

Metric coarse - mm, N·m

THREAD	TAP DRILL	CLEARANCE	TORQUE 8.8	HEX HEAD	HEX KEY
M2.5×0.45	2.05	2.9	0.7	-	2
M3×0.5	2.5	3.4	1.3	5.5	2.5
M4×0.7	3.3	4.5	3.1	7	3
M5×0.8	4.2	5.5	6.2	8	4
M6×1	5	6.6	11	10	5
M8×1.25	6.8	9	25	13	6
M10×1.5	8.5	11	50	16	8
M12×1.75	10.2	13.5	88	18	10
M14×2	12	15.5	141	21	12
M16×2	14	17.5	218	24	14
M20×2.5	17.5	22	426	30	17
M24×3	21	26	736	36	19

NPT pipe threads

SIZE	TPI	TAP DRILL	MAJOR DIA
1/16"	27	C	0.3125
1/8"	27	R	0.405
1/4"	18	7/16	0.54
3/8"	18	37/64	0.675
1/2"	14	23/32	0.84
3/4"	14	59/64	1.05
1"	11.5	1-5/32	1.315
1-1/4"	11.5	1-1/2	1.66
1-1/2"	11.5	1-47/64	1.9
2"	11.5	2-7/32	2.375
2-1/2"	8	2-5/8	2.875
3"	8	3-1/4	3.5

Unified inch - in, lb-ft

THREAD	TAP DRILL	CLEARANCE	TORQUE GR5	HEX HEAD	HEX KEY
#4-40	#43	0.128	0.7	1/4	3/32
#6-32	#36	0.17	1.3	5/16	7/64
#8-32	#29	0.19	2.4	11/32	9/64
#10-24	#25	0.221	3.5	3/8	5/32
#10-32	#21	0.221	4.0	3/8	5/32
1/4-20	#7	0.281	8.5	7/16	3/16
1/4-28	#3	0.281	9.7	7/16	3/16
5/16-18	F	0.344	17	1/2	1/4
3/8-16	5/16	0.406	31	9/16	5/16
7/16-14	U	0.469	49	5/8	3/8
1/2-13	27/64	0.562	75	3/4	3/8
5/8-11	17/32	0.688	150	15/16	1/2

Worth remembering

Tap drill = D - pitch

The metric rule. M8x1.25 -> 6.8 mm. Within a hundredth of exact.

75% thread is the shop default

Going 75% -> 60% costs ~5% strength and saves ~30% tapping torque.

Torque figures assume dry threads

Lubricated or waxed, the same torque gives up to 2x the clamp load.

Clearance holes do not locate

Preload friction holds position, or use dowels. Not the bolt shank.

NPT is 60 deg, BSP is 55 deg

Same nominal sizes, will thread together, will not seal. Check the angle.

A 1/2" NPT thread is 0.840" across

Pipe sizes are nominal bore, not a measured diameter.