SEAL PARTS DESCRIPTION

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

TYPICAL TYPE “D” SEAL PARTS

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

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ADVANTAGES OF SPRINGER PARTS 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 SPLLC 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 SPLLC 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. Seat materials are available in a wide selection.

TYPICAL SPLLC 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° to +450°F
PRESSURE: 75 to 200 PSI

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

1. Remove seal to be replaced from shaft and/or sleeve.
3. Identify Head type (page 99) 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 SPLLC.

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 (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 (D).
Step 3. Take half of the measurement obtained in step 2.
Step 4. Subtract the figure obtained in step 3 from the measurement (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 (C).
(Not compressed).
Step 2. Multiply the total length (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. 72-100) 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.
# MATERIALS OF CONSTRUCTION

<table>
<thead>
<tr>
<th>METALS</th>
<th>ELASTOMERIC BELLOWS</th>
<th>SEALING FACES</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-8SS</td>
<td>AFLAS®</td>
<td>Carbon Graphite</td>
</tr>
<tr>
<td>316SS</td>
<td>Buna</td>
<td>Cast Iron</td>
</tr>
<tr>
<td>Brass</td>
<td>Ethylene Propylene</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Monel</td>
<td>Neoprene</td>
<td>Molded Plastic</td>
</tr>
<tr>
<td>Plated Steel</td>
<td>Viton®</td>
<td>Ni-Resist*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Silicon Carbide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stellite**</td>
</tr>
<tr>
<td>OPTIONS</td>
<td>Special Alloys</td>
<td>Tungsten Carbide</td>
</tr>
<tr>
<td></td>
<td>Special Secondary Sealing Elements</td>
<td></td>
</tr>
</tbody>
</table>

*Cast Iron with Nickle
**Chromium/Cobalt Alloy

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## PRESSURE LIMITS FOR SEAL TYPES

<table>
<thead>
<tr>
<th>Seal Types</th>
<th>Pressure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A and B</td>
<td>75 PSI</td>
</tr>
<tr>
<td>C</td>
<td>150 PSI</td>
</tr>
<tr>
<td>D and E</td>
<td>350 PSI</td>
</tr>
<tr>
<td>G</td>
<td>150 PSI</td>
</tr>
<tr>
<td>Q</td>
<td>30 PSI</td>
</tr>
<tr>
<td>W and X</td>
<td>350 PSI</td>
</tr>
</tbody>
</table>

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## ELASTOMERIC TEMPERATURE LIMITS

- AFLAS® 450°F
- Buna 225°F
- EPR 300°F
- Neoprene 175°F
- Viton 400°F

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**VITON SEALS for High Temperatures**

The elastomer compounds of our seals are available in Viton for temperatures exceeding 212°F and in services where Neoprene, Buna or EPR is not compatible with the fluid handled.

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HEAD TYPES

TYPE A
Equal to: Type 6

TYPE B
Equal to: Type 6A

TYPE C
Equal to: Type 21

TYPE D
Equal to: Type 2

TYPE E
Equal to: Type 1

TYPE E BALANCED
Equal to: Type 1 Balanced

TYPE G
Equal to: Types 2100 & 2106

TYPE K
Equal to: Type 21 Dbl.

TYPE Q
Equal to: Type 11A

TYPE R
Equal to: Type 2 Dbl.

TYPE S
Equal to: Type 8 Spec

TYPE T
Equal to: Type 1 Dbl.

TYPE U
Equal to: Type 1 w/Sp. Adpt.

TYPE V
Equal to: Type 8 D

TYPE W
Equal to: Types 9 & 9T

TYPE X
Equal to: Types 8-1 & 8-1T

MATING RING DESIGNS
(Available in a wide variety of materials)

CUP MTD. L-SHAPED O-RING

SPLLC MATERIAL CODE

<table>
<thead>
<tr>
<th>ELASTOMERS</th>
<th>WASHERS</th>
<th>METAL PARTS</th>
<th>SEATS</th>
<th>SPRINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Buna</td>
<td>A. Bronze</td>
<td>D. Brass</td>
<td>G. Cast Iron</td>
<td>E. Monel</td>
</tr>
<tr>
<td>N. Neoprene</td>
<td>C. Carbon</td>
<td>E. Monel</td>
<td>K. Ni-Resist</td>
<td>F. Stainless Steel</td>
</tr>
<tr>
<td>O. EPR</td>
<td>H. Glass Filled TFE</td>
<td>F. Stainless Steel</td>
<td>L. Silicon Carbide</td>
<td>P. Plated Steel</td>
</tr>
<tr>
<td>T. PTFE</td>
<td>L. Silicon Carbide</td>
<td>O. Stellite</td>
<td>J. Ceramic</td>
<td></td>
</tr>
<tr>
<td>V. Viton*</td>
<td>M. Molded Plastic</td>
<td>P. Plated Steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X. AFLAS*</td>
<td>R. Silicon Carbide (CVR)</td>
<td>S. Tooled Steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S. Tooled Steel</td>
<td>Z. Tungsten Carbide</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Z. Tungsten Carbide</td>
<td></td>
<td></td>
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SEAL APPLICATION GUIDE

CONTACT: ____________________________

PHONE: ____________________________

FAX: ____________________________

E-MAIL: ____________________________

DIMENSIONAL DATA
(See drawing below)

A. Shaft/Sleeve O.D. ____________________________
B. Counter Bore of Stuffing Box ____________________________
C. Bore of Gland for Stationary Unit ____________________________
D. Width of Stationary ____________________________
E. Operating Height of Seal ____________________________
F. O.D. of Seal ____________________________
G. Width of Gland ____________________________
H. Stuffing Box Depth ____________________________

EQUIPMENT DATA
1. Pump Mfg. Name ____________________________
2. Model Number ____________________________
3. Seal Part No. ____________________________

SEAL DESIGN
1. Head Type ____________________________
2. Seat Type ____________________________
3. Manufacturer ____________________________
4. Manufacturers Part # ____________________________

OPERATING CONDITIONS
*1. Product Handled ____________________________
2. If Abrasive (explain) ____________________________
3. % of Concentration ____________________________
*4. Temperature F. _____ C. _____
*5. Stuffing Box Pressure ____________________________
*6. Shaft Speed ____________________________
*Required Fields

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