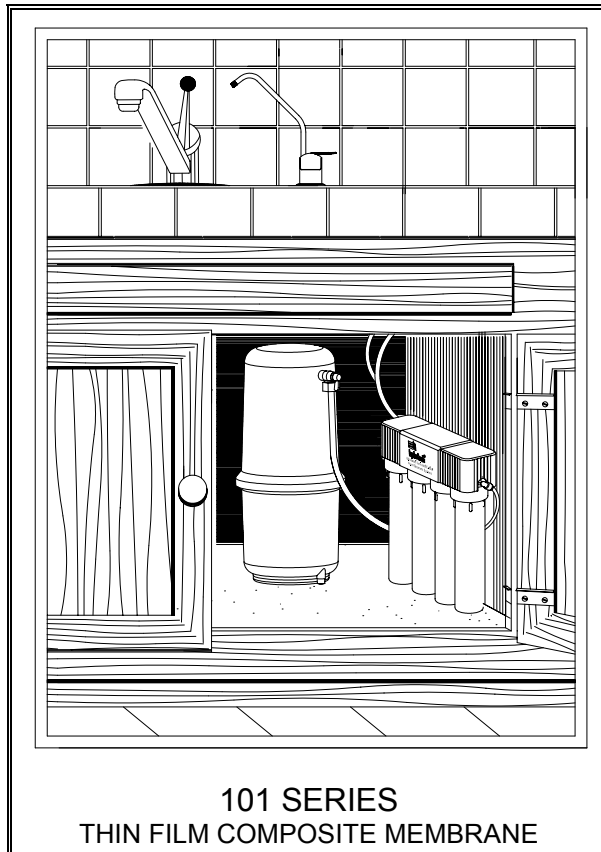


# OWNER'S GUIDE HYDROTECH®



## ADVANCED REVERSE OSMOSIS WATER TREATMENT SYSTEMS




**hydrotech®**

**Hydrotech, Inc.**

25555 West Avenue Stanford, Valencia, CA 91355  
Phone (661) 294-8888 Fax (661) 294-8880

# INTRODUCTION

## CERTIFIED CONTAMINANT REDUCTION PERFORMANCE

	<b>System Conforms to NSF/ANSI 58 for Specific Performance Claims as Verified and Substantiated by Test Data.</b>				
	ARSENIC*	ASBESTOS	BARIUM	CADMIUM	COPPER
	TRIVALENT CHROMIUM		HEXAVALENT CHROMIUM		CYSTS**
	LEAD	NITRATES†	RADIUM 226/228	SELENIUM	TURBIDITY
	CHLORINE - TASTE AND ODOR#			TOTAL DISSOLVED SOLIDS (TDS)	

\* This system Has been tested for the treatment of pentavalent arsenic (also known as As (V), As (+5), or arsenate at levels of 0.30 mg/L or less. This system reduces pentavalent, but it may not remove other forms of arsenic. This system is to be used on water supplies containing a detectable free chlorine residual or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramines (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Facts section of the Performance Data Sheet for further information.

\*\* Certified for reduction of Cysts including Cryptosporidium parvum oocysts and cysts of Giardia and Entamoeba.

† This system is acceptable for treatment of influent concentrations of no more than 27 mg/L nitrate (NO<sub>3</sub>) and 3-mg/L nitrite (NO<sub>2</sub>) in combination measured as 7.8 mg/L nitrogen (N) and is certified for nitrate/nitrite reduction in water supplies with a pressure of 280 kPa (40 psig) or greater. This system is not available in California.

# System Tested and Certified by NSF International against NSF/ANSI 42 for aesthetics for taste and odor to a capacity of 3,000 gallons.

## MODEL NUMBERS, PRODUCTION AND RECOVERY RATES

**TABLE 1**

GUIDE IS APPLICABLE TO HYDROTECH® REVERSE OSMOSIS DRINKING WATER TREATMENT SYSTEMS AS SPECIFIED IN THIS TABLE									
Select System, Claims, Output Specification, Monitor, and Faucet. Assemble Respective Codes in Sequence.									
SYSTEM CONFORMS TO NSF/ANSI 58 FOR SPECIFIC PERFORMANCE CLAIMS AS VERIFIED AND SUBSTANTIATED BY TEST DATA.									
System Code		101				101			
Claims		Chemical / Mechanical				Chemical / Mechanical / Nitrate			
System Output	Designation <sup>‡</sup>	25	45	25	45	25	45	25	45
	Daily Production	29 Liters/day (7.5 gal/day)	45 Liters/day (12 gal/day)	29 Liters/day (7.5 gal/day)	45 Liters/day (12 gal/day)	29 Liters/day (7.5 gal/day)	45 Liters/day (12 gal/day)	29 Liters/day (7.5 gal/day)	45 Liters/day (12 gal/day)
	Recovery Rate <sup>††</sup>	21%	24%	21%	24%	21%	24%	21%	24%
	Code	05	07	05	07	05	07	05	07
Monitor		Pushbutton Smartap®		Faucet Smartap®		Pushbutton Smartap®		Faucet Smartap®	
Faucet		Polymer		Polymer		Polymer		Polymer	
Faucet Code		101		102		103		104	

<sup>‡</sup> Manufacturer's Reference Designation Only. Refer to Production and Recovery Rates table for certified output production rates.

<sup>††</sup> System has been tested and operates at the specified recovery rating under standard test conditions as specified in the Performance Data Sheet. The Recovery Rating is a percentage measure of the amount of influent water which is delivered as permeate under open permeate discharge conditions. A rating of 25% means that 25% of the influent water is delivered as permeate and 75% is processed as reject water.  
Example: For every 37.8 L/day (10 gal/day) entering the system, 9.45 L/day (2.5 gal/day) is delivered as permeate and 28.35 L/day (7.5 gal/day) is used to rinse the membrane and sent to the drain.

**Example:** 4 vessel, Chemical/Mechanical Reduction, 25 GPD, Faucet Smartap®, Polymer Faucet, is Model Number 10105102

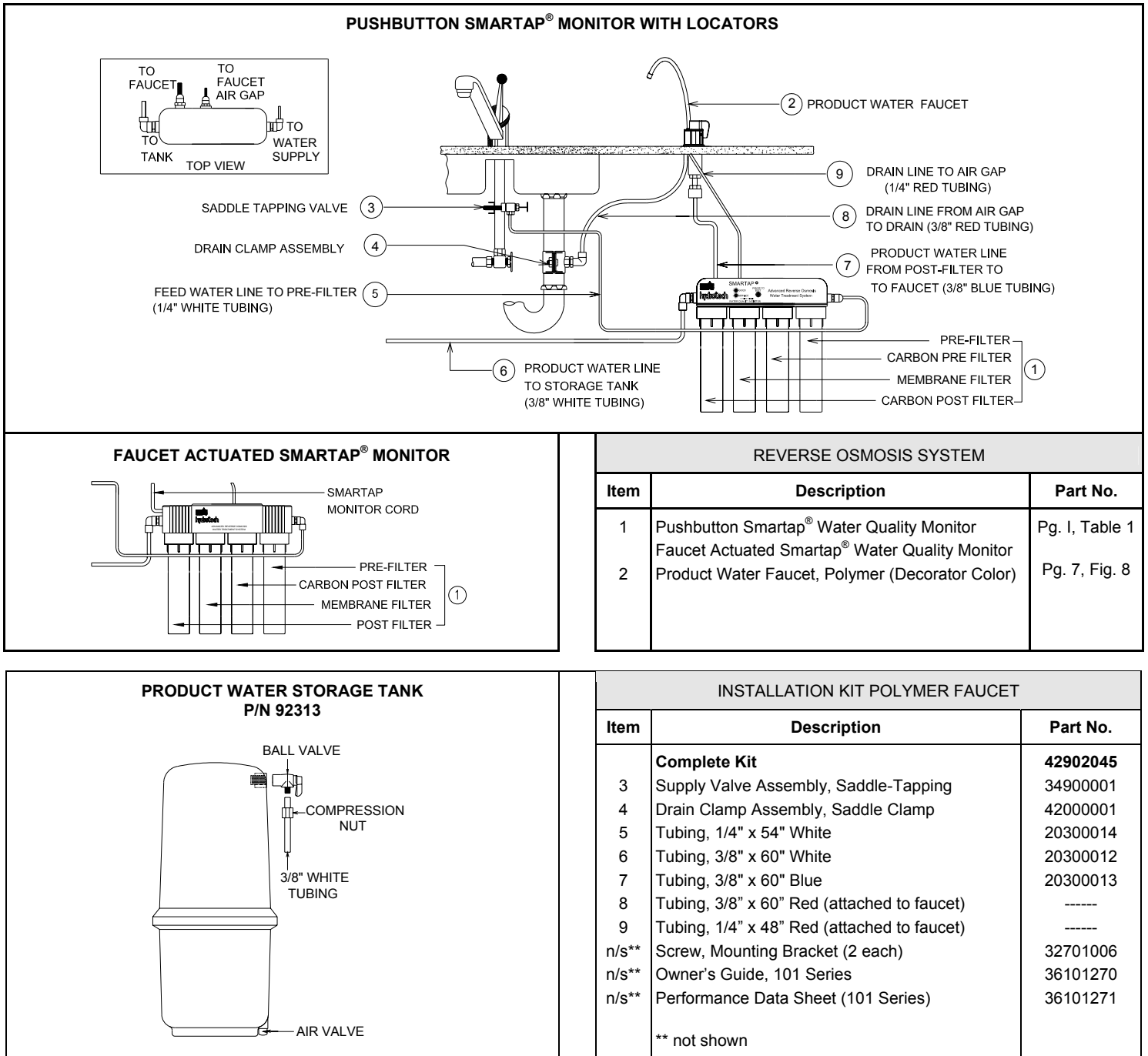
## CONDITIONS FOR USE

## THIN FILM COMPOSITE MEMBRANE

Source Water Supply Profile	Chemical Parameters	Max mg/L
Community/Private	Chlorinated/Non-Chlorinated	Hardness (CaCO <sub>3</sub> )
Feed Water Pressure <sup>1</sup>	242-690 kPa (35-100 psig)	Iron (Fe)
Temperature	4°-38° C (40°-100° F)	Manganese (Mn)
pH Range	3.0 - 11.0	Hydrogen Sulfide (H <sub>2</sub> S)
Maximum TDS Level	2000 mg/L	Residual Chlorine (Cl <sub>2</sub> )
Turbidity	<1.0 NTU	1. Silt Density Index: Value stated in SDI units.
Maximum SDI <sup>1</sup>	<4.0	

NOTE: 1. PRESSURE REGULATOR IS RECOMMENDED FOR FEED WATER PRESSURES EXCEEDING 552 kPa (80 psig).

# INTRODUCTION



**Figure 1** Component and Interconnection Locators, 101 Series

## OPTIONS AND ACCESSORIES

FAUCET ACTUATED SMARTAP® MONITOR	BOOSTER PUMP
Indicator lights appearing in a Light Bar report system status. Light Bar is located in faucet body front cover (Polymer). It connects to electronics inside RO Module by a length of phone cord routed to terminal on manifold cover.	A booster pump may be used if system pressure is below 242 kPa (35 psi). Pump should be placed near RO Module. and installed in feed water line just before it enters Module. Power supplies are available in a variety of voltages.

Contact your Hydrotech® Dealer to purchase these items or to obtain more information.

# SMARTAP® WATER QUALITY MONITOR

Hydrotech® 101 Series Reverse Osmosis Systems incorporate a proven performance indicator. Our *patented* Smartap® Water Quality Monitor uses dual probe LOGIC PULSE MEMORY technology to accurately indicate membrane performance. A split-second power pulse compares feed water Total Dissolved Solids (TDS) level with that of the product water. Then, by reversing the polarity of the electronic pulse, the probes are cleaned and kept free of chemical plating. A nine-volt alkaline battery provides power to the Monitor. For optimum monitor performance, the battery should be replaced each time system is sanitized.

**NOTE:** Monitor Troubleshooting Indicators and Common Solutions are shown in Table 3 on Page 14.

## THE SMARTAP® WATER QUALITY MONITOR IS AVAILABLE IN TWO MODELS

### Pushbutton Actuated Smartap®

Pressing a test button located on the manifold cover activates monitor. When button is pressed, and momentarily held down, monitor reports membrane status by illuminating a light located next to test button. A green light means system is operating normally. A yellow light indicates system needs servicing (membrane may be depleted or fouled). While the button may be pressed at any time, the most accurate readings are obtained when the system is making water.

### Faucet Actuated Smartap®

Monitor is activated by opening product water faucet or extra point-of-use device. When monitor is activated, it reports system status by illuminating a light appearing in a light bar that is integrated into faucet body front cover (Polymer faucet). A green light means system is operating normally. A yellow light means membrane may be depleted or fouled. An orange light means a trained technician should service the system. To prolong battery life, the monitor indicator lights self-extinguish after a few seconds even if water is being dispensed.

## INTER-COMPONENT CONNECTIONS

Connections between cold water supply line, RO Module, storage tank, product water faucet, and drain line are accomplished using plastic tubing and push-together quick-connect type fittings.

### PLASTIC TUBING

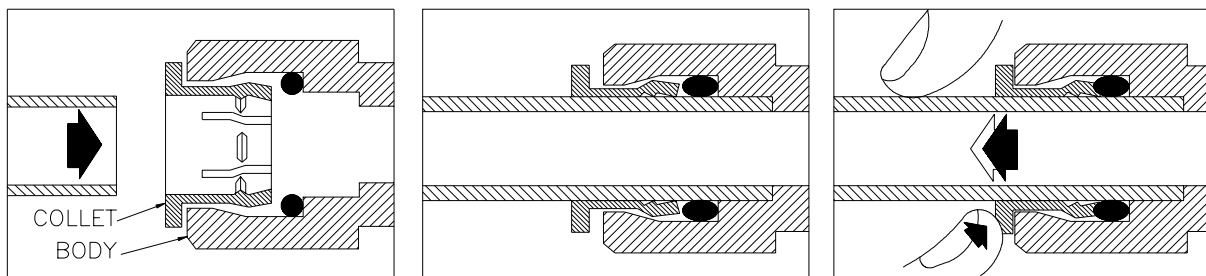
1. Cut tube ends square and straight. Do not deform tube (i.e., cause tube to compress its diameter so it is no longer round).
2. Make sure outer surface of tube is clear of marks or scratches for a length equal to twice tube diameter. This allows "O" ring to seat properly against tube.
3. Avoid sharp changes in direction when routing tubing. Sharp turns cause tubing to flex and deform, which reduces its flow capacity and may increase lateral stress on the fittings, causing leakage.

### QUICK-CONNECT FITTINGS

Fittings consist of two parts: a Body and a colored Collet. Collet color corresponds to tubing color to be used at that connection (Figure 2.A.).

1. To install a tube, push it through Collet until it seats firmly at bottom of fitting (Figure 2.A and 2.B.).
2. To remove a tube, push and hold Collet against Body while pulling tube out (Figure 2.C.).

**NOTE:** Systems are shipped with a plug in each fitting (prevents leakage of sanitizing fluid). Remove a plug in same manner as a tube.



A. Push tube through Collet into Body    B. Tube must seat firmly at bottom of fitting    C. Push Collet against Body to release tube

**Figure 2** How to Use Quick-Connect Fittings

## INSTALLATION REQUIREMENTS

### READ THIS ENTIRE INSTALLATION AND SERVICE GUIDE BEFORE BEGINNING INSTALLATION

Hydrotech® 101 Series Reverse Osmosis (RO) Drinking Water Treatment Systems have been designed for ease of installation and serviceability. They are constructed with the finest materials available. Using these instructions and paying close attention to parameters outlined within "CONDITIONS FOR USE" detailed on Page I will ensure a successful installation.

All systems must be installed in accordance with applicable city, state, and local plumbing codes. To insure a system continues to operate at its optimum level, it is necessary to have a routine maintenance and replacement schedule (Page 16). The frequency at which filters must be changed will depend on quality of feed water supply and level of system usage.

Hydrotech® RO systems contain a replaceable treatment component critical to the efficiency of the system. Replacement of the reverse osmosis component should be with one of identical specifications, as defined by Hydrotech®, to assure the same efficiency and contaminant reduction performance. Product water shall be tested periodically to verify the system is performing properly. Operator performs test using the Smartap® Water Quality Monitor.

### PREPARATION

1. Check that all appropriate components are packed with your system (Figure 1). Refer to applicable Component Parts Breakdown (Figures 8, 9, or 10) for a complete list of parts.
2. Determine locations for RO component installation. Two requirements for consideration are: access to cold water supply line and household sink drainpipe. Specific requirements are detailed in Table 2.

<p><b>PRODUCT WATER FAUCET</b></p> <p>Faucet may be installed in any convenient location. Make sure underside of location is free of obstructions</p>	<p><b>REVERSE OSMOSIS MODULE*</b></p> <p>Module may be installed under sink or in any convenient location within 15 feet of source water supply and faucet.</p>
<p><b>STORAGE TANK</b></p> <p>Tank may be placed in any space within 15 feet of faucet, generally under kitchen sink or in an adjacent unused cabinet. Tubing length between components should be kept to a minimum, avoiding sharp bends or kinks.</p>	
<p><b>* DO NOT PLACE MODULE WHERE IT WILL BE EXPOSED TO FREEZING AND/OR DIRECT SUNLIGHT.</b> Mount Module on side of cabinet using bracket (attached to Module) and two screws provided in the Installation Kit. <b>HOLD THE MODULE BY THE FILTER HOUSINGS WHEN PICKING UP OR CARRYING UNIT.</b></p>	

**Table 2** Component Location Requirements

### NOTE

THIS DRINKING WATER SYSTEM IS FOR USE ON POTABLE WATER SUPPLIES ONLY. SOURCE WATER EXCEEDING CHEMICAL PARAMETERS REQUIRES PRE-TREATMENT.

COMMONWEALTH OF MASSACHUSETTS PLUMBING CODES 248 CMR SHALL BE ADHERED TO. CONSULT WITH YOUR LICENSED PLUMBER FOR INSTALLATION OF THIS SYSTEM.

### CAUTION

**DO NOT USE WITH WATER THAT IS MICROBIOLOGICALLY UNSAFE OR OF UNKNOWN QUALITY WITHOUT ADEQUATE DISINFECTION BEFORE OR AFTER THE SYSTEM.**

### SYSTEMS CLAIMING CYST REDUCTION

SYSTEM MAY BE USED ON DISINFECTED WATER THAT MAY CONTAIN FILTERABLE CYSTS. IF SIGNIFICANT INLET WATER PRESSURE DIFFERENTIALS OCCUR, PRESSURE REGULATOR MUST BE USED.



## SADDLE-TAPPING VALVE INSTALLATION ON STEEL OR BRASS PIPE

**NOTE:** The saddle-tapping valve is approved for use on steel or brass pipe from 1/8" to 1".

**NOTE:** State and local plumbing codes may prohibit use of saddle-tapping valves.

1. **CAUTION:** If no shut off valve is installed under sink, close main water valve during this installation.

**CAUTION:** Do not install feed water assembly on hot water line.

Locate and shut off source water supply line (see Page 2, Steps 1 and 2).

**NOTE:** All instructions refer to components shown in Figure 3.B. unless otherwise noted.

2. **WARNING: USE A BATTERY POWERED HAND DRILL TO AVOID SHOCK HAZARD.**

**CAUTION:** Place a container or towel below shut-off valve to catch any remnant water.

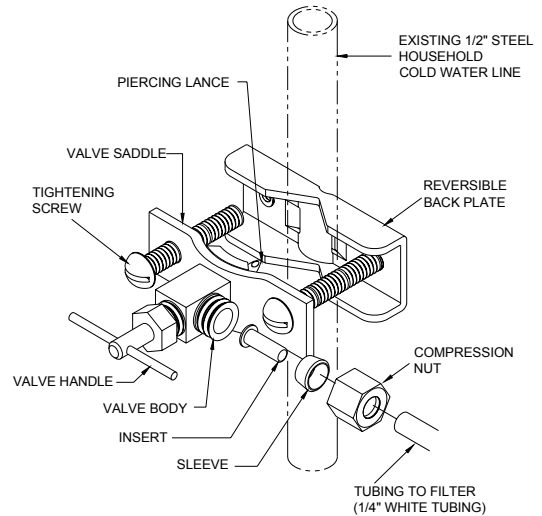
Using a clean drill bit, drill a 3/16" hole in pipe. Hole must be located so that tubing connection will be oriented toward the RO Module input port.

3. Assemble saddle-tapping valve assembly on tube.
  - a. Turn valve handle to expose lance beyond rubber gasket no more than 3/16".
  - b. Place valve saddle against pipe. Make sure lance fits into hole.
  - c. Hold back plate against tubing in a position directly opposite valve saddle.
  - d. Tighten screws enough so valve saddle and back plate are held securely against tube.
  - e. Tighten screws evenly (brackets must be parallel). Tighten each screw firmly. Do not crush tube.
4. Connect source water feed tubing to valve body (see Page 2, Step 4).

5. Connect tubing from saddle-tapping valve to RO Module inlet elbow (Item 13 on Page 8, Figure 9).
6. Turn saddle-tapping valve handle clockwise to close the valve.
7. **CAUTION:** Do not open valve until system is activated (Page 10).

Turn on cold water supply. Check saddle-tapping valve installation for leaks. Allow water to run from faucet for a few minutes to clear any debris in the line caused by installation.

**NOTE:** If flow from sink faucet is reduced, clean faucet aerator.



**Figure 3B** Saddle-Tapping Valve Assembly  
P/N 34900001 Installed on 1/8" to 1" NPT  
Steel or Brass Pipe.

## ADDITIONAL POINT OF USE CONNECTION

**NOTE:** Icemakers typically use 1/4" tubing as feed line. Use a reducing union (P/N 33503407) for this connection.

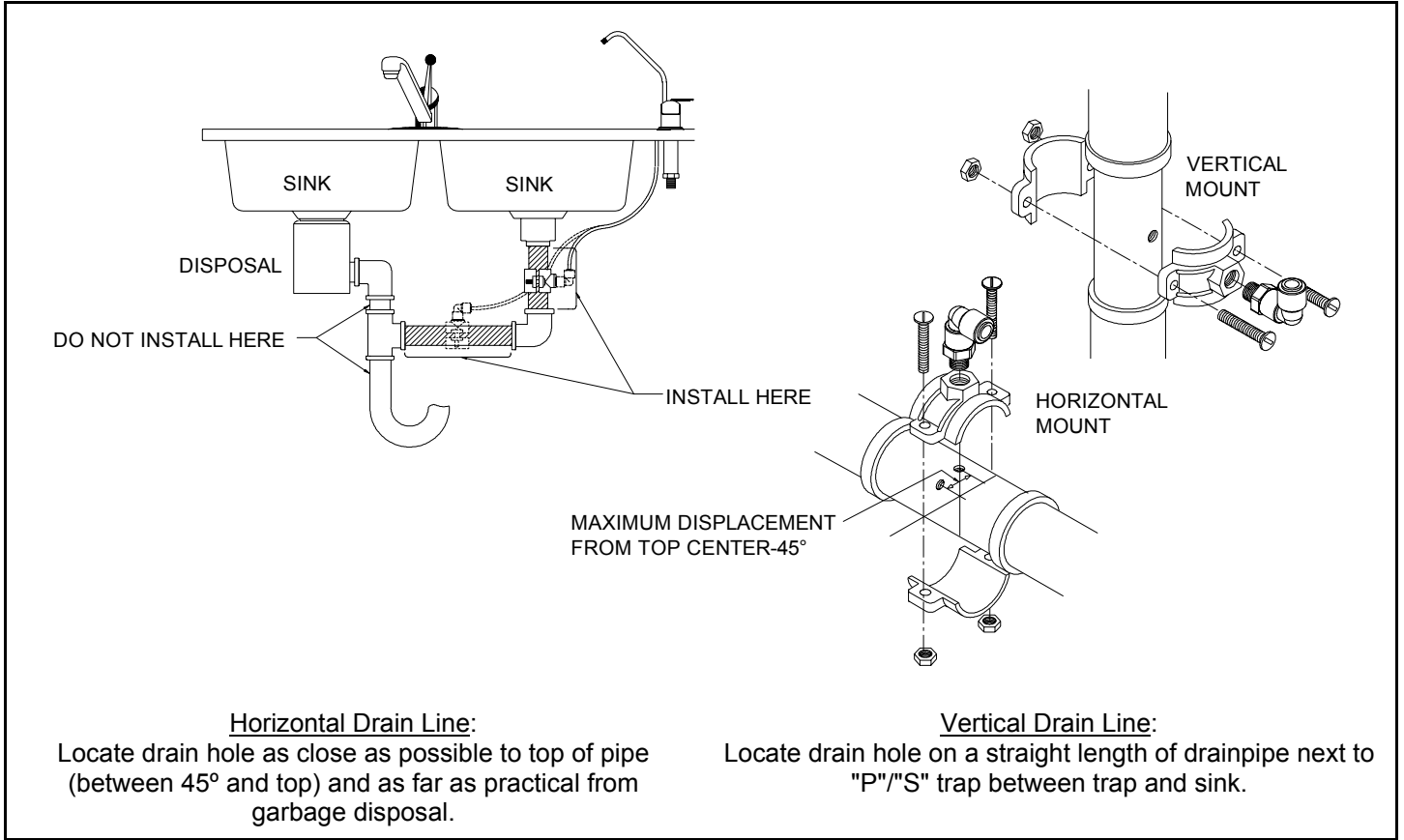
**NOTE:** Reduce the 3/8" line to 1/4" as close as possible to the additional point-of-use device to minimize flow loss.

1. To connect an additional point of use (icemaker, extra faucet in wet bar and/or another use for treated water), place a "tee" connector (P/N 33503703) in 3/8" blue line between faucet and back of RO Module.
2. Connect "tee" to point-of-use with 3/8" blue tubing (P/N 60602001). Connect tubing to point-of-use. Connector requirements are based on type of delivery device i.e., a typical icemaker uses 3/8" x 1/4" reducing device (P/N 33503407).

## DRAIN OUTLET ASSEMBLY INSTALLATION

**NOTE:** State and local plumbing codes may prohibit use of saddle-tapping drain connections.

**NOTE:** Location and orientation of drain outlet assembly is vital to system performance.

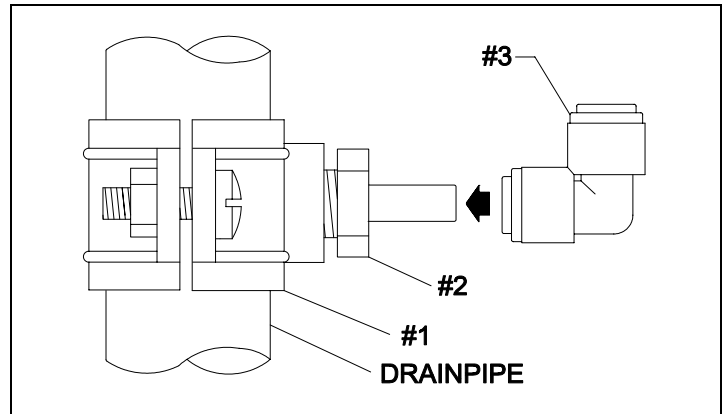


**Figure 4** Drain Hole Location and Installation

1. Select a location for drain hole based on type of sink and orientation of drain line (Figure 4).

**NOTE:** Item callouts refer to Figure 5 unless noted otherwise.

2. Position drain outlet saddle (Item 1) on drainpipe. Allow adequate space for drilling operation.
3. Tighten saddle bolts evenly on both sides. Avoid over-tightening.
4. Using opening in drain outlet saddle as a guide, drill a 3/8" to 7/16" diameter hole in drainpipe. Clean any debris out of drain saddle connection.
5. Install drain saddle stem adaptor (Item 2) fitting into drain saddle. Use thread-sealing tape (P/N 35700002) to seal threads between stem adaptor and drain saddle.
6. Install union elbow (Item 3), onto stem adaptor by pushing either end of elbow firmly onto stem.



Item	Description	Part No.
1	Drain Saddle	42000002
2	Stem Adapter	33503101
3	3/8" Union Elbow	33503401

**Figure 5** Drain Outlet Assembly

## PRODUCT WATER FAUCET SITE PREPARATION

Refer to Faucet Installation Instructions (Page 6) for site location and mounting hole specifications.

Primary considerations for site selection are convenience of use and an open area under sink.  
Always check underside of selected location for obstructions.

### PORCELAIN/ENAMEL OVER STEEL OR CAST IRON SINKS

1. **CAUTION:** A heavy duty, variable speed drill motor with a spring-loaded porcelain drill set (Figure 6.B.) is strongly recommended for this procedure.

**CAUTION:** The plastic sleeve supplied on pilot drill (Figure 6.A) is to be positioned on drill bit against drill chuck. This prevents chuck from contacting porcelain after pilot hole has been completed.

Using carbide tipped bit with plastic sleeve (Figure 6.A.), drill pilot hole completely through porcelain and metal underneath.

**NOTE:** Practice on discarded sinks to become familiar with operation of porcelain cutter kit.

2. **CAUTION:** Avoid high motor R.P.M. during initial penetration of porcelain, as high drill speed will cause excessive chipping.

Place spring-loaded porcelain saw (Figure 6.B.) into drill chuck. Make sure pilot guide is inserted tightly. Insert pilot guide into pilot hole. Push down gently on drill motor to apply light pressure to porcelain surface. Start drill motor turning as slowly as possible.

After initial cut has started, motor speed may be gradually increased. The cut may require three to four minutes to complete. Going faster could result in excessive chipping. Be sure a complete ring has been cut through porcelain to material underneath.

3. Place finish hole saw (Figure 6.C.) into drill chuck. Make sure pilot guide is inserted tightly. Insert pilot guide into pilot hole. Begin cut using a slow speed and light pressure until porcelain (inside ring cut in Step 2) has been penetrated to material underneath.
4. Remove saw from hole and clean all debris from porcelain surface. Re-insert saw into hole and cut through remaining material.
5. Installation hole is ready, install faucet.

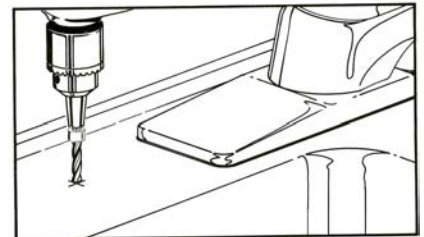
### TILE COUNTER TOP

1. Follow procedures detailed in section labeled "Porcelain/Enamel Over Steel" (substitute "tile" for "Porcelain" in instructions).

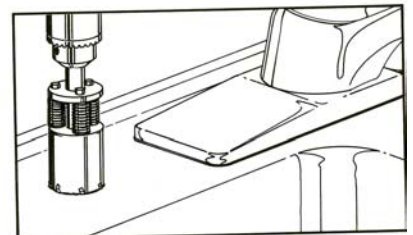
### STAINLESS STEEL SINK

1. Use a center punch to make a small indentation to mark center of desired location.
2. Drill a pilot hole with a 1/8" metal drill bit, then enlarge hole with a 3/8" metal drill bit.
3. Complete hole size by using a 1 1/4" chasis punch available from your dealer (P/N 36201006).
4. Installation hole is ready, install faucet.

#### A. PILOT DRILL



#### B. SPRING LOADED PORCELAIN SAW



#### C. FINISH HOLE SAW

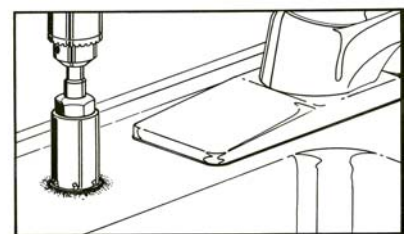


Figure 6 Porcelain Cutter Kit P/N 36201003

# PRODUCT WATER FAUCET INSTALLATION AND SYSTEM CONNECTIONS

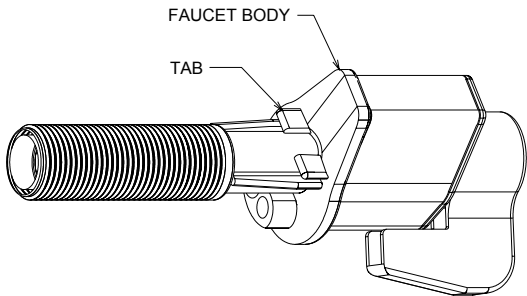
Install on flat surface at least 2 7/16" in diameter. Unused 1 1/4"- 1 7/16" opening is ideal.

## New Faucet Installation

Refer to Faucet Site Preparation, Page 5.

## Replacement Faucet Installation

Verify size of existing hole. If hole measures 1 7/16", Faucet may be installed without changes. If hole measures 1 1/4", remove two locator tabs (Figure 7) prior to installation by breaking them off at faucet base.



**Figure 7** Faucet Locator Tabs and Air Gap.

1. Remove mounting nut and "U" bracket from faucet.
2. Install 3/8" blue tube into blue collet in faucet base.
3. **CAUTION:** Do not pinch, kink, pull, or otherwise deform monitor cord.

**Plain Front:** Insert three tubes into mounting hole and place faucet over hole. Align faucet body with narrow face forward.

**Light Bar:** Insert three tubes and monitor cord into mounting hole and place faucet over hole. Align faucet body with light bar forward.

4. Install "U" bracket and mounting nut below sink. Tighten mounting nut **by hand** so that faucet does not move. **Do not over tighten.**

**NOTE:** Faucet is packaged for right-hand operation. For left-hand operation, realign handle by completing Step 5.

**NOTE:** Item callouts in Step 5 refer to Page 7, Figure 8.

5. Align faucet knob for left-hand operation.
  - a. Rotate knob to rear of faucet (closed position).
  - b. Remove knob cover (Item 1) using a thin, flat tool to pry cover from knob.
  - c. Remove knob attachment screw (Item 2) using a Phillips-head screwdriver.

- d. Remove knob (Item 3) by pulling it (by hand) straight up. Rotate handle counterclockwise 90°, and re-install knob.
- e. Install knob attachment screw. Tighten screw until free movement (i.e., rocking) is eliminated.
- f. Snap knob cover into place.

6. Install spout into faucet body. Lubricate "O" ring with FDA approved Silicone Lubricant. Align spout with faucet outlet, gently push spout to bottom of outlet.

7. **CAUTION:** Red 3/8" tube connecting faucet to drain connection must run vertically (or as closely as possible) with no sharp bends or loops (See Page 4, Figure 4).

Connect loose ends of tubing as follows:

- a. 3/8" blue tubing to 3/8" swivel elbow located on rear of module.
- b. 1/4" red tubing to 1/4" swivel elbow located on rear of module.
- c. 3/8" red tubing to drain connection.

8. **Light Bar:** Connect monitor cord to module. Insert cord into a telephone-style connector located on rear of module cover.

9. The basic installation is complete and system is ready for activation (see Page 10).

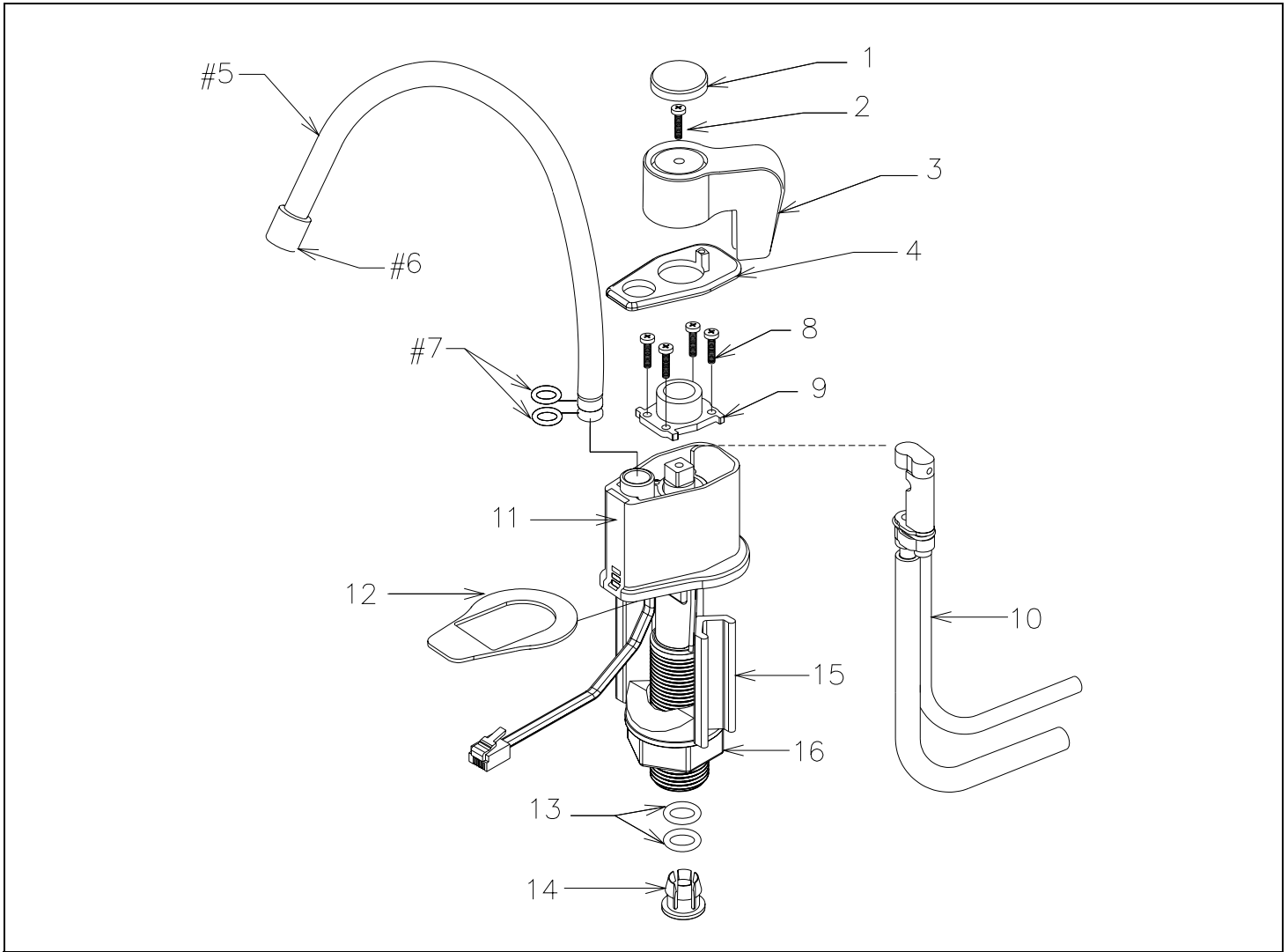
## Storage Tank Connection

**NOTE:** The following instructions refer to Page II, Figure 1.

1. Hand-tighten ball valve onto the RO storage tank.

**CAUTION:** Do not over tighten ball valve as this may strip threads or compromise the "O" ring seal.
2. Slide compression nut over 3/8" tubing as shown in Figure 1.
3. Push 3/8" white tubing into the ball valve as far as possible.
4. While holding 3/8" tubing in the ball valve, hand-tighten the compression nut onto the ball valve.
5. The basic installation is complete and system is ready for activation (see Page 10).

**CLEAN FAUCET SURFACE USING DISHWASHING DETERGENT ONLY. DO NOT USE ABRASIVES OR SOLVENTS.**



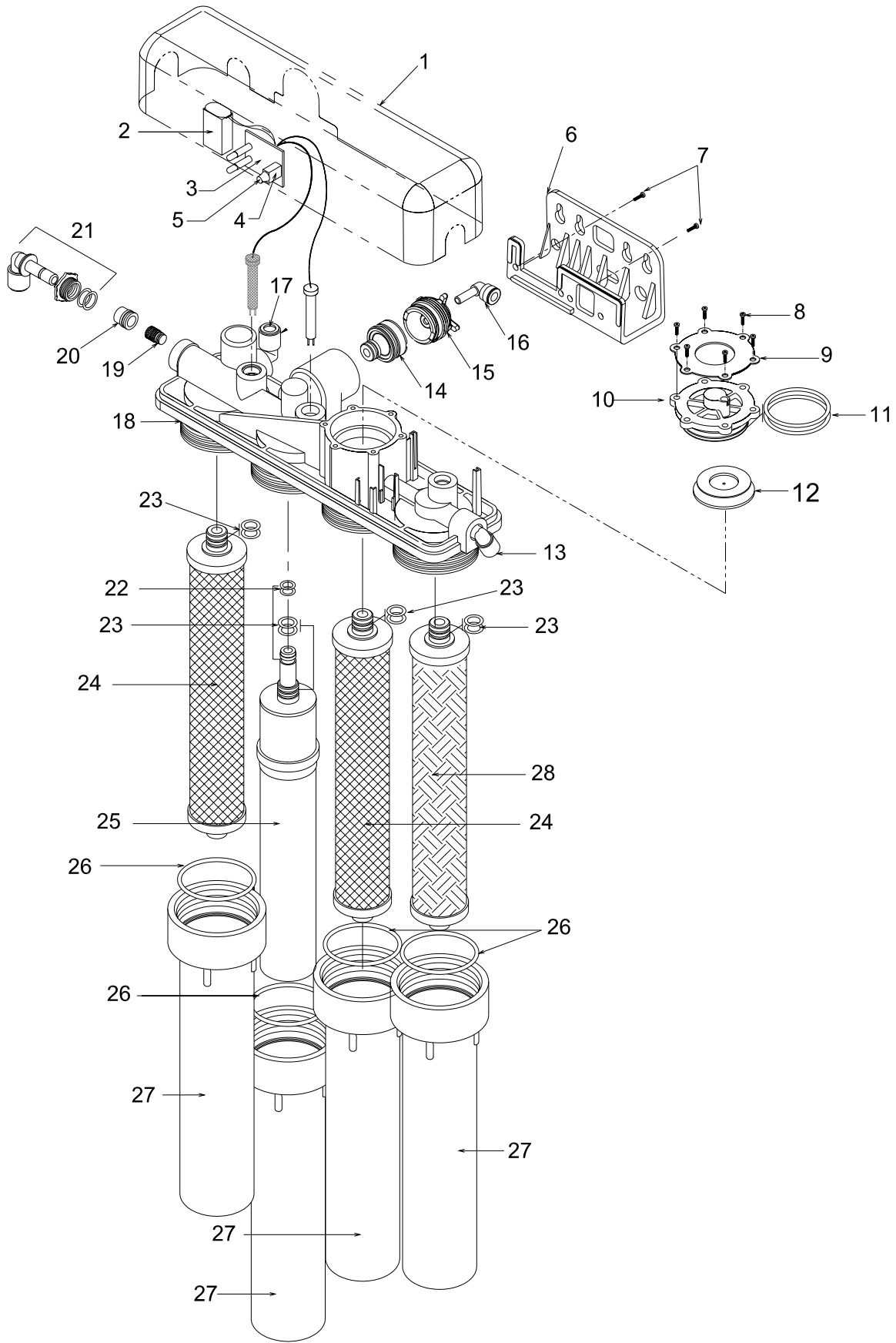
Item	Description	Part No.
1	Cover, Knob - Color Cover, Knob - Plated	2080050* 3580050*
2	Screw, Knob	32701021
3	Knob, Faucet	2080090*
4	Cover, Body - Color Cover, Body - Plated	2081700* 3581700*
5	Spout, Faucet	3580130*
6	Tip, Spout	2080150*
7	"O" ring, Spout	34201004

Item	Description	Part No.
8	Screw, Bearing	32701022
9	Bearing	20800101
10	Air Gap Assembly	40303800
11	Body Assembly	403039‡*
12	Gasket, Sink	20819001
13	"O" ring, Tube Spacer/Stop	34201019
14	Collet 3/8" Blue	33502005
15	Bracket, Mounting	20800301
16	Nut, Mounting	20821001

‡ SEVENTH DIGIT OF PART NUMBER IS CODE SPECIFYING FAUCET BODY CONFIGURATION  
 Code 0 designates faucet body with plain front. Code 3 designates faucet body with 3 LED.  
 Example: 40303935 is a Faucet Body Assembly (3 LED).

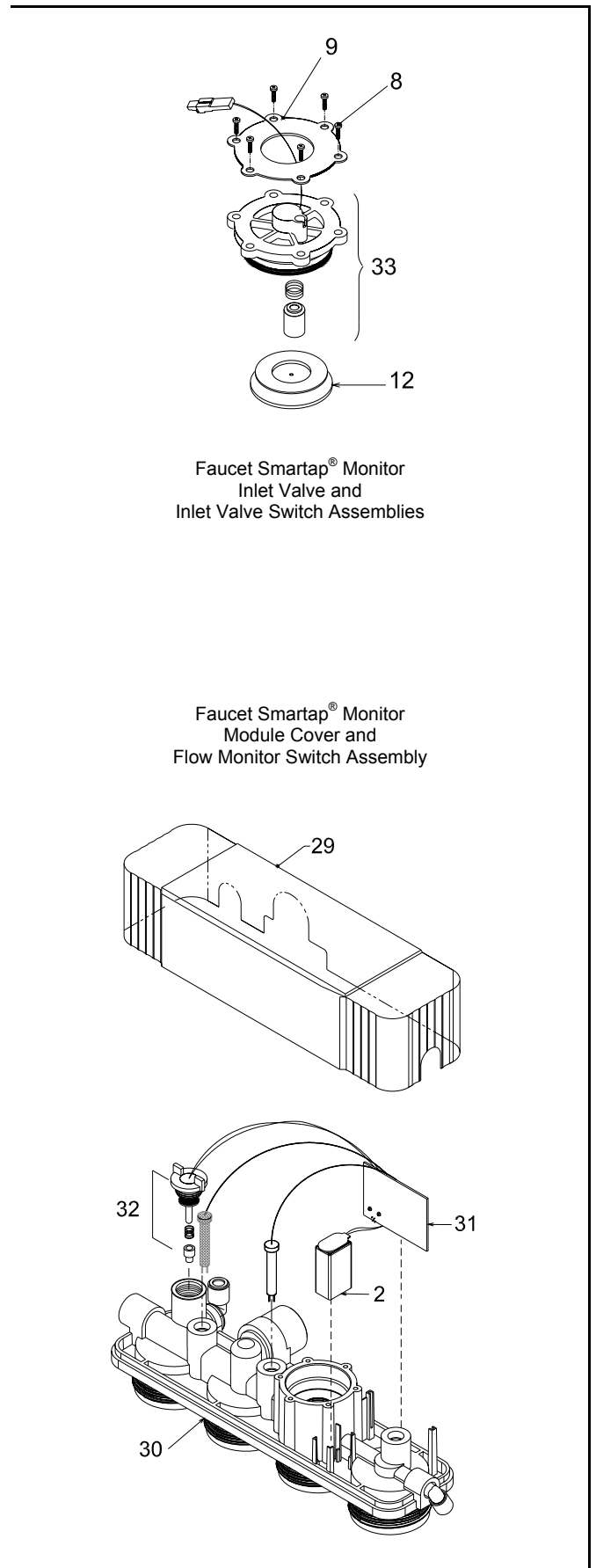
\* EIGHTH DIGIT OF PART NUMBER IS CODE SPECIFYING PART COLOR.  
 Codes 1 (White), 3 (Almond), 4 (Black) designate plain color parts and assemblies.  
 Codes 0 (Chrome/Black), 2 (Chrome/White), 6 (Satin/Black), and 8 (Satin/White) designate electro-plated parts and assemblies.  
 Example: 20800903 is a Faucet Knob in Almond or 40303930 is a Faucet Body Assembly in EP/Chrome with Black Light Bar (3 LED).

**Figure 8** Parts Breakdown, Air Gap Product Water Faucet, Polymer Plain Front P/N 1140020\* and Light Bar P/N 1140043\*



**Figure 9** Exploded Schematic , 101 Series Four Vessel Manifold Module

Item	Description	Part No.
1	Cover, 4-vessel Manifold – Pushbutton	42100002
2	Battery, 9-volt alkaline	31300001
3	Monitor, Water Quality - Smartap®	40200002
4	Guard, Pushbutton	20500050
5	Pushbutton, Monitor	20500080
6	Bracket, Mounting	21100001
7	Screw, Mounting Bracket	32701006
8	Screw, Inlet Valve Cover	32701038
9	Plate, Retaining - Inlet Valve Cover	31900041
10	Cover, Inlet Valve	20500066
11	"O" Ring, Inlet Valve Cover	34201024
12	Shut Off Assembly	40600010
13	Elbow, 1/4" Stem w/white collet	33503502
14	Flow Control Assembly (by Model)	
	Model 10105, Black Tape 25 GPD	40600005
	Model 10107, Orange Tape 45 GPD	40600007
15	Cap, Flow Control w/"O" Ring	40600050
16	Elbow, 1/4" Stem w/red collet	33503505
17	Elbow, 3/8" Stem w/blue collet	33503503
18*	Manifold 4 vessel, Qualified P/B 25 GPD	41003003
	Manifold 4 vessel, Qualified P/B 45 GPD	41003005
19	Check valve, Duckbill	42500014
20	Stop, Tube	20500094
21	Retainer Assembly, Outlet	40600033
22	"O" Ring, Membrane Flow Tower	34201006
23	"O" Ring, Cartridge	34201010
24	Cartridge, Carbon AES	41400075
25	Filter, Membrane Thin Film Composite	
	Model 10105, Green Casing Black Tape	41400005
	Model 10107, Green Casing Orange Tape	41400007
26	"O" Ring, Filter Housing	34201026
27	Housing, Filter	20500023
28	Cartridge, String-Wound Pre-Filter	41400008
<b>Optional Faucet Smartap® Monitor</b>		
29	Cover, 4-vessel Manifold - Faucet Monitor	42100004
30**	Manifold 4 vessel, Qualified F/M 25 GPD	41003010
	Manifold 4 vessel, Qualified F/M 45 GPD	41003012
31	Monitor, Faucet Smartap® Monitor	40200077
32	Switch Assembly, Flow Meter	40200043
33	Switch Assembly, Inlet Valve	40200044
* Includes Item Numbers 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, and 21.		
** Includes Item Numbers 8, 9, 12, 13, 14, 15, 16, 17, 19, 20, 21, 32, and 33.		



**Figure 10** Parts Breakdown, 101 Series Manifold Module; Exploded Schematic Smartap® Faucet Monitor Components

## ACTIVATING THE SYSTEM

**CAUTION:** Make sure all water supply lines, drain lines, and fittings are secure and free from leakage.

1. Open saddle-tapping valve. Close product water faucet. Check for leakage.
2. Turn tank valve one-quarter turn counter-clockwise to open valve (handle should be in line with tubing as it enters connection).
3. Confirm system is producing water. Module will be sending rinse water to drain.

**NOTE:** Item Callouts refer to Page 8, Figure 9 unless noted otherwise.

4. **CAUTION:** Wiring within module cover connects monitor components. If wires, circuit board, or connections are damaged and/or wetted, monitor will not function.

Loosen mounting bracket screws (Item 7). Gently pull module cover (Item 1) up and away from the manifold body.

5. **CAUTION:** Connect battery located inside module cover or on manifold to monitor after system has been in production mode for at least 5 minutes. This ensures sensing switch is in proper position to record data.  
Connect battery (Item 2) by pressing clip onto battery terminals (Page 13, Figure 11).
6. Replace module cover and tighten screws.

7. Test battery connection by activating monitor. Open product water faucet or press pushbutton, whichever is applicable. If indicator light illuminates, connection is good.

**NOTE:** Close faucet immediately after light illuminates. Test is to confirm battery connection, not water quality.

8. Open product water faucet and let water flow until all air has been expelled from system. Lock faucet open by rotating handle 90° or by lifting handle, whichever is applicable.

9. Close product water faucet. In 30 minutes, check connections for leaks and correct if necessary.

Ice maker/Extra point of use: Check connections on these supply lines for leaks.

10. Allow storage tank to fill overnight.

11. **WARNING: DO NOT USE THE FIRST FULL STORAGE TANK OF WATER**

Discard (to drain) first full tank of water by opening product water (and extra point-of-use) faucet until water flow stops, then close faucet. This will flush sanitizing solution from system.

Ice maker: Let tray/bin fill with ice cubes. Discard all ice cubes. This flushes sanitizing solution from lines to icemaker.

12. System is ready to use. Should there be any aftertaste or odor to water or ice cubes, repeat Steps 10 and 11.

### DO NOT USE THE FIRST STORAGE TANK OF WATER

Allow storage tank to fill overnight. Dispense this water to drain.

This process removes factory-installed sanitizing solution from the entire system and sends it to drain.

This process also sanitizes fittings and tubing used during installation.

## KEY COMPONENTS

### PRODUCT WATER FAUCETS/TANK      MEMBRANES AND FILTERS

Air Gap Faucet	Part No.	Membrane - Thin Film Composite	Part No.	Filter	Part No.
Polymer, Plain Front	1140020*	Models 10105 - Black Tape 25 GPD	41400005	Sediment Filter - Black Cap	41400008
Polymer, Light Bar	1140043*	Models 10107 - Orange Tape 45 GPD	41400007	Carbon Filter - Blue Cap	41400009
Storage Tank	Part No.	*Color Suffix Codes: EPChrome/Black = 0, White = 1, EPChrome/White = 2, Almond = 3, Black = 4, Satin/Black = 6, Satin/White = 8			
7.6L (2.0 gal) Polymer White	92313				

PARTS AND SERVICE AVAILABLE THROUGH YOUR HYDROTECH® DEALER

## ROUTINE MAINTENANCE

RECOMMENDATIONS	
<p>HAVE ALL COMPONENTS ON HAND AND READY BEFORE BEGINNING PROCEDURE.            A CLEAN WORK AREA AND EQUIPMENT ARE ESSENTIAL TO PROPERLY CLEAN AND/OR SANITIZE THE SYSTEM.            (i.e., CLEAN HANDS, TOOLS, WORK SURFACE, AND CONTAINERS)</p>	
Service Requirements	Recommended Service Intervals
<p>To insure the system operates at its optimum level, certain routine maintenance must be performed. Frequency of maintenance performance will depend on feed water quality and level of system usage.</p> <p><b>CLEAN:</b> Each time filters are replaced  <b>SANITIZE:</b> At least once a year and each time membrane is replaced</p>	<p>Replace filters as required or every 6 to 12 months depending on feed water quality.</p> <p>Replace membrane as required based on Smartap® Water Quality Monitor indication or periodic TDS rejection tests.</p> <p>Maximum recommended service life for membrane is 60 months.</p>

EQUIPMENT NEEDED		
Safety glasses Rubber gloves, sanitary Wash Cloth, Clean and Lint-free Liquid dish soap	Household bleach - Unscented Only (5 1/4% sodium hypo chlorite) Plastic storage bag Manual Air Pump	Plastic bucket Plastic bowl "O" ring Lube FDA Approved (P/N 30300026)

REPLACEMENT FILTER SETS	REPLACEMENT MEMBRANES
P/N 41400008 Sediment Filter (1 each) P/N 41400075 Activated Carbon Filter (2 each)	P/N 41400005, Model 10105, Black Tape 25 GPD P/N 41400007, Model 10107, Orange Tape 45 GPD
"O" RINGS	
P/N 34201010 Sediment or Carbon Cartridge to Port P/N 34201026 Filter Housing	P/N 34201010 Membrane to Flow Tower, Lower P/N 34201006 Membrane Flow Tower, Upper

## CLEANING, SANITIZING, AND CARTRIDGE REPLACEMENT PROCEDURE

1. Mix mild cleaning solution of dish soap and clean potable water in plastic bowl.
2. Empty storage tank and relieve system pressure. Verify tank valve is open. Close feed water supply valve and open product water faucet.  
  
Ice maker: Transfer ice cubes from bin/tray to clean freezer container for storage until procedure is done.
3. **CAUTION:** Use air hand pump to avoid damaging tank. Verify product water valve is open before proceeding.  
  
Check product water storage tank air pre-charge using low-pressure gauge (P/N 34002024). Air valve is located on tank base. Pre-charge should be 55 kPa (8 psig) with tank empty and tank valve open.

4. **CAUTION:** Do not attempt to remove filter housings until water flow stops. This reduces pressure inside the system so housings may safely be removed.  
  
**CAUTION:** Additional point-of-use devices (i.e., icemakers) may use filters along their supply line. Remove any filter or treatment device installed between module and delivery device before proceeding.  
  
Remove each filter/membrane housing by turning it counter-clockwise. Remove each filter cartridge as its housing is removed. Discard filters.

IF MEMBRANE IS PERFORMING SATISFACTORILY:  
Go to Step 5.

IF MEMBRANE IS DEPLETED OR FOULED:  
Discard it and go to Step 7.

5. **CAUTION:** Use sanitary rubber gloves for this procedure to avoid contaminating sanitizing solution, filters, or membrane. Wear gloves whenever cleaning/ sanitizing system components or handling new filter/membrane cartridges.  
  
Clean membrane outer wrap with washcloth and cleaning solution. Do not immerse membrane in solution. Do not scrub membrane wrap with abrasive cleaners. Rinse membrane well with clean potable water.
6. Place membrane into clean plastic bag, close bag.
7. Remove filter/membrane housing "O" rings and wash them with cleaning solution. Rinse them well with clean potable water. Inspect them for damage (i.e., nicks, scratches). Replace damaged "O" rings.

8. **CAUTION:** Do not get Smartap<sup>®</sup> Water Quality Monitor electronics, wiring, or connectors wet.  
  
Clean filter housings and manifold ports, inside and outside, with washcloth and cleaning solution. Do not use abrasive materials.
9. Rinse manifold/housings with clean potable water.
10. Inspect manifold and filter housing "O" ring groove area for damage (i.e., nicks or scratches). Replace damaged components.
11. Place a small amount of "O" ring lubricant over surface of filter/membrane housing "O" ring. Install "O" ring into filter housing groove.

TO SANITIZE THE SYSTEM: Complete Steps 12-34.

TO INSTALL FILTERS: Complete Steps 19-34.

**WARNING: WEAR SAFETY GLASSES WHILE PERFORMING THIS PROCEDURE.**

**WARNING: READ "WARNINGS" INFORMATION ON BLEACH CONTAINER BEFORE USING CONTENTS. HANDLE SANITIZING SOLUTION CAREFULLY. AVOID CONTACT WITH UNPROTECTED AREAS.**

12. **CAUTION:** Excessive concentrations of bleach will damage plastic and rubber components. Rinse all parts that contact bleach thoroughly with clean potable water.  
  
Mix sanitizing solution of 1.5 ml (1/3 teaspoon) of household bleach and 3.8 L (1 gallon) of clean, potable water in the bucket. Mix solution well.
13. **CAUTION:** Tighten filter housings by hand only. Do not use tools as they will over-tighten and damage housings. Take care not to cut or pinch "O" rings.  
  
Add 236 ml (one cup or 8 oz.) of sanitizing solution to each filter housing and install them onto the manifold (do not install filters or membrane at this time). Tighten each filter housing by hand only.
14. Slowly open source water supply valve.
15. Open product water faucet. Close faucet as soon as water begins to flow from spout.
16. Wait 5 minutes, then close source water supply valve.
17. Wait 25 minutes, then open product water faucet and let water flow to drain.

## CLEANING, SANITIZING, AND CARTRIDGE REPLACEMENT PROCEDURE

18. **CAUTION:** Do not attempt to remove filter housings until water flow stops. This reduces pressure inside the system so housings may safely be removed.

Remove filter housings and dispose of water. Rinse filter housings and manifold ports thoroughly with clean potable water.

19. **CAUTION:** Do not remove protective plastic bag from replacement filter/membrane cartridges until so instructed.

Install "O" rings into filter housings. Open top of filter bag enough to expose filter cap and "O" ring grooves. Place a small amount of "O" ring lubricant on surface of each "O" ring.

20. **CAUTION:** Tighten filter housings by hand only. Do not use tools as they will over-tighten and damage housings. Take care not to cut or pinch "O" rings.

**CAUTION:** Refer to Page 8, Figure 9 for location of each cartridge.

Install filter and membrane cartridges. Hold cartridge by its protective plastic bag and insert cartridge into manifold turning it 1/4 turn as it enters the port. Slide bag from cartridge and discard. Replace each filter housing as each cartridge is installed.

21. Turn feed water valve slowly to open position.

22. Confirm system is producing water. Unit will be sending rinse water to drain.

TO REPLACE BATTERY: Perform Steps 23 – 29.

**NOTE:** Replace battery with a new alkaline 9-volt battery (P/N 31300001).

23. **CAUTION:** Wiring within module cover connects monitor components. If wires, circuit board, or connections are damaged and/or wetted, monitor will not function.

Remove module cover (Page 10, Step 4).

24. Disconnect battery. The battery connection is a snap type connector (Figure 11).

25. Remove battery by sliding it out of its holder.

26. **CAUTION:** Replace battery after system has been in production mode for at least 5 minutes. This ensures sensing switch is in proper position to record data.

Carefully slide battery into its holder.

27. **CAUTION:** Verify battery connector alignment before making connection (Figure 11).

Connect battery by pressing clip onto battery terminals.

28. Test battery connection by activating monitor. Open product water faucet. If an indicator light illuminates, connection is good.

**NOTE:** Close faucet after light illuminates. Test confirms connection, not water quality.

29. Replace module cover and tighten screws.

30. Open product water faucet. Let water flow until all air has been expelled from the system.

31. Close product water faucet. Wait 30 minutes, check connections for leaks, and correct if necessary.

Icemaker/Extra point of use: Check lines for leaks.

32. Allow storage tank to fill overnight.

33. **WARNING: DO NOT USE THE FIRST FULL STORAGE TANK OF WATER**

Discard (to drain) first full tank of water by opening product water faucet until water flow stops, then close faucet. This flushes sanitizing solution from system.

Icemaker: Let tray/bin fill with ice cubes. Discard all ice cubes to drain. This flushes sanitizing solution from lines to icemaker. Replace delivery device filter (if applicable).

34. System is ready to use. Should there be any aftertaste or odor, drain storage tank and repeat Steps 32 and 33.

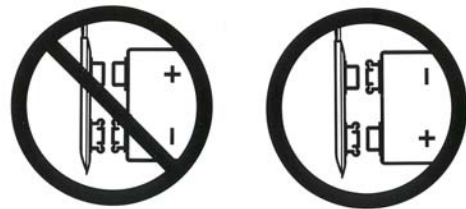


Figure 11 Smartap® Battery Connections

### DO NOT USE THE FIRST FULL STORAGE TANK OF WATER

Allow reservoir to fill overnight. Dispense this water to drain.

This process removes sanitizing solution from system, sanitizes fittings and tubing, and sends solution to drain.

## HYDROTECH® TROUBLE SHOOTING GUIDE

### WATER VOLUME AND QUALITY

Symptom	Condition	Action
No product water.	Water supply is turned OFF.	Turn water ON.
Not enough product water.	Low water pressure. Water supply is blocked. Storage tank valve is closed. Storage tank is depleted.  Clogged Pre-filter cartridge(s). Storage tank air pressure charge is low.	Check source water line pressure. Clear restriction. Open storage tank valve. Increase product water storage capacity and/or install membrane and flow control with higher output rating. Replace Pre-filter cartridge(s). Empty water from storage tank (product water valve must remain open while adjusting pressure) and adjust pressure to 55 kPa (8 psig).
System does not shut off.	Shut-off valve is not closing.	Contact your Hydrotech® Dealer.
No drain water.	Clogged Flow Control.	Replace Flow Control.
Water has offensive taste and/or odor.	Carbon post-filter is depleted.  Membrane depleted or fouled.  Sanitizer not flushed out.	Drain storage tank, sanitize system, and replace carbon post-filter cartridge.  Smartap® Monitor reads yellow, or if TDS test is unsatisfactory, drain storage tank, sanitize system, and replace membrane.  Drain storage tank and let it refill overnight.

### LEAKAGE AND NOISE

Symptom	Probable Cause	Solution
Leak at fitting.	Tubing not pushed completely into fitting. Defective tube.	Push tube into fitting past "O" ring seal. Cut damaged area from tube or replace tube (See Page 2, Figure 2).
Leak at filter housings.	"O" ring has not seated properly.  "O" ring has nicks or scratches.	Remove "O" ring and inspect "O" ring groove for debris. Clean groove, lube, and reseal "O" ring.  Replace "O" ring.
Leak from air gap in faucet.	Restricted drain tube. Obstructed hole in drain clamp Tubing from air gap to drain is routed incorrectly.	Clear restriction. Remove obstruction. Reroute tubing so tubing runs vertically with no sharp bends or loops.

### PUSHBUTTON ACTUATED SMARTAP® WATER QUALITY MONITOR

Indication	Condition	Action
Green Light.	System operating normally.	None.
Yellow Light.	Low or non-usage. Membrane depleted or fouled.	Draw one quart of water from Module. Wait 10 minutes, test. Clean and sanitize system. Replace membrane.
Dim or No Light.	Battery voltage low.	Replace Battery.

### FAUCET ACTUATED SMARTAP® WATER QUALITY MONITOR

Indication	Probable Cause	Solution
Green Light.	System operating normally.	None.
Orange Light (appears with green or yellow light).	Shut-off valve is not closing.	Contact your Hydrotech® Dealer.
Yellow Light.	Membrane depleted or fouled.	Clean and sanitize system. Replace membrane.
No Monitor Light.	Light Assembly not connected.	Plug connector into phone jack and check all other monitor connections. Replace battery.

**Table 3** System Troubleshooting Indicators and Common Solutions.

## INSTALLATION AND SERVICE RECORD

DATE INSTALLED	SYSTEM/MEMBRANE OUTPUT RATING	LPD/GPD
----------------	-------------------------------	---------

DATE SERVICED	SERVICED BY	COMPANY	
SERVICE PERFORMED	<input type="checkbox"/> CLEANING ONLY	<input type="checkbox"/> CLEANING & SANITIZING	<input type="checkbox"/> REPAIR
FILTERS REPLACED	<input type="checkbox"/> SEDIMENT	<input type="checkbox"/> CARBON (PRE)	<input type="checkbox"/> MEMBRANE
COMMENTS			

DATE SERVICED	SERVICED BY	COMPANY	
SERVICE PERFORMED	<input type="checkbox"/> CLEANING ONLY	<input type="checkbox"/> CLEANING & SANITIZING	<input type="checkbox"/> REPAIR
FILTERS REPLACED	<input type="checkbox"/> SEDIMENT	<input type="checkbox"/> CARBON (PRE)	<input type="checkbox"/> MEMBRANE
COMMENTS			

DATE SERVICED	SERVICED BY	COMPANY	
SERVICE PERFORMED	<input type="checkbox"/> CLEANING ONLY	<input type="checkbox"/> CLEANING & SANITIZING	<input type="checkbox"/> REPAIR
FILTERS REPLACED	<input type="checkbox"/> SEDIMENT	<input type="checkbox"/> CARBON (PRE)	<input type="checkbox"/> MEMBRANE
COMMENTS			

DATE SERVICED	SERVICED BY	COMPANY	
SERVICE PERFORMED	<input type="checkbox"/> CLEANING ONLY	<input type="checkbox"/> CLEANING & SANITIZING	<input type="checkbox"/> REPAIR
FILTERS REPLACED	<input type="checkbox"/> SEDIMENT	<input type="checkbox"/> CARBON (PRE)	<input type="checkbox"/> MEMBRANE
COMMENTS			

## LIMITED WARRANTY

Subject to the conditions and limitations described below, Hydrotech, Inc. warrants its Model 101/HTF Series Reverse Osmosis Drinking Water Treatment Systems (excluding cartridge filters and battery), when installed in accordance with Hydrotech, Inc. specifications, to be free from defects in materials and workmanship under normal use within the operating specifications for a period of two (2) years from the date of purchase. Hydrotech, Inc. also warrants the Smartap® Water Quality Monitor to be free from defects in materials and workmanship under normal use within the operating specifications for a period of five (5) years from the date of purchase. This warranty shall apply only to the original end-user of the drinking water system.

Other than the cartridge filters and battery, any part found defective within the terms of this warranty will be repaired or replaced by Hydrotech, Inc. If any part is found defective, Hydrotech, Inc. also reserves the right to replace the drinking water appliance with a comparable Hydrotech, Inc. drinking water system of equal or greater quality. You pay only freight for repaired or replaced parts from our factory and local dealer charges, including but not limited to labor charges, travel and transportation expenses and handling fees.

This warranty shall not apply to any part damaged by accident, fire, flood, freezing, Act of God, bacterial attack, membrane fouling and/or scaling, sediment, misuse, misapplication, neglect, alteration, installation, or operation contrary to our printed instructions, or by the use of accessories or components which do not meet Hydrotech, Inc. specifications. If the drinking water system is altered by anyone other than Hydrotech, Inc. the warranty shall be void.

ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THE PERIOD SPECIFIED ABOVE FOR THE PARTS DESCRIBED IN THIS LIMITED WARRANTY.

As a manufacturer, we do not know the characteristics of your water supply. The quality of water supplies may vary seasonably or over a period of time. Your water usage may vary as well. Water characteristics can also change if the drinking water appliance is moved to a new location. For these reasons, we assume no liability for the determination of the proper equipment necessary to meet your requirements, and we do not authorize others to assume such obligation for us. Further, we assume no liability and extend no warranties, express or implied, for the use of this product with a non-potable water source or a water source which does not meet the conditions for use as described in this Owners Guide.

HYDROTECH'S OBLIGATIONS UNDER THIS WARRANTY ARE LIMITED TO THE REPAIR OR REPLACEMENT OF THE FAILED PARTS OF THE DRINKING WATER SYSTEM, AND WE ASSUME NO LIABILITY WHATSOEVER FOR DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, GENERAL OR OTHER DAMAGES, WHETHER FROM CORROSION OR OTHER CAUSES.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Similarly, some states do not allow the exclusion of incidental or consequential damage, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights that vary from state to state.

For warranty return or information, please contact the Water Professional who installed your system.  
Your Unit was installed by: