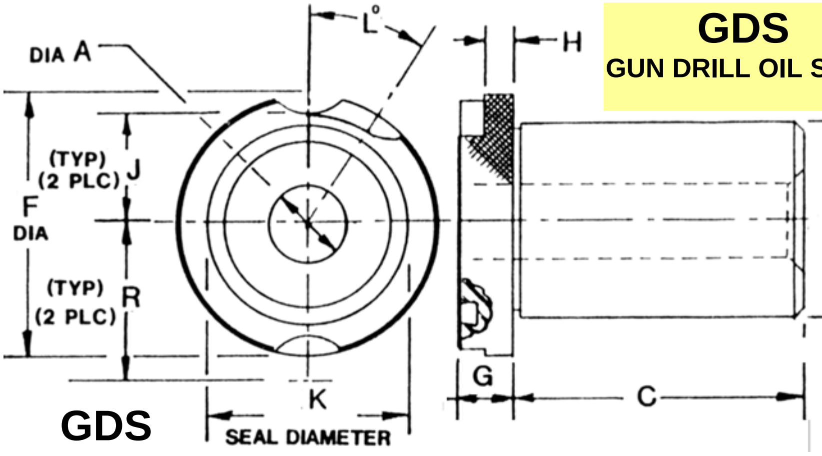
Seal It With 'GDS' Oil Seal Gun Drill Bushings!

Oil Seal Gun Drill Bushings



GDS

GDS
GUN DRILL OIL SEAL

GDS — FOR GUN DRILLING MACHINES

Positive sealing using O-Rings against the workpiece allows your gun drill machine to maintain the oil pressure required for optimum speeds and feeds.

These tools eliminate the 'overworked' condition of your coolant pressure systems. Keep gun drill sharpened. Do not use worn out or eccentric bushings.

Straight and accurate holes can only be achieved with adequate and constant oil pressures.

O-Ring Sizes

ANSI STANDARD TOLERANCES

PART NO.	O. D.	F	G	H	J	K	L	R
GDSR-64	1"	1-27/64	3/8	3/16	19/32	15/1	35º	59/64
GDSR-88	1-3/8	1-51/64	3/8	3/16	25/32	1-1/4	30º	1-7/64
GDSR-112	1-3/4	2-19/64	3/8	3/16	1"	1-3/4	30º	1-25/64
GDSR-144	2-1/4	2-51/64	3/8	3/16	1-1/4	2-1/4	25º	1-41/64
GDSR-176	2-3/4	4-13/16	1/2	1/4	2-15/64	4"	25º	2-5/8

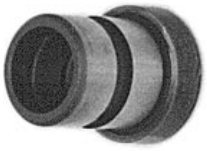
GUN DRILL SEAL BUSHINGS

A I.D. RANGE STANDARD DRILL SIZES NOMINAL	ACTUAL	B O.D. SIZE NOM.	ACTUAL	ANSI SYMBOL	C LENGTH UNDER HEAD / ANSI LENGTH SYMBOL BY 16ths 3/4 -12	1" -16	1-3/8 -22	1-3/4 -28	2-1/8 -34	2-1/2 -40	3" -48	LOCK SCREWS USED
1/8 - 3/16	.1250- .1875	1"	1.0000- .9998	GDS-64	GDS-64-12	GDS-64-16	GDS-64-22	GDS-64-28				LS-2
12 - 11/32	.1890- .3437	1"	1.0000- .9998	GDS-64	GDS-64-12	GDS-64-16	GDS-64-22	GDS-64-28	GDS-64-34			LS-2
9/32 - 9/16	.2812- .5625	1"	1.0000- .9998	GDS-64	GDS-64-12	GDS-64-16	GDS-64-22	GDS-64-28	GDS-64-34	GDS-64-40		LS-2
15/32 - 25/32	.4687- .7812	1"	1.0000- .9998	GDS-64	GDS-64-12	GDS-64-16	GDS-64-22	GDS-64-28	GDS-64-34	GDS-64-40	GDS-64-48	LS-2
1/8 - 3/16	.1250- .1875	1-3/8	1.3750 1.3747	GDS-88		GDS-88-16	GDS-88-22	GDS-88-28				LS-2
12 - 11/32	.1890- .3437	1-3/8	1.3750 1.3747	GDS-88		GDS-88-16	GDS-88-22	GDS-88-28	GDS-88-34			LS-2
9/32 - 9/16	.2812-- .5625	1-3/8	1.3750 1.3747	GDS-88		GDS-88-16	GDS-88-22	GDS-88-28	GDS-88-34	GDS-88-40		LS-2
15/32 - 23/32	.4687- .7187	1-3/8	1.3750 1.3747	GDS-88		GDS-88-16	GDS-88-22	GDS-88-28	GDS-88-34	GDS-88-40	GDS-88-48	LS-2
47/64 - 1-1/16	.7344- 1.0625	1-3/8	1.3750 1.3747	GDS-88		GDS-88-16	GDS-88-22	GDS-88-28	GDS-88-34	GDS-88-40	GDS-88-48	LS-2
31/32 - 1-13/32	.9687- 1.4062	1-3/4	1.7500- 1.7497	GDS-112				GDS-112-28	GDS-112-34	GDS-112-40	GDS-112-48	LS-3
31/32 - 1-13/32	.9687- 1.4062	1-3/4	1.7500- 1.7497	GDS-112				GDS-112-28	GDS-112-34	GDS-112-40	GDS-112-48	LS-3
31/32 - 1-13/32	.9687- 1.4062	1-3/4	1.7500- 1.7497	GDS-112				GDS-112-28	GDS-112-34	GDS-112-40	GDS-112-48	LS-3
31/32 - 1-13/32	.9687- 1.4062	1-3/4	1.7500- 1.7497	GDS-112				GDS-112-28	GDS-112-34	GDS-112-40	GDS-112-48	LS-3
31/32 - 1-13/32	.9687- 1.4062	1-3/4	1.7500- 1.7497	GDS-112				GDS-112-28	GDS-112-34	GDS-112-40	GDS-112-48	LS-3
31/32 - 1-13/32	.9687- 1.4062	1-3/4	1.7500- 1.7497	GDS-112				GDS-112-28	GDS-112-34	GDS-112-40	GDS-112-48	LS-3
31/32 - 1-13/32	.9687- 1.4062	1-3/4	1.7500- 1.7497	GDS-112				GDS-112-28	GDS-112-34	GDS-112-40	GDS-112-48	LS-3
1-11/32 - 1-7/8	1.3437- 1.8750	2-1/4	2.2500- 2.2497	GDS-144				GDS-144-28	GDS-144-34	GDS-144-40	GDS-144-48	LS-3
1-11/32 - 1-7/8	1.3437- 1.8750	2-1/4	2.2500- 2.2497	GDS-144				GDS-144-28	GDS-144-34	GDS-144-40	GDS-144-48	LS-3
1-11/32 - 1-7/8	1.3437- 1.8750	2-1/4	2.2500- 2.2497	GDS-144				GDS-144-28	GDS-144-34	GDS-144-40	GDS-144-48	LS-3
1-11/32 - 1-7/8	1.3437- 1.8750	2-1/4	2.2500- 2.2497	GDS-144				GDS-144-28	GDS-144-34	GDS-144-40	GDS-144-48	LS-3
1-1/2 - 2-9/32	1.5000- 2.2812	2-3/4	2.7500- 2.7497	GDS-176				GDS-176-28	GDS-176-34	GDS-176-40	GDS-176-48	LS-4
1-1/2 - 2-9/32	1.5000- 2.2812	2-3/4	2.7500- 2.7497	GDS-176				GDS-176-28	GDS-176-34	GDS-176-40	GDS-176-48	LS-4
1-1/2 - 2-9/32	1.5000- 2.2812	2-3/4	2.7500- 2.7497	GDS-176				GDS-176-28	GDS-176-34	GDS-176-40	GDS-176-48	LS-4
1-1/2 - 2-9/32	1.5000- 2.2812	2-3/4	2.7500- 2.7497	GDS-176				GDS-176-28	GDS-176-34	GDS-176-40	GDS-176-48	LS-4
1-1/2 - 2-9/32	1.5000- 2.2812	2-3/4	2.7500- 2.7497	GDS-176				GDS-176-28	GDS-176-34	GDS-176-40	GDS-176-48	LS-4

Oil Groove Bushings

Increase Your Up Time

The Friendly *UNITED* Guys' Precisionability Increases Wear Life For New and Used Machine Tools!



Oil Groove Bushings—48 Styles

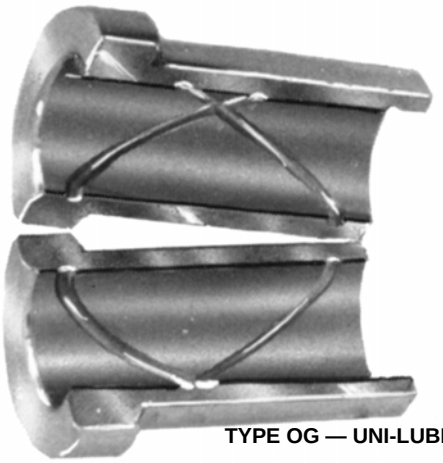
UNITED **Oil Grooves are available in I.D. sizes from 1/2" to 16" maximum. I.D. sizes from 1/2" to 2" have approximately 7" of Groove length. I.D. sizes from 2" to 16" have approximately 14" of Groove length.**

Groove sizes are 1/16" wide by 1/32" deep. Bushing I.D.s smaller than 1/2" will be grooved with appropriate width and depth sizes.

O.D. styles feature Holes and Grooves that are centrally located on the underhead length. Typical Holes are 1/4" diameter and Grooves 5/16" wide by 3/64" deep. When either the I.D. or O.D. or Length is less than 1", Holes will be 1/8" dia. and grooves will be 3/16" wide by 1/32" deep.

USES:

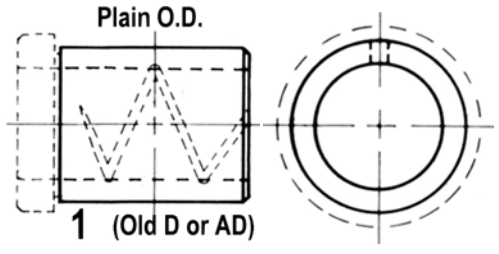
- ***FOR LUBRICATION BUSHINGS***
- ***DIE SET LUBE BUSHINGS***
- ***PROBE BAR LUBE BUSHINGS***
- ***DIE CASTING LUBE BUSHINGS***
- ***TOGGLE LUBE BUSHINGS***
- ***HYDRAULIC PRESS BUSHINGS***
- ***FOR CHIP & DIRT ELIMINATION***



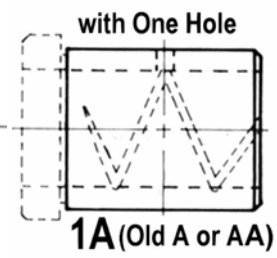
TYPE OG — UNI-LUBE

UNITED's **48 Styles listed here and on the following pages**

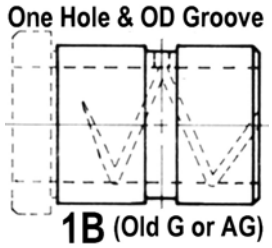
Used for Vertical Shafts — *STYLE 1* — HELIX SPIRAL - OUT ONE END



Vertical shaft type bushing as on a boring bar.

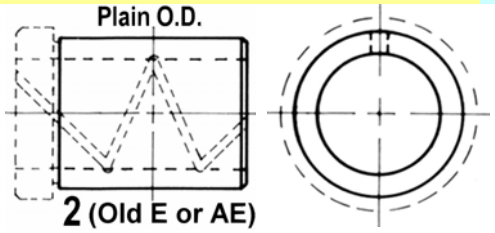


Oil hole must be set into position

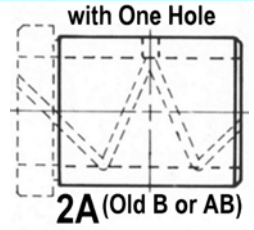


Does not require positioning for oil hole as the O.D. groove picks up oil flow

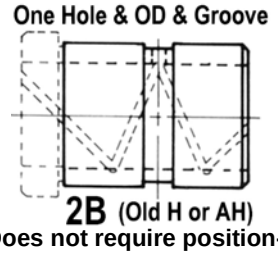
Used for Horizontal Shafts — *STYLE 2* — HELIX SPIRAL - OUT BOTH ENDS



Used for horizontal shafts in motion or grooved for lubrication

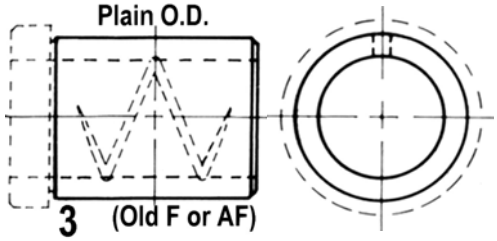


Oil hole must be set into position

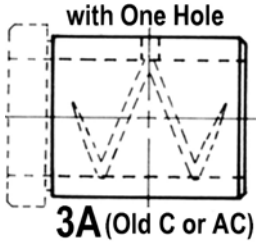


Does not require positioning because of oil groove

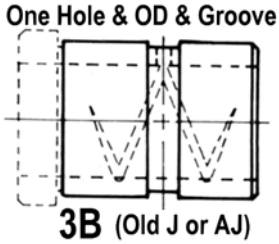
Used for Shafts in Motion — *STYLE 3* — HELIX SPIRAL - INSIDE



For shaft in motion as transfer machines. Oil enters through shaft



Oil hole must be set into position



Does not require positioning because of oil groove

12200 WOODRUFF AVE. • DOWNEY, CA 90241-5608 • TELEPHONE (562) 803-1521 / (800)421-3466 IN CA / 800-486-3466 • FAX (562) 803-6898 /(800)486-3465

8-21-97

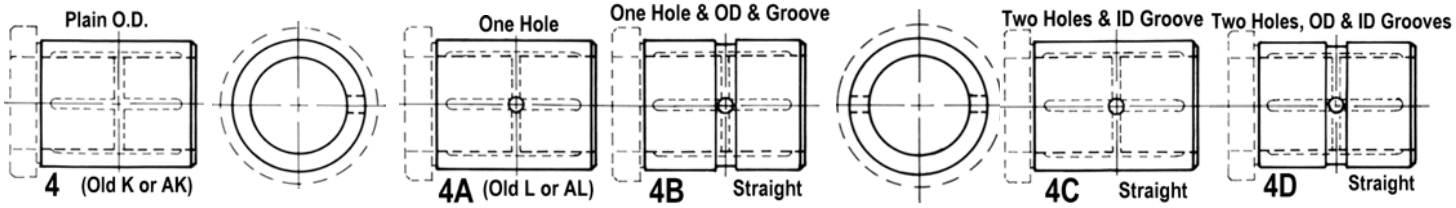
Styles 4-8 Oil Grooves

Oil Groove Bushings

AVAILABLE IN BRONZE AND TOOL STEELS
48 Styles — Pages A55 thru A59

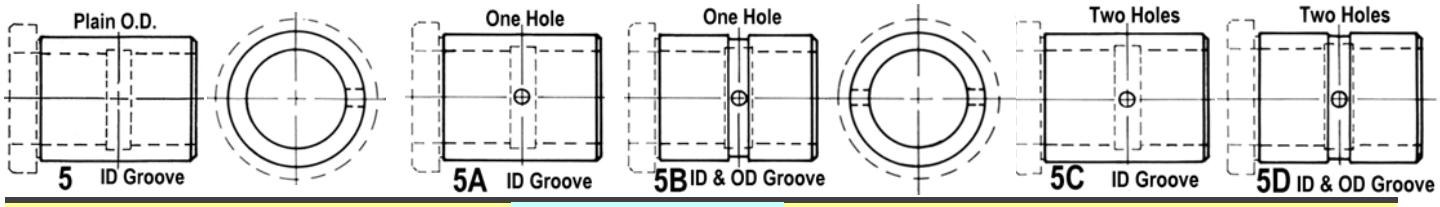
SLOTS and RING GROOVE — STYLE 4 — Used for Rotary Motion

Shaft in a Rotary Motion — No Break Out



RING GROOVE — Internal — STYLE 5 — Used for Minimum Lubrication

Style 5 Lubrication Thru Shaft—Styles 5A, 5B, 5C, 5D Thru Fixture—For Minimum Lubrication



SPIRAL and RING GROOVE — STYLE 6 — Used for Maximum Lubrication

HELIX —*For Maximum Continuous Lubrication — Oil Does Not break Out*

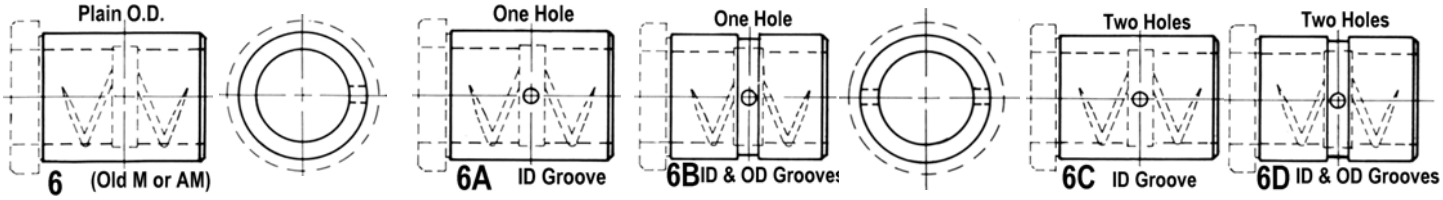
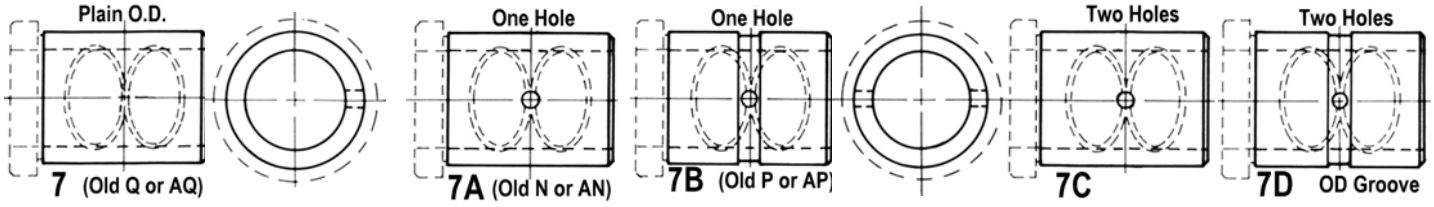


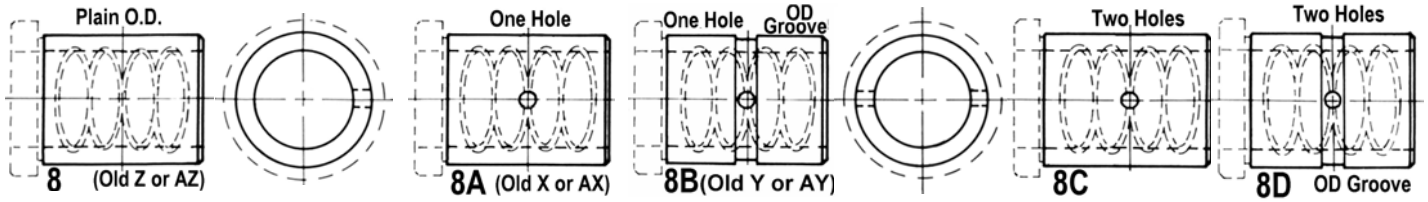
FIGURE EIGHT — STYLE 7 — Used for Conventional Lubrication

For Conventional Groove with Short Strokes — Modest Lubrication



DOUBLE FIGURE EIGHT — STYLE 8 — Used for Maximum Lubrication

For Shafts with Short Strokes — Maximum Lubrication — Oil Does Not Break Out



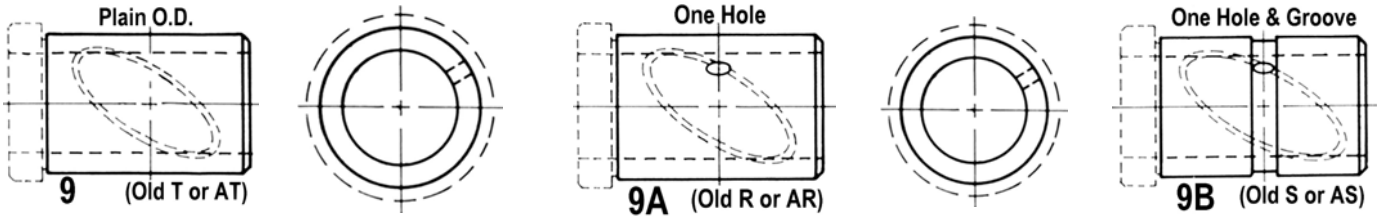
UNITED's 48 Oil Grooves

MANUFACTURED AS ORDERED FROM SEMI FINISHED

Styles 9-12 Oil Grooves

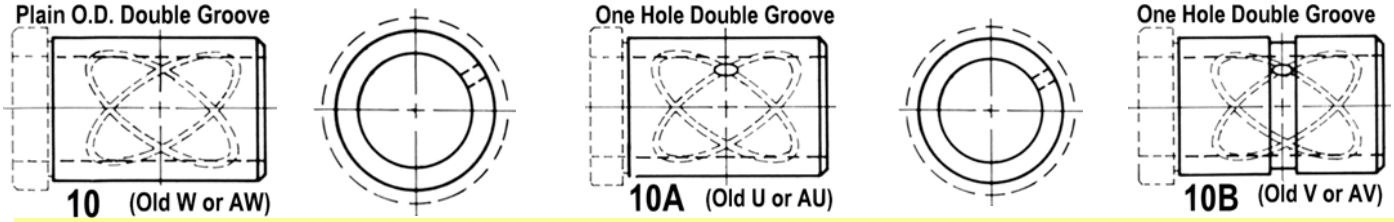
Used for Less Lubrication — *STYLE 9* — SINGLE LOOP

For ShaftsRequiring Less Lubrication than Figure 8 Styles — Oil Does Not Break Out



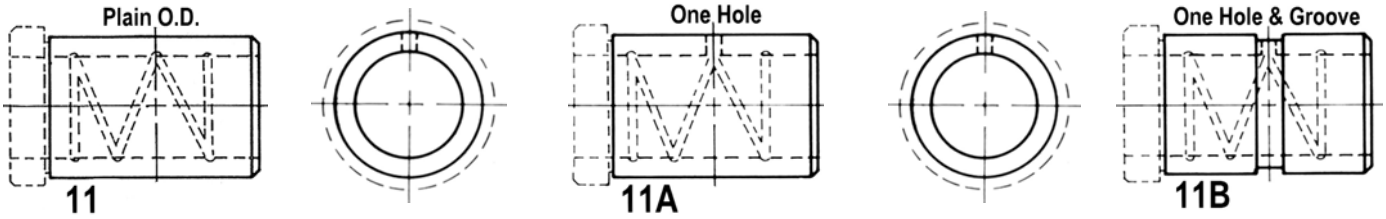
Moderate to Maximum Lube — *STYLE 10* — DOUBLE LOOP

Provides Maximum Lubrication Across Bushing Area



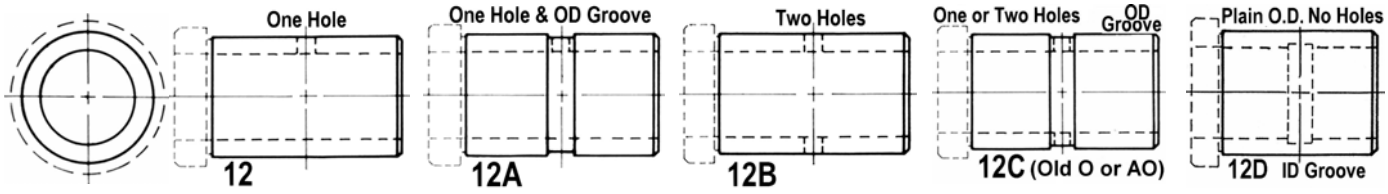
Concentrates Lube in Bush — *STYLE 11* — SPIRAL & TWO RING GROOVES

Excellent for Very Short Strokes



Induces Lube for Drilling — *STYLE 12* — O.D. GROOVING ONLY

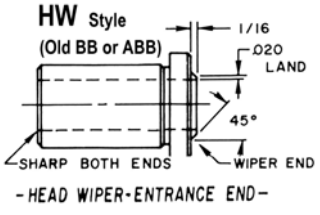
Flow is Induced Thru Fixture, Coolant Drill or Coolant Slip Fit Bushing

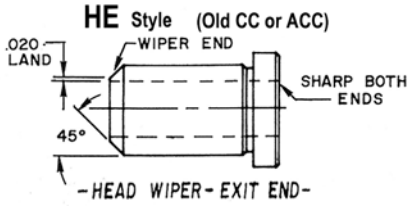


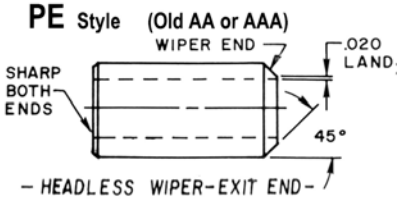
WIPER END SPECIFICATIONS — OIL GROOVE DOES NOT RUN OUT ON WIPER END

Ordering Example: **P - 48 - 16 - .5000 -OG 10A - PE**

BUSHING STYLE | O.D. | LENGTH | I.D. (4 Decimal Places) | OIL GROOVE No. | WIPER Style



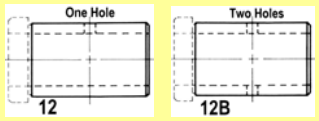




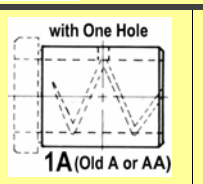
Oil Groove Selection By 3 Principal Types

OIL GROOVE BUSHINGS WITH 1 OR 2 OIL FEED HOLES

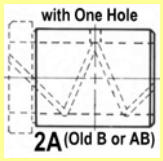
1. COOLANT FLOWS FROM MANIFOLD PASSAGE TO INTERNAL OIL GROOVES



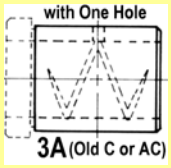
FLOWS TO INTERNAL GROOVES



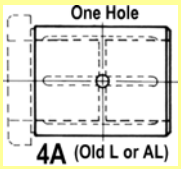
HELIX OPEN BOTTOM



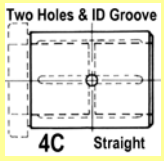
HELIX OPEN BOTH ENDS



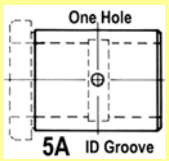
HELIX INSIDE



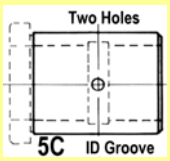
STRAIGHT



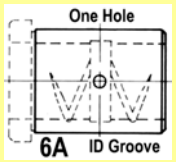
STRAIGHT



INTERNAL RING GROOVE



INTERNAL RING GROOVE



HELIX ID GROOVE

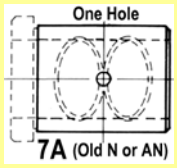


FIGURE EIGHT

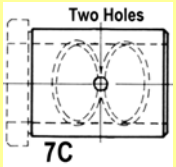
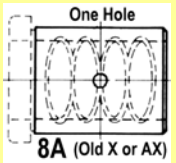
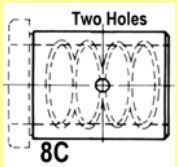


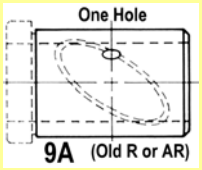
FIGURE EIGHT



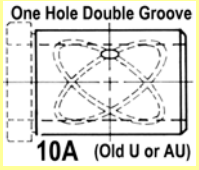
MAXIMUM LUBRICATION



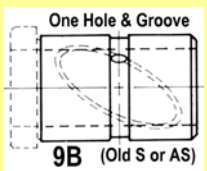
DOUBLE FIGURE EIGHT



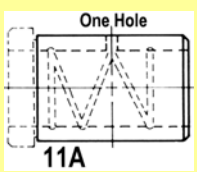
MIN LUBE LOOP



DOUBLE LOOP



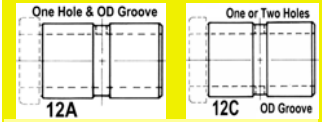
MIN LUBE LOOP



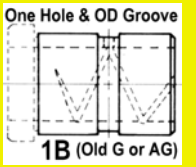
SHORT STROKES

OIL GROOVE BUSHINGS WITH 1 OR 2 OIL FEED HOLES and WITH EXTERNAL O.D. GROOVES

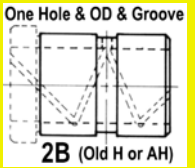
2. COOLANT FLOWS FROM MANIFOLD PASSAGE FROM INSIDE OR OUTSIDE TO INTERNAL OIL GROOVES



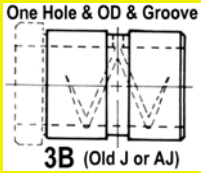
FLOWS FROM INSIDE OR OUTSIDE



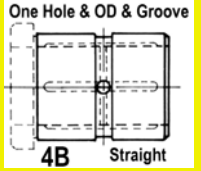
HELIX OPEN BOTTOM



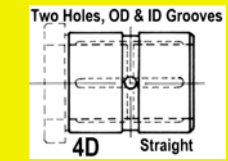
HELIX OPEN BOTH ENDS



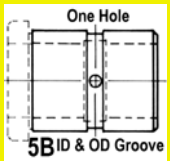
HELIX INSIDE



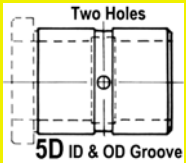
STRAIGHT



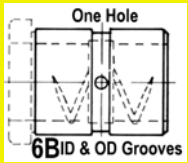
STRAIGHT



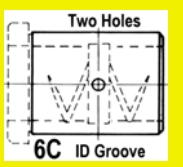
MINIMUM LUBE



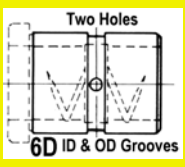
MINIMUM LUBRICATION



CONTINUOUS LUBE



HELIX



MAX LUBE HELIX

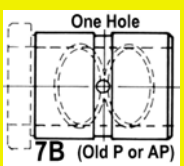


FIGURE EIGHT

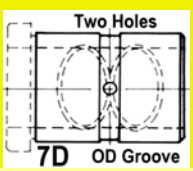
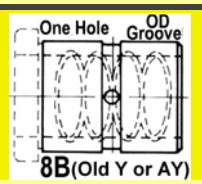
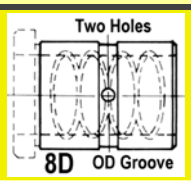


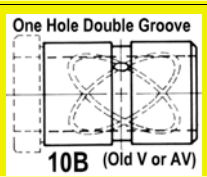
FIGURE EIGHT



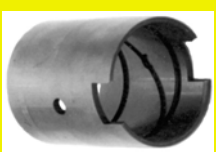
MAXIMUM LUBRICATION



MAXIMUM LUBRICATION



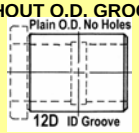
DOUBLE LOOP



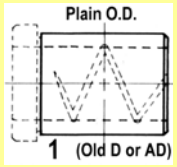
OIL GROOVES

OIL GROOVE BUSHINGS WITH INTERNAL GROOVES and WITHOUT OIL FEED HOLES OR WITHOUT O.D. GROOVES

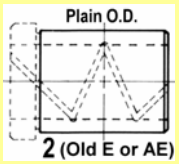
3. COOLANT ENTERS FROM TOP OF BUSHING OR PACKED WITH GREASE



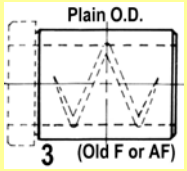
FLOWS FROM TOP



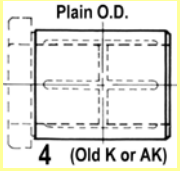
HELIX OPEN BOTTOM



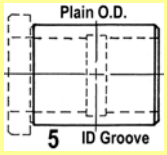
HELIX OPEN BOTH ENDS



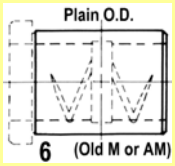
HELIX INSIDE



STRAIGHT



INTERNAL GROOVE



HELIX WITH I.D. GROOVE

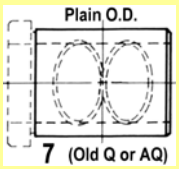
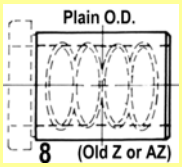
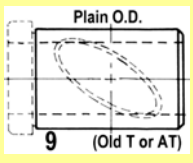


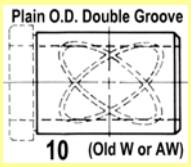
FIGURE EIGHT



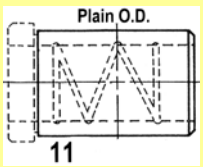
DOUBLE FIGURE EIGHT



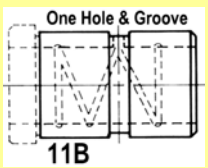
MIN LUBE LOOP



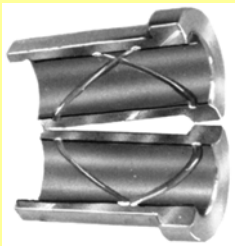
DOUBLE LOOP



RETAINS LUBRICATION



RETAINS LURBRICATION



WIPERS

Styles HW, HE and PE

See Page A57 this Section.

Complete Conversion & Listing of Oil Grooves

Oil Groove Bushing Conversion Chart

UNITED OIL GROOVE CONVERSION CHART

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

UNITED WIPER CONVERSION CHART **See Page A57 in this Section.**

ACE	ACME	ALL AMERICAN CARR LANE	AMERICAN	BRINEY, ECONOMY, UNIVERSAL, WELCH	*UNITED*
Type WEA	Style WA	Style AAA	Style A	Style AA	Style PE
Type WEB	Style WC	Style ABB	Style B	Style BB	Style HW
Type WEC	Style WB	Style ACC	Style C	Style CC	Style HE

1-26-99