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BarnsteadInternational

B-pure Pressure Cartridge System

OPERATION MANUAL AND PARTS LIST SERIES 583

Model #	Voltage
D4505	
D4511	
D4521	120
D4522-33	230
D4523	100
D4524	120
D4525	240
D5831	120
D5832	240
D5833	120
D5834	240
D5839	

LT583X1 • 4/25/05

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Safety Information

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.

Your Barnstead B-pure Pressure Cartridge System has been designed with function, reliability and safety in mind. It is your responsibility to install it in conformance with local electrical codes. For safe operation, please pay attention to the alert signals throughout the manual.

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.

General Usage

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

Warnings

To avoid electrical shock, always:

1. Use a properly grounded electrical outlet of correct voltage and current handling capacity.

2. Avoid mounting B-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.

3. Disconnect from power supply before servicing.

To avoid personal injury:

1. Depressurize system prior to attempting to remove canisters or meter and cell assembly.

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2. Avoid splashing disinfecting solutions on clothing or skin.

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

4. Always depressurize chemical lines before disassembly.

5. Carefully follow the manufacturer's safety instructions on labels of chemical containers and Material Safety Data Sheets.

6. Refer servicing to qualified personnel.

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Technical Specifications

Feedwater Requirements

Types	Tap, RO, DI, distilled
Maximum pressure	7 kg/cm^2 (100 psig) maximum
Temperature	4–49°C (40-120°F)

Installation

Mounting	Wall mount, with bracket provided		
Dimensions, mm (in.)	**Dual B-pure**	**Single B-pure**	**1/2 size Holder**
Width	381 (15)	178 (7)	178 (7)
Depth	171.5 (6.75)	171.5 (6.75)	171.5 (6.75)
Height	673 (26.5)	591 (23.25)	368 (14.5)
Op. weight, kg (lb)	12.7 (28)	5.9 (13)	5 (11)
Plumbing Connections			
Inlet	1/2" NPTF	1/2" NPTF	1/2" NPTF
Outlet	1/2" NPTF 1/4" NPTF 5/16" OD Hose barb	1/2" NPTF	1/2" NPTF

Resistivity Measurement

Range	0.1–18.3 megohm-cm (Temperature Compensated to 25°C/77°F)
Accuracy	3% Full Scale
Cell	0.1 constant
Electrical Requirements	
120 VAC, 50/60 Hz	108-132 VAC, 47-63 Hz, 5 Watts
240 VAC, 50/60 Hz	216-264 VAC, 47-63 Hz, 5 Watts

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Declaration of Conformity

Barnstead International hereby declares under its sole responsibility that this product conforms with the technical requirements of the following standards (230 volt models only):

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:

Electrothermal Engineering, Ltd.
419 Sutton Road
Southend On Sea
Essex SS2 5PH
United Kingdom

Copies of the Declaration of Conformity are available upon request.

Environmental Conditions

Operating:

4°C - 49°C; 20% - 80% relative humidity, non-condensing. Installation Category II (over-voltage) in accordance with IEC 664. Pollution Degree 2 in accordance with IEC 664. Altitude limit: 2,000 meters.

Storage: -25°C - 65°C; 10% to 85% relative humidity.

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Unpacking

Unpack the B-pure carefully. B-pure units come completely assembled. A spare head interconnector (15853) is supplied as a loose part with the single B-pure (D4511) and the 1/2 size B-pure (D4505 and D5839). Retain this item for possible later use in expansion.

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Installation

The cartridge holders that make up the B-pure family are designed for a wide range of applications and configurations. It is not possible to include specifics in this manual for the broad application range. Barnstead recommends that you contact your local representative or Barnstead International Customer Service for guidance. Knowing the correct cartridges or filters for your specific application will assure you of the most efficient and economical use of your B-pure System.

All individual members of the B-pure family can be interconnected to form custom water treatment systems. If you are constructing a custom system, be sure to read the Mix & Match section before mounting the system. The mounting hole patterns will vary depending on the particular configuration that you choose.

The B-pure system requires expendable pretreatment, prefilters, deionization cartridges and final filters which are not supplied with the unit. They must be purchased separately. Descriptions, applications and catalog numbers of filters and cartridges are located in the "Maintenance and Servicing" section of this manual. When ordering, please state catalog number, description and quantity required. Screws and fasteners required for wall mounting are not supplied with the unit.

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Warning
Do not mount B-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.



Caution
Wall and mounting hardware must be capable of supporting the full operational weights as outlined in the technical characteristics section of this manual. Inadequate support or fasteners may result in damage to mounting surface and/or equipment. Use adequate hardware for the job. If you are unsure of the hardware, consult your building maintenance group or contractor.



Note
If you are constructing a custom water treatment system using B-pure components, read the Mix and Match section of this manual before proceeding further.

System Location

The B-pure should be mounted at a convenient height for routine operation. Adequate front access will be required for cartridge or filter exchange and reading of the resistivity meter, if used. The following clearances are necessary:

Left and right side clearance:

- All B-pure products, 4" minimum

Free space below canisters:

- All B-pure products, 4" minimum

Free Space Above Center of Wall Bracket:

- All B-pure products without meter, 4" minimum
- B-pure products with meter, 8" minimum

The recommended dimensions for mounting hardware to support your equipment are:

- Body Diameter, 1/4" maximum
- Head Diameter, 3/8" maximum
- Length, 1" typical

Mounting and Utility Connections

All B-pure installations require a user supplied shutoff valve in the incoming water service line. In some installations, it may be desirable to provide an outlet shutoff valve. A draw-off valve assembly is provided on the Dual Holders as a standard and may be ordered as an optional extra for other B-pure products. (See exploded view drawing for part numbers.)

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Mount the B-pure unit using the following steps:

1. Remove the wall bracket from the unit by removing the two securing screws on the left and the right bottom portion of the bracket. Slide bracket downward to release.
2. Using the wall bracket as a template, mark the hole locations on the wall.
3. Drill holes in wall suitable for the selected fasteners.
4. Mount wall bracket and secure with fasteners.
5. Re-secure B-pure on bracket and refasten securing screws.
6. Connect feedwater service to the left side of the head assembly using adapter provided. Use PTFE tape on threads to assure a leak-free connection.
7. Make outlet connections as required by your specific application.



Caution
Do not overtighten this connection; excessive tightening will crack the adapter. Do not thread a metal fitting into the inlet or outlet adapter.

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Initial Operation

Warning
Depressurize system prior to attempting to remove canisters.

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
Secure locking pin before operating. Locking pin on canister must be fully released into hole in head before system is operated.

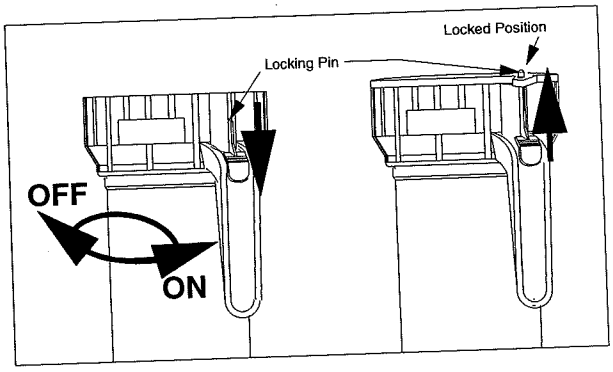


Figure 1: Locking Pin

Various types of filters and cartridges are used in B-pure systems; 10" nominal particulate filters and cartridges are used in the half-size canisters and nominal 17" water treatment cartridges used in the full size canisters.

Installing Water Treatment Cartridges

1. Remove the cartridge from the bag.
2. Remove the canister from the head by depressing the thumb lever and rotating the hand ring 1/4 turn to the left.
3. Check to ensure that the small o-ring inside the head is in place. This is important because water will bypass the cartridge if this o-ring is not in place.
4. Place cartridge(s) in canister with the large opening down.
5. Wet canister o-ring before installation. Install canister by depressing thumb lever and rotating 1/4 turn to the right, until the locking pin is in the appropriate position (see Figure 1).

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Installing Particulate Filters

Two types of particulate filters are used in the half-size canisters.

Prefilters

These devices are string-wound filters designed to prevent large particulates from entering a water treatment system.

Final Filters

These devices are pleated membrane filters designed to remove particulates as small as 0.2 micron. These filters are supplied with gaskets which are not used for B-pure installations. Install filters as follows:

1. Remove filter and adapters from package.
2. Remove canister from head by pressing the thumb lever and rotating the ring 1/4 turn to the left.
3. Lubricate the o-rings on the adapters using pure water, then install adapters into filters by turning the adapter as you push it into the filter's open end.
4. Lubricate the o-rings on the head with pure water, then secure the filter (including adapter) onto the head by gently pushing and turning the filter.
5. Insert the canister vertically upward over the filter and tighten 1/4 turn to the right.



Warning
Depressurize system prior to attempting to remove canisters.



Caution
Secure locking pin before operating; locking pin must be fully released into hole on head before the system is operated.

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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:

1. Place a container or suitable drain under the outlet valve.
2. Open all inlet valves and the outlet valve.
3. Depress vent button on top of head to remove air.
4. When there is a steady flow from the outlet valve, close the outlet valve.
5. If using a resistivity meter, plug into electrical service.
6. Open the outlet valve and allow water to flow through the system until desired purity is reached.



Note

When using a submicron filter, hold purge button (red button on holder head) down until a steady flow of water is observed. Check all fittings for leaks and tighten as necessary.

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Operation

Prior to withdrawing water for use, it is recommended that you allow some water to run to drain to rinse up the system. If using a resistivity meter, the display will register a gradual improvement of water quality.

Resistivity Meter/Puralite

The resistivity measurement in the dual holder B-pure is accomplished with an in-line digital readout 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.

Other systems may include a Puralite. These lights are go/no-go indicators. The light will illuminate green when the purity of the water exiting the system is above the value of the individual light. When the purity drops below that value, it will illuminate red, indicating the need for cartridge replacement.

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Maintenance and Servicing



Warning
Disconnect from power supply before servicing.

Refer servicing to qualified personnel.



Warning
Depressurize system prior to attempting to remove canisters.

Cartridge and Filter Replacement

Depending on your particular usage, cartridges must be periodically replaced. The need for replacement of water treatment cartridges designed to remove ionized impurities can be determined by a drop in resistivity of the water. For 10" particulate filters, replacement can be determined by a significant drop in pressure or a decrease in flow rate.
Change all cartridges as follows:

1. Close the customer-supplied shutoff valve on the inlet side of the system.
2. Place a suitable container under the outlet and open the outlet valve to depressurize the system.
3. Press vent button on top of B-pure head.
4. Place a container under the cartridge canister to collect any spillage.
5. Remove the canister from the head and drain into container.
6. Remove old cartridge and discard.
7. Inspect the o-rings in the canister and replace if worn.
8. Install a new cartridge or filter as explained in "Initial Operation."

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System Sanitization

Frequency of cleaning is difficult to determine because of the wide variety of feedwater supplies, however 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 any are observed, clean the system as follows:

1. Disconnect power to system where appropriate.
2. Close the shutoff valve on the inlet side of the system.
3. Relieve pressure by opening the outlet valve.
4. With the cartridge(s) out of the canister(s), wash the inside of the head(s) and canister(s) with soap or detergent, using a sponge or clean cloth. Rinse out the canister(s) and head(s) with clean water several times to remove the detergent residues.
5. Make up the following disinfecting solution: add 230 milliliters of household bleach (5.25% sodium hypochlorite) to 3.8 liters of water to make a 0.3% solution.
6. Fill the canister to within 2" of the top with the above disinfecting solution, and reassemble the canister(s) on the unit.
7. Open the shutoff valve on the inlet side of the system.
8. Open the outlet valve, draw off approximately 200 ml of solution and discard it.



Note

The sanitizing solution noted in step 5 is sufficient for one large canister. Prepare a sufficient amount of solution to fill all of the canisters in your system.

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9. Close inlet and outlet valves.
10. Allow the disinfecting solution to stand for one half hour.
11. Open the inlet and outlet valves and flush the system for 10 minutes.
12. Close the shutoff valve on the inlet side of the system and open the outlet valve to depressurize the system.
13. Carefully remove the canister(s) from the system, and discard the solution remaining from the canister(s). Do not rinse the canister(s).
14. Install fresh cartridge(s) in the system as explained in Initial Operation.
15. Turn to the Operation section of this manual for filling procedure and normal operation.



Warning
Depressurize system prior to attempting to remove meter and cell assembly.



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

Cleaning the Resistivity Cell

Clean the resistivity cell as follows:

1. Disconnect power to the system.
2. Close the shutoff valve on the inlet side of the system.
3. Open the outlet valve.
4. Remove meter and cell assembly from the head.
5. Wash the cell in a mild detergent solution or a 10% inorganic acid solution (follow chemical manufacturer's

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



Caution
Do not overtighten cell. Excessive tightening will crack the head.

recommended handling procedure). This may be done in an ultrasonic cleaner or with a soft brush. The cell must be thoroughly rinsed in deionized water following the detergent or acid cleaning.

After cleaning, remove old PTFE tape from the head and cell threads and apply a fresh wrap of PTFE tape to cell body threads. Install the meter assembly in the B-pure System.

General Cleaning Instructions

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

Storage

If the B-pure System 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, cleaned, and sanitized before new cartridges are installed.

Mix and Match

All B-pure products are designed for interconnection to form a variety of water systems. Individual applications will determine the correct sequence of B-pure components. After the sequence is determined the various parts can be easily arranged and connected. In this section we describe the general procedure for constructing a custom system and detail the procedures for constructing two commonly used configurations. We recommend you read the entire section before proceeding.

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Tools and Accessories

Constructing a custom system will require the following tools:

- Small screwdriver for drive pin removal.
- A small mallet or hammer for re-seating the drive pins.

General Procedure

After carefully unpacking B-pure components place them on a table in the desired order. As a general rule, if you are using a dual holder B-pure it should be located as far to the right as possible. This will reduce the number of changes that need to be made.

Next remove all of the fastener pins in the canister heads where two heads touch each other and remove the adapters or assemblies retained by the fastener pins. Fastener pins are removed by gently tapping them up with a screwdriver. Set the fastener pins and other parts aside. If you have a dual holder B-pure, it is not necessary to remove the factory installed fastener pins that join the heads.

Locate the head interconnectors (BR550X4) supplied as loose parts and install these wherever heads need to be joined. Make sure that the o-rings are still in the recesses of the heads. Re-install fastener pins and tap gently with a hammer until they are seated.
You should now have a rigid assembly of heads and wall brackets in your desired sequence. Inlet and outlet adapters or assemblies can now be installed to suit your particular requirements. Turn to the “Mounting and

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Utility Connections" section of this manual for mounting instructions.

Three Holder B-pure Unit (Two DI Cartridges and one Filter Cartridge)

A common configuration built from B-pure components is the three holder unit. This unit allows the use of two water treatment cartridges and a final filter at the outlet. This will require one dual B-pure and a 1/2 size B-pure filter holder (D5839). Disassemble the units as follows:

1. Position the dual holder on the left and the 1/2 size filter holder to its right.
2. Remove all the canisters.
3. Remove the draw-off valve assembly from the dual holder by driving up the fastener pins.
4. Remove the end fitting on the inlet and outlet of the 1/2 size filter holder.

Reassemble the units as follows:

1. Install the head interconnector into the outlet port of the dual holder. Be sure o-ring is in place. Install and seat fastener pins.
2. Connect the 1/2 size filter holder head into the dual holder head so that the interconnector from the Dual Holder is in the inlet port of the 1/2 size filter holder. Be sure o-ring is in place. Install and seat fastener pins.
3. Install draw-off valve assembly, including meter, into the 1/2 size filter holder outlet port. Be sure the o-ring is in place. Install and seat fastener pins.

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Turn to the Mounting and Utility Connections section of this manual for mounting instructions.



Note
Refer to Figure 2 for assembly order.

Three Holder B-pure (Three Water Treatment Cartridges)

A common configuration built from B-pure components is a Three-Holder System. This system will utilize three water treatment cartridges in series. This will require a Dual Holder and a single holder B-pure (D4511) Disassemble the unit as follows:

1. Position Dual Holder on right and single holder on left on top of table.
2. Remove the canisters from all units.
3. Drive up fastener pins from the outlet of the single holder and the inlet of the dual holder and remove end fittings. This is accomplished by gently tapping from the bottom with a small screwdriver and a hammer — excessive force will damage the pins.
4. Connect the two units together using the head interconnector supplied. Ensure that the o-ring is present in both openings. Install and seat fastener pins.
5. Turn to the “Mounting and Utility Connections” section of this manual for mounting instructions.

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Cartridges

Description	Half Size. Catalog no.	Full Size Catalog no.	Application
Macropure	N.A.	D0836	Effectively removes colloids, bacteria, chlorine and organics, increases filter life.
Pretreatment	N.A.	D0835	Effectively removes colloids, bacteria organics and chlorine.
Still Pretreatment	D50217	D0832	Removes ionized impurities and has a layer of activated carbon to remove chlorine and organics.
Organic Removal	D50215	D0813	Removes organics and chlorine.
Cation	N.A.	D0815	Converts ionized salts to the acid form resulting in a product water that is low in pH, ideal for precious metal or isotope recovery.
Anion	N.A.	D0760	Effective removal of anion impurities, raises the pH of solutions, recovers precious metal complexes.
High Capacity	N.A.	D0803	Removes ionized impurities, produces a larger quantity of water than that of the Ultrapure, however at a lower resistivity.
Ultrapure	D50213	D0809	Removes ionized impurities to produce high resistivity water with a neutral pH.
Oxygen Removal	D50214	D0811	Maintains low oxygen content to prevent corrosion in cooling water loops, etc. The feedwater should contain less than 10 ppm of ionized solids.

Prefilters

15 micron	FL583X3
10 micron	FL583X2
5 micron	FL583X1

Final Filters

0.45 micron	FL583X5
0.2 micron	FL583X6

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Troubleshooting

Problem	Possible Causes	Solutions
Water will not rinse up to purity.	Exhausted cartridges.	Replace all cartridges as explained in the "Maintenance & Servicing" section.
	Cartridges upside down.	Install right-side up as explained in the "Initial Operation" section.
	Cartridges out of order.	Verify that cartridge order is correct for your specific application.
	Feedwater bypassing cartridge(s).	Be sure o-ring is not damaged and is properly installed.
	Excessive flow rate.	Reduce flow to a specified maximum or less.
Reduced or no water flow.	Particulate filter clogged.	Replace the filter as explained in the "Maintenance & Servicing" section.
	Air trapped in filter.	Purge air in the system as explained in "Purging Air From the System."
Leaking canisters.	O-ring missing, damaged or not seated properly in the groove of canister.	Replace or position correctly.
Excessive particulate passage.	One or both filter adapters missing or installed improperly.	Check that the adapters are installed on the filters properly and that their o-rings are in place.
Short cartridge life.	Cartridges being used beyond expiration date.	Check the expiration date; cartridges begin to lose capacity after being stored 2 years from date of manufacture. Replace with fresh cartridges.
	Change in feedwater characteristics.	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 and vice versa) will result in a water quality change. If feedwater is from a central purification source, verify water quality and proper functioning of the system.

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Exploded Views

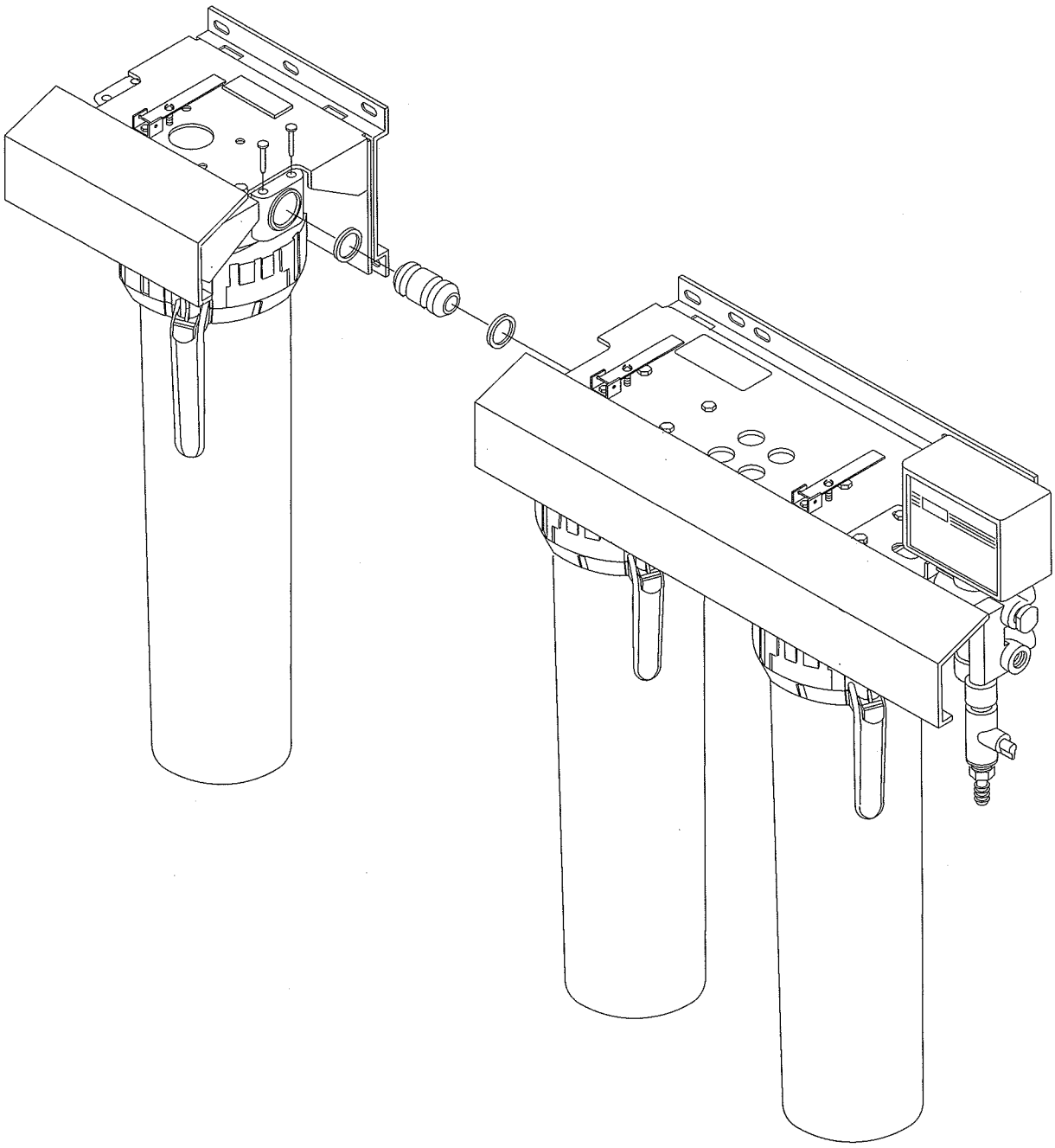


Figure 2: Three-holder B-pure (Three Water Treatment Cartridges

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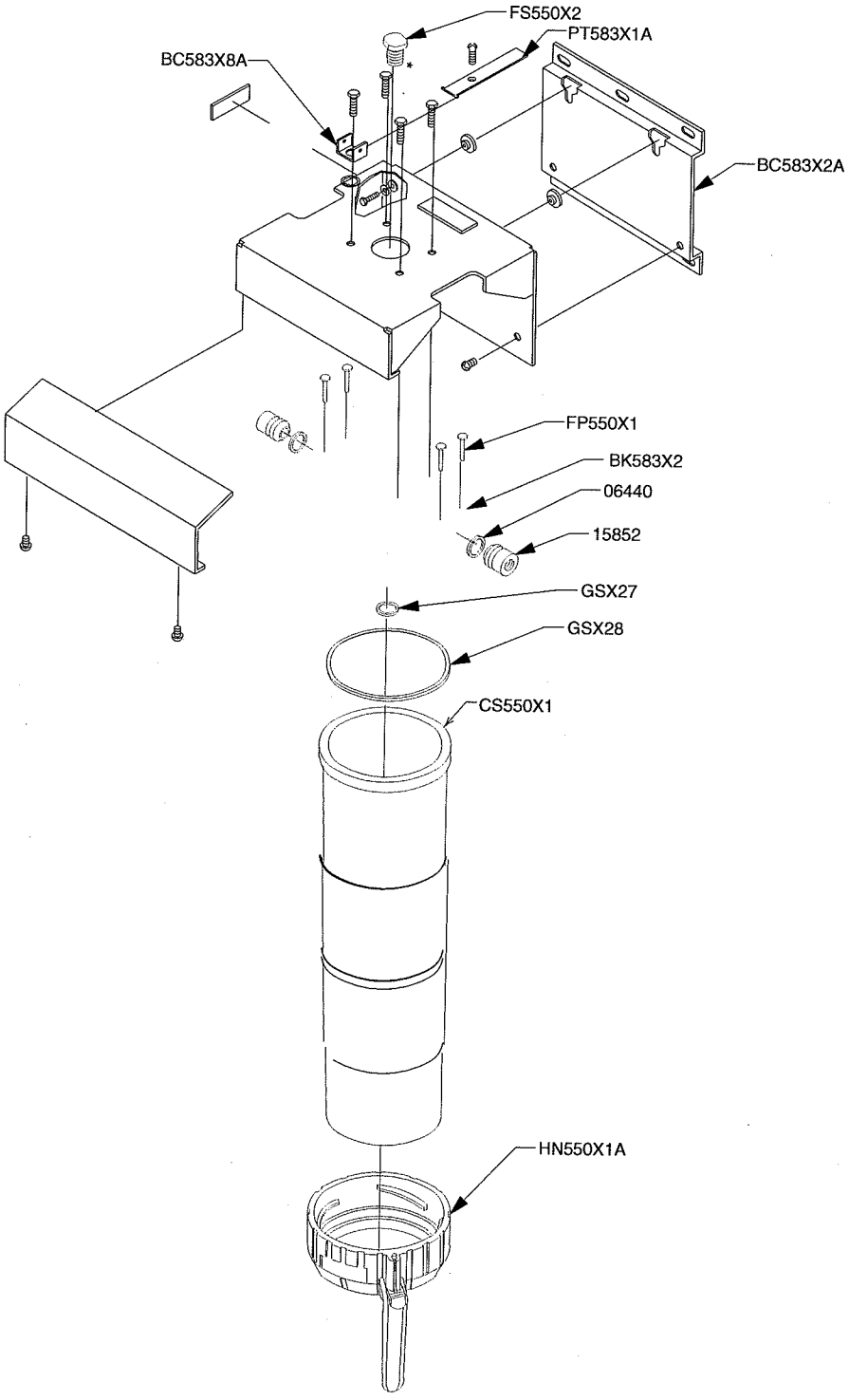


Figure 3: Exploded View B-pure (D4511)

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EXPLODED VIEWS

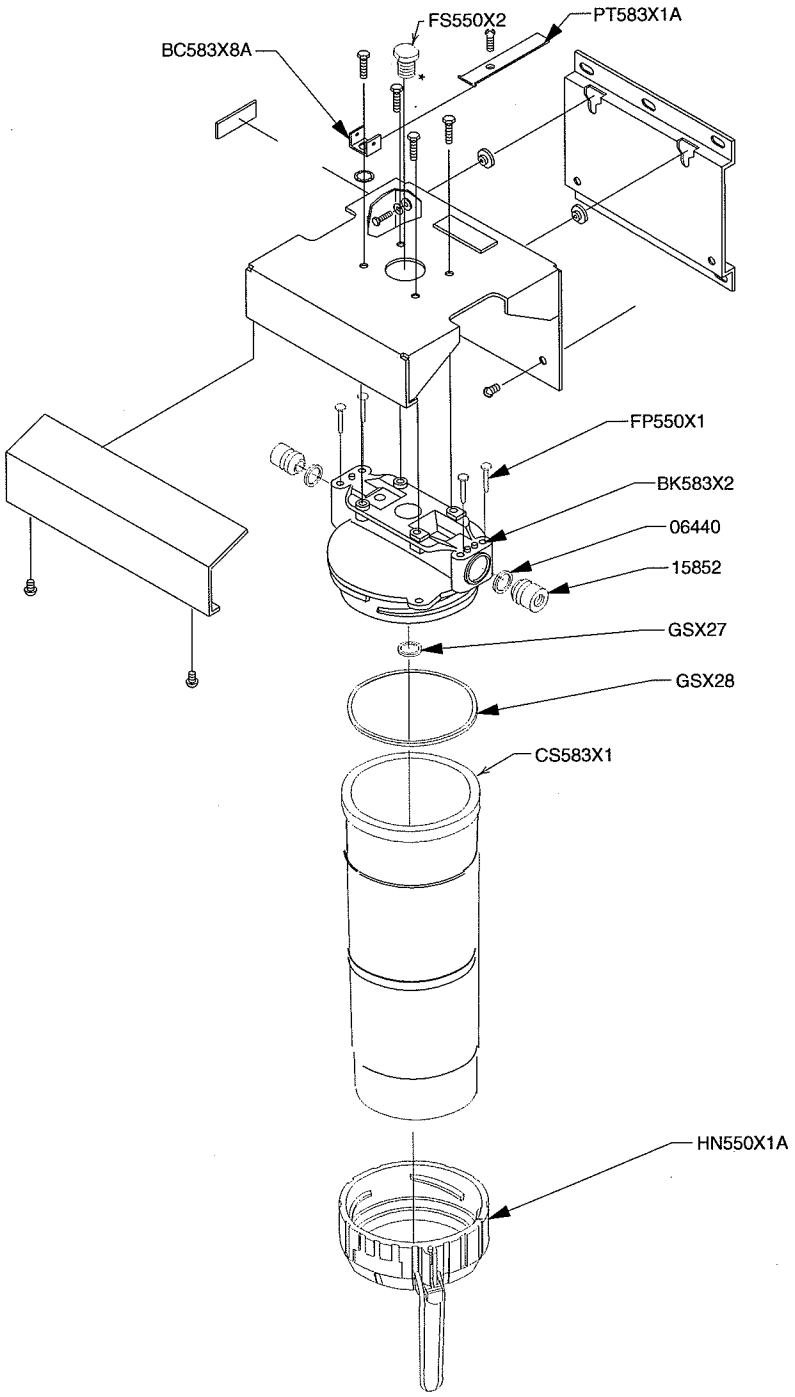


Figure 4: Exploded View B-pure (D4505)

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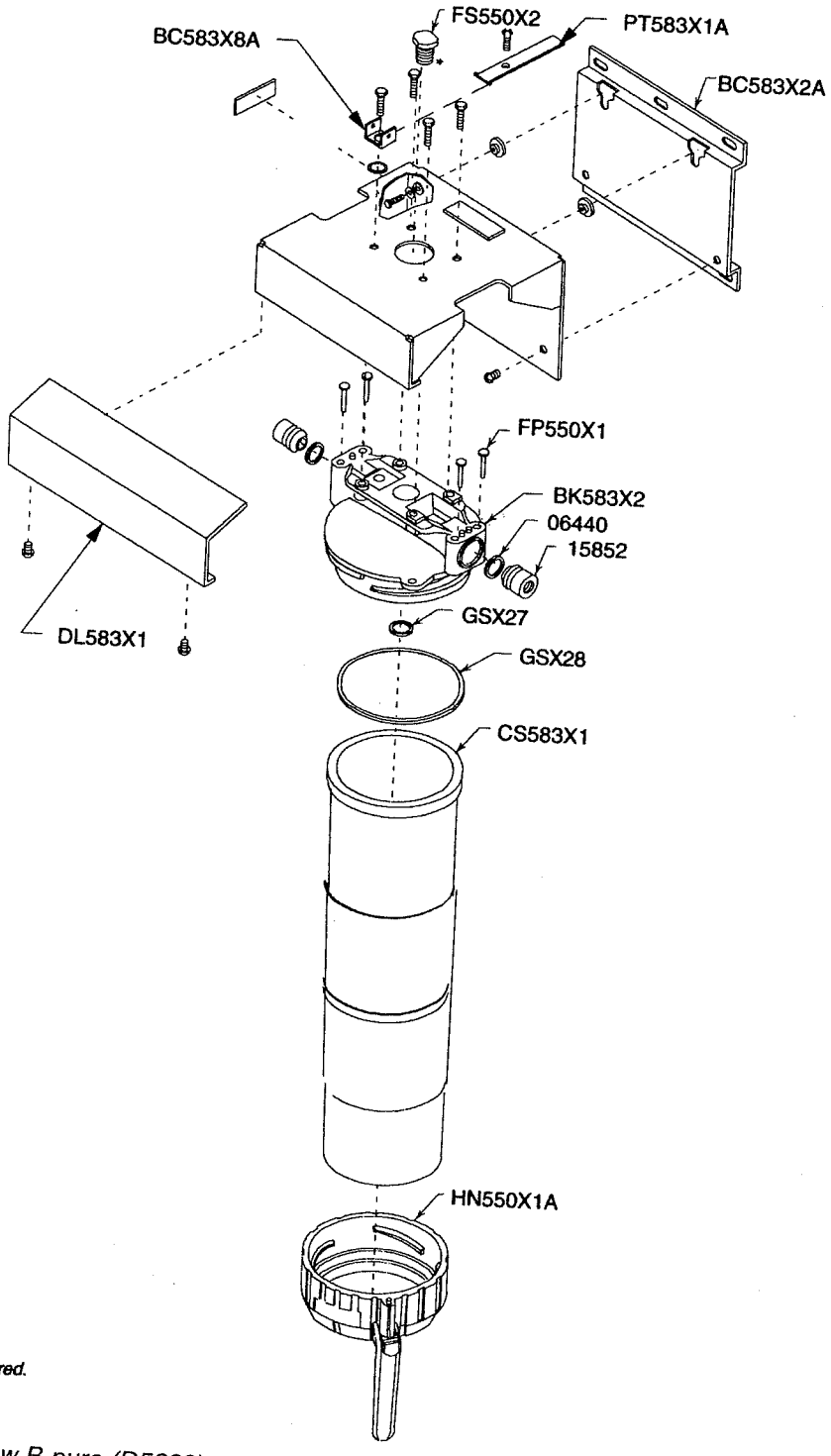


Figure 5: Exploded View B-pure (D5839)

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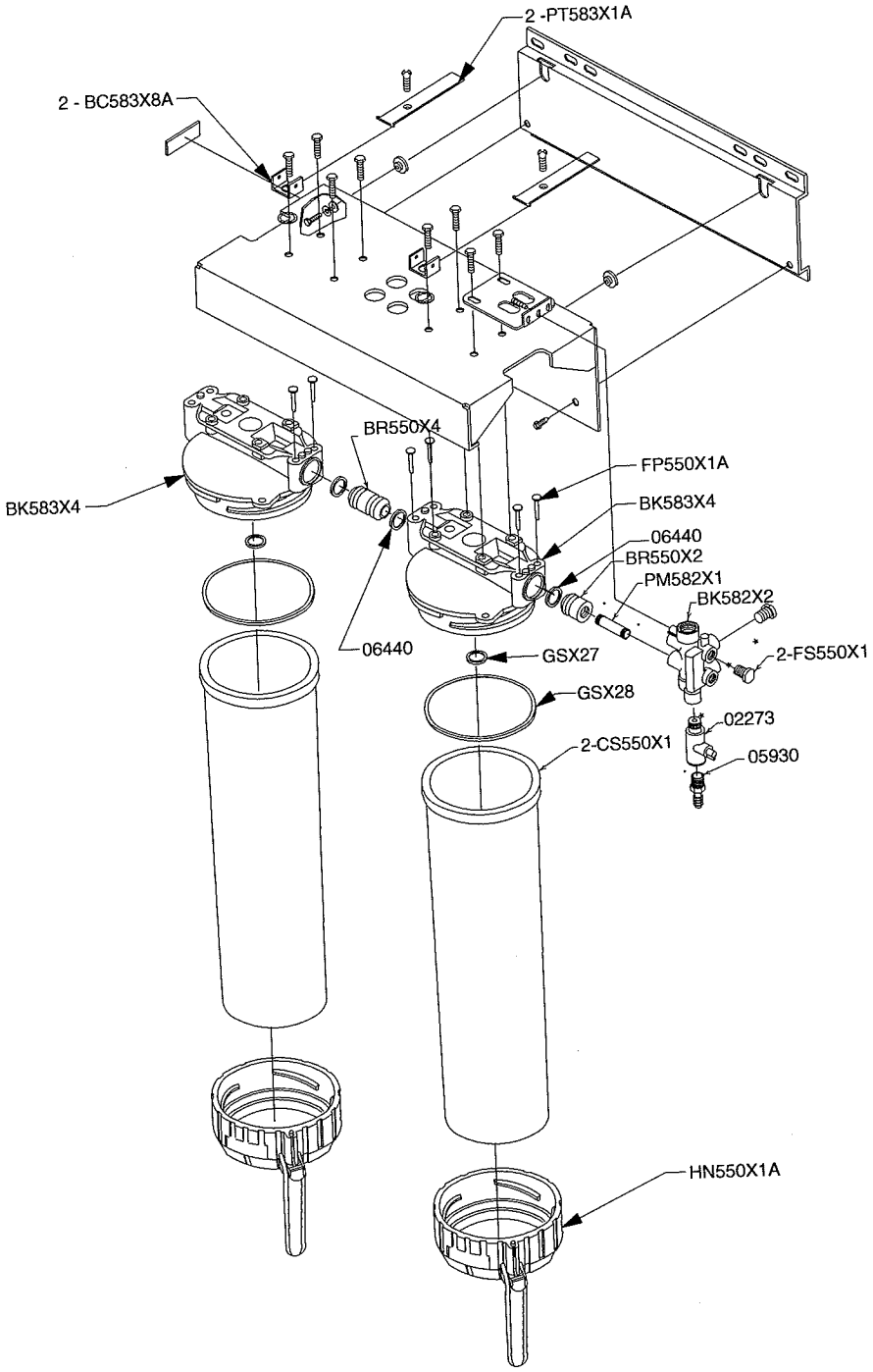


Figure 6: Exploded View for Dual Holder B-pure

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Replacement Parts



Warning
To avoid electrical shock, always disconnect from power supply before maintenance and servicing.

Refer servicing to qualified personnel.

Recommended Spares

Consumable parts are those required to support the day-to-day operation of this equipment. Barnstead International establishes two types of consumables:

- Those items that must periodically be replaced to maintain performance (filters, resin cartridges, etc.)
- Other items of limited life (indicator lights, fuses. etc.) that the user can expect to replace on a more or less random basis.

The replacement of consumable parts is discussed in the Maintenance and Servicing section of this manual to assist the user in accomplishing his own service.

Consumables List

The only consumables used in the B-pure products are user selected. The following chart is provided for the user as a means of recording the cartridges, part numbers (catalog numbers), and their location in the system.

Location	Part# (Qty)	Description
1		
2		
3		
4		
5		
6		

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 International recommends that the user stock the general maintenance parts as an aid to ensuring the continued operation of this equipment.

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Part #	Description	Recommended Quantity 1/2 size B-pure	Single B-pure	Dual B-pure
GSX27	O-ring, cartridge head seal	1	1	2
GSX28	O-ring, large head seal	1	1	2
06440	O-ring (between heads)	1	1	4
FP550X1	Fastener pin	4	4	8
BR550X4	Head interconnector	N.R.	N.R.	1
15852	Connector (inlet/outlet)	1	1	1

Safety Stock

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

Part #	Description	Recommended Quantity 1/2 size B-pure	Single B-pure	Dual B-pure
BK583X4	Cartridge canister head	N.R.	1	2
BK583X2	Filter canister head	1	N.R.	N.R.
CS550X1	Full-size cartridge canister	N.R.	1	1
CS583X1	1/2-size filter canister	1	N.R.	N.R.
D2770	Resistivity meter, 115 VAC	N.R.	N.R.	1
D2769	Resistivity meter, 230 VAC	N.R.	N.R.	1
HN550X1A	Cartridge canister handle	1	1	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 International** dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at 563-556-2241 or 800-553-0039.

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

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One Year Limited Warranty

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

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

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

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

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

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

BarnsteadInternational

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