Inch Tap and Clearance Drills

Unified threads **#0 to 1-1/2"**, coarse and fine, with tap drills for soft and hard metals and the clearance hole for each bolt.

Thread UNC coarse UNF fine

SIZE	THREADS PER INCH	MAJOR DIA.	TAP DRILL · ALUMINUM, BRASS, PLASTIC			TAP DRILL · STEEL, STAINLESS			CLEARANCE HOLE			
			DRILL	INCH	THREAD	DRILL	INCH	THREAD	CLOSE	INCH	FREE	INCH
#0 UNF	80	.0600	3/64	.0469	81%	#55	.0520	49%	#52	.0635	#50	.0700
#1 UNC	64	.0730	#53	.0595	67%	1/16	.0625	52%	#48	.0760	#46	.0810
#1 UNF	72	.0730	#53	.0595	75%	#52	.0635	53%	#48	.0760	#46	.0810
#2 UNC	56	.0860	#50	.0700	69%	#49	.0730	56%	#43	.0890	#41	.0960
#2 UNF	64	.0860	#50	.0700	79%	#48	.0760	49%	#43	.0890	#41	.0960
#3 UNC	48	.0990	#47	.0785	76%	#44	.0860	48%	#37	.1040	#35	.1100
#3 UNF	56	.0990	#45	.0820	73%	#43	.0890	43%	#37	.1040	#35	.1100
#4 UNC	40	.1120	#43	.0890	71%	#41	.0960	49%	#32	.1160	#30	.1285
#4 UNF	48	.1120	#42	.0935	68%	#40	.0980	52%	#32	.1160	#30	.1285
#5 UNC	40	.1250	#38	.1015	72%	7/64	.1094	48%	#30	.1285	#29	.1360
#5 UNF	44	.1250	#37	.1040	71%	#35	.1100	51%	#30	.1285	#29	.1360
#6 UNC	32	.1380	#36	.1065	78%	#32	.1160	54%	#27	.1440	#25	.1495
#6 UNF	40	.1380	#33	.1130	77%	#31	.1200	55%	#27	.1440	#25	.1495
#8 UNC	32	.1640	#29	.1360	69%	#27	.1440	49%	#18	.1695	#16	.1770
#8 UNF	36	.1640	#29	.1360	78%	#26	.1470	47%	#18	.1695	#16	.1770
#10 UNC	24	.1900	#25	.1495	75%	#20	.1610	54%	#9	.1960	#7	.2010
#10 UNF	32	.1900	#21	.1590	76%	#18	.1695	51%	#9	.1960	#7	.2010
#12 UNC	24	.2160	#16	.1770	72%	#12	.1890	50%	#2	.2210	#1	.2280
#12 UNF	28	.2160	#14	.1820	73%	#10	.1935	48%	#2	.2210	#1	.2280
1/4 UNC	20	.2500	#7	.2010	75%	7/32	.2188	48%	F	.2570	H	.2660
1/4 UNF	28	.2500	#3	.2130	80%	#1	.2280	47%	F	.2570	H	.2660
5/16 UNC	18	.3125	F	.2570	77%	J	.2770	49%	P	.3230	Q	.3320
5/16 UNF	24	.3125	I	.2720	75%	9/32	.2812	58%	P	.3230	Q	.3320
3/8 UNC	16	.3750	5/16	.3125	77%	Q	.3320	53%	W	.3860	X	.3970
3/8 UNF	24	.3750	Q	.3320	79%	S	.3480	50%	W	.3860	X	.3970
7/16 UNC	14	.4375	U	.3680	75%	25/64	.3906	51%	29/64	.4531	15/32	.4688
7/16 UNF	20	.4375	25/64	.3906	72%	13/32	.4062	48%	29/64	.4531	15/32	.4688
1/2 UNC	13	.5000	27/64	.4219	78%	29/64	.4531	47%	33/64	.5156	17/32	.5312
1/2 UNF	20	.5000	29/64	.4531	72%	15/32	.4688	48%	33/64	.5156	17/32	.5312
9/16 UNC	12	.5625	31/64	.4844	72%	33/64	.5156	43%	37/64	.5781	19/32	.5938
9/16 UNF	18	.5625	33/64	.5156	65%	17/32	.5312	43%	37/64	.5781	19/32	.5938
5/8 UNC	11	.6250	17/32	.5312	79%	9/16	.5625	53%	41/64	.6406	21/32	.6562
5/8 UNF	18	.6250	37/64	.5781	65%	19/32	.5938	43%	41/64	.6406	21/32	.6562
3/4 UNC	10	.7500	21/32	.6562	72%	11/16	.6875	48%	49/64	.7656	25/32	.7812
3/4 UNF	16	.7500	11/16	.6875	77%	45/64	.7031	58%	49/64	.7656	25/32	.7812
7/8 UNC	9	.8750	49/64	.7656	76%	51/64	.7969	54%	57/64	.8906	29/32	.9062
7/8 UNF	14	.8750	13/16	.8125	67%	53/64	.8281	51%	57/64	.8906	29/32	.9062
1 UNC	8	1.0000	7/8	.8750	77%	59/64	.9219	48%	1 1/64	1.0156	1 1/32	1.0312
1 UNF	12	1.0000	59/64	.9219	72%	61/64	.9531	43%	1 1/64	1.0156	1 1/32	1.0312
1 UNS	14	1.0000	15/16	.9375	67%	61/64	.9531	51%	1 1/64	1.0156	1 1/32	1.0312
1 1/8 UNC	7	1.1250	63/64	.9844	76%	–			–		–	
1 1/8 UNF	12	1.1250	1 3/64	1.0469	72%	–			–		–	
1 1/4 UNC	7	1.2500	1 7/64	1.1094	76%	–			–		–	
1 1/4 UNF	12	1.2500	1 11/64	1.1719	72%	–			–		–	
1 3/8 UNC	6	1.3750	1 7/32	1.2188	72%	–			–		–	
1 3/8 UNF	12	1.3750	1 19/64	1.2969	72%	–			–		–	
1 1/2 UNC	6	1.5000	1 11/32	1.3438	72%	–			–		–	
1 1/2 UNF	12	1.5000	1 27/64	1.4219	72%	–			–		–	

Which column? The standard tap drill gives about 75% thread, strong and easy to tap in soft metals. In steel and stainless, the larger drill (about 50% thread) cuts the tapping force and breaks fewer taps with little loss of strength. **Close** clearance lines parts up tightly; **free** clearance lets bolts slip through holes that are a little off.

Metric Tap and Clearance Drills

ISO metric threads **M1.6 to M30**, coarse and common fine pitches, with the closest inch drill and all three clearance fits.

Thread coarse fine

THREAD	PITCH MM	TAP DRILL			CLOSEST INCH DRILL		CLEARANCE HOLE, MM (ISO 273)		
		DRILL	INCH	THREAD	DRILL	INCH	CLOSE	NORMAL	LOOSE
M1.6 coarse	0.35	**1.25 mm**	.0492	77%	3/64	.0469	1.7	**1.8**	2
M2 coarse	0.4	**1.6 mm**	.0630	77%	1/16	.0625	2.2	**2.4**	2.6
M2.5 coarse	0.45	**2.05 mm**	.0807	77%	#46	.0810	2.7	**2.9**	3.1
M3 coarse	0.5	**2.5 mm**	.0984	77%	#40	.0980	3.2	**3.4**	3.6
M3.5 coarse	0.6	**2.9 mm**	.1142	77%	#33	.1130	3.7	**3.9**	4.2
M4 coarse	0.7	**3.3 mm**	.1299	77%	#30	.1285	4.3	**4.5**	4.8
M5 coarse	0.8	**4.2 mm**	.1654	77%	#19	.1660	5.3	**5.5**	5.8
M6 coarse	1	**5 mm**	.1969	77%	#9	.1960	6.4	**6.6**	7
M8 coarse	1.25	**6.8 mm**	.2677	74%	H	.2660	8.4	**9**	10
M8 fine	1	**7 mm**	.2756	77%	J	.2770	8.4	**9**	10
M10 coarse	1.5	**8.5 mm**	.3346	77%	Q	.3320	10.5	**11**	12
M10 fine	1.25	**8.8 mm**	.3465	74%	S	.3480	10.5	**11**	12
M10 fine	1	**9 mm**	.3543	77%	T	.3580	10.5	**11**	12
M12 coarse	1.75	**10.2 mm**	.4016	79%	Y	.4040	13	**13.5**	14.5
M12 fine	1.5	**10.5 mm**	.4134	77%	Z	.4130	13	**13.5**	14.5
M12 fine	1.25	**10.8 mm**	.4252	74%	27/64	.4219	13	**13.5**	14.5
M14 coarse	2	**12 mm**	.4724	77%	15/32	.4688	15	**15.5**	16.5
M14 fine	1.5	**12.5 mm**	.4921	77%	31/64	.4844	15	**15.5**	16.5
M16 coarse	2	**14 mm**	.5512	77%	35/64	.5469	17	**17.5**	18.5
M16 fine	1.5	**14.5 mm**	.5709	77%	37/64	.5781	17	**17.5**	18.5
M18 coarse	2.5	**15.5 mm**	.6102	77%	39/64	.6094	19	**20**	21
M18 fine	1.5	**16.5 mm**	.6496	77%	21/32	.6562	19	**20**	21
M20 coarse	2.5	**17.5 mm**	.6890	77%	11/16	.6875	21	**22**	24
M20 fine	1.5	**18.5 mm**	.7283	77%	47/64	.7344	21	**22**	24
M22 coarse	2.5	**19.5 mm**	.7677	77%	49/64	.7656	23	**24**	26
M22 fine	1.5	**20.5 mm**	.8071	77%	13/16	.8125	23	**24**	26
M24 coarse	3	**21 mm**	.8268	77%	53/64	.8281	25	**26**	28
M24 fine	2	**22 mm**	.8661	77%	55/64	.8594	25	**26**	28
M27 coarse	3	**24 mm**	.9449	77%	15/16	.9375	28	**30**	32
M30 coarse	3.5	**26.5 mm**	1.0433	77%	1 3/64	1.0469	31	**33**	35

Metric tap drill rule

Tap drill = size − pitch

M8 × 1.25: 8 − 1.25 = 6.75, so use the stock **6.8 mm** drill. Gives about 75 to 80% thread.

No metric drills?

The **closest inch drill** column is within 0.008" of the metric drill. Close enough for most work in soft metals; in steel, stay with the metric size.