



2008T BlueStarTM Premium Installation Instructions

2008T BlueStar Standard to 2008T BlueStar Premium

Part Number 490328 Rev D

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2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Purpose:

The purpose of these instructions is to define the process of installing the 2008T BlueStar Premium option onto a 2008T hemodialysis machine.

Scope:

The 2008T BlueStar Premium option consists of electronic and hydraulic installations. The electronic installations are necessary for a minimum installation of the 2008T BlueStar Premium option. The hydraulic installations can be postponed and consist of rebuilding the Acid, Bicarbonate and UF Pumps with longer lasting components. In order to implement the 2008T BlueStar Preventive Maintenance schedule, the hydraulic installation must be completed before or during the next scheduled Preventive Maintenance. When the time comes to rebuild the pumps, return to this document and proceed to the 2008T BlueStar Premium Hydraulic Installation Decision on page 8

Machine Prerequisite:

- 2008T BlueStar Functional software version 2.71 or greater*
- 2008T BlueStar Actuator-Test software version 2.32 or greater*

***Note:** If a software update is needed, a 2008T 2008T BlueStar Standard Upgrade Kit (P/N 191137) must be ordered separately.

Equipment Required:

- Mesa 90XL Dialysate Meter (With Conductivity/Temperature Module)
- Mesa Serial Cable – P/N 368402-10
- Null Modem – P/N 190323

Required Tools:

- #2 Phillips screw driver
- Diagonal Cutters
- Permanent Marker
- Pliers
- 7mm Nutdriver
- T20 Torx screwdriver
- Flat blade screw driver
- AppLoader
(Optional tool for Special Feature activation P/N 190894)

Reference Documents:

- Special Features EEPROM Installation Instructions – P/N 507554
- 2008T 2008T BlueStar Software Update Instructions - P/N 490329 (not included in the kit)
- 2008T Calibration Procedures – P/N 508032 (not included in the kit**)
- 2008T Preventive Maintenance Procedures – P/N 508033 (not included in the kit**)
- 2008T Hemodialysis Machine Operator's Manual – P/N 490122 (not included in the kit**)

**Electronic versions available at: www.fmcna.com/frtmanuals

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Procedure:

Caution: Assembly, installation, adjustment, or repair is to be performed by Fresenius Medical Care or by persons trained by Fresenius Medical Care.

Rinse Machine & Inventory Parts

1. Power the machine on.
2. From the Select Program screen select Rinse to thoroughly rinse the machine. While the machine is rinsing, carefully read all steps outlined in these instructions. Inventory the parts kit for completeness using the list on page 14.
3. Power off machine.

Software Version Confirmation

4. Power the machine on and enter Service Mode.
5. Select the Options screen button and enter debug by pressing and holding the CTRL key and then press the ▲ and ▼ keys at the same time on the keyboard. Use the ▲ and ▼ keys to go to debug screen 3 ACTUATOR.

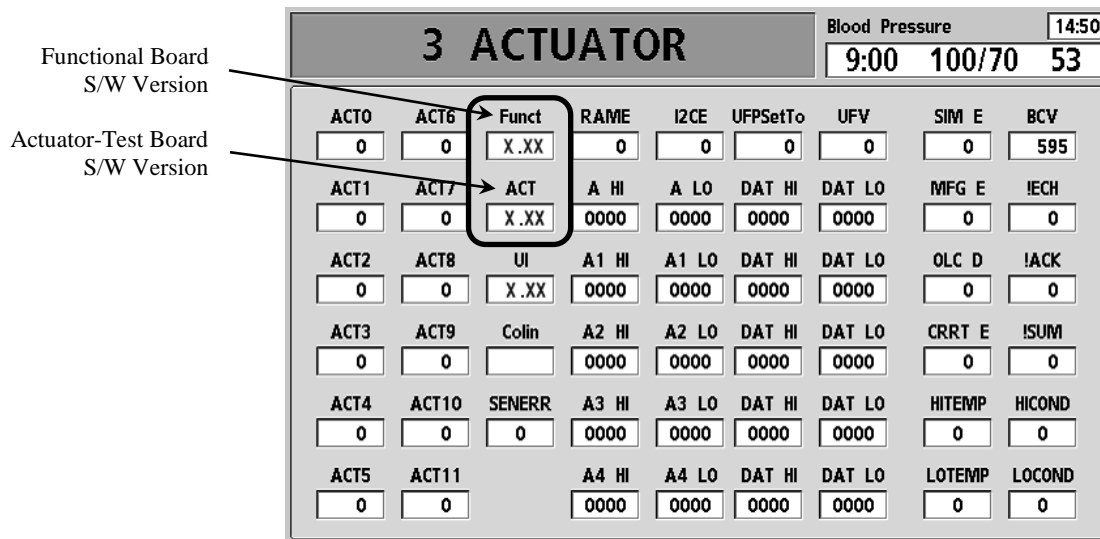


Figure 1

6. Using Figure 1 verify the Functional software version is 2.71 or greater and the Actuator-Test software version is 2.32 or greater. Press the Escape key to exit debug.
7. If valid software versions are already installed, skip to the Card Cage Preparation section on the next page.
8. Perform the 2008T BlueStar Software Update Instructions (P/N 490329) included in the 2008T BlueStar Standard Upgrade Kit (P/N 191137).

Note: Once the machine has 2008T BlueStar software installed there are additional Service Mode Options. Some are inactive until the 2008T BlueStar Premium option is activated later in this procedure. Refer to the 2008T Operator's Manual (P/N 490122) for information regarding setting 2008T BlueStar options.

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Card Cage Preparation

- Remove the two (2) screws securing the card cage into the cabinet (see Figure 2). Slide the card cage out the front of the cabinet a few inches.

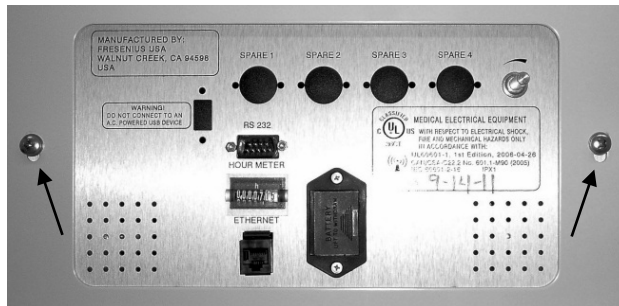


Figure 2

Note: The middle and lower rear panels have ground wires attached. Take care not to damage these wires when removing these panels.

- Remove the middle rear panel covers. See Figure 3 for screw locations. Unplug the cover's ground wire.

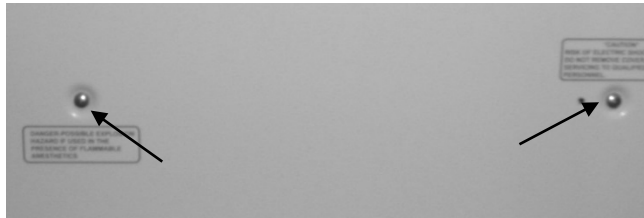


Figure 3 – Middle Rear Panel Screw Locations

Note: If the hydraulic installations are being postponed until the next Preventive Maintenance, the lower rear panel does not need to be removed. Skip to the Motherboard EEPROM Installation section on the next page.

- Remove the lower rear panel covers. See Figure 4 for screw locations. Unplug the cover's ground wire.

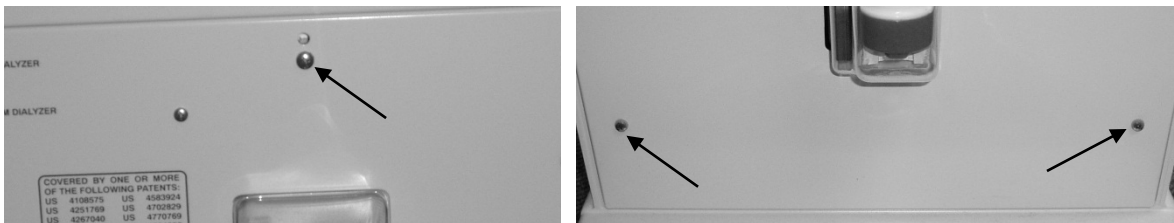


Figure 4 – Lower Rear Panel Screw Locations

- Remove the distribution box cover. See Figure 5 for screw locations.

Note: The distribution box cover screws remain attached to the cover when loosened. Do not attempt to remove the screws.

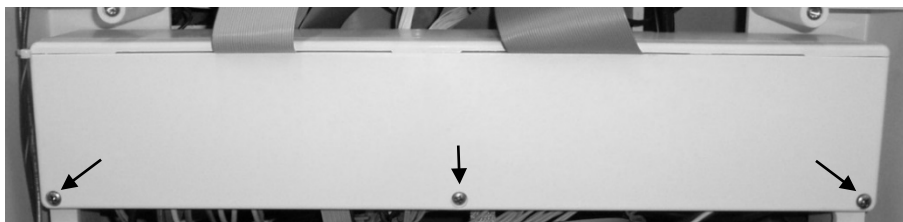


Figure 5 – Distribution Box Screw Locations

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Motherboard EEPROM Installation

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

13. Locate the 2008T BlueStar Premium Motherboard EEPROM included in the kit.

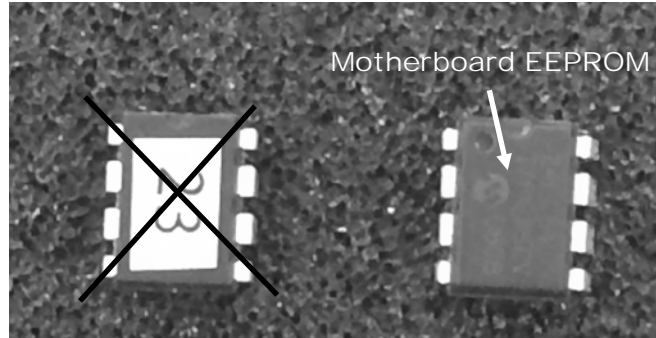


Figure 6 – Motherboard EEPROM Part Recognition

14. Slide the card cage out far enough to access the Power Logic board.
15. Unlock the Power Logic board, disconnect the two (2) ribbon cables from the top of the Power Logic board and remove from the board from the card cage.
16. Locate the 8-pin chip socket between the Power Logic board and the Actuator-Test board (see Figure 7)

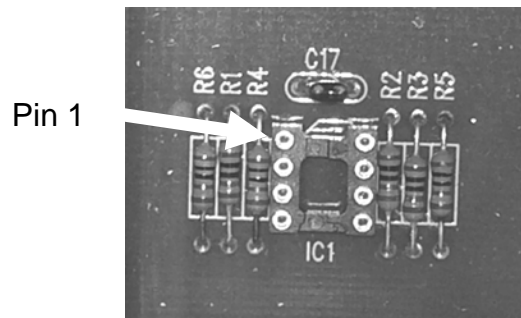


Figure 7

Caution: Incorrect installation of this component could cause the machine to be inoperable until corrected.

17. Using the pin 1 locator indicated in Figure 7 and Figure 8 and install the Motherboard EEPROM included in the kit

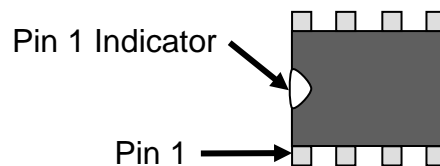


Figure 8

Note: The installation of the Motherboard EEPROM will be tested once the 2008T BlueStar Premium Special Features have been activated.

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Power Logic Board Upgrade

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

18. Locate new Power Logic board (P/N 190951-XXX) included in the kit.

Note: The “-XXX” portion of the Power Logic board part number represents the software version.

19. Install the new Power Logic board into the card cage where the old board was removed earlier.

20. Lock the board into place and install the two (2) ribbon cables removed earlier.

Special Feature Activation

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

21. Locate the 2008T BlueStar Premium Special Features EEPROM (P/N 190351-23) included in the kit.

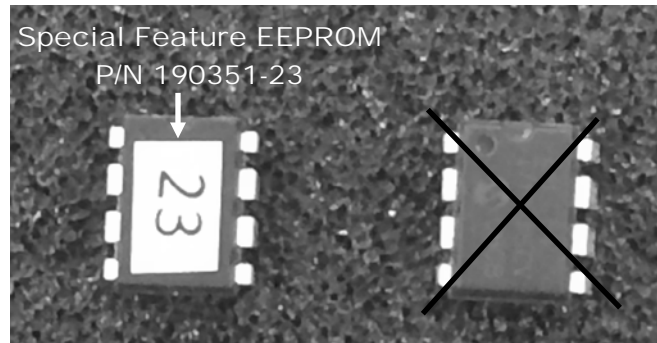


Figure 9 – Special Feature EEPROM Part Recognition

Note: In the next step, if an AppLoader is used to activate the 2008T BlueStar Premium Special Features, refer to the AppLoader instructions included in the AppLoader Kit (P/N 190894). Once the APPS LOADED message is displayed, power the machine off. Due to the mandatory testing of the new EEPROM on the motherboard, **do not complete the remaining steps of the AppLoader instructions.** Skip to step 23.

22. Follow the Special Features EEPROM Installation Instructions (P/N 507554) included with the 2008T BlueStar Premium Special Features kit to activate the 2008T BlueStar Premium Special Features.

Motherboard EEPROM Installation Test

23. Once the 2008T BlueStar Premium Special Features have been activated, power the machine on.

24. During the power on process, the EEPROM installed on the motherboard will be tested.

- If error message “Unmatched Serial Numbers!” is displayed, power the machine off. This message confirms the EEPROM on the motherboard is installed and functioning correctly. Power the machine off and proceed to step 25 on the next page.
- If error message “Motherboard EEPROM Error!” is displayed, power the machine off and check the installation of the EEPROM on the motherboard. Check for missed/bent pins or backwards installation. If the message cannot be cleared, a new motherboard EEPROM will be needed.

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Serial Number & Hour Meter Information Transfer

The machine Serial Number and Hour Meter information needs to be entered into the 2008T BlueStar Premium software. Once entered, this information will be visible on the opening screen. The hour meter information will be used to display reminders; also on the opening screen. Refer to the 2008T Operator's Manual

(P/N 490122) for more information.

25. Power the machine on and enter Service Mode.
26. Select the Update Software screen button then select the S/N Hour Meter screen button.
27. Locate the machine serial number label under the Upper IV Holder. Older machines may only have the machine serial number label inside the cabinet. An example of the machine serial number format is shown in Figure 10.

5T0S-137607

↑ ↑ ↓
First Middle Last
Digit 3 Digits 3 Digits

Figure 10 – Machine Serial Number Example

28. The machine serial number will need to be broken up into the elements required by the 2008T BlueStar Premium software as shown in Figure 10.
29. On the S/N & Hour Meter screen, enter the elements of the machine serial number as shown in Figure 11. Press the CONFIRM key after entering each element.

Enter Serial Number & Hour Meter

Serial Number

First Digit: 5 T0S- Middle 3 Digits: 137 Last 3 Digits: 607

Hour Meter

Hours: []

Data "Entered By"

Enter Name: []

Functional Board Arterial Blood Pump SN Blood Pump Actuator Board UI Board Aploader **S/N & Hour Meter**

Options Calibrate Hydraulics Calibrate Sensors Maint. Test BP Module Diagnostics Fill for Shipping Update Software

Figure 11

30. Once the machine serial number has been entered, locate the hour meter on the back of the card cage.
31. Record the hours from the hour meter and enter this information in the Hour Meter Hours data box on the S/N & Hour Meter screen. Once the hours have been entered, press the CONFIRM key.
32. Once the hour meter data has been entered, press the Enter Name button and enter the name of the person who entered the Serial Number and Hour Meter information. Press the CONFIRM key.

Hour Meter Cover Installation

Once the hour meter information is transferred into the software, the original hour meter must be covered to avoid confusion.

33. Locate the Hour Meter Cover Sticker (P/N 290913) included in the kit.
34. Using a non-residual cleaning agent, clean the face of the hour meter.
35. Using a permanent marker, write across the face of the hour meter so that the hour meter information cannot be read if for some reason the Hour Meter Cover should come off in the future.
36. Affix the Hour Meter Cover to the face of the hour meter. The Hour Meter Cover must completely cover the hour meter.

Lock Alarm Volume Option Activation

The alarm volume is now controlled by the 2008T BlueStar Premium software but before disabling the alarm volume control, the Lock Alarm Volume option needs to be activated.

37. With the machine still in Service Mode.
38. Select the Options screen button then select the Module Options screen button.
39. On the Module Options screen, locate the Lock Alarm Volume option.
40. Press the Lock Alarm Volume button and the selection menu shown in Figure 12 will appear.

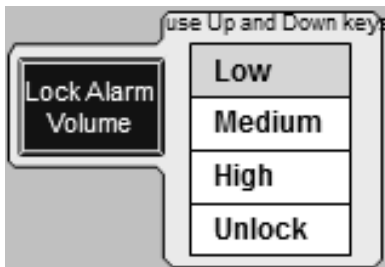


Figure 12

- **Low** is locked at the minimum volume level allowed
- **Medium** is locked at 50% of full volume
- **High** is locked at 100% full volume
- Selecting the **Unlock** option allows the volume level to be adjusted across the entire available volume range using the on-screen selector shown in Figure 13. Refer to the 2008T Hemodialysis Machine Operator's Manual (P/N 490122) for the usage of this adjustment in Dialysis Mode.

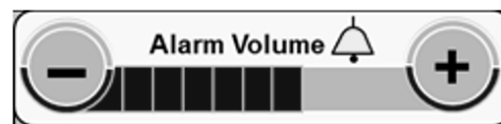


Figure 13

41. Once a selection is chosen, press the CONFIRM key.

Note: At this point, only some of the 2008T BlueStar Premium Service Mode Options have been set. Additional Service Mode Options are now active. Refer to the 2008T Operator's Manual (P/N 490122) for information regarding setting 2008T BlueStar Premium options.

42. Power the machine off.

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Volume Control Cover Installation

Now that the alarm volume is being controlled by the Lock Alarm Volume option, the mechanical volume control must be disabled by attaching a cover.

43. Locate the Volume Control Cover (P/N 330916-35) included in the kit.
44. If needed, slide the card cage out far enough to access the volume control potentiometer from inside of the card cage.
45. While supporting the volume control potentiometer, remove the outside nut holding the potentiometer to the card cage chassis.
46. Turn the volume control all way clockwise so it is at full volume.

Caution: The Volume Control Cover installed in the next step contains a fine thread. Take care not cross thread or over-tighten while installing the cover.

47. Thread the Volume Control Cover onto the threads of the volume control potentiometer. Tighten the cover enough to secure the potentiometer to the card cage chassis.

Note: Sliding the card cage in and out of the cabinet may unplug cables. Before proceeding to the next step, seat all cables. Also, seat and lock all boards.

48. Slide the card cage into the cabinet. Take care not to damage or pinch any of the wires and cables.

2008T BlueStar Premium Hydraulic Installation Decision:

The 2008T BlueStar Premium option has now been installed. In order to implement the 2008T BlueStar Preventive Maintenance schedule, the Acid, Bicarbonate and UF pumps need to be rebuilt with the remaining components included in the kit. The rebuilding of the pumps can however be delayed and performed before or during your next scheduled Preventive Maintenance.

Pump Rebuild Performed Now

If the Acid, Bicarbonate and UF pumps are being rebuilt now, proceed to the Hydraulic Preparation section on page 9.

Pump Rebuild Postponed

If rebuilding the Acid, Bicarbonate and UF pumps is being postponed, then continue to the next step.

49. With the machine off, slide the card cage completely into the cabinet and secure it with the two (2) screws removed in step 9. Take care not to damage or pinch any of the wires and cables.
50. Re-attach the cover's ground wires and re-install the middle rear panel cover.
51. Proceed to Final Tests section on page 12.

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Hydraulic Preparation

Note: If returning to these instructions to rebuild the pumps, the middle and lower rear panels will need to be removed. These panels have ground wires attached so take care not to damage these wires when removing the panels.

52. Turn the heater and power switches into the off position (see Figure 14).

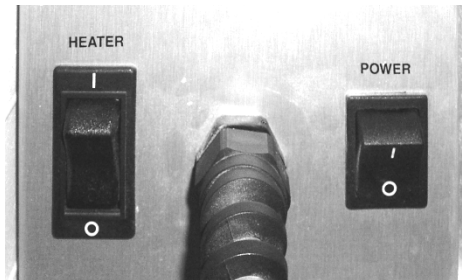


Figure 14 - Heater and Power Switches in the Off Position

53. Stabilize the machine by applying the caster brake.
54. Using Figure 15 locate and remove the front hydraulic screw holding the hydraulics into the cabinet

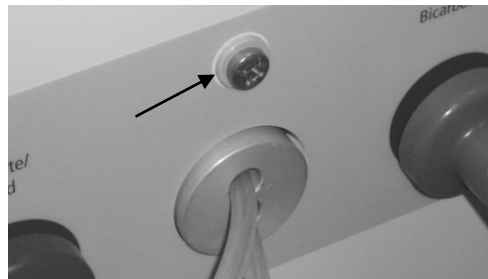


Figure 15 - Front Hydraulic Screw Location

55. Using Figure 16 locate and remove the two (2) bolts holding the hydraulics into the cabinet.

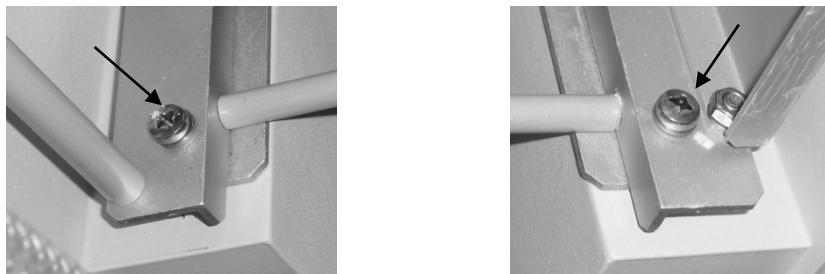


Figure 16 - Left and Right Hydraulics Rail Screw Locations

Warning: Use proper lifting technique when removing and installing hydraulic chassis.

56. Hinge the hydraulics out so the Acid, Bicarbonate and UF pumps are accessible and the restraining strap supports the weight of the hydraulics.

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Acid Pump Upgrade

The acid pump needs to be rebuilt with 2008T BlueStar Premium components in order to qualify for an extended Preventive Maintenance schedule. Once rebuilt, the acid pump will be calibrated during post installation testing.

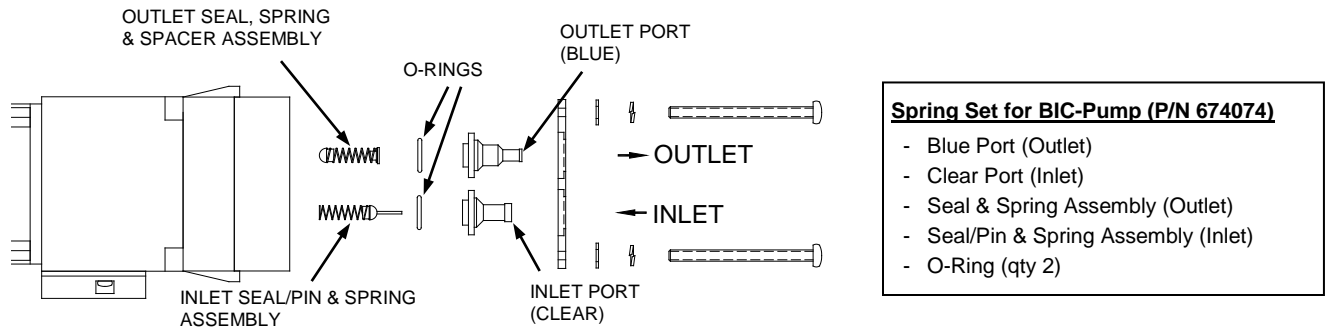


Figure 17 - Acid Pump Exploded View

57. Locate the acid pump.
58. Rebuild the acid pump assembly using parts in the Spring Set for BIC-Pump (P/N 674074) included in the kit. Refer to Figure 17 for the correct parts for the acid pump.
59. Once the acid pump has been rebuilt, write **BlueStar** with permanent marker on the acid pump housing for future rebuild reference.

Bicarbonate Pump Upgrade

The bicarbonate pump needs to be rebuilt with 2008T BlueStar Premium components in order to qualify for an extended Preventive Maintenance schedule. Once rebuilt, the bicarbonate pump will be calibrated during post installation testing.

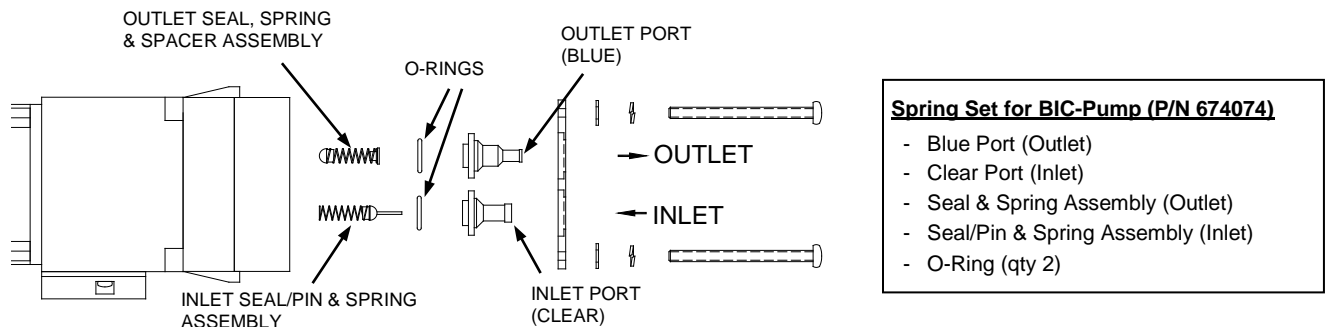


Figure 18 - Bicarbonate Pump Exploded View

60. Locate the bicarbonate pump in the hydraulics.
61. Rebuild the bicarbonate pump assembly using parts in the Spring Set for BIC-Pump (P/N 674074) included in the kit. Refer to Figure 18 for the correct parts for the bicarbonate pump.
62. Once the bicarbonate pump has been rebuilt, write **BlueStar** with permanent marker on the bicarbonate pump housing for future rebuild reference.

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

Ultrafiltration (UF) Pump Upgrade

The UF pump needs to be rebuilt with 2008T BlueStar Premium components in order to qualify for an extended Preventive Maintenance schedule. Once rebuilt, the UF pump will be calibrated during post installation testing.

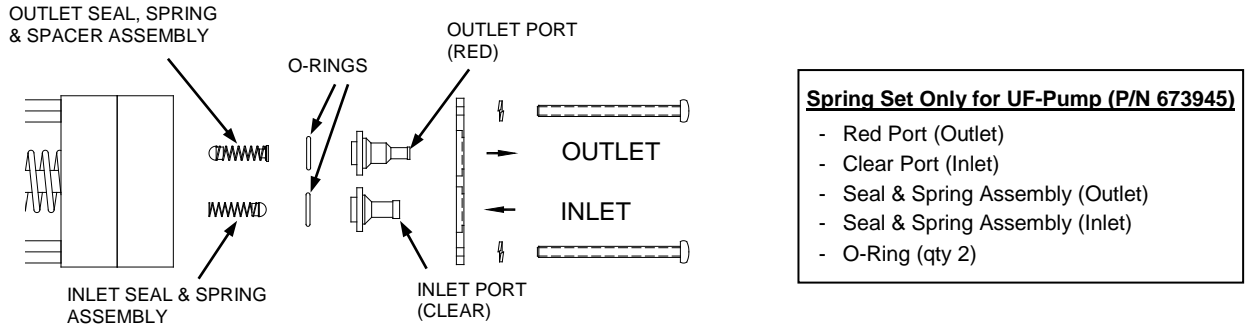


Figure 19 – UF Pump Exploded View

63. Locate the UF pump.
64. Rebuild the UF pump assembly using parts in the Spring Set only for UF-Pump (P/N 673945) included in the kit. Refer to Figure 19 for the correct parts for the UF pump.
65. Once the UF pump has been rebuilt, write **BlueStar** with permanent marker on the UF pump housing for future rebuild reference.

Post Installation Testing

66. Turn the heater and power switches into the on position (see Figure 20).

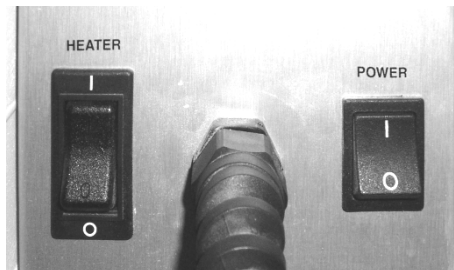


Figure 20 – Heater and Power Switches in the On Position

- Note:** If returning to these instructions to only rebuild the pumps during a Preventive Maintenance, then skip to step 68.
67. With the machine off, slide the card cage completely into the cabinet and secure it with the two (2) screws removed in step 9. Take care not to damage or pinch any of the wires and cables.
 68. Power the machine back on. Select Rinse from the Select Program screen to thoroughly purge air from the hydraulics.
 69. Verify the machine operates leak-free. Repair any leaks that are found.
 70. Power the machine on and enter Service Mode.

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

71. Refer to the 2008T Calibration Procedures (P/N 508032) to calibrate the following:
- Acid (Concentrate) Pump Volume Calibration (Section 2.2.4)
 - Bicarbonate Pump Volume Calibration (Section 2.2.5)
 - UF Pump Volume Calibration (Section 2.2.6)
 - Dialysate Cells Calibrations (Section 2.3.8.1)
 - Temperature Control Calibration with Allow Slow Flow and Temp Comp options enabled (Method 2) (Section 2.3.6.2)
 - Conductivity Confirmation Cell Calibration (Section 2.3.8.3)

Machine Reassembly

72. Once calibrations are complete and the hydraulics are in the cabinet, secure it with the three (3) screws removed in step 54.
73. Install the distribution box cover removed in step 12.
74. If not already done, re-attach each cover's ground wires and re-install the middle and lower rear panel covers.

Final Tests:

Self Tests

75. Run both self tests and confirm all tests pass.
76. Run a Diasafe Test and confirm the test passes.

Machine Disinfection

77. Heat disinfect the machine and wipe down the external surfaces.

2008T BLUESTAR PREMIUM INSTALLATION INSTRUCTIONS

2008T BlueStar Label Installation

Important Note: If rebuilding of the Acid, Bicarbonate and UF Pumps has been postponed and have not been rebuilt with longer lasting components, **do not install the 2008T BlueStar Label.**

The 2008T BlueStar Premium option has a label displaying the 2008T BlueStar name. It is installed in two (2) locations for the purpose of identifying the extended Preventive Maintenance (PM) qualification.

78. Locate the two (2) 2008T BlueStar labels (P/N 490327) included in the kit.
79. Using a non-residual cleaning agent, clean the two (2) locations shown in Figure 21 and Figure 22.
80. Affix the 2008T BlueStar labels using the measurements shown in Figure 21 and Figure 22.



Figure 21 – Keyboard Folded Down



Figure 22 – Keyboard Folded Up

Table 1

**2008T
2008T BlueStar Premium Upgrade Kit
(P/N 191138)**

PARTS

Electronic Installation Components

| | |
|---|------------|
| 2008T BlueStar Premium Installation Instructions | 490328 |
| Power Logic board Assembly | 190951-XXX |
| *Note: The “-XXX” portion of the part number represents the software version | |
| Special Features EEPROM Installation Instructions | 507554 |
| 2008T BlueStar Premium Special Features EEPROM | 190351-23 |
| Motherboard EEPROM | |
| *Note: Contact Fresenius Medical Care Technical Support if replacement is needed. | |
| 2008T BlueStar Premium Label (Qty 2) | 490327 |
| Hour Meter Cover Sticker | 290913 |
| Potentiometer Cap | 330916-35 |

Hydraulic Installation Components

| | |
|-------------------------------------|--------|
| Spring Set for BIC-Pump (qty 2) | 674074 |
| Spring Set only for UF-Pump (qty 1) | 673945 |

Contact Fresenius Medical Care Technical Support at 800-227-2572 if any parts are incorrect or missing.