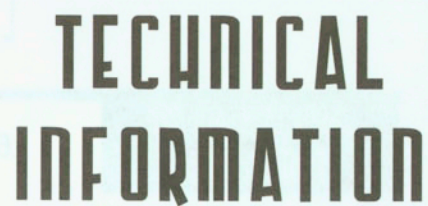
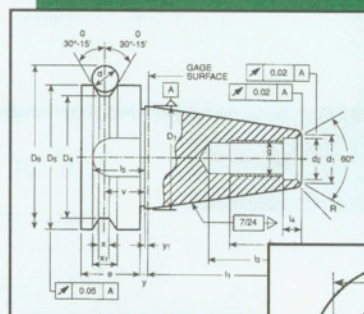


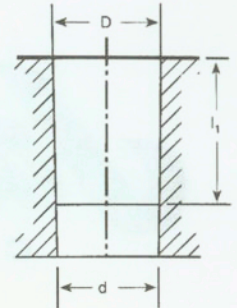
Mount Specifications  
Taper Specifications  
Tool Shank Standards





## JACOBS® TAPERS AND MOUNTS

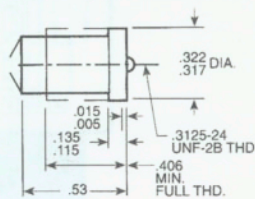
The tables below reproduce and classify the normal dimensions of Jacobs® tapers and mounts. They also observe the generally accepted designation. In effect, the range of increasing values for diameter D contains two No. 2 tapers, the first of which is No. 2 short taper. Between the tapers 2 and 3, there are two interpolated tapers which bear the out-of-series numbers 33 and 6 respectively.



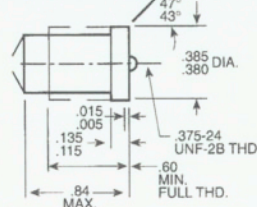
Jacobs Taper No	D		d		l <sub>1</sub>		Taper on Diameter	
	in.	mm	in.	mm	in.	mm	in.	mm
0	0.250 0	6.350	0.228 4	5.802	0.437 50	11.112	0.591 45	15.023
1	0.384 0	9.754	0.333 4	8.469	0.565 25	16.669	0.925 08	23.497
2 short	0.548 8	13.940	0.487 6	12.386	0.750 00	19.050	0.978 61	24.857
2	0.559 0	14.199	0.487 6	12.386	0.875 00	22.225	0.978 61	24.857
33	0.624 0	15.850	0.560 5	14.237	1.000 00	25.400	0.761 94	19.353
6	0.676 0	17.170	0.624 1	15.852	1.000 00	25.400	0.622 92	15.822
3	0.811 0	20.599	0.746 1	18.951	1.218 75	30.956	0.638 98	16.230
4	1.124 0	28.550	1.037 2	26.346	1.656 25	42.069	0.628 86	15.973
5	1.413 0	35.890	1.316 1	33.422	1.875 00	47.625	0.620 10	15.773

## JACOBS® STANDARD THREADED MOUNTS

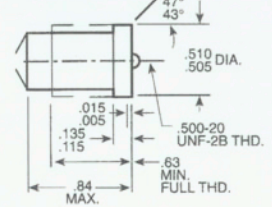
5/16 - 24



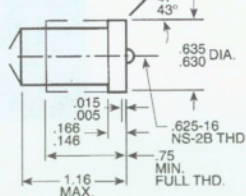
3/8 - 24



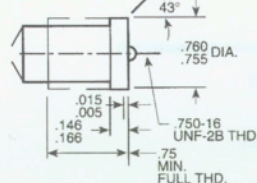
1/2 - 20



5/8 - 16

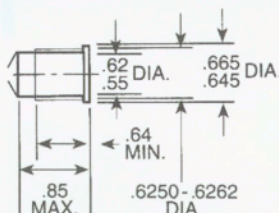


3/4 - 16



## JACOBS® STANDARD STRAIGHT MOUNT

.625STR



### NOTE:

All dimensions are in inches unless otherwise specified.

### CAUTION:

When designing for new applications, contact the Engineering Department, The Jacobs® Chuck Manufacturing Company for current specifications.



DIN  
TAPERS

DIN TAPER  
INTERCHANGABILITY

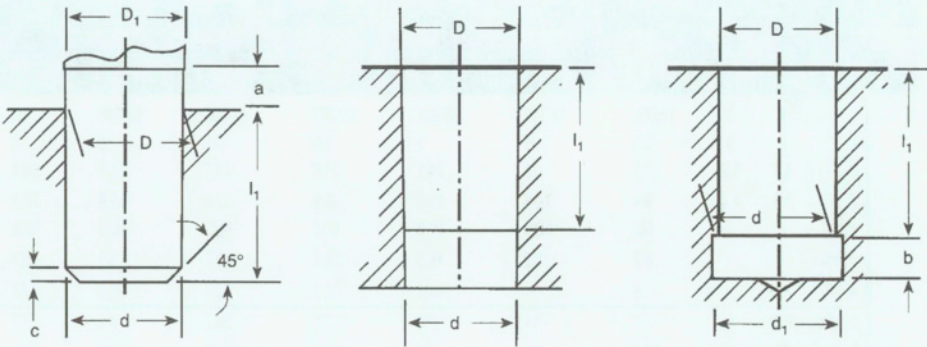
DIN tapered sections are identical with the following Morse tapers:

No. 1, for tapers B10 and B12

No. 2, for tapers B16 and B18

No. 3, for tapers B22 and B24

The length of each of these tapers is, of course, distinctly less than the overall length of the corresponding Morse taper. Each taper may be regarded as corresponding approximately either to that part of the Morse taper nearest the small end (for example: B10), or to the part nearest the large end (for example: B12).



Ref. No.	D		D1*		d*		d1		l1		a(max.)		b		c		Morse No.	Taper on Diameter	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		in.	mm
B10	0.397 4	10.094	0.403 6	10.3	0.368 9	9.4	25/64	9.8	0.571	14.5	0.125	3.5	0.125	3.5	0.047	1.0	1	0.049 88	1.267
B12	0.475 0	12.065	0.481 2	12.2	0.487 7	11.1	29/64	11.5	0.728	18.5	0.125	3.5	0.125	3.5	0.047	1.0	1	0.049 88	1.267
B16	0.619 4	15.733	0.628 8	16.0	0.572 2	14.5	19/32	15.0	0.945	24.0	0.188	5.0	0.156	4	0.063	1.5	2	0.049 95	1.269
B18	0.700 0	17.780	0.709 4	18.0	0.637 1	16.2	21/32	16.8	1.260	32.0	0.188	5.0	0.156	4	0.063	1.5	2	0.049 95	1.269
B22	0.858 0	21.793	0.867 4	22.0	0.778 0	19.8	13/16	20.5	1.594	40.5	0.188	5.0	0.188	4.5	0.078	2.0	3	0.050 20	1.275
B24	0.938 0	23.825	0.947 4	24.1	0.838 2	21.3	7/8	22.0	1.988	50.5	0.188	5.0	0.188	4.5	0.078	2.0	3	0.050 20	1.275

NOTES:

\* D1 and d = calculated values given for information.

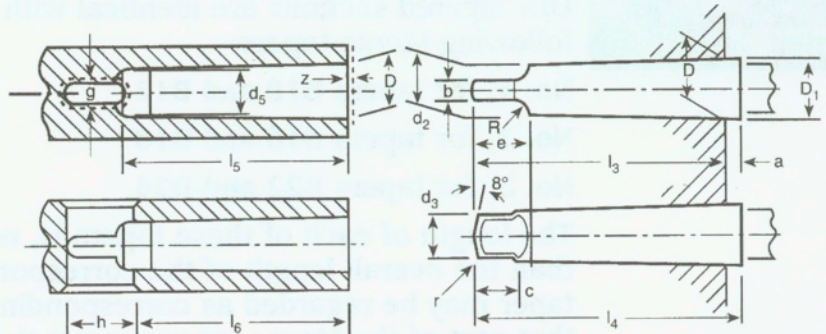
The effective values are obtained by applying the rate of taper and the basic dimension D to the actual values of a and l1, respectively.



**MORSE  
TAPERS**

Nos. 1 to 6 METRIC

### EXTERNAL TAPER WITH TANG



**NOTE:** All dimensions are in millimeters unless otherwise specified.

Designation		Metric Taper		Morse Taper					Metric Taper					
		4	6	1	2	3	4	5	6	80	100	120	160	200
Basic Size	Taper			0.598 58:12	0.599 41:12	0.062 35:12	0.623 26:12	0.631 51:12	0.625 65:12					
				=1:20.047	=1:20.020	=1:19.922	=1:19.254	=1:19.002	=1:19.180					
		1:20=0.05		=.049 88	=0.049 95	=0.050 20	=0.051 94	=0.052 63	=0.052 14			1:20 = 0.05		
External Taper	D	4	6	12.065	17.780	23.825	31.267	44.399	63.348	80	100	120	160	200
	a	2	3	3.5	5	5	6.5	6.5	8	8	10	12	16	20
	D <sub>1</sub> (1)	4.1	6.2	12.2	18	24.1	31.6	44.7	63.8	80.4	100.5	120.6	160.8	201
	d (1)	2.9	4.4	9.4	14.6	19.8	25.9	37.6	53.9	70.2	88.4	106.6	143	179.4
	d <sub>1</sub> (2)	-	-	M6	M10	M12	M16	M20	M24	M30	M36	M36	M48	M48
	d <sub>3</sub> max.	-	-	8.7	13.5	18.5	24.5	35.7	51	67	85	102	138	174
	d <sub>2</sub> (1)	-	-	9	14	19.1	25.2	36.5	52.4	69	87	105	141	177
	d <sub>4</sub> max.	2.5	4	9	14	19	25	35.7	51	67	85	102	138	174
	l <sub>1</sub> max.	23	32	53.5	64	81	102.5	129.5	182	196	232	268	340	412
	l <sub>2</sub> max.	25	35	57	69	86	109	136	190	204	242	280	356	432
	l <sub>3</sub> max.	-	-	62	75	94	117.5	149.5	210	220	260	300	380	460
	l <sub>4</sub> max.	-	-	65.5	80	99	124	156	218	228	270	312	396	480
	b h13	-	-	5.2	6.3	7.9	11.9	15.9	19	26	32	38	50	62
	c (3)	-	-	8.5	10	13	16	19	27	24	28	32	40	48
	e max.	-	-	13.5	16	20	24	29	40	48	58	68	88	108
	Internal Taper	l min.	-	-	16	24	28	32	40	50	65	80	80	100
R max.		-	-	5	6	7	8	10	13	24	30	36	48	60
R max.		-	-	1.2	1.6	2	2.5	3	4	5	5	6	8	10
t max.		2	3	5	5	7	9	10	16	24	30	36	48	60
d <sub>5</sub> H11		3	4.6	9.7	14.9	20.2	26.5	38.2	54.6	71.5	90	108.5	145.5	182.5
d <sub>6</sub>		-	-	7	11.5	14	18	23	27	33	36	39	52	52
l <sub>5</sub> min.		25	34	56	67	84	107	135	188	202	240	276	350	424
l <sub>6</sub>		21	29	52	62	78	98	125	177	186	220	254	321	388
g A13		22	32	52	63	79	11.9	15.9	19	26	32	38	50	62
h		8	12	19	22	27	32	33	47	52	60	70	90	110
z (4)		0.5	0.5	1	1	1	1.5	1.5	2	2	2	2	3	3

NOTES:

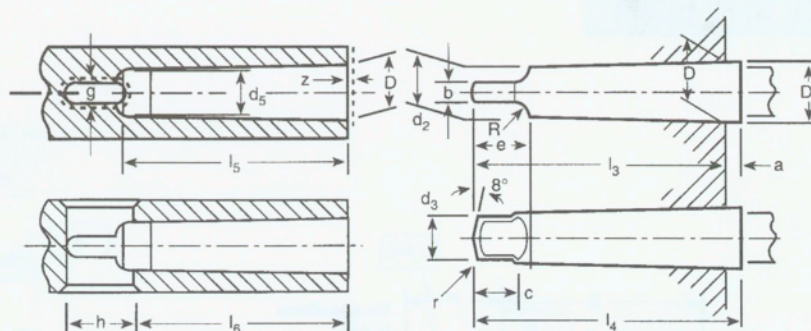
1.  $D_1$  and  $d$  or  $d_2$  = approximate values given for guidance. The actual values result from the actual values of  $a$  and  $l_1$  or  $l_3$  respectively, taking into account the taper and the basis size  $D$ .
2. It is allowed to increase the length  $c$  over which the tang is turned to diameter  $d_3$ , but without exceeding  $e$ .
3.  $z$  = maximum permissible deviation, outwards onlm of the position of the gage plane  $D$  from the nominal position of coincidence with the leading face.



## MORSE TAPERS

Nos. 1 to 6

### EXTERNAL TAPER WITH TANG



NOTE: All dimensions are in inches unless otherwise specified.

Designation		Morse Taper					
		1	2	3	4	5	6
Basic Size	Taper	0.598 58:12	0.599 41:12	0.062 35:12	0.623 26:12	0.631 51:12	0.625 65:12
		=1:20.047	=1:20.020	=1:19.922	=1:19.254	=1:19.002	=1:19.180
		=0.049 88	=0.049 95	=0.050 20	=0.051 94	=0.052 63	=0.052 14
External Taper	D	0.475	0.700	0.938	1.231	1.748	2.494
	a	1/8	3/16	3/16	1/4	1/4	5/16
	D <sub>1</sub> (1)	0.481 2	0.709 4	0.947 4	1.244 0	1.761 2	2.510 3
	d (1)	0.369 0	0.572 0	0.778 0	1.020 0	1.475 0	2.116 0
	d <sub>1</sub> (2)	UNC 1/4	UNC 3/8	UNC 1/2	UNC 5/8	UNC 5/8	UNC 1
	d <sub>2</sub> (1)	0.353 4	0.553 3	0.752 9	0.990 8	1.438 8	2.063 9
	d <sub>3</sub> max.	11/32	17/32	23/32	31/32	1-13/32	2
	d <sub>4</sub> max.	11/32	17/32	23/32	31/32	1-13/32	2
	l <sub>1</sub> max.	2-1/8	2-9/16	3-3/16	4-1/16	5-3/16	7-1/4
	l <sub>2</sub> max.	2-1/4	2-3/4	3-3/8	4-5/16	5-7/16	7-9/16
	l <sub>3</sub> max.	2-7/16	2-15/16	3-11/16	4-5/8	5-7/8	8-1/4
	l <sub>4</sub> max.	2-9/16	3-1/8	3-7/8	4-7/8	6-1/8	8-9/16
	b h12	0.203 1	0.250 0	0.312 5	0.468 7	0.625 0	0.750 0
	c (3)	11/32	13/32	17/32	5/8	3/4	1-1/16
	e max.	0.52	0.66	0.83	0.96	1.15	1.58
	l min.	1/2	3/4	1	1-1/4	1-1/4	2
	R max.	3/16	1/4	9/32	5/16	3/8	1/2
	r max.	3/64	1/16	5/64	3/32	1/8	5/32
	t max.	3/16	3/16	1/4	1/4	5/16	3/8
Internal Taper	d <sub>5</sub> H11	0.378	0.588	0.797	1.044	1.502	2.150
	d <sub>6</sub>	9/32	7/16	9/16	11/16	11/16	1-1/8
	l <sub>5</sub> min.	2-3/16	2-21/32	3-9/32	4-5/32	5-5/16	7-3/8
	l <sub>6</sub>	2-1/16	2-1/2	3-1/16	3-7/8	4-15/16	7
	g H12	0.223	0.270	0.333	0.493	0.650	0.780
	h	3/4	7/8	1-1/8	1-1/4	1-1/2	1-7/8
	z (4)	0.040	0.040	0.040	0.060	0.060	0.080

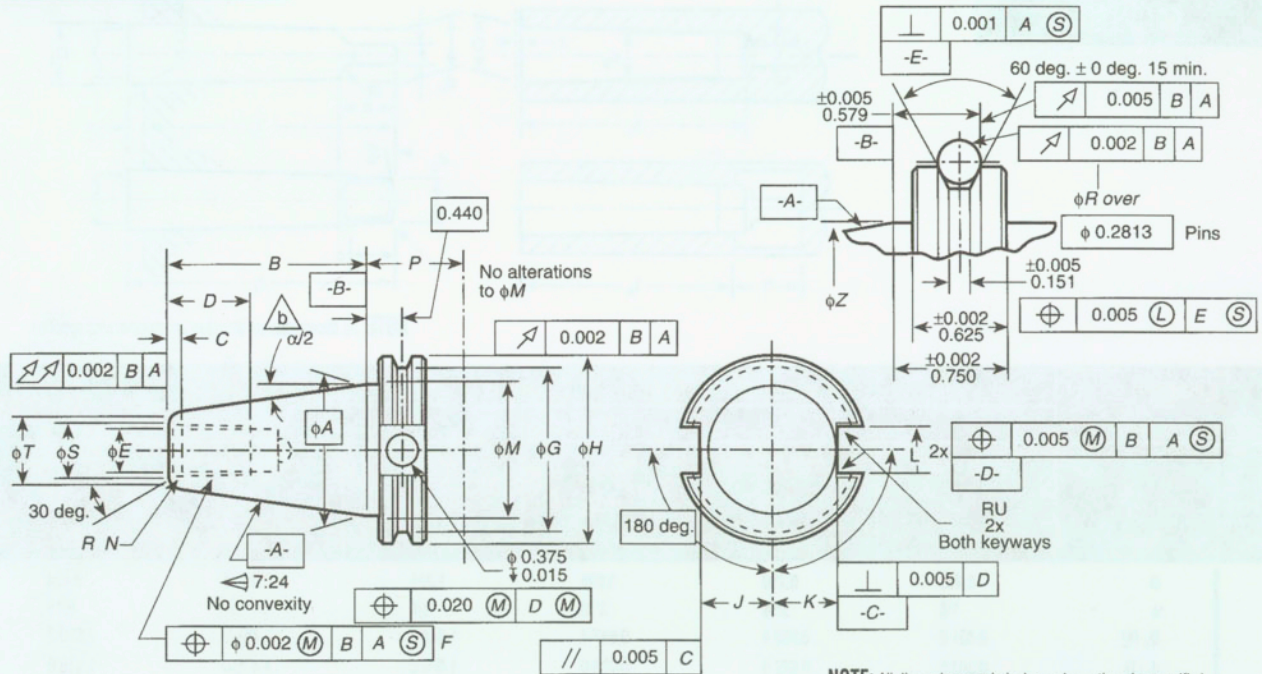
#### NOTES:

1. D<sub>1</sub> and d or d<sub>2</sub> = approximate values given for guidance. The actual values result from the actual values of a and l<sub>1</sub> or l<sub>3</sub> respectively, taking into account the taper and the basic size D.
2. It is allowed to increase the length c over which the tang is turned to diameter d<sub>3</sub>, but without exceeding e.
3. z = maximum permissible deviation, outwards only of the position of the gage plane D from the nominal position of coincidence with the leading face.



ANSI/ASME B5.50 - 1994

## V-FLANGE



**NOTE:** All dimensions are in inches unless otherwise specified.

Tols. Size	øA Gage Dia.	B ±0.005	C ±0.010	D Min.	øE ±0.015 -0.000	F UNC 28	øG ±0.010	øH ±0.002	J 0.000 -0.015	K +0.000 -0.015	L ±0.010	øM ±0.005	N 0.015 0.030	P 1.38	øR ±0.002	øS ±0.010	øT Min. Flat	U ±0.0010	øZ +0.000 ±0.005
30	1.250	1.875	0.188	1.00	0.516	0.500-13	1.531	1.812	0.735	0.640	0.645	1.250	0.015	1.38	2.176	0.590	0.650	0.030	1.250
40	1.750	2.687	0.188	1.12	0.641	0.625-11	2.219	2.500	0.985	0.890	0.645	1.750	0.045	1.38	2.863	0.720	0.860	0.030	1.750
45	2.250	3.250	0.188	1.50	0.766	0.750-10	2.969	3.250	1.235	1.140	0.770	2.250	0.075	1.38	3.613	0.850	1.090	0.030	2.250
50	2.750	4.000	0.250	1.75	1.031	1.000-8	3.594	3.875	1.485	1.390	1.020	2.750	0.075	1.38	4.238	1.125	1.380	0.030	2.750
60	4.250	6.375	0.312	2.25	1.281	1.250-7	5.219	5.500	2.235	2.140	1.020	4.250	0.120	1.50	5.683	1.375	2.040	0.400	4.250

GENERAL NOTES:

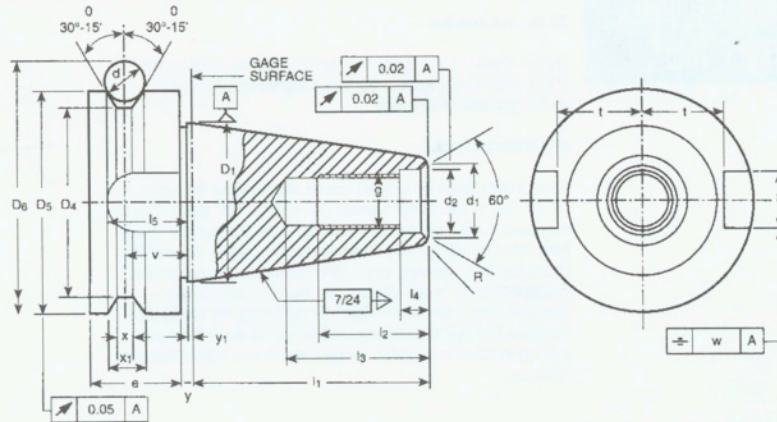
- (a) Taper cone tolerance is in accordance with ISO-1947
- (b) Standard cone angle tolerance grade is to be AT-4
- (c) Geometric dimension symbols are in accordance with ANSI Y14.5M-1982
- (d) Deburr all sharp edges
- (e) all unspecified fillets and radii:  $R\ 0.03 \pm 0.010$  or  $0.03 \pm 0.010 \times 45^\circ$ .



## TOOL SHANK STANDARDS

JMTBA MAS403 - 1982

### BT TAPERED SHANK



NOTE: All dimensions are in millimeters unless otherwise specified.

Serial No.	Shank			Screw						Tang			
	D <sub>1</sub>	l <sub>1</sub> ±0.2	R (max)	d <sub>1</sub>	d <sub>2</sub> H8	g 6H	l <sub>2</sub> (min)	l <sub>3</sub> (min)	l <sub>4</sub> +0.5 0	b H12	l <sub>5</sub> (min)	t 0 -0.2	w
BT30	31.75	48.4	0.5	14	12.5	M12	24	34	7.0	16.1	17	16.3	0.12
BT35	38.10	56.4	0.5	14	12.5	M12	24	34	7.0	16.1	20	19.6	0.12
BT40	44.45	65.4	1	19	17	M16	30	43	9.0	16.1	21	22.6	0.12
BT45	57.15	82.8	1	23	21	M20	38	53	11.0	19.3	26	29.1	0.12
BT50	69.85	101.8	1	27	25	M24	45	62	13.0	25.7	31	35.4	0.20
BT55	88.90	126.8	1	33	31	M30	56	76	16.0	25.7	31	45.1	0.20
BT60	107.95	161.8	1	33	31	M30	56	76	16.0	25.7	34	60.1	0.20

Serial No.	Flange								7/24 Taper Angle Tolerance (1) ATD	Reference		
	D <sub>4</sub>	D <sub>5</sub> h8	e	v ±0.1	x	x <sub>1</sub> 0.1 0	y ±0.4	y <sub>1</sub> -0.4		Small End Diam.	d	D <sub>6</sub>
BT30	38	46	20	13.6	4	8	2	2	+0.0039/-0	17.633	8	56.144
BT35	43	53	22	14.6	5	10	2	2	+0.0045/-0	21.650	10	65.680
BT40	53	63	25	16.6	5	10	2	2	+0.0041/-0	25.375	10	75.679
BT45	73	85	30	21.2	6	12	3	3	+0.0052/-0	33.000	12	100.216
BT50	85	100	35	23.2	7	15	3	3	+0.0051/-0	40.158	15	119.020
BT55	107	120	40	26.2	9	18	3	3	+0.0063/-0	51.917	18	147.823
BT60	135	155	45	28.2	11	20	3	3	+0.0065/-0	60.758	20	180.359