

Asia High Performance Catalogue

亚洲版高性能系列产品目录



澳大利亚·神盾工具





Sutton Tools has made the tool selection for cutting different materials easy by applying colour coded bands to the shanks of the tools which relates to the material it is best suited to.

Why Colour Band?

- Each colour gives clear assignment of materials, different choice of tools and applications.
- Internationally recognised
- All suitable standard tools are identified at a glance
- A simplified tool selection lends itself to rationalisation
- Rejects are reduced due to correct tool choice.

Selection Made Easy!

- UNI** Universal use for a wide range of materials, preferred application: steels up to 1200 N/mm²
- VA** Use in stainless steels, high-strength steels up to 900 N/mm²
- H** Use in hard materials up to 1400 N/mm²
- AI** Use in wrought Al alloys, pure-copper and thermoplastics.
- W** Use in soft materials, free-cutting steels, AlSi alloys.
- Cu** Use in wrought Al alloys and coppers.
- GG** Use in grey cast iron GG, brittle plastics, hard bronzes.

Sutton Tools - 神盾工具通过在刀具柄径上标识的色环来显示其最适宜切割的材料。由此可轻松选择用于切削不同材料的刀具。

为何要使用色环?

- 每种色彩清楚地表明刀具的材料, 刀具及其应用的不同选择。
- 国际公认
- 可一目了然地识别所有合适的标准刀具
- 轻松地选择工具有利于其合理使用
- 选择正确的刀具可减少不良品。

选择使一切变得轻松!

- UNI 型** 高效泛用型, 适合抗拉强度<1200N/mm²的钢铁及非铁金属
- VA 型** 不锈钢专用, 同时适用于≤900N/mm²的合金钢
- H 型** 硬质材料专用, 加工硬度可达1400N/mm²
- AI 型** 软质铝合金专用, 适合锻造铝、红铜、热塑性塑料
- W 型** 软质材料专用, 如易削钢、含硅铝合金
- Cu 型** 红铜专用, 同时适合锻造铝
- GG 型** 灰口铸铁 GG 专用, 同时适合脆性塑料及硬青铜

Materials		HB	N/mm ²	% Elong. 延展性 %	Material eg. 材料示例
1.0 Steels 钢材					
1.1 Mild steels, magnetic soft steel	铁磁性低碳钢	<200	>200 <400	10	RFe100
1.2 Free cutting, structural, unalloyed	易削钢、结构钢	<200	>350 <700	30	C10, C15, ST37, ST52
1.3 Plain carbon, low alloyed	普通碳钢	<300	>350 <850	20	C45, C92D, D95-S
1.4 Alloy steels harden. / tempered	合金钢	<250	>500 <850	30	41CrMo4, 36CrNiMo4, X155CrMo12-1, 90MnV8
1.5 Alloy steels harden. / tempered	合金钢-淬火及回火	<350	>850 <1200	30	
1.6 Hardened, heat treated, high tensile alloy	预硬钢、淬火钢	<420	<1500	12	
1.7 High tensile 45-50 Rc	淬火钢 45-50 Rcc	<550		<12	
1.8 High Tensile 50-62 Rc	淬火钢 50-62 Rc	<700		<12	HS2-10-1-8
2.0 Stainless Steels 不锈钢					
2.1 Free machining	易切削	<250	<850	25	X8CrNiS18-9
2.2 Austenitic	奥氏体	<250	<850	20	X5CrNi18-10
2.3 Ferritic + martensitic	铁素体 + 马氏体	<250	<850	20	X20Cr13
3.0 Cast Irons 铸铁					
3.1 Lamellar graphite (Grey soft)	灰铸铁(软质)	<150	<500	10	GG10, GG40
3.2 Lamellar graphite (Grey hard)	灰铸铁(硬质)	<300	<1000	10	GG640, GGG80
3.3 Nodular (spheroidal) graphite & malleable	球墨铸铁、可锻铸铁	<200	<700	10	
4.0 Titaniums 钛铁					
4.1 Pure Titanium	纯钛	<250	<850	20	Ti99.7, Ti99.8
4.2 Titanium alloys	钛合金	>250	>850	20	TiCu2, TiAl6V4
5.0 Nickels 镍					
5.1 Nickel alloys	镍合金	<250	<850	25	Ni38, Ni54, NiCr16FeTi
5.2 Nickel alloys	镍合金	>250	>850	25	
6.0 Coppers 铜					
6.1 Pure Copper (electrolytic copper)	紫铜	<120	<400	12	SF-Cu
6.2 Short chip Brass, Phosphor Bronze, gun metal	短屑黄铜、磷铜、青铜	<200	<700	12	G-CuSn12Ni
6.3 Long chip Brass, Bronze	长屑黄铜、青铜	<200	<700	12	G-CuPb20Sn
7.0 Aluminiums 铝					
7.1 Aluminium unalloyed	纯铝	<100	<350	15	Al99.5
7.2 Magnesium unalloyed	纯镁	<150	<350	15	Al99.85Mg0.5
7.3 Al Alloyed Si < 1.5 %	铝合金, 合硅量 < 1.5 %	<120	<500	15	AlMg1.5
7.4 Al Alloyed 1.5 % < Si < 10%	铝合金, 合硅量>1.5%<10%	<120	<400	10	AlSi10Mg
7.5 Al Alloyed > 10% Si	铝合金, 合硅量>10%	-	<400	N	AlSi17Cu4
7.6 Magnesium alloys	镁合金	-	<400	N	MgAl3Zn
8.0 Plastics 塑料					
8.1 Plastics, Thermoplastics, Polyethylene	塑料、热塑性塑料、聚乙烯	<340	<50	N	ABS, PVC, Polycarbonate 丙烯酸-丁二烯-苯乙烯 (ABS)

we offer a comprehensive service...



Customer Service

Stock requirements and needs can vary from customer to customer and Sutton Tools has implemented varied ordering systems (EDI, email, Phone & fax) to receive orders and seamlessly process them. Sutton Tools customer service team deliver helpful service and advice to businesses, end users and stores throughout Australia. Their job is to help you solve any problems. The service team have a strong reputation for providing support with experience and first-rate

product knowledge.

Sutton Tools has been successfully delivering quality cutting tools to customers throughout Australia for over 90 years. Sutton Tools combines the latest logistic technology (freight management systems) with personalised service to ensure that you get the products you order, when you need them on time, every time.



Distribution and Logistics

Our International Distribution Centre uses modern radio frequency scanning technology coupled with the latest carousel and stock replenishment systems which allows accurate stock control and efficient warehouse operation. We have over 17,000 SKU's and our stock availability consistently averages in the high 90%'s. From a customer perspective, this provides confidence in breadth and depth of stock cover and reliable delivery service.



Special Tools & Tool Resourcing

For over 90 years Sutton Tools has been designing and manufacturing precision cutting tools in Australia and exporting to the world. Sutton Tools is a leading global provider of specialist cutting solutions, in drilling tools, threading tools, reamers and milling cutters, we offer a one stop shop tool refurbishment including re-grinds & re-coating for special tools that can be supplied to suit your special requirements.

Specialist tools distributed to industries such as Automotive, Aerospace, Marine, Transport, Construction, Surgical equipment, Manufacturing, Toolmaking, and Agriculture to name a few.



Quality Management Systems

Sutton Tools company complies with and is currently certified to ISO Global 9001:2008, under the Quality Management Systems. This demonstrates Sutton Tools' commitment to providing a service based on quality.



Sutton Tools Expert Tool Selector

www.suttontools.com.au/ETS/ExpertToolSelector

Sutton Tools Web assisted Expert Tool Selector, allows for finding the right tool for your specific machining task so easy. The Expert Tool Selector will recommend the right tool for the right application and everything from suitable coolant choices through to cutting calculations. Our Expert Tool Selector provides easy step-by-step detailed information that includes:

- Graph Selector: Hardness of Materials
- Material Type
- Material Classification
- Material Groups
- Tool Selector
- Recommend Tools
- Shows Stock Availability



Sales advice and service

Sutton Tools Sales consultants are fully experienced to assist with:

- Technical advice
- Products
- Core stock ranges
- Merchandising concepts, product ranges & installation
- Sales and Marketing - Point of sale and promotional material



Technical Advice

Sutton Tools have specialised staff that are highly trained.

- Assist to select the right tool.
- Advise on the operating conditions of a tool.
- Specialist in optimising your process.
- Experienced metrology specialist
- Selected machining experts

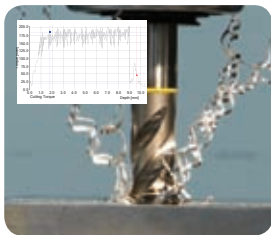
commitment to research & development....

Today's metal working industry faces the relentless challenge of producing products faster, better and cheaper than before. Such a challenge requires innovative technology to world standards. Sutton Tools meets this challenge, through its commitment to research and development.



Research

Sutton Tools' research includes travelling the world for the best equipment available, attending engineering exhibitions on an international level. We treat R&D seriously, an ongoing vigil to stay abreast of better best technology advancements and continue investing into R&D or research & development, that is Sutton Tools' philosophy.



Testing

In order to assist in R&D, Sutton Tools has implemented a state of the art Test Centre incorporating CNC machining centres for testing and developing of our tools, to simulate precisely the way industry is using the tools.



Development - Tools

One aspect of the manufacturing process we employ is the conventional grinding and advanced super abrasive grinding. This "Grinding Technology" has enabled Sutton Tools to be a leader in this field and we can genuinely claim as having one of the best grinding shops. Our CNC equipment is designed to operate at a high level of grinding technology to ensure that our cutting tools are of the highest accuracy and performance.



Development - Machinery

Sutton tools' Engineering Department has state of the art technology and design equipment which has been critical in our continual new development of machinery. Sutton Tools' purpose-built machinery for manufacture is designed for specific applications and to produce the best cutting tools.



Automation & Production

In order to control the escalating costs of manufacture, Sutton Tools has heavily invested in automation to reduce labour costs. Our robotic equipment is designed to increase our production and efficiency.

内容

丝锥
用于盲孔

丝锥
用于通孔

硬质合金钻头
短钻头、标准刃钻头、长刃钻头

高速钢钻头
短钻头、标准刃钻头、长刃钻头

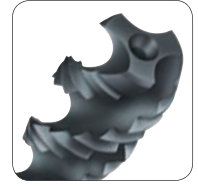
钻头
定位钻及倒角刀

硬质合金铣刀
精加工和粗加工

铣刀
精加工及粗加工

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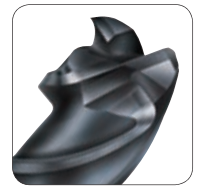
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Endmills
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Countersinks		倒角刀						
C108	18	A1108	○	Countersink, Three Flute, UNI 倒角刀, 三刃, UNI	90°	HSS Co	TiAlN 氮化铝钛	DIN335
Drills 钻头								
D151	11	A1006	N → H	Drill, Stub, CNC 钻头, 短钻头, 数控	130° Form B	HSS Co	TiAlN 氮化铝钛	DIN1897
D153	11	A1502	○	Drill, Stub, R40 VA, <i>Black Magic</i> 钻头, 短钻头, R40 VA, 黑魔法	4 Facet	HSS Co	TiAlN 氮化铝钛	DIN1897
D155	11	A1502	○	Drill, Stub, R40 UNI 钻头, 短钻头, R40 UNI	130° 4 Facet Form B	SPM	TiAlN 氮化铝钛	DIN1897
D163	14	A0418	N → H	Drill, Jobber, DHJ 钻头, 标准刃钻头, DHJ	130° Form B	HSS Co	TiAlN 氮化铝钛	DIN338
D165	14	A0418	W → N	Drill, Jobber, DXJ 钻头, 标准刃钻头, DXJ	130° Form A	HSS Co	TiAlN 氮化铝钛	DIN338
D168	14	A1502	○	Drill, Jobber, R40 UNI 钻头, 标准刃钻头, R40 UNI	130° 4 Facet Form B	SPM	TiAlN 氮化铝钛	DIN338
D169	14	A1502	○	Drill, Jobber, R40 VA, <i>Black Magic</i> 钻头, 标准刃钻头, R40 VA, 黑魔法	4 Facet Form C	HSS Co	TiAlN 氮化铝钛	DIN338
D171	17	A0508	N → H	Drill, Long Series, DHL 钻头, 长刃钻头, DHL	130° Form B	HSS Co	TiAlN 氮化铝钛	DIN340
D175	18	A1124		Drill, NC Spotting 钻头, NC 定位钻	90°	HSS Co	TiN 氮化钛	DIN1897
D176	18	A1124		Drill, NC Spotting 钻头, NC 定位钻	120°	HSS Co	TiN 氮化钛	DIN1897
D177	11	A1006	W → N	Drill, Stub, DXS 钻头, 短钻头, DXS	130° Form A	HSS Co	TiAlN 氮化铝钛	DIN1897
D194	17	A0508	N → H	Drill, Extra Long, DHXL-1 钻头, 超长刃钻头, DHXL-1	130° Form B	HSS Co	TiAlN 氮化铝钛	DIN1869-1
D195	17	A0508	N → H	Drill, Extra Long, DHXL-2 钻头, 超长刃钻头, DHXL-2	130° Form B	HSS Co	TiAlN 氮化铝钛	DIN1869-2
D196	17	A0508	N → H	Drill, Extra Long, DHXL-3 钻头, 超长刃钻头, DHXL-3	130° Form B	HSS Co	TiAlN 氮化铝钛	DIN1869-3
D323	8	A0210		Drill, 3xD, Shank Form HA 钻头, 3xD, 柄径 HA 型	140° Form C	VHM	AlCrN 氮化铝铬	DIN6537
D326	9	A0210		Drill, 5xD, Shank Form HA 钻头, 5xD, 柄径 HA 型	140° Form C	VHM	AlCrN 氮化铝铬	DIN6537
D329	8	A0210		Drill, 3xD, Shank Form HA, IK 钻头, 3xD, 柄径 HA 型, IK	140° Form C	VHM	AlCrN 氮化铝铬	DIN6537
D332	9	A0210		Drill, 5xD, Shank Form HA, IK 钻头, 5xD, 柄径 HA 型, IK	140° Form C	VHM	AlCrN 氮化铝铬	DIN6537
D335	10	A0210		Drill, 8xD, Shank Form HA, IK 钻头, 8xD, 柄径 HA 型, IK	140° Form C	VHM	AlCrN 氮化铝铬	DIN6537

Catalogue Code 目录代码	Page No. 页码	Discount Group 折扣组	Colour Ring 色环	Description 说明	Shank 柄径	Tool Material 工具材料	Surface Finish 表面处理	Standard 标准
Endmills 铣刀								
E109	21	B0612	○	Endmill, Stub, 2 Flute, R30 UNI 铣刀, 短刃, 二刃, R30 UNI	DIN 1835-A	SPM	TiAlN 氮化铝钛	DIN327
E110	21	B0606	○	Endmill, Regular, 2 Flute, R40 Al 铣刀, 标准, 二刃, R40 Al	DIN 1835-A	HSS Co.8	BrT 无处理	DIN844K
E122	21	B0612	○	Endmill, Regular, 3 Flute, R45 W 铣刀, 标准, 三刃, R45 W	DIN 1835-A	SPM	TiAlN 氮化铝钛	DIN844K
E124	21	B0612	○	Endmill, Long, 3 Flute, R40 W 铣刀, 加长, 三刃, R40 W	DIN 1835-A	SPM	TiAlN 氮化铝钛	DIN844L
E134	21	B0612	○	Endmill, Regular, 4 Flute, R30/32, <i>Harmony</i> 铣刀, 标准, 四刃, R30/32, 和谐系列	DIN 1835-A	SPM	TiAlN 氮化铝钛	DIN844K
E136	21	B0612	○	Endmill, Long, 4 Flute, R30/32, <i>Harmony</i> 铣刀, 加长, 四刃, R30/32, 和谐系列	DIN 1835-A	SPM	TiAlN 氮化铝钛	DIN844L
E137	21	B0612	○	Endmill, Regular, 4 Flute, R50 VA 铣刀, 标准, 四刃, R50 VA	DIN 1835-A	SPM	TiAlN 氮化铝钛	DIN844K
E151	22	B0408	○	Endmill, Regular, 3-6 Flute, R45 UNI, HRS 铣刀, 标准, 3-6刃, R45 UNI, HRS	DIN 1835-B	SPM	TiAlN 氮化铝钛	DIN844K
E152	22	B0406	○	Endmill, Regular, 3 Flute, R35, WR 铣刀, 标准, 三刃, R35 WR	DIN 1835-B	SPM	BrT 无处理	DIN844K
E154	22	B0406	○	Endmill, Long, 3 Flute, R35, WR 铣刀, 加长, 三刃, R35 WR	DIN 1835-B	SPM	BrT 无处理	DIN844L
E157	22	B0612	○	Endmill, Regular, 4 Flute, R55 VA 铣刀, 标准, 四刃, R55 VA	DIN 1835-B	SPM	TiAlN 氮化铝钛	DIN844K
E176	22	B0408	○	Endmill, Regular, 4-5 Flute, R30, HR 铣刀, 标准, 4-5刃, R30, HR	DIN 1835-B	SPM	TiAlN 氮化铝钛	DIN844K



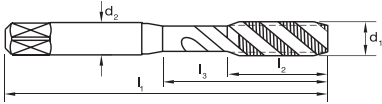
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E177	22	B0408	○	Endmill, Long, 4-5 Flute, R30, HR 铣刀, 加长, 4-5刃, R30, HR	DIN 1835-B	SPM	TiAlN 氮化铝钛	DIN844L	
E535	20	B0210	○	Endmill, Long, 4 Flute, R35/38, <i>Harmony</i> 铣刀, 标准, 四刃, R35/38, 和谐系列	DIN 6535-HA	VHM-ULTRA	AlCrN 氮化铝铬	DIN6527L	
E545	20	B0210	○	Endmill, Long, 4 Flute, R45-STF, <i>Harmony</i> 铣刀, 标准, 四刃, R45-STF, 和谐系列	DIN 6535-HA	VHM-ULTRA	AlCrN 氮化铝铬	DIN6527L	
E549	20	B0210	○	Endmill, Long, 3-6 Flute, R45-HRS, <i>Harmony</i> 铣刀, 标准, 3-6刃, R45-HRS, 和谐系列	DIN 6535-HA	VHM-ULTRA	AlCrN 氮化铝铬	DIN6527L	
E555	20	B0210		Endmill, Long Reach, Ballnose, 2 Flute, R30 铣刀, 长柄, 球头, 二刃, R30	DIN 6535-HA	VHM-ULTRA	AlCrN 氮化铝铬	-	
E557	20	B0210		Endmill, Long Reach, Ballnose, 4 Flute, R30 铣刀, 长柄, 球头, 四刃, R30	DIN 6535-HA	VHM-ULTRA	AlCrN 氮化铝铬	-	
E603	19	B0212		Endmill, Long, 2 Flute, R30 铣刀, 加长, 二刃, R30	DIN 6535-HA	VHM	TiAlN 氮化铝钛	-	
E604	19	B0212		Endmill, Long, 4 Flute, R30 铣刀, 加长, 四刃, R30	DIN 6535-HA	VHM	TiAlN 氮化铝钛	-	
E605	19	B0212		Endmill, Long, Ballnose, 2 Flute, R30 铣刀, 加长, 球头, 二刃, R30	DIN 6535-HA	VHM	TiAlN 氮化铝钛	-	
E607	19	B0212		Endmill, Long, Ballnose, 4 Flute, R30 铣刀, 加长, 球头, 四刃, R30	DIN 6535-HA	VHM	TiAlN 氮化铝钛	-	
Catalogue Code 目录代码	Page No. 页码	Discount Group 折扣组	Colour Ring 色环	Description 说明	Thread 螺纹	Geometry Type 几何类型	Tool Material 工具材料	Surface Finish 表面处理	Standard 标准
Taps 丝锥									
T369	7	D0412		Tap, Spiral Flute, Synchro, R45 Al 丝锥, 螺旋槽, 同步, R45 Al	Metric 公制	HSC	PM-HSSE V3	CrN 氮化铬	~DIN1835-B
T373	7	D0412		Tap, Spiral Flute, Synchro, R50 丝锥, 螺旋槽, 同步, R50	Metric 公制	HSC	PM-HSSE V3	TiCN 氮化钛	~DIN1835-B
T377	7	D0412		Tap, Spiral Flute, Synchro, Gun 丝锥, 螺旋槽, 先端, 同步	Metric 公制	HSC	PM-HSSE V3	TiCN 氮化钛	~DIN1835-B
T381	7	D0412		Tap, Forming, Synchro 丝锥, 挤压, 同步	Metric 公制	HSC	PM-HSSE V3	TiN 氮化钛	~DIN1835-B
T499	5	D0602		Tap, Gun, N 丝锥, 先端, N	Metric 公制	N	HSSE V3	Br 无处理	JIS
T500	5	D0602		Tap, Gun, N 丝锥, 先端, N	Metric 公制	N	HSSE V3	Blu 氧化处理	JIS
T503	4	D0602		Tap, Spiral Flute, R40 N 丝锥, 螺旋槽, R40 N	Metric 公制	N	HSSE V3	Br 无处理	JIS
T504	4	D0602		Tap, Spiral Flute, R40 N 丝锥, 螺旋槽, R40 N	Metric 公制	N	HSSE V3	Blu 氧化处理	JIS
T510	6	D0606		Tap, Forming, single coolant groove, P lead 丝锥, 挤压, 单冷却液槽, P型	Metric 公制	N	HSS Co.8	Ni 氮化处理	JIS
T511	6	D0606		Tap, Forming, single coolant groove, B lead 丝锥, 挤压, 单冷却液槽, B型	Metric 公制	N	HSS Co.8	Ni 氮化处理	JIS
T512	6	D0606		Tap, Forming, single coolant groove, P lead 丝锥, 挤压, 单冷却液槽, P型	Metric 公制	N	HSS Co.8	Blu 氧化处理	JIS
T513	6	D0606		Tap, Forming, single coolant groove, B lead 丝锥, 挤压, 单冷却液槽, B型	Metric 公制	N	HSS Co.8	Blu 氧化处理	JIS
T514	6	D0614		Tap, Forming, single coolant groove, P lead 丝锥, 挤压, 单冷却液槽, P型	Metric 公制	N	HSS Co.8	TiN 氮化钛	JIS
T515	6	D0614		Tap, Forming, single coolant groove, B lead 丝锥, 挤压, 单冷却液槽, B型	Metric 公制	N	HSS Co.8	TiN 氮化钛	JIS
T546	5	D0602	○	Tap, Gun, W 丝锥, 先端, W	Metric 公制	W	HSSE V3	Ni 氮化处理	JIS
T548	5	D0602	○	Tap, Gun, VA 丝锥, 先端, VA	Metric 公制	VA	HSSE V3	Blu 氧化处理	JIS
T567	4	D0602	○	Tap, Spiral Flute, R45 W 丝锥, 螺旋槽, R45 W	Metric 公制	W	HSSE V3	Ni 氮化处理	JIS
T570	4	D0602	○	Tap, Spiral Flute, R45 VADH 丝锥, 螺旋槽, R45 VADH	Metric 公制	VADH	HSSE V3	Blu 氧化处理	JIS
T606	4	D0602		Tap, Spiral Flute, R40 N (Point Removed) 丝锥, 螺旋槽, R40 N削平头	Metric 公制	N	HSSE V3	Br 无处理	JIS
T607	4	D0602		Tap, Spiral Flute, R40 N (Point Removed) 丝锥, 螺旋槽, R40 N削平头	Metric 公制	N	HSSE V3	Blu 氧化处理	JIS
T610	4	D0602	○	Tap, Spiral Flute, R45 W (Point Removed) 丝锥, 螺旋槽, R45 W削平头	Metric 公制	W	HSSE V3	Ni 氮化处理	JIS
T611	4	D0602	○	Tap, Spiral Flute, R45 VADH (Point Removed) 丝锥, 螺旋槽, R45 VADH削平头	Metric 公制	VADH	HSSE V3	Blu 氧化处理	JIS
T629	6	D0614		Tap, Forming, single coolant groove, P lead 丝锥, 挤压, 单冷却液槽, P型	Metric 公制	N	PM-HSSE V3	TiCN 氮化钛	JIS
T630	6	D0614		Tap, Forming, single coolant groove, B lead 丝锥, 挤压, 单冷却液槽, B型	Metric 公制	N	PM-HSSE V3	TiCN 氮化钛	JIS

Taps Metric, Spiral Flute



- General purpose use, materials up to approx. 1000 N/mm²
- Blind holes
- Suitable for machine operations
- Depths up to approx. 2.5 x d₁ (R40). 3 x d₁ (R45)
- Speed & Feeds - refer page 25

- 被削材的抗拉强度可达 1,000N/mm²
- 盲孔
- 适用于机械作业
- 深度约达 2.5 x d (R40). 3 x d (R45)
- 旋转速度及进给速度一请参阅第 25 页



Product Name 产品名称

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Geometry 几何结构

Lead 切削锥

R40 N	R40 N	R45 W	R45 VADH
D0602	D0602	D0602	D0602
HSSE V3	HSSE V3	HSSE V3	HSSE V3
Br _t 无处理	Blu 氧化处理	Ni 氮化处理	Blu 氧化处理
N	N	W	VADH
R40	R40	R45	R45
2.5 x P	2.5 x P	2.5 x P	2.5 x P
Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
T503	T504	T567	T570
T503 0100			
T503 0110			
T503 0120			
T503 0140			
T503 0160			
T503 0170			
T503 0180			
T503 0200	T504 0200		T570 0200
T503 0220	T504 0220		
T503 0230	T504 0230		
T503 0250	T504 0250		T570 0250
T503 0260	T504 0260		
T503 0300	T504 0300	T567 0300	T570 0300
T503 0350	T504 0350		
T503 0400	T504 0400		T570 0400
T503 0500	T504 0500	T567 0500	T570 0500
T503 0600	T504 0600	T567 0600	T570 0600
T606	T607	T610	T611
T606 0200	T607 0200	T610 0200	
T606 0250	T607 0250	T610 0250	
T606 0300	T607 0300	T610 0300	
T606 0350	T607 0350		
T606 0400	T607 0400	T610 0400	
T606 0500	T607 0500	T610 0500	
T606 0600	T607 0600	T610 0600	
T606 0700	T607 0700		
T606 0800	T607 0800	T610 0800	T611 0800
T606 1006	T607 1006		
T606 1000	T607 1000	T610 1000	T611 1000
T606 1200	T607 1200	T610 1200	T611 1200



尺寸参考 螺距 精度

Size Ref.	d ₁	Pitch	LimitStyle	l ₁	l ₂	l ₃	d ₂	sq	z	drill Ø	
WITH POINT 尖头											
0100	M 1	x 0.25	P1	1	30	7	-	3.0	2.5	2	0.75
0110	M 1.1	x 0.25	P1	1	32	8	-	3.0	2.5	2	0.85
0120	M 1.2	x 0.25	P1	1	32	8	-	3.0	2.5	2	0.95
0140	M 1.4	x 0.3	P1	1	34	9	-	3.0	2.5	2	1.1
0160	M 1.6	x 0.35	P1	1	36	10	-	3.0	2.5	2	1.25
1170	M 1.7	x 0.35	P1	1	36	11	-	3.0	2.5	2	1.35
0180	M 1.8	x 0.35	P1	1	36	11	-	3.0	2.5	2	1.45
0200	M 2	x 0.4	P2	1	40	12	-	3.0	2.5	2	1.60
0220	M 2.2	x 0.45	P2	1	42	13	-	3.0	2.5	2	1.75
0230	M 2.3	x 0.4	P2	1	42	13	-	3.0	2.5	2	1.9
0250	M 2.5	x 0.45	P2	1	44	14	-	3.0	2.5	2	2.05
0260	M 2.6	x 0.45	P2	1	44	14	-	3.0	2.5	2	2.15
0300	M 3	x 0.5	P2	2	46	11	19	4.0	3.2	3	2.5
0350	M 3.5	x 0.6	P1	2	48	13	23	4.0	3.2	3	2.9
0400	M 4	x 0.7	P2	2	52	13	21	5.0	4.0	3	3.3
0500	M 5	x 0.8	P2	2	60	16	24	5.5	4.5	3	4.2
0600	M 6	x 1.0	P2	2	62	19	31	6.0	4.5	3	5.0
WITHOUT POINT 削平头											
0200	M 2	x 0.4	P2	4	40	12	-	3.0	2.5	2	1.60
0250	M 2.5	x 0.45	P2	4	44	14	-	3.0	2.5	2	2.05
0300	M 3	x 0.5	P2	5	46	11	19	4.0	3.2	3	2.5
0350	M 3.5	x 0.6	P1	5	48	13	23	4.0	3.2	3	2.9
0400	M 4	x 0.7	P2	5	52	13	21	5.0	4.0	3	3.3
0500	M 5	x 0.8	P2	5	60	16	24	5.5	4.5	3	4.2
0600	M 6	x 1.0	P2	5	62	19	31	6.0	4.5	3	5.0
0700	M 7	x 1.0	P2	3	65	22	-	6.2	5.0	3	6.0
0800	M 8	x 1.25	P2	3	70	22	-	6.2	5.0	3	6.8
1006	MF 10	x 1.25	P2	3	75	24	-	7.0	5.5	3	8.5
1000	M 10	x 1.5	P2	3	75	24	-	7.0	5.5	3	8.8
1200	M 12	x 1.75	P2	3	82	29	-	8.5	6.5	3	10.2

Recommended Tapping Drill

推荐的底孔钻头

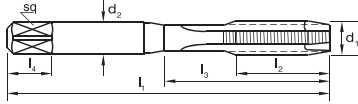
D151 D151 D177 D153



Taps Metric, Gun, (Spiral Point)



- General purpose use, materials up to approx. 1000 N/mm²
- Through holes
- Ideally suited for machine applications.
- Depths up to approx. 3 x d₁
- Speed & Feeds - refer page 25
- 被削材的抗拉强度可达 1,000N/mm²
- 盲孔
- 适用于机械作业
- 深度约达 3 x d₁
- 旋转速度及进给速度—请参阅第 25 页



Catalogue Code 目录代码

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Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Geometry 几何结构

Lead 切削锥

	T499	T500	T546	T548
	D0602	D0602	D0602	D0602
	HSSE V3	HSSE V3	HSSE V3	HSSE V3
	Brf 无处理	Blu 氧化处理	Ni 氮化处理	Blu 氧化处理
	N	N	W	VA
			High Rake 大前角	Special Relief 特殊后角
	5 x P	5 x P	5 x P	4 x P
	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
0100	T499 0100			
0110	T499 0110			
0120	T499 0120			
0140	T499 0140			
0160	T499 0160			
0170	T499 0170			
0180	T499 0180			
0200	T499 0200	T500 0200	T546 0200	T548 0200
0220	T499 0220	T500 0220		
0230	T499 0230	T500 0230		
0250	T499 0250	T500 0250	T546 0250	T548 0250
0260	T499 0260	T500 0260		
0300	T499 0300	T500 0300	T546 0300	T548 0300
0350	T499 0350	T500 0350		T548 0350
0400	T499 0400	T500 0400	T546 0400	T548 0400
0500	T499 0500	T500 0500	T546 0500	T548 0500
0600	T499 0600	T500 0600	T546 0600	T548 0600
0700	T499 0700	T500 0700		
0800	T499 0800	T500 0800	T546 0800	T548 0800
1006	T499 1006	T500 1006		
1000	T499 1000	T500 1000	T546 1000	T548 1000
1200	T499 1200	T500 1200		T548 1200
1400	T499 1400	T500 1400		T548 1400
1600	T499 1600	T500 1600		T548 1600
1800	T499 1800	T500 1800		T548 1800
2000	T499 2000	T500 2000		T548 2000
2200	T499 2200	T500 2200		
2400	T499 2400	T500 2400		



尺寸参考 螺距 精度

Size Ref.	d ₁	Pitch	Limit Style	l ₁	l ₂	l ₃	d ₂	sq	z	drill Ø	
0100	M 1	x 0.25	P1	1	30	7	-	3.0	2.5	2	0.75
0110	M 1.1	x 0.25	P1	1	32	8	-	3.0	2.5	2	0.85
0120	M 1.2	x 0.25	P1	1	32	8	-	3.0	2.5	2	0.95
0140	M 1.4	x 0.3	P1	1	34	9	-	3.0	2.5	2	1.1
0160	M 1.6	x 0.35	P1	1	36	10	-	3.0	2.5	2	1.25
0170	M 1.7	x 0.35	P1	1	36	11	-	3.0	2.5	2	1.35
0180	M 1.8	x 0.35	P1	1	36	11	-	3.0	2.5	2	1.45
0200	M 2	x 0.4	P2	1	40	12	-	3.0	2.5	2	1.60
0220	M 2.2	x 0.45	P2	1	42	13	-	3.0	2.5	2	1.75
0230	M 2.3	x 0.4	P2	1	42	13	-	3.0	2.5	2	1.9
0250	M 2.5	x 0.45	P2	1	44	14	-	3.0	2.5	2	2.05
0260	M 2.6	x 0.45	P2	1	44	14	-	3.0	2.5	2	2.15
0300	M 3	x 0.5	P2	2	46	11	19	4.0	3.2	3	2.5
0350	M 3.5	x 0.6	P2	2	48	13	23	4.0	3.2	3	2.9
0400	M 4	x 0.7	P2	2	52	13	21	5.0	4.0	3	3.3
0500	M 5	x 0.8	P2	2	60	16	24	5.5	4.5	3	4.2
0600	M 6	x 1.0	P2	2	62	19	31	6.0	4.5	3	5.0
0700	M 7	x 1.0	P2	3	65	22	-	6.2	5.0	3	6.0
0800	M 8	x 1.25	P3	3	70	22	-	6.2	5.0	3	6.8
1006	MF 10	x 1.25	P3	3	75	24	-	7.0	5.5	3	8.8
1000	M 10	x 1.5	P3	3	75	24	-	7.0	5.5	3	8.5
1200	M 12	x 1.75	P4	3	82	29	-	8.5	6.5	3	10.2
1400	M 14	x 2.0	P4	3	88	30	-	10.5	8.0	3	12.0
1600	M 16	x 2.0	P4	3	95	32	-	12.5	10.0	4	14.0
1800	M 18	x 2.5	P4	3	100	37	-	14.0	11.0	4	15.5
2000	M 20	x 2.5	P4	3	105	37	-	15.0	12.0	4	17.5
2200	M 22	x 2.5	P4	3	115	38	-	17.0	13.0	4	19.5
2400	M 24	x 3.0	P4	3	120	45	-	19.0	15.0	4	21.0

Recommended Tapping Drill

推荐的底孔钻头



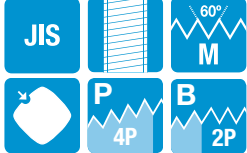
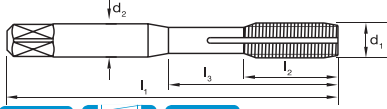
Taps Metric, Forming, Single Coolant Groove



- Depths up to approx. $3 \times d_1$
- For cold forming of threads in materials with good flow characteristics
- Ni - For non-ferrous materials. Blu - For ferrous materials
- TiN - For materials up to 1000 N/mm². TiCN - For difficult materials
- Speed & Feeds - refer page 26

Sutton Tools

- 加工深度可达 $3.5 \times d_1$
- 用于延展性良好的材料
- Ni (氮化处理) - 非铁金属用 Blu (氧化处理) - 钢用
- TiN (氮化钛) - 高性能泛用
- TiCN (碳氮化钛) - 难加工材料用
- 旋转速度及进给速度—请参阅第 26 页



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色环及应用

尺寸参考

螺距 精度

Geometry 几何结构

Size Ref.	d ₁	Pitch	Limit Style	l ₁	l ₂	l ₃	d ₂	sq	z	Tap hole min/max
P LEAD P型 (通孔用)										
0100	M 1	x 0.25	GH4	1	30	7	- 3.0	2.5	4	0.90 - 0.92
0110	M 1.1	x 0.25	GH4	1	32	8	- 3	3	4	1.00 - 1.02
0120	M 1.2	x 0.25	GH4	1	32	8	- 3.0	2.5	4	1.10 - 1.12
0140	M 1.4	x 0.30	GH4	1	34	9	- 3.0	2.5	4	1.27 - 1.29
0145	M 1.4	x 0.30	GH5	1	34	9	- 3.0	2.5	4	1.28 - 1.31
0160	M 1.6	x 0.35	GH4	1	36	10	- 3.0	2.5	4	1.44 - 1.47
0170	M 1.7	x 0.35	GH4	1	36	11	- 3.0	2.5	4	1.54 - 1.57
0175	M 1.7	x 0.35	GH5	1	36	11	- 3.0	2.5	4	1.55 - 1.58
0180	M 1.8	x 0.35	GH4	1	36	11	- 3.0	2.5	4	1.64 - 1.67
0200	M 2	x 0.40	GH4	1	40	12	- 3.0	2.5	4	1.81 - 1.84
0205	M 2	x 0.40	GH5	1	40	12	- 3.0	2.5	4	1.82 - 1.86
0220	M 2.2	x 0.45	GH4	1	42	13	- 3.0	2.5	4	1.98 - 2.02
0230	M 2.3	x 0.40	GH4	1	42	13	- 3.0	2.5	4	2.11 - 2.14
0250	M 2.5	x 0.45	GH4	1	44	14	- 3.0	2.5	4	2.28 - 2.32
0255	M 2.5	x 0.45	GH5	1	44	14	- 3.0	2.5	4	2.29 - 2.33
0260	M 2.6	x 0.45	GH4	1	44	14	- 3.0	2.5	4	2.38 - 2.42
0300	M 3	x 0.50	GH5	2	46	9	19 4.0	3.2	4	2.76 - 2.80
0306	M 3	x 0.50	GH6	2	46	9	19 4.0	3.2	4	2.78 - 2.82
0307	M 3	x 0.50	GH7	2	46	9	19 4.0	3.2	4	2.79 - 2.83
0350	M 3.5	x 0.60	GH5	2	48	9	23 4.0	3.2	4	3.20 - 3.25
0400	M 4	x 0.70	GH6	2	52	10	21 5.0	4.0	4	3.65 - 3.71
0500	M 5	x 0.80	GH6	2	60	11	24 5.5	4.5	4	4.59 - 4.66
0600	M 6	x 1.00	GH7	2	62	12	31 6.0	4.5	4	5.49 - 5.57
0700	M 7	x 1.00	GH7	3	65	18	- 6.2	5.0	4	6.49 - 6.57
0800	M 8	x 1.25	GH7	3	70	18	- 6.2	5.0	6	7.34 - 7.44
1000	M 10	x 1.50	GH7	3	75	19	- 7.0	5.5	6	9.18 - 9.31
B LEAD B型 (盲孔用)										
0100	M 1	x 0.25	GH4	1	30	7	- 3.0	2.5	4	0.90 - 0.92
0110	M 1.1	x 0.25	GH4	1	32	8	- 3	3	4	1.00 - 1.02
0120	M 1.2	x 0.25	GH4	1	32	8	- 3.0	2.5	4	1.10 - 1.12
0140	M 1.4	x 0.30	GH5	1	34	9	- 3.0	2.5	4	1.27 - 1.29
0160	M 1.6	x 0.35	GH4	1	36	10	- 3.0	2.5	4	1.44 - 1.47
0170	M 1.7	x 0.35	GH5	1	36	11	- 3.0	2.5	4	1.54 - 1.57
0180	M 1.8	x 0.35	GH4	1	36	11	- 3.0	2.5	4	1.64 - 1.67
0200	M 2	x 0.40	GH4	1	40	12	- 3.0	2.5	4	1.81 - 1.84
0220	M 2.2	x 0.45	GH4	1	42	13	- 3.0	2.5	4	1.98 - 2.02
0230	M 2.3	x 0.40	GH4	1	42	13	- 3.0	2.5	4	2.11 - 2.14
0250	M 2.5	x 0.45	GH4	1	44	14	- 3.0	2.5	4	2.28 - 2.32
0260	M 2.6	x 0.45	GH4	1	44	14	- 3.0	2.5	4	2.38 - 2.42
0300	M 3	x 0.50	GH5	2	46	9	19 4.0	3.2	4	2.76 - 2.80
0350	M 3.5	x 0.60	GH5	2	48	9	23 4.0	3.2	4	3.20 - 3.25
0400	M 4	x 0.70	GH6	2	52	10	21 5.0	4.0	4	3.65 - 3.71
0500	M 5	x 0.80	GH6	2	60	11	24 5.5	4.5	4	4.59 - 4.66
0600	M 6	x 1.00	GH7	2	62	12	31 6.0	4.5	4	5.49 - 5.57
0700	M 7	x 1.00	GH7	3	65	18	- 6.2	5.0	4	6.49 - 6.57
0800	M 8	x 1.25	GH7	3	70	18	- 6.2	5.0	6	7.34 - 7.44
1000	M 10	x 1.50	GH7	3	75	19	- 7.0	5.5	6	9.18 - 9.31



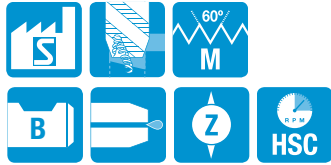
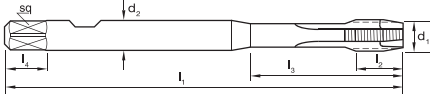
	D0606	D0606	D0614	D0614
	HSS Co.8	HSS Co.8	HSS Co.8	PM-HSSE V3
	Ni 氮化处理	Blu 氧化处理	TiN 氮化钛	TiCN 碳氮化钛
	General Production	General Production	Medium Production	High Production
	一般产量	一般产量	中/高产量	高产量
	1 Coolant Groove M3+	1 Coolant Groove M3+	1 Coolant Groove M3+	1 Coolant Groove M3+
	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
	T510	T512	T514	T629
T510 0100	T512 0100	T514 0100	T629 0100	
T510 0110	T512 0110	T514 0110		
T510 0120	T512 0120	T514 0120	T629 0120	
T510 0140	T512 0140	T514 0140	T629 0140	
T510 0160	T512 0160	T514 0160	T629 0160	
T510 0170	T512 0170	T514 0170	T629 0170	
		T514 0175		
T510 0180	T512 0180	T514 0180	T629 0180	
T510 0200	T512 0200	T514 0200	T629 0200	
		T514 0205		
T510 0220	T512 0220	T514 0220	T629 0220	
T510 0230	T512 0230	T514 0230	T629 0230	
T510 0250	T512 0250	T514 0250	T629 0250	
T510 0255	T512 0255	T514 0255		
T510 0260	T512 0260	T514 0260	T629 0260	
T510 0300	T512 0300	T514 0300	T629 0300	
T510 0306	T512 0306	T514 0306		
		T514 0307		
T510 0350	T512 0350	T514 0350	T629 0350	
T510 0400	T512 0400	T514 0400	T629 0400	
T510 0500	T512 0500	T514 0500	T629 0500	
T510 0600	T512 0600	T514 0600	T629 0600	
T510 0700	T512 0700	T514 0700		
T510 0800	T512 0800	T514 0800	T629 0800	
T510 1000	T512 1000	T514 1000	T629 1000	
	T511	T513	T515	T630
T511 0100	T513 0100	T515 0100	T630 0100	
T511 0110	T513 0110	T515 0110		
T511 0120	T513 0120	T515 0120	T630 0120	
T511 0140	T513 0140	T515 0140	T630 0140	
T511 0160	T513 0160	T515 0160	T630 0160	
T511 0170	T513 0170	T515 0170	T630 0170	
T511 0180	T513 0180	T515 0180	T630 0180	
T511 0200	T513 0200	T515 0200	T630 0200	
T511 0220	T513 0220	T515 0220	T630 0220	
T511 0230	T513 0230	T515 0230	T630 0230	
T511 0250	T513 0250	T515 0250	T630 0250	
T511 0260	T513 0260	T515 0260	T630 0260	
T511 0300	T513 0300	T515 0300	T630 0300	
T511 0350	T513 0350	T515 0350	T630 0350	
T511 0400	T513 0400	T515 0400	T630 0400	
T511 0500	T513 0500	T515 0500	T630 0500	
T511 0600	T513 0600	T515 0600	T630 0600	
T511 0700	T513 0700	T515 0700		
T511 0800	T513 0800	T515 0800	T630 0800	
T511 1000	T513 1000	T515 1000	T630 1000	

Taps Metric, Synchro



- For high speed and precision tapping
 - For rigid tapping in CNC machines with synchronised feed
- Speed & Feeds - refer page 26

- 用于高速度及高精度攻牙
 - 用于数控机床的同步进给刚性攻牙
- 旋转速度及进给速度—请参阅第 26 页



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Geometry 几何结构

Chamfer 倒角

Shank Form (~DIN 1835) 柄径型

尺寸参考 螺距 Limit & Nut Tolerance 精度及螺母容许公差

Size Ref.	d ₁	Pitch	l ₁	l ₂	l ₃	d ₂	sq	l ₄	z	drill Ø
0200	M2	x 0.4	70	4	13	6.0	4.9	8.0	2	1.6
0250	M2.5	x 0.45	70	4.5	14	6.0	4.9	8.0	2	2.1
0300	M3	x 0.50	70	5	18	6.0	4.9	8.0	2	2.5
0400	M4	x 0.70	70	7	21	6.0	4.9	8.0	2	3.3
0500	M5	x 0.80	70	8	21	6.0	4.9	8.0	2	4.2
0600	M6	x 1.00	80	10	28	6.0	4.9	8.0	2	5.0
0800	M8	x 1.25	90	13	30	8.0	6.2	9.0	2	6.8
1000	M10	x 1.50	100	15	39	10.0	8.0	11.0	2	8.5
1200	M12	x 1.75	110	18	45	12.0	9.0	12.0	2	10.3
1400	M14	x 2.00	110	20	44	14.0	11.0	14.0	2	12.0
1600	M16	x 2.00	110	20	44	16.0	12.0	15.0	2	14.0
1800	M18	x 2.50	125	25	-	16.0	12.0	15.0	2	15.5
2000	M20	x 2.50	140	25	-	16.0	12.0	15.0	2	17.5



T377	T373	T369	T381
D0412	D0412	D0412	D0412
PM-HSSE V3	PM-HSSE V3	PM-HSSE V3	PM-HSSE V3
TiCN 氮化钛	TiCN 氮化钛	CrN 氮化铬	TiN 氮化钛
Gun	R50	R45 Al	Forming
Form B / 4.5 x P	Form C / 2.5 x P	Form C / 2.5 x P	Form C / 2.5 x P
B	B	B	B
6HX	6HX	6HX	6HX

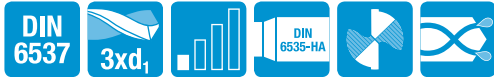
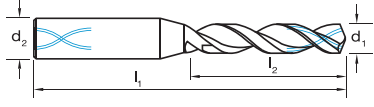
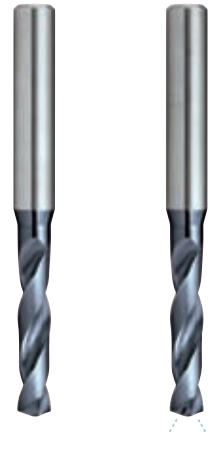
Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
T377 0200	T373 0200	T369 0200	T381 0200
T377 0250	T373 0250	T369 0250	T381 0250
T377 0300	T373 0300	T369 0300	T381 0300
T377 0400	T373 0400	T369 0400	T381 0400
T377 0500	T373 0500	T369 0500	T381 0500
T377 0600	T373 0600	T369 0600	T381 0600
T377 0800	T373 0800	T369 0800	T381 0800
T377 1000	T373 1000	T369 1000	T381 1000
T377 1200	T373 1200	T369 1200	T381 1200
T377 1400	T373 1400	T369 1400	T381 1400
T377 1600	T373 1600	T369 1600	T381 1600
T377 1800	T373 1800	T369 1800	T381 1800
T377 2000	T373 2000	T369 2000	T381 2000

Drills Carbide - Stub, 3 x d₁



- Suitable for materials up to 1400N/mm²
 - Strong core with and without internal coolant supply
 - Micro geometry & surface conditioning for optimal chip control
 - AlCrN for maximum tool life
 Speed & Feeds - refer page 23

- 加工硬度可达 1400N/mm²
 - 高刚性芯径, 分外冷和内冷
 - 微型几何结构和表面处理, 具有最佳切屑控制
 - 使用氮化铝铬, 最大程度延长刀具的使用寿命
 旋转速度及进给速度—请参阅第 23 页



					D323		D329	
Catalogue Code 目录代码					A0210		A0210	
Discount Group 折扣组					VHM		VHM	
Material 材料					AlCrN 氮化铝铬		AlCrN 氮化铝铬	
Surface Finish 表面处理					Up to 1400N/mm ²		Up to 1400N/mm ²	
Colour Ring & Application 色环及应用					R30		R30 - IK	
Geometry 几何结构					140° Form C		140° Form C	
Point Type 钻尖类别					HA (h6)		HA (h6)	
Shank Form 柄径型					Item # (货号)		Item # (货号)	
0300	3.0	62	20	6	D323 0300	D329 0300		
0310	3.1	62	20	6	D323 0310	D329 0310		
0320	3.2	62	20	6	D323 0320	D329 0320		
0330	3.3	62	20	6	D323 0330	D329 0330		
0340	3.4	62	20	6	D323 0340	D329 0340		
0350	3.5	62	20	6	D323 0350	D329 0350		
0360	3.6	62	20	6	D323 0360	D329 0360		
0370	3.7	62	20	6	D323 0370	D329 0370		
0380	3.8	66	24	6	D323 0380	D329 0380		
0390	3.9	66	24	6	D323 0390	D329 0390		
0400	4.0	66	24	6	D323 0400	D329 0400		
0410	4.1	66	24	6	D323 0410	D329 0410		
0420	4.2	66	24	6	D323 0420	D329 0420		
0430	4.3	66	24	6	D323 0430	D329 0430		
0440	4.4	66	24	6	D323 0440	D329 0440		
0450	4.5	66	24	6	D323 0450	D329 0450		
0460	4.6	66	24	6	D323 0460	D329 0460		
0470	4.7	66	24	6	D323 0470	D329 0470		
0480	4.8	66	28	6	D323 0480	D329 0480		
0490	4.9	66	28	6	D323 0490	D329 0490		
0500	5.0	66	28	6	D323 0500	D329 0500		
0510	5.1	66	28	6	D323 0510	D329 0510		
0520	5.2	66	28	6	D323 0520	D329 0520		
0530	5.3	66	28	6	D323 0530	D329 0530		
0540	5.4	66	28	6	D323 0540	D329 0540		
0550	5.5	66	28	6	D323 0550	D329 0550		
0560	5.6	66	28	6	D323 0560	D329 0560		
0570	5.7	66	28	6	D323 0570	D329 0570		
0580	5.8	66	28	6	D323 0580	D329 0580		
0590	5.9	66	28	6	D323 0590	D329 0590		
0600	6.0	66	28	6	D323 0600	D329 0600		
0630	6.3	79	34	8	D323 0630	D329 0630		
0650	6.5	79	34	8	D323 0650	D329 0650		
0670	6.7	79	34	8	D323 0670	D329 0670		
0680	6.8	79	34	8	D323 0680	D329 0680		
0700	7.0	79	34	8	D323 0700	D329 0700		
0710	7.1	79	41	8	D323 0710	D329 0710		
0740	7.4	79	41	8	D323 0740	D329 0740		
0750	7.5	79	41	8	D323 0750	D329 0750		
0780	7.8	79	41	8	D323 0780	D329 0780		
0790	7.9	79	41	8	D323 0790	D329 0790		
0800	8.0	79	41	8	D323 0800	D329 0800		
0830	8.3	89	47	10	D323 0830	D329 0830		
0850	8.5	89	47	10	D323 0850	D329 0850		

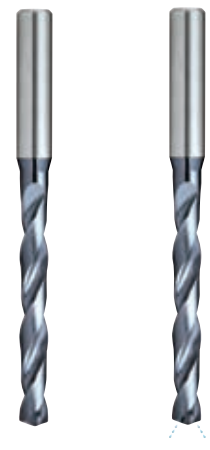
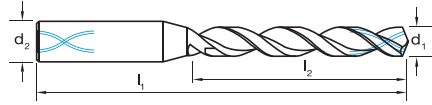
					D323		D329	
Catalogue Code 目录代码					A0210		A0210	
Discount Group 折扣组					VHM		VHM	
Material 材料					AlCrN 氮化铝铬		AlCrN 氮化铝铬	
Surface Finish 表面处理					Up to 1400N/mm ²		Up to 1400N/mm ²	
Colour Ring & Application 色环及应用					R30		R30 - IK	
Geometry 几何结构					140° Form C		140° Form C	
Point Type 钻尖类别					HA (h6)		HA (h6)	
Shank Form 柄径型					Item # (货号)		Item # (货号)	
0870	8.7	89	47	10	D323 0870	D329 0870		
0880	8.8	89	47	10	D323 0880	D329 0880		
0900	9.0	89	47	10	D323 0900	D329 0900		
0910	9.1	89	47	10	D323 0910	D329 0910		
0920	9.2	89	47	10	D323 0920	D329 0920		
0930	9.3	89	47	10	D323 0930	D329 0930		
0950	9.5	89	47	10	D323 0950	D329 0950		
0980	9.8	89	47	10	D323 0980	D329 0980		
0990	9.9	89	47	10	D323 0990	D329 0990		
1000	10.0	89	47	10	D323 1000	D329 1000		
1020	10.2	102	55	12	D323 1020	D329 1020		
1030	10.3	102	55	12	D323 1030	D329 1030		
1050	10.5	102	55	12	D323 1050	D329 1050		
1070	10.7	102	55	12	D323 1070	D329 1070		
1100	11.0	102	55	12	D323 1100	D329 1100		
1110	11.1	102	55	12	D323 1110	D329 1110		
1120	11.2	102	55	12	D323 1120	D329 1120		
1150	11.5	102	55	12	D323 1150	D329 1150		
1170	11.7	102	55	12	D323 1170	D329 1170		
1190	11.9	102	55	12	D323 1190	D329 1190		
1200	12.0	102	55	12	D323 1200	D329 1200		
1250	12.5	107	60	14	D323 1250	D329 1250		
1280	12.8	107	60	14	D323 1280	D329 1280		
1300	13.0	107	60	14	D323 1300	D329 1300		
1350	13.5	107	60	14	D323 1350	D329 1350		
1380	13.8	107	60	14	D323 1380	D329 1380		
1400	14.0	107	60	14	D323 1400	D329 1400		
1450	14.5	107	65	16	D323 1450	D329 1450		
1480	14.8	115	65	16	D323 1480	D329 1480		
1500	15.0	115	65	16	D323 1500	D329 1500		
1550	15.5	115	65	16	D323 1550	D329 1550		
1580	15.8	115	65	16	D323 1580	D329 1580		
1600	16.0	115	65	16	D323 1600	D329 1600		
1650	16.5	123	73	18	D323 1650	D329 1650		
1700	17.0	123	73	18	D323 1700	D329 1700		
1750	17.5	123	73	18	D323 1750	D329 1750		
1800	18.0	123	73	18	D323 1800	D329 1800		
1850	18.5	131	79	20	D323 1850	D329 1850		
1900	19.0	131	79	20	D323 1900	D329 1900		
1950	19.5	131	79	20	D323 1950	D329 1950		
2000	20.0	131	79	20	D323 2000	D329 2000		

Drills Carbide - Jobber, 5 x d₁



- Suitable for materials up to 1400N/mm²
- Strong core with and without internal coolant supply
- Micro geometry & surface conditioning for optimal chip control
- AlCrN for maximum tool life
- Speed & Feeds - refer page 23

- 加工硬度可达 1400N/mm²
- 高刚性芯径, 分外冷和内冷
- 微型几何结构和表面处理, 具有最佳切屑控制
- 使用氮化铝铬, 最大程度延长刀具的使用寿命
- 旋转速度及进给速度—请参阅第 23 页



Catalogue Code 目录代码	D326	D332
Discount Group 折扣组	A0210	A0210
Material 材料	VHM	VHM
Surface Finish 表面处理	AlCrN 氮化铝铬	AlCrN 氮化铝铬
Colour Ring & Application 色环及应用	Up to 1400N/mm ²	Up to 1400N/mm ²
Geometry 几何结构	R30	R30 - IK
Point Type 钻尖类别	140° Form C	140° Form C
Shank Form 柄径型	HA (h6)	HA (h6)

Catalogue Code 目录代码	D326	D332
Discount Group 折扣组	A0210	A0210
Material 材料	VHM	VHM
Surface Finish 表面处理	AlCrN 氮化铝铬	AlCrN 氮化铝铬
Colour Ring & Application 色环及应用	Up to 1400N/mm ²	Up to 1400N/mm ²
Geometry 几何结构	R30	R30 - IK
Point Type 钻尖类别	140° Form C	140° Form C
Shank Form 柄径型	HA (h6)	HA (h6)

尺寸参考

Size Ref.	d ₁	l ₁	l ₂	d ₂	Item # (货号)	Item # (货号)
0300	3.0	66	28	6	D326 0300	D332 0300
0310	3.1	66	28	6	D326 0310	D332 0310
0320	3.2	66	28	6	D326 0320	D332 0320
0330	3.3	66	28	6	D326 0330	D332 0330
0340	3.4	66	28	6	D326 0340	D332 0340
0350	3.5	66	28	6	D326 0350	D332 0350
0360	3.6	66	28	6	D326 0360	D332 0360
0370	3.7	66	28	6	D326 0370	D332 0370
0380	3.8	74	36	6	D326 0380	D332 0380
0390	3.9	74	36	6	D326 0390	D332 0390
0400	4.0	74	36	6	D326 0400	D332 0400
0410	4.1	74	36	6	D326 0410	D332 0410
0420	4.2	74	36	6	D326 0420	D332 0420
0430	4.3	74	36	6	D326 0430	D332 0430
0440	4.4	74	36	6	D326 0440	D332 0440
0450	4.5	74	36	6	D326 0450	D332 0450
0460	4.6	74	36	6	D326 0460	D332 0460
0470	4.7	74	36	6	D326 0470	D332 0470
0480	4.8	82	44	6	D326 0480	D332 0480
0490	4.9	82	44	6	D326 0490	D332 0490
0500	5.0	82	44	6	D326 0500	D332 0500
0510	5.1	82	44	6	D326 0510	D332 0510
0520	5.2	82	44	6	D326 0520	D332 0520
0530	5.3	82	44	6	D326 0530	D332 0530
0540	5.4	82	44	6	D326 0540	D332 0540
0550	5.5	82	44	6	D326 0550	D332 0550
0560	5.6	82	44	6	D326 0560	D332 0560
0570	5.7	82	44	6	D326 0570	D332 0570
0580	5.8	82	44	6	D326 0580	D332 0580
0590	5.9	82	44	6	D326 0590	D332 0590
0600	6.0	82	44	6	D326 0600	D332 0600
0630	6.3	91	53	8	D326 0630	D332 0630
0650	6.5	91	53	8	D326 0650	D332 0650
0670	6.7	91	53	8	D326 0670	D332 0670
0680	6.8	91	53	8	D326 0680	D332 0680
0700	7.0	91	53	8	D326 0700	D332 0700
0710	7.1	91	53	8	D326 0710	D332 0710
0740	7.4	91	53	8	D326 0740	D332 0740
0750	7.5	91	53	8	D326 0750	D332 0750
0780	7.8	91	53	8	D326 0780	D332 0780
0790	7.9	91	53	8	D326 0790	D332 0790
0800	8.0	91	53	8	D326 0800	D332 0800
0830	8.3	103	61	10	D326 0830	D332 0830
0850	8.5	103	61	10	D326 0850	D332 0850

尺寸参考

Size Ref.	d ₁	l ₁	l ₂	d ₂	Item # (货号)	Item # (货号)
0870	8.7	103	61	10	D326 0870	D332 0870
0880	8.8	103	61	10	D326 0880	D332 0880
0900	9.0	103	61	10	D326 0900	D332 0900
0910	9.1	103	61	10	D326 0910	D332 0910
0920	9.2	103	61	10	D326 0920	D332 0920
0930	9.3	103	61	10	D326 0930	D332 0930
0950	9.5	103	61	10	D326 0950	D332 0950
0980	9.8	103	61	10	D326 0980	D332 0980
0990	9.9	103	61	10	D326 0990	D332 0990
1000	10.0	103	61	10	D326 1000	D332 1000
1020	10.2	118	71	12	D326 1020	D332 1020
1030	10.3	118	71	12	D326 1030	D332 1030
1050	10.5	118	71	12	D326 1050	D332 1050
1070	10.7	118	71	12	D326 1070	D332 1070
1100	11.0	118	71	12	D326 1100	D332 1100
1110	11.1	118	71	12	D326 1110	D332 1110
1120	11.2	118	71	12	D326 1120	D332 1120
1150	11.5	118	71	12	D326 1150	D332 1150
1170	11.7	118	71	12	D326 1170	D332 1170
1190	11.9	118	71	12	D326 1190	D332 1190
1200	12.0	118	71	12	D326 1200	D332 1200
1250	12.5	124	77	14	D326 1250	D332 1250
1280	12.8	124	77	14	D326 1280	D332 1280
1300	13.0	124	77	14	D326 1300	D332 1300
1350	13.5	124	77	14	D326 1350	D332 1350
1380	13.8	124	77	14	D326 1380	D332 1380
1400	14.0	124	77	14	D326 1400	D332 1400
1450	14.5	133	83	16	D326 1450	D332 1450
1480	14.8	133	83	16	D326 1480	D332 1480
1500	15.0	133	83	16	D326 1500	D332 1500
1550	15.5	133	83	16	D326 1550	D332 1550
1580	15.8	133	83	16	D326 1580	D332 1580
1600	16.0	133	83	16	D326 1600	D332 1600
1650	16.5	143	93	18	D326 1650	D332 1650
1700	17.0	143	93	18	D326 1700	D332 1700
1750	17.5	143	93	18	D326 1750	D332 1750
1800	18.0	143	93	18	D326 1800	D332 1800
1850	18.5	153	101	20	D326 1850	D332 1850
1900	19.0	153	101	20	D326 1900	D332 1900
1950	19.5	153	101	20	D326 1950	D332 1950
2000	20.0	153	101	20	D326 2000	D332 2000

* HB & HE Shank styles available

* HB 和 HE 柄径样式可供选购

Drills Carbide - Long, 8 x d₁



- Suitable for materials up to 1400N/mm²
 - Strong core with and without internal coolant supply
 - Micro geometry & surface conditioning for optimal chip control
 - AlCrN for maximum tool life
- Speed & Feeds - refer page 23

- 加工硬度可达 1400N/mm²
 - 高刚性芯径, 带内冷
 - 微型几何结构和表面处理, 具有最佳切屑控制
 - 使用氮化铝铬, 最大程度延长刀具的使用寿命
- 旋转速度及进给速度—请参阅第 23 页



Catalogue Code 目录代码 D335 Discount Group 折扣组 A0210 Material 材料 VHM Surface Finish 表面处理 AlCrN 氮化铝铬 Colour Ring & Application 色环及应用 Up to 1400N/mm² Geometry 几何结构 R30 - IK Point Type 钻尖类别 140° Form C Shank Form 柄径型 HA (h6)					
Size Ref.	d ₁	l ₁	l ₂	d ₂	Item # (货号)
0500	5.0	95	50	6	D335 0500
0510	5.1	95	50	6	D335 0510
0520	5.2	95	50	6	D335 0520
0530	5.3	95	50	6	D335 0530
0540	5.4	95	50	6	D335 0540
0550	5.5	95	50	6	D335 0550
0560	5.6	95	50	6	D335 0560
0570	5.7	95	50	6	D335 0570
0580	5.8	95	50	6	D335 0580
0590	5.9	95	50	6	D335 0590
0600	6.0	95	50	6	D335 0600
0610	6.1	114	66	8	D335 0610
0620	6.2	114	66	8	D335 0620
0630	6.3	114	66	8	D335 0630
0640	6.4	114	66	8	D335 0640
0650	6.5	114	66	8	D335 0650
0660	6.6	114	66	8	D335 0660
0670	6.7	114	66	8	D335 0670
0680	6.8	114	66	8	D335 0680
0690	6.9	114	76	8	D335 0690
0700	7.0	114	76	8	D335 0700
0710	7.1	114	76	8	D335 0710
0720	7.2	114	76	8	D335 0720
0730	7.3	114	76	8	D335 0730
0740	7.4	114	76	8	D335 0740
0750	7.5	114	76	8	D335 0750
0760	7.6	114	76	8	D335 0760
0770	7.7	114	76	8	D335 0770
0780	7.8	114	76	8	D335 0780
0790	7.9	114	76	8	D335 0790
0800	8.0	114	76	8	D335 0800
0810	8.1	142	87	10	D335 0810
0820	8.2	142	87	10	D335 0820
0830	8.3	142	87	10	D335 0830
0840	8.4	142	87	10	D335 0840
0850	8.5	142	87	10	D335 0850
0860	8.6	142	87	10	D335 0860
0870	8.7	142	87	10	D335 0870
0880	8.8	142	87	10	D335 0880
0890	8.9	142	87	10	D335 0890
0900	9.0	142	87	10	D335 0900
0910	9.1	142	95	10	D335 0910
0920	9.2	142	95	10	D335 0920
0930	9.3	142	95	10	D335 0930

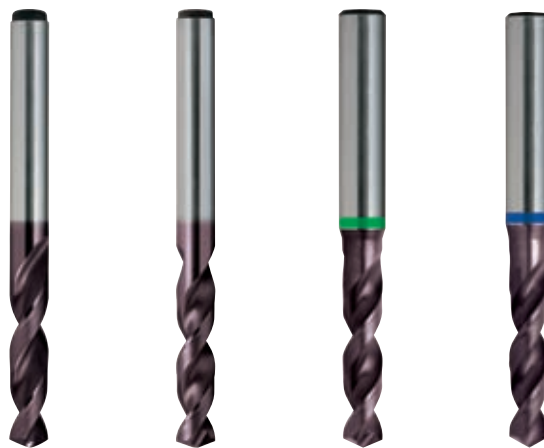
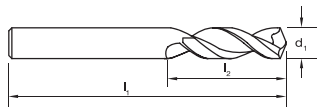
Catalogue Code 目录代码 D335 Discount Group 折扣组 A0210 Material 材料 VHM Surface Finish 表面处理 AlCrN 氮化铝铬 Colour Ring & Application 色环及应用 Up to 1400N/mm² Geometry 几何结构 R30 - IK Point Type 钻尖类别 140° Form C Shank Form 柄径型 HA (h6)					
Size Ref.	d ₁	l ₁	l ₂	d ₂	Item # (货号)
0940	9.4	142	95	10	D335 0940
0950	9.5	142	95	10	D335 0950
0960	9.6	142	95	10	D335 0960
0970	9.7	142	95	10	D335 0970
0980	9.8	142	95	10	D335 0980
0990	9.9	142	95	10	D335 0990
1000	10.0	142	95	10	D335 1000
1010	10.1	162	106	12	D335 1010
1020	10.2	162	106	12	D335 1020
1030	10.3	162	106	12	D335 1030
1040	10.4	162	106	12	D335 1040
1050	10.5	162	106	12	D335 1050
1060	10.6	162	106	12	D335 1060
1070	10.7	162	106	12	D335 1070
1080	10.8	162	106	12	D335 1080
1090	10.9	162	106	12	D335 1090
1100	11.0	162	106	12	D335 1100
1110	11.1	162	114	12	D335 1110
1120	11.2	162	114	12	D335 1120
1130	11.3	162	114	12	D335 1130
1140	11.4	162	114	12	D335 1140
1150	11.5	162	114	12	D335 1150
1160	11.6	162	114	12	D335 1160
1170	11.7	162	114	12	D335 1170
1180	11.8	162	114	12	D335 1180
1190	11.9	162	114	12	D335 1190
1200	12.0	162	114	12	D335 1200

Drills Stub 3xd₁



Speed & Feeds - refer page 24

旋转速度及进给速度—请参阅第 24 页



Catalogue Code 目录代码
Product Name 产品名称
Discount Group 折扣组
Material 材料
Surface Finish 表面处理
Colour Ring & Application 色环及应用
Point Type 钻尖类别
Shank Tolerance 柄径容许公差

D177	D151	D155	D153
DXS	CNC	UNI	Black Magic
A1006	A1006	A1502	A1502
HSS Co	HSS Co	SPM	HSS Co
TiAlN 氮化铝钛	TiAlN 氮化铝钛	TiAlN 氮化铝钛	TiAlN 氮化铝钛
R35 W → N	R40 N → H	R40 UNI	R40 VA
130° Form A	130° Form B	130° 4 Facet Form B	4 Facet
h9	h9	h7	h7

尺寸参考

Size Ref.	d ₁	l ₁	l ₂	d ₂	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
0100	1.0	26	6	3	D177 0100	D151 0100	D155 0100	D153 0100
0110	1.1	28	7	3	D177 0110	D151 0110	D155 0110	D153 0110
0120	1.2	30	8	3	D177 0120	D151 0120	D155 0120	D153 0120
0130	1.3	30	8	3	D177 0130	D151 0130	D155 0130	D153 0130
0140	1.4	32	9	3	D177 0140	D151 0140	D155 0140	D153 0140
0150	1.5	32	9	3	D177 0150	D151 0150	D155 0150	D153 0150
0160	1.6	34	10	3	D177 0160	D151 0160	D155 0160	D153 0160
0170	1.7	34	10	3	D177 0170	D151 0170	D155 0170	D153 0170
0180	1.8	36	11	3	D177 0180	D151 0180	D155 0180	D153 0180
0190	1.9	36	11	3	D177 0190	D151 0190	D155 0190	D153 0190
0200	2.0	38	12	3	D177 0200	D151 0200	D155 0200	D153 0200
0210	2.1	38	12	3	D177 0210	D151 0210	D155 0210	D153 0210
0220	2.2	40	13	3	D177 0220	D151 0220	D155 0220	D153 0220
0230	2.3	40	13	3	D177 0230	D151 0230	D155 0230	D153 0230
0240	2.4	43	14	3	D177 0240	D151 0240	D155 0240	D153 0240
0250	2.5	43	14	3	D177 0250	D151 0250	D155 0250	D153 0250
0260	2.6	43	14	3	D177 0260	D151 0260	D155 0260	D153 0260
0270	2.7	46	16	3	D177 0270	D151 0270	D155 0270	D153 0270
0280	2.8	46	16	3	D177 0280	D151 0280	D155 0280	D153 0280
0290	2.9	46	16	3	D177 0290	D151 0290	D155 0290	D153 0290
0300	3.0	46	16	3	D177 0300	D151 0300	D155 0300	D153 0300
0310	3.1	49	18	4	D177 0310	D151 0310	D155 0310	D153 0310
0320	3.2	49	18	4	D177 0320	D151 0320	D155 0320	D153 0320
0330	3.3	49	18	4	D177 0330	D151 0330	D155 0330	D153 0330
0340	3.4	52	20	4	D177 0340	D151 0340	D155 0340	D153 0340
0350	3.5	52	20	4	D177 0350	D151 0350	D155 0350	D153 0350
0360	3.6	52	20	4	D177 0360	D151 0360	D155 0360	D153 0360
0370	3.7	52	20	4	D177 0370	D151 0370	D155 0370	D153 0370
0380	3.8	55	22	4	D177 0380	D151 0380	D155 0380	D153 0380
0390	3.9	55	22	4	D177 0390	D151 0390	D155 0390	D153 0390
0400	4.0	55	22	4	D177 0400	D151 0400	D155 0400	D153 0400
0410	4.1	55	22	6	D177 0410	D151 0410	D155 0410	D153 0410
0420	4.2	55	22	6	D177 0420	D151 0420	D155 0420	D153 0420
0430	4.3	58	24	6	D177 0430	D151 0430	D155 0430	D153 0430
0440	4.4	58	24	6	D177 0440	D151 0440	D155 0440	D153 0440
0450	4.5	58	24	6	D177 0450	D151 0450	D155 0450	D153 0450
0460	4.6	58	24	6	D177 0460	D151 0460	D155 0460	D153 0460
0470	4.7	58	24	6	D177 0470	D151 0470	D155 0470	D153 0470
0480	4.8	62	26	6	D177 0480	D151 0480	D155 0480	D153 0480
0490	4.9	62	26	6	D177 0490	D151 0490	D155 0490	D153 0490
0500	5.0	62	26	6	D177 0500	D151 0500	D155 0500	D153 0500
0510	5.1	62	26	6	D177 0510	D151 0510	D155 0510	D153 0510
0520	5.2	62	26	6	D177 0520	D151 0520	D155 0520	D153 0520
0530	5.3	62	26	6	D177 0530	D151 0530	D155 0530	D153 0530
0540	5.4	66	28	6	D177 0540	D151 0540	D155 0540	D153 0540
0550	5.5	66	28	6	D177 0550	D151 0550	D155 0550	D153 0550

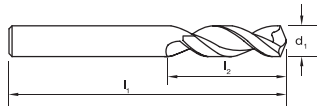
d₂ ref - D155 & D153

Drills Stub 3xd₁



Speed & Feeds - refer page 24

旋转速度及进给速度—请参阅第 24 页



Catalogue Code 目录代码

Product Name 产品名称

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Point Type 钻尖类别

Shank Tolerance 柄径容许公差

尺寸参考

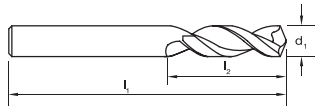
Size Ref.	d ₁	l ₁	l ₂	d ₂	D177	D151	D155	D153
					Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
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0570	5.7	66	28	6	D177 0570	D151 0570	D155 0570	D153 0570
0580	5.8	66	28	6	D177 0580	D151 0580	D155 0580	D153 0580
0590	5.9	66	28	6	D177 0590	D151 0590	D155 0590	D153 0590
0600	6.0	66	28	6	D177 0600	D151 0600	D155 0600	D153 0600
0610	6.1	70	31	8	D177 0610	D151 0610	D155 0610	D153 0610
0620	6.2	70	31	8	D177 0620	D151 0620	D155 0620	D153 0620
0630	6.3	70	31	8	D177 0630	D151 0630	D155 0630	D153 0630
0640	6.4	70	31	8	D177 0640	D151 0640	D155 0640	D153 0640
0650	6.5	70	31	8	D177 0650	D151 0650	D155 0650	D153 0650
0660	6.6	70	31	8	D177 0660	D151 0660	D155 0660	D153 0660
0670	6.7	70	31	8	D177 0670	D151 0670	D155 0670	D153 0670
0680	6.8	74	34	8	D177 0680	D151 0680	D155 0680	D153 0680
0690	6.9	74	34	8	D177 0690	D151 0690	D155 0690	D153 0690
0700	7.0	74	34	8	D177 0700	D151 0700	D155 0700	D153 0700
0710	7.1	74	34	8	D177 0710	D151 0710	D155 0710	D153 0710
0720	7.2	74	34	8	D177 0720	D151 0720	D155 0720	D153 0720
0730	7.3	74	34	8	D177 0730	D151 0730	D155 0730	D153 0730
0740	7.4	74	34	8	D177 0740	D151 0740	D155 0740	D153 0740
0750	7.5	74	34	8	D177 0750	D151 0750	D155 0750	D153 0750
0760	7.6	79	37	8	D177 0760	D151 0760	D155 0760	D153 0760
0770	7.7	79	37	8	D177 0770	D151 0770	D155 0770	D153 0770
0780	7.8	79	37	8	D177 0780	D151 0780	D155 0780	D153 0780
0790	7.9	79	37	8	D177 0790	D151 0790	D155 0790	D153 0790
0800	8.0	79	37	8	D177 0800	D151 0800	D155 0800	D153 0800
0810	8.1	79	37	10	D177 0810	D151 0810	D155 0810	D153 0810
0820	8.2	79	37	10	D177 0820	D151 0820	D155 0820	D153 0820
0830	8.3	79	37	10	D177 0830	D151 0830	D155 0830	D153 0830
0840	8.4	79	37	10	D177 0840	D151 0840	D155 0840	D153 0840
0850	8.5	79	37	10	D177 0850	D151 0850	D155 0850	D153 0850
0860	8.6	84	40	10	D177 0860	D151 0860	D155 0860	D153 0860
0870	8.7	84	40	10	D177 0870	D151 0870	D155 0870	D153 0870
0880	8.8	84	40	10	D177 0880	D151 0880	D155 0880	D153 0880
0890	8.9	84	40	10	D177 0890	D151 0890	D155 0890	D153 0890
0900	9.0	84	40	10	D177 0900	D151 0900	D155 0900	D153 0900
0910	9.1	84	40	10	D177 0910	D151 0910	D155 0910	D153 0910
0920	9.2	84	40	10	D177 0920	D151 0920	D155 0920	D153 0920
0930	9.3	84	40	10	D177 0930	D151 0930	D155 0930	D153 0930
0940	9.4	84	40	10	D177 0940	D151 0940	D155 0940	D153 0940
0950	9.5	84	40	10	D177 0950	D151 0950	D155 0950	D153 0950
0960	9.6	89	43	10	D177 0960	D151 0960	D155 0960	D153 0960
0970	9.7	89	43	10	D177 0970	D151 0970	D155 0970	D153 0970
0980	9.8	89	43	10	D177 0980	D151 0980	D155 0980	D153 0980
0990	9.9	89	43	10	D177 0990	D151 0990	D155 0990	D153 0990
1000	10.0	89	43	10	D177 1000	D151 1000	D155 1000	D153 1000
1010	10.1	89	43	10	D177 1010		D155 1010	D153 1010

Drills Stub 3xd₁



Speed & Feeds - refer page 24

旋转速度及进给速度—请参阅第 24 页



Catalogue Code 目录代码
Product Name 产品名称
Discount Group 折扣组
Material 材料
Surface Finish 表面处理
Colour Ring & Application 色环及应用
Point Type 钻尖类别
Shank Tolerance 柄径容许公差

D177	D151	D155	D153
DXS	CNC	UNI	Black Magic
A1006	A1006	A1502	A1502
HSS Co	HSS Co	SPM	HSS Co
TiAlN 氮化铝钛	TiAlN 氮化铝钛	TiAlN 氮化铝钛	TiAlN 氮化铝钛
R35 W → N	R40 N → H	R40 UNI	R40 VA
130° Form A	130° Form B	130° 4 Facet Form B	4 Facet
h9	h9	h7	h7

尺寸参考

Size Ref.	d ₁	l ₁	l ₂	d ₂	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
1020	10.2	89	43	10	D177 1020	D151 1020	D155 1020	D153 1020
1030	10.3	89	43	10			D155 1030	D153 1030
1040	10.4	89	43	10			D155 1040	D153 1040
1050	10.5	89	43	10	D177 1050	D151 1050	D155 1050	D153 1050
1060	10.6	89	43	12			D155 1060	D153 1060
1070	10.7	95	47	12			D155 1070	D153 1070
1080	10.8	95	47	12	D177 1080	D151 1080	D155 1080	D153 1080
1090	10.9	95	47	12			D155 1090	D153 1090
1100	11.0	95	47	12	D177 1100	D151 1100	D155 1100	D153 1100
1110	11.1	95	47	12			D155 1110	D153 1110
1120	11.2	95	47	12	D177 1120		D155 1120	D153 1120
1130	11.3	95	47	12			D155 1130	D153 1130
1140	11.4	95	47	12			D155 1140	D153 1140
1150	11.5	95	47	12	D177 1150	D151 1150	D155 1150	D153 1150
1160	11.6	95	47	12			D155 1160	D153 1160
1170	11.7	95	47	12			D155 1170	D153 1170
1180	11.8	95	47	12	D177 1180	D151 1180	D155 1180	D153 1180
1190	11.9	102	51	12			D155 1190	D153 1190
1200	12.0	102	51	12	D177 1200	D151 1200	D155 1200	D153 1200
1210	12.1	102	51	12			D155 1210	D153 1210
1220	12.2	102	51	12		D151 1220	D155 1220	D153 1220
1230	12.3	102	51	12			D155 1230	D153 1230
1240	12.4	102	51	12			D155 1240	D153 1240
1250	12.5	102	51	12	D177 1250	D151 1250	D155 1250	D153 1250
1260	12.6	102	51	12			D155 1260	D153 1260
1270	12.7	102	51	12		D151 1270	D155 1270	D153 1270
1280	12.8	102	51	12	D177 1280		D155 1280	D153 1280
1290	12.9	102	51	12			D155 1290	D153 1290
1300	13.0	102	51	12	D177 1300	D151 1300	D155 1300	D153 1300
1350	13.5	107	54	16	D177 1350	D151 1350	D155 1350	D153 1350
1400	14.0	107	54	16	D177 1400	D151 1400	D155 1400	D153 1400
1450	14.5	111	56	16	D177 1450	D151 1450	D155 1450	D153 1450
1500	15.0	111	56	16	D177 1500	D151 1500	D155 1500	D153 1500
1550	15.5	115	58	16	D177 1550	D151 1550	D155 1550	D153 1550
1600	16.0	115	58	16	D177 1600	D151 1600	D155 1600	D153 1600
1650	16.5	119	60	20	D177 1650	D151 1650	D155 1650	D153 1650
1700	17.0	119	60	20	D177 1700	D151 1700	D155 1700	D153 1700
1750	17.5	123	62	20	D177 1750	D151 1750	D155 1750	D153 1750
1800	18.0	123	62	20	D177 1800	D151 1800	D155 1800	D153 1800
1850	18.5	127	64	20	D177 1850	D151 1850	D155 1850	D153 1850
1900	19.0	127	64	20	D177 1900	D151 1900	D155 1900	D153 1900
1950	19.5	131	66	20	D177 1950	D151 1950	D155 1950	D153 1950
2000	20.0	131	66	20	D177 2000	D151 2000	D155 2000	D153 2000

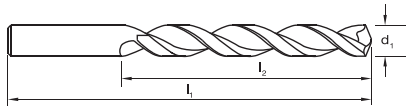
d₂ ref - D155 & D153

Drills Jobber 5xd₁



Speed & Feeds - refer page 24

旋转速度及进给速度—请参阅第 24 页



Catalogue Code 目录代码

Product Name 产品名称

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Point Type 钻尖类别

Shank Tolerance 柄径容许公差

尺寸参考

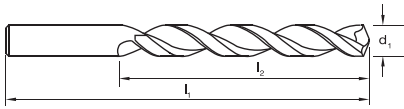
Size Ref.	d ₁	l ₁	l ₂	d ₂	D165	D163	D168	D169
					DXJ	DHJ	UNI	Black Magic
					A0418	A0418	A1502	A1502
					HSS Co	HSS Co	SPM	HSS Co
					TiAlN 氮化铝钛	TiAlN 氮化铝钛	TiAlN 氮化铝钛	TiAlN 氮化铝钛
					R35 W → N	R40 N → H	R40 UNI	R40 VA
					130° Form A	130° Form B	130° 4 Facet Form B	4 Facet Form C
					h9	h9	h7	h7
					Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
0100	1.0	34	13	3		D163 0100	D168 0100	
0110	1.1	36	15	3		D163 0110	D168 0110	
0120	1.2	38	17	3		D163 0120	D168 0120	
0130	1.3	38	17	3		D163 0130	D168 0130	
0140	1.4	40	19	3		D163 0140	D168 0140	
0150	1.5	40	19	3		D163 0150	D168 0150	
0160	1.6	43	21	3		D163 0160	D168 0160	
0170	1.7	43	21	3		D163 0170	D168 0170	
0180	1.8	46	23	3		D163 0180	D168 0180	
0190	1.9	46	23	3		D163 0190	D168 0190	
0200	2.0	49	24	3		D163 0200	D168 0200	D169 0200
0210	2.1	49	24	3		D163 0210	D168 0210	D169 0210
0220	2.2	53	28	3		D163 0220	D168 0220	D169 0220
0230	2.3	53	28	3		D163 0230	D168 0230	D169 0230
0240	2.4	57	31	3		D163 0240	D168 0240	D169 0240
0250	2.5	57	31	3		D163 0250	D168 0250	D169 0250
0260	2.6	57	31	3		D163 0260	D168 0260	D169 0260
0270	2.7	61	34	3		D163 0270	D168 0270	D169 0270
0280	2.8	61	34	3		D163 0280	D168 0280	D169 0280
0290	2.9	61	34	3		D163 0290	D168 0290	D169 0290
0300	3.0	61	33	3	D165 0300	D163 0300	D168 0300	D169 0300
0310	3.1	65	36	4	D165 0310	D163 0310	D168 0310	D169 0310
0320	3.2	65	36	4	D165 0320	D163 0320	D168 0320	D169 0320
0330	3.3	65	36	4	D165 0330	D163 0330	D168 0330	D169 0330
0340	3.4	70	39	4	D165 0340	D163 0340	D168 0340	D169 0340
0350	3.5	70	39	4	D165 0350	D163 0350	D168 0350	D169 0350
0360	3.6	70	39	4	D165 0360	D163 0360	D168 0360	D169 0360
0370	3.7	70	39	4	D165 0370	D163 0370	D168 0370	D169 0370
0380	3.8	75	43	4	D165 0380	D163 0380	D168 0380	D169 0380
0390	3.9	75	43	4	D165 0390	D163 0390	D168 0390	D169 0390
0400	4.0	75	43	4	D165 0400	D163 0400	D168 0400	D169 0400
0410	4.1	75	43	6	D165 0410	D163 0410	D168 0410	D169 0410
0420	4.2	75	43	6	D165 0420	D163 0420	D168 0420	D169 0420
0430	4.3	80	47	6	D165 0430	D163 0430	D168 0430	D169 0430
0440	4.4	80	47	6	D165 0440	D163 0440	D168 0440	D169 0440
0450	4.5	80	47	6	D165 0450	D163 0450	D168 0450	D169 0450
0460	4.6	80	47	6	D165 0460	D163 0460	D168 0460	D169 0460
0470	4.7	80	47	6	D165 0470	D163 0470	D168 0470	D169 0470
0480	4.8	86	52	6	D165 0480	D163 0480	D168 0480	D169 0480
0490	4.9	86	52	6	D165 0490	D163 0490	D168 0490	D169 0490
0500	5.0	86	52	6	D165 0500	D163 0500	D168 0500	D169 0500
0510	5.1	86	52	6	D165 0510	D163 0510	D168 0510	D169 0510
0520	5.2	86	52	6	D165 0520	D163 0520	D168 0520	D169 0520
0530	5.3	86	52	6	D165 0530	D163 0530	D168 0530	D169 0530
0540	5.4	93	57	6	D165 0540	D163 0540	D168 0540	D169 0540
0550	5.5	93	57	6	D165 0550	D163 0550	D168 0550	D169 0550

Drills Jobber 5xd₁



Speed & Feeds - refer page 24

旋转速度及进给速度—请参阅第 24 页



Catalogue Code 目录代码

Product Name 产品名称

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Point Type 钻尖类别

Shank Tolerance 柄径容许公差

尺寸参考

Size Ref.	d ₁	l ₁	l ₂	d ₂	D165	D163	D168	D169
					DXJ	DHJ	UNI	Black Magic
0560	5.6	93	57	6	A0418	A0418	A1502	A1502
0570	5.7	93	57	6	HSS Co	HSS Co	SPM	HSS Co
0580	5.8	93	57	6	TiAlN 氮化铝钛	TiAlN 氮化铝钛	TiAlN 氮化铝钛	TiAlN 氮化铝钛
0590	5.9	93	57	6	R35 W → N	R40 N → H	R40 UNI	R40 VA
0600	6.0	93	57	6	130° Form A	130° Form B	130° 4 Facet Form B	4 Facet Form C
0610	6.1	101	63	8	h9	h9	h7	h7
0620	6.2	101	63	8	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
0630	6.3	101	63	8	D165 0630	D163 0630	D168 0630	D169 0630
0640	6.4	101	63	8	D165 0640	D163 0640	D168 0640	D169 0640
0650	6.5	101	63	8	D165 0650	D163 0650	D168 0650	D169 0650
0660	6.6	101	63	8	D165 0660	D163 0660	D168 0660	D169 0660
0670	6.7	101	63	8	D165 0670	D163 0670	D168 0670	D169 0670
0680	6.8	109	69	8	D165 0680	D163 0680	D168 0680	D169 0680
0690	6.9	109	69	8	D165 0690	D163 0690	D168 0690	D169 0690
0700	7.0	109	69	8	D165 0700	D163 0700	D168 0700	D169 0700
0710	7.1	109	69	8	D165 0710	D163 0710	D168 0710	D169 0710
0720	7.2	109	69	8	D165 0720	D163 0720	D168 0720	D169 0720
0730	7.3	109	69	8	D165 0730	D163 0730	D168 0730	D169 0730
0740	7.4	109	69	8	D165 0740	D163 0740	D168 0740	D169 0740
0750	7.5	109	69	8	D165 0750	D163 0750	D168 0750	D169 0750
0760	7.6	117	75	8	D165 0760	D163 0760	D168 0760	D169 0760
0770	7.7	117	75	8	D165 0770	D163 0770	D168 0770	D169 0770
0780	7.8	117	75	8	D165 0780	D163 0780	D168 0780	D169 0780
0790	7.9	117	75	8	D165 0790	D163 0790	D168 0790	D169 0790
0800	8.0	117	75	8	D165 0800	D163 0800	D168 0800	D169 0800
0810	8.1	117	75	10	D165 0810	D163 0810	D168 0810	D169 0810
0820	8.2	117	75	10	D165 0820	D163 0820	D168 0820	D169 0820
0830	8.3	117	75	10	D165 0830	D163 0830	D168 0830	D169 0830
0840	8.4	117	75	10	D165 0840	D163 0840	D168 0840	D169 0840
0850	8.5	117	75	10	D165 0850	D163 0850	D168 0850	D169 0850
0860	8.6	125	81	10	D165 0860	D163 0860	D168 0860	D169 0860
0870	8.7	125	81	10	D165 0870	D163 0870	D168 0870	D169 0870
0880	8.8	125	81	10	D165 0880	D163 0880	D168 0880	D169 0880
0890	8.9	125	81	10	D165 0890	D163 0890	D168 0890	D169 0890
0900	9.0	125	81	10	D165 0900	D163 0900	D168 0900	D169 0900
0910	9.1	125	81	10	D165 0910	D163 0910	D168 0910	D169 0910
0920	9.2	125	81	10	D165 0920	D163 0920	D168 0920	D169 0920
0930	9.3	125	81	10	D165 0930	D163 0930	D168 0930	D169 0930
0940	9.4	125	81	10	D165 0940	D163 0940	D168 0940	D169 0940
0950	9.5	125	81	10	D165 0950	D163 0950	D168 0950	D169 0950
0960	9.6	133	87	10	D165 0960	D163 0960	D168 0960	D169 0960
0970	9.7	133	87	10	D165 0970	D163 0970	D168 0970	D169 0970
0980	9.8	133	87	10	D165 0980	D163 0980	D168 0980	D169 0980
0990	9.9	133	87	10	D165 0990	D163 0990	D168 0990	D169 0990
1000	10.0	133	87	10	D165 1000	D163 1000	D168 1000	D169 1000
1010	10.1	133	87	10	D165 1010	D163 1010	D168 1010	D169 1010

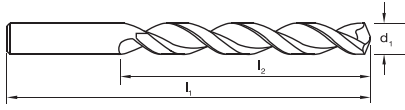
d₂ ref - D155 & D153

Drills Jobber 5xd₁



Speed & Feeds - refer page 24

旋转速度及进给速度—请参阅第 24 页



Catalogue Code 目录代码

Product Name 产品名称

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Point Type 钻尖类别

Shank Tolerance 柄径容许公差

尺寸参考

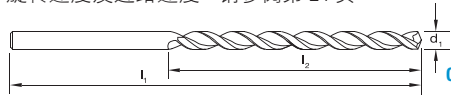
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1030	10.3	133	87	10				
1040	10.4	133	87	10				
1050	10.5	133	87	10				
1060	10.6	133	87	12				
1070	10.7	142	94	12				
1080	10.8	142	94	12				
1090	10.9	142	94	12				
1100	11.0	142	94	12				
1110	11.1	142	94	12				
1120	11.2	142	94	12				
1130	11.3	142	94	12				
1140	11.4	142	94	12				
1150	11.5	142	94	12				
1160	11.6	142	94	12				
1170	11.7	142	94	12				
1180	11.8	142	94	12				
1190	11.9	142	94	12				
1200	12.0	151	101	12				
1210	12.1	151	101	12				
1220	12.2	151	101	12				
1230	12.3	151	101	12				
1240	12.4	151	101	12				
1250	12.5	151	101	12				
1260	12.6	151	101	12				
1270	12.7	151	101	12				
1280	12.8	151	101	12				
1290	12.9	151	101	12				
1300	13.0	151	101	12				
1350	13.5	160	108	16				
1400	14.0	160	108	16				
1450	14.5	169	114	16				
1500	15.0	169	114	16				
1550	15.5	178	120	16				
1600	16.0	178	120	16				
1650	16.5	184	125	20				
1700	17.0	184	125	20				
1750	17.5	191	130	20				
1800	18.0	191	130	20				
1850	18.5	198	135	20				
1900	19.0	198	135	20				
1950	19.5	205	140	20				
2000	20.0	205	140	20				

Drills Long & Extra Length



- Suitable for materials up to 1200N/mm²
 - Point geometry ensures high strength
 - Parabolic flute design for optimal chip transportation
 - Less pecking required over standard drills
 - TiAIN for longer tool life
- Speed & Feeds - refer page 24

- 加工硬度可达 1200 N/mm²
 - 钻尖的几何结构确保其高强度
 - 物线槽设计, 切屑排除效果特佳
 - 较一般标准钻头的退刀次数大为减少
 - 使用氮化铝钛, 延长刀具使用寿命
- 旋转速度及进给速度—请参阅第 24 页



Catalogue Code 目录代码

Product Name 产品名称

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Point Type 钻尖类别

Shank Tolerance 柄径容许公差

DIN 340		DIN 1869-1	
DIN 1869-2		DIN 1869-3	

尺寸参考

Size Ref.	d ₁	l ₁	l ₂	l ₁	l ₂	l ₁	l ₂	l ₁	l ₂
		DIN340		DIN1869-1		DIN1869-2		DIN1869-3	
0100	1.0	56	33						
0150	1.5	70	45						
0200	2.0	85	56	135	90				
0250	2.5	95	62	140	95				
0300	3.0	100	66	155	105	200	135		
0330	3.3	106	69						
0350	3.5	112	73	165	115	210	145	265	180
0400	4.0	119	78	175	120	220	150	280	190
0420	4.2	119	78						
0450	4.5	126	82	185	125	235	160	295	200
0500	5.0	132	87	195	135	245	170	315	210
0550	5.5	139	91	205	140	260	180	330	225
0600	6.0	139	91	205	140	260	180	330	225
0650	6.5	148	97	215	150	275	190	350	235
0680	6.8	156	102						
0700	7.0	156	102	225	155	290	200	370	250
0750	7.5	156	102	225	155	290	200	370	250
0800	8.0	165	109	240	165	305	210	390	265
0850	8.5	165	109	240	165	305	210	390	265
0900	9.0	175	115	250	175	320	220	410	280
0950	9.5	175	115	250	175	320	220	410	280
1000	10.0	184	121	265	185	340	235	430	295
1020	10.2	184	121						
1050	10.5	184	121						
1100	11.0	195	128						
1200	11.5	195	128						
1250	12.0	205	134						
1270	12.5	205	134						
1300	13.0	205	134						



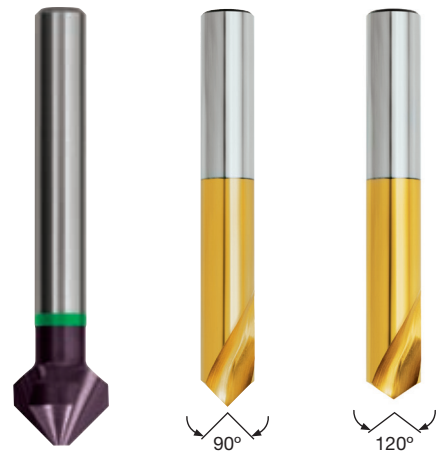
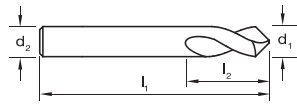
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DHL	DHXL-1	DHXL-2	DHXL-3
A0508	A0508	A0508	A0508
HSS Co	HSS Co	HSS Co	HSS Co
TiAIN 氮化铝钛	TiAIN 氮化铝钛	TiAIN 氮化铝钛	TiAIN 氮化铝钛
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130° Form B	130° Form B	130° Form B	130° Form B
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D171 0100			
D171 0150			
D171 0200	D194 0200		
D171 0250	D194 0250		
D171 0300	D194 0300	D195 0300	
D171 0330			
D171 0350	D194 0350	D195 0350	D196 0350
D171 0400	D194 0400	D195 0400	D196 0400
D171 0420			
D171 0450	D194 0450	D195 0450	D196 0450
D171 0500	D194 0500	D195 0500	D196 0500
D171 0550	D194 0550	D195 0550	D196 0550
D171 0600	D194 0600	D195 0600	D196 0600
D171 0650	D194 0650	D195 0650	D196 0650
D171 0680			
D171 0700	D194 0700	D195 0700	D196 0700
D171 0750	D194 0750	D195 0750	D196 0750
D171 0800	D194 0800	D195 0800	D196 0800
D171 0850	D194 0850	D195 0850	D196 0850
D171 0900	D194 0900	D195 0900	D196 0900
D171 0950	D194 0950	D195 0950	D196 0950
D171 1000	D194 1000	D195 1000	D196 1000
D171 1020			
D171 1050			
D171 1100			
D171 1200			
D171 1250			
D171 1270			
D171 1300			

Drills Spotting & Countersinks



Speed & Feeds - refer page 24

旋转速度及进给速度—请参阅第 24 页



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Geometry 钻尖类别

Point Type 钻尖类别

Shank Tolerance 柄径容许公差

尺寸参考

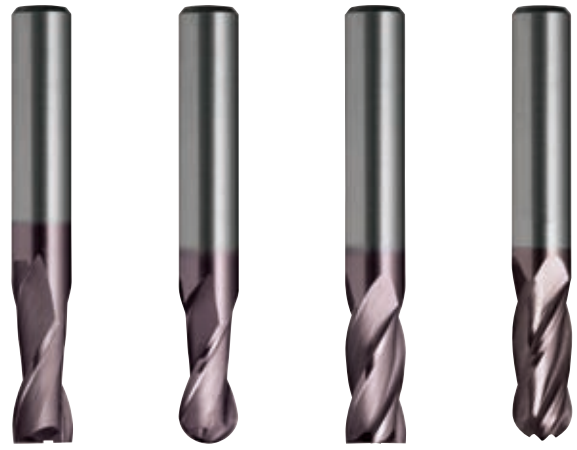
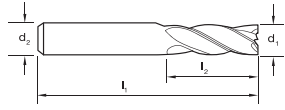
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0730	7.3	50		6	C108 0730		
0800	8.0	50		6	C108 0800		
0840	8.4	50		6	C108 0840		
0940	9.4	50		6	C108 0940		
1000	10.0	50		6	C108 1000		
1040	10.4	50		6	C108 1040		
1150	11.5	56		8	C108 1150		
1240	12.4	56		8	C108 1240		
1340	13.4	56		8	C108 1340		
1500	15.0	60		10	C108 1500		
1650	16.5	60		10	C108 1650		
1900	19.0	63		10	C108 1900		
2050	20.5	63		10	C108 2050		
2300	23.0	67		10	C108 2300		
2500	25.0	67		10	C108 2500		
3000	30.0	71		12	C108 3000		
3100	31.0	71		12	C108 3100		
DIN 1897							
0300	3.0	46	16	3.0		D175 0300	D176 0300
0400	4.0	55	22	4.0		D175 0400	D176 0400
0500	5.0	62	26	5.0		D175 0500	D176 0500
0600	6.0	63	25	6.0		D175 0600	D176 0600
0800	8.0	80	29	8.0		D175 0800	D176 0800
1000	10.0	90	32	10.0		D175 1000	D176 1000
1200	12.0	100	32	12.0		D175 1200	D176 1200
1600	16.0	114	35	16.0		D175 1600	D176 1600
2000	20.0	130	37	20.0		D175 2000	D176 2000
2500	25.0	130	37	25.0		D175 2500	D176 2500

Endmills Carbide



Speed & Feeds - refer page 27

旋转速度及进给速度—请参阅第 27 页



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Geometry 钻尖类别

Shank Form (DIN 6535) 柄径形 (DIN 6535)

Shank Tolerance 柄径容许公差

尺寸参考

Size Ref.	d ₁	l ₁	l ₂	d ₂	z	<table border="1"> <tr> <th>E603</th> <th>E605</th> <th>E604*</th> <th>E607*</th> </tr> <tr> <td>B0212</td> <td>B0212</td> <td>B0212</td> <td>B0212</td> </tr> <tr> <td>VHM</td> <td>VHM</td> <td>VHM</td> <td>VHM</td> </tr> <tr> <td>TIAlN 氮化铝钛</td> <td>TIAlN 氮化铝钛</td> <td>TIAlN 氮化铝钛</td> <td>TIAlN 氮化铝钛</td> </tr> <tr> <td>Up to 1600N/mm²</td> <td>Up to 1600N/mm²</td> <td>Up to 1600N/mm²</td> <td>Up to 1600N/mm²</td> </tr> <tr> <td>R30</td> <td>R30</td> <td>R30</td> <td>R30</td> </tr> <tr> <td>HA</td> <td>HA</td> <td>HA</td> <td>HA</td> </tr> <tr> <td>h6</td> <td>h6</td> <td>h6</td> <td>h6</td> </tr> </table>				E603	E605	E604*	E607*	B0212	B0212	B0212	B0212	VHM	VHM	VHM	VHM	TIAlN 氮化铝钛	TIAlN 氮化铝钛	TIAlN 氮化铝钛	TIAlN 氮化铝钛	Up to 1600N/mm ²	Up to 1600N/mm ²	Up to 1600N/mm ²	Up to 1600N/mm ²	R30	R30	R30	R30	HA	HA	HA	HA	h6	h6	h6	h6
						E603	E605	E604*	E607*																																
B0212	B0212	B0212	B0212																																						
VHM	VHM	VHM	VHM																																						
TIAlN 氮化铝钛	TIAlN 氮化铝钛	TIAlN 氮化铝钛	TIAlN 氮化铝钛																																						
Up to 1600N/mm ²	Up to 1600N/mm ²	Up to 1600N/mm ²	Up to 1600N/mm ²																																						
R30	R30	R30	R30																																						
HA	HA	HA	HA																																						
h6	h6	h6	h6																																						
Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)																																						
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0200	E603 0200	E605 0200	E604 0200	E607 0200																																					
0250	E603 0250	E605 0250	E604 0250	E607 0250																																					
0300	E603 0300	E605 0300	E604 0300	E607 0300																																					
0350	E603 0350	E605 0350	E604 0350	E607 0350																																					
0400	E603 0400	E605 0400	E604 0400	E607 0400																																					
0450	E603 0450	E605 0450	E604 0450	E607 0450																																					
0500	E603 0500	E605 0500	E604 0500	E607 0500																																					
0600	E603 0600	E605 0600	E604 0600	E607 0600																																					
0700	E603 0700	E605 0700	E604 0700	E607 0700																																					
0800	E603 0800	E605 0800	E604 0800	E607 0800																																					
0900	E603 0900	E605 0900	E604 0900	E607 0900																																					
1000	E603 1000	E605 1000	E604 1000	E607 1000																																					
1100	E603 1100	E605 1100	E604 1100	E607 1100																																					
1200	E603 1200	E605 1200	E604 1200	E607 1200																																					
1400	E603 1400	E605 1400	E604 1400	E607 1400																																					
1600	E603 1600	E605 1600	E604 1600	E607 1600																																					
1800	E603 1800	E605 1800	E604 1800	E607 1800																																					
2000	E603 2000	E605 2000	E604 2000	E607 2000																																					
2500	E603 2500	E605 2500	E604 2500	E607 2500																																					

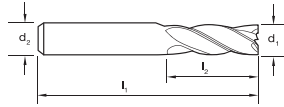
*4 Flute
*4 二刃

Endmills Carbide



Speed & Feeds - refer page 27

旋转速度及进给速度—请参阅第 27 页



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Geometry 钻尖类别

Shank Form (DIN 6535) 柄径形 (DIN 6535)

尺寸参考

Shank Tolerance 柄径容许公差

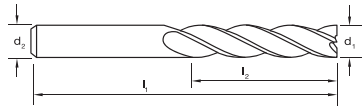
						E555	E557	E535	E545	E549
						B0210	B0210	B0210	B0210	B0210
						VHM-ULTRA	VHM-ULTRA	VHM-ULTRA	VHM-ULTRA	VHM-ULTRA
						AICrN 氮化铝铬	AICrN 氮化铝铬	AICrN 氮化铝铬	AICrN 氮化铝铬	AICrN 氮化铝铬
						Up to 1300N/mm ²	Up to 1300N/mm ²	HARMONY	HARMONY	HARMONY
						R30	R30	R35 / 38	R45 (Uneq. Flute)	R45 HRS
						HA	HA	HA	HA	HA
						h6	h6	h6	h6	h6
Size Ref.	d ₁	l ₁	l ₂	d ₂	z	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
SUTTON STD										
0200	2.0	50	5	6	2	E555 0200				
0300	3.0	60	8	6	2	E555 0300				
0400	4.0	70	8	6	2	E555 0400				
0500	5.0	80	10	6	2	E555 0500				
0600	6.0	90	12	6	2	E555 0600				
0800	8.0	100	14	8	2	E555 0800				
1000	10.0	100	18	10	2	E555 1000				
1200	12.0	110	22	12	2	E555 1200				
0200	2.0	50	5	6	4		E557 0200			
0300	3.0	60	8	6	4		E557 0300			
0400	4.0	70	8	6	4		E557 0400			
0500	5.0	80	10	6	4		E557 0500			
0600	6.0	90	12	6	4		E557 0600			
0800	8.0	100	14	8	4		E557 0800			
1000	10.0	100	18	10	4		E557 1000			
1200	12.0	110	22	12	4		E557 1200			
DIN 6527L										
0400	4.0	57	11	6	4			E535 0400	E545 0400	
0500	5.0	57	13	6	4			E535 0500	E545 0500	
0600	6.0	57	13	6	4			E535 0600	E545 0600	
0800	8.0	63	19	8	4			E535 0800	E545 0800	
1000	10.0	72	22	10	4			E535 1000	E545 1000	
1200	12.0	83	26	12	4			E535 1200	E545 1200	
1600	16.0	92	32	16	4			E535 1600	E545 1600	
2000	20.0	104	38	20	4			E535 2000	E545 2000	
0400	4.0	57	11	6	3					E549 0400
0500	5.0	57	13	6	4					E549 0500
0600	6.0	57	16	6	4					E549 0600
0800	8.0	63	19	8	4					E549 0800
1000	10.0	72	22	10	4					E549 1000
1200	12.0	83	26	12	4					E549 1200
1600	16.0	92	32	16	5					E549 1600
2000	20.0	104	38	20	6					E549 2000

Endmills Slotting + Finishing



Speed & Feeds - refer page 28

旋转速度及进给速度—请参阅第 28 页



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Colour Ring & Application 色环及应用

Geometry 钻尖类别

Shank Form (DIN 1835 Part 1) 柄径型 (DIN 1835 Part 1)

尺寸参考

Shank Tolerance 柄径容许公差

Size Ref.	d ₁	l ₁	l ₂	d ₂	z	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
						DIN 327				
						E109				
0200	2.0	48	4	6	2	E109 0200				
0300	3.0	49	5	6	2	E109 0300				
0400	4.0	51	7	6	2	E109 0400				
0500	5.0	52	8	6	2	E109 0500				
0600	6.0	52	8	6	2	E109 0600				
0800	8.0	61	11	10	2	E109 0800				
1000	10.0	63	13	10	2	E109 1000				
1200	12.0	73	16	12	2	E109 1200				
1600	16.0	79	19	16	2	E109 1600				
2000	20.0	88	22	20	2	E109 2000				
						DIN 844K				
						E110[†]				
						E122*				
						E134				
						E137				
0300	3.0	52	8	6	4	E110 0300	E122 0300	E134 0300		
0400	4.0	55	11	6	4	E110 0400	E122 0400	E134 0400		
0500	5.0	57	13	6	4	E110 0500	E122 0500	E134 0500		
0600	6.0	57	13	6	4	E110 0600	E122 0600	E134 0600	E137 0600	
0800	8.0	69	19	10	4	E110 0800	E122 0800	E134 0800	E137 0800	
1000	10.0	72	22	10	4	E110 1000	E122 1000	E134 1000	E137 1000	
1200	12.0	83	26	12	4	E110 1200	E122 1200	E134 1200	E137 1200	
1600	16.0	92	32	16	4	E110 1600	E122 1600	E134 1600	E137 1600	
2000	20.0	104	38	20	4	E110 2000	E122 2000	E134 2000	E137 2000	
						DIN 844L				
						E124*				
						E136				
0600	6.0	68	24	6	4	E124 0600	E136 0600			
0800	8.0	88	38	10	4	E124 0800	E136 0800			
1000	10.0	95	45	10	4	E124 1000	E136 1000			
1200	12.0	110	53	12	4	E124 1200	E136 1200			
1600	16.0	123	63	16	4	E124 1600	E136 1600			
2000	20.0	141	75	20	4	E124 2000	E136 2000			

[†] 2 Flute *3 Flute

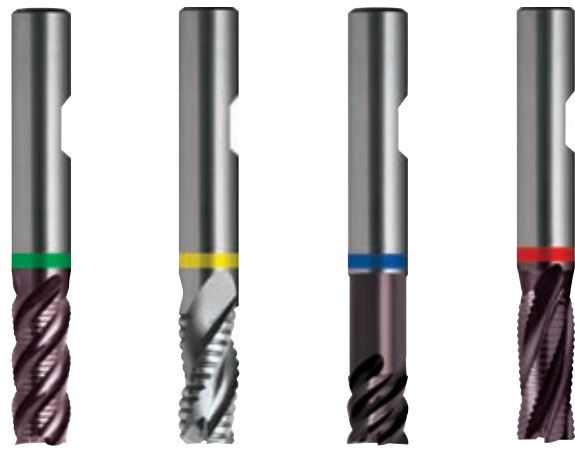
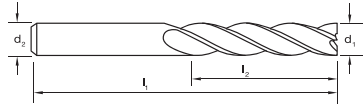
[†] 二刃 *3 三刃

Endmills Roughing



Speed & Feeds - refer page 28

旋转速度及进给速度—请参阅第 28 页



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

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Geometry 钻尖类别

Shank Form (DIN 1835 Part 1) 柄径型 (DIN 1835 Part 1)

Shank Tolerance 柄径容许公差

尺寸参考

Size Ref.	d ₁	l ₁	l ₂	d ₂	z	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
DIN 844K						E151			E176
0400	4.0	55	11	6	3	E151 0400			
0500	5.0	57	13	6	4	E151 0500			
0600	6.0	57	13	6	4	E151 0600			E176 0600
0800	8.0	69	19	10	4	E151 0800			E176 0800
1000	10.0	72	22	10	4	E151 1000			E176 1000
1200	12.0	83	26	12	4	E151 1200			E176 1200
1400	14.0	83	26	12	5	E151 1400			
1600	16.0	92	32	16	5	E151 1600			E176 1600 [†]
1800	18.0	92	32	16	6	E151 1800			
2000	20.0	104	38	20	6				E176 2000 [†]
2200	22.0	121	45	20	6	E151 2200			
2500	25.0	121	45	25	6	E151 2500			E176 2500 ^{**}
DIN 844K							E152*	E157	
0400	4.0	55	5	6	4			E157 0400	
0500	5.0	57	6	6	4			E157 0500	
0600	6.0	57	7	6	4		E152 0600	E157 0600	
0800	8.0	69	9	10	4		E152 0800	E157 0800	
1000	10.0	72	11	10	4		E152 1000	E157 1000	
1200	12.0	83	13	12	4		E152 1200	E157 1200	
1600	16.0	92	17	16	4		E152 1600	E157 1600	
2000	20.0	104	21	20	4		E152 2000	E157 2000	
2500	25.0	121	45	25	4		E152 2500		
DIN 844L							E154*		E177
0600	6.0	68	24	6	3				E177 0600
0800	8.0	88	38	10	3				E177 0800
1000	10.0	95	45	10	4		E154 1000		E177 1000
1200	12.0	110	53	12	4		E154 1200		E177 1200
1600	16.0	123	63	16	4		E154 1600		E177 1600
2000	20.0	141	75	20	4		E154 2000		E177 2000
2500	25.0	166	90	25	5				E177 2500

*3 Flute †4 Flute **5 Flute

*3 二刃 †4 二刃 **5 二刃

Application Guide Speeds & Feeds - Carbide



	STUB		JOBBER		LONG
Drilling Depth	≤ 3xØ		≤ 5xØ		≤ 8xØ
Catalogue Code	D323	D329	D326	D332	D335
Material	VHM				
Surface Finish	AlCrN				
Colour Ring & Application	< 1400N/mm ²				
Geometry	R30	R30 - IK	R30	R30 - IK	R30 - IK

Notes on Drilling

- Step feeding or pecking is required for drilling greater than 3 x diameter
- When drilling cast surface & black (ie. not machined surface), reduce drilling speed by 20%
- For optimal positional accuracy and hole size, the use of spot drills is recommended prior to drilling desired hole, refer to our standard range (product group A1124).
- For hole depths greater than 7 x Ø, pre-drill initially to pilot start for more accurate hole position and eliminate drill wandering. The pilot can be drilled with short rigid drill, approx. 3 x Ø in depth and reduced feed to ensure accurate pilot hole

Metal Removal Volume

Materials	HB	N/mm ²	% Elong.	Material eg.	Medium		Medium		Medium		Medium			
					Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #		
1.0 Steels														
1.1 Mild steels, magnetic soft steel	<200	>200 <400	10	RFe100	90	7	130	7	90	7	130	7	100	6
1.2 Free cutting, structural, unalloyed	<200	>350 <700	30	C10, C15, ST37, ST52	90	7	130	7	90	7	130	7	100	6
1.3 Plain carbon, low alloyed	<300	>350 <850	20	C45, C920, D95-S	75	7	95	7	75	7	95	7	80	6
1.4 Alloy steels harden. / tempered	<250	>500 <850	30	41CrMo4, 36CrNiMo4, X155CrVMo12-1, 90MnV8	65	7	80	7	65	7	80	7	70	6
1.5 Alloy steels harden. / tempered	<350	>850 <1200	30		50	6	70	6	50	6	70	6	60	5
1.6 Hardened, heat treated, high tensile alloy	<420	>1500	12	X155CrVMo12-1, 90MnV8	25	4	40	4	25	4	40	4	30	3
1.7 Hardened Steel 45-50 Rc	<550		<12		16	3	25	3	16	3	25	3	20	2
1.8 Hardened Steel 50-62 Rc	<700		<12	H52-10-1-8	10	2	15	2	10	2	15	2	10	2
2.0 Stainless Steels														
2.1 Free machining	<250	<850	25	X8CrNiS18-9	-	-	60	5	-	-	60	5	-	-
2.2 Austenitic	<250	<850	20	X5CrNi18-10	-	-	50	5	-	-	50	5	-	-
2.3 Ferritic + martensitic	<250	<850	20	X20Cr13	-	-	40	5	-	-	40	5	-	-
3.0 Cast Irons														
3.1 Lamellar graphite (Grey soft)	<150	<500	10	GG10, GG40	75	6	150	9	75	6	150	9	130	8
3.2 Lamellar graphite (Grey hard)	<300	<1000	10	GGG40, GGG80	65	6	120	8	65	6	120	8	100	7
3.3 Nodular (spheroidal) graphite & malleable	<200	<700	10		65	5	100	8	65	5	100	8	90	7
4.0 Titaniums														
4.1 Pure Titanium	<250	<850	20	Ti99.7, Ti99.8	40	4	45	5	-	-	45	5	40	4
4.2 Titanium alloys	>250	>850	20	TiCu2, TiAl6V4	35	3	40	4	-	-	40	4	30	3
5.0 Nickels														
5.1 Nickel alloys	<250	<850	25	Ni38, Ni54, NiCr16FeTi	25	4	35	4	-	-	35	4	25	3
5.2 Nickel alloys	>250	>850	25		20	4	30	4	-	-	30	4	20	3
6.0 Coppers														
6.1 Pure Copper (electrolytic copper)	<120	<400	12	SF-Cu	100	7	125	7	-	-	125	7	100	6
6.2 Short chip Brass, Phosphor Bronze, gun metal	<200	<700	12	G-CuSn12Ni	150	8	120	8	-	-	120	8	100	7
6.3 Long chip Brass, Bronze	<200	<700	12	G-CuPb20Sn	120	7	150	7	-	-	150	7	120	6
7.0 Aluminiums														
7.1 Aluminium unalloyed	<100	<350	15	Al99.5	250	9	300	9	-	-	300	9	200	8
7.2 Magnesium unalloyed	<150	<350	15	Al99.85Mg0.5	250	9	300	9	-	-	300	9	200	8
7.3 Al Alloyed Si < 1.5 %	<120	<500	15	AlMg1.5	250	9	300	9	-	-	300	9	200	8
7.4 Al Alloyed 1.5 % < Si < 10%	<120	<400	10	AlSi10Mg	200	9	250	9	-	-	250	9	200	8
7.5 Al Alloyed > 10% Si	-	<400	N	AlSi17Cu4	150	8	200	8	-	-	200	8	150	7
7.6 Magnesium alloys	-	<400	N	MgAl3Zn	200	8	250	8	-	-	250	8	200	7
8.0 Plastics														
8.1 Plastics, Thermoplastics, Polyethylene	<340	<50	N	ABS, PVC, Polycarbonate	50	4	50	4	50	4	50	4	50	3

Ø	Feed Table (f) (mm/rev)								
	1	2	3	4	5	6	7	8	9
2.0	0.020	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.120
3.0	0.030	0.040	0.050	0.060	0.080	0.100	0.120	0.150	0.180
4.0	0.040	0.050	0.060	0.080	0.100	0.120	0.150	0.180	0.200
5.0	0.045	0.055	0.065	0.085	0.110	0.135	0.165	0.190	0.220
6.0	0.050	0.060	0.080	0.100	0.120	0.150	0.180	0.200	0.250
8.0	0.060	0.080	0.100	0.120	0.150	0.200	0.250	0.300	0.350
10.0	0.080	0.100	0.120	0.150	0.200	0.250	0.300	0.350	0.400
12.0	0.080	0.100	0.120	0.150	0.200	0.250	0.300	0.400	0.500
16.0	0.100	0.120	0.150	0.200	0.250	0.300	0.400	0.500	0.600
20.0	0.150	0.200	0.250	0.300	0.400	0.500	0.600	0.700	0.800

LEGEND

n = rev. per minute
 v_c = cutting speed (m/min)
 f = feed (mm/rev)
 v_f = feed rate (mm/min)

FORMULAS

$n = (v_c \times 1000) / (\phi \times \pi)$
 $v_c = (\phi \times \pi \times n) / 1000$
 $v_f = f \times n$

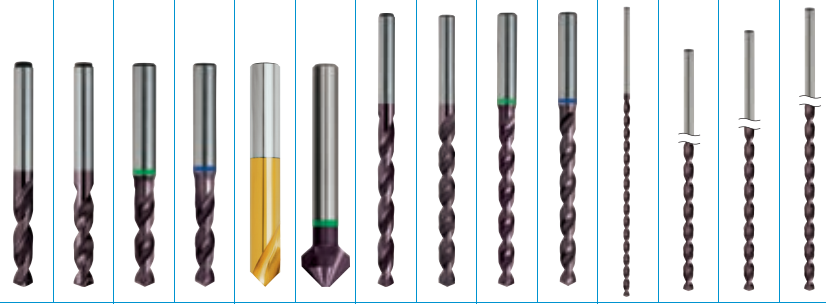
Application Guide Speeds & Feeds - Drills



Drilling Depth	STUB						JOBBER				LONG					
	≤ 3xØ						≤ 5xØ				≤ 7xØ, ≤ 10xØ, ≤ 12xØ, ≤ 14xØ					
Catalogue Code	D177	D151	D155	D153	D175	C108	D165	D163	D168	D169	D171	D194	D195	D196		
Material	HSS Co			SPM			HSS Co			SPM		HSS Co				
Surface Finish	TiAlN			TiN			TiAlN			TiAlN						
Colour Ring & Application	W → N	N → H	UNI	VA	NC	UNI	W → N	N → H	UNI	VA	N					
Geometry	R35		R40				-		-		R35		R40			

Notes on Drilling

- Step feeding or pecking is required for drilling greater than 3 x diameter
- When drilling cast surface & black (ie. not machined surface), reduce drilling speed by 20%
- For optimal positional accuracy and hole size, the use of spot drills is recommended prior to drilling desired hole, refer to our standard range (product group A1124).
- For hole depths greater than 7 x Ø, pre-drill initially to pilot start for more accurate hole position and eliminate drill wandering. The pilot can be drilled with short rigid drill, approx. 3 x Ø in depth and reduced feed to ensure accurate pilot hole



Metal Removal Volume

Materials	HB	N/mm ²	% Elong.	Material eg.	Medium		Med/High		High		Medium		Med/High		Medium																	
					Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #												
1.0 Steels																																
1.1 Mild steels, magnetic soft steel	<200	>200 <400	10	RFe100	35	4	40	6	60	6	64	6	35	4	44	3	29	4	29	5	70	7	58	6	30	5	25	5	20	5	20	5
1.2 Free cutting, structural, unalloyed	<200	>350 <700	30	C10, C15, ST37, ST52	30	4	30	6	45	6	64	6	25	4	36	3	25	4	25	5	50	7	58	6	16	5	13	5	10	5	10	5
1.3 Plain carbon, low alloyed	<300	>350 <850	20	C45, C92D, D95-S	30	4	30	6	45	6	62	5	20	4	36	2	25	4	25	5	50	7	58	5	16	5	13	5	10	5	10	5
1.4 Alloy steels harden. / tempered	<250	>500 <850	30		20	4	20	5	30	6	30	4	15	4	22	2	20	4	17	4	40	7	25	4	16	4	13	4	10	4	10	4
1.5 Alloy steels harden. / tempered	<350	>850 <1200	30		12	4	15	4	15	6	-	-	15	3	16	1	10	4	12	4	40	6	-	-	10	4	10	4	10	4	10	4
1.6 Hardened, heat treated, high tensile alloy	<420	>1500	12	41CrMo4, 36CrNiMo4, X155CrNiMo12-1, 90MnV8	-	-	12	4	12	5	-	-	12	3	10	1	-	-	10	4	25	6	-	-	8	4	8	4	10	4	10	4
1.7 Hardened Steel 45-50 Rc	<550		<12		-	-	-	-	10	4	-	-	10	3	-	-	-	-	-	-	12	4	-	-	-	-	-	-	-	-	-	-
1.8 Hardened Steel 50-62 Rc	<700		<12	HS2-10-1-8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.0 Stainless Steels																																
2.1 Free machining	<250	<850	25	X8CrNiS18-9	15	3	20	5	10	5	30	6	10	3	14	2	12	4	12	5	16	4	25	6	10	4	10	4	10	4	10	4
2.2 Austenitic	<250	<850	20	X5CrNi18-10	10	4	15	5	8	5	20	5	15	2	12	1	8	5	-	-	12	4	14	5	-	-	-	-	-	-	-	-
2.3 Ferritic + martensitic	<250	<850	20	X20Cr13	15	4	20	4	10	4	12	4	10	2	12	1	-	-	12	5	14	3	12	4	10	4	10	4	10	4	10	4
3.0 Cast Irons																																
3.1 Lamellar graphite (Grey soft)	<150	<500	10	GG10, GG40	35	5	30	6	44	6	-	-	30	5	28	2	29	5	24	6	40	6	-	-	19	6	15	6	12	6	12	6
3.2 Lamellar graphite (Grey hard)	<300	<1000	10	GG40, GGG80	-	-	25	6	39	6	-	-	20	4	28	2	-	-	20	5	35	6	-	-	16	5	13	5	10	5	10	5
3.3 Nodular (spheroidal) graphite & malleable	<200	<700	10		-	-	25	6	44	5	-	-	20	4	25	2	-	-	20	6	40	5	-	-	16	6	13	6	10	6	10	6
4.0 Titaniums																																
4.1 Pure Titanium	<250	<850	20	Ti99.7, Ti99.8	-	-	-	-	-	-	-	-	-	-	18	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.2 Titanium alloys	>250	>850	20	TiCu2, TiAl6V4	-	-	-	-	-	-	-	-	-	-	18	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.0 Nickels																																
5.1 Nickel alloys	<250	<850	25	Ni38, Ni54, NiCr16FeTi	-	-	-	-	-	-	-	-	12	1	10	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.2 Nickel alloys	>250	>850	25		-	-	-	-	-	-	-	-	-	-	10	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.0 Coppers																																
6.1 Pure Copper (electrolytic copper)	<120	<400	12	SF-Cu	45	5	30	5	33	4	80	3	50	4	72	2	40	5	-	-	30	5	70	3	-	-	-	-	-	-	-	-
6.2 Short chip Brass, Phosphor Bronze, gun metal	<200	<700	12	G-CuSn12Ni	35	5	40	5	44	5	-	-	30	4	58	2	32	5	32	5	40	5	-	-	26	5	20	5	16	5	16	5
6.3 Long chip Brass, Bronze	<200	<700	12	G-CuPb20Sn	50	5	60	5	39	4	50	5	40	4	94	2	48	5	48	5	35	4	40	5	38	5	31	5	25	5	25	5
7.0 Aluminiums																																
7.1 Aluminium unalloyed	<100	<350	15	Al99.5	60	6	-	-	88	5	112	6	50	5	58	4	48	6	-	-	80	5	112	8	-	-	-	-	-	-	-	-
7.2 Magnesium unalloyed	<150	<350	15	Al99.85Mg0.5	50	6	-	-	70	6	80	7	50	4	58	4	40	6	-	-	64	6	80	7	-	-	-	-	-	-	-	-
7.3 Al Alloyed Si < 1.5 %	<120	<500	15	AlMg1.5	50	6	50	6	70	6	80	7	50	4	58	4	40	6	40	6	64	6	80	7	32	6	26	6	20	6	20	6
7.4 Al Alloyed 1.5 % < Si < 10%	<120	<400	10	AlSi10Mg	40	5	40	5	53	5	70	7	35	4	44	4	32	5	32	5	48	5	70	6	26	5	20	5	16	5	16	5
7.5 Al Alloyed > 10% Si	-	<400	N	AlSi17Cu4	30	8	30	7	-	-	-	-	30	4	44	4	25	7	25	6	30	6	-	-	18	5	18	5	16	5	16	5
7.6 Magnesium alloys	-	<400	N	MgAl3Zn	30	8	-	-	-	-	-	-	30	4	44	4	25	7	-	-	30	6	-	-	-	-	-	-	-	-	-	-
8.0 Plastics																																
8.1 Plastics, Thermoplastics, Polyethylene	<340	<50	N	ABS, PVC, Polycarbonate	70	5	50	4	70	5	50	4	30	4	44	4	60	5	50	4	60	4	50	4	40	4	40	4	40	4	40	4

Ø	Feed Table (f) (mm/rev)								
	Feed No.								
	1	2	3	4	5	6	7	8	9
2.0	0.020	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.120
3.0	0.030	0.040	0.050	0.060	0.080	0.100	0.120	0.150	0.180
4.0	0.040	0.050	0.060	0.080	0.100	0.120	0.150	0.180	0.200
5.0	0.045	0.055	0.065	0.085	0.110	0.135	0.165	0.190	0.220
6.0	0.050	0.060	0.080	0.100	0.120	0.150	0.180	0.200	0.250
8.0	0.060	0.080	0.100	0.120	0.150	0.200	0.250	0.300	0.350
10.0	0.080	0.100	0.120	0.150	0.200	0.250	0.300	0.350	0.400
12.0	0.080	0.100	0.120	0.150	0.200	0.250	0.300	0.400	0.500
16.0	0.100	0.120	0.150	0.200	0.250	0.300	0.400	0.500	0.600
20.0	0.150	0.200	0.250	0.300	0.400	0.500	0.600	0.700	0.800

LEGEND

n = rev. per minute
 v_c = cutting speed (m/min)
 f = feed (mm/rev)
 v_f = feed rate (mm/min)

FORMULAS

$$n = (v_c \times 1000) / (\phi \times \pi)$$

$$v_c = (\phi \times \pi \times n) / 1000$$

$$v_f = f \times n$$

Application Guide Speeds & Feeds - Taps



FOR TAPPING BLIND HOLES

Thread Depth	≤ 2.5xØ		≤ 3xØ	
	T503	T504	T567	T570
Catalogue Code	HSSE V3			
Material	HSSE V3			
Surface Finish	Brt	Blu	Ni	Blu
Colour Ring & Application	N		W	VADH
Geometry	R40		R45	

THROUGH HOLES

≤ 3xØ			
T499	T500	T546	T548
HSSE V3			
Brt	Blu	Ni	Blu
N		W	VA
Gun		High Rake	Special Relief

Materials	HB	N/mm ²	% Elong.	Material eg.	Vc (m/min)			
1.0 Steels								
1.1 Mild steels, magnetic soft steel	<200	>200 <400	10	RFe100	8	8	18	18
1.2 Free cutting, structural, unalloyed	<200	>350 <700	30	C10, C15, ST37, ST52	8	8	15	15
1.3 Plain carbon, low alloyed	<300	>350 <850	20	C45, C92D, D95-S	10	10	18	18
1.4 Alloy steels harden. / tempered	<250	>500 <850	30		4	4	10	10
1.5 Alloy steels harden. / tempered	<350	>850 <1200	30	41CrMo4, 36CrNiMo4, X150CrMo12-1, 90MnV8	-	-	-	-
1.6 Hardened, heat treated, high tensile alloy	<420	>1500	12		-	-	-	-
1.7 Hardened Steel 45-50 Rc	<550		<12		-	-	-	-
1.8 Hardened Steel 50-62 Rc	<700		<12	HS2-10-1-8	-	-	-	-
2.0 Stainless Steels								
2.1 Free machining	<250	<850	25	X8CrNiS18-9	-	5	-	8
2.2 Austenitic	<250	<850	20	X5CrNi18-10	-	3	-	5
2.3 Ferritic + martensitic	<250	<850	20	X20Cr13	-	3	-	4
3.0 Cast Irons								
3.1 Lamellar graphite (Grey soft)	<150	<500	10	GG10, GG40	10	10	-	-
3.2 Lamellar graphite (Grey hard)	<300	<1000	10	GG40, GGG80	8	8	-	-
3.3 Nodular (spheroidal) graphite & malleable	<200	<700	10		8	8	-	-
4.0 Titaniums								
4.1 Pure Titanium	<250	<850	20	Ti99.7, Ti99.8	-	-	-	-
4.2 Titanium alloys	>250	>850	20	TiCu2, TiAl6V4	-	-	-	-
5.0 Nickels								
5.1 Nickel alloys	<250	<850	25	Ni38, Ni54, NiCr16FeTi	-	-	-	-
5.2 Nickel alloys	>250	>850	25		-	-	-	-
6.0 Coppers								
6.1 Pure Copper (electrolytic copper)	<120	<400	12	SF-Cu	-	-	5	-
6.2 Short chip Brass, Phosphor Bronze, gun metal	<200	<700	12	G-CuSn12Ni	8	-	-	-
6.3 Long chip Brass, Bronze	<200	<700	12	G-CuPb20Sn	10	-	15	-
7.0 Aluminiums								
7.1 Aluminium unalloyed	<100	<350	15	Al99.5	15	-	25	-
7.2 Magnesium unalloyed	<150	<350	15	Al99.85Mg0.5	15	-	25	-
7.3 Al Alloyed Si < 1.5 %	<120	<500	15	AlMg1.5	15	-	25	-
7.4 Al Alloyed 1.5 % < Si < 10%	<120	<400	10	AlSi10Mg	10	-	20	-
7.5 Al Alloyed > 10% Si	-	<400	N	AlSi17Cu4	-	-	-	-
7.6 Magnesium alloys	-	<400	N	MgAl3Zn	-	-	-	-
8.0 Plastics								
8.1 Plastics, Thermoplastics, Polyethylene	<340	<50	N	ABS, PVC, Polycarbonate	20	-	-	-

Vc (m/min)			
10	10	15	15
10	10	18	12
11	11	15	15
8	8	15	10
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	5	-	10
-	3	-	8
-	2	-	-
15	15	-	-
10	10	-	-
10	10	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	8	-
12	-	-	-
15	-	18	-
18	-	30	-
18	-	30	-
18	-	30	-
15	-	25	-
-	-	-	-
-	-	-	-
20	-	-	-

Notes on Tapping

- The speeds listed above are a recommendation only, and are based on depth of thread listed, speeds can be adjusted on application. As a general rule:
 - If hole depth required is less than above mentioned = increase speed
 - If hole depth required is more than above mentioned = reduce speed
- Taps must be driven by the square to eliminate slippage, eg, ER-GB collets (square drive)
- When using spiral flute taps with length compensation tapping attachment, it is recommended to short pitch the feed 95%, to eliminate tap cutting oversize. eg. M6x1 @ 1000RPM, Feedrate= 950mm/min

LEGEND

n = rev. per minute
 v_c = cutting speed (m/min)
 f = pitch (mm)
 v_f = feed rate (mm/min)

FORMULAS

$n = (v_c \times 1000) / (\phi \times \pi)$
 $v_c = (\phi \times \pi \times n) / 1000$
 $v_f = f \times n$

Application Guide Speeds & Feeds - Taps



THREAD FORMING				
Thread Depth	≤ 3xØ			
Catalogue Code	T510	T512	T514	T629
Material	HSS Co.8		HSS Co.8	PM-HSSE V3
Surface Finish	Ni	Blu	TiN	TiCN
Colour Ring & Application	General Production		Medium Production	High Production
Geometry	Single-Coolant Groove			

SYNCHRO			
≤ 3xØ			
T377	T373	T369	T381
PM-HSSE V3			
TiCN	TiCN	CrN	TiN
High Speed Cutting			
Gun	R50	R45 Al	Forming

Materials	HB	N/mm²	% Elong.	Material eg.	Vc (m/min)			
1.0 Steels								
1.1 Mild steels, magnetic soft steel	<200	>200 <400	10	RFe100	-	15	15	18
1.2 Free cutting, structural, unalloyed	<200	>350 <700	30	C10, C15, ST37, ST52	-	15	15	18
1.3 Plain carbon, low alloyed	<300	>350 <850	20	C45, C92D, D95-S	-	12	12	15
1.4 Alloy steels harden. / tempered	<250	>500 <850	30		-	-	-	-
1.5 Alloy steels harden. / tempered	<350	>850 <1200	30	41CrMo4, 36CrNiMo4, X155CrVMo12-1, 90MnV8	-	-	-	-
1.6 Hardened, heat treated, high tensile alloy	<420	>1500	12		-	-	-	-
1.7 Hardened Steel 45-50 Rc	<550		<12		-	-	-	-
1.8 Hardened Steel 50-62 Rc	<700		<12	HS2-10-1-8	-	-	-	-
2.0 Stainless Steels								
2.1 Free machining	<250	<850	25	X8CrNiS18-9	-	12	12	15
2.2 Austenitic	<250	<850	20	X5CrNi18-10	-	10	10	13
2.3 Ferritic + martensitic	<250	<850	20	X20Cr13	-	-	-	-
3.0 Cast Irons								
3.1 Lamellar graphite (Grey soft)	<150	<500	10	GG10, GG40	-	-	-	-
3.2 Lamellar graphite (Grey hard)	<300	<1000	10	GGG40, GGG80	-	-	-	-
3.3 Nodular (spheroidal) graphite & malleable	<200	<700	10		-	-	-	-
4.0 Titaniums								
4.1 Pure Titanium	<250	<850	20	Ti99.7, Ti99.8	-	-	-	-
4.2 Titanium alloys	>250	>850	20	TiCu2, TiAl6V4	-	-	-	-
5.0 Nickels								
5.1 Nickel alloys	<250	<850	25	Ni38, Ni54, NiCr16FeTi	-	-	-	-
5.2 Nickel alloys	>250	>850	25		-	-	-	-
6.0 Coppers								
6.1 Pure Copper (electrolytic copper)	<120	<400	12	SF-Cu	25	30	30	30
6.2 Short chip Brass, Phosphor Bronze, gun metal	<200	<700	12	G-CuSn12Ni	-	-	-	-
6.3 Long chip Brass, Bronze	<200	<700	12	G-CuPb20Sn	10	25	25	25
7.0 Aluminiums								
7.1 Aluminium unalloyed	<100	<350	15	Al99.5	30	30	30	30
7.2 Magnesium unalloyed	<150	<350	15	Al99.85Mg0.5	30	30	30	30
7.3 Al Alloyed Si < 1.5 %	<120	<500	15	AlMg1.5	25	30	30	30
7.4 Al Alloyed 1.5 % < Si < 10%	<120	<400	10	AlSi10Mg	15	20	20	20
7.5 Al Alloyed > 10% Si	-	<400	N	AlSi17Cu4	-	-	-	-
7.6 Magnesium alloys	-	<400	N	MgAl3Zn	-	-	-	-
8.0 Plastics								
8.1 Plastics, Thermoplastics, Polyethylene	<340	<50	N	ABS, PVC, Polycarbonate	-	-	-	-

50-60	40-50	-	20-30
40-50	30-40	-	20-30
30-40	20-30	-	20-30
20-35	15-25	-	10-20
20-35	15-25	-	10-20
12-20	8-15	-	-
-	-	-	-
-	-	-	-
15-25	20-35	-	10-20
12-20	15-25	-	10-20
10-15	8-15	-	-
30-40	20-25	-	-
30-40	20-25	-	-
20-25	12-20	-	-
15-25	10-20	-	-
10-15	5-10	-	-
10-15	5-10	-	-
-	-	-	-
25-35	20-30	25-35	20-30
20-30	20-30	40-50	-
25-35	20-30	25-35	-
60-80	50-60	60-80	20-30
60-80	50-60	60-80	20-30
40-50	30-40	40-50	20-30
30-40	20-30	30-40	-
20-30	20-30	-	-
20-30	20-30	-	-
50-60	50-60	60-80	-

Notes on Tapping

- The speeds listed above are a recommendation only, and are based on depth of thread listed, speeds can be adjusted on application. As a general rule;
 - If hole depth required is less than above mentioned = increase speed
 - If hole depth required is more than above mentioned = reduce speed
- Taps must be driven by the square to eliminate slippage, eg, ER-GB collets (square drive)
- When using spiral flute taps with length compensation tapping attachment, it is recommended to short pitch the feed 95%, to eliminate tap cutting oversize. eg. M6x1 @ 1000RPM, Feedrate= 950mm/min

LEGEND
 n = rev. per minute
 v_c = cutting speed (m/min)
 f = pitch (mm)
 v_f = feed rate (mm/min)

FORMULAS
 $n = (v_c \times 1000) / (\phi \times \pi)$
 $v_c = (\phi \times \pi \times n) / 1000$
 $v_f = f \times n$

Application Guide Speeds & Feeds - Carbide



	PROFILING				SLOT		FINISHING		ROUGHING	
Catalogue Code	E605	E607	E555	E557	E603	E604	E535	E545	E549	
Material	VHM	VHM	VHM-ULTRA		VHM		VHM-ULTRA			
Surface Finish	TIAlN	TIAlN	AlCrN		TIAlN	TIAlN	AlCrN			
Colour Ring & Application	Up to 1600N/mm ²	Up to 1600N/mm ²	< 1300N/mm ²		< 1600N/mm ²		HARMONY			
Geometry	R30	R30	R30	R30	R30	R30	R35 / 38	R45 (Uneq. Flute)	R45 HRS	

Notes on Milling

- Above values are guidelines for the size and type of cut nominated.
- For coated tools, speeds may be increased by 20%.
- For long series tools, reduce speed by 40% and feed by 20%.

Materials	HB	N/mm ²	% Elong.	Material eg.	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #		
1.0 Steels																						
1.1 Mild steels, magnetic soft steel	<200	>200 <400	10	RFe100	160-180	10	160-180	10	90-110	9	90-110	9	100-120	10	200-220	9	200-240	15	250-320	12	130-145	10
1.2 Free cutting, structural, unalloyed	<200	>350 <700	30	C10, C15, ST37, ST52	160-180	10	160-180	10	90-110	9	90-110	9	100-120	10	200-220	9	200-240	15	250-320	12	130-145	10
1.3 Plain carbon, low alloyed	<300	>350 <850	20	C45, C92D, D95-S	140-160	10	140-160	10	80-100	9	85-95	9	90-110	10	170-190	9	180-220	15	210-300	12	110-130	10
1.4 Alloy steels harden. / tempered	<250	>500 <850	30	41CrMo4, 36CrNiMo4, X155CrVMo12-1, 90MnV8	100-120	9	100-120	9	50-60	8	50-60	8	80-100	8	150-170	7	140-160	13	170-250	9	80-100	9
1.5 Alloy steels harden. / tempered	<350	>850 <1200	30		45-55	9	45-55	9	25-35	8	25-35	8	60-80	6	100-120	5	95-115	10	130-200	7	35-45	9
1.6 Hardened, heat treated, high tensile alloy	<420	>1500	12		45-55	9	45-55	9	25-35	8	25-35	8	50-70	6	80-100	4	80-100	10	70-80	6	35-45	9
1.7 Hardened Steel 45-50 Rc	<550		<12		40-50	8	40-50	8	-	-	-	-	35-55	6	60-80	4	65-85	10	-	-	30-40	8
1.8 Hardened Steel 50-62 Rc	<700		<12	HS2-10-1-8	-	-	-	-	-	-	-	-	-	-	50-70	8	-	-	-	-	-	-
2.0 Stainless Steels																						
2.1 Free machining	<250	<850	25	X8CrNiS18-9	65-75	5	65-75	5	35-45	4	35-45	4	70-90	9	90-110	8	90-100	12	130-170	8	50-60	5
2.2 Austenitic	<250	<850	20	X5CrNi18-10	55-65	5	55-65	5	30-40	4	30-40	4	60-80	9	70-90	8	80-90	12	100-150	8	45-50	5
2.3 Ferritic + martensitic	<250	<850	20	X20Cr13	45-55	5	45-55	5	25-35	4	25-35	4	50-70	8	60-80	7	90-100	12	80-110	6	35-45	5
3.0 Cast Irons																						
3.1 Lamellar graphite (Grey soft)	<150	<500	10	GG10, GG40	150-170	14	150-170	14	90-110	13	90-110	13	100-120	10	150-170	15	150-170	15	210-250	11	120-135	14
3.2 Lamellar graphite (Grey hard)	<300	<1000	10	GGG40, GGG80	90-110	12	90-110	12	50-70	11	50-70	11	80-100	10	120-140	11	120-140	15	140-170	11	70-90	12
3.3 Nodular (spheroidal) graphite & malleable	<200	<700	10		170-190	13	170-190	13	100-120	12	100-120	12	60-80	10	80-100	9	100-120	15	100-150	11	135-150	13
4.0 Titaniums																						
4.1 Pure Titanium	<250	<850	20	Ti99.7, Ti99.8	75-85	7	75-85	7	45-55	6	45-55	6	45-65	5	70-90	7	70-90	8	50-70	8	60-70	7
4.2 Titanium alloys	>250	>850	20	TiCu2, TiAl6V4	60-70	4	60-70	4	35-45	3	35-45	3	40-60	5	50-70	5	60-80	8	40-60	8	50-55	4
5.0 Nicksels																						
5.1 Nickel alloys	<250	<850	25	Ni38, Ni54, NiCr16FeTi	55-65	5	55-65	5	30-40	4	30-40	4	45-65	5	70-90	7	60-80	8	50-70	8	45-50	5
5.2 Nickel alloys	>250	>850	25		-	-	-	-	-	-	-	-	40-60	5	50-70	5	50-70	8	40-60	8	-	-
6.0 Coppers																						
6.1 Pure Copper (electrolytic copper)	<120	<400	12	SF-Cu	220-270	12	220-270	12	130-150	11	130-150	11	100-120	8	110-130	11	-	-	400-450	7	175-215	12
6.2 Short chip Brass, Phosphor Bronze, gun metal	<200	<700	12	G-CuSn12Ni	140-190	10	140-190	10	90-110	9	90-110	9	80-100	8	110-130	10	280-300	12	200-250	7	110-150	10
6.3 Long chip Brass, Bronze	<200	<700	12	G-CuPb20Sn	180-230	12	180-230	12	110-130	11	110-130	11	90-110	8	90-110	11	-	-	200-250	7	145-185	12
7.0 Aluminiums																						
7.1 Aluminium unalloyed	<100	<350	15	Al99.5	220-270	13	220-270	13	130-150	12	130-150	12	100-110	8	110-130	11	300-400	15	-	-	175-215	13
7.2 Magnesium unalloyed	<150	<350	15	Al99.85Mg0.5	220-270	13	220-270	13	130-150	12	130-150	12	100-110	8	110-130	11	300-400	15	-	-	175-215	13
7.3 Al Alloyed Si < 1.5 %	<120	<500	15	AlMg1.5	200-250	13	200-250	13	120-140	12	120-140	12	80-90	8	100-120	11	300-400	15	-	-	160-200	13
7.4 Al Alloyed 1.5 % < Si < 10%	<120	<400	10	AlSi10Mg	180-230	12	180-230	12	110-130	11	110-130	11	70-80	8	90-110	11	250-300	15	-	-	145-185	12
7.5 Al Alloyed > 10% Si	-	<400	N	AlSi17Cu4	140-190	11	140-190	11	90-110	10	90-110	10	60-70	8	70-90	11	200-250	15	-	-	110-150	11
7.6 Magnesium alloys	-	<400	N	MgAl3Zn	140-190	11	140-190	11	90-110	10	90-110	10	60-70	8	70-90	11	200-250	15	-	-	110-150	11
8.0 Plastics																						
8.1 Plastics, Thermoplastics, Polyethylene	<340	<50	N	ABS, PVC, Polycarbonate	180-200	8	180-200	8	180-200	8	180-200	8	180-200	8	250-270	10	150-170	7	-	-	145-180	8

Ø	Feed Table (f) (mm/tooth)															
	Feed No.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2.0	0.001	0.001	0.001	0.002	0.002	0.004	0.005	0.006	0.007	0.008	0.010	0.012	0.014	0.016	0.018	0.020
3.0	0.002	0.002	0.003	0.003	0.004	0.007	0.010	0.010	0.010	0.012	0.015	0.017	0.019	0.022	0.024	0.027
5.0	0.005	0.006	0.007	0.009	0.010	0.014	0.020	0.020	0.022	0.025	0.026	0.026	0.028	0.030	0.032	0.038
6.0	0.006	0.008	0.009	0.011	0.013	0.017	0.020	0.024	0.027	0.029	0.031	0.033	0.035	0.036	0.039	0.043
8.0	0.010	0.012	0.014	0.016	0.019	0.024	0.029	0.032	0.034	0.036	0.038	0.041	0.045	0.048	0.052	0.063
10.0	0.013	0.015	0.018	0.021	0.024	0.030	0.036	0.039	0.044	0.049	0.053	0.058	0.063	0.067	0.071	0.075
12.0	0.016	0.018	0.022	0.026	0.030	0.036	0.046	0.048	0.052	0.059	0.063	0.072	0.079	0.085	0.090	0.100
16.0	0.020	0.023	0.027	0.031	0.038	0.045	0.052	0.059	0.063	0.071	0.079	0.087	0.095	0.100	0.110	0.120
20.0	0.022	0.028	0.033	0.038	0.045	0.056	0.065	0.073	0.080	0.090	0.096	0.100	0.110	0.120	0.130	0.140

LEGEND

n = rev. per minute
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FORMULAS

$n = vc \times 1000 / \phi \times \pi$
 $vc = \phi \times \pi \times n / 1000$
 $fz = vf / z \times n$
 $vf = fz \times z \times n$
 $Q = ae \times ap \times vf / 1000$

Application Guide Speeds & Feeds - Endmills



	SLOTTING				FINISHING				ROUGHING			
Catalogue Code	E109	E110	E122	E134	E137	E151	E152	E157	E176			
Material	SPM	HSS Co	SPM	SPM	SPM	SPM	SPM	SPM	SPM			
Surface Finish	TiAlN	BrT	TiAlN	TiAlN	TiAlN	TiAlN	BrT	TiAlN	TiAlN			
Colour Ring & Application	UNI	AI	W	HARMONY	VA	UNI	W	VA	H			
Geometry	R30	R40	R45	R30 / 32	R50	R45 HRS	R35 WR	R55	R30 HR			

Notes on Milling

- Above values are guidelines for the size and type of cut nominated.
- For coated tools, speeds may be increased by 20%.
- For long series tools, reduce speed by 40% and feed by 20%.

Materials	HB	N/mm ²	% Elong.	Material eg.	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #		
1.0 Steels																						
1.1 Mild steels, magnetic soft steel	<200	>200 <400	10	RFe100	48	6	-	-	110	7	70	8	70	7	70	6	-	-	35	6	-	-
1.2 Free cutting, structural, unalloyed	<200	>350 <700	30	C10, C15, ST37, ST52	48	6	-	-	110	7	70	8	70	7	70	6	-	-	35	6	-	-
1.3 Plain carbon, low alloyed	<300	>350 <850	20	C45, C92D, D95-S	42	5	-	-	90	6	70	7	70	6	60	6	-	-	25	6	-	-
1.4 Alloy steels harden. / tempered	<250	>500 <850	30	41CrMo4, 36CrNiMo4, X155CrMo12-1, 90MnV8	30	5	-	-	-	60	7	40	6	40	5	-	-	-	15	4	40	4
1.5 Alloy steels harden. / tempered	<350	>850 <1200	30		30	5	-	-	-	50	7	40	6	40	4	-	-	-	-	15	4	40
1.6 Hardened, heat treated, high tensile alloy	<420	>1500	12	X155CrMo12-1, 90MnV8	24	4	-	-	-	40	5	-	-	30	4	-	-	-	-	-	30	2
1.7 Hardened Steel 45-50 Rc	<550		<12		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
1.8 Hardened Steel 50-62 Rc	<700		<12	HS2-10-1-8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.0 Stainless Steels																						
2.1 Free machining	<250	<850	25	X8CrNiS18-9	24	5	-	-	-	30	5	30	6	25	4	-	-	-	30	6	-	-
2.2 Austenitic	<250	<850	20	X5CrNi18-10	18	3	-	-	-	22	3	25	4	15	2	-	-	-	20	6	-	-
2.3 Ferritic + martensitic	<250	<850	20	X20Cr13	15	4	-	-	-	18	4	20	5	15	3	-	-	-	20	6	25	6
3.0 Cast Irons																						
3.1 Lamellar graphite (Grey soft)	<150	<500	10	GG10, GG40	48	5	-	-	-	60	5	-	-	60	8	-	-	-	-	-	-	-
3.2 Lamellar graphite (Grey hard)	<300	<1000	10	GG40, GGG80	36	4	-	-	-	50	4	-	-	40	8	-	-	-	-	-	60	6
3.3 Nodular (spheroidal) graphite & malleable	<200	<700	10		30	3	-	-	-	40	3	-	-	25	8	-	-	-	-	-	-	-
4.0 Titaniums																						
4.1 Pure Titanium	<250	<850	20	Ti99.7, Ti99.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	9	30	5
4.2 Titanium alloys	>250	>850	20	TiCu2, TiAl6V4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	9	15	4
5.0 Nickels																						
5.1 Nickel alloys	<250	<850	25	Ni38, Ni54, NiCr16FeTi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	4
5.2 Nickel alloys	>250	>850	25		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	15	15
6.0 Coppers																						
6.1 Pure Copper (electrolytic copper)	<120	<400	12	SF-Cu	72	6	72	6	150	12	100	6	-	-	-	-	58	8	49	7	-	-
6.2 Short chip Brass, Phosphor Bronze, gun metal	<200	<700	12	G-CuSn12Ni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	6
6.3 Long chip Brass, Bronze	<200	<700	12	G-CuPb20Sn	36	5	48	5	-	-	70	5	-	-	-	-	38	8	33	7	-	-
7.0 Aluminiums																						
7.1 Aluminium unalloyed	<100	<350	15	Al99.5	85	6	96	6	300	12	100	6	100	7	120	9	77	6	52	5	-	-
7.2 Magnesium unalloyed	<150	<350	15	Al99.85Mg0.5	85	6	96	6	300	12	100	6	100	7	120	9	77	6	52	5	-	-
7.3 Al Alloyed Si < 1.5 %	<120	<500	15	AlMg1.5	75	5	84	5	250	12	80	6	90	7	120	9	67	6	48	5	-	-
7.4 Al Alloyed 1.5 % < Si < 10%	<120	<400	10	AlSi10Mg	65	5	72	5	180	12	70	5	80	6	80	8	58	5	40	4	-	-
7.5 Al Alloyed > 10% Si	-	<400	N	AlSi17Cu4	45	5	48	6	-	-	-	-	-	-	-	-	40	7	-	-	-	-
7.6 Magnesium alloys	-	<400	N	MgAl3Zn	45	6	48	6	-	-	-	-	-	-	-	-	40	7	-	-	-	-
8.0 Plastics																						
8.1 Plastics, Thermoplastics, Polyethylene	<340	<50	N	ABS, PVC, Polycarbonate	120	5	130	6	-	-	100	5	55	4	-	-	-	-	55	4	-	-

Ø	Feed Table (f) (mm/tooth)															
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2.0	0.001	0.001	0.001	0.002	0.002	0.004	0.005	0.006	0.007	0.008	0.010	0.012	0.014	0.016	0.018	0.020
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5.0	0.005	0.006	0.007	0.009	0.010	0.014	0.020	0.022	0.025	0.026	0.026	0.028	0.030	0.032	0.038	
6.0	0.006	0.008	0.009	0.011	0.013	0.017	0.020	0.024	0.027	0.029	0.031	0.033	0.035	0.036	0.039	0.043
8.0	0.010	0.012	0.014	0.016	0.019	0.024	0.029	0.032	0.034	0.036	0.038	0.041	0.045	0.048	0.052	0.063
10.0	0.013	0.015	0.018	0.021	0.024	0.030	0.036	0.039	0.044	0.049	0.053	0.058	0.063	0.067	0.071	0.075
12.0	0.016	0.018	0.022	0.026	0.030	0.036	0.046	0.048	0.052	0.059	0.063	0.072	0.079	0.085	0.090	0.100
16.0	0.020	0.023	0.027	0.031	0.038	0.045	0.052	0.059	0.063	0.071	0.079	0.087	0.095	0.100	0.110	0.120
20.0	0.022	0.028	0.033	0.038	0.045	0.056	0.065	0.073	0.080	0.090	0.096	0.100	0.110	0.120	0.130	0.140

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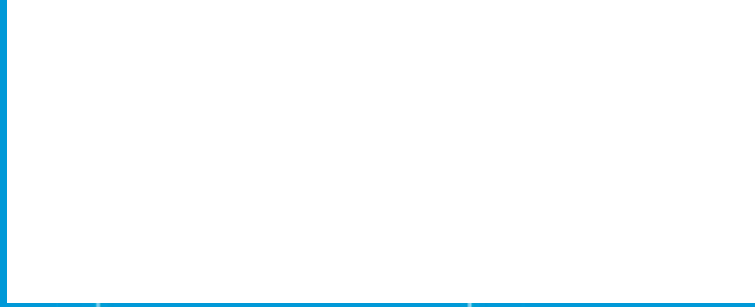
Technical Information Surface Finish

Trade Name	Coating	Coating Structure	Micro-hardness	Coeff. of Friction vs Steel	Thermal Stability	Colour	Application & Benefits
Brt	-	-	-	0.8 - 1.0	-	-	<ul style="list-style-type: none"> • Non-ferrous metals and plastics
Blu	Steam Oxide	-	-	0.8 - 1.0	-	Blue - Black	<ul style="list-style-type: none"> • Ferrous metals e.g. HSS • Prevents chip build-up on the cutting edges • Cutting sticky ferrous materials • Increased corrosion resistance
Ni	Plasma Nitride	-	-	0.8 - 1.0	-	-	<ul style="list-style-type: none"> • Abrasive materials - cast iron and aluminium alloys
Futura Nano (TiAlN)	TiAlN	Nano Layer	3300 HV	0.3 - 0.35	up to 900°C	Violet - Grey	<ul style="list-style-type: none"> • Abrasive materials - cast iron and heat treated steel • Difficult to machine materials, such as stainless steel • Higher speeds and feeds • Reduces or eliminates use of coolants
Hardlube	TiAlN + WC/C	Nano Layer	3000 HV	0.15 - 0.2	up to 800 °C	Dark Grey	<ul style="list-style-type: none"> • Outstanding frictional and lubrication properties of the WC/C coating allow for smooth chip flow. • Tapping & drilling in difficult to machine materials • MQL (minimum quantity lubrication) or dry machining
Alcrona	AlCrN	Mono Layer	3200 HV	0.35	up to 1,100°C	Blue - Grey	<ul style="list-style-type: none"> • Low alloy steels and high tensile steels • Hardened steels up to 54 HRC • Ideal for carbide tools
Helica	Alcrona based	Multi Layer	3000 HV	0.25	up to 1100°C	Copper	<ul style="list-style-type: none"> • Longer tool life • Higher cutting speeds and feeds • Superb chip evacuation • Greater number of regrinds • Improved drill hole quality • Excellent performance in abrasive material
TiCN	TiCN	Gradient Coating	3000 HV	0.4	up to 400°C	Blue - Grey	<ul style="list-style-type: none"> • High performance applications • Difficult to machine materials • Abrasive materials - cast iron and aluminium alloys • Adhesive materials - copper and copper based alloys
TiN	TiN	Mono Layer	2300 HV	0.4	up to 600°C	Gold - Yellow	<ul style="list-style-type: none"> • General purpose use • Wide range of materials • 3 to 8 times longer tool life than uncoated tools • Higher tool speeds and feeds than uncoated tools
CrN	CrN	Gradient Coating	1750 HV	0.5	up to 700°C	Silver - Grey	<ul style="list-style-type: none"> • Cutting and forming of copper, nickel, & monel metal • Enhanced thermal stability and oxidation resistance • Excellent corrosion resistance • Low internal stress of coating results in excellent adhesion under high loads

Abbreviations	Type	Application	Description
HSS	Conventional high speed steel	Standard tool material for most common applications	Used for the manufacturing of cutting tools such as twist drills, end mills and taps. Yields consistent hardness levels following heat treatment providing for a reputable tool life.
HSS Co	5% cobalt grade of high speed steel	High-heat resistance, especially suited for roughing or when coolant insufficient	Cobalt alloyed, tungsten-molybdenum high speed steel possessing high hardness, excellent cutting properties, high-red hardness and good toughness.
HSSE Co8%	8% cobalt grade of high speed steel	Increased heat resistance & hardness, suitable for difficult-to-machine materials	Available for applications that require a strong resistance to softening at elevated cutting temperatures. The ability of the steel to maintain its "red-hot hardness" is provided by the addition of cobalt. The high hot hardness is required for machining difficult materials such as nickel-base, titanium and highly alloyed steel.
HSSE V3	Premium grade of high speed steel	Wide range of machine taps.	Vanadium grade gives high wear resistance and toughness for most tapping applications.
PM-HSS V3	Powdered metallurgy - vanadium grade of high speed steel	Materials with hardness up to 40HR _c . Difficult to machine materials eg. stainless steels.	PM-HSS V3 for higher performance tools, incorporates very fine and uniform grain structure allowing a high hardness to be achieved, whilst maintaining good toughness.
PM-HSS Co	Powdered metallurgy - 8% Cobalt grade of high speed steel	Materials with hardness up to 45HR _c	The addition of cobalt provides this material with the ability to maintain its strength and hardness level when exposed to extremely high cutting temperatures. This makes PM-HSS Co suitable for heavy duty tapping, in materials such as high alloyed steels to non-ferrous metals like Ni-base alloys & Ti-alloys.
SPM	Powdered metallurgy - 11% Cobalt grade of high speed steel	Special applications, requiring very high edge hardness. Cutting tools with the appropriate geometry can be applied to workpiece materials with hardness up to 55HR _c	An excellent bridge material between high speed steel and carbide. SPM offers very high red hardness, wear resistance and the highest compressive strength of any high speed steel.
VHM	Sub-micron grade of solid Carbide (ISO K15-K30)	Tapping hardened steel	Ultra fine grain type (0.8µm) with maximum toughness & high hardness, therefore especially recommended for rotating tools to machine hardened parts.
VHM	Sub-micron grade of solid Carbide (ISO K40)	Sutton standard grade for endmills & drills	Ultra fine grain type (0.6µm) offers the ideal combination of hardness & toughness for high performance drilling & general milling applications
VHM-ULTRA	Sub-micron grade of solid Carbide (ISO K40-K50)	High performance grade for endmills	Ultra fine grain type (0.5µm) offers the best wear resistance for high performance milling applications.

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