

## Changing Diaphragm and Valve Plates/Seals

- Conditions
- Pump is switched off and mains plug is removed from the socket
  - Pump is clean and free of hazardous materials
  - Tubes removed from pump's pneumatic inlet and outlet

Spare parts/tools

| Spare part/tool                                   |
|---|
| Service Set (contact your KNF Sales Rep to order) |
| Philips screwdriver No. 2                         |
| Screwdriver, blade width 2 mm                     |
| Felt-tip pen                                      |

Information on procedure

Always replace diaphragm and valve plates/sealings together to maintain the pump performance.

With multi-head pumps, parts of the individual pump heads can be confused.

Replace the diaphragm and valve plates/sealings of the individual pump heads consecutively.



### WARNING

Health hazard due to dangerous substances in the pump!

Depending on the substance transferred, caustic burns or poisoning are possible.

Wear protective clothing if necessary, e.g. protective gloves.

Flush pump before replacing the diaphragm and valve plates/sealings

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- 1 Valve plate/sealing
- 2 Top plate
- 3 Cross recessed raised cheese head screw
- 4 Disk spring
- 5 Housing
- 6 Diaphragm
- 7 Diaphragm spacer(s)
- 8 Connecting rod
- 9 Intermediate plate
- 10 Head plate
- 11 Cross recessed raised countersunk head screw

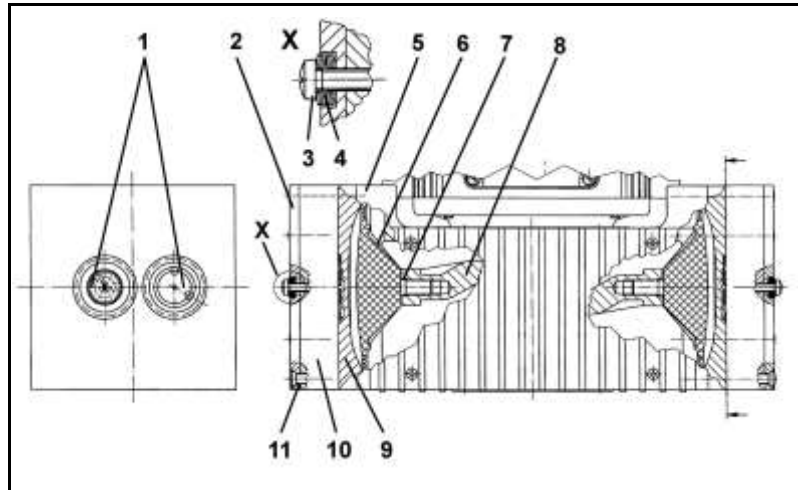


Fig. 11: Cross section of pump heads for pump 860.3 FT.18P (symbolic)

### Removing pump head

1. On the pneumatic head connections, loosen one of the union nuts by hand. Then slightly loosen the angle-fitting in the pump head by turning it anticlockwise, so that the connecting tube can be pulled out
2. Undo the screws that hold the fan cover (see fig. 3/8, page 12) and remove the fan cover from the motor.
3. At both pump heads make a mark (M) on the top plate (fig. 11/2), head plate (10), intermediate plate (9), and housing (5) with a felt-tip pen. This is to ensure that the parts will be reassembled correctly at a later stage.
4. Undo the eight screws (11).
5. Lift the pump heads off the housing (5).

**i** The magnetic valve of the drying system remains fitted in this situation.

### Changing diaphragm

**i** Replace the diaphragms of two-headed pumps consecutively in order to ensure that the same number of diaphragm spacers is used as before.

1. Position the pump so that the diaphragm surface is upwards.
2. Turn the fan to bring one diaphragm (6) to top dead centre.
3. Using a small screwdriver, between the housing and the outer edge of the diaphragm, carefully lift the edge of the diaphragm lightly upwards at one point (making sure not to damage the housing). Now grip the edge of the diaphragm on opposite sides, unscrew it by turning counter-clockwise.
4. Take the diaphragm spacer(s) (7) off the connecting rod (8) and retain them.
5. Check that all parts are free from dirt and clean them if necessary.

- Put the diaphragm spacer(s) (7) on the thread of the new diaphragm.
- Fit the new diaphragm (6): hold the connecting rod (8) with one finger, and gently screw in (clockwise) the diaphragm with diaphragm spacers.
- Turn the fan until the diaphragm is at the top dead centre. Using a small screwdriver, between the housing and the outer edge of the diaphragm, carefully lift the edge of the diaphragm lightly upwards at one point. Now grip the edge of the diaphragm on opposite sides (do not overstretch the diaphragm!) and tighten the diaphragm clock-wise.
- Carry out steps 1 to 8 for the second pump head.

### Changing valve plates/sealings

**i** Replacing the valve plates/sealings of pump heads consecutively.

- Undo the two screws (3).
- Separate the head plate (10) with top plate (2) from intermediate plate (9).
- Remove the valve plates/sealings (1) from the intermediate plate.
- Check that the valve seats, the head plate and intermediate plate are clean. If scratches, distortion, or corrosion are evident on these parts they should be replaced.
- Lay the new valve plates/sealings (1) in the recesses in the intermediate plate. The valve plates/sealings for suction and pressure sides are identical, as are upper and lower sides of the valve plates/sealings.
- Carry out steps 1 to 6 for the second pump head.
- Dispose of the old diaphragms and valve plates/sealings properly.

### Refitting pump head

- Turn the fan to bring the diaphragm (6) of one pump head to medium position.
- Place the intermediate plate (9), with valve plates/sealings (1), on the housing, in the position indicated by the marking (M).
- Place the head plate (10) on the intermediate plate (9) in the position indicated by the marking (M).
- Place top plate (2) in position and insert screws (3) with disk springs (4), and tighten them until the screw heads are just fully seated (do not completely tighten them!).

- i** The concave side of the first three disc springs must point away from the screw head, the next three towards it (see fig. 11, detail X).
5. Gently tighten the screws (**11**), evenly and diagonally.
  6. Turn the fan to check that the pump rotates freely.
  7. Now tighten screws (**11**) hand-tight.
  8. Tighten each of the screws (**3**) a half-turn more.
  9. Carry out steps 1 to 8 for the second pump head.
  10. Refit the pneumatic head connection: Place tube onto the connecting part of the angle fitting, turn angle fitting to a straight position and tighten the union nut.

#### **Final steps**

1. Refit the fan cover.
2. Reconnect suction and pressure line to the pump.
3. Reconnect the pump to the electricity supply.

If you have any questions about servicing call your KNF technical adviser (see last page for contact telephone number).