

# Hole-Making

**Your professional Cutting Partner!**

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## 公司简介 Company profile

坐落于“世界工厂”之称的中国广东东莞市，创立于2017年，厂区占地面积5000平方米，是一家集研发、设计、制造、销售和服务于一体的精密数控刀具制造厂商，主要以生产孔加工刀具为主，目前开发产品有U钻（快速钻）、铲钻、皇冠钻（可换钻尖钻头）、带定心U钻、组合钻、VMD大钻头、扩孔钻、固定镗刀、油路刀柄、精密镗刀等，多种系列一千多款不同规格产品远销国内外，并深受客户好评与青睐。

公司拥有专业的研发工程师8人和100余名的生产团队，网点销售人员和售后服务工程师20余人，竭诚为每一个客户解决孔加工难题。产品设计理念与时俱进，技术力量雄厚，生产设备先进，现有三菱、西子、法兰克系统CNC加工中心共50台，数控车床20台，精密磨床4台，瑞士TRIMOS optima光学对刀仪、进口检测仪器等设备，产品坚持全检，让用户放心使用。

用质量铸造品牌，以实力证明价值，诚信经营稳健发展，迈向企业永续经营之路！

Located in the "world factory" known as Dongguan, Guangdong, China, founded in 2017, the factory covers an area of 5000 square meters, is a set of RESEARCH and development, design, manufacturing, sales and service in one of the precision CNC tool manufacturers, mainly to produce hole processing tools, At present, the development of products are U drill (fast drill), shovel drill, crown drill (replaceable drill point drill), with centering U drill, combination drill, VMD big drill, reaming drill, fixed boring tool, oil handle, precision boring tool, etc., a variety of series more than one thousand different specifications of products sold at home and abroad, and well received by customers and favor.

The company has 8 professional R & D engineers and more than 100 production team, network sales staff and after-sales service engineers more than 20 people, wholeheartedly for each customer to solve the hole processing problems. Product design concept advancing with The Times, strong technical force, advanced production equipment, the existing Mitsubishi, Xizi, Frank system CNC machining center 50 sets, 20 sets of CNC lathes, precision grinding machine 4 sets, Switzerland TRIMOS Optima optical knife instrument, imported testing equipment and other equipment, products adhere to the full inspection, let users rest assured to use.

Casting brand with quality, to prove the value of strength, good faith management steady development, towards the road of enterprise sustainable management!

## U钻 U drill

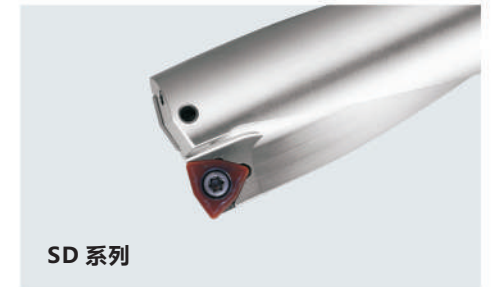
### U钻的特征和优势

Characteristics and advantages of U drill

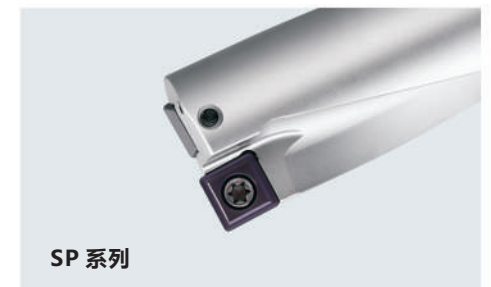
#### 钻头特征 Bit characteristics

- U钻首先来说与普通钻头的区别就是U钻使用硬质合金刀片，设计内刃刀片和外刃刀片，钻头磨损后无需重磨直接更换刀片即可。
- U钻的刚性更好，可以采用很高的进给率，而且U钻的加工直径要比普通钻头大的多，钻孔范围达到 $\phi 10\text{mm}\sim 80\text{mm}$ ，最长加工深度可达5倍径。
- U钻钻孔的精度比普通钻头要高，而且光洁度要好，而且U钻可以修正孔的位置精度。
- U钻可以在倾斜角小于 $30^\circ$ 的表面上打孔，而无需降低切削参数。
- U钻的切削参数降低30%后，可实现断续切削，如加工相交孔、相贯孔、相穿孔。
- U钻可实现多阶梯孔的钻削，并能镗孔、倒角、偏心钻孔。
- U钻钻削时钻屑多为短碎屑，并可利用其内冷系统进行快速排屑，不会缠铁屑，有利产品的加工连续性，缩短加工时间，提高效率。
- 使用U钻无需预打中心孔，加工出的盲孔底面较为平直，省去了平底钻头。
- U钻机床使用广泛，电脑锣加工中心、数控车床、普通车床、孔加工专用机械等均可使用，可以为用户大大节约加工时间和使用成本。

- First of all, the difference between U drill and ordinary drill is that U drill uses hard alloy blades and designs inner and outer edge blades. After the drill is worn, the blades can be replaced directly without regrinding.
- U drill has better rigidity and can use a high feed rate. Moreover, the processing diameter of U drill is much larger than that of ordinary drill. The drilling range can reach  $\text{D}10\text{mm}\sim 80\text{mm}$ , and the longest processing depth can reach 5 times diameter.
- The precision of the u-drill is higher than that of the conventional drill, and the finish is better, and the U-drill can correct the precision of the hole position.
- U drill can drill holes on surfaces with inclination angles less than  $30^\circ$  without reducing cutting parameters.
- When the cutting parameters of U drill are reduced by 30%, discontinuous cutting can be realized, such as processing intersecting hole, intersecting hole and phase perforation.
- U drill can realize drilling of multi-step holes, and can boring, chamfering and eccentric drilling.
- The drilling cuttings of U drill are mostly short cuttings, and the internal cooling system can be used for rapid chip removal without iron cuttings, which is conducive to product processing continuity, shorten processing time and improve efficiency.
- There is no need to pre-drill the center hole with U drill, and the bottom surface of the processed blind hole is relatively straight, eliminating the need for flat bottom drill bit.
- U drill machine is widely used, including computer gong machining center, CNC lathe, ordinary lathe, hole machining machinery, etc., which can greatly save processing time and cost for users.



SD 系列



SP 系列

#### 钻头型号编码规则 Drill bit type code rules

Sd 18-3D-C25

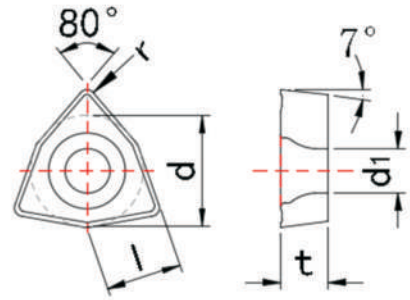
大类 Big type	刀杆直径 Tool rod diameter	长径比 Length to diameter handle	柄径 Shank diameter
SD (WC刀片系列)	18 (表示刀杆 $\phi 18\text{mm}$ )	2D (直径的2倍)	C20 (柄径 $\phi 20\text{mm}$ )
SP (SP刀片系列)		3D (直径的3倍)	C25 (柄径 $\phi 25\text{mm}$ )
		4D (直径的4倍)	C32 (柄径 $\phi 32\text{mm}$ )
		5D (直径的5倍)	C40 (柄径 $\phi 40\text{mm}$ )



刀片 Insert

WCMX 刀片

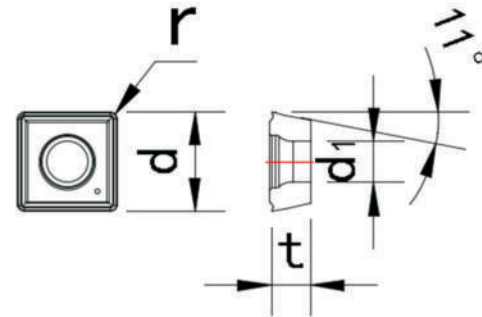
WCMX Insert



型号 Code No	尺寸 Size					螺钉 Clamp screw	扳手 Wrench
	l	d	t	r	d1		
WCMX030208	3.8	5.56	2.38	0.8	2.8	M2.5X6	T8
WCMX040208	4.3	6.35	2.38	0.8	2.8	M2.5X6	T8
WCMT050308	5.4	7.94	3.18	0.8	3.3	M3X8	T8
WCMT06T308	6.54	9.525	3.97	0.8	3.8	M3.5X10	T15
WCMT080412	8.74	12.7	4.76	1.2	4.3	M4X10	T15

SPMG 刀片

SPMG Insert



型号 Code No	尺寸 Size				螺钉 Clamp screw	扳手 Wrench
	d	t	r	d1		
SPMT04T102	4	1.98	0.2	2	M1.8X4	T6
SPMG050204	5	2.38	0.4	2.25	M2.2X5	T6
SPMG060204	6	2.38	0.4	2.61	M2.2X6	T7
SPMG07T308	7.94	3.97	0.8	2.85	M2.5X8	T8
SPMG090408	9.8	4.3	0.8	4.05	M3.5X10	T15
SPMG110408	11.5	4.8	0.8	4.45	M4X10	T15
SPMG140512	14.3	5.2	1.2	5.75	M5X12	T20

钻头特性 Bit features

钻头特性

Bit features

排屑槽 Chip removal tank



创新的螺旋槽设计，内外槽比例6:4，排屑更好。  
Innovative spiral groove design, inside and outside groove ratio 6:4, better chip removal.

刀杆刚性 Tool rod rigid



边缘倒角更小，提高刀杆刚性，拥抱式排屑有效保护刀体磨损。  
The edge chamfer is smaller, improve the rigidity of the cutter bar, and embrace chip discharge effectively protects the cutter body from wear.

车床油冷接口 Cold connection for lathe oil



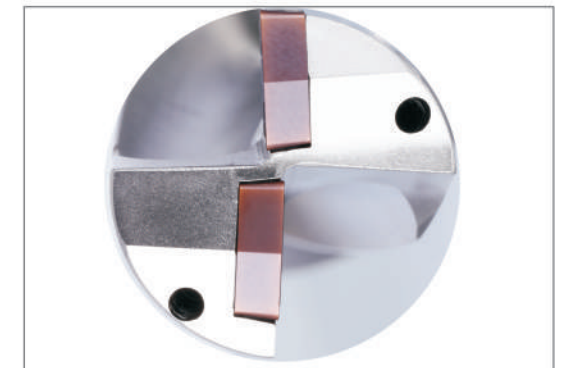
刀柄尾部带管牙螺丝，方便车床接油冷使用。  
Handle tail with tube screw, easy to use lathe oil cold.

刀片位 The blade position



平整的刀片位，与刀片贴合更好，有效提高切削效果。  
Flat blade position, better fit with the blade, effectively improve the cutting effect.

油冷系统 Oil cooling system



油冷水孔加大1.5倍，冷却更好，排屑更快。  
Increase oil cold water hole 1.5 times, better cooling, faster chip removal.

优秀的断屑控制 Excellent chip breaking control



更新后的刀片位角度，断屑更优秀。  
Updated blade Angle, better cutting.

U 钻

铲钻

可换钻尖钻头

组合钻

带定心U钻

VMD 大钻头

模块系统

U 钻

铲钻

可换钻尖钻头

组合钻

带定心U钻

VMD 大钻头

模块系统

# 安装与使用 Installation and use

# 安装与使用 Installation and use

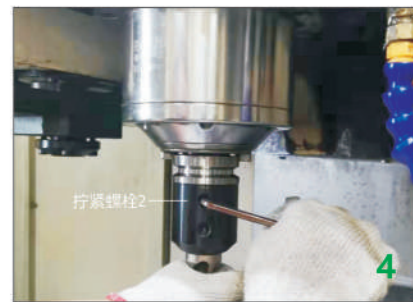
## 钻头侧固式刀柄的安装方式

Installation of the bit side - grip



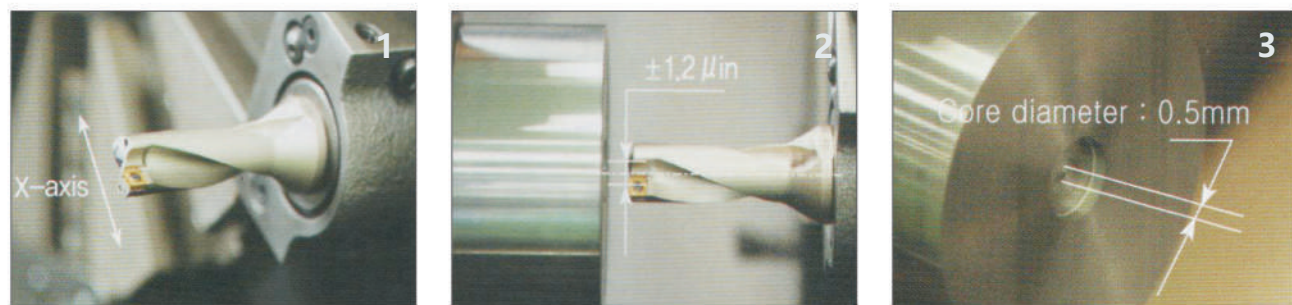
1. 插入钻头时，钻头的侧固面方向和刀柄螺丝方向一致。
2. 将钻头装入刀柄，钻头法兰面与刀柄安装面紧密贴合。
3. 首先拧紧1号螺栓。
4. 下一步拧紧2号螺栓。

1. Insert the bit in the same direction as the shank screw.
2. Install the drill bit into the tool holder, and the flange surface of the drill bit is closely attached to the mounting surface of the tool holder.
3. Tighten bolt No. 1 first.
4. Next, tighten bolt No. 2.



## 钻头在车床上的安装方式

The way in which the drill bit is mounted on the lathe



\*请确认侧固位置，它可能因机床不同而差异。

1. 外刃刀片切削与X轴平行（以侧固面为基准）。
2. 如果钻孔5mm后，核心部分有直径0.5mm的痕迹表面安装正确。
3. 建议外刃的安装朝向应使外刃面朝向操作者（图1）（但也可逆向180°使用）

另外，当车床上有上下两个转塔时，当需要将钻头安装在下转塔上时，则外刃面一定要朝向操作者。（此时也可逆向180°使用）

1. The cutting of the outer edge blade is parallel to the X axis (based on the side solid surface).
2. If the core part has traces with a diameter of 0.5mm after drilling 5mm, the surface is correctly installed.
3. It is recommended that the mounting orientation of the outer edge should be towards the operator (Fig.1) (But can also be reversed 180° use)

In addition, when there are two turrets on the lathe, when it is necessary to install the drill bit on the lower turret, the outer edge must face the operator. (This can also be used in reverse 180°)

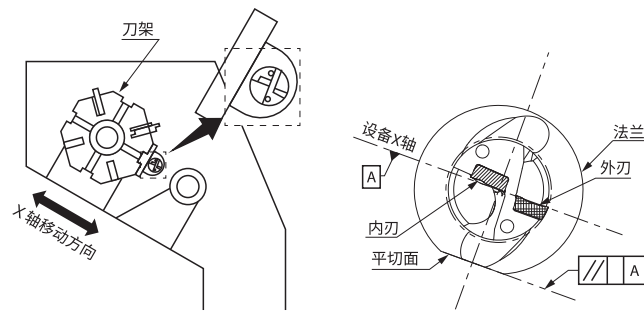


图1 安装到车床上的状态  
FIG. 1 Mounting state on lathe

## 加工径的调整方法

Adjustment method of machining diameter

### 加工径的调整方法 Adjustment method of machining diameter

1. 通过移动X轴来调整，X轴的移动方向取决于刀杆的安装方向。
2. 通过向外刃方向移动X轴扩大孔径。（图2，图3）孔径的缩小调整请向反方向移动X轴。（这种轴的移动叫「偏心」）但是如果加工孔径比钻头径小0.2mm以上时，刀杆本体的外周部会与加工孔干涉。（图4）

- 例) 使用Φ20的钻头时，孔径不能小于Φ19.8。
1. Adjust by moving the X axis. The moving direction of the X axis depends on the installation direction of the knife rod.
  2. Enlarge the aperture by moving the X axis toward the outer edge. (FIG. 2, FIG. 3) For aperture reduction adjustment, please move the X axis in the opposite direction. (This axis movement is called "eccentricity.")
- However, if the machining aperture is more than 0.2mm smaller than the bit diameter, the outer circumference of the cutter shank body will interfere with the machining hole. (figure 4)
- When using a φ 20 drill bit, the hole diameter should not be less than φ 19.8.

### 加工径的偏心值 Eccentric value of machining diameter

关于加工径的偏心参数，根据实际操作调，原则上刀杆本体不能与外周干涉即可。

例) Φ20的钻头，“半径方向的可偏心范围”为+0.55mm，通过偏心设置，最大可以扩孔至Φ21.1。  
The eccentric parameters of machining diameter can be adjusted according to the actual operation. In principle, the cutter bar body can not interfere with the periphery. Example) φ 20 drill, "radius of eccentricity range" is +0.55mm, through the eccentric setting, the maximum hole reaming to φ 21.1.

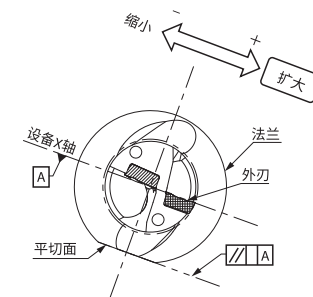


图2 外刃表面上时  
FIG. 2 When the outer edge surface is upward

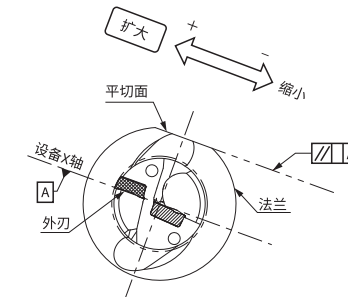


图3 外刃表面向下时  
FIG. 3 When the outer edge surface is downward

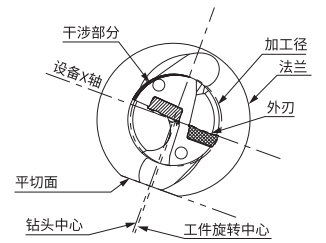


图4 孔径过时  
FIG. 4 Aperture obsolescence

## 中心高的调整方法

Adjustment method of center height

### 关于内刃的中心高 Center height of inner edge

如图1所示安装时，内刃中心高设定低于中心0.05mm左右。（图2）此为标准中心高，设计·制造时，钻头自身的内刃比中心高降低0.05mm左右。但是、车床的转塔与主轴中心偏移不准的时候，中心太高或太低的情况也是有的。

为了稳定加工确认内刃中心高是很重要的。

As shown in Figure 1, the center height of the inner edge was set about 0.05mm lower than the center during installation. (FIG. 2) This is the standard center height. During design and manufacture, the inner edge of the bit itself is about 0.05mm lower than the center height. However, the lathe turret and spindle center deviation is not accurate, the center is too high or too low.

It is important to confirm the inner edge center height for stable machining.

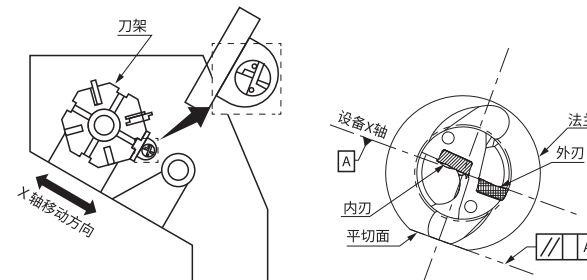


图1 安装到车床上的状态  
FIG. 1 Mounting state on lathe

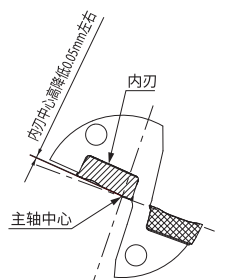


图2 钻头正面图  
FIG. 2 Front view of the bit



► 内刃中心高的确认方法 Confirmation method of inner edge center height

可以通过盲孔内端面中心部残留的芯核来确认内刃中心高设置是否合理。如果残留着直径0.5mm前后的芯核、中心高的设定是合适的。(图3) 直径1mm以上的大芯核残留的话,有必要对中心高进行调整。

※确认用的盲孔请使用0.1mm/rev以下的低进给、深度10mm左右进行加工。

The core core left at the center of the inner end face of the blind hole can be used to confirm whether the setting of the inner edge center height is reasonable. If there is a residual 0.5mm diameter before and after the core, center height setting is appropriate. (figure 3) It is necessary to adjust the center height if there is a large core with a diameter of more than 1mm.

※ The blind hole used for confirmation should be processed with a low feed below 0.1mm/ REV and a depth of about 10mm.

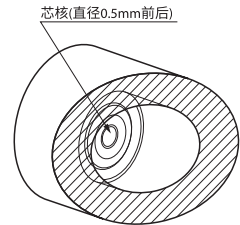


图3 中心芯核  
FIG. 3. Core core



图4 内刃的钻头中心部附近的崩损  
FIG. 4 Collapse near the center of the bit at the inner edge

► 内刃中心高的调整方法 Adjustment method of inner edge center height

a) 完全没有芯核,内刃的钻头中心部位附近产生崩损。  
No core at all, collapse near the center of the inner edge of the bit.

这是内刃中心高过高的状态。必须进行调整。(图4)  
This is the state where the inner edge center is too high. Adjustments must be made. (figure 4)

调整方法

请将钻头本体旋转180°安装。  
很多问题通过此方法改善。(图5)

Please install the bit body by rotating it 180°.  
Many problems can be solved by this method. (figure 5)

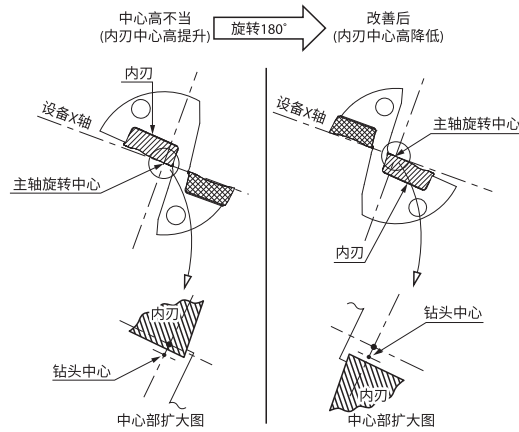


图5 FIG. 5

调整方法

上述调整后加工的芯核径如果变得过大,如图6右侧图所示将刀杆本体旋转90°,将外刃靠下侧安装随着设备X轴的移动来调整中心高。  
(但是无法调整加工径(偏心))

另外,请注意与图反方向(外刃靠上侧)安装时,加工径会变小、刀杆本体可能会与孔发生干涉。根本来说需要对转塔本身的中心高进行调整。

If the core diameter processed after the above adjustment becomes too large, see Fig.6As shown in the picture on the right, rotate the tool holder body 90° and put the outer edge to the lower side. The mounting adjusts the center height as the device moves along the X axis.

(But can not adjust the machining diameter (eccentric))

In addition, please note that when it is installed in the opposite direction (outer edge on the upper side), the machining diameter will be smaller and the tool holder body may interfere with the hole.

Basically, the center height of the turret itself needs to be adjusted.

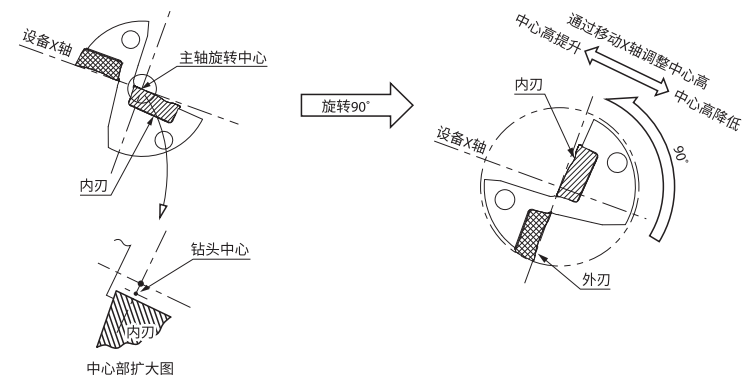


图6 FIG. 6

调整后内刃中心高降低量变大的状态

b) 芯核过大时(直径1mm以上)  
When the core is too large (diameter above 1mm)

这是内刃的中心高降低方向大幅度偏离的状态。此时,会对排屑性能有害,请务必进行调整。  
This is the condition in which the center height and lowering direction of the inner edge deviate greatly. At this time, will be harmful to the chip removal performance, please be sure to adjust.

调整方法

如图7右图所示将刀杆本体旋转90°,将外刃靠上侧安装,随着设备X轴的移动来调整中心高。  
(但是无法调整加工径(偏心))

另外,请注意与图反方向(外刃靠下侧)安装时,加工径会变小、刀杆本体可能会与孔发生干涉。根本来说需要对转塔本身的中心高进行调整。

As shown in figure 7 on the right, rotate the tool rod body 90°, install the outer edge on the upper side, and adjust the center height as the X axis of the equipment moves.

(But can not adjust the machining diameter (eccentric))

In addition, please note that when it is installed in the opposite direction (the outer edge is on the lower side), the machining diameter will be smaller and the tool holder body may interfere with the hole.

Basically, the center height of the turret itself needs to be adjusted.

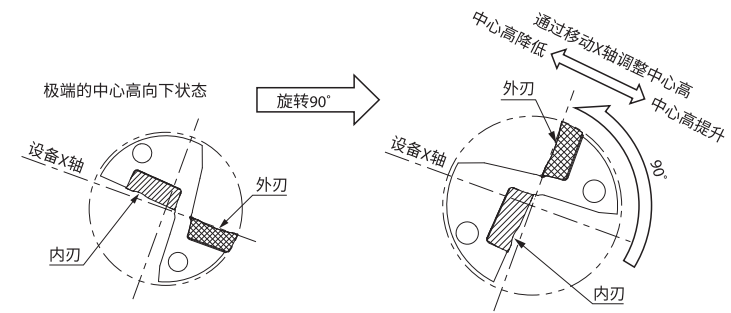
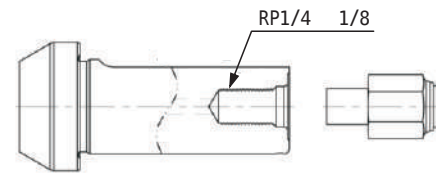


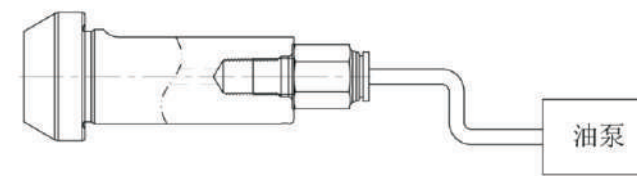
图7 FIG. 7

车床使用内冷安装方式

The lathe is installed with internal cooling



钻头刀柄+快速接头  
Bit holder + quick connector



插头低端与输油软管相连,钻头和油泵相连  
The lower end of the plug is connected to the oil hose, and the drill bit is connected to the oil pump

1. 钻头刀柄、快速接头、输油软管、油泵链接起来可以实现内冷。
2. 拔出插头后,可在铣床上使用。

1. Internal cooling can be realized by connecting the drill shank, quick connector, oil hose and oil pump.
2. After pulling out the plug, it can be used in milling machine.

# 参数计算 Calculation method of parameters

## 高效率可转位快速钻加工相关参数计算方法

Related to the processing parameters of shallow hole drilling method of calculation

切削速度 (Vc)

$$Vc = \frac{Dc \times \pi \times n}{1000}$$

Vc (m/min): 切削速度  
Dc (mm): 钻头直径  
n (rev/min): 转速

实例

主轴转速为1600rev/min, 钻头直径为Φ20mm, 其切削速度为:

$$Vc = \frac{Dc \times \pi \times n}{1000} = \frac{20 \times 3.14 \times 1600}{1000} = 100(m/min)$$

进给速度

$$Vf = fr \times n$$

Vf (m/min): 切削速度  
Fr (mm/rev): 每转进给量  
n (rev/min): 主轴转速

实例

主轴转速为1500rev/min, 每转进给量为Φ0.1mm/rev, 其进给速度为:

$$Vf = fr \times n = 0.1 \times 1500 = 150(mm/min)$$

孔加工时间

$$Tc = \frac{ld \times i}{n \times f}$$

Tc (min): 加工时间  
ld (mm): 钻孔深  
n (rev/min): 主轴转速  
i: 孔数量

实例

钻一个Φ20mm, 深为40mm的孔, 切削速度为100m/min, 每转进给量为0.1mm/rev, 求钻削时间。

$$Ve = \frac{Vc \times 1000}{Dc \times \pi} = \frac{100 \times 1000}{20 \times 3.14} = 1600(rev/min)$$

$$Tc = \frac{ld \times i}{n \times f} = \frac{40 \times 1}{1600 \times 0.1} = 0.25(min)$$

金属去除率

$$Q = \frac{Vf \times \pi \times Dc^2}{4 \times 1000}$$

Q (cm<sup>3</sup>/min): 金属去除率  
Dc (mm): 钻头直径  
Vf (mm/min): 进给速度

实例

一个Φ20mm的钻头, 加工时的进给速度为160mm/rev, 其金属去除率为:

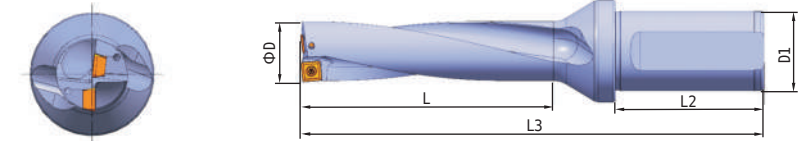
$$Q = \frac{Vf \times \pi \times Dc^2}{4 \times 1000} = \frac{160 \times 3.14 \times 20^2}{4 \times 1000} = 20.24(cm^3/min)$$

# 钻头参数 Drilling parameters

## 钻头公差和孔径公差

Bit tolerance and aperture tolerance

### SP系列钻头公差和孔径公差 SP series drill tolerance and aperture tolerance



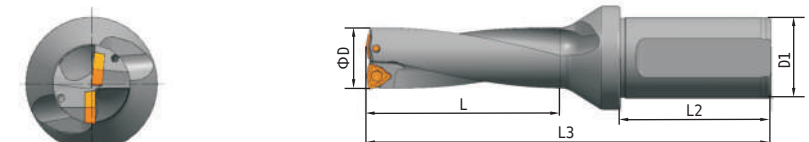
钻头直径		Φ10~Φ12	Φ12.5~Φ21.5	Φ22~Φ33.5	Φ34~Φ50.5	Φ51~Φ60
2D~3D	钻头公差 (ΦD)	0.00~-0.20	0.00~-0.20	0.00~-0.20	0.00~-0.25	0.00~-0.30
	钻孔公差	+0.10~-0.20	+0.10~-0.20	+0.10~-0.20	+0.10~-0.25	+0.10~-0.35
4D~5D	钻头公差 (ΦD)	0.00~-0.20	0.00~-0.25	0.00~-0.25	0.00~-0.30	0.00~-0.30
	钻孔公差	+0.10~-0.25	+0.10~-0.25	+0.10~-0.25	+0.10~-0.35	+0.10~-0.35

1. 川山甲刀具有限公司实际公差为图标数据 2. 钻头长度, 被加工工件种类, 机床稳定性以及切削条件都会影响公差

1. The actual tolerance of Chuanshanjia Tool Co., LTD is the data of the icon

2. Length of drill bit. Type of workpiece to be processed. Both machine tool stability and cutting conditions affect tolerances

### SD系列钻头公差和孔径公差 SD series drill tolerance and aperture tolerance



钻头直径		Φ14	Φ14.5~Φ23.5	Φ24~Φ30.5	Φ31~Φ41.5	Φ51~Φ60
2D~3D	钻头公差 (ΦD)	+0.10~+0.20	0.00~-0.20	0.00~-0.20	0.00~-0.25	0.00~-0.30
	钻孔公差	+0.05~+0.25	+0.10~-0.25	+0.10~-0.25	+0.10~-0.25	+0.10~-0.35
4D~5D	钻头公差 (ΦD)	+0.05~+0.25	0.00~-0.25	0.00~-0.25	0.00~-0.25	0.00~-0.30
	钻孔公差	+0.05~+0.30	+0.10~-0.30	+0.10~-0.30	+0.10~-0.35	+0.10~-0.35

1. 川山甲刀具有限公司实际公差为图标数据 2. 钻头长度, 被加工工件种类, 机床稳定性以及切削条件都会影响公差

1. The actual tolerance of Chuanshanjia Tool Co., LTD is the data of the icon

2. Length of drill bit. Type of workpiece to be processed. Both machine tool stability and cutting conditions affect tolerances

### SP系列刀片和配件 SP series blades and accessories

钻头直径	外刃刀片	内刃刀片	螺丝	螺丝头大小	锥度	扳手
Φ10-Φ12	SPMT04T102	SPMT04T102	M1.8X4	2.4	60	T6
Φ12.5-Φ15.5	SPMG050204	SPMG050204	M2.2X5	2.7	60	T6
Φ16-Φ21.5	SPMG060204	SPMG060204	M2.2X6	3	60	T7
Φ22-Φ27.5	SPMG07T308	SPMG07T308	M2.5X8	3.6	60	T8
Φ28-Φ33.5	SPMG090408	SPMG090408	M3.5X10	5.2	48	T15
Φ34-Φ41.5	SPMG110408	SPMG110408	M4X10	5.7	60	T15
Φ42-Φ50	SPMG140512	SPMG140512	M5X12	6.8	60	T20

### SD系列刀片和配件 SD series blades and accessories

钻头直径	外刃刀片	内刃刀片	螺丝	螺丝头大小	锥度	扳手
Φ14	WCMX030208	WCMX030208	M2.5X5	3.6	60	T8
Φ14.5-Φ19.5	WCMX030208	WCMX030208	M2.5X6	3.6	60	T8
Φ20-Φ23.5	WCMX040208	WCMX040208	M2.5X6	3.6	60	T8
Φ24-Φ30.5	WCMT050308	WCMT050308	M3X8	4	60	T8
Φ31-Φ41.5	WCMT06T308	WCMT06T308	M3.5X10	5.2	48	T15
Φ42-Φ60	WCMT080412	WCMT080412	M4X10	5.7	60	T15



## 切削参数 Cutting parameters

### U钻 2D

钻头直径	建议主轴功率	低碳钢 S10C-S25C	中碳钢 SS30C-S50C	结构钢 SS,SM	铸铁 FC,FCD	合金钢 SCr,SCM	工具钢 H13,SKD	不锈钢 SUS	铝合金
Φ10~Φ12	5.5千瓦以上	S3000-S2500	S3000-S2500	S2800-S2300	S2800-S2300	S2600-S2100	S2600-S2100	S2500-S2000	S3000-S2500
		Fz 0.02-0.03 F 40-80	Fz 0.02-0.03 F 40-80	Fz 0.02-0.03 F 35-75	Fz 0.02-0.03 F 35-75	Fz 0.02-0.03 F 35-70	Fz 0.02-0.03 F 35-70	Fz 0.02-0.03 F 30-65	Fz 0.02-0.03 F 50-90
Φ12.5~Φ15.5	5.5千瓦以上	S1800-S1500	S1800-S1500	S1800-S1500	S2000-S1700	S1500-S1200	S1500-S1200	S1500-S1300	S2000-S1700
		Fz 0.04-0.07 F 60-90	Fz 0.04-0.07 F 60-90	Fz 0.04-0.07 F 60-90	Fz 0.04-0.07 F 70-140	Fz 0.04-0.07 F 50-90	Fz 0.04-0.07 F 50-90	Fz 0.04-0.07 F 40-80	Fz 0.04-0.07 F 70-140
Φ16~Φ18.5	7.5千瓦以上BT40	S1600-S1300	S1600-S1300	S1600-S1300	S1700-S1500	S1500-S1200	S1500-S1200	S1400-S1200	S1700-S1500
		Fz 0.07-0.1 F 70-100	Fz 0.07-0.1 F 70-100	Fz 0.07-0.1 F 70-100	Fz 0.07-0.1 F 90-160	Fz 0.07-0.1 F 85-120	Fz 0.07-0.1 F 85-120	Fz 0.07-0.1 F 50-90	Fz 0.07-0.1 F 90-160
Φ19~Φ21.5	7.5千瓦以上BT40	S1500-S1200	S1500-S1200	S1500-S1200	S1600-S1300	S1400-S1100	S1400-S1100	S1300-S1100	S1600-S1300
		Fz 0.1-0.12 F 80-120	Fz 0.1-0.12 F 80-120	Fz 0.1-0.12 F 80-120	Fz 0.1-0.12 F 100-180	Fz 0.07-0.1 F 75-130	Fz 0.07-0.1 F 75-130	Fz 0.07-0.1 F 55-90	Fz 0.1-0.12 F 100-180
Φ22~Φ24.5	7.5千瓦以上BT40	S1400-S1100	S1400-S1100	S1400-S1100	S1500-S1200	S1300-S1000	S1300-S1000	S1200-S1000	S1500-S1200
		Fz 0.1-0.12 F 90-130	Fz 0.1-0.12 F 90-130	Fz 0.1-0.12 F 90-130	Fz 0.1-0.12 F 100-170	Fz 0.08-0.10 F 80-130	Fz 0.08-0.10 F 80-130	Fz 0.08-0.10 F 55-90	Fz 0.1-0.12 F 100-170
Φ25~Φ28.5	7.5千瓦以上BT40	S1400-S1100	S1400-S1100	S1400-S1100	S1500-S1200	S1300-S1000	S1300-S1000	S1100-S900	S1500-S1200
		Fz 0.1-0.12 F 100-140	Fz 0.1-0.12 F 100-140	Fz 0.1-0.12 F 100-140	Fz 0.1-0.12 F 90-160	Fz 0.1-0.12 F 90-120	Fz 0.1-0.12 F 90-120	Fz 0.1-0.12 F 60-100	Fz 0.1-0.12 F 90-160
Φ29~Φ30.5	7.5千瓦以上BT40	S1100-S850	S1100-S850	S1100-S850	S1300-S1000	S1000-S800	S1000-S800	S900-S700	S1300-S1000
		Fz 0.1-0.12 F 85-140	Fz 0.1-0.12 F 85-140	Fz 0.1-0.12 F 85-140	Fz 0.1-0.12 F 90-150	Fz 0.1-0.12 F 80-100	Fz 0.1-0.12 F 80-100	Fz 0.1-0.12 F 60-90	Fz 0.1-0.12 F 90-150
Φ31~Φ35.5	11千瓦以上BT50主轴	S900-S700	S900-S700	S900-S700	S1200-S900	S800-S600	S800-S600	S800-S600	S1200-S900
		Fz 0.10-0.12 F 70-110	Fz 0.10-0.12 F 70-110	Fz 0.10-0.12 F 70-110	Fz 0.10-0.12 F 80-140	Fz 0.10-0.12 F 60-75	Fz 0.10-0.12 F 60-75	Fz 0.10-0.12 F 60-80	Fz 0.10-0.12 F 80-140
Φ36~Φ39.5	11千瓦以上BT50主轴	S900-S700	S900-S700	S900-S700	S1000-S700	S700-S600	S700-S600	S800-S600	S1000-S700
		Fz 0.10-0.12 F 70-100	Fz 0.10-0.12 F 70-100	Fz 0.10-0.12 F 70-100	Fz 0.10-0.12 F 70-120	Fz 0.10-0.12 F 60-75	Fz 0.10-0.12 F 60-75	Fz 0.10-0.12 F 50-75	Fz 0.10-0.12 F 70-120
Φ40~Φ42.5	11千瓦以上BT50主轴	S850-S650	S850-S650	S850-S650	S1000-S700	S650-S550	S650-S550	S700-S550	S1000-S700
		Fz 0.1-0.12 F 65-90	Fz 0.1-0.12 F 65-90	Fz 0.1-0.12 F 65-90	Fz 0.1-0.12 F 65-110	Fz 0.1-0.12 F 55-65	Fz 0.1-0.12 F 55-65	Fz 0.1-0.12 F 45-70	Fz 0.1-0.12 F 65-110
Φ43~Φ45.5	15千瓦以上/带齿轮头	S700-S600	S700-S600	S700-S600	S900-S600	S650-S550	S650-S550	S650-S550	S900-S600
		Fz 0.1-0.12 F 50-85	Fz 0.1-0.12 F 50-85	Fz 0.1-0.12 F 50-85	Fz 0.1-0.12 F 60-110	Fz 0.1-0.12 F 55-65	Fz 0.1-0.12 F 55-65	Fz 0.1-0.12 F 40-65	Fz 0.1-0.12 F 60-110
Φ46~Φ50.5	15千瓦以上/带齿轮头	S650-S550	S650-S550	S650-S550	S800-S600	S600-S500	S600-S500	S600-S500	S800-S600
		Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 60-100	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 60-100
Φ51~Φ55.5	15千瓦以上/带齿轮头	S650-S500	S650-S500	S650-S500	S700-S500	S550-S500	S550-S500	S550-S500	S700-S500
		Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-90	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 50-90
Φ56~Φ60	15千瓦以上/带齿轮头	S600-S500	S600-S500	S600-S500	S700-S500	S550-S450	S550-S450	S550-S450	S700-S500
		Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-90	Fz 0.1-0.12 F 40-55	Fz 0.1-0.12 F 40-55	Fz 0.1-0.12 F 35-50	Fz 0.1-0.12 F 50-90

备注: S=转速 Fz=每转进刀量 F=进给

- 初始钻削时, 推荐采用中间范围切削数值, 之后(根据刀具磨损情况)调整切削参数以达到最佳切削效果。
- 上述切削参数, 是针对2D, 3D类型而言, 如对4D类型的钻削参数应相应降低15%。
- 冷却方式仅采用外冷时, 切削速度应降低10%。
- 对于奥氏体不锈钢加工, 必需采用内冷却方式。
- 在斜面上开始钻孔或零件有预钻孔及相贯孔或钻削堆叠的多层板材时, 进给量须减小到推荐值的1/3左右。
- Initial drilling, to recommend the use of cutting conditions in the middle range, followedby (in accordance with wear) to adjust the cutting Parameters to achieve the best cuttingeffect.
- The above cutting parameters is for 3D, 4D drilling tools, the cutting parameters need to decrease 15%.
- Cooling mode using only cold outside, cutting speed should be reduced by 10%
- It must adopt inner cooling mode for austenitic stainless steel machining.
- Diling onthe slope or the parts have pre-drillinghole or intersection hole, The drilling feedrate must decrease to 1/3 of the recommended data.

## 切削参数 Cutting parameters

### U钻 3D

钻头直径	建议主轴功率	低碳钢 S10C-S25C	中碳钢 SS30C-S50C	结构钢 SS,SM	铸铁 FC,FCD	合金钢 SCr,SCM	工具钢 H13,SKD	不锈钢 SUS	铝合金
Φ10~Φ12	5.5千瓦以上	S3200-S2600	S3200-S2600	S3000-S2500	S3000-S2500	S2800-S2200	S2800-S2200	S2600-S2000	S3000-S2500
		Fz 0.015-0.02 F 40-65	Fz 0.015-0.02 F 40-65	Fz 0.015-0.02 F 35-60	Fz 0.015-0.02 F 35-60	Fz 0.015-0.02 F 30-55	Fz 0.015-0.02 F 30-55	Fz 0.015-0.02 F 30-55	Fz 0.015-0.02 F 40-70
Φ12.5~Φ15.5	5.5千瓦以上	S1800-S1500	S1800-S1500	S1800-S1500	S2000-S1700	S1400-S1200	S1400-S1200	S1500-S1300	S2000-S1700
		Fz 0.04-0.07 F 60-90	Fz 0.04-0.07 F 60-90	Fz 0.04-0.07 F 60-90	Fz 0.04-0.07 F 70-140	Fz 0.03-0.06 F 40-90	Fz 0.03-0.06 F 40-90	Fz 0.04-0.07 F 40-80	Fz 0.04-0.07 F 70-140
Φ16~Φ18.5	7.5千瓦以上	S1600-S1300	S1600-S1300	S1600-S1300	S1700-S1500	S1400-S1100	S1400-S1100	S1400-S1200	S1700-S1500
		Fz 0.07-0.1 F 70-100	Fz 0.07-0.1 F 70-100	Fz 0.07-0.1 F 70-100	Fz 0.07-0.1 F 90-160	Fz 0.06-0.1 F 65-110	Fz 0.06-0.1 F 65-110	Fz 0.07-0.1 F 50-90	Fz 0.07-0.1 F 90-160
Φ19~Φ21.5	7.5千瓦以上	S1500-S1200	S1500-S1200	S1500-S1200	S1600-S1300	S1300-S1000	S1300-S1000	S1300-S1100	S1600-S1300
		Fz 0.1-0.12 F 80-120	Fz 0.1-0.12 F 80-120	Fz 0.1-0.12 F 80-120	Fz 0.1-0.12 F 100-180	Fz 0.08-0.10 F 80-100	Fz 0.08-0.10 F 80-100	Fz 0.07-0.1 F 55-90	Fz 0.1-0.12 F 100-180
Φ22~Φ24.5	7.5千瓦以上	S1400-S1100	S1400-S1100	S1400-S1100	S1500-S1200	S1200-S900	S1200-S900	S1200-S1000	S1500-S1200
		Fz 0.1-0.12 F 90-130	Fz 0.1-0.12 F 90-130	Fz 0.1-0.12 F 90-130	Fz 0.1-0.12 F 100-170	Fz 0.08-0.1 F 70-90	Fz 0.08-0.1 F 70-90	Fz 0.08-0.1 F 55-90	Fz 0.1-0.12 F 100-170
Φ25~Φ28.5	7.5千瓦以上	S1400-S1100	S1400-S1100	S1400-S1100	S1500-S1200	S1200-S900	S1200-S900	S1100-S900	S1500-S1200
		Fz 0.1-0.12 F 100-140	Fz 0.1-0.12 F 100-140	Fz 0.1-0.12 F 100-140	Fz 0.1-0.12 F 90-160	Fz 0.08-0.12 F 72-110	Fz 0.08-0.12 F 72-110	Fz 0.1-0.12 F 60-100	Fz 0.1-0.12 F 90-160
Φ29~Φ30.5	7.5千瓦以上	S1100-S850	S1100-S850	S1100-S850	S1300-S1000	S1000-S800	S1000-S800	S900-S700	S1300-S1000
		Fz 0.1-0.12 F 85-140	Fz 0.1-0.12 F 85-140	Fz 0.1-0.12 F 85-140	Fz 0.1-0.12 F 90-150	Fz 0.1-0.13 F 80-100	Fz 0.1-0.13 F 80-100	Fz 0.1-0.13 F 60-90	Fz 0.1-0.12 F 90-150
Φ31~Φ35.5	11千瓦以上	S900-S700	S900-S700	S900-S700	S1200-S900	S800-S600	S800-S600	S800-S600	S1200-S900
		Fz 0.10-0.12 F 70-110	Fz 0.10-0.12 F 70-110	Fz 0.10-0.12 F 70-110	Fz 0.10-0.12 F 80-140	Fz 0.08-0.10 F 50-60	Fz 0.08-0.10 F 50-60	Fz 0.10-0.12 F 60-80	Fz 0.10-0.12 F 80-140
Φ36~Φ39.5	11千瓦以上	S900-S700	S900-S700	S900-S700	S1000-S700	S700-S600	S700-S600	S800-S600	S1000-S700
		Fz 0.10-0.12 F 70-100	Fz 0.10-0.12 F 70-100	Fz 0.10-0.12 F 70-100	Fz 0.10-0.12 F 70-120	Fz 0.08-0.12 F 50-75	Fz 0.08-0.12 F 50-75	Fz 0.10-0.12 F 50-75	Fz 0.10-0.12 F 70-120
Φ40~Φ42.5	11千瓦以上	S850-S650	S850-S650	S850-S650	S1000-S700	S650-S550	S650-S550	S700-S550	S1000-S700
		Fz 0.1-0.12 F 65-90	Fz 0.1-0.12 F 65-90	Fz 0.1-0.12 F 65-90	Fz 0.1-0.12 F 65-110	Fz 0.1-0.12 F 50-65	Fz 0.1-0.12 F 50-65	Fz 0.1-0.12 F 45-70	Fz 0.1-0.12 F 65-110
Φ43~Φ45.5	15千瓦以上/带齿轮头	S700-S600	S700-S600	S700-S600	S900-S600	S650-S550	S650-S550	S650-S550	S900-S600
		Fz 0.1-0.12 F 50-85	Fz 0.1-0.12 F 50-85	Fz 0.1-0.12 F 50-85	Fz 0.1-0.12 F 60-110	Fz 0.1-0.12 F 50-65	Fz 0.1-0.12 F 50-65	Fz 0.1-0.12 F 40-65	Fz 0.1-0.12 F 60-110
Φ46~Φ50.5	15千瓦以上/带齿轮头	S650-S550	S650-S550	S650-S550	S800-S600	S600-S500	S600-S500	S600-S500	S800-S600
		Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 60-100	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 60-100
Φ51~Φ55.5	15千瓦以上/带齿轮头	S650-S500	S650-S500	S650-S500	S700-S500	S550-S500	S550-S500	S550-S500	S700-S500
		Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-90	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 40-60	Fz 0.1-0.12 F 50-90
Φ56~Φ60	15千瓦以上/带齿轮头	S600-S500	S600-S500	S600-S500	S700-S500	S550-S450	S550-S450	S550-S450	S700-S500
		Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-80	Fz 0.1-0.12 F 50-90	Fz 0.1-0.12 F 40-55	Fz 0.1-0.12 F 40-55	Fz 0.1-0.12 F 35-50	Fz 0.1-0.12 F 50-90

备注: S=转速 Fz=每转进刀量 F=进给

- 初始钻削时, 推荐采用中间范围切削数值, 之后(根据刀具磨损情况)调整切削参数以达到最佳切削效果。
- 上述切削参数, 是针对2D, 3D类型而言, 如对4D类型的钻削参数应相应降低15%。
- 冷却方式仅采用外冷时, 切削速度应降低10%。
- 对于奥氏体不锈钢加工, 必需采用内冷却方式。
- 在斜面上开始钻孔或零件有预钻孔及相贯孔或钻削堆叠的多层板材时, 进给量须减小到推荐值的1/3左右。
- Initial drilling, to recommend the use of cutting conditions in the middle range, followedby (in accordance with wear) to adjust the cutting Parameters to achieve the best cuttingeffect.
- The above cutting parameters is for 3D, 4D drilling tools, the cutting parameters need to decrease 15%.
- Cooling mode using only cold outside, cutting speed should be reduced by 10%
- It must adopt inner cooling mode for austenitic stainless steel machining.
- Diling onthe slope or the parts have pre-drillinghole or intersection hole, The drilling feedrate must decrease to 1/3 of the recommended data.

### U钻 4D

钻头直径	建议主轴功率	低碳钢 S10C-S25C	中碳钢 SS30C-S50C	结构钢 SS,SM	铸铁 FC,FCD	合金钢 SCr,SCM	工具钢 H13,SKD	不锈钢 SUS	铝合金
Φ10~Φ12	5.5千瓦以上	S3500-S2800	S3500-S2800	S3300-S2600	S3300-S2600	S3200-S2500	S3200-S2500	S3000-S2400	S3300-S2600
		Fz 0.015-0.02	Fz 0.015-0.02	Fz 0.015-0.02	Fz 0.015-0.02	Fz 0.015-0.02	Fz 0.015-0.02	Fz 0.015-0.02	Fz 0.015-0.02
Φ12.5~Φ15.5	5.5千瓦以上	S1800-S1500	S1800-S1500	S1800-S1500	S1800-S1600	S1300-S1200	S1300-S1200	S1300-S1100	S1800-S1600
		Fz 0.04-0.07	Fz 0.04-0.07	Fz 0.04-0.07	Fz 0.04-0.07	Fz 0.03-0.05	Fz 0.03-0.05	Fz 0.04-0.07	Fz 0.04-0.07
Φ16~Φ18.5	7.5千瓦以上	S1600-S1300	S1600-S1300	S1600-S1300	S1600-S1400	S1300-S1100	S1300-S1100	S1300-S1100	S1600-S1400
		Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.05-0.07	Fz 0.05-0.07	Fz 0.07-0.1	Fz 0.07-0.1
Φ19~Φ21.5	7.5千瓦以上	S1500-S1200	S1500-S1200	S1500-S1200	S1500-S1300	S1200-S900	S1200-S900	S1200-S900	S1500-S1300
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.1-0.12
Φ22~Φ24.5	7.5千瓦以上	S1400-S1100	S1400-S1100	S1400-S1100	S1500-S1200	S1200-S800	S1200-S800	S1200-S800	S1500-S1200
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.08-0.10	Fz 0.1-0.12
Φ25~Φ28.5	7.5千瓦以上	S1400-S1100	S1400-S1100	S1400-S1100	S1400-S1200	S1100-S800	S1100-S800	S1100-S800	S1400-S1200
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ29~Φ30.5	7.5千瓦以上	S1100-S850	S1100-S850	S1100-S850	S1300-S1000	S900-S700	S900-S700	S900-S700	S1300-S1000
		Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.08-0.10	Fz 0.08-0.10	Fz 0.10-0.13	Fz 0.10-0.13
Φ31~Φ35.5	11千瓦以上	S900-S700	S900-S700	S900-S700	S1200-S1000	S700-S550	S700-S550	S800-S600	S1200-S1000
		Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.07-0.09	Fz 0.07-0.09	Fz 0.10-0.12	Fz 0.10-0.12
Φ36~Φ39.5	11千瓦以上	S900-S700	S900-S700	S900-S700	S1100-S900	S700-S500	S700-S500	S800-S600	S1100-S900
		Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.10-0.12	Fz 0.10-0.12
Φ40~Φ42.5	11千瓦以上	S850-S650	S850-S650	S850-S650	S900-S700	S650-S550	S650-S550	S700-S550	S900-S700
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ43~Φ45.5	15千瓦以上/带 齿轮头	S700-S600	S700-S600	S700-S600	S800-S600	S650-S550	S650-S550	S650-S550	S800-S600
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ46~Φ50.5	15千瓦以上/带 齿轮头	S650-S550	S650-S550	S650-S550	S800-S600	S600-S500	S600-S500	S600-S500	S800-S600
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ51~Φ55.5	15千瓦以上/带 齿轮头	S650-S500	S650-S500	S650-S500	S700-S500	S550-S500	S550-S500	S550-S500	S700-S500
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ56~Φ60	15千瓦以上/带 齿轮头	S600-S500	S600-S500	S600-S500	S700-S500	S550-S450	S550-S450	S550-S450	S700-S500
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12

备注: S=转速 Fz=每转进刀量 F=进给

- 初始钻削时, 推荐采用中间范围切削数值, 之后(根据刀具磨损情况)调整切削参数以达到最佳切削效果。
- 冷却方式仅采用外冷时, 切削速度应降低10%。
- 对于奥氏体不锈钢加工, 必需采用内冷却方式。
- 在斜面上开始钻孔或零件有预钻孔及相贯孔或钻削堆叠的多层板材时, 进给量须减小到推荐值的1/3左右。
- Initial drilling, to recommend the use of cutting conditions in the middle range, followedby (in accordance with wear) to adjust the cutting Parameters to achieve the best cuttingeffect.
- Cooling mode using only cold outside, cutting speed should be reduced by 10%
- It must adopt inner cooling mode for austenitic stainless steel machining.
- Dilling onthe slope or the parts have pre-drillinghole or intersection hole, The drilling feedrate must decrease to 1/3 of the recommended data.

### U钻 5D

钻头直径	建议主轴功率	低碳钢 S10C-S25C	中碳钢 SS30C-S50C	结构钢 SS,SM	铸铁 FC,FCD	合金钢 SCr,SCM	工具钢 H13,SKD	不锈钢 SUS	铝合金
Φ10~Φ12	5.5千瓦以上	S3600-S3000	S3600-S3000	S3500-S3000	S3500-S3000	S3400-S2800	S3400-S2800	S3200-S2800	S3600-S3000
		Fz 0.01-0.02	Fz 0.01-0.02	Fz 0.01-0.02	Fz 0.01-0.02	Fz 0.01-0.02	Fz 0.01-0.02	Fz 0.01-0.02	Fz 0.01-0.02
Φ12.5~Φ15.5	5.5千瓦以上	S1800-S1500	S1800-S1500	S1800-S1500	S1800-S1600	S1300-S1200	S1300-S1100	S1300-S1100	S1800-S1600
		Fz 0.04-0.07	Fz 0.04-0.07	Fz 0.04-0.07	Fz 0.04-0.07	Fz 0.03-0.05	Fz 0.03-0.05	Fz 0.04-0.07	Fz 0.04-0.07
Φ16~Φ18.5	7.5千瓦以上	S1600-S1300	S1600-S1300	S1600-S1300	S1600-S1400	S1300-S1100	S1300-S1100	S1300-S1100	S1600-S1400
		Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.05-0.07	Fz 0.05-0.07	Fz 0.07-0.1	Fz 0.07-0.1
Φ19~Φ21.5	7.5千瓦以上	S1500-S1200	S1500-S1200	S1500-S1200	S1500-S1300	S1200-S900	S1200-S900	S1200-S900	S1500-S1300
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.1-0.12
Φ22~Φ24.5	7.5千瓦以上	S1400-S1100	S1400-S1100	S1400-S1100	S1500-S1200	S1200-S800	S1200-S800	S1200-S800	S1500-S1200
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.08-0.10	Fz 0.1-0.12
Φ25~Φ28.5	7.5千瓦以上	S1400-S1100	S1400-S1100	S1400-S1100	S1400-S1200	S1100-S800	S1100-S800	S1100-S800	S1400-S1200
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ29~Φ30.5	7.5千瓦以上	S1100-S850	S1100-S850	S1100-S850	S1300-S1000	S900-S700	S900-S700	S900-S700	S1300-S1000
		Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.08-0.10	Fz 0.08-0.10	Fz 0.10-0.13	Fz 0.10-0.13
Φ31~Φ35.5	11千瓦以上	S900-S700	S900-S700	S900-S700	S1200-S1000	S700-S550	S700-S550	S800-S600	S1200-S1000
		Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.07-0.09	Fz 0.07-0.09	Fz 0.10-0.12	Fz 0.10-0.12
Φ36~Φ39.5	11千瓦以上	S900-S700	S900-S700	S900-S700	S1100-S900	S700-S500	S700-S500	S800-S600	S1100-S900
		Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.10-0.12	Fz 0.10-0.12
Φ40~Φ42.5	11千瓦以上	S850-S650	S850-S650	S850-S650	S900-S700	S650-S550	S650-S550	S700-S550	S900-S700
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ43~Φ45.5	15千瓦以上/带 齿轮头	S700-S600	S700-S600	S700-S600	S800-S600	S650-S550	S650-S550	S650-S550	S800-S600
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ46~Φ50.5	15千瓦以上/带 齿轮头	S650-S550	S650-S550	S650-S550	S800-S600	S600-S500	S600-S500	S600-S500	S800-S600
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ51~Φ55.5	15千瓦以上/带 齿轮头	S650-S500	S650-S500	S650-S500	S700-S500	S550-S500	S550-S500	S550-S500	S700-S500
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12
Φ56~Φ60	15千瓦以上/带 齿轮头	S600-S500	S600-S500	S600-S500	S700-S500	S550-S450	S550-S450	S550-S450	S700-S500
		Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12

备注: S=转速 Fz=每转进刀量 F=进给

- 初始钻削时, 推荐采用中间范围切削数值, 之后(根据刀具磨损情况)调整切削参数以达到最佳切削效果。
- 冷却方式仅采用外冷时, 切削速度应降低10%。
- 对于奥氏体不锈钢加工, 必需采用内冷却方式。
- 在斜面上开始钻孔或零件有预钻孔及相贯孔或钻削堆叠的多层板材时, 进给量须减小到推荐值的1/3左右。
- Initial drilling, to recommend the use of cutting conditions in the middle range, followedby (in accordance with wear) to adjust the cutting Parameters to achieve the best cuttingeffect.
- Cooling mode using only cold outside, cutting speed should be reduced by 10%
- It must adopt inner cooling mode for austenitic stainless steel machining.
- Dilling onthe slope or the parts have pre-drillinghole or intersection hole, The drilling feedrate must decrease to 1/3 of the recommended data.



# 加工要求 Processing requirements

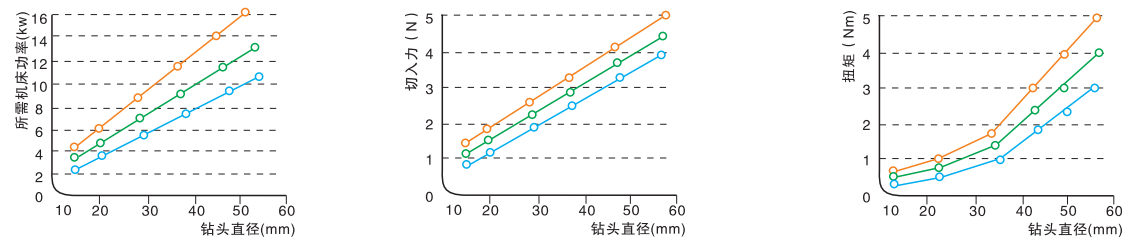
## 加工功率要求

Machining power requirement

下方图表显示钻削加工所需的切削力/高刚性高功率机床配合进行加工

- 被加工件: SCM440(240B) 切削条件:  $vc(m/min)=100$
- 内冷系统

$fn(mm/rev)=0.13$     $fn(mm/rev)=0.10$     $fn(mm/rev)=0.07$



## 加工注意事项 Processing considerations

被加工件	加工事项	
	加工不规则表面	刀片可能产生崩刃 正常进给减少25%
	加工凸面	中心刀片先接触被加工表面 降低50%进给,直到内外刀片都进入被加工件
	加工凹面	降低50%进给,直到内外刀片都进入被加工件
	镗孔	正常进给降低50%
	斜面	正常进给降低50%
	加工交叉孔	重叠部分进给降低50%
	加工重叠相交孔	正常进给降低50%
	加工重叠板	刀片可能产生断裂和崩刃 正常进给降低25%

## 加工问题解决方案 Process problem solution

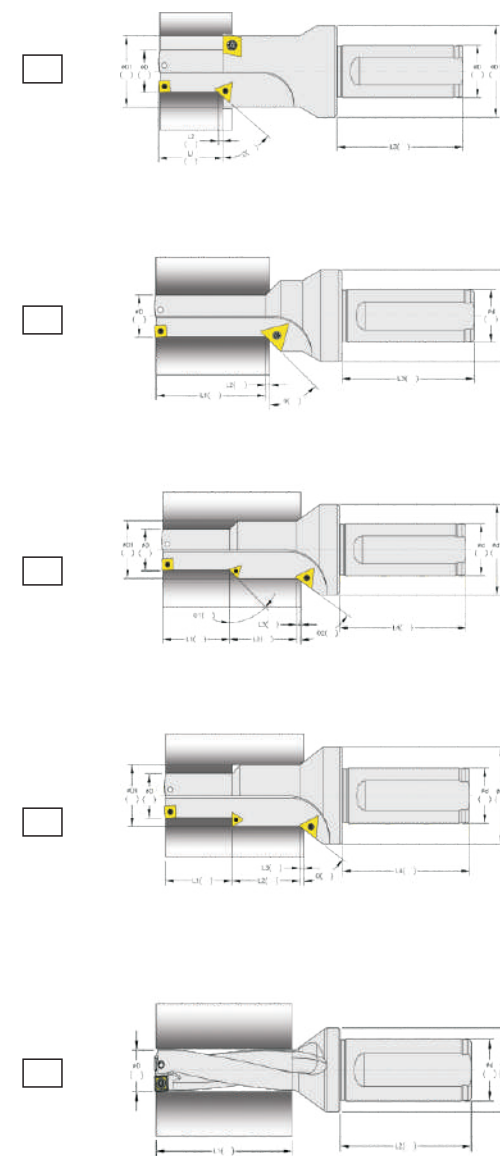
问题	具体情况	解决方案	
加工同一孔时 孔径发生变化	加工同一孔时期孔径发生变化 →底部孔径变大	增强冷却液, 检查冷却液排出情况 更换长径比小的钻头 更改切削条件, 获得更好的切屑控制	
孔径变大或变小	孔径变大或变小	铣削 →增强冷却液 →检查冷却液排出情况 车削 →检查钻头中心及被加工情况 →钻头旋转180°	
震动	加工震动	更换长径比小的钻头 降低切削速度和进给	稳定的夹持力 检查机床扭矩
排屑不良	长切屑	低碳钢/不锈钢 →提高切削速度, 进给以及冷却油压 合金钢/碳钢 →提高切削速度和进给	
表面精度差	短切屑	提高切削速度, 进给以及冷却油压	
	加工表面有刀痕	更换切削条件, 获得更好的切屑控制 降低进给或者提高切削速度	增加冷却液, 检查冷却液排出情况 更换长径比小的钻头, 增大夹紧力
刀片寿命降低	刀片磨损严重或者崩刃	检查切削条件 增加冷却液, 检查冷却液排出情况	更换长径比小的钻头, 增大夹紧力 更换刀片材质

# 非标钻头定制 Non-standard drill bit customization

## 非标钻头订货单

Non-standard drill bit order

方框内填写“√”



### 冷却方式 Cooling mode

- 油孔在法兰上
- 油孔在柄部

### 钻孔类型 Borehole type

- 盲孔加工
- 有底孔
- 通孔加工
- 无底孔

### 柄部类型 Handle type

- 平头型
- 韦尔登类型
- 惠式峭型

### 侧面位置 Position of side fixing surface

- 与外刃刀片平行(标准)
- 与外刃刀片呈90°
- 与外刃刀片呈150°
- 与外刃刀片呈180°

### 注明:

现在使用的刀具  
现在的切削条件  
-RPM or  $vc(m/min)$   
- $vc(mm/min)$  or  $fn(mm/rev)$   
-孔深 (mm)

### 标准刀具寿命使用设备

-加工中心  
-普通车床  
-CNC车床

### Note:

Knives in use today  
Current cutting conditions  
-RPM or  $vc(m/min)$   
- $vc(mm/min)$  or  $fn(mm/rev)$   
- Hole depth (mm)

### Standard tool life using equipment

- Machining center  
- General lathe  
- CNC lathe

U钻

铲钻

可换钻尖钻头

组合钻

带定心U钻

VMD大钻头

模块系统

U钻

铲钻

可换钻尖钻头

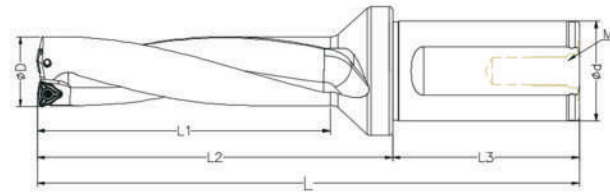
组合钻

带定心U钻

VMD大钻头

模块系统

U钻 U drill



WC刀片 2D

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench					
	ΦD	L	L1	L2	L3	M	Φd								
SD14-2D-C25	14	107	30	51	56	G 1/8	25	WCMX 03 02 08	M2.5X5	T8					
SD14.5-2D-C25	14.5	108	31	52	56	G 1/8	25	WCMX 03 02 08	M2.5X6	T8					
SD15-2D-C25	15	107	32	51	56										
SD15.5-2D-C25	15.5	108	33	52	56										
SD16-2D-C25	16	109	34	53	56										
SD16.5-2D-C25	16.5	110	35	54	56										
SD17-2D-C25	17	111	36	55	56										
SD17.5-2D-C25	17.5	112	37	56	56										
SD18-2D-C25	18	113	38	57	56										
SD18.5-2D-C25	18.5	114	39	58	56										
SD19-2D-C25	19	113	40	57	56										
SD19.5-2D-C25	19.5	114	41	58	56	G 1/8	25	WCMX 04 02 08	M2.5X6	T8					
SD20-2D-C25	20	115.5	42	59.5	56										
SD20.5-2D-C25	20.5	117	43	61	56										
SD21-2D-C25	21	118	44	62	56										
SD21.5-2D-C25	21.5	119	45	63	56										
SD22-2D-C25	22	120	46	64	56										
SD22.5-2D-C25	22.5	121	47	65	56										
SD23-2D-C25	23	122	48	66	56										
SD23.5-2D-C25	23.5	123	49	67	56										
SD24-2D-C25	24	124	50	68	56						G 1/8	25	WCMX 04 02 08	M2.5X6	T8
SD24.5-2D-C25	24.5	125	51	69	56										
SD25-2D-C25	25	127	52	71	56										
SD25-2D-C32	25	136	52	76	60	G 1/4	32	WCMT 05 03 08	M3.0X8	T8					
SD25.5-2D-C32	25.5	137	53	77	60										
SD26-2D-C32	26	138	54	78	60										
SD26.5-2D-C32	26.5	139	55	79	60										
SD27-2D-C32	27	140	56	80	60										
SD27.5-2D-C32	27.5	141	57	81	60										
SD28-2D-C32	28	142	58	82	60										
SD28.5-2D-C32	28.5	143	59	83	60										
SD29-2D-C32	29	144	60	84	60										
SD29.5-2D-C32	29.5	145	61	85	60						G 1/4	32	WCMT 06 T3 08	M3.5X10	T15
SD30-2D-C32	30	146	62	86	60										
SD30.5-2D-C32	30.5	146	63	86	60										
SD31-2D-C32	31	147	64	87	60										
SD31.5-2D-C32	31.5	147	65	87	60										
SD32-2D-C32	32	149	66	89	60										
SD32.5-2D-C32	32.5	149	67	89	60										
SD33-2D-C32	33	151	68	91	60										
SD33.5-2D-C32	33.5	151	69	91	60										

U钻 U drill

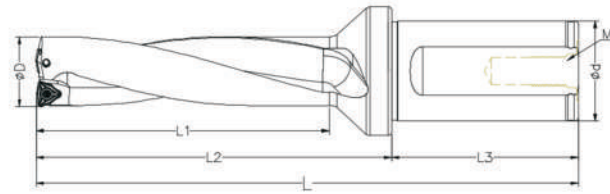
WC刀片 2D

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd			
SD34-2D-C32	34	152	70	92	60	G 1/4	32	WCMT 06 T3 08	M3.5X10	T15
SD34.5-2D-C32	34.5	152	71	92	60					
SD35-2D-C32	35	155	72	95	60					
SD35.5-2D-C32	35.5	155	73	95	60					
SD36-2D-C32	36	157	74	97	60					
SD36.5-2D-C32	36.5	158	75	98	60					
SD37-2D-C32	37	159	76	99	60					
SD37.5-2D-C32	37.5	161	77	101	60					
SD38-2D-C32	38	158.5	78	98.5	60					
SD38.5-2D-C32	38.5	159.5	79	99.5	60					
SD39-2D-C32	39	162	80	102	60					
SD39.5-2D-C32	39.5	160	81	100	60					
SD40-2D-C32	40	160	82	100	60					
SD40.5-2D-C32	40.5	160	83	100	60					
SD41-2D-C32	41	164	84	104	60					
SD41.5-2D-C32	41.5	162	85	102	60	G 1/4	40	WCMT 08 04 12	M4.0X10	T15
SD42-2D-C40	42	181	86	111	70					
SD42.5-2D-C40	42.5	182	87	112	70					
SD43-2D-C40	43	183	88	113	70					
SD43.5-2D-C40	43.5	184	89	114	70					
SD44-2D-C40	44	185	90	115	70					
SD44.5-2D-C40	44.5	186	91	116	70					
SD45-2D-C40	45	187	92	117	70					
SD45.5-2D-C40	45.5	188	93	118	70					
SD46-2D-C40	46	189	94	119	70					
SD46.5-2D-C40	46.5	190	95	120	70					
SD47-2D-C40	47	191	96	121	70					
SD47.5-2D-C40	47.5	192	97	122	70					
SD48-2D-C40	48	193	98	123	70					
SD48.5-2D-C40	48.5	194	99	124	70					
SD49-2D-C40	49	195	100	125	70					
SD49.5-2D-C40	49.5	196	101	126	70					
SD50-2D-C40	50	197	102	127	70					
SD50.5-2D-C40	50.5	197	103	127	70					
SD51-2D-C40	51	199	104	129	70					
SD52-2D-C40	52	201	106	131	70					
SD53-2D-C40	53	203	108	133	70					
SD54-2D-C40	54	205	110	135	70					
SD55-2D-C40	55	207	112	137	70					
SD56-2D-C40	56	209	114	139	70					
SD57-2D-C40	57	211	116	141	70					
SD58-2D-C40	58	213	118	143	70					
SD59-2D-C40	59	215	120	145	70					
SD60-2D-C40	60	217	122	147	70	G 1/4	40	WCMT 06 T3 08	M3.5X10	T15
SD65-2D-C40	65	233.5	132	163.5	70					
SD68-2D-C40	68	240	138	170	70					
SD70-2D-C40	70	232	142	162	70					



U钻 U drill

U 钻



WC刀片 3D

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench					
	ΦD	L	L1	L2	L3	M	Φd								
SD14-3D-C25	14	121	44	65	56	G 1/8	25	WCMX 03 02 08	M2.5X5	T8					
SD14.5-3D-C25	14.5	122.5	45.5	66.5	56	G 1/8	25	WCMX 03 02 08	M2.5X6	T8					
SD15-3D-C25	15	122	47	66	56										
SD15.5-3D-C25	15.5	123.5	48.5	67.5	56										
SD16-3D-C25	16	125	50	69	56										
SD16.5-3D-C25	16.5	126.5	51.5	70.5	56										
SD17-3D-C25	17	128	53	72	56										
SD17.5-3D-C25	17.5	129.5	54.5	73.5	56										
SD18-3D-C25	18	131	56	75	56										
SD18.5-3D-C25	18.5	132.5	57.5	76.5	56										
SD19-3D-C25	19	132	59	76	56										
SD19.5-3D-C25	19.5	133.5	60.5	77.5	56	G 1/8	25	WCMX 04 02 08	M2.5X6	T8					
SD20-3D-C25	20	135.5	62	79.5	56										
SD20.5-3D-C25	20.5	137.5	63.5	81.5	56										
SD21-3D-C25	21	139	65	83	56										
SD21.5-3D-C25	21.5	140.5	66.5	84.5	56										
SD22-3D-C25	22	142	68	86	56										
SD22.5-3D-C25	22.5	143.5	69.5	87.5	56										
SD23-3D-C25	23	145	71	89	56										
SD23.5-3D-C25	23.5	146.5	72.5	90.5	56										
SD24-3D-C25	24	148	74	92	56						G 1/8	25	WCMX 04 02 08	M2.5X6	T8
SD24.5-3D-C25	24.5	149.5	75.5	93.5	56										
SD25-3D-C25	25	152	77	96	56										
SD25-3D-C32	25	161	77	101	60	G 1/4	32	WCMT 05 03 08	M3.0X8	T8					
SD25.5-3D-C32	25.5	162.5	78.5	102.5	60										
SD26-3D-C32	26	164	80	104	60										
SD26.5-3D-C32	26.5	165.5	81.5	105.5	60										
SD27-3D-C32	27	167	83	107	60										
SD27.5-3D-C32	27.5	168.5	84.5	108.5	60										
SD28-3D-C32	28	170	86	110	60										
SD28.5-3D-C32	28.5	171.5	87.5	111.5	60										
SD29-3D-C32	29	173	89	113	60										
SD29.5-3D-C32	29.5	174.5	90.5	114.5	60										
SD30-3D-C32	30	176	92	116	60	G 1/4	32	WCMT 06 T3 08	M3.5X10	T15					
SD30.5-3D-C32	30.5	176.5	93.5	116.5	60										
SD31-3D-C32	31	178	95	118	60										
SD31.5-3D-C32	31.5	178.5	96.5	118.5	60										
SD32-3D-C32	32	181	98	121	60										
SD32.5-3D-C32	32.5	181.5	99.5	121.5	60										
SD33-3D-C32	33	184	101	124	60										
SD33.5-3D-C32	33.5	184.5	102.5	124.5	60										

U钻 U drill

U 钻

WC刀片 3D

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd			
SD34-3D-C32	34	186	104	126	60	G 1/4	32	WCMT 06 T3 08	M3.5X10	T15
SD34.5-3D-C32	34.5	186.5	105.5	126.5	60					
SD35-3D-C32	35	190	107	130	60					
SD35.5-3D-C32	35.5	190.5	108.5	130.5	60					
SD36-3D-C32	36	193	110	133	60					
SD36.5-3D-C32	36.5	194.5	111.5	134.5	60					
SD37-3D-C32	37	196	113	136	60					
SD37.5-3D-C32	37.5	198.5	114.5	138.5	60					
SD38-3D-C32	38	196.5	116	136.5	60					
SD38.5-3D-C32	38.5	198	117.5	138	60					
SD39-3D-C32	39	197	119	137	60					
SD39.5-3D-C32	39.5	199.5	120.5	139.5	60					
SD40-3D-C32	40	200	122	140	60					
SD40.5-3D-C32	40.5	200.5	123.5	140.5	60					
SD41-3D-C32	41	205	125	145	60					
SD41.5-3D-C32	41.5	203.5	126.5	143.5	60	G 1/4	40	WCMT 08 04 12	M4.0X10	T15
SD42-3D-C40	42	223	128	153	70					
SD42.5-3D-C40	42.5	224.5	129.5	154.5	70					
SD43-3D-C40	43	226	131	156	70					
SD43.5-3D-C40	43.5	227.5	132.5	157.5	70					
SD44-3D-C40	44	229	134	159	70					
SD44.5-3D-C40	44.5	230.5	135.5	160.5	70					
SD45-3D-C40	45	232	137	162	70					
SD45.5-3D-C40	45.5	233.5	138.5	163.5	70					
SD46-3D-C40	46	235	140	165	70					
SD46.5-3D-C40	46.5	236.5	141.5	166.5	70					
SD47-3D-C40	47	238	143	168	70					
SD47.5-3D-C40	47.5	239.5	144.5	169.5	70					
SD48-3D-C40	48	241	146	171	70					
SD48.5-3D-C40	48.5	242.5	147.5	172.5	70					
SD49-3D-C40	49	244	149	174	70					
SD49.5-3D-C40	49.5	245.5	150.5	175.5	70					
SD50-3D-C40	50	247	152	177	70					
SD50.5-3D-C40	50.5	249	154	179	70					
SD51-3D-C40	51	250	155	180	70					
SD52-3D-C40	52	253	158	183	70					
SD53-3D-C40	53	256	161	186	70					
SD54-3D-C40	54	259	164	189	70					
SD55-3D-C40	55	262	167	192	70					
SD56-3D-C40	56	265	170	195	70					
SD57-3D-C40	57	268	173	198	70					
SD58-3D-C40	58	271	176	201	70					
SD59-3D-C40	59	274	179	204	70					
SD60-3D-C40	60	277	182	207	70					
SD65-3D-C40	65	298.5	197	228.5	70	G 1/4	40	WCMT 06 T3 08	M3.5X10	T15
SD68-3D-C40	68	308	206	238	70					
SD70-3D-C40	70	302	212	232	70					

铲钻

可换钻尖钻头

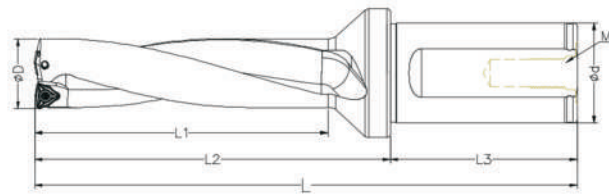
组合钻

带定心U钻

VMD大钻头

模块系统

U钻 U drill



WC刀片 4D

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd			
SD14-4D-C25	14	135	58	79	56	G 1/8	25	WCMX 03 02 08	M2.5X5	T8
SD14.5-4D-C25	14.5	137	60	81	56	G 1/8	25	WCMX 03 02 08	M2.5X6	T8
SD15-4D-C25	15	137	62	81	56					
SD15.5-4D-C25	15.5	139	64	83	56					
SD16-4D-C25	16	141	66	85	56					
SD16.5-4D-C25	16.5	143	68	87	56					
SD17-4D-C25	17	145	70	89	56					
SD17.5-4D-C25	17.5	147	72	91	56					
SD18-4D-C25	18	149	74	93	56					
SD18.5-4D-C25	18.5	151	76	95	56					
SD19-4D-C25	19	151	78	95	56					
SD19.5-4D-C25	19.5	153	80	97	56	G 1/8	25	WCMX 04 02 08	M2.5X6	T8
SD20-4D-C25	20	155.5	82	99.5	56					
SD20.5-4D-C25	20.5	158	84	102	56					
SD21-4D-C25	21	160	86	104	56					
SD21.5-4D-C25	21.5	162	88	106	56					
SD22-4D-C25	22	164	90	108	56					
SD22.5-4D-C25	22.5	166	92	110	56					
SD23-4D-C25	23	168	94	112	56					
SD23.5-4D-C25	23.5	170	96	114	56					
SD24-4D-C25	24	172	98	116	56					
SD24.5-4D-C25	24.5	174	100	118	56					
SD25-4D-C25	25	177	102	121	56					
SD25-4D-C32	25	186	102	126	60					
SD25.5-4D-C32	25.5	188	104	128	60					
SD26-4D-C32	26	190	106	130	60					
SD26.5-4D-C32	26.5	192	108	132	60					
SD27-4D-C32	27	194	110	134	60					
SD27.5-4D-C32	27.5	196	112	136	60					
SD28-4D-C32	28	198	114	138	60					
SD28.5-4D-C32	28.5	200	116	140	60					
SD29-4D-C32	29	202	118	142	60					
SD29.5-4D-C32	29.5	204	120	144	60					
SD30-4D-C32	30	206	122	146	60					
SD30.5-4D-C32	30.5	207	124	147	60					
SD31-4D-C32	31	209	126	149	60					
SD31.5-4D-C32	31.5	210	128	150	60					
SD32-4D-C32	32	213	130	153	60					
SD32.5-4D-C32	32.5	214	132	154	60					
SD33-4D-C32	33	217	134	157	60					
SD33.5-4D-C32	33.5	218	136	158	60					
SD31-4D-C32	31	209	126	149	60					
SD31.5-4D-C32	31.5	210	128	150	60					
SD32-4D-C32	32	213	130	153	60					
SD32.5-4D-C32	32.5	214	132	154	60					
SD33-4D-C32	33	217	134	157	60					
SD33.5-4D-C32	33.5	218	136	158	60					
SD31-4D-C32	31	209	126	149	60					
SD31.5-4D-C32	31.5	210	128	150	60					
SD32-4D-C32	32	213	130	153	60					
SD32.5-4D-C32	32.5	214	132	154	60					
SD33-4D-C32	33	217	134	157	60					
SD33.5-4D-C32	33.5	218	136	158	60					

U钻 U drill

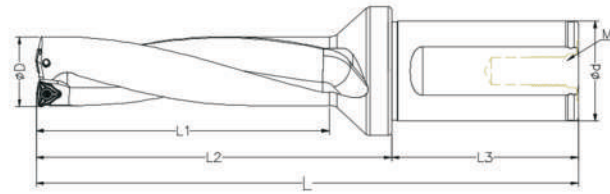
WC刀片 4D

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd			
SD34-4D-C32	34	220	138	160	60	G 1/4	32	WCMT 06 T3 08	M3.5X10	T15
SD34.5-4D-C32	34.5	221	140	161	60					
SD35-4D-C32	35	225	142	165	60					
SD35.5-4D-C32	35.5	226	144	166	60					
SD36-4D-C32	36	229	146	169	60					
SD36.5-4D-C32	36.5	231	148	171	60					
SD37-4D-C32	37	233	150	173	60					
SD37.5-4D-C32	37.5	236	152	176	60					
SD38-4D-C32	38	234.5	154	174.5	60					
SD38.5-4D-C32	38.5	236.5	156	176.5	60					
SD39-4D-C32	39	240	158	180	60					
SD39.5-4D-C32	39.5	239	160	179	60					
SD40-4D-C32	40	240	162	180	60					
SD40.5-4D-C32	40.5	241	164	181	60					
SD41-4D-C32	41	246	166	186	60					
SD41.5-4D-C32	41.5	245	168	185	60					
SD42-4D-C40	42	265	170	195	70	G 1/4	40	WCMT 08 04 12	M4.0X10	T15
SD42.5-4D-C40	42.5	267	172	197	70					
SD43-4D-C40	43	269	174	199	70					
SD43.5-4D-C40	43.5	271	176	201	70					
SD44-4D-C40	44	273	178	203	70					
SD44.5-4D-C40	44.5	275	180	205	70					
SD45-4D-C40	45	277	182	207	70					
SD45.5-4D-C40	45.5	279	184	209	70					
SD46-4D-C40	46	281	186	211	70					
SD46.5-4D-C40	46.5	283	188	213	70					
SD47-4D-C40	47	285	190	215	70					
SD47.5-4D-C40	47.5	287	192	217	70					
SD48-4D-C40	48	289	194	219	70					
SD48.5-4D-C40	48.5	291	196	221	70					
SD49-4D-C40	49	293	198	223	70					
SD49.5-4D-C40	49.5	295	200	225	70					
SD50-4D-C40	50	297	202	227	70					
SD50.5-4D-C40	50.5	299	204	229	70					
SD51-4D-C40	51	301	206	231	70					
SD52-4D-C40	52	305	210	235	70					
SD53-4D-C40	53	309	214	239	70					
SD54-4D-C40	54	313	218	243	70					
SD55-4D-C40	55	317	222	247	70					
SD56-4D-C40	56	321	226	251	70					
SD57-4D-C40	57	325	230	255	70					
SD58-4D-C40	58	329	234	259	70					
SD59-4D-C40	59	333	238	263	70					
SD60-4D-C40	60	337	242	267	70					
SD65-4D-C40	65	363.5	262	293.5	70	G 1/4	40	WCMT 06 T3 08	M3.5X10	T15
SD68-4D-C40	68	376	274	306	70					
SD70-4D-C40	70	372	282	302	70					



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WC刀片 5D

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench					
	ΦD	L	L1	L2	L3	M	Φd								
SD14-5D-C25	14	149	72	93	56	G 1/8	25	WCMX 03 02 08	M2.5X5	T8					
SD14.5-5D-C25	14.5	151.5	74.5	95.5	56	G 1/8	25	WCMX 03 02 08	M2.5X6	T8					
SD15-5D-C25	15	152	77	96	56										
SD15.5-5D-C25	15.5	154.5	79.5	98.5	56										
SD16-5D-C25	16	157	82	101	56										
SD16.5-5D-C25	16.5	159.5	84.5	103.5	56										
SD17-5D-C25	17	162	87	106	56										
SD17.5-5D-C25	17.5	164.5	89.5	108.5	56										
SD18-5D-C25	18	167	92	111	56										
SD18.5-5D-C25	18.5	169.5	94.5	113.5	56										
SD19-5D-C25	19	170	97	114	56										
SD19.5-5D-C25	19.5	172.5	99.5	116.5	56										
SD20-5D-C25	20	175.5	102	119.5	56	G 1/8	25	WCMX 04 02 08	M2.5X6	T8					
SD20.5-5D-C25	20.5	178.5	104.5	122.5	56										
SD21-5D-C25	21	181	107	125	56										
SD21.5-5D-C25	21.5	183.5	109.5	127.5	56										
SD22-5D-C25	22	186	112	130	56										
SD22.5-5D-C25	22.5	188.5	114.5	132.5	56										
SD23-5D-C25	23	191	117	135	56										
SD23.5-5D-C25	23.5	193.5	119.5	137.5	56										
SD24-5D-C25	24	196	122	140	56						G 1/8	25	WCMX 04 02 08	M2.5X6	T8
SD24.5-5D-C25	24.5	198.5	124.5	142.5	56										
SD25-5D-C25	25	202	127	146	56										
SD25-5D-C32	25	211	127	151	60	G 1/4	32	WCMT 05 03 08	M3.0X8	T8					
SD25.5-5D-C32	25.5	213.5	129.5	153.5	60										
SD26-5D-C32	26	216	132	156	60										
SD26.5-5D-C32	26.5	218.5	134.5	158.5	60										
SD27-5D-C32	27	221	137	161	60										
SD27.5-5D-C32	27.5	223.5	139.5	163.5	60										
SD28-5D-C32	28	226	142	166	60										
SD28.5-5D-C32	28.5	228.5	144.5	168.5	60										
SD29-5D-C32	29	231	147	171	60										
SD29.5-5D-C32	29.5	233.5	149.5	173.5	60										
SD30-5D-C32	30	236	152	176	60	G 1/4	32	WCMT 06 T3 08	M3.5X10	T15					
SD30.5-5D-C32	30.5	237.5	154.5	177.5	60										
SD31-5D-C32	31	240	157	180	60										
SD31.5-5D-C32	31.5	241.5	159.5	181.5	60										
SD32-5D-C32	32	245	162	185	60										
SD32.5-5D-C32	32.5	246.5	164.5	186.5	60										
SD33-5D-C32	33	250	167	190	60										
SD33.5-5D-C32	33.5	251.5	169.5	191.5	60										

U钻 U drill

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WC刀片 5D

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd			
SD34-5D-C32	34	254	172	194	60	G 1/4	32	WCMT 06 T3 08	M3.5X10	T15
SD34.5-5D-C32	34.5	255.5	174.5	195.5	60					
SD35-5D-C32	35	260	177	200	60					
SD35.5-5D-C32	35.5	261.5	179.5	201.5	60					
SD36-5D-C32	36	265	182	205	60					
SD36.5-5D-C32	36.5	267.5	184.5	207.5	60					
SD37-5D-C32	37	270	187	210	60					
SD37.5-5D-C32	37.5	273.5	189.5	213.5	60					
SD38-5D-C32	38	272.5	192	212.5	60					
SD38.5-5D-C32	38.5	275	194.5	215	60					
SD39-5D-C32	39	279	197	219	60					
SD39.5-5D-C32	39.5	278.5	199.5	218.5	60					
SD40-5D-C32	40	280	202	220	60					
SD40.5-5D-C32	40.5	281.5	204.5	221.5	60					
SD41-5D-C32	41	287	207	227	60					
SD41.5-5D-C32	41.5	286.5	209.5	226.5	60					
SD42-5D-C40	42	307	212	237	70	G 1/4	40	WCMT 08 04 12	M4.0X10	T15
SD42.5-5D-C40	42.5	309.5	214.5	239.5	70					
SD43-5D-C40	43	312	217	242	70					
SD43.5-5D-C40	43.5	314.5	219.5	244.5	70					
SD44-5D-C40	44	317	222	247	70					
SD44.5-5D-C40	44.5	319.5	224.5	249.5	70					
SD45-5D-C40	45	322	227	252	70					
SD45.5-5D-C40	45.5	324.5	229.5	254.5	70					
SD46-5D-C40	46	327	232	257	70					
SD46.5-5D-C40	46.5	329.5	234.5	259.5	70					
SD47-5D-C40	47	332	137	262	70					
SD47.5-5D-C40	47.5	334.5	239.5	264.5	70					
SD48-5D-C40	48	337	242	267	70					
SD48.5-5D-C40	48.5	339.5	244.5	269.5	70					
SD49-5D-C40	49	342	247	272	70					
SD49.5-5D-C40	49.5	344.5	249.5	274.5	70					
SD50-5D-C40	50	347	252	277	70					
SD50.5-5D-C40	50.5	349.5	254.5	279.5	70					
SD51-5D-C40	51	352	257	282	70					
SD52-5D-C40	52	257	262	287	70					
SD53-5D-C40	53	362	267	292	70					
SD54-5D-C40	54	367	272	297	70					
SD55-5D-C40	55	372	277	302	70					
SD56-5D-C40	56	377	282	307	70					
SD57-5D-C40	57	382	287	312	70					
SD58-5D-C40	58	387	292	317	70					
SD59-5D-C40	59	392	297	322	70					
SD60-5D-C40	60	397	302	327	70					
SD65-5D-C40	65	428.5	327	358.5	70	G 1/4	40	WCMT 06 T3 08	M3.5X10	T15
SD68-5D-C40	68	444	342	374	70					
SD70-5D-C40	70	442	352	372	70					

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可换钻尖钻头

组合钻

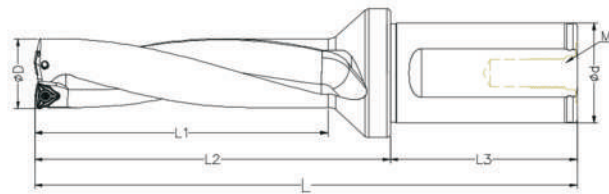
带定心U钻

VMD大钻头

模块系统

U钻 U drill

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WC刀片 2D-C20

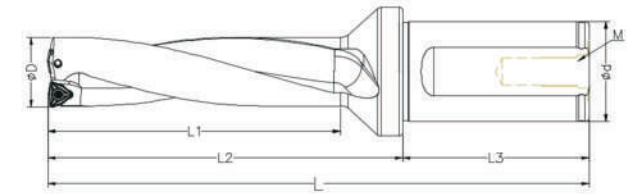
型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd			
SD14-2D-C20	14	101	30	51	50	G 1/8	20	WCMX 03 02 08	M2.5X5	T8
SD14.5-2D-C20	14.5	102	31	52	50	G 1/8	20	WCMX 03 02 08	M2.5X6	T8
SD15-2D-C20	15	101	32	51	50					
SD15.5-2D-C20	15.5	102	33	52	50					
SD16-2D-C20	16	103	34	53	50					
SD16.5-2D-C20	16.5	104	35	54	50					
SD17-2D-C20	17	105	36	55	50					
SD17.5-2D-C20	17.5	106	37	56	50					
SD18-2D-C20	18	107	38	57	50					
SD18.5-2D-C20	18.5	108	39	58	50					
SD19-2D-C20	19	107	40	57	50					
SD19.5-2D-C20	19.5	108	41	58	50					
SD20-2D-C20	20	109.5	42	59.5	50	G 1/8	20	WCMX 04 02 08	M2.5X6	T8
SD20.5-2D-C20	20.5	111	43	61	50					
SD21-2D-C20	21	112	44	62	50					
SD21.5-2D-C20	21.5	113	45	63	50					
SD22-2D-C20	22	114	46	64	50					
SD22.5-2D-C20	22.5	115	47	65	50					
SD23-2D-C20	23	116	48	66	50					
SD23.5-2D-C20	23.5	117	49	67	50					

WC刀片 3D-20

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd			
SD14-3D-C20	14	115	44	65	50	G 1/8	20	WCMX 03 02 08	M2.5X5	T8
SD14.5-3D-C20	14.5	116.5	45.5	66.5	50	G 1/8	20	WCMX 03 02 08	M2.5X6	T8
SD15-3D-C20	15	116	47	66	50					
SD15.5-3D-C20	15.5	117.5	48.5	67.5	50					
SD16-3D-C20	16	119	50	69	50					
SD16.5-3D-C20	16.5	120.5	51.5	70.5	50					
SD17-3D-C20	17	122	53	72	50					
SD17.5-3D-C20	17.5	123.5	54.5	73.5	50					
SD18-3D-C20	18	125	56	75	50					
SD18.5-3D-C20	18.5	126.5	57.5	76.5	50					
SD19-3D-C20	19	126	59	76	50					
SD19.5-3D-C20	19.5	127.5	60.5	77.5	50					
SD20-3D-C20	20	129.5	62	79.5	50	G 1/8	20	WCMX 04 02 08	M2.5X6	T8
SD20.5-3D-C20	20.5	131.5	63.5	81.5	50					
SD21-3D-C20	21	133	65	83	50					
SD21.5-3D-C20	21.5	134.5	66.5	84.5	50					
SD22-3D-C20	22	136	68	86	50					
SD22.5-3D-C20	22.5	137.5	69.5	87.5	50					
SD23-3D-C20	23	139	71	89	50					
SD23.5-3D-C20	23.5	140.5	72.5	90.5	50					

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WC刀片 4D-C20

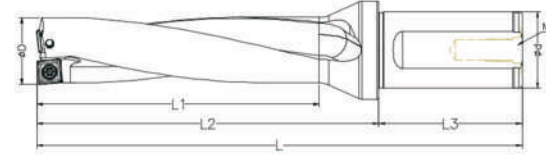
型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd			
SD14-4D-C20	14	129	58	79	50	G 1/8	20	WCMX 03 02 08	M2.5X5	T8
SD14.5-4D-C20	14.5	131	60	81	50	G 1/8	20	WCMX 03 02 08	M2.5X6	T8
SD15-4D-C20	15	131	62	81	50					
SD15.5-4D-C20	15.5	133	64	83	50					
SD16-4D-C20	16	135	66	85	50					
SD16.5-4D-C20	16.5	137	68	87	50					
SD17-4D-C20	17	139	70	89	50					
SD17.5-4D-C20	17.5	141	72	91	50					
SD18-4D-C20	18	143	74	93	50					
SD18.5-4D-C20	18.5	145	76	95	50					
SD19-4D-C20	19	145	78	95	50					
SD19.5-4D-C20	19.5	147	80	97	50					
SD20-4D-C20	20	149.5	82	99.5	50	G 1/8	20	WCMX 04 02 08	M2.5X6	T8
SD20.5-4D-C20	20.5	152	84	102	50					
SD21-4D-C20	21	154	86	104	50					
SD21.5-4D-C20	21.5	156	88	106	50					
SD22-4D-C20	22	158	90	108	50					
SD22.5-4D-C20	22.5	160	92	110	50					
SD23-4D-C20	23	162	94	112	50					
SD23.5-4D-C20	23.5	164	96	114	50					

WC刀片 5D-C20

型号 Code No	尺寸 Size							刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd			
SD14-5D-C20	14	143	72	93	50	G 1/8	20	WCMX 03 02 08	M2.5X5	T8
SD14.5-5D-C20	14.5	145.5	74.5	95.5	50	G 1/8	20	WCMX 03 02 08	M2.5X6	T8
SD15-5D-C20	15	146	77	96	50					
SD15.5-5D-C20	15.5	148.5	79.5	98.5	50					
SD16-5D-C20	16	151	82	101	50					
SD16.5-5D-C20	16.5	153.5	84.5	103.5	50					
SD17-5D-C20	17	156	87	106	50					
SD17.5-5D-C20	17.5	158.5	89.5	108.5	50					
SD18-5D-C20	18	161	92	111	50					
SD18.5-5D-C20	18.5	163.5	94.5	113.5	50					
SD19-5D-C20	19	164	97	114	50					
SD19.5-5D-C20	19.5	166.5	99.5	116.5	50					
SD20-5D-C20	20	169.5	102	119.5	50	G 1/8	20	WCMX 04 02 08	M2.5X6	T8
SD20.5-5D-C20	20.5	172.5	104.5	122.5	50					
SD21-5D-C20	21	175	107	125	50					
SD21.5-5D-C20	21.5	177.5	109.5	127.5	50					
SD22-5D-C20	22	180	112	130	50					
SD22.5-5D-C20	22.5	182.5	114.5	132.5	50					
SD23-5D-C20	23	185	117	135	50					
SD23.5-5D-C20	23.5	187.5	119.5	137.5	50					



U钻 U drill



SP刀片 2D

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP10-2D-C20	10	83	22	33	50	G 1/8	20	SPGT 04 T1 02	M1. 8X4	T6
SP10.5-2D-C20	10.5	84	23	34	50					
SP11-2D-C20	11	85	24	35	50					
SP11.5-2D-C20	11.5	86	25	36	50					
SP12-2D-C20	12	87	26	37	50					
SP12.5-2D-C20	12.5	96	27	46	50	G 1/8	20	SPMG 05 02 04	M2. 2X5	T6
SP13-2D-C20	13	97	28	47	50					
SP13.5-2D-C20	13.5	98	29	48	50					
SP14-2D-C25	14	107	30	51	56	G 1/8	25	SPMG 06 02 04	M2. 2X6	T7
SP14.5-2D-C25	14.5	108	31	52	56					
SP15-2D-C25	15	109	32	53	56					
SP15.5-2D-C25	15.5	110	33	54	56					
SP16-2D-C25	16	111	34	55	56	G 1/8	25	SPMG 07 T3 08	M2. 5X8	T8
SP16.5-2D-C25	16.5	112	35	56	56					
SP17-2D-C25	17	111	36	55	56					
SP17.5-2D-C25	17.5	112	37	56	56					
SP18-2D-C25	18	112	38	56	56					
SP18.5-2D-C25	18.5	113	39	57	56					
SP19-2D-C25	19	113	40	57	56					
SP19.5-2D-C25	19.5	114	41	58	56					
SP20-2D-C25	20	117	42	61	56					
SP20.5-2D-C25	20.5	118	43	62	56					
SP21-2D-C25	21	119	44	63	56	G 1/8	25	SPMG 07 T3 08	M2. 5X8	T8
SP21.5-2D-C25	21.5	120	45	64	56					
SP22-2D-C25	22	121	46	65	56					
SP22.5-2D-C25	22.5	122	47	66	56					
SP23-2D-C25	23	123	48	67	56					
SP23.5-2D-C25	23.5	124	49	68	56	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP24-2D-C25	24	125	50	69	56					
SP24.5-2D-C25	24.5	126	51	70	56					
SP25-2D-C25	25	128	52	72	56					
SP25-2D-C32	25	137	52	77	60					
SP25.5-2D-C32	25.5	138	53	78	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP26-2D-C32	26	139	54	79	60					
SP26.5-2D-C32	26.5	140	55	80	60					
SP27-2D-C32	27	141	56	81	60					
SP27.5-2D-C32	27.5	142	57	82	60					
SP28-2D-C32	28	143	58	83	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP28.5-2D-C32	28.5	144	59	84	60					
SP29-2D-C32	29	145	60	85	60					
SP29.5-2D-C32	29.5	146	61	86	60					

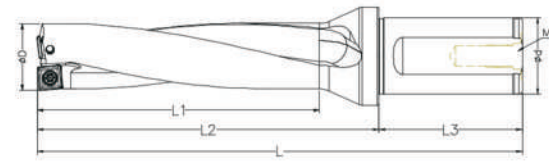
U钻 U drill

SP刀片 2D

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP30-2D-C32	30	144	62	84	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP30.5-2D-C32	30.5	145	63	85	60					
SP31-2D-C32	31	146	64	86	60					
SP31.5-2D-C32	31.5	147	65	87	60					
SP32-2D-C32	32	148	66	88	60					
SP32.5-2D-C32	32.5	149	67	89	60					
SP33-2D-C32	33	150	68	90	60					
SP33.5-2D-C32	33.5	151	69	91	60					
SP34-2D-C32	34	156	70	96	60	G 1/4	32	SPMG 11 04 08	M4X10	T15
SP34.5-2D-C32	34.5	157	71	97	60					
SP35-2D-C32	35	158	72	98	60					
SP35.5-2D-C32	35.5	159	73	99	60					
SP36-2D-C32	36	160	74	100	60					
SP36.5-2D-C32	36.5	161	75	101	60					
SP37-2D-C32	37	161	76	101	60					
SP37.5-2D-C32	37.5	162	77	102	60					
SP38-2D-C32	38	163	78	103	60					
SP38.5-2D-C32	38.5	164	79	104	60					
SP39-2D-C32	39	165	80	105	60	G 1/4	40	SPMG 14 05 12	M5X12	T20
SP39.5-2D-C32	39.5	166	81	106	60					
SP40-2D-C32	40	167	82	107	60					
SP40.5-2D-C32	40.5	168	83	108	60					
SP41-2D-C32	41	169	84	109	60					
SP42-2D-C40	42	179	86	109	70					
SP43-2D-C40	43	181	88	111	70					
SP44-2D-C40	44	186	90	116	70					
SP45-2D-C40	45	188	92	118	70					
SP46-2D-C40	46	191	94	121	70					
SP47-2D-C40	47	193	96	123	70	G 1/4	40	SPMG 07 T3 08	M2. 5X8	T8
SP48-2D-C40	48	195	98	125	70					
SP49-2D-C40	49	197	100	127	70					
SP50-2D-C40	50	199	102	129	70					
SP51-2D-C40	51	201	104	131	70					
SP52-2D-C40	52	203	106	133	70	G 1/4	40	SPMG 09 04 08	M3. 5X10	T15
SP53-2D-C40	53	205	108	135	70					
SP54-2D-C40	54	207	110	137	70					
SP55-2D-C40	55	209	112	139	70					
SP56-2D-C40	56	211	114	141	70					
SP57-2D-C40	57	213	116	143	70	G 1/4	40	SPMG 09 04 08	M3. 5X10	T15
SP58-2D-C40	58	215	118	145	70					
SP59-2D-C40	59	218	120	148	70					
SP60-2D-C40	60	220	122	150	70					

U钻 U drill

U 钻



SP刀片 3D

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP10-3D-C20	10	93	32	43	50	G 1/8	20	SPGT 04 T1 02	M1. 8X4	T6
SP10.5-3D-C20	10.5	94.5	33.5	44.5	50					
SP11-3D-C20	11	96	35	46	50					
SP11.5-3D-C20	11.5	97.5	36.5	47.5	50					
SP12-3D-C20	12	99	38	49	50					
SP12.5-3D-C20	12.5	108.5	39.5	58.5	50	G 1/8	20	SPMG 05 02 04	M2. 2X5	T6
SP13-3D-C20	13	110	41	60	50					
SP13.5-3D-C20	13.5	111.5	42.5	61.5	50					
SP14-3D-C25	14	121	44	65	56	G 1/8	25	SPMG 06 02 04	M2. 2X6	T7
SP14.5-3D-C25	14.5	122.5	45.5	66.5	56					
SP15-3D-C25	15	124	47	68	56					
SP15.5-3D-C25	15.5	125.5	48.5	69.5	56					
SP16-3D-C25	16	127	50	71	56					
SP16.5-3D-C25	16.5	128.5	51.5	72.5	56	G 1/8	25	SPMG 07 T3 08	M2. 5X8	T8
SP17-3D-C25	17	128	53	72	56					
SP17.5-3D-C25	17.5	129.5	54.5	73.5	56					
SP18-3D-C25	18	130	56	74	56					
SP18.5-3D-C25	18.5	131.5	57.5	75.5	56					
SP19-3D-C25	19	132	59	76	56					
SP19.5-3D-C25	19.5	133.5	60.5	77.5	56					
SP20-3D-C25	20	137	62	81	56					
SP20.5-3D-C25	20.5	138.5	63.5	82.5	56					
SP21-3D-C25	21	140	65	84	56					
SP21.5-3D-C25	21.5	141.5	66.5	85.5	56	G 1/8	25	SPMG 07 T3 08	M2. 5X8	T8
SP22-3D-C25	22	143	68	87	56					
SP22.5-3D-C25	22.5	144.5	69.5	88.5	56					
SP23-3D-C25	23	146	71	90	56					
SP23.5-3D-C25	23.5	147.5	72.5	91.5	56					
SP24-3D-C25	24	149	74	93	56	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP24.5-3D-C25	24.5	150.5	75.5	94.5	56					
SP25-3D-C25	25	153	77	97	56					
SP25-3D-C32	25	162	77	102	60					
SP25.5-3D-C32	25.5	163.5	78.5	103.5	60					
SP26-3D-C32	26	165	80	105	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP26.5-3D-C32	26.5	166.5	81.5	106.5	60					
SP27-3D-C32	27	168	83	108	60					
SP27.5-3D-C32	27.5	169.5	84.5	109.5	60					
SP28-3D-C32	28	171	86	111	60					
SP28.5-3D-C32	28.5	172.5	87.5	122.5	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP29-3D-C32	29	174	89	114	60					
SP29.5-3D-C32	29.5	175.5	90.5	115.5	60					

铲钻

可换钻尖钻头

组合钻

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VMD大钻头

模块系统

U钻 U drill

U 钻

SP刀片 3D

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP30-3D-C32	30	174	92	114	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP30.5-3D-C32	30.5	175.5	93.5	115.5	60					
SP31-3D-C32	31	177	95	117	60					
SP31.5-3D-C32	31.5	178.5	96.5	118.5	60					
SP32-3D-C32	32	180	98	120	60					
SP32.5-3D-C32	32.5	181.5	99.5	121.5	60					
SP33-3D-C32	33	183	101	123	60					
SP33.5-3D-C32	33.5	184.5	102.5	124.5	60	G 1/4	32	SPMG 11 04 08	M4X10	T15
SP34-3D-C32	34	191.5	104	131.5	60					
SP34.5-3D-C32	34.5	191.5	105.5	131.5	60					
SP35-3D-C32	35	193	107	133	60					
SP35.5-3D-C32	35.5	194.5	108.5	134.5	60					
SP36-3D-C32	36	196	110	136	60					
SP36.5-3D-C32	36.5	197.5	111.5	137.5	60					
SP37-3D-C32	37	198	113	138	60					
SP37.5-3D-C32	37.5	199.5	114.5	139.5	60					
SP38-3D-C32	38	201	116	141	60					
SP38.5-3D-C32	38.5	202.5	117.5	142.5	60					
SP39-3D-C32	39	204	119	144	60					
SP39.5-3D-C32	39.5	205.5	120.5	145.5	60					
SP40-3D-C32	40	207	122	147	60					
SP40.5-3D-C32	40.5	208.5	123.5	148.5	60					
SP41-3D-C32	41	210	125	150	60					
SP42-3D-C40	42	221	128	151	70					
SP43-3D-C40	43	224	131	154	70					
SP44-3D-C40	44	230	134	160	70	G 1/4	40	SPMG 07 T3 08	M2. 5X8	T8
SP45-3D-C40	45	233	137	163	70					
SP46-3D-C40	46	237	140	167	70					
SP47-3D-C40	47	240	143	170	70					
SP48-3D-C40	48	243	146	173	70					
SP49-3D-C40	49	246	149	176	70	G 1/4	40	SPMG 09 04 08	M3. 5X10	T15
SP50-3D-C40	50	249	152	179	70					
SP51-3D-C40	51	252	155	182	70					
SP52-3D-C40	52	255	158	185	70					
SP53-3D-C40	53	258	161	188	70					
SP54-3D-C40	54	261	164	191	70					
SP55-3D-C40	55	264	167	194	70					
SP56-3D-C40	56	267	170	197	70					
SP57-3D-C40	57	270	173	200	70	G 1/4	40	SPMG 09 04 08	M3. 5X10	T15
SP58-3D-C40	58	273	176	203	70					
SP59-3D-C40	59	277	179	207	70					
SP60-3D-C40	60	280	182	210	70					

铲钻

可换钻尖钻头

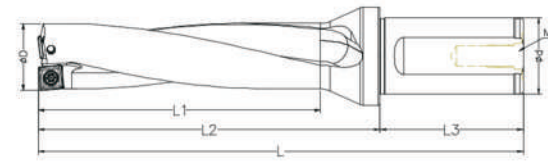
组合钻

带定心U钻

VMD大钻头

模块系统

U钻 U drill



SP刀片 4D

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP10-4D-C20	10	103	42	53	50	G 1/8	20	SPGT 04 T1 02	M1. 8X4	T6
SP10.5-4D-C20	10.5	105	44	55	50					
SP11-4D-C20	11	107	46	57	50					
SP11.5-4D-C20	11.5	109	48	59	50					
SP12-4D-C20	12	111	50	61	50					
SP12.5-4D-C20	12.5	121	52	71	50	G 1/8	20	SPMG 05 02 04	M2. 2X5	T6
SP13-4D-C20	13	123	54	73	50					
SP13.5-4D-C20	13.5	125	56	75	50					
SP14-4D-C25	14	135	58	79	56	G 1/8	25	SPMG 06 02 04	M2. 2X6	T7
SP14.5-4D-C25	14.5	137	60	81	56					
SP15-4D-C25	15	139	62	83	56					
SP15.5-4D-C25	15.5	141	64	85	56					
SP16-4D-C25	16	143	66	87	56					
SP16.5-4D-C25	16.5	145	68	89	56	G 1/8	25	SPMG 07 T3 08	M2. 5X8	T8
SP17-4D-C25	17	145	70	89	56					
SP17.5-4D-C25	17.5	147	72	91	56					
SP18-4D-C25	18	148	74	92	56					
SP18.5-4D-C25	18.5	150	76	94	56					
SP19-4D-C25	19	151	78	95	56					
SP19.5-4D-C25	19.5	153	80	97	56					
SP20-4D-C25	20	157	82	101	56					
SP20.5-4D-C25	20.5	159	84	103	56					
SP21-4D-C25	21	161	86	105	56					
SP21.5-4D-C25	21.5	163	88	107	56	G 1/8	25	SPMG 07 T3 08	M2. 5X8	T8
SP22-4D-C25	22	165	90	109	56					
SP22.5-4D-C25	22.5	167	92	111	56					
SP23-4D-C25	23	169	94	113	56					
SP23.5-4D-C25	23.5	171	96	115	56					
SP24-4D-C25	24	173	98	117	56	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP24.5-4D-C25	24.5	175	100	119	56					
SP25-4D-C25	25	178	102	122	56					
SP25-4D-C32	25	187	102	127	60					
SP25.5-4D-C32	25.5	189	104	129	60					
SP26-4D-C32	26	191	106	131	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP26.5-4D-C32	26.5	193	108	133	60					
SP27-4D-C32	27	195	110	135	60					
SP27.5-4D-C32	27.5	197	112	137	60					
SP28-4D-C32	28	199	114	139	60					
SP28.5-4D-C32	28.5	201	116	141	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP29-4D-C32	29	203	118	143	60					
SP29.5-4D-C32	29.5	205	120	145	60					

U钻 U drill

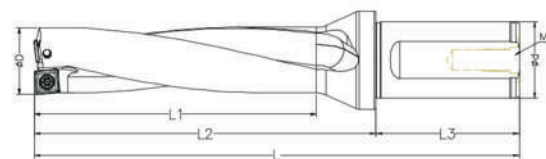
SP刀片 4D

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP30-4D-C32	30	204	122	144	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP30.5-4D-C32	30.5	206	124	146	60					
SP31-4D-C32	31	208	126	148	60					
SP31.5-4D-C32	31.5	210	128	150	60					
SP32-4D-C32	32	212	130	152	60					
SP32.5-4D-C32	32.5	214	132	154	60					
SP33-4D-C32	33	216	134	156	60					
SP33.5-4D-C32	33.5	218	136	158	60					
SP34-4D-C32	34	224	138	164	60	G 1/4	32	SPMG 11 04 08	M4X10	T15
SP34.5-4D-C32	34.5	226	140	166	60					
SP35-4D-C32	35	228	142	168	60					
SP35.5-4D-C32	35.5	230	144	170	60					
SP36-4D-C32	36	232	146	172	60					
SP36.5-4D-C32	36.5	234	148	174	60					
SP37-4D-C32	37	235	150	175	60					
SP37.5-4D-C32	37.5	237	152	177	60					
SP38-4D-C32	38	239	154	179	60					
SP38.5-4D-C32	38.5	241	156	181	60					
SP39-4D-C32	39	243	158	183	60	G 1/4	40	SPMG 14 05 12	M5X12	T20
SP39.5-4D-C32	39.5	245	160	185	60					
SP40-4D-C32	40	247	162	187	60					
SP40.5-4D-C32	40.5	249	164	189	60					
SP41-4D-C32	41	251	166	191	60					
SP42-4D-C40	42	263	170	193	70					
SP43-4D-C40	43	267	174	197	70					
SP44-4D-C40	44	274	178	204	70					
SP45-4D-C40	45	278	182	208	70					
SP46-4D-C40	46	283	186	213	70					
SP47-4D-C40	47	287	190	217	70	G 1/4	40	SPMG 07 T3 08	M2. 5X8	T8
SP48-4D-C40	48	291	194	221	70					
SP49-4D-C40	49	295	198	225	70					
SP50-4D-C40	50	299	202	229	70					
SP51-4D-C40	51	303	206	233	70					
SP52-4D-C40	52	307	210	237	70	G 1/4	40	SPMG 09 04 08	M3. 5X10	T15
SP53-4D-C40	53	311	214	241	70					
SP54-4D-C40	54	315	218	245	70					
SP55-4D-C40	55	319	222	249	70					
SP56-4D-C40	56	323	226	253	70					
SP57-4D-C40	57	327	230	257	70					
SP58-4D-C40	58	331	234	261	70	G 1/4	40	SPMG 09 04 08	M3. 5X10	T15
SP59-4D-C40	59	336	238	266	70					
SP60-4D-C40	60	340	242	270	70					



U钻 U drill

U 钻



SP刀片 5D

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP12.5-5D-C20	12.5	133.5	64.5	83.5	50	G 1/8	20	SPMG 05 02 04	M2. 2X5	T6
SP13-5D-C20	13	136	67	86	50					
SP13.5-5D-C20	13.5	138.5	69.5	88.5	50					
SP14-5D-C25	14	149	72	93	56	G 1/8	25			
SP14.5-5D-C25	14.5	151.5	74.5	95.5	56					
SP15-5D-C25	15	154	77	98	56					
SP15.5-5D-C25	15.5	156.5	79.5	100.5	56	G 1/8	25			
SP16-5D-C25	16	159	82	103	56					
SP16.5-5D-C25	16.5	161.5	84.5	105.5	56					
SP17-5D-C25	17	162	87	106	56					
SP17.5-5D-C25	17.5	164.5	89.5	108.5	56					
SP18-5D-C25	18	166	92	110	56					
SP18.5-5D-C25	18.5	168.5	94.5	112.5	56			G 1/8	25	
SP19-5D-C25	19	170	97	114	56					
SP19.5-5D-C25	19.5	172.5	99.5	116.5	56					
SP20-5D-C25	20	177	102	121	56			SPMG 06 02 04	M2. 2X6	T7
SP20.5-5D-C25	20.5	179.5	104.5	123.5	56					
SP21-5D-C25	21	182	107	126	56					
SP21.5-5D-C25	21.5	184.5	109.5	128.5	56					
SP22-5D-C25	22	187	112	131	56	G 1/8	25			
SP22.5-5D-C25	22.5	189.5	114.5	133.5	56					
SP23-5D-C25	23	192	117	136	56					
SP23.5-5D-C25	23.5	194.5	119.5	138.5	56	G 1/8	25			
SP24-5D-C25	24	197	122	141	56					
SP24.5-5D-C25	24.5	199.5	124.5	143.5	56					
SP25-5D-C25	25	203	127	147	56	SPMG 07 T3 08	M2. 5X8	T8		
SP25-5D-C32	25	212	127	152	60					
SP25.5-5D-C32	25.5	214.5	129.5	154.5	60					
SP26-5D-C32	26	217	132	157	60				G 1/4	32
SP26.5-5D-C32	26.5	219.5	134.5	159.5	60					
SP27-5D-C32	27	222	137	162	60					
SP27.5-5D-C32	27.5	224.5	139.5	164.5	60				G 1/4	32
SP28-5D-C32	28	227	142	167	60					
SP28.5-5D-C32	28.5	229.5	144.5	169.5	60					
SP29-5D-C32	29	232	147	172	60					
SP29.5-5D-C32	29.5	234.5	149.5	174.5	60					
SP30-5D-C32	30	234	152	174	60					
SP30.5-5D-C32	30.5	236.5	154.5	176.5	60					
SP31-5D-C32	31	239	157	179	60					
SP31.5-5D-C32	31.5	241.5	159.5	181.5	60					
SP32-5D-C32	32	244	162	184	60					

铲钻

可换钻尖钻头

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模块系统

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SP刀片 5D

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP32.5-5D-C32	32.5	246.5	164.5	186.5	60	G 1/4	32	SPMG 09 04 08	M3. 5X10	T15
SP33-5D-C32	33	249	167	189	60					
SP33.5-5D-C32	33.5	251.5	169.5	191.5	60					
SP34-5D-C32	34	258	172	198	60	G 1/4	32			
SP34.5-5D-C32	34.5	260.5	174.5	200.5	60					
SP35-5D-C32	35	263	177	203	60					
SP35.5-5D-C32	35.5	265.5	179.5	205.5	60					
SP36-5D-C32	36	268	182	208	60					
SP36.5-5D-C32	36.5	270.5	184.5	210.5	60					
SP37-5D-C32	37	272	187	212	60					
SP37.5-5D-C32	37.5	274.5	189.5	214.5	60					
SP38-5D-C32	38	277	192	217	60					
SP38.5-5D-C32	38.5	279.5	194.5	219.5	60					
SP39-5D-C32	39	282	197	222	60	G 1/4	32			
SP39.5-5D-C32	39.5	284.5	199.5	224.5	60					
SP40-5D-C32	40	287	202	227	60					
SP40.5-5D-C32	40.5	289.5	204.5	229.5	60					
SP41-5D-C32	41	292	207	232	60					
SP42-5D-C40	42	305	212	235	70			G 1/4	40	
SP43-5D-C40	43	310	217	240	70					
SP44-5D-C40	44	318	222	248	70					
SP45-5D-C40	45	323	227	253	70					
SP46-5D-C40	46	329	232	259	70					
SP47-5D-C40	47	334	237	264	70					
SP48-5D-C40	48	339	242	269	70					
SP49-5D-C40	49	344	247	274	70					
SP50-5D-C40	50	349	252	279	70					
SP51-5D-C40	51	354	257	284	70	G 1/4	40			
SP52-5D-C40	52	359	262	289	70					
SP53-5D-C40	53	364	267	294	70					
SP54-5D-C40	54	369	272	299	70	G 1/4	40			
SP55-5D-C40	55	374	277	304	70					
SP56-5D-C40	56	379	282	309	70					
SP57-5D-C40	57	384	287	314	70	G 1/4	40			
SP58-5D-C40	58	389	292	319	70					
SP59-5D-C40	59	395	297	325	70					
SP60-5D-C40	60	400	302	330	70					

铲钻

可换钻尖钻头

组合钻

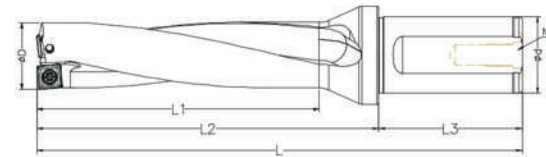
带定心U钻

VMD大钻头

模块系统

U钻 U drill

U 钻



SP刀片 2D-C20

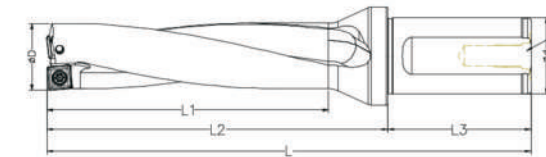
型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP14-2D-C20	14	98.5	30	48.5	50	G 1/8	20	SPMG 05 02 04	M2. 2X5	T6
SP14.5-2D-C20	14.5	100	31	50	50					
SP15-2D-C20	15	103	32	53	50					
SP15.5-2D-C20	15.5	104	33	54	50					
SP16-2D-C20	16	105	34	55	50					
SP16.5-2D-C20	16.5	106	35	56	50	G 1/8	20	SPMG 06 02 04	M2. 2X6	T7
SP17-2D-C20	17	105	36	55	50					
SP17.5-2D-C20	17.5	106	37	56	50					
SP18-2D-C20	18	106	38	56	50					
SP18.5-2D-C20	18.5	107	39	57	50					
SP19-2D-C20	19	107	40	57	50	G 1/8	20	SPMG 07 T3 08	M2. 5X8	T8
SP19.5-2D-C20	19.5	108	41	58	50					
SP20-2D-C20	20	111	42	61	50					
SP20.5-2D-C20	20.5	112	43	62	50					
SP21-2D-C20	21	113	44	63	50					
SP21.5-2D-C20	21.5	114	45	64	50	G 1/8	20	SPMG 07 T3 08	M2. 5X8	T8
SP22-2D-C20	22	115	46	65	50					
SP22.5-2D-C20	22.5	116	47	66	50					
SP23-2D-C20	23	117	48	67	50					
SP23.5-2D-C20	23.5	118	49	68	50					

SP刀片 3D-C20

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP14-3D-C20	14	112.5	44	62.5	50	G 1/8	20	SPMG 05 02 04	M2. 2X5	T6
SP14.5-3D-C20	14.5	114.5	45.5	64.5	50					
SP15-3D-C20	15	118	47	68	50					
SP15.5-3D-C20	15.5	119.5	48.5	69.5	50					
SP16-3D-C20	16	121	50	71	50					
SP16.5-3D-C20	16.5	122.5	51.5	72.5	50	G 1/8	20	SPMG 06 02 04	M2. 2X6	T7
SP17-3D-C20	17	122	53	72	50					
SP17.5-3D-C20	17.5	123.5	54.5	73.5	50					
SP18-3D-C20	18	124	56	74	50					
SP18.5-3D-C20	18.5	125.5	57.5	75.5	50					
SP19-3D-C20	19	126	59	76	50	G 1/8	20	SPMG 07 T3 08	M2. 5X8	T8
SP19.5-3D-C20	19.5	127.5	60.5	77.5	50					
SP20-3D-C20	20	131	62	81	50					
SP20.5-3D-C20	20.5	132.5	63.5	82.5	50					
SP21-3D-C20	21	134	65	84	50					
SP21.5-3D-C20	21.5	135.5	66.5	85.5	50	G 1/8	20	SPMG 07 T3 08	M2. 5X8	T8
SP22-3D-C20	22	137	68	87	50					
SP22.5-3D-C20	22.5	138.5	69.5	88.5	50					
SP23-3D-C20	23	140	71	90	50					
SP23.5-3D-C20	23.5	141.5	72.5	91.5	50					

U钻 U drill

U 钻



SP刀片 4D-C20

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP14-4D-C20	14	126.5	58	76.5	50	G 1/8	20	SPMG 05 02 04	M2. 2X5	T6
SP14.5-4D-C20	14.5	129	60	79	50					
SP15-4D-C20	15	133	62	83	50					
SP15.5-4D-C20	15.5	135	64	85	50					
SP16-4D-C20	16	137	66	87	50					
SP16.5-4D-C20	16.5	139	68	89	50	G 1/8	20	SPMG 06 02 04	M2. 2X6	T7
SP17-4D-C20	17	139	70	89	50					
SP17.5-4D-C20	17.5	141	72	91	50					
SP18-4D-C20	18	142	74	92	50					
SP18.5-4D-C20	18.5	144	76	94	50					
SP19-4D-C20	19	145	78	95	50	G 1/8	20	SPMG 07 T3 08	M2. 5X8	T8
SP19.5-4D-C20	19.5	147	80	97	50					
SP20-4D-C20	20	151	82	101	50					
SP20.5-4D-C20	20.5	153	84	103	50					
SP21-4D-C20	21	155	86	105	50					
SP21.5-4D-C20	21.5	157	88	107	50	G 1/8	20	SPMG 07 T3 08	M2. 5X8	T8
SP22-4D-C20	22	159	90	109	50					
SP22.5-4D-C20	22.5	161	92	111	50					
SP23-4D-C20	23	163	94	113	50					
SP23.5-4D-C20	23.5	165	96	115	50					

SP刀片 5D-C20

型号 Code No	尺寸 Size						刀片 Insert	螺钉 Clamp screw	扳手 Wrench	
	ΦD	L	L1	L2	L3	M				Φd
SP14-5D-C20	14	140.5	72	90.5	50	G 1/8	20	SPMG 05 02 04	M2. 2X5	T6
SP14.5-5D-C20	14.5	143.5	74.5	93.5	50					
SP15-5D-C20	15	148	77	98	50					
SP15.5-5D-C20	15.5	150.5	79.5	100.5	50					
SP16-5D-C20	16	153	82	103	50					
SP16.5-5D-C20	16.5	155.5	84.5	105.5	50	G 1/8	20	SPMG 06 02 04	M2. 2X6	T7
SP17-5D-C20	17	156	87	106	50					
SP17.5-5D-C20	17.5	158.5	89.5	108.5	50					
SP18-5D-C20	18	160	92	110	50					
SP18.5-5D-C20	18.5	162.5	94.5	112.5	50					
SP19-5D-C20	19	164	97	114	50	G 1/8	20	SPMG 07 T3 08	M2. 5X8	T8
SP19.5-5D-C20	19.5	166.5	99.5	116.5	50					
SP20-5D-C20	20	171	102	121	50					
SP20.5-5D-C20	20.5	173.5	104.5	123.5	50					
SP21-5D-C20	21	176	107	126	50					
SP21.5-5D-C20	21.5	178.5	109.5	128.5	50	G 1/8	20	SPMG 07 T3 08	M2. 5X8	T8
SP22-5D-C20	22	181	112	131	50					
SP22.5-5D-C20	22.5	183.5	114.5	133.5	50					
SP23-5D-C20	23	186	117	136	50					
SP23.5-5D-C20	23.5	188.5	119.5	138.5	50					



# 铲钻 Shovel drill

U 钻

铲钻

可换钻头

组合钻

带定心U钻

VMD大钻头

模块系统

## 铲钻的特征和优势

Characteristics and advantages of shovel drilling

### 介绍 Introduction

- 铲钻是川山甲新推出的一款可换刀片的机夹式钻头，根据直径、加工深度和材质不同，可以灵活切换。
- 铲钻可以在传统机床和数控机床上使用，在线更换钻尖，方便快捷效率大幅提高。
- 铲钻由刀杆和刀片用螺丝固定而组成，刀杆与刀片之间的高精度接口可以确保刀片装夹精度，且刀片更换方便，刀杆采用韧性好、耐磨性高的优质钢材，真空热处理调质加工而成；刀片采用进口高端粉末高速钢和硬质合金制造，切削刃口设计有断屑槽，刀尖有自定心刃口。刀杆采用内冷设计，可连接机床内冷系统。
- 铲钻效率高，操作简单，性价比高，其钻孔综合效率是普通麻花钻的2~5倍以上，寿命比普通麻花钻提高3~5倍。孔加工精度公差在+0.05~-0.05范围。加工深度可达25倍径。

- Shovel drill is a kind of machine clip drill with replaceable blade, which can be flexibly changed according to diameter, processing depth and material.
- Shovel drill can be used in traditional machine tools and CNC machine tools, on-line replacement drill tip, convenient and efficient greatly improved.
- Shovel drill is composed of knife bar and blade fixed with screws. The high-precision interface between the knife bar and blade can ensure the clamping accuracy of the blade, and the blade is easy to replace. The knife bar is made of high-quality steel with good toughness and high wear resistance, and is processed by vacuum heat treatment and tempering. The blade is made of imported high-end powder high speed steel and hard alloy. The cutting edge is designed with chip breaking groove, and the tip has self-centering edge. The tool rod adopts internal cooling design, which can be connected to the internal cooling system of the machine tool.
- Shovel drilling efficiency is high, the operation is simple, cost-effective, its comprehensive drilling efficiency is more than 2~5 times of ordinary twist drill, life than ordinary twist drill 3~5 times. The tolerance of hole machining accuracy is in the range of +0.05~-0.05. Machining depth up to 25 times diameter.

### 优势 Advantages

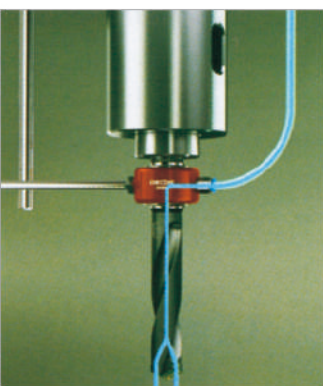
- 简单便捷的刀片接口，可在机床上在线更换刀片，节约刃磨时间。
- 刀片多款不同性能的涂层，可覆盖不锈钢、结构钢等各种金属和非金属材料的钻孔加工。
- 刀杆采用内冷却设计，在深孔钻削时也能及时将切屑排出以及良好冷却。
- 铲钻只需16个刀杆，就可以满足从Φ9.5mm~Φ114mm的钻孔需求，刀杆柄型有侧固式直柄和锥柄两大类，通用性强，与各种机床连接方便。

- Simple and convenient blade interface, blade can be replaced online on the machine tool, saving grinding time.
- The blades are coated with different properties, which can cover drilling of various metal and non-metal materials such as stainless steel and structural steel.
- The knife rod adopts internal cooling design, which can discharge chips in time and cool well when drilling deep holes.
- Shovel drill only 16 knife rod, can meet the drilling needs from  $\phi 9.5\text{mm} \sim \phi 114\text{mm}$ , knife rod handle type has two series of fixed straight handle and taper handle, strong versatility, and convenient connection with a variety of machine tools.

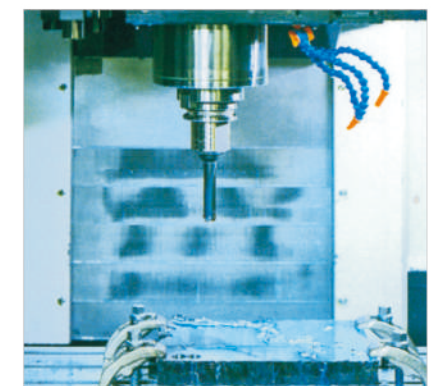
### 铲钻的选择 Spade drill selection

铲钻由刀杆和刀片组成，刀杆中心采用内冷却设计，一种刀杆规格可适配多个规格刀片，减少刀杆的购置成本。刀片有进口粉末高速钢和进口硬质合金两大系列请根据您的加工工况选择合适的类型。

The shovel drill is composed of a cutter bar and a blade. The center of the cutter bar is designed with internal cooling. A cutter bar specification can be adapted to multiple specifications of the blade, reducing the cost of the cutter bar. Blade imported powder HSS and imported hard alloy two series please choose the right type according to your processing conditions.



传统机床，请选择粉末高速钢系列  
For traditional machine tools, please choose powder high speed steel series.



CNC数控机床，中低速钻削时请选择粉末高速钢系列，高速钻削时请选择硬质合金系列。  
CNC machine tools, medium and low speed drilling please choose powder high speed steel series, please choose carbide series when high-speed drilling.

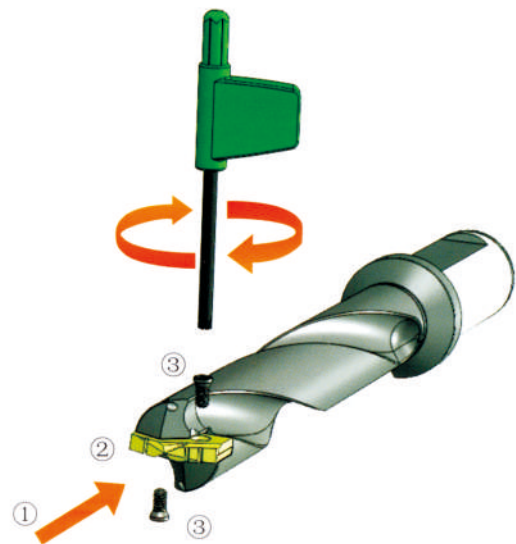




安装示意图

Instillation diagram

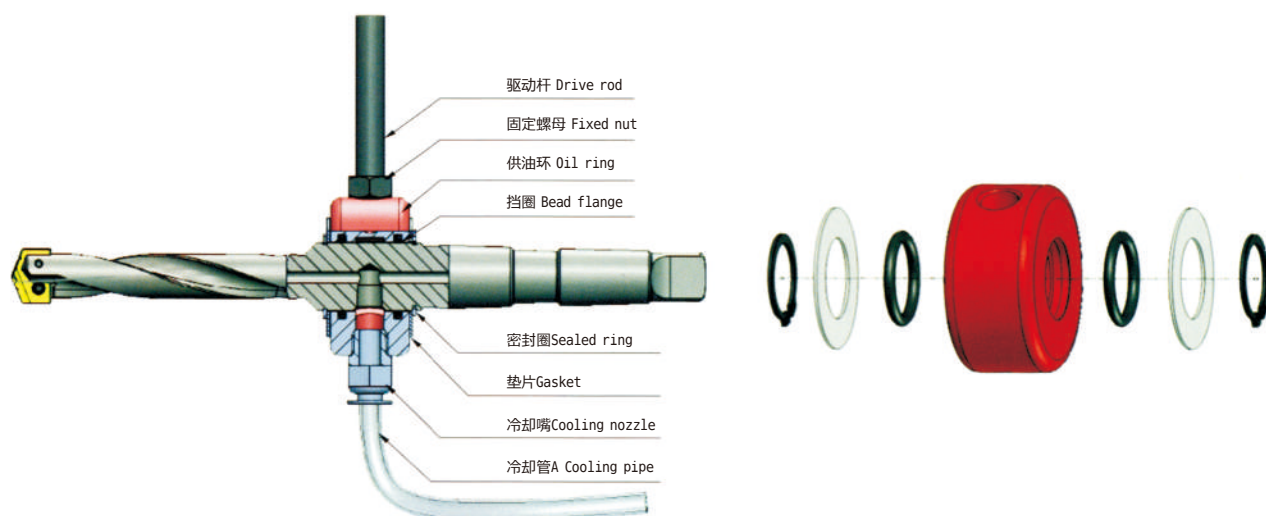
刀片的安装 Installation procedure



直径范围Φ Range of Diameter Φ	拧紧力矩(Nm) Tightening Torque (Nm)	扳手 Wrench
9.5-12.5	0.5	T7
13.0-17.5	1.0	T8
18.0-24.5	1.8	T9
25.0-35.5	3.5	T15
36.0-65.0	5.0	T20
66.0-114.0	7.0	T25

- ①用压缩空气清洁刀片和刀片槽。
  - ②将刀片插入刀杆安装槽内轻按刀片。
  - ③用紧固螺钉锁紧刀片。有条件的用户推荐采用力矩扳手锁紧，锁紧力矩值如图所示。
- ①First, clean the insert and mounting groove with compressed air.  
②Load the insert into the mounting groove in the holder and slightly push the insert.  
③Fix the insert with the fastening bolt. It is recommended that users use a torque wrench as far as possible and the tightening torques are shown in the figure.

供油环装配示意图 Schematic diagram of oil ring assembly



刀片介绍

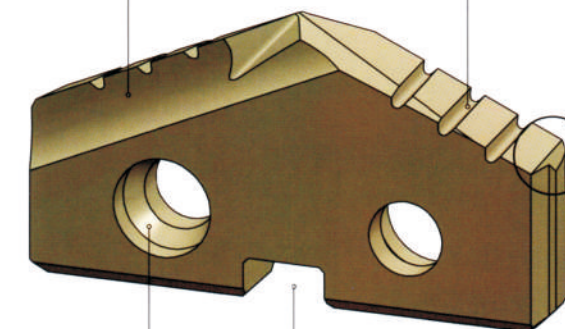
Blade introduction

Chip breaker

- 折断切屑、易于排屑
- Broken chips, easy to remove chips

Fix screw holes

- 安全可靠的装夹、确保钻削过程中的稳定性
- Safe and reliable clamping, Ensure the stability during drilling



分屑槽

Chip dividing groove

- 减小切屑宽度
- 易于排屑
- 减小钻削扭矩
- Reduce cutting width
- Better chip removal
- Reduce drilling torque

倒角

Beveling

- 增加刀片的强度
- 减少角的磨损
- 提高工件表面光洁度
- Increase the strength of insert
- Reduce the wear & tear of outer diameter
- Improve the smoothness on the surface of workpiece

定位槽

Location groove

- 保证径向的平衡
- Ensure the accuracy of the radial direction

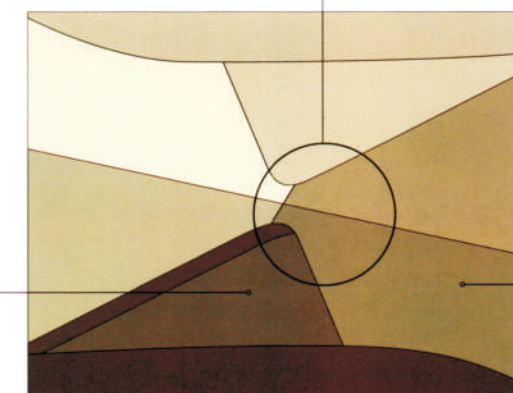
Core drilling

- 钻芯薄与一般钻头产品相比降低20%的轴向阻力
- 良好的自定心
- Thinner core drilling, which reduce 20% axial resistance compared with normal drilling products.
- Better self-centering

XR型横刃修磨

XR chisel edge regninding

- 提高刃口强度
- 增强稳定性
- Improve the strength of cutting edges
- Increase the stability



两个后刀面

TWO back flank surface

- 减少与工件的摩擦
- 良好的自定心
- 降低轴向阻力
- Reduce the friction with the workpiece
- Better self-centering
- Reduce the axial resistance

## 铲钻刀片

Spade drill insert

### 型号编码规则 Model coding rule

# SZ2-M0250-15XH

大类 Big type	小类 Small type	接口代码 Connector code			公英制 Metrical and Imperial	刀片直径 Insert diameter	材质 Material	几何 Geometry	涂层 Coating
		接口 Connector	公制 Metric	英制 Imperia					
S-铲钻	Z-刀片	Y	9.50~11.49	0.374" ~0.452"	M-公制	M0250-25mm	10-粉末高速钢	X-标准钻尖	H-C500
		Z	11.50~12.97	0.453" ~0.511"	I-英制	I0984-0.984"	15-含钴粉末高速钢	V-双顶角钻尖	A-C300
		0	12.98~17.85	0.511" ~0.703"			25-高钴粉末高速钢		
		1	17.86~24.60	0.703" ~0.969"	50-硬质合金				
		2	24.61~35.5	0.969" ~1.398"					
		3	35.51~47.99	1.398" ~1.889"					
		4	48.00~65.00	1.89" ~2.559"					
		5	63.50~76.99	2.5" ~3.031"					
		6	77.00~89.09	3.031" ~3.507"					
		7	89.10~101.60	3.508" ~4"					
8	101.61~114.30	4" ~4.5"							

## 铲钻刀杆

Spade drill insert

### 型号编码规则 Model coding rule

# SLH20-ML032-187N

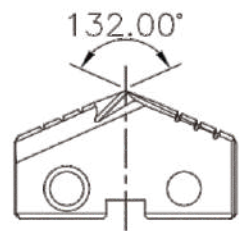
大类 Big type	小类 Small type	槽形 Groore spape	接口代码 Connector code			公英制 Metrical and Imperial	柄部类型 Petiole type	刀柄直径 The handle diameter	长度(L1) Length (L1)	表面处理 Surface treatment
			接口 Connector	公制 Metric	英制 Imperia					
S-铲钻	L-刀杆	H-螺旋槽	Y0	9.50~1.49	0.374" ~0.452"	M-公制	L-侧固式	016-∅16mm	实际刃长:	N-黑色
			Z0	11.50~12.97	0.453" ~0.511"	I-英制	M-莫氏锥柄	020-∅20mm	L1的尺寸	氧化
		00	12.98~15.49	0.511" ~0.61"			025-∅25mm		处理	
		05	15.50~17.85	0.61" ~0.703"			032-∅32mm		T-银灰色	
		10	17.86~21.99	0.703" ~0.866"			040-∅40mm		电镀	
		15	22.00~24.60	0.866" ~0.969"			075-3/4"		处理	
		20	24.61~29.99	0.969" ~1.181"			063-5/8"			
		25	30.00~35.50	1.181" ~1.398"			125-1-1/4"			
		30	35.51~41.99	1.398" ~1.653"			150-1-1/2"			
		35	42.00~47.99	1.654" ~1.889"			MT2-#2			
		40	48.00~55.99	1.89" ~2.204"			MT3-#3			
		45	56.00~63.49	2.205" ~2.5"			MT4-#4			
		50	63.50~76.99	2.5" ~3.031"			MT5-#5			
		60	77.00~89.09	3.031" ~3.507"						
		70	89.10~101.60	3.508" ~4"						
80	101.61~114.30	4" ~4.5"								

粉末高速钢刀片

HSS-PM insert series

HSS PM HPC

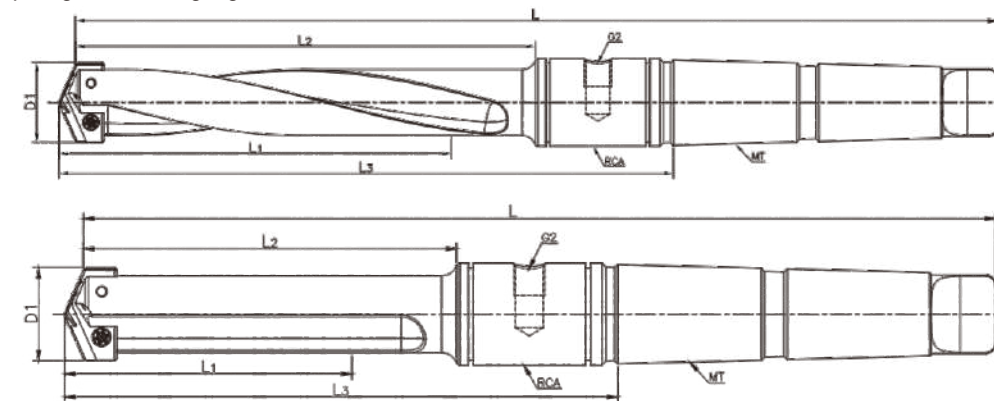
- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.



接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
Y	2.38 3/32"	9.50		0.374			SZY-M0095-25XH
		9.53	3/8"	0.375			SZY-I0375-25XH
		9.80		0.386			SZY-M0098-25XH
		10.00		0.394			SZY-M0100-25XH
		10.20		0.402			SZY-M0102-25XH
		10.50		0.413			SZY-M0105-25XH
		10.72	27/64"	0.422			SZY-I0421-25XH
		10.80		0.425			SZY-M0108-25XH
		11.00		0.433			SZY-M0110-25XH
		11.11	7/16"	0.437			SZY-I0437-25XH
Z	2.38 3/32"	11.50		0.453			SZZ-M0115-25XH
		11.51	29/64"	0.453			SZZ-I0453-25XH
		12.00		0.472			SZZ-M0120-25XH
		12.30	31/64"	0.484			SZZ-I0484-25XH
		12.50		0.492			SZZ-M0125-25XH
		12.70	1/2"	0.500			SZZ-I0500-25XH
0	3.18 1/8"	13.00		0.512	SZO-M0130-10XH	SZO-M0130-15XH	SZO-M0130-25XH
		13.50		0.531	SZO-M0135-10XH	SZO-M0135-15XH	SZO-M0135-25XH
		14.00		0.551	SZO-M0140-10XH	SZO-M0140-15XH	SZO-M0140-25XH
		14.29	9/16"	0.563	SZO-I0562-10XH	SZO-I0562-15XH	SZO-I0562-25XH
		14.50		0.571	SZO-M0145-10XH	SZO-M0145-15XH	SZO-M0145-25XH
		15.00		0.591	SZO-M0150-10XH	SZO-M0150-15XH	SZO-M0150-25XH
0	3.18 1/8"	15.50		0.610	SZO-M0155-10XH	SZO-M0155-15XH	SZO-M0155-25XH
		15.88	5/8"	0.625	SZO-I0625-10XH	SZO-I0625-15XH	SZO-I0625-25XH
		16.00		0.630	SZO-M0160-10XH	SZO-M0160-15XH	SZO-M0160-25XH
		16.50		0.650	SZO-M0165-10XH	SZO-M0165-15XH	SZO-M0165-25XH
		17.00		0.669	SZO-M0170-10XH	SZO-M0170-15XH	SZO-M0170-25XH
		17.46	11/16"	0.687	SZO-I0687-10XH	SZO-I0687-15XH	SZO-I0687-25XH
		17.50		0.689	SZO-M0175-10XH	SZO-M0175-15XH	SZO-M0175-25XH

锥柄螺旋槽/直槽刀杆

Taper shank spiral groove / straight groove Arbor



型号 Code No	接口 Connector	D1	L1	L2	L3	L	MT	G2	RCA		
SLHY0-MMMT2-32N	Y0	9.50~11.49 0.374"~0.452"	32	52	88	160	MT2	1/16"	SH-1905R	M2X4	T7X35
<b>SLSY0-MMMT2-32N</b>			<b>32</b>	<b>52</b>	<b>88</b>	<b>160</b>					
SLHY0-MMMT2-60N			60	80	117	189					
SLHY0-MMMT2-111N			111	131	167	240					
SLHZ0-MMMT2-32N			Z0	11.50~12.97 0.453"~0.511"	32	52					
<b>SLSZ0-MMMT2-32N</b>	<b>32</b>	<b>52</b>			<b>88</b>	<b>160</b>					
SLHZ0-MMMT2-60N	60	80			117	189					
SLHZ0-MMMT2-111N	111	131			167	240					
SLH00-MMMT2-35N	00	12.98~15.49 0.511"~0.61"	35	56	92	164	MT2	1/16"	SH-1905R	M2.5X5.8	T8X40
<b>SLS00-MMMT2-35N</b>			<b>35</b>	<b>56</b>	<b>92</b>	<b>164</b>					
SLH00-MMMT2-64N			64	84	121	193					
SLH00-MMMT2-114N			114	135	172	244					
SLH00-MMMT2-178N			178	199	235	307					
SLH05-MMMT2-35N	05	15.50~17.85 0.61"~0.703"	35	56	92	164	MT2	1/16"	SH-1905R	M2.5X7	T8X40
<b>SLS05-MMMT2-35N</b>			<b>35</b>	<b>56</b>	<b>92</b>	<b>164</b>					
SLH05-MMMT2-64N			64	84	121	193					
SLH05-MMMT2-114N			114	135	172	244					
SLH05-MMMT2-178N			178	199	235	307					

注: SLH-螺旋槽 SLS-直槽

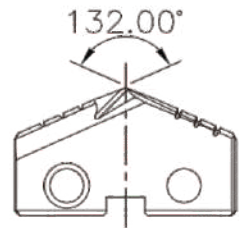


粉末高速钢刀片

HSS-PM insert series



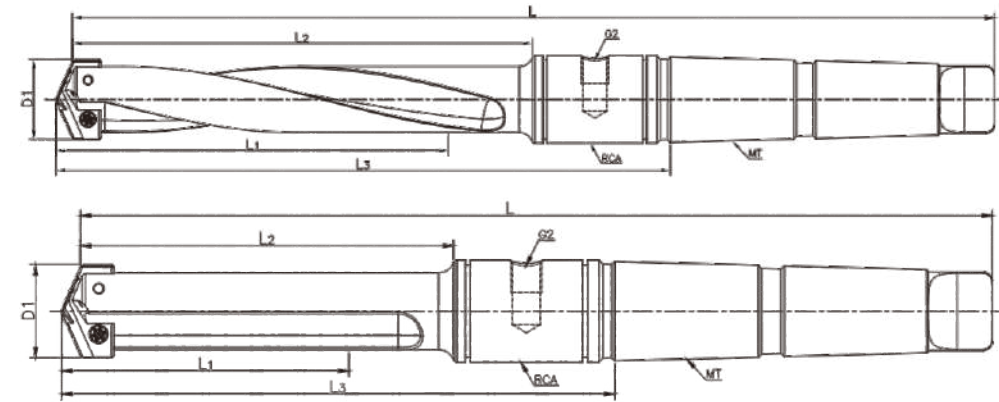
- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.



接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
1	3.97 5/32"	18.00		0.709	SZ1-M0180-10XH	SZ1-M0180-15XH	SZ1-M0180-25XH
		18.50		0.728	SZ1-M0185-10XH	SZ1-M0185-15XH	SZ1-M0185-25XH
		19.00		0.748	SZ1-M0190-10XH	SZ1-M0190-15XH	SZ1-M0190-25XH
		19.05	3/4"	0.750	SZ1-I0750-10XH	SZ1-I0750-15XH	SZ1-I0750-25XH
		19.50		0.768	SZ1-M0195-10XH	SZ1-M0195-15XH	SZ1-M0195-25XH
		20.00		0.787	SZ1-M0200-10XH	SZ1-M0200-15XH	SZ1-M0200-25XH
		20.50		0.807	SZ1-M0205-10XH	SZ1-M0205-15XH	SZ1-M0205-25XH
		20.64	13/16"	0.813	SZ1-I0812-10XH	SZ1-I0812-15XH	SZ1-I0812-25XH
		21.00		0.827	SZ1-M0210-10XH	SZ1-M0210-15XH	SZ1-M0210-25XH
1	3.97 5/32"	21.50		0.846	SZ1-M0215-10XH	SZ1-M0215-15XH	SZ1-M0215-25XH
		22.00		0.866	SZ1-M0220-10XH	SZ1-M0220-15XH	SZ1-M0220-25XH
		22.23	7/8"	0.875	SZ1-I0875-10XH	SZ1-I0875-15XH	SZ1-I0875-25XH
		23.00		0.906	SZ1-M0230-10XH	SZ1-M0230-15XH	SZ1-M0230-25XH
		23.81	15/16"	0.937	SZ1-I0937-10XH	SZ1-I0937-15XH	SZ1-I0937-25XH
2	4.76 3/16"	24.00		0.945	SZ1-M0240-10XH	SZ1-M0240-15XH	SZ1-M0240-25XH
		25.00		0.984	SZ2-M0250-10XH	SZ2-M0250-15XH	SZ2-M0250-25XH
		25.40	1"	1.000	SZ2-I1000-10XH	SZ2-I1000-15XH	SZ2-I1000-25XH
		26.00		1.024	SZ2-M0260-10XH	SZ2-M0260-15XH	SZ2-M0260-25XH
		26.99	1-1/16"	1.063	SZ2-I1062-10XH	SZ2-I1062-15XH	SZ2-I1062-25XH
		27.00		1.063	SZ2-M0270-10XH	SZ2-M0270-15XH	SZ2-M0270-25XH
		28.00		1.102	SZ2-M0280-10XH	SZ2-M0280-15XH	SZ2-M0280-25XH
2	4.76 3/16"	28.58	1-1/8"	1.125	SZ2-I1125-10XH	SZ2-I1125-15XH	SZ2-I1125-25XH
		29.00		1.142	SZ2-M0290-10XH	SZ2-M0290-15XH	SZ2-M0290-25XH
		30.00		1.181	SZ2-M0300-10XH	SZ2-M0300-15XH	SZ2-M0300-25XH
2	4.76 3/16"	30.16	1-3/16"	1.187	SZ2-I1187-10XH	SZ2-I1187-15XH	SZ2-I1187-25XH
		31.00		1.220	SZ2-M0310-10XH	SZ2-M0310-15XH	SZ2-M0310-25XH
		31.75	1-1/4"	1.250	SZ2-I1250-10XH	SZ2-I1250-15XH	SZ2-I1250-25XH
		32.00		1.260	SZ2-M0320-10XH	SZ2-M0320-15XH	SZ2-M0320-25XH
		33.00		1.299	SZ2-M0330-10XH	SZ2-M0330-15XH	SZ2-M0330-25XH
		33.34	1-5/16"	1.313	SZ2-I1312-10XH	SZ2-I1312-15XH	SZ2-I1312-25XH
		34.00		1.339	SZ2-M0340-10XH	SZ2-M0340-15XH	SZ2-M0340-25XH
		34.13	1-11/32"	1.344	SZ2-I1343-10XH	SZ2-I1343-15XH	SZ2-I1343-25XH
		34.93	1-3/8"	1.375	SZ2-I1375-10XH	SZ2-I1375-15XH	SZ2-I1375-25XH
		35.00		1.378	SZ2-M0350-10XH	SZ2-M0350-15XH	SZ2-M0350-25XH

锥柄螺旋槽/直槽刀杆

Taper shank spiral groove / straight groove Arbor



型号 Code No	接口 Connector	D1	L1	L2	L3	L	MT	G2	RCA		
SLH10-MMMT3-70N <b>SLS10-MMMT3-70N</b>	10	17.86~21.99 0.703"~0.866"	70	98	143	233	MT3	1/8"	SH-2540R	M3X7	T9X40
SLH10-MMMT3-121N			121	149	193	283					
SLH10-MMMT3-172N			172	200	244	334					
SLH10-MMMT3-273N			273	302	346	436					
SLH15-MMMT3-70N <b>SLS15-MMMT3-70N</b>			15	22.00~24.60 0.866"~0.969"	70	98					
SLH15-MMMT3-121N	121	149			193	283					
SLH15-MMMT3-172N	172	200			244	334					
SLH15-MMMT3-273N	273	302			346	436					
SLH20-MMMT4-86N <b>SLS20-MMMT3-86N</b>	20	24.61~29.99 0.969"~1.181"	86	114	160	274	MT4	1/8"	SH-2540R	M4X10	T15X45
SLH20-MMMT4-137N			137	165	211	325					
SLH20-MMMT4-187N			187	216	262	375					
SLH20-MMMT4-289N			289	318	364	477					
SLH25-MMMT4-86N <b>SLS25-MMMT3-86N</b>	25	30.00~35.50 1.181"~1.398"	86	114	168	281	MT4	1/4"	SH-3175R	M4X10	T15X45
SLH25-MMMT4-137N			137	165	218	332					
SLH25-MMMT4-187N			187	216	269	383					
SLH25-MMMT4-289N			289	318	371	484					
SLH25-MMMT4-400N			400	429	482	595					

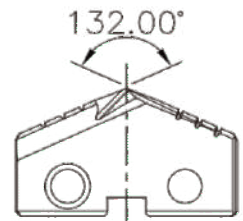
注: SLH-螺旋槽 SLS-直槽

粉末高速钢刀片

HSS-PM insert series

HSS PM HPC

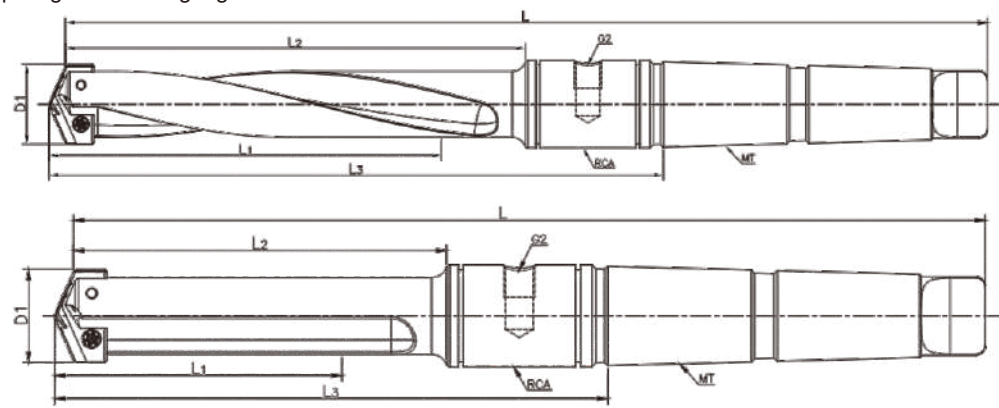
- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.



接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
3	6.35 1/4"	36.00		1.417	SZ3-M0360-10XH	SZ3-M0360-15XH	SZ3-M0360-25XH
		36.51	1-7/16"	1.437	SZ3-I1437-10XH	SZ3-I1437-15XH	SZ3-I1437-25XH
		37.00		1.457	SZ3-M0370-10XH	SZ3-M0370-15XH	SZ3-M0370-25XH
		38.00		1.496	SZ3-M0380-10XH	SZ3-M0380-15XH	SZ3-M0380-25XH
		38.10	1-1/2"	1.500	SZ3-I1500-10XH	SZ3-I1500-15XH	SZ3-I1500-25XH
		39.00		1.535	SZ3-M0390-10XH	SZ3-M0390-15XH	SZ3-M0390-25XH
		39.69	1-9/16"	1.563	SZ3-I1562-10XH	SZ3-I1562-15XH	SZ3-I1562-25XH
		40.00		1.575	SZ3-M0400-10XH	SZ3-M0400-15XH	SZ3-M0400-25XH
		41.00		1.614	SZ3-M0410-10XH	SZ3-M0410-15XH	SZ3-M0410-25XH
		41.28	1-5/8"	1.625	SZ3-I1625-10XH	SZ3-I1625-15XH	SZ3-I1625-25XH
3	6.35 1/4"	42.00		1.654	SZ3-M0420-10XH	SZ3-M0420-15XH	SZ3-M0420-25XH
		42.86	1-11/16"	1.687	SZ3-I1687-10XH	SZ3-I1687-15XH	SZ3-I1687-25XH
		43.00		1.693	SZ3-M0430-10XH	SZ3-M0430-15XH	SZ3-M0430-25XH
		44.00		1.732	SZ3-M0440-10XH	SZ3-M0440-15XH	SZ3-M0440-25XH
		44.45	1-3/4"	1.750	SZ3-I1750-10XH	SZ3-I1750-15XH	SZ3-I1750-25XH
		45.00		1.772	SZ3-M0450-10XH	SZ3-M0450-15XH	SZ3-M0450-25XH
		46.00		1.811	SZ3-M0460-10XH	SZ3-M0460-15XH	SZ3-M0460-25XH
		46.04	1-13/16"	1.813	SZ3-I1812-10XH	SZ3-I1812-15XH	SZ3-I1812-25XH
		47.00		1.850	SZ3-M0470-10XH	SZ3-M0470-15XH	SZ3-M0470-25XH
		47.63	1-7/8"	1.875	SZ3-I1875-10XH	SZ3-I1875-15XH	SZ3-I1875-25XH

锥柄螺旋槽/直槽刀杆

Taper shank spiral groove / straight groove Arbor



型号 Code No	接口 Connector	D1	L1	L2	L3	L	MT	G2	RCA									
SLH30-MMMT4-121N	30	35.51~41.99 1.398"~1.653"	121	152	206	319	MT4	1/4"	SH-3175R	M5X14	T20X45							
SLS30-MMMT4-121N			121	152	206	319												
SLH30-MMMT4-165N			165	197	251	364												
SLH30-MMMT4-210N			210	241	295	408												
SLH30-MMMT4-349N			349	381	435	548												
SLS30-MMMT4-349N			349	381	435	548												
SLS30-MMMT4-559N			559	591	645	757												
SLS30-MMMT4-787N			787	819	873	986												
SLH35-MMMT4-121N			35	42.00~47.99 1.654"~1.899"	121	152						206	319	MT4	1/4"	SH-3175R	M5X14	T20X45
SLS35-MMMT4-121N					121	152						206	319					
SLH35-MMMT4-165N	165	197			251	364												
SLH35-MMMT4-210N	210	241			295	408												
SLH35-MMMT4-349N	349	381			435	548												
SLS35-MMMT4-349N	349	381			435	548												
SLS35-MMMT4-559N	559	591			645	757												
SLS35-MMMT4-787N	787	819			873	986												

注: SLH-螺旋槽 SLS-直槽

# 铲钻 Shovel drill

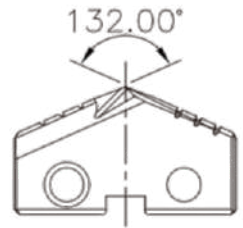
# 铲钻 Shovel drill

## 粉末高速钢刀片

HSS-PM insert series

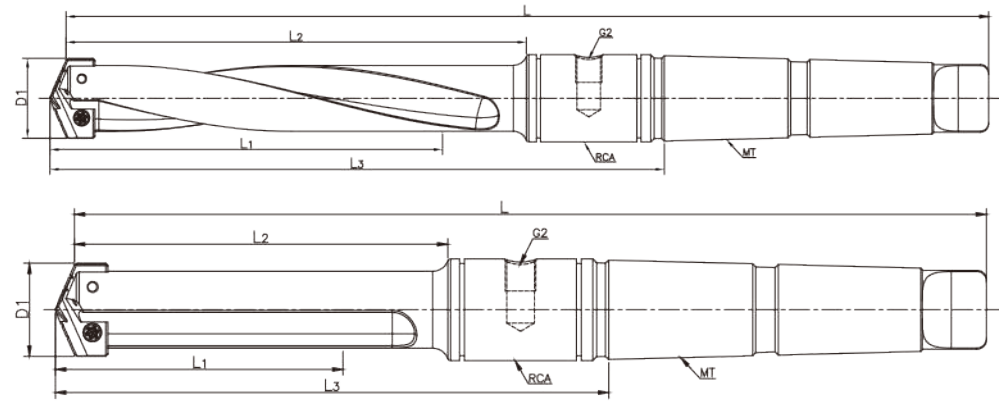


- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.



## 锥柄螺旋槽/直槽刀杆

Taper shank spiral groove / straight groove Arbor



接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
4	7.94 5/16"	48.00		1.890	SZ4-M0480-10XH	SZ4-M0480-15XH	SZ4-M0480-25XH
		49.21	1-15/16"	1.937	SZ4-I1937-10XH	SZ4-I1937-15XH	SZ4-I1937-25XH
		50.00		1.969	SZ4-M0500-10XH	SZ4-M0500-15XH	SZ4-M0500-25XH
		50.80	2"	2.000	SZ4-I2000-10XH	SZ4-I2000-15XH	SZ4-I2000-25XH
		51.00		2.008	SZ4-M0510-10XH	SZ4-M0510-15XH	SZ4-M0510-25XH
		52.00		2.047	SZ4-M0520-10XH	SZ4-M0520-15XH	SZ4-M0520-25XH
		52.39	2-1/16"	2.063	SZ4-I2062-10XH	SZ4-I2062-15XH	SZ4-I2062-25XH
		53.00		2.087	SZ4-M0530-10XH	SZ4-M0530-15XH	SZ4-M0530-25XH
		53.98	2-1/8"	2.125	SZ4-I2125-10XH	SZ4-I2125-15XH	SZ4-I2125-25XH
		54.00		2.126	SZ4-M0540-10XH	SZ4-M0540-15XH	SZ4-M0540-25XH
		55.00		2.165	SZ4-M0550-10XH	SZ4-M0550-15XH	SZ4-M0550-25XH
		55.56	2-3/16"	2.187	SZ4-I2187-10XH	SZ4-I2187-15XH	SZ4-I2187-25XH
4	7.94 5/16"	56.00		2.205	SZ4-M0560-10XH	SZ4-M0560-15XH	SZ4-M0560-25XH
		57.00		2.244	SZ4-M0570-10XH	SZ4-M0570-15XH	SZ4-M0570-25XH
		57.15	2-1/4"	2.250	SZ4-I2250-10XH	SZ4-I2250-15XH	SZ4-I2250-25XH
		58.00		2.283	SZ4-M0580-10XH	SZ4-M0580-15XH	SZ4-M0580-25XH
		58.74	2-5/16"	2.313	SZ4-I2312-10XH	SZ4-I2312-15XH	SZ4-I2312-25XH
		59.00		2.323	SZ4-M0590-10XH	SZ4-M0590-15XH	SZ4-M0590-25XH
		60.00		2.362	SZ4-M0600-10XH	SZ4-M0600-15XH	SZ4-M0600-25XH
		60.33	2-3/8"	2.375	SZ4-I2375-10XH	SZ4-I2375-15XH	SZ4-I2375-25XH
		61.00		2.402	SZ4-M0610-10XH	SZ4-M0610-15XH	SZ4-M0610-25XH
		61.91	2-7/16"	2.437	SZ4-I2437-10XH	SZ4-I2437-15XH	SZ4-I2437-25XH
		62.00		2.441	SZ4-M0620-10XH	SZ4-M0620-15XH	SZ4-M0620-25XH
		63.00		2.480	SZ4-M0630-10XH	SZ4-M0630-15XH	SZ4-M0630-25XH
63.50	2-1/2"	2.500	SZ4-I2500-10XH	SZ4-I2500-15XH	SZ4-I2500-25XH		
64.00		2.520	SZ4-M0640-10XH	SZ4-M0640-15XH	SZ4-M0640-25XH		
65.00		2.559	SZ4-M0650-10XH	SZ4-M0650-15XH	SZ4-M0650-25XH		
65.09	2-9/16"	2.563	SZ4-I2562-10XH	SZ4-I2562-15XH	SZ4-I2562-25XH		

型号 Code No	接口 Connector	D1	L1	L2	L3	L	MT	G2	RCA									
SLH40-MMMT5-130N	40	48.00~55.99 1.89"~2.204"	130	165	219	364	MT5	1/4"	SH-4445R	M5X14	T20X45							
SLS40-MMMT5-130N			130	165	219	364												
SLH40-MMMT5-232N			232	267	321	465												
SLH40-MMMT5-350N			350	385	439	583												
SLH40-MMMT5-422N			422	457	511	656												
SLS40-MMMT5-422N			422	457	511	656												
SLS40-MMMT5-625N			625	660	714	859												
SLS40-MMMT5-879N			879	914	968	1113												
SLH45-MMMT5-130N			45	56.00~65.19 2.205"~2.563"	130	165						219	364	MT5	1/4"	SH-4445R	M5X14	T20X45
SLS45-MMMT5-130N					130	165						219	364					
SLH45-MMMT5-232N	232	267			321	465												
SLH45-MMMT5-350N	350	385			439	583												
SLH45-MMMT5-422N	422	457			511	656												
SLS45-MMMT5-422N	422	457			511	656												
SLS45-MMMT5-625N	625	660			714	859												
SLS45-MMMT5-879N	879	914			968	1113												

注: SLH-螺旋槽 SLS-直槽



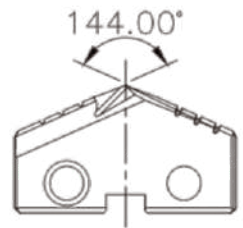
铲钻 Shovel drill

粉末高速钢刀片

HSS-PM insert series



- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.

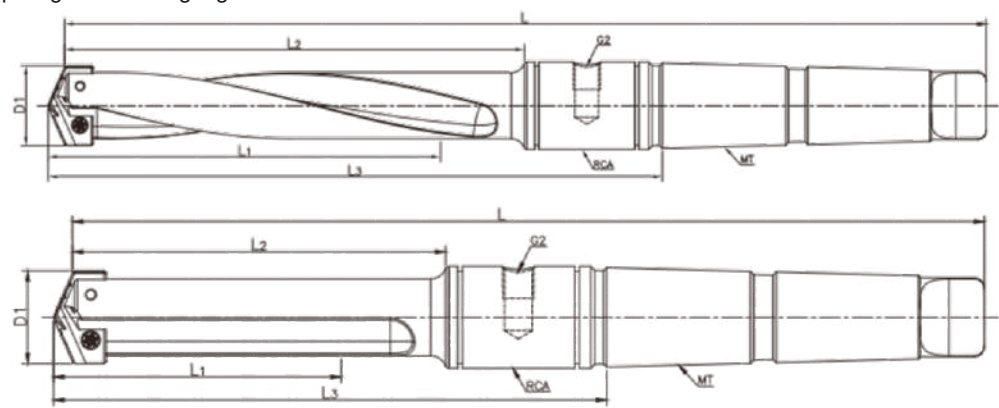


接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
5	11.11 7/16"	63.50	2-1/2"	2.500	SZ5-I2500-10XH	SZ5-I2500-15XH	
		64.00		2.520	SZ5-M0640-10XH	SZ5-M0640-15XH	
		65.00		2.559	SZ5-M0650-10XH	SZ5-M0650-15XH	
		65.09	2-9/16"	2.563	SZ5-I2562-10XH	SZ5-I2562-15XH	
		66.00		2.598	SZ5-M0660-10XH	SZ5-M0660-15XH	
		66.68	2-5/8"	2.625	SZ5-I2625-10XH	SZ5-I2625-15XH	
		68.00		2.677	SZ5-M0680-10XH	SZ5-M0680-15XH	
		70.00		2.756	SZ5-M0700-10XH	SZ5-M0700-15XH	
		71.44	2-13/16"	2.813	SZ5-I2812-10XH	SZ5-I2812-15XH	
		72.00		2.835	SZ5-M0720-10XH	SZ5-M0720-15XH	
		73.03	2-7/8"	2.875	SZ5-I2875-10XH	SZ5-I2875-15XH	
		74.00		2.913	SZ5-M0740-10XH	SZ5-M0740-15XH	
		74.61	2-15/16"	2.937	SZ5-I2937-10XH	SZ5-I2937-15XH	
		76.00		2.992	SZ5-M0760-10XH	SZ5-M0760-15XH	
		76.20	3"	3.000	SZ5-I3000-10XH	SZ5-I3000-15XH	
76.99	3-1/32"	3.031	SZ5-I3031-10XH	SZ5-I3031-15XH			
6	11.11 7/16"	77.00		3.031	SZ6-M0770-10XH	SZ6-M0770-15XH	
		77.79	3-1/16"	3.063	SZ6-I3062-10XH	SZ6-I3062-15XH	
		78.00		3.071	SZ6-M0780-10XH	SZ6-M0780-15XH	
		79.38	3-1/8"	3.125	SZ6-I3125-10XH	SZ6-I3125-15XH	
		80.00		3.150	SZ6-M0800-10XH	SZ6-M0800-15XH	
		80.96	3-3/16"	3.187	SZ6-I3187-10XH	SZ6-I3187-15XH	
		82.00		3.228	SZ6-M0820-10XH	SZ6-M0820-15XH	
		82.55	3-1/4"	3.250	SZ6-I3250-10XH	SZ6-I3250-15XH	
		84.00		3.307	SZ6-M0840-10XH	SZ6-M0840-15XH	
		84.14	3-5/16"	3.313	SZ6-I3312-10XH	SZ6-I3312-15XH	
		85.73	3-3/8"	3.375	SZ6-I3375-10XH	SZ6-I3375-15XH	
		86.00		3.386	SZ6-M0860-10XH	SZ6-M0860-15XH	
		87.31	3-7/16"	3.437	SZ6-I3437-10XH	SZ6-I3437-15XH	
		88.00		3.465	SZ6-M0880-10XH	SZ6-M0880-15XH	
		88.90	3-1/2"	3.500	SZ6-I3500-10XH	SZ6-I3500-15XH	
89.00		3.504	SZ6-M0890-10XH	SZ6-M0890-15XH			

铲钻 Shovel drill

锥柄螺旋槽/直槽刀杆

Taper shank spiral groove / straight groove Arbor



型号 Code No	接口 Connector	D1	L1	L2	L3	L	MT	G2	RCA									
SLH50-MMMT5-172N	50	63.50~76.99 2.5"~3.031"	172	216	287	430	MT5	1/2"	SH-5715R	M6X19	T25X100							
SLS50-MMMT5-172N			172	216	287	430												
SLH50-MMMT5-273N			273	318	389	532												
SLS50-MMMT5-368N			368	413	484	627												
SLH50-MMMT5-464N			464	508	579	722												
SLS50-MMMT5-464N			464	508	579	722												
SLS50-MMMT5-660N			660	705	776	919												
SLS50-MMMT5-889N			889	933	1005	1148												
SLH55-MMMT5-172N			55	77.00~89.09 3.031"~3.507"	172	216						287	430	MT5	1/2"	SH-5715R	M6X19	T25X100
SLS55-MMMT5-172N					172	216						287	430					
SLH55-MMMT5-273N	273	318			389	532												
SLH55-MMMT5-464N	464	508			579	722												
SLS55-MMMT5-464N	464	508			579	722												
SLS55-MMMT5-660N	660	705			776	919												
SLS55-MMMT5-889N	889	933			1005	1148												

注: SLH-螺旋槽 SLS-直槽

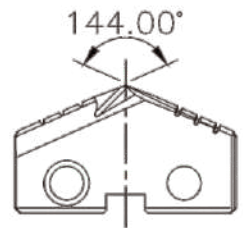
铲钻 Shovel drill

粉末高速钢刀片

HSS-PM insert series

HSS PM HPC

- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.

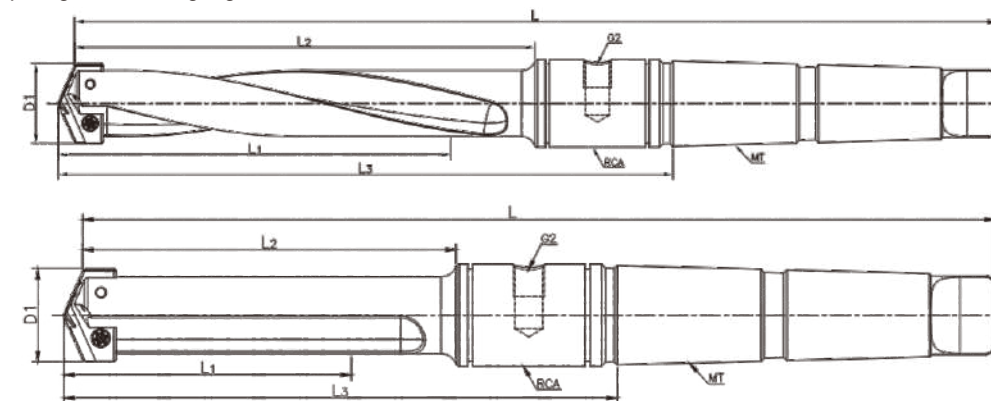


接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
7	11.11 7/16"	89.96	3-17/32"	3.542	SZ7-I3531-10XH	SZ7-I3531-15XH	
		90.00		3.543	SZ7-M0900-10XH	SZ7-M0900-15XH	
		90.49	3-9/16"	3.563	SZ7-I3562-10XH	SZ7-I3562-15XH	
		92.00		3.622	SZ7-M0920-10XH	SZ7-M0920-15XH	
		92.08	3-5/8"	3.625	SZ7-I3625-10XH	SZ7-I3625-15XH	
		93.66	3-11/16"	3.687	SZ7-I3687-10XH	SZ7-I3687-15XH	
		94.00		3.701	SZ7-M0940-10XH	SZ7-M0940-15XH	
		95.25	3-3/4"	3.750	SZ7-I3750-10XH	SZ7-I3750-15XH	
		96.00		3.780	SZ7-M0960-10XH	SZ7-M0960-15XH	
		96.84	3-13/16"	3.813	SZ7-I3812-10XH	SZ7-I3812-15XH	
		98.00		3.858	SZ7-M0980-10XH	SZ7-M0980-15XH	
		98.43	3-7/8"	3.875	SZ7-I3875-10XH	SZ7-I3875-15XH	
		100.00		3.937	SZ7-M1000-10XH	SZ7-M1000-15XH	
100.01	3-15/16"	3.937	SZ7-I3937-10XH	SZ7-I3937-15XH			
101.60	4"	4.000	SZ7-I4000-10XH	SZ7-I4000-15XH			
8	11.11 7/16"	102.00		4.016	SZ8-M1020-10XH	SZ8-M1020-15XH	
		104.00		4.094	SZ8-M1040-10XH	SZ8-M1040-15XH	
		104.78	4-1/8"	4.125	SZ8-I4125-10XH	SZ8-I4125-15XH	
		106.00		4.173	SZ8-M1060-10XH	SZ8-M1060-15XH	
		107.95	4-1/4"	4.250	SZ8-I4250-10XH	SZ8-I4250-15XH	
		108.00		4.252	SZ8-M1080-10XH	SZ8-M1080-15XH	
		110.00		4.331	SZ8-M1100-10XH	SZ8-M1100-15XH	
		112.00		4.409	SZ8-M1120-10XH	SZ8-M1120-15XH	
		114.00		4.488	SZ8-M1140-10XH	SZ8-M1140-15XH	
114.30	4-1/2"	4.500	SZ8-I4500-10XH	SZ8-I4500-15XH			

铲钻 Shovel drill

锥柄螺旋槽/直槽刀杆

Taper shank spiral groove / straight groove Arbor



型号 Code No	接口 Connector	D1	L1	L2	L3	L	MT	G2	RCA									
SLH70-MMMT5-172N	70	89.10~101.60 3.508"~4"	172	225	297	440	MT5	1/2"	SH-5715R	M6X19	T25X100							
SLS70-MMMT5-172N			172	225	297	440												
SLH70-MMMT5-273N			273	327	399	541												
SLH70-MMMT5-556N			556	610	681	824												
SLS70-MMMT5-556N			556	610	681	824												
SLS70-MMMT5-685N			685	740	811	954												
SLS70-MMMT5-939N			939	994	1065	1208												
SLH80-MMMT5-172N			80	101.61~114.30 4"~4.5"	172	225						297	440	MT5	1/2"	SH-5715R	M6X19	T25X100
SLS80-MMMT5-172N					172	225						297	440					
SLH80-MMMT5-273N	273	327			399	541												
SLH80-MMMT5-556N	556	610			681	824												
SLS80-MMMT5-556N	556	610			681	824												
SLS80-MMMT5-685N	685	740			811	954												
SLS80-MMMT5-939N	939	994			1065	1208												

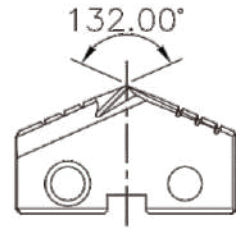
注: SLH-螺旋槽 SLS-直槽

粉末高速钢刀片

HSS-PM insert series

HSS PM HPC

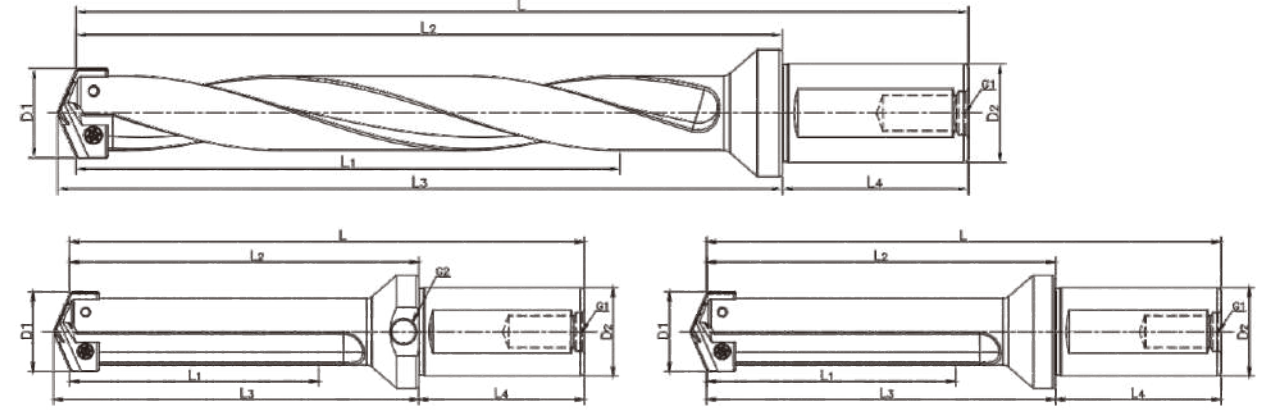
- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.



接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
Y	2.38 3/32"	9.50		0.374			SZY-M0095-25XH
		9.53	3/8"	0.375			SZY-I0375-25XH
		9.80		0.386			SZY-M0098-25XH
		10.00		0.394			SZY-M0100-25XH
		10.20		0.402			SZY-M0102-25XH
		10.50		0.413			SZY-M0105-25XH
		10.72	27/64"	0.422			SZY-I0421-25XH
		10.80		0.425			SZY-M0108-25XH
		11.00		0.433			SZY-M0110-25XH
		11.11	7/16"	0.437			SZY-I0437-25XH
Z	2.38 3/32"	11.50		0.453			SZZ-M0115-25XH
		11.51	29/64"	0.453			SZZ-I0453-25XH
		12.00		0.472			SZZ-M0120-25XH
		12.30	31/64"	0.484			SZZ-I0484-25XH
		12.50		0.492			SZZ-M0125-25XH
0	3.18 1/8"	12.70	1/2"	0.500			SZZ-I0500-25XH
		13.00		0.512	SZ0-M0130-10XH	SZ0-M0130-15XH	SZ0-M0130-25XH
		13.50		0.531	SZ0-M0135-10XH	SZ0-M0135-15XH	SZ0-M0135-25XH
		14.00		0.551	SZ0-M0140-10XH	SZ0-M0140-15XH	SZ0-M0140-25XH
		14.29	9/16"	0.563	SZ0-I0562-10XH	SZ0-I0562-15XH	SZ0-I0562-25XH
		14.50		0.571	SZ0-M0145-10XH	SZ0-M0145-15XH	SZ0-M0145-25XH
0	3.18 1/8"	15.00		0.591	SZ0-M0150-10XH	SZ0-M0150-15XH	SZ0-M0150-25XH
		15.50		0.610	SZ0-M0155-10XH	SZ0-M0155-15XH	SZ0-M0155-25XH
		15.88	5/8"	0.625	SZ0-I0625-10XH	SZ0-I0625-15XH	SZ0-I0625-25XH
		16.00		0.630	SZ0-M0160-10XH	SZ0-M0160-15XH	SZ0-M0160-25XH
		16.50		0.650	SZ0-M0165-10XH	SZ0-M0165-15XH	SZ0-M0165-25XH
		17.00		0.669	SZ0-M0170-10XH	SZ0-M0170-15XH	SZ0-M0170-25XH
		17.46	11/16"	0.687	SZ0-I0687-10XH	SZ0-I0687-15XH	SZ0-I0687-25XH
17.50		0.689	SZ0-M0175-10XH	SZ0-M0175-15XH	SZ0-M0175-25XH		

侧固式柄螺旋槽/直槽刀杆

Side fixed handle spiral groove / straight groove cutter bar



型号 Code No	接口 Connector	D1	L1	L2	L3	L	D2	L4	G1	G2		
SLSY0-ML016-19N	Y0	9.50~11.49 0.374"~0.452"	19	48	50	96	16	48	1/16"	1/8"	M2X4	T7X35
SLSY0-ML020-32N			32	61	64	111	20	50	1/8"			
SLHY0-ML020-60N			60	90	92	140	20	50	1/8"			
SLHY0-ML020-111N			111	141	143	191	20	50	1/8"			
SLSY0-ML020-222N			222	252	254	302	20	50	1/8"			
SLSY0-ML020-290N			290	320	322	370	20	50	1/8"			
SLSZ0-ML016-19N			Z0	11.50~12.97 0.453"~0.511"	19	48	50	96	16			
SLSZ0-ML020-32N	32	61			64	111	20	50	1/8"			
SLHZ0-ML020-60N	60	90			92	140	20	50	1/8"			
SLHZ0-ML020-111N	111	141			143	191	20	50	1/8"			
SLSZ0-ML020-222N	222	252			254	302	20	50	1/8"			
SLSZ0-ML020-290N	290	320			322	370	20	50	1/8"			
SLS00-ML020-22N	00	12.98~15.49 0.511"~0.61"	22	48	50	98	20	50	1/8"	1/8"	M2.5X5.8	T8X40
SLS00-ML020-35N			35	64	66	114						
SLH00-ML020-64N			64	92	95	142						
SLH00-ML020-114N			114	143	146	193						
SLH00-ML020-178N			178	206	209	256						
SLS00-ML020-240N			240	268	271	318						
SLS00-ML020-295N			295	324	327	374						
SLS00-ML020-387N	387	416	419	466								
SLS05-ML020-22N	05	15.50~17.85 0.61~0.703	22	48	50	98	20	50	1/8"	1/8"	M2.5X7	T8X40
SLS05-ML020-35N			35	64	66	114						
SLH05-ML020-64N			64	92	95	142						
SLH05-ML020-114N			114	143	146	193						
SLH05-ML020-178N			178	206	209	256						
SLS05-ML020-240N			240	268	271	318						
SLS05-ML020-295N			295	324	327	374						
SLS05-ML020-387N	387	416	419	466								

注: SLH-螺旋槽 SLS-直槽

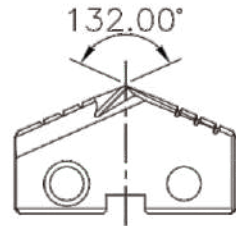


粉末高速钢刀片

HSS-PM insert series

HSS PM HPC

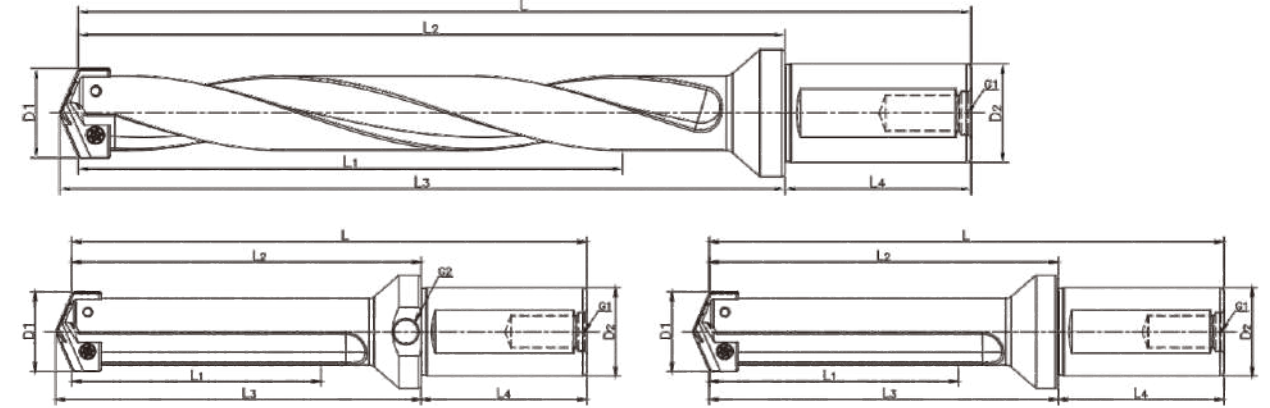
- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.



接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
1	3.97 5/32"	18.00		0.709	SZ1-M0180-10XH	SZ1-M0180-15XH	SZ1-M0180-25XH
		18.50		0.728	SZ1-M0185-10XH	SZ1-M0185-15XH	SZ1-M0185-25XH
		19.00		0.748	SZ1-M0190-10XH	SZ1-M0190-15XH	SZ1-M0190-25XH
		19.05	3/4"	0.750	SZ1-I0750-10XH	SZ1-I0750-15XH	SZ1-I0750-25XH
		19.50		0.768	SZ1-M0195-10XH	SZ1-M0195-15XH	SZ1-M0195-25XH
		20.00		0.787	SZ1-M0200-10XH	SZ1-M0200-15XH	SZ1-M0200-25XH
		20.50		0.807	SZ1-M0205-10XH	SZ1-M0205-15XH	SZ1-M0205-25XH
		20.64	13/16"	0.813	SZ1-I0812-10XH	SZ1-I0812-15XH	SZ1-I0812-25XH
		21.00		0.827	SZ1-M0210-10XH	SZ1-M0210-15XH	SZ1-M0210-25XH
		21.50		0.846	SZ1-M0215-10XH	SZ1-M0215-15XH	SZ1-M0215-25XH
1	3.97 5/32"	22.00		0.866	SZ1-M0220-10XH	SZ1-M0220-15XH	SZ1-M0220-25XH
		22.23	7/8"	0.875	SZ1-I0875-10XH	SZ1-I0875-15XH	SZ1-I0875-25XH
		23.00		0.906	SZ1-M0230-10XH	SZ1-M0230-15XH	SZ1-M0230-25XH
		23.81	15/16"	0.937	SZ1-I0937-10XH	SZ1-I0937-15XH	SZ1-I0937-25XH
		24.00		0.945	SZ1-M0240-10XH	SZ1-M0240-15XH	SZ1-M0240-25XH
2	4.76 3/16"	25.00		0.984	SZ2-M0250-10XH	SZ2-M0250-15XH	SZ2-M0250-25XH
		25.40	1"	1.000	SZ2-I1000-10XH	SZ2-I1000-15XH	SZ2-I1000-25XH
		26.00		1.024	SZ2-M0260-10XH	SZ2-M0260-15XH	SZ2-M0260-25XH
		26.99	1-1/16"	1.063	SZ2-I1062-10XH	SZ2-I1062-15XH	SZ2-I1062-25XH
		27.00		1.063	SZ2-M0270-10XH	SZ2-M0270-15XH	SZ2-M0270-25XH
		28.00		1.102	SZ2-M0280-10XH	SZ2-M0280-15XH	SZ2-M0280-25XH
		28.58	1-1/8"	1.125	SZ2-I1125-10XH	SZ2-I1125-15XH	SZ2-I1125-25XH
		29.00		1.142	SZ2-M0290-10XH	SZ2-M0290-15XH	SZ2-M0290-25XH
2	4.76 3/16"	30.00		1.181	SZ2-M0300-10XH	SZ2-M0300-15XH	SZ2-M0300-25XH
		30.16	1-3/16"	1.187	SZ2-I1187-10XH	SZ2-I1187-15XH	SZ2-I1187-25XH
		31.00		1.220	SZ2-M0310-10XH	SZ2-M0310-15XH	SZ2-M0310-25XH
		31.75	1-1/4"	1.250	SZ2-I1250-10XH	SZ2-I1250-15XH	SZ2-I1250-25XH
		32.00		1.260	SZ2-M0320-10XH	SZ2-M0320-15XH	SZ2-M0320-25XH
		33.00		1.299	SZ2-M0330-10XH	SZ2-M0330-15XH	SZ2-M0330-25XH
		33.34	1-5/16"	1.313	SZ2-I1312-10XH	SZ2-I1312-15XH	SZ2-I1312-25XH
		34.00		1.339	SZ2-M0340-10XH	SZ2-M0340-15XH	SZ2-M0340-25XH
		34.13	1-11/32"	1.344	SZ2-I1343-10XH	SZ2-I1343-15XH	SZ2-I1343-25XH
		34.93	1-3/8"	1.375	SZ2-I1375-10XH	SZ2-I1375-15XH	SZ2-I1375-25XH
35.00		1.378	SZ2-M0350-10XH	SZ2-M0350-15XH	SZ2-M0350-25XH		

侧固式柄螺旋槽/直槽刀杆

Side fixed handle spiral groove / straight groove cutter bar



型号 Code No	接口 Connector	D1	L1	L2	L3	L	D2	L4	G1	G2		
SLS10-ML025-48N	10	17.86~21.99 0.703"~0.866"	48	76	79	132	25	56	1/8"	1/8"	M3X7	T9X40
SLS10-ML025-67N			67	107	111	163						
SLH10-ML025-118N			118	155	158	211						
SLH10-ML025-168N			168	206	209	262						
SLH10-ML025-222N			222	260	263	316						
SLH10-ML025-270N			270	307	311	363						
SLS10-ML025-365N			365	402	406	458						
SLS10-ML025-457N			457	495	498	551						
SLS10-ML025-569N			569	603	606	659						
SLS15-ML025-48N			15	22.00~24.60 0.866"~0.969"	48	76						
SLS15-ML025-67N	67	107			111	163						
SLH15-ML025-118N	118	155			158	211						
SLH15-ML025-168N	168	206			209	262						
SLH15-ML025-222N	222	260			263	316						
SLH15-ML025-270N	270	307			311	363						
SLS15-ML025-365N	365	402			406	458						
SLS15-ML025-457N	457	495			498	551						
SLS15-ML025-569N	569	603			606	659						
SLS20-ML032-57N	20	24.61~29.99 0.969"~1.181"			57	89	92	149	32	60	1/4"	1/8"
SLS20-ML032-86N			86	129	132	189						
SLH20-ML032-137N			137	179	183	239						
SLH20-ML032-187N			187	230	234	290						
SLH20-ML032-237N			237	280	284	340						
SLH20-ML032-289N			289	332	335	392						
SLS20-ML032-400N			400	443	446	503						
SLS20-ML032-511N			511	554	558	618						
SLS20-ML032-492N			692	735	739	795						
SLS25-ML032-57N			25	30.00~35.50 1.181"~1.398"	57	89	92	149				
SLS25-ML032-86N	86	129			132	189						
SLH25-ML032-137N	137	179			183	239						
SLH25-ML032-187N	187	230			234	290						
SLH20-ML032-237N	237	280			284	340						
SLH25-ML032-289N	289	332			335	392						
SLS25-ML032-400N	400	443			446	503						
SLS25-ML032-511N	511	554			558	618						
SLS25-ML032-492N	692	735			739	795						

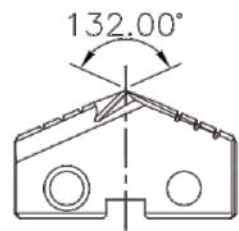
注: SLH-螺旋槽 SLS-直槽

粉末高速钢刀片

HSS-PM insert series

HSS PM HPC

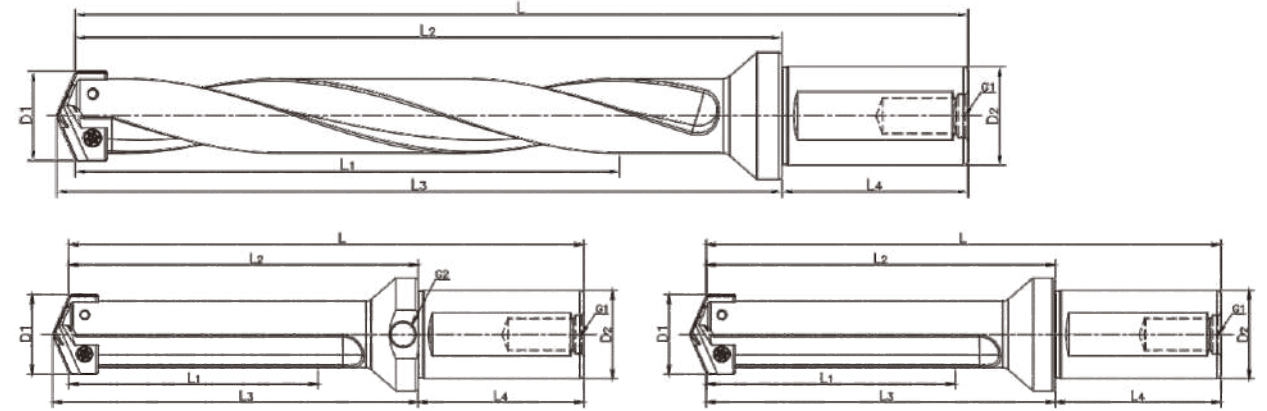
- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.



接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
3	6.35 1/4"	36.00		1.417	SZ3-M0360-10XH	SZ3-M0360-15XH	SZ3-M0360-25XH
		36.51	1-7/16"	1.437	SZ3-I1437-10XH	SZ3-I1437-15XH	SZ3-I1437-25XH
		37.00		1.457	SZ3-M0370-10XH	SZ3-M0370-15XH	SZ3-M0370-25XH
		38.00		1.496	SZ3-M0380-10XH	SZ3-M0380-15XH	SZ3-M0380-25XH
		38.10	1-1/2"	1.500	SZ3-I1500-10XH	SZ3-I1500-15XH	SZ3-I1500-25XH
		39.00		1.535	SZ3-M0390-10XH	SZ3-M0390-15XH	SZ3-M0390-25XH
		39.69	1-9/16"	1.563	SZ3-I1562-10XH	SZ3-I1562-15XH	SZ3-I1562-25XH
		40.00		1.575	SZ3-M0400-10XH	SZ3-M0400-15XH	SZ3-M0400-25XH
		41.00		1.614	SZ3-M0410-10XH	SZ3-M0410-15XH	SZ3-M0410-25XH
		41.28	1-5/8"	1.625	SZ3-I1625-10XH	SZ3-I1625-15XH	SZ3-I1625-25XH
3	6.35 1/4"	42.00		1.654	SZ3-M0420-10XH	SZ3-M0420-15XH	SZ3-M0420-25XH
		42.86	1-11/16"	1.687	SZ3-I1687-10XH	SZ3-I1687-15XH	SZ3-I1687-25XH
		43.00		1.693	SZ3-M0430-10XH	SZ3-M0430-15XH	SZ3-M0430-25XH
		44.00		1.732	SZ3-M0440-10XH	SZ3-M0440-15XH	SZ3-M0440-25XH
		44.45	1-3/4"	1.750	SZ3-I1750-10XH	SZ3-I1750-15XH	SZ3-I1750-25XH
		45.00		1.772	SZ3-M0450-10XH	SZ3-M0450-15XH	SZ3-M0450-25XH
		46.00		1.811	SZ3-M0460-10XH	SZ3-M0460-15XH	SZ3-M0460-25XH
		46.04	1-13/16"	1.813	SZ3-I1812-10XH	SZ3-I1812-15XH	SZ3-I1812-25XH
		47.00		1.850	SZ3-M0470-10XH	SZ3-M0470-15XH	SZ3-M0470-25XH
		47.63	1-7/8"	1.875	SZ3-I1875-10XH	SZ3-I1875-15XH	SZ3-I1875-25XH

侧固式柄螺旋槽/直槽刀杆

Side fixed handle spiral groove / straight groove cutter bar



型号 Code No	接口 Connector	D1	L1	L2	L3	L	D2	L4	G1	G2		
SLS30-ML040-76N	30	35.51~41.99 1.398"~1.653"	76	125	130	195	40	70	1/4"	1/4"	M5X14	T20X45
SLS30-ML040-121N			121	173	178	243						
SLH30-ML040-165N			165	218	222	288						
SLH30-ML040-210N			210	262	267	332						
SLH30-ML040-260N			260	312	317	382						
SLH30-ML040-349N			349	402	406	472						
SLS30-ML040-349N			349	402	406	472						
SLS30-ML040-559N			559	611	616	681						
SLS30-ML040-787N			787	840	845	910						
SLS35-ML040-76N			35	42.00~47.99 1.654"~1.899"	76	125						
SLS35-ML040-121N	121	173			178	243						
SLH35-ML040-165N	165	218			222	288						
SLH35-ML040-210N	210	262			267	332						
SLH35-ML040-260N	260	312			317	382						
SLH35-ML040-349N	349	402			406	472						
SLS35-ML040-349N	349	402			406	472						
SLS35-ML040-559N	559	611			616	681						
SLS35-ML040-787N	787	840			845	910						

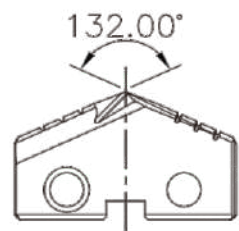
注: SLH-螺旋槽 SLS-直槽

粉末高速钢刀片

HSS-PM insert series

HSS PM HPC

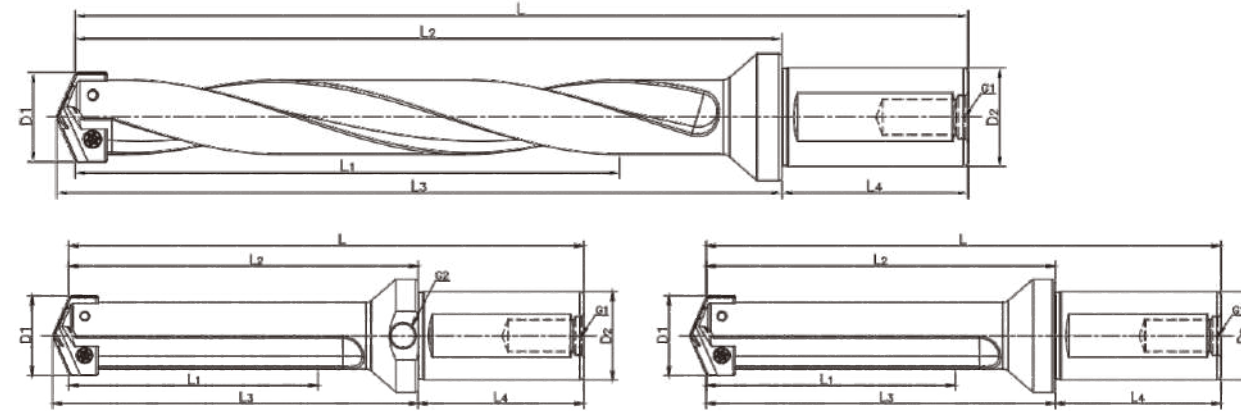
- HPM10 - 粉末高速钢, 适用于硬度HB275以下的钢材。  
Powder high speed steel, apply to process carbon steel with hardness is till Hb275;
- HPM15 - 含钴粉末高速钢, 适用于硬度HB350以下的钢、不锈钢、铸铁;  
Powder cobalt high speed steel apply to process carbon steel, stainless steel, cast iron and other materials which hardness is ill Hb350;
- HPM25 - 高钴粉末高速钢, 适用于硬度HB400以下的钢、不锈钢、铸铁。  
Powder cobalt-rich high speed steel, apply to process alloy steel stainless steel, cast iron and other materials which hardness is ill Hb400.



接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			可选刀片材质 Optional blade material		
		mm	Frcational Equivalent	inch	HPM10	HPM15	HPM25
4	7.94 5/16"	48.00		1.890	SZ4-M0480-10XH	SZ4-M0480-15XH	SZ4-M0480-25XH
		49.21	1-15/16"	1.937	SZ4-I1937-10XH	SZ4-I1937-15XH	SZ4-I1937-25XH
		50.00		1.969	SZ4-M0500-10XH	SZ4-M0500-15XH	SZ4-M0500-25XH
		50.80	2"	2.000	SZ4-I2000-10XH	SZ4-I2000-15XH	SZ4-I2000-25XH
		51.00		2.008	SZ4-M0510-10XH	SZ4-M0510-15XH	SZ4-M0510-25XH
		52.00		2.047	SZ4-M0520-10XH	SZ4-M0520-15XH	SZ4-M0520-25XH
		52.39	2-1/16"	2.063	SZ4-I2062-10XH	SZ4-I2062-15XH	SZ4-I2062-25XH
		53.00		2.087	SZ4-M0530-10XH	SZ4-M0530-15XH	SZ4-M0530-25XH
		53.98	2-1/8"	2.125	SZ4-I2125-10XH	SZ4-I2125-15XH	SZ4-I2125-25XH
		54.00		2.126	SZ4-M0540-10XH	SZ4-M0540-15XH	SZ4-M0540-25XH
		55.00		2.165	SZ4-M0550-10XH	SZ4-M0550-15XH	SZ4-M0550-25XH
		55.56	2-3/16"	2.187	SZ4-I2187-10XH	SZ4-I2187-15XH	SZ4-I2187-25XH
4	7.94 5/16"	56.00		2.205	SZ4-M0560-10XH	SZ4-M0560-15XH	SZ4-M0560-25XH
		57.00		2.244	SZ4-M0570-10XH	SZ4-M0570-15XH	SZ4-M0570-25XH
		57.15	2-1/4"	2.250	SZ4-I2250-10XH	SZ4-I2250-15XH	SZ4-I2250-25XH
		58.00		2.283	SZ4-M0580-10XH	SZ4-M0580-15XH	SZ4-M0580-25XH
		58.74	2-5/16"	2.313	SZ4-I2312-10XH	SZ4-I2312-15XH	SZ4-I2312-25XH
		59.00		2.323	SZ4-M0590-10XH	SZ4-M0590-15XH	SZ4-M0590-25XH
		60.00		2.362	SZ4-M0600-10XH	SZ4-M0600-15XH	SZ4-M0600-25XH
		60.33	2-3/8"	2.375	SZ4-I2375-10XH	SZ4-I2375-15XH	SZ4-I2375-25XH
		61.00		2.402	SZ4-M0610-10XH	SZ4-M0610-15XH	SZ4-M0610-25XH
		61.91	2-7/16"	2.437	SZ4-I2437-10XH	SZ4-I2437-15XH	SZ4-I2437-25XH
		62.00		2.441	SZ4-M0620-10XH	SZ4-M0620-15XH	SZ4-M0620-25XH
		63.00		2.480	SZ4-M0630-10XH	SZ4-M0630-15XH	SZ4-M0630-25XH
63.50	2-1/2"	2.500	SZ4-I2500-10XH	SZ4-I2500-15XH	SZ4-I2500-25XH		
64.00		2.520	SZ4-M0640-10XH	SZ4-M0640-15XH	SZ4-M0640-25XH		
65.00		2.559	SZ4-M0650-10XH	SZ4-M0650-15XH	SZ4-M0650-25XH		
65.09	2-9/16"	2.563	SZ4-I2562-10XH	SZ4-I2562-15XH	SZ4-I2562-25XH		

侧固式柄螺旋槽/直槽刀杆

Side fixed handle spiral groove / straight groove cutter bar



型号 Code No	接口 Connector	D1	L1	L2	L3	L	D2	L4	G1	G2										
SLS40-ML040-130N	40	48.00~55.99 1.89"~2.204"	130	179	184	249	40	70	1/4"	-	M5X14	T20X45								
SLH40-ML040-232N			232	281	286	351														
SLH40-ML040-350N			350	399	404	469														
SLH40-ML040-422N			422	472	476	542														
SLS40-ML040-422N			422	472	476	542														
SLS40-ML040-525N			525	575	579	645														
SLS40-ML040-625N			625	675	680	745														
SLS40-ML040-879N			879	929	934	999														
SLS45-ML040-130N			45	56.00~65.09 2.205"~2.563"	130	179							184	249	40	70	1/4"	-	M5X14	T20X45
SLH45-ML040-232N					232	281							286	351						
SLH45-ML040-350N	350	399			404	469														
SLH45-ML040-422N	422	472			476	542														
SLS45-ML040-422N	422	472			476	542														
SLS45-ML040-525N	525	575			579	645														
SLS45-ML040-625N	625	675			680	745														
SLS45-ML040-879N	879	929			934	999														

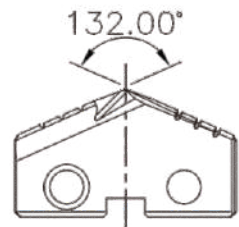
注: SLH-螺旋槽 SLS-直槽



铲钻 Shovel drill

硬质合金刀片

Carbide inseries

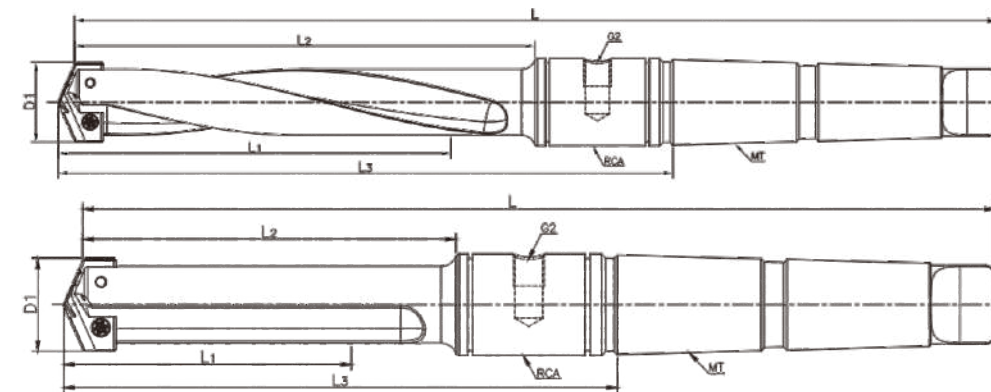


接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			应用 Application		
		mm	Frcationl Equivalent	inch	P	K	N
Y	2.38 3/32"	9.50		0.374	SZY-M0095-50XH	SZY-M0095-50CH	SZY-M0095-50SC
		9.53	3/8"	0.375	SZY-I0375-50XH	SZY-I0375-50CH	SZY-I0375-50SC
		9.80		0.386	SZY-M0098-50XH	SZY-M0098-50CH	SZY-M0098-50SC
		10.00		0.394	SZY-M0100-50XH	SZY-M0100-50CH	SZY-M0100-50SC
		10.20		0.402	SZY-M0102-50XH	SZY-M0102-50CH	SZY-M0102-50SC
		10.50		0.413	SZY-M0105-50XH	SZY-M0105-50CH	SZY-M0105-50SC
		10.72	27/64"	0.422	SZY-I0421-50XH	SZY-I0421-50CH	SZY-I0421-50SC
		10.80		0.425	SZY-M0108-50XH	SZY-M0108-50CH	SZY-M0108-50SC
		11.00		0.433	SZY-M0110-50XH	SZY-M0110-50CH	SZY-M0110-50SC
		11.11	7/16"	0.437	SZY-I0437-50XH	SZY-I0437-50CH	SZY-I0437-50SC
Z	2.38 3/32"	11.50		0.453	SZZ-M0115-50XH	SZZ-M0115-50CH	SZZ-M0115-50SC
		11.51	29/64"	0.453	SZZ-I0453-50XH	SZZ-I0453-50CH	SZZ-I0453-50SC
		12.00		0.472	SZZ-M0120-50XH	SZZ-M0120-50CH	SZZ-M0120-50SC
		12.30	31/64"	0.484	SZZ-I0484-50XH	SZZ-I0484-50CH	SZZ-I0484-50SC
		12.50		0.492	SZZ-M0125-50XH	SZZ-M0125-50CH	SZZ-M0125-50SC
		12.70	1/2"	0.500	SZZ-I0500-50XH	SZZ-I0500-50CH	SZZ-I0500-50SC
0	3.18 1/8"	13.00		0.512	SZO-M0130-50XH	SZO-M0130-50CH	SZO-M0130-50SC
		13.50		0.531	SZO-M0135-50XH	SZO-M0135-50CH	SZO-M0135-50SC
		14.00		0.551	SZO-M0140-50XH	SZO-M0140-50CH	SZO-M0140-50SC
		14.29	9/16"	0.563	SZO-I0562-50XH	SZO-I0562-50CH	SZO-I0562-50SC
		14.50		0.571	SZO-M0145-50XH	SZO-M0145-50CH	SZO-M0145-50SC
		15.00		0.591	SZO-M0150-50XH	SZO-M0150-50CH	SZO-M0150-50SC
0	3.18 1/8"	15.50		0.610	SZO-M0155-50XH	SZO-M0155-50CH	SZO-M0155-50SC
		15.88	5/8"	0.625	SZO-I0625-50XH	SZO-I0625-50CH	SZO-I0625-50SC
		16.00		0.630	SZO-M0160-50XH	SZO-M0160-50CH	SZO-M0160-50SC
		16.50		0.650	SZO-M0165-50XH	SZO-M0165-50CH	SZO-M0165-50SC
		17.00		0.669	SZO-M0170-50XH	SZO-M0170-50CH	SZO-M0170-50SC
		17.46	11/16"	0.687	SZO-I0687-50XH	SZO-I0687-50CH	SZO-I0687-50SC
		17.50		0.689	SZO-M0175-50XH	SZO-M0175-50CH	SZO-M0175-50SC

铲钻 Shovel drill

锥柄螺旋槽/直槽刀杆

Taper shank spiral groove / straight groove Arbor



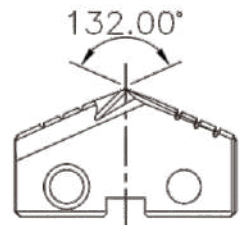
型号 Code No	接口 Connector	D1	L1	L2	L3	L	MT	G2	RCA		
SLHY0-MMMT2-32N <b>SLSY0-MMMT2-32N</b> SLHY0-MMMT2-60N SLHY0-MMMT2-111N	Y0	9.50~11.49 0.374"~0.452"	32 <b>32</b> 60 111	52 <b>52</b> 80 131	88 <b>88</b> 117 167	160 <b>160</b> 189 240	MT2	1/16"	SH-1905R	M2X4	T7X35
SLHZ0-MMMT2-32N <b>SLSZ0-MMMT2-32N</b> SLHZ0-MMMT2-60N SLHZ0-MMMT2-111N	Z0	11.50~12.97 0.453"~0.511"	32 <b>32</b> 60 111	52 <b>52</b> 80 131	88 <b>88</b> 117 167	160 <b>160</b> 189 240	MT2	1/16"	SH-1905R	M2X4.8	T7X35
SLH00-MMMT2-35N <b>SLS00-MMMT2-35N</b> SLH00-MMMT2-64N SLH00-MMMT2-114N SLH00-MMMT2-178N	00	12.98~15.49 0.511"~0.61"	35 <b>35</b> 64 114 178	56 <b>56</b> 84 135 199	92 <b>92</b> 121 172 235	164 <b>164</b> 193 244 307	MT2	1/16"	SH-1905R	M2.5X5.8	T8X40
SLH05-MMMT2-35N <b>SLS05-MMMT2-35N</b> SLH05-MMMT2-64N SLH05-MMMT2-114N SLH05-MMMT2-178N	05	15.50~17.85 0.61~0.703	35 <b>35</b> 64 114 178	56 <b>56</b> 84 135 199	92 <b>92</b> 121 172 235	164 <b>164</b> 193 244 307	MT2	1/16"	SH-1905R	M2.5X7	T8X40

注: SLH-螺旋槽 SLS-直槽

铲钻 Shovel drill

硬质合金刀片

Carbide inseries

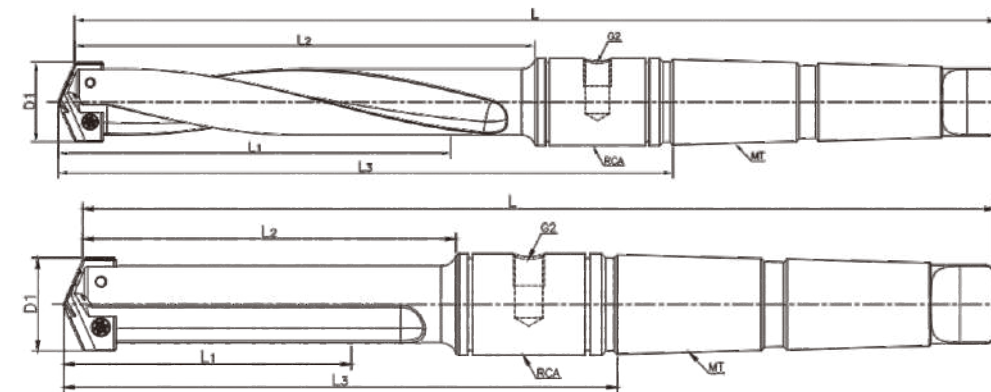


接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			应用 Application		
		mm	Frcationl Equivalent	inch	P	K	N
1	3.97 5/32"	18.00		0.709	SZ1-M0180-50XH	SZ1-M0180-50CH	SZ1-M0180-50SC
		18.50		0.728	SZ1-M0185-50XH	SZ1-M0185-50CH	SZ1-M0185-50SC
		19.00		0.748	SZ1-M0190-50XH	SZ1-M0190-50CH	SZ1-M0190-50SC
		19.05	3/4"	0.750	SZ1-I0750-50XH	SZ1-I0750-50CH	SZ1-I0750-50SC
		19.50		0.768	SZ1-M0195-50XH	SZ1-M0195-50CH	SZ1-M0195-50SC
		20.00		0.787	SZ1-M0200-50XH	SZ1-M0200-50CH	SZ1-M0200-50SC
		20.50		0.807	SZ1-M0205-50XH	SZ1-M0205-50CH	SZ1-M0205-50SC
		20.64	13/16"	0.813	SZ1-I0812-50XH	SZ1-I0812-50CH	SZ1-I0812-50SC
		21.00		0.827	SZ1-M0210-50XH	SZ1-M0210-50CH	SZ1-M0210-50SC
1	3.97 5/32"	21.50		0.846	SZ1-M0215-50XH	SZ1-M0215-50CH	SZ1-M0215-50SC
		22.00		0.866	SZ1-M0220-50XH	SZ1-M0220-50CH	SZ1-M0220-50SC
		22.23	7/8"	0.875	SZ1-I0875-50XH	SZ1-I0875-50CH	SZ1-I0875-50SC
		23.00		0.906	SZ1-M0230-50XH	SZ1-M0230-50CH	SZ1-M0230-50SC
		23.81	15/16"	0.937	SZ1-I0937-50XH	SZ1-I0937-50CH	SZ1-I0937-50SC
2	4.76 3/16"	24.00		0.945	SZ1-M0240-50XH	SZ1-M0240-50CH	SZ1-M0240-50SC
		25.00		0.984	SZ2-M0250-50XH	SZ2-M0250-50CH	SZ2-M0250-50SC
		25.40	1"	1.000	SZ2-I1000-50XH	SZ2-I1000-50CH	SZ2-I1000-50SC
		26.00		1.024	SZ2-M0260-50XH	SZ2-M0260-50CH	SZ2-M0260-50SC
		26.99	1-1/16"	1.063	SZ2-I1062-50XH	SZ2-I1062-50CH	SZ2-I1062-50SC
		27.00		1.063	SZ2-M0270-10XH	SZ2-M0270-10CH	SZ2-M0270-10SC
		28.00		1.102	SZ2-M0280-50XH	SZ2-M0280-50CH	SZ2-M0280-50SC
2	4.76 3/16"	28.58	1-1/8"	1.125	SZ2-I1125-50XH	SZ2-I1125-50CH	SZ2-I1125-50SC
		29.00		1.142	SZ2-M0290-50XH	SZ2-M0290-50CH	SZ2-M0290-50SC
		30.00		1.181	SZ2-M0300-50XH	SZ2-M0300-50CH	SZ2-M0300-50SC
		30.16	1-3/16"	1.187	SZ2-I1187-50XH	SZ2-I1187-50CH	SZ2-I1187-50SC
		31.00		1.220	SZ2-M0310-50XH	SZ2-M0310-50CH	SZ2-M0310-50SC
		31.75	1-1/4"	1.250	SZ2-I1250-50XH	SZ2-I1250-50CH	SZ2-I1250-50SC
		32.00		1.260	SZ2-M0320-50XH	SZ2-M0320-50CH	SZ2-M0320-50SC
		33.00		1.299	SZ2-M0330-50XH	SZ2-M0330-50CH	SZ2-M0330-50SC
		33.34	1-5/16"	1.313	SZ2-I1312-50XH	SZ2-I1312-50CH	SZ2-I1312-50SC
		34.00		1.339	SZ2-M0340-50XH	SZ2-M0340-50CH	SZ2-M0340-50SC
2	4.76 3/16"	34.13	1-11/32"	1.344	SZ2-I1343-50XH	SZ2-I1343-50CH	SZ2-I1343-50SC
		34.93	1-3/8"	1.375	SZ2-I1375-50XH	SZ2-I1375-50CH	SZ2-I1375-50SC
		35.00		1.378	SZ2-M0350-50XH	SZ2-M0350-50CH	SZ2-M0350-50SC

铲钻 Shovel drill

锥柄螺旋槽/直槽刀杆

Taper shank spiral groove / straight groove Arbor



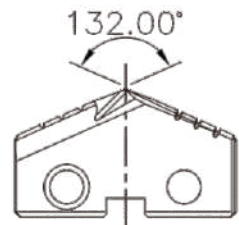
型号 Code No	接口 Connector	D1	L1	L2	L3	L	MT	G2	RCA		
SLH10-MMMT3-70N <b>SLS10-MMMT3-70N</b>	10	17.86~21.99 0.703"~0.866"	70	98	143	233	MT3	1/8"	SH-2540R	M3X7	T9X40
SLH10-MMMT3-121N			121	149	193	283					
SLH10-MMMT3-172N			172	200	244	334					
SLH10-MMMT3-273N			273	302	346	436					
<b>SLS15-MMMT3-70N</b>			70	98	143	233					
SLH15-MMMT3-121N	121	149	193	283	MT3	1/8"	SH-2540R	M3X7	T9X40		
SLH15-MMMT3-172N	172	200	244	334							
SLH15-MMMT3-273N	273	302	346	436							
<b>SLS15-MMMT3-70N</b>	70	98	143	233							
SLH20-MMMT4-86N <b>SLS20-MMMT3-86N</b>	20	24.61~29.99 0.969"~1.181"	86	144						160	274
SLH20-MMMT4-137N			137	165	211	325					
SLH20-MMMT4-187N			187	216	262	375					
SLH20-MMMT4-289N			289	318	364	477					
<b>SLS25-MMMT3-86N</b>			86	144	168	281					
SLH25-MMMT4-137N	137	165	218	332	MT4	1/4"	SH-3175R	M4X10	T15X45		
SLH25-MMMT4-187N	187	216	269	383							
SLH25-MMMT4-289N	289	318	371	484							
<b>SLS25-MMMT3-86N</b>	86	144	168	274							

注: SLH-螺旋槽 SLS-直槽

铲钻 Shovel drill

硬质合金刀片

Carbide inseries

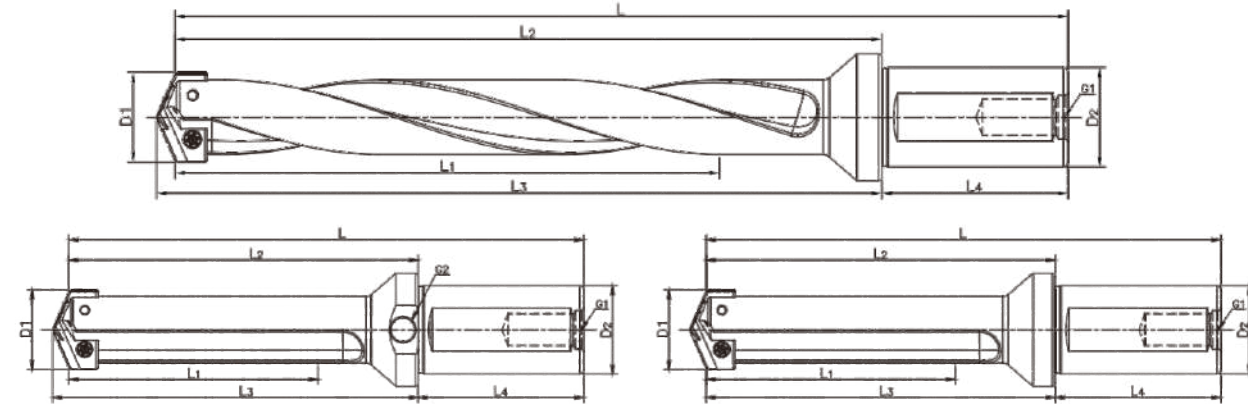


接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			应用 Application		
		mm	Frcationl Equivalent	inch	P	K	N
Y	2.38 3/32"	9.50		0.374	SZY-M0095-50XH	SZY-M0095-50CH	SZY-M0095-50SC
		9.53	3/8"	0.375	SZY-I0375-50XH	SZY-I0375-50CH	SZY-I0375-50SC
		9.80		0.386	SZY-M0098-50XH	SZY-M0098-50CH	SZY-M0098-50SC
		10.00		0.394	SZY-M0100-50XH	SZY-M0100-50CH	SZY-M0100-50SC
		10.20		0.402	SZY-M0102-50XH	SZY-M0102-50CH	SZY-M0102-50SC
		10.50		0.413	SZY-M0105-50XH	SZY-M0105-50CH	SZY-M0105-50SC
		10.72	27/64"	0.422	SZY-I0421-50XH	SZY-I0421-50CH	SZY-I0421-50SC
		10.80		0.425	SZY-M0108-50XH	SZY-M0108-50CH	SZY-M0108-50SC
		11.00		0.433	SZY-M0110-50XH	SZY-M0110-50CH	SZY-M0110-50SC
		11.11	7/16"	0.437	SZY-I0437-50XH	SZY-I0437-50CH	SZY-I0437-50SC
Z	2.38 3/32"	11.50		0.453	SZZ-M0115-50XH	SZZ-M0115-50CH	SZZ-M0115-50SC
		11.51	29/64"	0.453	SZZ-I0453-50XH	SZZ-I0453-50CH	SZZ-I0453-50SC
		12.00		0.472	SZZ-M0120-50XH	SZZ-M0120-50CH	SZZ-M0120-50SC
		12.30	31/64"	0.484	SZZ-I0484-50XH	SZZ-I0484-50CH	SZZ-I0484-50SC
		12.50		0.492	SZZ-M0125-50XH	SZZ-M0125-50CH	SZZ-M0125-50SC
		12.70	1/2"	0.500	SZZ-I0500-50XH	SZZ-I0500-50CH	SZZ-I0500-50SC
0	3.18 1/8"	13.00		0.512	SZO-M0130-50XH	SZO-M0130-50CH	SZO-M0130-50SC
		13.50		0.531	SZO-M0135-50XH	SZO-M0135-50CH	SZO-M0135-50SC
		14.00		0.551	SZO-M0140-50XH	SZO-M0140-50CH	SZO-M0140-50SC
		14.29	9/16"	0.563	SZO-I0562-50XH	SZO-I0562-50CH	SZO-I0562-50SC
		14.50		0.571	SZO-M0145-50XH	SZO-M0145-50CH	SZO-M0145-50SC
		15.00		0.591	SZO-M0150-50XH	SZO-M0150-50CH	SZO-M0150-50SC
0	3.18 1/8"	15.50		0.610	SZO-M0155-50XH	SZO-M0155-50CH	SZO-M0155-50SC
		15.88	5/8"	0.625	SZO-I0625-50XH	SZO-I0625-50CH	SZO-I0625-50SC
		16.00		0.630	SZO-M0160-50XH	SZO-M0160-50CH	SZO-M0160-50SC
		16.50		0.650	SZO-M0165-50XH	SZO-M0165-50CH	SZO-M0165-50SC
		17.00		0.669	SZO-M0170-50XH	SZO-M0170-50CH	SZO-M0170-50SC
		17.46	11/16"	0.687	SZO-I0687-50XH	SZO-I0687-50CH	SZO-I0687-50SC
		17.50		0.689	SZO-M0175-50XH	SZO-M0175-50CH	SZO-M0175-50SC

铲钻 Shovel drill

侧固式柄螺旋槽/直槽刀杆

Side fixed handle spiral groove / straight groove cutter bar



型号 Code No	接口 Connector	D1	L1	L2	L3	L	D2	L4	G1	G2		
SLSY0-ML016-19N	Y0	9.50~11.49 0.374"~0.452"	19	48	50	96	16	48	1/16"	1/8"	M2X4	T7X35
SLSY0-ML020-32N			32	61	64	111	20	50	1/8"			
SLHY0-ML020-60N			60	90	92	140	20	50	1/8"			
SLHY0-ML020-111N			111	141	143	191	20	50	1/8"			
SLSY0-ML020-222N			222	252	254	302	20	50	1/8"			
SLSY0-ML020-290N			290	320	322	370	20	50	1/8"			
SLSZ0-ML016-19N			Z0	11.50~12.97 0.453"~0.511"	19	48	50	96	16			
SLSZ0-ML020-32N	32	61			64	111	20	50	1/8"			
SLHZ0-ML020-60N	60	90			92	140	20	50	1/8"			
SLHZ0-ML020-111N	111	141			143	191	20	50	1/8"			
SLSZ0-ML020-222N	222	252			254	302	20	50	1/8"			
SLSZ0-ML020-290N	290	320			322	370	20	50	1/8"			
SLS00-ML020-22N	00	12.98~15.49 0.511"~0.61"	22	48	50	98				1/8"	M2.5X5.8	T8X40
SLS00-ML020-35N			35	64	66	114						
SLH00-ML020-64N			64	92	95	142						
SLH00-ML020-114N			114	143	146	193	20	50	1/8"			
SLH00-ML020-178N			178	206	209	256						
SLS00-ML020-295N			295	324	327	374						
SLS00-ML020-387N			387	416	419	466						
SLS05-ML020-22N	05	15.50~17.85 0.61"~0.703"	22	48	50	98				1/8"	M2.5X7	T8X40
SLS05-ML020-35N			35	64	66	114						
SLH05-ML020-64N			64	92	95	142						
SLH05-ML020-114N			114	143	146	193	20	50	1/8"			
SLH05-ML020-178N			178	206	209	256						
SLS05-ML020-295N			295	324	327	374						
SLS05-ML020-387N			387	416	419	466						

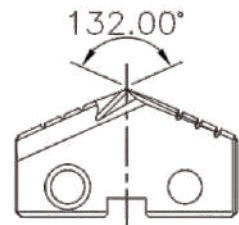
注: SLH-螺旋槽 SLS-直槽



铲钻 Shovel drill

硬质合金刀片

Carbide inseries

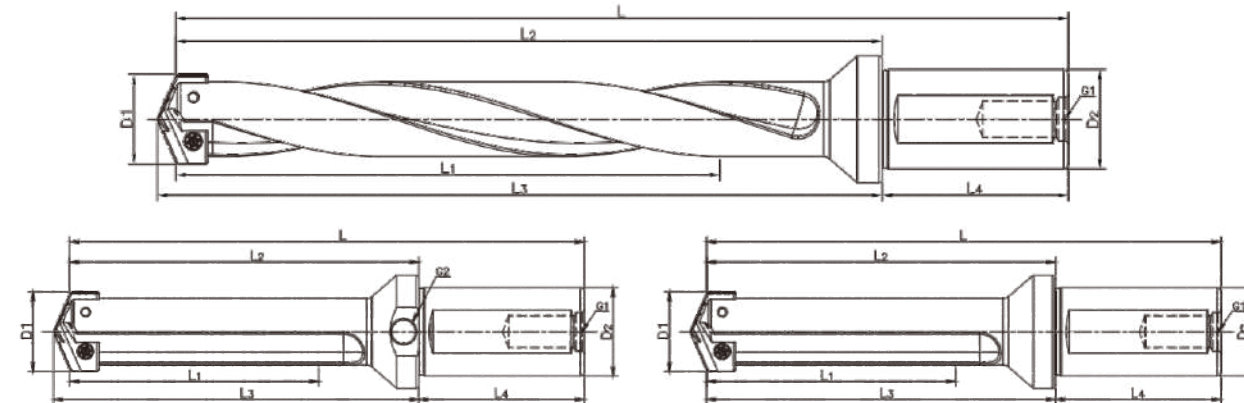


接口 Connector	厚度 Ckness (mm/inch)	直径 Diameter			应用 Application		
		mm	Frcationl Equivalent	inch	P	K	N
1	3.97 5/32"	18.00		0.709	SZ1-M0180-50XH	SZ1-M0180-50CH	SZ1-M0180-50SC
		18.50		0.728	SZ1-M0185-50XH	SZ1-M0185-50CH	SZ1-M0185-50SC
		19.00		0.748	SZ1-M0190-50XH	SZ1-M0190-50CH	SZ1-M0190-50SC
		19.05	3/4"	0.750	SZ1-I0750-50XH	SZ1-I0750-50CH	SZ1-I0750-50SC
		19.50		0.768	SZ1-M0195-50XH	SZ1-M0195-50CH	SZ1-M0195-50SC
		20.00		0.787	SZ1-M0200-50XH	SZ1-M0200-50CH	SZ1-M0200-50SC
		20.50		0.807	SZ1-M0205-50XH	SZ1-M0205-50CH	SZ1-M0205-50SC
		20.64	13/16"	0.813	SZ1-I0812-50XH	SZ1-I0812-50CH	SZ1-I0812-50SC
		21.00		0.827	SZ1-M0210-50XH	SZ1-M0210-50CH	SZ1-M0210-50SC
21.50		0.846	SZ1-M0215-50XH	SZ1-M0215-50CH	SZ1-M0215-50SC		
1	3.97 5/32"	22.00		0.866	SZ1-M0220-50XH	SZ1-M0220-50CH	SZ1-M0220-50SC
		22.23	7/8"	0.875	SZ1-I0875-50XH	SZ1-I0875-50CH	SZ1-I0875-50SC
		23.00		0.906	SZ1-M0230-50XH	SZ1-M0230-50CH	SZ1-M0230-50SC
		23.81	15/16"	0.937	SZ1-I0937-50XH	SZ1-I0937-50CH	SZ1-I0937-50SC
		24.00		0.945	SZ1-M0240-50XH	SZ1-M0240-50CH	SZ1-M0240-50SC
2	4.76 3/16"	25.00		0.984	SZ2-M0250-50XH	SZ2-M0250-50CH	SZ2-M0250-50SC
		25.40	1"	1.000	SZ2-I1000-50XH	SZ2-I1000-50CH	SZ2-I1000-50SC
		26.00		1.024	SZ2-M0260-50XH	SZ2-M0260-50CH	SZ2-M0260-50SC
		26.99	1-1/16"	1.063	SZ2-I1062-50XH	SZ2-I1062-50CH	SZ2-I1062-50SC
		27.00		1.063	SZ2-M0270-10XH	SZ2-M0270-10CH	SZ2-M0270-10SC
		28.00		1.102	SZ2-M0280-50XH	SZ2-M0280-50CH	SZ2-M0280-50SC
		28.58	1-1/8"	1.125	SZ2-I1125-50XH	SZ2-I1125-50CH	SZ2-I1125-50SC
29.00		1.142	SZ2-M0290-50XH	SZ2-M0290-50CH	SZ2-M0290-50SC		
2	4.76 3/16"	30.00		1.181	SZ2-M0300-50XH	SZ2-M0300-50CH	SZ2-M0300-50SC
		30.16	1-3/16"	1.187	SZ2-I1187-50XH	SZ2-I1187-50CH	SZ2-I1187-50SC
		31.00		1.220	SZ2-M0310-50XH	SZ2-M0310-50CH	SZ2-M0310-50SC
		31.75	1-1/4"	1.250	SZ2-I1250-50XH	SZ2-I1250-50CH	SZ2-I1250-50SC
		32.00		1.260	SZ2-M0320-50XH	SZ2-M0320-50CH	SZ2-M0320-50SC
		33.00		1.299	SZ2-M0330-50XH	SZ2-M0330-50CH	SZ2-M0330-50SC
		33.34	1-5/16"	1.313	SZ2-I1312-50XH	SZ2-I1312-50CH	SZ2-I1312-50SC
		34.00		1.339	SZ2-M0340-50XH	SZ2-M0340-50CH	SZ2-M0340-50SC
		34.13	1-11/32"	1.344	SZ2-I1343-50XH	SZ2-I1343-50CH	SZ2-I1343-50SC
		34.93	1-3/8"	1.375	SZ2-I1375-50XH	SZ2-I1375-50CH	SZ2-I1375-50SC
		35.00		1.378	SZ2-M0350-50XH	SZ2-M0350-50CH	SZ2-M0350-50SC

铲钻 Shovel drill

侧固式柄螺旋槽/直槽刀杆

Side fixed handle spiral groove / straight groove cutter bar



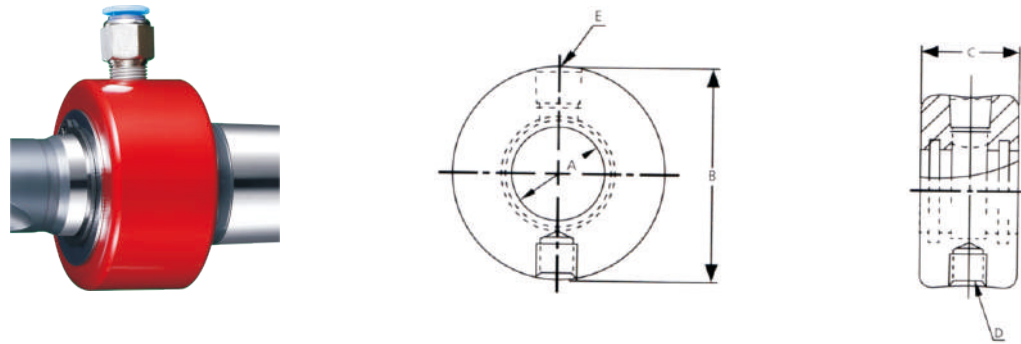
型号 Code No	接口 Connector	D1	L1	L2	L3	L	D2	L4	G1	G2										
SLS10-ML025-48N	10	17.86~21.99 0.703"~0.866"	48	76	79	132	25	56	1/8"	1/8"										
SLS10-ML025-67N			67	107	111	163														
SLH10-ML025-118N			118	155	158	211														
SLH10-ML025-168N			168	206	209	262														
SLH10-ML025-270N			270	307	311	363														
SLS10-ML025-457N			457	495	498	551														
SLS10-ML025-569N			569	603	606	659														
SLS15-ML025-48N			15	22.00~24.60 0.866"~0.969"	48	76							79	132	25	56	1/8"	1/8"		
SLS15-ML025-67N					67	107							111	163						
SLH15-ML025-118N					118	155							158	211						
SLH15-ML025-168N	168	206			209	262														
SLH15-ML025-270N	270	307			311	363														
SLS15-ML025-457N	457	495			498	551														
SLS15-ML025-569N	569	603	606	659																
SLS20-ML032-57N	20	24.61~29.99 0.969"~1.181"	57	89	92	149	32	60	1/4"	1/8"										
SLS20-ML032-86N			86	129	132	189														
SLH20-ML032-137N			137	179	183	239														
SLH20-ML032-187N			187	230	234	290														
SLH20-ML032-289N			289	332	335	392														
SLS20-ML032-511N			511	554	558	618														
SLS20-ML032-492N			692	735	739	795														
SLS25-ML032-57N	25	30.00~35.50 1.181"~1.398"	57	89	92	149	32	60	1/4"	1/8"										
SLS25-ML032-86N			86	129	132	189														
SLH25-ML032-137N			137	179	183	239														
SLH25-ML032-187N			187	230	234	290														
SLH25-ML032-289N			289	332	335	392														
SLS25-ML032-511N			511	554	558	618														
SLS25-ML032-492N			692	735	739	795														

注: SLH-螺旋槽 SLS-直槽

配件 Accessories

供油环

Rotary Coolant Adapter



型号 Code No	内径(A) Inside diameter	外径(B) Outside diameter	厚度(C) Thickness	驱动杆螺纹(D) Driving rod thread	冷却嘴螺纹(E) Coding nozzle thread
SH-1905R	19.05	44.45	22.23	M8X1.25	1/8"
SH-2540R	25.40	53.97	28.57	M8X1.25	1/8"
SH-3175R	31.75	63.50	34.92	M10X1.5	1/4"
SH-4445R	44.45	76.20	34.92	M10X1.5	1/4"
SH-5715R	57.15	95.27	44.45	M12X1.75	1/2"

驱动杆

Drive rod



型号 Code No	螺纹 Thread	总长 Total length	匹配的供油环 Matched oil ring
SG-M8-250	M8X1.25	250	SH-1905R
SG-M8-250	M8X1.25	250	SH-2540R
SG-M10-250	M10X1.5	250	SH-3175R
SG-M10-250	M10X1.5	250	SH-4445R
SG-M12-250	M12X1.75	250	SH-5715R

注意事项 Precautions

应用要点、注意事项

Essentials of use and precautions

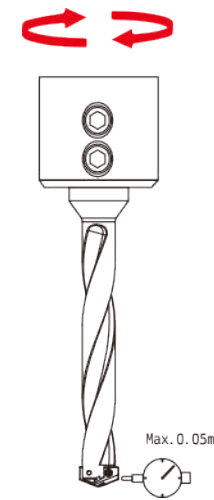
安装 Assembly

应用场合的稳定性对于获得最佳的刀具寿命与孔的精度是重要的。检查机床主轴、夹具与工件的装夹情况，确保最大的稳定性与刚性。不稳定的工况会引起钻头的折断。

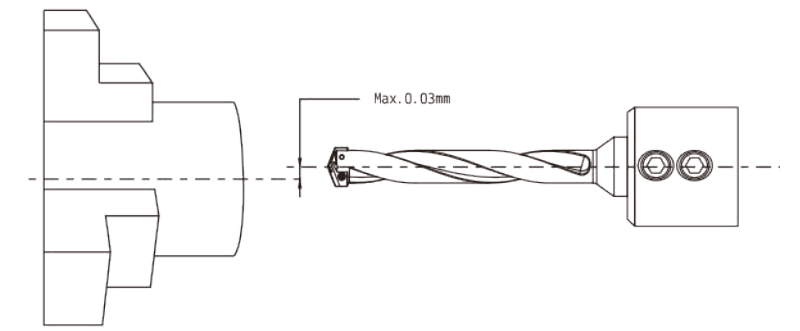
The stability of the applications is essential for optimal tool life and hole accuracy. Guarantee the maximum stability and rigidity by checking the holding of the machine tool spindle, fixtures and workpiece. Unstable operating conditions will cause fracture of drills bits.

最大跳动和同心度 Max.Runout and Misalignment

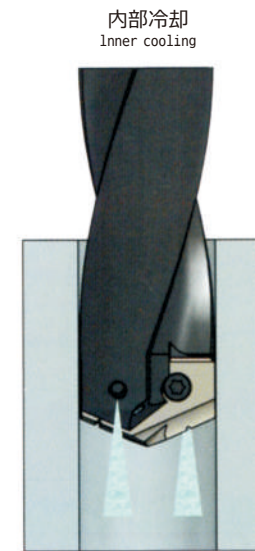
跳动  
Runout



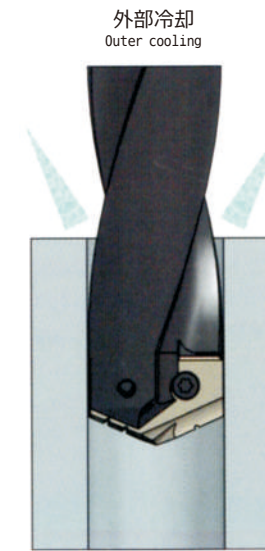
同心度  
Misalignment



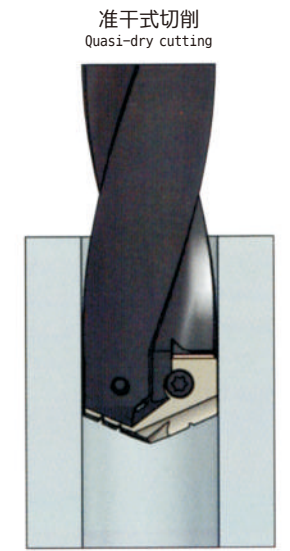
冷却压力 Cooling Pressure



- 5-6D:5bar ✓
- 7-8D:10bar ✓
- 8-12D:15bar ✓
- 11-14D:20bar ✓



- 3-4D:5bar ✓
- 7-8D:10bar ✗
- 8-12D:15bar ✗
- 11-14D:20bar ✗



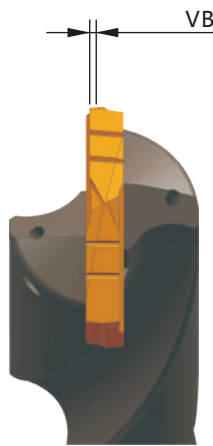
- 3-4D: MQL ✓  
(仅硬质合金/Only carbide)

应用要点、注意事项

Essentials of use and precautions

► 钻头更换判断标准 Standard for drill bit replacement

磨损极限 Wear limit



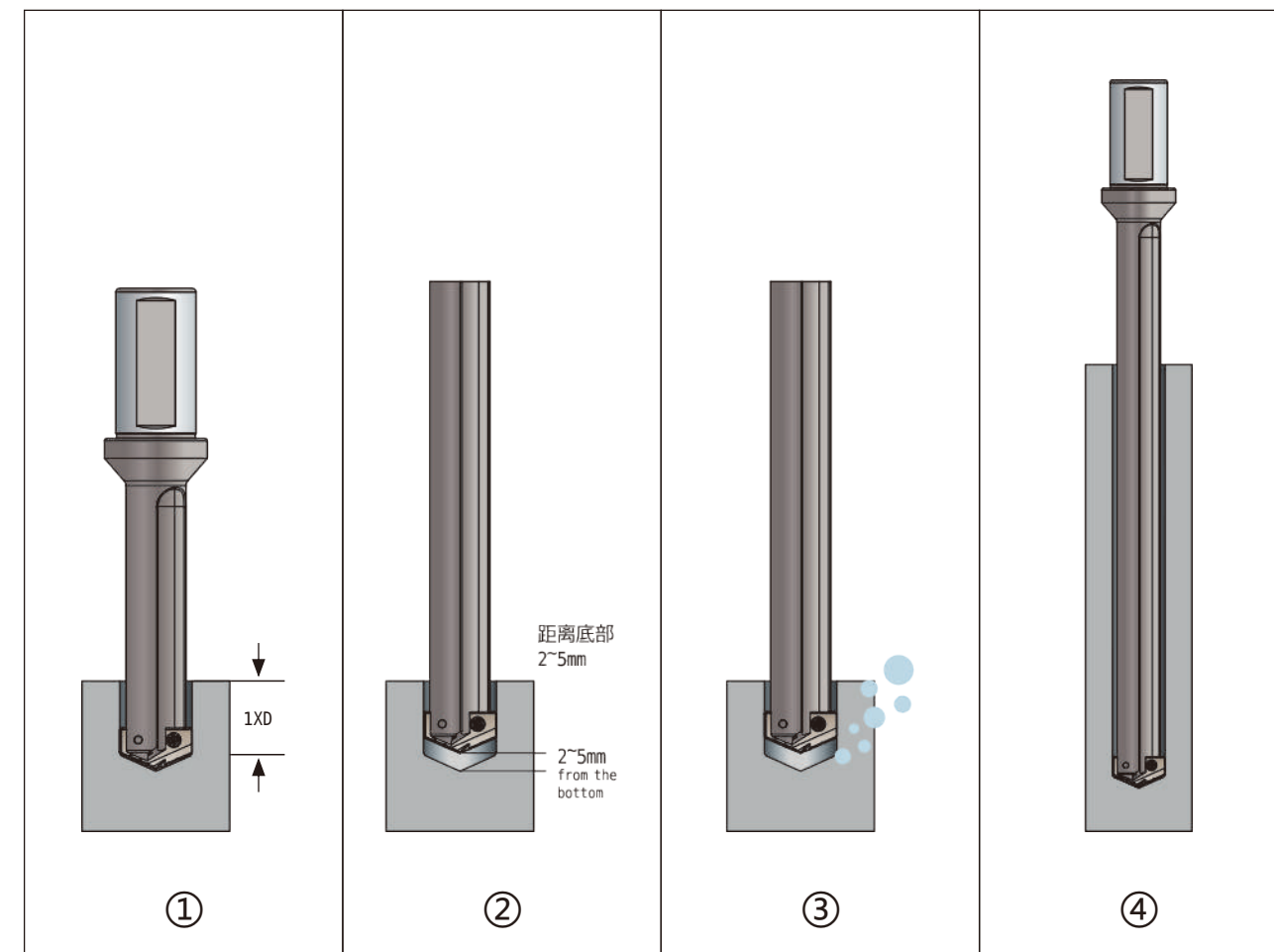
硬质合金刀片: VB=0.3mm  
Carbide insert:  
粉末高速钢刀片: VB=0.4mm  
HSS-PM insert:

► 应用 Application

工况 Operating Condition	说明 Instructions	工况 Operating Condition	说明 Instructions
	起始面为斜面 The entry surface is slanted 斜面进给率 Slope Feed Rate <math><3^\circ - 50\%</math>		工件表面不平整 The entry surface is welded 加工前先磨平 Let it through spot treating before machining 钻叠层板 Stacked plates 原则上可以 Allowed in principle
	出孔为斜面 The outlet is slanted 斜面进给率 Slope Feed Rate <math><3^\circ - 50\%</math>		需要良好的工件压紧 The work pieces shall be properly clamped 切削时 When cutting 板之间不能有间隙 There must be no gap between the plates 不可以 Not allowed
	起始面为弧面 The entry surface is arc 在中心处钻孔并降低进给是可以的 Drilling at the center at reduced feed rate is allowed 如起始点不在弧面中心需要将面磨平 Spot facing is required if the entry point is not at the center of the arc		起始面有台阶 Step on the entry surface 不可以 (钻尖起始点必须为平面) Not allowed (the entry point must be on a horizontal plane)
	钻贯穿孔 Through hole 不可以 Not allowed		

长径系列钻削工艺

Long diameter series drilling process



- ①短钻头钻引导孔至1D~1.5D  
Drill a pilot hole to 1D to 1.5D with a short drill bit
- ②低转速和低进给进入引导孔  
Enter the pilot hole at a low speed and low feed rate
- ③让冷却液停留2~3秒  
Keep the coolant for 2 to 3s
- ④按推荐的参数连续加工出口时降低速度和进给  
Carry out continuous drilling according to the recommended parameters. Reduce the speed and feed rate at the outlet



# 切削参数 Cutting parameters

U 钻

铲钻

可换钻尖钻头

组合钻

带定心U钻

VMD 大钻头

模块系统

硬质合金刀片系列 Carbide blade series					布氏硬度 HB	强度 N/mm <sup>2</sup>		
ISO	被加工材料 Material			条件 Heatreatment				
P	易切屑钢 Non-alloy steel	Y13	1215	1.0736	<0.25%C	退火 Annealed	100-150	370-500
		Y15	1213	1.0715	≥0.25%C	退火 Annealed	175-225	600-775
		45	1045	1.0503	<0.55%C	退火和调质 Quenched and tempered	225-275	775-940
					≥0.55%C	退火 Annealed	275-325	940-1090
	Q345B	1140	1.7026	退火和调质 Quenched and tempered	300	1000		
				退火 Annealed	175-225	600-775		
	低合金钢 Low alloy steel				退火 Annealed	225-275	775-940	
		40Cr	5140	1.7035	退火 Annealed	275-325	940-1090	
		42CrMo	4140	1.7225	调质 Tempered	325-375	1090-1265	
	高合金钢, 工具钢, 铸钢, 锰钢 High alloy steel, tool steel, Cast steel	Cr12, D3, 1.2080; 4Cr5MoSiV, H13, 1.2344			退火 Annealed	225-300	600-1020	
			调质 Tempered	300-350	1020-1180			
铁素体/马氏体不锈钢 Stainless steel Ferritic/martensitic	0Cr13	403	1.400	铁素体 Ferritic	185-275	640-940		
	2Cr13	410	1.4021	马氏体 Martensitic	275-350	940-1180		
M	奥氏体不锈钢 Stainless steel Austenitic	0Cr18Ni9	304	1.4301	退火/淬硬 Annealed/Harden	135-185	480-640	
		0Cr17Ni11Mo2	316	1.4401	铸造+未处理 Cast+Unhandled	185-275	640-940	
	超级双相不锈钢 Super Duplex Stainless Steel				N<0.1%	>60%铁素体 Ferritic	135-185	480-640
				N≥0.1%	<60%铁素体 Ferritic	185-275	640-940	
K	灰口铸铁 Grey cast iron	HT200	NO.30	GG20	铁素体 Ferritic	120-150	430-500	
		HT250	NO.35	GG25	珠光体 Pearlitic	150-200	500-700	
	球墨铸铁 Cast iron nodular	QT400-18	60-40-18	GGG40	铁素体 Ferritic	200-220	700-755	
		QT600-3	80-60-03	GGG60	珠光体 Pearlitic	220-260	755-890	
可锻铸铁 Malleable cast iron				铁素体 Ferritic	120-150	430-500		
				珠光体 Pearlitic	260-320	890-1020		
N	锻铝 Wrought Alumi				未固化 Not cureable	30	100	
					固化 Cured	180	600	
	铸铝 Cast Aluminium				未固化 Not cureable	30	100	
					固化 Cured	180	600	
				≤12% Si	高温处理 High temperature	-	-	
				>12% Si	易切 Free cutting	100-200	370-670	
铜合金 Copper Alloys				>1% Pb	黄铜 Brass	200-250	670-855	
					电解铜 Electrolytic copper	100	370	
					塑料纤维 Duroplastics fiber plastics	-	-	
S	非铁金属 Non metallic				硬橡胶 Hard rubber	60	200	
					铁基 Fe base	退火 Annealed	140-220	480-755
	高温合金 High Temp. Alloy Hastelloy B, Inconel 600,				固化 Cured	223-310	755-990	
					退火 Annealed	250	-	
					镍基或钴基 Ni or co base	固化 Cured	350	-
			铸造 Cast	320	-			
钛合金 Titanium Alloy				-	320	Rm 400		
				α+β 合金固化 α+β alloys Cured	-	Rm 1050		
H	哈氏耐磨护板 Wear PlateHardox, AR400, T-1,				淬硬 Harden	400	1365	
					淬硬 Harden	500	1600	
	淬硬钢 Hardened Steel				淬硬 Harden	300-400	1020-1365	
					淬硬 Harden	400-500	1365+	

注意: 上述推荐的切削参数以3-4D系列为准。当使用5-6D、7-8D、8-12D、12-14D、14-22D等系列时, 根据工况适当降低参数。

参数: 3-4D系列=100%; 5-6D、7-8D系列=80%以下; ≥8-12D系列=70%以下。

# 切削参数 Cutting parameters

U 钻

铲钻

可换钻尖钻头

组合钻

带定心U钻

VMD 大钻头

模块系统

切削速度 Vc(m/min)			进给量 (f <sub>n</sub> )mm/r											
			Φ9.5-12.5mm			Φ13.0-17.5mm			Φ18.0-24.0mm			Φ25.0-35.0mm		
最小 Min.	推荐 Recommended	最大 Max.	最小 Min.	推荐 Recommended	最大 Max.	最小 Min.	推荐 Recommended	最大 Max.	最小 Min.	推荐 Recommended	最大 Max.	最小 Min.	推荐 Recommended	最大 Max.
75	94	117	0.09	0.12	0.17	0.13	0.17	0.23	0.17	0.22	0.31	0.21	0.28	0.39
55	69	86	0.07	0.09	0.12	0.10	0.14	0.19	0.13	0.17	0.23	0.19	0.25	0.34
49	61	76	0.07	0.09	0.12	0.10	0.14	0.19	0.13	0.17	0.23	0.19	0.25	0.34
41	51	64	0.05	0.07	0.10	0.09	0.12	0.17	0.12	0.16	0.22	0.16	0.21	0.29
41	51	64	0.04	0.06	0.08	0.08	0.10	0.14	0.12	0.16	0.22	0.16	0.21	0.29
54	67	84	0.07	0.09	0.12	0.10	0.14	0.19	0.13	0.17	0.23	0.19	0.25	0.34
49	61	76	0.07	0.09	0.12	0.09	0.12	0.17	0.13	0.17	0.23	0.19	0.25	0.34
45	56	70	0.05	0.07	0.10	0.08	0.10	0.14	0.12	0.16	0.22	0.16	0.21	0.29
40	50	62	0.04	0.06	0.08	0.08	0.10	0.14	0.12	0.16	0.22	0.16	0.21	0.29
40	50	62	0.07	0.09	0.12	0.09	0.12	0.17	0.12	0.16	0.22	0.13	0.17	0.23
30	38	47	0.05	0.07	0.10	0.09	0.12	0.17	0.12	0.16	0.22	0.13	0.17	0.23
37	46	58	0.08	0.10	0.14	0.10	0.14	0.19	0.12	0.16	0.22	0.13	0.17	0.23
29	36	45	0.07	0.09	0.12	0.09	0.12	0.17	0.10	0.14	0.19	0.10	0.14	0.19
37	46	58	0.04	0.06	0.08	0.09	0.12	0.17	0.10	0.14	0.19	0.13	0.17	0.23
29	36	45	0.04	0.06	0.08	0.08	0.10	0.14	0.09	0.12	0.17	0.10	0.14	0.19
19	24	30	0.04	0.06	0.08	0.09	0.12	0.17	0.10	0.14	0.19	0.13	0.17	0.23
15	19	24	0.04	0.06	0.08	0.08	0.10	0.14	0.09	0.12	0.17	0.10	0.14	0.19
78	98	122	0.09	0.12	0.17	0.16	0.21	0.29	0.21	0.28	0.39	0.26	0.34	0.47
75	94	117	0.08	0.10	0.14	0.14	0.19	0.26	0.19	0.25	0.34	0.23	0.31	0.43
67	84	105	0.08	0.10	0.14	0.12	0.16	0.22	0.16	0.21	0.29	0.21	0.28	0.39
58	72	90	0.07	0.09	0.12	0.09	0.12	0.17	0.12	0.16	0.22	0.16	0.21	0.29
75	94	117	0.09	0.12	0.17	0.16	0.21	0.29	0.21	0.28	0.39	0.26	0.34	0.47
52	66	82	0.05	0.07	0.10	0.08	0.10	0.14	0.09	0.12	0.17	0.12	0.16	0.22
105	150	195	0.05	0.07	0.10	0.08	0.10	0.14	0.13	0.17	0.23	0.16	0.21	0.29
91	130	169	0.10	0.14	0.19	0.17	0.22	0.31	0.21	0.28	0.39	0.23	0.31	0.43
105	150	195	0.10	0.14	0.19	0.17	0.22	0.31	0.21	0.28	0.39	0.26	0.34	0.47
91	130	169	0.10	0.14	0.19	0.17	0.22	0.31	0.21	0.28	0.39	0.23	0.31	0.43
91	130	169	0.10	0.14	0.19	0.17	0.22	0.31	0.21	0.28	0.39	0.23	0.31	0.43
105	150	195	0.08	0.10	0.14	0.14	0.19	0.26	0.19	0.25	0.34	0.23	0.31	0.43
105	150	195	0.07	0.09	0.12	0.09	0.12	0.17	0.12	0.16	0.22	0.16	0.21	0.29
105	150	195	0.09	0.12	0.17	0.16	0.21	0.29	0.21	0.28	0.39	0.26	0.34	0.47
105	150	195	0.10	0.14	0.19	0.17	0.22	0.31	0.21	0.28	0.39	0.23	0.31	0.43
105	150	195	0.10	0.14	0.19	0.17	0.22	0.31	0.21	0.28	0.39	0.23	0.31	0.43
19	24	30	0.04	0.06	0.08	0.09	0.12	0.17	0.10	0.14	0.19	0.13	0.17	0.23
15	18	23	0.04	0.06	0.08	0.08	0.10	0.10	0.09	0.12	0.17	0.10	0.14	0.19
19	24	30	0.04	0.06	0.08	0.09	0.12	0.17	0.10	0.14	0.19	0.13	0.17	0.23
15	18	23	0.04	0.06	0.08	0.08	0.10	0.14	0.09	0.12	0.17	0.10	0.14	0.19
15	18	23	0.04	0.06	0.08	0.08	0.10	0.14	0.09	0.12	0.17	0.10	0.14	0.19
22	27	34	0.04	0.06	0.08	0.09	0.12	0.17	0.10	0.14	0.19	0.13	0.17	0.23
17	21	26	0.04	0.06	0.08	0.08	0.10	0.14	0.09	0.12	0.17	0.10	0.14	0.19
23	29	36	0.04	0.06	0.08	0.08	0.10	0.14	0.10	0.14	0.19	0.12	0.16	0.22
19	24	30	0.02	0.03	0.04	0.07	0.09	0.12	0.09	0.12	0.17	0.10	0.14	0.19
24	30	38	0.04	0.06	0.08	0.08	0.10	0.14	0.10	0.14	0.19	0.12	0.16	0.22
19	24	30	0.02	0.03	0.04	0.07	0.09	0.12	0.09	0.12	0.17	0.10	0.14	0.19

Nm1e: The above recommended cutting parameters are based on the 3-4D series. When using series 5-6D/7-8D/8-12D/12-14D/14-22D etc, the parameters should be appropriately reduced according to the working condition.

Parameter: 3-4D series=100%, 5-6D/7-8D series=below 80%, ≥8-12D series=below 70%.



## 铲钻刀杆非标定制卡

Special holder custom made

询问 Inquiry  订购 Order

公司 Company _____	客户编号 Customer number _____
联系人 Contact Person _____	电话 TeL _____
手机 M. B _____	传真 FaX _____
地址 Add _____	电子邮件 E-Mail _____
订货号 Order number _____	购买数量 Order Quantity _____
交货期 Delivery _____	

### 加工条件和刀具信息

#### 孔 HOLE

通孔 THROUGH HOLE  盲孔 BLIND HOLE  
 要求孔径: \_\_\_\_\_ mm 钻孔深度: \_\_\_\_\_ mm  
 APERTURE DEPTH

#### 加工方法 PROCESSING METHODS

湿式 WET  干式 DRY

#### 冷却方式 COOLING

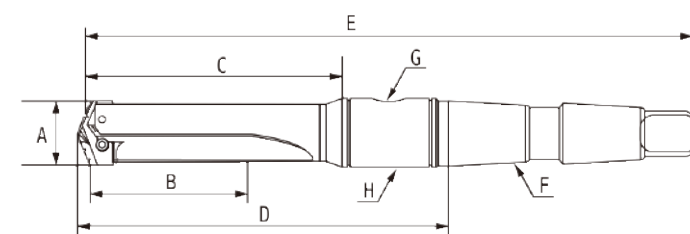
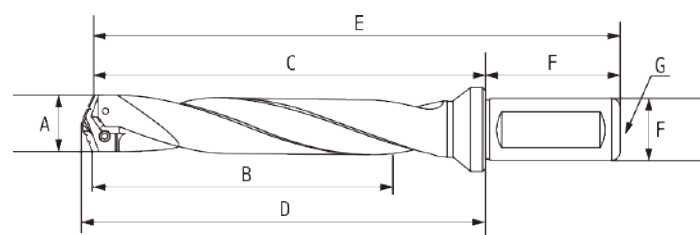
外冷 EXTERNAL COOLING  内冷 COOLED

硬度 HARDNESS (HRC, HB) \_\_\_\_\_ 抗拉强度 TENSILE STRENGTH (N/mm<sup>2</sup>) \_\_\_\_\_

使用机床 MACHINE \_\_\_\_\_

#### 沟槽形式 FUTEMODALITY:

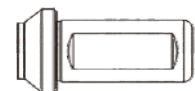
直槽 STRAIGHT  螺旋槽 HELICAL



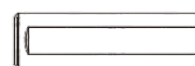
A: \_\_\_\_\_ B: \_\_\_\_\_ C: \_\_\_\_\_ D: \_\_\_\_\_ E: \_\_\_\_\_ F: \_\_\_\_\_ G: \_\_\_\_\_ H: \_\_\_\_\_

#### 柄部型式 SHANK TYPE

侧固式法兰柄 FLANGED SHANK



侧固式直柄 LATHE SHANK



莫氏锥柄 MORSE TAPER



提示: 如未陈述以上内容, 我们将采用 CHT00LS 标准。

TIP: IF NOT STATED ABOVE, AND WE WILL USE THE STANDARD CHT00LS

签名 SIGNATURE: \_\_\_\_\_

日期 DATE: \_\_\_\_\_

## 铲钻刀杆非标定制卡

Special holder custom made

询问 Inquiry  订购 Order

公司 Company _____	客户编号 Customer number _____
联系人 Contact Person _____	电话 TeL _____
手机 M. B _____	传真 FaX _____
地址 Add _____	电子邮件 E-Mail _____
订货号 Order number _____	购买数量 Order Quantity _____
交货期 Delivery _____	

### 加工条件和刀具信息

#### 孔 HOLE

通孔 THROUGH HOLE  盲孔 BLIND HOLE  
 要求孔径: \_\_\_\_\_ mm 钻孔深度: \_\_\_\_\_ mm  
 APERTURE DEPTH

#### 加工方法 PROCESSING METHODS

湿式 WET  干式 DRY

#### 冷却方式 COOLING

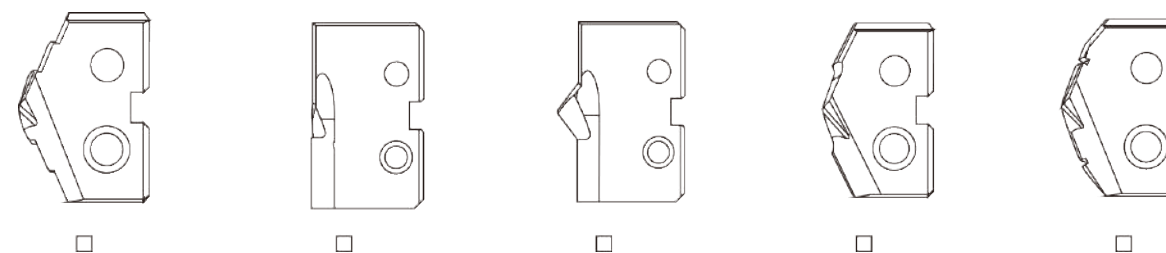
外冷 EXTERNAL COOLING  内冷 COOLED

硬度 HARDNESS (HRC, HB) \_\_\_\_\_ 抗拉强度 TENSILE STRENGTH (N/mm<sup>2</sup>) \_\_\_\_\_

使用机床 MACHINE \_\_\_\_\_

刀片涂层 BLADE COATINE: TiCN , TiN , TiAlN , 无 , \_\_\_\_\_

#### 刀片类型 INSERT TYPE



#### 其他类型(客户自定义) OTHER TYPE (CUSTOMIZABLE)

提示: 如未陈述以上内容, 我们将采用 CHT00LS 标准。

TIP: IF NOT STATED ABOVE, AND WE WILL USE THE STANDARD CHT00LS

签名 SIGNATURE: \_\_\_\_\_

日期 DATE: \_\_\_\_\_



# 可换钻尖钻头 Adjustable point drill bit

U 钻

铲钻

可换钻尖钻头

组合钻

带定心U 钻

VMD 大钻头

模块系统

## 可换式钻头的特征和优势

Characteristics and advantages of interchangeable bit

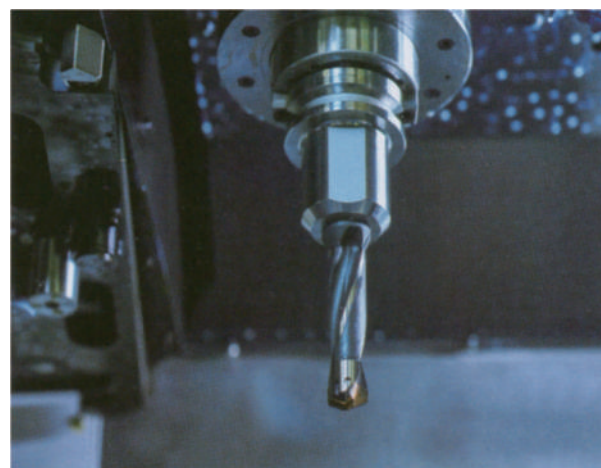
### 介绍 Introduction

- ADJ可换钻尖式钻头，是川山甲新推出的一款高性能、可变量钻头系统，简称ADJ钻头。该钻头刀片与钻杆灵活搭配，满足不同的直径和深度需求。一杆多用，精度可控，大大减少刀具的投入和库存。
- 刀具直径范围 $\Phi 10.00 \sim \Phi 30.99\text{mm}$ ，钻孔深度分为3D/5D/7D/10D/12D；刀片材质有硬质合金和高性能粉末高速钢两种，按照被加工的材料不同设计有4种钻尖：通用钻尖、不锈钢用钻尖、铸铁用钻尖、有色金属用钻尖。
- 最佳的材料、顶级的涂层工艺和精密磨削配合，实现性能的最佳效果。
- ADJ replaceable point bit is a high-performance, variable diameter bit system newly launched by Chuanshanjia, referred to as ADJ bit. The bit blade fits flexibly with the drill pipe to meet different diameters and depths. Multi-purpose, controllable precision, greatly reduce the input and inventory of cutting tools.
- Tool diameter range of  $\Phi 10.00 \sim \Phi 30.99\text{mm}$ , drilling depth is divided into 3D/5D/7D/10D/12D; The blade material has two kinds of hard alloy and high performance powder high speed steel, according to the different design of processing materials have 4 kinds of drill tip: universal drill tip, stainless steel drill tip, cast iron drill tip, non-ferrous metal drill tip.
- Best materials, top coating technology and precision grinding to achieve the best performance.

### 优势 Advantages

- 稳定和方便操作的可换钻尖结构，可以在线操作。
- 锁紧螺丝和V型组合定位，把钻尖和钻杆保持受力一致，稳定可靠。
- 高强度的钻尖结构，大进给钻削也同样可靠。
- 硬质合金和高性能粉末高速钢材质钻尖，可满足高性能CNC钻削和普通机床钻削。
- Stable and easy to operate replaceable drill tip structure that can be operated online.
- Lock screw and V-type combination positioning, the drill tip and drill pipe keep the same force, stable and reliable.
- High strength drill tip structure, large feed drilling is also reliable.
- Carbide and high performance powder high speed steel drill point can meet high performance CNC drilling and ordinary machine drilling.

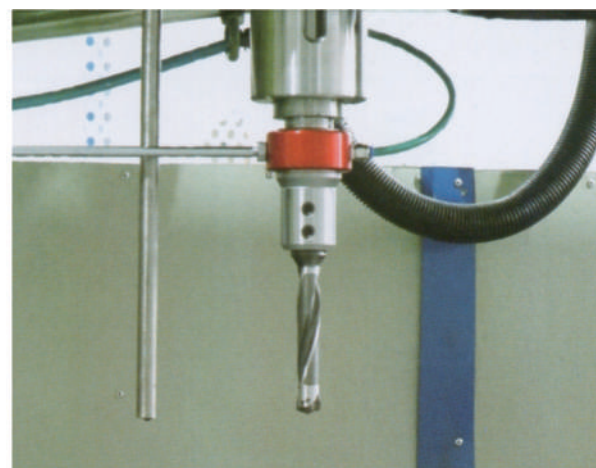
### 应用领域 Application field



#### 硬质合金刀片

——刀片硬度高，耐磨性好，应用于数控钻床、数控车床、加工中心的高速钻削

Given their high hardness and wear resistance, the inserts are used for high speed drilling on CNC drills, CNC lathes and machining centers.



#### 粉末高速钢刀片

——刀片抗崩刃性更好应用于各类摇臂钻床、立式钻床、普通车床、数控机床的中低速钻削

With high chipping resistance, the inserts are used for low-to-medium speed drilling on various radial drilling machines, vertical drilling machines, common lathes and CNC machine tools.



# 可换钻尖钻头 Adjustable point drill bit

# 可换钻尖钻头 Adjustable point drill bit

## 型号编码规则

Model coding rule

### ADJ钻头刀片 ADJ bit blade

# ADJ60-PA1050

大类 Big type	材质 Insert Material	钻尖类型 Drill point	刀片直径 Insert Diameter
ADJ系列可换钻尖式钻头	60-硬质合金 30-粉末高速钢	PA-通用钻尖 MA-不锈钢用钻尖 KA-铸铁用钻尖 NA-有色金属用钻尖	1050-10.5mm

Carbide micro grain HPC

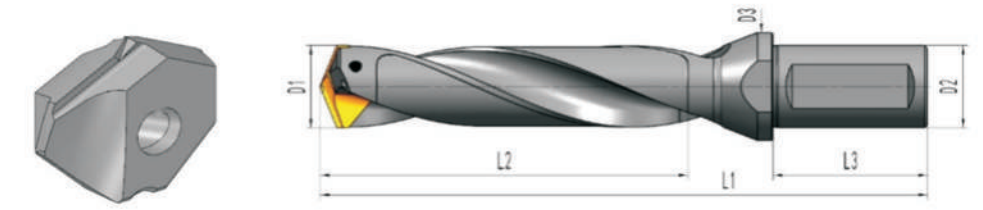
硬质合金刀片 Carbide inseries	ISO				
	P	M	K	N	S
PA	•	○	○		
MA	○	•			○
KA			•		
NA				•	

### ADJ钻头刀杆 ADJ drill shank

# ADJ1050/1099-3D-L16

大类 Big type	直径 The diameter of	最大加工孔深 Maximum machining hole depth	刀柄直径 The handle diameter
ADJ系列可换钻尖式钻头	1050/1099表示 最小安装刀片Φ10.50mm, 最大安装刀片Φ10.99mm	3D-3XD1 5D-5XD1 7D-7XD1 10D-10XD1 12D-12XD1	L16-16mm L20-20mm L25-25mm L32-32mm L40-40mm

ISO 9766 3D 5D 7D 10D 12D

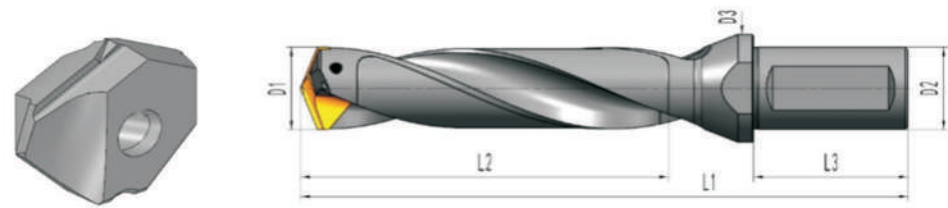


ISO 9766 3D 5D 7D 10D 12D

刀片型号 The blade model	标准库存直径 Standard stock diameter	刀杆型号 Tool rod type	刀片直径范围 Blade diameter range (D1)	倍径 Times the diameter	尺寸 Size					螺钉 Clamp screw	扳手 Wrench
					L1	L2	L3	D2	D3		
ADJ60-PA1000	10.0	ADJ1000/1049-3D-L16	10.00-10.49	3D	101	37	48	16	24	M2.0*10	6IP
				5D	131	67	48	16	24		
				7D	141	77	48	16	24		
				10D	171	107	48	16	24		
ADJ60-PA1050	10.5	ADJ1050/1099-3D-L16	10.00-10.99	3D	101	37	48	16	24		
				5D	131	67	48	16	24		
				7D	141	77	48	16	24		
				10D	171	107	48	16	24		
ADJ60-PA1100	11.0	ADJ1100/1149-3D-L16	11.00-11.49	3D	104	40	48	16	24		
				5D	137	73	48	16	24		
				7D	148	84	48	16	24		
				10D	181	117	48	16	24		
ADJ60-PA1150	11.5	ADJ1150/1199-3D-L16	11.00-11.99	3D	104	40	48	16	24		
				5D	137	73	48	16	24		
				7D	148	84	48	16	24		
				10D	181	117	48	16	24		
ADJ60-PA1200	12.0	ADJ1200/1249-3D-L16	12.00-12.49	3D	108	43	48	16	24		
				5D	144	79	48	16	24		
				7D	156	91	48	16	24		
				10D	192	127	48	16	24		
ADJ60-PA1250	12.5	ADJ1250/1299-3D-L16	12.00-12.99	3D	108	43	48	16	24		
				5D	144	79	48	16	24		
				7D	156	91	48	16	24		
				10D	192	127	48	16	24		
ADJ60-PA1300	13.0	ADJ1300/1349-3D-L16	13.00-13.49	3D	111	46	48	16	24		
				5D	150	85	48	16	24		
				7D	163	98	48	16	24		
				10D	202	137	48	16	24		
ADJ60-PA1350	13.5	ADJ1350/1399-3D-L16	13.00-13.99	3D	111	46	48	16	24		
				5D	150	85	48	16	24		
				7D	163	98	48	16	24		
				10D	202	137	48	16	24		

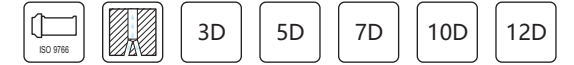
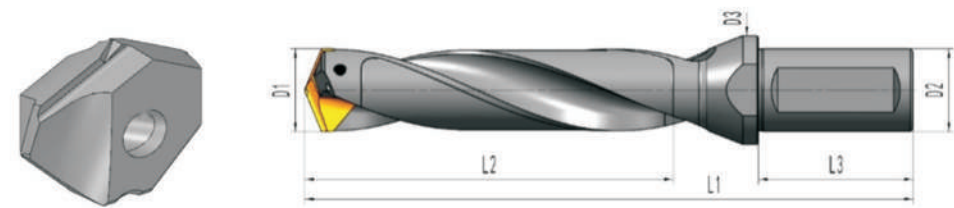


可换钻尖钻头 Adjustable point drill bit



刀片型号 The blade model	标准库存直径 Standard stock diameter	刀杆型号 Tool rod type	刀片直径范围 Blade diameter range (D1)	倍径 Times the diameter	尺寸 Size					螺钉 Clamp screw	扳手 Wrench
					L1	L2	L3	D2	D3		
ADJ60-PA1400	14.0	ADJ1400/1449-3D-L20	14.00-14.49	3D	120	49	50	20	28	M3.0*14	
		ADJ1400/1449-5D-L20		5D	162	91	50	20	28		
		ADJ1400/1449-7D-L20		7D	176	105	50	20	28		
		ADJ1400/1449-10D-L20		10D	218	147	50	20	28		
		ADJ1400/1449-12D-L20		12D	246	175	50	20	28		
ADJ60-PA1450	14.5	ADJ1450/1499-3D-L20	14.00-14.99	3D	120	49	50	20	28	M3.0*14	
		ADJ1450/1499-5D-L20		5D	162	91	50	20	28		
		ADJ1450/1499-7D-L20		7D	176	105	50	20	28		
		ADJ1450/1499-10D-L20		10D	218	147	50	20	28		
		ADJ1450/1499-12D-L20		12D	246	175	50	20	28		
ADJ60-PA1500	15.0	ADJ1500/1549-3D-L20	15.00-15.49	3D	123	52	50	20	28	M3.0*14	
		ADJ1500/1549-5D-L20		5D	168	97	50	20	28		
		ADJ1500/1549-7D-L20		7D	183	112	50	20	28		
		ADJ1500/1549-10D-L20		10D	228	157	50	20	28		
		ADJ1500/1549-12D-L20		12D	258	187	50	20	28		
ADJ60-PA1550	15.5	ADJ1550/1599-3D-L20	15.00-15.99	3D	123	52	50	20	28	M3.0*14	
		ADJ1550/1599-5D-L20		5D	168	97	50	20	28		
		ADJ1550/1599-7D-L20		7D	183	112	50	20	28		
		ADJ1550/1599-10D-L20		10D	228	157	50	20	28		
		ADJ1550/1599-12D-L20		12D	258	187	50	20	28		
ADJ60-PA1600	16.0	ADJ1600/1649-3D-L20	16.00-16.49	3D	127	56	50	20	28	8IP	
		ADJ1600/1649-5D-L20		5D	175	104	50	20	28		
		ADJ1600/1649-7D-L20		7D	191	120	50	20	28		
		ADJ1600/1649-10D-L20		10D	239	168	50	20	28		
		ADJ1600/1649-12D-L20		12D	271	200	50	20	28		
ADJ60-PA1650	16.5	ADJ1650/1699-3D-L20	16.00-16.99	3D	127	56	50	20	28	M3.0*16	
		ADJ1650/1699-5D-L20		5D	175	104	50	20	28		
		ADJ1650/1699-7D-L20		7D	191	120	50	20	28		
		ADJ1650/1699-10D-L20		10D	239	168	50	20	28		
		ADJ1650/1699-12D-L20		12D	271	200	50	20	28		
ADJ60-PA1700	17.0	ADJ1700/1749-3D-L20	17.00-17.49	3D	131	60	50	20	28	M3.0*16	
		ADJ1700/1749-5D-L20		5D	182	111	50	20	28		
		ADJ1700/1749-7D-L20		7D	199	128	50	20	28		
		ADJ1700/1749-10D-L20		10D	250	179	50	20	28		
		ADJ1700/1749-12D-L20		12D	284	213	50	20	28		
ADJ60-PA1750	17.5	ADJ1750/1799-3D-L20	17.00-17.99	3D	131	60	50	20	28	M3.0*16	
		ADJ1750/1799-5D-L20		5D	182	111	50	20	28		
		ADJ1750/1799-7D-L20		7D	199	128	50	20	28		
		ADJ1750/1799-10D-L20		10D	250	179	50	20	28		
		ADJ1750/1799-12D-L20		12D	284	213	50	20	28		

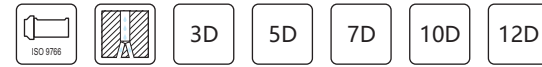
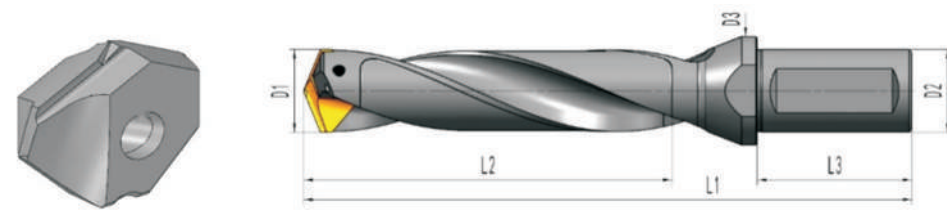
可换钻尖钻头 Adjustable point drill bit



刀片型号 The blade model	标准库存直径 Standard stock diameter	刀杆型号 Tool rod type	刀片直径范围 Blade diameter range (D1)	倍径 Times the diameter	尺寸 Size					螺钉 Clamp screw	扳手 Wrench
					L1	L2	L3	D2	D3		
ADJ60-PA1800	18.0	ADJ1800/1849-3D-L20	18.00-18.49	3D	136	63	50	20	28	M4.0*18	
		ADJ1800/1849-5D-L20		5D	190	117	50	20	28		
		ADJ1800/1849-7D-L20		7D	208	135	50	20	28		
		ADJ1800/1849-10D-L20		10D	262	189	50	20	28		
		ADJ1800/1849-12D-L20		12D	298	225	50	20	28		
ADJ60-PA1850	18.5	ADJ1850/1899-3D-L20	18.00-18.99	3D	136	63	50	20	28	M4.0*18	
		ADJ1850/1899-5D-L20		5D	190	117	50	20	28		
		ADJ1850/1899-7D-L20		7D	208	135	50	20	28		
		ADJ1850/1899-10D-L20		10D	262	189	50	20	28		
		ADJ1850/1899-12D-L20		12D	298	225	50	20	28		
ADJ60-PA1900	19.0	ADJ1900/1949-3D-L20	19.00-19.49	3D	140	67	50	20	28	M4.0*18	
		ADJ1900/1949-5D-L20		5D	197	124	50	20	28		
		ADJ1900/1949-7D-L20		7D	216	143	50	20	28		
		ADJ1900/1949-10D-L20		10D	273	200	50	20	28		
		ADJ1900/1949-12D-L20		12D	311	238	50	20	28		
ADJ60-PA1950	19.5	ADJ1950/1999-3D-L20	19.00-19.99	3D	140	67	50	20	28	M4.0*18	
		ADJ1950/1999-5D-L20		5D	197	124	50	20	28		
		ADJ1950/1999-7D-L20		7D	216	143	50	20	28		
		ADJ1950/1999-10D-L20		10D	273	200	50	20	28		
		ADJ1950/1999-12D-L20		12D	311	238	50	20	28		
ADJ60-PA2000	20.0	ADJ2000/2099-3D-L25	20.00-20.49	3D	154	72	56	25	35	15IP	
		ADJ2000/2099-5D-L25		5D	214	132	56	25	35		
		ADJ2000/2099-7D-L25		7D	234	152	56	25	35		
		ADJ2000/2099-10D-L25		10D	294	212	56	25	35		
		ADJ2000/2099-12D-L25		12D	334	252	56	25	35		
ADJ60-PA2050	20.5	ADJ2000/2099-3D-L25	20.00-20.99	3D	157	75	56	25	35	M4.0*20	
		ADJ2000/2099-5D-L25		5D	220	138	56	25	35		
		ADJ2000/2099-7D-L25		7D	241	159	56	25	35		
		ADJ2000/2099-10D-L25		10D	304	222	56	25	35		
		ADJ2000/2099-12D-L25		12D	346	264	56	25	35		
ADJ60-PA2100	21.0	ADJ2100/2199-3D-L25	21.00-21.49	3D	157	75	56	25	35	M4.0*20	
		ADJ2100/2199-5D-L25		5D	220	138	56	25	35		
		ADJ2100/2199-7D-L25		7D	241	159	56	25	35		
		ADJ2100/2199-10D-L25		10D	304	222	56	25	35		
		ADJ2100/2199-12D-L25		12D	346	264	56	25	35		
ADJ60-PA2150	21.5	ADJ2100/2199-3D-L25	21.00-21.99	3D	157	75	56	25	35	M4.0*20	
		ADJ2100/2199-5D-L25		5D	220	138	56	25	35		
		ADJ2100/2199-7D-L25		7D	241	159	56	25	35		
		ADJ2100/2199-10D-L25		10D	304	222	56	25	35		
		ADJ2100/2199-12D-L25		12D	346	264	56	25	35		

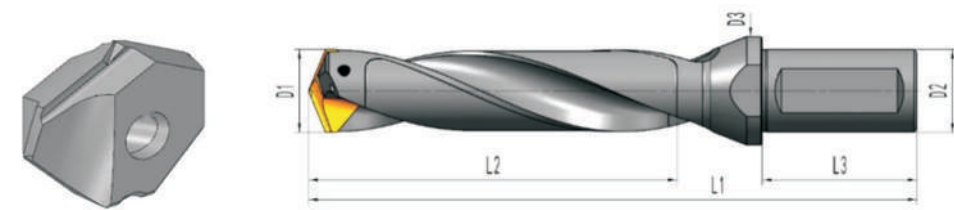


可换钻尖钻头 Adjustable point drill bit



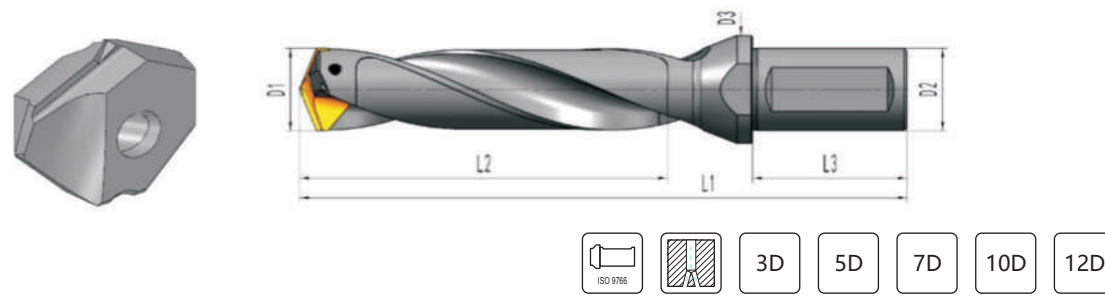
刀片型号 The blade model	标准库存直径 Standard stock diameter	刀杆型号 Tool rod type	刀片直径范围 Blade diameter range (D1)	倍径 Times the diameter	尺寸 Size					螺钉 Clamp screw	扳手 Wrench
					L1	L2	L3	D2	D3		
ADJ60-PA2200	22.0	ADJ2200/2299-3D-L25	22.00-22.49	3D	161	79	56	25	35	M4.0*22	15IP
				5D	227	145	56	25	35		
				7D	249	167	56	25	35		
				10D	315	233	56	25	35		
				12D	359	277	56	25	35		
ADJ60-PA2250	22.5	ADJ2200/2299-3D-L25	22.00-22.99	3D	161	79	56	25	35	M4.0*22	15IP
				5D	227	145	56	25	35		
				7D	249	167	56	25	35		
				10D	315	233	56	25	35		
				12D	359	277	56	25	35		
ADJ60-PA2300	23.0	ADJ2300/2399-3D-L25	23.00-23.49	3D	164	82	56	25	35	M4.0*22	15IP
				5D	233	151	56	25	35		
				7D	256	174	56	25	35		
				10D	325	243	56	25	35		
				12D	371	289	56	25	35		
ADJ60-PA2350	23.5	ADJ2300/2399-3D-L25	23.00-23.99	3D	164	82	56	25	35	M4.0*22	15IP
				5D	233	151	56	25	35		
				7D	256	174	56	25	35		
				10D	325	243	56	25	35		
				12D	371	289	56	25	35		
ADJ60-PA2400	24.0	ADJ2400/2499-3D-L25	24.00-24.49	3D	172	86	56	25	35	M4.0*22	15IP
				5D	244	158	56	25	35		
				7D	268	182	56	25	35		
				10D	340	254	56	25	35		
				12D	388	302	56	25	35		
ADJ60-PA2450	24.5	ADJ2400/2499-3D-L25	24.00-24.99	3D	172	86	56	25	35	M5.0*24	20IP
				5D	244	158	56	25	35		
				7D	268	182	56	25	35		
				10D	340	254	56	25	35		
				12D	388	302	56	25	35		
ADJ60-PA2500	25.0	ADJ2500/2599-3D-L32	25.00-25.49	3D	182	89	60	32	42	M5.0*24	20IP
				5D	257	164	60	32	42		
				7D	282	189	60	32	42		
				10D	357	264	60	32	42		
				12D	407	314	60	32	42		
ADJ60-PA2550	25.5	ADJ2500/2599-3D-L32	25.00-25.99	3D	182	89	60	32	42	M5.0*24	20IP
				5D	257	164	60	32	42		
				7D	282	189	60	32	42		
				10D	357	264	60	32	42		
				12D	407	314	60	32	42		

可换钻尖钻头 Adjustable point drill bit



刀片型号 The blade model	标准库存直径 Standard stock diameter	刀杆型号 Tool rod type	刀片直径范围 Blade diameter range (D1)	倍径 Times the diameter	尺寸 Size					螺钉 Clamp screw	扳手 Wrench
					L1	L2	L3	D2	D3		
ADJ60-PA2600	26.0	ADJ2600/2699-3D-L32	26.00-26.49	3D	185	92	60	32	42	M5.0*26	20IP
				5D	263	170	60	32	42		
				7D	289	196	60	32	42		
				10D	367	274	60	32	42		
				12D	419	326	60	32	42		
ADJ60-PA2650	26.5	ADJ2600/2699-3D-L32	26.00-26.99	3D	185	92	60	32	42	M5.0*26	20IP
				5D	263	170	60	32	42		
				7D	289	196	60	32	42		
				10D	367	274	60	32	42		
				12D	419	326	60	32	42		
ADJ60-PA2700	27.0	ADJ2700/2799-3D-L32	27.00-27.49	3D	189	96	60	32	42	M5.0*26	20IP
				5D	270	177	60	32	42		
				7D	297	204	60	32	42		
				10D	378	285	60	32	42		
				12D	432	339	60	32	42		
ADJ60-PA2750	27.5	ADJ2700/2799-3D-L32	27.00-27.99	3D	189	96	60	32	42	M5.0*26	20IP
				5D	270	177	60	32	42		
				7D	297	204	60	32	42		
				10D	378	285	60	32	42		
				12D	432	339	60	32	42		
ADJ60-PA2800	28.0	ADJ2800/2899-3D-L32	28.00-28.49	3D	192	99	60	32	42	M5.0*28	20IP
				5D	276	183	60	32	42		
				7D	304	211	60	32	42		
				10D	388	295	60	32	42		
				12D	444	351	60	32	42		
ADJ60-PA2850	28.5	ADJ2800/2899-3D-L32	28.00-28.99	3D	192	99	60	32	42	M5.0*28	20IP
				5D	276	183	60	32	42		
				7D	304	211	60	32	42		
				10D	388	295	60	32	42		
				12D	444	351	60	32	42		
ADJ60-PA2900	29.0	ADJ2900/2999-3D-L32	29.00-29.49	3D	196	103	60	32	42	M5.0*28	20IP
				5D	283	190	60	32	42		
				7D	312	219	60	32	42		
				10D	399	306	60	32	42		
				12D	457	364	60	32	42		
ADJ60-PA2950	29.5	ADJ2900/2999-3D-L32	29.00-29.99	3D	196	103	60	32	42	M5.0*28	20IP
				5D	283	190	60	32	42		
				7D	312	219	60	32	42		
				10D	399	306	60	32	42		
				12D	457	364	60	32	42		

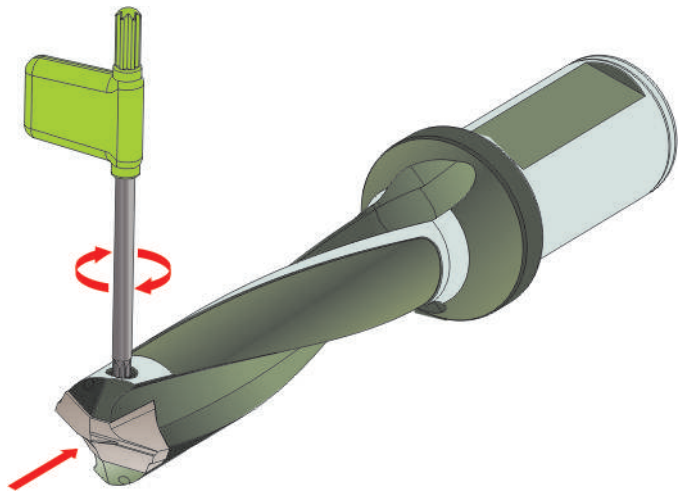
# 可换钻尖钻头 Adjustable point drill bit



刀片型号 The blade model	标准库存直径 Standard stock diameter	刀杆型号 Tool rod type	刀片直径范围 Blade diameter range (D1)	倍径 Times the diameter	尺寸 Size					螺钉 Clamp screw	扳手 Wrench
					L1	L2	L3	D2	D3		
ADJ60-PA3000	30.0	ADJ3000/3099-3D-L32	30.00-30.49	3D	199	106	60	32	42	M5.0*28	20IP
		ADJ3000/3099-5D-L32		5D	289	196	60	32	42		
		ADJ3000/3099-7D-L32		7D	319	226	60	32	42		
		ADJ3000/3099-10D-L32		10D	409	316	60	32	42		
		ADJ3000/3099-12D-L32		12D	469	376	60	32	42		
ADJ60-PA3050	30.5	ADJ3000/3099-3D-L32	30.00-30.99	3D	199	106	60	32	42	M5.0*28	20IP
		ADJ3000/3099-5D-L32		5D	289	196	60	32	42		
		ADJ3000/3099-7D-L32		7D	319	226	60	32	42		
		ADJ3000/3099-10D-L32		10D	409	316	60	32	42		
		ADJ3000/3099-12D-L32		12D	469	376	60	32	42		

## 刀片的安装

Installation procedure



直径范围Φ Range of Diameter Φ	拧紧力矩(Nm) Tightening Torque (Nm)
10.0-13.99	0.6
14.0-17.99	1.2
18.0-23.99	2.2
24.0-27.99	3.3
28.0-30.99	5.0

- ①用压缩空气清洁刀片和刀片槽;
  - ②将刀片插入刀杆安装槽内轻按刀片;
  - ③用紧固螺栓锁紧刀片。有条件的用户推荐采用力矩扳手锁紧锁紧力矩值如图所示。
- ① Clean the blade and blade slot with compressed air;  
② Insert the blade into the knife rod mounting slot and press the blade gently.  
③ Lock the blade with fastening bolts. Users with conditions recommend using torque wrenches to lock the locking torque value as shown in the figure.

# 可换钻尖钻头 Adjustable point drill bit

## 应用要点、注意事项

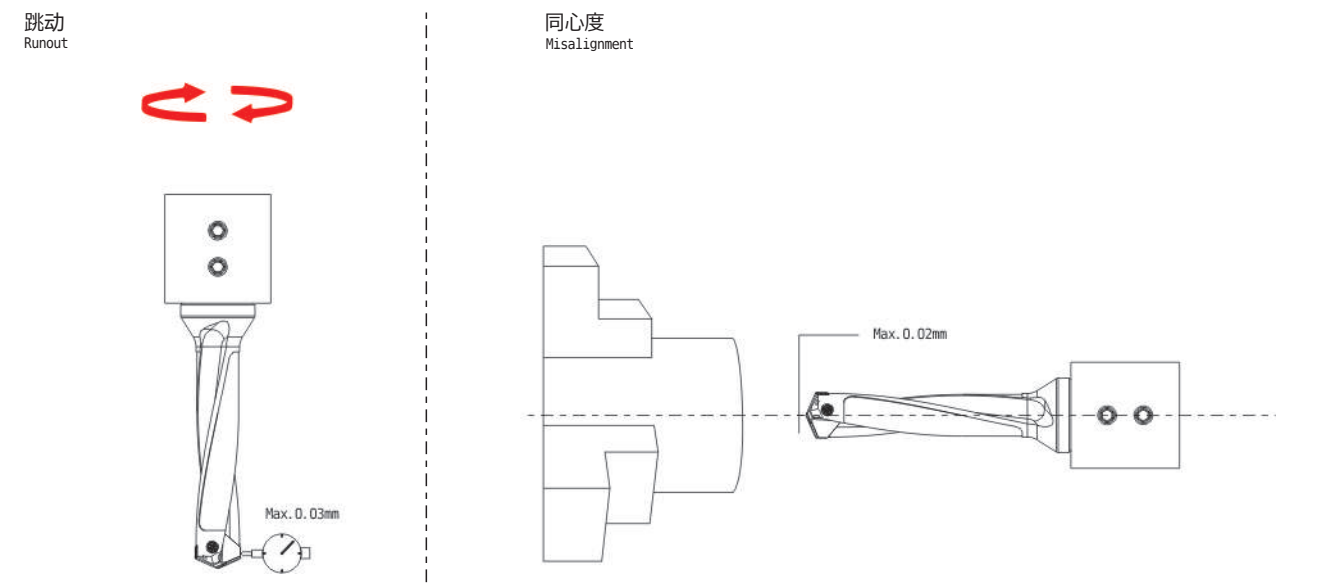
Essentials of use and precautions

### 安装 Assembly

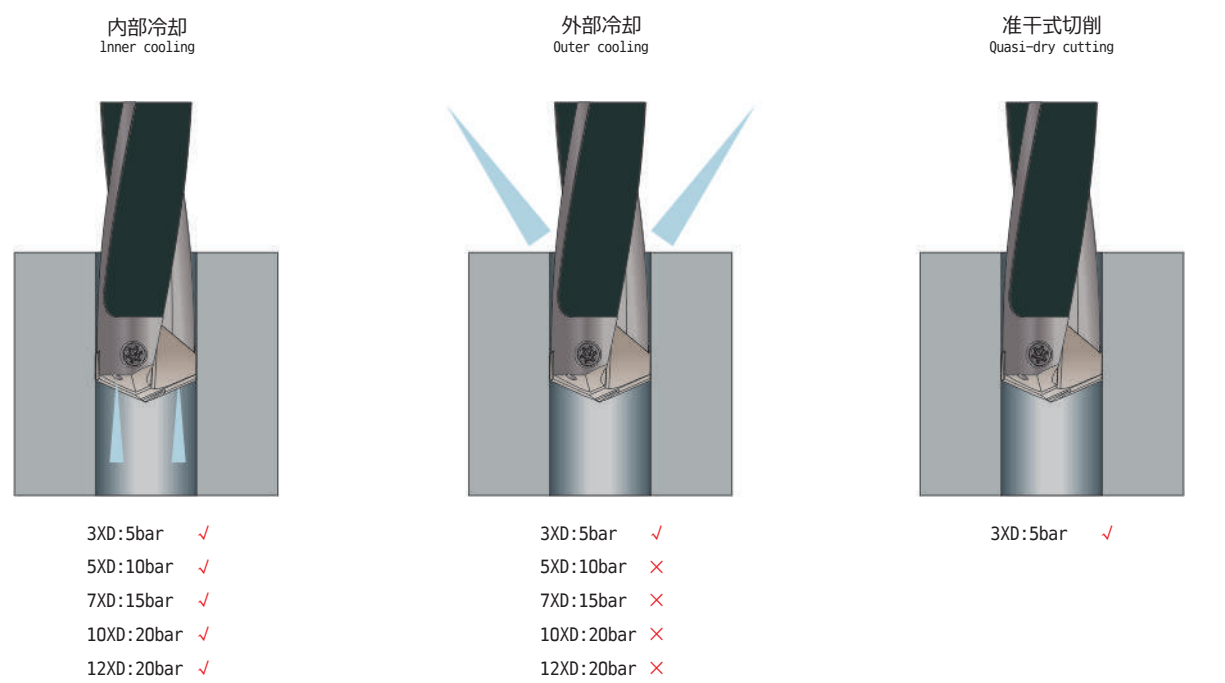
应用场合的稳定性对于获得最佳的刀具寿命与孔的精度是重要的。检查机床主轴、夹具与工件的装夹情况，确保最大的稳定性与刚性。不稳定的工况会引起钻头的折断。

The stability of the applications is essential for optimal tool life and hole accuracy. Guarantee the maximum stability and rigidity by checking the holding of the machine tool spindle, fixtures and workpiece. Unstable operating conditions will cause fracture of drills bits.

### 最大跳动和同心度 Max.Runout and Misalignment



### 冷却压力 Cooling Pressure



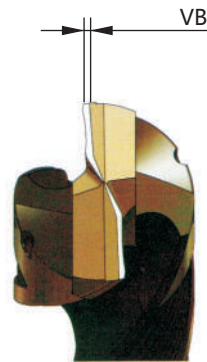
# 可换钻尖钻头 Adjustable point drill bit

## 应用要点、注意事项

Essentials of use and precautions

### 钻头更换判断标准 Standard for drill bit replacement

磨损极限 Wear limit



硬质合金刀片:  $VB=0.3\text{mm}$   
Carbide insert:  
粉末高速钢刀片:  $VB=0.4\text{mm}$   
HSS-PM insert:

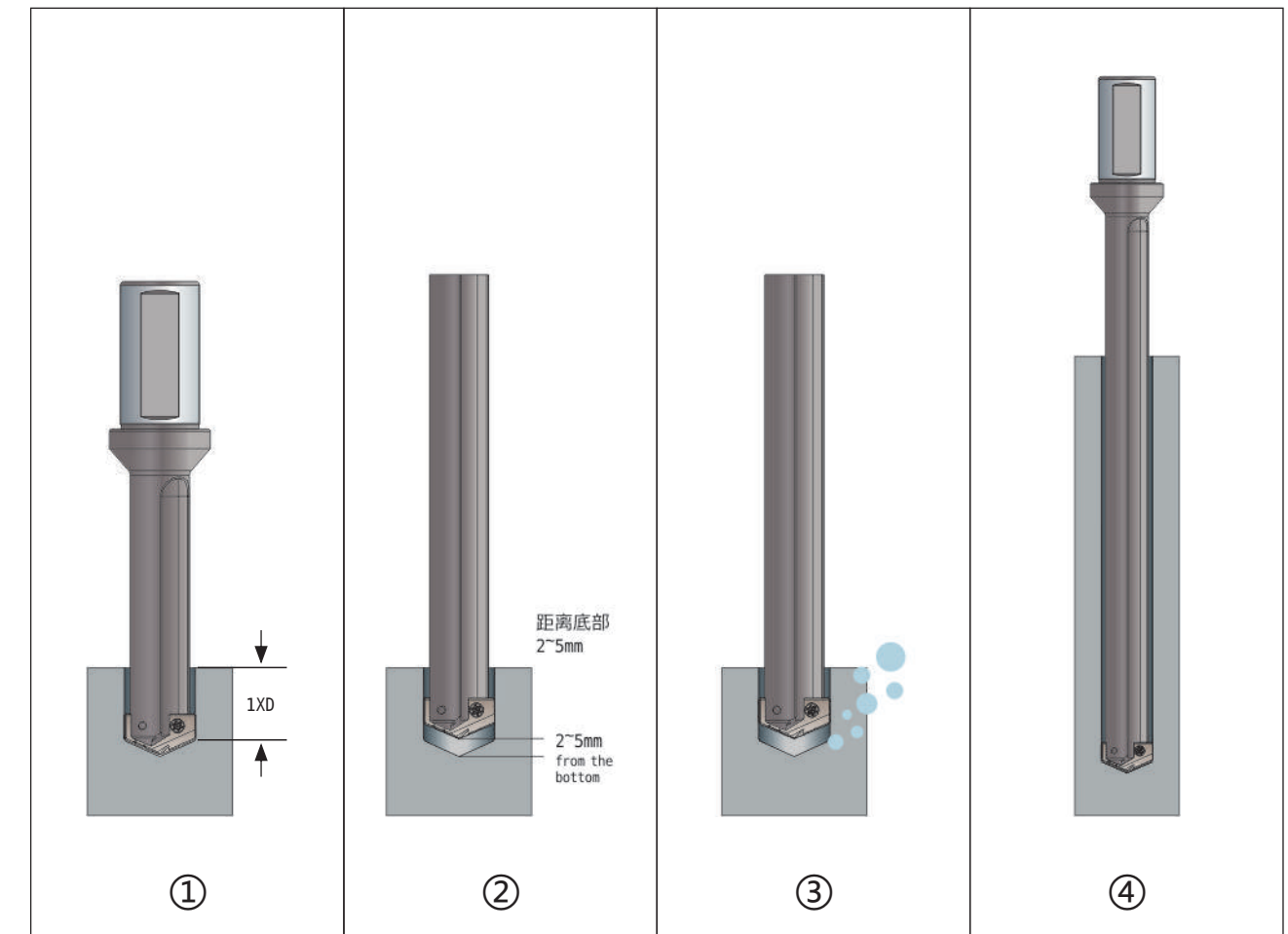
### 应用 Application

工况 Operating Condition	说明 Instructions	工况 Operating Condition	说明 Instructions
	<b>起始面为斜面</b> The entry surface is slanted 斜面进给率 Slope Feed Rate <math>3^\circ\ 50\%</math>		<b>工件表面不平整</b> The entry surface is welded 加工前先忽平 Level it through spot facing before machining
	<b>出孔为斜面</b> The outlet is slanted 斜面进给率 Slope Feed Rate <math>3^\circ\ 50\%</math>		<b>钻叠层板</b> Stacked plates 原则上可以 Allowed in principle 需要良好的工件压紧 The workpiece shall be properly clamped 板之间不能有间隙 There must be no gaps between the plates
	<b>起始面为弧面</b> The entry surface is arc 在中心处钻孔并降低进给是可以的 Drilling at the center at reduced feed rate is allowed 如起始点不在弧面中心需要将面惚平 Spot facing is required if the entry point is not at the center of the arc		<b>钻型腔</b> Cavities 不可以 Not allowed
	<b>钻贯穿孔</b> Through hole 不可以 Not allowed		<b>起始面有台阶</b> Step on the entry surface 不可以(钻尖起始点必须为平面) Not allowed (the entry point must be on a horizontal plane)

# 可换钻尖钻头 Adjustable point drill bit

## 长径系列钻削工艺

Long diameter series drilling process



①短钻头钻引导孔至 $1D$ 至 $1.5D$

Drill a pilot hole to  $1D$  to  $1.5D$  with a short drill bit

②低转速和低进给进入引导孔

Enter the pilot hole at a low speed and low feed rate

③让冷却液停留2~3秒

Keep the coolant for 2 to 3s

④按推荐的参数连续加工出口时降低速度和进给

Carry out continuous drilling according to the recommended parameters. Reduce the speed and feed rate at the outlet



切削参数 Cutting parameters

U 钻

铲钻

可换钻尖钻头

组合钻

带定心U钻

VMD 大钻头

模块系统

Main cutting parameters table for carbide blade series (硬质合金刀片系列), including ISO material, heat treatment, and speed/depth of cut data.

注意: 1. 上述推荐的切削参数以3D型为准。当使用5D、7D、10D、12D型时, 根据工况适当降低进给量。进给量: 3D型=100%、5D型=80%、7D型=70%、10D型=60%、12D型=50%以下; 2. 切削H类硬材料推荐使用MQL (微量油雾冷却方式)。

切削参数 Cutting parameters

U 钻

铲钻

可换钻尖钻头

组合钻

带定心U钻

VMD 大钻头

模块系统

Main cutting parameters table for carbide blade series (硬质合金刀片系列) showing feed rate (进给量) data in (f<sub>n</sub>)/mm/r for various drill diameters.

Note: 1. The cutting parameters recommended by the upper speed are subject to the 3D model. When using type 5D and type 8D, the feed should be appropriately reduced according to the working condition. Feed quantity : 3D type =100%, 5D type =80%, 7D type =70%, 10D =60%, 12D = less than 50%; 2. MQL (micro oil mist cooling) is recommended for cutting H hard materials.





## 组合钻 Combined drill

### 组合钻的特征和优势

Characteristics and advantages of combination drill

#### 特征优势 Main feature

可换钻尖组合钻头，是在可换钻尖钻头（皇冠钻）的基础开发的一款钻头，钻孔范围直径26mm~62m，孔深有3D/5D/7D/10D四种规格，切削刃用可换钻尖和普通U钻刀片组合，效率高，成本低，孔加工精度公差在+0.1~-0.1范围。

Replaceable bit combination, is in the replaceable bit (crown drill) based on the development of a drill, drilling range diameter 26mm~62m, hole depth of 3D/5D/7D/10D four specifications, cutting edge with replaceable drill point and common U drill blade combination, high efficiency, low cost, hole machining accuracy tolerance in +0.1~-0.1 range.

### 组合钻的型号编码

The type code of the combination drill

#### 组合钻中心刃刀片 Combined drill center blade

A DJS60-PA 2600

大类 Big type	材质 Insert Material	钻尖类型 Drill point type	刀片直径 Insert Diameter
ADJS系列可换钻尖式钻头	60-硬质合金 30-粉末高速钢	PA-通用钻尖 MA-不锈钢用钻尖 KA-铸铁用钻尖 NA-有色金属用钻尖	2600-26.00mm

#### 组合钻刀杆 Combined drill shank

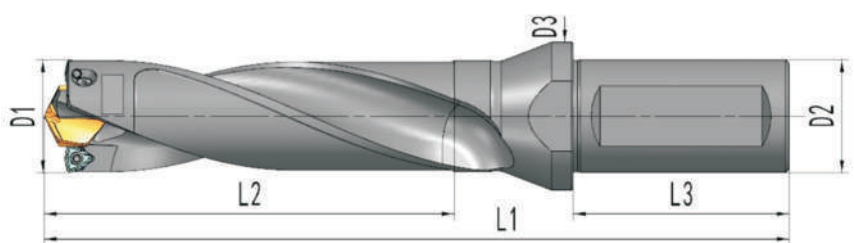
A DJS2600/2649-3D-C32

大类 Big type	直径 The diameter of	有效加工孔深 Maximum machining hole depth	刀柄直径 The handle diameter
ADJS系列可换钻尖式组合钻	2600/2649-表示最小刀片组合 Φ2600mm, 最大刀片组合Φ2649mm	3D-3XD1 5D-5XD1 7D-7XD1 10D-10XD1	C25-Φ25mm C32-Φ32mm C40-Φ40mm



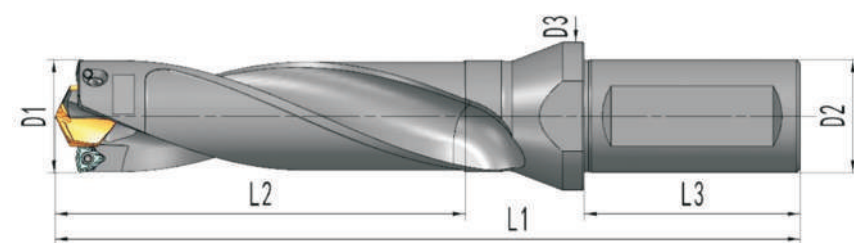


组合钻 Combined drill



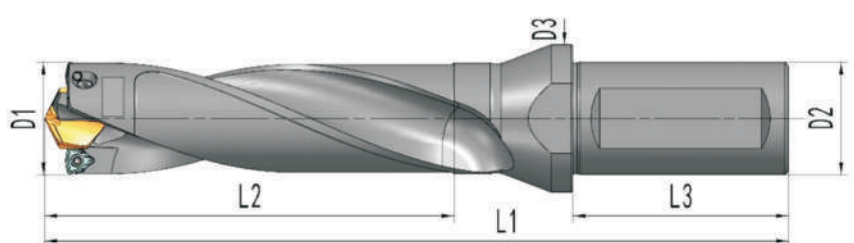
中心刀片 Center of the blade	扩孔刀片 x2 Reaming blade X2	标准 库存 直径	刀杆型号 Tool rod type	刀片直 径范围 (D1)	倍径 Times the diameter	尺寸 Size					中心刀片		扩孔刀片	
						L1	L2	L3	D2	D3	螺钉	扳手	螺钉	扳手
ADJS60-PA2600	WCMX040208	26.0	ADJS2600/2649-3D-C32 ADJS2600/2649-5D-C32 ADJS2600/2649-7D-C32 ADJS2600/2649-10D-C32	26.00   26.49	3D	185	92	60	32	42	M2.5X10.9	7IP		
					5D	237	144	60	32	42				
					7D	289	196	60	32	42				
					10D	367	274	60	32	42				
ADJS60-PA2650	WCMX040208	26.5	ADJS2650/2699-3D-C32 ADJS2650/2699-5D-C32 ADJS2650/2699-7D-C32 ADJS2650/2699-10D-C32	26.50   26.99	3D	185	92	60	32	42				
					5D	237	144	60	32	42				
					7D	289	196	60	32	42				
					10D	367	274	60	32	42				
ADJS60-PA2700	WCMX040208	27.0	ADJS2700/2749-3D-C32 ADJS2700/2749-5D-C32 ADJS2700/2749-7D-C32 ADJS2700/2749-10D-C32	27.00   27.49	3D	189	96	60	32	42				
					5D	243	150	60	32	42				
					7D	297	204	60	32	42				
					10D	378	285	60	32	42				
ADJS60-PA2750	WCMX040208	27.5	ADJS2750/2799-3D-C32 ADJS2750/2799-5D-C32 ADJS2750/2799-7D-C32 ADJS2750/2799-10D-C32	27.50   27.99	3D	189	96	60	32	42				
					5D	243	150	60	32	42				
					7D	297	204	60	32	42				
					10D	378	285	60	32	42				
ADJS60-PA2800	WCMX040208	28.0	ADJS2800/2849-3D-C32 ADJS2800/2849-5D-C32 ADJS2800/2849-7D-C32 ADJS2800/2849-10D-C32	28.00   28.49	3D	192	99	60	32	42				
					5D	248	155	60	32	42				
					7D	304	211	60	32	42				
					10D	388	295	60	32	42				
ADJS60-PA2850	WCMX040208	28.5	ADJS2850/2899-3D-C32 ADJS2850/2899-5D-C32 ADJS2850/2899-7D-C32 ADJS2850/2899-10D-C32	28.50   28.99	3D	192	99	60	32	42				
					5D	248	155	60	32	42				
					7D	304	211	60	32	42				
					10D	388	295	60	32	42				
ADJS60-PA2900	WCMX040208	29.0	ADJS2900/2949-3D-C32 ADJS2900/2949-5D-C32 ADJS2900/2949-7D-C32 ADJS2900/2949-10D-C32	29.00   29.49	3D	193	100	60	32	42				
					5D	251	158	60	32	42				
					7D	309	216	60	32	42				
					10D	396	303	60	32	42				
ADJS60-PA2950	WCMX040208	29.5	ADJS2950/2999-3D-C32 ADJS2950/2999-5D-C32 ADJS2950/2999-7D-C32 ADJS2950/2999-10D-C32	29.50   29.99	3D	193	100	60	32	42				
					5D	251	158	60	32	42				
					7D	309	216	60	32	42				
					10D	396	303	60	32	42				
ADJS60-PA3000	WCMX040208	30.0	ADJS3000/3049-3D-C32 ADJS3000/3049-5D-C32 ADJS3000/3049-7D-C32 ADJS3000/3049-10D-C32	30.00   30.49	3D	199	326	60	32	42				
					5D	259	386	60	32	42				
					7D	319	446	60	32	42				
					10D	409	536	60	32	42				
ADJS60-PA3050	WCMX040208	30.5	ADJS3050/3099-3D-C32 ADJS3050/3099-5D-C32 ADJS3050/3099-7D-C32 ADJS3050/3099-10D-C32	30.50   30.99	3D	199	106	60	32	42				
					5D	259	166	60	32	42				
					7D	319	226	60	32	42				
					10D	409	316	60	32	42				

组合钻 Combined drill



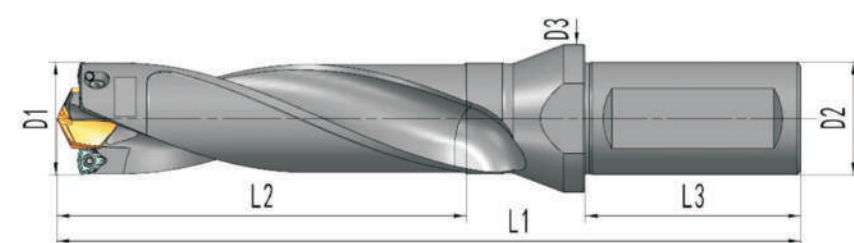
中心刀片 Center of the blade	扩孔刀片 x2 Reaming blade X2	标准 库存 直径	刀杆型号 Tool rod type	刀片直 径范围 (D1)	倍径 Times the diameter	尺寸 Size					中心刀片		扩孔刀片	
						L1	L2	L3	D2	D3	螺钉	扳手	螺钉	扳手
ADJS60-PA3100	WCMX040208	31.0	ADJS3100/3149-3D-C32 ADJS3100/3149-5D-C32 ADJS3100/3149-7D-C32 ADJS3100/3149-10D-C32	31.00   31.49	3D	202	109	60	32	42	M3.0X12.8	8IP		
					5D	264	171	60	32	42				
					7D	326	233	60	32	42				
					10D	419	326	60	32	42				
ADJS60-PA3150	WCMX040208	31.5	ADJS3150/3199-3D-C32 ADJS3150/3199-5D-C32 ADJS3150/3199-7D-C32 ADJS3150/3199-10D-C32	31.50   31.99	3D	202	109	60	32	42				
					5D	264	171	60	32	42				
					7D	326	233	60	32	42				
					10D	419	326	60	32	42				
ADJS60-PA3200	WCMX040208	32.0	ADJS3200/3249-3D-C32 ADJS3200/3249-5D-C32 ADJS3200/3249-7D-C32 ADJS3200/3249-10D-C32	32.00   32.49	3D	206	113	60	32	42				
					5D	270	177	60	32	42				
					7D	334	241	60	32	42				
					10D	430	337	60	32	42				
ADJS60-PA3250	WCMX040208	32.5	ADJS3250/3299-3D-C32 ADJS3250/3299-5D-C32 ADJS3250/3299-7D-C32 ADJS3250/3299-10D-C32	32.50   32.99	3D	206	113	60	32	42				
					5D	270	177	60	32	42				
					7D	334	241	60	32	42				
					10D	430	337	60	32	42				
ADJS60-PA3300	WCMT050308	33.0	ADJS3300/3349-3D-C32 ADJS3300/3349-5D-C32 ADJS3300/3349-7D-C32 ADJS3300/3349-10D-C32	33.00   33.49	3D	213	119	60	32	42				
					5D	279	185	60	32	42				
					7D	345	251	60	32	42				
					10D	444	350	60	32	42				
ADJS60-PA3350	WCMT050308	33.5	ADJS3350/3399-3D-C32 ADJS3350/3399-5D-C32 ADJS3350/3399-7D-C32 ADJS3350/3399-10D-C32	33.50   33.99	3D	213	119	60	32	42				
					5D	279	185	60	32	42				
					7D	345	251	60	32	42				
					10D	444	350	60	32	42				
ADJS60-PA3400	WCMT050308	34.0	ADJS3400/3449-3D-C32 ADJS3400/3449-5D-C32 ADJS3400/3449-7D-C32 ADJS3400/3449-10D-C32	34.00   34.49	3D	217	123	60	32	42				
					5D	285	191	60	32	42				
					7D	353	259	60	32	42				
					10D	455	361	60	32	42				
ADJS60-PA3450	WCMT050308	34.5	ADJS3450/3499-3D-C32 ADJS3450/3499-5D-C32 ADJS3450/3499-7D-C32 ADJS3450/3499-10D-C32	34.50   34.99	3D	217	123	60	32	42				
					5D	285	191	60	32	42				
					7D	353	259	60	32	42				
					10D	455	361	60	32	42				
ADJS60-PA3500	WCMT050308	35.0	ADJS3500/3549-3D-C32 ADJS3500/3549-5D-C32 ADJS3500/3549-7D-C32 ADJS3500/3549-10D-C32	35.00   35.49	3D	220	126	60	32	42				
					5D	290	196	60	32	42				
					7D	360	266	60	32	42				
					10D	465	371	60	32	42				
ADJS60-PA3550	WCMT050308	35.5	ADJS3550/3599-3D-C32 ADJS3550/3599-5D-C32 ADJS3550/3599-7D-C32 ADJS3550/3599-10D-C32	35.50   35.99	3D	220	126	60	32	42				
					5D	290	196	60	32	42				
					7D	360	266	60	32	42				
					10D	465	371	60	32	42				

组合钻 Combined drill



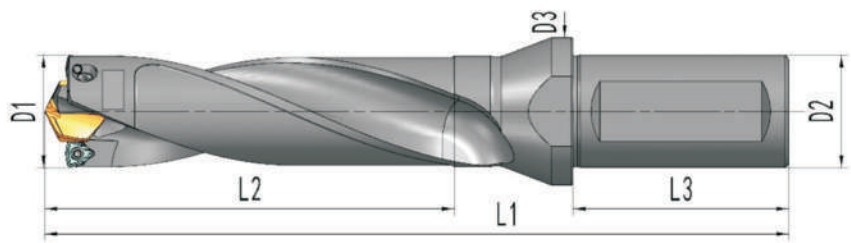
中心刀片 Center of the blade	扩孔刀片 x2 Reaming blade X2	标准 库存 直径	刀杆型号 Tool rod type	刀片直 径范围 (D1)	倍径 Times the diameter	尺寸 Size					中心刀片		扩孔刀片	
						L1	L2	L3	D2	D3	螺钉	扳手	螺钉	扳手
ADJS60-PA3600	WCMT050308	36.0	ADJS3600/3649-3D-C32	36.00	3D	223	129	60	32	42	M4.0X16.7	15IP	M3.0X8	T8
			ADJS3600/3649-5D-C32		5D	295	201	60	32	42				
			ADJS3600/3649-7D-C32	36.49	7D	367	273	60	32	42				
			ADJS3600/3649-10D-C32		10D	475	381	60	32	42				
ADJS60-PA3650	WCMT050308	36.5	ADJS3650/3699-3D-C32	36.50	3D	223	129	60	32	42				
			ADJS3650/3699-5D-C32		5D	295	201	60	32	42				
			ADJS3650/3699-7D-C32	36.99	7D	367	273	60	32	42				
			ADJS3650/3699-10D-C32		10D	475	381	60	32	42				
ADJS60-PA3700	WCMT050308	37.0	ADJS3700/3749-3D-C32	37.00	3D	227	131	60	32	42				
			ADJS3700/3749-5D-C32		5D	301	205	60	32	42				
			ADJS3700/3749-7D-C32	37.49	7D	375	279	60	32	42				
			ADJS3700/3749-10D-C32		10D	486	390	60	32	42				
ADJS60-PA3750	WCMT050308	37.5	ADJS3750/3799-3D-C32	37.50	3D	227	131	60	32	42				
			ADJS3750/3799-5D-C32		5D	301	205	60	32	42				
			ADJS3750/3799-7D-C32	37.99	7D	375	279	60	32	42				
			ADJS3750/3799-10D-C32		10D	486	390	60	32	42				
ADJS60-PA3800	WCMT050308	38.0	ADJS3800/3849-3D-C32	38.00	3D	230	134	60	32	42				
			ADJS3800/3849-5D-C32		5D	306	210	60	32	42				
			ADJS3800/3849-7D-C32	38.49	7D	382	286	60	32	42				
			ADJS3800/3849-10D-C32		10D	496	400	60	32	42				
ADJS60-PA3850	WCMT050308	38.5	ADJS3850/3899-3D-C32	38.50	3D	230	134	60	32	42				
			ADJS3850/3899-5D-C32		5D	306	210	60	32	42				
			ADJS3850/3899-7D-C32	38.99	7D	382	286	60	32	42				
			ADJS3850/3899-10D-C32		10D	496	400	60	32	42				
ADJS60-PA3900	WCMT050308	39.0	ADJS3900/3949-3D-C32	39.00	3D	234	138	60	32	42				
			ADJS3900/3949-5D-C32		5D	312	216	60	32	42				
			ADJS3900/3949-7D-C32	39.49	7D	390	294	60	32	42				
			ADJS3900/3949-10D-C32		10D	507	411	60	32	42				
ADJS60-PA3950	WCMT050308	39.5	ADJS3950/3999-3D-C32	39.50	3D	234	138	60	32	42				
			ADJS3950/3999-5D-C32		5D	312	216	60	32	42				
			ADJS3950/3999-7D-C32	39.99	7D	390	294	60	32	42				
			ADJS3950/3999-10D-C32		10D	507	411	60	32	42				
ADJS60-PA4000	WCMT06T308	40.0	ADJS4000/4049-3D-C32	40.00	3D	234	138	60	32	42				
			ADJS4000/4049-5D-C32		5D	314	218	60	32	42				
			ADJS4000/4049-7D-C32	40.49	7D	394	298	60	32	42				
			ADJS4000/4049-10D-C32		10D	514	418	60	32	42				
ADJS60-PA4050	WCMT06T308	40.5	ADJS4050/4099-3D-C32	40.50	3D	234	138	60	32	42				
			ADJS4050/4099-5D-C32		5D	314	218	60	32	42				
			ADJS4050/4099-7D-C32	40.99	7D	394	298	60	32	42				
			ADJS4050/4099-10D-C32		10D	514	418	60	32	42				

组合钻 Combined drill



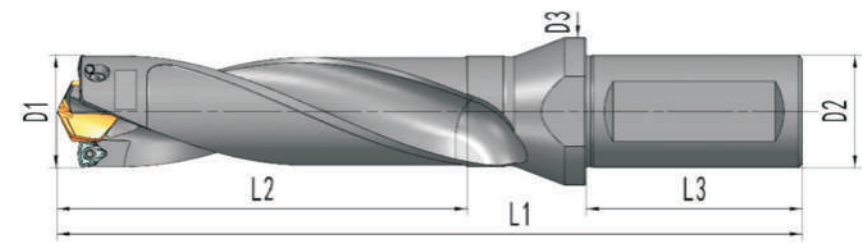
中心刀片 Center of the blade	扩孔刀片 x2 Reaming blade X2	标准 库存 直径	刀杆型号 Tool rod type	刀片直 径范围 (D1)	倍径 Times the diameter	尺寸 Size					中心刀片		扩孔刀片	
						L1	L2	L3	D2	D3	螺钉	扳手	螺钉	扳手
ADJS60-PA4100	WCMT06T308	41.0	ADJS4100/4149-3D-C32	41.00	3D	237	141	60	32	42	M4.0X16.7	15IP	M3.5X10	T15
			ADJS4100/4149-5D-C32		5D	319	223	60	32	42				
			ADJS4100/4149-7D-C32	41.49	7D	401	305	60	32	42				
			ADJS4100/4149-10D-C32		10D	524	428	60	32	42				
ADJS60-PA4150	WCMT06T308	41.5	ADJS4150/4199-3D-C32	41.50	3D	237	141	60	32	42				
			ADJS4150/4199-5D-C32		5D	319	223	60	32	42				
			ADJS4150/4199-7D-C32	41.99	7D	401	305	60	32	42				
			ADJS4150/4199-10D-C32		10D	524	428	60	32	42				
ADJS60-PA4200	WCMT06T308	42.0	ADJS4200/4249-3D-C32	42.00	3D	243	147	60	32	42				
			ADJS4200/4249-5D-C32		5D	327	231	60	32	42				
			ADJS4200/4249-7D-C32	42.49	7D	411	315	60	32	42				
			ADJS4200/4249-10D-C32		10D	537	441	60	32	42				
ADJS60-PA4250	WCMT06T308	42.5	ADJS4250/4299-3D-C32	42.50	3D	243	147	60	32	42				
			ADJS4250/4299-5D-C32		5D	327	231	60	32	42				
			ADJS4250/4299-7D-C32	42.99	7D	411	315	60	32	42				
			ADJS4250/4299-10D-C32		10D	537	441	60	32	42				
ADJS60-PA4300	WCMT06T308	43.0	ADJS4300/4349-3D-C32	43.00	3D	246	150	60	32	42				
			ADJS4300/4349-5D-C32		5D	332	236	60	32	42				
			ADJS4300/4349-7D-C32	43.49	7D	418	322	60	32	42				
			ADJS4300/4349-10D-C32		10D	547	451	60	32	42				
ADJS60-PA4350	WCMT06T308	43.5	ADJS4350/4399-3D-C32	43.50	3D	246	150	60	32	42				
			ADJS4350/4399-5D-C32		5D	332	236	60	32	42				
			ADJS4350/4399-7D-C32	43.99	7D	418	322	60	32	42				
			ADJS4350/4399-10D-C32		10D	547	451	60	32	42				
ADJS60-PA4400	WCMT06T308	44.0	ADJS4400/4449-3D-C32	44.00	3D	249	153	60	32	42				
			ADJS4400/4449-5D-C32		5D	337	241	60	32	42				
			ADJS4400/4449-7D-C32	44.49	7D	425	329	60	32	42				
			ADJS4400/4449-10D-C32		10D	557	461	60	32	42				
ADJS60-PA4450	WCMT06T308	44.5	ADJS4450/4499-3D-C32	44.50	3D	249	153	60	32	42				
			ADJS4450/4499-5D-C32		5D	337	241	60	32	42				
			ADJS4450/4499-7D-C32	44.99	7D	425	329	60	32	42				
			ADJS4450/4499-10D-C32		10D	557	461	60	32	42				
ADJS60-PA4500	WCMT06T308	45.0	ADJS4500/4549-3D-C32	45.00	3D	252	156	60	32	42				
			ADJS4500/4549-5D-C32		5D	342	246	60	32	42				
			ADJS4500/4549-7D-C32	45.49	7D	432	336	60	32	42				
			ADJS4500/4549-10D-C32		10D	567	471	60	32	42				
ADJS60-PA4550	WCMT06T308	45.5	ADJS4550/4599-3D-C32	45.50	3D	252	156	60	32	42				
			ADJS4550/4599-5D-C32		5D	342	246	60	32	42				
			ADJS4550/4599-7D-C32	45.99	7D	432	336	60	32	42				
			ADJS4550/4599-10D-C32		10D	567	471	60	32	42				

组合钻 Combined drill



中心刀片 Center of the blade	扩孔刀片 x2 Reaming blade X2	标准 库存 直径	刀杆型号 Tool rod type	刀片直 径范围 (D1)	倍径 Times the diameter	尺寸 Size					中心刀片		扩孔刀片		
						L1	L2	L3	D2	D3	螺钉	扳手	螺钉	扳手	
ADJS60-PA4600	WCMT06T308	46.0	ADJS4600/4649-3D-C32	46.00	3D	255	159	60	32	42	M4.0X16.7	15IP	M3.5X10	T15	
			ADJS4600/4649-5D-C32		5D	347	251	60	32	42					
			ADJS4600/4649-7D-C32		46.49	7D	439	343	60	32					42
			ADJS4600/4649-10D-C32		10D	577	481	60	32	42					
ADJS60-PA4650	WCMT06T308	46.5	ADJS4650/4699-3D-C32	46.50	3D	255	159	60	32	42					
			ADJS4650/4699-5D-C32		5D	347	251	60	32	42					
			ADJS4650/4699-7D-C32		46.99	7D	439	343	60	32					42
			ADJS4650/4699-10D-C32		10D	577	481	60	32	42					
ADJS60-PA4700	WCMT06T308	47.0	ADJS4700/4749-3D-C32	47.00	3D	258	162	60	32	42					
			ADJS4700/4749-5D-C32		47.49	5D	352	256	60	32					42
			ADJS4700/4749-7D-C32		7D	446	350	60	32	42					
			ADJS4700/4749-10D-C32		10D	587	491	60	32	42					
ADJS60-PA4750	WCMT06T308	47.5	ADJS4750/4799-3D-C32	47.50	3D	258	162	60	32	42					
			ADJS4750/4799-5D-C32		47.99	5D	352	256	60	32	42				
			ADJS4750/4799-7D-C32		7D	446	350	60	32	42					
			ADJS4750/4799-10D-C32		10D	587	491	60	32	42					
ADJS60-PA4800	WCMT06T308	48.0	ADJS4800/4849-3D-C32	48.00	3D	261	165	60	32	42					
			ADJS4800/4849-5D-C32		48.49	5D	357	261	60	32	42				
			ADJS4800/4849-7D-C32		7D	453	357	60	32	42					
			ADJS4800/4849-10D-C32		10D	597	501	60	32	42					
ADJS60-PA4850	WCMT06T308	48.5	ADJS4850/4899-3D-C32	48.50	3D	261	165	60	32	42					
			ADJS4850/4899-5D-C32		48.99	5D	357	261	60	32	42				
			ADJS4850/4899-7D-C32		7D	453	357	60	32	42					
			ADJS4850/4899-10D-C32		10D	597	501	60	32	42					
ADJS60-PA4900	WCMT06T308	49.0	ADJS4900/4949-3D-C32	49.00	3D	264	168	60	32	42					
			ADJS4900/4949-5D-C32		49.49	5D	362	266	60	32	42				
			ADJS4900/4949-7D-C32		7D	460	364	60	32	42					
			ADJS4900/4949-10D-C32		10D	607	511	60	32	42					
ADJS60-PA4950	WCMT06T308	49.5	ADJS4950/4999-3D-C32	49.50	3D	264	168	60	32	42					
			ADJS4950/4999-5D-C32		49.99	5D	362	266	60	32	42				
			ADJS4950/4999-7D-C32		7D	460	364	60	32	42					
			ADJS4950/4999-10D-C32		10D	607	511	60	32	42					
ADJS60-PA5000	WCMT080412	50.0	ADJS5000/5049-3D-C32	50.00	3D	267	171	60	32	42					
			ADJS5000/5049-5D-C32		50.49	5D	367	271	60	32	42				
			ADJS5000/5049-7D-C32		7D	467	371	60	32	42					
			ADJS5000/5049-10D-C32		10D	617	521	60	32	42					
ADJS60-PA5050	WCMT080412	50.5	ADJS5050/5099-3D-C32	50.50	3D	267	171	60	32	42					
			ADJS5050/5099-5D-C32		50.99	5D	367	271	60	32	42				
			ADJS5050/5099-7D-C32		7D	467	371	60	32	42					
			ADJS5050/5099-10D-C32		10D	617	521	60	32	42					

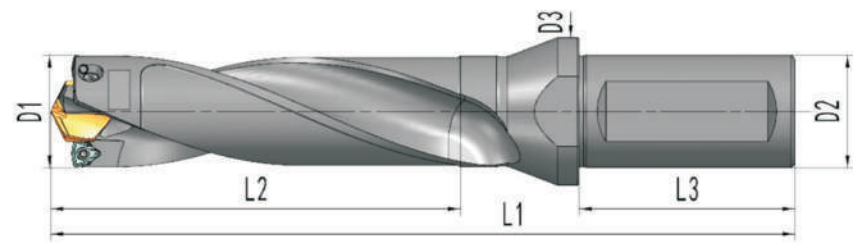
组合钻 Combined drill



中心刀片 Center of the blade	扩孔刀片 x2 Reaming blade X2	标准 库存 直径	刀杆型号 Tool rod type	刀片直 径范围 (D1)	倍径 Times the diameter	尺寸 Size					中心刀片		扩孔刀片		
						L1	L2	L3	D2	D3	螺钉	扳手	螺钉	扳手	
ADJS60-PA5100	WCMT080412	51.0	ADJS5100/5149-3D-C32	51.00	3D	270	174	60	32	42	M4.0X16.7	15IP	M4.0X10	T15	
			ADJS5100/5149-5D-C32		51.49	5D	372	276	60	32					42
			ADJS5100/5149-7D-C32		7D	474	378	60	32	42					
			ADJS5100/5149-10D-C32		10D	627	531	60	32	42					
ADJS60-PA5150	WCMT080412	51.5	ADJS5150/5199-3D-C32	51.50	3D	270	174	60	32	42					
			ADJS5150/5199-5D-C32		51.99	5D	372	276	60	32					42
			ADJS5150/5199-7D-C32		7D	474	378	60	32	42					
			ADJS5150/5199-10D-C32		10D	627	531	60	32	42					
ADJS60-PA5200	WCMT080412	52.0	ADJS5200/5249-3D-C32	52.00	3D	273	177	60	32	42					
			ADJS5200/5249-5D-C32		52.49	5D	377	281	60	32					42
			ADJS5200/5249-7D-C32		7D	481	385	60	32	42					
			ADJS5200/5249-10D-C32		10D	637	541	60	32	42					
ADJS60-PA5250	WCMT080412	52.5	ADJS5250/5299-3D-C32	52.50	3D	273	177	60	32	42					
			ADJS5250/5299-5D-C32		52.99	5D	377	281	60	32	42				
			ADJS5250/5299-7D-C32		7D	481	385	60	32	42					
			ADJS5250/5299-10D-C32		10D	637	541	60	32	42					
ADJS60-PA5300	WCMT080412	53.0	ADJS5300/5349-3D-C32	53.00	3D	276	180	60	32	42					
			ADJS5300/5349-5D-C32		53.49	5D	382	286	60	32	42				
			ADJS5300/5349-7D-C32		7D	488	392	60	32	42					
			ADJS5300/5349-10D-C32		10D	647	551	60	32	42					
ADJS60-PA5350	WCMT080412	53.5	ADJS5350/5399-3D-C32	53.50	3D	276	180	60	32	42					
			ADJS5350/5399-5D-C32		53.99	5D	382	286	60	32	42				
			ADJS5350/5399-7D-C32		7D	488	392	60	32	42					
			ADJS5350/5399-10D-C32		10D	647	551	60	32	42					
ADJS60-PA5400	WCMT080412	54.0	ADJS5400/5449-3D-C32	54.00	3D	279	183	60	32	42					
			ADJS5400/5449-5D-C32		54.49	5D	387	291	60	32	42				
			ADJS5400/5449-7D-C32		7D	495	399	60	32	42					
			ADJS5400/5449-10D-C32		10D	657	561	60	32	42					
ADJS60-PA5450	WCMT080412	54.5	ADJS5450/5499-3D-C32	54.50	3D	279	183	60	32	42					
			ADJS5450/5499-5D-C32		54.99	5D	387	291	60	32	42				
			ADJS5450/5499-7D-C32		7D	495	399	60	32	42					
			ADJS5450/5499-10D-C32		10D	657	561	60	32	42					
ADJS60-PA5500	WCMT080412	55.0	ADJS5500/5549-3D-C32	55.00	3D	282	186	60	32	42					
			ADJS5500/5549-5D-C32		55.49	5D	392	296	60	32	42				
			ADJS5500/5549-7D-C32		7D	502	406	60	32	42					
			ADJS5500/5549-10D-C32		10D	667	571	60	32	42					
ADJS60-PA5550	WCMT080412	55.5	ADJS5550/5599-3D-C32	55.50	3D	282	186	60	32	42					
			ADJS5550/5599-5D-C32		55.99	5D	392	296	60	32	42				
			ADJS5550/5599-7D-C32		7D	502	406	60	32	42					
			ADJS5550/5599-10D-C32		10D	667	571	60	32	42					

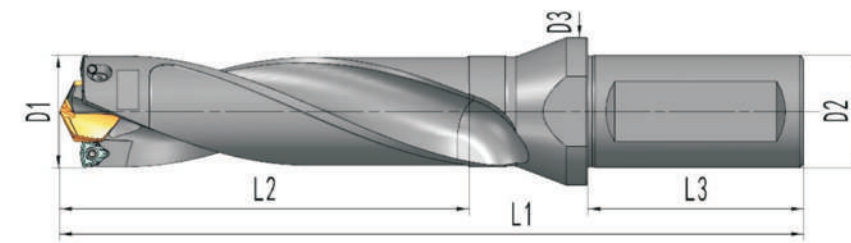


组合钻 Combined drill



中心刀片 Center of the blade	扩孔刀片 x2 Reaming blade X2	标准 库存 直径	刀杆型号 Tool rod type	刀片直 径范围 (D1)	倍径 Times the diameter	尺寸 Size					中心刀片		扩孔刀片	
						L1	L2	L3	D2	D3	螺钉	扳手	螺钉	扳手
ADJS60-PA5600	WCMT080412	56.0	ADJS5600/5649-3D-C40	56.00	3D	298	189	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						410	301	70	40	50				
						522	413	70	40	50				
						690	581	70	40	50				
ADJS60-PA5650	WCMT080412	56.5	ADJS5650/5699-3D-C40	56.50	3D	298	189	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						410	301	70	40	50				
						522	413	70	40	50				
						690	581	70	40	50				
ADJS60-PA5700	WCMT080412	57.0	ADJS5700/5749-3D-C40	57.00	3D	301	192	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						415	306	70	40	50				
						529	420	70	40	50				
						700	591	70	40	50				
ADJS60-PA5750	WCMT080412	57.5	ADJS5750/5799-3D-C40	57.50	3D	301	192	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						415	306	70	40	50				
						529	420	70	40	50				
						700	591	70	40	50				
ADJS60-PA5800	WCMT080412	58.0	ADJS5800/5849-3D-C40	58.00	3D	304	195	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						420	311	70	40	50				
						536	427	70	40	50				
						710	601	70	40	50				
ADJS60-PA5850	WCMT080412	58.5	ADJS5850/5899-3D-C40	58.50	3D	304	195	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						420	311	70	40	50				
						536	427	70	40	50				
						710	601	70	40	50				
ADJS60-PA5900	WCMT080412	59.0	ADJS5900/5949-3D-C40	59.00	3D	307	198	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						425	316	70	40	50				
						543	434	70	40	50				
						720	611	70	40	50				
ADJS60-PA5950	WCMT080412	59.5	ADJS5950/5999-3D-C40	59.50	3D	307	198	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						425	316	70	40	50				
						543	434	70	40	50				
						720	611	70	40	50				
ADJS60-PA6000	WCMT080412	60.0	ADJS6000/6049-3D-C40	60.00	3D	310	201	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						430	321	70	40	50				
						550	441	70	40	50				
						730	621	70	40	50				
ADJS60-PA6050	WCMT080412	60.5	ADJS6050/6099-3D-C40	60.50	3D	310	201	70	40	50	M5.0X20.6	20IP	M4.0X10	T15
						430	321	70	40	50				
						550	441	70	40	50				
						730	621	70	40	50				

组合钻 Combined drill



中心刀片 Center of the blade	扩孔刀片 x2 Reaming blade X2	标准 库存 直径	刀杆型号 Tool rod type	刀片直 径范围 (D1)	倍径 Times the diameter	尺寸 Size					中心刀片		扩孔刀片	
						L1	L2	L3	D2	D3	螺钉	扳手	螺钉	扳手
ADJS60-PA6100	WCMT080412	61.0	ADJS6100/6149-3D-C40	61.00	3D	313	204	70	40	50	M4.0X16.7	15IP	M4.0X10	T15
						435	326	70	40	50				
						557	448	70	40	50				
						740	631	70	40	50				
ADJS60-PA6150	WCMT080412	61.5	ADJS6150/6199-3D-C40	61.50	3D	313	204	70	40	50	M4.0X16.7	15IP	M4.0X10	T15
						435	326	70	40	50				
						557	448	70	40	50				
						740	631	70	40	50				

切削参数

组合钻直径 diameter	材质	切削速度 Cutting speed				材质	组合钻直径 diameter	材质	切削速度 Cutting speed				材质
		3D	5D	7D	10D				3D	5D	7D	10D	
转速 BT40	一般钢	1100-1200	1000-1100	900-1000	900-1000	特殊 钢速 降低 20% -30%	转速	一般钢	750-800	750-800	700-750	700-750	特殊 钢速 降低 20% -30%
26-28.9		Fz 0.15-0.2	Fz 0.15-0.2	Fz 0.16-0.2	Fz 0.15-0.2		45-46.9		Fz 0.18-0.25	Fz 0.18-0.25	Fz 0.16-0.2	Fz 0.16-0.2	
		F 165-240	F 150-220	F 145-200	F 135-200		F 135-200		F 135-200	F 135-200	F 110-150	F 110-150	
转速		1000-1100	1000-1100	900-1000	900-1000		转速		750-800	750-800	700-750	700-750	
29-30.9		Fz 0.15-0.2	Fz 0.15-0.2	Fz 0.15-0.2	Fz 0.15-0.2		47-48.9		Fz 0.18-0.25	Fz 0.18-0.25	Fz 0.16-0.2	Fz 0.16-0.2	
		F 150-220	F 150-220	F 135-200	F 135-200		F 135-200		F 135-200	F 135-200	F 115-150	F 115-150	
转速		950-1050	950-1050	900-1000	900-1000		转速		700-750	700-750	650-700	650-700	
31-32.9		Fz 0.15-0.2	Fz 0.15-0.2	Fz 0.14-0.2	Fz 0.14-0.2		49-50.9		Fz 0.18-0.25	Fz 0.18-0.25	Fz 0.16-0.2	Fz 0.16-0.2	
		F 145-210	F 145-210	F 125-200	F 125-200		F 125-185		F 125-185	F 105-140	F 105-140		
转速 BT50		900-1000	900-1000	850-900	850-900		转速		700-750	700-750	650-700	650-700	
33-34.9		Fz 0.16-0.2	Fz 0.16-0.2	Fz 0.14-0.2	Fz 0.14-0.2		51-52.9		Fz 0.18-0.25	Fz 0.18-0.25	Fz 0.16-0.2	Fz 0.16-0.2	
		F 145-200	F 145-200	F 120-180	F 120-180		F 125-185		F 125-185	F 105-140	F 105-140		
转速		850-900	850-900	800-850	800-850		转速		700-750	700-750	650-700	650-700	
35-36.9		Fz 0.16-0.2	Fz 0.16-0.2	Fz 0.14-0.2	Fz 0.14-0.2		53-54.9		Fz 0.18-0.25	Fz 0.18-0.25	Fz 0.16-0.2	Fz 0.16-0.2	
		F 135-180	F 135-180	F 115-175	F 115-175		F 125-185		F 125-185	F 105-140	F 105-140		
转速		850-900	850-900	800-850	800-850		转速		650-700	650-700	600-650	600-650	
37-38.9	Fz 0.16-0.2	Fz 0.16-0.2	Fz 0.14-0.2	Fz 0.14-0.2	55-56.9	Fz 0.18-0.25	Fz 0.18-0.25	Fz 0.16-0.2	Fz 0.16-0.2				
	F 135-180	F 135-180	F 115-170	F 115-170	F 115-175	F 115-175	F 95-130	F 95-130					
转速	800-850	800-850	750-800	750-800	转速	650-700	650-700	600-650	600-650				
39-40.9	Fz 0.16-0.2	Fz 0.16-0.2	Fz 0.14-0.2	Fz 0.14-0.2	57-58.9	Fz 0.2-0.25	Fz 0.2-0.25	Fz 0.16-0.2	Fz 0.16-0.2				
	F 130-170	F 130-170	F 105-160	F 105-160	F 130-175	F 130-175	F 95-130	F 95-130					
转速	800-850	800-850	750-800	750-800	转速	600-650	600-650	550-600	550-600				
41-42.9	Fz 0.16-0.2	Fz 0.16-0.2	Fz 0.14-0.2	Fz 0.14-0.2	59-60.9	Fz 0.2-0.25	Fz 0.2-0.25	Fz 0.16-0.2	Fz 0.16-0.2				
	F 130-170	F 130-170	F 105-160	F 105-160	F 120-165	F 120-165	F 90-120	F 90-120					
转速	750-800	750-800	700-750	700-750	转速	550-600	550-600	500-550	500-550				
43-44.9	Fz 0.18-0.25	Fz 0.18-0.25	Fz 0.16-0.2	Fz 0.16-0.2	61-62	Fz 0.2-0.25	Fz 0.2-0.25	Fz 0.16-0.2	Fz 0.16-0.2				
	F 135-200	F 135-200	F 115-150	F 115-150	F 110-150	F 110-150	F 80-110	F 80-110					

备注: Fz= 每转进刀量 F=进给

# 带定心U钻 Centring U drill

## 带定心U钻的特点和优势

Characteristics and advantages of centering bit

### 特征优势 Main feature

带定心U钻, 是U钻延伸的孔加工刀具, 使用U钻刀片, 容纳U钻的优点, 加上利用加装定心钻的设计, 可实现更长倍径的钻孔。标准库存直径18mm~40mm, 加工深度6~8倍径可选择。

With centering drill, is the extension of U drill hole processing tool, the use of U drill blade, accommodate the advantages of U drill, coupled with the use of fixed core drill design, can achieve longer diameter drilling. Standard stock diameter 18mm~40mm, processing depth 6~8 times diameter can be selected.

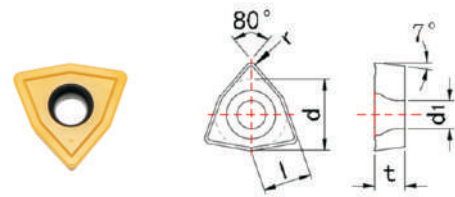
### 型号编码规则 Model coding rule

# SP18-6D-C25-H06

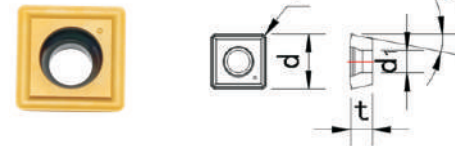
大类 Big type	刀杆直径 Tool rod diameter	长径比 Length to diameter handle	柄径 Shank diameter	中心钻型号 Center drill type
SD (WC刀片系列)	18 (表示刀杆Φ18mm)	2D (直径的2倍)	C20 (柄径Φ20mm)	H06 (中心钻型号)
SP (SP刀片系列)		3D (直径的3倍) 4D (直径的4倍) 5D (直径的5倍)	C25 (柄径Φ25mm) C32 (柄径Φ32mm) C40 (柄径Φ40mm)	

## 刀片型号

The blade model

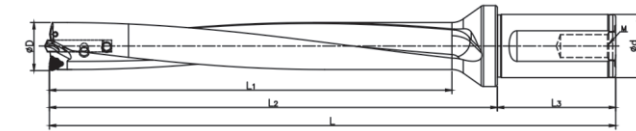


型号 Code No	尺寸 Size					螺钉 Clamp screw	扳手 Wrench
	l	d	t	r	d1		
WCMX030208	3.8	5.56	2.38	0.8	2.8	M2.5X6	T8
WCMX040208	4.3	6.35	2.38	0.8	2.8	M2.5X6	T8
WCMT050308	5.4	7.94	3.18	0.8	3.3	M3X8	T8
WCMT06T308	6.54	9.525	3.97	0.8	3.8	M3.5X10	T15
WCMT080412	8.74	12.7	4.76	1.2	4.3	M4X10	T15



型号 Code No	尺寸 Size				螺钉 Clamp screw	扳手 Wrench
	d	t	r	d1		
SPMT04T102	4	1.98	0.2	2	M1.8X4	T6
SPMG050204	5	2.38	0.4	2.25	M2.2X5	T6
SPMG060204	6	2.38	0.4	2.61	M2.2X6	T7
SPMG07T308	7.94	3.97	0.8	2.85	M2.5X8	T8
SPMG090408	9.8	4.3	0.8	4.05	M3.5X10	T15
SPMG110408	11.5	4.8	0.8	4.45	M4X10	T15
SPMG140512	14.3	5.2	1.2	5.75	M5X12	T20

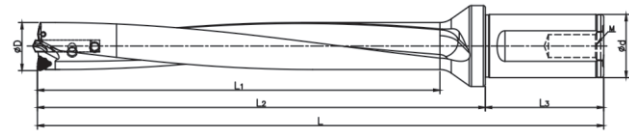
# 带定心U钻 Centring U drill



## WC DX6

型号 Code No	尺寸 Size						导向钻 Pilot Drill	刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M				
SD25-6D-C32-H06	25	237	154	177	60		HSS-V0630Tin	WCMX030208	M2.5X6	T8
SD25.5-6D-C32-H06	25.5	240	157	180	60					
SD26-6D-C32-H06	26	243	160	183	60					
SD26.5-6D-C32-H06	26.5	246	163	186	60					
SD27-6D-C32-H06	27	249	166	189	60					
SD27.5-6D-C32-H06	27.5	252	169	192	60					
SD28-6D-C32-H06	28	255	172	195	60					
SD28.5-6D-C32-H06	28.5	298	175	198	60					
SD29-6D-C32-H06	29	261	178	201	60					
SD29.5-6D-C32-H06	29.5	264	181	204	60					
SD30-6D-C32-H06	30	267	184	207	60		HSS-V0835Tin	WCMX040208	M2.5X6	T8
SD30.5-6D-C32-H06	30.5	270	187	210	60					
SD31-6D-C32-H06	31	273	190	213	60					
SD31.5-6D-C32-H06	31.5	276	193	216	60					
SD32-6D-C32-H08	32	279	196	219	60					
SD32.5-6D-C32-H08	32.5	282	199	222	60					
SD33-6D-C32-H08	33	285	202	225	60					
SD33.5-6D-C32-H08	33.5	288	205	228	60					
SD34-6D-C32-H08	34	290	208	230	60					
SD34.5-6D-C32-H08	34.5	293	211	233	60					
SD35-6D-C32-H08	35	297	214	237	60	G 1/4	HSS-V0835Tin	WCMX050308	M3.0X8	T8
SD35.5-6D-C32-H08	35.5	300	217	240	60					
SD36-6D-C32-H08	36	303	220	243	60					
SD36.5-6D-C32-H08	36.5	306	223	246	60					
SD37-6D-C32-H08	37	309	226	249	60					
SD37.5-6D-C32-H08	37.5	312	229	252	60					
SD38-6D-C32-H08	38	315	232	255	60					
SD38.5-6D-C32-H08	38.5	318	235	258	60					
SD39-6D-C32-H08	39	321	238	261	60					
SD39.5-6D-C32-H08	39.5	324	241	264	60					
SD40-6D-C32-H08	40	324	244	264	60		HSS-V1035Tin	WCMX06T308	M3.5X10	T15
SD40.5-6D-C32-H08	40.5	327	247	267	60					
SD41-6D-C40-H10	41	330	250	270	60					
SD41.5-6D-C40-H10	41.5	333	253	273	60					
SD42-6D-C40-H10	42	351	256	281	70					
SD42.5-6D-C40-H10	42.5	354	259	284	70					
SD43-6D-C40-H10	43	357	262	287	70					
SD43.5-6D-C40-H10	43.5	360	265	290	70					
SD44-6D-C40-H10	44	363	268	293	70					
SD44.5-6D-C40-H10	44.5	366	271	296	70					
SD45-6D-C40-H10	45	369	274	299	70					

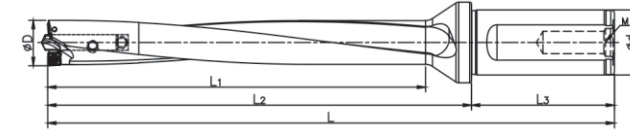
带定心U钻 Centring U drill



WC DX8

型号 Code No	尺寸 Size							导向钻 Pilot Drill	刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd				
SD25-8D-C32-H06	25	287	204	227	60	G 1/4	32	HSS-V0630Tin	WCMX030208	M2.5X6	T8
SD25.5-8D-C32-H06	25.5	291	208	231	60						
SD26-8D-C32-H06	26	295	212	235	60						
SD26.5-8D-C32-H06	26.5	299	216	239	60						
SD27-8D-C32-H06	27	303	220	243	60						
SD27.5-8D-C32-H06	27.5	307	224	247	60						
SD28-8D-C32-H06	28	311	228	251	60						
SD28.5-8D-C32-H06	28.5	315	232	255	60						
SD29-8D-C32-H06	29	319	236	259	60						
SD29.5-8D-C32-H06	29.5	323	240	263	60						
SD30-8D-C32-H06	30	327	244	267	60						
SD30.5-8D-C32-H06	30.5	331	248	271	60						
SD31-8D-C32-H06	31	335	252	275	60						
SD31.5-8D-C32-H06	31.5	339	256	279	60						
SD32-8D-C32-H08	32	343	260	283	60						
SD32.5-8D-C32-H08	32.5	347	264	287	60						
SD33-8D-C32-H08	33	351	268	291	60						
SD33.5-8D-C32-H08	33.5	355	272	295	60						
SD34-8D-C32-H08	34	358	276	298	60						
SD34.5-8D-C32-H08	34.5	362	280	302	60						
SD35-8D-C32-H08	35	367	284	307	60						
SD35.5-8D-C32-H08	35.5	371	288	311	60						
SD36-8D-C32-H08	36	375	292	315	60						
SD36.5-8D-C32-H08	36.5	379	296	319	60						
SD37-8D-C32-H08	37	383	300	323	60						
SD37.5-8D-C32-H08	37.5	387	304	327	60						
SD38-8D-C32-H08	38	391	308	331	60						
SD38.5-8D-C32-H08	38.5	395	312	335	60						
SD39-8D-C32-H08	39	399	316	339	60						
SD39.5-8D-C32-H08	39.5	403	320	343	60						
SD40-8D-C32-H08	40	404	324	344	60						
SD40.5-8D-C32-H08	40.5	408	328	348	60						
SD41-8D-C40-H10	41	412	332	352	60						
SD41.5-8D-C40-H10	41.5	416	336	356	60						
SD42-8D-C40-H10	42	435	340	365	70						
SD42.5-8D-C40-H10	42.5	439	344	369	70						
SD43-8D-C40-H10	43	443	348	373	70						
SD43.5-8D-C40-H10	43.5	447	352	377	70						
SD44-8D-C40-H10	44	451	356	381	70						
SD44.5-8D-C40-H10	44.5	455	360	385	70						
SD45-8D-C40-H10	45	459	364	389	70						
						40	HSS-V1035Tin	WCMX06T308	M3.5X10	T15	

带定心U钻 Centring U drill

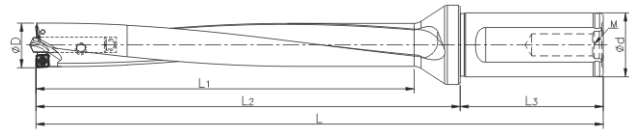


SP DX6

型号 Code No	尺寸 Size							导向钻 Pilot Drill	刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3	M	Φd				
SP18-6D-C25	18.0	186	112	130	56	G 1/8	25	HSS-V0630Tin	WCMG050204	M2.2X5	T6
SP18.5-6D-C25	18.5	189	115	133	56						
SP19-6D-C25	19.0	192	118	136	56						
SP19.5-6D-C25	19.5	195	121	139	56						
SP20-6D-C25	20.0	198	124	142	56						
SP20.5-6D-C25	20.5	201	127	145	56						
SP21-6D-C25	21.0	204	130	148	56						
SP21.5-6D-C25	21.5	207	133	151	56						
SP22-6D-C25	22.0	210	136	154	56						
SP22.5-6D-C25	22.5	213	139	157	56						
SP23-6D-C25	23.0	216	142	160	56						
SP23.5-6D-C25	23.5	219	145	163	56						
SP24-6D-C25	24.0	222	148	166	56						
SP24.5-6D-C25	24.5	225	151	169	56						
SP25-6D-C25	25.0	228	154	172	56						
SP25.5-6D-C32	25.5	242	157	182	60	G 1/4	32	HSS-V0835Tin	WCMG07T308	M2.5X8	T8
SP26-6D-C32	26.0	245	160	185	60						
SP26.5-6D-C32	26.5	248	163	188	60						
SP27-6D-C32	27.0	251	166	191	60						
SP27.5-6D-C32	27.5	254	169	194	60						
SP28-6D-C32	28.0	257	172	197	60						
SP28.5-6D-C32	28.5	260	175	200	60						
SP29-6D-C32	29.0	263	178	203	60						
SP29.5-6D-C32	29.5	266	181	206	60						
SP30-6D-C32	30.0	269	184	209	60						



# 带定心U钻 Centring U drill



## SP DX8

型号 Code No	尺寸 Size						M	Φd	导向钻 Pilot Drill	刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	ΦD	L	L1	L2	L3							
SP18-8D-C25	18.0	222	148	166	56	G 1/8	25	HSS-V0630Tin	WCMG050204	M2. 2X5	T6	
SP18.5-8D-C25	18.5	226	152	170	56							
SP19-8D-C25	19.0	230	156	174	56							
SP19.5-8D-C25	19.5	234	160	178	56							
SP20-8D-C25	20.0	238	164	182	56							
SP20.5-8D-C25	20.5	242	168	186	56							
SP21-8D-C25	21.0	246	172	190	56							
SP21.5-8D-C25	21.5	250	176	194	56							
SP22-8D-C25	22.0	254	180	198	56							
SP22.5-8D-C25	22.5	258	184	202	56							
SP23-8D-C25	23.0	262	188	206	56							
SP23.5-8D-C25	23.5	266	192	210	56							
SP24-8D-C25	24.0	270	196	214	56							
SP24.5-8D-C25	24.5	274	200	218	56							
SP25-8D-C25	25.0	278	204	222	56							
SP25.5-8D-C32	25.5	293	208	233	60	G 1/4	32	HSS-V0835Tin	WCMG07T308	M2. 5X8	T8	
SP26-8D-C32	26.0	297	212	237	60							
SP26.5-8D-C32	26.5	301	216	241	60							
SP27-8D-C32	27.0	305	220	245	60							
SP27.5-8D-C32	27.5	309	224	249	60							
SP28-8D-C32	28.0	313	228	253	60							
SP28.5-8D-C32	28.5	317	232	257	60							
SP29-8D-C32	29.0	321	236	261	60							
SP29.5-8D-C32	29.5	325	240	265	60							
SP30-8D-C32	30.0	329	244	269	60							

## 导向钻 Guide drill

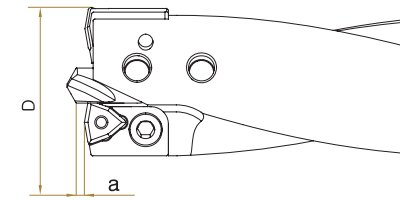


型号 Code No	尺寸 Size	
	Φd	L
HSS-V0630Tin	6	30
HSS-V0835Tin	8	35
HSS-V1035Tin	10	35
HSS-V1240Tin	12	40
HSS-V1645Tin	16	45
HSS-V2050Tin	20	50
HSS-V2560Tin	25	60

# 带定心U钻 Centring U drill

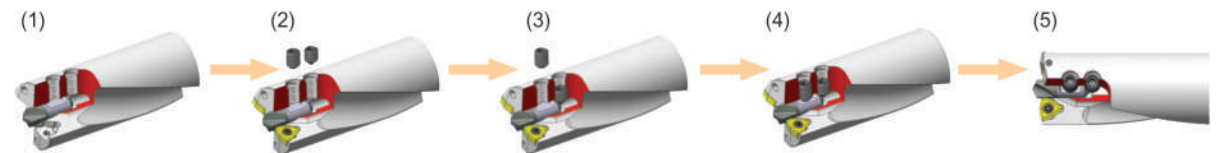
## 用户指南 User Guide

### 导向钻的高度设置 Pilot drill(PLD) setting



钻头直径(D) Bit diameter (D)	a		
	非合金钢	合金钢	有色金属
25-30	1.2	1	1.5
31-40	1.5	1.3	1.8
41-50	1.8	1.5	2.2
51-59	2.2	1.8	2.5
60-75	2.5	2	2.8
75-80	3	2.5	3.5

## 使用方法 Method of use



- (1) 插入孔导向钻;
- (2) 安装刀片;
- (3) 调整好导向钻高度;
- (4) 锁紧螺丝;
- (5) 导向钻底部必须紧贴导向钻, 高度调整螺丝, 不可有缝隙。

- (1) Insert hole guide drill;
- (2) Install the blade;
- (3) Adjust the guide drill height;
- (4) Lock screws;
- (5) The bottom of the guide drill must be close to the guide drill, height adjustment screws, no gaps.



导向钻高度调整螺丝, 涂上防松动胶, 防止使用中松动。  
Guide drill height adjustment screw, coated with anti-loosening adhesive, to prevent loose in use.

## 带定心U钻 Centring U drill

### 带定心U钻WC系列切削参数

钻头直径	建议主轴功率	低碳钢 S10C-S25C	中碳钢 SS30C-S50C	结构钢 SS,SM	铸铁 FC,FCD	合金钢 SCr,SCM	工具钢 H13,SKD	不锈钢 SUS	铝合金
Φ25~Φ31.5	7.5千瓦以上 BT40	S1200-S900	S1100-S850	S1200-S900	S1300-S1000	S1300-S1000	S1100-S800	S1000-S700	S1300-S1000
		Fz 0.1-0.12	Fz 0.08-0.11	Fz 0.08-0.12	Fz 0.09-0.12	Fz 0.1-0.12	Fz 0.08-0.10	Fz 0.08-0.10	Fz 0.1-0.12
		F 90-120	F 80-110	F 80-120	F 90-130	F 90-120	F 70-110	F 60-100	F 100-150
Φ32~Φ36.5	11千瓦以上 BT40	S1000-S800	S1100-S850	S1000-S750	S1000-S700	S1000-S700	S900-S650	S900-S650	S1200-S800
		Fz 0.10-0.13	Fz 0.10-0.12	Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.10-0.13	Fz 0.10-0.13
		F 80-130	F 85-120	F 75-130	F 70-130	F 70-130	F 65-100	F 65-100	F 80-130
Φ37~Φ40.5	15千瓦以上 BT50主轴	S1000-S700	S100-S700	S1000-S650	S1000-S650	S900-S600	S800-S600	S800-S600	S1000-S800
		Fz 0.08-0.12	Fz 0.08-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.08-0.12	Fz 0.10-0.12	Fz 0.10-0.12
		F 60-100	F 65-100	F 65-110	F 65-120	F 60-120	F 55-100	F 55-100	F 80-120
Φ41~Φ43.5	15千瓦以上 BT50主轴	S100-S700	S100-S700	S900-S700	S900-S700	S800-S600	S800-S600	S800-S600	S1000-S700
		Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.08-0.10	Fz 0.10-0.12
		F 70-110	F 70-110	F 70-110	F 70-110	F 60-100	F 60-100	F 50-80	F 70-120
Φ44~Φ45	15千瓦以上 BT50主轴	S900-S650	S900-S650	S850-S650	S850-S650	S750-S550	S750-S550	S700-S550	S1000-S700
		Fz 0.08-0.12	Fz 0.08-0.12	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.12	Fz 0.08-0.12	Fz 0.08-0.12	Fz 0.09-0.12
		F 60-110	F 60-110	F 65-90	F 65-110	F 50-65	F 50-65	F 45-80	F 65-120

备注: S=转速 Fz=每转进刀量 F=进给

### 带定心U钻SP系列切削参数

钻头直径	建议主轴功率	低碳钢 S10C-S25C	中碳钢 SS30C-S50C	结构钢 SS,SM	铸铁 FC,FCD	合金钢 SCr,SCM	工具钢 H13,SKD	不锈钢 SUS	铝合金
Φ18~Φ19.5	7.5千瓦以上 BT40	S1400-S1200	S1400-S1200	S1300-S1100	S1300-S1100	S1400-S1100	S1400-S1000	S1400-S1000	S1600-S1200
		Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.1-0.12
		F 85-100	F 85-120	F 90-110	F 90-110	F 70-110	F 60-100	F 60-90	F 100-150
Φ20~Φ22.5	11千瓦以上 BT40	S1300-S1000	S1300-S1000	S1200-S1000	S1200-S1000	S1200-S900	S1200-S900	S1100-S900	S1500-S1100
		Fz 0.07-0.1	Fz 0.07-0.1	Fz 0.08-0.12	Fz 0.08-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.08-0.1
		F 70-110	F 70-110	F 80-120	F 80-120	F 75-120	F 75-120	F 70-90	F 90-150
Φ23~Φ25.5	15千瓦以上 BT50主轴	S1200-S1000	S1200-S1000	S1100-S900	S1100-S900	S1100-S900	S1000-S800	S1000-S700	S1400-S1200
		Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.1	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.08-0.12
		F 80-120	F 80-120	F 75-110	F 75-110	F 90-110	F 70-100	F 60-100	F 100-140
Φ26~Φ27.5	15千瓦以上 BT50主轴	S1100-S900	S1100-S900	S1100-S900	S1100-S900	S1000-S800	S1000-S800	S900-S700	S1200-S900
		Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.10-0.12	Fz 0.08-0.1	Fz 0.10-0.12
		F 75-110	F 75-110	F 90-130	F 90-130	F 80-120	F 80-120	F 60-90	F 90-140
Φ28~Φ30	15千瓦以上 BT50主轴	S1000-S800	S1000-S800	S1000-S800	S1000-S800	S900-S700	S900-S700	S800-S600	S1200-S900
		Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12	Fz 0.1-0.12	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.08-0.1	Fz 0.1-0.12
		F 65-100	F 65-100	F 80-120	F 80-120	F 65-90	F 65-90	F 55-80	F 90-140

备注: S=转速 Fz=每转进刀量 F=进给

## VMD 大钻头 VMD large bit

### VMD大钻头的特点和优势

Features and advantages of VMD large bit

#### 特征优势 Main feature

- VMD大直径暴力钻头，专门针对直径45mm-180mm大孔径加工，由刀体、连接杆、刀片座、导向钻、连接环等组成。
  - 带导向钻的定芯设计，深孔加工起到导向作用。
  - 与U钻通用WC系列刀片，方便采购。
  - 刀片座模块化设计，刀夹可换，刃径可调范围直径0-5mm。
  - 刀体和连接杆可根据孔加工深度适配，有效减少刀具库存。
  - 自带内冷出水系统，可连续加工使用。
- VMD large diameter violent bit is specially processed for large holes with diameters of 45mm-180mm. It is composed of cutter body, connecting rod, blade holder, guide drill, connecting ring, etc.
- Positioning design with guide drill, and deep hole processing plays a guiding role.
- Universal WC series blade with U drill, convenient to purchase.
- Modular design of blade holder, replaceable blade holder, adjustable blade diameter range of 0-5mm.
- The tool body and connecting rod can be adapted according to the depth of hole processing, effectively reducing tool inventory.
- With internal cooling water system, can be used for continuous processing.



模块化系统，连接强度卓越，刀体与连接杆组合，加工深度自由调节。

Modular system, excellent connection strength, combination of cutter body and connecting rod, free adjustment of machining depth.

# VMD 大钻头 VMD large bit

## 型号编码规则

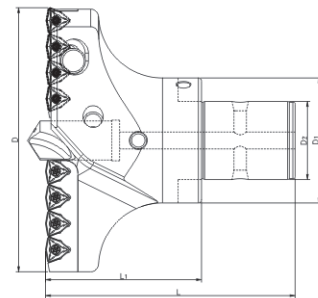
Model coding rule

# VMD-045/050-13

大类 Big type	可调节直径范围 Adjustable diameter range	柄径 Shank diameter
VMD系列大钻头	045/050 (表示最小钻孔直径45mm, 最大钻孔直径50mm)	13 (表示柄径13mm)

## VMD 大钻头

VMDDrH

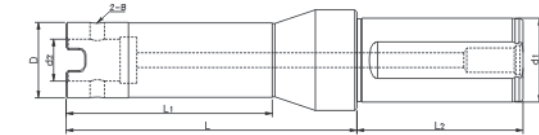


型号 Code No	尺寸 Size					导向钻 Guide drill	刀片座 Insert Seat	刀片 Insert	螺钉 Clamp screw	扳手 Wrench
	D	d2	D1	L1	L					
VMD-045/050-13	45-50	13	28	50	85	PLD-1035 TiN-H	VMC-045050N/T	WCMX030204	M2.5X5	T8
VMD-050/055-13	50-55	13	28	50	85		VMC-050055N/T			
VMD-055/060-16	55-60	16	32	60	100	PLD-1238 TiN-H	VMC-055060N/T	WCMX030204	M2.5X6	T10
VMD-060/065-16	60-65	16	32	60	100		VMC-060065N/T			
VMD-065/070-16	65-70	16	32	60	100		VMC-065070N/T			
VMD-070/075-22	70-75	22	40	70	115	PLD-1645 TiN-H	VMC-070075N/T	WCMX050308	M3.0X8	T15
VMD-075/080-22	75-80	22	40	70	115		VMC-075080N/T			
VMD-080/085-22	80-85	22	40	70	115		VMC-080085N/T			
VMD-085/090-27	85-90	27	48	70	120		VMC-085090N/T			
VMD-090/095-27	90-95	27	48	70	120	PLD-2045 TiN-H	VMC-090095N/T	WCMX06T308	M3.5X10	T15
VMD-095/100-27	95-100	27	48	70	120		VMC-095100N/T			
VMD-100/105-32	100-105	32	58	80	130	PLD-2556 TiN-H	VMC-100105N/T	WCMX050308	M3.0X8	T10
VMD-105/110-32	105-110	32	58	80	130		VMC-105110N/T			
VMD-110/115-32	110-115	32	58	80	130		VMC-110115N/T			
VMD-115/120-40	115-120	40	70	90	145	PLD-3068 TiN-H	VMC-115120N/T	WCMX080408	M4.0X10	T15
VMD-120/125-40	120-125	40	70	90	145		VMC-120125N/T			
VMD-125/130-40	125-130	40	70	90	145		VMC-125130N/T			
VMD-130/135-40	130-135	40	70	90	145		VMC-130135N/T			
VMD-135/140-40	135-140	40	70	90	145	WCMX080408	VMC-135140N/T	M4.0X10	T15	
VMD-140/150-50	140-150	50	80	100	160		VMC-140150N/T			
VMD-150/160-50	150-160	50	80	100	160	VMC-150160N/T	WCMX080408	M4.0X10	T15	
VMD-160/170-50	160-170	50	80	100	160	VMC-160170N/T				
VMD-170/180-50	170-180	50	80	100	160	VMC-170180N/T				

# VMD 大钻头 VMD large bit

## VMD 连接刀杆

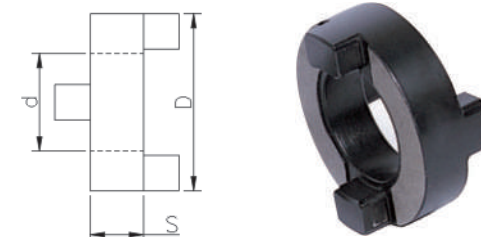
VMD connecting cutter bar



型号 Code No	尺寸 Size						锁紧螺钉 Connecting screw	连接环 Drive Ring	
	d1	d2	L	L1	D	L2			
VMD13-115L	32	13	115	77	28	70	M8	WET-281310	
VMD13-200L		13	200	165	28				
VMD13-300L		13	300	265	28				
VMD16-125L	40	16	125	86	32	80		M10	WET-321610
VMD16-200L		16	200	161	32				
VMD16-300L		16	300	261	32				
VMD22-148L		22	148	109	40				
VMD22-200L		22	200	161	40				
VMD22-300L		22	300	261	40				
VMD27-168L	50.5	27	168	133	48	80	M12	WET-482712	
VMD27-300L		27	300	265	48				
VMD32-186L		32	186	151	58				
VMD32-300L		32	300	265	58				
VMD40-186L		40	186	151	70				
VMD40-300L		40	300	265	70				
VMD50-184L	50.5	50	184	149	80	80	M16	WET-704014	
VMD50-300L		50	300	265	80				

## 连接环

Adapter ring

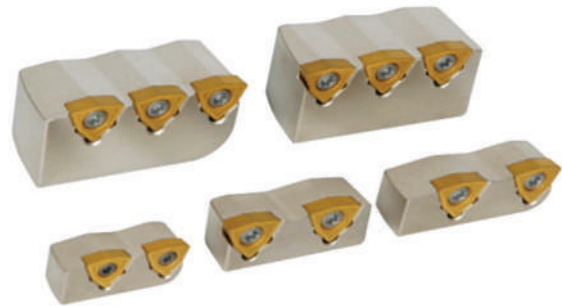


型号 Code No	外径 D	内径 d	厚度 S
WET-281310	28	13	10
WET-321610	32	16	10
WET-402212	40	22	12
WET-482712	48	27	12
WET-583214	58	32	14
WET-704012	70	40	14
WET-805016	80	50	16



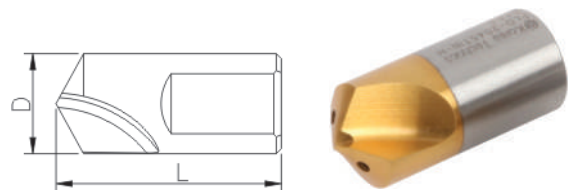
# VMD 大钻头 VMD large bit

## 刀片座 Blade bearing



型号 Code No	刀片座内 Insert Seat	刀片座外 Insert Seat	刀片 Insert	刃数 Z	螺钉 Clamp screw	扳手 Wrench
45-50	VMC-045050N	VMC-045050T	WCMX030204	2	M2.5X5	T8
50-55	VMC-050055N	VMC-050055T				
55-60	VMC-055060N	VMC-055060T	WCMX040204	2	M2.5X6	T10
60-65	VMC-060065N	VMC-060065T				
65-70	VMC-065070N	VMC-065070T	WCMX050308	2	M3.0X8	T10
70-75	VMC-070075N	VMC-070075T				
75-80	VMC-075080N	VMC-075080T	WCMX06T308	2	M3.5X10	T15
80-85	VMC-080085N	VMC-080085T				
85-90	VMC-085090N	VMC-085090T	WCMX06T308	2	M3.5X10	T15
90-95	VMC-090095N	VMC-090095T				
95-100	VMC-095100N	VMC-095100T	WCMX050308	3	M3.0X8	T10
100-105	VMC-100105N	VMC-100105T				
105-110	VMC-105110N	VMC-105110T	WCMX06T308	3	M3.5X10	T15
110-115	VMC-110115N	VMC-110115T				
115-120	VMC-115120N	VMC-115120T	WCMX06T308	3	M3.5X10	T15
120-125	VMC-120125N	VMC-120125T				
125-130	VMC-125130N	VMC-125130T	WCMX080408	3	M4.0X10	T15
130-135	VMC-130135N	VMC-130135T				
135-140	VMC-135140N	VMC-135140T	WCMX080408	3	M4.0X10	T15
140-150	VMC-140150N	VMC-140150T				
150-160	VMC-150160N	VMC-150160T	WCMX080408	3	M4.0X10	T15
160-170	VMC-160170N	VMC-160170T				
170-180	VMC-170180N	VMC-170180T	WCMX080408	3	M4.0X10	T15

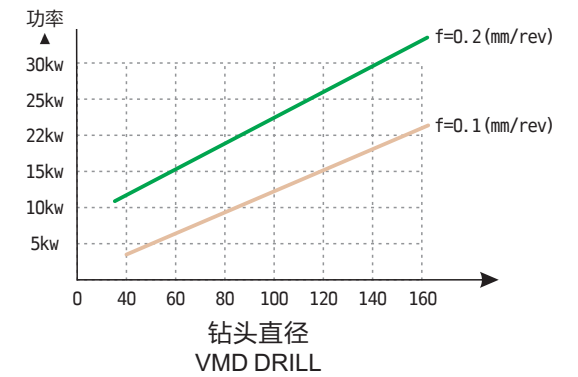
## 导向钻 Guide drill HSS C08%



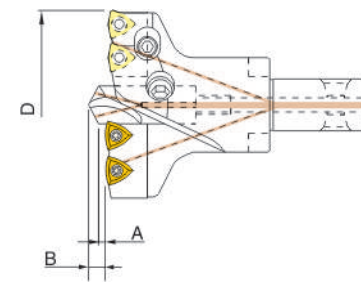
型号 Code No	直径 D	长度 L
HSS-V1035TIN-H	10	35
HSS-V1238TIN-H	12	38
HSS-V1645TIN-H	16	45
HSS-2045TIN-H	50	45
HSS-2556TIN-H	25	56
HSS-3068TIN-H	30	68

# VMD 大钻头 VMD large bit

## 信息技术 Technical Data



## 导向钻高度设置 Pilot Drill



型号 Code No	2~4XD		4~6XD		6~8XD	
	A	B	A	B	A	B
45-55	1.6	4.0	1.8	4.2	2.0	4.4
55-75	1.8	5.4	2.0	5.6	2.2	5.8
75-100	2.2	6.5	2.5	6.8	2.8	7.1
100-120	2.4	7.7	2.8	8.1	3.2	8.5
120-170	3.2	9.9	3.6	10.3	4.0	10.7
170-180	3.5	12.2	3.9	12.6	4.3	13.0

## 推荐切削参数(VMD) Recommended Cutting Values For VMD

ISO	被削材	硬度	切削速 VC(m/min) 下限-推荐-上限	进给量fz(mm/rev) 下限-推荐-上限						刀片 材质	
				Φ45~Φ55	Φ55~Φ60	Φ60~Φ75	Φ75~Φ100	Φ100~Φ105	Φ105~Φ150		Φ150~Φ180
P	(-0.25%) 低碳钢	180~280HB	120-150-180	0.06-0.08-0.1	0.07-0.08-0.11	0.08-0.1-0.12	0.1-0.12-0.14	0.14-0.17-0.2	0.08-0.1-0.12	0.1-0.12-0.14	AC330
	(0.25%~) 低碳钢	180~280HB	110-140-170	0.06-0.08-0.1	0.07-0.08-0.11	0.08-0.1-0.12	0.1-0.12-0.14	0.12-0.15-0.18	0.08-0.1-0.12	0.1-0.12-0.14	1030
	(~Hb300) 低合金钢	180~300HB	90-110-130	0.06-0.08-0.1	0.07-0.08-0.11	0.08-0.1-0.12	0.1-0.12-0.14	0.12-0.15-0.18	0.08-0.1-0.12	0.1-0.12-0.14	1030
	(Hb300~) 高合金钢	180~300HB	60-80-100	0.05-0.06-0.07	0.05-0.06-0.07	0.06-0.07-0.08	0.06-0.08-0.1	0.09-0.11-0.13	0.06-0.07-0.08	0.06-0.08-0.1	MU7025
M	不锈钢	200~330HB	60-90-110	0.04-0.05-0.07	0.04-0.07-0.11	0.06-0.09-0.12	0.08-0.11-0.14	0.1-0.14-0.18	0.06-0.1-0.12	0.08-0.11-0.14	1025
K	灰口铸铁	250HB	120-150-180	0.07-0.1-0.13	0.07-0.11-0.15	0.08-0.12-0.16	0.1-0.14-0.18	0.12-0.17-0.22	0.08-0.12-0.16	0.1-0.14-0.18	AC330
	球墨铸铁	250HB	100-140-180	0.04-0.08-0.13	0.07-0.11-0.15	0.08-0.12-0.16	0.1-0.18-0.25	0.12-0.19-0.26	0.08-0.12-0.16	0.1-0.18-0.25	MU7025
N	锻造铝 合金	-	180-230-280	0.04-0.05-0.06	0.07-0.01-0.12	0.08-0.1-0.13	0.09-0.12-0.15	0.12-0.16-0.2	0.08-0.1-0.13	0.09-0.12-0.15	MU3225
	铸造铝 合金	-	120-210-270	0.04-0.05-0.06	0.06-0.09-0.12	0.08-0.1-0.13	0.09-0.12-0.15	0.12-0.16-0.2	0.08-0.1-0.13	0.09-0.12-0.15	MU3225

注: \*以上切削条件为大致基准, 需要根据机械刚性和工件刚性、切深等进行调整。  
\*转速n (min-1)=切削速度Vc (m/min) × 1000 ÷ 3.14 ÷ 刀具直径 (mm)  
\*进给速度Vf (mm/min)=n (min-1) × 每齿进给量fz (mm/t) × Z (刀齿数)

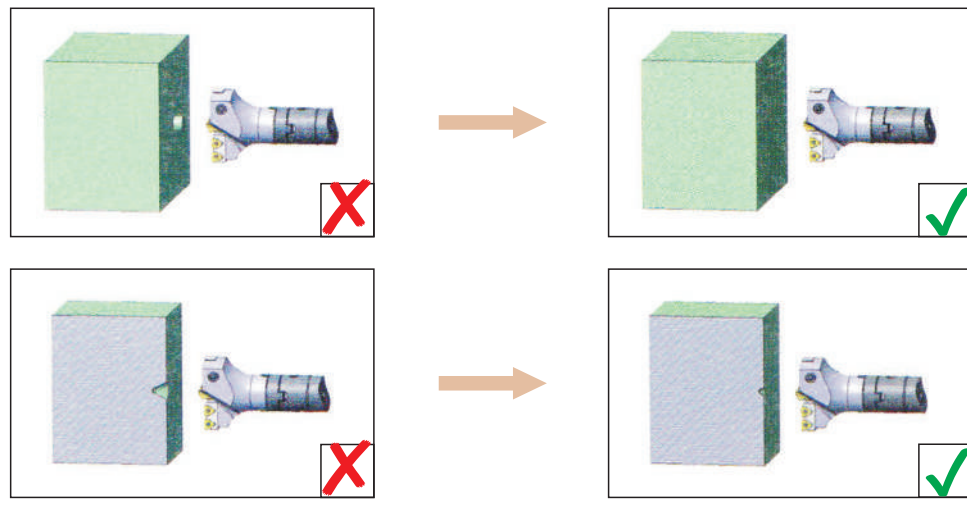
# VMD 大钻头 VMD large bit

# 模块系统 Module system

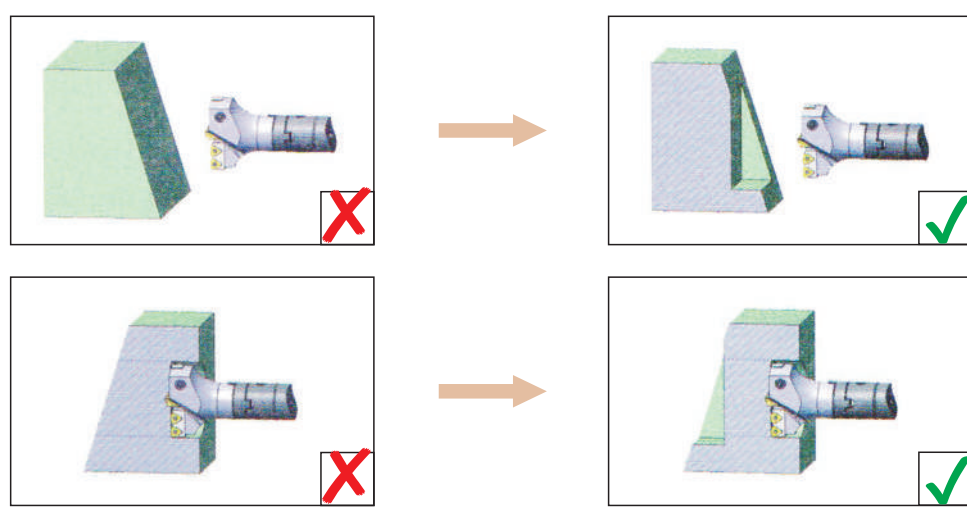
## 使用时注意事项

Precautions when using

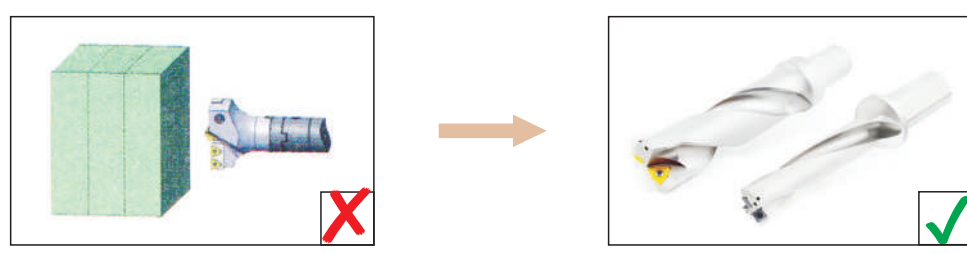
和下图相同的加工表面，有比导向钻直径大的孔直接加工会出现剧烈振动，导向钻头与刀片可能会损伤。  
On the same machined surface as the figure below, direct machining of holes larger than the diameter of the guide drill will cause severe vibration, and the guide drill bit and blade may be damaged.



斜面加工时，铣平后，再用钻头钻孔作业。  
In the case that there is inclined side, after make the part flat by mill ng work , please do drilling work.

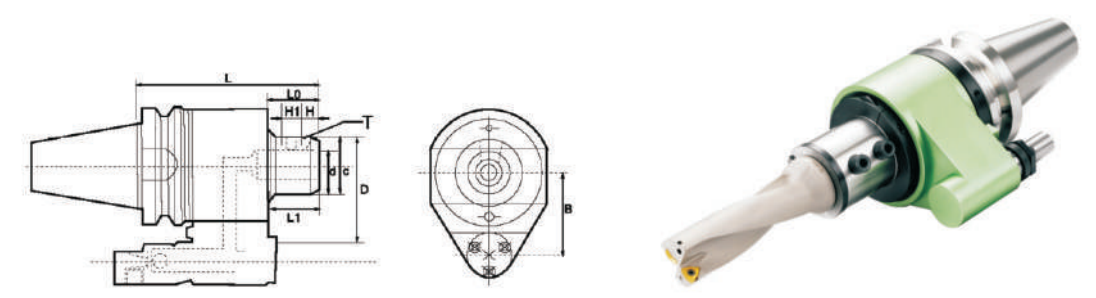


VMD系列不可以重叠加工  
VMD series can not overlap processing



## SLO 侧固式自动换刀油路刀柄

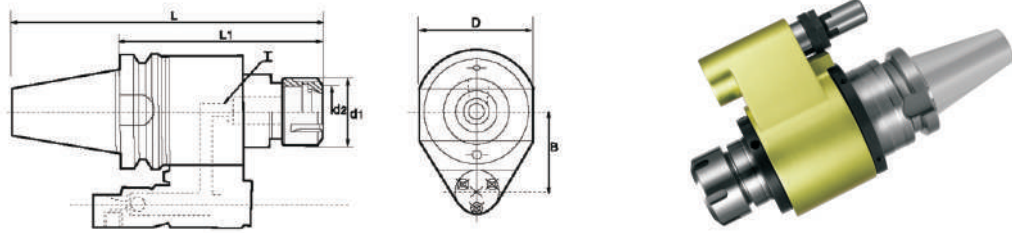
SLO side fixed automatic tool changing oil path tool handle



型号 Code No	尺寸 Size								
	L	L1	H	H1	D	d	c	B	T
BT40-SL016-165	165	58	25	-	82	16	46.5	65	M12x1.75P
BT40-SL020-165	165	60	25	-	82	20	46.5	65	M12x1.75P
BT40-SL025-165	165	66	15	20	82	25	46.5	65	M12x1.75P
BT40-SL032-165	165	70	15	20	82	32	47	65	M12x1.75P
BT40-SL016-165S	165	48	25	-	82	16	46.5	60	M12x1.75P
BT40-SL020-165S	165	50	25	-	82	20	46.5	60	M12x1.75P
BT40-SL025-165S	165	56	15	20	82	25	47	60	M12x1.75P
BT40-SL032-165S	165	60	15	20	82	32	56	60	M12x1.75P
BT50-SL016-165	165	58	24	-	98	16	56	80	M14x2.0P
BT50-SL020-165	165	60	25	-	98	20	56	80	M12x1.75P
BT50-SL025-165	165	70	15	20	98	25	56	80	M16x2.0P
BT50-SL032-165	165	70	15	20	98	32	56	80	M16x2.0P
BT50-SL040-170	170	70	15	25	105	40	56	80	M14x2.0P
BT50-SL016-165M	165	48	25	-	98	16	56	82	M14x2.0P
BT50-SL020-165M	165	50	25	-	98	20	56	82	M12x1.75P
BT50-SL025-165M	165	56	15	20	98	25	56	82	M16x2.0P
BT50-SL032-165M	165	60	15	20	98	32	56	82	M16x2.0P
BT50-SL040-170M	170	62	15	25	105	40	56	82	M14x2.0P
BT50-SL016-165L	165	48	25	-	98	16	56	85	M14x2.0P
BT50-SL020-165L	165	50	25	-	98	20	56	85	M12x1.75P
BT50-SL025-165L	165	56	15	20	98	25	56	85	M16x2.0P
BT50-SL032-165L	165	60	15	20	98	32	56	85	M16x2.0P
BT50-SL040-170L	170	62	15	25	105	40	56	85	M14x2.0P

ERO 自动换刀油路刀柄

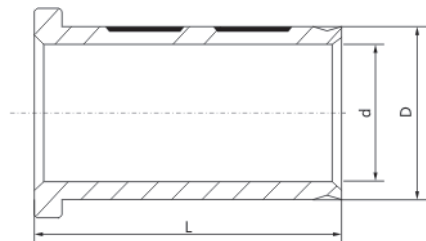
Ero automatic tool changing oil path tool holder



型号 Code No	尺寸 Size						
	L1	L	D	d1	d2	B	T
BT40-ER016-160	160	225.4	82	28	16	65	M10
BT40-ER020-160				34	20		M12
BT40-ER025-160				42	25		M16
BT40-ER032-160				50	32		
BT50-ER016-160	160	261.8	98	28	16	80	M10
BT50-ER020-160				34	20		M12
BT50-ER025-160				42	25		M16
BT50-ER032-160				50	32		
BT50-ER040-160				63	40		M20

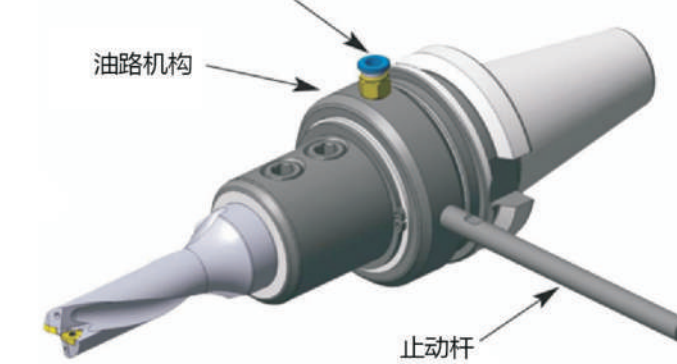
转换套

Conversion of



型号 Code No	尺寸 Size		
	L	D	d
40-32	71	40	32
40-25	71	40	25
40-20	66	40	20
32-25	71	32	25
32-20	60	32	20
25-20	58	25	20

快速安装 PT1/4-Ø8 切削液

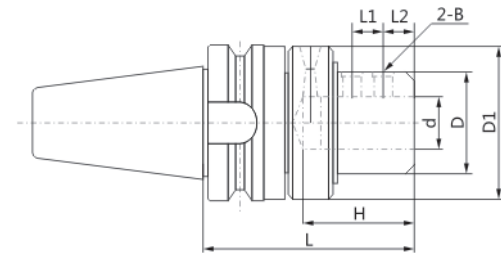


- 油路刀柄可快速实现刀具内冷却功能，使用简单方便。
- 提高刀具切削速度，有效降低切削刃口温度。
- 高压内冷可快速的排除铁屑，延长刀具使用寿命。
- 主要应用于VMD钻头。
- 内部专用密封结构，可快速进行密封圈更换。
- 允许最高转速2000RPM，允许冷却液压强为1MPa。
- 从油路机构外部90度处可以看到两条螺纹：一个用于提供切削油的功能，另一个用于安装止动杆的功能。
- Oil handle can quickly realize the tool cooling function, simple and convenient to use.
- Improve the cutting speed of the tool and effectively reduce the temperature of the cutting edge.
- High pressure internal cooling can quickly remove iron filings and extend the service life of the tool.
- Mainly used in VMD bits.
- Internal special sealing structure, sealing ring can be quickly replaced.
- The maximum allowable speed is 2000RPM, and the allowable cooling hydraulic strength is 1MPa.
- Two threads can be seen 90 degrees from the outside of the oil path mechanism: one for the cutting oil function and the other for the mounting stop rod function.



BT-OMS手动换刀油路刀柄

BT - OMS manual tool changing oil path tool handle

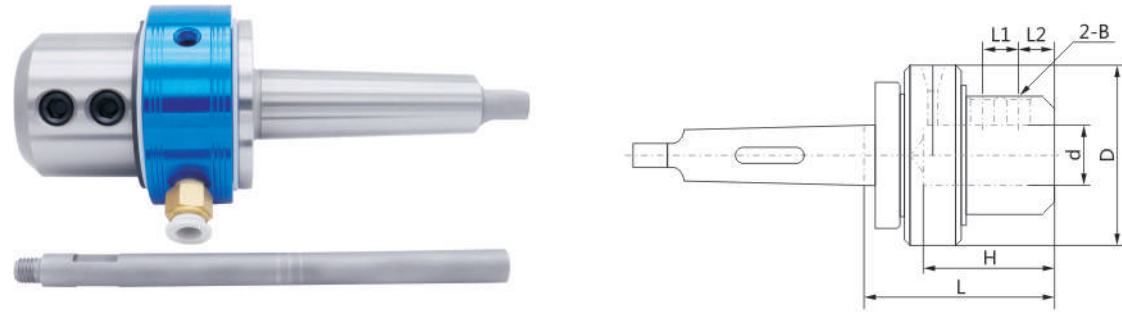


型号 Code No	尺寸 Size							
	d	L	D	D1	H	L1	L2	B
BT40-OMS-20105	20	105	50	78	50	20	/	M12
BT40-OMS-25120	25	120	50	78	60	20	20	M12
BT40-OMS-32125	32	125	65	88	70	20	20	M14
BT50-OMS-20120	20	120	50	78	50	20	/	M12
BT50-OMS-25135	25	135	50	78	60	20	20	M12
BT50-OMS-32135	32	135	65	98	70	20	20	M14
BT50-OMS-40145	40	145	65	98	80	20	25	M16X1.5
BT50-OMS-50170	50	170	90	123	90	35	35	M20



MT-OML手动换刀油路刀柄

MT - OML manual tool change oil path tool handle



型号 Code No	尺寸 Size						
	d	D	L1	L2	H	L1	B
MT4-OMS-20080	20	83	20	/	60	80	M12
MT4-OMS-25095	25	83	20	20	75	95	M12
MT4-OMS-32100	32	88	20	20	78	100	M14
MT5-OMS-20080	20	83	20	/	60	80	M12
MT5-OMS-25095	25	83	20	20	75	95	M12
MT5-OMS-32100	32	88	20	20	78	100	M14
MT5-OMS-40110	40	88	20	25	82	110	M16X1.5
MT6-OMS-20085	20	83	20	/	60	85	M12
MT6-OMS-25100	25	83	20	20	75	100	M12
MT6-OMS-32105	32	88	20	20	78	105	M14
MT6-OMS-40120	40	88	20	25	82	120	M16X1.5

BT-SLA 侧固式刀柄

BT-SLA side fixed shank



型号 Code No	尺寸 Size						
	d1	d2	L1	L2	L3	T	
TB40	-SLA16-75	16	48	75	22	18	M12X1.75P
	-SLA20-75	20	52		25	20	
	-SLA25-90	25	65	90	30	22	M16X2.0P
	-SLA32-90	32	72		30	22	
	-SLA40-100	40	90		100	35	
TB50	-SLA20-90	20	52	90	25	20	M16X2.0P
	-SLA25-105	25	60	105	30	22	M16X2.0P
	-SLA32-105	32	63	105	30	22	M16X2.0P
	-SLA40-105	40	78/90	105	35	25	M16X2.0P

莫式侧固式刀柄

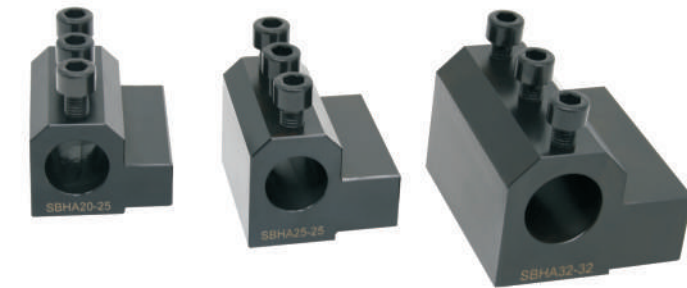
MOE side fixed shank



型号 Code No	尺寸 Size								
	D1	d1	d2	L1	L2	Σ1	Σ2	Σ3	d3
MTA4-SLA25-80	31.267	25	65	117.5	100	54	24	25	M16
MTA4-SLA32-85	31.267	32	72	117.5	100	58	24	28	M16
MTA5-SLA25-80	44.399	25	65	149.5	100	54	24	25	M16
MTA5-SLA32-85	44.399	32	72	149.5	100	58	24	28	M16
MTA5-SLA40-95	44.399	40	90	149.5	100	68	30	32	M20

U钻车床刀座

U-drill lathe tool holder



型号 Code No	尺寸 Size			
	H	H1	L	D
DK20-16	20	37	60	16
DK20-20		47	65	20
DK20-25		47	65	25
DK20-32		55	85	32
DK25-16	25	42	65	16
DK25-25		53	70	25
DK25-32		60	85	32
DK25-40	32	65	90	40
DK32-40		83	100	40
DK32-50		83	100	50

# 问题分析和解决措施 Insert Drill

## 问题分析和解决措施

Insert Drill

磨损类型 The wear types	特征 Characteristics of the	措施 measures
刀具寿命短, 可转位刀片磨损严重	<ol style="list-style-type: none"> <li>1. 切削参数错误</li> <li>2. 刀具材料的耐磨性不足</li> <li>3. 冷却液不足</li> <li>4. 刀片座损坏</li> <li>5. 钻头刀体过长</li> <li>6. 夹紧系统不稳定</li> <li>7. 调整错误(针对车床)</li> </ol>	<ol style="list-style-type: none"> <li>1. 校正切削参数</li> <li>2. 选择更耐磨的切削材质</li> <li>3. 检查冷却液压力; 如果过低, 提高流量</li> <li>4. 检查钻头刀体, 必要时更换</li> <li>5. 如有可能, 使用较短的刀具</li> <li>6. 提高夹紧装置的稳定性</li> <li>7. 检查机床对正</li> </ol>
中心刀片崩刃	 <ol style="list-style-type: none"> <li>1. 刀具中心高度过高/过低(针对车床)</li> <li>2. 进给过高</li> <li>3. 切削度过硬</li> <li>4. 可转位刀片槽型遇到过大切削力</li> <li>5. 夹紧系统不稳定</li> </ol>	<ol style="list-style-type: none"> <li>1. 检查中心高度并调整</li> <li>2. 减小进给量</li> <li>3. 使用更硬的刀具材料</li> <li>4. 使用刀刃更锋利的槽型</li> <li>5. 检查精度; 如果无法改善钻头夹紧和/或无法保证最佳稳定性; 减小进给量</li> </ol>
周边刀片崩刃	 <ol style="list-style-type: none"> <li>1. 进给过高</li> <li>2. 断续切削</li> <li>3. 可转位刀片槽型需要更大切削力</li> </ol>	<ol style="list-style-type: none"> <li>1. 减小进给量</li> <li>2. 使用更硬的切削材质和更强的槽型</li> <li>3. 使用槽型更锋利的可转位刀片</li> </ol>
形成积屑瘤	 <ol style="list-style-type: none"> <li>1. 冷却液不足</li> <li>2. 切削参数错误</li> </ol>	<ol style="list-style-type: none"> <li>1. 检查冷却液压力; 如果过低, 提高流量</li> <li>2. 提高切削速度, 降低进给</li> </ol>
排屑效果或断屑不佳	 <ol style="list-style-type: none"> <li>1. 冷却液不足</li> <li>2. 切削参数错误</li> </ol>	<ol style="list-style-type: none"> <li>1. 提高冷却液压力和流量(为了改善排屑效果以及切削刃冷却)</li> <li>2. 优化该应用的切削参数和切屑控制; 提高切削速度, 降低进给</li> </ol>
侧面有摩擦痕迹	 <ol style="list-style-type: none"> <li>1. 钻孔直径过小</li> <li>2. 排屑效果差</li> <li>3. 由于刀刃钝化导致弯曲应力提高</li> </ol>	<ol style="list-style-type: none"> <li>1. 检查调整情况</li> <li>2. 优化切削参数, 检查可转位刀片槽型</li> <li>3. 选择更锋利的槽型</li> </ol>

# 问题分析和解决措施 Insert Drill

## 问题分析和解决措施

Insert Drill

磨损类型 The wear types	特征 Characteristics of the	措施 measures
钻孔质量差	 <ol style="list-style-type: none"> <li>1. 冷却液不足</li> <li>2. 切削参数错误</li> <li>3. 夹紧系统不稳定</li> <li>4. 调整错误(针对车床)</li> </ol>	<ol style="list-style-type: none"> <li>1. 提高冷却液压力和体积流量</li> <li>2a. 提高切削速度, 降低进给</li> <li>2b. 检查(刀具和工件的)装夹精度, 必要时改进</li> <li>3. 优化装夹的稳定性</li> <li>4. 检查机床对正</li> </ol>
喇叭孔	 <ol style="list-style-type: none"> <li>1. 切屑积聚在外部可转位刀片槽中</li> <li>2. 材料非常软</li> </ol>	<ol style="list-style-type: none"> <li>1. 选择备选断屑槽型, 必要时提高进给</li> <li>2a. 提高切削速度, 降低进给</li> <li>2b. 使用其他切削槽型</li> </ol>
钟形孔	 <ol style="list-style-type: none"> <li>1. 切屑积聚在中央可转位刀片槽中</li> </ol>	<ol style="list-style-type: none"> <li>1. 选择其他槽型, 必要时提高进给</li> </ol>
孔径过小或者过大	 <ol style="list-style-type: none"> <li>1. 机床不在零位上运转(针对车床)</li> <li>2. 机床坐标轴偏移(针对车床)</li> <li>3. 偏心套调整错误</li> </ol>	<ol style="list-style-type: none"> <li>1. 检查调整情况并校正</li> <li>2. 检查调整情况并校正</li> <li>3. 检查调整情况并校正</li> </ol>
刀夹式钻头的孔径过小或者过大	 <ol style="list-style-type: none"> <li>1. 调刀错误(在外部刀夹上)</li> </ol>	<ol style="list-style-type: none"> <li>1. 检查调整情况并校正</li> </ol>