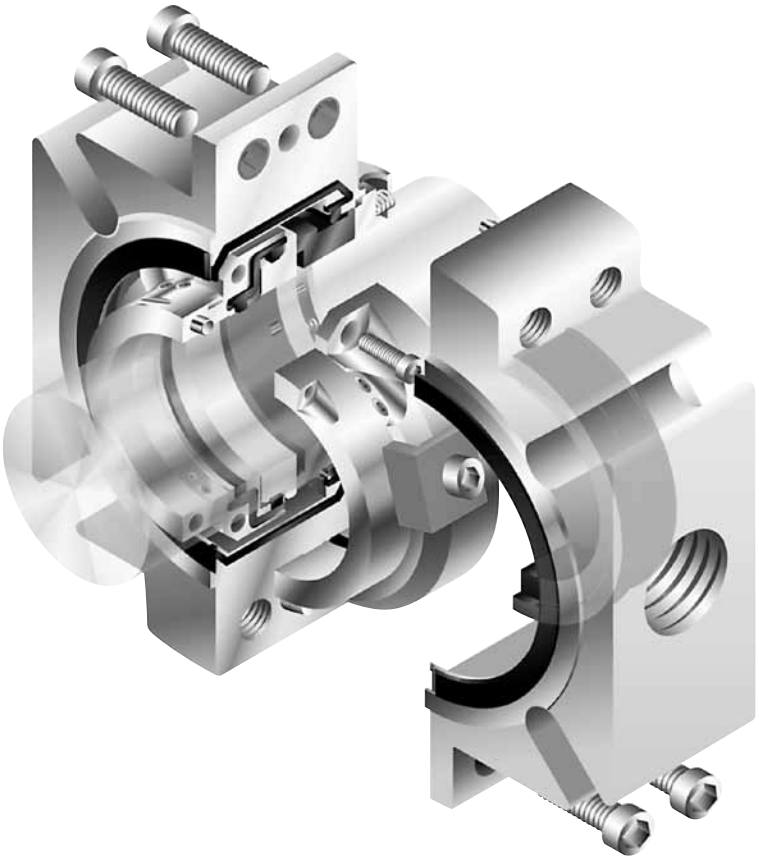
FLOWSERVE

Installation Instructions

Durametallic® PSS III

Split Seal

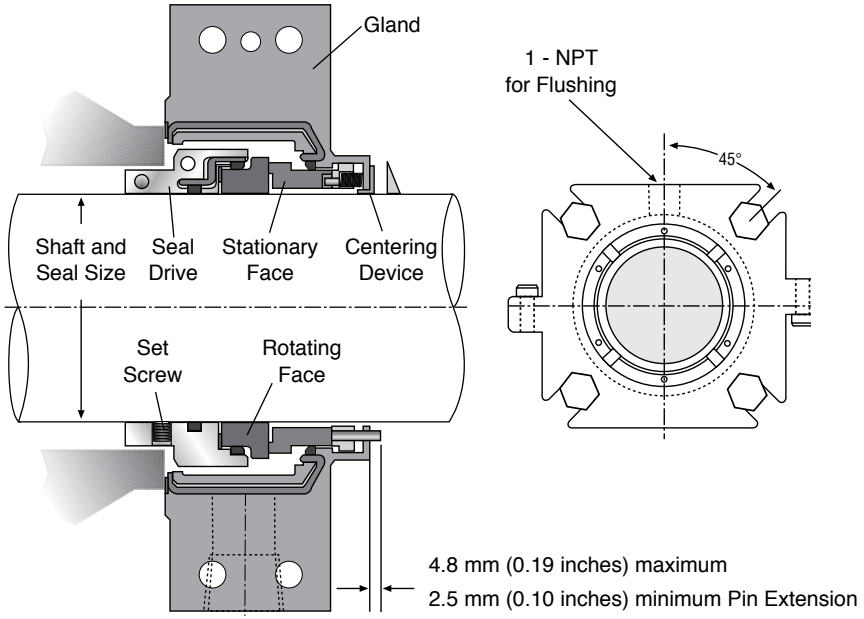


Experience In Motion

While the **PSS III** has been designed for rugged industrial application and ease of installation, it does require assembly in a clean environment according to the following installation steps. No setting dimensions or measurements are required to install the seal.

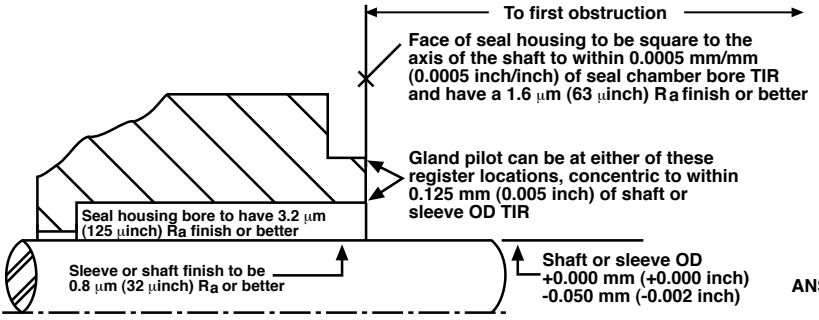
Seal Reference

Figure 1



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 inch) TIR**
- **Maximum shaft runout at face of seal housing = 0.05 mm (0.002 inch) TIR**
- **Maximum dynamic shaft deflection at seal housing = 0.05 mm (0.002 inch) TIR**

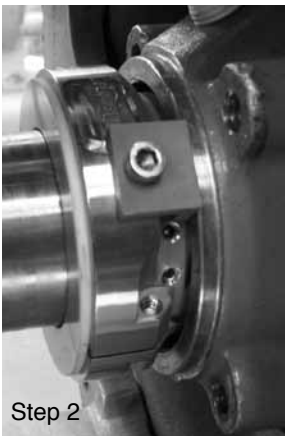
The images of parts shown in these instructions may differ visually from the actual parts due to manufacturing processes that do not affect the part function or quality.

Tools Needed for Installation

- 5/32", 5/16" and 3/32" or 1/8" T-handle hex key wrenches (supplied with seal)
- An open end wrench for the gland bolts.
- A common screw driver to remove the setting devices and centering devices.

Seal Drive Installation

Step 1


Step 2

Step 1 **Lubricate** the exposed surfaces of the sleeve gasket and sleeve gasket ends, rotating face gasket ends, and seal drive split joint gaskets with the enclosed lube. Confirm that the set screws are backed out of the seal drive bore so the set screws do not interfer with seal drive fit around the shaft.

Step 2 Loosely **assemble the seal drive halves** around the shaft and slide the seal drive toward the box until the setting devices contact the box face.

Step 3a With the seal drive still loose, align the rotating face joints at their OD and at the face so there is no step at the joints.

b Finish **tightening the seal drive cap screws** to 4.5 N-m (40 in-lbs). **Recheck the rotating face joints for flatness.** A small mismatch can be corrected by pushing on the high side of the joint or gently prying on the low side.

c The rotating face joints must be flat and smooth. Any mismatch will result in leakage. If a mismatch exists, loosen the seal drive cap screws 1-2 turns and repeat steps a and b.

d Clean rotating face with alcohol.


Step 3

Caution: Consult material safety data sheets for proper handling of alcohol.

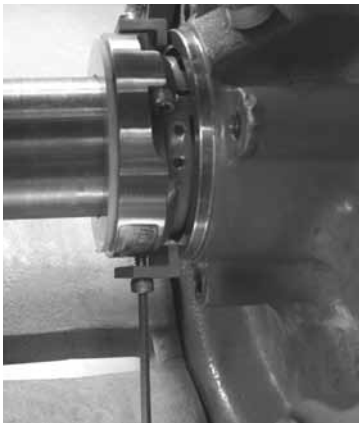
Step 4a **With the setting devices against the box face**, tighten the set screws. All sizes have eight set screws. Tighten all four located at one split joint. Then tighten the four at the other split joint. Tighten all set screws to 2.8 N-m (25 in-lbs) for seal sizes up through 85.7 mm (3.375 inch) and 5.6 N-m (50 in-lbs) for larger sizes.

b **Tighten set screws a second time** in the same order.

c Check the face for joint alignment again.

Step 5 **Remove setting devices** by unscrewing the socket head cap screw from the seal drive.

Step 4



Step 5

Gland Installation

Step 6a Lubricate the fractured ends of the stationary face, the seat gasket ends, and the exposed surfaces of the gland split joint gaskets with the enclosed lube.

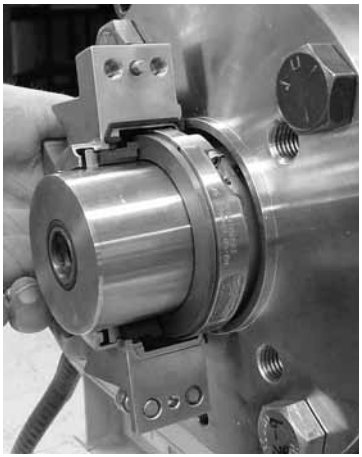
b **Carefully assemble the gland halves around the rotor**.

c **Finger tighten the gland cap screws**. There should be a gap between the halves of about 0.8 mm (0.03 inch).

d **Finger tighten the gland bolts** so the gland is supported at the pump mounting surface while the cap screws are being tightened.

e **Tighten the gland cap screws to 144 in-lbs, 16 N-m (12 ft-lbs).**

f **Tighten the gland mounting bolts evenly** until the gland gasket is fully compressed and the gland is squarely seated against the pump box face.

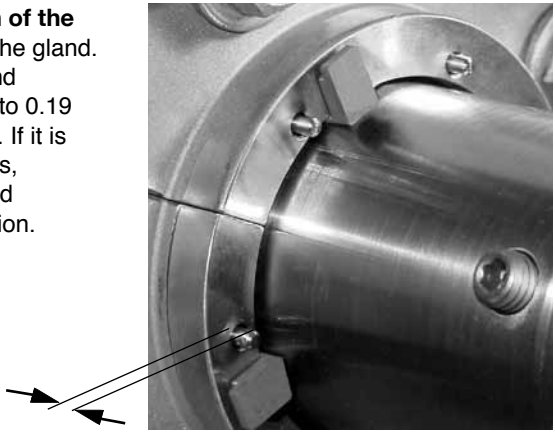


Step 6a

Gland to Pump Mounting Bolt Torques

Size Range	Torque
25.4-95.25 mm (1-3.750”)	33 N-m (25 ft-lbs)
Above 95.25 mm (3.750”)	67 N-m (50 ft-lbs)

Step 7 **Observe the length of the lock pin** outside of the gland. The pin should extend 2.5 to 4.8 mm (0.10 to 0.19 inch) from the gland. If it is more or less than this, remove the gland and recheck the installation.



Step 7

Step 8 **Pry off the centering devices** with a screwdriver.

Step 8

Step 9 **Connect the flush line** to the gland if required.

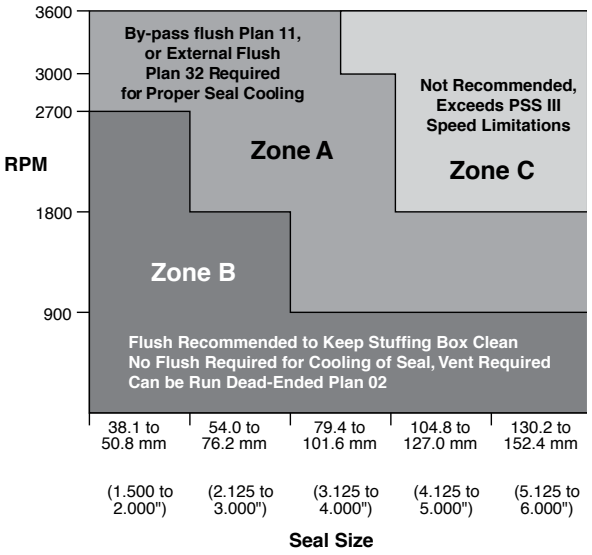
Step 10 **Turn the shaft by hand** as a final check to be sure nothing is binding.

Operational Recommendations

Do not start up the equipment dry. Vent air from the stuffing box before startup. Circulate clean product, Plan 11, or a clean fluid from an external source, Plan 32, through the seal chamber whenever the equipment is in operation unless operating in Zone B of Figure 3 where no flush is required.

Cooling Recommendations for PSS III

Figure 3



Notes for Figure 3:

- Recommendations are for use in water or other similar viscosity liquids.
- These recommendations apply to products having a maximum temperature of 71°C (160°F).
- Use Plan 13 on vertical equipment to vent the seal area even when operating in zone B

If the seal runs hot, check for proper seal setting, see Step 7, and check the flush line for obstructions.

If you encounter special problems during installation contact your nearest Flowserve Sales and Service Representative.

Repairs

This product is a precision sealing device. The design and dimension tolerances are critical to seal performance. Only parts supplied by Flowserve should be used to repair the seal. These parts are available from numerous Flowserve stocking locations. To order replacement parts, refer to the part code number and B/M number. A spare back-up seal should be stocked to reduce repair time. The following parts can also be stocked for emergency needs.

Rotating Face	Split Joint Gaskets
Sleeve Gasket	Gland Gasket
Rotating Face Gasket	Centering Devices
Stationary Face	Setting Devices
Seat Gasket	Cap Screws
Coil Springs	Set Screws

When seals are returned to Flowserve for repair, **decontaminate the seal assembly** and include an order marked **"Repair or Replace." A signed certificate of decontamination** must be attached. **A Material Safety Data Sheet (MSDS) must be enclosed** for any product that came in contact with the seal. The seal assembly will be inspected and, if repairable, it will be rebuilt, tested, and returned.

FLOWSERVE®

TO REORDER REFER TO
B/M #_____
F.O. _____

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