

TAPS



Being the best through innovation



TECHNICAL DATA


**YG-1 YH精度体系
YG-1 YH LIMIT SYSTEM**

YG-1使用一套独特的丝锥中径精度 我们叫它YH精度体系 用等级方法, 你可选择最合适你工件条件的丝锥中径精度.

YG-1 applies a unique system of tap pitch diameter limits. We call it the YH limits system. Using the step method, you can select the best tap pitch diameter limits to match your work condition.

YH精度, 为大多数YG-1的丝锥所采用 精度计算如下.

YH limit Most of Y.G-1's taps use this limit system. The limits calculated as follows;

1. Up to 0.6P (40TPI)

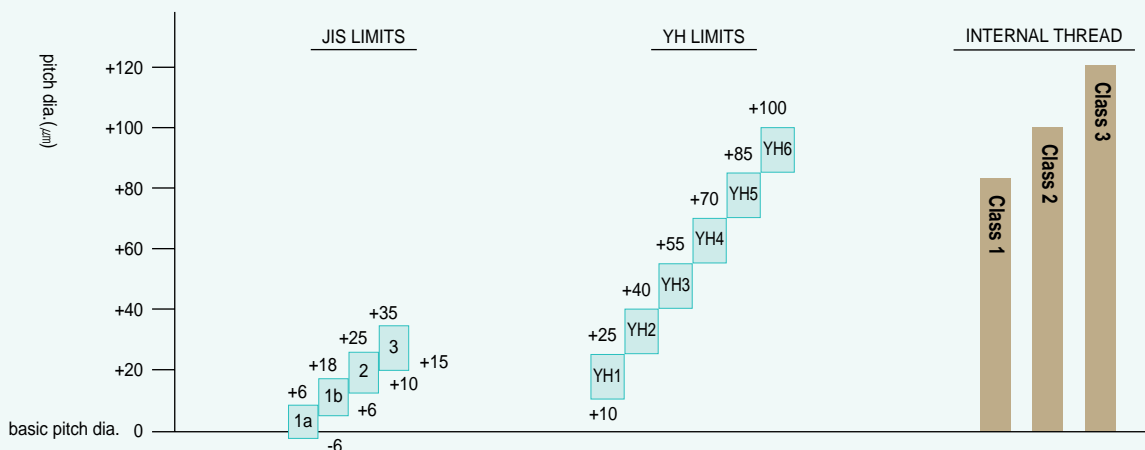
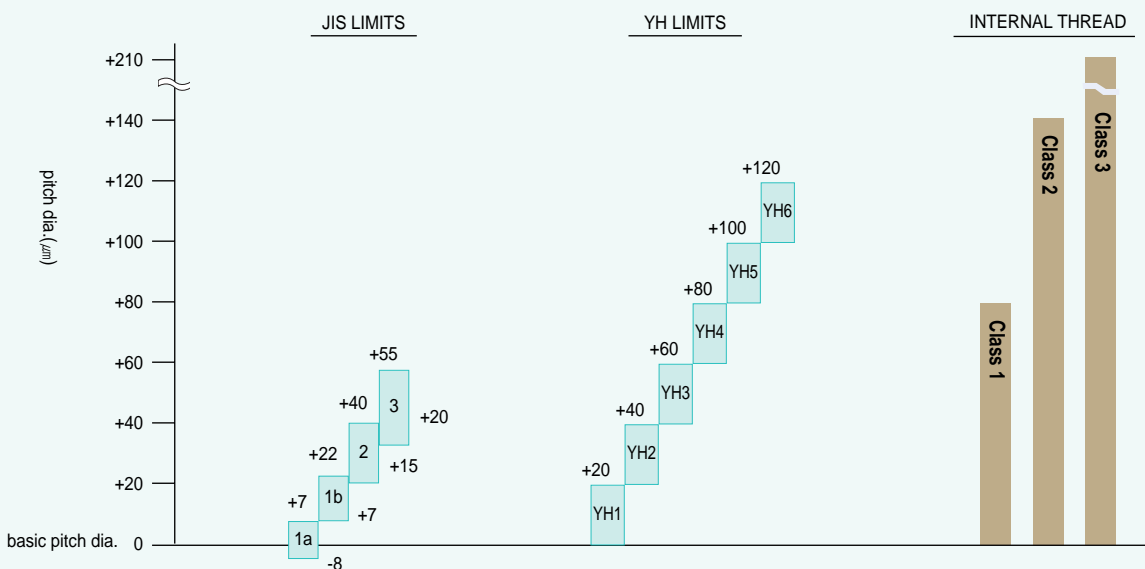
upper limits : $10\mu\text{m} + 15\mu\text{m} \times n$
lower limit : (upper limits) - $15\mu\text{m}$

n=YH No.

2. Above 0.7P (36TPI)

upper limits : $20\mu\text{m} \times n$
lower limit : (upper limits) - $20\mu\text{m}$

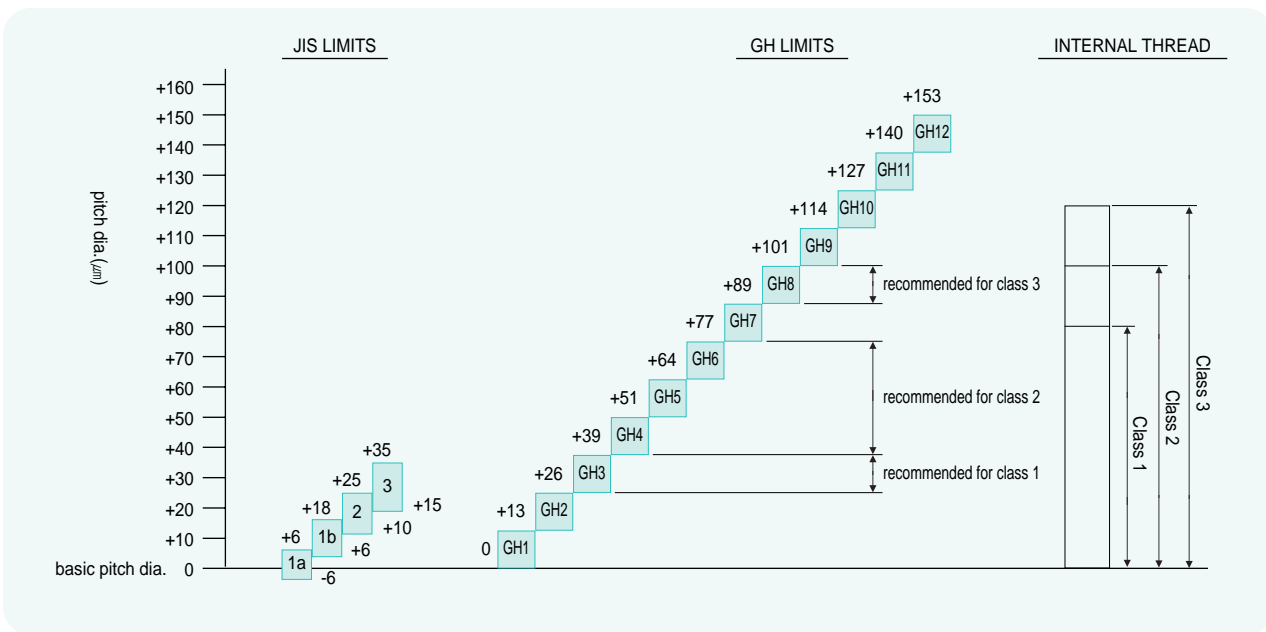
n=YH No.

例如M3×0.5 / Example M3×0.5

例如M10×1.5 / Example M10×1.5


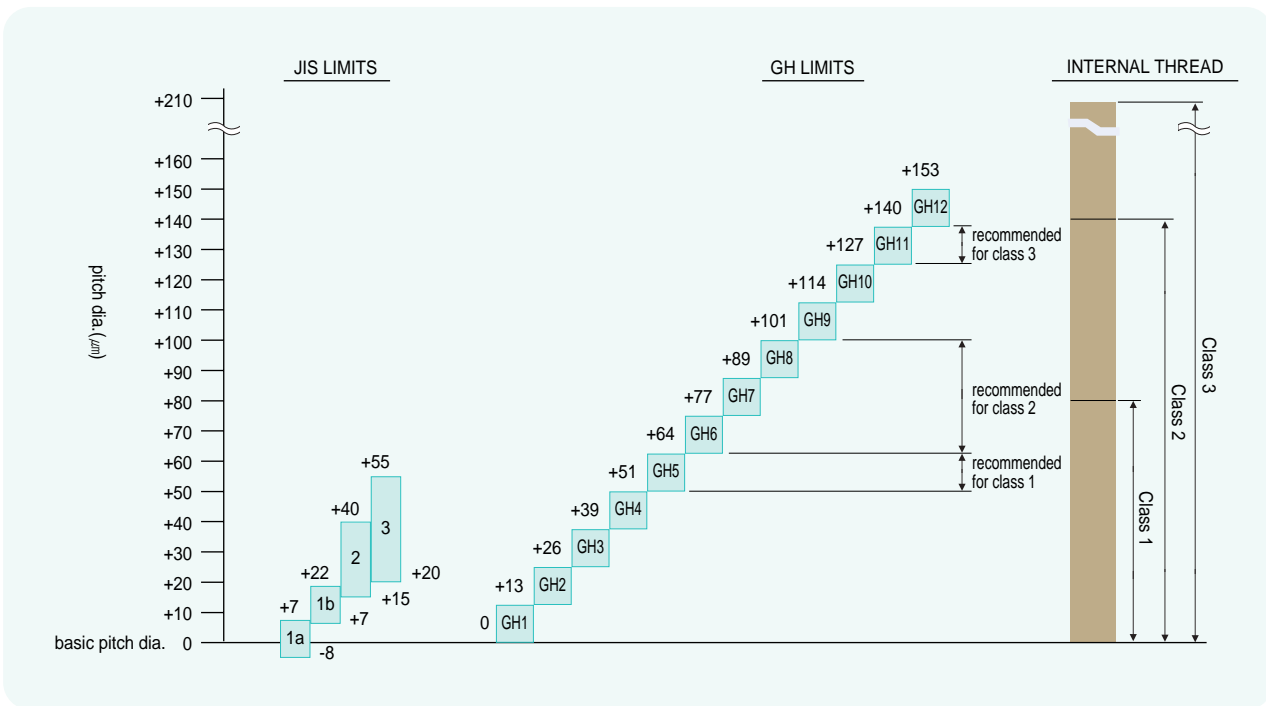
YG-1 GH精度体系 YG-1 GH LIMIT SYSTEM

YG-1的挤压丝锥采用GH精度体系 精度是按12.7um的增量确定的。
YG-1's fluteless taps are described by the GH limit system. The limits are established by increments of 12.7 μm .

例如M3×0.5 / Example M3 × 0.5



例如M10×1.5 / Example M10 × 1.5



- COMBO TAPS
- SPIRAL POINT TAPS
- SPIRAL FLUTE TAPS
- STRAIGHT FLUTE TAPS
- LONG SHANK TAPS
- FLUTELRSS TAPS
- SCREW THREAD INSERT TAPS
- HAND TAPS
- PIPE TAPS
- CARBIDE TAPS
- SKS21 HAND TAPS
- SKS21 PIPE TAPS
- THREAD MILLS
- TECHNICAL DATA


推荐的攻丝速度
RECOMMENDED TAPPING SPEEDS
推荐攻丝速度
RECOMMENDED TAPPING SPEED AND CUTTING FLUIDS

表中列出推荐的攻丝速度和切削液 丝锥材质，丝锥倒角长度的形式底孔尺寸，工件尺寸和切削液是决定合适的攻丝速度的重要因素。

润滑，冷却能力和抗粘性是影响切削液的3个重要因素

This chart shows the recommended tapping speeds and cutting fluids. Tap material, type of tap chamfer length, dimension of drill hole, work materials and cutting fluids are important factors for determining suitable tapping speed.

Lubrication, cooling capability and adhesion Resistance are the three important factors effecting cutting fluid.

WORK MATERIALS		TAPPING SPEED (m/min)						CUTTING FLUIDS	
		SPIRAL FLUTED TAP	GUN POINTED TAP	STRAIGHT FLUTED TAP	FLUTELESS TAP	SOLID CARBIDE TAP	PIPE TAP		
LOW CARBON STEELS	≤CO.2%	8 ~ 13	15 ~ 25	8 ~ 13	8 ~ 13	—	3 ~ 6	Sulfochlorinated Oil (Active Type) Tapping Paste EP Additive Non-Water-Soluble Cutting Fluid (Emulsion Type)	
MEDIUM CARBON STEELS	CO.25~0.40%	7 ~ 12	10 ~ 15	7 ~ 12	7 ~ 10	—	3 ~ 6		
HIGH CARBON STEELS	≥CO.45%	6 ~ 9	8 ~ 13	6 ~ 9	5 ~ 8	—	2 ~ 5		
ALLOY STEELS	SCM	7 ~ 12	10 ~ 15	7 ~ 12	5 ~ 8	—	2 ~ 5		
HARDENED STEELS	HRc 25~40	3 ~ 5 (4 ~ 8)	4 ~ 6 (6 ~ 10)	3 ~ 5 (4 ~ 8)	—	—	2 ~ 5		
STAINLESS STEELS	SUS	5 ~ 8	8 ~ 13	4 ~ 7	5 ~ 10	—	5 ~ 10		
TOOL STEELS	SKD	6 ~ 9	7 ~ 10	6 ~ 9	—	—	2 ~ 5		
CAST STEELS	SC	6 ~ 11	10 ~ 15	6 ~ 11	—	—	2 ~ 5		
CAST IRON	FC	—	—	10 ~ 15	—	10 ~ 20	2 ~ 5		Water-Soluble Cutting Fluid (Emulsion Type) Non-Water-Soluble Cutting Fluid
HIGH TENSION CAST IRON	FCD	7 ~ 12	10 ~ 20	7 ~ 12	—	10 ~ 20	4 ~ 8		
COPPER	Cu	6 ~ 11	7 ~ 12	6 ~ 9	7 ~ 12	10 ~ 20	2 ~ 5	Non-Water-Soluble Cutting Fluid (Inactive Type) Water-Soluble Cutting Fluid (Emulsion Type)	
BRASS	Bs, BsC	10 ~ 20	15 ~ 25	10 ~ 15	7 ~ 12	15 ~ 25	5 ~ 10		
BRASS CASTING									
BRONZE	PB, PBC	6 ~ 11	10 ~ 20	6 ~ 11	7 ~ 12	10 ~ 20	6 ~ 11		
BORNZE CASTING									
ALUMINUM ROLLED STEELS	AL	10 ~ 20	15 ~ 25	10 ~ 20	10 ~ 20	—	5 ~ 10		
ALUMINUM ALLOY CASTING	AC, ADC	10 ~ 15	15 ~ 20	10 ~ 15	10 ~ 15	10 ~ 20	10 ~ 15		
MAGNESIUM ALLOY CASTING	MC	7 ~ 12	10 ~ 15	7 ~ 12	—	10 ~ 20	10 ~ 15		
ZINC ALLOY CASTING	ZDC	7 ~ 12	10 ~ 15	7 ~ 12	7 ~ 12	10 ~ 20	10 ~ 15		
THERMOSETTING PLASTIC	BAKELITE PHENOL, EPOXY	—	—	10 ~ 20	—	15 ~ 25	5 ~ 10		Water-Soluble Cutting Fluid Mist Lubrication Air Cooling, Dry
THERMOPLASTIC	VINYL CHLORIDE NYLON	10 ~ 15	10 ~ 20	10 ~ 20	—	10 ~ 20	5 ~ 10		

1. 这些是一般的建议，根据实际条件，可能有变化。

2. 要选择最适合的丝锥，请参考丝锥推荐表

3. ()=是关于HSS-PM丝锥的推荐

1. These are general recommendations which depending upon conditions, may be altered.

2. To select the best taps, please see Tap Recommended Table.

3. ()=recommendation for HSS-PM taps.



推荐攻丝底孔尺寸

RECOMMENDED TAP DRILL SIZES

公制螺纹

FOR METRIC THREADS

Thread Size	Drill Size (mm)	D1 (mm)		Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.			Max.	Min.
M2 × 0.4	1.60	1.679	1.567	M12 × 0.5	11.50	11.520	11.400
M2 × 0.25	1.75	(1.785)	(1.729)	M14 × 2	12.00	12.210	11.835
M2.2 × 0.45	1.75	1.838	1.713	M14 × 1.5	12.50	12.676	12.376
M2.2 × 0.25	1.95	(1.985)	(1.929)	M14 × 1	13.00	13.153	12.917
M2.2 × 0.4	1.90	1.979	1.867	M15 × 1.5	13.50	13.673	13.376
M2.3 × 0.25	2.05	2.061	2.001	M15 × 1	14.00	14.153	13.917
M2.5 × 0.45	2.10	2.138	5.013	M16 × 2	14.00	14.210	13.835
M2.5 × 0.35	2.20	2.221	2.121	M16 × 1.5	14.50	14.676	14.376
M2.6 × 0.45	2.20	2.238	2.113	M16 × 1	15.00	15.153	14.917
M2.6 × 0.35	2.20	2.246	2.186	M17 × 1.5	15.50	15.676	15.376
M3 × 0.5	2.50	2.599	2.459	M17 × 1	16.00	16.153	15.917
M3 × 0.35	2.70	2.721	2.621	M18 × 2.5	15.50	15.744	15.294
M3.5 × 0.6	2.90	3.010	2.850	M18 × 2	16.00	16.210	15.835
M3.5 × 0.35	3.20	3.221	3.121	M18 × 1.5	16.50	16.676	16.376
M4 × 0.7	3.30	3.422	3.242	M18 × 1	17.00	17.153	16.917
M4 × 0.5	3.50	3.599	3.459	M20 × 2.5	17.50	17.744	17.294
M4.5 × 0.75	3.80	3.878	3.688	M20 × 2	18.00	18.210	17.835
M4.5 × 0.5	4.00	4.099	3.959	M20 × 1.5	18.50	18.676	18.376
M5 × 0.8	4.20	4.334	4.134	M20 × 1	19.00	19.153	18.917
M5 × 0.5	4.50	4.599	4.459	M22 × 2.5	19.50	19.744	19.294
M6 × 1	5.00	5.153	4.917	M22 × 2	20.00	20.210	19.835
M6 × 0.75	5.30	5.378	5.188	M22 × 1.5	20.50	20.673	20.376
M6 × 0.5	5.50	5.550	5.400	M22 × 1	21.00	21.153	20.917
M7 × 1	6.00	6.153	5.917	M24 × 3	21.00	21.252	20.752
M7 × 0.75	6.30	6.378	6.188	M24 × 2	22.00	22.210	21.835
M7 × 0.5	6.50	6.550	6.400	M24 × 1.5	22.50	22.676	22.376
M8 × 1.25	6.80	6.912	6.647	M24 × 1	23.00	23.153	22.917
M8 × 1	7.00	7.153	6.917	M25 × 2	23.00	23.210	22.835
M8 × 0.75	7.30	7.378	7.188	M25 × 1.5	23.50	23.676	23.376
M8 × 0.5	7.50	7.520	7.400	M25 × 1	24.00	24.153	23.917
M9 × 1.25	7.80	7.912	7.647	M26 × 1.5	24.50	24.676	24.376
M9 × 1	8.00	8.153	7.917	M27 × 3	24.00	24.252	23.752
M9 × 0.75	8.30	8.378	8.188	M27 × 2	25.00	25.210	24.835
M10 × 1.5	8.50	8.676	8.376	M27 × 1.5	25.50	25.676	25.376
M10 × 1.25	8.80	8.912	8.647	M27 × 1	26.00	26.153	25.917
M10 × 1	9.00	9.153	8.917	M28 × 2	26.00	26.210	25.835
M10 × 0.75	9.30	9.378	9.188	M28 × 1.5	26.50	26.676	26.376
M10 × 0.5	9.50	9.520	9.400	M28 × 1	27.00	27.153	26.917
M11 × 1.5	9.50	9.676	9.376	M30 × 3.5	26.50	26.771	26.211
M11 × 1	10.00	10.153	9.917	M30 × 3	27.00	27.252	26.752
M11 × 0.75	10.30	10.378	10.188	M30 × 2	28.00	28.210	27.835
M12 × 1.75	10.30	10.441	10.106	M30 × 1.5	28.50	28.676	28.376
M12 × 1.5	10.50	10.676	10.376	M30 × 1	29.00	29.153	28.917
M12 × 1.25	10.80	10.912	10.647	M32 × 2	30.00	30.210	29.835
M12 × 1	11.00	11.153	10.917	M32 × 1.5	30.50	30.676	30.376

COMBO TAPS

SPIRAL POINT TAPS

SPIRAL FLUTE TAPS

STRAIGHT FLUTE TAPS

LONG SHANK TAPS

FLUTELRSS TAPS

SCREW THREAD INSERT TAPS

HAND TAPS

PIPE TAPS

CARBIDE TAPS

SKS21 HAND TAPS

SKS21 PIPE TAPS

THREAD MILLS

TECHNICAL DATA

公制螺纹
FOR METRIC THREADS

Thread Size	Drill Size (mm)	D1 (mm)		Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.			Max.	Min.
M33 × 3.5	29.50	29.771	29.211	M42 × 4	38.00	38.270	37.670
M33 × 3	30.00	30.252	29.752	M42 × 3	39.00	39.252	38.752
M33 × 2	31.00	31.210	30.835	M42 × 2	40.00	40.210	39.835
M33 × 1.5	31.50	31.676	31.376	M42 × 1.5	40.50	40.676	40.376
M35 × 1.5	33.50	33.676	33.376	M45 × 4.5	40.50	40.799	40.129
M36 × 4	32.00	32.270	31.670	M45 × 4	41.00	41.270	40.670
M36 × 3	33.00	33.252	32.752	M45 × 3	42.00	42.252	41.752
M36 × 2	34.00	34.210	33.835	M45 × 2	43.00	43.210	42.835
M36 × 1.5	34.50	34.676	34.376	M45 × 1.5	43.50	43.676	43.376
M38 × 1.5	36.50	36.676	36.376	M48 × 5	43.00	43.297	42.587
M39 × 4	35.00	35.270	34.670	M48 × 4	44.00	44.270	43.670
M39 × 3	36.00	36.252	35.752	M48 × 3	45.00	45.252	44.752
M39 × 2	37.00	37.210	36.835	M48 × 2	46.00	46.210	45.835
M39 × 1.5	37.50	37.676	37.376	M48 × 1.5	46.50	46.676	46.376
M40 × 3	37.00	37.252	36.752	M50 × 3	47.00	47.252	46.752
M40 × 2	38.00	38.210	37.835	M50 × 2	48.00	48.210	47.835
M40 × 1.5	38.50	38.676	38.376	M50 × 1.5	48.50	48.676	48.376
M42 × 4.5	37.50	37.799	37.129				

D1 : JIS级内螺纹小径, 但 () 内的 D1是JIS 1级内螺纹因为它们的公称尺寸在JIS2级中未指定.

D1 : Minor diameter of JIS class 1 internal thread. But, the minor diameter D1 shown in () are of JIS class 1 internal threads because their nominal sizes are not specified in JIS Class 2.

英制螺纹
FOR UNIFIED THREADS

Thread Size	Drill Size (mm)	D1 (mm)		Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.			Max.	Min.
#2 - 56 UNC	1.80	1.871	1.695	1/4 - 28 UNF	5.50	5.588	5.360
#2 - 64 UNF	1.85	1.912	1.756	1/4 - 32 UNEF	5.60	5.690	5.486
#3 - 48 UNC	2.10	2.146	1.941	5/16 - 18 UNC	6.60	6.731	6.401
#3 - 56 UNF	2.10	2.197	2.025	5/16 - 24 UNF	6.90	7.035	6.782
#4 - 40 UNC	2.30	2.385	2.157	5/16 - 32 UNEF	7.10	7.264	7.087
#4 - 48 UNF	2.40	2.458	2.271	3/8 - 16 UNC	8.00	8.153	7.798
#5 - 40 UNC	2.60	2.697	2.487	3/8 - 24 UNF	8.50	8.636	8.382
#5 - 44 UNF	2.70	2.740	2.551	3/8 - 32 UNEF	8.70	8.865	8.661
#6 - 32 UNC	2.80	2.895	2.642	7/16 - 14 UNC	9.40	9.550	9.144
#6 - 40 UNF	2.90	3.022	2.820	7/16 - 20 UNF	9.90	10.033	9.729
#8 - 32 UNC	3.40	3.530	3.302	7/16 - 28 UNEF	10.20	10.338	10.135
#8 - 36 UNF	3.50	3.606	3.404	1/2 - 13 UNC	10.80	11.023	10.592
#10 - 24 UNC	3.90	3.962	3.683	1/2 - 20 UNF	11.50	11.607	11.329
#10 - 32 UNF	4.10	4.165	3.963	1/2 - 28 UNEF	11.80	11.938	11.709
#12 - 24 UNC	4.50	4.597	4.344	9/16 - 12 UNC	12.20	12.446	11.989
#12 - 28 UNF	4.60	4.724	4.496	9/16 - 18 UNF	12.90	13.081	12.751
#12 - 32 UNF	4.70	4.826	4.623	9/16 - 24 UNEF	13.20	13.386	13.132
1/4 - 20 UNC	5.10	5.257	4.979	5/8 - 11 UNC	13.60	13.868	13.386

英制螺纹

FOR UNIFIED THREADS

Thread Size	Drill Size (mm)	D1 (mm)		Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.			Max.	Min.
5/8 - 18 UNF	14.50	14.681	14.351	1 * 1/4 - 8 UN	28.50	28.956	28.321
5/8 - 24 UNEF	14.80	14.986	14.732	1 * 3/8 - 6 UNC	30.80	31.115	30.353
3/4 - 10 UNC	16.50	16.840	16.307	1 * 3/8 - 12 UNF	32.80	33.096	32.639
3/4 - 16 UNF	17.50	17.678	17.323	1 * 3/8 - 18 UNEF	33.50	33.731	33.401
3/4 - 20 UNEF	17.80	17.958	17.678	1 * 3/8 - 8 UN	31.80	32.131	31.496
7/8 - 9 UNC	19.50	19.761	19.177	1 * 1/2 - 6 UNC	34.00	34.290	33.528
7/8 - 14 UNF	20.50	20.675	20.270	1 * 1/2 - 12 UNF	36.00	36.271	35.814
7/8 - 20 UNEF	21.00	21.133	20.853	1 * 1/2 - 18 UNEF	36.50	36.881	36.576
1 - 8 UNC	22.20	22.606	21.971	1 * 1/2 - 8 UN	35.00	35.306	34.671
1 - 12 UNF	23.20	23.571	23.114	1 * 5/8 - 18 UNEF	39.80	40.081	39.751
1 - 20 UNEF	24.00	24.308	24.028	1 * 5/8 - 8 UN	38.20	38.481	37.846
1 * 1/8 - 7 UNC	25.00	25.349	24.638	1 * 5/8 - 12 UN	39.20	39.446	38.989
1 * 1/8 - 12 UNF	26.50	26.746	26.289	1 * 3/4 - 5 UNC	39.50	39.827	38.964
1 * 1/8 - 18 UNEF	27.20	27.381	27.051	1 * 3/4 - 8 UN	41.20	41.656	41.021
1 * 1/8 - 8 UN	25.50	25.781	25.146	1 * 3/4 - 12 UN	42.20	42.621	42.164
1 * 1/4 - 7 UNC	28.20	28.524	27.813	2 - 4 * 1/2 UNC	45.20	45.593	44.679
1 * 1/4 - 12 UNF	29.50	29.921	29.464	2 - 8 UN	47.80	48.006	47.371
1 * 1/4 - 18 UNEF	30.20	30.556	30.226	2 - 12 UN	48.50	48.971	48.514

D1 : 内螺纹小径.

对 UNC 和 UNF 螺纹, 按照 JIS 2B 级

对 UNEF 和 UN 螺纹, 按照 ANSI B1.1a, 2B 级.

D1 : Minor diameter of internal thread.

For UNC and UNF threads, according to JIS Class 2B ;

For UNEF and UN threads, according to ANSI B1.1 Class 2B

惠氏螺纹

FOR WHITWORTH THREADS

Thread Size	Drill Size (mm)		Thread Size	Drill Size (mm)	
	A	B		A	B
W1/8 - 40	2.65	2.60	W7/8 - 9	19.50	19.30
W5/32 - 32	3.25	3.20	W1 - 8	22.40	22.00
W3/16 - 24	3.75	3.70	W1 * 1/8 - 7	25.00	24.80
W1/4 - 20	5.10	5.00	W1 * 1/4 - 7	28.30	28.00
W5/16 - 18	6.60	6.50	W1 * 3/8 - 6	30.50	30.30
W3/8 - 16	8.00	7.90	W1 * 1/2 - 6	33.80	33.50
W7/16 - 14	9.40	9.30	W1 * 5/8 - 5	36.00	35.70
W1/2 - 12	10.70	10.50	W1 * 3/4 - 5	39.20	39.00
W9/16 - 12	12.30	12.00	W1 * 7/8 - 4 * 1/2	41.80	41.50
W5/8 - 11	13.70	13.50	W2 - 4 * 1/2	45.00	44.70
W3/4 - 10	16.70	16.50			

通常 A 栏的螺纹底孔的钻头尺寸是用于加工孔的；当孔的尺寸趋向变大时应选择 B 栏的螺纹底孔的钻头尺寸。

Generally the tap drill sizes in column A are used for producing holes ; When holes tend to be cut oversized the tap drill sizes in column B should be Selected.

COMBO TAPS

SPIRAL POINT TAPS

SPIRAL FLUTE TAPS

STRAIGHT FLUTE TAPS

LONG SHANK TAPS

FLUTELRSS TAPS

SCREW THREAD INSERT TAPS

HAND TAPS

PIPE TAPS

CARBIDE TAPS

SKS21 HAND TAPS

SKS21 PIPE TAPS

THREAD MILLS

TECHNICAL DATA



PT锥形管螺纹

PT TAPER PIPE THREADS

Thread Size	Drill Size (mm)		Internal Thread Minor Dia. on [Min] Length of Useful Thread (mm)	Internal Thread Minor Dia. on [Min] Gauge Length (mm)
	With Reaming Before Tapping	Without Reaming Before Tapping		
PT 1/16 - 28	6.10	6.20	6.244	6.384
PT 1/8 - 28	8.10	8.20	8.249	8.388
PT 1/4 - 19	10.70	11.00	10.962	11.174
PT 3/8 - 19	14.20	14.50	14.448	14.658
PT 1/2 - 14	17.60	18.00	17.979	18.263
PT 3/4 - 14	23.00	23.50	23.378	23.663
PT 1 - 11	29.00	29.50	29.459	29.822
PT 1 * 1/4 - 11	37.50	38.00	37.976	38.339
PT 1 * 1/2 - 11	43.40	44.00	43.869	44.232
PT 2 - 11	54.90	55.50	55.412	55.844

PS直形管螺纹

PS STRAIGHT PIPE THREADS

Thread Size	Drill Size (mm)	D1 (mm)		Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.			Max.	Min.
PS 1/16 - 28	6.50	6.632	6.490	PS 3/4 - 14	24.00	24.259	23.975
PS 1/8 - 28	8.50	8.637	8.495	PS 1 - 11	30.20	30.471	30.111
PS 1/4 - 19	11.40	11.549	11.341	PS 1 * 1/4 - 11	38.80	39.132	38.772
PS 3/8 - 19	15.00	15.054	14.846	PS 1 * 1/2 - 11	44.80	45.025	44.665
PS 1/2 - 14	18.50	18.773	18.489	PS 2 - 11	56.50	56.836	56.476

PF直形管螺纹

PF STRAIGHT PIPE THREADS

Thread Size	Drill Size (mm)	D1 (mm)		Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.			Max.	Min.
PF 1/16 - 28	6.70	6.843	6.561	PF 3/4 - 14	24.50	24.658	24.117
PF 1/8 - 28	8.70	8.848	8.566	PF 1 - 11	30.50	30.931	30.291
PF 1/4 - 19	11.70	11.890	11.445	PF 1 * 1/4 - 11	39.20	39.592	38.952
PF 3/8 - 19	15.20	15.395	14.950	PF 1 * 1/2 - 11	45.00	45.485	44.845
PF 1/2 - 14	19.00	19.172	18.631	PF 2 - 11	57.00	57.296	56.656

NPT锥形管螺纹

NPT TAPER PIPE THREADS

Thread Size	Drill Size (mm)			
	With Reaming Before Tapping		Without Reaming Before Tapping	
	mm	inch	mm	inch
NPT 1/16 - 27	5.94	0.234	6.15	0.242
NPT 1/8 - 27	8.33	0.328	8.43	0.332
NPT 1/4 - 18	10.72	0.422	11.13	0.438
NPT 3/8 - 18	14.27	0.562	14.27	0.562
NPT 1/2 - 14	17.48	0.688	17.86	0.703
NPT 3/4 - 14	22.63	0.891	23.01	0.906
NPT 1 - 11 * 1/2	28.58	1.125	28.98	1.141
NPT 1 * 1/4 - 11 * 1/2	37.31	1.469	37.69	1.484
NPT 1 * 1/2 - 11 * 1/2	43.26	1.703	43.66	1.719
NPT 2 - 11 * 1/2	55.17	2.172	55.58	2.188
NPT 2/1/2 - 8	65.48	2.578	66.27	2.609

NPTF锥形管螺纹

NPTF TAPER PIPE THREADS

Thread Size	Drill Size (mm)			
	With Reaming Before Tapping		Without Reaming Before Tapping	
	mm	inch	mm	inch
NPTF 1/16 - 27	5.94	0.234	6.15	0.242
NPTF 1/8 - 27	8.33	0.328	8.43	0.332
NPTF 1/4 - 18	10.72	0.422	11.13	0.438
NPTF 3/8 - 18	14.27	0.562	14.27	0.562
NPTF 1/2 - 14	17.48	0.688	17.86	0.703
NPTF 3/4 - 14	22.63	0.891	23.01	0.906
NPTF 1 - 11 * 1/2	28.58	1.125	28.98	1.141
NPTF 1 * 1/4 - 11 * 1/2	37.31	1.469	37.69	1.484
NPTF 1 * 1/2 - 11 * 1/2	43.26	1.703	43.66	1.719
NPTF 2 - 11 * 1/2	55.17	2.172	55.58	2.188
NPTF 2/1/2 - 8	65.48	2.578	66.27	2.609

COMBO
TAPSSPIRAL
POINT TAPSSPIRAL
FLUTE TAPSSTRAIGHT
FLUTE TAPSLONG SHANK
TAPSFLUTELRSS
TAPSSCREW
THREAD
INSERT TAPS

HAND TAPS

PIPE TAPS

CARBIDE
TAPSSKS21
HAND TAPSSKS21
PIPE TAPSTHREAD
MILLSTECHNICAL
DATA


**挤压丝锥
FOR FLUTELESS TAPS**

Thread Size	Drill Size (mm)							
	Tap Limits							
	GH4	GH5	GH6	GH7	GH8	GH9	GH10	GH11
M2 × 0.4	1.83	1.84	---	---	---	---	---	---
M2.2 × 0.45	2.00	2.01	---	---	---	---	---	---
M2.3 × 0.4	2.13	2.14	---	---	---	---	---	---
M2.5 × 0.45	2.30	2.31	---	---	---	---	---	---
M2.6 × 0.45	2.40	2.41	---	---	---	---	---	---
M3 × 0.5	2.77	2.78	2.79	2.81	---	---	---	---
M3 × 0.35	2.85	2.87	2.88	2.89	---	---	---	---
M3.5 × 0.6	---	3.23	3.24	3.25	---	---	---	---
M4 × 0.7	---	3.67	3.68	3.70	---	---	---	---
M4 × 0.5	---	3.78	3.79	3.81	---	---	---	---
M5 × 0.8	---	4.61	4.63	4.64	---	---	---	---
M5 × 0.5	---	4.78	4.79	4.81	---	---	---	---
M6 × 1	---	5.50	5.51	5.53	---	---	---	---
M6 × 0.75	---	5.64	5.65	5.67	---	---	---	---
M6 × 0.5	---	5.78	5.79	5.81	---	---	---	---
M7 × 1	---	6.50	6.51	6.53	---	---	---	---
M8 × 1.25	---	---	7.37	7.39	7.40	---	---	---
M8 × 1	---	---	7.51	7.53	7.54	---	---	---
M10 × 1.5	---	---	9.23	9.24	9.26	9.27	---	---
M10 × 1.25	---	---	9.37	9.39	9.40	9.41	---	---
M10 × 1	---	---	9.51	9.53	9.54	9.55	---	---
M12 × 1.75	---	---	---	11.10	11.12	11.13	11.14	---
M12 × 1.5	---	---	---	11.24	11.26	11.27	11.28	---
M12 × 1.25	---	---	---	11.39	11.40	11.41	11.42	---
M12 × 1	---	---	---	11.53	11.54	11.55	11.56	---
M14 × 2	---	---	---	---	12.98	12.99	13.00	13.01
M14 × 1.5	---	---	---	---	13.26	13.27	13.28	13.30
M14 × 1	---	---	---	---	13.54	13.55	13.56	13.58
M16 × 2	---	---	---	---	14.98	14.99	15.00	15.01
M16 × 1.5	---	---	---	---	14.26	15.27	15.28	15.30
M16 × 1	---	---	---	---	15.54	15.55	15.56	15.58
M18 × 2.5	---	---	---	---	---	16.71	16.72	16.73
M18 × 1.5	---	---	---	---	---	17.27	17.28	17.30
M20 × 2.5	---	---	---	---	---	---	18.72	18.73
M20 × 1.5	---	---	---	---	---	---	19.28	19.30

**挤压丝锥
FOR FLUTELESS TAPS**

Thread Size	Drill Size (mm)							
	Tap Limits							
	GH4	GH5	GH6	GH7	GH8	GH9	GH10	GH11
#2 - 56 UNC	---	1.99	2.01	---	---	---	---	---
#4 - 40 UNC	---	2.55	2.56	2.58	---	---	---	---
#5 - 40 UNC	---	2.88	2.89	2.91	---	---	---	---
#6 - 32 UNC	---	3.12	3.13	3.15	3.16	---	---	---
#8 - 32 UNC	---	---	3.80	3.81	3.82	---	---	---
#10 - 24 UNC	---	---	---	4.32	4.33	4.34	---	---
#12 - 24 UNC	---	---	---	4.98	4.99	5.01	---	---
1/4 - 20 UNC	---	---	---	5.72	5.74	5.75	---	---


标准螺纹规格(部分)
SYMBOL USED FOR STANDARD THREADS (PARTIAL LISTING)

Thread Symbol	Thread		Reference Standard	Thread Angle
M	Metric screw threads	Coarse series	JIS B 0205	60°
		Fine series	JIS B 0207	
S	Metric screw threads		JIS B 0201	
UNC	Unified threads	Coarse series	JIS B 0206	
			ANSI B1.1	
UNF		Fine series	JIS B 0208	
UNEF		Extra-fine series	ANSI B1.1	
UNS		Special diameter, pitch, & length of engagement		
UN		Constant-pitch series		
UNJC	Unified threads (MIL Standard)	Coarse series	MIL-S-8879	
UNJF		Fine series		
UNJEF		Extra-fine series		
UNJ		Constant-pitch series		
Tr	Metric trapezoidal screw threads		JIS B 0216	
TM	30° Trapezoidal screw threads		JIS B 0216 Appendix	
TW	29° Trapezoidal screw threads		JIS B 0222	29°
R	Pipe threads where pressure-tight joints are made on the threads	Taper external pipe threads	JIS B 0203	55° 1/16 Taper
Rc		Taper internal pipe threads		
Rp		Parallel internal pipe threads		
G	Pipe threads where pressure-tight joints are not made on the threads		JIS B 0202	55°
PF	Parallel pipe threads (For mechanical joints)		JIS B 0202 Appendix	55° 1/16 Taper
PT	Taper pipe threads (For pressure-tight joints)		JIS B 0203 Appendix	
PS	Parallel pipe threads			
NPT	American Standard taper pipe threads for general use		ANSI/ASEM B1.20.1	60° 1/16 Taper
NPSC	American Standard straight pipe threads in pipe couplings			
NPSM	American Standard straight pipe threads for free-fitting mechanical joints for fixtures			60°
NPTF	Dryseal American Standard taper pipe threads		ANSI B1.20.3	60° 1/16 Taper
NPSF	Dryseal American Standard fuel internal straight pipe threads			60°
CTG	Screw threads for rigid metal thick-walled conduits and fittings		JIS B 0204	55°
CTC	Screw threads for rigid metal thin-walled conduits and fittings			80°
BC	Cycle threads		JIS B 0225	60°
SM	Screw threads for sewing machine		JIS B 0226	
CTV	Tyre valve threads of cycle		JIS D 9422	
TV	Tyre valve threads of automobile		JIS D 4208	
E	Electric socket and lamp-base threads		JIS C 7709	
BA	British association threads		BS 93	47° 30'
BSC	British Standard cycle threads		BS 811	60°
BSW	British Standard Whitworth threads		BS 84	55°
BSF	British Standard fine threads			
BSMO	British Standard microscope objective threads		BS 3569	80°
FG	(Germany) Cycle threads		DIN 79012	
Pg	(Germany) Steel conduit threads		DIN 40430	

COMBO TAPS

SPIRAL POINT TAPS

SPIRAL FLUTE TAPS

STRAIGHT FLUTE TAPS

LONG SHANK TAPS

FLUTELRSS TAPS

SCREW THREAD INSERT TAPS

HAND TAPS

PIPE TAPS

CARBIDE TAPS

SKS21 HAND TAPS

SKS21 PIPE TAPS

THREAD MILLS

TECHNICAL DATA



硬度换算表

HARDNESS CONVERSION TABLE

Rockwell ★ C. Scale Hardness	Vickers Hardness	Brinell Hardness	Rockwell A. Scale Hardness	Shore Hardness	Tensile Strength ★★ MPa (Kgf/mm2)
58	653	---	80.1	78	---
57	633	---	79.6	76	---
56	613	---	79.0	75	---
55	595	---	78.5	74	2075 (212)
54	577	---	78.0	72	2015 (205)
53	560	---	77.4	71	1950 (199)
52	544	(500)	76.8	69	1880 (192)
51	528	(487)	76.3	68	1820 (186)
50	513	(475)	75.9	67	1760 (179)
49	498	(464)	75.2	66	1695 (173)
48	484	451	74.7	64	1635 (167)
47	471	442	74.1	63	1580 (161)
46	458	432	73.6	62	1530 (156)
45	446	421	73.1	60	1480 (151)
44	434	409	72.5	58	1435 (146)
43	423	400	72.0	57	1385 (141)
42	412	390	71.5	56	1340 (136)
41	402	381	70.9	55	1295 (132)
40	392	371	70.4	54	1250 (127)
39	382	362	69.9	52	1215 (124)
38	372	353	69.4	51	1180 (120)
37	363	344	68.9	50	1160 (118)
36	354	336	68.4	49	1115 (114)
35	345	327	67.9	48	1080 (110)
34	336	319	67.4	47	1055 (108)
33	327	311	66.8	46	1025 (105)
32	318	301	66.3	44	1000 (102)
31	310	294	65.8	43	980 (100)
30	302	286	65.3	42	950 (97)
29	294	279	64.7	41	930 (95)
28	286	271	64.3	41	910 (93)
27	279	264	63.8	40	880 (90)
26	272	258	63.3	38	860 (88)
25	266	253	62.8	38	840 (86)
24	260	247	62.4	37	825 (84)
23	254	243	62.0	36	805 (82)
22	248	237	61.5	35	785 (80)
21	243	231	61.0	35	770 (79)
20	238	226	60.5	34	760 (77)
(18)	230	219	---	33	730 (75)
(16)	222	212	---	32	705 (72)
(14)	213	203	---	31	675 (69)
(12)	204	194	---	29	650 (66)
(10)	196	187	---	28	620 (63)
(8)	188	179	---	27	600 (61)
(6)	180	171	---	26	580 (59)
(4)	173	165	---	25	550 (56)
(2)	166	158	---	24	530 (54)
(0)	160	152	---	24	515 (53)

● 硬度转换只作为粗略的参考，因为不同材料会有变化。
黑体字的数字是以ASTM E 140为基准(通常由SAE-ASM-ASTM进行调整)

★ ()中的数字只供参考

★★ 抗拉强度的单位和 () 中的数字是用JIS Z 8413 & Z 8438中的转换表由psi值转换的。
此表是根据SAE J 417作成(部分)

● Hardness conversions should only be used as a rough guide due to variation for different materials.

Figures shown in bold type are based on ASTM E 140 (which being adjusted commonly by SAE-ASM-ASTM).

★ Figure shown in () are provided for reference only.

★★ The unit of tensile strength and figures in () are converted from psi values by using conversion tables in JIS Z 8413 & Z 8438. This table is according to SAE J 417 (partial listing).



攻丝过程中的问题及对策

APPLICATION AND USE OF THREADING TAPS

问题 / Problem	问题发生 / Causes	对策 / Solutions
攻孔过大 Tapped hole oversize	不正确的丝锥使用(切削参数不适合运用) Incorrect tap in use (cutting geometry unsuitable for application)	根据相应的材料组选择丝锥 Use tap selected from the relevant material group
	同轴性不好 Faulty alignment	确保丝锥和锥孔正确的在一条线上 Ensure that the tap is correctly aligned with the core hole axis
	冷焊 Cold welding	改变冷却油方向, 调整切削速度 Improve lubrication and direction of coolant Adjust cutting speed
	重置丝锥(引入线不是同心的) Re-ground tap (lead-in is not concentric)	用合适的研磨机械再研磨丝锥的引入部分 Regrind tap lead correctly on a suitable tap grinding machine
带状螺纹 Stripped threads	错误使用丝锥(切削参数不适合运用) Incorrect tap in use (cutting geometry incorrect for application)	根据相应的材料组选择丝锥 Use a tap from the relevant material group.
	主轴速度和进给率不同步 Spindle speed and feed rate not synchronized	检查进给率程序和主轴螺距 使用带有轴向滑动的攻丝主轴 Check feed rate programming and / or pitch of leading spindle Use a tapping spindle with axial float
	不足的启动压力, 促使外面的螺纹脱落 Insufficient start pressure exerted on tap with peel-cut	增大启动压力 Increase start pressure
攻丝的孔成钟型 Bell mouthed tapped hole	启动压力不合适 Incorrect start pressure applied to tap	使用带有轴向滑动的攻丝主轴 Use a tapping spindle with axial float
不理想的螺纹表面 Unsatisfactory thread surface finish	错误使用丝锥 (切削参数不适合运用) Incorrect tap in use (Cutting geometry unsuitable for application)	根据相应的材料组选择丝锥 Select tap from the relevant material group
	丝锥生硬 The tap is blunt	替换和重新研磨丝锥 Replace or re-grind tap
	再研磨效果差 Tap badly re-ground	再研磨一遍 检查切削参数是否适合被加工材料 Re-grind tap again. Check that cutting geometry is suitable for material
	冷却油太少影响润滑质量和产量 Coolant lacking in lubricating qualities and / or quantity	确保冷却油使用正确且供应充足 Ensure the use of suitable coolant and an ample supply

COMBO TAPS

SPIRAL POINT TAPS

SPIRAL FLUTE TAPS

STRAIGHT FLUTE TAPS

LONG SHANK TAPS

FLUTELRSS TAPS

SCREW THREAD INSERT TAPS

HAND TAPS

PIPE TAPS

CARBIDE TAPS

SKS21 HAND TAPS

SKS21 PIPE TAPS

THREAD MILLS

TECHNICAL DATA

COMBO
TAPSSPIRAL
POINT TAPSSPIRAL
FLUTE TAPSSTRAIGHT
FLUTE TAPSLONG SHANK
TAPSFLUTELRSS
TAPSSCREW
THREAD
INSERT TAPS

HAND TAPS

PIPE TAPS

CARBIDE
TAPSSKS21
HAND TAPSSKS21
PIPE TAPSTHREAD
MILLSTECHNICAL
DATA

问题 / Problem	问题发生 / Causes	对策 / Solutions
丝锥的铁屑部分 Partial chipping of tap	金属屑阻塞 Swarf jamming	检查切削速度 使用有选择性的丝锥类型 Check cutting speed Use alternative tap type
	丝锥碰到孔底部而阻塞 Tap has jammed against bottom of core hole	检查孔和螺纹的深度 钻孔要深一些 Check hole and thread depths Drill core hole deeper
	丝锥错误的再研磨 (导入的直径太小以至于切齿太少) Tap incorrectly re-ground (lead-in diameter too small therefore too few cutting teeth)	在再研磨时, 确保它的原始值 Ensure that original values are maintained when regrinding
	无规律的工件原材料结构 Irregular workpiece material structure	调整切削速度 提高冷却油的润滑质量 Adjust cutting speed Improve lubricating quality of coolant
过度的丝锥破损 Excessive tap wear	不当的切削速度 Incorrect cutting speed	调整切削速度以合适被加工材料 Adjust cutting speed to suit workpiece material
	冷却油太少影响润滑质量和产量 Coolant lacking in lubricating qualities and / or quantity	确保冷却油使用正确且供应充足 Ensure the use of a suitable coolant and an ample supply 检查冷却油是否到达加工区域 Check that coolant is reaching the cutting zone
	攻孔太小, 孔的外表面压缩 Surface of the core hole is compacted	检查钻孔情况 (仔细钻孔以减少缩孔的风险) Check core hole drilling conditions (drill carefully to reduce risk of surface compacting) 检查钻边 Check drill cutting edges
丝锥破损 Tap breakage	错误使用丝锥 (切削参数不适合运用) Incorrect tap in use (cutting geometry unsuitable for application)	根据相应的材料组选择丝锥 Use tap from the relevant material group
	中心误差 Centering error	确保丝锥和被加工孔成一条直线 Ensure that axes of tap and core hole are aligned
	丝锥生硬 Blunt tap	再研磨丝锥 Re-grind tap 确保丝锥的存放安全性 Ensure that taps are stored carefully
	丝锥碰到孔的底部 Tap has reached bottom of core hole	用具有轴向滑动制动的攻丝主轴 Use tapping spindle with axial float and slipping clutch
	攻孔太小 Core hole too small	为每一步选择攻孔 手册在533-538页 Select core hole as per chart, pages 533~538 of this catalogue