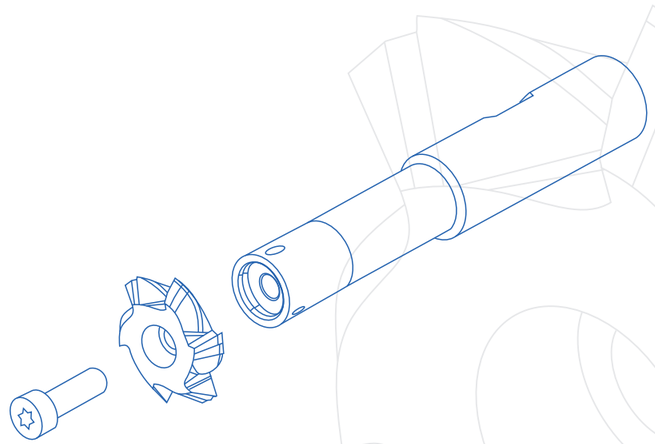
国机集团
SINOMACH

专用立铣刀

针对航空航天、军工、汽车细分领域
典型零部件加工专用化设计



成都工具研究所有限公司
CHENGDU TOOL RESEARCH INSTITUTE CO.,LTD

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CHENGDU TOOL RESEARCH INSTITUTE CO.,LTD

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Company Profile
企业介绍

成都工具研究所有限公司的前身是“第一机械工业部工具科学研究院”，1956年创建于北京，是原国家机械工业部直属的我国机械行业唯一的综合性工具科研开发机构，1965年内迁至成都。1998年经国家科技部批准，成为“国家精密工具工程技术研究中心”和“精密工具生产力促进中心”的依托单位。1999年转制为科技型企业，进入中国机械工业集团有限公司。2010年更名为成都工具研究所有限公司，2022年荣获国家级专精特新“小巨人”企业称号，获批高性能工具国家重点实验室。工研所主要从事现代高效切削刀具、先进刀具材料、表面改性技术、精密量仪与装备、行业服务等基础、共性技术的研究及高新技术产品的研发与产业化，并担负着全国工具行业发展规划、产品标准、产品质量监督检测等行业技术工作。产品应用领域主要涉及工具(刀具、模具)、汽车、轴承、能源(石油、地质、汽轮机、风电等)、齿轮、航空航天、轨道交通等行业。

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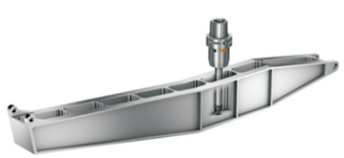
Chengdu Tool Research Institute Co., Ltd. was formerly known as "The First Ministry of Machinery Industry Tool Scientific Research Institute", established in Beijing in 1956. It was relocated to Chengdu in 1965 and was the only comprehensive tool research and development institute directly under the previous Ministry of Machinery Industry in China. In 1998, approved by the Ministry of Science and Technology of China, the company became the supporting unit of the "National Precision Tool Engineering Technology Research Center" and the "National Tool Productivity Promotion Center". In 1999, it was transformed into a technology-based company and joined the China National Machinery Industry Corporation (SINOMACH).

CTRI is mainly engaged in the development and industrialization of high-efficiency cutting tools , advanced tool materials, surface modification technology, precision measuring instruments and equipment, industry services, etc. It is also responsible for the development planning of the national tool industry, product standards, product quality supervision and testing and other industry technical work. Product applications mainly involve tools (cutting tools, molds), automotive, bearings, energy (oil, geology, turbines, wind power, etc.), gears, aerospace, rail transportation and other industries.

专用棒铣刀

应用领域
APPLICATION AREA

专用棒铣刀主要应用在航空、军工、汽车零部件等加工难度大、技术要求高的领域，对刀具产品结构设计、形状精度和可靠性要求高，需要针对不同的应用场景设计不同的刀具结构以及相应的工艺控制方法，同时要满足客户高精度和高稳定性要求。


产品特点
PRODUCT FEATURES

1.材料采用国际国内顶尖材料厂商的优质棒材。
2.涂层采用国际顶尖的涂层公司涂层牌号。
3.刀具结构针对性设计，满足不同的被加工材料及应用场景。
4.刀具前刀面抛光，排屑流畅。
5.刀柄IT5级，精度高，夹持可靠跳动小。
6.刃口强化处理，不易崩缺。
7.刀具可非标化设计，满足客户特殊设计需求。

产品优势
PRODUCT ADVANTAGES

专用棒铣刀针对航空航天、军工、汽车细分领域典型零部件加工专用化设计，刀具精度和使用寿命媲美进口刀具，满足客户性价比需求，可为客户提供非标定制化设计与服务，解决客户痛点难点。

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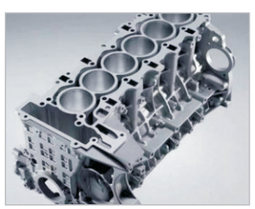
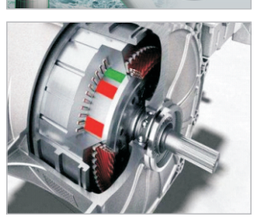
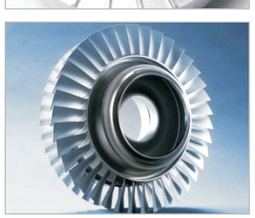
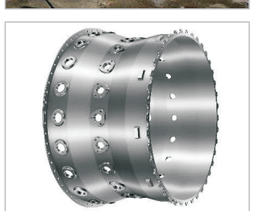
专用棒铣刀应用场景
APPLICATION SCENARIOS OF SPECIALIZED BAR MILLING CUTTERS




加工案例
PROCESSING CASES

某飞机发动机叶片型面加工

加工机床：卧式五轴铣床　　被加工材料：TC4
冷却方式：内冷水冷　　加工方式：型面铣削
加工参数如下：

序号	名称	转速 Vc(m/min)	进给 f(mm/min)	切深 ap(mm)	加工件数
1	D8密齿铣刀	3500	950	0.25-0.3	3
2	R0.1立铣刀	7000	500	5-6	10
3	D14密齿铣刀	2100	1200	0.5-1	10
4	R5锥度球头铣刀	3200	850	0.5-1	10
5	R1锥度球头铣刀	15000	1100	0.25-0.3	10

使用效果：

全套刀具加工钛合金型面，尺寸、表面质量、寿命达到国际先进厂家水平。

铣刀系列

2/3刃　铝合金铣刀

- 适用铝及铝合金材质加工
- 刀槽抛光，无刀纹
- 刃部直径公差高精密化
- 螺旋角度 30°～45°

刃径公差(mm)	柄径公差
-0.02~0	h6

型　号	刃部直径	柄部直径	刃长	全长	库存
D4×13×50×D4-2T-S-AL	4	4	13	50	–
D4×13×50×D6-2T-S-AL	4	6	13	50	–
D5×17×50×D6-2T-S-AL	5	6	17	50	–
D6×17×50×D6-2T-S-AL	6	6	17	50	●
D7×22×75×D8-2T-S-AL	7	8	22	75	●
D8×22×75×D8-2T-S-AL	8	8	22	75	●
D9×27×75×D10-2T-S-AL	9	10	27	75	●
D10×27×75×D10-2T-S-AL	10	10	27	75	●
D12×32×82×D12-2T-S-AL	12	12	32	82	●
D16×42×110×D16-3T-S-AL	16	16	42	110	●
D20×48×110×D20-3T-S-AL	20	20	48	110	●

★产品参数可根据特殊要求非标定制　　● 常备库存

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铣刀系列

2/4刃　圆鼻铣刀

- 设计用于加工碳钢，工具钢，合金钢，不锈钢
- 高耐磨性
- 弧形角可防止高速切削时崩刃
- 螺旋角度 30°～45°
- 适合于高速加工，冷却液及干式切削条件

刃径公差(mm)	柄径公差
-0.02~0	h6

型　号	圆弧半径	刃部直径	柄部直径	刃长	全长	库存
D6×R0.2×15×75×D6-4T-DP	R0.2	6	6	15	75	●
D6×R0.3×15×75×D6-4T-DP	R0.3	6	6	15	75	●
D6×R0.5×15×75×D6-4T-DP	R0.5	6	6	15	75	●
D6×R1.0×15×75×D6-4T-DP	R1.0	6	6	15	75	●
D8×R0.3×20×75×D8-4T-DP	R0.3	8	8	20	75	●
D8×R0.5×20×75×D8-4T-DP	R0.5	8	8	20	75	●
D8×R1.0×20×75×D8-4T-DP	R1.0	8	8	20	75	●
D8×R1.5×20×75×D8-4T-DP	R1.5	8	8	20	75	●
D8×R2.0×20×75×D8-4T-DP	R2.0	8	8	20	75	●
D10×R0.3×25×75×D10-4T-DP	R0.3	10	10	25	75	●
D10×R0.5×25×75×D10-4T-DP	R0.5	10	10	25	75	●
D10×R1.0×25×75×D10-4T-DP	R1.0	10	10	25	75	●
D10×R1.5×25×75×D10-4T-DP	R1.5	10	10	25	75	●
D10×R2.0×25×75×D10-4T-DP	R2.0	10	10	25	75	●
D10×R2.5×25×75×D10-4T-DP	R2.5	10	10	25	75	●
D12×R0.3×30×82×D12-4T-DP	R0.3	12	12	30	82	●
D12×R0.5×30×82×D12-4T-DP	R0.5	12	12	30	82	●
D12×R1.0×30×82×D12-4T-DP	R1.0	12	12	30	82	●
D12×R1.5×30×82×D12-4T-DP	R1.5	12	12	30	82	●
D12×R2.0×30×82×D12-4T-DP	R2.0	12	12	30	82	●
D12×R2.5×30×82×D12-4T-DP	R2.5	12	12	30	82	●

★产品参数可根据特殊要求非标定制　　● 常备库存

4/6刃　平头铣刀

- 高速切削和高进给量的精切削
- 卓越的工件表面粗糙度
- 螺旋角度 30°～45°
- 适合于高速加工，冷却液及干式切削条件

刃径公差(mm)	柄径公差
-0.02~0	h6

型　号	刃部直径	柄部直径	刃长	全长	库存
D4×11×50×D4-4T-SP	4	4	11	50	●
D5×13×50×D6-4T-SP	5	6	13	50	–
D6×16×50×D6-4T-SP	6	6	16	50	●
D6×25×75×D6-4T-SP	6	6	25	75	●
D8×19×75×D8-4T-SP	8	8	19	75	●
D8×32×82×D8-4T-SP	8	8	32	82	●
D10×25×75×D10-4T-SP	10	10	25	75	●
D10×35×82×D10-4T-SP	10	10	35	82	●
D12×30×75×D12-4T-SP	12	12	30	75	●
D12×40×100×D12-4T-SP	12	12	40	100	●
D16×32×100×D16-6T-SP	16	16	32	100	●
D16×65×150×D16-6T-SP	16	16	65	150	–
D18×38×100×D18-6T-SP	18	18	38	100	●
D20×38×100×D20-6T-SP	20	20	38	100	●
D20×70×150×D20-6T-SP	20	20	70	150	–

★产品参数可根据特殊要求非标定制　　● 常备库存

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铣刀系列

2/4刃　球头铣刀

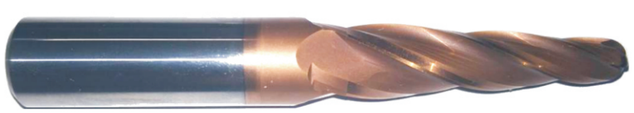
- 为加工高达HRC65的铸型，冲模和合金钢设计
- 适合于干式切削，高速切削，最新开发的原材料和涂层
- 卓越的工件表面粗糙度
- 螺旋角度 35°
- 极高的耐磨性

刃径公差(mm)	柄径公差
-0.02~0	h6

型　号	球头半径	刃部直径	柄部直径	刃长	全长	库存
D4×R2×15×60×D4-4T-DS-HSM	R2	4	4	15	60	●
D6×R3×20×65×D6-4T-DS-HSM	R3	6	6	20	65	●
D8×R4×20×65×D8-4T-DS-HSM	R4	8	8	20	65	●
D10×R5×20×75×D10-4T-DS-HSM	R5	10	10	20	75	●
D12×R6×25×75×D12-4T-DS-HSM	R6	12	12	25	75	●
D16×R8×35×110×D16-4T-DS-HSM	R8	16	16	35	110	●
D20×R10×40×110×D20-4T-DS-HSM	R10	20	20	40	110	●

★产品参数可根据特殊要求非标定制　　● 常备库存

2/4/6刃　锥度球头铣刀



- 高速切削和高进给量的精切削
- 卓越的工件表面粗糙度
- 螺旋角度 30°～40°
- 兼顾韧性和耐磨性
- 合理的设计保证刀具刚性

刃径公差(mm)	柄径公差
-0.02~0	h6

型　号	球头半径	刃部直径	柄部直径	刃长	全长	库存
D2×R1×30×8°×80×D10-2T-DS	1	8	10	30	80	–
D3×R1.5×26×8°×80×D10-2T-DS	1.5	8	10	26	80	●
D4×R2×23×8°×80×D10-2T-DS	2	8	10	23	80	●
D5×R2.5×20×8°×80×D10-4T-DS	2.5	8	10	20	80	●
D4×R2×30×8°×80×D12-2T-DS	2	8	12	30	80	●
D5×R2.5×27×8°×80×D12-4T-DS	2.5	8	12	27	80	●
D6×R3×24×8°×80×D12-4T-DS	3	8	12	24	80	●
D5×R2.5×41×8°×110×D16-4T-DS	2.5	8	16	41	110	●
D6×R3×38×8°×110×D16-4T-DS	3	8	16	38	110	●
D8×R4×32×8°×110×D16-4T-DS	4	8	16	32	110	●
D10×R5×47×4°×110×D16-6T-DS	5	4	16	47	110	●
D6×R3×74×4°×165×D16-4T-DS	3	4	16	74	165	●
D8×R4×61×4°×165×D16-4T-DS	4	4	16	61	165	●
D6×R3×103×4°×165×D20-4T-DS	3	4	20	103	165	●
D8×R4×89×4°×165×D20-4T-DS	4	4	20	89	165	●
D10×R5×76×4°×165×D20-6T-DS	5	4	20	76	165	●
D12×R6×62×4°×165×D20-6T-DS	6	4	20	62	165	●

★产品参数可根据特殊要求非标定制　　● 常备库存

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铣刀系列

8/10/12刃　叶片镜面铣刀

- 适用于钛合金、高温合金叶片镜面精加工
- 卓越的工件表面粗糙度
- 锥度角度8°
- 兼顾韧性和耐磨性
- 可内冷顶部出水
- 不等分度设计

刃径公差(mm)	柄径公差
-0.02~0	h6

型　号	圆弧半径	刃部直径	柄部直径	刃长	全长	库存
D8×R0.5×80×D10-8T-MDP	0.5	8	8	10	80	–
D8×R0.6×80×D10-8T-MDP	0.6	8	8	10	80	–
D8×R0.8×80×D10-8T-MDP	0.8	8	8	10	80	●
D8×R1.0×80×D10-8T-MDP	1.0	8	8	10	80	●
D8×R1.5×80×D10-8T-MDP	1.5	8	8	10	80	–
D10×R0.8×80×D12-8T-MDP	0.8	8	10	12	80	●
D10×R1.0×80×D12-8T-MDP	1.0	8	10	12	80	●
D10×R1.5×80×D12-8T-MDP	1.5	8	10	12	80	●
D14×R0.8×80×D16-8T-MDP	0.8	8	14	16	80	–
D14×R1.0×80×D16-8T-MDP	1.0	8	14	16	80	–
D14×R1.5×80×D16-8T-MDP	1.5	8	14	16	80	–
D14×R0.8×80×D16-10T-MDP	0.8	10	14	16	80	●
D14×R1.0×80×D16-10T-MDP	1.0	10	14	16	80	●
D14×R1.5×80×D16-10T-MDP	1.5	10	14	16	80	●
D19×R1.0×110×D20-12T-MDP	1.0	12	19	20	110	●
D19×R1.5×110×D20-12T-MDP	1.5	12	19	20	110	●
D19×R2.0×110×D20-12T-MDP	2.0	12	19	20	110	–

★产品参数可根据特殊要求非标定制　　● 常备库存

硬质合金BZB系列成型铣刀
BZB Series Carbide Profile Milling Tool

简介
BRIEF INTRODUCTION

本产品旨在为高精度复杂型线和型面的成型铣削加工提供非标刀具解决方案。满足客户对硬质合金非标成型铣削刀具的需求。帮助客户掌握非标成型铣工艺用法，丰富客户的加工手段，从而提升加工能力。

BZB系列成型铣刀的刀具廓型根据工件廓型所设计。可在通用机床上加工复杂形状的表面，获得较高的加工精度和表面质量，能有效提高产品一致性和生产率。

The purpose of this product is to provide non-standard tool solutions for high-precision and complex line milling and surface profile milling to meet customer's requirement of carbide non-standard milling tool, help customers understand non-standard milling processing application and enrich customer's processing methods, thereby improve machining capabilities.
The profile of BZB series milling cutter is designed according to component's profile, and cut complex surface on CNC machine to achieve high accuracy and surface quality so that to improve product consistency and cutting efficiency.

详细介绍
DETAILED INTRODUCTION

1.被加工材料：各种碳素钢、合金钢、不锈钢、高温合金、钛合金等。
2.可用于单边型面加工或沟槽加工。
3.刀具材料：多种牌号的硬质合金可供选择。
4.刀具涂层：多种PVD，CVD涂层可供选择。
5.可用于直线型面、曲线型面、环形面（孔）的加工。
6.刀具前面形式：可根据具体情况采用直槽，斜槽，螺旋槽。
7.刀具后刀面形式：尖齿后角，等铲背量铲磨后角，阿基米德后角。
8.粗加工：可制作后波刃以满足粗加工或半精加工的需求。
9.廓型精度：±0.02mm（更高精度可咨询）
10.可带中心内冷孔。

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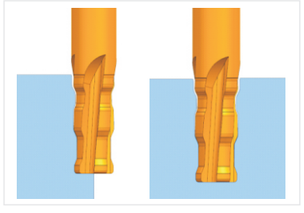
1.Material to be cut: Various Carbon steel, alloy steel, stainless steel, high temperature alloy, Titanium alloy
2.Can be used for unilateral surface profile cutting or grooving
3.Cutting Tool Material: Various carbide grade available for selection
4.Cutting Tool Coating: Various PVD, CVD coating for selection
5.Can be used for line profile, curved profile, circular (hole) machining.
6.Cutting tool front face forms: can be designed to straight groove, chute groove, and spiral groove based on specific situations
7.Cutting tool flank forms: flat relieved teeth, equal back off amount to backing off relieve angle, Archimedes relief angle
8.Rough Machining: can design waved edges to meet rough or semi-finish machining requirement
9.Profile Accuracy: ±0.02mm (Please ask for technical support for higher accuracy)
10.Can be designed with central internal coolant hole.

4



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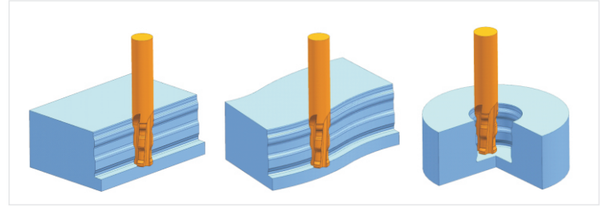
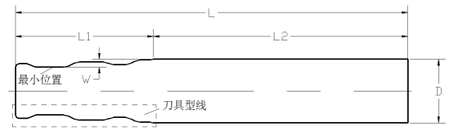


尺寸规格
DIMENSION

D——柄径，最大直径；W——刀具型线宽度；
Shank, Maximum Diameter; Cutting Tool Profile Width
L——刀具总长；L1——刀具型线长度；
Cutting Tool Total Length; Cutting Tool Profile Length
L2——刀具柄长（包含一部分刀槽）；
Cutting Tool Shank Length (Including part of the cutting groove)



尺寸范围表见下图
Dimensions Ranges are as follows

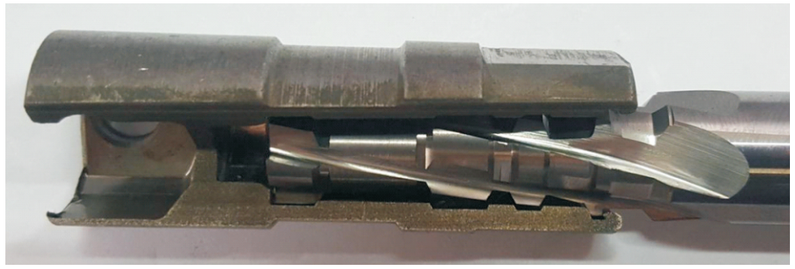
直径D Diameter	柄径 Shank Dia	型线最大长度 L1max	型线最大宽度 Wmax	最小总长 Lmin	建议最大总长 Lmax
Φ20	Φ20	60	4	L1+40	140
Φ16	Φ16	48	3.2	L1+40	120
Φ14	Φ14	42	2.8	L1+40	100
Φ12	Φ12	36	2.4	L1+40	100
Φ10	Φ10	30	2	L1+40	80
Φ8	Φ8	24	1.6	L1+40	80

刀具实例
CUTTING TOOL APPLICATION

1、孔内环槽铣削刀具
Inner Hole Ring Groove Milling Cutter

该刀具针对国外厂商的特殊零件设计，可同时加工盲孔侧壁4个环槽的精加工。利用刀具精度保证各个槽的形状和位置精度，刀具长度95mm，刀具直径16mm，整体廓型精度±0.02mm，局部地方更高。该刀具采用了5齿螺旋槽结构，阿基米德后角，带中心冷却液孔。下面是工件与刀具的相关照片。

This milling cutter is designed for special components for a foreign manufacturer. Finish machining occurs simultaneously on 4 ring grooves of blind holes. Each groove's profile and position accuracy are guaranteed by the tool accuracy. The tool length is 95mm, tool diameter is 16mm, the overall profile accuracy is + 0.02mm, and accuracy is higher for some parts. It is designed with 5 teeth spiral groove structure, Archimedes relief angle with central coolant hole. Followings are the photo of component and tool.



2、末叶组锁紧槽铣削刀具
Locking Groove Milling Cutter for Turbine Rotor

该刀具为国内某汽轮机厂研制， 用于加工汽轮机转子末叶组锁紧槽。刀具直径16mm，刀具长度95mm。轮廓精度±0.02mm，截距精度±0.005mm。刀具采用4齿小角度螺旋槽前刀面，尖齿后角（带径向和轴向后角）。其下图为该刀具实物照片。

The cutter is developed for a domestic steam turbine plant and is used for processing the locking grooves at the end of the turbine rotor. The tool diameter is 16mm, and the length of the tool is 95mm. The contour accuracy is + 0.02mm, and the intercept precision is ±0.005mm. The cutter is designed with 4 teeth small angle spiral groove rake face, sharp teeth relief angle (with radial and axial relief angle). Following is the photo of the tool.

硬质合金可换头铣刀
EXCHANGEABLE HEAD MILLS

简介
BRIEF INTRODUCTION

可换头刀具，也称模块化刀具，是一种硬质合金刀头与刀杆通过一定的接口装配而成的组合式刀具。通常刀头部分可做成平头刀、圆鼻刀、球头刀、槽铣刀、端铣刀、螺纹铣刀、其它非标铣刀等形式。

Exchangeable head mills, also known as modular milling tools are composite tools consisting of a carbide head and a tool shank assembled through a specific interface. The tool head can be designed as flat-end mills, round-nose mills, ball-end

应用范围
APPLICATION RANGE

可换头刀具系列主要用于航空、能源、汽车领域各种曲面、平面、槽型加工，针对不同的材料都有专属的刀具材料、结构、涂层设计，满足客户需求。

The exchangeable head mill series is mainly used for various curved surface, flat, and groove machining in the aerospace, energy, and automotive fields. Different tool materials, structures, and coatings are designed for different materials to meet customer needs.

刀具特点
TOOL CHARACTERISTICS

1.刀头和刀杆分开，打破了整体硬质合金铣刀材料形状上的限制，性价比高。

2.刀杆采用硬质合金钎焊方式，刚性媲美整体硬质合金。

3.刀杆采用内部冷却方式更有利于内孔零部件冷却润滑加工。

4.刀头刀杆模块化设计，组合使用更灵活。

5.刀头刀杆互换性好，节省对刀时间。

6.刀头抗振结构设计，适用于各种粗铣加工和精铣加工。

7.刀头可非标化设计，满足客户特殊设计需求。

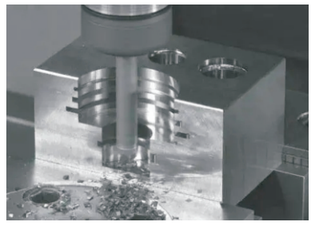
With the separation of the tool head and shank, cost savings are achieved through the ability to replace inserts rather than an entire tool.
The tool shank uses carbide brazing, achieving rigidity comparable to solid carbide.
The internal cooling method of the tool shank is more beneficial for cooling and lubricating internal hole parts during machining.
The modular design of the tool head and shank allows more flexible combinations.
The exchangeable tool heads and shanks save tool-setting time.
The vibration-resistant structure design of the tool head is suitable for various rough and finish milling operations.
The tool head can be customized to meet special design needs of customers.

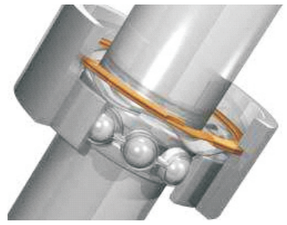
产品优势
PRODUCT ADVANTAGES

可换头系列产品在结构上稳定可靠、使用方便；
在材料和涂层方面提供多种组合满足客户不同的加工需求；
在刀具质量和寿命方面媲美国际先进厂家；
在价格方面大大低于进口品牌，为客户提供性价比优秀的产品；
在客户维护方面提供定制化设计及服务，解决客户痛点难点。

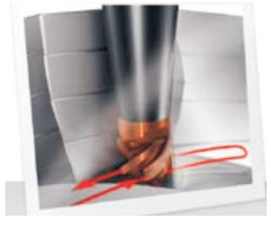
The structure is stable, reliable, and easy to use.
Various combinations of materials and coatings are provided to meet different processing needs of customers.
The tool quality and life rival international advanced manufacturers.
The price is significantly lower than imported brands, offering cost-effective products to customers.
Customized design and services are provided to address customer pain points and difficulties.

刀具应用场景
APPLICATIONS







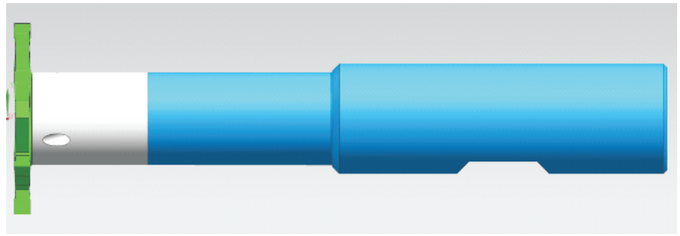




HT-C类可换头刀具应用案例
HT-C SERIES APPLICATION CASES

汽车连杆瓦槽加工
Automotive Connecting Rod Slot Machining

应用客户：国内某大型汽车制造单位
对比刀具品牌：国外某品牌
转速：1200r/min
进给：120mm/min
工件材料：46MnVS5　HB280~350
试验结果：国外刀具加工2000件，工研所HT-C切槽铣刀加工3000件，寿命提高50%。

Customer: A large automobile manufacturing unit
Comparative Brand: An import brand
Speed: 1200 r/min
Feed: 120 mm/min
Workpiece Material: 46MnVS5 HB280~350
Test Result: The import tool processed 2000 pieces, Institute's HT-C slot milling cutter processed 3000 pieces, a 50% increase in lifespan.



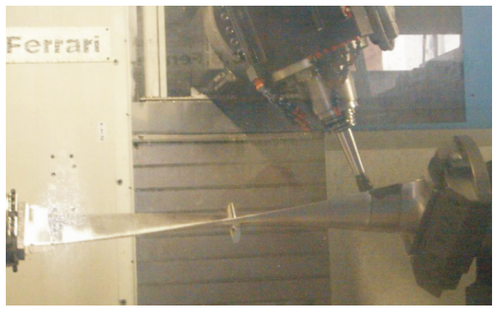


HT-A类可换头刀具应用案例
HT-A SERIES APPLICATION CASES

汽轮机叶片榫根倒角加工
Steam Turbine Blade Tenon Chamfering

应用客户：某大型汽轮机主机厂
对比刀具品牌：国外某品牌整体合金刀具
转速：4000r/min
进给：2500mm/min
工件材料：0Cr17Ni4Cu4Nb
试验结果：国外刀具加工22件，工研所HT-A型可换头铣刀加工23件，达到国外先进厂家水平，而刀具价格方面，可换刀头远远低于整体合金刀具。

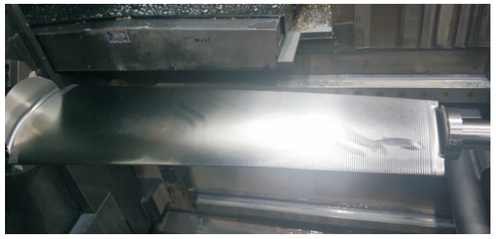
Customer: A large steam turbine mainframe factory
Comparative Brand: An import brand solid carbide tool
Speed: 4000 r/min
Feed: 2500 mm/min
Workpiece Material: 0Cr17Ni4Cu4Nb
Test Result: The import tool processed 22 pieces, Institute's HT-A mills processed 23 pieces, reaching the level of international advanced manufacturers, with much lower tool head prices compared to solid carbide tools.



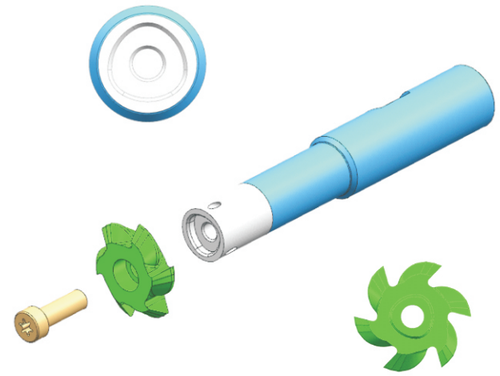
汽轮机叶片型面加工
Steam Turbine Blade Profile Machining

客户：某大型透平叶片主机厂
对比刀具品牌：国外某品牌
转速：2000r/min
进给：2250mm/min
工件材料：PH17-4
刀具寿命：国外刀具寿命加工一件完整的叶片，工研所HT-A型可换头铣刀加工可加工两件完整的叶片，超越国外品牌水平。

Customer: A large turbine blade mainframe factory
Comparative Brand: An import brand
Speed: 2000 r/min
Feed: 2250 mm/min
Workpiece Material: PH17-4
Test Result: The import tool life processed one complete blade, and the Institute's HT-A mills processed two complete blades, surpassing the foreign brand level.

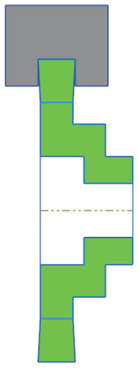
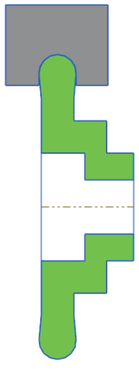
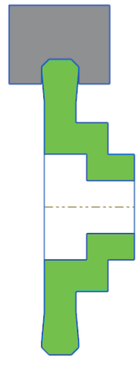
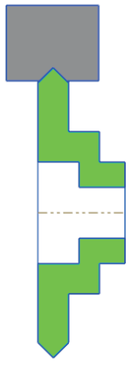
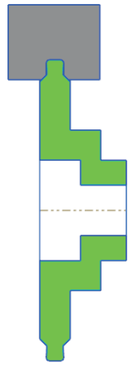


HT-C类可换头刀具形式
HT-C SERIES FORMS

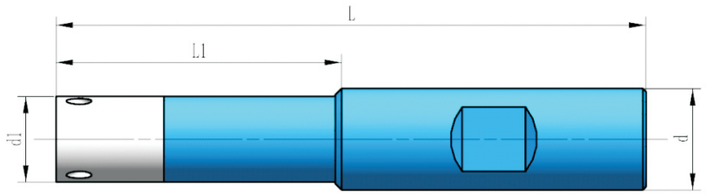


HT-C类可换头刀具刀头形式
HT-C HEAD FORMS

刀头覆盖φ8~φ35的直径范围的各种铣削加工。
HT-C Head FormsThe tool heads cover a diameter range of φ8~φ35 for various milling processes.

T型槽 T-slots	带R的槽 R-slots	倒角 chamfers	螺纹 threads	槽+倒角 slots&chamfers
				

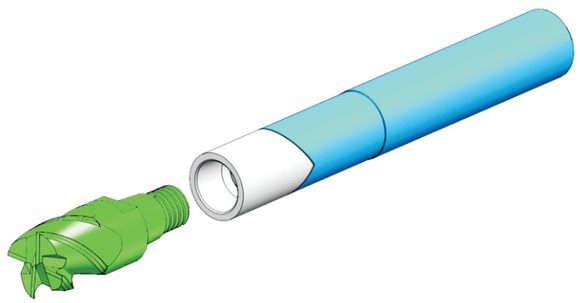
HT-C类可换头刀具刀杆形式
HT-C SHANK FORMS



接口系列 Interface	接口尺寸 Interface Size	d1	d h6	柄长 Shank Length	L1	L	螺纹 Thread
HT-C H7.6	7.6	10	12	45	定制	定制	4
HT-C H9.2	9.2	12	12	45	定制	定制	5
HT-C H9.9	9.9	13	16	48	定制	定制	5
HT-C H10.7	10.7	14	16	48	定制	定制	5
HT-C H12.2	12.2	16	16	48	定制	定制	6
HT-C H15.2	15.2	20	20	50	定制	定制	6

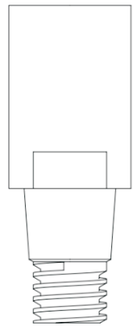
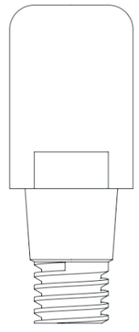
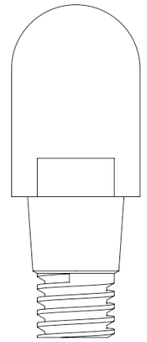
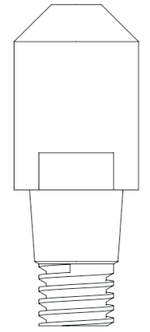
刀杆长度，直径均可定制，可自由搭配。
Shank length and diameter can be customized for flexible matching.

HT-A类可换头刀具形式
HT-A FORMS

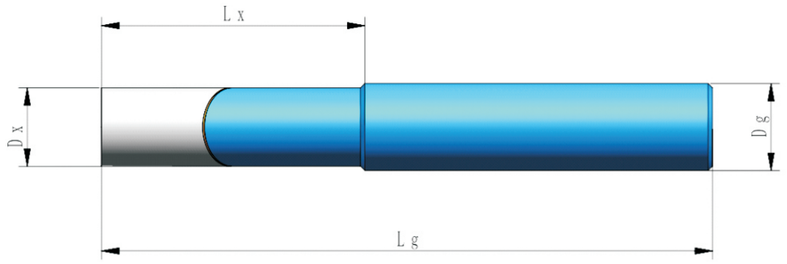


HT-A类可换头刀具刀头形式
HT-A REPLACEABLE HEAD FORMS

刀头覆盖 ϕ 8~ϕ20的直径范围的各种铣削加工。
Tool heads cover a diameter range of ϕ 8~ϕ 20 for various milling processes.

平头 Flat heads	圆弧 Arc heads	球头 ball heads	定制 custom
			

HT-A类可换头刀具刀杆形式
HT-A SHANK FORMS



接口系列 Interface	dx	dg	Lx	Lg
HT-A10	9.7	10	定制	定制
HT-A12	11.7	12	定制	定制
HT-A16	15.7	16	定制	定制
HT-A20	19.7	20	定制	定制

刀杆长度，直径均可定制，可自由搭配。
Shank length and diameter can be customized for flexible matching.