

23. 螺紋下孔徑表

■ 公制螺紋用

Unit : mm

尺寸	D ₁		下孔徑(參考)
	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

尺寸	D ₁		下孔徑(參考)
	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

· D1: JIS 6H(2級)表示為內螺紋內徑，()內的數值，所記載的是粗螺紋5H(2級)以及細牙螺紋4H・5H(1級)表示。
 · ※此標記符號，因為JIS關係刪除。

23.螺紋下孔徑表

尺寸	D ₁		下孔徑(參考)
	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

尺寸	D ₁		下孔徑(參考)
	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

- D1: JIS 6H(2級)表示為內螺紋內徑。
- ※此標記符號，因為JIS關係刪除。

23. 螺紋下孔徑表

■ 美制螺紋用

尺寸	D ₁		下孔徑(參考)
	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

尺寸	D ₁		下孔徑(參考)
	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

• D1為2B內螺紋內徑。UNC, UNFはJIS, UNEF, UN, UNS的2B內螺紋內徑，D1是依據ANSI B1.1

23. 螺紋下孔徑表

■ 螺紋護套用

尺寸	D ₁		下孔徑(參考)
	Max.	Min.	
M 2 × 0.4	2.16	2.10	2.13
M 2.5 × 0.45	2.68	2.62	2.65
M 2.6 × 0.45	2.78	2.72	2.75
M 3 × 0.5	3.20	3.13	3.15
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

尺寸	D ₁		下孔徑(參考)
	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

■ 管牙用 (Rc、PT)

尺寸	下孔徑(參考)		有效螺紋部長度 (最小)螺紋內徑	標準長度(最小) 螺紋內徑
	使用鉸刀	無使用鉸刀		
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

■ 英制牙用

尺寸	D ₁		下孔徑(參考)
	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

■ 針車牙用

尺寸	D ₁		下孔徑(參考)
	Max.	Min.	
1/8 SM44	2.605	2.485	2.5
9/64 SM40	2.948	2.818	2.9
11/64 SM40	3.742	3.612	3.7

- D1: JIS 2級表示為內螺紋內徑。
- 英制螺紋因由JIS而被刪除。
- ※印此標記符號是以BSW為標準。

23. 螺紋下孔徑表

■ 管用平行螺紋

○Rp, PS

尺寸	D1		下孔徑(參考)
	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

尺寸	D1		下孔徑(參考)
	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

■ 美製管用螺紋

尺寸	下孔徑				NPSC	
	NPT					
	使用鉸刀		無使用鉸刀		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

• 摘錄美製管用螺紋ANSI/ASME B1.20.1-1983 PIPE THREADS, GENERAL PURPOSE (INCH) 所推薦的下孔徑參考值。

23. 螺紋下孔徑表

■ 美用乾式氣密管用螺紋

單位 / Unit : mm

尺寸	下孔徑				NPSF	
	NPTF		無使用鉸刀			
	使用鉸刀	無使用鉸刀	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		

■ 螺紋下孔徑咬合率公式及內螺紋牙山的高度與斷面積關係

螺紋咬合率計算公式 (%)

$$\frac{\text{外徑} - \text{下孔徑}}{2 \times (\text{標準咬合率高度})} \times 100$$

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

標準的咬合率高度：

公制牙(M)、美制牙(U)	0.5413P
英制牙(W)	0.5664P
管牙(Rc.Rp.G.PT.PS.PF)	0.6403P

