

Water Prodigy II

Models 90861, 90862, 90861-01, 90862-01

INSTRUCTION MANUAL

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Components Shipped

Carefully check the contents of the carton for damage that might have occurred in transit. Do not discard the carton or packaging material until all components have been checked against the following component list and the equipment has been installed and tested.

As shipped, the carton should contain the following:

Part Number	Description
90861	Water Prodigy II - wall mounted
or	
90862	Water Prodigy II - bench top
or	
90861-01	230 V Water Prodigy II - wall mounted
or	
90862-01	230 V Water Prodigy II - bench top
90868	Manual
90852	Template for wall mounting
90447	Spanner wrench
19979	Black pop-on screw covers
90815	Water Test Kit Request Card
10503-06	Water Purification Guide

INTRODUCTION

General Description

The Labconco Water Prodigy II Systems, Models 90861, 90862, 90861-01 and 90862-01 produce both Reverse Osmosis and Type I water upon demand. A dispensing gun equipped with a 0.2 μm (micron) final filter delivers Type I water for those laboratory applications requiring this grade. A dispensing valve mounted to the side of the unit delivers reverse osmosis water.

The unit is a five bowl system that may be wall or bench mounted. Figure 1 illustrates the appearance of the Water Prodigy II.

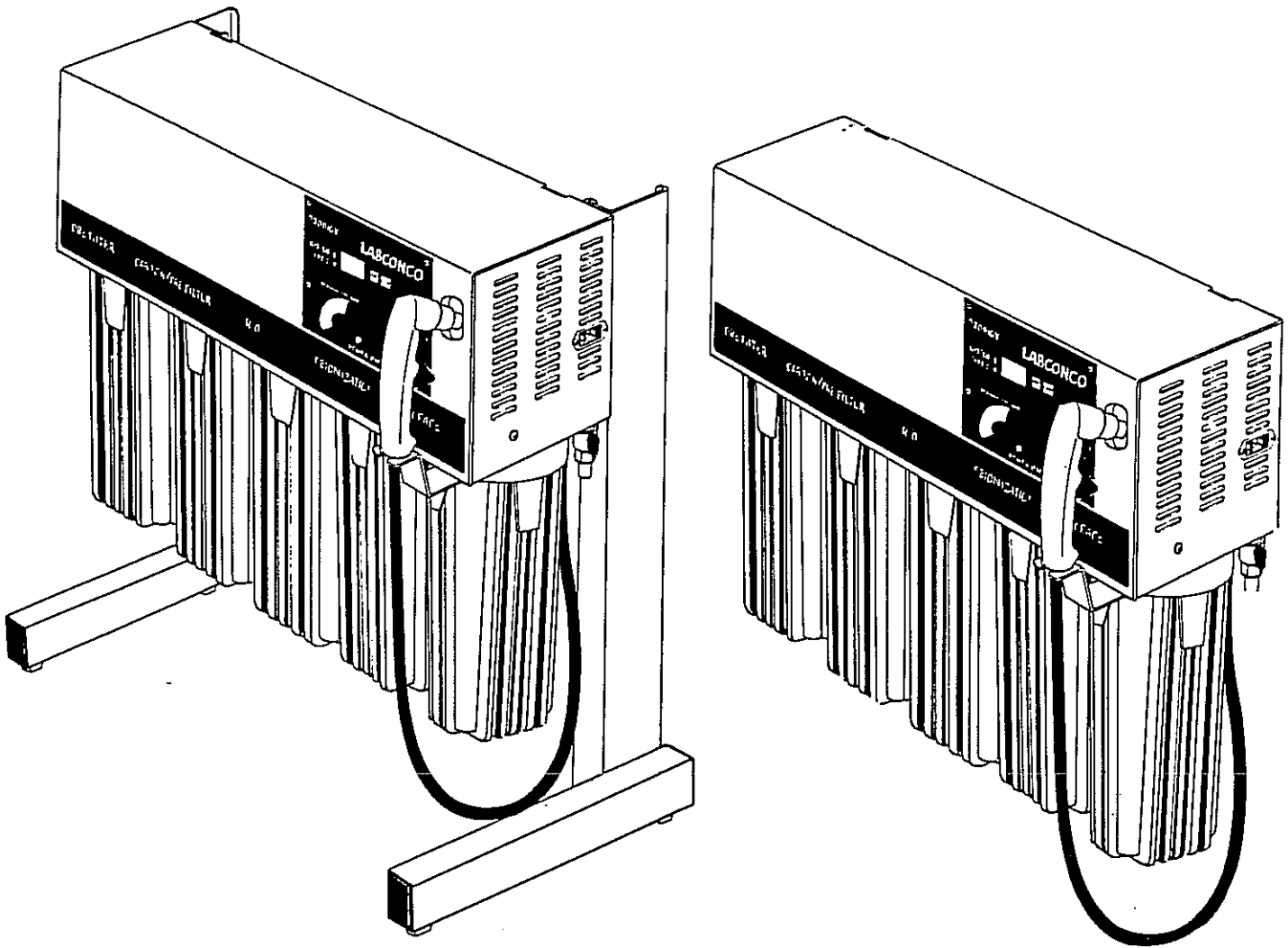


Figure 1

Performance

The Water Prodigy II utilizes a 10 inch reverse osmosis membrane to eliminate at least 90% of ions and organics in the feed as well as a 10 inch nuclear grade deionization cartridge to further purify the water to Type I specifications. (16 - 18 megohm-cm)

Reverse osmosis (RO) utilizes a pressure greater than osmotic pressure to "force" the flow from the more concentrated to the less concentrated or purer side. The result is a treated water or permeate which is greatly reduced in ionic and organic content. The concentrated portion of this separation, known as the reject, is flushed to drain. The pressure utilized in this system is line pressure. A minimum of 50 psi line pressure is recommended for usage with this system. Line pressure below 50 psi requires catalog number 90963 booster pump.

The deionization cartridge contains a mixture of a basic and acidic resin. The ions for exchange are the hydrogen ion (H^+) and hydroxide ion (OH^-). The ions left in the solution after the reverse osmosis treatment are exchanged to sub-ppb (parts per billion) levels when passed through the resin cartridge. This results in Type I (16 - 18 megohm-cm) purified water.

The system is equipped with a 1.4 liter storage tank which is pressurized to 40 psi. The storage tank holds RO water which can be dispensed through the RO dispensing valve or passed through the deionization cartridge before dispensing through the gun.

Upon demand, approximately 500 ml (0.5 liters) of water can be dispensed through the dispensing valve in one minute. The RO (reverse osmosis) valve dispenses 1300 ml (1.3 LPM) in one minute. After the storage tank is depleted, the volume dispensed directly from the RO is 230 ml/min at 25°C (77°F) at 75 psig and 160 ml/min from Type I dispensing gun. Flow rate from the RO will vary from membrane to membrane (as much as $\pm 15\%$) as well as with varying inlet pressure and temperature. After dispensing Type I water a reduction in megohm-cm reading will occur until the recirculation system can circulate enough water through the deionization cartridge to produce Type I water. See pressure/temperature chart page 35. An optional 6 liter tank may be installed for added volume.

The unit accepts both softened and tap feed water. Softened water is preferred for extended membrane life. Softened water is required when the Langlier Saturation Index (LSI) is positive. This is determined through the Water ProFile test from Labconco. The water is pretreated with activated carbon and particulate filters prior to the reverse osmosis operation and storage.

To reduce bacterial growth in the reservoir, an automatic flush valve is incorporated to automatically empty the reservoir while flushing the RO membrane for 4 minutes every 2 hours. This process is controlled by the microprocessor board.

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Figure 2 shows the Flow Diagram of the Water Prodigy II.

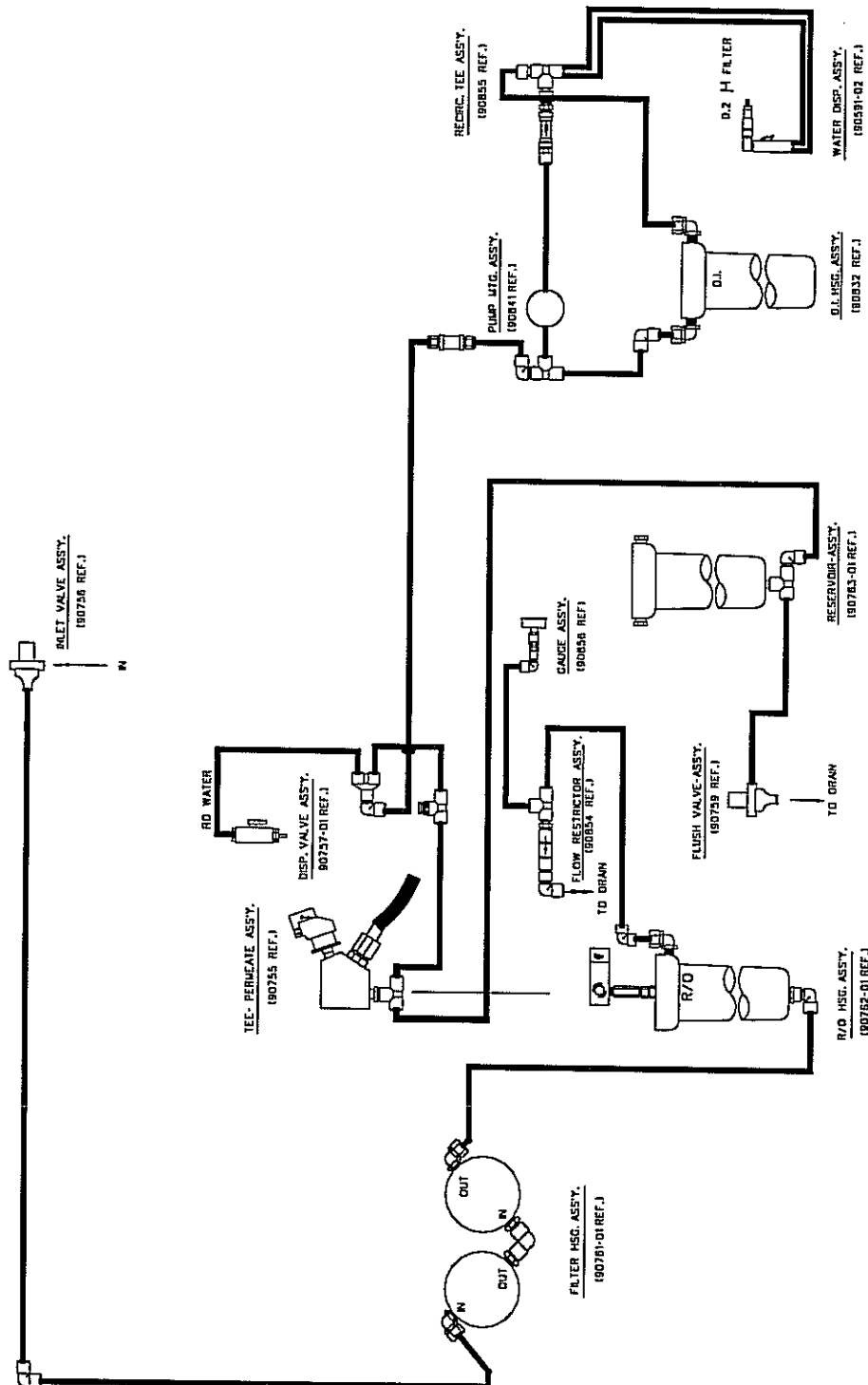


Figure 2

Component Identification (Refer to Figure 3)

- (1) **Pressure Gauge.** The pressure gauge indicates RO back pressure. This will vary depending on line pressure.
- (2) **Dispensing Valve.** The dispensing valve dispenses RO water when turned to the ON position.
- (3) **Inlet Valve.** The inlet valve allows feed water to enter the system.
- (4) **Flow Restrictor.** The flow restrictor allows a controlled flow of reject water to drain while creating a restriction for RO back pressure.
- (5) **Recirculating Pump.** The piston pump recirculates water at a rate of 48 liters/hour (800 ml/min) at 20°C. **Do not run dry.** Keep display off until water is dispensed from gun.
- (6) **Pressure Switch.** This trips to shut off the inlet valve when the reservoir is pressurized to 40 psig.
- (7) **Conductivity Sensor.** The sensor reads the RO permeate (product water) in micro-siemens ($\mu\text{s}/\text{cm}$). This appears digitally on the control panel.
- (8) **Flush Valve.** The valve is controlled by the microprocessor and is activated every two hours for four minutes to empty the reservoir and flush the RO.
- (9) **Resistivity Sensor.** The sensor reads the quality of the Type I water in megohm-cm. This appears digitally on the control panel.
- (10) **Dispensing Gun.** The dispensing gun delivers Type I water.
- (11) **Control Panel.** The control panel contains the PC board which is equipped with a pilot light to indicate 'Power On' as well as digital readings of Conductivity (RO Water) and Resistivity (Type I water).
- (12) **Prefilter Housing.** This houses the prefilter which is rated between 3 - 6 microns. It effectively removes sediments as well as chlorine and organics.
- (13) **Carbon Housing.** This houses the carbon filter with a higher capacity to further remove chlorine and organics.
- (14) **RO Housing.** This houses the 10" RO Membrane.

INTRODUCTION

Component Identification (Con't)

- (15) **Deionization Housing.** This houses the 10" deionization cartridge which purifies the water to Type I quality.
- (16) **Reservoir.** The 1.4 liter reservoir allows the user to dispense 1.3 liter (1300 ml) of purified water in one minute from the RO valve when pressurized to 40 psig.
- (17) **Flow Regulator.** This 0.13 GPM (500 LPM) regulator controls water to the deionization cartridge to allow for effective ion exchange.

Component Identification

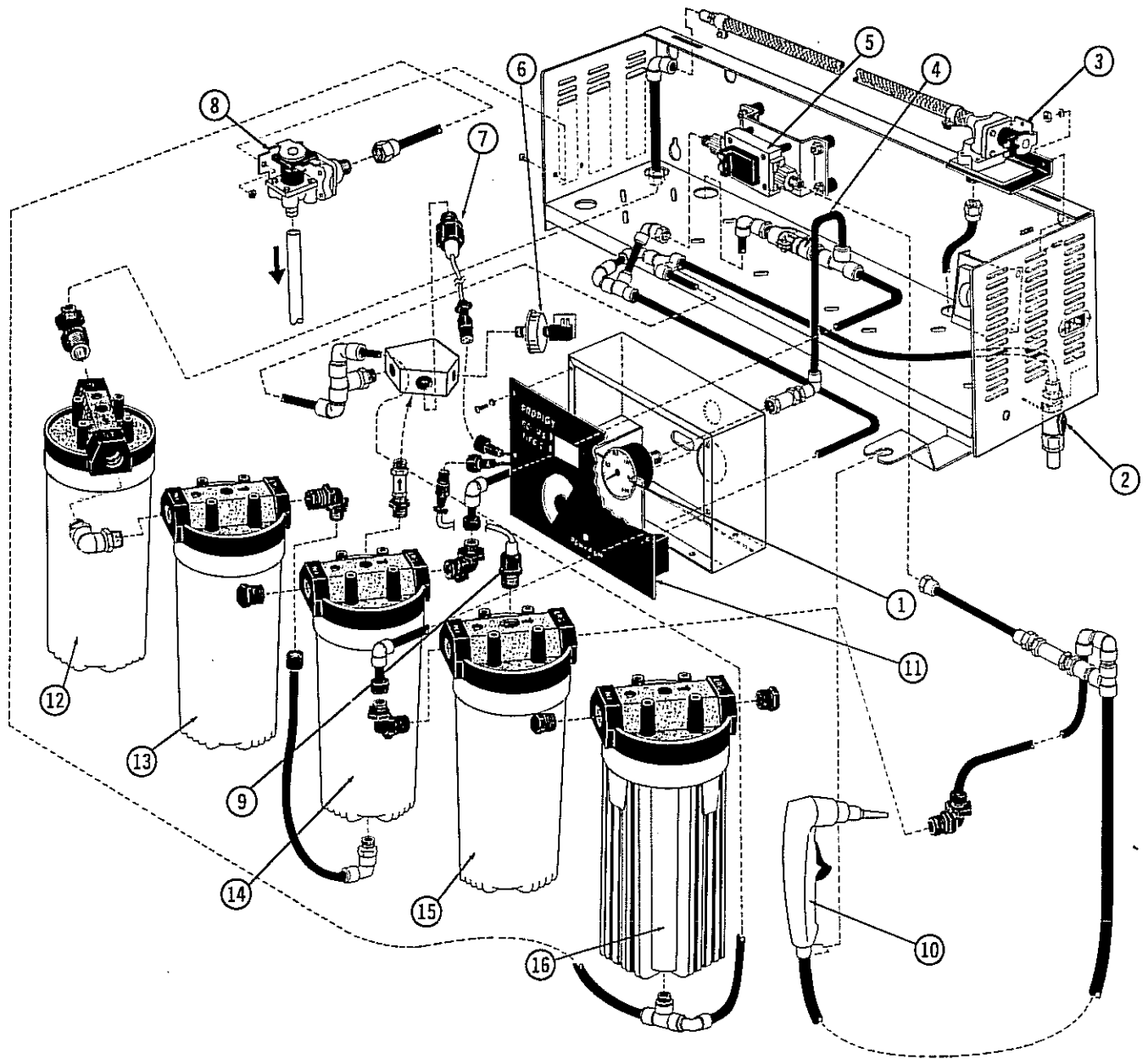


Figure 3

INSTALLATION

PRODIGY II SPECIFICATIONS:

Technology:	Reverse osmosis, deionization, microfiltration
Reverse Osmosis Membrane:	Thin film composite membrane
Deionization:	Nuclear grade mixed bed
Minimum Rejection Rate:	94%
Relative Humidity:	Less than 80%
Water Dispensing System:	Dispensing valve delivers controlled amounts of reverse osmosis water. Dispensing gun dispenses Type I water (16 - 18 meg ohm-cm) through a 0.2 μ m final filter.
RO Water Production Rate:	From 1.4 liter reservoir: 1300 ml/in one minute. (1.3 LPM) through RO valve. From RO: 230 ml/min. (25°C) at 75 psig line pressure. (See Pressure/Temperature chart page 35 for other flow rates).
DI Flow Rate:	From 1.4 liter reservoir 500 ml in one minute (through 0.2 μ m filter in gun). Flow after reservoir depleted depends on RO flow rates but usually 30% less when a new hollow fiber filter has been installed. May require as long as five minutes for the water quality to recover to Type I water after dispensing water from the reservoir.

INLET WATER SPECIFICATIONS:

Temperature:	10° - 35° C (50° - 95° F)
pH:	4 - 10
Water Pressure and Flow:	50 - 100 psi (3.4 -7 bar) (Less than 50 psi requires booster pump part #90963. 1 gallon/min (3.785 liters/min) - minimum flow rate
Maximum Silt Density Index:	5 SDI
Turbidity:	≤ 1 NTU (nephelometric turbidity units)
Langlier Saturation Index*:	Negative (if positive requires water softener pretreatment)

Maximum Ion Concentrations:

Iron (Total):	0.1 ppm (mg/L)
Manganese:	0.1 ppm
Free Chlorine	0.5 ppm

*LST is indicated in the Water ProFile water analysis test and recommendations will be made by Labconco.

These specifications ($\pm 15\%$ flow rate variation), are typical and will vary depending on the membrane inlet pressure and temperature and TDS of the water.

These specifications are typical and will vary depending on the membrane ($\pm 15\%$ flow rate variations), inlet pressure, temperature and TDS of the water.

Preparation

Do not remove the Water Prodigy II system from its shipping box until it is ready to be placed in its final location. Call Labconco at (800) 821-5525 or (816) 333-8811 or return the business reply card to obtain your Water ProFile test kit. Pretreatment of the feed water, if required, will be recommended by Labconco after analysis of water sample.

Stand Installation

(For Models 90862 and 90862-01 only). Tools needed: 1/2" nut driver or socket wrench.

- (1) Locate the following hardware from the plastic bag:
 - 4 - Hex head 1/4-20 x 1/2 cap screws
 - 4 - Flat washers
 - 4 - Lock washers
- (2) Carefully unpack Water Prodigy II from box.
- (3) Remove left and right leg assemblies of stand from box.
- (4) Place unit front panel down on a padded surface. Support the bowls so that they are even with the back of the unit now facing the operator. This can be accomplished by using the packaging specifically designed for the bowls from the shipping box.
- (5) Align the holes in the stand legs with the four smaller threaded holes in the back of the housing now facing the operator. Install the screws with flat washers, then lock washer on screw. Two per leg.

INSTALLATION

- (6) Repeat for all four holes and place unit in standing position.
- (7) Unit is now ready for further installation.

Location

The unit should be placed close to a water source and drain. The unit can be wall mounted or placed on a bench top with the stand installed. Direct both lines labeled 'drain' to a drain and secure. One drain line is connected to the flush valve; the other is connected to the housing for draining reject water. Insert tubing in envelop into fitting labeled 'inlet' and connect to feed water. See Figure 4.

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.

Wall mounted units require a minimum of 4" clearance on the bottom for cartridge and membrane installation/removal. If 6 liter reservoir is installed, allow 6" minimum.

Utility Connections

The electrical outlet should be rated at 115 VAC, 60 Hz, 15 Amps for models 90861 and 90862 (230 VAC, 50 Hz, 10 Amps for models 90861-01 and 90862-01 and be dedicated to the Prodigy II system only.

All plumbing connections to the system should be easily accessible and have an in line, shut-off valve should disconnection be required.

Refer to "Prodigy II Specifications/Inlet Water Specifications" section for feed water requirements.

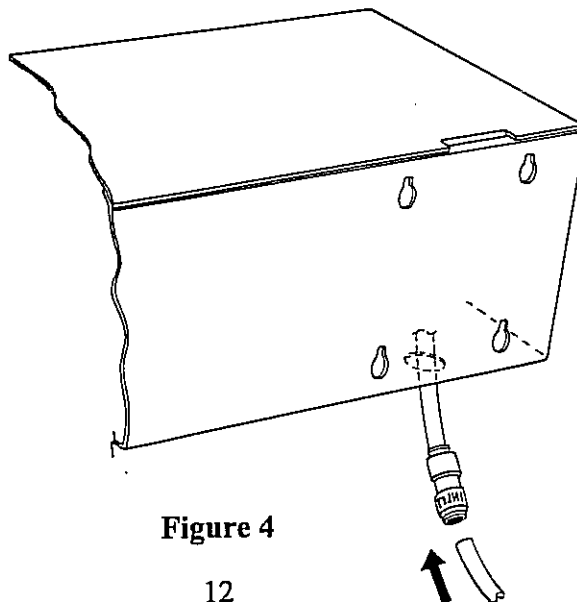
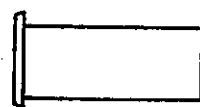


Figure 4

Tubing Installation

The tubing connectors used in the Water Prodigy II have been selected for their dependability and ease of installation. A detailed drawing of a typical connection is shown in Figure 5.

For flexible tubing, be sure to insert a tube support. Rigid tubing does not require the use of a tube support.



TUBE SUPPORT

1. Tubing should have tube support inserted if flexible.
2. Moisten the end of the tubing with water and insert into the fitting until the tube bottoms on the fitting shoulder.
3. To remove the tube from the fitting, press the gray collar in and pull the tubing straight out.

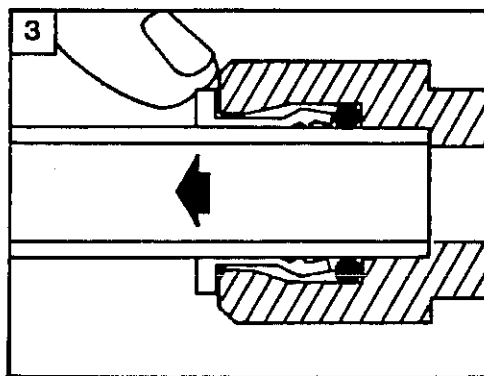
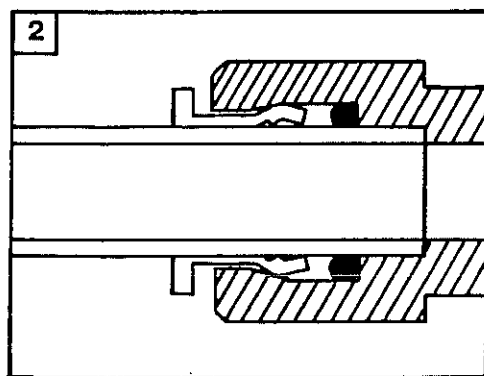
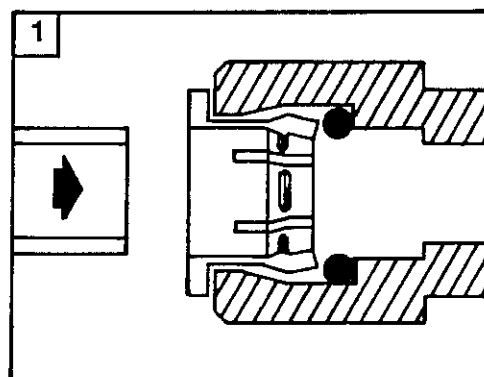


Figure 5

INSTALLATION

Cartridge Installation (See Figure 6)

- (1) Install Prefilter, P/N 90210, in first bowl (the bowl on the left side).
- (2) Install Carbon/Prefilter, P/N 90072 in second bowl.
- (3) Remove the tubing from the connector in the bottom of the third bowl by pressing the gray collar back towards the connector and pulling the tubing straight out. (See Tubing Installation)
- (4) With the Spanner Wrench supplied, remove the third bowl from the unit.
- (5) Center the lower spacer disk over the support post in the bottom of the bowl. For ease of installation of the lower spacer, center a long tube and drop the disk over it. **NOTE:** Orient the disk in the bowl so that the slots are upward. (See Figure 7).
- (6) Install the lower adaptor into the bottom of the RO membrane by pushing it until it seats firmly.
- (7) Install the upper adaptor in the top of the RO membrane by twisting while pushing until it seats firmly.
- (8) Place the Reverse Osmosis membrane in the bowl such that the upper adaptor is in the top of the bowl.
- (9) Thread the bowl in the system.

NOTE: Direct the tubing which fits into the bottom of RO housing to drain for **15 minutes** to flush out any carbon fines when new prefilters are installed. Failure to do so may damage the RO membrane. Refer to "Initial Start-Up" for further instructions.

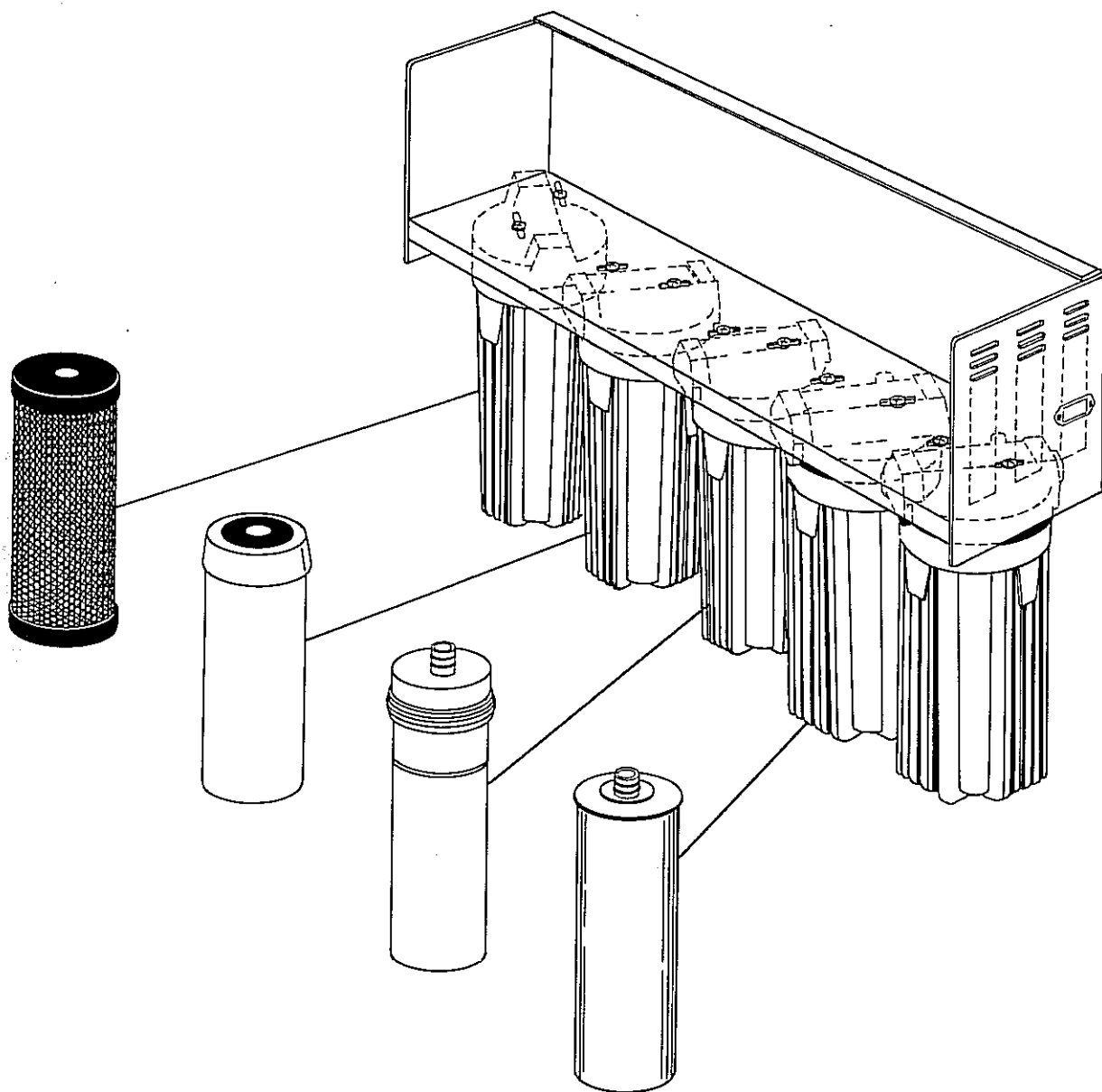


Figure 6

INSTALLATION

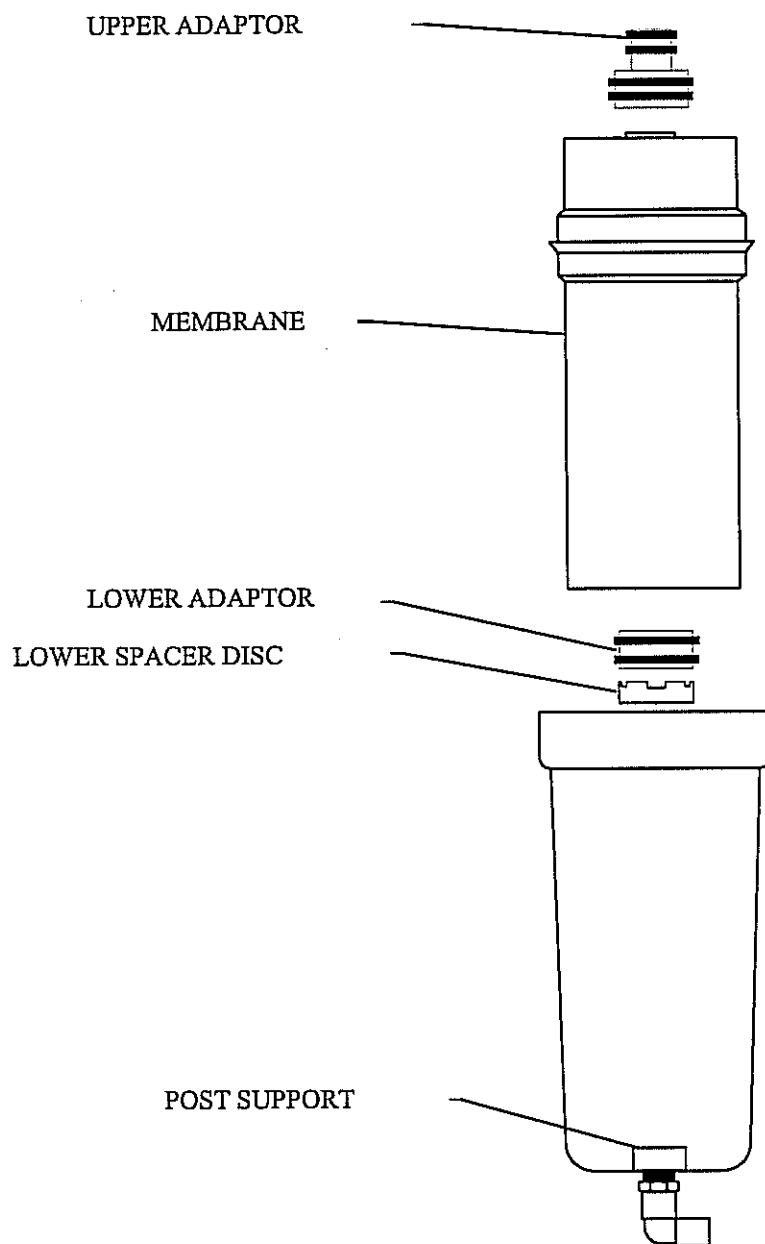


Figure 7

Optional 6 Liter Storage Tank Installation

If the Prodigy II is bench mounted (P/N 90861), replace the legs with the longer stand legs shipped with the 6 Liter tank. Follow stand installation on page 11.

- (1) Unplug the Prodigy II unit. Turn the feed water off and open the dispenser and direct the water to drain until it ceases to flow.
- (2) Remove the two black pop off hardware covers from the front of your unit and set aside for re-assembly.
- (3) Remove the two screws with the plastic collar and set aside.
- (4) Remove the front cover to the unit.
- (5) Remove the new 6 liter storage tank from its carton.
- (6) Remove the two pop off covers from the 6 liter storage tank as well as the two screws with
- (7) Remove the screw located on the left corner of the unit as shown in the illustration. Set the hardware aside to be reused.
- (8) Line up the two studs on the 6 liter cabinet with the front and back top row slots in the RO or Prodigy.
- (9) Install the flat washers, lock washers and nuts from the carton on those two screws.
- (10) Insert the screw, removed from the unit, through the 6 liter cabinet and your water unit as shown.
- (11) Install the lock washer and nut and then tighten.
- (12) Reinstall the cover to the 6 liter storage tank and install screws and pop off cover previously removed.
- (13) Insert a tube support in each end of the black tubing supplied with the 6 liter storage tank.
- (14) Insert one end of the tubing into the elbow in the lower end of the 6 liter storage tank. Route the other end through the hole as shown in the illustration and upwards into the cabinet.
- (15) Remove the plug from the tee as shown, and insert the other end of the tubing into it.

INSTALLATION

- (16) Pull on the tubing to ensure a tight fit.
- (17) Reinstall the cover to the water purification unit with the screws and pop off covers previously removed.
- (18) Open the dispenser to drain. Turn on the feed water and plug the unit into an electrical outlet.
- (19) Direct water to drain for 2 minutes then close the dispenser and allow the storage tanks to fill. Unit will automatically shut off.

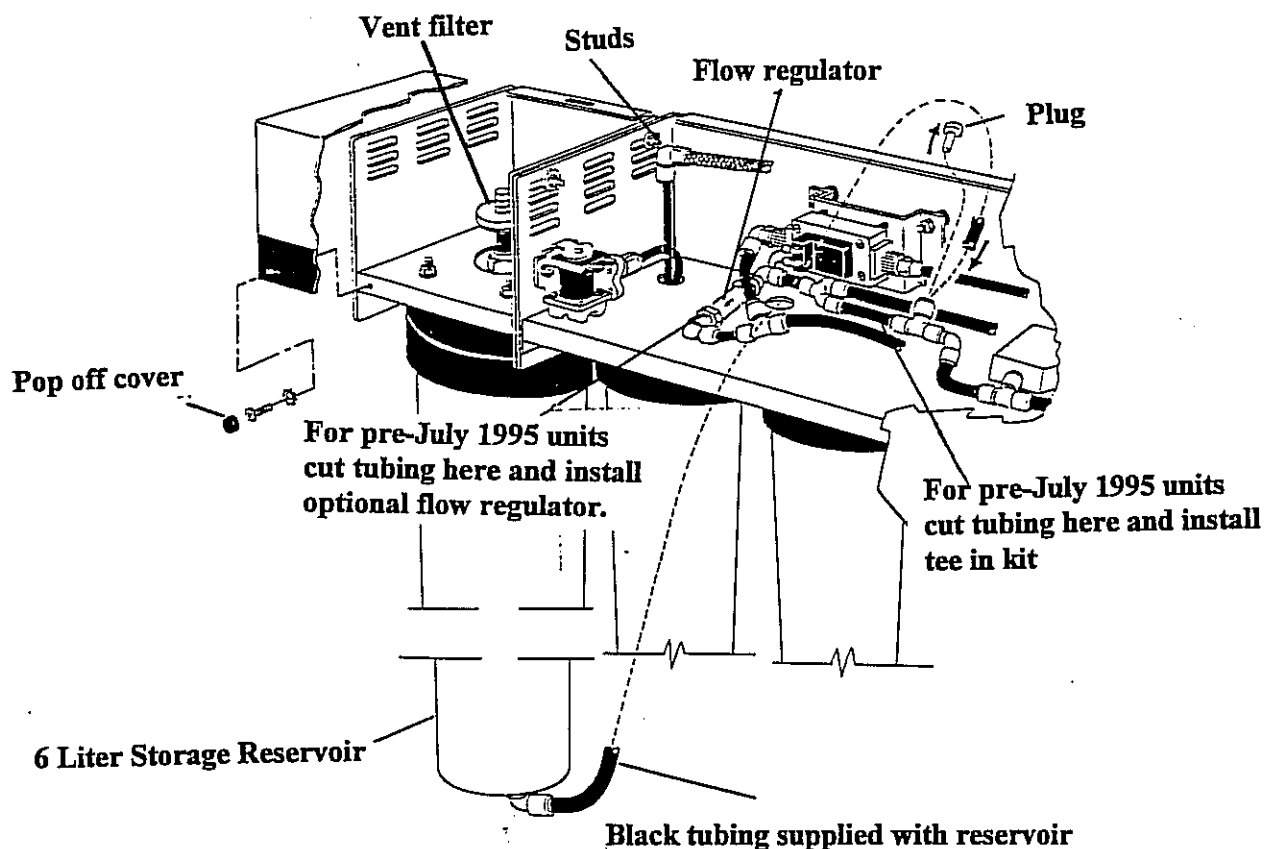


Figure 8

SAFETY PRECAUTIONS

- Pretreat feed water appropriately as indicated by Labconco Water ProFile test results to extend the life of the RO membrane.
- Change prefilters frequently as stated in this manual to prevent free chlorine from destroying the RO membrane.
- 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 Water Prodigy II system from the outlet.
- Preserve RO membrane whenever unit is unplugged for more than a week without usage per instructions under 'Preserving RO Membrane'.
- 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.
- System performance and cartridge life span are directly related to the feed water quality. It is important to establish feed water quality before operating the unit. A Labconco Water ProFile test is recommended prior to installation.

NORMAL OPERATION

Thoroughly understand procedures and equipment required before beginning work. Prefilter, Carbon/Prefilter, RO Membrane and Deionization Cartridges should already be installed. Last bowl is empty.

Initial Start-Up

- Pretreat feed water as recommended by Labconco based upon Water ProFile test.
- Direct the tubing which fits into the bottom of RO housing to drain to flush out any carbon fines from the carbon prefilter.
- Plug unit into electrical outlet. Turn feed water on. Unit will start. Run for 5 minutes with display off.
- Reattach the RO tubing to the elbow. A firm tug on the tubing should not pull it out.
- Install deionization cartridge in fourth bowl. Last bowl is left empty.
- Install final filter into dispensing gun. Remove the final filter from its plastic bag and orient it as shown by the flow direction on its label.
- There are two versions of dispensing guns. One requires loosening the dispensing gun by 1/2 to 1 full turn and pushing the filter inlet firmly into the body until it stops. Hand tighten the fitting.
- For the other version, a threaded filter is provided which threads into the dispensing end.
- Connect a drain line to the ball valve. (Dispensing gun should be closed).
- Start unit by opening dispensing valve. Direct to drain for one hour. (Be sure Prefilter and Carbon/Prefilter are in place.)
- Close ball valve and open the dispensing gun. Allow unit to dispense water to drain for 15 minutes.
- Turn display on, close dispensing gun. Unit will shut off automatically, however, recirculation pump will be on.
- Unit is ready for operation.

Start UP

- Plug unit into electrical outlet. Do not remove from electrical except to service.
- Turn feed water valve ON. (Should be left on at all times)
- Turn display switch ON.
- Open dispensing valve or gun to vessel to be filled and dispense.

NORMAL OPERATIONS

Automatic Flush Valve

The unit is equipped with a flush valve. The flush valve automatically opens every 2 hours and dumps water from the reservoir to drain while the RO is being flushed. In order for the flush valve to work, keep the unit plugged into an electrical outlet at all times.

1.4 Liter Reservoir

- Dispenses 500 milliliters of DI water in one minute when dispensing gun is opened, and 1.3 liters in one minute from the RO valve.
- After reservoir is empty, RO dispenses 230 ml/min (at 25°C, 75 psig line pressure). This will vary with line pressure, temperature, membrane, and TDS level of inlet water.
- When both dispensing valve and gun are closed, the reservoir will be filled with RO water and automatically shut off.

Work Techniques

- Use clean glassware to collect RO and DI water.
- Substitute RO water for DI water when application allows.
- Always leave unit plugged into electrical outlet. Disconnect unit from electrical outlet to service.
- Preserve membrane per 'Preservation Instructions' in this manual if unit is left unplugged for more than a week.
- Check to ensure security of drain lines.
- Keep a log of RO and DI performance.

Shut Down

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

- Disconnect unit from electrical outlet.
- Turn feed valve OFF.
- Turn dispensing valve and gun to ON position to drain water and relieve pressure.

Under normal operation, your Water Prodigy II will require little routine maintenance. The following schedule is recommended.

Follow The Shut Down Procedure

Weekly

- Change prefilter and carbon/prefilter if more than 500 gallons of feed water have been processed. Direct the tubing which fits into the bottom of the RO housing to drain for 15 minutes to flush out any carbon fines when prefilters are installed or damage to membrane may occur.
- Clean unit of any dust.
- Preserve unit if unplugged for more than one week.
- Change DI when resistivity falls below 10 megohm-cm and is slow to recover after 5 minutes recirculation.

Semi-monthly

- Change final 0.2 μ m filter or sooner if filter causes significant flow reduction.

Monthly

- Change Prefilter once a month and Carbon/Prefilter once every two months.
- All weekly activities.

Annually

- Clean RO membrane.
- Disinfect unit.
- Change DI Cartridge.
- All monthly activities

Biennial (once every two years)

- Replace RO membrane if the normalized (see chart on Page 35) flow rate at 25°C has decreased by 20% or more with the same line pressure.
- All annual activities.

EXPENDABLES

KIT #	DESCRIPTION
90872	RO Membrane Kit Includes one each RO membrane and adaptors
90071	Replacement Prefilters, 6 each
90869-01	Polishing Kit Includes Prefilters, 1 each Activated Carbon /Prefilter Cartridge, 2 each Hollow Fiber Final Filter, 1 each, Deionization Cartridge.

PART #	
90210	10" Prefilter, 1 each of 90071
90072	10" Activated Carbon/Prefilter
90871	RO Membrane
90073	Deionization cartridge 1 each
90929	Hollow Fiber Final Filter

Sanitization

Sanitization is necessary when the RO element becomes biologically fouled. Biological fouling of the RO is an obstruction due to living or dead bacteria on the membrane surface. This may occur if the RO is left stagnant without flushing or operation for more than a week.

If biological fouling occurs, the unit should be sanitized with 0.1% (wt/wt) formaldehyde as follows: (0.1% sodium bisulfite may be substituted. Do not store in bisulfite solution).

- (1) Collect approximately 2 liters of RO purified water in a container set aside.
- (2) Disconnect the unit from the electrical outlet. Shut off the feed water valve.
- (3) Relieve the water pressure in the unit by opening the RO dispensing valve or gun.
- (4) Remove both 10" Prefilter and 10" Carbon/Prefilter cartridges. Do not remove RO membrane. Remove 10" Deionization Cartridge as well.
- (5) Carefully wash inside the prefilter bowl, carbon/prefilter bowl, DI bowl and reservoir(s) with liquid detergent using a clean sponge or cloth. Rinse out the bowls several times to remove any residue.

CAUTION: Prepare and handle solutions in well ventilated areas. Wear protective clothing, gloves and eye protection. Dispose of excess spillage properly.

- (6) Prepare 0.1% formaldehyde or 0.1% sodium bisulfite in the RO purified water collected in Step 1.

CAUTION: Use only chlorine-free water. Use of chlorinated tap water will degrade and destroy the RO membrane.

- (7) Install a new 10" Prefilter cartridge (P/N 90210) in the empty, clean 10" bowl (bowl #1).
- (8) Fill the Carbon/Prefilter bowl (bowl #2) with the 0.1% formaldehyde. Fill the reservoir(s) (last bowl and 6 liter tank) one-third full with the 0.1% solution.
- (9) Reinstall remaining bowls in their correct positions.
- (10) Plug the unit into the electrical outlet. Reopen the feed water valve.
- (11) Start the unit with the dispensing valve closed and the display OFF. The unit will fill the reservoir(s) and automatically shut off.

DECONTAMINATION/CLEANING

Sanitization (Con't)

- (12) Allow the unit to stand for 1 hour.
- (13) If the system will not be in use for an extended time, leave the formaldehyde or sodium bisulfite solution in the system.
- (14) If the system is to be returned to service, flush the residual solution from the system for 1 hour by attaching a hose to the dispensing valve and routing to drain as well as opening the dispensing valve and activating the unit.

Both inorganic and organic fouling are indicated when either or both of the following occur:

- . The normalized (temperature corrected) product flow rate drops by 20 percent. (See page 35 for corrected flow rate)
- . The microsiemens (μ s) of the permeate rises noticeably.

Inorganic Fouling (Scaling)

Inorganic fouling is caused by mineral scale such as:

- . Calcium carbonate
- . Calcium sulfate
- . Barium sulfate
- . Strontium sulfate
- as well as ions such as
- . Iron or manganese

Inorganic fouling can be cleaned with the following recommended solution:

0.5% HCl with a final pH of 2.

Procedure

- (1) Collect approximately 2 liters of reverse osmosis water in a container set aside for use in preparing the cleaning solution.

CAUTION: Use chlorine-free water to prepare the cleaning solutions. The use of chlorinated tap water will destroy the reverse osmosis membrane.

Procedure (Con't)

- (2) Disconnect the unit from electrical power source by unplugging the unit.
- (3) Shut off feed water valve.
- (4) Relieve the water pressure in the unit by opening the dispensing valve and directing the water to a drain.
- (5) Remove the Carbon /Prefilter cartridge from its housing (second bowl from left) and discard the water. Also remove the Deionization cartridge bowl (fourth bowl from left) and final filter from gun.
- (6) Fill the Carbon/Prefilter bowl (second bowl from left), approximately 3/4 full with the cleaning solution.
- (7) Reinstall the bowl.
- (8) Close the ball valve and open the feed water valve.
- (9) Plug the unit into an electrical outlet, activate the unit and allow it to operate until it automatically shuts off.
- (10) Disconnect the unit from the electrical outlet and allow the membrane to soak for at least 2 hours.
- (11) Relieve the pressure by opening the dispensing valve.

CAUTION: Do not attempt to remove the acid-filled bowls when the system is pressurized.

- (12) Carefully remove the carbon bowl and dispose of the water appropriately.

CAUTION: The water in the bowl contains cleaning solution. Handle and dispose of properly.

- (13) Install new Prefilter (first bowl from left) and Carbon/Prefilter (second bowl) from left cartridges.
- (14) Connect a hose to the dispensing gun and route to drain. Activate the unit by connecting to an electrical outlet. Leave the dispensing gun open and direct water to drain for 60 minutes. After each 20 minute interval, close valve and allow standard storage tank to fill. Then open the dispensing gun to drain.

DECONTAMINATION/CLEANING

Procedure (Con't)

- (15) At the end of the hour, relieve the pressure by opening the dispensing valve (or gun) and directing water to drain. Disconnect unit.
- (16) Place paper towels beneath the standard storage tank (last bowl and optional 6 liter tank if installed) and disconnect both ends of tubing from the tee. Discard the water in the tank and reinstall. Connect both ends of tubing as well. Also install new Deionization cartridge (4th bowl) and new Hollow Fiber Final Filter in gun.
- (17) Close dispensing gun. Connect unit to electrical outlet. The unit is now ready for normal operation.

Organic Fouling

Organic fouling can be caused by silt, bacterial slime or any other organic materials.

The following recommended cleaners may be used:

- . Sodium hydroxide 0.5%
- . Sodium dodecyl sulfate 0.1% (Adjust pH to 11.5 with HCl if necessary)
- . Trisodium phosphate, 1%
- . Sodium tri-polyphosphate, 1%
- . Tetra sodium EDTA, 1% (Adjust pH to 11.5 with HCl if necessary)

For cleaning procedure, follow steps 1 through 17 under Inorganic Fouling.

Preserving RO Membrane

If the system will not be in use (without electricity) for over a week, preserve with 0.1% formaldehyde.

- (1) Collect approximately 2 liters of RO purified water in a container set aside.
- (2) Disconnect the unit from electrical source. Shut off the feed water valve.
- (3) Relieve the water pressure in the unit by opening the RO dispense valve or gun and directing the water to drain.

Preserving RO Membrane (Con't)

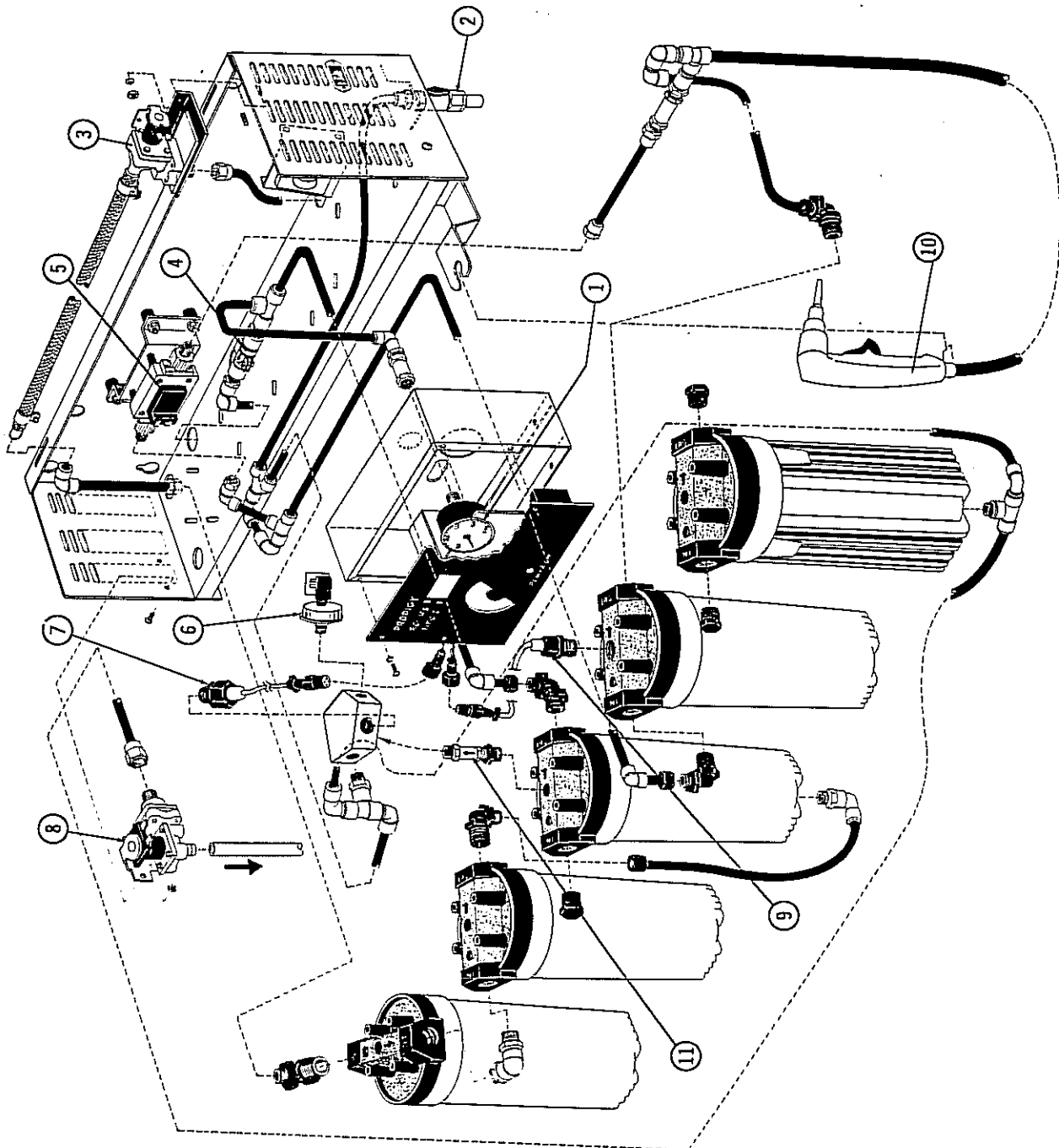
- (4) Remove both 10" Prefilter and 10" Carbon/Prefilter cartridges. Remove 10" Deionization cartridge as well. Do not remove RO membrane.
- (5) Carefully wash inside the Prefilter bowl, Carbon/Prefilter bowl, DI bowl and reservoir(s) with liquid detergent using a clean sponge or cloth. Rinse out the bowls several times to remove any residue.
- (6) Prepare 0.1% formaldehyde or sodium bisulfite in the RO purified water collected in Step 1.
- (7) Install a new 10" prefilter cartridge (P/N 90210) in the empty, clean 10" bowl (bowl #1).
- (8) Fill the Carbon/Prefilter bowl with the 0.1% formaldehyde or sodium bisulfite.
- (9) Reinstall the bowls in their correct position.
- (10) Plug the unit into the electrical outlet. Reopen the feed water valve.
- (11) Turn display off. Allow it to operate for 5 - 10 seconds.
- (12) Close off feed water valve and disconnect from electrical source.

REPLACEMENT PARTS

ITEM	QUANTITY	PART #	DESCRIPTION
1	1	90547-01	Pressure Gauge
2	1	13629	Dispensing Valve - RO Water
3	1	90756	Inlet Valve Assembly - 115 V
3	1	90756-01	Inlet Valve Assembly - 230 V
4	1	90833	Flow Restrictor
5	1	90343	Recirculation Pump, 115 V
5	1	90343-01	Recirculation Pump, 230 V
6	1	13021	Pressure Switch
7	1	90607	Conductivity Sensor
8	1	90759	Flush Valve Assembly
9	1	90607	Resistivity Sensor
10	1	90904	Dispensing Gun Assembly
11	1	13633	Check Valve

ELECTRICAL

QUANTITY	PART #	DESCRIPTION
1	13345	Power Cord, 125 V
1	13341	Power Cord, 230 V
1	90842	PC Board Assembly



PRODIGY II

SERVICE

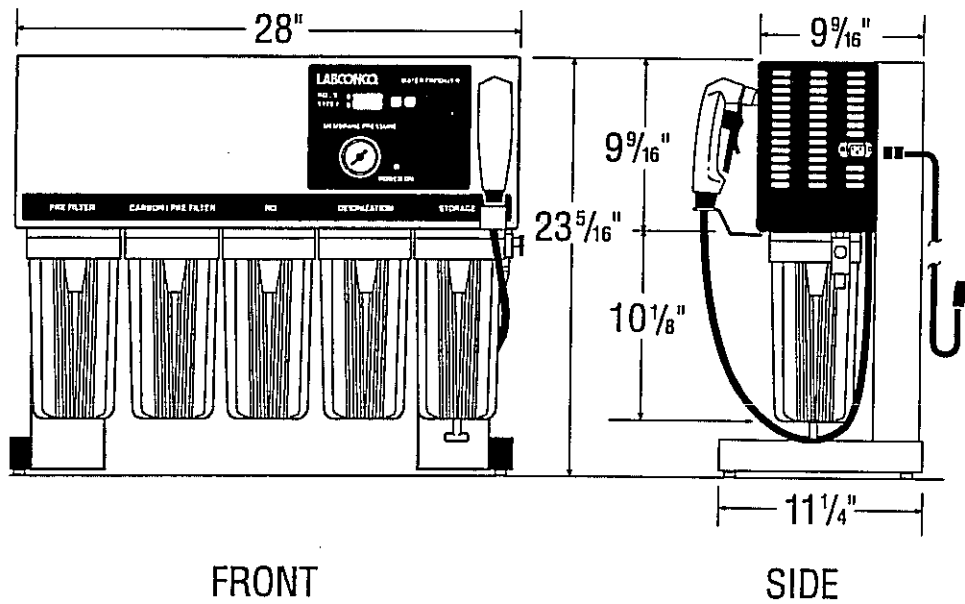
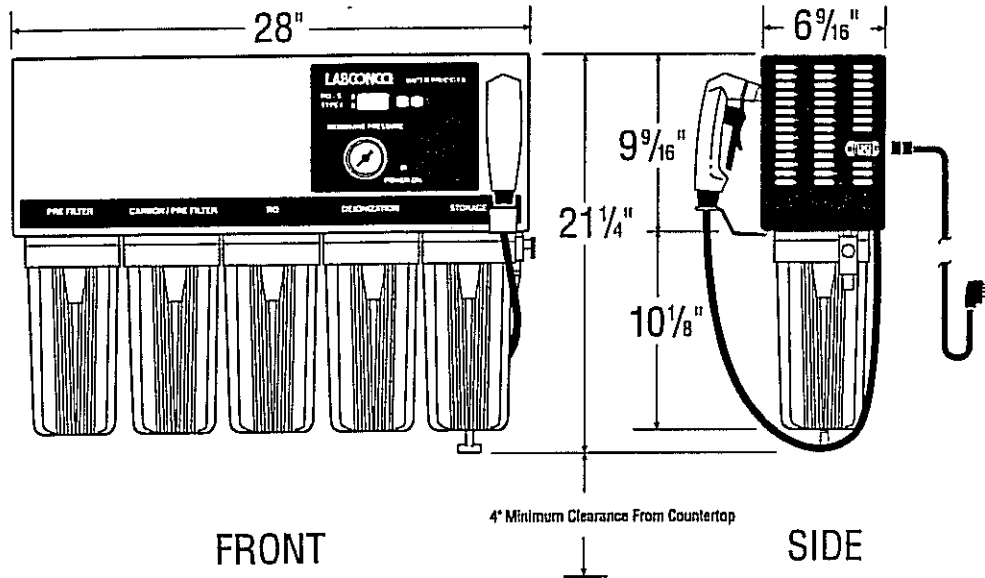
Front Panel Removal

- (1) Locate the two black screw covers on the front panel.
- (2) Using a blade screwdriver, pop off the black covers
- (3) Using a Phillips screw driver, remove the two screws holding the front panel.
- (4) Retain the plastic collars with the screws. Do not misplace.
- (5) Lift up on the cover to remove.

Prefilter And Carbon Replacement

NOTE: (Prefilter - change at least once a month, Carbon/Prefilter change at least once every two months.)

- (1) Disconnect unit and relieve the pressure by opening dispensing valve or gun.
- (2) With the spanner wrench provided, remove the first and second bowls.
- (3) Remove the old Prefilter and Carbon/Prefilter.
- (4) Discard water in bowls.
- (5) Clean and dry bowls with mild soap and water.
- (6) Insert new Prefilter and Carbon and place bowls on unit.
- (7) Hand tighten bowls in place. Do not use wrench to tighten as this may damage the bowls.



ELECTRICAL DATA

MODEL	ELECTRICAL REQUIREMENTS
90861	115 VAC - 60 Hz 1 Phase - 2 Amp
90861-01	230 VAC - 50 Hz 1 Phase - 1 Amp
90862	115 VAC - 60 Hz 1 Phase - 2 Amp
90862-01	230 VAC - 50 Hz 1 Phase - 1 Amp

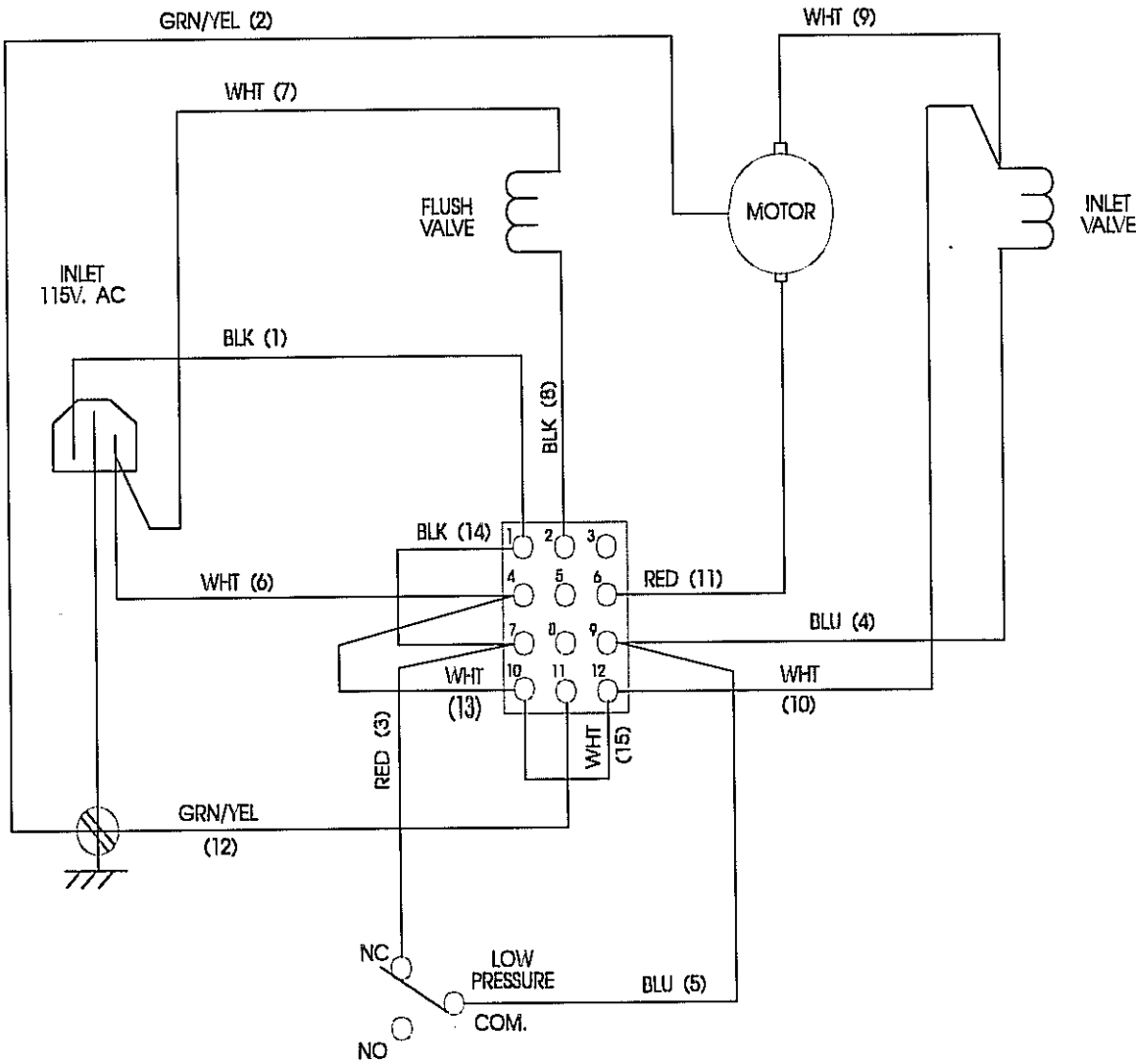
RO PRODUCTION TABLE RATES

R/O Production Rates in Millimeters/Minute Back Pressure (psi)

Temperature °C	10	20	30	40	50	60	70	75	80	90
13	6	24	50	70	92	116	138	148	158	182
16	7	29	56	79	104	131	156	168	179	204
18	8	34	62	88	116	146	174	187	200	227
21	9	39	68	97	128	161	192	207	221	250
24	10	44	74	106	140	176	210	226	242	273
25	11	46	76	109	144	181	216	233	249	281
27	12	49	80	115	152	191	228	246	263	296
29	13	54	86	124	164	206	246	265	284	319
32	14	59	92	135	176	221	264	285	305	342

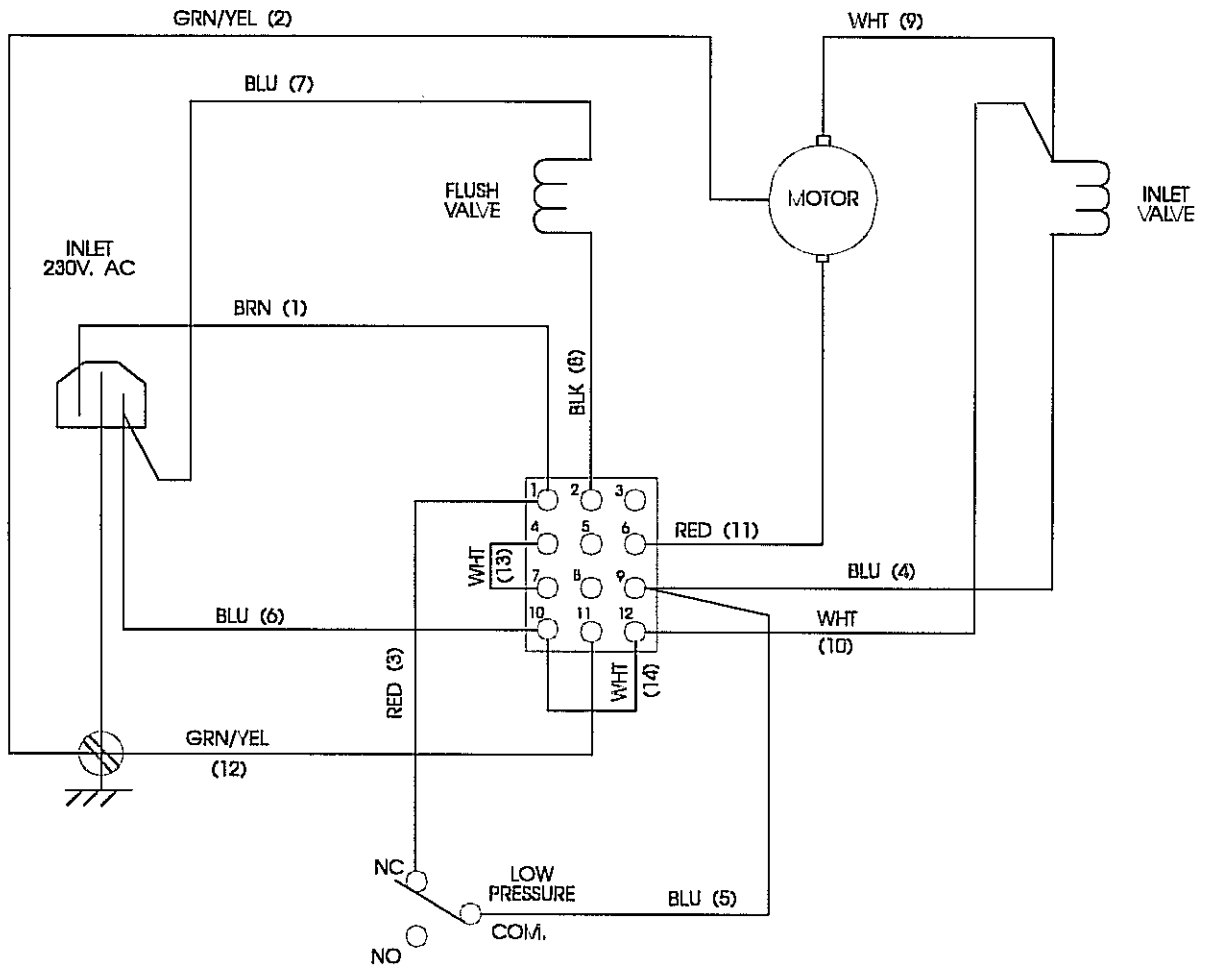
WIRING DIAGRAM

115 V Wall Mount and Bench Top
Models 90861 and 90862



WIRING DIAGRAM

230 V Wall Mount and Bench Top
Models 90861-01 and 90862-01



TROUBLESHOOTING

PROBLEM	CAUSES	CORRECTIVE ACTION
Display reads 0.	RO conductivity sensor disconnected from wiring harness	Connect sensor to harness from circuit board
	Air gap	Purge unit until air is expelled by opening the dispensing valve
Increase in μs (microsiemen) reading	High inlet TDS	This is normal. With increased inlet TDS, RO μ s increases
	RO membrane scaling or other deposits	Clean membrane per instructions in RO cleaning section
Excessively high μs	RO membrane fouled Biofilm formed	Clean RO membrane per instructions in RO cleaning section
	RO poisoned. Chlorine damage	Replace RO membrane and prefilters per installation instructions
Low flow rate	Reservoir is empty	Reservoir dispenses 500 ml/min. After the reservoir is depleted, flow rate is 240 ml/min (at 25°C, 75 psig line pressure)*
	Loss of charge in reservoir	Unplug unit, drain and remove reservoir(s) to allow air in. Replace reservoir(s) and activate unit

*Based on one membrane tested at those conditions listed, rate will vary with pressure and temperature

PROBLEM	CAUSES	CORRECTIVE ACTION
Pilot light not on	Unit not plugged into outlet	Plug Water Prodigy II into appropriate electrical service
	Circuit breaker tripped	Reset circuit breaker
RO microsiemen μs reading not displayed	Display switch not ON	Turn display switch ON
	Unit not plugged into outlet	Plug unit into appropriate electrical service
Inlet Valve does not operate, pilot light on	Feed water valve (manual) is closed	Open feed water valve
	Inlet valve disconnected or defective	Unplug unit, connect wiring or replace inlet valve
	Pressure switch defective	Replace pressure switch
Low flow rate at valve	Final filter in gun is blocked	Replace Hollow Fiber Final Filter
	Low outlet temperature	RO production rate drops with decrease in temperature
	Kinked line in system	Trace and straighten line
	Decrease in RO backpressure	Line pressure may have dropped. Check line pressure

TROUBLESHOOTING

PROBLEM	CAUSES	CORRECTIVE ACTION
Type I Display Reads Low	Deionization cartridge is exhausted	Replace deionization cartridge
	Dirty System	Clean System
Type I Display Reads HI	Sensor disconnected	Connect sensor to board
	Air in system	Purge all air from system by opening dispensing gun and directing water to drain
Polished water will not rinse up to desired quality after 24 hours	Cartridges are past expiration date	The shelf life of cartridges is two years from the day of manufacture. Replace the expired cartridges with new ones. Check the manufactured date
	Cartridges installed in the wrong sequence	Install the cartridges as described in Installation section
	Water is bypassing the cartridges	Ensure that the O-rings at the top of the deionization cartridges and the post at the top of the canister are intact.

PROBLEM	CAUSES	CORRECTIVE ACTION
Reduced cartridge life	Cartridges are past expiration date	Check the manufactured date on the cartridge package. The shelf life of cartridge is two years from the day of manufacture. Replace the expired cartridges with new ones.
	Feed water quality has changed	If the source is tap water, some water supplies are subject to seasonal variations in quality, or the source of the tap water may have changed. Submit a sample to Labconco for analysis by the Water ProFile analysis
	Recirculation pump is defective	Replace recirculation pump
Water Quality Display acting erratically	Dirty System	Clean System
	New cartridge 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 system by opening the dispensing gun and directing to drain
	Deionization cartridge is exhausted	Replace the deionization cartridge
	Polishing loop resistivity cell is defective	Replace cell

TROUBLESHOOTING

PROBLEM	CAUSES	CORRECTIVE ACTION
Recirculation pump is very noisy	Air in system	Turn display OFF (This turns off the pump as well). Allow water to be dispensed out of dispensing gun and valve before turning display ON. Do not run pump dry

WATER PRODIGY II OPERATING LOG

Customer Name _____

Model Number _____

Date Installed _____

Serial Number _____

Unit Location _____

Date							
RO μ S							
RO psi							
Type I							
Reservoir Flow Rate/min.							
(After reservoir empty) RO Flow Rate							
Reject flow out of drain line							
Prefilter changed (Change once a month)							
Carbon/Prefilter changed (Change once every two mo.)							
Deionization cartridge changed							
Membrane Cleaned							
% Conversion $\frac{\text{RO Flow Rate} \times 100}{\text{RO Flow Rate} + \text{Reject Flow Rate}}$							

NOTE: Make extra copies and keep a binder of records.

WARRANTY

We are committed to providing our customers with quality equipment and service after the sale. Part of this objective involves keeping you informed of changes and new product additions. We therefore request that you take a moment to fill out the product registration card so we may know your location as well as some of the reasons that prompted you to purchase our products.

Labconco Corporation warrants products of its manufacture for one year, from receipt of the equipment by the purchaser, against defects in materials and workmanship. This limited warranty covers parts and labor but not transportation and insurance charges. In the event of a warranty claim, contact the dealer who sold you the product. If the cause is determined to be a manufacturing fault, the dealer or Labconco Corporation will repair or replace all defective parts to restore the unit to operation. **Under no circumstance shall Labconco Corporation be liable for indirect consequential or special damages of any kind.** This statement of warranty may be altered by a specific published amendment. No individual has authorization to alter the provisions of this warranty policy or its amendments. Lamps and expendable items such as filters are not covered by this warranty. Damage due to corrosion or accidental breakage are also not covered.

WARNING: 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 urged 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.

If a shipment is received in visibly damaged condition, be certain to make a notation on the delivering carrier's receipt and have their agent confirm the damage on your receipt. Otherwise, the damage claim may be refused.

If concealed damage or pilferage is discovered, notify the carrier immediately and retain the entire shipment intact for inspection. Interstate Commerce Commission rules require that the claim be filed with the carrier within 15 days after delivery.

NOTE: Do not return goods. Goods returned without prior authorization will not be accepted. Labconco Corporation and its dealers are not responsible for shipping damage. Claims must be filed directly with the freight carrier by the recipient. If authorization has been received to return this product, by accepting this approval, the user assumes all responsibility and liability for biological and chemical decontamination and cleansing. Labconco reserves the right to refuse delivery of any products which do not appear to have been properly cleaned and/or decontaminated prior to return.

CONTACTING LABCONCO

If you have any questions that are not addressed in this manual, or if you need technical assistance, please contact Labconco's Customer Service Department at either (800) 821-5525 or (816) 333-8811, between the hours of 7:00 a.m. and 6:00 p.m. Central Standard Time.

Visit Labconco through the Internet at:

<http://www.labconco.com>

or

email: labconco@labconco.com