

24. Drill size and recommended hole size for cutting taps

Intro

Metric Threads (M)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
M 1 × 0.25	0.785	0.729	0.75	0.77
M 1.1 × 0.25	0.885	0.829	0.85	0.87
M 1.2 × 0.25	0.985	0.929	0.95	0.97
M 1.4 × 0.3	1.142	1.075	1.10	1.13
M 1.6 × 0.35	1.321	1.221	1.25	1.30
M 1.7 × 0.35	1.421	1.321	1.35	1.40
M 1.8 × 0.35	1.521	1.421	1.45	1.50
M 2 × 0.4	1.679	1.567	1.60	1.65
M 2.2 × 0.45	1.838	1.713	1.75	1.81
M 2.3 × 0.4	1.979	1.867	1.90	1.95
M 2.5 × 0.45	2.138	2.013	2.10	2.11
M 2.6 × 0.45	2.238	2.113	2.20	2.21
M 3 × 0.5	2.599	2.459	2.50	2.56
M 3.5 × 0.6	3.010	2.850	2.90	2.97
M 4 × 0.7	3.422	3.242	3.30	3.38
M 4.5 × 0.75	3.878	3.688	3.80	3.83
M 5 × 0.8	4.334	4.134	4.20	4.28
M 6 × 1	5.153	4.917	5.00	5.09
M 7 × 1	6.153	5.917	6.00	6.09
M 8 × 1.25	6.912	6.647	6.80	6.85
M 9 × 1.25	7.912	7.647	7.80	7.85
M 10 × 1.5	8.676	8.376	8.50	8.60
M 11 × 1.5	9.676	9.376	9.50	9.60
M 12 × 1.75	10.441	10.106	10.30	10.36
M 14 × 2	12.210	11.835	12.00	12.12
M 16 × 2	14.210	13.835	14.00	14.12
M 18 × 2.5	15.744	15.294	15.50	15.63
M 20 × 2.5	17.744	17.294	17.50	17.63
M 22 × 2.5	19.744	19.294	19.50	19.63
M 24 × 3	21.252	20.752	21.00	21.13
M 27 × 3	24.252	23.752	24.00	24.13
M 30 × 3.5	26.771	26.211	26.50	26.63
M 33 × 3.5	29.771	29.211	29.50	29.63
M 36 × 4	32.270	31.670	32.00	32.12
M 39 × 4	35.270	34.670	35.00	35.12
M 42 × 4.5	37.799	37.129	37.50	37.63
M 45 × 4.5	40.799	40.129	40.50	40.63
M 48 × 5	43.297	42.587	43.00	43.12
M 52 × 5	47.297	46.587	47.00	47.10
M 56 × 5.5	50.796	50.046	50.50	50.60
M 60 × 5.5	54.796	54.046	54.50	54.60
M 64 × 6	58.305	57.505	58.00	58.10
M 68 × 6	62.305	61.505	62.00	62.10
M 70 × 6	64.305	63.505	64.00	64.10
M 72 × 6	66.305	65.505	66.00	66.10
M 76 × 6	70.305	69.505	70.00	70.10
M 80 × 6	74.305	73.505	74.00	74.10
M 85 × 6	79.305	78.505	79.00	79.10
M 90 × 6	84.305	83.505	84.00	84.10
M 95 × 6	89.305	88.505	89.00	89.10
M 100 × 6	94.305	93.505	94.00	94.10

Metric Fine Threads (MF)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
MF 1 × 0.2	0.821	0.783	0.80	0.81
MF 1.1 × 0.2	0.921	0.883	0.90	0.91
MF 1.2 × 0.2	1.021	0.983	1.00	1.01
MF 1.4 × 0.2	1.221	1.183	1.20	1.21
MF 1.6 × 0.2	1.421	1.383	1.40	1.41
MF 1.7 × 0.2	1.521	1.483	1.50	1.51
MF 1.8 × 0.2	1.621	1.583	1.60	1.61
MF 2 × 0.25	1.785	1.729	1.75	1.77
MF 2.2 × 0.25	1.985	1.929	1.95	1.97
MF 2.3 × 0.25	2.085	2.029	2.05	2.07
MF 2.5 × 0.35	2.221	2.121	2.20	2.20
MF 2.6 × 0.35	2.321	2.221	2.30	2.30
MF 3 × 0.35	2.721	2.621	2.70	2.70
MF 3.5 × 0.35	3.221	3.121	3.20	3.20
MF 4 × 0.5	3.599	3.459	3.50	3.56
MF 4.5 × 0.5	4.099	3.959	4.00	4.06
MF 5 × 0.5	4.599	4.459	4.50	4.56
MF 5.5 × 0.5	5.099	4.959	5.00	5.06
MF 6 × 0.75	5.378	5.188	5.30	5.33
MF 6 × 0.5	5.599	5.459	5.50	5.56
MF 7 × 0.75	6.378	6.188	6.30	6.33
MF 7 × 0.5	6.599	6.459	6.50	6.56
MF 8 × 1	7.153	6.917	7.00	7.09
MF 8 × 0.75	7.378	7.188	7.30	7.33
MF 8 × 0.5	7.599	7.459	7.50	7.56
MF 9 × 1	8.153	7.917	8.00	8.09
MF 9 × 0.75	8.378	8.188	8.30	8.33
MF 10 × 1.25	8.912	8.647	8.80	8.85
MF 10 × 1	9.153	8.917	9.00	9.09
MF 10 × 0.75	9.378	9.188	9.30	9.33
MF 10 × 0.5	9.599	9.459	9.50	9.56
MF 11 × 1	10.153	9.917	10.00	10.10
MF 11 × 0.75	10.378	10.188	10.30	10.33
MF 11 × 0.5	10.599	10.459	10.50	10.56
MF 12 × 1.5	10.676	10.376	10.50	10.60
MF 12 × 1.25	10.912	10.647	10.80	10.85
MF 12 × 1	11.153	10.917	11.00	11.09
MF 12 × 0.5	11.599	11.459	11.50	11.56
MF 14 × 1.5	12.676	12.376	12.50	12.60
MF 14 × 1	13.153	12.917	13.00	13.09
MF 15 × 1.5	13.676	13.376	13.50	13.60
MF 15 × 1	14.153	13.917	14.00	14.09
MF 16 × 1.5	14.676	14.376	14.50	14.60
MF 16 × 1	15.153	14.917	15.00	15.09
MF 17 × 1.5	15.676	15.376	15.50	15.60
MF 17 × 1	16.153	15.917	16.00	16.09
MF 18 × 2	16.210	15.835	16.00	16.12
MF 18 × 1.5	16.676	16.376	16.50	16.60
MF 18 × 1	17.153	16.917	17.00	17.09
MF 20 × 2	18.210	17.835	18.00	18.12
MF 20 × 1.5	18.676	18.376	18.50	18.60

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Unit: mm

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Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
MF 20 × 1	19.153	18.917	19.00	19.09
MF 22 × 2	20.210	19.835	20.00	20.12
MF 22 × 1.5	20.676	20.376	20.50	20.60
MF 22 × 1	21.153	20.917	21.00	21.09
MF 24 × 2	22.210	21.835	22.00	22.12
MF 24 × 1.5	22.676	22.376	22.50	22.60
MF 24 × 1	23.153	22.917	23.00	23.09
MF 25 × 2	23.210	22.835	23.00	23.12
MF 25 × 1.5	23.676	23.376	23.50	23.60
MF 25 × 1	24.153	23.917	24.00	24.09
MF 26 × 1.5	24.676	24.376	24.50	24.60
MF 27 × 2	25.210	24.835	25.00	25.12
MF 27 × 1.5	25.676	25.376	25.50	25.60
MF 27 × 1	26.153	25.917	26.00	26.09
MF 28 × 2	26.210	25.835	26.00	26.12
MF 28 × 1.5	26.676	26.376	26.50	26.60
MF 28 × 1	27.153	26.917	27.00	27.09
MF 30 × 3	27.252	26.752	27.00	27.13
MF 30 × 2	28.210	27.835	28.00	28.12
MF 30 × 1.5	28.676	28.376	28.50	28.60
MF 30 × 1	29.153	28.917	29.00	29.09
MF 32 × 2	30.210	29.835	30.00	30.12
MF 32 × 1.5	30.676	30.376	30.50	30.60
MF 33 × 3	30.252	29.752	30.00	30.13
MF 33 × 2	31.210	30.835	31.00	31.12
MF 33 × 1.5	31.676	31.376	31.50	31.60
MF 35 × 1.5	33.676	33.376	33.50	33.60
MF 36 × 3	33.252	32.752	33.00	33.13
MF 36 × 2	34.210	33.835	34.00	34.12
MF 36 × 1.5	34.676	34.376	34.50	34.60
MF 38 × 1.5	36.676	36.376	36.50	36.60
MF 39 × 3	36.252	35.752	36.00	36.13
MF 39 × 2	37.210	36.835	37.00	37.12
MF 39 × 1.5	37.676	37.376	37.50	37.60
MF 40 × 3	37.252	36.752	37.00	37.13
MF 40 × 2	38.210	37.835	38.00	38.12
MF 40 × 1.5	38.676	38.376	38.50	38.60
MF 42 × 4	38.270	37.670	38.00	38.12
MF 42 × 3	39.252	38.752	39.00	39.13
MF 42 × 2	40.210	39.835	40.00	40.12
MF 42 × 1.5	40.676	40.376	40.50	40.60
MF 45 × 4	41.270	40.670	41.00	41.12
MF 45 × 3	42.252	41.752	42.00	42.13
MF 45 × 2	43.210	42.835	43.00	43.12
MF 45 × 1.5	43.676	43.376	43.50	43.60
MF 48 × 4	44.270	43.670	44.00	44.12
MF 48 × 3	45.252	44.752	45.00	45.13
MF 48 × 2	46.210	45.835	46.00	46.12
MF 48 × 1.5	46.676	46.376	46.50	46.60
MF 50 × 3	47.252	46.752	47.00	47.13
MF 50 × 2	48.210	47.835	48.00	48.12

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
MF 50 × 1.5	48.676	48.376	48.50	48.60
MF 52 × 4	48.270	47.670	48.00	48.10
MF 52 × 3	49.252	48.752	49.00	49.10
MF 52 × 2	50.210	49.835	50.00	50.10
MF 52 × 1.5	50.676	50.376	50.50	50.60
MF 55 × 4	51.270	50.670	51.00	51.10
MF 55 × 3	52.252	51.752	52.00	52.10
MF 55 × 2	53.210	52.835	53.00	53.10
MF 55 × 1.5	53.676	53.376	53.50	53.60
MF 56 × 4	52.270	51.670	52.00	52.10
MF 56 × 3	53.252	52.752	53.00	53.10
MF 56 × 2	54.210	53.835	54.00	54.10
MF 56 × 1.5	54.676	54.376	54.50	54.60
MF 58 × 4	54.270	53.670	54.00	54.10
MF 58 × 3	55.252	54.752	55.00	55.10
MF 58 × 2	56.210	55.835	56.00	56.10
MF 58 × 1.5	56.676	56.376	56.50	56.60
MF 60 × 4	56.270	55.670	56.00	56.10
MF 60 × 3	57.252	56.752	57.00	57.10
MF 60 × 2	58.210	57.835	58.00	58.10
MF 60 × 1.5	58.676	58.376	58.50	58.60
MF 62 × 4	58.270	57.670	58.00	58.10
MF 62 × 3	59.252	58.752	59.00	59.10
MF 62 × 2	60.210	59.835	60.00	60.10
MF 62 × 1.5	60.676	60.376	60.50	60.60
MF 64 × 4	60.270	59.670	60.00	60.10
MF 64 × 3	61.252	60.752	61.00	61.10
MF 64 × 2	62.210	61.835	62.00	62.10
MF 64 × 1.5	62.676	62.376	62.50	62.60
MF 65 × 4	61.270	60.670	61.00	61.10
MF 65 × 3	62.252	61.752	62.00	62.10
MF 65 × 2	63.210	62.835	63.00	63.10
MF 65 × 1.5	63.676	63.376	63.50	63.60
MF 68 × 4	64.270	63.670	64.00	64.10
MF 68 × 3	65.252	64.752	65.00	65.10
MF 68 × 2	66.210	65.835	66.00	66.10
MF 68 × 1.5	66.676	66.376	66.50	66.60
MF 70 × 4	66.270	65.670	66.00	66.10
MF 70 × 3	67.252	66.752	67.00	67.10
MF 70 × 2	68.210	67.835	68.00	68.10
MF 70 × 1.5	68.676	68.376	68.00	68.60
MF 72 × 4	68.270	67.670	68.00	68.10
MF 72 × 3	69.252	68.752	69.00	69.10
MF 72 × 2	70.210	69.835	70.00	70.10
MF 72 × 1.5	70.676	70.376	70.50	70.60
MF 75 × 4	71.270	70.670	71.00	71.10
MF 75 × 3	72.252	71.752	72.00	72.10
MF 75 × 2	73.210	72.835	73.00	73.10
MF 75 × 1.5	73.676	73.376	73.50	73.60
MF 76 × 4	72.270	71.670	72.00	72.10
MF 76 × 3	73.252	72.752	73.00	73.10

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24. Drill size and recommended hole size for cutting taps

Intro

SP

Metric Fine Threads (MF)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
MF 76 × 2	74.210	73.835	74.00	74.10
MF 76 × 1.5	74.676	74.376	74.50	74.60
MF 78 × 2	76.210	75.835	76.00	76.10
MF 80 × 4	76.270	75.670	76.00	76.10
MF 80 × 3	77.252	76.752	77.00	77.10
MF 80 × 2	78.210	77.835	78.00	78.10
MF 80 × 1.5	78.676	78.376	78.50	78.60
MF 82 × 2	80.210	79.835	80.00	80.10
MF 85 × 4	81.270	80.670	81.00	81.10
MF 85 × 3	82.252	81.752	82.00	82.10
MF 85 × 2	83.210	82.835	83.00	83.10
MF 90 × 4	86.270	85.670	86.00	86.10
MF 90 × 3	87.252	86.752	87.00	87.10
MF 90 × 2	88.210	87.835	88.00	88.10
MF 95 × 4	91.270	90.670	91.00	91.10
MF 95 × 3	92.252	91.752	92.00	92.10
MF 95 × 2	93.210	92.835	93.00	93.10
MF 100 × 4	96.270	95.670	96.00	96.10
MF 100 × 3	97.252	96.752	97.00	97.10
MF 100 × 2	98.210	97.835	98.00	98.10

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Miniature threads (S)

Unit: mm

Size	Recommended Hole Size
S 0.4 X 0.1	0.32
S 0.5 X 0.125	0.41
S 0.6 X 0.15	0.49
S 0.7 X 0.175	0.57
S 0.8 X 0.2	0.65
S 0.9 X 0.225	0.73

Unified Coarse Threads (UNC)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
No. 1 - 64 UNC	1.582	1.425	1.55	1.54
No. 2 - 56 UNC	1.871	1.695	1.80	1.83
No. 3 - 48 UNC	2.146	1.941	2.10	2.09
No. 4 - 40 UNC	2.385	2.157	2.30	2.33
No. 5 - 40 UNC	2.697	2.487	2.60	2.64
No. 6 - 32 UNC	2.895	2.642	2.80	2.83
No. 8 - 32 UNC	3.530	3.302	3.40	3.47
No. 10 - 24 UNC	3.962	3.683	3.90	3.89
No. 12 - 24 UNC	4.597	4.344	4.50	4.53
1/4 - 20 UNC	5.257	4.979	5.10	5.19
5/16 - 18 UNC	6.731	6.401	6.60	6.65
3/8 - 16 UNC	8.153	7.798	8.00	8.07
7/16 - 14 UNC	9.550	9.144	9.40	9.45
1/2 - 13 UNC	11.023	10.592	10.90	10.91
9/16 - 12 UNC	12.446	11.989	12.20	12.33
5/8 - 11 UNC	13.868	13.386	13.60	13.75
3/4 - 10 UNC	16.840	16.307	16.60	16.7
7/8 - 9 UNC	19.761	19.177	19.60	19.61
1 - 8 UNC	22.606	21.971	22.30	22.45
1 1/8 - 7 UNC	25.349	24.638	25.00	25.17
1 1/4 - 7 UNC	28.524	27.813	28.20	28.35
1 3/8 - 6 UNC	31.115	30.353	30.80	30.92
1 1/2 - 6 UNC	34.290	33.528	34.00	34.10
1 3/4 - 5 UNC	39.827	38.964	39.50	39.61
2 - 4.5 UNC	45.593	44.679	45.20	45.37

Unified Fine Threads (UNF)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
No. 0 - 80 UNF	1.305	1.182	1.25	1.27
No. 1 - 72 UNF	1.612	1.474	1.55	1.58
No. 2 - 64 UNF	1.912	1.756	1.85	1.87
No. 3 - 56 UNF	2.197	2.025	2.10	2.15
No. 4 - 48 UNF	2.458	2.271	2.40	2.41
No. 5 - 44 UNF	2.740	2.551	2.70	2.69
No. 6 - 40 UNF	3.022	2.820	2.90	2.97
No. 8 - 36 UNF	3.606	3.404	3.50	3.55
No. 10 - 32 UNF	4.165	3.963	4.10	4.12
No. 12 - 28 UNF	4.724	4.496	4.60	4.67
1/4 - 28 UNF	5.588	5.360	5.50	5.53
5/16 - 24 UNF	7.035	6.782	6.90	6.97
3/8 - 24 UNF	8.636	8.382	8.50	8.57
7/16 - 20 UNF	10.033	9.729	9.90	9.96
1/2 - 20 UNF	11.607	11.329	11.50	11.54
9/16 - 18 UNF	13.081	12.751	12.90	13.00
5/8 - 18 UNF	14.681	14.351	14.50	14.6
3/4 - 16 UNF	17.678	17.323	17.50	17.59
7/8 - 14 UNF	20.675	20.270	20.50	20.57
1 - 12 UNF	23.571	23.114	23.30	23.46
1 1/8 - 12 UNF	26.746	26.289	26.50	26.63
1 1/4 - 12 UNF	29.921	29.464	29.60	29.81
1 3/8 - 12 UNF	33.096	32.639	32.80	32.98
1 1/2 - 12 UNF	36.271	35.814	36.00	36.16

Unified Threads (8UN)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
1"1/8 - 8 UN	25.781	25.146	25.50	25.62
1"1/4 - 8 UN	28.956	28.321	28.50	28.80
1"3/8 - 8 UN	32.131	31.496	31.80	31.97
1"1/2 - 8 UN	35.306	34.671	35.00	35.15
1"5/8 - 8 UN	38.481	37.846	38.10	38.32
1"3/4 - 8 UN	41.656	41.021	41.30	41.50
2 - 8 UN	48.006	47.371	47.80	47.85

Unified Threads (12UN)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
1"5/8 - 12 UN	39.446	38.989	39.10	39.33
1"3/4 - 12 UN	42.621	42.164	42.30	42.51
2 - 12 UN	48.971	48.514	48.60	48.86

Unified Extra Fine Threads (UNEF)

Unit: mm

No.	Size	Minor Diameter		Drill Size	Recommended Hole Size
		Max.	Min.		
12	32 UNEF	4.826	4.623	4.70	4.78
	1/4 - 32 UNEF	5.689	5.487	5.60	5.64
	5/16 - 32 UNEF	7.264	7.087	7.10	7.22
	3/8 - 32 UNEF	8.864	8.662	8.70	8.81
	7/16 - 28 UNEF	10.337	10.135	10.20	10.29
	1/2 - 28 UNEF	11.938	11.710	11.80	11.88
	9/16 - 24 UNEF	13.385	13.132	13.20	13.32
	5/8 - 24 UNEF	14.986	14.732	14.80	14.92
	3/4 - 20 UNEF	17.957	17.679	17.80	17.89
	7/8 - 20 UNEF	21.132	20.854	21.00	21.06
	1 - 20 UNEF	24.307	24.029	24.10	24.24
	1"1/8 - 18 UNEF	27.381	27.051	27.20	27.3
	1"1/4 - 18 UNEF	30.556	30.226	30.30	30.47
	1"3/8 - 18 UNEF	33.731	33.401	33.50	33.65
	1"1/2 - 18 UNEF	36.906	36.576	36.70	36.82
	1"5/8 - 18 UNEF	40.081	39.751	39.80	40.00

Cylindrical Pipe Threads - G(BSP)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
G 1/16 - 28	6.843	6.561	6.75	6.77
G 1/8 - 28	8.848	8.566	8.75	8.78
G 1/4 - 19	11.890	11.445	11.75	11.78
G 3/8 - 19	15.395	14.950	15.25	15.28
G 1/2 - 14	19.172	18.631	19.00	19.04
G 5/8 - 14	21.128	20.587	21.00	21.00
G 3/4 - 14	24.658	24.117	24.50	24.52
G 7/8 - 14	28.418	27.877	28.25	28.28
G 1 - 11	30.931	30.291	30.75	30.77
G 1 1/8 - 11	35.579	34.939	35.30	35.42
G 1 1/4 - 11	39.592	38.952	39.30	39.43
G 1 1/2 - 11	45.485	44.845	45.25	45.33
G 1 3/4 - 11	51.428	50.788	51.25	51.27
G 2 - 11	57.296	56.656	57.00	57.14
G 2 1/2 - 11	72.866	72.226	72.50	72.70
G 3 - 11	85.566	84.926	85.25	85.40
G 3 1/2 - 11	98.012	97.372	97.75	97.90
G 4 - 11	110.712	110.072	110.50	110.60

Parallel Internal Pipe Threads - Rp(BSP) - PS

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
Rp 1/16 - 28	6.632	6.490	6.50	6.55
Rp 1/8 - 28	8.637	8.495	8.50	8.55
Rp 1/4 - 19	11.549	11.341	11.40	11.50
Rp 3/8 - 19	15.054	14.846	14.80	14.90
Rp 1/2 - 14	18.773	18.489	18.50	18.55
Rp 5/8 - 14	20.729	20.445	20.50	20.55
Rp 3/4 - 14	24.259	23.975	24.00	24.10
Rp 7/8 - 14	28.019	27.735	27.75	27.80
Rp 1 - 11	30.472	30.110	30.20	30.25
Rp 1 1/8 - 11	35.120	34.758	34.75	34.80
Rp 1 1/4 - 11	39.133	38.771	38.75	38.80
Rp 1 1/2 - 11	45.026	44.664	44.60	44.70
Rp 1 3/4 - 11	50.969	50.607	50.60	50.70
Rp 2 - 11	56.837	56.475	56.50	56.60
Rp 2 1/4 - 11	62.933	62.571	62.50	62.60
Rp 2 1/2 - 11	72.442	72.010	72.00	72.10
Rp 3 - 11	85.142	84.710	84.75	84.80
Rp 3 1/2 - 11	97.588	97.156	97.20	97.30
Rp 4 - 11	110.288	109.856	109.90	110.00

Hand Taps

Thread Mills

Dies

Center Drills

SP

SL

PO

ST

ROLL

CARBIDE

LONG

HAND TAPS

EG (STI)

SPECIAL THREADS, GAUGES

THREAD MILLS

DIES

CENTER DRILLS

Technical info

24. Drill size and recommended hole size for cutting taps

Intro

SP

American Pipe Threads (NPSC)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
NPSC 1/16 - 27	6.604	6.300	6.50	6.53
NPSC 1/8 - 27	8.940	8.636	8.80	8.86
NPSC 1/4 - 18	11.633	11.227	11.50	11.53
NPSC 3/8 - 18	15.087	14.656	14.90	14.98
NPSC 1/2 - 14	18.643	18.161	18.50	18.52
NPSC 3/4 - 14	24.003	23.495	23.75	23.88
NPSC 1 - 11.5	30.073	29.490	29.80	29.93
NPSC 1 1/4 - 11.5	38.836	38.253	38.50	38.69
NPSC 1 1/2 - 11.5	44.907	44.323	44.75	44.76
NPSC 2 - 11.5	56.946	56.363	56.75	56.80

SL

PO

ST

American Pipe Threads (NPSM)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
NPSM 1/16 - 27	6.898	6.747	6.80	6.86
NPSM 1/8 - 27	9.246	9.094	9.20	9.21
NPSM 1/4 - 18	12.217	11.888	12.10	12.13
NPSM 3/8 - 18	15.554	15.317	15.50	15.49
NPSM 1/2 - 14	19.278	18.974	19.20	19.20
NPSM 3/4 - 14	24.638	24.334	24.50	24.60
NPSM 1 - 11.5	30.759	30.506	30.60	30.70
NPSM 1 1/4 - 11.5	39.497	39.269	39.40	39.40
NPSM 1 1/2 - 11.5	45.567	45.339	45.50	45.50
NPSM 2 - 11.5	57.607	57.379	57.50	57.60

ROLL

Dryseal American Pipe Threads (NPSF)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
NPSF 1/16 - 27	6.482	6.305	6.40	6.44
NPSF 1/8 - 27	8.740	8.652	8.70	8.72
NPSF 1/4 - 18	11.363	11.232	11.30	11.33
NPSF 3/8 - 18	14.803	14.672	14.75	14.77
NPSF 1/2 - 14	18.288	18.118	18.25	18.20
NPSF 3/4 - 14	23.634	23.465	23.50	23.50
NPSF 1 - 11.5	29.669	29.464	29.50	29.60
NPSF 1 1/4 - 11.5	38.514	38.220	38.30	38.40
NPSF 1 1/2 - 11.5	44.584	44.290	44.50	44.50
NPSF 2 - 11.5	56.621	56.328	56.50	56.50

CARBIDE

LONG

HAND TAPS

EG (STI)

SPECIAL THREADS, GAUGES

THREAD MILLS

DIES

CENTER DRILLS

Technical info

Taper Internal Pipe Threads - Rc(BSPT)-PT (refer to JIS B 0203 or ISO 7-1)

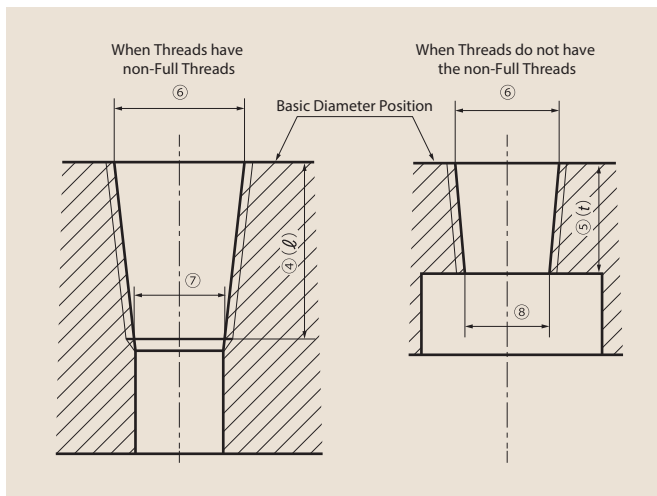
Unit: mm

Size	Thread Standards				Minor Diameter			Recommended Bored Hole Sizes (reference)		Reference		
	Basic Diameter	Basic Diameter	Effective Thread Length (Minimum)		Pipe End (Workpiece Face) (Basic Diameter)	When Threads have non-Full Threads	When Threads do not have the non-Full Threads	Maximum Size of Straight Bored Hole		Tap		
			Pipe End	When Threads have non-Full Threads ℓ		When Threads do not have the non-Full Threads t	Position away from Pipe End by ℓ	Position away from Pipe End by t	When Threads have non-Full Threads	When Threads do not have the non-Full Threads	Long Thread Type	Short Thread Type
	Tolerance in radial direction	Tolerance in axial direction c				Basic Size	Basic Size	Basic Size				
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬
PT 1/16 - 28	±0.071	±1.13	6.2	4.4	6.561	6.174	6.286	6.1	6.2	13.0	10.5	10.1
PT 1/8 - 28	±0.071	±1.13	6.2	4.4	8.566	8.179	8.291	8.1	8.2	13.0	10.5	10.1
PT 1/4 - 19	±0.104	±1.67	9.4	6.7	11.445	10.858	11.026	10.7	10.9	21.0	12.5	15.0
PT 3/8 - 19	±0.104	±1.67	9.7	7.0	14.950	14.344	14.513	14.2	14.4	21.0	14.0	15.4
PT 1/2 - 14	±0.142	±2.27	12.7	9.1	18.631	17.837	18.062	17.6	17.9	25.0	17.0	20.5
PT 5/8 - 14	±0.142	±2.27	(13.4)	(9.65)	20.587	19.750	19.984	19.6	19.8	25.0	-	-
PT 3/4 - 14	±0.142	±2.27	14.1	10.2	24.117	23.236	23.480	23.0	23.3	25.0	19.0	21.8
PT 7/8 - 14	±0.142	±2.27	(15.2)	(10.9)	27.877	26.930	27.196	26.7	27.0	28.0	-	-
PT 1 - 11	±0.181	±2.89	16.2	11.6	30.291	29.279	29.566	29.0	29.3	32.0	22.0	26.0
PT 1 1/8 - 11	±0.181	±2.89	(17.4)	(12.5)	34.939	33.855	34.158	33.6	33.9	32.0	-	-
PT 1 1/4 - 11	±0.181	±2.89	18.5	13.4	38.952	37.796	38.115	37.6	37.9	32.0	24.5	28.3
PT 1 1/2 - 11	±0.181	±2.89	18.5	13.4	44.845	43.689	44.008	43.5	43.8	32.0	25.5	28.3
PT 1 3/4 - 11	±0.181	±2.89	(18.5)	(13.4)	50.788	49.632	49.951	49.4	49.7	32.0	-	-
PT 2 - 11	±0.181	±2.89	22.8	16.9	56.656	55.231	55.600	55.0	55.4	35.0	27.5	32.7
PT 2 1/4 - 11	±0.216	±3.46	(26.7)	(18.6)	65.710	64.041	64.548	63.8	64.3	50.0	-	-
PT 2 1/2 - 11	±0.216	±3.46	26.7	18.6	72.226	70.557	71.064	70.3	70.8	50.0	32.0	37.1
PT 3 - 11	±0.216	±3.46	29.8	21.1	84.926	83.064	83.607	82.8	83.3	52.0	36.0	40.2
PT 3 1/2 - 11	±0.216	±3.46	31.4	22.4	97.372	95.410	95.972	95.1	95.7	52.0	-	46.2
PT 4 - 11	±0.216	±3.46	35.8	25.9	110.072	107.835	108.453	107.6	108.2	55.0	-	46.2

Note: Length toward End of Smaller Diameter from Basic Diameter Position

REMARKS DURING TAPPING

- PT internal threads have R design on their crests. The tap should cut threads with their thread rot.
- On thread drawing non-full threads. If you are going to cut effective thread length ℓ , use the tap of long type.



- Opening of Internal Thread (Face of workpiece) is Basic Diameter Position.
- Effective Thread Length has 2 types: with non-Full Thread Type and without non-Full Thread Type.
- Concerning bored hole shape, considering load on taps, taper bored hole is recommended.
- Use the machines that has synchronized feed system in the case of taper bored hole.
- When applying taper bored hole, by referring to values shown in columns ②⑤⑧, prepare the taper hole by using pipe reamer (1/16 taper). By referring to values shown in columns ⑨ and ⑩, select the drill diameter before reaming by taking reamer's margin into account.
- When preparing straight bored hole, by referring to values shown in columns ⑨ and ⑩, select drill diameter.

24. Drill size and recommended hole size for cutting taps

Intro

SP

American Taper Pipe Threads (NPT) (Refer to ANSI/ASME B1.20.1-1983)

Unit: mm

SL

PO

ST

ROLL

Size	L1	L3	L1+L3	Minor Diameter						Bored Hole Size (reference)	reference Tap
				Pipe End (Basic Diameter Position)			Position away from Pipe End by (L1+L3)				
				Maximum Value	Minimum Value	Tolerance	Maximum Value	Minimum Value	Tolerance	Maximum Size of Straight Bored Hole	Basic Diameter Position ϕg
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
NPT 1/16 - 27	4.064	2.822	6.886	6.510	6.388	0.122	6.080	5.958	0.122	6.05	12.00
NPT 1/8 - 27	4.102	2.822	6.924	8.857	8.736	0.121	8.425	8.303	0.122	8.39	12.05
NPT 1/4 - 18	5.786	4.234	10.020	11.514	11.357	0.157	10.888	10.730	0.158	10.85	17.45
NPT 3/8 - 18	6.096	4.234	10.330	14.953	14.796	0.157	14.308	14.150	0.158	14.27	17.65
NPT 1/2 - 14	8.128	5.443	13.571	18.485	18.323	0.162	17.637	17.475	0.162	17.60	22.85
NPT 3/4 - 14	8.611	5.443	14.054	23.831	23.668	0.163	22.952	22.790	0.162	22.91	22.95
NPT 1 - 11.5	10.160	6.627	16.787	29.868	29.696	0.172	28.819	28.647	0.172	28.78	27.40
NPT 1 1/4 - 11.5	10.668	6.627	17.295	38.625	38.452	0.173	37.544	37.372	0.172	37.50	28.10
NPT 1 1/2 - 11.5	10.668	6.627	17.295	44.695	44.522	0.173	43.614	43.441	0.173	43.57	28.40
NPT 2 - 11.5	11.074	6.627	17.701	56.732	56.560	0.172	55.626	55.454	0.172	55.58	28.00
NPT 2 1/2 - 8	17.323	6.350	23.673	67.806	67.618	0.188	66.326	66.138	0.188	66.28	40.80
NPT 3 - 8	19.456	6.350	25.806	83.715	83.527	0.188	82.102	81.914	0.188	82.05	42.95

CARBIDE

LONG

HAND TAPS

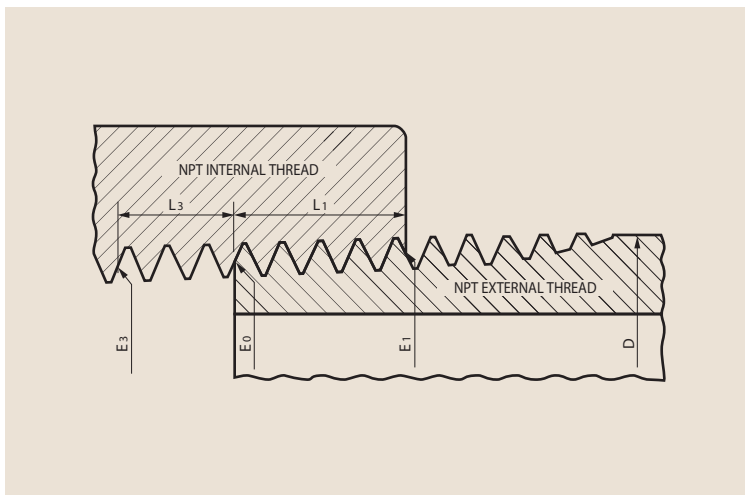
EG (STI)

SPECIAL THREADS, GAUGES

THREAD MILLS

DIES

CENTER DRILLS



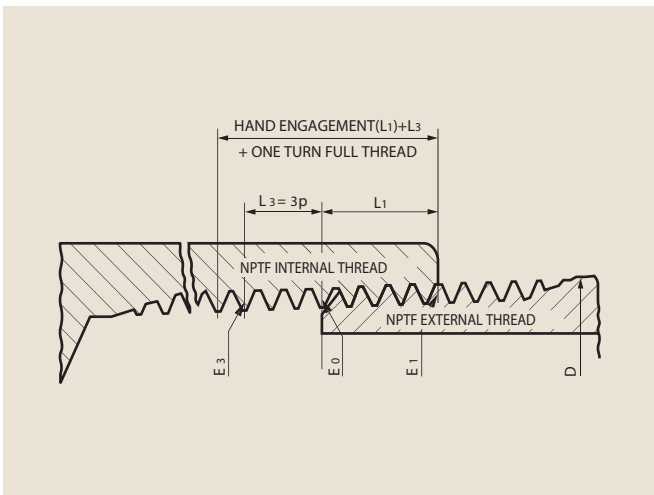
- Remarks 1. Pipe End is Basic Diameter Position (E1).
- Remarks 2. Effective Thread Length is the length away from Pipe End by (L1+L3).
- Remarks 3. Concerning bored hole shape, considering load on taps, taper bored hole is recommended.
- Remarks 4. When applying taper bored hole. by referring to values in shown columns ⑤, ⑥ and ⑧, ⑨, prepare the taper hole by using pipe reamer (1/16 taper). By referring to values shown in column ⑪, select the drill diameter before reaming by taking reamer's margin into account.
- Remarks 5. When preparing straight bored hole, by referring to values shown in column ⑪, select drill diameter.

Technical info

American Taper Pipe Threads (NPTF) (Refer to ANSI/ASME B1.20.1-1983)

Unit: mm

Size	L1	L3 (3P)	L1+L3+1P	Minor Diameter						Bored Hole Size (reference)	reference
				Pipe End (Basic Diameter Position)			Position away from Pipe End by (L1+L3+1P)				Maximum Size of Straight Bored Hole
				Maximum Value	Minimum Value	Tolerance	Maximum Value	Minimum Value	Tolerance	Basic Diameter Position lg	
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
NPTF 1/16 - 27	4.064	2.822	7.827	6.505	6.414	0.091	6.015	5.923	0.092	5.99	12.00
NPTF 1/8 - 27	4.102	2.822	7.865	8.852	8.761	0.091	8.362	8.270	0.092	8.34	12.05
NPTF 1/4 - 18	5.786	4.234	11.431	11.484	11.397	0.087	10.770	10.684	0.086	10.75	17.45
NPTF 3/8 - 18	6.096	4.234	11.741	14.923	14.836	0.087	14.189	14.103	0.086	14.17	17.65
NPTF 1/2 - 14	8.128	5.443	15.386	18.419	18.333	0.086	17.459	17.373	0.086	17.44	22.85
NPTF 3/4 - 14	8.611	5.443	15.868	23.764	23.678	0.086	22.773	22.687	0.086	22.75	22.95
NPTF 1 - 1 1.5	10.160	6.627	18.996	29.812	29.726	0.086	28.625	28.538	0.087	28.60	27.40
NPTF 1 1/4 - 1 1.5	10.668	6.627	19.504	38.569	38.483	0.086	37.350	37.263	0.087	37.33	28.10
NPTF 1 1/2 - 1 1.5	10.668	6.627	19.504	44.639	44.552	0.087	43.420	43.334	0.086	43.40	28.40
NPTF 2 - 1 1.5	11.074	6.627	19.910	56.677	56.590	0.087	55.432	55.345	0.087	55.41	28.00



- Remarks 1. Pipe End is Basic Diameter Position (E1).
- Remarks 2. Effective Thread Length is the length away from Pipe End by (L1+L3+1P).
- Remarks 3. Concerning bored hole shape, considering load on taps, taper bored hole is recommended.
- Remarks 4. When applying taper bored hole, by referring to values shown in columns ⑤, ⑥ and ⑧, ⑨, prepare the taper hole by using pipe reamer (1/16 taper). By referring to values in shown column ⑪, select the drill diameter before reaming by taking reamer's margin into account.
- Remarks 5. When preparing straight bored hole, by referring to values shown in column ⑪, select drill diameter.

24. Drill size and recommended hole size for cutting taps

Intro

SP

Whitworth Threads (BSW)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
BSW 1/16 - 60	1.23	1.107	1.15	1.20
BSW 3/32 - 48	1.914	1.785	1.85	1.88
BSW 1/8 - 40	2.591	2.456	2.55	2.56
BSW 5/32 - 32	3.214	3.071	3.15	3.20
BSW 3/16 - 24	3.745	3.563	3.70	3.70
BSW 7/32 - 24	4.54	4.358	4.50	4.49
BSW 1/4 - 20	5.204	4.914	5.10	5.13
BSW 5/16 - 18	6.67	6.34	6.50	6.59
BSW 3/8 - 16	8.113	7.733	8.00	8.02
BSW 7/16 - 14	9.508	9.048	9.30	9.39
BSW 1/2 - 12	10.83	10.31	10.60	10.70
BSW 9/16 - 12	12.418	11.898	12.25	12.29
BSW 5/8 - 11	13.817	13.257	13.50	13.68
BSW 3/4 - 10	16.778	16.178	16.50	16.63
BSW 7/8 - 9	19.691	19.031	19.50	19.53
BSW 1 - 8	22.514	21.814	22.20	22.34
BSW 1 1/8 - 7	25.229	24.469	24.75	25.04
BSW 1 1/4 - 7	28.404	27.644	28.00	28.21
BSW 1 3/8 - 6	30.923	30.123	30.50	30.72
BSW 1 1/2 - 6	34.098	33.298	33.75	33.90
BSW 1 5/8 - 5	36.409	35.529	36.00	36.19
BSW 1 3/4 - 5	39.584	38.704	39.20	39.36
BSW 1 7/8 - 4 1/2	42.227	41.237	42.00	41.98
BSW 2 - 4.5	45.402	44.412	45.00	45.15
BSW 2 1/4 - 4	51.068	49.958	50.50	50.79
BSW 2 1/2 - 4	57.418	56.308	57.00	57.14
BSW 2 3/4 - 3 1/2	62.816	61.636	62.50	62.52
BSW 3 - 3 1/2	69.166	67.986	68.50	68.87
BSW 3 1/4 - 3 1/4	74.902	73.702	74.50	74.60
BSW 3 1/2 - 3 1/4	81.252	80.052	81.00	81.10
BSW 3 3/4 - 3	86.908	85.668	86.50	86.60
BSW 4 - 3	93.258	92.018	92.80	92.95

SL

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ST

ROLL

CARBIDE

LONG

HAND TAPS

EG (STI)

SPECIAL THREADS, GAUGES

THREAD MILLS

DIES

CENTER DRILLS

Technical info

Helical Coil Wire Thread Inserts Metric Coarse (EG STI M)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
EG(STI) M 2 × 0.4	2.16	2.10	2.13	2.15
EG(STI) M 2.5 × 0.45	2.68	2.60	2.60	2.66
EG(STI) M 2.6 × 0.45	2.78	2.70	2.70	2.76
EG(STI) M 3 × 0.5	3.20	3.12	3.15	3.18
EG(STI) M 4 × 0.7	4.30	4.17	4.20	4.27
EG(STI) M 5 × 0.8	5.33	5.16	5.20	5.29
EG(STI) M 6 × 1	6.42	6.25	6.30	6.38
EG(STI) M 8 × 1.25	8.52	8.31	8.40	8.47
EG(STI) M 10 × 1.5	10.62	10.37	10.50	10.56
EG(STI) M 12 × 1.75	12.73	12.43	12.60	12.66
EG(STI) M 14 × 2	14.83	14.49	14.70	14.75
EG(STI) M 16 × 2	16.83	16.49	16.70	16.75
EG(STI) M 18 × 2.5	19.04	18.58	18.90	18.93
EG(STI) M 20 × 2.5	21.04	20.58	20.90	20.93
EG(STI) M 22 × 2.5	23.04	22.58	22.90	22.93
EG(STI) M 24 × 3	25.25	24.70	25.10	25.11

Helical Coil Wire Thread Inserts Metric Fine (EG STI MF)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
EG(STI) MF 10 × 1.25	10.52	10.31	10.40	10.47
EG(STI) MF 10 × 1	10.42	10.25	10.30	10.38
EG(STI) MF 12 × 1.5	12.62	12.37	12.50	12.56
EG(STI) MF 12 × 1.25	12.52	12.31	12.40	12.47
EG(STI) MF 14 × 1.5	14.62	14.37	14.50	14.56
EG(STI) MF 14 × 1.25	14.52	14.31	14.40	14.47
EG(STI) MF 16 × 1.5	16.62	16.37	16.50	16.56
EG(STI) MF 18 × 1.5	18.62	18.37	18.50	18.56
EG(STI) MF 20 × 1.5	20.62	20.37	20.50	20.56
EG(STI) MF 22 × 1.5	22.62	22.37	22.50	22.56
EG(STI) MF 24 × 1.5	24.62	24.37	24.50	24.56

Helical Coil Wire Thread Inserts Unified Coarse (EG STI UNC)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
EG(STI) No. 2 - 56 UNC	2.440	2.284	2.35	2.4
EG(STI) No. 4 - 40 UNC	3.180	2.985	3.10	3.13
EG(STI) No. 5 - 40 UNC	3.487	3.315	3.40	3.44
EG(STI) No. 6 - 32 UNC	3.878	3.678	3.80	3.83
EG(STI) No. 8 - 32 UNC	4.523	4.339	4.40	4.48
EG(STI) No. 10 - 24 UNC	5.283	5.055	5.20	5.23
EG(STI) No. 12 - 24 UNC	5.943	5.715	5.80	5.89
EG(STI) 1/4 - 20 UNC	6.868	6.625	6.80	6.81
EG(STI) 5/16 - 18 UNC	8.488	8.243	8.40	8.43
EG(STI) 3/8 - 16 UNC	10.126	9.868	10.00	10.06
EG(STI) 7/16 - 14 UNC	11.783	11.507	11.70	11.71
EG(STI) 1/2 - 13 UNC	13.393	13.122	13.20	13.33
EG(STI) 5/8 - 11 UNC	16.672	16.376	16.50	16.60

Helical Coil Wire Thread Inserts Unified Fine (EG STI UNF)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
EG(STI) No. 4 - 48 UNF	3.121	2.962	3.00	3.08
EG(STI) No. 6 - 40 UNF	3.817	3.645	3.70	3.77
EG(STI) No. 8 - 36 UNF	4.498	4.321	4.40	4.45
EG(STI) No. 10 - 32 UNF	5.184	4.999	5.10	5.14
EG(STI) 1/4 - 28 UNF	6.720	6.546	6.60	6.68
EG(STI) 5/16 - 24 UNF	8.351	8.167	8.30	8.31
EG(STI) 3/8 - 24 UNF	9.931	9.754	9.80	9.89
EG(STI) 7/16 - 20 UNF	11.584	11.387	11.50	11.53
EG(STI) 1/2 - 20 UNF	13.172	12.975	13.10	13.12
EG(STI) 5/8 - 18 UNF	16.385	16.180	16.30	16.33
EG(STI) 3/4 - 16 UNF	19.608	19.393	19.50	19.55

Aerospace Metric Coarse Threads (MJ)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
MJ 3 x 0.5	2.653	2.513	2.60	2.62
MJ 4 x 0.7	3.498	3.318	3.10	3.45
MJ 5 x 0.8	4.421	4.221	4.30	4.37
MJ 6 x 1	5.216	5.026	5.10	5.17
MJ 8 x 1.25	6.994	6.782	6.90	6.94
MJ 10 x 1.5	8.775	8.539	8.65	8.72
MJ 12 x 1.75	10.560	10.295	10.43	10.50
MJ 16 x 2	14.351	14.051	14.20	14.30

Aerospace Metric Fine Threads (MFJ)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
MJ 8 x 1	7.216	7.026	7.10	7.17

Aerospace Unified Coarse Threads (UNJC)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
No. 2 - 56 UNJC	1.859	1.743	1.81	1.83
No. 3 - 48 UNJC	2.136	1.999	2.10	2.10
No. 4 - 40 UNJC	2.392	2.228	2.30	2.35
No. 5 - 40 UNJC	2.722	2.558	2.60	2.68
No. 6 - 32 UNJC	2.938	2.734	2.84	2.89
No. 8 - 32 UNJC	3.599	3.394	3.50	3.55
No. 10 - 24 UNJC	4.064	3.795	3.93	4.00
No. 12 - 24 UNJC	4.704	4.456	4.60	4.64
1/4 - 20 UNJC	5.387	5.114	5.30	5.32
5/16 - 18 UNJC	6.832	6.564	6.70	6.76
3/8 - 16 UNJC	8.255	7.979	8.10	8.19
7/16 - 14 UNJC	9.639	9.348	9.50	9.57
1/2 - 13 UNJC	11.094	10.798	11.00	11.02
9/16 - 12 UNJC	12.481	12.228	12.40	12.42
5/8 - 11 UNJC	13.903	13.628	13.80	13.83
3/4 - 10 UNJC	16.880	16.577	16.70	16.80
7/8 - 9 UNJC	19.814	19.477	19.70	19.73
1 - 8 UNJC	22.689	22.309	22.50	22.59

Aerospace Unified Fine Threads (UNJF)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
No. 2 - 64 UNJF	1.902	1.799	1.86	1.88
No. 3 - 56 UNJF	2.189	2.073	2.10	2.16
No. 4 - 48 UNJF	2.466	2.330	2.40	2.43
No. 5 - 44 UNJF	2.763	2.614	2.70	2.73
No. 6 - 40 UNJF	3.053	2.888	3.00	3.01
No. 8 - 36 UNJF	3.662	3.480	3.60	3.62
No. 10 - 32 UNJF	4.254	4.054	4.20	4.20
No. 12 - 28 UNJF	4.815	4.603	4.70	4.76
1/4 - 28 UNJF	5.661	5.467	5.60	5.61
5/16 - 24 UNJF	7.109	6.907	7.00	7.06
3/8 - 24 UNJF	8.679	8.494	8.60	8.63
7/16 - 20 UNJF	10.083	9.876	10.00	10.03
1/2 - 20 UNJF	11.661	11.464	11.60	11.61
9/16 - 18 UNJF	13.121	12.914	13.00	13.07
5/8 - 18 UNJF	14.701	14.501	14.60	14.65
3/4 - 16 UNJF	17.721	17.506	17.60	17.67
7/8 - 14 UNJF	20.706	20.460	20.60	20.64
1 - 12 UNJF	23.594	23.341	23.50	23.53

Steel Conduit Threads (Pg)

Unit: mm

Size	Minor Diameter		Drill Size	Recommended Hole Size
	Max.	Min.		
Pg 7 - 20	11.43	11.28	11.40	11.45
Pg 9 - 18	14.01	13.86	14.00	14.10
Pg 11 - 18	17.41	17.26	17.30	17.35
Pg 13.5 - 18	19.21	19.06	19.10	19.15
Pg 16 - 18	21.31	21.16	21.25	21.30
Pg 21 - 16	27.03	26.78	27.00	27.10
Pg 29 - 16	35.73	35.48	35.60	35.70

24. Drill size and recommended hole size for cutting taps

Intro

Trapezoidal Threads (Tr)

Unit: mm

SP	Size	Minor Diameter		Drill Size	Recommended Hole Size
		Max.	Min.		
SL	Tr 10 × 2	8.236	8.000	8.20	8.18
	Tr 12 × 2	10.236	10.000	10.20	10.20
	Tr 12 × 3	9.315	9.000	9.20	9.20
	Tr 14 × 3	11.315	11.000	11.20	11.20
PO	Tr 16 × 3	13.315	13.000	13.20	13.20
	Tr 16 × 4	12.375	12.000	12.25	12.30
	Tr 18 × 4	14.375	14.000	14.25	14.30
	Tr 20 × 4	16.375	16.000	16.25	16.30
ST	Tr 22 × 5	17.450	17.000	17.25	17.30
	Tr 24 × 5	19.450	19.000	19.25	19.30
	Tr 25 × 5	20.450	20.000	20.25	20.30
	Tr 26 × 5	21.450	21.000	21.25	21.30
ROLL	Tr 26 × 6	20.500	20.000	20.30	20.40
	Tr 28 × 5	23.450	23.000	23.25	23.30
	Tr 30 × 6	24.500	24.000	24.30	24.40

CARBIDE

LONG

HAND TAPS

EG (STI)

SPECIAL THREADS, GAUGES

THREAD MILLS

DIES

CENTER DRILLS

Technical info

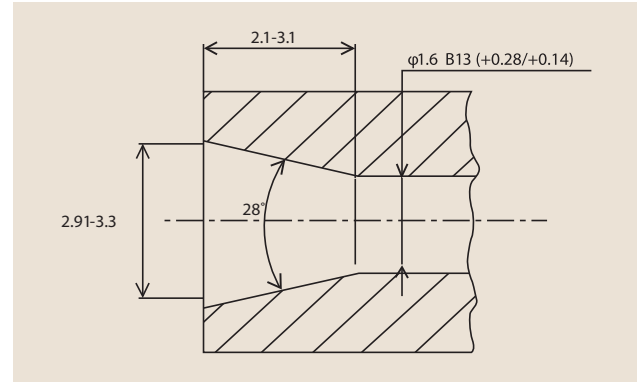
Camera tripod mounting screws

Unit: mm

Size	Minor Diameter		Recommended Hole Size
	Max.	Min.	
1/4 - 20	5.267	4.975	5.19

Camera release mounting taper female thread

Unit: mm



Automotive tire valve screws

Unit: mm

Size	Minor Diameter		Recommended Hole Size
	Max.	Min.	
5 V 1	4.801	4.597	4.75
8 V 1	7.239	7.036	7.19
8 V 2	7.035	6.782	6.97
9 V 1	8.865	8.661	8.81
10 V 1	8.900	8.750	8.86
10 V 2	9.550	9.350	9.50
11 V 1	10.033	9.729	9.96
12 V 1	11.379	11.176	11.33
13 V 1	11.608	11.328	11.54
13 V 2	12.039	11.837	11.99
15 V 1	13.950	13.750	13.90
16 V 1	15.088	14.859	15.03
17 V 1	15.950	15.750	15.90
17 V 2	16.560	16.307	16.50
17 V 3	16.103	15.748	16.01
19 V 1	17.678	17.323	17.59
20 V 1	19.450	19.250	19.40

Bicycle tire valve screws

Unit: mm

Size	Minor Diameter		Recommended Hole Size
	Max.	Min.	
CTV 5 - 36	4.732	4.630	4.71
CTV 5 - 24	4.214	3.954	4.15
CTV 8 - 32	7.192	7.040	7.15
CTV 8 - 30	7.344	7.183	7.30
5 V 2	4.600	4.400	4.55
6 V 1	5.540	5.440	5.52

Bicycle screws general (BC)

Unit: mm

Size	Minor Diameter		Recommended Hole Size
	Max.	Min.	
BC 5/16 - 26	7.16	7.06	7.13
BC 3/8 - 26	8.75	8.65	8.73
BC 7/16 - 26	10.33	10.23	10.31
BC 1/2 - 20	11.66	11.55	11.63
BC 9/16 - 20	13.25	13.14	13.23
BC 5/8 - 20	14.84	14.73	14.81
BC 11/16 - 24	16.59	16.48	16.57
BC 3/4 - 30	18.40	18.29	18.37
BC 31/32 - 30	23.96	23.85	23.94
BC 1 - 24	24.56	24.44	24.53
BC 1.29 - 24	31.95	31.82	31.92
BC 1.37 - 24	33.98	33.85	33.95
BC 1 7/16 - 24	35.69	35.56	35.66
BC 1.45 - 24	36.01	35.88	35.98
BC 1 9/16 - 24	38.87	38.74	38.84

Thin steel conduit screws (CTC)

Unit: mm

Size	Minor Diameter		Recommended Hole Size
	Max.	Min.	
CTC 19 - 16	18.208	17.808	18.11
CTC 25 - 16	24.508	24.108	24.41
CTC 31 - 16	30.908	30.508	30.81
CTC 39 - 16	37.208	36.808	37.11
CTC 51 - 16	49.908	49.508	49.81
CTC 63 - 16	62.608	62.208	62.51
CTC 75 - 16	75.308	74.908	75.21

Thick steel conduit tube screws (CTG)

Unit: mm

Size	Minor Diameter		Recommended Hole Size
	Max.	Min.	
CTG 16 - 14	19.522	19.022	19.40
CTG 22 - 14	25.008	24.508	24.88
CTG 28 - 11	31.361	30.761	31.21
CTG 36 - 11	40.022	39.422	39.87
CTG 42 - 11	45.915	45.315	45.77
CTG 54 - 11	57.826	57.126	57.65
CTG 70 - 11	73.396	72.696	73.22
CTG 82 - 11	86.096	85.396	85.92
CTG 92 - 11	98.542	97.842	98.37
CTG 104 - 11	111.242	110.542	111.07

25. Drill size and recommended hole size for forming taps

Intro

Metric Coarse Threads (M)

Unit: mm

Size	Class	Minor Diameter			Drill Size	Recommended Hole Size	
		Tol.	Max.	Min.		Max.	Min.
M 1 × 0.25	ISO2X 6H	(0.785)	(0.729)	0.91	0.92	0.89	
	ISO3X 6G	(0.803)	(0.747)	0.92	0.93	0.91	
M 1.2 × 0.25	ISO2X 6H	(0.985)	(0.929)	1.11	1.12	1.09	
	ISO3X 6G	(1.003)	(0.947)	1.12	1.13	1.11	
M 1.4 × 0.3	ISO2X 6H	1.142	1.075	1.27	1.28	1.25	
	ISO3X 6G	1.160	1.093	1.29	1.3	1.27	
M 1.6 × 0.35	ISO2X 6H	1.321	1.221	1.46	1.48	1.43	
	ISO3X 6G	1.340	1.240	1.47	1.49	1.44	
M 1.7 × 0.35	ISO2X 6H	1.421	1.321	1.55	1.57	1.53	
	ISO3X 6G	1.440	1.340	1.57	1.59	1.54	
M 1.8 × 0.35	ISO2X 6H	1.521	1.421	1.65	1.67	1.62	
	ISO3X 6G	1.540	1.440	1.67	1.69	1.64	
M 2 × 0.4	ISO2X 6H	1.679	1.567	1.83	1.86	1.80	
	ISO3X 6G	1.698	1.586	1.85	1.87	1.82	
M 2.2 × 0.45	ISO2X 6H	1.838	1.713	2.01	2.04	1.97	
	ISO3X 6G	1.858	1.733	2.03	2.06	1.99	
M 2.3 × 0.4	ISO2X 6H	1.979	1.867	2.13	2.16	2.10	
	ISO3X 6G	1.998	1.886	2.15	2.17	2.12	
M 2.5 × 0.45	ISO2X 6H	2.138	2.013	2.31	2.34	2.27	
	ISO3X 6G	2.158	2.033	2.34	2.37	2.31	
M 2.6 × 0.45	ISO2X 6H	2.238	2.113	2.41	2.44	2.37	
	ISO3X 6G	2.258	2.133	2.44	2.47	2.41	
M 3 × 0.5	ISO2X 6H	2.599	2.459	2.80	2.83	2.76	
	ISO3X 6G	2.619	2.479	2.82	2.85	2.78	
M 3.5 × 0.6	ISO2X 6H	3.010	2.850	3.25	3.29	3.21	
	ISO3X 6G	3.031	2.871	3.27	3.31	3.23	
M 4 × 0.7	ISO2X 6H	3.422	3.242	3.71	3.75	3.66	
	ISO3X 6G	3.444	3.264	3.73	3.77	3.68	
M 5 × 0.8	ISO2X 6H	4.334	4.134	4.65	4.70	4.60	
	ISO3X 6G	4.358	4.158	4.67	4.72	4.62	
M 6 × 1	ISO2X 6H	5.153	4.917	5.56	5.61	5.50	
	ISO3X 6G	5.179	4.943	5.60	5.65	5.54	
M 8 × 1.25	ISO2X 6H	6.912	6.647	7.45	7.52	7.38	
	ISO3X 6G	6.940	6.675	7.47	7.53	7.40	
M 10 × 1.5	ISO2X 6H	8.676	8.376	9.34	9.41	9.26	
	ISO3X 6G	8.708	8.408	9.37	9.44	9.29	
M 12 × 1.75	ISO2X 6H	10.441	10.106	11.22	11.3	11.13	
	ISO3X 6G	10.475	10.140	11.25	11.33	11.16	
M 14 × 2	ISO2X 6H	12.210	11.835	13.10	13.19	13.00	
	ISO3X 6G	12.248	11.873	13.14	13.23	13.04	
M 16 × 2	ISO2X 6H	14.210	13.835	15.10	15.19	15.00	
	ISO3X 6G	14.248	13.873	15.14	15.23	15.04	

Metric Fine Threads (MF)

Unit: mm

Size	Class	Minor Diameter			Drill Size	Recommended Hole Size	
		Tol.	Max.	Min.		Max.	Min.
MF 6 × 0.75	ISO2X 6H	5.378	5.188	5.67	5.72	5.62	
	ISO3X 6G	5.400	5.210	5.70	5.75	5.65	
MF 6 × 0.5	ISO2X 6H	5.599	5.459	5.78	5.81	5.74	
	ISO3X 6G	5.619	5.479	5.80	5.83	5.76	
MF 8 × 1	ISO2X 6H	7.153	6.917	7.55	7.61	7.49	
	ISO3X 6G	7.179	6.943	7.59	7.65	7.53	
MF 10 × 1.25	ISO2X 6H	8.912	8.647	9.45	9.51	9.38	
	ISO3X 6G	8.940	8.675	9.47	9.53	9.40	
MF 10 × 1	ISO2X 6H	9.153	8.917	9.55	9.61	9.49	
	ISO3X 6G	9.179	8.943	9.59	9.65	9.53	
MF 12 × 1.5	ISO2X 6H	10.676	10.376	11.32	11.39	11.24	
	ISO3X 6G	10.708	10.408	11.35	11.42	11.27	
MF 12 × 1.25	ISO2X 6H	10.912	10.647	11.45	11.51	11.38	
	ISO3X 6G	10.940	10.675	11.46	11.52	11.39	
MF 12 × 1	ISO2X 6H	11.153	10.917	11.56	11.62	11.50	
	ISO3X 6G	11.179	10.943	11.57	11.63	11.51	
MF 14 × 1.5	ISO2X 6H	12.676	12.376	13.32	13.39	13.24	
	ISO3X 6G	12.708	12.408	13.35	13.42	13.27	
MF 14 × 1	ISO2X 6H	13.153	12.917	13.55	13.61	13.49	
	ISO3X 6G	13.179	12.943	13.57	13.62	13.51	
MF 16 × 1.5	ISO2X 6H	14.676	14.376	15.31	15.38	15.23	
	ISO3X 6G	14.708	14.408	15.34	15.41	15.26	
MF 16 × 1	ISO2X 6H	15.153	14.917	15.55	15.61	15.49	
	ISO3X 6G	15.179	14.943	15.56	15.62	15.50	
MF 18 × 1.5	ISO2X 6H	16.676	16.376	17.31	17.38	17.23	
	ISO3X 6G	16.708	16.408	17.34	17.41	17.26	
MF 20 × 1.5	ISO2X 6H	18.676	18.376	19.30	19.37	19.22	
	ISO3X 6G	18.708	18.408	19.34	19.41	19.26	

Miniature threads (S)

Unit: mm

Size	Recommended Hole Size	
	Max.	Min.
S 0.6 X 0.15	0.55	0.54
S 0.7 X 0.175	0.64	0.62
S 0.8 X 0.2	0.73	0.71
S 0.9 X 0.225	0.82	0.80

DIES

CENTER DRILLS

Technical info

Unified Coarse Threads (UNC)

Unit: mm

No.	Size	Class	Minor Diameter		Drill Size	Recommended Hole Size	
			Max.	Min.		Max.	Min.
No. 1	- 64 UNC	2BX G4	1.582	1.425	1.71	1.75	1.67
No. 2	- 56 UNC	2BX G4	1.871	1.695	2.01	2.05	1.96
No. 3	- 48 UNC	2BX G4	2.146	1.941	2.30	2.35	2.25
No. 4	- 40 UNC	2BX G5	2.385	2.157	2.60	2.65	2.54
No. 5	- 40 UNC	2BX G5	2.697	2.487	2.92	2.97	2.87
No. 6	- 32 UNC	2BX G5	2.895	2.642	3.17	3.23	3.11
No. 8	- 32 UNC	2BX G6	3.530	3.302	3.84	3.89	3.78
No. 10	- 24 UNC	2BX G6	3.962	3.683	4.37	4.44	4.30
No. 12	- 24 UNC	2BX G6	4.597	4.344	5.02	5.08	4.96
	1/4 - 20 UNC	2BX G7	5.257	4.979	5.80	5.87	5.73
	5/16 - 18 UNC	2BX G7	6.731	6.401	7.31	7.39	7.22
	3/8 - 16 UNC	2BX G7	8.153	7.798	8.80	8.89	8.71
	7/16 - 14 UNC	2BX G8	9.550	9.144	10.30	10.40	10.20
	1/2 - 13 UNC	2BX G8	11.023	10.592	11.82	11.93	11.70

Unified Fine Threads (UNF)

Unit: mm

No.	Size	Class	Minor Diameter		Drill Size	Recommended Hole Size	
			Max.	Min.		Max.	Min.
No. 0	- 80 UNF	2BX G4	1.305	1.182	1.41	1.44	1.38
No. 1	- 72 UNF	2BX G4	1.612	1.474	1.73	1.76	1.69
No. 2	- 64 UNF	2BX G4	1.912	1.756	2.03	2.06	1.99
No. 3	- 56 UNF	2BX G4	2.197	2.025	2.33	2.37	2.29
No. 4	- 48 UNF	2BX G5	2.458	2.271	2.64	2.68	2.59
No. 5	- 44 UNF	2BX G5	2.740	2.551	2.95	2.99	2.90
No. 6	- 40 UNF	2BX G5	3.022	2.820	3.24	3.29	3.19
No. 8	- 36 UNF	2BX G5	3.606	3.404	3.86	3.91	3.81
No. 10	- 32 UNF	2BX G6	4.165	3.963	4.49	4.54	4.44
No. 12	- 28 UNF	2BX G6	4.724	4.496	5.09	5.14	5.03
	1/4 - 28 UNF	2BX G7	5.588	5.360	5.96	6.01	5.90
	5/16 - 24 UNF	2BX G7	7.035	6.782	7.48	7.54	7.41
	3/8 - 24 UNF	2BX G7	8.636	8.382	9.05	9.11	8.99
	7/16 - 20 UNF	2BX G8	10.033	9.729	10.55	10.63	10.47
	1/2 - 20 UNF	2BX G8	11.607	11.329	12.14	12.21	12.06

Cylindrical Pipe Threads - G(BSP)

Unit: mm

G	Size	Class	Minor Diameter		Drill Size	Recommended Hole Size	
			Max.	Min.		Max.	Min.
G	1/8 - 28	-	8.848	8.566	9.29	9.36	9.22
G	1/4 - 19	-	11.890	11.445	12.53	12.64	12.42
G	3/8 - 19	-	15.395	14.950	16.03	16.14	15.92
G	1/2 - 14	-	19.172	18.631	20.12	20.25	19.99

Helical Coil Wire Thread Inserts Metric Coarse (EG STI M)

Unit: mm

EG(STI)	M	Class	Minor Diameter		Drill Size	Recommended Hole Size		
			Max.	Min.		Max.	Min.	
EG(STI)	M	3 × 0.5	-	3.220	3.108	3.43	3.45	3.40
EG(STI)	M	4 × 0.7	-	4.292	4.152	4.59	4.63	4.56
EG(STI)	M	5 × 0.8	-	5.334	5.174	5.67	5.71	5.64
EG(STI)	M	6 × 1	-	6.407	6.217	6.84	6.89	6.80
EG(STI)	M	8 × 1.25	-	8.483	8.271	9.05	9.10	8.99
EG(STI)	M	10 × 1.5	-	10.560	10.324	11.25	11.31	11.19
EG(STI)	M	12 × 1.75	-	12.644	12.379	13.45	13.52	13.39

Helical Coil Wire Thread Inserts Metric Fine (EG STI MF)

Unit: mm

EG(STI)	MF	Class	Minor Diameter		Drill Size	Recommended Hole Size		
			Max.	Min.		Max.	Min.	
EG(STI)	MF	10 × 1.25		10.483	10.271	11.04	11.10	10.99
EG(STI)	MF	12 × 1.5		12.560	12.324	13.25	13.31	13.18
EG(STI)	MF	12 × 1.25		12.483	12.271	13.04	13.09	12.98