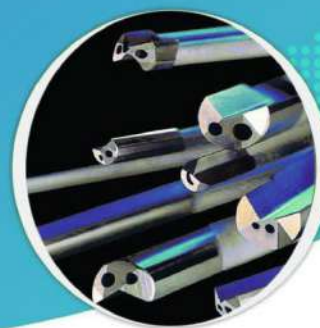


# 钻星® 枪钻

DRILLSTAR GUN DRILLS

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## 德州钻星刀具有限公司

Dezhou Drillstar Cutting Tool Co., Ltd

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## 德州钻星刀具有限公司

Dezhou Drillstar Cutting Tool Co., Ltd

# 公司简介

About Us

德州钻星刀具有限公司是一家专业从事枪钻制造的企业，位于深孔机床制造基地山东省德州市，刀具品牌为“钻星”牌。公司能够生产可以满足深孔加工行业中各种枪钻，并可以根据客户的需求开发非标深孔刀具。

公司专注于枪钻的加工制造，拥有专业的深孔枪钻制造设备。刀头采用瑞士ESTECH原产硬质合金，为成品枪钻的耐磨性提供了基础保障。ESTECH公司成立于1941年，是Botek公司枪钻刀头的合作伙伴。

公司聘用国内知名的刀具教授指导开发刀具，拥有枪钻研发工程师和从业多年的刀具生产技师。公司经过多年的发展，拥有自主的技术工艺流程，拥有自主的注册品牌。我们的产品畅销海内外，受到客户广泛的好评。

钻星作为优秀的民营企业，具有创新、精干和高度灵活的组织机构，可以快速响应客户的需求。公司拥有完整、科学的质量管理体系，能够保证每支枪钻的质量达到出厂标准。钻星®枪钻硬度高、刚性好、精度高、经久耐用，性价比高。

不断改善工艺流程，踏踏实实做产品，打造民族品牌，追求卓越品质是钻星人永恒的目标。

Dezhou Drillstar Cutting Tool Co., Ltd is a manufacturer of gun drills, located in Dezhou, Shandong which is a base city for deep hole drilling. Our brand is "Drillstar". We can produce many sizes of gun drills as well as non standard gun drills according to clients' special requirements.

We focus on gun drill production business. We have special deep hole drilling tool machines. Our gun drill carbide tip (brand ESTECH) is sourced from Switzerland, which guarantees the quality of the tool. ESTECH was founded in 1941, is a partner of Botek.

Our company invites famous cutting tool professors in this industry to instruct the research and development. With many years development, we have our own technique process, and registered our own brand. Nowadays, our products are sold well in domestic market and overseas, and are highly praised by our customers.

As a good private owned company, we have innovative, capable and flexible structure, and complete and scientific quality control system. Our gun drills are high hardness, capable rigidity, high accuracy, long lasting, and good cost performance.

Continuous improvement of the process, solid progress to produce the gun drills, creating a national brand, and to pursue the excellence is our eternal goal.

### 公司理念 Company Philosophy

质量：价值与尊严的起点 Quality: Quality is the starting point of value and dignity.

服务：品牌的生命与灵魂 Service: Service is the life and soul of the brand.



### 厂房一角 Workshop

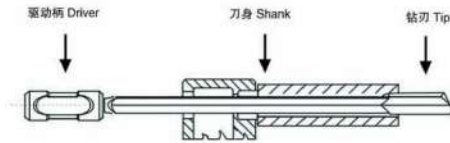




### 焊接式枪钻的构造

#### Brazed gun drill structure

标准的枪钻是由超硬钨钴钻头、航天钢材经热处理制成的刀身及钢制驱动柄经高精度的银焊、铜焊组合而成的，各组成部分如下：



钻头是整个枪钻的关键部分，其独特科学的组合结构保证在完成切削工作同时还起到自导向的作用，可以通过一次贯穿得到一个高精度的深孔。钻头有两个基本度，可以根据被切削工件的材料及形式来选择最恰当的组合，以便于工作更好的平衡切削力和断屑，并将切削力传递给支撑凸肩，保证良好的直线度和同轴度。钻头可以保证钻身可以在切削孔内自由旋转而不会磨擦孔内壁的切削表面，根据不同要求，刃部有单圆孔、肾型孔和双圆孔的通道同刀身的油道连接，高压的冷却液可以通过此通道到达切削点，并将切屑带出工件。

刀身采用航天工业专用合金钢材并经热处理制成，刀身有115°~165°的V型槽，高压切削冷却液经驱动柄、刀身油孔到达刃部后从此V型槽排出孔外，并将切屑带走，为保证切削的直线度和同轴度，刀身必须有足够的强度以便在较小的扭转变形下提供切削所需的扭矩，同时刀身也必须有足够的韧性，这样才能吸收刀身高速旋转产生的震动。

驱动柄在机床和钻头间传递扭矩，柄柄和钻杆之间的高回转精度能避免额外的振动，提高加工精度和可靠性。钻星枪钻完全依照标准工业加工法的规定制造。其与刀身相接的颈部处有消除应力的光滑弧状凹槽以避免因应力集中而产生破坏。

As a key part to the gun drill, Drill Edge guarantees cutting and self-guidance by its specifically scientific combination structure to drill a highly precise hole by one-time penetration. Drill edge has two basic parameters. On the basis of the parameters, the best combination can be selected according to workpiece material and form for better balance between cutting force and chip breaking and transferring cutting force to support shoulder with the aim of good straightness and coaxiality. Drill tip can make drill body rotates freely without friction against internal hole wall. According to different requirements, the edge has single circular hole, kidney-shaped hole and double-circular holes with channels connected to oil passage of the tool blade so that high-pressure coolant travels through the passage to the cutting point and removes chips.

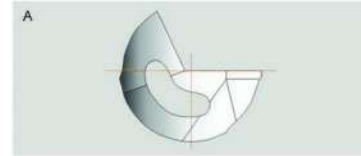
Shank is made of special aviation alloy steel through heat treatment. The blade has a 115-165° V-shot where high-pressure cutting fluid passes through driven handle and oil hole to be drained away with chips. To guarantee cutting straightness and coaxiality, the blade shall be strong enough to provide the torque needed by cutting under small twist deformation; meanwhile, it shall be tough to absorb vibration resulted from high-speed blade rotation.

Driven Handle transfers torque between machine tool and drill bit; high-rotation precision between Drillstar drill handle and stem avoids extra vibration to improve precision and reliability. Drillstar gun drill is fabricated entirely in accordance with standardized machining. Its neck with the blade has a smooth arc slot to remove stress for avoiding damage due to stress concentration.

### 标准外圆形式 Standard circumferential types

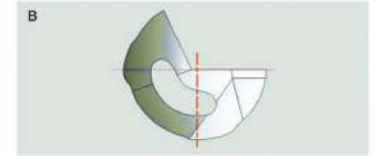
钻星开发了多种标准导向条形式，各有相应的适用范围。

The circumferential shapes developed by Drillstar are specially tailored to the respective application.



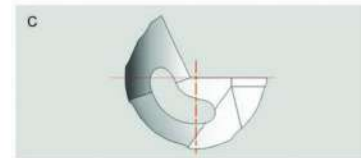
这是通用的导向条形式，适用于大部分材料和加工情况。采用这种外形的枪钻制成后，其直径将不可测量。这种形式的导向条起始位置一般是在60度位置，但可以在45度到80度之间变化。

Standard form suitable for most of materials and drilling jobs. With this shape the tool diameter can no longer be measured after manufacture. This standard starting point of the guide pad is 60°, but can range from 45° to 80°.



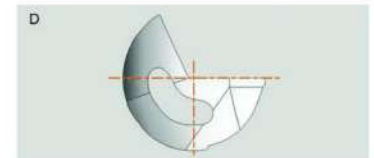
这种导向条形式适用于对孔径公差和表面质量有较高要求的孔加工。在这种形式下，部分导向条被做成凸面，而且凸面可以高于常规导向条。

This Form is the preferred choice for narrow tolerances in terms of the bore diameter and finish. Some of the guide pads are convex ground. The spherical grinding heel can protrude over the guide pads.



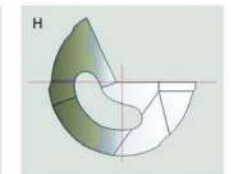
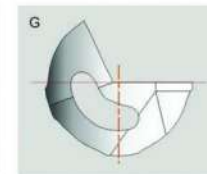
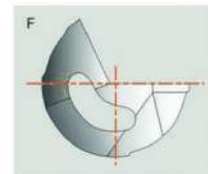
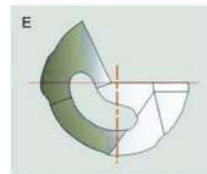
这种导向条形式适用于难度高的加工情况，如钻交叉孔，或材料软胶、冷却润滑条件差等。在枪钻的钻头比较长时经常采用这种导向条形式。

This form is for awkward approaches to drilling work or cross drilling, machining of soft materials and poor performance of cooling lubricant. Often used on the long drill head.



这种导向条形式适用加工软材料，如灰铸铁，石墨等，尤其适合对于孔径公差要求严格的孔。

This form is almost exclusively used for soft materials, such as grey cast iron, graphite etc, especially in conjunction with narrow bore tolerances.

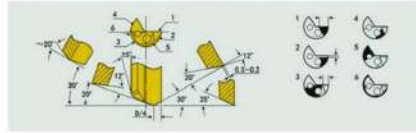
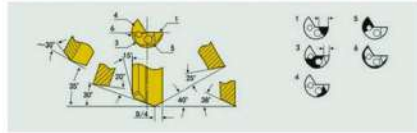


焊接式单刃枪钻的标准磨削角度

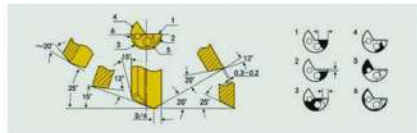
Brazed single flute gun drill grinding angles

1. 直径  $\leq 5.00\text{mm}$  的单刃枪钻的标准磨削角度  
Diameter  $\leq 5.00\text{mm}$

2. 直径  $5.00\text{mm} - 20.00\text{mm}$  单刃枪钻的标准磨削角度  
Diameter  $5.00 - 20.00\text{mm}$



3. 直径  $\geq 20.00\text{mm}$  单刃枪钻的标准磨削角度  
Diameter  $\geq 20.00\text{mm}$



注：针对一些特殊的加工材料和不同加工精度的要求，可以对枪钻刃磨角度做适当调整。  
PS: We can adjust the angles according to the material being drilled and accuracy requirements.

硬质合金枪钻刃磨中注意事项：

- 1、枪钻的磨削应为定时强制磨削。即当刀具后面磨损量达到磨钝标准时，就应进行重磨。
  - 2、磨削时每次进刀量不可过大，以防硬质合金钻头破裂和断头，造成人员受伤。
  - 3、磨削时钻头的受力方向应向着刀垫，以防因钻杆晃动造成刀具损坏。
  - 4、钻头五个刀面磨削完成后，应手工在砂轮上将钻头后面与钻头导向部分之间的棱角倒圆滑。
  - 5、枪钻需在专用的金刚石砂轮上进行重磨，双功能砂轮可实现粗、精磨两种功能。
  - 6、刃磨枪钻硬质合金部分产生的粉尘对身体有害，请佩戴防护眼镜和面具。
- 同时，我们可以提供枪钻的二次重焊服务。二次重焊是新枪钻刀头部分合金损耗完后重新焊接新合金然后精磨的一种工艺，重焊加工后的枪钻可达到等同于新枪钻的使用效果。

Attentions for Edge Grinding of carbide Gun Drill:

1. Gun drill shall be compulsorily ground regularly. In other words, regrinding shall be conducted in case back wear extent of the cutter reaches the indicated size.
  2. The feed amount each time for grinding shall not be excessive, which may cause the carbide drill bit cracking and breaking, leading to personal injury.
  3. The stressing direction of the bit in grinding shall be toward the cutter shim to prevent cutter damage resulted from drill stem shaking.
  4. After the five cutting edges of the bit are ground, the corner angle between the back cutting edge of the bit and the bit guide shall be rounded with grinding wheel manually.
  5. Gun drill shall be reground on special-purpose diamond grinding wheel; double-function grinding wheel can realize both coarse and precise grinding functions.
  6. The dust generated when grinding the carbide part of the gun drill is hazardous to human body, therefore, the operator shall wear protection glasses and face shield.
- We also can provide re-brazing service, make the gun drill used as new.

钻柄款式 Clamping sleeves

除了制造图表中的标准钻柄外，钻星还按照客户要求定制特殊钻柄（按客户的图纸或实物）。

In addition to manufacturing below standard clamping sleeves, Drillstar also customizes clamping to your special requirements (from a diagram or sample).

尺寸 Size	示意图 Diagram	L1	L2	X	M	钻头直径 Drill range	钻柄编号 Article no.
Ø10X40		42	55	24.3		7.100-9.999	DR001
Ø16X45		45	65	31		11.400-14.949	DR002
Ø16X50		52	75	47.5		11.400-14.949	DR003
Ø10X40		40	46	24.3		1.900-7.099	DR004
Ø16X45		45	53	31		1.900-12.099	DR005
Ø16X50		50	58	47.5		1.900-12.099	DR006
Ø25X70		70	78	34		1.900-19.799	DR007
Ø16X50		50	58	47.5		1.900-8.699	DR008
Ø25X70		72	105	34		19.800-24.799	DR009
Ø12.7X38.1		38.1		25.4		1.900-8.299	DR010
Ø19.05X69.8		69.8		44.4		1.900-14.949	DR011
Ø12.7X38.1		38.1	58	25.4		8.300-12.499	DR012
Ø19.05X69.8		69.8	100	44.4		14.95-18.799	DR013
Ø25.4X69.8		69.8		57.1		1.900-19.799	DR014
Ø31.75X69.8		69.8		57.1		1.900-25.999	DR015
Ø38.1X69.8		69.8		57.1		1.900-32.999	DR016
Ø25.4X69.8		69.8	105	57.1		19.8-24.799	DR017
Ø31.75X69.8		69.8	100	57.1		26.0-30.999	DR018
Ø38.1X69.8		69.8	100	57.1		33.0-40.0	DR019
Ø10X68		68		35	M6X0.5	1.9-6.799	DR020
Ø16X90		90		37	M10X1	1.9-12.099	DR021
Ø25X112		112		45	M16X1.5	1.9-19.799	DR022
Ø10X68		68	81	35	M6X0.5	6.8-9.999	DR023
Ø16X90		90	110	37	M10X1	11.4-14.949	DR024
Ø25X112		112	142	45	M16X1.5	19.8-24.799	DR025



钻柄款式 Clamping sleeves

除了制造图表中的标准钻柄外，钻星还按照客户要求定制特殊钻柄（按客户的图纸或实物）。  
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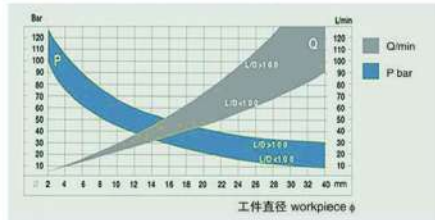
尺寸 Size	示意图 Diagram	L1	L2	X	M	钻头直径 Drill range	钻柄编号 Article no.
Ø10X40		40				1.9-6.499	DR026
Ø12X45		45				1.9-7.999	DR027
Ø16X48		48				1.9-11.399	DR028
Ø20X50		50				1.9-14.949	DR029
Ø25X56		56				1.9-19.799	DR030
Ø32X60		60				1.9-25.999	DR031
Ø10X40		40	20			1.9-7.099	DR032
Ø12X45		45	22.5			1.9-7.999	DR033
Ø16X48		48	24			1.9-12.099	DR034
Ø20X50		50	25			1.9-14.949	DR035
Ø25X56		56	32			1.9-19.799	DR036
Ø32X60		60	36			1.9-25.999	DR037
Ø40X70		70	40			1.9-29.999	DR038
Ø10X40		40	28			1.9-7.099	DR039
Ø12X45		45	33			1.9-7.999	DR040
Ø16X48		48	36			1.9-11.399	DR041
Ø20X50		50	38			1.9-14.949	DR042
Ø25X56		56	44			1.9-19.799	DR043
Ø32X60		60	48			1.9-25.999	DR044
Ø10X40		40	28			1.9-6.499	DR045
Ø12X45		45	33			1.9-7.999	DR046
Ø16X48		48	36			1.9-11.399	DR047
Ø20X50		50	38			1.9-14.949	DR048
Ø25X56		56	44			1.9-19.799	DR049
Ø16X112		112	72		TR16X1.5	1.9-11.399	DR050
Ø20X126		126	81		TR20X2	1.9-14.949	DR051
Ø28X126		126	24		TR28X2	1.9-23.799	DR052
Ø36X162		162	25		TR36X2	1.9-26.999	DR053
Ø10X60		60			M6X0.5	1.9-6.499	DR054
Ø16X80		80			M10X1	1.9-12.099	DR055
Ø25X100		100			M16X1.5	1.9-19.799	DR056
Ø16X80		80	100		M10X1	12.1-14.949	DR057
Ø25X100		100	140		M16X1.5	19.8-24.799	DR058

枪钻使用参数选取和问题处理措施  
Gun drill usage parameter and problem solving

ISO	材料 Material	切削力 N/mm3	布氏硬度 Hardness HB	切削速度 cutting speed V <sub>m</sub> /min	钻头直径, gun drill diameter(mm)		
					3.00-6.30	6.00-12.50	12.50-40.50
P steel	非淬硬 non hardened 0.1-0.25%	2000	90-200	60-120	0.003-0.010	0.015-0.055	0.020-0.110
	非合金 Non alloy	2100	2100	50-120	0.003-0.010	0.015-0.055	0.020-0.110
	非淬硬 non hardened 0.25-0.55%	2180	150-250	40-100	0.003-0.010	0.015-0.055	0.020-0.110
	非淬硬 non hardened 0.55-0.8%	2100	150-260	40-120	0.003-0.010	0.015-0.055	0.020-0.110
	低合金 Low alloy	2775	220-450	40-120	0.003-0.010	0.015-0.055	0.020-0.110
	淬硬与回火 hardened and fixed	2500	150-250	40-100	0.003-0.010	0.015-0.055	0.020-0.110
	退火 annealing	3750	250-350	50-100	0.003-0.010	0.015-0.055	0.020-0.110
	淬硬工具钢 hardened tool steel	1800	90-225	50-120	0.003-0.010	0.015-0.055	0.020-0.110
	非合金 non alloy	2100	150-250	40-100	0.003-0.010	0.015-0.055	0.020-0.110
	低合金 (合金元素 <5%) low alloy (alloy <5%)	2300	150-270	40-90	0.003-0.008	0.010-0.040	0.020-0.100
M stainless steel	铁素体 ferrite, 马氏体 martensite, 非淬硬 non hardened	2600	150-275	40-90	0.003-0.008	0.010-0.040	0.020-0.100
	轧制/锻造 rolled/forged	960	110-145	70-90	0.005-0.010	0.020-0.070	0.050-0.190
	轧制/锻造 rolled/forged	1100	150-270	60-90	0.005-0.010	0.010-0.070	0.030-0.190
K cast iron	可锻铸铁 malleable cast-iron	1100	150-220	60-90	0.004-0.010	0.010-0.070	0.030-0.190
	珠光体 pearlite	1290	200-330	15-90	0.003-0.010	0.005-0.070	0.010-0.190
	灰口铸铁 grey cast iron	1050	125-230	70-90	0.005-0.010	0.020-0.070	0.050-0.190
N non ferrous metal	球墨铸铁 nodular cast iron	1760	200-300	60-90	0.004-0.010	0.010-0.070	0.030-0.190
	铁素体 ferrite	750	40-100	65-300	0.005-0.015	0.020-0.070	0.030-0.150
	铝合金 AL alloy	700	70-160	65-300	0.005-0.015	0.020-0.070	0.030-0.150

枪钻机床的冷却液和流量表

Gun drilling machine cooling lubricant and flow chart



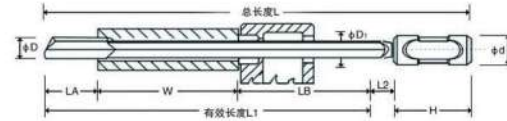
枪钻问题分析和解决方案

Problem analysis and problem solving

问题 Problem	原因 Reasons
孔倾斜度超差 Hole degree of deviation is very bad.	1.工件定位、装夹问题，未能准确找正 Workpiece not positioned or fixed well. 2.钻套制造不合要求，钻套与钻头之间间隙过大 Drill guide is not suitable, big space between the drill guide and gun drill 3.钻杆没有获得合理的支撑 No good support for the gun drill shank. 4.工件的结构（如工件壁厚差过大）和材料（如材料不均匀）问题 Workpiece structure is not good, such as workpiece wall thickness is too big, and material issue such as not even.
孔光洁度差 Hole roughness too bad	1.主轴转速、进给速度过低 Main spindle rotating speed, feeding rate is too slow. 2.切削油使用不当；压力、流量低、油温过高 Cutting oil is not suitable; Pressure is low, flow is low, oil temperature is too high. 3.切削油滤清效果差 Cutting oil filtering result is not good. 4.刀具过度磨损 Cutting tool is over worn. 5.机床震动，工件装夹不牢固 Machine vibrating; workpiece is not fixing steadily.
孔径过大 Hole diameter is larger.	1.钻套不合理要求，工件定位、装夹不正确，未能准确找正 Drill guide is not used well, workpiece positioning and holding are not correct. 2.钻套与钻头之间间隙过大 Big space between the drill guide and gun drill. 3.钻头磨削角度不适宜 Drill tool tip grinding angle is not correct.
喇叭孔 Trumpet hole	1.钻套与钻头之间间隙过大 Big space between the drill guide and gun drill. 2.导向机构刚性不足 Drill guide rigidity is not enough.
刀具寿命短或崩刃 Gun drill life is short or tip is chipping.	1.主轴转速、进给速度过高或过低，应针对所加工的材料选择适合的切削参数 Main spindle rotating speed & feeding rate is too low or too high. Have to choose suitable parameters. 2.钻头磨削角度不适宜 Drill tool tip grinding angle is not correct. 3.枪钻的牌号选择不适宜 Gun drill type is not correct. 4.切削油使用不当；压力、流量低，油箱容积过小，油温控制不好 Cutting oil is not suitable; Pressure is low, flow is low, oil temperature control is not good.
排屑不畅或断续排屑 Chip removal is not good, or not continuous	1.切削油压力、流量低 Cutting oil pressure and flow is too low. 2.工件材料（如不锈钢）断屑困难，应磨制断屑槽 Workpiece chip removal is difficult, we should grind a chip breaker groove. 3.切削进给过大，主轴转速偏小 Feeding rate is too big, spindle rotating is too small.

焊接式单刃枪钻常用型号之参数

The parameters of the commonly used single blade gun drills



枪钻直径 D Gun drill diameter (mm)	合金长度 Carbide length (mm)	可修磨长度 LA Regrindable carbide length (mm)	公差 Tolerance (mm)	刀杆直径D1 Shank (mm)	最大总长 L Commonly used max length (mm)
3.02	24.23	21	±1	2.75	1000
4.02	26.25	23	±1	3.8	1200
5.02	28.64	25	±1	4.75	1400
6.02	34	30	±1	5.75	1600
7.02	34	30	±1	6.7	1600
8.02	38	33	±1	7.7	1800
9.02	38	33	±1	8.7	2200
10.02	37.8	34	±1	9.65	2200
11.02	37.8	34	±1	10.65	2200
11.52	37.8	32	±1	11.1	2200
12.02	37.8	33	±1	11.6	2200
12.52	37.8	33	±1	12.1	2200
13.02	37.8	32	±1	12.5	2200
14.02	42.5	36	±2	13.5	2200
15.02	48.6	38	±2	14.5	2200
16.02	48.6	38	±2	15.4	2200
17.02	47.8	36	±2	16.4	2200
18.02	47.8	34	±2	17.4	2200
19.02	47.8	34	±2	18.2	2200
20.02	47.8	33	±2	19.1	3500
21.02	56.5	44	±3	20.1	3500
22.02	58.8	45	±3	21.1	3500
23.02	58.8	45	±3	22.1	3500
24.02	60	45	±3	23.1	3500
25.02	61.8	45	±3	24.1	3500
26.02	62.6	45	±3	25.1	3500
27.02	62.4	45	±3	26.1	3500
28.02	63.3	45	±3	27.1	3500
29.02	64	45	±3	28.1	3500
30.02	65	45	±3	29.1	3500



钻星刀具为客户提供常规规格的大量库存及大量半成品库存，满足客户的紧急需求。  
详细规格变化请咨询钻星公司的销售人员。



We provide large quantity of common sizes stock and half finished stock,  
to meet the clients' special requirement. Please consult our sales people for the details.

单位(unit): mm    ●代表默认库存规格    ●Means stock

D \ 库存 L	800	900	970	1000	1200	1400	1650	1860	2000
3.02	●	●							
3.175	●	●							
3.52	●	●							
3.968	●	●		●					
4.02	●	●		●					
4.52	●	●		●					
4.762	●	●		●					
5.02	●	●		●					
5.52	●	●		●					
5.556									
6.02	●	●	●	●	●	●	●		
6.35				●	●	●	●		
6.52				●	●	●	●		
7.02				●	●	●	●		
7.52				●	●	●	●		
7.937				●	●	●	●		
8.02			●	●	●	●	●	●	●
8.52				●	●	●	●		
9.02				●	●	●	●		
9.52				●	●	●	●		
9.525				●	●	●	●		
10.02			●	●	●	●	●	●	●
10.318									
10.52				●	●	●			
11.02				●	●	●			
11.112				●	●	●			
11.52				●	●	●			
12.02				●	●	●			
12.52			●	●	●	●	●	●	●
12.72				●	●	●			
13.02				●	●	●			
13.52				●	●	●			
14.02				●	●	●	●	●	●
14.52				●	●	●			
15.02				●	●	●	●	●	●
15.52				●	●	●			
15.875				●	●	●			
16.02				●	●	●	●	●	●

钻星刀具为客户提供常规规格的大量库存及大量半成品库存，满足客户的紧急需求。  
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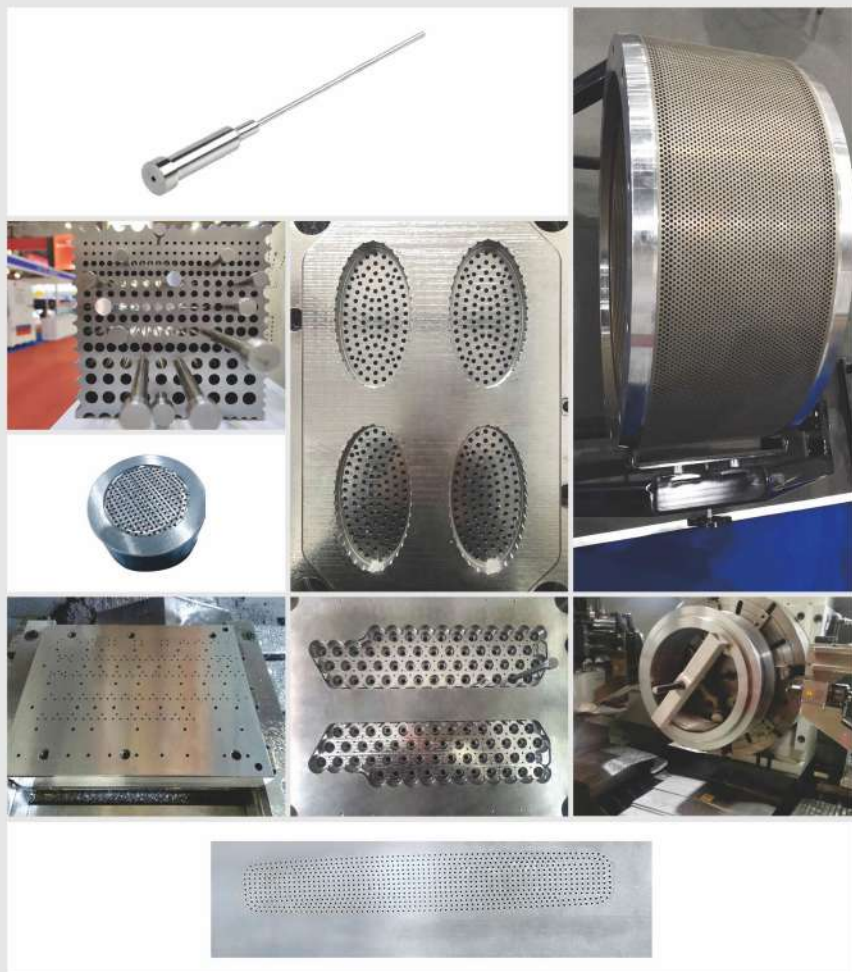
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单位(unit): mm    ●代表默认库存规格    ●Means stock

D \ 库存 L	800	900	970	1000	1200	1400	1650	1860	2000
16.52					●	●	●		
17.02					●	●	●		
17.52					●	●	●		
18.02					●	●	●		
18.52					●	●	●		
19.02					●	●	●		
19.05					●	●	●		
19.52					●	●	●		
20.02					●	●	●		
20.52					●	●	●		
21.02					●	●	●		
21.52					●	●	●		
22.02					●	●	●		
22.52					●	●	●		
23.02					●	●	●		
23.52					●	●	●		
24.02					●	●	●		
25.02					●	●	●		
26.42					●	●	●		
27.02					●	●	●		
28.02					●	●	●		
29.02					●	●	●		
30.02					●	●	●		
31.02					●	●	●		
32.02					●	●	●		
33.02					●	●	●		
34.02					●	●	●		
35.02					●	●	●		
36.02					●	●	●		
37.02					●	●	●		
38.02					●	●	●		
39.02					●	●	●		
40.02					●	●	●		
41.02					●	●	●		
42.02					●	●	●		
43.02					●	●	●		
44.02									
45.02									

## 整体硬质合金单刃枪钻 SINGLE FLUTE SOLID CARBIDE GUN DRILL

### 应用实例 Applications



## 整体硬质合金单刃枪钻 SINGLE FLUTE SOLID CARBIDE GUN DRILL

### 枪钻示意图 Gun Drill



相对于焊接式枪钻，整体硬质合金枪钻具有更优异的孔加工稳定性，高效及单次使用寿命长等优点，它的刀杆和刀头部位由整支的合金棒料研磨而成，中间没有焊接点。夹持部位有焊接刀柄或直接夹装刀杆2种方式。钻星刀具目前生产的整体硬质合金枪钻从直径0.9mm到12mm，有效长305mm（根据实际规格）。

Solid Carbide drills are manufactured as a single piece of carbide, without braze joint at the head and tube. Solid carbide drills have strong rigid result in stable and efficiency hole drilling. Zuoxing solid carbide gun drills start from 0.9mm to 12mm, The effective length and 305 mm (according to the actual specification).



## 整体硬质合金单刃枪钻

SINGLE FLUTE SOLID CARBIDE GUN DRILL

### 枪钻刀柄 Drivers

刀柄规格 size	尺寸标注 diagram	L1	L2	适用钻头规格 drill range	M(螺牙)	钻星编号 part No.
4 x 46		34	46	0.9-2.5		DRS001
4 x 50		38	50	2.5-5		DRS002
6x50		36	50	0.9-5		DRS003
10x55		40	55	0.9-7		DRS004
10x65		50	65	0.9-7		DRS005
10x95		80	95	0.9-7		DRS006
10x100		85	100	0.9-7		DRS007
10x110		95	110	0.9-7		DRS008
10x115		100	115	0.9-7		DRS009
10x55		40	55	0.9-6	M6X0.5	DRS010
10x70		55	70	0.9-6	M6X0.5	DRS011
10x130		115	130	0.9-6	M6X0.5	DRS012
10x130		70	130	0.9-6	M10X1.0	DRS013
10x130		70	130	0.9-6	M10X1.0	DRS014
16x105		90	105	0.9-6	M10X1.0	DRS015
16x130		115	130	0.9-6	M10X1.0	DRS016

针对不同的装夹方式，钻星刀具采用相应的刀柄款式用来满足各种不同品牌的深孔钻机床装夹。  
Zuoxing produces all kinds of shank drivers to meet various requirements

## 整体硬质合金单刃枪钻

SINGLE FLUTE SOLID CARBIDE GUN DRILL

### 常规库存规格 Regular inventory specifications

	140	150	160	180	200	250	320
0.92							
1.02	●		●	●			
1.12							
1.22							
1.32							
1.42							
1.52	●		●	●			
1.62							
1.72							
1.82							
1.92							
2.02	●		●	●	●		
2.12							
2.22							
2.32							
2.42							
2.52			●	●	●	●	
2.62							
2.72							
2.82							
2.92							
3.02			●	●	●	●	●
3.12							
3.22							
3.32							
3.42							
3.52			●	●	●	●	●
3.62							
3.72							
3.82							
3.92							
4.02			●	●	●	●	●
4.52							
5.02							
5.52							
6.02							
6.52							
7.02							
7.52							
8.02							
8.52							
9.02							
9.52							
10.02							
10.52							
11.02							
11.52							
12.02							

钻星刀具库存现货可以即时发货  
Stock drills can be delivered in 24 hours

技术支持  
TECHNICAL SUPPORT

整体硬质合金单刃枪钻标准加工参数  
solid carbide gun drills cutting parameters

材料种类 material	合金钢 alloyed 调质钢 tempered steel 工具钢 tool steel (>900N/mm <sup>2</sup> )	结构钢 structural steel 高碳低合金钢 high carbon low alloy 调质钢 machining steel 表面硬化钢 case-hardened steel 工具钢 tool steel (<900N/mm <sup>2</sup> ) 易切削钢 easy processable	不锈钢 (316) 及类似材质 stainless steel(316) and related
	线速度 Linear velocity	65-85	75-105
钻头直径mm dia	进给速度 mm/转 feed mm/rev		
	进给区域 feed mm/rev	进给区域 feed mm/rev	进给区域 feed mm/rev
0.9-1.0	0.0010 ~ 0.0020	0.0010 ~ 0.0030	0.0015 ~ 0.0020
1.1-1.2	0.0015 ~ 0.0025	0.0010 ~ 0.0035	0.0016 ~ 0.0025
1.2-1.3	0.0015 ~ 0.0030	0.0015 ~ 0.0040	0.0020 ~ 0.0030
1.3-1.4	0.0020 ~ 0.0040	0.0020 ~ 0.0040	0.0025 ~ 0.0030
1.4-1.5	0.0020 ~ 0.0040	0.0020 ~ 0.0050	0.0025 ~ 0.0035
1.5-1.6	0.0025 ~ 0.0050	0.0020 ~ 0.0055	0.0025 ~ 0.0035
1.6-1.7	0.0025 ~ 0.0055	0.0020 ~ 0.0070	0.0025 ~ 0.0040
1.7-1.8	0.0030 ~ 0.0060	0.0030 ~ 0.0075	0.0030 ~ 0.0050
1.8-1.9	0.0035 ~ 0.0075	0.0030 ~ 0.0095	0.0040 ~ 0.0065
1.9-2.5	0.0035 ~ 0.0085	0.0040 ~ 0.0150	0.0050 ~ 0.0075
2.5-3.0	0.0040 ~ 0.0100	0.0050 ~ 0.0180	0.0060 ~ 0.0095
3.0-3.5	0.0050 ~ 0.0150	0.0080 ~ 0.0200	0.0080 ~ 0.0140
3.5-4.0	0.0070 ~ 0.0150	0.0090 ~ 0.0250	0.0100 ~ 0.0150
4.0-4.5	0.0080 ~ 0.0200	0.0150 ~ 0.0250	0.0100 ~ 0.0200
4.5-5.0	0.0100 ~ 0.0250	0.0150 ~ 0.0300	0.0150 ~ 0.0250
5.0-6.0	0.0150 ~ 0.0250	0.0150 ~ 0.0400	0.0150 ~ 0.0250
6.0-8.0	0.0150 ~ 0.0350	0.0200 ~ 0.0500	0.0200 ~ 0.0300
8.0-12.0	0.0180 ~ 0.0400	0.0200 ~ 0.0550	0.0200 ~ 0.0350

加工参数根据机床稳定性、冷却介质、刀具长度的不同而有所变化。  
以上数据仅供参考交流。  
Parameters above are average values as a guide, the setting based on tool length, cooling lubricant, material, machine stability, workpiece clamping etc.

技术支持  
TECHNICAL SUPPORT

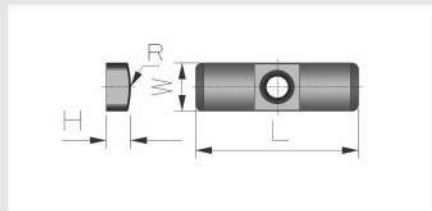
整体硬质合金单刃枪钻标准加工参数  
solid carbide gun drills cutting parameters

材料种类 material	铸铁 cast iron 灰口铸铁 grey cast iron (<300N/mm <sup>2</sup> ) 球墨铸铁 ductile cast iron (<400N/mm <sup>2</sup> ) 碳钢 general steel 铸件 casting	铝 + 铸铝 aluminium + cast aluminium	弹簧钢 spring steel 钛合金 titanium alloy 高温合金 high-temp steel 铸钢 cast steel
	线速度 Linear velocity	65-95	85-165
钻头直径mm dia	进给速度 mm/转 feed mm/rev		
	进给区域 feed mm/rev	进给区域 feed mm/rev	进给区域 feed mm/rev
0.9-1.0	0.0015 ~ 0.0025	0.0020 ~ 0.0025	0.0011 ~ 0.0025
1.1-1.2	0.0020 ~ 0.0030	0.0020 ~ 0.0025	0.0015 ~ 0.0030
1.2-1.3	0.0025 ~ 0.0035	0.0025 ~ 0.0030	0.0020 ~ 0.0035
1.3-1.4	0.0030 ~ 0.0040	0.0025 ~ 0.0035	0.0025 ~ 0.0040
1.4-1.5	0.0040 ~ 0.0050	0.0025 ~ 0.0045	0.0025 ~ 0.0040
1.5-1.6	0.0050 ~ 0.0060	0.003 ~ 0.0055	0.0030 ~ 0.0040
1.6-1.7	0.0050 ~ 0.0070	0.0035 ~ 0.0065	0.0030 ~ 0.0045
1.7-1.8	0.0065 ~ 0.0095	0.0040 ~ 0.0085	0.0035 ~ 0.0055
1.8-1.9	0.0070 ~ 0.0150	0.0050 ~ 0.0100	0.0040 ~ 0.0065
1.9-2.5	0.0100 ~ 0.0250	0.0050 ~ 0.0200	0.0050 ~ 0.0075
2.5-3.0	0.0150 ~ 0.0350	0.0060 ~ 0.0350	0.0060 ~ 0.0095
3.0-3.5	0.0150 ~ 0.0400	0.0080 ~ 0.0550	0.0080 ~ 0.0100
3.5-4.0	0.0180 ~ 0.0500	0.0100 ~ 0.0750	0.0090 ~ 0.0155
4.0-4.5	0.0200 ~ 0.0550	0.0150 ~ 0.0950	0.0100 ~ 0.0150
4.5-5.0	0.0250 ~ 0.0650	0.0150 ~ 0.1500	0.0100 ~ 0.0180
5.0-6.0	0.0250 ~ 0.0750	0.0150 ~ 0.1550	0.0150 ~ 0.0250
6.0-8.0	0.0300 ~ 0.1000	0.0200 ~ 0.2000	0.0150 ~ 0.0300
8.0-12.0	0.0350 ~ 0.1500	0.0200 ~ 0.2000	0.0180 ~ 0.0350

加工参数根据机床稳定性、冷却介质、刀具长度的不同而有所变化。  
以上数据仅供参考交流。  
Parameters above are average values as a guide, the setting based on tool length, cooling lubricant, material, machine stability, workpiece clamping etc.

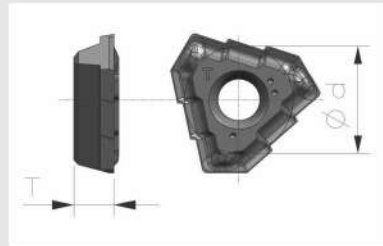


## 镶刀粒枪钻 INDEXABLE GUNDRILLS



导条示意图  
guiding pad

刀粒示意图  
inserts



镶刀粒枪钻具有断屑效果好，高进给，更换刀粒便捷等传统枪钻无法比拟的加工优势，但是加工孔径公差范围太大，对交叉孔孔服效果差，对加工机床稳定性要求高等方面又导致它的通用性不是很好。一般在盲孔，管板，棒料孔等要求不高的领域使用。

compare with brazed gundrills, indexable gundrills have good performance at chips removal, high feed rate, and easy to change inserts. but the indexable type gundrills have lower accurate, poor performance at cross holes, it also require machines with more stability, normally indexable gundrills use on blind holes, tube sheet, shaft holes etc, no more accuracy requirement processing.

## 镶刀粒枪钻 INDEXABLE GUNDRILLS

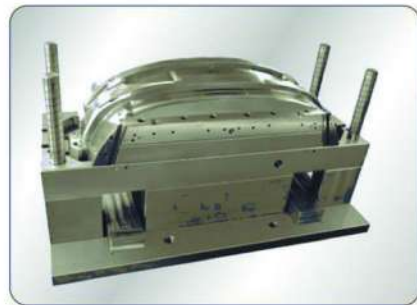
### 镶刀粒枪钻标准加工参数

### Indexable gun drills cutting parameters

工件材料 Material	线速度 cutting speed	枪钻规格 drill bit dia / 每转进给 feed rate mm/rev		
		φ12.00-22.00mm	φ22.50-26.00mm	φ26.50-35.00mm
结构钢 <700/mm construction steel	80-100	0.055-0.100	0.080-0.110	0.100-0.140
表面硬化钢 <700/mm case hardened steel	80-100	0.055-0.100	0.080-0.110	0.100-0.140
表面硬化钢 <1100/mm case hardened steel	70-80	0.070-0.100	0.080-0.110	0.100-0.130
热处理钢 <700/mm heat treated steel	70-90	0.070-0.100	0.080-0.110	0.100-0.140
热处理钢 <1100/mm heat treated steel	55-75	0.070-0.100	0.080-0.110	0.100-0.130
氮化钢 <1100/mm Nitriding steel	55-75	0.070-0.090	0.080-0.100	0.090-0.120
铁素体钢 <900/mm Ferritic steel	60-80	0.070-0.100	0.080-0.110	0.100-0.140
奥氏体钢 Austenitic steel	60-80	0.070-0.090	0.080-0.100	0.100-0.120
耐热钢 Heat resisting steel 工具钢 Tool steel	50-70	0.070-0.090	0.080-0.100	0.100-0.120
钢铸件 <700/mm Steel castings	60-80	0.070-0.100	0.080-0.100	0.100-0.140
球墨铸铁 <700/mm Nodular cast iron	65-80	0.090-0.120	0.100-0.130	0.120-0.150
铸铁 合金和非合金 Cast iron alloyed and unalloyed	70-100	0.090-0.120	0.100-0.130	0.120-0.150
铝 Aluminium	100-200	0.080-0.110	0.090-0.120	0.100-0.140
铜 Copper Cu-content <99%	120-300	0.050-0.090	0.060-0.100	0.080-0.120

加工参数根据机床稳定性、冷却介质、刀具长度不同而有所变化。  
以上数据仅供参考交流。  
Parameters above are average values as a guide, the setting based on tool length, cooling lubricant, material, machine stability, workpiece clamping etc.

加工案例 Working Cases



钻星全球  
Drillstar Worldwide

Worldwide Business

As an exporter with rich trading experience, we also can help our clients on purchase of other products. Just take the following as example, gun drill accessories, gun drilling machine, gun drilling oil, gun drill grinders, oil spray pump, BTA drill head, chamber reamer, floating reamer holder, button, honing tool, abrasive tools, steel etc. We can do transitional business as well, buying from other countries, transit in China, then send them to you. All in all, we can be your partner and consultant in China.

Should you have any needs, please don't hesitate to contact us.



深孔钻床  
Gun Drilling Machine



枪钻磨刀机  
Gun Drill Grinder



枪钻油  
Gun Drilling Oil



油雾冷却设备  
Oil Spray Pump Kit



导向套  
Drill Guide



橡胶套  
Rubber Sleeves



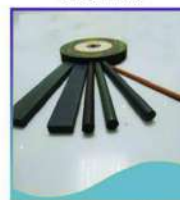
BTA 钻头  
BTA Drill Head



浮动铰刀卡座  
Floating Reamer Holder



美国 CRATEX 砂轮  
USA CRATEX Abrasive



美国 CRATEX 砂轮  
USA CRATEX Abrasive



扩孔铰刀  
Chamber Reamer



拉刀  
Button