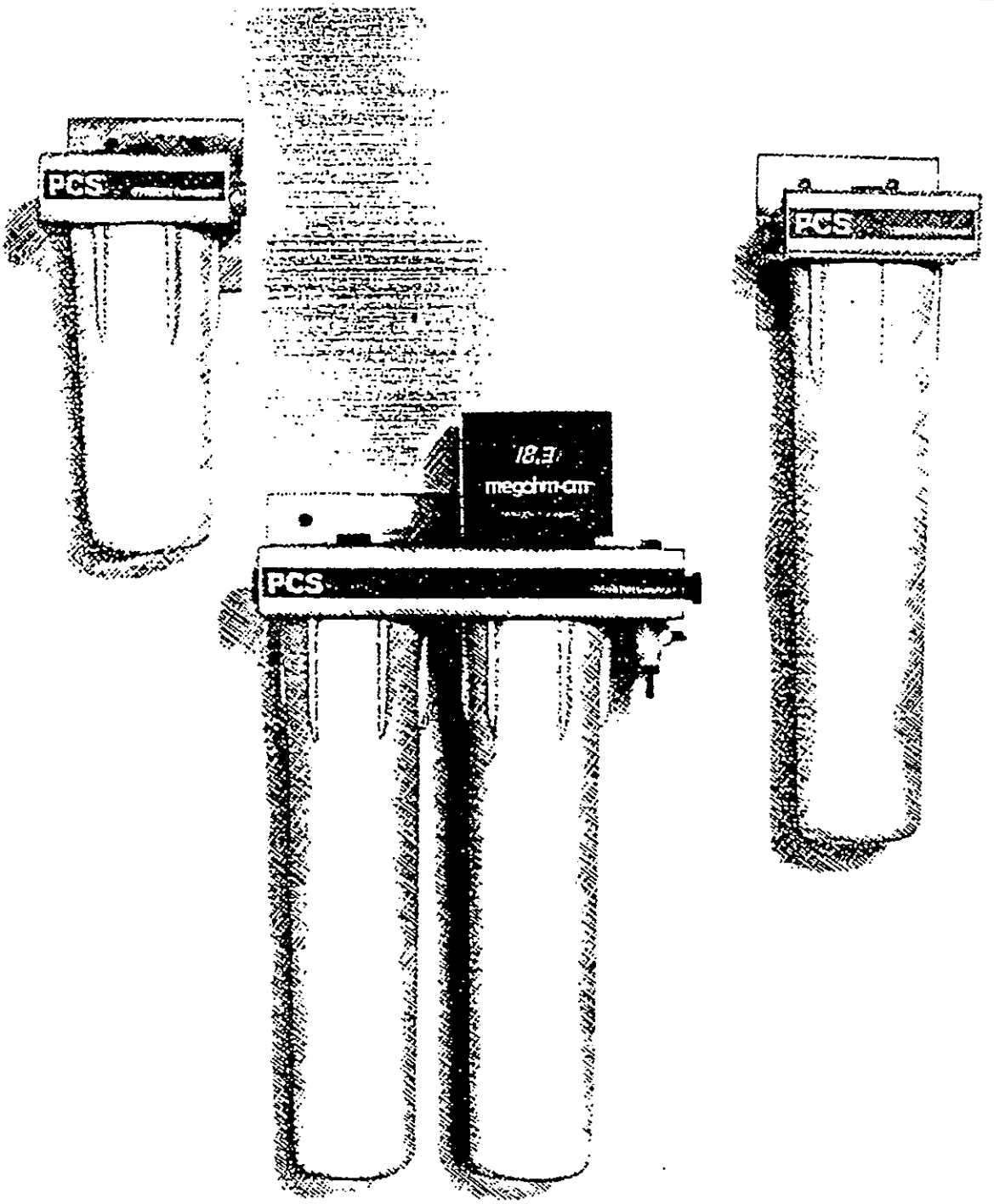
Barnstead PCS

OWNER'S MANUAL



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IMPORTANT

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 PCS.

WARNING

DO NOT MOUNT PCS 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

TO PREVENT ELECTRICAL SHOCK, DISCONNECT THE POWER PRIOR TO SERVICING PCS.

WARNING

- AVOID SPLASHING DISINFECTING SOLUTIONS 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.

DESCRIPTION OF TERMS IN MANUAL

WARNING NOTES APPLY WHEN THERE IS A POSSIBILITY OF PERSONAL INJURY.
CAUTION NOTES APPLY WHEN THERE IS A POSSIBILITY OF DAMAGE TO THE EQUIPMENT.

NOTES alert the user of the manual to pertinent facts and conditions.

INTRODUCTION

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

This manual contains the information you will need to install, operate, and maintain the PCS (Pressure Cartridge System) that you have purchased.

Careful attention to the following instructions will assure you that your PCS is correctly installed and provides trouble-free operation.

Illustrated parts list are on pages 18, 19, 20. Take a few minutes to familiarize yourself with the hardware before installation.

PRECAUTIONS BEFORE INSTALLATION

The cartridge holders that make up the PCS 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 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 PCS System.

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

The PCS 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 on page 16. When ordering, please state catalog number, description and quantity required.

Screws and fasteners required for wall mounting are not supplied with the unit.

C. Drill holes in wall suitable for the selected fasteners.

D. Mount wall bracket and secure with fasteners.

E. Connect feedwater service to the left side of the head assembly using adapter provided. Use Teflon® tape on threads to assure a leak-free connection.

CAUTION

DO NOT OVERTIGHTEN THIS CONNECTION. EXCESSIVE TIGHTENING WILL CRACK THE ADAPTER.

F. Make outlet connections as required by your specific application.

G. If you are installing a resistivity meter, apply 1 to 1-1/2 turns of Teflon tape to the cell thread. Install meter into the top of the head.

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CAUTION

DO NOT OVERTIGHTEN CELL. EXCESSIVE TIGHTENING WILL CRACK THE HEAD.

NOTE

The following step is only necessary when a resistivity rneter has been installed on the 1/2 PCS Holder.

H. Remove the rear screw located on the right side of the meter. Position the vent lever under the meter and fasten to the meter case using the slotted hole in the vent lever. Before tightening the screw, make sure the vent lever rests on the red vent button. The vent can now be operated by depressing the lever extension on the left side of the meter.

E. If using a resistivity meter, plug into electrical service.

F. Open the outlet valve and allow water to flow through the system until desired purity is reached.

NORMAL OPERATION

Prior to withdrawing water for use, it is recommended that the user 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

The resistivity measurement in the Dual Holder PCS 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.

F. Fill each canister to within 2" of the top with one of the above disinfecting solutions, and reassemble the canisters on the unit.

G. Open the shutoff valve on the inlet side of the system.

H. Open the outlet valve and draw off approximately 200 ml. of solution. Discard this solution.

I. Close inlet and outlet valves.

J. Allow the disinfecting solution to stand for one half hour.

K. In remaining solution, soak the springs from the canisters for 5-10 minutes. Remove from solution and rinse. Discard solution.

L. Open the inlet and outlet valves and flush the system for 10 minutes.

M. Close the shutoff valve on the inlet side of the system and open the outlet valve to depressurize the system.

N. Carefully remove all the canisters from the system, and discard the solution remaining from the canisters. DO NOT RINSE THE CANISTERS.

O. Install fresh cartridges in the system as explained in Initial Operation. Be sure a spring is installed in the canister.

P. Turn to the Operation section of this manual for filling procedure and normal operation.

RESISTIVITY CELL CLEANING

Clean the resistivity cell as follows:

A. Disconnect power to the system.

B. Close the shutoff valve on the inlet side of the system.

C. Open the outlet valve.

D. Remove meter and cell assembly from the head. If you have used the vent lever accessory, you must remove the vent lever before unscrewing the meter.

CAUTION

THE CELL ELECTRODES ARE ETCHED TO IMPROVE WETTING CHARACTERISTICS. DO NOT MECHANICALLY ABRADE OR DAMAGE THIS SURFACE.

E. Wash the cell in a mild detergent solution or a 10% inorganic acid solution (follow manufacturer's 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.

CAUTION

DO NOT IMMERSE THE ENTIRE CELL ASSEMBLY IN THE CLEANING SOLUTION, ONLY THE ELECTRODE PORTION.

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

CAUTION

DO NOT OVERTIGHTEN CELL. EXCESSIVE TIGHTENING WILL CRACK THE HEAD.

SHUTDOWN

If the PCS 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 new cartridges installed prior to use.

INTRODUCTION

All PCS Products are designed for interconnection to form a variety of water treatment systems. Individual application requirements will determine the correct sequence of PCS 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 that you read this entire section before proceeding with actual assembly.

TOOLS AND ACCESSORIES

Constructing a custom system will require the following tools:

1. Small screwdriver (slot blade) for dress plate removal.
2. Large screwdriver (8" or 10" overall length) for removal of U-pins. A slot type is preferred, however, a phillips type may be used.
3. A small mallet or hammer for re-seating the U-pins.

If your system design requires the use of a resistivity meter (D2770 or D2769) in the 1/2 PCS Holder, you *must* order a PCS Vent Button Lever. (All meters with serial numbers higher than 84-10XXX require PCS Vent Button Lever, Cat. No. 16755. All other meters require PCS Vent Button Lever, Cat. No. 16597.)

GENERAL PROCEDURE

After unpacking the PCS components, place them on a table in the desired order. As a general rule, you should try and position any Dual Holder (D2702 and D2703) as far to the right as possible to reduce the number of dress plates that need to be moved. After positioning, it will be easy to observe interferences of the dress plates. Starting from the left side, remove the first dress plate where there is an interference. Then remove all the dress plates to the right (dress plate removal is easier with the canisters removed). Set the dress plates and mounting screws aside.

CAUTION

DO NOT ATTEMPT TO GET THE CORRECT SEQUENCE BY INTERCHANGING JUST THE CARTRIDGE CANISTERS. THE 1/2 HOLDER (D0701) REQUIRES A SPECIAL HEAD. ALWAYS USE THE 1/2 SIZE CANISTER WITH THE HEAD THAT HAS THE RED VENT BUTTON.

Next remove all of the U-pins in the canister heads where two heads touch each other and remove the adapters or assemblies retained by the U-pins. U-pins are removed by prying them up with a long screwdriver. Set the U-pins and other parts aside. If you have a Dual Holder (D2702 or D2703), it is not necessary to remove the factory installed U-pins that join the heads.

Locate the head interconnectors (15853) 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 U-pins and tap 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 Utility Connections Section of this manual for mounting instructions.

FIGURE A. 3-HOLDER PCS UNIT

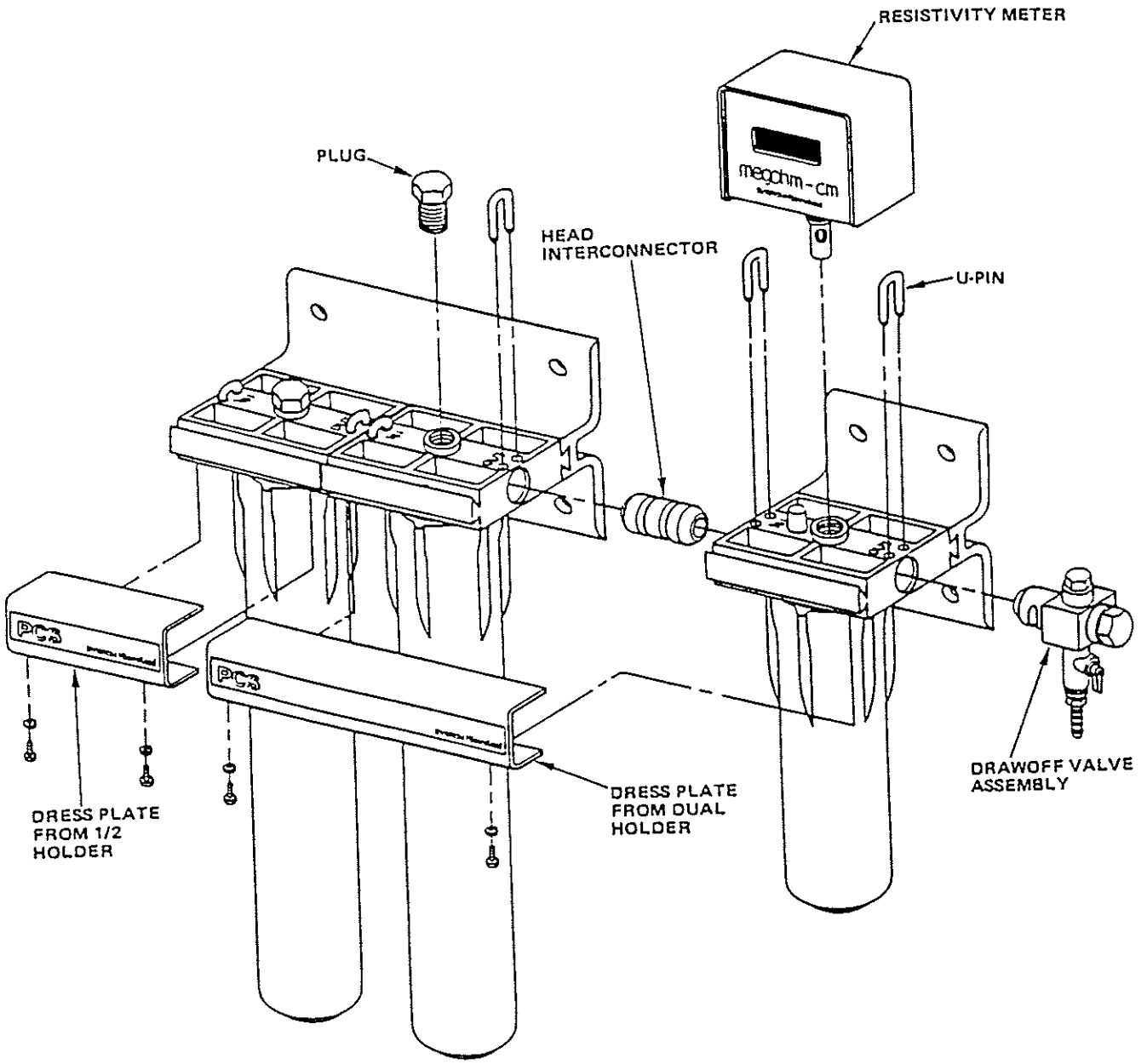
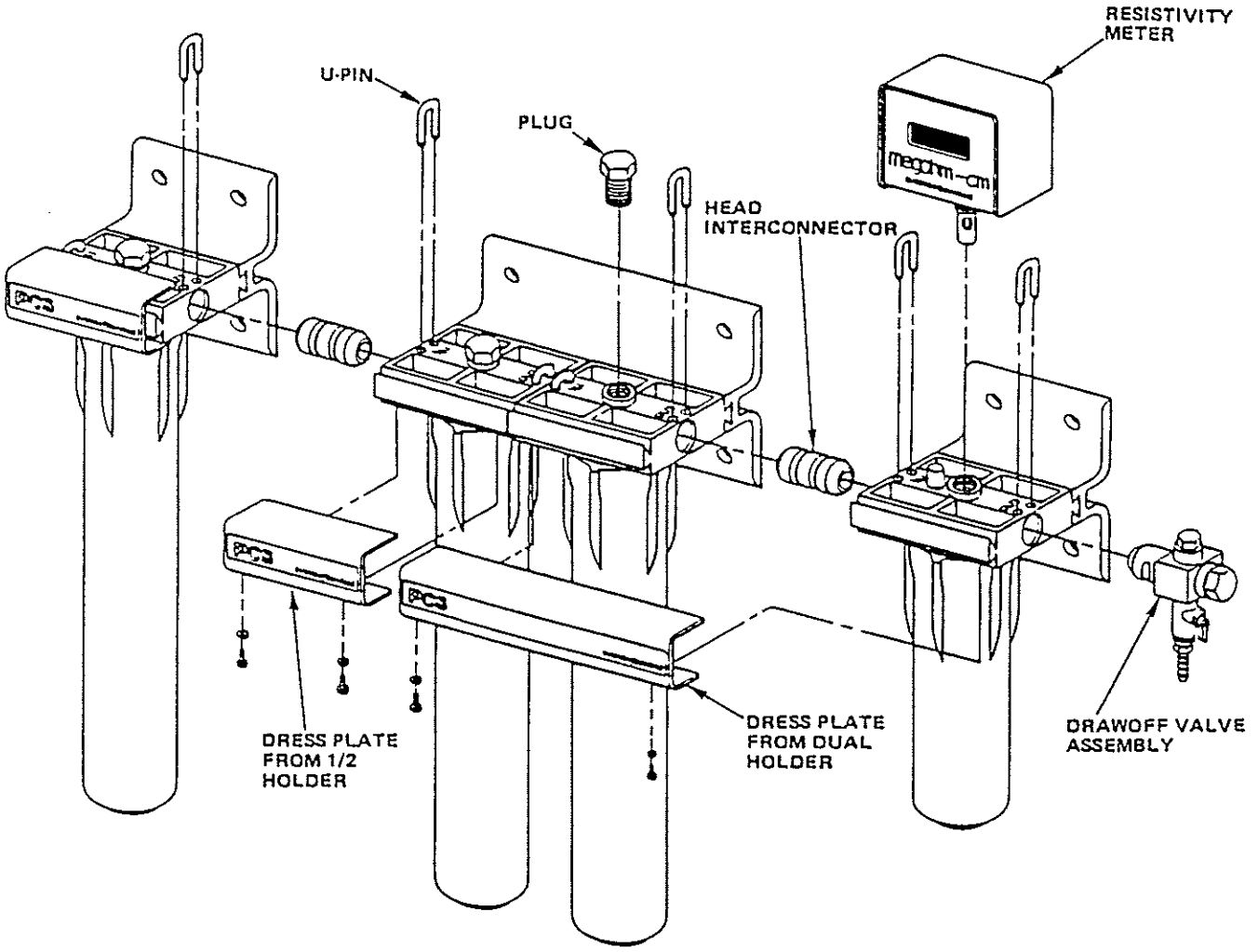


FIGURE B. 4-HOLDER PCS UNIT



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

GENERAL MAINTENANCE PARTS

Description	Cat. No.	Recommended Quantity		
		1/2 PCS	Single PCS	Dual PCS
O-Ring (Cartridge Seal)	06411	N/R	1	2
Quad-Ring	06808	1	1	2
O-Ring (Between Heads)	06440	1	1	1
U-Pin	15854	1	1	1
Head Interconnector	15853	N/R	N/R	1
Connector (Inlet/Outlet)	15852	1	1	1
Spring	06613	N/R	1	1
Drawoff Valve Assembly	D2746	N/R	N/R	1

Safety Stock. For critical applications where performance with MINIMUM downtime is required, Barnstead 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 technicians, thereby, avoiding unnecessary delays in delivery of replacement parts.

SAFETY STOCK

Description	Cat. No.	Recommended Quantity		
		1/2 PCS	Single PCS	Dual PCS
Cartridge Canister Head	16215	N/R	1	1
Filter Canister Head	16106	1	N/R	N/R
Full Size Cartridge Canister	30100	N/R	1	1
1/2 Size Filter Canister	30101	1	N/R	N/R
Resistivity Meter 115 VAC	D2770	N/R	N/R	1
Resistivity Meter 230 VAC	D2769	N/R	N/R	1

N/R Denotes "Not Required"

TECHNICAL CHARACTERISTICS

FEEDWATER REQUIREMENTS

Types	Tap, RO, DI, Distilled
Pressure	7 kg/cm² (100 psig) maximum
Temperature	4-49°C (40-120°F)

INSTALLATION

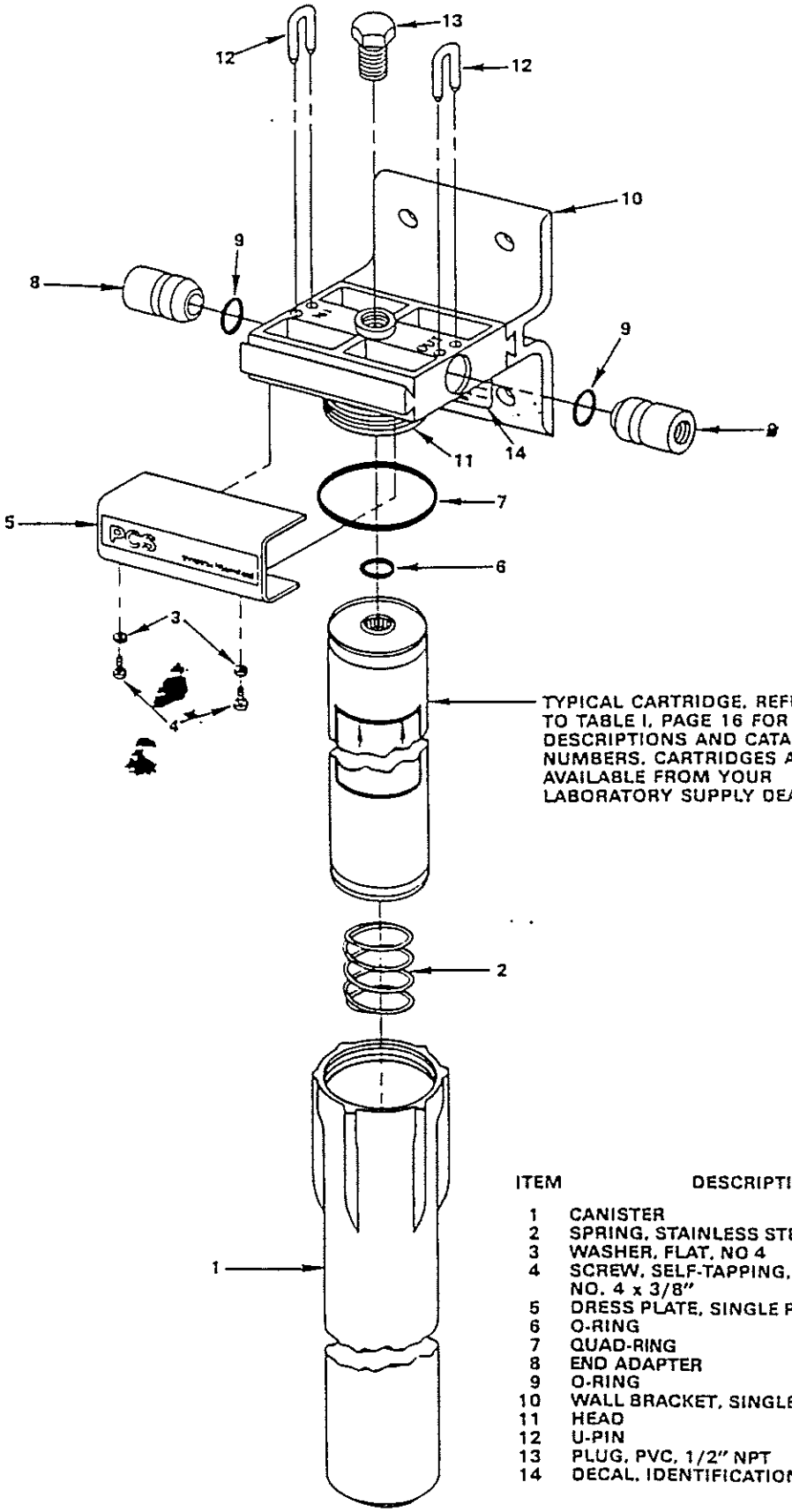
Mounting — Wall Mount with Bracket Provided

	DUAL PCS	SINGLE PCS	1/2 PCS
Dimensions mm (in.)			
Width	381 (15)	178 (7)	178 (7)
Depth	171.5 (6-3/4)	171.5 (6-3/4)	171.5 (6-3/4)
Height	673 (26-1/2)	591 (23-1/4)	368 (14-1/2)
Operating Weight kg (lbs.)	12.7 (28)	5.9 (13)	3.6 (8)
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	± 1.0 Megohm-cm
Cell	0.1 Constant
Electrical Requirements	
120 VAC, 50/60 HZ Nominal	108-132 VAC, 47-63 HZ, 5 Watts
240 VAC, 50/60 HZ Nominal	216-264 VAC, 47-63 HZ, 5 Watts

FIGURE D. SINGLE HOLDER PCS



TYPICAL CARTRIDGE. REFER TO TABLE I, PAGE 16 FOR DESCRIPTIONS AND CATALOG NUMBERS. CARTRIDGES ARE AVAILABLE FROM YOUR LABORATORY SUPPLY DEALER.

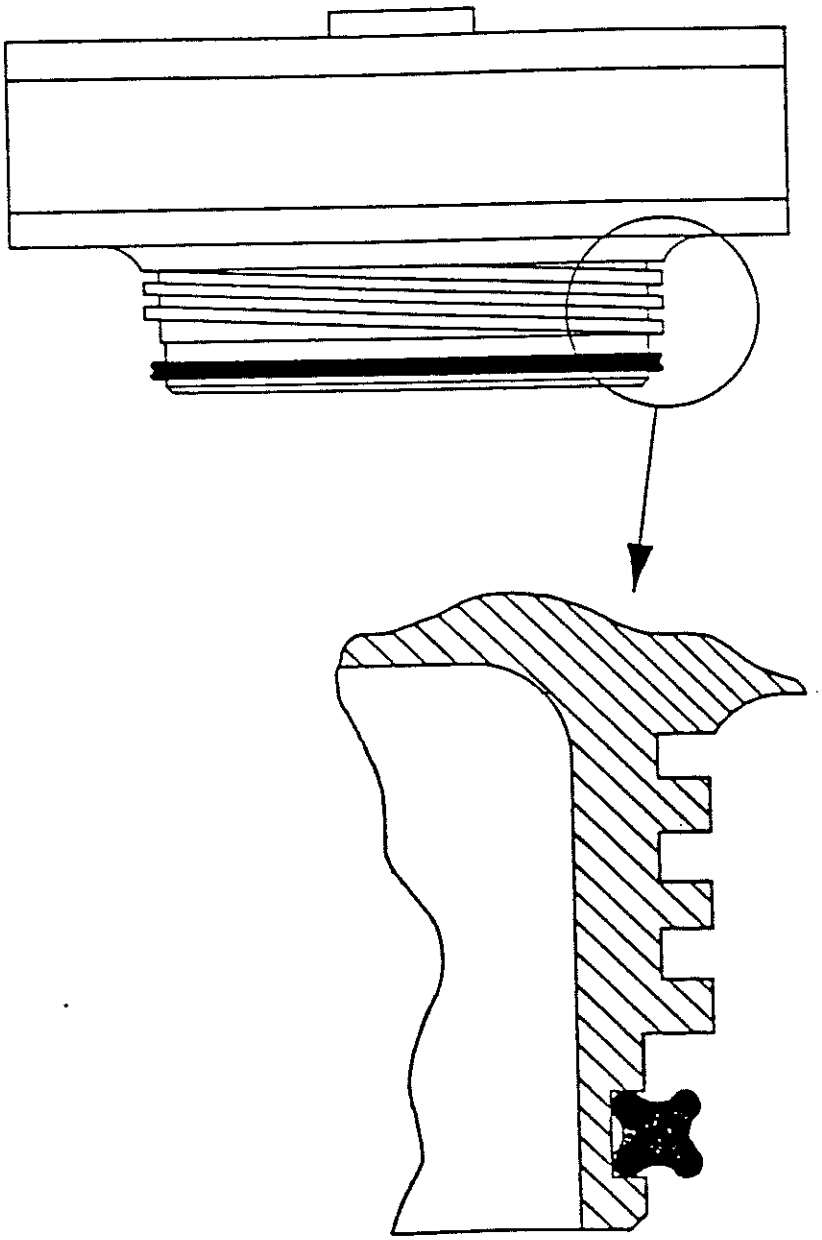
ITEM	DESCRIPTION	CATALOG NO.
1	CANISTER	30100
2	SPRING, STAINLESS STEEL	06613
3	WASHER, FLAT, NO 4	10280
4	SCREW, SELF-TAPPING, NO. 4 x 3/8"	10273
5	DRESS PLATE, SINGLE PCS	06887
6	O-RING	06411
7	QUAD-RING	06808
8	END ADAPTER	15852
9	O-RING	06440
10	WALL BRACKET, SINGLE PCS	15857
11	HEAD	16215
12	U-PIN	15854
13	PLUG, PVC, 1/2" NPT	15002
14	DECAL, IDENTIFICATION	06838

ADDENDUM

QUAD-RING (O-RING, HEAD SEAL) 06808 INSTALLATION

When replacing the Quad-Ring on PCS head, use the illustration below as a guide for proper orientation of Quad-Ring.

1. Place the Quad-Ring into the groove in the rear of the PCS head threads.
2. Gently guide the remainder of the Quad-Ring into the groove.
3. Inspect Quad-Ring seal to make sure that it has not twisted.



BARNSTEAD
NEW EQUIPMENT WARRANTY

The Barnstead Company warrants all equipment supplied by it which is of its manufacture to be free from defects in material and workmanship eighteen months from original shipment or twelve months from installation, whichever first occurs. Unless otherwise specified, service labor required to repair or replace shall be provided by Barnstead or its authorized Agents or Distributors for a period of ninety (90) days from the start of the warranty period. Defective parts shall be replaced for the full warranty year; however, labor to repair or replace such parts shall be at the Purchaser's expense after the first 90 days. This policy is limited to the Continental United States and Canada.

This warranty shall not apply if equipment has been damaged in transit or has been improperly used or maintained. Although Barnstead does not warrant equipment which has been manufactured by others, it will assist Purchaser to assert guaranties or warranties furnished to Barnstead by such other manufacturers.

There are no other guaranties or warranties expressed or implied. Barnstead shall under no circumstances be liable for special, indirect or consequential damages, nor for losses and expenses arising from installation or use, regardless of the advises or recommendations that may have been rendered concerning installation or use of the product.

Additional copies of this owner's manual may be purchased; order part number, 60257.

MINIMUM CHARGE FOR PARTS ORDERS IS $50.00.