

**BARNSTEAD E-pure®**  
OPERATION MANUAL  
AND PARTS LIST  
*SERIES 1090*

**3 Module E-pure**  
D4631 120 VAC  
D4632-33 230 VAC  
D4633 100 VAC

**4 Module E-pure**  
D4641 120 VAC  
D4642-33 230 VAC  
D4643 100 VAC

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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.

## **Safety Information**

Your Barnstead E-pure water purification unit has been designed with function, reliability, and safety in mind. It is the user's responsibility to install it in conformance with local electrical codes. For safe operation, please pay attention to the alert boxes throughout the manual.

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# Warnings

## Warning

Water Purification technology employs one or more of the following: Chemicals, electrical devices, mercury vapor lamps, steam and heated vessels. Care should be taken when installing, operating or servicing Barnstead Products. Listed below are the specific safety notes pertinent to the Barnstead E-Pure.

### **To avoid electrical shock, always:**

1. Use a properly grounded electrical outlet of correct voltage and current handling capacity.
2. Ensure that the equipment is connected to electrical service according to local and national electrical codes. Failure to properly connect may create a fire or shock hazard.
3. Do not mount E-pure 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. For continued protection against possible hazard, replace fuses with same type and rating of fuse.
5. Disconnect power supply to equipment before 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. Avoid splashing disinfectant solution on clothing or skin. Ensure all piping connections are tight to avoid leakage of chemicals. Always depressurize chemical lines before disassembly. Ensure adequate ventilation. Follow carefully the manufacturer's safety instructions on labels of chemical containers and material data sheets.
4. Depressurize the system prior to attempting to remove the canisters.
5. Refer servicing to qualified personnel.

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# General Specifications

## General Specifications

### Feedwater Requirements

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

### Product Water

Water Quality (1)	Type 1 Reagent Grade Water (RGW) per ASTM-D1193, NCCLS-ASC-3, and CAP.
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### Flow rate (Maximum) (2)

Type 1 RGW-Filtered	Pressure feed (40 psig inlet min.)	60 Hz	2.5 lpm
		50 Hz	2.0 lpm
	Gravity feed (12" H <sub>2</sub> O)	60 Hz	1.5 lpm
		50 Hz	1.3 lpm

(1) E-pure will produce Type I water using pretreated water (RO, DI, Distilled) or high quality tap water, provided feedwater suitability is qualified laboratory analysis and recommended faucet flow rate is maintained.

(2) Flow rates are dependent on operating conditions and filter usage. Flow rates will also depend on filter compaction.

### Overall Installed Dimensions

#### 3-module

Width	30"	(762 mm)
Depth	7-1/2"	(191 mm)
Height	26"	(660 mm)

#### 4-module

Width	36-1/2"	(927 mm)
Depth	7-1/2"	(191 mm)
Height	26"	

### Operating Weight

3-module	27.2 kg (54 lbs.)
4-module	32.7 kg (67 lbs.)

Mounting	Wall mount with brackets provided.
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## GENERAL SPECIFICATIONS

### Plumbing Connections

Feedwater Inlet            3/8" OD tubing or 1/4" NPTF

Product Water Outlet  
For Type I Water            1/2" OD hose barb

### Electrical Requirements

#### 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                        0.01-18.3 megohm-cm [temperature compensated to 25°C (77°F.)]

Accuracy                    ± 3% FS

Cell                          0.1 constant

### Environmental Conditions

Operating: 17°C - 27°C; 20% to 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: 2,000 meters.

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

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# Declaration of Conformity

## Declaration of Conformity (-33 models only)

Barnstead|Thermolyne hereby declares under its sole responsibility that this product conforms with the technical requirements of the following standards:

EMC: EN 50081-1 Generic Emission Standard; EN 50082-1 Generic Immunity Standard;

Safety: IEC 1010-1-92 Safety requirements for electrical equipment for measurement, control, and laboratory use; Part I: General Requirements

per the provisions of the Electromagnetic Compatibility Directive 89/336/EEC, as amended by 92/31/EEC and 93/68/EEC, and per the provisions of the Low Voltage Directive 73/23/EEC, as amended by 93/68/EEC.

The authorized representative located within the European Community is:

European Manager  
Barnstead|Thermolyne  
Saarbrückener Str. 248  
D-38116 Braunschweig  
Germany

Copies of the Declaration of Conformity are available upon request.

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# Introduction

## Introduction

It is the user's responsibility to read and to understand the contents of this manual prior to installation and use of this equipment.

The manual contains the information you will need to install, operate and maintain the E-pure cartridge deionization system manufactured by Barnstead/Thermolyne Corporation.

The E-pure is designed to produce Type 1 reagent grade water equal to or exceeding standards established by ASTM, CAP and NCCLS.

Careful attention to the following instructions will assure that the E-pure runs properly and produces water to specification.

## General Usage

Do not use this product for anything other than its intended usage.

## Unpacking Instructions

Unpack the E-pure carefully. Ensure that all components are removed prior to discarding packaging. The wall bracket can be removed and used as a mounting template. Additional parts included with your unit, but not attached to the unit are as follows: 1 - TU550X5 Tubing; 1 - 03039 Adapter, placed on tubing and 3 or 4 - GSX28 O-rings.



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# Precautions Before Installation

## Precautions Before Installation

The E-pure deionization system can be used on pretreated or high quality tap water. Some municipal tap water supplies contain a very high concentration of suspended particles, colloids, and dissolved organic and inorganic materials that should be removed by pretreatment before the water is processed by the E-pure. The 4-module unit is typically used with tap water. The 3-module unit is typically used with water pretreated by reverse osmosis, distillation or deionization. If you plan to use a tap water feed for your E-pure, Barnstead encourages the use of our water analysis service to verify feedwater suitability. A sample collection kit may be obtained by contacting Barnstead/Thermolyne or your preferred laboratory supply dealer.

The E-pure requires expendable pretreatment and deionization cartridges and final filters which are not supplied with the unit and must be purchased separately. These expendables are available as individual components or in Expendable Kits. See Table 2 on page 12 for kit listings.

Your E-pure 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.

On 100 VAC, 115 VAC and 230 VAC models a power cord is provided with a plug to be connected to a standard grounded electrical outlet. The power cord on E-pure is color coded to CEE\* specifications. (Table 1)

**Table 1. POWER CORD COLOR CODE**

<b>CEE* Color Coding</b>	<b>North American Standard Color Coding</b>	
<b>Function</b>		
Light Blue	White	N - Neutral
Brown	Black	L - Live
Green/Yellow	Green or Green Yellow	E - Earth or Ground

*\*International Commission on Rules for the Approval of Electrical Equipment*

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# Mounting and Utility



## WARNING

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



## WARNING

Ensure that the equipment is connected to electrical service according to local and national electrical codes. Failure to properly connect may create a fire or shock hazard.



## 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.



## CAUTION

Do not connect unit to electrical service until instructed to do so.



## CAUTION

Wall composition, condition 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 145 pounds. Inadequate support and/or fastener 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.

## Mounting and Utility

Screws and fasteners required for wall mounting are not supplied with the unit. The recommended dimensions for mounting hardware to support your E-pure are:

- Body diameter - 1/4" maximum
- Head diameter - 3/8" minimum
- Length - 1" typical

The E-pure comes completely assembled. The only requirements are to secure the unit to the wall and have a source of feedwater and electrical service nearby.

The E-pure comes complete with a 6 (six) foot power cord that must be plugged into a suitable outlet. (See specification plate for electrical requirements).

## Mounting the E-pure

The E-pure must be mounted at a level where there can be easy access to controls and valves and where the digital display can be read.

- A. Remove the wall bracket from the unit by removing the two screws located at the left and right hand bottom portion of the wall bracket. (See Figure E for location)
- B. Secure the wall bracket to the wall using suitable fasteners.
- C. Carefully remove the canisters from the heads by depressing the thumb lever and rotating 1/4 turn from right to left.
- D. Mount the E-pure on the wall bracket by lifting unit and fitting mounting pins securely on to the corresponding holes on the bracket. Replace the two screws that were removed in Step A.
- E. 10 feet of 3/8" OD tubing and a 3/8" OD x 1/4" NPT tubing adapter is supplied with your unit for feed water connections.
- F. Wrap 1-1/2 - 2 turns Teflon® tape to 3/8" OD x 1/4" NPT adapter and secure to feedwater piping.
- G. Secure tubing to E-pure feedwater connection. (See tubing connector installation Figure A.)

## Tubing Connector Installation

- A. Completely disassemble the fitting. Refer to Figure A to familiarize yourself with the names of the component parts.
- B. Make sure the tubing is cut off reasonably square and



**CAUTION**

It does not require much force to effect a water tight seal. Over tightening of the adapter will create damage and subsequent leakage.



**NOTE**

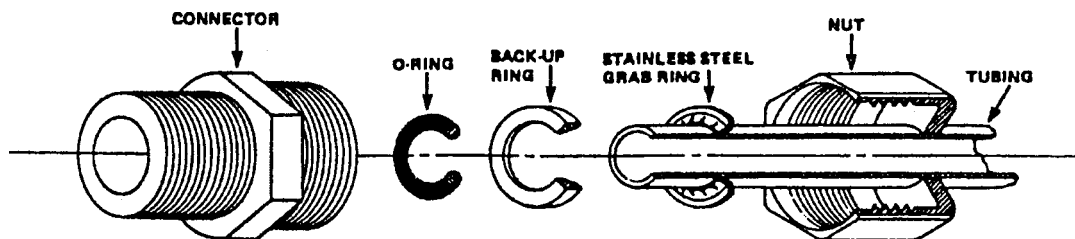
It is recommended that the customer supply a feedwater shut off valve to interrupt water to the unit when cartridge replacement is necessary.



**CAUTION**

Do not tighten tube fitting hex nut with a wrench. Tight connections can be made by hand.

- that no plastic burrs or ridges are present.
- C. Place the grab ring and back up ring in the hex nut in the order and orientation shown in Figure A. Thread the nut onto the connector. DO NOT use the O - ring at this time.
  - D. Push the tubing through the nut until it bottoms out in the connector.
  - E. 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.
  - F. Install the hex nut on the connector and hand tighten.
  - G. Repeat above steps when securing tubing to the E-pure.



**Figure A. Typical Polypropylene Tubing Connector Installation**

# Operation



## NOTE

Because of the fragile nature of the macroreticular resin used in the D0835 and D0836 Pretreatment Cartridges, it is possible that shipment may have caused fracturing of some of the resin particles. Resin fracturing will not degrade cartridge performance. However, it may reduce system performance as evidenced by premature clogging of the Final Filter. To insure optimum system performance and to prevent premature filter clogging, it is recommended that the D0835 and D0836 Pretreatment Cartridge be rinsed to remove any fine particles. Install only the Pretreatment Cartridge in the first canister and run water to drain for ten minutes.



## NOTE

Check to be sure O-rings are in place in the canister and inside the head and are not damaged prior to installation. Do not install the remaining cartridges and final filter at this time.

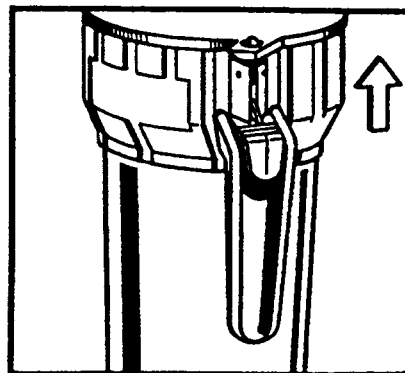
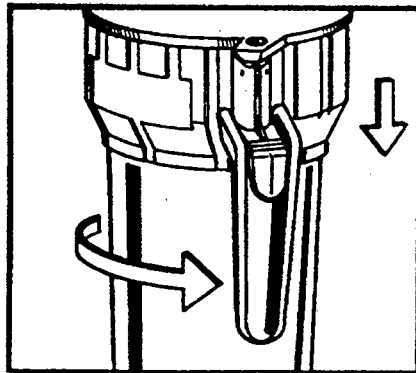
## Operation

### Initial Operation

Install the cartridges as follows:

(Refer to TABLE 2 for correct left to right cartridge sequence.)

- A. Remove the protective plastic bag from the cartridges.
- B. Install D0835 or D0836 pretreatment cartridge into canister #1. Ensure the small hole is on the top and the larger hole is on the bottom.
- C. Install the canister, including cartridge, on head #1 (closest to pump cabinet).



*Figure B. Canister Locking Pin Positioning*

**CAUTION**

Secure Locking Pin 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 in shipment.

**CAUTION**

Do not run the pump dry; dry running will damage the pump. Always make sure you have an adequate volume of feedwater.

**WARNING**

Depressurize the system prior to attempting to remove the canisters.

**NOTE**

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

- D. Replace remaining canisters on heads.
- E. Open inlet valve and place the power switch to the "ON" position.
- F. Open drawoff valve to facilitate air removal from the system
- G. Allow the unit to run to drain for ten minutes.
- H. Turn power to unit off. Close Inlet Valve.
- I. Remove the empty canisters, drain the water and install the remaining cartridges per Table 2.
- J. Open inlet valve and turn power "ON" and run the first ten liters of water to drain.

**Table 2 Correct Cartridge Sequence  
(left to right)**

<b>3 Module Type 1 Cat. No. D5029</b>	<b>3 Module ORGANICfree Cat. No. D5022</b>
1. D0835-Pretreatment 2. D5027-ULTRApure DI SG 3. D5027-ULTRApure DI SG	1. D0836-MACROpure 2. D5027-ULTRApure DI SG 3. D5021-ORGANICfree
<b>4 Module Type 1 Cat. No. D5028</b>	<b>4 Module ORGANICfree Cat. No. D5023</b>
1. D0835-Pretreatment 2. D0803-High Capacity 3. D5027-ULTRApure DI SG 4. D5027-ULTRApure DI SG	1. D0836-MACROpure 2. D0803-High Capacity 3. D5027-ULTRApure DI SG 4. D5021-ORGANICfree
<b>4 Module Type 1 Pretreat Feed Cat. No. D50227</b>	<b>4 Module ORGANICfree Pretreat Feed Cat. No. D50228</b>
1. D0835-Pretreatment 2. D0809-ULTRApure SPG 3. D5027-ULTRApure DI SG 4. D5027-ULTRApure DI SG	1. D0836-MACROpure 2. D0809-ULTRApure SPG 3. D5027-ULTRApure DI SG 4. D5021-ORGANICfree

**CAUTION**

Do not run the pump dry; dry running will damage the pump. Always make sure you have an adequate volume of feedwater.

**CAUTION**

Do not tighten filter with a wrench. Tight connections can be made by hand.

**Filling Procedure**

After every cartridge exchange, some air will be trapped in the system. Air should be purged before routine use, by the following procedure.

- A. Place a container or suitable drain under the drawoff block.
- B. Open all inlet valves and the drawoff valve (handle in vertical position).
- C. Plug the unit into the electrical service.
- D. Place Power Switch to the "ON" position.
- E. When there is a steady flow from the drawoff valve, close drawoff valve.
- F. Check all fittings for leaks and tighten as necessary.
- G. Install the final filter into the drawoff valve as follows:
  1. Tape 1 1/2 - 2 turns Teflon tape around threaded portion of filter.
  2. Carefully screw final filter into drawoff valve. Hold drawoff valve to prevent it from turning.
- H. Allow the pump to recirculate water before withdrawing any water from the unit. During this recirculation, the digital display will register a gradual improvement of water quality indicating that the ion exchange cartridges are functioning properly. After desired resistivity is reached, open the drawoff valve and discard about two liters (1/2 gallon) of water into a container to rinse the filter. For critical applications such as H.P.L.C., rinse 50-100 ml of water through the filter prior to using the water

E-pure is ready to deliver Type 1 reagent grade water.

**Normal Operation**

It is recommended that the pump be left operating during the normal workday to eliminate the need of rinsing the unit up to purity each time product water is required from the unit.

**Resistivity Meter**

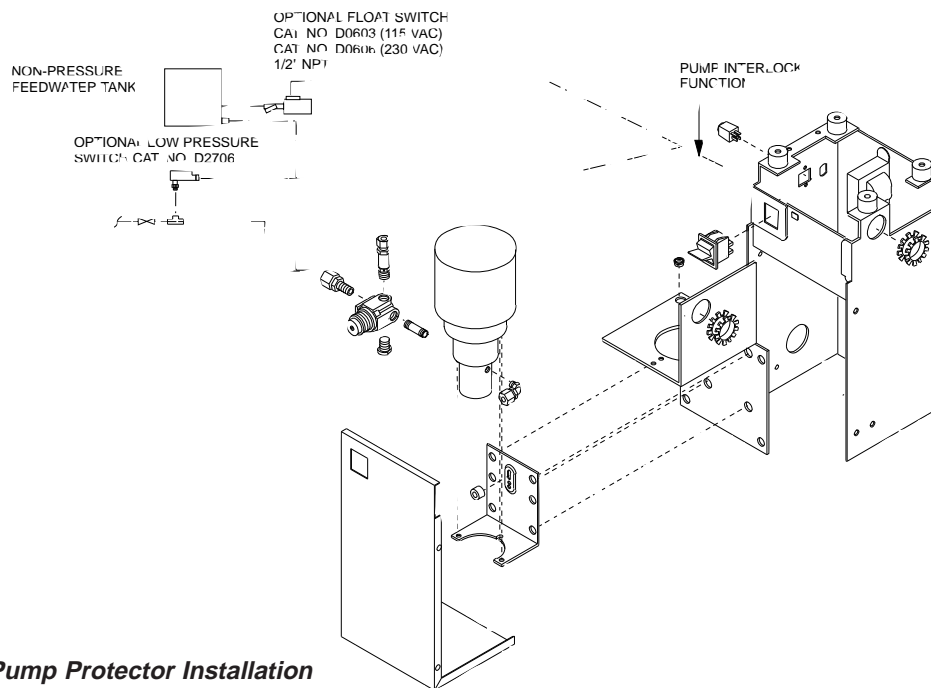
The D2769 and 2770 are in-line digital read out meters and integral cells that calculate the resistivity in the E-pure<sup>®</sup>. The resistivity meter measures the specific resistance of the water on a scale of 0.1 to 18.3 megohm-cm. The resistivity measurement is automatically temperature compensated to 25°C regardless of system water temperature.

# Installing Float or Pressure Switch

## Installing Float or Pressure Switch

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

1. Disconnect electrical power.
2. Remove pump interlock from left side of pump cabinet and save for future use.
3. If using D0603 or D0606 float switch, follow installation instructions included with unit for installation to tank or water line.
4. If using D2706 low pressure switch, install a 1/2" PVC tee (supplied) in incoming water line (see Figure C). Screw the switch into the top of the "T" and inlet tubing to NANOpure into remaining openings.
5. Route cable from float or low pressure switch to E-pure.
6. Plug cable into jumper plug outlet.



**Figure C: Pump Protector Installation**



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# Maintenance



## WARNING

Disconnect power supply to equipment before servicing.

Refer servicing to qualifying personnel.



## WARNING

Depressurize the system prior to attempting to remove the canisters.

## Maintenance

### Cartridge Replacement

When the resistivity of the water drops below the desired level, replace all cartridges with new cartridges.

- A. Disconnect power to the system.
- B. Close the shutoff valve on the inlet side of the system.
- C. Place a customer-supplied container under the final filter and open the drawoff valve to depressurize the system. Close the drawoff valve.
- D. Place a container under the cartridge canister to collect any spillage.
- E. Carefully remove the canister from the head by depressing the thumb lever and rotating 1/4 turn from right to left. Drain the canister into the container and remove the exhausted cartridge.
- F. Inspect the O-rings at the top of the canister and inside the head and replace if worn.
- G. Install new cartridges as explained in INITIAL OPERATION.

### E-pure Final Filter Replacement

It is recommended that the final filter be replaced every 15 working days, when there is an unacceptable high bacteria passage or when flow decreases to less than 1 liter per minute.

To replace the final filter, follow instructions on page 12 Step G.

Always run at least 2 liters (1/2 gallon) of deionized water through a new filter after installation.

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## MAINTENANCE



### WARNING

Disconnect power supply to equipment before servicing.

Refer servicing to qualifying personnel.



### WARNING

For continued protection against possible hazard, replace fuses with same type and rating of fuse.



### WARNING

Depressurize the system prior to attempting to remove the canisters.

### Fuse Replacement

- A. Disconnect power to the system.
- B. Remove the front cover of the pump cabinet by removing the four screws that secure it to the cabinet. There are two located on the right and left hand side portion. The front cover is secured to the cabinet by a hinge on the bottom.
- C. Remove the plate located above the pump and motor by removing the four screws that secure the plate. This will expose the fuses and holder. (See Exploded View Figure D, page 20)
- D. Replace fuses.
- E. Reassemble plate and resecure front panel.

### System Sanitization

Frequency of sanitization is difficult to determine because of the wide variety of feedwater supplies which can be used, but the need for sanitization can be easily determined. Whenever cartridges are replaced, the system should be sanitized by using the new, easy-to-use sanitization cartridge (#D50223).

Sanitize your E-Pure as follows:

- A. Turn system off and disconnect power.
- B. Shut off feedwater valve. Open the drawoff valve to depressurize system prior to attempting to remove canisters.
- C. Remove the canisters by depressing the thumb lever and rotating 1/4 turn to the left. Discard used cartridges. 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.
- D. Remove the 0.2 Micron Final Filter from the drawoff valve. Do not attempt to sanitize the 0.2 Micron Final Filter with chemical solutions.
- E. Place the sanitizing cartridge (D50223) containing the chlorine pellet onto the head of position number one.
- F. Install the three or four canisters onto the heads by depressing the thumb lever and rotating the handle ring 1/4 turn to the right.
- G. Place a suitable container under the drawoff valve to catch the sanitizing solution. Open the drawoff valve. Turn on the water supply and power to the unit.



**WARNING**

Avoid splashing disinfectant solution on clothing or skin.

Ensure all piping connections are tight to avoid leakage of chemicals.

Always depressurize chemical lines before disassembly.

Ensure adequate ventilation.

Follow carefully the manufacturer's safety instructions on labels of chemical containers and material data sheets.



**CAUTION**

Do not run the pump dry; dry running will damage the pump. Always make sure you have an adequate volume of feedwater.



**CAUTION**

The cell electrodes are etched to improve wetting characteristics. Do not mechanically abrade or damage this surface.

Do not immerse the entire cell assembly in cleaning solution, only the electrode portion.

- H. When the sanitizing solution begins to exit the drawoff valve, close the drawoff valve.
- I. Allow the unit to remain in recirculation for 30-45 minutes.
- J. After 30-45 minutes, open the drawoff valve. Allow the sanitizing solution to exit the unit. Leave the valve open for approximately 5 minutes.
- K. Turn system off and disconnect power. Shut off feed water. Open the drawoff valve to depressurize system prior to attempting to remove canisters.
- L. Carefully remove all canisters from the system and discard the remaining solution. Do not rinse the canisters.
- M. Install fresh cartridges in the system as indicated in the REPLACING CARTRIDGES section of this manual. Do not reinstall used cartridges (they may contain large amounts of bacteria).
- N. Reconnect the feedwater, and reconnect the pump protector or pressure switch to its receptacle. Save the jumper plug for future use.
- O. Connect the power to the unit, and press the power switch 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.
- P. Close the drawoff valve, and allow the resistivity of the water to rise. Install a new 0.2 Micron Final Filter as indicated in the E-PURE FINAL FILTER REPLACEMENT section of this manual.

**Resistivity Cell Cleaning**

- A. Disconnect from power supply.
- B. Shut feedwater valve off and open drawoff valve to depressurize system.
- C. Disconnect resistivity meter from power and remove meter and cell assembly from draw-off block.
- D. See Fuse Replacement for access to power supply (page 14).
- E. Wash the cell in a mild detergent solution and/or a 10% inorganic acid solution (follow 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.

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## MAINTENANCE



### CAUTION

Do not over tighten cell. Excessive tightening will crack the drawoff block.



### NOTE

#### Remote Dispenser and ULTRAFILTER

If you are using the E-pure in conjunction with a Remote Dispenser or ULTRAFILTER, refer to the Owner's Manual of the individual item for installation and operating instructions. Figure E of this manual shows only where the individual equipment attaches to the E-pure.

- F. After cleaning, install the cell in the E-pure system. Remove old Teflon<sup>®</sup> tape from drawoff block and cell threads and apply a fresh wrap of Teflon<sup>®</sup> tape to cell body threads.

#### Shutdown

If E-pure is to be shut down for an extended period of time, the system should be completely drained and the cartridges 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 installed prior to use.

#### General Cleaning Instructions

Wipe exterior surfaces with lightly dampened cloth containing mild soap solution.

# Troubleshooting

## Troubleshooting Chart

Symptom	Probable Cause	Test and Remedy
E-pure completely inactive (pump not operating.)	No electrical power to E-pure.  Main fuse is blown.	Ensure that the E-pure power cord is connected to a live power source and completely plugged into the outlet.  Replace the main fuse as indicated under Main Fuse Replacement in the Maintenance Section.
Pump does not run. Display lights.  the feedwater reservoir.	Pump protector (in reservoir), feedwater line pressure switch, or jumper plug not connected to pump module.	Connect the pump protector or pressure switch cord to the receptacle on the left side of the pump housing. 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).  Open the feedwater line shutoff valve or fill fill  If no pump protector is used, make sure a
jumper plug is installed.  Recirculated water will not rinse up to desired purity level.	Exhausted cartridges.  Cartridges out of order.  Cartridges upside down.  Feedwater bypassing cartridge(s).	Replace all the cartridges as indicated under Cartridge Replacement in the Maintenance Section.  Install the cartridges in the proper order as indicated under Initial Operation.  Install the cartridges right side up as indicated under Initial Operation.  Be sure that small O-ring inside head is not damaged and is properly installed.
Reduced or no product flow.	Final filter clogged.	Replace the final filter as indicated under E-pure Final Filter Replacement.
Leaking canisters.	Large O-ring on cartridge holder is missing, damaged or not installed properly.	Replace or position correctly.

# Troubleshooting

Symptom	Probable Cause	Test and Remedy
Short cartridge life.	Cartridges being used are beyond expiration date.	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.
	Change in feedwater characteristics.	<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 E-pure 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>

Key Number	Description	Part Number
1.	Check valve	02214
2.	Adapter	03039
3.	Plug	FS550X1
4.	Nipple	PM550X2
5.	Pump	100 VAC & 120 VAC 230 VAC PU1090X1A
6.	Fuse	100 VAC & 120 VAC 230 VAC PU1090X2A FZX15, Type AGC, 250 Volt, 3 Amp 2 Required
7.	Fuse holder	100 VAC & 120 VAC 230 VAC 5120-0025, Type T, 250 Volt, 2 Amp 2 Required FZX26
8.	Switch ON/OFF	100 VAC & 120 VAC 230 VAC FZX38 2 Required SWX143
9.	Switch ON/OFF	SWX144
10.	Pump interlock	04247
11.	Elbow	05766
	Pressure regulator	02280

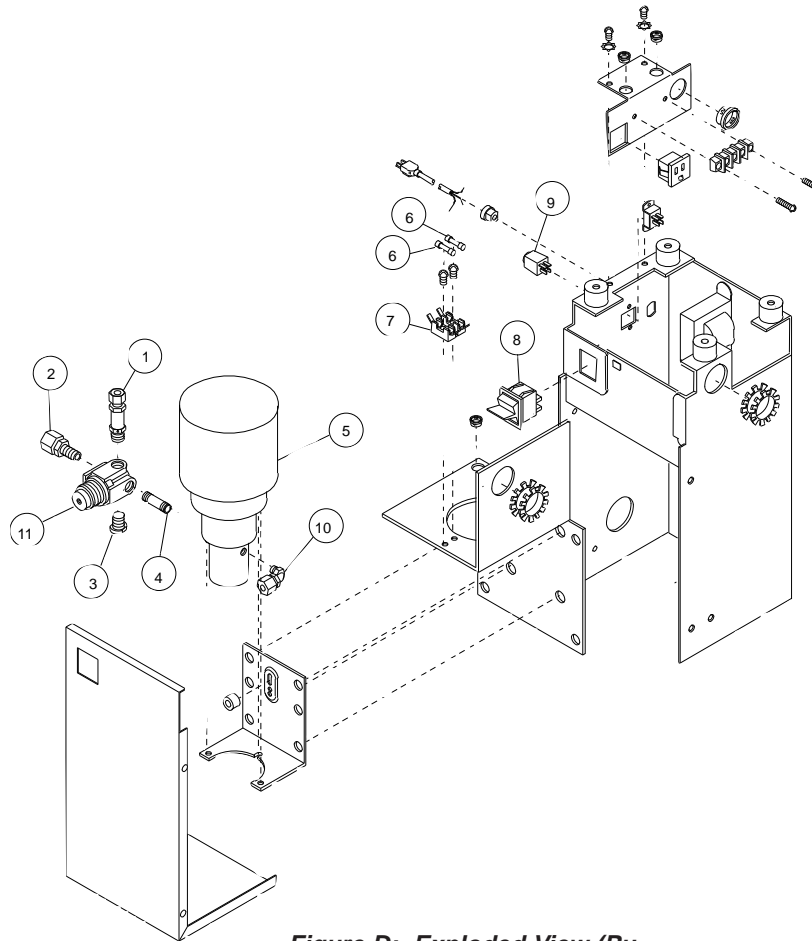
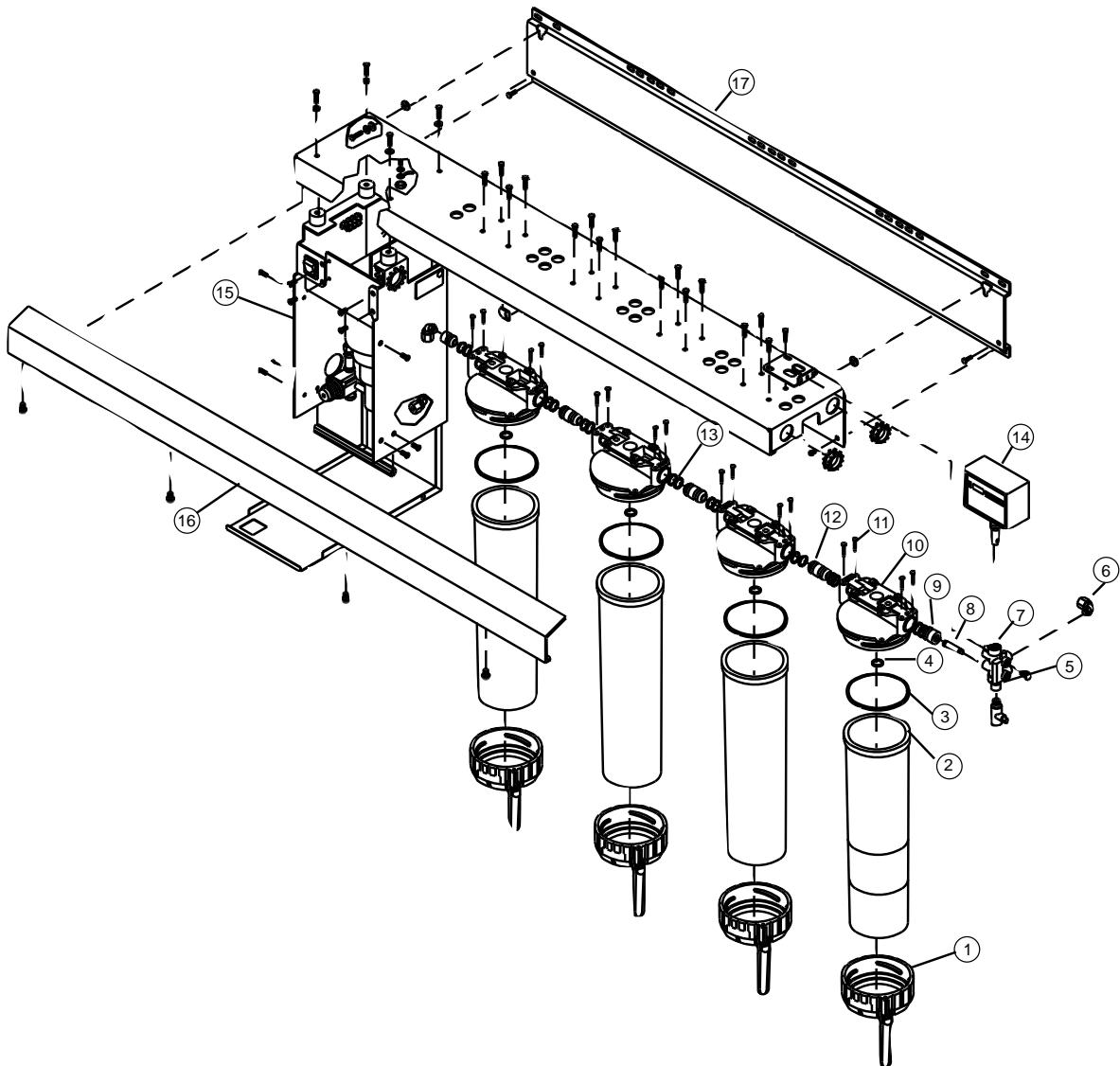
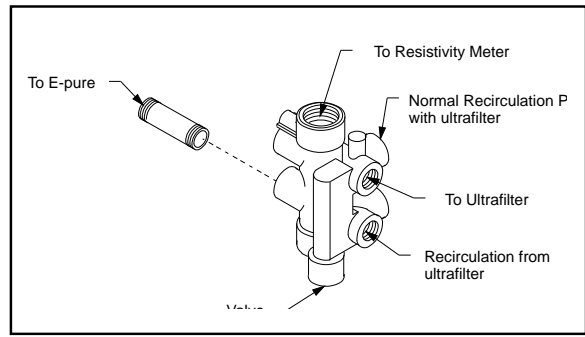
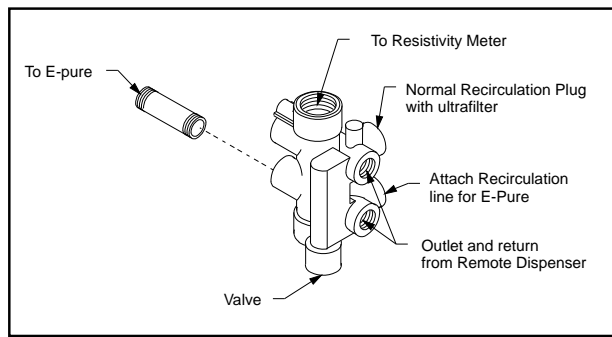


Figure D: Exploded View (Pu)



**Figure E: Exploded View (E-pure)**



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**Key to Figure E**

<b>Key Number</b>	<b>Description</b>	<b>Part Number</b>
1.	Cartridge handle	HN550X1A
2.	Canister, Cartridge holder	CS550X1
3.	O-RING, large canister seal	GSX28
4.	O-RING, cartridge seal	GSX27
5.	Valve	02273
6.	Elbow	05766
7.	Block	BK582X2
8.	Nipple	PM582X1
9.	Adapter	BR550X2
10.	Head	BK550X2
11.	Fastener pins	FP550X1
12.	Connector (head to head)	BR550X4
13.	O-ring, head to head	06440
14.	Meter 100 VAC & 120 VAC	D2770
	Meter 230 VAC	ME1090X1
15.	Pump cabinet	
	120 VAC	CS1090X2
	100 VAC	CS1090X4
	230 VAC	CS1090X3
16.	Dress face -3 holder	DL582X2
	-4 holder	DL582X1A
17.	Wall bracket -3 holder	BC582X6A
	-4 holder	BC582X7A
18. (not shown)	Hose nipple	05930

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# Parts List

## Parts List

### General

This section contains parts list information for the E-pure cartridge deionization system, Series 582. When ordering spare parts, specify part number and quantity desired. When ordering electrical parts provide voltage and frequency information.

### Recommended Spares

**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 (fuses, etc.) that the USER 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 the USER may calculate a replacement interval compatible with your usage pattern.

The replacement of consumable parts is discussed in the Maintenance Section of this manual to assist the USER 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.

**Consumables**

Description	Cat No.	Recommended Quantity	
		3-module	4-module
Final Filter	D3750	1	1
Pretreatment Cartridge	D0835 or D0836	1	1
High Capacity Cartridge	D0803	N/R	1
ULTRApure Cartridge DI SG	D5027	2*	2*
ULTRApure Cartridge SPG	D0809	1****	1****
ORGANICfree Cartridge	D5021	1**	1**
3.0 Amp SlowBlow Fuse, Type AGC, 250 Volt	FZX15***	2	2
2.0 Amp SlowBlow Fuse, Type T, 250 Volt	5120-0025****	2	2

\* Used with analytical grade cartridges if ORGANICfree 1 required

\*\* Used with ORGANICfree Kit

\*\*\* For 100 VAC and 115 VAC models

\*\*\*\* For 230 VAC model

\*\*\*\*\* Used with 4 Holder Pretreatment Feed Cartridge Kits. (Number 2 Canister Only.)

N/R Denotes None Required

**General Maintenance Parts**

**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 the USER stock the general maintenance parts as an aid to ensuring the continued operation of this equipment.

Description	Cat No.	Recommended Quantity	
		3-module	4-module
O-ring (between heads)	06440	2	2
O-ring (head seal)	GSX28	3	4
O-ring (cartridge seal)	GSX27	3	4
Drive Pins	FP550X1	4	4
Connector (head to head)	BR550X4	1	1
Adapter (head end)	BR550X2	1	1
Valve	02273	1	1
Check Valve	02214	1	1

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## PARTS LIST

### Safety Stock

**Safety Stock.** For critical applications where performance with MINIMUM downtime is required, Barnstead/Thermolyne recommends that the USER maintain a local stock of those parts listed under "General Maintenance" and "Safety Stock." In the event of component failure, this stock can be drawn upon by USER or Barnstead/Thermolyne technicians, thereby, avoiding unnecessary delays in delivery of replacement parts.

Description	Cat No.	Recommended Quantity	
		3-module	4-module
Resistivity Meter 100 VAC	D2770	1	1
Resistivity Meter 120 VAC	D2770	1	1
Resistivity Meter 230 VAC	ME1090X1	1	1
Recirculation Pump - 100 & 120 VAC	PU1090X1A	1	1
Recirculation Pump 230 VAC	PU1090X2A	1	1
Cartridge Head	BK550X2	1	1
Cartridge Canister	CS550X1	1	1
Pressure Regulator	02280	1	1

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# Ordering Procedures

## 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.

shall it be liable for incidental or consequential damage.



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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: [mkt@barnsteadthermolyne.com](mailto:mkt@barnsteadthermolyne.com)

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

THE WARRANTY STATED HEREIN IS THE SOLE WARRANTY APPLICABLE TO **Barnstead|Thermolyne** PRODUCTS. **Barnstead|Thermolyne** EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR USE.

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