

Vitronics Soltec

Pump Seal Replacement Instructions

For use with part number: 3313410-A

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Tools Required:

1. Safety glasses
2. Soft plastic or wooden mallet
3. 10mm wrench and socket
4. External snap ring pliers
5. Penetrating oil
6. 11/16" / 17.188mm wooden dowel (approximately 6" / 152mm long)
7. Thin blade screwdriver
8. Glycol base lubricant (DO NOT use petroleum product), Example: Cealube G
9. Torque wrench (0-25 ft. lbs. / 0-3.45 kg m)

B. Cautions:

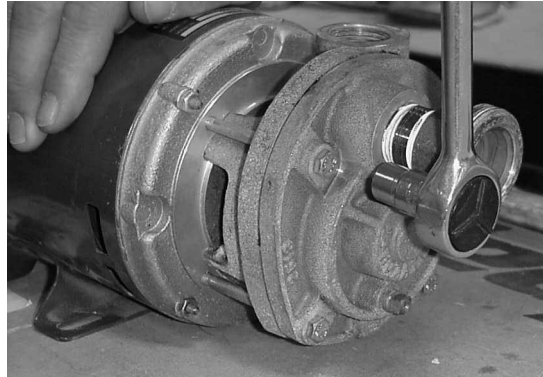
1. **Before attempting any service on the pump or motor, disconnect the electrical power to the pump motor or the complete machine.**
2. **If the pump is being used to pump hot liquid, let the pump and liquid cool before starting disassembly.**

C. Preliminary Information:

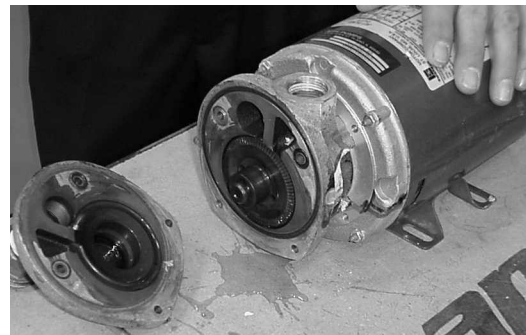
1. Use colored or numbered tape to mark the wire connections of the motor and power source, for reconnection.
2. Disconnect the inlet and outlet piping before unbolting the pump and motor. If the pipes are corroded, use penetrating oil on the threads to aid in removal.
3. Unbolt the motor from the base and remove the unit. All work on the unit should be performed on an elevated workbench whenever possible.

D. Disassembly:

1. Remove all liquid from the pump. Air blown through the pump will remove the coolant quickly.
2. Remove the four (4) M6-1 x 80mm bolts from the cover.



3. Remove the cover.
 - (a) In some cases, **light** tapping with a plastic or wooden mallet on the outside diameter of the cover may be required to loosen it from the motor bracket.
 - (b) **Care should be taken if a screwdriver is needed to pry between the cover and motor bracket. Damage to the "O ring" and/or impeller can result.**

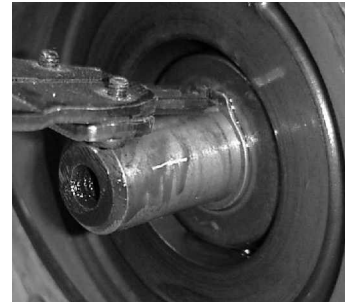


4. Remove the impeller.
 - (a) The impeller is a slip fit and under normal conditions can be removed by hand or by **gently** tapping on the end of the shaft with a plastic or wooden mallet.
 - (b) **Striking the shaft too hard could damage the seat, rotating element, or the motor.**
 - (c) After removing the impeller, the impeller key needs to be removed from the shaft keyway.



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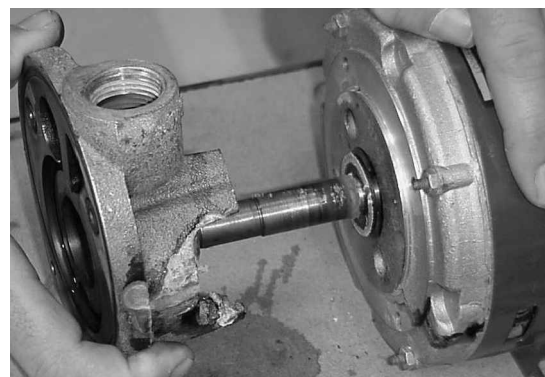
5. Remove the snap ring and spring from the shaft.
 - (a) Note: The spring is held in place by the snap ring.
 - (b) Remove the snap ring using the external snap ring pliers.
 - (c) Remove the spring from the shaft.



6. Remove the rotating element.
 - (a) Gently slide the motor bracket forward on the shaft to move the rotating element far enough out to be removed by hand.
 - (b) Grasp rotating element in fingers and slide off the shaft.



7. Remove the motor bracket.



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8. To remove the seat.
 - (a) Place the motor bracket face down on a clean surface.
 - (b) Look into the opening in the center of the motor bracket and you will see a portion of the seat.
 - (c) Insert the 11/16" / 17.188mm dowel and **very gently** tap the seat until it drops out.

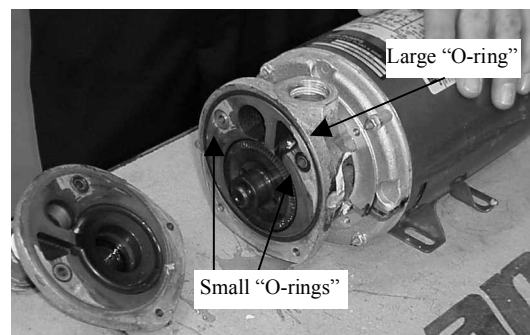


E. Inspection of Components:

1. Thoroughly clean all parts.

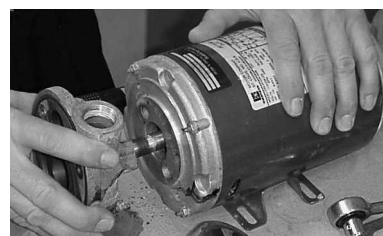
Cleanliness is imperative when working with mechanical seals. Small particulates or debris between seal faces can be, and often are, the cause of early seal failures.
2. Examine all parts for wear and corrosion.

Note: If the pump was not producing sufficient pressure or capacity, the clearances between the rings and impeller probably exceed the maximum allowable clearance. If the total side running clearance of an impeller exceeds .007" it is unlikely that pump performance will reach that of a new pump except at lower discharge pressures.
3. The "O" rings and other elastomeric components should be replaced if they have been deformed or cut.
4. Check the impeller. It is designed to float. It should move easily on the shaft. As long as it can be moved on the shaft by hand, it is loose enough. If the impeller can be rocked or wobbled, it is too loose and must be replaced.
5. Check the shaft for galling, pitting and corrosion. If the shaft is corroded where the seal comes in contact with the shaft, the motor must be replaced. Surface corrosion must be removed so that seals can slide freely during assembly. The shaft diameter should be no smaller than .002" below the nominal fractional seal size of 5/8". Remove any nicks or burrs which may have occurred during disassembly.
6. Reclean parts as necessary.
- 7.



F. Reassembly:

1. Visually inspect parts.
2. **The seal seat must be installed in the motor bracket before the bracket is installed on the motor.**
 - (a) Place the motor bracket face up on a flat surface.
 - (b) Apply a coating of compatible lubricant to the elastomer portion of the seal to aid with installation.
 - (c) Carefully press the seat **smooth side up** into the seat cavity of the motor bracket. Thumb pressure is usually sufficient to install the seat.
3. Install the motor bracket.
 - (a) **Make sure that both the "C-face" of the motor and the feet of the motor bracket are clean.**
 - (b) Slide the motor bracket over the shaft onto the motor.
4. Install the rotating element.
 - (a) Lubricate I.D. of the rotating element.
 - (b) Place the rotating element on the shaft with the carbon end toward the seat.
 - (c) Place the spring over the shaft, with the backing plate up.
 - (d) Compress the spring to locate the rotating element against the seat. **If this fails to seat the rotating element, gently push the rotating element down with a thin blade screwdriver. Be careful not to damage the seat or the rotating element.**



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5. Install Spring and Snap Ring.

- (a) Compress and hold the seal spring slightly below the snap ring groove and install the snap ring.
- (b) Make sure the snap ring is locked in the groove.



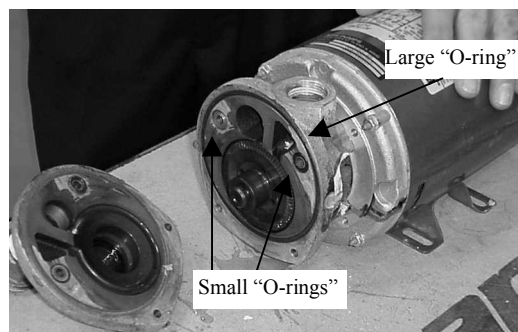
6. Install Impeller Key and Impeller.

- (a) Install the impeller key into the shaft keyway.
- (b) The impeller is a slip fit and should slide on firmly but easily until it stops against the impeller-wearing surface.
- (c) Force should not be required or used to install the impeller in the correct position. The impeller hub should be facing out away from the motor bracket.
- (d) Rotate the impeller by hand, it should move freely.



7. Replace the 3 "O-rings" if necessary.

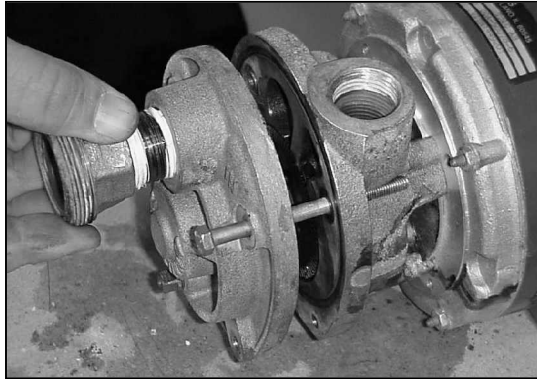
- (a) Insert the large "O-ring" in the large groove of the motor bracket.
- (b) Insert the two smaller "O-rings" in the smaller grooves.



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10. Install the cover.

- (a) Place the cover over the motor bracket and install the four (4) M6-1 x 80mm.
- (b) Using a torque wrench, tighten the bolts systematically, alternating diagonally across the cover.
- (c) **Do not exceed between 7-11 ft. lbs. (0.96-1.52 kg m) of torque or damage to the motor "C-face" may occur.**



G. Testing and Final Adjustment:

The pump is now ready for installation. Final adjustments will be made with the pump in operation.

1. Connect all piping and fill the pump with fluid.
2. Reconnect the electrical connections, referring to the colored or numbered tape used to mark the wires.
3. Make sure all valves are opened, except for the drain valve, and fluid will flow through the system.
4. Start the pump and make the final adjustments to the M6 bolts holding the cover on. Torque the bolts to 7-11 ft. lbs. (0.96-1.52 kg m) to obtain proper performance.
5. Check for leaks on pump and piping. Special attention should be given to the seal area at the rear opening in the motor bracket.
6. Under pressure, the impeller will find its "hydraulic" balance.
7. Using an amp probe or similar device, check for motor overload.
8. While the impeller is seating, it is common to experience some variance in readings. After a run-in period the readings should level off.

