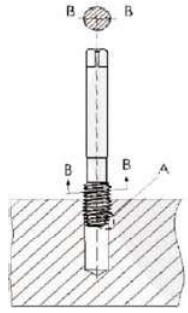
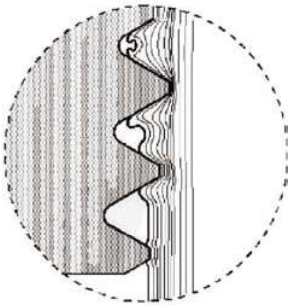
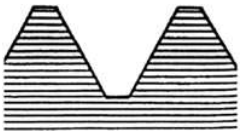
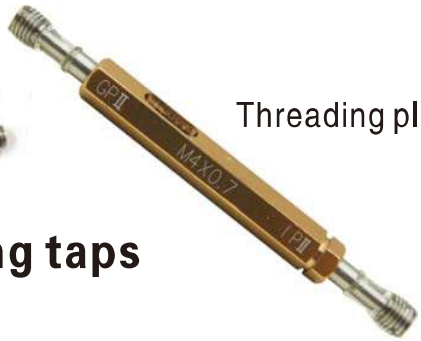
Spiral point,spiral flute taps' Shape and features



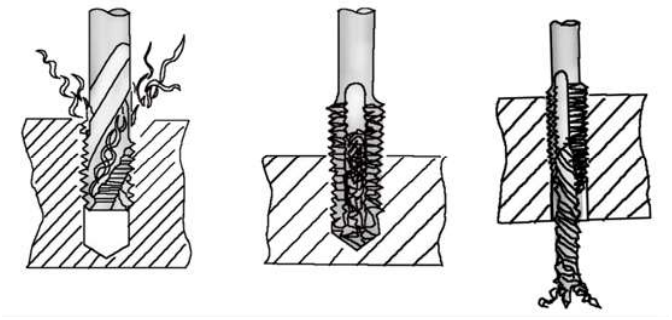






Threading plug

Shape and features of forming taps



Surface treatment of taps and application

Tapping is limited for processing inside a hole. Since cooling and lubricaion with cutting fluids arie not easy，and both cutting heat and frictional heat are generated，wear and galling are likely to occur. In addition，processing steel materials may result in affinity with tap materials，So that galling is easy to occur. Various kinds of surface treatment are available to address these problems.

Types	Color	Effects	Hardness	Application
Natural	Natural color		HV 900	Suitable for machining pure aluminum, pure zinc,aluminum alloy,etc
TIN	Gold	Improved wear resistance and galling-proofness	HV 2300	Suitable for machining low and medium carbon steel, sus etc
TICN	Blue gray	Improved wear resistance and galling-proofness	HV 3000	Suitable for machining sus,aluninum alloy(low aluminum),magneium alloy, zinc alloy etc
ALSIN-A	Black	Improved wear resistance and galling-proofness	HV 2000	Suitable for machining sus,titanium alloy, low and medium carbon steel,etc

Recommended tapping speeds

Work Material		Forming Tap v=(m/min)	Pointed Tap v=(m/min)	Fluted Tap v=(m/min)	Straight Fluted Tap v=(m/min)
Low Carbon Steel	~C0.2%	8~13	15~25	8~13	8~13
Medium Carbon Steel	C0.25%~0.40%	7~10	10~15	7~12	7~12
High Carbon Steel	C0.45%	5~8	8~13	6~9	6~9
Aloy Steel	SCM	5~8	10~15	7~12	7~12
Stainless Steel	SUS	5~10	8~13	5~8	4~7
Copper	CU	7~12	7~12	6~11	6~9
Brass · Brass Casting	Bs · BsC	7~12	15~25	10~20	10~15
Bronze · Bronze Casting	PB · PBC	7~12	10~15	7~12	7~12
Wrought Aluminum Alloy	AL	10~20	15~25	10~20	10~20
Aluminum Alloy Casting	AC · ADC	10~15	15~20	10~15	10~15
Zinc Casting	ZDC	7~12	10~15	7~12	7~12

●Stock ○Availabie upon Order

The difference between forming taps and cutting taps

Forming taps

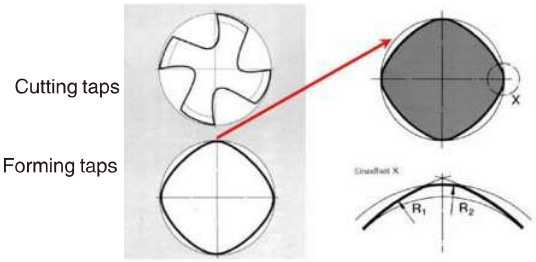
- no cutting,so no chip removal problem
- improved the thread surface quality
- increased the cutting speed(2 times)
- increased the taps' life

Forming taps limited on workpiece material

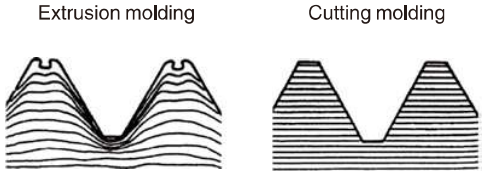
- Brittle materials(I.e.Grey cast iron)are not suitable
- workpiece's elongation at least to 10%

Remark: the bottom hole usual bigger than thread bottom hole

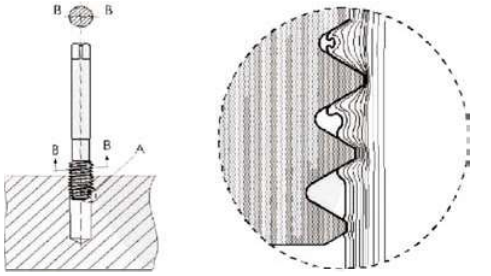
Feature comparison



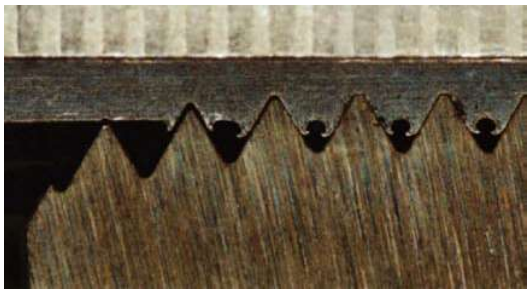
Thread comparison



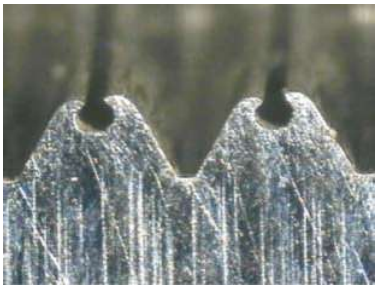
Extrusion forming diagram



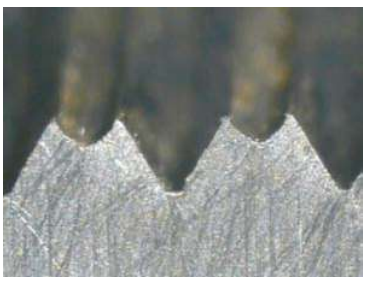
Extrusion forming cast diagram



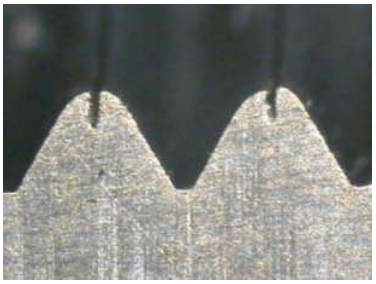
Normal extrusion thread(reasonable bottom hole)



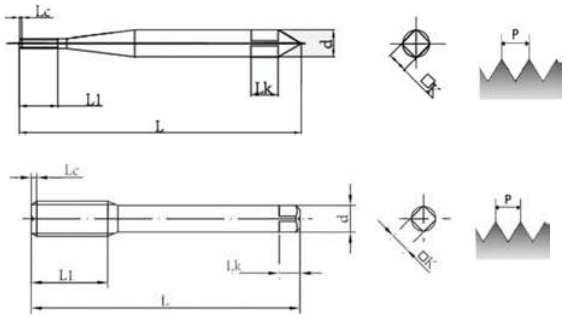
When the bottom hole is so big(molding not finish)



When the bottom hole is too small



Forming Taps

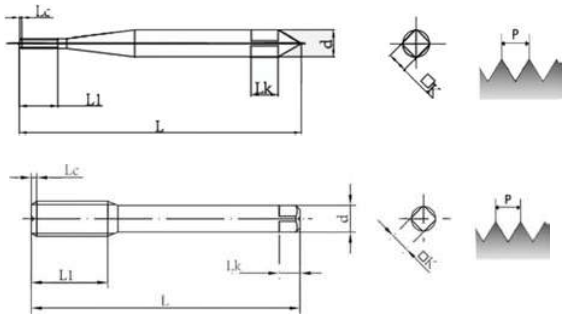


Material: HSSE Unit: mm

Ordering Code	L	L1	d	K	Natural color	Tin	Alsin-A	Ticn
M1.0*0.25 RH4	32.5	3.5	3	2.5*3	●	○	○	○
M1.0*0.25 RH4	32.5	4.5	3	2.5*3	●	○	○	○
M1.2*0.25 RH4	32.5	3.5	3	2.5*3	●	○	○	○
M1.2*0.25 RH4	32.5	4.5	3	2.5*3	●	○	○	○
M1.4*0.30 RH4	37	6.5	3	2.5*3	●	○	○	○
M1.6*0.35 RH4	37	8	3	2.5*3	●	○	○	○
M1.7*0.35 RH4	37	8	3	2.5*3	●	○	○	○
M1.8*0.35 RH4	37	8	3	2.5*3	●	○	○	○
M2.0*0.40 RH5	45	10	3	2.5*3	●	○	○	○
M2.3*0.40 RH5	45	10	3	2.5*3	●	○	○	○
M2.5*0.45 RH5	45	13	3	2.5*3	●	○	○	○
M2.6*0.45 RH5	45	13	3	2.5*3	●	○	○	○
M3.0*0.50 RH7	50	16	4	3.2*6	●	○	○	○
M3.5*0.60 RH7	50	16	4	3.2*6	●	○	○	○
M4.0*0.70 RH7	57	18	5	4*7	●	○	○	○
M5.0*0.80 RH7	66	20	5.5	4.5*7	●	○	○	○
M6.0*1.00 RH7	62	24	6	4.5*7	●	○	○	○
M7.0*1.00 RH7	70	13	6.2	5*8	●	○	○	○
M8.0*1.00 RH7	70	13	6.2	5*8	●	○	○	○
M8.0*1.25 RH7	70	13	6.2	5*8	●	○	○	○
M10.0*1.00 RH7	75	13	7	5.5*8	●	○	○	○
M10.0*1.25 RH7	75	13	7	5.5*8	●	○	○	○
M10.0*1.50 RH7	75	15	7	5.5*8	●	○	○	○
M12.0*1.00 RH7	82	13	8.5	6.5*9	●	○	○	○
M12.0*1.25 RH8	82	13	8.5	6.5*9	●	○	○	○
M12.0*1.50 RH8	82	17	8.5	6.5*9	●	○	○	○
M12.0*1.75 RH8	82	17	8.5	6.5*9	●	○	○	○
M14.0*1.00 RH7	88	13	10.5	8*11	●	○	○	○
M14.0*1.25 RH7	88	13	10.5	8*11	●	○	○	○
M14.0*1.50 RH8	88	20	10.5	8*11	●	○	○	○
M14.0*2.00 RH8	88	20	10.5	10*13	●	○	○	○
M16.0*1.00 RH8	95	13	12.5	10*13	●	○	○	○
M16.0*1.25 RH8	95	13	12.5	10*13	●	○	○	○
M16.0*1.50 RH8	95	20	12.5	10*13	●	○	○	○
M16.0*2.00 RH9	95	20	12.5	10*13	●	○	○	○

●Stock ○Availabie upon Order

Forming Taps

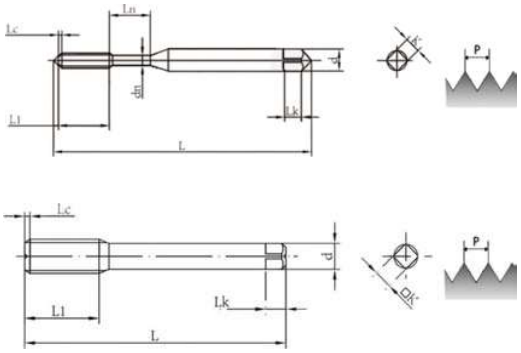


Material: HSSE Unit: mm

Ordering Code	L	L1	d	K	Natural color	Tin	Alsin-A	Ticn
NO.0-80UNF RH4	37	6.5	3	2.5*3	●	○	○	○
NO.1-64UNC RH4	37	9	3	2.5*3	●	○	○	○
NO.1-72UNF RH4	37	9	3	2.5*3	●	○	○	○
NO.2-56UNC RH4	45	12	3	2.5*3	●	○	○	○
NO.3-48UNC RH4	45	15	3	2.5*3	●	○	○	○
NO.4-40UNC RH4	45	15	3	2.5*3	●	○	○	○
NO.5-40UNF RH5	50	15	4	3.2*6	●	○	○	○
NO.6-32UNC RH6	50	16	4	3.2*6	●	○	○	○
NO.8-32UNC RH7	57	18	5	4*7	●	○	○	○
NO.10-24UNC RH7	66	20	5.5	4.5*7	●	○	○	○
NO.10-32UNF RH7	66	20	5.5	4.5*7	●	○	○	○
NO.12-24UNC RH7	66	20	5.5	4.5*7	●	○	○	○
NO.12-28UNF RH7	66	20	5.5	4.5*7	●	○	○	○
1/4-20UNC RH7	62	24	6	4.5*7	●	○	○	○
1/4-28UNF RH7	62	24	6	4.5*7	●	○	○	○
5/16-18UNC RH7	70	15	6.1	5*8	●	○	○	○
5/16-24UNF RH7	70	11	6.1	5*8	●	○	○	○
3/8-16UNC RH7	75	16	7	5.5*8	●	○	○	○
3/8-24UNF RH7	75	11	7	5.5*8	●	○	○	○
7/16-20UNF RH7	80	13	8	5*8	●	○	○	○
1/2-13UNC RH8	85	21	9	7*10	●	○	○	○
1/2-20UNF RH8	85	13	9	7*10	●	○	○	○
9/16-18UNF RH7	90	15	10.5	8*11	●	○	○	○
5/8-11UNC RH9	95	23	12	9*12	●	○	○	○
W1/40 RH6	50	15	4	3.2*6	●	○	○	○
W5/32-32 RH7	66	18	5	4*7	●	○	○	○
W3/16-24 RH7	66	18	5.5	4.5*7	●	○	○	○
W1/4-20 RH7	62	24	6	4.5*7	●	○	○	○
W5/16-18 RH7	70	15	6.1	5*8	●	○	○	○
W3/8-16 RH7	75	16	7	5.5*8	●	○	○	○
W1/2-12 RH8	85	21	9	7*10	●	○	○	○
W5/8-11 RH9	95	23	12	9*12	●	○	○	○

●Stock ○Availabie upon Order

Cutting Taps



Material: HSSE Unit: mm

Ordering Code	L	L1	d	K	LK	dn	In	Natural color	Tin	Alsin-A	Ticn
M1.0*0.25 P1	32	6.5	3	2.5	3			●	○	○	○
M1.2*0.25 P1	32	6.5	3	2.5	3			●	○	○	○
M1.4*0.30 P1	37	9.5	3	2.5	3			●	○	○	○
M1.6*0.35 P1	37	10	3	2.5	3			●	○	○	○
M2.0*0.40 P1	45	9	3	2.5	3	1.4	6	●	○	○	○
M2.5*0.45 P2	45	9	3	2.5	3	1.9	6	●	○	○	○
M3.0*0.50 P2	50	12	4	3.2	6	2.3	7	●	○	○	○
M3.5*0.60 P2	50	13	4	3.2	6	2.6	7	●	○	○	○
M4.0*0.70 P2	57	14	5	4	7	3	7	●	○	○	○
M5.0*0.80 P2	66	16	5.5	4.5	7	4	9	●	○	○	○
M6.0*1.00 P2	62	19.5	6	4.5	7	4.6	9.5	●	○	○	○
M8.0*1.25 P3	70	22	6.2	5	8			●	○	○	○
M8.0*1.00 P3	70	22	6.2	5	8			●	○	○	○
M10.0*1.50 P3	75	24	7	5.5	8			●	○	○	○
M10.0*1.25 P3	75	24	7	5.5	8			●	○	○	○
M10.0*1.00 P3	75	24	7	5.5	8			●	○	○	○
M12.0*1.75 P3	82	29	8.5	6.5	9			●	○	○	○
M12.0*1.50 P3	82	29	8.5	6.5	9			●	○	○	○
M12.0*1.25 P3	82	29	8.5	6.5	9			●	○	○	○
M12.0*1.00 P3	82	29	8.5	6.5	9			●	○	○	○
M14.0*2.00 P4	88	20	10.5	8	11			●	○	○	○
M14.0*1.50 P4	88	20	10.5	8	11			●	○	○	○
M14.0*1.25 P4	88	20	10.5	8	11			●	○	○	○
M14.0*1.00 P4	88	20	10.5	8	11			●	○	○	○
M16.0*2.00 P4	95	20	12.5	10	13			●	○	○	○
M16.0*1.50 P4	95	20	12.5	10	13			●	○	○	○
M16.0*1.25 P4	95	20	12.5	10	13			●	○	○	○
M16.0*1.00 P4	95	19.5	12.5	10	13			●	○	○	○
NO.4-40UNC P2	45	10	3	2.5	3	2	6	●	○	○	○
NO.5-40UNC P2	50	12	4	3.2	6	2.3	7	●	○	○	○
NO.6-32UNC P2	50	13	4	3.2	6	2.4	7	●	○	○	○
NO.8-32UNC P2	57	13.5	5	4	7	3	8	●	○	○	○
NO.10-24UNC P2	66	16.5	5.5	4.5	7	3.4	9.5	●	○	○	○
NO.12-24UNC P2	66	16.5	5.5	4.5	7	4	9.5	●	○	○	○
1/4-20UNC P2	62	19.5	6	4.5	7	4.6	9.5	●	○	○	○
5/16-18UNC P3	70	23	6.1	5	8			●	○	○	○
3/8-16UNC P3	75	24	7	5.5	8			●	○	○	○
7/16-14UNC P3	80	29	8	6	9			●	○	○	○
1/2-13UNC P3	85	30	9	7	10			●	○	○	○
9/16-12UNC P4	90	30	10.5	8	11			●	○	○	○
5/8-11UNC P4	95	23	12	9	12			●	○	○	○

●Stock ○Availabie upon Order

Plug gauge’s specification

Material: HSSE Unit: mm

Ordering Code	Precision	Ordering Code	Precision
M1.0*0.25	5H	M7.0*1.00	6H
M1.2*0.25	5H	M8.0*1.25	6H
M1.4*0.30	6H	M8.0*1.00	6H
M1.6*0.35	6H	M10.0*1.50	6H
M1.7*0.35	6H	M10.0*1.25	6H
M1.8*0.35	6H	M10.0*1.00	6H
M2.0*0.40	6H	M12.0*1.75	6H
M2.3*0.40	6H	M12.0*1.50	6H
M2.5*0.45	6H	M12.0*1.25	6H
M2.6*0.45	6H	M12.0*1.00	6H
M3.0*0.50	6H	M14.0*2.00	6H
M3.5*0.60	6H	M14.0*1.50	6H
M4.0*0.70	6H	M16.0*2.00	6H
M5.0*0.80	6H	M16.0*1.50	6H
M6.0*1.00	6H		

Material: HSSE Unit: mm

Ordering Code	Precision	Ordering Code	Precision
M0.1–40 UNC	2B	1/2–13 UNC	2B
M0.5–40 UNC	2B	1/2–20 UNF	2B
M0.6–32 UNC	2B	9/16–12 UNC	2B
M0.8–32 UNC	2B	5/8–11 UNC	2B
M0.10–24 UNC	2B	5/8–18 UNF	2B
M0.10–32 UNF	2B	5/8–24 UNF	2B
M0.12–24 UNC	2B	W1/8–40	2B
M0.12–28 UNF	2B	W5/32–32	2B
1/4–20 UNC	2B	W3/16–24	2B
1/4–28 UNF	2B	W1/4–20	2B
5/16–18 UNC	2B	W5/16–18	2B
5/16–24 UNF	2B	W3/8–16	2B
3/8–16 UNC	2B	W1/2–12	2B
2/8–24 UNF	2B	W5/8–11	2B
7/16–14 UNC	2B		
7/16–20 UNF	2B		

plug gauge use HSS material,the size ⩾3mm' shardness in HRC53–60° , > 3mm in HRC58–60° ,
GO–NO GO FIXED GAUGES's precision can be 5H,6H,also can be 6G,7H.size⩽M1.4 can be 5H,
go gauge use GP to mark T=GO=GR,not–go–end USD IP to mark Z=NO=NR

NRT hole diameter calculating mode

1.dN=D–P*0.45 2.dN=D–0.2P–0.00403 · P · f1+0.0127 · n Eg: M3*0.5 Rh6 JIS class 2 drill hole Thread overlap ratio 90% dN=3–0.2*0.5–0.00403 · 0.5 · 90+0.0127 · 6=2.79	dN=Hole diameter D=Diameter P=Pitch f1=Thread overlap ratio n=RH

●Stock ○Availabie upon Order

Recommended drill hole size for forming taps

Material: HSSE Unit: mm

Ordering Code	For JIS class 1B drill hole dia		For JIS class 2B drill hole dia	
	RH	MIN~MAX	RH	MIN~MAX
	Precision	Thread Overlap Ratio:%	Precision	Thread Overlap Ratio:%
M1.0*0.25	2	0.87~0.89(100~85)	4	0.90~0.82(100~80)
M1.2*0.25	2	1.07~1.09(100~85)	4	1.10~1.12(100~80)
M1.4*0.30	2	1.244~1.263(100~85)	4	1.270~1.294(100~80)
M1.6*0.35	2	1.40~1.44(100~80)	4	1.44~1.48(100~75)
M1.7*0.35	2	1.51~1.54(100~80)	4	1.54~1.58(100~75)
M2.0*0.40	2	1.78~1.82(100~80)	4	1.81~1.85(100~75)
M2.3*0.40	2	2.08~2.12(100~80)	4	2.11~2.15(100~75)
M2.5*0.45	2	2.25~2.29(100~80)	4	2.28~2.33(100~75)
M2.6*0.45	2	2.35~2.39(100~80)	4	2.38~2.43(100~75)
M3.0*0.50	3	2.74~2.78(100~80)	5	2.76~2.81(100~75)
M3.5*0.60	3	3.18~3.21(100~85)	5	3.20~3.26(100~75)
M4.0*0.70	4	3.63~3.67(100~85)	6	3.65~3.70(100~85)
M5.0*0.80	4	4.57~4.62(100~85)	6	4.59~4.66(100~80)
M6.0*1.00	4	5.45~5.51(100~85)	7	5.48~5.57(100~80)
M7.0*1.00	4	6.45~6.51(100~85)	7	6.48~6.57(100~80)
M8.0*1.25	5	7.31~7.38(100~85)	7	7.34~7.41(100~85)
M10.0*1.50	5	9.19~9.22(100~90)	7	9.18~9.28(100~85)
M12.0*1.75	5	11.01~11.08(100~90)	8	11.05~11.15(100~85)
M14.0*2.00	6	12.83~12.95(100~90)	10	12.92~13.04(100~85)
M16*2.00	6	14.87~14.95(100~90)	10	14.92~15.04(100~85)

Material: HSSE Unit: mm

Ordering Code	For JIS class 1B drill hole dia		For JIS class 2B drill hole dia	
	RH	MIN~MAX	RH	MIN~MAX
	Precision	Thread Overlap Ratio:%	Precision	Thread Overlap Ratio:%
NO.2~56UNC	4	1.96~2.02(100~65)	3	1.95~2.01(100~65)
2~64	3	1.98~2.04(100~65)	2	1.97~2.03(100~65)
3~48	4	2.25~2.60(100~65)	3	2.23~2.31(100~65)
4~40	5	2.52~2.60(100~70)	3	2.50~2.58(100~70)
4~48	4	2.57~2.64(100~70)	3	2.56~2.63(100~70)
6~32	5	3.09~3.17(100~75)	3	3.06~3.14(100~75)
6~40	5	3.19~3.26(100~70)	3	3.16~3.22(100~75)
8~32	6	3.75~3.83(100~75)	4	3.74~3.82(100~75)
10~24	6	4.26~4.35(100~80)	4	4.24~4.32(100~80)
10~32	5	4.41~4.48(100~80)	4	4.40~4.46(100~80)
12~28	5	5.00~5.08(100~80)	4	4.99~5.06(100~80)
1/4~20	6	5.66~5.76(100~80)	4	5.64~5.74(100~80)
1/4~28	5	5.86~5.93(100~80)	4	5.85~5.92(100~80)
5/16~18	7	7.18~7.29(100~80)	5	7.15~7.24(100~80)
5/16~24	6	7.38~7.46(100~80)	5	7.36~7.43(100~85)
3/8~16	7	8.66~8.78(100~80)	5	8.63~8.73(100~85)
3/8~24	6	8.96~9.05(100~80)	5	8.95~9.02(100~85)
7/16~20	7	10.44~10.54(100~80)	5	10.41~10.49(100~85)
1/2~13	8	11.62~11.78(100~80)	6	11.60~11.68(100~90)
1/2~20	7	12.02~12.12(100~80)	5	12.00~12.05(100~90)
5/8~11	11	14.62~14.76(100~85)	8	14.58~14.67(100~90)
5/8~18	9	15.14~15.25(100~80)	7	15.11~15.17(100~90)

●Stock ○Availabie upon Order

Recommended drill hole size for cutting taps

Specification(M)		Standard Hole Dia	For JIS Class2 Drill Hole Dia	
			Max	Min
M1.0	0.25	0.75	0.785	0.729
M1.1	0.25	0.85	0.885	0.829
M1.2	0.25	0.95	0.985	0.929
M1.4	0.30	1.10	1.142	1.075
M1.6	0.35	1.25	1.321	1.221
M1.7	0.35	1.35	1.421	1.321
M1.8	0.35	1.45	1.521	1.421
M2.0	0.40	1.60	1.679	1.567
M2.2	0.45	1.75	1.838	1.713
M2.3	0.40	1.90	1.979	1.867
M2.5	0.45	2.10	2.138	2.013
M2.6	0.45	2.20	2.238	2.113
M3.0	0.50	2.50	2.599	2.459
M3.5	0.60	2.90	3.010	2.850
M4.0	0.70	3.30	3.422	3.242
M4.5	0.75	3.80	3.878	3.688
M5.0	0.80	4.20	4.334	4.134
M6.0	1.00	5.00	5.153	4.917
M7.0	1.00	6.00	6.153	5.917
M8.0	1.25	6.80	6.912	6.647
M8.0	1.00	7.00	7.153	6.917
M9.0	1.25	7.80	7.912	7.647
M10	1.50	8.50	8.676	8.376
M10	1.25	8.80	8.912	8.647
M10	1.00	9.00	9.153	8.917
M11	1.50	9.50	9.676	9.376
M12	1.75	10.30	10.441	10.106
M12	1.50	10.50	10.676	10.376
M12	1.25	10.80	10.912	10.647
M12	1.00	11.00	11.153	10.917
M14	2.00	12.00	12.210	11.835
M14	1.50	12.50	12.676	12.376
M14	1.00	13.00	13.153	12.917
M16	2.00	14.00	14.210	13.835
M16	1.50	14.50	14.676	14.376
M16	1.00	15.00	15.153	14.917

Specification(M) (UNC)		Standard Hole Dia	For JIS Class2 Drill Hole Dia	
			Max	Min
NO.1	–64	1.55	1.582	1.425
NO.2	–56	1.80	1.871	1.695
NO.3	–48	2.10	2.146	1.941
NO.4	–40	2.30	2.385	2.157
NO.5	–40	2.60	2.697	2.487
NO.6	–32	2.80	2.895	2.642
NO.8	–32	3.40	3.530	3.302
NO.10	–24	3.90	3.962	3.683
NO.12	–24	4.50	4.597	4.344
1/4	–20	5.10	5.257	4.979
5/16	–18	6.60	6.731	6.401
3/8	–16	8.00	8.153	7.798
7/16	–14	9.40	9.550	9.144
1/2	–13	10.90	11.023	10.592
9/16	–12	12.20	12.466	11.989
5/8	–11	13.60	13.868	13.386

Specification(M) (UNC)		Standard Hole Dia	For JIS Class2 Drill Hole Dia	
			Max	Min
NO.0	–80	1.25	1.305	1.182
NO.1	–72	1.55	1.612	1.474
NO.2	–64	1.85	1.912	1.756
NO.3	–56	2.10	2.197	2.025
NO.4	–48	2.40	2.458	2.271
NO.5	–44	2.70	2.740	2.551
NO.6	–40	2.90	3.022	2.820
NO.8	–36	3.50	3.606	3.404
NO.10	–32	4.10	4.165	3.963
NO.12	–28	4.60	4.724	4.496
1/4	–28	5.50	5.588	5.360
5/16	–24	6.90	7.035	6.782
3/8	–24	8.50	8.636	8.382
7/16	–20	9.90	10.033	9.729
1/2	–20	11.50	11.607	11.329
9/16	–18	12.90	13.081	12.751
5/8	–18	14.50	14.681	14.351