

ANSI-B107.4

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ASME B107.4M-1995

(REVISION OF ANSI B107.4-1982)

**Driving and Spindle Ends
for Portable Hand, Impact,
Air, and Electric Tools
(Percussion Tools Excluded)**

AN AMERICAN NATIONAL STANDARD



The American Society of
Mechanical Engineers

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The American Society of
Mechanical Engineers

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FOREWORD

(This Foreword is not part of ASME B107.4M-1995.)

The American National Standards Committee B107, Socket Wrenches and Drives, under sponsorship by the American Society of Mechanical Engineers, held its organizational meeting on June 28, 1967. Subcommittee 1 on Driving Ends for Portable Hand, Air, and Electric Tools and Subcommittee 3 on Spindle Ends for Portable Air and Electric Tools were subsequently organized. These two subcommittees took over the work that was originally handled by Technical Committee 28 of Standards Committee B5. The data contained in this Standard supersedes that in the B107.4 1982(R1988) document.

Suggestions for improvement of this Standard will be welcome. They should be sent to The American Society of Mechanical Engineers, Attn: Secretary, B107 Main Committee, 345 East 47th Street, New York, NY 10017.

This revision was approved as an American National Standard on October 16, 1995.

ASME STANDARDS COMMITTEE B107

Hand Tools and Accessories

(The following is the roster of the Committee at the time of approval of this Standard.)

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CONTENTS

Foreword	iii
Standards Committee Roster	v

1	Scope	1
2	Definitions	1
3	Normative References	1
4	ISO Compatibility	1
5	Gage Use and Design	1
6	Spindles for Chucks	2
7	Hexagon Drives	6
8	Square Drives	8
9	Spline Drives	20
10	Abrasion Tool Spindles	26
11	Circular Saw Arbors	29

Tables

1	Threaded Spindles	2
2	Threaded Chucks	3
3	Tapered Spindles	4
4	Master Plug Gage Dimensions — Jacobs Taper	5
5	Hexagonal Chucks	6
6	Hexagonal Shanks	7
7	Square Drive Specifications for Hand, Power, and Impact Wrenches — Female End	8
8	Square Drive Gage Specifications for Hand, Power, and Impact Wrenches — Female End	10
9	Square Drive Specifications for Hand, Power, and Impact Wrenches — Male End	12
10	Square Drive Gage Specifications for Hand, Power, and Impact Wrenches — Male End	15
11	Square Drive Pulloff Force Gage Specifications for Designs C and D Hand, Power, and Impact Wrenches — Male End	17
12	Square Drive Interchangeability Gage Specifications for Designs A and B Hand, Power, and Impact Wrenches — Male End	18
13	Spline Drives — Female Spline Proportions	20
14	Spline Drives — Male Spline Proportions	22
15	Spline Drives — Female Mounting Dimensions	24
16	Spline Drives — Male Mounting Dimensions	25
17	Sanders and Polishers	26
18	Vertical and Angle Grinders for Unthreaded Wheels	26
19	Vertical and Angle Grinders for Threaded Wheels	27
20	Cone Wheel Grinders	28

21	Straight Wheel Grinders	29
22	Round Arbors	29

Appendices

A	Chucks and Spindles	31
B	Mounting of Abrasive Wheels on Threaded Spindles	33

Table

A1	Chucks and Spindles	31
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DRIVING AND SPINDLE ENDS FOR PORTABLE HAND, IMPACT, AIR, AND ELECTRIC TOOLS (PERCUSSION TOOLS EXCLUDED)

1 SCOPE

This Standard applies to portable power tools for drilling, grinding, polishing, sawing, and driving threaded fasteners and hand tools for driving threaded fasteners. Other tools not classed as percussion tools belong in this category and may be added by revision or addition through the usual procedure.

This Standard includes dimensions and tolerances for both driving and driven elements where such coordination is important and not established by reference to the pertinent American National Standards. All dimensions are in inches and millimeters.¹

2 DEFINITIONS

tool — as used in this Standard, a portable device for performing a mechanical operation with power from compressed air or electricity and hand operated

percussion tools — hammers, chisels, scalers, tampers, clay diggers, and rock drills. Percussion tools are excluded from this Standard.

rounding values — When the next digit beyond the last digit to be retained is:

- (a) less than 5, the last digit to be retained is not changed;
- (b) 5 or more, the last digit to be retained is increased by one.

3 NORMATIVE REFERENCES

Current American National Standards referred to herein include:

ANSI B7.1-1988, Safety Requirements for the Use, Care, and Protection of Abrasive Wheels

ANSI B92.1-1970 (R1982) (R1993), Involute Splines and Inspection, Inch Version

ASME B1.1-1989, Unified Inch Screw Threads (UN and UNR Thread Form)

ISO 1174-1975/A1-1981(E), Assembly Tools for Bolts and Screws — Driving Squares for Power Socket Wrenches and Hand Socket Wrenches

4 ISO COMPATIBILITY

Italicized and in bold type indicate ISO compatibility. Example: **(38.214)**

5 GAGE USE AND DESIGN

The illustrations shown herein are descriptive and not restrictive, and are not intended to preclude the manufacture of product or gages which are otherwise in accordance with this Standard.

Manufacturers may use gages with tighter dimensions or tolerances than shown herein to ensure product acceptance.

Tolerances on gage dimensions within this Standard represent new, as gage manufactured or purchased gage sizes. The extreme size for all limit (GO and NO GO) gages shall not exceed the extreme limits of products specified within this Standard. All variations (manufacturing tolerance, calibration error, wear allowance, etc.) in the gages, whatever their cause or purpose, shall bring these gages within the extreme limits of this gage size specified within this Standard. Thus a gage which represents a minimum limit may be larger, but never smaller, than the minimum size specified for the product standard; likewise, the gage which represents a maximum limit may be smaller, but never larger, than the maximum size specified for the product standard.

¹The values stated in US customary units are to be regarded as the standard.

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

6 SPINDLES FOR CHUCKS

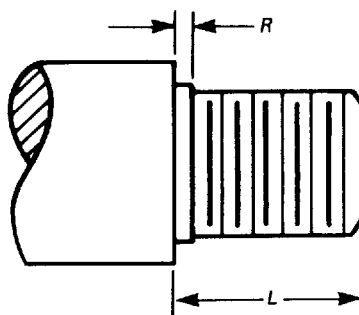


TABLE 1 THREADED SPINDLES, in.

Nominal Dia and Thread UNF	Pitch Dia		<i>R</i>	<i>L</i>
	Max	Min.		
$\frac{3}{8}$ -24	0.3479	0.3455	$\frac{1}{16} \pm \frac{1}{64}$	$\frac{1}{16}$ [Note (1)] +0.000 -0.030
$\frac{1}{2}$ -20	0.4675	0.4649	$\frac{1}{16} \pm \frac{1}{64}$	$\frac{1}{16}$ +0.000 -0.030
$\frac{5}{8}$ -16UN-2A	0.5844	0.5812	$\frac{3}{32} \pm \frac{1}{64}$	$\frac{1}{16}$ +0.000 -0.030
$\frac{3}{4}$ -16	0.7094	0.7062	$\frac{3}{32} \pm \frac{1}{64}$	$\frac{1}{16}$ +0.000 -0.030

GENERAL NOTE: Threads right hand.

NOTE:

(1) Also $\frac{7}{16}$.

TABLE 1 THREADED SPINDLES, mm

Nominal Dia and Thread (in.) UNF-2A	Pitch Dia		<i>R</i>	<i>L</i>
	Max	Min.		
$\frac{3}{8}$ -24	8.836	8.776	1.59 ± 0.39	14.29 [Note (1)] +0.00 -0.76
$\frac{1}{2}$ -20	11.874	11.808	1.59 ± 0.39	14.29 +0.00 -0.76
$\frac{5}{8}$ -16UN-2A	14.843	14.762	2.38 ± 0.39	17.46 +0.00 -0.76
$\frac{3}{4}$ -16	18.018	17.937	2.38 ± 0.39	17.46 +0.00 -0.76

GENERAL NOTE: Threads right hand.

NOTE:

(1) Also 11.11.

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

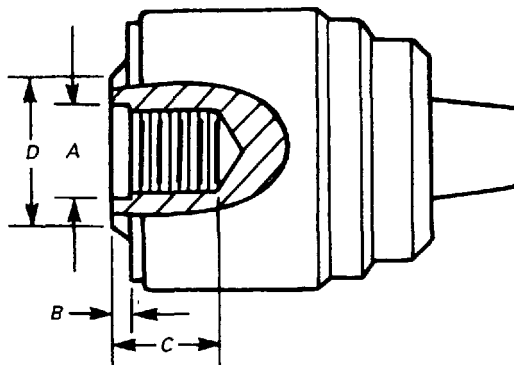


TABLE 2 THREADED CHUCKS, in.

Nominal Dia and Thread	A		B, Min.	C, Min.	D [Note (1)], Nom.
	Max	Min.			
$\frac{3}{8}$ -24	0.385	0.380	0.115	$\frac{19}{32}$	$\frac{5}{8}$
$\frac{1}{2}$ -20	0.510	0.503	0.115	$\frac{19}{32}$	$\frac{7}{8}$
$\frac{5}{8}$ -16	0.635	0.629	0.146	$\frac{25}{32}$	$1\frac{1}{8}$
$\frac{3}{4}$ -16	0.760	0.754	0.146	$\frac{13}{16}$	$1\frac{1}{4}$

NOTE:

(1) Reference Manufacturer's Practice.

TABLE 2 THREADED CHUCKS, mm

Nominal Dia and Thread (in.)	A		B, Min.	C, Min.	D [Note (1)], Nom.
	Max	Min.			
$\frac{3}{8}$ -24	9.77	9.65	2.92	15.09	15.88
$\frac{1}{2}$ -20	12.95	12.78	2.92	15.09	22.23
$\frac{5}{8}$ -16	16.12	15.98	3.71	19.84	28.58
$\frac{3}{4}$ -16	19.30	19.15	3.71	20.64	31.75

NOTE:

(1) Reference Manufacturer's Practice.

ASME B107.4M-1995

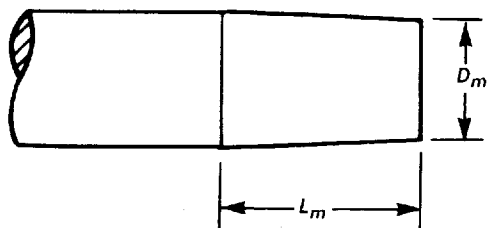
DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

TABLE 3 TAPERED SPINDLES, in.

Number [Note (1)]	D_m	L_m	Taper Per Foot
1	0.335–0.333	0.656	0.92508
2 Short	0.490–0.488	0.750	0.97861
2	0.490–0.488	0.875	0.97861
33	0.563–0.561	1.000	0.76194
6	0.626–0.624	1.000	0.62292
3	0.748–0.746	1.219	0.63898

NOTE:

(1) Jacobs Number.

TABLE 3 TAPERED SPINDLES, mm

Number [Note (1)]	D_m	L_m	mm Per Meter
1	8.50– 8.46	16.66	77.0900
2 Short	12.44–12.40	19.05	81.5508
2	12.44–12.40	22.23	81.5508
33	14.30–14.25	25.40	63.4950
6	15.90–15.85	25.40	51.9100
3	18.99–18.95	30.96	53.2483

NOTE:

(1) Jacobs Number.

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

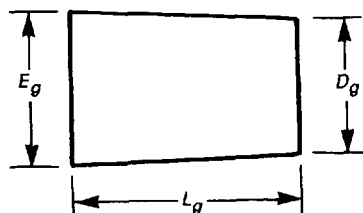


TABLE 4 MASTER PLUG GAGE DIMENSIONS — JACOBS TAPER, in.

Number	E_g	D_g	L_g	Taper Per Foot [Note (1)]
1	0.38400	0.33341	0.65625	0.92508
2 Short	0.54880	0.48764	0.7500	0.97861
2	0.55900	0.48764	0.87500	0.97861
33	0.62401	0.56051	1.000	0.76194
6	0.67600	0.62409	1.000	0.62292
3	0.81100	0.74610	1.21875	0.63898

NOTE:

(1) Calculated from E_g , D_g , and L_g .

TABLE 4 MASTER PLUG GAGE DIMENSIONS — JACOBS TAPER, mm

Number	E_g	D_g	L_g	mm Per Meter [Note (1)]
1	9.7536	8.4686	16.6688	77.0900
2 Short	13.9395	12.3861	19.0500	81.5508
2	14.1986	12.3861	22.2250	81.5508
33	15.8499	14.2370	25.4000	63.4950
6	17.1704	15.8519	25.4000	51.9100
3	20.5994	18.9509	30.9563	53.2483

NOTE:

(1) Calculated from E_g , D_g , and L_g .

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

7 HEXAGON DRIVES

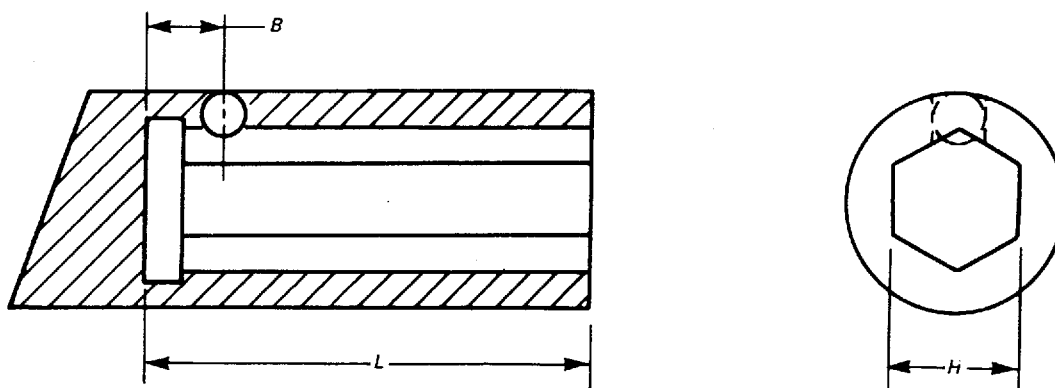


TABLE 5 HEXAGONAL CHUCKS, in.

Nominal Hexagon		H		B, ±0.005	L, Max
in.	mm	Max	Min.		
1/4	6.35	0.255	0.253	3/8	15/16
5/16	7.94	0.316	0.314	13/64	1
7/16	11.11	0.444	0.442	17/64	1 1/8
9/16	15.88	0.632	0.630	11/32	1 5/8
3/4	19.05	0.758	0.755	1 1/32	1 7/8

TABLE 5 HEXAGONAL CHUCKS, mm

Nominal Hexagon		H		B, ±0.127	L, Max
mm	in.	Max	Min.		
6.35	1/4	6.47	6.43	9.53	23.81
7.94	5/16	8.02	7.98	5.16	25.40
11.11	7/16	11.27	11.23	6.75	28.57
15.88	9/16	16.05	16.00	8.73	41.27
19.05	3/4	19.25	19.18	8.73	47.62

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

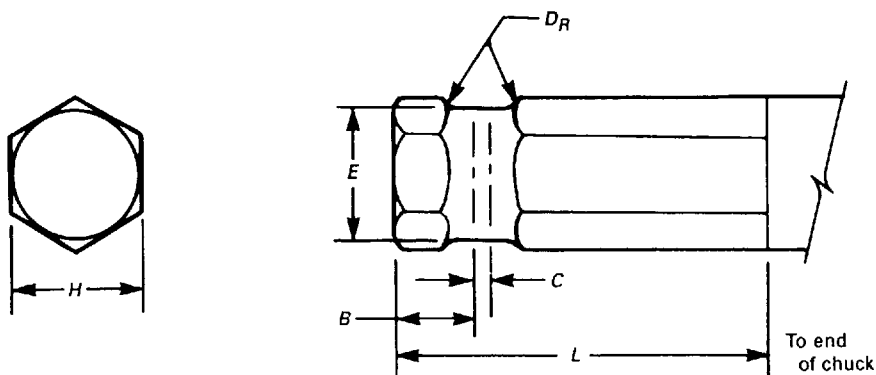


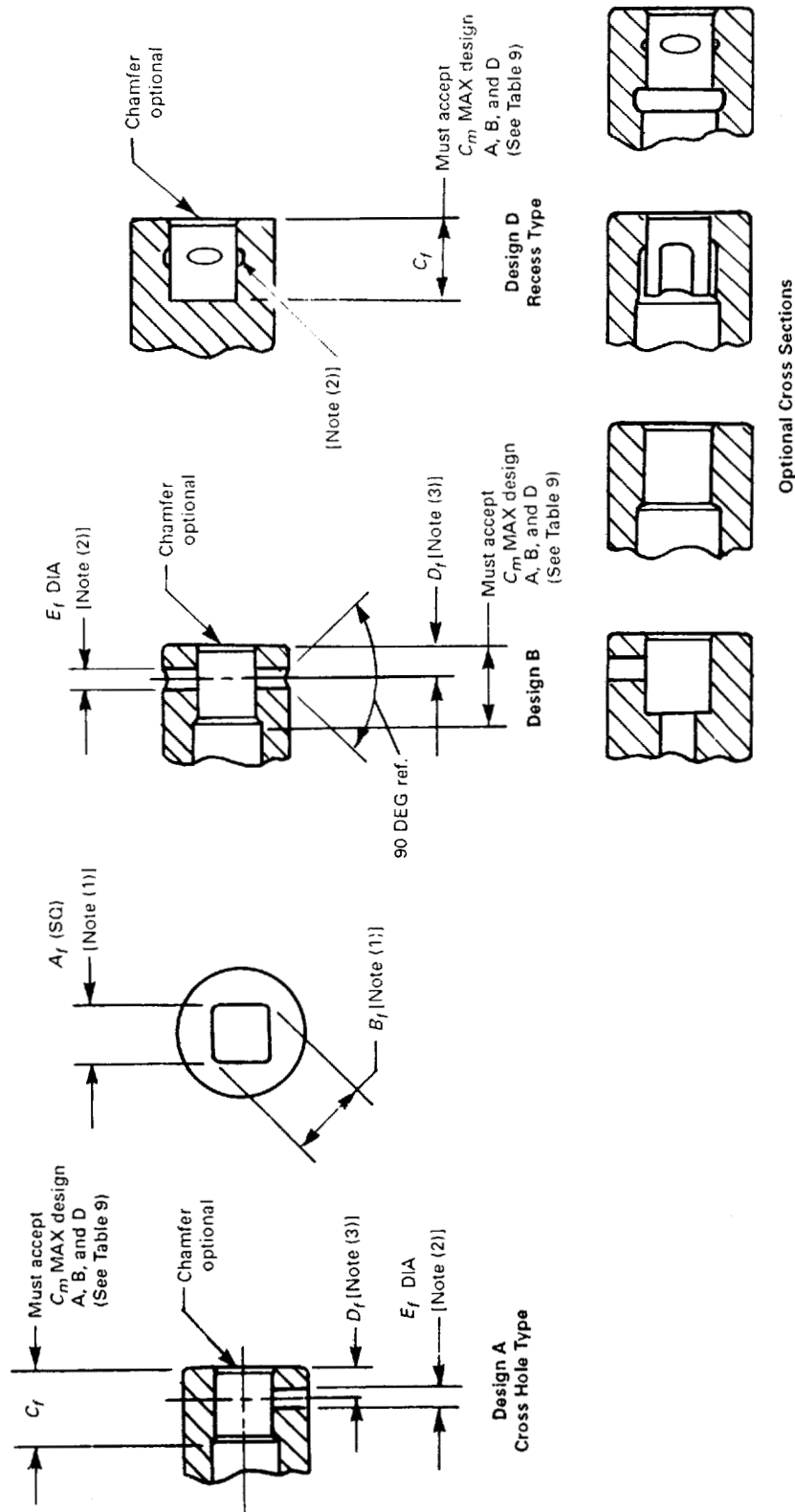
TABLE 6 HEXAGONAL SHANKS, in.

Nominal Hexagon		<i>H</i>		<i>B</i>	<i>C</i>	<i>D_R</i>	<i>E</i> , Dia	<i>L</i>
in.	mm	Max	Min.					
1/4	6.35	0.250	0.248	11/32	1/16	3/32	3/16	1
5/16	7.94	0.312	0.310	3/16	3/64	3/32	1/4	1 1/16
7/16	11.11	0.4375	0.435	1/4	1/32	7/64	11/32	1 1/4
5/8	15.88	0.625	0.622	5/16	1/16	5/32	17/32	1 3/4
3/4	19.05	0.750	0.747	5/16	1/16	5/32	21/32	2

TABLE 6 HEXAGONAL SHANKS, mm

Nominal Hexagon		<i>H</i>		<i>B</i>	<i>C</i>	<i>D_R</i>	<i>E</i> , Dia	<i>L</i>
mm	in.	Max	Min.					
6.35	1/4	6.35	6.30	8.73	1.59	2.38	4.76	25.40
7.94	5/16	7.92	7.87	4.76	1.19	2.38	6.35	26.99
11.11	7/16	11.11	11.05	6.35	0.79	2.78	8.73	31.75
15.88	5/8	15.87	15.80	7.94	1.59	3.97	13.49	44.45
19.05	3/4	19.05	18.97	7.94	1.59	3.97	16.67	50.80

8 SQUARE DRIVES



GENERAL NOTE: Design C is not included in Table 7 since it only refers to external squares, ring type.

NOTES:

- (1) Square tolerances shall be such as to insure acceptance when gaged with gages conforming to Table 8.
- (2) Neither cross hole Design A nor Design B, nor recess Design D, is required for $\frac{1}{4}$ in. drive female opening, however, if recessed Design D, it must be on four sides. Either recess Design D on four sides or cross hole Design A on one, two, or four sides is required on $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, and 1 in. sizes. Cross Hole Design B shall be through two opposite sides.
- (3) D_{fmax} doesn't equal D_{fmin} ; however, due to edge radius, plunger dia, and square dimension interactions, no interference or interchangeability problem exists.

TABLE 7 SQUARE DRIVE SPECIFICATIONS FOR HAND, POWER, AND IMPACT WRENCHES — FEMALE END

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

**TABLE 7 SQUARE DRIVE SPECIFICATIONS FOR HAND, POWER, AND IMPACT WRENCHES —
FEMALE END, in.**

Drive Size		A_f		D_f			E_f	
in.	mm	Max	Min.	B_f , Min.	Max [See Fig. Note (3)]	Min.	Design A, Min.	Design B, Min.
$\frac{1}{4}$	6.3	<i>0.2603</i>	<i>0.2527</i>	<i>0.335</i>	<i>0.161</i>	0.136	0.090	0.118
$\frac{3}{8}$	10.0	<i>0.3853</i>	<i>0.3777</i>	0.505	<i>0.224</i>	0.199	0.170	0.204
$\frac{1}{2}$	12.5	<i>0.5113</i>	<i>0.5027</i>	0.670	<i>0.318</i>	0.293	0.201	<i>0.220</i>
$\frac{5}{8}$ [Note (1)]	16.0	0.6333	0.6277	0.843	0.318	0.290	...	0.250
$\frac{3}{4}$	20.0	<i>0.7613</i>	<i>0.7527</i>	1.005	0.415	0.390	0.216	<i>0.250</i>
1	25.0	<i>1.0125</i>	<i>1.0035</i>	<i>1.350</i>	<i>0.602</i>	0.577	0.234	<i>0.280</i>
$1\frac{1}{2}$	40.0	1.5155	<i>1.5045</i>	<i>1.984</i>	<i>0.645</i>	0.620	...	<i>0.337</i>
$2\frac{1}{2}$	63.0	2.5205	<i>2.5045</i>	<i>3.359</i>	<i>1.505</i>	1.480	...	<i>0.500</i>
$3\frac{1}{2}$	...	3.5205	<i>3.5045</i>	4.702	2.370	2.345	...	0.700

GENERAL NOTES:

- (a) Dimensions *italicized* and in **bold face** type, sizes $\frac{1}{4}$ in. through 1 in., are compatible (will fit) with ISO 1174-1975/A1-1981(E).
 (b) Dimensions *italicized* and in **bold face** type, sizes $1\frac{1}{2}$ in. and $2\frac{1}{2}$ in., are compatible (will fit) with ISO 1174-1975(E).

NOTE:

- (1) Not recommended for new production.

**TABLE 7 SQUARE DRIVE SPECIFICATIONS FOR HAND, POWER, AND IMPACT WRENCHES —
FEMALE END, mm**

Drive Size		A_f		D_f			E_f	
mm	in.	Max	Min.	B_f , Min.	Max [See Fig. Note (3)]	Min.	Design A, Min.	Design B, Min.
6.3	$\frac{1}{4}$	<i>6.612</i>	<i>6.419</i>	<i>8.51</i>	<i>4.09</i>	3.45	2.29	3.00
10.0	$\frac{3}{8}$	<i>9.787</i>	<i>9.594</i>	12.83	5.69	5.05	4.32	5.18
12.5	$\frac{1}{2}$	<i>12.987</i>	<i>12.769</i>	17.02	<i>8.08</i>	7.44	5.11	5.59
16.0 [Note (1)]	$\frac{5}{8}$	16.086	15.944	21.41	8.08	7.37	...	6.35
20.0	$\frac{3}{4}$	<i>19.337</i>	<i>19.119</i>	25.53	10.54	9.91	5.49	<i>6.35</i>
25.0	1	<i>25.718</i>	<i>25.489</i>	34.29	15.29	14.66	5.94	<i>7.11</i>
40.0	$1\frac{1}{2}$	38.494	<i>38.214</i>	50.39	16.38	15.75	...	<i>8.56</i>
63.0	$2\frac{1}{2}$	64.021	<i>63.614</i>	85.32	<i>38.23</i>	37.59	...	<i>12.70</i>
...	$3\frac{1}{2}$	89.421	89.014	119.43	60.20	59.56	...	17.78

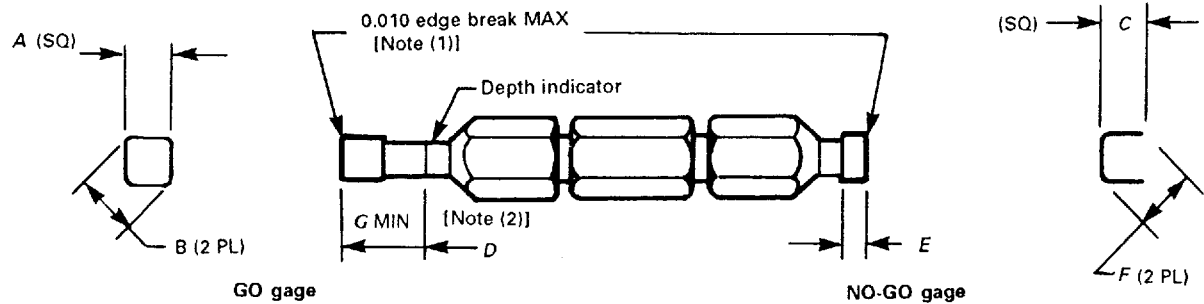
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NOTE:

- (1) Not recommended for new production.

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

NOTES:

- (1) Do not include the length of the chamfer as part of the NO GO gaging procedure. If edge break is more than 0.010 in., the difference must be added to D .
- (2) G min. = a minimum dimension = A min. for up to 1 in. or 25 mm
 = 1 in. min. or 25 mm (min.), for A greater than 1 in. or 25 mm
 If G min. is made equal to D , then G min. can be used as the depth indicator.

TABLE 8 SQUARE DRIVE GAGE SPECIFICATIONS FOR HAND, POWER, AND IMPACT WRENCHES – FEMALE END, in.

Drive Size					D , +0.003 –0.000 [Notes (1), (2)]	E , Min.	F (NO GO)	
in.	mm	A (GO), +0.0002 –0.0000	B (GO), +0.0002 –0.0002	C (NO GO), +0.0000 –0.0002			Max	Min.
$\frac{1}{4}$	6.3	0.2527	0.3350	0.2603	0.312	0.250	0.3334	0.3301
$\frac{3}{8}$	10.0	0.3777	0.5050	0.3853	0.438	0.250	0.5039	0.4989
$\frac{1}{2}$	12.5	0.5027	0.6700	0.5113	0.625	0.250	0.6684	0.6617
$\frac{5}{8}$	16.0	0.6277	0.8430	0.6333	0.656	0.250	0.8414	0.8330
$\frac{3}{4}$	20.0	0.7527	1.0050	0.7613	0.938	0.250	1.0034	0.9934
1	25.0	1.0035	1.3500	1.0125	1.125	0.250	1.3484	1.3349
$1\frac{1}{2}$	40.0	1.5045	1.9840	1.5155	1.625	0.250	1.9824	1.9626
$2\frac{1}{2}$	63.0	2.5045	3.3590	2.5205	2.265	0.250	3.3574	3.3238
$3\frac{1}{2}$	...	3.5045	4.7020	3.5205	3.265	0.250	4.7004	4.6534

GENERAL NOTE: Gage tolerances are gage manufacturing tolerances.

NOTES:

- (1) Do not include the length of the chamfer as part of the NO GO gaging procedure.
- (2) Square drive opening shall accept min. of length D .

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

**TABLE 8 SQUARE DRIVE GAGE SPECIFICATIONS FOR HAND, POWER, AND IMPACT WRENCHES —
FEMALE END, mm**

Drive Size					D, +0.08 -0.00 [Notes (1), (2)]	E, Min.	F (NO GO)	
mm	in.	A (GO), +0.005 -0.000	B (GO), +0.005 -0.005	C (NO GO), +0.000 -0.005			Max	Min.
6.3	¼	6.419	8.509	6.612	7.92	6.35	8.468	8.385
10.0	⅜	9.594	12.827	9.787	11.13	6.35	12.799	12.672
12.5	½	12.769	17.018	12.987	15.88	6.35	16.977	16.807
16.0	⅝	15.944	21.412	16.086	16.66	6.35	21.372	21.158
20.0	¾	19.119	25.527	19.337	23.83	6.35	25.486	25.232
25.0	1	25.489	34.290	25.718	28.58	6.35	34.249	33.906
40.0	1½	38.214	50.394	38.494	41.28	6.35	50.353	49.850
63.0	2½	63.614	85.319	64.021	57.53	6.35	85.278	84.425
...	3½	89.014	119.431	89.421	82.93	6.35	119.390	118.196

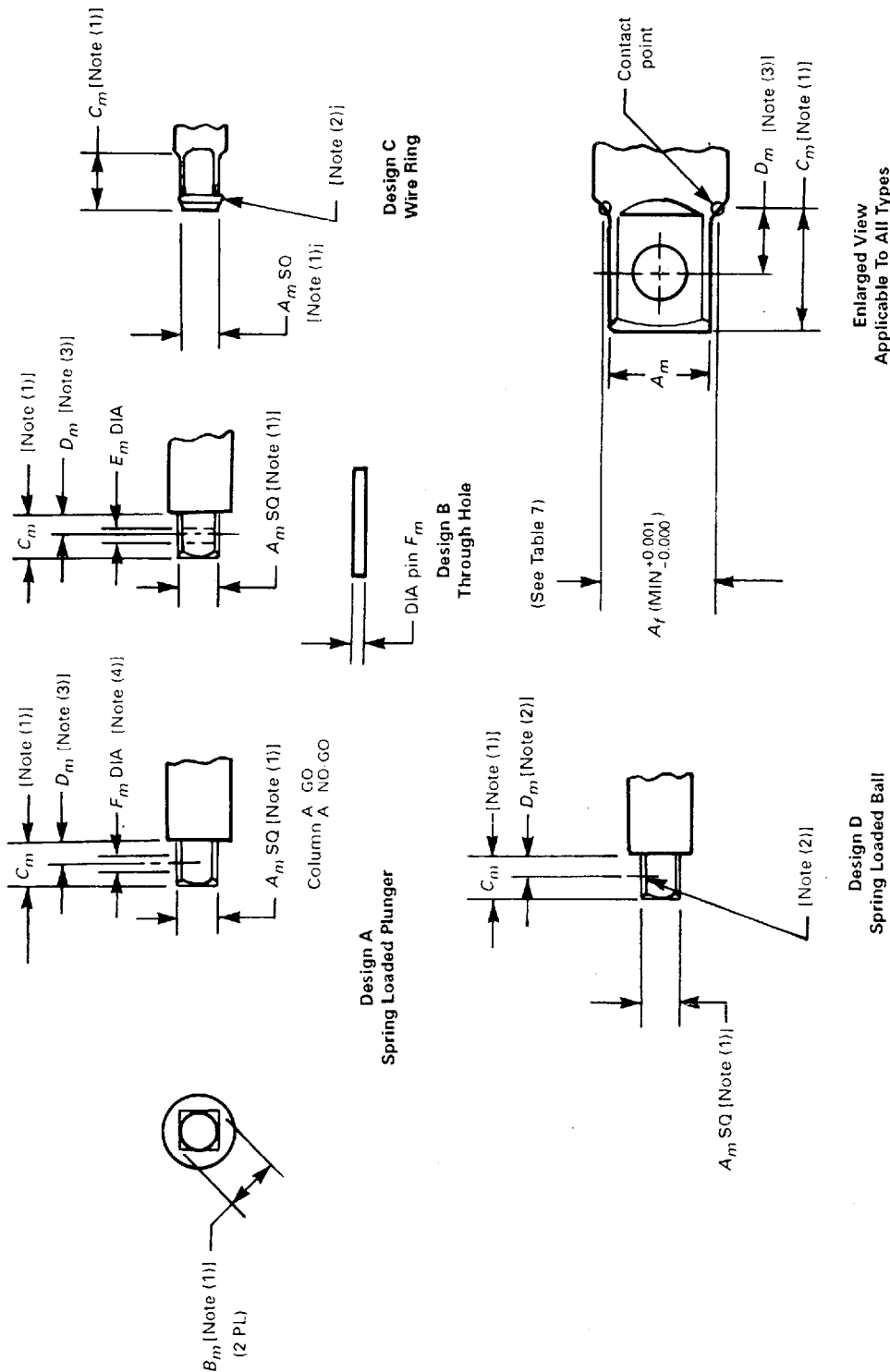
GENERAL NOTE: Gage tolerances are gage manufacturing tolerances.

NOTES:

- (1) Do not include the length of the chamfer as part of the NO GO gaging procedure.
- (2) Square drive opening shall accept min. of length D.

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND, IMPACT, AIR, AND ELECTRIC TOOLS



GENERAL NOTES:

- (a) D_m min. doesn't equal D_f max; however, due to edge radius, plunger dia, and square dimension interactions, no interference or interchangeability problem exists.
- (b) For impact wrenches, A_m should be held as close to maximum as practical.

NOTES:

- (1) Square tolerances shall be such as to insure acceptance when gaged with gages conforming to Table 10.
- (2) The minimum retention force of the ball or wire ring shall be such as to insure the holding force of weights conforming to Table 11.
- (3) Dimension D_m tolerance shall be such as to insure acceptance when gaged with gages conforming to Table 12.
- (4) F_m is the diameter of a plunger or pin and does not apply to a spring loaded ball or ball shaped plunger or wire ring.

TABLE 9 SQUARE DRIVE SPECIFICATIONS FOR HAND, POWER, AND IMPACT WRENCHES — MALE END

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

TABLE 9 SQUARE DRIVE SPECIFICATIONS FOR HAND, POWER, AND IMPACT WRENCHES — MALE END, in.

Drive Size		A_m , All Designs		C_m						E_m , Design B, Min.		F_m , Designs A, B, Max		Force to Remove Square lbs., Min.
		Max		Min.		B_m , All Designs, Max		Designs A, B, D		Design C		Designs A, B, D, Min.		
in.	mm													
1/4	6.3	0.252	0.2467	0.330	0.312	0.265	...	...	...	0.156	...	0.078	1.5	
3/8	10.0	0.377	0.3717	0.500	0.438	0.406	0.516	0.482	...	0.218	...	0.140	4.0	
1/2	12.5	0.502	0.4967	0.665	0.625	0.531	0.665	0.619	...	0.312	...	0.156	6.0	
5/8 [Note (1)]	16.0	0.627	0.6217	0.834	0.656	0.594	0.794	0.760	...	0.322	...	0.156	...	
3/4	20.0	0.752	0.7467	1.000	0.938	0.750	0.938	0.875	0.250	0.409	0.250	0.188	10	
1	25.0	1.002	0.9965	1.340	1.125	1.000	1.170	1.130	0.250	0.596	0.250	0.188	12	
1 1/2	40.0	1.503	1.4975	1.968	1.625	1.562	...	...	0.345	0.641	0.345	0.250	...	
2 1/2	63.0	2.500	2.4845	3.344	2.265	2.234	...	...	0.430	1.515	0.430	0.312	...	
3 1/2	...	3.500	3.4845	4.687	3.265	3.234	...	...	0.578	2.380	0.578	0.500	...	

GENERAL NOTES:

- (a) Dimensions *italicized* and in **bold face** type, sizes 1/4 in. through 1 in., are compatible (will fit) with ISO 1174-1975/A1-1981(E) Hand.
 (b) Dimensions *italicized* and in **bold face** type, sizes 1 1/2 in. through 2 1/2 in., are compatible (will fit) with ISO 1174-1975 (E) Power.

NOTE:

- (1) Not recommended for new product.

TABLE 9 SQUARE DRIVE SPECIFICATIONS FOR HAND, POWER, AND IMPACT WRENCHES — MALE END, mm

Drive Size	A_m , All Designs		C_m				D_m , Designs A, B, D,	E_m , Design B,	F_m , Designs A, B	Force to Remove Square kg, Min.	
	mm	in.	Max	Min.	Designs A, B, D		Design C	Min.	Max		
					Max	Min.					
6.3		1/4	6.401	6.266	8.38	7.92	6.73	...	3.96	1.98	0.68
10.0		3/8	9.576	9.441	12.70	11.13	10.31	12.24	5.54	3.56	1.81
12.5		1/2	12.751	12.616	16.89	15.88	13.49	15.72	7.92	3.96	2.72
16.0 [Note (1)]		5/8	15.926	15.791	21.18	16.66	15.09	19.30	8.18	3.96	...
20.0		3/4	19.101	18.966	25.40	23.83	19.05	22.23	10.39	4.78	4.54
25.0		1	25.451	25.311	34.03	28.58	25.40	28.70	15.14	4.78	5.44
40.0		1 1/2	38.176	38.037	49.99	41.28	39.67	...	16.28	6.125	...
63.0		2 1/2	63.500	63.106	84.94	57.53	56.74	...	38.48	7.92	...
...		3 1/2	88.900	88.506	119.05	82.93	82.14	...	60.45	12.70	...

GENERAL NOTES:

(a) Dimensions *italicized* and in **bold face**, type sizes $\frac{1}{4}$ in. through 1 in., are compatible (will fit) with ISO 1174-1975/A1-1981(E) Hand.(b) Dimensions *italicized* and in **bold face** type, sizes $1\frac{1}{2}$ in. through $2\frac{1}{2}$ in., are compatible (will fit) with ISO 1174-1975 (E) Power.

NOTE:

(1) Not recommended for new product.

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS**TABLE 10 SQUARE DRIVE GAGE SPECIFICATIONS FOR HAND, POWER, AND IMPACT WRENCHES
— MALE END, in.**

Drive Size		A_m , +0.0000 -0.0002, All Designs	B , +0.0002 -0.0002, All Designs	C , +0.000 -0.001 Designs A, B, D Design C		D , +0.001 -0.000 Designs A, B, D Design C		G Min., Designs A, B, D	E_m , +0.0002 -0.0000, All Designs
in.	mm								
1/4	6.3	0.252	0.3300	0.312	...	0.265	...	0.312	0.2467
3/8	10.0	0.377	0.5000	0.438	0.516	0.406	0.482	0.438	0.3717
1/2	12.5	0.502	0.6650	0.625	0.653	0.531	0.619	0.625	0.4967
5/8	16.0	0.627	0.8340	0.656	0.794	0.594	0.760	0.656	0.6217
3/4	20.0	0.752	1.0000	0.938	0.915	0.750	0.875	0.938	0.7467
1	25.0	1.002	1.3400	1.125	1.170	1.000	1.130	1.125	0.9965
1 1/2	40.0	1.503	1.9680	1.625	...	1.562	...	1.625	1.4975
2 1/2	63.0	2.500	3.3440	2.265	...	2.234	...	2.265	2.4845
3 1/2	...	3.500	4.6870	3.265	...	3.234	...	3.265	3.4845

GENERAL NOTES:

- (a) NO GO gage must be used by rotating gage 90 deg to check both sets of across flat dimensions.
 (b) Gage tolerances are tool makers' gage manufacturing tolerances.

**TABLE 10 SQUARE DRIVE GAGE SPECIFICATIONS FOR HAND, POWER, AND IMPACT
WRENCHES — MALE END, mm**

Drive Size		A_m , +0.000 -0.005, All Designs	B , +0.005 -0.005, All Designs	C , +0.00 -0.03 Designs A, B, D Design C		D , +0.03 -0.00 Designs A, B, D Design C		G Min., Designs A, B, D	E_m , +0.005 -0.000, All Designs
mm	in.								
6.3	1/4	6.401	8.38	7.92	...	6.73	...	7.92	6.266
10.0	3/8	9.576	12.70	11.13	13.11	10.31	12.24	11.13	9.441
12.5	1/2	12.751	16.89	15.88	16.59	13.49	15.72	15.88	12.616
16.0	5/8	15.926	21.18	16.66	20.17	15.09	19.30	16.66	15.791
20.0	3/4	19.101	25.40	23.83	23.24	19.05	22.23	23.83	18.966
25.0	1	25.451	34.04	28.58	29.72	25.40	28.70	28.58	25.311
40.0	1 1/2	38.176	49.99	41.28	...	39.67	...	41.28	38.037
63.0	2 1/2	63.500	84.94	57.53	...	56.74	...	57.53	63.106
...	3 1/2	88.900	119.05	82.93	...	82.14	...	82.93	88.506

GENERAL NOTES:

- (a) NO GO gage must be used by rotating gage 90 deg to check both sets of across flat dimensions.
 (b) Gage tolerances are tool makers' gage manufacturing tolerances.

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

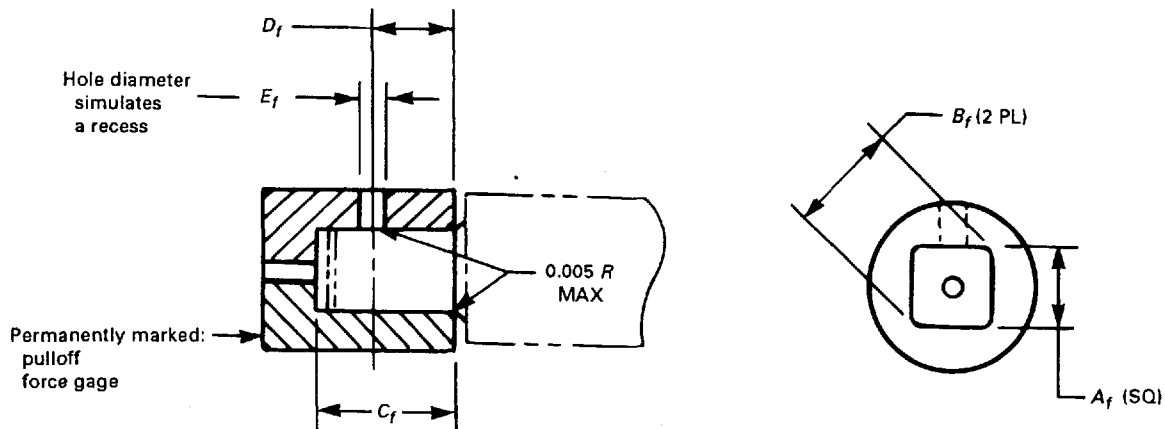


**TABLE 11 SQUARE DRIVE PULLOFF FORCE GAGE SPECIFICATIONS FOR DESIGNS C AND D
HAND, POWER, AND IMPACT WRENCHES — MALE END, in.**

Drive Size		A_f , +0.0010 -0.0000	B_f , +0.005 -0.000	C_f , +0.005 -0.000	D_f , +0.000 -0.002	E_f , +0.000 -0.002	Weight, Pulloff Force, lbs	
in.	mm						Max	Min.
1/4	6.3	0.2603	0.335	0.312	0.161	N/A	1.55	1.5
3/8	10.0	0.3853	0.505	0.438	0.224	0.076	4.12	4.0
1/2	12.5	0.5113	0.670	0.625	0.318	0.110	6.18	6.0
3/4	20.0	0.7613	1.005	0.938	0.415	0.216	10.30	10.0
1	25.0	1.0125	1.350	1.125	0.602	0.234	12.36	12.0

GENERAL NOTES:

- (a) Square shall be lifted gradually in a vertical manner, avoiding any side loads, while retaining gage.
 (b) The above gage simulates worse case condition of an internal square to test the pulloff force retention of an external square Design C (wire) and Design D (ball).

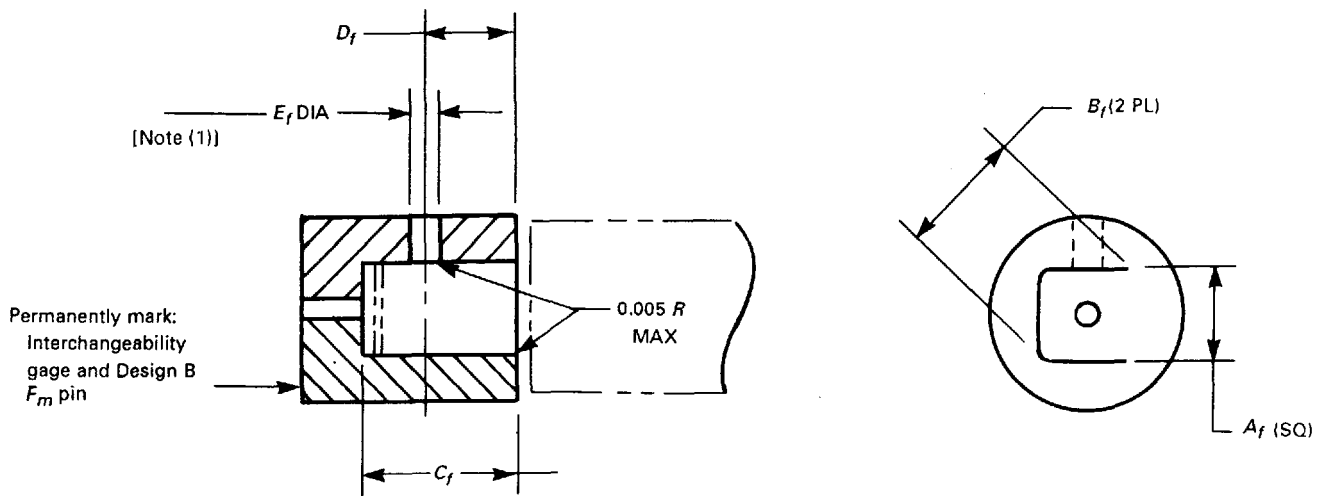
**TABLE 11 SQUARE DRIVE PULLOFF FORCE GAGE SPECIFICATIONS FOR DESIGNS C AND D
HAND, POWER, AND IMPACT WRENCHES — MALE END, mm**

Drive Size		A_f , +0.020 -0.000	B_f , +0.13 -0.00	C_f , +0.13 -0.00	D_f , +0.00 -0.05	E_f , +0.00 -0.05	Weight, Pulloff Force, kg	
mm	in.						Max	Min.
6.3	1/4	6.612	8.51	7.92	4.08	N/A	0.70	0.68
10.0	3/8	9.787	12.83	11.13	5.68	1.93	1.87	1.81
12.5	1/2	12.987	17.02	15.88	8.07	2.78	2.80	2.72
20.0	3/4	19.337	25.53	23.83	10.54	5.49	4.67	4.54
25.0	1	25.718	34.29	28.58	15.29	5.94	5.61	5.44

GENERAL NOTES:

- (a) Square shall be lifted gradually in a vertical manner, avoiding any side loads, while retaining gage.
 (b) The above gage simulates worse case condition of an internal square to test the pulloff force retention of an external square Design C (wire) and Design D (ball).

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

NOTE:

(1) E_f will be through both sides for Design B.**TABLE 12 SQUARE DRIVE INTERCHANGEABILITY GAGE SPECIFICATIONS FOR DESIGNS A AND B
HAND, POWER, AND IMPACT WRENCHES — MALE END, in.**

Drive Size						E_f , +0.000 -0.002		F_m Pin, +0.0005 -0.0000, Design B, Max.
in.	mm	A_f , +0.0010 -0.0000	B_f , +0.005 -0.000	C_f , +0.005 -0.000	D_f , +0.000 -0.002	Design A, Min.	Design B, Min.	Design B, Max.
1/4	6.3	0.2527	0.335	0.312	0.161	0.090	0.118	0.078
3/8	10.0	0.3777	0.505	0.438	0.224	0.170	0.204	0.140
1/2	12.5	0.5027	0.670	0.625	0.318	0.201	0.220	0.156
5/8	16.0	0.6277	0.843	0.656	0.318	...	0.250	0.156
3/4	20.0	0.7527	1.005	0.938	0.415	0.216	0.250	0.188
1	25.0	1.0035	1.350	1.125	0.602	0.234	0.280	0.188
1 1/2	40.0	1.5045	1.984	1.625	0.645	...	0.337	0.250
2 1/2	63.0	2.5045	3.359	2.265	1.505	...	0.500	0.312
3 1/2	89.0	3.5045	4.702	3.265	2.370	...	0.700	0.500

GENERAL NOTES:

- (a) The above gage simulates worse case condition of an internal square to test interchangeability of the external square drive Design A (plunger) and Design B (pin).
- (b) Product to be oriented to engage plunger or pin into E_f diameter of gage.

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

**TABLE 12 SQUARE DRIVE INTERCHANGEABILITY GAGE SPECIFICATIONS FOR DESIGNS A AND B
HAND, POWER, AND IMPACT WRENCHES — MALE END, mm**

Drive Size		A_f , +0.020 -0.000	B_f , +0.13 -0.00	C_f , +0.13 -0.00	D_f , +0.00 -0.05	E_f , +0.00 -0.05		F_m Pin, +0.013 -0.000, Design B, Max.
mm	in.					Design A, Min.	Design B, Min.	
6.3	$\frac{1}{4}$	6.419	8.51	7.92	4.09	2.29	3.00	1.98
10.0	$\frac{3}{8}$	9.594	12.83	11.12	5.69	4.32	5.18	3.55
12.5	$\frac{1}{2}$	12.769	17.02	15.87	8.08	5.11	5.59	3.96
16.0	$\frac{5}{8}$	15.944	21.41	16.66	8.08	...	6.35	3.96
20.0	$\frac{3}{4}$	19.119	25.53	23.82	10.54	5.49	6.35	4.77
25.0	1	25.489	34.29	28.57	15.29	5.94	7.11	4.77
40.0	$1\frac{1}{2}$	38.214	50.39	41.27	16.38	...	8.56	6.35
63.0	$2\frac{1}{2}$	63.614	85.32	57.53	38.23	...	12.70	7.92
89.0	$3\frac{1}{2}$	89.014	119.43	82.93	60.20	...	17.78	12.70

GENERAL NOTES:

- The above gage simulates worse case condition of an internal square to test interchangeability of the external square drive Design A (plunger) and Design B (pin).
- Product to be oriented to engage plunger or pin into E_f diameter of gage.

9 SPLINE DRIVES

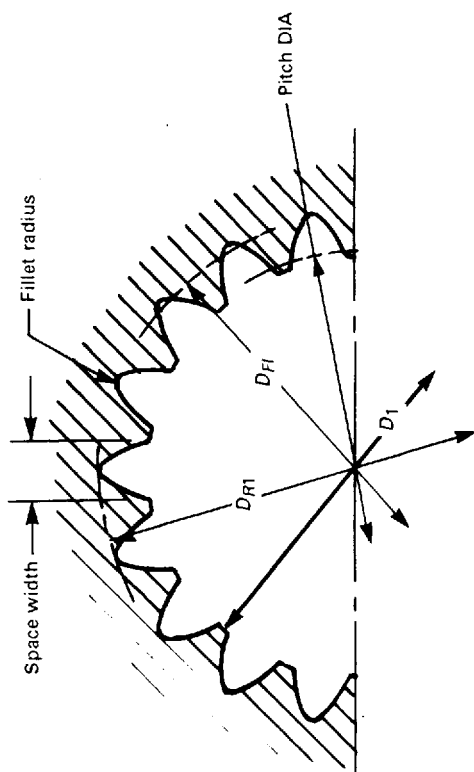


TABLE 13 SPLINE DRIVES — FEMALE SPLINE PROPORTIONS, in.

Drive Number	Size Number	Nominal Size	Num- ber of Teeth	Pitch	Press Angle, deg	D _{R1} , Major Diamo- ter			D _{FI} , Form Dia		D ₁ , Minor Dia		Fillet Radius	Space Width	
						Max	Min		Max	Min	Max	Min		Max Act	Min. Eff
1		0.542	12	$\frac{24}{48}$	30	0.5840	0.5750		0.5457	0.4583	0.4633	0.4583	0.009	0.0678	0.0654
2		0.6500	12	$\frac{20}{40}$	30	0.7000	0.6900		0.6540	0.5500	0.5550	0.5500	0.012	0.0811	0.0785
2A		0.7500	14	$\frac{20}{40}$	30	0.8000	0.7900		0.7540	0.6500	0.6550	0.6500	0.013	0.0812	0.0785
3		0.938	14	$\frac{16}{32}$	30	0.9985	0.9875		0.9415	0.8125	0.8185	0.8125	0.017	0.1009	0.0982
4		1.2500	14	$\frac{12}{24}$	30	1.3297	1.3167		1.2540	1.0833	1.0903	1.0833	0.025	0.1338	0.1309
5 [Note (1)]		1.6250	14	$\frac{10}{12}$	20	1.6850	1.6700		1.6358	1.3520	1.3620	1.3520	0.055	0.2015	0.1980
5A		1.9000	18	$\frac{10}{20}$	30	1.9950	1.9800		1.9040	1.7000	1.7100	1.7000	0.033	0.1601	0.1571
6		2.3750	18	$\frac{9}{16}$	30	2.4930	2.4750		2.3795	2.1250	2.1370	2.1250	0.041	0.1995	0.1963

NOTE:

(1) Size 5 prescribes proportions in common use for splined socket drives. Other splines conform to ANSI B92.1-1970 (R1982) for fillet root, side fit, Class 1 (except the minor diameter maximum dimension, D₁ max, for sizes 3, 4, 5A, and 6).

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

TABLE 13 SPLINE DRIVES — FEMALE SPLINE PROPORTIONS, mm

Drive Size Number	Nominal Size	Num- ber of Teeth	Module	Press Angle, deg	D_{H1} , Major Dia		D_{F1} , Form Dia		D_1 , Minor Dia		Fillet Radius		Space Width	
					Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.
1	13.77	12	1.0583/0.5292	30	14.833	14.605	13.861	11.767	11.641	0.23	1.722	1.661		
2	16.51	12	1.2700/0.6350	30	17.780	17.526	16.612	14.097	13.970	0.30	2.059	1.994		
2A	19.05	14	1.2700/0.6350	30	20.320	20.066	19.152	16.637	16.510	0.33	2.062	1.994		
3	23.83	14	1.5875/0.7938	30	25.361	25.083	23.914	20.789	20.638	0.43	2.562	2.494		
4	31.75	14	2.1167/1.0583	30	33.774	33.444	31.852	27.693	27.516	0.64	3.398	3.325		
5 [Note (1)]	41.28	14	2.5400/2.1167	20	42.799	42.418	41.549	34.594	34.341	1.40	5.118	5.030		
5A	48.26	18	2.5400/1.2700	30	50.673	50.292	48.362	43.434	43.180	0.84	4.066	3.990		
6	60.33	18	3.1750/1.5875	30	63.322	62.865	60.439	54.279	53.975	1.04	5.067	64.986		

NOTE:

(1) Size 5 prescribes proportions in common use for splined socket drives. Other splines conform to ANSI B92.1-1970 (R1982) for fillet root, side fit, Class 1 (except the minor diameter maximum dimension, D_1 max, for sizes 3, 4, 5A, and 6).

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND, IMPACT, AIR, AND ELECTRIC TOOLS

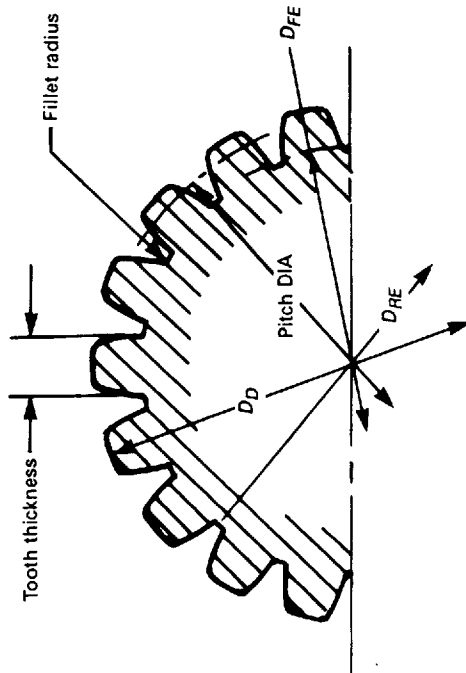


TABLE 14 SPLINE DRIVES — MALE SPLINE PROPORTIONS, in.

Drive Size Number	Nomi- nal Size	Num- ber of Teeth	Pitch	Press Angle, deg	Pitch Dia	D_{R1} , Major Diameter		D_R , Form Dia		D_{RE} , Minor Dia		Fillet Ra- dius	Tooth Thickness	
						Max	Min.	Max	Min.	Max	Min.		Max Eff	Min. Act
1	0.542	12	$\frac{24}{48}$	30	0.5000	0.5417	0.5367	0.4543	0.4167	0.4077	0.018	0.0639	0.0615	
2	0.650	12	$\frac{20}{40}$	30	0.6000	0.6500	0.6450	0.5460	0.5000	0.4900	0.021	0.0770	0.0744	
2A	0.750	14	$\frac{20}{40}$	30	0.7000	0.7500	0.7450	0.6460	0.6000	0.5900	0.020	0.0770	0.0743	
3	0.938	14	$\frac{16}{32}$	30	0.8750	0.9375	0.9325	0.8085	0.7500	0.7390	0.025	0.0967	0.0940	
4	1.250	14	$\frac{12}{24}$	30	1.1667	1.2500	1.2450	1.0793	1.0167	1.0037	0.038	0.1294	0.1265	
5 [Note (1)]	1.625	14	$\frac{10}{12}$	20	1.4000	1.6150	1.6110	1.3156	1.2500	1.2350	0.050	0.1950	0.1900	
5A	1.900	18	$\frac{10}{20}$	30	1.800	1.9000	1.8950	1.6950	1.6200	1.6150	0.044	0.1556	0.1526	
6	2.375	18	$\frac{9}{18}$	30	2.2500	2.3750	2.3700	2.1205	2.0250	2.0070	0.055	0.1948	0.1915	

NOTE:

(1) Size 5 prescribes proportions in common use for splined socket drives. Other splines conform to ANSI B92.1-1970 (R1982) for fillet root, side fit, Class 1.

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

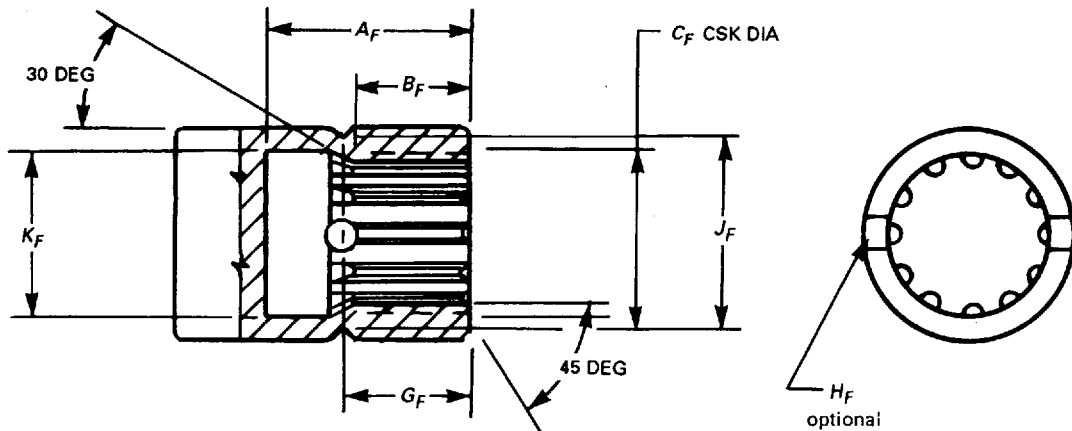
TABLE 14 SPLINE DRIVES — MALE SPLINE PROPORTIONS, mm

Drive Number	Nomi- nal Size	Num- ber of Teeth	Module	Press Angle, deg	Pitch Dia	D _o , Major Dia		D _{RE} , Minor Dia		Fillet		Tooth Thickness	
						Max	Min.	Max	Min.	Ra- dius	Min. Act	Max Eff	Min. Act
1	13.77	12	1.0583/0.5292	30	12.700	13.759	13.632	11.539	10.584	0.46	1.623	1.562	
2	16.51	12	1.2700/0.6350	30	15.240	16.510	16.383	13.868	12.700	0.53	1.955	1.890	
2A	19.05	14	1.2700/0.6350	30	17.780	19.050	18.923	16.408	15.240	0.51	1.955	1.887	
3	23.83	14	1.5875/0.7938	30	22.225	23.812	23.686	20.536	19.050	0.64	2.456	2.388	
4	31.75	14	2.1167/1.0583	30	29.634	31.750	31.623	27.414	25.824	0.97	3.286	3.213	
5 [Note (1)]	41.28	14	2.5400/2.1167	20	35.560	41.021	40.919	33.416	31.750	1.27	4.953	4.826	
5A	48.26	18	2.5400/1.2700	30	45.720	48.260	48.133	43.078	41.148	1.12	3.952	3.876	
6	60.33	18	3.1750/1.5875	30	57.150	60.325	60.198	53.861	51.435	1.40	4.947	4.864	

NOTE:

(1) Size 5 prescribes proportions in common use for splined socket drives. Other splines conform to ANSI B92.1-1970 (R1982) for fillet root, side fit, Class 1.

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

GENERAL NOTES:

- (a) Hole H_F must be oriented on the centerline of a tooth (as shown) for all sizes except Size 5.
Hole H_F must be oriented on the centerline of a tooth space for Size 5 only.
(b) The proportions of the female drive shall permit entry of comparable sized Male Drive End, conforming to Table 21 of this Standard, to a depth equal to dimension A_F .
(c) The 30 deg angle forward of the spline shall extend to the major diameter of the spline.

TABLE 15 SPLINE DRIVES — FEMALE MOUNTING DIMENSIONS, in.

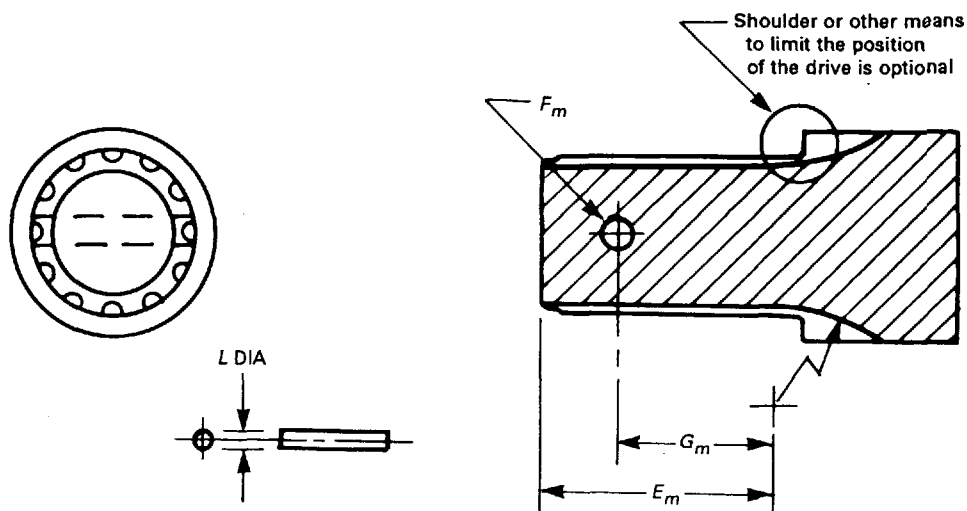
Drive Size Number	A_F , Min.	B_F , Max	C_F , $\pm \frac{1}{64}$	G_F , ± 0.006	H_F , $+\frac{1}{32}$ -0	J_F , $+\frac{1}{16}$ -0	K_F , Min.
1	0.656	0.375	$\frac{35}{64}$	0.468	$\frac{3}{16}$	...	0.5417
2	0.937	0.562	$\frac{21}{32}$	0.672	$\frac{7}{32}$	...	0.6500
2A	1.094	0.625	$\frac{3}{4}$	0.750	$\frac{7}{32}$	$1\frac{1}{8}$	0.7500
3	1.312	0.687	$\frac{19}{16}$	0.844	$\frac{5}{16}$	$1\frac{3}{8}$	0.9375
4	1.500	0.750	$1\frac{1}{4}$	0.953	$\frac{3}{8}$	$1\frac{1}{16}$	1.2500
5	1.875	0.906	$1\frac{5}{8}$	0.625	$\frac{5}{16}$	$2\frac{1}{16}$	1.6150
5A	2.060	1.010	$2\frac{1}{32}$	1.250	$\frac{15}{32}$	$2\frac{1}{32}$	1.9000
6	2.125	1.094	$2\frac{3}{8}$	1.328	$\frac{1}{2}$	$3\frac{3}{16}$	2.3750

TABLE 15 SPLINE DRIVES — FEMALE MOUNTING DIMENSIONS, mm

Drive Size Number	A_F , Min.	B_F , Max	C_F , ± 0.396	G_F , ± 0.15	H_F , +0.79 -0.00	J_F , +1.58 -0.00	K_F , Min.
1	16.66	9.52	13.89	11.89	4.76	...	13.759
2	23.80	14.27	16.67	17.07	5.56	...	16.510
2A	27.79	15.87	19.05	19.05	5.56	28.58	19.050
3	33.32	17.44	23.81	21.44	7.94	34.93	23.813
4	38.10	19.05	31.75	24.21	9.53	42.86	31.750
5	47.63	23.01	41.28	15.88	7.94	52.39	41.021
5A	52.32	25.65	51.59	31.75	11.91	59.53	48.260
6	53.98	27.79	60.33	33.73	12.70	80.96	60.325

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995



GENERAL NOTE:

Hole F_m must be oriented on the centerline of a tooth space as shown for all sizes except Size 5. Hole F_m must be oriented on the centerline of a tooth for Size 5 ONLY. Male ends shall provide means to retain Female Drive Ends which conform to Table 20 of this Standard. Hole F_m must be deleted when other means are employed.

TABLE 16 SPLINE DRIVES — MALE MOUNTING DIMENSIONS, in.

Drive Size Number	E_m , Max	F_m , Min.	G_m , ± 0.006	L , Dia, Max
1	0.656	$\frac{9}{64}$	0.468	$\frac{1}{8}$
2	0.937	$\frac{11}{64}$	0.672	$\frac{5}{32}$
2A	1.094	$\frac{11}{64}$	0.750	$\frac{5}{32}$
3	1.312	$\frac{7}{32}$	0.844	$\frac{3}{16}$
4	1.500	$\frac{9}{32}$	0.953	$\frac{1}{4}$
5	1.875	$\frac{5}{16}$	0.625	$\frac{1}{4}$
5A	2.060	$\frac{11}{32}$	1.250	$\frac{5}{16}$
6	2.125	$\frac{13}{32}$	1.328	$\frac{3}{8}$

TABLE 16 SPLINE DRIVES — MALE MOUNTING DIMENSIONS, mm

Drive Size Number	E_m , Max	F_m , Min.	G_m , ± 0.152	L , Dia, Max
1	16.66	3.57	11.89	3.17
2	23.80	4.37	17.07	3.96
2A	27.78	4.37	19.05	3.96
3	33.32	5.56	21.44	4.76
4	38.10	7.14	24.21	6.35
5	47.62	7.94	15.88	6.35
5A	52.32	8.73	31.75	7.93
6	53.97	10.32	33.73	9.52

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

10 ABRASION TOOL SPINDLES

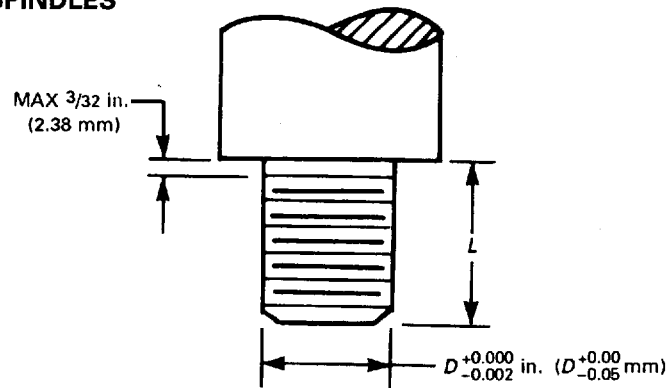
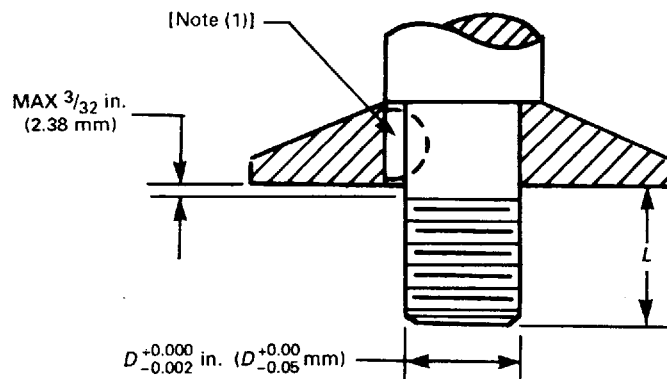


TABLE 17 SANDERS AND POLISHERS

<i>D</i>		<i>L</i> , in.		<i>L</i> , mm	
$\frac{5}{8}$ -11	UNC-2A	$\frac{15}{16}$	+0	23.81	+0.00
			$-\frac{1}{16}$		-1.58

GENERAL NOTES:

- (a) Not suited for use with grinding wheels.
(b) Threads right hand.



NOTE:

- (1) Driven flange for wheels
over 5 in. dia.

TABLE 18 VERTICAL AND ANGLE GRINDERS
FOR UNTHREADED WHEELS

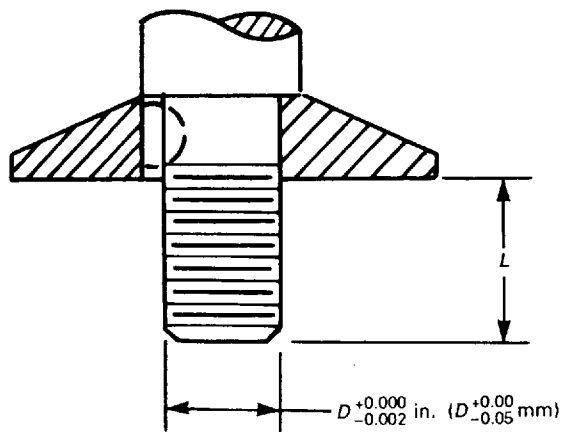
<i>D</i> , Wheel Dia		<i>L</i> , in.	<i>L</i> , mm
Over 5 in.	5 in. and Under		
$\frac{5}{8}$ -11 UNC-2A	$\frac{5}{8}$ -11 UNC-2A through $\frac{3}{8}$ -24	$1\frac{1}{2}$ Max	38.10 Max

GENERAL NOTES:

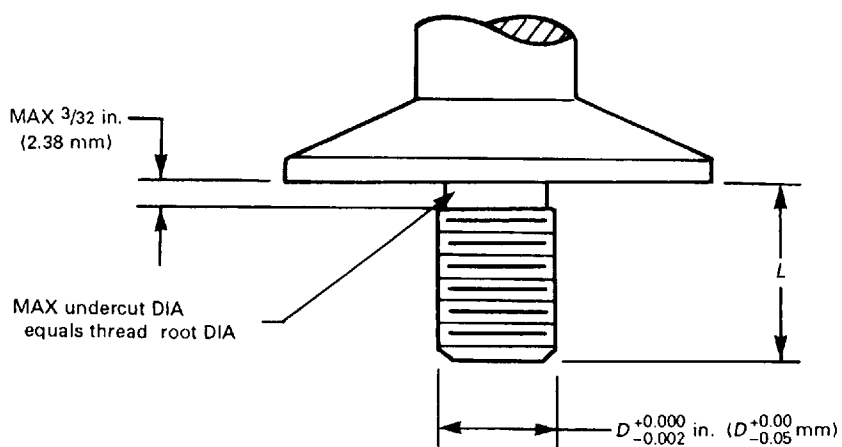
- (a) See ANSI B7.1-1988 for proper flange diameters.
(b) Threads right hand.

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995



Separate Flange



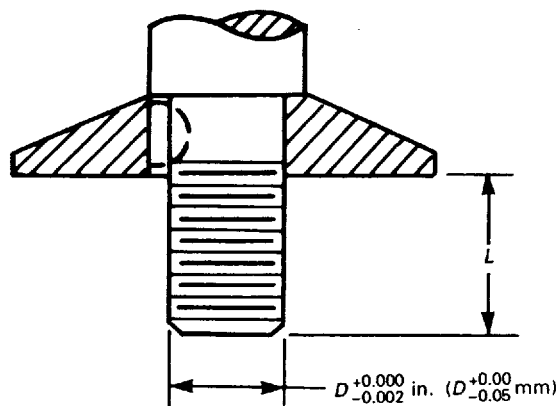
Integral Flange

TABLE 19 VERTICAL AND ANGLE GRINDERS
FOR THREADED WHEELS

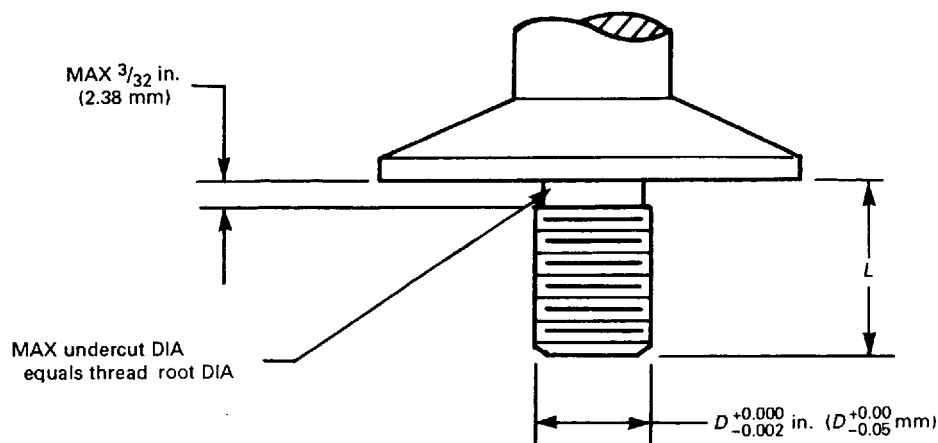
D	L , in.	L , mm
$\frac{5}{8}$ -11 UNC-2A	$\frac{15}{16}$	23.81

GENERAL NOTE: See ANSI B7.1-1988 for proper flange diameters.

ASME B107.4M-1995

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS


Separate Flange



Integral Flange

TABLE 20 CONE WHEEL GRINDERS

D	L, in.	L, mm
3/8-24 UNF-2A	9/16	14.29
1/2-13 UNC-2A	11/16	17.46
5/8-11 UNC-2A	15/16	23.81

GENERAL NOTE: See ANSI B7.1-1988 for proper flange diameters.

DRIVING AND SPINDLE ENDS FOR PORTABLE HAND,
IMPACT, AIR, AND ELECTRIC TOOLS

ASME B107.4M-1995

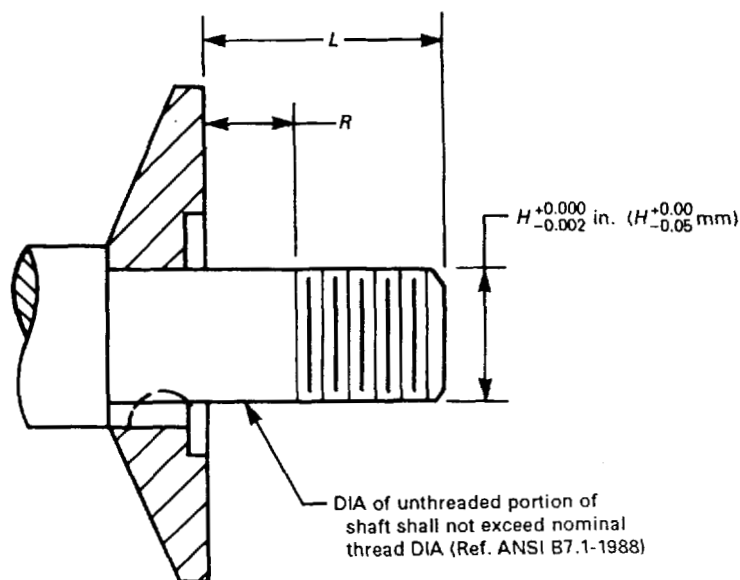


TABLE 21 STRAIGHT WHEEL GRINDERS

H	L , in.	L , mm
$\frac{3}{8}$ -24 UNF-2A	$1\frac{1}{8}$	28.58
$\frac{1}{2}$ -13 UNC-2A	$1\frac{3}{4}$	44.45
$\frac{5}{8}$ -11 UNC-2A	$2\frac{1}{8}$	53.98
$\frac{5}{8}$ -11 UNC-2A	$3\frac{1}{8}$	79.38
$\frac{3}{4}$ -10 UNC-2A	$3\frac{1}{4}$	82.55

GENERAL NOTES:

- (a) See ANSI B7.1-1988 for proper flange diameters.
 (b) R is governed by the thickness of the wheel used.

11 CIRCULAR SAW ARBORS

TABLE 22 ROUND ARBORS

Nominal Blade Dia, in.	Nominal Blade Dia, mm	Round Arbor Dia, in.	Round Arbor Dia, mm
6 to $8\frac{1}{2}$, incl.	152 to 216	$\frac{5}{8}$	15.88
9 to 12, incl.	228 to 305	$\frac{3}{4}$	19.05

APPENDIX A

CHUCKS AND SPINDLES

(This Appendix is not part of ASME B107.4M-1995 and is included for information only.)

A1 CHUCKS AND SPINDLES

TABLE A1 CHUCKS AND SPINDLES

Chuck Sizes	Recommended Spindles	
	Threaded [Note (1)]	Taper
$\frac{3}{16}$ and $\frac{1}{4}$ Light	$\frac{3}{8}$ -24 UNF-2A	1
$\frac{1}{4}$ and $\frac{5}{16}$ Medium	$\frac{3}{8}$ -24 UNF-2A or $\frac{1}{2}$ -20 UNF-2A	2 Short
$\frac{3}{8}$ Light	$\frac{3}{8}$ -24 UNF-2A or $\frac{1}{2}$ -20 UNF-2A	2
$\frac{3}{8}$ Medium	$\frac{1}{2}$ -20 UNF-2A or $\frac{5}{8}$ -16 UN-2A	2
$\frac{1}{2}$ Light	$\frac{1}{2}$ -20 UNF-2A or $\frac{5}{8}$ -16UN-2A	33
$\frac{1}{2}$ Medium	$\frac{5}{8}$ -16 UN-2A or $\frac{3}{4}$ -16 UNF-2A	6
$\frac{5}{8}$ and $\frac{3}{4}$ Medium	$\frac{5}{8}$ -16 UN-2A or $\frac{3}{4}$ -16 UNF-2A	3

APPENDIX B
MOUNTING OF ABRASIVE WHEELS ON THREADED SPINDLES

(This Appendix is not part of ASME B107.4M-1995 and is included for information only.)

**B2 MOUNTING OF ABRASIVE WHEELS ON
THREADED SPINDLES**

Mounting shall conform to the applicable requirements of ANSI B7.1-1988.

AMERICAN NATIONAL STANDARDS FOR HAND TOOLS

Socket Wrenches, Hand (Inch Series).....	B107.1-1993
Socket Wrenches, Extensions, Adaptors, and Universal Joints, Power Drive (Impact) (Inch Series)	B107.2-1995
Socket Wrenches, Power Drive (Non-Impact) (Inch Series).....	B107.3-1978(R1991)
Driving and Spindle Ends for Portable Hand, Impact, Air, and Electric Tools (Percussion Tools Excluded)	B107.4M-1995
Socket Wrenches, Hand (Metric Series)	B107.5M-1994
Wrenches, Box, Angled, Open End, Combination, Flare Nut, and Tappet (Inch Series)	B107.6-1994
Adjustable Wrenches	B107.8M-1991
Wrenches, Box, Angled, Open End, Combination, Flare Nut, and Tappet (Metric Series)	B107.9M-1994
Handles and Attachments for Hand Socket Wrenches — Inch and Metric Series	B107.10M-1982(R1988)
Pliers, Diagonal Cutting, and Nippers, End Cutting	B107.11M-1993
Nut Drivers (Spin Type, Screwdriver Grip)	B107.12-1991
Pliers (Long Nose, Long Reach)	B107.13M-1985(R1991)
Hand Torque Tools	B107.14M-1994
Flat Tip and Phillips Screwdrivers	B107.15-1993
Shears (Metal Cutting, Bench and Hand)	B107.16-1992
Gages, Wrench Openings, Reference	B107.17M-1991
Pliers (Wire Twister)	B107.18M-1985(R1991)
Pliers, Retaining Ring	B107.19-1993
Pliers (Lineman's, Iron Worker's, Gas, Glass, and Fence)	B107.20M-1992
Wrench, Crowfoot Attachments	B107.21-1992
Electronic Cutters and Pliers	B107.22M-1991
Pliers, Multiple Position, Adjustable	B107.23-1991

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