

## Hole Diameters for Tapping

UNIFIED THREADS			METRIC THREADS		
TAP SIZE	CUTTING TAPS	FORMING TAPS	TAP SIZE	CUTTING TAPS	FORMING TAPS
	Based on 75% Thread (in.)	Based on 65% Thread (in.)		Based on 75% Thread (in.)	Based on 65% Thread (in.)
0-80	0.0478"	0.0545"	M1.6 X 0.35	0.0496"	0.0569"
1-64	0.0578"	0.0661"	M1.8 X 0.35	0.0574"	0.0648"
1-72	0.0595"	0.0669"	M2 X 0.4	0.0634"	0.0718"
2-56	0.0686"	0.0781"	M2.2 X 0.45	0.0694"	0.0788"
2-64	0.0708"	0.0791"	M2.5 X 0.45	0.0812"	0.0906"
3-48	0.0787"	0.0898"	M3 X 0.5	0.0989"	0.1094"
3-56	0.0816"	0.0911"	M3.5 X 0.6	0.1148"	0.1274"
4-40	0.0876"	0.1010"	M4 X 0.7	0.1306"	0.1453"
4-48	0.0917"	0.1028"	M4.5 X 0.75	0.1484"	0.1641"
5-40	0.1006"	0.1140"	M5 X 0.8	0.1662"	0.1829"
5-44	0.1029"	0.1150"	M6 X 1.0	0.1979"	0.2188"
6-32	0.1076"	0.1242"	M7 X 1.0	0.2372"	0.2582"
6-40	0.1136"	0.1270"	M8 X 1.25	0.2670"	0.2932"
8-32	0.1336"	0.1502"	M8 X 1.0	0.2766"	0.2976"
8-36	0.1369"	0.1517"	M10 X 1.5	0.3362"	0.3676"
10-24	0.1494"	0.1716"	M10 X 1.25	0.3458"	0.3719"
10-32	0.1596"	0.1762"	M12 X 1.75	0.4053"	0.4420"
12-24	0.1754"	0.1976"	M12 X 1.25	0.4245"	0.4507"
12-28	0.1812"	0.2002"	M14 X 2.0	0.4745"	0.5164"
1/4-20	0.2013"	0.2279"	M14 X 1.5	0.4936"	0.5251"
1/4-28	0.2152"	0.2342"	M16 X 2.0	0.5532"	0.5951"
5/16-18	0.2584"	0.2879"	M16 X 1.5	0.5724"	0.6038"
5/16-24	0.2719"	0.2941"	M18 X 2.5	0.6128"	0.6652"
3/8-16	0.3141"	0.3474"	M18 X 1.5	0.6511"	0.6826"
3/8-24	0.3344"	0.3566"	M20 X 2.5	0.6915"	0.7439"
7/16-14	0.3679"	0.4059"	M20 X 1.5	0.7299"	0.7613"
7/16-20	0.3888"	0.4154"	M22 X 2.5	0.7702"	0.8226"
1/2-13	0.4251"	0.4660"	M22 X 1.5	0.8086"	0.8400"
1/2-20	0.4513"	0.4779"	M24 X 3.0	0.8298"	0.8927"
9/16-12	0.4813"	0.5257"	M24 X 2.0	0.8682"	
9/16-18	0.5084"	0.5379"	M27 X 3.0	0.9479"	
5/8-11	0.5364"	0.5848"	M27 X 2.0	0.9863"	
5/8-18	0.5709"	0.6004"	M30 X 3.5	1.0469"	
3/4-10	0.6526"	0.7058"	M30 X 2.0	1.1044"	
3/4-16	0.6891"	0.7224"	M33 X 3.5	1.1650"	
7/8-9	0.7668"		M33 X 2.0	1.2225"	
7/8-14	0.8054"		M36 X 4.0	1.2639"	
1-8	0.8782"		M36 X 3.0	1.3023"	
1-12	0.9188"		M39 X 4.0	1.3820"	
1-14	0.9304"		M39 X 3.0	1.4204"	

## Pipe Taps

TAP SIZE	NPT** HOLE SIZE	NPTF** HOLE SIZE	NPS HOLE SIZE	NPSF HOLE SIZE
1/16	0.2460"	0.2420"	0.2500"	0.2460"
1/8	0.3390"	0.3320"	0.3438"	0.3390"
1/4	0.4375"	0.4375"	0.4375"	0.4375"
3/8	0.5781"	0.5625"	0.5781"	0.5781"
1/2	0.7031"	0.7031"	0.7188"	0.7188"
3/4	0.9063"	0.9063"	0.9375"	0.9219"
1	1.1406"	1.1406"	1.1719"	1.1563"
1-1/4	1.4844"	1.4844"	1.5156"	
1-1/2	1.7344"	1.7344"	1.7500"	
2	2.2031"	2.1875"	2.2187"	
2-1/2	2.6250"	2.6250"	2.6563"	
3	3.2500"	3.2500"		

\*\*For tapping without reaming

**NOTE:** Information in this chart is for reference only. We will not be held liable for any consequential damages or economic loss due to the use of information contained within this chart.

# Tap Drill Sizes – STI (Screw Thread Insert) Taps

STI TAP SIZE	ALUMINUM		STEEL, PLASTIC, MAGNESIUM		MINOR DIA. LIMITS (AFTER TAPPING)	
	TAP DRILL SIZE	DECIMAL EQUIV. OF TAP DRILL (INCHES)	TAP DRILL SIZE	DECIMAL EQUIV. OF TAP DRILL (INCHES)	MIN.	MAX.
2 - 56	3/32	.0938	#41	.0960	.0899	.0961
4 - 40	#31	.1200	#31	.1200	.1175	.1252
5 - 40	3.4mm	.1339	#29	.1360	.1305	.1373
6 - 32	#26	.1470	#25	.1495	.1448	.1527
6 - 40	#26	.1470	#25	.1495	.1435	.1503
8 - 32	#17	.1730	#16	.1770	.1708	.1781
10 - 24	13/64	.2031	#5	.2055	.1990	.2080
10 - 32	#7	.2010	13/64	.2031	.1968	.2041
12 - 24	#1	.2280	#1	.2280	.2250	.2340
1/4 - 20	H	.2660	H	.2660	.2608	.2704
1/4 - 28	G	.2610	6.7mm	.2638	.2577	.2646
5/16 - 18	Q	.3320	Q	.3320	.3245	.3342
5/16 - 24	21/64	.3281	21/64	.3281	.3215	.3288
3/8 - 16	X	.3970	X	.3970	.3885	.3987
3/8 - 24	25/64	.3906	25/64	.3906	.3840	.3910
7/16 - 14	29/64	.4531	29/64	.4531	.4530	.4639
7/16 - 20	29/64	.4531	29/64	.4531	.4483	.4561
1/2 - 13	33/64	.5156	17/32	.5312	.5166	.5273
1/2 - 20	33/64	.5156	33/64	.5156	.5108	.5186

Recommended tap drill sizes may vary slightly from recommended minor diameter limits to enable use of standard stock drill sizes. This variance does not cause any issues in most applications.

Drill sizes shown for steel, plastic and magnesium are such as to allow for material contraction in softer materials and to provide increased tap life. Variations in material and equipment may require the use of drills which are larger or smaller than those recommended.

Threads produced should be checked with thread plug gages to ensure that the threads meet required specifications.

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## Tapping Formulas

<b>Formula for Obtaining Tap Drill Sizes for Cutting Taps:</b>			
Major Dia. of Thread	-	$\frac{.01299 \times \text{Amt. of percentage of full thread}}{\text{No. of threads per inch}}$	= Drilled Hole* Size
Note: Select nearest commercial stock drill.			
<b>Percentage of Full Thread for Other Drill Sizes</b>			
No. of Threads per Inch	x	$\frac{\text{Major Dia. Selectedof Thread - Drill Dia.}}{.01299}$	= Percentage of Full Thread
<b>Formula For Obtaining Tap Drill Sizes For Thread Forming Taps:</b>			
*Drill Hole Size (inches)	=	Basic Major Dia. of thread (inches) - .0068	x $\frac{\text{Percentage of Full Thread}}{\text{No. of Threads per Inch}}$
*Drilled Hole Size (mm)	=	Basic Major Dia. of thread (mm)	- $\frac{\text{Percentage of Full Thread X mm Pitch}}{147.06}$
*Note: Drill size should be smaller than hole size by the probable amount the drill will cut oversize.			