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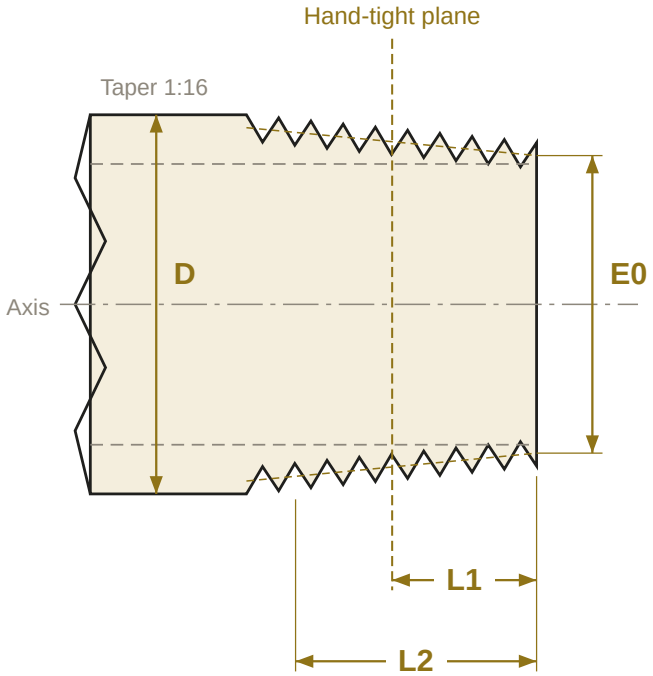
NPT Thread Chart

Dimensions per ASME B1.20.1, from 1/16" to 4"

NPT (National Pipe Taper) is the tapered pipe thread used in hydraulic, pneumatic, gas and water connections. The nominal size comes from the pipe, not from the thread diameter. Each measurement is shown in inches, with millimeters in parentheses.

HOW AN NPT THREAD IS MEASURED

Threaded end of the pipe (male thread). The taper is exaggerated in the drawing so it can be seen.



D — Outside diameter of the pipe. The nominal size (1/2", 3/4"...) comes from the pipe, not from this value.

E0 — Pitch diameter at the end of the pipe: halfway up the thread, where the gauges are referenced.

L1 — Length the male thread goes in when tightened by hand. With a wrench it takes 2 to 3 more turns.

L2 — Effective thread length: the full thread the male part must have.

NPT THREAD DIMENSIONS

Threads per inch, outside diameter, tap drill without reaming, hand-tight engagement, effective thread length and pitch diameter.

Size	Threads per inch	Outside diameter (D)	Tap drill (no reamer)	Drill diameter	Hand-tight (L1)	Effective length (L2)	Pitch diameter (E0)
1/16" NPT	27 TPI	0.3125" (7.94 mm)	**D**	0.246" (6.25 mm)	0.16" (4.06 mm)	0.2611" (6.63 mm)	0.27118" (6.89 mm)
1/8" NPT	27 TPI	0.405" (10.29 mm)	**R**	0.339" (8.61 mm)	0.1615" (4.10 mm)	0.2639" (6.70 mm)	0.36351" (9.23 mm)
1/4" NPT	18 TPI	0.54" (13.72 mm)	**7/16"**	0.4375" (11.11 mm)	0.2278" (5.79 mm)	0.4018" (10.21 mm)	0.47739" (12.13 mm)
3/8" NPT	18 TPI	0.675" (17.14 mm)	**37/64"**	0.5781" (14.68 mm)	0.24" (6.10 mm)	0.4078" (10.36 mm)	0.61201" (15.55 mm)
1/2" NPT	14 TPI	0.84" (21.34 mm)	**23/32"**	0.7188" (18.26 mm)	0.32" (8.13 mm)	0.5337" (13.56 mm)	0.75843" (19.26 mm)
3/4" NPT	14 TPI	1.05" (26.67 mm)	**59/64"**	0.9219" (23.42 mm)	0.339" (8.61 mm)	0.5457" (13.86 mm)	0.96768" (24.58 mm)
1" NPT	11.5 TPI	1.315" (33.40 mm)	**1-5/32"**	1.1563" (29.37 mm)	0.4" (10.16 mm)	0.6828" (17.34 mm)	1.21363" (30.83 mm)
1-1/4" NPT	11.5 TPI	1.66" (42.16 mm)	**1-1/2"**	1.5" (38.10 mm)	0.42" (10.67 mm)	0.7068" (17.95 mm)	1.55713" (39.55 mm)
1-1/2" NPT	11.5 TPI	1.9" (48.26 mm)	**1-47/64"**	1.7344" (44.05 mm)	0.42" (10.67 mm)	0.7235" (18.38 mm)	1.79609" (45.62 mm)

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Dimensions per ASME B1.20.1, from 1/16" to 4"

Size	Threads per inch	Outside diameter (D)	Tap drill (no reamer)	Drill diameter	Hand-tight (L1)	Effective length (L2)	Pitch diameter (E0)
2" NPT	11.5 TPI	2.375" (60.32 mm)	**2-7/32"**	2.2188" (56.36 mm)	0.436" (11.07 mm)	0.7565" (19.22 mm)	2.26902" (57.63 mm)
2-1/2" NPT	8 TPI	2.875" (73.02 mm)	**2-5/8"**	2.625" (66.67 mm)	0.682" (17.32 mm)	1.1375" (28.89 mm)	2.71953" (69.08 mm)
3" NPT	8 TPI	3.5" (88.90 mm)	**3-1/4"**	3.25" (82.55 mm)	0.766" (19.46 mm)	1.2" (30.48 mm)	3.34062" (84.85 mm)
3-1/2" NPT	8 TPI	4" (101.60 mm)	**3-3/4"**	3.75" (95.25 mm)	0.821" (20.85 mm)	1.25" (31.75 mm)	3.8375" (97.47 mm)
4" NPT	8 TPI	4.5" (114.30 mm)	**4-1/4"**	4.25" (107.95 mm)	0.844" (21.44 mm)	1.3" (33.02 mm)	4.33438" (110.09 mm)

Dimensions per ASME B1.20.1. Tap drill is for direct tapping without reaming. With a taper pipe reamer a smaller drill is used: for example 27/64" for 1/4" NPT, 11/16" for 1/2" and 57/64" for 3/4". Tap maker charts vary slightly; the right size is the one that keeps the L1 gauge within ±1 turn.

Taper 1:16 on diameter (3/4" per foot). Thread angle 60°. Millimeters = inches x 25.4.

HOW TO CITE THIS CHART (APA 7)

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