

# IMPORTANT INFORMATION



General Information .....	1.2
General Bushing Information .....	1.3
Drill Size Chart .....	1.6
Jig Boring, Grinding Data, Counterbore data .....	1.7
Conversion Charts .....	1.10
Fax It! .....	1.15
Cad Library .....	1.16

**AVAILABILITY!** We pride ourselves in being able to ship your order the same day we receive it. At All American we keep a huge inventory of drill bushings and tooling components... Ready when you need them.

**COST!** You save money buying All American. That's one reason we're so popular! Your savings start with our prices and continue building up as long as you use **All American Bushings** and **Tooling Components**.

## ORDERING INFORMATION

The most common method of ordering consists of giving us: quantity, bushing type, the inside diameter (A) (or drill size), the outside diameter (B) and the length of bushings or liners required (C). Please note that head liners are measured overall.

**EXAMPLE:**

Quantity	Bushing Type	I.D.(A)	O.D.(B)	Length(C)
24	P	5/16	5/8	3/4

Or, using the ANSI symbols assigned to the various sizes listed in the catalog:

**EXAMPLE: 24 P-40-12-5/16**

**ALL BUSHINGS WILL BE CONSIDERED TO BE FINISH GROUND.** When ordering an unground O.D. specify unground and add the letter "U" to the ANSI symbol, or after the bushing type. The example shown is for 24 headless press fit bushing with a 5/16 I.D. or a drill size with a 5/8 O.D. Outside Diameter and 3/4 inch length.

**STANDARD SIZES:** All bushing sizes listed herein are considered to be Catalog Standard Sizes and should be ordered whenever possible. Standard drill sizes, specified in the bushing I.D. range columns, are those standard letter, number and fractional sizes defined by the American National Standards Institute and listed on the inside back cover of this catalog. Any other decimal or millimeter size within a given range is considered special and will be priced accordingly.

**ANSI STANDARD:** The United States of America Standards Institute (USASI) is now known officially as the American National Standards Institute (ANSI). All former USA Standard bushings are now identified as ANSI Standard bushings.

Order tooling components by the All American catalog number listed.

**EXAMPLE:**

Quantity	Catalog #
25	#107-50

All American personnel will be happy to help you convert other manufactures' numbers to the All American number where possible.

**ORDERING METRIC DRILL BUSHINGS:** Please order by giving us the part number and inside diameter. Head press fit and head liner bushings are measured by overall length. Use ANSI part number assigned to the various sizes listed in the catalog. Example given is for a headless press fit bushing with an 8mm inside diameter, 12mm outside diameter and 16mm length.

**EXAMPLE: PM-12-16-8**

## TERMS

**TRADE TERMS:** 1% ten days, net 30. (invoices not paid within 60 days are subject to a 1% service charge.)

**SHIPMENT:** All prices are quoted F.O.B. shipping point.

**RETURNS:** Standard products purchased from stock may be returned prepaid within one (1) month after shipment is made subject to inventory conditions and only with our written consent. A 15% restocking charge will be made. Special bushings, Tungsten Carbide, Airfeed and extended range bushings are not returnable.

**PRICES:** Subject to change without notice.

## GUARANTEE

All American Drill Bushings and Tooling Accessories are guaranteed against defects in material and workmanship and are warranted to be accurate to ANSI and catalog standards. Our liability is limited to the replacement of any All American Drill Bushing part.

**DISCLAIMER NOTICE:** All American takes great care to ensure that the dimensions and specifications in our catalogs and flyers are correct but accepts no responsibility for printing and typing errors which unfortunately do sometimes occur. Our liability is limited to the replacement of any All American item. We at All American also reserve the right to change any dimension or specifications without notice.

## SIZES AND MATERIAL DATA

**I.D. TOLERANCES:** All American and ANSI Standard:

Standard sizes in a given I.D. range are sizes listed in the decimal equivalent chart either as a fraction, number or letter size. Any other decimal or millimeter size within a given range is considered special and will be priced accordingly.

Standard Drill Sizes	I.D.	Tolerances
<b>#80-1/4</b>	<b>Nom</b>	<b>+0.001/+0.004</b>
<b>Over 1/4 - 3/4</b>	<b>Nom</b>	<b>+0.001/+0.005</b>
<b>Over 3/4 - 1-1/2</b>	<b>Nom</b>	<b>+0.002/+0.006</b>
<b>Over 1-1/2</b>	<b>Nom</b>	<b>+0.003/+0.007</b>
Reamer Sizes	I.D.	Tolerances
<b>up to 1/4</b>	<b>Nom</b>	<b>+0.005/+0.008</b>
<b>Over 1/4 - 1"</b>	<b>Nom</b>	<b>+0.006/+0.010</b>
<b>Over 1"</b>	<b>Nom</b>	<b>+0.008/+0.012</b>

To order: Specify type and "reamer bushing." Reamer bushings will be furnished with correct tolerance on all fraction, number, letter and decimal sizes.

**I.D. TOLERANCES:** Metric:

Metric Sizes	I.D.	Tolerances
<b>.35 to 3.00</b>	<b>Nom</b>	<b>+0.002 - +0.008</b>
<b>3.01 to 6.00</b>	<b>Nom</b>	<b>+0.004 - +0.012</b>
<b>6.01 to 10.00</b>	<b>Nom</b>	<b>+0.005 - +0.014</b>
<b>10.01 to 18.00</b>	<b>Nom</b>	<b>+0.006 - +0.017</b>
<b>18.01 to 30.00</b>	<b>Nom</b>	<b>+0.007 - +0.020</b>
<b>30.01 to 50.00</b>	<b>Nom</b>	<b>+0.009 - +0.025</b>
<b>50.01 to 55.00</b>	<b>Nom</b>	<b>+0.010 - +0.029</b>
Metric Reamer Sizes	I.D.	Tolerances
<b>1.00 to 3.00</b>	<b>Nom</b>	<b>+0.006 - +0.012</b>
<b>3.01 to 6.00</b>	<b>Nom</b>	<b>+0.010 - +0.018</b>
<b>6.01 to 10.00</b>	<b>Nom</b>	<b>+0.013 - +0.022</b>
<b>10.01 to 18.00</b>	<b>Nom</b>	<b>+0.016 - +0.027</b>
<b>18.01 to 30.00</b>	<b>Nom</b>	<b>+0.020 - +0.033</b>

**CONCENTRICITY:** (Total indicator reading.)

Standard ANSI bushings:

I.D. 1/8 thru 1/2	0 to .0003 T.I.R. max.
Other Sizes	0 to .0005 T.I.R. max.

Standard ANSI Metric Bushings:

All Sizes	0 to .012mm T.I.R. max
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The above tolerances will be met at the drill exit end.

**COUNTERBORE:** Bushings with small holes are counterbored leaving correct drill bearing to facilitate chip removal and lubrication.

**NO COUNTERBORED:** Bushings normally counterbored may be ordered without counterbore by specifying "**No Counterbore**" or using the abbreviation "**NCB**" (Priced as Specials.)

**RADIUS:** All bushings feature a blended radius at the drill entrance unless otherwise specified.

**LEAD:** All press type bushings features a concentric ground lead in addition to a chamfer on the exit end of bushing.

**STEEL:** Our bushings are manufactured from selected steels known for their long wear and stability. Bushings are also available from other materials at extra cost (bronze, M-2, D-2, A-2, stainless steel, etc.)

**HARDNESS:** Rockwell C62-64 in the hole.

**CHIP CLEARANCE:** Due to the abrasive action of metal particles, sufficient clearance should be provided between the drill bushing and the workpiece to allow for removal of chips. Careful consideration of this point will aid in producing accurate holes. (A rule of thumb is the greater the clearance, the greater the chance of error.) **Example:** The recommended chip clearance for metal producing small chips, such as cast iron, equals one-half the drill diameter. The recommended chip clearance for metal producing long chips, such as cold-rolled steel, equals one to one and one-half times the drill diameter. **Maximum Accuracy:** Use drill bushings of different lengths to obtain the combined advantages of adequate chip removal and precise accuracy. **Example:** Use a drill bushing that is short enough to provide chip clearance during the drilling operation. Next, use bushings long enough to contact or closely approach the work piece for the reaming operation.

## BUSHING APPLICATION DATA:

**PRESS FIT:** The **press fit**, type P, drill bushing is the most popular and least expensive. This bushing is permanently pressed into the jig plate or fixture and is generally used where replacement due to wear is not anticipated during the life of the tooling and where a single operation such as drilling only or reaming only is performed. Headless press fit bushings offer two advantages: they can be installed flush with the jig plate without counterboring the mounting hole and they can be mounted closer together than headed bushings. However, where space permits, the use of headed press fit bushings is preferable in any application where heavy axial loads may eventually forces headless bushing out of the jig plate.

**HEAD PRESS FIT:** The **head press fit**, type H, drill bushing is similar to the headless press fit bushing except that it has a head or shoulder on the drill entry end and the jig plate or fixture must be counterbored for flush mounting. This bushing is permanently pressed into the jig plate or fixture and is generally used where replacement due to wear is not anticipated during the life of the tooling and where a single operation such as drilling only or reaming only is

performed. The head press fit bushings are preferable in any application where heavy axial loads may eventually force a headless bushing out of the jig plate.

**SLIP FIXED RENEWABLE:** The **slip fixed renewable**, type SF or SFX, drill bushing is used in conjunction with a liner or headliner (L or HL.) The unique design of this versatile drill bushing offers the combined design of both the slip and the renewable bushings (S and F.) It is recommended for long production runs where more than one operation is performed in the same hole, such as drilling, then reaming or counterboring. There are slots milled in the knurled head of the slip fixed renewable which enables a lock screw or clamp to hold the bushing in place or easily remove it.

**FIXED RENEWABLE:** The **fixed renewable**, type FM, drill bushing is the ideal design for long production runs where the number of parts to be drilled or reamed is greater than the normal wear life of the drill bushing. This type is used in conjunction with a liner, Type L or HL bushing and is secured in place by a lock screw or clamp. The unique design allows easy replacement. Simply remove the lock screw or clamp without removing the jig or fixture from the production line.

**LINER:** The **liner**, type L, drill bushing is used with All American ANSI renewable drill bushings and is permanently pressed into a jig plate or fixture plate. The liner drill bushing provides a precise and stable location for renewable drill bushings in addition to protecting the hole in the jig plate from wear caused by frequent drill bushing replacement. The inside diameter is ground for correct slip fit with renewable drill bushings. The liner bushings can be installed flush with the jig plate without counterboring the mounting hole and can be mounted closer together than the head liners. The head liner bushings are preferred where space permits and when heavy axial loads are anticipated.

**HEAD LINER:** The **head liner**, type HL, drill bushings is similar to the liner drill bushings except that it has a head or shoulder on the drill entry end and the fixture must be counter bored for flush mounting.

**CASTABLE BUSHING APPLICATION DATA:**

Castable bushings are made made for potted, cast in place or imbedment in jigs made of laminated glass fibers, potting compounds, castable and soft materials. All three basic types, the **diamond groove** - type DG, the **serrata groove** - type SG and the **serrata press** - type SP offer exceptional self - locking grip and holding power.

**DIAMOND GROOVE:** The **diamond groove**, type DG, drill bushing features a special knurl which makes it superior in holding strength.

**SERRATA GROOVE:** The **serrata groove**, type SG, drill bushing features a special serration which allows the bushing to be easily pressed into a jig made of plastic or soft materials and offers excellent holding strength.

**SERRATA PRESS:** The **serrata press**, type SP, drill bushing features a special serration and a finish ground O.D., outside diameter, which makes it superior for press-in installation in soft materials such as magnesium, aluminum, masonite or wood.

\* Points to consider when selecting a castable bushing suited for a particular application:

1. The type of material, its hardness and ductility and its groove sensitivity.
2. The maximum load to be transferred onto the bushing.

**INSTALLATION DATA:**

To maintain accuracy in the production operation, extra care must be taken in mounting hole preparation. Factors to consider are diametral interference fits, alignment, chip clearance and proximity of the bushing to the work piece.

**MOUNTING HOLES:** An important point to be considered is the roundness of the mounting hole. Because bushings tend to assume the shape of the hole into which they are pressed it is recommended that all mounting holes be jig bored or sized with a reamer to assure roundness. An ordinary twist will seldom produce a hole that is accurately sized and truly round.

**INTERFERENCE FITS:** In any press fit installation, metal is displaced. Usually, a combination of bushing closure and jig plate distortion results. Therefore, the best practice is to use the minimum interference necessary to retain the bushing in the jig plate. In most installations, diametral interference of .0005 to .0008 inch is adequate for installation of headless press fit bushings or liners.

**BUSHING INSTALLATION:**

Before installing a **press fit bushing** always lubricate the inside diameter of the mounting hole and the outside diameter of the bushing. Bushings installed without lubricant may pick up metal and score the mounting hole during installation. Lubricated bushings are more easily removed for replacement with less chance of damaging the jig plate. Use a hand arbor to press the bushing or liner into



the jig plate whenever possible. If not, use some other means such as drawing the bushing into the jig plate with two steel plates and a nut and bolt. A hammer should be used only if not other methods are possible and then never strike the bushing directly; use a block to take the hammer blows. Whichever method is used, care should be taken to maintain centerline perpendicularity, otherwise inaccuracies may result in the production operation.

**Diamond and/or serrata groove bushings**, which are locked in the mold prior to the molding operation, need special attention regarding centerline perpendicularity. Also beware of molding material in the bushing I.D., inside diameter.

**Serrata and/or serrata press bushings** can be used in drilled holes in imbedment or soft materials. Pilot hole size

will vary according to the ductility or hardness of the material which the bushings will be installed into. Due to the variations in the materials used specific pilot hole size recommendations cannot be made.

\* Points to consider regarding pilot hole preparations:

1. Sufficient interference is necessary to assure a firm hold of the bushing. However, excessive interference may crack or distort the jig or fixture because of the displaced material.
2. Heating plastic materials during bushing installation expands the hole which allows easy insertion. Due to shrinkage of the plastic during cooling, the material flows around the serrations providing a shrink fit.



# DRILL SIZE CHART

## DRILL SIZE DECIMAL EQUIVALENTS

DRILL	DECIMAL	DRILL	DECIMAL	DRILL	DECIMAL	DRILL	DECIMAL	DRILL	DECIMAL	DRILL	DECIMAL
80	.0135	1.55mm	.0610	30	.1285	3	.2130	P	.3230	13.50mm	.5315
.35mm	.0138	1/16	.0625	3.30mm	.1299	5.50mm	.2165	8.25mm	.3248	35/64	.5469
79	.0145	1.60mm	.0630	3.40mm	.1339	7/32	.2188	8.30mm	.3268	14.00mm	.5512
.38mm	.0150	52	.0635	29	.1360	5.60mm	.2205	21/64	.3281	9/16	.5625
1/64	.0156	1.65mm	.0650	3.50mm	.1378	2	.2210	8.40mm	.3307	14.50mm	.5709
.40mm	.0157	1.70mm	.0669	28	.1405	5.70mm	.2244	Q	.3320	37/64	.5781
78	.0160	51	.0670	9/64	.1406	5.75mm	.2264	8.50mm	.3346	15.00mm	.5906
.42mm	.0167	1.75mm	.0689	3.60mm	.1417	1	.2280	8.60mm	.3386	19/64	.5938
.45mm	.0177	50	.0700	27	.1440	5.80	.2283	R	.3390	39/64	.6094
77	.0180	1.80mm	.0709	3.70mm	.1457	5.90mm	.2323	8.70mm	.3425	15.50mm	.6102
.48mm	.0189	1.85mm	.0728	26	.1470	A	.2340	11/32	.3438	5/8	.6250
.50mm	.0197	49	.0730	3.75mm	.1476	15/64	.2344	8.75mm	.3445	16.00mm	.6299
76	.0200	1.90mm	.0748	25	.1495	6.00mm	.2362	8.80mm	.3465	41/64	.6406
75	.0210	48	.0760	3.80mm	.1496	B	.2380	S	.3480	16.50mm	.6496
.55mm	.0217	1.95mm	.0768	24	.1520	6.10mm	.2402	8.90mm	.3504	21/32	.6562
74	.0225	5/64	.0781	3.90mm	.1535	C	.2420	9.00mm	.3543	17.00mm	.6693
.60mm	.0236	47	.0785	23	.1540	6.20mm	.2441	T	.3580	43/64	.6719
73	.0240	2.00mm	.0787	5/32	.1562	D	.2460	9.10mm	.3583	11/16	.6875
72	.0250	2.05mm	.0807	22	.1570	6.25mm	.2461	23/64	.3594	17.50mm	.6890
.65mm	.0256	46	.0810	4.00mm	.1575	6.30mm	.2480	9.20mm	.3622	45/64	.7031
71	.0260	45	.0820	21	.1590	E	.2500	9.25mm	.3642	18.00mm	.7087
.70mm	.0276	2.10mm	.0827	20	.1610	1/4	.2500	9.30mm	.3661	23/32	.7188
70	.0280	2.15mm	.0846	4.10mm	.1614	6.40mm	.2520	U	.3680	18.50mm	.7283
69	.0292	44	.0860	4.20mm	.1654	6.50mm	.2559	9.40mm	.3701	47/64	.7344
.75mm	.0295	2.20mm	.0866	19	.1660	F	.2570	9.50mm	.3740	19.00mm	.7480
68	.0310	2.25mm	.0886	4.25mm	.1674	6.60mm	.2598	3/8	.3750	3/4	.7500
1/32	.0312	43	.0890	4.30mm	.1693	G	.2610	V	.3770	49/64	.7656
.80mm	.0315	2.30mm	.0906	18	.1695	6.70mm	.2638	9.60mm	.3780	19.50mm	.7677
67	.0320	2.35mm	.0925	11/64	.1719	17/64	.2656	9.70mm	.3819	25/32	.7812
66	.0330	42	.0935	17	.1730	6.75mm	.2657	9.75mm	.3839	20.00mm	.7874
.85mm	.0335	3/32	.0938	4.40mm	.1732	H	.2660	9.80mm	.3858	51/64	.7969
65	.0350	2.40mm	.0945	16	.1770	6.80	.2677	W	.3860	20.50mm	.8071
.90mm	.0354	41	.0960	4.50mm	.1772	6.90	.2717	9.90mm	.3898	13/16	.8125
64	.0360	2.45mm	.0965	15	.1800	I	.2720	25/64	.3906	21.00mm	.8268
63	.0370	40	.0980	4.60mm	.1811	7.00mm	.2756	10.00mm	.3937	53/64	.8281
.95mm	.0374	2.50mm	.0984	14	.1820	J	.2770	X	.3970	27/32	.8438
62	.0380	39	.0995	4.70mm	.1850	7.10mm	.2795	10.20mm	.4016	21.50mm	.8465
61	.0390	2.55mm	.1004	13	.1850	K	.2811	Y	.4040	55/64	.8594
1.00mm	.0394	38	.1015	4.75mm	.1870	9/32	.2812	13/32	.4062	22.00mm	.8661
60	.0400	2.60mm	.1024	3/16	.1875	7.20mm	.2835	Z	.4130	7/8	.8750
59	.0410	37	.1040	4.80mm	.1890	7.25mm	.2854	10.50mm	.4134	22.50mm	.8858
1.05mm	.0413	2.65	.1043	12	.1890	7.30mm	.2874	27/64	.4219	57/64	.8906
58	.0420	2.70mm	.1063	11	.1910	L	.2900	10.80mm	.4252	23.00mm	.9055
57	.0430	36	.1065	4.90mm	.1929	7.40mm	.2913	7/16	.4375	29/32	.9062
1.10mm	.0433	2.75mm	.1083	10	.1935	M	.2950	11.00mm	.4331	23.50mm	.9252
1.15mm	.0453	7/64	.1094	9	.1960	7.50mm	.2953	11.20mm	.4409	59/64	.9219
56	.0465	2.80mm	.1102	5.00mm	.1969	19/64	.2969	11.50mm	.4528	15/16	.9375
3/64mm	.0469	35	.1100	8	.1990	7.60mm	.2992	29/64	.4531	24.00mm	.9449
1.20mm	.0472	34	.1110	5.10mm	.2008	N	.3020	11.80mm	.4646	24.50mm	.9646
1.25mm	.0492	33	.1130	7	.2010	7.70mm	.3031	15.32	.4688	61/64	.9531
1.30mm	.0512	2.90	.1142	13/64	.2031	7.75mm	.3051	12.00mm	.4724	25.00mm	.9843
55	.0520	32	.1160	6	.2040	7.80mm	.3071	12.20mm	.4803	31/32	.9688
1.35mm	.0531	3.00mm	.1181	5.20mm	.2047	7.90mm	.3110	31/64	.4844	63/64	.9844
54	.0550	31	.1200	5	.2055	5/16	.3125	12.50mm	.4921	1	1.000
1.40mm	.0551	3.10mm	.1220	5.25mm	.2067	8.00mm	.3150	1/2	.5000		
1.45mm	.0571	1/8	.1250	5.30mm	.2087	O	.3160	13.00mm	.5118		
1.50mm	.0591	3.20mm	.1260	4	.2090	8.10mm	.3189	33/64	.5156		
53	.0595	3.25mm	.1280	5.40mm	.2126	8.20mm	.3228	17/32	.5312		

# JIGBORING & GRINDING DATA

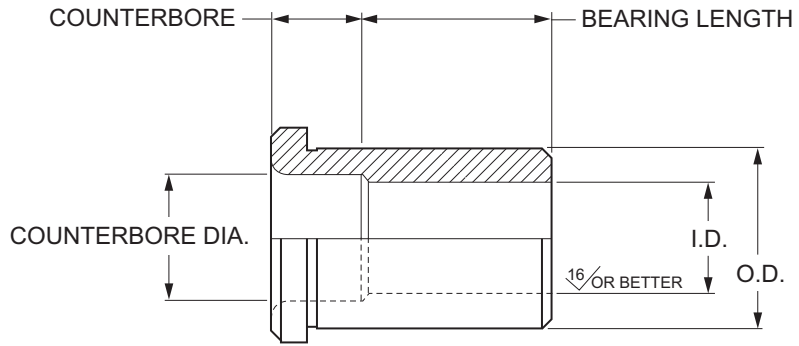
ANSI STANDARD SIZES			
NOMINAL BUSHING SIZE (O.D.)	JIGBORE HOLE SIZE	BUSHING O.D. PRESS FIT TYPE	BUSHING O.D. SLIP FIXED TYPE
5/32	.1565	.1578	
	.1570	.1575	
3/16	.1880	.1891	.1875
	.1883	.1888	.1873
13/64	.2037	.2046	
	.2040	.2043	
1/4	.2507	.2516	.2500
	.2510	.2513	.2498
5/16	.3132	.3141	.3125
	.3135	.3138	.3123
3/8	.3757	.3766	.3750
	.3760	.3763	.3748
13/32	.4069	.4078	
	.4072	.4075	
7/16	.4382	.4392	.4375
	.4385	.4389	.4373
1/2	.5007	.5017	.5000
	.5010	.5014	.4998
9/16	.5632	.5642	.5625
	.5635	.5639	.5623
5/8	.6257	.6267	.6250
	.6260	.6264	.6248
3/4	.7507	.7518	.7500
	.7510	.7515	.7498
7/8	.8757	.8768	.8750
	.8760	.8765	.8748
1"	1.0007	1.0018	1.0000
	1.0010	1.0015	.9998
1-1/8	1.1257	1.1270	1.1250
	1.1260	1.1267	1.1247
1-1/4	1.2507	1.2520	1.2500
	1.2510	1.2517	1.2497
1-3/8	1.3757	1.3772	1.3750
	1.3760	1.3768	1.3747
1-1/2	1.5007	1.5022	1.5000
	1.5010	1.5018	1.4997
1-3/4	1.7507	1.7523	1.7500
	1.7510	1.7519	1.7497
2-1/4	2.2507	2.2525	2.2500
	2.2510	2.2521	2.2496
2-3/4	2.7507	2.7526	2.7500
	2.7510	2.7522	2.7596

METRIC STANDARD SIZES		
NOMINAL (O.D.)	JIGBORE HOLE SIZE	ACTUAL (O.D.)
4	4.000	4.027
	4.012	4.019
5	5.000	5.027
	5.012	5.019
6	6.000	6.027
	6.012	6.019
7	7.000	7.032
	7.015	7.023
8	8.000	8.032
	8.015	8.023
10	10.000	10.032
	10.015	10.023
12	12.000	12.039
	12.018	12.028
15	15.000	15.039
	15.018	15.028
18	18.000	18.039
	18.018	18.028
22	22.000	22.048
	22.021	22.035
26	26.000	26.048
	26.021	26.035
30	30.000	30.048
	30.021	30.035
35	35.000	35.059
	35.025	35.043
42	42.000	42.059
	42.025	42.043
48	48.000	48.059
	48.025	48.043
55	55.000	55.072
	55.030	55.053
62	62.000	62.072
	62.030	62.053
70	72.000	70.078
	72.030	70.059
78	78.000	78.078
	78.030	78.059
85	85.000	85.093
	85.035	85.071
95	95.000	95.093
	95.035	95.071
105	105.000	105.101
	105.035	105.079
115	115.000	115.101
	115.035	115.079
125	125.000	125.117
	125.040	125.092

# COUNTERBORE DATA

Counterboring of drill jig bushings assists in the removal of chips traveling up the flutes of the drill as the hole depth in the workpiece increases.

The counterbore diameter increase also enables the expansion of the chips, reducing friction and the load on the drill, extending the life of the drill.



## BEARING LENGTH -- TYPE-P - PRESS FIT

I.D. DRILL SIZE	DECIMAL	O.D.	BUSHING LENGTH (BODY ONLY)											
			1/4	5/16	3/8	1/2	3/4	1"	1-3/8	1-1/2	1-3/4	2-1/8	1-1/2	3
#80-#70	.0135-.0280	5/32	-	-	-	5/16	-	-	-	-	-	-	-	-
#69-3/64	.0292-.0469	5/32	-	-	-	5/16	5/16	-	-	-	-	-	-	-
#55-1/16	.0520-.0625	5/32	-	-	-	5/16	5/16	-	-	-	-	-	-	-
#55-1/16	.0520-.0625	3/16	-	-	-	5/16	5/16	-	-	-	-	-	-	-
#52-#39	.0635-.0995	3/16	-	-	-	-	7/16	-	-	-	-	-	-	-
#80-#70	.0135-.0280	13/64	-	-	-	5/16	-	-	-	-	-	-	-	-
#69-3/64	.0292-.0469	13/64	-	-	-	5/16	5/16	-	-	-	-	-	-	-
#55-1/16	.0520-.0625	13/64	-	-	-	-	5/16	5/16	-	-	-	-	-	-
#52-#39	.0635-.0995	13/64	-	-	-	-	7/16	7/16	7/16	-	-	-	-	-
#40-9/64	.0980-.1406	1/4	-	-	-	-	7/16	5/8	5/8	5/8	5/8	-	-	-
1/8-#10	.1250-.1935	5/16	-	-	-	-	-	5/8	5/8	5/8	5/8	-	-	-
#10-#1	.1935-.2280	3/8	-	-	-	-	-	5/8	-	-	-	-	-	-
3/16-F	.1875-.2570	13/32	-	-	-	-	-	5/8	5/8	5/8	5/8	-	-	-
A-L	.2340-.2900	7/16	-	-	-	-	-	5/8	-	-	-	-	-	-
3/16-O	.1875-.3160	1/2	-	-	-	-	-	5/8	3/4	3/4	3/4	3/4	-	-
5/16-17/32	.3125-.5312	3/4	-	-	-	-	-	-	-	-	-	-	1-1/2	-

## BEARING LENGTH -- TYPE-H - HEAD PRESS FIT

I.D. DRILL SIZE	DECIMAL	O.D.	BUSHING LENGTH (BODY ONLY)											
			1/4	5/16	3/8	1/2	3/4	1"	1-3/8	1-1/2	1-3/4	2-1/8	1-1/2	3
#80-#70	.0135-.0280	5/32	-	-	5/16	5/16	-	-	-	-	-	-	-	-
#69-3/64	.0292-.0469	5/32	-	-	5/16	5/16	5/16	-	-	-	-	-	-	-
#55-1/16	.0520-.0625	5/32	-	-	-	5/16	5/16	-	-	-	-	-	-	-
#80-#70	.0135-.0280	13/64	-	-	5/16	5/16	-	-	-	-	-	-	-	-
#69-3/64	.0292-.0469	13/64	-	-	5/16	5/16	5/16	-	-	-	-	-	-	-
#55-1/16	.0520-.0625	13/64	-	-	-	5/16	5/16	5/16	-	-	-	-	-	-
#52-#39	.0635-.0995	13/64	-	-	-	7/16	7/16	7/16	-	-	-	-	-	-
#40-9/64	.0980-.1406	1/4	-	-	-	7/16	7/16	5/8	5/8	5/8	-	-	-	-
1/8-#10	.1250-.1935	5/16	-	-	-	-	-	5/8	5/8	5/8	-	-	-	-
#10-#1	.1935-.2280	3/8	-	-	-	-	-	5/8	-	-	-	-	-	-
3/16-F	.1875-.2570	13/32	-	-	-	-	-	5/8	5/8	5/8	5/8	-	-	-
A-L	.2340-.2900	7/16	-	-	-	-	-	5/8	-	-	-	-	-	-
3/16-O	.1875-.3160	1/2	-	-	-	-	-	3/4	3/4	3/4	3/4	-	-	-

# COUNTERBORE DATA

BEARING LENGTH -- TYPE-SF, TYPE SFX & TYPE F - SLIP FIXED AND FIXED RENEWABLE															
I.D. DRILL SIZE	DECIMAL	O.D.	BUSHING LENGTH (BODY ONLY)												
			1/4	5/16	3/8	1/2	5/8	3/4	1"	1-3/8	1-1/2	1-3/4	2-1/8	1-1/2	3
#80-#70	.0135-.0280	3/16	1/4	5/16	5/16	5/16	5/16	5/16	5/16	-	-	-	-	-	-
#69-3/64	.0292-.0469	3/16	-	5/16	5/16	5/16	5/16	5/16	5/16	-	-	-	-	-	-
#55-1/16	.0520-.0625	3/16	-	5/16	5/16	5/16	5/16	5/16	5/16	-	-	-	-	-	-
#52-#40	.0635-.0980	3/16	-	5/16	3/8	7/16	7/16	7/16	7/16	-	-	-	-	-	-
#39-9/64	.0995-.1406	1/4	-	-	3/8	7/16	7/16	7/16	7/16	-	-	-	-	-	-
#80-#70	.0135-.0280	5/16	1/4	5/16	5/16	5/16	-	5/16	-	-	-	-	-	-	-
#69-3/64	.0292-.0469	5/16	-	5/16	5/16	5/16	-	5/16	-	-	-	-	-	-	-
#55-1/16	.0520-.0625	5/16	-	5/16	5/16	5/16	-	5/16	-	-	-	-	-	-	-
#52-#43	.0635-.0890	5/16	-	-	3/8	7/16	-	7/16	7/16	-	-	-	-	-	-
#42-#31	.0935-.1200	5/16	-	-	-	7/16	-	7/16	7/16	7/16	-	-	-	-	-
1/8-#10	.1250-.1935	5/16	-	-	-	-	-	5/8	5/8	5/8	-	-	-	-	-
#10-#1	.1935-.2280	3/8	-	-	-	-	-	5/8	5/8	-	-	-	-	-	-
A-L	.2340-.2900	7/16	-	-	-	-	-	5/8	5/8	-	-	-	-	-	-
#28-3/16	.1405-.1875	1/2	-	-	-	-	-	5/8	5/8	5/8	5/8	5/8	-	-	-
#12-11/32	.1890-.3437	1/2	-	-	-	-	-	-	7/8	1"	1"	1"	1"	-	-
9/32-9/16	.2812-.5625	3/4	-	-	-	-	-	-	-	-	-	-	-	1-1/2	1-1/2



# CONVERSION CHARTS

INFORMATION

PRESS FIT BUSHINGS								
AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECO N	UNIV.	XLO
FOR UNGROUND ADD "U" AFTER LAST DIGIT	O.D. PLUS GRIND STOCK							
	OMIT LETTER "F"	ADD "N" AFTER	USE "X" BEFORE	OMIT LETTER "G"	DROP THE "A"	ADD "S" AFTER LETTER	OMIT FIRST "G"	OMIT LAST DIGIT
P-10-4	AA-01-F	1P0	P-010	G-701-11	AS-88A	T-00	GM-902	AX-788
P-10-5	A-01-F	2P0	P-011	G-701-1	S-88A	T-01	GU-902	X-788
P-10-6	BB-01-F	3P0	P-011X	G-701-12	AL-88A	T-011	GS-902	AL-788
P-10-8	C-01-F	4P0	P-012	G-701-2	L-88A	T-02	GA-902	O-788
P-13-4	AA-1-F	1P1	P-10	G-702-11	AS-89A	T-10	GM-901	AX-799
P-13-5	A-1-F	2P1	P-11	G-702-1	S-89A	T-11	GU-901	X-799
P-13-6	BB-1-F	3P1	P-11X	G-702-12	AL-89A	T-111	GS-901	AL-799
P-13-8	C-1-F	4P1	P-12	G-702-2	L-89A	T-12	GA-901	O-799
P-13-12	1L-1-F	5P1	P-13	G-702-3	1-89A	T-13	GB-901	1S-799
P-13-16	2L-1-F	6P1	P-14		2-89A	T-14		2S-799
P-16-4	AA-2-F	1P2	P-20	G-703-11	AS-90A	T-20	GM-900	AX-800
P-16-5	A-2-F	2P2	P-21	G-703-1	S-90A	T-21	GU-900	X-800
P-16-6	BB-2-F	3P2	P-21X	G-703-12	AL-90A	T-211	GS-900	AL-800
P-16-8	C-2-F	4P2	P-22	G-703-2	L-90A	T-22	GA-900	O-800
P-16-12	1L-2-F	5P2	P-23	G-703-3	1-90A	T-23	GB-900	1S-800
P-16-16	2L-2-F	6P2	P-24		2-90A	T-24		2S-800
P-20-4	AA-3-F	1P3	P-30	G-71-11	AS-91A	T-30	GM-91	AX-811
P-20-5	A-3-F	2P3	P-31	G-71-1	S-91A	T-31	GU-91	X-811
P-20-6	BB-3-F	3P3	P-31X	G-71-12	AM-91A	T-311	GX-91	AL-811
P-20-8	B-3-F	4P3	P-32	G-71-2	M-91A	T-32	GS-91	L-811
P-20-12	C-3-F	5P3	P-33	G-71-3	L-91A	T-33	GA-91	O-811
P-20-16	1L-3-F	6P3	P-34	G-71-4	1-91A	T-34	GB-91	1S-811
P-20-22	2L-3-F	7P3	P-35	G-71-5	2-91A	T-35	GC-91	2S-811
P-26-4	AA-4-F	1P4	P-040	G-71A-11	AS-910A	T-30A	GM-921	AX-811-A
P-26-5	A-4-F	2P4	P-041	G-71A-1	S-910A	T-31A	GU-921	X-811-A
P-26-6	BB-4-F	3P4	P-041X	G-71A-12	AM-910A	T-311A	GX-921	AL-811-A
P-26-8	B-4-F	4P4	P-042	G-71A-2	M-910A	T-32A	GS-921	L-811-A
P-26-12	C-4-F	5P4	P-043	G-71A-3	L-910A	T-33A	GA-921	O-811-A
P-26-16	1L-4-F	6P4	P-044	G-71A-4	1-910A	T-34A	GB-921	1S-811-A
P-26-22	2L-4-F	7P4	P-045	G-71A-5	2-910A	T-35A	GD-921	2S-811-A
P-26-28	3L-4-F	8P4	P-046	G-71A-6	3-910A	T-36A	GE-921	3S-811-A
P-26-34	4L-4-F	9P4	P-047	G-71A-7	4-910A	T-37A	GF-921	4S-811-A
P-32-4	AA-5-F	1P5	P-40	G-72-N	AS-92A	T-40	GM-92	AX-822
P-32-5	A-5-F	2P5	P-41	G-72-1	S-92A	T-41	GU-92	X-822
P-32-6	BB-5-F	3P5	P-41X	G-72-11	AM-92A	T-411	GX-92	AL-822
P-32-8	B-5-F	4P5	P-42	G-72-2	M-92A	T-42	GS-92	L-822
P-32-12	C-5-F	5P5	P-43	G-72-3	L-92A	T-43	GA-92	O-822
P-32-16	1L-5-F	6P5	P-44	G-72-4	1-92A	T-44	GB-92	1S-822
P-32-22	2L-5-F	7P5	P-45	G-72-5	2-92A	T-45	GD-92	2S-822
P-32-28	3L-5-F	8P5	P-46	G-72-6	3-92A	T-46	GE-92	3S-822
P-32-34	4L-5-F	9P5	P-47	G-72-7	4-92A	T-47	GF-92	4S-822
P-40-5	AA-6-F	2P6	P-051	G-72A-11	AS-920A	T-40A	GM-931	AX-822-A
P-40-6	BA-6-F	3P6	P-051X	G-72A-12	BS-920A	T-411A	GX-931	X-822-A
P-40-8	A-6-F	4P6	P-052	G-72A-2	S-920A	T-42A	GU-931	AL-822-A
P-40-12	B-6-F	5P6	P-053	G-72A-3	M-920A	T-43A	GS-931	L-822-A
P-40-16	C-6-F	6P6	P-054	G-72A-4	L-920A	T-44A	GA-931	O-822-A
P-40-22	1L-6-F	7P6	P-055	G-72A-5	1-920A	T-45A	GB-931	1S-822-A
P-40-28	2L-6-F	8P6	P-056	G-72A-6	2-920A	T-46A	GC-931	2S-822-A
P-40-34	3L-6-F	9P6	P-057	G-72A-7	3-920A	T-47A	GE-931	3S-822-A
P-40-40	4L-6-F	10P6	P-058	G-72A-8	4-920A	T-48A	GF-931	4S-822-A
P-48-5	AA-7-F	2P7	P-51	G-73-11	AS-93A	T-51	GM-93	AX-833
P-48-6	A-7-F	4P7	P-52	G-73-1	S-93A	T-52	GU-93	X-833
P-48-12	B-7-F	5P7	P-53	G-73-2	M-93A	T-53	GS-93	L-833
P-48-16	C-7-F	6P7	P-54	G-73-3	L-93A	T-54	GA-93	O-833

PRESS FIT BUSHINGS - CONTINUED								
AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
FOR UNGROUND ADD "U" AFTER LAST DIGIT	O.D. PLUS GRIND STOCK							
	OMIT LETTER "F"	ADD "N" AFTER	USE "X" BEFORE	OMIT LETTER "G"	DROP THE "A"	ADD "S" AFTER LETTER	OMIT FIRST "G"	OMIT LAST DIGIT
P-48-22	1L-7-F	7P7	P-55	G-73-4	1-93A	T-55	GB-93	1S-833
P-48-28	2L-7-F	8P7	P-56	G-73-5	2-93A	T-56	GC-93	2S-833
P-48-34	3L-7-F	9P7	P-57	G-73-6	3-93A	T-57	GE-93	3S-833
P-48-40	4L-7-F	10P7	P-58	G-73-7	4-93A	T-58	GF-93	4S-833
P-56-8	AA-8-F	4P8	P-062	G-73A-11	AS-930A	T-52A	GM-941	B-833-A
P-56-12	A-8-F	5P8	P-063	G-73A-1	S-930A	T-53A	GU-941	X-833-A
P-56-16	B-8-F	6P8	P-064	G-73A-2	M-930A	T-54A	GS-941	L-833-A
P-56-22	C-8-F	7P8	P-065	G-73A-3	L-930A	T-55A	GA-941	O-833-A
P-56-28	1L-8-F	8P8	P-066	G-73A-4	1-930A	T-56A	GB-941	1S-833-A
P-56-34	2L-8-F	9P8	P-067	G-73A-5	2-930A	T-57A	GE-941	2S-833-A
P-56-40	3L-8-F	10P8	P-068	G-73A-6	3-930A	T-58A	GD-941	3S-833-A
P-56-48	4L-8-F	11P8	P-069	G-73A-7	4-930A	T-59A	GF-941	4S-833-A
P-64-8	AA-9-F	4P9	P-62	G-74-11	AS-94A	T-62	GM-94	B-844
P-64-12	A-9-F	5P9	P-63	G-74-1	S-94A	T-63	GU-94	X-844
P-64-16	B-9-F	6P9	P-64	G-74-2	M-94A	T-64	GS-94	L-844
P-64-22	C-9-F	7P9	P-65	G-74-3	L-94A	T-65	GA-94	O-844
P-64-28	1L-9-F	8P9	P-66	G-74-4	1-94A	T-66	GB-94	1S-844
P-64-34	2L-9-F	9P9	P-67	G-74-5	2-94A	T-67	GE-94	2S-844
P-64-40	3L-9-F	10P9	P-68	G-74-6	3-94A	T-68	GD-94	3S-844
P-64-48	4L-9-F	11P9	P-69	G-74-7	4-94A	T-69	GF-94	4S-844
P-88-12	A-10-F	5P10	P-73	G-75-1	S-95A	T-73	GU-95	X-855
P-88-16	B-10-F	6P10	P-74	G-75-2	M-95A	T-74	GS-95	L-855
P-88-22	C-10-F	7P10	P-75	G-75-3	L-95A	T-75	GA-95	O-855
P-88-28	1L-10-F	8P10	P-76	G-75-4	1-95A	T-76	GB-95	1S-855
P-88-34	2L-10-F	9P10	P-77	G-75-5	2-95A	T-77	GE-95	2S-855
P-88-40	3L-10-F	10P10	P-78	G-75-6	3-95A	T-78	GF-95	3S-855
P-88-48	4L-10-F	11P10	P-79	G-75-7	4-95A	T-79	GG-95	4S-855
P-112-16	A-11-F	6P11	P-84	G-76-1	S-96A	T-84	GU-96	X-866
P-112-22	B-11-F	7P11	P-85	G-76-2	M-96A	T-85	GS-96	L-866
P-112-28	C-11-F	8P11	P-86	G-76-3	L-96A	T-86	GA-96	O-866
P-112-34	1L-11-F	9P11	P-87	G-76-4	1-96A	T-87	GE-96	1S-866
P-112-40	2L-11-F	10P11	P-88	G-76-5	2-96A	T-88	GC-96	2S-866
P-112-48	3L-11-F	11P11	P-89	G-76-6	3-96A	T-89	GD-96	3S-866
P-144-16	A-12-F	6P12	P-94	G-77-1	S-97A	T-94	GU-97	X-877
P-144-22	B-12-F	7P12	P-95	G-77-2	M-97A	T-95	GS-97	L-877
P-144-28	C-12-F	8P12	P-96	G-77-3	L-97A	T-96	GA-97	O-877
P-144-34	1L-12-F	9P12	P-97	G-77-4	1-97A	T-97	GE-97	1S-877
P-144-40	2L-12-F	10P12	P-98	G-77-5	2-97A	T-98	GF-97	2S-877
P-144-48	3L-12-F	11P12	P-99	G-77-6	3-97A	T-99	GG-97	3S-877

HEAD PRESS FIT BUSHINGS								
AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
FOR UNGROUND ADD "U" AFTER LAST DIGIT	O.D. PLUS GRIND STOCK							
	OMIT LETTER "F"	ADD "N" AFTER	USE "X" BEFORE	OMIT LETTER "G"	DROP THE "A"	ADD "S" AFTER LETTER	OMIT FIRST "G"	OMIT LAST DIGIT
H-10-4	AA-020-F	1H0	S-010	G-601-11	AS-68A	K-00	GM-702	AX-588
H-10-5	A-020-F	2H0	S-011	G-601-1	S-68A	K-01	GU-702	X-588
H-10-6	BB-020-F	3H0	S-011X	G-601-12	AL-68A	K-011	GS-702	AL-588
H-10-8	C-020-F	4H0	S-012	G-601-3	L-68A	K-02	GA-702	O-588
H-13-4	AA-20-F	4H1	S-10	G-602-11	AS-69A	K-10	GM-701	AX-599
H-13-5	A-20-F	5H1	S-11	G-602-2	S-69A	K-11	GU-701	X-599

# CONVERSION CHARTS

HEAD PRESS FIT BUSHINGS - CONTINUED								
AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
FOR UNGROUND ADD "U" AFTER LAST DIGIT	O.D. PLUS GRIND STOCK							
	OMIT LETTER "F"	ADD "N" AFTER	USE "X" BEFORE	OMIT LETTER "G"	DROP THE "A"	ADD "S" AFTER LETTER	OMIT FIRST "G"	OMIT LAST DIGIT
H-13-6	BB-20-F	3H1	S-011X	G-602-12	AL-69A	K-111	GS-701	AL-599
H-13-8	C-20-F	4H1	S-012	G-602-2	L-69A	K-12	GA-701	O-599
H-13-12	1L-20-F	5H1	S-013	G-602-3	1-69A	K-13	GB-701	1S-599
H-16-4	AA-21-F	1H2	S-20	G-603-11	AS-70A	K-20	GM-700	AX-600
H-16-5	A-21-F	2H2	S-21	G-603-1	S-70A	K-21	GU-700	X-600
H-16-6	BB-21-F	3H2	S-21X	G-603-12	AL-70A	K-211	GS-700	AL-600
H-16-8	C-21-F	4H2	S-22	G-603-2	L-70A	K-22	GA-700	O-600
H-16-12	1L-21-F	5H2	S-23	G-603-3	1-70A	K-23	GB-700	1S-600
H-20-4	AA-22-F	1H3	S-30	G-61-11	AS-71A	K-30	GM-71	AX-611
H-20-5	A-22-F	2H3	S-31	G-61-1	S-71A	K-31	GU-71	X-611
H-20-6	BB-22-F	3H3	S-31X	G-61-12	AM-71A	K-311	GX-71	AL-611
H-20-8	B-22-F	4H3	S-32	G-61-2	M-71A	K-32	GS-71	L-611
H-20-12	C-22-F	5H3	S-33	G-61-3	L-71A	K-33	GA-71	O-611
H-20-16	1L-22-F	6H3	S-34	G-61-4	1-71A	K-34	GB-71	1S-611
H-20-22	2L-22-F	7H3	S-35	G-61-5	2-71A	K-35	GC-71	2S-611
H-26-4	AA-23-F	1H4	S-040	G-61A-11	AS-710A	K-30A	GM-721	AX-611-A
H-26-5	A-23-F	2H4	S-041	G-61A-1	S-710A	K-31A	GU-721	X-611-A
H-26-6	BB-23-F	3H4	S-041X	G-61A-12	AM-710A	K-311A	GX-721	AL-611-A
H-26-8	B-23-F	4H4	S-042	G-61A-2	M-710A	K-32A	GS-721	L-611-A
H-26-12	C-23-F	5H4	S-043	G-61A-3	L-710A	K-33A	GA-721	O-611-A
H-26-16	1L-23-F	6H4	S-044	G-61A-4	1-710A	K-34A	GB-721	1S-611-A
H-26-22	2L-23-F	7H4	S-045	G-61A-5	2-710A	K-35A	GD-721	2S-611-A
H-26-28	3L-23-F	8H4	S-046	G-61A-6	3-710A	K-36A	GE-721	3S-611-A
H-26-34	4L-23-F	9H4	S-047	G-61A-7	4-710A	K-37A	GF-721	4S-611-A
H-32-4	AA-24-F	1H5	S-40	G-62-N	AS-72A	K-40	GM-72	B-622
H-32-5	A-24-F	2H5	S-41	G-62-1	S-72A	K-41	GU-72	X-622
H-32-6	BB-24-F	3H5	S-41X	G-62-11	AM-72A	K-411	GX-72	AL-622
H-32-8	B-24-F	4H5	S-42	G-62-2	M-72A	K-42	GS-72	L-622
H-32-12	C-24-F	5H5	S-43	G-62-3	L-72A	K-43	GA-72	O-622
H-32-16	1L-24-F	6H5	S-44	G-62-4	1-72A	K-44	GB-72	1S-622
H-32-22	2L-24-F	7H5	S-45	G-62-5	2-72A	K-45	GD-72	2S-622
H-32-28	3L-24-F	8H5	S-46	G-62-6	3-72A	K-46	GE-72	3S-622
H-32-34	4L-24-F	9H5	S-47	G-62-7	4-72A	K-47	GF-72	4S-622
H-40-5	AA-25-F	2H6	S-051	G-62A-11	AS-720A	K-41A	GM-731	AX-622-A
H-40-6	BA-25-F	3H6	S-051X	G-62A-1	S-720A	K-411A	GX-731	BX-622-A
H-40-8	A-25-F	4H6	S-052	G-62A-12	AM-720A	K-42A	GU-731	X-622-A
H-40-12	B-25-F	5H6	S-053	G-62A-2	M-720A	K-43A	GS-731	L-622-A
H-40-16	C-25-F	6H6	S-054	G-62A-3	L-720A	K-44A	GA-731	O-622-A
H-40-22	1L-25-F	7H6	S-055	G-62A-4	1-720A	K-45A	GB-731	1S-622-A
H-40-28	2L-25-F	8H6	S-056	G-62A-5	2-720A	K-46A	GC-731	2S-622-A
H-40-34	3L-25-F	9H6	S-057	G-62A-6	3-720A	K-47A	GE-731	3S-622-A
H-40-40	4L-25-F	10H6	S-058	G-62A-7	4-720A	K-48A	GF-731	4S-622-A
H-48-5	AA-26-F	2H7	S-51X	G-63-11	AS-73A	K-51	GM-73	B-633
H-48-8	A-26-F	4H7	S-52	G-63-1	S-73A	K-52	GU-73	X-633
H-48-12	B-26-F	5H7	S-53	G-63-2	M-73A	K-53	GS-73	L-633
H-48-16	C-26-F	6H7	S-54	G-63-3	L-73A	K-54	GA-73	O-633
H-48-22	1L-26-F	7H7	S-55	G-63-4	1-73A	K-55	GB-73	1S-633
H-48-28	2L-26-F	8H7	S-56	G-63-5	2-73A	K-56	GC-73	2S-633
H-48-34	3L-26-F	9H7	S-57	G-63-6	3-73A	K-57	GE-73	3S-633
H-48-40	4L-26-F	10H7	S-58	G-63-7	4-73A	K-58	GF-73	4S-633
H-56-8	AA-27-F	4H8	S-062	G-63A-11	AS-730A	K-52A	GM-741	B-633-A
H-56-12	A-27-F	5H8	S-063	G-63A-1	S-730A	K-53A	GU-741	X-633-A
H-56-16	B-27-F	6H8	S-064	G-63A-2	M-730A	K-54A	GS-741	L-633-A
H-56-22	C-27-F	7H8	S-065	G-63A-3	L-730A	K-55A	GA-741	O-633-A
H-56-28	1L-27-F	8H8	S-066	G-63A-4	1-730A	K-56A	GB-741	1S-633-A
H-56-43	2L-27-F	9H8	S-067	G-63A-5	2-730A	K-57A	GE-741	2S-633-A

HEAD PRESS FIT BUSHINGS - CONTINUED								
AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
FOR UNGROUND ADD "U" AFTER LAST DIGIT	O.D. PLUS GRIND STOCK							
	OMIT LETTER "F"	ADD "N" AFTER	USE "X" BEFORE	OMIT LETTER "G"	DROP THE "A"	ADD "S" AFTER LETTER	OMIT FIRST "G"	OMIT LAST DIGIT
H-56-40	3L-27-F	10H8	S-068	G-63A-6	3-730A	K-58A	GD-741	3S-633-A
H-56-48	4L-27-F	11H8	S-069	G-63A-7	4-730A	K-59A	GF-741	4S-633-A
H-64-8	AA-28-F	4H9	S-62	G-64-11	AS-74A	K-62	GM-74	B-644
H-64-12	A-28-F	5H9	S-63	G-64-1	S-74A	K-63	GU-74	X-644
H-64-16	B-28-F	6H9	S-64	G-64-2	M-74A	K-64	GS-74	L-644
H-64-22	C-28-F	7H9	S-65	G-64-3	L-74A	K-65	GA-74	O-644
H-64-28	1L-28-F	8H9	S-66	G-64-4	1-74A	K-66	GB-74	1S-644
H-64-34	2L-28-F	9H9	S-67	G-64-5	2-74A	K-67	GE-74	2S-644
H-64-40	3L-28-F	10H9	S-68	G-64-6	3-74A	K-68	GD-74	3S-644
H-64-48	4L-28-F	11H9	S-69	G-64-7	4-74A	K-69	GF-74	4S-644
H-88-12	A-29-F	5H10	S-73	G-65-1	S-75A	K-73	GU-75	X-655
H-88-16	B-29-F	6H10	S-74	G-65-2	M-75A	K-74	GS-75	L-655
H-88-22	C-29-F	7H10	S-75	G-65-3	L-75A	K-75	GA-75	O-655
H-88-28	1L-29-F	8H10	S-76	G-65-4	1-75A	K-76	GB-75	1S-655
H-88-34	2L-29-F	9H10	S-77	G-65-5	2-75A	K-77	GE-75	2S-655
H-88-40	3L-29-F	10H10	S-78	G-65-6	3-75A	K-78	GF-75	3S-655
H-88-48	4L-29-F	11H10	S-79	G-65-7	4-75A	K-79	GG-75	4S-655
H-112-16	A-30-F	6H11	S-84	G-66-1	S-76A	K-84	GU-76	X-666
H-112-22	B-30-F	7H11	S-85	G-66-2	M-76A	K-85	GS-76	L-666
H-112-28	C-30-F	8H11	S-86	G-66-3	L-76A	K-86	GA-76	O-666
H-112-34	1L-30-F	9H11	S-87	G-66-4	1-76A	K-87	GB-76	1S-666
H-112-40	2L-30-F	10H11	S-88	G-66-5	2-76A	K-88	GC-76	2S-666
H-112-48	3L-30-F	11H11	S-89	G-66-6	3-76A	K-89	GD-76	3S-666
H-144-16	A-31-F	6H12	S-94	G-67-1	S-77A	K-94	GU-77	X-677
H-144-22	B-31-F	7H12	S-95	G-67-2	M-77A	K-95	GS-77	L-677
H-144-28	C-31-F	8H12	S-96	G-67-3	L-77A	K-96	GA-77	O-677
H-144-34	1L-31-F	9H12	S-97	G-67-4	1-77A	K-97	GB-77	1S-677
H-144-40	2L-31-F	10H12	S-98	G-67-5	2-77A	K-98	GF-77	2S-677
H-144-48	3L-31-F	11H12	S-99	G-67-6	3-77A	K-99	GG-77	3S-677

SLIP RENEWABLE BUSHINGS								
AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
S-12-4	AA-050	1S0	R-020	0K1	AS-30	H-20	U-30	AX-20
S-12-5	A-050	2S0	R-021	0K2	S-30	H-21	S-30	X-20
S-12-6	BB-050	3S0	R-021X	0K3	AM-30	H-211	A-30	AL-20
S-12-8	C-050	4S0	R-022	0K4	M-30	H-22	B-30	O-20
S-20-5	A-50	2S3	R-31	1K1	S-31	H-31&A	U-31	X-21
S-20-8	B-50	4S3	R-32	1K2	M-31	H-32&A	S-31	L-21
S-20-12	C-50	5S3	R-33	1K3	L-31	H-33&A	A-31	O-21
S-20-16	1L-50	6S3	R-34	1K4	1-31	H-34&A	B-31	1S-21
S-20-22	2L-50	7S3	R-35	1K5	2-31	H-35	C-31	2S-21
S-32-5	A-51	2S5	R-41	2K1	S-32	H-41&A	U-32	X-22
S-32-8	B-51	4S5	R-42	2K2	M-32	H-42&A	S-32	L-22
S-32-12	C-51	5S5	R-43	2K3	L-32	H-43&A	A-32	O-22
S-32-16	1L-51	6S5	R-44	2K4	1-32	H-44&A	B-32	1S-22
S-32-22	2L-51	7S5	R-45	2K5	2-32	H-45&A	D-32	2S-22
S-32-28	3L-51	8S5	R-46	2K6	3-32	H-46&A	E-32	3S-22
S-32-34	4L-51	9S5	R-47	2K7	4-32	H-47	F-32	4S-22
S-48-8	A-52	4S7	R-52	3K1	S-33	H-52	U-33	X-23
S-48-12	B-52	5S7	R-53	3K2	M-33	H-53	S-33	L-23
S-48-16	C-52	6S7	R-54	3K3	L-33	H-54	A-33	O-23

INFORMATION

# CONVERSION CHART



## SLIP RENEWABLE BUSHINGS - CONTINUED

AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
S-48-22	1L-52	7S7	R-55	3K4	1-33	H-55	B-33	1S-23
S-48-28	2L-52	8S7	R-56	3K5	2-33	H-56	C-33	2S-23
S-48-34	3L-52	9S7	R-57	3K6	3-33	H-57	E-33	3S-23
S-48-40	4L-52	10S7	R-58	3K7	4-33	H-58	F-33	4S-23
S-48-48	5L-52	10S7	R-59	3K8	5-33	H-59	G-33	5S-23
S-64-8	AA-53	4S9	R-62	4KN	SS-34	H-62	M-34	B-24
S-64-12	A-53	5S9	R-63	4K1	S-34	H-63	U-34	X-24
S-64-16	B-53	6S9	R-64	4K2	M-34	H-64	S-34	L-24
S-64-22	C-53	7S9	R-65	4K3	L-34	H-65	A-34	O-24
S-64-28	1L-53	8S9	R-66	4K4	1-34	H-66	B-34	1S-24
S-64-34	2L-53	9S9	R-67	4K5	2-34	H-67	E-34	2S-24
S-64-40	3L-53	10S9	R-68	4K6	3-34	H-68	D-34	3S-24
S-64-48	4L-53	11S9	R-69	4K7	4-34	H-69	F-34	4S-24
S-88-12	A-54	5S10	R-73	5K1	S-35	H-73	U-35	X-25
S-88-16	B-54	6S10	R-74	5K2	M-35	H-74	S-35	L-25
S-88-22	C-54	7S10	R-75	5K3	L-35	H-75	A-35	O-25
S-88-28	1L-54	8S10	R-76	5K4	1-35	H-76	B-35	1S-25
S-88-34	2L-54	9S10	R-77	5K5	2-35	H-77	E-35	2S-25
S-88-40	3L-54	10S10	R-78	5K6	3-35	H-78	F-35	3S-25
S-88-48	4L-54	11S10	R-79	5K7	4-35	H-79	G-35	4S-25
S-112-16	A-55	6S11	R-84	6K1	S-36	H-84	U-36	X-26
S-112-22	B-55	7S11	R-85	6K2	M-36	H-85	S-36	L-26
S-112-28	C-55	8S11	R-86	6K3	L-36	H-86	A-36	O-26
S-112-34	1L-55	9S11	R-87	6K4	1-36	H-87	E-36	1S-26
S-112-40	2L-55	10S11	R-88	6K5	2-36	H-88	C-36	2S-26
S-112-48	3L-55	11S11	R-89	6K6	3-36	H-89	D-36	3S-26
S-144-16	A-56	6S12	R-94	7K1	S-37	H-94	U-37	X-27
S-144-22	B-56	7S12	R-95	7K2	M-37	H-95	S-37	L-27
S-144-28	C-56	8S12	R-96	7K3	L-37	H-96	A-37	O-27
S-144-34	1L-56	9S12	R-97	7K4	1-37	H-97	E-37	1S-27
S-144-40	2L-56	10S12	R-98	7K5	2-37	H-98	F-37	2S-27
S-144-48	3L-56	11S12	R-99	7K6	3-37	H-99	G-37	3S-27

## FIXED RENEWABLE BUSHINGS - CONTINUED

AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
F-64-8	AA-43	4F9	RS-62	4Z9	SS-4	E-62	M-4	B-14
F-64-12	A-43	5F9	RS-63	4Z1	S-4	E-63	U-4	X-14
F-64-16	B-43	6F9	RS-64	4Z2	M-4	E-64	S-4	L-14
F-64-22	C-43	7F9	RS-65	4Z3	L-4	E-65	A-4	O-14
F-64-28	1L-43	8F9	RS-66	4Z4	1-4	E-66	B-4	1S-14
F-64-34	2L-43	9F9	RS-67	4Z5	2-4	E-67	E-4	2S-14
F-64-40	3L-43	10F9	RS-68	4Z6	3-4	E-68	D-4	3S-14
F-64-48	4L-43	11F9	RS-69	4Z7	4-4	E-69	F-4	4S-14
F-88-12	A-44	5F10	RS-73	5Z1	S-5	E-73	U-5	X-15
F-88-16	B-44	6F10	RS-74	5Z2	M-5	E-74	S-5	L-15
F-88-22	C-44	7F10	RS-75	5Z3	L-5	E-75	A-5	O-15
F-88-28	1L-44	8F10	RS-76	5Z4	1-5	E-76	B-5	1S-15
F-88-34	2L-44	9F10	RS-77	5Z5	2-5	E-77	E-5	2S-15
F-88-40	3L-44	10F10	RS-78	5Z6	3-5	E-78	F-5	3S-15
F-88-48	4L-44	11F10	RS-79	5Z7	4-5	E-79	G-5	4S-15
F-112-16	A-45	6F11	RS-84	6Z1	S-6	E-84	U-6	X-16
F-112-22	B-45	7F11	RS-85	6Z2	M-6	E-85	S-6	L-16
F-112-28	C-45	8F11	RS-86	6Z3	L-6	E-86	A-6	O-16
F-112-34	1L-45	9F11	RS-87	6Z4	1-6	E-87	E-6	1S-16
F-112-40	2L-45	10F11	RS-88	6Z5	2-6	E-88	C-6	2S-16
F-112-48	3L-45	11F11	RS-89	6Z6	3-6	E-89	D-6	3S-16
F-144-16	A-46	6F12	RS-94	7Z1	S-7	E-94	U-7	X-17
F-144-22	B-46	7F12	RS-95	7Z2	M-7	E-95	S-7	L-17
F-144-28	C-46	8F12	RS-96	7Z3	L-7	E-96	A-7	O-17
F-144-34	1L-46	9F12	RS-97	7Z4	1-7	E-97	E-7	1S-17
F-144-40	2L-46	10F12	RS-98	7Z5	2-7	E-98	F-7	2S-17
F-144-48	3L-46	11F12	RS-99	7Z6	3-7	E-99	G-7	3S-17



## FIXED RENEWABLE BUSHINGS

AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
F-12-4	AA-040	1F0	RS-020	0Z1	AS-0	E-20	U-0	AX-10
F-12-5	A-040	2F0	RS-021	0Z2	S-0	E-21	S-0	X-10
F-12-6	BB-040	3F0	RS-021X	0Z3	AM-0	E-211	A-0	AL-10
F-12-8	C-040	4F0	RS-022	0Z4	M-0	E-22	B-0	L-10
F-20-5	A-40	2F3	RS-31	1Z1	S-1	E-31&A	U-1	X-11
F-20-8	B-40	4F3	RS-32	1Z2	M-1	E-32&A	S-1	L-11
F-20-12	C-40	5F3	RS-33	1Z3	L-1	E-33&A	A-1	O-11
F-20-16	1L-40	6F3	RS-34	1Z4	1-1	E-34&A	B-1	1S-11
F-20-22	2L-40	7F3	RS-35	1Z5	2-1	E-35&A	C-1	2S-11
F-32-5	A-41	2F5	RS-41	2Z1	S-2	E-41&A	U-2	X-12
F-32-8	B-41	4F5	RS-42	2Z2	M-2	E-42&A	S-2	L-12
F-32-12	C-41	5F5	RS-43	2Z3	L2	E-43&A	A-2	O-12
F-32-16	1L-41	6F5	RS-44	2Z4	1-2	E-44&A	B-2	1S-12
F-32-22	2L-41	7F5	RS-45	2Z5	2-2	E-45&A	D-2	2S-12
F-32-28	3L-41	8F5	RS-46	2Z6	3-2	E-46&A	E-2	3S-12
F-32-34	4L-41	9F5	RS-47	2Z7	4-2	E-47	F-2	4S-12
F-48-8	A-42	4F7	RS-52	3Z1	S-3	E-52	U-3	X-13
F-48-12	B-42	5F7	RS-53	3Z2	M-3	E-53	S-3	L-13
F-48-16	C-42	6F7	RS-54	3Z3	L-3	E-54	A-3	O-13
F-48-22	1L-42	7F7	RS-55	3Z4	1-3	E-55	B-3	1S-13
F-48-28	2L-42	8F7	RS-56	3Z5	2-3	E-56	C-3	2S-13
F-48-34	3L-42	9F7	RS-57	3Z6	3-3	E-57	E-3	3S-13
F-48-40	4L-42	10F7	RS-58	3Z7	4-3	E-58	F-3	4S-13
F-48-48	5L-42	10F7	RS-59	3Z8	5-3	E-59	G-3	5S-13



# CONVERSION CHARTS

LINERS								
AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
FOR UNGROUND ADD "U" AFTER LAST DIGIT	O.D. PLUS GRIND STOCK							
	OMIT LETTER "F"	ADD "N" AFTER	USE "X" BEFORE	OMIT LETTER "G"	DROP THE "A"	ADD "S" AFTER LETTER	OMIT FIRST "G"	OMIT LAST DIGIT
L-20-4	AA-060-F	1L3	L-110	G20X1	AS-50A	M-20	GU-50	AX-400
L-20-5	A-060-F	2L3	L-111	G20X2	S-50A	M-21	GS-50	X-400
L-20-6	BB-060-F	3L3	L-11X	G20X3	AM-50A	M211	GA-50	AL-400
L-20-8	B-060-F	4L3	L-112	G20X4	M-50A	M-22	GB-50	L-400
L-32-5	A-60-F	2L5	L-31	G21X1	S-51A	M-31	GU-51	X-411
L-32-8	B-60-F	4L5	L-32	G21X2	M-51A	M-32	GS-51	L-411
L-32-12	C-60-F	5L5	L-33	G21X3	L-51A	M-33	GA-51	O-411
L-32-16	1L-60-F	6L5	L-34	G21X4	1-51A	M-34	GB-51	1S-411
L-32-22	2L-60-F	7L5	L-35	G21X5	2-51A	M-35	GC-51	2S-411
L-48-5	A-61-F	2L7	L-41	G22X1	S-52A	M-41	GU-52	X-422
L-48-6	B-61-F	4L7	L-42	G22X2	M-52A	M-42	GS-52	L-422
L-48-12	C-61-F	5L7	L-43	G22X3	L-52A	M-43	GA-52	O-422
L-48-16	1L-61-F	6L7	L-44	G22X4	1-52A	M-44	GB-52	1S-422
L-48-22	2L-61-F	7L7	L-45	G22X5	2-52A	M-45	GD-52	1S-422
L-48-28	3L-61-F	8L7	L-46	G22X6	3-52A	M-46	GE-52	2S-422
L-48-34	4L-61-F	9L7	L-47	G22X7	4-52A	M-47	GG-52	3S-422
L-64-8	A-62-F	4L9	L-52	G23X1	S-53A	M-52	GU-53	X-433
L-64-12	B-62-F	5L9	L-53	G23X2	M-53A	M-53	GS-53	L-433
L-64-16	C-62-F	6L9	L-54	G23X3	L-53A	M-54	GA-53	O-433
L-64-22	1L-62-F	7L9	L-55	G23X4	1-53A	M-55	GB-53	1S-433
L-64-28	2L-62-F	8L9	L-56	G23X5	2-53A	M-56	GC-53	2S-433
L-64-34	3L-62-F	9L9	L-57	G23X6	3-53A	M-57	GE-53	3S-433
L-64-40	4L-62-F	10L9	L-58	G23X7	4-53A	M-58	GF-53	4S-433
L-64-48	5L-62-F	11L9	L-59	G23X8	5-53A	M-59	GG-53	5S-433
L-88-8	AA-63-F	4L10	L-62	G24XN		M-62	GM-54	B-444
L-88-12	A-63-F	5L10	L-63	G24X1	S-54A	M-62	GU-54	X-444
L-88-16	B-63-F	6L10	L-64	G24X2	M-54A	M-62	GS-54	L-444
L-88-22	C-63-F	7L10	L-65	G24X3	L-54A	M-62	GA-54	O-444
L-88-28	1L-63-F	8L10	L-66	G24X4	1-54A	M-62	GB-54	1S-444
L-88-34	2L-63-F	9L10	L-67	G24X5	2-54A	M-62	GD-54	2S-444
L-88-40	3L-63-F	10L10	L-68	G24X6	3-54A	M-62	GE-54	3S-444
L-88-48	4L-63-F	11L10	L-69	G24X7	4-54A	M-62	GF-54	4S-444
L-112-12	A-64-F	5L11	L-73	G25X1	S-55A	M-73	GU-55	X-455
L-112-16	B-64-F	6L11	L-74	G25X2	M-55A	M-74	GS-55	L-455
L-112-22	C-64-F	7L11	L-75	G25X3	L-55A	M-75	GA-55	O-455
L-112-28	1L-64-F	8L11	L-76	G25X4	1-55A	M-76	GB-55	1S-455
L-112-34	2L-64-F	9L11	L-77	G25X5	2-55A	M-77	GE-55	2S-455
L-112-40	3L-64-F	10L11	L-78	G25X6	3-55A	M-78	GF-55	3S-455
L-112-48	4L-64-F	11L11	L-79	G25X7	4-55A	M-79	GG-55	4S-455
L-144-16	A-65-F	6L12	L-84	G26X1	S-56A	M-84	GU-56	X-466
L-144-22	B-65-F	7L12	L-85	G26X2	M-56A	M-85	GS-56	L-466
L-144-28	C-65-F	8L12	L-86	G26X3	L-56A	M-86	GA-56	O-466
L-144-34	1L-65-F	9L12	L-87	G26X4	1-56A	M-87	GE-56	1S-466
L-144-40	2L-65-F	10L12	L-88	G26X5	2-56A	M-88	GC-56	2S-466
L-144-48	3L-65-F	11L12	L-89	G26X6	3-56A	M-89	GD-56	3S-466
L-176-16	A-66-F	6L13	L-94	G27X1	S-56A	M-94	GU-57	X-477
L-176-22	B-66-F	7L13	L-95	G27X2	M-56A	M-95	GS-57	L-477
L-176-28	C-66-F	8L13	L-96	G27X3	L-56A	M-96	GA-57	O-477
L-176-34	1L-66-F	9L13	L-97	G27X4	1-56A	M-97	GE-57	1S-477
L-176-40	2L-66-F	10L13	L-98	G27X5	2-56A	M-98	GF-57	2S-477
L-176-48	3L-66-F	11L13	L-99	G27X6	3-56A	M-99	GG-57	3S-477

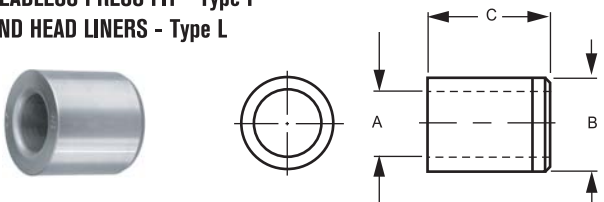
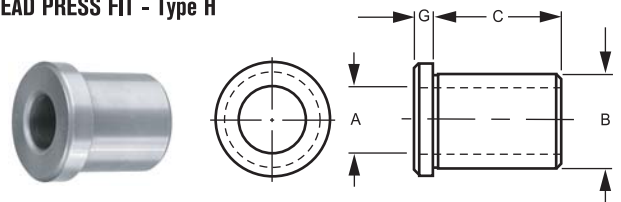
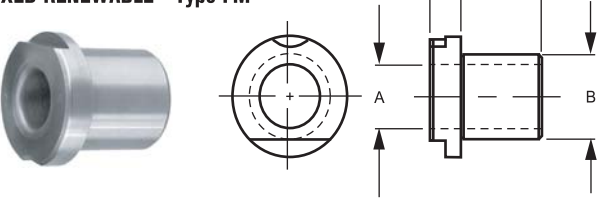
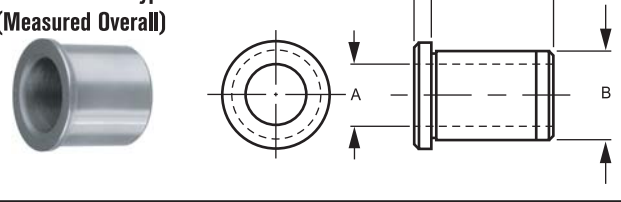
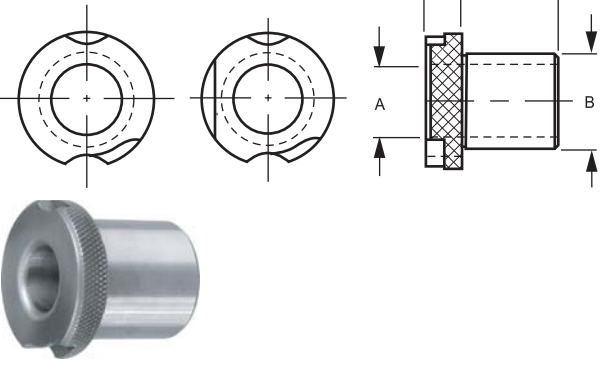
HEAD LINERS								
AA ANSI	ABC	OLD ACE	ACME	BRINEY	COL	ECON	UNIV.	XLO
FOR UNGROUND ADD "U" AFTER LAST DIGIT	O.D. PLUS GRIND STOCK							
	OMIT LETTER "F"	ADD "N" AFTER	USE "X" BEFORE	OMIT LETTER "G"	DROP THE "A"	ADD "S" AFTER LETTER	OMIT FIRST "G"	OMIT LAST DIGIT
HL-32-5	A-70-F	2HL5	SL-31	G21Z1	S-41A	SM-31	GU-551	X-4811
HL-32-8	B-70-F	4HL5	SL-32	G21Z2	M-41A	SM-32	GS-551	L-4811
HL-32-12	C-70-F	5HL5	SL-33	G21Z3	L-41A	SM-33	GA-551	O-4811
HL-32-16	1L-70-F	6HL5	SL-34	G21Z4	1-41A	SM-34	GB-551	1S-4811
HL-32-22	2L-70-F	7HL5	SL-35	G21Z5	2-41A	SM-35	GC-551	2S-4811
HL-48-5	A-71-F	2HL7	SL-41	G22Z1	S-42A	SM-41	GU-552	X-4822
HL-48-8	B-71-F	4HL7	SL-42	G22Z2	M-42A	SM-42	GS-552	L-4822
HL-48-12	C-71-F	5HL7	SL-43	G22Z3	L-42A	SM-43	GA-552	O-4822
HL-48-16	1L-71-F	6HL7	SL-44	G22Z4	1-42A	SM-44	GB-552	1S-4822
HL-48-22	2L-71-F	7HL7	SL-45	G22Z5	2-42A	SM-45	GD-552	2S-4822
HL-48-28	3L-71-F	8HL7	SL-46	G22Z6	3-42A	SM-46	GE-552	3S-4822
HL-48-34	4L-71-F	9HL7	SL-47	G22Z7	4-42A	SM-47	G7-552	4S-4822
HL-64-8	A-72-F	4HL9	SL-52	G23Z1	S-43A	SM-52	GU-553	X-4833
HL-64-12	B-72-F	5HL9	SL-53	G23Z2	M-43A	SM-53	GS-553	L-4833
HL-64-16	C-72-F	6HL9	SL-54	G23Z3	L-43A	SM-54	GA-553	O-4833
HL-64-22	1L-72-F	7HL9	SL-55	G23Z4	1-43A	SM-55	GB-553	1S-4833
HL-64-28	2L-72-F	8HL9	SL-56	G23Z5	2-43A	SM-56	GC-553	2S-4833
HL-64-34	3L-72-F	9HL9	SL-57	G23Z6	3-43A	SM-57	GE-553	3S-4833
HL-64-40	4L-72-F	10HL9	SL-58	G23Z7	4-43A	SM-58	GF-553	4S-4833
HL-64-48	5L-72-F	11HL9	SL-59	G23Z8	5-43A	SM-59	GG-553	5S-4833
HL-88-8	AA-73-F		SL-62	G24ZN	SS-44A	SM-62	GM-554	B-4844
HL-88-12	A-73-F	5HL10	SL-63	G24Z1	S-44A	SM-63	GU-554	X-4844
HL-88-16	B-73-F	6HL10	SL-64	G24Z2	M-44A	SM-64	GS-554	L-4844
HL-88-22	C-73-F	7HL10	SL-65	G24Z3	L-44A	SM-65	GA-554	O-4844
HL-88-28	1L-73-F	8HL10	SL-66	G24Z4	1-44A	SM-66	GB-554	1S-4844
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HL-88-48	4L-73-F	11HL10	SL-69	G24Z7	4-44A	SM-69	GF-554	4S-4844
HL-112-12	A-74-F	5HL11	SL-73	G25Z1	S-45A	SM-73	GU-555	X-4855
HL-112-16	B-74-F	6HL11	SL-74	G25Z2	M-45A	SM-74	GS-555	L-4855
HL-112-22	C-74-F	7HL11	SL-75	G25Z3	L-45A	SM-75	GA-555	O-4855
HL-112-28	1L-74-F	8HL11	SL-76	G25Z4	1-45A	SM-76	GB-555	1S-4855
HL-112-34	2L-74-F	9HL11	SL-77	G25Z5	2-45A	SM-77	GE-555	2S-4855
HL-112-40	3L-74-F	10HL11	SL-78	G25Z6	3-45A	SM-78	GF-555	3S-4855
HL-112-48	4L-74-F	11HL11	SL-79	G25Z7	4-45A	SM-79	GG-555	4S-4855
HL-144-16	A-75-F	6HL12	SL-84	G26Z1	S-46A	SM-84	GU-556	X-4866
HL-144-22	B-75-F	7HL12	SL-85	G26Z2	M-46A	SM-85	GS-556	L-4866
HL-144-28	C-75-F	8HL12	SL-86	G26Z3	L-46A	SM-86	GA-556	O-4866
HL-144-34	1L-75-F	9HL12	SL-87	G26Z4	1-46A	SM-87	GB-556	1S-4866
HL-144-40	2L-75-F	10HL12	SL-88	G26Z5	2-46A	SM-88	GC-556	2S-4866
HL-144-48	3L-75-F	11HL12	SL-89	G26Z6	3-46A	SM-89	GD-556	3S-4866
HL-176-16	A-76-F	6HL13	SL-94	G27Z1	S-47A	SM-94	GU-567	X-4877
HL-176-22	B-76-F	7HL13	SL-95	G27Z2	M-47A	SM-95	GS-567	L-4877
HL-176-28	C-76-F	8HL13	SL-96	G27Z3	L-47A	SM-96	GA-567	O-4877
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HL-176-40	2L-76-F	10HL13	SL-98	G27Z5	2-47A	SM-98	GF-567	2S-4877
HL-176-48	3L-76-F	11HL13	SL-99	G27Z6	3-47A	SM-99	GG-567	3S-4877

# CONVERSION CHART

## OIL GROOVE BUSHINGS

ALL AMERICAN	ACE	ACME	AMERICAN	BRINEY	ECONOMY	UNITED	UNIVERSAL	WELCH
STYLE AA	TYPE 1	STYLE 5	STYLE 1	STYLE A	STYLE A	STYLE 1A	STYLE A	STYLE A
STYLE AB	TYPE 2	STYLE 8	STYLE 2	STYLE B	STYLE B	STYLE 2A	STYLE B	STYLE B
STYLE AC	TYPE 3	STYLE 2	STYLE 3	STYLE C	STYLE C	STYLE 3A	STYLE C	STYLE C
STYLE AD	TYPE 4	STYLE 4	STYLE 4	STYLE D	STYLE D	STYLE 1	STYLE D	STYLE D
STYLE AE	TYPE 6	STYLE 7	STYLE 5	STYLE E	STYLE E	STYLE 2	STYLE E	STYLE E
STYLE AF	TYPE 5	STYLE 1	STYLE 6	STYLE F	STYLE F	STYLE 3	STYLE F	STYLE F
STYLE AG	TYPE 7	STYLE 6	STYLE 7	STYLE G	STYLE G	STYLE 1B	STYLE G	STYLE G
STYLE AH	TYPE 8	STYLE 9	STYLE 8	STYLE H	STYLE H	STYLE 2B	STYLE H	STYLE H
STYLE AJ	TYPE 9	STYLE 3	STYLE 9	STYLE J	STYLE J	STYLE 3B	STYLE J	STYLE J
STYLE AK	TYPE 10	STYLE 10	STYLE 10	STYLE K	STYLE K	STYLE 4	STYLE K	STYLE K
STYLE AL	TYPE 11	STYLE 11	STYLE 11	STYLE L	STYLE L	STYLE 4A	STYLE L	STYLE L
STYLE AM	TYPE 12	STYLE 25	STYLE 12	STYLE M	STYLE M	STYLE 6	STYLE M	STYLE M
STYLE AN	TYPE 14	STYLE 20	STYLE 13	STYLE N	STYLE N	STYLE 7A	STYLE N	STYLE N
STYLE AO	TYPE 13	STYLE 12	STYLE 14	STYLE O	STYLE O	STYLE 12C	STYLE O	STYLE O
STYLE AP	TYPE 15	STYLE 21	STYLE 15	STYLE P	STYLE P	STYLE 7B	STYLE P	STYLE P
STYLE AQ	TYPE 16	STYLE 19	STYLE 16	STYLE Q	STYLE Q	STYLE 7	STYLE Q	STYLE Q
STYLE AR	TYPE 17	STYLE 14	STYLE 17	STYLE R	STYLE R	STYLE 9A	STYLE R	STYLE R
STYLE AS	TYPE 18	STYLE 15	STYLE 18	STYLE S	STYLE S	STYLE 9B	STYLE S	STYLE S
STYLE AT	TYPE 19	STYLE 13	STYLE 19	STYLE T	STYLE T	STYLE 9	STYLE T	STYLE T
STYLE AU	TYPE 20	STYLE 17	STYLE 20	STYLE U	STYLE U	STYLE 10A	STYLE U	STYLE U
STYLE AV	TYPE 21	STYLE 18	STYLE 21	STYLE V	STYLE V	STYLE 10B	STYLE V	STYLE V
STYLE AW	TYPE 22	STYLE 16	STYLE 22	STYLE W	STYLE W	STYLE 10	STYLE W	STYLE W
STYLE AX	TYPE 23	STYLE 23	STYLE 23	STYLE X	STYLE X	STYLE 8A	STYLE X	STYLE X
STYLE AY	TYPE 24	STYLE 24	STYLE 24	STYLE Y	STYLE Y	STYLE 8B	STYLE Y	STYLE Y
STYLE AZ	TYPE 25	STYLE 22	STYLE 25	STYLE Z	STYLE Z	STYLE 8	STYLE Z	STYLE Z
WIPER	WIPER	WIPER	WIPER	WIPER	WIPER	WIPER	WIPER	WIPER
STYLE AAA	TYPE AA	STYLE WA	STYLE A	STYLE AA	STYLE AA	STYLE PE	STYLE AA	STYLE AA
WIPER	WIPER	WIPER	WIPER	WIPER	WIPER	WIPER	WIPER	WIPER
STYLE ABB	TYPE BB	STYLE WB	STYLE B	STYLE BB	STYLE BB	STYLE HW	STYLE BB	STYLE BB
WIPER	WIPER	WIPER	WIPER	WIPER	WIPER	WIPER	WIPER	WIPER
STYLE ACC	TYPE CC	STYLE WC	STYLE C	STYLE CC	STYLE CC	STYLE HE	STYLE CC	STYLE CC

When a special bushing isn't available, All American will modify standard bushings to meet your requirements, or custom design bushings to your specifications and tolerances. Photocopy this page and FAX or mail it to us with all necessary information. **Oil impregnated bronze bushings are available on request.**

<p><b>HEADLESS PRESS FIT - Type P AND HEAD LINERS - Type L</b></p> 	<p><b>HEAD PRESS FIT - Type H</b></p> 										
<p><b>FIXED RENEWABLE - Type FM</b></p> 	<p><b>HEADLINERS - Type HL (Measured Overall)</b></p> 										
<p><b>SLIP FIXED RENEWABLE - Type SF and SFX</b></p> 	<table border="1"> <thead> <tr> <th data-bbox="841 802 977 871">(A) I.D.</th> <th data-bbox="977 802 1112 871">(B) O.D.</th> <th data-bbox="1112 802 1250 871">(C) LENGTH</th> <th data-bbox="1250 802 1383 871">(G) HEAD THICKNESS</th> <th data-bbox="1383 802 1523 871">(F) HEAD O.D.</th> </tr> </thead> <tbody> <tr> <td style="height: 150px;"></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	(A) I.D.	(B) O.D.	(C) LENGTH	(G) HEAD THICKNESS	(F) HEAD O.D.					
(A) I.D.	(B) O.D.	(C) LENGTH	(G) HEAD THICKNESS	(F) HEAD O.D.							

**Contact your local distributor or fax to: (818)361-8776**

- ✓ Standard tolerances will be supplied unless otherwise specified.
- ✓ Please specify to four decimal places.
- ✓ Please specify if you require a counterbore or not.

**Check type of bushing needed:**

P = Headless Press Fit

H = Head Press Fit

SF = Slip-Fixed Renewable

SFX = Slip Fixed Renewable

FM = Fixed Renewable

HL = Head Liners

L = Headless Liners

Tungsten Carbide

Type of material required \_\_\_\_\_

Hardness of \_\_\_\_\_ RC

Quantities required \_\_\_\_\_

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

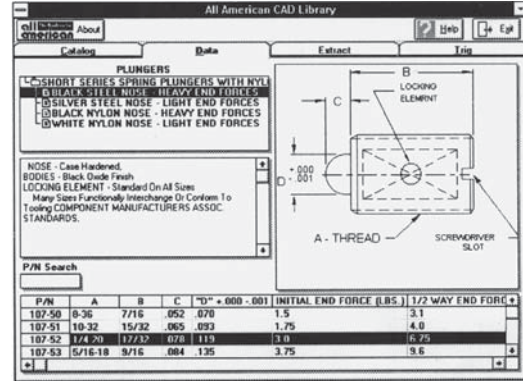
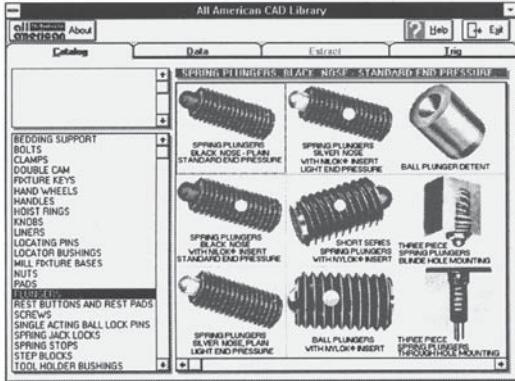
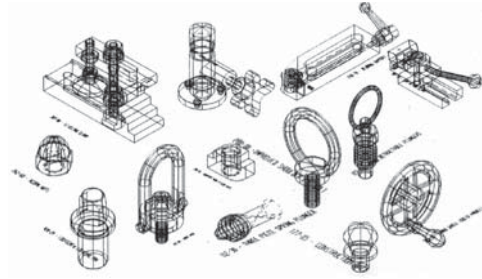
Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Telephone ( ) \_\_\_\_\_ Ext. \_\_\_\_\_ FAX: \_\_\_\_\_

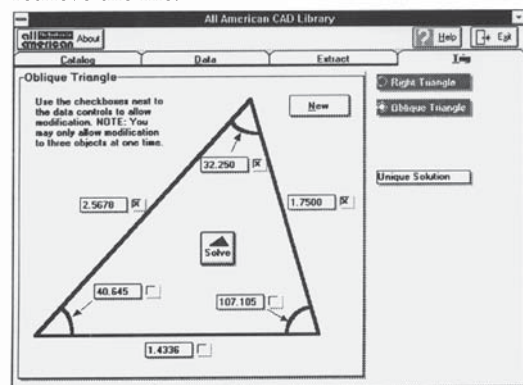
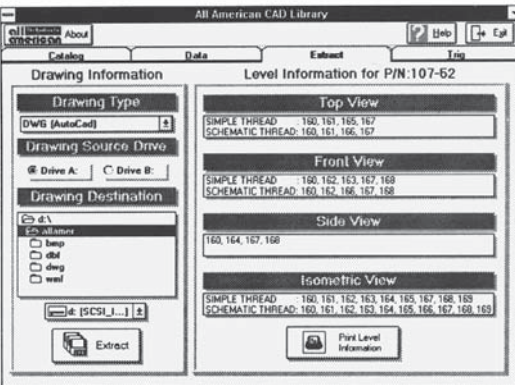
INFORMATION

Now designing tooling fixtures has become easier than ever by using the All American CAD-Library<sup>®</sup>. Instead of drawing tooling components you simply retrieve them from the cad-library in a matter of seconds with these three simple steps.



1. Use the mouse or simply enter the first letter of the category name and the first occurrence will be highlighted, then the second and so on. Navigate through the categories, and choose the picture of the part you want then double click on it.

2. Choose the sub-category and you are ready to look at the data. If you know the All American part number you can enter it in the P/N search area which will bring up the information. Double click on the part number and you are ready to retrieve the file.



3. In the final step, you choose the CD-ROM drive, the destination drive and directory then click on the extract button.

The All American CAD-Library<sup>®</sup> interface also features triangle solving software for solving right angle and oblique angle triangles.

There are more than 2800 3-D wire frame models in the All American CAD-Library<sup>®</sup>. Every model has been drawn to scale. Each model has components in different layers or levels in order to easily convert 3-D wire frame into a 2-D drawing.

**MINIMUM REQUIREMENTS:**

8 MB of free hard disk space. Windows is required to run the interface, a minimum of 640 x 480 resolution graphics card and a CD-ROM drive.

**NOTE: YOUR CAD SYSTEM DOES NOT HAVE TO RUN IN WINDOWS.**

Please either fill out the order form on page 1.17 and send or fax to us, or go to our web site at [www.allamericanproducts.com](http://www.allamericanproducts.com) in order to qualify for the free copy of the All American CAD-Library<sup>®</sup>.

## ORDER FORM

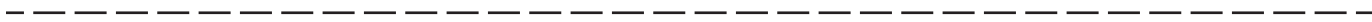
This form can also be filled out online by going to [www.allamericanproducts.com](http://www.allamericanproducts.com)

INFORMATION

First name	Last name	
Company name		
Address		
City	State	ZIP
Phone # with area code	Fax # with area code	

- |                          |             |       |             |   |        |
|--------------------------|-------------|-------|-------------|---|--------|
| <input type="checkbox"/> | Auto CAD™   | -     | DWG Format  | - | CD-ROM |
| <input type="checkbox"/> | Cadkey™     | -     | PTN Format  | - | CD-ROM |
| <input type="checkbox"/> | Autodesk    | -     | DXF™ Format | - | CD-ROM |
| <input type="checkbox"/> | IGES Format | ..... |             |   | CD-ROM |

**Note:** The user interface is available for **Windows** only. The CAD system that you are using doesn't have to run in Windows™



CAD System \_\_\_\_\_ Type of computer \_\_\_\_\_

**Operating System**     Windows                       Other \_\_\_\_\_  
(please specify)

**Media Type**                       CD-Rom                       Other \_\_\_\_\_  
(please specify)

