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# E.2 Series mechanical seal replacement

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## Installation and operating instructions

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## 1.0 EXISTING PUMP REMOVAL FROM SYSTEM PIPING (LEAVING THE VOLUTE IN PLACE)

- 1 Ensure that electric power is disconnected and locked out. Loosen the screw from the terminal box cover and remove the cover. Disconnect the supply wires from the circulator only, leaving the capacitor wires connected.
- 2 If valves have been installed, on the suction and discharge sides of the pump, close them before attempting to remove the circulator from the volute. If no valves have been installed it may be necessary to drain the system.



Allow water to cool to 100°F (40°C) before draining the system. It is best to leave the drain valve open while working on the system.

- 3 To relieve any residual pressure which may be present in the pump body, loosen the flange bolts and gently move the pump body back and forth to allow the pressurized water to escape.

**NOTE:** Place a pan under the pump to collect the drain water.

- 4 If the entire volute is needed to be removed, then remove the flange bolts and nuts. The entire circulator can then be removed from the piping system.

## 2.0 REPLACING THE MECHANICAL SEAL

- 1 Follow steps 1 through 4 in section **Existing pump removal from system piping**.
- 2 While holding the motor body, remove the bottom two bolts that attach the motor to the pump casing (volute), then slowly loosen the top two bolts. Allow the water to drain from the bottom of the pump. When the water has finished draining, remove the two top bolts. Remove the motor straight out from the volute being careful of the attached impeller.



### Handle with care

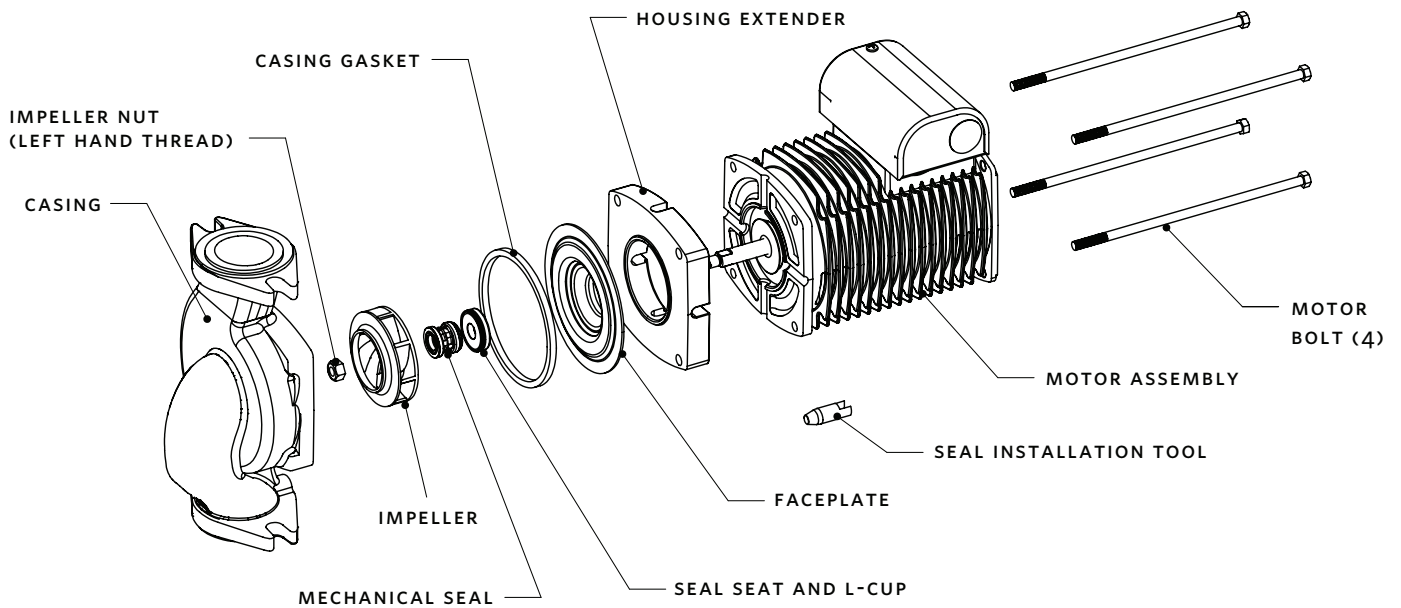
The motor is heavy, and possibly hot,  
**DO NOT** drop it!

- 3 While holding the rotor very tightly by hand or a gloved hand only, unscrew the impeller nut off the motor shaft by turning it clockwise (i.e. opposite to most bolts and nuts). Place the motor on its back, with the shaft up.

- 4 Remove the rotary part of the mechanical seal by gently pulling it off the shaft. If it is too tight use two small flat bladed screwdrivers to gently pry it off the shaft by placing the flat side of the blades onto opposite sides of the mechanical seal.
- 5 Remove the face plate from the motor by gently prying it off of the motor housing extension, and carefully pulling it straight up, avoiding any shaft contact.
- 6 Remove the stationary part of the seal by gently prying it off the steel faceplate.
- 7 Remove any corrosion present on the stainless steel motor shaft and face plate (especially the seal seat area) with a non-metallic brush or scrub pad. Do not use a wire brush or steel wool.
- 8 Remove any dust created during step #7 above and put a few drops of non-petroleum lubricant around the face plate where the stationary seat is to be installed.
- 9 Install the new stationary seal seat into the faceplate by firmly pressing it down until it bottoms. The disk should be clean. If needed, wipe it with alcohol and a soft lint free cloth.
- 10 Replace the faceplate on the motor housing extension, being careful to avoid shaft contact. This may need to be gently tapped down until tight to the housing. Be sure to check that the stainless steel plate is flush to the extender plate face.
- 11 Install the special **installation tool** (180202-095) on the top of the shaft making sure it is tight to the end of the shaft and the flats fully engaged to protect the seal from sharp edges during seal installation.
- 12 Apply a liberal amount of non-petroleum based lubricant on the outside of the special plastic **installation tool**.
- 13 Wipe any excess lubricant off of the stationary silicon carbide seal face with a lint free cloth and alcohol to ensure the surface is clean.
- 14 Install the new rotating seal element and spring assembly by gently pushing it (graphite ring first) over the **installation tool** and onto the shaft until the graphite ring presses tightly against the stationary seal seat. The seal spring may be compressed slightly.

- 15 Remove the **installation tool** from the shaft.
- 16 Install the impeller keeping the inlet end up. Make sure to align the flats to the shaft flats and push the impeller down tightly to the seal.
- 17 Place 2-3 drops of medium strength thread locker liquid on the nut threads.
- 18 Install the special left hand thread nut on the motor shaft. While holding the motor rotor in place as in step 3, thread the impeller nut on to the shaft in a counter-clockwise direction and tighten the nut to approximately 6ft-lbs.
- 19 If the impeller will not spin freely contact Armstrong Technical Support at 1-416-755-2291 or email [techsupport@armlink.com](mailto:techsupport@armlink.com).
- 20 Ensure the gasket is properly seated in the pump casing (volute) gasket groove. Holding the motor body, insert the impeller straight into the volute. Verify the gasket was not dislodged during insertion, and is still seated properly. Hold the motor body steady while fastening the four bolts that attach the motor to the pump casing (volute). Tighten evenly and diagonally. There should be a small, even gap of about 0.02" (0.5 mm) between the motor flange and the pump casing (volute).
- 21 Follow the **START UP** instructions (File no. 10.84) and check for leaks.

FIG.1 Exploded view



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