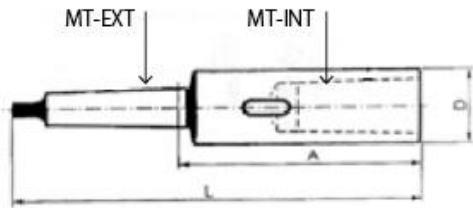




Morse Taper Extension Sleeves allow cutting tools with a Morse Taper Shank to be fitted to machine spindles which have a different Morse Taper to that of the tool. They also provide extended length to taper shank tools

Manufactured from Carbon steel
External and Internal Tapers hardened and ground
Manufactured to DIN 2187



Code	External Morse Taper MT-EXT	Internal Morse Taper MT-INT	L mm	A mm	D mm	Weight kg	Accuracy mm
EXT 101	1	1	145	83	20	0.19	0.03
EXT 102	1	2	160	98	30	0.40	0.03
EXT 201	2	1	160	85	20	0.29	0.03
EXT 202	2	2	175	100	30	0.50	0.03
EXT 203	2	3	196	121	36	0.60	0.03
EXT 301	3	1	175	81	20	0.41	0.03
EXT 302	3	2	194	100	30	0.62	0.03
EXT 303	3	3	215	121	36	0.89	0.03
EXT 304	3	4	240	146	48	1.55	0.03
EXT 401	4	1	200	82.5	20	0.81	0.03
EXT 402	4	2	215	97.5	30	1.00	0.03
EXT 403	4	3	240	122.5	36	1.27	0.03
EXT 404	4	4	265	147.5	48	1.93	0.03
EXT 405	4	5	300	182.5	63	3.18	0.03
EXT 501	5	1	232	82.5	20	1.70	0.04
EXT 502	5	2	247	97.5	30	2.00	0.04
EXT 503	5	3	268	118.5	36	2.27	0.04
EXT 504	5	4	300	150.5	48	2.93	0.04

Packed Weight and Dimensions

Code	External Morse Taper MT-EXT	Internal Morse Taper MT-INT	Weight g	W mm	H mm	L mm
EXT 101	1	1	208	32	32	166
EXT 102	1	2	334	36	36	166
EXT 201	2	1	258	34	34	164
EXT 202	2	2	340	34	34	182
EXT 203	2	3	748	39	39	204
EXT 301	3	1	410	28	28	183
EXT 302	3	2	670	35	35	201
EXT 303	3	3	910	51	51	220
EXT 304	3	4	1508	51	51	252
EXT 401	4	1	736	35	35	210
EXT 402	4	2	978	36	36	220
EXT 403	4	3	1790	53	53	274
EXT 404	4	4	3366	73	73	350
EXT 405	4	5	1250	45	45	258
EXT 501	5	1	1628	48	48	242
EXT 502	5	2	1900	54	54	274
EXT 503	5	3	2116	54	54	276
EXT 504	5	4	2826	68	68	340

Morse Taper Information

The Morse Taper was invented by Stephen A. Morse in the mid-1860s. Since then, it has evolved to encompass smaller and larger sizes and has been adopted as a standard by numerous organizations, including the International Organization for Standardization (ISO) as ISO 296 and the German Institute for Standardization (DIN) as DIN 228-1. It is one of the most widely used types, and is particularly common on the shank of taper-shank twist drills and machine reamers, in the spindles of industrial drill presses, and in the tailstocks of lathes.

Sizes

Morse Tapers come in eight sizes identified by whole numbers between 0 and 7, and one half-size (4 1/2 - very rarely found, and not shown in the table). Often the designation is abbreviated as MT followed by a digit, for example a Morse taper number 4 would be MT4. The MT2 taper is the size most often found in drill presses up to 1/2" capacity. Stub (short) versions, the same taper angle but a little over half the usual length, are occasionally encountered for the whole number sizes from 1 through 5. There are standards for these, which (inter alia) are sometimes used in lathe headstocks to preserve a larger spindle through-hole.

End types

Morse tapers are of the self-holding variety, and can have three types of ends:

- tang (illustrated) to facilitate removal with a drift
- threaded to be held in place with a drawbar
- flat (no tang or threaded section)

Self-holding tapers rely on a heavy preponderance of axial load over radial load to transmit high torques. Problems may arise using large drills in relation to the shank, if the pilot hole is too large. The threaded style is essential for any side loading, particularly milling. The only exception is that such unfavorable situations can be simulated to remove a jammed shank. Permitting chatter will help release the grip. The acute (narrow) taper angle can result in such jamming with heavy axial loads, or over long periods.

End-Milling cutters with a Morse taper shank with a tang are occasionally seen: for security these must be used with a C-collar or similar, fitting into the neck between cutter and shank, and pulling back against the large end of the taper

The taper itself is roughly 5/8" per foot, but exact ratios and dimensions for the various sizes of tang type tapers are given below.

Morse Taper Dimensions

Principal dimensions of Morse Taper Shank in accordance with BS1660, 1972 / ISO 296/DIN 228

	MORSE TAPER No.	A mm	B mm	C mm	D mm	E mm	TAPER per mm on dia.
	1	12.065	62.0	65.5	5.2	5	0.04988
	2	17.780	75.0	80.0	6.3	6	0.04995
	3	23.825	94.0	99.0	7.9	7	0.05020
	4	31.267	117.5	124.0	11.9	8	0.05194
	5	44.399	149.5	156.0	15.9	10	0.05263