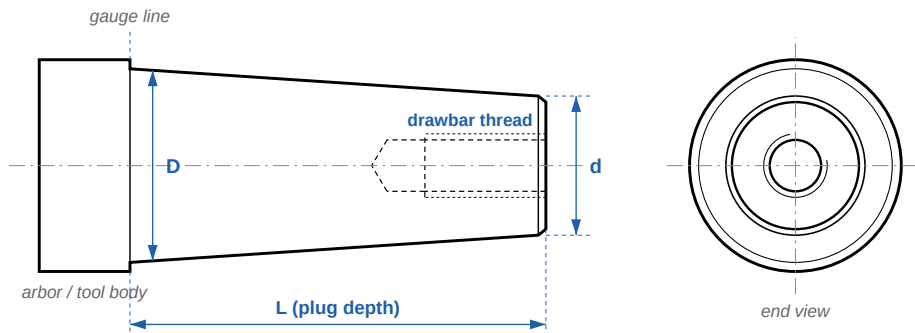
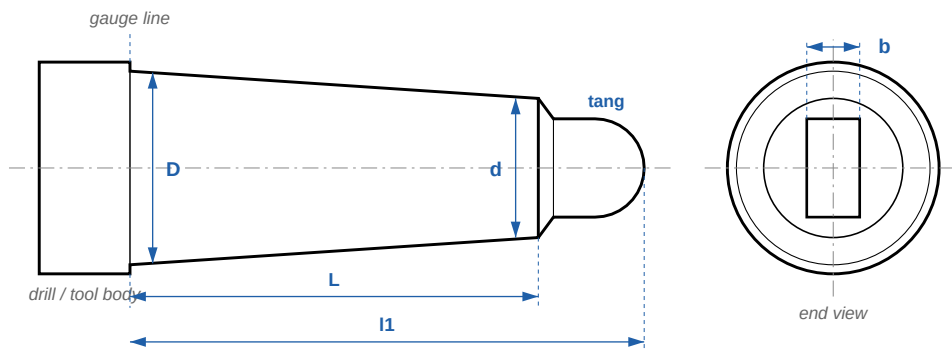


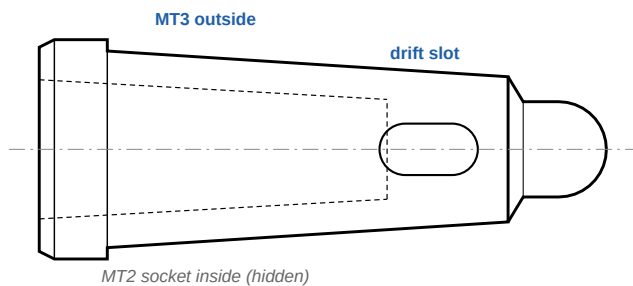
Form A - tapped for a drawbar



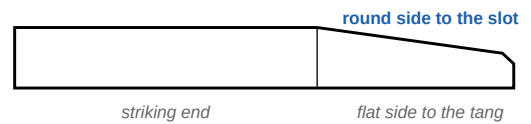
Form B - tang for a drift



Reducing sleeve MT3 - MT2, with drift slot



Drift (taper key)



Morse taper dimensions

Taper	Ratio	D mm	d mm	L mm	D in	d in	L in	Form A thread	Form B tang b mm	Form B l1 mm
MT0	1:19.212	9.045	6.40	50.8	0.3561	0.252	2.0000	-	3.9	59.5
MT1	1:20.047	12.065	9.37	54.0	0.4750	0.369	2.1250	M6	5.2	65.5
MT2	1:20.020	17.780	14.53	65.1	0.7000	0.572	2.5625	M10	6.3	80.0
MT3	1:19.922	23.825	19.76	81.0	0.9380	0.778	3.1875	M12	7.9	99.0
MT4	1:19.254	31.267	25.91	103.2	1.2310	1.020	4.0625	M16	11.9	124.0
MT5	1:19.002	44.399	37.47	131.8	1.7480	1.475	5.1875	M20	15.9	156.0
MT6	1:19.180	63.348	53.75	184.1	2.4940	2.116	7.2500	M24	19.0	218.0

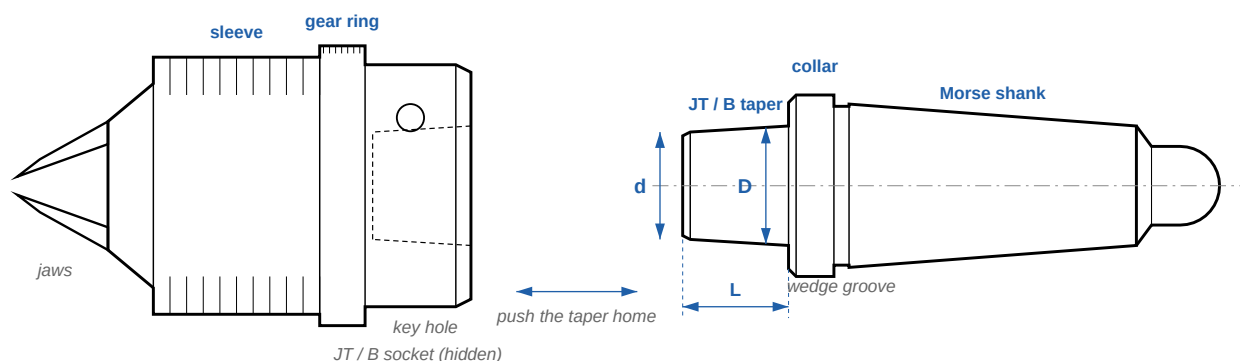
D - diameter at the gauge line (large end of the socket). d - small end of the shank. L - plug depth. b - tang thickness.

Form A: tapped for a drawbar (milling arbors, lathe tooling). Form B: tang, knocked out with a drift (drills, chuck arbors).

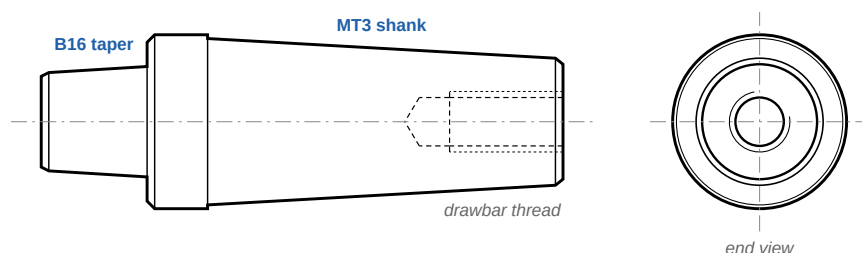
A reducing sleeve steps a large socket down (MT3 - MT2 = MT3 outside, MT2 inside). Drive the drift through the slot, flat side to the tang.

To identify a Morse taper, measure the large end (D) with a vernier and compare with the table.

Keyed drill chuck and chuck arbor (MT2 - JT33)



Chuck arbor, Form A shank (MT3 - B16) - held by a drawbar in a mill



Jacobs tapers

Taper	D mm	d mm	L mm	D in	d in	L in
JT0	6.350	5.802	11.11	0.2500	0.22844	0.4375
JT1	9.754	8.469	16.67	0.3840	0.33341	0.6562
JT2	14.199	12.386	22.22	0.5590	0.48764	0.8750
JT2S	13.940	12.386	19.05	0.5488	0.48764	0.7500
JT3	20.599	18.951	30.96	0.8110	0.74610	1.2188
JT33	15.850	14.237	25.40	0.6240	0.56050	1.0000
JT4	28.550	26.345	42.07	1.1240	1.03720	1.6563
JT5	35.890	33.429	47.62	1.4130	1.31610	1.8750
JT6	17.170	15.852	25.40	0.6760	0.62410	1.0000

B tapers (DIN 238)

Taper	D mm	d mm	L mm	Ratio	From
B10	10.094	9.371	14.5	1:20.047	MT1
B12	12.065	11.142	18.5	1:20.047	MT1
B16	15.733	14.534	24.0	1:20.020	MT2
B18	17.780	16.182	32.0	1:20.020	MT2
B22	21.793	19.760	40.5	1:19.922	MT3
B24	23.825	21.290	50.5	1:19.922	MT3

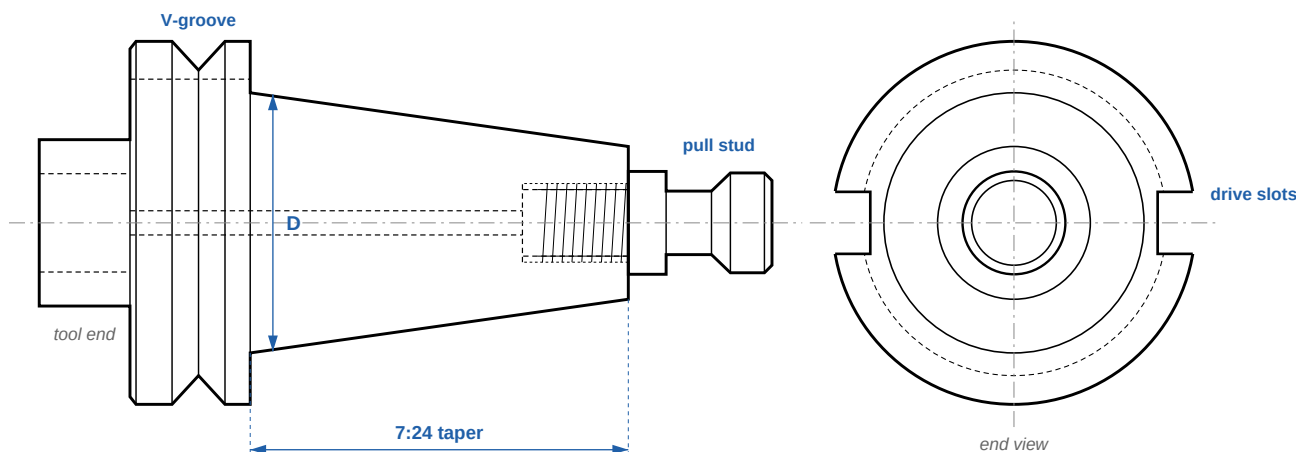
D - large end of the taper (at the collar). d - small end. L - taper length. Remove a chuck with wedges in the groove behind the collar.

JT2S is the short JT2. JT33 and JT6 are the common 1/2" chuck tapers; JT3 is used on larger chucks.

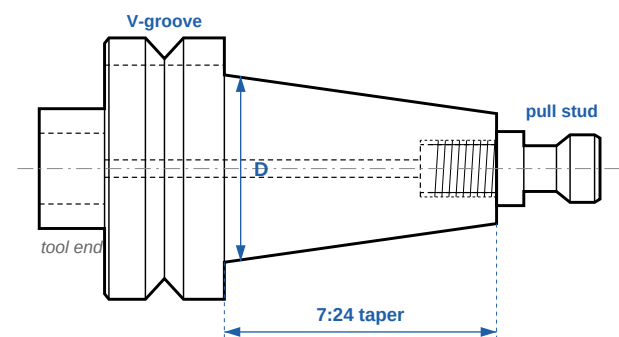
B tapers are short sections of Morse tapers: B10/B12 from MT1, B16/B18 from MT2, B22/B24 from MT3. B16 and B18 are the most common.

An arbor is named shank first, chuck taper second: MT2 - JT33 = Morse 2 shank with a Jacobs 33 chuck taper.

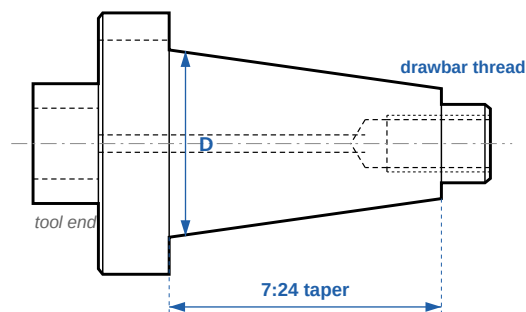
SK 40 tool holder (DIN 69871) with pull stud - for automatic tool change



BT 40 (MAS 403) - thick flange, V-groove in the middle



DIN 2080 - no V-groove, manual drawbar



7:24 steep tapers

Standard	Size	Gauge D mm	Flange mm	Drawbar / pull stud	Notes
DIN 2080	30	31.75	50	M12	Manual drawbar, no V-groove
DIN 2080	40	44.45	63	M16	Manual drawbar, no V-groove
DIN 2080	45	57.15	82.5	M20	Manual drawbar, no V-groove
DIN 2080	50	69.85	97.5	M24	Manual drawbar, no V-groove
SK / DIN 69871	30	31.75	50	M12	V-flange, pull stud (ATC)
SK / DIN 69871	40	44.45	63.55	M16	V-flange, pull stud (ATC)
SK / DIN 69871	45	57.15	82.55	M20	V-flange, pull stud (ATC)
SK / DIN 69871	50	69.85	97.5	M24	V-flange, pull stud (ATC)
BT / MAS 403	30	31.75	46	M12	Thicker flange, pull stud
BT / MAS 403	40	44.45	63	M16	Thicker flange, pull stud
BT / MAS 403	50	69.85	100	M24	Thicker flange, pull stud
CAT / ANSI	40	44.45	63.5	5/8"-11 UNC	Inch pull-stud thread
CAT / ANSI	50	69.85	98.4	1"-8 UNC	Inch pull-stud thread

All 7:24 tapers of one size share the gauge diameter D - the flange, V-groove, drive slots and thread tell them apart.

SK (DIN 69871) and BT are not interchangeable in an ATC spindle. DIN 2080 holders have no V-groove and a threaded spigot for a manual drawbar. CAT (ANSI) uses inch pull-stud threads. Always match the pull stud to the machine - studs differ by maker.

Arbor & Taper Chart

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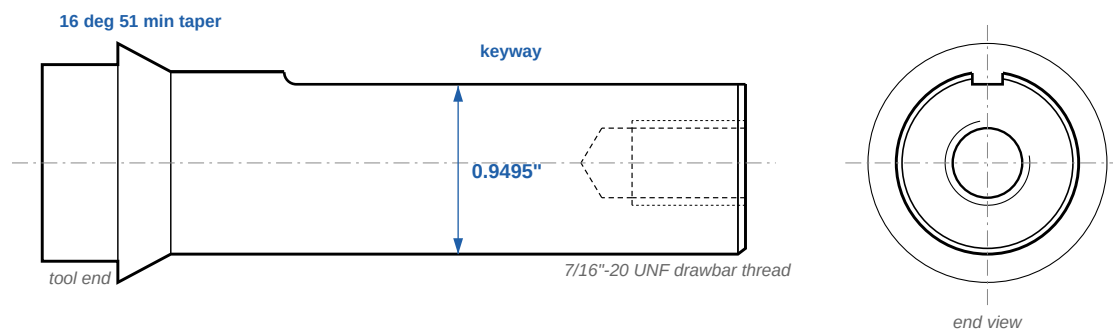
No 2 Hood Road, Southerton, Harare

Milling arbors - R8 (Bridgeport-type mills), shell mill arbors and horizontal milling arbors.

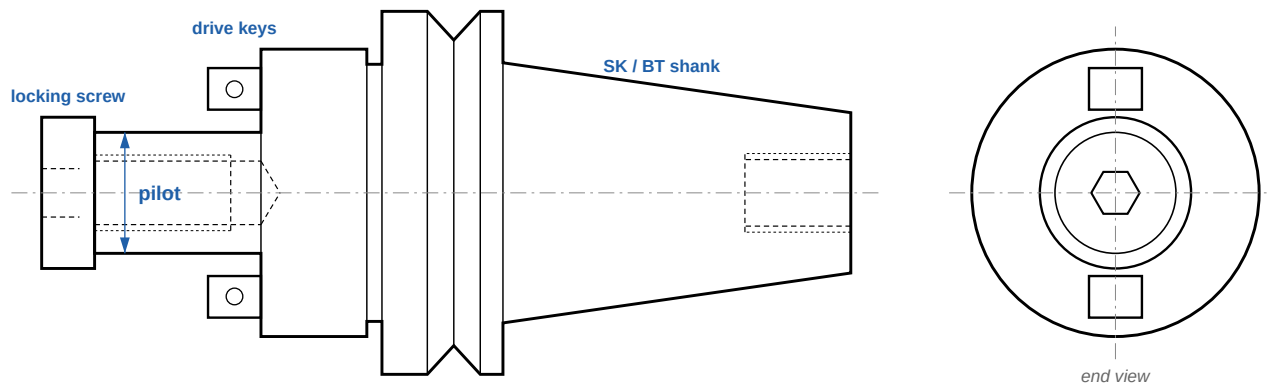
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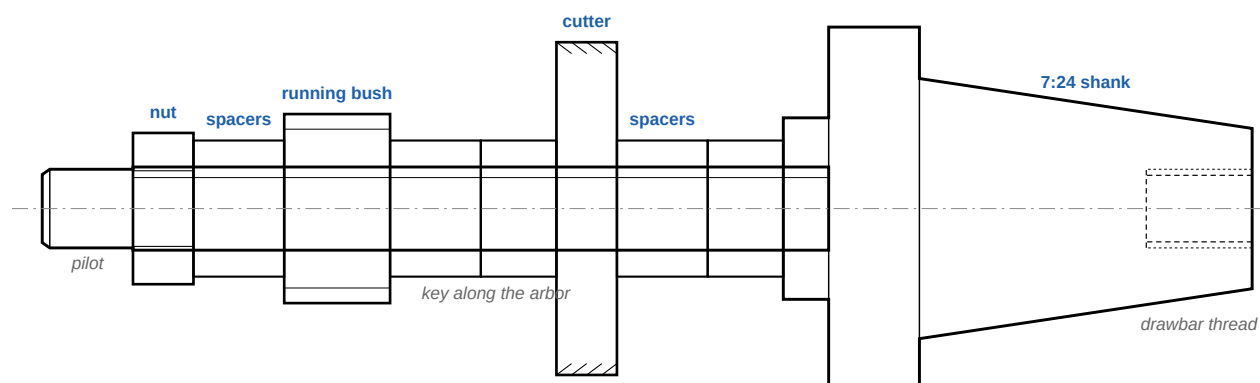
R8 arbor / tool shank



Shell (face) mill arbor



Horizontal milling arbor (long arbor with spacers and support bush)



R8 (Bridgeport-type mills)

Taper	Body dia	Taper angle	Drawbar	Key
R8 (Bridgeport)	0.9495" (24.12 mm)	16deg 51min included	7/16"-20 UNF	Keyway in body

Shell mill arbor pilots

Pilot dia mm	Typical cutter dia mm
16	40
22	50 - 63
27	63 - 80
32	80 - 100
40	100 - 125

Shell mill arbors are named by shank and pilot:

SK40 - 27 = SK40 shank with a 27 mm pilot.

The cutter is driven by the two keys and held by the locking screw.

Horizontal arbors are sized by arbor diameter (22, 27, 32 mm or 1", 1.1/4") - the cutter bore must match, and the running bush sits in the overarm support.