

For Full U.S. SEAL Catalog, please refer to our PRODUCTS Section of our Website.

Under PRODUCTS click on MECHANICAL SEALS



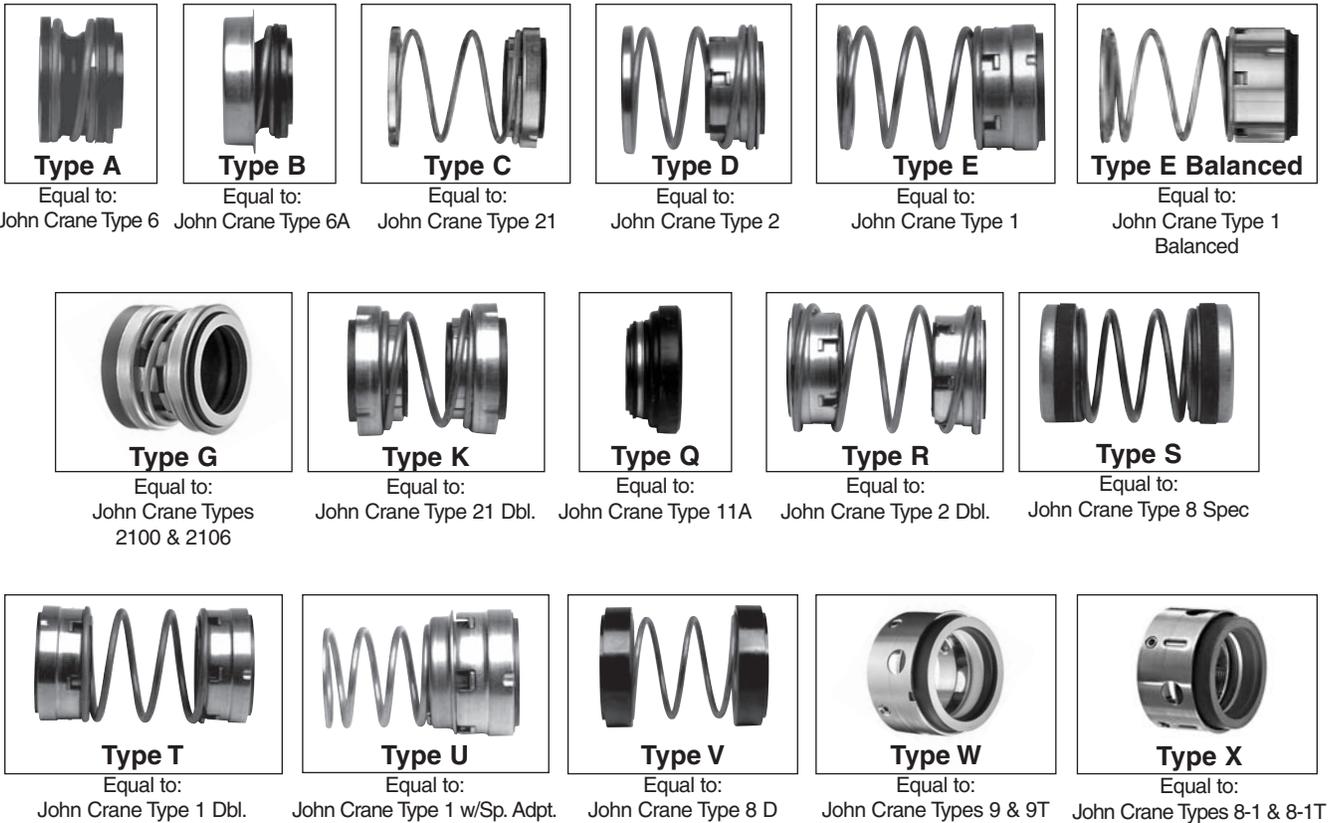
DEMAND QUALITY...



DEMAND U.S. SEAL

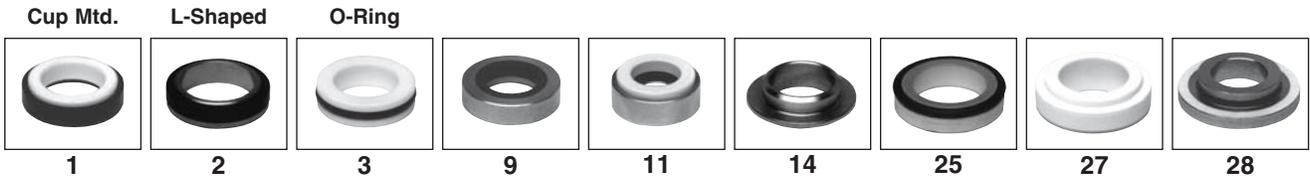
A COMPLETE LINE OF QUALITY SEALS

HEAD TYPES



MATING RING DESIGNS

(Available in a wide variety of materials)



U.S. SEAL MFG. MATERIAL CODE

ELASTOMERS	WASHERS	METAL PARTS	SEATS	SPRINGS
B. Buna	A. Bronze	D. Brass	G. Cast Iron	E. Monel
N. Neoprene	C. Carbon	E. Monel	J. Ceramic	F. Stainless Steel
Q. EPR	H. Glass Filled TFE	F. Stainless Steel	K. Ni-Resist	P. Plated Steel
T. PTFE	L. Silicon Carbide		L. Silicon Carbide	
V. Viton®	M. Molded Plastic		O. Stellite	
X. AFLAS®	R. Silicon Carbide (CVR)		P. Plated Steel	
	S. Toolled Steel		S. Toolled Steel	
	Z. Tungsten Carbide		Z. Tungsten Carbide	



AFLAS is a registered trademark of Asahi Glass Co. Ltd.
 Viton is a registered trademark of DuPont.

ADVANTAGES OF U.S. SEALS

As most engineers know, a successful seal must be designed to give long life, reduce maintenance and provide automatic self adjustment. The seals in the U.S. Seal line meet these basic requirements. In addition, they offer other important advantages to the seal user.



1. ABSOLUTE SEALING - resulting in less pumpage losses, cleaner environmental facilities, less fire hazard, no danger from fumes and no contamination of the fluid being handled.



2. NO RUBBING FRICTION BETWEEN SHAFT AND SEAL PARTS. By replacing your old packing with new state-of-the-art U.S. Seal mechanical seals, there is no more expensive shaft or sleeve replacements.



3. MORE FLEXIBILITY WITH SEALS MEANS LONGER SERVICE LIFE. Seals have more flexibility than packing and are able to compensate for shaft deflection, axial and radial end play, as well as vibration and wear of the sealing faces.



4. LESS FRICTION MEANS VALUABLE POWER SAVINGS. Seals use less friction than packing and therefore, require less horsepower consumption.



5. PRECISION LAPPED SEALING SURFACES. Positively control leakage and eliminate "break in" runs.

6. HIGHER SPEEDS AND PRESSURES ARE NO PROBLEMS.

7. EXTREME FLAT SURFACES OF MATING FACES. Care is taken to furnish precision lapped sealing surfaces with a flatness within three light bands which maintains the necessary face film lubrication.

8. MATERIALS OF CONSTRUCTION. Teflon, AFLAS[®], Viton[®], EPR and PTFE materials are available for those applications where Neoprene and Buna are not compatible with the process fluid. Metal parts are normally made of brass, plated steel or stainless steel, but other alloys, such as Monel and Hastelloy can be supplied. Seal materials are available in a wide selection.

TYPICAL U.S. SEAL MFG. SEAL INSTALLATION

- SWIMMING POOL PUMPS
- CENTRIFUGAL PUMPS
- ROTARY PUMPS
- JET PUMPS
- TURBINE PUMPS
- PETROCHEMICAL PUMPS
- GEARBOX SEALS

SHAFT SIZE: .312" to 5.625"
 TEMPERATURES: -75°F to +450°F.
 PRESSURE: 75 to 200 PSI

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FEATURES OF SEALS: TYPES A, B, C, D, E, G, Q, W, X

TYPE A (Shaft Sizes 5/16" through 1")

FEATURES: Compact, unitized, single spring, elastomer bellows seal. The factory-assembled, one piece design permits fast, easy installation and the full-convolution elastomer bellows provide maximum flexibility in compensating for shaft movement and wear.

SERVICES: Centrifugal water pumps, deep and shallow well jet pumps, swimming pool pumps and wastewater pumps. Pressures to 75 PSI. Temperature: -40°F to +400°F.



TYPE B (Shaft Sizes 3/8" through 1")

FEATURES: A full-convolution elastomer bellows provide maximum flexibility in compensating for shaft movement while torsional stress on the bellows is controlled by a dent and groove positive drive arrangement.

SERVICES: Small centrifugal water pumps, submersible pumps and swimming pool pumps. Pressures to 75 PSI. Temperature: -40°F to +400°F.



TYPE C (Shaft Sizes 1/2" through 5-1/2")

FEATURES: Elastomer bellows seal, non-clogging, single coil spring, The drive band's notch design eliminates overstressing of the bellows.

SERVICES: Centrifugal, hydraulic, rotary and turbine pumps, compressors, mixers, blenders and chillers. Pressures to 150 PSI. Temperature: -40°F to +400°F.



TYPE D, E (Shaft Sizes 1/2" through 5-1/2")

FEATURES: Self adjusting elastomer bellows compensate for abnormal shaft end play and primary face sealing wear. Effects of radial and axial shaft end play are minimized by uniform spring pressure.

Positive drive is transmitted through the drive band and drive notches, which absorb breakout and running torque. Damaging stresses on the elastomer bellows are prevented. Slippage is eliminated, thus protecting shaft and sleeve against wear and scoring. The result is long seal life.

The seal's large single-coil spring is much sturdier than a multiple spring construction design. The spring is non-clogging, self-cleaning and will not foul up due to fluid contact. Corrosion and clogging problems are eliminated.

SERVICES: Used throughout industry in all types of rotary shaft equipment such as pumps, mixers, blenders, agitators and compressors. Seals can be used in an extremely wide range of services from water and steam to chemicals and corrosives. Pressures to 350 PSI. Temperature: -40°F to +400°F.



TYPE D

TYPE E

TYPE G (Shaft Sizes 7/16" through 1")

FEATURES: A compact unitized single spring elastomeric bellows shaft seal. Innovative full convolution bellows and interlocking drive band design allows for positive drive and greater tolerance to misalignment. Interference fit of primary ring insures positive drive while avoiding high face distortions associated with crimped designs.

SERVICES: Small centrifugal pumps used in Pool & Spa, Well Water, & HVAC applications. Pressures to 150 PSI. Temperature -20°F to +300°F.



TYPE Q (Shaft Sizes 1/2" through 2-1/4")

FEATURES: Press fitted, rubber diaphragm protects metal components, spring loaded

SERVICES: Icemaker and appliance applications, general purpose food service. Pressures to 30 PSI. Temperature -40°F to +400°F.



TYPE W (Shaft Sizes 1/2" through 6")

FEATURES: Multi Spring, TFE wedge design for use in extreme temperatures / chemical applications. Unitized construction. Also available in a balanced design

SERVICES: Corrosive fluid applications, extreme temperatures. Pressures to 350 PSI. Temperature -75°F to +500°F.



TYPE X (Shaft Sizes 1/2" through 6")

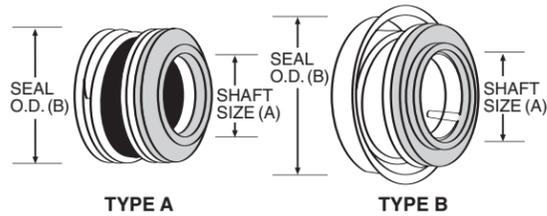
FEATURES: Multi Spring, O ring Design, unitized construction, flexible design compensates for shaft misalignment for high performance and longer seal life. Also available in a balanced design.

SERVICES: Wide usage in chemicals and corrosives. Pressures to 350 PSI. Temperature -20°F to +400°F.



SEAL SIZING GUIDE

1. Remove seal to be replaced from shaft and/or sleeve.
2. Make note of materials used for the old seal parts using U.S. Seal Material Code found on the front cover fold-out.
3. Identify Head type (see front cover fold-out.) Use caliper to measure inside diameter (I.D.) and outside diameter (O.D.)



SEAL HEADS – TYPE A and B

Identify seal head type - Determine Shaft Size:
Measure the inside diameter (I.D.) (dimension A)
Measure the outside diameter (O.D.) (dimension B)

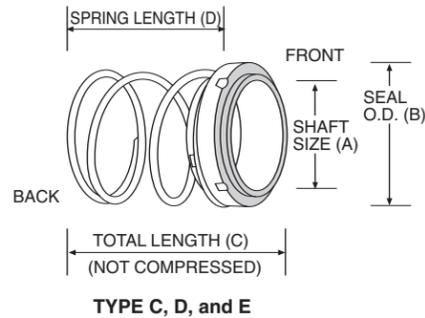
The operating height is generally the same for all A and B seals of the same shaft size. More positive identification will result from calculating the mating ring dimensions below. If unable to positively identify the seal, consult U.S. Seal Mfg.

SEAL HEADS – TYPE C, D and E

Identify seal head type - Determine Shaft Size:
Measure I.D. of the bellows (dimension A) as installed in the seal head.
Add approximately .016" additional for rubber squeeze.

Measure the head O.D. (dimension B)

- Step 1. Measure the total free length (dimension C) of the rotating portion of the assembled seal. (Do not include the seat).
- Step 2. Disassemble seal and measure the free length of the spring (dimension D).
- Step 3. Take half of the measurement obtained in step 2.
- Step 4. Subtract the figure obtained in step 3 from the measurement (dimension C) in step 1. The result is the approximate operating height of the seal.

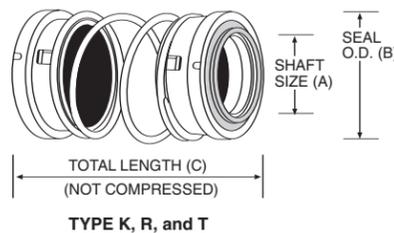


SEAL HEADS – TYPE K, R and T

Identify seal head type - Determine Shaft Size:
Measure the inside diameter of the bellows (dimension A).
Add approximately .016" additional for rubber squeeze.

Measure the head O.D. (dimension B)
Calculate the operating height of the seal as follows:

- Step 1. Measure the total length of the rotating seal (dimension C). (Not compressed).
- Step 2. Multiply the total length (dimension C) by .73. The result is the approximate operating height of the seal.

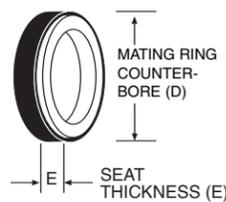


MATING RING and GASKET

Identify the mating ring design from those shown on inside of back cover.
Measure O.D. of the gasket while assembled on mating ring and subtract approximately .016" additional for rubber squeeze to obtain counterbore dimension (dimension D).

Measure the combined insert and gasket width (dimension E).

Use the Dimensional Cross Reference by Shaft Size guide (pgs. 79-114) to find the part number of the seal you need, start with Shaft Size and find the line in the tables that matches the dimensions and material code.



CONVERSION CHART

Fraction	Decimal	mm
1/64	.0156	0.397
1/32	.0312	0.794
3/64	.0468	1.191
1/16	.0625	1.588
5/64	.0781	1.984
3/32	.0937	2.381
7/64	.1093	2.778
1/8	.1250	3.175
9/64	.1406	3.572
5/32	.1562	3.969
11/64	.1718	4.366
3/16	.1875	4.763
13/64	.2031	5.159
7/32	.2187	5.556
15/64	.2343	5.953
1/4	.2500	6.350
17/64	.2656	6.747
9/32	.2812	7.144
19/64	.2968	7.541
5/16	.3125	7.938
21/64	.3281	8.334
11/32	.3437	8.731
23/64	.3593	9.128
3/8	.3750	9.525
25/64	.3906	9.922
13/32	.4062	10.319
27/64	.4218	10.716
7/16	.4375	11.113
29/64	.4531	11.509
15/32	.4687	11.906
31/64	.4843	12.303
1/2	.5000	12.700

Fraction	Decimal	mm
33/64	.5156	13.097
17/32	.5312	13.494
35/64	.5468	13.891
9/16	.5625	14.288
37/64	.5781	14.684
19/32	.5937	15.081
39/64	.6093	15.478
5/8	.6250	15.875
41/64	.6406	16.272
21/32	.6562	16.669
43/64	.6718	17.066
11/16	.6875	17.463
45/64	.7031	17.859
23/32	.7187	18.256
47/64	.7343	18.653
3/4	.7500	19.050
49/64	.7656	19.447
25/32	.7812	19.844
51/64	.7968	20.241
13/16	.8125	20.638
53/64	.8281	21.034
27/32	.8437	21.431
55/64	.8593	21.828
7/8	.8750	22.225
57/64	.8906	22.622
29/32	.9062	23.019
59/64	.9218	23.416
15/16	.9375	23.813
61/64	.9531	24.209
31/32	.9687	24.606
63/64	.9843	25.003
1	1.0000	25.400

mm	Inches	mm	Inches
.1	.0039	46	1.811
.2	.0079	47	1.850
.3	.0118	48	1.889
.4	.0157	49	1.929
.5	.0197	50	1.968
.6	.0236	51	2.007
.7	.0276	52	2.047
.8	.0315	53	2.086
.9	.0354	54	2.126
1	.0394	55	2.165
2	.0787	56	2.204
3	.1181	57	2.244
4	.1575	58	2.283
5	.1969	59	2.322
6	.2362	60	2.362
7	.2752	61	2.401
8	.3150	62	2.440
9	.3543	63	2.480
10	.3937	64	2.519
11	.4331	65	2.559
12	.4724	66	2.598
13	.5118	67	2.637
14	.5512	68	2.677
15	.5906	69	2.716
16	.6299	70	2.755
17	.6693	71	2.795
18	.7087	72	2.834
19	.7480	73	2.874
20	.7874	74	2.913
21	.8268	75	2.952
22	.8661	76	2.992
23	.9055	77	3.031
24	.9449	78	3.070
25	.9843	79	3.110
26	1.023	80	3.149
27	1.063	81	3.189
28	1.102	82	3.228
29	1.141	83	3.267
30	1.181	84	3.307
31	1.221	85	3.346
32	1.259	86	3.385
33	1.299	87	3.425
34	1.338	88	3.464
35	1.378	89	3.503
36	1.417	90	3.543
37	1.456	91	3.582
38	1.496	92	3.622
39	1.535	93	3.661
40	1.574	94	3.700
41	1.614	95	3.740
42	1.653	96	3.779
43	1.692	97	3.818
44	1.732	98	3.858
45	1.771	99	3.897
		100	3.937



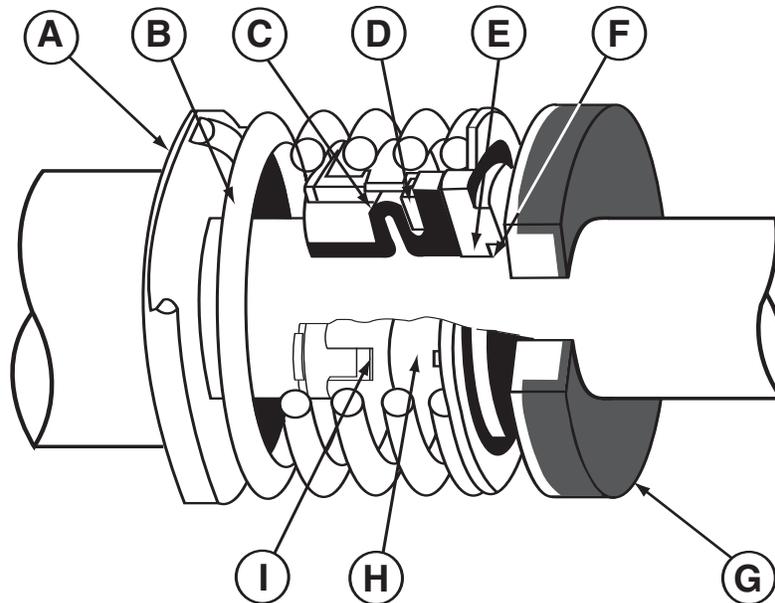
See Pages 132-141 for Metric Seal Selection

DESIGN AND CONSTRUCTION FEATURES

- SELF ALIGNING
- COMPLETELY ASSEMBLED FOR EASY INSTALLATION
- EXCEPTIONALLY BROAD APPLICATION RANGE
- WIDE TEMPERATURE RANGE
- LOW, MEDIUM OR HIGH PRESSURE APPLICATIONS
- AVAILABLE FOR STANDARD OR LIMITED GLAND DEPTHS
- AUTOMATIC COMPENSATION FOR MATING RING WEAR AND SHAFT END PLAY

ELASTOMETRIC TEMPERATURE LIMITS

(AFLAS® +450° F Buna +225° F EPR +300° F Neoprene +175° F Viton +400° F)



TYPICAL TYPE "D" SEAL PARTS

- | | |
|--|-------------------------------|
| A Spring Holder | F Lapped Sealing Faces |
| B Spring | G Mating Ring Assembly |
| C Rubber Bellows | H Retainer |
| D Disc | I Drive Band |
| E Sealing Washer (Primary Ring) | |