

Metric vs Imperial Thread Chart - 44 Lookalike Pairs That Do Not Mate

Metric ISO 261/262 against Unified inch (UNC/UNF). Inch major = in x 25.4, pitch = 25.4 / TPI, both rounded to 3 decimals; differences between nominal values. The smaller major starts in the larger nut and the larger never does; none of the pairs may carry load.

EKINSUN LTD - thread adapters, standoffs and double-end studs with a metric thread one end and an inch thread the other, MOQ 1 - <https://www.ekinsun.com/custom-fasteners/metric-vs-imperial-thread-chart/>

Metric	pitch mm	Inch	major mm	TPI	pitch mm	dia diff	pitch diff	result
M1.6	0.350	#0-80	1.524	80	0.318	0.076	0.032	Engages, feels right, then binds
M1.6	0.350	#1-64	1.854	64	0.397	0.254	0.047	Starts, binds within a few turns
M2	0.400	#2-56	2.184	56	0.454	0.184	0.054	Starts, binds within a few turns
M2	0.400	#2-64	2.184	64	0.397	0.184	0.003	Runs in, wrong diameter, no load
M2.5	0.450	#3-48	2.515	48	0.529	0.015	0.079	Engages, feels right, then binds
M3	0.500	#4-40	2.845	40	0.635	0.155	0.135	Starts, binds within a few turns
M3	0.500	#5-40	3.175	40	0.635	0.175	0.135	Starts, binds within a few turns
M3.5	0.600	#6-32	3.505	32	0.794	0.005	0.194	Starts, binds within a few turns
M3.5	0.600	#6-40	3.505	40	0.635	0.005	0.035	Engages, feels right, then binds
M4	0.700	#8-32	4.166	32	0.794	0.166	0.094	Starts, binds within a few turns
M4	0.700	#8-36	4.166	36	0.706	0.166	0.006	Runs in, wrong diameter, no load
M5	0.800	#10-24	4.826	24	1.058	0.174	0.258	Starts, binds within a few turns
M5	0.800	#10-32	4.826	32	0.794	0.174	0.006	Runs in, wrong diameter, no load
M5	0.800	#12-24	5.486	24	1.058	0.486	0.258	Starts, binds within a few turns
M6	1.000	1/4-20	6.350	20	1.270	0.350	0.270	Starts, binds within a few turns
M6	1.000	1/4-28	6.350	28	0.907	0.350	0.093	Starts, binds within a few turns
M8	1.250	5/16-18	7.938	18	1.411	0.062	0.161	Starts, binds within a few turns
M8	1.250	5/16-24	7.938	24	1.058	0.062	0.192	Starts, binds within a few turns
M8x1	1.000	5/16-24	7.938	24	1.058	0.062	0.058	Engages, feels right, then binds
M10	1.500	3/8-16	9.525	16	1.588	0.475	0.088	Starts, binds within a few turns
M10	1.500	3/8-24	9.525	24	1.058	0.475	0.442	Starts, binds within a few turns
M10x1.25	1.250	3/8-24	9.525	24	1.058	0.475	0.192	Starts, binds within a few turns
M10x1	1.000	3/8-24	9.525	24	1.058	0.475	0.058	Starts, binds within a few turns
M12	1.750	1/2-13	12.700	13	1.954	0.700	0.204	Starts, binds within a few turns
M12	1.750	7/16-14	11.113	14	1.814	0.887	0.064	Starts, binds within a few turns
M12	1.750	1/2-20	12.700	20	1.270	0.700	0.480	Starts, binds within a few turns
M12x1.25	1.250	1/2-20	12.700	20	1.270	0.700	0.020	Runs in, wrong diameter, no load
M12x1.5	1.500	1/2-20	12.700	20	1.270	0.700	0.230	Starts, binds within a few turns
M14	2.000	9/16-12	14.288	12	2.117	0.288	0.117	Starts, binds within a few turns
M14	2.000	9/16-18	14.288	18	1.411	0.288	0.589	Starts, binds within a few turns
M14x1.5	1.500	9/16-18	14.288	18	1.411	0.288	0.089	Starts, binds within a few turns
M16	2.000	5/8-11	15.875	11	2.309	0.125	0.309	Starts, binds within a few turns
M16	2.000	5/8-18	15.875	18	1.411	0.125	0.589	Starts, binds within a few turns
M16x1.5	1.500	5/8-18	15.875	18	1.411	0.125	0.089	Starts, binds within a few turns
M20	2.500	3/4-10	19.050	10	2.540	0.950	0.040	Starts, binds within a few turns
M20	2.500	3/4-16	19.050	16	1.588	0.950	0.912	Starts, binds within a few turns
M20x1.5	1.500	3/4-16	19.050	16	1.588	0.950	0.088	Starts, binds within a few turns
M22	2.500	7/8-9	22.225	9	2.822	0.225	0.322	Starts, binds within a few turns
M22	2.500	7/8-14	22.225	14	1.814	0.225	0.686	Starts, binds within a few turns
M24	3.000	1-8	25.400	8	3.175	1.400	0.175	Starts, binds within a few turns
M24	3.000	1-12	25.400	12	2.117	1.400	0.883	Starts, binds within a few turns
M30	3.500	1-1/8-7	28.575	7	3.629	1.425	0.129	Starts, binds within a few turns
M30	3.500	1-1/8-12	28.575	12	2.117	1.425	1.383	Starts, binds within a few turns
M30	3.500	1-1/4-7	31.750	7	3.629	1.750	0.129	Starts, binds within a few turns

Results: 'Starts, binds within a few turns' = the smaller part enters, the pitch difference accumulates and the flanks lock. 'Runs in, wrong diameter, no load' = pitches within 0.020 mm, diameter short, crest contact only. 'Engages, feels right, then binds' = both within 0.100 mm, feels right by hand, the pitch difference still accumulates and the flanks lock. Pipe threads: G (55 deg) and NPT (60 deg, 1-in-16 taper) share 14 TPI at 1/2 and 3/4 in and still do not seal - use a machined adapter.