



2019

JIS CATALOGUE

JIS 系列产品目录

澳大利亚·神盾工具

suttontools

Taps 丝锥



5

Endmills 铣刀



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Technical Information 技术数据



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Endmills 铣刀									
Catalogue Code 产品目录号	Page No. 页数	Discount Group 折扣组	Sutton Designation 神盾工具代号	Description 产品名称	Shank 柄类型	Tool Material 刀具材质	Surface Finish 表面处理	Standard 生产标准	
E100	25	B0502	N	Slot Drill, Stub, 2 Flute, R30 N	DIN 1835-A	HSS Co.8	Brt	JIS	
E102	26	B0502	N	Slot Drill, Long, 2 Flute, R30 N	DIN 1835-A	HSS Co.8	Brt	JIS	
E113	27	B0502	N	Slot Drill, Ballnose, 2 Flute, R30 N, Long Reach	DIN 1835-A	HSS Co.8	Brt	-	
E125	28	B0502	N	Endmill, 4 Flute, R30 N, Regular	DIN 1835-A	HSS Co.8	Brt	JIS	
E127	30	B0502	N	Endmill, 4 Flute, R30 N, Regular	DIN 1835-A	HSS Co.8	Brt	JIS	
E142	31	B0402	WN	Rougher, NR (normal), R30 WN, Regular	DIN 1835-A	HSS Co.8	Brt	JIS	
E143	31	B0404	WN	Rougher, NR (normal), R30 WN, Regular	DIN 1835-A	HSS Co.8	TiCN	JIS	
E144	31	B0402	WN	Rougher, NR (normal), R30 WN, Regular	DIN 1835-B	HSS Co.8	Brt	JIS	
E145	31	B0404	WN	Rougher, NR (normal), R30 WN, Regular	DIN 1835-B	HSS Co.8	TiCN	JIS	
E168	32	B0402	NH	Rougher, HR (fine) R30 NH, Regular	DIN 1835-A	HSS Co.8	Brt	JIS	
E169	32	B0404	NH	Rougher, HR (fine) R30 NH, Regular	DIN 1835-A	HSS Co.8	TiCN	JIS	
E171	32	B0404	NH	Rougher, HR (fine) R30 NH, Regular	DIN 1835-B	HSS Co.8	TiCN	JIS	
E225	26	B0502	N	Slot Drill, 2 Flute, R30 N, Long	DIN 1835-A	HSS Co.8	Brt	JIS	
E227	28	B0502	N	Endmill, 4 Flute / 6 Flute, R30 N, Regular	DIN 1835-A	HSS Co.8	Brt	JIS	
E229	30	B0502	N	Endmill, 4 Flute / 6 Flute, R30 N, Long	DIN 1835-A	HSS Co.8	Brt	JIS	
Taps 丝锥									
Catalogue Code 产品目录号	Page No. 页数	Discount Group 折扣组	Sutton Designation 神盾工具代号	Description 产品名称	Thread 螺纹类别	Geometry Type 几何类型	Tool Material 刀具材质	Surface Finish 表面处理	Standard 生产标准
T294	14	D0408	XH	Tap, Straight Flute, XH	M	XH	SPM	TiCN	-
T295	14	D0408	XH	Tap, Straight Flute, XH	M	XH	SPM	TiCN	-
T296	14	D0414	VH	Tap, Straight Flute, VH	M	VH	VHM	TiCN	DIN371/376
T297	14	D0414	VH	Tap, Straight Flute, VH	M	VH	VHM	TiCN	DIN371/376
T499	9	D0602	N	Tap, Gun, N	M	N	HSSE	Brt	JIS
T500	9	D0602	N	Tap, Gun, N	M	N	HSSE	Blu	JIS
T503	11	D0602	N	Tap, Spiral Flute, R40 N	M	N	HSSE	Brt	JIS
T504	11	D0602	N	Tap, Spiral Flute, R40 N	M	N	HSSE	Blu	JIS
T514	7	D0614	N	Tap, Forming, single coolant groove, P lead	M	N	HSS Co.8	TiN	JIS
T515	7	D0614	N	Tap, Forming, single coolant groove, B lead	M	N	HSS Co.8	TiN	JIS
T520	8	D0614	N	Tap, Forming, multi coolant groove, P lead	M	N	HSS Co.8	TiN	JIS
T521	8	D0614	N	Tap, Forming, multi coolant groove, B lead	M	N	HSS Co.8	TiN	JIS
T526	15	D0614	N	Tap, Forming, single coolant groove, P lead	UNC	N	HSS Co.8	TiN	JIS
T527	15	D0614	N	Tap, Forming, single coolant groove, B lead	UNC	N	HSS Co.8	TiN	JIS
T539	19	D0614	N	Tap, Forming, single coolant groove, B lead	UNF	N	HSS Co.8	TiN	JIS
T548	10	D0602	VA	Tap, Gun, VA	M	VA	HSSE	Blu	JIS
T570	12	D0602	VADH	Tap, Spiral Flute, R45 VADH	M	VADH	HSSE	Blu	JIS
T577	13	D0602	H	Tap, Spiral Flute, R15 H	M	H	PM-HSS Co	Brt	JIS
T606	11	D0602	N	Tap, Spiral Flute, R40 N (Point Removed)	M	N	HSSE	Brt	JIS
T607	11	D0602	N	Tap, Spiral Flute, R40 N (Point Removed)	M	N	HSSE	Blu	JIS
T611	12	D0602	VADH	Tap, Spiral Flute, R45 VADH (Point Removed)	M	VADH	HSSE	Blu	JIS
T615	17	D0602	N	Tap, Gun, N	UNC	N	HSSE	Brt	JIS
T616	17	D0602	N	Tap, Gun, N	UNC	N	HSSE	Blu	JIS
T618	18	D0602	N	Tap, Spiral Flute, R40 N	UNC	N	HSSE	Brt	JIS
T619	18	D0602	N	Tap, Spiral Flute, R40 N	UNC	N	HSSE	Blu	JIS
T621	20	D0602	N	Tap, Gun, N	UNF	N	HSSE	Brt	JIS
T622	20	D0602	N	Tap, Gun, N	UNF	N	HSSE	Blu	JIS
T625	21	D0602	N	Tap, Spiral Flute, R40 N	UNF	N	HSSE	Brt	JIS
T626	21	D0602	N	Tap, Spiral Flute, R40 N	UNF	N	HSSE	Blu	JIS
T662	16	D0614	N	Tap, Forming, multi coolant groove, P lead	UNC	N	HSS Co.8	TiN	JIS
T663	16	D0614	N	Tap, Forming, multi coolant groove, B lead	UNC	N	HSS Co.8	TiN	JIS
T690	12	D0602	VA	Tap, Spiral Flute, R45 VA	M	VA	HSSE	Blu	JIS

suttontools

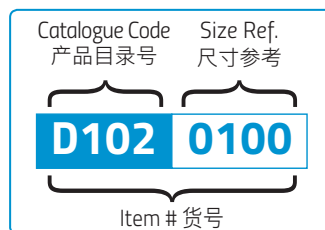
Sutton Tools Code System - explained

Sutton Tools item # system makes it easier to identify a product. The codes are based on a universal prefix and suffix system.

Prefix (Catalogue Code) - is alpha numeric, and is unique to a specific product range.

The letter is relevant to the type of tool, and the number refers to a product range.

- B - Burs
- C - Countersinks
- D - Drills
- E - Endmills
- L - Literature
- M - Toolbits & Needle Files
- R - Reamers
- T - Taps
- Z - Tool Holders / Chucks



D1020100 = D(Drill) 102(Blue Jobber) 0100(1.0mm)

Suffix (Size Ref.) - in most cases is relevant to the diameter or size reference of an item, and is based on a metric value. For example 5mm = 0500, & 1/4" = 0635 (inch converted to decimal). Suffix can also refer to set code or number of pieces in a set.

Benefits of the coding system

- Range identification simplified.
- Search online 'Expert Tool Selector' by range.

Understanding your Sutton Tools Catalogue

Once you have selected the correct page from the index (page 2) further information will be given regarding the product you have selected on each page. What does it all mean?

Discount Group (A0202 – Z1108)

All product groups have been given a discount group number. These codes enable our distributor partners to identify their discounts on any particular product.

Material

This highlights what the product is made of. (VHM = Carbide, HSS = High Speed Steel)

Surface Finish

Many of our products have various surface coatings to improve the performance. Surface coatings improve productivity by increasing speeds and feeds and reducing friction related problems.

Symbols

For all of our product pages you will find symbols which depict what specifications these products were made to. Symbols have been used to simplify product identification. A full list of symbols can be found before the contents page of this catalogue.

Some common examples are:



Standard



Regular length



5 x D max. working depth



60° Metric thread form

we've made it easier to find the right tool fast...

For easy tool reference, you will find an extensive application based index at the start of each section.

These icons below can be found on the product pages throughout the catalogue, and at a glance the characteristic features of the tool can be identified.

Standard 生产标准	 Sutton Standard	 German Standard	 International Standard	 American Standard	 British Standard	 Japanese Standard				
Length 长度	 Stub	 Regular	 Long	 Extra Long						
Shank 柄径型	 Plain	 Form B	 Form HE	 Threaded	 Stepped	 Reduced	 Tanged	 Morse Taper	 Square Drive	
Depth 深度	 3 x diameter	 4 x diameter	 5 x diameter	 6 x diameter	 8 x diameter	 10 x diameter	 12 x diameter	 14 x diameter		
Drill Application 钻头用途	(DIN 1412)				Carbide					
	Facet Standard  	Form A   	Form B  	Form C  	Special 	Normal 		IK 		
Tap Application 丝锥用途	 Blind Hole Straight Flute	 Through Hole Straight Flute	 Through Hole Gun	 Blind Hole Spiral Flute	 Thread Forming	Countersink Geometry 倒角结构  Crosshole		 Single Flute	 3 Flutes	
	 High Speed Cutting	 Z-Axis Control	 Deep Hole	 Single Coolant Groove	 Multi Coolant Groove	Internal Coolant 油槽型  Internal Coolant (Helical)		 Internal Coolant (Axial)	 Internal Coolant (Radial)	
Thread Forms 螺纹	 Metric Coarse	 Metric Fine	 Unified Coarse	 Unified Fine	 Unified Series	 Unified Extra Fine	 (BSPF)	 Whitworth Coarse	 Whitworth Fine	
	 British Association	 British Standard Brass	 Steel Conduit	 (BSPPL) Sealing Pipe	 (BSPT)	 Dryseal Straight	 National Pipe Taper	 Dryseal Taper		
Endmill Application 铣刀用途	Cutting Directions					Geometry	 Unequal	 Radius	 Chamfer	 Reduced Neck
	Cutting Edge Forms						 HR	 HRS	 NF	 NR
						 Ti	 VA	 WR	 Micro Geometry	
									 Rake Correction	

Taps JIS 丝锥

- Roll Taps
- SP & PO machine taps
- Metric, UNC & UNF standard thread forms
- 挤压
- SP螺旋及PO先端
- 公制粗牙,美制UNC及UNF牙



TAPS JIS

ISO及VDI应用材料代号

ISO VDI Material Group 工件材料类别

Sutton 应用材料代号

P	A	Steel 钢件	N		UNI
M	R	Stainless Steel 不锈钢	VA		
K	F	Cast Iron 铸铁	GG		
N	N	Non-Ferrous Metals, Aluminiums & Coppers 有色金属	Al	W	
S	S	Titaniums & Super Alloys 钛合金及超级合金	Ti	Ni	
H	H	Hard Materials (≥ 45 HRC) 淬火钢 (≥ 45 HRC)	H		

Page 页 M

UNC

UNF

挤压

直槽
(盲孔及通孔用)

先端-通孔用

螺旋-盲孔用

FOR THREAD FORMING		FOR TAPPING BLIND & THROUGH HOLES		FOR TAPPING THROUGH HOLES			FOR TAPPING BLIND HOLES				
7	8	14	14	9	9	10	11	11	12	12	13
15	16			17	17		18	18			
19				20	20		21	21			
											

[^] VDI 3323 material groups can also be determined by referring to the material cross reference listing in the application guide at the back of this catalogue.

^a VDI 3323 工件材料类别明细可查阅产品目录最后部份技术篇的工件材料分类表。

Catalogue Code 产品号 M

UNC

UNF

Material 材质

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Tapping Depth 有效攻牙深度

[illegible]

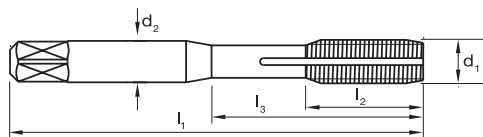
Condition (材料状态): **A** (Annealed) (正火), **AH** (Age Hardened) (时效硬化), **C** (Cast) (铸件), **HT** (Hardened & Tempered) (淬火及回火), **QT** (Quenched & Tempered) (调质及回火).

● Optimal 非常适合 ○ Effective 适合

suttontools

- For cold forming of threads in materials with good flow characteristics
- N-Suitable for material with >10% elongation
- P lead for through holes
- B lead for blind holes
- Depths up to approximately. 3 x d₁

- 用于延展性良好的材料
- N-适合延展率>10%的材料
- P型通孔用
- B型盲孔用
- 加工深度可达 3 x d₁



尺寸参考 螺距 精度 样式 底孔径

Size Ref.	d ₁	Pitch	Limit	Style	l ₁	l ₂	l ₃	d ₂	sq	z	Tap hole min/max	Item # (货号)	Item # (货号)
P Lead (P型=4牙倒锥)													
0100	M 1	x 0.25	GH4	1	30	7	-	3.0	2.5	4	0.90 - 0.92	T514 0100	
0120	M 1.2	x 0.25	GH4	1	32	7	-	3.0	2.5	4	1.10 - 1.12	T514 0120	
0160	M 1.6	x 0.35	GH4	1	36	10	-	3.0	2.5	4	1.44 - 1.47	T514 0160	
0200	M 2	x 0.4	GH4	1	40	12	-	3.0	2.5	4	1.81 - 1.84	T514 0200	
0205	M 2	x 0.4	GH5	1	40	12	-	3.0	2.5	4	1.82 - 1.85	T514 0205	
0265	M 2.6	x 0.45	GH5	1	44	14	-	3.0	2.5	4	2.37 - 2.44		
0300	M 3	x 0.5	GH5	2	46	9	18	4.0	3.2	4	2.76 - 2.81	T514 0300	
0356	M 3.5	x 0.6	GH6	2	48	9	18	4.0	3.2	4	3.21 - 3.26		
0400	M 4	x 0.7	GH6	2	52	10	20	5.0	4.0	4	3.65 - 3.71	T514 0400	
0500	M 5	x 0.8	GH6	2	60	11	22	5.5	4.5	4	4.59 - 4.66	T514 0500	
0600	M 6	x 1	GH7	2	62	12	24	6.0	4.5	4	5.49 - 5.57	T514 0600	
0800	M 8	x 1.25	GH7	3	70	18	-	6.2	5.0	6	7.34 - 7.44	T514 0800	
1000	M 10	x 1.5	GH7	3	75	19	-	7.0	5.5	6	9.18 - 9.31	T514 1000	

B Lead (B型=2牙倒锥)

0100	M 1	x 0.25	GH4	1	30	7	-	3.0	2.5	4	0.90 - 0.92		T515 0100
0120	M 1.2	x 0.25	GH4	1	32	7	-	3.0	2.5	4	1.10 - 1.12		T515 0120
0140	M 1.4	x 0.3	GH4	1	34	7	-	3.0	2.5	4	1.27 - 1.29		T515 0140
0160	M 1.6	x 0.35	GH4	1	36	10	-	3.0	2.5	4	1.44 - 1.47		T515 0160
0200	M 2	x 0.4	GH4	1	40	12	-	3.0	2.5	4	1.81 - 1.84		T515 0200
0300	M 3	x 0.5	GH5	5	46	9	18	4.0	3.2	4	2.76 - 2.81		T515 0300
0400	M 4	x 0.7	GH6	5	52	10	20	5.0	4.0	4	3.65 - 3.71		T515 0400
0500	M 5	x 0.8	GH6	5	60	11	22	5.5	4.5	4	4.59 - 4.66		T515 0500
0600	M 6	x 1	GH7	5	62	12	24	6.0	4.5	4	5.49 - 5.57		T515 0600
0800	M 8	x 1.25	GH7	3	70	18	-	6.2	5.0	6	7.34 - 7.44		T515 0800
1000	M 10	x 1.5	GH7	3	75	19	-	7.0	5.5	6	9.18 - 9.31		T515 1000

Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Lead 倒锥牙

T514

D0614

HSS Co.8

TiN 氮化钛

N

1 Coolant Groove M3+ 1 Coolant Groove M3+

4 x P

T515

D0614

HSS Co.8

TiN 氮化钛

N

2 x P

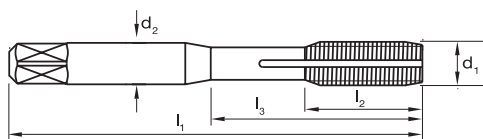
ISO	P												M			K					N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
T514	●	●	●	○		○						○		●	●								●	●	○	○		●	○	○																				
T515	●	●	●	○		○						○		●	●								●	●	○	○		●	○	○																				
P	Steel 钢材					M Stainless Steel 不锈钢					K Cast Iron 铸铁					N Non-Ferrous Metals 有色金属					S Titanium & Super Alloys 钛合金及超级合金					H Hard Materials 淬火钢										● Optimal 非常适合 ○ Effective 适合														

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

suttontools

- For cold forming of threads in materials with good flow characteristics
- Suitable for material with >10% elongation
- P lead for through holes
- B lead for blind holes
- Depths up to approximately. $3 \times d_1$

- 用于延展性良好的材料
- 适合延展率>10%的材料
- P型通孔用
- B型盲孔用
- 加工深度可达 $3 \times d_1$



尺寸参考	螺距	精度	样式	底孔径								Catalogue Code 目录代码	T520	T521
Size Ref.	d_1	Pitch	Limit	Style*	l_1	l_2	l_3	d_2	sq	z	Tap hole min/max	Discount Group 折扣组	D0614	D0614
P Lead (P型=4牙倒锥)														
0300	M 3	x 0.5	GH5	2	46	9	18	4.0	3.2	4	2.76 - 2.81	Material 材料	HSS Co.8	HSS Co.8
0400	M 4	x 0.7	GH6	2	52	10	20	5.0	4.0	4	3.65 - 3.71	Surface Finish 表面处理	TIN 氮化钛	TIN 氮化钛
0500	M 5	x 0.8	GH6	2	60	11	22	5.5	4.5	4	4.59 - 4.69	Sutton Designation 神盾工具代号	N	N
0600	M 6	x 1	GH7	2	62	12	24	6.0	4.5	4	5.49 - 5.57	Geometry 几何结构	Multi Coolant Groove	Multi Coolant Groove
0800	M 8	x 1.25	GH7	3	70	18	-	6.2	5.0	6	7.33 - 7.44	Lead 倒锥牙	4 x P	2 x P
1000	M 10	x 1	GH7	3	75	19	-	7.0	5.5	6	9.18 - 9.30	Item # (货号)	T520 1000	T521 1000
B Lead (B型=2牙倒锥)														
0300	M 3	x 0.5	GH5	5	46	9	18	4.0	3.2	4	2.76 - 2.81			T521 0300
0400	M 4	x 0.7	GH6	5	52	10	20	5.0	4.0	4	3.65 - 3.71			T521 0400
0500	M 5	x 0.8	GH6	5	60	11	22	5.5	4.5	4	4.59 - 4.66			T521 0500
0600	M 6	x 1	GH7	5	62	12	24	6.0	4.5	4	5.49 - 5.57			T521 0600
0800	M 8	x 1.25	GH7	3	70	18	-	6.2	5.0	6	7.34 - 7.44			T521 0800
1000	M 10	x 1.5	GH7	3	75	19	-	7.0	5.5	6	9.18 - 9.30			T521 1000



ISO	P												M			K						N										S										H															
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41								
T520	●	●	●	○	○	○						○		●	●									●	●	○	○		●	○	○																										
T521	●	●	○	○	○	○						○		●	●									●	●	○	○		●	○	○																										
P	Steel 钢材			M			Stainless Steel 不锈钢			K			Cast Iron 铸铁			N			Non-Ferrous Metals 有色金属			S			Titanium & Super Alloys 钛合金及超级合金										H				Hard Materials 淬火钢																		
																																														● Optimal 非常适合				○ Effective 适合							

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

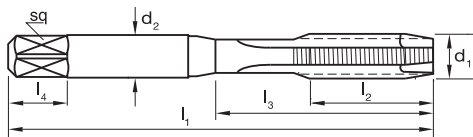
* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后页的技术信息部分。

JIS Taps Metric, Gun, N (Spiral Point)

suttontools

- General purpose use
- Suitable for materials up to 1000 N/mm²
- Through holes
- Depths up to 3 x d₁

- 一般用途
- 适合 ≤ 1000 N/mm² 的材料
- 通孔用
- 加工深度 ≤ 3 x d₁



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Lead 倒锥牙

T499

T500

D0602

D0602

HSSE

HSSE

Brt 无处理

Blu 氧化处理

N

N

5 x P

5 x P

尺寸参考	螺距	精度	样式	底孔钻								Item # (货号)	Item # (货号)
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	T499 0100	•
0110	M 1.1	x 0.25	P1	1	32	8	-	3.0	2.5	2	0.85	T499 0110	•
0120	M 1.2	x 0.25	P1	1	32	8	-	3.0	2.5	2	0.95	T499 0120	•
0140	M 1.4	x 0.3	P1	1	34	9	-	3.0	2.5	2	1.1	T499 0140	•
0160	M 1.6	x 0.35	P1	1	36	10	-	3.0	2.5	2	1.25	T499 0160	•
0170	M 1.7	x 0.35	P1	1	36	11	-	3.0	2.5	2	1.35	T499 0170	•
0180	M 1.8	x 0.35	P1	1	36	11	-	3.0	2.5	2	1.45	T499 0180	•
0200	M 2	x 0.4	P2	1	40	12	-	3.0	2.5	2	1.60	T499 0200	T500 0200
0220	M 2.2	x 0.45	P2	1	42	13	-	3.0	2.5	2	1.75	T499 0220	•
0230	M 2.3	x 0.4	P2	1	42	13	-	3.0	2.5	2	1.9	T499 0230	•
0250	M 2.5	x 0.45	P2	1	44	14	-	3.0	2.5	2	2.05	T499 0250	T500 0250
0260	M 2.6	x 0.45	P2	1	44	14	-	3.0	2.5	2	2.15	T499 0260	T500 0260
0300	M 3	x 0.5	P2	2	46	11	19	4.0	3.2	3	2.5	T499 0300	T500 0300
0350	M 3.5	x 0.6	P2	2	48	13	20	4.0	3.2	3	2.9	T499 0350	T500 0350
0400	M 4	x 0.7	P2	2	52	13	21	5.0	4.0	3	3.3	T499 0400	T500 0400
0500	M 5	x 0.8	P2	2	60	16	24	5.5	4.5	3	4.2	T499 0500	T500 0500
0600	M 6	x 1	P2	2	62	19	28	6.0	4.5	3	5.0	T499 0600	T500 0600
0700	M 7	x 1	P2	3	65	22	-	6.2	5.0	3	6.0	T499 0700	•
0800	M 8	x 1.25	P3	3	70	22	-	6.2	5.0	3	6.8	T499 0800	T500 0800
1006	MF 10	x 1.25	P3	3	75	24	-	7.0	5.5	3	8.8	T499 1006	T500 1006
1000	M 10	x 1.5	P3	3	75	24	-	7.0	5.5	3	8.5	T499 1000	T500 1000
1200	M 12	x 1.75	P4	3	82	29	-	8.5	6.5	3	10.2	T499 1200	T500 1200
1400	M 14	x 2	P4	3	88	30	-	10.5	8.0	3	12.0	T499 1400	•
1600	M 16	x 2	P4	3	95	32	-	12.5	10.0	4	14.0	T499 1600	T500 1600
1800	M 18	x 2.5	P4	3	100	37	-	14.0	11.0	4	15.5	T499 1800	•
2000	M 20	x 2.5	P4	3	105	37	-	15.0	12.0	4	17.5	T499 2000	T500 2000
2200	M 22	x 2.5	P4	3	115	38	-	17.0	13.0	4	19.5	T499 2200	•
2400	M 24	x 3	P4	3	120	45	-	19.0	15.0	4	21.0	T499 2400	T500 2400

ISO	P													M			K						N										S										H						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
T499	●	●	○	○		●	○			○							○		○		○	○	●	●	○	○		○	○																				
T500	●	●	●	●	○	●	●	○		●		○		○			○		○		○	○																											

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

* Available on request as special manufacture. Subject to lead time. • 可定制。

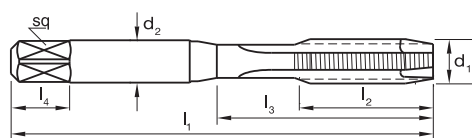
* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后页的技术信息部分。

JIS Taps Metric, Gun, VA (Spiral Point)

suttontools

- Use in stainless steels and high strength steels
- Suitable for materials up to 850 N/mm²
- Through holes
- Depths up to 3 x d₁

- 针对不锈钢及高韧性材料
- 适合 ≤ 850 N/mm² 的材料
- 通孔用
- 加工深度 ≤ 3 x d₁



Catalogue Code 目录代码

T548

Discount Group 折扣组

D0602

Material 材料

HSSE

Surface Finish 表面处理

Blu 氧化处理

Sutton Designation 神盾工具代号

VA

Geometry 几何结构

Special Relief

Lead 倒锥牙

4 x P

尺寸参考 螺距 精度 样式 底孔钻

Size Ref.	d ₁	Pitch	Limit	Style*	l ₁	l ₂	l ₃	d ₂	sq	z	drill Ø	Item # (货号)
0200	M 2	x 0.4	P2	1	40	12	-	3.0	2.5	2	1.6	T548 0200
0300	M 3	x 0.5	P3	2	46	11	19	4.0	3.2	3	2.5	T548 0300
0400	M 4	x 0.7	P3	2	52	13	21	5.0	4.0	3	3.3	T548 0400
0500	M 5	x 0.8	P3	2	60	16	24	5.5	4.5	3	4.2	T548 0500
0600	M 6	x 1	P2	2	62	19	28	6.0	4.5	3	5.0	T548 0600
0800	M 8	x 1.25	P3	3	70	22		6.2	5.0	3	6.8	T548 0800
1000	M 10	x 1.5	P3	3	75	24		7.0	5.5	3	8.5	T548 1000
1200	M 12	x 1.75	P3	3	82	29		8.5	6.5	3	10.2	T548 1200
1600	M 16	x 2	P4	3	95	32		12.5	10.0	4	14.0	T548 1600
2000	M 20	x 2.5	P4	3	105	37		15.0	12.0	4	17.5	T548 2000

ISO	P												M			K										N												S												H																						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41																							
T548	●	●	●	○		●	○					○		●	●	○																																																								
P	Steel 钢材												M	Stainless Steel 不锈钢			K	Cast Iron 铸铁										N	Non-Ferrous Metals 有色金属												S	Titanium & Super Alloys 钛合金及超级合金												H	Hard Materials 淬火钢												●	Optimal 非常适合		○	Effective 适合	

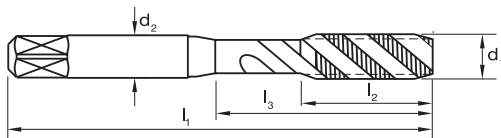
P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

JIS Taps Metric, Spiral Flute, R40 N

suttontools

- General purpose use
- Suitable for materials up to 1000 N/mm²
- Blind holes
- Depths up to 2.5 x d₁

- 一般用途
- 适合 ≤ 1000 N/mm² 的材料
- 盲孔用
- 加工深度 ≤ 2.5 x d₁



尺寸参考 螺距 精度 样式 底孔钻

Size Ref.	d ₁	Pitch	Limit	Style*	l ₁	l ₂	l ₃	d ₂	sq	z	drill Ø	Item # (货号)	Item # (货号)
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With Point 尖头

0120	M 1.2	x 0.25	P1	1	32	8	-	3.0	2.5	2	0.95	T503 0120	•
0140	M 1.4	x 0.3	P1	1	34	9	-	3.0	2.5	2	1.1	T503 0140	•
0160	M 1.6	x 0.35	P1	1	36	10	-	3.0	2.5	2	1.25	T503 0160	•
0170	M 1.7	x 0.35	P1	1	36	11	-	3.0	2.5	2	1.35	T503 0170	•
0200	M 2	x 0.4	P2	1	40	12	15	3.0	2.5	2	1.60	T503 0200	T504 0200
0250	M 2.5	x 0.45	P2	1	44	14	16	3.0	2.5	2	2.05	T503 0250	T504 0250
0260	M 2.6	x 0.45	P2	1	44	14	16	3.0	2.5	2	2.15	T503 0260	T504 0260
0300	M 3	x 0.5	P2	2	46	11	18	4.0	3.2	3	2.5	T503 0300	T504 0300
0350	M 3.5	x 0.6	P1	2	48	13	20	4.0	3.2	3	2.9	T503 0350	T504 0350
0400	M 4	x 0.7	P2	2	52	13	20	5.0	4.0	3	3.3	T503 0400	T504 0400
0500	M 5	x 0.8	P2	2	60	16	25	5.5	4.5	3	4.2	T503 0500	T504 0500
0600	M 6	x 1	P2	2	62	19	28	6.0	4.5	3	5.0	T503 0600	T504 0600

Without Point 平头

												T606	T607
0700	M 7	x 1	P2	3	65	22	-	6.2	5.0	3	6.0	T606 0700	•
0800	M 8	x 1.25	P2	3	70	22	-	6.2	5.0	3	6.8	T606 0800	T607 0800
1006	MF 10	x 1.25	P2	3	75	24	-	7.0	5.5	3	8.5	T606 1006	T607 1006
1000	M 10	x 1.5	P2	3	75	24	-	7.0	5.5	3	8.8	T606 1000	T607 1000
1200	M 12	x 1.75	P2	3	82	29	-	8.5	6.5	3	10.2	T606 1200	T607 1200
1400	M 14	x 2	P2	3	88	30	-	10.5	8.0	3	12.0	T606 1400	•
1600	M 16	x 2	P2	3	95	32	-	12.5	10.0	4	14.0	T606 1600	T607 1600
1800	M 18	x 2.5	P3	3	100	37	-	14.0	11.0	4	15.5	T606 1800	•
2000	M 20	x 2.5	P3	3	105	37	-	15.0	12.0	4	17.5	T606 2000	T607 2000
2200	M 22	x 2.5	P3	3	115	38	-	17.0	13.0	4	19.5	T606 2200	•
2400	M 24	x 3	P3	3	120	45	-	19.0	15.0	4	21.0	T606 2400	T607 2400

Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Lead 倒锥牙

T503

D0602

HSSE

Brf 无处理

N

R40

2.5 x P

T504

D0602

HSSE

Blu 氧化处理

N

R40

2.5 x P

Item # (货号)

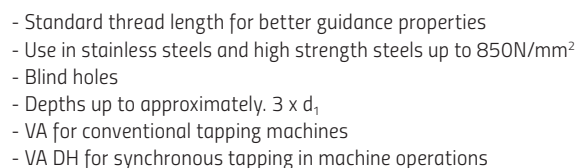
Item # (货号)

ISO	P													M			K						N										S										H							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
T503	●	●	●	○		●	●			●					●	○	○	○	○	○	○	○	●	●	○	○		○	○																					
T504	●	●	●	○		●	●	○				○			○	○		○	○	○	○	○	●	●	○	○		○	○																					
T606	●	●	●	○		○	●								○	○		○	○	○	○	○	●	●	○	○		○	○																					
T607	●	●	●	○		○	●			●		○			○	○		○	○	○	○	○	●	●	○	○		○	○																					

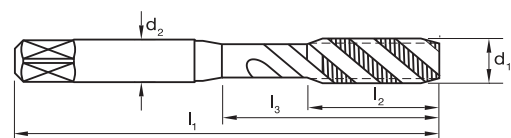
P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 • Optimal 非常适合 ○ Effective 适合

• Available on request as special manufacture. Subject to lead time. • 可定制.

* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后页的技术信息部分.



- T690 标准长牙设计,有较佳的校正能力
- 针对不锈钢及高韧性材料 $\leq 850 \text{ N/mm}^2$
- 盲孔用
- 加工深度 $\leq 3 \times d_1$
- VA 亦可用于传统的攻牙机
- VADH系列只适用于稳定的进给方式



Catalogue Code	目录代码	T690	T570
Discount Group	折扣组	D0602	D0602
Material	材料	HSSE	HSSE
Surface Finish	表面处理	Blu 氧化处理	Blu 氧化处理
Sutton Designation	神盾工具代号	VA	VADH
Geometry	几何结构	R45	R45
Lead	倒锥牙	2.5 x P	2.5 x P

尺寸参考	螺距	精度	样式	底孔钻										Lead 倒锥牙	2.5 x P	2.5 x P
Size Ref.	d ₁	Pitch	Limit	Style	I ₁	I ₂	I ₃	d ₂	sq	z	drill Ø		Item # (货号)	Item # (货号)		

	Without Point 平头											T611
0800	M 8	x 1.25	P3	3	70	13	6.2	5.0	3	6.8		T611 0800
1000	M 10	x 1.5	P3	3	75	15	7.0	5.5	3	8.5		T611 1000
1200	M 12	x 1.75	P3	3	82	17.5	8.5	6.5	3	10.2		T611 1200
1400	M 14	x 2	P3	3	88	20	10.5	8.0	3	12.0		T611 1400
1600	M 16	x 2	P3	3	95	20	12.5	10.0	4	14.0		T611 1600

ISO	P												M			K				N										S								H													
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
T690	●	●	○	○		●	○					○		●	●	○																																			
T570	●	●	○	○		●	○					○																																							
T611	●	●	○	○		●	○					○		●	●	○																																			

P Steel 钢材

M Stainless Steel 不锈钢

K Cast Iron 铸铁

N Non-Ferrous Metals 有色金属

S Titanium & Super Alloys 钛合金及超级合金

H Hard Materials 淬火钢

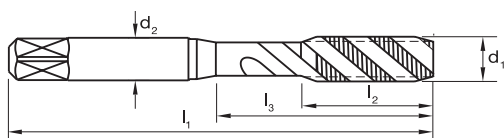
● Optimal 非常适合

○ Effective 适合



- Suitable for harder short chipping materials up to 45 HRC
- Blind holes
- Depths up to $1.5 \times d_1$

- 针对中高硬钢 $\leq 45\text{HRC}$
- 盲孔用
- 加工深度 $\leq 1.5 \times d_1$



Catalogue Code	目录代码	T577
Discount Group	折扣组	D0602
Material	材料	PM-HSS Co
Surface Finish	表面处理	Brf 无处理
Sutton Designation	神盾工具代号	H
Geometry	几何结构	R15 Low Relief
Lead	倒锥牙	3 x P

尺寸参考		螺距	精度	样式	底孔钻							几何 / 结构	ISO 标准
Size Ref.	d ₁	Pitch	Limit	Style	I ₁	I ₂	I ₃	d ₂	sq	z	drill Ø	Lead 倒锥牙	Item # (货号)
0300	M 3	x 0.5	P3	2	46	11	19	4.0	3.2	3	2.5		T577 0300
0400	M 4	x 0.7	P3	2	52	13	21	5.0	4.0	3	3.3		T577 0400
0500	M 5	x 0.8	P3	2	60	16	24	5.5	4.5	3	4.2		T577 0500
0600	M 6	x 1	P2	2	62	19	28	6.0	4.5	3	5.0		T577 0600

ISO	P													M		K					N										S										H								
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
T577																																																	

P

Steel 钢材

M

Stainless Steel 不锈钢

K

Cast Iron 铸铁

N

Non-Ferrous Metals 有色金属

S

Titanium & Super Alloys 钛合金及超级合金

H

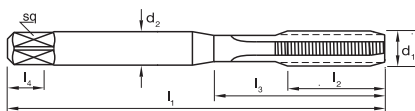
Hard Materials 淬火钢

● Optimal 非常适合

○ Effective 适用

- XH, use in hardened steels 42-52 HRC
- VH, use in hardened steels 50-60 HRC
- Through & blind holes
- Depths up to approximately. $1.5 \times d_1$

- XH, 针对42-52HRC淬火钢
- VH, 针对50-60HRC淬火钢
- 通孔及盲孔用
- 加工深度 $\leq 1.5 \times d_1$



Lead 倒锥牙

T294	T295	T296	T297
D0408	D0408	D0414	D0414
SPM 含钴粉末钢	SPM 含钴粉末钢	VHM 硬质合金	VHM 硬质合金
TiCN 碳氮化钛	TiCN 碳氮化钛	TiCN 碳氮化钛	TiCN 碳氮化钛
XH	XH	VH	VH
Special Relief	Special Relief	Special Relief	Special Relief
3 x P	5 x P	Form C / 3 x P	Form D / 5 x P

尺寸参考	螺距	精度	样式	Lead 倒锥牙									3 x P	5 x P	Form C / 3 x P	Form D / 5 x P
Size Ref.	d ₁	Pitch	Limit	Style	I ₁	I ₂	I ₃	d ₂	sq	z	drill Ø	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)	
0500	M 5	x 0.8	6HX	2	60	16	24	6.0	4.9	4	4.3	T294 0500	T295 0500			
0600	M 6	x 1	6HX	2	62	19	28	6.0	4.9	4	5.1	T294 0600	T295 0600			
0800	M 8	x 1.25	6HX	3	70	22	-	6.0	4.9	5	6.9	T294 0800	T295 0800			
1000	M 10	x 1.5	6HX	3	75	24	-	7.0	5.5	5	8.6	T294 1000	T295 1000			
1200	M 12	x 1.75	6HX	3	82	29	-	9.0	7.0	5	10.3	T294 1200	T295 1200			
1600	M 16	x 2	6HX	3	95	32	-	12.0	9.0	5	14.1	T294 1600	T295 1600			
2000	M 20	x 2.5	6HX	3	105	37	-	16.0	12.0	5	17.7	T294 2000	T295 2000			

0300	M 3	x 0.5	6HX	2	56	11	18	3.5	2.7	4	2.55	T296 0300	T297 0300
0400	M 4	x 0.7	6HX	2	63	13	21	4.5	3.4	4	3.4	T296 0400	T297 0400
0500	M 5	x 0.8	6HX	2	70	16	25	6.0	4.9	4	4.3	T296 0500	T297 0500
0600	M 6	x 1	6HX	2	80	19	30	6.0	4.9	5	5.1	T296 0600	T297 0600
0800	M 8	x 1.25	6HX	3	90	22	35	8.0	6.2	5	6.9	T296 0800	T297 0800
1000	M 10	x 1.5	6HX	3	100	24	39	10.0	8.0	5	8.6	T296 1000	T297 1000

1200	M 12	x 1.75	6HX	3	110	28	-	9.0	7.0	5	10.3	T296 1200	T297 1200
1600	M 16	x 2	6HX	3	110	32	-	12.0	9.0	6	14.1	T296 1600	T297 1600
2000	M 20	x 2.5	6HX	3	140	34	-	16.0	12.0	6	17.7	T296 2000	T297 2000

ISO	P													M			K						N										S										H								
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
T294					○		○	○	●	○	●		●						○		○		○							○														●							
T295					○			○	○	○	○		○						○		○																									●					
T296					○			○	○	○	○		○						○		○																									●	●	●	●		
T297					○			○	○	○	○		○						○		○																									●					●

P Steel 钢件 **M** Stainless Steel 不锈钢 **K** Cast Iron 铸铁 **N** Non-Ferrous Metals 有色金属 **S** Titanium & Super Alloys 钛合金及超级合金 **H** Hard Materials 淬火钢

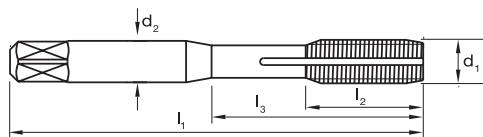
* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后页的技术信息部分。

JIS Taps UNC, Forming, Single Coolant Groove

suttontools

- For cold forming of threads in materials with good flow characteristics
- Suitable for material with >10% elongation
- Through or blind holes
- Depths up to approximately. $3 \times d_1$

- 用于延展性良好的材料
- 适合延展率>10%的材料
- 通孔及盲孔用
- 加工深度 $\leq 3 \times d_1$



尺寸参考 螺距 精度 样式

底孔径

Size Ref.	d_1	Pitch	Limit	Style*	l_1	l_2	l_3	d_2	sq	z	Top hole min/max	Item # (货号)
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P Lead (P型=4牙倒锥)

0284	#4	40	GH5	2	44	11	16	3.0	2.5	4	2.52 - 2.60	T526 0284
0318	#5	40	GH5	2	46	9	16	4.0	3.2	4	2.86 - 2.93	T526 0318
0351	#6	32	GH6	2	48	9	18	4.0	3.2	4	3.11 - 3.19	T526 0351
0417	#8	32	GH6	2	52	10	20	5.0	4.0	4	3.77 - 3.85	T526 0417
0483	#10	24	GH6	2	60	11	22	5.5	4.5	4	4.27 - 4.38	T526 0483
0635	1/4	20	GH7	2	62	14	24	6.0	4.5	4	5.67 - 5.80	T526 0635
0794	5/16	18	GH7	3	70	22	-	6.1	5.0	6	7.18 - 7.32	T526 0794

B Lead (B型=2牙倒锥)

0284	#4	40	GH5	5	44	11	16	3.0	2.5	4	2.52 - 2.60	T527 0284
0318	#5	40	GH5	5	46	9	16	4.0	3.2	4	2.86 - 2.93	T527 0318
0351	#6	32	GH6	5	48	9	18	4.0	3.2	4	3.11 - 3.19	T527 0351
0417	#8	32	GH6	5	52	10	20	5.0	4.0	4	3.76 - 3.85	T527 0417
0483	#10	24	GH6	5	60	11	22	5.5	4.5	4	4.27 - 4.38	T527 0483
0635	1/4	20	GH7	5	62	14	24	6.0	4.5	4	5.68 - 5.80	T527 0635
0794	5/16	18	GH7	3	70	22	-	6.1	5.0	6	7.18 - 7.32	T527 0794

Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Lead 倒锥牙

T526

T527

D0614

D0614

HSS Co.8

HSS Co.8

TiN 氮化钛

TiN 氮化钛

N

N

1 Coolant Groove #4+ 1 Coolant Groove #4+

4P

2P

ISO	P													M			K							N										S										H					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
T526	●	●	○	○		○						○		●	●								●	●	○	○		●	○	○																			
T527	●	●	○	○		○						○		●	●								●	●	○	○		●	○	○																			

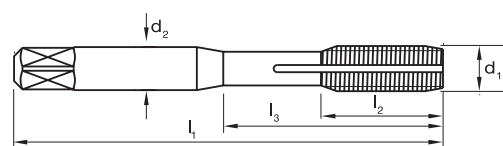
P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

JIS Taps UNC, Forming, Multi Coolant Groove

suttontools

- For cold forming of threads in materials with good flow characteristics
- Suitable for material with >10% elongation
- Through or blind holes
- Depths up to approximately $3 \times d_1$

- 用于延展性良好的材料
- 适合延展率>10%的材料
- 通孔及盲孔用
- 加工深度 $\leq 3 \times d_1$



尺寸参考	螺距	精度	样式	底孔径	Catalogue Code 目录代码	T662	T663
Size Ref.	d_1	Pitch	Limit Style [*]	l_1 l_2 l_3 d_2 s_q z	Discount Group 折扣组	D0614	D0614
P Lead (P型=4牙倒锥)					Material 材料	HSS Co.8	HSS Co.8
0351	#6	32	GH6 2	48 9 18 4.0 3.2 4 3.11 - 3.19	Surface Finish 表面处理	TIN 氮化钛	TIN 氮化钛
0417	#8	32	GH6 2	52 10 20 5.0 4.0 4 3.77 - 3.85	Sutton Designation 神盾工具代号	N	N
0483	#10	24	GH6 2	60 11 22 5.5 4.5 4 4.27 - 4.38	Geometry 几何结构	Multi Coolant Groove	Multi Coolant Groove
0549	#12	24	GH6 2	62 11 25 6.0 4.5 4 4.93 - 5.04	Lead 倒锥牙	4P	2P
0635	1/4	20	GH7 2	62 14 24 6.0 4.5 4 5.67 - 5.80	Item # (货号)		
B Lead (B型=2牙倒锥)							
0351	#6	32	GH6 5	48 9 18 4.0 3.2 4 3.11 - 3.19			T663 0351
0417	#8	32	GH6 5	52 10 20 5.0 4.0 4 3.77 - 3.85			T663 0417
0483	#10	24	GH6 5	60 11 22 5.5 4.5 4 4.27 - 4.38			T663 0483
0549	#12	24	GH6 5	62 11 25 6.0 4.5 4 4.93 - 5.04			T663 0549
0635	1/4	20	GH7 5	62 14 24 6.0 4.5 4 5.67 - 5.80			T663 0635



ISO	P												M			K					N										S										H											
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
T662	●	●	○	○		○						○		●	●								●	●	○	○		●	●	○	○																					
T663	●	●	○	○		○						○		●	●								●	●	○	○		●	●	○	○																					
P Steel 钢材	M Stainless Steel 不锈钢													K Cast Iron 铸铁	N Non-Ferrous Metals 有色金属	S Titanium & Super Alloys 钛合金及超级合金										H Hard Materials 淬火钢												● Optimal 非常适合	○ Effective 适合													

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

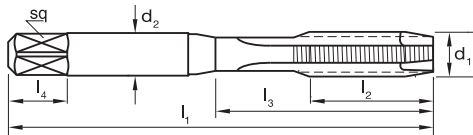
* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后页的技术信息部分。

JIS Taps UNC, Gun, N (Spiral Point)

suttontools

- General purpose use
- Suitable for materials up to 1000 N/mm²
- Through holes
- Depths up to 3 x d₁

- 一般用途
- 适合 ≤ 1000 N/mm² 的材料
- 通孔用
- 加工深度 ≤ 3 x d₁



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Lead 倒锥牙

T615	T616
D0602	D0602
HSSE	HSSE
Brf 无处理	Blu 氧化处理
N	N
5 x P	5 x P

尺寸参考	螺距	精度	样式	底孔钻								Item # (货号)	Item # (货号)
Size Ref.	d ₁	Pitch	Limit	Style*	l ₁	l ₂	l ₃	d ₂	sq	z	drill Ø		
0218	#2	56	2B	1	42	10	-	3.0	2.5	2	1.80	T615 0218	T616 0218
0284	#4	40	2B	2	44	11	16	3.0	2.5	2	2.30	T615 0284	T616 0284
0318	#5	40	2B	2	46	11	16	4.0	3.2	3	2.60	T615 0318	T616 0318
0351	#6	32	2B	2	48	13	20	4.0	3.2	3	2.80	T615 0351	T616 0351
0417	#8	32	2B	2	52	13	20	5.0	4.0	3	3.4	T615 0417	T616 0417
0483	#10	24	2B	2	60	16	22	5.5	4.5	3	3.9	T615 0483	T616 0483
0635	1/4	20	2B	2	62	19	30	6.0	4.5	3	5.1	T615 0635	T616 0635
0794	5/16	18	2B	3	70	22	-	6.1	5.0	3	6.6	T615 0794	T616 0794
0953	3/8	16	2B	3	75	24	-	7.0	5.5	3	8.0	T615 0953	T616 0953
1111	7/16	14	2B	3	80	29	-	8.0	6.0	3	9.4	T615 1111	T616 1111
1270	1/2	13	2B	3	85	29	-	9.0	7.0	3	10.8	T615 1270	T616 1270
1588	5/8	11	2B	3	95	32	-	12.5	10.0	4	13.5	T615 1588	T616 1588
1905	3/4	10	2B	3	105	37	-	14.0	11.0	4	16.5	T615 1905	
2223	7/8	9	2B	3	115	38	-	17.0	13.0	4	19.5	T615 2223	
2540	1	8	2B	3	120	45	-	20.0	15.0	4	22.5	T615 2540	

ISO	P													M		K				N										S												H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
T615	●	●	●	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
T616	●	●	●	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P

Steel 钢材

M

Stainless Steel 不锈钢

K

Cast Iron 铸铁

N

Non-Ferrous Metals 有色金属

S

Titanium & Super Alloys 钛合金及超级合金

H

Hard Materials 淬火钢

●

Optimal 非常合适

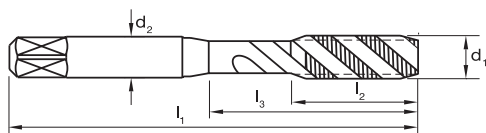
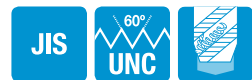
○

Effective 适合

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

suttontools

- General purpose use, materials up to approximately. 1000 N/mm² 一般用途, 适合 $\leq 1000 \text{ N/mm}^2$ 的材料
- Blind holes 盲孔用
- Suitable for machine operations 适合机用
- Depths up to approximately. $2.5 \times d_1$ 加工深度 $\leq 2.5 \times d_1$



尺寸参考 螺距 精度 样式 底孔钻

Size Ref.	d ₁	Pitch	Limit	Style*	l ₁	l ₂	l ₃	d ₂	sq	z	drill Ø	Item # (货号)	Item # (货号)
0218	#2	56	2B	1	42	14	-	3.0	2.5	2	1.80	T618 0218	T619 0218
0284	#4	40	2B	2	44	11	16	3.0	2.5	2	2.30	T618 0284	T619 0284
0351	#6	32	2B	2	48	13	18	4.0	3.2	3	2.80	T618 0351	T619 0351
0417	#8	32	2B	2	52	13	20	5.0	4.0	3	3.4	T618 0417	T619 0417
0483	#10	24	2B	2	60	16	22	5.5	4.5	3	3.9	T618 0483	T619 0483
0635	1/4	20	2B	2	62	19	30	6.0	4.5	3	5.1	T618 0635	T619 0635
0794	5/16	18	2B	3	70	22	-	6.1	5.0	3	6.6	T618 0794	T619 0794
0953	3/8	16	2B	3	75	24	-	7.0	5.5	3	8.0	T618 0953	T619 0953
1111	7/16	14	2B	3	80	29	-	8.0	6.0	3	9.4	T618 1111	T619 1111
1270	1/2	13	2B	3	85	29	-	9.0	7.0	3	10.8	T618 1270	T619 1270
1588	5/8	11	2B	3	95	32	-	12.5	10.0	4	13.5	T618 1588	T619 1588
1905	3/4	10	2B	3	105	37	-	14.0	11.0	4	16.5	T618 1905	T619 1905
2540	1	8	2B	3	120	45	-	20.0	15.0	4	22.5	T618 2540	T619 2540

Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Lead 倒锥牙

T618

D0602

HSSE

Brt 无处理

N

R40

2.5 x P

T619

D0602

HSSE

Blu 氧化处理

N

R40

2.5 x P

Item # (货号)

Item # (货号)

ISO	P												M			K					N										S										H								
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
T618	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
T619	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
P Steel 钢材	M Stainless Steel 不锈钢												K Cast Iron 铸铁					N Non-Ferrous Metals 有色金属					S Titanium & Super Alloys 钛合金及超级合金										H Hard Materials 淬火钢				● Optimal 非常适合 ○ Effective 适合												

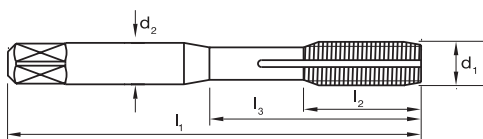
P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后页的技术信息部分。



- For cold forming of threads in materials with good flow characteristics
- Suitable for material with $>10\%$ elongation
- Through or blind holes
- Depths up to approximately $3 \times d_1$

- 用于延展性良好的材料
- 适合延展率 $>10\%$ 的材料
- 通孔及盲孔用
- 加工深度 $\leq 3 \times d_1$



Catalogue Code 目录代码	T539
Discount Group 折扣组	D0614
Material 材料	HSS Co.8
Surface Finish 表面处理	TIN 氮化钛
Designation 神盾工具代号	N
Geometry 几何结构	1 Coolant Groove #4+
Lead 倒锥牙	2P

尺寸参考													底孔径		Lead 倒锥牙		2P
Size Ref.	d ₁	Pitch	Limit	Style	I ₁	I ₂	I ₃	d ₂	sq	z	Tap hole min/max			Item # (货号)			
B Lead (B型 = 2牙倒锥)																	
0284	#4	48	GH5	5	46	11	16	3.0	2.5	4	2.58 - 2.65			T539 0284			
0351	#6	40	GH6	5	48	9	18	4.0	3.2	4	3.20 - 3.27			T539 0351			
0483	#10	32	GH6	5	60	11	22	5.5	5	4	4.43 - 4.51			T539 0483			
0635	1/4	28	GH7	5	62	14	30	6.0	4.5	4	5.93 - 5.98			T539 0635			

ISO	P													M			K						N										S										H						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
T539	●	●	○	○		○						○		●	●								●	●	○	○		●	○	○																			

P

Steel 钢材

M

Stainless Steel 不锈钢

K

Cast Iron 铸铁

N

Non-Ferrous Metals 有色金属

S

Titanium & Super Alloys 钛合金及超级合金

H

Hard Materials 淬火钢

●

Optimal 非常适合

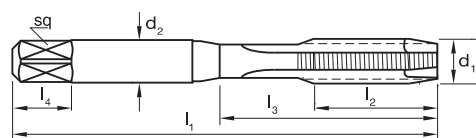
○

Effective 适合

JIS Taps UNF, Gun, N (Spiral Point)

suttontools

- General purpose use, materials up to approximately. 1000 N/mm² — 一般用途, 适合 ≤ 1000 N/mm² 的材料
- Through holes — 通孔用
- Suitable for machine operations — 适合机用
- Depths up to approximately. 3 x d₁ — 加工深度 ≤ 3 x d₁



Catalogue Code 目录代码	T621	T622
Discount Group 折扣组	D0602	D0602
Material 材料	HSSE	HSSE
Surface Finish 表面处理	Brt 无处理	Blu 氧化处理
Sutton Designation 神盾工具代号	N	N
Geometry 几何结构		
Lead 倒锥牙	5 x P	5 x P

尺寸参考				螺距		精度		样式		底孔钻				Lead 倒锥牙		5 x P	5 x P
Size Ref.	d ₁	Pitch	Limit	Style*	I ₁	I ₂	I ₃	d ₂	sq	z	drill Ø				Item # (货号)	Item # (货号)	
0483	#10	32	2B	2	60	16	22	5.5	4.5	3	4.1				T621 0483	T622 0483	
0635	1/4	28	2B	2	62	19	30	6.0	4.5	3	5.5				T621 0635		
0794	5/16	24	2B	3	70	22	-	6.1	5.0	3	6.9				T621 0794		
0953	3/8	24	2B	3	75	24	-	7.0	5.5	3	8.5				T621 0953		
1270	1/2	20	2B	3	85	29	-	9.0	7.0	3	11.5				T621 1270		
1588	5/8	18	2B	3	95	32	-	12.5	10.0	4	14.5				T621 1588		
1905	3/4	16	2B	3	105	37	-	14.0	11.0	4	17.5				T621 1905		
2540	1	12	2B	3	120	45	-	20.0	15.0	4	23.3				T621 2540		

ISO	P													M			K							N											S										H										
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41						
T621	●	●	●	○	○	●	○			○							○	○	○	○	○	○	●	●	○	○		○	○																										
T622	●	●	●	●	○	●	●	○		●		○		○	○		○	○	○	○	○	○																																	

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

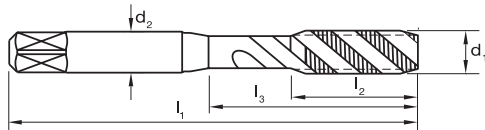
* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后页的技术信息部分。

JIS Taps UNF, Spiral Flute, R40 N

suttontools

- General purpose use, materials up to approximately. 1000 N/mm²
- Blind holes
- Suitable for machine operations
- Depths up to approximately. 2.5 x d₁

- 一般用途, 适合 ≤ 1000 N/mm² 的材料
- 通孔用
- 适合机用
- 加工深度 ≤ 2.5 x d₁



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Lead 倒锥牙

T625

D0602

HSSE

Brt 无处理

N

R40

2.5 x P

T626

D0602

HSSE

Blu 氧化处理

N

R40

2.5 x P

尺寸参考 螺距 精度 样式 底孔钻

Size Ref.	d ₁	Pitch	Limit	Style*	l ₁	l ₂	l ₃	d ₂	sq	z	drill Ø	Item # (货号)	Item # (货号)
0483	#10	32	2B	2	60	16	22	5.5	4.5	3	4.1	T625 0483	T626 0483
0635	1/4	28	2B	2	62	19	30	6.0	4.5	3	5.5	T625 0635	T626 0635
0794	5/16	24	2B	3	70	22	-	6.1	5.0	3	6.9	T625 0794	T626 0794
0953	3/8	24	2B	3	75	24	-	7.0	5.5	3	8.5	T625 0953	T626 0953
1270	1/2	20	2B	3	85	29	-	9.0	7.0	3	11.5	T625 1270	T626 1270
1588	5/8	18	2B	3	95	32	-	12.5	10.0	4	14.5	T625 1588	T626 1588
1905	3/4	16	2B	3	105	37	-	14.0	11.0	4	17.5	T625 1905	T626 1905
2540	1	12	2B	3	120	45	-	20.0	15.0	4	23.3	T625 2540	T626 2540

ISO	P													M	K								N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
T625	●	●	○	○		●	○			○								○	○	○	○	○		●	●	○	○		○	○																						
T626	●	●	●	●	○	○	●	○		●		○			○	○	○	○	○	○	○	○																														

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

SSH STIMONE ENDMILLS HSS

Endmills HSS 高速钢系铣刀

Cost effective machining

- Solutions for slotting, finishing, roughing & profiling
- 8% Co HSS
- Short & Long Series

Endmill Finder - HSS

ISO	VDI	Material Group 工件材料类别	Sutton 应用材料代号
P	A	Steel 钢件	N
M	R	Stainless Steel 不锈钢	VA
K	F	Cast Iron 铸铁	GG
N	N	Non-Ferrous Metals, Aluminiums & Coppers 有色金属	Al W
S	S	Titaniums & Super Alloys 钛合金及超级合金	Ti Ni
H	H	Hard Materials (≥ 45 HRC) 淬火钢(≥ 45 HRC)	H

ISO及VDI应用材料代号

^ VDI 3323 material groups can also be determined by referring to the material cross reference listing in the application guide at the back of this catalogue.

^ VDI 3323 工件材料类别明细可查阅产品目录最后部份技术篇的工件材料分类表。

Catalogue Code 产品号

Type of Cut: **Slotting** 槽铣**Finishing** 精铣**Universal** 侧铣**Roughing** 粗铣**Profiling** 仿型铣**Material** 材质**Surface Finish** 表面处理**Sutton Designation** 神盾工具代号**Standard** 生产标准**Shank Tolerance** 柄径容许公差

Page 页

25	26	27	28	30	31	31	32	32
								
E100	E102/E225	E113	E125/E227	E127/E229	E142/E144	E143/E145	E168	E169/E171
●	●		●	●				
			●	●				
			●	●				
					●	●	●	●
		●						
HSS Co.8 含8%钴高速钢				HSS Co.8 含8%钴高速钢				
Brt 无处理				Brt 无处理	TICN 氮化钛	Brt 无处理	TICN 氮化钛	TICN 氮化钛
N				N	WN		NH	
JIS				JIS		JIS		
h6				h6		h6		

ISO	VDI 3323	Material 工件材料	Condition 材料状态	HB 硬度	N/mm²									
P	1	Steel - Non-alloy, cast & free cutting 钢件-非合金及易切削	~ 0.15 %C	A	125	440	●	●	●	●	●	●	●	
	2		~ 0.45 %C	A	190	640	●	●	●	●	●	●	●	
	3			QT	250	840	○	○	○	○	○	○	○	●
	4		~ 0.75 %C	A	270	910	○	○	○	○	○	○	○	
	5			QT	300	1010	○	○	○	○	○	○	○	●
	6	Steel - Low alloy & cast < 5% of alloying elements 钢件-低合金钢		A	180	610	●	●	●	●	●	●	●	
	7			QT	275	930	○	○	○	○	○	○	○	●
	8			QT	300	1010	○	○	○	○	○	○	○	●
	9			QT	350	1180								●
	10	Steel - High alloy, cast & tool 高合金钢及工具钢		A	200	680	○	○	○	○	○	○	○	●
	11			HT	325	1100								●
	12	Steel - Corrosion resistant & cast 钢件-耐酸钢	Ferritic / Martensitic	A	200	680			○	○			○	○
	13		Martensitic	QT	240	810	○		○	○			○	○
M	14.1	Stainless Steel 不锈钢	Austenitic	A	180	610			○					○
	14.2		Duplex		250	840			○					○
	14.3		Precipitation Hardening		250	840								○
K	15	Cast Iron - Grey (GG)	Ferritic / Pearlitic		180	610	○		○	○		○	○	●
	16	灰铸铁	Pearlitic		260	880	○		○	○				○
	17	Cast Iron - Nodular (GGG)	Ferritic		160	570	○	○	○	○		○	○	●
	18	球墨铸铁	Pearlitic		250	840	○		○	○				○
	19	Cast Iron - Malleable 可锻铸铁	Ferritic		130	460	○		○	○		○	○	●
	20		Pearlitic		230	780	○		○	○				○
N	21	Aluminum & Magnesium - wrought alloy 锻造铝合金	Non Heat Treatable		60	210	●	●	●	●	●	○		
	22		Heat Treatable	AH	100	360	●	●	●	●	●	○		
	23	Aluminum & Magnesium - cast alloy ≤12% Si 压铸铝 ≤12% Si	Non Heat Treatable		75	270	○	○	○	○	○	○		
	24		Heat Treatable	AH	90	320	○	○	○	○	○	○		
	25	Al & Mg-cast alloy 压铸铝 >12% Si	Non Heat Treatable		130	460	○		○					
	26	Copper & Cu alloys (Brass/Bronze) 铜及铜合金	Free cutting, Pb > 1%		110	390	○	○	○	○	○	○		
	27		Brass (CuZn, CuSnZn)		90	320							○	●
	28		Bronze (CuSn)		100	360	○	○	○	○	○	○		
	29	Non-metallic - Thermosetting & fiber-reinforced plastics												
	30	Non-metallic - Hard rubber, wood etc.												
S	31	High temp. alloys 耐热合金	Fe based	A	200	680								
	32			AH	280	950								
	33		Ni / Co based	A	250	840								
	34			AH	350	1180								
	35			C	320	1080								
	36	Titanium & Ti alloys 钛合金	CP Titanium		400 MPa									
	37.1		Alpha alloys		860 MPa									
	37.2		Alpha / Beta alloys	A	960 MPa									
	37.3			AH	1170 MPa									
	37.4		Beta alloys	A	830 MPa									
	37.5			AH	1400 MPa									
H	38.1	Hardened steel 淬火钢		HT	45 HRC									
	38.2			HT	55 HRC									
	39.1			HT	58 HRC									
	39.2			HT	62 HRC									
	40	Cast Iron 硬铸铁	Chilled	C	400	1350								○
	41			HT	55 HRC									

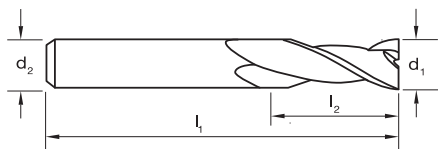
Condition (材料状态): A (Annealed) (正火), AH (Age Hardened) (时效硬化), C (Cast) (铸件), HT (Hardened & Tempered) (淬火及回火), QT (Quenched & Tempered) (调质及回火).

● Optimal 非常適合 ○ Effective 适合

Slot Drills 2 Flute, R30 N, Regular

suttontools

- For precision milling of slots & cavities
- Suitable for materials up to 1000 N/mm²
- For soft steels & non-ferrous material
- 适用于槽铣及型腔铣
- 加工硬度 ≤ 1000N/mm²
- 亦适合软钢及非铁金属



尺寸参考

Size Ref.	d ₁ (e8)	l ₁	l ₂	d ₂	z	Item # (货号)
0100	1	50	3	6	2	E100 0100
0150	1.5	50	4.5	6	2	E100 0150
0200	2	50	7	6	2	E100 0200
0250	2.5	50	7	6	2	E100 0250
0300	3	50	9	6	2	E100 0300
0350	3.5	60	12	8	2	E100 0350
0400	4	60	12	8	2	E100 0400
0450	4.5	60	15	8	2	E100 0450
0500	5	60	15	8	2	E100 0500
0550	5.5	60	15	8	2	E100 0550
0600	6	60	15	8	2	E100 0600
0650	6.5	65	20	10	2	E100 0650
0700	7	65	20	10	2	E100 0700
0750	7.5	65	20	10	2	E100 0750
0800	8	65	20	10	2	E100 0800
0850	8.5	75	25	10	2	E100 0850
0900	9	75	25	10	2	E100 0900
0950	9.5	75	25	10	2	E100 0950
1000	10	75	25	10	2	E100 1000
1100	11	80	30	12	2	E100 1100
1200	12	80	30	12	2	E100 1200
1300	13	90	35	16	2	E100 1300
1400	14	90	35	16	2	E100 1400
1500	15	95	40	16	2	E100 1500
1600	16	95	40	16	2	E100 1600
1700	17	105	40	20	2	E100 1700
1800	18	105	40	20	2	E100 1800
1900	19	110	45	20	2	E100 1900
2000	20	110	45	20	2	E100 2000
2200	22	110	45	20	2	E100 2200
2400	24	120	50	25	2	E100 2400
2500	25	120	50	25	2	E100 2500
2800	28	125	55	25	2	E100 2800
3000	30	125	55	25	2	E100 3000
3200	32	145	60	32	2	E100 3200

Imperial (英制)

0159	1/16	1-31/32	1/8	1/4	2	E100 0159
0238	3/32	1-31/32	3/16	1/4	2	E100 0238
0318	1/8	1-31/32	7/32	1/4	2	E100 0318
0476	3/16	2-3/8	3/8	1/4	2	E100 0476
0635	1/4	2-9/16	9/16	1/4	2	E100 0635
0794	5/16	2-9/16	9/16	3/8	2	E100 0794
0953	3/8	2-3/4	23/32	3/8	2	E100 0953
1270	1/2	3-17/32	1	1/2	2	E100 1270
1588	5/8	3-3/4	1-3/16	5/8	2	E100 1588
1905	3/4	4-5/16	1-9/16	3/4	2	E100 1905
2540	1	4-23/32	2	3/4	2	E100 2540

ISO	P													M			K					N										S										H							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E100	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Shank Form (DIN 1835) 柄径型

Shank Tolerance 柄径容许公差

E100

B0502

HSS Co.8

Brt 无处理

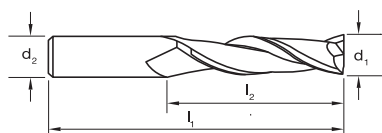
N

R30

A

h6

- 适用于长悬伸的槽铣
- 加工硬度 $\leq 1000\text{N/mm}^2$
- 亦适合软钢及非铁金属



0635	1/4	2-9/16	1	1/4	2	E102 0635
0953	3/8	3-3/4	1-3/4	3/8	2	E102 0953
1270	1/2	4-5/16	2-5/32	1/2	2	E102 1270
1905	3/4	5-1/2	2-61/64	3/4	2	E102 1905



Shank Tolerance 柄径容许公差

E102	E225
B0502	B0502
HSS Co.8	HSS Co.8
<i>Brt</i> 无处理	<i>Brt</i> 无处理
N	N
R30	R30
A	A
h6	h6

ISO	P													M			K					N										S										H							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E102	●	●	●	●	●	●	○	○		○									○					●	●	○	○		○	○																			
E225	●	●	●	○	○	●	○	○															●	●	○	○	○	○	○	○																			

P Steel 钢材

M Stainless Steel 不锈钢

K Cast Iron 铸铁

N Non-Ferrous Metals 有色金属

S Titanium & Super Alloys 钛合金及超级合金

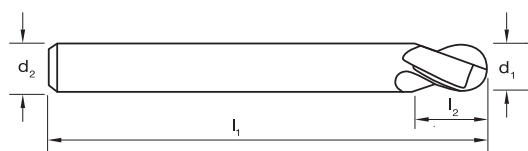
H Hard Materials 淬火钢

● Optimal 非常适合

○ Effective 适合

P Steel 钢件 **M** Stainless Steel 不锈钢 **K** Cast Iron 铸铁 **N** Non-Ferrous Metals 有色金属 **S** Titanium & Super Alloys 钛合金及超级合金 **H** Hard Materials 淬硬钢

* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后页的技术信息部分。



Size Ref.	d_1 (e8)	l_1	l_2	d_2	z	Item # (货号)
0150	1.5	55	3	6	2	E113 0150
0200	2	55	4	6	2	E113 0200
0250	2.5	55	5	6	2	E113 0250
0300	3	60	6	6	2	E113 0300
0400	4	70	8	6	2	E113 0400
0500	5	80	10	6	2	E113 0500
0600	6	90	12	6	2	E113 0600
0700	7	90	14	6	2	E113 0700
0800	8	100	16	8	2	E113 0800
0900	9	100	18	8	2	E113 0900
1000	10	100	20	10	2	E113 1000
1200	12	110	24	12	2	E113 1200
1400	14	110	28	12	2	E113 1400
1600	16	140	32	16	2	E113 1600
2000	20	160	40	20	2	E113 2000
2500	25	180	50	25	2	E113 2500
3000	30	180	55	25	2	E113 3000



Shank Tolerance 柄径容许公差

h6

ISO	P													M		K					N										S										H								
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E113	●	●		○		●	○	○		○				○	○	○	○	○	○	○	○	○	●	●	●	○	○	○	○	○																			

P

Steel 钢材

M

Stainless Steel 不锈钢

K

Cast Iron 铸铁

N

Non-Ferrous Metals 有色金属

S

Titanium & Super Alloys 钛合金及超级合金

H

Hard Materials 淬火钢

●

Optimal 非常适合

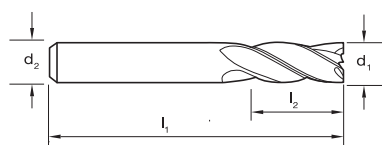
○

Effective 适用

Endmills 4 Flute / 6 Flute, R30 N, Regular

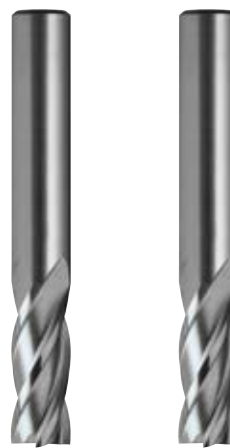
suttontools

- For precision finish milling applications
- Suitable for materials up to 1000 N/mm²
- TiCN for longer tool life
- 适用于高精铣削
- 加工硬度 ≤ 1000N/mm²
- TiCN涂层可延长刀具寿命



尺寸参考

Size Ref.	d ₁ (k9)	L ₁	L ₂	d ₂	z	Item # (货号)	Item # (货号)
0150	1.5	50	3	6	4	E125 0150	
0200	2.0	50	6	6	4	E125 0200	
0250	2.5	50	7	6	4	E125 0250	
0300	3.0	50	9	6	4	E125 0300	
0350	3.5	60	12	6	4		E227 0350
0350	3.5	60	12	8	4	E125 0350	
0400	4.0	60	12	6	4		E227 0400
0400	4.0	60	12	8	4	E125 0400	
0450	4.5	60	15	6	4		E227 0450
0450	4.5	60	15	8	4	E125 0450	
0500	5.0	60	15	6	4		E227 0500
0500	5.0	60	15	8	4	E125 0500	
0550	5.5	60	15	6	4		E227 0550
0550	5.5	60	15	8	4	E125 0550	
0600	6.0	60	15	6	4		E227 0600
0600	6.0	60	15	8	4	E125 0600	
0650	6.5	65	20	10	4	E125 0650	
0700	7.0	65	20	10	4	E125 0700	
0750	7.5	65	20	10	4	E125 0750	
0800	8.0	65	20	10	4	E125 0800	
0850	8.5	75	25	10	4	E125 0850	
0900	9.0	75	25	10	4	E125 0900	
0950	9.5	75	25	10	4	E125 0950	
1000	10.0	75	25	10	4	E125 1000	
1050	10.5	80	30	12	4	E125 1050	
1100	11.0	80	30	12	4	E125 1100	
1150	11.5	80	30	12	4	E125 1150	
1200	12.0	80	30	12	4	E125 1200	
1300	13.0	90	35	16	4	E125 1300	
1400	14.0	90	35	16	4	E125 1400	
1500	15.0	95	40	16	4	E125 1500	
1600	16.0	95	40	16	4	E125 1600	
1700	17.0	105	40	20	4	E125 1700	
1800	18.0	105	40	20	4	E125 1800	
1900	19.0	110	45	20	4	E125 1900	
2000	20.0	110	45	20	4	E125 2000	
2200	22.0	110	45	20	4	E125 2200	
2400	24.0	120	50	25	4	E125 2400	
2500	25.0	120	50	25	4	E125 2500	
2800	28.0	125	55	25	6	E125 2800	
3000	30.0	125	55	25	6	E125 3000	
3200	32.0	145	60	32	6	E125 3200	



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Shank Form (DIN 1835) 柄径型

Shank Tolerance 柄径容许公差

E125

B0502

HSS Co.8

Brt 无处理

N

R30

A

h6

E227

B0502

HSS Co.8

Brt 无处理

N

R30

A

h6

ISO	P													M	K										N										S										H				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E125	●	●	○	○	○	●	○	○		○		○	○				○	○	○	○	○	○	●	●	○		○		○																				
E227	●	●	○	○	○	●	○	○		○		○	○				○	○	○	○	○	○	●	●	○		○		○																				

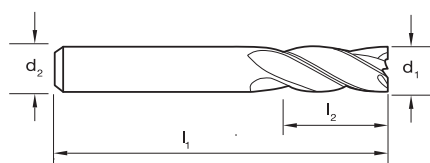
P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

Endmills 4 Flute, R30 N, Regular

suttontools

- For precision finish milling applications
- Suitable for materials up to 1000 N/mm²

- 适用于高精铣削
- 加工硬度 ≤ 1000N/mm²



尺寸参考

Size Ref.	d ₁ (k9)	l ₁	l ₂	d ₂	z	Item # (货号)
0159	1/16	1-31/32	1/4	1/4	4	E125 0159
0238	3/32	1-31/32	9/32	1/4	4	E125 0238
0318	1/8	1-31/32	11/32	1/4	4	E125 0318
0476	3/16	2-11/32	19/32	1/4	4	E125 0476
0635	1/4	2-11/32	19/32	1/4	4	E125 0635
0794	5/16	2-9/16	25/32	3/8	4	E125 0794
0953	3/8	2-15/16	31/32	3/8	4	E125 0953
1270	1/2	3-7/32	1-3/8	1/2	4	E125 1270
1588	5/8	3-3/4	1-9/16	5/8	4	E125 1588
1905	3/4	4-5/16	1-3/4	3/4	4	E125 1905
2540	1	4-23/32	1-31/32	3/4	4	E125 2540
2541	1	4-23/32	1-31/32	1	4	E125 2541



Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Shank Form (DIN 1835) 柄径型

Shank Tolerance 柄径容许公差

E125**B0502****HSS Co.8****Brf 无处理****N**

R30

A

h6

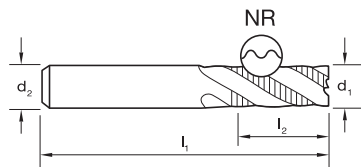
ISO	P												M		K						N										S										H																																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41																											
E125	●	●	○	○	○	●	○	○		○	○	○	○				○	○	○	○	○	○	○	●	●	○	○	○	○	○																																														
P	Steel 钢材												M		Stainless Steel 不锈钢						K						Cast Iron 铸铁						N		Non-Ferrous Metals 有色金属										S										Titanium & Super Alloys 钛合金及超级合金										H				Hard Materials 淬火钢							
																																												● Optimal 非常适合				○ Effective 适用																												

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

Roughers NR (normal), R30 WN, Regular

suttontools

- For roughing applications
- NR geometry allows for heavy cuts
- Suitable for materials up to 1000 N/mm²
- TiCN for longer tool life
- 适用于粗加工铣削
- NR粗齿型有利于大切深
- 加工硬度 ≤ 1000N/mm²
- TiCN涂层可延长刀具寿命



尺寸参考

Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

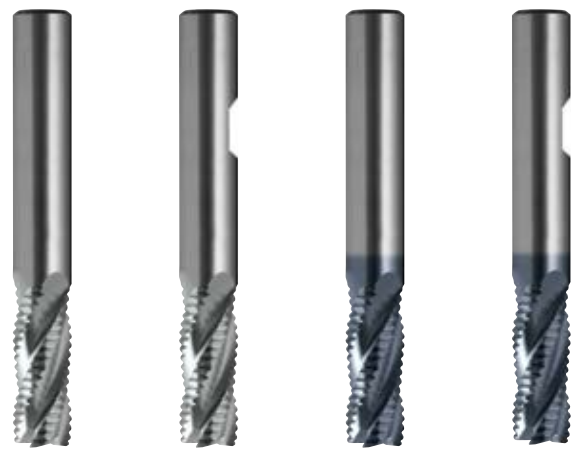
Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Shank Form (DIN 1835) 柄径型

Shank Tolerance 柄径容许公差



Size Ref.	d ₁ (js14)	l ₁	l ₂	d ₂	z	Item # (货号)	Item # (货号)	Item # (货号)	Item # (货号)
0600	6.0	60	15	10	3	E142 0600		E143 0600	
0800	8.0	65	20	10	3	E142 0800		E143 0800	
1000	10.0	75	25	10	4	E142 1000		E143 1000	
1200	12.0	80	30	12	4	E142 1200		E143 1200	
1400	14.0	90	35	16	4	E142 1400			
1500	15.0	95	40	16	4	E142 1500			
1600	16.0	95	40	16	4		E144 1600		E145 1600
1800	18.0	105	40	20	4				E145 1800
2000	20.0	110	45	20	4		E144 2000		E145 2000
2200	22.0	110	45	20	4				E145 2200
2500	25.0	120	50	25	5		E144 2500		E145 2500
3000	30.0	125	55	25	5		E144 3000		

ISO	P												M		K					N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E142	●	●	○	○		●																	●	●	●	○		○		○																			
E144	●	●	○	○		●																	●	●	●	○		○		○																			
E143	●	●	○	○	○	●	○	○									○		○		○		○	○	○	○		○		○																			
E145	●	●	○	○	○	●	○	○									○		○		○		○	○	○	○		○		○																			

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

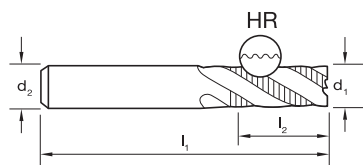
* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后页的技术信息部分。

Roughers HR (fine), R30 NH, Regular

suttontools

- For roughing applications
- HR geometry allows for heavy cuts, in harder materials
- Suitable for materials up to 1300 N/mm²
- TiCN for longer tool life

- 适用于粗加工铣削
- HR细齿型适用中高硬度材料的大切深
- 加工硬度 ≤ 1300N/mm²
- TiCN涂层可延长刀具寿命



尺寸参考

Size Ref.	d ₁ (js14)	l ₁	l ₂	d ₂	z
0600	6.0	60	15	10	3
0800	8.0	65	20	10	3
1000	10.0	75	25	10	4
1200	12.0	80	30	12	4
1600	16.0	95	40	16	4

Catalogue Code 目录代码

Discount Group 折扣组

Material 材料

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Shank Form (DIN 1835) 柄径型

Shank Tolerance 柄径容许公差



E168	E169	E171
B0402	B0404	B0404
HSS Co.8	HSS Co.8	HSS Co.8
Brf 无处理	TiCN 碳氮化钛	TiCN 碳氮化钛
NH	NH	NH
R30 HR	R30 HR	R30 HR
A	A	B 侧固柄
h6	h6	h6

Item # (货号)	Item # (货号)	Item # (货号)
E168 0600	E169 0600	
E168 0800	E169 0800	
E168 1000	E169 1000	
E168 1200	E169 1200	
		E171 1600

ISO	P												M			K						N						S						H															
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E168			●		○		●	○	○		○	○					○		○		○									○																			
E169					●		●	●	○	○	○	○		○	○		●		○		○																											○	
E171					●		●	●	●	●	●	●		○	○		●		○		○																											○	
P	Steel 钢材			M Stainless Steel 不锈钢									K Cast Iron 铸铁			N Non-Ferrous Metals 有色金属			S Titanium & Super Alloys 钛合金及超级合金						H Hard Materials 淬火钢						● Optimal 非常适合 ○ Effective 适合																		

P Steel 钢件 M Stainless Steel 不锈钢 K Cast Iron 铸铁 N Non-Ferrous Metals 有色金属 S Titanium & Super Alloys 钛合金及超级合金 H Hard Materials 淬火钢 ● Optimal 非常适合 ○ Effective 适合

* For style specifications refer to the Technical Information section at the back of this catalogue. * 如果需要查看详细的样式细节请参考产品目录后的技术信息部分.

TECHNICAL INFO

Technical Information

- Material Charts
- Speeds & feeds charts
- Coatings
- Tool Materials
- Taps
- Endmills
- Troubleshooting Charts

技术资料

- 工件材料分类表
- 加工参数表
- 涂层资料
- 刀具材质资料
- 丝锥
- 立铣刀
- 加工问题与对策

Technical Information Materials - Workpiece

suttontools

Material Group 各国材料对照		WKR	DIN	BS	EN	AFNOR	UNI	UNE	SS	JIS	AISI / SAE / UNS
ISO	VDI 3323	Germany	Germany	U.K.	U.K.	France	Italy	Spain	Sweden	Japan	USA
P	1	1.0402	C 22	050 A 20	2C	CC20	C 20 , C 21	F.112	1450		1020, G 10200
	1	1.0715	9 SMn 28	230 M 07		S250	CF 9 SMn 28	11SMn28	1912	SUM 22	1213, G 12130
	1	1.0722	10 SPb 20			10PbF2	CF 10 SPb 20	10SPb20			11 L 08
	1	1.0736	9 SMn 36	240 M 07	1B	S300	CF 9 SMn 36	12SMN35			1215, G 12150
	1	1.0737	9 SMnPb 36			S300Pb	CF 9 SMnPb 36	12SMnP35	1926		12 L 14, G 12144
	1	1.0401	C 15	080 M 15	CS	CC12	C16	F.111	1350	S 15 CK	1015, G 10170
	1	1.0718	9 SMnPb 28			S250Pb	CF 9 SMnPb 28	11SMnPb28	1914	SUM 22 L	12 L 13, G 12134
	1	1.1141	Ck 15	080 M 15	32C	XC12 , XC15 , XC18	C15		1370	S15C	1015, G 10170
	2	1.1170	28 Mn 6	150 M 28	14A	20M5	C 28 Mn			SCMn 1	1330
	2 / 3	1.0501	C 35	060 A 35		CC35	C 35	F.113	1550	S 35 C	1035, G 10350
	2 / 3	1.0503	C 45	080 M 46		CC45	C 45	F.114	1650	S45C	1045, G 10430
	2 / 3	1.1191	Ck 45	080 M 46			C 45	F.1140	1672	S48C	1045, G 10420
	2 / 3	1.0726	35 S 20	212 M 36	8M	35 MF 4		F.210.G	1957		1140, G 11400
	2 / 3	1.1157	40 Mn 4	150 M 36	15	35 M 5					1039, G10390
	2 / 3	1.1167	36 Mn 5	150 M 36		40 M 5		F.411	2120	SMn438(H)	1335, G 13350
	4 / 5	1.0535	C 55	070 M 55			C 55	F.1150	1655	S 55 C	1055
	4 / 5	1.0601	C 60	080 A 62	43D	CC 55	C 60			S 58 C	1060, G 10600
	4 / 5	1.1203	Ck 55	070 M 55		XC 55	C 50		1655	S 55 C	1055
	4 / 5	1.1221	Ck 60	080 A 62	43D	XC 60	C 60	F.1150	1665; 1678	S 58 C	1060, G 10640
	4 / 5	1.1545	C 105 W1	BW 1A			C 100 KU	F.5118	1880	SK 3	W 110, T 72301
	4 / 5	1.1274	Ck 101	060 A 96				F.5117	1870	SUP 4	1095, G 10950
	5 / 9	1.5120	38 MnSi 4								
	6 / 7	1.6657	10 NiCrMo 13-4	832 M 13	36C		15 NiCrMo 13	14NiCrMo131			
	6 / 7	1.5423	16 Mo 5	1503-245-420			16 Mo 5	16Mo5		SB 450 M	4520, G 45200
	6 / 7	1.7131	16 MnCr 5	527 M 17		16 MC 5	16 MnCr 5	F.1516	2511	SCR 415	5115, G 51170
	6 / 7	1.5622	14 Ni 6			16 N 6	14 Ni 6	15Ni6			A350LF5
	6 / 7	1.5415	15 Mo 3	1501-240		15 D 3	16 Mo 3	16Mo3	2912		A204GrA
	6 / 7	1.5752	14 NiCr 14	655 M 13	36A	12 NC 15				SNC 815 (H)	3310, 3415, 9314, G 33106
	6 / 7	1.6587	17 CrNiMo 6	820 A 16		18 NCD 6	18 NiCrMo 7				
	6 / 7	1.7262	15 CrMo 5			12 CD 4	12 CrMo 4	12CrMo4	2216		
	6 / 7	1.7335	13 CrMo 4-4	1501-620 Gr. 27		15 CD 3.5	14 CrMo 4 5	14CrMo45	2216		A 182-F11, F12
	6 / 7	1.7380	10 CrMo 9-10	1501-622 Gr. 31, 45		10 CD 9.10	12 CrMo 9 10	F.155	2218		A 182-F22, J 21890
	6 / 7	1.7715	14 MoV 6-3	1503-660-440							
	6 / 7	1.7015	10 Cr 3	523 M 15		12 C 3				SCr 415 (H)	5015, G 50150
	6 / 8	1.7033	34 Cr 4	530 A 32	18B	32 C 4	34 Cr 4 (KB)			SCr 430 (H)	5132, G 51320
	6 / 8	1.7218	25 CrMo 4	1717 CDS 110		25 CD 4 5	25 CrMo 4 (KB)	F.1251	2225	SCM 420, SCM 430	4130, G 41300
	6 / 8	1.6523	21 NiCrMo 2	805 M 20	362	20 NCD 2	20 NiCrMo 2	F.1522	2506	SNCM 220 (H)	8620, G 86170
	6 / 9	1.7220	34 CrMo 4	708 A 37		35 CD 4	35 CrMo 4		2234	SCM 432, SCCrM 3	4135, 4137, G 41350
	6 / 9	1.7225	42 CrMo 4	708 M 40		42 CD 4	42 CrMo 4		2244	SCM 440 (H)	4140, 4142, G 41400
	6 / 9	1.8509	41 CrAlMo 7	905 M 39	41B	40 CAD 6.12	41 CrAlMo 7			SACM 645	A355GrA, K 24065
	6 / 9	1.0961	60 SiCr 7			60 SC 7	60 SiCr 8				9262
	6 / 9	1.2067	100 Cr 6	BL 3							L 3, T 61203
	6 / 9	1.2419	105 WCr 6			105 WC 13	107 WCr 5 KU		2140	SKS 31	
	6 / 9	1.2542	45 WCrV 7	BS 1			45 WCrV 8 KU		2710		S 1, T 41901
	6 / 9	1.2713	55 NiCrMoV 6			55 NCDV 7		F.520.5		SKT 4	L 6, T 61206
	6 / 9	1.7035	41 Cr 4	530 M 40	18	42 C 4	41 Cr 4			SCr 440 (H)	5140, G 51400
	6 / 9	1.7176	55 Cr 3	527 A 60	48	55 C 3	55 Cr 3		2253	SUP 9 (A)	5155, G 51550
	6 / 9	1.6546	40 NiCrMo 2-2	311-Type 7		40 NCD 2	40 NiCrMo 2 (KB)			SNCM 240	8740, G 87400
	6 / 9	1.6511	36 CrNiMo 4	816 M 40	110	40 NCD 3	38 NiCrMo 4 (KB)				9840, G 98400
	6 / 9	1.6582	34 CrNiMo 6	817 M 40	24	35 NCD 6	35 NiCrMo 6 (KW)		2541	SNCM 447	4340
	6 / 9	1.7361	32 CrMo 12	722 M 24	40B	30 CD 12	32 CrMo 12		2240		
	6 / 9	1.8159	50 CrV 4	735 A 50	47	50 CV 4	51 CrV 4	51CrV4	2230	SUP 10	6145, 6150
	6 / 9	1.8523	39 CrMoV 13-9	897 M 39	40C		36 CrMoV 13 9				
	6 / 9	1.8161	58 CrV 4								
	10 / 11	1.5680	12 Ni 19			Z 18 N 5					2515
	10 / 11	1.2363	X100 CrMoV 5-1	BA 2		Z 100 CDV 5	X 100 CrMoV 5 1 KU	F.5227	2260	SKD 12	A 2, T 30102
	10 / 11	1.2436	X210 CrW 12				X 215 CrW 12 1 KU	F.5213	2312	SKD 2	D 4
	10 / 11	1.2601	X165 CrMoV 12				X 165 CrMoV 12 KU		2310		
	10 / 11	1.3343	S 6-5-2	BM 2		Z 85 WDCV 06.05.04.02	HS 6-5-2		2722	SKH 51	M 2, T 11302
	10 / 11	1.2344	X40 CrMoV 5-1	BH 13		Z 40 CDV 5	X 40 CrMo 5 1 1 KU	F.5318	2242	SKD 61	H 13, T 20813
	10 / 11	1.2581	X30 WCrV 9-3	BH 21		Z 30 WCV 9	X 30 WCrV 9 3 KU			SKD 5	H 21, T 20821
	10 / 11	1.2080	X210 Cr 12	BD 3		Z 200 C 12	X 210 Cr 13 KU			SKD 1	D 3, T 30403
	10 / 11	1.3243	S 6-5-2-5	BM 35		Z 85 WDKCV 06.05.05.04.02	HS 6-5-2-5	HS 6-5-2-5	2723	SKH 55	M35
	10 / 11	1.3348	S 2-9-2			Z 100 DCWV 09.04.02.02	HS 2-9-2	HS 2-9-2	2782		M 7, T 11307

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Material Group 各国材料对照		WKR	DIN	BS	EN	AFNOR	UNI	UNE	SS	JIS	AISI / SAE / UNS
ISO	VDI [^] 3323	Germany	Germany	U.K.	U.K.	France	Italy	Spain	Sweden	Japan	USA
P	10 / 11	1.3255	S 18-1-2-5	BT 4		Z 80 WKC 18.05.04.0	HS 18-1-1-5	HS 18-1-1-5		SKH 3	T 4, T 12004
	10 / 11	1.3355	S 18-0-1	BT 1		Z 80 WC 18.04.01	HS 18-0-1	HS 18-0-1		SKH 2	T 1, T 12001
	10 / 11	1.4718	X45 CrSi 9-3	401 S 45	52	Z 45 CS 9	X 45 CrSi 8			SUH 1	HNW 3, S 65007
	12 / 13	1.4104	X12 CrMoS 17	420 S 37		Z 10 CF 17	X 10 CrS 17	F.3117	2383	SUS 430 F	430 F, S 43020
	12 / 13	1.4000	X6 Cr 13	403 S 17		Z 6 C 13	X 6 Cr 13	F.3110	2301	SUS 403	403, S 40300
	12 / 13	1.4016	X6 Cr 17	430 S 15	60	Z 8 C 17	X 8 Cr 17	F.3113	2320	SUS 430	430, S 43000
	12 / 13	1.4113	X6 CrMo 17	434 S 17		Z 8 CD 17.01	X 8 CrMo 17			SUS 434	434, S 43400
	12 / 13	1.4006	X12 Cr 13	410 S 21	56A	Z10 C 13	X 12 Cr 13	F.3401	2302	SUS 410	410 S, S 41000
	12 / 13	1.4001	X7 Cr 14					F.8401		SUS 429	429
	12 / 13	1.4871	X53 CrMnNiN 21-9	349 S 52		Z 52 CMN 21.09	X 53 CrMnNiN 21 9			SUH 35	EV 8, S 63008
	12 / 13	1.4034	X46 Cr 13	420 S 45	56D	Z 40 C 14	X 40 Cr 14	F.3405	2304	SUS 420J2	
	12 / 13	1.4057	X19 CrNi 17-2	431 S 29	57	Z 15 CN 16.02	X 16 CrNi 16	F.3427	2321	SUS 431	431, S 43100
M	12 / 13	1.4313	X3 CrNi 13-4	425 C 11		Z 5 CN 13.4	X 6 CrNi 13 04		2385	SCS 5	CA 6-NM, J 91540
	12 / 13	1.4027	G-X20Cr14	420 C 24	56B	Z 20 C 13 M				SCS 2	
	14.1	1.4436	X3 CrNiMo 17-13-3	316 S 33		Z 6 CND 18.12.03	X 5 CrNiMo 17 13 2		2343	SUS 316	316, S 31600
	14.1	1.4310	X10 CrNi 18-8	301 S 21		Z 12 CN 17.07	X2CrNi18 07	F.3517	2331	SUS 301	301, S 30100
	14.1	1.4401	X5 CrNiMo 17-12-2	316 S 31	58J	Z 6 CND 17.11	X 5 CrNiMo 17 12	F.3543	2347	SUS 316	316, S 31600
	14.1	1.4429	X2CrNiMoN 17-13-3	316 S 62		Z 2 CND 17.13 Az	X 2 CrNiMoN 17 13 3		2375	SUS 316 LN	316 LN, S 31653
	14.1	1.4583	X6 CrNiMoNb 18-12				X 6 CrNiMoNb 17 13				318
	14.1	1.4305	X10 CrNiS 18-10	303 S 21	58M	Z 10 CNF 18.09	X 10 CrNi 18 09	F.3508	2346	SUS 303	303, S 30300
	14.1	1.4301	X5 CrNi 18-10	304 S 15	58E	Z 6 CN 18.09	X 5 CrNi 18 11	F.3504	2332, 2333	SUS 304	304, 304 H, S 30400
	14.1	1.4571	X6 CrNiMoTi17-12-2	320 S 31	58J	Z 6 CNT 17.12	X 6 CrNiMoTi 17 12	F.3535	2350	SUS 316 Ti	316 Ti, S 31635
	14.1	1.4311	X2 CrNiN 18 10	304 S 62		Z 2 CN 18.10	X2CrNiN18 10	F.3541	2371	SUS 304 LN	304 LN, S 30453
	14.1	1.4308	G-X6CrNi 18-9	304 C 15	58E	Z 6 CN 18.10 M			2333	SCS 13	CF-8, J 92590
K	14.1	1.4408	G-X6CrNiMo 18-10	316 C 16					2343	SCS 14	CF-8M, J 92900
	14.1	1.4581	G-X5CrNiMoNb 18	318 C 17		Z 4 CNDNb 18.12	GX5CrNiMoNb19 11 2			SCS 22	
	14.2	1.4845	X12 CrNi 25-21	310 S 24		Z 12 CN 25.20	X 6 CrNi 25 20	F.331	2361	SUH 310; SUS 310 S	310 S
	14.2	1.4878	X12 CrNiTi 18-9	321 S 51	58B	Z6CNT18.12B		F.3523	2337	SUS 321	321
	14.2	1.4541	X14 CrNiTi 18-10	321 S 12		Z 6 CNT 18.10	X 6 CrNiTi 18 11	F.3523	2337	SUS 321	321 H, S 32100
	14.2	1.4550	X6 CrNiNb 18-10	347 S 17	58F	Z 6 CNDNb 18.10	X 6 CrNiNb 18 11	F.3524	2338	SUS 347	347, S 34700
	14.3	1.4545	X5CrNiCuNb15-5-4			EZ5CNU15-05					S15500, 15-5 PH
	14.3	1.4542	X5CrNiCuNb16-4			Z6CNU17-04					S17400, 17-4 PH; 630
	15 / 16	0.6020	GG 20	180, 200/220, 220, Grade180, Grade260		FGL200, Ft20D	G 20	FG20	120	FC200	200/225, 25B, 30, 30B
	15	0.6010	GG-10		100	FT 10 D	G10		0110-00	FC100	
	15	0.6015	GG 15	Grade 150		FT 15 D	G 15	FG 15	0115-00	FC150	NO 25 B
	15	0.6660	GGL-NiCr202	L-NiCuCr202		L-NC 202			0523-00		A436 Type 2
	15	0.7040	GGG 40	SNG 420/12		FCS 400-12	G5400-12	FGE 38-17	0717-02	FCD400	60-40-18
	16	0.6030	GG30	Grade 300		Ft 30 D	G30	FG30	01 30-00	FC300	300/325, 40B, 45/50, 45B
	16	0.6035	GG-35	GRADE 350		Ft35D	G 35	FG 35	135	FC350	A48-50
	16	0.6040	GG40	GRADE400		Ft 40 D			140		A48-60 B
	16	0.7070	GGG-70	SNG700/2	EN-JS1070	FGS 700-2	GGG 70	GGG 70	07 37-01	FCD700, FCD700-2	100-70-03
	17	0.7033	GGG35.3						07 17-15		Ni-ResistD-5B, S-NiCr35-3
	17	0.7043	GGG-40.3	370/7	EN-JS1025	FGS 370/17			0717-15	FCD400-18L	60/40/18
	17	0.7050	GGG50	SNG500/7	EN-JS1050	FGS 500/7	GGG 50	FGE50-7	0727-02	FCD500, FCD500-7	65-45-12, 70-50-05, 80-55-06
	17	0.7652	GGG-NiMn 13 7	S-NiMn 137		S-Mn 137					
	17	0.7660	GGG-NiCr 20 2	Grade S6		S-NC 202			0772-00		A43D2, Ni-ResistD-2, S-NiCr20-2
	18	0.6025	GG25	Grade260		Ft 25 D	G25	FG25	0717-12		250/275, 35, 35B, 40
	18	0.7060	GGG60	SNG600/3	EN-JS1060	FGS600-3	G 25	FG 25	07 32-03	FC250	100-70-03, 80-55-06, 80-60-03
	18								0727-03	FCD600	A48 40 B
	19	0.8055	GTW55								
	19	0.8135	GTS-35-10	B 340/2		Mn 35-10		GTS 35	810		
	19	0.8145	GTS-45-06	P 440/7		Mn 450-6			0815-00		A220-40010
	19		GTS-35	B 340/12			0852-00	GMN 45			
	19			8 290/6		MN 32-8					
	19		GTS-35	B340/12		MN 35-10			0810-00		32510
	20	0.8035	GTM-35	W340/3		MB35-7			814	AC4A	
	20	0.8040	GTW-40	W410/4		MB40-10			08 15	FCMW330	
	20	0.8045						GTM 35	852		
	20	0.8065	GTMW-65				GMB40	GTM 40			
	20	0.8155	GTS-55-04	P 510/4		Mn 550-4	GMB45	GTM 45			A220-50005
	20	0.8165	GTS-65-02	P 570/3		Mn 650-3			0854-00		70003
	20	0.8170	GTS-70-02	P 690/2		Mn 700-2	GMN 55, 65		0854-00	FCMP490	90001
	20		GTS-45	P440/7			20 Mn 7	F.1515-20 Mn 6		SMnC 420	400 10
	20		GTS-65	P 570/3		MP 60-3	C 36; C 38		1572	S 35 C	70003

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ISO	VDI 3323	Germany	Germany	U.K.	U.K.	France	Italy	Spain	Sweden	Japan	USA
N	21	3.0205							08 52		A199
	21	3.0255	Al99.5	L31/34/36		A59050C	P-Al99.5		Al99.5	FCMP540	1000
	21	3.3315	AlMg1								
	21	3.0505	AlMn0.5Mg0.5								
	21	3.0275	Al99.7	4508, 9001-3, P-Al99.7		1070A	Al99.7			1070, A1070	1070A
	21	3.0285	Al99.8	1080A		1080A	4590, 9001-4, P-Al99.8			1080A, 1080A	1080A, 1080A
	22	3.1325	AlCuMg 1			2017A	P-AlCu4MgMnSi			2017	A92017
	22	3.1655	AlCuSiPb								
	22	3.2315	AlMgSi1								
	22	3.4345	AlZnMgCu0,5	L 86		AZ 4 GU/9051					7050
	22	3.1305	AlCuMg0.5	L86		A-U2G2117	P-AlCu2.5MgSi			2117	2117
	22	3.0517	AlMnCu								
	23	3.2381	G-AlSi 10 Mg	G-AlSi9Mg		A-510G			AlSi10Mg	AC4A, ADC3	A03590
	23	3.2382	GD-AlSi10Mg						811-04	ADC3	
	23	3.2581	G-AlSi12	LM20		A-512U	G-AlSi13CuMn		AlSi12Cu	AC3A	A04130
	23	3.3561	G-AlMg 5							AC7A, ADC5, Al-Mg6	
	23	3.5101	G-MgZn4sE1Zr1	MAG 5							ZE 41
	23	3.5103	MgSE3Zn27r1	MAG 6		G-TR3Z2					EZ 33
	23	3.5812	G-MgAl8Zn1	NMAG 1							AZ 81
	23	3.5912	G-MgAl9Zn1	MAG 7							AZ 91
	23	3.3549	AlMg5Mn								
	23	3.3555	AlMg5								
	23	3.3547	AlMg4.5, AlMg4.5Mn	5083		5183	P-AlMg4.4		AlMg4.5Mn	5082	A95083
	23-24	3.2383	G-AlSi0Mg(Cu)	LM9					4253		A360.2
	23-24			2789;1973		NF A32-201					A356-72
	23-24			LM25					4244	A5052	356.1
	23-24		G-AlSi12	LM 6					4261		A413.2
	23-24		G-AlSi 12 (Cu)	LM 20					4260	ADC12	A413.1
	23-24		GD-AlSi12						4247	A6061	A413.0
	23-24		GD-AlSi8Cu3	LM24					4250	A7075	A380.1
	24	2.1871	G-AlCu 4 TiMg								
	24	3.1754	G-AlCu5Ni1,5								
	24	3.2163	G-AlSi9Cu3							ADC10	
	24	3.2371	G-AlSi 7 Mg							AC4CH	4218 B
	24	3.2373	G-AlSi9MGWA			A-57G			4251	C4BS	SC64D
	24	3.5106	G-MgAg3SE2Zr1	mag 12							QE 22
	24		G-ALMG5	LM5		A-SU12			4252		GD-AlSi12
	26	2.1090	G-CuSn 7 5 pb			U-E 7 Z 5 pb 4					C93200
	26	2.1096	G-CuSn5ZnPb	LG 2							c 83600
	26	2.1098	G-CuSn 2 Znpb								C 83600
	26	2.1182	G-CuPb15Sn	LB1		U-pb 15 E 8					C23000
	27	2.0240	CuZn 15								
	27	2.0321	CuZn 37	cz 108		CuZn 36, CuZn 37	C 2700				C27200
	27	2.0590	G-CuZn40Fe								
	27	2.0592	G-CuZn 35 Al 1	U-Z 36 N 3		HTB 1					C 86500
	27	2.1293	CuCrZr	CC 102		U-Cr 0.8 Zr					C 18200
	28	2.0060	E-Cu57								
	28	2.0375	CuZn36Pb3								
	28	2.0966	CuAl 10 Ni 5 Fe 4	Ca 104		U-A 10 N					C 63000
	28	2.0975	G-CuAl 10 Ni								B-148-52
	28	2.1050	G-CuSn 10	CT1							c 90700
	28	2.1052	G-CuSn 12	pb 2		UE 12 P					C 90800
	28	2.1292	G-CuCrF 35	CC1-FF							C 81500
	28	2.4764	CoCr20W15Ni								

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Material Group 各国材料对照		WKR	DIN	BS	EN	AFNOR	UNI	UNE	SS	JIS	AISI / SAE / UNS
ISO	VDI [^] 3323	Germany	Germany	U.K.	U.K.	France	Italy	Spain	Sweden	Japan	USA
S	31	1.4558	X 2 NiCrAlTi 32 20	NA 15							N 08800
	31	1.4562	X 1 NiCrMoCu 32 28 7								N 08031
	31	1.4563	X 1 NiCrMoCuN 31 27 4						2584		N 08028
	31	1.4864	X 12 NiCrSi 36 16	NA 17		Z 12 NCS 35.16				SUH 330	INCOLOY DS,, N08330
	31	1.4865	G-X40NiCrSi38 18	330 C 40			XG50NiCr39 19			SCH15	N 08004
	31	1.4958	X 5 NiCrAlTi 31 20								
	31	2.4668	NiCr19NbMo			NC20K14					AMS 5544
	32	1.4977	X 40 CoCrNi 20 20			Z 42 CNKDOWNb					
	33	2.4360	NiCu30Fe	NA 13		NU 30					Monel 400
	33	2.4603				NC22FeD					5390A
	33	2.4610	NiMo16Cr16Ti								Hastelloy C-4
	33	2.4630	NiCr20Ti	HR 5,203-4		NC 20 T					Nimonic 75
	33	2.4642	NiC29Fe			Nnc 30 Fe					Inconel 690
	33	2.4856	NiCr22Mo9Nb	NA 21		NC 22 FeDNb					INCONEL 625, N 26625
	33	2.4858	NiCr21Mo	NA 16		NC 21 Fe DU					Incoloy 825
	34	2.4375	NiCu30 Al	NA 18		NU 30 AT					Monel k-500
	34	2.4631	NiCr20TiAl	Hr40:601, NA 20		NC20TA					N 07080
	34	2.4668	NiCr19FeNbMo			NC 19 Fe Nb					Inconel 718
	34	2.4694	NiCr16fE7TiAl								Inconel
	34	2.4955	NiFe25Cr20NbTi								
	34	2.4668	NiCr19Fe19NbMo	HR8		NC19eNB					5383
	34	2 4670	S-NiCr13A16MoNb	3146-3		NC12AD					5391
	34	2.4662	NiFe35Cr14MoTi			ZSNCDT42					5660
	34	2.4964	CoCr20W15Ni			KC20WN					5537C
	34		COCr22W14Ni			KC22WN					AMS 5772
	34										N07725, Inconel 725
	35	2.4669	NiCr15Fe7TiAl			NC 15 TNb A					Inconel X-750
	35	2.4685	G-NiMo28								Hastelloy B
	35	2.4810	G-NiMo30								Hastelloy C
	35	2.4973	NiCr19Co11MoTi			NC19KDT					AMS 5399
	35	3.7115	TiAl5Sn2								
	36	3.7025	Ti 1	2 TA 1							R 50250
	36	3.7225	Ti 1 pd	TP 1							R 52250
	36	2 4674	NiCo15Cr10MoAlTi								AMS 5397
	37	3.7124	TiCu2	2 TA 21-24							
	37	3.7145	TiAl6Sn2Zr4Mo2Si								R 54620
	37	3.7165	TiAl6V4	TA 10-13;TA 28		T-A 6 V					
	37	3.7185	TiAl4Mo4Sn2	TA 45-51; TA 57							
	37	3.7195	TiAl 3 V 2.5								
	37		TiAl4Mo4Sn4Si0.5								
	37		TiAl5Sn2.5	TA14/17		T-A5E					AMS R54520
	37		TiAl6V4	TA10-13/TA28		T-A6V					AMS R56400
	37		TiAl6V4ELI	TA11							AMS R56401
H	38	1.1545	C 105 W1	BW 1A		Y1 105	C 100 KU	F-5118	1880	SK 3	W 1
	38	1.2762	75 CrMoNiW 6 7								
	38	1.4125	X105 CrMo 17			Z 100 CD 17					440C
	38	1.6746	32 nlcRmO 14 5	832 M 31		35 NCD 14					
	40	0.9620	G-X 260 NiCr 4 2	Grade 2 A			0512-00				Ni- Hard 2
	40	0.9625	G-X 330 Ni Cr 4 2	Grade 2 B							Ni- Hard 1
	40	0.9630	G-X 300 CrNiSi 9 5 2				0513-00				Ni-Hard 4
	40	0.9640	G-X 300 CrMoNi 15 2 1								
	40	0.9650	G-X 260 Cr 27	Grade 3 D							A 532 III A 25% Cr
	40	0.9655	G-X 300 CrNiMo 27 1	Grade 3 E							A 532 III A 25% Cr
	40	1.2419	105 WCr 6	105WC 13			0466-00				
	40	1.4841	X15 CrNiSi 25 20	314 531		Z 15 CNS 25-20					310
	41	0.9635	G-X 300 CrMo 15 3								
	41	0.9645	G-X 260 CrMoNi 20 2 1					107 WCr 5 KU			

Technical Information Speeds & Feeds - Taps

suttontools

ISO	VDI	Material Group	工件材料类别	Sutton	应用材料代号
P	A	Steel	钢件	N	UN
M	R	Stainless Steel	不锈钢	VA	
K	F	Cast Iron	铸铁	GG	
N	N	Non-Ferrous Metals, Aluminiums & Coppers	有色金属	Al W	
S	S	Titaniums & Super Alloys	钛合金及超级合金	Ti	Ni
H	H	Hard Materials (≥ 45 HRC)	淬火钢(≥ 45 HRC)	H	

ISO及VDI应用材料代号

^ VDI 3323 material groups can also be determined by referring to the workpiece material cross reference listing. Refer to main index of this section.

^ VDI 3323 工件材料类别明细可查阅产品目录技术篇的工件材料分类表。

Catalogue Code 产品号

UNC
UNF

Material 材质

Surface Finish 表面处理

Sutton Designation 神盾工模具代号

Geometry 几何结构

Thread Depth 有效攻牙深度



THREAD FORMING	THROUGH HOLES	BLIND/THROUGH	FOR TAPPING BLIND HOLES
T514/T515 T520/T521 T526/T527 T662/T623 T539	T499 T500 T548 T615 T616 T621 T622	T294/T295 T296/T297	T503/T606 T504/T607 T690 T570/T611 T577
HSS Co.8	HSSE	SPM VHM	HSSE
TiN	BrT Blu	TiCN	BrT Blu Blu BrT
N	N VA	XH VH	N VA VADH
Single Coolant Groove Multi Coolant Groove	Special Relief	Special Relief	R40 R15
≤ 3xØ	≤ 3xØ	≤ 1.5xØ	≤ 2.5xØ ≤ 1.5xØ

ISO	VDI 3323	Material 工件材料	Condition 材料状态	HB 硬度	N/mm²	Vc (m/min)	Vc (m/min)	Vc (m/min)	Vc (m/min)
P	1	Steel - Non-alloy, cast & free cutting	~ 0.15 %C	A	125	440	18	18	10
	2	钢件-非合金及易切削	~ 0.45 %C	A	190	640	18	18	10
	3			QT	250	840	15	15	8
	4		~ 0.75 %C	A	270	910	17	17	9
	5			QT	300	1010	-	-	10
	6	Steel - Low alloy & cast < 5% of alloying elements		A	180	610	18	18	10
	7	钢件-低合金钢		QT	275	930	-	-	6
	8			QT	300	1010	-	-	7
	9			QT	350	1180	-	-	4
	10	Steel - High alloy, cast & tool		A	200	680	-	-	9
	11	高合金钢及工具钢		HT	325	1100	-	-	7
	12	Steel - Corrosion resistant & cast	Ferritic / Martensitic	A	200	680	-	-	-
	13	钢件-耐酸钢	Martensitic	QT	240	810	-	-	4
M	14.1	Stainless Steel	Austenitic	A	180	610	9	9	-
	14.2	不锈钢	Duplex		250	840	6	6	-
	14.3		Precipitation Hardening		250	840	-	-	-
K	15	Cast Iron - Grey (GG)	Ferritic / Pearlitic		180	610	-	-	10
	16	灰铸铁	Pearlitic		260	880	-	-	-
	17	Cast Iron - Nodular (GGG)	Ferritic		160	570	-	-	10
	18	球墨铸铁	Pearlitic		250	840	-	-	11
	19	Cast Iron - Malleable	Ferritic		130	460	-	-	12
	20	可锻铸铁	Pearlitic		230	780	-	-	10
N	21	Aluminum & Magnesium - wrought alloy	Non Heat Treatable		60	210	18	18	10
	22	锻造铝合金	Heat Treatable	AH	100	360	23	23	12
	23	Aluminum & Magnesium - cast alloy ≤12% Si	Non Heat Treatable		75	270	23	23	12
	24	压铸铝 ≤12% Si	Heat Treatable	AH	90	320	23	23	12
	25	Al & Mg cast alloy 压铸铝 >12% Si	Non Heat Treatable		130	460	-	-	-
	26	Copper & Cu alloys (Brass/Bronze)	Free cutting, Pb > 1%		110	390	12	12	6
	27	铜及铜合金	Brass (CuZn, CuSnZn)		90	320	-	-	14
	28		Bronze (CuSn)		100	360	21	21	-
	29	Non-metallic - Thermosetting & fiber-reinforced plastics					-	-	-
	30	Non-metallic - Hard rubber, wood etc.					-	-	-
S	31	High temp. alloys	Fe based	A	200	680	-	-	-
	32	耐热合金		AH	280	950	-	-	-
	33		Ni / Co based	A	250	840	-	-	-
	34			AH	350	1180	-	-	-
	35			C	320	1080	-	-	-
	36	Titanium & Ti alloys	CP Titanium		400 MPa		-	-	-
	37.1	钛合金	Alpha alloys		860 MPa		-	-	-
	37.2		Alpha / Beta alloys	A	960 MPa		-	-	-
	37.3			AH	1170 MPa		-	-	-
	37.4		Beta alloys	A	830 MPa		-	-	-
	37.5			AH	1400 MPa		-	-	-
H	38.1	Hardened steel	HT	45 HRC			-	-	4
	38.2	淬火钢	HT	55 HRC			-	-	4
	39.1		HT	58 HRC			-	-	4
	39.2		HT	62 HRC			-	-	4
	40	Cast Iron	Chilled	C	400	1350	-	-	-
	41	硬铸铁	HT	55 HRC			-	-	15

Condition (材料状态): A (Annealed) (正火), AH (Age Hardened) (时效硬化), C (Cast) (铸件), HT (Hardened & Tempered) (淬火及回火), QT (Quenched & Tempered) (调质及回火)

Bold = Optimal | Regular = Effective 粗体 = 非常适合 | 细体 = 适合

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.

METRIC TAPS (mm size)

$$\begin{aligned}
 \phi &= \text{nominal tap size (mm)} \\
 P &= \text{thread pitch (mm)} \\
 n &= \text{spindle speed (RPM)} \\
 v_c &= \text{cutting speed (m/min)} \\
 v_f &= \text{feed rate (mm/min)} \\
 v_r &= \text{feed rate per rev (mm/rev)}
 \end{aligned}
 \quad
 \begin{aligned}
 n &= \frac{v_c \times 1000}{\phi \times \pi} \approx \frac{v_c}{\phi} \times 318 \\
 v_c &= \frac{n \times \phi \times \pi}{1000} \approx \frac{n \times \phi}{318} \\
 v_f &= n \times P
 \end{aligned}$$

Technical Information Speeds & Feeds - Endmills

suttontools

ISO VDI Material Group 工件材料类别 Sutton 应用材料代号

P	A	Steel 钢件	N	UNI
M	R	Stainless Steel 不锈钢	VA	
K	F	Cast Iron 铸铁	GG	
N	N	Non-Ferrous Metals, Aluminums & Coppers 有色金属	Al W	
S	S	Titaniums & Super Alloys 钛合金及超级合金	Ti	Ni
H	H	Hard Materials (≥ 45 HRC) 淬火钢(≥ 45 HRC)	H	

ISO及VDI应用材料代号

^ VDI 3323 material groups can also be determined by referring to the workpiece material cross reference listing. Refer to main index of this section.

^ VDI 3323 工件材料类别明细可查阅产品目录技术篇的工件材料分类表。

Catalogue Code 产品号

Material 材质

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Type of Cut: Slotting 槽铣

Finishing 精铣

Universal 侧铣

Roughing 粗铣

Profiling 仿型铣

ap × Ø 切深

ae × Ø 切深

				
E100	E102/E225	E125/E227	E127/E229	E126
HSS Co.8				
BrT	BrT	BrT	BrT	TiCN
N				
R30				
•	•			
		•	•	•
		•		•
				•
0.5	0.5	1.5	1.5	1.5
1.0	1.0	0.1	0.25	0.1
0.5	0.5	1.5	1.5	1.5
1.0	1.0	0.1	0.25	0.1

ISO	VDI 3323	Material 工件材料	Condition 材料状态	HB 硬度	N/mm²	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #
P	1	Steel - Non-alloy, cast & free cutting 钢件-非合金及易切削	~ 0.15 %C	A	125	440	30	6	18	4	40	4	40	5	24	3	50
	2		~ 0.45 %C	A	190	640	30	6	18	4	40	4	40	5	24	3	50
	3			QT	250	840	30	6	18	4	40	4	40	5	24	3	50
	4		~ 0.75 %C	A	270	910	30	6	18	4	40	4	40	5	24	3	50
	5			QT	300	1010	20	5	12	3	25	3	25	4	15	2	30
	6	Steel - Low alloy & cast < 5% of alloying elements 钢件-低合金钢		A	180	610	30	6	18	4	40	4	40	5	24	3	50
	7			QT	275	930	25	5	15	3	30	3	30	4	18	3	40
	8			QT	300	1010	20	5	12	3	25	3	25	4	15	3	30
	9			QT	350	1180	-	-	-	-	-	-	-	-	-	25	3
	10	Steel - High alloy, cast & tool 高合金钢及工具钢		A	200	680	20	5	12	3	25	3	25	4	20	3	30
	11			HT	325	1100	-	-	-	-	-	-	-	-	-	25	3
	12	Steel - Corrosion resistant & cast 钢件-耐酸钢	Ferritic / Martensitic	A	200	680	-	-	-	-	10	2	10	3	8	2	12
	13		Martensitic	QT	240	810	15	4	10	2	22	3	22	4	15	3	25
M	14.1	Stainless Steel 不锈钢	Austenitic	A	180	610	-	-	-	-	-	-	-	-	-	20	3
	14.2		Duplex		250	840	-	-	-	-	-	-	-	-	-	15	1
	14.3		Precipitation Hardening		250	840	-	-	-	-	-	-	-	-	-	12	2
K	15	Cast Iron - Grey (GG) 灰铸铁	Ferritic / Pearlitic		180	610	30	5	18	3	35	3	35	4	20	3	40
	16		Pearlitic		260	880	25	4	15	2	25	2	25	3	15	2	30
	17	Cast Iron - Nodular (GGG) 球墨铸铁	Ferritic		160	570	20	3	12	2	22	2	22	3	12	2	5
	18		Pearlitic		250	840	20	3	12	2	22	2	22	3	12	2	5
	19	Cast Iron - Malleable 可锻铸铁	Ferritic		130	460	20	3	12	2	22	2	22	3	12	2	5
N	20		Pearlitic		230	780	20	3	12	2	22	2	22	3	12	2	5
	21	Aluminum & Magnesium - wrought alloy 锻造铝合金	Non Heat Treatable		60	210	70	6	40	4	70	5	70	6	40	4	75
	22		Heat Treatable	AH	100	360	70	6	40	4	70	5	70	6	40	4	75
	23	Aluminum & Magnesium - cast alloy ≤12% Si 压铸铝 ≤12% Si	Non Heat Treatable		75	270	50	5	30	3	55	4	55	5	35	3	60
	24		Heat Treatable	AH	90	320	50	5	30	3	55	4	55	5	35	3	60
	25	Al & Mg-cast alloy 压铸铝 >12% Si	Non Heat Treatable		130	460	30	6	13	4	-	-	-	-	-	50	4
	26	Copper & Cu alloys (Brass/Bronze) 铜及铜合金	Free cutting, Pb > 1% 自由切削, Pb > 1%		110	390	25	5	15	3	40	4	40	5	24	3	40
	27		Brass (CuZn, CuSnZn) 黄铜		90	320	-	-	-	-	-	-	-	-	-	-	-
	28		Bronze (CuSn) 青铜		100	360	50	6	30	4	70	5	70	6	40	4	75
	29	Non-metallic - Thermosetting & fiber-reinforced plastics 非金属材料-热固性塑料及纤维增强塑料					-	-	-	-	-	-	-	-	-	-	-
S	30	Non-metallic - Hard rubber, wood etc. 非金属材料-硬橡胶、木材等					-	-	-	-	-	-	-	-	-	-	-
	31	High temp. alloys 耐热合金	Fe based	A	200	680	-	-	-	-	-	-	-	-	-	-	-
	32			AH	280	950	-	-	-	-	-	-	-	-	-	-	-
	33		Ni / Co based	A	250	840	-	-	-	-	-	-	-	-	-	-	-
	34			AH	350	1180	-	-	-	-	-	-	-	-	-	-	-
	35			C	320	1080	-	-	-	-	-	-	-	-	-	-	-
	36	Titanium & Ti alloys 钛合金	CP Titanium		400 MPa		-	-	-	-	-	-	-	-	-	-	-
	37.1		Alpha alloys		860 MPa		-	-	-	-	-	-	-	-	-	-	-
	37.2		Alpha / Beta alloys	A	960 MPa		-	-	-	-	-	-	-	-	-	-	-
	37.3			AH	1170 MPa		-	-	-	-	-	-	-	-	-	-	-
H	37.4		Beta alloys	A	830 MPa		-	-	-	-	-	-	-	-	-	-	-
	37.5			AH	1400 MPa		-	-	-	-	-	-	-	-	-	-	-
	38.1	Hardened steel 淬火钢		HT	45 HRC		-	-	-	-	-	-	-	-	-	-	-
	38.2			HT	55 HRC		-	-	-	-	-	-	-	-	-	-	-
	39.1			HT	58 HRC		-	-	-	-	-	-	-	-	-	-	-
	39.2			HT	62 HRC		-	-	-	-	-	-	-	-	-	-	-
	40	Cast Iron 硬铸铁	Chilled	C	400	1350	-	-	-	-	25	3	25	3	20	2	35
	41			HT	55 HRC		-	-	-	-	-	-	-	-	-	-	-

Condition (材料状态):

A (Annealed) (正火), AH (Age Hardened) (时效硬化),

C (Cast) (铸件), HT (Hardened & Tempered) (淬火及回火),

QT (Quenched & Tempered) (调质及回火)

Bold = Optimal | Regular = Effective

粗体 = 非常适合 | 细体 = 适合

Notes on Milling

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

Feed Table (f) (mm/tooth) 进给量表 f (mm/齿)																				
Ø	Feed # 进给号																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.010	0.011	0.013	0.014	0.016	0.018	0.020	0.022	0.024	0.026	0.030
3	0.002	0.003	0.004	0.005	0.006	0.008	0.009	0.010	0.012	0.014	0.016	0.018	0.020	0.023	0.025	0.028	0.032	0.034	0.038	0.042
4	0.004	0.005	0.006	0.007	0.009	0.010	0.012	0.014	0.016	0.018	0.021	0.023	0.026	0.030	0.032	0.036	0.040	0.044	0.045	0.050
5	0.005	0.006	0.008	0.009	0.011	0.013	0.015	0.017	0.020	0.023	0.025	0.030	0.032	0.036	0.040	0.044	0.050	0.055	0.060	0.065
6	0.006	0.008	0.009	0.011	0.013	0.016	0.018	0.021	0.024	0.028	0.030	0.034	0.038	0.042	0.045	0.050	0.055	0.060	0.070	0.075
8	0.010	0.012	0.014	0.017	0.019	0.022	0.025	0.028	0.032	0.036	0.040	0.045	0.050	0.055	0.060	0.065	0.075	0.080	0.085	0.095
10	0.013	0.015	0.018	0.021	0.024	0.028	0.032	0.036	0.040	0.045	0.050	0.055	0.060	0.070	0.075	0.085	0.090	0.100	0.11	0.12
12	0.016	0.019	0.022	0.026	0.030	0.034	0.038	0.044	0.050	0.055	0.060	0.065	0.075	0.080	0.090	0.100	0.11	0.12	0.13	0.14
16	0.020	0.024	0.028	0.034	0.038	0.044	0.050	0.055	0.060	0.070	0.080	0.085	0.095	0.11	0.12	0.13	0.14	0.16	0.17	0.18
20	0.022	0.028	0.032	0.038	0.044	0.050	0.060	0.065	0.075	0.085	0.095	0.11	0.12	0.13	0.15	0.16	0.18	0.19	0.21	0.23
25	0.025	0.032	0.038	0.045	0.055	0.060	0.070	0.080	0.090	0.10	0.12	0.13	0.15	0.16	0.18	0.20	0.22	0.24	0.26	0.29

Technical Information Speeds & Feeds - Endmills

suttontools

ISO VDI Material Group 工件材料类别 Sutton 应用材料代号

P	A	Steel 钢件	N	UN
M	R	Stainless Steel 不锈钢	VA	
K	F	Cast Iron 铸铁	GG	
N	N	Non-Ferrous Metals, Aluminiums & Coppers 有色金属	Al W	Ni
S	S	Titaniums & Super Alloys 钛合金及超级合金	Ti	
H	H	Hard Materials (≥ 45 HRC) 淬火钢 (≥ 45 HRC)	H	

ISO及VDI应用材料代号

^ VDI 3323 material groups can also be determined by referring to the workpiece material cross reference listing. Refer to main index of this section.

^ VDI 3323 工件材料类别明细可查阅产品目录技术篇的工件材料分类表。

Catalogue Code 产品号

Material 材质

Surface Finish 表面处理

Sutton Designation 神盾工具代号

Geometry 几何结构

Type of Cut: Slotting 槽铣

Finishing 精铣

Universal 侧铣

Roughing 粗铣

Profiling 仿型铣

ap x Ø 切深

ae x Ø 切深

				
E142/E144	E143/E145	E168	E171	E113
HSS Co.8				
BrT	TiCN	BrT	TiCN	BrT
WN		NH		N
R30 NR		R30 HR		R30
1.0	1.0	1.0	1.0	0.05
0.5	0.5	0.5	0.5	0.02-0.05

ISO	VDI ³³²³	Material 工件材料		Condition 材料状态	HB 硬度	N/mm ²	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	VDI ³³²³	ISO
P	1	Steel - Non-alloy, cast & free cutting 钢件-非合金及易切削	~ 0.15 %C	A	125	440	36	5	40	5	-	-	-	-	40	5	1	P
	2		~ 0.45 %C	A	190	640	36	5	40	5	-	-	-	-	40	5	2	
	3			QT	250	840	36	5	40	5	30	3	-	-	40	5	3	
	4		~ 0.75 %C	A	270	910	36	5	40	5	-	-	-	-	40	5	4	
	5			QT	300	1010	-	-	40	5	30	3	35	3	30	4	5	
	6	Steel - Low alloy & cast < 5% of alloying elements 钢件-低合金钢		A	180	610	36	5	40	5	-	-	-	-	40	5	6	
	7			QT	275	930	-	-	40	5	38	3	40	3	35	4	7	
	8			QT	300	1010	-	-	40	5	30	3	35	3	30	4	8	
	9			QT	350	1180	-	-	-	-	25	3	30	3	-	-	9	
	10	Steel - High alloy, cast & tool 高合金钢及工具钢		A	200	680	-	-	-	-	30	3	35	3	30	4	10	
	11			HT	325	1100	-	-	-	-	25	3	30	3	-	-	11	
	12	Steel - Corrosion resistant & cast 钢件-耐酸钢	Ferritic / Martensitic	A	200	680	-	-	-	-	15	3	20	3	-	-	12	
	13		Martensitic	QT	240	810	-	-	-	-	25	3	30	3	-	-	13	
M	14.1	Stainless Steel	Austenitic	A	180	610	-	-	-	-	-	-	35	4	20	4	14.1	M
	14.2	不锈钢	Duplex		250	840	-	-	-	-	-	-	25	3	15	2	14.2	
	14.3		Precipitation Hardening		250	840	-	-	-	-	-	-	20	3	-	-	14.3	
K	15	Cast Iron - Grey (GG)	Ferritic / Pearlitic		180	610	-	-	50	8	50	8	60	8	40	4	15	K
	16	灰铸铁	Pearlitic		260	880	-	-	-	-	-	-	40	8	30	3	16	
	17	Cast Iron - Nodular (GGG)	Ferritic		160	570	-	-	20	8	20	8	30	8	25	2	17	
	18	球墨铸铁	Pearlitic		250	840	-	-	-	-	-	-	30	8	25	2	18	
	19	Cast Iron - Malleable	Ferritic		130	460	-	-	20	8	20	8	30	8	25	2	19	
	20	可锻铸铁	Pearlitic		230	780	-	-	-	-	-	-	30	8	25	2	20	
N	21	Aluminum & Magnesium - wrought alloy 锻造铝合金	Non Heat Treatable		60	210	80	9	90	9	-	-	-	-	80	6	21	N
	22		Heat Treatable	AH	100	360	80	9	90	9	-	-	-	-	80	6	22	
	23	Aluminum & Magnesium - cast alloy ≤12% Si 压铸铝 ≤12% Si	Non Heat Treatable		75	270	55	8	65	8	-	-	-	-	55	5	23	
	24		Heat Treatable	AH	90	320	55	8	65	8	-	-	-	-	55	5	24	
	25	Al & Mg-cast alloy 压铸铝 >12% Si	Non Heat Treatable		130	460	-	-	-	-	-	-	-	-	50	5	25	
	26	Copper & Cu alloys (Brass/Bronze) 铜及铜合金	Free cutting, Pb > 1%		110	390	30	6	35	6	-	-	-	-	25	5	26	
	27		Brass (CuZn, CuSnZn)		90	320	-	-	-	-	25	5	30	5	-	-	27	
	28		Bronze (CuSn)		100	360	40	6	50	6	-	-	-	-	50	6	28	
	29	Non-metallic - Thermosetting & fiber-reinforced plastics						-	-	-	-	-	-	-	-	-	-	
30	Non-metallic - Hard rubber, wood etc.						-	-	-	-	-	-	-	-	-	-	30	
S	31	High temp. alloys 耐热合金	Fe based	A	200	680	-	-	-	-	-	-	-	-	-	-	31	S
	AH			280	950	-	-	-	-	-	-	-	-	32				
	Ni / Co based		A	250	840	-	-	-	-	-	-	-	-	-	-	33		
			AH	350	1180	-	-	-	-	-	-	-	-	-	-	34		
			C	320	1080	-	-	-	-	-	-	-	-	-	-	35		
	36	Titanium & Ti alloys 钛合金	CP Titanium		400 MPa		-	-	-	-	-	-	-	-	-	-	36	
	Alpha alloys			860 MPa		-	-	-	-	-	-	-	-	-	-	37.1		
			Alpha / Beta alloys	A	960 MPa		-	-	-	-	-	-	-	-	-	-	37.2	
			AH	1170 MPa		-	-	-	-	-	-	-	-	-	-	37.3		
			A	830 MPa		-	-	-	-	-	-	-	-	-	-	37.4		
	AH		1400 MPa		-	-	-	-	-	-	-	-	-	-	37.5			
H	38.1	Hardened steel 淬火钢		HT	45 HRC		-	-	-	-	25	3	30	3	-	-	38.1	H
	HT			55 HRC		-	-	-	-	-	-	-	-	-	38.2			
	HT			58 HRC		-	-	-	-	-	-	-	-	-	39.1			
	HT			62 HRC		-	-	-	-	-	-	-	-	-	39.2			
	40	Cast Iron 硬铸铁	Chilled	C	400	1350	-	-	-	-	-	-	40	8	-	-	40	
	HT			55 HRC		-	-	-	-	-	-	-	-	-	41			

IMPERIAL ENDMILLS (inch size)

Ø	= nominal tool diameter (inch)	$n = \frac{v_c \times 12}{\phi \times \pi} \approx \frac{v_c}{\phi} \times 3.82$
n	= Spindel speed (RPM)	
v _c	= Cutting speed (SFM)	$v_c = \frac{n \times \phi \times \pi}{12} \approx \frac{n \times \phi}{3.82}$
f _s	= Feed rate per tooth (inch/tooth)	$f_s = \frac{V_f}{z \times n}$
v _f	= Feed rate (inch/min)	$v_f = f_s \times z \times n$
z	= No. cutting edges	
Q	= Metal removal rate (in ³ /min)	$Q = \frac{a_p \times a_e \times v_f}{1000}$
a _p	= Cutting depth (inch)	
a _e	= Cutting width (inch)	

METRIC ENDMILLS (mm size)

Ø	= nominal tool diameter (mm)	$n = \frac{v_c \times 1000}{\phi \times \pi} \approx \frac{v_c}{\phi} \times 318$
n	= Spindel speed (RPM)	
v _c	= Cutting speed (m/min)	$v_c = \frac{n \times \phi \times \pi}{1000} \approx \frac{n \times \phi}{318}$
f _s	= Feed rate per tooth (mm/tooth)	$f_s = \frac{V_f}{z \times n}$
v _f	= Feed rate (mm/min)	$v_f = f_s \times z \times n$
z	= No. cutting edges	
Q	= Metal removal rate (cm ³ /min)	$Q = \frac{a_p \times a_e \times v_f}{1000}$
a _p	= Cutting depth (mm)	
a _e	= Cutting width (mm)	

Trade Name 名称	Coating 涂层类型	Coating Structure 涂层结构	Micro- hardness HV硬度	Coeff. of Friction vs Steel 摩擦系数	Thermal Stability 高温氧化温度	Colour 涂层颜色	Application & Benefits 用途及特点
Brt 光亮,无表面处理	-	-	-	0.8 - 1.0	-	-	For general purpose applications
Blu 表面氧化处理(黑色)	Steam Oxide	-	-	0.8 - 1.0	-	Blue - Black 蓝黑	- For ferrous metals - Prevents chip build-up on the cutting edges, especially in low carbon steels - Oxide layer protects surface - Good carrier of lubricants
Ni 表面氮化处理	Plasma Nitride	-	-	0.8 - 1.0	-	-	- Increases surface hardness - Better lubricant carrying properties - Abrasive materials - cast iron and aluminium alloys
Futura Nano (TiAlN) 高铝钛涂层	Titanium Aluminium Nitride	Nano Layer	3300 HV	0.3 - 0.35	up to 900°C	Violet - Grey 灰紫	- 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 HL涂层	TiAlN + WC/C	Nano Layer	3000 HV	0.15 - 0.20	up to 800°C	Dark Grey 灰黑	- Excellent friction and lubricating properties of the coating provide optimal chip flow - Tapping and drilling of hard to machine materials - Suitable for minimum quantity lubrication (MQL) and dry machining
Alcrona (AlCrN) 氮化铝铬涂层	Aluminium Chromium Nitride	Mono Layer	3200 HV	0.35	up to 1100°C	Blue - Grey 灰蓝	- Low alloy steels and high tensile steels - Hardened steels up to 54 HRC - Ideal for carbide tools
Helica Helica涂层	Alcrona based	Multi Layer	3000 HV	0.25	up to 1100°C	Copper 紫铜	- Longer tool life - Higher cutting speeds and feeds - Superb chip evacuation - Greater number of regrinds - Improved drill hole quality - Excellent performance in abrasive material
Aldura Aldura涂层	TiAlN + ALCrXn	Multi Layer	3300 HV	<0.4	>1100°C	Blue - Grey 灰蓝	- High speed machining - Suitable for minimum quantity lubrication (MQL) and dry machining - Machining of hardened steels (>60HRC) - Ideal for carbide tools
TiCN 碳氮化钛涂层	Titanium Carbonitride	Gradient Coating	3000 HV	0.4	up to 400°C	Blue - Grey 灰蓝	- High performance applications - Difficult to machine materials - Abrasive materials - cast iron and aluminium alloys - Adhesive materials - copper and copper based alloys
TiN 氮化钛涂层	Titanium Nitride	Mono Layer	2300 HV	0.4	up to 600°C	Gold - Yellow 金黄	- 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
TiSiN TiSiN涂层	TiSi based	Multi Layer	3600 HV	0.3	<1200°C	Copper 紫铜	- Suitable for high speed (wet / dry) and hard machining for difficult materials above 52 HRC. - Suitable for high speed machining with hardened steels above 60 HRC to maximum of 63 HRC - Vc & Vf = +50%
CrN 氮化铬涂层	Chromium Nitride	Gradient Coating	1750 HV	0.5	up to 700°C	Silver - Grey 银灰	- 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

Latest advances in thin film coatings to optimise your machining application

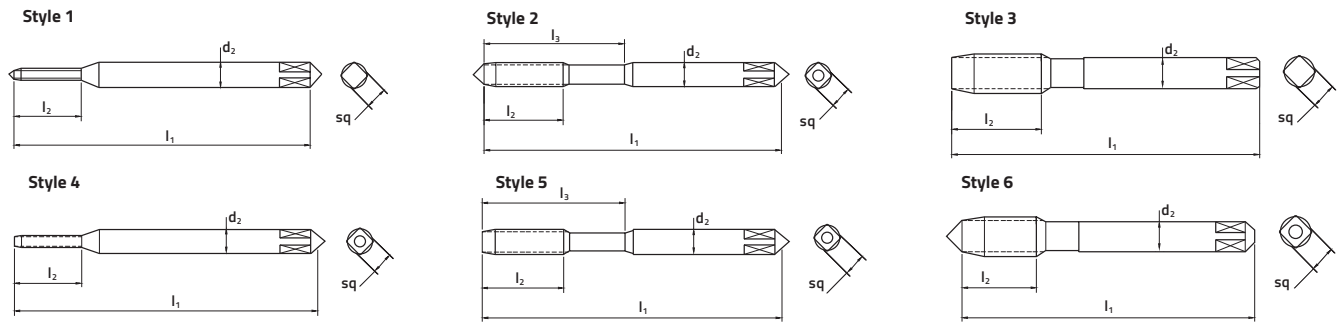


Abbreviations 名称缩写	Type 类型	Application 用途	Description 说明
HSS 高速钢	Conventional high speed steel	Standard tool material for most common applications	Used for the manufacturing of cutting tools such as twist drills, end mills and taps.
HSS Co 含钴高速钢	5% cobalt grade of high speed steel	High-heat resistance, 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% 含8%钴高速钢	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 钨钼高速钢	Premium grade of high speed steel	Wide range of machine taps.	Vanadium grade gives high wear resistance and toughness for most tapping applications.
PM-HSSE 粉末冶金高速钢	Powdered metallurgy - vanadium grade of high speed steel	Materials with hardness up to 40 HRC 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 粉末冶金含钴高速钢	Powdered metallurgy - 8% Cobalt grade of high speed steel	Materials with hardness up to 45 HRC	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 粉末冶金含11%钴高速钢	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 55 HRC	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 硬质合金 (0.8μm)	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 硬质合金 (0.6μm)	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 硬质合金 (0.5μm)	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.

Computer controlled vacuum heat treatment ensures consistent high quality



Tap Styles



技术数据HSS刀柄技术资料

Technical Information Shank Designs - HSS Tools

High Speed Steel Straight Shanks HSS刀具带直柄

DIN 1835

Form A (plain) 圆柱直柄

d_1 h6	l_1 +2 -0	d_1 h6	l_1 +2 -0	
3	28	16	48	
4	28	20	50	
5	28	25	56	
6	36	32	60	
8	36	40	70	
10	40	50	80	
12	45	63	90	

Form B (with drive flat) 侧固直柄

d_1 h6	b_1 +0.05 -0	c_1 0 -1	h_1 h13	l_1 +2 -0	l_2 +1 -0	
6	4.2	18	4.8	36	-	
8	5.5	18	6.6	36	-	
10	7	20	8.4	40	-	
12	8	22.5	10.4	45	-	
16	10	24	14.2	48	-	
20	11	25	18.2	50	-	
25	12	32	23	56	17	
32	14	36	30	60	19	
40	14	40	38	70	19	
50	18	45	47.8	80	23	
63	18	50	60.8	90	23	

Form D (screwed shank) 螺纹柄

d_1	l_1 +2 -0	l_3 +1 -0	d_2	
6	36	10	5.9	
10	40	10	9.9	
12	45	10	11.9	
16	48	10	15.9	
20	50	15	19.9	
25	56	15	24.9	
32	60	15	31.9	

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Fluteless taps 挤压丝锥

Fluteless taps do not cut threads in the same manner as conventional taps – but actually FORM and FLOW the threads with an absence of chips. Used under suitable conditions, these taps produce threads with a high degree of finish not possible with ordinary taps. Ductile materials are most appropriate for forming of threads and must have a minimum 10% elongation.

Benefits of thread forming 挤压丝锥的好处

- Higher speeds and tool life
- Reduced possibility of breakage due to no cutting edges and robust tool construction

Figure 1. No chips produced

Figure 2. Higher tensile strength threads produced due to grain structure following the thread form

Figure 3. For use in through and blind holes applications

Figure 1.

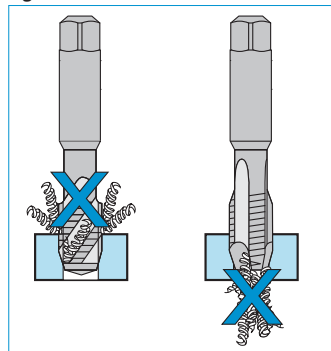


Figure 2.

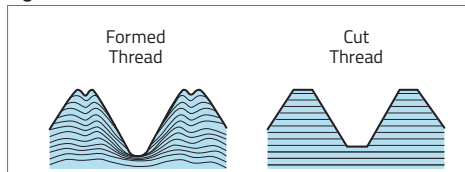
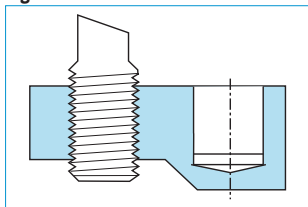


Figure 3.



What's New? 有何新意 ?

Figure 4. New polygon profile

Figure 5. New radiused blend on polygon profile

Figure 6. Thread profile with radius crest

Figure 7. Polished tool surface, surface finish

Figure 4.

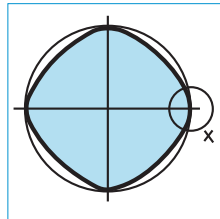


Figure 5.

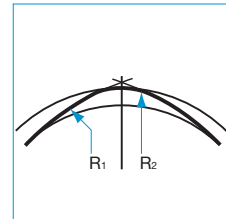


Figure 6.

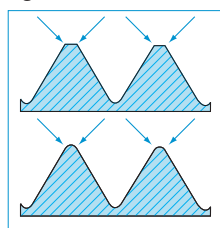


Figure 7.



Suitable for wide range materials 适合广泛材料

- Low carbon steels
- Leaded steels
- Austenitic stainless steels
- Alloy steels; typically up to 1200 N/mm², (36 Rc) with a minimum 10% elongation

- Aluminium die castings alloys (low silicon, 10% max;)
- Wrought aluminium alloys (Ductile)
- Zinc die casting alloys
- Copper and copper alloys

Percentage of thread required 所需的螺纹咬合率

Because the thread produced by a fluteless tap is substantially stronger than a conventional thread, greater tool life and efficiency may be obtained when forming up to 65% thread.

Threads may be formed up to 80% of depth, but tool life will be reduced and work clamping pressure necessarily increased. Greater tapping speeds allow the metal to flow far more readily, so 60 feet per minute minimum may be used as a guide, but this could increase with the type of material being tapped. A depth of 65% is recommended for the ductile materials mentioned, but this percentage will be reduced for less ductile materials to maintain all-round efficiency.

Tapping drill formula for fluteless taps 挤压丝锥底孔钻的的计算公式

Refer Tapping Drill Size Chart for recommended sizes (Suitable for Unified, Whitworth and Metric sizes only).

The formula to calculate the theoretical hole size for a required percentage of thread is:

Formula 公式	Example 例子
Drill size = nominal thread dia. (in mm) – (0.007 x % of thread x pitch)	Drill size for 65% of thread in a M6 x 1.0 threaded hole would be: Drill size = 6 – (0.007 x 65 x 1.0 (pitch)) = 5.54mm (Use 5.50mm drill (Stockable drill) = 71%)

It is to be noted that the drill size for fluteless tapping is always larger than the P.D. of the thread. A drill size equal to the P.D. of the thread would produce 100% of thread, but this is NOT recommended.

As the additional driving torque is only up to 50% increase, any conventional driving equipment using the square as a drive is suitable for fluteless tapping.

Lubrication 润滑

In general it is best to use a good cutting oil or lubricant rather than a coolant for fluteless tapping. Sulphur base and mineral oils, along with most friction reducing lubricants recommended for use in cold extrusion or metal drawing, have proven best for this work. Make sure lubricant is clean, free from chips swarf and filings in suspension, which produce a poor finish and jamming, sometimes breakage – extra filtration may be required.

Countersinking 倒角

Because the fluteless tap displaces metal, some metal will be displaced above the mouth of the hole during tapping, countersink or chamfer the hole prior to tapping will reduce the extrusion within the countersink and not interfere with the mating part.

Technical Information Tapping Drill Size Chart (Fluteless)

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(Fluteless) Roll Taps 挤压丝锥:

Thread Size 螺纹			ISO Coarse ISO粗牙		UNC		BSW	
Metric 公制	Fraction 分数	M/C Screw Gauge 号数	Pitch (mm) 牙距	Tapping Drill (mm) 钻径	T.P.I.	Tapping Drill mm 钻径	T.P.I.	Tapping Drill mm 钻径
M1.0			0.25	0.90				
M1.1			0.25	1.00				
M1.2			0.25	1.10				
M1.4			0.3	1.25				
M1.6			0.35	1.45				
M1.7			0.35	1.55				
M1.8			0.35	1.65				
M2.0			0.4	1.80				
M2.2			0.45	2.00				
M2.3			0.4	2.10				
M2.5			0.45	2.30				
M2.6			0.45	2.40				
M3.0			0.5	2.75				
	1/8						40	2.90
M3.5			0.6	3.20				
		#6			32	3.10		
	5/32						32	3.60
M4			0.7	3.70				
		#8			32	3.80		
	3/16						24	4.30
		#10			24	4.30		
M5			0.8	4.60				
M6			1.0	5.55				
	1/4				20	5.80	20	5.80
	5/16				18	7.30	18	7.30
M8			1.25	7.40				
	3/8				16	8.80	16	8.80
M10			1.50	9.30				



Code 编号		Problem 加工问题					Possible reason 可能原因	Solution 对策
1	2	3	4	5	6	7		
1							Thread is oversize	
2							Axial miscutting of thread	
3							Thread is undersize	
4							Thread has bellmouthed entry	
5							Thread surface is rough and unclean	
6							Low tool life	
7							Partial or complete tap breakage on FORWARD or BACKWARD movement	
1	2	3	4	5	6	7	Possible reason 可能原因	Solution 对策
●		●	●	●	●	●	Wrong tap, cutting geometry of the tap is not suitable for this operation	Use correct tap for the material group. See Expert Tool Selector, at www.suttontools.com/expert-tool-selector
●				●	●		Tap hole diameter is undersize	Tap hole diameter should be in accordance to DIN336 or respective standard. For cold forming taps, a special hole diameter is needed.
●			●			●	Misalignment - tap hole position, or angle is not correct	a) check workpiece clamping b) check machine settings
●							The axial machine spindle movement is not free and easy	a) use mechanical feed b) use tap holder with length compensation
●							Cold welding on the thread flanks of the tap	a) use a new tap b) improve and check lubrication c) remove cold welding area from tap d) use tap with surface treatment or coatings
●							Poor guidance of the tap because of little thread depth	a) use mechanical feed b) use tap that has better guiding characteristics
●				●	●		Speed is too high	a) improve lubrication b) lower speed
●				●	●		Chip clogging	a) use tap with different flute form b) use coated taps c) use tap set
●				●	●		The lubrication wrong, additives or the coolant supply is not sufficient	Make sure that the coolant is correct and that the supply is sufficient
	●						Spiral fluted taps are over pressured in the initial cutting phase (retracting pulling force)	Spiral fluted taps should only be lightly pushed into the tap hole until it begins to cut. The tap holder should immediately begin to apply tension to the tap.
	●						Spiral pointed taps (gun taps) are not receiving enough pressure in the initial cutting phase	Spiral pointed taps and even left hand spiral flute taps must have a stronger pressure until they begin to cut. The tap holder should immediately begin to apply pressure to the tap (pushing force)
●		●					Tolerance on the tap is not identical to the tolerance on the drawing or on the gauge	Use a tap which has a correct tolerance
			●				Wrong initial cutting pressure has been used or the machine spindle is not moving along its axis free and easy	a) use mechanical feed b) use tap holder with length compensation
				●	●		Tap is over loaded, either from coarse pitch and/or tough material	Use set of taps
					●		Cold welding, material build-up (pick-up)	a) improve coolant supply, use taps with surface treatments or coatings b) check if surface treatment is correct for this application
					●	●	Hardened walls in drilled hole	a) use drill best suited to material being drilled b) use new drill or boring tool c) resharpen drilling or boring tools d) if possible, heat treatment and coatings should only be made after threading
						●	Over loading of teeth in the chamfer area	a) use a longer chamfer (check if the tap hole is blind hole or through) b) use increased number of teeth in the chamfer area by selecting tap with increased number of flutes
						●	Tap hole chamfer is missing or wrong	Countersink tap hole chamfer with correct angle
						●	Tap crashed against the bottom of tap hole	Use tap holder with length compensation and over load clutch



Code 编号		Problem 加工问题								Possible reason 可能原因
1		Poor workpiece finish								Cutting edge wear, cutter radial run-out
2		Splintering of workpiece edge								Unsuitable cutting conditions, unsuitable shape of cutting edge
3		Non-parallel or uneven surface								Low stiffness of the cutter or of the workpiece (loose)
4		Extreme flank wear								Unsuitable cutting conditions, unsuitable shape of cutting edge
5		Extreme crater wear								
6		Breaks and shelling due to thermal shock								
7		Formation of built-up edges								
8		Poor chip clearance, chip blockage								
9		Lack of Rigidity								Difficult cutting conditions, clamping of the workpiece
10		Endmill cutter breaks								Unsuitable cutting conditions, flute length of the cutter
1	2	3	4	5	6	7	8	9	10	Solution 对策
●						●	●			increase cutting speed
			●	●				●		reduce cutting speed
						●	●			increase feed rate
●	●	●		●	●		●	●	●	reduce feed rate
●	●	●		●	●			●	●	reduce cutting depth
							●	●	●	change cutter diameter and cut width
●			●	●		●	●			check use of cooling lubricant, flush swarf away
	●	●	●	●	●	●	●	●		increase clearance angle (Radial relief)
	●			●	●					increase wedge angle (Rake angle)
	●									increase number of teeth
		●					●	●	●	reduce number of teeth
							●			select larger chip space (Cutter)
●	●	●	●		●					change shape of minor cutting edge
		●			●					cutter - change radial run-out
	●	●			●			●	●	change cutter stiffness, flute length (l/D ratio)
	●	●			●			●		select machine with higher power and stiffness

Metric Taps; Comparison Tap Limits & Product Classes and Grades

公制丝锥; 丝锥精度与内螺纹的等级对比

Product Tolerance 内螺纹公差					Tap Limits 丝锥精度					
Tap Size mm	Pitch	ISO Tolerance Class	6H Upper Deviation Tolerance µm	JIS 2 Old/JIS Product Tolerance µm	ISO Tap Grade	Tap Limits Microns µm	Recommended Limit			
							P 1 µm	P 2 µm	P 3 µm	P 4 µm
M1.0	x 0.25	5H	56	60	ISO 1	+ 6 / 17	+ 10 / 25			
M1.1	x 0.25	5H	56	60	ISO 1	+ 6 / 17	+ 10 / 25			
M1.2	x 0.25	5H	56	60	ISO 1	+ 6 / 17	+ 10 / 25			
M1.4	x 0.3	5H	60	60	ISO 1	+ 6 / 18	+ 10 / 25			
M1.6	x 0.35	5H	67	85	ISO 1	+ 7 / 20	+ 10 / 25	+ 25 / 40		
M1.7	x 0.35	6H	85	85	ISO 2	+ 20 / 34	+ 10 / 25	+ 25 / 40		
M1.8	x 0.35	6H	85	85	ISO 2	+ 20 / 34	+ 10 / 25	+ 25 / 40		
M2.0	x 0.4	6H	90	70	ISO 2	+ 21 / 36	+ 10 / 25	+ 25 / 40		
M2.2	x 0.45	6H	95	95	ISO 2	+ 23 / 38	+ 10 / 25	+ 25 / 40		
M2.3	x 0.4	6H	90	95	ISO 2	+ 21 / 36	+ 10 / 25	+ 25 / 40		
M2.5	x 0.45	6H	95	95	ISO 2	+ 23 / 38	+ 10 / 25	+ 25 / 40		
M2.6	x 0.45	6H	95	95	ISO 2	+ 23 / 38	+ 10 / 25	+ 25 / 40		
M3.0	x 0.5	6H	100	100	ISO 2	+ 24 / 40	+ 10 / 25	+ 25 / 40		
M3.5	x 0.6	6H	112	90	ISO 2	+ 27 / 45	+ 10 / 25	+ 25 / 40		
M4.0	x 0.7	6H	118	118	ISO 2	+ 29 / 48		+ 20 / 40		
M5	x 0.8	6H	125	125	ISO 2	+ 30 / 50		+ 20 / 40		
M6	x 1.0	6H	150	120	ISO 2	+ 35 / 59		+ 20 / 40		
M7	x 1.0	6H	150	120	ISO 2	+ 35 / 59		+ 20 / 40		
M8	x 1.25	6H	160	130	ISO 2	+ 38 / 63		+ 20 / 40	+ 40 / 60	
M10	x 1.5	6H	180	140	ISO 2	+ 42 / 70		+ 20 / 40	+ 40 / 60	
M12	x 1.75	6H	200	160	ISO 2	+ 48 / 80			+ 40 / 60	+ 60 / 80
M14	x 2.0	6H	212	170	ISO 2	+ 51 / 85			+ 40 / 60	+ 60 / 80
M16	x 2.0	6H	212	170	ISO 2	+ 51 / 85			+ 40 / 60	+ 60 / 80
M18	x 2.5	6H	224	190	ISO 2	+ 54 / 90			+ 40 / 60	+ 60 / 80
M20	x 2.5	6H	224	190	ISO 2	+ 54 / 90			+ 40 / 60	+ 60 / 80
M22	x 2.5	6H	224	190	ISO 2	+ 54 / 90			+ 40 / 60	+ 60 / 80
M24	x 3.0	6H	265	200	ISO 2	+ 64 / 106			+ 40 / 60	+ 60 / 80

P limits; they stock the smaller P limit for SP Taps, and the larger P limit for PO taps.
Where there is only the one "P" limit; it is the same limit for both SP & PO Taps



Tensile Strength vs Hardness (≈)

强度对应硬度

Tensile Strength 强度			Hardness 硬度	
N/mm ²	Kg/mm ²	Tons/Inch ²	Brinell [HB]	Rockwell [HRC (HRB)]
400	40.8	26.0	119	69 HRB
450	45.9	29.0	133	75 HRB
500	50.1	32.4	149	81 HRB
550	56.0	35.6	163	85.5 HRB
600	61.0	38.9	178	89 HRB
650	66.2	42.1	193	92 HRB
700	71.4	45.3	208	95 HRB
750	76.5	48.5	221	97 HRB
800	81.6	51.8	238	22 HRC
850	86.7	55.1	252	25 HRC
900	91.8	58.3	266	27 HRC
1000	102.0	64.7	296	31 HRC
1100	112.2	71.2	325	35 HRC
1200	122.4	77.7	354	38 HRC
1300	132.6	84.1	383	41 HRC
1400	142.8	90.5	408	44 HRC
1500	152.9	97.0	444	47 HRC
1600	163.1	103.5	461	49 HRC
1700	173.3	109.9	477	50 HRC
1800	183.5	116.4	514	52 HRC
1900	193.7	122.9	549	54 HRC
2000	203.9	129.3	584	56 HRC
2100	214.1	135.8	607	57 HRC
2200	224.3	142.2	622	58 HRC
2300	233.1	148.7	653	60 HRC

Conversion of values depends on the actual alloy content; this chart therefore indicates a general conversion only.

Manufacturing Tolerances

生产公差

Nominal Diameter in mm above 公称直径或以上	up to and including 公称直径上限	Tolerance Grade in Microns 公差级别 (0.001mm)									1 Micron = 0.001mm			
		e8	h5	h6	h7	h8	h9	h10	js12	js14	k8	k9	k10	m7
0	3	-14	0	0	0	0	0	0	+50	+125	+14	+25	+40	+12
		-18	-4	-6	-10	-14	-25	-40	-50	-125	0	0	0	+2
3	6	-20	0	0	0	0	0	0	+60	+150	+18	+30	+48	+16
		-38	-5	-8	-12	-18	-30	-48	-60	-150	0	0	0	+4
6	10	-25	0	0	0	0	0	0	+75	+180	+22	+36	+58	+21
		-47	-6	-9	-15	-22	-36	-58	-75	-180	0	0	0	+6
10	18	-32	0	0	0	0	0	0	+90	+215	+27	+43	+70	+25
		-59	-8	-11	-18	-27	-43	-70	-90	-215	0	0	0	+7
18	30	-40	0	0	0	0	0	0	+105	+260	+33	+52	+84	+29
		-73	-9	-13	-21	-33	-52	-84	-105	-260	0	0	0	+8
30	50	-50	0	0	0	0	0	0	+125	+310	+39	+62	+100	+34
		-89	-11	-16	-25	-39	-62	-100	-125	-310	0	0	0	+9
50	80	-60	0	0	0	0	0	0	+150	+370	+46	+74	+120	+41
		-106	-13	-19	-30	-46	-74	-120	-150	-370	0	0	0	+11
80	120	-72	0	0	0	0	0	0	+175	+435	+54	+87	+140	+48
		-126	-15	-22	-35	-54	-87	-140	-175	-435	0	0	0	+13

Conversion: 1 micron equals .00004 inches

