ACE Hardware Zimbabwe

Arbor & Taper Chart

Morse, Jacobs, B, 7:24 and R8 tapers - how to identify them and what fits what.

Workshop Reference Charts
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Morse tapers

Morse tapers are self-holding (friction grips them) and are used on drill shanks, lathe tailstocks and drill-press spindles. Measure the largest diameter at the mouth of the socket or the thickest part of the shank, then match it to the gauge diameter.

Morse tapers (ISO 296 / DIN 228)

Taper	Gauge dia. mm	Gauge dia. in	Taper ratio	Taper per foot (in)	Included angle	Drawbar thread
MT0	9.045	0.3561	1 : 19.212	0.6246	2° 58' 54"	-
MT1	12.065	0.4750	1 : 20.047	0.5986	2° 51' 27"	M6
MT2	17.780	0.7000	1 : 20.020	0.5994	2° 51' 41"	M10
MT3	23.825	0.9380	1 : 19.922	0.6023	2° 52' 31"	M12
MT4	31.267	1.2310	1 : 19.254	0.6232	2° 58' 30"	M16
MT5	44.399	1.7480	1 : 19.002	0.6315	3° 00' 52"	M20
MT6	63.348	2.4940	1 : 19.180	0.6257	2° 59' 12"	M24

> Form A shanks have a tapped end for a drawbar (thread shown). Form B shanks have a flat tang that is knocked out with a drift. MT0 is normally tang type only.

Drill-chuck tapers

Jacobs drill-chuck tapers

Jacobs taper	Large end in	Large end mm	Taper per foot (in)	Included angle
JT0	0.2500	6.35	0.59145	2° 49' 24"
JT1	0.3840	9.75	0.92508	4° 24' 53"
JT2	0.5590	14.20	0.97861	4° 40' 12"
JT2 Short	0.5488	13.94	0.97861	4° 40' 12"
JT33	0.6240	15.85	0.76194	3° 38' 12"
JT6	0.6760	17.17	0.62292	2° 58' 25"
JT3	0.8110	20.60	0.63898	3° 03' 01"
JT4	1.1240	28.55	0.62886	3° 00' 07"
JT5	1.4130	35.89	0.62010	2° 57' 36"

B tapers (DIN 238)

B taper	Large end mm	Same taper as
B10	10.094	MT1
B12	12.065	MT1
B16	15.733	MT2
B18	17.780	MT2
B22	21.793	MT3
B24	23.825	MT3

B tapers are short Morse-derived tapers used on chuck arbors. An arbor is named shank-first, e.g. **MT2 – B16** fits an MT2 spindle and a B16 chuck. B12 has the same angle and gauge diameter as MT1 but is shorter.

Milling machine tapers

7:24 steep tapers (ISO 7388 / DIN 69871 / MAS 403 / ANSI B5.50)

Size	Gauge dia. mm	SK / DIN 69871 pull stud	BT (MAS 403) pull stud	CAT (ANSI) pull stud
30	31.75	M12	M12	1/2"-13 UNC
40	44.45	M16	M16	5/8"-11 UNC
45	57.15	M20	M20	3/4"-10 UNC
50	69.85	M24	M24	1"-8 UNC

All 7:24 tapers have an included angle of 16° 35' 39" and are **not** self-holding: they are located by the taper and driven by keys in the flange. SK, BT and CAT holders of the same number share the gauge diameter but differ in flange shape and pull stud, so they are not interchangeable on an automatic tool changer.

R8 (Bridgeport-type mills)

Feature	Value
Body diameter	0.9495" (24.12 mm)
Drawbar thread	7/16"-20 UNF
Taper included angle	16° 51'
Location	Keyway in body engages a pin in the spindle
Typical capacity	Round collets 1/16" to 3/4" (some sets to 7/8")

Guide values for general workshop use. Always follow the equipment or fastener maker's figure where one is given, and check critical work against the relevant standard.

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