

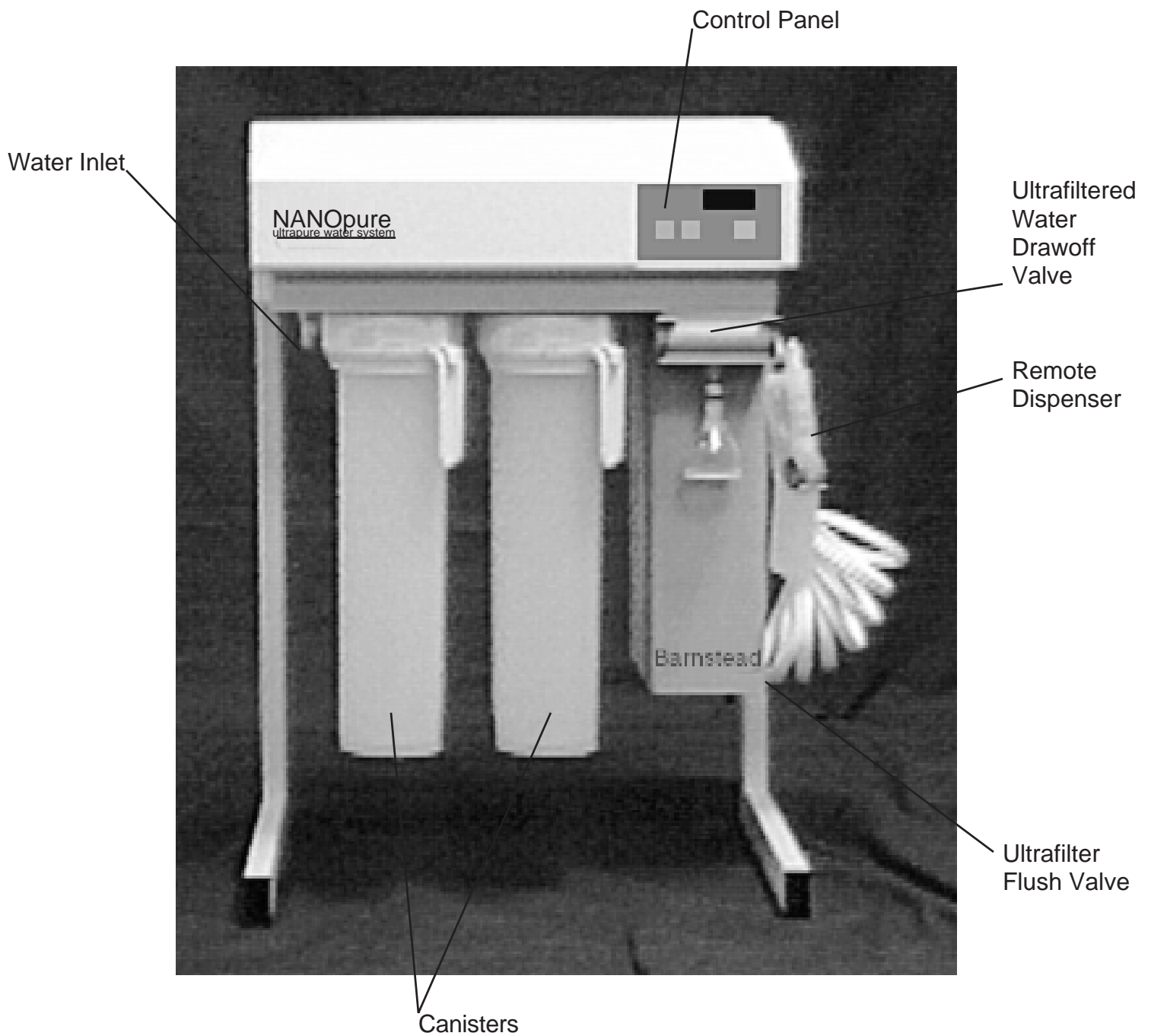
# Type D4700 NANOpure Bioresearch Deionization System

OPERATION MANUAL  
AND PARTS LIST  
SERIES 747

## BIORESEARCH GRADE SYSTEMS

<b>Model #</b>	<b>Voltage</b>	<b>Mount</b>
D4751	120	Wall
D4752	240	Wall
D4753	100	Wall
D4754	120	Bench
D4755	240	Bench
D4756	100	Bench

This manual contains important operating and safety information. You must carefully read and understand the contents of this manual prior to the use of this equipment.



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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.

---

## Warnings

To avoid electrical shock, always:

1. Use with a properly grounded electrical outlet of correct voltage and current handling capacity.
2. Do not mount the NANOpure Bioresearch directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.
3. Replace fuses with those of the same type and rating.
4. Disconnect from the power supply prior to maintenance and servicing.

To avoid personal injury:

1. Do not use in the presence of flammable or combustible materials; fire or explosion may result. This device contains components which may ignite such materials.
2. This device is to be used with water feeds only. Sanitizing/cleaning agents must be used in compliance with instructions in this manual. Failure to comply with the above could result in explosion and personal injury.
3. Do not mount the NANOpure Bioresearch directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.

4. Replace fuses only with the same type and rating for continued protection against possible fire hazard.
5. Wall composition and construction, as well as fastener type, must be considered when mounting this unit. The mounting surface and fasteners selected must be capable of supporting a minimum of 275 lbs. Inadequate support and/or fasteners may result in damage to mounting surface and/or equipment. If you are unsure of mounting surface composition, condition and construction, or correct fasteners, consult your building maintenance group or contractor.
6. Avoid splashing disinfecting solutions on clothing or skin. Ensure all piping connections are tight to avoid chemical leakage. Always depressurize chemical lines before disassembly. Ensure adequate ventilation. Carefully follow manufacturer's safety instructions on labels of chemical containers and material safety data sheets.
7. A small amount of 2.0% hydrogen peroxide is used to preserve the ultrafilter during storage. When removing the ultrafilter from the bag, ensure adequate ventilation and wear protective gloves and glasses.
8. Depressurize system prior to attempting to remove canisters.
9. Refer servicing to qualified personnel.

# Introduction



## Warning

This device is to be used with water feeds only. Sanitizing/cleaning agents must be used in compliance with instructions in this manual. Failure to comply with the above could result in explosion and personal injury.

## Introduction

This manual contains the information you will need to install, operate, and maintain the NANOpure Bioresearch Grade, Series 747, ultrapure water system manufactured by Barnstead|Thermolyne Corporation. It is your responsibility to read and understand the contents of this manual prior to installation and use of this equipment.

The NANOpure Bioresearch is designed to produce Type I Reagent Grade Water equal to or exceeding standards established by ASTM, CAP, and NCCLS with bacterial endotoxin levels below 0.005 EU/ml. Careful attention to the following instructions will assure that the NANOpure Bioresearch runs properly and produces water to specification. Illustrated parts lists are attached inside. Take a few minutes to familiarize yourself with the hardware before installation.

The unit includes a constant bleed of the ultrafiltered reject water. This bleed can be discontinued if you feel it is not required. See the appropriate section of this manual if you want to stop the constant bleed.

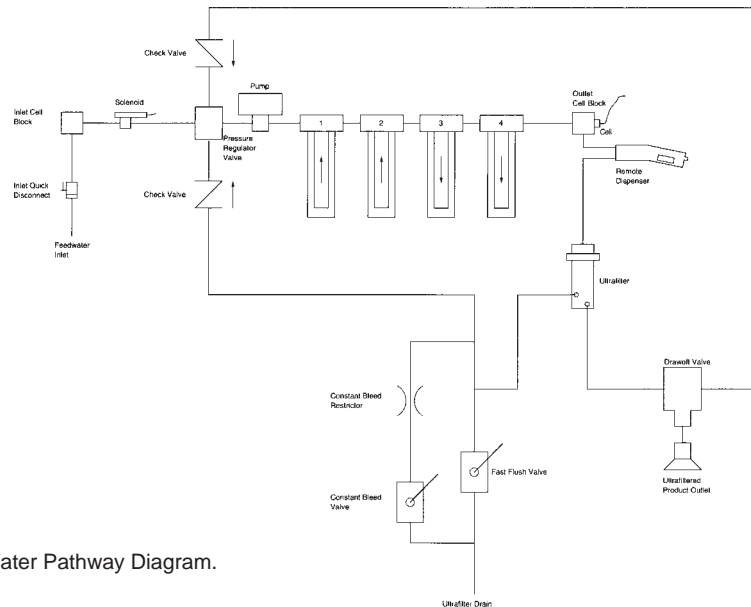


Figure A NANOpure Bioresearch Water Pathway Diagram.

# Technical Specifications - Bioresearch Grade

## Feed Water Requirements

Types <sup>1</sup>	Tap (Potable), RO, DI, Distilled.
Pressure Range	Gravity feed to 100 psig (7 kg/cm <sup>2</sup> ) maximum.
Temperature Range	4-49°C (40-120°F)

## Product Water

Water Quality <sup>1</sup>	Remote Dispenser and Ultrafiltered Water Drawoff -Type I Reagent Grade Water (RGW) per ASTM-D1193, NCCLS ASC-3, and CAP.
Flow rate (Maximum) <sup>2</sup>	

		From Dispenser	From Ultrafiltered Water Drawoff.
Pressured Feed (40 psig Inlet Min.)	50 HZ	1.5 LPM	1.25 LPM
	60 HZ	1.6 LPM	1.3 LPM
Gravity Feed (12" Minimum)	50 HZ	1.0 LPM	1.0 LPM
	60 HZ	1.1 LPM	1.1 LPM

## Dimensions

### Wall mounted models

Width	22"	(559 mm)
Depth	14 1/4"	(362 mm)
Height	29 1/2"	(749 mm)

### Bench mounted models

Width	22"	(559 mm)
Depth	16 1/4"	(413 mm)
Height	32 1/2"	(826 mm)

## Plumbing Connections

Feed water Inlet	3/8" OD tubing or 1/4" NPTF
Ultrafilter Reject	3/8" hose-barb

## Electrical Requirements (depending on model supplied)

### Voltage and Frequency (Nominal)

100 VAC, 50/60 Hz	85-110 VAC, 47-63 Hz, 1 phase
115 VAC, 50/60 Hz	98-127 VAC, 47-63 Hz, 1 phase
230 VAC, 50/60 Hz	196-253 VAC, 47-63 Hz, 1 phase

### Protection

100 VAC service	3 ampere slow blow fuse
115 VAC service	3 ampere slow blow fuse
230 VAC service	2 ampere slow blow fuse

### Resistivity Measurement

Range	0.1-18.3 megohm-cm [temperature compensated to 25°C (77°F)]
Accuracy	± 3 % FS
Cell	0.1 constant
Display	Digital

## Notes:

<sup>1</sup> NANOpure Bioresearch will produce Type I water using pretreated water (RO, DI, Distilled) or high quality tap water provided feedwater suitability is qualified by laboratory analysis and recommended feed flowrate is maintained.

<sup>2</sup> Flowrates are dependent on operating conditions and filter usage. Flowrates will also depend on filter compaction.

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# Installation

The NANOpure Bioresearch deionization system can be used on pretreated or high quality tap water. Some municipal tap water supplies contain a very high concentration of suspended particulates, colloids, dissolved organic and inorganic materials that should be removed by pretreatment before the water is processed by the NANOpure Bioresearch. If you plan to use tap water feed for your NANOpure Bioresearch, Barnstead encourages the use of our water analysis service to verify feedwater suitability. A sample collection kit may be obtained by contacting any of our offices or your preferred laboratory supply dealer.

The NANOpure Bioresearch includes two 0.2 Micron Final Filters, but requires expendable pretreatment and deionization cartridges and Final Filters for the Remote Dispenser which are not supplied with the unit and must be purchased separately. These expendables are available as individual components or in an expendable kit (see Table 1).

Your NANOpure Bioresearch is supplied with a pre-wired jumper in the “pump interlock” connector. Installation of options D0603, D0606 (Float Switch) or D2706 (Pressure Switch) require removal of this jumper plug. DO NOT discard this plug; it will be needed for certain maintenance operations.

All models are provided with a power cord and plug to be connected to a standard grounded electrical outlet. Refer to TECHNICAL

## **D5026 NANOpure Bioresearch Pretreat Feed 4-Cartridge Expendables Kit with ORGANICfree**

1	D0836	Pretreatment MACROpure Cartridge
2	D5027	Ultrapure SG Cartridge
1	D5021	ORGANICfree Cartridge
2	D3751	Remote Dispenser Filter

Table 1 Expendable Kit





**Warning**

To avoid electrical shock, use with a properly grounded electrical outlet of correct voltage and current handling capacity.

SPECIFICATIONS and Figures M, N & O (pages 49-51) in this instruction manual for the electrical requirements.

**Unpacking**

Unpack the NANOpure Bioresearch carefully. Remove all contents carefully. Included with the packaging is a box containing the 4 canisters, O-rings, handle rings, an ultrafilter, 0.2 micron Final Filters, tubing, fittings, the power cord, a filler panel, a display wall bracket, a 10 foot display cable, a Sanitization Cartridge and the Remote Dispenser. Inspect packaging for additional materials before discarding. Lift the NANOpure Bioresearch carefully from box, holding onto either the mounting bracket or bench stand. Lay the NANOpure Bioresearch on its back. Remove the canisters, handle rings and O-rings from the packaging and set aside. Do not install until told to do so.

**Choosing a Site**

The NANOpure Bioresearch system features remote controls and dispenser allowing system to be mounted almost anywhere within the laboratory.

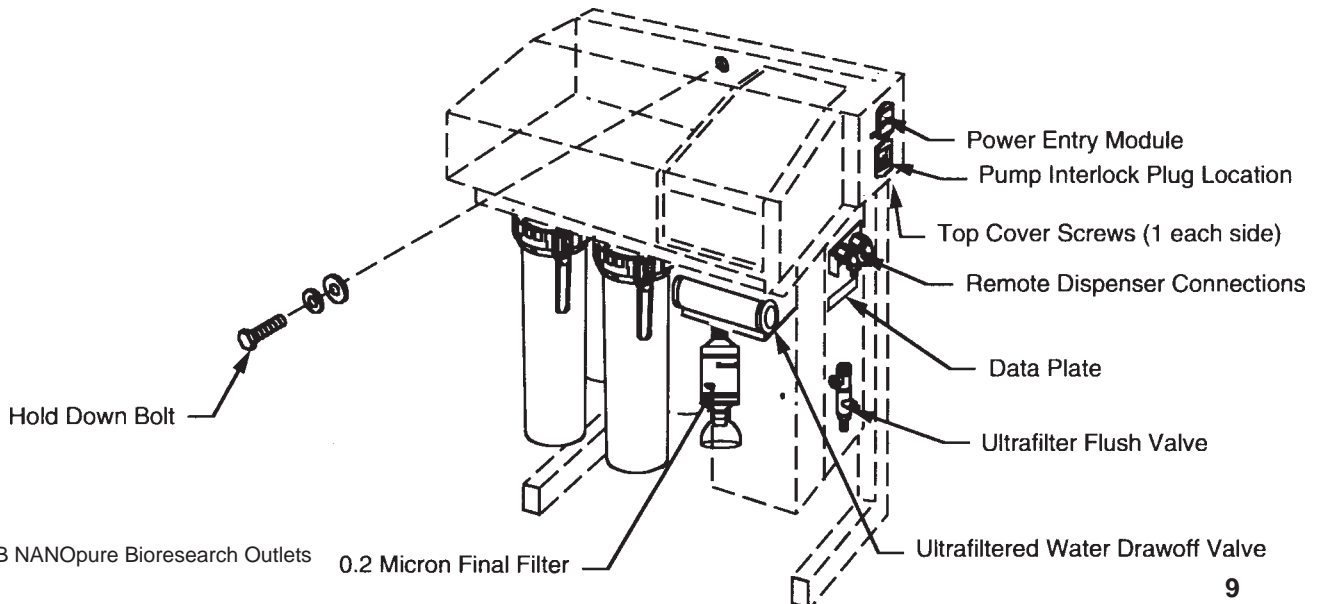


Figure B NANOpure Bioresearch Outlets

0.2 Micron Final Filter

Use mounting bracket for wall mounted systems as template to drill mounting holes. (The NANOpure Bioresearch does not include screws and fasteners for mounting.) Allow a minimum of 6 inches (15 cm) clearance on all sides of the unit for servicing and 16 inches (40 cm) in front for top cover removal.

### Tubing Connector Installation

In the Mounting and Utility Connections instructions, you will be instructed to make water line connections on the NANOpure Bioresearch. Water line connections on the NANOpure Bioresearch are made with the included tubing connector. Use the following procedure whenever you are instructed to connect water lines together with a tubing connector.

1. Completely disassemble the fitting. Refer to Figure C to familiarize yourself with the names of the component parts.
2. Make sure the tubing is cut off reasonably square and that no plastic burrs or ridges are present.
3. Place the grab ring and back-up ring in the hex nut in the order and orientation shown in Figure C. Thread the nut onto the connector. Do not use the O-ring at this time.
4. Push the tubing through the nut until it bottoms out in the connector.

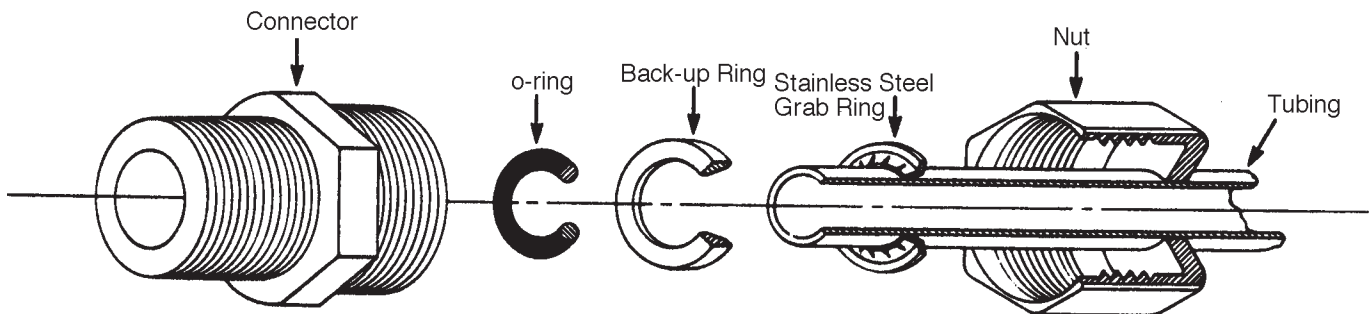


Figure C Typical Polypropylene Tubing Connector Installation

5. Remove the adapter nut and tubing. Place the O-ring over the tubing. Be careful not to push the back-up ring or grab ring further back on the tubing when installing the O-ring.
6. Install the hex nut on the connector and hand tighten.

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### **Mounting and Utility Connections**

1. Remove the two screws securing the top cover to the NANOpure Bioresearch as well as the pump interlock plug (Figure B, page 9) and slide the top cover off away from the NANOpure Bioresearch. Familiarize yourself with various components and install any optional equipment, i.e. inlet cell, pressure and/or float switch. See appropriate section for instructions.
2. Remove the hold down bolt securing the NANOpure Bioresearch to the wall bracket. It is located on the center of the back wall inside the NANOpure Bioresearch cabinet. (Figure B, PAGE 9)
3. Disengage the NANOpure Bioresearch from the wall bracket.
4. Remove the packing material from the wall bracket.
5. Use the wall bracket as a template and locate and drill the mounting holes in the mounting surface. A minimum of four fasteners will be required — two on the top and two on the bottom.



### **Warning**

Wall composition and construction, as well as fastener type, must be considered when mounting this unit. The mounting surface and fasteners selected must be capable of supporting a minimum of 275 lbs. Inadequate support and/or fasteners may result in damage to mounting surface and/or equipment. If you are unsure of mounting surface composition, condition and construction, or correct fasteners, consult your building maintenance group or contractor.

Do not mount the NANOpure Bioresearch directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.

6. Hang the NANOpure Bioresearch unit on the bracket by sliding the mounting pins into the bracket grooves. Reinstall the hold down bolt.
7. Install the top cover by sliding forward. Ensure the pins on the cover align with the holes on the forward cabinet section. Install the top cover screws and the interlock plug removed in step 1. (See Figure B, page 9).
8. Remove the Remote Dispenser from packaging.
9. Remove the tubing connector from the ends of the Remote Dispenser tubing. Retain for use as replacement parts. See Figure C, page 10, for identification of the connector components.
10. Remove the tubing nut, grab ring, backup ring and O-ring from Remote Dispenser connection on NANOpure Bioresearch. Save as replacement parts.
11. Connect the Remote Dispenser tubing to NANOpure Bioresearch at elbow connections on NANOpure Bioresearch (Figure B, page 9). It is not important which nut on the dispenser is attached to which connector on the NANOpure Bioresearch.
12. Connect 3/8" OD tubing (supplied with unit) to water service.
13. Locate the quick disconnect shutoff valve fitting on the inlet to the NANOpure Bioresearch.

14. Remove the inlet valve by depressing the stainless steel thumb pad.
15. Remove the tube nut from the valve and slide the nut over the tubing.
16. Wet the tubing with water and slip it over the hose barb. Tighten the nut.
17. Connect customer supplied tubing to the hose nipple on the ultrafilter flush valve (Figure B, page 9) and route to drain.
18. Connect to electrical service by installing the electrical cord to the power entry module on the right hand portion of the NANOpure Bioresearch (Figure B, page 9) and plugging into a live outlet.

---

## Initial Sanitization and Ultrafilter Installation

1. Perform the following sanitization procedure utilizing the sanitization cartridge provided.
  - a. Remove the sanitization cartridge containing the chlorine pellet from the plastic bag and install onto head #1. (See Figure F, page 18, for identification.)
  - b. Clean the sealing surfaces of the heads and the top of the canisters with a clean, wet cloth. Install the O-rings in the O-ring grooves of the 4 canisters. Wet the O-rings and install over the sanitization cartridge into canister position one. Install canisters two, three and four without cartridges



### Note

Do not install the Ultrafilter until the NANOpure is ready for use. If the NANOpure sits for longer than 72 hours without use, it will become contaminated and may effect product water quality.

## INSTALLATION



### Caution

Ensure O-ring is in place in the canister groove; wet O-ring prior to securing canister on the head.

Do not tighten canister handle ring beyond point where locking pin and pin hole line up.

Secure locking pin before operating. Pin must be fully engaged before operating.

Do not operate the pump dry. Dry running will damage the pump.



### Warning

Avoid splashing disinfecting solutions on clothing or skin. Ensure all piping connections are tight to avoid chemical leakage. Always depressurize chemical lines before disassembly. Ensure adequate ventilation. Carefully follow manufacturer's safety instructions on labels of chemical containers and material safety data sheets.

installed in them by depressing the thumb lever and rotating 1/4 turn to the right.

Locking pin on canister ring must be fully engaged into hole on head before system is operated (see Figure D for proper positioning).

- c. Ensure that the flush housing is in the remote dispenser. Attach feedwater line by inserting the quick disconnect valve into the coupling body and listening for the click that indicates full closure. Place a container below the Ultrafiltered Water Drawoff valve to collect sanitization solution. Open both the Ultrafiltered Water Drawoff and the Remote Dispenser. Turn the unit on by depressing the ON/OFF/Standby button on the control panel.
- d. When the sanitization solution begins to exit the Ultrafiltered Water Drawoff valve, close the Ultrafiltered Water Drawoff valve. Let the solution exit the Remote Dispenser for 30 seconds in the stream mode. After 30 seconds, change to the spray mode and allow the unit to spray the solution for an additional 30 seconds. During this

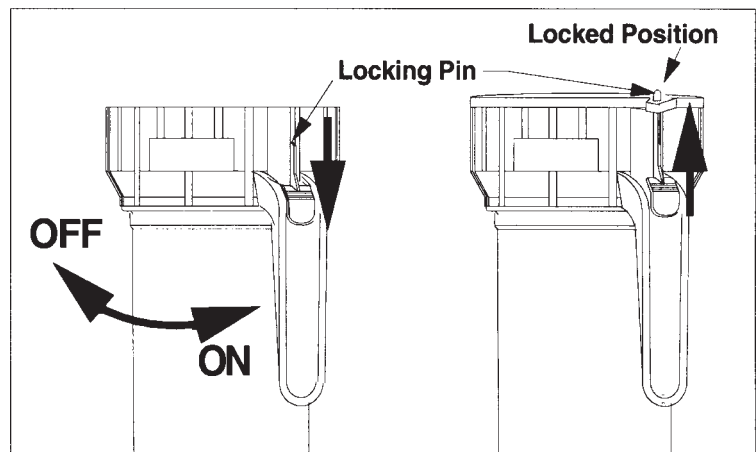


Figure D Canister Locking Pin Positioning



**Note**

The pellet in the sanitization cartridge may not completely dissolved. This does not constitute an incomplete sanitization. Do not reuse spent sanitization cartridge.



**Warning**

Depressurize system prior to attempting to remove canisters.



**Note**

Do not install the Ultrafilter until the NANOpure is ready for use. If the NANOpure sits for longer than 72 hours without use, it will become contaminated and may effect product water quality.



**Note**

If you wish to close the constant bleed valve, this can be done easily before the ultrafilter is installed. See "Stopping the Constant Bleed."

procedure, approximately 60ml a minute of solution will be exiting the Ultrafilter Reject Valve. This is normal.

- e. Close the Remote Dispenser and allow the unit to remain in recirculation for 30-45 minutes.
  - f. After 30-45 minutes, open the Ultrafiltered Water Drawoff valve and the Remote Dispenser. Allow the sanitizing solution to exit the unit. Leave these valves open for approximately 5 minutes. A small quantity of water should be flowing from the Ultrafilter Reject Valve.
  - g. Turn the unit off by depressing the ON/OFF/Standby button on the control panel until the display is blank.
  - h. Allow the system to depressurize. Carefully remove all canisters from the system by depressing the thumb lever and rotating 1/4 turn to your left. Discard the remaining solution within the canister. Do not rinse the canisters.
  - i. Disconnect from electrical service and remove the power cord from the NANOpure Bioresearch.
  - j. Remove the top cover of the unit by removing the top cover screws and pump interlock cable or jumper plug and pull the cover straight out.
2. Install the ultrafilter by following these steps:

## INSTALLATION



### Warning

A small amount of 2.0% hydrogen peroxide is used to preserve the filter during storage. When removing the ultrafilter from the bag, ensure adequate ventilation and wear protective gloves and glasses.

- a. Remove the ultrafilter housing by pushing up on the clip located at the bottom of the housing and pulling the housing straight forward.
- b. Remove the “T” securing the three pieces of tubing (ultrafilter feed, reject and product). This is accomplished by unscrewing the nut, which will include the stainless steel grab ring, back up ring and O-ring. Dispose of the “T” connector.
- c. Locate and remove the ultrafilter from box and protective bag.
- d. The ultrafilter comes complete with fittings installed. The product, reject and feed connections are shown in Figure E. Install the ultrafilter into the cradle located on the inside of the housing removed in step a. Ensure the orientation is correct. The single feed connection must be on top with the reject and product connections on the bottom facing the installer.

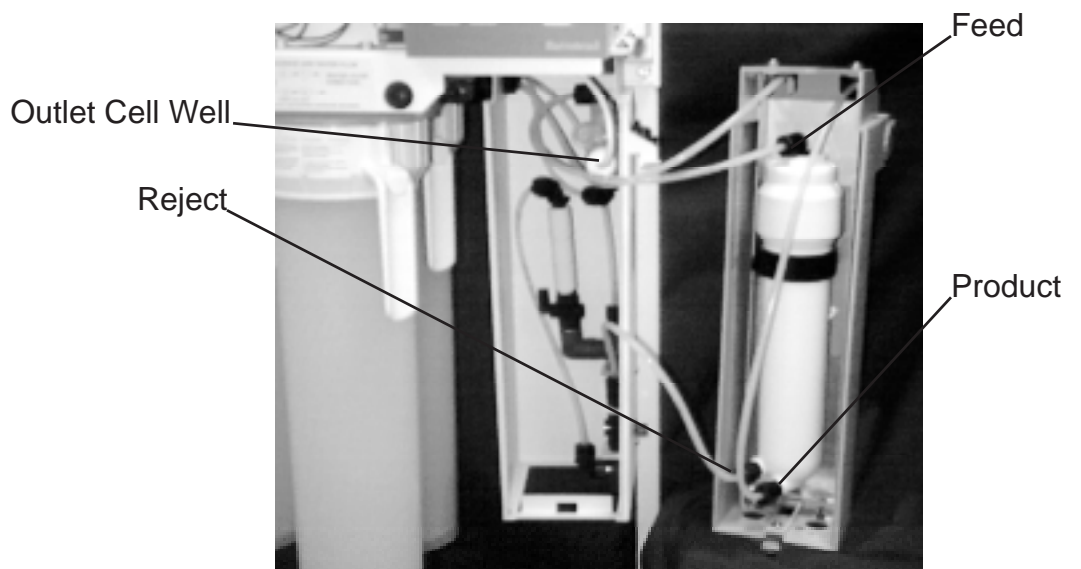


Figure E Ultrafilter Installation



- e. Secure the ultrafilter into the cradle by tightening the strap around the ultrafilter.
- f. Remove the nut, stainless steel grab-rings, back-up rings and O-rings from ultrafilter connections and discard. (See Figure C, page 10, for part identification.)
- g. Secure proper tubing to connections on the ultrafilter. The feed tubing is connected on the outlet cell well. Attach the loose end of this tubing to the top connector on the ultrafilter. The reject and product connections are located on the bottom of the ultrafilter. The reject connection is the upper and outside most of these two fittings. Attach the free end of the tubing attached to the reject valve to the reject connection on the ultrafilter. Attach the product tubing connected to the Ultrafiltered Water Drawoff (Figure E, page 16) to the lower and more center of the two bottom connections on the ultrafilter.
- h. Reattach ultrafilter housing complete with ultrafilter and attached tubing to NANOpure cabinet. Install the top cover by sliding it forward. Ensure pins on cover, align with holes on forward cabinet section. Install top cover screws and interlock plug previously removed.

# Initial Operation



## Caution

Ensure O-ring is in place in the canister groove; wet O-ring prior to securing canister on the head.

Do not tighten canister handle ring beyond point where locking pin and pin hole line up.

Secure locking pin before operating. Pin must be fully engaged before operating.



## Note

An extra set of head-to-canister O-rings are supplied. These can be used to replace any O-rings that may have been damaged or deformed.

## Initial Operation

Install and rinse cartridges and filters as follows:

1. Install a D0836 pretreatment cartridge, with the small opening up, into canister position one (Figure F). Replace canisters two, three and four.

Locking pin on canister handle ring must be fully engaged into hole on head before system is operated (see Figure D, page 14, for proper positioning).

2. Connect electrical service by installing electrical cord to power entry module on the right hand portion of the NANOpure Bioresearch. (Figure B, page 9.)
3. Open the Ultrafilter Flush Valve and the Remote Dispenser valve. (Ensure that the system flush housing is in Remote Dispenser prior to rinsing.) Turn the unit on by depressing the ON/OFF/Standby button on the control panel until the pump is energized and the display begins to read numbers; this will open inlet solenoid valve

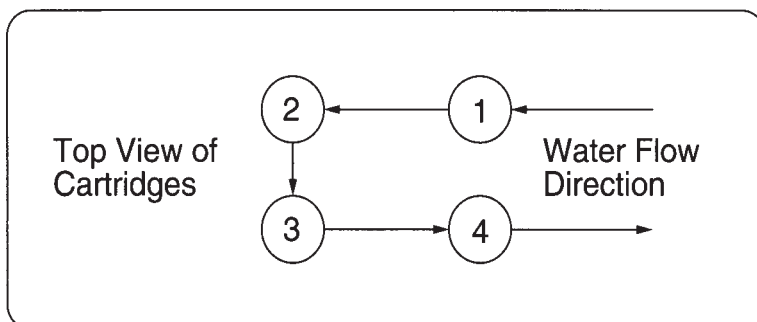


Figure F Cartridge Sequence



**Caution**

Do not operate the pump dry - dry running will damage the pump.



**Warning**

Depressurize system prior to attempting to remove canisters.



**Caution**

Improper rinsing of ultrafilter may result in cartridge damage.



**Note**

The correct sequence of cartridges is important in producing the desired quality of water.

and supply water to the NANOpure Bioresearch. Allow to run to drain for 15 minutes through the Remote Dispenser and the Ultrafilter Flush Valve.

4. Turn off system power and open Remote Dispenser and Ultrafiltered Water Draw-off valve to depressurize system prior to removing the canisters.
5. Remove the canisters in positions two, three, and four and pour out water. Rinse if required.
6. Install remaining cartridges as shown in Figure F, page 18, and Table 2.
7. Turn the unit on by depressing the ON/OFF/Standby button on the control panel until the pump is energized and the display begins to read numbers. Allow water to run to drain for 5 minutes. Close Remote Dispenser valve.
8. With Ultrafilter Flush Valve open (Figure B, page 9), allow reject water to run to drain for five minutes.

***Pretreated Feed Standard Cartridge Kit  
Catalog Number D5026***

Position	Type	Catalog no.
1	Pretreatment	D0836
2	Ultrapure SG	D5027
3	Ultrapure SG	D5027
4	ORGANICfree	D5021

Table 2 Correct Cartridge Sequence

## INITIAL OPERATION

9. Leave Ultrafilter Flush Valve open and open Ultrafiltered Water Drawoff valve (Figure B, page 9). Allow product and reject to run to drain for five minutes.
10. With Ultrafiltered Water Drawoff valve open, close Ultrafilter Flush Valve and allow product to run to drain for twenty minutes.
11. Turn the unit off by depressing the ON/OFF/Standby button on the control panel until the display is blank. Open Remote Dispenser valve and Ultrafiltered Water Drawoff valve to depressurize system.
12. Install a new 0.2 Micron Final Filter by removing the filter from the package and placing it onto the Luer connector on the Ultrafiltered Water Drawoff valve. Gently turn the 0.2 Micron Final Filter clockwise until it is fully seated on the Luer fitting.
13. Remove system flush housing from Remote Dispenser and save for future use.



### Caution

Do not handle filter by Luer connector. Care must be taken to prevent contamination of filter while handling.

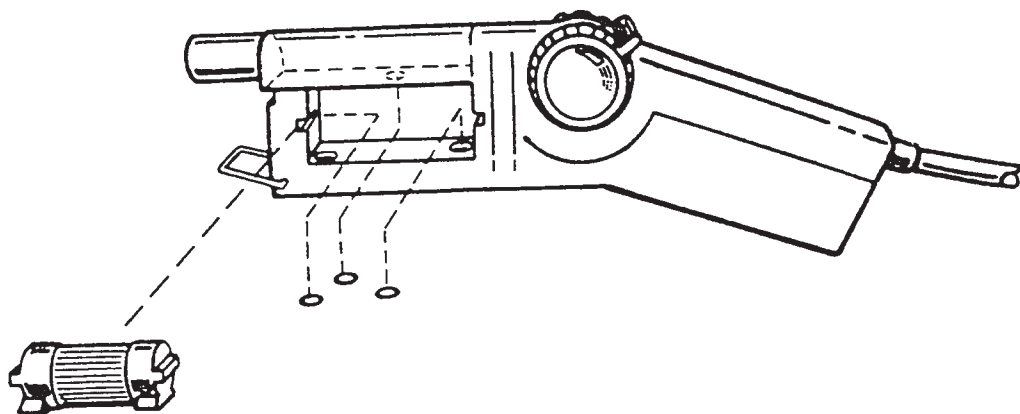


Figure G Remote Dispenser Final Filter Installation



**Note**

Always wet O-rings before installing 0.2 Micron Final Filter into Remote Dispenser.

14. Install a D3751, 0.2 Micron Final Filter into Remote Dispenser by sliding filter into grooves on side of dispenser (Figure G, page 20).
15. Turn the unit on by depressing the ON/OFF/Standby button on the control panel until the pump is energized and the display begins to read numbers. Allow approximately 8 liters of water to run to drain through the Remote Dispenser to rinse the D3751, 0.2 Micron Final Filter.
16. Close Remote Dispenser and allow system to recirculate until desired purity is achieved.
17. Rinse 50 to 100 mls of water to drain through Remote Dispenser Final Filter before each use.
18. Rinse several liters of water to drain through the Ultrafiltered Water Drawoff 0.2 Micron Final Filter. The NANOpure system is now ready for use.

# Normal Operation

For best results and optimization of cartridge life, it is recommended that the NANOpure Bioresearch be left in the standby mode during periods of non-use. The standby mode is designed to automatically recirculate water through the entire NANOpure Bioresearch system (even Remote Dispenser) for 10 minutes of each hour of inactivity. Standby mode is accessed by pushing “On/Standby/Off” membrane switch on controls until display reads “SbY.” Ensure adequate water supply is available to NANOpure Bioresearch when the unit is in standby.

The NANOpure Bioresearch is equipped with a constant bleed of the ultrafiltered reject water. This bleed provides for approximately 60 ml of ultrafilter reject water being constantly sent to drain. This will occur whenever the pump is on both during drawoff and recirculation. This bleed will shorten your cartridge life due to the extra volume of water being processed by the cartridges.

Because of the unique design and flow paths of the NANOpure Bioresearch System, we believe that the unit can operate with little or no appreciable change in product water quality without this bleed under most conditions. If you feel the bleed is not required, you can easily stop it. Refer to the appropriate section of this manual.

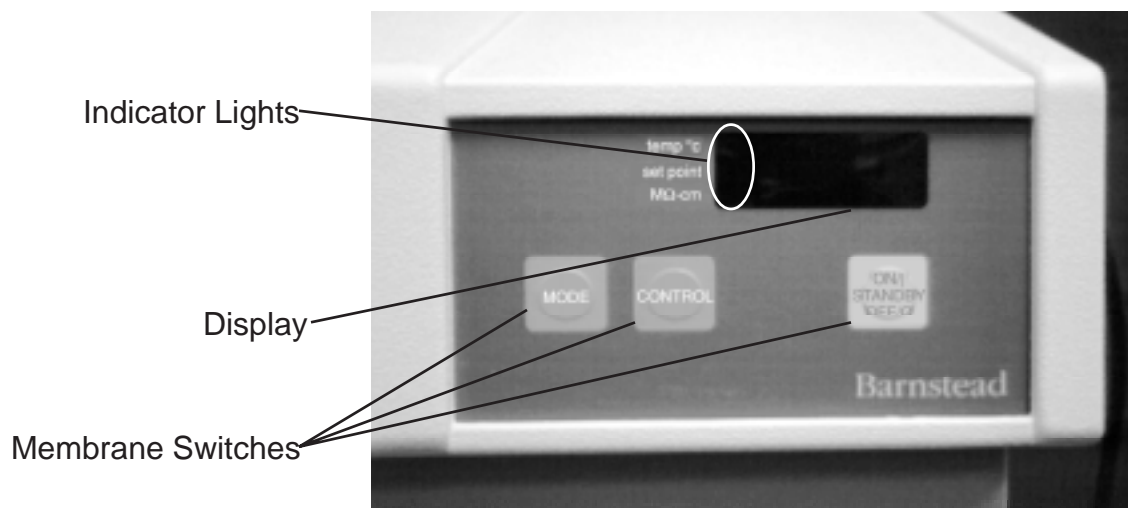


Figure H Display Indicators

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# Smart Purity Meter

NANOpure Bioresearch normal operation is with the electronics set in the resistivity mode. The meter automatically compensates readings to 25°C. If the resistivity falls below the programmed set point (see selecting the set point), the display will flash numerals.

When the NANOpure Bioresearch display reads “Err,” it is an indication that there is air in the system or a problem in the resistivity monitoring system. Please refer to the troubleshooting section at the back of this manual for problem identification and solution. On initial startup, the unit will read “ERR” until water has passed through the system and out the Remote Dispenser.

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## Modes of Operation

The NANOpure Bioresearch has one membrane panel with three switches which control its functions.

- Mode Allows you to choose from resistivity, set point, or temperature.
- Control Allows you to change set point values, check resistivity meter calibration, or monitor optional inlet cell.
- On/Standby/Off Allows you to turn unit on, off or operate unit in standby mode.

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## Turning Unit On or Off

- To turn unit on, press the “On/Standby/Off” membrane switch once. The display will light.

- To turn unit off, press “On/Standby/Off” membrane switch until the display becomes blank.

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## Selecting the Set Point

The NANOpure Bioresearch electronics include a user programmable set point which alerts you when water quality falls below the programmed set point. The set point is user selectable from 0.1 megohm-cm to 18.3 megohm-cm. The display will flash numerals when actual resistivity measurement is at or below programmed set point.

1. Push the “Mode” membrane switch until the orange light (Figure H, page 22) is lit alongside the set point indicator. Preset set point in electronics will appear on display.
2. To change the set point, press and hold the “Control” membrane switch and then press the “Mode” membrane switch. The set point display will automatically begin to scroll backward. To reverse the scrolling, release the “Control” membrane switch until the desired set point is attained.
3. When the desired set point is reached, release the “Mode” switch. The NANOpure Bioresearch electronics will automatically retain the set point until you re-enter the set point mode and repeat the procedure.



---

## Displaying the Temperature

To display the water temperature, simply push the “Mode” switch until the orange light is lit alongside the “Temp °C” indicator. The display will now read the water temperature in degrees centigrade.

---

## Checking the Calibration

The NANOpure Bioresearch system is equipped with a manual electronics calibration check which allows you to verify meter accuracy.

1. Ensure that the reference/inlet cell toggle switch inside the top housing (Figure I, page 26) is in the reference position.
2. Ensure that the display is in the resistivity mode.
3. Depress and hold the control switch on until a reading is given.

If the electronics are within calibration, the reading will be between 9.7 and 10.3 megohm-cm for resistivity. If the reading is not between these values, call Barnstead|Thermolyne Customer Service for further assistance.

# Inlet Cell



## Note

To disrupt the flow of water to the NANOpure Bioresearch, remove the inlet valve by depressing the stainless steel thumb pad. The insert with the valve is easily removed. To resupply the NANOpure Bioresearch with water, push the insert into the coupling body and listen for the click that indicates full closure.



## Note

E550X1A includes  $\frac{1}{2}$ " NPS threaded bushing and an O-ring.

## Installation

The NANOpure Bioresearch system offers as an optional feature the ability to monitor the resistivity at the NANOpure Bioresearch inlet water. To install the inlet cell:

1. Disconnect feedwater supply. Open the Remote Dispenser valve to depressurize unit.
2. Remove the power cord. Remove the pump interlock plug or the pump protector. Remove the cover screws. Pull the top cover straight out and remove.
3. Install cell (part no. E550X1A) into the NANOpure Bioresearch inlet cell well (Figure I) by removing plug from top of inlet cell well.
4. Thread the cell cable including all lead wires through NANOpure Bioresearch system as shown in Figure I.

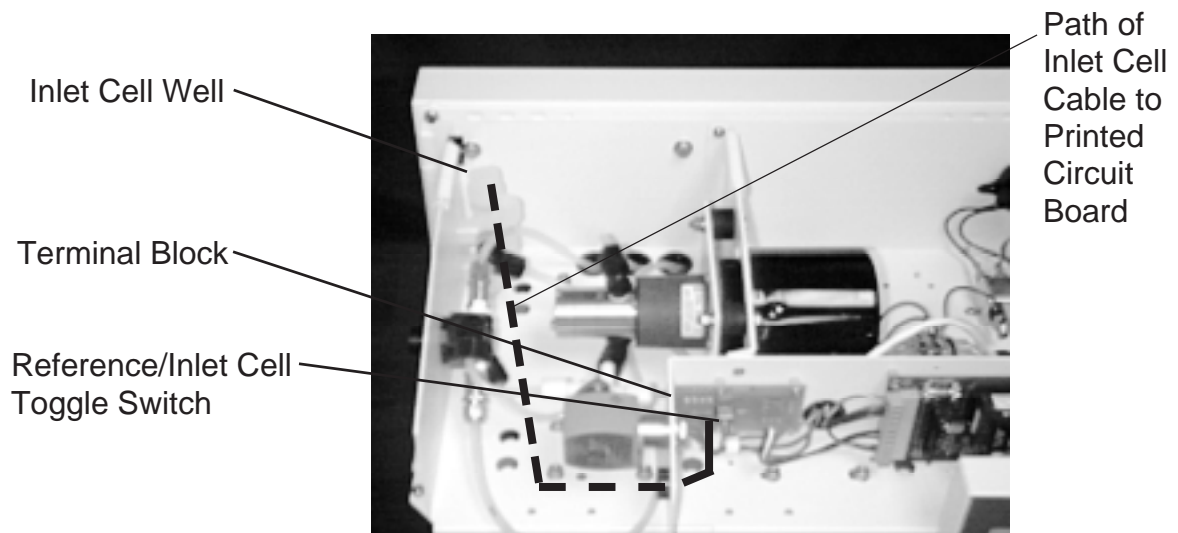


Figure I Inlet Cell Installation

5. Wire cell to inlet cell terminal (Figure I, page 26) according to wiring scheme shown in Table 3.
6. Ensure that the reference/inlet cell toggle switch is in the inlet cell position.
7. Reinstall the top cover, power cord and the pump interlock cable or jumper plug. Resupply feedwater to the NANOpure Bioresearch.
8. Operate normally.

---

## Inlet Cell Operation

To monitor inlet cell readings, select the proper mode and depress and hold the “control” switch. The reading shown on the display will be for the inlet cell and will revert to the primary cell when switch is released.

<b>Cell lead</b>	<b>Terminal block position</b>
White	Position 1
Red	Position 2
Black	Position 3

Table 3 Inlet Cell Wire Connections

---

# Remote Display Mounting

The NANOpure Bioresearch includes as a standard feature the ability to remotely mount the electronic control display up to 10 feet away by means of an umbilical cord included with each unit.

1. Disconnect from electrical service and remove the power cord from the NANOpure Bioresearch.
2. Remove the top cover of the unit by removing the top cover screws and the pump interlock cable or jumper plug and pull the cover straight out.
3. Locate the 10 ft. display interconnect cable. Remove the 6" cord from its connection points on the main circuit board and the display unit.
4. Remove the display unit from the mounting bracket by pulling the display straight up until pins on back line up with mounting holes then pull straight forward.
5. Attach the 10 foot cord to the connector on the main circuit board and route the interconnect cable through the NANOpure Bioresearch as shown in Figure J.

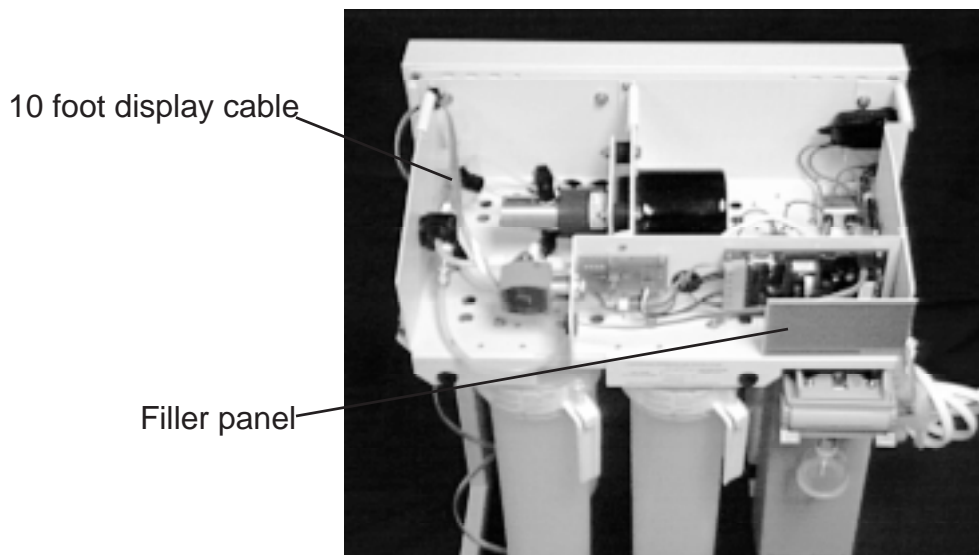


Figure J Remote Display Mounting

6. A bracket is supplied to permanently mount the display in a remote location. Attach the bracket to the desired location with user supplied screws. Attach the cable to the display and attach the display to the bracket by lining up the mounting pins on display with bracket grooves.
7. A filler panel is supplied to fill the void left when the display is removed. Prior to attaching the filler panel, move the mounting bracket forward by loosening and reattaching the mounting screws.
8. Remove the screws from filler panel and reassemble through the slots on the mounting bracket.
9. Reinstall the top cover and reattach the cover screws as well as the power cord, and the pump interlock cable or jumper plug.

---

# Remote Dispenser



## Note

Do not discard system flush housing after initial cartridge rinsing. Keep for future cartridge changes and sanitization procedures.

Each NANOpure Bioresearch system includes a Remote Dispenser unit. The Remote Dispenser is shipped with a system flush housing installed. This housing is to be used during cartridge rinsing and sanitization procedures. The dispenser incorporates an easy to use thumb wheel dispensing mechanism. This thumb wheel mechanism is designed to deliver a steady stream when the thumb wheel is completely forward; drop by drop when it is slightly forward of the center; and spray when it is back. When the thumb wheel is in the center, water will be in recirculation (no water out of dispenser).

# Installing Float or Pressure Switch

Accessories D0603, D0606 (float switches) and D2706 (pressure switch) are designed to protect the NANOpure Bioresearch pump by alerting the NANOpure Bioresearch of an inadequate feedwater condition so that the pump can be shut down. Use the following instructions for installation.

1. Disconnect from electrical service.
2. If using the D0603 or D0606 float switch, follow the installation instructions included with the unit for installation to tank.
3. If using the D2706 low pressure switch, install the PVC tee (supplied with D2706) into the incoming water line (Figure K). Screw the switch into the top of the tee, then connect the inlet tubing to NANOpure Bioresearch with the remaining opening. It is recommended that a customer supplied shutoff valve should be added ahead of the switch.
4. Route the cable from float or low pressure switch either above or below NANOpure Bioresearch cover (Figure K).

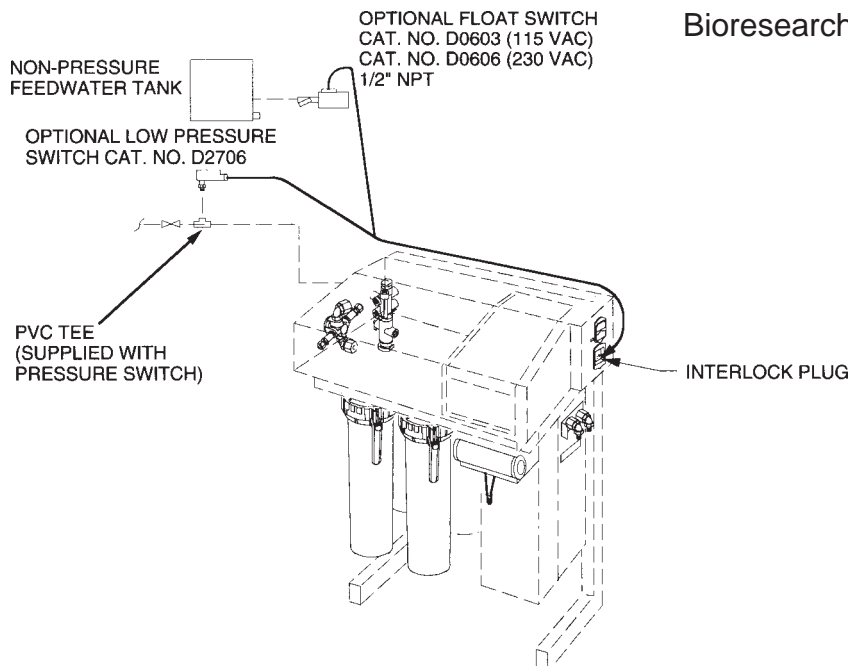


Figure K Pump Protector/Pressure Switch Installation

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## INSTALLING FLOAT OR PRESSURE SWITCH

5. Remove the jumper plug and save for future use.
6. Plug the cable into jumper plug outlet.
7. Reconnect the electrical cord.



---

# Maintenance and Servicing



## Warning

Disconnect from the power supply prior to maintenance and servicing.

Refer servicing to qualified personnel.



## Warning

Depressurize system prior to attempting to remove canisters.

---

## Replacing Cartridges

When the resistivity of the water drops below the desired level, change all of the cartridges together.

1. Disconnect from electrical service.
2. Open the Remote Dispenser valve and the Ultrafiltered Water Drawoff valve to depressurize the system. Close the valve.
3. Place a container under the cartridge canister to collect any spillage.
4. Carefully remove the canister from the head by depressing thumb lever and rotating the canister from right to left 1/4 turn. Pull cartridge from head and discard, drain the canister into a container.
5. Install and rinse new cartridges as explained in INITIAL OPERATION section.

---

## Replacing the Remote Dispenser 0.2 Micron Final Filter

It is recommended that the Remote Dispenser 0.2 micron Final Filter be replaced every 45 days, when there is an unacceptable bacteria passage or when flow decreases to less than one liter per minute. To replace the Remote Dispenser 0.2 micron Final Filter

1. Turn the unit off by depressing the ON/OFF/Standby button on the control panel until the display is blank.
2. Open Remote Dispenser valve and Ultrafiltered Water Drawoff valve to depressurize system.



**Note**

Use care when handling the new Remote Dispenser 0.2 Micron Final Filter assembly to prevent environmental contamination of filter.



**Note**

If a newly installed 0.2 micron filter clogs rapidly after installation, the NANOpure Bioresearch may need to be sanitized to remove bacterial contaminants. See **System Sanitization**.



**Note**

Use care when handling the new Ultrafiltered Water Drawoff 0.2 Micron Final Filter assembly to prevent environmental contamination of filter.

3. Remove the old Remote Dispenser 0.2 Micron Final Filter by pushing it towards open grooves on dispenser (Figure G, page 20).
4. Wet O-rings to allow new Remote Dispenser 0.2 Micron Final Filter to slide easily into place.
5. Install the new Remote Dispenser 0.2 Micron Final Filter into dispenser by inserting into grooves as shown in Figure G, page 20.
6. Rinse 6 to 10 liters of D.I. water to drain through filter.

---

## Replacing the Ultrafiltered Water Drawoff 0.2 Micron Final Filter

Replace the Ultrafiltered Water Drawoff 0.2 Micron Final Filter whenever any of the following conditions occur: every 30 days, the product water





**Caution**

Do not overtighten the Ultrafiltered Water Drawoff 0.2 Micron Final Filter assembly onto the Luer fitting or use excessive force in seating it. The filter and/or Luer fitting can be damaged by overtightening or excessive force.



**Note**

If a newly installed 0.2 micron filter clogs rapidly after installation, the NANOpure Bioresearch may need to be sanitized to remove bacterial contaminants. See **System Sanitization**.

flow is reduced or bacteria and/or pyrogen break through. The Ultrafiltered Water Drawoff 0.2 Micron Final Filter is shipped assembled with a bell. To replace the Ultrafiltered Water Drawoff 0.2 micron filter assembly:

1. Remove the old Ultrafiltered Water Drawoff 0.2 micron filter assembly by turning it counterclockwise until it is free from the Luer fitting.
2. Remove the new Ultrafiltered Water Drawoff 0.2 Micron Final Filter assembly from its bag and insert it into the Luer fitting. Gently turn it clockwise until it is fully seated in the Luer fitting.
3. Rinse at least 5 liters of water through the Ultrafiltered Water Drawoff 0.2 Micron Final Filter to drain prior to using the product water.

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## Replacing Fuses

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### Main Fuse Replacement

The “main fuse” is located in a fuse holder at the upper right side of the top housing. To access, remove top cover, squeeze the clip on the fuse holder and remove. Replace with a slow blow 2 ampere fuse for 230 VAC units and a slow blow 3 ampere fuse for 100 or 115 VAC units. The fuses are labeled. To reassemble, simply insert the fuse in the fuse holder and push the fuse holder until it snaps into place.



**Warning**

Replace fuses with those of the same type and rating.

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## Printed Circuit Fuse Replacement

The “printed circuit fuse” is located in a fuse holder on the front of the printed circuit board. Replace this device with the appropriate fuse as listed in the spare parts list.

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## System Sanitization

Frequency of cleaning is difficult to determine because of the wide variety of feedwater supplies which can be used, but the need for cleaning can be easily determined. Whenever cartridges are replaced, perform a sanitization procedure utilizing the D50223 sanitization cartridge, a new, easy-to-use sanitization cartridge.

1. Turn the unit off by depressing the ON/OFF/Standby button on the control panel until the display is blank. Disconnect the power from electrical service.
2. Open the Remote Dispenser and the Ultrafiltered Water Drawoff to depressurize the system prior to attempting to remove the canisters.
3. Remove the Remote Dispenser 0.2 Micron Final Filter and insert the empty flush housing. Remove the Ultrafiltered Water Drawoff 0.2 micron filter.
4. With the cartridges removed from the canisters, wash the inside of the canisters and the inside heads with soap or detergent, using a sponge or clean cloth. Rinse out the canisters and the heads with clean water several times to remove the detergent residues.



### Warning

Depressurize system prior to attempting to remove canisters.



**Caution**

Secure locking pin before operating. Pin must be fully engaged before operating.

Ensure O-ring is in place in the groove and wet O-ring prior to securing the canister on the head.



**Warning**

Avoid splashing disinfecting solutions on clothing or skin. Ensure all piping connections are tight to avoid chemical leakage. Always depressurize chemical lines before disassembly. Ensure adequate ventilation. Carefully follow manufacturer's safety instructions on labels of chemical containers and material safety data sheets.



**Note**

The pellet in the sanitization cartridge may not have completely dissolved. That does not constitute an incomplete sanitization. Do not reuse spent sanitization cartridge.

5. Remove the sanitization cartridge containing the chlorine pellet from the plastic bag and install onto head #1.
6. Install the four canisters onto the heads by depressing the thumb lever and rotating 1/4 turn to the right.
7. Place a container under the ultrafiltered water drawoff to collect the sanitization solution. Open both the Ultrafiltered Water Drawoff and the Remote Dispenser. Turn on power to the unit.
8. When the sanitization solution begins to exit the Ultrafiltered Water Drawoff, close the Ultrafiltered Water Drawoff. Let the solution exit the Remote Dispenser for 30 seconds in the stream mode. After 30 seconds, change to the spray mode and allow the unit to spray the solution for an additional 30 seconds.
9. Close the Remote Dispenser and allow the unit to remain in recirculation for 30-45 minutes. During recirculation, a small amount of sanitization solution will exit the NANOpure Bioresearch constant bleed line (if not closed off).
10. After 30-45 minutes, open the Ultrafiltered Water Drawoff and the Remote Dispenser. Allow the sanitizing solution to exit the unit. Leave these valves open for approximately 5 minutes.
11. Turn the unit off by depressing the ON/OFF/Standby button on the control panel until the display is blank.



### Warning

Depressurize system prior to attempting to remove canisters.



### Caution

Ensure O-ring is in place in the groove and wet O-ring prior to securing the canister on the head.

Secure locking pin before operating. Pin must be fully engaged before operating.

12. Allow the system to depressurize. Carefully remove all canisters from the system by depressing the thumb lever and rotating 1/4 turn to your left. Discard the remaining solutions within the canister. Do not rinse the canisters.
13. Install fresh cartridges in the system as indicated in **Initial Operation** under "Replacing Cartridges." Do not reinstall used cartridges (they may contain large amounts of bacteria).
14. Press the control panel "on/off" button to start the pump and fill the system. Run water through the system to drain any remaining disinfecting solution. A flush of 10 liters is sufficient.
15. Close the Remote Dispenser valve, and allow the resistivity of the water to rise above the "set point" setting on the resistivity meter. Install and rinse a new Remote Dispenser 0.2 Micron Final Filter as indicated under "Replacing The Remote Dispenser 0.2 Micron Final Filter."
16. Install and rinse a new Ultrafiltered Water Drawoff 0.2 micron filter as indicated under Replacing the Ultrafiltered Water Drawoff 0.2 Micron Filter.

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## Cleaning the Resistivity Cell

Disconnect from electrical service. Disconnect inlet valve and tubing and depressurize system. Remove top cover screws and slide top cover toward you. Remove the ultrafilter housing by pushing up on the clip located at the bottom of the

**Warning**

Avoid splashing disinfecting solutions on clothing or skin. Ensure all piping connections are tight to avoid chemical leakage. Always depressurize chemical lines before disassembly. Ensure adequate ventilation. Carefully follow manufacturer's safety instructions on labels of chemical containers and material safety data sheets.

housing and pulling the housing straight forward. Disconnect tubing at outlet cell well. Also, disconnect and remove tubing connected to ultrafilter flush valve assembly. Carefully remove the power supply microprocessor circuit board. Disconnect three cell leads at the printed circuit board connector and gently pull cable down through grommet toward the cell. Unscrew and remove the cell. Carefully remove O-ring to clean cell.

Wash the cell in a mild detergent solution or a 10% inorganic acid solution (follow acid manufacturers recommended handling procedure). This may be done in an ultrasonic cleaner or with a soft brush. The cell must be thoroughly rinsed in deionized or distilled water following the detergent or acid cleaning.

After cleaning, check O-ring on cell, replace if necessary. Reinstall cell into cell well and hand tighten. Reroute cable up through housing and reconnect leads. Refer to wiring diagram for proper lead terminal position. Replace power supply microprocessor circuit board and ultrafilter housing. Reconnect tubing to outlet cell well and flush valve assembly. Replace top cover.

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## Shutdown

If NANOpure Bioresearch is to be shut down for an extended period of time, the system should be completely drained and the cartridges, the ultrafilter and final filters removed to prevent the growth of bacteria.

If the system has remained inactive and full of water, then the system should be drained, sanitized and new cartridges and final filters installed prior to use.

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## Stopping the Constant Bleed

To stop the constant bleed of the NANOpure Bioresearch system, make the following modification:

1. Disconnect the power to the system and remove the power cord and pump interlock cable or jumper plug located on the right hand portion of the NANOpure Bioresearch.
2. Remove the top cover of the unit by removing the top cover lock screws and pulling the top cover straight out.
3. Remove the ultrafilter housing by pushing up on the clip located at the bottom of the housing and pulling the housing straight forward.
4. Close the valve attached to the elbow located at the center of the NANOpure Bioresearch cabinet.
5. Reattach the ultrafilter housing to the NANOpure Bioresearch cabinet.
6. Replace top cover and secure cover screws.
7. Reconnect power cord and reinstall pump interlock plug or pump protector.



# Troubleshooting Guide

Problem	Possible Causes	Solutions
<p>NANOpure Bioresearch completely inactive (pump not operating, control panel not lit, etc.).</p>	<p>No electrical power to NANOpure Bioresearch.</p> <p>Main fuse blown.</p>	<p>Ensure that the NANOpure Bioresearch power cord is connected to a live power source and completely plugged into electrical outlet</p> <p>Replace the main fuse as indicated in the REPLACING FUSES section (page 22).</p>
<p>Pump runs, but no display (no digital display).</p>	<p>Printed circuit fuse blown.</p> <p>Printed circuit board inter-connect cable disconnected.</p>	<p>Replace the printed circuit fuse as indicated in the REPLACING FUSES section (page 22).</p> <p>Reconnect cable.</p>
<p>Reduced or no product flow from the Remote Dispenser.</p>	<p>0.2 micron final filter clogged.</p>	<p>Replace the Final Filter as indicated in the REPLACING THE REMOTE DISPENSER 0.2 MICRON FINAL FILTER section (page 21).</p>
<p>Leaking canisters.</p>	<p>Large o-ring in canister is missing, damaged or not sealed properly.</p> <p>Loose Head/Canister fit.</p>	<p>Replace or position correctly.</p> <p>Tighten handle ring.</p>
<p>Pump does not run. Display light.</p>	<p>Pump protector (in reservoir), feedwater line pressure switch or jumper plug not connected to pump interlock.</p>	<p>Connect the pump protector or pressure switch cord to the receptacle located inside top cover. If a Barnstead pressure switch is installed in the feedwater line, the pump will not start until the line pressure rises to 0.35 kg/cm<sup>2</sup> (5 psi).</p> <p>Open the feedwater line shut off valve or fill the feedwater reservoir.</p> <p>Make sure the jumper plug is installed.</p>

## TROUBLESHOOTING GUIDE

Problem	Possible Causes	Solutions
Recirculated water will not rinse up to desired purity level.	<p>Exhausted cartridge.</p> <p>Cartridges out of order.</p> <p>Cartridges upside down.</p> <p>Feed water bypassing cartridge(s).</p> <p>Check valve malfunctioning.</p>	<p>Replace all the cartridges as indicated in the REPLACING CARTRIDGES section (page 21).</p> <p>Install the cartridges in the proper order as indicated in the INITIAL OPERATION section (page 13).</p> <p>Install the cartridges right side up as indicated In the INITIAL OPERATION section (page 13).</p> <p>Be sure that small O-ring inside head is not damaged and is properly installed.</p> <p>Remove tubing from check valve; turn unit on. If water leaks from end of check valve, wash to remove any particulates.</p>
Display reads "Err" when checking resistivity.	<p>Resistivity cell disconnected or wired improperly.</p> <p>Air in system.</p> <p>System electronics or cell out of calibration.</p>	<p>Check resistivity cell wiring.</p> <p>Purge air from system by opening Remote Dispenser and/or Ultrafiltered Water Drawoff.</p> <p>Check resistivity of reference cell. If resistivity displayed is not between 9.7 and 10.3 electronics need recalibration. If resistivity reading is proper, clean cell and reinstall. If problem persists, replace cell.</p>
No constant reject out of Ultrafilter reject.	Blocked reject flow device.	Remove flow restrictive device and back flush.
Display reads E_A.	System electronics failure.	Replace main PC board.

Problem	Possible Causes	Solutions
<p>Short cartridge life.</p>	<p>Cartridges being used are beyond expiration date.</p> <p>Change in feedwater characteristics.</p>	<p>Check the expiration date. Cartridges begin to lose capacity after being stored two years from the date of manufacture. Replace the cartridges with unexpired ones.</p> <p>If a Barnstead ROpure is the feedwater source, check that the membrane is functioning properly.</p> <p>If a Barnstead Still is the feedwater source, ensure that the distillate temperature to the NANOpure Bioresearch does not exceed 49°C (120°F).</p> <p>If tap water is the feedwater source, check the quality of the water. In some cases the quality of the water will change with the seasons. Changing the source (city water to well water, or well water to city water) will result in a water quality change.</p> <p>If feedwater is from a central water purification system, verify water quality and proper functioning of the system.</p>

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# Replacement Parts Listing

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## Recommended Spares

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### Consumables

Consumable parts are those required to support the day-to-day operation of this equipment.

Barnstead |Thermolyne establishes two types of consumables; those items that must periodically be replaced to maintain performance (filters, resin cartridges, etc.) and other items of limited life (indicator lights, fuses, etc.) that you can expect to replace on a more or less random basis. Where practical, Barnstead |Thermolyne recommends the frequency of replacement, or provides information on life expectancy from which you may calculate a replacement interval compatible with your usage pattern.

The replacement of consumable parts is discussed in the Maintenance and Servicing section to assist you in accomplishing your own service.

Consumables may be ordered separately and in some cases, as an expendables kit. Check with your Barnstead/Thermolyne representative for additional information on the expendables kit.

<b>Description</b>	<b>Catalog No.</b>	<b>Recommended Quantity</b>
Ultrafilter Water Drawoff Final Filter	FL703X2	2
Remote Dispenser Final Filter	D3751	2
Pretreatment Cartridge	D0836	1
Ultrapure SG Cartridge	D5027	2
OrganicFree Cartridge	D5021	1
3.0 Ampere Slow Blow Fuse, 115 Volt	04455	1
2.0 Ampere Slow Blow Fuse, 230 Volt	04420	1
Teflon <sup>®</sup> Tape, Roll	06078	1
Printed Circuit Board Fuse, 100, 120V	FZX43	1
Printed Circuit Board Fuse, 240V	FZX48	1
Sanitization Cartridges (pkg of 3)	D50223	1

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## General Maintenance Parts

General maintenance parts are defined as laboratory level repair parts which do not require great expertise or special tools for installation. Barnstead |Thermolyne recommends that you stock the general maintenance parts as an aid to ensuring the continued operation of this equipment.

Description	Catalog No.	Recommended Quantity
O-ring (between heads)	06440	2
O-ring (head-to-canister)	GSX28	4
O-ring (head-to-cartridge)	GSX27	4
Fastener Pin	FP550X1	2
Connector (head to head)	BR550X4	1
Adapter (head end)	BR550X2	1
Check Valve	02214	1
1/4" O.D. x 1/4" NPT Connector	05931	1
Quick Disconnect Inlet Valve		
Body 1/4 NPT	CUX8	1
Insert 3/8 tube	CUX9	1
Flush Valve	02273	1
Restrictor	PMX99	1

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## Safety Stock

For critical applications where performance with minimum downtime is required, Barnstead |Thermolyne recommends that you maintain a local stock of those parts listed in the General Maintenance parts and Safety Stock sections.

Description	Catalog No.	Recommended Quantity
Resistivity Display	SW550X1A	1
Main PC Board 100 & 120 VAC	PC550X1A	1
Main PC Board 240 VAC	PC747X2A	1
Recirculation Pump & Motor 100 & 120 VAC	PU733X1A	1
Recirculation Pump & Motor 240 VAC	PU733X2A	1
Cartridge Canister Head	BK550X2	1
Cartridge Canister Handle Ring	HN550X1A	1
Cartridge Canister	CS550X1	1
Pressure Regulator	02280	1
Resistivity Cell	E550X1A	1
Inlet Solenoid Valve		
100V and 120V	RY747X1A	1
240V	RY747X2A	1

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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|Thermolyne 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 319-556-2241 or 800-553-0039.

Prior to returning any materials to Barnstead|Thermolyne Corp., please contact our Customer Service Department for a "Return Goods Authorization" number (RGA). Material returned without a RGA number will be refused.

# Exploded View 100 & 120 Volt Models

Key	Part #	Description
1	DL687X1A	Top cover
2	05766	1/4" OD x 1/4 NPT Elbow
3	PU733X1A	Pump assembly, 100/120V
4	CRX72	Cord set 100/120V
5	04247	Pump interlock plug
6	CUX8	Quick Disconnect
7	CUX9	Quick Disconnect Insert
8	PC550X3A	PC board, reference call
9	SW550X1A	Display
10	WH550X2	Interconnect cable 10' (WH550X1 6")
11	PC550X1A	Main PC board, 100/120V
12	02280	Pressure reducing valve
13	02214	Stainless steel check valve
14	BR550X2	Head end fitting
15	06440	O-ring between heads
16	FP550X1	Head connector pins
17	BR550X4	Head connector
18	BK550X2	Head
19	GSX27	Head o-ring
20	GSX28	Head to canister o-ring
21	HN550X1A	Canister handle ring
22	CS550X1	Canister
23	CV747X1A	Auxiliary Drawoff
24	PM703X3	Luer Connector
25	DL630X18	Ultrafilter housing
26	E550X1A	Resistivity cell
27	CS895X3	Remote Dispenser
30	GSX29	O-ring
31	D4740	Floor stand
32	CEX172	Power Entry Module
33	CAX44	Filter, Power Supply
34	RY747X1A	100/120V Solenoid Valve
	Not Shown	Transformer
	TN687X1A	Ultrafilter Flush Valve
	02273	Constant Bleed Restrictor
	PMX99	Filter
	FL703X2	Filter

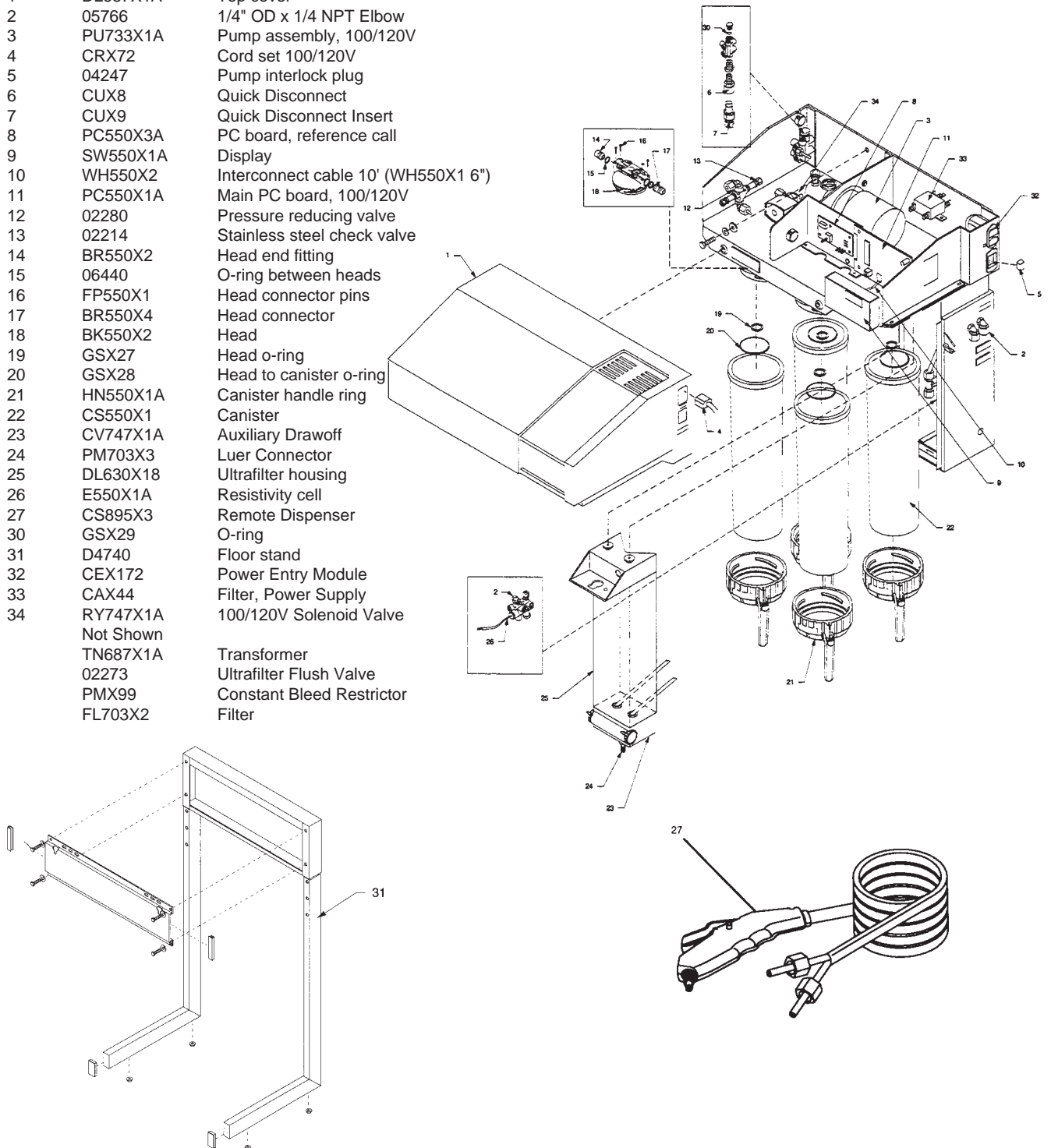
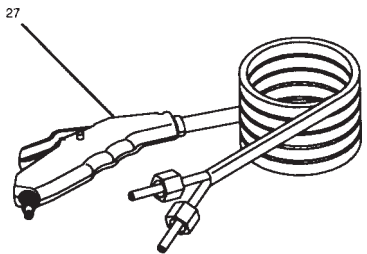
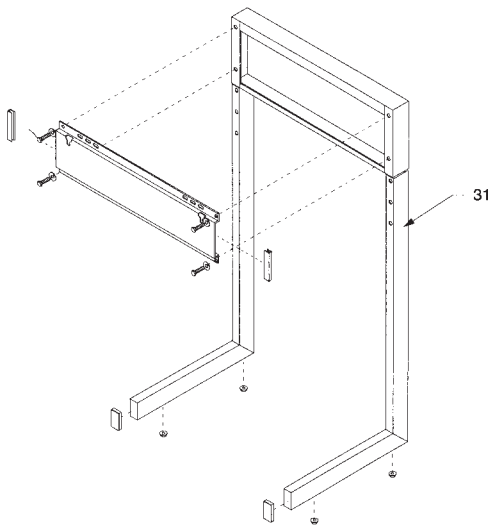
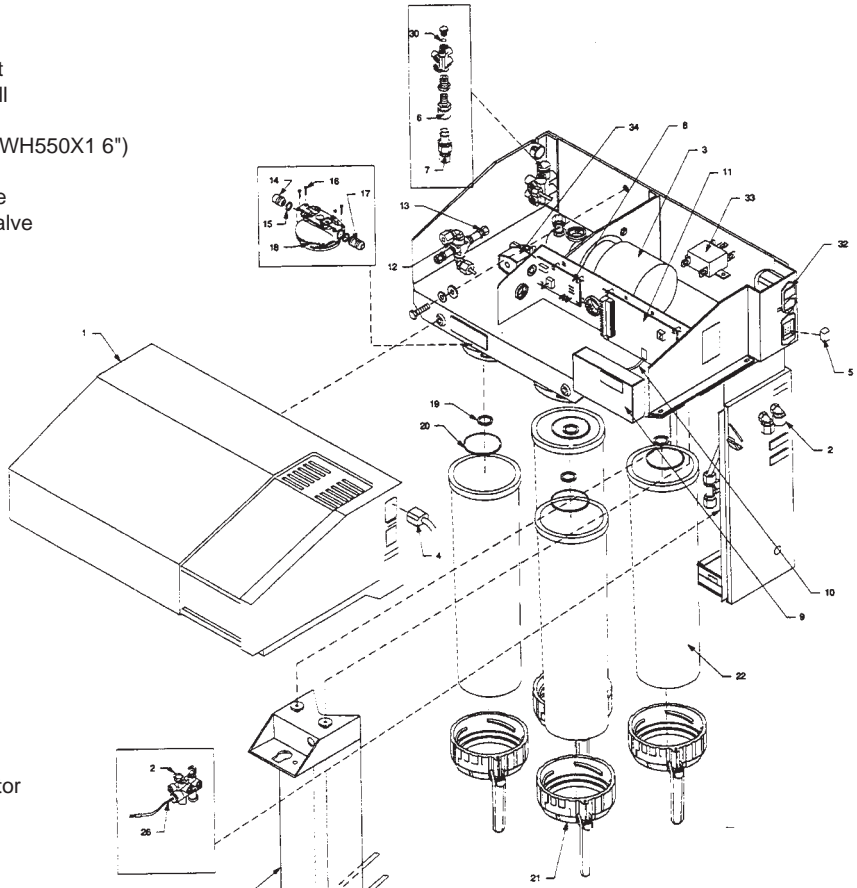


Figure L Exploded View

# Exploded View 240 Volt Models

Key	Part #	Description
1	DL687X1A	Top cover
2	05766	1/4" OD x 1/4 NPT Elbow
3	PU733X2A	Pump assembly, 240V
4	CRX70	Cord set 240V
5	04247	Pump interlock plug
6	CUX8	Quick Disconnect
7	CUX9	Quick Disconnect Insert
8	PC550X3A	PC board, reference call
9	SW550X1A	Display
10	WH550X2	Interconnect cable 10' (WH550X1 6")
11	PC747X2A	Main PC board, 240V
12	02280	Pressure reducing valve
13	02214	Stainless steel check valve
14	BR550X2	Head end fitting
15	06440	O-ring between heads
16	FP550X1	Head connector pins
17	BR550X4	Head connector
18	BK550X2	Head
19	GSX27	Head o-ring
20	GSX28	Head to canister o-ring
21	HN550X1A	Canister handle ring
22	CS550X1	Canister
23	CV747X1A	Auxiliary Drawoff
24	PM703X3	Luer Connector
25	DL630X18	Ultrafilter housing
26	E550X1A	Resistivity cell
27	CS895X3	Remote Dispenser
30	GSX29	O-ring
31	D4740	Floor stand
32	CEX172	Power Entry Module
33	CAX44	Filter, Power Supply
34	RY7472A	Solenoid Valve
	Not Shown	
	02273	Ultrafilter Flush Valve
	PMX99	Constant Bleed Restrictor
	FL703X2	Filter





# Wiring Diagrams

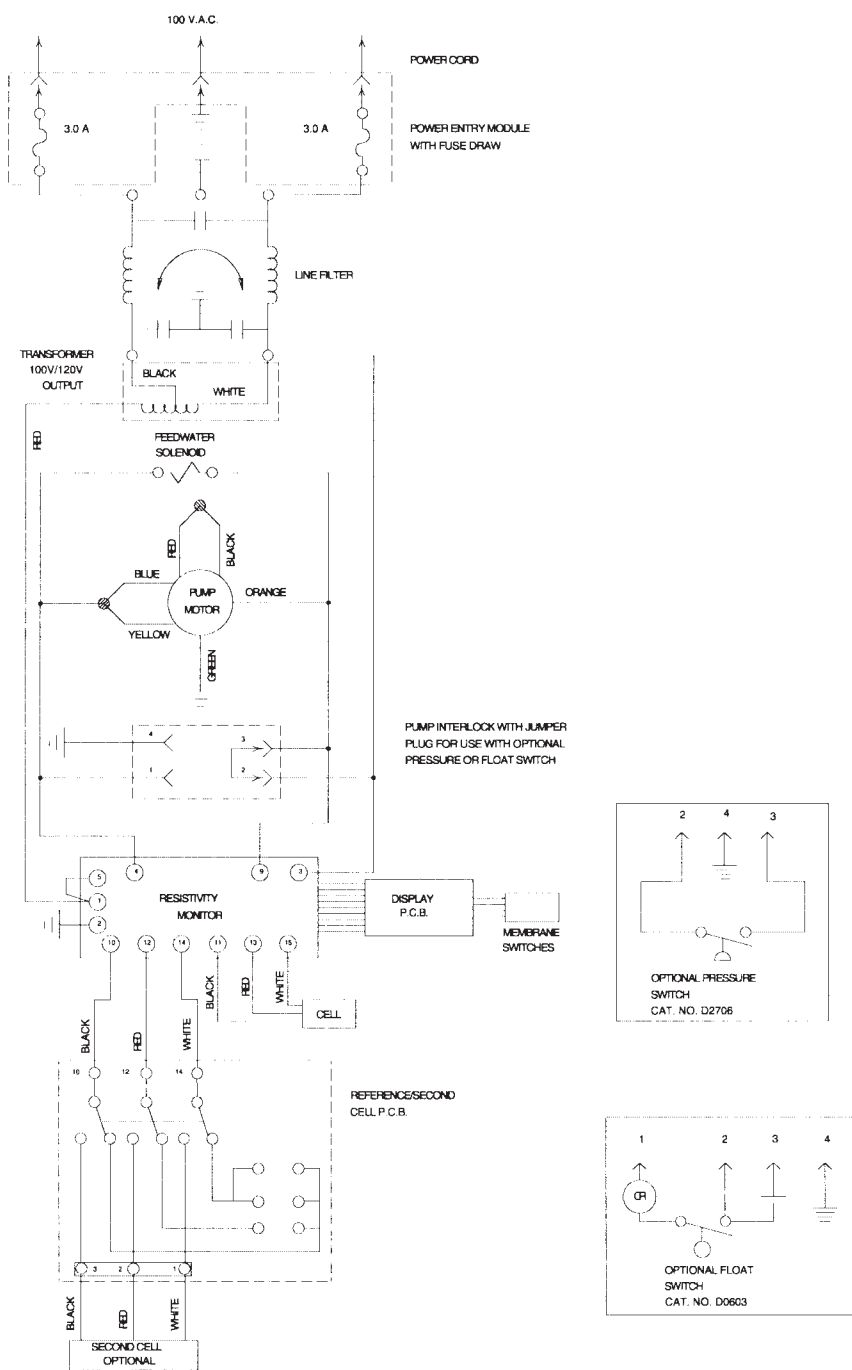


Figure M Wiring Diagram for 100V Model

# WIRING DIAGRAMS

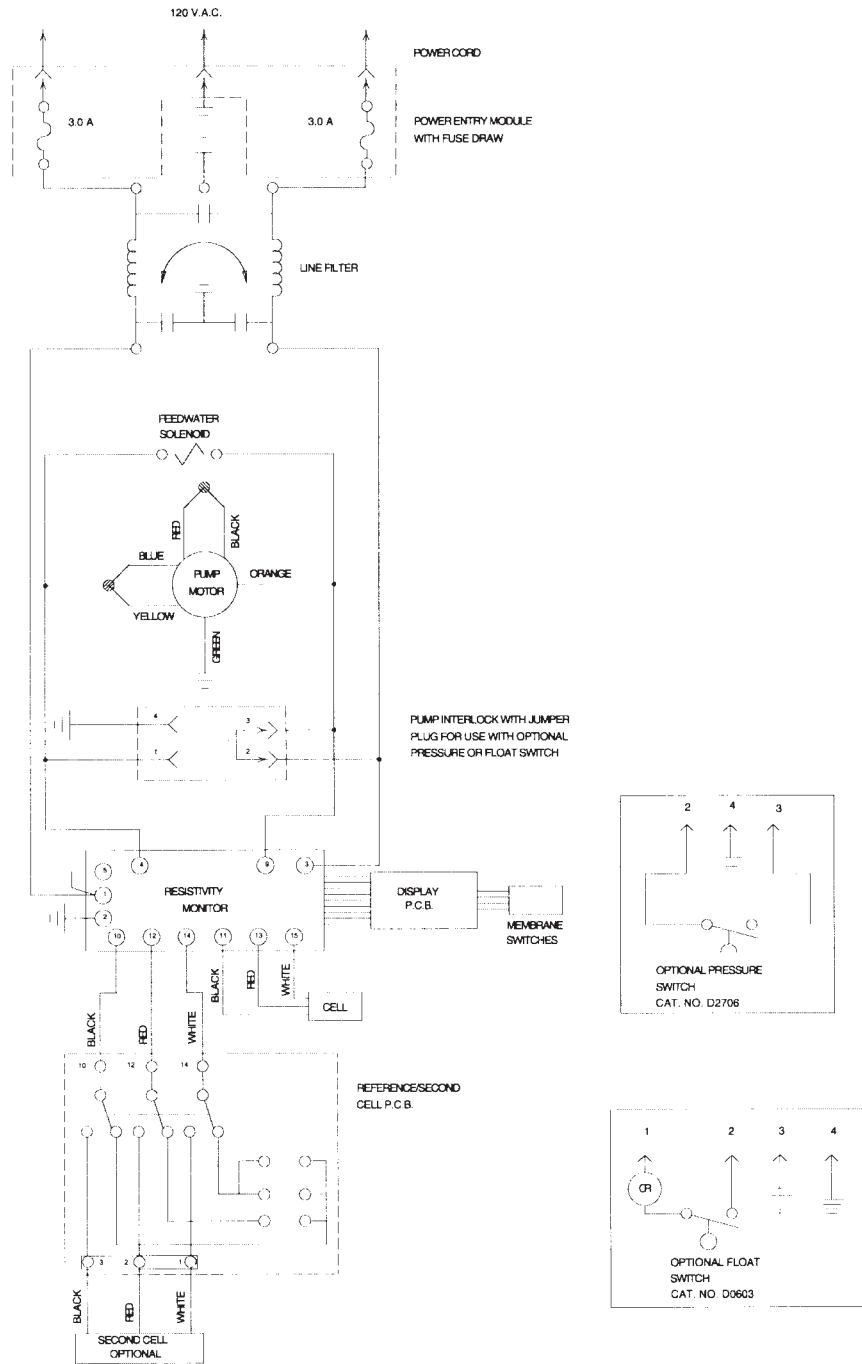


Figure N Wiring Diagram for 120V Model

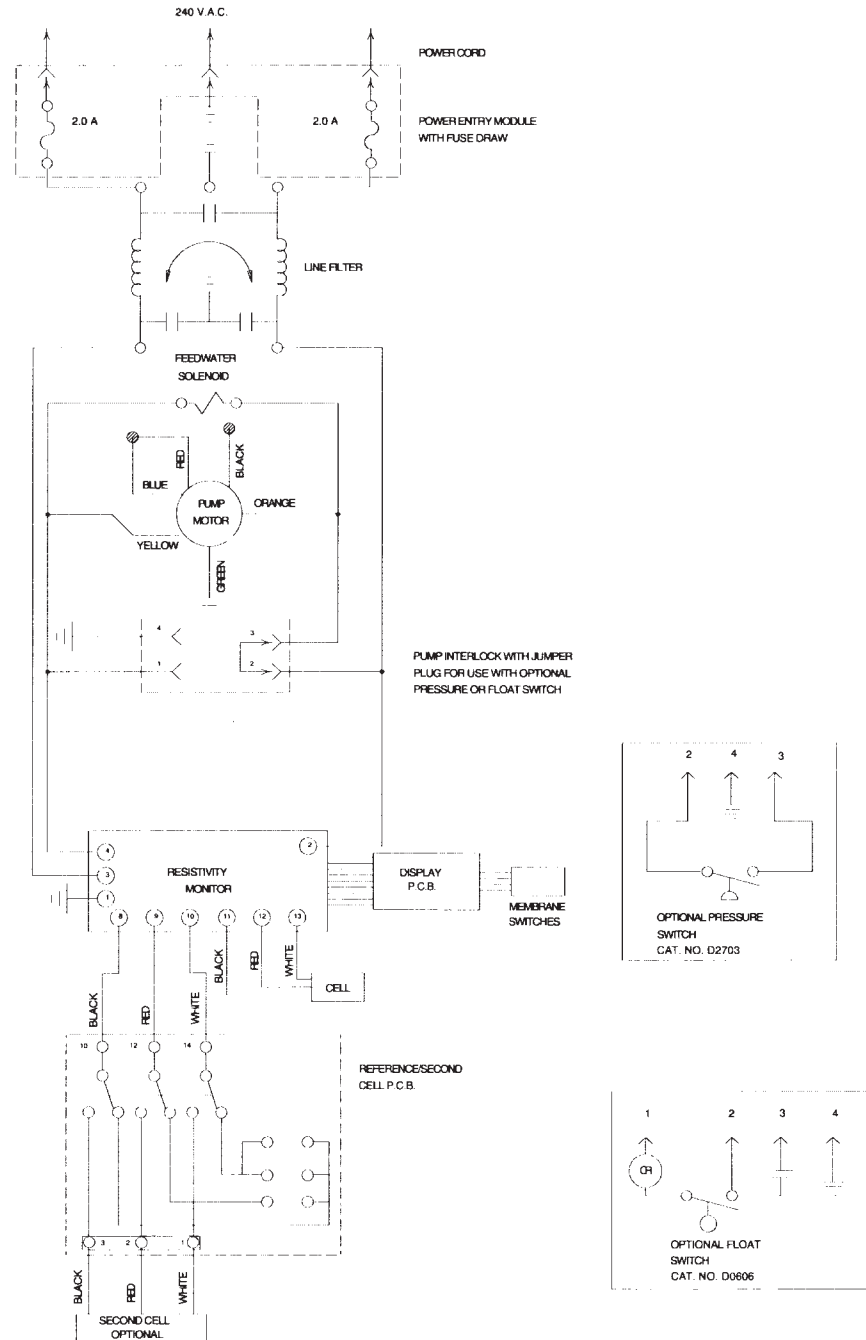


Figure O Wiring Diagram for 230V Model

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# One Year Limited Warranty

**Barnstead|Thermolyne Corporation** warrants that if a product manufactured by **Barnstead|Thermolyne** and sold by it within the continental United States or Canada proves to be defective in material or construction, it will provide you, without charge, for a period of ninety (90) days, the labor, and a period of one (1) year, the parts, necessary to remedy any such defect. Outside the continental United States and Canada, the warranty provides, for one (1) year, the parts necessary to remedy any such defect. The warranty period shall commence either six (6) months following the date the product is sold by **Barnstead|Thermolyne** or on the date it is purchased by the original retail consumer, whichever date occurs first.

All warranty inspections and repairs must be performed by and parts obtained from an authorized **Barnstead|Thermolyne** dealer or **Barnstead|Thermolyne** (at its own discretion). Heating elements, however, because of their susceptibility to overheating and contamination, must be returned to our factory, and if, upon inspection, it is concluded that failure is not due to excessive high temperature or contamination, warranty replacement will be provided by **Barnstead|Thermolyne**. The name of the authorized **Barnstead|Thermolyne** dealer nearest you may be obtained by calling 1-800-446-6060 or writing to:

**Barnstead|Thermolyne**  
P.O. Box 797  
2555 Kerper Boulevard  
Dubuque, IA 52004-0797  
USA  
FAX: (319) 589-0516

E-MAIL ADDRESS: [mkt@barnsteadthermolyne.com](mailto:mkt@barnsteadthermolyne.com)

**Barnstead|Thermolyne's** sole obligation with respect to its product shall be to repair or (at its own discretion) replace the product. Under no circumstances shall it be liable for incidental or consequential damage.

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