

Comprehensive Engineering Thread Charts

Reference Guide for Metric, Unified, Pipe, and Specialty Threads.

1. Metric ISO Thread Chart

Standard: ISO 261 / ISO 965 Note: If no pitch is specified (e.g., "M8"), Coarse pitch is assumed.

Nominal Size	Coarse Pitch (Standard)	Fine Pitch (Common)	Tap Drill Ø (Coarse)
M1.6	0.35 mm	—	1.25 mm
M2	0.4 mm	—	1.6 mm
M2.5	0.45 mm	—	2.05 mm
M3	0.5 mm	—	2.5 mm
M4	0.7 mm	—	3.3 mm
M5	0.8 mm	—	4.2 mm
M6	1.0 mm	—	5.0 mm
M8	1.25 mm	1.0 mm	6.8 mm
M10	1.5 mm	1.25 mm	8.5 mm
M12	1.75 mm	1.5 mm	10.2 mm
M14	2.0 mm	1.5 mm	12.0 mm
M16	2.0 mm	1.5 mm	14.0 mm
M20	2.5 mm	1.5 mm	17.5 mm
M24	3.0 mm	2.0 mm	21.0 mm
M30	3.5 mm	2.0 mm	26.5 mm
M36	4.0 mm	3.0 mm	32.0 mm

2. Unified Thread Standard (UTS)

Standard: ASME B1.1

A. Numbered Sizes (Precision/Electronics)

Size	Major Dia.	UNC (Coarse) TPI	Tap Drill	UNF (Fine) TPI	Tap Drill
#0	0.060"	—	—	80	3/64"
#1	0.073"	64	#53	72	#53
#2	0.086"	56	#50	64	#50
#4	0.112"	40	#43	48	#42
#6	0.138"	32	#36	40	#33
#8	0.164"	32	#29	36	#29
#10	0.190"	24	#25	32	#21

B. Fractional Sizes (Standard Hardware)

Size	Major Dia.	UNC (Coarse) TPI	Tap Drill	UNF (Fine) TPI	Tap Drill
1/4"	0.250"	20	#7	28	#3
5/16"	0.3125"	18	F	24	I
3/8"	0.375"	16	5/16"	24	Q
7/16"	0.4375"	14	U	20	25/64"
1/2"	0.500"	13	27/64"	20	29/64"
5/8"	0.625"	11	17/32"	18	37/64"
3/4"	0.750"	10	21/32"	16	11/16"

Size	Major Dia.	UNC (Coarse) TPI	Tap Drill	UNF (Fine) TPI	Tap Drill
1"	1.000"	8	7/8"	12	59/64"

3. Pipe Threads (NPT vs. BSP)

WARNING: NPT (60°) and BSP (55°) are NOT compatible.

A. NPT (National Pipe Taper) - USA/Canada

Size	TPI	Approx OD	Tap Drill
1/8" NPT	27	0.405"	R
1/4" NPT	18	0.540"	7/16"
3/8" NPT	18	0.675"	37/64"
1/2" NPT	14	0.840"	23/32"
3/4" NPT	14	1.050"	59/64"
1" NPT	11.5	1.315"	1-5/32"

B. BSP (British Standard Pipe) - Europe/Asia/ISO

BSPT = Tapered (R), BSPP = Parallel (G)

Size (G/R)	TPI	OD (mm)	Drill (Taper)	Drill (Parallel)
1/8"	28	9.73	8.2 mm	8.8 mm
1/4"	19	13.16	11.0 mm	11.8 mm
3/8"	19	16.66	14.5 mm	15.25 mm
1/2"	14	20.96	18.0 mm	19.0 mm
3/4"	14	26.44	23.5 mm	24.5 mm

Size (G/R)	TPI	OD (mm)	Drill (Taper)	Drill (Parallel)
1"	11	33.25	29.5 mm	30.75 mm

4. UN Constant Pitch Series

Used for heavy machinery and high-pressure bolting.

Diameter	8-UN (8 TPI)	12-UN (12 TPI)
1-1/8"	Standard	Standard
1-1/4"	Standard	Standard
1-1/2"	Standard	Standard
1-3/4"	Standard	Standard
2"	Standard	Standard
2-1/2"	Standard	Standard

5. PG Thread (Conduit)

Standard: DIN 40430 (80° Thread Angle)

Size	Major Dia. (mm)	TPI	Tap Drill (mm)
PG 7	12.5	20	11.4
PG 9	15.2	18	14.0
PG 11	18.6	18	17.25
PG 13.5	20.4	18	19.0
PG 16	22.5	18	21.25
PG 21	28.3	16	26.8
PG 29	37.0	16	35.5

6. NPS (National Pipe Straight)

Parallel version of NPT. Requires a gasket for sealing.

Size	TPI	Major Dia.	Tap Drill
1/8" NPS	27	0.405"	11/32"
1/4" NPS	18	0.540"	7/16"
3/8" NPS	18	0.675"	37/64"
1/2" NPS	14	0.840"	47/64"
3/4" NPS	14	1.050"	59/64"
1" NPS	11.5	1.315"	1-5/32"

7. UNS (Unified Special)

Common non-standard sizes for specific industries.

Size & Pitch	Application	Tap Drill
1/4" - 36 UNS	SMA RF Connectors	5.55 mm
1/2" - 24 UNS	Firearms (Muzzle)	11.6 mm
1/2" - 27 UNS	Lighting Fixtures	11.8 mm
5/8" - 27 UNS	Microphone Stands	15.0 mm
1" - 14 UNS	Hydraulics	23.5 mm

8.Inch Thread Chart

A.BSW Thread Chart (British Standard Whitworth)

Standard: BS 84 | Angle: 55° | Radius Roots/Crests Note: This is the "original" coarse inch thread, common in vintage machinery and some piping.

Nominal Size	Major Diameter (Inch)	Threads Per Inch (TPI)	Tap Drill Size
1/8" BSW	0.125"	40	#39 (2.55mm)
3/16" BSW	0.1875"	24	#26 (3.7mm)

Nominal Size	Major Diameter (Inch)	Threads Per Inch (TPI)	Tap Drill Size
1/4" BSW	0.250"	20	#7 (5.1mm)
5/16" BSW	0.3125"	18	F (6.5mm)
3/8" BSW	0.375"	16	5/16" (7.9mm)
7/16" BSW	0.4375"	14	U (9.3mm)
1/2" BSW	0.500"	12	10.5 mm
5/8" BSW	0.625"	11	13.5 mm
3/4" BSW	0.750"	10	16.25 mm
7/8" BSW	0.875"	9	19.25 mm
1" BSW	1.000"	8	22.0 mm
1-1/8" BSW	1.125"	7	24.5 mm
1-1/4" BSW	1.250"	7	27.5 mm
1-1/2" BSW	1.500"	6	33.5 mm

B. BSF Thread Chart (British Standard Fine)

Standard: BS 84 | Angle: 55° Note: The fine-pitch version of Whitworth, similar to how UNF is to UNC.

Nominal Size	Major Diameter (Inch)	Threads Per Inch (TPI)	Tap Drill Size
3/16" BSF	0.1875"	32	4.0 mm
1/4" BSF	0.250"	26	5.3 mm
5/16" BSF	0.3125"	22	6.8 mm
3/8" BSF	0.375"	20	8.3 mm
7/16" BSF	0.4375"	18	9.7 mm
1/2" BSF	0.500"	16	11.1 mm
5/8" BSF	0.625"	14	14.0 mm

Nominal Size	Major Diameter (Inch)	Threads Per Inch (TPI)	Tap Drill Size
3/4" BSF	0.750"	12	16.7 mm
1" BSF	1.000"	10	22.7 mm

9. ACME Thread Chart (General Purpose)

Standard: ASME B1.5 | Angle: 29° Note: Used for lead screws (lathes, vices, jacks) to transmit power. Not for fastening.

Nominal Size	Threads Per Inch (TPI)	Major Diameter	Minor Diameter (Nut)
1/4" ACME	16	0.250"	0.1875"
5/16" ACME	14	0.3125"	0.2411"
3/8" ACME	12	0.375"	0.2917"
1/2" ACME	10	0.500"	0.4000"
5/8" ACME	8	0.625"	0.5000"
3/4" ACME	6	0.750"	0.5833"
7/8" ACME	6	0.875"	0.7083"
1" ACME	5	1.000"	0.8000"
1-1/4" ACME	5	1.250"	1.0500"
1-1/2" ACME	4	1.500"	1.2500"