

**Sterilemax**  
**Table Top Steam Sterilizer**  
**Service and Repair Manual**  
*Series 1118*

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# Safety Information

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## Alert Signals



### **Warning**

Warnings alert you to a possibility of personal injury.



### **Caution**

Cautions alert you to a possibility of damage to the equipment.



### **Note**

Notes alert you to pertinent facts and conditions.



### **Hot Surface**

Hot surfaces alert you to a possibility of personal injury if you come in contact with a surface during use or for a period of time after use.

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## Warnings

1. Disconnect the sterilizer from the power supply before servicing.
2. Depressurize the sterilizer and allow the sterilizer to cool before servicing.
3. Refer servicing to qualified personnel.

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# Technical Data

**Chamber Size:**

12" (304.8 mm) Diameter X 18" (457.2 mm) Depth

**Overall Dimensions:**

22 7/16" (569.9 mm) Width X 24 1/2" (622.3 mm) Depth X 17" (431.8 mm) Height

**Tray Sizes:**

Large - 15 1/2" (393.7 mm) X 9 3/16" (233.4 mm)

Small - 15 1/2" (393.7 mm) X 6" (152.4 mm)

**Weight (Shipping)**

85 lbs. (39 kgs)

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## Electrical

Voltage	Heating Element Wattage	Amperage
120	1500	12.50
240	1500	6.25
100	1500	15.00

**Maximum Pressure Rating:** 45 PSI

**Reservoir Capacity:** 7.0 Liters

**Chamber Capacity:** 1.2 cubic feet (34 liters)

**Frequency:** 50/60 HZ

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## Environmental Conditions

**Operating:** 17°C - 27°C; 20% - 80% relative humidity, non-condensing.

Installation Category II (over-voltage) in accordance with IEC 664.

Pollution Degree 2 in accordance with IEC 664.

**Altitude limit:** 5,000 meters.

**Storage:** -25°C - 65°C; 20% - 80% relative humidity.

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# General Description

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## Electrical

1. **Door Switch:** Prevents the unit from running a sterilization cycle if the door is not fully closed.
2. **Main Control PC Board:** Contains the microprocessor and related circuits to control the sterilizer's operation. It also contains the necessary circuitry to convert the analog signals from the thermocouple and the pressure sensor into digital form, calibrate those signals and send them to the main control board.
3. **Power Supply Board:** Converts Supply power into 5VDC and 12VDC to power the various electrical components of the sterilizer, except the heater, which is powered by supply voltage.
4. **Solenoid PC Board:** Contains the necessary circuitry to control the opening and closing of the fill and vent solenoid valves and the operation of the pump.
5. **Power Module:** With the power cord, serves as the point of connection between the sterilizer and the power mains.
6. **Transformer:** Steps supply voltage down for the power supply board.

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## GENERAL DESCRIPTION

7. **Membrane Panel:** An 11 button membrane panel that allows the operator to control the operation of the sterilizer and to modify the sterilizer's operational parameters.
8. **ON/Off Switch:** Located on the underside of the front case, below the membrane switch. The on/off switch has a build-in circuit breaker to protect the sterilizer from current overload.
9. **Heater:** The heater in this sterilizer contains a high wattage element for heating the sterilizer to exposure temperatures and a low wattage element for maintaining the sterilizer at drying temperatures. The heater also incorporates an automatic over temperature protection circuit. If the heater overheats, turn the main power switch off and allow time for the heater to cool and reset. The heater is bolted to the bottom of the sterilizer chamber and is accessible through an access panel on the bottom of the unit.
10. **Printer Assembly:** The optional printer in this sterilizer is a thermal printer, requiring thermally sensitive paper to operate. The printer provides a record of the chamber temperature and pressure and cycle stage at one minute intervals. The printer is equipped with a paper advance button and a light to indicate when the printer is out of paper.
11. **Fill Solenoid:** Located on the water inlet line between the water pump and the sterilizer chamber, the fill solenoid opens

when energized, allowing water from the reservoir to be pumped into the chamber.

12. **Vent Solenoid:** Located on the steam return piping between the sterilizer chamber and the reservoir, the vent solenoid closes when energized, allowing steam pressure and temperature to rise to sterilization levels in the chamber. In the event of power failure, the vent solenoid will open, venting the chamber, ending the sterilization cycle and allowing you access to the load in the chamber.
13. **Temperature Probe:** Located in the top center of the back wall of the sterilizer chamber, the temperature probe supplies an analog signal to the analog PC board.
14. **Pump:** When energized at the initiation of a sterilization cycle, the pump will run for a specified time, which will vary depending on the cycle selected. This ensures that the chamber is always filled with the proper amount of water for the cycle being run.
15. **Fan:** Wired directly to the main on/off switch, the fan will run continuously while the main on/off switch is on to provide cooling for the PC boards.
16. **SSR/OTP Board:** Contains necessary circuitry to detect either an open or shorted RTD.

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## GENERAL DESCRIPTION

Normal operation of this board includes cycling the heating element to prevent the unit from overheating.

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## Over Temperature Protection (OTP)

1. **Automatic OTP:** Sensor is attached to heating element. In an overheat situation, the circuit will turn heating element off and indicate on the display "Cycle Aborted Due To Auto OTP Device, Press Stop, Shut off Unit Power To Reset." See **Resetting the Automatic OTP** for resetting instructions.
2. **Mechanical OTP:** This is a fail safe OTP. In the event the automatic OTP fails, the manual OTP will turn the heating elements off. This is indicated on the display as "The Mechanical OTP Has Tripped. Shut off Unit Power And Reset. Caution - Unit Hot!!" The Mechanical OTP will have to be manually reset. See **Resetting the Mechanical OTP Sensor**.

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## Controls

### **On/Off Switch:**

Turns power on to the unit.

### **Liquids:**

Starts fixed liquids cycle of 15 minutes at 121°C.

### **Unwrapped:**

Starts fixed unwrapped goods cycle of 3 minutes at 135°C.



**Packs:**

Starts fixed packs cycle of 30 minutes at 121°C.

**Wrapped:**

Starts fixed wrapped goods cycle of 10 minutes at 135°C.

**Start Cycle:**

Pressing this button starts the predetermined cycle.

**Stop:**

This button will stop any cycle in progress and return the unit to the idle mode.

**Optional Cycle:**

Allows users to set their own parameters for time, temperature, and drying time.

**Select:**

Used for diagnostic testing.

**Up/Down Arrows:**

Used to adjust parameters.

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## Piping

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### Reservoir Drain Connection

Used to drain reservoir of water. Only done while unit is in idle mode or off and door is open. This connection is a self-sealing quick disconnect fitting with a corresponding quick disconnect insert attached to a length of tubing.

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### Reservoir

Holds 7 liters of distilled or low grade deionized (minimum 0.5 megohm/cm, maximum 1.5 megohm/cm) water. Used to supply water to chamber.

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### Pressure Relief Valve

Opens at 45 PSI to prevent over pressuring the chamber above ASME rating.

# Sequence of Operation

Cycle Status	Action	Display
Power On	Main On/Off switch on. LCD energized. Fan on. Power supply energized. Vent solenoid is open.	After heading and version, display goes to SELECT CYCLE.
Cycle Type Selected	Printer prints cycle type, time, temperature and pressure parameters	Display indicates cycle parameters and may indicate drying time or optional settings.
Start Cycle Button Pressed	Fill solenoid and pump energize to fill chamber with water, printer prints cycle no., date, time and heading.	Door closed, if not, unit displays: DOOR OPEN - CLOSE TO CONTINUE. Display indicates unit is filling with water and "Cycle Type".
Heating	Printer starts recording cycle information. Unit energizes heater. Vent valve stays open until cold air is removed and closes at preset temperature to build pressure.	Display is indicating elapsed time, temperature, pressure and "Cycle Type" heating.
Exposure/ Sterilization	Preset temperature and pressure is achieved. Heater will be cycling On/Off to maintain temperature. Exposure timer is activated.	Display is indicating elapsed/ exposure time, temperature, pressure and "Cycle Type" venting.
Venting	Heater turns off, vent valve is fully open except for liquid cycle where vent valve stays closed until 2 psi.	Display is indicating elapsed time, temperature, pressure and "Cycle Type" venting.
Cycle Complete	Fill solenoid and pump energize to remove water from chamber. Buzzer sounds. Vent valve stays open.	Display indicates: VENTING COMPLETED, OPEN DOOR AND PRESS START TO BEGIN DRYING CYCLE or if liquid cycle, START will go to SELECT CYCLE.
Drying	Open door, press START key, unit energizes heater and timer starts counting. Printer prints: DRYING CYCLE INITIATED.	Display is indicating the elapsed time and drying time along with STOP TO CANCEL.
Drying Completed	Heater turns off, buzzer sounds and printer prints: DRYING CYCLE COMPLETED.	Display indicates: DRYING CYCLE COMPLETED and PRESS START TO SELECT CYCLE.
Start Cycle Button Pressed		Display indicates: SELECT CYCLE

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# Special Operating Instructions



## Warning

Do not attempt to open the sterilizer door until the display reads "Cycle Complete." Pressure within the chamber could cause the door to open with extreme force, possibly causing personal injury.

Reprocess your load in the event the sterilizing cycle has been terminated prematurely.

Failure to drain excess water from the sterilizer chamber after a cycle abort may result in subsequent unsterile loads as a result of contact with water in the chamber. Always drain excess water from the chamber after aborting a cycle.

allow chamber to cool before draining excess water.



## Note

If display shows, "The Mechanical OTP Has Tripped. Shutoff Unit Power and Reset - Caution - Unit Hot!!" - Reset as described under **Resetting the Mechanical OTP Sensor.**

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## Emergency Off (Cycle Abort)

Pressing the "Stop" button will immediately terminate sterilization. Allow the sterilizer to cool and press the "Stop" button again to reset the sterilizer. Proceed with a new sterilization cycle normally.

When terminating a load, pressing the "Stop" button will vent steam from the chamber back into the reservoir.

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## Resetting the Automatic OTP

Display shows: "Cycle Aborted Due To Auto OTP Device. Press STOP Shutoff Unit Power To Reset.

1. Press the "Stop" button.
2. Wait for the display to read "Select Cycle".
3. Turn power switch off and then on to reset the Software Program.
4. Open the chamber door and allow the chamber to cool.
5. Select your desired cycle and run the cycle with an empty chamber to verify operation.
6. In the event of a repetition of fault, call Barnstead/Thermolyne Customer Service.

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## Erratic Controls Display or Operation

Abnormal sterilizer operation or controls display could be caused by an internal or external electrical voltage surge. Such a voltage surge could be caused by any of a number of events: a momentary surge in the power supply, a nearby lightning storm, or even a static electrical charge carried by operating personnel.

Abnormal operation or displays are not common occurrences and may never happen. No damage to the equipment will occur if such an event should happen.

If an abnormal condition should occur, terminate any processing cycle in process. (Press "Stop.") Reset the sterilizer by turning the power switch (on the front right corner of the unit) to OFF. Wait 30 seconds and turn the power switch back on. Select your desired cycle and proceed with normal operation.



### **Warning**

Reprocess your load in the event the sterilizing cycle has been terminated prematurely. The load may not be sterile when the sterilizing cycle has been terminated prematurely.

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## Power Failure During Sterilizing Cycle

All Selector/Indicator Panel lights will be off. Allow the unit to cool down. Reset the sterilizer by turning the power switch (under the front right corner of the unit) to OFF. Wait 30 seconds and turn the power switch back on. Drain excess water from the sterilizer chamber. Then reprocess your load normally.

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# Repairs and Adjustments

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## Changing Temperature Units

To change the units in which the chamber temperature is displayed on the digital display and printer tape (°C or °F):

1. From the "Select Cycle" screen, press the "Select" key and then the UP ARROW KEY.
2. Wait for the sterilizer to display the "Change Time" screen. Press the DOWN ARROW KEY to select "No."
3. The sterilizer will then display the "Change Temperature" screen. Press the UP ARROW KEY to select "Yes."
4. At the "Temperature Units" screen, press the UP ARROW KEY to toggle between °C and °F.
5. After you have selected your desired temperature units, press the "Start" key.
6. At the "Change Pressure Units" screen, press the DOWN ARROW KEY to select "No" and return to the "Select Cycle" screen, if a printer is not attached. If the sterilizer has a printer, The DOWN ARROW KEY will go to the "Change Printer Mode" screen.
7. At the "Change Printer Mode" screen, press the DOWN ARROW KEY to select "NO" and return to the "Select Cycle" screen.

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## Changing Pressure Units

To change the units in which the chamber pressure is displayed on the digital display and the printer tape (PSI, BAR or KPA):

1. From the "Select Cycle" screen, press the "Select" key and then the UP ARROW KEY.
2. Wait for the sterilizer to display the "Change Time" screen. Press the DOWN ARROW KEY to select "No."
3. The sterilizer will then display the "Change Temperature" screen. Press the DOWN ARROW KEY to select "No."
4. At the "Change Pressure Units" screen, press the UP ARROW KEY to select "Yes."
5. At the "Pressure Units" screen, press the UP ARROW to cycle between the three available units.
6. When you have selected your desired pressure units, press the "Start" key to return to the "Select Cycle" screen, if a printer is not attached. If the sterilizer has a printer, the DOWN ARROW KEY will go to the "Change Printer Mode" screen."

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## Setting Month/Date/Year/Hour/Minute

To set the current date and time:

1. From the "Select Cycle" screen, press the "Select" key and then the up arrow key.

2. Wait for the sterilizer to display the "Change Time" screen. Press the up arrow key to select "Yes."
3. At the "Set Current Month" screen, press the up or down arrow key to set the current month. Press the "Start" key when the current month is set.
4. At the "Set Current Date" screen, press the up or down arrow key to set the current date. Press the "Start" key when the current date is set.
5. At the "Set Current Year" screen, press the up or down arrow key to set the current year's final two digits. Press the "Start" key when the current year is set.
6. At the "Change Hour" screen, press the up or down arrow key to set the current twenty-four hour clock hour. Press the "Start" key when the current hour is set.
7. At the "Change Minute" screen, press the up or down arrow key to set the current minute. Press the "Start" key when the current minute is set.
8. At the "Change Temperature Units" screen, press the down arrow key to select "No."
9. At the "Change Pressure Units" screen, press the down arrow key to select "No" and return to the "Select Cycle" screen, if a printer is not attached. If the sterilizer has a printer, the DOWN ARROW KEY will go to the "Change Printer Mode" screen.

10. At the "Change PrinterMode" screen, Press the DOWN ARROW KEY to select "NO" and return to the "Select Cycle" screen.

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## Changing Printer Mode

This display can only be entered if the sterilizer has a printer. To change the mode of use for attached printers from "USED" to "UNUSED":

1. From the "Select Cycle" screen, press the SELECT KEY and UP ARROW KEY.
2. Wait for the sterilizer to display the "Change Time" screen. Press the DOWN ARROW KEY to select "NO."
3. The sterilizer will then display the "Change Temperature" screen. Press the DOWN ARROW KEY to select "NO."
4. At the "Change Pressure Units" screen, press the DOWN ARROW KEY to select "NO."
5. At the "Change Printer Mode" screen, press the UP ARROW KEY to select "YES."
6. At the "Printer Mode Set To" screen, press the UP ARROW to toggle between the available modes.
7. When you have selected your desired mode of operation, press the START KEY to return to the "Select Cycle" screen. Printer will print one line showing current mode settings.



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## Removing Covers

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.

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### Main cover

1. Unplug the power cord from the power entry module.
2. The cover is secured by nine screws, three on either side and three on the back. Remove these nine screws, then lift the cover straight up to remove.



**Note**

The main cover must be removed before the front cover can be removed.

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### Back Panel

You can obtain access to the fan and the certification label for the sterilizer's pressure chamber by removing the back panel of the cover, without removing the cover itself. To remove the back panel:

1. Unplug the power cord from the power entry module.
2. The panel is secured by twelve screws. Remove these twelve screws, then pull the panel straight out to remove.



**Note**

Note the location and orientation of the ribbon cables for proper reattachment.

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### Front Cover

1. Remove the three screws securing the front cover.
2. Carefully pull the front cover straight out. The printer assembly is attached to the front cover and will come out with it.

3. Disconnect the printer ribbon cable and the keypad ribbon cable from the main PC board.

**Replacing the Front Cover**

1. Reattach the membrane switch ribbon cable to the pins on the main PC board. Ensure that the ribbon cable is not twisted, as twisting may result in misconnecting the membrane switch.
2. Hold the ribbon cable from the LCD PC board out flat. Rotate the connector on the end of the cable on quarter turn counterclockwise and attach the LCD PC ribbon cable to the main PC board. The blue line on the ribbon should be on the bottom next to the printer ribbon cable.
3. Connect the printer ribbon cable to the main PC board.
4. Replace the main power switch into its slot in the bottom of the front cover.
5. Replace the front cover and secure it with three screws.

**Note**

Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized. See *Component Layout Interior* on page 52.

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## Removing PC Boards

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### **OTP, Power and Solenoid PC Boards**

The OTP, power and solenoid PC boards are located in the back of the unit. The power PC is on the back wall; the solenoid PC board is on the interior wall separating the control section of the sterilizer from the sterilizer chamber, adjacent to the power PC board, and the OTP PC board is below the solenoid PC board.

1. Remove the cover as described under **Removing Covers: Main Cover.**
2. Remove the wires attached to the PC board, taking care to note the location of each to ensure proper attachment to your new board.
3. Remove the four screws securing the PC board to the case. Remove the PC board.
4. Install the new PC board in the same orientation as the board you removed. Secure with the four screws you removed in step 2.
5. Attach all wiring to the new PC board, taking care to attach it to the new PC board in the same position from which you removed it from the old PC board.
6. Replace the cover as described under **Removing Covers: Main Cover.**
7. Reconnect the sterilizer to the power supply.



### Note

The “Hidden” key is located in the blank position below the “Down Arrow” key and to the left of the “Wrapped Key”. See *Keypad Layout on page 50*.



### Note

If the offset value cannot be determined, call Barnstead|Thermolyne Customer Service for assistance. Model number and serial number are required.

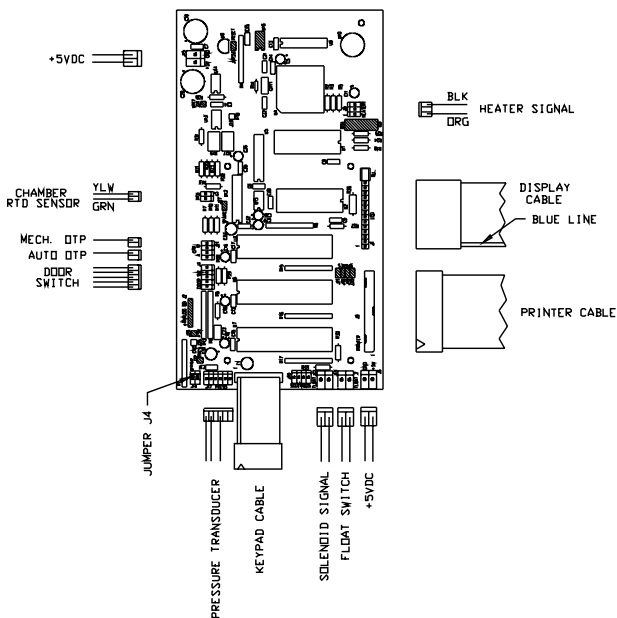


Figure 1

## Analog and Main PC Boards

Main PC board is located on the interior wall behind the front cover.

1. Determine what the current offset value is for unit:
  - a. Connect unit to power source and turn on.
  - b. From “Select Cycle” display, press the “Select” and then the “Up Arrow” keys.
  - c. Once the display shows “Change Time”, press the “Down Arrow” key until the display shows “Change Pressure Units” display.
  - d. Press the “Hidden” key. The display should show “Set Temp Offset”. Press the “Up Arrow” for Yes to display the current offset value. Write down the value for the offset so it can be entered into the replacement PC board assembly.
  - e. Turn the unit off and disconnect from power source.
2. Remove the main and front covers as described under **Removing Covers**.
3. Remove the wires attached to the main PC board, taking care to note the location of each to ensure proper attachment to your new board.
4. Remove the five nuts securing the main PC board to the case. Remove the main PC board.
5. Install the new main PC board in the same orientation as the board you removed. Secure with the five nuts you removed in step 4.

6. Attach all wiring to the new main PC board, taking care to attach it to the new main PC board in the same position from which you removed it from the old main PC board. *See Figure 1.*
7. Replace the front cover as described under **Replacing the Front Cover**. Replace the main cover.
8. Reconnect the sterilizer to the power supply and turn on. Verify the display shows: Vendor, Model and Version, then switches to “Select Cycle”.
9. Go back through Step 1 until the display shows “Set Temp Offset” display and current offset value.
10. Change the offset value to the number recorded from the old PC board, using “Up” or “Down” arrow key. Press the “Start” key to return to the “Select Cycle” display.
11. Re-enter the altitude adjustment and display parameters according to the Repair and Adjustments Section.



**Note**

To verify that the offset value is correct, follow the Temperature Readout Calibration Procedure.



**Note**

Make sure the tubing between the pump and the fill solenoid is not pinched or crimped. This will restrict water flow to the chamber.

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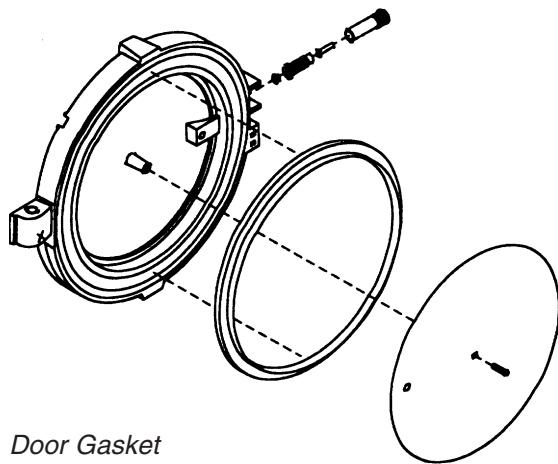
## Replacing Pump

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Drain the reservoir as described in **Draining the Reservoir**.
3. Remove the main cover as described in **Removing Covers: Main Cover**.

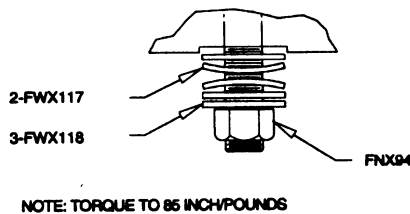
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## REPAIRS AND ADJUSTMENTS

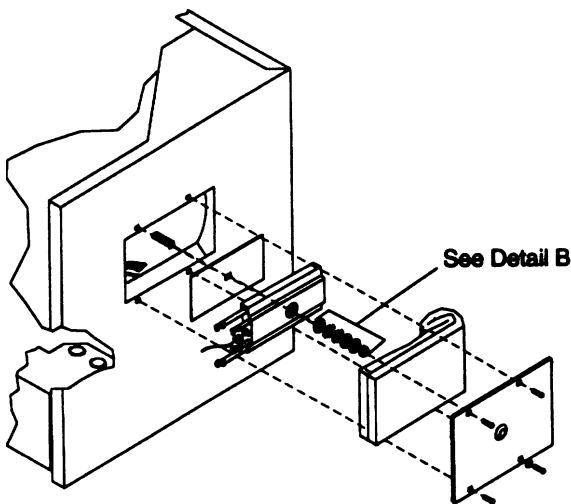
4. Place the sterilizer on its side.
5. Locate and remove the two bolts securing the pump assembly to the main case.
6. Place the sterilizer upright.
7. Remove the pump wires from the pump, noting their attachment point to ensure proper polarity when reconnecting wires. The red wire is (+); the black wire is (-).
8. Remove the two lengths of water tubing from the pump, noting their attachment locations to ensure proper attachment to the new pump.
9. If your new pump was not supplied with rubber standoff posts, remove the rubber standoff posts from the old pump and install them on the new pump.
10. Attach the water tubing to the appropriate connections on the new pump.
11. Place the sterilizer on its side.
12. Secure the pump assembly with the two bolts you removed in step 5.
13. Place the sterilizer upright.
14. Attach the pump wires to the appropriate location on the pump.
15. Replace the cover.
16. Refill the reservoir.
17. Reconnect the sterilizer to the power supply.



Door Gasket



Detail B



Element Assembly

## Changing Door Gasket

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the old gasket by pulling it out of the door.
3. Use a warm, soapy water combination to lubricate the gasket for easier installation.
4. Working around the door from one point, insert the outer edge of the gasket under the machined lip of the gasket groove in the door.
5. Working around the door from one point, press the inner edge of the gasket into the gasket groove, ensuring that the gasket is fully seated in the groove.
6. Reconnect the sterilizer to the power supply.

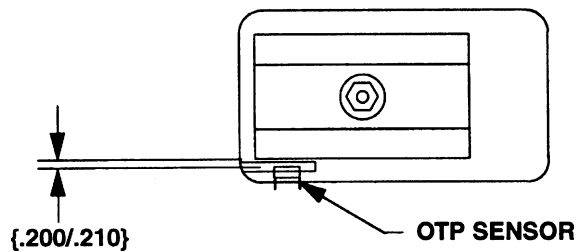
## Heater Replacement

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Drain the reservoir as described in **Draining the Reservoir**.
3. Place the sterilizer on its side.
4. Remove the 4 screws securing the bottom access cover. Remove the bottom access cover. Remove the piece of

blanket insulation covering the heating element.

5. Remove the nut securing the heater to the bottom of the sterilizer chamber. Take note of the orientation of the 2 flat washers, 2 belleville washers and 1 flat washer on the element. Remove the heating element.
6. Remove the heater wires from the heater. Remove the OTP sensor, taking care not to damage the lead wires of the sensor.
7. Insert the OTP sensor into the new heating element. Attach the heater wires to the new heater.
8. Position the new heating element on top of the conducting gasket, against the chamber.
9. Install the first flat washer against the element.
10. Install the first belleville washer with the crown away from the element. Install the second belleville washer with the crown towards the element.
11. Install two flat washers on top of the belleville washers.
12. Install the nut on the stud and tighten hand tight.
13. Adjust the alignment of the conducting gasket and element to the curve of the chamber. Center the washers on the stud.
14. Verify the distance between the side of the heating elements and mechanical OTP surface is **.200 - .210 of an inch**. If not,





*Element & Mechanical OTP*

adjust accordingly.

15. **Tighten the nut with a torque wrench to 85 inch-pounds.**
16. Recheck distance between element and mechanical OTP.
17. Replace the blanket insulation over the heating element. Replace the bottom access cover and secure it with the screws you removed in step 4.
18. Place the sterilizer upright.
19. Reconnect the sterilizer to the power supply.

## Solenoid Valve Replacements

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover from the unit as described in **Removing Covers: Main Cover**.
3. Disconnect the solenoid valve wires from the solenoid PC board, noting their attachment location to ensure proper attachment of the new solenoid valves' wires.
4. Disconnect the piping from the solenoid valve, or in those cases where the piping

is attached to an elbow or tee which is in turn attached to the solenoid valve, from the elbow or tee, being careful not to bend the piping.

5. Remove the screws securing the solenoid valve to the sterilizer. The vent solenoid is secured to the back wall of the sterilizer by two screws. The fill solenoid is secured to the side of the rear interior wall by two screws.
6. Remove the solenoid valve.
7. Remove any elbow or tee attached to the old solenoid valve, noting its orientation to ensure proper installation on the new solenoid.
8. Remove any old Teflon<sup>®</sup> tape from the elbow or tee and piping. Wrap new Teflon tape on the threads of the elbow or tee and piping, leaving the first thread uncovered to allow easier assembly.
9. Attach the elbow or tee you removed in step 6 to the new solenoid valve, orienting it as it was oriented on the old solenoid valve.
10. Place the solenoid valve in its proper position on the sterilizer. Secure with the screws you removed in step 4.
11. Attach the piping to the solenoid valve, being careful not to bend the piping.
12. Attach the solenoid valve wires to the appropriate location on the solenoid PC



### Note

When replacing the fill solenoid, attach the silicone tubing to the fill solenoid before attaching the solenoid to the bracket.

When the solenoid is secure, check to insure that the silicone tubing is not pinched near the pump. This would prevent water from entering the chamber.

board.

13. Replace the cover.
14. Reconnect the sterilizer to the power supply.

---

## Pressure Relief Valve Replacement

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the Main cover from the unit as described in **Removing Covers: Main Cover**.
3. Hold the elbow to prevent it from moving. Unscrew the pressure relief valve.
4. Wrap Teflon tape around the threads on the new pressure relief valve, leaving the first thread uncovered for easier assembly.
5. Hold the elbow to prevent it from moving. Tighten the pressure relief valve until it is secure.
6. Replace the back panel.
7. Reconnect the sterilizer to the power supply.



**Note**

The temperature probe wires are accessible from the side of the unit and are located behind the front cover.

---

## Temperature Probe Testing and Replacement

---

### Testing

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover as described in **Removing Covers: Main Cover**.
3. Disconnect the temperature probe wires from the logic PC board (J2), noting their attachment location for proper reattachment.
4. Using an ohmmeter, test the resistance through the temperature probe. An infinite or zero ohm reading indicates that the temperature probe must be replaced.

---

### Replacement

5. Unscrew the temperature probe from the back of the sterilizer chamber.
6. Wrap Teflon tape around the threads on the new temperature probe, leaving the first thread uncovered for easier assembly.
7. Insert the new temperature probe into the temperature probe port in the back of the sterilizer chamber and tighten.

8. Thread the temperature probe wires around the sterilizer chamber and through the hole in the frame panel to the side of the logic PC board.
9. Attach the temperature probe wires to the logic PC board (J2).
10. Replace the cover.
11. Reconnect the sterilizer to the power supply.

---

## Printer Replacement

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main and front covers as described in **Removing Covers**.
3. Remove the printer's front cover by squeezing the buttons on either side of the cover.
4. Unscrew the screws securing the printer to the printer retaining bracket. Remove the printer.
5. Insert the new printer into the printer retaining bracket. Secure the printer with the screws you removed in step 5.
6. Replace the front and main covers as described in **Replacing the Front Cover**.
7. Install paper in the new printer as described in the Maintenance Section of the Operator's Manual.

8. Replace the printer's front cover, being sure to line up the paper feed button with its hole in the cover.
9. Reconnect the sterilizer to the power supply.

---

### Fan Replacement

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the Back cover from the unit as described in **Removing Covers: Back Panel**.
3. Disconnect the fan wires from the terminal block, taking care to mark and note their location.
4. Remove the four bolts securing the fan to the fan bracket.
5. Secure the new fan to the fan bracket with the four bolts you removed in step 2.
6. Reconnect the fan wires to the terminal block, taking care to connect them to their proper location.
7. Replace the back panel.
8. Reconnect the sterilizer to the power supply.

---

## Replacing Power Module

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Unplug the power cord from the power module.
3. Remove the back cover from the unit as described in **Removing Covers: Back Panel**.
4. Remove the wires from the power module, noting their attachment locations to ensure proper attachment to the replacement.
5. Remove the screws securing the power module to the case.
6. Remove the power module.
7. Install the new power module and secure it with the screws you removed in step 5.
8. Attach the wires you removed in step 4 to the new power module, ensuring that you attach them in the proper locations.
9. Replace the cover.
10. Plug the power cord into the power module.
11. Reconnect the sterilizer to the power supply.

---

## Replacing Reservoir Float

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover from the unit as described in **Removing Covers: Main Cover**.
3. Drain the reservoir as described under **Draining the Reservoir**.
4. Remove the front cover as described in **Removing the Covers: Front Cover**.
5. Disconnect the reservoir float wires from the main PC board (J12), noting their attachment location for proper attachment of the replacement.
6. Remove the reservoir float.
7. Wrap the threads of the new reservoir float with Teflon tape, leaving the first thread uncovered for easier assembly.
8. Insert the new reservoir float into the reservoir float hole in the side of the reservoir.
9. Tighten the reservoir float, ensuring that the float is positioned to fall below the central contact rod of the float assembly as the water level drops below the level of the reservoir float.
10. Attach the reservoir float wires to the main PC board.



11. Replace the front cover and the main cover as described in **Removing the Covers**.
12. Refill the reservoir.
13. Reconnect the sterilizer to the power supply.

---

## Replacing LCD PC Board

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main and front covers from the unit as described in **Removing Covers**.
3. Unclip the LCD PC board from the front cover.
4. Clip the new LCD PC board to the front cover.
6. Replace the front cover as described in **Replacing the Front Cover**. Replace the Main cover.
7. Reconnect the sterilizer to the power supply.



**Note**

The software set exposure temperature is **0.5° higher** than the temperature displayed and printed by the sterilizer. Therefore, when calibrating a 121° cycle, subtract the displayed chamber temperature plus 0.5°C from the probe temperature recorded in step 8. When calibrating a 135° C cycle, subtract the displayed temperature plus 0.5°C from the probe temperature recorded in step 8.

---

## Temperature Readout Calibration

---

### Thermocouple Installation

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover from the unit as described under **Removing Covers: Main Cover**.
3. Remove the plug in the tee installed in the top rear of the sterilizer chamber. The other two branches of the tee are connected to the vent piping and the pressure relief valve.
4. Wrap Teflon tape around the threads on the Thermolyne Thermocouple temperature probe, (TC759X1A) leaving the first thread uncovered for easier assembly.

Install the Thermolyne Thermocouple kit temperature probe into the open port on the tee in the top rear of the sterilizer chamber. Ensure that the probe tightly seals the port.

5. Reconnect the sterilizer to the power supply.

---

### Testing Temperature Readout

6. With the sterilizer chamber empty and the door closed, run at least 2 cycles—1 packs and 1 wrapped.
7. Initiate a packs cycle.

8. Record the chamber temperature on the display and the temperature from the Thermolyne temperature probe. With 1 minute remaining in the sterilizing phase.
9. To calculate the offset value, take and subtract the (displayed chamber temperature plus 0.5°C) from the temperature indicated on the temperature probe.
10. Allow cycle to complete process.
11. If the offset value is greater than  $\pm 3^{\circ}\text{C}$ , go to **Adjust Temperature Offset** to adjust the temperature offset.
12. Initiate a wrapped cycle as a second cycle or additional cycles, if necessary, until the offset value is less than  $\pm 3^{\circ}\text{C}$ . If the offset value is less than  $\pm 3^{\circ}\text{C}$ , go to **Reassembly**, otherwise go to step 8 for recording temperatures.



**Note**

The hidden key is located in the blank position below the DOWN ARROW KEY and to the left of the WRAPPED KEY.



**Note**

If the calculation in step 16 results in an offset less than -4.0 or greater than 4.0, the unit cannot be calibrated using this method. Call Barnstead/Thermolyne Customer Service for assistance.

---

**Adjusting Temperature Offset**

11. From the "Select Cycle" screen, press the "Select" key and then the up arrow key.
12. Wait for the sterilizer to display the "Change Time" screen. Press the down arrow key to select "No."
13. The sterilizer will then display the "Change Temperature" screen. Press the down arrow key to select "No."
14. At the "Change Pressure Units" screen, press the "Select" key and then the hidden key.

15. At the "Modify Chamber Offset" screen, press the up arrow to select "Yes."
16. At the "Set Temp Offset" screen, note the different current offset. Add the difference you recorded in step 9 to the current offset to the number you just recorded.
17. Press the "Start" key to return to the "Select Cycle" display. Go to step No. 12 to run a second or additional cycles.

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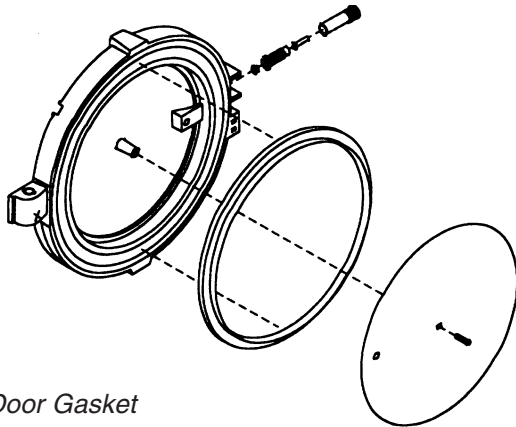
**Reassembly**

18. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
19. Remove the Thermolyne Thermocouple temperature probe.
20. Wrap new Teflon tape around the threads on the plug you removed in step 3, leaving the first thread uncovered for easier assembly. Reinstall the plug, ensuring that it seals the port.
21. Replace the cover.
22. Reconnect the sterilizer to the power supply.

---

## Replacing the Door Switch

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover as described in Removing the Covers: Main Cover.
3. Remove the front cover as described in Removing the Covers.
4. Disconnect the Door Switch wires from the main PC board (J4).
5. Mark the location of the door switch assembly. Remove the door switch assembly from the upper right hand corner of the sterilizer.
6. Install the new door switch assembly in the location you marked in step 5.
7. Attach the door switch wires to the Main PC Board (J4).
8. Replace the front cover and the main cover as described in **Removin Covers**.
9. Reconnect the sterilizer to the power supply.



Door Gasket



**Note**

Do not force the brass housing assembly into the door. This will cause damage to the silicone spring.

---

## Replacing the Pressure Locking Pin in the Door

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. The pressure locking pin is located inside of the fork on the left side of the door. Remove the pressure locking pin by unscrewing the brass housing out of the door. Note that the silicone spring, pin and inner bushing may not come out with the brass housing.
3. Wet the lip of the silicone spring around the inner bushing with water. Install the brass housing/silicone spring/pin/inner bushing assembly into the opening in the door.
4. Push the brass housing in until the threads engage, then tighten it until the brass housing bottoms out on the door. **Do not overtighten.** Ensure that the pin lines up in the hole of the brass housing.
5. Reconnect the sterilizer to the power supply.

---

## Replacing the Solid State Relay

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover as described in

**Removing Covers: Main Cover.**

3. Disconnect the wires from the solid state relay, noting the location and polarity of the wires.
4. Remove the solid state relay from the base of the sterilizer, noting the orientation of the relay.
5. Install the new solid state relay in the same direction as the old solid state relay.
6. Attach the wires to the solid state relay in the proper locations.
7. Replace the main cover as described in **Removing Covers: Main Cover.**
8. Reconnect the sterilizer to the power supply.

---

**Replacing the On/Off Power Switch**

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover as described in **Removing Covers: Main Cover.**
3. Remove the front cover as described in **Removing Covers: Front Cover.** Note the orientation of the on/off power switch.
4. Disconnect the display, keypad and printer

ribbon cables from the main control PC board, taking note of the location and orientation of each.

5. Disconnect the wires from the on/off power switch, taking note the location of their attachment to the switch.
6. Attach the wires to the new on/off power switch.
7. Install the new on/off power switch into the front cover. Reconnect the display, keypad and printer ribbon cables.
8. Replace the front and main covers as described under **Replacing Covers**.
9. Reconnect the sterilizer to the power supply.

---

## Replacing the Over Temperature Protection (OTP) Relay

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover as described under **Removing Covers**.
3. Disconnect the wires from the OTP Relay, taking note of the location and polarity of the wires and diode.
4. Remove the OTP Relay from the base of



the sterilizer, noting the orientation of the OTP Relay.

5. Install the new OTP Relay in the same direction as the old relay.
6. Attach the wires to the OTP Relay in the proper location.
7. Replace the main cover.
8. Reconnect the sterilizer to the power supply.

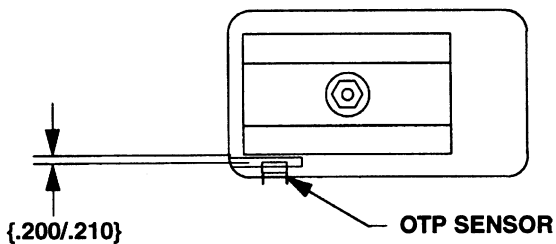
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## Replacing the Automatic Over Temperature Protection (OTP) Sensor.

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Drain the reservoir as described under Draining the Reservoir.
3. Remove the main cover as described under Removing the Cover.
4. Disconnect the Automatic OTP Sensor wires from the OTP PC Board (PC1118X2, location J2). Feed the wires to the back of the unit behind the heating element.
5. Turn the unit on its side to gain access to the heating element access cover.
6. Remove the heating element access

cover and the blanket insulation, exposing the heating element.

7. Unscrew the OTP Sensor out of the back of the heating element and remove from the unit.
8. Install the new OTP Sensor in the back of the heating element. Tighten the OTP Sensor until it is snug. **Do not overtighten.**
9. Replace the blanket insulation and access cover on the heating element.
10. Set the sterilizer right side up.
11. Route the OTP Sensor wires back over to the OTP PC Board (PC1118X2) and re-connect to J2.
12. Replace the main cover as described under Removing the Cover.
13. Refill the reservoir.
14. Reconnect the sterilizer to the power supply.



*Element & Mechanical OTP*

---

### Replacing the Mechanical OTP Sensor

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Drain the reservoir as described under **Draining the Reservoir.**

3. Remove the main cover as described under **Removing the Cover**.
4. Disconnect the Mechanical OTP Sensor wires from the OTP PC board (PC1118X2, Location J4). Feed the wires to the back of the unit.
5. Turn the unit on its side to gain access to the heating element access cover.
6. Remove the heating element access cover and the blanket insulation, exposing the heating element and Mechanical OTP.
7. Remove the two screws that secure the Mechanical OTP bracket to the chamber. Take note of which holes were used on the bracket for reassembly. Remove the assembly from the sterilizer.
8. Remove the old Mechanical OTP Sensor and replace with new sensor. Disconnect the wires from the old sensor and connect to the new sensor.
9. Mount the Mechanical OTP sensor bracket on the leg of the chamber, using the same mounting holes.
10. Check and verify the distance between the side of the heating element and the Mechanical OTP surface is .200 - .210 of an inch. If not, adjust accordingly.

11. Replace blanket insulation and access cover on the heating element.
12. Set the sterilizer right side up.
13. Route the OTP sensor wires back over to the OTP board (PC1118X2) and reconnect to J4.
14. Replace the main cover as described under **Removing the Cover**.
15. Refill the reservoir.
16. Reconnect the sterilizer to the power supply.



### Note

Note orientation of wire harness, pressure tubing, and notch on pin 1 of the pressure transducer. Do not hook up backwards.

---

## Replacing Pressure Transducer

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover as described under **Removing Covers**.
3. Disconnect wire harness and pressure tubing.
4. Remove pressure transducer and replace with new pressure transducer. Make sure print on transducer is down and the notch on pin 1 is toward reservoir.
5. Reconnect tubing and wire harness, noting orientation.

6. Replace the main cover as described under **Removing Covers**.
7. Reconnect the sterilizer to the power supply.

---

## Replacing the Transformer

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover as described in **Removing Covers: Main Cover**.
3. Disconnect the transformer wires that are attached to the terminal block and power supply PC Board (J1,J2,J10), taking note of location for wires.
4. Remove the transformer from the base of the sterilizer. Remove the bracket and wires from the transformer, noting their location and orientation.
5. Install the bracket and transformer wires on the new transformer. Install the new transformer into the base of the sterilizer.
6. Reconnect the wires from the transformer terminal block and power supply PC board (J1,J2,J10).
7. Replace the main cover.
8. Reconnect the sterilizer to the power supply.

---

## Replacing the Transformer Fuses

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Remove the main cover as described in **Removing Covers: Main Cover**.
3. Fuses are located next to the pump on the transformer cover.
4. Replace open fuse or open fuses with FZX47 (Slow Blow, 250V, 1.6 amp).
5. Replace the main cover.
6. Reconnect the sterilizer to the power supply.



### Note

If the Mechanical OTP is tripped, the automatic OTP circuit needs to be checked to determine why it did not terminate the cycle.

---

## Resetting the Mechanical OTP Sensor

1. Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.
2. Drain the reservoir as described in **Draining the Reservoir**.
3. Turn the unit on its side to gain access to the heating element access cover.
4. Remove the heating element access cover and blanket insulation.
5. Push the red button on the mechanical OTP sensor until it "clicks."

6. Replace the blanket insulation and access cover on the heating element.
7. Set the sterilizer right side up.
8. Refill the reservoir.
9. Reconnect the sterilizer to the power supply.

# Problem Solving Chart

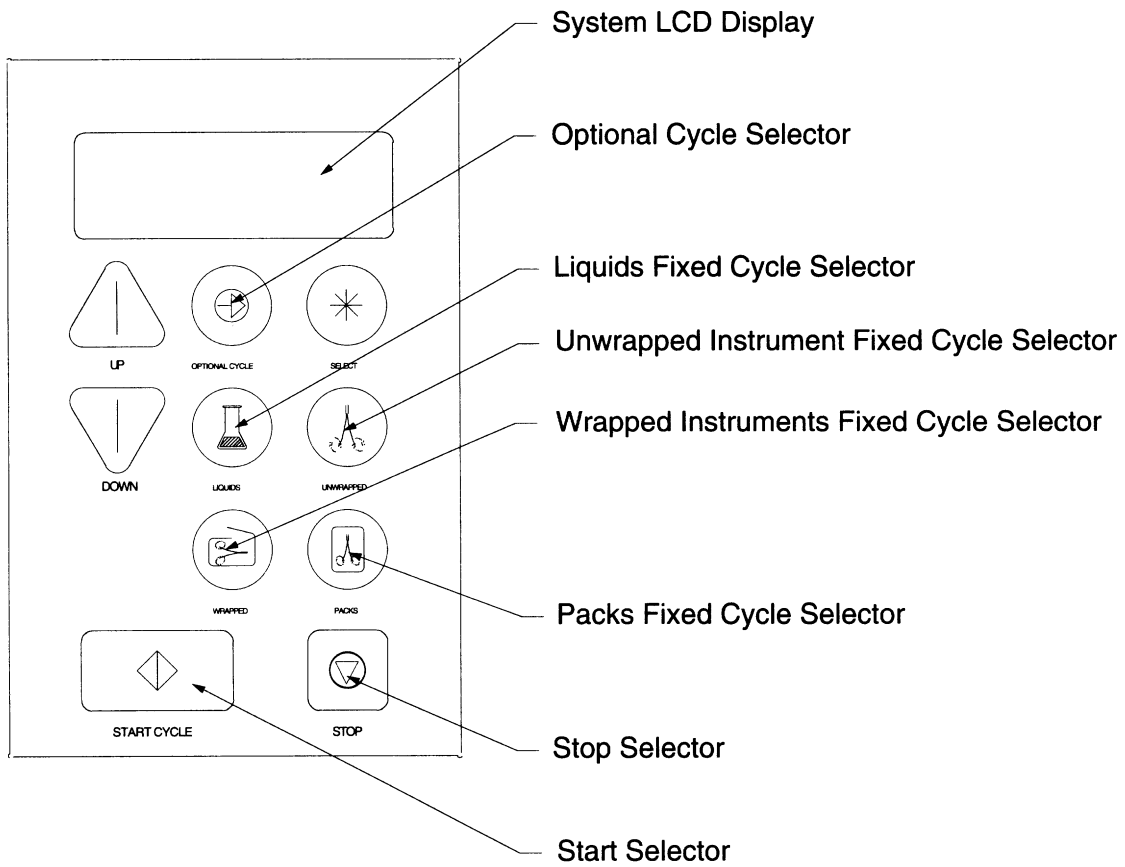
Fault Indication	Fault Cause	Solution
Cycle halted, display reads: "Cycle Halted Due To Heatup Exceeding Maximum Heatup Time, Push Stop To Reset."	The temperature in the vessel has not reached the specified setpoint within 75 minutes,	1. Check for adequate water fill at the beginning of cycle. 2. Check solenoid valves/ door gasket for leaks. 3. See "Sterilizer will not heat."
Cycle halted, display reads: "Cycle Failed Due To Over Temperature Condition, Press Stop. "To Continue."	The temperature inside the chamber has exceeded more than 5°C above the setpoint.	Press the STOP button, allow chamber to depressurize and cool, drain the chamber, restart cycle.
Exposure phase lengthened beyond programmed time.	Temperature in the chamber dropped more than 1°C but not more than 5°C below the setpoint, causing the exposure phase timer to reset. (Not applicable to liquid cycle.)	None necessary. Load is sterile at end of cycle.
Cycle halted display reads, "Cycle Failed Due To Low Temperature Condition, Press Stop To Continue."	Temperature in the chamber dropped more than 1°C below the setpoint in a liquid cycle, or more than 5°C in any other cycle.	Press the STOP button, allow chamber to depressurize and cool, drain the chamber, restart cycle.
Cycle halted, display reads: "The Door Has Opened, Sterilization Cycle Aborted, Press Stop To Continue."	The door switch opened after the initiation of a cycle.	Press the STOP button, allow chamber to depressurize and cool, drain the chamber, restart cycle, ensuring that the door is securely closed.
Cycle does not start, display reads "The Door Is Open, Close Door To Continue."	The door switch was open when START was pressed.	Close door securely. Cycle will start when door switch is closed.
Display reads: "Unit Has Enough Water For One More Cycle, Please Refill Reservoir."	The water level switch in reservoir opened during the fill, indicating low water.	Allow cycle to run. After cycle has ended, refill reservoir before running another cycle.

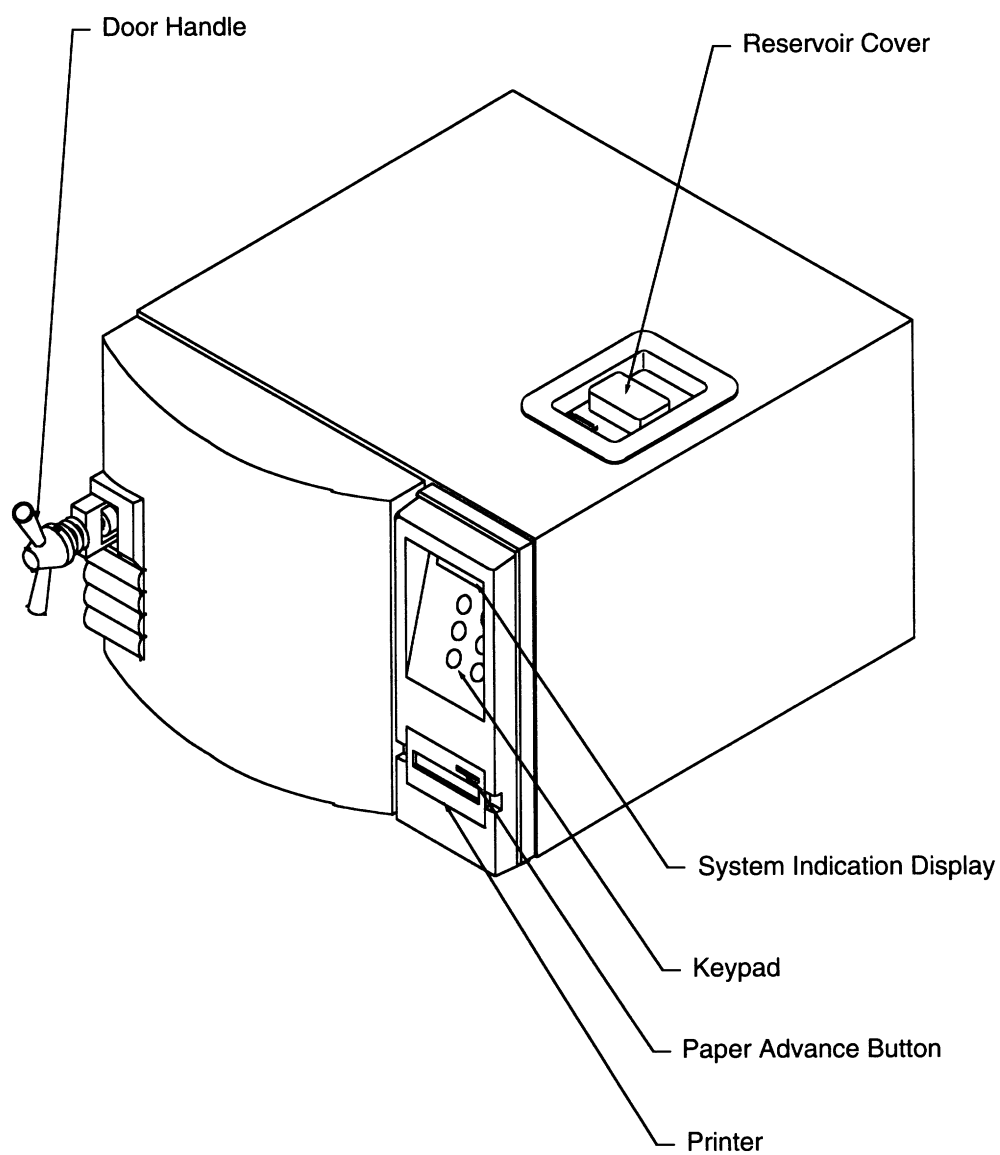


## PROBLEM SOLVING CHART

Fault Indication	Fault Cause	Solution
Cycle does not start, display reads "Reservoir is Empty. Fill and Restart Sterilization Cycle."	The water level switch is open at the beginning of a cycle, indicating low water.	Refill reservoir. Restart cycle.
When STOP is pressed the display reads "Pressure Greater Than 1 psi, Please Wait To Stop."	The cycle has stopped, but the chamber pressure is too great to safely open the door.	Wait for pressure to drop.
When START is pressed at the end of venting to begin the drying phase, the display reads "Door Must Be Open To Begin Drying Cycle."	Door is closed. (Door must be open for adequate drying.)	Open door. Press START.
Display reads "Drying Cycle Aborted Due to Closure Of Door, Open Door To Continue." (Heater and timer will both be off).	Door switch closed during the drying phase.	Open door. Drying cycle will continue automatically from the point at which it quit.
Mechanical over pressure relief valve opens, venting pressure from chamber.	Pressure in the chamber has exceeded 45 psi.	Press the STOP button, allow chamber to depressurize. Restart cycle. In the event of a repetition of fault, call Barnstead/Thermolyne Customer Service.
Display reads "Cycle Aborted Due To Auto OTP Device. Press STOP, shutoff unit power to reset.	Temperature sensor on the heater has reached its preset cutoff point or sensor failure.	See <b>Resetting the Automatic OTP</b> . In the event of a repetition of fault, call Barnstead/Thermolyne Customer Service.
Sterilizer will not heat. Display reads: "The Mechanical OTP Has Tripped. Shutoff Unit And Restart. Caution - Unit Hot!!"	The fail-safe mechanical over temperature switch has opened due to significant thermal runaway.	Reset as described under <b>Resetting the Mechanical OTP Sensor</b> . In the event of a repetition of fault, call Barnstead/Thermolyne Customer Service.
No display or printout, but fan on back is running.	Fuses protecting the transformer are blown.	Replace fuses as described under <b>Replacing The Transformer Fuses</b> .

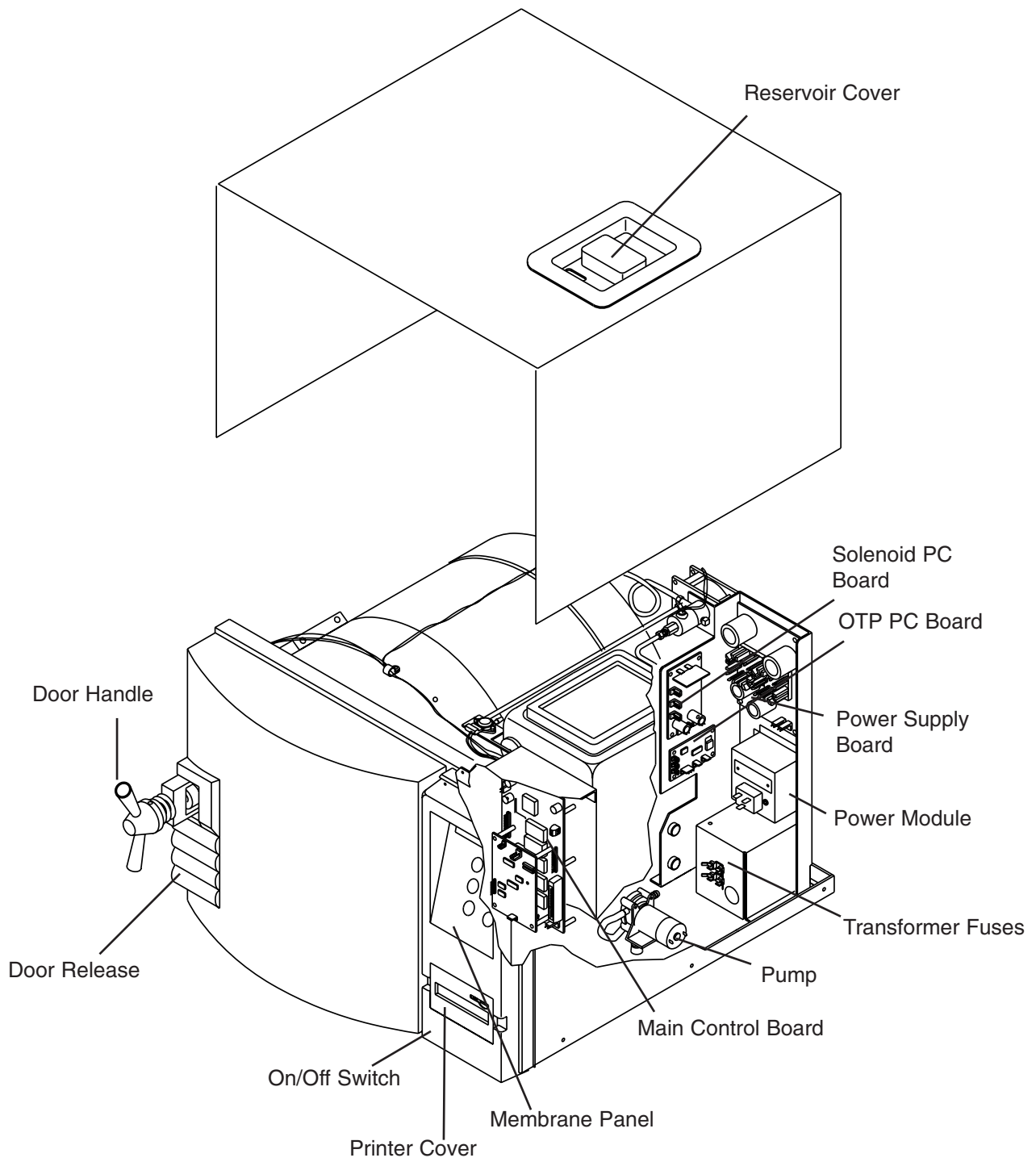
# Figures



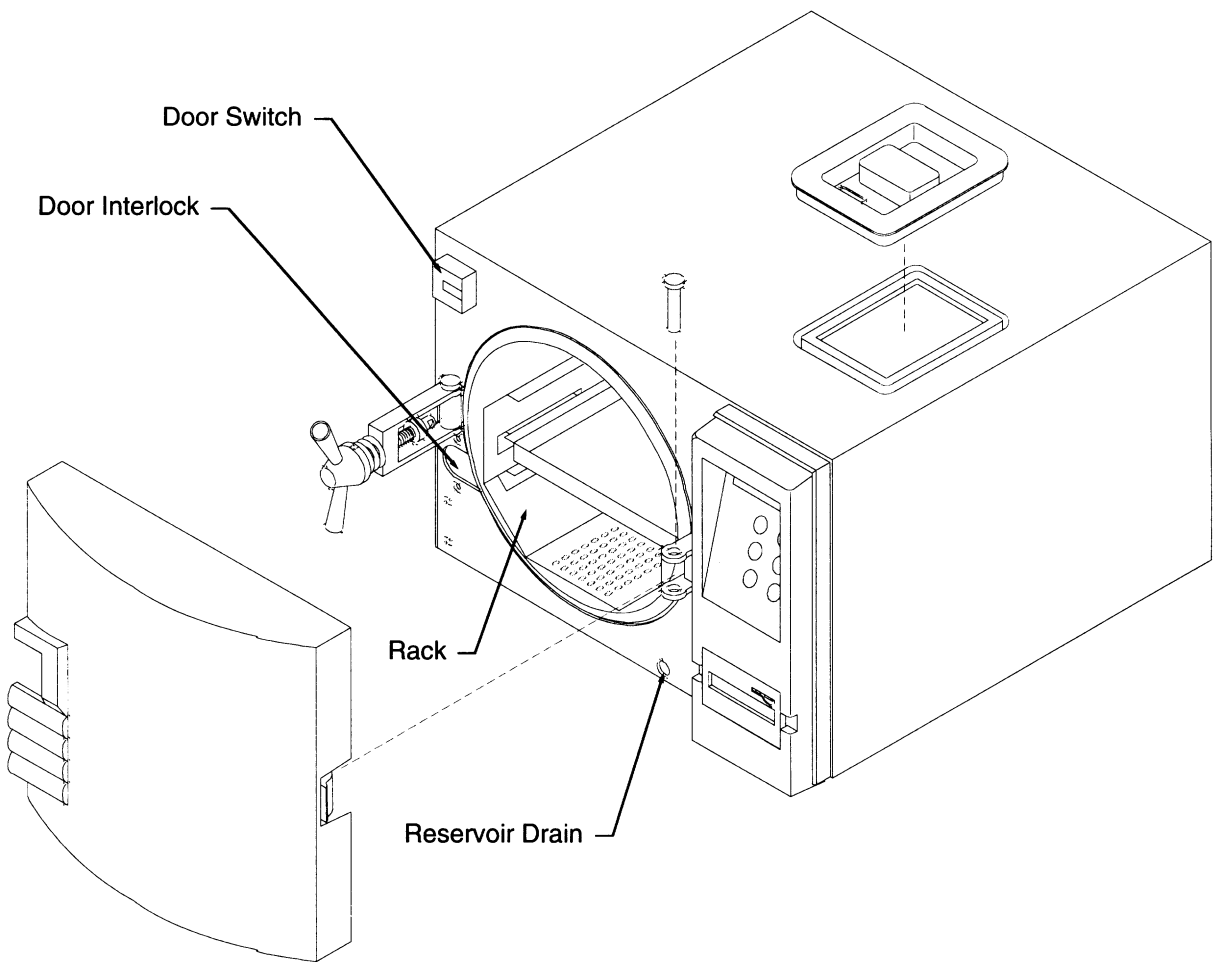


*Sterilizer Component Layout - Exterior*

**FIGURES**

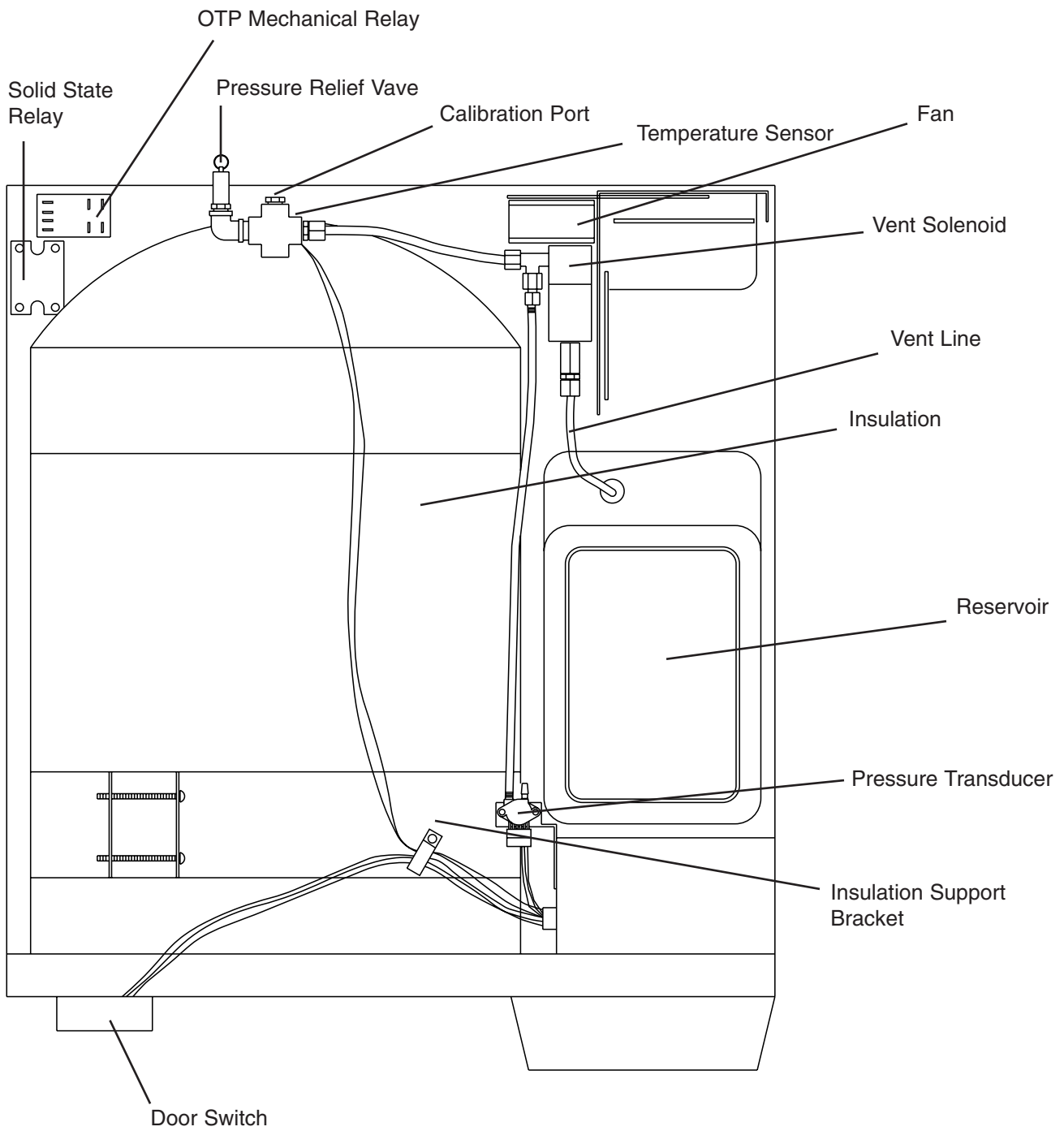


*Sterilizer Component Layout - Interior*

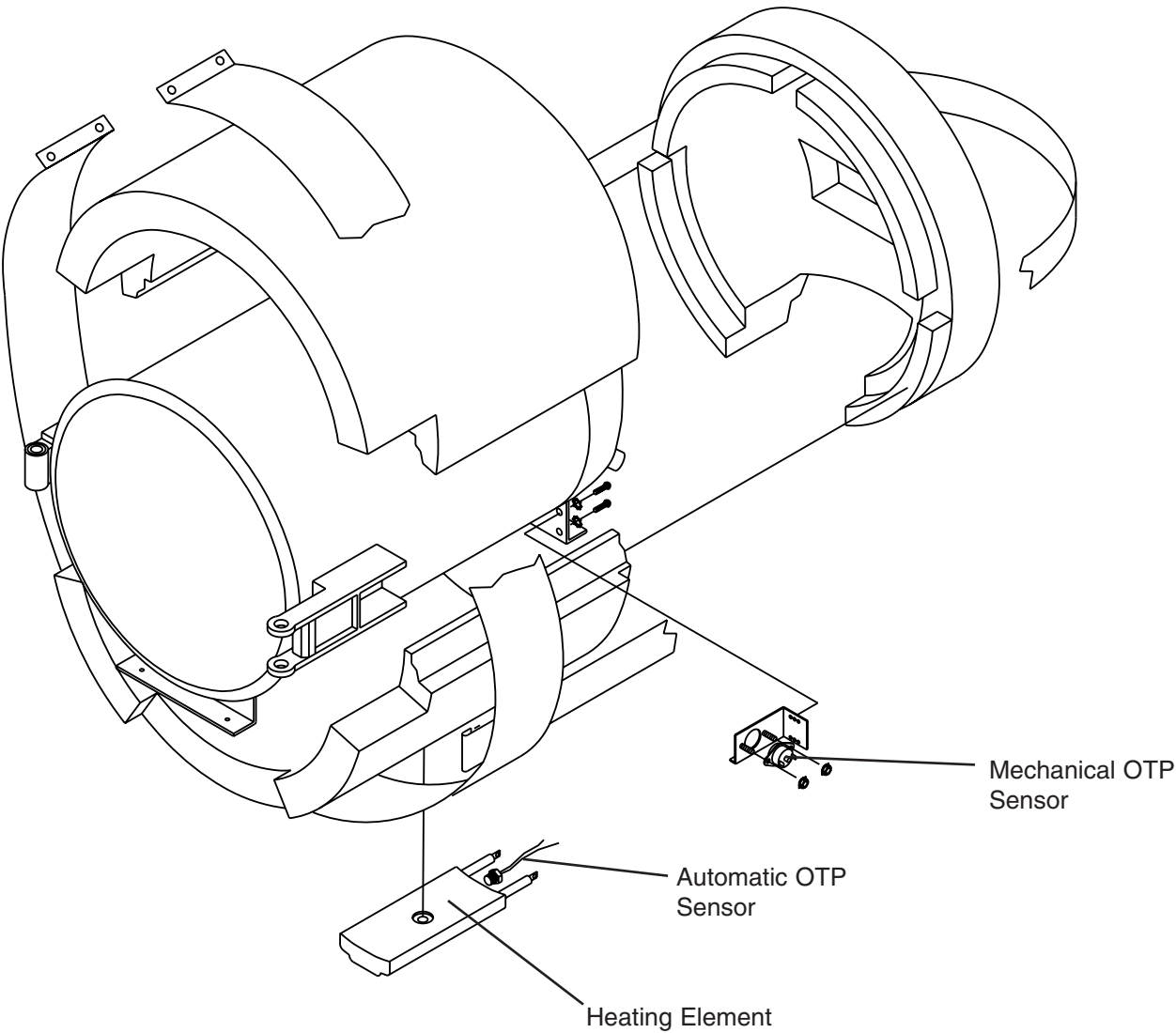


*Sterilizer Component Layout - Chamber and Door*

**FIGURES**

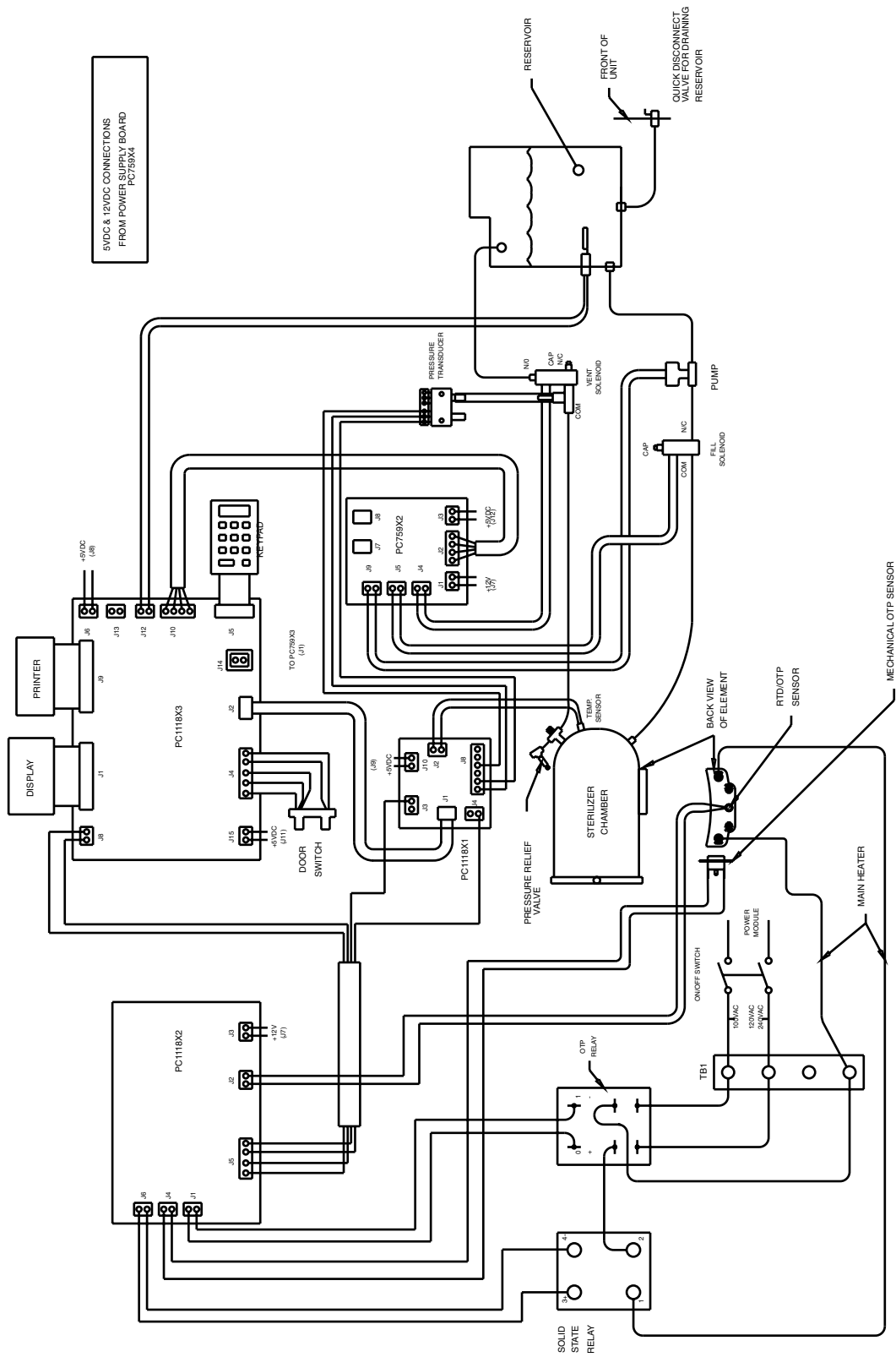


*Sterilizer Component Layout - Top View*

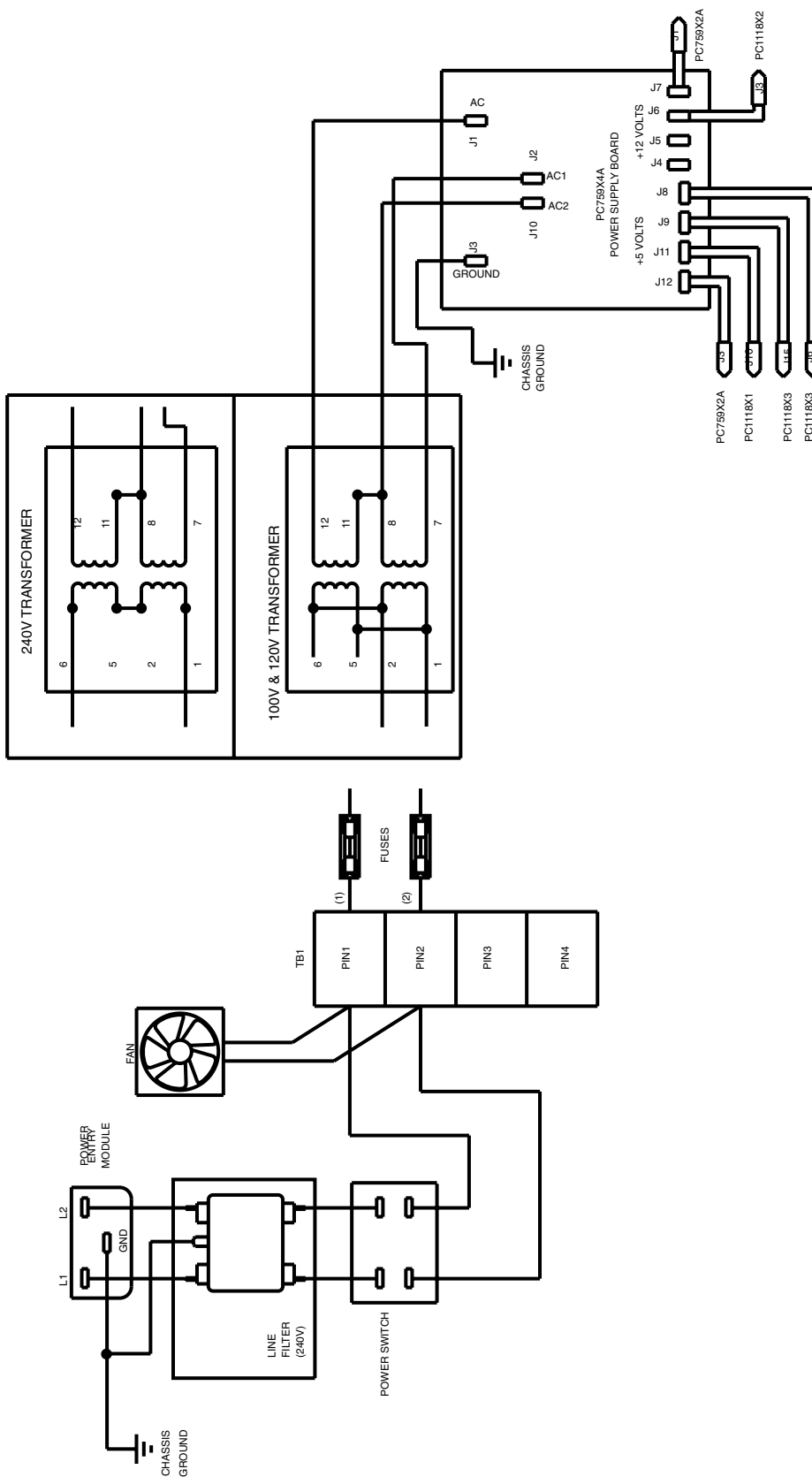


*Insulation Installation  
Reservoir Cutaway*

# FIGURES







Power Supply Wiring Diagram

# Parts List



## Warning

Replace fuses with same type and rating

Description	<u>100 V</u>	<u>120 V</u>	<u>220V~</u>
	Part No.	Part No.	Part No.
Printer Paper Tape Roll	PRX2	PRX2	PRX2
Solenoid Valve	RY759X1A	RY759X1A	RY759X1A
PC Board (Power Supply)	PC759X4A	PC759X4A	PC759X4A
Transformer	TN759X1A	TN759X1A	TN759X2A
PC Board (Solenoid)	PC1118X5	PC1118X5	PC1118X5
Pressure Relief Valve	250052401	250052401	250052401
Tank, Lower Float	SW759X1A	SW759X1A	SW759X1A
PC Board (Logic)w/printer	PC1118X3	PC1118X3	PC1118X3
PC Board (Logic)w/o printer	PC1118X4	PC1118X4	PC1118X4
ON/OFF Switch	SWX141	SWX141	SWX104
Terminal Strip	TRX177	TRX177	TRX177
Relay Contact	RYX60	RYX60	RYX60
Pump	PUX16	PUX16	PUX16
Printer Cover	CV759X5	CV759X5	CV759X5
Printer	AYX3	AYX3	AYX3
Door Gasket	GS759X1A	GS759X1A	GS759X1A
Fan	FA981X1A	FA981X1A	FA759X1A
Heater	ELX8	ELX9	ELX10
Gasket (Chamber)	GS759X4	GS759X4	GS759X4
Relay, Solid State	RYX34	RYX34	RYX34
PC Board (OTP)	PC1118X2	PC1118X2	PC1118X2
Tray (Large)	TY759X2A	TY759X2A	TY759X2A
Tray (Small)	TY759X3A	TY759X3A	TY759X3A
Door Switch	SW1118X1	SW1118X1	SW1118X1
Membrane Panel	SW759X3	SW759X3	SW759X3
Water Reservoir	TY759X1	TY759X1	TY759X1
Safety Latch	SF759X1A	SF759X1A	SF759X1A
Shaft Ass'y (Main Door Latch)	SF759X2A	SF759X2A	SF759X2A
Pressure Pin (Door)	SP759X1	SP759X1	SP759X1
Handle (Yoke Assembly)	HNX18	HNX18	HNX18
Drain Tube Assembly	TU759X9A	TU759X9A	TU759X9A
Reservoir Cover	DL759X2	DL759X2	DL759X2
Chamber Temp. Sensor	RS759X1A	RS759X1A	RS759X1A
Automatic OTP Sensor	RS759X2A	RS759X2A	RS759X2A
Mechanical OTP Sensor	FZ759X1	FZ759X1	FZ759X1
Line Filter			CAX104
Fuse (Type Slow Blow, 250V, 1.6 amp)	FZX47	FZX47	FZX47
Pressure Transducer	TDX5	TDX5	TDX5

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# Ordering Procedures

Please refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

All parts listed herein may be ordered from the **Barnstead International** dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at 563-556-2241 or 800-553-0039.

Prior to returning any materials to **Barnstead International**, please contact our Customer Service Department for a "Return Goods Authorization" number (RGA). Material Returned without an RGA number will be returned.

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# Decontamination Statement

We cannot accept any product or component sent to Barnstead Thermolyne for repair or credit that is contaminated with or has been exposed to potentially infectious agents or radioactive materials.

No product or component will be accepted without a "Return Goods Authorization" (RGA) number.

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# One Year Limited Warranty

BARNSTEAD INTERNATIONAL ("BARNSTEAD") warrants that if a product manufactured by Barnstead shall be free of defects in materials and workmanship for one (1) year from the first to occur of (i) the date the product is sold by BARNSTEAD or (ii) the date the product is purchased by the original retail customer (the "Commencement Date"). Except as expressly stated above, BARNSTEAD MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCTS AND EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF DESIGN, MERCHANT ABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

An authorized representative of BARNSTEAD must perform all warranty inspections. In the event of a defect covered by BARNSTEAD's warranty, BARNSTEAD shall, as its sole obligation and exclusive remedy, provide free replacement parts to remedy the defective product. In addition, for products sold by BARNSTEAD within the continental United States or Canada, BARNSTEAD shall provide free labor to repair the products with the replacement parts, but only for a period of ninety (90) days from the Commencement Date.

BARNSTEAD's warranty provided hereunder shall be null and void and without further force or effect if there is any (i) repair made to the product by a party other than BARNSTEAD or its duly authorized service representative, (ii) misuse (including use inconsistent with written operating instructions for the product), mishandling, contamination, overheating, modification or alteration of the product by any customer or third party or (iii) use of replacement parts that are obtained from a party who is not an authorized dealer of BARNSTEAD.

Heating elements, because of their susceptibility to overheating and contamination, must be returned to the BARNSTEAD factory and if, upon inspection, it is concluded that failure is due to factors other than excessive high temperature or contamination, BARNSTEAD will provide warranty replacement. As a condition to the return of any product, or any constituent part thereof, to BARNSTEAD's factory, it shall be sent prepaid and a prior written authorization from BARNSTEAD assigning a Return Goods Number to the product or part shall be obtained.

IN NO EVENT SHALL BARNSTEAD BE LIABLE TO ANY PARTY FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR ANY DAMAGES RESULTING FROM LOSS OF USE OR PROFITS, ANTICIPATED OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR PERFORMANCE OF ANY PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), ANY THEORY OF STRICT LIABILITY OR REGULATORY ACTION.

The name of the authorized Barnstead International dealer nearest you may be obtained by calling 1-800-446-6060 (563-556-2241) or writing to:

 **Barnstead**International  
an Apogent company *Your Lab Starts Here*

2555 Kerper Boulevard  
P.O. Box 797  
Dubuque, Iowa 52001-0797  
Phone: 563-556-2241 or 800-553-0039  
Fax: 563-589-0516  
E-mail: [mkt@barnstead.com](mailto:mkt@barnstead.com)  
[www.barnstead.com](http://www.barnstead.com)

