TAP DRILL SIZES - INCH & METRIC
with DRILL SIZE FORMULAS

TAP/DRILL SIZES

TAP SIZE		CUTTING TAPS		TRU-FLO ™ FORMING TAPS	
INCH	METRIC	DRILL SIZE	DECIMAL EQUIVALENT	DRILL SIZE	DECIMAL EQUIVALENT
0-80		3/64	.0469	54	.0550
	M1.6 X 0.35	1.25mm	.0492	1.45mm	.0571
	M1.8 X 0.35	1.45mm	.0571	1.65mm	.0650
1-64		53	.0595	51	.0650
1-72		53	.0595	51	.0650
	M2 X 0.40	1.60mm	.0630	1.80mm	.0709
2-56		50	.0700	5/64	.0781
2-64		50	.0700	47	.0785
	M2.2 X 0.45	1.75mm	.0689	2.00mm	.0787
	M2.5 X 0.45	2.05mm	.0807	2.30mm	.0906
3-48		47	.0785	43	.0890
3-56		46	.0810	2.30mm	.0905
4-40		43	.0890	38	.1015
4-48		42	.0935	2.60mm	.1024
	M3 X 0.50	2.50mm	.0984	7/64	.1094
5-40		38	.1015	33	.1130
5-44		37	.1040	2.90mm	.1142
	M3.5 X 0.60	2.90mm	.1142	3.20mm	.1260
6-32		36	.1065	1/8	.1250
6-40		33	.1130	3.25mm	.1280
	M4 X 0.70	3.30mm	.1299	3.70mm	.1457
8-32		29	.1360	25	.1495
8-36		29	.1360	24	.1520
	M4.5 X 0.75	3.70mm	.1476	4.10mm	.1614
10-24		26	.1470	11/64	.1719
10-32		21	.1590	16	.1770
	M5 X 0.80	4.20mm	.1654	14	.1820
12-24		16	.1770	5mm	.1969
12-28		15	.1800	7	.2010
	M6 X 1.00	5.00mm	.1969	7/32	.2188
1/4-20		7	.2010	1	.2280
1/4-28		3	.2130	15/64	.2340
	M7 X 1.00	6.00mm	.2362	F	.2570
5/16-18		F	.2570	L	.2900
5/16-24		I	.2720	M	.2950
	M8 X 1.25	6.70mm	.2638	7.40mm	.2913
	M8 X 1.0	7.00mm	.2756	19/64	.2969
3/8-16		5/16	.3125	S	.3480
3/8-24		Q	.3320	T	.3580
	M10 X 1.50	8.50mm	.3346	U	.3680
	M10 X 1.25	8.70mm	.3425	9.40mm	.3701
7/16-14		U	.3680	Y	.4040
7/16-20		25/64	.3906	Z	.4130
	M12 X 1.75	10.20mm	.4016	11.20mm	.4409
	M12 X 1.25	10.80mm	.4252	11.50mm	.4528
1/2-13		27/64	.4219	15/32	.4682
1/2-20		29/64	.4531	12.25mm	.4823
	M14 X 2.00	12.00mm	.4224	33/64	.5156
9/16-12		31/64	.4844	17/32	.5312
9/16-18		33/64	.5156	13.50mm	.5315
5/8-11		17/32	.5312	14.75mm	.5807
5/8-18		37/64	.5781	15.25mm	.6004
	M16 X 2.00	14.00mm	.5512	19/32	.5938
	M16 X 1.50	14.50mm	.5906	15.25mm	.6004
	M18 X 2.50	15.50mm	.6102	39/64	.6094
	M18 X 1.50	16.50mm	.6496	17.25mm	.6791

Drill sizes given are the 'closest' drill size.

TAP DRILL SIZES - INCH & METRIC
with DRILL SIZE FORMULAS (cont.)

TAP/DRILL SIZES cont.

TAP SIZE		CUTTING TAPS		TRU-FLO ™ FORMING TAPS	
INCH	METRIC	DRILL SIZE	DECIMAL EQUIVALENT	DRILL SIZE	DECIMAL EQUIVALENT
3/4-10		21/32	.6562	45/64	.7031
3/4-16		11/16	.6875	23/32	.7188
	M20 X 2.50	17.50mm	.6890		
	M20 X 1.50	18.50mm	.7283		
	M22 X 2.50	19.50mm	.7677		
	M22 X 1.50	20.50mm	.8071		
7/8-9		49/64	.7656		
7/8-14		13/16	.8125		
	M24 X 3.00	21.00mm	.8268		
	M24 X 2.00	22.00mm	.8661		
1-8		7/8	.8750		
1-12		59/64	.9219		
	M27 X 3.00	24.00mm	.9449		
	M27 X 2.00	25.00mm	.9843		
1-1/8-7		63/64	.9844		
1-1/8-12		1-3/64	1.0469		
	M30 X 3.50	26.50mm	1.0433		
	M30 X 2.00	28.00mm	1.1024		
1-1/4-7		1-7/64	1.1094		
1-1/4-12		1-11/64	1.1719		
	M33 X 3.50	29.50mm	1.1614		
	M33 X 2.00	31.00mm	1.2205		
1-3/8-6		1-7/32	1.2188		
1-3/8-12		1-19/64	1.2969		
	M36 X 4.00	32.00mm	1.2598		
	M36 X 3.00	33.00mm	1.2992		
1-1/2-6		1-11/32	1.3438		
1-1/2-12		1-27/64	1.4219		
	M39 X 4.00	35.00mm	1.3780		
	M39 X 3.00	36.00mm	1.4173		

PIPE THREAD DRILLED HOLE SIZES

NOMINAL SIZE	NPT	NPTF	NPSC	NPSM	NPSF	NPSI	BSPT	BSPP
1/16 - 27	D (0.246)	D (0.246)	.250		.250	.250		
1/8 - 27	Q (0.332)	Q (0.332)	.3437	.3593	.3437	.3437		
1/8 - 28							.3281	.3437
1/4 - 18	.4375	.4375	.4375	.4687	.4375	.4375		
1/4 - 19							.4375	.4531
3/8 - 18	.5625	.5781	.5781	.6093	.5781	.5781		
3/8 - 19							.5781	.5937
1/2 - 14	.7031	.7031	.7187	.750	.7187	.7187	.7187	.7343
5/8 - 14								.8125
3/4 - 14	.9062	.9218	.9218	.9646			.9380	.9650
7/8 - 14								1.1093
1 - 11							1.1718	1.1875
1 - 11-1/2	1.1406	1.1562	1.1562	1.2031				
1-1/4 - 11							1.500	1.5468
1-1/4 - 11-1/2	1.4843	1.500	1.500	1.5468				
1-1/2 - 11							1.750	1.7656
1-1/2 - 11-1/2	1.7343	1.7343	1.750	1.7913				
1-3/4 - 11								2.000
2 - 11							2.2187	2.250
2 - 11-1/2	2.2031	2.2187	2.2187	2.2638				

Drill sizes given are the 'closest' drill size.

TAP DRILL SIZES - INCH & METRIC
with DRILL SIZE FORMULAS (cont.)

FORMULA FOR TAP/DRILL SIZES (INCH)

METHOD 1:

$$\text{Drilled Hole Size (in.)} = \text{Basic Major Dia. Of Thread (in.)} - \frac{.013 \times \% \text{ of Full Thread*}}{\text{\# of Threads per Inch (T.P.I.)}}$$

*Use whole numbers for % of thread…for 65% (not .65).

METHOD 2:

Nominal O.D. - (Dbl. Thread Depth X % of Full Thread) = Drilled Hole Size

EXAMPLE: To find the hole size for obtaining 75% of thread in a 1/4-20 tapped hole, follow first column down to 20 threads, then across to 75% of thread. This figure (.0485), when subtracted from the .250 diameter, is .2015, which is the required diameter of hole. See equation: .250 - .0485 = .2015

To figure whether or not pitch is too coarse for diameter:
(Double thread depth) X 3 = x
x = the smallest diameter possible for that T.P.I.

THREADS PER INCH	DOUBLE THREAD DEPTH	50% THREAD	55% THREAD	60% THREAD	RECOMMENDED RANGE			80% THREAD	85% THREAD
					65% THREAD	70% THREAD	75% THREAD		
6	.21651	.1083	.1192	.1300	.1408	.1517	.1625	.1733	.1842
7	.18558	.0929	.1021	.1114	.1207	.1300	.1393	.1486	.1579
8	.16238	.0813	.0894	.0975	.1056	.1138	.1219	.1300	.1381
9	.14434	.0722	.0794	.0866	.0939	.1011	.1083	.1156	.1228
10	.12990	.0649	.0714	.0779	.0844	.0909	.0974	.1039	.1105
11	.11809	.0590	.0649	.0708	.0767	.0826	.0885	.0944	.1005
12	.10825	.0541	.0595	.0649	.0702	.0755	.0808	.0861	.0921
13	.09992	.0499	.0549	.0599	.0649	.0699	.0749	.0799	.0850
14	.09278	.0464	.0510	.0556	.0602	.0648	.0694	.0740	.0789
16	.08119	.0406	.0446	.0486	.0526	.0566	.0606	.0646	.0691
18	.07217	.0361	.0396	.0431	.0466	.0501	.0536	.0571	.0614
20	.06495	.0325	.0357	.0389	.0421	.0453	.0485	.0517	.0553
24	.05412	.0270	.0298	.0326	.0354	.0382	.0410	.0438	.0460
27	.04811	.0240	.0264	.0288	.0312	.0336	.0360	.0384	.0409
28	.04639	.0232	.0254	.0276	.0298	.0324	.0347	.0370	.0395
30	.04330	.0216	.0238	.0260	.0282	.0304	.0326	.0348	.0368
32	.04059	.0203	.0223	.0243	.0263	.0283	.0303	.0323	.0345
36	.03608	.0180	.0198	.0216	.0234	.0252	.0270	.0288	.0307
40	.03247	.0162	.0178	.0194	.0210	.0226	.0242	.0258	.0276
44	.02952	.0147	.0162	.0177	.0192	.0207	.0222	.0237	.0251
48	.02706	.0135	.0148	.0161	.0174	.0187	.0200	.0213	.0230
56	.02319	.0116	.0127	.0138	.0149	.0160	.0171	.0182	.0197
64	.02029	.0101	.0111	.0121	.0131	.0141	.0151	.0161	.0173
72	.01804	.0090	.0099	.0107	.0115	.0123	.0131	.0139	.0153
80	.01623	.0081	.0089	.0097	.0105	.0113	.0121	.0129	.0138

Figures in table show amount to subtract from O.D. of screw to obtain specific percentages of thread.
Select nearest size commercial stock drill.

TAP DRILL SIZES - INCH & METRIC
with DRILL SIZE FORMULAS (cont.)

FORMULA FOR TAP/DRILL SIZES (METRIC)

METHOD 1:

$$\text{Drilled Hole Size (mm)} = \text{Basic Major Dia. Of Thread (mm)} - \frac{\text{\% of Full Thread* X mm Pitch}}{76.98}$$

*Use whole numbers for % of thread…for 65%, use 65 (not .65).

METHOD 2:

Nominal O.D. - (Dbl. Thread Depth X % of Full Thread) = Drilled Hole Size

EXAMPLE: To find the hole size for obtaining 75% of thread in a (M6) 6mm x 1.00 tapped hole, follow first column down to 1.00 threads, then across to 75% of thread. This figure (.9743), when subtracted from 6mm diameter, is 5.0257, which is the required diameter of hole. See equation: M6 - (1.2990 X 75) = (6 - .9743) = 5.0257mm

To figure whether or not pitch is too coarse for diameter:
(Double thread depth) X 3 = x
x = the smallest diameter possible for that T.P.I.

mm PITCH	DOUBLE THREAD DEPTH	50% THREAD	55% THREAD	60% THREAD	RECOMMENDED RANGE		75% THREAD	80% THREAD	85% THREAD
					65% THREAD	70% THREAD			
4.0	5.1963	2.5982	2.8580	3.1178	3.3776	3.6374	3.8972	4.1570	4.4169
3.50	4.5466	2.2733	2.5006	2.7280	2.9553	3.1826	3.4100	3.6373	3.8646
3.00	3.8969	1.9485	2.1433	2.3381	2.5330	2.7278	2.9227	3.1175	3.3124
2.50	3.2476	1.6238	1.7862	1.9486	2.1109	2.2733	2.4357	2.5981	2.7605
2.00	2.5979	1.2990	1.4288	1.5587	1.6886	1.8185	1.9484	2.0783	2.2082
1.75	2.2733	1.1367	1.2503	1.3640	1.4776	1.5913	1.7050	1.8186	1.9323
1.50	1.9487	.9744	1.0718	1.1692	1.2667	1.3641	1.4615	1.5590	1.6564
1.25	1.6236	.8118	.8930	.9742	1.0553	1.1365	1.2177	1.2989	1.3801
1.00	1.2990	.6495	.7145	.7794	.8444	.9093	.9743	1.0392	1.1042
.90	1.1687	.5844	.6428	.7012	.7597	.8181	.8765	.9350	.9934
.80	1.0394	.5197	.5717	.6236	.6756	.7276	.7796	.8315	.8835
.75	.9743	.4871	.5359	.5846	.6333	.6820	.7307	.7794	.8282
.70	.9093	.4547	.5001	.5456	.5910	.6365	.6820	.7274	.7729
.60	.7793	.3897	.4286	.4676	.5065	.5455	.5845	.6234	.6624
.50	.6421	.3211	.3532	.3853	.4174	.4495	.4816	.2137	.5458
.45	.5847	.2924	.3216	.3508	.3801	.4093	.4385	.4678	.4970
.40	.5197	.2599	.2858	.3118	.3378	.3638	.3898	.4158	.4417
.35	.4547	.2274	.2501	.2728	.2956	.3183	.3410	.3638	.3865
.30	.3896	.1948	.2143	.2338	.2532	.2727	.2922	.3117	.3312
.25	.3246	.1663	.1785	.1948	.2110	.2272	.2434	.2597	.2759

Figures in table show amount to subtract from O.D. of screw to obtain specific percentages of thread.
Select nearest size commercial stock drill.