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User's Manual

WaterPro® PS Systems

Models

90005 Series
90006 Series
90007 Series

To receive important product updates,
complete your product registration card
online at **register.labconco.com**

Please read the User's Manual before operating the equipment.

Warranty

Labconco Corporation provides a warranty to the original buyer for the repair or replacement of parts and reasonable labor as a result of normal and proper use of the equipment with compatible chemicals. Broken glassware and maintenance items, such as filters, gaskets, light bulbs, finishes and lubrication are not warranted. Excluded from warranty are products with improper installation, erratic electrical or utility supply, unauthorized repair and products used with incompatible chemicals.

The warranty for WaterPro® PS Systems will expire one year from date of installation or two years from date of shipment from Labconco, whichever is sooner. Warranty is non-transferable and only applies to the owner (organization) of record.

Buyer is exclusively responsible for the set-up, installation, verification, decontamination or calibration of equipment. This limited warranty covers parts and labor, but not transportation and insurance charges. If the failure is determined to be covered under this warranty, the dealer or Labconco Corporation will authorize repair or replacement of all defective parts to restore the unit to operation. Repairs may be completed by 3rd party service agents approved by Labconco Corporation. Labconco Corporation reserves the rights to limit this warranty based on a service agent's travel, working hours, the site's entry restrictions and unobstructed access to serviceable components of the product.

Under no circumstances shall Labconco Corporation be liable for indirect, consequential, or special damages of any kind. This warranty is exclusive and in lieu of all other warranties whether oral, or implied.

Returned or Damaged Goods

Do not return goods without the prior authorization from Labconco. Unauthorized returns will not be accepted. If your shipment was damaged in transit, you must file a claim directly with the freight carrier. Labconco Corporation and its dealers are not responsible for shipping damages.

The United States Interstate Commerce Commission rules require that claims be filed with the delivery carrier within fifteen (15) days of delivery.

Limitation of Liability

The disposal and/or emission of substances used in connection with this equipment may be governed by various federal, state, or local regulations. All users of this equipment are required to become familiar with any regulations that apply in the user's area concerning the dumping of waste materials in or upon water, land, or air and to comply with such regulations. Labconco Corporation is held harmless with respect to user's compliance with such regulations.

Contacting Labconco Corporation

If you have questions that are not addressed in this manual, or if you need technical assistance, contact Labconco's Customer Service Department or Labconco's Product Service Department at 1-800-821-5525 or 1-816-333-8811, between the hours of 7:30 a.m. and 5:30 p.m., Central Standard Time.

Part #9049605, Rev. B
ECO L506

Original Instructions

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Chapter 1: Introduction

The Labconco WaterPro PS Polishing Systems have been specifically designed to meet the ultrapure water needs in a variety of laboratory applications.

The most basic of WaterPro PS models, General Chemistry, is ideally suited for typical chemical research labs. The WaterPro PS/HPLC models are specifically designed for demanding analytical chemistry work, involving sensitive instrumentation and requiring the lowest levels of Total Organic Carbon (TOC). The WaterPro PS/UF models are suited for bio-analytical research, requiring bacteria and/or pyrogen-free water.

Prepurified water of a minimum purity of 100µs or better is plumbed to the WaterPro PS through a 3/8" feedwater supply line. The built-in regulator allows the unit to accept water pressure from 0-100 psi. The feed water must flow at a rate of 2 liters/minute or greater at the given inlet pressure.

The General Chemistry model purifies the water to Type I quality through the use of carbon and deionization resins and provides a typical flow rate of 1.8 liters/minute. The HPLC models allow for the addition of an organic adsorption cartridge and include a dual wavelength ultraviolet reactor to oxidize last traces of organic compounds ensuring ultra low levels of total organic carbon. The Life Science models provide Type I water free of bacteria and pyrogens through the use of an ultrafilter and germicidal ultraviolet reactor. The HPLC/Hybrid models not only give HPLC quality water through the use of the ultraviolet reactor, but deliver low level bacteria and pyrogen-free water.

Each model has the capability of displaying water quality, water temperature, low resistance set point and a programmable time dispense mode. Each model is offered with a dispensing valve, with or without a dispensing gun. Figure 1 shows models with dispensing gun and with dispensing valve only. A 0.2 micron self-venting hollow fiber final filter can be added to the gun or valve as an accessory when required. Ultrafilters and optional 0.2 micron final filters will reduce pure water flow rates.

Chapter 1: Introduction

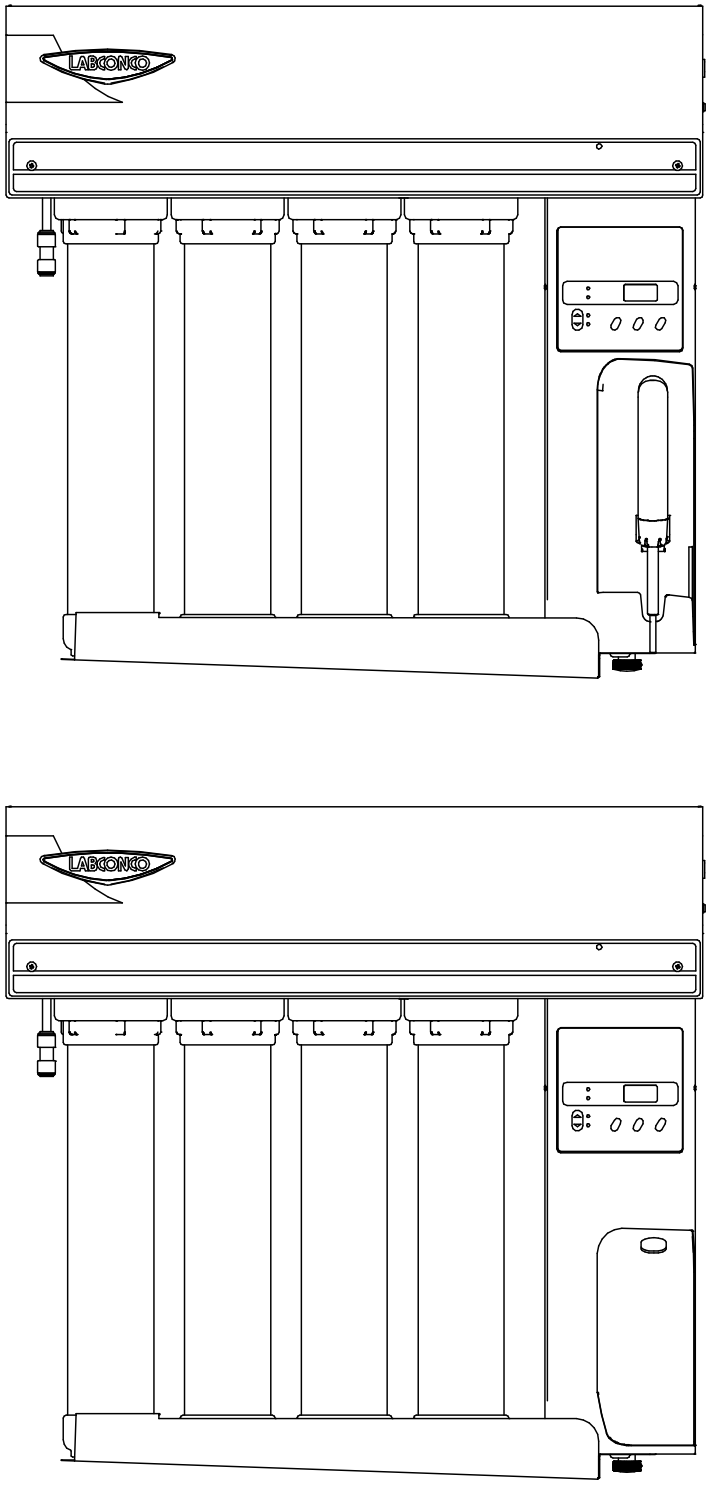


Figure 1

Safety Symbols

Your WaterPro PS System was designed with safety in mind, however conditions may exist that could be hazardous.

WARNING: Read and understand operator's manual before using this machine. Failure to follow operating instructions could result in death or serious injury.

AVERTISSEMENT : Lisez et comprenez le manuel d'opération avant d'utiliser cette machine. A défaut de suivre les instructions du manuel cela pourrait causer la mort ou des blessures sérieuses.

Throughout this manual potentially hazardous conditions are identified using the following words and symbols.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

AVERTISSEMENT : Ceci est le symbole d'alerte de sécurité. Il est utilisé pour vous alerter aux risques de dommages corporels potentiels. Obéissez à tous les messages de sécurité qui suivent ce symbole pour éviter la possibilité de blessures corporelles ou même de la mort.

It is important that you understand the warnings listed throughout this manual before you operate the WaterPro PS.

Chapter 1: Introduction

Chapter 2: Prerequisites

Before you install your WaterPro PS System you need to prepare your site for installation. Carefully examine the location where you intend to install your WaterPro PS. You must be certain that the mounting surface is of solid construction. An electrical source must be located near the installation site.

Carefully read this chapter to learn:

- How to select the installation location.
- The electrical supply requirements.
- The feedwater and drain requirements.
- Space requirements

Refer to APPENDIX C: WATERPRO PS SYSTEM SPECIFICATIONS for electrical and environmental conditions, specifications and requirements.

Chapter 2: Prerequisites

Location

WARNING: Do not install the WaterPro PS System directly over or near equipment that uses electrical service. Routine use and maintenance of the unit may involve water spillage. A potential for electrical shock hazard exists if improperly located.

AVERTISSEMENT : N'installez pas le système WaterPro PS au-dessus de ou près d'équipements qui utilisent le service électrique. L'utilisation et l'entretien routinier peut entraîner un déversement d'eau. Un système situé près d'appareils électrique pourrait entrainer un risque de choc électrique.

The WaterPro PS should be located adjacent to appropriate electrical, feedwater and drain connections. The unit can be wall mounted or mounted on an optional stand.
Mounting surface composition, condition and construction must be considered when mounting this unit. The surface must be able to support at least 500 pounds. Inadequate support may result in damage to the mounting surface and/or equipment. Four ¼ x 2.0" Lg. lag screws (1897432) are provided for securing the unit to typical wood frame wall studs. If the optional support stand has been purchased, follow instructions with stand.

When mounting next to a WaterPro RO System use the optional electrical connection cord, part number 1306000. This cord conveniently connects the RO to a PS. To use this cord the PS System should be located on the left side of the RO System.

Electrical Requirements

WARNING: Do not position the unit so that it is difficult to operate the main disconnect device.

AVERTISSEMENT : Ne positionnez pas l'unité de sorte qu'il soit difficile d'utiliser le conducteur principal de l'unité.

WARNING: Do not use any detachable power cord that is not adequately rated for the unit.

AVERTISSEMENT : N'employez aucun câble électrique détachable qui n'a pas la tension nominale pour l'unité.

The 115 V WaterPro PS Systems come with a detachable 15 amp power cord which has a plug to connect to a standard outlet. The electrical outlet should be rated at 115 VAC, 60 Hz, 10 Amps.

Depending on the unit ordered, the 230V units come with a 10 amp electrical cord for connecting to a wall outlet in the EU, UK, US, China/Australia or India. The outlet for 230 VAC models should be rated 230 VAC, 50 Hz, 10 Amps and be dedicated to the PS system only. A switchable circuit breaker or a switch connected to the wall outlet should be located in close proximity to the unit to provide easily accessible disconnect of the MAINS. For personal safety always use a three conductor power cord with the WaterPro PS to insure connection of the unit with the MAINS protective earthing ground. For safe operation the dedicated outlet must provide the protective earthing ground connection to the cabinet.

Feedwater and Drain Requirements

The WaterPro PS Systems are designed for use with water which as been pre-purified, such as distilled, reverse osmosis or deionized water with a conductivity of 100µS or less. Water with higher conductivity such as tap water, will rapidly exhaust the deionization cartridges, and therefore is not recommended. Refer to APPENDIX B: WATERPRO PS SYSTEM Specification for estimated capacity of deionization cartridges.

The HPLC, UF and Hybrid models are equipped with a drain line that must be routed to an open drain.

NOTE: When connecting the WaterPro PS to a non-pressurized feedwater supply, such as a storage tank, the WaterPro PS System cabinet must not be located more than 5 feet above the storage tank. The supply tube should be at least 1/4" inner diameter and the length of the supply tube should not exceed 5 feet.

IMPORTANT NOTE: System performance, membrane, and cartridge life span are directly related to the feedwater. It is important to establish feedwater quality before installing and operating the unit. If you are uncertain about the quality of your feedwater, or would like us to calculate the capacity of your system's cartridges given your feedwater quality, contact Labconco at (800) 821-5525.

Space Requirements

Wall mounted units require a minimum of 6" clearance on the bottom for cartridge/sump bowl removal.

Refer to APPENDIX B: WATERPRO PS SYSTEM DIMENSIONS for dimensional drawings of the WaterPro PS System.

Chapter 2: Prerequisites

Chapter 3:
Getting Started

Now that the site for your WaterPro PS System installation site is properly prepared, you are ready to unpack, inspect, install, and test your WaterPro PS System. Read this chapter to learn how to:

- Unpack and move your WaterPro PS System.
- Set up your WaterPro PS System.
- Connect a Glassware Washer or WaterPro PS System.
- Understand Operating Precautions

Chapter 3: Getting Started

Unpacking Your WaterPro PS System

Carefully unpack your WaterPro PS System and inspect it for damage that may have occurred in transit. If your WaterPro PS System is damaged, notify the delivery carrier immediately and retain the entire shipment intact for inspection by the carrier.

The United States Interstate Commerce Commission rules require that claims be filed with the delivery carrier within fifteen (15) days of delivery.

NOTE: Do not return goods without the prior authorization of Labconco. Unauthorized returns will not be accepted. If the WaterPro PS System was damaged in transit, you must file a claim directly with the freight carrier. Labconco Corporation and its dealers are not responsible for shipping damage.

Do not discard the carton or packing material for your WaterPro PS System until you have checked all of the components and installed and tested the WaterPro PS System.

WaterPro PS System Components

The WaterPro PS System is available to operate at 115V or 230V. Locate the model of WaterPro PS System you received in the following table. Verify that the components listed are present and undamaged.

As shipped, the carton should contain the following:

Part Number	Description
9000520	General Chemistry Model, 115V, 60 Hz
9000521	General Chemistry Pistol Model, 115V, 60 Hz
9000530, 40, 60, 70, 80	General Chemistry Model, 230V, 50 Hz
9000531, 41, 61, 71, 81	General Chemistry Pistol Model, 230V, 50 Hz
or	
9000620	HPLC Model, 115V, 60 Hz
9000621	HPLC Pistol Model, 115V, 60 Hz
9000630, 40, 60, 70, 80	HPLC Model, 230V, 50 Hz
9000631, 41, 61, 71, 81	HPLC Pistol Model, 230V, 50 Hz
or	
9000720	UF Model, 115V, 60 Hz
9000721	UF Pistol Model, 115V, 60 Hz
9000730, 40, 60, 70, 80	UF Model, 230V, 50 Hz
9000731, 41, 61, 71, 81	UF Pistol Model, 230V, 50 Hz
or	
9000722	HPLC/UF Hybrid, 115V, 60 Hz
9000732, 42, 62, 72, 82	HPLC/UF Hybrid, 230V, 50 Hz

Part Number	Description
9049602	Manual, PS
9109100	Spanner Wrench
9108200	Template
1334500	Power Cord, 115V
or	
1338000	Power Cord, 230V US
or	
1336100	Power Cord, 230V EU
or	
1332600	Power Cord, 230V UK
1332700	Power Cord, 230V CHINA/AUS
or	
1345700	Power Cord, 230V INDIA
1541700	Tube Support
1552500	Tube, Polyurethane Black 3/8 OD x ¼ ID x 5'
9013415	Tube, Parflex 3/8 OD x ¼ ID x 5'
1897432	Screw, Wall Mount ¼-X 2.0" Lg. Lag

Chapter 3: Getting Started

Component Identification (Refer to Figure 2)

1 **Inlet Port (located on underside).** Connects the WaterPro PS to the feedwater supply line (3/8" OD (0.95 cm) rigid plastic tubing). Feedwater must have a pressure of 0 – 100 psi, a minimum flow rate of 2 liters/minute and a conductivity of 100 µS or less.

2 **Drain Port (located on underside).** Connect 3/8" OD (0.95 cm) line and route to drain. (HPLC, Life Science and Hybrid models only)

3 **Pressure Regulator**. Protects the system from excessive inlet pressure. Factory adjusted and should not require readjustment. Ensures proper recirculation, Call Labconco Product Service before trying to adjust.

4 **Recirculation Pump & Motor.** Circulates water through the system. This pump is a rotary vane self-priming pump that requires water flow for lubrication. Operation of system without an inlet water supply will damage the pump.

5 **Carbon Cartridge Bowl.** Unpigmented virgin polypropylene bowl that houses the carbon cartridge for the removal of organics. Cartridges must be ordered separately. (Insert cartridge with O-ring pointing up as shown.)

6 **Carbon Cartridge.** Refer to page 15 for correct installation. Cartridge o-rings must point up as shown.

7 **Deionization Cartridge Bowls.** Unpigmented virgin polypropylene bowls that house the nuclear grade ion exchange resin for the removal of ionic containments. Cartridge must be ordered separately. (Insert cartridge with cartridge o-ring pointing up as shown.)
Organic Adsorption Cartridge Bowl (HPLC and Hybrid Systems only). Unpigmented virgin polypropylene bowl that houses the organic adsorption cartridge for the removal of trace organic containments. Cartridges must be ordered separately.

8 **Deionization Cartridges.** Refer to page 15 for correct installation. Cartridge o-rings must point up as shown.

9 **Organic Adsorption Cartridge.** Refer to page 15 for correct installation. Cartridge o-rings must point up as shown.

10 **Moisture Sensor.** Closes inlet valve if moisture is detected in drip pan.

11 **Ultrafilter (UF Systems only).** Removes particles, bacteria, microorganisms and pyrogens greater than 0.01 micron in diameter. (10,000 Dalton cut-off)

12 **TOC Dump Valve (HPLC and Hybrid Systems only).** Directs a small portion of purified water to drain during automatic recirculation, reducing TOC levels in the system.
Ultrafilter Flush Valve (UF and Hybrid Systems only). Allows for UF membrane to flush during automatic recirculation operations.

13 **Inlet Valve:** Closes if moisture is detected in the drip pan to shut off water supply to unit in case of leak.

14 **UV Reactor (HPLC, UF and Hybrid Systems only).** Irradiates the purified water before it is dispensed, ensuring low bacteria and organics. (Dual wavelength at both 185 and 254 nm)

15 **Resistivity Sensor.** Provides measurement of resistivity (purity) of the water.

16 **Electronic Control Center.** Provides ON/OFF, DISPENSE and MODE keys, along with digital and LED displays.

17 **Dispense Valve.** Controlled by the dispense key. Located in the cabinet on gun models and in the dispense housing for non-gun models.

18 **Dispense Housing.** Contains the electronics, dispense valve or gun depending on model.

19 **Check Valve.** Prevents inlet water from bypassing filter cartridges during dispense.

Component Identification

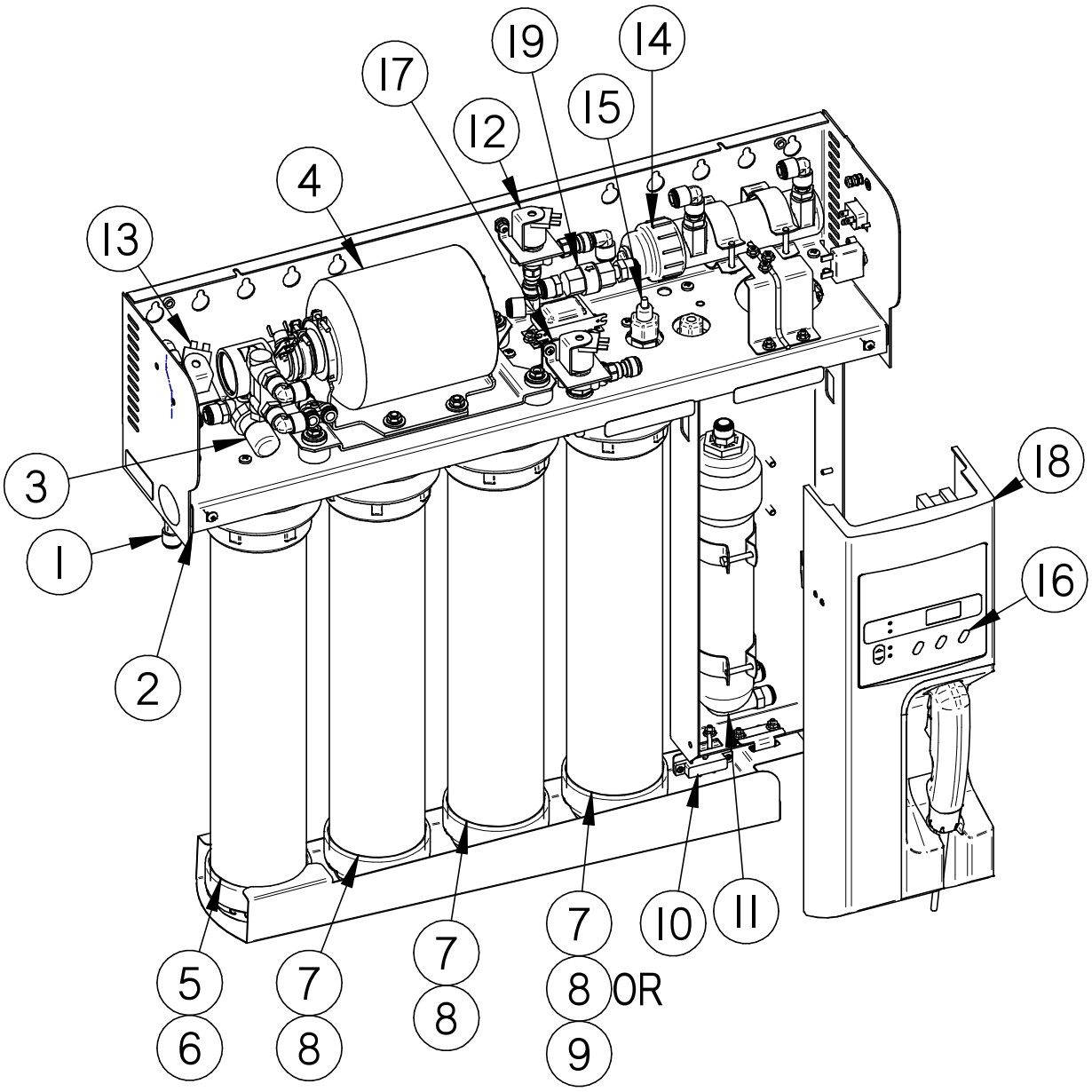


Figure 2

Chapter 3: Getting Started

Setting Up the WaterPro PS System

Unfold the installation template included and follow the instructions to mount the WaterPro PS System on a suitable wall.

If the optional Wall Mounting Panel, Support Stand or WaterPro PS/PS Mobile Stand has been purchased, discard the templates and follow instructions provided with the option.

When installing the WaterPro PS the unit should be lifted in place and supported from the bottom by two people on both sides of the unit.

Feedwater and Drain Connection

The supplied feedwater is 3/8" OD (0.95 cm) rigid plastic tubing. If more tubing is required, refer to Replacement Parts section in this manual. The tubing is inserted into the inlet port. At a convenient spot in the supply line, a valve should be installed so the WaterPro PS may be isolated from the feedwater supply when required. Line pressure should not exceed 100 psi (7 Bar).

To connect the feedwater supply to the inlet port, cut the tube square, check for burrs, and insert into the inlet water fitting as explained in the Tubing Installation section below.

Drain Connections

The HPLC, UF and Hybrid models are equipped with a drain line that must be routed to an open drain. Install the flexible tubing provided into the fitting marked drain, it is important to weight the line or attach permanently to the drain to prevent the line from coming out of the drain due to the water pressure during the flush cycle.

Tubing Installation

The tubing connectors used in the WaterPro PS have been selected for their dependability and ease of installation. A detailed drawing of a typical connection is shown in Figure 3.
For flexible tubing, be sure to insert a tube support into the end of the tubing. Rigid tubing does not require the use of a tube support.

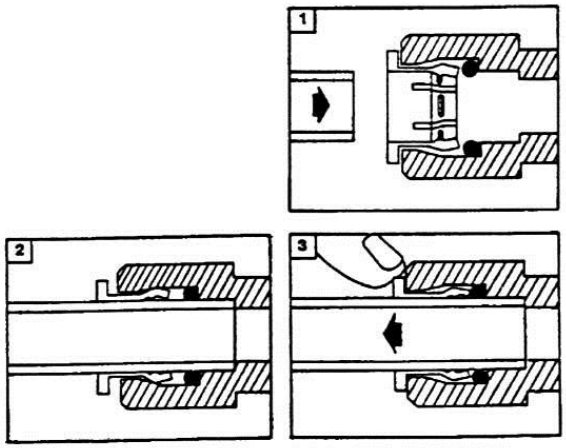


Figure 3

Cartridge Installation

1. Remove the four polypropylene sump bowls by placing the spanner wrench as high as possible around the bowls. Unscrew each bowl by turning clockwise. With a twisting motion, install the carbon filter in the first bowl and other cartridges as indicated in the table below. Check each cartridge to ensure the two black O-rings are seated properly into the sump top. Wetting of these O-rings will aid in installation. Carefully thread the bowls back into the position and ***hand tighten*** only to seal the bowl O-rings.

CARTRIDGE INSTALLATION SEQUENCE
(BOWLS ARE NUMBERED 1-4 FROM LEFT TO RIGHT)

HAND TIGHTEN SUMPS ONLY - DO NOT USE WRENCH

Model	Bowl Number	Cartridge Type	Kit Number	Catalog Number
General Chemistry Models 90005 Series	1 2 3 4	Carbon Deionization Deionization Deionization	9047101	9007201 9007301 9007301 9007301
HPLC and HPLC/UF Hybrid 90006 Series	1 2 3 4	Carbon Deionization Deionization Organic Adsorption	9047201	9007201 9007301 9007301 9053300
Life Science Models 90007 Series	1 2 3 4	Carbon Deionization Deionization Deionization	9047401	9007201 9007301 9007301 9007301
Ultrafilter is included and installed on all UF models				9104400
Hollow Fiber Final Filter (if required)				9092900

2. Place a suitable container or a hose that goes to a drain over the dispense valve or dispense gun nozzle and SLOWLY open the inlet supply valve.
3. Plug the unit into an electrical outlet and turn the power switch on.

NOTE: When activating a new Polishing System, or one that has new cartridges installed, the system will initially be full of air. This may cause the water quality display to operate erratically or incorrectly. This is common, and the display will resume normal operation when all of the air has been displaced from the system. Allow system to dispense to drain until all air has been removed. On ultrafiltered models, turn unit off and press dispense. Repeat until all air has been removed from the system. This is a normal air purging procedure.

4. If the optional filter Catalog number 9092900 has been ordered, remove it from its plastic bag and thread it into either the dispense valve or the gun. The nozzle on the valve or gun must be removed before installing hollow fiber final filter. Orient filter as shown on label. **HAND TIGHTENS ONLY**. Reference Figure 4.
5. Install the bowl. Do not over tighten.
6. Connect the tubing into the elbow. A firm tug on the tubing should not pull it out.
7. Connect a drain line to the dispensing valve.
8. Set timed dispense for 1.5 hours and start unit. After time runs out unit will automatically shut off. (Be sure prefilter and carbon/prefilter are in place).
9. Unit is ready for operation.

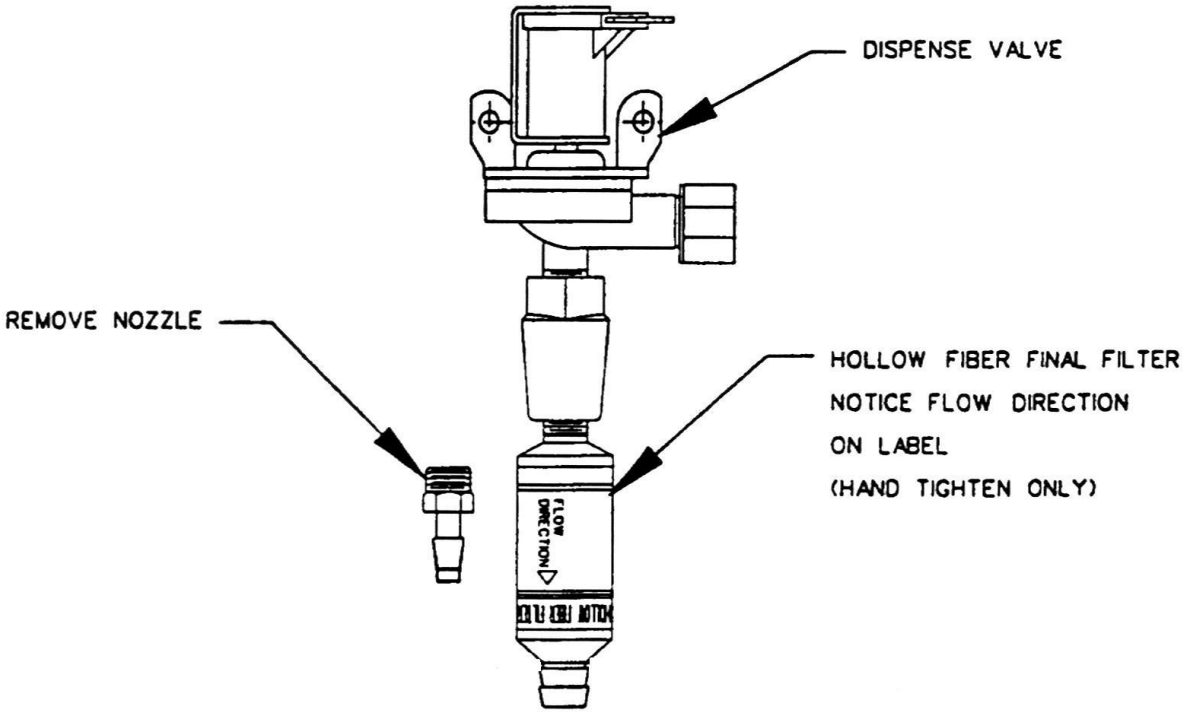


Figure 4

Operating Precautions

- After installing new cartridges, the resistivity will slowly increase due to the removal of contaminants in the system and on the cartridges. Rinse up time may be as long as 24 hours before the resistivity equals or exceeds Type 1 specifications (16-18 megohm-cm resistivity). When the unit has set for period of time allow five minutes of operation to assure equivalent water purity throughout the system. Ultrafiltered models may require longer time.
- Ensure that the WaterPro PS is connected to a prepurified source of water, such as distilled, reverse osmosis or deionized with a conductivity of 100µS or less. Water of lesser quality will exhaust the carbon, deionization and organic adsorption cartridges faster and will prematurely destroy the ultrafilter membrane. All feed and drain lines should be connected and routed in accordance to local and national plumbing codes.
- The ultraviolet lamp, used in models so equipped, emits small amounts of ultraviolet radiation during operation. ALWAYS unplug the system before removing the unit cover or servicing the lamp.
- Ensure that the unit is connected to electrical service according to local and national electrical codes. Failure to do so may create a fire or electrical hazard.
- Do not remove or service any electrical components without first disconnecting the PS system from the outlet.
- System performance and cartridge life span are directly related to the feedwater quality. It is important to establish feedwater quality before operating the unit.
- Organic adsorption and deionization cartridges have a finite capacity for purifying water before being exhausted. As the cartridges approach exhaustion, the system will require longer recirculation times to achieve 16 – 18.2 megohm-cm resistivity and the water quality may fluctuate during dispensing. Upon exhaustion, the resistivity will decrease rapidly without recovery. Replacement of the deionization and/or organic adsorption cartridges will restore water purity.
- On Ultrafiltered models with new membranes or membranes that have not been used for a period of time, allow water to dispense to drain for a period of two hours and recirculate overnight before use. Failure to do so may cause contamination in the system and/or false meghom readings. A preservative has been added to the membrane to prevent bacterial growth and freezing.

Thoroughly understand procedures and equipment before beginning work.

Chapter 3: Getting Started

CHAPTER 4
USING YOUR WATERPRO PS SYSTEM

After your WaterPro PS System has been installed as detailed in *Chapter 3: Getting Started*, you are ready to begin using your WaterPro PS System. Read this chapter to learn how to:

- Understand the display
- Operate the unit

If the unit is not operated as specified in this manual, it may impair the protection provided by the unit.

Si l'unité n'est pas utilisée comme l'indique ce manuel, cela pourrait altérer la guarantie fournie par l'unité.

Display

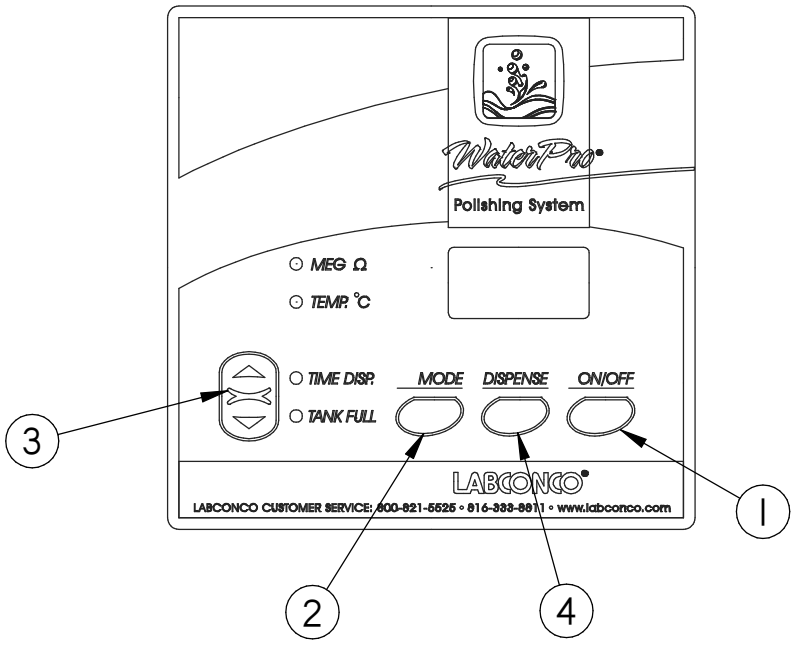


Figure 5

1. **ON/OFF Switch.** This switch starts the recirculation and lights the display. When the switch is in the OFF position the pump will automatically start and recirculate four minutes every two hours to prevent the system's water quality from degrading. Before automatic recirculation occurs the switch must be in the OFF position for a full two hours.
2. **Mode.** This key selects the mode of operation as indicated by the illuminated LED. Digital display indicates value as each mode is selected.
    a. **MegOhm.** This is the normal operating mode and displays the water purity measured in resistivity.
    b. **Temp.** Displays temperature of the water in degrees Centigrade.
    c. **Time Dispense.** Displays amount of time in minutes the system will dispense water from the dispense valve. Time can be increased or decreased using arrow keys.
3. **Set Pt.** To display minimum desired resistivity setting (up to 16 MegOhm). Display will flash if water resistivity drops below set point. Set point can be increased or decreased using arrow keys.
4. **Dispense.** Pressing this key delivers water from the dispense valve. The key must be held down to continue dispensing. The delivery will be time controlled if that mode has been selected, and value entered into the display. Relieve pressure in Ultrafiltered models by first turning OFF the display with the ON/OFF switch and pressing the dispense key until pressure in system has been relieved.

Operating the Unit

Start Up

- Plug unit into electrical outlet.
- Turn feedwater valve ON.
- Turn unit ON.
- Press DISPENSE to dispense water from dispense valve in to vessel.

Automatic Intermittent Recirculation

All WaterPro PS Systems are designed to automatically start and recirculate water during periods of nonuse to minimize rinse up time and bacterial growth. The automatic recirculation cycles last for approximately 4 minutes every two hours. This automatic recirculation feature keeps rinse up time to highest purity at a minimum. During periods of frequent use, leaving the unit constantly on will provide Type I water instantly. When the unit has set for a period of time allow five minutes of operation to assure equivalent water purity throughout the system. Ultrafiltered models may take longer.

Ultrafilter Flush Valve Operation

The ultrafilter flush valve, found only on Ultrafiltered models, has been preset to open and flush to drain for one minute on alternate recirculation cycles. (The valve opens for one minute every four hours), to flush and clean the ultrafilter membrane. Reference Item 12 on Page 12 of this manual.

Total Organic Carbon (TOC) Dump Valve Operation

The TOC flush valve, found on HPLC models, has been preset to open and flush to drain for one minute on alternate recirculation cycles (the valve opens for one minute every four hours), to maintain the lowest possible TOC values. Reference Item 12 on page 12 of this manual.

Chapter 4: Using Your WaterPro PS System

Work Techniques

- Use clean glassware to collect PS water.
- Disconnect unit to service.
- Check to ensure security of drain lines.

Shut Down

When changing the cartridge or cleaning the unit, do the following:

- Turn feed valve OFF
- Press dispense to relieve system pressure.
- Unplug unit from electrical outlet.

CHAPTER 5
MAINTAINING YOUR WATERPRO PS SYSTEM

Under normal operation, the WaterPro PS System requires little maintenance. Read this chapter to learn:

- The Maintenance Schedule
- Sanitizing the System
- How to replace the UV Light.
- When to replace cartridges.
- Replacement of Optional Final Filter
- Service Tips

Chapter 5: Maintaining Your WaterPro PS System

Maintenance Schedule

As needed

- Replace Cartridges
- Clean unit of any dust.
- Sanitize

Annually

- Replace UV lamp

System Sanitization

Frequency of system cleaning and sanitization will depend directly on the quality of the feedwater and the operating environment of the unit. The unit should be cleaned when needed, such as when the bacterial or organic containment concentrations become unacceptable.

WARNING: When sanitizing the system:
Avoid splashing the solution on skin or clothing.
Ensure that all piping connections are tight to avoid leakage.
Always depressurize the system COMPLETELY before disassembly. Ensure adequate ventilation. Carefully follow the manufacturer's safety instructions when handling sanitizers. Throw away solutions in accordance with local and national laws.

AVERTISSEMENT : Lorsque vous désinfectez le système ou préservez la membrane, évitez d'éclabousser la solution sur la peau ou les vêtements. Assurez-vous que toutes les connexions de tuyauterie soient bien serres pour éviter toute fuite. Toujours dépressurisez le système complètement avant de le démonter. Assurez-vous une ventilation suffisante.

SANITIZE ALL MODELS AS FOLLOWS:

1. Close the feedwater inlet valve (supplied by customer), turn off the display on the Ultrafilter model and release the pressure in the system by pressing the dispense button. Unplug the WaterPro PS and remove the cartridges and hollow fiber final filter at dispense (if installed), as described in the Cartridge Replacement section.

2. Prepare approximately 16 liters of ONE of the following solutions:
   0.3% Bleach (1 liter 5.25% household bleach in 15 liters of clean water)
   OR
   2.0% Formaldehyde
   OR
   3.0% Hydrogen Peroxide

3. Fill each bowl approximately ½ full with sanitizing solution and reattach them to the unit. Connect a temporary feedwater line to inlet port of the WaterPro PS (Item 1, page 12 of this manual) and place it in the container of sanitizing solution.
4. Place a suitable container under the dispense valve or gun, turn on unit and allow to operate until a steady stream of sanitizing solution flows from the valve or gun.
5. Close the valve or gun and allow the WaterPro PS to recirculate the sanitizer for at least two hours, periodically opening the dispense valve or gun to sanitize it. After the sanitization is complete, unplug the unit and open the dispense valve to depressurize the system.
6. Carefully discard the sanitizing solution, WITHOUT RINSING OUT THE BOWLS.
7. Install new cartridge in the appropriate bowls, plug in and turn on the WaterPro PS.
8. Leave the dispense valve open until approximately 10 liters have been dispensed, then close the valve and install a new final filter on the dispenser, if required. Allow the unit to recirculate until the resistivity is acceptable. The unit is now ready for operation.

UV Lamp Replacement
(HPLC, Life Science and HPLC/UF, Hybrid Models)

Avoid direct exposure of eyes and skin to ultraviolet light.

Evitez toute exposition directe des yeux et la peau à la lumière ultraviolette.

The UV lamp should be replaced annually to maintain lamp intensity. To replace lamp, use the following procedure (Refer to Figure 6).

(1) Unplug the WaterPro PS system and remove the front cover via the two screws on the front of the cover.

(2) Locate the ultraviolet reactors by referring to Item 14 under Component Identification located on Page 12 of this manual.

(3) Disconnect the two white leads and pull the bulb from the reactor.

(4) Insert new bulb Catalog number 9109200 into the reactor and reconnect the leads.

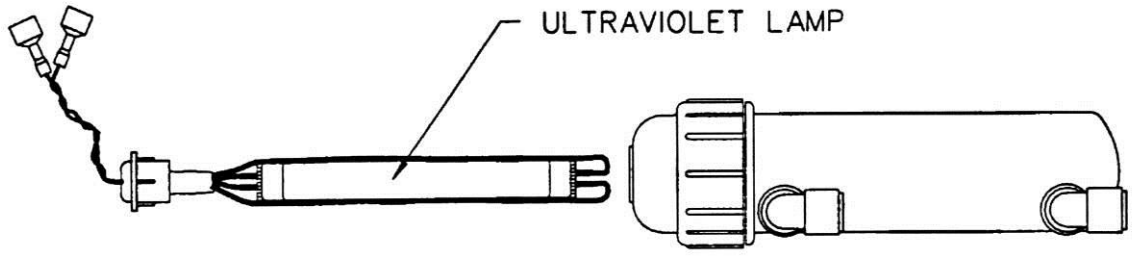


Figure 6

Hg

THE LAMP(S) IN THIS PRODUCT CONTAIN MERCURY

Manage in accordance with local disposal laws. DO NOT place lamps in trash. Dispose as a hazardous waste. For information regarding safe handling, recycling and disposal, consult www.lamprecycle.org

CETTE LAMPE DANS CE PRODUIT CONTIENT DU MERCUE

Éliminez ou recyclez conformément aux lois applicables. Pour de l'information concernant des pratiques de manipulation sécuritaires et l'élimination sécuritaire et le recyclage, veuillez consulter www.lamprecycle.org

Cartridge Replacement

(1) Organic adsorption and deionization cartridges have a finite capacity for purifying water before being exhausted. As the cartridges approach exhaustion, the system will require longer recirculation times to achieve 16-18.2 megohm-cm resistivity and resistivity will decrease rapidly without recovery. Replacement of the deionization and/or organic adsorption cartridges will restore water purity. The carbon cartridge should be replaced at the same time as the deionization cartridges are replaced.

(2) Refer to page 15 of this manual under Cartridge Replacement.

Replacement of Optional Final Filter – Catalog number 9092900

It is recommended that the optional 0.2µm hollow fiber final filter Catalog number 9092900 be replaced every 2-3 weeks when there is an unacceptably high passage of bacteria through the filter, or when the flow rate drops below an acceptable level. The filter should be replaced following the steps outlined on page 16, Step 4. When it's not required, the use of the final filter lowers flow rate unnecessarily.

Replacement of Ultrafilter – Catalog number 9104400

On models with Ultrafilters, the Ultrafilter requires replacement if it has been damaged due to sanitization solution or is biofouled and releasing pyrogens of bacteria into the purified water.

1. Turn OFF display with the ON/OFF switch and press the dispense button until the pressure in the system is relieved.
2. Unplug the unit and remove four screws from the dispense housing. Lift housing away from dispense module exposing the wiring connector.
3. Disconnect wiring connector and set housing aside.
4. Locate ultrafilter shown as Item 11 on page 14 of the Component Identification section.
5. Disconnect inlet and outlet tubing by holding in the gray collar of the fitting and removing the tubing. Refer to Figure 3.
6. Remove the filter housing from its holder and unscrew the top exposing the ultrafilter.
7. Remove the element and replace with Catalog number 9104400. Assemble in reverse order.

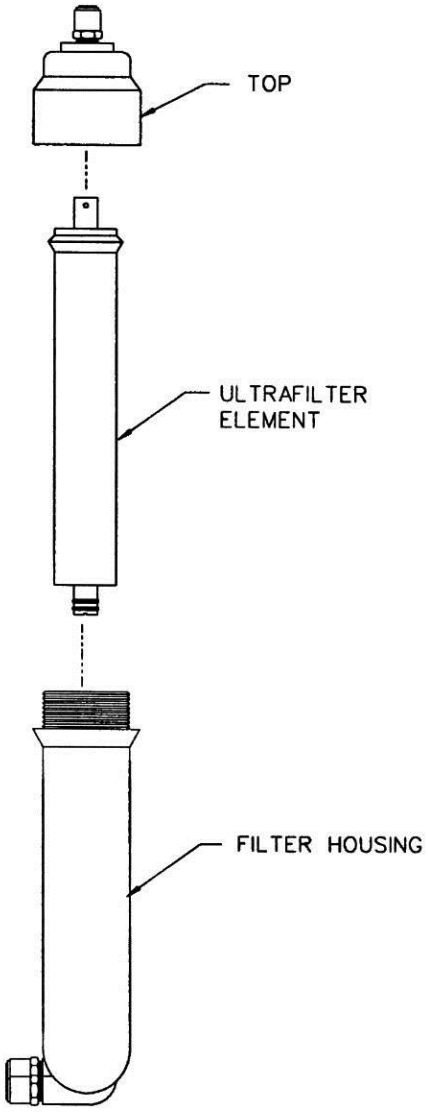


Figure 7

Service Tips

To remove the front cover for servicing

1. Disconnect the power cord.
2. Remove the two black screws on the front panel.
3. Raise the front of the cover slightly and pull out.
4. To remove the plastic cover remove the drip pan
5. Press the spring clips on both sides of the cover and pull out.

CHAPTER 6
TROUBLESHOOTING

Refer to the following if your WaterPro PS System fails to operate properly. If the suggested corrective actions do not solve your problem, contact Labconco for additional assistance.

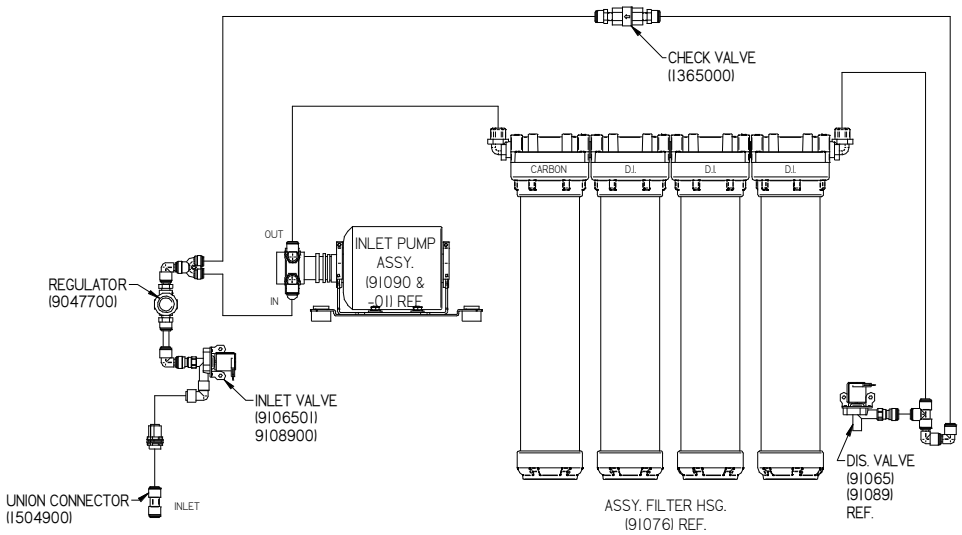
PROBLEM	CAUSES	CORRECTIVE ACTION
Unit inoperative	Unit not plugged into outlet	Plug the Polishing Station into appropriate electrical service.
	Circuit breaker tripped/fuse blown	Reset circuit breaker/replace fuse.
	Power switch is in the off position	Press power button to switch system on.
	Defective circuit board	Replace circuit board.
	Inlet valve closed do to moisture in drip pan.	Check system for leaks. Dry drip pan.
Recirculation pump operates but no water is dispensed	Customer supplied feed valve is closed	Open the valve.
	Feed-water line is restricted, or no supply	Inspect and adjust feedwater line as required.
	Final filter is clogged	Replace final filter.

PROBLEM	CAUSES	CORRECTIVE ACTION
Recirculation pump operates but no water is dispensed (cont.)	Return line check valve is defective	Replace check valve assembly.
	Recirculation pump is defective	Replace recirculation pump.
Reduced flow at dispense valve/gun	Optional final filter is blocked	Replace final filter.
	Restricted tube in the feed line or polishing system	Inspect polishing loop tubing for any restrictions.
Water quality display acting erratically	New cartridges installed in system	Purge all of the air out of the polishing system.
	Air trapped in resistivity cell	Purge all of the air out of the polishing system.
	Deionization cartridges are exhausted	Replace the deionization cartridges.
	Polishing loop resistivity cell not connected to wiring harness	Reconnect cell to wiring harness.
	Polishing loop resistivity cell is defective	Replace cell.
Polished water will not rinse up to desired quality	Cartridges are past expiration date	The shelf life of unopened cartridges is two years from the date of manufacture. Replace the expired cartridges with new ones. Check the manufactured date.
	Cartridges installed in wrong sequence	Install the cartridges as described in the “Initial Operation and Cartridge Replacement” section.
	Water is bypassing the cartridges	Ensure that the O-rings are at the top of the deionization cartridges and the posts at the top of the bowls are inserted correctly.

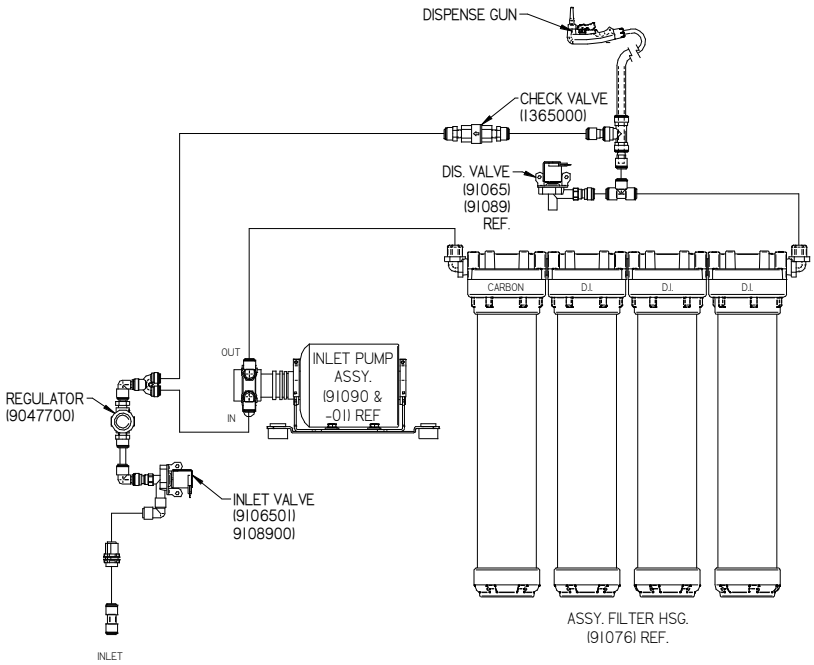
PROBLEM	CAUSES	CORRECTIVE ACTION
Reduced cartridge life	Cartridges are past expiration date	Check the manufactured date on the cartridge package. The shelf life of unopened cartridges is one year from the date of manufacture. Replace the expired cartridges with new ones.
	Feed-water quality has changed	If the source is a reverse osmosis system, ensure that that it is working properly. If the source is a central water supply, verify that it is still working properly. Check the average tap water supply versus the deionization capacity chart on page 43.
Odor from polished water	Bacterial growth on the filters	Remove old filters. Sanitize system. Install new filters.
	Old DI filters. DI resins breaking down	Remove old filters. Sanitize system. Install new filters.

Plumbing Diagrams

General Chemistry



MODELS 9000520,-30,-40,-60,-70,-80



MODELS 9000521,-31,-41,-61,-71,-81

Figure 8

HPLC Analytical Instrument

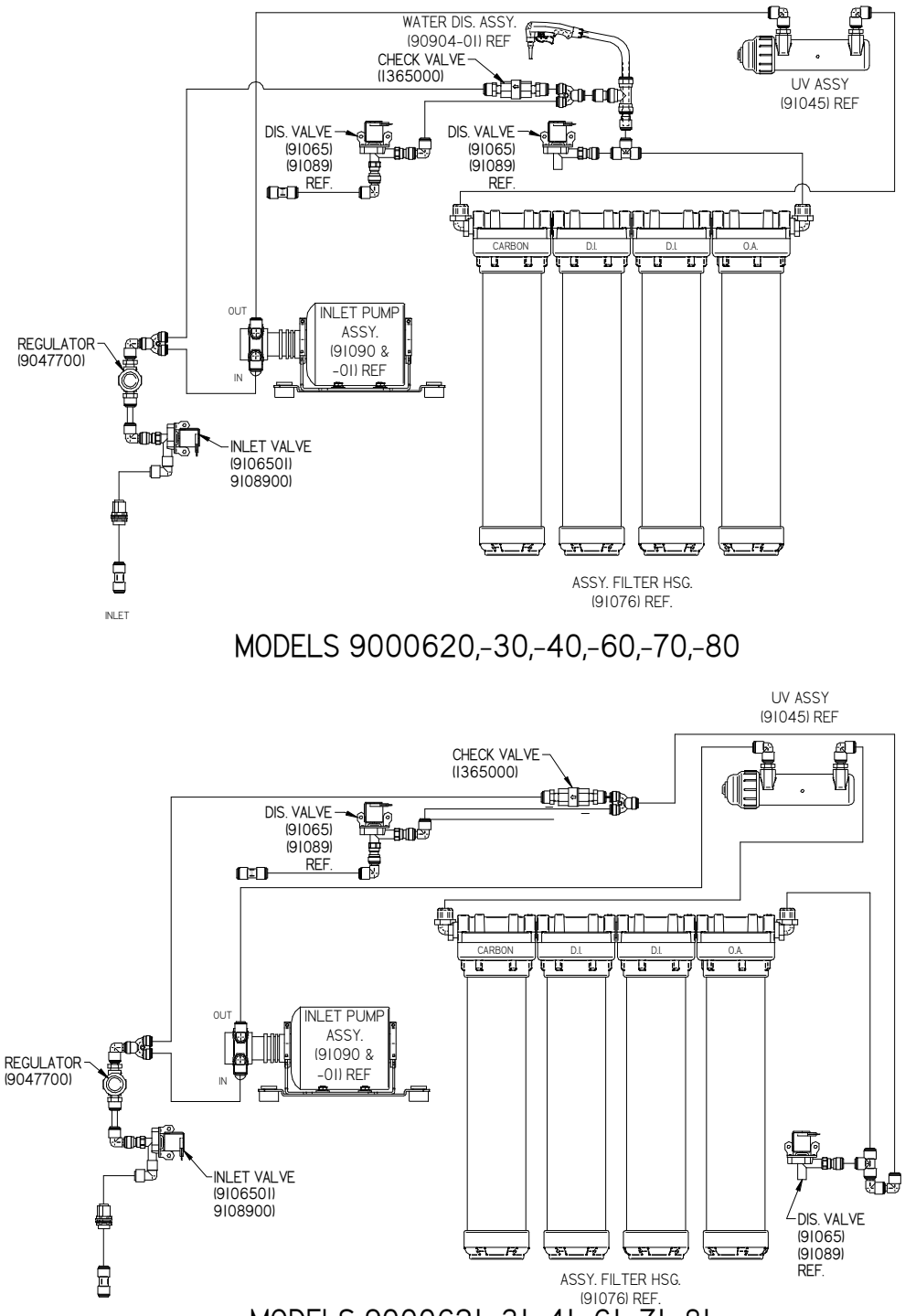
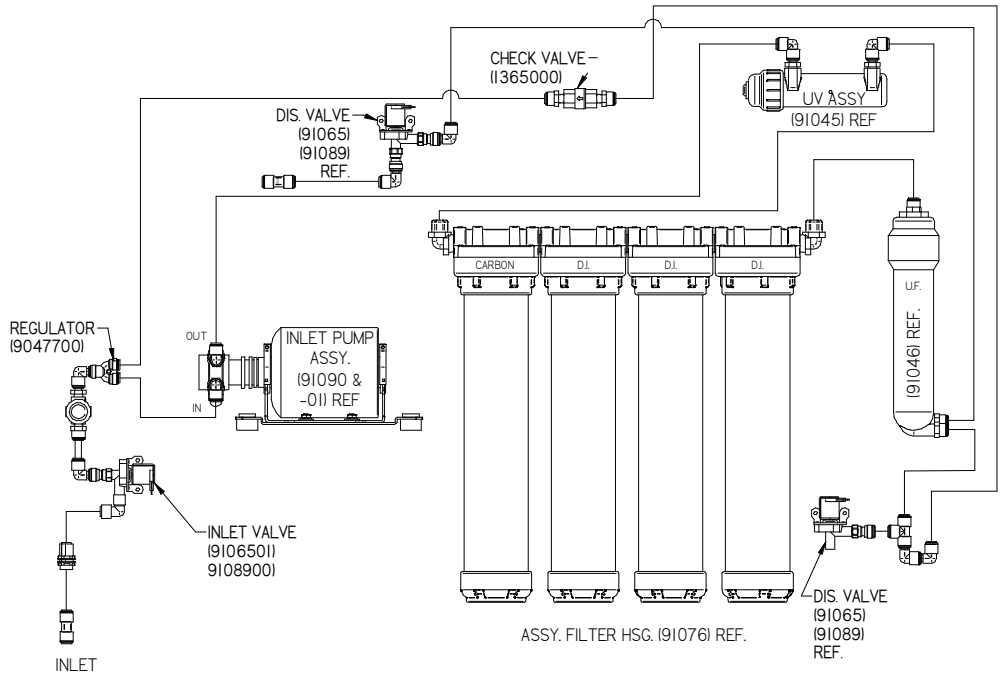
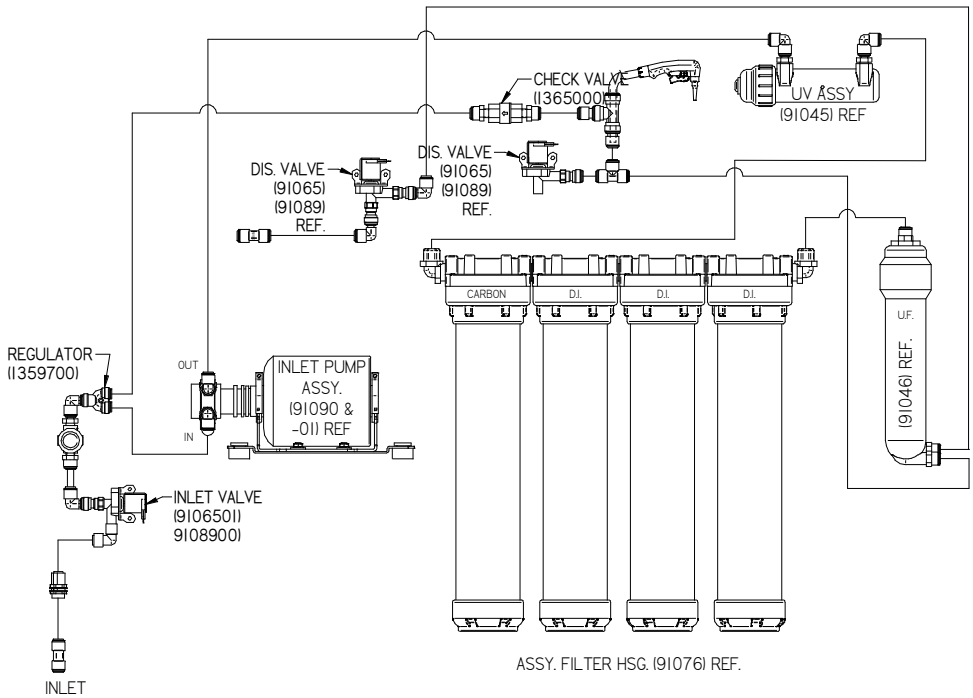


Figure 9



MODELS 9000720,-30,-40,-60,-70,-80



MODELS 900072I,-3I,-4I,-6I,-7I,-8I

Figure 10

HPLC/Ultrafilter Hybrid

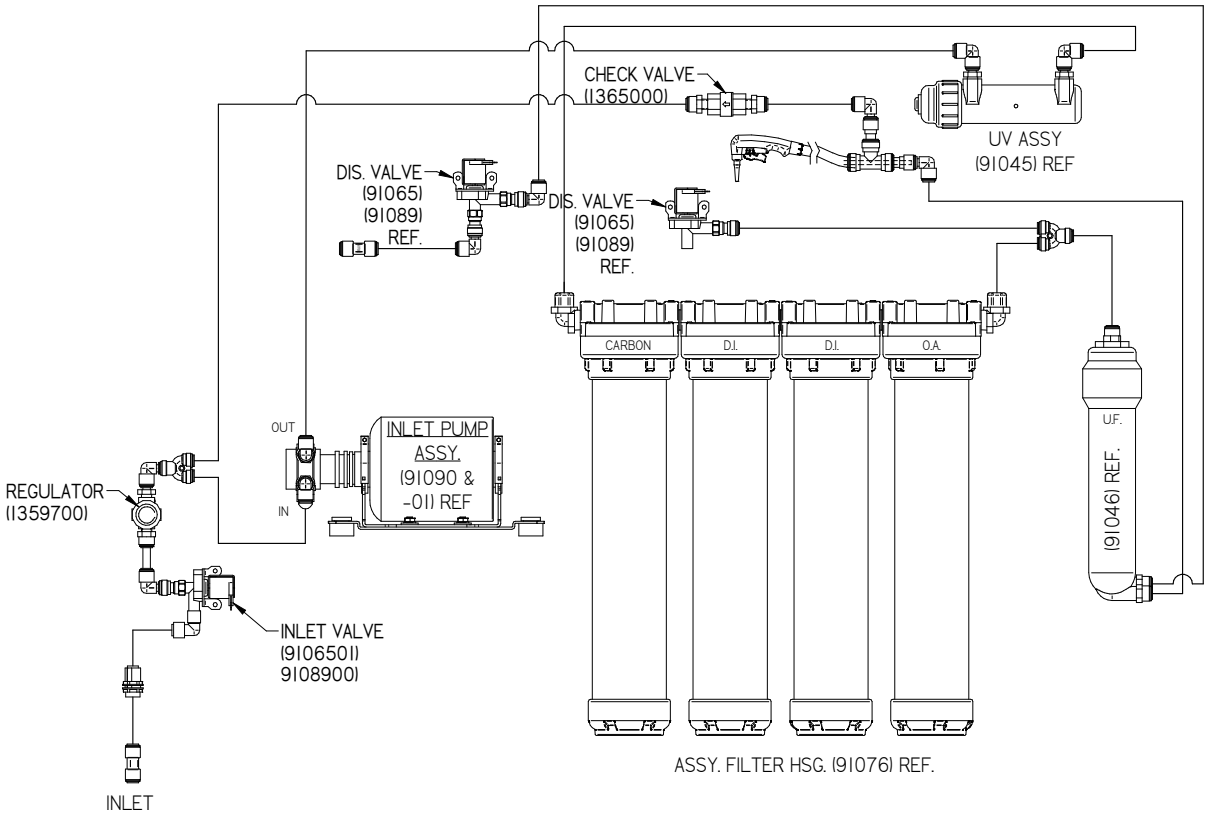


Figure 11

APPENDIX A
WATERPRO PS SYSTEM COMPONENTS

The following pages list components that are available for your WaterPro PS System. The parts shown are the most common replacement parts. If other parts are required, contact Product Service.

ITEM	QTY	PART NO.	DESCRIPTION
1	1	9047500	Pump Assembly, 115 VAC
1	1	9047501	Pump Assembly, 220 VAC
2	1	1210101	Motor Pump, 115 VAC
3	1	1365000	Check Valve
4	1	9105300	Resistivity Cell
5	1	9106500	Dispense Valve, 115V
5	1	9108900	Dispense Valve, 230V
6	1	9103502	Printed Circuit Board
7	1	9104400	Ultrafilter Element. For Models 90007XX Series
8	1	9109200	Dual Wavelength Ultraviolet Lamp Replacement. For Models 90006XX and 90007XX Series
9	1	9044100	Filling Bell (Not Shown)
10	1	9109300	Ultraviolet Field Installation Kit (Not Shown)
11	1	9109400	Ultrafilter Field Installation Kit (Not Shown)
12	1	1552500	Drain Tubing (Not Shown)
13	1	1549100	Inlet Tubing (Not Shown)
14	1	9106501	Inlet Valve 230 V
14	1	9108900	Inlet Valve 230 V
15	1	1359700	Regulator
16	1	9123001	Moisture Sensor Assembly

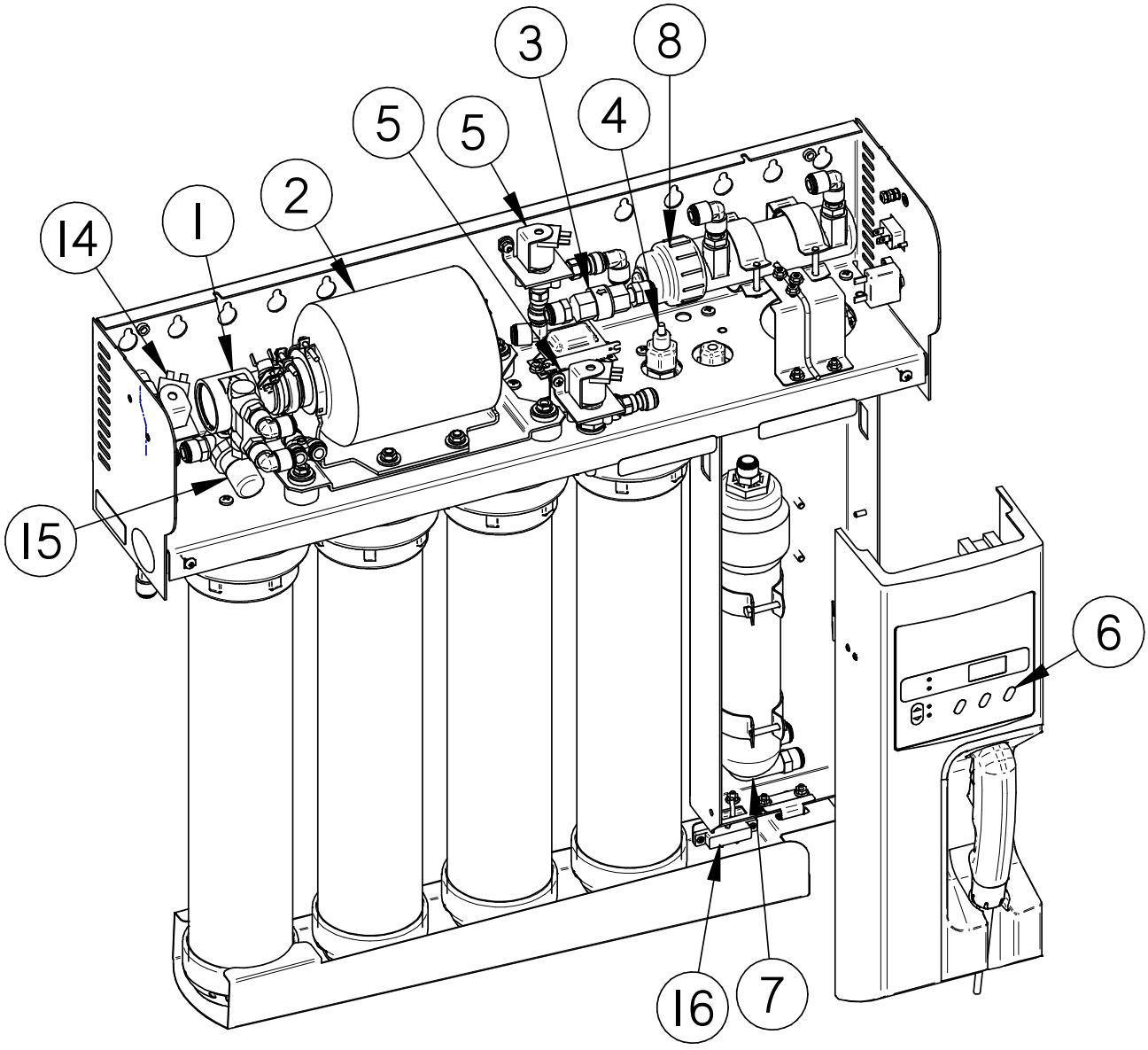
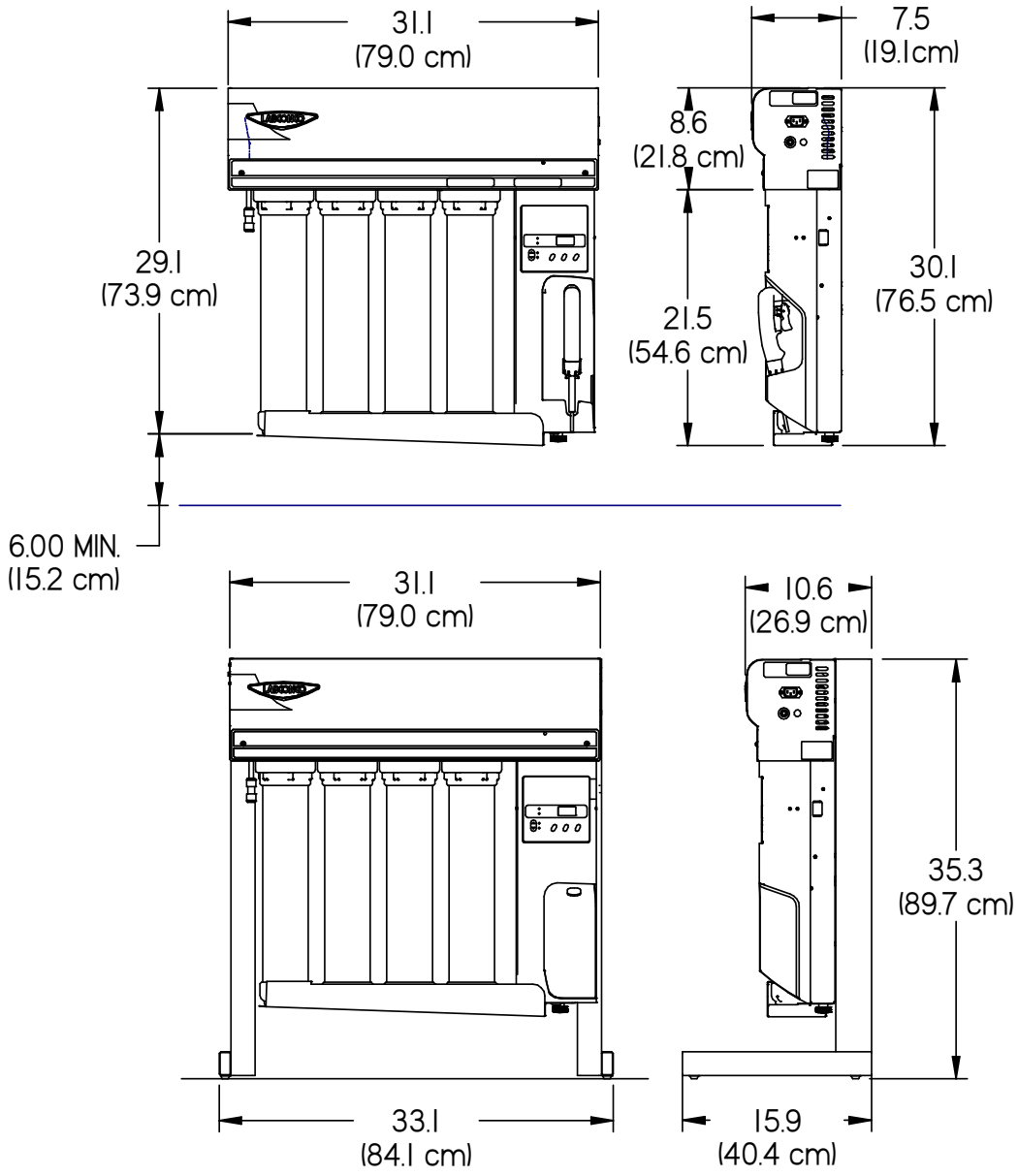


Figure 12

APPENDIX B
WATERPRO PS SYSTEM DIMENSIONS



Original Instructions

APPENDIX C
WATERPRO PS SYSTEM SPECIFICATIONS

PS SPECIFICATIONS:

System Description:	Self contained cartridge water purification system.
Technologies:	GENERAL CHEMISTRY Activated carbon adsorption, deionization. HPLC ANALYTICAL INSTRUMENT MODELS Activated carbon adsorption, deionization, organic adsorption, and ultraviolet irradiation at both 185 and 254 nm. UF LIFE SCIENCE MODELS Activated carbon adsorption, deionization, ultrafiltration and ultraviolet irradiation at both 185 and 254 nm. HPLC/UF HYBRID MODELS Activated carbon adsorption, deionization, organic adsorption, ultrafiltration and ultraviolet irradiation at both 185 and 254 nm.
Typical Water Production Rate: (0-100 psi with a minimum feed rate of 2 liters per minutes)	1.8 liters per minute for General Chemistry and HPLC models. Reduced to 1.2 liters/minute with the addition of a 0.2 micron final filter.* 1.1 liters per minute for Ultrafiltered models. Reduced to 1 liter per minute with the addition of 0.2 micron final filter.*

Appendix C: WaterPro PS System Specifications

Water Dispensing Systems:	GUN DISPENSING MODELS Dispense from gun by depressing trigger or from dispense valve by pressing dispense key. Release trigger or key to stop flow. Timed dispense from dispense valve only. Optional hollow fiber filter can be installed on both gun and dispense valves by removing threaded nozzle and replacing with hollow fiber filter. NON-GUN DISPENSING MODELS Dispense by pressing dispense key. Release key to stop flow.
Water Quality Produced:	Meets or exceeds the following: • American Society for Testing and Materials Type I Water • National Committee for Clinical Laboratory Standards Type I Water

*Actual flow rates for ultrafiltered models could vary as much as ± 15% depending on the membrane. Flow rates determined with new hollow fiber final filter installed. Flow rate from final filter decreases with use.

Weight (dry):	60 lbs. (27.2 kg)
Feedwater Requirements **Type:**	Prepurified via reverse osmosis, distillation or deionization, with a conductivity of < 100µS (Tap water feed not recommended)
Temperature:	10-30 degrees Centigrade (50-86 degrees Fahrenheit)
pH:	4-10
Inlet Pressure and Flow:	0-100 psi (0-7 Bar) providing 2 liters/minute (0.5 gallons/minute) or better
Deionization Capacity: **(Based on 70% operating efficiency. See Table under Feed Water Quality in Installation Section of the manual)**	General Chemistry models 1373 Grains as $CaCO_3$ HPLC Analytical Instrument models 915 Grains as $CaCO_3$ UF Life Science models 1373 Grains as $CaCO_3$

	HPLC/UF Hybrid models 915 Grains as $CaCO_3$
Deionization:	High Purity Polishing grade mixed bed resin, which will deliver 16 to 18.2 Megohm.cm Type I water.
Ultrafiltration: **(membrane included on UF models)**	Polysulfone membrane in a spirally wound configuration.
Final Filtration (Optional):	Self-venting 0.2 micron hollow fiber filter
Electrical Specifications:	115V, 60 Hz, 5.0 Amps or 230V, 50 Hz, 2.5 Amps Single Phase
Relative Humidity:	Less than 80%

Environmental Conditions:

The WaterPro PS is designed to operate safely under the following conditions:

- Indoor use
- Altitude up to 2,000M (6,562 Ft.)
- Ambient temperatures 5°C to 40°C (41°F to 104°F)
- Maximum relative humidity 80% for temperatures up to 31°C (88°F) decreasing linearly to 50% relative humidity at 40°C (104°F)
- Main supply voltage fluctuations not to exceed ±10% of the nominal voltage
- Transient over-voltages according to installation category II (over-voltage categories per IEC 1010)
- Pollution degrees 2 (Normally only non-conductive foreign matter, solid, liquid, or gaseous (ionized gases), that may produce a reduction of dielectric strength or surface resistivity occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected, in accordance with IEC 664)

Appendix C: WaterPro PS System Specifications

PS Deionization Cartridge Capacity

WaterPro Reverse Osmosis and WaterPro PS HPLC and HPLC/UF Hybrid Models

Tap Water Conductivity uS/cm	RO Performance 95% Reduction	Resulting RO Water Purity uS/cm	PS Ion Removal Capacity 70% Efficiency	Liters of Type I Water Produced 16.0-18.2 Megohm/cm
2000	x .05	100	915 Grains	1,183
1500	x .05	75	915 Grains	1,577
1000	x .05	50	915 Grains	2,366
900	x .05	45	915 Grains	2,629
800	x .05	40	915 Grains	2,957
700	x .05	35	915 Grains	3,380
600	x .05	30	915 Grains	3,943
500	x .05	25	915 Grains	4,732
400	x .05	20	915 Grains	5,914
300	x .05	15	915 Grains	7,886
200	x .05	10	915 Grains	11,829
100	x .05	5	915 Grains	23,658
90	x .05	4.5	915 Grains	26,286
80	x .05	4	915 Grains	29,572
70	x .05	3.5	915 Grains	33,796
60	x .05	3	915 Grains	39,429
50	x .05	2.5	915 Grains	47,315
40	x .05	2	915 Grains	59,144
30	x .05	1.5	915 Grains	78,858
20	x .05	1	915 Grains	118,288
10	x .05	0.5	915 Grains	236,575
5	x .05	0.25	915 Grains	473,150
1	x .05	0.05	915 Grains	2,365,751
1,000	No Pretreatment w/RO System: If pretreatment with an RO System is not utilized with tap water that has a conductivity of 200 to 1,000 uS/cm, minimal volume of Type I Water is obtained per filter set.		915 Grains	118
900			915 Grains	131
800			915 Grains	148
700			915 Grains	169
600			915 Grains	197
500			915 Grains	237
400			915 Grains	296
300			915 Grains	394
200			915 Grains	591
100			915 Grains	1,183

WaterPro Reverse Osmosis and WaterPro PS General Chemistry and UF Life Science Models

Tap Water Conductivity uS/cm	RO Performance 95% Reduction	Resulting RO Water Purity uS/cm	PS Ion Removal Capacity 70% Efficiency	Liters of Type I Water Produced 16.0-18.2 Megohm/cm
2000	x .05	100	1,373 Grains	1,775
1500	x .05	75	1,373 Grains	2,367
1000	x .05	50	1,373 Grains	3,550
900	x .05	45	1,373 Grains	3,944
800	x .05	40	1,373 Grains	4,437
700	x .05	35	1,373 Grains	5,071
600	x .05	30	1,373 Grains	5,917
500	x .05	25	1,373 Grains	7,100
400	x .05	20	1,373 Grains	8,875
300	x .05	15	1,373 Grains	11,833
200	x .05	10	1,373 Grains	17,750
100	x .05	5	1,373 Grains	35,499
90	x .05	4.5	1,373 Grains	39,444
80	x .05	4	1,373 Grains	44,374
70	x .05	3.5	1,373 Grains	50,713
60	x .05	3	1,373 Grains	59,165
50	x .05	2.5	1,373 Grains	70,998
40	x .05	2	1,373 Grains	88,748
30	x .05	1.5	1,373 Grains	118,331
20	x .05	1	1,373 Grains	177,496
10	x .05	0.5	1,373 Grains	354,992
5	x .05	0.25	1,373 Grains	709,984
1	x .05	0.05	1,373 Grains	3,549,919
1,000	No Pretreatment w/RO System: If pretreatment with an RO System is not utilized with tap water that has a conductivity of 200 to 1,000 uS/cm, minimal volume of Type I Water is obtained per filter set.		1,373 Grains	177
900			1,373 Grains	197
800			1,373 Grains	222
700			1,373 Grains	254
600			1,373 Grains	296
500			1,373 Grains	355
400			1,373 Grains	444
300			1,373 Grains	592
200			1,373 Grains	887
100			1,373 Grains	1,775

If a customer starts with tap water that has a conductivity of 2,000 uS/cm and feeds it to an RO System the resulting dispense water conductivity will be 100uS/cm. If the customer connects the RO dispense to a PS System, they should be able to obtain an estimated 1,183 Liters of Type I water per filter set.

APPENDIX D
WATERPRO PS SYSTEM
EXPENDABLES AND ACCESSORIES

Expendables

Model	Polishing Kit	Components Included Catalog No.	Cartridge Type
General Chemistry	9047101	9007201 (1)	Carbon
		9007301 (1)	Deionization
		9007301 (1)	Deionization
		9007301 (1)	Deionization
HPLC and HPLC/UF Hybrid	9047201	9007201 (1)	Carbon
		9007301 (1)	Deionization
		9007301 (1)	Deionization
		9053300 (1)	Organic Adsorption
Life Science	9047101	9007201 (1)	Carbon
		9007301 (1)	Deionization
		9007301 (1)	Deionization
		9007301 (1)	Deionization
Life Science and HPLC/UF Hybrid	Order individual Filters separately	9104400 (1)	Ultrafilter
		9092900 (1)	Hollow Fiber Final Filter

Appendix D: WaterPro PS Expendables & Accessories

Accessories

Catalog Number	Description
1306000	**WaterPro RO/PS** 125-230 Volt, 10 amp, electrical connecting cord for connecting PS to RO when mounted within 15 inches of each other
9077400	**Support Stand** – For mounting WaterPro PS on bench. Rests on countertop or other horizontal surface.
9113200	**WaterPro RO/PS Mobile Stand** Allows the mounting of a RO and PS on the same mobile stand.
9109200	**UV Light Replacement**
9109300	**UV Light Field Installation Kit** Used to add UV Light and TOC flush Valve to basic units in the field
9109400	**Ultrafilter Field Installation Kit** Used o add Ultrafiter and UV flush Valve to basic unit in the field
90788-00	**Wall Mounting Panel Kit Stainless** Steel panel that mounts to the wall behind the WaterPro PO and PS systems. System facilitates installation and helps to protect the wall from moisture.