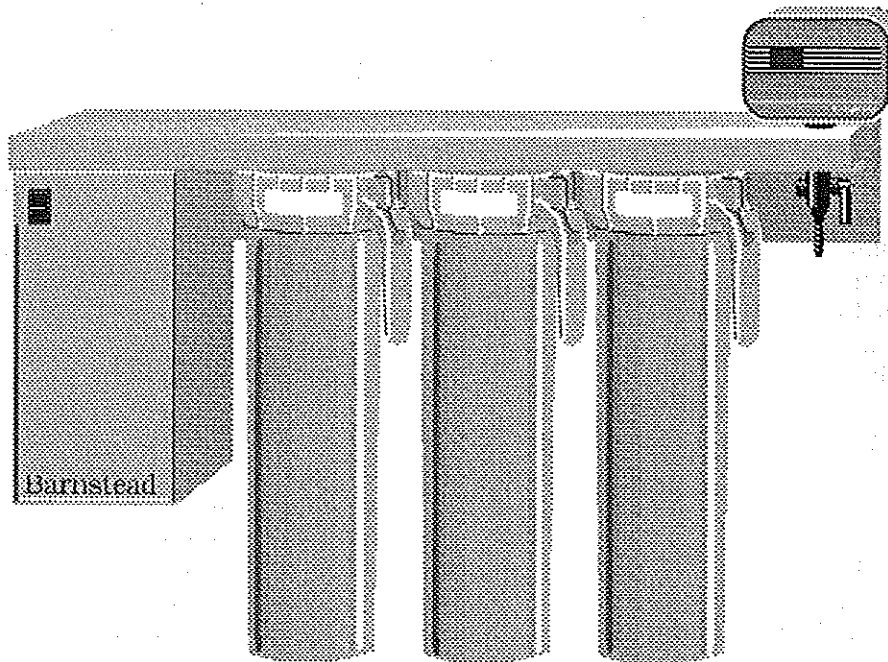


Barnstead

Barnstead|Thermolyne Corporation

BARNSTEAD E-pure[®] **OPERATION MANUAL** **AND PARTS LIST** **SERIES 582**



3 Module E-pure	4 Module E-pure
D4631 120 VAC	D4641 120 VAC
D4632 240 VAC	D4642 240 VAC
D4633 100 VAC	D4643 100 VAC

One Year Limited Warranty

Barnstead|Thermolyne Corporation warrants this product to be free from defects in material and workmanship for a period of one year from date of purchase.

This warranty applies only to defects in original parts or components, and does not apply to claims or alleged product failures resulting from unauthorized repairs, misuse, accidents or lack of proper maintenance, failure to follow **Barnstead|Thermolyne's** instructions for use or from ordinary wear and tear.

Warranty service may be obtained by returning any defective product to an authorized **Barnstead|Thermolyne** dealer or to **Barnstead|Thermolyne**. Heating elements, 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.

BARNSTEAD|THERMOLYNE'S SOLE OBLIGATION UNDER THIS WARRANTY SHALL BE TO REPAIR OR REPLACE ANY PRODUCTS WHICH IT DELIVERS AND ARE FOUND TO BE DEFECTIVE.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, MADE IN CONNECTION WITH THE SALE OF THIS PRODUCT. BARNSTEAD|THERMOLYNE EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR SPECIFIC USE.

Barnstead

Barnstead|Thermolyne Corporation

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Dubuque, Iowa 52004-0797, USA
Phone 319-556-2241 • 800-553-0039
Fax 319-556-0695 • Telex 284 767

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. Minimum invoice: \$25.

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	
		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

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	
		3-module	4-module
Resistivity Meter 100 VAC	D2770	1	1
Resistivity Meter 120 VAC	D2770	1	1
Resistivity Meter 240 VAC	D2770	1	1
Recirculation Pump - 100 & 120VAC	PU582X1A	1	1
Recirculation Pump 240 VAC	PU582X2A	1	1
Cartridge Head	BK550X2	1	1
Cartridge Canister	CS550X1	1	1
Pressure Regulator	02280	1	1

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	D5027	2*	2*
DI SG			
ORGANICfree Cartridge	D5021	1**	1**
3.0 Amp SlowBlow Fuse	FZX15***	2	2
2.0 Amp SlowBlow Fuse	04420****	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

NR Denotes None Required

Key to Figure D

Key

Number	Description	Part Number
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	D2770
15.	Pump cabinet	
	120vac	CS582x1B
	100vac	CS582X3A
	240vac	CS582X2A
16.	Dress face -3 holder	DL582X2
	-4 holder	DL582X1A
17.	Wall bracket -3 holder	BC582X6A
	-4 holder	BC582X7A
18.	Hose nipple	05930

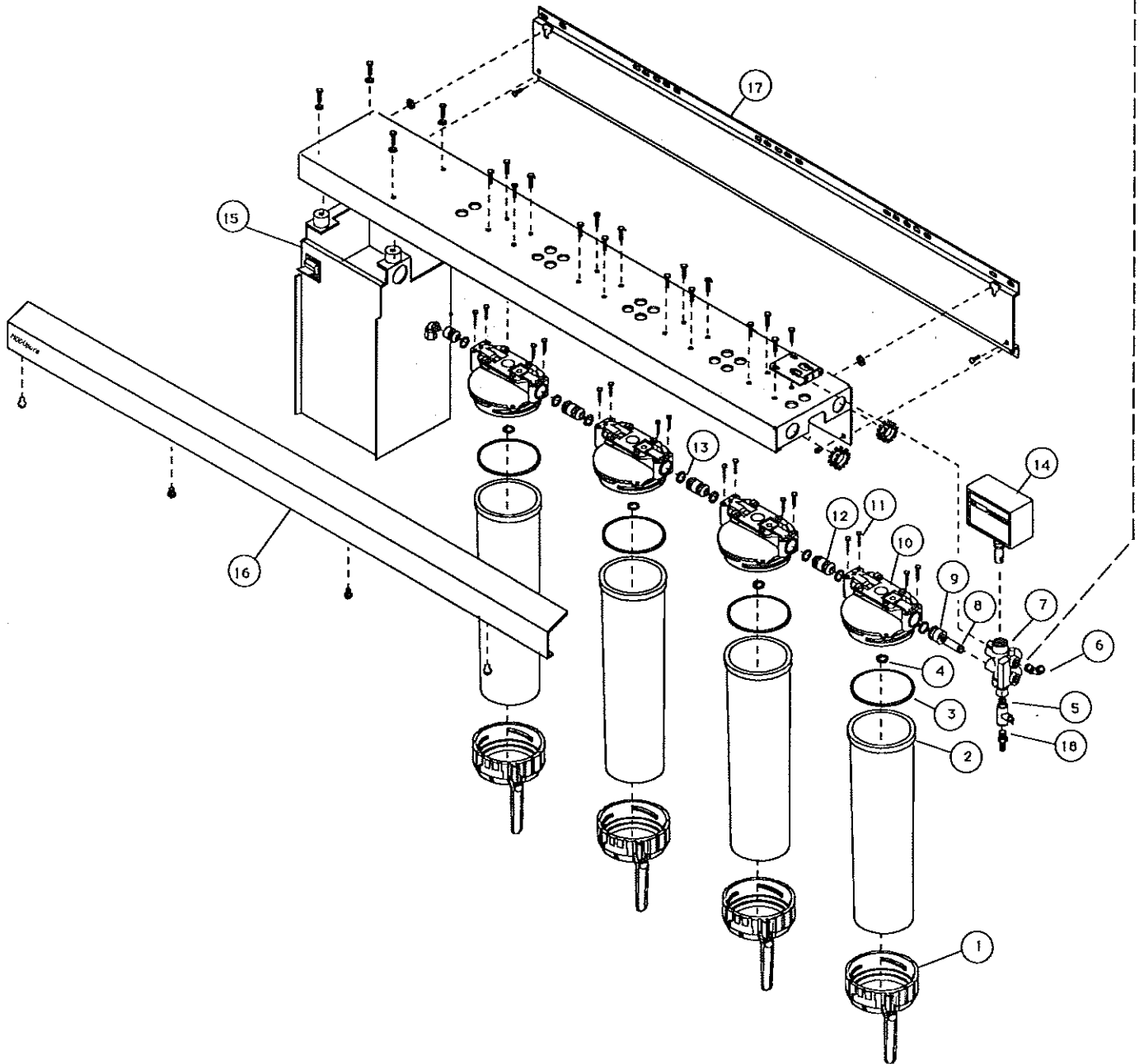
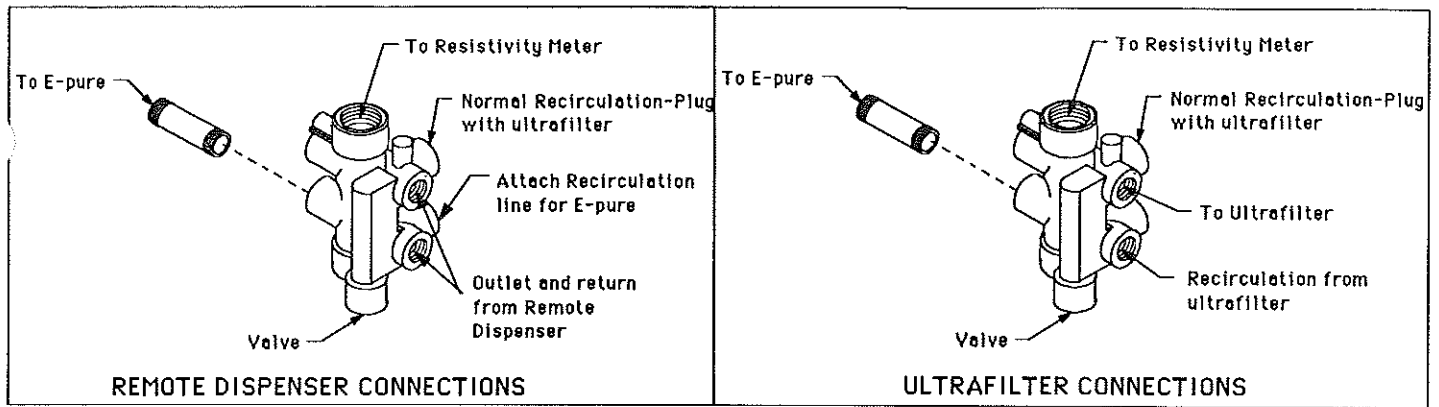


Figure D: Exploded View (E-pure)

Key Number	Description	Part Number
1.	Check valve	02214
2.	Adapter	03039
3.	Plug	FS550X1
4.	Nipple	PM550X2
5.	Pump	100 VAC & 120 VAC 240 VAC PU582X1A 100 VAC & 120 VAC 240 VAC PU582X2A
6.	Fuse	FZX15 2 Required
	Fuse	04420 2 Required
7.	Fuse holder	FZX26
8.	Switch ON/OFF	SWX84
9.	Pump interlock	04247
10.	Elbow	05766
11.	Pressure regulator	02280

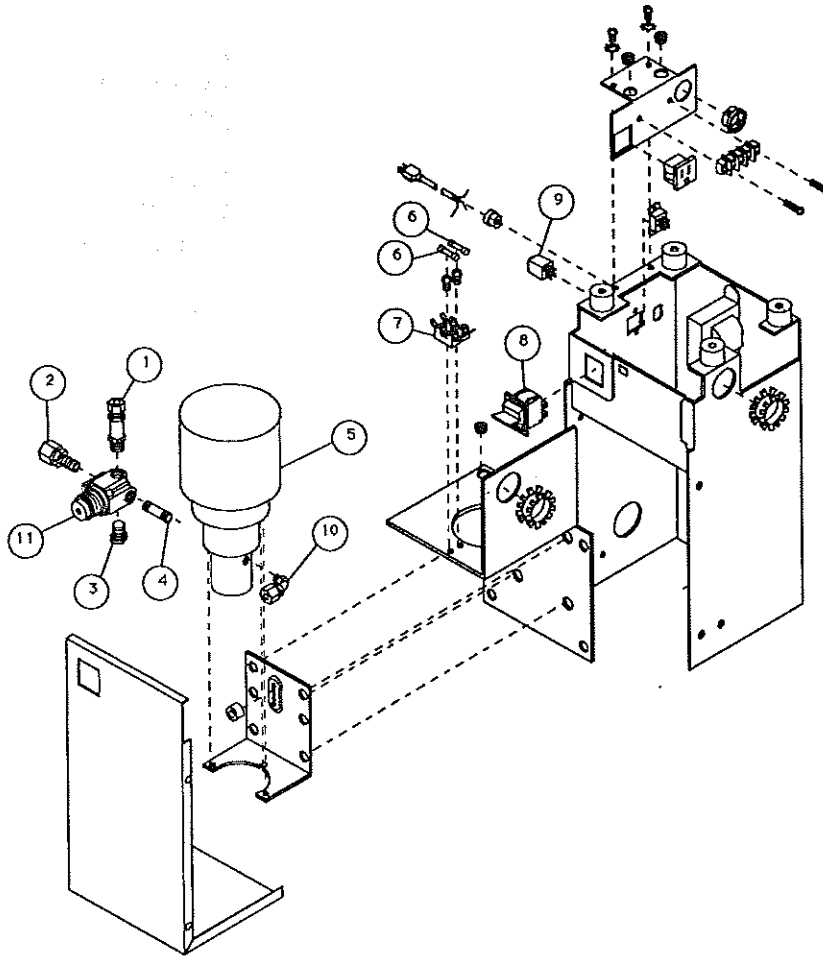


Figure C: Exploded View (Pump)

Leaking canisters.	Large O-ring on cartridge holder is missing, damaged or not installed properly.	Replace or position correctly.
Short cartridge life.	<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 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>

Trouble Shooting 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.	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 ² (5 psi). Open the feedwater line shutoff valve or fill the feedwater reservoir. 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.

- P. Install fresh cartridges in the system as indicated under Cartridge Replacement. DO NOT REINSTALL USED CARTRIDGES. (They contain large amounts of bacteria).
- Q. Reconnect the feedwater line to the feedwater source and reconnect the pump protector or pressure switch to the receptacle on the pump housing. Save the jumper for future use.
- R. Open the feedwater shutoff valve, connect the power to the unit, and place "ON/OFF" switch to the power on position to start the system. Run water through the system to drain any remaining disinfecting solution. A flush of ten liters is sufficient.
- S. Close the drawoff valve and allow the resistivity of the water to rinse to your desired level on the resistivity meter. Install a new E-pure® Final Filter Replacement. The system is now ready for use.

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 12).



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.

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



CAUTION

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

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.



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 D of this manual shows only where the individual equipment attaches to the E-pure.

System Sanitization

Frequency of cleaning is difficult to predict because of the wide variety of feedwater supplies that can be used, but the need for cleaning can be easily determined. Whenever a cartridge is replaced, always examine the inside of the canister for any residual deposits. If residual deposits are observed, clean the system as follows:

- A. Turn system off and disconnect electrical power.
- B. Shut off feedwater valve.
- C. Relieve system pressure by opening the drawoff valve and remove cartridges.
- D. With the cartridges out of all of the canisters, wash the inside of the canisters and the inside of the heads with soap or detergent, using a sponge or clean cloth. Rinse out the canister and the heads with clean water several times to remove the detergent residues.
- E. Make up the following disinfectant solution:
Bleach: Add one liter (one quart) of bleach (5.25% sodium hypochlorite) to fifteen liters (four gallons) of water to make a 0.3% solution.



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.

- F. Partially fill each canister with the disinfecting solutions noted above, and reassemble the canisters on the unit.
- G. Remove the E-pure[®] final filter from the unit. Do not attempt to sanitize final filter with chemical solutions.
- H. If an external pressure switch or pump protector is used, disconnect from the receptacle on the left side of the pump housing, and install the jumper plug provided.
- I. Disconnect the feedwater line at the source. Connect feedwater line into disinfectant solution container.
- J. Connect power to the unit and start the pump.
- K. Drain off some solution through the drawoff valve until a steady flow is achieved. Discard this solution.
- L. Recirculate the disinfecting solution for about 1/2 an hour. Then open the drawoff valve and allow the remaining disinfecting solution to enter the system, directing the output to the drain.



CAUTION

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

- M. Turn the unit off and disconnect the power.
- N. Leave the drawoff valve open to depressurize the system and to drain as much of the system as possible.
- O. Carefully remove all the canisters from the system and discard the solution remaining from the canisters. **DO NOT RINSE THE CANISTERS.**

Maintenance



WARNING

To prevent electrical shock, disconnect the power prior to servicing E-pure.

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 11 Step G.

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

Fuse Replacement



WARNING

Disconnect from power supply.



WARNING

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

- 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 C, page 17)
- D. Replace fuses.
- E. Reassemble plate and resecure front panel.

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 1/4" NPT PVC tee in incoming water line (see Figure K) The tee is customer supplied. 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.

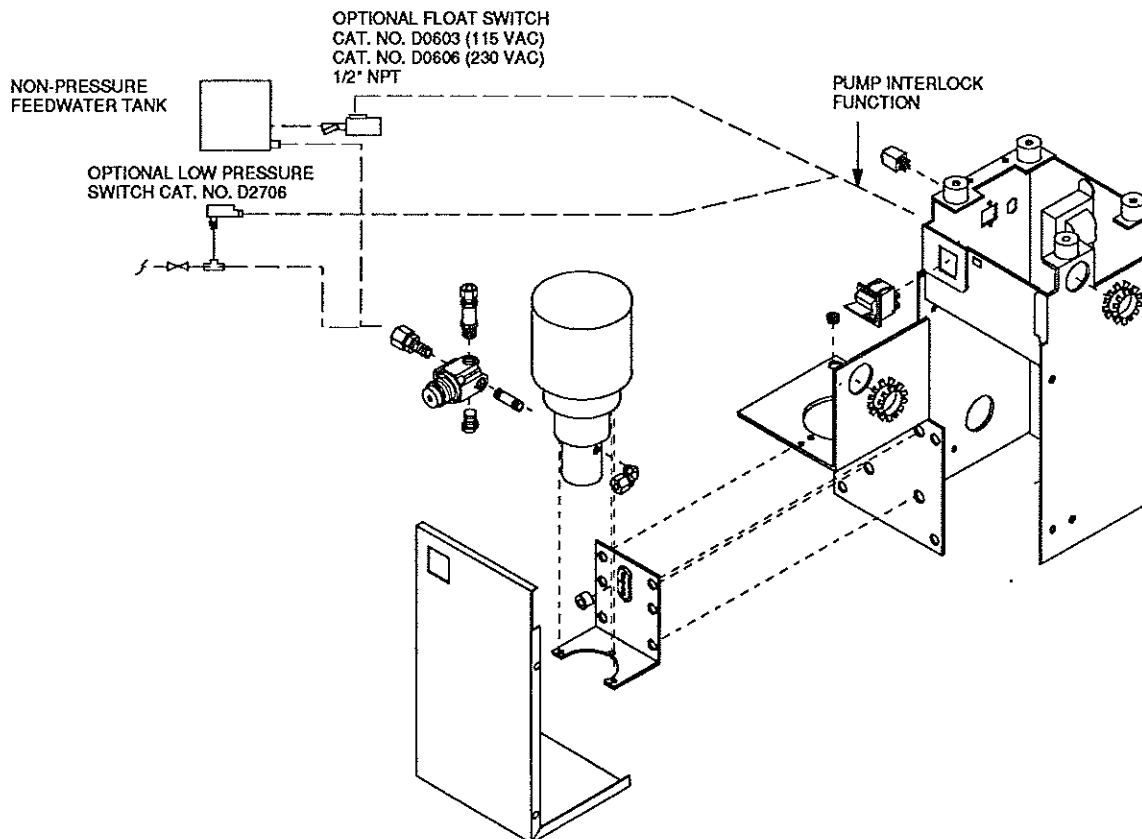


Figure K: Pump Protector Installation

Filling Procedure



CAUTION

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

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.



CAUTION

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

- 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.

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 resistivity measurement in the E-pure[®] is accomplished with an in-line digital read-out meter and integral cell. 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.

**CAUTION**

Secure Locking Pin before operating.

D. Replace remaining canisters on heads.

**NOTE**

An extra set of head-to-canister O-rings are supplied. These can be used to replace and 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.

- 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.

**NOTE**

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

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)**

3 Module Type 1 Cat. No. D5029	3 Module ORGANICfree Cat. No. D5022
1. D0835-Pretreatment	1. D0836-MACROpure
2. D5027-ULTRApure DI SG	2. D5027-ULTRApure DI SG
3. D5027-ULTRApure DI SG	3. D5021-ORGANICfree
4 Module Type 1 Cat. No. D5028	4 Module ORGANICfree Cat. No. D5023
1. D0835-Pretreatment	1. D0836-MACROpure
2. D0803-High Capacity	2. D0803-High Capacity
3. D5027-ULTRApure DI SG	3. D5027-ULTRApure DI SG
4. D5027-ULTRApure DI SG	4. D5021-ORGANICfree

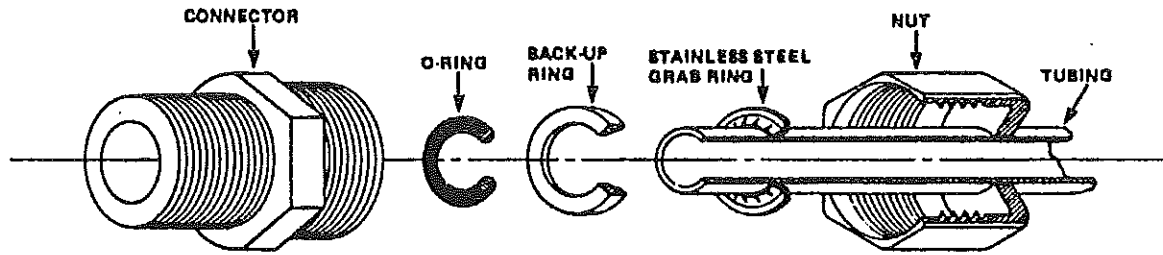


Figure A. Typical Polypropylene Tubing Connector Installation

Operation

Initial 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.

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.



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.

- C. Install the canister, including cartridge on head #1 (closest to pump cabinet).

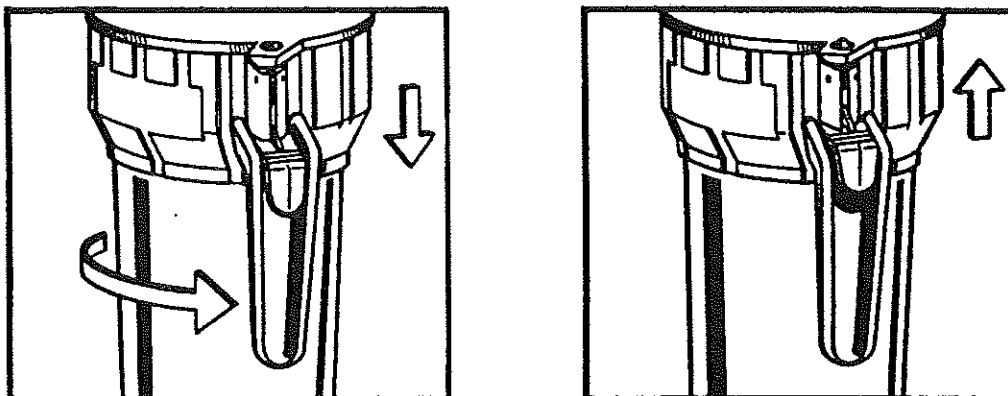


Figure B. Cannister Locking Pin Positioning

Mounting the E-pure®

The E-pure® must be mounted at a location 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 D 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.



CAUTION

It does not require much force to effect a water tight seal. Overtightening 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.

- 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 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 backing 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®.



CAUTION

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

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.

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).

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.

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.

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 10 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

CEE* Color Coding	North American Standard Color Coding	Function
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*

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

General Specifications

Feedwater Requirements

Types [1]	Tap, RO, DI, distilled.
Pressure Range	Gravity feed to 7 kg/cm ² (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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Flowrate (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 ₂ O)	60 Hz	1.5 lpm
		50 Hz	1.3 lpm

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

[2] Flowrates are dependent on operating conditions and filter usage. Flowrates 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"	(660 mm)

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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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.

Alert Boxes



WARNING

Warning alerts apply when there is a possibility of personal injury.



CAUTION

Caution alerts apply when there is a possibility of damage to the equipment.



NOTE

Notes alert the manual user to pertinent facts and conditions.

Warnings

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.

WARNING

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 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. 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. Refer servicing to qualified personnel.

IMPORTANT INFORMATION

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

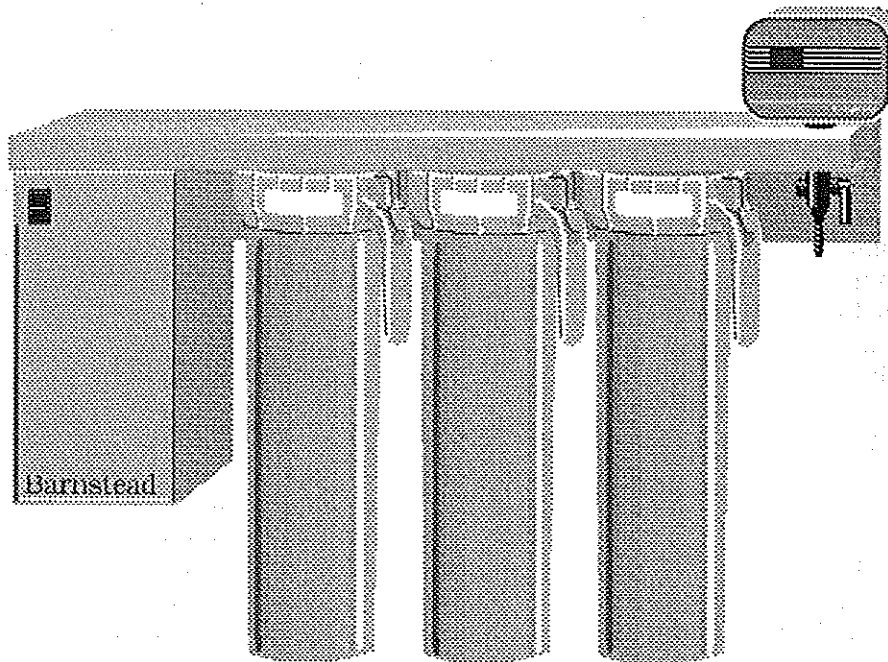
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Barnstead

Barnstead|Thermolyne Corporation

BARNSTEAD E-pure[®] **OPERATION MANUAL** **AND PARTS LIST** **SERIES 582**



3 Module E-pure	4 Module E-pure
D4631 120 VAC	D4641 120 VAC
D4632 240 VAC	D4642 240 VAC
D4633 100 VAC	D4643 100 VAC

- WATER BOX
- ① NEW CATALOG 1991
 - ② PRESSURE GAUGE FOR E-PURE SYSTEM
 - ③ ~~REGULATOR~~ REGULATOR INTERNAL? TO WHAT PRESSURE
 - ④ CARTRIDGE SHELF LIFE?
 - ⑤ 2 COMBO D8809 ^{81\$} STILL AVAILABLE
3 COMBO D8811 - 83\$

Expendable Kits for NANOpure®, NAN

Barnstead ultrapure water systems require exp kits include everything needed to allow the Barr Type I reagent grade water.

Each standard cartridge kit includes a pretreat final filters. Kits must be ordered by the system to system.

For customers performing HPLC, TOC, BOD at Barnstead suggests our kits with the ORGANIC megohm-cm resistivity Type I reagent grade wa Barnstead kits with ORGANICfree must be ord

7:30 JAN 2

	TYPE I	ORGANIC
	0835	0836
	0803	0803
ULTRAPURE	5027	5027
	5027	5021
	(252)	(304)
KIT →	5028	5023
	(415)	(486)

SEE PAGE 20

Cartridge Kits for Quad-Style NANOp

Part No.	Description	Contents
D4801	Type I Cartridge Kit; Tap Feed	1-D0835 Pretr
D4802	Type I Cartridge Kit with ORGANICfree; Tap Feed	1-D0836 MAC 2-D3751 Rem
D5025	Type I Cartridge Kit for Pretreated Feed	1-D0835 Pretr
D5026	Type I ORGANICfree Cartridge Kit for Pretreated Feed	1-D0836 MAC

FILTERS D 3750 (13)

Cartridge Kits for E-pure™ Systems

Part No.	Description	Contents
D5029	3 Module Type I Cartridge Kit	1-D0835 Pretreatment Cartridge, 2-D5027 Ultrapure Cartridges, 4-D3750 Final Filters
D5028	4 Module Type I Cartridge Kit	1-D0835 Pretreatment Cartridge, 1-D0803 High Capacity Cartridge, 2-D5027 Ultrapure Cartridges, 4-D3750 Final Filters
D5022	3 Module Type I Kit with ORGANICfree	1-D0836 MACROpure Cartridge, 1-D5027 Ultrapure Cartridge, 1-D5021 ORGANICfree Cartridge, 4-D3750 Final Filters
D5023	4 Module Type I Kit with ORGANICfree	1-D0836 MACROpure Cartridge, 1-D0803 High Capacity Cartridge, 1-D5027 Ultrapure Cartridge, 1-D5021 ORGANICfree Cartridge, 4-D3750 Final Filters

Cartridge Kits for NANOpure® and NANOpure II® Systems

Part No.	Description	Contents
D3805	3 Module Type I Kit	1-D0835 Pretreatment Cartridge, 2-D0809 Ultrapure Cartridges, 4-D3750 Final Filters
D3804	4 Module Type I Kit	1-D0835 Pretreatment Cartridge, 1-D0803 High Capacity Cartridge, 2-D0809 Ultrapure Cartridges, 4-D3750 Final Filters
D3806	3 Module Type I Kit with ORGANICfree	1-D0836 MACROpure Cartridge, 1-D0809 Ultrapure Cartridge, 1-D0820 ORGANICfree, 4-D3750 Final Filters
D3807	4 Module Type I Kit with ORGANICfree	1-D0836 MACROpure Cartridge, 1-D0803 High Capacity Cartridge, 1-D0809 Ultrapure Cartridge, 1-D0820 ORGANICfree, 4-D3750 Final Filters

DID YOU KNOW...

Most high purity water causes interferences with the BOD (Biochemical Oxygen Demand) test. When using deionized water to make up your BOD reagent an unusually high depletion occurs in the blank. The remedy for the problem is to make up your BOD reagent with high purity water, then store it in your incubator for at least 72 hours before you use it. This will solve the problem of false oxygen depletion.

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Catalog Model Number	Product Category	Description	Suggested List Price U.S. \$
D0809	A	Ultrapure Cartridge	\$ 66.00
D0811	A	Oxygen Removal Cartridge	69.00
D0813	A	Organic Removal Cartridge	53.00
D0815	A	Cation Removal Cartridge	47.00
D0820	A	ORGANICfree Cartridge	79.00
D0832	A	Pretreatment Cartridge for A56285.....	61.00
D0835	A	Combination Colloid Organic Removal Cartridge.....	63.00
D0836	A	MACROpure Cartridge.....	92.00
D2651	A	pH Adjustment Cartridge.....	48.00
D2652	A	Chlorinator Cartridge	46.00
D2653	A	Dechlorinator Cartridge	46.00
D2655**	A	Unfilled AQUAprep Cartridges Ctn/6	147.00
D2729**	A	ULTROpure Prefilter, 5 Micron	14.00
D3749**	A	NANOpure Final Filter, 0.2 Micron.....	42.00
D3750	A	Hollow Fiber Final Filter, 0.2 Micron (NANOpure II & E-pure).....	43.00
D3804	A	NANOpure II Cartridge Kit (D3700 Series 4-Module)	430.00
D3805	A	NANOpure II Cartridge Kit (D3700 Series 3-Module).....	367.00
D3806	A	NANOpure II Cartridge Kit w/ORGANICfree (D3700 Series 3-Module)	409.00
D3807	A	NANOpure II Cartridge Kit w/ORGANICfree (D3700 Series 4-Module)	472.00
D4801	A	Type I Cart. Kit for Quad-Style NANOpure System.....	363.00
D4802	A	Type I Cart. Kit w/ORGANICfree for Quad-Style NANOpure Systems ...	415.00
D5021	A	Downflow ORGANICfree Cartridge for Quad-Style NANOpure & E-pure	86.00
D5022	A	3 Module Type I Cartridge Kit w/ORGANICfree for E-pure Systems...	390.00
D5023	A	4 Module Type I Cartridge Kit w/ORGANICfree for E-pure Systems...	486.00
D5025	A	Type I Cartridge kit for Pretreated Feed	363.00
D5026	A	Type I ORGANICfree Cartridge Kit for Pretreated Feed.....	415.00
D5027	A	Ultrapure Cartridge - Quad Style NANOpure & E-pure.....	63.00
D5028	A	E-pure Cartridge Kit 4-holder.....	415.00
D5029	A	E-pure Cartridge Kit 3-holder.....	369.00
D8901	A	Hose Nipple High Capacity Cartridge	61.00
D8902	A	Hose Nipple Ultrapure Cartridge.....	61.00
D8903	A	Hose Nipple Oxygen Removal Cartridge	79.00
D8904	A	Hose Nipple Organic Removal Cartridge	52.00
D8905	A	Hose Nipple Cation Removal Cartridge	52.00
D8911	A	Hose Nipple Ultrapure Cartridge (No Dye).....	67.00
D8921	A	Hose Nipple Pretreatment Cartridge.....	67.00
D8922	A	Hose Nipple Combination Cartridge	71.00
D8950	A	Hose Nipple Economy Cartridge	53.00
18011	A	Filter, 10 Micron (PCS & Economy).....	16.00
18017	A	Filter, 5 Micron (PCS & Economy).....	16.00
18018	A	Filter, 15 Micron (PCS & Economy).....	16.00
18024	A	Filter, 1 Micron (PCS & Economy).....	21.00
D50213**	A	Cartridge, Ultrapure 1/2 B-pure	51.00
D50215**	A	Cartridge, Organic removal 1/2 B-pure	41.00
FL583X1	A	Filter 5 micron 1/2 B-pure.....	21.00
FL583X2	A	Filter 10 micron 1/2 B-pure.....	21.00
FL583X3	A	Filter 15 micron 1/2 B-pure.....	21.00
FL583X4	A	Filter 1 micron 1/2 B-pure.....	21.00
FL583X5	A	Filter 0.45 micron 1/2 B-pure.....	120.00
FL583X6	A	Filter 0.2 micron 1/2 B-pure.....	120.00

DISTRIBUTION PUMPS

H1110	D	Size "AA" Pump Assembly (TIN).....	1663.00
H1111	D	Size "AA" Pump Assembly (316 SS).....	1687.00
H1112	D	Size "AA" Pump Assembly (PVC)	1575.00
H1120	D	Size "BB" Pump Assembly (TIN).....	2310.00
H1121	D	Size "BB" Pump Assembly (316 SS).....	2520.00
H1122	D	Size "BB" Pump Assembly (PVC)	2048.00

**Product not detailed in '91 "Water Book"