5. Maintenance

Note: for numbered items, see assembly drawing on page 10.

5.1 Checking the shaft seal

Check the pump's shaft seal for leaks on a regular basis. If the shaft seal is leaking, replace it or its relevant parts as described below.

5.2 Replacing the shaft seal

See page 10 for the referenced assembly drawing.

The assembly drawing shows the position and construction of the shaft seal - both standard seals and seals with water/steam flushing.

Pump disassembly

To replace the shaft seal, it is necessary to dismantle the pump as described below.

1. Disconnect the power supply in the motor isolator by removing the fuses and disconnecting the cables.

2. Turn off the steam and flushing water supply.

3. Close the inlet and discharge of the pump, and make sure that there is no liquid in the pump body.

If the pump is used for hot and/or aggressive liquids, special precautions must be taken. In such cases, observe the local regulations for personal protection when working with these products.

4. Once the inlet and outlet pipes have been closed properly, release the clamp ring (page 10, item 9a) or body screws, take off the pump body (item 1a) and remove the impeller (item 4).

Shaft Seal disassembly

5. Remove the stationary seal face (item 5.6) mounted in the back plate (item 7a) with your fingers.

6. Remove the o-ring (item 5.5) from the stationary seal face.

7. Use your fingers to remove the rotary seal face (item 5.7) mounted in the impeller (item 4).

8. Remove the o-ring (page 10, item 5.5) from the rotary seal face.

9. Clean the stator and rotary seal face locations, if necessary with air or water.

9a. In the case of water-flushed/aseptic shaft seals, the back plate must be removed to dismantle the rear shaft seal. The rear stationary seal face (item 5.6) is mounted in the pressure ring (item 5.11) and the rotary seal face (item 5.7) is mounted on the shaft (item 11). These are removed in the same way as the front seal components.

10. Check the o-rings (item 5.5) for signs of cracks, lack of elasticity, brittleness and/or chemical attack. Replace worn or defective parts.

Checking parts for wear

11. Check the stationary seal face (item 5.6) and rotary seal face (item 5.7) for signs of wear. The wearing surfaces must be completely free of scratches/cracks. If not, the rotary seal face and stationary seal face must both be replaced.

11a. In the case of water-flushed shaft seals, check the rear seal rings (item 5.7, 5.6) for wear, and replace if necessary.

5. Maintenance

Fitting

Note: for numbered items, see assembly drawing on page 10.

12. Fit new o-rings on the stationary seal face (item 5.6) and rotary seal face (item 5.7). Take extra care not to leave finger prints or contaminates on the seal faces during assembly.

Note. Remember to moisten these with water.

13. Fit the rotary seal face (item 5.7) on the impeller without using tools.

Note. The "notch" in the rotary seal face must be located so that it mates with the driving pin (item 5.8) in the impeller hub.

13a. In the case of water-flushed/aseptic seals, also fit a rotary seal face (item 5.7) with its o-ring (item 5.5) in the location on the shaft, again without using tools.

14. Fit drain pipe (item 5.4) to the back of the stationary seal face (item 5.6). Fit the stationary seal face (item 5.6) on the back plate without using tools.

Note. The "notches" in the stationary seal face must mate with the driving dogs on the carrier in the back plate. Check that the stationary seal face is positioned so that it slides backwards and forwards easily in the back plate.

14a. Where there are water-flushed/aseptic seals, fit the stationary seal faces (item 5.6) into the seal cover (item 5.9) and back plate (item 7a).

Positioning the water supply connections

15. After fitting, clean the wearing surfaces.

15a. For liquid-flushed/aseptic seals, remount the back plate (item 7a).

16. Fit the impeller (item 4) and secure it with the cap nut/inducer (item 2a). Lubricate the threads and use the proper tightening torque:

M10:	33 lb·ft	(45 Nm)	(uses 8 mm Allen wrench)
M14:	52 lb·ft	(70 Nm)	(uses 22 mm Allen wrench)
M20:	148 lb·ft	(200 Nm)	(uses 30 mm Allen wrench)

Reference the table "Required torques for cap nuts" on page 18.

17. Check that the locating pin in the top of the back plate (item 8, where fitted) mates with the detent in the pump body. Carefully, to avoid damaging the o-ring, press the pump body (item 1a) in over the o-ring (item 6) and fasten with the clamp ring (item 9a) or body screws, observing the correct tightening torque. See the table on page 18, "Required torques for housing clamp/screws."

5. Maintenance

Fig. 4: Unscrew motor flange bolts

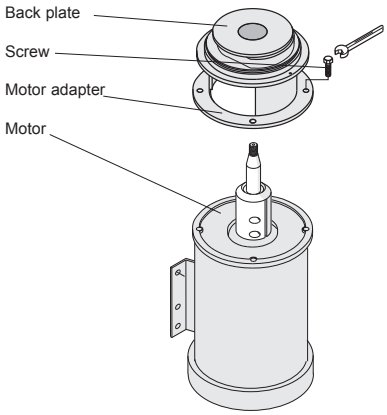


Fig. 5: Loosen screws

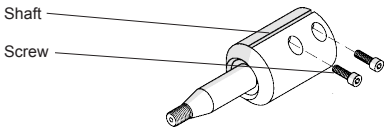


Fig. 6: Mount pump shaft

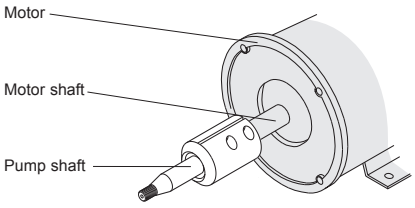


Fig. 8: Balance hole position

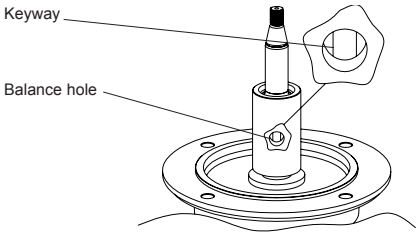
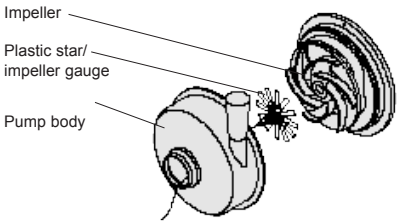


Fig. 7: Place plastic star against impeller



5.3 Replacement of motor

The standard motor for the W+ pump has a locked front bearing. If the motor is replaced, the new motor must also have a locked front bearing. The motor bearing is enclosed and permanently lubricated.

Follow the instructions below when replacing the motor. For replacement of bearings, see the motor supplier's service instructions.

1. Lock Out power supply, then disconnect the pump and motor from the system.
2. Remove the pump body. See para 5.2, points 1-4.
3. Remove the impeller.
4. If possible, stand the pump on end. See Fig. 4.
5. Undo the four motor flange bolts between the motor and motor adapter and remove them. See Fig. 4.
6. Lift the back plate, motor adapter and spacer flange (where fitted), which are still bolted together, up and off the shaft. See Fig. 4.
7. See Fig. 5. Loosen the screws in the base of the shaft, pull the shaft off and replace the motor.
8. See Fig. 6. Before remounting the pump shaft, remove any dirt and grease from the motor shaft and the base`s internal clamping surfaces. Mount the pump shaft loosely. Position the balance hole above the keyway. See Fig. 8.
9. Fit the back plate and motor adapter over the shaft.
10. Apply "Never-Seez" or equivalent to the bolt threads and tighten the bolts.
11. Turn the pump back so that it stands on its legs.
12. Fit the impeller (item 4) and secure it with the cap nut/inducer (item 2a). Remember to use the proper tightening torque:

M10:	33 lb·ft	(45 Nm)	(uses 8 mm Allen wrench)
M14:	52 lb·ft	(70 Nm)	(uses 22 mm Allen wrench)
M20:	148 lb·ft	(200 Nm)	(uses 30 mm Allen wrench)

13. Place the plastic star against the impeller. See Fig. 7.
14. Fit the pump body (item 1a) with the clamp ring (item 9a).
15. Push the shaft (item 11) forward until the impeller (item 4) is touching the plastic star/impeller gauge. See Fig. 9.
16. Apply "Never-Seez" or equivalent to the screw threads. Tighten the shaft screws. Remember to use the proper tightening torque for the screws:

M8:	22 lb·ft	(30 Nm)	(uses 6 mm Allen wrench)
M10:	41 lb·ft	(55 Nm)	(uses 8 mm Allen wrench)

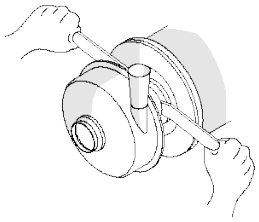
17. Remove the star/impeller gauge by pulling it out through the inlet.

    Replacement star/impeller gauge:

part no.	size	part no.	size
L274534	4.5" (115 mm)	L260406	9" (230 mm)
L259776	5.9" (150 mm)	L267637	11" (280 mm)

5. Maintenance

Fig. 9: Push shaft forward



5.4 Recommended inventory of spare parts

Seal set

We recommend that you keep both seal kits and service kits for the W+ pumps in stock. The seal kit for the W+ pump consists of the wearing parts of the pump, as specified on page 30.

Service kit

The service kit is made up of a number of the main components of the pump which are not wearing parts, but which you still may have to replace: shaft, impeller, cap nut and fixing kit.

The table below shows the recommended inventory of spare parts for normal operation and in cases where there are special needs - for example, 24-hour operation, operation with abrasive media, or processes that are sensitive to even the shortest production stoppage.

Wearing parts (seal kit, see page 30)

	No. of pumps in service		
	0-5	5-20	> 20
	Sets	Sets	Sets/ 10 pumps
Normal operation	2	3	1
Special needs	3	6	2

Service parts (shaft, impeller, cap nut, see page 25-27, fixing kit, see page 28).

	No. of pumps in service		
	0-5	5-20	> 20
	Sets	Sets	Sets/ 10 pumps
Normal operation	0	1	1
Special needs	1	2	1

6. Technical data

6.1 Maximum permissible outlet pressure

The maximum pump outlet pressures specified below must not be exceeded (applies to water at 68°F/20°C).

Max. 260 psig (18 bar): W+10/8, W+22/20, W+30/80, W+35/55, W+35/35, W+110/130

Max. 200 psig (14 bar): W+25/210, W+30/120, W+50/8, W+55/35, W+55/60, W+60/110, W+65/350, W+70/40, W+80/80

The above values also apply to the corresponding models in the Wa+ and Wi+ versions.

Subject to change.