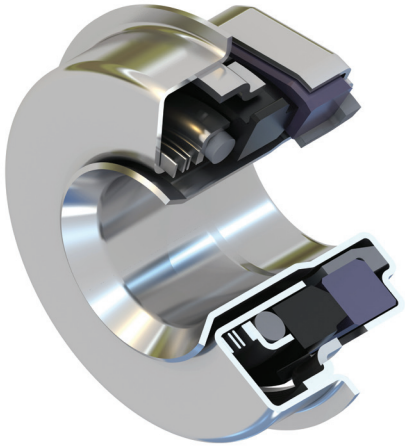
FLOWSERVE

Installation Instructions

ASP-X

Mechanical Shaft Seal

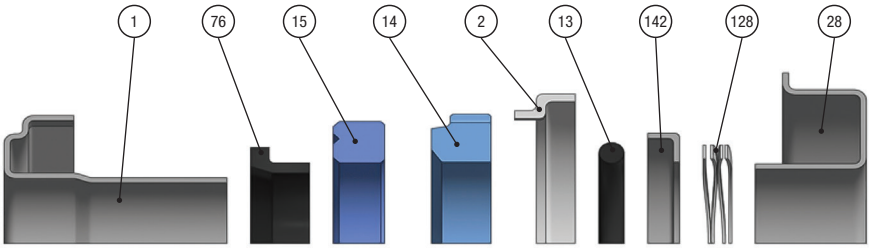


Description

As part of the Advanced Stationary Pusher (ASP) series, the **ASP-X** seal is optimized for improved performance in belt-driven engine coolant pumps. The **ASP-X** seal utilizes stamped metal components (shells, sleeves, drives and gasket holders) and a single-wave spring in a unitized stationary flexible element pusher seal design.

ASP-X Seal Nomenclature

Figure 1



Part Reference	Description
1	Sleeve
76	Rotating Face Gasket
15	Rotating Face
14	Stationary Face
2	Seal Drive

Part Reference	Description
13	Seat Gasket
142	Retainer
128	Wave Spring
28	Shell

1 Equipment Checks

1.1 Follow plant safety regulations prior to equipment disassembly, including but not limited to the following:

- Lock out equipment driver and valves.
- Wear designated personal safety equipment.
- Isolate equipment and relieve any pressure in the system.
- Consult plant Safety Data Sheet (SDS) files for hazardous material regulations.

1.2 Disassemble equipment in accordance with the equipment manufacturer's instructions to allow access to seal installation area.

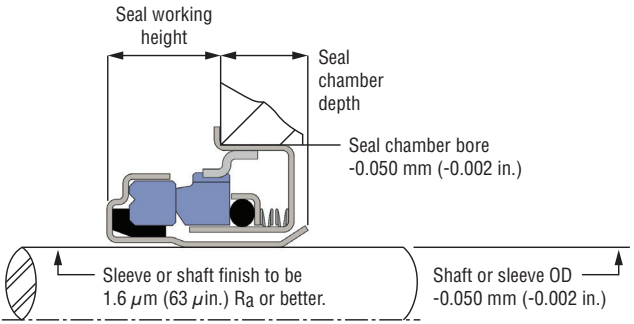
- If necessary, remove existing sealing arrangement (mechanical seal or otherwise).

1.3 Check seal documentation for seal design and materials of construction.

1.4 Check shaft or sleeve outer diameter (OD), seal working height, seal chamber bore and seal chamber depth to ensure they are dimensionally within the tolerances shown on the seal assembly drawing. See Figure 2.

Seal Chamber Requirements

Figure 2



- Bearings must be in good condition.
- Maximum lateral or axial movement of shaft (end play) = 0.25 mm [0.010 in.] FIM
- Maximum shaft runout at face of seal housing = 0.05 mm [0.002 in.] FIM
- Maximum dynamic shaft deflection at seal housing = 0.05 mm [0.002 in.] FIM
- Verify proper shaft and bore lead in chamfers are present and within specifications. Difficulty and damage can be observed during seal installation without proper lead in chamfers.

1.5 Thoroughly inspect and clean the seal chamber and shaft or pump sleeve. Inspect for corrosion or any defects. Remove all burs, cuts, dents or defects that might damage stamped metal components or allow a leak path. Replace worn shaft or pump sleeve.

1.6 Check equipment requirements as described in Figure 2. Any measurement different than what is specified on seal drawing must be brought within specifications.

1.7 Handle the seal with care; it is manufactured to precise tolerances. The seal faces are of special importance and should be always kept clean.

2 ASP-X Seal Installation: With Installation Tool

2.1 Slide the seal assembly by hand onto the shaft until it is centered on the equipment shaft. Take care not to press the seal into place by pushing on the seal sleeve end.

- *Note: Pushing the seal into place by pressing on the seal sleeve could damage the internal components of the seal.*

2.2 Place the installation tool over the shaft until it contacts the seal assembly.

- *Note: Initial contact between the installation tool to the seal will be on the seal sleeve. The tool will push the sleeve until it contacts the lip of the seal shell.*

2.3 Using a pneumatic press, Press on the installation tool down the length of the pumps shaft. The installation tool is designed to press on both the seal shell and seal sleeve at the same time to eliminate any damage to internal seal components. Press the seal into the seal chamber bore, and assure the seal shell lip is seated flush against the seal chamber face. Once the shell is fully seated into the pump bore, release the pneumatic press and remove the seal installation tool. The tool is designed to set the seal working height to its nominal dimension.

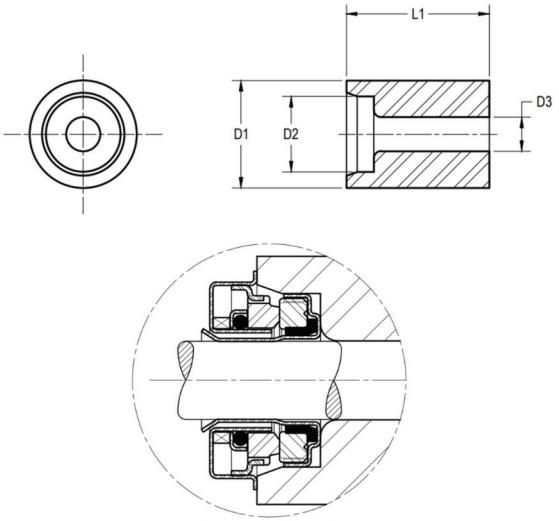
2.4 Using a drop micrometer, or other accurate means, measure the distance from the back of the seal sleeve to the face of the pump bore to confirm proper working height setting of the seal.

2.5 The seal should never be removed and used again for installation in the pump. Due to the interference press fit between the metal components of the pump and stamped components of the seal, these dimensions are altered after installation and for that reason cannot be uninstalled and reinstalled again

2.6 Reference Figure 3 for overall general seal tool installation configuration. Work with your local Flowserve Representative for specific tool design details and procurement based on the ASP seal size you are using on your equipment.

General Seal Tool Design Configuration

Figure 3



3 ASP-X Seal Operational Recommendations

3.1 Remove lock-outs on equipment and valves.

3.2 Do not start up the pump dry to check motor rotation or for any other reason. Open valves to flood pump with product fluid. Vent air from the casing of the pump and the seal chamber before start-up.

3.3 Observe the start-up. If the seal runs hot or squeals, do not allow the pump to run for any extended time.

3.4 The seal is designed to resist corrosion through proper material selection. Do not expose the seal materials of construction to products outside of their corrosion limits. Consult Flowserve for chemical resistance recommendations.

3.5 Do not exceed pressure and speed limits established for the seal.

3.6 Do not exceed temperature limits of the seal based on the material of construction.

FLOWSERVE

TO REORDER, REFER TO

B/M # _____

F.O. _____

Headquarters
Flowserve Corporation
5215 North O'Connor Blvd.
Suite 700
Irving, Texas 75039-5421 USA

USA and Canada
Kalamazoo, Michigan USA
Telephone: +1 269 381 2650

Europe, Middle East, Africa
Etten-Leur, The Netherlands
Telephone: +31 765 028 200

Asia Pacific
Singapore
Telephone: +65 6544 6800

Latin America
Mexico City
Telephone: +52 55 5567 7170

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