

# Design Envelope 4300, 4322 & 4200H

## Mechanical Seal Replacement

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## Installation and operating instructions

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**CAUTION**



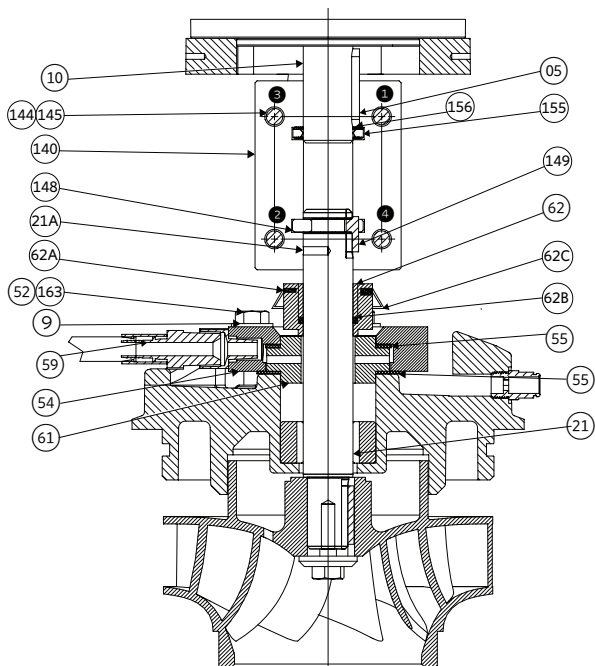
Always disconnect power supply from motor before beginning service work.

**WARNING**



Hydronic system components may be pressurized which, if suddenly released, can cause serious injury or death. When performing any kind of service to the pump, the pressure must be released in the system and the unit should be properly drained before starting any service work.

**MECHANICAL SEAL REPLACEMENT INSTRUCTIONS FOR RIGID SPLIT- COUPLED PUMPING UNITS (SERIES 4300, 4322 & 4200H)**



**WARNING**



When reinstalling the clamp, tighten the clamp nut to 90-100 in-lb torque.

**CAUTION**



Do not use oil, Vaseline or other petroleum or silicon based products for seal elastomer lubrication. Otherwise elastomer swelling may occur, causing seal failure.

Recommended: International Products Corp p-80 Rubber Lubricant Emulsion in USA & UK [www.ipcol.com](http://www.ipcol.com)

**Seal Removal**

An important feature of the rigid split-coupled pump is that the design permits removal of the mechanical seal without disturbing the pump, motor or electrical wiring.

- A** Disconnect the power supply at the main switch and close the isolating valves on the suction and discharge. Empty casing by removing drain plug(s) located at the bottom.
- B** Loosen off the seal collar set screws (62A) Remove the coupling screws and lock washer (144,145) and separate the coupling halves (140). Remove the motor shaft key (05) and the pump shaft key (149).

Do not remove motor collar (155) for seal replacement.

- C** Remove the mechanical seal rotating assembly (62) through the gap between the pump and motor shafts.
- D** Disconnect the seal flush piping (59) from pump discharge. Mark seal gland plate (54) position. Remove the seal gland plate bolts and washer (lock washer) (52,163) and seal gland plate (54). Remove the stationary seat (61) and seat gaskets (55).

**Seal replacement**

Handle mechanical seal carefully to protect seal faces from damage. Do not contaminate seal faces with finger prints

- E** Replace the stationary seat (61) and gaskets (55) from mechanical seal package, aligning the seat flush hole with the seal gland plate flush line connection. Ensure the large diameter gasket is on the bottom. Replace seal gland plate (54) and tighten the seal gland plate bolts (52,163) evenly and diagonally to 5 (ft. lbs) for 0.75" seal size.
- F** When installing the mechanical seal (62), ensure parts are perfectly clean.
- G** Apply a small amount of temporary rubber lubricant emulsion to the O-ring (62B). Carefully slide the mechanical seal rotating assembly (62) down the shaft onto the stationary seat (61). Do not tighten the set screws (62A) on the side of the mechanical seal yet. Do not remove holding clips (62C).

**If motor is replaced:** Loosen set screws (56) on motor shaft collar (155) and remove from old motor shaft. To position the collar (155) correctly on the new motor shaft, temporarily fit motor shaft collar (155) into groove of the keyed coupling half. Slide collar, with coupling half onto new motor shaft until end of shaft lines up with line scored into coupling. Tighten the visible set screws (156) in the collar (155) enough to hold the collar in place on the shaft and remove the coupling half. Tighten all collar set screws (156) evenly and diagonally.

- H Fit the motor shaft key (05) and the pump shaft key (149) then install the keyed coupling half (140) first.

**NOTE:**

For easier coupling installation, motor and pump shaft keys (05 & 149) should be 180 degrees from the working area. To automatically locate the impeller in the pump, insert the coupling screw Allan wrench into positioning hole (21A) and lift pump shaft until the pump shaft collar is positioned in the coupling groove, then rotate shaft to locate the pump shaft key (149) into blind keyway in coupling.

- I Place the second coupling half into position and tighten the coupling screws (144,145) following the tightening pattern shown on the illustration (1-2-3-4).

**NOTE:**

Snug fit the coupling screws and confirm even gap spacing between coupling halves, then firmly tighten coupling screws following the tightening pattern illustrated. Then push (or slide) mechanical seal (62) firmly onto the stationary seat (61) and tighten the set screws (62A) by a torque wrench to 5 (ft. lbs). The mechanical seal is now pre-set at the correct working length.

- J Replace the seal flush piping (59) and drain plug(s). Open all isolating valves prior to operating pump(s). Reconnect power supply.

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