Tap Drill Chart

Recommended tap drill (75% thread for UNC/UNF/UNEF, D – P for metric, no-ream size for NPT) with clearance holes. Thread % = (D – drill) / (1.299 × pitch).

Unified National Coarse (UNC)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
1-64 UNC	#53	**0.0595**	**1.51**	**67%**	#46	#44
2-56 UNC	#50	**0.0700**	**1.78**	**69%**	#41	#37
3-48 UNC	#47	**0.0785**	**1.99**	**76%**	7/64"	#32
4-40 UNC	#43	**0.0890**	**2.26**	**71%**	#31	#30
5-40 UNC	#38	**0.1015**	**2.58**	**72%**	#29	#27
6-32 UNC	#36	**0.1065**	**2.71**	**78%**	#26	#23
8-32 UNC	#29	**0.1360**	**3.45**	**69%**	#16	#13
10-24 UNC	#25	**0.1495**	**3.80**	**75%**	13/64"	#3
12-24 UNC	#16	**0.1770**	**4.50**	**72%**	A	B
1/4-20 UNC	#7	**0.2010**	**5.11**	**75%**	H	J
5/16-18 UNC	F	**0.2570**	**6.53**	**77%**	Q	T
3/8-16 UNC	5/16"	**0.3125**	**7.94**	**77%**	X	27/64"
7/16-14 UNC	U	**0.3680**	**9.35**	**75%**	15/32"	1/2"
1/2-13 UNC	27/64"	**0.4219**	**10.72**	**78%**	35/64"	9/16"
9/16-12 UNC	31/64"	**0.4844**	**12.30**	**72%**	39/64"	5/8"
5/8-11 UNC	17/32"	**0.5313**	**13.49**	**79%**	43/64"	11/16"
3/4-10 UNC	21/32"	**0.6563**	**16.67**	**72%**	51/64"	27/32"
7/8-9 UNC	49/64"	**0.7656**	**19.45**	**76%**	59/64"	31/32"
1-8 UNC	7/8"	**0.8750**	**22.23**	**77%**	1-3/64"	1-7/64"
1-1/8-7 UNC	63/64"	**0.9844**	**25.00**	**76%**	1-11/64"	1-1/4"
1-1/4-7 UNC	1-7/64"	**1.1094**	**28.18**	**76%**	1-19/64"	1-3/8"
1-3/8-6 UNC	1-7/32"	**1.2188**	**30.96**	**72%**	1-27/64"	1-1/2"
1-1/2-6 UNC	1-11/32"	**1.3438**	**34.13**	**72%**	1-35/64"	1-5/8"

Unified National Fine (UNF)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
0-80 UNF	3/64"	**0.0469**	**1.19**	**81%**	#51	#50
1-72 UNF	#53	**0.0595**	**1.51**	**75%**	#46	#44
2-64 UNF	#50	**0.0700**	**1.78**	**79%**	#41	#37
3-56 UNF	#45	**0.0820**	**2.08**	**73%**	7/64"	#32
4-48 UNF	#42	**0.0935**	**2.37**	**68%**	#31	#30
5-44 UNF	#37	**0.1040**	**2.64**	**71%**	#29	#27

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Values from the ASME B1.1, ISO 261/68-1 and ASME B1.20.1 thread formulas; drill sizes per ASME B94.11M; clearance holes per ISO 273. Method: whatsizeis.com/how-we-calculate/

Tap Drill Chart (continued)

Unified National Fine (UNF) (cont.)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
6-40 UNF	#33	**0.1130**	**2.87**	**77%**	#26	#23
8-36 UNF	#29	**0.1360**	**3.45**	**78%**	#16	#13
10-32 UNF	#21	**0.1590**	**4.04**	**76%**	13/64"	#3
12-28 UNF	#14	**0.1820**	**4.62**	**73%**	A	B
1/4-28 UNF	#3	**0.2130**	**5.41**	**80%**	H	J
5/16-24 UNF	I	**0.2720**	**6.91**	**75%**	Q	T
3/8-24 UNF	Q	**0.3320**	**8.43**	**79%**	X	27/64"
7/16-20 UNF	25/64"	**0.3906**	**9.92**	**72%**	15/32"	1/2"
1/2-20 UNF	29/64"	**0.4531**	**11.51**	**72%**	35/64"	9/16"
9/16-18 UNF	33/64"	**0.5156**	**13.10**	**65%**	39/64"	5/8"
5/8-18 UNF	37/64"	**0.5781**	**14.68**	**65%**	43/64"	11/16"
3/4-16 UNF	11/16"	**0.6875**	**17.46**	**77%**	51/64"	27/32"
7/8-14 UNF	13/16"	**0.8125**	**20.64**	**67%**	59/64"	31/32"
1-12 UNF	59/64"	**0.9219**	**23.42**	**72%**	1-3/64"	1-7/64"
1-1/8-12 UNF	1-3/64"	**1.0469**	**26.59**	**72%**	1-11/64"	1-1/4"
1-1/4-12 UNF	1-11/64"	**1.1719**	**29.77**	**72%**	1-19/64"	1-3/8"
1-3/8-12 UNF	1-19/64"	**1.2969**	**32.94**	**72%**	1-27/64"	1-1/2"
1-1/2-12 UNF	1-27/64"	**1.4219**	**36.12**	**72%**	1-35/64"	1-5/8"

Unified National Extra Fine (UNEF)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
12-32 UNEF	#13	**0.1850**	**4.70**	**76%**	A	B
1/4-32 UNEF	7/32"	**0.2188**	**5.56**	**77%**	H	J
5/16-32 UNEF	9/32"	**0.2813**	**7.14**	**77%**	Q	T
3/8-32 UNEF	11/32"	**0.3438**	**8.73**	**77%**	X	27/64"
7/16-28 UNEF	Y	**0.4040**	**10.26**	**72%**	15/32"	1/2"
1/2-28 UNEF	15/32"	**0.4688**	**11.91**	**67%**	35/64"	9/16"
9/16-24 UNEF	33/64"	**0.5156**	**13.10**	**87%**	39/64"	5/8"
5/8-24 UNEF	37/64"	**0.5781**	**14.68**	**87%**	43/64"	11/16"
11/16-24 UNEF	41/64"	**0.6406**	**16.27**	**87%**	47/64"	49/64"
3/4-20 UNEF	45/64"	**0.7031**	**17.86**	**72%**	51/64"	27/32"
13/16-20 UNEF	49/64"	**0.7656**	**19.45**	**72%**	55/64"	29/32"
7/8-20 UNEF	53/64"	**0.8281**	**21.03**	**72%**	59/64"	31/32"



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Values from the ASME B1.1, ISO 261/68-1 and ASME B1.20.1 thread formulas; drill sizes per ASME B94.11M; clearance holes per ISO 273. Method: whatsizeis.com/how-we-calculate/

Tap Drill Chart (continued)

Unified National Extra Fine (UNEF) (cont.)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
15/16-20 UNEF	57/64"	**0.8906**	**22.62**	**72%**	63/64"	1-1/32"
1-20 UNEF	61/64"	**0.9531**	**24.21**	**72%**	1-3/64"	1-7/64"
1-1/16-18 UNEF	1-1/64"	**1.0156**	**25.80**	**65%**	1-7/64"	1-3/16"
1-1/8-18 UNEF	1-5/64"	**1.0781**	**27.38**	**65%**	1-11/64"	1-1/4"
1-3/16-18 UNEF	1-9/64"	**1.1406**	**28.97**	**65%**	1-15/64"	1-5/16"
1-1/4-18 UNEF	1-13/64"	**1.2031**	**30.56**	**65%**	1-19/64"	1-3/8"
1-5/16-18 UNEF	1-17/64"	**1.2656**	**32.15**	**65%**	1-23/64"	1-7/16"
1-3/8-18 UNEF	1-21/64"	**1.3281**	**33.73**	**65%**	1-27/64"	1-1/2"
1-7/16-18 UNEF	1-25/64"	**1.3906**	**35.32**	**65%**	1-31/64"	1-9/16"
1-1/2-18 UNEF	1-29/64"	**1.4531**	**36.91**	**65%**	1-35/64"	1-5/8"

Metric coarse (ISO 261)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
M1 x 0.25	0.75 mm	**0.0295**	**0.75**	**77%**	1.1 mm	1.2 mm
M1.2 x 0.25	0.95 mm	**0.0374**	**0.95**	**77%**	1.3 mm	1.4 mm
M1.4 x 0.3	1.1 mm	**0.0433**	**1.10**	**77%**	1.5 mm	1.6 mm
M1.6 x 0.35	1.25 mm	**0.0492**	**1.25**	**77%**	1.7 mm	1.8 mm
M2 x 0.4	1.6 mm	**0.0630**	**1.60**	**77%**	2.2 mm	2.4 mm
M2.5 x 0.45	2.05 mm	**0.0807**	**2.05**	**77%**	2.7 mm	2.9 mm
M3 x 0.5	2.5 mm	**0.0984**	**2.50**	**77%**	3.2 mm	3.4 mm
M3.5 x 0.6	2.9 mm	**0.1142**	**2.90**	**77%**	3.7 mm	3.9 mm
M4 x 0.7	3.3 mm	**0.1299**	**3.30**	**77%**	4.3 mm	4.5 mm
M5 x 0.8	4.2 mm	**0.1654**	**4.20**	**77%**	5.3 mm	5.5 mm
M6 x 1	5 mm	**0.1969**	**5.00**	**77%**	6.4 mm	6.6 mm
M8 x 1.25	6.8 mm	**0.2677**	**6.80**	**74%**	8.4 mm	9 mm
M10 x 1.5	8.5 mm	**0.3346**	**8.50**	**77%**	10.5 mm	11 mm
M12 x 1.75	10.2 mm	**0.4016**	**10.20**	**79%**	13 mm	13.5 mm
M14 x 2	12 mm	**0.4724**	**12.00**	**77%**	15 mm	15.5 mm
M16 x 2	14 mm	**0.5512**	**14.00**	**77%**	17 mm	17.5 mm
M18 x 2.5	15.5 mm	**0.6102**	**15.50**	**77%**	19 mm	20 mm
M20 x 2.5	17.5 mm	**0.6890**	**17.50**	**77%**	21 mm	22 mm
M22 x 2.5	19.5 mm	**0.7677**	**19.50**	**77%**	23 mm	24 mm
M24 x 3	21 mm	**0.8268**	**21.00**	**77%**	25 mm	26 mm

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Values from the ASME B1.1, ISO 261/68-1 and ASME B1.20.1 thread formulas; drill sizes per ASME B94.11M; clearance holes per ISO 273. Method: whatsizeis.com/how-we-calculate/

Tap Drill Chart (continued)

Metric coarse (ISO 261) (cont.)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
M27 x 3	24 mm	**0.9449**	**24.00**	**77%**	28 mm	30 mm
M30 x 3.5	26.5 mm	**1.0433**	**26.50**	**77%**	31 mm	33 mm
M33 x 3.5	29.5 mm	**1.1614**	**29.50**	**77%**	34 mm	36 mm
M36 x 4	32 mm	**1.2598**	**32.00**	**77%**	37 mm	39 mm
M39 x 4	35 mm	**1.3780**	**35.00**	**77%**	40 mm	42 mm
M42 x 4.5	37.5 mm	**1.4764**	**37.50**	**77%**	43 mm	45 mm
M45 x 4.5	40.5 mm	**1.5945**	**40.50**	**77%**	46 mm	48 mm
M48 x 5	43 mm	**1.6929**	**43.00**	**77%**	50 mm	52 mm

Metric fine (ISO 261)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
M4 x 0.5	3.5 mm	**0.1378**	**3.50**	**77%**	4.3 mm	4.5 mm
M5 x 0.5	4.5 mm	**0.1772**	**4.50**	**77%**	5.3 mm	5.5 mm
M8 x 1	7 mm	**0.2756**	**7.00**	**77%**	8.4 mm	9 mm
M10 x 1	9 mm	**0.3543**	**9.00**	**77%**	10.5 mm	11 mm
M10 x 1.25	8.8 mm	**0.3465**	**8.80**	**74%**	10.5 mm	11 mm
M12 x 1.25	10.8 mm	**0.4252**	**10.80**	**74%**	13 mm	13.5 mm
M12 x 1.5	10.5 mm	**0.4134**	**10.50**	**77%**	13 mm	13.5 mm
M14 x 1.5	12.5 mm	**0.4921**	**12.50**	**77%**	15 mm	15.5 mm
M16 x 1.5	14.5 mm	**0.5709**	**14.50**	**77%**	17 mm	17.5 mm
M18 x 1.5	16.5 mm	**0.6496**	**16.50**	**77%**	19 mm	20 mm
M20 x 1.5	18.5 mm	**0.7283**	**18.50**	**77%**	21 mm	22 mm
M22 x 1.5	20.5 mm	**0.8071**	**20.50**	**77%**	23 mm	24 mm
M24 x 1.5	22.5 mm	**0.8858**	**22.50**	**77%**	25 mm	26 mm
M24 x 2	22 mm	**0.8661**	**22.00**	**77%**	25 mm	26 mm
M27 x 2	25 mm	**0.9843**	**25.00**	**77%**	28 mm	30 mm
M30 x 2	28 mm	**1.1024**	**28.00**	**77%**	31 mm	33 mm
M12 x 1	11 mm	**0.4331**	**11.00**	**77%**	13 mm	13.5 mm
M14 x 1	13 mm	**0.5118**	**13.00**	**77%**	15 mm	15.5 mm
M16 x 1	15 mm	**0.5906**	**15.00**	**77%**	17 mm	17.5 mm
M18 x 1	17 mm	**0.6693**	**17.00**	**77%**	19 mm	20 mm
M18 x 2	16 mm	**0.6299**	**16.00**	**77%**	19 mm	20 mm
M20 x 1	19 mm	**0.7480**	**19.00**	**77%**	21 mm	22 mm

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Tap Drill Chart (continued)

Metric fine (ISO 261) (cont.)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
M20 x 2	18 mm	**0.7087**	**18.00**	**77%**	21 mm	22 mm
M22 x 1	21 mm	**0.8268**	**21.00**	**77%**	23 mm	24 mm
M22 x 2	20 mm	**0.7874**	**20.00**	**77%**	23 mm	24 mm
M24 x 1	23 mm	**0.9055**	**23.00**	**77%**	25 mm	26 mm
M27 x 1.5	25.5 mm	**1.0039**	**25.50**	**77%**	28 mm	30 mm
M30 x 1.5	28.5 mm	**1.1220**	**28.50**	**77%**	31 mm	33 mm
M30 x 1	29 mm	**1.1417**	**29.00**	**77%**	31 mm	33 mm
M33 x 2	31 mm	**1.2205**	**31.00**	**77%**	34 mm	36 mm
M36 x 1.5	34.5 mm	**1.3583**	**34.50**	**77%**	37 mm	39 mm

National Pipe Taper (NPT)

THREAD	TAP DRILL	INCH	MM	THREAD %	CLOSE FIT	NORMAL FIT
1/16-27 NPT	1/4"	**0.2500**	**6.35**	**–**	–	–
1/8-27 NPT	11/32"	**0.3438**	**8.73**	**–**	–	–
1/4-18 NPT	7/16"	**0.4375**	**11.11**	**–**	–	–
3/8-18 NPT	37/64"	**0.5781**	**14.68**	**–**	–	–
1/2-14 NPT	23/32"	**0.7188**	**18.26**	**–**	–	–
3/4-14 NPT	59/64"	**0.9219**	**23.42**	**–**	–	–
1-11.5 NPT	1-5/32"	**1.1563**	**29.37**	**–**	–	–
1-1/4-11.5 NPT	1-1/2"	**1.5000**	**38.10**	**–**	–	–
1-1/2-11.5 NPT	1-3/4"	**1.7500**	**44.45**	**–**	–	–
2-11.5 NPT	2-7/32"	**2.2188**	**56.36**	**–**	–	–

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