

## Fresenius Medical Care North America Service Bulletin

Equipment: All Hemodialysis Machines  
Bulletin: 13-FRS-009 Rev A  
Subject: Motor/Gearbox Replacement

### 1.0 PURPOSE

To inform all Field Service and Technical Support personnel of the process of replacing the Motor/Gearbox assembly (P/N M30687) on the Arterial Blood Pump module used on the 2008®K, 2008®K<sup>2</sup>, 2008®T and the 2008K@HOME™ machines.

### 2.0 TOOLS REQUIRED

#2 Phillips Screwdriver with a shaft 6" long or greater.

### 3.0 PROCEDURE

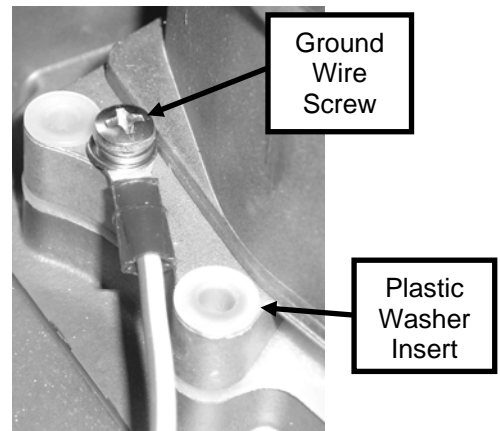


**Caution:** Care must be taken when handling circuit boards to prevent damage by ESD (Electrostatic Discharge). Use appropriate ESD precautions when handling electronic components.

#### **Motor/Gearbox Removal**

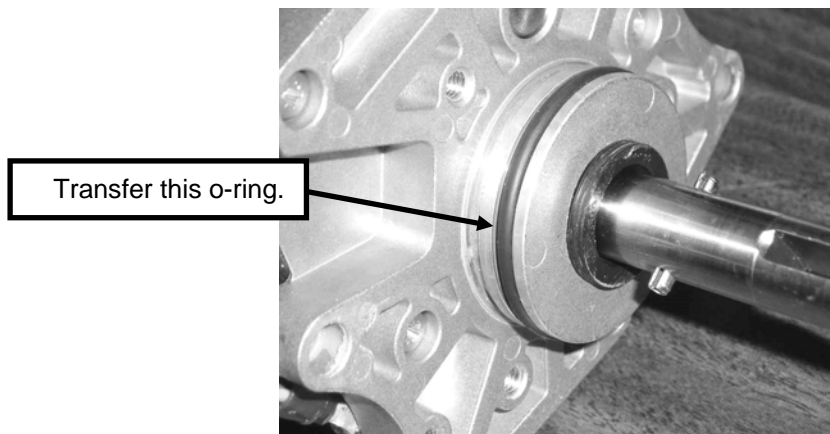
1. Remove the module from the machine; unplug the module ribbon cable(s) from the LP955 and the ESD ground wire from the module face plate.
2. Remove the blood pump rotor.
3. Lay the module face down on an ESD protective surface.
4. Locate and unplug the following connections to the LP956 board:
  - MOTOR (red and black wires)
  - OPT. SENSOR (yellow, green, brown and white ribbon)
5. Locate and remove the four screws attaching the motor/gearbox assembly to the face plate. Save the hardware. There should be a screw, a split ring lock washer and a flat washer for each hole.

6. Each hole will have a plastic washer insert (see Figure 1). Transfer these plastic washer inserts to the new motor/gearbox assembly.
7. Locate the motor ground wire and remove the screw attaching it to the motor/gearbox assembly (see Figure 1). Save all hardware for the screw. There should be a screw, a split ring lock washer, a flat washer and a star washer under the wire lug.
8. Once the screws are removed, the motor can be removed from the face plate. A slight twisting action will help with the sealing o-ring.



**Figure 1**

9. Carefully remove the large o-ring (see Figure 2) and transfer it to the new motor/gearbox assembly. If the o-ring is damaged, a replacement can be ordered using (P/N M30682).



**Figure 2**

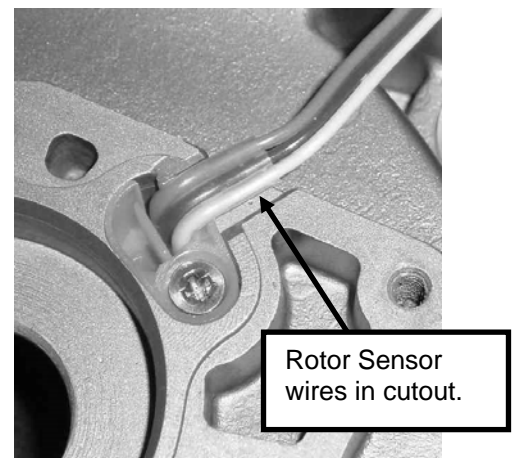
10. If the motor/gearbox flat gasket remains attached to the original motor/gearbox remove it and place it onto the face plate aligning all holes.

### **Motor/Gearbox Installation**



**Caution:** Before installing the new motor/gearbox into the face plate, make sure the rotor sensor wires are still positioned in the cutout so the wires do not get pinched (see Figure 3).

11. Install the motor/gearbox assembly into the face plate aligning the hole-pattern and the gasket correctly.
12. Install and tighten each of the four screws just enough for the lock washers to touch the motor/gearbox flange. Proceed to tighten each screw in turn a ¼ turn at a time to uniformly secure the flange to the face plate. This prevents the motor/gearbox from not being tightened too tight on one side causing the rotor shaft to be angled. Continue tightening the screws until all are tight.



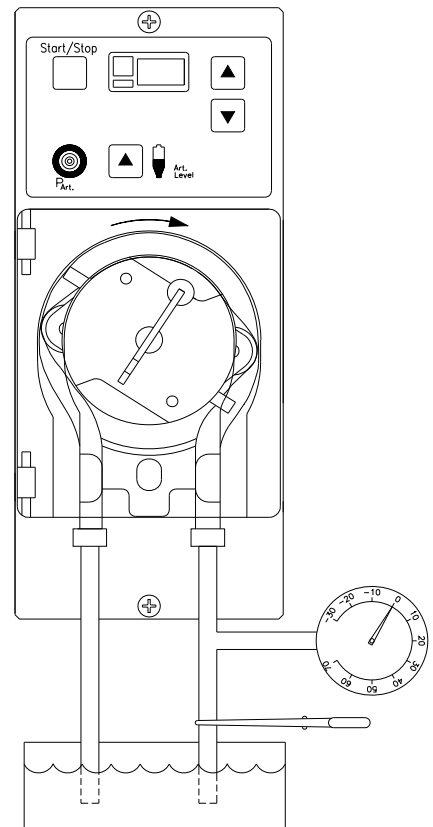
**Figure 3**

13. Connect the motor and optical cables to the MOTOR and OPT. SENSOR connectors on the LP956 board.
14. Install the ground screw and wire to the motor/gearbox flange (see Figure 1).
15. Install the blood pump rotor.

### **Post Reassembly Testing**

16. Reconnect the ribbon cable(s) to the blood pump module and install it into a machine.
  17. Turn the machine on and place the machine into Dialysis Mode.
  18. Clear all blood alarms and start the blood pump if it is not already running.
  19. Open the blood pump door. Verify that the red alarm light on the blood pump module lights within 15 or 30 seconds.
- NOTE:** Delay time before the blood pump alarm lights is set by dipswitch 4 on the LP955 board.
20. Close the blood pump door and press the RESET key to clear the alarm.
  21. Test the occlusion of the blood pump rotor as follows:

- Set the Tubing Size to 8mm.
- Insert a bloodline in the pump. Do not change the setting of the tubing size selector, even if you are not using 8mm tubing.
- Connect a pressure gauge to the bloodline in the pump (See Figure 4) and allow the rotor to pull up 37°C ± 1.5°C water. Let this fluid flow past the pressure gauge long enough to clear out air.
- With the pump running at 600ml/min, clamp the outlet so that the pressure gauge is between the output of the pump and the clamp (see Figure 4). The peak pressure on the gauge must be between 25 and 35psi. If the peak pressure is out of range, replace the blood pump rotor springs (P/N 650174).
- Set the Tubing Size Selector to agree with the size of bloodline used in the pump.



**Figure 4 - Rotor Occlusion Test**

If there are any questions regarding this bulletin, contact Fresenius Medical Care Technical Support at 800-227-2572.

© 2013, Fresenius Medical Care North America, All rights reserved.