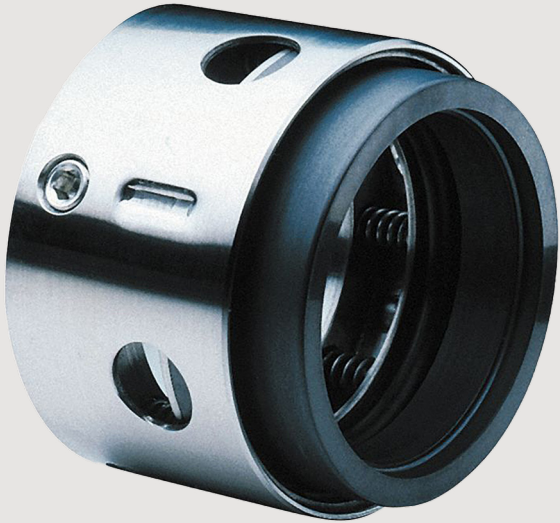


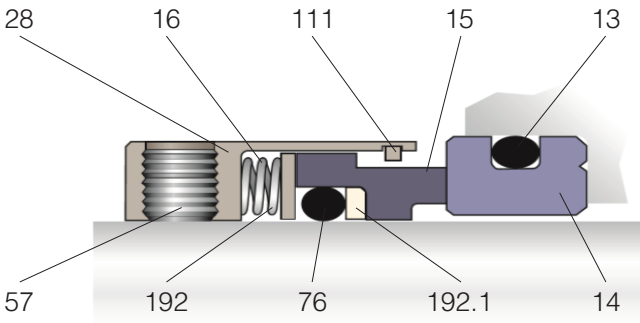


# **Pac-Seal<sup>®</sup> Type 8/8T Seal Installation Instructions**



## DESCRIPTION

The Pac-Seal Type 8/8T seal was designed for fluids, chemicals, light hydrocarbons, corrosives, and high-pressure liquids and gases. The seal comes standard with O-ring secondary sealing elements and positive drive via set screws, which transmit torque from the shaft to the seal. To facilitate installation, the Type 8/8T seal's rotating components are held together with a snap ring to form a semi-unitized design. The Type 8T seal features a small radial cross-section to allow for use in pumps with a small stuffing box diameter.



**Figure 1: Type 8/8T seal nomenclature**

Part Reference	Description
13	Seat Gasket/Mating Ring O-ring
14	Stationary Face/Mating Ring
15	Rotating Face/Primary Ring
16	Spring
28	Shell
57	Set Screw
76	Rotating Face O-ring
111	Snap Ring
192	Flat Washer
192.1	Flat Washer

# 1 EQUIPMENT CHECK

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

- Lock out motor and valves.
- Wear designated personal safety equipment.
- Relieve any pressure in the system.
- Consult plant MSDS files for hazardous material regulations.

1.2 Disassemble pump in accordance with equipment manufacturer's instructions and remove sealing arrangement.

**Note:** Seal location and relationship to the seal's working height should be reviewed and documented prior to removal. If the pump configuration allows, a scribe mark could be added to locate the back of the rotating assembly, as shown in Figure 2.

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

1.4 Check shaft or pump sleeve outer diameter, seal working height, mating ring width, mating ring bore and stationary assembly bore to ensure they are dimensionally within the tolerances shown on the seal assembly drawing. See Figure 2.

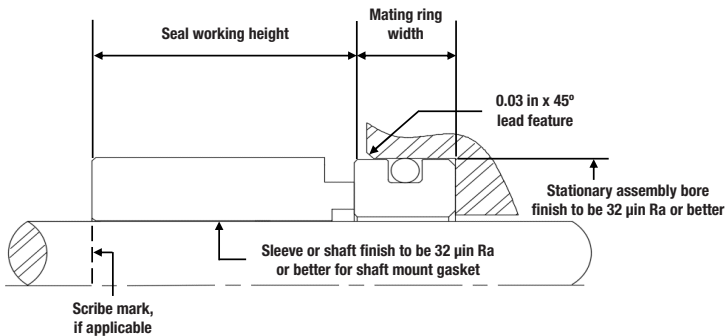


Figure 2: Seal chamber requirements

- Bearings must be in good condition.
  - Maximum lateral or axial movement of shaft (end play) = 0.25 mm (0.010 in).
  - Maximum shaft runout at face of seal housing = 0.05 mm (0.002 in) FIM.
  - Maximum dynamic shaft deflection at seal chamber = 0.05 mm (0.002 in) FIM.
  - Verify proper shaft and bore lead-in chamfers are present and within specifications. Difficulty and even damage can occur during seal installation due to improper lead-in chamfers.
- 1.5** Thoroughly inspect and clean the seal chamber, shaft and/or pump sleeve. Inspect for corrosion and/or any defects. Remove all burrs, cuts, dents or defects that might damage gaskets or allow a leak path. Replace worn shaft or pump sleeve.
- 1.6** Check equipment requirements, as described in Figure 2. Any measurement falling outside the allowable tolerance listed 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 protected from dirt, lubricants, dust and airborne particulate matter at all times prior to installation. Avoid using excessive force during installation. Do not use a hammer or similar tool which results in excessive force on the seal or adjacent components.

## 2 INSTALLATION

- 2.1** Ensure seal faces are kept clean throughout the installation procedure. Clean both rotating and stationary seal faces with a lint-free wipe and isopropyl alcohol as needed.

**Note:** Any oil, grease, assembly lubricant, fingerprints or other residue from the installation process can cause the seal to leak excessively.

- 2.2** Lubricate the bore inner and gasket outer diameters and proceed to press the stationary assembly firmly into the bore, ensuring it is bottomed out and square. This can be hand-pressed or machine-pressed into place, taking care to protect the sealing face from direct contact with any metal object. A plastic installation tool is recommended along with a machine-press mechanism if available.

**Note:** Use a silicone-based lubricant unless otherwise specified. If a silicone-based lubricant is not available, use a solution of liquid dish soap in water or isopropyl alcohol in water as lubricant. Never use grease or oil as an installation lubricant. Oil used to lubricate elastomer components will significantly reduce the friction drive or anti-rotation capability of the mating ring gasket.

- 2.3** Lubricate the shaft and the exposed rotating face O-ring at the inner diameter of the rotating assembly. Slide the rotating assembly down the shaft, cleaning any excess lubricant from the rotating seal face prior to mating the seal faces, until the rotating seal face mates with the stationary seal face.
- 2.4** Compress seal to proper axial working height (or scribe line if applicable) and tighten set screws firmly and evenly into the shaft.

### **3 OPERATIONAL RECOMMENDATIONS**

- 3.1** Remove lock outs on equipment and valves.
- 3.2** Do not start up the pump dry for any reason. Open valves to flood pump and seal chambers 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 duration of time.
- 3.4** The seal is designed to resist corrosion through proper material selection. Do not expose the selected seal materials to products outside of the intended application. Consult Flowserve for additional chemical resistance recommendations.
- 3.5** Do not exceed pressure and speed limits established for the seal.
- 3.6** Do not exceed the temperature limits of the seal, as determined by the materials of construction.



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**SSIOM000176 (EN)** April 2020