

# REBUILD INSTRUCTIONS FOR BLOOD PUMP WITH REMOVABLE TACHOMETER

## 1. PURPOSE:

To outline the process of removing and reinstalling the tachometer assembly in order to access the motor brushes on a 2008<sup>®</sup> Series Arterial Blood Pump with a removable tachometer.

## 2. TOOLS REQUIRED:

- T-20 Torx Screw Driver
- T-25 Torx Screw Driver
- #2 Phillips Screw Driver
- Marking Pen

## 3. 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.

### Blood Pump Preparation

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. Lay the module face down on an ESD protective surface.

### Removable Tachometer Identification

In order to rebuild a 2008<sup>®</sup> Series Arterial Blood Pump, the tachometer has to be the removable type. Figure 1 shows how to make the distinction between the two types. **If the tachometer is not removable, the blood pump motor cannot be rebuilt.**

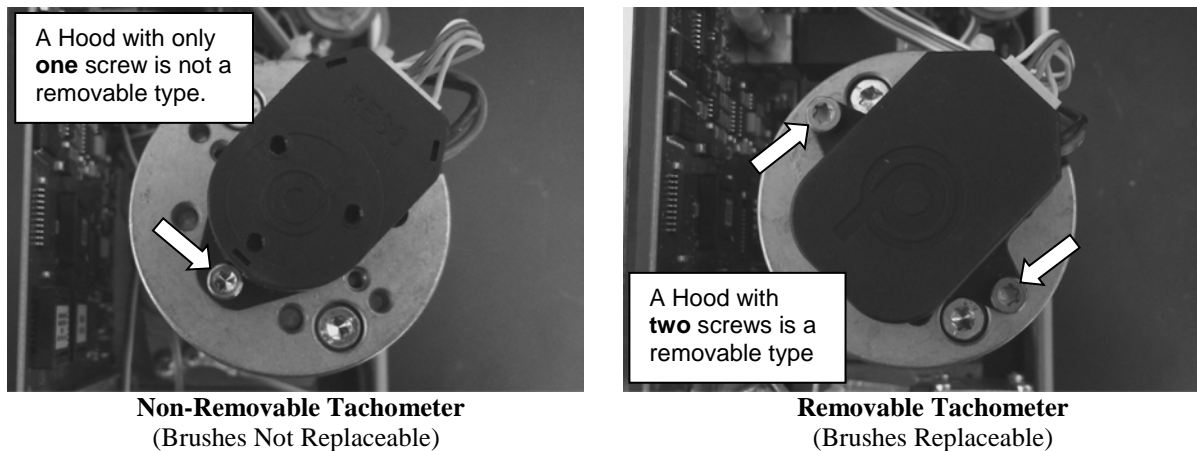


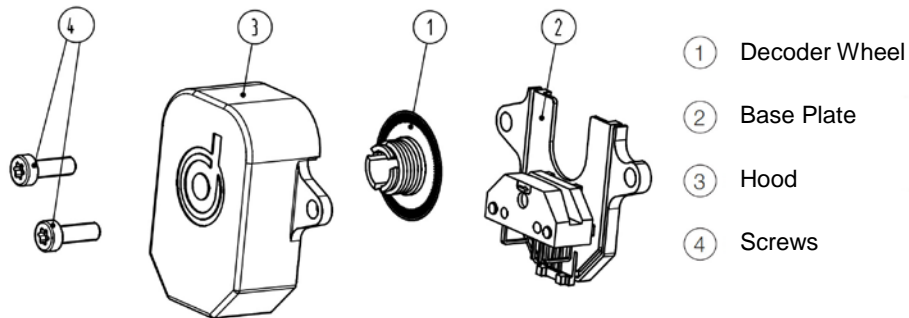
Figure 1



**Note:** A non-removable tachometer blood pump can be converted by replacing the motor/gearbox assembly with P/N M49706.

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## Tachometer Assembly Part Identification



## Tachometer Assembly Removal

- Using a T-20 Torx Screw Driver, remove the two screws holding the Hood and Base Plate to the motor housing (Figure 2)

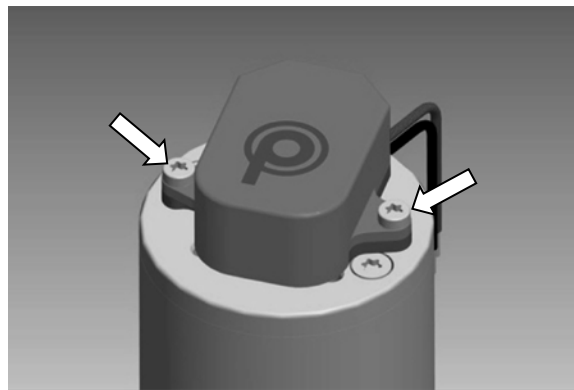


Figure 2

- Once the screws have been removed, both the Hood and the Base Plate can be removed.



**Caution:** The Decoder Wheel is very delicate and can be easily damaged. In the next step, use care when removing it from the motor shaft. Grease, dust and finger pressure on the Decoder Wheel must be prevented.

- Remove the Decoder Wheel from the motor shaft by pulling straight up (Figure 3).

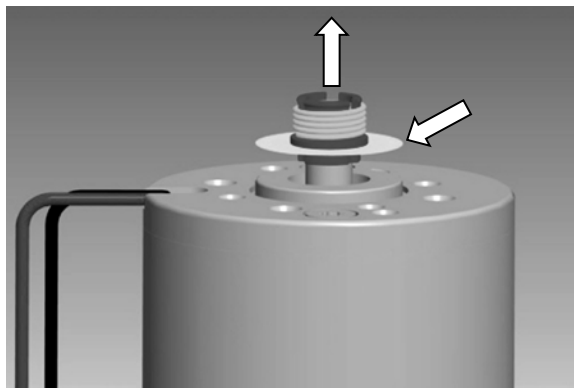


Figure 3

- Set the Decoder Wheel aside so that it does not get damaged or contaminated.

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### Motor Brush Replacement Preparation

7. Using a marker, make marks on the motor housing and motor end caps (Figure 4). These marks will ensure the correct alignment when reassembling the motor case.

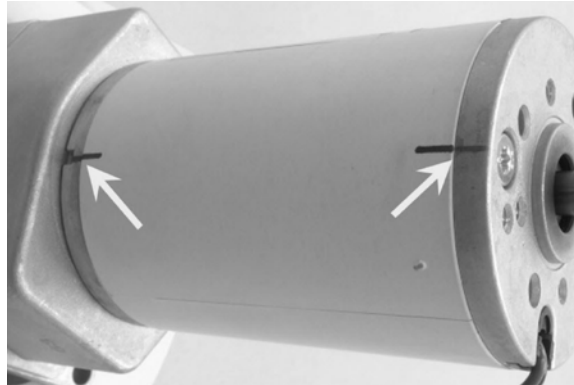


Figure 4 - Motor/Gearbox Assembly with marks.

8. Using a T-25 Torx Screw Driver, remove the two screws holding the motor cap to the motor housing.
9. Remove the motor cap to gain access to the motor brushes.
10. Once complete, reassemble the motor, aligning the marks.
11. While holding the pieces together, install and tighten the two T-25 screws.



**Note:** If the motor case and motor cap are not installed using the marks, the motor will run in reverse and errors will result.

### Tachometer Assembly Installation



**Caution:** The Decoder Wheel is very delicate and can be easily damaged. In the next step, use care when removing it from the motor shaft. Grease, dust and finger pressure on the Decoder Wheel must be prevented.

12. One of the “leg” of the Base Plate has been designed to be used as a thickness gauge. In preparation for the next step, place the “leg” against the motor shaft as shown in Figure 5.

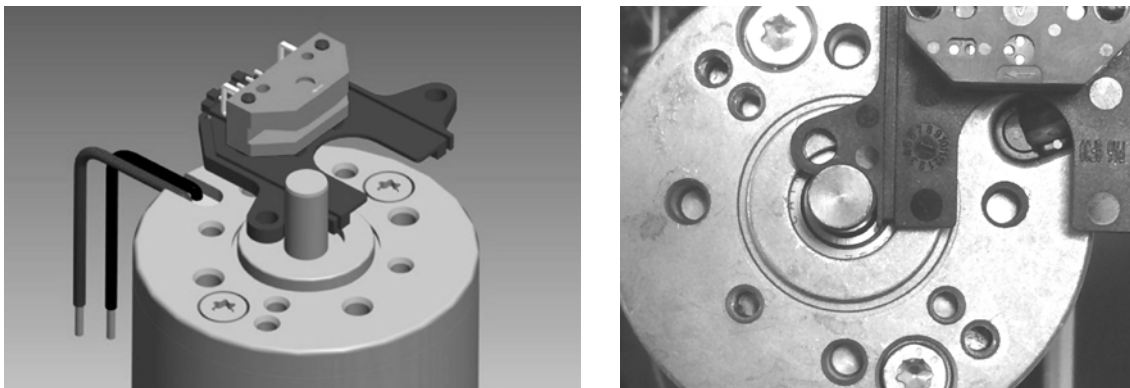


Figure 5

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13. Slide the Decode Wheel on the motor shaft until it touches the Base Plate “leg” (Figure 6).

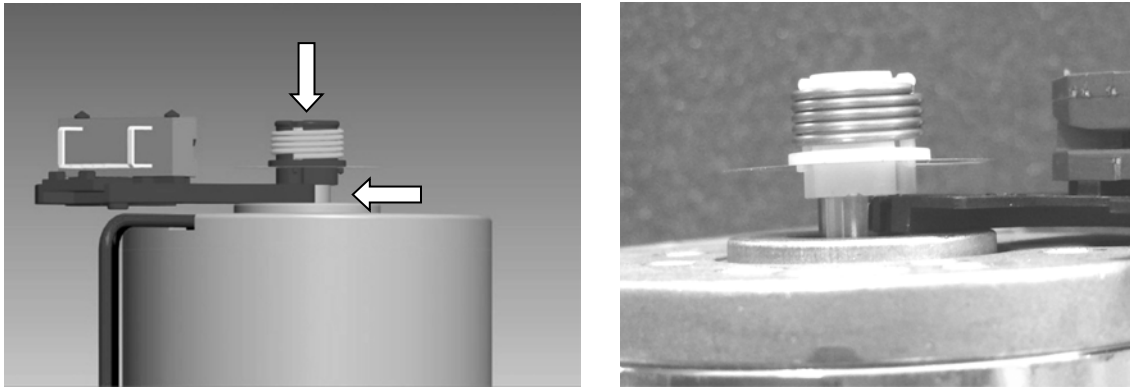


Figure 6



**Note:** Prior to installing the Base Plate, be aware of the small alignment post on its underside. It fits into one of the holes in the motor end plate to assist in aligning the Base Plate for mounting (see the arrow in Figure 7).

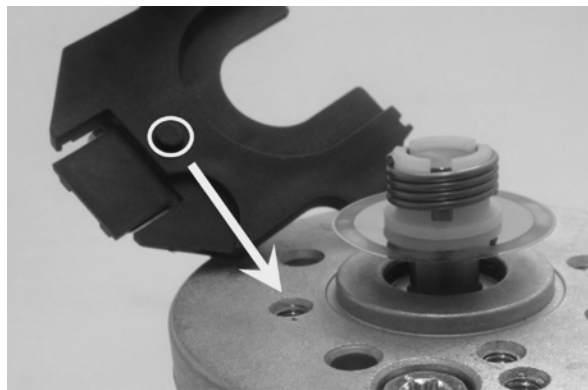


Figure 7

14. Once the Decoder Wheel is in place, carefully position the Base Plate so the Decoder Wheel is positioned in the gap of the sensor (Figure 8). The Decoder Wheel should not touch the sensor when the motor shaft is turned.

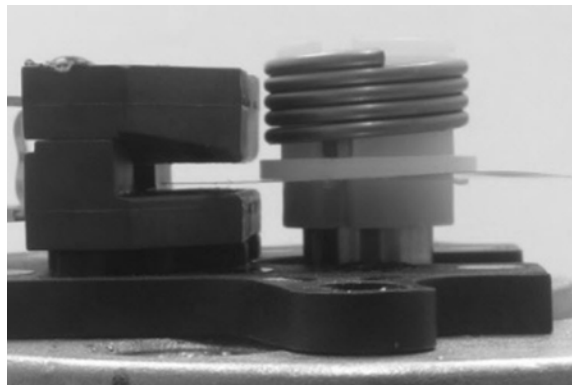
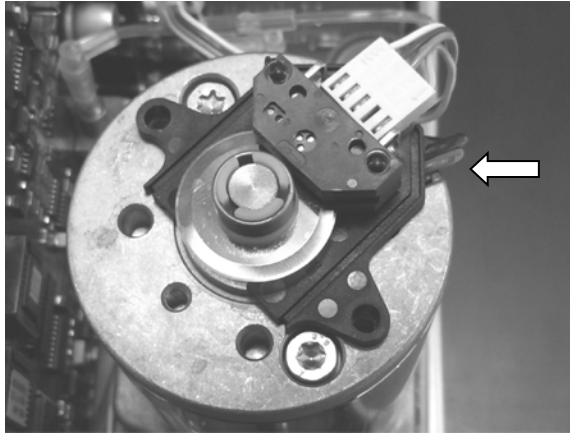


Figure 8

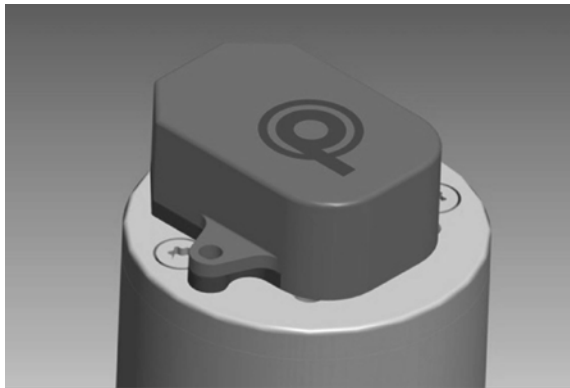
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15. The Base Plate is properly positioned when the decoder wires are aligned with the motor wires (see arrow in Figure 9).



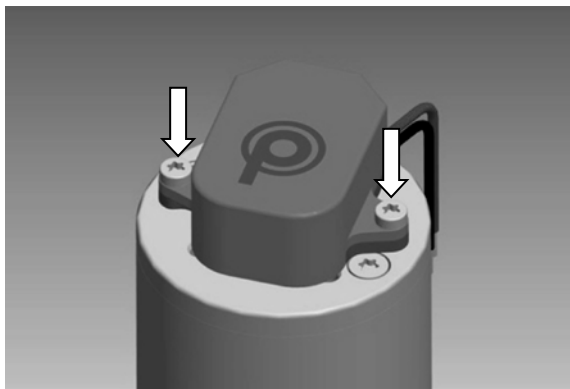
**Figure 9**

16. Place the Hood onto the Base Plate and align the mounting holes with the threaded screw holes in the motor end plate. Ensure the alignment pin on the underside of the Base Plate is inserted into its hole in the motor end plate (Figure 10).



**Figure 10**

17. Once aligned, install and tighten the two T-20 screws removed in step 3 to secure the Hood and Base Plate (Figure 11). Do not over tighten the screws.



**Figure 11**

## **REBUILD INSTRUCTIONS FOR BLOOD PUMP WITH REMOVABLE TACHOMETER**

### Post Reassembly Testing

18. Reconnect the ribbon cable(s) and the ESD ground wire to the blood pump module and install it into a machine.
19. Turn the machine on and place the machine into Dialysis Mode.
20. Clear all blood alarms and start the blood pump if it is not already running by pressing the Start/Stop key on the blood pump.
21. Verify no alarms or error codes displayed on the blood pump.