

Dismantling the Pump



Pumps which convey hazardous liquids must be decontaminated before dismantling the pump. The appropriate personal protection equipment should be used.

Tools required: Open ended spanner - across flats 1 1/8" (D3, D4, D4V), 46 mm (D5, D5V, D6, D6V) Engineers pliers, Screwdriver - medium flat blade, Hide mallet, Allen key - 5 mm & 6 mm across flats, Torque wrench.



1) Isolate the motor (1) from the power supply.

2) Disconnect the inlet, outlet and flush connections.



Risk of contact with liquid being pumped.

3) Unscrew the clamp ring handle(s) (8) by several turns and lift the clamp ring (7) over the flanged adaptor (5).

4) Remove the cover (18).

5) Unscrew the impeller locknut (22) with the spanner (right hand thread).

6) Slide the impeller vane plate (20) and (where fitted) the back plate (19) forward off the shaft (14) by maintaining an even pressure. Hitting the impeller can cause serious damage.

7) Remove the key (21) from the pump stub shaft (14).

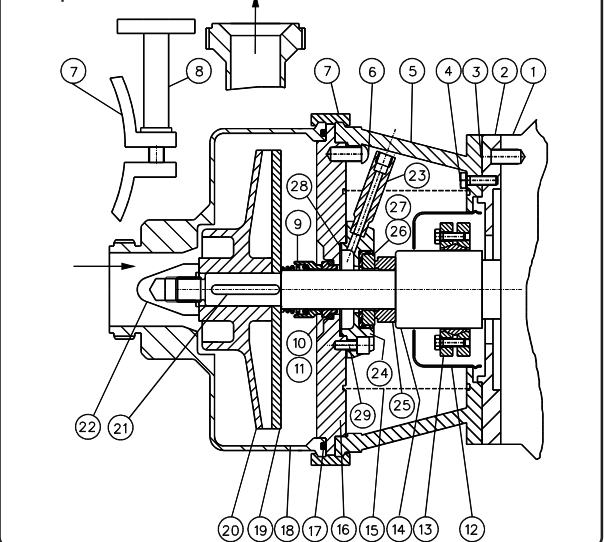
8) The inboard mechanical seal (9) is now accessible. Clean the shaft and slide the seal forwards off the shaft.

9) The face of the inboard seal is now exposed and can be inspected.

10) To remove the seal seat assembly (10,11), unscrew the housing plate screws (6) and unscrew the flush connectors (23) (D3, D4, D4V only). Take out the housing plate (16).

11) Unscrew the clamp plate screws (29) and remove the clamp plate (24). The inboard and outboard seal seats (11,26), seat rings (10,27), and flush gasket (28) can all be inspected.

Typical pump with double face to face seals & low pressure flush



Reassembling the Pump

1) Push the outboard mechanical seal (25) fully onto the shaft (14) ensuring that the carbon face is towards the impeller end (see page S2).

2) Locate the outboard seal seat assembly (26,27) and flush gasket (28) in the clamp plate (24), fit the clamp plate to the housing plate (16) and tighten the clamp plate screws (29).

3) Locate the inboard seal seat assembly (10,11) in the housing plate (16), fit the housing plate into the flanged adaptor (5) and tighten the housing plate screws (6). The outboard seal (25) will be squeezed to it's working length. Take care during assembly that the seal seats (11,26) do not contact the shaft (14) and become chipped. Ensure that the shaft guard (15) is in position.

4) Screw in the flush connectors (23) (D3, D4, D4V only), and fit the inboard mechanical seal (9) (see page S2).

5) Replace the key (21) in the pump stub shaft (14).

6) Slide the impeller back plate (19) (where fitted) and the vane plate (20) onto the shaft.

7) Screw on the impeller locknut (22) (right hand thread) and tighten with the spanner. If supplied, hold the impeller with the special tool and tighten with the torque wrench to 90 Nm (D3, D4) or 180 Nm (D5, D6).

8) Refit the cover (18).

9) Fit the clamp ring (7) into position and tighten the clamp ring handle(s) (8), ensuring that the clamp ring is correctly located.

10) Connect the inlet, outlet and flush connections.

11) Before start-up, the flush must be running and the pump should be flooded with liquid at the seal faces, as dry running will cause overheating and may damage the mating surfaces.

Replacing the Seal - double face to face seals, type 109 (inboard) & RB05 or 2100 (outboard)

ATTENTION

Mechanical seals are precision products. Installation should be carried out to the laid down procedure. Seals should be installed in a clean environment with particular care given to the lapped and polished seal faces.

Notes: - For information on the seal fitted in your pump, please refer to the data sheet.

Tools required: Diluted soft soap solution, Allen key - type 109: 2mm across flats. Seal fitting tube and sleeve (recommended).

Removing the old seals:

Dismantle the pump and seals as described on page S1. Where necessary, remove the grub screw burrs from the pump stub shaft.

Fitting the new seals:

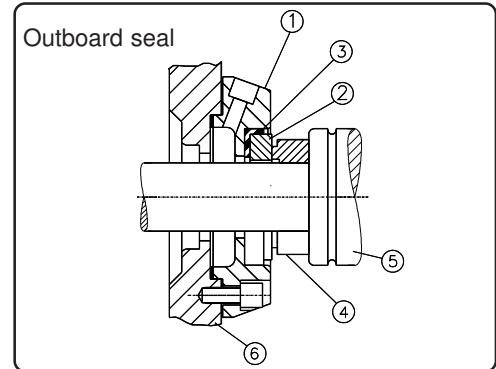
- 1) Ensure all components are clean. Any sharp edges on the shaft shoulder or keyway should be removed.

Outboard seal type RB05 or 2100:

- 2) Push the outboard mechanical seal (4) fully onto the shaft (5) ensuring that the carbon face is towards the impeller end.
- 3) Ensure that the rubber bellows in the mechanical seal (4) are not cut or damaged during assembly.
- 4) Lubricate the inside sleeve of the bellows with a very slight smear of diluted soft soap solution. **Never use mineral oil, grease, vaseline**, etc, as it is **not** hygienic and may degrade the rubber.
- 5) Fit the seat (2) into the seat ring (3) to form the outboard seat assembly.
- 6) Press the outboard seat assembly fully down into the recess in the clamp plate (1), ensuring that it is at right angles to the axis of the shaft with the lapped sealing surface facing **towards** the outboard mechanical seal assembly (4).

Inboard seal type 109:

- 7) Remove the 4 off retention clips before fitting the new seal onto the shaft.
- 8) Fit the seat (2) into the seat ring (3) to form the inboard seat assembly.
- 9) Press the inboard seat assembly fully down into the recess in the housing plate (1). Ensure that it is at right angles to the axis of the shaft and that the lapped sealing surface will face **towards** the inboard mechanical seal assembly.
- 10) Fit the housing plate (1) into the flanged adaptor and tighten the housing plate screws. Take care during assembly that the seal seat does not contact the shaft and become chipped. Ensure that the shaft guard (where supplied) is in position.
- 11) Lubricate the shaft with a very slight smear of diluted soft soap solution. **Never use mineral oil, grease, vaseline**, etc, as it is **not** hygienic.



- 12) Ensure that the grub screws (4) are well clear of the bore of the retainer (5).
- 13) Slide the seal unit gently onto the shaft, taking particular care when passing the seal over the stepped shaft not to damage the bore of the seal face. If the seal does not slide easily, remove it from the shaft, reverse it and push it gently onto the shaft so as to ease the wedge. Then remove the seal, place it on the shaft the right way round and slide it onto the shaft.
- 14) Fit the impeller and backplate (where applicable) onto the shaft and tighten the locknut. This will ensure that the seal is at the correct working length.
- 15) Lightly tighten the grub screws (4) in the retainer (5), centralising the seal on the shaft.
- 16) Unscrew the locknut and remove the impeller and backplate (where applicable) from the shaft. Tighten the grub screws (4).
- 17) Reassemble the pump as described on page S1.
- 18) Before start-up, the flush must be running and the pump should be flooded with liquid at the seal faces, as dry running will cause overheating and may damage the mating surfaces.

