

# 23. ねじ下穴ドリル径表 / Recommended Tap Drill Sizes

## メートルねじ用 / For Metric Threads

単位 / Unit : mm

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
M1 ×0.25	(0.785)	(0.729)	0.75
M1 ×0.2	(0.821)	(0.783)	0.80
M1.1×0.25	(0.885)	(0.829)	0.85
M1.1×0.2	(0.921)	(0.883)	0.90
M1.2×0.25	(0.985)	(0.929)	0.95
M1.2×0.2	(1.021)	(0.983)	1.00
M1.4×0.3	(1.142)	(1.075)	1.10
M1.4×0.2	(1.221)	(1.183)	1.20
M1.6×0.35	1.321	1.221	1.25
M1.6×0.2	(1.421)	(1.383)	1.40
※ M1.7×0.35	1.421	1.321	1.35
※ M1.7×0.2	1.521	1.483	1.50
M1.8×0.35	1.521	1.421	1.45
M1.8×0.2	(1.621)	(1.583)	1.60
M2 ×0.4	1.679	1.567	1.60
M2 ×0.25	(1.785)	(1.729)	1.75
M2.2×0.45	1.838	1.713	1.75
M2.2×0.25	(1.985)	(1.929)	1.95
※ M2.3×0.4	1.979	1.867	1.90
※ M2.3×0.25	2.085	2.029	2.05
M2.5×0.45	2.138	2.013	2.1
M2.5×0.35	2.221	2.121	2.2
※ M2.6×0.45	2.238	2.113	2.2
※ M2.6×0.35	2.321	2.221	2.2
M3 ×0.5	2.599	2.459	2.5
M3 ×0.35	2.721	2.621	2.7
M3.5×0.6	3.010	2.850	2.9
M3.5×0.35	3.221	3.121	3.2
M4 ×0.7	3.422	3.242	3.3
M4 ×0.5	3.599	3.459	3.5
M4.5×0.75	3.878	3.688	3.8
M4.5×0.5	4.099	3.959	4.0
M5 ×0.8	4.334	4.134	4.2
M5 ×0.5	4.599	4.459	4.5
M6 ×1	5.153	4.917	5.0
M6 ×0.75	5.378	5.188	5.3
※ M6 ×0.5	5.599	5.459	5.5
M7 ×1	6.153	5.917	6.0

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
M7 ×0.75	6.378	6.188	6.3
※ M7 ×0.5	6.599	6.459	6.5
M8 ×1.25	6.912	6.647	6.8
M8 ×1	7.153	6.917	7.0
M 8×0.75	7.378	7.188	7.3
※ M 8×0.5	7.599	7.459	7.5
M 9×1.25	7.912	7.647	7.8
M 9×1	8.153	7.917	8.0
M 9×0.75	8.378	8.188	8.3
M10×1.5	8.676	8.376	8.5
M10×1.25	8.912	8.647	8.8
M10×1	9.153	8.917	9.0
M10×0.75	9.378	9.188	9.3
※ M10×0.5	9.599	9.459	9.5
M11×1.5	9.676	9.376	9.5
M11×1	10.153	9.917	10.0
M11×0.75	10.378	10.188	10.3
※ M11×0.5	10.599	10.459	10.5
M12×1.75	10.441	10.106	10.3
M12×1.5	10.676	10.376	10.5
M12×1.25	10.912	10.647	10.8
M12×1	11.153	10.917	11.0
※ M12×0.5	11.599	11.459	11.5
M14×2	12.210	11.835	12.0
M14×1.5	12.676	12.376	12.5
M14×1	13.153	12.917	13.0
M15×1.5	13.676	13.376	13.5
M15×1	14.153	13.917	14.0
M16×2	14.210	13.835	14.0
M16×1.5	14.676	14.376	14.5
M16×1	15.153	14.917	15.0
M17×1.5	15.676	15.376	15.5
M17×1	16.153	15.917	16.0
M18×2.5	15.744	15.294	15.5
M18×2	16.210	15.835	16.0
M18×1.5	16.676	16.376	16.5
M18×1	17.153	16.917	17.0
M20×2.5	17.744	17.294	17.5

・ D<sub>1</sub>: JIS 6H (2級)めねじ内径を表します。( )内の数値は、並目ねじは5H (2級)、細目ねじは4H・5H (1級)を記載してあります。

・ 呼び※印のものはJISより削除されています。

・ The recommended tap drill sizes indicated above are for JIS 6H (Class 2) Metric Threads.

・ D<sub>1</sub>: Minor diameter of JIS 6H (Class 2) internal thread. The Minor diameters D<sub>1</sub> shown in ( ) are of 5H (Class 2) for coarse threads and of 4H・5H (Class 1) for fine threads.

・ ※Marked sizes have been eliminated from JIS.

## 23. ねじ下穴ドリル径表 / Recommended Tap Drill Sizes

単位 / Unit : mm

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
M20×2	18.210	17.835	18.0
M20×1.5	18.676	18.376	18.5
M20×1	19.153	18.917	19.0
M22×2.5	19.744	19.294	19.5
M22×2	20.210	19.835	20.0
M22×1.5	20.676	20.376	20.5
M22×1	21.153	20.917	21.0
M24×3	21.252	20.752	21.0
M24×2	22.210	21.835	22.0
M24×1.5	22.676	22.376	22.5
M24×1	23.153	22.917	23.0
M25×2	23.210	22.835	23.0
M25×1.5	23.676	23.376	23.5
M25×1	24.153	23.917	24.0
M26×1.5	24.676	24.376	24.5
M27×3	24.252	23.752	24.0
M27×2	25.210	24.835	25.0
M27×1.5	25.676	25.376	25.5
M27×1	26.153	25.917	26.0
M28×2	26.210	25.835	26.0
M28×1.5	26.676	26.376	26.5
M28×1	27.153	26.917	27.0
M30×3.5	26.771	26.211	26.5
M30×3	27.252	26.752	27.0
M30×2	28.210	27.835	28.0
M30×1.5	28.676	28.376	28.5
M30×1	29.153	28.917	29.0
M32×2	30.210	29.835	30.0
M32×1.5	30.676	30.376	30.5
M33×3.5	29.771	29.211	29.5
M33×3	30.252	29.752	30.0
M33×2	31.210	30.835	31.0
M33×1.5	31.676	31.376	31.5
M35×1.5	33.676	33.376	33.5
M36×4	32.270	31.670	32.0
M36×3	33.252	32.752	33.0
M36×2	34.210	33.835	34.0
M36×1.5	34.676	34.376	34.5

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
M38×1.5	36.676	36.376	36.5
M39×4	35.270	34.670	35.0
M39×3	36.252	35.752	36.0
M39×2	37.210	36.835	37.0
M39×1.5	37.676	37.376	37.5
M40×3	37.252	36.752	37.0
M40×2	38.210	37.835	38.0
M40×1.5	38.676	38.376	38.5
M42×4.5	37.799	37.129	37.5
M42×4	38.270	37.670	38.0
M42×3	39.252	38.752	39.0
M42×2	40.210	39.835	40.0
M42×1.5	40.676	40.376	40.5
M45×4.5	40.799	40.129	40.5
M45×4	41.270	40.670	41.0
M45×3	42.252	41.752	42.0
M45×2	43.210	42.835	43.0
M45×1.5	43.676	43.376	43.5
M48×5	43.297	42.587	43.0
M48×4	44.270	43.670	44.0
M48×3	45.252	44.752	45.0
M48×2	46.210	45.835	46.0
M48×1.5	46.676	46.376	46.5
M50×3	47.252	46.752	47.0
M50×2	48.210	47.835	48.0
M50×1.5	48.676	48.376	48.5

- ・ D<sub>1</sub>: JIS 6H (2級) めねじ内径を表します。
- ・ 呼び※印のものはJISより削除されています。
- ・ The recommended tap drill sizes indicated above are for JIS 6H (Class 2) Metric Threads.
- ・ D<sub>1</sub>: Minor diameter of JIS 6H (Class 2) internal thread.
- ・ ※Marked sizes have been eliminated from JIS.

単位 / Unit : mm

## ユニファイねじ用 / For Unified Threads

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
No. 0 - 80UNF	1.305	1.182	1.25
No. 1 - 64UNC	1.582	1.425	1.55
No. 1 - 72UNF	1.612	1.474	1.55
No. 2 - 56UNC	1.871	1.695	1.80
No. 2 - 64UNF	1.912	1.756	1.85
No. 3 - 48UNC	2.146	1.941	2.1
No. 3 - 56UNF	2.197	2.025	2.1
No. 4 - 40UNC	2.385	2.157	2.3
No. 4 - 48UNF	2.458	2.271	2.4
No. 5 - 40UNC	2.697	2.487	2.6
No. 5 - 44UNF	2.740	2.551	2.7
No. 6 - 32UNC	2.895	2.642	2.8
No. 6 - 40UNF	3.022	2.820	2.9
No. 8 - 32UNC	3.530	3.302	3.4
No. 8 - 36UNF	3.606	3.404	3.5
No.10 - 24UNC	3.962	3.683	3.9
No.10 - 32UNF	4.165	3.963	4.1
No.12 - 24UNC	4.597	4.344	4.5
No.12 - 28UNF	4.724	4.496	4.6
No.12 - 32UNEF	4.826	4.623	4.7
1/4 - 20UNC	5.257	4.979	5.1
1/4 - 28UNF	5.588	5.360	5.5
1/4 - 32UNEF	5.689	5.487	5.6
5/16 - 18UNC	6.731	6.401	6.6
5/16 - 24UNF	7.035	6.782	6.9
5/16 - 32UNEF	7.264	7.087	7.1
3/8 - 16UNC	8.153	7.798	8.0
3/8 - 24UNF	8.636	8.382	8.5
3/8 - 32UNEF	8.864	8.662	8.7
7/16 - 14UNC	9.550	9.144	9.4
7/16 - 20UNF	10.033	9.729	9.9
7/16 - 28UNEF	10.337	10.135	10.2
1/2 - 13UNC	11.023	10.592	10.9
1/2 - 20UNF	11.607	11.329	11.5
1/2 - 28UNEF	11.938	11.710	11.8
9/16 - 12UNC	12.446	11.989	12.2
9/16 - 18UNF	13.081	12.751	12.9
9/16 - 24UNEF	13.385	13.132	13.2

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
5/8 - 11UNC	13.868	13.386	13.6
5/8 - 18UNF	14.681	14.351	14.5
5/8 - 24UNEF	14.986	14.732	14.8
3/4 - 10UNC	16.840	16.307	16.6
3/4 - 16UNF	17.678	17.323	17.5
3/4 - 20UNEF	17.957	17.679	17.8
7/8 - 9UNC	19.761	19.177	19.6
7/8 - 14UNF	20.675	20.270	20.5
7/8 - 20UNEF	21.132	20.854	21.0
1 - 8UNC	22.606	21.971	22.3
1 - 12UNF	23.571	23.114	23.3
1 - 20UNEF	24.307	24.029	24.1
1 1/8 - 7UNC	25.349	24.638	25.0
1 1/8 - 8UN	25.781	25.146	25.5
1 1/8-12UNF	26.746	26.289	26.5
1 1/8-18UNEF	27.381	27.051	27.2
1 1/4 - 7UNC	28.524	27.813	28.2
1 1/4 - 8UN	28.956	28.321	28.5
1 1/4-12UNF	29.921	29.464	29.6
1 1/4-18UNEF	30.556	30.226	30.3
1 3/8 - 6UNC	31.115	30.353	30.8
1 3/8 - 8UN	32.131	31.496	31.8
1 3/8-12UNF	33.096	32.639	32.8
1 3/8-18UNEF	33.731	33.401	33.5
1 1/2 - 6UNC	34.290	33.528	34.0
1 1/2 - 8UN	35.306	34.671	35.0
1 1/2-12UNF	36.271	35.814	36.0
1 1/2-18UNEF	36.880	36.576	36.6
1 5/8 - 8UN	38.481	37.846	38.1
1 5/8-12UN	39.446	38.989	39.1
1 5/8-18UNEF	40.081	39.751	39.8
1 3/4 - 5UNC	39.827	38.964	39.5
1 3/4 - 8UN	41.656	41.021	41.3
1 3/4-12UN	42.621	42.164	42.3
2 - 4 1/2UNC	45.593	44.679	45.2
2 - 8UN	48.006	47.371	47.8
2 - 12UN	48.971	48.514	48.6

・ D<sub>1</sub>: 2Bめねじ内径を表します。UNC, UNFはJIS, UNEF, UN, UNSの2Bめねじ内径D<sub>1</sub>はANSI B1.1によっています。

・ The recommended tap drill sizes indicated above are for JIS Class 2B UNC & UNF threads, and ANSI B1.1 Class 2B UNEF, UN & UNS threads.

・ D<sub>1</sub>: Minor diameter of internal thread.

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

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

## 23. ねじ下穴ドリル径表 / Recommended Tap Drill Sizes

### ■ インサートコイルメートルねじ用 / For Metric Threads Using with Helical Coil Wire Inserts

単位 / Unit : mm

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
M 2 × 0.4	2.16	2.10	2.13
M 2.5 × 0.45	2.65	2.6	2.6
M 2.6 × 0.45	2.85	2.77	2.8
M 3 × 0.5	3.20	3.12	3.1
M 4 × 0.7	4.30	4.17	4.2
M 5 × 0.8	5.33	5.16	5.2
M 6 × 1	6.42	6.25	6.3
M 8 × 1.25	8.52	8.31	8.4
M10 × 1.5	10.62	10.37	10.5
M10 × 1.25	10.52	10.31	10.4
M10 × 1	10.42	10.25	10.3
M12 × 1.75	12.73	12.43	12.6
M12 × 1.5	12.62	12.37	12.5
M12 × 1.25	12.52	12.31	12.4

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
M14 × 2	14.83	14.49	14.7
M14 × 1.5	14.62	14.37	14.5
M14 × 1.25	14.52	14.31	14.4
M16 × 2	16.83	16.49	16.7
M16 × 1.5	16.62	16.37	16.5
M18 × 2.5	19.04	18.58	18.9
M18 × 1.5	18.62	18.37	18.5
M20 × 2.5	21.04	20.58	20.9
M20 × 1.5	20.62	20.37	20.5
M22 × 2.5	23.04	22.58	22.9
M22 × 1.5	22.62	22.37	22.5
M24 × 3	25.25	24.70	25.1
M24 × 1.5	24.62	24.38	24.5

・この表はインサートコイルメーカーの資料によっています。  
 ・ The figures listed above are according to the data provided by helical coil wire insert manufacturers.

### ■ 管用テーパねじ (Pc, PT) / Pipe Thread (Pc, PT)

単位 / Unit : mm

呼び Nominal size	ドリル径(参考) / Drill Size		有効ねじ部の長さ(最小)に おけるめねじ内径 Internal Thread Minor Dia. on [Min.] Length of Useful Thread	基準の長さ(最小) におけるめねじ内径 Internal Thread Minor Dia. on [Min.] Gauge Length
	リーマ使用の場合 With Reaming Before Tapping	リーマ使用せぬ場合 Without Reaming Before Tapping		
Rc 1/16 - 28	6.1	6.2	6.244	6.384
Rc 1/8 - 28	8.1	8.2	8.249	8.388
Rc 1/4 - 19	10.7	11.0	10.962	11.174
Rc 3/8 - 19	14.2	14.5	14.448	14.658
Rc 1/2 - 14	17.6	18.0	17.979	18.263
Rc 3/4 - 14	23.0	23.5	23.378	23.663
Rc 1 - 11	29.0	29.5	29.459	29.822
Rc 1 1/4 - 11	37.5	38.0	37.976	38.339
Rc 1 1/2 - 11	43.4	44.0	43.869	44.232
Rc 2 - 11	54.9	55.5	55.412	55.844

### ■ ウィット並目ねじ用

For Whitworth Coarse Threads

単位 / Unit : mm

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
W 1/8 - 40	(2.591)	(2.362)	2.55
W 3/16 - 24	(3.744)	(3.406)	3.70
W 1/4 - 20	5.204	4.914	5.1
W 5/16 - 18	6.670	6.340	6.6
W 3/8 - 16	8.113	7.733	8.0
W 7/16 - 14	9.508	9.048	9.4
W 1/2 - 12	10.830	10.310	10.7
W 9/16 - 12	12.418	11.898	12.3
W 5/8 - 11	13.817	13.257	13.7
W 3/4 - 10	16.778	16.178	16.6
W 7/8 - 9	19.691	19.031	19.5
W 1 - 8	22.514	21.814	22.3

・ D1: JIS 2級めねじ内径を表します。  
 ・ ウィットねじはJISより削除されています。  
 ・ 呼び※印のものはBSWに準じています。  
 ・ The recommended tap drill sizes indicated above are for JIS Class 2 Whitworth Threads.  
 ・ D1: Minor diameter of JIS Class 2 internal thread.  
 ・ Whitworth Threads have been eliminated from JIS.  
 ・ ※Marked sizes are in accordance with BSW.

### ■ ミシン用ねじ用

For Sewing Machine Threads

単位 / Unit : mm

呼び Nominal size	D <sub>1</sub>		ドリル径(参考) Drill Size
	Max.	Min.	
1/8 SM44	2.605	2.485	2.5
9/32 SM40	2.948	2.818	2.9
11/32 SM40	3.742	3.612	3.7

## ■ 管用平行ねじ / Pipe Thread

○Rp, PS

単位 / Unit : mm

呼び Nominal size	めねじ内径(D1) / Minor Diameter of JIS internal thread (D1)		ドリル径(参考) Drill Size
	Max.	Min.	
Rp 1/16 - 28	6.632	6.490	6.5
Rp 1/8 - 28	8.637	8.495	8.5
Rp 1/4 - 19	11.549	11.341	11.4
Rp 3/8 - 19	15.054	14.846	14.9
Rp 1/2 - 14	18.773	18.489	18.6
Rp 3/4 - 14	24.259	23.975	24.0
Rp 1 - 11	30.472	30.110	30.2
Rp 1 1/4-11	39.133	38.771	38.8
Rp 1 1/2-11	45.026	44.664	44.7
Rp 2 - 11	56.837	56.475	56.5

○G, PF

単位 / Unit : mm

呼び Nominal size	めねじ内径(D1) / Minor Diameter of JIS internal thread (D1)		ドリル径(参考) Drill Size
	Max.	Min.	
G 1/16 - 28	6.843	6.561	6.7
G 1/8 - 28	8.848	8.566	8.7
G 1/4 - 19	11.890	11.445	11.7
G 3/8 - 19	15.395	14.950	15.2
G 1/2 - 14	19.172	18.631	19.0
G 5/8 - 14	21.128	20.587	21.0
G 3/4 - 14	24.658	24.117	24.5
G 7/8 - 14	28.418	27.877	28.2
G 1 - 11	30.931	30.291	30.6
G 1 1/8-11	35.579	34.939	35.2
G 1 1/4-11	39.592	38.952	39.2
G 1 1/2-11	45.485	44.845	45.0
G 1 3/4-11	51.428	50.788	51.0
G 2 - 11	57.296	56.656	57.0

## ■ アメリカ管用ねじ / American Standard Pipe Thread

単位 / Unit : mm

呼び Nominal size	ドリル径(参考) / Tap Drill Size				NPSC	
	NPT					
	リーマ使用の場合 / With Reaming Before Tapping		リーマ使用せぬ場合 / Without Reaming Before Tapping		mm	inch
	mm	inch	mm	inch		
1/16 - 27	5.94	0.234	6.15	0.242	6.35	0.250
1/8 - 27	8.33	0.328	8.43	0.332	8.74	0.344
1/4 - 18	10.72	0.422	11.13	0.438	11.13	0.438
3/8 - 18	14.27	0.562	14.27	0.562	14.68	0.578
1/2 - 14	17.48	0.688	17.86	0.703	18.26	0.719
3/4 - 14	22.63	0.891	23.01	0.906	23.42	0.922
1 - 11 1/2	28.58	1.125	28.98	1.141	29.36	1.156
1 1/4-11 1/2	37.31	1.469	37.69	1.484	38.10	1.500
1 1/2-11 1/2	43.26	1.703	43.66	1.719	44.45	1.750
2 - 11 1/2	55.17	2.172	55.58	2.188	56.36	2.219
2 1/2 - 8	65.48	2.578	66.27	2.609	67.46	2.656

・アメリカ管用ねじANSI/ASME B1.20.1-1983 PIPE THREADS, GENERAL PURPOSE (INCH) の推奨下穴ドリル径より抜粋。

・ The drill sizes are according to ANSI/ASME B1.20.1-1983 PIPE THREADS, GENERAL PURPOSE (INCH) (partial listing).

## 23. ねじ下穴ドリル径表 / Recommended Tap Drill Sizes

### ■ アメリカドライシール管用ねじ / Dryseal American Standard Pipe Thread

単位 / Unit : mm

呼び Nominal size	ドリル径(参考) / Tap Drill Size				NPSF	
	NPTF					
	リーマ使用の場合 / With Reaming Before Tapping		リーマ使用せぬ場合 / Without Reaming Before Tapping			
	mm	inch	mm	inch	mm	inch
1/16 - 27	5.94	0.234	6.15	0.242	6.25	0.246
1/8 - 27	8.33	0.328	8.43	0.332	8.61	0.339
1/4 - 18	10.72	0.422	11.13	0.438	11.13	0.438
3/8 - 18	14.27	0.562	14.27	0.562	14.68	0.578
1/2 - 14	17.48	0.688	17.86	0.703	17.86	0.703
3/4 - 14	22.63	0.891	23.01	0.906	23.42	0.922
1 - 11 1/2	28.58	1.125	28.98	1.141	29.36	1.156
1 1/4 - 11 1/2	37.31	1.469	37.69	1.484		
1 1/2 - 11 1/2	43.26	1.703	43.66	1.719		
2 - 11 1/2	55.17	2.172	55.58	2.188		
2 1/2 - 8	65.48	2.578	66.27	2.609		

- ・ アメリカドライシール管用ねじ ANSI B1.20.3-1976 Dryseal Pipe Threads (Inch) の推奨下穴ドリル径より抜粋。
- ・ The drill sizes are according to ANSI B1.20.3-1976 Dryseal Pipe Threads (Inch) (partial listing).

### ■ ねじ下穴径のひっかかり率算出式及びめねじの山の高さ と 断面積の関係

Percentage of Thread Engagement & Relation between Percentage of Thread Height and Area Removed at A Thread Height

ひっかかり率(%) / Percentage of Thread Engagement

$$\frac{\text{外径の基準寸法} - \text{下穴径}}{2 \times (\text{標準のひっかかり高さ})} \times 100$$

$$\frac{\text{Basic Major Dia.} - \text{Hole Size Before Tapping}}{2 \times (\text{Basic Thread Overlap})} \times 100$$

基準のひっかかり高さ / Basic Thread Overlap:

メートルねじ、ユニファイねじ / Metric & Unified Thread	0.5413P
ウィットねじ / Whitworth Thread	0.5664P
管用ねじ (Rc, Rp, G, PT, PS, PF) / Pipe Thread	0.6403P

P = ピッチ、Pitch

めねじ / Internal Thread

Units area △ per row

断面積(%) / Percentage of Area Removed (%)

Percentage of Thread Height (%)

ねじ山の高さ と 断面積の関係は上図の通りで、ねじ下穴径は許される範囲で大きければ、タッピングによるねじ立てにも有利といえます。

As shown above, when the thread height increases, the amount of material to be removed increases rapidly, so it is an advantage to tap users to keep the hole size (thread minor diameter) as large as possible.