200	300	5,000	800	3,000	100
6	8,000	2,200	3,500	400	4,200	840	2,800	100
8	6,000	1,800	2,600	400	3,200	630	1,800	150
10	4,800	1,300	2,000	400	2,500	560	1,600	150
12	4,000	1,000	1,700	400	2,100	470	1,200	150
14	3,400	900	1,500	300	1,800	400	1,000	120
16	3,000	800	1,400	300	1,600	390	800	120
18	2,600	700	950	250	1,400	350	800	100
20	2,400	650	950	250	1,200	330	700	100

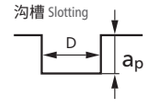
切深量 Depth of Cut

(D:外径 Dia.)

侧面 Side Milling



沟槽 Slotting



ap
φ3～5=0.5D（SUS:φ3～6=0.5D）
φ6～12=1D（SUS:φ8～12=1D）
φ13～16=0.5D
φ18～20=0.3D

备注 Notes

※1 请根据机床刚性调整切深量。
　实际加工时请根据加工形状、目的以及所用的机床等调整切削参数。
※2 请以相同的比率调整主轴转速和进给速度。
※3 对于不锈钢工件，建议使用油冷冷却方式。
※4 使用油冷冷却方式进行加工时，根据排屑和发烟的状况调整切削参数。
※5 使用油冷冷却方式时，加工时产生的火花及破损有引发起火甚至火灾的危险。请务必采取防火措施。
※6 切削沟槽时，请注意排屑状况。
※7 建议使用刚性较大的铣刀刀柄和机床。
※8 请尽量缩短刀具的伸出量。

※1 Adjust Depth of Cut according to machine rigidity.
　Final milling conditions are subject to machining profile, purpose and machine status.
※2 Adjust both spindle speed and feed at the same rate.
※3 Water-insoluble fluid is recommended for cutting stainless steels.
※4 Adjust milling condition with caution for chip evacuation and smoke generation when milling with water-insoluble fluid.
※5 Using water-insoluble fluid could lead to fires due to sparks generated during machining or heat caused by breakage. Ensure that you take proper fire-prevention measures.
※6 Chip disposal is important for slotting.
※7 Use a rigid and precise machine and chuck holder.
※8 Overhang of end mill should be as short as possible from spindle nose.

MHDH445R

规格 Size φ3 × R0.2 ～ φ4 × R0.5

Premium ∞ ≦65 HRC

无限白金涂层 高硬度钢材用4刃圆鼻铣刀

MUGEN COATING PREMIUM 4-Flute Corner Radius End Mill for Hardened Steel

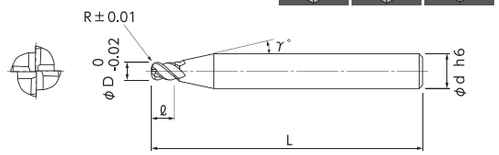
共有6种规格 Total 6 sizes

4刃强螺旋角，可对应高硬度钢（～65HRC）的圆鼻铣刀

4-flute high helix angle corner radius end mill for hardened steels up to 65HRC

MG Side | 4 Slot | 45° Face





- 在高硬度领域（48～65HRC）的长时间加工中也可实现稳定的延长刀具寿命。
- 强螺旋角，锋利度更高，圆鼻形状可抑制崩刃。
- Realized stably long tool life against high hardened steels (48～65HRC).
- Corner radius to prevent flute chipping, and high helix angle for cutting sharpness.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00437-03002	3	R0.2	6	12°	6	60	13,800
★ 08-00437-03003		R0.3	6	12°	6	60	13,800
★ 08-00437-03005		R0.5	6	12°	6	60	13,800
★ 08-00437-04002	4	R0.2	8	12°	6	60	14,900
★ 08-00437-04003		R0.3	8	12°	6	60	14,900
★ 08-00437-04005		R0.5	8	12°	6	60	14,900

订购方法 How to Order

请指定MHDH445R 外径(D)×角半径(R)。 ※(γ)为参考值。

When you order, indicate MHDH445R (D)×(R). ※(γ) is reference value.

加工材料 Work Material	高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
3	10,000	1,000	8,000	580	8,000	700	7,500	500	7,000	560	6,000	280
4	8,500	1,200	7,500	620	7,000	800	6,000	540	6,000	600	5,000	300
切深量 Depth of Cut (D：外径 Dia.)	侧面 Side Milling 1.5D 0.03D; 沟槽 Slotting D 0.02D				侧面 Side Milling 1.5D 0.02D; 沟槽 Slotting D 0.01D				侧面 Side Milling 1.5D 0.02D; 沟槽 Slotting D 0.01D			
备注 Notes	※1 请使用刚性好、精度高的机床和夹具。 ※2 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※3 请以相同的比率调整主轴转速和进给速度。 ※4 建议使用油雾冷却方式。 ※1 Use a rigid and precise machine and chuck holder. ※2 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine. ※3 Adjust both spindle speed and feed at the same rate. ※4 Use oilmist coolant.											

圆鼻 全刃长 Full Cutting Length Corner Radius 涂层 Coating

P 调质钢 Prehardened Steel ○
H ～52 HRC 高硬度钢 Hardened Steel ◎
H ～60 HRC 高硬度钢 Hardened Steel ◎
H ～65 HRC 高硬度钢 Hardened Steel ○

常规系列 无限白金涂层 全刃长造型 Regular Line MUGEN PREMIUM Full Cutting Length Type

规格 Size φ5 × R0.2 ～ φ12 × R2

Premium ∞ ≦65 HRC

MHDH645R

无限白金涂层 高硬度钢材用6刃圆鼻铣刀

MUGEN COATING PREMIUM 6-Flute Corner Radius End Mill for Hardened Steel

共有21种规格 Total 21 sizes

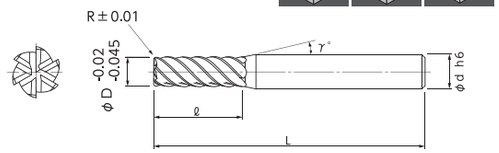
切削参数参考表 Recommended Milling Conditions

6刃强螺旋角，可对应高硬度钢（～65HRC）的圆鼻铣刀

6-flute high helix angle corner radius end mill for hardened steels up to 65HRC

MG Side | 6 Slot | 45° Face





- 在高硬度领域（48～65HRC）的长时间加工中也可实现稳定的延长刀具寿命。
- 多刃强螺旋角，锋利度更高，圆鼻形状可抑制崩刃。
- Realized stably long tool life against high hardened steels (48～65HRC).
- Corner radius to prevent flute chipping, and high helix angle for cutting sharpness.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00438-05002	5	R0.2	10	12°	6	60	16,000
★ 08-00438-05003		R0.3	10	12°	6	60	16,000
★ 08-00438-05005		R0.5	10	12°	6	60	16,000
★ 08-00438-05010		R1	10	12°	6	60	16,000
★ 08-00438-06002	6	R0.2	12	–	6	60	17,100
★ 08-00438-06003		R0.3	12	–	6	60	17,100
★ 08-00438-06005		R0.5	12	–	6	60	17,100
★ 08-00438-06010		R1	12	–	6	60	17,100
★ 08-00438-08003	8	R0.3	16	–	8	65	23,700
★ 08-00438-08005		R0.5	16	–	8	65	23,700
★ 08-00438-08010		R1	16	–	8	65	23,700
★ 08-00438-08015		R1.5	16	–	8	65	23,700
★ 08-00438-10003	10	R0.3	20	–	10	75	32,100
★ 08-00438-10005		R0.5	20	–	10	75	32,100
★ 08-00438-10010		R1	20	–	10	75	32,100
★ 08-00438-10015		R1.5	20	–	10	75	32,100
★ 08-00438-10020		R2	20	–	10	75	32,100
★ 08-00438-12005	12	R0.5	24	–	12	80	38,700
★ 08-00438-12010		R1	24	–	12	80	38,700
★ 08-00438-12015		R1.5	24	–	12	80	38,700
★ 08-00438-12020		R2	24	–	12	80	38,700

订购方法 How to Order

请指定MHDH645R 外径(D)×角半径(R)。
When you order, indicate MHDH645R (D)×(R).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
	侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting		侧面 Side Milling		沟槽 Slotting	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
5	7,600	1,600	6,800	900	6,200	1,200	5,600	600	5,300	800	4,800	350
6	6,400	1,800	5,800	950	5,300	1,200	4,800	600	4,600	800	4,200	350
8	4,800	2,000	4,300	1,000	4,000	1,400	3,600	700	3,400	1,000	3,000	400
10	3,800	2,000	3,400	1,000	3,200	1,600	2,800	800	2,600	1,000	2,300	500
12	3,200	2,000	2,800	1,000	2,600	1,600	2,300	800	2,200	1,000	2,000	500
切深量 Depth of Cut (D：外径 Dia.)	侧面 Side Milling 沟槽 Slotting 1.5D 0.03D D 0.02D				侧面 Side Milling 沟槽 Slotting 1.5D 0.02D D 0.01D				侧面 Side Milling 沟槽 Slotting 1.5D 0.02D D 0.01D			
备注 Notes	※1 请使用刚性好、精度高的机床和夹具。 ※2 加工参数会因切深量和机床刚性的状况而有所不同。请每次调整后再使用。 ※3 请以相同的比率调整主轴转速和进给速度。 ※4 建议使用油雾冷却方式。 ※1 Use a rigid and precise machine and chuck holder. ※2 Adjust milling conditions according to the volume of Depth of Cut and rigidity of the machine. ※3 Adjust both spindle speed and feed at the same rate. ※4 Use oil mist coolant.											

规格 Size φ1 × R0.1 ～ φ5 × R1.5

≦52 HRC

无限涂层 2刃圆鼻铣刀
MUGEN COATING 2-Flute Corner Radius End Mill

共有31种规格
Total 31 sizes

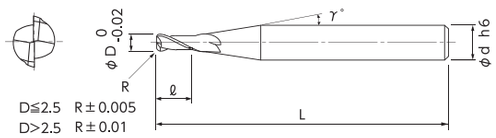
切削参数参考表
Recommended Milling Conditions

标准2刃30° 螺旋角造型的圆鼻铣刀
适用于从粗加工到精加工的各种加工
2-flute standard type corner radius end mill with helix angle 30°
For multi-purpose from roughing to finishing

MG | 2 | 30° | Corner R ±0.005 (D≦2.5)

Side | Slot | Face





D≦2.5 R±0.005
D>2.5 R±0.01

● 共有31种规格，可根据加工用途选择合适的刀具。
● Total 31 sizes for suitable selection.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00700-01001	1	R0.1	2	9°	4	60	7,400
08-00700-01002		R0.2					7,400
08-00700-01003		R0.3					7,400
08-00700-01501	1.5	R0.1	3	9°	4	60	7,400
08-00700-01502		R0.2					7,400
08-00700-01503		R0.3					7,400
08-00700-01505		R0.5					7,400
08-00700-02001	2	R0.1	4	9°	4	60	7,400
08-00700-02002		R0.2					7,400
08-00700-02003		R0.3					7,400
08-00700-02005		R0.5					7,400
08-00700-02501	2.5	R0.1	5	9°	4	60	7,400
08-00700-02502		R0.2					7,400
08-00700-02503		R0.3					8,100
08-00700-02505		R0.5					8,100
★ 08-00700-03001	3	R0.1	6	9°	6	60	9,500
★ 08-00700-03002		R0.2					9,500
★ 08-00700-03003		R0.3					9,500
★ 08-00700-03005		R0.5					9,500
★ 08-00700-03010		R1					10,300
★ 08-00700-04001	4	R0.1	8	9°	6	65	9,600
★ 08-00700-04002		R0.2					9,600
★ 08-00700-04003		R0.3					9,600
★ 08-00700-04005		R0.5					9,600
★ 08-00700-04010		R1					10,500
★ 08-00700-05001	5	R0.1	10	9°	6	70	9,700
★ 08-00700-05002		R0.2					9,700
★ 08-00700-05003		R0.3					9,700
★ 08-00700-05005		R0.5					9,700
★ 08-00700-05010		R1					10,600
★ 08-00700-05015		R1.5					11,000

订购方法 How to Order

请指定MSRS230 外径(D)×角半径(R)。
When you order, indicate MSRS230 (D)×(R).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK			高硬度钢 Hardened Steels SKD61 (～52HRC)		
切削速度 Cutting Speed	60～80m/min			50～70m/min			30～50m/min			20～30m/min		
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min		min^{-1}	mm/min	
		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting		侧面 Side Milling	沟槽 Slotting
1	25,500	200	100	19,200	130	50	12,800	80	40	6,400	60	30
1.5	17,100	340	120	12,800	180	60	8,500	90	45	4,200	70	35
2	12,800	400	150	9,600	210	70	6,400	110	55	3,200	80	40
2.5	10,200	400	150	7,700	210	70	5,100	110	55	2,500	80	40
3	8,500	450	160	6,400	250	80	4,300	120	60	2,100	100	50
4	6,400	450	160	4,800	250	80	3,200	120	60	1,600	100	50
5	5,100	600	200	3,800	300	90	2,600	150	75	1,300	120	60

切深量 Depth of Cut (D:外径 Dia.)

侧面 Side Milling: 1.5D / 0.1D

沟槽 Slotting: D / 0.3D以下

侧面 Side Milling: 1D / 0.02D

沟槽 Slotting: D / φ1～3=0.05D φ4～5=0.1D

备注 Notes

※1 请根据加工面的倾斜角调整进给速度。
※2 在进行R角加工时，进给速度须降低30～50%。
※3 转速无法提高时，请以相同的比率调整进给速度与切深量。
※1 Adjust feed according to inclined angle.
※2 When corner machining, reduce the feed by approximately 50%～30%.
※3 Adjust spindle speed and feed at the same rate also reduce Depth of Cut, if the machine spindle speed insufficient.

圆鼻 Corner Radius
全刃长 Full Cutting Length
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 全刃长造型 Regular Line MUGEN COATING Full Cutting Length Type

MSRS430

规格 Size φ6 × R0.1 ～ φ12 × R3

∞ ≦52 HRC

无限涂层 4刃圆鼻铣刀
MUGEN COATING 4-Flute Radius End Mill

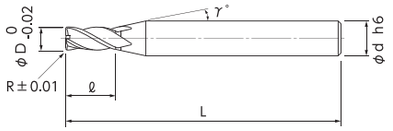
共有33种规格
Total 33 sizes

标准4刃30° 螺旋角造型的圆鼻铣刀
适用于从粗加工到精加工的各种加工

4-flute standard type corner radius end mill with helix angle 30°
For multi-purpose from roughing to finishing

MG | 4 | 30°
Side | Slot | Face





- 从φ6到φ12，共有33种规格，可提高微细加工的效率。
- 共有33种规格，可根据加工用途选择合适的刀具。
- 33 sizes Line up from φ6 to φ12 to achieve high efficient micro machining.
- Total 33 sizes for suitable selection.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 08-00710-06001	6	R0.1	12	–	6	80	16,000
★ 08-00710-06002		R0.2					16,000
★ 08-00710-06003		R0.3					16,000
★ 08-00710-06005		R0.5					16,000
★ 08-00710-06010		R1					17,100
★ 08-00710-06015		R1.5					17,100
★ 08-00710-06020		R2					17,100
★ 08-00710-08001	8	R0.1	16	–	8	90	23,000
★ 08-00710-08002		R0.2					23,000
★ 08-00710-08005		R0.5					23,000
★ 08-00710-08010		R1					23,000
★ 08-00710-08015		R1.5					24,200
★ 08-00710-08020		R2					24,200
★ 08-00710-08025		R2.5					25,600
★ 08-00710-08030		R3					25,600
★ 08-00710-10001	10	R0.1	20	–	10	100	24,200
★ 08-00710-10002		R0.2					24,200
★ 08-00710-10003		R0.3					24,200
★ 08-00710-10005		R0.5					24,200
★ 08-00710-10010		R1					24,200
★ 08-00710-10015		R1.5					25,600
★ 08-00710-10020		R2					25,600
★ 08-00710-10025		R2.5					28,200
★ 08-00710-10030		R3					28,200
★ 08-00710-12001	12	R0.1	24	–	12	110	38,300
★ 08-00710-12002		R0.2					38,300
★ 08-00710-12003		R0.3					38,300
★ 08-00710-12005		R0.5					38,300
★ 08-00710-12010		R1					38,300
★ 08-00710-12015		R1.5					39,600
★ 08-00710-12020		R2					39,600
★ 08-00710-12025		R2.5					40,800
★ 08-00710-12030		R3					40,800

订购方法 How to Order
请指定MSRS430 外径(D)×角半径(R)。
When you order, indicate MSRS430 (D)x(R).

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢 Alloy Steels SCM・SKD・SUS		调质钢 Prehardened Steels HPM・NAK		高硬度钢 Hardened Steels SKD61 (～52HRC)	
切削速度 Cutting Speed	60～80m/min		50～70m/min		30～50m/min		20～30m/min	
外径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
6	4,300	780	3,200	580	2,200	380	1,100	160
8	3,200	780	2,400	580	1,600	380	800	160
10	2,600	780	1,900	580	1,300	380	650	160
12	2,100	780	1,600	580	1,100	380	530	160
切深量 Depth of Cut (D:外径 Dia.)	侧面 Side Milling 1.5D / 0.1D						侧面 Side Milling 1D / 0.05D	
备注 Notes	※1 请根据加工面的倾斜角调整进给速度。 ※2 在进行R角加工时，进给速度须降低30～50%。 ※3 转速无法提高时，请以相同的比率调整进给速度与切深量。 ※1 Adjust feed according to inclined angle. ※2 When corner machining, reduce the feed by approximately 50%～30%. ※3 Adjust spindle speed and feed at the same rate also reduce Depth of Cut, if the machine spindle speed insufficient.							

圆鼻 Corner Radius
全刃长 Full Cutting Length
涂层 Coating
P 碳素钢 Carbon Steel ◎
P 合金钢 Alloy Steel ◎
P 调质钢 Prehardened Steel ◎
H ～52 HRC 高硬度钢 Hardened Steel ○
M 不锈钢 Stainless Steel ○
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ○
常规系列 无限涂层 全刃长造型 Regular Line MUGEN COATING Full Cutting Length Type

AL3D-345R New

规格 Size φ2×R0.2 ～ φ12×R2

WC

铝合金用高效率圆鼻铣刀3刃3倍刃长

High efficient 3-Flute Corner Radius End Mill for Aluminium L/D=3

共有39种规格

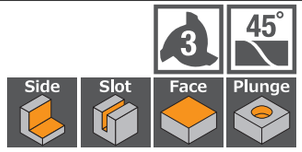
Total 39 sizes

切削参数参考表

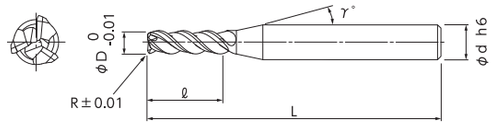
Recommended Milling Conditions

铝合金加工用3刃圆鼻铣刀强螺旋角造型 在任何条件下都可实现稳定的高效率加工

3-flute corner radius end mill with high helix angle for aluminium
Realized a stable and high efficient machining







- NS TOOL的AL系列在任何条件下都可实现稳定的高效率加工。
- 可在多个领域中获得稳定的加工面精度，即使高速加工也可抑制振刀。
- 采用3刃形，实现高效率加工。
- AL-series realized a stable and high efficient machining.
- It exhibits stable excellent surface on a wide area and no chattering occurs even during high speed cutting.
- Realized high efficiency machining by adopting 3 flutes.

单位[规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R) 角半径 Corner Radius	(ℓ)刃长 Length of Cut	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
01-00630-02002	2	R0.2	6	12°	4	60	7,700
01-00630-02003		R0.3	6	12°	4	60	7,700
01-00630-02004		R0.4	6	12°	4	60	7,700
01-00630-03002	3	R0.2	9	12°	6	60	9,700
01-00630-03003		R0.3	9	12°	6	60	9,700
01-00630-03004		R0.4	9	12°	6	60	9,700
01-00630-03005		R0.5	9	12°	6	60	9,700
01-00630-04002	4	R0.2	12	12°	6	70	11,200
01-00630-04003		R0.3	12	12°	6	70	11,200
01-00630-04004		R0.4	12	12°	6	70	11,200
01-00630-04005		R0.5	12	12°	6	70	11,200
01-00630-04008		R0.8	12	12°	6	70	11,200
01-00630-05002	5	R0.2	15	12°	6	80	12,100
01-00630-05003		R0.3	15	12°	6	80	12,100
01-00630-05004		R0.4	15	12°	6	80	12,100
01-00630-05005		R0.5	15	12°	6	80	12,100
01-00630-05008		R0.8	15	12°	6	80	12,100
01-00630-05010		R1	15	12°	6	80	12,100
01-00630-06002	6	R0.2	18	-	6	80	12,600
01-00630-06003		R0.3	18	-	6	80	12,600
01-00630-06004		R0.4	18	-	6	80	12,600
01-00630-06005		R0.5	18	-	6	80	12,600
01-00630-06008		R0.8	18	-	6	80	12,600
01-00630-06010		R1	18	-	6	80	12,600
01-00630-08003	8	R0.3	24	-	8	90	20,000
01-00630-08005		R0.5	24	-	8	90	20,000
01-00630-08010		R1	24	-	8	90	20,000
01-00630-08015		R1.5	24	-	8	90	20,000
01-00630-08020		R2	24	-	8	90	20,000
01-00630-10003	10	R0.3	30	-	10	100	27,300
01-00630-10005		R0.5	30	-	10	100	27,300
01-00630-10010		R1	30	-	10	100	27,300
01-00630-10015		R1.5	30	-	10	100	27,300
01-00630-10020		R2	30	-	10	100	27,300
01-00630-12003	12	R0.3	36	-	12	110	32,400
01-00630-12005		R0.5	36	-	12	110	32,400
01-00630-12010		R1	36	-	12	110	32,400
01-00630-12015		R1.5	36	-	12	110	32,400
01-00630-12020		R2	36	-	12	110	32,400

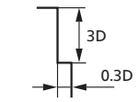
订购方法 How to Order

请指定AL3D-345R 外径(D)×角半径(R)。 ※(γ)为参考值。
When you order, indicate AL3D-345R (D)×(R). ※(γ) is reference value.

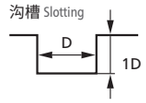
加工材料 Work Material	铝 Aluminium A1070						铝合金 Aluminium Alloy A2017·A5052·A7075						铸铝 Aluminium Cast AC8C					
切削速度 Cutting Speed	300m/min		220m/min		220m/min		330m/min		240m/min		240m/min		250m/min		160m/min		160m/min	
外径 Dia.	侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging		侧面 Side Milling		沟槽 Slotting		插铣 Plunging	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
2	20,000	1,800	20,000	700	20,000	150	20,000	1,800	20,000	700	20,000	150	20,000	1,800	20,000	700	20,000	130
3	20,000	2,000	20,000	1,000	20,000	150	20,000	2,000	20,000	1,000	20,000	150	20,000	2,000	17,000	850	17,000	130
4	20,000	2,200	17,500	1,100	17,500	150	20,000	2,200	19,000	1,100	19,000	200	20,000	2,200	13,000	850	13,000	100
5	19,000	2,200	14,000	1,100	14,000	150	20,000	2,700	15,500	1,200	15,500	200	16,000	2,200	10,000	850	10,000	80
6	16,000	2,200	11,500	1,100	11,500	150	17,500	3,000	12,500	1,300	12,500	200	13,500	2,200	8,500	850	8,500	80
8	12,000	2,200	9,000	1,200	9,000	100	13,000	3,000	9,500	1,400	9,500	200	10,000	2,300	6,500	850	6,500	60
10	9,500	2,200	7,000	1,300	7,000	70	10,500	3,250	7,500	1,500	7,500	150	8,000	2,500	5,000	900	5,000	50
12	8,000	2,400	6,000	1,400	6,000	70	9,000	3,350	6,500	1,600	6,500	150	6,500	2,600	4,000	1,000	4,000	50

切深量 Depth of Cut

侧面 Side Milling



沟槽 Slotting



(D:外径 Dia.)

备 注 Notes

※1 请以相同的比率调整主轴转速和进给速度。
（主轴转速使用20,000转以上时，请进行相同的调整。）
※2 在沟槽加工中，如果是深度与刀具角半径相似的浅槽加工，请将转速调整为60%，将进给速度调整为60%左右。
※3 请使用刚性好、精度高的机床和夹具。
※4 因工件、机床或铣刀刀柄而导致出现振动或异响时，请变更切削参数。
※5 进行插铣加工时如果切屑容易堵塞，则请进行分级式铣削。
※6 建议使用水溶性切削方式。

※1 Adjust both spindle speed and feed at the same rate.
When using spindle speed 20,000 or more, the same adjustment is required.
※2 When machining shallow grooves where the cutting depth is about the corner radius of the tool, adjust the spindle speed to 60% and the feed rate to 60%.
※3 Use a rigid and precise machine and chuck holder.
※4 Adjust milling conditions when vibration and abnormal sounds occur by the conditions of the machine, chuck holder and work clamping.
※5 When tending to have chip packing during drilling, step milling is recommended.
※6 Water-soluble fluid is recommended.

圆鼻 全刃长 Full Cutting Length Corner Radius 无涂层 Non-Coating

N 铝合金 Aluminium Alloy ◎
N 铜合金 Copper ○
O 树脂 Resin ○

铝合金加工 Aluminium Milling

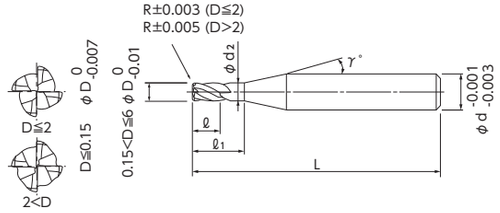
规格增加到φ6，提高表面粗糙度的刀刃形状和高精度R角设计可改善对于高硬度钢材的高精度精加工

Lineup extended up to φ6, combining specialized tool design and high accuracy corner R enhance finishing performance on hardened steels

SMG 4 30° Corner R ±0.003 (D≦2) Corner R ±0.005 (D>2) φd -0.001 -0.003

Connect For Crafting Tomorrow — Side Slot Face

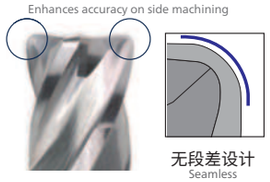




- 采用高硬度钢用无限白金Plus涂层及强倒锥形状，实现了延长刀具寿命及减轻振刀的精加工表面。
- 可进行高效加工的4刃型铣刀。
- 4刃圆鼻铣刀，备有φ0.1～φ6的205个规格。
- MUGEN COATING PREMIUM Plus for hardened steels with strong back taper reduce chattering to realize long tool life and excellent finishing surface.
- 4-flute end mill for high efficiency machining.
- 4-Flute end mill has 205 sizes in total that lineup from the smallest diameter φ0.1 to φ6.

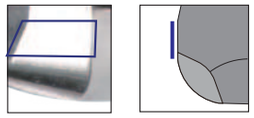
φ0.1～φ2为底刃中心没有刃口。请留意此设计并注意加工余量。
Please be aware of stock since there is no cutting edge from the center to the bottom.

提高加工精度
角部R±0.003 mm (D≦2)
Enhances accuracy on side machining

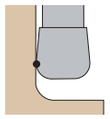


无段差设计
Seamless

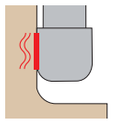
提高底面的表面粗糙度
修光刃 (D≧0.4)
Enhances surface roughness on bottom by wiper



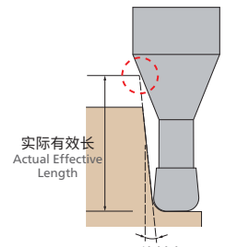
底刃采用修光刃，
提高底面加工时的表面粗糙度
By adopting wiper at the end tooth, improves the surface roughness on bottom surface machining



单点切削，不易振刀！
Suppress chattering by point milling



普通铣刀
General End Mill



工件斜度
Inclined Angle

单位[规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

◆ 新增加规格

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00239-01002	0.1	R0.01	0.2	0.08	0.085	15°	4	35	12,900	0.23	0.24	0.25	0.26	0.28
08-00239-01003			0.3	0.08	0.085	15°	4	35	12,900	0.33	0.35	0.36	0.37	0.4
08-00239-01503	0.15	R0.01	0.3	0.12	0.135	15°	4	35	12,900	0.33	0.35	0.36	0.37	0.4
08-00239-01505			0.5	0.12	0.135	15°	4	35	12,900	0.54	0.56	0.58	0.6	0.65
08-00239-01523		R0.02	0.3	0.12	0.135	15°	4	35	12,900	0.33	0.34	0.36	0.37	0.4
08-00239-01525			0.5	0.12	0.135	15°	4	35	12,900	0.54	0.56	0.58	0.6	0.65
08-00239-02203	0.2	R0.02	0.3	0.15	0.18	15°	4	35	12,900	0.34	0.35	0.37	0.38	0.41
08-00239-02205			0.5	0.15	0.18	15°	4	35	12,900	0.55	0.57	0.59	0.61	0.66
08-00239-02207			0.75	0.15	0.18	15°	4	35	12,900	0.81	0.84	0.87	0.9	0.97
08-00239-02210			1	0.15	0.18	15°	4	35	12,900	1.07	1.1	1.14	1.18	1.28
08-00239-02403		R0.05	0.3	0.15	0.18	15°	4	35	12,900	0.34	0.35	0.36	0.38	0.4
08-00239-02405			0.5	0.15	0.18	15°	4	35	12,900	0.55	0.57	0.59	0.61	0.65
08-00239-02407			0.75	0.15	0.18	15°	4	35	12,900	0.81	0.83	0.86	0.89	0.96
08-00239-02410			1	0.15	0.18	15°	4	35	12,900	1.07	1.1	1.14	1.18	1.27
08-00239-03205	0.3	R0.02	0.5	0.25	0.28	15°	4	35	12,900	0.55	0.57	0.59	0.61	0.66
08-00239-03207			0.75	0.25	0.28	15°	4	35	12,900	0.81	0.84	0.87	0.9	0.97
08-00239-03210			1	0.25	0.28	15°	4	35	12,900	1.07	1.1	1.14	1.18	1.28
08-00239-03215			1.5	0.25	0.28	15°	4	35	12,900	1.58	1.64	1.7	1.76	1.9
08-00239-03405		R0.05	0.5	0.25	0.28	15°	4	35	12,900	0.55	0.57	0.59	0.61	0.65
08-00239-03407			0.75	0.25	0.28	15°	4	35	12,900	0.81	0.83	0.86	0.89	0.96
08-00239-03410			1	0.25	0.28	15°	4	35	12,900	1.07	1.1	1.14	1.18	1.27
08-00239-03415			1.5	0.25	0.28	15°	4	35	12,900	1.58	1.64	1.69	1.76	1.89

订购方法 How to Order — 请指定MHRSH430RSF 外径(D)×角半径(R)×颈长(ℓ1)。 When you order, indicate MHRSH430RSF (D)×(R)×(ℓ1).

※(γ)为参考值。 ※(γ) is reference value.

加工案例 Machining case — M-028

圆鼻 长颈 Long Neck Corner Radius 涂层 Coating
高硬度钢～65 Hardened Steel HRC H
高硬度钢～70 Hardened Steel HRC H
常规系列 无限白金Plus涂层 Regular Line MUGEN PREMIUM Plus

MHRSH430RSF

无限白金Plus涂层 高硬度钢材高精度加工用4刃长颈圆鼻铣刀
MUGEN COATING PREMIUM Plus 4-Flute Long Neck Corner Radius End Mill with Short Shank for Hardened Steel and High Accuracy Cutting

◆ 新增加规格

单位[规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00239-04205	0.4	R0.02	0.5	0.3	0.37	15°	4	35	8,300	0.57	0.59	0.61	0.63	0.68
08-00239-04210			1	0.3	0.37	15°	4	35	8,300	1.09	1.12	1.16	1.21	1.3
08-00239-04215			1.5	0.3	0.37	15°	4	35	8,300	1.6	1.66	1.72	1.78	1.92
08-00239-04220			2	0.3	0.37	15°	4	35	8,300	2.12	2.19	2.27	2.36	2.55
08-00239-04405		R0.05	0.5	0.3	0.37	15°	4	35	8,300	0.57	0.59	0.61	0.63	0.67
08-00239-04410			1	0.3	0.37	15°	4	35	8,300	1.08	1.12	1.16	1.2	1.3
08-00239-04415			1.5	0.3	0.37	15°	4	35	8,300	1.6	1.66	1.71	1.78	1.92
08-00239-04420			2	0.3	0.37	15°	4	35	8,300	2.12	2.19	2.27	2.35	2.54
08-00239-05210	0.5	R0.02	1	0.4	0.46	15°	4	35	6,700	1.11	1.14	1.18	1.23	1.33
08-00239-05215			1.5	0.4	0.46	15°	4	35	6,700	1.62	1.68	1.74	1.8	1.95
08-00239-05220			2	0.4	0.46	15°	4	35	6,700	2.14	2.21	2.29	2.38	2.57
08-00239-05225			2.5	0.4	0.46	15°	4	35	6,700	2.66	2.75	2.85	2.95	3.19
08-00239-05410		R0.05	1	0.4	0.46	15°	4	35	6,700	1.1	1.14	1.18	1.22	1.32
08-00239-05415			1.5	0.4	0.46	15°	4	35	6,700	1.62	1.68	1.73	1.8	1.94
08-00239-05420			2	0.4	0.46	15°	4	35	6,700	2.14	2.21	2.29	2.37	2.56
08-00239-05425			2.5	0.4	0.46	15°	4	35	6,700	2.65	2.75	2.84	2.95	3.18
08-00239-05510		R0.1	1	0.4	0.46	15°	4	35	6,700	1.1	1.14	1.18	1.22	1.31
08-00239-05515			1.5	0.4	0.46	15°	4	35	6,700	1.62	1.67	1.73	1.79	1.93
08-00239-05520			2	0.4	0.46	15°	4	35	6,700	2.14	2.21	2.28	2.37	2.55
08-00239-05525			2.5	0.4	0.46	15°	4	35	6,700	2.65	2.74	2.84	2.94	3.17
08-00239-06210	0.6	R0.02	1	0.5	0.56	15°	4	35	6,700	1.11	1.14	1.18	1.23	1.33
08-00239-06220			2	0.5	0.56	15°	4	35	6,700	2.14	2.21	2.29	2.38	2.57
08-00239-06230			3	0.5	0.56	15°	4	35	6,700	3.17	3.28	3.4	3.53	3.81
08-00239-06410		R0.05	1	0.5	0.56	15°	4	35	6,700	1.1	1.14	1.18	1.22	1.32
08-00239-06420			2	0.5	0.56	15°	4	35	6,700	2.14	2.21	2.29	2.37	2.56
08-00239-06430			3	0.5	0.56	15°	4	35	6,700	3.17	3.28	3.4	3.52	3.81
08-00239-06510		R0.1	1	0.5	0.56	15°	4	35	6,700	1.1	1.14	1.18	1.22	1.31
08-00239-06520			2	0.5	0.56	15°	4	35	6,700	2.14	2.21	2.28	2.37	2.55
08-00239-06530			3	0.5	0.56	15°	4	35	6,700	3.17	3.28	3.39	3.52	3.79
08-00239-08202	0.8	R0.02	2	0.65	0.76	15°	4	35	7,500	2.14	2.21	2.29	2.38	2.57
08-00239-08203			3	0.65	0.76	15°	4	35	7,500	3.17	3.28	3.4	3.53	3.81
08-00239-08204			4	0.65	0.76	15°	4	35	7,500	4.21	4.35	4.51	4.68	5.06
08-00239-08402		R0.05	2	0.65	0.76	15°	4	35	7,500	2.14	2.21	2.29	2.37	2.56
08-00239-08403			3	0.65	0.76	15°	4	35	7,500	3.17	3.28	3.4	3.52	3.81
08-00239-08404			4	0.65	0.76	15°	4	35	7,500	4.21	4.35	4.51	4.67	5.05
08-00239-08502		R0.1	2	0.65	0.76	15°	4	35	7,500	2.14	2.21	2.28	2.37	2.55
08-00239-08503			3	0.65	0.76	15°	4	35	7,500	3.17	3.28	3.39	3.52	3.79
08-00239-08504			4	0.65	0.76	15°	4	35	7,500	4.2	4.35	4.5	4.67	5.04
08-00239-08602		R0.2	2	0.65	0.76	15°	4	35	7,500	2.13	2.2	2.27	2.35	2.53
08-00239-08603			3	0.65	0.76	15°	4	35	7,500	3.17	3.27	3.38	3.5	3.77
08-00239-08604			4	0.65	0.76	15°	4	35	7,500	4.2	4.34	4.49	4.65	5.01
08-00239-10202	1	R0.02	2	0.8	0.95	15°	4	35	6,800	2.16	2.23	2.31	2.4	2.59
08-00239-10203			3	0.8	0.95	15°	4	35	6,800	3.19	3.3	3.42	3.55	3.84
08-00239-10204			4	0.8	0.95	15°	4	35	6,800	4.23	4.37	4.53	4.7	5.08
08-00239-10205			5	0.8	0.95	15°	4	40	6,800	5.26	5.44	5.64	5.85	6.32
08-00239-10402		R0.05	2	0.8	0.95	15°	4	35	6,800	2.16	2.23	2.31	2.39	2.59
08-00239-10403			3	0.8	0.95	15°	4	35	6,800	3.19	3.3	3.42	3.54	3.83
08-00239-10404			4	0.8	0.95	15°	4	35	6,800	4.22	4.37	4.53	4.69	5.07
08-00239-10405			5	0.8	0.95	15°	4	40	6,800	5.26	5.44	5.63	5.84	6.31
08-00239-10502		R0.1	2	0.8	0.95	15°	4	35	6,800	2.16	2.23	2.3	2.39	2.57
08-00239-10503			3	0.8	0.95	15°	4	35	6,800	3.19	3.3	3.41	3.54	3.82
08-00239-10504			4	0.8	0.95	15°	4	35	6,800	4.22	4.37	4.52	4.69	5.06
08-00239-10505			5	0.8	0.95	15°	4	40	6,800	5.26	5.44	5.63	5.84	6.3

长颈 Long Neck 圆鼻 Corner Radius 涂层 Coating
H ～65 HRC Hardened Steel 高硬度钢
H ～70 HRC Hardened Steel 高硬度钢
常规系列 无限白金Plus涂层 Regular Line MUGEN PREMIUM Plus

无限白金Plus涂层 高硬度钢材高精度加工用4刃长颈圆鼻铣刀

MUGEN COATING PREMIUM Plus 4-Flute Long Neck Corner Radius End Mill with Short Shank for Hardened Steel and High Accuracy Cutting

◆ 新增加规格

单位[规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00239-10602	1	R0.2	2	0.8	0.95	15°	4	35	6,800	2.15	2.22	2.29	2.37	2.55
08-00239-10603			3	0.8	0.95	15°	4	35	6,800	3.19	3.29	3.4	3.52	3.79
08-00239-10604			4	0.8	0.95	15°	4	35	6,800	4.22	4.36	4.51	4.67	5.04
08-00239-10605			5	0.8	0.95	15°	4	40	6,800	5.25	5.43	5.62	5.82	6.28
08-00239-10702		R0.3	2	0.8	0.95	15°	4	35	6,800	2.15	2.21	2.28	2.36	2.53
08-00239-10703			3	0.8	0.95	15°	4	35	6,800	3.18	3.28	3.39	3.51	3.77
08-00239-10704			4	0.8	0.95	15°	4	35	6,800	4.22	4.35	4.5	4.66	5.01
08-00239-10705			5	0.8	0.95	15°	4	40	6,800	5.25	5.42	5.61	5.81	6.26
08-00239-15203	1.5	R0.02	3	1.2	1.43	15°	4	35	7,100	3.23	3.34	3.46	3.59	3.88
08-00239-15204			4	1.2	1.43	15°	4	35	7,100	4.26	4.41	4.57	4.74	5.13
08-00239-15206			6	1.2	1.43	15°	4	40	7,100	6.33	6.55	6.79	7.04	7.61
08-00239-15208			8	1.2	1.43	15°	4	40	7,600	8.4	8.69	9	9.34	10.1
08-00239-15403		R0.05	3	1.2	1.43	15°	4	35	7,100	3.23	3.34	3.46	3.59	3.87
08-00239-15404			4	1.2	1.43	15°	4	35	7,100	4.26	4.41	4.57	4.74	5.12
08-00239-15406			6	1.2	1.43	15°	4	40	7,100	6.33	6.55	6.78	7.04	7.6
08-00239-15408			8	1.2	1.43	15°	4	40	7,600	8.4	8.69	9	9.34	10.09
08-00239-15503		R0.1	3	1.2	1.43	15°	4	35	7,100	3.23	3.34	3.45	3.58	3.86
08-00239-15504			4	1.2	1.43	15°	4	35	7,100	4.26	4.41	4.56	4.73	5.11
08-00239-15506			6	1.2	1.43	15°	4	40	7,100	6.33	6.55	6.78	7.03	7.59
08-00239-15508			8	1.2	1.43	15°	4	40	7,600	8.4	8.69	9	9.33	10.08
08-00239-15603		R0.2	3	1.2	1.43	15°	4	35	7,100	3.22	3.33	3.44	3.57	3.84
08-00239-15604			4	1.2	1.43	15°	4	35	7,100	4.26	4.4	4.55	4.72	5.08
08-00239-15606			6	1.2	1.43	15°	4	40	7,100	6.33	6.54	6.77	7.01	7.57
08-00239-15608			8	1.2	1.43	15°	4	40	7,600	8.39	8.68	8.98	9.31	10.06
08-00239-15703		R0.3	3	1.2	1.43	15°	4	35	7,100	3.22	3.32	3.43	3.55	3.82
08-00239-15704			4	1.2	1.43	15°	4	35	7,100	4.25	4.39	4.54	4.7	5.06
08-00239-15706			6	1.2	1.43	15°	4	40	7,100	6.32	6.53	6.76	7	7.55
08-00239-15708			8	1.2	1.43	15°	4	40	7,600	8.39	8.67	8.97	9.3	10.03
08-00239-15803		R0.5	3	1.2	1.43	15°	4	35	7,100	3.21	3.31	3.41	3.52	3.77
08-00239-15804			4	1.2	1.43	15°	4	35	7,100	4.25	4.38	4.52	4.67	5.01
08-00239-15806			6	1.2	1.43	15°	4	40	7,100	6.32	6.52	6.74	6.97	7.5
08-00239-15808			8	1.2	1.43	15°	4	40	7,600	8.38	8.66	8.95	9.27	9.98
08-00239-20204	2	R0.02	4	1.6	1.91	15°	4	35	7,100	4.3	4.45	4.61	4.78	5.17
08-00239-20206			6	1.6	1.91	15°	4	35	7,100	6.37	6.59	6.83	7.08	7.66
08-00239-20208			8	1.6	1.91	15°	4	40	7,600	8.44	8.73	9.05	9.38	10.14
08-00239-20210			10	1.6	1.91	15°	4	40	7,600	10.5	10.87	11.26	11.68	12.63
08-00239-20404		R0.05	4	1.6	1.91	15°	4	35	7,100	4.3	4.45	4.61	4.78	5.16
08-00239-20406			6	1.6	1.91	15°	4	35	7,100	6.37	6.59	6.83	7.08	7.65
08-00239-20408			8	1.6	1.91	15°	4	40	7,600	8.44	8.73	9.04	9.38	10.14
08-00239-20410			10	1.6	1.91	15°	4	40	7,600	10.5	10.87	11.26	11.68	12.62
08-00239-20504		R0.1	4	1.6	1.91	15°	4	35	7,100	4.3	4.45	4.6	4.77	5.15
08-00239-20506			6	1.6	1.91	15°	4	35	7,100	6.37	6.59	6.82	7.07	7.64
08-00239-20508			8	1.6	1.91	15°	4	40	7,600	8.43	8.73	9.04	9.37	10.13
08-00239-20510			10	1.6	1.91	15°	4	40	7,600	10.5	10.86	11.25	11.67	12.61
08-00239-20604		R0.2	4	1.6	1.91	15°	4	35	7,100	4.3	4.44	4.59	4.76	5.13
08-00239-20606			6	1.6	1.91	15°	4	35	7,100	6.36	6.58	6.81	7.06	7.62
08-00239-20608			8	1.6	1.91	15°	4	40	7,600	8.43	8.72	9.03	9.36	10.1
08-00239-20610			10	1.6	1.91	15°	4	40	7,600	10.5	10.86	11.24	11.66	12.59
08-00239-20704		R0.3	4	1.6	1.91	15°	4	35	7,100	4.29	4.43	4.58	4.74	5.11
08-00239-20706			6	1.6	1.91	15°	4	35	7,100	6.36	6.57	6.8	7.04	7.59
08-00239-20708			8	1.6	1.91	15°	4	40	7,600	8.43	8.71	9.02	9.34	10.08
08-00239-20710			10	1.6	1.91	15°	4	40	7,600	10.5	10.85	11.23	11.64	12.56
08-00239-20804		R0.5	4	1.6	1.91	15°	4	35	7,100	4.29	4.42	4.56	4.71	5.06
08-00239-20806			6	1.6	1.91	15°	4	35	7,100	6.35	6.56	6.78	7.01	7.54
08-00239-20808			8	1.6	1.91	15°	4	40	7,600	8.42	8.7	8.99	9.31	10.03
08-00239-20810			10	1.6	1.91	15°	4	40	7,600	10.49	10.84	11.21	11.61	12.52

订购方法 How to Order

请指定MHRSH430RSF 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate MHRSH430RSF (D)×(R)×(ℓ1).

加工案例 Machining case

M-028

MHRSH430RSF

无限白金Plus涂层 高硬度钢材高精度加工用4刃长颈圆鼻铣刀

MUGEN COATING PREMIUM Plus 4-Flute Long Neck Corner Radius End Mill with Short Shank for Hardened Steel and High Accuracy Cutting

◆ 新增加规格

单位[规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00239-30404	3	R0.05	4	2.5	2.85	15°	6	45	7,900	4.42	4.57	4.73	4.91	5.3
◆ 08-00239-30406			6	2.5	2.85	15°	6	45	7,900	6.48	6.71	6.95	7.21	7.79
◆ 08-00239-30408			8	2.5	2.85	15°	6	45	7,900	8.55	8.85	9.17	9.51	10.28
◆ 08-00239-30410			10	2.5	2.85	15°	6	50	8,800	10.62	10.99	11.38	11.81	12.76
◆ 08-00239-30412			12	2.5	2.85	15°	6	50	8,800	12.69	13.13	13.6	14.11	15.25
◆ 08-00239-30415			15	2.5	2.85	15°	6	55	9,700	15.79	16.34	16.92	17.56	18.98
◆ 08-00239-30504		R0.1	4	2.5	2.85	15°	6	45	7,900	4.42	4.57	4.73	4.9	5.29
◆ 08-00239-30506			6	2.5	2.85	15°	6	45	7,900	6.48	6.71	6.94	7.2	7.78
◆ 08-00239-30508			8	2.5	2.85	15°	6	45	7,900	8.55	8.84	9.16	9.5	10.26
◆ 08-00239-30510			10	2.5	2.85	15°	6	50	8,800	10.62	10.98	11.38	11.8	12.75
◆ 08-00239-30512			12	2.5	2.85	15°	6	50	8,800	12.68	13.12	13.59	14.1	15.24
◆ 08-00239-30515			15	2.5	2.85	15°	6	55	9,700	15.79	16.33	16.92	17.55	18.97
◆ 08-00239-30604		R0.2	4	2.5	2.85	15°	6	45	7,900	4.41	4.56	4.72	4.89	5.27
◆ 08-00239-30606			6	2.5	2.85	15°	6	45	7,900	6.48	6.7	6.93	7.19	7.75
◆ 08-00239-30608			8	2.5	2.85	15°	6	45	7,900	8.55	8.84	9.15	9.49	10.24
◆ 08-00239-30610			10	2.5	2.85	15°	6	50	8,800	10.61	10.98	11.37	11.79	12.73
◆ 08-00239-30612			12	2.5	2.85	15°	6	50	8,800	12.68	13.12	13.58	14.09	15.21
◆ 08-00239-30615			15	2.5	2.85	15°	6	55	9,700	15.78	16.33	16.91	17.54	18.94
◆ 08-00239-30704		R0.3	4	2.5	2.85	15°	6	45	7,900	4.41	4.55	4.71	4.87	5.24
◆ 08-00239-30706			6	2.5	2.85	15°	6	45	7,900	6.48	6.69	6.92	7.17	7.73
◆ 08-00239-30708			8	2.5	2.85	15°	6	45	7,900	8.54	8.83	9.14	9.47	10.22
◆ 08-00239-30710			10	2.5	2.85	15°	6	50	8,800	10.61	10.97	11.36	11.77	12.7
◆ 08-00239-30712			12	2.5	2.85	15°	6	50	8,800	12.68	13.11	13.57	14.07	15.19
◆ 08-00239-30715			15	2.5	2.85	15°	6	55	9,700	15.78	16.32	16.9	17.52	18.92
◆ 08-00239-30804		R0.5	4	2.5	2.85	15°	6	45	7,900	4.4	4.54	4.69	4.84	5.2
◆ 08-00239-30806			6	2.5	2.85	15°	6	45	7,900	6.47	6.68	6.9	7.14	7.68
◆ 08-00239-30808			8	2.5	2.85	15°	6	45	7,900	8.54	8.82	9.12	9.44	10.17
◆ 08-00239-30810			10	2.5	2.85	15°	6	50	8,800	10.6	10.96	11.33	11.74	12.66
◆ 08-00239-30812			12	2.5	2.85	15°	6	50	8,800	12.67	13.1	13.55	14.04	15.14
◆ 08-00239-30815			15	2.5	2.85	15°	6	55	9,700	15.77	16.31	16.88	17.49	18.87
◆ 08-00239-40508	4	R0.1	8	3.2	3.8	15°	6	45	10,800	8.65	8.94	9.26	9.61	10.38
◆ 08-00239-40512			12	3.2	3.8	15°	6	50	10,800	12.78	13.22	13.7	14.21	15.35
◆ 08-00239-40516			16	3.2	3.8	15°	6	55	10,800	16.92	17.5	18.13	18.81	Free
◆ 08-00239-40520			20	3.2	3.8	15°	6	55	12,100	21.05	21.78	22.56	23.41	Free
◆ 08-00239-40608		R0.2	8	3.2	3.8	15°	6	45	10,800	8.64	8.94	9.25	9.59	10.36
◆ 08-00239-40612			12	3.2	3.8	15°	6	50	10,800	12.78	13.22	13.69	14.19	15.33
◆ 08-00239-40616			16	3.2	3.8	15°	6	55	10,800	16.91	17.5	18.12	18.79	Free
◆ 08-00239-40620			20	3.2	3.8	15°	6	55	12,100	21.05	21.77	22.55	23.39	Free
◆ 08-00239-40708		R0.3	8	3.2	3.8	15°	6	45	10,800	8.64	8.93	9.24	9.58	10.33
◆ 08-00239-40712			12	3.2	3.8	15°	6	50	10,800	12.77	13.21	13.68	14.18	15.31
◆ 08-00239-40716			16	3.2	3.8	15°	6	55	10,800	16.91	17.49	18.11	18.78	Free
◆ 08-00239-40720			20	3.2	3.8	15°	6	55	12,100	21.04	21.77	22.54	23.38	Free
◆ 08-00239-40808		R0.5	8	3.2	3.8	15°	6	45	10,800	8.63	8.92	9.22	9.55	10.29
◆ 08-00239-40812			12	3.2	3.8	15°	6	50	10,800	12.77	13.2	13.65	14.15	15.26
◆ 08-00239-40816			16	3.2	3.8	15°	6	55	10,800	16.9	17.47	18.09	18.75	Free
◆ 08-00239-40820			20	3.2	3.8	15°	6	55	12,100	21.04	21.75	22.52	23.35	Free

无限白金Plus涂层 高硬度钢材高精度加工用4刃长颈圆鼻铣刀

MUGEN COATING PREMIUM Plus 4-Flute Long Neck Corner Radius End Mill with Short Shank for Hardened Steel and High Accuracy Cutting

◆ 新增加规格

单位[规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00239-50515	5	R0.1	15	4	4.75	15°	6	50	15,200	15.98	16.53	17.13	Free	Free
◆ 08-00239-50520			20	4	4.75	15°	6	55	15,200	21.15	21.88	Free	Free	Free
◆ 08-00239-50615		R0.2	15	4	4.75	15°	6	50	15,200	15.98	16.53	17.12	Free	Free
◆ 08-00239-50620			20	4	4.75	15°	6	55	15,200	21.14	21.87	Free	Free	Free
◆ 08-00239-50715		R0.3	15	4	4.75	15°	6	50	15,200	15.97	16.52	17.1	Free	Free
◆ 08-00239-50720			20	4	4.75	15°	6	55	15,200	21.14	21.87	Free	Free	Free
◆ 08-00239-50815		R0.5	15	4	4.75	15°	6	50	15,200	15.97	16.5	17.08	Free	Free
◆ 08-00239-50820			20	4	4.75	15°	6	55	15,200	21.13	21.85	Free	Free	Free
◆ 08-00239-60512	6	R0.1	12	5	5.7	-	6	45	11,000	Free	Free	Free	Free	Free
◆ 08-00239-60518			18	5	5.7	-	6	50	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60524			24	5	5.7	-	6	60	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60530			30	5	5.7	-	6	65	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60612		R0.2	12	5	5.7	-	6	45	11,000	Free	Free	Free	Free	Free
◆ 08-00239-60618			18	5	5.7	-	6	50	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60624			24	5	5.7	-	6	60	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60630			30	5	5.7	-	6	65	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60712		R0.3	12	5	5.7	-	6	45	11,000	Free	Free	Free	Free	Free
◆ 08-00239-60718			18	5	5.7	-	6	50	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60724			24	5	5.7	-	6	60	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60730			30	5	5.7	-	6	65	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60812		R0.5	12	5	5.7	-	6	45	11,000	Free	Free	Free	Free	Free
◆ 08-00239-60818			18	5	5.7	-	6	50	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60824			24	5	5.7	-	6	60	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60830			30	5	5.7	-	6	65	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60912		R1	12	5	5.7	-	6	45	11,000	Free	Free	Free	Free	Free
◆ 08-00239-60918			18	5	5.7	-	6	50	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60924			24	5	5.7	-	6	60	13,600	Free	Free	Free	Free	Free
◆ 08-00239-60930			30	5	5.7	-	6	65	13,600	Free	Free	Free	Free	Free

订购方法 How to Order

请指定MHRSH430RSF 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate MHRSH430RSF (D)×(R)×(ℓ1).

加工案例 Machining case

M-028

切削参数参考表 Recommended Milling Conditions

加工材料 Work Material				高速钢·高硬度钢 High Speed Steels / Hardened Steels SKH51·SKD11(～62HRC)				高速钢 High Speed Steels SKH55·HAP40(～66HRC)				高速钢 High Speed Steels SKH57·HAP72(～70HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	外径与颈长之比 L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm	min-1	mm/min	ap mm	ae mm
0.1	0.01	0.2	2	40,000	200	0.002	0.01	40,000	150	0.002	0.01	40,000	120	0.002	0.01
		0.3	3	40,000	160	0.002	0.01	40,000	120	0.002	0.01	40,000	90	0.002	0.01
0.15	0.01	0.3	2	40,000	240	0.002	0.015	40,000	180	0.002	0.01	40,000	140	0.002	0.01
		0.5	3.3	40,000	160	0.002	0.015	40,000	120	0.002	0.01	40,000	90	0.002	0.01
	0.02	0.3	2	40,000	240	0.002	0.015	40,000	180	0.002	0.01	40,000	140	0.002	0.01
		0.5	3.3	40,000	160	0.002	0.015	40,000	120	0.002	0.01	40,000	90	0.002	0.01
0.2	0.02	0.3	1.5	30,000	360	0.003	0.02	30,000	280	0.003	0.01	30,000	220	0.003	0.01
		0.5	2.5	30,000	320	0.003	0.02	30,000	240	0.003	0.01	30,000	180	0.003	0.01
		0.75	3.8	30,000	270	0.003	0.02	30,000	190	0.003	0.01	30,000	150	0.003	0.01
		1	5	30,000	240	0.002	0.02	30,000	160	0.002	0.01	30,000	120	0.002	0.01
	0.05	0.3	1.5	30,000	360	0.003	0.02	30,000	280	0.003	0.01	30,000	220	0.003	0.01
		0.5	2.5	30,000	320	0.003	0.02	30,000	240	0.003	0.01	30,000	180	0.003	0.01
		0.75	3.8	30,000	270	0.003	0.02	30,000	190	0.003	0.01	30,000	150	0.003	0.01
		1	5	30,000	240	0.003	0.02	30,000	160	0.003	0.01	30,000	120	0.003	0.01
0.3	0.02	0.5	1.7	30,000	600	0.003	0.04	30,000	500	0.003	0.03	30,000	400	0.003	0.03
		0.75	2.5	30,000	560	0.003	0.04	30,000	460	0.003	0.03	30,000	360	0.003	0.03
		1	3.3	30,000	500	0.003	0.04	30,000	400	0.003	0.03	30,000	300	0.003	0.03
		1.5	5	30,000	320	0.003	0.04	30,000	240	0.003	0.03	30,000	180	0.003	0.03
	0.05	0.5	1.7	30,000	600	0.003	0.04	30,000	500	0.003	0.03	30,000	400	0.003	0.03
		0.75	2.5	30,000	560	0.003	0.04	30,000	460	0.003	0.03	30,000	360	0.003	0.03
		1	3.3	30,000	500	0.003	0.04	30,000	400	0.003	0.03	30,000	300	0.003	0.03
		1.5	5	30,000	320	0.003	0.04	30,000	240	0.003	0.03	30,000	180	0.003	0.03
0.4	0.02	0.5	1.3	28,000	760	0.005	0.05	25,000	650	0.004	0.04	22,000	480	0.004	0.04
		1	2.5	28,000	700	0.005	0.05	25,000	600	0.004	0.04	22,000	450	0.004	0.04
		1.5	3.8	28,000	600	0.005	0.05	25,000	520	0.004	0.04	22,000	390	0.004	0.04
		2	5	25,000	500	0.005	0.05	25,000	440	0.003	0.04	22,000	330	0.003	0.04
	0.05	0.5	1.3	28,000	760	0.005	0.05	25,000	650	0.005	0.04	22,000	480	0.005	0.04
		1	2.5	28,000	700	0.005	0.05	25,000	600	0.005	0.04	22,000	450	0.005	0.04
		1.5	3.8	28,000	600	0.005	0.05	25,000	520	0.005	0.04	22,000	390	0.005	0.04
		2	5	25,000	500	0.005	0.05	25,000	440	0.005	0.04	22,000	330	0.005	0.04
0.5	0.02	1	2	23,000	900	0.006	0.1	20,000	800	0.004	0.08	18,000	600	0.004	0.08
		1.5	3	23,000	800	0.006	0.1	20,000	640	0.004	0.08	18,000	480	0.004	0.08
		2	4	23,000	720	0.005	0.1	20,000	600	0.003	0.08	18,000	450	0.003	0.08
		2.5	5	23,000	680	0.005	0.1	20,000	580	0.003	0.08	18,000	420	0.003	0.08
	0.05	1	2	23,000	900	0.007	0.1	20,000	800	0.005	0.08	18,000	600	0.005	0.08
		1.5	3	23,000	800	0.007	0.1	20,000	640	0.005	0.08	18,000	480	0.005	0.08
		2	4	23,000	720	0.007	0.1	20,000	600	0.005	0.08	18,000	450	0.005	0.08
		2.5	5	23,000	680	0.006	0.1	20,000	580	0.004	0.08	18,000	420	0.004	0.08
	0.1	1	2	23,000	900	0.007	0.1	20,000	800	0.005	0.08	18,000	600	0.005	0.08
		1.5	3	23,000	800	0.007	0.1	20,000	640	0.005	0.08	18,000	480	0.005	0.08
		2	4	23,000	720	0.007	0.1	20,000	600	0.005	0.08	18,000	450	0.005	0.08
		2.5	5	23,000	680	0.006	0.1	20,000	580	0.004	0.08	18,000	420	0.004	0.08

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				高速钢·高硬度钢 High Speed Steels / Hardened Steels SKH51·SKD11（~62HRC）				高速钢 High Speed Steels SKH55·HAP40（~66HRC）				高速钢 High Speed Steels SKH57·HAP72（~70HRC）			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	外径与颈长之比 L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm
0.6	0.02	1	1.7	23,000	1,000	0.006	0.15	20,000	850	0.004	0.1	17,000	640	0.004	0.1
		2	3.3	23,000	800	0.006	0.15	20,000	640	0.004	0.1	17,000	480	0.004	0.1
		3	5	23,000	700	0.005	0.15	20,000	600	0.003	0.1	17,000	450	0.003	0.1
	0.05	1	1.7	23,000	1,000	0.01	0.15	20,000	850	0.01	0.1	17,000	640	0.008	0.1
		2	3.3	23,000	800	0.01	0.15	20,000	640	0.007	0.1	17,000	480	0.006	0.1
		3	5	23,000	700	0.008	0.15	20,000	600	0.006	0.1	17,000	450	0.005	0.1
	0.1	1	1.7	23,000	1,000	0.01	0.15	20,000	850	0.01	0.1	17,000	640	0.008	0.1
		2	3.3	23,000	800	0.01	0.15	20,000	640	0.007	0.1	17,000	480	0.006	0.1
		3	5	23,000	700	0.008	0.15	20,000	600	0.006	0.1	17,000	450	0.005	0.1
0.8	0.02	2	2.5	23,000	1,400	0.006	0.16	20,000	1,000	0.005	0.14	17,000	700	0.005	0.14
		3	3.8	23,000	1,300	0.005	0.16	20,000	900	0.003	0.14	17,000	650	0.003	0.14
		4	5	23,000	1,200	0.005	0.16	20,000	800	0.003	0.14	17,000	600	0.003	0.14
	0.05	2	2.5	23,000	1,400	0.02	0.16	20,000	1,000	0.015	0.14	17,000	700	0.012	0.14
		3	3.8	23,000	1,300	0.015	0.16	20,000	900	0.01	0.14	17,000	650	0.008	0.14
		4	5	23,000	1,200	0.015	0.16	20,000	800	0.01	0.14	17,000	600	0.006	0.14
	0.1	2	2.5	23,000	1,400	0.02	0.16	20,000	1,000	0.015	0.14	17,000	700	0.012	0.14
		3	3.8	23,000	1,300	0.015	0.16	20,000	900	0.01	0.14	17,000	650	0.008	0.14
		4	5	23,000	1,200	0.015	0.16	20,000	800	0.01	0.14	17,000	600	0.006	0.14
	0.2	2	2.5	23,000	1,400	0.02	0.16	20,000	1,000	0.015	0.14	17,000	700	0.012	0.14
		3	3.8	23,000	1,300	0.015	0.16	20,000	900	0.01	0.14	17,000	650	0.008	0.14
		4	5	23,000	1,200	0.015	0.16	20,000	800	0.01	0.14	17,000	600	0.006	0.14
1	0.02	2	2	21,000	2,000	0.01	0.25	17,000	1,400	0.008	0.2	15,000	1,000	0.005	0.2
		3	3	20,000	1,800	0.01	0.25	16,000	1,300	0.008	0.2	14,000	900	0.005	0.2
		4	4	18,000	1,500	0.008	0.25	14,000	1,100	0.005	0.2	12,000	750	0.003	0.2
		5	5	16,000	1,400	0.005	0.25	13,000	1,000	0.003	0.2	11,000	650	0.003	0.2
	0.05	2	2	21,000	2,000	0.04	0.25	17,000	1,400	0.03	0.2	15,000	1,000	0.018	0.2
		3	3	20,000	1,800	0.04	0.25	16,000	1,300	0.03	0.2	14,000	900	0.018	0.2
		4	4	18,000	1,500	0.03	0.25	14,000	1,100	0.02	0.2	12,000	750	0.012	0.2
		5	5	16,000	1,400	0.02	0.25	13,000	1,000	0.01	0.2	11,000	650	0.006	0.2
	0.1	2	2	21,000	2,000	0.04	0.25	17,000	1,400	0.03	0.2	15,000	1,000	0.018	0.2
		3	3	20,000	1,800	0.04	0.25	16,000	1,300	0.03	0.2	14,000	900	0.018	0.2
		4	4	18,000	1,500	0.03	0.25	14,000	1,100	0.02	0.2	12,000	750	0.012	0.2
		5	5	16,000	1,400	0.02	0.25	13,000	1,000	0.01	0.2	11,000	650	0.006	0.2
	0.2	2	2	21,000	2,000	0.04	0.25	17,000	1,400	0.03	0.2	15,000	1,000	0.018	0.2
		3	3	20,000	1,800	0.04	0.25	16,000	1,300	0.03	0.2	14,000	900	0.018	0.2
		4	4	18,000	1,500	0.03	0.25	14,000	1,100	0.02	0.2	12,000	750	0.012	0.2
		5	5	16,000	1,400	0.02	0.25	13,000	1,000	0.01	0.2	11,000	650	0.006	0.2
	0.3	2	2	21,000	2,000	0.04	0.25	17,000	1,400	0.03	0.2	15,000	1,000	0.018	0.2
		3	3	20,000	1,800	0.04	0.25	16,000	1,300	0.03	0.2	14,000	900	0.018	0.2
		4	4	18,000	1,500	0.03	0.25	14,000	1,100	0.02	0.2	12,000	750	0.012	0.2
		5	5	16,000	1,400	0.02	0.25	13,000	1,000	0.01	0.2	11,000	650	0.006	0.2
1.5	0.02	3	2	20,000	2,000	0.01	0.4	16,000	1,400	0.008	0.3	14,000	1,000	0.006	0.3
		4	2.7	18,000	1,700	0.01	0.4	14,000	1,200	0.008	0.3	12,000	800	0.006	0.3
		6	4	16,000	1,500	0.008	0.4	13,000	1,100	0.005	0.3	11,000	750	0.004	0.3
		8	5.3	14,000	1,300	0.008	0.4	11,000	900	0.003	0.3	10,000	600	0.003	0.3
1.5	0.05	3	2	20,000	2,000	0.04	0.4	16,000	1,400	0.03	0.3	14,000	1,000	0.018	0.3
		4	2.7	18,000	1,700	0.04	0.4	14,000	1,200	0.03	0.3	12,000	800	0.018	0.3
		6	4	16,000	1,500	0.03	0.4	13,000	1,100	0.02	0.3	11,000	750	0.012	0.3
		8	5.3	14,000	1,300	0.025	0.4	11,000	900	0.01	0.3	10,000	600	0.006	0.3
	0.1	3	2	20,000	2,000	0.04	0.4	16,000	1,400	0.03	0.3	14,000	1,000	0.018	0.3
		4	2.7	18,000	1,700	0.04	0.4	14,000	1,200	0.03	0.3	12,000	800	0.018	0.3
		6	4	16,000	1,500	0.03	0.4	13,000	1,100	0.02	0.3	11,000	750	0.012	0.3
		8	5.3	14,000	1,300	0.025	0.4	11,000	900	0.01	0.3	10,000	600	0.006	0.3
	0.2	3	2	20,000	2,000	0.04	0.4	16,000	1,400	0.03	0.3	14,000	1,000	0.018	0.3
		4	2.7	18,000	1,700	0.04	0.4	14,000	1,200	0.03	0.3	12,000	800	0.018	0.3
		6	4	16,000	1,500	0.03	0.4	13,000	1,100	0.02	0.3	11,000	750	0.012	0.3
		8	5.3	14,000	1,300	0.025	0.4	11,000	900	0.01	0.3	10,000	600	0.006	0.3
	0.3	3	2	20,000	2,000	0.04	0.4	16,000	1,400	0.03	0.3	14,000	1,000	0.018	0.3
		4	2.7	18,000	1,700	0.04	0.4	14,000	1,200	0.03	0.3	12,000	800	0.018	0.3
		6	4	16,000	1,500	0.03	0.4	13,000	1,100	0.02	0.3	11,000	750	0.012	0.3
		8	5.3	14,000	1,300	0.025	0.4	11,000	900	0.01	0.3	10,000	600	0.006	0.3
	0.5	3	2	20,000	2,000	0.04	0.4	16,000	1,400	0.03	0.3	14,000	1,000	0.018	0.3
		4	2.7	18,000	1,700	0.04	0.4	14,000	1,200	0.03	0.3	12,000	800	0.018	0.3
		6	4	16,000	1,500	0.03	0.4	13,000	1,100	0.02	0.3	11,000	750	0.012	0.3
		8	5.3	14,000	1,300	0.025	0.4	11,000	900	0.01	0.3	10,000	600	0.006	0.3
2	0.02	4	2	17,000	2,000	0.012	0.5	14,000	1,400	0.008	0.35	12,000	1,000	0.006	0.35
		6	3	15,000	1,800	0.012	0.5	12,000	1,200	0.008	0.35	11,000	900	0.006	0.35
		8	4	14,000	1,500	0.01	0.5	11,000	1,100	0.005	0.35	10,000	750	0.004	0.35
		10	5	12,000	1,300	0.01	0.5	10,000	1,000	0.003	0.35	9,000	650	0.003	0.35
	0.05	4	2	17,000	2,000	0.05	0.5	14,000	1,400	0.03	0.35	12,000	1,000	0.018	0.35
		6	3	15,000	1,800	0.05	0.5	12,000	1,200	0.03	0.35	11,000	900	0.018	0.35
		8	4	14,000	1,500	0.04	0.5	11,000	1,100	0.02	0.35	10,000	750	0.012	0.35
		10	5	12,000	1,300	0.04	0.5	10,000	1,000	0.02	0.35	9,000	650	0.012	0.35
	0.1	4	2	17,000	2,000	0.05	0.5	14,000	1,400	0.03	0.35	12,000	1,000	0.018	0.35
		6	3	15,000	1,800	0.05	0.5	12,000	1,200	0.03	0.35	11,000	900	0.018	0.35
		8	4	14,000	1,500	0.04	0.5	11,000	1,100	0.02	0.35	10,000	750	0.012	0.35
		10	5	12,000	1,300	0.04	0.5	10,000	1,000	0.02	0.35	9,000	650	0.012	0.35
	0.2	4	2	17,000	2,000	0.05	0.5	14,000	1,400	0.03	0.35	12,000	1,000	0.018	0.35
		6	3	15,000	1,800	0.05	0.5	12,000	1,200	0.03	0.35	11,000	900	0.018	0.35
		8	4	14,000	1,500	0.04	0.5	11,000	1,100	0.02	0.35	10,000	750	0.012	0.35
		10	5	12,000	1,300	0.04	0.5	10,000	1,000	0.02	0.35	9,000	650	0.012	0.35
	0.3	4	2	17,000	2,000	0.05	0.5	14,000	1,400	0.03	0.35	12,000	1,000	0.018	0.35
		6	3	15,000	1,800	0.05	0.5	12,000	1,200	0.03	0.35	11,000	900	0.018	0.35
		8	4	14,000	1,500	0.04	0.5	11,000	1,100	0.02	0.35	10,000	750	0.012	0.35
		10	5	12,000	1,300	0.04	0.5	10,000	1,000	0.02	0.35	9,000	650	0.012	0.35
	0.5	4	2	17,000	2,000	0.05	0.5	14,000	1,400	0.03	0.35	12,000	1,000	0.018	0.35
		6	3	15,000	1,800	0.05	0.5	12,000	1,200	0.03	0.35	11,000	900	0.018	0.35
		8	4	14,000	1,500	0.04	0.5	11,000	1,100	0.02	0.35	10,000	750	0.012	0.35
		10	5	12,000	1,300	0.04	0.5	10,000	1,000	0.02	0.35	9,000	650	0.012	0.35

圆鼻 Corner Radius
长颈 Long Neck
涂层 Coating
◎ 高硬度钢~65 Hardened Steel HRC H
◎ 高硬度钢~70 Hardened Steel HRC H
常规系列 无限白金Plus涂层 Regular Line MUGEN PREMIUM Plus

MHRSH430RSF
切削参数参考表
Recommended Milling Conditions

圆鼻 Corner Radius
长颈 Long Neck
涂层 Coating
H ~65高硬度钢 HRC Hardened Steel ◎
H ~70高硬度钢 HRC Hardened Steel ◎
常规系列 无限白金Plus涂层 Regular Line MUGEN PREMIUM Plus

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				高速钢·高硬度钢 High Speed Steels / Hardened Steels SKH51·SKD11（～62HRC）				高速钢 High Speed Steels SKH55·HAP40（～66HRC）				高速钢 High Speed Steels SKH57·HAP72（～70HRC）			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	外径与颈长之比 L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm
3	0.05	4	1.3	13,000	2,000	0.05	0.7	10,000	1,400	0.05	0.6	8,000	1,100	0.03	0.6
		6	2	11,500	1,700	0.05	0.7	9,500	1,300	0.05	0.6	7,500	1,000	0.03	0.6
		8	2.7	10,500	1,500	0.05	0.7	8,000	1,100	0.05	0.6	6,000	800	0.03	0.6
		10	3.3	10,000	1,350	0.05	0.7	7,500	1,000	0.05	0.6	6,000	750	0.03	0.6
		12	4	10,000	1,350	0.04	0.7	7,500	1,000	0.04	0.6	6,000	750	0.024	0.6
		15	5	9,000	1,200	0.03	0.7	7,000	900	0.03	0.6	5,500	650	0.018	0.6
	0.1	4	1.3	13,000	2,000	0.07	0.7	10,000	1,400	0.05	0.6	8,000	1,100	0.03	0.6
		6	2	11,500	1,700	0.07	0.7	9,500	1,300	0.05	0.6	7,500	1,000	0.03	0.6
		8	2.7	10,500	1,500	0.07	0.7	8,000	1,100	0.05	0.6	6,000	800	0.03	0.6
		10	3.3	10,000	1,350	0.07	0.7	7,500	1,000	0.05	0.6	6,000	750	0.03	0.6
		12	4	10,000	1,350	0.06	0.7	7,500	1,000	0.04	0.6	6,000	750	0.024	0.6
		15	5	9,000	1,200	0.05	0.7	7,000	900	0.03	0.6	5,500	650	0.018	0.6
	0.2	4	1.3	13,000	2,000	0.07	0.7	10,000	1,400	0.05	0.6	8,000	1,100	0.03	0.6
		6	2	11,500	1,700	0.07	0.7	9,500	1,300	0.05	0.6	7,500	1,000	0.03	0.6
		8	2.7	10,500	1,500	0.07	0.7	8,000	1,100	0.05	0.6	6,000	800	0.03	0.6
		10	3.3	10,000	1,350	0.07	0.7	7,500	1,000	0.05	0.6	6,000	750	0.03	0.6
		12	4	10,000	1,350	0.06	0.7	7,500	1,000	0.04	0.6	6,000	750	0.024	0.6
		15	5	9,000	1,200	0.05	0.7	7,000	900	0.03	0.6	5,500	650	0.018	0.6
	0.3	4	1.3	13,000	2,000	0.07	0.7	10,000	1,400	0.05	0.6	8,000	1,100	0.03	0.6
		6	2	11,500	1,700	0.07	0.7	9,500	1,300	0.05	0.6	7,500	1,000	0.03	0.6
		8	2.7	10,500	1,500	0.07	0.7	8,000	1,100	0.05	0.6	6,000	800	0.03	0.6
		10	3.3	10,000	1,350	0.07	0.7	7,500	1,000	0.05	0.6	6,000	750	0.03	0.6
		12	4	10,000	1,350	0.06	0.7	7,500	1,000	0.04	0.6	6,000	750	0.024	0.6
		15	5	9,000	1,200	0.05	0.7	7,000	900	0.03	0.6	5,500	650	0.018	0.6
	0.5	4	1.3	13,000	2,000	0.07	0.7	10,000	1,400	0.05	0.6	8,000	1,100	0.03	0.6
		6	2	11,500	1,700	0.07	0.7	9,500	1,300	0.05	0.6	7,500	1,000	0.03	0.6
		8	2.7	10,500	1,500	0.07	0.7	8,000	1,100	0.05	0.6	6,000	800	0.03	0.6
		10	3.3	10,000	1,350	0.07	0.7	7,500	1,000	0.05	0.6	6,000	750	0.03	0.6
		12	4	10,000	1,350	0.06	0.7	7,500	1,000	0.04	0.6	6,000	750	0.024	0.6
		15	5	9,000	1,200	0.05	0.7	7,000	900	0.03	0.6	5,500	650	0.018	0.6
4	0.1	8	2	8,500	1,800	0.08	1	7,000	1,300	0.06	0.8	5,500	1,000	0.036	0.8
		12	3	8,500	1,800	0.07	1	7,000	1,300	0.05	0.8	5,500	1,000	0.03	0.8
		16	4	7,500	1,500	0.06	1	5,500	1,000	0.05	0.8	5,200	900	0.03	0.8
		20	5	6,000	1,200	0.06	1	4,500	800	0.05	0.8	4,000	650	0.03	0.8
	0.2	8	2	8,500	1,800	0.08	1	7,000	1,300	0.06	0.8	5,500	1,000	0.036	0.8
		12	3	8,500	1,800	0.07	1	7,000	1,300	0.05	0.8	5,500	1,000	0.03	0.8
		16	4	7,500	1,500	0.06	1	5,500	1,000	0.05	0.8	5,200	900	0.03	0.8
		20	5	6,000	1,200	0.06	1	4,500	800	0.05	0.8	4,000	650	0.03	0.8
	0.3	8	2	8,500	1,800	0.08	1	7,000	1,300	0.06	0.8	5,500	1,000	0.036	0.8
		12	3	8,500	1,800	0.07	1	7,000	1,300	0.05	0.8	5,500	1,000	0.03	0.8
		16	4	7,500	1,500	0.06	1	5,500	1,000	0.05	0.8	5,200	900	0.03	0.8
		20	5	6,000	1,200	0.06	1	4,500	800	0.05	0.8	4,000	650	0.03	0.8
	0.5	8	2	8,500	1,800	0.08	1	7,000	1,300	0.06	0.8	5,500	1,000	0.036	0.8
		12	3	8,500	1,800	0.07	1	7,000	1,300	0.05	0.8	5,500	1,000	0.03	0.8
		16	4	7,500	1,500	0.06	1	5,500	1,000	0.05	0.8	5,200	900	0.03	0.8
		20	5	6,000	1,200	0.06	1	4,500	800	0.05	0.8	4,000	650	0.03	0.8

切削参数参考表
Recommended Milling Conditions

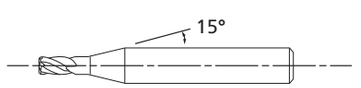
加工材料 Work Material				高速钢·高硬度钢 High Speed Steels / Hardened Steels SKH51·SKD11（～62HRC）				高速钢 High Speed Steels SKH55·HAP40（～66HRC）				高速钢 High Speed Steels SKH57·HAP72（～70HRC）			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	外径与颈长之比 L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm
5	0.1	15	3	7,000	1,700	0.08	1.6	5,500	1,300	0.06	1.2	4,400	900	0.036	1.2
		20	4	6,000	1,400	0.07	1.6	5,000	1,100	0.05	1.2	4,000	750	0.03	1.2
	0.2	15	3	7,000	1,700	0.08	1.6	5,500	1,300	0.06	1.2	4,400	900	0.036	1.2
		20	4	6,000	1,400	0.07	1.6	5,000	1,100	0.05	1.2	4,000	750	0.03	1.2
	0.3	15	3	7,000	1,700	0.08	1.6	5,500	1,300	0.06	1.2	4,400	900	0.036	1.2
		20	4	6,000	1,400	0.07	1.6	5,000	1,100	0.05	1.2	4,000	750	0.03	1.2
	0.5	15	3	7,000	1,700	0.08	1.6	5,500	1,300	0.06	1.2	4,400	900	0.036	1.2
		20	4	6,000	1,400	0.07	1.6	5,000	1,100	0.05	1.2	4,000	750	0.03	1.2
6	0.1	12	2	5,500	1,800	0.08	2	4,500	1,400	0.06	1.5	3,600	1,000	0.036	1.5
		18	3	5,000	1,500	0.08	2	4,000	1,100	0.06	1.5	3,000	800	0.036	1.5
		24	4	4,500	1,300	0.07	2	3,500	900	0.05	1.5	2,700	700	0.036	1.5
		30	5	3,000	800	0.07	2	3,000	650	0.05	1.5	2,300	500	0.03	1.5
	0.2	12	2	5,500	1,800	0.08	2	4,500	1,400	0.06	1.5	3,600	1,000	0.036	1.5
		18	3	5,000	1,500	0.08	2	4,000	1,100	0.06	1.5	3,000	800	0.036	1.5
		24	4	4,500	1,300	0.07	2	3,500	900	0.05	1.5	2,700	700	0.036	1.5
		30	5	3,000	800	0.07	2	3,000	650	0.05	1.5	2,300	500	0.03	1.5
	0.3	12	2	5,500	1,800	0.08	2	4,500	1,400	0.06	1.5	3,600	1,000	0.036	1.5
		18	3	5,000	1,500	0.08	2	4,000	1,100	0.06	1.5	3,000	800	0.036	1.5
		24	4	4,500	1,300	0.07	2	3,500	900	0.05	1.5	2,700	700	0.036	1.5
		30	5	3,000	800	0.07	2	3,000	650	0.05	1.5	2,300	500	0.03	1.5
	0.5	12	2	5,500	1,800	0.08	2	4,500	1,400	0.06	1.5	3,600	1,000	0.036	1.5
		18	3	5,000	1,500	0.08	2	4,000	1,100	0.06	1.5	3,000	800	0.036	1.5
		24	4	4,500	1,300	0.07	2	3,500	900	0.05	1.5	2,700	700	0.036	1.5
		30	5	3,000	800	0.07	2	3,000	650	0.05	1.5	2,300	500	0.03	1.5
	1	12	2	5,500	1,800	0.08	2	4,500	1,400	0.06	1.5	3,600	1,000	0.036	1.5
		18	3	5,000	1,500	0.08	2	4,000	1,100	0.06	1.5	3,000	800	0.036	1.5
		24	4	4,500	1,300	0.07	2	3,500	900	0.05	1.5	2,700	700	0.036	1.5
		30	5	3,000	800	0.07	2	3,000	650	0.05	1.5	2,300	500	0.03	1.5

备 注
Notes

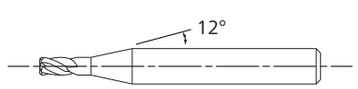
※1 切深量的ap表示轴向切深量，ae表示径向切深量。
※2 请根据机床刚性和工件的夹持状态等调整切削参数。
※3 发生振刀等情况时，请根据需要调整切削参数。
※4 R角等切削阻力大的部位，请特别注意参数设定和刀路轨迹等。
※5 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※6 沟槽切削时建议参考切削参数表，切深量ap 及进给速度设定为50%以下，并采用来回切削加工方式。
※7 请以相同的比率调整主轴转速和进给速度。
※8 刀具的夹持方法建议采用热缩刀柄型。使用弹簧筒夹型等夹持方法时，请确认最小夹持长度。
※9 建议使用油雾冷却方式。

※1 Depth of Cut : ap = Axial Depth of Cut / ae = Radial Depth of Cut.
※2 Adjust milling condition according to machine rigidity and clamp condition of work material.
※3 In case of chattering etc., please adjust cutting conditions if necessary.
※4 At point where cutting load is high such as at corners, pay attention to setting cutting conditions and tool paths particularly.
※5 Recommend to apply helical or ramping for approaching into axial direction.
※6 For slotting, recommend reciprocating milling by adjusting feed & ap in below 50% of recommended milling condition.
※7 Adjust both spindle speed and feed at the same rate.
※8 A shrink fit type is recommended for tool holder. When using collet type or others, strictly adhere to minimum gripping length.
※9 We recommend using oil mist coolant.

MHRSH430RSF的颈角（γ）为15°。本公司其他产品的颈角（γ）为12°。
Neck taper angle (γ) of MHRSH430RSF is 15°. Our other products have a neck taper angle (γ) of 12°.



MHRSH430RSF



本公司其他产品的颈角为 12°
Our other products have a neck taper angle (γ) of 12°

MHRH230R

规格 Size ϕ 0.2 × R0.02 ～ ϕ 0.9 × R0.1

Premium ≦65 HRC

无限白金涂层 高硬度钢材用2刃长颈圆鼻铣刀

MUGEN COATING PREMIUM 2-Flute Long Neck Corner Radius End Mill for Hardened Steel

共有97种规格
Total 97 sizes

MHRH230R

无限白金涂层 高硬度钢材用2刃长颈圆鼻铣刀
MUGEN COATING PREMIUM 2-Flute Long Neck Corner Radius End Mill for Hardened Steel

圆鼻 长颈 Long Neck / Corner Radius 涂层 Coating

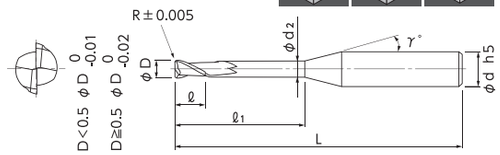
可对应调质钢、高硬度钢（～65HRC）的长颈圆鼻铣刀。L/D最大约16倍

Long neck corner radius end mill
for prehardened steels and hardened steels(≦65HRC). Maximum L/D=16

MG | 2 | 30° | Corner R ±0.005 | φd h5

Side | Slot | Face

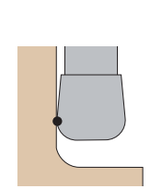




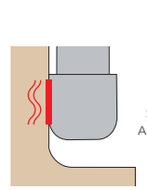
- 采用高硬度钢用无限白金涂层与倒锥新形状，耐崩刃性优异并可有效抑制振刀，从而提高了加工面的加工精度。
- MUGEN COATING PREMIUM for hardened steels and unique new design excel in chipping prevention and resolve chattering to realize excellent finished surface.

[颈部形状]
所述的颈角（γ）的值仅为参考值。如果担心加工材料和颈部会干涉时，请务必实际测量进行确认。

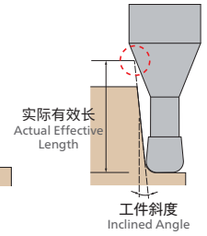
〔Neck Shape〕
(γ) is reference value.Tool measurement required in order to avoid interference to the work material.



单点切削，不易振刀！
Suppress chattering by point milling



普通铣刀
General End Mill



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
08-00227-02021	0.2	R0.02	0.5	0.15	0.18	12°	4	45	10,600	0.56	0.59	0.62	0.65	0.71
08-00227-02023			1					45	10,600	1.09	1.13	1.19	1.24	1.38
08-00227-02025			1.5					45	12,500	1.61	1.68	1.76	1.84	2.04
08-00227-02027			2					45	13,700	2.13	2.22	2.33	2.44	2.71
08-00227-02051		R0.05	0.5					45	10,600	0.56	0.59	0.61	0.64	0.70
08-00227-02053			1					45	10,600	1.08	1.13	1.18	1.24	1.37
08-00227-02055			1.5					45	12,500	1.61	1.68	1.75	1.84	2.03
08-00227-02057			2					45	13,700	2.13	2.22	2.32	2.43	2.70
08-00227-03021	0.3	R0.02	1	0.25	0.28	12°	4	45	10,300	1.09	1.13	1.19	1.24	1.38
08-00227-03022			1.5					45	10,300	1.61	1.68	1.76	1.84	2.04
08-00227-03023			2					45	10,300	2.13	2.22	2.33	2.44	2.71
08-00227-03024			2.5					45	12,900	2.65	2.77	2.90	3.04	3.37
08-00227-03025			3					45	12,900	3.17	3.31	3.47	3.64	4.03
08-00227-03051		R0.05	1					45	10,300	1.08	1.13	1.18	1.24	1.37
08-00227-03052			1.5					45	10,300	1.61	1.68	1.75	1.84	2.03
08-00227-03053			2					45	10,300	2.13	2.22	2.32	2.43	2.70
08-00227-03054			2.5					45	12,900	2.65	2.77	2.89	3.03	3.36
08-00227-03055			3					45	12,900	3.17	3.31	3.46	3.63	4.02
08-00227-04021	0.4	R0.02	1	0.3	0.37	12°	4	45	6,800	1.11	1.16	1.21	1.27	1.41
08-00227-04022			1.5					45	6,800	1.63	1.70	1.78	1.87	2.07
08-00227-04023			2					45	6,800	2.15	2.25	2.35	2.47	2.74
08-00227-04024			2.5					45	6,800	2.67	2.79	2.92	3.07	3.40
08-00227-04025			3					45	6,800	3.20	3.34	3.49	3.67	4.06
08-00227-04027			4					45	6,800	4.24	4.43	4.63	4.86	5.39
08-00227-04051		R0.05	1					45	6,800	1.11	1.16	1.21	1.27	1.40
08-00227-04052			1.5					45	6,800	1.63	1.70	1.78	1.86	2.06
08-00227-04053			2					45	6,800	2.15	2.25	2.35	2.46	2.73
08-00227-04054			2.5					45	6,800	2.67	2.79	2.92	3.06	3.39
08-00227-04055			3					45	6,800	3.19	3.34	3.49	3.66	4.05
08-00227-04057			4					45	6,800	4.24	4.43	4.63	4.86	5.38
08-00227-04101		R0.1	1					45	6,800	1.11	1.15	1.20	1.26	1.38
08-00227-04103			2					45	6,800	2.15	2.24	2.34	2.45	2.71
08-00227-04105			3					45	6,800	3.19	3.33	3.48	3.65	4.04
08-00227-04107			4					45	6,800	4.24	4.42	4.62	4.85	5.36
08-00227-05021	0.5	R0.02	1	0.4	0.46	12°	4	45	5,600	1.14	1.19	1.24	1.30	1.44
08-00227-05022			2					45	5,600	2.18	2.27	2.38	2.50	2.77
08-00227-05023			3					45	5,600	3.22	3.36	3.52	3.69	4.10
08-00227-05024			4					45	5,600	4.26	4.45	4.66	4.89	5.42
08-00227-05025			5					45	5,600	5.31	5.54	5.80	6.09	6.75
08-00227-05026			6					45	5,600	6.35	6.63	6.94	7.28	8.08
08-00227-05051		R0.05	1					45	5,600	1.13	1.18	1.24	1.29	1.43
08-00227-05052			2					45	5,600	2.18	2.27	2.38	2.49	2.76
08-00227-05053			3					45	5,600	3.22	3.36	3.52	3.69	4.09
08-00227-05054			4					45	5,600	4.26	4.45	4.66	4.88	5.41
08-00227-05055			5					45	5,600	5.31	5.54	5.80	6.08	6.74
08-00227-05056			6					45	5,600	6.35	6.63	6.94	7.28	8.07
08-00227-05101	0.5	R0.1	1	0.4	0.46	12°	4	45	5,600	1.13	1.18	1.23	1.28	1.41
08-00227-05102			2					45	5,600	2.17	2.27	2.37	2.48	2.74
08-00227-05103			3					45	5,600	3.22	3.36	3.51	3.68	4.07
08-00227-05104			4					45	5,600	4.26	4.45	4.65	4.87	5.40
08-00227-05105			5					45	5,600	5.30	5.54	5.79	6.07	6.72
08-00227-05106			6					45	5,600	6.35	6.63	6.93	7.27	8.05
08-00227-06021	0.6	R0.02	2	0.5	0.56	12°	4	45	6,000	2.18	2.27	2.38	2.50	2.77
08-00227-06023			4					45	6,000	4.26	4.45	4.66	4.89	5.42
08-00227-06025			6					45	6,000	6.35	6.63	6.94	7.28	8.08
08-00227-06027			8					50	6,200	8.43	8.81	9.22	9.68	10.73
08-00227-06029			10					50	6,200	10.52	10.99	11.50	12.07	13.39
08-00227-06051		R0.05	2					45	6,000	2.18	2.27	2.38	2.49	2.76
08-00227-06053			4					45	6,000	4.26	4.45	4.66	4.88	5.41
08-00227-06055			6					45	6,000	6.35	6.63	6.94	7.28	8.07
08-00227-06057			8					50	6,200	8.43	8.81	9.22	9.67	10.72
08-00227-06059			10					50	6,200	10.52	10.99	11.50	12.06	13.38
08-00227-06101		R0.1	2					45	5,600	2.17	2.27	2.37	2.48	2.74
08-00227-06103			4					45	5,600	4.26	4.45	4.65	4.87	5.40
08-00227-06105			6					45	5,600	6.35	6.63	6.93	7.27	8.05
08-00227-06107			8					50	5,800	8.43	8.80	9.21	9.66	10.71
08-00227-06109			10					50	5,800	10.52	10.98	11.49	12.05	13.36
08-00227-07020	0.7	R0.02	2	0.55	0.66	12°	4	45	6,300	2.18	2.27	2.38	2.50	2.77
08-00227-07021			4					45	6,300	4.26	4.45	4.66	4.89	5.42
08-00227-07023			6					45	6,300	6.35	6.63	6.94	7.28	8.08
08-00227-07050		R0.05	2					45	6,300	2.18	2.27	2.38	2.49	2.76
08-00227-07051			4					45	6,300	4.26	4.45	4.66	4.88	5.41
08-00227-07053			6					45	6,300	6.35	6.63	6.94	7.28	8.07
08-00227-07100		R0.1	2					45	6,300	2.17	2.27	2.37	2.48	2.74
08-00227-07101			4					45	6,300	4.26	4.45	4.65	4.87	5.40
08-00227-07103			6					45	6,300	6.35	6.63	6.93	7.27	8.05
08-00227-08020	0.8	R0.02	2	0.65	0.76	12°	4	45	6,300	2.18	2.27	2.38	2.50	2.77
08-00227-08021			4					45	6,300	4.26	4.45	4.66	4.89	5.42
08-00227-08023			6					45	6,300	6.35	6.63	6.94	7.28	8.08
08-00227-08025			8					50	6,500	8.43	8.81	9.22	9.68	10.73
08-00227-08050		R0.05	2					45	6,300	2.18	2.27	2.38	2.49	2.76
08-00227-08051			4					45	6,300	4.26	4.45	4.66	4.88	5.41
08-00227-08053			6					45	6,300	6.35	6.63	6.94	7.28	8.07
08-00227-08055			8					50	6,500	8.43	8.81	9.22	9.67	10.72
08-00227-08059			12					50	6,500	12.60	13.17	13.78	14.46	16.03
08-00227-08100		R0.1	2					45	6,300	2.17	2.27	2.37	2.48	2.74
08-00227-08101			4					45	6,300	4.26	4.45	4.65	4.87	5.40
08-00227-08103			6					45	6,300	6.35	6.63	6.93	7.27	8.05
08-00227-08105			8					50	6,500	8.43	8.80	9.21	9.66	10.71
08-00227-08109			12					50	6,500	12.60	13.16	13.77	14.45	16.01
08-00227-08200		R0.2	2					45	6,300	2.17	2.26	2.36	2.46	2.71
08-00227-08201			4					45	6,300	4.26	4.44	4.64	4.85	5.36
08-00227-08203			6					45	6,300	6.34	6.62	6.92	7.25	8.02
08-00227-08205			8					50	6,500	8.43	8.80	9.20	9.64	10.67
08-00227-08209			12					50	6,500	12.60	13.15	13.76	14.43	15.98
08-00227-09101	0.9	R0.1	4	0.7	0.85	12°	4	45	7,100	4.28	4.47	4.68	4.90	5.43
08-00227-09105			8					50	7,100	8.46	8.83	9.24	9.69	10.74

P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
H ～60 HRC 高硬度钢 Hardened Steel
H ～65 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列 无限白金涂层 长颈造型 Regular Line MUGEN PREMIUM Long Neck Type

订购方法 How to Order

请指定MHRH230R 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate MHRH230R (D)×(R)×(ℓ1).

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			调质钢 Prehardened Steels HPM・NAK (～42HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm
0.2	0.02	0.5	30,000	240	0.005	0.05	30,000	200	0.003	0.04	30,000	160	0.003	0.02	30,000	120	0.003	0.01
		1	30,000	180	0.005	0.05	30,000	150	0.003	0.04	30,000	120	0.002	0.02	30,000	80	0.002	0.01
		1.5	30,000	120	0.004	0.05	30,000	100	0.002	0.04	30,000	80	0.002	0.02	30,000	60	0.001	0.01
		2	30,000	70	0.003	0.05	30,000	50	0.002	0.04	30,000	40	0.001	0.02	30,000	30	0.001	0.01
	0.05	0.5	30,000	240	0.01	0.05	30,000	200	0.003	0.04	30,000	160	0.003	0.02	30,000	120	0.003	0.01
		1	30,000	180	0.007	0.05	30,000	150	0.003	0.04	30,000	120	0.003	0.02	30,000	80	0.003	0.01
		1.5	30,000	120	0.005	0.05	30,000	100	0.002	0.04	30,000	80	0.002	0.02	30,000	60	0.002	0.01
		2	30,000	70	0.003	0.05	30,000	50	0.002	0.04	30,000	40	0.002	0.02	30,000	30	0.002	0.01
0.3	0.02	1	30,000	350	0.015	0.1	30,000	300	0.003	0.08	30,000	250	0.003	0.04	30,000	200	0.003	0.03
		1.5	30,000	240	0.01	0.1	30,000	200	0.003	0.08	30,000	160	0.003	0.04	30,000	120	0.003	0.03
		2	30,000	180	0.007	0.1	30,000	150	0.003	0.08	30,000	120	0.003	0.04	25,000	100	0.003	0.03
		2.5	30,000	150	0.005	0.1	25,000	100	0.002	0.08	25,000	80	0.002	0.04	20,000	60	0.002	0.03
		3	30,000	70	0.004	0.1	25,000	50	0.002	0.08	25,000	40	0.002	0.04	20,000	30	0.002	0.03
	0.05	1	30,000	350	0.02	0.1	30,000	300	0.003	0.08	30,000	250	0.003	0.04	30,000	200	0.003	0.03
		1.5	30,000	240	0.015	0.1	30,000	200	0.003	0.08	30,000	160	0.003	0.04	30,000	120	0.003	0.03
		2	30,000	180	0.01	0.1	30,000	150	0.003	0.08	30,000	120	0.003	0.04	25,000	100	0.003	0.03
		2.5	30,000	150	0.007	0.1	25,000	100	0.002	0.08	25,000	80	0.002	0.04	20,000	60	0.002	0.03
		3	30,000	70	0.005	0.1	25,000	50	0.002	0.08	25,000	40	0.002	0.04	20,000	30	0.002	0.03
0.4	0.02	1	30,000	450	0.015	0.12	30,000	400	0.005	0.1	28,000	350	0.005	0.05	25,000	300	0.004	0.04
		1.5	30,000	400	0.012	0.12	30,000	350	0.005	0.1	28,000	300	0.005	0.05	25,000	260	0.004	0.04
		2	30,000	360	0.01	0.12	30,000	300	0.005	0.1	25,000	250	0.005	0.05	25,000	220	0.003	0.04
		2.5	30,000	340	0.008	0.12	28,000	280	0.004	0.1	25,000	240	0.004	0.05	20,000	180	0.003	0.04
		3	30,000	320	0.008	0.12	25,000	250	0.004	0.1	23,000	220	0.003	0.05	18,000	160	0.002	0.04
		4	30,000	250	0.006	0.12	25,000	200	0.003	0.1	20,000	160	0.002	0.05	18,000	120	0.002	0.04
	0.05	1	30,000	450	0.025	0.12	30,000	400	0.005	0.1	28,000	350	0.005	0.05	25,000	300	0.005	0.04
		1.5	30,000	400	0.022	0.12	30,000	350	0.005	0.1	28,000	300	0.005	0.05	25,000	260	0.005	0.04
		2	30,000	360	0.02	0.12	30,000	300	0.005	0.1	25,000	250	0.005	0.05	25,000	220	0.005	0.04
		2.5	30,000	340	0.015	0.12	28,000	280	0.004	0.1	25,000	240	0.004	0.05	20,000	180	0.004	0.04
		3	30,000	320	0.015	0.12	25,000	250	0.004	0.1	23,000	220	0.003	0.05	18,000	160	0.003	0.04
		4	30,000	250	0.01	0.12	25,000	200	0.003	0.1	20,000	160	0.002	0.05	18,000	120	0.002	0.04
	0.1	1	30,000	450	0.025	0.12	30,000	400	0.005	0.1	28,000	350	0.005	0.05	25,000	300	0.005	0.04
		2	30,000	360	0.02	0.12	30,000	300	0.005	0.1	25,000	250	0.005	0.05	25,000	220	0.005	0.04
		3	30,000	320	0.015	0.12	25,000	250	0.004	0.1	23,000	220	0.003	0.05	18,000	160	0.003	0.04
		4	30,000	250	0.01	0.12	25,000	200	0.003	0.1	20,000	160	0.002	0.05	18,000	120	0.002	0.04
0.5	0.02	1	30,000	600	0.016	0.14	25,000	500	0.008	0.15	23,000	450	0.006	0.1	20,000	400	0.004	0.08
		2	30,000	500	0.014	0.14	25,000	420	0.007	0.15	23,000	360	0.005	0.1	20,000	300	0.003	0.08
		3	30,000	420	0.012	0.14	25,000	350	0.006	0.15	23,000	320	0.004	0.1	20,000	280	0.003	0.08
		4	25,000	380	0.01	0.14	25,000	300	0.004	0.15	23,000	240	0.002	0.1	20,000	180	0.002	0.08
		5	25,000	300	0.008	0.14	20,000	200	0.003	0.15	18,000	150	0.002	0.1	16,000	100	0.002	0.08
		6	25,000	250	0.004	0.14	20,000	160	0.002	0.15	18,000	100	0.001	0.1	16,000	70	0.001	0.08
	0.05 0.1	1	30,000	600	0.03	0.14	25,000	500	0.01	0.15	23,000	450	0.007	0.1	20,000	400	0.005	0.08
		2	30,000	500	0.025	0.14	25,000	420	0.01	0.15	23,000	360	0.007	0.1	20,000	300	0.005	0.08
		3	30,000	420	0.02	0.14	25,000	350	0.008	0.15	23,000	320	0.005	0.1	20,000	280	0.003	0.08
		4	25,000	380	0.015	0.14	25,000	300	0.005	0.15	23,000	240	0.003	0.1	20,000	180	0.002	0.08
		5	25,000	300	0.01	0.14	20,000	200	0.004	0.15	18,000	150	0.003	0.1	16,000	100	0.002	0.08
		6	25,000	250	0.008	0.14	20,000	160	0.003	0.15	18,000	100	0.002	0.1	16,000	70	0.001	0.08

加工材料 Work Material			调质钢 Prehardened Steels HPM・NAK (～42HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm
0.6	0.02	2	30,000	600	0.016	0.2	25,000	500	0.012	0.2	23,000	400	0.006	0.15	20,000	320	0.004	0.1
		4	25,000	450	0.012	0.2	23,000	400	0.007	0.2	20,000	300	0.004	0.15	18,000	200	0.003	0.1
		6	23,000	300	0.008	0.2	20,000	200	0.005	0.2	18,000	150	0.003	0.15	12,000	100	0.002	0.1
		8	18,000	200	0.006	0.2	16,000	150	0.003	0.2	14,000	100	0.001	0.15	10,000	80	0.001	0.1
		10	16,000	120	0.003	0.2	14,000	100	0.001	0.2	12,000	80	0.001	0.15	8,000	50	0.001	0.1
	0.05 0.1	2	30,000	600	0.035	0.2	25,000	500	0.02	0.2	23,000	400	0.01	0.15	20,000	320	0.007	0.1
		4	25,000	450	0.025	0.2	23,000	400	0.015	0.2	20,000	300	0.007	0.15	18,000	200	0.005	0.1
		6	23,000	300	0.015	0.2	20,000	200	0.008	0.2	18,000	150	0.005	0.15	12,000	100	0.003	0.1
		8	18,000	200	0.01	0.2	16,000	150	0.005	0.2	14,000	100	0.002	0.15	10,000	80	0.001	0.1
		10	16,000	120	0.005	0.2	14,000	100	0.002	0.2	12,000	80	0.001	0.15	8,000	50	0.001	0.1
0.7	0.02	2	30,000	900	0.016	0.25	25,000	700	0.012	0.25	23,000	600	0.006	0.15	20,000	450	0.003	0.12
		4	28,000	700	0.012	0.25	25,000	600	0.008	0.25	23,000	500	0.005	0.15	20,000	350	0.002	0.12
		6	25,000	500	0.008	0.25	20,000	350	0.005	0.25	18,000	250	0.003	0.15	16,000	200	0.002	0.12
	0.05 0.1	2	30,000	900	0.04	0.25	25,000	700	0.03	0.25	23,000	600	0.015	0.15	20,000	450	0.01	0.12
		4	28,000	700	0.03	0.25	25,000	600	0.02	0.25	23,000	500	0.01	0.15	20,000	350	0.007	0.12
		6	25,000	500	0.02	0.25	20,000	350	0.01	0.25	18,000	250	0.007	0.15	16,000	200	0.005	0.12
0.8	0.02	2	28,000	1,000	0.016	0.3	25,000	800	0.014	0.25	23,000	700	0.006	0.16	20,000	500	0.005	0.14
		4	28,000	900	0.012	0.3	25,000	700	0.008	0.25	23,000	600	0.005	0.16	20,000	400	0.003	0.14
		6	23,000	700	0.009	0.3	20,000	550	0.006	0.25	18,000	450	0.004	0.16	16,000	320	0.002	0.14
		8	18,000	500	0.006	0.3	16,000	400	0.003	0.25	14,000	300	0.002	0.16	12,000	200	0.002	0.14
	0.05 0.1 0.2	2	28,000	1,000	0.05	0.3	25,000	800	0.03	0.25	23,000	700	0.02	0.16	20,000	500	0.015	0.14
		4	28,000	900	0.045	0.3	25,000	700	0.025	0.25	23,000	600	0.015	0.16	20,000	400	0.01	0.14
		6	23,000	700	0.03	0.3	20,000	550	0.02	0.25	18,000	450	0.01	0.16	16,000	320	0.007	0.14
		8	18,000	500	0.02	0.3	16,000	400	0.01	0.25	14,000	300	0.005	0.16	12,000	200	0.005	0.14
		12	16,000	300	0.007	0.3	14,000	200	0.005	0.25	12,000	120	0.003	0.16	10,000	80	0.001	0.14
0.9	0.1	4	25,000	1,100	0.05	0.3	25,000	850	0.03	0.3	20,000	700	0.02	0.2	18,000	600	0.01	0.15
		8	18,000	500	0.03	0.3	16,000	400	0.01	0.3	14,000	350	0.008	0.2	10,000	250	0.005	0.15

备 注 Notes

※1 请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 切削高硬度钢时，建议使用油雾冷却方式。
※4 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※5 L（颈长）/D（外径）超过8倍时，立面附近的进给速度须调整至50%以下，切深量：ae调整至30%以下。
※6 沟槽切削时建议参考切削参数表，切深量ap及进给速度设定为50%以下，并采用来回切削加工方式。
※7 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。

※1 Adjust milling conditions according to milling shape and machine type.
※2 ap : Axial Depth of Cut, ae : Radial Depth of Cut.
※3 Recommend to use oil mist coolant for machining hardened steels.
※4 Recommend to apply helical or ramping for approaching into axial direction.
※5 Adjust feed rate 50% lower and cutting depth (ae) 30% lower for milling deep wall area when L/D exceeds 8 for stable milling.
※6 For slotting, recommend reciprocating milling by adjusting feed & ap in below 50% of recommended milling condition.
※7 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.

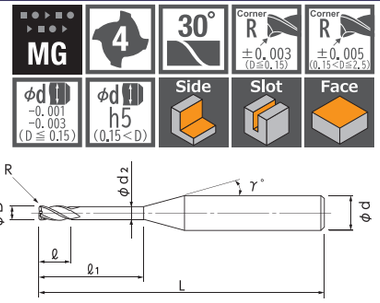
圆鼻 Corner Radius
长颈 Long Neck
涂层 Coating

P 调质钢 Prehardened Steel
H ～52 高硬度钢 HRC Hardened Steel
H ～60 高硬度钢 HRC Hardened Steel
H ～65 高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy

常规系列
无限白金涂层
长颈造型
Regular Line
MUGEN PREMIUM
Long Neck Type

可对应调质钢、高硬度钢（～65HRC）的长颈圆鼻铣刀 丰富的尺寸规格增加至共450种规格

Long neck corner radius end mill supports machining from prehardened steels to hardened steels (～65HRC)
Abundant size variations with total 450 sizes







- 采用高硬度钢用的无限白金涂层与新刀具设计提升耐崩损性、抑制振刀现象进而提升精加工面品质。
- 可进行高效率加工的4刃造型铣刀。
- 4刃造型最小径从φ0.1 ～φ6，共450种规格。
- MUGEN COATING PREMIUM for hardened steels and unique new design excel in chipping prevention and resolve chattering to realize excellent finished surface.
- 4 flutes end mill for higher efficiency.
- 4 flute end mill has 450 sizes in total that lineup from the smallest diameter φ 0.1 to φ 6.

φ0.1～φ0.3为底刃中心没有刃口。请留意此设计并注意加工余量。
Beware of stocks because there is no blade to the shaft center of end teeth of φ0.1 to φ0.3.

规格 Size	外径公差 Diameter Tolerance	角半径公差 Corner R Tolerance	柄径公差 Shank Dia. Tolerance
D≦0.15	0 -0.007	±0.003	-0.001 -0.003
0.15<D<0.5	0 -0.01	±0.005	h5
0.5≦D≦2.5	0 -0.02		
D>2.5		±0.01	

◆ 新增加规格
★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

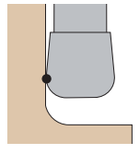
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00237-01013	0.1	R0.01	0.3	0.08	0.085	12°	4	45	15,400	0.34	0.36	0.38	0.39	0.44
08-00237-01015			0.5					45	16,200	0.55	0.58	0.60	0.63	0.70
08-00237-01512	0.15	R0.01	0.3	0.12	0.135	12°	4	45	14,300	0.34	0.36	0.38	0.39	0.44
08-00237-01513			0.5					45	14,800	0.55	0.58	0.60	0.63	0.70
08-00237-01515			0.75					45	15,300	0.81	0.85	0.89	0.93	1.03
08-00237-01517			1					45	15,900	1.07	1.12	1.17	1.23	1.37
08-00237-01522		R0.02	0.3					45	14,300	0.34	0.36	0.37	0.39	0.43
08-00237-01523			0.5					45	14,800	0.55	0.58	0.60	0.63	0.70
08-00237-01525			0.75					45	15,300	0.81	0.85	0.89	0.93	1.03
08-00237-01527			1					45	15,900	1.07	1.12	1.17	1.23	1.36
◆ 08-00237-02020	0.2	R0.02	0.3	0.15	0.18	12°	4	45	14,300	0.36	0.37	0.39	0.41	0.45
08-00237-02021			0.5					45	14,300	0.56	0.59	0.62	0.65	0.71
08-00237-02023			1					45	14,300	1.09	1.13	1.19	1.24	1.38
08-00237-02025			1.5					45	16,800	1.61	1.68	1.76	1.84	2.04
08-00237-02027			2					45	18,400	2.13	2.22	2.33	2.44	2.71
◆ 08-00237-02050		R0.05	0.3					45	14,300	0.35	0.37	0.38	0.40	0.44
08-00237-02051			0.5					45	14,300	0.56	0.59	0.61	0.64	0.71
08-00237-02053			1					45	14,300	1.08	1.13	1.18	1.24	1.37
08-00237-02055			1.5					45	16,800	1.61	1.68	1.75	1.84	2.03
08-00237-02057			2					45	18,400	2.13	2.22	2.32	2.43	2.70
◆ 08-00237-03020	0.3	R0.02	0.5	0.25	0.28	12°	4	45	13,900	0.56	0.59	0.62	0.65	0.71
08-00237-03021			1					45	13,900	1.09	1.13	1.19	1.24	1.38
08-00237-03022			1.5					45	13,900	1.61	1.68	1.76	1.84	2.04
08-00237-03023			2					45	13,900	2.13	2.22	2.33	2.44	2.71
08-00237-03024			2.5					45	17,300	2.65	2.77	2.90	3.04	3.37
08-00237-03025			3					45	17,300	3.17	3.31	3.47	3.64	4.03
◆ 08-00237-03050		R0.05	0.5					45	13,900	0.56	0.59	0.61	0.64	0.71
08-00237-03051			1					45	13,900	1.08	1.13	1.18	1.24	1.37
08-00237-03052			1.5					45	13,900	1.61	1.68	1.75	1.84	2.03
08-00237-03053			2					45	13,900	2.13	2.22	2.32	2.43	2.70
08-00237-03054			2.5					45	17,300	2.65	2.77	2.89	3.03	3.36
08-00237-03055			3					45	17,300	3.17	3.31	3.46	3.63	4.02

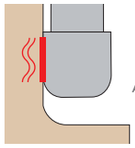
订购方法 How to Order

请指定MHRH430R 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate MHRH430R (D)×(R)×(ℓ1).

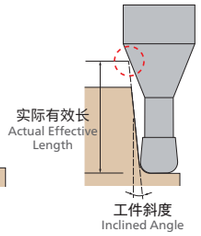
※(γ)为参考值。
※(γ) is reference value.



单点切削，不易振刀！
Suppress chattering by point milling



普通铣刀
General End Mill

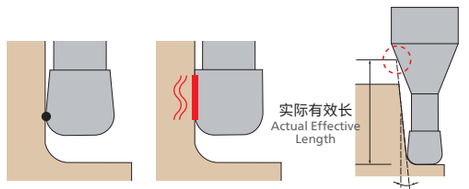


工件斜度
Inclined Angle

◆ 新增加规格
★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm/价格：日元] Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00237-04020	0.4	R0.02	0.5	0.3	0.37	12°	4	45	9,200	0.59	0.61	0.64	0.67	0.75
08-00237-04021			1					45	9,200	1.11	1.16	1.21	1.27	1.41
08-00237-04022			1.5					45	9,200	1.63	1.70	1.78	1.87	2.07
08-00237-04023			2					45	9,200	2.15	2.25	2.35	2.47	2.74
08-00237-04024			2.5					45	9,200	2.67	2.79	2.92	3.07	3.40
08-00237-04025			3					45	9,200	3.20	3.34	3.49	3.67	4.06
08-00237-04027			4					45	9,200	4.24	4.43	4.63	4.86	5.39
◆ 08-00237-04050		R0.05	0.5					45	9,200	0.59	0.61	0.64	0.67	0.74
08-00237-04051			1					45	9,200	1.11	1.16	1.21	1.27	1.40
08-00237-04052			1.5					45	9,200	1.63	1.70	1.78	1.86	2.06
08-00237-04053			2					45	9,200	2.15	2.25	2.35	2.46	2.73
08-00237-04054			2.5					45	9,200	2.67	2.79	2.92	3.06	3.39
08-00237-04055			3					45	9,200	3.19	3.34	3.49	3.66	4.05
08-00237-04057			4					45	9,200	4.24	4.43	4.63	4.86	5.38
08-00237-04101		R0.1	1					45	9,200	1.11	1.15	1.20	1.26	1.38
08-00237-04103			2					45	9,200	2.15	2.24	2.34	2.45	2.71
08-00237-04105			3					45	9,200	3.19	3.33	3.48	3.65	4.04
08-00237-04107			4					45	9,200	4.24	4.42	4.62	4.85	5.37
08-00237-05021	0.5	R0.02	1	0.4	0.46	12°	4	45	7,600	1.14	1.19	1.24	1.30	1.44
08-00237-05022			2					45	7,600	2.18	2.27	2.38	2.50	2.77
08-00237-05023			3					45	7,600	3.22	3.36	3.52	3.69	4.10
08-00237-05024			4					45	7,600	4.26	4.45	4.66	4.89	5.42
08-00237-05025			5					45	7,600	5.31	5.54	5.80	6.09	6.75
08-00237-05026			6					45	7,600	6.35	6.63	6.94	7.28	8.08
08-00237-05051		R0.05	1					45	7,600	1.13	1.18	1.24	1.29	1.43
08-00237-05052			2					45	7,600	2.18	2.27	2.38	2.49	2.76
08-00237-05053			3					45	7,600	3.22	3.36	3.52	3.69	4.09
08-00237-05054			4					45	7,600	4.26	4.45	4.66	4.88	5.41
08-00237-05055			5					45	7,600	5.31	5.54	5.80	6.08	6.74
08-00237-05056			6					45	7,600	6.35	6.63	6.94	7.28	8.07
08-00237-05101		R0.1	1					45	7,600	1.13	1.18	1.23	1.28	1.42
08-00237-05102			2					45	7,600	2.17	2.27	2.37	2.48	2.74
08-00237-05103			3					45	7,600	3.22	3.36	3.51	3.68	4.07
08-00237-05104			4					45	7,600	4.26	4.45	4.65	4.87	5.40
08-00237-05105			5					45	7,600	5.30	5.54	5.79	6.07	6.72
08-00237-05106			6					45	7,600	6.35	6.63	6.93	7.27	8.05
08-00237-06021	0.6	R0.02	2	0.5	0.56	12°	4	45	8,100	2.18	2.27	2.38	2.50	2.77
08-00237-06023			4					45	8,100	4.26	4.45	4.66	4.89	5.42
08-00237-06025			6					45	8,100	6.35	6.63	6.94	7.28	8.08
08-00237-06027			8					50	8,400	8.43	8.81	9.22	9.68	10.73
08-00237-06029			10					50	8,400	10.52	10.99	11.50	12.07	13.39
08-00237-06051		R0.05	2					45	8,100	2.18	2.27	2.38	2.49	2.76
08-00237-06053			4					45	8,100	4.26	4.45	4.66	4.88	5.41
08-00237-06055			6					45	8,100	6.35	6.63	6.94	7.28	8.07
08-00237-06057			8					50	8,400	8.43	8.81	9.22	9.67	10.72
08-00237-06059			10					50	8,400	10.52	10.99	11.50	12.06	13.38
08-00237-06101		R0.1	2					45	7,600	2.17	2.27	2.37	2.48	2.74
08-00237-06103			4					45	7,600	4.26	4.45	4.65	4.87	5.40
08-00237-06105			6					45	7,600	6.35	6.63	6.93	7.27	8.05
08-00237-06107			8					50	7,800	8.43	8.80	9.21	9.66	10.71
08-00237-06109			10					50	7,800	10.52	10.98	11.49	12.05	13.36
08-00237-07020	0.7	R0.02	2	0.55	0.66	12°	4	45	8,500	2.18	2.27	2.38	2.50	2.77
08-00237-07021			4					45	8,500	4.26	4.45	4.66	4.89	5.42
08-00237-07023			6					45	8,500	6.35	6.63	6.94	7.28	8.08
08-00237-07050		R0.05	2					45	8,500	2.18	2.27	2.38	2.49	2.76
08-00237-07051			4					45	8,500	4.26	4.45	4.66	4.88	5.41
08-00237-07053			6					45	8,500	6.35	6.63	6.94	7.28	8.07
08-00237-07100		R0.1	2					45	8,500	2.17	2.27	2.37	2.48	2.74
08-00237-07101			4					45	8,500	4.26	4.45	4.65	4.87	5.40
08-00237-07103			6					45	8,500	6.35	6.63	6.93	7.27	8.05



◆ 新增加规格
★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00237-08020	0.8	R0.02	2	0.65	0.76	12°	4	45	8,500	2.18	2.27	2.38	2.50	2.77
08-00237-08021			4					45	8,500	4.26	4.45	4.66	4.89	5.42
08-00237-08023			6					45	8,500	6.35	6.63	6.94	7.28	8.08
08-00237-08025			8					50	8,800	8.43	8.81	9.22	9.68	10.73
08-00237-08050		R0.05	2					45	8,500	2.18	2.27	2.38	2.49	2.76
08-00237-08051			4					45	8,500	4.26	4.45	4.66	4.88	5.41
08-00237-08053			6					45	8,500	6.35	6.63	6.94	7.28	8.07
08-00237-08055			8					50	8,800	8.43	8.81	9.22	9.67	10.72
08-00237-08059			12					50	8,800	12.60	13.17	13.78	14.46	16.03
08-00237-08100		R0.1	2					45	8,500	2.17	2.27	2.37	2.48	2.74
08-00237-08101			4					45	8,500	4.26	4.45	4.65	4.87	5.40
08-00237-08103			6					45	8,500	6.35	6.63	6.93	7.27	8.05
08-00237-08105			8					50	8,800	8.43	8.80	9.21	9.66	10.71
08-00237-08109			12					50	8,800	12.60	13.16	13.77	14.45	16.01
08-00237-08200		R0.2	2					45	8,500	2.17	2.26	2.36	2.46	2.71
08-00237-08201			4					45	8,500	4.26	4.44	4.64	4.86	5.37
08-00237-08203			6					45	8,500	6.34	6.62	6.92	7.25	8.02
08-00237-08205			8					50	8,800	8.43	8.80	9.20	9.64	10.67
08-00237-08209			12					50	8,800	12.60	13.15	13.76	14.43	15.98
08-00237-09101	0.9	R0.1	4	0.7	0.85	12°	4	45	9,700	4.28	4.47	4.68	4.90	5.43
08-00237-09105			8					50	9,700	8.46	8.83	9.24	9.69	10.74
◆ 08-00237-10024	1	R0.02	1.5	0.8	0.95	12°	4	50	6,500	1.68	1.76	1.84	1.93	2.14
08-00237-10028			2					50	6,500	2.20	2.30	2.41	2.53	2.80
◆ 08-00237-10026			2.5					50	6,500	2.72	2.85	2.98	3.12	3.46
08-00237-10020			3					50	6,500	3.25	3.39	3.55	3.72	4.13
08-00237-10021			4					50	6,500	4.29	4.48	4.69	4.92	5.45
08-00237-10022			5					50	7,100	5.33	5.57	5.83	6.11	6.78
08-00237-10023			6					50	7,100	6.37	6.66	6.97	7.31	8.11
08-00237-10025			8					50	7,100	8.46	8.84	9.25	9.70	10.76
08-00237-10027			10					50	7,100	10.54	11.02	11.53	12.10	13.42
◆ 08-00237-10054		R0.05	1.5					50	6,500	1.68	1.75	1.83	1.92	2.13
08-00237-10058			2					50	6,500	2.20	2.30	2.40	2.52	2.79
◆ 08-00237-10056			2.5					50	6,500	2.72	2.84	2.97	3.12	3.45
08-00237-10050			3					50	6,500	3.24	3.39	3.54	3.72	4.12
08-00237-10051			4					50	6,500	4.29	4.48	4.68	4.91	5.44
08-00237-10052			5					50	7,100	5.33	5.57	5.82	6.11	6.77
08-00237-10053			6					50	7,100	6.37	6.66	6.97	7.31	8.10
08-00237-10055			8					50	7,100	8.46	8.83	9.25	9.70	10.75
08-00237-10057			10					50	7,100	10.54	11.01	11.53	12.09	13.41
◆ 08-00237-10104		R0.1	1.5					50	6,500	1.68	1.75	1.83	1.91	2.11
08-00237-10108			2					50	6,500	2.20	2.29	2.40	2.51	2.77
◆ 08-00237-10106			2.5					50	6,500	2.72	2.84	2.97	3.11	3.44
08-00237-10100			3					50	6,500	3.24	3.38	3.54	3.71	4.10
08-00237-10101			4					50	6,500	4.28	4.47	4.68	4.90	5.43
08-00237-10102			5					50	7,100	5.33	5.56	5.82	6.10	6.76
08-00237-10103			6					50	7,100	6.37	6.65	6.96	7.30	8.08
08-00237-10105			8					50	7,100	8.46	8.83	9.24	9.69	10.74
08-00237-10107			10					50	7,100	10.54	11.01	11.52	12.08	13.39
◆ 08-00237-10204		R0.2	1.5					50	6,500	1.67	1.74	1.81	1.89	2.08
08-00237-10208			2					50	6,500	2.19	2.28	2.38	2.49	2.74
◆ 08-00237-10206			2.5					50	6,500	2.72	2.83	2.95	3.09	3.41
08-00237-10200			3					50	6,500	3.24	3.37	3.52	3.69	4.07
08-00237-10201			4					50	6,500	4.28	4.46	4.66	4.88	5.40
08-00237-10202			5					50	7,100	5.32	5.55	5.80	6.08	6.72
08-00237-10203			6					50	7,100	6.37	6.64	6.94	7.28	8.05
08-00237-10205			8					50	7,100	8.45	8.82	9.23	9.67	10.71
08-00237-10207			10					50	7,100	10.54	11.00	11.51	12.06	13.36

订购方法 How to Order

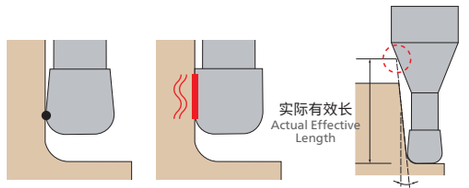
请指定MHRH430R 外径 (D)×角半径 (R)×颈长 (ℓ1)。
When you order, indicate MHRH430R (D)×(R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

◆ 新增加规格
★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00237-10304	1	R0.3	1.5	0.8	0.95	12°	4	50	6,500	1.67	1.73	1.80	1.87	2.05
08-00237-10308			2					50	6,500	2.19	2.28	2.37	2.47	2.71
◆ 08-00237-10306			2.5					50	6,500	2.71	2.82	2.94	3.07	3.37
08-00237-10300			3					50	6,500	3.23	3.36	3.51	3.67	4.04
08-00237-10301			4					50	6,500	4.28	4.45	4.65	4.86	5.36
08-00237-10302			5					50	7,100	5.32	5.54	5.79	6.06	6.69
08-00237-10303			6					50	7,100	6.36	6.63	6.93	7.26	8.02
08-00237-10305			8					50	7,100	8.45	8.81	9.21	9.65	10.67
08-00237-10307			10					50	7,100	10.53	10.99	11.49	12.04	13.33
08-00237-12101	1.2	R0.1	5	1	1.14	12°	4	50	7,400	5.35	5.59	5.84	6.13	6.79
08-00237-12103			10					50	7,400	10.57	11.03	11.55	12.11	13.42
08-00237-12201		R0.2	5					50	7,400	5.35	5.58	5.83	6.11	6.75
08-00237-12203			10					50	7,400	10.56	11.03	11.53	12.09	13.39
08-00237-12301		R0.3	5					50	7,400	5.34	5.57	5.82	6.09	6.72
08-00237-12303			10					50	7,400	10.56	11.02	11.52	12.07	13.36
08-00237-15020	1.5	R0.02	3	1.2	1.43	12°	4	50	6,900	3.29	3.44	3.60	3.78	4.19
08-00237-15021			4					50	6,900	4.34	4.53	4.74	4.97	5.52
08-00237-15023			6					50	6,900	6.42	6.71	7.02	7.37	8.17
08-00237-15025			8					50	7,400	8.51	8.89	9.30	9.76	10.83
◆ 08-00237-15026			10					50	7,400	10.59	11.07	11.59	12.15	13.48
08-00237-15027			12					50	7,400	12.68	13.25	13.87	14.55	16.13
08-00237-15029			15					50	7,400	15.81	16.51	17.29	18.14	20.12
08-00237-15050		R0.05	3					50	6,900	3.29	3.44	3.60	3.77	4.18
08-00237-15051			4					50	6,900	4.34	4.53	4.74	4.97	5.51
08-00237-15053			6					50	6,900	6.42	6.71	7.02	7.36	8.16
08-00237-15055			8					50	7,400	8.51	8.89	9.30	9.76	10.82
◆ 08-00237-15056			10					50	7,400	10.59	11.06	11.58	12.15	13.47
08-00237-15057			12					50	7,400	12.68	13.24	13.86	14.54	16.12
08-00237-15059			15					50	7,400	15.81	16.51	17.28	18.13	20.11
08-00237-15100		R0.1	3					50	6,900	3.29	3.43	3.59	3.76	4.16
08-00237-15101			4					50	6,900	4.33	4.52	4.73	4.96	5.49
08-00237-15103			6					50	6,900	6.42	6.70	7.01	7.35	8.15
08-00237-15105			8					50	7,400	8.50	8.88	9.29	9.75	10.80
◆ 08-00237-15106			10					50	7,400	10.59	11.06	11.57	12.14	13.45
08-00237-15107			12					50	7,400	12.68	13.24	13.85	14.53	16.11
08-00237-15109			15					60	7,400	15.80	16.51	17.28	18.12	20.09
08-00237-15200		R0.2	3					50	6,900	3.29	3.43	3.58	3.74	4.13
08-00237-15201			4					50	6,900	4.33	4.51	4.72	4.94	5.46
08-00237-15203			6					50	6,900	6.42	6.69	7.00	7.33	8.11
08-00237-15205			8					50	7,400	8.50	8.87	9.28	9.73	10.77
◆ 08-00237-15206			10					50	7,400	10.59	11.05	11.56	12.12	13.42
08-00237-15207			12					50	7,400	12.67	13.23	13.84	14.51	16.08
08-00237-15209			15					60	7,400	15.80	16.50	17.26	18.10	20.06
08-00237-15300		R0.3	3					50	6,900	3.28	3.42	3.56	3.72	4.10
08-00237-15301			4					50	6,900	4.33	4.51	4.70	4.92	5.43
08-00237-15303			6					50	6,900	6.41	6.68	6.98	7.31	8.08
08-00237-15305			8					50	7,400	8.50	8.86	9.27	9.71	10.74
◆ 08-00237-15306			10					50	7,400	10.58	11.04	11.55	12.10	13.39
08-00237-15307			12					50	7,400	12.67	13.22	13.83	14.49	16.04
08-00237-15309			15					60	7,400	15.80	16.49	17.25	18.08	20.03
08-00237-15500		R0.5	3					50	6,900	3.27	3.40	3.53	3.69	4.04
08-00237-15501			4					50	6,900	4.32	4.49	4.68	4.88	5.36
08-00237-15503			6					50	6,900	6.40	6.67	6.96	7.27	8.02
08-00237-15505			8					50	7,400	8.49	8.85	9.24	9.67	10.67
◆ 08-00237-15506			10					50	7,400	10.57	11.02	11.52	12.06	13.33
08-00237-15507			12					50	7,400	12.66	13.20	13.80	14.45	15.98
08-00237-15509			15					60	7,400	15.79	16.47	17.22	18.04	19.96



◆ 新增加规格
★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

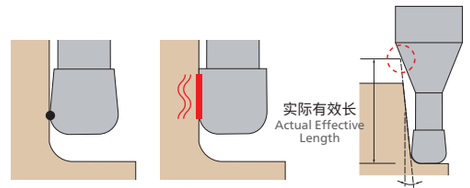
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00237-20022	2	R0.02	3	1.6	1.91	12°	4	50	6,900	3.34	3.49	3.66	3.83	4.25
08-00237-20020			4					50	6,900	4.39	4.58	4.80	5.03	5.58
08-00237-20021			6					50	6,900	6.47	6.76	7.08	7.42	8.23
08-00237-20023			8					50	7,400	8.56	8.94	9.36	9.82	10.89
◆ 08-00237-20024			10					50	7,400	10.64	11.12	11.64	12.21	13.54
08-00237-20025			12					50	7,400	12.73	13.30	13.92	14.60	16.20
08-00237-20027			16					60	7,400	16.90	17.66	18.48	19.39	Free
08-00237-20029			20					60	7,400	21.07	22.01	23.04	24.18	Free
◆ 08-00237-20052		R0.05	3					50	6,900	3.34	3.49	3.65	3.83	4.24
08-00237-20050			4					50	6,900	4.38	4.58	4.79	5.03	5.57
08-00237-20051			6					50	6,900	6.47	6.76	7.07	7.42	8.22
08-00237-20053			8					50	7,400	8.56	8.94	9.35	9.81	10.88
◆ 08-00237-20054			10					50	7,400	10.64	11.12	11.63	12.20	13.53
08-00237-20055			12					50	7,400	12.73	13.29	13.92	14.60	16.19
08-00237-20057			16					60	7,400	16.90	17.65	18.48	19.38	Free
08-00237-20059			20					60	7,400	21.07	22.01	23.04	24.17	Free
◆ 08-00237-20102		R0.1	3					50	6,900	3.34	3.49	3.64	3.82	4.23
08-00237-20100			4					50	6,900	4.38	4.57	4.78	5.02	5.55
08-00237-20101			6					50	6,900	6.47	6.75	7.07	7.41	8.21
08-00237-20103			8					50	7,400	8.55	8.93	9.35	9.80	10.86
◆ 08-00237-20104			10					50	7,400	10.64	11.11	11.63	12.19	13.52
08-00237-20105			12					50	7,400	12.73	13.29	13.91	14.59	16.17
08-00237-20107			16					60	7,400	16.90	17.65	18.47	19.37	Free
08-00237-20109			20					60	7,400	21.07	22.01	23.03	24.16	Free
◆ 08-00237-20202		R0.2	3					50	6,900	3.34	3.48	3.63	3.80	4.19
08-00237-20200			4					50	6,900	4.38	4.57	4.77	5.00	5.52
08-00237-20201			6					50	6,900	6.46	6.74	7.05	7.39	8.18
08-00237-20203			8					50	7,400	8.55	8.92	9.33	9.78	10.83
◆ 08-00237-20204			10					50	7,400	10.64	11.10	11.61	12.18	13.48
08-00237-20205			12					50	7,400	12.72	13.28	13.89	14.57	16.14
08-00237-20207			16					60	7,400	16.89	17.64	18.46	19.36	Free
08-00237-20209			20					60	7,400	21.06	22.00	23.02	24.14	Free
◆ 08-00237-20302		R0.3	3					50	6,900	3.33	3.47	3.62	3.78	4.16
08-00237-20300			4					50	6,900	4.37	4.56	4.76	4.98	5.49
08-00237-20301			6					50	6,900	6.46	6.74	7.04	7.37	8.14
08-00237-20303			8					50	7,400	8.55	8.91	9.32	9.76	10.80
◆ 08-00237-20304			10					50	7,400	10.63	11.09	11.60	12.16	13.45
08-00237-20305			12					50	7,400	12.72	13.27	13.88	14.55	16.11
08-00237-20307			16					60	7,400	16.89	17.63	18.44	19.34	Free
08-00237-20309			20					60	7,400	21.06	21.99	23.00	24.12	Free
◆ 08-00237-20502		R0.5	3					50	6,900	3.32	3.45	3.59	3.74	4.10
08-00237-20500			4					50	6,900	4.37	4.54	4.73	4.94	5.43
08-00237-20501			6					50	6,900	6.45	6.72	7.01	7.33	8.08
08-00237-20503			8					50	7,400	8.54	8.90	9.29	9.72	10.73
◆ 08-00237-20504			10					50	7,400	10.62	11.08	11.57	12.12	13.39
08-00237-20505			12					50	7,400	12.71	13.25	13.85	14.51	16.04
08-00237-20507			16					60	7,400	16.88	17.61	18.42	19.30	Free
08-00237-20509			20					60	7,400	21.05	21.97	22.98	24.08	Free
◆ 08-00237-25100	2.5	R0.1	5	2	2.39	12°	4	50	7,600	5.47	5.72	5.98	6.27	6.94
08-00237-25101			10					50	7,600	10.69	11.16	11.68	12.25	13.58
◆ 08-00237-25102			15					60	7,900	15.90	16.61	17.38	18.23	Free
08-00237-25103			20					60	7,900	21.12	22.06	23.09	Free	Free
08-00237-25105			30					70	8,100	31.55	32.95	Free	Free	Free

订购方法 How to Order
请指定MHRH430R 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate MHRH430R (D)×(R)×(ℓ1).
※(γ)为参考值。
※(γ) is reference value.

MHRH430R

无限白金涂层 高硬度钢材用4刃长颈圆鼻铣刀
MUGEN COATING PREMIUM 4-Flute Long Neck Corner Radius End Mill for Hardened Steel



◆ 新增加规格
★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆ 08-00237-25200	2.5	R0.2	5	2	2.39	12°	4	50	7,600	5.47	5.71	5.96	6.25	6.91
08-00237-25201			10					50	7,600	10.68	11.15	11.67	12.23	13.55
◆ 08-00237-25202			15					60	7,900	15.90	16.60	17.37	18.21	Free
08-00237-25203			20					60	7,900	21.11	22.05	23.07	Free	Free
08-00237-25205			30					70	8,100	31.54	32.94	Free	Free	Free
◆ 08-00237-25300		R0.3	5					50	7,600	5.47	5.70	5.95	6.23	6.88
08-00237-25301			10					50	7,600	10.68	11.14	11.65	12.21	13.52
◆ 08-00237-25302			15					60	7,900	15.89	16.59	17.36	18.20	Free
08-00237-25303			20					60	7,900	21.11	22.04	23.06	Free	Free
08-00237-25305			30					70	8,100	31.54	32.93	Free	Free	Free
◆ 08-00237-25500		R0.5	5					50	7,600	5.46	5.68	5.92	6.19	6.82
08-00237-25501			10					50	7,600	10.67	11.13	11.63	12.17	13.45
◆ 08-00237-25502			15					60	7,900	15.89	16.57	17.33	18.16	Free
08-00237-25503			20					60	7,900	21.10	22.02	23.03	Free	Free
08-00237-25505			30					70	8,100	31.53	32.92	Free	Free	Free
★ 08-00237-30058	3	R0.05	4	2.5	2.85	12°	6	50	6,600	4.53	4.73	4.95	5.19	5.76
★ 08-00237-30050			6					50	6,600	6.62	6.91	7.23	7.59	8.41
★ 08-00237-30051			8					50	6,600	8.70	9.09	9.51	9.98	11.07
◆★ 08-00237-30052			10					50	6,600	10.79	11.27	11.80	12.37	13.72
★ 08-00237-30053			12					50	7,900	12.87	13.45	14.08	14.77	16.37
◆★ 08-00237-30054			14					50	7,900	14.96	15.63	16.36	17.16	19.03
★ 08-00237-30055			16					60	9,900	17.05	17.81	18.64	19.55	21.68
★ 08-00237-30057			20					60	9,900	21.22	22.16	23.20	24.34	26.99
★ 08-00237-30112		R0.1	4					50	6,600	4.53	4.73	4.95	5.18	5.74
★ 08-00237-30100			6					50	6,600	6.62	6.91	7.23	7.58	8.39
★ 08-00237-30101			8					50	6,600	8.70	9.09	9.51	9.97	11.05
◆★ 08-00237-30102			10					50	6,600	10.79	11.27	11.79	12.36	13.70
★ 08-00237-30103			12					50	7,900	12.87	13.44	14.07	14.76	16.36
◆★ 08-00237-30104			14					50	7,900	14.96	15.62	16.35	17.15	19.01
★ 08-00237-30105			16					60	9,900	17.04	17.80	18.63	19.54	21.67
★ 08-00237-30107			20					60	9,900	21.21	22.16	23.19	24.33	26.98
★ 08-00237-30109			25					70	9,900	26.43	27.61	28.90	30.31	Free
★ 08-00237-30111			30					70	11,100	31.64	33.05	34.60	36.30	Free
★ 08-00237-30212		R0.2	4					50	6,600	4.53	4.72	4.93	5.16	5.71
★ 08-00237-30200			6					50	6,600	6.61	6.90	7.21	7.56	8.36
★ 08-00237-30201			8					50	6,600	8.70	9.08	9.49	9.95	11.02
◆★ 08-00237-30202			10					50	6,600	10.78	11.26	11.77	12.34	13.67
★ 08-00237-30203			12					50	7,900	12.87	13.44	14.06	14.74	16.33
◆★ 08-00237-30204			14					50	7,900	14.95	15.61	16.34	17.13	18.98
★ 08-00237-30205			16					60	9,900	17.04	17.79	18.62	19.52	21.64
★ 08-00237-30207			20					60	9,900	21.21	22.15	23.18	24.31	26.94
★ 08-00237-30209			25					70	9,900	26.42	27.60	28.88	30.29	Free
★ 08-00237-30211			30					70	11,100	31.64	33.05	34.58	36.28	Free
★ 08-00237-30312		R0.3	4					50	6,600	4.52	4.71	4.92	5.15	5.68
★ 08-00237-30300			6					50	6,600	6.61	6.89	7.20	7.54	8.33
★ 08-00237-30301			8					50	6,600	8.69	9.07	9.48	9.93	10.99
◆★ 08-00237-30302			10					50	6,600	10.78	11.25	11.76	12.33	13.64
★ 08-00237-30303			12					50	7,900	12.86	13.43	14.04	14.72	16.29
◆★ 08-00237-30304			14					50	7,900	14.95	15.61	16.32	17.11	18.95
★ 08-00237-30305			16					60	9,900	17.04	17.78	18.60	19.50	21.60
★ 08-00237-30307			20					60	9,900	21.21	22.14	23.17	24.29	26.91
★ 08-00237-30309			25					70	9,900	26.42	27.59	28.87	30.27	Free
★ 08-00237-30311			30					70	11,100	31.63	33.04	34.57	36.26	Free
★ 08-00237-30512		R0.5	4					50	6,600	4.51	4.69	4.89	5.11	5.61
★ 08-00237-30500			6					50	6,600	6.60	6.87	7.17	7.50	8.27
★ 08-00237-30501			8					50	6,600	8.68	9.05	9.45	9.89	10.92

无限白金涂层 高硬度钢材用4刃长颈圆鼻铣刀

MUGEN COATING PREMIUM 4-Flute Long Neck Corner Radius End Mill for Hardened Steel

◆ 新增加规格

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆★ 08-00237-30502	3	R0.5	10	2.5	2.85	12°	6	50	6,600	10.77	11.23	11.73	12.29	13.58
★ 08-00237-30503			12					50	7,900	12.86	13.41	14.01	14.68	16.23
◆★ 08-00237-30504			14					50	7,900	14.94	15.59	16.30	17.07	18.89
★ 08-00237-30505			16					60	9,900	17.03	17.77	18.58	19.47	21.54
★ 08-00237-30507			20					60	9,900	21.20	22.12	23.14	24.25	26.85
★ 08-00237-30509			25					70	9,900	26.41	27.57	28.84	30.24	Free
★ 08-00237-30511			30					70	11,100	31.63	33.02	34.54	36.22	Free
◆★ 08-00237-31000		R1	6					50	6,600	6.58	6.83	7.10	7.40	8.11
★ 08-00237-31001			8					50	6,600	8.66	9.01	9.38	9.80	10.76
◆★ 08-00237-31002			10					50	6,600	10.75	11.19	11.66	12.19	13.42
★ 08-00237-31003			12					50	7,900	12.83	13.36	13.94	14.58	16.07
◆★ 08-00237-31004			14					50	7,900	14.92	15.54	16.23	16.98	18.73
★ 08-00237-31005			16					60	9,900	17.01	17.72	18.51	19.37	21.38
★ 08-00237-31007			20					60	9,900	21.18	22.08	23.07	24.16	26.69
★ 08-00237-31009			25					70	9,900	26.39	27.53	28.77	30.14	Free
★ 08-00237-31011			30					70	11,100	31.60	32.97	34.47	36.12	Free
◆★ 08-00237-40051	4	R0.05	8	3.2	3.8	12°	6	60	9,900	8.83	9.22	9.65	10.12	11.22
◆★ 08-00237-40053			12					60	9,900	13.00	13.58	14.21	14.91	16.53
◆★ 08-00237-40054			16					60	9,900	17.17	17.93	18.77	19.69	Free
◆★ 08-00237-40055			20					65	11,000	21.34	22.29	23.33	24.48	Free
◆★ 08-00237-40056			24					70	11,000	25.51	26.65	27.90	Free	Free
◆★ 08-00237-40057			28					70	11,000	29.68	31.01	32.46	Free	Free
◆★ 08-00237-40058			32					70	11,000	33.85	35.37	37.02	Free	Free
★ 08-00237-40106		R0.1	8					60	9,900	8.82	9.21	9.64	10.11	11.21
◆★ 08-00237-40107			10					60	9,900	10.91	11.39	11.92	12.50	13.86
★ 08-00237-40100			12					60	9,900	13.00	13.57	14.20	14.90	16.51
★ 08-00237-40101			16					60	9,900	17.17	17.93	18.77	19.68	Free
◆★ 08-00237-40102			20					65	11,000	21.34	22.29	23.33	24.47	Free
★ 08-00237-40103			24					70	11,000	25.51	26.65	27.89	Free	Free
◆★ 08-00237-40104			28					70	11,000	29.68	31.00	32.45	Free	Free
★ 08-00237-40105			32					70	11,000	33.85	35.36	37.01	Free	Free
◆★ 08-00237-40108			40					80	12,100	42.19	44.08	Free	Free	Free
★ 08-00237-40206		R0.2	8					60	9,900	8.82	9.21	9.63	10.09	11.17
◆★ 08-00237-40207			10					60	9,900	10.91	11.38	11.91	12.49	13.83
★ 08-00237-40200			12					60	9,900	12.99	13.56	14.19	14.88	16.48
★ 08-00237-40201			16					60	9,900	17.16	17.92	18.75	19.66	Free
◆★ 08-00237-40202			20					65	11,000	21.33	22.28	23.31	24.45	Free
★ 08-00237-40203			24					70	11,000	25.50	26.64	27.88	Free	Free
◆★ 08-00237-40204			28					70	11,000	29.68	30.99	32.44	Free	Free
★ 08-00237-40205			32					70	11,000	33.85	35.35	37.00	Free	Free
◆★ 08-00237-40208			40					80	12,100	42.19	44.07	Free	Free	Free
★ 08-00237-40306		R0.3	8					60	9,900	8.82	9.20	9.61	10.07	11.14
◆★ 08-00237-40307			10					60	9,900	10.90	11.38	11.90	12.47	13.80
★ 08-00237-40300			12					60	9,900	12.99	13.55	14.18	14.86	16.45
★ 08-00237-40301			16					60	9,900	17.16	17.91	18.74	19.65	Free
◆★ 08-00237-40302			20					65	11,000	21.33	22.27	23.30	24.43	Free
★ 08-00237-40303			24					70	11,000	25.50	26.63	27.86	Free	Free
◆★ 08-00237-40304			28					70	11,000	29.67	30.99	32.42	Free	Free
★ 08-00237-40305			32					70	11,000	33.84	35.34	36.99	Free	Free
◆★ 08-00237-40308			40					80	12,100	42.19	44.06	Free	Free	Free
★ 08-00237-40506		R0.5	8					60	9,900	8.81	9.18	9.59	10.03	11.08
◆★ 08-00237-40507			10					60	9,900	10.89	11.36	11.87	12.43	13.73
★ 08-00237-40500			12					60	9,900	12.98	13.54	14.15	14.82	16.39
★ 08-00237-40501			16					60	9,900	17.15	17.89	18.71	19.61	Free
◆★ 08-00237-40502			20					65	11,000	21.32	22.25	23.27	24.39	Free
★ 08-00237-40503			24					70	11,000	25.49	26.61	27.83	Free	Free
◆★ 08-00237-40504			28					70	11,000	29.66	30.97	32.40	Free	Free
★ 08-00237-40505			32					70	11,000	33.83	35.33	36.96	Free	Free
◆★ 08-00237-40508			40					80	12,100	42.18	44.04	Free	Free	Free
★ 08-00237-41006		R1	8					60	9,900	8.79	9.13	9.52	9.94	10.92
◆★ 08-00237-41007			10					60	9,900	10.87	11.31	11.80	12.33	13.57
★ 08-00237-41000			12					60	9,900	12.96	13.49	14.08	14.72	16.23
★ 08-00237-41001			16					60	9,900	17.13	17.85	18.64	19.51	Free
◆★ 08-00237-41002			20					65	11,000	21.30	22.21	23.20	24.30	Free
★ 08-00237-41003			24					70	11,000	25.47	26.57	27.77	29.08	Free
◆★ 08-00237-41004			28					70	11,000	29.64	30.92	32.33	Free	Free
★ 08-00237-41005			32					70	11,000	33.81	35.28	36.89	Free	Free
◆★ 08-00237-41008			40					80	12,100	42.16	44.00	Free	Free	Free

订购方法 How to Order

请指定MHRH430R 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate MHRH430R (D)×(R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

◆ 新增加规格

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
◆★ 08-00237-50104	5	R0.1	10	4	4.75	12°	6	70	14,100	11.03	11.52	12.06	12.65	Free
★ 08-00237-50100			15					70	14,100	16.25	16.97	17.76	Free	Free
★ 08-00237-50101			20					70	14,100	21.46	22.42	Free	Free	Free
◆★ 08-00237-50102			30					80	15,600	31.89	Free	Free	Free	Free
★ 08-00237-50103			40					90	17,600	42.32	Free	Free	Free	Free
◆★ 08-00237-50204		R0.2	10					70	14,100	11.03	11.51	12.04	12.63	Free
★ 08-00237-50200			15					70	14,100	16.24	16.96	17.75	Free	Free
★ 08-00237-50201			20					70	14,100	21.46	22.41	Free	Free	Free
◆★ 08-00237-50202			30					80	15,600	31.88	Free	Free	Free	Free
★ 08-00237-50203			40					90	17,600	42.31	Free	Free	Free	Free
◆★ 08-00237-50304		R0.3	10					70	14,100	11.02	11.50	12.03	12.61	Free
★ 08-00237-50300			15					70	14,100	16.24	16.95	17.73	Free	Free
★ 08-00237-50301			20					70	14,100	21.45	22.40	Free	Free	Free
◆★ 08-00237-50302			30					80	15,600	31.88	Free	Free	Free	Free
★ 08-00237-50303			40					90	17,600	42.31	Free	Free	Free	Free
◆★ 08-00237-50504		R0.5	10					70	14,100	11.02	11.49	12.00	12.57	Free
★ 08-00237-50500			15					70	14,100	16.23	16.93	17.70	Free	Free
★ 08-00237-50501			20					70	14,100	21.44	22.38	Free	Free	Free
◆★ 08-00237-50502			30					80	15,600	31.87	Free	Free	Free	Free
★ 08-00237-50503			40					90	17,600	42.30	Free	Free	Free	Free
◆★ 08-00237-51004		R1	10					70	14,100	10.99	11.44	11.93	12.47	Free
★ 08-00237-51000			15					70	14,100	16.21	16.89	17.63	Free	Free
★ 08-00237-51001			20					70	14,100	21.42	22.34	Free	Free	Free
◆★ 08-00237-51002			30					80	15,600	31.85	Free	Free	Free	Free
★ 08-00237-51003			40					90	17,600	42.28	Free	Free	Free	Free
◆★ 08-00237-60051	6	R0.05	12	5	5.7	–	6	70	14,300	Free	Free	Free	Free	Free
◆★ 08-00237-60052			15					70	14,300	Free	Free	Free	Free	Free
◆★ 08-00237-60053			18					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60054			24					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60055			30					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60056			40					100	19,900	Free	Free	Free	Free	Free
◆★ 08-00237-60057			48					110	22,100	Free	Free	Free	Free	Free
★ 08-00237-60104		R0.1	12					70	14,300	Free	Free	Free	Free	Free
◆★ 08-00237-60105			15					70	14,300	Free	Free	Free	Free	Free
★ 08-00237-60100			18					90	18,200	Free	Free	Free	Free	Free
★ 08-00237-60101			24					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60102			30					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60106			40					100	19,900	Free	Free	Free	Free	Free
★ 08-00237-60103			48					110	22,100	Free	Free	Free	Free	Free
★ 08-00237-60204		R0.2	12					70	14,300	Free	Free	Free	Free	Free
◆★ 08-00237-60205			15					70	14,300	Free	Free	Free	Free	Free
★ 08-00237-60200			18					90	18,200	Free	Free	Free	Free	Free
★ 08-00237-60201			24					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60202			30					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60206			40					100	19,900	Free	Free	Free	Free	Free
★ 08-00237-60203			48					110	22,100	Free	Free	Free	Free	Free
★ 08-00237-60304		R0.3	12					70	14,300	Free	Free	Free	Free	Free
◆★ 08-00237-60305			15					70	14,300	Free	Free	Free	Free	Free
★ 08-00237-60300			18					90	18,200	Free	Free	Free	Free	Free
★ 08-00237-60301			24					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60302			30					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60306			40					100	19,900	Free	Free	Free	Free	Free
★ 08-00237-60303			48					110	22,100	Free	Free	Free	Free	Free
★ 08-00237-60504		R0.5	12					70	14,300	Free	Free	Free	Free	Free
◆★ 08-00237-60505			15					70	14,300	Free	Free	Free	Free	Free
★ 08-00237-60500			18					90	18,200	Free	Free	Free	Free	Free
★ 08-00237-60501			24					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60502			30					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-60506			40					100	19,900	Free	Free	Free	Free	Free
★ 08-00237-60503			48					110	22,100	Free	Free	Free	Free	Free
★ 08-00237-61004		R1	12					70	14,300	Free	Free	Free	Free	Free
◆★ 08-00237-61005			15					70	14,300	Free	Free	Free	Free	Free
★ 08-00237-61000			18					90	18,200	Free	Free	Free	Free	Free
★ 08-00237-61001			24					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-61002			30					90	18,200	Free	Free	Free	Free	Free
◆★ 08-00237-61006			40					100	19,900	Free	Free	Free	Free	Free
★ 08-00237-61003			48					110	22,100	Free	Free	Free	Free	Free

无限白金涂层 高硬度钢材用4刃长颈圆鼻铣刀
MUGEN COATING PREMIUM 4-Flute Long Neck Corner Radius End Mill for Hardened Steel

切削参数参考表
Recommended Milling Conditions

MHRH430R

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			调质钢 Prehardened Steels HPM・NAK (～42HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
0.1	0.01	0.3	40,000	240	0.004	0.03	40,000	200	0.003	0.02	40,000	160	0.002	0.01	40,000	120	0.002	0.01
		0.5	40,000	180	0.003	0.03	40,000	150	0.002	0.02	40,000	120	0.001	0.01	40,000	90	0.001	0.01
0.15	0.01	0.3	40,000	360	0.004	0.04	40,000	300	0.003	0.03	40,000	240	0.002	0.015	40,000	180	0.002	0.01
		0.5	40,000	240	0.004	0.04	40,000	200	0.003	0.03	40,000	160	0.002	0.015	40,000	120	0.002	0.01
		0.75	40,000	180	0.003	0.04	40,000	150	0.002	0.03	40,000	120	0.001	0.015	40,000	90	0.001	0.01
		1	40,000	100	0.003	0.04	40,000	80	0.002	0.03	40,000	65	0.001	0.015	40,000	50	0.001	0.01
	0.02	0.3	40,000	360	0.004	0.04	40,000	300	0.003	0.03	40,000	240	0.002	0.015	40,000	180	0.002	0.01
		0.5	40,000	240	0.004	0.04	40,000	200	0.003	0.03	40,000	160	0.002	0.015	40,000	120	0.002	0.01
		0.75	40,000	180	0.003	0.04	40,000	150	0.002	0.03	40,000	120	0.001	0.015	40,000	90	0.001	0.01
		1	40,000	100	0.003	0.04	40,000	80	0.002	0.03	40,000	65	0.001	0.015	40,000	50	0.001	0.01
0.2	0.02	0.3	30,000	560	0.005	0.05	30,000	480	0.003	0.04	30,000	380	0.003	0.02	30,000	280	0.003	0.01
		0.5	30,000	480	0.005	0.05	30,000	400	0.003	0.04	30,000	320	0.003	0.02	30,000	240	0.003	0.01
		1	30,000	360	0.005	0.05	30,000	300	0.003	0.04	30,000	240	0.002	0.02	30,000	160	0.002	0.01
		1.5	30,000	240	0.004	0.05	30,000	200	0.002	0.04	30,000	160	0.002	0.02	30,000	120	0.001	0.01
		2	30,000	140	0.003	0.05	30,000	100	0.002	0.04	30,000	80	0.001	0.02	30,000	60	0.001	0.01
	0.05	0.3	30,000	560	0.01	0.05	30,000	480	0.003	0.04	30,000	380	0.003	0.02	30,000	280	0.003	0.01
		0.5	30,000	480	0.01	0.05	30,000	400	0.003	0.04	30,000	320	0.003	0.02	30,000	240	0.003	0.01
		1	30,000	360	0.007	0.05	30,000	300	0.003	0.04	30,000	240	0.003	0.02	30,000	160	0.003	0.01
		1.5	30,000	240	0.005	0.05	30,000	200	0.002	0.04	30,000	160	0.002	0.02	30,000	120	0.002	0.01
		2	30,000	140	0.003	0.05	30,000	100	0.002	0.04	30,000	80	0.002	0.02	30,000	60	0.002	0.01
0.3	0.02	0.5	30,000	800	0.015	0.1	30,000	680	0.003	0.08	30,000	560	0.003	0.04	30,000	450	0.003	0.03
		1	30,000	700	0.015	0.1	30,000	600	0.003	0.08	30,000	500	0.003	0.04	30,000	400	0.003	0.03
		1.5	30,000	480	0.01	0.1	30,000	400	0.003	0.08	30,000	320	0.003	0.04	30,000	240	0.003	0.03
		2	30,000	360	0.007	0.1	30,000	300	0.003	0.08	30,000	240	0.003	0.04	25,000	200	0.003	0.03
		2.5	30,000	300	0.005	0.1	25,000	200	0.002	0.08	25,000	160	0.002	0.04	20,000	120	0.002	0.03
		3	30,000	140	0.004	0.1	25,000	100	0.002	0.08	25,000	80	0.002	0.04	20,000	60	0.002	0.03
	0.05	0.5	30,000	800	0.02	0.1	30,000	680	0.003	0.08	30,000	560	0.003	0.04	30,000	450	0.003	0.03
		1	30,000	700	0.02	0.1	30,000	600	0.003	0.08	30,000	500	0.003	0.04	30,000	400	0.003	0.03
		1.5	30,000	480	0.015	0.1	30,000	400	0.003	0.08	30,000	320	0.003	0.04	30,000	240	0.003	0.03
		2	30,000	360	0.01	0.1	30,000	300	0.003	0.08	30,000	240	0.003	0.04	25,000	200	0.003	0.03
		2.5	30,000	300	0.007	0.1	25,000	200	0.002	0.08	25,000	160	0.002	0.04	20,000	120	0.002	0.03
		3	30,000	140	0.005	0.1	25,000	100	0.002	0.08	25,000	80	0.002	0.04	20,000	60	0.002	0.03
0.4	0.02	0.5	30,000	1,000	0.015	0.12	30,000	900	0.005	0.1	28,000	780	0.005	0.05	25,000	660	0.004	0.04
		1	30,000	900	0.015	0.12	30,000	800	0.005	0.1	28,000	700	0.005	0.05	25,000	600	0.004	0.04
		1.5	30,000	800	0.012	0.12	30,000	700	0.005	0.1	28,000	600	0.005	0.05	25,000	520	0.004	0.04
		2	30,000	720	0.01	0.12	30,000	600	0.005	0.1	25,000	500	0.005	0.05	25,000	440	0.003	0.04
		2.5	30,000	680	0.008	0.12	28,000	560	0.004	0.1	25,000	480	0.004	0.05	20,000	360	0.003	0.04
		3	30,000	640	0.008	0.12	25,000	500	0.004	0.1	23,000	440	0.003	0.05	18,000	320	0.002	0.04
		4	30,000	500	0.006	0.12	25,000	400	0.003	0.1	20,000	320	0.002	0.05	18,000	240	0.002	0.04
	0.05	0.5	30,000	1,000	0.025	0.12	30,000	900	0.005	0.1	28,000	780	0.005	0.05	25,000	660	0.005	0.04
		1	30,000	900	0.025	0.12	30,000	800	0.005	0.1	28,000	700	0.005	0.05	25,000	600	0.005	0.04
		1.5	30,000	800	0.022	0.12	30,000	700	0.005	0.1	28,000	600	0.005	0.05	25,000	520	0.005	0.04
		2	30,000	720	0.02	0.12	30,000	600	0.005	0.1	25,000	500	0.005	0.05	25,000	440	0.005	0.04
		2.5	30,000	680	0.015	0.12	28,000	560	0.004	0.1	25,000	480	0.004	0.05	20,000	360	0.004	0.04
		3	30,000	640	0.015	0.12	25,000	500	0.004	0.1	23,000	440	0.003	0.05	18,000	320	0.003	0.04
		4	30,000	500	0.01	0.12	25,000	400	0.003	0.1	20,000	320	0.002	0.05	18,000	240	0.002	0.04
	0.1	1	30,000	900	0.025	0.12	30,000	800	0.005	0.1	28,000	700	0.005	0.05	25,000	600	0.005	0.04
		2	30,000	720	0.02	0.12	30,000	600	0.005	0.1	25,000	500	0.005	0.05	25,000	440	0.005	0.04
		3	30,000	640	0.015	0.12	25,000	500	0.004	0.1	23,000	440	0.003	0.05	18,000	320	0.003	0.04
		4	30,000	500	0.01	0.12	25,000	400	0.003	0.1	20,000	320	0.002	0.05	18,000	240	0.002	0.04
0.5	0.02	1	30,000	1,200	0.016	0.14	25,000	1,000	0.008	0.15	23,000	900	0.006	0.1	20,000	800	0.004	0.08
		2	30,000	1,000	0.014	0.14	25,000	840	0.007	0.15	23,000	720	0.005	0.1	20,000	600	0.003	0.08
		3	30,000	840	0.012	0.14	25,000	700	0.006	0.15	23,000	640	0.004	0.1	20,000	560	0.003	0.08
		4	25,000	760	0.01	0.14	25,000	600	0.004	0.15	23,000	480	0.002	0.1	20,000	360	0.002	0.08
		5	25,000	600	0.008	0.14	20,000	400	0.003	0.15	18,000	300	0.002	0.1	16,000	200	0.002	0.08
		6	25,000	500	0.004	0.14	20,000	320	0.002	0.15	18,000	200	0.001	0.1	16,000	140	0.001	0.08
	0.05 0.1	1	30,000	1,200	0.03	0.14	25,000	1,000	0.01	0.15	23,000	900	0.007	0.1	20,000	800	0.005	0.08
		2	30,000	1,000	0.025	0.14	25,000	840	0.01	0.15	23,000	720	0.007	0.1	20,000	600	0.005	0.08
		3	30,000	840	0.02	0.14	25,000	700	0.008	0.15	23,000	640	0.005	0.1	20,000	560	0.003	0.08
		4	25,000	760	0.015	0.14	25,000	600	0.005	0.15	23,000	480	0.003	0.1	20,000	360	0.002	0.08
		5	25,000	600	0.01	0.14	20,000	400	0.004	0.15	18,000	300	0.003	0.1	16,000	200	0.002	0.08
		6	25,000	500	0.008	0.14	20,000	320	0.003	0.15	18,000	200	0.002	0.1	16,000	140	0.001	0.08
0.6	0.02	2	30,000	1,200	0.016	0.2	25,000	1,000	0.012	0.2	23,000	800	0.006	0.15	20,000	640	0.004	0.1
		4	25,000	900	0.012	0.2	23,000	800	0.007	0.2	20,000	600	0.004	0.15	18,000	400	0.003	0.1
		6	23,000	600	0.008	0.2	20,000	400	0.005	0.2	18,000	300	0.003	0.15	12,000	200	0.002	0.1
		8	18,000	400	0.006	0.2	16,000	300	0.003	0.2	14,000	200	0.001	0.15	10,000	160	0.001	0.1
		10	16,000	240	0.003	0.2	14,000	200	0.001	0.2	12,000	160	0.001	0.15	8,000	100	0.001	0.1
	0.05 0.1	2	30,000	1,200	0.035	0.2	25,000	1,000	0.02	0.2	23,000	800	0.01	0.15	20,000	640	0.007	0.1
		4	25,000	900	0.025	0.2	23,000	800	0.015	0.2	20,000	600	0.007	0.15	18,000	400	0.005	0.1
		6	23,000	600	0.015	0.2	20,000	400	0.008	0.2	18,000	300	0.005	0.15	12,000	200	0.003	0.1
		8	18,000	400	0.01	0.2	16,000	300	0.005	0.2	14,000	200	0.002	0.15	10,000	160	0.001	0.1
		10	16,000	240	0.005	0.2	14,000	200	0.002	0.2	12,000	160	0.001	0.15	8,000	100	0.001	0.1

加工材料 Work Material			调质钢 Prehardened Steels HPM・NAK (～42HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
0.7	0.02	2	30,000	1,800	0.016	0.25	25,000	1,400	0.012	0.25	23,000	1,200	0.006	0.15	20,000	900	0.003	0.12
		4	28,000	1,400	0.012	0.25	25,000	1,200	0.008	0.25	23,000	1,000	0.005	0.15	20,000	700	0.002	0.12
		6	25,000	1,000	0.008	0.25	20,000	700	0.005	0.25	18,000	500	0.003	0.15	16,000	400	0.002	0.12
	0.05 0.1	2	30,000	1,800	0.04	0.25	25,000	1,400	0.03	0.25	23,000	1,200	0.015	0.15	20,000	900	0.01	0.12
		4	28,000	1,400	0.03	0.25	25,000	1,200	0.02	0.25	23,000	1,000	0.01	0.15	20,000	700	0.007	0.12
		6	25,000	1,000	0.02	0.25	20,000	700	0.01	0.25	18,000	500	0.007	0.15	16,000	400	0.005	0.12
0.8	0.02	2	28,000	2,000	0.016	0.3	25,000	1,600	0.014	0.25	23,000	1,400	0.006	0.16	20,000	1,000	0.005	0.14
		4	28,000	1,800	0.012	0.3	25,000	1,400	0.008	0.25	23,000	1,200	0.005	0.16	20,000	800	0.003	0.14
		6	23,000	1,400	0.009	0.3	20,000	1,100	0.006	0.25	18,000	900	0.004	0.16	16,000	650	0.002	0.14
		8	18,000	1,000	0.006	0.3	16,000	800	0.003	0.25	14,000	600	0.002	0.16	12,000	400	0.002	0.14
	0.05 0.1 0.2	2	28,000	2,000	0.05	0.3	25,000	1,600	0.03	0.25	23,000	1,400	0.02	0.16	20,000	1,000	0.015	0.14
		4	28,000	1,800	0.045	0.3	25,000	1,400	0.025	0.25	23,000	1,200	0.015	0.16	20,000	800	0.01	0.14
		6	23,000	1,400	0.03	0.3	20,000	1,100	0.02	0.25	18,000	900	0.01	0.16	16,000	650	0.007	0.14
		8	18,000	1,000	0.02	0.3	16,000	800	0.01	0.25	14,000	600	0.005	0.16	12,000	400	0.005	0.14
		12	16,000	600	0.007	0.3	14,000	400	0.005	0.25	12,000	240	0.003	0.16	10,000	160	0.001	0.14
0.9	0.1	4	25,000	2,200	0.05	0.3	25,000	1,700	0.03	0.3	20,000	1,400	0.02	0.2	18,000	1,200	0.01	0.15
		8	18,000	1,000	0.03	0.3	16,000	800	0.01	0.3	14,000	700	0.008	0.2	10,000	500	0.005	0.15
1	0.02	1.5	30,000	3,000	0.016	0.35	25,000	2,400	0.012	0.3	21,000	2,100	0.01	0.25	17,000	1,500	0.008	0.2
		2	30,000	2,800	0.016	0.35	25,000	2,300	0.012	0.3	21,000	2,000	0.01	0.25	17,000	1,400	0.008	0.2
		2.5	29,000	2,700	0.016	0.35	24,000	2,200	0.012	0.3	20,000	1,900	0.01	0.25	16,500	1,350	0.008	0.2
		3	28,000	2,500	0.016	0.35	23,000	2,100	0.012	0.3	20,000	1,800	0.01	0.25	16,000	1,300	0.008	0.2
		4	25,000	2,200	0.014	0.35	21,000	1,800	0.01	0.3	18,000	1,500	0.008	0.25	14,000	1,100	0.005	0.2
		5	23,000	1,900	0.012	0.35	19,000	1,600	0.008	0.3	16,000	1,400	0.005	0.25	13,000	1,000	0.003	0.2
		6	20,000	1,700	0.01	0.35	16,000	1,400	0.008	0.3	14,000	1,200	0.005	0.25	11,000	850	0.003	0.2
		8	18,000	1,400	0.008	0.35	15,000	1,100	0.006	0.3	13,000	900	0.005	0.25	10,000	650	0.002	0.2
		10	16,000	1,000	0.006	0.35	13,000	800	0.004	0.3	11,000	700	0.003	0.25	9,000	500	0.002	0.2
	0.05 0.1 0.2 0.3	1.5	30,000	3,000	0.065	0.35	25,000	2,400	0.05	0.3	21,000	2,100	0.04	0.25	17,000	1,500	0.03	0.2
		2	30,000	2,800	0.065	0.35	25,000	2,300	0.05	0.3	21,000	2,000	0.04	0.25	17,000	1,400	0.03	0.2
		2.5	29,000	2,700	0.06	0.35	24,000	2,200	0.05	0.3	20,000	1,900	0.04	0.25	16,500	1,350	0.03	0.2
		3	28,000	2,500	0.06	0.35	23,000	2,100	0.05	0.3	20,000	1,800	0.04	0.25	16,000	1,300	0.03	0.2
		4	25,000	2,200	0.055	0.35	21,000	1,800	0.04	0.3	18,000	1,500	0.03	0.25	14,000	1,100	0.02	0.2
		5	23,000	1,900	0.05	0.35	19,000	1,600	0.03	0.3	16,000	1,400	0.02	0.25	13,000	1,000	0.01	0.2
		6	20,000	1,700	0.045	0.35	16,000	1,400	0.02	0.3	14,000	1,200	0.01	0.25	11,000	850	0.007	0.2
		8	18,000	1,400	0.035	0.35	15,000	1,100	0.015	0.3	13,000	900	0.008	0.25	10,000	650	0.005	0.2
		10	16,000	1,000	0.025	0.35	13,000	800	0.01	0.3	11,000	700	0.006	0.25	9,000	500	0.005	0.2
1.2	0.1 0.3	5	24,000	2,200	0.06	0.45	20,000	1,800	0.045	0.4	17,000	1,500	0.03	0.3	14,000	1,100	0.02	0.2
		10	16,000	1,400	0.04	0.45	13,000	1,100	0.03	0.4	11,000	950	0.01	0.3	9,000	700	0.005	0.2
1.5	0.02	3	28,000	2,800	0.016	0.55	23,000	2,300	0.012	0.5	20,000	2,000	0.01	0.4	16,000	1,400	0.008	0.3
		4	25,000	2,400	0.016	0.55	21,000	2,000	0.012	0.5	18,000	1,700	0.01	0.4	14,000	1,200	0.008	0.3
		6	23,000	2,200	0.014	0.55	19,000	1,800	0.01	0.5	16,000	1,500	0.008	0.4	13,000	1,100	0.005	0.3
		8	20,000	1,800	0.014	0.55	16,000	1,500	0.01	0.5	14,000	1,300	0.008	0.4	11,000	900	0.003	0.3
		10	18,000	1,600	0.013	0.55	15,000	1,300	0.008	0.5	13,000	1,100	0.006	0.4	10,000	750	0.003	0.3
		12	16,000	1,400	0.012	0.55	13,000	1,100	0.008	0.5	11,000	950	0.005	0.4	9,000	650	0.002	0.3
		15	14,000	1,000	0.008	0.55	11,000	800	0.005	0.5	9,000	700	0.003	0.4	7,000	500	0.002	0.3
	0.05 0.1 0.2 0.3 0.5	3	28,000	2,800	0.1	0.55	23,000	2,300	0.05	0.5	20,000	2,000	0.04	0.4	16,000	1,400	0.03	0.3
		4	25,000	2,400	0.08	0.55	21,000	2,000	0.05	0.5	18,000	1,700	0.04	0.4	14,000	1,200	0.03	0.3
		6	23,000	2,200	0.08	0.55	19,000	1,800	0.045	0.5	16,000	1,500	0.03	0.4	13,000	1,100	0.02	0.3
		8	20,000	1,800	0.06	0.55	16,000	1,500	0.04	0.5	14,000	1,300	0.025	0.4	11,000	900	0.01	0.3
		10	18,000	1,600	0.06	0.55	15,000	1,300	0.03	0.5	13,000	1,100	0.02	0.4	10,000	750	0.01	0.3
		12	16,000	1,400	0.06	0.55	13,000	1,100	0.03	0.5	11,000	950	0.02	0.4	9,000	650	0.007	0.3
		15	14,000	1,000	0.03	0.55	11,000	800	0.02	0.5	9,000	700	0.007	0.4	7,000	500	0.005	0.3
2	0.02	3	25,000	3,000	0.02	0.7	22,000	2,500	0.015	0.6	19,000	2,100	0.012	0.5	15,000	1,500	0.008	0.35
		4	24,000	2,800	0.02	0.7	20,000	2,300	0.015	0.6	17,000	2,000	0.012	0.5	14,000	1,400	0.008	0.35
		6	22,000	2,500	0.018	0.7	18,000	2,100	0.015	0.6	15,000	1,800	0.012	0.5	12,000	1,300	0.008	0.35
		8	20,000	2,200	0.016	0.7	16,000	1,800	0.012	0.6	14,000	1,500	0.01	0.5	11,000	1,100	0.005	0.35
		10	18,000	1,900	0.015	0.7	14,000	1,500	0.012	0.6	13,000	1,300	0.008	0.5	10,000	950	0.005	0.35
		12	16,000	1,700	0.014	0.7	13,000	1,400	0.01	0.6	11,000	1,200	0.008	0.5	9,000	850	0.003	0.35
		16	14,000	1,400	0.012	0.7	11,000	1,100	0.008	0.6	9,500	950	0.005	0.5	7,500	650	0.002	0.35
		20	10,000	800	0.01	0.7	8,000	650	0.005	0.6	7,000	550	0.003	0.5	5,500	400	0.002	0.35
	0.05 0.1 0.2 0.3 0.5	3	25,000	3,000	0.13	0.7	22,000	2,500	0.06	0.6	19,000	2,100	0.05	0.5	15,000	1,500	0.03	0.35
		4	24,000	2,800	0.13	0.7	20,000	2,300	0.06	0.6	17,000	2,000	0.05	0.5	14,000	1,400	0.03	0.35
		6	22,000	2,500	0.12	0.7	18,000	2,100	0.06	0.6	15,000	1,800	0.05	0.5	12,000	1,300	0.03	0.35
		8	20,000	2,200	0.11	0.7	16,000	1,800	0.05	0.6	14,000	1,500	0.04	0.5	11,000	1,100	0.02	0.35
		10	18,000	1,900	0.1	0.7	14,000	1,500	0.05	0.6	13,000	1,300	0.03	0.5	10,000	950	0.015	0.35
		12	16,000	1,700	0.09	0.7	13,000	1,400	0.04	0.6	11,000	1,200	0.03	0.5	9,000	850	0.01	0.35
		16	14,000	1,400	0.07	0.7	11,000	1,100	0.03	0.6	9,500	950	0.02	0.5	7,500	650	0.007	0.35
		20	10,000	800	0.05	0.7	8,000	650	0.02	0.6	7,000	550	0.01	0.5	5,500	400	0.005	0.35
2.5	0.1 0.2 0.3 0.5	5	20,000	2,800	0.16	0.85	20,000	2,400	0.08	0.7	16,000	1,800	0.05	0.5	13,000	1,300	0.03	0.5
		10	16,000	2,200	0.14	0.85	13,000	1,800	0.07	0.7	11,000	1,500	0.05	0.5	9,000	1,100	0.03	0.5
		15	14,000	1,800	0.11	0.85	12,000	1,600	0.05	0.7	9,000	1,100	0.03	0.5	7,000	750	0.02	0.5
		20	11,000	1,400	0.08	0.85	9,000	1,100	0.04	0.7	7,500	950	0.02	0.5	6,000	650	0.01	0.5
		30	7,000	800	0.03	0.85	5,500	650	0.01	0.7	4,500	550	0.01	0.5	3,500	400	0.005	0.5

圆鼻 Corner Radius
长颈

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			调质钢 Prehardened Steels HPM・NAK (～42HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)				高速钢 High Speed Steels SKH (～65HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm
3	0.05	4	18,000	2,800	0.18	1	15,000	2,300	0.1	0.8	13,000	2,000	0.07	0.7	10,000	1,400	0.05	0.6
		6	16,000	2,500	0.17	1	13,000	2,100	0.1	0.8	11,000	1,800	0.07	0.7	9,000	1,300	0.05	0.6
		8	14,000	2,200	0.16	1	11,000	1,800	0.1	0.8	9,500	1,500	0.07	0.7	7,500	1,100	0.05	0.6
		10	13,800	2,100	0.16	1	11,000	1,700	0.09	0.8	9,500	1,400	0.06	0.7	7,500	1,000	0.04	0.6
		12	13,500	2,000	0.16	1	11,000	1,600	0.08	0.8	9,500	1,400	0.06	0.7	7,500	1,000	0.04	0.6
		14	12,800	1,900	0.15	1	10,000	1,500	0.07	0.8	9,000	1,300	0.05	0.7	7,200	940	0.03	0.6
		16	12,000	1,800	0.14	1	10,000	1,500	0.07	0.8	8,500	1,300	0.05	0.7	7,000	900	0.03	0.6
		20	10,000	1,400	0.12	1	8,000	1,100	0.05	0.8	7,000	950	0.04	0.7	5,500	700	0.02	0.6
	0.1 0.2 0.3 0.5	4	18,000	2,800	0.18	1	15,000	2,300	0.1	0.8	13,000	2,000	0.07	0.7	10,000	1,400	0.05	0.6
		6	16,000	2,500	0.17	1	13,000	2,100	0.1	0.8	11,000	1,800	0.07	0.7	9,000	1,300	0.05	0.6
		8	14,000	2,200	0.16	1	11,000	1,800	0.1	0.8	9,500	1,500	0.07	0.7	7,500	1,100	0.05	0.6
		10	13,800	2,100	0.16	1	11,000	1,700	0.09	0.8	9,500	1,400	0.06	0.7	7,500	1,000	0.04	0.6
		12	13,500	2,000	0.16	1	11,000	1,600	0.08	0.8	9,500	1,400	0.06	0.7	7,500	1,000	0.04	0.6
		14	12,800	1,900	0.15	1	10,000	1,500	0.07	0.8	9,000	1,300	0.05	0.7	7,200	940	0.03	0.6
		16	12,000	1,800	0.14	1	10,000	1,500	0.07	0.8	8,500	1,300	0.05	0.7	7,000	900	0.03	0.6
		20	10,000	1,400	0.12	1	8,000	1,100	0.05	0.8	7,000	950	0.04	0.7	5,500	700	0.02	0.6
		25	9,000	1,200	0.08	1	7,500	1,000	0.04	0.8	6,500	850	0.02	0.7	5,000	600	0.01	0.6
		30	8,000	800	0.06	1	6,500	650	0.03	0.8	5,500	550	0.02	0.7	4,500	400	0.007	0.6
	1	6	16,000	2,500	0.17	1	13,000	2,100	0.1	0.8	11,000	1,800	0.07	0.7	9,000	1,300	0.05	0.6
		8	14,000	2,200	0.16	1	11,000	1,800	0.1	0.8	9,500	1,500	0.07	0.7	7,500	1,100	0.05	0.6
		10	13,800	2,100	0.16	1	11,000	1,700	0.09	0.8	9,500	1,400	0.06	0.7	7,500	1,000	0.04	0.6
		12	13,500	2,000	0.16	1	11,000	1,600	0.08	0.8	9,500	1,400	0.06	0.7	7,500	1,000	0.04	0.6
		14	12,800	1,900	0.15	1	10,000	1,500	0.07	0.8	9,000	1,300	0.05	0.7	7,200	940	0.03	0.6
		16	12,000	1,800	0.14	1	10,000	1,500	0.07	0.8	8,500	1,300	0.05	0.7	7,000	900	0.03	0.6
		20	10,000	1,400	0.12	1	8,000	1,100	0.05	0.8	7,000	950	0.04	0.7	5,500	700	0.02	0.6
		25	9,000	1,200	0.08	1	7,500	1,000	0.04	0.8	6,500	850	0.02	0.7	5,000	600	0.01	0.6
		30	8,000	800	0.06	1	6,500	650	0.03	0.8	5,500	550	0.02	0.7	4,500	400	0.007	0.6
4	0.05	8	12,000	2,600	0.25	1.4	10,000	2,100	0.15	1.2	8,500	1,800	0.08	1	7,000	1,300	0.06	0.8
		12	12,000	2,600	0.25	1.4	10,000	2,100	0.15	1.2	8,500	1,800	0.08	1	7,000	1,300	0.06	0.8
		16	10,000	2,200	0.17	1.4	8,000	1,800	0.1	1.2	7,000	1,500	0.06	1	5,500	1,100	0.05	0.8
		20	9,000	1,900	0.15	1.4	7,200	1,500	0.09	1.2	6,300	1,300	0.06	1	5,000	950	0.04	0.8
		24	8,000	1,600	0.14	1.4	6,500	1,300	0.08	1.2	5,500	1,100	0.05	1	4,500	750	0.03	0.8
		28	7,200	1,400	0.11	1.4	6,000	1,200	0.05	1.2	5,000	1,000	0.03	1	4,000	700	0.02	0.8
		32	6,500	1,300	0.08	1.4	5,500	1,100	0.04	1.2	4,500	950	0.02	1	3,500	650	0.01	0.8
	0.1 0.2 0.3 0.5 1	8	12,000	2,600	0.25	1.4	10,000	2,100	0.15	1.2	8,500	1,800	0.08	1	7,000	1,300	0.06	0.8
		10	12,000	2,600	0.25	1.4	10,000	2,100	0.15	1.2	8,500	1,800	0.08	1	7,000	1,300	0.06	0.8
		12	12,000	2,600	0.25	1.4	10,000	2,100	0.15	1.2	8,500	1,800	0.08	1	7,000	1,300	0.06	0.8
		16	10,000	2,200	0.17	1.4	8,000	1,800	0.1	1.2	7,000	1,500	0.06	1	5,500	1,100	0.05	0.8
		20	9,000	1,900	0.15	1.4	7,200	1,500	0.09	1.2	6,300	1,300	0.06	1	5,000	950	0.04	0.8
		24	8,000	1,600	0.14	1.4	6,500	1,300	0.08	1.2	5,500	1,100	0.05	1	4,500	750	0.03	0.8
		28	7,200	1,400	0.11	1.4	6,000	1,200	0.05	1.2	5,000	1,000	0.03	1	4,000	700	0.02	0.8
		32	6,500	1,300	0.08	1.4	5,500	1,100	0.04	1.2	4,500	950	0.02	1	3,500	650	0.01	0.8
		40	5,500	1,000	0.05	1.4	4,600	830	0.025	1.2	3,600	640	0.01	1	2,400	420	0.005	0.8
5	0.1 0.2 0.3 0.5 1	10	9,800	2,500	0.3	2.2	8,500	2,100	0.18	2	7,400	1,800	0.08	1.6	6,000	1,400	0.06	1.2
		15	9,500	2,400	0.25	2.2	8,000	2,000	0.15	2	7,000	1,700	0.08	1.6	5,500	1,200	0.06	1.2
		20	8,000	2,000	0.18	2.2	6,500	1,600	0.1	2	5,500	1,400	0.07	1.6	4,500	1,000	0.05	1.2
		30	6,400	1,600	0.14	2.2	5,300	1,300	0.07	2	4,500	1,100	0.03	1.6	3,800	850	0.02	1.2
		40	5,000	1,200	0.09	2.2	4,000	1,000	0.05	2	3,500	850	0.02	1.6	3,000	600	0.01	1.2
6	0.05 0.1 0.2 0.3 0.5 1	12	8,000	2,500	0.35	2.7	6,500	2,100	0.18	2.5	5,500	1,800	0.08	2	4,500	1,300	0.06	1.5
		15	7,700	2,400	0.32	2.7	6,000	1,900	0.18	2.5	5,000	1,600	0.08	2	4,000	1,200	0.06	1.5
		18	7,000	2,200	0.3	2.7	5,500	1,800	0.18	2.5	4,500	1,500	0.08	2	3,500	1,100	0.06	1.5
		24	6,000	1,800	0.2	2.7	5,000	1,500	0.15	2.5	4,000	1,300	0.07	2	3,000	900	0.05	1.5
		30	5,300	1,600	0.16	2.7	4,300	1,300	0.13	2.5	3,600	1,080	0.06	2	2,700	870	0.04	1.5
		40	4,300	1,300	0.12	2.7	3,200	960	0.08	2.5	2,700	800	0.04	2	2,300	700	0.03	1.5
		48	3,000	900	0.1	2.7	2,500	750	0.05	2.5	2,000	650	0.03	2	2,000	450	0.02	1.5

备 注 Notes

※ 1 请根据实际的加工形状和所使用的机床等调整切削参数。
※ 2 切深量的 ap 表示轴向切深量，ae 表示径向切深量。
※ 3 切削高硬度钢时，建议使用油雾冷却方式。
※ 4 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※ 5 L（颈长）/ D（外径）超过 8 倍时，立面附近的进给速度须调整至 50% 以下，切深量：ae 调整至 30% 以下。
※ 6 沟槽切削时建议参考切削参数表，切深量 ap 及进给速度设定为 50% 以下，并采用来回切削加工方式。
※ 7 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。

※1 Adjust milling conditions according to milling shape and machine type.
※2 ap : Axial Depth of Cut, ae : Radial Depth of Cut.
※3 Recommend to use oil mist coolant for machining hardened steels.
※4 Recommend to apply helical or ramping for approaching into axial direction.
※5 Adjust feed rate 50% lower and cutting depth (ae) 30% lower for milling deep wall area when L/D exceeds 8 for stable milling.
※6 For slotting, recommend reciprocating milling by adjusting feed & ap in below 50% of recommended milling condition.
※7 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.



长颈 Long Neck 圆鼻 Corner Radius 涂层 Coating
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
H ～60高硬度钢 HRC Hardened Steel
H ～65高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy
常规系列 无限白金涂层 长颈造型 Regular Line MUGEN PREMIUM Long Neck Type

规格 Size $\phi 0.2 \times R0.05 \sim \phi 6 \times R1$

≦52 HRC

无限涂层 2刃长颈圆鼻铣刀
MUGEN COATING 2-Flute Long Neck Corner Radius End Mill

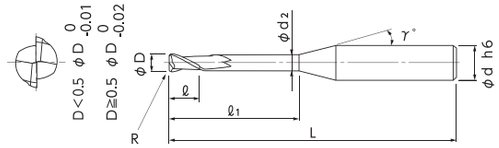
共有387种规格
Total 387 sizes

无限涂层 2刃长颈圆鼻铣刀
MUGEN COATING 2-Flute Long Neck Corner Radius End Mill

2刃长颈圆鼻铣刀。L/D最大20倍

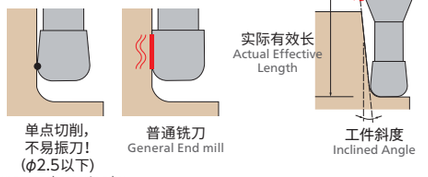
2-flute long neck corner radius end mill. Maximum L/D=20





D≦2.5 R±0.005
D>2.5 R±0.01

- 外周刃与工件的接触被降到了最低限度，可有效抑制振刀。
- 与球头铣刀相比，步距设定值可取较大值，实现高效加工。
- 角半径精度高达±5μm（外径φ2.5以下）。
- 升级版的无限涂层，可广泛应用于从高硬度钢、调质钢的直接切削到铜电极加工等各种不同的领域。
- Minimized chattering by peripheral cutting edge designed for minimal contact to work material.
- Realized high efficiency milling by obtaining larger radial depth of cutting comparing with Ball End Mill.
- Corner R accuracy : ±5μm (Dia. ～2.5)
- Better performance in wide range of machining of direct carving on Hardened Steels, Prehardened Steels and Copper Electrode.



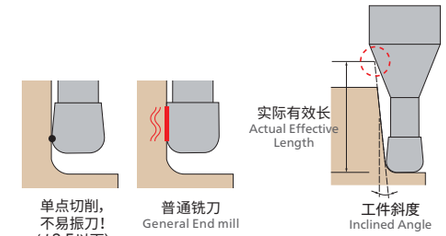
单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00221-02050	0.2	R0.05	0.5	0.15	0.18	12°	4	45	9,500	0.56	0.59	0.61	0.64	0.71
08-00220-02001			0.5				6	50	12,000	0.56	0.59	0.61	0.64	0.71
08-00221-02051			1				4	45	9,500	1.08	1.13	1.18	1.24	1.37
08-00220-02002			1				6	50	12,000	1.08	1.13	1.18	1.24	1.37
08-00221-02052			1.5				4	45	9,500	1.61	1.68	1.75	1.84	2.03
08-00221-02053			2				4	45	9,500	2.13	2.22	2.32	2.43	2.70
08-00221-03050	0.3	R0.05	1	0.25	0.28	12°	4	45	9,100	1.08	1.13	1.18	1.24	1.37
08-00220-03001			1				6	50	11,600	1.08	1.13	1.18	1.24	1.37
08-00221-03051			1.5				4	45	9,100	1.61	1.68	1.75	1.84	2.03
08-00221-03052			2				4	45	9,100	2.13	2.22	2.32	2.43	2.70
08-00220-03002			2				6	50	11,600	2.13	2.22	2.32	2.43	2.70
08-00221-03053			2.5				4	45	10,100	2.65	2.77	2.89	3.03	3.36
08-00221-03054			3				4	45	10,100	3.17	3.31	3.46	3.63	4.02
08-00221-04050	0.4	R0.05	1	0.3	0.37	12°	4	45	6,100	1.11	1.16	1.21	1.27	1.40
08-00221-04051			1.5				4	45	6,100	1.63	1.70	1.78	1.86	2.06
08-00221-04052			2				4	45	6,100	2.15	2.25	2.35	2.46	2.73
08-00220-04005			2				6	50	7,700	2.15	2.25	2.35	2.46	2.73
08-00221-04053			3				4	45	6,100	3.19	3.34	3.49	3.66	4.05
08-00220-04006			3				6	50	7,700	3.19	3.34	3.49	3.66	4.05
08-00221-04054			4				4	45	6,100	4.24	4.43	4.63	4.86	5.38
08-00220-04007			4				6	50	7,700	4.24	4.43	4.63	4.86	5.38
08-00221-04100		R0.1	1				4	45	6,100	1.11	1.15	1.20	1.26	1.38
08-00221-04101			1.5				4	45	6,100	1.63	1.70	1.77	1.86	2.05
08-00221-04102			2				4	45	6,100	2.15	2.24	2.34	2.45	2.71
08-00220-04011			2				6	50	7,700	2.15	2.24	2.34	2.45	2.71
08-00221-04103			3				4	45	6,100	3.19	3.33	3.48	3.65	4.04
08-00220-04013			3				6	50	7,700	3.19	3.33	3.48	3.65	4.04
08-00221-04104			4				4	45	6,100	4.24	4.42	4.62	4.85	5.37
08-00220-04012			4				6	50	7,700	4.24	4.42	4.62	4.85	5.37

订购方法 How to Order

请指定MHR230R 外径(D)×角半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MHR230R (D)×(R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.



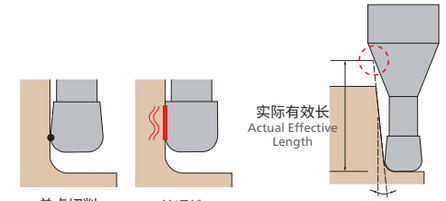
单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00221-05050	0.5	R0.05	1	0.4	0.46	12°	4	45	4,900	1.13	1.18	1.24	1.29	1.43
08-00221-05051			2				4	45	4,900	2.18	2.27	2.38	2.49	2.76
08-00220-05005			2				6	50	6,300	2.18	2.27	2.38	2.49	2.76
08-00221-05052			3				4	45	4,900	3.22	3.36	3.52	3.69	4.09
08-00220-05006			3				6	50	6,300	3.22	3.36	3.52	3.69	4.09
08-00221-05053			4				4	45	4,900	4.26	4.45	4.66	4.88	5.41
08-00220-05007			4				6	50	6,300	4.26	4.45	4.66	4.88	5.41
08-00221-05054			5				4	45	4,900	5.31	5.54	5.80	6.08	6.74
08-00220-05008			5				6	50	6,300	5.31	5.54	5.80	6.08	6.74
08-00221-05055			6				4	45	4,900	6.35	6.63	6.94	7.28	8.07
08-00221-05100		R0.1	1				4	45	4,900	1.13	1.18	1.23	1.28	1.42
08-00221-05101			2				4	45	4,900	2.17	2.27	2.37	2.48	2.74
08-00220-05011			2				6	50	6,300	2.17	2.27	2.37	2.48	2.74
08-00221-05102			3				4	45	4,900	3.22	3.36	3.51	3.68	4.07
08-00220-05013			3				6	50	6,300	3.22	3.36	3.51	3.68	4.07
08-00221-05103			4				4	45	4,900	4.26	4.45	4.65	4.87	5.40
08-00220-05012			4				6	50	6,300	4.26	4.45	4.65	4.87	5.40
08-00221-05104			5				4	45	4,900	5.30	5.54	5.79	6.07	6.72
08-00220-05014			5				6	50	6,300	5.30	5.54	5.79	6.07	6.72
08-00221-05105			6				4	45	4,900	6.35	6.63	6.93	7.27	8.05
08-00221-06050	0.6	R0.05	2	0.5	0.56	12°	4	45	4,900	2.18	2.27	2.38	2.49	2.76
08-00220-06005			2				6	50	6,300	2.18	2.27	2.38	2.49	2.76
08-00221-06051			3				4	45	4,900	3.22	3.36	3.52	3.69	4.09
08-00221-06052			4				4	45	4,900	4.26	4.45	4.66	4.88	5.41
08-00220-06007			4				6	50	6,300	4.26	4.45	4.66	4.88	5.41
08-00221-06053			6				4	45	4,900	6.35	6.63	6.94	7.28	8.07
08-00220-06009			6				6	50	6,300	6.35	6.63	6.94	7.28	8.07
08-00221-06054			8				4	50	4,900	8.43	8.81	9.22	9.67	10.72
08-00221-06100		R0.1	2				4	45	4,900	2.17	2.27	2.37	2.48	2.74
08-00221-06101			3				4	45	4,900	3.22	3.36	3.51	3.68	4.07
08-00221-06102			4				4	45	4,900	4.26	4.45	4.65	4.87	5.40
08-00220-06011			4				6	50	6,300	4.26	4.45	4.65	4.87	5.40
08-00221-06103			6				4	45	4,900	6.35	6.63	6.93	7.27	8.05
08-00220-06012			6				6	50	6,300	6.35	6.63	6.93	7.27	8.05
08-00221-06104			8				4	50	4,900	8.43	8.80	9.21	9.66	10.71
08-00221-06200		R0.2	2				4	45	4,900	2.17	2.26	2.36	2.46	2.71
08-00221-06201			3				4	45	4,900	3.21	3.35	3.50	3.66	4.04

圆鼻 长颈 Long Neck Corner Radius 涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H 高硬度钢～52 Hardened Steel HRC
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

无限涂层 2刃长颈圆鼻铣刀

MUGEN COATING 2-Flute Long Neck Corner Radius End Mill



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00221-06202	0.6	R0.2	4	0.5	0.56	12°	4	45	4,900	4.26	4.44	4.64	4.86	5.37
08-00221-06203			6				4	45	4,900	6.34	6.62	6.92	7.25	8.02
08-00221-06204			8				4	50	4,900	8.43	8.80	9.20	9.64	10.67
08-00221-07050	0.7	R0.05	4	0.55	0.66	12°	4	45	5,300	4.26	4.45	4.66	4.88	5.41
08-00220-07005			4				6	50	6,600	4.26	4.45	4.66	4.88	5.41
08-00221-07051			6				4	45	5,300	6.35	6.63	6.94	7.28	8.07
08-00220-07006			6				6	50	6,600	6.35	6.63	6.94	7.28	8.07
08-00221-07100		R0.1	4				4	45	5,300	4.26	4.45	4.65	4.87	5.40
08-00220-07011			4				6	50	6,600	4.26	4.45	4.65	4.87	5.40
08-00221-07101			6				4	45	5,300	6.35	6.63	6.93	7.27	8.05
08-00220-07012			6				6	50	6,600	6.35	6.63	6.93	7.27	8.05
08-00221-08050	0.8	R0.05	4	0.65	0.76	12°	4	45	5,700	4.26	4.45	4.66	4.88	5.41
08-00220-08005			4				6	50	7,200	4.26	4.45	4.66	4.88	5.41
08-00221-08051			6				4	45	5,700	6.35	6.63	6.94	7.28	8.07
08-00220-08006			6				6	50	7,200	6.35	6.63	6.94	7.28	8.07
08-00221-08052			8				4	50	5,700	8.43	8.81	9.22	9.67	10.72
08-00220-08007			8				6	50	7,200	8.43	8.81	9.22	9.67	10.72
08-00221-08100		R0.1	4				4	45	5,700	4.26	4.45	4.65	4.87	5.40
08-00220-08011			4				6	50	7,200	4.26	4.45	4.65	4.87	5.40
08-00221-08101			6				4	45	5,700	6.35	6.63	6.93	7.27	8.05
08-00220-08012			6				6	50	7,200	6.35	6.63	6.93	7.27	8.05
08-00221-08102			8				4	50	5,700	8.43	8.80	9.21	9.66	10.71
08-00220-08013			8				6	50	7,200	8.43	8.80	9.21	9.66	10.71
08-00221-08200		R0.2	4				4	45	5,700	4.26	4.44	4.64	4.86	5.37
08-00220-08021			4				6	50	7,200	4.26	4.44	4.64	4.86	5.37
08-00221-08201			6				4	45	5,700	6.34	6.62	6.92	7.25	8.02
08-00220-08022			6				6	50	7,200	6.34	6.62	6.92	7.25	8.02
08-00221-08202			8				4	50	5,700	8.43	8.80	9.20	9.64	10.67
08-00220-08023			8				6	50	7,200	8.43	8.80	9.20	9.64	10.67
08-00221-09100	0.9	R0.1	4	0.7	0.85	12°	4	45	6,300	4.28	4.47	4.68	4.90	5.43
08-00220-09011			4				6	50	7,500	4.28	4.47	4.68	4.90	5.43
08-00221-09101			8				4	50	6,300	8.46	8.83	9.24	9.69	10.74
08-00220-09012			8				6	50	7,500	8.46	8.83	9.24	9.69	10.74
08-00221-10050	1	R0.05	2	0.8	0.95	12°	4	50	4,800	2.20	2.30	2.40	2.52	2.79
08-00221-10051			3				4	50	4,800	3.24	3.39	3.54	3.72	4.12
08-00220-10001			3				6	50	6,600	3.24	3.39	3.54	3.72	4.12
08-00221-10052			4				4	50	4,800	4.29	4.48	4.68	4.91	5.44

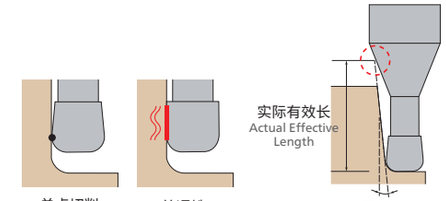
订购方法 How to Order

请指定MHR230R 外径(D)×角半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MHR230R (D)×(R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.

MHR230R

无限涂层 2刃长颈圆鼻铣刀
MUGEN COATING 2-Flute Long Neck Corner Radius End Mill

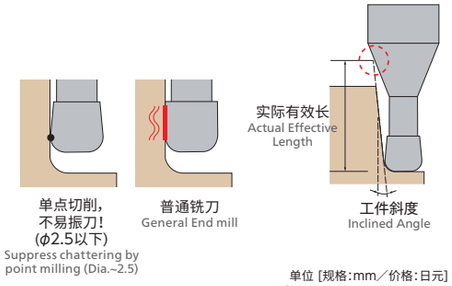


单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00220-10002	1	R0.05	4	0.8	0.95	12°	6	50	6,600	4.29	4.48	4.68	4.91	5.44
08-00221-10053			5				4	50	4,800	5.33	5.57	5.82	6.11	6.77
08-00220-10003			5				6	50	6,600	5.33	5.57	5.82	6.11	6.77
08-00221-10054			6				4	50	5,300	6.37	6.66	6.97	7.31	8.10
08-00220-10004			6				6	50	6,600	6.37	6.66	6.97	7.31	8.10
08-00221-10055			8				4	50	5,300	8.46	8.83	9.25	9.70	10.75
08-00220-10006			8				6	50	6,600	8.46	8.83	9.25	9.70	10.75
08-00221-10056			10				4	50	5,300	10.54	11.01	11.53	12.09	13.41
08-00220-10008			10				6	50	6,600	10.54	11.01	11.53	12.09	13.41
08-00221-10057			12				4	50	5,300	12.63	13.19	13.81	14.49	16.06
08-00220-10009			12				6	50	6,600	12.63	13.19	13.81	14.49	16.06
08-00221-10058			16				4	60	6,900	16.80	17.55	18.37	19.27	21.37
08-00221-10059			20				4	60	7,700	20.97	21.91	22.93	24.06	26.68
08-00221-10100		R0.1	2				4	50	4,800	2.20	2.29	2.40	2.51	2.77
08-00221-10101			3				4	50	4,800	3.24	3.38	3.54	3.71	4.10
08-00220-10010			3				6	50	6,600	3.24	3.38	3.54	3.71	4.10
08-00221-10102			4				4	50	4,800	4.28	4.47	4.68	4.90	5.43
08-00220-10011			4				6	50	6,600	4.28	4.47	4.68	4.90	5.43
08-00221-10103			5				4	50	4,800	5.33	5.56	5.82	6.10	6.76
08-00220-10014			5				6	50	6,600	5.33	5.56	5.82	6.10	6.76
08-00221-10104			6				4	50	5,300	6.37	6.65	6.96	7.30	8.08
08-00220-10015			6				6	50	6,600	6.37	6.65	6.96	7.30	8.08
08-00221-10105			8				4	50	5,300	8.46	8.83	9.24	9.69	10.74
08-00220-10012			8				6	50	6,600	8.46	8.83	9.24	9.69	10.74
08-00221-10106			10				4	50	5,300	10.54	11.01	11.52	12.08	13.39
08-00220-10016			10				6	50	6,600	10.54	11.01	11.52	12.08	13.39
08-00221-10107			12				4	50	5,300	12.63	13.19	13.80	14.48	16.05
08-00220-10013			12				6	50	6,600	12.63	13.19	13.80	14.48	16.05
08-00221-10108			16				4	60	6,900	16.80	17.55	18.36	19.26	21.36
08-00221-10109			20				4	60	7,700	20.97	21.90	22.93	24.05	26.66
08-00221-10200		R0.2	2				4	50	4,800	2.19	2.28	2.38	2.49	2.74
08-00221-10201			3				4	50	4,800	3.24	3.37	3.52	3.69	4.07
08-00220-10024			3				6	50	6,600	3.24	3.37	3.52	3.69	4.07
08-00221-10202			4				4	50	4,800	4.28	4.46	4.66	4.88	5.40
08-00220-10021			4				6	50	6,600	4.28	4.46	4.66	4.88	5.40
08-00221-10203			5				4	50	4,800	5.32	5.55	5.80	6.08	6.72
08-00220-10025			5				6	50	6,600	5.32	5.55	5.80	6.08	6.72

无限涂层 2刃长颈圆鼻铣刀

MUGEN COATING 2-Flute Long Neck Corner Radius End Mill



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00221-10204	1	R0.2	6	0.8	0.95	12°	4	50	5,300	6.37	6.64	6.94	7.28	8.05
08-00220-10026			6				6	50	6,600	6.37	6.64	6.94	7.28	8.05
08-00221-10205			8				4	50	5,300	8.45	8.82	9.23	9.67	10.71
08-00220-10022			8				6	50	6,600	8.45	8.82	9.23	9.67	10.71
08-00221-10206			10				4	50	5,300	10.54	11.00	11.51	12.06	13.36
08-00220-10027			10				6	50	6,600	10.54	11.00	11.51	12.06	13.36
08-00221-10207			12				4	50	5,300	12.62	13.18	13.79	14.46	16.01
08-00220-10023			12				6	50	6,600	12.62	13.18	13.79	14.46	16.01
08-00221-10208			16				4	60	6,900	16.79	17.54	18.35	19.24	21.32
08-00221-10209			20				4	60	7,700	20.97	21.89	22.91	24.03	26.63
08-00221-10300		R0.3	2				4	50	4,800	2.19	2.28	2.37	2.47	2.71
08-00221-10301			3				4	50	4,800	3.23	3.36	3.51	3.67	4.04
08-00220-10034			3				6	50	6,600	3.23	3.36	3.51	3.67	4.04
08-00221-10302			4				4	50	4,800	4.28	4.45	4.65	4.86	5.36
08-00220-10031			4				6	50	6,600	4.28	4.45	4.65	4.86	5.36
08-00221-10303			5				4	50	4,800	5.32	5.54	5.79	6.06	6.69
08-00220-10035			5				6	50	6,600	5.32	5.54	5.79	6.06	6.69
08-00221-10304			6				4	50	5,300	6.36	6.63	6.93	7.26	8.02
08-00220-10036			6				6	50	6,600	6.36	6.63	6.93	7.26	8.02
08-00221-10305			8				4	50	5,300	8.45	8.81	9.21	9.65	10.67
08-00220-10032			8				6	50	6,600	8.45	8.81	9.21	9.65	10.67
08-00221-10306			10				4	50	5,300	10.53	10.99	11.49	12.04	13.33
08-00220-10037			10				6	50	6,600	10.53	10.99	11.49	12.04	13.33
08-00221-10307			12				4	50	5,300	12.62	13.17	13.77	14.44	15.98
08-00220-10033			12				6	50	6,600	12.62	13.17	13.77	14.44	15.98
08-00221-10308			16				4	60	6,900	16.79	17.53	18.34	19.22	21.29
08-00221-10309			20				4	60	7,700	20.96	21.89	22.90	24.01	26.60
08-00220-12011	1.2	R0.1	5	1	1.14	12°	6	50	6,800	5.35	5.59	5.84	6.13	6.79
08-00221-12100			6				4	50	5,400	6.39	6.68	6.99	7.32	8.11
08-00221-12101			8				4	50	5,400	8.48	8.86	9.27	9.72	10.77
08-00221-12102			10				4	50	5,400	10.57	11.03	11.55	12.11	13.42
08-00220-12013			10				6	50	6,800	10.57	11.03	11.55	12.11	13.42
08-00221-12103			12				4	50	5,400	12.65	13.21	13.83	14.50	16.08
08-00220-12015			15				6	60	10,000	15.78	16.48	17.25	18.09	20.06
08-00221-12104			16				4	60	5,400	16.82	17.57	18.39	19.29	21.39
08-00221-12105			20				4	60	8,200	20.99	21.93	22.95	24.08	26.70
08-00220-12021		R0.2	5				6	50	6,800	5.35	5.58	5.83	6.11	6.75

订购方法 How to Order

请指定MHR230R 外径(D)×角半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MHR230R (D)×(R)×(ℓ1)×(d).

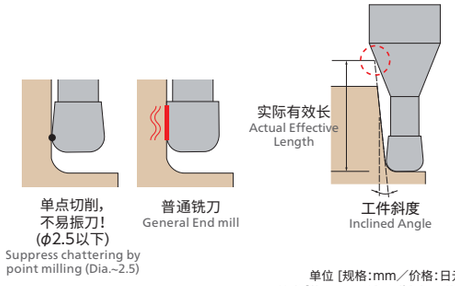
※(γ)为参考值。
※(γ) is reference value.

MHR230R

无限涂层 2刃长颈圆鼻铣刀

MUGEN COATING 2-Flute Long Neck Corner Radius End Mill

圆鼻 Corner Radius
长颈 Long Neck
涂层 Coating



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00221-12200	1.2	R0.2	6	1	1.14	12°	4	50	5,400	6.39	6.67	6.97	7.30	8.08
08-00221-12201			8				4	50	5,400	8.48	8.85	9.25	9.70	10.74
08-00221-12202			10				4	50	5,400	10.56	11.03	11.53	12.09	13.39
08-00220-12022			10				6	50	6,800	10.56	11.03	11.53	12.09	13.39
08-00221-12203			12				4	50	5,400	12.65	13.20	13.81	14.48	16.05
08-00220-12023			15				6	60	10,300	15.78	16.47	17.24	18.07	20.03
08-00221-12204			16				4	60	5,400	16.82	17.56	18.38	19.27	21.35
08-00221-12205			20				4	60	8,200	20.99	21.92	22.94	24.06	26.66
08-00220-12031		R0.3	5				6	50	6,800	5.34	5.57	5.82	6.09	6.72
08-00221-12300			6				4	50	5,400	6.39	6.66	6.96	7.29	8.05
08-00221-12301			8				4	50	5,400	8.47	8.84	9.24	9.68	10.70
08-00221-12302			10				4	50	5,400	10.56	11.02	11.52	12.07	13.36
08-00220-12032			10				6	50	6,800	10.56	11.02	11.52	12.07	13.36
08-00221-12303			12				4	50	5,400	12.64	13.20	13.80	14.46	16.01
08-00220-12033			15				6	60	10,000	15.77	16.46	17.22	18.05	20.00
08-00221-12304			16				4	60	5,400	16.81	17.55	18.36	19.25	21.32
08-00221-12305			20				4	60	8,200	20.99	21.91	22.92	24.04	26.63
08-00221-15100	1.5	R0.1	4	1.2	1.45	12°	4	50	5,100	4.28	4.47	4.68	4.90	5.43
08-00221-15101			6				4	50	5,100	6.37	6.65	6.96	7.30	8.08
08-00220-15011			6				6	50	6,800	6.37	6.65	6.96	7.30	8.08
08-00221-15102			8				4	50	5,400	8.46	8.83	9.24	9.69	10.74
08-00221-15103			10				4	50	5,400	10.54	11.01	11.52	12.08	13.39
08-00221-15104			12				4	50	5,400	12.63	13.19	13.80	14.48	16.05
08-00220-15013			12				6	50	6,800	12.63	13.19	13.80	14.48	16.05
08-00221-15105			16				4	60	5,400	16.80	17.55	18.36	19.26	21.36
08-00221-15106			18				4	60	5,400	18.88	19.72	20.64	21.65	Free
08-00220-15015			18				6	60	6,800	18.88	19.72	20.64	21.65	24.01
08-00221-15107			20				4	60	5,400	20.97	21.90	22.93	24.05	Free
08-00221-15200		R0.2	4				4	50	5,100	4.28	4.46	4.66	4.88	5.40
08-00221-15201			6				4	50	5,100	6.37	6.64	6.94	7.28	8.05
08-00220-15021			6				6	50	6,800	6.37	6.64	6.94	7.28	8.05
08-00221-15202			8				4	50	5,400	8.45	8.82	9.23	9.67	10.71
08-00221-15203			10				4	50	5,400	10.54	11.00	11.51	12.06	13.36
08-00221-15204			12				4	50	5,400	12.62	13.18	13.79	14.46	16.01
08-00220-15023			12				6	50	6,800	12.62	13.18	13.79	14.46	16.01
08-00221-15205			16				4	60	5,400	16.79	17.54	18.35	19.24	21.32
08-00221-15206			18				4	60	5,400	18.88	19.72	20.63	21.64	23.98

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ~52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

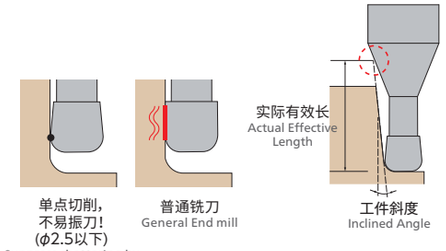
无限涂层 2刃长颈圆鼻铣刀

MUGEN COATING 2-Flute Long Neck Corner Radius End Mill

MHR230R

无限涂层 2刃长颈圆鼻铣刀

MUGEN COATING 2-Flute Long Neck Corner Radius End Mill



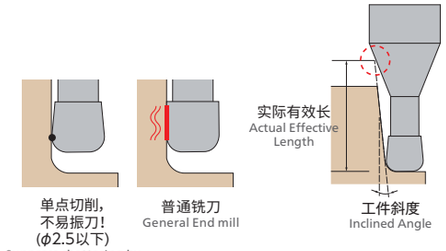
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00220-15025		R0.2	18				6	60	6,800	18.88	19.72	20.63	21.64	23.98
08-00221-15207			20				4	60	5,400	20.97	21.89	22.91	24.03	Free
08-00221-15300		R0.3	4				4	50	5,100	4.28	4.45	4.65	4.86	5.36
08-00221-15301			6				4	50	5,100	6.36	6.63	6.93	7.26	8.02
08-00220-15031			6				6	50	6,800	6.36	6.63	6.93	7.26	8.02
08-00221-15302			8				4	50	5,400	8.45	8.81	9.21	9.65	10.67
08-00221-15303			10				4	50	5,400	10.53	10.99	11.49	12.04	13.33
08-00221-15304			12				4	50	5,400	12.62	13.17	13.77	14.44	15.98
08-00220-15032			12				6	50	6,800	12.62	13.17	13.77	14.44	15.98
08-00221-15305			16				4	60	5,400	16.79	17.53	18.34	19.22	21.29
08-00221-15306			18				4	60	5,400	18.88	19.71	20.62	21.62	23.95
08-00220-15033	1.5		18	1.2	1.45	12°	6	60	6,800	18.88	19.71	20.62	21.62	23.95
08-00221-15307			20				4	60	5,400	20.96	21.89	22.90	24.01	Free
08-00221-15500		R0.5	4				4	50	5,100	4.27	4.44	4.62	4.83	5.30
08-00221-15501			6				4	50	5,100	6.35	6.62	6.90	7.22	7.96
08-00220-15051			6				6	50	6,800	6.35	6.62	6.90	7.22	7.96
08-00221-15502			8				4	50	5,400	8.44	8.79	9.18	9.61	10.61
08-00221-15503			10				4	50	5,400	10.52	10.97	11.46	12.01	13.26
08-00221-15504			12				4	50	5,400	12.61	13.15	13.75	14.40	15.92
08-00220-15052			12				6	50	6,800	12.61	13.15	13.75	14.40	15.92
08-00221-15505			16				4	60	5,400	16.78	17.51	18.31	19.18	21.23
08-00221-15506			18				4	60	5,400	18.87	19.69	20.59	21.58	23.88
08-00220-15053			18				6	60	6,800	18.87	19.69	20.59	21.58	23.88
08-00221-15507			20				4	60	5,400	20.95	21.87	22.87	23.97	Free
08-00221-20100		R0.1	4				4	50	5,100	4.38	4.57	4.78	5.02	5.55
08-00221-20101			6				4	50	5,100	6.47	6.75	7.07	7.41	8.21
08-00221-20102			8				4	50	5,400	8.55	8.93	9.35	9.80	10.86
08-00220-20011			8				6	50	6,900	8.55	8.93	9.35	9.80	10.86
08-00221-20103			10				4	50	5,400	10.64	11.11	11.63	12.19	13.52
08-00221-20104			12				4	50	5,400	12.73	13.29	13.91	14.59	16.17
08-00220-20014	2		12	1.6	1.91	12°	6	50	6,900	12.73	13.29	13.91	14.59	16.17
08-00221-20105			16				4	60	5,400	16.90	17.65	18.47	19.37	Free
08-00220-20012			16				6	60	6,900	16.90	17.65	18.47	19.37	21.48
08-00221-20106			20				4	60	5,400	21.07	22.01	23.03	24.16	Free
08-00220-20015			20				6	60	6,900	21.07	22.01	23.03	24.16	26.79
08-00221-20107			24				4	70	5,400	25.24	26.36	27.59	Free	Free
08-00220-20013			24				6	70	6,900	25.24	26.36	27.59	28.95	32.10

订购方法 How to Order

请指定MHR230R 外径(D)×角半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MHR230R (D)×(R)×(ℓ1)×(d).

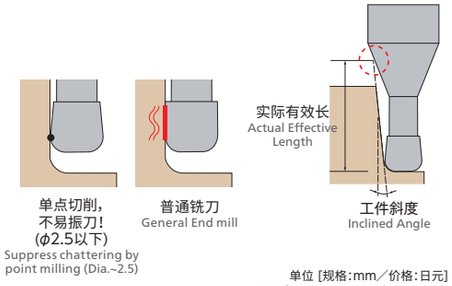
※(γ)为参考值。
※(γ) is reference value.



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00221-20108		R0.1	26				4	70	5,400	27.32	28.54	29.88	Free	Free
08-00221-20109			30				4	70	5,400	31.50	32.90	34.44	Free	Free
08-00221-20200		R0.3	4				4	50	5,100	4.38	4.57	4.77	5.00	5.52
08-00221-20201			6				4	50	5,100	6.46	6.74	7.05	7.39	8.18
08-00221-20202			8				4	50	5,400	8.55	8.92	9.33	9.78	10.83
08-00220-20021			8				6	50	6,900	8.55	8.92	9.33	9.78	10.83
08-00221-20203			10				4	50	5,400	10.64	11.10	11.61	12.18	13.48
08-00221-20204			12				4	50	5,400	12.72	13.28	13.89	14.57	16.14
08-00220-20023			12				6	50	6,900	12.72	13.28	13.89	14.57	16.14
08-00221-20205		R0.2	16				4	60	5,400	16.89	17.64	18.46	19.36	Free
08-00220-20025			16				6	60	6,900	16.89	17.64	18.46	19.36	21.45
08-00221-20206			20				4	60	5,400	21.06	22.00	23.02	24.14	Free
08-00220-20027			20				6	60	6,900	21.06	22.00	23.02	24.14	26.76
08-00221-20207			24				4	70	5,400	25.23	26.36	27.58	Free	Free
08-00220-20029			24				6	70	6,900	25.23	26.36	27.58	28.93	32.07
08-00221-20208			26				4	70	5,400	27.32	28.53	29.86	Free	Free
08-00221-20209			30				4	70	5,400	31.49	32.89	34.42	Free	Free
08-00221-20300		R0.3	4				4	50	5,100	4.37	4.56	4.76	4.98	5.49
08-00221-20301	2		6	1.6	1.91	12°	4	50	5,100	6.46	6.74	7.04	7.37	8.14
08-00221-20302			8				4	50	5,400	8.55	8.91	9.32	9.76	10.80
08-00220-20031			8				6	50	6,900	8.55	8.91	9.32	9.76	10.80
08-00221-20303			10				4	50	5,400	10.63	11.09	11.60	12.16	13.45
08-00221-20304			12				4	50	5,400	12.72	13.27	13.88	14.55	16.11
08-00220-20034			12				6	50	6,900	12.72	13.27	13.88	14.55	16.11
08-00221-20305			16				4	60	5,400	16.89	17.63	18.44	19.34	Free
08-00220-20032			16				6	60	6,900	16.89	17.63	18.44	19.34	21.42
08-00221-20306			20				4	60	5,400	21.06	21.99	23.00	24.12	Free
08-00220-20035			20				6	60	6,900	21.06	21.99	23.00	24.12	26.73
08-00221-20307			24				4	70	5,400	25.23	26.35	27.57	28.91	Free
08-00220-20033			24				6	70	6,900	25.23	26.35	27.57	28.91	32.03
08-00221-20308			26				4	70	5,400	27.32	28.53	29.85	Free	Free
08-00221-20309			30				4	70	5,400	31.49	32.88	34.41	Free	Free
08-00221-20500		R0.5	4				4	50	5,100	4.37	4.54	4.73	4.94	5.43
08-00221-20501			6				4	50	5,100	6.45	6.72	7.01	7.33	8.08
08-00221-20502			8				4	50	5,400	8.54	8.90	9.29	9.72	10.73
08-00220-20051			8				6	50	6,900	8.54	8.90	9.29	9.72	10.73
08-00221-20503			10				4	50	5,400	10.62	11.08	11.57	12.12	13.39

无限涂层 2刃长颈圆鼻铣刀
MUGEN COATING 2-Flute Long Neck Corner Radius End Mill



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00221-20504	2	R0.5	12	1.6	1.91	12°	4	50	5,400	12.71	13.25	13.85	14.51	16.04
08-00220-20054			12				6	50	6,900	12.71	13.25	13.85	14.51	16.04
08-00221-20505			16				4	60	5,400	16.88	17.61	18.42	19.30	Free
08-00220-20052			16				6	60	6,900	16.88	17.61	18.42	19.30	21.35
08-00221-20506			20				4	60	5,400	21.05	21.97	22.98	24.08	Free
08-00220-20055			20				6	60	6,900	21.05	21.97	22.98	24.08	26.66
08-00221-20507			24				4	70	5,400	25.22	26.33	27.54	28.87	Free
08-00220-20053			24				6	70	6,900	25.22	26.33	27.54	28.87	31.97
08-00221-20508			26				4	70	5,400	27.31	28.51	29.82	Free	Free
08-00221-20509			30				4	70	5,400	31.48	32.87	34.38	Free	Free
08-00221-25100	2.5	R0.1	10	2	2.39	12°	4	50	5,700	10.69	11.16	11.68	12.25	13.58
08-00220-25011			10				6	50	7,200	10.69	11.16	11.68	12.25	13.58
08-00221-25101			20				4	60	5,800	21.12	22.06	23.09	Free	Free
08-00220-25013			20				6	60	7,400	21.12	22.06	23.09	24.22	26.85
08-00221-25102			30				4	70	6,000	31.55	32.95	Free	Free	Free
08-00220-25015			30				6	70	7,700	31.55	32.95	34.49	36.18	Free
08-00221-25200		R0.2	10				4	50	5,700	10.68	11.15	11.67	12.23	13.55
08-00220-25021			10				6	50	7,200	10.68	11.15	11.67	12.23	13.55
08-00221-25201			20				4	60	5,800	21.11	22.05	23.07	Free	Free
08-00220-25023			20				6	60	7,400	21.11	22.05	23.07	24.20	26.82
08-00221-25202			30				4	70	6,000	31.54	32.94	Free	Free	Free
08-00220-25025			30				6	70	7,700	31.54	32.94	34.48	36.16	Free
08-00221-25300		R0.3	10				4	50	5,700	10.68	11.14	11.65	12.21	13.52
08-00220-25031			10				6	50	7,200	10.68	11.14	11.65	12.21	13.52
08-00221-25301			20				4	60	5,800	21.11	22.04	23.06	Free	Free
08-00220-25032			20				6	60	7,400	21.11	22.04	23.06	24.18	26.79
08-00221-25302			30				4	70	6,000	31.54	32.93	Free	Free	Free
08-00220-25033			30				6	70	7,600	31.54	32.93	34.46	36.14	Free
08-00221-25500		R0.5	10				4	50	5,700	10.67	11.13	11.63	12.17	13.45
08-00220-25051			10				6	50	7,200	10.67	11.13	11.63	12.17	13.45
08-00221-25501			20				4	60	5,800	21.10	22.02	23.03	Free	Free
08-00220-25052			20				6	60	7,400	21.10	22.02	23.03	24.14	26.72
08-00221-25502			30				4	70	6,000	31.53	32.92	Free	Free	Free
08-00220-25053			30				6	70	7,600	31.53	32.92	34.44	36.11	Free

订购方法 How to Order

请指定MHR230R 外径(D)×角半径(R)×颈长(ℓ1)×柄径(d)。
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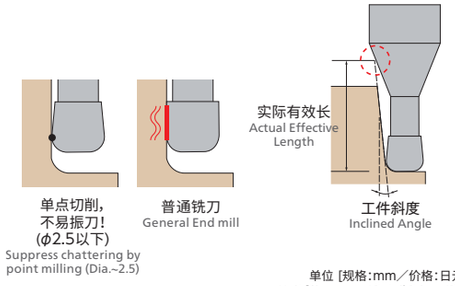
※(γ)为参考值。
※(γ) is reference value.

MHR230R

无限涂层 2刃长颈圆鼻铣刀
MUGEN COATING 2-Flute Long Neck Corner Radius End Mill



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

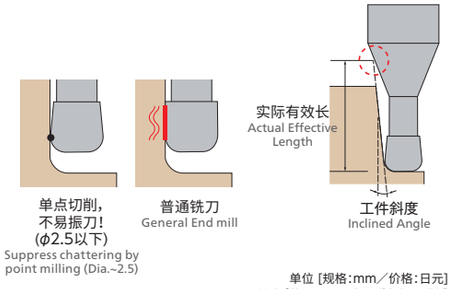
产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00220-30011	3	R0.1	12	4.5	2.85	12°	6	50	9,500	12.87	13.44	14.07	14.76	16.36
08-00220-30013			18				6	60	9,700	19.13	19.98	20.91	21.94	24.32
08-00220-30015			24				6	70	10,000	25.39	26.52	27.76	29.12	Free
08-00220-30017			30				6	70	10,500	31.64	33.05	34.60	36.30	Free
08-00220-30019			36				6	80	10,500	37.90	39.59	41.44	Free	Free
08-00220-30021		R0.2	12				6	50	9,500	12.87	13.44	14.06	14.74	16.33
08-00220-30023			18				6	60	9,700	19.13	19.97	20.90	21.92	24.29
08-00220-30025			24				6	70	10,000	25.38	26.51	27.74	29.10	Free
08-00220-30027			30				6	70	10,500	31.64	33.05	34.58	36.28	Free
08-00220-30029			36				6	80	10,500	37.90	39.58	41.43	Free	Free
08-00220-30031		R0.3	12				6	50	9,500	12.86	13.43	14.04	14.72	16.29
08-00220-30034			18				6	60	9,700	19.12	19.96	20.88	21.90	24.26
08-00220-30032			24				6	70	10,000	25.38	26.50	27.73	29.08	Free
08-00220-30035			30				6	70	10,500	31.63	33.04	34.57	36.26	Free
08-00220-30033			36				6	80	10,500	37.89	39.57	41.41	Free	Free
08-00220-30051		R0.5	12				6	50	9,500	12.86	13.41	14.01	14.68	16.23
08-00220-30054			18				6	60	9,700	19.11	19.95	20.86	21.86	24.19
08-00220-30052			24				6	70	10,000	25.37	26.48	27.70	29.04	Free
08-00220-30055			30				6	70	10,500	31.63	33.02	34.54	36.22	Free
08-00220-30053			36				6	80	10,500	37.88	39.56	41.39	43.40	Free
08-00220-30101		R1	12				6	50	9,500	12.83	13.36	13.94	14.58	16.07
08-00220-30104			18				6	60	9,700	19.09	19.90	20.79	21.76	24.04
08-00220-30102			24				6	70	10,000	25.35	26.44	27.63	28.94	Free
08-00220-30105			30				6	70	10,500	31.60	32.97	34.47	36.12	Free
08-00220-30103			36				6	80	10,500	37.86	39.51	41.32	43.30	Free
08-00220-40011	4	R0.1	16	6	3.8	12°	6	60	9,500	17.17	17.93	18.77	19.68	Free
08-00220-40013			24				6	70	9,500	25.51	26.65	27.89	Free	Free
08-00220-40015			32				6	70	9,500	33.85	35.36	37.01	Free	Free
08-00220-40017			48				6	100	15,100	50.54	52.79	Free	Free	Free
08-00220-40021		R0.2	16				6	60	9,500	17.16	17.92	18.75	19.66	Free
08-00220-40023			24				6	70	9,500	25.50	26.64	27.88	Free	Free
08-00220-40025			32				6	70	9,500	33.85	35.35	37.00	Free	Free
08-00220-40027			48				6	100	15,100	50.53	52.78	Free	Free	Free
08-00220-40031		R0.3	16				6	60	9,500	17.16	17.91	18.74	19.65	Free
08-00220-40034			24				6	70	9,500	25.50	26.63	27.86	Free	Free
08-00220-40032			32				6	70	9,500	33.84	35.34	36.99	Free	Free
08-00220-40033			48				6	100	15,100	50.53	52.78	Free	Free	Free

圆鼻 Corner Radius
长颈 Long Neck
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ~52 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

无限涂层 2刃长颈圆鼻铣刀
MUGEN COATING 2-Flute Long Neck Corner Radius End Mill

MHR230R

切削参数参考表
Recommended Milling Conditions



单位 [规格：mm／价格：日元]
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产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30′	1°	1°30′	2°	3°
08-00220-40051	4	R0.5	16	6	3.8	12°	6	60	9,500	17.15	17.89	18.71	19.61	Free
08-00220-40054			24				6	70	9,500	25.49	26.61	27.83	Free	Free
08-00220-40052			32				6	70	9,500	33.83	35.33	36.96	Free	Free
08-00220-40053			48				6	100	15,100	50.52	52.76	Free	Free	Free
08-00220-40101		R1	16				6	60	9,500	17.13	17.85	18.64	19.51	Free
08-00220-40104			24				6	70	9,500	25.47	26.57	27.77	29.08	Free
08-00220-40102			32				6	70	9,500	33.81	35.28	36.89	Free	Free
08-00220-40103			48				6	100	15,100	50.50	52.71	Free	Free	Free
08-00220-50011	5	R0.1	20	7.5	4.8	12°	6	70	12,000	21.34	22.29	Free	Free	Free
08-00220-50013			40				6	90	15,100	42.19	Free	Free	Free	Free
08-00220-50021		R0.2	20				6	70	12,000	21.33	22.28	Free	Free	Free
08-00220-50023			40				6	90	15,100	42.19	Free	Free	Free	Free
08-00220-50031		R0.3	20				6	70	12,000	21.33	22.27	Free	Free	Free
08-00220-50032			40				6	90	15,100	42.19	Free	Free	Free	Free
08-00220-50051		R0.5	20				6	70	12,000	21.32	22.25	Free	Free	Free
08-00220-50052			40				6	90	15,100	42.18	Free	Free	Free	Free
08-00220-50101		R1	20				6	70	12,000	21.30	22.21	Free	Free	Free
08-00220-50102			40				6	90	15,100	42.16	Free	Free	Free	Free
08-00220-60011	6	R0.1	24	9	5.8	–	6	90	12,000	Free	Free	Free	Free	Free
08-00220-60013			48				6	110	18,800	Free	Free	Free	Free	Free
08-00220-60021		R0.2	24				6	90	12,000	Free	Free	Free	Free	Free
08-00220-60023			48				6	110	18,800	Free	Free	Free	Free	Free
08-00220-60031		R0.3	24				6	90	12,000	Free	Free	Free	Free	Free
08-00220-60032			48				6	110	18,800	Free	Free	Free	Free	Free
08-00220-60051		R0.5	24				6	90	12,000	Free	Free	Free	Free	Free
08-00220-60052			48				6	110	18,800	Free	Free	Free	Free	Free
08-00220-60101		R1	24				6	90	12,000	Free	Free	Free	Free	Free
08-00220-60102			48				6	110	18,800	Free	Free	Free	Free	Free

订购方法 How to Order

请指定MHR230R 外径(D)×角半径(R)×颈长(ℓ1)×柄径(d)。
When you order, indicate MHR230R (D)×(R)×(ℓ1)×(d).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (~43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (~55HRC)				铝合金・铜合金 Aluminium Alloy・Copper			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm	min⁻¹	mm/min	ap mm	ae mm
0.2	0.05	0.5	30,000	200	0.01	0.05	30,000	150	0.003	0.04	30,000	250	0.012	0.05
		1	30,000	150	0.007	0.05	30,000	100	0.003	0.04	30,000	200	0.008	0.05
		1.5	30,000	100	0.005	0.05	30,000	80	0.002	0.04	30,000	135	0.006	0.05
		2	30,000	50	0.003	0.05	30,000	50	0.002	0.04	30,000	75	0.004	0.05
0.3	0.05	1	30,000	200	0.02	0.1	30,000	180	0.003	0.08	30,000	300	0.024	0.1
		1.5	30,000	180	0.015	0.1	30,000	130	0.003	0.08	30,000	260	0.018	0.1
		2	30,000	150	0.01	0.1	30,000	100	0.003	0.08	30,000	250	0.012	0.1
		2.5	30,000	120	0.007	0.1	25,000	80	0.002	0.08	30,000	240	0.008	0.1
		3	30,000	100	0.005	0.1	25,000	50	0.002	0.08	30,000	220	0.006	0.1
0.4	0.05 0.1	1	30,000	350	0.025	0.12	30,000	300	0.005	0.1	30,000	450	0.03	0.12
		1.5	30,000	300	0.022	0.12	30,000	270	0.005	0.1	30,000	400	0.027	0.12
		2	30,000	250	0.02	0.12	25,000	180	0.005	0.1	30,000	360	0.024	0.12
		3	30,000	220	0.015	0.12	25,000	150	0.004	0.1	30,000	300	0.018	0.12
		4	25,000	160	0.01	0.12	20,000	100	0.003	0.1	30,000	240	0.012	0.12
0.5	0.05 0.1	1	30,000	500	0.03	0.14	25,000	400	0.01	0.12	30,000	650	0.036	0.14
		2	30,000	400	0.025	0.14	25,000	300	0.01	0.12	30,000	600	0.03	0.14
		3	30,000	340	0.02	0.14	25,000	250	0.008	0.12	30,000	480	0.024	0.14
		4	25,000	280	0.015	0.14	20,000	180	0.005	0.12	30,000	430	0.018	0.14
		5	25,000	230	0.01	0.14	20,000	150	0.004	0.12	30,000	360	0.012	0.14
		6	20,000	180	0.008	0.14	16,000	100	0.003	0.12	25,000	270	0.01	0.14
0.6	0.05 0.1 0.2	2	30,000	600	0.035	0.16	25,000	400	0.02	0.13	30,000	800	0.04	0.16
		3	30,000	500	0.03	0.16	25,000	350	0.015	0.13	30,000	750	0.035	0.16
		4	25,000	400	0.025	0.16	20,000	250	0.015	0.13	30,000	650	0.03	0.16
		6	20,000	250	0.015	0.16	16,000	150	0.008	0.13	25,000	400	0.018	0.16
		8	18,000	180	0.01	0.16	14,000	100	0.005	0.13	20,000	300	0.012	0.16
0.7	0.05 0.1	4	25,000	600	0.03	0.2	20,000	400	0.02	0.16	30,000	1,000	0.04	0.2
		6	20,000	450	0.02	0.2	16,000	250	0.01	0.16	25,000	700	0.025	0.2
0.8	0.05 0.1 0.2	4	25,000	1,000	0.045	0.25	20,000	600	0.025	0.2	30,000	1,400	0.055	0.25
		6	20,000	700	0.03	0.25	16,000	400	0.02	0.2	25,000	1,000	0.04	0.25
		8	18,000	400	0.02	0.25	14,000	250	0.01	0.2	22,000	600	0.025	0.25
0.9	0.1	4	25,000	1,100	0.05	0.3	20,000	700	0.03	0.24	30,000	1,500	0.06	0.3
		8	18,000	500	0.03	0.3	14,000	350	0.01	0.24	22,000	800	0.04	0.3
1	0.05 0.1 0.2 0.3	2	25,000	1,600	0.065	0.35	20,000	900	0.05	0.28	30,000	2,200	0.08	0.35
		3	25,000	1,500	0.06	0.35	20,000	850	0.05	0.28	30,000	2,100	0.07	0.35
		4	25,000	1,400	0.055	0.35	20,000	800	0.04	0.28	30,000	2,000	0.065	0.35
		5	22,000	1,200	0.05	0.35	18,000	700	0.03	0.28	27,000	1,700	0.06	0.35
		6	20,000	1,000	0.045	0.35	16,000	600	0.02	0.28	25,000	1,500	0.055	0.35
		8	18,000	700	0.035	0.35	14,000	450	0.02	0.28	22,000	1,000	0.045	0.35
		10	16,000	600	0.025	0.35	13,000	350	0.01	0.28	20,000	800	0.03	0.35
		12	14,000	350	0.02	0.35	12,000	250	0.008	0.28	18,000	600	0.025	0.35
		16	12,000	250	0.01	0.35	10,000	150	0.005	0.28	14,000	350	0.012	0.35
		20	11,000	150	0.005	0.35	9,000	100	0.003	0.28	13,000	250	0.006	0.35
1.2	0.1 0.2 0.3	5	22,000	1,500	0.055	0.4	18,000	850	0.03	0.32	26,000	2,200	0.065	0.4
		6	20,000	1,300	0.05	0.4	17,000	750	0.03	0.32	25,000	2,000	0.06	0.4
		8	18,000	1,100	0.04	0.4	15,000	600	0.025	0.32	22,000	1,600	0.05	0.4
		10	16,000	900	0.03	0.4	13,000	500	0.02	0.32	20,000	1,400	0.04	0.4
		12	14,000	700	0.025	0.4	11,000	400	0.015	0.32	17,000	1,000	0.03	0.4
		15	12,000	360	0.018	0.4	10,000	210	0.01	0.32	14,000	520	0.022	0.4
		16	12,000	350	0.015	0.4	10,000	200	0.008	0.32	14,000	500	0.02	0.4
		20	10,000	230	0.01	0.4	8,000	150	0.005	0.32	12,000	330	0.012	0.4

常规系列
无限涂层
长颈造型
Regular Line
MUGEN COATING
Long Neck Type

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				铜合金・铝合金 Copper・Aluminium Alloy			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
1.5	0.1 0.2 0.3 0.5	4	22,000	1,600	0.09	0.45	18,000	1,000	0.05	0.36	26,000	2,300	0.1	0.45
		6	20,000	1,400	0.08	0.45	16,000	850	0.045	0.36	24,000	2,000	0.09	0.45
		8	18,000	1,200	0.07	0.45	15,000	700	0.04	0.36	22,000	1,800	0.08	0.45
		10	16,000	1,000	0.06	0.45	13,000	550	0.035	0.36	20,000	1,500	0.07	0.45
		12	14,000	800	0.05	0.45	11,000	450	0.03	0.36	17,000	1,200	0.06	0.45
		16	12,000	600	0.035	0.45	10,000	350	0.018	0.36	15,000	900	0.04	0.45
		18	11,000	450	0.03	0.45	9,000	280	0.01	0.36	13,000	650	0.035	0.45
		20	10,000	300	0.02	0.45	8,000	200	0.005	0.36	12,000	450	0.025	0.45
2	0.1 0.2 0.3 0.5	4	16,000	2,200	0.13	0.5	14,000	1,000	0.06	0.4	20,000	3,000	0.15	0.5
		6	16,000	2,100	0.12	0.5	14,000	900	0.055	0.4	20,000	2,800	0.14	0.5
		8	16,000	2,000	0.11	0.5	13,000	800	0.05	0.4	20,000	2,600	0.13	0.5
		10	16,000	1,800	0.1	0.5	13,000	750	0.045	0.4	20,000	2,300	0.12	0.5
		12	14,000	1,500	0.09	0.5	11,000	600	0.04	0.4	17,000	1,900	0.11	0.5
		16	12,000	1,200	0.07	0.5	10,000	500	0.03	0.4	15,000	1,600	0.085	0.5
		20	10,000	800	0.05	0.5	8,000	350	0.02	0.4	12,000	1,000	0.06	0.5
		24	9,000	700	0.03	0.5	7,000	280	0.01	0.4	11,000	900	0.04	0.5
		26	9,000	600	0.025	0.5	7,000	250	0.008	0.4	11,000	850	0.03	0.5
		30	8,000	400	0.02	0.5	6,400	200	0.005	0.4	9,000	550	0.025	0.5
2.5	0.1 0.2 0.3 0.5	10	13,000	1,800	0.14	0.8	11,000	900	0.07	0.65	16,000	3,000	0.17	0.8
		20	9,000	1,000	0.08	0.8	7,000	450	0.05	0.65	11,000	1,600	0.1	0.8
		30	7,000	500	0.03	0.8	5,600	250	0.01	0.65	8,500	850	0.035	0.8
3	0.1 0.2 0.3 0.5 1	12	11,000	1,800	0.16	0.9	9,000	900	0.08	0.75	13,000	3,000	0.2	0.9
		18	10,000	1,400	0.12	0.9	8,000	700	0.07	0.75	12,000	2,400	0.14	0.9
		24	8,000	1,000	0.08	0.9	6,400	500	0.05	0.75	10,000	1,800	0.1	0.9
		30	7,000	800	0.06	0.9	5,600	400	0.03	0.75	8,500	1,300	0.07	0.9
		36	6,000	500	0.03	0.9	4,800	300	0.01	0.75	7,200	1,000	0.04	0.9
4	0.1 0.2 0.3 0.5 1	16	8,000	2,000	0.2	1.2	6,400	850	0.1	1	10,000	3,200	0.3	1.2
		24	7,000	1,500	0.12	1.2	5,600	700	0.08	1	8,500	2,400	0.18	1.2
		32	6,000	800	0.08	1.2	4,800	500	0.04	1	8,000	1,800	0.14	1.2
		48	4,000	400	0.04	1.2	3,200	300	0.01	1	4,800	700	0.05	1.2

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				铜合金・铝合金 Copper・Aluminium Alloy			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
5	0.1 0.2 0.3 0.5 1	20	6,000	1,800	0.25	1.6	4,800	800	0.1	1.3	7,200	3,000	0.36	1.6
		40	4,000	700	0.07	1.6	3,200	400	0.05	1.3	4,800	1,300	0.16	1.6
6	0.1 0.2 0.3 0.5 1	24	4,500	1,500	0.3	2.1	3,600	700	0.15	1.7	5,400	2,600	0.48	2.1
		48	3,000	600	0.1	2.1	2,400	350	0.05	1.7	3,600	1,000	0.18	2.1

备 注 Notes

※1 请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 切削高硬度钢时，建议使用油雾冷却方式。
※4 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※5 L（颈长）/D（外径）超过8倍时，立面附近的进给速度须调整至50%以下，切深量：ae调整至30%以下。
※6 沟槽切削时建议参考切削参数表，ap切深量及进给速度设定为50%以下，并采用来回切削加工方式。
※7 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。

※ 1 Adjust milling conditions according to milling shape and machine type.
※ 2 ap : Axial Depth of Cut, ae : Radial Depth of Cut.
※ 3 Recommend to use oil mist coolant for machining hardened steels.
※ 4 Recommend to apply helical or ramping for approaching into axial direction.
※ 5 Adjust feed rate 50% lower and cutting depth (ae) 30% lower for milling deep wall area when L/D exceeds 8 for stable milling.
※ 6 For slotting, recommend reciprocating milling by adjusting feed & ap in below 50% of recommended milling condition.
※ 7 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.

MHR230R
切削参数参考表
Recommended Milling Conditions

MHR430R

无限涂层 4刃长颈圆鼻铣刀
MUGEN COATING 4-Flute Long Neck Corner Radius End Mill

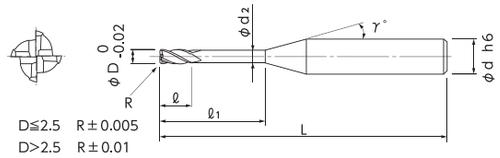
4刃长颈圆鼻铣刀。L/D最大12倍

4-flute long neck corner radius end mill. Maximum L/D=12

MG | 4 | 30° | Corner R ±0.005 (D≦2.5)

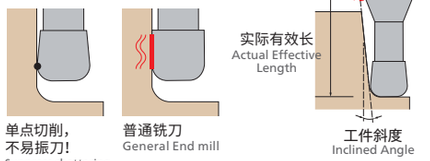
Side | Slot | Face





D≦2.5 R±0.005
D>2.5 R±0.01

- 短刃造型长专用的铣刀！与工件的接触大幅减小，可有效抑制振刀。
- 角部R精度高达±5μm。
- 升级版的无限涂层，在加工高硬度钢、调质钢时可发挥超群威力，而且也适合于铜电极加工。
- Employing short flute length. Less contact to work material reduces chattering.
- Corner R accuracy : ±5μm
- Upgraded MUGEN COATING brings outstanding performance for milling of Prehardened Steels and Copper Electrode as well.



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

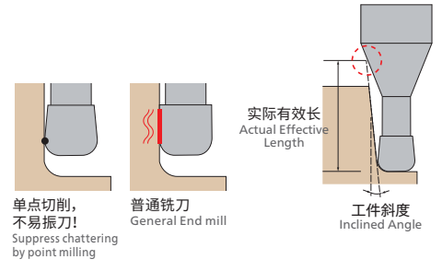
单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
08-00230-10021	1	R0.05	3	0.8	0.95	12°	4	50	7,600	3.24	3.39	3.54	3.72	4.12
08-00230-10022			4					50	7,600	4.29	4.48	4.68	4.91	5.44
08-00230-10023			5					50	7,600	5.33	5.57	5.82	6.11	6.77
08-00230-10024			6					50	7,600	6.37	6.66	6.97	7.31	8.10
08-00230-10025			8					50	7,600	8.46	8.83	9.25	9.70	10.75
08-00230-10026			10					50	7,600	10.54	11.01	11.53	12.09	13.41
08-00230-10027			12					50	7,600	12.63	13.19	13.81	14.49	16.06
08-00230-10031		R0.1	3					50	7,600	3.24	3.38	3.54	3.71	4.10
08-00230-10032			4					50	7,600	4.28	4.47	4.68	4.90	5.43
08-00230-10033			5					50	7,600	5.33	5.56	5.82	6.10	6.76
08-00230-10034			6					50	7,600	6.37	6.65	6.96	7.30	8.08
08-00230-10035			8					50	7,600	8.46	8.83	9.24	9.69	10.74
08-00230-10036			10					50	7,600	10.54	11.01	11.52	12.08	13.39
08-00230-10037			12					50	7,600	12.63	13.19	13.80	14.48	16.05
08-00230-10041		R0.2	3					50	7,600	3.24	3.37	3.52	3.69	4.07
08-00230-10042			4					50	7,600	4.28	4.46	4.66	4.88	5.40
08-00230-10043			5					50	7,600	5.32	5.55	5.80	6.08	6.72
08-00230-10044			6					50	7,600	6.37	6.64	6.94	7.28	8.05
08-00230-10045			8					50	7,600	8.45	8.82	9.23	9.67	10.71
08-00230-10046			10					50	7,600	10.54	11.00	11.51	12.06	13.36
08-00230-10047			12					50	7,600	12.62	13.18	13.79	14.46	16.01
08-00230-10051		R0.3	3					50	7,600	3.23	3.36	3.51	3.67	4.04
08-00230-10052			4					50	7,600	4.28	4.45	4.65	4.86	5.36
08-00230-10053			5					50	7,600	5.32	5.54	5.79	6.06	6.69
08-00230-10054			6					50	7,600	6.36	6.63	6.93	7.26	8.02
08-00230-10055			8					50	7,600	8.45	8.81	9.21	9.65	10.67
08-00230-10056			10					50	7,600	10.53	10.99	11.49	12.04	13.33
08-00230-10057			12					50	7,600	12.62	13.17	13.77	14.44	15.98
08-00230-12031	1.2	R0.1	5	1	1.14	12°	4	50	8,000	5.35	5.59	5.84	6.13	6.79
08-00230-12032			10					50	8,000	10.57	11.03	11.55	12.11	13.42
08-00230-12033			15					60	12,000	15.78	16.48	17.25	18.09	20.06

订购方法 How to Order

请指定MHR430R 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate MHR430R (D)×(R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

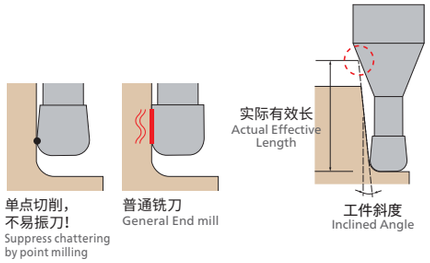


★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
08-00230-12041	1.2	R0.2	5	1	1.14	12°	4	50	8,000	5.35	5.58	5.83	6.11	6.75
08-00230-12042			10					50	8,000	10.56	11.03	11.53	12.09	13.39
08-00230-12043			15					60	12,000	15.78	16.47	17.24	18.07	20.03
08-00230-12051		R0.3	5					50	8,000	5.34	5.57	5.82	6.09	6.72
08-00230-12052			10					50	8,000	10.56	11.02	11.52	12.07	13.36
08-00230-12053			15					60	12,000	15.77	16.46	17.22	18.05	20.00
08-00230-15031	1.5	R0.1	6	1.2	1.45	12°	4	50	8,000	6.37	6.65	6.96	7.30	8.08
08-00230-15032			12					50	8,000	12.63	13.19	13.80	14.48	16.05
08-00230-15033			18					60	8,000	18.88	19.72	20.64	21.65	Free
08-00230-15041		R0.2	6					50	8,000	6.37	6.64	6.94	7.28	8.05
08-00230-15042			12					50	8,000	12.62	13.18	13.79	14.46	16.01
08-00230-15043			18					60	8,000	18.88	19.72	20.63	21.64	23.98
08-00230-15051		R0.3	6					50	8,000	6.36	6.63	6.93	7.26	8.02
08-00230-15052			12					50	8,000	12.62	13.17	13.77	14.44	15.98
08-00230-15053			18					60	8,000	18.88	19.71	20.62	21.62	23.95
08-00230-15061		R0.5	6					50	8,000	6.35	6.62	6.90	7.22	7.96
08-00230-15062			12					50	8,000	12.61	13.15	13.75	14.40	15.92
08-00230-15063			18					60	8,000	18.87	19.69	20.59	21.58	23.88
08-00230-20031	2	R0.1	8	1.6	1.91	12°	4	50	8,000	8.55	8.93	9.35	9.80	10.86
08-00230-20032			12					50	8,000	12.73	13.29	13.91	14.59	16.17
08-00230-20033			16					60	8,000	16.90	17.65	18.47	19.37	Free
08-00230-20034			20					60	8,000	21.07	22.01	23.03	24.16	Free
08-00230-20035			24					70	8,000	25.24	26.36	27.59	Free	Free
08-00230-20041		R0.2	8					50	8,000	8.55	8.92	9.33	9.78	10.83
08-00230-20042			12					50	8,000	12.72	13.28	13.89	14.57	16.14
08-00230-20043			16					60	8,000	16.89	17.64	18.46	19.36	Free
08-00230-20044			20					60	8,000	21.06	22.00	23.02	24.14	Free
08-00230-20045			24					70	8,000	25.23	26.36	27.58	Free	Free
08-00230-20051		R0.3	8					50	8,000	8.55	8.91	9.32	9.76	10.80
08-00230-20052			12					50	8,000	12.72	13.27	13.88	14.55	16.11
08-00230-20053			16					60	8,000	16.89	17.63	18.44	19.34	Free
08-00230-20054			20					60	8,000	21.06	21.99	23.00	24.12	Free
08-00230-20055			24					70	8,000	25.23	26.35	27.57	28.91	Free
08-00230-20061		R0.5	8					50	8,000	8.54	8.90	9.29	9.72	10.73
08-00230-20062			12					50	8,000	12.71	13.25	13.85	14.51	16.04
08-00230-20063			16					60	8,000	16.88	17.61	18.42	19.30	Free
08-00230-20064			20					60	8,000	21.05	21.97	22.98	24.08	Free
08-00230-20065			24					70	8,000	25.22	26.33	27.54	28.87	Free

无限涂层 4刃长颈圆鼻铣刀
MUGEN COATING 4-Flute Long Neck Corner Radius End Mill



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
08-00230-25031	2.5	R0.1	10	2	2.39	12°	4	50	8,400	10.69	11.16	11.68	12.25	13.58
08-00230-25032			20					60	8,400	21.12	22.06	23.09	Free	Free
08-00230-25033			30					70	8,800	31.55	32.95	Free	Free	Free
08-00230-25041		R0.2	10					50	8,400	10.68	11.15	11.67	12.23	13.55
08-00230-25042			20					60	8,400	21.11	22.05	23.07	Free	Free
08-00230-25043			30					70	8,800	31.54	32.94	Free	Free	Free
08-00230-25051		R0.3	10					50	8,400	10.68	11.14	11.65	12.21	13.52
08-00230-25052			20					60	8,400	21.11	22.04	23.06	Free	Free
08-00230-25053			30					70	8,800	31.54	32.93	Free	Free	Free
08-00230-25061		R0.5	10					50	8,400	10.67	11.13	11.63	12.17	13.45
08-00230-25062			20					60	8,400	21.10	22.02	23.03	Free	Free
08-00230-25063			30					70	8,800	31.53	32.92	Free	Free	Free
★ 08-00230-30031	3	R0.1	12	2.5	2.85	12°	6	50	11,400	12.87	13.44	14.07	14.76	16.36
★ 08-00230-30032			18					60	11,400	19.13	19.98	20.91	21.94	24.32
★ 08-00230-30033			24					70	12,100	25.39	26.52	27.76	29.12	Free
★ 08-00230-30034			30					70	12,100	31.64	33.05	34.60	36.30	Free
★ 08-00230-30035			36					80	12,500	37.90	39.59	41.44	Free	Free
★ 08-00230-30041		R0.2	12					50	11,400	12.87	13.44	14.06	14.74	16.33
★ 08-00230-30042			18					60	11,400	19.13	19.97	20.90	21.92	24.29
★ 08-00230-30043			24					70	12,100	25.38	26.51	27.74	29.10	Free
★ 08-00230-30044			30					70	12,500	31.64	33.05	34.58	36.28	Free
★ 08-00230-30045			36					80	12,500	37.90	39.58	41.43	Free	Free
★ 08-00230-30051		R0.3	12					50	11,400	12.86	13.43	14.04	14.72	16.29
★ 08-00230-30052			20					60	11,400	21.21	22.14	23.17	24.29	26.91
★ 08-00230-30053			24					70	12,100	25.38	26.50	27.73	29.08	Free
★ 08-00230-30054			30					70	12,500	31.63	33.04	34.57	36.26	Free
★ 08-00230-30055			36					80	12,500	37.89	39.57	41.41	Free	Free
★ 08-00230-30061		R0.5	12					50	11,400	12.86	13.41	14.01	14.68	16.23
★ 08-00230-30062			20					60	11,400	21.20	22.12	23.14	24.25	26.85
★ 08-00230-30063			24					70	12,100	25.37	26.48	27.70	29.04	Free
★ 08-00230-30064			30					70	12,500	31.63	33.02	34.54	36.22	Free
★ 08-00230-30065			36					80	12,500	37.88	39.56	41.39	43.40	Free
★ 08-00230-30071		R1	12					50	11,400	12.83	13.36	13.94	14.58	16.07
★ 08-00230-30072			20					60	11,400	21.18	22.08	23.07	24.16	26.69
★ 08-00230-30073			24					70	12,100	25.35	26.44	27.63	28.94	Free
★ 08-00230-30074			30					70	12,500	31.60	32.97	34.47	36.12	Free
★ 08-00230-30075			36					80	12,500	37.86	39.51	41.32	43.30	Free

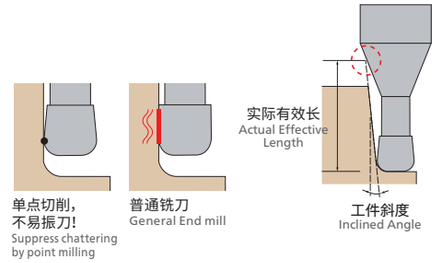
订购方法 How to Order

请指定MHR430R 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate MHR430R (D)×(R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

MHR430R

无限涂层 4刃长颈圆鼻铣刀
MUGEN COATING 4-Flute Long Neck Corner Radius End Mill



★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
★ 08-00230-40031	4	R0.1	16	3.2	3.8	12°	6	60	11,400	17.17	17.93	18.77	19.68	Free
★ 08-00230-40032			24					70	11,400	25.51	26.65	27.89	Free	Free
★ 08-00230-40033			32					70	11,400	33.85	35.36	37.01	Free	Free
★ 08-00230-40034			48					100	18,300	50.54	52.79	Free	Free	Free
★ 08-00230-40041		R0.2	16					60	11,400	17.16	17.92	18.75	19.66	Free
★ 08-00230-40042			24					70	11,400	25.50	26.64	27.88	Free	Free
★ 08-00230-40043			32					70	11,400	33.85	35.35	37.00	Free	Free
★ 08-00230-40044			48					100	18,300	50.53	52.78	Free	Free	Free
★ 08-00230-40051		R0.3	16					60	11,400	17.16	17.91	18.74	19.65	Free
★ 08-00230-40052			24					70	11,400	25.50	26.63	27.86	Free	Free
★ 08-00230-40053			32					70	11,400	33.84	35.34	36.99	Free	Free
★ 08-00230-40054			48					100	18,300	50.53	52.78	Free	Free	Free
★ 08-00230-40061		R0.5	16					60	11,400	17.15	17.89	18.71	19.61	Free
★ 08-00230-40062			24					70	11,400	25.49	26.61	27.83	Free	Free
★ 08-00230-40063			32					70	11,400	33.83	35.33	36.96	Free	Free
★ 08-00230-40064			48					100	18,300	50.52	52.76	Free	Free	Free
★ 08-00230-40071		R1	16					60	11,400	17.13	17.85	18.64	19.51	Free
★ 08-00230-40072			24					70	11,400	25.47	26.57	27.77	29.08	Free
★ 08-00230-40073			32					70	11,400	33.81	35.28	36.89	Free	Free
★ 08-00230-40074			48					100	18,300	50.50	52.71	Free	Free	Free
★ 08-00230-50031	5	R0.1	20	4	4.75	12°	6	70	14,300	21.46	22.42	Free	Free	Free
★ 08-00230-50032			40					90	18,300	42.32	Free	Free	Free	Free
★ 08-00230-50041		R0.2	20					70	14,300	21.46	22.41	Free	Free	Free
★ 08-00230-50042			40					90	18,300	42.31	Free	Free	Free	Free
★ 08-00230-50051		R0.3	20					70	14,300	21.45	22.40	Free	Free	Free
★ 08-00230-50052			40					90	18,300	42.31	Free	Free	Free	Free
★ 08-00230-50061		R0.5	20					70	14,300	21.44	22.38	Free	Free	Free
★ 08-00230-50062			40					90	18,300	42.30	Free	Free	Free	Free
★ 08-00230-50071		R1	20					70	14,300	21.42	22.34	Free	Free	Free
★ 08-00230-50072			40					90	18,300	42.28	Free	Free	Free	Free
★ 08-00230-60031	6	R0.1	24	5	5.7	–	6	90	14,300	Free	Free	Free	Free	Free
★ 08-00230-60032			48					110	22,700	Free	Free	Free	Free	Free
★ 08-00230-60041		R0.2	24					90	14,300	Free	Free	Free	Free	Free
★ 08-00230-60042			48					110	22,700	Free	Free	Free	Free	Free
★ 08-00230-60051		R0.3	24					90	14,300	Free	Free	Free	Free	Free
★ 08-00230-60052			48					110	22,700	Free	Free	Free	Free	Free
★ 08-00230-60061		R0.5	24					90	14,300	Free	Free	Free	Free	Free
★ 08-00230-60062			48					110	22,700	Free	Free	Free	Free	Free
★ 08-00230-60071		R1	24					90	14,300	Free	Free	Free	Free	Free
★ 08-00230-60072			48					110	22,700	Free	Free	Free	Free	Free

圆鼻 Corner Radius
长颈 Long Neck
涂层 Coating
碳素钢 Carbon Steel P
合金钢 Alloy Steel P
调质钢 Prehardened Steel P
高硬度钢~52 Hardened Steel HRC H
不锈钢 Stainless Steel M
铝合金 Aluminium Alloy N
铜合金 Copper N
树脂 Resin O
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				铝合金・铜合金 Aluminium Alloy・Copper			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
1	0.05 0.1 0.2 0.3	3	16,000	1,800	0.06	0.35	12,800	1,260	0.045	0.3	16,000	1,800	0.2	0.23
		4	16,000	1,500	0.05	0.35	12,800	1,050	0.04	0.3	16,000	1,500	0.15	0.23
		5	16,000	1,410	0.045	0.35	12,800	990	0.035	0.25	16,000	1,410	0.13	0.23
		6	14,500	1,200	0.04	0.25	11,600	840	0.03	0.25	14,500	1,200	0.12	0.2
		8	14,500	870	0.03	0.25	11,600	620	0.02	0.2	14,500	870	0.09	0.2
		10	11,100	660	0.025	0.25	8,900	470	0.015	0.1	11,100	660	0.075	0.15
		12	11,100	300	0.02	0.2	8,900	210	0.01	0.08	11,100	300	0.06	0.15
1.2	0.1 0.2 0.3	5	15,500	1,740	0.06	0.4	12,400	1,220	0.045	0.35	15,500	1,740	0.18	0.28
		10	12,000	1,290	0.04	0.35	9,600	900	0.03	0.25	12,000	1,290	0.12	0.28
		15	10,600	480	0.02	0.25	8,500	330	0.01	0.1	10,600	480	0.07	0.23
1.5	0.1 0.2 0.3 0.5	6	14,000	1,910	0.08	0.53	11,200	1,340	0.05	0.4	14,000	1,910	0.24	0.35
		12	11,500	1,250	0.06	0.42	9,000	870	0.04	0.3	11,500	1,250	0.18	0.3
		18	8,500	560	0.02	0.3	6,800	390	0.01	0.15	8,500	560	0.08	0.25
2	0.1 0.2 0.3 0.5	8	11,100	2,150	0.08	0.6	8,800	1,500	0.05	0.5	11,100	2,150	0.24	0.45
		12	11,100	1,800	0.065	0.6	8,800	1,260	0.045	0.5	11,100	1,800	0.2	0.43
		16	9,600	1,500	0.05	0.5	7,700	1,050	0.04	0.35	9,600	1,500	0.15	0.39
		20	9,600	900	0.03	0.45	7,700	630	0.015	0.25	9,600	900	0.12	0.35
		24	6,400	740	0.02	0.4	5,100	510	0.01	0.2	6,400	740	0.1	0.3
2.5	0.1 0.2 0.3 0.5	10	9,200	2,280	0.1	0.85	7,400	1,590	0.07	0.7	9,200	2,280	0.3	0.5
		20	8,300	1,580	0.08	0.6	6,600	1,110	0.05	0.4	8,300	1,580	0.24	0.43
		30	5,400	710	0.025	0.45	4,300	500	0.01	0.2	5,400	710	0.1	0.33
3	0.1 0.2 0.3 0.5 1	12	8,000	2,400	0.12	0.9	6,400	1,680	0.08	0.8	8,000	2,400	0.36	0.55
		18	7,800	2,000	0.11	0.8	6,200	1,410	0.07	0.7	7,800	2,010	0.33	0.5
		20	7,700	1,850	0.1	0.8	6,200	1,250	0.06	0.6	7,700	1,850	0.3	0.5
		24	7,500	1,620	0.1	0.7	6,000	1,140	0.06	0.5	7,500	1,620	0.3	0.45
		30	6,000	1,050	0.05	0.6	4,800	740	0.03	0.4	6,000	1,050	0.15	0.4
		36	4,200	710	0.03	0.5	3,400	500	0.01	0.3	4,200	710	0.1	0.35
4	0.1 0.2 0.3 0.5 1	16	6,000	2,520	0.15	1.2	4,800	1,770	0.1	1	6,000	2,520	0.45	0.75
		24	5,400	2,030	0.12	1	4,300	1,430	0.085	0.8	5,400	2,030	0.39	0.7
		32	4,800	1,350	0.08	0.9	3,800	950	0.04	0.7	4,800	1,350	0.25	0.6
		48	3,200	570	0.04	0.8	2,600	410	0.01	0.35	3,200	570	0.12	0.5
5	0.1 0.2 0.3 0.5 1	20	5,100	2,300	0.17	1.6	4,100	1,610	0.12	1.2	5,100	2,300	0.52	1
		40	3,200	1,020	0.07	1.2	2,600	720	0.05	0.9	3,200	1,020	0.25	0.8
6	0.1 0.2 0.3 0.5 1	24	3,700	2,100	0.2	2.1	3,000	1,470	0.12	1.5	3,700	2,100	0.6	1.2
		48	2,600	950	0.09	1.5	2,100	660	0.05	1.2	2,600	950	0.32	0.9

备 注 Notes

※1 请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 切削高硬度钢时，建议使用油雾冷却方式。
※4 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※5 L（颈长）/D（外径）超过8倍时，立面附近的进给速度须调整至50%以下，切深量：ae调整至30%以下。
※6 沟槽切削时建议参考切削参数表，切深量：ap及进给速度设定为50%以下，并采用来回切削加工方式。
※7 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※ 1 Adjust milling conditions according to milling shape and machine type.
※ 2 ap : Axial Depth of Cut, ae : Radial Depth of Cut.
※ 3 Recommend to use oil mist coolant for machining hardened steels.
※ 4 Recommend to apply helical or ramping for approaching into axial direction.
※ 5 Adjust feed rate 50% lower and cutting depth(ae) 30% lower for milling deep wall area. When L/D exceeds 8 for stable milling.
※ 6 For slotting, recommend reciprocating milling by adjusting feed & ap in below 50% of recommended milling condition.
※ 7 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.

高速切削参数参考表
Recommended High Speed Milling Conditions

加工材料 Work Material			碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels HPM38・STAVAX・SKD61 (～55HRC)				高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
2	0.5	8	22,000	6,200	0.06	0.4	16,000	4,500	0.04	0.3	12,800	3,000	0.03	0.2
2.5	0.5	10	18,000	6,400	0.08	0.65	13,000	4,600	0.05	0.5	10,200	3,600	0.03	0.3
3	1	12	15,000	7,100	0.1	0.7	11,000	5,100	0.06	0.6	8,500	3,700	0.04	0.4
4	1	16	11,000	7,100	0.13	1	8,000	5,100	0.08	0.8	6,300	3,800	0.05	0.5
5	1	20	9,000	8,200	0.15	1.4	6,500	5,200	0.1	1	5,100	3,700	0.05	0.7
6	1	24	7,500	7,700	0.18	1.8	5,300	5,300	0.1	1.3	4,200	3,100	0.06	0.8

备 注 Notes

※1 请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 切削高硬度钢时，建议使用油雾冷却方式。
※4 立面附近的进给速度须调整至50%以下，切深量：ae调整至30%以下。
※5 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※6 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※1 Adjust milling conditions according to milling shape and machine type.
※2 ap : Axial Depth of Cut, ae : Radial Depth of Cut.
※3 Recommend to use oil mist coolant for machining hardened steels.
※4 Adjust feed rate 50% lower and cutting depth (ae) 30% lower for milling deep wall area.
※5 Recommend to apply helical or ramping for approaching into axial direction.
※6 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.

圆鼻 Corner Radius
长颈 Long Neck
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

MSTNR230

规格 Size φ0.2×R0.05×颈角1°～φ3×R0.5×颈角1°
φ0.2×R0.05×neck taper angle1°～φ3×R0.5×neck taper angle1°

∞ ≦52 HRC

无限涂层 长颈锥形圆鼻铣刀
MUGEN COATING 2-Flute Long Taper Neck Corner Radius End Mill

共有165种规格
Total 165 sizes

MSTNR230

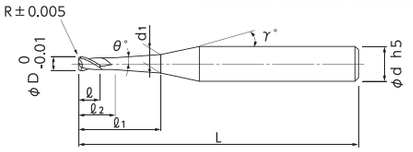
无限涂层 长颈锥形圆鼻铣刀
MUGEN COATING 2-Flute Long Taper Neck Corner Corner Radius End Mill

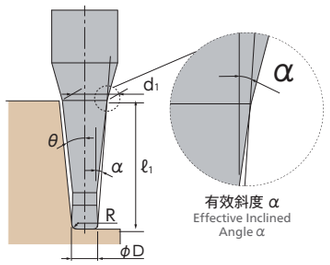
采用锥颈形状，大幅提高刀具刚性！ L/D最大35倍

Taper neck design for significant improvement of tool rigidity!
Maximum L/D=35

MG | 2 | 30° | Corner R ±0.005 | φd h5
Side | Slot | Face







- 进行从半粗加工到精密精加工的切削时，可抑制振刀，实现稳定的高速切削，提高了加工面精度。
- R精度高达±5μm！
- 升级版的无限涂层，可广泛应用于从高硬度钢、调质钢的直接切削到铜电极加工等各种不同的领域。
- Improve surface overall accuracy brought by high speed cutting with minimal chattering in roughing to finishing process.
- High R-Accuracy : ±5μm.
- Better performance in wide range of machining of direct carving on Hardened Steels, Prehardened Steels and Copper Electrode.

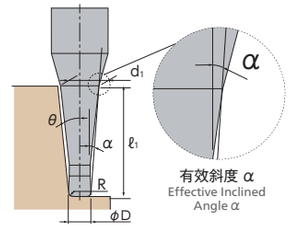
单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00770-02211	0.2	R0.05	1°	1	0.23	0.15	0.4	12°	0°38′	4	50	13,700
08-00770-02212				2	0.26				0°49′		50	13,700
08-00770-02231			3°	1	0.27				1°54′		50	13,700
08-00770-02232				2	0.37				2°28′		50	13,700
08-00770-02251			5°	1	0.31				3°10′		50	13,700
08-00770-02252				2	0.48				4°07′		50	13,700
08-00770-03211	0.3	R0.05	1°	2	0.35	0.25	0.6	12°	0°43′	4	50	13,700
08-00770-03212				3	0.39				0°49′		50	13,700
08-00770-03231			3°	2	0.45				2°10′		50	13,700
08-00770-03232				3	0.56				2°27′		50	13,700
08-00770-03251			5°	2	0.55				3°35′		50	13,700
08-00770-03252				3	0.72				4°04′		50	13,700
08-00770-04211	0.4	R0.05	1°	3	0.48	0.3	0.8	12°	0°45′	4	50	10,200
08-00770-04212				4	0.52				0°49′		50	10,200
08-00770-04231			3°	3	0.64				2°14′		50	10,200
08-00770-04232				4	0.74				2°26′		50	10,200
08-00770-04251			5°	3	0.79				3°44′		50	10,200
08-00770-04252				4	0.96				4°03′		50	10,200
08-00770-04311		R0.1	1°	3	0.48				0°46′		50	10,200
08-00770-04312				4	0.52				0°49′		50	10,200
08-00770-04331			3°	3	0.64				2°17′		50	10,200
08-00770-04332				4	0.74				2°28′		50	10,200
08-00770-04351			5°	3	0.79				3°48′		50	10,200
08-00770-04352				4	0.96				4°07′		50	10,200
08-00770-05211	0.5	R0.05	1°	3	0.57	0.4	1	12°	0°41′	4	50	9,300
08-00770-05212				5	0.64				0°49′		50	9,800
08-00770-05213				8	0.75				0°53′		50	10,100
08-00770-05214				10	0.82				0°54′		50	11,100
08-00770-05215				12	0.89				0°55′		50	11,100

订购方法 How to Order

请指定MSTNR230 外径(D)×角半径(R)×颈角(θ)×颈长(ℓ1)。
When you order, indicate MSTNR230 (D)×(R)×(θ)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.



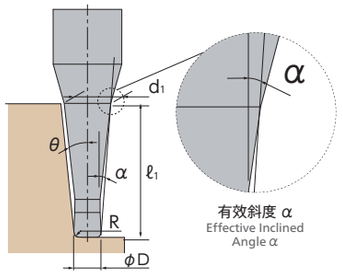
单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00770-05231	0.5	R0.05	3°	3	0.71	0.4	1	12°	2°02′	4	50	10,100
08-00770-05232				5	0.92				2°25′		50	10,100
08-00770-05233				8	1.24				2°38′		50	11,100
08-00770-05234				10	1.45				2°43′		50	11,100
08-00770-05235				12	1.66				2°46′		50	11,100
08-00770-05251			5°	3	0.85				3°23′		50	10,100
08-00770-05252				5	1.2				4°02′		50	10,100
08-00770-05253				8	1.73				4°25′		50	11,100
08-00770-05254				10	2.08				4°32′		50	11,100
08-00770-05311		R0.1	1°	3	0.57				0°41′		50	9,300
08-00770-05312				5	0.64				0°49′		50	9,800
08-00770-05313				8	0.75				0°53′		50	10,100
08-00770-05314				10	0.82				0°55′		50	11,100
08-00770-05315				12	0.89				0°55′		50	11,100
08-00770-05331			3°	3	0.71				2°04′		50	10,100
08-00770-05332				5	0.92				2°27′		50	10,100
08-00770-05333				8	1.24				2°40′		50	11,100
08-00770-05334				10	1.45				2°44′		50	11,100
08-00770-05335				12	1.66				2°46′		50	11,100
08-00770-05351			5°	3	0.85				3°27′		50	10,100
08-00770-05352				5	1.2				4°05′		50	10,100
08-00770-05353				8	1.73				4°26′		50	11,100
08-00770-05354				10	2.08				4°33′		50	11,100
08-00770-08211	0.8	R0.05	1°	5	0.92	0.65	1.6	12°	0°41′	4	50	9,700
08-00770-08212				8	1.03				0°48′		50	10,100
08-00770-08231			3°	5	1.16				2°04′		50	10,500
08-00770-08232				8	1.48				2°25′		50	10,900
08-00770-08311		R0.1	1°	5	0.92				0°42′		50	9,700
08-00770-08312				8	1.03				0°49′		50	10,100
08-00770-08331			3°	5	1.16				2°05′		50	10,500
08-00770-08332				8	1.48				2°26′		50	10,900
08-00770-08411		R0.2	1°	5	0.92				0°43′		50	9,700
08-00770-08412				8	1.03				0°49′		50	10,100
08-00770-08431			3°	5	1.16				2°07′		50	10,500
08-00770-08432				8	1.48				2°28′		50	10,900
08-00770-10211	1	R0.05	1°	6	1.14	0.8	2	12°	0°40′	4	50	8,400
08-00770-10212				10	1.28				0°48′		60	8,400
08-00770-10213				15	1.46				0°52′		60	8,800
08-00770-10214				20	1.63				0°54′		60	10,000

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

无限涂层 长颈锥形圆鼻铣刀

MUGEN COATING 2-Flute Long Taper Neck Corner Radius End Mill



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00770-10215	1	R0.05	1°	25	1.81	0.8	2	12°	0°55′	4	70	11,800
08-00770-10216				30	1.98				0°56′		80	12,200
08-00770-10217				35	2.16				0°56′		80	14,500
08-00770-10231			3°	6	1.42				2°01′		50	8,400
08-00770-10232				10	1.84				2°25′		60	8,400
08-00770-10311		R0.1	1°	6	1.14				0°41′		50	8,400
08-00770-10312				10	1.28				0°49′		60	8,400
08-00770-10313				15	1.46				0°52′		60	8,800
08-00770-10314				20	1.63				0°54′		60	10,000
08-00770-10315				25	1.81				0°55′		70	11,800
08-00770-10316				30	1.98				0°56′		80	12,200
08-00770-10317				35	2.16				0°57′		80	14,500
08-00770-10331			3°	6	1.42				2°02′		50	8,400
08-00770-10332				10	1.84				2°26′		60	8,400
08-00770-10411		R0.2	1°	6	1.14				0°41′		50	8,400
08-00770-10412				10	1.28				0°49′		60	8,400
08-00770-10413				15	1.46				0°53′		60	8,800
08-00770-10414				20	1.63				0°55′		60	10,000
08-00770-10415				25	1.81				0°56′		70	11,800
08-00770-10416				30	1.98				0°56′		80	12,200
08-00770-10417				35	2.16				0°57′		80	14,500
08-00770-10431			3°	6	1.42				2°04′		50	8,400
08-00770-10432				10	1.84				2°27′		60	8,400
08-00770-10511		R0.3	1°	6	1.14				0°42′		50	8,400
08-00770-10512				10	1.28				0°49′		60	8,400
08-00770-10513				15	1.46				0°53′		60	8,800
08-00770-10514				20	1.63				0°55′		60	10,000
08-00770-10515				25	1.81				0°56′		70	11,800
08-00770-10516				30	1.98				0°56′		80	12,200
08-00770-10517				35	2.16				0°57′		80	14,500
08-00770-10531			3°	6	1.42				2°06′		50	8,400
08-00770-10532				10	1.84				2°29′		60	8,400
08-00770-15311	1.5	R0.1	1°	10	1.75	1.2	3	12°	0°43′	4	60	9,000
08-00770-15312				15	1.92				0°49′		60	9,900
08-00770-15313				20	2.1				0°51′		60	10,800
08-00770-15314				25	2.27				0°53′		70	11,300
08-00770-15315				30	2.45				0°54′		80	13,700
08-00770-15331			3°	10	2.24				2°07′		60	9,000
08-00770-15332				15	2.76				2°25′		60	9,900

订购方法 How to Order

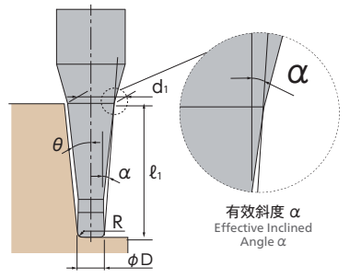
请指定MSTNR230 外径(D)×角半径(R)×颈角(θ)×颈长(ℓ1)。
When you order, indicate MSTNR230 (D)×(R)×(θ)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

MSTNR230

无限涂层 长颈锥形圆鼻铣刀

MUGEN COATING 2-Flute Long Taper Neck Corner Corner Radius End Mill



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00770-15411	1.5	R0.2	1°	10	1.75	1.2	3	12°	0°43′	4	60	9,000
08-00770-15412				15	1.92				0°49′		60	9,900
08-00770-15413				20	2.1				0°52′		60	10,800
08-00770-15414				25	2.27				0°53′		70	11,300
08-00770-15415				30	2.45				0°55′		80	13,700
08-00770-15431			3°	10	2.24				2°08′		60	9,000
08-00770-15432				15	2.76				2°26′		60	9,900
08-00770-15511		R0.3	1°	10	1.75				0°43′		60	9,000
08-00770-15512				15	1.92				0°49′		60	9,900
08-00770-15513				20	2.1				0°52′		60	10,800
08-00770-15514				25	2.27				0°53′		70	11,300
08-00770-15515				30	2.45				0°55′		80	13,700
08-00770-15531			3°	10	2.24				2°10′		60	9,000
08-00770-15532				15	2.76				2°27′		60	9,900
08-00770-20311	2	R0.1	1°	15	2.39	1.6	4	12°	0°44′	4	60	9,000
08-00770-20312				20	2.56				0°48′		60	9,000
08-00770-20313				25	2.74				0°50′		70	10,700
08-00770-20314				30	2.91				0°52′		80	12,100
08-00770-20315				40	3.26				0°54′		80	16,200
08-00770-20316				50	3.61				0°55′		100	18,000
08-00770-20331			3°	15	3.16				2°13′		60	9,000
08-00770-20332				20	3.68				2°25′		60	9,000
08-00770-20411		R0.2	1°	15	2.39				0°44′		60	9,000
08-00770-20412				20	2.56				0°49′		60	9,000
08-00770-20413				25	2.74				0°51′		70	10,700
08-00770-20414				30	2.91				0°52′		80	12,100
08-00770-20415				40	3.26				0°54′		80	16,200
08-00770-20416				50	3.61				0°55′		100	18,000
08-00770-20431			3°	15	3.16				2°14′		60	9,000
08-00770-20432				20	3.68				2°25′		60	9,000
08-00770-20511		R0.3	1°	15	2.39				0°45′		60	9,000
08-00770-20512				20	2.56				0°49′		60	9,000
08-00770-20513				25	2.74				0°51′		70	10,700
08-00770-20514				30	2.91				0°53′		80	12,100
08-00770-20515				40	3.26				0°55′		80	16,200
08-00770-20516				50	3.61				0°56′		100	18,000
08-00770-20531			3°	15	3.16				2°15′		60	9,000
08-00770-20532				20	3.68				2°26′		60	9,000

圆鼻 Corner Radius
锥颈 Taper Neck
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ~52 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

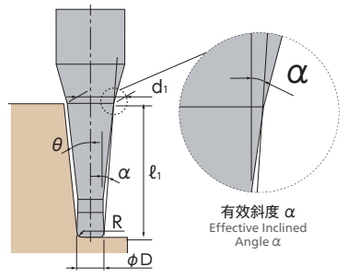
无限涂层 长颈锥形圆鼻铣刀

MUGEN COATING 2-Flute Long Taper Neck Corner Radius End Mill

MSTNR230

切削参数参考表

Recommended Milling Conditions



单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(θ)颈角 Neck Taper Angle	(ℓ1)颈长 Under Neck Length	(d1)颈径 Neck Dia.	(ℓ)刃长 Length of Cut	(ℓ2)颈长2 Under Neck Length 2	(γ)颈角2 Neck Taper Angle 2	(α)有效斜度 Effective Inclined Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00770-20611	2	R0.5	1°	15	2.39	1.6	4	12°	0°46′	4	60	9,000
08-00770-20612				20	2.56				0°49′		60	9,000
08-00770-20613				25	2.74				0°52′		70	10,700
08-00770-20614				30	2.91				0°53′		80	12,100
08-00770-20615				40	3.26				0°55′		80	16,200
08-00770-20616				50	3.61				0°56′		100	18,000
08-00770-20631			3°	15	3.16				2°17′		60	9,000
08-00770-20632				20	3.68				2°28′		60	9,000
08-00770-30411	3	R0.2	1°	15	3.32	2.5	6	12°	0°37′	6	60	14,100
08-00770-30412				20	3.49				0°43′		60	14,100
08-00770-30413				30	3.84				0°49′		80	14,100
08-00770-30414				40	4.19				0°51′		80	15,200
08-00770-30415				50	4.54				0°53′		100	17,600
08-00770-30416				60	4.89				0°54′		110	18,800
08-00770-30611		R0.5	1°	15	3.32				0°37′		60	14,100
08-00770-30612				20	3.49				0°43′		60	14,100
08-00770-30613				30	3.84				0°49′		80	14,100
08-00770-30614				40	4.19				0°52′		80	15,200
08-00770-30615				50	4.54				0°53′		100	17,600
08-00770-30616				60	4.89				0°55′		110	18,800

订购方法 How to Order

请指定MSTNR230 外径(D)×角半径(R)×颈角(θ)×颈长(ℓ1)。
When you order, indicate MSTNR230 (D)×(R)×(θ)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material				碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels SKD11・SKD61・STAVAX・HPM38 (～55HRC)				铜合金・铝合金 Copper・Aluminium Alloy			
外径 Dia.	角半径 Corner Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
0.2	0.05	1°	1	30,000	200	0.005	0.02	30,000	150	0.005	0.02	30,000	250	0.015	0.06
			2	30,000	200	0.005	0.02	30,000	150	0.005	0.02	30,000	250	0.015	0.06
		3°	1	30,000	300	0.005	0.03	30,000	200	0.005	0.02	30,000	360	0.02	0.06
			2	30,000	300	0.005	0.03	30,000	200	0.005	0.02	30,000	360	0.02	0.06
		5°	1	30,000	350	0.01	0.03	30,000	250	0.01	0.03	30,000	420	0.04	0.06
			2	30,000	350	0.01	0.03	30,000	250	0.01	0.03	30,000	420	0.04	0.06
0.3	0.05	1°	2	30,000	200	0.007	0.03	30,000	150	0.005	0.03	30,000	250	0.02	0.06
			3	30,000	200	0.007	0.03	30,000	150	0.005	0.03	30,000	250	0.02	0.06
		3°	2	30,000	300	0.01	0.05	30,000	200	0.01	0.03	30,000	360	0.03	0.15
			3	30,000	300	0.01	0.05	30,000	200	0.01	0.03	30,000	360	0.03	0.15
		5°	2	30,000	350	0.02	0.06	30,000	250	0.02	0.05	30,000	420	0.06	0.15
			3	30,000	350	0.02	0.06	30,000	250	0.02	0.05	30,000	420	0.06	0.15
0.4	0.05 0.1	1°	3	30,000	300	0.015	0.05	30,000	200	0.01	0.04	30,000	360	0.03	0.15
			4	30,000	300	0.015	0.05	30,000	200	0.01	0.04	30,000	360	0.03	0.15
		3°	3	30,000	350	0.02	0.06	30,000	250	0.02	0.05	30,000	420	0.06	0.15
			4	30,000	350	0.02	0.06	30,000	250	0.02	0.05	30,000	420	0.06	0.15
		5°	3	30,000	450	0.03	0.07	30,000	300	0.03	0.06	30,000	540	0.09	0.15
			4	30,000	450	0.03	0.07	30,000	300	0.03	0.06	30,000	540	0.09	0.15
0.5	0.05 0.1	1°	3	30,000	500	0.02	0.1	30,000	350	0.02	0.1	30,000	600	0.06	0.24
			5	30,000	500	0.015	0.1	30,000	350	0.015	0.1	30,000	600	0.045	0.24
			8	30,000	500	0.01	0.08	30,000	350	0.01	0.05	30,000	600	0.03	0.24
			10	24,000	400	0.007	0.06	24,000	250	0.007	0.04	24,000	480	0.02	0.18
			12	24,000	300	0.005	0.05	24,000	150	0.005	0.03	24,000	360	0.015	0.15
		3°	3	30,000	600	0.03	0.1	30,000	400	0.03	0.1	30,000	700	0.09	0.25
			5	30,000	600	0.02	0.1	30,000	400	0.02	0.1	30,000	700	0.06	0.25
			8	30,000	600	0.02	0.08	30,000	400	0.02	0.05	30,000	700	0.06	0.24
			10	24,000	500	0.015	0.08	24,000	350	0.01	0.05	24,000	600	0.03	0.24
			12	24,000	350	0.015	0.05	24,000	200	0.01	0.03	24,000	420	0.03	0.15
		5°	3	30,000	750	0.05	0.15	30,000	500	0.05	0.1	30,000	900	0.15	0.25
			5	30,000	750	0.03	0.15	30,000	500	0.03	0.1	30,000	900	0.09	0.25
			8	24,000	750	0.03	0.11	24,000	500	0.03	0.08	24,000	900	0.09	0.25
			10	24,000	600	0.02	0.08	24,000	400	0.02	0.06	24,000	720	0.06	0.25
0.8	0.05 0.1 0.2	1°	5	26,000	1,000	0.06	0.2	21,000	700	0.06	0.1	26,000	1,200	0.18	0.3
			8	24,000	800	0.04	0.2	19,000	560	0.04	0.1	24,000	950	0.12	0.3
		3°	5	26,000	1,200	0.08	0.3	21,000	840	0.08	0.3	26,000	1,400	0.24	0.35
			8	24,000	1,000	0.06	0.3	19,000	700	0.06	0.3	24,000	1,200	0.18	0.35

圆鼻 Corner Radius
锥颈 Taper Neck
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

MSTNR230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				碳素钢・调质钢 Carbon Steels・Prehardened Steels S50C・NAK55・NAK80・HPM1 (～43HRC)				高硬度钢 Hardened Steels SKD11・SKD61・STAVAX・HPM38 (～55HRC)				铜合金・铝合金 Copper・Aluminium Alloy			
外径 Dia.	角半径 Corner Radius	颈角 Neck Taper Angle	颈长 Under Neck Length	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm
1	0.05 0.1 0.2 0.3	1°	6	22,000	1,300	0.08	0.35	17,000	900	0.06	0.35	22,000	1,500	0.24	0.5
			10	18,000	1,000	0.05	0.35	14,000	700	0.05	0.35	18,000	1,200	0.15	0.5
			15	18,000	850	0.03	0.2	14,000	600	0.03	0.13	18,000	1,000	0.09	0.5
			20	14,000	700	0.025	0.1	11,000	500	0.025	0.06	14,000	850	0.075	0.3
			25	14,000	600	0.02	0.05	11,000	400	0.02	0.03	14,000	700	0.06	0.15
			30	10,000	480	0.015	0.03	8,000	300	0.015	0.02	10,000	600	0.045	0.09
			35	10,000	350	0.01	0.02	8,000	250	0.01	0.01	10,000	400	0.03	0.06
		3°	6	22,000	1,500	0.1	0.35	17,600	1,000	0.1	0.35	22,000	1,800	0.3	0.5
			10	18,000	1,200	0.08	0.35	14,400	800	0.08	0.35	18,000	1,400	0.24	0.5
1.5	0.1 0.2 0.3	1°	10	16,000	1,300	0.1	0.55	12,800	900	0.1	0.55	16,000	1,500	0.3	0.6
			15	14,000	1,000	0.07	0.55	11,200	700	0.07	0.55	14,000	1,200	0.2	0.6
			20	14,000	800	0.05	0.3	11,200	550	0.05	0.2	14,000	900	0.16	0.5
			25	14,000	600	0.03	0.1	11,200	400	0.03	0.06	14,000	700	0.1	0.3
			30	12,000	450	0.03	0.05	9,600	300	0.03	0.03	12,000	550	0.09	0.15
		3°	10	16,000	1,500	0.15	0.55	12,800	1,000	0.15	0.55	16,000	1,800	0.45	0.6
			15	14,000	1,200	0.1	0.55	11,200	850	0.1	0.55	14,000	1,400	0.3	0.6
2	0.1 0.2 0.3 0.5	1°	15	14,000	1,200	0.1	0.7	11,200	850	0.07	0.7	14,000	1,400	0.3	0.7
			20	12,000	1,200	0.07	0.7	9,600	850	0.07	0.7	12,000	1,400	0.2	0.7
			25	12,000	1,000	0.05	0.5	9,600	700	0.04	0.5	12,000	1,200	0.15	0.7
			30	10,000	750	0.04	0.3	8,000	500	0.03	0.3	10,000	900	0.13	0.7
			40	8,000	400	0.03	0.2	6,400	300	0.02	0.2	8,000	500	0.1	0.5
			50	6,000	350	0.015	0.1	4,800	250	0.01	0.1	6,000	400	0.05	0.3
		3°	15	20,000	2,000	0.2	0.7	16,000	1,400	0.2	0.7	20,000	2,400	0.6	0.7
			20	16,000	1,600	0.1	0.7	12,800	1,100	0.1	0.7	16,000	2,000	0.4	0.7
3	0.2 0.5	1°	15	11,000	1,600	0.15	1.05	8,800	1,100	0.1	1.05	11,000	1,900	0.6	1.1
			20	11,000	1,600	0.13	1.05	8,800	1,100	0.1	1.05	11,000	1,900	0.45	1.1
			30	9,000	1,200	0.1	1.05	7,200	850	0.07	1.05	9,000	1,400	0.3	1.1
			40	9,000	1,000	0.07	0.6	7,200	700	0.05	0.6	9,000	1,200	0.21	0.9
			50	8,000	640	0.05	0.35	6,400	450	0.04	0.35	8,000	750	0.15	0.8
			60	8,000	480	0.03	0.2	6,400	300	0.02	0.2	8,000	550	0.1	0.7

备 注 Notes

※ 1 请根据实际的加工形状和所使用的机床等调整切削参数。
※ 2 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速过低时，也以相同的比率降低。
※ 3 切削高硬度钢时，建议使用油雾冷却方式。
※ 4 加工深沟时，请充分注意冷却液的供油及排屑是否顺畅。
※1 Adjust milling conditions according to machining profile and machine status.
※2 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※3 Recommend to use oil mist coolant for machining hardened steels.
※4 Coolant supply and chip disposal are important for machining deep-rib.

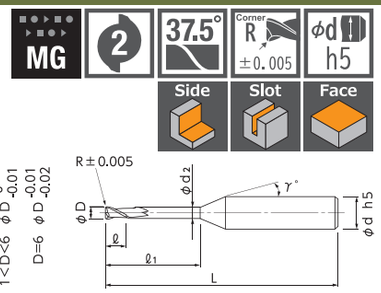


锥颈 Taper Neck
圆鼻 Corner Radius
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
常规系列 无限涂层 长颈造型 Regular Line MUGEN COATING Long Neck Type

DHR237R
铜电极加工用长颈圆鼻铣刀
Long Neck Corner Radius End Mill for Copper Electrode

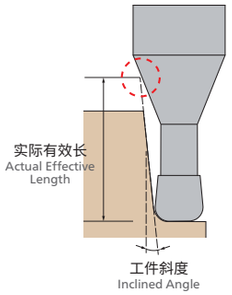
针对铜电极加工用的长颈圆鼻铣刀
刀刃锋利，可减少毛刺，实现优质的加工面

Long neck corner radius end mill specialized for machining copper alloy
Sharpe cutting edge makes less burr and high quality surface





- 针对铜电极加工用的长颈圆鼻铣刀。
- 采用兼顾高锋利度、高品位加工表面的37.5°螺旋角和优化的刀刃形状，可提高加工面的品质。
- 采用DLC涂层，可确保长时间进行持续稳定的加工。
- 对钨铜电极的加工也很有效。
- Long neck radius end mill specialized for machining copper electrode.
- 37.5°helix angle provides both sharpness shearing ability and finishing surface quality, combining the most suitable cutting edge design realizes the higher quality of finishing surface.
- High quality and stable milling performance with long tool life by optimized design and DLC COATING.
- Machining copper tungsten electrodes is also effective.



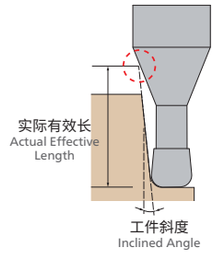
单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
07-00110-02021	0.2	R0.02	0.5	0.4	0.18	12°	4	45	11,500	0.56	0.59	0.62	0.65	0.71
07-00110-02023			1	0.4	0.18	12°	4	45	12,000	1.09	1.13	1.19	1.24	1.38
07-00110-02025			1.5	0.4	0.18	12°	4	45	12,300	1.61	1.68	1.76	1.84	2.04
07-00110-02051		R0.05	0.5	0.4	0.18	12°	4	45	11,500	0.56	0.59	0.61	0.64	0.71
07-00110-02053			1	0.4	0.18	12°	4	45	12,000	1.08	1.13	1.18	1.24	1.37
07-00110-02055			1.5	0.4	0.18	12°	4	45	12,300	1.61	1.68	1.75	1.84	2.03
07-00110-03021	0.3	R0.02	1	0.6	0.28	12°	4	45	12,000	1.09	1.13	1.19	1.24	1.38
07-00110-03022			1.5	0.6	0.28	12°	4	45	12,300	1.61	1.68	1.76	1.84	2.04
07-00110-03023			2	0.6	0.28	12°	4	45	12,500	2.13	2.22	2.33	2.44	2.71
07-00110-03051		R0.05	1	0.6	0.28	12°	4	45	12,000	1.08	1.13	1.18	1.24	1.37
07-00110-03052			1.5	0.6	0.28	12°	4	45	12,300	1.61	1.68	1.75	1.84	2.03
07-00110-03053			2	0.6	0.28	12°	4	45	12,500	2.13	2.22	2.32	2.43	2.70
07-00110-04021	0.4	R0.02	1	0.8	0.37	12°	4	45	10,500	1.11	1.16	1.21	1.27	1.41
07-00110-04023			2	0.8	0.37	12°	4	45	10,700	2.15	2.25	2.35	2.47	2.74
07-00110-04025			3	0.8	0.37	12°	4	45	10,900	3.20	3.34	3.49	3.67	4.06
07-00110-04027			4	0.8	0.37	12°	4	45	11,100	4.24	4.43	4.63	4.86	5.39
07-00110-04051		R0.05	1	0.8	0.37	12°	4	45	10,500	1.11	1.16	1.21	1.27	1.40
07-00110-04053			2	0.8	0.37	12°	4	45	10,700	2.15	2.25	2.35	2.46	2.73
07-00110-04055			3	0.8	0.37	12°	4	45	10,900	3.19	3.34	3.49	3.66	4.05
07-00110-04057			4	0.8	0.37	12°	4	45	11,100	4.24	4.43	4.63	4.86	5.38
07-00110-04101		R0.1	1	0.8	0.37	12°	4	45	10,500	1.11	1.15	1.20	1.26	1.38
07-00110-04103			2	0.8	0.37	12°	4	45	10,700	2.15	2.24	2.34	2.45	2.71
07-00110-04105			3	0.8	0.37	12°	4	45	10,900	3.19	3.33	3.48	3.65	4.04
07-00110-04107			4	0.8	0.37	12°	4	45	11,100	4.24	4.42	4.62	4.85	5.37

订购方法 How to Order
请指定DHR237R 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate DHR237R (D)×(R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

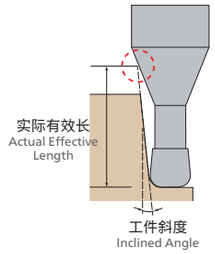
加工案例 Machining case
M-038



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece 30´	1°	1°30´	2°	3°
07-00110-05022	0.5	R0.02	2	1	0.46	12°	4	45	10,400	2.18	2.27	2.38	2.50	2.77
07-00110-05023			3	1	0.46	12°	4	45	10,600	3.22	3.36	3.52	3.69	4.10
07-00110-05024			4	1	0.46	12°	4	45	10,800	4.26	4.45	4.66	4.89	5.42
07-00110-05025			5	1	0.46	12°	4	45	11,000	5.31	5.54	5.80	6.09	6.75
07-00110-05052		R0.05	2	1	0.46	12°	4	45	10,400	2.18	2.27	2.38	2.49	2.76
07-00110-05053			3	1	0.46	12°	4	45	10,600	3.22	3.36	3.52	3.69	4.09
07-00110-05054			4	1	0.46	12°	4	45	10,800	4.26	4.45	4.66	4.88	5.41
07-00110-05055			5	1	0.46	12°	4	45	11,000	5.31	5.54	5.80	6.08	6.74
07-00110-05102		R0.1	2	1	0.46	12°	4	45	10,400	2.17	2.27	2.37	2.48	2.74
07-00110-05103			3	1	0.46	12°	4	45	10,600	3.22	3.36	3.51	3.68	4.07
07-00110-05104			4	1	0.46	12°	4	45	10,800	4.26	4.45	4.65	4.87	5.40
07-00110-05105			5	1	0.46	12°	4	45	11,000	5.30	5.54	5.79	6.07	6.72
07-00110-06022	0.6	R0.02	2	1.2	0.56	12°	4	45	11,200	2.18	2.27	2.38	2.50	2.77
07-00110-06024			4	1.2	0.56	12°	4	45	11,700	4.26	4.45	4.66	4.89	5.42
07-00110-06026			6	1.2	0.56	12°	4	45	12,100	6.35	6.63	6.94	7.28	8.08
07-00110-06052		R0.05	2	1.2	0.56	12°	4	45	11,200	2.18	2.27	2.38	2.49	2.76
07-00110-06054			4	1.2	0.56	12°	4	45	11,700	4.26	4.45	4.66	4.88	5.41
07-00110-06056			6	1.2	0.56	12°	4	45	12,100	6.35	6.63	6.94	7.28	8.07
07-00110-06102		R0.1	2	1.2	0.56	12°	4	45	11,200	2.17	2.27	2.37	2.48	2.74
07-00110-06104			4	1.2	0.56	12°	4	45	11,700	4.26	4.45	4.65	4.87	5.40
07-00110-06106			6	1.2	0.56	12°	4	45	12,100	6.35	6.63	6.93	7.27	8.05
07-00110-08024	0.8	R0.02	4	1.6	0.76	12°	4	45	11,700	4.26	4.45	4.66	4.89	5.42
07-00110-08026			6	1.6	0.76	12°	4	45	12,100	6.35	6.63	6.94	7.28	8.08
07-00110-08028			8	1.6	0.76	12°	4	50	12,300	8.43	8.81	9.22	9.68	10.73
07-00110-08054		R0.05	4	1.6	0.76	12°	4	45	11,700	4.26	4.45	4.66	4.88	5.41
07-00110-08056			6	1.6	0.76	12°	4	45	12,100	6.35	6.63	6.94	7.28	8.07
07-00110-08058			8	1.6	0.76	12°	4	50	12,300	8.43	8.81	9.22	9.67	10.72
07-00110-08104		R0.1	4	1.6	0.76	12°	4	45	11,700	4.26	4.45	4.65	4.87	5.40
07-00110-08106			6	1.6	0.76	12°	4	45	12,100	6.35	6.63	6.93	7.27	8.05
07-00110-08108			8	1.6	0.76	12°	4	50	12,300	8.43	8.80	9.21	9.66	10.71
07-00110-10053	1	R0.05	3	2	0.95	12°	4	45	10,900	3.24	3.39	3.54	3.72	4.12
07-00110-10054			4	2	0.95	12°	4	45	11,000	4.29	4.48	4.68	4.91	5.44
07-00110-10055			5	2	0.95	12°	4	45	11,300	5.33	5.57	5.82	6.11	6.77
07-00110-10056			6	2	0.95	12°	4	45	11,500	6.37	6.66	6.97	7.31	8.10
07-00110-10058			8	2	0.95	12°	4	50	11,700	8.46	8.83	9.25	9.70	10.75
07-00110-10060			10	2	0.95	12°	4	50	12,000	10.54	11.01	11.53	12.09	13.41
07-00110-10103		R0.1	3	2	0.95	12°	4	45	10,900	3.24	3.38	3.54	3.71	4.10
07-00110-10104			4	2	0.95	12°	4	45	11,000	4.28	4.47	4.68	4.90	5.43
07-00110-10105			5	2	0.95	12°	4	45	11,300	5.33	5.56	5.82	6.10	6.76
07-00110-10106			6	2	0.95	12°	4	45	11,500	6.37	6.65	6.96	7.30	8.08
07-00110-10108			8	2	0.95	12°	4	50	11,700	8.46	8.83	9.24	9.69	10.74
07-00110-10110			10	2	0.95	12°	4	50	12,000	10.54	11.01	11.52	12.08	13.39
07-00110-10203		R0.2	3	2	0.95	12°	4	45	10,900	3.24	3.37	3.52	3.69	4.07
07-00110-10204			4	2	0.95	12°	4	45	11,000	4.28	4.46	4.66	4.88	5.40
07-00110-10205			5	2	0.95	12°	4	45	11,300	5.32	5.55	5.80	6.08	6.72
07-00110-10206			6	2	0.95	12°	4	45	11,500	6.37	6.64	6.94	7.28	8.05
07-00110-10208			8	2	0.95	12°	4	50	11,700	8.45	8.82	9.23	9.67	10.71
07-00110-10210			10	2	0.95	12°	4	50	12,000	10.54	11.00	11.51	12.06	13.36

铜电极加工用长颈圆鼻铣刀
Long Neck Corner Radius End Mill for Copper Electrode



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
07-00110-15105	1.5	R0.1	5	3	1.45	12°	4	45	11,400	5.33	5.56	5.82	6.10	6.76
07-00110-15110			10	3	1.45	12°	4	50	11,500	10.54	11.01	11.52	12.08	13.39
07-00110-15115			15	3	1.45	12°	4	50	11,600	15.76	16.46	17.22	18.07	20.03
07-00110-15205		R0.2	5	3	1.45	12°	4	45	11,400	5.32	5.55	5.80	6.08	6.72
07-00110-15210			10	3	1.45	12°	4	50	11,500	10.54	11.00	11.51	12.06	13.36
07-00110-15215			15	3	1.45	12°	4	50	11,600	15.75	16.45	17.21	18.05	20.00
07-00110-15305		R0.3	5	3	1.45	12°	4	45	10,900	5.32	5.54	5.79	6.06	6.69
07-00110-15310			10	3	1.45	12°	4	50	11,500	10.53	10.99	11.49	12.04	13.33
07-00110-15315			15	3	1.45	12°	4	50	11,600	15.75	16.44	17.20	18.03	19.96
07-00110-15505		R0.5	5	3	1.45	12°	4	45	11,000	5.31	5.53	5.76	6.02	6.63
07-00110-15510			10	3	1.45	12°	4	50	11,500	10.52	10.97	11.46	12.01	13.26
07-00110-15515			15	3	1.45	12°	4	50	11,600	15.74	16.42	17.17	17.99	19.90
07-00110-15520			20	3	1.45	12°	4	60	11,800	20.95	21.87	22.87	23.97	Free
07-00110-20105	2	R0.1	5	4	1.94	12°	4	45	10,600	5.35	5.59	5.84	6.13	6.79
07-00110-20108			8	4	1.94	12°	4	50	11,000	8.48	8.86	9.27	9.72	10.77
07-00110-20110			10	4	1.94	12°	4	50	11,100	10.57	11.03	11.55	12.11	13.42
07-00110-20115			15	4	1.94	12°	4	50	11,200	15.78	16.48	17.25	18.09	Free
07-00110-20120			20	4	1.94	12°	4	60	11,400	20.99	21.93	22.95	24.08	Free
07-00110-20205		R0.2	5	4	1.94	12°	4	45	10,600	5.35	5.58	5.83	6.11	6.75
07-00110-20208			8	4	1.94	12°	4	50	11,000	8.48	8.85	9.25	9.70	10.74
07-00110-20210			10	4	1.94	12°	4	50	11,100	10.56	11.03	11.53	12.09	13.39
07-00110-20215			15	4	1.94	12°	4	50	11,200	15.78	16.47	17.24	18.07	Free
07-00110-20220			20	4	1.94	12°	4	60	11,400	20.99	21.92	22.94	24.06	Free
07-00110-20305		R0.3	5	4	1.94	12°	4	45	10,600	5.34	5.57	5.82	6.09	6.72
07-00110-20308			8	4	1.94	12°	4	50	11,000	8.47	8.84	9.24	9.68	10.70
07-00110-20310			10	4	1.94	12°	4	50	11,100	10.56	11.02	11.52	12.07	13.36
07-00110-20315			15	4	1.94	12°	4	50	11,200	15.77	16.46	17.22	18.05	Free
07-00110-20320			20	4	1.94	12°	4	60	11,400	20.99	21.91	22.92	24.04	Free
07-00110-20505		R0.5	5	4	1.94	12°	4	45	10,600	5.33	5.55	5.79	6.05	6.66
07-00110-20508			8	4	1.94	12°	4	50	11,000	8.46	8.82	9.21	9.64	10.64
07-00110-20510			10	4	1.94	12°	4	50	11,100	10.55	11.00	11.49	12.03	13.30
07-00110-20515			15	4	1.94	12°	4	50	11,200	15.76	16.45	17.19	18.02	Free
07-00110-20520			20	4	1.94	12°	4	60	11,400	20.98	21.89	22.90	24.00	Free
07-00110-25208	2.5	R0.2	8	5	2.4	12°	4	50	11,000	8.57	8.95	9.36	9.81	10.86
07-00110-25214			14	5	2.4	12°	4	50	11,200	14.83	15.49	16.20	16.99	Free
07-00110-25220			20	5	2.4	12°	4	60	11,400	21.09	22.02	23.05	Free	Free
07-00110-25508		R0.5	8	5	2.4	12°	4	50	11,000	8.56	8.92	9.32	9.75	10.77
07-00110-25514			14	5	2.4	12°	4	50	11,200	14.82	15.46	16.16	16.93	Free
07-00110-25520			20	5	2.4	12°	4	60	11,400	21.08	22.00	23.00	Free	Free

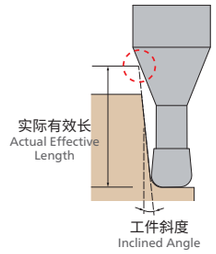
订购方法 How to Order
请指定DHR237R 外径(D)×角半径(R)×颈长(ℓ1)。
When you order, indicate DHR237R (D)×(R)×(ℓ1).

※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining case
M-038

DHR237R

铜电极加工用长颈圆鼻铣刀
Long Neck Corner Radius End Mill for Copper Electrode



单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)外径 Dia.	(R)角半径 Corner Radius	(ℓ1)颈长 Under Neck Length	(ℓ)刃长 Length of Cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece				
										30´	1°	1°30´	2°	3°
07-00110-30112	3	R0.1	12	6	2.85	12°	6	50	12,000	12.87	13.44	14.07	14.76	16.36
07-00110-30118			18	6	2.85	12°	6	60	12,300	19.13	19.98	20.91	21.94	24.32
07-00110-30124			24	6	2.85	12°	6	70	13,000	25.39	26.52	27.76	29.12	Free
07-00110-30212		R0.2	12	6	2.85	12°	6	50	12,000	12.87	13.44	14.06	14.74	16.33
07-00110-30218			18	6	2.85	12°	6	60	12,300	19.13	19.97	20.90	21.92	24.29
07-00110-30224			24	6	2.85	12°	6	70	13,000	25.38	26.51	27.74	29.10	Free
07-00110-30312		R0.3	12	6	2.85	12°	6	50	12,000	12.86	13.43	14.04	14.72	16.29
07-00110-30318			18	6	2.85	12°	6	60	12,300	19.12	19.96	20.88	21.90	24.26
07-00110-30324			24	6	2.85	12°	6	70	13,000	25.38	26.50	27.73	29.08	Free
07-00110-30512		R0.5	12	6	2.85	12°	6	50	12,000	12.86	13.41	14.01	14.68	16.23
07-00110-30515			15	6	2.85	12°	6	60	12,200	15.98	16.68	17.44	18.27	20.21
07-00110-30518			18	6	2.85	12°	6	60	12,300	19.11	19.95	20.86	21.86	24.19
07-00110-30524			24	6	2.85	12°	6	70	13,800	25.37	26.48	27.70	29.04	Free
07-00110-30530			30	6	2.85	12°	6	70	14,200	31.63	33.02	34.54	36.22	Free
07-00110-40116	4	R0.1	16	8	3.8	12°	6	60	12,000	17.17	17.93	18.77	19.68	Free
07-00110-40124			24	8	3.8	12°	6	60	12,300	25.51	26.65	27.89	Free	Free
07-00110-40132			32	8	3.8	12°	6	70	13,000	33.85	35.36	37.01	Free	Free
07-00110-40216		R0.2	16	8	3.8	12°	6	60	12,000	17.16	17.92	18.75	19.66	Free
07-00110-40224			24	8	3.8	12°	6	60	12,300	25.50	26.64	27.88	Free	Free
07-00110-40232			32	8	3.8	12°	6	70	13,000	33.85	35.35	37.00	Free	Free
07-00110-40316		R0.3	16	8	3.8	12°	6	60	12,000	17.16	17.91	18.74	19.65	Free
07-00110-40324			24	8	3.8	12°	6	60	12,300	25.50	26.63	27.86	Free	Free
07-00110-40332			32	8	3.8	12°	6	70	13,000	33.84	35.34	36.99	Free	Free
07-00110-40516		R0.5	16	8	3.8	12°	6	60	12,000	17.15	17.89	18.71	19.61	Free
07-00110-40524			24	8	3.8	12°	6	60	12,300	25.49	26.61	27.83	Free	Free
07-00110-40532			32	8	3.8	12°	6	70	13,800	33.83	35.33	36.96	Free	Free
07-00110-41016		R1	16	8	3.8	12°	6	60	12,000	17.13	17.85	18.64	19.51	Free
07-00110-41024			24	8	3.8	12°	6	60	12,300	25.47	26.57	27.77	29.08	Free
07-00110-41032			32	8	3.8	12°	6	70	13,800	33.81	35.28	36.89	Free	Free
07-00110-50120	5	R0.1	20	10	4.8	12°	6	60	12,200	21.34	22.29	Free	Free	Free
07-00110-50140			40	10	4.8	12°	6	80	17,800	42.19	Free	Free	Free	Free
07-00110-60124	6	R0.1	24	12	5.8	–	6	60	13,800	Free	Free	Free	Free	Free
07-00110-60148			48	12	5.8	–	6	90	21,600	Free	Free	Free	Free	Free
07-00110-60224		R0.2	24	12	5.8	–	6	60	13,800	Free	Free	Free	Free	Free
07-00110-60248			48	12	5.8	–	6	90	21,600	Free	Free	Free	Free	Free
07-00110-60324		R0.3	24	12	5.8	–	6	60	13,800	Free	Free	Free	Free	Free
07-00110-60348			48	12	5.8	–	6	90	21,600	Free	Free	Free	Free	Free
07-00110-60524		R0.5	24	12	5.8	–	6	60	13,800	Free	Free	Free	Free	Free
07-00110-60530			30	12	5.8	–	6	70	14,500	Free	Free	Free	Free	Free
07-00110-60548			48	12	5.8	–	6	90	21,600	Free	Free	Free	Free	Free
07-00110-61024		R1	24	12	5.8	–	6	60	13,800	Free	Free	Free	Free	Free
07-00110-61048			48	12	5.8	–	6	90	21,600	Free	Free	Free	Free	Free

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				铜合金 Copper				钨铜 Copper Tungsten (W70%-Cu30%)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm
0.2	0.02	0.5	2.5	40,000	400	0.01	0.1	36,000	360	0.009	0.09
		1	5	40,000	320	0.008	0.1	36,000	280	0.007	0.09
		1.5	7.5	30,000	180	0.005	0.1	27,000	160	0.005	0.09
	0.05	0.5	2.5	40,000	400	0.03	0.1	36,000	360	0.027	0.09
		1	5	40,000	320	0.02	0.1	36,000	280	0.018	0.09
		1.5	7.5	30,000	180	0.01	0.1	27,000	160	0.009	0.09
0.3	0.02	1	3.3	40,000	480	0.01	0.15	36,000	420	0.009	0.14
		1.5	5	40,000	360	0.008	0.15	36,000	320	0.007	0.14
		2	6.7	30,000	240	0.005	0.15	27,000	210	0.005	0.14
	0.05	1	3.3	40,000	480	0.03	0.15	36,000	420	0.027	0.14
		1.5	5	40,000	360	0.024	0.15	36,000	320	0.022	0.14
		2	6.7	30,000	240	0.018	0.15	27,000	210	0.016	0.14
0.4	0.02	1	2.5	40,000	640	0.01	0.2	36,000	580	0.009	0.18
		2	5	40,000	560	0.01	0.2	36,000	500	0.009	0.18
		3	7.5	30,000	420	0.008	0.2	27,000	380	0.007	0.18
		4	10	30,000	360	0.005	0.2	27,000	320	0.005	0.18
	0.05	1	2.5	40,000	640	0.03	0.2	36,000	580	0.027	0.18
		2	5	40,000	560	0.024	0.2	36,000	500	0.022	0.18
		3	7.5	30,000	420	0.018	0.2	27,000	380	0.016	0.18
		4	10	30,000	360	0.012	0.2	27,000	320	0.01	0.18
	0.1	1	2.5	40,000	640	0.06	0.2	36,000	580	0.054	0.18
		2	5	40,000	560	0.05	0.2	36,000	500	0.045	0.18
		3	7.5	30,000	420	0.036	0.2	27,000	380	0.032	0.18
		4	10	30,000	360	0.024	0.2	27,000	320	0.022	0.18
0.5	0.02	2	4	40,000	800	0.01	0.25	36,000	720	0.009	0.23
		3	6	35,000	640	0.01	0.25	32,000	580	0.009	0.23
		4	8	30,000	480	0.008	0.25	27,000	420	0.007	0.23
		5	10	25,000	400	0.005	0.25	23,000	360	0.005	0.23
	0.05	2	4	40,000	800	0.03	0.25	36,000	720	0.027	0.23
		3	6	35,000	640	0.024	0.25	32,000	580	0.022	0.23
		4	8	30,000	480	0.018	0.25	27,000	420	0.016	0.23
		5	10	25,000	400	0.012	0.25	23,000	360	0.01	0.23
	0.1	2	4	40,000	800	0.06	0.25	36,000	720	0.054	0.23
		3	6	35,000	640	0.05	0.25	32,000	580	0.045	0.23
		4	8	30,000	480	0.036	0.25	27,000	420	0.032	0.23
		5	10	25,000	400	0.024	0.25	23,000	360	0.022	0.23
0.6	0.02	2	3.3	30,000	1,000	0.01	0.3	27,000	900	0.009	0.27
		4	6.7	25,000	800	0.01	0.3	23,000	720	0.009	0.27
		6	10	20,000	600	0.008	0.3	18,000	540	0.007	0.27
	0.05	2	3.3	30,000	1,000	0.03	0.3	27,000	900	0.027	0.27
		4	6.7	25,000	800	0.02	0.3	23,000	720	0.018	0.27
		6	10	20,000	600	0.012	0.3	18,000	540	0.01	0.27
	0.1	2	3.3	30,000	1,000	0.06	0.3	27,000	900	0.054	0.27
		4	6.7	25,000	800	0.05	0.3	23,000	720	0.045	0.27
		6	10	20,000	600	0.036	0.3	18,000	540	0.032	0.27

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切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				铜合金 Copper				钨铜 Copper Tungsten (W70%-Cu30%)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min^{-1}	mm/min	a_p mm	a_e mm	min^{-1}	mm/min	a_p mm	a_e mm
0.8	0.02	4	5	25,000	1,600	0.01	0.4	23,000	1,400	0.009	0.36
		6	7.5	20,000	1,200	0.01	0.4	18,000	1,100	0.009	0.36
		8	10	16,000	800	0.01	0.4	14,000	720	0.009	0.36
	0.05	4	5	25,000	1,600	0.03	0.4	23,000	1,400	0.027	0.36
		6	7.5	20,000	1,200	0.024	0.4	18,000	1,100	0.022	0.36
		8	10	16,000	800	0.02	0.4	14,000	720	0.018	0.36
	0.1	4	5	25,000	1,600	0.06	0.4	23,000	1,400	0.054	0.36
		6	7.5	20,000	1,200	0.05	0.4	18,000	1,100	0.045	0.36
		8	10	16,000	800	0.04	0.4	14,000	720	0.036	0.36
1	0.05	3	3	25,000	2,400	0.03	0.6	23,000	2,200	0.027	0.55
		4	4	25,000	2,200	0.03	0.6	23,000	2,000	0.027	0.55
		5	5	22,000	2,000	0.024	0.6	20,000	1,800	0.022	0.55
		6	6	20,000	1,800	0.024	0.6	18,000	1,600	0.022	0.55
		8	8	16,000	1,400	0.02	0.6	14,000	1,200	0.018	0.55
		10	10	12,000	1,000	0.02	0.6	11,000	900	0.018	0.55
	0.1	3	3	25,000	2,400	0.06	0.6	23,000	2,200	0.054	0.55
		4	4	25,000	2,200	0.055	0.6	23,000	2,000	0.05	0.55
		5	5	22,000	2,000	0.05	0.6	20,000	1,800	0.045	0.55
		6	6	20,000	1,800	0.045	0.6	18,000	1,600	0.04	0.55
		8	8	16,000	1,400	0.04	0.6	14,000	1,200	0.036	0.55
		10	10	12,000	1,000	0.03	0.6	11,000	900	0.027	0.55
	0.2	3	3	25,000	2,400	0.12	0.6	23,000	2,200	0.11	0.55
		4	4	25,000	2,200	0.11	0.6	23,000	2,000	0.1	0.55
		5	5	22,000	2,000	0.1	0.6	20,000	1,800	0.09	0.55
		6	6	20,000	1,800	0.09	0.6	18,000	1,600	0.08	0.55
		8	8	16,000	1,400	0.08	0.6	14,000	1,200	0.07	0.55
		10	10	12,000	1,000	0.06	0.6	11,000	900	0.054	0.55
1.5	0.1	5	3.3	20,000	2,400	0.06	0.9	18,000	2,200	0.054	0.8
		10	6.6	16,000	1,600	0.05	0.9	14,000	1,400	0.045	0.8
		15	10	12,000	1,000	0.04	0.9	11,000	900	0.036	0.8
	0.2	5	3.3	20,000	2,400	0.12	0.9	18,000	2,200	0.11	0.8
		10	6.6	16,000	1,600	0.1	0.9	14,000	1,400	0.09	0.8
		15	10	12,000	1,000	0.08	0.9	11,000	900	0.07	0.8
	0.3	5	3.3	20,000	2,400	0.18	0.9	18,000	2,200	0.16	0.8
		10	6.6	16,000	1,600	0.15	0.9	14,000	1,400	0.14	0.8
		15	10	12,000	1,000	0.12	0.9	11,000	900	0.11	0.8
	0.5	5	3.3	20,000	2,400	0.25	0.5	18,000	2,200	0.23	0.8
		10	6.6	16,000	1,600	0.2	0.5	14,000	1,400	0.18	0.8
		15	10	12,000	1,000	0.12	0.5	11,000	900	0.11	0.8
		20	13.3	8,000	600	0.06	0.5	7,000	540	0.054	0.8

圆鼻 Corner Radius
长颈 Long Neck
涂层 Coating
铝合金 Aluminium Alloy N
铜合金 Copper 钨铜 Copper Tungsten N
树脂 Resin O
铜电极加工 Copper Electrode Milling

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切削参数参考表
Recommended Milling Conditions

加工材料 Work Material				铜合金 Copper				钨铜 Copper Tungsten (W70%-Cu30%)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
2	0.1	5	2.5	16,000	3,000	0.06	1.2	14,000	2,700	0.054	1.1
		8	4	14,000	2,600	0.06	1.2	13,000	2,400	0.054	1.1
		10	5	12,000	2,000	0.06	1.2	11,000	1,800	0.054	1.1
		15	7.5	10,000	1,600	0.05	1.2	9,000	1,400	0.045	1.1
		20	10	8,000	1,200	0.04	1.2	7,000	1,100	0.036	1.1
	0.2	5	2.5	16,000	3,000	0.12	1.2	14,000	2,700	0.11	1.1
		8	4	14,000	2,600	0.12	1.2	13,000	2,400	0.11	1.1
		10	5	12,000	2,000	0.12	1.2	11,000	1,800	0.11	1.1
		15	7.5	10,000	1,600	0.1	1.2	9,000	1,400	0.09	1.1
		20	10	8,000	1,200	0.08	1.2	7,000	1,100	0.07	1.1
	0.3	5	2.5	16,000	3,000	0.18	1.2	14,000	2,700	0.16	1.1
		8	4	14,000	2,600	0.18	1.2	13,000	2,400	0.16	1.1
		10	5	12,000	2,000	0.18	1.2	11,000	1,800	0.16	1.1
		15	7.5	10,000	1,600	0.14	1.2	9,000	1,400	0.13	1.1
		20	10	8,000	1,200	0.1	1.2	7,000	1,100	0.09	1.1
	0.5	5	2.5	16,000	3,000	0.3	1.2	14,000	2,700	0.27	1.1
		8	4	14,000	2,600	0.3	1.2	13,000	2,400	0.27	1.1
		10	5	12,000	2,000	0.3	1.2	11,000	1,800	0.27	1.1
		15	7.5	10,000	1,600	0.2	1.2	9,000	1,400	0.18	1.1
		20	10	8,000	1,200	0.15	1.2	7,000	1,100	0.14	1.1
2.5	0.2	8	3.2	15,000	3,000	0.12	1.5	13,500	2,700	0.11	1.4
		14	5.6	12,000	2,200	0.1	1.5	11,000	2,000	0.09	1.4
		20	8	10,000	1,600	0.08	1.5	9,000	1,400	0.04	1.4
	0.5	8	3.2	15,000	3,000	0.3	1.5	13,500	2,700	0.027	1.4
		14	5.6	12,000	2,200	0.25	1.5	11,000	2,000	0.23	1.4
		20	8	10,000	1,600	0.2	1.5	9,000	1,400	0.18	1.4
3	0.1	12	4	14,000	3,000	0.06	1.8	13,000	2,700	0.054	1.6
		18	6	12,000	2,400	0.05	1.8	11,000	2,200	0.045	1.6
		24	8	10,000	1,800	0.04	1.8	9,000	1,600	0.036	1.6
	0.2	12	4	14,000	3,000	0.12	1.8	13,000	2,700	0.11	1.6
		18	6	12,000	2,400	0.1	1.8	11,000	2,200	0.09	1.6
		24	8	10,000	1,800	0.08	1.8	9,000	1,600	0.07	1.6
	0.3	12	4	14,000	3,000	0.18	1.8	13,000	2,700	0.16	1.6
		18	6	12,000	2,400	0.15	1.8	11,000	2,200	0.14	1.6
		24	8	10,000	1,800	0.12	1.8	9,000	1,600	0.11	1.6
	0.5	12	4	14,000	3,000	0.3	1.8	13,000	2,700	0.27	1.6
		15	5	13,000	2,600	0.3	1.8	12,000	2,400	0.27	1.6
		18	6	12,000	2,400	0.25	1.8	11,000	2,200	0.23	1.6
		24	8	10,000	1,800	0.2	1.8	9,000	1,600	0.18	1.6
		30	10	8,000	1,400	0.16	1.8	7,000	1,200	0.14	1.6

加工材料 Work Material				铜合金 Copper				钨铜 Copper Tungsten (W70%-Cu30%)			
外径 Dia.	角半径 Corner Radius	颈长 Under Neck Length	L(颈长)/D(外径) L/D	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	ae mm
4	0.1	16	4	10,000	2,800	0.06	2.8	9,000	2,500	0.054	2.5
		24	6	8,000	2,200	0.05	2.8	7,000	1,900	0.045	2.5
		32	8	6,000	1,600	0.04	2.8	5,500	1,400	0.036	2.5
	0.2	16	4	10,000	2,800	0.14	2.8	9,000	2,500	0.13	2.5
		24	6	8,000	2,200	0.12	2.8	7,000	1,900	0.11	2.5
		32	8	6,000	1,600	0.1	2.8	5,500	1,400	0.09	2.5
	0.3	16	4	10,000	2,800	0.18	2.8	9,000	2,500	0.16	2.5
		24	6	8,000	2,200	0.15	2.8	7,000	1,900	0.14	2.5
		32	8	6,000	1,600	0.12	2.8	5,500	1,400	0.11	2.5
	0.5	16	4	10,000	2,800	0.3	2.4	9,000	2,500	0.27	2.2
		24	6	8,000	2,200	0.24	2.4	7,000	1,900	0.22	2.2
		32	8	6,000	1,600	0.18	2.4	5,500	1,400	0.16	2.2
	1	16	4	10,000	2,800	0.6	2	9,000	2,500	0.54	1.8
		24	6	8,000	2,200	0.48	2	7,000	1,900	0.43	1.8
		32	8	6,000	1,600	0.36	2	5,500	1,400	0.32	1.8
5	0.1	20	4	8,000	2,700	0.06	3.5	7,000	2,400	0.054	3.2
		40	8	5,000	1,600	0.04	3.5	4,500	1,400	0.036	3.2
6	0.1	24	4	6,000	2,600	0.06	4.2	5,500	2,300	0.054	3.8
		48	8	4,000	1,600	0.03	4.2	3,500	1,400	0.027	3.8
	0.2	24	4	6,000	2,600	0.12	4.2	5,500	2,300	0.11	3.8
		48	8	4,000	1,600	0.06	4.2	3,500	1,400	0.054	3.8
	0.3	24	4	6,000	2,600	0.18	4.2	5,500	2,300	0.16	3.8
		48	8	4,000	1,600	0.09	4.2	3,500	1,400	0.08	3.8
	0.5	24	4	6,000	2,600	0.3	3.6	5,500	2,300	0.27	3.2
		30	5	5,000	2,200	0.24	3.6	4,500	1,900	0.22	3.2
		48	8	4,000	1,600	0.16	3.6	3,500	1,400	0.14	3.2
	1	24	4	6,000	2,600	0.6	3	5,500	2,300	0.54	2.7
		48	8	4,000	1,600	0.3	3	3,500	1,400	0.27	2.7

备 注 Notes

※1 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。
※2 切深量的ap表示轴向切深量，ae表示径向切深量。
※3 轴向进刀建议采用螺旋进刀及倾斜进刀方式。
※4 沟槽切削时建议参考切削参数表，进给速度设定为60%以下，并采用来回切削加工方式。
※5 发生振刀时，请以相同的比率降低主轴转速和进给速度。
此外，主轴转速过低时，也以相同的比率降低。
※6 建议使用油冷冷却方式。

※1 Recommend to use the milling condition as just reference. Adjust milling conditions according to machining shape and machine status.
※2 Depth of Cut : ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※3 Recommend to apply helical or ramping for approaching into axial direction.
※4 For slotting, recommend reciprocating milling by adjusting feed & ap in below 60% of recommended milling condition.
※5 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※6 Water-insoluble fluid is recommended.

长颈 Long Neck 圆鼻
涂层 Coating Corner Radius
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper 钨铜 Copper Tungsten ◎
O 树脂 Resin ○
铜电极加工 Copper Electrode Milling

规格 前端刃径φ0.2×锥度半角30′～前端刃径φ10×锥度半角5°
Size φ0.2×taper angle30′～φ10×taper angle5°

≦52 HRC

MTE230

无限涂层 锥刃平底铣刀
MUGEN COATING 2-Flute Taper End Mill

共有189种规格
Total 189 sizes

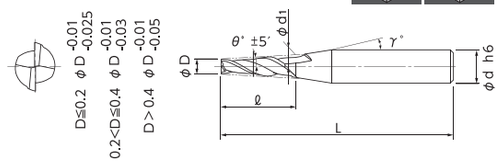
无限涂层 锥刃平底铣刀
MUGEN COATING 2-Flute Taper End Mill

标准锥刃铣刀
种类丰富，适用于所有形状加工

Standard type tapered end mill
Suitable for various shapes by wide range of size

MG | 2 | 30°
Side | Slot





- 采用无限涂层，提高了锥形铣刀的加工寿命。
- 前端刃径φ0.2～φ10，锥度半角30′～20°（前端刃径φ0.5～φ6）。
- MUGEN COATING realizes long tool life at tapered cutting.
- Available from Dia. 0.2 to Dia.10mm and taper angle are from 30′ to 20°.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)前端刃径 Dia.	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d1)大端直径 Dia. at Large End	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00300-00202	0.2	30′	0.8	0.21	9°	4	45	13,700
08-00300-00204		1°	0.8	0.23	9°	4	45	13,700
08-00300-00205		1°30′	0.8	0.24	9°	4	45	13,700
08-00300-00206		2°	0.8	0.26	9°	4	45	13,700
08-00300-00208		3°	0.8	0.28	9°	4	45	13,700
08-00300-00212		5°	0.8	0.34	9°	4	45	16,100
08-00300-00219		10°	0.8	0.48	10°	4	45	19,200
08-00300-00302	0.3	30′	1.2	0.32	9°	4	45	11,300
08-00300-00304		1°	1.2	0.34	9°	4	45	11,300
08-00300-00305		1°30′	1.2	0.36	9°	4	45	11,300
08-00300-00306		2°	1.2	0.38	9°	4	45	11,300
08-00300-00308		3°	1.2	0.43	9°	4	45	11,300
08-00300-00312		5°	1.2	0.51	9°	4	45	13,200
08-00300-00319		10°	1.2	0.72	10°	4	45	16,100
08-00300-00402	0.4	30′	1.6	0.43	9°	4	45	13,800
08-00300-00404		1°	1.6	0.46	9°	4	45	13,800
08-00300-00405		1°30′	1.6	0.48	9°	4	45	13,800
08-00300-00406		2°	1.6	0.51	9°	4	45	13,800
08-00300-00408		3°	1.6	0.57	9°	4	45	13,800
08-00300-00412		5°	1.6	0.68	9°	4	45	16,100
08-00300-00419		10°	1.6	0.96	10°	4	45	19,500
08-00300-00502	0.5	30′	2	0.53	9°	4	45	11,300
08-00300-00504		1°	2	0.57	9°	4	45	11,300
08-00300-00505		1°30′	2	0.60	9°	4	45	11,300
08-00300-00506		2°	2	0.64	9°	4	45	11,300
08-00300-00508		3°	2	0.71	9°	4	45	11,300
08-00300-00510		4°	2	0.78	9°	4	45	12,300
08-00300-00512		5°	2	0.85	9°	4	45	13,200
08-00300-00514		6°	2	0.92	9°	4	45	14,200
08-00300-00516		7°	2	0.99	9°	4	45	15,100
08-00300-00519		10°	2	1.21	10°	4	45	16,100
08-00300-00524		15°	2	1.57	15°	4	45	17,200
08-00300-00525		20°	2	1.96	15°	4	45	18,900

订购方法 How to Order
请指定MTE230 前端刃径(D)×锥度半角(θ)。
When you order, indicate MTE230 (D)×(θ).

※(d1)及(γ)为参考值。
※(d1) and (γ) is reference value.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)前端刃径 Dia.	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d1)大端直径 Dia. at Large End	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00300-00602	0.6	30′	2	0.63	9°	4	45	10,600
08-00300-00604		1°	2	0.67	9°	4	45	10,600
08-00300-00605		1°30′	2	0.70	9°	4	45	10,600
08-00300-00606		2°	2	0.74	9°	4	45	10,600
08-00300-00608		3°	2	0.81	9°	4	45	10,600
08-00300-00610		4°	2	0.88	9°	4	45	11,600
08-00300-00612		5°	2	0.95	9°	4	45	12,500
08-00300-00614		6°	2	1.02	9°	4	45	13,400
08-00300-00616		7°	2	1.09	9°	4	45	14,400
08-00300-00619		10°	2	1.31	10°	4	45	15,300
08-00300-00624		15°	2	1.67	15°	4	45	16,300
08-00300-00625		20°	2	2.06	15°	4	45	17,200
08-00300-00702	0.7	30′	2	0.73	9°	4	45	12,900
08-00300-00704		1°	2	0.77	9°	4	45	12,900
08-00300-00705		1°30′	2	0.80	9°	4	45	12,900
08-00300-00706		2°	2	0.84	9°	4	45	12,900
08-00300-00708		3°	2	0.91	9°	4	45	12,900
08-00300-00710		4°	2	0.98	9°	4	45	14,100
08-00300-00712		5°	2	1.05	9°	4	45	15,200
08-00300-00714		6°	2	1.12	9°	4	45	16,400
08-00300-00716		7°	2	1.19	9°	4	45	17,500
08-00300-00719		10°	2	1.41	10°	4	45	18,700
08-00300-00724		15°	2	1.77	15°	4	45	19,800
08-00300-00725		20°	2	2.16	15°	4	45	21,000
08-00300-00802	0.8	30′	3	0.85	9°	4	45	10,600
08-00300-00804		1°	3	0.90	9°	4	45	10,600
08-00300-00805		1°30′	3	0.96	9°	4	45	10,600
08-00300-00806		2°	3	1.01	9°	4	45	10,600
08-00300-00808		3°	3	1.11	9°	4	45	10,600
08-00300-00810		4°	3	1.21	9°	4	45	11,600
08-00300-00812		5°	3	1.32	9°	4	45	12,500
08-00300-00814		6°	3	1.43	9°	4	45	13,400
08-00300-00816		7°	3	1.54	9°	4	45	14,400
08-00300-00819		10°	3	1.86	10°	4	45	15,300
08-00300-00824		15°	3	2.41	15°	4	45	16,300
08-00300-00825		20°	3	2.98	20°	4	45	17,200
08-00300-00902	0.9	30′	3	0.95	9°	4	45	12,900
08-00300-00904		1°	3	1.00	9°	4	45	12,900
08-00300-00905		1°30′	3	1.06	9°	4	45	12,900
08-00300-00906		2°	3	1.11	9°	4	45	12,900
08-00300-00908		3°	3	1.21	9°	4	45	12,900
08-00300-00910		4°	3	1.32	9°	4	45	14,100
08-00300-00912		5°	3	1.42	9°	4	45	15,200
08-00300-00914		6°	3	1.53	9°	4	45	16,400
08-00300-00916		7°	3	1.64	9°	4	45	17,500
08-00300-00919		10°	3	1.96	10°	4	45	18,700
08-00300-00924		15°	3	2.51	15°	4	45	19,800
08-00300-00925		20°	3	3.08	20°	4	45	21,000

锥形 Tapered
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
锥刃 Tapered

MTE230

无限涂层 锥刃平底铣刀
MUGEN COATING 2-Flute Taper End Mill

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)前端刃径 Dia.	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d1)大端直径 Dia. at Large End	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00300-01002	1	30′	4	1.07	9°	4	45	8,300
08-00300-01004		1°	4	1.14	9°	4	45	8,300
08-00300-01005		1°30′	4	1.21	9°	4	45	8,300
08-00300-01006		2°	4	1.28	9°	4	45	8,300
08-00300-01008		3°	4	1.42	9°	4	45	8,500
08-00300-01010		4°	4	1.56	9°	4	45	10,300
08-00300-01012		5°	4	1.70	9°	4	45	10,300
08-00300-01014		6°	4	1.84	9°	4	45	12,100
08-00300-01016		7°	4	1.98	9°	4	45	13,800
08-00300-01019		10°	4	2.41	10°	4	45	14,700
08-00300-01024		15°	4	3.14	15°	6	50	17,200
08-00300-01025		20°	4	3.91	15°	6	50	18,900
08-00300-01502	1.5	30′	5	1.59	9°	4	45	8,300
08-00300-01504		1°	5	1.67	9°	4	45	8,300
08-00300-01505		1°30′	5	1.76	9°	4	45	8,300
08-00300-01506		2°	5	1.85	9°	4	45	8,300
08-00300-01508		3°	5	2.02	9°	4	45	8,500
08-00300-01510		4°	5	2.20	9°	4	45	10,300
08-00300-01512		5°	5	2.37	9°	4	45	10,300
08-00300-01514		6°	5	2.55	9°	4	45	12,100
08-00300-01516		7°	5	2.73	9°	4	45	13,800
08-00300-01519		10°	5	3.26	10°	4	45	14,700
08-00300-01524		15°	5	4.18	15°	6	50	17,200
08-00300-01525		20°	5	5.14	20°	6	50	18,900
08-00300-02002	2	30′	6	2.10	9°	4	45	8,300
08-00300-02004		1°	6	2.21	9°	4	45	8,300
08-00300-02005		1°30′	6	2.31	9°	4	45	8,300
08-00300-02006		2°	6	2.41	9°	4	45	8,300
08-00300-02008		3°	6	2.62	9°	4	45	8,500
08-00300-02010		4°	6	2.84	9°	4	45	8,800
08-00300-02012		5°	6	3.05	9°	4	45	10,300
08-00300-02014		6°	6	3.26	9°	4	45	12,100
08-00300-02016		7°	6	3.47	7°	4	45	13,800
08-00300-02019		10°	6	4.11	10°	6	50	17,200
08-00300-02024		15°	6	5.22	15°	6	50	18,900
08-00300-02025		20°	6	6.37	–	6	50	22,900
08-00300-02502	2.5	30′	8	2.64	9°	4	45	10,100
08-00300-02504		1°	8	2.78	9°	4	45	10,100
08-00300-02505		1°30′	8	2.91	9°	4	45	10,100
08-00300-02506		2°	8	3.05	9°	4	45	10,100
08-00300-02508		3°	8	3.33	9°	4	45	10,400
08-00300-02510		4°	8	3.62	4°	4	45	10,700
08-00300-02512		5°	8	3.90	5°	4	45	12,500
08-00300-02514		6°	8	4.18	–	4	50	13,200
08-00300-02516		7°	8	4.46	–	4	50	15,400
08-00300-02519		10°	8	5.32	10°	6	50	23,100
08-00300-02524		15°	8	6.79	–	6	50	27,800
08-00300-02525		20°	8	8.32	–	8	60	32,700
08-00300-03002	3	30′	10	3.17	9°	6	50	9,100
08-00300-03004		1°	10	3.35	9°	6	50	9,100
08-00300-03005		1°30′	10	3.52	9°	6	50	9,100
08-00300-03006		2°	10	3.69	9°	6	50	9,100
08-00300-03008		3°	10	4.05	9°	6	50	9,400
08-00300-03010		4°	10	4.40	9°	6	50	9,600

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)前端刃径 Dia.	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d1)大端直径 Dia. at Large End	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00300-03012	3	5°	10	4.75	9°	6	50	10,200
08-00300-03014		6°	10	5.10	6°	6	50	13,500
08-00300-03016		7°	10	5.46	7°	6	50	18,000
08-00300-03019		10°	10	6.53	–	6	50	22,900
08-00300-03024		15°	10	8.36	–	8	60	26,800
08-00300-03025		20°	10	10.30	–	10	70	29,800
08-00300-04002	4	30′	15	4.26	9°	6	50	9,500
08-00300-04004		1°	15	4.52	9°	6	50	9,500
08-00300-04005		1°30′	15	4.79	9°	6	50	9,500
08-00300-04006		2°	15	5.04	9°	6	50	9,500
08-00300-04008		3°	15	5.57	9°	6	50	9,900
08-00300-04010		4°	15	6.10	–	6	55	12,500
08-00300-04012		5°	15	6.62	–	6	55	13,800
08-00300-04014		6°	15	7.15	–	6	55	16,000
08-00300-04016		7°	15	7.68	–	6	55	19,900
08-00300-04019		10°	15	9.29	–	8	60	26,800
08-00300-04024		15°	15	12.04	–	12	80	36,300
08-00300-04025		20°	15	14.92	–	12	80	42,400
08-00300-05002	5	30′	20	5.34	9°	6	55	13,200
08-00300-05004		1°	20	5.70	9°	6	55	13,200
08-00300-05005		1°30′	20	6.04	–	6	55	15,700
08-00300-05006		2°	20	6.39	–	6	55	15,700
08-00300-05008		3°	20	7.10	–	6	55	16,400
08-00300-05010		4°	20	7.80	–	6	60	18,200
08-00300-05012		5°	20	8.50	–	8	60	24,200
08-00300-05014		6°	20	9.20	–	8	60	27,800
08-00300-05016		7°	20	9.91	7°	10	70	30,300
08-00300-05019		10°	20	12.05	–	12	80	36,300
08-00300-05024		15°	20	15.72	15°	16	90	48,400
08-00300-05025		20°	20	19.56	20°	20	100	54,500
08-00300-06002	6	30′	20	6.35	–	6	55	17,600
08-00300-06004		1°	20	6.70	–	6	55	17,600
08-00300-06005		1°30′	20	7.05	–	6	55	18,800
08-00300-06006		2°	20	7.40	–	6	55	18,800
08-00300-06008		3°	20	8.10	–	8	60	19,400
08-00300-06010		4°	20	8.80	–	8	65	21,200
08-00300-06012		5°	20	9.50	–	8	65	25,400
08-00300-06014		6°	20	10.20	–	10	70	30,300
08-00300-06016		7°	20	10.91	–	10	70	33,900
08-00300-06019		10°	20	13.05	–	12	80	38,700
08-00300-06024		15°	20	16.72	–	16	90	50,800
08-00300-06025		20°	20	20.56	–	20	100	56,900
08-00300-08002	8	30′	25	8.44	–	8	65	23,000
08-00300-08004		1°	25	8.87	–	8	65	23,000
08-00300-08005		1°30′	25	9.31	–	8	65	24,900
08-00300-08006		2°	25	9.74	–	8	65	26,100
08-00300-08008		3°	25	10.62	–	10	70	30,300
08-00300-08012		5°	25	12.37	–	12	90	48,400
08-00300-10002	10	30′	35	10.61	–	10	85	36,300
08-00300-10004		1°	35	11.22	–	10	85	36,300
08-00300-10005		1°30′	35	11.83	–	10	85	39,900
08-00300-10006		2°	35	12.44	–	12	90	44,800
08-00300-10008		3°	35	13.67	–	12	90	53,200
08-00300-10012		5°	35	16.12	–	16	90	60,500

锥形 Tapered
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
锥刃 Tapered

订购方法 How to Order

请指定MTE230 前端刃径(D)×锥度半角(θ)。
When you order, indicate MTE230 (D)×(θ).

※(d1)及(γ)为参考值。
※(d1) and (γ) is reference value.

切削参数参考表
Recommended Milling Conditions

［φ0.5～1沟槽切削 Slotting］

加工材料 Work Material		碳素钢・合金钢・调质钢 Carbon Steels・Alloy Steels・Prehardened Steels (～40HRC)		铝合金 Aluminium Alloy		铜合金 Copper	
切削速度 Cutting Speed		40～70m/min		150～300m/min		80～150m/min	
前端刀径 Dia.	切深量 ap Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	mm	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
0.5	0.005～0.01	38,000	300	50,000	400	25,000	200
0.6	0.01 ～ 0.02	32,000	300	50,000	400	25,000	200
0.7	0.01 ～ 0.03	27,000	300	50,000	500	25,000	250
0.8	0.02 ～ 0.04	24,000	400	50,000	650	25,000	330
0.9	0.03 ～ 0.06	21,000	400	50,000	800	25,000	400
1	0.03 ～ 0.08	19,000	400	50,000	1,000	25,000	500

备 注 Notes

※1 请使用切削油。
※2 请根据加工面的倾斜角调整主轴转速或进给速度。
※3 在进行R角加工时，进给速度须降低30 ～ 50%。
※4 转速无法提高时，请以相同的比率调整进给速度与切深量。
※5 建议采用来回切削加工方式。
※1 Use cutting fluid.
※2 Adjust spindle speed and feed according to inclined angle.
※3 When corner machining, reduce the feed by approximately 50%～30%.
※4 Adjust spindle speed and feed at the same rate also reduce depth of cut, if the machine spindle speed insufficient.
※5 Recommend reciprocating cutting.

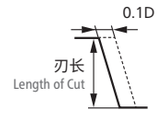
切削参数参考表
Recommended Milling Conditions

［φ1.5～10侧面切削 Side Milling］

加工材料 Work Material	碳素钢 Carbon Steels S50C		合金钢・刀具钢・调质钢 Alloy Steels・Tool Steels・Prehardened Steels SKD・HPM・NAK		调质钢 Prehardened Steels NAK80(～45HRC)	
切削速度 Cutting Speed	50～70m/min		40～60m/min		30～50m/min	
前端刀径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1.5	12,700	330	10,600	250	8,500	200
2	9,600	400	8,000	300	6,400	270
2.5	7,600	450	6,400	330	5,100	300
3	6,400	450	5,300	330	4,300	300
4	4,800	450	4,000	330	3,200	300
5	3,800	450	3,200	330	2,600	300
6	3,200	450	2,700	330	2,200	300
8	2,400	480	2,000	360	1,600	330
10	1,900	480	1,600	360	1,300	330

切深量 Depth of Cut
(D:前端刀径 Dia.)

锥度壁面 Taper Side Milling



备 注 Notes

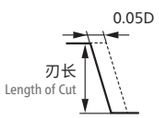
※1 请使用切削油。
※2 请根据加工面的倾斜角调整主轴转速或进给速度。
※3 在进行R角加工时，进给速度须降低30 ～ 50%。
※4 转速无法提高时，请以相同的比率调整进给速度与切深量。
※1 Use cutting fluid.
※2 Adjust spindle speed and feed according to inclined angle.
※3 When corner machining, reduce the feed by approximately 50%～30%.
※4 Adjust spindle speed and feed at the same rate also reduce depth of cut, if the machine spindle speed insufficient.

［φ1.5 ～ 10侧面切削 Side Milling］

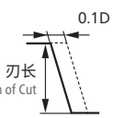
加工材料 Work Material	高硬度钢 Hardened Steels (～55HRC)		铝合金 Aluminium Alloy		铜合金 Copper	
切削速度 Cutting Speed	20m/min		150～300m/min		80～150m/min	
前端刀径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
1.5	4,300	110	50,000	1,300	25,000	650
2	3,200	130	48,000	2,000	24,000	1,000
2.5	2,700	150	38,200	2,200	19,100	1,100
3	2,200	150	32,000	2,200	16,000	1,100
4	1,600	150	24,000	2,200	12,000	1,100
5	1,300	150	19,100	2,200	9,600	1,100
6	1,100	150	16,000	2,200	8,000	1,100
8	800	160	12,000	2,200	6,000	1,100
10	650	160	9,600	2,200	4,800	1,100

切深量 Depth of Cut
(D:前端刀径 Dia.)

锥度壁面 Taper Side Milling



锥度壁面 Taper Side Milling



备 注 Notes

※1 请使用切削油。
※2 请根据加工面的倾斜角调整主轴转速或进给速度。
※3 在进行R角加工时，进给速度须降低30 ～ 50%。
※4 转速无法提高时，请以相同的比率调整进给速度与切深量。
※1 Use cutting fluid.
※2 Adjust spindle speed and feed according to inclined angle.
※3 When corner machining, reduce the feed by approximately 50%～30%.
※4 Adjust spindle speed and feed at the same rate also reduce depth of cut, if the machine spindle speed insufficient.

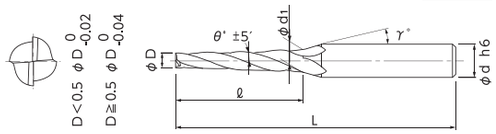
锥形 Tapered
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
锥刃 Tapered

无需预加工，可直接加工沟槽的锥刃铣刀 L/D最大16倍

Taper end mill for direct milling on rib shape without pre-processing. Maximum L/D=16

MG 4 25° Slot





(底部2刃)
2 cutting edges on end.

- 采用NS TOOL独创的高刚性设计，实现高精度高效率加工。
- It is possible for high precision and efficiency cutting by NS TOOL original design.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)前端刃径 Dia.	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d1)大端直径 Dia. at Large End	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00310-02022	0.2	30′	2	0.23	15°	3	40	12,300
08-00310-02023		1°		0.27	15°	3	40	12,300
08-00310-02024		1°30′		0.30	15°	3	40	12,300
08-00310-02025		2°		0.34	15°	3	40	12,300
08-00310-03032	0.3	30′	3	0.35	15°	3	40	9,000
08-00310-03033		1°		0.40	15°	3	40	9,000
08-00310-03034		1°30′		0.46	15°	3	40	9,000
08-00310-03035		2°		0.51	15°	3	40	9,000
08-00310-04042	0.4	30′	4	0.47	15°	3	40	9,000
08-00310-04043		1°		0.54	15°	3	40	9,000
08-00310-04044		1°30′		0.61	15°	3	40	9,000
08-00310-04045		2°		0.68	15°	3	40	9,000
08-00310-05042	0.5	30′	4	0.57	15°	3	40	8,200
08-00310-05043		1°		0.64	15°	3	40	8,200
08-00310-05044		1°30′		0.71	15°	3	40	8,200
08-00310-05045		2°		0.78	15°	3	40	8,200
08-00310-05062		30′	6	0.60	15°	3	40	8,200
08-00310-05063		1°		0.71	15°	3	40	8,200
08-00310-05064		1°30′		0.81	15°	3	40	8,200
08-00310-05065		2°		0.92	15°	3	40	8,200
08-00310-06042	0.6	30′	4	0.67	15°	3	40	8,200
08-00310-06043		1°		0.74	15°	3	40	8,200
08-00310-06044		1°30′		0.81	15°	3	40	8,200
08-00310-06045		2°		0.88	15°	3	40	8,200
08-00310-06062		30′	6	0.70	15°	3	40	8,200
08-00310-06063		1°		0.81	15°	3	40	8,200
08-00310-06064		1°30′		0.91	15°	3	40	8,200
08-00310-06065		2°		1.02	15°	3	40	8,200
08-00310-07062	0.7	30′	6	0.80	15°	3	40	11,200
08-00310-07063		1°		0.91	15°	3	40	11,200
08-00310-07064		1°30′		1.01	15°	3	40	11,200
08-00310-07065		2°		1.12	15°	3	40	11,200
08-00310-07082		30′	8	0.84	15°	3	45	11,200
08-00310-07083		1°		0.98	15°	3	45	11,200
08-00310-07084	0.7	1°30′	8	1.12	15°	3	45	11,200
08-00310-07085		2°		1.26	15°	3	45	11,200
08-00310-08041	0.8	15′	4	0.83	15°	4	45	8,200
08-00310-08042		30′		0.87	15°	4	45	8,200
08-00310-08043		1°		0.94	15°	4	45	8,200
08-00310-08044		1°30′		1.01	15°	4	45	8,200
08-00310-08045		2°		1.08	15°	4	45	8,200
08-00310-08061		15′	6	0.85	15°	4	45	8,200
08-00310-08062		30′		0.90	15°	4	45	8,200
08-00310-08063		1°		1.01	15°	4	45	8,200
08-00310-08064		1°30′		1.11	15°	4	45	8,200
08-00310-08065		2°		1.22	15°	4	45	8,200
08-00310-08081		15′	8	0.87	15°	4	45	8,200
08-00310-08082		30′		0.94	15°	4	45	8,200
08-00310-08083		1°		1.08	15°	4	45	8,200
08-00310-08084		1°30′		1.22	15°	4	45	8,200
08-00310-08085		2°		1.36	15°	4	45	8,200
08-00310-08101		15′	10	0.89	15°	4	45	8,200
08-00310-08102		30′		0.97	15°	4	45	8,200
08-00310-08103		1°		1.15	15°	4	45	8,200
08-00310-08104		1°30′		1.32	15°	4	45	8,200
08-00310-08105		2°		1.50	15°	4	45	8,200
08-00310-08122		30′	12	1.01	15°	4	50	8,200
08-00310-08123		1°		1.22	15°	4	50	8,200
08-00310-08124		1°30′		1.43	15°	4	50	8,200
08-00310-08125		2°		1.64	15°	4	50	8,200
08-00310-10061	1	15′	6	1.05	15°	4	45	8,200
08-00310-10062		30′		1.10	15°	4	45	8,200
08-00310-10063		1°		1.21	15°	4	45	8,200
08-00310-10064		1°30′		1.31	15°	4	45	8,200
08-00310-10065		2°		1.42	15°	4	45	8,200
08-00310-10081		15′	8	1.07	15°	4	45	8,200
08-00310-10082		30′		1.14	15°	4	45	8,200
08-00310-10083		1°		1.28	15°	4	45	8,200

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)前端刃径 Dia.	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d1)大端直径 Dia. at Large End	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00310-10084	1	1°30′	8	1.42	15°	4	45	8,200
08-00310-10085		2°		1.56	15°	4	45	8,200
08-00310-10101		15′	10	1.09	15°	4	45	8,200
08-00310-10102		30′		1.17	15°	4	45	8,200
08-00310-10103		1°		1.35	15°	4	45	8,200
08-00310-10104		1°30′		1.52	15°	4	45	8,200
08-00310-10105		2°		1.70	15°	4	45	8,200
08-00310-10121		15′	12	1.10	15°	4	50	8,400
08-00310-10122		30′		1.21	15°	4	50	8,400
08-00310-10123		1°		1.42	15°	4	50	8,400
08-00310-10124		1°30′		1.63	15°	4	50	8,400
08-00310-10125		2°		1.84	15°	4	50	8,400
08-00310-10163		1°	16	1.56	15°	4	55	8,400
08-00310-10164		1°30′		1.84	15°	4	55	8,400
08-00310-10165		2°		2.12	15°	4	55	8,400
08-00310-12061	1.2	15′	6	1.25	15°	4	45	11,200
08-00310-12062		30′		1.30	15°	4	45	11,200
08-00310-12063		1°		1.41	15°	4	45	11,200
08-00310-12064		1°30′		1.51	15°	4	45	11,200
08-00310-12065		2°		1.62	15°	4	45	11,200
08-00310-12101		15′	10	1.29	15°	4	45	11,200
08-00310-12102		30′		1.37	15°	4	45	11,200
08-00310-12103		1°		1.55	15°	4	45	11,200
08-00310-12104		1°30′		1.72	15°	4	45	11,200
08-00310-12105		2°		1.90	15°	4	45	11,200
08-00310-12121		15′	12	1.30	15°	4	50	11,400
08-00310-12122		30′		1.41	15°	4	50	11,400
08-00310-12123		1°		1.62	15°	4	50	11,400
08-00310-12124		1°30′		1.83	15°	4	50	11,400
08-00310-12125		2°		2.04	15°	4	50	11,400
08-00310-12161		15′	16	1.34	15°	4	55	11,700
08-00310-12162		30′		1.48	15°	4	55	11,700
08-00310-12163		1°		1.76	15°	4	55	11,700
08-00310-12164		1°30′		2.04	15°	4	55	11,700
08-00310-12165		2°		2.32	15°	4	55	11,700
08-00310-12203		1°	20	1.90	15°	4	55	11,700
08-00310-12204		1°30′		2.25	15°	4	55	11,700
08-00310-12205		2°		2.60	15°	4	55	11,700
08-00310-13122	1.3	30′	12	1.51	15°	4	50	11,400
08-00310-13123		1°		1.72	15°	4	50	11,400
08-00310-13124		1°30′		1.93	15°	4	50	11,400
08-00310-13125		2°		2.14	15°	4	50	11,400
08-00310-14122	1.4	30′	12	1.61	15°	4	50	11,400
08-00310-14123		1°		1.82	15°	4	50	11,400
08-00310-14124	1.4	1°30′	12	2.03	15°	4	50	11,400
08-00310-14125		2°		2.24	15°	4	50	11,400
08-00310-15061	1.5	15′	6	1.55	15°	4	45	11,400
08-00310-15062		30′		1.60	15°	4	45	11,400
08-00310-15063		1°		1.71	15°	4	45	11,400
08-00310-15064		1°30′		1.81	15°	4	45	11,400
08-00310-15065		2°		1.92	15°	4	45	11,400
08-00310-15081		15′	8	1.57	15°	4	45	11,400
08-00310-15082		30′		1.64	15°	4	45	11,400
08-00310-15083		1°		1.78	15°	4	45	11,400
08-00310-15084		1°30′		1.92	15°	4	45	11,400
08-00310-15085		2°		2.06	15°	4	45	11,400
08-00310-15101		15′	10	1.59	15°	4	45	11,400
08-00310-15102		30′		1.67	15°	4	45	11,400
08-00310-15103		1°		1.85	15°	4	45	11,400
08-00310-15104		1°30′		2.02	15°	4	45	11,400
08-00310-15105		2°		2.20	15°	4	45	11,400
08-00310-15121		15′	12	1.60	15°	4	50	11,400
08-00310-15122		30′		1.71	15°	4	50	11,400
08-00310-15123		1°		1.92	15°	4	50	11,400
08-00310-15124		1°30′		2.13	15°	4	50	11,400
08-00310-15125		2°		2.34	15°	4	50	11,400
08-00310-15161		15′	16	1.64	15°	4	55	11,700
08-00310-15162		30′		1.78	15°	4	55	11,700
08-00310-15163		1°		2.06	15°	4	55	11,700
08-00310-15164		1°30′		2.34	15°	4	55	11,700
08-00310-15165		2°		2.62	15°	4	55	11,700
08-00310-15201		15′	20	1.67	15°	4	55	12,400
08-00310-15202		30′		1.85	15°	4	55	12,400
08-00310-15203		1°		2.20	15°	4	55	12,400
08-00310-15204		1°30′		2.55	15°	4	55	12,400
08-00310-15205		2°		2.90	15°	4	55	12,400
08-00310-15253		1°	25	2.37	15°	4	60	12,400
08-00310-15254		1°30′		2.81	15°	4	60	12,400
08-00310-15255		2°		3.25	15°	4	60	12,400
08-00310-16082	1.6	30′	8	1.74	15°	4	45	11,400
08-00310-16083		1°		1.88	15°	4	45	11,400
08-00310-16084		1°30′		2.02	15°	4	45	11,400
08-00310-16085		2°		2.16	15°	4	45	11,400
08-00310-16122		30′	12	1.81	15°	4	50	12,400
08-00310-16123		1°		2.02	15°	4	50	12,400
08-00310-16124		1°30′		2.23	15°	4	50	12,400
08-00310-16125		2°		2.44	15°	4	50	12,400
08-00310-16162		30′	16	1.88	15°	4	55	12,400

订购方法 How to Order

请指定MRT425 前端刃径(D)×锥度半角(θ)×刃长(ℓ)。 ※(d1)及(γ)为参考值。
When you order, indicate MRT425 (D)×(θ)×(ℓ). ※(d1) and (γ) is reference value.

锥形 Tapered
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
锥刃 Tapered

MRT425

无限涂层 深沟加工用锥刃平底铣刀
MUGEN COATING 4-Flute Taper End Mill for Deep Rib

切削参数参考表
Recommended Milling Conditions

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)前端刃径 Dia.	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d1)大端直径 Dia. at Large End	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00310-16163	1.6	1°	16	2.16	15°	4	55	12,400
08-00310-16164		1°30′		2.44	15°	4	55	12,400
08-00310-16165		2°		2.72	15°	4	55	12,400
08-00310-16202		30′	20	1.95	15°	4	55	12,400
08-00310-16203		1°		2.30	15°	4	55	12,400
08-00310-16204		1°30′		2.65	15°	4	55	12,400
08-00310-16205		2°		3.00	15°	4	55	12,400
08-00310-18081	1.8	15′	8	1.87	15°	4	45	12,400
08-00310-18082		30′		1.94	15°	4	45	12,400
08-00310-18083		1°		2.08	15°	4	45	12,400
08-00310-18084		1°30′		2.22	15°	4	45	12,400
08-00310-18085		2°		2.36	15°	4	45	12,400
08-00310-18161		15′	16	1.94	15°	4	55	12,400
08-00310-18162		30′		2.08	15°	4	55	12,400
08-00310-18163		1°		2.36	15°	4	55	12,400
08-00310-18164		1°30′		2.64	15°	4	55	12,400
08-00310-18165		2°		2.92	15°	4	55	12,400
08-00310-18241		15′	24	2.01	15°	4	60	12,400
08-00310-18242		30′		2.22	15°	4	60	12,400
08-00310-18243		1°		2.64	15°	4	60	12,400
08-00310-18244		1°30′		3.06	15°	4	60	12,400
08-00310-18245		2°		3.48	15°	4	60	12,400
08-00310-20081	2	15′	8	2.07	15°	4	45	12,400
08-00310-20082		30′		2.14	15°	4	45	12,400
08-00310-20083		1°		2.28	15°	4	45	12,400
08-00310-20084		1°30′		2.42	15°	4	45	12,400
08-00310-20085		2°		2.56	15°	4	45	12,400
08-00310-20101		15′	10	2.09	15°	4	45	12,400
08-00310-20102		30′		2.17	15°	4	45	12,400
08-00310-20103		1°		2.35	15°	4	45	12,400
08-00310-20104		1°30′		2.52	15°	4	45	12,400
08-00310-20105		2°		2.70	15°	4	45	12,400
08-00310-20121		15′	12	2.10	15°	4	50	12,400
08-00310-20122		30′		2.21	15°	4	50	12,400
08-00310-20123		1°		2.42	15°	4	50	12,400
08-00310-20124		1°30′		2.63	15°	4	50	12,400
08-00310-20125		2°		2.84	15°	4	50	12,400
08-00310-20127		3°		3.26	15°	4	50	12,400
08-00310-20161		15′	16	2.14	15°	4	55	12,400
08-00310-20162		30′		2.28	15°	4	55	12,400
08-00310-20163		1°		2.56	15°	4	55	12,400
08-00310-20164		1°30′		2.84	15°	4	55	12,400
08-00310-20165		2°		3.12	15°	4	55	12,400
08-00310-20167		3°		3.68	15°	4	55	12,400
08-00310-20201	2	15′	20	2.17	15°	4	55	12,400
08-00310-20202		30′		2.35	15°	4	55	12,400
08-00310-20203		1°		2.70	15°	4	55	12,400
08-00310-20204		1°30′		3.05	15°	4	55	12,400
08-00310-20205		2°		3.40	15°	4	55	12,400
08-00310-20207		3°		4.10	15°	6	55	13,000
08-00310-20251		15′	25	2.22	15°	4	60	13,300
08-00310-20252		30′		2.44	15°	4	60	13,300
08-00310-20253		1°		2.87	15°	4	60	13,300
08-00310-20254		1°30′		3.31	15°	4	60	13,300
08-00310-20255		2°		3.75	15°	4	60	13,300
08-00310-20257		3°		4.62	15°	6	60	14,000
08-00310-20302		30′	30	2.52	15°	4	65	13,300
08-00310-20303		1°		3.05	15°	4	65	13,300
08-00310-20304		1°30′		3.57	15°	4	65	13,300
08-00310-20305		2°		4.10	15°	6	65	14,000
08-00310-20307		3°		5.14	15°	6	65	14,000
08-00310-25102	2.5	30′	10	2.67	15°	4	45	13,500
08-00310-25103		1°		2.85	15°	4	45	13,500
08-00310-25104		1°30′		3.02	15°	4	45	13,500
08-00310-25105		2°		3.20	15°	4	45	13,500
08-00310-25162		30′	16	2.78	15°	4	50	13,500
08-00310-25163		1°		3.06	15°	4	50	13,500
08-00310-25164		1°30′		3.34	15°	4	50	13,500
08-00310-25165		2°		3.62	15°	4	50	13,500
08-00310-25202		30′	20	2.85	15°	4	55	13,500
08-00310-25203		1°		3.20	15°	4	55	13,500
08-00310-25204		1°30′		3.55	15°	4	55	13,500
08-00310-25205		2°		3.90	15°	4	55	13,500
08-00310-25252		30′	25	2.94	15°	4	60	14,800
08-00310-25253		1°		3.37	15°	4	60	14,800
08-00310-25254		1°30′		3.81	15°	4	60	14,800
08-00310-25255		2°		4.25	15°	6	60	15,500
08-00310-25302		30′	30	3.02	15°	4	65	14,800
08-00310-25303		1°		3.55	15°	4	65	14,800
08-00310-25304		1°30′		4.07	15°	6	65	15,500
08-00310-25305		2°		4.60	15°	6	65	15,500
08-00310-30252	3	30′	25	3.44	15°	6	65	15,500
08-00310-30253		1°		3.87	15°	6	65	15,500
08-00310-30254		1°30′		4.31	15°	6	65	15,500
08-00310-30255		2°		4.75	15°	6	65	15,500
08-00310-30402		30′	40	3.70	15°	6	80	17,100
08-00310-30403		1°		4.40	15°	6	80	17,100
08-00310-30404		1°30′		5.09	15°	6	80	17,100
08-00310-30405		2°		5.79	15°	6	80	17,100

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢・调质钢 Alloy Steels・Prehardened Steels SKD・HPM・NAK (～40HRC)			高硬度钢 Hardened Steels SKD61 (45～52HRC)		
切削速度 Cutting Speed	10～80m/min （φ0.2～φ0.5） 25～100m/min（φ0.6～φ0.8） 40～70m/min （φ1～φ3）			10～80m/min （φ0.2～φ0.5） 25～100m/min（φ0.6～φ0.8） 35～65m/min （φ1～φ3）			10～65m/min（φ0.2～φ0.4） 25～50m/min（φ0.5～φ0.8） 25～40m/min（φ1～φ3）		
前端刃径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	切深量 ap Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 ap Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 ap Depth of Cut
	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm
0.2	20,000～50,000	300～ 800	0.001～0.002	20,000～50,000	250～700	0.001～0.002	20,000～50,000	200～400	0.001～0.002
0.3	20,000～50,000	300～ 800	0.002～0.003	20,000～50,000	250～700	0.002～0.003	20,000～50,000	200～400	0.002～0.003
0.4	20,000～50,000	300～ 800	0.002～0.004	20,000～50,000	250～700	0.002～0.004	20,000～50,000	200～400	0.002～0.004
0.5	20,000～50,000	300～ 800	0.01 ～0.025	20,000～50,000	250～700	0.01 ～0.025	15,000～30,000	200～400	0.005～0.01
0.6	15,000～40,000	350～ 900	0.012～0.03	15,000～40,000	300～700	0.012～0.03	15,000～30,000	200～400	0.006～0.012
0.7	15,000～40,000	350～ 900	0.014～0.035	15,000～40,000	300～700	0.014～0.035	10,000～20,000	200～400	0.007～0.014
0.8	15,000～40,000	350～ 900	0.016～0.04	15,000～40,000	300～700	0.016～0.04	10,000～20,000	200～400	0.008～0.016
1	14,000～20,000	500～1,000	0.02 ～0.05	12,000～20,000	400～700	0.02 ～0.05	8,000～11,000	200～400	0.01 ～0.02
1.2	12,000～17,000	500～1,000	0.024～0.06	10,000～16,000	400～700	0.024～0.06	7,000～ 9,500	200～400	0.012～0.024
1.3	10,000～16,000	500～1,000	0.026～0.065	9,000～15,000	400～700	0.026～0.065	6,500～ 8,500	200～400	0.013～0.026
1.4	9,000～15,000	500～1,000	0.028～0.07	8,000～14,000	400～700	0.028～0.07	6,000～ 8,000	200～400	0.014～0.028
1.5	8,000～14,000	500～1,000	0.03 ～0.075	7,000～13,000	400～700	0.03 ～0.075	5,500～ 7,500	200～400	0.015～0.03
1.6	7,000～13,000	500～1,000	0.032～0.08	6,000～12,000	400～700	0.032～0.08	5,000～ 7,000	200～400	0.016～0.032
1.8	6,500～12,000	500～1,000	0.036～0.09	5,000～11,000	400～700	0.036～0.09	4,500～ 6,000	200～400	0.018～0.036
2	6,500～11,000	500～1,000	0.04 ～0.1	5,000～10,000	400～700	0.04 ～0.1	4,000～ 5,500	200～400	0.02 ～0.04
2.5	6,000～ 9,000	500～1,000	0.05 ～0.125	4,000～ 8,000	400～700	0.05 ～0.125	3,500～ 4,500	200～400	0.025～0.05
3	5,000～ 7,000	500～1,000	0.06 ～0.15	4,000～ 6,500	400～700	0.06 ～0.15	3,000～ 4,000	200～400	0.03 ～0.06

备 注 Notes

※1 设定切削参数时，各种尺寸刃长较长类型的主轴转速、进给速度和切深量必须设为上述切削参数表范围之内的较低值。
※2 在进行R角加工时，进给速度须降低50%。
※3 请使用发烟性低的油冷冷却方式。
※4 建议采用来回切削加工方式。
※1 When length of cut is long, reduce the conditions listed above.
※2 When cutting at the corner, reduce the feed by 50% from the above values.
※3 Use cutting fluid with smoke retardant.
※4 Recommend reciprocating cutting.

订购方法 How to Order

请指定MRT425 前端刃径(D)×锥度半角(θ)×刃长(ℓ)。 ※(d1)及(γ)为参考值。
When you order, indicate MRT425 (D)×(θ)×(ℓ). ※(d1) and (γ) is reference value.

锥形 Tapered
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52高硬度钢 HRC Hardened Steel
锥刃 Tapered

MTB230

规格 前端刃径 R0.1 ×锥度半角 1° ～ 前端刃径 R2 ×锥度半角 15°
Size R0.1×taper angle1°～ R2×taper angle15°

≦52 HRC

无限涂层 锥刃球头铣刀
MUGEN COATING 2-Flute Taper Ball End Mill

共有111种规格
Total 111 sizes

MTB230

无限涂层 锥刃球头铣刀
MUGEN COATING 2-Flute Taper Ball End Mill

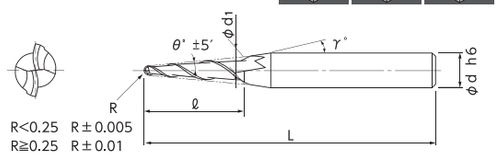
标准锥刃球头铣刀
锥度半角最大15°

Line up to maximum neck taper angle 15° of standard type taper ball end mill

MG | 2 | 30° | R ±0.005 (R<0.25) | R ±0.01 (R≧0.25)

Side | Slot | 3D





- 可同时进行锥面与球面加工。
- 规格最小R0.1，锥度半角最大15°。
- It is possible to cut both taper and ball simultaneously.
- The available sizes are from radius 0.1 and single angles up to 15°.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d1)大端直径 Dia. at Large End	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00540-01004	R0.1	1°	1	0.23	9°	4	50	26,300
08-00540-01006		2°	1	0.26	9°	4	50	26,300
08-00540-01008		3°	1	0.29	9°	4	50	26,300
08-00540-01012		5°	1	0.36	9°	4	50	26,300
08-00540-01016		7°	1	0.42	9°	4	50	27,800
08-00540-01019		10°	1	0.52	10°	4	50	31,500
08-00540-01504	R0.15	1°	1.5	0.35	9°	4	50	21,000
08-00540-01506		2°	1.5	0.39	9°	4	50	21,000
08-00540-01508		3°	1.5	0.44	9°	4	50	21,000
08-00540-01512		5°	1.5	0.54	9°	4	50	21,000
08-00540-01516		7°	1.5	0.63	9°	4	50	22,600
08-00540-01519		10°	1.5	0.78	10°	4	50	24,700
08-00540-01524		15°	1.5	1.03	15°	4	50	30,500
08-00540-02004	R0.2	1°	2	0.46	9°	4	50	15,800
08-00540-02006		2°	2	0.53	9°	4	50	15,800
08-00540-02008		3°	2	0.59	9°	4	50	15,800
08-00540-02012		5°	2	0.72	9°	4	50	16,300
08-00540-02016		7°	2	0.84	9°	4	50	17,300
08-00540-02019		10°	2	1.04	10°	4	50	19,400
08-00540-02024		15°	2	1.38	15°	4	50	24,200
08-00540-02504	R0.25	1°	2.5	0.58	9°	4	50	14,700
08-00540-02506		2°	2.5	0.66	9°	4	50	14,700
08-00540-02508		3°	2.5	0.74	9°	4	50	14,700
08-00540-02512		5°	2.5	0.90	9°	4	50	15,200
08-00540-02516		7°	2.5	1.06	9°	4	50	16,300
08-00540-02519		10°	2.5	1.30	10°	4	50	18,400
08-00540-02524		15°	2.5	1.72	15°	4	50	23,100
08-00540-03004	R0.3	1°	3	0.69	9°	4	50	13,700
08-00540-03006		2°	3	0.79	9°	4	50	13,700
08-00540-03008		3°	3	0.88	9°	4	50	13,700
08-00540-03012		5°	3	1.07	9°	4	50	14,200
08-00540-03016		7°	3	1.27	9°	4	50	15,200
08-00540-03019		10°	3	1.56	10°	4	50	17,300
08-00540-03024		15°	3	2.07	15°	4	50	22,100
08-00540-03504	R0.35	1°	3.5	0.81	9°	4	50	13,700
08-00540-03506		2°	3.5	0.92	9°	4	50	13,700
08-00540-03508		3°	3.5	1.03	9°	4	50	13,700
08-00540-03512		5°	3.5	1.25	9°	4	50	14,200
08-00540-03516		7°	3.5	1.48	9°	4	50	15,200
08-00540-03519		10°	3.5	1.82	10°	4	50	17,300
08-00540-03524		15°	3.5	2.41	15°	4	50	22,100
08-00540-04004	R0.4	1°	4	0.93	9°	4	50	13,700
08-00540-04006		2°	4	1.05	9°	4	50	13,700
08-00540-04008		3°	4	1.18	9°	4	50	13,700
08-00540-04012		5°	4	1.43	9°	4	50	14,200
08-00540-04016		7°	4	1.69	9°	4	50	15,200
08-00540-04019		10°	4	2.08	10°	4	50	17,300
08-00540-04024		15°	4	2.76	15°	4	50	22,100

订购方法 How to Order

请指定MTB230 球头半径(R)×锥度半角(θ)。 ※(d1)及(γ)为 参考值。
When you order, indicate MTB230 (R)×(θ). ※(d1) and (γ) is reference value.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R)球头半径 Radius	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d1)大端直径 Dia. at Large End	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00540-04504	R0.45	1°	4	1.02	9°	4	50	13,700
08-00540-04506		2°	4	1.15	9°	4	50	13,700
08-00540-04508		3°	4	1.27	9°	4	50	13,700
08-00540-04512		5°	4	1.52	9°	4	50	14,200
08-00540-04516		7°	4	1.74	9°	4	50	15,200
08-00540-04519		10°	4	2.17	10°	4	50	17,300
08-00540-04524		15°	4	2.83	15°	4	50	22,100
08-00540-05004	R0.5	1°	4	1.12	9°	4	55	13,100
08-00540-05006		2°	4	1.25	9°	4	55	13,100
08-00540-05008		3°	4	1.37	9°	4	55	13,100
08-00540-05012		5°	4	1.62	9°	4	55	13,700
08-00540-05016		7°	4	1.87	9°	4	55	14,700
08-00540-05019		10°	4	2.25	10°	4	55	16,800
08-00540-05024		15°	4	2.91	15°	4	55	21,000
08-00540-06004	R0.6	1°	5	1.35	9°	4	55	13,100
08-00540-06006		2°	5	1.50	9°	4	55	13,100
08-00540-06008		3°	5	1.66	9°	4	55	13,100
08-00540-06012		5°	5	1.97	9°	4	55	13,700
08-00540-06016		7°	5	2.29	9°	4	55	14,700
08-00540-06019		10°	5	2.77	10°	4	55	16,800
08-00540-06024		15°	5	3.60	15°	4	55	21,000
08-00540-07504	R0.75	1°	6	1.68	9°	4	55	13,100
08-00540-07506		2°	6	1.87	9°	4	55	13,100
08-00540-07508		3°	6	2.05	9°	4	55	13,100
08-00540-07512		5°	6	2.42	9°	4	55	13,700
08-00540-07516		7°	6	2.80	9°	4	55	14,700
08-00540-07519		10°	6	3.37	10°	4	55	16,800
08-00540-07524		15°	6	4.37	–	4	55	22,000
08-00540-08004	R0.8	1°	6	1.78	9°	4	55	13,100
08-00540-08006		2°	6	1.96	9°	4	55	13,100
08-00540-08008		3°	6	2.15	9°	4	55	13,100
08-00540-08012		5°	6	2.52	9°	4	55	13,700
08-00540-08016		7°	6	2.89	9°	4	55	14,700
08-00540-08019		10°	6	3.46	10°	4	55	16,800
08-00540-08024		15°	6	4.44	–	4	55	24,200
08-00540-10004	R1	1°	8	2.24	9°	4	60	13,700
08-00540-10006		2°	8	2.49	9°	4	60	13,700
08-00540-10008		3°	8	2.74	9°	4	60	13,700
08-00540-10012		5°	8	3.23	9°	4	60	14,200
08-00540-10016		7°	8	3.73	7°	4	60	15,200
08-00540-10019		10°	8	4.50	10°	6	60	18,200
08-00540-10024		15°	8	5.82	15°	6	60	23,100
08-00540-12504	R1.25	1°	10	2.81	9°	4	60	14,200
08-00540-12506		2°	10	3.11	9°	4	60	14,200
08-00540-12508		3°	10	3.42	9°	4	60	14,200
08-00540-12512		5°	10	4.04	9°	6	60	15,400
08-00540-12516		7°	10	4.67	9°	6	60	16,500
08-00540-12519		10°	10	5.62	10°	6	60	17,600
08-00540-12524		15°	10	7.28	–	6	60	28,200
08-00540-15004	R1.5	1°	12	3.37	9°	4	60	14,700
08-00540-15006		2°	12	3.74	2°	4	60	14,700
08-00540-15008		3°	12	4.10	9°	6	60	15,400
08-00540-15012		5°	12	4.85	9°	6	60	16,000
08-00540-15016		7°	12	5.60	7°	6	60	17,100
08-00540-15019		10°	12	6.75	–	6	60	21,100
08-00540-15024		15°	12	8.73	–	8	60	27,000
08-00540-20004	R2	1°	16	4.49	9°	6	65	16,000
08-00540-20006		2°	16	4.98	9°	6	65	16,000
08-00540-20008		3°	16	5.47	9°	6	65	16,000
08-00540-20012		5°	16	6.46	–	6	65	18,600
08-00540-20016		7°	16	7.47	7°	8	65	22,400
08-00540-20019		10°	16	9.00	–	8	65	25,600
08-00540-20024		15°	16	11.64	–	10	70	32,000

锥形 Tapered
球头 Ball
涂层 Coating

P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
H ～52 HRC 高硬度钢 Hardened Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin

锥刃 Tapered

MTB230

切削参数参考表
Recommended Milling Conditions

加工材料 Work Material		碳素钢・合金钢・调质钢 Carbon Steels・Alloy Steels・Prehardened Steels S50C・SKD・NAK			高硬度钢 Hardened Steels (52HRC)			铝合金・铜合金 Aluminium Alloy・Copper		
		沟槽 Slotting			沟槽 Slotting			沟槽 Slotting		
球头半径 Radius	锥度半角 Taper Angle	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
		min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
R0.1	1°	40,000	90	0.005	40,000	60	0.003	40,000	100	0.006
	2°	40,000	100	0.006	40,000	70	0.004	40,000	110	0.007
	3°	40,000	120	0.006	40,000	80	0.004	40,000	140	0.007
	5°	40,000	130	0.007	40,000	90	0.005	40,000	140	0.008
	7°	40,000	160	0.007	40,000	100	0.005	40,000	180	0.008
	10°	40,000	180	0.008	40,000	120	0.005	40,000	200	0.01
R0.15	1°	40,000	120	0.005	40,000	80	0.004	40,000	140	0.006
	2°	40,000	130	0.005	40,000	90	0.004	40,000	140	0.006
	3°	40,000	140	0.006	40,000	100	0.004	40,000	160	0.007
	5°	40,000	150	0.006	40,000	100	0.005	40,000	170	0.007
	7°	40,000	180	0.007	40,000	120	0.005	40,000	200	0.008
	10°	40,000	210	0.008	40,000	140	0.005	40,000	230	0.01
	15°	40,000	240	0.01	40,000	160	0.007	40,000	260	0.012
R0.2	1°	40,000	390	0.015	40,000	260	0.01	40,000	430	0.018
	2°	40,000	400	0.015	40,000	260	0.01	40,000	440	0.018
	3°	40,000	420	0.02	40,000	280	0.013	40,000	460	0.024
	5°	40,000	430	0.02	40,000	290	0.013	40,000	470	0.024
	7°	40,000	450	0.02	40,000	300	0.013	40,000	500	0.024
	10°	40,000	470	0.02	40,000	310	0.013	40,000	520	0.024
	15°	40,000	500	0.02	37,000	310	0.013	40,000	550	0.024
R0.25	1°	40,000	420	0.015	38,000	260	0.01	40,000	460	0.018
	2°	40,000	430	0.02	37,000	260	0.013	40,000	470	0.024
	3°	40,000	440	0.02	36,000	260	0.013	40,000	490	0.024
	5°	40,000	450	0.025	35,000	260	0.017	40,000	500	0.03
	7°	40,000	480	0.03	34,000	270	0.02	40,000	530	0.036
	10°	40,000	510	0.03	32,000	270	0.02	40,000	560	0.036
	15°	40,000	540	0.03	29,000	270	0.02	40,000	600	0.036
R0.3	1°	40,000	500	0.03	31,000	260	0.02	40,000	550	0.036
	2°	40,000	520	0.035	30,500	260	0.023	40,000	580	0.042
	3°	40,000	530	0.04	30,000	260	0.026	40,000	580	0.05
	5°	40,000	550	0.045	29,000	270	0.03	40,000	610	0.055
	7°	38,000	570	0.05	28,000	280	0.033	40,000	660	0.06
	10°	35,000	580	0.05	27,000	300	0.033	40,000	730	0.06
	15°	32,000	600	0.05	24,000	300	0.033	40,000	820	0.06
R0.35	1°	36,000	720	0.06	27,000	360	0.04	40,000	880	0.07
	2°	35,000	720	0.065	26,500	360	0.043	40,000	900	0.08
	3°	34,000	720	0.07	26,000	360	0.046	40,000	940	0.085
	5°	33,000	720	0.075	25,000	360	0.05	40,000	960	0.09
	7°	32,000	720	0.08	24,000	360	0.053	40,000	990	0.095
	10°	30,000	720	0.085	23,000	360	0.056	40,000	1,060	0.1
	15°	28,000	720	0.09	21,000	360	0.06	40,000	1,140	0.11
R0.4	1°	32,000	900	0.065	23,500	460	0.043	40,000	1,240	0.08
	2°	31,000	900	0.07	23,000	460	0.046	40,000	1,280	0.085
	3°	30,000	900	0.075	22,500	460	0.05	40,000	1,320	0.09
	5°	29,000	900	0.08	22,000	460	0.053	40,000	1,370	0.095
	7°	28,000	900	0.09	21,000	460	0.06	40,000	1,420	0.11
	10°	27,000	900	0.1	20,000	460	0.066	40,000	1,470	0.12
	15°	25,000	900	0.11	18,500	460	0.073	37,000	1,470	0.13

加工材料 Work Material		碳素钢・合金钢・调质钢 Carbon Steels・Alloy Steels・Prehardened Steels S50C・SKD・NAK			高硬度钢 Hardened Steels (52HRC)			铝合金・铜合金 Aluminium Alloy・Copper		
		沟槽 Slotting			沟槽 Slotting			沟槽 Slotting		
球头半径 Radius	锥度半角 Taper Angle	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
		min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
R0.45	1°	28,000	1,100	0.1	21,000	550	0.065	40,000	1,730	0.12
	2°	27,500	1,100	0.1	20,500	550	0.067	40,000	1,760	0.125
	3°	27,000	1,100	0.11	20,000	550	0.073	40,000	1,790	0.13
	5°	26,000	1,100	0.12	19,500	550	0.08	39,000	1,820	0.145
	7°	25,000	1,100	0.13	19,000	550	0.086	37,500	1,820	0.16
	10°	24,000	1,100	0.14	18,000	550	0.092	36,000	1,820	0.17
	15°	22,000	1,100	0.15	16,500	550	0.1	33,000	1,820	0.18
R0.5	1°	25,000	1,200	0.12	19,000	570	0.08	38,000	2,000	0.145
	2°	24,500	1,200	0.13	18,500	570	0.085	37,000	2,000	0.16
	3°	24,000	1,200	0.14	18,000	570	0.09	36,000	2,000	0.17
	5°	23,000	1,200	0.15	17,500	570	0.1	35,000	2,000	0.18
	7°	22,500	1,200	0.16	17,000	570	0.105	34,000	2,000	0.19
	10°	21,000	1,200	0.17	16,000	570	0.11	32,000	2,000	0.2
	15°	20,000	1,200	0.18	15,000	570	0.12	29,000	2,000	0.21
R0.6	1°	21,000	1,300	0.13	16,000	590	0.085	32,000	2,100	0.16
	2°	20,500	1,300	0.15	15,500	590	0.1	31,000	2,100	0.18
	3°	20,000	1,300	0.16	15,000	590	0.11	30,000	2,100	0.2
	5°	19,500	1,300	0.18	14,500	590	0.12	29,000	2,100	0.22
	7°	19,000	1,300	0.2	14,000	590	0.13	28,000	2,100	0.24
	10°	18,000	1,300	0.22	13,000	590	0.145	27,000	2,100	0.26
	15°	16,000	1,300	0.23	12,000	590	0.15	25,000	2,100	0.28
R0.75	1°	17,000	1,300	0.15	13,000	600	0.1	25,000	2,100	0.17
	2°	16,500	1,300	0.17	12,500	600	0.11	24,500	2,100	0.2
	3°	16,000	1,300	0.18	12,000	600	0.12	24,000	2,100	0.22
	5°	15,500	1,300	0.2	11,500	600	0.13	23,000	2,100	0.24
	7°	15,000	1,300	0.22	11,000	600	0.145	22,500	2,100	0.25
	10°	14,000	1,300	0.24	10,500	600	0.16	21,000	2,100	0.27
	15°	13,000	1,300	0.25	10,000	600	0.165	20,000	2,100	0.29
R0.8	1°	16,000	1,400	0.15	12,500	620	0.105	23,500	2,300	0.19
	2°	15,500	1,400	0.17	12,000	620	0.11	23,000	2,300	0.22
	3°	15,000	1,400	0.18	11,500	620	0.12	22,500	2,300	0.23
	5°	14,500	1,400	0.2	11,000	620	0.13	22,000	2,300	0.25
	7°	14,000	1,400	0.22	10,500	620	0.145	21,000	2,300	0.26
	10°	13,000	1,400	0.24	10,000	620	0.16	20,000	2,300	0.29
	15°	12,000	1,400	0.25	9,500	620	0.165	18,000	2,300	0.3
R1	1°	13,000	1,200	0.18	10,000	600	0.12	19,000	2,000	0.21
	2°	12,500	1,200	0.2	9,500	600	0.13	18,500	2,000	0.24
	3°	12,000	1,200	0.22	9,000	600	0.145	18,000	2,000	0.26
	5°	11,500	1,200	0.24	8,500	600	0.16	17,500	2,000	0.29
	7°	11,000	1,200	0.26	8,000	600	0.17	17,000	2,000	0.31
	10°	10,500	1,200	0.28	7,500	600	0.185	16,000	2,000	0.33
	15°	10,000	1,200	0.3	7,000	600	0.195	15,000	2,000	0.36
R1.25	1°	10,000	1,200	0.2	7,500	600	0.13	15,500	2,000	0.24
	2°	10,000	1,200	0.22	7,500	600	0.145	15,000	2,000	0.26
	3°	9,500	1,200	0.24	7,000	600	0.16	14,500	2,000	0.29
	5°	9,500	1,200	0.26	7,000	600	0.17	14,000	2,000	0.31
	7°	9,000	1,200	0.28	6,500	600	0.185	13,500	2,000	0.33
	10°	8,500	1,200	0.3	6,500	600	0.2	13,000	2,000	0.36
	15°	8,000	1,200	0.32	6,000	600	0.21	12,000	2,000	0.38

锥形 Tapered
球头 Ball
涂层 Coating

P 碳素钢 Carbon Steel ◎
P 合金钢 Alloy Steel ◎
P 调质钢 Prehardened Steel ◎
H ~52 HRC 高硬度钢 Hardened Steel ○
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ○

锥刃 Tapered

MTB230

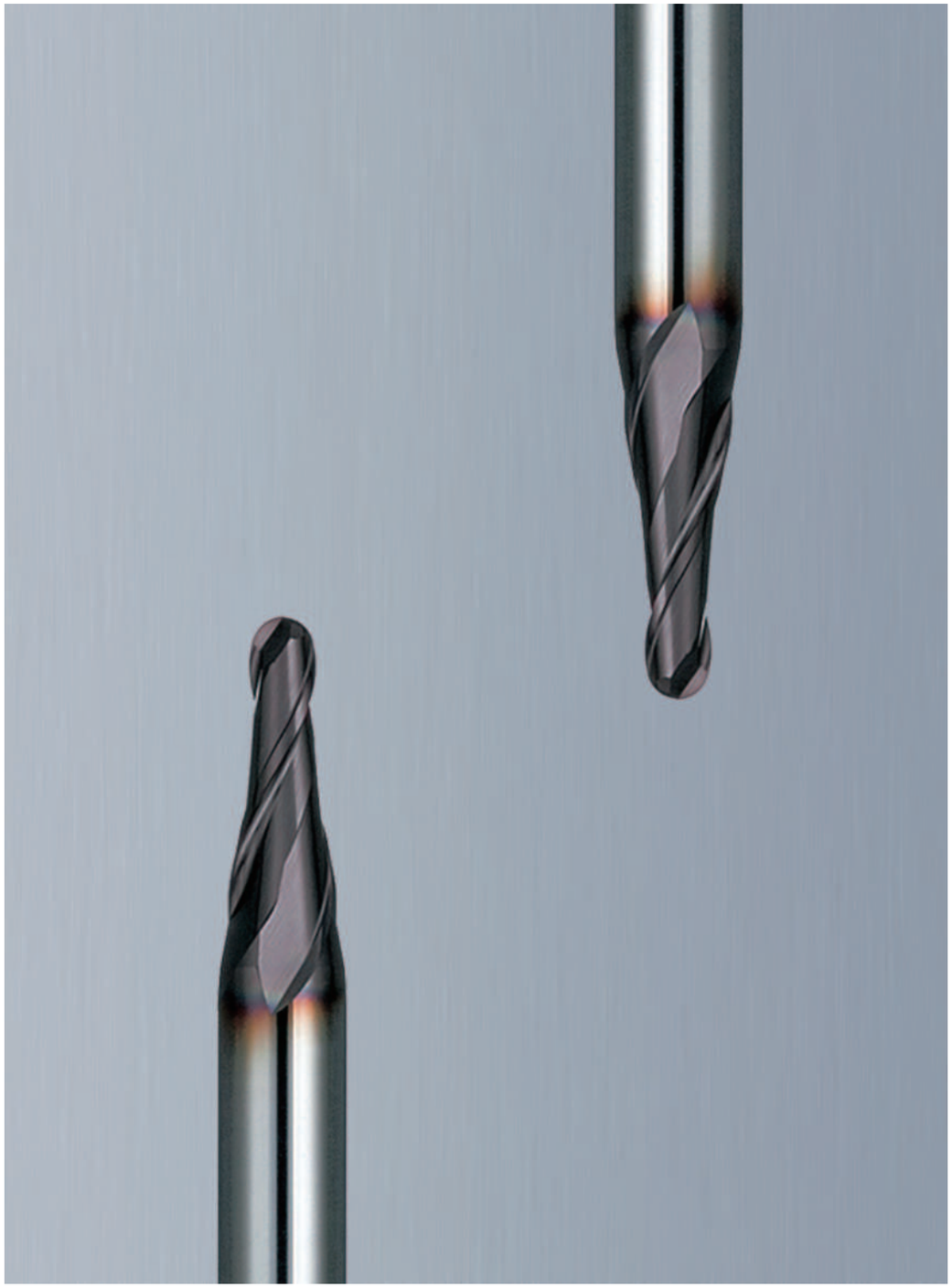
切削参数参考表
Recommended Milling Conditions

加工材料 Work Material		碳素钢・合金钢・调质钢 Carbon Steels・Alloy Steels・Prehardened Steels S50C・SKD・NAK			高硬度钢 Hardened Steels (52HRC)			铝合金・铜合金 Aluminium Alloy・Copper		
		沟槽 Slotting			沟槽 Slotting			沟槽 Slotting		
球头半径 Radius	锥度半角 Taper Angle	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
		min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm
R1.5	1°	8,300	1,200	0.22	6,300	600	0.145	13,000	2,000	0.26
	2°	8,200	1,200	0.24	6,100	600	0.16	12,500	2,000	0.29
	3°	8,100	1,200	0.26	6,000	600	0.17	12,000	2,000	0.31
	5°	7,800	1,200	0.28	5,800	600	0.185	11,500	2,000	0.33
	7°	7,500	1,200	0.3	5,600	600	0.2	11,000	2,000	0.36
	10°	7,100	1,200	0.32	5,300	600	0.21	10,500	2,000	0.38
	15°	6,500	1,200	0.35	4,900	600	0.23	10,000	2,000	0.42
R2	1°	6,300	1,100	0.25	4,700	550	0.165	9,400	1,800	0.3
	2°	6,100	1,100	0.27	4,600	550	0.18	9,200	1,800	0.32
	3°	6,000	1,100	0.29	4,500	550	0.19	9,100	1,800	0.35
	5°	5,800	1,100	0.32	4,400	550	0.21	8,800	1,800	0.38
	7°	5,600	1,100	0.35	4,200	550	0.23	8,400	1,800	0.42
	10°	5,300	1,100	0.37	4,000	550	0.245	8,000	1,800	0.44
	15°	4,900	1,100	0.4	3,700	550	0.265	7,300	1,800	0.48

备 注 Notes

※1 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。
※2 本切削参数以距离刀具前端R×2的加工深度为假定条件。
深度超出该值的沟槽加工请调整转速或进给速度。
※3 发生振刀时，请以相同的比率降低主轴转速和进给速度。
此外，主轴转速过低时，也以相同的比率降低。
※4 建议采用来回切削加工方式。
※5 加工高硬度钢时，建议使用油雾冷却方式。

※1 Recommend to use the milling condition as just reference. Adjust milling conditions according to machining shape and machine status.
※2 This cutting condition assumes cutting depth of R×2 from the tip of the tool.
Please adjust both spindle speed and feed when the slotting depth is over 2×R.
※3 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※4 Recommend reciprocating cutting.
※5 Oil mist coolant is recommended for the machining of hardened steels.



锥形 Tapered
球头 Ball
涂层 Coating

P 碳素钢 Carbon Steel ◎
P 合金钢 Alloy Steel ◎
P 调质钢 Prehardened Steel ◎
H ～52高硬度钢 HRC Hardened Steel ○
N 铝合金 Aluminium Alloy ○
N 铜合金 Copper ○
O 树脂 Resin ○

锥刃 Tapered

MSDH

规格 Size φ0.1 ～ φ1

Premium ≦65 HRC

无限白金涂层 高硬度钢材加工用小径钻头
MUGEN COATING PREMIUM Precision Drill for Hardened Steel

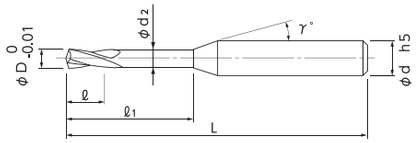
共有19种规格
Total 19 sizes

可对65HRC的高硬度钢进行钻孔加工

Available for drilling on hardened steel which has 65HRC

MG 2 20° φd h5 Drill





前端角 150°（采用特殊形状）
Point Angle 150°(Original design)

- 小径钻头，可对高硬度钢（～65HRC）进行钻孔加工！
- 孔径的偏差变小，并实现了延长刀具寿命的稳定加工！
- 可进行高硬度钢钻孔加工（φ0.1 ～）！
- Precise drilling on hardened steel (65HRC)!
- Equable hole accuracy and stably long tool life!
- Drilling on high hardened steel (φ0.1～)!

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(ℓ1)颈长 Under neck Length	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00050-01000	0.1	0.2	1	0.085	15°	4	45	14,700
04-00050-01500	0.15	0.3	1.5	0.13	15°	4	45	14,700
04-00050-02000	0.2	0.4	2	0.18	15°	4	45	13,700
04-00050-02500	0.25	0.5	2.5	0.23	15°	4	45	13,700
04-00050-03000	0.3	0.6	3	0.28	15°	4	45	12,600
04-00050-03500	0.35	0.7	3.5	0.32	15°	4	45	12,600
04-00050-04000	0.4	0.8	4	0.37	15°	4	45	10,100
04-00050-04500	0.45	0.9	4.5	0.41	15°	4	45	10,100
04-00050-05000	0.5	1	5	0.46	15°	4	45	8,900
04-00050-05500	0.55	1.1	5.5	0.51	15°	4	45	8,900
04-00050-06000	0.6	1.2	6	0.56	15°	4	45	8,200
04-00050-06500	0.65	1.3	6.5	0.61	15°	4	45	8,200
04-00050-07000	0.7	1.4	7	0.66	15°	4	45	7,600
04-00050-07500	0.75	1.5	7.5	0.71	15°	4	45	7,600
04-00050-08000	0.8	1.6	8	0.76	15°	4	45	7,100
04-00050-08500	0.85	1.7	8.5	0.81	15°	4	45	7,100
04-00050-09000	0.9	1.8	9	0.86	15°	4	45	6,800
04-00050-09500	0.95	1.9	9.5	0.9	15°	4	45	6,800
04-00050-10000	1	2	10	0.95	15°	4	45	6,300

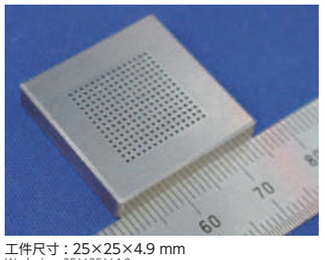
订购方法 How to Order

请指定MSDH 直径(D)。
When you order, indicate MSDH (D).

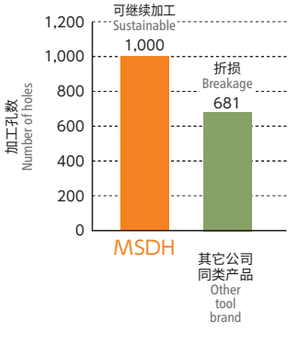
※(γ)为参考值。
※(γ) is reference value.

加工案例 1 Machining Case1

加工材料：DC53 60HRC
Work material : DC53 60HRC



工件尺寸：25×25×4.9 mm
Work size : 25×25×4.9 mm



使用刀具 Tool	MSDH φ0.5
主轴转速 Spindle speed	15,000 min-1
进给速度 Feed	50 mm/min
分级量 Step feed	0.025 mm
孔深 Depth of hole	4.9 mm(通孔) Through
冷却方式 Coolant	油雾 Oil mist
加工孔数 Number of holes	1,000 孔 1,000 holes
加工时间 Machining time	每孔 1 分 25 秒 1min 25sec / 1 hole

加工材料 Work Material	高硬度钢 Hardened Steels HPM-38・STAVAX・SKD61 (～55HRC)			高硬度钢 Hardened Steels SKD11・PD613 (～62HRC)			高速钢 High Speed Tool Steels SKH (～65HRC)		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed
	mim-1	mm/min	mm	mim-1	mm/min	mm	mim-1	mm/min	mm
0.1	40,000	10	0.005	40,000	5	0.003	40,000	3	0.001
0.15	40,000	10	0.005	40,000	5	0.003	40,000	3	0.001
0.2	30,000	20	0.01	30,000	15	0.005	30,000	5	0.003
0.25	30,000	20	0.01	30,000	15	0.005	30,000	5	0.003
0.3	20,000	30	0.02	20,000	25	0.01	20,000	15	0.005
0.35	20,000	30	0.02	20,000	25	0.01	20,000	15	0.005
0.4	20,000	40	0.04	20,000	40	0.02	20,000	40	0.007
0.45	20,000	40	0.04	20,000	40	0.02	20,000	40	0.007
0.5	15,000	50	0.05	15,000	50	0.03	15,000	50	0.01
0.55	15,000	50	0.05	15,000	50	0.03	15,000	50	0.01
0.6	15,000	70	0.05	15,000	70	0.03	15,000	70	0.01
0.65	15,000	70	0.05	15,000	70	0.03	15,000	70	0.01
0.7	12,000	130	0.06	12,000	120	0.04	12,000	100	0.02
0.75	12,000	130	0.06	12,000	120	0.04	12,000	100	0.02
0.8	12,000	160	0.06	12,000	150	0.04	12,000	140	0.02
0.85	12,000	160	0.06	12,000	150	0.04	12,000	140	0.02
0.9	10,000	200	0.07	10,000	200	0.05	10,000	180	0.03
0.95	10,000	200	0.07	10,000	200	0.05	10,000	180	0.03
1	10,000	200	0.07	10,000	200	0.05	10,000	180	0.03

备注 Notes

※1 请使用适合加工材料和加工内容的冷却方式。
※2 请尽量将主轴转速设为振动较小的转速，并尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※3 请尽量确保加工面平坦后开始加工。
※4 取出或夹持刀具时请务必小心。
※1 Use appropriate coolant for work material and machining description.
※2 Minimize chucking runout by setting spindle speed at minimum oscillation.
(Recommend to measure actual runout at activated Spindle Speed.)
※3 Set up flat surface before start machining.
※4 Take extra care when chucking in and out.

规格
Size ϕ 0.01 ～ ϕ 0.1

Micro ≦40 HRC

无限微细涂层 微径钻头
MUGEN MICRO COATING Micro Drill

共有19种规格
Total 19 sizes

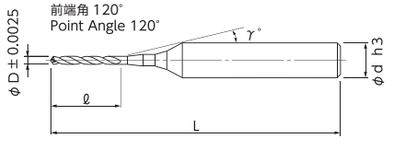
切削参数参考表
Recommended Milling Conditions

直径ϕ0.1以下的无限微米涂层微径钻头 可加工深度为直径的10倍
Coated micro drill Dia.0.1mm or smaller to drill hole depth L/D=10

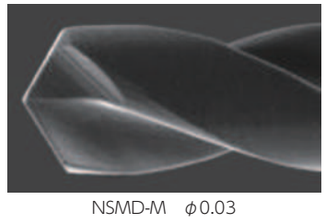
SMG 2 30° ϕd h3 Drill











NSMD-M ϕ0.03

- 槽长是使用10倍直径的标准型。
- 采用微径钻头专用微细涂层，在进行不锈钢等钻孔加工时可发挥优异的性能。
- 前端部采用横刃修磨，减小了切削负载。钻孔精度稳定。（ϕ0.02以上）
- L/D=10 standard type.
- Special thin film coating for Micro Drill exercise high drilling performance on steels include stainless steels.
- Thinning on the cutting edge to reduce cutting load for accurate drilling. (Dia. 0.02～)

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00002-00100	**0.01**	0.1	15°	4	40	61,400
04-00002-00150	**0.015**	0.15	15°	4	40	61,400
04-00002-00200	**0.02**	0.2	15°	4	40	49,100
04-00002-00250	**0.025**	0.25	15°	4	40	49,100
04-00002-00300	**0.03**	0.3	15°	4	40	28,700
04-00002-00350	**0.035**	0.4	15°	4	40	28,700
04-00002-00400	**0.04**	0.4	15°	4	40	19,400
04-00002-00450	**0.045**	0.5	15°	4	40	19,400
04-00002-00500	**0.05**	0.5	15°	4	40	15,500
04-00002-00550	**0.055**	0.6	15°	4	40	15,500
04-00002-00600	**0.06**	0.6	15°	4	40	14,200
04-00002-00650	**0.065**	0.7	15°	4	40	14,200
04-00002-00700	**0.07**	0.7	15°	4	40	11,300
04-00002-00750	**0.075**	0.8	15°	4	40	11,300
04-00002-00800	**0.08**	0.8	15°	4	40	7,600
04-00002-00850	**0.085**	0.9	15°	4	40	7,600
04-00002-00900	**0.09**	0.9	15°	4	40	7,600
04-00002-00950	**0.095**	1	15°	4	40	7,600
04-00002-01000	**0.1**	1	15°	4	40	6,900

订购方法 How to Order

请指定NSMD-M 直径(D)。
When you order, indicate NSMD-M (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	不锈钢 Stainless Steels SUS304			铝合金 Aluminium Alloy A5052		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed
	min^{-1}	mm/min	μm	min^{-1}	mm/min	μm
0.01	20,000	1	0.1	30,000	2	0.5
0.03	20,000	2	0.5	30,000	3	1.5
0.05	20,000	2	3	30,000	4	5
0.1	20,000	5	5	25,000	10	10

备注 Notes

※1 请使用适合加工材料和加工内容的冷却方式。
※2 请尽量将主轴转速设为振动较小的转速，并尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※3 请尽量确保加工面平坦后开始加工。
※4 取出或夹持刀具时请务必小心。
※1 Use appropriate coolant for work material and machining description.
※2 Minimize chucking runout by setting spindle speed at minimum oscillation.
(Recommend to measure actual runout at activated Spindle Speed.)
※3 Set up flat surface before start machining.
※4 Take extra care when chucking in and out.

规格
Size ϕ 0.01 ～ ϕ 0.05

Micro ≦40 HRC

无限微细涂层 微径短刃造型钻头
MUGEN MICRO COATING Micro Drill Short

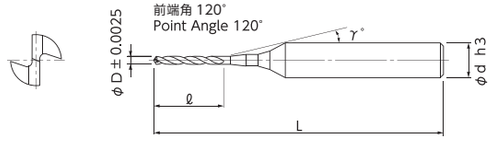
共有9种规格
Total 9 sizes

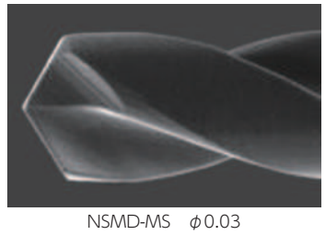
切削参数参考表
Recommended Milling Conditions

SMG 2 30° φd h3 Drill

直径φ0.1以下的无限微米涂层微径钻头 可加工深度为直径的6倍
Coated micro drill Dia.0.1mm or smaller to drill hole depth L/D=6







NSMD-MS φ0.03

- 槽长是使用6倍直径的短刃造型。
- 采用微径钻头专用微细涂层，在进行不锈钢等钻孔加工时可发挥优异的性能。
- 前端部采用横刃修磨，减小了切削负载。钻孔精度稳定。（φ0.02以上）
- L/D=6 short type.
- Special thin film coating for Micro Drill exercise high drilling performance on steels include stainless steels.
- Thinning on the cutting edge to reduce cutting load for accurate drilling. (Dia. 0.02～)

加工材料 Work Material	不锈钢 Stainless Steels SUS304			铝合金 Aluminium Alloy A5052		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed
	mim^{-1}	mm/min	μm	mim^{-1}	mm/min	μm
0.01	20,000	1	0.1	30,000	2	0.5
0.03	20,000	2	0.5	30,000	3	1.5
0.05	20,000	2	3	30,000	4	5
备注 Notes	※1 请使用适合加工材料和加工内容的冷却方式。 ※2 请尽量将主轴转速设为振动较小的转速，并尽量抑制刀具的偏摆量。 （可能的话，请确认所用主轴转速下的动态偏摆精度。） ※3 请尽量确保加工面平坦后开始加工。 ※4 取出或夹持刀具时请务必小心。 ※1 Use appropriate coolant for work material and machining description. ※2 Minimize chucking runout by setting spindle speed at minimum oscillation. (Recommend to measure actual runout at activated Spindle Speed.) ※3 Set up flat surface before start machining. ※4 Take extra care when chucking in and out.					

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00006-00100	0.01	0.06	15°	4	40	52,300
04-00006-00150	0.015	0.09	15°	4	40	52,300
04-00006-00200	0.02	0.12	15°	4	40	34,900
04-00006-00250	0.025	0.15	15°	4	40	34,900
04-00006-00300	0.03	0.18	15°	4	40	26,800
04-00006-00350	0.035	0.24	15°	4	40	26,800
04-00006-00400	0.04	0.24	15°	4	40	20,500
04-00006-00450	0.045	0.3	15°	4	40	20,500
04-00006-00500	0.05	0.3	15°	4	40	13,700

订购方法 How to Order

请指定NSMD-MS 直径(D)。
When you order, indicate NSMD-MS (D).

※(γ)为参考值。
※(γ) is reference value.

涂层 Coating
钻头 Drill
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
M 不锈钢 Stainless Steel
S 钛合金 耐热合金 Titanium Alloy Heat Resistant Alloy
N 铝合金 Aluminium Alloy
钻头 Drill

规格
Size ϕ 0.01 ～ ϕ 0.1

Micro ≦40 HRC

无限微细涂层 微径定位钻头（底孔加工用）

MUGEN MICRO COATING Micro Point Drill (Drill for Guide Hole)

共有12种规格
Total 12 sizes

切削参数参考表
Recommended Milling Conditions

无限微米涂层微径钻头的底孔加工用

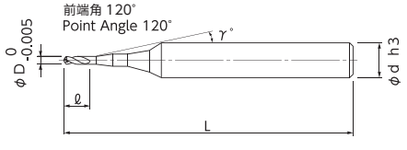
For making a guide hole for coated micro drill

SMG 2 30° φd h3

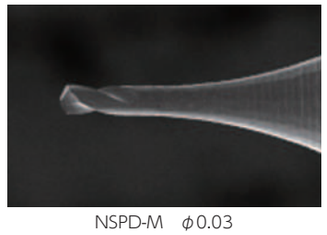
Drill







- 适用于微径钻头的底孔加工。
- 采用微径钻头专用微细涂层，在进行不锈钢等钻孔加工时可发挥优异的性能。
- 前端部采用横刃修磨，减小了切削负载。钻孔精度稳定。（ϕ0.025以上）
- Guide hole for Micro Drill.
- Special thin film coating for Micro Drill exercise high drilling performance on steels include stainless steels.
- Thinning on the cutting edge to reduce cutting load for accurate drilling. (Dia. 0.025～)



NSPD-M ϕ0.03

加工材料 Work Material	不锈钢 Stainless Steels SUS304			铝合金 Aluminium Alloy A5052		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed
	min^{-1}	mm/min	μm	min^{-1}	mm/min	μm
0.01	20,000	1	0.1	20,000	1	0.1
0.03	20,000	2	0.5	20,000	2	0.5
0.05	20,000	2	1	20,000	2	1
0.1	20,000	5	2	25,000	5	2

备注 Notes

※1 请使用适合加工材料和加工内容的冷却方式。
※2 请尽量将主轴转速设为振动较小的转速，并尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※3 请尽量确保加工面平坦后开始加工。
※4 取出或夹持刀具时请务必小心。

※1 Use appropriate coolant for work material and machining description.
※2 Minimize chucking runout by setting spindle speed at minimum oscillation. (Recommend to measure actual runout at activated rpm)
※3 Set up flat surface before start machining.
※4 Take extra care when chucking in and out.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00012-00100	0.01	0.015	15°	4	40	61,400
04-00012-00150	0.015	0.025	15°	4	40	61,400
04-00012-00200	0.02	0.04	15°	4	40	49,100
04-00012-00250	0.025	0.05	15°	4	40	49,100
04-00012-00300	0.03	0.06	15°	4	40	28,700
04-00012-00400	0.04	0.08	15°	4	40	19,400
04-00012-00500	0.05	0.1	15°	4	40	15,500
04-00012-00600	0.06	0.12	15°	4	40	14,200
04-00012-00700	0.07	0.14	15°	4	40	11,300
04-00012-00800	0.08	0.16	15°	4	40	7,600
04-00012-00900	0.09	0.18	15°	4	40	7,600
04-00012-01000	0.1	0.2	15°	4	40	6,900

订购方法 How to Order

请指定NSPD-M 直径(D)。
When you order, indicate NSPD-M (D).

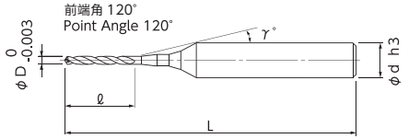
※(γ)为参考值。
※(γ) is reference value.

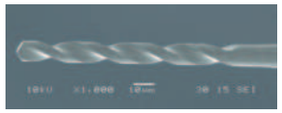
直径φ0.1以下的微径钻头。可加工深度为直径的10倍

Micro drill Dia.0.1mm or smaller to drill hole depth L/D=10









NSMDφ0.01

- 凝聚了NS TOOL所有的制造技术。前端刃径最小为φ0.01，实现了标准化!
- 开拓使用钻头进行钻孔加工的新领域。
- 前端部采用横刃修磨，减小了切削负载。钻孔精度稳定。（φ0.02以上）
- 槽长是使用10倍直径的标准型。
- Standardized from dia. 0.01mm by concentrating NS manufacturing technology!
- Micro Drill develops new drilling capability.
- Thinning on the cutting edge to reduce cutting load for accurate drilling. (Dia. 0.02～)
- L/D=10 standard type.





横刃前端部
Thinning

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00001-00100	**0.01**	0.1	15°	4	40	47,300
04-00001-00150	**0.015**	0.15	15°	4	40	47,300
04-00001-00200	**0.02**	0.2	15°	4	40	37,800
04-00001-00250	**0.025**	0.25	15°	4	40	37,800
04-00001-00300	**0.03**	0.3	15°	4	40	22,100
04-00001-00400	**0.04**	0.4	15°	4	40	14,900
04-00001-00500	**0.05**	0.5	15°	4	40	12,600
04-00001-00600	**0.06**	0.6	15°	4	40	11,600
04-00001-00700	**0.07**	0.7	15°	4	40	10,400
04-00001-00800	**0.08**	0.8	15°	4	40	7,100
04-00001-00900	**0.09**	0.9	15°	4	40	7,100
04-00001-01000	**0.1**	1	15°	4	40	5,300

订购方法 How to Order

请指定NSMD 直径(D)。
When you order, indicate NSMD (D).

※(γ)为参考值。
※(γ) is reference value.

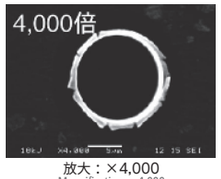
加工案例 1 Machining Case 1

铝合金 Aluminium alloy

■加工孔形状：φ0.01mm 盲孔 深度0.1mm(L/D=10)
Hole description: φ0.01mm (Blind hole) Depth 0.1mm (L/D=10)



主轴转速 Spindle speed	60,000min^{-1}
进给速度 Feed	2mm/min
分级量 Step feed	0.2μm
冷却方式 Coolant	油雾 Oil mist



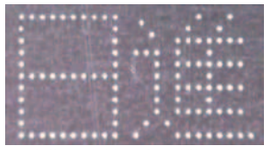
放大：×4,000
Magnification: × 4,000

刀具规格：φ0.01
Drill size : φ 0.01
加工材料：A5052
Work material : A5052
加工孔数：10孔
No. of holes: 10 holes
加工时间：1小时20分钟
Machining time: 1hr 20min

加工案例 2 Machining Case 2

SUS304 SUS304

■加工孔形状：φ0.03mm 通孔 板厚0.15mm(L/D=5)
Hole description: φ0.03mm (Through hole) Depth 0.15mm (L/D=5)



主轴转速 Spindle speed	60,000min^{-1}
进给速度 Feed	1mm/min
分级量 Step feed	1μm
冷却方式 Coolant	油雾 Oil mist

刀具规格：φ0.03
Drill size : φ 0.03
加工材料：SUS304
Work material : SUS304
加工孔数：105孔
No. of holes: 105 holes
加工时间：16小时
Machining time: 16 hr

加工材料 Work Material	不锈钢 Stainless Steels SUS304			铝合金 Aluminium Alloy A5052		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed
	mim^{-1}	mm/min	μm	mim^{-1}	mm/min	μm
0.01	20,000	1	0.1	30,000	2	0.5
0.03	20,000	2	0.5	30,000	3	1.5
0.05	20,000	2	3	30,000	4	5
0.1	20,000	5	5	25,000	10	10
备注 Notes	※1 请使用适合加工材料和加工内容的冷却方式。 ※2 请尽量将主轴转速设为振动较小的转速，并尽量抑制刀具的偏摆量。 （可能的话，请确认所用主轴转速下的动态偏摆精度。） ※3 请尽量确保加工面平坦后开始加工。 ※4 取出或夹持刀具时请务必小心。 ※1 Use appropriate coolant for work material and machining description. ※2 Minimize chucking runout by setting spindle speed at minimum oscillation. (Recommend to measure actual runout at activated Spindle Speed.) ※3 Set up flat surface before start machining. ※4 Take extra care when chucking in and out.					

NSMD-S

规格 Size ϕ 0.01 ～ ϕ 0.05

SMG

微径钻头 短刃造型
Micro Drill Short

共有7种规格
Total 7 sizes

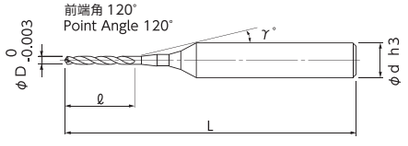
切削参数参考表
Recommended Milling Conditions

直径ϕ0.1以下的微径钻头。可加工深度为直径的6倍

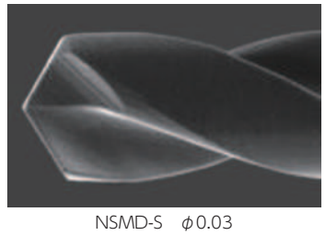
Micro drill Dia.0.1mm or smaller to drill hole depth L/D=6







- 槽长是使用6倍直径的短刃造型，可进行稳定的加工。
- 前端部采用横刃修磨，减小了切削负载。钻孔精度稳定。（ϕ0.02以上）
- L/D=6 short type, realized stable drilling.
- Thinning on the cutting edge to reduce cutting load for accurate drilling. (Dia. 0.02～)



NSMD-S ϕ0.03

加工材料 Work Material	不锈钢 Stainless Steels SUS304			铝合金 Aluminium Alloy A5052		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed
	mim^{-1}	mm/min	μm	mim^{-1}	mm/min	μm
0.01	20,000	1	0.1	30,000	2	0.5
0.03	20,000	2	0.5	30,000	3	1.5
0.05	20,000	2	3	30,000	4	5
备注 Notes	※1 请使用适合加工材料和加工内容的冷却方式。 ※2 请尽量将主轴转速设为振动较小的转速，并尽量抑制刀具的偏摆量。 （可能的话，请确认所用主轴转速下的动态偏摆精度。） ※3 请尽量确保加工面平坦后开始加工。 ※4 取出或夹持刀具时请务必小心。 ※1 Use appropriate coolant for work material and machining description. ※2 Minimize chucking runout by setting spindle speed at minimum oscillation. (Recommend to measure actual runout at activated Spindle Speed.) ※3 Set up flat surface before start machining. ※4 Take extra care when chucking in and out.					

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00005-00100	0.01	0.06	15°	4	40	47,300
04-00005-00150	0.015	0.09	15°	4	40	47,300
04-00005-00200	0.02	0.12	15°	4	40	37,800
04-00005-00250	0.025	0.15	15°	4	40	37,800
04-00005-00300	0.03	0.18	15°	4	40	22,100
04-00005-00400	0.04	0.24	15°	4	40	14,900
04-00005-00500	0.05	0.3	15°	4	40	12,600

订购方法 How to Order

请指定NSMD-S 直径(D)。
When you order, indicate NSMD-S (D).

※(γ)为参考值。
※(γ) is reference value.

微径定位钻头（底孔加工用）
Micro Point Drill (Drill for Guide Hole)

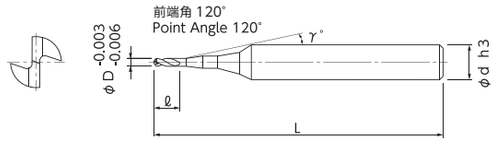
共有12种规格
Total 12 sizes

切削参数参考表
Recommended Milling Conditions

微径钻头的底孔加工用

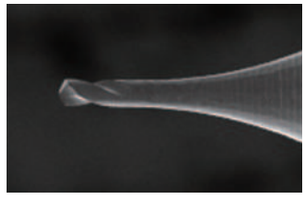
For making a guide hole for micro drill





- 适用于微径钻头的底孔加工。
- 前端部采用横刃修磨，减小了切削负载。钻孔精度稳定。（φ0.025以上）
- Micro Point Drill for guide hole.
- Thinning on the cutting edge to reduce cutting load for accurate drilling. (Dia. 0.025～)





NSPD φ0.03

加工材料 Work Material	不锈钢 Stainless Steels SUS304			铝合金 Aluminium Alloy A5052		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed
	min^{-1}	mm/min	μm	min^{-1}	mm/min	μm
0.01	20,000	1	0.1	20,000	1	0.1
0.03	20,000	2	0.5	20,000	2	0.5
0.05	20,000	2	1	20,000	2	1
0.1	20,000	5	2	25,000	5	2

备注 Notes

※1 请使用适合加工材料和加工内容的冷却方式。
※2 请尽量将主轴转速设为振动较小的转速，并尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※3 请尽量确保加工面平坦后开始加工。
※4 取出或夹持刀具时请务必小心。
※1 Use appropriate coolant for work material and machining description.
※2 Minimize chucking runout by setting spindle speed at minimum oscillation.
(Recommend to measure actual runout at activated rpm)
※3 Set up flat surface before start machining.
※4 Take extra care when chucking in and out.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价（日元） Retail Price
04-00010-00100	0.01	0.015	15°	4	40	47,300
04-00010-00150	0.015	0.025	15°	4	40	47,300
04-00010-00200	0.02	0.04	15°	4	40	37,800
04-00010-00250	0.025	0.05	15°	4	40	37,800
04-00010-00300	0.03	0.06	15°	4	40	22,100
04-00010-00400	0.04	0.08	15°	4	40	14,900
04-00010-00500	0.05	0.1	15°	4	40	12,600
04-00010-00600	0.06	0.12	15°	4	40	11,600
04-00010-00700	0.07	0.14	15°	4	40	10,400
04-00010-00800	0.08	0.16	15°	4	40	7,100
04-00010-00900	0.09	0.18	15°	4	40	7,100
04-00010-01000	0.1	0.2	15°	4	40	5,300

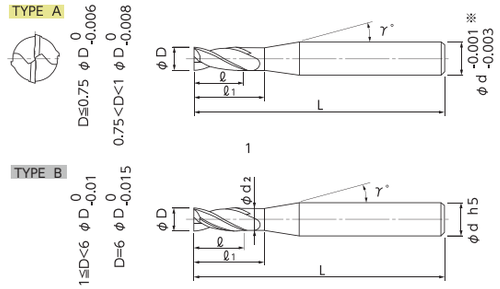
订购方法 How to Order
请指定NSPD 直径(D)。
When you order, indicate NSPD (D).
※(γ)为参考值。
※(γ) is reference value.

在斜面、曲面上均可稳定钻孔

Stable drilling is realized in various scenes such as inclined surface and curved surface



MG | 2 | 20° (D＜0.5) | 30° (D≧0.5) | φd -0.001 -0.003 (D＜1) | φd h5 (D≧1) | Flat Drill



- 平底小径钻头，按不同规格研发出最优化的刀具设计！
- 孔径低于φ1的微细钻孔领域，从φ0.1起，以0.05为间隔做为标准品规格，φ1以上间隔为0.1。
- 不论是斜面或曲面等加工面形状，都可进行稳定的钻孔加工。
- 可进行高效插铣加工，抑制毛刺发生。
- Small diameter drill with flat end profile, tool design developed and optimized for different sizes.
- Developed for the precise drilling field. Standardized every 0.05 sizes from φ0.1～φ0.95, and every 0.1 for over φ1.
- Stable drilling is realized in various scenes such as inclined surface and curved surface!
- High efficient counter boring is available, also possible to reduce the back burr.

※ 柄径公差按JIS标准属于h4，本公司按-0.001mm～-0.003mm的范围[0.002mm]进行生产。
Shank tolerance is h4(JIS), NS TOOL produces within 0.002mm from -0.001mm～-0.003mm.

★ 返修对应（柄长须在15mm以上。详情请咨询本公司。）

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(ℓ1)颈长 Under Neck Length	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00230-00010	0.1	0.2	0.3	A	–	9°	4	45	8,400
04-00230-00015	0.15	0.3	0.45		–	9°	4	45	9,000
04-00230-00020	0.2	0.4	0.6		–	9°	4	45	7,800
04-00230-00025	0.25	0.5	0.75		–	9°	4	45	8,300
04-00230-00030	0.3	0.6	0.9		–	9°	4	45	7,700
04-00230-00035	0.35	0.7	1.05		–	9°	4	45	8,200
04-00230-00040	0.4	0.8	1.2		–	9°	4	45	7,600
04-00230-00045	0.45	0.9	1.35		–	9°	4	45	8,000
04-00230-00050	0.5	1	1.5		–	9°	4	45	7,500
04-00230-00055	0.55	1.1	1.65		–	9°	4	45	7,500
04-00230-00060	0.6	1.2	1.8		–	9°	4	45	6,900
04-00230-00065	0.65	1.3	1.95		–	9°	4	45	7,500
04-00230-00070	0.7	1.4	2.1		–	9°	4	45	6,900
04-00230-00075	0.75	1.5	2.25		–	9°	4	45	7,500
04-00230-00080	0.8	1.6	2.4		–	9°	4	45	6,900
04-00230-00085	0.85	1.7	2.55		–	9°	4	45	7,500
04-00230-00090	0.9	1.8	2.7		–	9°	4	45	6,900
04-00230-00095	0.95	1.9	2.85		–	9°	4	45	7,500
04-00230-00100	1	2	3	B	0.95	9°	4	55	6,400
04-00230-00110	1.1	2.2	3.3		1.05	9°	4	55	6,400

订购方法 How to Order
请指定MFD 直径(D)。
When you order, indicate MFD (D).
※(γ)为参考值。
※(γ) is reference value.

加工案例 Machining Case
M-041

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(ℓ1)颈长 Under Neck Length	形状 Type	(d2)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
★ 04-00230-00120	1.2	2.4	3.6		1.15	9°	4	55	6,400
★ 04-00230-00130	1.3	2.6	3.9		1.25	9°	4	55	6,400
★ 04-00230-00140	1.4	2.8	4.2		1.35	9°	4	55	6,400
★ 04-00230-00150	1.5	3	4.5		1.45	9°	4	55	6,400
★ 04-00230-00160	1.6	3.2	4.8		1.55	9°	4	55	6,400
★ 04-00230-00170	1.7	3.4	5.1		1.65	9°	4	55	6,400
★ 04-00230-00180	1.8	3.6	5.4		1.75	9°	4	55	6,400
★ 04-00230-00190	1.9	3.8	5.7		1.84	9°	4	55	6,400
★ 04-00230-00200	2	4	6		1.94	9°	4	55	5,700
★ 04-00230-00210	2.1	4.2	6.3		2	9°	4	60	5,700
★ 04-00230-00220	2.2	4.4	6.6		2.1	9°	4	60	5,700
★ 04-00230-00230	2.3	4.6	6.9		2.2	9°	4	60	5,700
★ 04-00230-00240	2.4	4.8	7.2		2.3	9°	4	60	5,700
★ 04-00230-00250	2.5	5	7.5		2.4	9°	4	60	5,700
★ 04-00230-00260	2.6	5.2	7.8		2.45	9°	4	60	5,700
★ 04-00230-00270	2.7	5.4	8.1		2.55	9°	4	60	5,700
★ 04-00230-00280	2.8	5.6	8.4		2.65	9°	4	60	5,700
★ 04-00230-00290	2.9	5.8	8.7		2.75	9°	4	60	5,700
★ 04-00230-00300	3	6	9		2.85	9°	6	60	5,900
★ 04-00230-00310	3.1	6.2	9.3		2.9	9°	6	60	6,400
★ 04-00230-00320	3.2	6.4	9.6		3	9°	6	60	6,400
★ 04-00230-00330	3.3	6.6	9.9		3.1	9°	6	60	6,400
★ 04-00230-00340	3.4	6.8	10.2		3.2	9°	6	60	6,400
★ 04-00230-00350	3.5	7	10.5		3.3	9°	6	60	6,400
★ 04-00230-00360	3.6	7.2	10.8	B	3.4	9°	6	60	6,700
★ 04-00230-00370	3.7	7.4	11.1		3.5	9°	6	60	6,700
★ 04-00230-00380	3.8	7.6	11.4		3.6	9°	6	60	6,700
★ 04-00230-00390	3.9	7.8	11.7		3.7	9°	6	60	6,700
★ 04-00230-00400	4	8	12		3.8	9°	6	60	6,700
★ 04-00230-00410	4.1	8.2	12.3		3.9	9°	6	60	7,200
★ 04-00230-00420	4.2	8.4	12.6		4	9°	6	60	7,200
★ 04-00230-00430	4.3	8.6	12.9		4.1	9°	6	60	7,200
★ 04-00230-00440	4.4	8.8	13.2		4.2	9°	6	60	7,200
★ 04-00230-00450	4.5	9	13.5		4.3	9°	6	60	7,200
★ 04-00230-00460	4.6	9.2	13.8		4.4	9°	6	60	7,700
★ 04-00230-00470	4.7	9.4	14.1		4.5	9°	6	60	7,700
★ 04-00230-00480	4.8	9.6	14.4		4.6	9°	6	60	7,700
★ 04-00230-00490	4.9	9.8	14.7		4.7	9°	6	60	7,700
★ 04-00230-00500	5	10	15		4.8	9°	6	60	7,700
★ 04-00230-00510	5.1	10.2	15.3		4.9	9°	6	60	8,100
★ 04-00230-00520	5.2	10.4	15.6		5	9°	6	60	8,100
★ 04-00230-00530	5.3	10.6	15.9		5.1	9°	6	60	8,100
★ 04-00230-00540	5.4	10.8	16.2		5.2	9°	6	60	8,100
★ 04-00230-00550	5.5	11	16.5		5.3	9°	6	60	8,100
★ 04-00230-00560	5.6	11.2	16.8		5.4	9°	6	60	8,500
★ 04-00230-00570	5.7	11.4	17.1		5.5	9°	6	60	8,500
★ 04-00230-00580	5.8	11.6	17.4		5.6	9°	6	60	8,500
★ 04-00230-00590	5.9	11.8	17.7		5.7	9°	6	60	8,500
★ 04-00230-00600	6	12	18		5.8	–	6	60	8,500

MFD
无限涂层平底钻头
MUGEN COATING Flat Drill
钻头 Drill
涂层 Coating
碳素钢 Carbon Steel P
合金钢 Alloy Steel P
调质钢 Prehardened Steel P
不锈钢 Stainless Steel M
铝合金 Aluminium Alloy N
铜合金 Copper N
钻头 Drill

MFD

切削参数参考表
Recommended Milling Conditions

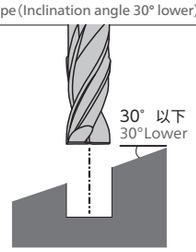
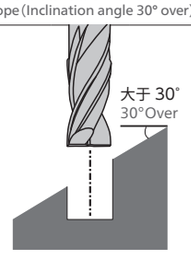
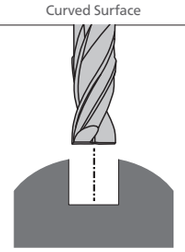
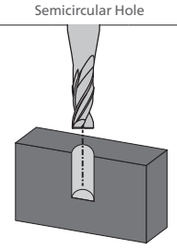
加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM440			不锈钢 Stainless Steels SUS304			铝合金 Aluminium Alloy A5052			铝合金压铸件 Aluminium Alloy Die Casting ADC		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	1次进给量 Feed per Revolution	主轴转速 Spindle Speed	进给速度 Feed	1次进给量 Feed per Revolution	主轴转速 Spindle Speed	进给速度 Feed	1次进给量 Feed per Revolution	主轴转速 Spindle Speed	进给速度 Feed	1次进给量 Feed per Revolution	主轴转速 Spindle Speed	进给速度 Feed	1次进给量 Feed per Revolution
	min^{-1}	mm/min	mm/rev	min^{-1}	mm/min	mm/rev	min^{-1}	mm/min	mm/rev	min^{-1}	mm/min	mm/rev	min^{-1}	mm/min	mm/rev
0.1	36,000	15	0.0004	34,000	10	0.0003	20,000	5	0.0003	40,000	45	0.0011	40,000	35	0.0009
0.2	32,000	30	0.0009	30,000	20	0.0007	17,000	10	0.0006	36,000	90	0.0025	36,000	70	0.0019
0.3	30,000	60	0.002	28,000	40	0.0014	15,000	15	0.001	34,000	140	0.0041	34,000	110	0.0032
0.4	28,000	90	0.0032	26,000	60	0.0023	13,000	15	0.0012	32,000	180	0.0056	32,000	140	0.0044
0.5	26,000	120	0.0046	24,000	85	0.0035	11,000	20	0.0018	30,000	210	0.007	30,000	170	0.0057
0.6	24,000	140	0.0058	22,000	100	0.0045	10,000	20	0.002	28,000	240	0.0086	28,000	190	0.0068
0.7	22,000	160	0.0073	21,000	120	0.0057	9,000	25	0.0028	26,000	260	0.01	26,000	210	0.0081
0.8	21,000	180	0.0086	20,000	140	0.007	8,000	25	0.0031	24,000	280	0.0117	24,000	220	0.0092
0.9	20,000	200	0.01	19,000	160	0.0084	7,000	30	0.0043	22,000	300	0.0136	22,000	240	0.0109
1	19,000	250	0.013	18,000	180	0.01	6,500	35	0.005	20,000	360	0.018	20,000	300	0.015
2	10,500	370	0.035	10,000	200	0.02	3,600	35	0.01	20,000	720	0.036	20,000	600	0.03
3	8,000	430	0.054	6,800	300	0.044	2,500	40	0.016	15,000	1,000	0.067	13,000	760	0.058
4	6,000	430	0.072	5,200	320	0.062	2,400	60	0.025	11,000	1,000	0.091	10,000	760	0.076
5	4,800	430	0.09	4,200	320	0.076	1,900	60	0.032	9,000	1,000	0.111	8,000	760	0.095
6	4,000	430	0.108	3,600	320	0.089	1,600	80	0.05	7,500	1,000	0.133	6,600	760	0.115

备 注 Notes

※1 推荐孔深为2D（刀具直径×2）。
※2 切削点及钻槽的冷却液供应必须充足。
※3 请充分考虑机床刚性、刀夹刚性以及工件夹具刚性的基础上调整切削参数。
※4 进行斜面、曲面以及半圆孔加工时，请参考下述的图表设定切削参数。
※5 安装刀具时，请尽量抑制刀具的偏摆量。
※6 加工期间发生切屑堵塞时，建议采用分级加工方式。
※7 建议使用水溶性切削油。

※1 Recommend drilling depth is 2D.
※2 Coolant must supply correctly to the point of drilling or flute.
※3 Adjust drilling condition conforming to machine rigidity, holder rigidity and clamping condition.
※4 Refer below table for recommended drilling condition in case of drilling on curved surface, inclined surface or semicircular hole.
※5 Minimize chucking runout.
※6 When chip can not be disposed, apply step feed.
※7 Water soluble fluid is recommended.

各种加工形状的切削参数基准
Recommended Drilling Conditions Depending on Work Shape

斜面（倾斜角30°以下） Slope (Inclination angle 30° lower)		斜面（倾斜角大于30°） Slope (Inclination angle 30° over)			曲面 Curved Surface		半圆孔加工 Semicircular Hole		
									
直径 Dia.	进给速度 Feed	直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	直径 Dia.	进给速度 Feed	直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed
ϕ0.1～4.5	70%	ϕ0.1～4.5	80%	50%	ϕ0.1～6	90%	ϕ0.1～4.5	80%	40%
ϕ4.6～6	40%	ϕ4.6～6	80%	30%			ϕ4.6～6	80%	30%



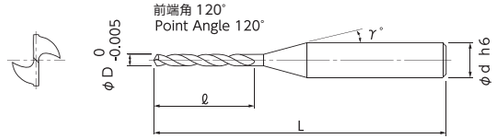
涂层 Coating
钻头 Drill
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
钻头 Drill

小径钻头。

Miniature pivot drill. Maximum flute length is L/D≈16

MG 2 30° Drill





- 采用无限涂层，实现了长时间安定的孔加工！
- 适用于精密零件加工的高精度规格。直径公差精度 0 ～ -0.005mm。
- Stable and long-life drill realized by MUGEN COATING.
- High accuracy suitable for precision machining. Tolerance of diameter : 0/-0.005mm.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00200-00100	0.1	1.2	15°	3	38	6,300
04-00200-00110	0.11	1.2	15°	3	38	6,300
04-00200-00120	0.12	1.4	15°	3	38	6,300
04-00200-00130	0.13	1.4	15°	3	38	6,300
04-00200-00140	0.14	1.4	15°	3	38	6,300
04-00200-00150	0.15	1.8	15°	3	38	5,400
04-00200-00160	0.16	1.8	15°	3	38	5,700
04-00200-00170	0.17	1.8	15°	3	38	5,700
04-00200-00180	0.18	2.1	15°	3	38	5,700
04-00200-00190	0.19	2.1	15°	3	38	5,700
04-00200-00200	0.2	2.4	15°	3	38	4,600
04-00200-00210	0.21	2.4	15°	3	38	5,300
04-00200-00220	0.22	2.6	15°	3	38	5,300
04-00200-00230	0.23	2.6	15°	3	38	5,300
04-00200-00240	0.24	2.6	15°	3	38	5,300
04-00200-00250	0.25	3	15°	3	38	5,300
04-00200-00260	0.26	3	15°	3	38	4,900
04-00200-00270	0.27	3	15°	3	38	4,900
04-00200-00280	0.28	3.3	15°	3	38	4,900
04-00200-00290	0.29	3.3	15°	3	38	4,900
04-00200-00300	0.3	5	15°	3	38	4,100
04-00200-00310	0.31	5	15°	3	38	4,900
04-00200-00320	0.32	5	15°	3	38	4,900
04-00200-00330	0.33	5	15°	3	38	4,900
04-00200-00340	0.34	5	15°	3	38	4,900
04-00200-00350	0.35	5	15°	3	38	4,400
04-00200-00360	0.36	5	15°	3	38	4,900
04-00200-00370	0.37	5	15°	3	38	4,900
04-00200-00380	0.38	5	15°	3	38	4,900
04-00200-00390	0.39	5	15°	3	38	4,900

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00200-00400	0.4	6	15°	3	38	4,100
04-00200-00410	0.41	6	15°	3	38	4,900
04-00200-00420	0.42	6	15°	3	38	4,900
04-00200-00430	0.43	6	15°	3	38	4,900
04-00200-00440	0.44	6	15°	3	38	4,900
04-00200-00450	0.45	6	15°	3	38	4,400
04-00200-00460	0.46	6	15°	3	38	4,900
04-00200-00470	0.47	6	15°	3	38	4,900
04-00200-00480	0.48	6	15°	3	38	4,900
04-00200-00490	0.49	6	15°	3	38	4,900
04-00200-00500	0.5	6	15°	3	38	4,400
04-00200-00510	0.51	6	15°	3	38	4,400
04-00200-00520	0.52	6	15°	3	38	4,400
04-00200-00530	0.53	6	15°	3	38	4,400
04-00200-00540	0.54	6	15°	3	38	4,400
04-00200-00550	0.55	6	15°	3	38	3,600
04-00200-00560	0.56	6	15°	3	38	4,400
04-00200-00570	0.57	6	15°	3	38	4,400
04-00200-00580	0.58	6	15°	3	38	4,400
04-00200-00590	0.59	6	15°	3	38	4,400
04-00200-00600	0.6	7	15°	3	38	3,000
04-00200-00610	0.61	7	15°	3	38	4,400
04-00200-00620	0.62	7	15°	3	38	4,400
04-00200-00630	0.63	7	15°	3	38	4,400
04-00200-00640	0.64	7	15°	3	38	4,400
04-00200-00650	0.65	7	15°	3	38	3,600
04-00200-00660	0.66	7	15°	3	38	4,400
04-00200-00670	0.67	7	15°	3	38	4,400
04-00200-00680	0.68	7	15°	3	38	4,400
04-00200-00690	0.69	7	15°	3	38	4,400

订购方法 How to Order
请指定MDR-R 直径(D)。
When you order, indicate MDR-R (D).
※(γ)为参考值。
※(γ) is reference value.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

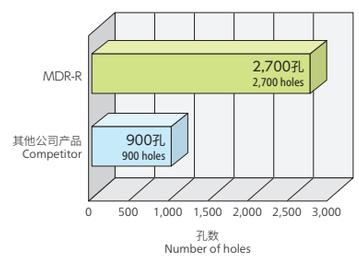
产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00200-00700	0.7	8	15°	3	38	3,000
04-00200-00710	0.71	8	15°	3	38	4,400
04-00200-00720	0.72	8	15°	3	38	4,400
04-00200-00730	0.73	8	15°	3	38	4,400
04-00200-00740	0.74	8	15°	3	38	4,400
04-00200-00750	0.75	8	15°	3	38	3,600
04-00200-00760	0.76	8	15°	3	38	4,400
04-00200-00770	0.77	8	15°	3	38	4,400
04-00200-00780	0.78	8	15°	3	38	4,400
04-00200-00790	0.79	8	15°	3	38	4,400
04-00200-00800	0.8	8	15°	3	38	3,000
04-00200-00810	0.81	8	15°	3	38	4,400
04-00200-00820	0.82	8	15°	3	38	4,400
04-00200-00830	0.83	8	15°	3	38	4,400
04-00200-00840	0.84	8	15°	3	38	4,400
04-00200-00850	0.85	8	15°	3	38	3,600

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00200-00860	0.86	8	15°	3	38	4,400
04-00200-00870	0.87	8	15°	3	38	4,400
04-00200-00880	0.88	8	15°	3	38	4,400
04-00200-00890	0.89	8	15°	3	38	4,400
04-00200-00900	0.9	8	15°	3	38	3,000
04-00200-00910	0.91	8	15°	3	38	4,400
04-00200-00920	0.92	8	15°	3	38	4,400
04-00200-00930	0.93	8	15°	3	38	4,400
04-00200-00940	0.94	8	15°	3	38	4,400
04-00200-00950	0.95	8	15°	3	38	3,600
04-00200-00960	0.96	8	15°	3	38	4,400
04-00200-00970	0.97	8	15°	3	38	4,400
04-00200-00980	0.98	8	15°	3	38	4,400
04-00200-00990	0.99	8	15°	3	38	4,400
04-00200-01000	1	10	15°	3	38	3,000

加工案例 1 Machining Case 1

S50C 通孔加工 Through hole drilling

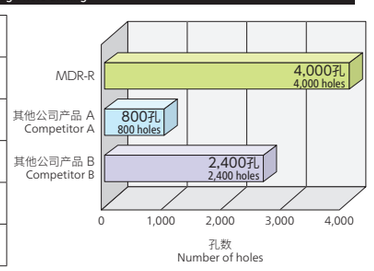
使用刀具 Tool	MDR-R φ1
主轴转速 Spindle speed	10,000 min^{-1}
进给速度 Feed	500 mm/min
分级量 Step feed	0.5 mm
孔深 Depth of hole	9 mm(通孔) Through
冷却方式 Coolant	水溶性切削油 Water soluble fluid



加工案例 2 Machining Case 2

SUS304 通孔加工 Through hole drilling

使用刀具 Tool	MDR-R φ0.5
主轴转速 Spindle speed	7,000 min^{-1}
进给速度 Feed	105 mm/min
分级量 Step feed	0.1 mm
孔深 Depth of hole	4 mm(通孔) Through
冷却方式 Coolant	水溶性切削油 Water soluble fluid



MDR-R

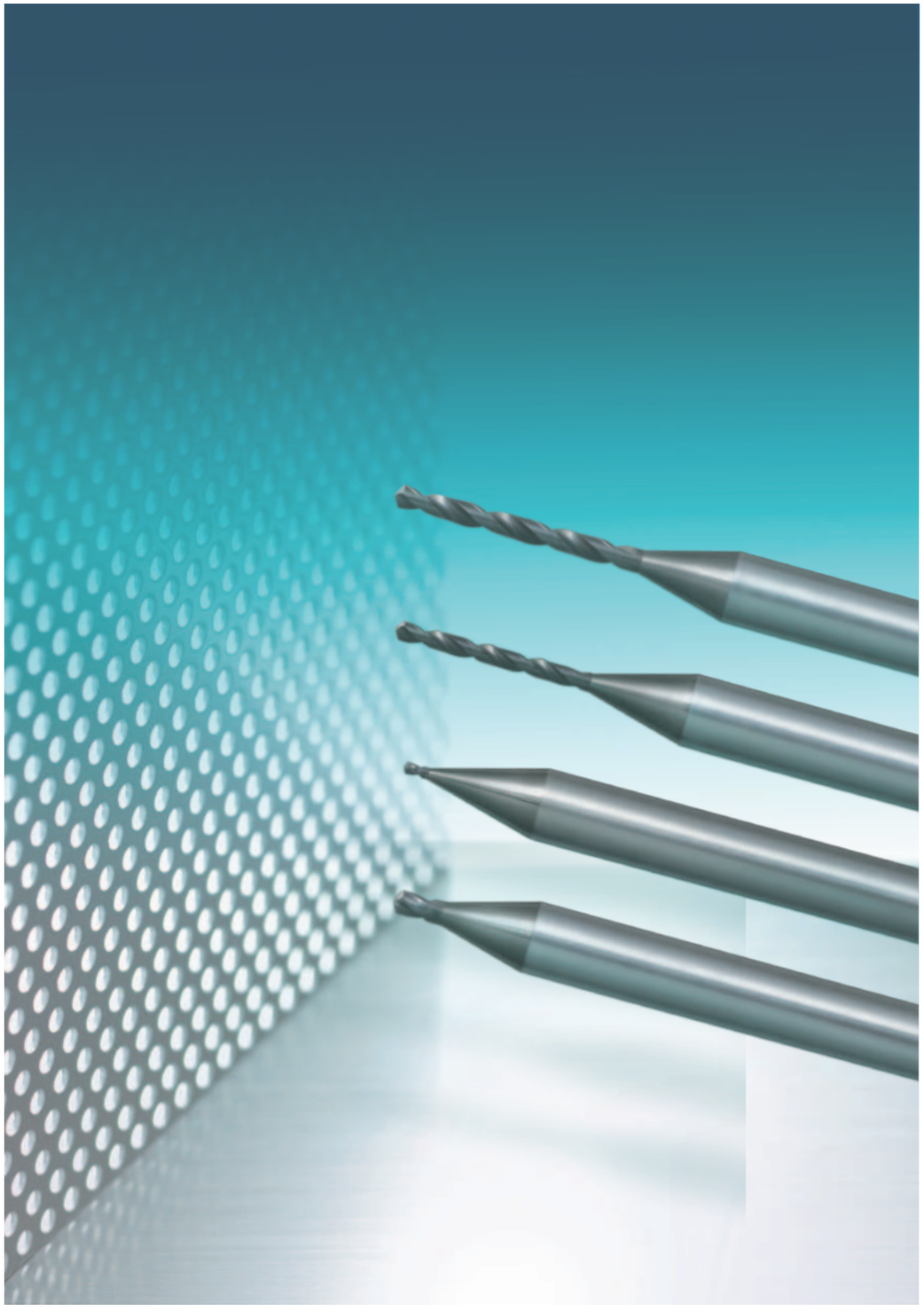
切削参数参考表
Recommended Milling Conditions

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD			调质钢 Prehardened Steels HPM・NAK (～40HRC)			铝合金 Aluminium Alloy A5052			不锈钢 Stainless Steels SUS304		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed
	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm
0.1	25,000	50	0.02	20,000	40	0.02	17,000	35	0.02	25,000	50	0.05	15,000	30	0.005
0.15	25,000	50	0.02	20,000	40	0.02	17,000	35	0.02	25,000	50	0.05	15,000	30	0.005
0.2	25,000	75	0.04	20,000	60	0.04	17,000	50	0.04	25,000	100	0.1	15,000	45	0.01
0.25	25,000	75	0.04	20,000	60	0.04	17,000	50	0.04	25,000	100	0.2	15,000	45	0.01
0.3	20,000	120	0.05	15,000	60	0.05	13,000	50	0.05	22,000	400	0.3	11,000	45	0.02
0.35	20,000	120	0.05	15,000	60	0.05	13,000	50	0.05	22,000	400	0.3	11,000	45	0.02
0.4	20,000	160	0.06	15,000	75	0.06	13,000	65	0.06	22,000	700	0.4	8,500	45	0.04
0.45	20,000	160	0.06	15,000	75	0.06	13,000	65	0.06	22,000	700	0.4	8,500	45	0.07
0.5	18,000	180	0.1	13,000	100	0.1	10,000	80	0.1	20,000	1,000	0.5	7,000	55	0.1
0.55	18,000	180	0.1	13,000	100	0.1	10,000	80	0.1	20,000	1,000	0.5	7,000	55	0.1
0.6	18,000	360	0.15	13,000	100	0.15	10,000	80	0.15	20,000	1,000	0.6	7,000	55	0.12
0.65	18,000	360	0.15	13,000	100	0.15	10,000	80	0.15	20,000	1,000	0.6	7,000	55	0.12
0.7	16,000	480	0.2	11,000	110	0.2	8,000	80	0.2	18,000	1,100	0.7	6,000	60	0.14
0.75	16,000	480	0.2	11,000	110	0.2	8,000	80	0.2	18,000	1,100	0.7	6,000	60	0.14
0.8	16,000	640	0.3	11,000	220	0.3	8,000	160	0.3	18,000	1,100	0.8	6,000	120	0.16
0.85	16,000	640	0.3	11,000	220	0.3	8,000	160	0.3	18,000	1,100	0.8	6,000	120	0.16
0.9	15,000	750	0.4	9,000	270	0.4	7,000	210	0.4	16,000	1,200	0.8	5,000	150	0.18
0.95	15,000	750	0.4	9,000	270	0.4	7,000	210	0.4	16,000	1,200	0.8	5,000	150	0.18
1	15,000	750	0.5	9,000	270	0.5	7,000	210	0.5	16,000	1,200	1	5,000	150	0.2

备注 Notes

※1 请使用适合加工材料和加工内容的冷却方式。
※2 请尽量将主轴转速设为振动较小的转速，并尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※3 请尽量确保加工面平坦后开始加工。
※4 取出或夹持刀具时请务必小心。

※1 Use appropriate coolant for work material and machining description.
※2 Minimize chucking runout by setting spindle speed at minimum oscillation.
(Recommend to measure actual runout at activated Spindle Speed.)
※3 Set up flat surface before start machining.
※4 Take extra care when chucking in and out.



钻头 Drill
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
M 不锈钢 Stainless Steel
N 铝合金 Aluminium Alloy
N 铜合金 Copper
钻头 Drill

MDR-PD

规格 Size ϕ0.1 ～ ϕ1

≦40 HRC

无限涂层 小径定位钻头（底孔加工用）

MUGEN COATING Point Drill (Drill for Guide Hole)

共有10种规格
Total 10 sizes

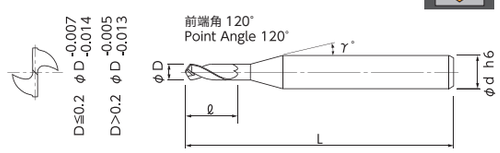
切削参数参考表
Recommended Milling Conditions

小径定位钻头
维持稳定孔加工时所需的底孔加工用

Miniature point drill for aiming at guide hole which brings stable drilling

MG　2　25°　Drill





- 无限涂层小径钻头的底孔加工用钻头。同样可用于薄板的钻孔加工。
- 采用横刃修磨，提升了孔位置精度，实现稳定的孔加工。
- Aiming at guide hole for MUGEN COATING miniature drill. Also used for drilling on thin materials.
- Positioning of drill center is improved by web thinning which brings stable drilling.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(D)直径 Dia.	(ℓ)槽长 Flute Length	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00210-00100	0.1	0.2	15°	3	38	8,600
04-00210-00200	0.2	0.4	15°	3	38	7,800
04-00210-00300	0.3	0.6	15°	3	38	6,600
04-00210-00400	0.4	0.6	15°	3	38	6,600
04-00210-00500	0.5	1	15°	3	38	6,600
04-00210-00600	0.6	1	15°	3	38	6,600
04-00210-00700	0.7	1.2	15°	3	38	6,600
04-00210-00800	0.8	1.2	15°	3	38	6,600
04-00210-00900	0.9	1.8	15°	3	38	6,600
04-00210-01000	1	2	15°	3	38	6,600

订购方法 How to Order

请指定MDR-PD 直径(D)。
When you order, indicate MDR-PD (D).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD			调质钢 Prehardened Steels HPM・NAK (～40HRC)			铝合金 Aluminium Alloy A5052			不锈钢 Stainless Steels SUS304		
直径 Dia.	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed	主轴转速 Spindle Speed	进给速度 Feed	分级量 Step Feed
	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm	min^{-1}	mm/min	mm
0.1	20,000	20	0.01	16,000	16	0.01	14,000	10	0.01	25,000	25	0.01	10,000	10	0.003
0.2	20,000	40	0.02	16,000	32	0.02	14,000	25	0.02	25,000	50	0.02	10,000	20	0.005
0.3	16,000	48	0.02	12,000	35	0.02	10,000	30	0.02	22,000	110	0.02	8,000	20	0.01
0.4	16,000	64	0.03	12,000	40	0.03	10,000	30	0.03	22,000	440	0.03	8,000	25	0.02
0.5	14,000	70	0.05	10,000	40	0.05	8,000	35	0.05	20,000	500	0.05	5,000	25	0.05
0.6	14,000	140	0.07	10,000	40	0.07	8,000	35	0.07	20,000	500	0.07	5,000	25	0.06
0.7	12,000	180	0.1	8,000	40	0.1	6,000	30	0.1	18,000	540	0.1	4,000	20	0.07
0.8	12,000	240	0.15	8,000	80	0.15	6,000	60	0.15	18,000	540	0.15	4,000	40	0.08
0.9	10,000	250	0.2	6,000	90	0.2	5,000	75	0.2	16,000	560	0.2	3,000	45	0.09
1	10,000	250	0.2	6,000	90	0.2	5,000	75	0.2	16,000	560	0.2	3,000	45	0.1

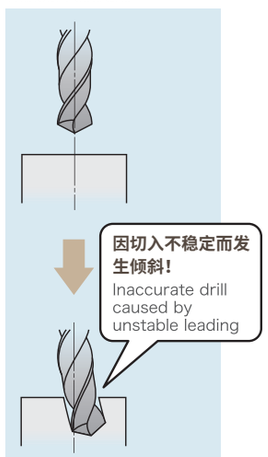
备注 Notes

※1 请使用适合加工材料和加工内容的冷却方式。
※2 请尽量将主轴转速设为振动较小的转速，并尽量抑制刀具的偏摆量。
（可能的话，请确认所用主轴转速下的动态偏摆精度。）
※3 请尽量确保加工面平坦后开始加工。
※4 取出或夹持刀具时请务必小心。

※1 Use appropriate coolant for work material and machining description.
※2 Minimize chucking runout by setting spindle speed at minimum oscillation.
(Recommend to measure actual runout at activated Spindle Speed.)
※3 Set up flat surface before start machining.
※4 Take extra care when chucking in and out.

定位钻头的使用效果 Effect of Point drill

不使用定位钻头
Without Point drill



使用定位钻头
With Point drill



采用定位用钻头，提高了钻孔的位置精度，可抑制倾斜并实现稳定的无偏差加工。
（特别在曲面上开孔时不可缺少。）
Positioning of drill center is improved by point drill which brings stable drilling. (Point drill is required for drilling on a curved surface.)

无限涂层 微径螺纹铣刀（内螺纹用）
MUGEN COATING Micro Thread Cutting Tool (for Internal Thread)

共有13种规格
Total 13 sizes

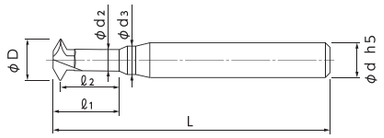
切削参数参考表
Recommended Milling Conditions

MG | 2 | φd h5 | Thread

适用于加工微小径螺纹（内螺纹）。实现S0.1和S0.2的独特标准化，可进行微细、精密的螺纹切削加工

Specialized for miniature internal thread.
NS TOOL original standard of S0.1 and S0.2 for precise micro threading





- 可加工的公称最小直径为0.1mm的内螺纹。
- 对底孔进行螺纹切削加工时，由于刀具直径小于底孔直径，即使刀具折断，也可取出重新加工。
- 采用无限涂层，实现了延长刀具寿命化。
- World smallest threaded size 0.1mm is possible to cut.
- When the tool is broken during thread milling, the wreckages can be easily removed as the tool diameter is smaller than the pilot hole.
- MUGEN COATING realized long tool life.



刀刃形状 2刃
Cutting edge shape 2-Flute

※本刀具请正转使用。
※This Product should be used in the forward rotation.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	规格 Thread Size	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ2)有效螺纹长度 Effective Thread Length	(d2)颈径 Neck Dia.	(d3)颈径 Neck Dia.	(d)柄径 Shank Dia.	(L)全长 Overall Length	刃数 Number of Flute	定价(日元) Retail Price
06-00001-01000	S0.1	0.066	0.15	0.14	0.032	0.185	4	45	2	36,800
06-00001-02000	S0.2	0.14	0.31	0.28	0.07	0.185	4	45	2	33,600
06-00001-03000	S0.3	0.2	0.48	0.44	0.085	0.235	4	45	2	26,300
06-00001-04000	S0.4	0.28	0.61	0.55	0.15	0.315	4	45	2	21,000
06-00001-05000	S0.5	0.35	0.77	0.69	0.17	0.39	4	45	2	17,900
06-00001-06000	S0.6	0.43	0.93	0.83	0.22	0.47	4	45	2	15,800
06-00001-08000	S0.8	0.58	1.24	1.1	0.31	0.62	4	45	2	13,700
06-00001-10000	S1.0	0.73	1.55	1.38	0.41	0.77	4	45	2	11,600
06-00001-10001		0.73	3.17	3	0.41	0.77	4	45	2	11,600
06-00001-12000	S1.2	0.93	1.6	1.38	0.61	0.97	4	45	2	10,500
06-00001-12001		0.93	3.22	3	0.61	0.97	4	45	2	10,500
06-00001-14000	S1.4	1.08	1.9	1.65	0.7	1.14	4	45	2	10,500
06-00001-14001		1.08	3.86	3.6	0.7	1.14	4	45	2	10,500

订购方法 How to Order
请指定MMTS 规格×颈长(ℓ1)。
When you order, indicate MMTS Thread Size×(ℓ1).

- 由于小型螺纹的JIS标准最小为S0.3，因此S0.1、S0.2为NS TOOL的独特尺寸。
- S0.1 and S0.2 are original standard by NS Tool Co., LTD. as a miniature thread standard of JIS is from S0.3.

本公司网站免费提供NC程序软件。 URL
https://www.ns-tool.com/en/download/thread_nc_maker/
※使用前请仔细阅读使用说明书。

规格 Thread Size	外径 Dia.	螺距 Pitch	NS推荐底孔直径 Recommended pilot hole Dia.	NS推荐加工螺旋R*1 Recommended process Helical R	碳素钢 Carbon Steels S50C		不锈钢 Stainless Steels SUS304		铝合金 Aluminium Alloy A5052		纯钛 Titanium Ti	
					主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
			mm	mm	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
S0.1	0.066	0.025	0.075	R0.017*3	20,000	5	20,000	5	20,000	5	20,000	5
S0.2	0.14	0.05	0.15	R0.035*3	20,000	5	20,000	5	20,000	5	20,000	5
S0.3	0.2	0.08	0.23	R0.061*3	20,000	5	20,000	5	20,000	5	20,000	5
S0.4	0.28	0.1	0.32	R0.070	18,000	5	18,000	5	18,000	5	18,000	5
S0.5	0.35	0.125	0.4	R0.088	15,000	10	15,000	10	15,000	10	15,000	10
S0.6	0.43	0.15	0.48	R0.110	12,000	10	12,000	10	12,000	10	12,000	10
S0.8	0.58	0.2	0.64	R0.130	10,000	20	10,000	20	10,000	20	10,000	20
S1.0	0.73	0.25	0.8	R0.155	7,000	50	7,000	50	7,000	50	7,000	50
S1.2	0.93	0.25	1	R0.155	6,000	80	6,000	80	6,000	80	6,000	80
S1.4	1.08	0.3	1.15	R0.190	5,000	100	5,000	100	5,000	100	5,000	100

备 注 Notes

※1 本刀具请正转使用。
※2 请根据主轴回转时的振动或使用机床的情况，必要时将半径向的切深量分成数次进行加工。
※3 使用S0.1、S0.2、S0.3规格时，请务必将半径向的切深量分成数次进行加工。
※4 如有可能，请依据实际外径测量值调整加工螺旋R的最终设定值。
※5 请注意底孔直径会因所用钻头的不同以及主轴回转时的振动情况而改变。
※6 加工螺旋R实际会变为使用本刀具进行螺旋角加工时动作的圆弧R。
※7 如加工后的螺纹呈锥形，请再进行一次零切量加工。
※8 请尽量缩短刀具的伸出量。
※9 拆装刀具或者测量刀具长度时请务必小心。
※10 请使用适合加工材料的冷却方式。
※11 请注意排屑状况。

※1 This product should be used in the forward rotation.
※2 Radial depth of cut may be divided into multiple cutting approaches by condition of spindle runout and machine.
※3 Radial depth of cut must be divided into multiple cutting approaches for the sizes, S0.1, S0.2, and S0.3.
※4 Adjust process helical final value based on measured actual Dia. of the tool if possible.
※5 Care differences of actual pilot hole Dia. caused by runout of a pilot drill and rotation.
※6 Process Helical is a circular radius value of actual tool movement when helical process by MMTS.
※7 Add zero-cut process in case completed thread left deflection angle.
※8 Tool overhang to be as short as possible.
※9 Extra care of handling when tool setting and measuring.
※10 Choose appropriate coolant for each working material.
※11 Care with cutting chip removal.

MMTM

加工螺纹规格 Threading Size M1 ～ M6

≦40 HRC

无限涂层 公制规格螺纹铣刀（内螺纹用）

MUGEN COATING M-Thread Mill (for Internal Thread)

共有11种规格
Total 11 sizes

MG | 4 | 6 | φd h5 | Thread

适用于加工公制螺纹（内螺纹）可进行微细、精密的螺纹切削加工

Specialized for metric internal thread. Available for precise micro threading

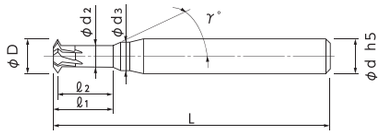


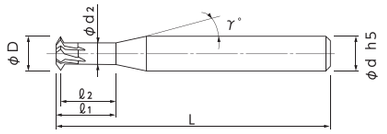
4刃 4-Flute



6刃 6-Flute







- 采用刃部锋利的刀刃形状，提升了加工精度。
- 采用无限涂层，实现了延长刀具寿命化。
- 对底孔进行螺纹切削加工时，由于刀具直径小于底孔直径，即使刀具折断，也可取出重新加工。
- Improvement of cutting accuracy by adoption of tool design focusing on sharpness.
- MUGEN COATING realized long tool life.
- When the tool is broken during thread milling, the wreckages can be easily removed as the tool diameter is smaller than the pilot hole.

※本刀具请正转使用。
※This Product should be used in the forward rotation.



刀刃形状 4刃
Cutting edge shape 4-Flute



刀刃形状 6刃
Cutting edge shape 6-Flute

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	规格 Thread Size	(D)外径 Dia.	(ℓ1)颈长 Under Neck Length	(ℓ2)有效螺纹长度 Effective Thread Length	(d2)颈径 Neck Dia.	(d3)颈径 Neck Dia.	(γ)颈角 Neck Taper Angle	(d)柄径 Shank Dia.	(L)全长 Overall Length	刃数 Number of Flute	加工规格 Thread Milling Size	定价(日元) Retail Price
06-00002-00100	M1	0.72	2.64	2.5	0.36	0.75	30°	4	45	4	M1 M1.1	9,500
06-00002-00120	M1.2	0.92	2.67	2.5	0.56	0.95	30°	4	45	4	M1.2	9,500
06-00002-00140	M1.4	1.05	3.18	3	0.62	1.08	30°	4	45	4	M1.4	9,500
06-00002-00160	M1.6	1.20	3.71	3.5	0.68	1.23	30°	4	45	4	M1.6	9,500
06-00002-00170	M1.7	1.30	3.71	3.5	0.78	1.33	30°	4	45	4	M1.7 M1.8	9,500
06-00002-00200	M2	1.50	5.02	4.8	0.89	–	12°	4	45	6	M2 M2.3	15,800
06-00002-00250	M2.5	1.95	5.7	5.4	1.28	–	12°	4	45	6	M2.5 M2.6	15,800
06-00002-00300	M3	2.36	6.3	6	1.63	–	12°	4	45	6	M3	15,800
06-00002-00400	M4	3.08	8.8	8.4	2.08	–	12°	6	60	6	M4	18,200
06-00002-00500	M5	3.97	10.1	9.6	2.86	–	12°	6	60	6	M5	18,200
06-00002-00600	M6	4.72	12.6	12	3.35	–	12°	6	60	6	M6	18,200

订购方法 How to Order

请指定MMTM规格。
When you order, indicate MMTM Thread Size.

※(γ)为参考值。
※(γ) is reference value.

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URL
https://www.ns-tool.com/en/download/thread_nc_maker/

※使用前请仔细阅读使用说明书。

切削参数参考表

Recommended Milling Conditions

规格 Thread Size	加工规格 Thread Milling Size	外径 Dia.	螺距 Pitch	螺旋R Helical R	NS推荐加工方向 Recommended Process	碳素钢 Carbon Steels S50C 主轴转速 Spindle Speed	进给速度 Feed	每刃进给量 Feed per Tooth	不锈钢 Stainless Steels SUS304 主轴转速 Spindle Speed	进给速度 Feed	每刃进给量 Feed per Tooth	钛合金 Titanium Alloy Ti-6Al-4V 主轴转速 Spindle Speed	进给速度 Feed	每刃进给量 Feed per Tooth	铝合金 Aluminium Alloy A5052 主轴转速 Spindle Speed	进给速度 Feed	每刃进给量 Feed per Tooth
		mm		mm		min^{-1}	mm/min	mm/tooth	min^{-1}	mm/min	mm/tooth	min^{-1}	mm/min	mm/tooth	min^{-1}	mm/min	mm/tooth
M1	M1	0.72	0.25	R0.155	逆铣 Up-cut	35,000	600	0.004	35,000	600	0.004	18,000	150	0.002	45,000	1,000	0.006
M1	M1.1	0.72	0.25	R0.205	逆铣 Up-cut	35,000	600	0.004	35,000	600	0.004	18,000	150	0.002	45,000	1,000	0.006
M1.2	M1.2	0.92	0.25	R0.155	逆铣 Up-cut	27,000	600	0.005	27,000	600	0.005	14,000	160	0.003	35,000	1,000	0.007
M1.4	M1.4	1.05	0.3	R0.195	逆铣 Up-cut	24,000	600	0.006	24,000	600	0.006	12,000	180	0.004	30,000	1,000	0.008
M1.6	M1.6	1.2	0.35	R0.22	逆铣 Up-cut	21,000	600	0.007	21,000	600	0.007	10,000	220	0.005	26,000	1,000	0.01
M1.7	M1.7	1.3	0.35	R0.22	逆铣 Up-cut	20,000	600	0.007	20,000	600	0.007	10,000	250	0.006	24,000	1,000	0.01
M1.7	M1.8	1.3	0.35	R0.27	逆铣 Up-cut	20,000	600	0.007	20,000	600	0.007	10,000	250	0.006	24,000	1,000	0.01
M2	M2	1.5	0.4	R0.28	顺铣 Down-cut	12,000	600	0.008	12,000	600	0.008	10,000	500	0.008	20,000	1,200	0.01
M2	M2.3	1.5	0.4	R0.43	顺铣 Down-cut	12,000	600	0.008	12,000	600	0.008	10,000	500	0.008	20,000	1,200	0.01
M2.5	M2.5	1.95	0.45	R0.305	顺铣 Down-cut	12,000	600	0.008	12,000	600	0.008	10,000	500	0.008	16,000	1,200	0.012
M2.5	M2.6	1.95	0.45	R0.355	顺铣 Down-cut	12,000	600	0.008	12,000	600	0.008	10,000	500	0.008	16,000	1,200	0.012
M3	M3	2.36	0.5	R0.36	顺铣 Down-cut	8,000	600	0.012	8,000	600	0.012	8,000	500	0.01	10,000	1,200	0.02
M4	M4	3.08	0.7	R0.5	顺铣 Down-cut	5,700	400	0.012	5,700	400	0.012	4,600	350	0.013	7,000	800	0.019
M5	M5	3.97	0.8	R0.555	顺铣 Down-cut	4,000	400	0.017	4,000	400	0.017	3,200	350	0.018	5,500	800	0.024
M6	M6	4.72	1	R0.68	顺铣 Down-cut	3,200	400	0.021	3,200	400	0.021	3,000	350	0.019	4,500	800	0.03

备 注 Notes

※1 本刀具请正转使用。
※2 本公司网站免费提供NC程序软件。
※3 本切削参数是使用水溶性切削油，分2次进行加工时的参考基准。
※4 必须事先使用钻头等加工底孔。
※5 请以每刃进给量为基准，根据加工环境因素调整主轴转速和进给速度，以及路径和加工方向等。
※6 螺旋R是最终切削时的R值，为螺纹加工提供参考，M1.4以下为5H，M1.6以上为6H（与传统的JIS2等级相当）。
※7 使用参数表中的螺旋R值时，必须设定底孔直径，避免颈部与底孔发生干涉。
※8 如加工后的螺纹呈锥形，请再进行一次零切量加工。
※9 请使用适合加工材料的冷却方式。

※1 This Product should be used in the forward rotation.
※2 Software for generating NC program Will be provided on NS web site.
※3 The above Recommended Milling Conditions is provided as a guide for cutting when the depth of cut is divided into twice with water-soluble fluid.
※4 Recommend making pilot hole in advance by using drill, etc.
※5 Depending on environment, adjustments of spindle speed based on feed per tooth, feed, number of paths and cutting direction are needed.
※6 Helical R, 5H for M1.4 and under and 6H for more than M1.6, is a guideline for thread milling and it is R value in the final cutting.
※7 When use helical R in the Recommended Milling Conditions, set pilot hole dia. for avoiding interference between the area of under neck and pilot hole.
※8 Add zero-cut process in case completed thread left deflection angle.
※9 Choose appropriate coolant for each working material.

NSCV-M

规格 Size φ4 φ6

≦52 HRC

无限涂层 斜面加工用倒角刀
MUGEN COATING Chamfer Cutter

共有2种规格
Total 2 sizes

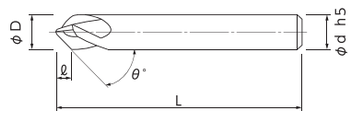
切削参数参考表
Recommended Milling Conditions

MG 3 φd h5 C

斜面加工用倒角刀。采用大前角，提高锋利度，可实现优质的加工面和减少毛刺。钢材用

Specialized for cutting at chamfering. Sharp edge with high rake angle realizes good surface quality and reduces burr. For steel





- 可轻松进行斜面加工。
- 采用无限涂层，耐磨性获得了飞跃性的提升。
- It can be cut at the corner easily.
- Tool life is exceptionally as MUGEN COATING provides additional wear resistance.

单位 [规格：mm／价格：日元]
Unit [Size : mm / Retail Price : JPY]

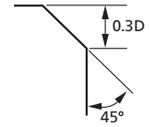
产品代码 Code No.	(D)外径 Dia.	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00260-00400	4	45°	2	4	60	11,600
04-00260-00600	6	45°	3	6	70	13,200

订购方法 How to Order

请指定NSCV-M 外径(D)。
When you order, indicate NSCV-M (D).

外径 Dia.	碳素钢 Carbon Steels S50C		不锈钢 Stainless Steels SUS304		调质钢 Prehardened Steels HPM・NAK	
	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min	min^{-1}	mm/min	min^{-1}	mm/min
4	6,500	580	6,000	540	4,500	400
6	4,300	380	4,000	360	3,000	270

切深量 Depth of Cut



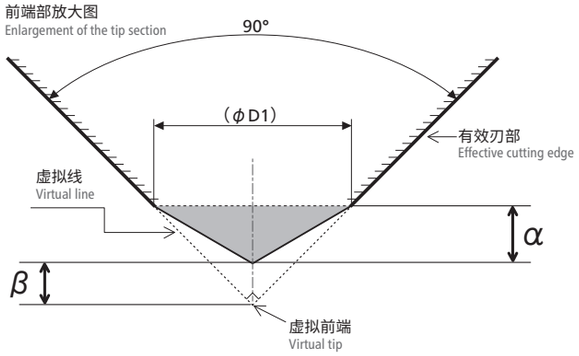
D：外径 (Dia.)

备　注 Notes

※1 本参数表中的刀具伸出量是4D的参考值。如果想要加长伸出量，请调整加工参数。
※2 请以相同的比率调整主轴转速和进给速度。
※3 请使用刚性较大的铣刀刀柄和机床。
※4 请使用适合加工材料的冷却方式。
※1 The above milling conditions are the value of reference for 4D, it needs adjustments of the conditions when it is longer.
※2 Adjust both spindle speed and feed at the same rate.
※3 Machine, tool chuck must be sufficiently rigid.
※4 Choose appropriate coolant for each working material.

使用注意事项
Precaution for use

前端部放大图
Enlargement of the tip section



单位 [mm]
Unit [mm]

外径 Dia.	α	β	(φD1)
4	0.15	0.06	0.42
6	0.45	0.15	1.2

※刀具前端的α部并非刀具的刃部，不能当作刀刃使用，请调整切削点。
※刀具前端α部的前端角不是90°，加工时必须以虚拟前端为基准，往ap方向补偿β部分的值。如果不进行调整，会导致倒角比目标值更大，敬请注意。
※ Required adjustments of the cut points to avoid using α part because its tool tip has no cutting edges.
※ Because the tool tip α part of point angle is not 90°, the value of β must be offset in the ap direction during machining on virtual tip basis.
In case of no adjustments, it requires attention because chamfer will be bigger than targeted value.

倒角 Chamfering
涂层 Coating
P 碳素钢 Carbon Steel
P 合金钢 Alloy Steel
P 调质钢 Prehardened Steel
M 不锈钢 Stainless Steel
倒角 Chamfering

NSCV

规格
Size φ4 φ6

MG ≦40 HRC

斜面加工用倒角刀
Chamfer Cutter

共有2种规格
Total 2 sizes

切削参数参考表
Recommended Milling Conditions

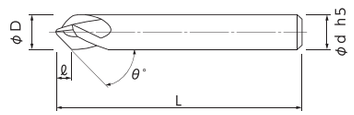
斜面加工用倒角刀。采用大前角，提高锋利度，可实现优质的加工面和减少毛刺。非铁金属用

Specialized for cutting at chamfering. Sharp edge with high rake angle realizes good surface quality and reduces burr. For non-ferrous metal

3 φd h5 C







- 可轻松进行斜面加工。
- It can be cut at the corner easily.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

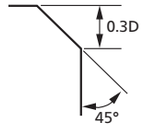
产品代码 Code No.	(D)外径 Dia.	(θ)锥度半角 Taper Angle	(ℓ)刃长 Length of Cut	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
04-00250-00400	4	45°	2	4	60	10,000
04-00250-00600	6	45°	3	6	70	11,600

订购方法 How to Order

请指定NSCV 外径(D)。
When you order, indicate NSCV (D).

外径 Dia.	铝合金 Aluminium Alloy A5052	
	主轴转速 Spindle Speed	进给速度 Feed
	min^{-1}	mm/min
4	11,000	2,400
6	7,500	1,800

切深量 Depth of Cut



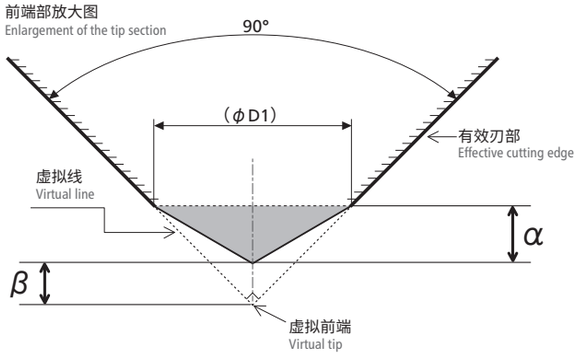
D:外径 (Dia.)

备 注 Notes

※1 本参数表中的刀具伸出量是4D的参考值。如果想要加长伸出量，请调整加工参数。
※2 请以相同的比率调整主轴转速和进给速度。
※3 请使用刚性较大的铣刀刀柄和机床。
※4 请使用适合加工材料的冷却方式。
※1 The above milling conditions are the value of reference for 4D, it needs adjustments of the conditions when it is longer.
※2 Adjust both spindle speed and feed at the same rate.
※3 Machine, tool chuck must be sufficiently rigid.
※4 Choose appropriate coolant for each working material.

使用注意事项
Precaution for use

前端部放大图
Enlargement of the tip section



单位 [mm]
Unit [mm]

外径 Dia.	α	β	(φD1)
4	0.15	0.06	0.42
6	0.45	0.15	1.2

※刀具前端的α部并非刀具的刃部，不能当作刀刃使用，请调整切削点。
※刀具前端α部的前端角不是90°，加工时必须以虚拟前端为基准，往ap方向补偿β部分的值。如果不进行调整，会导致倒角比目标值更大，敬请注意。
※ Required adjustments of the cut points to avoid using α part because its tool tip has no cutting edges.
※ Because the tool tip α part of point angle is not 90°, the value of β must be offset in the ap direction during machining on virtual tip basis.
In case of no adjustments, it requires attention because chamfer will be bigger than targeted value.

倒角 Chamfering
无涂层 Non-Coating
N 铝合金 Aluminium Alloy
N 铜合金 Copper
O 树脂 Resin
倒角 Chamfering

规格 Size R0.1 ～ R5

≦52 HRC

无限涂层 内圆弧R角刀

MUGEN COATING 2-Flute Inner Radius Cutter

共有29种规格
Total 29 sizes

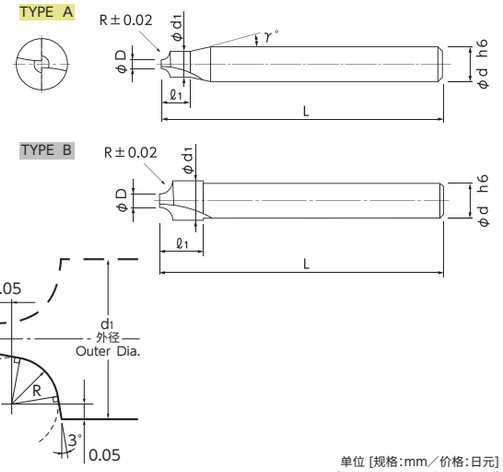
切削参数参考表
Recommended Milling Conditions

R倒角加工用倒角刀。可对应各种加工材料

Specialized for cutting at corner radius on various materials

SMG 2 R





- 适用于NC、MC。可轻松进行R倒角加工。
- 采用无限涂层，耐磨性获得了飞跃性的提升。
- It is suitable for both machining NC and MC and can be cut at the corner radius easily.
- Tool life is exceptionally extended as MUGEN COATING provides additional wear resistance.

单位 [规格:mm／价格:日元]
Unit [Size : mm / Retail Price : JPY]

产品代码 Code No.	(R) R Radius	(D)前端刃径 Dia.	(d1)外径 Outer Dia.	(ℓ1)外径长度 Outer Dia. Length	(γ)颈角 Neck Taper Angle	形状 Type	(d)柄径 Shank Dia.	(L)全长 Overall Length	定价(日元) Retail Price
08-00900-00100	R0.1	0.5	0.8	3	12°	A	4	45	13,900
08-00900-00150	R0.15	0.5	0.9	3	12°		4	45	13,900
08-00900-00200	R0.2	0.5	1	3	12°		4	45	13,900
08-00900-00250	R0.25	0.5	1.1	3	12°		4	45	13,900
08-00900-00300	R0.3	0.5	1.2	3	12°		4	45	11,300
08-00900-00350	R0.35	0.5	1.3	3	12°		4	45	11,300
08-00900-00400	R0.4	0.5	1.4	3	12°		4	45	11,300
08-00900-00450	R0.45	0.5	1.5	3	12°		4	45	11,300
08-00900-00500	R0.5	0.5	1.6	5	12°		4	45	11,300
08-00900-00550	R0.55	0.5	1.7	5	12°		4	45	11,300
08-00900-00600	R0.6	0.5	1.8	5	12°		4	45	8,500
08-00900-00650	R0.65	0.5	1.9	5	12°		4	45	8,500
08-00900-00700	R0.7	0.5	2	5	12°		4	45	8,500
08-00900-00750	R0.75	0.5	2.1	5	12°		4	45	8,500
08-00900-00800	R0.8	0.8	2.5	5	12°		4	45	8,500
08-00900-00850	R0.85	0.8	2.6	5	12°		4	45	8,500
08-00900-00900	R0.9	0.8	2.7	5	12°		4	45	8,500
08-00900-00950	R0.95	0.8	2.8	5	12°		4	45	8,500
08-00900-01000	R1	0.8	2.9	8	12°		4	45	9,800
08-00900-01250	R1.25	0.8	3.4	8	12°		4	45	9,800
08-00900-01500	R1.5	1.5	4.6	8	–	B	4	45	9,800
08-00900-01750	R1.75	1.5	5.1	8	–		4	45	9,800
08-00900-02000	R2	1.5	5.6	10	–		4	45	9,800
08-00900-02500	R2.5	1.5	6.6	10	–		6	45	13,000
08-00900-03000	R3	1.5	7.6	12	45°	A	8	55	13,200
08-00900-03500	R3.5	2	9.1	12	45°		10	55	16,600
08-00900-04000	R4	2	10.1	12	–	B	10	55	14,400
08-00900-04500	R4.5	2	11.1	15	45°	A	12	65	17,700
08-00900-05000	R5	2	12.1	15	–	B	12	65	16,300

订购方法 How to Order

请指定MIR200 球头半径(R)。
When you order, indicate MIR200 (R).

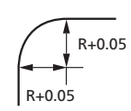
※(γ)为参考值。
※(γ) is reference value.

加工材料 Work Material	碳素钢 Carbon Steels S50C			合金钢 Alloy Steels SCM・SKD・SUS			调质钢 Prehardened Steels HPM・NAK		
切削速度 Cutting Speed	30～40m/min			20～30m/min			15～25m/min		
R	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min-1	mm/min		min-1	mm/min		min-1	mm/min	
		粗加工 Roughing	精加工 Finishing		粗加工 Roughing	精加工 Finishing		粗加工 Roughing	精加工 Finishing
0.1	18,500	60	100	13,300	50	70	10,600	40	60
0.2	16,000	60	100	11,400	50	70	9,100	40	60
0.3	14,000	60	100	10,000	50	70	8,000	40	60
0.4	12,500	60	100	8,800	50	70	7,100	40	60
0.5	11,000	60	100	8,000	50	70	6,400	40	60
0.75	9,000	60	100	6,400	50	70	5,100	40	60
0.8	7,000	60	100	5,000	50	70	4,900	40	60
1	6,200	60	100	4,400	50	70	4,200	40	60
1.25	5,400	60	100	3,900	50	70	3,600	40	60
1.5	3,700	60	100	2,700	50	70	3,200	40	60
1.75	3,400	60	100	2,400	50	70	2,800	40	60
2	3,200	60	100	2,300	50	70	2,500	40	60
2.5	2,800	60	100	2,000	50	70	2,100	40	60
3	2,500	60	100	1,800	50	70	1,800	40	60
3.5	2,000	60	100	1,400	50	70	1,600	40	60
4	1,850	60	100	1,300	50	70	1,400	40	60
4.5	1,700	60	100	1,200	50	70	1,300	40	60
5	1,600	60	100	1,100	50	70	1,200	40	60

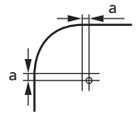
切深量 Depth of Cut

(R:球头半径 Radius)

粗加工 Roughing



精加工 Finishing



a
R 0.1～0.4=0.02mm
R 0.5～5=0.05mm

备 注 Notes

※1 建议使用切削油。
※2 请将切深量分成数次进行加工。
※1 Use cutting fluid.
※2 Divide the cutting depth into several paths.

3

NS TOOL特点

Features of NS TOOL

致力于保持稳定的高精度和高品质制造

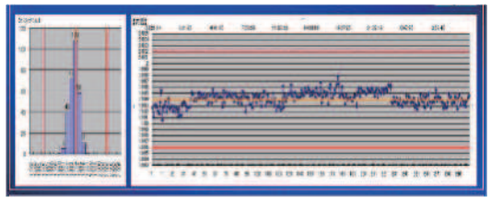
Being particular manufacturing that continues to maintain stable accuracy and quality

日进工具在产品制造方面不仅注重产品本身的高品质，同时重视保持质量的稳定性，可以持续提供同样高精度产品的绝对品质。

What is important in NS TOOL's product manufacturing is not only the high quality, but also the absolute quality of always maintaining the high quality and continuing to deliver the same high-precision products.



NS TOOL自行研发的刀具磨床 TGM
In- house development tool grinder TGM



实现稳定的加工精度
Realize stable production accuracy

发挥外径6mm以下小径规格的优势
日进工具铣刀的精度和品质支持着微细精密加工产业

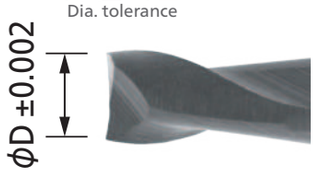
Strengths for small diameter sizes under ϕ 6mm
The accuracy and quality of NS TOOL's end mills support micro and precision machining

日进工具作为小径铣刀的制造商，将产品的稳定性视作企业的首要责任。为实现这一理念采用自行研发的刀具磨床TGM可有效抑制刀具制作时的差异变化，每次都为客户提供精度和品质一致的产品。

NS TOOL, which delivers small-diameter end mills to customers, is responsible for product stability. The in-house developed tool grinding machine TGM, which was developed to realize that desire, has made it possible to suppress product variations and deliver products with stable accuracy and quality to customers every time.

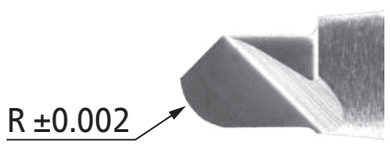


外径公差
Dia. tolerance



NSME230 ϕ0.03 mm

R 精度公差
R tolerance



NSMB100 R0.005 mm

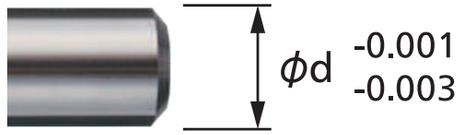
注重作为刀具基准的刀柄精度

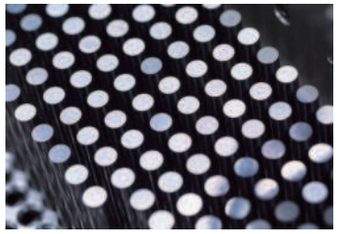
Uncompromising on shank accuracy as the basis of the tools

铣刀的刀柄是作为铣刀与机床连接的重要部分，不论是在使用铣刀时或是制造铣刀时都是如此。刀柄作为铣刀的基准，是奠定高精度的关键环节。日进工具十分注重作为基准的刀柄精度，将精度设定在“－0.001mm～－0.003mm”之间的0.002mm范围内进行生产（部分产品除外）。

The end mill shank is the part that is attached to the machine tool both when using the end mill and when manufacturing the end mill. The shank is the standard for end mills and is a very important part of the basis of high precision. NS TOOL is particular about the accuracy of the shank, which is the standard, and manufactures it in the 2 μm range of "-0.001 mm to -0.003 mm". (Excludes some products.)

刀柄精度
shank accuracy





每道工序过程都进行检查
日进工具提供微细精密加工领域中所需要的精度和品质

Inspections in each process
Support micro precision machining with NS TOOL accuracy and quality

日进工具不仅在最终进行质量检验，在每个生产环节当中也同步实施检测。通过在生产流程的每个阶段进行检测，我们不仅确保了更高的质量水平，而且还建立了一个反馈系统，使我们能够及时发现任何异常情况。

NS TOOL inspects end mills in each process to ensure high quality, and find out any occurred abnormalities at early process by inspective system







稳定供货的责任

Responsibility for stable supply

铣刀是切削加工中不可或缺的刀具，因此我司采取了多项防震措施以确保供应不会中断。除了针对建筑物主体的防震措施外，还充分落实了防止物品翻倒、玻璃防止破散以及针对测量仪、生产设备等等的保护措施。甚至，还自行研发了地震感测仪来加强防震对策。我们的目标是成为世界上最能对抗灾难的工厂，确保不会影响客户的生产进度。

End mills have become indispensable for cutting, and we are working on various earthquake countermeasures so that supply will not be interrupted. In addition to the measures for buildings mentioned above, we also take thorough measures to prevent falls, prevent glass from scattering, and protect measuring instruments and production equipment. As one of them, we also develop our own seismic detector device. We aim to be the most disaster-resistant factory in the world without stopping the production of our customers.





拥有最先进的环境和设备的研发中心

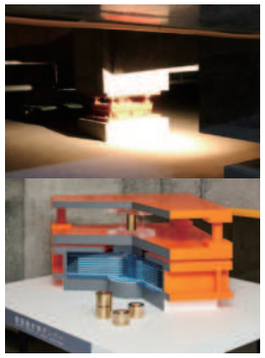
R&D center with the most advanced environment and equipment

采用免震结构并结合防止微震动的阻尼器构造而设计出的「全面免震」系统，可有效减轻会对微细加工造成影响的微震动，进而加速可满足客户需求的新产品与新技术的研发。

此外，还设立了可容纳150人的会议室，积极邀请客户举办各种研讨会，目标成为精密微细加工技术的信息传播中心。

Development of new products and technologies that embody customer needs by adopting "all-round seismic isolation" that combines micro-vibration dampers with seismic isolation devices, which are devices that dampen micro-vibrations that hinder microfabrication. We are accelerating. In addition, we have set up a seminar room that can accommodate 150 people, and actively hold seminars by inviting customers, aiming to be a base for disseminating information on precision and microfabrication technology.



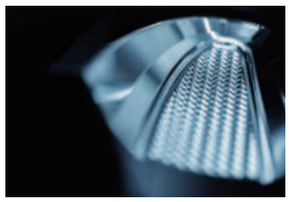


不只是「制造」，还要着重于能为客户「使用」的技术

Be aware of the technology to "use" as well as "make"

在研发过程中，我们不仅「制造」刀具，并且始终从客户的角度出发，站在客户如何「使用」的角度来致力于技术的研发。

At our company, we are always conscious of the user's perspective on how it will be used by our customers, and we are working on technological development not only for "making" but also for "using".





即使是尚未问世的技术，我们也会秉持有朝一日能被使用上的观点来进行研究开发。

今后，我们将持续努力从能比客户「看得更远」的角度去迈向新技术的挑战。

We are conscious of developing things not yet in the world from the perspective of being used.
We will keep to contiune to be bold with any challenge for development while looking a little ahead of the customer's perspective.





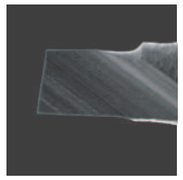
实现微细精密加工用的刀具研发

Tool development realizes micro and precision machining

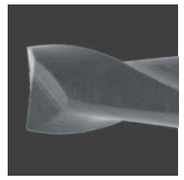
日进工具的最大的优势在于小径规格的铣刀制造技术，例如实现了比头发丝还细，外径0.01mm铣刀的标准品化等其他公司无法模仿的技术。

特别是外径越小的刀具，对于公差的要求也越严格，现在日进工具的无涂层标准品的外径，球头半径以及R角半径的精度，已可实现± 0.002mm的高精度公差。

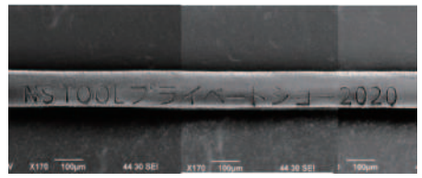
NS TOOL's great strength is that other companies cannot imitate the manufacturing technology for small diameter sizes, such as standardizing end mills that are thinner than hair and have an outer diameter of 0.01 mm. In particular, the requirements for tolerances have become even more stringent when the diameter is small, and we are currently achieving a tolerance range of 0.004 mm for non-coated products with an outer diameter, ball radius, and corner radius.



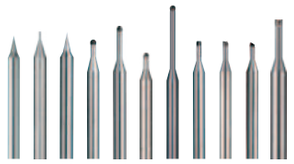
微米系列
NSME100 ϕ0.01 mm



微米系列
NSME230 ϕ0.03 mm



在头发上刻字“NS TOOL プライベートショー 2020”
Milling on hair



CBN铣刀系列
CBN end mill series



PCD铣刀系列
PCD end mill series



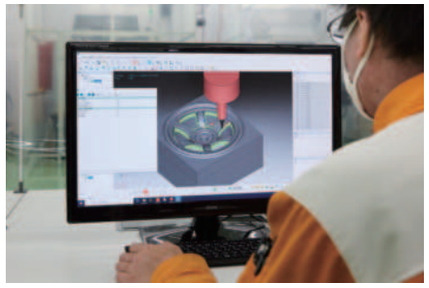
长颈铣刀系列
Long neck end mill series

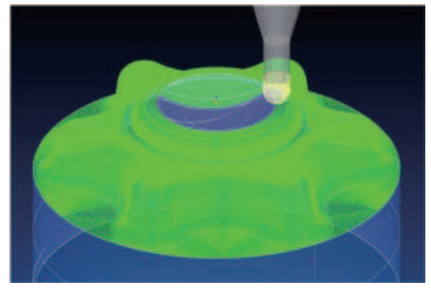
研发出针对微细精密加工用的CAD/CAM

Development of CAD / CAM specialized for fine and precision machining

在研究精密微细加工技术时，刀路轨迹的编程是至关重要的一环。在研究能充分发挥微小径铣刀性能的刀路轨迹的过程中，研发出了CAD/CAM“NS-MicroCAM”。

Tool paths are a very important factor in researching precision and micro fabrication technology. While researching a tool path that allows end mills with a small diameter to fully demonstrate their capabilities, we have also developed a CAD / CAM "NS-Micro CAM".





NS TOOL 刀具材料的介绍 NS TOOL tool material introduction

CBN铣刀 CBN End Mill

CBN(Cubic Boron Nitride ／立方氮化硼）烧结体，硬度仅次于钻石，约为硬质合金的3倍，是具有更高耐热性、热传导性的刀具材料。但是，同时也有强度和韧性低，易崩刃的缺点。在刀具刃尖阻力较大的粗加工中，容易出现崩刃的情况，所以CBN刀具不适合用于粗加工。但在切削阻力小的精加工中，由于CBN优异的硬度和耐热性，可降低刀具磨损，持久的刀具使用寿命，尤其适用于高硬度材料的加工。

CBN(Cubic Boron Nitride) sintered alloy is 3 times harder than Tungsten carbide, second hardest material next to diamond, Moreover strong heat-resistant and high thermal conductivity. However less tough characteristic of CBN often causes chipping of tool edge easily. Accordingly, CBN is recommended for finishing of hard materials with less cutting load on the tool edge, which guarantees extra long tool life.

PCD铣刀 PCD End Mill

PCD是使用微小人造钻石颗粒和结合材料（Co 等）的粉末，通过超高压、高温烧结成的钻石，也称为多晶钻石。与单晶钻石一样，硬度高、耐磨性优异。但因不耐热而用途受限。主要运用于脆性材料的加工中。

PCD consists micron-size artificial diamond powders sintered with binding materials such as Co and etc. at high pressure and temperature. PCD is as hard as Monocrystalline Diamond featuring strong wear-resistance. However the use is limited as being fragile against heat. It is mostly used for the machining of brittle materials.

硬质合金铣刀 Cemented Carbide End Mill

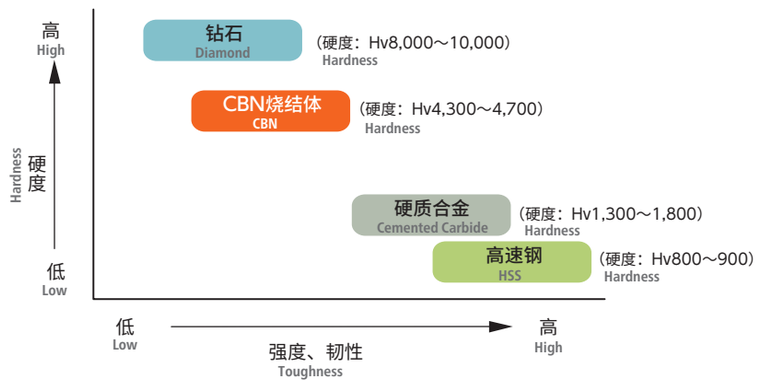
硬质合金铣刀是指以WC（碳化钨）为主要成份，与Co（钴）等粉末原料经高温烧结的硬质合金作为刀具材料制作的铣刀。与高速钢相比，是具有硬度更高、耐磨性更好的高品质刀具。可适用于从粗加工到精加工的广泛用途。

Cemented Carbide End Mill is made by WC (Tungsten carbide) -based sintered metal composed with power materials of Co (Cobalt) and etc. Its hardness higher than HSS (High speed steel) takes advantage on wear-resistance. It is widely used for the machining of various materials from Roughing to Finishing.

单晶钻石铣刀 Monocrystalline Diamond End Mill

用地球上最硬物质的钻石作为刀具材料的铣刀。与PCD 不同，里面并无结合材料，刀刃由1个钻石结晶制成。切削刀刃的刃部非常锋利，可用于切削阻力低的加工，但因工件材料的差异，磨损情况存在很大差别，使其在切削刀具的使用范围受限。主要运用于脆性材料和部分非铁金属材料的加工。

Monocrystalline Diamond End Mill by the hardest material on earth is made by a single crystal on flute unlike PCD consisting various binding materials. Its perfect sharp edge allows milling stress at minimum, while its application range may be limited due to behavior gap of flute wearing against material types. It is mostly used for the machining of brittle materials and non-ferrous metals.



无限白金Plus涂层

MUGEN COATING PREMIUM Plus

可切削加工至70HRC高硬度钢材的“无限白金Plus涂层”是采用三层构造的涂层，分别由耐氧化涂膜层、硬质涂膜层（超微细结晶结构）、高粘合涂膜层（微细结晶结构）组成，可发挥良好的刀具寿命。

MUGEN COATING PREMIUM Plus realizes machining on high hardened steels up to 70HRC. Three layers, oxidation resistant layer, hard coating layer (ultra micro crystal structure), and high adhesion coating layer (micro crystal structure), support excellent tool life.

无限白金涂层

MUGEN COATING PREMIUM

对高硬度钢材进行直接切削加工时，无限白金涂层可大幅提高刀具的使用寿命。适用于～65HRC的高硬度钢材加工。

MUGEN COATING PREMIUM supports the tool life when directly milling on high hardened steels. Suitable for machining on high hardened materials to 65HRC.

无限涂层

MUGEN COATING

“无限涂层”是以TiAlN（氮化铝钛）为基底的涂层，加工高硬度钢材、调质钢、生材、铜等各种加工材料时，也具有很强的耐磨损性和润滑性。

MUGEN COATING is a TiAlN (titanium aluminide) based coating, but it also has strong wear resistance and lubricity against hardened steel, heat-treated steel, raw materials, and copper.

DLC涂层

DLC COATING

DLC（类钻石碳）涂层是具有类似钻石性质的碳素涂膜，兼具钻石和石墨特性的非晶格结构的涂层。硬度高，摩擦系数低，涂膜的表面粗糙度Ra0.02μm，非常光滑。而且耐熔敷性能优异，加工铝合金时可保持优良的精加工表面。

DLC (diamond-like carbon) COATING is a carbon film with diamond-like properties and is an amorphous (non-crystalline) structure coating that has both diamond and graphite. The hardness is high, the coefficient of friction is low, and the surface roughness of the film is Ra 0.02 μm, which is extremely smooth. In addition, it has excellent welding resistance, so it is possible to maintain a good finished surface by processing aluminium alloys.

钻石涂层

DIAMOND COATING

不含结合剂和杂质的高纯度钻石，具有优异的耐磨损性，采用高粘合性的结合技术，可实现极高的稳定性。

High stability is achieved by excellent wear resistance and high adhesion technology made of high-purity diamond that does not contain binders and impurities.

无限微细涂层

MUGEN MICRO COATING

作为日进工具擅长的外径0.1mm以下极小径规格专用涂层而开发，以TiAlN（氮化铝钛）为基底的涂层。

This is a TiAlN (titanium aluminide) -based coating developed as a special coating for ultra-small diameter sizes with an outer diameter of 0.1 mm or less, which NS TOOL specializes in.

无限白金Plus涂层

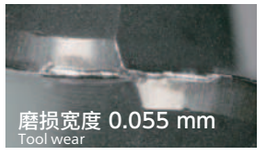
MUGEN COATING PREMIUM Plus

可切削加工至70HRC高硬度钢材，具有很强的耐氧化性和耐磨损性的全新涂层。三层涂膜分别由耐氧化涂膜层、硬质涂膜层（超微细结晶结构）、高粘合涂膜层（微细结晶结构）组成，可发挥良好的刀具寿命。

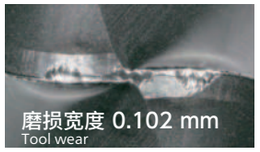
New developed coating with high oxidation resistance and abrasion resistance realizes machining on high hardened steels up to 70HRC. Three layers, Oxidation resistant layer, Hard coating layer (Ultra micro crystal structure), and High adhesion coating layer (micro crystal structure), support excellent tool life.

HAP72 70HRC（粉末高速钢）

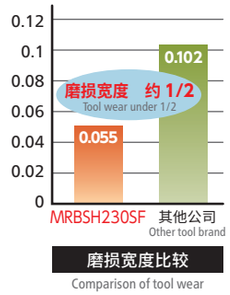
Powder HSS



MRBSH230SF R1× 6



其他公司 高硬度材料用
Other tool brand



n：16,000 min^{-1}　vf：1,200 mm/min　ap 0.1 mm × ae 0.3 mm
油雾　加工时间：80分钟
Oil mist　Machining time：80 min

无限白金涂层

MUGEN COATING PREMIUM

无限白金涂层是对传统无限涂层的进一步改良，直接切削加工高硬度钢材时，可大幅延长刀具的使用寿命，适用于～ 65HRC的高硬度钢材。

MUGEN COATING PREMIUM, improved from MUGEN COATING, supports the extended tool life for direct milling on high hardened steels. Suitable for machining on high hard materials to 65HRC.

HAP40 65HRC（粉末高速钢）

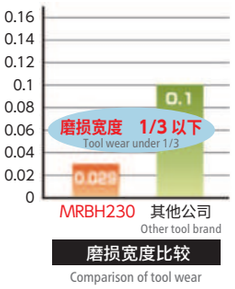
Powder HSS



MRBH230 R1× 6

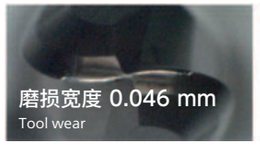


其他公司 高硬度材料用
Other tool brand



n：20,000 min^{-1}　vf：1,600 mm/min　ap 0.15 mm × ae 0.3 mm
油雾　加工时间：18 分钟　加工长度：25 m
Oil mist　Machining time：18 min　Cutting length：25 m

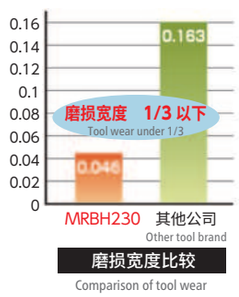
PD613 60HRC（SKD11）



MRBH230 R1× 6



其他公司 高硬度材料用
Other tool brand



n：25,000 min^{-1}　vf：2,000 mm/min　ap 0.2 mm × ae 0.3 mm
油雾　加工时间：62 分钟　加工长度：100 m
Oil mist　Machining time：62 min　Cutting length：100 m

无限涂层

MUGEN COATING

无限涂层是以TiAlN（氮化铝钛）为基底的涂层，加工调质钢、生材、铜等材料时，也具有很强的耐磨损性和润滑性。并且，冷却方式可使用水溶性、油冷、吹气、油雾冷却等，是不挑“加工材质和冷却方式”的优质涂层。

MUGEN COATING based on TiAlN (Titanium Aluminium Nitride), is recommended for hardened steels, pre-hardened steel, raw materials, and copper machining. In addition, the coating supports various type of coolant, such as water soluble fluid, water insoluble fluid, air blow, and oil mist.

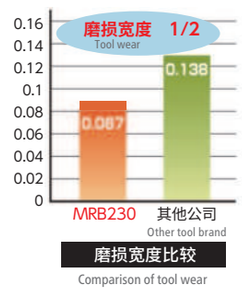
STAVAX 52HRC（SUS420J2）



MRB230 R1× 10

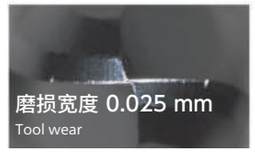


其他公司
Other tool brand



n：10,000min^{-1}　vf：1,500 mm/min　ap 0.1 mm × ae 0.2 mm
水溶性切削油　加工时间：132分钟　加工长度：150 m
Water soluble fluid　Machining time：132 min　Cutting length：150 m

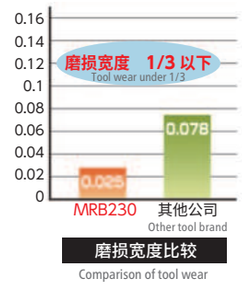
铜合金　Copper



MRB230 R1× 20



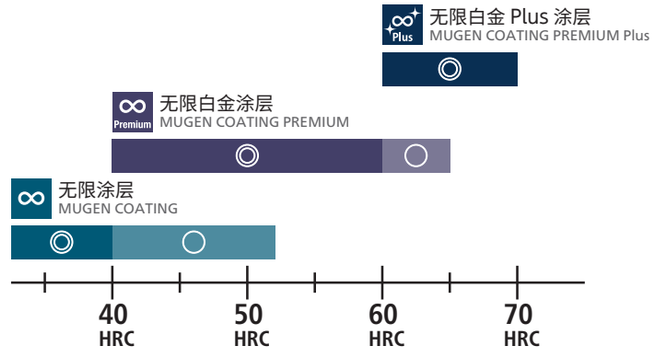
其他公司 CrN
Other tool brand



粗加工n：12,000 min^{-1}　vf：1,200 mm/min　ap 0.2 mm × ae 0.3 mm
Roughing
精加工n：5,000 min^{-1}　vf：700 mm/min　ap 0.05 mm × ae 0.03 mm
Finishing
水溶性切削油　加工时间：8小时54分钟
Water soluble fluid　Machining time：8 hr 54 min

日进工具自主研发的涂层 不同材料硬度的对应范围表

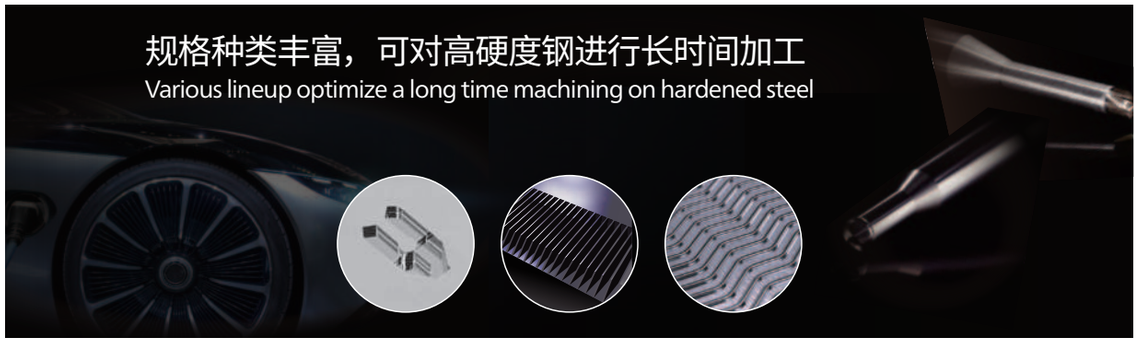
Range of NS TOOL original coating by work material hardness



4

各系列的特点

Features of Series



种类丰富、规格齐全
Wide variation and size lineup

CBN核心系列共有548种规格，其中包括3种型号平底铣刀、8种型号球头铣刀、4种型号圆鼻铣刀，可应对各种形状的精加工

The CBN core line consists of 3 square end mills, 8 ball end mills, and 4 corner radius end mills, for a total of 548 sizes for finishing a variety of machining shapes.

类型 Type		型号 Model	最大加工深度 Maximum cutting depth	规格 Size		特点 Features
平底铣刀 Square End Mill	微细 For micro milling	SMEZ	**SMEZ120** 1D 2D 3D 4D 5D	L/D=1	φ0.03 ～ φ0.1	共有 8 种规格 Total 8 sizes	φ0.1 以下的超微细加工 Ultrafine machining of φ0.1 or less
	微细角部 For microscopic corners	SSE 类型	**SSE400**	L/D=5	φ0.1	共有 2 种规格 Total 2 sizes	实现微细角部加工的平底铣刀 Square end mill for microscopic corners
			SSE600	L/D=5	φ0.2 ～ φ1	共有 14 种规格 Total 14 sizes	实现微细角部加工的平底铣刀 Square end mill for microscopic corners
类型 Type		型号 Model	最大加工深度 Maximum cutting depth 1D 2D 3D 4D・・・10D	规格 Size		特点 Features
球头铣刀 Ball End Mill	加工精度稳定 For stable machining precision	SSB 类型	**SSB200**	L/D=2.5	R0.1 ～ R1	共有 15 种规格 Total 15 sizes	实现稳定的加工 Realize stable milling
			SSBL200	L/D=10	R0.05 ～ R1	共有 25 种规格 Total 25 sizes	最大 L/D=10 的长颈造型 Long neck with max. L/D=10
	表面粗糙度 For surface roughness	SSPB 类型	**SSPB220**	L/D=3	R0.1 ～ R3	共有 30 种规格 Total 30 sizes	具有光泽的精加工面 Glossy finished surface
			SSPBL220	L/D=10	R0.1 ～ R1	共有 27 种规格 Total 27 sizes	最大 L/D=10 的长颈造型 Long neck with max. L/D=10
			SSPBTN220	L/D=10	R0.1 × 颈角30° ～ R1 × 颈角2°	共有 64 种规格 Total 64 sizes	最大 L/D=10 的锥颈造型 Tapered neck with max. L/D=10
	平缓斜面 For gradual slope	SFB	**SFB200**	L/D=2.5	R0.1 ～ R1	共有 12 种规格 Total 12 sizes	到 R 中心部具有超强的锋利度 Sharpened edge at R-center improves shearing ability
	微细 For micro milling	SMB 类型	**SMB120**	L/D=1	R0.01 ～ R0.05	共有 7 种规格 Total 7 sizes	R0.01 ～ R0.05 的超微细加工 Ultrafine machining of R0.01 to R0.05
			SMB200	L/D=0.75	R0.01 ～ R0.05	共有 7 种规格 Total 7 sizes	刃径 R0.01 起的 2 刃形状 2-flute shape specialized from R0.01
类型 Type		型号 Model	最大加工深度 Maximum cutting depth 2D 3D 4D 5D 6D	规格 Size		特点 Features
圆鼻铣刀 Corner Radius End Mill	万能 Multi purpose	SSR	**SSR200**	L/D=6	φ0.1 × R0.02 ～ φ2 × R0.5	共有 172 种规格 Total 172 sizes	2 刃 共有 172 种规格 2-flute in total 172 sizes
	高效率 High efficiency	SHR	**SHR320**	L/D=5	φ0.5 × R0.1 ～ φ2 × R0.3	共有 14 种规格 Total 14 sizes	3 刃 共有 14 种规格 3-flute in total 14 sizes
	高精度 High precision	SHPR	**SHPR400**	L/D=6	φ0.1 × R0.01 ～ φ3 × R0.2	共有 142 种规格 Total 142 sizes	4 刃 共有 142 种规格 4-flute in total 142 sizes
	平面 For flat surface	SSF	**SSF120**	L/D=2.5	φ0.2 × R0.05 ～ φ2 × R0.1	共有 9 种规格 Total 9 sizes	1 刃 平面加工用 1-flute for flat surface

良好的精加工表面粗糙度和延长刀具寿命
Excellent surface roughness over long machining duration

CBN (Cubic Boron Nitride ／立方氮化硼) 烧结体的硬度仅次于钻石，约为硬质合金的3倍
并且，其耐热性和耐磨损性也十分优秀，在高硬度钢的精加工中对延长刀具寿命和提高表面粗糙度非常有效

CBN (Cubic Boron Nitride) sintered material is the hardest next to diamond, and is about three times harder than cemented carbide. It also has very high heat and wear resistance, making it an extremely effective material for long life and surface roughness in the finishing for hardened steel.

■ CBN球头铣刀和涂层钨钢球头铣刀的精加工表面粗糙度比较
Comparison of surface roughness between CBN ball end mills and coated carbide ball end mills

使用刀具：球头铣刀 R0.5
Tool Ball end mill

加工材料：DC53（60HRC）
Work material

主轴转速 n：30,000 min^{-1}
Spindle speed

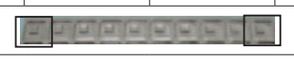
进给速度 vf：1,200 mm/min
Feed

切深量：ap 0.01 × ae 0.02 mm
Depth of cut

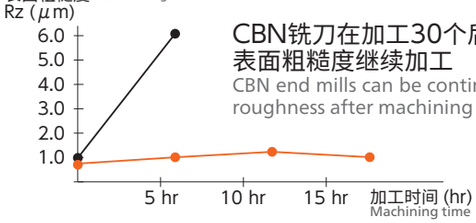


加工规格（1个 30 分钟）
Machined size
(Machining time:30 min/pocket)
14 × 14 mm



表面粗糙度 Rz [μm] Surface roughness	第1个 1 pc	第10个 10 pc	第20个 20 pc	第30个 30 pc
CBN铣刀 SFB200 CBN end mill	0.9	1.0	1.2	1.0
	第1个 1 pc 			第30个 30 pc
涂层钨钢铣刀 Coated carbide end mill	1.0	6.2	—	—
	第1个 1 pc 			第10个 10 pc

表面粗糙度 Surface roughness
Rz (μm)



CBN铣刀在加工30个后仍能以稳定的表面粗糙度继续加工
CBN end mills can be continued to use with stable surface roughness after machining 30 pieces

■ CBN铣刀和涂层钨钢铣刀的加工比较
Comparison of surface roughness between CBN end mills and coated carbide end mills

使用刀具：圆鼻铣刀 φ0.5 × R0.05 × 1
Tool Corner radius end mill

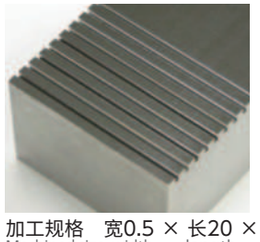
加工材料：ELMAX (58HRC)
Work material

主轴转速 n：30,000 min^{-1}
Spindle speed

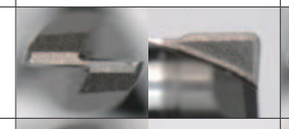
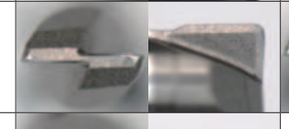
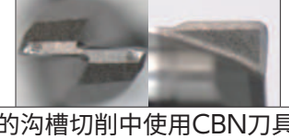
进给速度 vf：300 mm/min
Feed

切深量：ap 0.005 mm
Depth of cut

冷却方式：油雾
Coolant Oil mist



加工规格 宽0.5 × 长20 × 深1mm
Machined size width length depth

	CBN铣刀 SSR200 CBN end mill	涂层 钨钢铣刀 Coated carbide end mill
加工1个槽后 After 1 grooving 切削距离 约4 m Cutting length approx. 4m		
加工3个槽后 After 3 grooving 切削距离 约12 m Cutting length approx. 12m		
加工6个槽后 After 6 grooving 切削距离 约24 m Cutting length approx. 24m		由于刀具寿命原因 结束加工 End of machining due to tool life

在切削阻力大的沟槽切削中使用CBN刀具可以长时间加工
Even in grooving with high cutting load, CBN tools can be used for a long time

在切削加工中实现更高级别的精加工表面品质
Achieve a higher grade surface finished quality by machining

切削加工成各种形状，大幅减少抛光时间
Polishing time is greatly reduced by machining into various shape



可映照出NS TOOL商标的良好镜面特性
Mirror surface that also reflects the NS TOOL logo

加工材料:**STAVAX (52HRC)**
Work material :



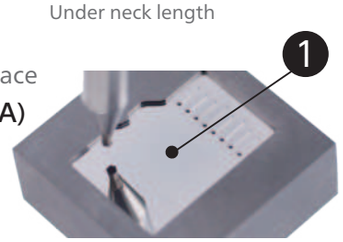
PCDRB　R1 × 颈长5
Under neck length

表面粗糙度 Surface roughness	Ra	Rz
测量位置 Measuring position		
1	0.016	0.119

单位[μm] Unit

平面加工也能实现镜面
Mirror finishing for flat surface

加工材料:**硬质合金 (92.5HRA)**
Work material : Cemented carbide



PCDSE　ϕ0.5

表面粗糙度 Surface roughness	Ra	Rz
测量位置 Measuring position		
1	0.002	0.02

单位[μm] Unit

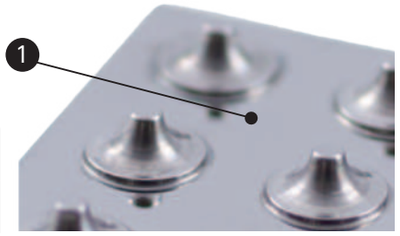
加工案例 Machining case　M-013



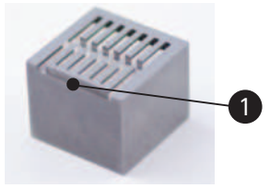
表面粗糙度 Surface roughness	Ra	Rz
测量位置 Measuring position		
1 底面 Bottom	0.0027	0.0192

单位[μm] Unit

加工材料:**硬质合金 (92.5HRA)**
Work material : Cemented carbide
工件尺寸:**10×10mm**(加工深度**0.864mm**)
Work size : Machining depth

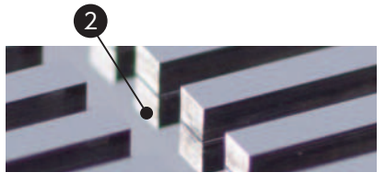


PCDRS　ϕ0.5×R0.1×颈长0.5
Under neck length



表面粗糙度 Surface roughness	Ra	Rz
测量位置 Measuring position		
1 侧面 Side	0.017	0.096
2 底面 Bottom	0.0007	0.008

单位[μm] Unit



PCDSE　ϕ0.5

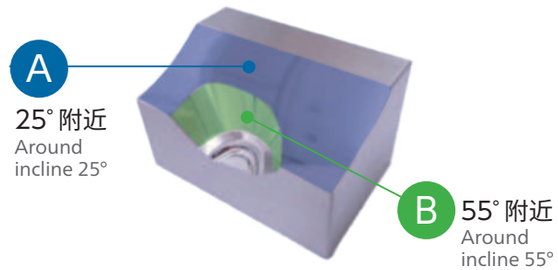
加工材料:**硬质合金 (92.5HRA)**
Work material : Cemented carbide
工件尺寸:**10×10 mm**(加工深度**0.5mm**)
Work size : Machining depth

与 CBN 刀具的加工比较
Cutting comparison with CBN end mill

表面粗糙度比较
Surface roughness comparison

加工材料 :**STAVAX (52HRC)**
Work material :
工件尺寸 :**60×40 mm**
Work size : (加工深度**19.48mm**)
Machining depth

在相同加工条件下的精加工面比较
Finishing surface comparison under the same cutting condition



A 25° 附近 Around incline 25°

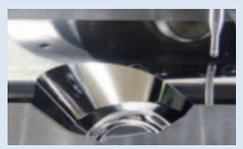
CBN球头铣刀 CBN Ball End Mill



表面粗糙度 Surface roughness	Ra
Ra	0.068

单位[μm] Unit

PCDRB R1



表面粗糙度 Surface roughness	Ra
Ra	0.030

单位[μm] Unit

B 55° 附近 Around incline 55°

CBN球头铣刀 CBN Ball End Mill



表面粗糙度 Surface roughness	Ra
Ra	0.042

单位[μm] Unit

PCDRB R1



表面粗糙度 Surface roughness	Ra
Ra	0.012

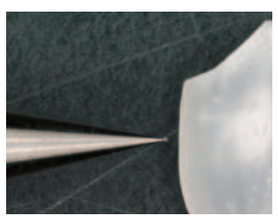
单位[μm] Unit

SMG CBN ≦40 HRC ≦70 HRC

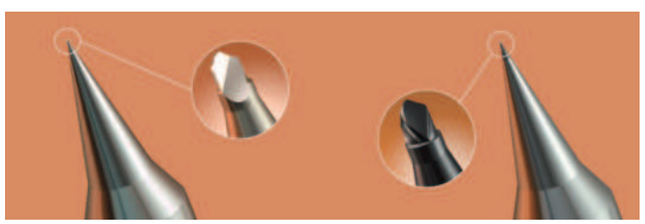
可进行超微细切削加工的系列
Various lineup for micro manufacturing



在头发上雕刻文字“NS TOOL MICRO EDGE”
Engraving letters on a hair



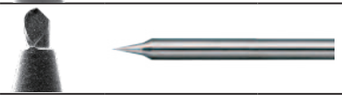
与米粒的比较
Comparison with a grain of rice



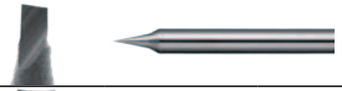
小径规格铣刀是日进工具的强项，其中，外径φ0.01 ～ φ0.1的铣刀也实现了标准化，可进行超微细精密切削加工。此刀具进一步巩固了日进工具在小径领域的地位。“可在头发上雕刻文字”这句话就是它的写照。

Among the small-diameter size end mills, a major strength of NS TOOL, these products enable ultrafine precision milling with standardized end mills of Dia.0.01mm to Dia.0.1mm.
A tool that has firmly established the position of "NS TOOL as small-diameter tool giant". It can engrave letters even on hair.

高硬度钢加工用 CBN微米系列
CBN Micro Edge for hardened steel

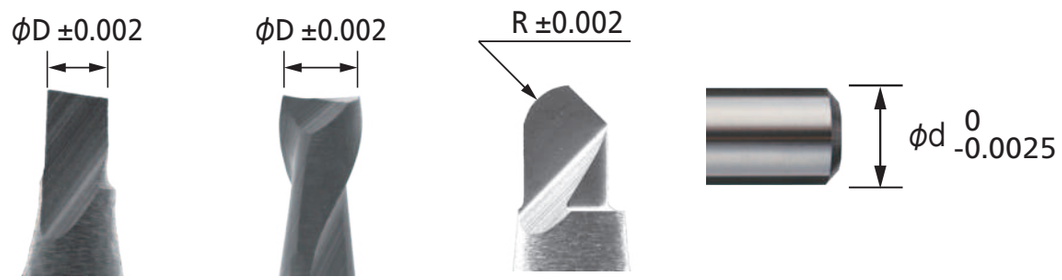
形状 Shape	型号 Model		规格 Size	特点 Features
平底 Square	**SMEZ120**		φ 0.03 ～ φ 0.1 共有 8 种规格 Total 8 sizes	将外径φ 0.1 以下标准化的微米级 CBN 平底铣刀 Micro CBN square end mills with standardized of Dia.0.1 or less
球头 Ball	**SMB120**		R0.01 ～ R0.05 共有 7 种规格 Total 7 sizes	实现超微细加工的微米级 CBN 球头铣刀 Micro CBN ball end mill that enables ultrafine miling
球头 Ball	**SMB200**		R0.01 ～ R0.05 共有 7 种规格 Total 7 sizes	刃径 R0.01 起的 2 刃形状 高精度规格的超微细切削刀具 2-flute shape specialized from R0.01 High precies specific micro end mill

～40HRC加工材料用 微米系列
Micro Edge for work material up to 40HRC

形状 Shape	型号 Model		规格 Size	特点 Features
平底 Square	**NSME100**		φ 0.01 ～ φ 0.05 共有 5 种规格 Total 5 sizes	最小外径φ 0.01 标准化 超微细加工用单刃直刃造型铣刀 Standardized minimum Dia.0.01. One straight flute for ultrafine milling
平底 Square	**NSME230**		φ 0.03 ～ φ 0.09 共有 7 种规格 Total 7 sizes	φ 0.03 ～ 2 刃 30°螺旋角 微米级平底铣刀 From Dia.0.03, 2-flute 30°helix angle Micro square end mill
球头 Ball	**NSMB100**		R0.005 ～ R0.05 共有 8 种规格 Total 8 sizes	最小 R0.005 标准化 超微细加工用球头铣刀 Standardized minimum R0.005 Ball end mill for ultrafine milling

实现超微细加工的高精度设计
High-precision design for ultrafine milling

外径、球头半径、柄径、偏摆精度全部采用高精度设计，可进行微细加工。
Ultrafine milling possible by high precision designs for all of diameter, radius, shank diameter, and runout accurace.



独立研发可生产微米系列的设备
Uniquely developed equipment for production of Micro Edge

产品制造除了注重高品质外，还十分注重绝对品质和产品稳定性，在始终秉持高品质的同时不断提供同样高精度的产品。为履行向客户提供小径铣刀的责任及实现该理念，本公司自行研发了刀具磨床TGM，可抑制产品偏差，每一次都为用户提供精度和品质稳定的产品。

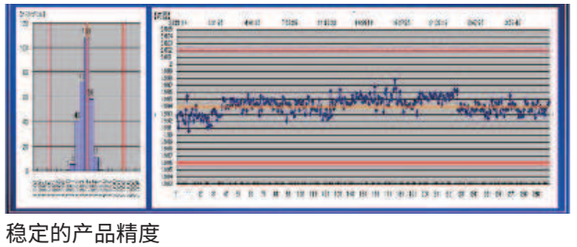
In manufacturing, we value the quality and stability of our products, which means that we always maintain a high level of quality as well as a high level of precision and continue to deliver high accurate products.
We are responsible for delivering small-diameter end mills to our customers, and our self-developed tool grinder TGM has been developed to realize this responsibility and to deliver products with consistent accuracy and quality every time.



仙台工厂　研发中心
Sendai Factory Development Center



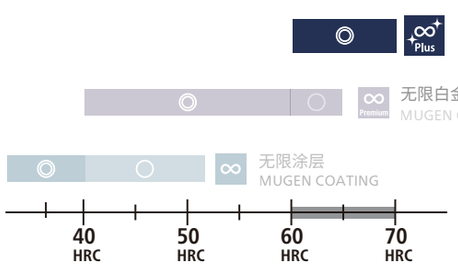
自行研发的刀具磨床　TGM
In-house developed tool grinder TGM



稳定的产品精度
Stable production accuracy

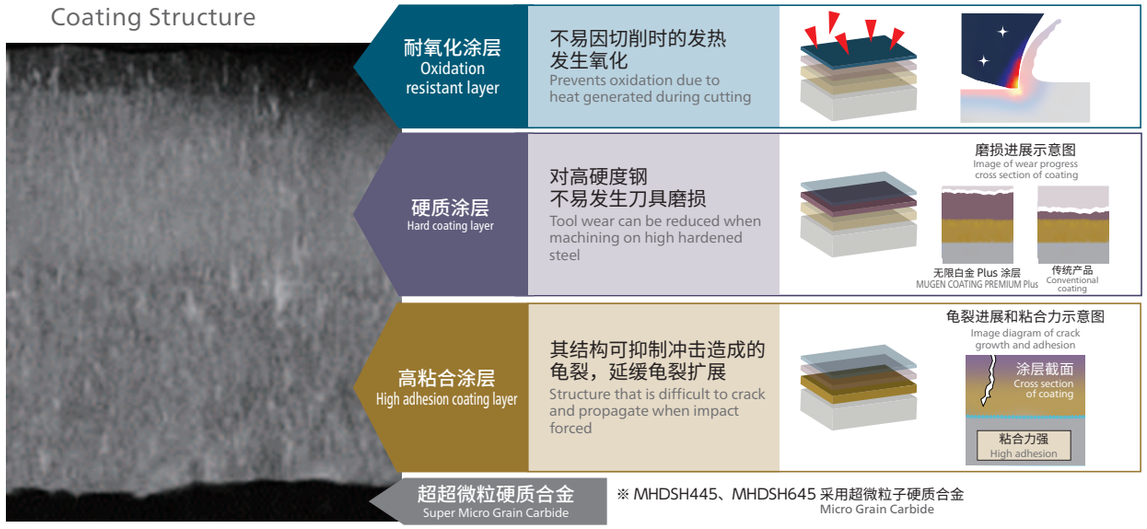
可对应 60 ～ 70HRC 的高硬度钢
Optimized for machining hardened steels up to 60 to 70HRC

日进工具自主研发的涂层 不同材料硬度的对应范围表
Range of NS TOOL original coating by work material hardness



耐氧化性、耐磨损性优异，可对 60HRC 以上的加工材料发挥最佳效果。
MUGEN COATING PREMIUM Plus with high oxidation resistance and abrasion resistance is suitable for machining above 60HRC.

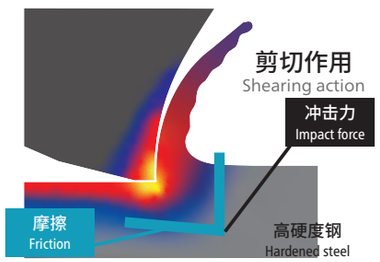
涂层结构
Coating Structure



※ MHDSH445、MHDSH645 采用超微粒子硬质合金
Micro Grain Carbide

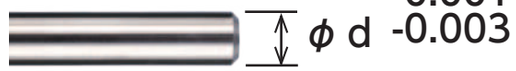
切削加工60～70HRC的高硬度钢时，会出现由于加工材料硬度及高韧性的影响，而导致加工时切削阻力过大的现象。因此，刀具的刀刃会因“剪切作用”发生以下情况：
As a phenomenon when machining hardened steel of 60 to 70 HRC, the cutting load during processing is extremely high because hardness and toughness of work material are high. Therefore, the "shearing action" at tool edge cause that…

- 刀具因发生“摩擦”而更快磨损
  Tools to wear easily causing frict
- 涂层因“切削热”而氧化，使硬度降低，容易磨损
  Tools tends to wear to reduced hardness of material on coating oxidizes of cutting heat
- “冲击力”大时刀具容易缺损
  Tool is easily damaged if impact force is large



针对 70HRC 的高硬度钢时也可实现延长刀具寿命和高精度加工
High precision and long tool life even for hardened steel up to 70 HRC

高精度刀柄可实现无差异性的加工
High precision shank realize no fluctuate machining

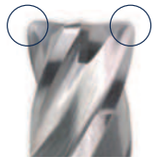


高精度球头半径、R角尺寸等，可实现高精度加工
Achieved high precision machining with high accuracy ball radius or corner radius

MRBSH230SF
球头半径 R±0.003
Ball radius
R 精度以实际外径的 1/2 为基准
R accuracy is based on a half value of actual diameter

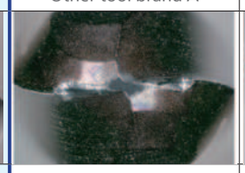


MHRSH430RSF
R角部±0.003
Corner radius
(D ≦ϕ 2)



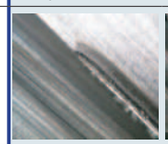
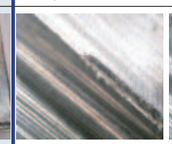
加工HAP40（64HRC）时球头铣刀的磨损比较
Ball end mill tool life comparison to HAP40 (64HRC)

切削参数n= 20,000min^{-1}，vf= 1,600mm/min，ap 0.15 × ae 0.3mm, 冷却方式: 油雾
Cutting condition n= 20,000 min^{-1}, vf= 1,600mm/min, ap 0.15xae 0.3mm, Coolant: Oil mist

	MRBSH230SF	其他公司产品 A Other tool brand A	其他公司产品 B Other tool brand B	其他公司产品 C Other tool brand C
加工 70 分钟后 After 70 min				
磨损宽度 Tool wear	0.102 mm	0.137 mm	0.190 mm	0.157 mm

加工HAP40（64HRC）时平底铣刀的磨损比较
Square end mill tool life comparison to HAP40 (64HRC)

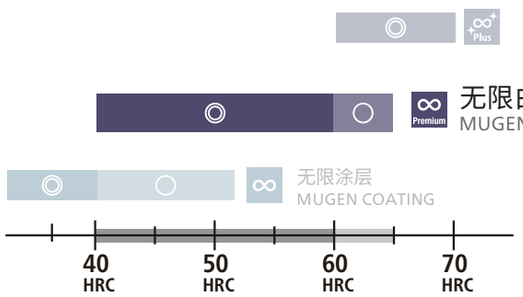
切削参数n= 4,200min^{-1}，vf= 600mm/min，ap 9 × ae 0.12 mm, 冷却方式: 油雾
Cutting condition n= 4,200 min^{-1}, vf= 600mm/min, ap 9 × ae 0.12mm, Coolant: Oil mist

	MHDSH645 ϕ 6 × 18		其他公司产品A ϕ6×15 Other tool brand A		其他公司产品B ϕ6×15 Other tool brand B	
	边界部 Major flank notch	前端部 End edge	边界部 Major flank notch	前端部 End edge	边界部 Major flank notch	前端部 End edge
加工 120 分钟后 After 120 min						
磨损宽度 Tool wear	0.060 mm	0.080 mm	0.097 mm	损伤大 无法测量磨损宽度 Wear width cannot be measured because great damage	损伤大 无法测量磨损宽度 Wear width cannot be measured because great damage	

无限白金涂层 全刃长造型
MUGEN COATING PREMIUM Full Cutting Length Type

适用于不锈钢、钛合金、高硬度钢的各种产品
Wide range lineup for stainless steel, titanium alloy and hardened steel

日进工具自主研发的涂层 不同材料硬度的对应范围表
Range of NS TOOL original coating by work material hardness



H 高硬度钢 Hardened steel

P 调质钢 Prehardened steel
M 不锈钢 Stainless steel
S 耐热合金 Heat resistant alloy

无限白金涂层是对传统无限涂层的进一步改良，直接切削加工高硬度钢时，可大幅延长刀具的使用寿命，适用于加工～ 65HRC 的高硬度钢。其优异的耐热性还可应对不锈钢、耐热合金的加工。
MUGEN COATING PREMIUM, improved from MUGEN COATING, supports the extended tool life for direct milling on high hardened steels. Suitable for machining on high hard materials up to 65HRC.

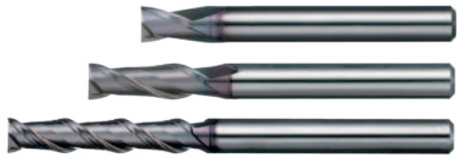
平底　MXH 型
Square　MXH type

～55HRC高硬度钢、不锈钢、难切削材料用　　L/D=1～5的共222种规格
For hardened steel (up to 55HRC), stainless steel and tough material　L/D=1/5 Total 222 size

可对应加工材料
Work material

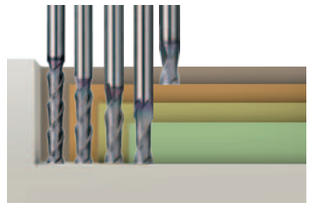
MXH225 ～ 245
- P 调质钢 Prehardened steel
- M 不锈钢 Stainless steel
- S 耐热合金 Heat resistant alloy
- H 高硬度钢 Hardened steel

MXH225P ～ 235P
- P 调质钢 Prehardened steel
- M 不锈钢 Stainless steel
- S 耐热合金 Heat resistant alloy



螺旋角 Helix angle
MXH225P
刃数 Number of flute
尖角造型 Shape edge

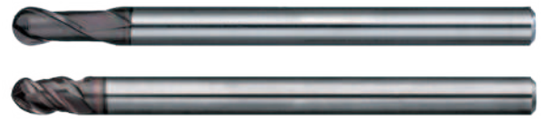
根据加工深度从各种规格中选择
Various sizes available according to processing depth



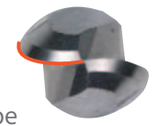
球头　MSBH 型
Ball　MSBH type

可对应调质钢、高硬度钢(～65HRC)的球头铣刀
Ball end mill for prehardened steel / hardened steel (up to 65HRC)

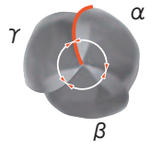
可对应加工材料
Work material
- P 调质钢 Prehardened steel
- H 高硬度钢 Hardened steel
- M 不锈钢 Stainless steel
- S 耐热合金 Heat resistant alloy



MSBH230
采用最适合高硬度钢加工的螺旋形状
Adoption optimal spiral shape for hardened steel



MSBH345
采用最适合高硬度钢加工的螺旋形状和底刃不等分割形状
Adoption optimal spiral shape and unequal flute spacing of end teeth



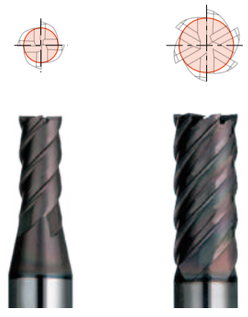
平底　MHDH 型
Square　MHDH type

采用4刃和6刃强螺旋角
可对应高硬度钢(～65HRC)的精加工
Ideal for finishing on hardened steel(up to 65HRC) with 4/6-flute with strong helix angle

可对应加工材料
Work material
- P 调质钢 Prehardened steel
- H 高硬度钢 Hardened steel



采用重视刚性的刀具设计，可改善高硬度钢加工中的倾斜现象和加工精度
High accuracy and less deflection on hardened steel with high rigid tool design





圆鼻　MHDH・R 型
Corner Radius　MHDH・R　type

可对应高硬度钢(～65HRC)的圆鼻铣刀
Corner radius end mill for hardened steel (up to 65HRC)

可对应加工材料
Work material
- P 调质钢 Prehardened steel
- H 高硬度钢 Hardened steel



适用于不锈钢、钛合金、高硬度钢的各种产品
Wide variations for machining Stainless steel, Titanium alloy, hardened steel or so

平底　MHRH 型
Square MHRH type

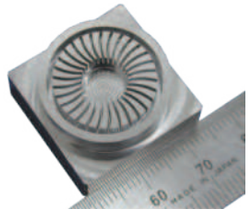
可对应加工材料
Work material

- P 调质钢 Prehardened steel
- H 高硬度钢 Hardened steel
- M 不锈钢 Stainless steel
- S 耐热合金 Heat resistant alloy

可对应调质钢、高硬度钢（～65HRC），
最适合深沟加工的长颈平底铣刀
Long Neck Square End Mills suitable for deep milling of tempered steel and hardened steel (up to 65HRC)



MHRH230 ϕ0.5 × 3
MHRH430 ϕ1　× 6
加工材料:PD613 (60HRC)
Work material :
工件尺寸:80×80 mm
Work size :

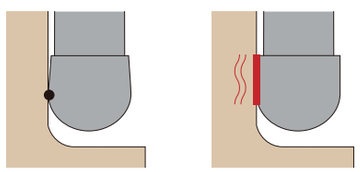


球头　MRBH230
Ball MRBH230

可对应加工材料
Work material

- P 调质钢 Prehardened steel
- H 高硬度钢 Hardened steel
- M 不锈钢 Stainless steel
- S 耐热合金 Heat resistant alloy

减轻切削阻力的
倒锥形状
Back tapered design
to reduce cutting loads



可对应调质钢、高硬度钢（～65HRC）的
长颈球头铣刀。L/D最大22倍
Long Neck Ball End Mill for tempered steel and hardened steel (up to 65HRC). L/D up to 22 times



MRBH230 R1×4
R1×8
加工材料:HAP40 (65HRC)
Work material :
工件尺寸:30×20 mm
Work size :



在薄形工件的加工中
也可抑制振刀
Suppression of chattering even
when machining thin profiles

球头　MACH 型
Ball MACH type

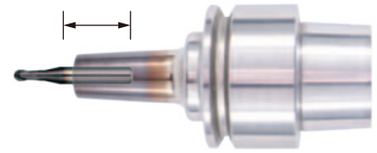
刀刃锋利，减轻了切削阻力，可对应高韧性的加工材料
Sharp cutting edges reduce cutting load and are suitable for tough materials

可对应加工材料
Work material

- P 调质钢 Prehardened steel
- H 高硬度钢 Hardened steel
- M 不锈钢 Stainless steel
- S 耐热合金 Heat resistant alloy



还新增了支持热缩刀柄的
短柄造型产品
Short length shank compatible with
shrink fit holder are also available



球头　MRBTNH 型
Ball MRBTNH type

在高硬度钢的深沟加工中也能实现高精度
High precision machining available for deep milling of hardened steel

可对应加工材料
Work material

- P 调质钢 Prehardened steel
- H 高硬度钢 Hardened steel
- M 不锈钢 Stainless steel
- S 耐热合金 Heat resistant alloy



MRBTNH345　R1×1°×30
R1×1°×20
加工材料:DAC-S (44HRC)
Work material :
工件尺寸:80×80 mm
Work size :



圆鼻　MHRH・R 型
Corner Radius MHRH・R type

可对应调质钢、高硬度钢（～65HRC），
最适合深沟加工的长颈圆鼻铣刀
Long Neck Corner Radius End Mills suitable for deep milling of tempered steel and hardened steel (up to 65HRC)

可对应加工材料
Work material

- P 调质钢 Prehardened steel
- H 高硬度钢 Hardened steel
- M 不锈钢 Stainless steel
- S 耐热合金 Heat resistant alloy





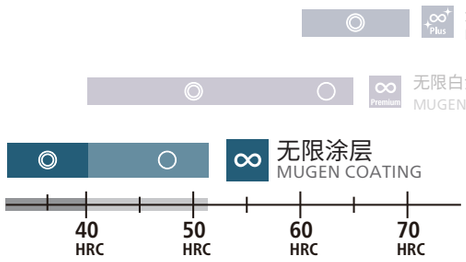
ϕ0.1的极小径规格也能
使用4刃进行高效率加工
Highly efficient machining with 4-flute even
for extremely small diameter of ϕ0.1

有可加工各种加工材料的多种铣刀类型
Abundant variations support machining on different work materials

不断改进的无限涂层
Progressive evolution of MUGEN COATING

无限涂层对调质钢、生材、铜等，具有优异的耐磨损性和润滑性
冷却方式可使用水溶性、油冷、吹气、油雾冷却等。
MUGEN COATING have high wear resistance and lubricity for tempered steel, raw materials, and copper or so.
In addition, this excellent coating is compatible with various coolants, water-soluble and insoluble cutting oils, air blowers, and oil mist.

日进工具自主研发的涂层 不同材料硬度的对应范围表
Range of NS TOOL original coating by work material hardness



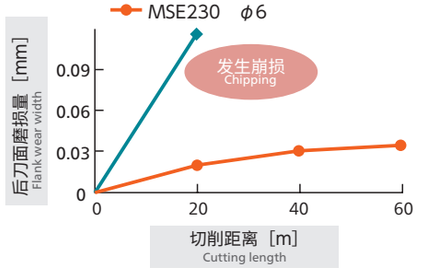
P 合金钢 Alloy steel　调质钢 Prehardened steel
M 不锈钢 Stainless steel
N 铝合金 Aluminium alloy　铜 Copper
H 高硬度钢 Hardened steel

S50C
切削长度20m时的磨损比较
Tool wear after cutting length 20m

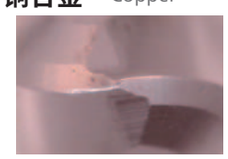

MSE230 ϕ6

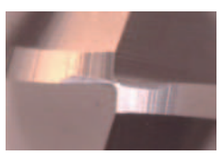

其他公司同等产品 Other tool brand

n : 3,400min^{-1}　vf : 600mm/min　ap 9 × ae 1.2 mm
水溶性切削油 Water soluble fluid　加工时间 : 100 分钟 Machining time : 100 min　加工长度 : 60 m Machining length : 60 m

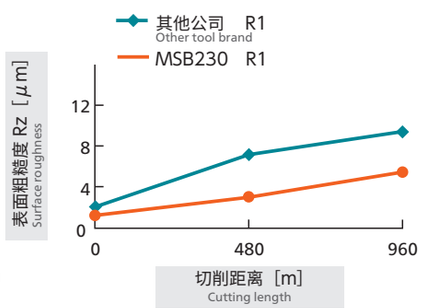


铜合金 Copper


MSB230 R1

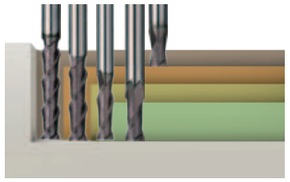
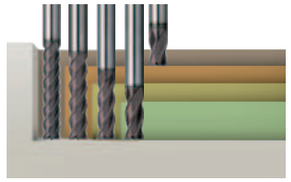

其他公司同等产品 Other tool brand

n : 20,000min^{-1}　vf : 2,000mm/min　ap 0.05 × ae 0.05 mm
水溶性切削油 Water soluble fluid　加工时间 : 9 小时 Machining time : 9 hr　加工长度 : 960 m Machining length : 960 m



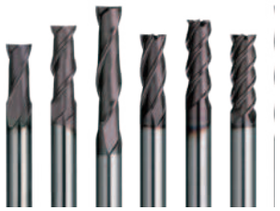
应对各种形状的丰富产品阵容
Extensive lineup for various machining shapes

MX系列 MX Series
平底 Square　丰富的品种可应对不同加工深度 Multi variations satisfy different machining depth of machining

MX □ □
螺旋角 Helix angle
25：25° 螺旋角 Helix 25°
30：30° 螺旋角 Helix 30°
35：35° 螺旋角 Helix 35°
40：40° 螺旋角 Helix 40°
45：45° 螺旋角 Helix 45°
刃数 Number of flute
2：2刃 2-flute
4：4刃 4-flute

MSE系列 MSE Series
平底 Square　刃数、外径、螺旋角、刃长种类丰富，可应对各种加工 Many variations in the number of flute, diameter, helix angle, and cutting length are available for multiplied machining operations



MSE □ □ □ □
M：中等刃长 Medium length of cut
螺旋角 Helix angle
30：30° 螺旋角 Helix 30°　45：45° 螺旋角 Helix 45°
SS：L/D=1的短刃造型 Short length of cut L/D=1
P ：尖角 Sharp edge
M ：实际外径标记 Actual diameter indicated
刃数 Number of flute
2：2刃 2-flute　3：3刃 3-flute　4：4刃 4-flute

MSB系列 MSB Series
球头 Ball　在长期畅销的MSB230的基础上新增多种产品 Numerous lineups based on the long-selling MSB230



MSB □ □ □ □
L：长柄 Long shank
XL：超长柄 Extra long shank
G2：R精度±0.002 R accuracy
S ：短型 Short type
SF ：支持热缩刀柄 Compatible for shrink fit
刃数 Number of flute
2：2刃 2-flute　3：3刃 3-flute
螺旋角 Helix angle
30：30°螺旋角 Helix 30°　45：45°螺旋角 Helix 45°

MSRS系列 MSRS Series
圆鼻 Corner Radius　标准圆鼻铣刀可应对从粗加工到精加工的各种加工 Standard corner radius end mill for multiple applications from roughing to finishing


MSRS230 ϕ1 × R0.1 ～ ϕ5 × R1.5
共有31种规格 Total 31 sizes


MSRS430 ϕ6 × R0.1 ～ ϕ12 × R3
共有33种规格 Total 33 sizes

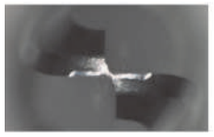
无限涂层 长颈造型
MUGEN COATING Long Neck Type

有可加工各种加工材料的多种铣刀类型

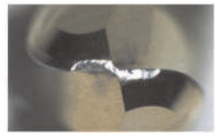
Abundant variations support machining on different work materials

		型号 Model		最大加工深度 Maximum cutting depth L/D	规格 Size	刃数 Number of flute	特点 Features
长颈 Long neck	平底 Square	MHR230		30	ϕ0.1 ～ ϕ 6	2	2 刃长颈平底 2-Flute long neck square end mill
		MHR430		20	ϕ1.0 ～ ϕ10	4	4 刃长颈平底 4-Flute long neck square end mill
	球头 Ball	MRB230		22	R0.05 ～ R3	2	2 刃长颈球头 共有 282 种规格 2-Flute long neck ball end mill Total 282 sizes
		MRB230SF		10	R0.1 ～ R1.5	2	2 刃长颈球头 支持热缩刀柄的短柄造型 2-Flute long neck ball end mill with short shank
	圆鼻 Corner radius	MHR230R		20	ϕ0.2 × R0.05 ～ ϕ6 × R1	2	2 刃长颈圆鼻 2-Flute long neck corner radius end mill
		MHR430R		12.5	ϕ1 × R0.05 ～ ϕ6 × R1	4	4 刃长颈圆鼻 4-Flute long neck corner radius end mill
锥颈 Long Neck Tapered	球头 Ball	MRBTN230		36	R0.1 × 颈角30' ～ R2 × 颈角1°	2	适用于与加工面倾斜角角度相同的颈角 Tools with the same neck angle as the inclination angle of the machined surface can be used
	圆鼻 Corner radius	MSTNR230		35	ϕ0.2 × R0.05 × 颈角1° ～ ϕ3 × R0.5 × 颈角1°	2	2 刃长颈锥刃圆鼻 2-Flute long neck tapered corner radius end mill

STAVAX 52HRC（SUS420J2改）

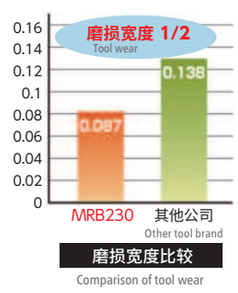


MRB230 R1 × 10

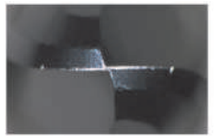


其他公司同等产品 Other tool brand

n : 10,000min^{-1} vf : 1,500mm/min ap 0.1 × ae 0.2 mm
水溶性切削油 加工时间 : 132 分钟 加工长度 : 150 m
Water soluble fluid Machining time : 132 min Machining length : 150 m



铜合金 Copper

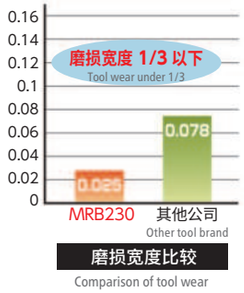


MRB230 R1 × 20



其他公司同等产品 Other tool brand

粗加工 n : 12,000min^{-1} vf : 1,200mm/min ap 0.2 × ae 0.3 mm
Roughing
精加工 n : 5,000min^{-1} vf : 700mm/min ap 0.05 × ae 0.03 mm
Finishing
水溶性切削油 加工时间 : 8 小时 54 分钟
Water soluble fluid Machining time : 8 hr 54 min

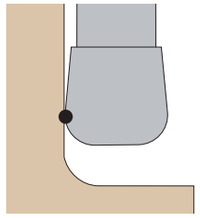


外周刃倒锥形状 MHR230R / MHR430R

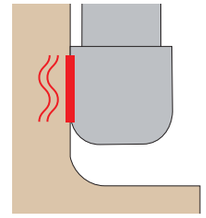
Back tapered design on peripheral cutting edge

外周刃与加工面接触时，切削阻力增加会发生振刀，影响刀具的使用寿命和加工面品质。通过采用倒锥形状，可减轻振刀发生

When the peripheral cutting edge contacts the workpiece surface, the increased cutting load causes chattering vibration, which affects tool life and workpiece surface quality. The back tapered design reduces this effect



单点切削，不易振刀！
Suppress chattering by point milling



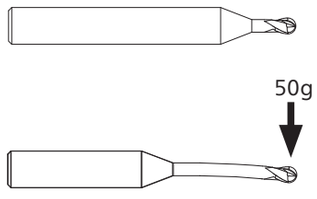
普通铣刀
General end mill

基于锥颈形状的刀具刚性

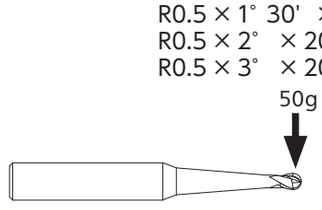
Rigidness of long neck tapered shape

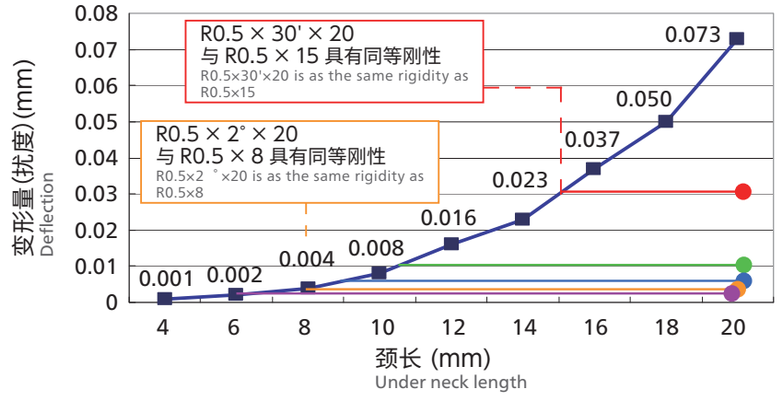
测量刀具前端施加 50g 荷重时不同颈部造型的变形量
Measureing the amount of deflection with 50g load on the tip of the tool

长颈球头铣刀
Long neck ball end mill
MRB230 R0.5 × 4 ～ 20



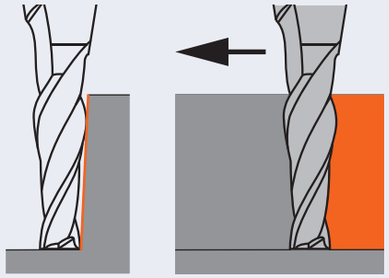
锥颈球头铣刀
Long neck tapered ball end mill
MRBTN230
R0.5 × 30' × 20
R0.5 × 1° × 20
R0.5 × 1° 30' × 20
R0.5 × 2° × 20
R0.5 × 3° × 20





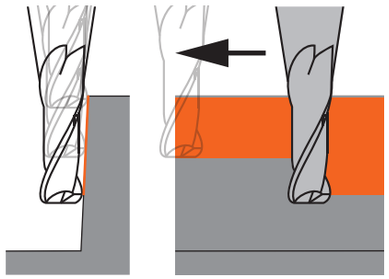
适用于锥形加工的铣刀
End mills enables tapered machining

根据加工环境选择锥刃
Select Tapered end mill according to cutting environment



通过使用刃长进行加工，在主轴转速或进给速度有限制的情况下，也能缩短加工时间、提高生产效率。

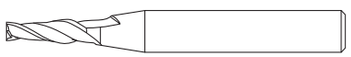
By using large length of cut, even limited spindle speed and feed, it reduces machining time and increases productivity.



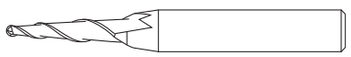
通过使用球头铣刀和圆鼻铣刀进行等高线加工，可以加工锥部，但在主轴转速和进给速度有限制的情况下，加工时间会延长。

Although it is possible to process tapered face by contour line milling using ball end mill and corner radius end mill, machining time would be longer if spindle speed and feed rate has limitation.

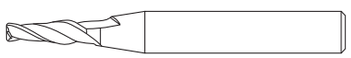
锥刃铣刀的种类
Types of tapered end mill



锥刃铣刀
Tapered End Mill



锥刃球头铣刀
Tapered Ball End Mill



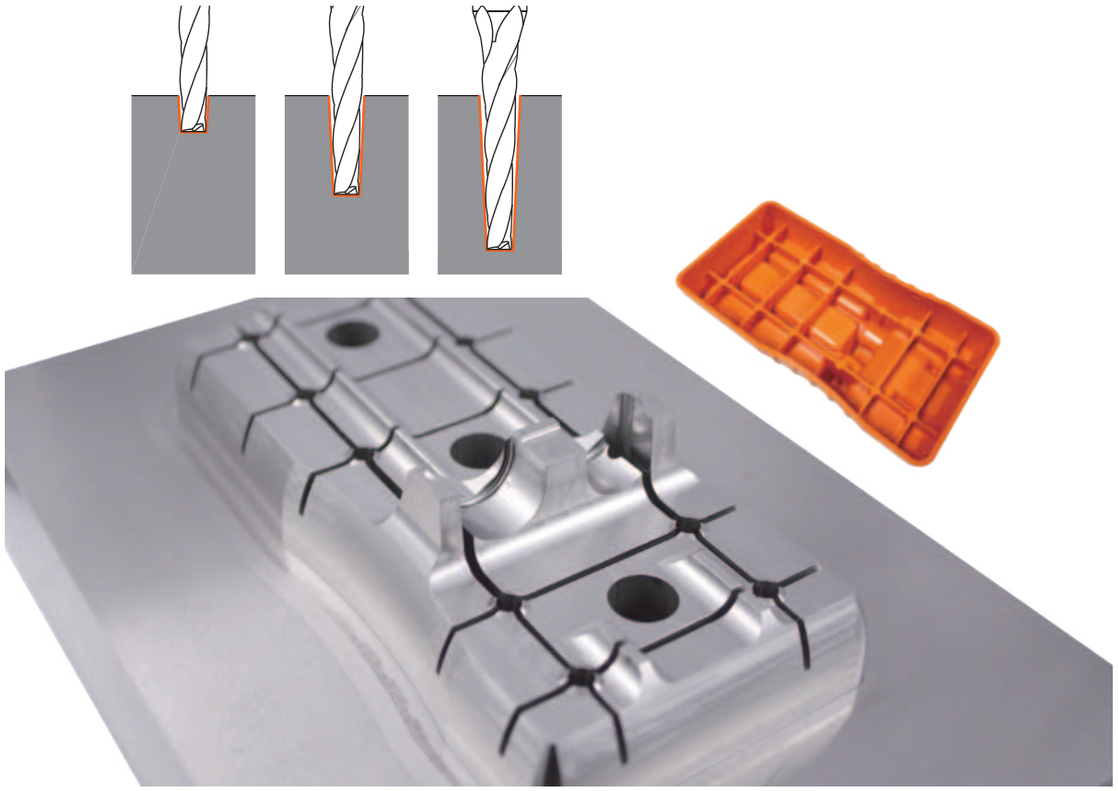
锥刃圆鼻铣刀
Tapered Corner Radius End Mill

深沟加工专用刀具
Specialized tool for rib milling

塑料模具上的沟槽也可通过使用沟槽专用刀具进行沟槽加工来实现。

Similarly, ribs in plastic molds can be machined using only grooving by using specialized tools for ribs.



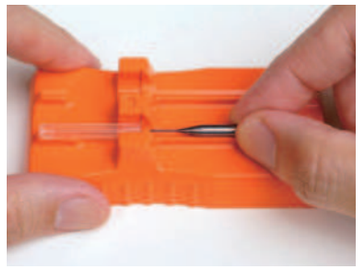


刀具保护套拆卸器
Tool Protection Cap Remover

可安全卸除小径规格刀刃上附带的保护套

使用上图中的模具制作“刀具保护套拆卸器”

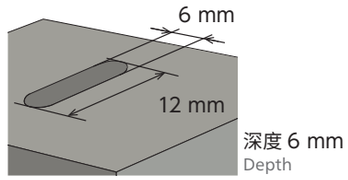
“Tool Protection Cap Remover” that enables to remove a cutting edge protective cap safely has made by mold in the above picture



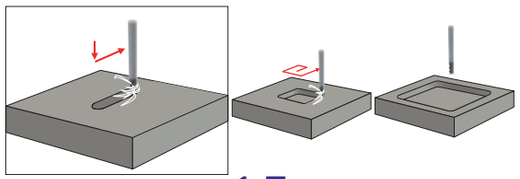
实现高效率加工的铣刀系列
End mill lineup to realize high efficient machining

可进行插铣～沟槽～侧面的连续加工，提高加工效率
High efficiency with continuous machining from plunging to grooves to side surfaces

使用MSZ345进行碳素钢S50C的插铣加工和使用以往产品进行沟槽加工的加工时间比较
Time comparison for carbon steel S50C between plunging by MSZ345 and grooving by conventional tool



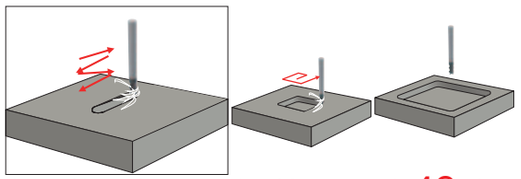
使用 MSZ345 ϕ 6 通过插铣进行加工
Pocket milling with approach by plunging with MSZ345 ϕ 6



插铣进刀 约 1.7 秒
Approach by plunging approx. 1.7 sec

主轴转速：4,800 min^{-1}, 进给速度（插铣 Plunging）：300 mm/min
Spindle speed 进给速度（沟槽加工 Slotting）：720 mm/min
Feed

使用以往的 4 刃铣刀通过倾斜进刀进行加工
Pocket milling with approach by grooving with conventional 4-flute tool



在倾斜加工中以 1.5° 倾斜角进刀 约 49 秒
Approach by lamping approx. 49 sec

主轴转速：3,400 min^{-1}, 进给速度（倾斜进刀 Lamping）：580 mm/min
Spindle speed Feed

可对应加工材料
Work material

M 不锈钢 Stainless steel
S 耐热合金 Heat resistant alloy



MSUSZ440 MSUSZ440-LN

可对应加工材料
Work material

P 调质钢 Prehardened steel



MSCZ440 MSCZ440-LN

可对应加工材料
Work material

P 调质钢 Prehardened steel
M 不锈钢 Stainless steel



MSZ345

可对应加工材料
Work material

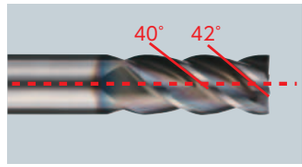
N 铝合金 Aluminium alloy



AL3D-345 AL3D-345R ALZ345 ALZ345-DLC

通过利用不等分割和不等螺旋角抑制振刀，提高加工效率
High efficient machining with unequal flute spacing and unequal helix angle design to suppress chattering

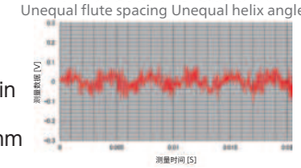
MSUSZ440・MSUSZ440-LN



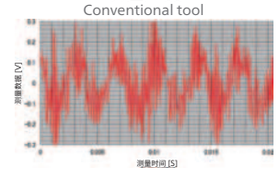
不等螺旋 Unequal Helix Angle
不等分割 Unequal Flute Spacing

加工材料：SUS304
Work material
主轴转速 n：5,500 min^{-1}
Spindle speed
进给速度 vf：1,300 mm/min
Feed
切深量：ap 12 × ae 1.2 mm
Depth of cut
冷却方式：水溶性切削油
Coolant : Water-soluble fluid

不等分割和不等螺旋形状
Unequal flute spacing Unequal helix angle



以往产品
Conventional tool

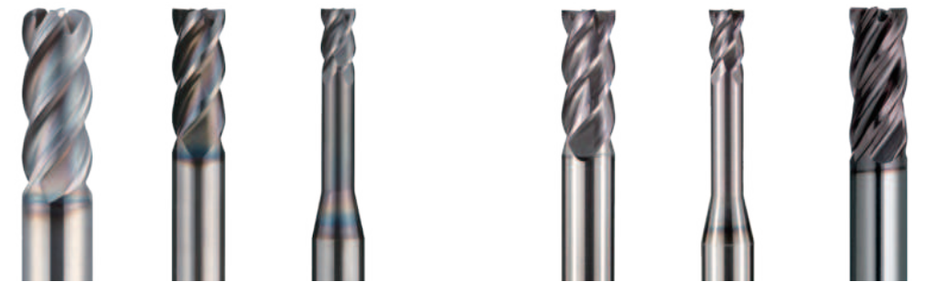


可对应加工材料
Work material

M 不锈钢 Stainless steel
S 耐热合金 Heat resistant alloy

可对应加工材料
Work material

P 调质钢 Prehardened steel



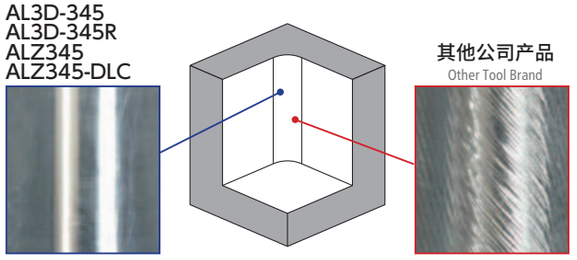
MSXH440R 螺旋角 Helix angle 40° / 42°
MSUSZ440 螺旋角 Helix angle 40° / 42°
MSUSZ440-LN 螺旋角 Helix angle 40° / 42°
MSCZ440 螺旋角 Helix angle 40° / 42°
MSCZ440-LN 螺旋角 Helix angle 40° / 42°
MSX440 螺旋角 Helix angle 35° / 38°

通过利用外周刃的特殊刀刃造型抑制振刀，提高加工效率
High efficient machining with unequal peripheral cutting edge design to suppress chattering



在切削速度40m/min ～ 360m/min的广泛区间内也不会发生振刀。在加工阻力大的角部及高速条件下也能实现稳定加工。
Realized no chattering within a wide range cutting speed, 40m/min~360m/min, achieved stable machining even at high cutting load corner part and high speed condition

AL3D-345
AL3D-345R
ALZ345
ALZ345-DLC



可对应加工材料
Work material

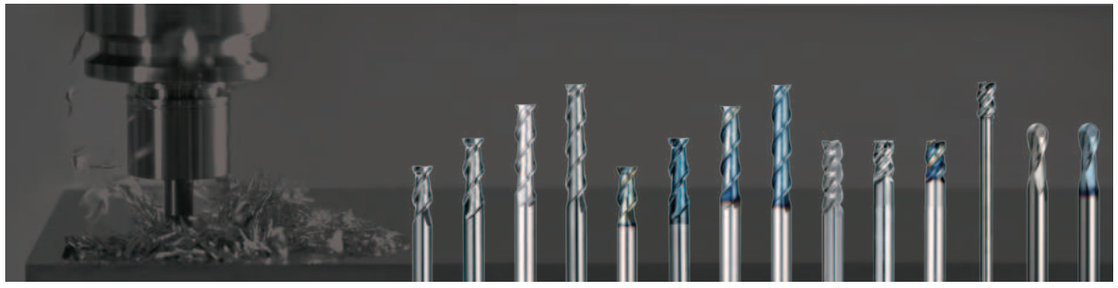
N 铝合金 Aluminium alloy



AL3D-345 AL3D-345R ALZ345 ALZ345-DLC

铝合金加工
Aluminium Milling

针对铝合金加工用的刃口设计，可减少振刀
Reducing chattering by specialized cutting edge design for aluminium



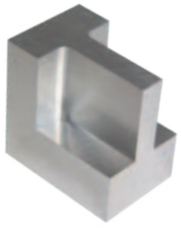
通过利用特殊刀刃形状抑制振刀，提高加工效率
High efficiency due to chatter suppression by special cutting edge design

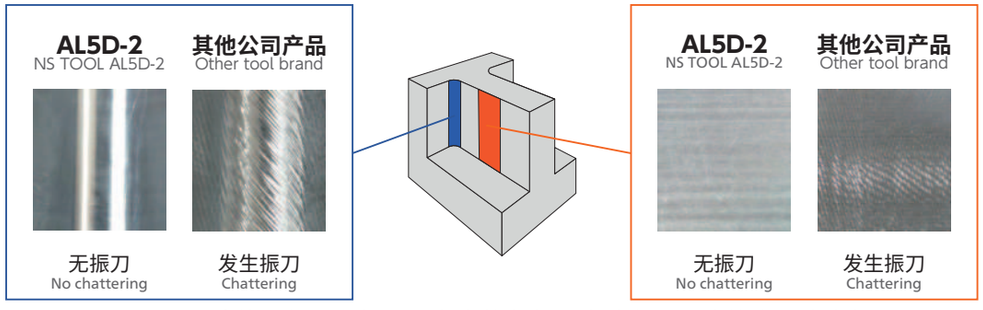
性能比较 Performance



AL5D-2 外周刃
AL5D-2 O. D. Cutting edge

加工材料：A5052
Work material :
加工部位尺寸：
12.5 × 35 × 30mm
Machined size :





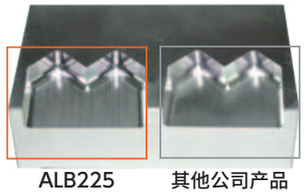
采用L/D=5倍的刃长，在加工阻力大的角部及高速条件下也能实现稳定加工
L/D=5 length of cut realizes stable machining in corners with high machining load and high-speed conditions

性能比较 Performance



ALB225 R部和外周刃
ALB225 R and O. D. Cutting edge

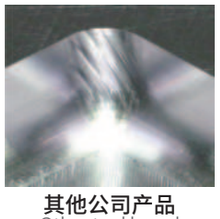
加工材料：A5052
Work material :





ALB225

ALB225在
3边角部也不会
发生振刀，
实现良好的加工面
ALB225 achieves good machining surface and no chattering at the corner

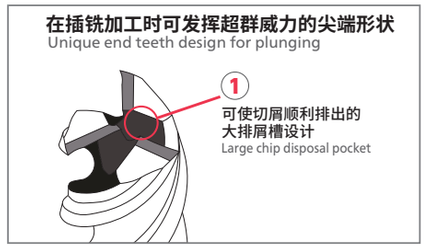


其他公司产品
Other tool brand

其他公司产品在3边
角部发生振刀
Chattering occurred at the corner part after machinedby other brand tool

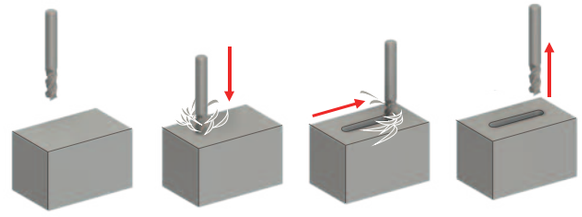
可进行插铣～沟槽～侧面的连续加工
Continuous machining available from plunging to grooves to side surfaces





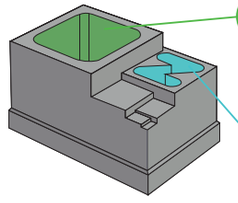


AL3D-345 AL3D-345R ALZ345 ALZ345-DLC



可通过3个刀刃对铝合金进行
连续插铣，加工沟槽和方槽
Plunging on aluminium alloy with 3-flute, continuous grooving / pocket machining

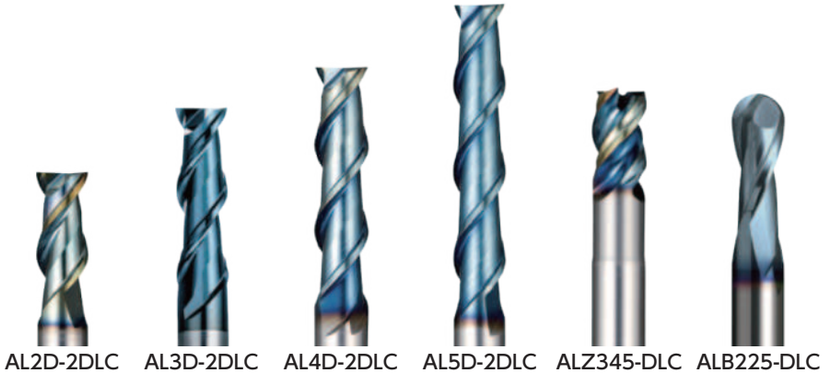
加工材料：A5052
Work material :



A 方槽 Pocket
主轴转速：11,000 min^{-1}, 进给速度（插铣）：300 mm/min
Spindle speed Feed (Plunging)
ALZ345 ϕ10

B 沟槽 Groove
主轴转速：18,600 min^{-1}, 进给速度（插铣）：400 mm/min
Spindle speed Feed (Plunging)
ALZ345 ϕ6

采用铝专用的 DLC 涂层，实现延长刀具寿命
Long tool life with DLC COATING specially designed for aluminium



AL2D-2DLC AL3D-2DLC AL4D-2DLC AL5D-2DLC ALZ345-DLC ALB225-DLC

超长的刀具寿命与高切削性能，可实现减少毛刺产生的高品质加工表面
Realized overwhelming long tool life and high quality burrless cutting performance

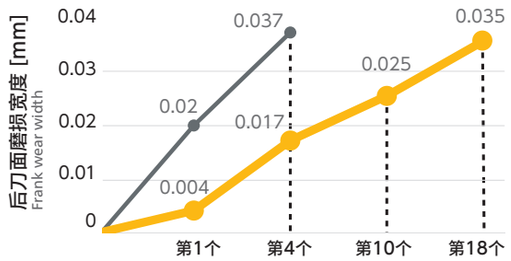
超长寿命
Long tool life

采用最适合铜及铜合金加工的 DLC 涂层，刀具寿命较以往大幅增加
DLC Coating optimized for copper and copper alloy machining increases tool life compare to conventional tool

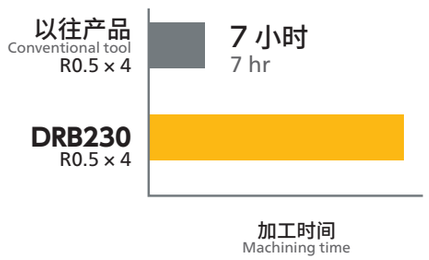
与以往产品的刀具寿命比较
Tool life comparison with conventional tool



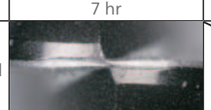
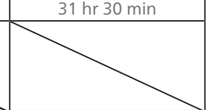
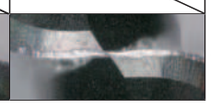
加工材料：紫铜
Work material : Tough pitch copper
冷却方式：水溶性切削油
Coolant : Water-soluble fluid



后刀面磨损宽度的推移 Frank wear progress



寿命延长4.5倍
（与以往产品相比）
4.5 times longer tool life than conventional tool

	加工4个后 After machining 4pcs 7 小时 7 hr	加工10个后 After machining 10pcs 17 小时 30 分钟 17 hr 30 min	加工18个后 After machining 18pcs 31 小时 30 分钟 31 hr 30 min
以往产品 Conventional tool R0.5×4			
DRB230 R0.5×4			



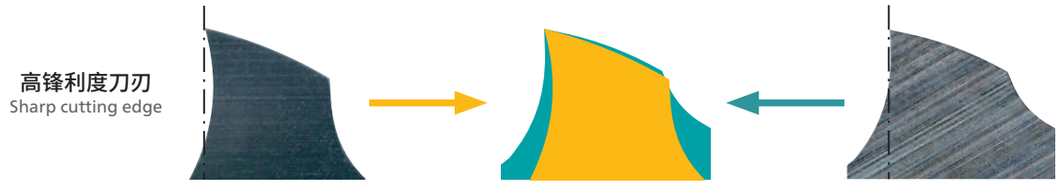
磨损宽度大
加工4个（7 小时）后结束
Ended at the fourth working piece by excess wear width

DRB230 加工了 18 个（31 小时 30 分钟）
DRB230 machined 18pieces (31 hr 30 min)

抑制毛刺发生
Burr suppression

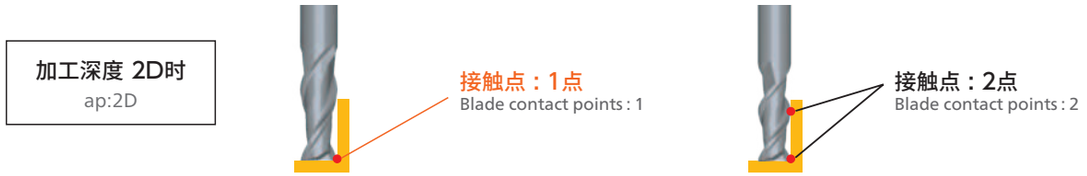
刀刃形状 Shape of cutting edge

刀刃采用锐角形状，相较以往产品毛刺更少，还可抑制倾斜，实现高品质表面。
Adoption of sharper cutting edge to realize high precision machining by suppressing burr and deflection.



外周刃的螺旋角 Helix angle of peripheral flutes

加大螺旋角，提高锋利度。
但是，如果螺旋角过大，会增加切削刃的接触点，导致发生起伏，因此采用37.5°。
High helix angle improves shearing ability. Specialized 37.5°helix angle with high shearing ability and less contact point to reduce waveness.

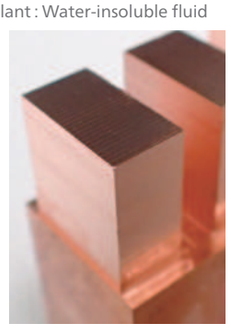


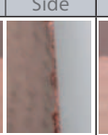
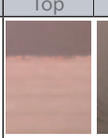
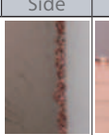
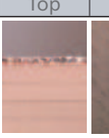
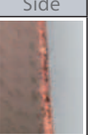
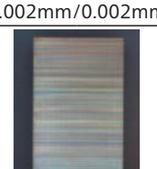
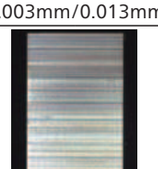
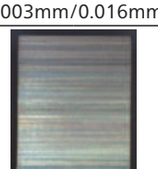
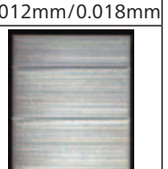
铜电极加工用 螺旋角 37.5°
DHR237 / DHR237R
Specialized for copper electrode machining
37.5°helix angle

一般强螺旋角型
螺旋角 45°
General high helix angle type
45°helix angle

与以往产品的加工结果比较 Comparison with conventional tool

加工材料：紫铜
Work material : Tough pitch copper
加工规格：8 × 15 mm
Machined size
加工深度 12 mm
Machining depth
冷却方式：油冷
Coolant : Water-insoluble fluid



	DHR237 ϕ3×15				以往产品 ϕ3×14 Conventional tool			
	加工初期 Beginning		加工 10 小时后 After 10 hr		加工初期 Beginning		加工 10 小时后 After 10 hr	
	顶面 Top	侧面 Side	顶面 Top	侧面 Side	顶面 Top	侧面 Side	顶面 Top	侧面 Side
毛刺高度 Burr height								
	0.002mm/0.002mm		0.003mm/0.013mm		0.003mm/0.016mm		0.012mm/0.018mm	
表面粗糙度 Roughness								
	Ra:0.075μm		Ra:0.076μm		Ra:0.120μm		Ra:0.350μm	

采用高锋利度的刀刃造型，实现优质的加工面品质
Sharp cutting edge shape with high cutting performance realizes good machined surface



产品阵容
Product lineup

3个型号共有353个规格尺寸，适用于各种形状加工
3 models. Lineup of 353 sizes is available for a variety of madhining shapes

型号 Model		刃长 Length of cut	规格 Size	刃数 Number of flute	特点 Features
平底铣刀 / 长颈平底铣刀　Square End Mill / Long Neck Square End Mill					
RSES230		1.5D	φ0.1 ～ φ6	2	刃长短、刚性高 Short cutting length type with high rigidity
RSE230		3D ～ 10D	φ0.1 ～ φ6	2	长颈造型最大加工深度 35D Maximum depth of cut is 35D with long neck type
球头铣刀 / 长颈球头铣刀　Ball End Mill / Long Neck Ball End Mill					
RSB230		3D ～ 10D	R0.1 ～ R3	2	长颈造型最大加工深度 35D Maximum depth of cut is 35D with long neck type

加工案例
Machining Case

树脂加工用球头铣刀“Clear Cut”
Ball End Mill for Resin
RSB230



加工材料：亚克力
Work material : Acrylic
工件尺寸：50 × 50 mm
Work size （加工深度 8 mm）
Machining depth
冷却方式：油雾
Coolant Oil mist
总加工时间：3 小时 20 分钟
Total machining time : 3 hr 20 min



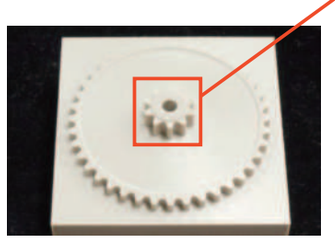
加工工序 Process	精加工 Finishing
使用刀具 Tool	RSB230 R1 × 6
主轴转速 [min^{-1}] Spindle speed	20,000
进给速度 [mm/min] Feed	1,600
切深量 ap × ae [mm] Depth of cut	0.02 × 0.03
加工时间 Machining time	2 小时 20 分钟 2 hr 20 min

采用高锋利度的刀刃设计，可进行高透明度加工
Sharp cutting edge design with high cutting ability enables processing with high transparency

树脂加工用平底铣刀“Clear Cut”短刃造型
Short Flute End Mill for Resin
RSES230



加工材料：PEEK树脂
Work material : PEEK resin
工件尺寸：45 × 45 mm
Work size （加工深度 6.5 mm）
Machining depth
冷却方式：水溶性切削油
Coolant : Water-soluble fluid
总加工时间：1 小时 40 分钟
Total machining time : 1 hr 40 min





可实现无振刀的良好切削表面
Smooth cutting surface with no chattering

加工工序 Process	粗加工 Roughing	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	RSES230 φ6 × 9	RSES230 φ1 × 1.5 × 4	RSES230 φ1 × 1.5 × 4
主轴转速 [min^{-1}] Spindle speed	3,000	20,000	
进给速度 [mm/min] Feed	1,250	800	400
切深量 ap × ae [mm] Depth of cut	6.47 × 1	0.3 × 0.5	0.3 × 0.03（侧面）Side 0.03 × 0.3（平面）Flat
加工时间 Machining time	4 分钟 30 秒 4 min 30 sec	7 分钟 7 min	1 小时 28 分钟 30 秒 1 hr 28 min 30 sec

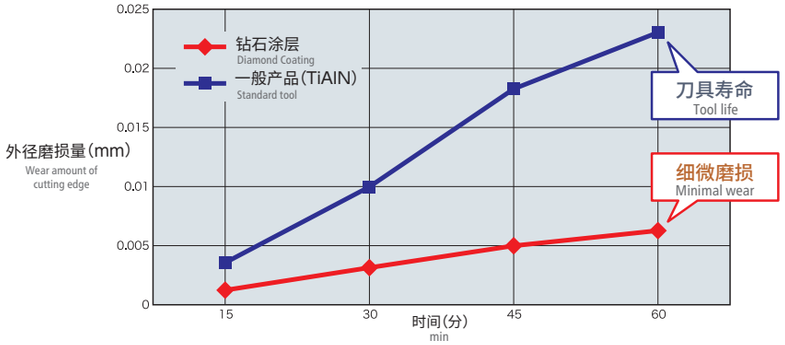
在加工石墨时也能发挥刀具寿命长、耐磨性高的特点
Long time machining and high durability are achieved on graphite machining

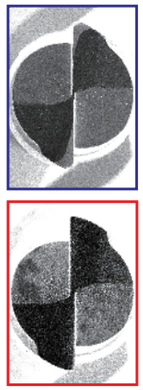
NS 独自研发的钻石涂层
NS TOOL's proprietary diamond coating

独自研发的钻石涂层具有10,000HV的超高涂膜硬度，采用不含结合剂和杂质的高纯度钻石，具有优异的耐久性，采用高粘合性的结合技术，在石墨及高硅铝合金加工中可实现延长刀具寿命。

The uniquely developed diamond coating is extremely hard with hardness of 10,000 HV.
Excellent durability and high adhesion technology with high-purity diamonds containing no bonding agents or impurities ensure long tool life in the machining of graphite and high silicon aluminium.

加工含碳素树脂时的涂层比较验证
Comparison of coating by machining Resin inclusive of carbon





(n：10,000min-1, Vf：1,000mm/min, 切深量：2mm (ap) ×0.1mm (ae), 加工距离：40m, 加工时间：60 分钟，干式切削)
Depth of cut, Cutting length, Machining time, Dry

产品阵容
Product lineup

形状 Shape	型号 Model		规格 Size	特点 Features
平底 Square	DCSE235		φ0.5 ～ φ6 共有 8 种规格 Total 8 sizes	2 刃 35°螺旋角 平底铣刀 2-flute 35° helix angle Square end mill
	DCHR230		φ0.5 ～ φ6 共有 19 种规格 Total 19 sizes	2 刃 30°螺旋角 长颈平底铣刀 2-flute 30° helix angle Long neck square end mill
球头 Ball	DCRB230		R0.2 ～ R3 共有 25 种规格 Total 25 sizes	2 刃 30°螺旋角 长颈球头铣刀 2-flute 30° helix angle Long neck ball end mill

加工案例
Machining case

钻石涂层 2刃铣刀
DIAMOND COATING
2-Flute End Mill
DCSE235



钻石涂层2刃长颈平底铣刀
DIAMOND COATING
2-Flute Long Neck End Mill
DCHR230



加工材料：含玻璃纤维的树脂
Work material : Resin inclusive of glass fiber
工件尺寸：30 × 30 mm (加工深度 10 mm)
Work size Machining depth
冷却方式：吹气
Coolant : Air blow
总加工时间：53 分钟
Total machining time : 53 min



加工工序 Process	外框部 Outer profile	沟槽部 Slot
使用刀具 Tool	DCSE235 φ6	DCHR230 φ1 × 6
主轴转速 [min-1] Spindle speed	10,000	
进给速度 [mm/min] Feed	2,000	1,000
切深量 ap × ae [mm] Depth of cut	10 × 0.5	ap 0.1
加工时间 Machining time	3 分钟 3 min	50 分钟 50 min

钻石涂层
2刃长颈平底铣刀
DIAMOND COATING
2-flute Long Neck End Mill
DCHR230



加工材料：石墨 TTK-5
Work material : Graphite
工件尺寸：φ14 (加工深度 6 mm)
Work size Machining depth
冷却方式：吹气
Coolant : Air blow
总加工时间：5 小时 13 分钟
Total machining time : 5 hr 13 min

板厚：0.05 mm
Thickness



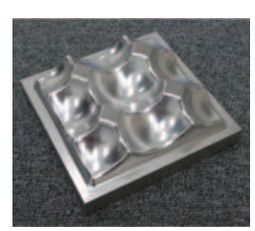


加工工序 Process	粗加工、精加工 Roughing・Finishing
使用刀具 Tool	DCHR230 φ0.5 × 6
主轴转速 [min-1] Spindle speed	20,000
进给速度 [mm/min] Feed	1,000
切深量 ap × ae [mm] Depth of cut	0.03 × 0.24
加工时间 Machining time	5 小时 13 分钟 5 hr 13 min

钻石涂层
2刃长颈球头铣刀
DIAMOND COATING
2-Flute Long Neck Ball End Mill
DCRB230



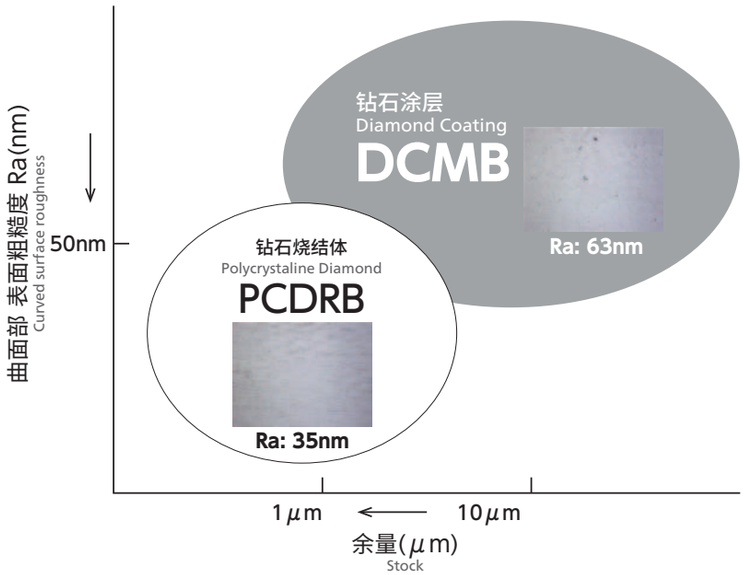
加工材料：MMC
Work material
工件尺寸：140 × 135 mm (加工深度 30 mm)
Work size Machining depth
冷却方式：油雾
Coolant : Oil mist
总加工时间：2 小时 53 分钟
Total machining time : 2 hr 53 min

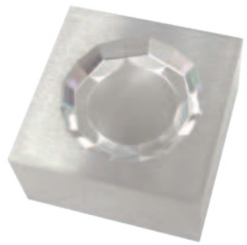


加工工序 Process	粗加工 Roughing	精加工 Finishing
使用刀具 Tool	DCRB230 R3 × 30	
主轴转速 [min-1] Spindle speed	10,000	
进给速度 [mm/min] Feed	3,000	2,000
切深量 ap × ae [mm] Depth of cut	1 × 2	0.2 × 0.2
加工时间 Machining time	1 小时 28 分钟 1 hr 28 min	1 小时 25 分钟 1 hr 25 min

可对硬脆材进行直接切削的钻石涂层
Diamond coating realizes direct milling even on hard brittle materials

钻石涂层与钻石烧结体的加工领域
Machining area of polycrystalline diamond and diamond coating

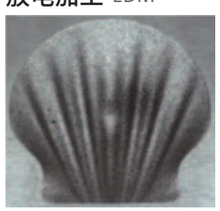




采用直接切削加工，提高生产效率
Productivity improvement by direct milling

使用刀具：DCMB R0.5
Tool
加工材料：硬质合金 (92.5HRA)
Work material : Cemented carbide
工件尺寸：15×15mm
Work size :

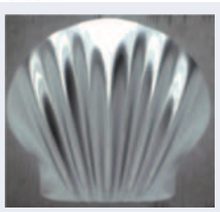
放电加工 EDM



- CAD/CAM 刀路编程
  CAD/CAM operation
- 电极制作
  Produce copper electrode
- 放电加工
  EDM process

共计 3 小时 30 分钟
Total 3 hr 30 min
3个工序
3 processes

切削加工 Milling

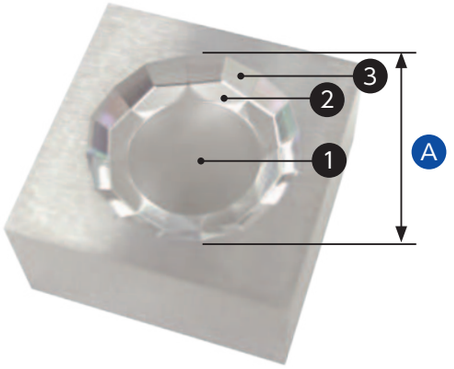


- CAD/CAM 刀路编程
  CAD/CAM operation
- 直接切削加工
  Machining process

共计 2 小时 50 分钟
Total 2 hr 50 min
2个工序
2 processes

减少工序，缩短加工时间
By reducing the process, shorten the cutting time

使用刀具：DCMB R0.3
Tool
加工材料：硬质合金 (92.5HRA)
Work material : Cemented carbide
工件尺寸：15×15mm
Work size :





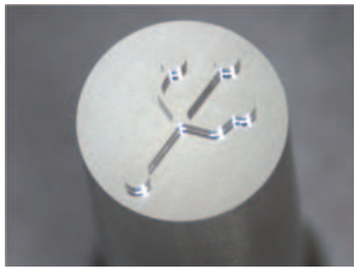
表面粗糙度 Surface Roughness
单位[μm] Unit

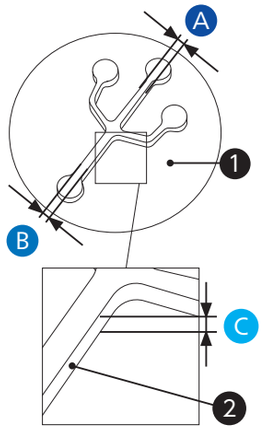
测量位置 Measuring position	Ra	Rz
1 底面 Bottom	0.15	1.31
2 20° 斜面 Incline 20°	0.09	1.60
3 45° 斜面 Incline 45°	0.05	1.10

加工精度 Accuracy
单位[mm] Unit

测量位置 Measuring position	目标值 Target	实测值 Actual	尺寸误差 Error
A 宽度 Width	11.560	11.563	0.003

使用刀具：DCMS ϕ0.5/ϕ0.3
Tool
加工材料：硬质合金 (92.5HRA)
Work material : Cemented carbide
工件尺寸：ϕ6 mm
Work size :





表面粗糙度 Surface Roughness
单位[μm] Unit

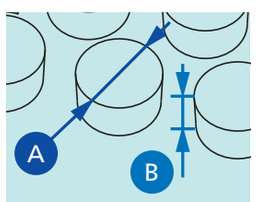
测量位置 Measuring position	Ra	Rz
1 底面 Bottom	0.017	0.109
2 侧面 Side	0.063	0.392

加工精度 Accuracy
单位[mm] Unit

测量位置 Measuring position	目标值 Target	实测值 Actual	尺寸误差 Error
A 宽度 Width	0.157	0.155	0.002
B 宽度 Width	0.229	0.227	0.002
C 高度 Height	0.4	0.398	0.002

使用刀具：DCMS ϕ0.5
Tool
加工材料：耐热玻璃
Work material : Heat-resistant glass
工件尺寸：20 × 20 mm
Work size :



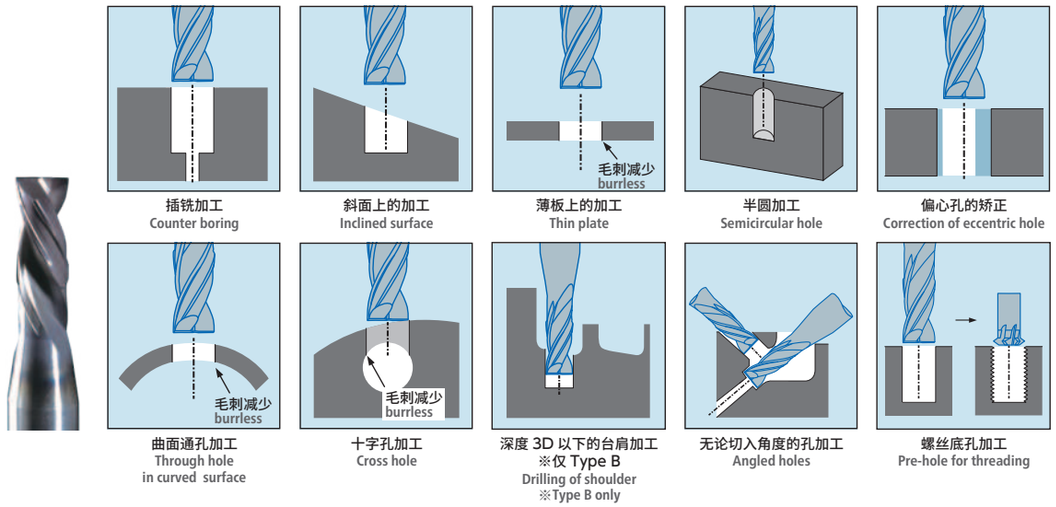


加工精度 Accuracy
单位[mm] Unit

测量位置 Measuring position	目标值 Target	实测值 Actual	尺寸误差 Error
A 宽度 Width	1.260	1.259	0.001
B 加工深度 Machining depth	1.000	0.999	0.001

3 种类型的产品阵容
Lineup for three categories

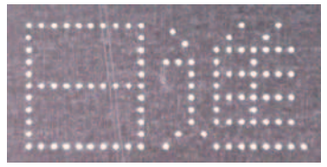
平底钻头使用用途（各种形状上的孔加工）
Usage of a flat drill for various scenes

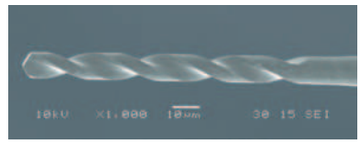




自最小直径ϕ 0.01 起标准化　微径钻头
Micro Drill Standardized from minimum ϕ 0.01

NSMD ϕ0.03
加工材料: SUS304
Work material :





ϕ0.03　板厚 0.15mm 通孔
ϕ0.03 Through hole, plate thickness 0.15mm

NSMD ϕ0.01
加工材料: A5052
Work material :





ϕ0.01　深度 0.1mm 盲孔
ϕ0.01 blind hole, cutting depth 0.1mm

微径钻头
Micro Drill



Micro

无限微细涂层
MUGEN MICRO COATING
NSMD-MS　NSMD-M

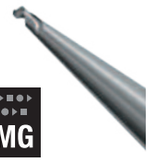
微径钻头
Micro Drill



SMG

无涂层
Non coating
NSMD-S　NSMD

微径定位钻头
Micro Point Drill

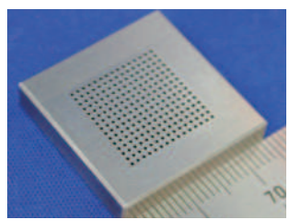


Micro　SMG

无限微细涂层
MUGEN MICRO COATING
Non coating
NSPD-M　NSPD

还备有用于高硬度钢及普通钢的产品
Lineup for steels, hardened steels

H





MSDH ϕ0.5
加工材料: DC53 (60HRC)
Work material :
工件尺寸: 25 × 25 mm
Work size :
深4.9mm的通孔(85 秒/孔)
加工1,000个孔后仍可继续加工
Through hole, cutting depth 4.9mm (85 sec/hole)
Usable even after 1,000 holes drilling

P M N

提供ϕ0.1～ϕ1、
以0.01mm尺寸为间隔的产品
Lineup from ϕ0.1～ϕ1 in 0.01mm increments



无限涂层 小径钻头
MUGEN COATING Miniature Drill
MDR-R

无限涂层 小径定位钻头
MUGEN COATING Point Drill
MDR-PD

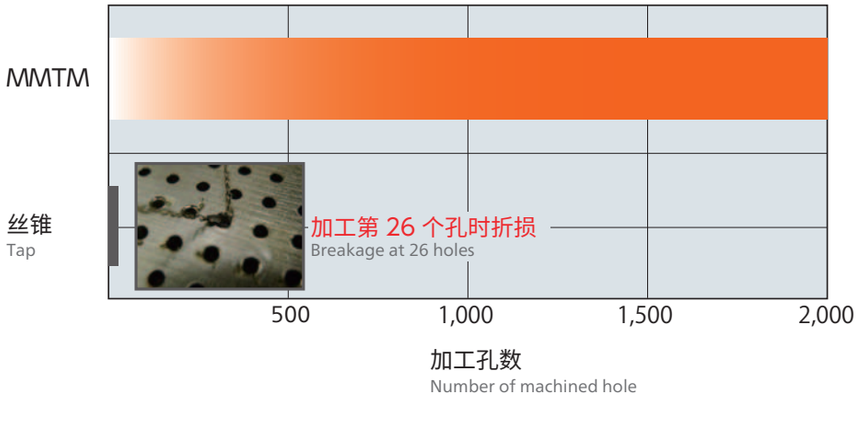
螺纹铣刀
Thread Mill

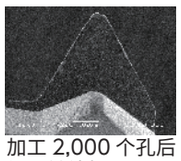
可对各种加工材料进行微细螺纹加工
Fine thread milling is realized on different kind of work materials



在螺纹加工中代替丝锥的螺纹铣刀。
与丝锥相比切削阻力大幅减小，可提高刀具寿命和加工精度。
万一刀具发生折损，也可轻松去除刀具。
Thread mills replace taps in threading operations.
Compared to a tap, the cutting load can be significantly reduced, and tool life and accuracy can be improved.
Also, in the case of tool breakage, the tool can be easily removed.

与丝锥的寿命比较（M2 SUS304）
Tool life comparison with Taps (M2 SUS304)




加工 2,000 个孔后仍可继续加工
Possible to use after 2,000 holes machining


第 2,000 个孔的状态
A state of 2,000th hole

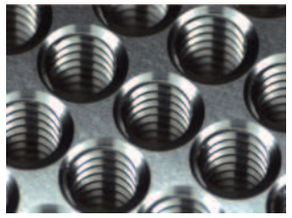
MMTM　n: 12,000min^{-1}, vf:600mm/min, 螺距 0.4mm, 有效螺纹长度 4.8mm
Pitch　Effective thread length
螺旋R:R0.3（ae0.12mm×2），顺铣
Helical R　Down-cut

丝锥 Tap　n:500min^{-1}, vf:200mm/min, 螺距0.4mm, 有效螺纹长度 5.0mm
Pitch　Effective thread length

加工案例
Machining case



使用刀具：MMTM M2
Tool
加工材料：Ti-6Al-4V
Work Material
加工深度：4.8 mm
Machining depth
加工时间：9秒/孔
Machining time : 9 sec/hole
冷却方式：水溶性切削油
Coolant : Water-soluble fluid


加工250个孔后
Cutting edge retreat amount after 250 holes


外径磨损量：0.004 mm
Cutting edge retreat amount

加工工序 Process	底孔 Pre-hole	螺纹铣刀 Thread
使用刀具 Tool	ϕ1.6	MMTM M2
主轴转速 [min^{-1}] Spindle speed	8,000	10,000
进给速度 [mm/min] Feed	150	500
分级量 [mm] Step	0.2	-
加工深度 [mm] Machining depth	5.6	4.8
加工时间 [sec/hole] Machining time	18	9

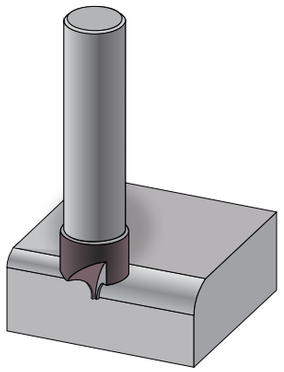
软件
Software

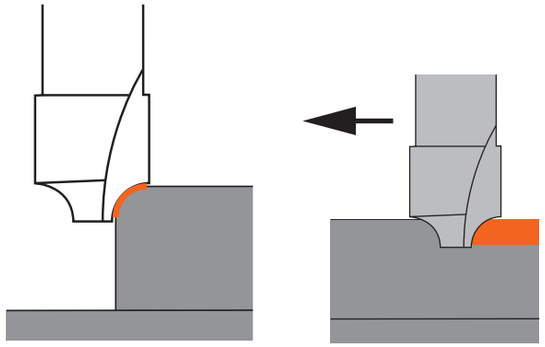
使用产品时，本公司网站免费提供NC程序软件。
We distribute NC program creation software on our website for the use of tools.



使用专用刀具轻松进行 R 倒角加工
R chamfering is easily machined with a special tool

对形状角部进行R倒角加工
R chamfering to each part of the shape





采用高锋利度的刀刃形状，实现优异的R形状加工面和减少毛刺
High machinable cutting edge shape for good machining surface and burr suppression

规格丰富，适用于加工各种材料
Extensive size lineup and supports various work materials

MIR200

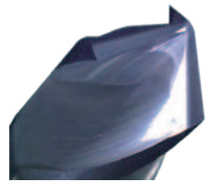


规格 R0.1 ～ R5　　共有 29 种规格　　(R1 以下以 R0.05 为间隔)
Size　　Total 29 sizes　　(R0.05 increment up to size R1)

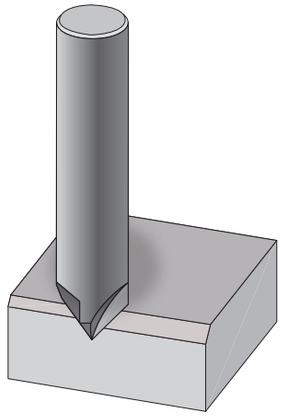
可对应加工材料
Corresponding work material

P	碳素钢 Carbon steel 合金钢 Alloy steel 调质钢 Prehardened steel	M	不锈钢 Stainless steel	N	铝合金 Aluminium alloy 铜合金 Copper
				O	树脂 Resin

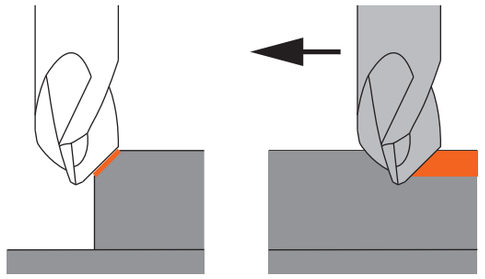
3 刃斜面加工刀具，加工效率高
High efficient machining with 3-flute C chamfering tool



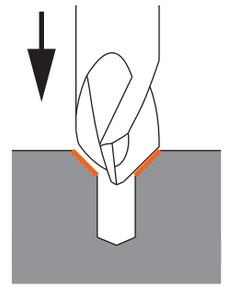
采用高锋利度的刀刃形状，
实现优异的加工面和减少毛刺
High machinable cutting edge shape
for good machining surface and burr
suppression



对形状角部进行C面加工
C chamfering on outside corner

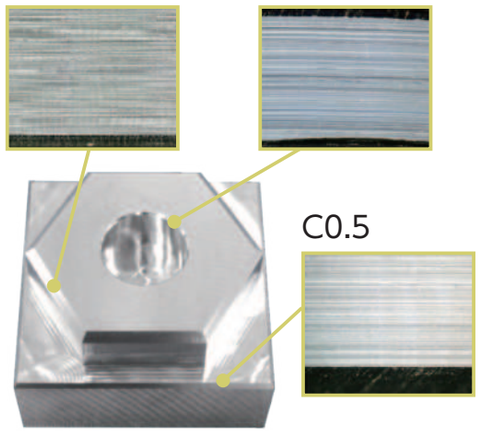


可对孔部进行斜面插铣加工
Hole chamfering with plunging



NSCV-M ϕ6
加工材料：SUS304
Work material :
工件尺寸：30 × 30 mm
Work size :

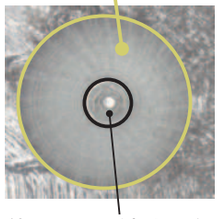
C1.0　　C0.2



C0.5

NSCV-M ϕ4
加工材料：S50C
Work material :
斜面尺寸：C1.2 mm
Chamfer :

斜面加工 C1.2
Chamfering 1.2



使用ϕ0.9钻头进行
的孔加工部分
Hole part by ϕ0.9 drill

5

加工案例

Machining Case

窄间距连接器
Narrow pitch connector

加工材料 HAP40　硬度 64HRC
Work Material

CBN平底铣刀
CBN Square End Mill

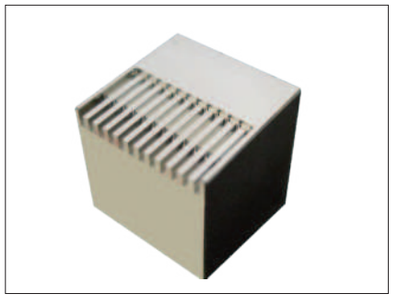
页面 Page ➡ B-006



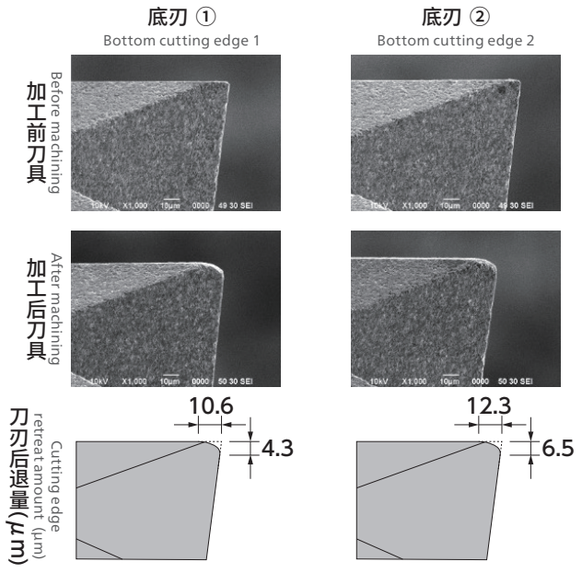
SSE600　ϕ0.2 ～ ϕ1　共有14种规格　Total 14 sizes



60HRC以上的高硬度钢
有加工直角要求时，可减轻刀具磨损，实现高精度加工
Possible to high-precision machining with reduced wear even for requiring corner edges with high hardened steels of 60HRC or higher



工件尺寸 Work size	15 × 15 mm（加工深度 2mm） Machining depth
加工材料 Work material	HAP40（64HRC）
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	13 小时 32 分钟 13 hr 32 min



加工工序 Process	粗加工 Roughing	等高线中精加工 Contour line semi-finishing	扫描线中精加工 Scanning line semi-finishing	等高线精加工 Contour line finishing	扫描线精加工 Scanning line finishing
使用刀具 Tool	SSR200 ϕ 0.5 × R0.05 × 2.5	SSR200 ϕ 0.5 × R0.05 × 2.5		SSE600 ϕ 0.5 × 2.5	
主轴转速 [min^{-1}] Spindle speed	30,000	30,000		30,000	
进给速度 [mm/min] Feed	500	500	300	400	300
切深量 ap × ae [mm] Depth of cut	0.005 × 0.2	0.005 × 0.01	0.01 × 0.01	0.005 × 0.002	0.002 × 0.01
加工时间 Machining time	7 小时 20 分钟 7 hr 20 min	2 小时 52 分钟 2 hr 52 min		3 小时 20 分钟 3 hr 20 min	

刻字加工 “N”
“ N ” letter engraving

加工材料 PD613　硬度 60HRC
Work Material

超微细加工用 CBN球头铣刀 “CBN Micro Ball”
CBN Ball End Mill for precision machining "CBN Micro Ball"

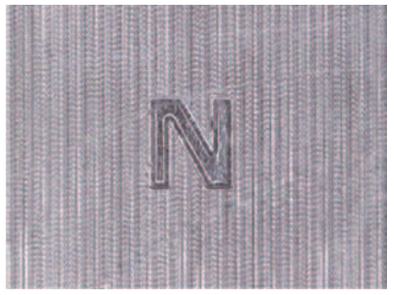
页面 Page ➡ B-008



SMB120　R0.01 ～ R0.05　共有7种规格　Total 7 sizes



对高硬度钢的微米级切削加工
延长刀具寿命的CBN铣刀在极小径时也可加工出高精度R角
Micro manufacturing cutting into high hardened steels
Long tool life CBN enables making of highly accurate corners even with a small diameter

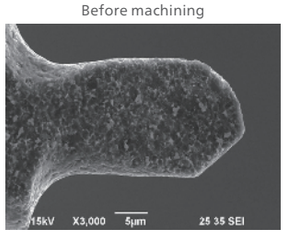




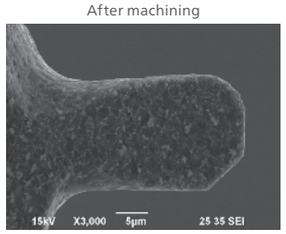
底面表面粗糙度 Rz 0.80 μm
Bottom surface roughness

工件尺寸 Work size	0.31 × 0.28 mm（加工深度0.01 mm） Machining depth
加工材料 Work material	PD613（60HRC）
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	3 小时 10 分钟 3 hr 10 min

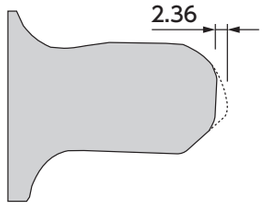
加工前刀具照片
Before machining



加工后刀具照片
After machining



使用刀具 Tool	SMB120 R0.01
主轴转速 [min^{-1}] Spindle speed	80,000
进给速度 [mm/min] Feed	5
切深量 ap × ae [mm] Depth of cut	0.0005 × 0.001
加工时间 Machining time	3 小时 10 分钟 3 hr 10 min



刀刃后退量（μm）
Cutting edge retreat amount (μm)

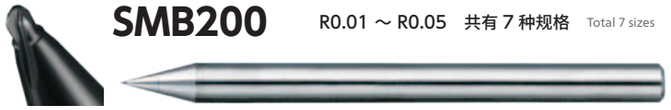
加工案例 CBN 核心系列 Machining Case CBN Core Line

细微沟槽形状
Micro slotting model

加工材料 SLD-MAGIC　硬度 59HRC
Work Material

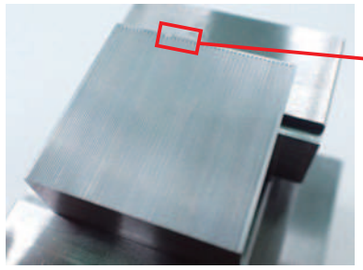
CBN 微米系列 2 刃球头铣刀
CBN Micro 2-Flute Ball End Mill

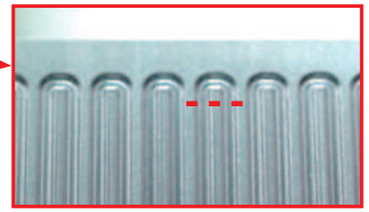
页面 Page ➡ B-010



SMB200　R0.01 ～ R0.05　共有 7 种规格　Total 7 sizes

R 角规格从 R0.01 起的 2 刃造型高精度造型的超微细切削工具
2-flute shape specialized from R0.01, high precise specific micro end mill





部分截面形状
Part cross section

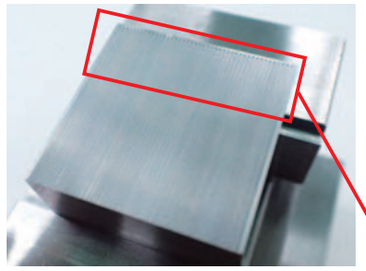


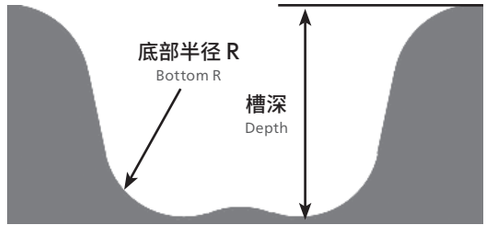
工件尺寸 Work size	30 × 30 mm（加工深度 0.08 mm） Machining depth
加工材料 Work material	SLD-MAGIC (59HRC)
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	44 小时 56 分钟 44 hr 56 min

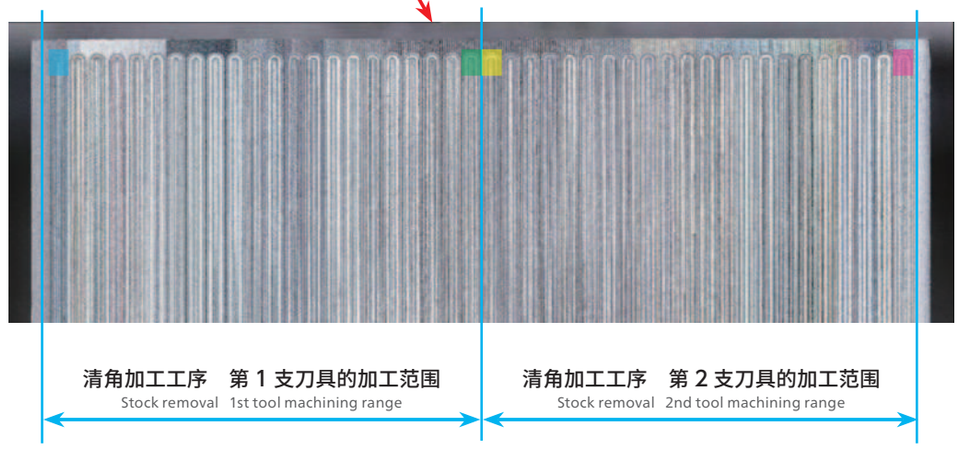
加工工序 Process	粗加工① Roughing	粗加工② Roughing	粗加工③ Roughing	精加工 Finishing	清角加工 Stock removal
加工深度 [mm] Machining depth	Z 0 ～ -0.06	Z-0.05 ～ -0.075	Z-0.055 ～ -0.078	Z 0 ～ -0.08	Z-0.067 ～ -0.08
使用刀具 Tool	SSPB220 R0.1 × 0.3	SSBL200 R0.075 × 0.45	SSBL200 ※ R0.05 × 0.3	SMB200 R0.05	SMB200 ※ R0.03
主轴转速 [min^{-1}] Spindle speed	120,000	120,000	120,000	120,000	120,000
进给速度 [mm/min] Feed	600	400	400	600	300
切深量 ap × ae [mm] Depth of cut	0.01 × 0.02	0.005 × 0.008	0.003 × 0.005	0.003 × 0.005	0.001 × 0.002
余量 [mm] Stock	0.002	0.002	0.002	-	-
加工时间 Machining time	2 小时 47 分钟 2 hr 47 min	2 小时 25 分钟 2 hr 25 min	12 小时 5 分钟 12 hr 5 min	9 小时 49 分钟 9 hr 49 min	17 小时 50 分钟 17 hr 50 min

※ 使用2支刀具
※ Using 2 tools

●加工精度
Machining accuracy







测量部位 Measuring position		第 1 支刀具加工初期 Initial of 1st tool	第 1 支刀具加工后期 End of 1st tool	第 2 支刀具加工初期 Initial of 2nd tool	第 2 支刀具加工后期 End of 2nd tool
加工精度 [mm] Machining accuracy	槽深 Depth 目标值：0.080 Target	0.080	0.079	0.079	0.078
	底部半径 R Bottom R 目标值：R0.030 Target	R0.031	R0.030	R0.030	R0.029

加工案例 CBN 核心系列 Machining Case CBN Core Line

微透镜阵列
Micro lens array

加工材料 STAVAX　硬度 52HRC
Work Material

CBN 微米系列 2 刃球头铣刀
CBN Micro 2-Flute Ball End Mill

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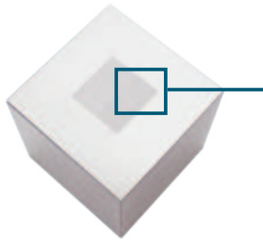
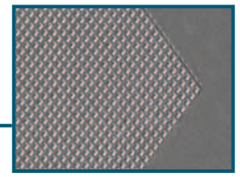
SMB200　R0.01 ～ R0.05　共有 7 种规格　Total 7 sizes



采用独特的刀刃形状和高精度 R 角（R ± 0.002mm）
实现超细微切削加工

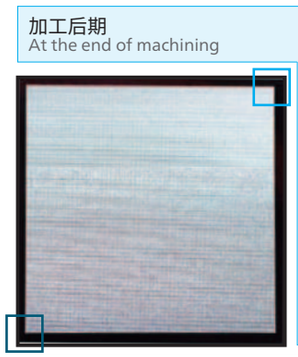
Micro precision machining is realized by specialized cutting edge and high R accuracy R±0.002mm





SR形状22,500个
SR shape 22,500pcs

工件尺寸 Work size	23 × 23 mm （加工深度 0.03 mm） Machining depth
加工材料 Work material	STAVAX(52HRC)
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	93 小时 57 分钟 93 hr 57 min



加工后期 At the end of machining

第22,500个 22,500th

表面粗糙度 Ra：0.085 μm
Surface roughness

加工精度 Machining accracy

深度 Depth　目标值 Target：0.030 mm

实测值 Actual：0.030 mm

形状精度 Accuracy　目标值 Target：R0.050 mm

实测值 Actual：R0.049 mm

加工初期 At the beginning of machining

第1个 1st

表面粗糙度 Ra：0.078 μm
Surface roughness

加工精度 Machining accracy

深度 Depth　目标值 Target：0.030 mm

实测值 Actual：0.031 mm

形状精度 Accuracy　目标值 Target：R0.050 mm

实测值 Actual：R0.050 mm

加工案例 CBN 核心系列
Machining Case CBN Core Line

加工工序 Process	粗加工 Roughing	精加工 Finishing
使用刀具 Tool	SSBL200 R0.05 × 0.3	SMB200 R0.03
主轴转速 [min-1] Spindle speed	60,000	60,000
进给速度 [mm/min] Feed	100	30
切深量 ap × ae [mm] Depth of cut	0.005 × 0.005	0.001 × 0.001
余量[mm] Stock	0.002	-
加工时间 Machining time	36 小时 16 分钟 36 hr 16 min	57 小时 41 分钟 57 hr 41 min

粉末冶金模具
Mold for power metallurgy

加工材料 YXR3　硬度 60HRC
Work Material

CBN 超精加工用 螺旋球头铣刀
CBN Super Spiral Ball End Mill

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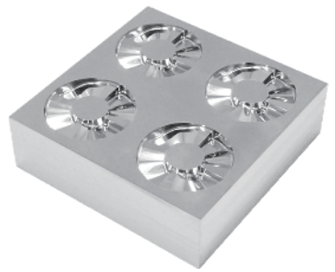
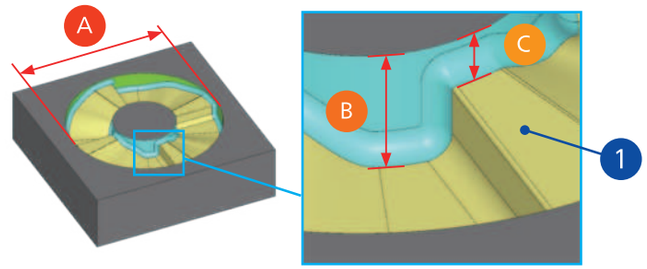
SSPB220　R0.1 ～ R3　共有 30 种规格　Total 30 sizes



加工 60HRC 高硬度钢材时，即使长达 17 小时的加工，
也能实现稳定的加工面品质和良好的加工精度。

CBN End Mill ensures high quality surface and accuracy for a long time machining to high-hardened steel (60HRC) even with 17hrs machining time.





工件尺寸 Work size	100 × 100 × 30 mm
加工材料 Work material	YXR3 (60HRC)
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	31 小时 12 分钟 31 hr 12 min

测量部位 Measuring position	实测值 Actual		
	A	B	C
目标值 Target	40.000	5.000	1.500
第 1 个 1st Machining part	39.998	4.998	1.499
第 4 个 4th Machining part	39.996	4.998	1.498

表面粗糙度 Surface roughness	1 Ra [μm]
第 1 个 1st Machining part	0.092
第 4 个 4th Machining part	0.080

加工案例 CBN 核心系列
Machining Case CBN Core Line

加工工序 Process	粗加工 Roughing	清角加工 Stock removal	中粗加工1 Semi-roughing1	中粗加工2 Semi-roughing2	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	MRBSH230SF R1.5 × 6	MRBSH230SF R1 × 6		MRBSH230SF R1 × 6	MRBSH230SF R1 × 6 ※	SSPB220 R1 × 5
主轴转速 [min-1] Spindle speed	15,000	20,000		20,000	20,000	40,000
进给速度 [mm/min] Feed	2,000	1,600		1,600	1,200	1,000
切深量 ap × ae [mm] Depth of cut	0.2 × 0.5	0.15 × 0.3	0.15 × 0.3	0.09 × 0.1	0.05 × 0.02	0.01 × 0.01
余量[mm] Stock	0.15	0.15	0.15	0.06	0.01	-
加工时间 Machining time	2 小时 10 分钟 2 hr 10 min	16 分钟 16 min	48 分钟 48 min	1 小时 46 分钟 1 hr 46 min	9 小时 12 分钟 9 hr 12 min	17 小时 17 hr

※ 使用 2 支刀具
※ Using 2 tools

反射板
Reflector

加工材料 ELMAX　硬度 60HRC
Work Material

CBN超高速加工用球头铣刀
CBN Super Speed Ball End Mill

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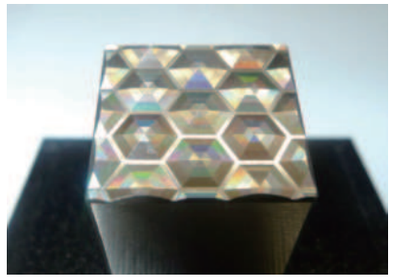
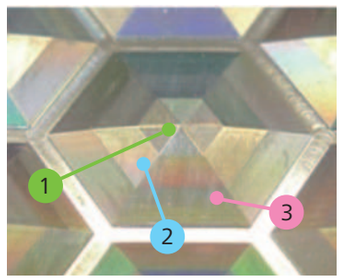
SSB200　R0.1 ～ R1　共有15种规格　Total 15 sizes



可对应高硬度钢的长时间精加工
Suitable for long finishing operation in high-hardened steel





工件尺寸 Work size	15 × 15 mm（加工深度 0.35 mm） Machining depth
加工材料 Work material	ELMAX（60HRC）
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	9 小时 34 分钟 9 hr 34 min

表面粗糙度 [μm] Surface roughness		
1	2	3
Rz 0.87 μm	Rz 0.89 μm	Rz 0.57 μm

加工工序 Process	粗加工 Roughing	沟槽加工 Slot	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	MRBH230 R0.5 × 2	MHRH230R φ0.4 × R0.05 × 1	MRBH230 R0.5 × 2	SSB200 R0.5 × 2.5
主轴转速 [min^{-1}] Spindle speed	40,000	30,000	40,000	40,000
进给速度 [mm/min] Feed	800	125	800	400
切深量 ap × ae [mm] Depth of cut	0.02 × 0.1	ap 0.003	0.02 × 0.08	0.004 × 0.004
加工时间 Machining time	52 分钟 52 min	38 分钟 38 min	1 小时 45 分钟 1 hr 45 min	6 小时 19 分钟 6 hr 19 min

高硬度钢微细沟槽加工
Micro-slotting

加工材料 YXR7　硬度 63HRC
Work Material

CBN超高速加工用 圆鼻铣刀
CBN Super Speed Corner Radius End Mill

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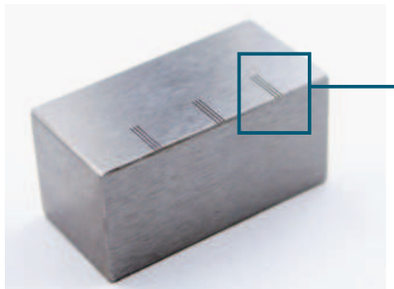
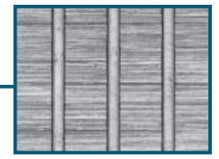
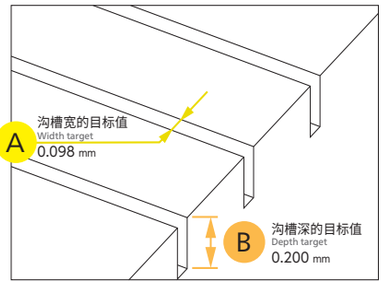
SSR200　φ0.1 × R0.02 ～ φ2 × R0.5　共有172种规格　Total 172 sizes



外径φ0.1的极微细径也可对YXR7（63HRC）进行高精度加工
High-precision machining to YXR7 (63HRC) is possible even with an ultra-fine diameter of 0.1 mm







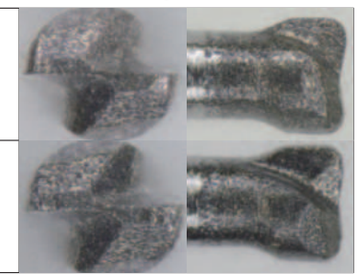
工件尺寸 Work size	30 × 15 mm（加工深度 0.2 mm） Machining depth
加工材料 Work material	YXR7（63HRC）
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	3 小时 51 分钟 3 hr 51 min

	目标值 Target	实测值 Actual
A 槽宽 Slot width	0.098 mm※	0.099 mm
B 槽深 Depth	0.2 mm	0.198 mm

※使用外径φ0.098的刀具
※Actual tool diameter φ 0.098.

使用刀具 Tool	SSR200 φ0.1 × R0.02 × 0.2
主轴转速 [min^{-1}] Spindle speed	31,000
进给速度 [mm/min] Feed	50
切深量 [mm] Depth of cut	ap 0.001

刀具的磨损状态　Tool ware after machining

加工前 Before machining	
1 小时 17 分钟 加工后 After machining 1 hr 17 min	

1支刀具加工3个沟槽　Three slots machined by one tool

加工案例 CBN 核心系列 Machining Case CBN Core Line

齿轮
Gear

加工材料 YXR7　硬度 63HRC
Work Material

CBN 超高速加工用 圆鼻铣刀
CBN Super Speed Corner Radius End Mill

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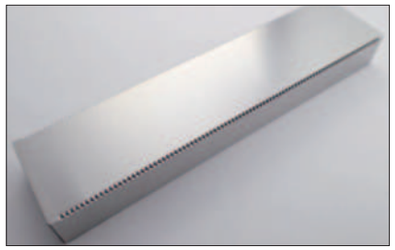
SSR200　φ0.1 × R0.02 ～ φ2 × R0.5　共有 172 种规格　Total 172 sizes



即使在加工 63HRC 的高硬度钢时，像φ 0.2 这样的极小径也能获得良好的加工精度。

CBN end mill ensures accuracy for a long time machining to high-hardened steel (63HRC) even with 0.2mm cutter diameter



工件尺寸 Work size　85 × 20 mm（加工深度 0.65 mm）Machining depth

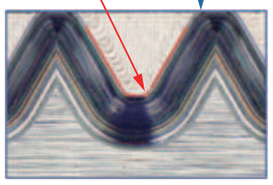
加工材料 Work material　YXR7（63HRC）

冷却方式 Coolant　油雾 Oil mist

总加工时间 Total machining time　43 小时 58 分钟 43 hr 58 min



R部 测量部分
Measuring position R



单位：mm Unit : mm

测量部位 Measuring position	目标值 Target	实测值 Actual
A	R0.075	R0.077
B		R0.073
C		R0.077
D		R0.079

加工工序 Process	粗加工 Roughing	清角加工① Stock ①	清角加工② Stock ②	清角加工③ Stock ③	精加工 Finishing
使用刀具 Tool	SSPB220 ※1 R0.3 × 1.2	SSPB220 ※1 R0.2 × 0.5	SSR200 ※2 φ0.2 × R0.03 × 0.3	SSR200 φ0.2 × R0.03 × 0.3	SSR200 ※1 φ0.15 × R0.03 × 0.3
主轴转速 [min^{-1}] Spindle speed	40,000	40,000	40,000	40,000	40,000
进给速度 [mm/min] Feed	600	300	180	180	120
切深量 ap × ae [mm] Depth of cut	0.01 × 0.01	0.004 × 0.008	0.003 × 0.006	0.002 × 0.01	0.005 × 0.003
余量 [mm] Stock	0.005	0.005	0.005	0.003	-
加工时间 Machining time	16 小时 44 分钟 16 hr 44 min	8 小时 40 分钟 8 hr 40 min	4 小时 50 分钟 4hr 50 min	58 分钟 58 min	12 小时 46 分钟 12hr 46 min

※ 1 使用 4支刀具
※ 1　Using 4 tools

※ 2 使用 2支刀具
※ 2　Using 2 tools

微针
Micro needle

加工材料 STAVAX　硬度 52HRC
Work Material

CBN超高精度圆鼻铣刀
CBN Super High Precision Corner Radius End Mill

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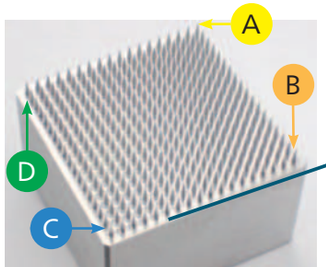
SHPR400　φ0.1 × R0.01 ～ φ3 × R0.2　共有142种规格　Total 142 sizes



外径φ0.3的小径规格也可经由
4刃造型实现长时间稳定加工

Achieves long tool life machining with 4-flutes CBN edge despite its small diameter of φ 0.3

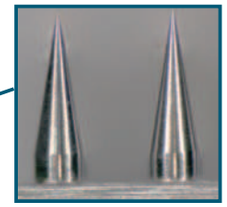


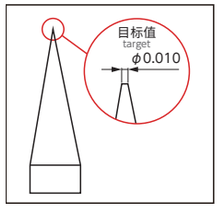
工件尺寸 Work size　15 × 15 mm（加工深度 1.2 mm）Machining depth

加工材料 Work material　STAVAX（52HRC）

冷却方式 Coolant　油雾 Oil mist

总加工时间 Total machining time　24 小时 53 分钟 24 hr 53 min





测量位置 Measuring position	尖端径 [mm] Tip diameter	
	目标值 Target	实测值 Actual
A	0.010	0.009
B		0.013
C		0.013
D		0.013

加工工序 Process	精加工 Finishing
使用刀具 Tool	SHPR400 φ0.3 × R0.02 × 1.5
主轴转速 [min^{-1}] Spindle speed	40,000
进给速度 [mm/min] Feed	25 ～ 300
切深量 ap × ae [mm] Depth of cut	0.003 × 0.04
加工时间 Machining time	14 小时 50 分钟 14 hr 50 min

※ 使用2支刀具
※　Using 2 tools

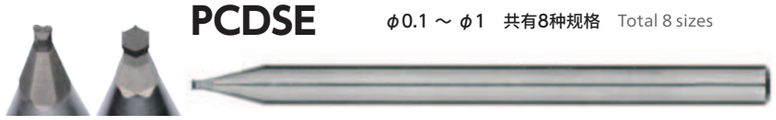
加工案例 CBN 核心系列 Machining Case CBN Core Line

微流道
Micro flow channel

加工材料 硬质合金　硬度 92.5HRA
Work Material Cemented carbide

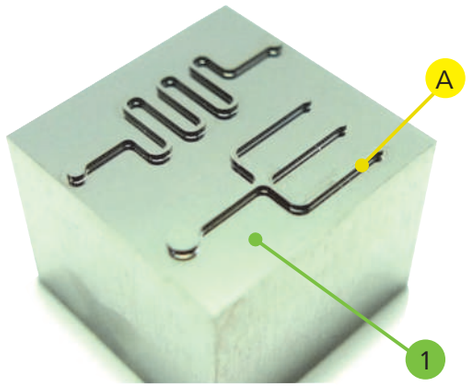
PCD超精加工用平底铣刀
PCD Square End Mill

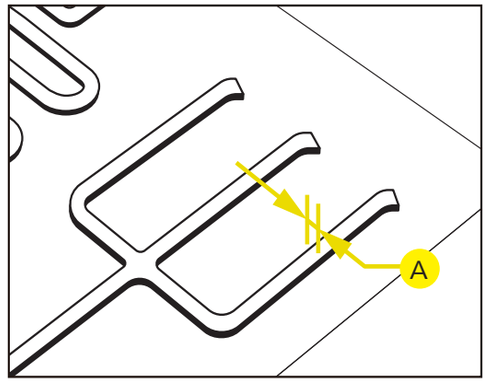
页面 Page ➡ C-002



PCDSE　φ0.1 ～ φ1　共有8种规格　Total 8 sizes

可在硬质合金的切削加工中实现稳定的切削表面
可获得超精密加工所需的纳米级表面粗糙度
Realizes stable machined surface in milling of cemented carbides.
Possible to achieve the nano-level surface roughness required in ultra-precision machining





工件尺寸 Work size　10 × 10 mm（加工深度 0.25 mm）Machining depth
加工材料 Work material　硬质合金（92.5HRA）Cemented carbide
冷却方式 Coolant　油冷 Water-insoluble fluid
总加工时间 Total machining time　12 小时 50 分钟 12 hr 50 min

1	底面表面粗糙度 Bottom surface roughness
Ra	0.002 μm
Rz	0.038 μm

A	流道宽度 Passage width
目标值 Target	0.180 mm
实测值 Actual	0.182 mm
误差 Error	+ 0.002 mm

加工案例 PCD 核心系列 Machining Case PCD Core Line

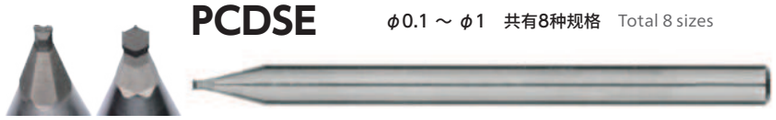
加工工序 Process	等高线精加工 Contour line finishing	扫描线精加工 Scanning line finishing
使用刀具 Tool	PCDSE φ 0.5	PCDSE φ 0.5
主轴转速 [min^{-1}] Spindle speed	56,000	56,000
进给速度 [mm/min] Feed	70	50
切深量 ap × ae [mm] Depth of cut	0.001 × 0.002	0.001 × 0.01
加工时间 Machining time	5 小时 5 hr	7 小时 50 分钟 7 hr 50 min

SD卡模具
SD Card model

加工材料 硬质合金　硬度 92.5HRA
Work Material Cemented carbide

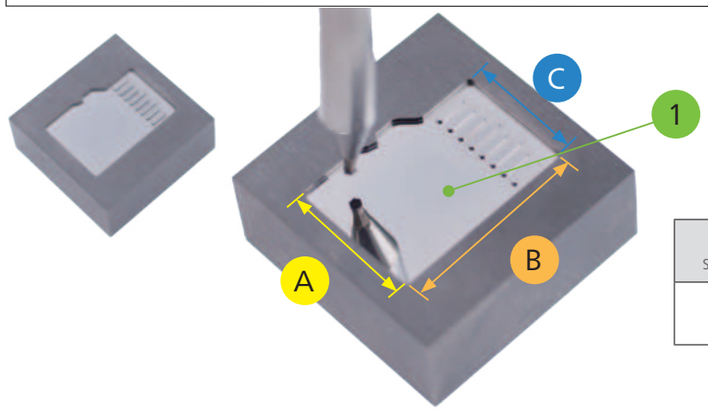
PCD 平底铣刀
PCD Square End Mill

页面 Page ➡ C-002



PCDSE　φ0.1 ～ φ1　共有8种规格　Total 8 sizes

在硬质合金的精加工中，PCDSE 可实现纳米级表面粗糙度
In the finishing of cemented carbide, PCDSE realizes surface roughness nano-level machining



单位 [μm] Unit

表面粗糙度 Surface roughness	Ra	Rz
1	0.002	0.02

单位 [mm] Unit

工件尺寸 Work size　20 × 20 mm（加工深度 0.415 mm）Machining depth
加工材料 Work material　硬质合金 (92.5HRA) Cemented carbide
冷却方式 Coolant　油冷 Water-insoluble fluid
总加工时间 Total machining time　24 小时 30 分钟 24 hr 30 min

测量位置 Measuring position	目标值 Target	实测值 Actual	误差 Error
A	10.769	10.768	- 0.001
B	15.000	15.003	+ 0.003
C	9.423	9.425	+ 0.002

加工案例 PCD 核心系列 Machining Case PCD Core Line

加工工序 Process	粗加工 Roughing	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	DCMS φ0.5	DCMS φ0.5	PCDSE φ0.5
主轴转速 [min^{-1}] Spindle speed	20,000	20,000	40,000
进给速度 [mm/min] Feed	150	150 ～ 300	100 ～ 200
切深量 ap × ae [mm] Depth of cut	0.002 × 0.3	0.002 × 0.002 ～ 0.05	0.0005 ～ 0.002 × 0.001 ～ 0.025
余量[mm] Stock	0.003	0.0005 ～ 0.002	-
加工时间 Machining time	14 小时 14 hr	2 小时 30 分钟 2 hr 30 min	8 小时 8 hr

抬头显示器(HUD)
Head up display

加工材料 STAVAX　硬度 52HRC
Work Material

PCD 球头铣刀
PCD Ball End Mill

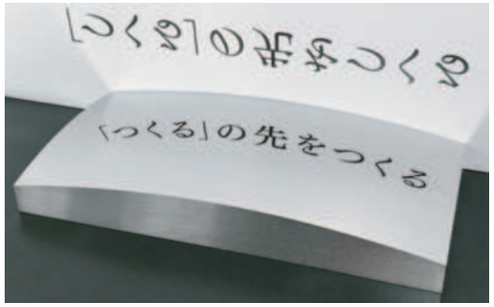
页面 Page ➡ C-004



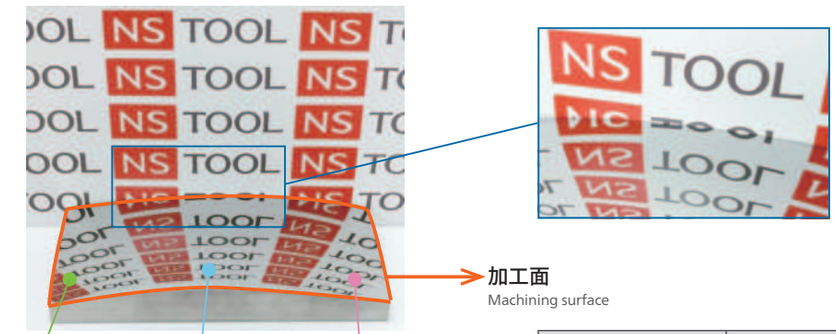
PCDRB　R0.05 ～ R3　共有 15 种规格　Total 15 sizes

如镜面般的光滑加工表面
实现了 Ra 30nm 以下的表面粗糙度

Finished surface looks “smooth, even and shiny” such as the mirror surface
Realized the surface roughness : Ra 30nm

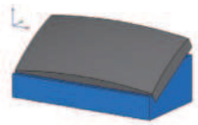


工件尺寸 Work size	200 × 100 × 30 mm
加工材料 Work material	STAVAX(52HRC)
冷却方式 Coolant	油冷 Water-insoluble fluid ※中精加工・精加工以外使用油雾冷却 ※ Using oil mist except for the semi-finishing and finishing process
总加工时间 Total machining time	66 小时 50 分钟 66 hr 50 min



测量部位 Measuring position	Ra [μm]
1	0.010
2	0.010
3	0.011

加工准备 Set up	XY 平面保持水平 Horizontal to XY 	
加工工序 Process	粗加工 Roughing	整平 Surface uniform
使用刀具 Tool	MRBSH230SF R3 × 10	
主轴转速 [min^{-1}] Spindle speed	16,000	16,000
进给速度 [mm/min] Feed	3,000	2,000
切深量 ap × ae [mm] Depth of cut	0.3 × 2	ae 0.5
余量 [mm] Stock	0.15	0.1
加工时间 Machining time	1 小时 35 分钟 1 hr 35 min	25 分钟 25 min

加工准备 Set up	工件倾斜 30° Inclined 30° 为了避开使用刀具的中心部位 Machining without using the center of the tool top 将工件倾斜30°后进行加工 Set up with Inclined 30°  倾斜30°的夹具 Jig with inclined 30°		
加工工序 Process	中精加工① Semi-finishing ①	中精加工② Semi-finishing ②	精加工 Finishing
使用刀具 Tool	MRBSH230SF R3 × 10	SSPB220 R3 × 12	PCDRB R3 × 15
主轴转速 [min^{-1}] Spindle speed	10,000	16,000	16,000
进给速度 [mm/min] Feed	2,000	1,400	700
切深量 ap × ae [mm] Depth of cut	ae 0.15	ae 0.05	ae 0.009
余量 [mm] Stock	0.04	0.005	-
加工时间 Machining time	1 小时 35 分钟 1 hr 35 min	5 小时 40 分钟 5 hr 40 min	57 小时 35 分钟 57 hr 35 min

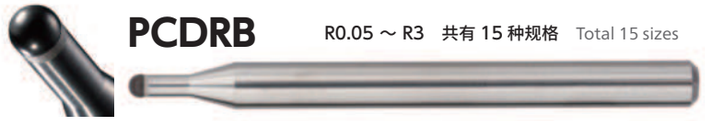
加工案例 PCD 核心系列 Machining Case PCD Core Line

圆柱内表面5轴加工透镜阵列
Lens array (5-axis machining)

加工材料 STAVAX　硬度 52HRC
Work Material

PCD 球头铣刀
PCD Ball End Mill

页面 Page ➡ C-004

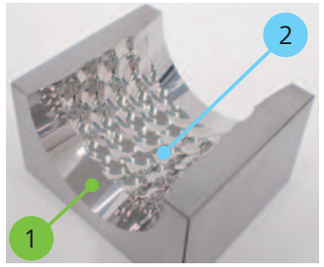


PCDRB　R0.05 ～ R3　共有 15 种规格　Total 15 sizes

如镜面般的光滑加工表面
实现了 Ra15nm 以下的表面粗糙度

Finished surface looks “smooth, even and shiny” such as the mirror surface
Realized the roughness : Ra 15nm

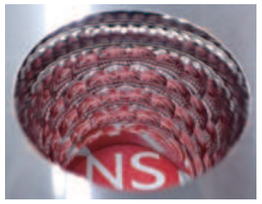




测量部位 Measuring position	Ra [μm]
1 锥部 Taper part	0.008
2 透镜部 Lens part	0.012

工件尺寸 Work size	60 × 40 mm（加工深度 35 mm） Machining depth
加工材料 Work material	STAVAX (52HRC)
冷却方式 Coolant	粗加工、中精加工：油雾 Roughing・Semi-finishing: Oil mist 精加工：油冷 Finishing: Water-insoluble fluid
总加工时间 Total machining time	34 小时 40 分钟 34 hr 40 min

镜面部分的反射
Reflection of mirror surface





加工工序 Process	粗加工 Roughing	中精加工① Semi-finishing ①	中精加工② Semi-finishing ②	精加工 Finishing
使用刀具 Tool	MSBSH330-5X ※ R1	MSBSH330-5X R1	SSPB200 R1 × 4	PCDRB R1 × 5
主轴转速 [min^{-1}] Spindle speed	16,000	20,000	40,000	40,000
进给速度 [mm/min] Feed	2,000	1,500	1,000	600
切深量 ap × ae [mm] Depth of cut	0.1 × 0.3	ap 0.05	ap 0.03	ap 0.005
余量 [mm] Stock	0.1	0.03	0.005	-
倾斜角 [°] Inclined angle	10° ～ 35°	8° ～ 35°	8° ～ 35°	8° ～ 35°
加工时间 Machining time	12 小时 20 分钟 12 hr 20 min	1 小时 1 hr	2 小时 50 分钟 2 hr 50 min	19 小时 30 分钟 19 hr 30 min

※ 使用 2支刀具
※ Using 2 tools

加工案例 PCD 核心系列 Machining Case PCD Core Line

5轴加工导光模具
5-axis machining light guide mold

加工材料 STAVAX　硬度 52HRC
Work Material

PCD 超精加工用 圆鼻铣刀
PCD Corner Radius End Mill

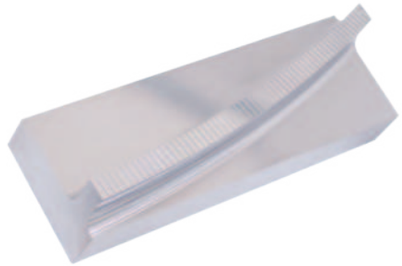
页面 Page ➡ C-006

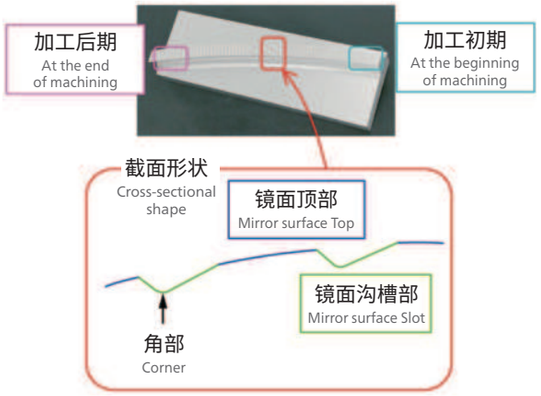


PCDRS　φ0.3 × R0.05 ～ φ1 × R0.1　共有 10 种规格　Total 10 sizes

PCD 材质的圆鼻铣刀
在高硬度钢的精加工中，可实现纳米级表面粗糙度

PCD corner radius end mill
Realized nano level finishined surface roughness on hardened steels





工件尺寸 Work size	150 × 50 × 40 mm
加工材料 Work material	STAVAX (52HRC)
冷却方式 Coolant	油冷 Water-insoluble fluid
总加工时间 Total machining time	64 小时 50 分钟 64 hr 50 min

	表面粗糙度 Ra[μm] Surface roughness	角部 Corner（目标值：R0.05） Target
加工初期 At the beginning of machining	镜面顶部：0.016 Mirror surface top 镜面沟槽部：0.019 Mirror surface slot	R0.052
加工后期 At the end of machining	镜面顶部：0.014 Mirror surface top 镜面沟槽部：0.018 Mirror surface slot	R0.051

加工部位 Machining position	镜面顶部 Mirror surface top	镜面沟槽部 Mirror surface slot
加工工序 Process	精加工① Finishing ①	精加工② Finishing ②
使用刀具 Tool	PCDRB R1.5 × 7.5	PCDRS φ1 × R0.05 × 1
主轴转速 [min^{-1}] Spindle speed	30,000	40,000
进给速度 [mm/min] Feed	700	300
切深量 ap × ae [mm] Depth of cut	ae 0.006	0.001 × 0.003
加工时间 Machining time	6 小时 10 分钟 6 hr 10 min	35 小时 40 分钟 35 hr 40 min

镜面部分的反射
Reflection of mirror surface



加工案例 PCD 核心系列 Machining Case PCD Core Line

双层八角圆柱
Two-stage octagon punch

加工材料 YXM1　硬度 63HRC
Work Material

无限白金 Plus 涂层
高硬度钢加工用 6 刃平底铣刀
MUGEN COATING PREMIUM Plus 6-Flute Square End Mill for Hardened steel

MHDSH645　φ5 ～ φ6　共有4种规格　Total 4 sizes



采用高刚性刀具设计，可抑制高硬度钢加工中的倾斜
High rigidity tool design suppresses deflection for hardened steel machining

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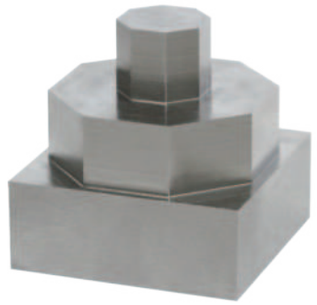
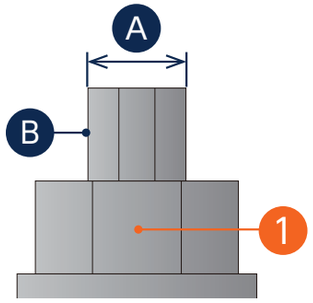
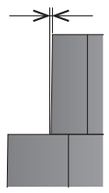


工件尺寸 Work size　30 × 30 mm（加工深度 18 mm）Machining depth
加工材料 Work material　YXM1 (63HRC)
冷却方式 Coolant　油雾 Oil mist
总加工时间 Total machining time　25 分钟 25 min



B 倾斜量 0.002 mm
Amount of deflection



采用高刚性刀具设计，可抑制倾斜量
High rigidity tool design suppresses deflection

单位 [μm] Unit

测量位置 Measuring position	1
Ra	0.33
Rz	1.99

测量位置 Measuring position	A
目标值 [mm] ※ Target	11.008
实测值 [mm] Actual	11.016
尺寸误差 [mm] Error	0.008

※ 该值考虑了加工前的刀具外径
※ Referenced to the tool outer diameter before machining

加工案例 常规系列 无限白金Plus涂层 Machining Case Regular Line MUGEN PREMIUM Plus

加工工序 Process	粗加工 Roughing	精加工（平坦部）Finishing (Plane)	精加工（侧面）Finishing (Side)
使用刀具 Tool	MHDSH645 φ6 × 12	MHDSH645 φ6 × 12	
主轴转速 [min^{-1}] Spindle speed	5,300		
进给速度 [mm/min] Feed	1,200	400	
切深量 ap × ae [mm] Depth of cut	9 × 0.12	0.05 × 3	9 × 0.05
余量[mm] Stock	0.05	-	
加工时间 Machining time	21 分钟 21 min	3 分钟 3 min	1 分钟 1 min

齿轮冲头造型
Punch pin

加工材料 HAP40　硬度 64HRC
Work Material

无限白金Plus涂层
5轴MC加工用3刃球头铣刀
MUGEN COATING PREMIUM Plus 3-Flute Ball End Mill for 5-axis machining

MSBSH330-5X　R0.1 ～ R1　共有8种规格　Total 8 sizes



适用于3轴加工难以完成的深沟加工，
在设计刀具时利用5轴加工机床的特点，可实现高精度加工
Realize high precision deep milling by the tool design that conforms the advantage of the features of a 5-axis machine

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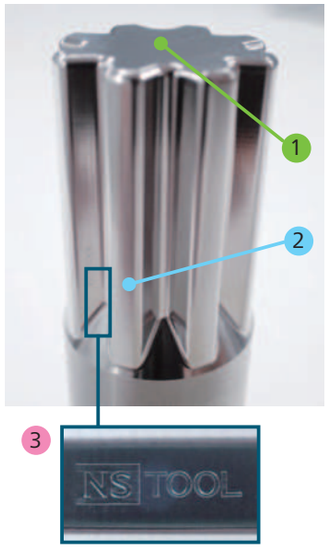
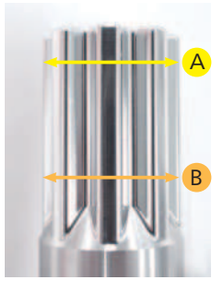


工件尺寸 Work size　φ25 × 80 mm（加工深度 35 mm）Machining depth
加工材料 Work material　HAP40(64HRC)
冷却方式 Coolant　油雾 Oil mist
总加工时间 Total machining time　5 小时 52 分钟 5 hr 52 min



表面粗糙度 Surface roughness	1	2	3
Ra[μm]	0.07	0.13	0.09

加工精度 Machining Accuracy	A	B
目标值[mm] Target	24.000	
实测值[mm] Actual	24.001	24.006

加工案例 常规系列 无限白金Plus涂层 Machining Case Regular Line MUGEN PREMIUM Plus

加工工序 Process	粗加工 Roughing		中精加工 Semi-finishing	精加工 Finishing	刻字加工 Engraving
使用刀具 Tool	MSBSH330-5X R1	MSBSH330-5X R1	MSBSH330-5X R1	MSBSH330-5X R1	MSBSH330-5X R0.1
主轴转速 [min^{-1}] Spindle speed	20,000	20,000	20,000	20,000	40,000
进给速度 [mm/min] Feed	3,000	1,500	1,500	1,200	200
切深量 ap × ae [mm] Depth of cut	0.08 × 0.3	0.09 × 0.09	0.06 × 0.06	0.03 × 0.03	0.005 × 0.005
余量 [mm] Stock	0.07	0.04	0.02	-	-
倾斜角 [°] Tilt angle	20°～ 90°	30°～ 90°	30°～ 65°	30°～ 65°	90°
加工时间 Machining time	2 小时 2 hr	38 分钟 38 min	55 分钟 55 min	2 小时 13 分钟 2 hr 13 min	6 分钟 6 min

无限白金 Plus 涂层
5 轴 MC 加工用 3 刃球头铣刀

MUGEN COATING PREMIUM Plus 3-Flute Ball End Mill for 5-Axis Machining

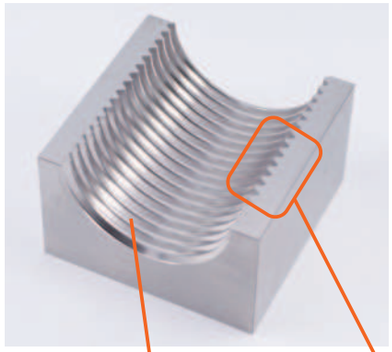
MSBSH330-5X　R0.1 ～ R1　共有 8 种规格　Total 8 sizes



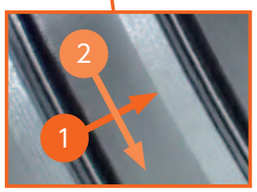
页面 Page ➡ E-002

通过可任意选择切削点的 5 轴加工提高表面品质
高刚性的 MSBSH330-5X 可实现高精度，高效率加工

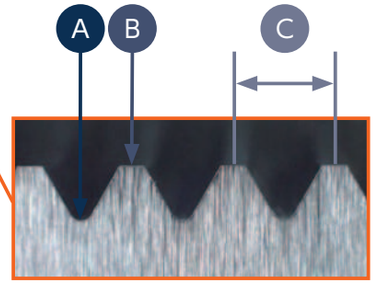
Optimized cut point featured as 5-axis machining to improve surface quality and high rigidity MSBSH330-5X realizes high accuracy and high efficiency machining performance



工件尺寸 Work size	50 × 50 mm（加工深度 20 mm） Machining depth
加工材料 Work material	DC53 (60HRC)
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	14 小时 54 分钟 14 hr 54 min



表面粗糙度 [μm] Surface roughness	
1 步距方向 Pick direction	Ra 0.15
2 进给方向 Feed direction	Ra 0.08



加工精度 Accuracy	A 螺纹大径 Major diameter of internal thread (Root)	B 螺纹小径 Major diameter of internal thread (Crest)	C 螺距 Thread pitch
目标值 [mm] Target	40.000	38.051	3.000
实测值 [mm] Actual	39.985	38.048	2.999
误差 [mm] Error	- 0.015	- 0.003	- 0.001

加工工序 Process	粗加工① Roughing ①		粗加工② Roughing ②	
使用刀具 Tool	MSBSH330-5X R1		MSBSH330-5X R0.5	
主轴转速 [min^{-1}] Spindle speed	25,000	25,000	30,000	30,000
进给速度 [mm/min] Feed	3,000	1,500	1,500	1,500
切深量 ap × ae [mm] Depth of cut	0.2 × 0.5	0.07 × 0.09	0.08 × 0.2	0.06 × 0.06
余量 [mm] Stock	0.1	0.03	0.025	0.015
倾斜角 Tilt angle	20°～ 40°		0°～ 30°	
加工时间 Machining time	2 小时 6 分钟 2 hr 6 min	27 分钟 27 min	1 小时 21 分钟 1 hr 21 min	53 分钟 53 min

加工工序 Process	清角加工 Stock removal	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	MSBSH330-5X R0.3	MSBSH330-5X R0.3	MSBSH330-5X R0.3
主轴转速 [min^{-1}] Spindle speed	40,000	40,000	40,000
进给速度 [mm/min] Feed	1,500	1,500	1,500
切深量 ap × ae [mm] Depth of cut	0.015 × 0.035	0.03 × 0.03	0.02 × 0.02
余量 [mm] Stock	0.015	0.005	-
倾斜角 Tilt angle	10°	3°	3°
加工时间 Machining time	2 小时 10 分钟 2 hr 10 min	3 小时 11 分钟 3 hr 11 min	4 小时 46 分钟 4 hr 46 min

加工案例 常规系列 无限白金Plus涂层
Machining Case Regular Line MUGEN PREMIUM Plus

5轴加工嵌合
5-Axis machined fitting sample

加工材料 STAVAX　硬度 52HRC
Work Material

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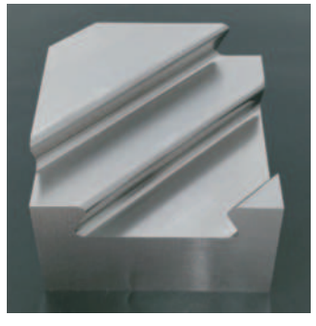
无限白金 Plus 涂层
高硬度钢材高精度加工用 2 刃长颈球头铣刀
可对应热缩刀柄的短柄造型

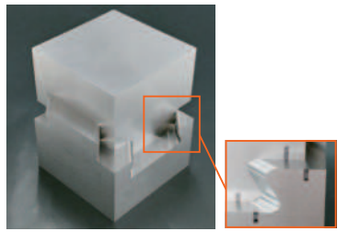
MUGEN COATING PREMIUM Plus 2-Flute Long Neck Ball End Mill
with Short Shank for Hardened Steel and High Accuracy Cutting

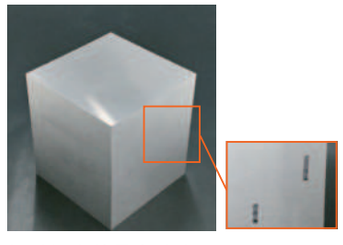
MRBSH230SF　R0.05 ～ R3　共有 115 种规格　Total 115 sizes



对 70HRC 的高硬度钢材加工也可实现延长工具寿命和高精度加工
High precision and long tool life even for hardened steel up to 70 HRC







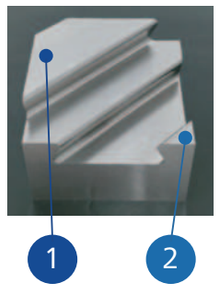
间隙设定值最大 0.01 mm
Clearance setting value maximum 0.01 mm

工件尺寸 Work size　80 × 80 × 60 mm

加工材料 Work material　STAVAX (52HRC)

冷却方式 Coolant　油雾 Oil mist

总加工时间 Total machining time　5 小时 18 分钟 5 hr 18 min



测量部位 Measuring position	Ra [μm]
1	0.182
2	0.205

加工案例 常规系列 无限白金Plus涂层
Machining Case Regular Line MUGEN PREMIUM Plus

加工工序 Process	粗加工 Roughing	中粗加工 Semi-roughing	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	MRBSH230SF R2 × 10			MRBSH230SF R2 × 10
主轴转速 [min^{-1}] Spindle speed	20,000	15,000	15,000	15,000
进给速度 [mm/min] Feed	3,000	2,500	2,500	2,500
切深量 ap × ae [mm] Depth of cut	0.3 × 1.5	ae 0.5	ae 0.07	ae 0.05
余量 [mm] Stock	0.2	0.08	0.03	-
加工时间 Machining time	1 小时 38 分钟 1 hr 38 min	15 分钟 15 min	1 小时 25 分钟 1 hr 25 min	2 小时 2 hr

螺丝头部形状3种冲头造型
3 difference shape on screw head (punch sample)

加工材料 HAP72　硬度 68HRC
Work Material

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无限白金 Plus 涂层
高硬度钢材高精度加工用 2 刃长颈球头铣刀
可对应热缩刀柄的短柄造型

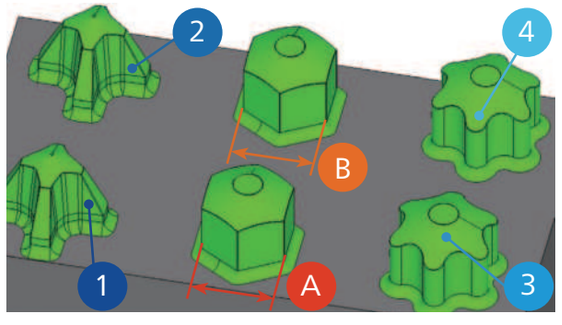
MUGEN COATING PREMIUM Plus 2-Flute Long Neck Ball End Mill
with Short Shank for Hardened Steel and High Accuracy Cutting

MRBSH230SF　R0.05 ～ R3　共有 115 种规格　Total 115 sizes



对 70HRC 的高硬度钢材加工也可实现延长工具寿命和高精度加工
High precision and long tool life even for hardened steel up to 70 HRC





工件尺寸 Work size　20 × 35 mm (加工深度 5.1 mm) Machining depth

加工材料 Work material　HAP72 (68HRC)

冷却方式 Coolant　油雾 Oil mist

总加工时间 Total machining time　8 小时 25 分钟 8 hr 25 min

●加工精度
Machining accuracy

	A	B
目标值 [mm] Target	5.080	5.080
实测值 [mm] Actual	5.087	5.090
倾斜量 [mm] Amount of deflection	0.001 以下 Under	0.001

●表面粗糙度
Surface roughness

	1	2	3	4
Ra [μm]	0.176	0.155	0.114	0.142
Rz [μm]	1.320	1.125	0.963	0.877

加工案例 常规系列 无限白金Plus涂层
Machining Case Regular Line MUGEN PREMIUM Plus

加工工序 Process	粗加工 Roughing	侧面中精加工 Semi-finishing (Side)	底面精加工 Finishing (Bottom)	清角加工 Stock removal	精加工 Finishing
使用刀具 Tool	MRBSH230SF R1 × 4	MRBSH230SF R1 × 4		MRBSH230SF R0.5 × 4	MRBSH230SF R0.5 × 4
主轴转速 [min^{-1}] Spindle speed	16,000	16,000		18,000	18,000
进给速度 [mm/min] Feed	1,500	600		300	400
切深量 ap × ae [mm] Depth of cut	0.1 × 0.3	pf : 0.03		pf : 0.03	pf : 0.02
余量 [mm] Stock	0.015	侧面 0.01 Side	底面 - Bottom	0.01	-
加工时间 Machining time	3 小时 1 分钟 3 hr 1 min	1 小时 35 分钟 1 hr 35 min		1 小时 20 分钟 1 hr 20 min	2 小时 29 分钟 2 hr 29 min

※ pf：步距量
※pf : Pick feed

绝缘片冲切刀模造型
Die cutter for insulation sheet

加工材料 HAP40　硬度 64HRC
Work Material

无限白金 Plus 涂层
高硬度钢材高效率加工用小径 3 刃长颈球头铣刀

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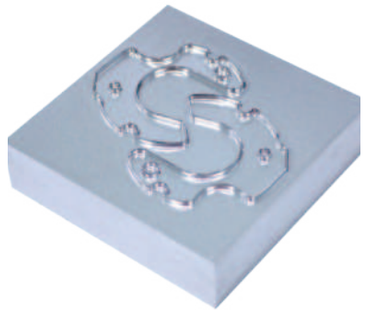
MUGEN COATING PREMIUM Plus High Efficient 3-Flute Small-Diameter Long Neck Ball End Mill for Hardened Steel

MRBSH330　R 0.1 ～ R 3　共有 31 种规格　Total 31 sizes



即使使用小径规格，也可对细微形状进行高效率加工
Realize high efficient machining on micro shape machined by small diameter end mill

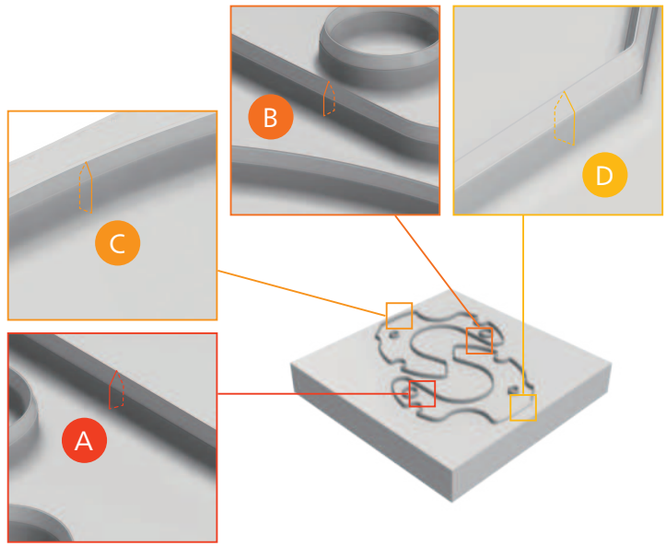


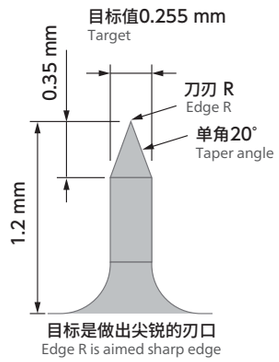
工件尺寸 Work size　50 × 50 mm（加工深度 1.2 mm）Machining depth

加工材料 Work material　HAP40 (64HRC)

冷却方式 Coolant　油雾 Oil mist

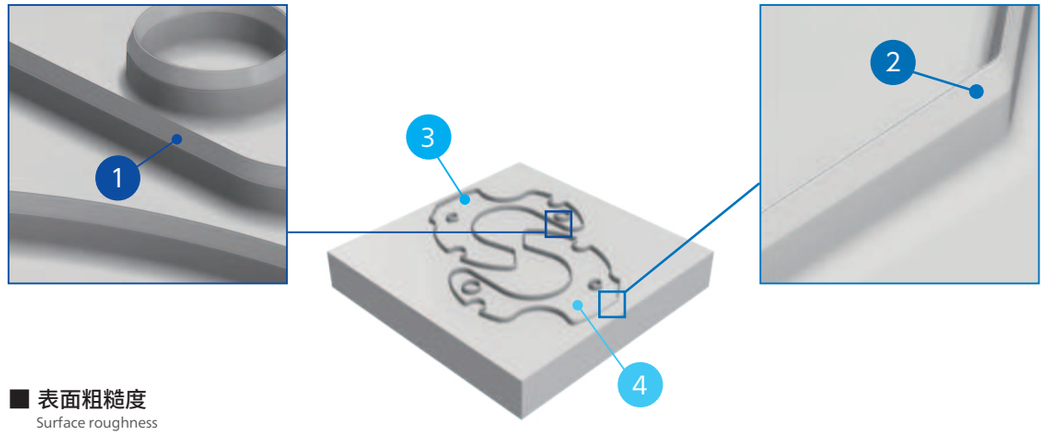
总加工时间 Total machining time　6 小时 52 分钟 6 hr 52 min





■ 加工精度
Machining accuracy

		A	B	C	D
宽度 [mm] Width	目标值 Target	0.255			
	实测值 Actual	0.260	0.258	0.259	0.260
	误差 Error	+0.005	+0.003	+0.004	+0.005
刀刃 R[mm] Edge R		R0.0018	R0.0027	R0.0025	R0.0025



■ 表面粗糙度
Surface roughness

	1	2	3	4
Ra [μm]	0.070	0.070	0.303	0.328
Rz [μm]	0.387	0.355	1.719	1.699

加工部位 Cutting part



加工工序 Process	粗加工 ① Roughing ①	精加工 ① Finishing ①	粗加工 ② Roughing ②	粗加工 ③ Roughing ③	中精加工 Semi-finishing	精加工 ② Finishing ②
使用刀具 Tool	MRBSH330 R1 × 3		MRBSH330 R0.5 × 2	MRBSH330 R0.3 × 1		MRBSH330 R0.3 × 1
主轴转速 [min^{-1}] Spindle speed	20,000		25,000			
进给速度 [mm/min] Feed	3,000	1,500	2,100	1,080		800
切深量 ap × ae [mm] Depth of cut	0.23 × 0.3	ae : 0.05	0.02 × 0.1	0.015 × 0.05	Z 轴步距量 Z pitch 0.02	侧面：Z 轴步距量 Side : Z pitch 0.003 ～ 0.01 底面：ae 0.05 Bottom
余量 [mm] Stock	0.05	-	0.03	0.015	0.005	-
加工时间 Machining time	37 分钟 37 min	33 分钟 33 min	1 小时 26 分钟 1 hr 26 min	42 分钟 42 min	39 分钟 39 min	2 小时 55 分钟 2 hr 55 min

加工案例 常规系列 无限白金Plus涂层 Machining Case Regular Line MUGEN PREMIUM Plus

无限白金 Plus 涂层
高硬度钢材高精度加工用小径 3 刃长颈球头铣刀

页面 Page ➡ E-032

MUGEN COATING PREMIUM Plus High Efficient 3-Flute Small-Diameter Long Neck Ball End Mill for Hardened Steel

MRBSH330

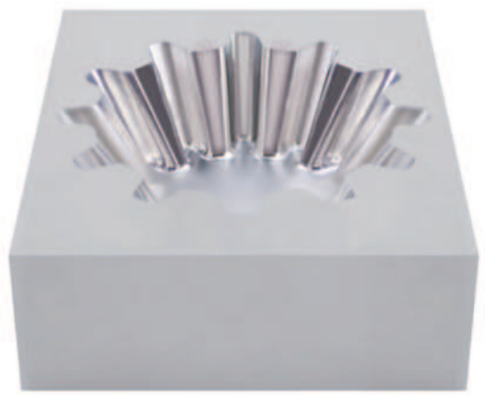
R 0.1 ～ R 3　共有 31 种规格　Total 31 sizes



提高了刀刃刚性和排屑性能，
使高精度模具加工更“更高效率”

High-efficiency high-precision die machining
with improved cutting edge rigidity and chip evacuation

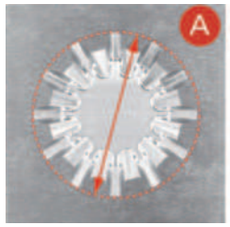
工件尺寸 Work size	50 × 50 mm （加工深度 10 mm） Machining depth
加工材料 Work material	YXR7 (61.5HRC)
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	1 小时 45 分钟 1 hr 45 min

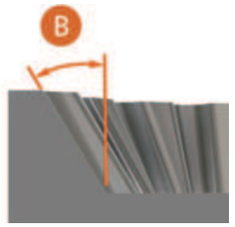


加工工序 Process	粗加工 Roughing	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	MRBSH330 R1 × 6		MRBSH330 R1 × 6
主轴转速 [min^{-1}] Spindle speed	20,000		20,000
进给速度 [mm/min] Feed	2,400		1,200
切深量 ap × ae [mm] Depth of cut	0.225 × 0.3	pf : 0.09	pf : 0.05
余量 [mm] Stock	0.03	0.01	-
加工时间 Machining time	57 分钟 57 min	12 分钟 12 min	36 分钟 36 min

※ pf : 步距量
※pf : Pick feed

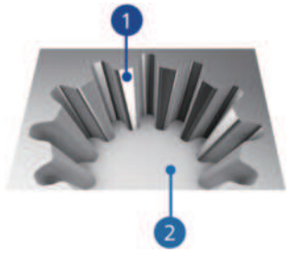
●加工精度
Machining accuracy





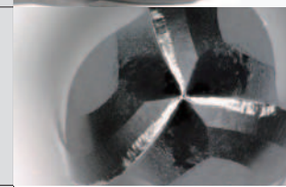
	A 宽度 [mm] Width	B 斜度 Inclined angle
目标值 Target	37.073	30° 45'
实测值 Actual	37.069	30° 48'
误差 Error	-0.004	+0° 3'

●表面粗糙度
Surface roughness



	1	2
Ra [μ m]	0.26	0.41
Rz [μ m]	1.75	3.69

●刀具的磨损状态
Tool ware after machining

	MRBSH330 R1 × 6 粗加工后 After roughing	MRBSH330 R1 × 6 精加工后 After finishing
前角 Rake		
外周部 Peripheral cutting edge		
前端中心 Center		
加工时间 Machining time	57 分钟 57 min	36 分钟 36 min

加工案例
常规系列
无限白金Plus涂层
Machining Case
Regular Line
MUGEN PREMIUM Plus

加工案例
常规系列
无限白金Plus涂层
Machining Case
Regular Line
MUGEN PREMIUM Plus

封装模具造型
Sealed mold

加工材料 VANADIS23　硬度 63HRC
Work Material

无限白金 Plus 涂层
高硬度钢材高精度加工用 4 刃长颈圆鼻铣刀

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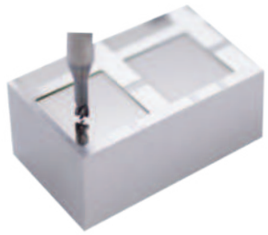
MUGEN COATING PREMIUM Plus 4-Flute Long Neck Corner Radius End Mill with short shank for Hardened Steel and High Accuracy Cutting

MHRSH430RSF　φ0.1 × R0.01 ～ φ6 × R1　共有205种规格　Total 205 sizes

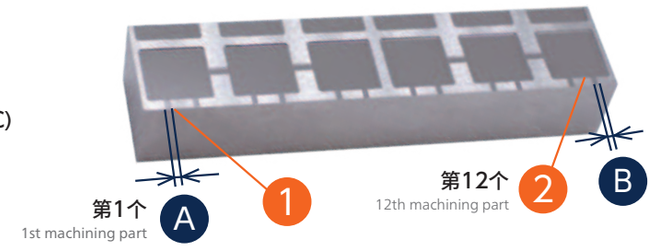


在高硬度钢加工中可实现延长刀具寿命及稳定的尺寸精度
还可通过修光刃效果实现平坦部的高精度加工
Realized stable dimension accuracy on machining hardened steels
By adopting wiper at the end cutting edge achieves high precision surface roughness on plane machining



工件尺寸 Work size	20 × 90 × 15 mm （加工深度 0.3 mm） Machining depth
加工材料 Work material	VANADIS23（63HRC）
冷却方式 Coolant	油雾 Oil mist
总加工时间 Total machining time	1 小时 44 分钟 1 hr 44 min

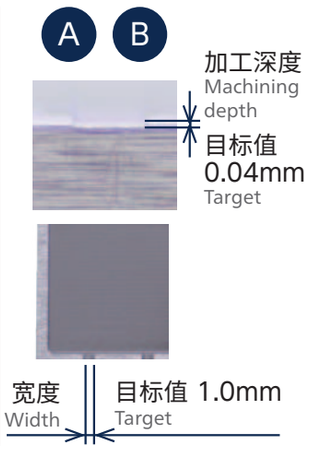
槽部加工　第1个与第12个比较
Machining at air vent comparison between 1st and 12th places



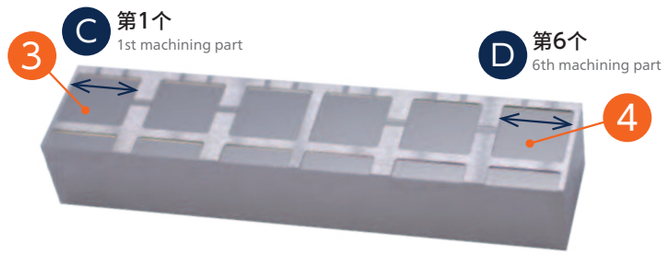
表面粗糙度 [μm] Surface roughness	1	2
Ra	0.055	0.066
Rz	0.387	0.445

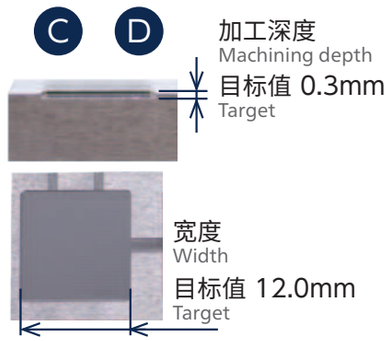
测量位置 [mm] Measuring position	A		B	
	宽度 Width	深度 Depth	宽度 Width	深度 Depth
加工后 After machining	1.001	0.039	0.999	0.041

加工工序 Process	粗加工 Roughing	精加工 Finishing
使用刀具 Tool	MHRSH430RSF φ0.8 × R0.02 × 2	MHRSH430RSF φ0.8 × R0.02 × 2
主轴转速 [min⁻¹] Spindle speed	11,000	
进给速度 [mm/min] Feed	500	300
切深量 ap × ae [mm] Depth of cut	0.003 × 0.18	0.005 × 0.01 侧面 Side 0.003 × 0.2 底面 Bottom
余量[mm] Stock	0.01 侧面 Side 0.003 底面 Bottom	-
加工时间 Machining time	3 分钟 3 min	4 分钟 4 min



凹槽部加工　第1个与第6个的比较
Machining at cavity　Comparison between 1st and 6th places





表面粗糙度 [μm] Surface roughness	3	4
Ra	0.053	0.051
Rz	0.370	0.336

测量位置 [mm] Measuring position	C		D	
	宽度 Width	深度 Depth	宽度 Width	深度 Depth
加工后 After machining	11.999	0.298	11.998	0.296

加工工序 Process	粗加工 Roughing	清角加工 Stock removal	底面中精加工 Bottom Semi-finishing
使用刀具 Tool	MHRSH430RSF φ1.5 × R0.1 × 4	MHRSH430RSF φ1 × R0.05 × 2	
主轴转速 [min⁻¹] Spindle speed	11,000	11,000	
进给速度 [mm/min] Feed	800	800	
切深量 ap × ae [mm] Depth of cut	0.06 × 0.3	0.01 × 0.12	ae 0.2
余量[mm] Stock	0.01 侧面 Side 0.004 底面 Bottom	0.01 侧面 Side 0.004 底面 Bottom	0.004 底面 Bottom
加工时间 Machining time	40 分钟 40 min	14 分钟 14 min	8 分钟 8 min

加工工序 Process	精加工 Finishing	角部精加工 Corner finishing
使用刀具 Tool	MHRSH430RSF φ1 × R0.05 × 2	
主轴转速 [min⁻¹] Spindle speed	11,000	
进给速度 [mm/min] Feed	800	
切深量 ap × ae [mm] Depth of cut	0.01 × 0.01 侧面 Side 0.004 × 0.2 底面 Bottom	0.01 × 0.05
余量[mm] Stock	-	-
加工时间 Machining time	26 分钟 26 min	9 分钟 9 min

加工案例 常规系列 无限白金Plus涂层
Machining Case Regular Line MUGEN PREMIUM Plus

高精度嵌合样品
High precision fitting sample

加工材料 STAVAX　硬度 52HRC
Work Material

无限白金涂层
长颈锥形2刃球头铣刀
MUGEN COATING PREMIUM 2-Flute Long Taper Neck Ball End Mill

MRBTNH230　R0.05 × 颈角 3° ～ R2 × 颈角 1° 共有187种规格 Total 187 sizes

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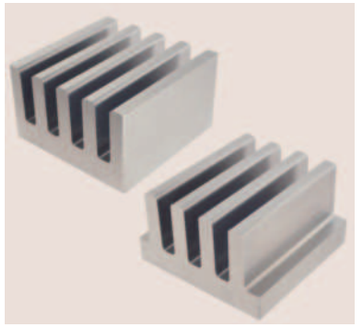
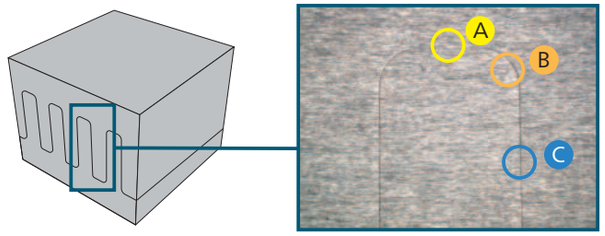
采用高刚性的锥颈造型刀具，
在加工深沟部位时可进行高精度稳定切削
The tapered neck shape with high rigidity enables highly accurate and stable machining even in deep milling





	间隙量 Stock removal
A	0.002 mm
B	0.014 mm
C	0.007 mm

工件尺寸 Work size: 50 × 50 mm（加工深度 20 mm） Machining depth
加工材料 Work material: STAVAX(52HRC)
冷却方式 Coolant: 油雾 Oil mist

加工时间 Machining time: 凹模 24 小时 11 分钟 Concave 24 hr 11 min
凸模 25 小时 13 分钟 Convex 25 hr 13 min
总加工时间 Total machining time: 49 小时 24 分钟 49 hr 24 min

加工工序 Process	粗加工 Roughing	中精加工 Semi-finishing	清角加工 Stock removal	精加工 Finishing
使用刀具 Tool	MRBH230 R2 × 20	MRBH230 R2 × 20	MRBTNH230 R1 × 30' × 20	MRBTNH230 R1 × 30' × 20
主轴转速 [min^{-1}] Spindle speed	16,000	8,000	8,000	5,000
进给速度 [mm/min] Feed	2,400	800	700	400
切深量 ap × ae [mm] Depth of cut	0.2 × 1.0	0.1 × 0.02	0.05 × 0.1	0.03 × 0.01
余量 [mm] Stock	0.03	0.01	0.01	-
凹模加工时间 Concave Machining time	1 小时 24 分钟 1 hr 24 min	2 小时 16 分钟 2 hr 16 min	1 小时 15 分钟 1 hr 15 min	19 小时 16 分钟 19 hr 16 min
凸模加工时间 Convex Machining time	1 小时 43 分钟 1 hr 43 min	2 小时 42 分钟 2 hr 42 min	58 分钟 58 min	19 小时 50 分钟 19 hr 50 min

加工案例 常规系列 无限白金涂层 长颈型
Machining Case Regular Line MUGEN PREMIUM Long Neck Type

汽车阀门造型模具
Valve body

加工材料 DAC-S　硬度 44HRC
Work Material

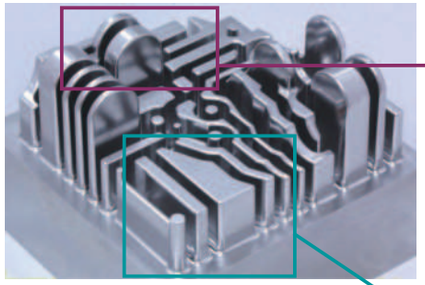
无限白金涂层
长颈锥形3刃球头铣刀
MUGEN COATING PREMIUM 3-Flute Long Taper Neck Ball End Mill

MRBTNH345　R0.5 × 颈角 30′ ～ R2 × 颈角 1° 共有69种规格 Total 69 sizes

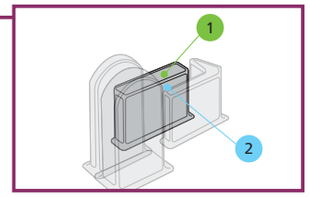
页面 Page ➡ E-078



采用高刚性的锥颈造型刀具，
在加工深沟部位时可进行高精度稳定切削
The tapered neck shape with high rigidity enables highly accurate and stable machining even in deep milling

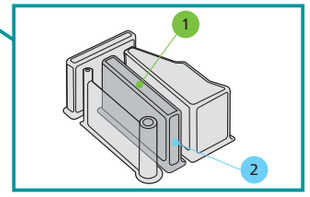


形状A（加工初期）
At the beginning of machining



表面粗糙度 [μm] Surface roughness	
1 平面 Top	Ra : 0.340 Rz : 2.015
2 侧面 Side	Ra : 0.168 Rz : 1.271

形状B（加工后期）
At the end of machining



表面粗糙度 [μm] Surface roughness	
1 平面 Top	Ra : 0.343 Rz : 2.081
2 侧面 Side	Ra : 0.194 Rz : 1.375

工件尺寸 Work size: 80 × 80 mm（加工深度 30 mm） Machining depth
加工材料 Work material: DAC-S(44HRC)
冷却方式 Coolant: 油雾 Oil mist
总加工时间 Total machining time: 35 小时 37 分钟 35 hr 37 min

加工工序 Process	粗加工① Roughing	粗加工② Roughing		粗加工③ Roughing		粗加工④ Roughing		精加工 Finishing	
使用刀具 Tool	MRBTNH345 R1.5 × 1°× 30	MRBTNH345 R1 × 1°× 20		MRBTNH345 R1 × 1°× 25		MRBTNH345 R1 × 1°× 30		MRBTNH345 R1 × 1°× 30	
主轴转速 [min^{-1}] Spindle speed	10,000					8,000			
进给速度 [mm/min] Feed	1,600	1,000	2,000	800	1,600	600	1,200	800	
切深量 ap × ae [mm] Depth of cut	0.1 × 0.2	ap 0.04	ap 0.08	ap 0.04	ap 0.08	ap 0.035	ap 0.07	ap 0.15	ae 0.1
余量 [mm] Stock	侧面:0.2 Side 底面:0.1 Bottom	0.05						-	
加工时间 Machining time	1 小时 38 分钟 1 hr 38 min	7 小时 45 分钟 7 hr 45 min		6 小时 6 hr		9 小时 20 分钟 9 hr 20 min		6 小时 26 分钟 6 hr 26 min	

加工案例 常规系列 无限白金涂层 长颈型
Machining Case Regular Line MUGEN PREMIUM Long Neck Type

高效率加工
High efficient machining

加工材料 钛合金 Ti-6Al-4V
Work Material Titanium alloy Ti-6Al-4V

无限白金涂层 SUS用高效率Z铣刀

页面 Page ➡ D-018

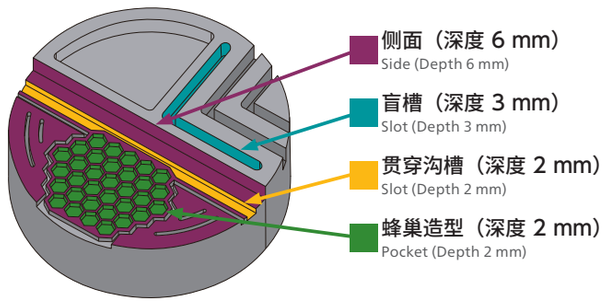
MUGEN COATING PREMIUM 4-Flute High Efficient "Z" End Mill for Stainless Steels

MSUSZ440 φ1～φ6 共有62种规格 Total 62 sizes



采用可抑制振刀的不等分割和不等螺旋角，
可对钛合金进行高效率加工
Unequal flute spacing / unequal helix angle to minimize chatter
Specializing in high-efficiency machining of titanium alloy





工件尺寸 Work size	φ 80	加工时间 Machining time	φ 1：27 分钟 φ 3：9 分钟 30 秒 φ 1 : 27 min φ 3 : 9 min 30 sec
加工材料 Work material	钛合金 Ti-6Al-4V Titanium alloy Ti-6Al-4V		
冷却方式 Coolant	水溶性切削油 Water-soluble fluid		

加工案例 高效率加工 Machining Case High Efficient Milling

加工部位 Cutting part	侧面（深度 6 mm） Side (Depth 6 mm)		盲槽（深度 3 mm） Slot (Depth 3 mm)			贯穿沟槽（深度 2 mm） Slot (Depth 2 mm)		蜂巢造型（深度 2 mm） Pocket (Depth 2 mm)		
加工工序 Process	粗加工 Roughing	精加工 Finishing	插铣 Plunging	沟槽加工 Slotting	精加工 Finishing	摆线加工 Trochoidal	精加工 Finishing	插铣&扩槽 Plunging& Contouring	粗加工 Roughing	精加工 Finishing
使用刀具 Tool	MSUSZ440 φ3 × 6		MSUSZ440 φ1 × 2							
主轴转速 [min^{-1}] Spindle speed	6,700		6,200			16,800		13,500		
进给速度 Feed [mm/min]	1,100	800	50	300	800	600	400	50 & 200	600	400
切深量 ap × ae [mm] Depth of cut	6 × 0.6	6 × 0.1	ap 0.75		3×0.1	2 × 0.2	2×0.05	0.25×0.5	1.97 × 0.12	2 × 0.05 (侧面:Side) 0.03 × 0.5 (底面:Bottom)
加工时间 Machining time	4 分钟 30 秒 4 min 30 sec		1 分钟 1 min			4 分钟 30 秒 4 min 30 sec		18 分钟 30 秒 18 min 30 sec		

沟槽・方槽 高效率加工
High efficient machining

加工材料 SCM415
Work Material

无限涂层 SC用高效率Z铣刀

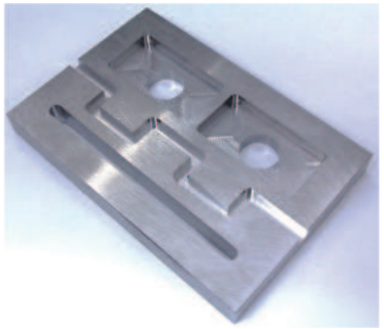
页面 Page ➡ D-064

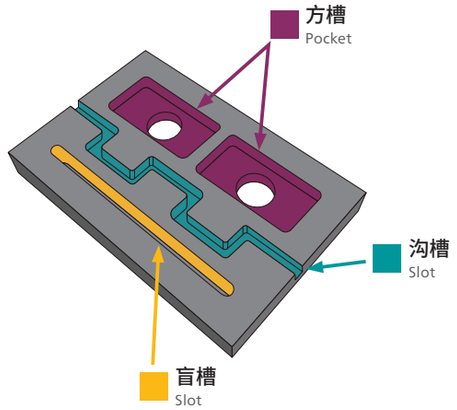
MUGEN COATING 4-Flute High Efficient "Z" End Mill for Carbon Steels

MSCZ440 φ1～φ6 共有62种规格 Total 62 sizes



采用可抑制振刀的不等分割和不等螺旋角，
可对碳素钢～调质钢进行插铣到沟槽加工的连续加工
Unequal flute spacing / unequal helix angle to minimize chatter
For carbon steel to pre-hardened steel, possible continuous machining from plunging to grooving





工件尺寸 Work size	150×100mm （加工深度 15 mm） Machining depth	加工材料 Work material	SCM415
冷却方式 Coolant	吹气 Air blow	总加工时间 Total machining time	8 分钟 30 秒 8 min 30 sec

加工案例 高效率加工 Machining Case High Efficient Milling

加工部位 Cutting part	方槽 Pocket			沟槽 Slot		盲槽 Slot	
加工工序 Process	粗加工 Roughing	粗加工 Roughing	精加工 Finishing	粗加工 Roughing	精加工 Finishing	粗加工 Roughing	精加工 Finishing
使用刀具 Tool	MSCZ440 φ5 × 10					MSCZ440 φ6 × 18	
主轴转速 [min^{-1}] Spindle speed	4,200					3,500	
进给速度 [mm/min] Feed	插铣・孔：200 Plunging・Hole 沟槽：880 Slot	1,600	800	880	800	插铣：150 Plunging 盲槽：650 Slot	780
切深量 ap × ae [mm] Depth of cut	ap 2.5	7.5 × 1	7.5 × 0.2	ap 5	ap 5	ap 3	ap 15
余量 [mm] Stock	-	0.2	-	0.4	-	0.3	-
加工时间 Machining time	1 分钟 30 秒 1 min 30 sec	3 分钟 3 min	1 分钟 1 min	30 秒 30 sec	30 秒 30 sec	1 分钟 30 秒 1 min 30 sec	30 秒 30 sec

蜂巢形状
Honeycomb pocket shape

加工材料 A6061
Work Material

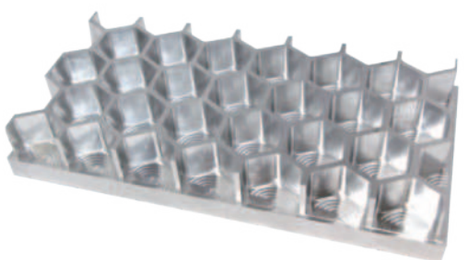
铝合金用高效率平底铣刀 3刃3倍刃长
High Efficient 3-Flute End Mill for Aluminium L/D=3

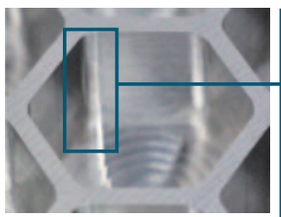
页面 Page ➡ D-124

AL3D-345 φ1～φ12 共有9种规格 Total 9 sizes



铝合金加工用3刃强螺旋角型
适用于插铣到沟槽加工的连续加工
3-flute strong twist type for aluminium processing
Continuous machining from plunge to grooving is possible





蜂巢尺寸宽度：25 mm
Pocket size : 25mm



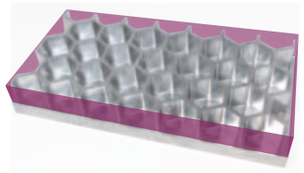
内角精加工表面的状态
In-corner surface after finishing

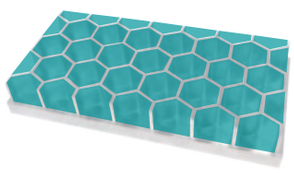
工件尺寸 Work size 200 × 100 mm (加工深度 18 mm) Machining depth

加工材料 Work material A6061

冷却方式 Coolant 水溶性切削油 Water-soluble fluid

总加工时间 Total machining time 18 分钟 18 min





加工案例
铝合金加工
Machining Case
Aluminium Milling

加工部位 Cutting part	外周部 Peripheral part		蜂巢造型 Honeycomb pocket		
加工工序 Process	粗加工 Roughing	精加工 Finishing	螺旋进刀 Helical approach	粗加工 Roughing	精加工 Finishing
使用刀具 Tool	AL3D-345 φ6				
主轴转速 [min⁻¹] Spindle speed	17,500				
进给速度 Feed [mm/min]	3,000		1,000	3,000	
切深量 ap × ae [mm] Depth of cut	18 × 1.8	18 × 0.1	ap 0.14 (1周) (1circle) (螺旋R = 2.0 mm 角度 = 4°) Helical R = 2.0mm Angle 4°	18 × 1.8	18 × 0.1

伞型齿轮电极
Bevel gear electrode

加工材料 钨铜 (W70% - Cu30%)
Work Material Copper tungsten (W70% - Cu30%)

铜电极加工用长颈球头铣刀
Long Neck Ball End Mill for Copper Electrode

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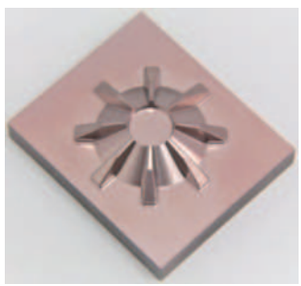
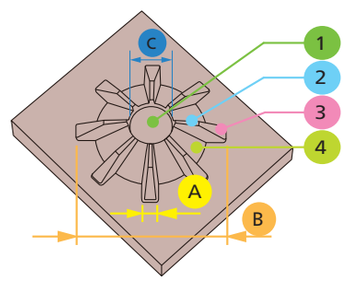
DRB230 R0.05 ～ R3 共有94种规格 Total 94 sizes



难加工材料钨铜也能得到稳定的加工精度
Realizes long time machining and achieves stable high precision machining surface even on tough material of copper tungsten





	表面粗糙度 [μm] Surface roughness
1 平面部 Flat surface	Ra : 0.129 Rz : 1.224
2 12°斜面 Inclined 12°	Ra : 0.174 Rz : 1.709
3 34.07°斜面 Inclined 34.07°	Ra : 0.199 Rz : 1.471
4 35°曲面 Curved 35°	Ra : 0.296 Rz : 2.050

工件尺寸 Work size 30 × 36 mm (加工深度 5 mm) Machining depth

加工材料 Work material 钨铜(W70% - Cu30%) Copper tungsten (W70% - Cu30%)

冷却方式 Coolant 油冷 Water-insoluble fluid

总加工时间 Total machining time 4 小时 20 分钟 4 hr 20 min

	宽度[mm] Width	
	目标值 Target	实测值 Actual
A	2.500	2.504
B	25.000	25.002
C	8.203	8.202

加工案例
铜电极加工
Machining Case
Copper Electrode
Milling

加工工序 Process	粗加工 Roughing	中精加工 Semi-finishing		清角加工 Stock removal	精加工 Finishing		
		侧面·曲面 Side · Curved	顶面·平面 Top · Flat		侧面·曲面 Side · Curved	顶面 Top	平面·轮廓 Flat · Contour
使用刀具 Tool	DRB230 R0.4 × 3	DRB230 R0.4 × 3		DRB230 R0.2 × 1			
主轴转速 [min⁻¹] Spindle speed	30,000						
进给速度 [mm/min] Feed	1,400			500			
切深量 ap × ae [mm] Depth of cut	0.15 × 0.3	0.05 × 0.01	0.01 × 0.05	0.01 × 0.02	0.03 × 0.01	0.01 × 0.03	ap 0.01 ae 0.03 · 0.02
余量 [mm] Stock	0.02	0.01		0.01	-		
加工时间 Machining time	1 小时 20 分钟 1 hr 20 min	25 分钟 25 min	23 分钟 23 min	47 分钟 47 min	1 小时 25 分钟 1 hr 25 min		

复合形状模具
Multi profile electrode

加工材料 钨铜 (W70% - Cu30%)
Work Material Copper tungsten (W70% - Cu30%)

铜电极加工用长颈平底铣刀
Long Neck Square End Mill for Copper Electrode

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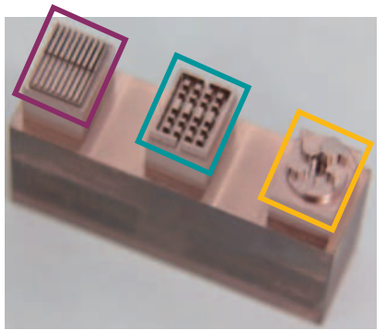
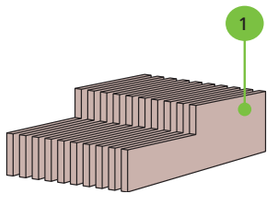
DHR237 ϕ0.1 ～ ϕ6 共有74种规格 Total 74 sizes

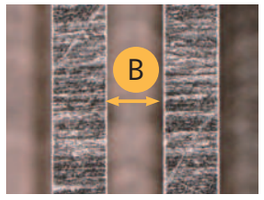


难加工材料钨铜也能得到稳定的加工精度
Realizes long time machining and achieves stable high precision machining surface even on tough material of copper tungsten



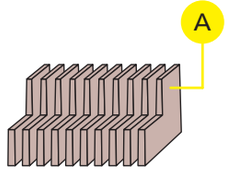
工件尺寸 Work size	10 × 30 mm (加工深度 3 mm) Machining depth
加工材料 Work material	钨铜 (W70% - Cu30%) Copper tungsten (W70% - Cu30%)
冷却方式 Coolant	油冷 Water-insoluble fluid
总加工时间 Total machining time	1 小时 40 分钟 1 hr 40 min





槽宽 [mm] Slot width	目标值 Target	实测值 Actual
B	0.310	0.307

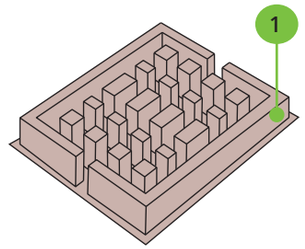
侧面部表面粗糙度 [μm] Side surface roughness	
1	Ra : 0.101

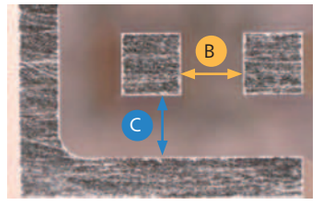


A 倾斜量 [mm] Deflection
0.001以内

加工形状 Shape	细微间隙造型 Micro slit shape	
加工工序 Process	粗加工 (沟槽加工) Roughing (Slotting)	精加工 (侧面加工) Finishing (Side milling)
使用刀具 Tool	DHR237 ϕ 0.3 × 1	DHR237 ϕ 0.3 × 2
主轴转速 [min^{-1}] Spindle speed	25,000	
进给速度 [mm/min] Feed	200 100 ※	150
切深量 ap × ae [mm] Depth of cut	ap 0.01 ap 0.005 ※	0.1 × 0.005
余量 [mm] Stock	0.005	-
加工时间 Machining time	42 分钟 42 min	12 分钟 12 min

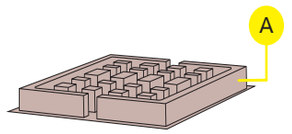
※为保持初期加工的安定性，加工至-0.05mm深为止所使用的加工条件。
※Guide part machining from the upper surface to -0.05mm.





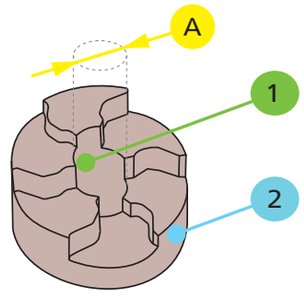
槽宽 [mm] Slot width	目标值 Target	实测值 Actual
B	0.600	0.601
C	0.600	0.599

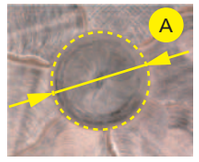
1 侧面部表面粗糙度 [μm] Side surface roughness
Ra : 0.197



A 倾斜量 [mm] Deflection
0.001以内

加工形状 Shape	细微方柱造型 Fine prism profile		
加工工序 Process	粗加工 (沟槽加工) Roughing (Slotting)	粗加工 (侧面加工) Roughing (Side milling)	精加工 (侧面加工) Finishing (Side milling)
使用刀具 Tool	DHR237 ϕ 0.5 × 1.5		
主轴转速 [min^{-1}] Spindle speed	26,000		
进给速度 Feed [mm/min]	500	550	
切深量 ap × ae [mm] Depth of cut	ap 0.07	0.3 × 0.02	0.3 × 0.005
余量 [mm] Stock	0.05	0.005	-
加工时间 Machining time	13 分钟 13 min		





A 直径 [mm] Width	目标值 Target	实测值 Actual
	1.800	1.797

表面粗糙度 [μm] Surface roughness	
1	Ra 0.182
2	Ra 0.176

加工形状 Shape	圆柱阶梯造型 Cylindrical stage profile		
加工工序 Process	粗加工 (螺旋加工) Roughing (Helical milling)	粗加工 (侧面加工) Roughing (Side milling)	精加工 (侧面加工) Finishing (Side milling)
使用刀具 Tool	DHR237 ϕ 0.8 × 3		
主轴转速 [min^{-1}] Spindle speed	12,000		
进给速度 [mm/min] Feed	500		
切深量 ap × ae [mm] Depth of cut	ap 0.02 (螺旋R = 0.25) (Helical R = 0.25)	0.5 × 0.02	0.5 × 0.005
余量 [mm] Stock	0.25	0.005	-
加工时间 Machining time	33 分钟 33 min		

加工案例
铜电极加工
Machining Case
Copper Electrode
Milling

冲压模具电极
Electrode for press mold

加工材料 钨铜 (W70% - Cu30%)
Work Material Copper tungsten (W70% - Cu30%)

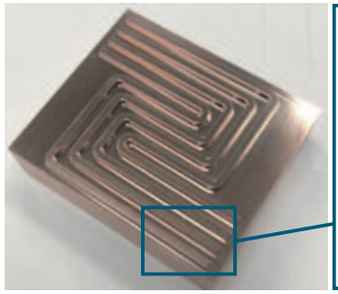
铜电极加工用长颈圆鼻铣刀
Long Neck Corner Radius End Mill for Copper Electrode

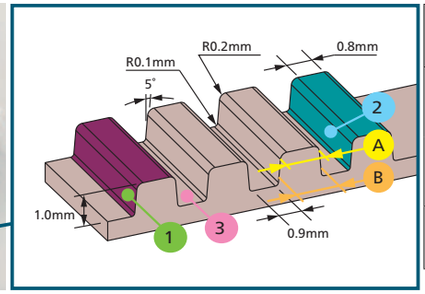
页面 Page ➡ F-070

DHR237R φ0.2 × R0.02 ～ φ6 × R1 共有153种规格 Total 153 sizes



难加工材料钨铜也能得到稳定的加工精度
Realizes long time machining and achieves stable high precision machining surface even on tough material of copper tungsten





表面粗糙度 [μm] Surface roughness		
侧面 Side	1	Ra : 0.159 Rz : 1.403
	2	Ra : 0.139 Rz : 1.018
底面 Bottom	3	Ra : 0.055 Rz : 0.516

工件尺寸 Work size	30 × 35 mm (加工深度 1.0 mm) Machining depth
加工材料 Work material	钨铜 (W70% - Cu30%) Copper tungsten (W70% - Cu30%)
冷却方式 Coolant	水溶性切削油 Water-soluble fluid
总加工时间 Total machining time	2 小时 5 分钟 2 hr 5 min

宽度 Width	A 自顶面起的位置 Depth from top	B 自顶面起的位置 Depth from top
目标值 Target	0.2 mm	0.8 mm
形状1 Shape	1.202 mm	1.307 mm
形状4 Shape	1.203 mm	1.311 mm
	1.207 mm	1.314 mm

加工工序 Process	粗加工 Roughing		中精加工 Semi-finishing		精加工 Finishing	
	等高线 Contour	沟槽 Slot	平面 Flat surface	侧面 Side	平面 Flat surface	侧面 Side
使用刀具 Tool	DHR237R φ 1 × R0.1 × 3				DHR237R φ 1 × R0.1 × 3	
主轴转速 [min^{-1}] Spindle speed	23,000					
进给速度 [mm/min] Feed	2,200	1,000	2,200		1,100	
切深量 ap × ae [mm] Depth of cut	0.054 × 0.55	ap 0.027	ae 0.05	ap 0.03	ae 0.05	ap 0.02
余量 [mm] Stock	0.05		0.03		-	
加工时间 Machining time	23 分钟 23 min		30 分钟 30 min		1 小时 12 分钟 1 hr 12 min	

加工案例
铜电极加工
Machining Case Copper Electrode Milling

耐热玻璃加工
Heat-resistant glass machining

加工材料 耐热玻璃
Work Material Heat-resistant glass

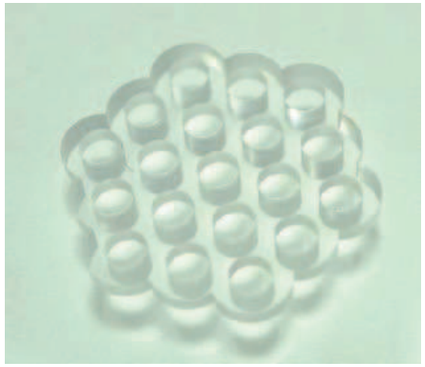
硬脆材加工用平底铣刀
End Mill for Hard Brittle Materials

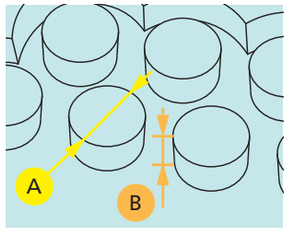
页面 Page ➡ C-008

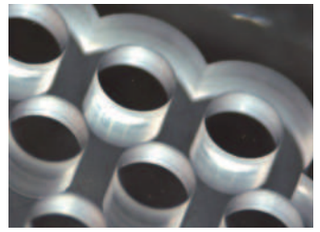
DCMS φ0.3 ～ φ2 共有14种规格 Total 14 sizes



可对玻璃或硬质合金等硬脆材料进行直接切削
采用高粘合性钻石涂层，可实现长时间加工
Machinable on hard brittle materials such as glass and cemented carbide
High adhered DIAMOND COATING makes tool life longer







工件尺寸 Work size	20 × 20 mm (加工深度 1 mm) Machining depth
加工材料 Work material	耐热玻璃 Heat-resistant glass
冷却方式 Coolant	水溶性切削油 Water-soluble fluid
总加工时间 Total machining time	20 小时 30 分钟 20 hr 30 min

	A 圆柱直径 Cylinder diameter	B 加工深度 Machining depth
目标值 [mm] Target	1.260	1.000
实测值 [mm] Actual	1.259	0.999

加工工序 Process	等高线 Contour
使用刀具 Tool	DCMS φ 0.5 × 1
主轴转速 [min^{-1}] Spindle speed	20,000
进给速度 [mm/min] Feed	120
切深量 ap × ae [mm] Depth of cut	0.002 × 0.3
加工时间 Machining time	20 小时 30 分钟 20 hr 30 min

加工案例
硬脆材加工
Machining Case Hard Brittle Material Milling

螺旋叶轮形状加工
Propeller shape

加工材料 石墨(TTK-5)
Work Material Graphite

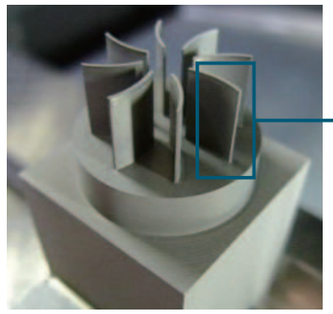
钻石涂层2刃长颈铣刀
DIAMOND COATING 2-Flute Long Neck End Mill

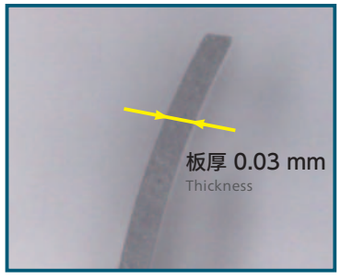
页面 Page C-012

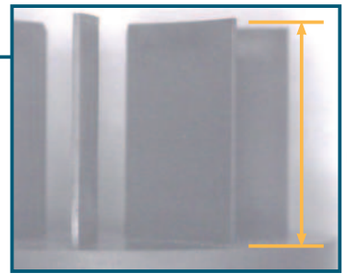
DCHR230 ϕ0.5 ～ ϕ6 共有19种规格 Total 19 sizes



采用独创的钻石涂层，在加工石墨时可发挥高耐久性
Original DIAMOND COATING realized a tool long life for the machining of graphite







工件尺寸 Work size	ϕ 14 mm (叶片高度 6 mm) Height of blade
加工材料 Work material	石墨（TTK-5） Graphite
冷却方式 Coolant	吹气 Air blow
总加工时间 Total machining time	1 小时 20 分钟 1 hr 20 min

加工案例 石墨加工 Machining Case Graphite Milling

加工工序 Process	圆柱部粗加工 Cylindrical roughing	粗加工 Roughing	中精加工 Semi-finishing	精加工 Finishing
使用刀具 Tool	DCSE235 ϕ6	DCHR230 ϕ1 × 10		
主轴转速 [min^{-1}] Spindle speed	8,000	20,000		
进给速度 [mm/min] Feed	600	2,000	1,000	800
切深量 ap × ae [mm] Depth of cut	8 × 0.5	0.2 × 0.6	0.05 × 0.2	
加工时间 Machining time	5 分钟 5 min	1 小时 5 分钟 1 hr 5 min		10 分钟 10 min

斜面钻孔加工
Slope drilling

加工材料 SUS304
Work Material

无限涂层平底钻头
MUGEN COATING Flat Drill

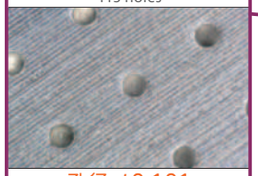
页面 Page H-016

MFD ϕ0.1 ～ ϕ6 共有69种规格 Total 69 sizes



在各种角度的斜面上都可实现高精度、少毛刺的孔加工
Possible for high-precision drilling on slopes of various angles with less burr

15°斜面(盲孔) 115孔
Inclined angle 15°(Blind hole) 115 holes

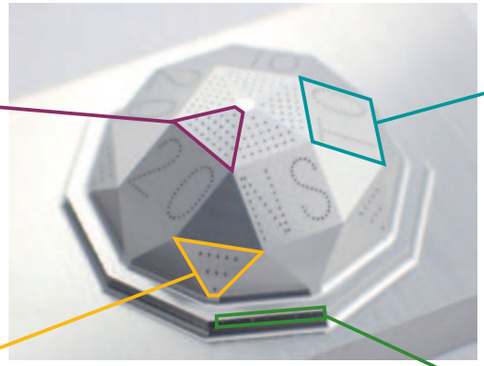


孔径 ϕ0.101
Hole diameter

70°斜面(盲孔) 45孔
Inclined angle 70°(Blind hole) 45 holes



孔径 ϕ0.100
Hole diameter



30°斜面(盲孔) 256孔
Inclined angle 30°(Blind hole) 256 holes



孔径 ϕ0.104
Hole diameter

半圆孔(盲孔) 35孔
Semicircular hole (Blind hole) 35 holes



孔径 ϕ0.100
Hole diameter

工件尺寸 Work size	20 × 30 mm
加工材料 Work material	SUS304
冷却方式 Coolant	水溶性切削油 Water-soluble fluid
总加工时间 Total machining time	1 小时 10 分钟 1 hr 10 min

加工案例 钻头 Machining Case Drill

加工工序 Process	15°斜面(盲孔) Inclined angle 15° (Blind hole)	30°斜面(盲孔) Inclined angle 30° (Blind hole)	70°斜面(盲孔) Inclined angle 70° (Blind hole)	半圆孔(盲孔) Semicircular hole (Blind hole)
使用刀具 Tool	MFD ϕ0.1	MFD ϕ0.1	MFD ϕ0.1	
主轴转速 [min^{-1}] Spindle speed	25,000	25,000	25,000	
进给速度 [mm/min] Feed	3	3	2	
加工深度 [mm] Machining depth	0.2 (无停顿) (Non-Step)	0.2 (无停顿) (Non-Step)	0.2 (无停顿) (Non-Step)	
加工时间 Machining time	15 分钟(8 秒/孔) 15 min(8 sec / hole)	40 分钟(8 秒/孔) 40 min(8 sec / hole)	10 分钟(10 秒/孔) 10 min(10 sec / hole)	5 分钟(10 秒/孔) 5 min (10 sec / hole)

6

技术资料

Techinical Guidance

什么是铣刀?
What is End mill ?

什么是切削刀具? What is cutting tool?

切削刀具除了使用铣刀进行铣削加工外，还包括使用刀盘和钻头进行铣削加工、使用车刀进行车削加工、使用钻床配合钻头进行钻孔加工、使用滚刀和拉床进行齿轮加工等。

Cutting tools generally include milling tools, end mills, cutters and drills, turning tools, drilling tools, gear hob cutters and etc.



使用钻头进行钻孔加工
Drilling



使用车刀进行车削加工
Turning processing



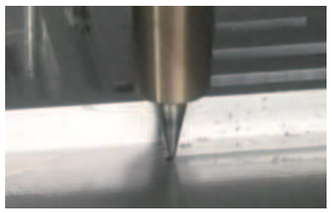
使用滚刀进行齿轮加工
Gear processing

什么是铣刀? What is end mill?

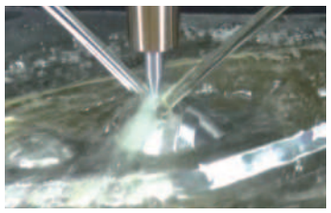
铣刀类似于钻头，支持多种切削加工，广泛应用于各种工业产品的生产。在尺寸上来说直径约可达到30㎜左右，但随着日本工业制品的发展，在6㎜以下的微细加工中小径铣刀的利用率不断升高。

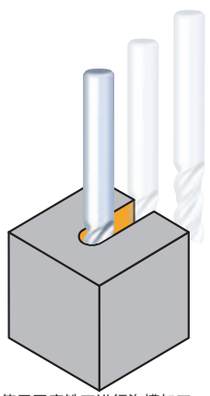
此外，铣刀材质丰富多样，从高速钢（SKH）到硬质合金、陶瓷，以及在硬质合金母材上焊接CBN、PCD的材质，具有多种切削性能。

End mill is similar to drill that supports variety of cutting processes, and is used to produce many industrial products. The biggest dimension is up to about ϕ30mm. Recently, with the development of Japanese industrial products, the small diameter end mill that under ϕ6mm is becoming popular. Furthermore, the materials of end mill are getting various from high speed steel to cemented carbide, ceramics, and even CBN, PCD brazed on cemented carbide.

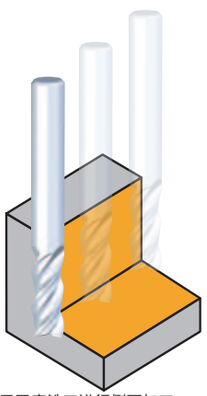




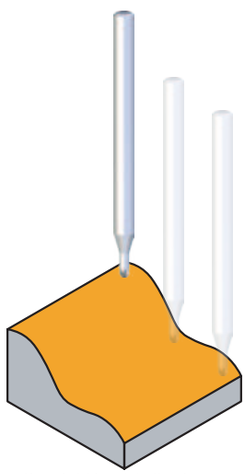




使用平底铣刀进行沟槽加工
Slotting by square end mill



使用平底铣刀进行侧面加工
Side milling by square end mill

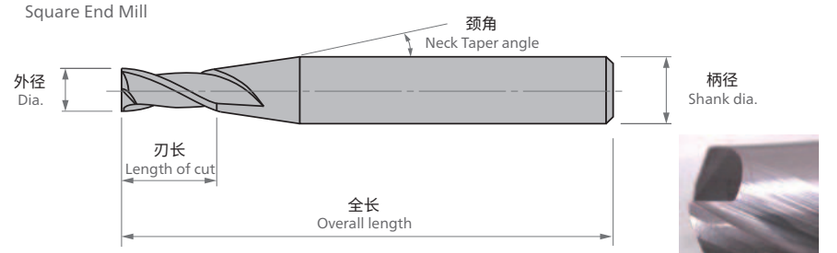


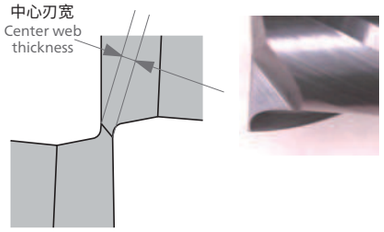
使用球头铣刀进行曲面加工
3D milling by ball end mill

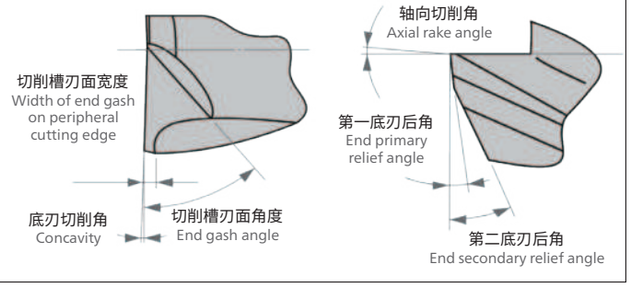
铣刀各部分的名称
Name of parts for End mill

平底铣刀 Square End Mill



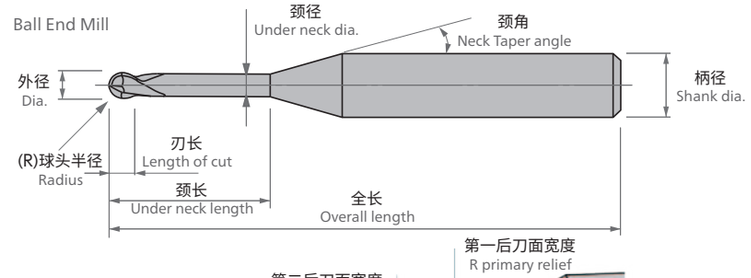




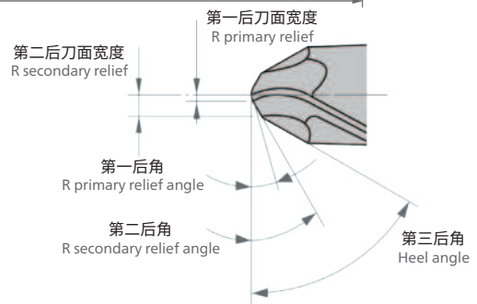


球头铣刀 Ball End Mill

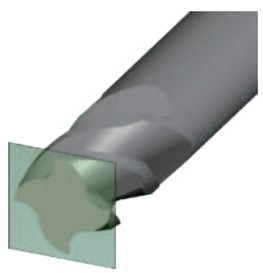


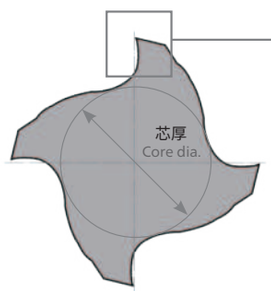


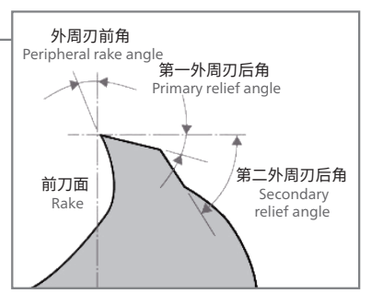




外周刃（4刃铣刀截面） Peripheral cutting edge (Cross section of 4-flute end mill)

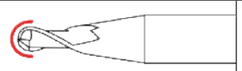
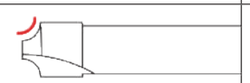
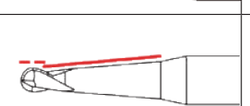






铣刀的种类
Type of End mill

铣刀的外周刃和底刃的形状 Type of peripheral and end cutting edge

底刃的形状 Type of End cutting edge	平底 Square		方角铣刀 Square end cutting edge
	球头 Ball		带球状底刃的铣刀 Ball end cutting edge
	圆鼻 Corner Radius		圆角铣刀 Square end cutting edge
	成型 Formed		用于加工特殊形状的铣刀总称 Generic name for special types
外周刃的形状 Type of Peripheral cutting edge	直刃 Straight		圆筒状外周刃 Cylindrical peripheral cutting edge
	锥刃 Taper		圆锥状外周刃 Tapered peripheral cutting edge
	长颈 Long Neck		颈径小于外径的形状 Thinner neck diameter than end diameter
	锥颈 Taper Neck		颈径小于外径且有角度的圆锥形状 Thinner neck diameter than end diameter but taper shape

日进工具的铣刀形状分类 Shapes of NS TOOL's end mill

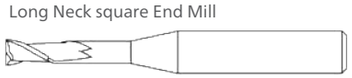
平底铣刀
Square End Mill



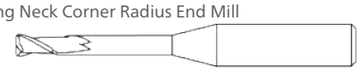
圆鼻铣刀
Corner Radius End Mill



长颈平底铣刀
Long Neck square End Mill



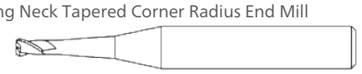
长颈圆鼻铣刀
Long Neck Corner Radius End Mill



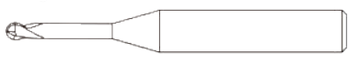
球头铣刀
Ball End Mill



锥颈圆鼻铣刀
Long Neck Tapered Corner Radius End Mill



长颈球头铣刀
Long Neck Ball End Mill



锥刃铣刀
Tapered End Mill



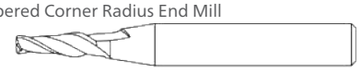
锥颈球头铣刀
Long Neck Tapered Ball End Mill



锥刃球头铣刀
Tapered Ball End Mill



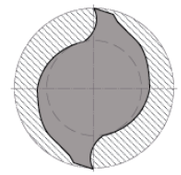
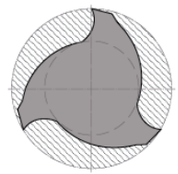
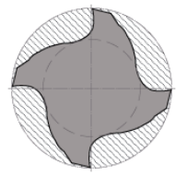
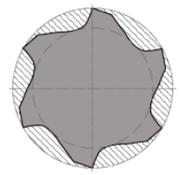
锥刃圆鼻铣刀
Tapered Corner Radius End Mill



铣刀刃数的区别
Differences on number of flute

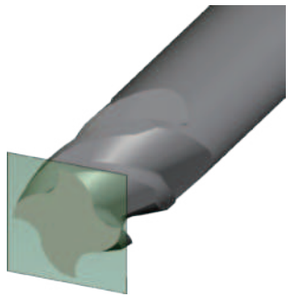
铣刀的刃数 Number of flute

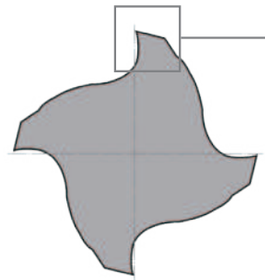
根据铣刀用途选择刃数非常重要。下面对各种刃数的优缺点及其用途进行介绍。
It is important to choose the number of flute of the end mill according to the usage. Introduction of the advantages, disadvantages, and usage of each number of flute are as below.

					
		2刃 2-flute	3刃 3-flute	4刃 4-flute	6刃 6-flute
特点 Features	优点 Advantage	排屑良好 Well chip removal	排屑良好 Well chip removal	刀具刚性高 High tool rigidity	刀具刚性高 High tool rigidity
	缺点 Disadvantage	刀具刚性低 Low tool rigidity	难以测量外径 Difficult to measure dia.	排屑不畅 Low chip removal	排屑不畅 Low chip removal
用途 Usage		通用 For General use	沟槽和侧面 Slotting & Side milling	侧面 Side milling	侧面 Side milling

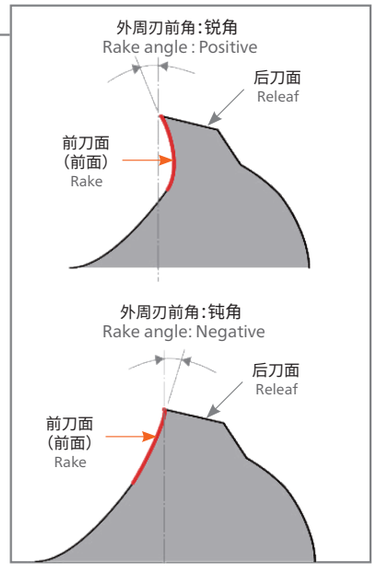
铣刀的前角 Rake angle at peripheral cutting edge

铣刀的前角因用途而异，主要取决于加工材料。
Variety of rake angles to support different cutting materials.





铣刀截面
Cross section of end mill



前角为锐角造型的铣刀注重锋利度，一般适用于非铁金属和低硬度的加工材料。前角为钝角造型的铣刀具有高强度刀刃，适用于高硬度钢等材料。
End mill with positive rake angle has a sharp flute that generally compatible with nonferrous metals and low hard materials. On the other hand, the negative rake angle has strong cutting edge to support high hard materials machining.

铣刀的切削参数（1）
Cutting conditions of End Mill (1)

切削速度、主轴转速、进给速度的计算方法 Calculation for Cutting Speed, Spindle Speed and Feed

切削速度 Cutting speed	vc (m/min)	=	$\frac{\pi\text{(圆周率3.14)} \times D\text{(外径 mm)} \times n\text{(主轴转速 min}^{-1}\text{)}}{1{,}000}$
主轴转速 Spindle speed	n (min^{-1})	=	vc ÷ π ÷ D × 1,000
进给速度 Feed	vf (mm/min)	=	n × fz × Z (刃数)
每刃进给量 Feed per tooth	fz (mm/tooth)	=	$\frac{vf}{n \times Z\text{(刃数)}}$
切屑排出量 Metal removal rate	Q (cm^3/min)	=	$\frac{ap \times ae \times vf}{1{,}000}$
理论表面粗糙度 ※平坦部 Theoretical surface finish ※Plane	h (μm)	=	$ae^2 \times 1{,}000 \div 8R$

ap：轴向切深量 (mm) Axial depth of cut
ae：径向切深量 (mm) Radial depth of cut
vf ：进给速度 (mm/min) Feed

ae：径向切深量 (mm) Radial depth of cut
R ：球头半径 (mm) Ball radius

使用机床的主轴不满足切削参数表的转速时…

利用下述的计算式**以相同的比率降低主轴转速和进给速度后**使用。

When maximum speed of the machine spindle less than value of recommended milling conditions, adjust conditions by calculation as follows.

例 Example

使用 MSE430 ϕ1 加工 S50C 工件时

Machining S50C with MSE430 ϕ1

切削参数参考表的参数
Recommended milling condition

主轴转速 n ：20,700 min^{-1}
Spindle speed n

进给速度 vf：330 mm/min
Feed vf

所用机床主轴转速最高为 12,000min^{-1}时
In case Maximum Spindle Speed of the machine is 12,000min^{-1}...

主轴转速 n ：10,000 min^{-1}
Spindle speed n

进给速度 **vf ：159 mm/min**
Feed vf

切削速度 vc（m/min） Cutting speed vc

切削速度会因铣刀的材质、外径、刃长、颈长、加工材料、使用机床、刀柄刚性、加工形状、精度、切削油等不同而存在差异，大致可参考铣刀的材质和加工材料的种类如表1所示。

Appropriate Cutting speed should be decided by parameters such as tool material, diameter, length of cut, work material, cutting machine, rigidity of tool holder, machining configuration, accuracy, cutting fluid, and etc.
Generally tool material and work material are main factors to determine the Cutting speed.

表1 切削速度
Table 1. Cutting speed

加工材料 Work material	切削速度 [m/min] Cutting speed (m/min)	
	钨钢铣刀 Solid carbide tool	涂层钨钢铣刀 Coated carbide tool
碳素钢（S50C等） Carbon steels	30 ～ 60	60 ～ 150
合金钢（SCM, SKD等） Alloy steels	30 ～ 40	60 ～ 100
调质钢（NAK, HPM等） Prehardened steels	30 ～ 40	60 ～ 100
不锈钢（SUS304等） Stainless steels	20 ～ 30	40 ～ 80
高硬度钢 (SKD61,STAVAX等45~60HRC) Hardened steels	–	20 ～ 100

每刃进给量 fz（mm/tooth） Feed per tooth fz

进给速度在考虑加工效率时是重要的因素之一，虽然决定其进给速度的每刃进给量因铣刀的外径、形状、加工材料、使用机床、刀柄刚性、加工形状、精度、切深量不同而存在差异，短刃造型铣刀的外径和刀刃数的大致参考标准如表2所示。

Feed per Tooth is an important element for efficient machining which should be determined by parameters such as tool diameter, type, work material, cutting machine, rigidity of tool holder, machining configuration, accuracy and cutting depth.
Table 2 is a guideline of Feed per tooth for short flute end mills.

表2 每刃进给量
Table 2. Feed per tooth

外径 [mm] Dia. (mm)	每刃进给量 [mm/tooth] Feed per tooth（mm/tooth）	
	2刃 2-flutes	4刃 4-flutes
1	0.001 ～ 0.005	
6	0.02 ～ 0.04	0.01 ～ 0.03
10	0.04 ～ 0.08	0.03 ～ 0.06
20	0.08 ～ 0.12	0.06 ～ 0.1

※短刃造型铣刀以外的铣刀，因刃长、颈长不同，每刃进给量必须设为表2数据的80%以下。
※ Note: Feed per tooth for standard flute size end mills should be adjusted to 80% or less from table 2.

参考上述的切削速度和每刃进给量，考虑切削相关的所有因素——加工形状、精度、使用机床、刀柄刚性等，来决定主轴转速和进给速度。

Referring above parameters of Cutting speed and Feed per tooth, both Spindle speed and Feed are calculated considering all other related factors as well.

铣刀的切削参数（2）
Cutting conditions of End Mill (2)

切屑排出量 Q（cm³/min） Metal Removal Rate Q

铣床的单位时间（1分钟）内所生成的切屑排出量按照以下公式进行计算。
Metal removal rate (the volume of metal removed in cubic mm per minute) is calculated by the following formula.

$$Q_{(cm^3/min)} = \frac{ap \times ae \times vf}{1{,}000}$$

Q : Metal removal rate (cm^3/min)

ap：轴向切深量（mm）
ae：径向切深量（mm）
ap : Axial depth of cut (mm)
ae : Radial depth of cut (mm)

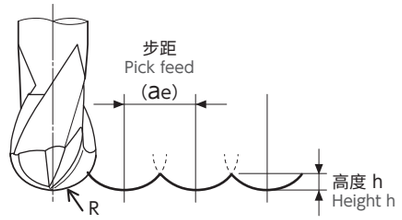
vf：进给速度（mm/min）
vf : Feed (mm/min)

基于球头铣刀的球头半径（R）和步距（ae）的尖点高度（理论表面粗糙度） Ball end mill and pick feed (ae)（theoretical surface finish）

球头铣刀加工中，如下图所示，依球头半径和步距而形成的切削剩余部分的高度被称为尖点高度或者残留高度，该高度可以作为理论上的表面粗糙度进行考量。进行平坦部分的表面加工时，由于步距与径向切深量ae相同，按照以下公式进行计算。
In ball end mill milling, height h of the unmachined part like mountain shape below be formed by ball radius and pick feed, which are called cusp height or scallop height and which is considered theoretical surface finish. Since pick feed is the same ae radial depth of cut at the milling in flat part, it is calculated by the following formula.

$$h_{(\mu m)} = \left(R - \sqrt{R^2 - \left(\frac{ae}{2}\right)^2}\right) \times 1000 \fallingdotseq ae^2 \times 1000 \div 8R$$

R：球头半径（mm）
R : Radius (mm)
ae：径向切深量（mm）
ae : Radial depth of cut (mm)



尖点高度一览表 Cusp Height Quick Reference Matrix　　单位Unit：μm

球头半径 R Radius	径向切深量 ae[mm] Radial depth of cut ae [mm]										
	0.005	0.01	0.02	0.03	0.04	0.05	0.08	0.1	0.15	0.2	0.3
0.05	0.06	0.25	1.01	2.30	–	–	–	–	–	–	–
0.1	0.03	0.13	0.50	1.13	2.02	3.18	–	–	–	–	–
0.3	0.01	0.04	0.17	0.38	0.67	1.04	2.68	4.20	–	–	–
0.5	0.01以下	0.03	0.10	0.23	0.40	0.63	1.60	2.51	5.66	–	–
0.75	–	0.02	0.07	0.15	0.27	0.42	1.07	1.67	3.76	6.70	–
1	–	0.01	0.05	0.11	0.20	0.31	0.80	1.25	2.82	5.01	–
1.5	–	0.01以下	0.03	0.08	0.13	0.21	0.53	0.83	1.88	3.34	7.52
2	–	–	0.03	0.06	0.10	0.16	0.40	0.63	1.41	2.50	5.63
2.5	–	–	0.02	0.05	0.08	0.13	0.32	0.50	1.13	2.00	4.50
3	–	–	0.02	0.04	0.07	0.10	0.27	0.42	0.94	1.67	3.75

※上表是使用球头铣刀对平坦部进行精加工时根据径向切深量ae求得的理论值。
※In finishing in flat part, the above values in the table are theoretical values by the radial depth of cut (ae).

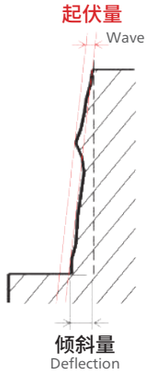
刃数选择标准 Selection of Number of Flute

	2刃 2-Flutes	3刃 3-Flutes	4刃 4-Flutes	6刃 6-Flutes
沟槽加工 Slotting	◎	◎	○	×
侧面加工 Side Milling	○	◎	◎	◎

通常，2刃及3刃排屑槽比较大，适合用于沟槽加工。
侧面加工时，因无需担心切屑的堆积，使用4刃及6刃等多刃刃的刀具效果更佳。
Generally 2-flutes and 3-flutes are selected for slotting because of the larger chip pocket.
4-flutes and 6-flutes are recommended for side milling as no problem of chip disposal.

螺旋角选择标准 Selection of Helix Angle

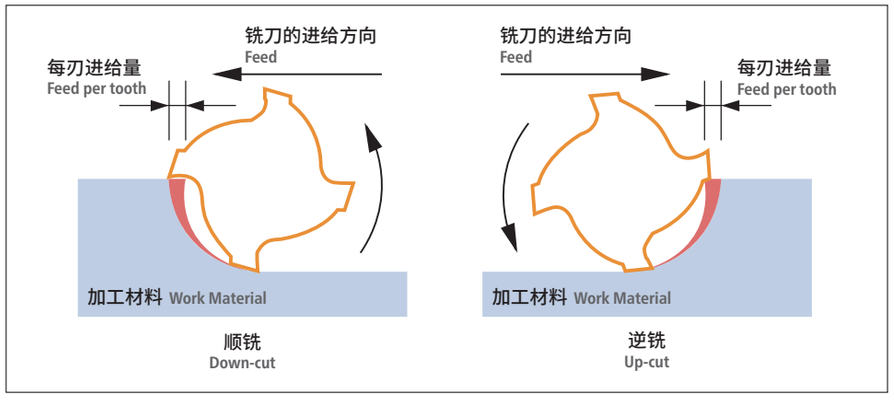
		25°螺旋角 Helix 25°	30°螺旋角 Helix 30°	35°螺旋角 Helix 35°	40°螺旋角 Helix 40°	45°螺旋角 Helix 45°
切削性能	Shearing ability	○	○	◎	◎	◎
抑制振刀效果	Chatter resistance	○	○	◎	◎	◎
加工表面粗糙度	Surface roughness	○	○	◎	◎	◎
加工面倾斜量	Inclination	◎	◎	◎	○	○
加工面起伏量	Wave	◎	◎	◎	○	○
用途 Application 沟槽加工	Slotting	◎	◎	○	○	△
用途 Application 侧面加工	Side milling	○	◎	◎	◎	◎
用途 Application 高硬度钢	Hardened steels	△	△	○	◎	◎



- **25°螺旋角** Helix 25°
  沟槽加工中，加工面的倾斜、起伏较少的25°螺旋角比较有效。
  Suitable for slotting.
- **30°螺旋角** Helix 30°
  可支持沟槽和侧面加工的通用型。
  Recommendable for both slotting and side milling.
- **35°螺旋角、40°螺旋角、45°螺旋角** Helix 35°, Helix 40°, Helix 45°
  根据加工表面所需的倾斜程度和起伏量进行选择。
  螺旋角越大，切削性能越好，振刀也越少，还能加大刀刃的长度。
  Selectable within the required tolerance.
  As larger angle gives higher shearing ability and reduce chattering, it is possible to relatively prolong the length of cut.
- **45°螺旋角** Helix 45°
  可对应高硬度钢及难切削材料的加工。
  Suitable for machining for hardened steels and tough materials.

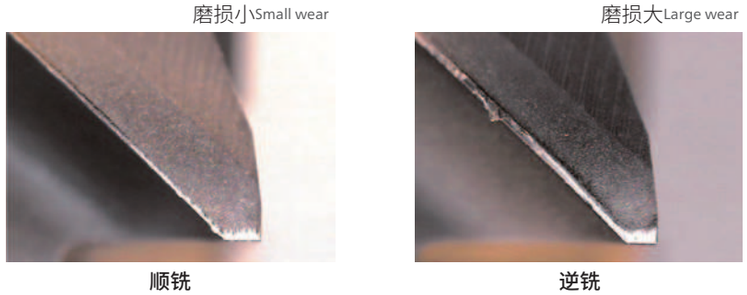
切削方向（逆铣与顺铣） Cutting Direction（Up-cut and Down-cut）

逆铣与顺铣的切削机构图 Cutting structure of Up-cut and Down-cut



不同切削方向的刀具磨损量比较图片 Difference of edge wear by cutting directions

（对S50C切削加工50m后的状态 After cutting of 50m, S50C）



顺铣是从厚进刀缓缓切薄，若是逆铣则按照相反的方向进行切削加工。从图片上也可得知，一般情况下，顺铣时刀具的损耗少，使用寿命长。
Down-cut tooth first cuts thicker then progressively thinner, while Up-cut goes the opposite. As shown by above photos, Down-cut is recommended since the wear of cutting edge is comparatively small and tool life is eventually longer.

技术资料
Technical Guidance

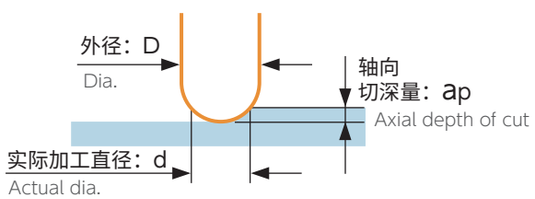
球头铣刀实际加工直径一览表

Summary of diameter of cutting point of Ball End Mill

球头半径 (R)	外径 (D)	轴向切深量【mm】 Axial depth of cut（ap）														
Radius	Dia.	0.01	0.02	0.03	0.04	0.05	0.08	0.1	0.15	0.2	0.3	0.5	0.8	1	2	3
0.1	0.2	0.087	0.12	0.143	0.16	0.173	0.196	0.2								
0.2	0.4	0.125	0.174	0.211	0.24	0.265	0.32	0.35	0.39	0.4						
0.3	0.6	0.154	0.215	0.262	0.299	0.332	0.41	0.45	0.52	0.57	0.6					
0.4	0.8	0.178	0.25	0.304	0.349	0.387	0.48	0.53	0.62	0.69	0.77					
0.5	1	0.199	0.28	0.341	0.392	0.436	0.54	0.6	0.71	0.8	0.92	1				
1	2	0.282	0.398	0.486	0.56	0.624	0.78	0.87	1.05	1.2	1.43	1.73	1.96	2		
1.5	3	0.346	0.488	0.597	0.688	0.768	0.97	1.08	1.31	1.5	1.8	2.24	2.65	2.83		
2	4	0.399	0.564	0.69	0.796	0.889	1.12	1.25	1.52	1.74	2.11	2.65	3.2	3.46	4	
2.5	5	0.447	0.631	0.722	0.891	0.995	1.25	1.4	1.71	1.96	2.37	3	3.67	4	4.9	
3	6	0.489	0.692	0.846	0.977	1.091	1.38	1.54	1.87	2.15	2.62	3.32	4.08	4.47	5.66	6
4	8	0.565	0.799	0.978	1.129	1.261	1.59	1.78	2.17	2.5	3.04	3.87	4.8	5.29	6.93	7.75
5	10	0.632	0.894	1.094	1.262	1.411	1.78	1.99	2.43	2.8	3.41	4.36	5.43	6	8	9.17
6	12	0.693	0.979	1.198	1.383	1.546	1.95	2.18	2.67	3.07	3.75	4.8	5.99	6.63	8.94	10.39
7	14	0.748	1.058	1.295	1.495	1.67	2.11	2.36	2.88	3.32	4.05	5.2	6.5	7.21	9.8	11.49
8	16	0.8	1.131	1.384	1.598	1.786	2.26	2.52	3.08	3.56	4.34	5.57	6.97	7.75	10.58	12.49
9	18	0.848	1.199	1.468	1.695	1.895	2.39	2.68	3.27	3.77	4.61	5.92	7.42	8.25	11.31	13.42
10	20	0.894	1.264	1.548	1.787	1.997	2.52	2.82	3.45	3.98	4.86	6.24	7.84	8.72	12	14.28

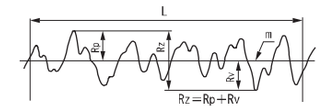
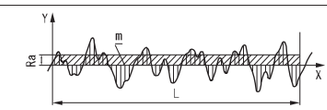
球头铣刀实际加工直径的计算公式　Calculation of Actual dia.

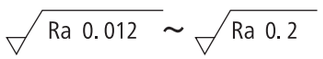
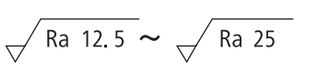
$$d = 2\sqrt{ap\ (D-ap)}$$



各种表面粗糙度的计算方法（JIS B 0601-2001）

Measurement and symbol of surface roughness (Extracted from JIS B 0601-2001)

种类 Type	符号 Symbol	计算方法 Description	说明图 Reference chart
最高值 Maximum height of the profile	Rz	在粗糙度曲线上，沿着平均线方向截取一段基准长度，然后在所截取的基准长度范围内，沿着粗糙度曲线的纵向倍率方向测量从峰顶到谷底的间隔。该间隔的值就是粗糙度的最高值，单位为（μm）。截取基准长度时，如果峰顶及谷底的值大得过于极端，则可视为伤痕，不能截取。 The maximum height of the profile is the distance between the maximum peak height and the maximum valley depth from the mean line in each sampling length. Rz（ISO/JIS）is the mean value of the maximum peak-to-valley heights in the evaluation length.	
平均值 Arithmetic mean deviation of the profile	Ra	在粗糙度曲线上，沿着平均线方向截取一段基准长度，然后将所截取部分的平均线方向定为x轴，将纵向倍率方向定为y轴，当粗糙度曲线以y=f（x）表示时，按照右图中所述的换算公式所求得的值就是平均值，单位为（μm）。 The arithmetic mean deviation of the profile is the arithmetic mean of the absolute values of distances from the mean line to the profile.	 $Ra = \frac{1}{L}\int_0^L \lvert f(x)\rvert dx$ L ＝ 基准长度 Evaluation length

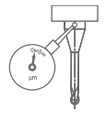
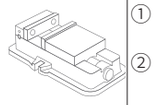
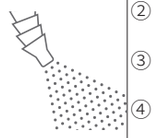
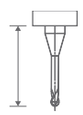
最高值Rz的区分值 Value of maximum height of the profile	平均值Ra的区分值 Value of arithmetic mean deviation of the profile	传统的三角符号 Finishing symbol	表面性状的图示（以Ra为例） Indication of surface texture in technical product documentation
0.05S 0.1S 0.2S 0.4S 0.8S	0.012a 0.025a 0.05a 0.1a 0.2a		
1.6S 3.2S 6.3S	0.4a 0.8a 1.6a		
12.5S 25S	3.2a 6.3a		
50S 100S	12.5a 25a		

※Ra、Rz与三角符号的对照只是作为参考，并非严格的相互关系。
※Note: Triangle finishing symbol mark presents approximate surface roughness specified by Ra and Rz.

硬度近似值对照表
Comparison table of hardness

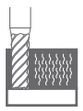
洛氏硬度 C标尺 Rockwell hardness C scale 150kg brale (HRC)	维氏硬度 Diamond pyramid hardness number, Vickers (HV)	布氏硬度 标准球10㎜/球负载29.42kN Brinell hardness standard 10mm ball 29.42kN (HB)	洛氏硬度 A标尺负载588.4N 钻石圆锥压头 Rockwell hardness A scale 60kg brale (HRA)	肖氏硬度 Shore scleroscope hardness number (HS)	抗拉强度近似值 N/mm² Approx tensile strength N/mm²
68	940	–	85.6	97	–
67	900	–	85.5	95	–
66	865	–	84.5	92	–
65	832	–	83.9	91	–
64	800	–	83.4	88	–
63	772	–	82.8	87	–
62	746	–	82.3	85	–
61	720	–	81.8	83	–
60	697	–	81.2	81	–
59	674	–	80.7	80	–
58	653	–	80.1	78	–
57	633	–	79.6	76	–
56	613	–	79.0	75	–
55	595	–	78.5	74	2079
54	577	–	78.0	72	2010
53	560	–	77.4	71	1952
52	544	500	76.8	69	1883
51	528	487	76.3	68	1824
50	513	475	75.9	67	1755
49	498	464	75.2	66	1687
48	484	451	74.7	64	1639
47	471	442	74.1	63	1578
46	458	432	73.6	62	1530
45	446	421	73.1	60	1481
44	434	409	72.5	58	1432
43	423	400	72.0	57	1383
42	412	390	71.5	56	1334
41	402	381	70.9	55	1294
40	392	371	70.4	54	1245
39	382	362	69.9	52	1216
38	372	353	69.4	51	1177
37	363	344	68.9	50	1157
36	354	336	68.4	49	1118
35	345	327	67.9	48	1079
34	336	319	67.4	47	1059
33	327	311	66.8	46	1030
32	318	301	66.3	44	1000
31	310	294	65.8	43	981
30	302	286	65.3	42	952
29	294	279	64.7	41	932
28	285	271	64.3	41	912
27	279	264	63.8	40	883
26	272	258	63.3	38	863
25	266	253	62.8	38	843
24	260	247	62.4	37	824
23	254	243	62.0	36	804
22	248	237	61.5	35	785
21	243	231	61.0	35	775
20	238	226	60.5	34	755
(18)	230	219	–	33	736
(16)	222	212	–	32	706
(14)	213	203	–	31	677
(12)	204	194	–	29	647
(10)	196	187	–	28	618
(8)	188	179	–	27	598
(6)	180	171	–	26	579
(4)	173	165	–	25	549
(2)	166	158	–	24	530
(0)	160	152	–	24	520

铣刀加工时的要点
Factors for End Mill operation

要点 Factor	注意事项 Instruction and Advice
机床刚性 Rigidity of machine 	① 尽可能使用高刚性的机床进行加工。 Use a rigid machine. ② 刚性不足时，请调整切深量及切削参数。 Adjust cutting conditions according to the rigidity of machine.
夹具和铣刀的偏摆 Collet chuck and run out of End Mill 	① 请使用高刚性高精度铣刀刀柄。 Use a rigid and precise collet chuck. ② 上刀时，请尽量将刀具的偏摆控制到最小。 Minimize the run out of end mill.
工件夹钳 Work clamp 	① 工件夹具必须固定牢固。 Work piece must be firmly clamped. ② 无法改善夹持状态时，请调整切深量等切削参数。 In case work piece cannot be firmly clamped, relieve cutting condition.
切削油和切屑的处理 Cutting fluid and chips 	① 使用的切削油量须够充足。 Give a sufficient cutting fluid. ② 重切削时，建议使用水溶性切削油。 Recommend water soluble fluid for heavy cutting. ③ 请注意部分产品为干式切削专用。 Some end mills apply dry cutting only. ④ 干式切削请使用吹气冷却方式。 Use air blow for dry cutting. ⑤ 应避免切屑妨碍切削油供应或切削加工。 Remove chips from working area.
铣刀的选择 Selection of End Mill 	① 请根据不同的加工工件和加工形状，选择适合的铣刀。 Select most suitable end mills according to work material and dimension. ② 请参照目录的索引。 Refer to the index table on front page.
切削参数 Cutting conditions **vc vf ap ae**	① 请参阅切削参数参考表。 Refer to recommended milling condition table. ② 请根据机床的刚性和工件的夹持状态，调整切削参数。 It is necessary to adjust conditions according to the machine rigidity and clamping condition of work material.
铣刀的伸出量 Overhang of End Mill from tool holder 	① 在不造成干涉的情况下，请尽量减少刀具的伸出量。 Overhang of end mill must be as short as possible from tool holder. ② 当刀具伸出量过长时，请调整切深量及进给速度等切削参数。 In case overhang cannot be shorten, relieve cutting condition .

铣刀加工时所遇到问题与解决方案

Troubleshooting for End Mill operation

问题现象 Symptoms of troubles	原因 Cause	建议措施 Solution
切削时的振刀 Chattering 	・主轴转速太快。 ・进给速度太快。 ・颈长超出需要，伸出量太长。 ・加工工件夹持力不足。 ・切削刀刃磨耗过大。 ・刀具夹持偏摆精度不足。 ・Excessive spindle speed ・Excessive feed ・Excessive long of effective length or overhang of end mill ・Work material is not firmly clamped ・Wear of cutting edge progressed ・Excessive chucking runout	・降低主轴转速。 ・降低进给速度。 ・将颈长和伸出量调整到最低限度。 ・牢固固定加工工件。 ・使用新的刀具或者进行返修。 ・调整刀具夹持偏摆精度。 ・Reduce spindle speed ・Reduce feed ・Adjust effective length and overhang as short as possible ・Clamp work material firmly ・Use new end mill or regrind ・Adjust chucking runout
切削时的折损 Breakage of End Mill 	・切深量太大。 ・切屑堵塞。 ・每刃进给量太大。 ・切削刀刃磨耗过大。 ・Excessive depth of cut ・Chips clogged ・Excessive feed per tooth ・Wear of cutting edge progressed	・降低切深量。 ・调整冷却液的对准方向，使切屑排出顺利。 ・降低每刃进给量。 ・使用新的刀具或者进行返修。 ・Reduce depth of cut ・Adjust coolant nozzle to right direction to dispose chips ・Reduce feed per tooth ・Use new end mill or regrind
切削中的崩刃（微小欠角） Chipping of cutting edge 	・切深量太大。 ・进给速度太快。 ・加工工件夹持力不足。 ・主轴转速太快。 ・颈长超出需要，伸出量太长。 ・切削刀刃磨耗过大。 ・产生积屑瘤。 ・切削时的急冷所造成的损伤。 ・Excessive depth of cut ・Excessive feed ・Work material is not firmly clamped ・Excessive spindle speed ・Excessive long of effective length or overhang of end mill ・Wear of cutting edge progressed ・Built up edge ・Excessive cooling	・降低切深量。 ・降低进给速度。 ・牢固固定加工工件。 ・降低主轴转速。 ・将颈长和伸出量调整到最低限度。 ・使用新的刀具或者进行返修。 ・使用最合适的涂层刀具。 ・使用吹气冷却或者油雾冷却方式。 ・Reduce depth of cut ・Reduce feed ・Clamp work material firmly ・Reduce spindle speed ・Adjust effective length and overhang as short as possible ・Use new end mill or regrind ・Choose appropriate coating ・Use air blow or oil mist
切削刃的异常磨损 Abnormal wear 	・主轴转速太快。 ・Excessive spindle speed ・进给速度太慢。 ・Too low feed	・降低主轴转速。 ・Reduce spindle speed ・调高进给速度。 ・Increase feed
切屑堵塞、熔敷 Clogging and depositing 	・排屑不畅。 ・进给速度太快。 ・切深量太大。 ・刀具刃数过多。 ・切削刀刃磨耗过大。 ・Chips are not well disposed ・Excessive feed ・Excessive depth of cut ・Inappropriate number of flute ・Wear of cutting edge progressed	・调整冷却液的对准方向，使切屑排出顺利。 ・降低进给速度。 ・降低切深量。 ・选用刃数较少的刀具。 ・使用新的刀具或者进行返修。 ・Adjust coolant nozzle to right direction to dispose chips ・Reduce feed ・Reduce depth of cut ・Use fewer flutes end mill ・Use new end mill or regrind
切削时的倾倒 Deflection of End Mill 	・进给速度太快。 ・切深量太大。 ・颈长超出需要，伸出量太长。 ・所使用刀具的螺旋角过大。 ・Excessive feed ・Excessive depth of cut ・Excessive long of effective length or overhang of end mill ・Large helix angle of flutes	・降低进给速度。 ・降低切深量。 ・将颈长和伸出量调整到最低限度。 ・使用螺旋角小的刀具。 ・Reduce feed ・Reduce depth of cut ・Adjust effective length and overhang as short as possible ・Use smaller helix angle
精加工面的毛刺 Burr on finished surface 	・切削刀刃磨耗过大。 ・所使用刀具的螺旋角过小。 ・切深量太大。 ・Wear of cutting edge progressed ・Small helix angle of flutes ・Excessive depth of cut	・使用新的刀具或者进行返修。 ・使用螺旋角大的刀具。 ・降低切深量。 ・Use new end mill or regrind ・Use larger helix angle ・Reduce depth of cut
精加工表面粗糙度不良 Poor surface roughness 	・切削刀刃磨耗过大。 ・卡入切屑。 ・进给速度太快。 ・颈长超出需要，伸出量太长。 ・主轴转速太慢。 ・精加工时的加工量不均匀。 ・刀具夹持偏摆精度不足。 ・Wear of cutting edge progressed ・Chips bite ・Excessive feed ・Excessive long of effective length or overhang of end mill ・Too low spindle speed ・Stock removals vary for finishing ・Excessive chucking runout	・使用新的刀具或者进行返修。 ・使用冷却液，除去切削位置处的切屑。 ・降低进给速度。 ・将颈长和伸出量调整到最低限度。 ・调高主轴转速。 ・确保精加工前的余量均匀。 ・调整刀具夹持偏摆精度。 ・Use new end mill or regrind ・Use coolant to remove chips ・Reduce feed ・Adjust effective length and overhang as short as possible ・Increase spindle speed ・Improve semi-finishing process ・Adjust chucking runout
加工精度不良 Poor machining accuracy 	・主轴的伸缩量不稳定。 ・精加工时的加工量不均匀。 ・进给速度太快。 ・刀具夹持偏摆精度不足。 ・Inconsistent thermal extension of spindle ・Stock removals vary for finishing ・Excessive feed ・Excessive chucking runout	・以使用的主轴转速进行暖机，主轴伸缩量稳定后再进行加工。 ・确保精加工前的余量均匀。 ・降低进给速度。 ・调整刀具夹持偏摆精度。 ・Warm up spindle by idling before starting operation ・Improve semi-finishing process ・Reduce feed ・Adjust chucking runout

模具用加工材料品牌对照表

Comparison table of die and mold materials

●冷轧模具用钢 For cold work die steels

分类 Classification	JIS	AISI	硬度 (HRC) Hardness	爱知制钢 AICHI STEEL	山阳特殊制钢 SANYO SPECIAL STEEL	大同特殊钢 DAIDO STEEL	日本高周波钢业 NIHON KOSHUHA STEEL	日立金属 HITACHI METALS	不二越 NACHI FUJIKOSHI	乌德霍尔姆 UDDEHOLM	伯乐 BOHLER
碳素刀具钢 Carbon tool steels	SK105 (原SK3)	W1-10			QK3	YK3					K990
合金刀具钢 Alloy steels	SKS93		55-60	SK301	QK3M	YK30	K3M	YCS3			
	SKS3	-	55-62	SKS3	QKS3	GOA	KS3	SGT		ARNE	K460
	SKD1	D3	55-62			DC1	KD1	CRD		SVERKER3	K100 K107
	SKD11	D2	55-62	SKD11	QC11	DC11	KD11	SLD SLD-i	CDS11	SVERKER21	K105 K110
	SKD11 (改)		55-62				KD11S KD11MAX				
	8%Cr类			AUD11 AUD15	QCM7 QCM8	DC53	KD21	SLD8 SLD10	MDS9	SLEPNER	K340
	矩阵类模具钢			SXACE		DCMX	NOGA	ARK1		CALDIE UNIMAX	W360
	SKD12	A2	55-62			DC12	KD12			RIGOR	K305
	调质钢 Pre- hardened steels		40			G040F	KAP65	HPM-MAGIC		IMPAX HH	
	火焰高硬度钢 Flame hardening steels		55-62	SX105V	QF3	G05	KRCX	HMD5		FERMO	
	低温高硬度钢 Low temperature air quenched steel		58-62			G04	KSM	ACD37			
	耐冲击用钢 Steels for impact resistance		55-60		QF1	GS5	KTV5	YSM			
	其它 Other		-					SLD-MAGIC	ICS22	CALMAX ELMAX VANCRON40 VANADIS4E VANADIS10	K390 K490 K890
高速刀具钢 High-speed steels	SKH51	M2	55-65		QH51	MH51	H51	YXM1	SKH9		S600
	SKH51类		57-66						SKH9D		
	SKH55类		57-66				HM35	YXM4	HM35 HS53M		S705
	SKH57类						MV10	XVC5	HS93R DURO-SP		S700
	矩阵类 Matrix type		55-64		QHZ	DRM1 DRM2 DRM3 MH85	KMX1 KMX2 KMX3	YXR3 YXR7 YXR33	DURO-FZ DURO-F1 DURO-F3 DURO-F7 DURO-V2 DURO-V5		
粉末高速刀具钢 Powder metal high speed tool steels	SKH40		58-70		SPM30	DEX40		HAP40	FAX38	VANADIS30	S590
	矩阵类 Matrix type		58-70			DEX-M1 DEX-M3		HAP5R			
	其它 Other		58-70		SPM23 SPM60 SPMR8 SPMV6 SPMX4N	DEX20 DEX60		HAP10 HAP50 HAP72	FAX31 FAX40 FAX55 FAXG2	VANADIS23 VANADIS60	S290 S390 S690 S790

模具用加工材料品牌对照表
Comparison table of die and mold materials

● 热轧模具用加工材料 Hot die steels

分类 Classification	JIS	AISI	硬度 (HRC) Hardness	爱知制钢 AICHI STEEL	山阳特殊制钢 SANYO SPECIAL STEEL	大同特殊钢 DAIDO STEEL	日本高周波钢业 NIHON KOSHUHA STEEL	日立金属 HITACHI METALS	不二越 NACHI FUJIKOSHI	三菱制钢 MITSUBISHI SEIKO	乌德霍尔姆 UDDEHOLM	伯乐 BOHLER
合金刀具钢 Alloy steels	SKD4		40-50			DH4	KD4					
	SKD5	H21	45-50			DH5	KD5					
	SKD6	H11	40-52			DH62	KD6				VIDAR	W300 W400
	SKD61	H13	40-52	SKD61	QD61	DHA DHA1	KDA	DAC			ORVAR 2M	W302
	SKD61 (改)		40-52	AUD61 AUD60A	QDA61 QDN QDX- HARMOTEX QDN1-R	DHA2 DH21 DHA- WORLD DH31-S DH31-EX	KDA1 KDA1S KDAMAX	DAC-S DAC3 DAC10 DAC55 DAC- MAGIC			ORVAR-S DIEVAR FORMVAR	W303 W403
	SKD61 (快削) Free-cutting					DH2F	KAP90F	FDAC				
	SKD62	H12	40-52		QD62	DH62	KDB					
	SKD7	H10	40-50			DH72	KDH1					W320
	SKD7 (改)		40-50	AUD72	QDH	DH32 DH71 DH73		DAC40 YEM-K	DURO-N1			
	SKD8	H19	40-50			DH41	KDF					
	SKD8 (改)		40-50			DH42	KDF4	MDC-K				
	SKT4	L6	38-45	SKT4A	QT41- HARMOTEX	GFA	KTV	DM			ALVAR14	W500
	SKT4 (改)		38-45		QDT	GF78	TD3					
	析出硬化钢 Precipitation steel			AUD91 MPH-K		DH76				HD22B		
	其它 Other				QF5	DHA- Thermo					BURE BALDER	
高速刀具钢 High-speed steels	矩阵类 Matrix type		53-65		QHZ	DRM1 DRM2	KMX1	YXR33	DURO-FZ DURO-F1			W360

模具用加工材料品牌对照表
Comparison table of die and mold materials

● 塑料模具用加工材料 Plastic mold steels

摘自特殊钢指南初版（修订版）卷末附录
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分类 Classification	JIS	AISI	硬度 (HRC) Hardness	爱知制钢 AICHI STEEL	JFE钢铁 JFE STEEL	山阳特殊制钢 SANYO SPECIAL STEEL	大同特殊钢 DAIDO STEEL	日本高周波钢业 NIHON KOSHUHA STEEL	日立金属 HITACHI METALS	不二越 NACHI FUJIKOSHI	乌德霍尔姆 UDDEHOLM	伯乐 BOHLER
调质钢 Pre-hardened steels	SC类	1055	13		JFE-MD1	PC55		KPM1 KPMAX				
	SCM类	4140	28		JFE-MD3 JFE-MD5		PDS3					
	SCM（改）	P20	33			PCM30	PX5 PXA30	KPM30	HPM7			M200 M201 M238
	SUS类	S420类					S-STAR D-STAR	GHX	HPM38	PROVA-400 PROVA-450	STAVAX	M303 M310
	SUS类 (快削) Free-cutting						G-STAR		HPM77		RoyAlloy	M315
	SUS类	S17400	35			QSH6	NAK101	U630	PSL		CORRAX	N700
	SCM（改）	P20	36					JHX			IMPAXHH	
	SUS类		40								EDRO400	M303HH
	SKD61 (改)	H13					DH2F	KAP90F	FDAC			
		P21				PCM40S	NAK80	KAP88	HPM-PRO			M461
		P21 (快削) Free-cutting				PCM40	NAK55	KAP65	HPM1			M261
		P21 (防锈) Rust resistant							CENA1 CENA-V			
									HPM- MAGIC		NIMAX	
淬火回火钢 Quenching and tempering	SKD11 (改)	D2	60	AUD11		QCM8 SPMR8	PD613	NOGA	HPM31 ZCD-M		RIGOR SLEIPNER CALDIE CALMAX	K105 K110 K340
	SUS类 440C	S44004	57			QPD5 SPC5	SUS440C	SUS440C	SUS440C	440C PROVA-500	ELMAX	M340 M390 N685 N690 N695
	SUS类 420	S420类	52				S-STAR D-STAR G-STAR	GHX	HPM38 HPM38S HPM77	PROVA-400 PROVA-450	STAVAX POLMAX MIRRAX	M310 M333
时效处理钢 Age hardening	马氏体时效钢 Maraging steels		50～			QM300	MAS1C	KMS	YAG	EXEO-M21		V720 V721
	其它 Other										CORRAX	
	非磁性钢 Non-magnetic steels		40					NMS1	HPM75			

模具用加工材料品牌对照表
Comparison table of die and mold materials

● 高速刀具钢 For High Speed Steels

分类 Classification	JIS	AISI	硬度 (HRC) Hardness	山阳特殊制钢 SANYO SPECIAL STEEL	大同特殊钢 DAIDO STEEL	日本高周波钢业 NIHON KOSHUHA STEEL	日立金属 HITACHI METALS	不二越 NACHI FUJIKOSHI	乌德霍尔姆 UDDEHOLM	伯乐 BOHLER
钨类 Tungsten type	SKH2	T1	63～			H2	YHX2	SKH2		S200
	SKH3	T4	64～			H3		SKH3		S305
	SKH4	T5	64～			H4		SKH4		
	SKH10	T15	64～			HV5				
钼类 Molybdenum type	SKH51	M2	55-65	QH51	MH51	H51	YXM1	SKH9		S600 S614 S401
	SKH52	M3-1	57-66			H52		HM31		
	SKH53	M3-2	64～			HV1				S607
	SKH54	M4	64～			HV2		HM4		
	SKH55		60-66			HM35	YXM4	HM35		S705
	SKH56	M36	60-66			HM36		HM36		
	SKH57		62-67			HV10	XVC5	HS93R		S700
	SKH58	M7	64～			HM3		HM7NN		S400
	SKH59	M42	62-67			HM42	YXM42	HM42		S500
	其它 Other					S70	YXM27 YXM60	HS53M HS97R HM1 HMT12 HM33 SKH9D DURO-SP		
矩阵类 Matrix type	矩阵类 Matrix type		45-65	QHZ	DRM1 DRM2 DRM3 MH85	KMX1 KMX2 KMX3	YXR3 YXR33 YXR7	DURO-FZ DURO-F1 DURO-F3 DURO-F7 DURO-V2 DURO-V5		W360
粉末类 Powdered type	SKH40		58-70	SPM30	DEX40		HAP40	FAX38	VANADIS30	S590
	其它 Other		58-70	SPM23 SPM60 SPMR8 SPMV6 SPMX4N	DEX20 DEX60 DEX-M1 DEX-M3		HAP10 HAP50 HAP72 HAP5R	FAX31 FAX40 FAX55 FAXG2	VANADIS23 VANADIS60	S290 S390 S690 S790

技术资料

Technical Guidance

为了使用安全
Read following precautions for safe use

警告 CAUTION

安全注意事项 Attention on Safety

●从铣刀盒拿取刀具时，请充分注意避免刀具弹出，不可用手直接触碰刀刃。
When removing tools from cases, be careful of getting-out of tools and don't touch directly the cutting edges.

●请注意不可用手直接接触刀刃
Never touch the cutting edges directly with bare hand.

●使用刀具时可能会引起损伤，请务必使用罩盖、防护镜等器具。
Use safety covers and eye protection, as tools may be broken.

●刀夹等必须与刀具及加工内容相匹配。
刀具必须牢固地固定在刀夹上，避免发生振刀。
Use holders, etc. that match the tools and nature of the machining operations.
The tool should be firmly attached to the holder to prevent shaking.

●请牢固地固定工件。
The work materials clamp firmly.

●加工前请确认刀具和工件的尺寸。
Make sure of dimensions of tools and work pieces before starting operation.

●应根据工件和所使用的机床调整切削条件。
It is necessary to adjust conditions according to the dimensions of work materials and the machine.

●请根据用途选用切削油。使用切削油时，可能会因加工时产生的火花或损伤导致起火乃至发生火灾。请务必采取防火措施。
Select a cutting fluid appropriate to the particular usage. Using water-insoluble fluid could lead to fires due to sparks generated during machining or heat caused by breakage. Ensure that you take proper fire-prevention measures.

●使用中若发生异常（切削声响、冒烟），请立即停止机床。
If abnormal sound, etc. occurs during machining, stop the machine immediately.

●请勿对刀具进行改造。
Don't modify tools.

返修时的注意事项 Attention on regrinding

●对刀具进行返修时会产生粉尘。粉尘可能会危害健康。返修时请使用防护镜等防护用具。
When the tool is reground, grinding dust is generated which is dangerous to your health.
Be sure to wear protective glasses and a dust proof mask.

●请在适宜的时期进行返修。
Regrind tools at proper period.

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