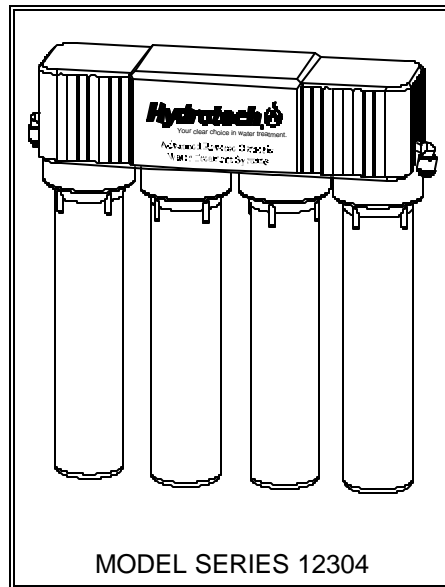
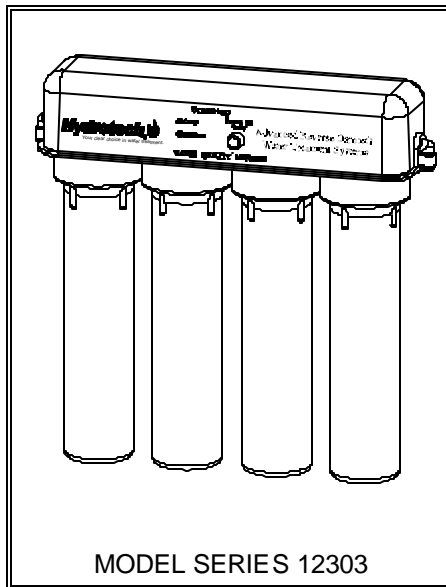
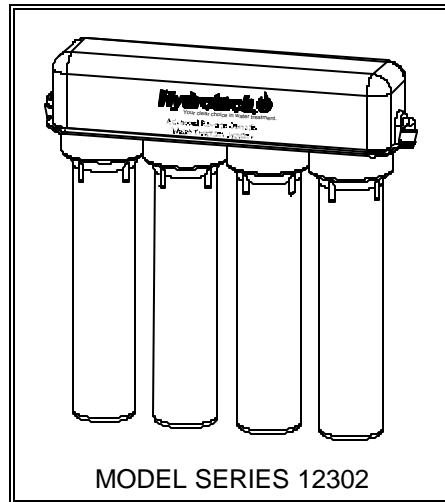
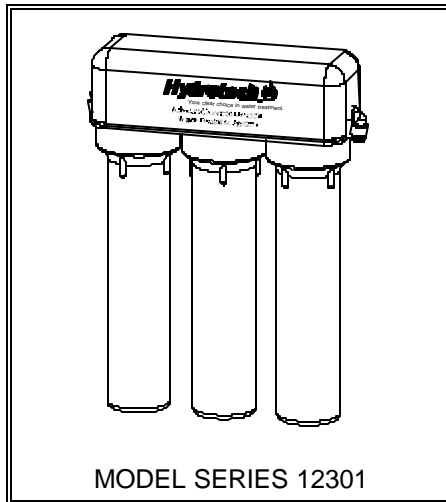


OWNER'S GUIDE



ADVANCED REVERSE OSMOSIS WATER TREATMENT SYSTEMS



265 Industrial Road P.O. Box 5000 Cambridge, ON Canada N3H 5N3	193 Osborne Road Fridley, MN U.S.A. 55432	580 Park Street Regina, SK Canada, S4N 5A9	9848 Glenoaks Boulevard Sun Valley, CA U.S.A. 91352	Toll Free U.S. 800.354.7867 Canada 877.299.5999 www.hydrotechwater.com
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INTRODUCTION

MODEL NUMBERS AND SYSTEM CONFIGURATIONS

Table 1

GUIDE IS APPLICABLE TO HYDROTECH® REVERSE OSMOSIS DRINKING WATER TREATMENT SYSTEMS AS SPECIFIED IN THIS TABLE Select System Code and Output Code to Determine Model Number																
System Code	12301				12302				12303				12304			
Output (GPD)*	9	25	50	75	9	25	50	75	9	25	50	75	9	25	50	75
Output Code	03	02	01	00	00	01	02	03	00	01	02	03	00	01	02	03
Vessels	3				4				4				4			
Monitor	None				None				Pushbutton Smartap®				Faucet Smartap®			
Sediment Filter	None				String Wound Polypropylene				String Wound Polypropylene				String Wound Polypropylene			
Pre-Filter	Dual-Purpose				Activated Carbon				Activated Carbon				Activated Carbon			
Membrane	Thin Film Composite															
Post Filter	Activated Carbon															

* Manufacturer's Specification with inlet conditions of 372 kPa (60 psig), 25° C (77° F), going to atmosphere.

CONDITIONS FOR USE

THIN FILM COMPOSITE MEMBRANE

Source Water Supply Profile	Chemical Parameters	Max mg/L	
Community/Private	Chlorinated/Non-Chlorinated	Hardness (CaCO ₃)	<350
Feed Water Pressure ¹	242-690 kPa (35-100 psig)	Iron (Fe)	<0.1
Temperature	4°-38° C (40°-100° F)	Manganese (Mn)	<0.05
pH Range	3.0 - 11.0	Hydrogen Sulfide (H ₂ S)	0.00
Maximum TDS Level	2000 mg/L	Residual Chlorine (Cl ₂)	<2.0
Turbidity**	<1.0 NTU	** Nephelometric Turbidity Unit	
Maximum SDI***	<4.0	*** Silt Density Index: Value stated in SDI units.	

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

OPTIONS AND ACCESSORIES

PRODUCT WATER FAUCETS	BOOSTER PUMP
Faucets are available as Air Gap and Non-Air Gap in Chrome-Plated Metal (EPA and California Proposition 65 Compliant) or an Air Gap molded Polymer that is available with or without Light Bar.	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.
SMARTAP® WATER QUALITY MONITOR	
PUSHBUTTON - METAL OR POLYMER FAUCET Indicator lights located on the module cover report system status. Pressing a test button located on the manifold cover activates monitor.	FAUCET ACTUATED - POLYMER FAUCET Indicator lights appearing in a Light Bar report system status. Light Bar is integrated into body front cover. It connects to electronics inside RO Module by a length of phone cord routed to terminal on manifold cover.

**CONTACT YOUR HYDROTECH DEALER TO PURCHASE REPLACEMENT PARTS AND ACCESSORIES.
TO LOCATE YOUR LOCAL DEALER, CALL HYDROTECH**

IN CANADA 877.299.5999

IN THE UNITED STATES 800.354.7867

INTRODUCTION

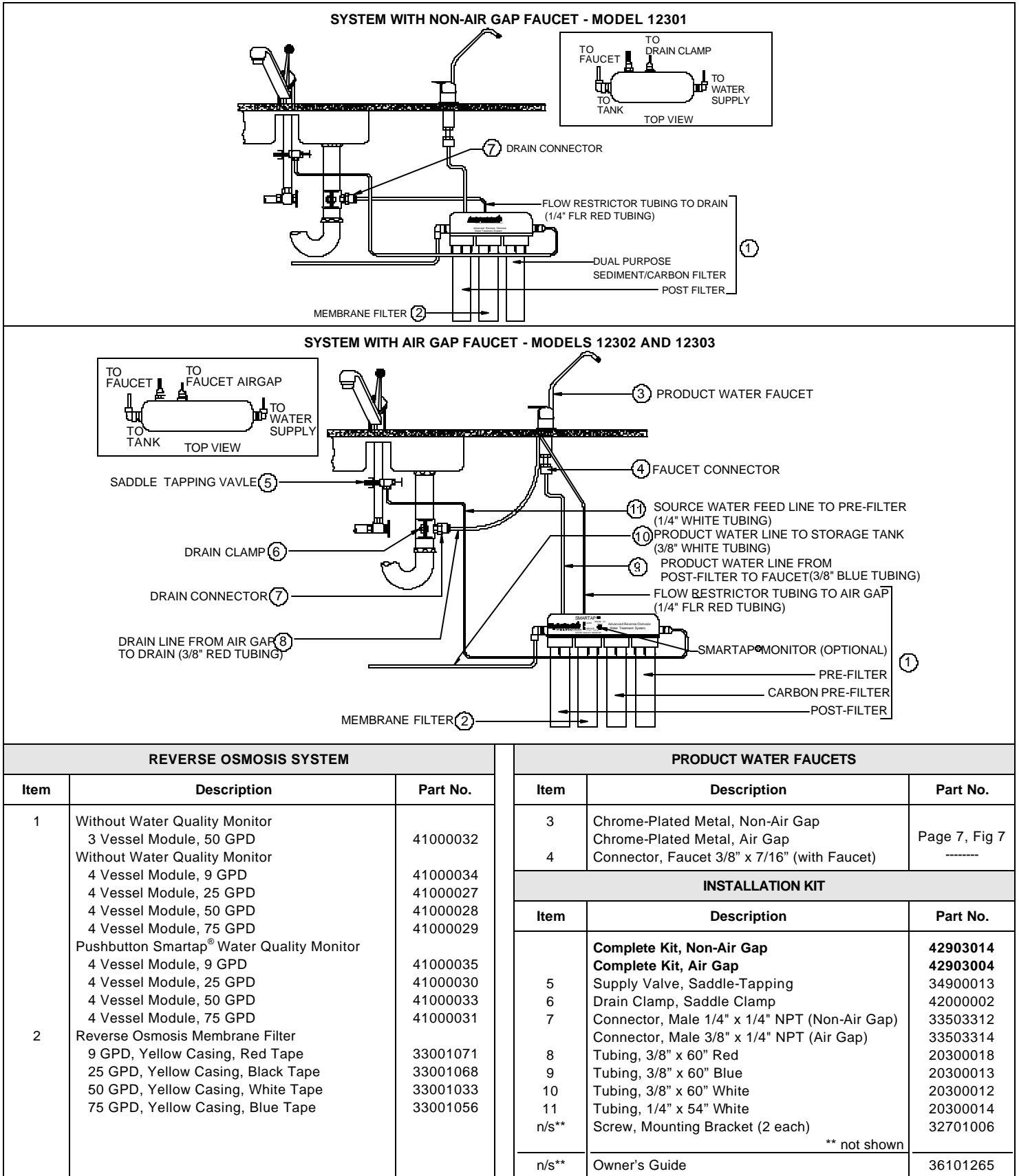
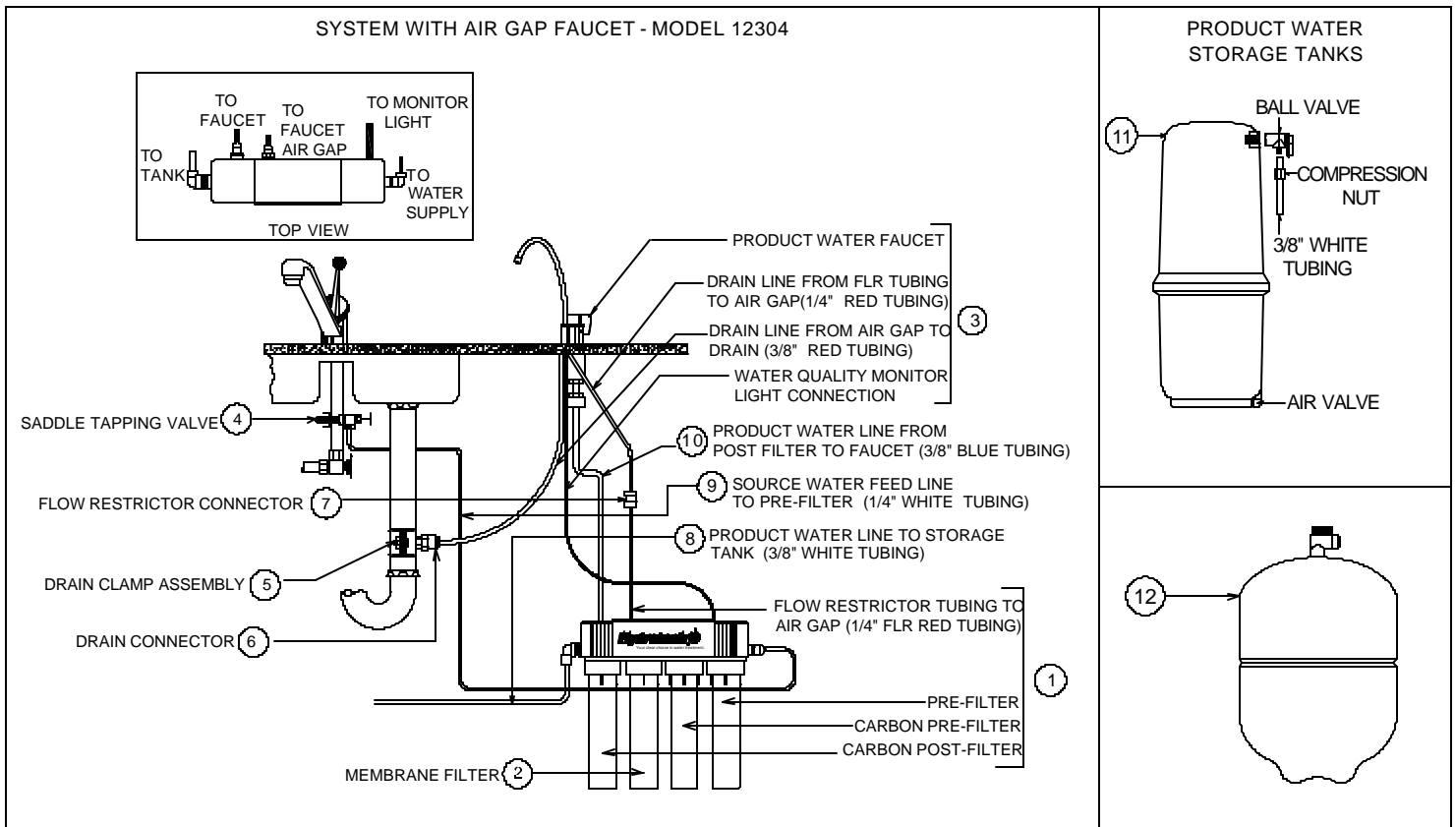


Figure 1A: Component and Interconnection Locators, Models 12301, 12302, and 12303.

NOTE: This Owner's Guide covers all components that may be included with a system. Information relating to any component that is not included with your system may be disregarded.

INTRODUCTION



REVERSE OSMOSIS SYSTEM		
Item	Description	Part No.
1	Faucet Smartap® Water Quality Monitor	
	4 Vessel Module, 9 GPD	41000039
	4 Vessel Module, 25 GPD	41000036
	4 Vessel Module, 50 GPD	41000037
	4 Vessel Module, 75 GPD	41000038
2	Reverse Osmosis Membrane Filter	
	9 GPD, Yellow Casing, Red Tape	33001071
	25 GPD, Yellow Casing, Black Tape	33001068
	50 GPD, Yellow Casing, White Tape	33001033
	75 GPD, Yellow Casing, Blue Tape	33001056

PRODUCT WATER FAUCETS		
Item	Description	Part No.
3	Product Water Faucet, Polymer Chrome/Black Air Gap, Hydrotap® Logo	11411200
7	Air Gap, Smartap® Logo (with Light Bar) Connector, 1/4" x 1/4" (Packaged with Faucet)	11402430

INSTALLATION KIT		
Item	Description	Part No.
	Complete Kit, Non-Air Gap	42903014
	Complete Kit, Air Gap	42903004
4	Supply Valve Assembly, Saddle-Tapping	34900013
5	Drain Clamp Assembly, Saddle Clamp	42000002
6	Connector, Male 1/4" x 1/4" NPT (Non-Air Gap)	33503312
	Connector, Male 3/8" x 1/4" NPT (Air Gap)	33503314
8	Tubing, 3/8" x 60" White	20300012
9	Tubing, 1/4" x 54" White	20300014
10	Tubing, 3/8" x 60" Blue	20300013
n/s**	Screw, Mounting Bracket (2 each)	32701006
	** not shown	
n/s**	Owner's Guide	36101265

PRODUCT WATER STORAGE TANKS - ALL SYSTEMS		
Item	Description	Part No.
11	Storage Tank Assembly, Polymer	34500023
12	Storage Tank Assembly, Metal	42600029

Figure 1B: Component and Interconnection Locators, Model 12304 and Product Water Storage Tanks.

NOTE: This Owner's Guide covers all components that may be included with a system. Information relating to any component that is not included with your system may be disregarded.

INSTALLATION REQUIREMENTS

READ THIS ENTIRE INSTALLATION AND SERVICE GUIDE BEFORE BEGINNING INSTALLATION

Hydrotech® 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 ensure a system continues to operate at its optimum level, it is necessary to have a routine maintenance and replacement schedule (Table 3).

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 specification, as defined by Hydrotech® to assure the same efficiency. Product water shall be tested periodically to verify the system is performing properly.

Operator performs test using the optional Smartap® Water Quality Monitor.

PREPARATION

1. Check that all appropriate components are packed with your system (Figures 1.A. and 1.B.). Refer to applicable Component Parts Breakdown (Figures 7, 9, 10.A. or 10.B.) 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.

COMPONENT LOCATION REQUIREMENTS

Table 2

<p style="text-align: center;">PRODUCT WATER FAUCET</p> <p>Faucet may be installed in any convenient location. Make sure underside of location is free of obstructions</p>	<p style="text-align: center;">REVERSE OSMOSIS MODULE*</p> <p>Module may be installed under sink or in any convenient location within 15 feet of source water supply and faucet.</p>
<p>STORAGE TANK</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>* DO NOT PLACE MODULE WHERE IT WILL BE EXPOSED TO FREEZING AND/OR DIRECT SUNLIGHT. MODULE MUST BE EASILY REMOVABLE FOR PERFORMANCE OF ROUTINE MAINTENANCE</p> <p>Mount Module on side of cabinet using bracket (attached to Module) and two screws provided in the Installation Kit. HOLD THE MODULE BY THE FILTER HOUSINGS WHEN PICKING UP OR CARRYING UNIT.</p>	

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.

MAINTENANCE REQUIREMENTS

Table 3

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 style="text-align: center;">CLEAN: Each time filters are replaced</p> <p>SANITIZE: 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>

SMARTAP[®] WATER QUALITY MONITOR

Hydrotech[®] 12303 and 12304 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 4 on Page 15.

THE SMARTAP[®] WATER QUALITY MONITOR IS AVAILABLE IN TWO MODELS

Pushbutton Actuated Smartap[®] - 12303 Series

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[®] - 12304 Series

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 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.

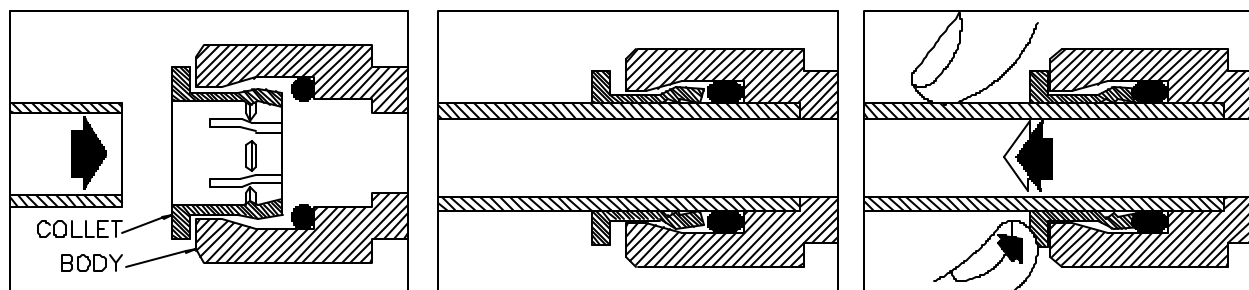
PLASTIC TUBING

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.).



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

SADDLE-TAPPING VALVE INSTALLATION ON COPPER TUBE

CAUTION: This saddle-tapping valve is not designed for installation on flex line tubing.

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.

Locate shut off valves on water lines under sink. To identify hot supply pipe and cold supply pipe, turn both faucets on and let water run. As water flows, hot water pipe becomes noticeably warmer.

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

Turn off cold water supply by closing shut off valve. Drain line by opening sink faucet. Some mixing type faucets may require hot water supply be shut off as well.

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

3. **CAUTION:** Do not turn valve handle before or while installing saddle-tapping valve. Make sure piercing lance does not protrude beyond rubber gasket before installing valve.

Assemble saddle-tapping valve assembly on tube.

- a. Hold back plate against tube.
 - 3/8" copper tubing use back plate smaller radius.
 - 1/2" copper tubing, use back plate larger radius
- b. Hold valve saddle against tubing in a position directly opposite back plate.
- c. Tighten screw enough so valve saddle and back plate are held securely against tube.
- d. Rotate assembly so tubing connection is aligned toward RO Module feed port.
- e. Tighten screw firmly. Do not crush tube.

4. Connect source water feed tubing to valve body using compression fitting.
 - a. Slide nut and sleeve onto tubing (in that order).
 - b. Install insert into plastic tubing.
 - c. Install tube with insert and sleeve into valve body.
 - d. Thread compression nut onto valve body, tighten.
5. Turn saddle-tapping valve handle clockwise until it is firmly seated and piercing lance is fully extended.
6. **CAUTION:** Supply line is pierced and valve is closed. Do not open valve until system is activated (Page 12).

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.

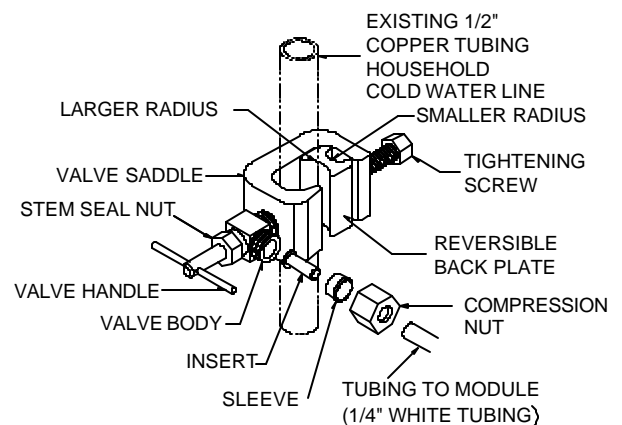


Figure 3: Saddle-Tapping Valve Assembly
P/N 34900013 installed on
1/2" Copper Tubing

ADDITIONAL POINT OF USE CONNECTION

NOTE: Ice makers 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 and may require use of an air gap.

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

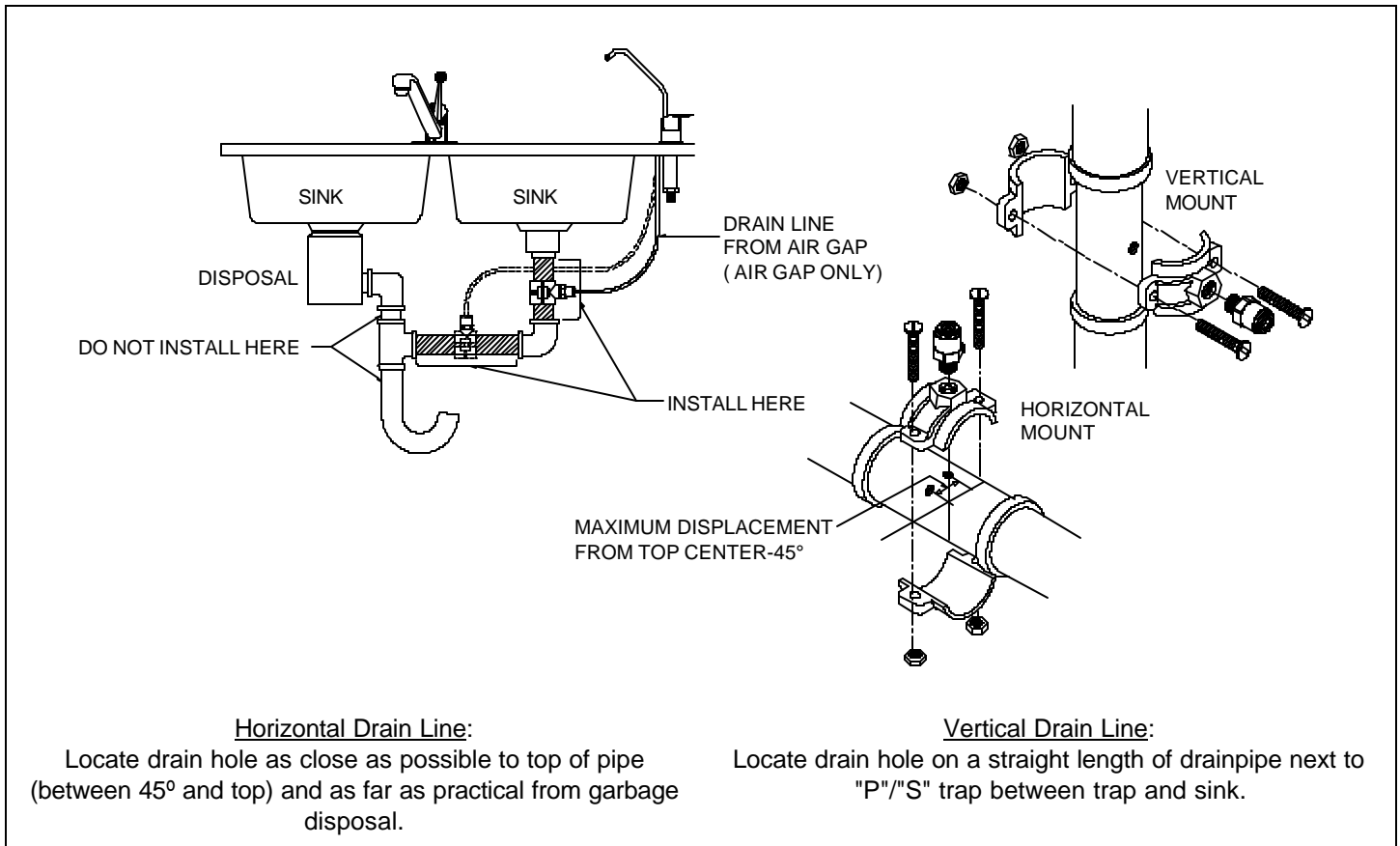


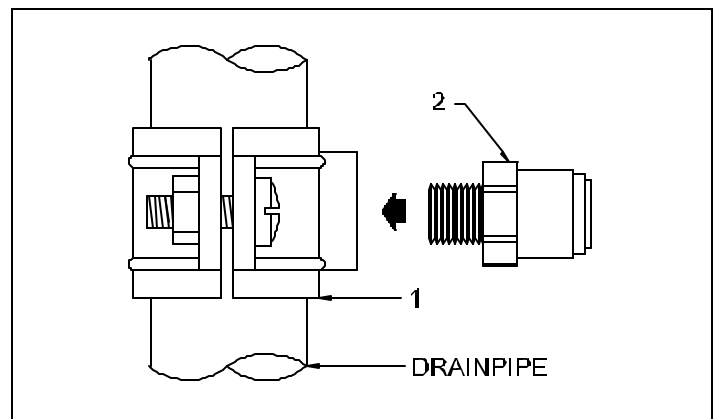
Figure 4: Drain Hole Location and Installation, Air Gap Faucet

NOTE: See Page II, Figure 1.A. for connection to drain for Non-Air Gap Faucet.

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 saddle outlet as a guide, drill a 3/8" to 7/16" diameter hole in drainpipe. Clean any debris out of drain saddle connection.
5. Install Male Connector (Item 2) fitting into drain saddle. Use thread sealing tape (P/N 35700002) to seal threads between male connector and drain saddle.



Item	Description	Part No.
1	Drain Saddle	42000002
2	Male Connector 1/4" X1/4" (Non-Air Gap)	33503312
	Male Connector 3/8" x 1/4" (Air-Gap)	33503314

Figure 5: Drain Outlet Assembly

PRODUCT WATER FAUCET SITE PREPARATION

Refer to Faucet Installation Instructions (Pages 6 or 8) 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.

NOTE: Practice on discarded sinks to familiarize yourself with operation of porcelain cutter kit.

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

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.

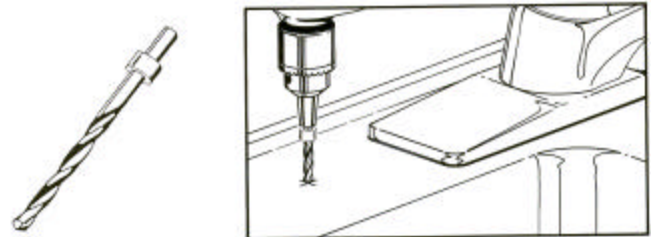
TILE COUNTER TOP

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

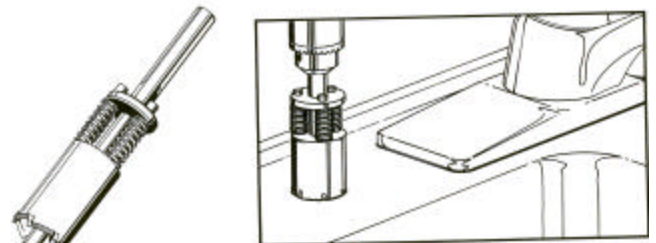
STAINLESS STEEL SINK

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" chassis 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

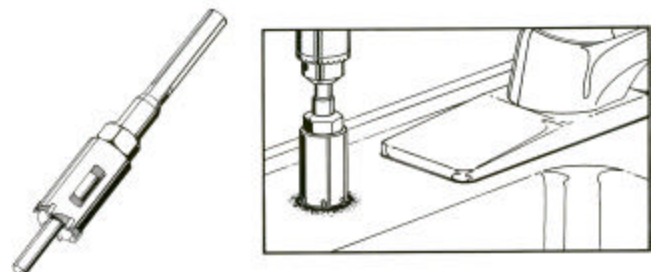


Figure 6: Porcelain Cutter Kit P/N 36201003

METAL PRODUCT WATER FAUCET INSTALLATION AND SYSTEM CONNECTIONS

Install faucet on flat surface at least 2" in diameter. Unused 1 1/4" hole is ideal. Steps unique to a specific configuration are so noted. All other steps are common to either configuration.

New Faucet Installation

Refer to Faucet Site Preparation, Page 5.

Replacement Faucet Installation

Verify size of existing hole is 1 1/4".

NOTE: Item callouts refer to Page 7, Figure 7 unless noted otherwise.

1. **Air Gap Only:** Verify faucet body, metal base washer, and rubber base washer are in place above sink (Items 1, 3, and 2).
Non-Air Gap Only: Verify faucet body, rubber body washer, metal base washer, and rubber base washer are in place above sink (Items 1, 9, 3, and 2).
2. **CAUTION:** Flow Restrictor (FLR) is installed inside the 1/4" red tubing at the end connected to the module. **DO NOT TRIM THE END OF THE 1/4" FLR RED TUBING (END WITH FLR LABEL) CONNECTED TO MODULE (See Figure 10.A/B).**
Air Gap Only: Install 3/8" x 60" red tubing from Installation Kit onto larger hose barb as shown in Figure 7.
3. **Air Gap Only:** Connect the 1/4" FLR red tubing between the module and the faucet:
 - a. **Air Gap Only:** Insert the 3/8" red tube into the mounting hole.
 - a. **Air Gap Only:** Insert the 1/4" FLR red tubing upwards through mounting hole.
 - b. **Air Gap Only:** Position module in desired location. Trim end of FLR tubing without label to desired length. Attach FLR tubing onto smaller hose barb as shown in Figure 7.
4. Lower faucet into mounting hole and place faucet over hole.
5. **Air Gap Only:** Install slotted washer, spacer, faucet washer, and nut onto faucet nipple below sink and snug them up (Items 4, 5, 6, and 7). Be sure to properly align faucet before tightening. Do not over tighten.
Non-Air Gap Only: Install locating washer, faucet washer, and nut (Items 4A, 6, and 7) onto faucet nipple below sink and snug them up. Be sure to align faucet properly before tightening. Do not over tighten.
6. Install faucet connector (Item 8), packaged with faucet, onto faucet nipple. Install 3/8" blue tube into faucet connector.
7. Trim 3/8" blue tube to desired length. Install 3/8" blue

tube into 3/8" swivel elbow located on rear of module.

8. **CAUTION:** Red 3/8" tube connecting product water faucet to drain saddle 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. **Non-Air Gap Only:** Connect 1/4" FLR red tubing to 1/4" male connector on drain saddle.
- b. **Air Gap Only:** Connect 3/8" red tubing to 3/8" male connector on drain saddle.

Storage Tank Connection - Polymer Tank Assembly

NOTE: The following Instructions refer to Page III, Figure 1.B., Item 8.

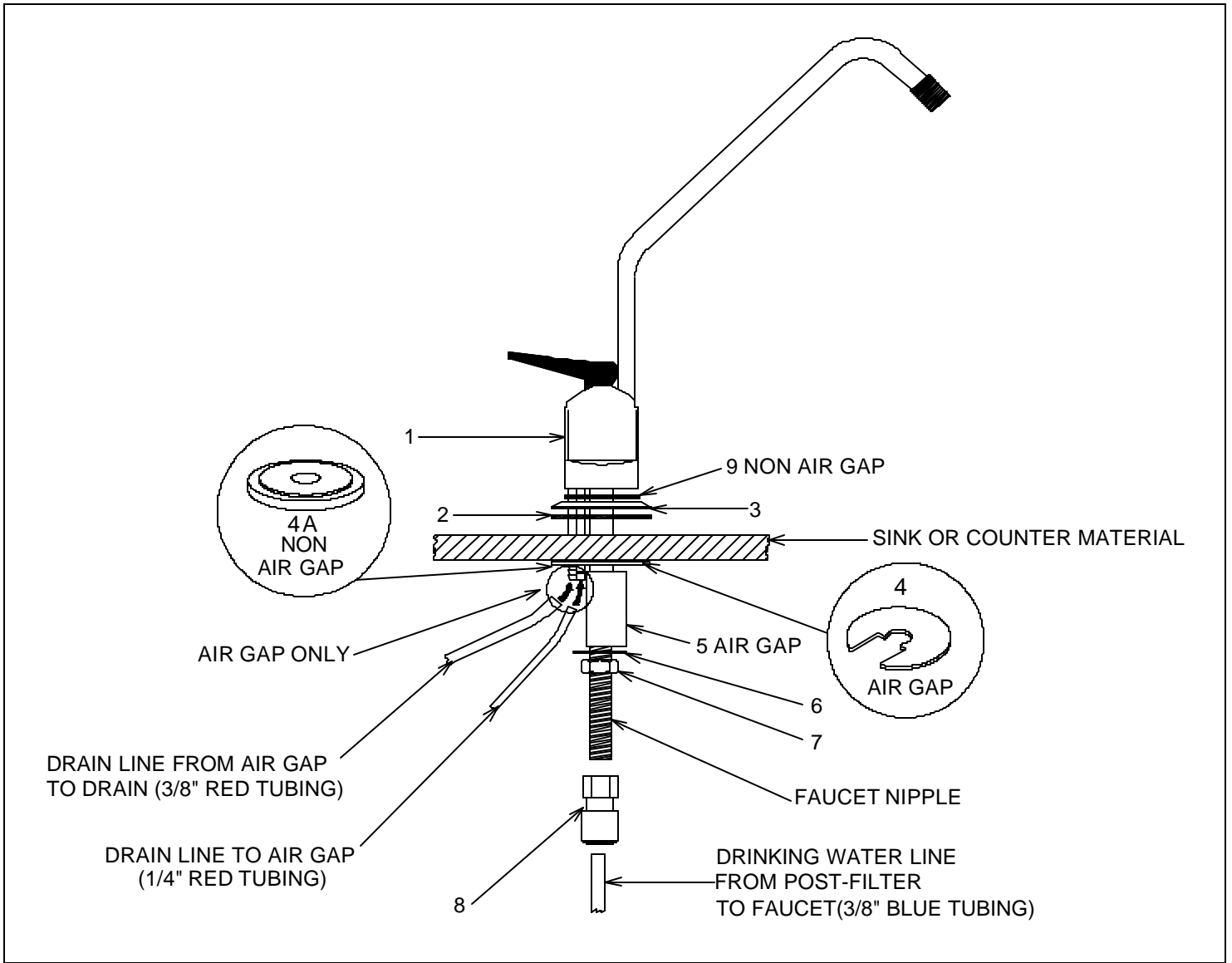
1. **CAUTION:** Do not over tighten ball valve as this may strip threads or compromise the "O" ring seal.
Hand-tighten the ball valve onto the RO storage tank.
2. Slide compression nut over 3/8" white tubing.
3. Push 3/8" white tubing into the ball valve as far as possible.
4. While holding 3/8" white 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 12).

Storage Tank Connection - Metal Tank Assembly

NOTE: The following instructions refer to Page III, Figure 1.B., Item 12.

NOTE: Refer to Page 2, Inter-Component Connections for instructions on how to install tubing.

1. Install ball valve (located inside of storage tank box) onto the 1/4" storage tank nipple. Use thread sealing tape (P/N 35700002) to seal threads between ball valve and nipple.
2. Connect 3/8" white tubing between module and storage tank shut-off valve.
3. The basic installation is complete and system is ready for activation (see Page 12).



Description	Part No.
Chrome Plated Metal Non-Air Gap Faucet (Faucet not available in California)	40301102
Chrome Plated Metal Non-Air Gap Faucet (EPA and California Proposition 65 Compliant)	40301002
Chrome Plated Metal Air Gap Faucet (Faucet not available in California)	40301101
Chrome Plated Metal Air Gap Faucet (EPA and California Proposition 65 Compliant)	40301001

Item	Description
1	Body, Faucet
2	Faucet Base Washer, Rubber
3	Faucet Base Washer, Metal
4	Washer, Slotted (Air Gap, Slot Shape may vary)
4A	Washer, Locating (Non-Air Gap, Replaces Items 4 and 5)
5	Spacer, Faucet (Air Gap)
6	Washer, Faucet
7	Nut, Faucet
8	Connector, Faucet 3/8" x 7/16"
9	Faucet Body Washer, Rubber (Non-Air Gap)

Figure 7: Chrome-Plated Metal Product Water Faucet Assembly

POLYMER 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 8) prior to installation by breaking them off at faucet base.

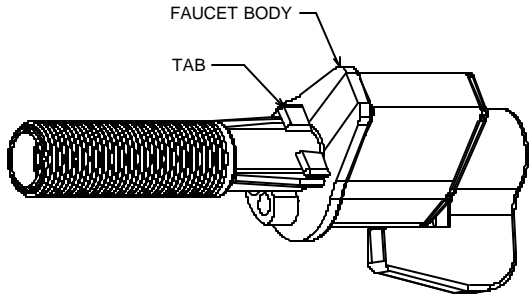


Figure 8: Faucet Locator Tabs and Air Gap.

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.

Light Bar: Insert three tubes and monitor cord into mounting hole and place faucet over hole.

4. **CAUTION:** Flow Restrictor (FLR) is installed inside the 1/4" red tubing at the end connected to the module. **DO NOT TRIM THE END OF THE 1/4" FLR RED TUBING (END WITH FLR LABEL) CONNECTED TO MODULE** (See Figure 10 & 11).

Connect tubing between module and faucet:

- a. Position module in desired location. Trim 3/8" blue tubing to desired length.
- b. Insert 3/8" blue tubing into 3/8" swivel elbow located on rear of module.
- c. Install Flow Restrictor Connector (Page III, Figure 1.B., Item 7) packaged with faucet, to 1/4" FLR red tubing from module.

- d. Trim 1/4" red tubing coming from faucet to desired length and connect to Flow Restrictor Connector as shown on Page III, Figure 1.B.

5. Align faucet in mounting hole:

Plain Front: Align body with narrow face forward.

Light Bar: Align body with light bar forward.

6. 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 6.

NOTE: Item callouts in Step 6 refer to Page 9, Figure 9.

7. 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.

8. 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.

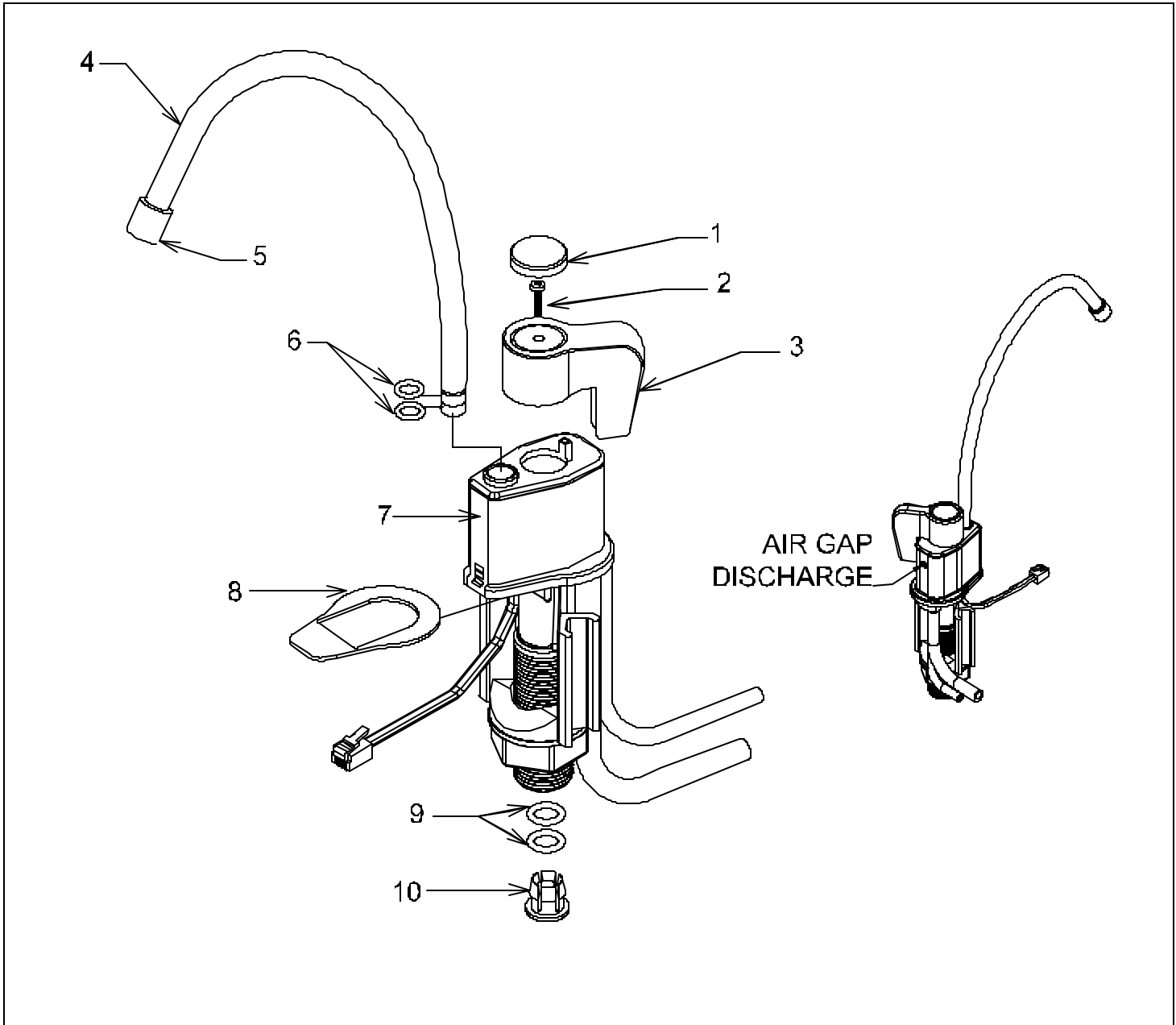
9. **CAUTION:** Red 3/8" tube connecting faucet to drain connection must run vertically (or as closely as possible) with no sharp bends or loops (See Page 4, Figure 4).

Connect 3/8" red tubing to drain connection.

10. **Light Bar:** Connect monitor cord to module. Insert cord into a telephone-style connector located on rear of module cover (See Page III, Figure 1.B.).

11. **Product Water Storage Tank:** Refer to Page 6 for instructions. Specific instructions are shown for Polymer and Metal Storage Tank Assemblies

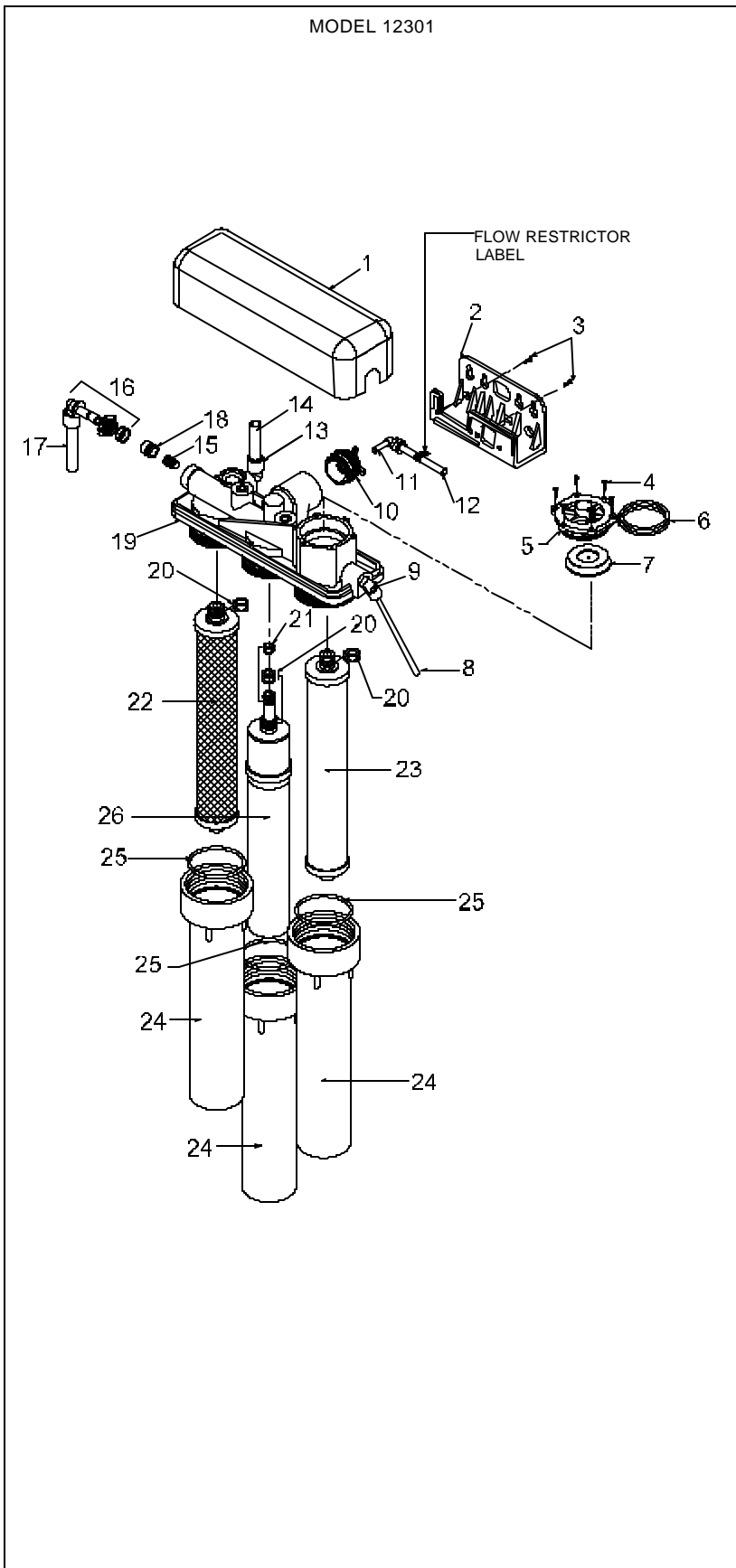
CLEAN FAUCET SURFACE USING DISHWASHING DETERGENT ONLY. DO NOT USE ABRASIVES OR SOLVENTS.



Item	Description	Part No.
1	Cover, Knob - Chrome - Plated	35800502
2	Screw, Knob	32701021
3	Knob, Faucet - Black	20800904
4	Spout, Faucet Polished	35801308
5	Tip, Spout - Black	20801504

Item	Description	Part No.
6	"O" ring, Spout	34201004
7	Body Assembly - Chrome Plated Plain Body Assembly - Chrome Plated 3 LED	----- -----
8	Gasket, Sink	20819001
9	"O" ring, Tube Spacer/Stop	34201019
10	Collet 3/8" Blue	33502005

Figure 9: Parts Breakdown, Air Gap Product Water Faucet, Polymer Chrome-Plated - Black, Hydrotap Logo® P/N 11411200 and Smartap® Logo (with Light Bar) P/N 11402430



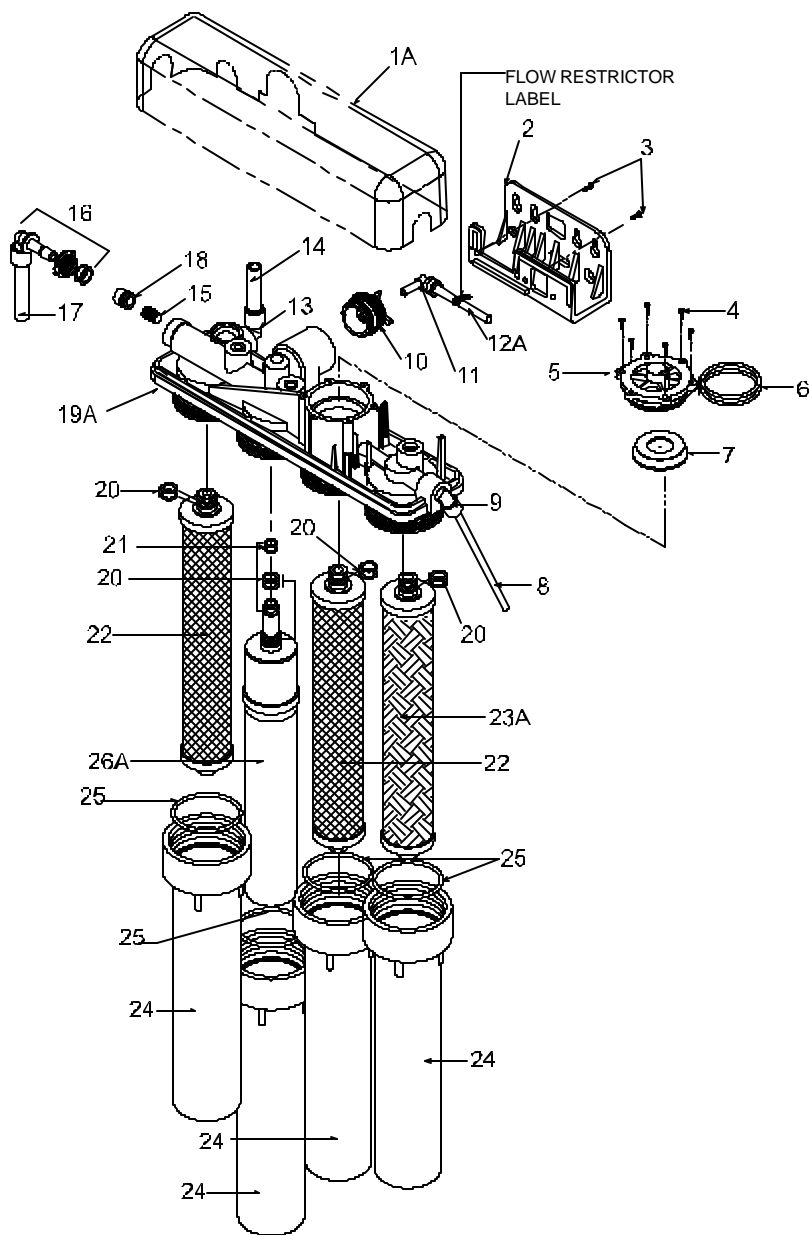
Item	Description	Part No.
1	Cover, 3-vessel Manifold, Hydrotech Logo	43066770
1A	Cover, 4-vessel Manifold, Hydrotech Logo	43066780
2	Bracket, Mounting	21100001
3	Screw, Mounting Bracket	32701006
4	Screw, Inlet Valve Cover	32701038
5	Cover, Inlet Valve	20500066
6	"O" Ring, Inlet Valve Cover	34201024
7	Shut Off Assembly	40600010
8	Tubing, 1/4" x 54" White	20300014
9	Elbow, 1/4" Stem w/white collet	33503502
10	Cap, Flow Control w/"O" Ring	40600050
11	Elbow, 1/4" Stem w/red collet	33503505
12	Flow Restrictor, Model 12301 Series 50 GPD	40600041
12A	Flow Restrictor, 12302/12303/12304 Series 9 GPD	40600034
	25 GPD	40600040
	50 GPD	40600041
	75 GPD	40600042
13	Elbow, 3/8" Stem w/blue collet	33503503
14	Tubing, 3/8" x 60" Blue	20300013
15	Check Valve, Duckbill	42500014
16	Retainer, Outlet Assembly	40600033
17	Tubing, 3/8" x 60" White	20300012
18	Stop, Tube	20500094
19*	Manifold 3 Vessel Qualified No Monitor	41300050
19A*	Manifold 4 Vessel Qualified No Monitor	41300045
20	"O" Ring, Cartridge	34201010
21	"O" Ring, Membrane Flow Tower	34201006
22	Cartridge, Carbon AES	41400075
23	Cartridge, Sediment/Carbon Filter	41400076
23A	Cartridge, String-Wound Pre-Filter	41400008
24	Housing, Filter	20500023
25	"O" Ring, Filter Housing	34201026
26	Filter, Membrane Thin Film Composite 50 GPD, Yellow Casing White Tape	33001033
26A	Filter, Membrane Thin Film Composite 9 GPD, Yellow Casing Red Tape	33001071
	25 GPD, Yellow Casing Black Tape	33001068
	50 GPD, Yellow Casing White Tape	33001033
	75 GPD, Yellow Casing Blue Tape	33001056
Optional Smartap Pushbutton Monitor		
27	Cover, 4-vessel Manifold – Pushbutton Monitor, Hydrotech Logo	43066790
28	Battery, 9-volt alkaline	31300001
29	Monitor, Water Quality - P/B Smartap®	40200002
30	Pushbutton, Monitor	20500080
31	Guard, Pushbutton	20500050
32*	Manifold 4 vessel Qualified P/B Monitor	41300052
Optional Smartap® Faucet Monitor		
33	Cover, 4-vessel Manifold - Faucet Monitor Hydrotech Logo	43082055
28	Battery, 9-volt Alkaline	31300001
34	Monitor, Water Quality - F/M Smartap®	40200077
35	Switch Assembly, Flow Meter	40200043
36	Switch Assembly, Inlet Valve	40200044
32A**	Manifold 4 vessel Qualified F/M Monitor	41300053

* Includes Item Numbers 4, 5, 6, 7, 9, 10, 11, 13, 15, 16, 18

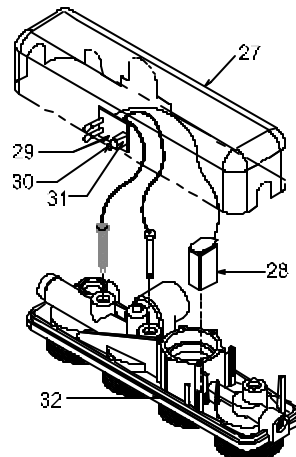
** Includes Item Numbers 4, 7, 9, 10, 11, 13, 15, 16, 18, 35, 36

Figure 10.A: Exploded Schematic, 12301 Model Series; Parts List for All Models

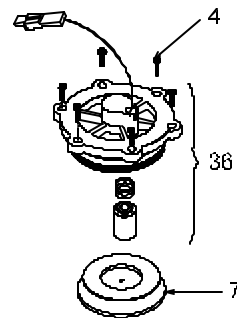
MODEL 12302



Model 12303
Pushbutton Smartap® Monitor
Module Cover and Monitor Connections



Model 12304
Faucet Smartap® Monitor
Inlet Valve Switch Assembly



Model 12304
Faucet Smartap® Monitor
Module Cover and Monitor Connections

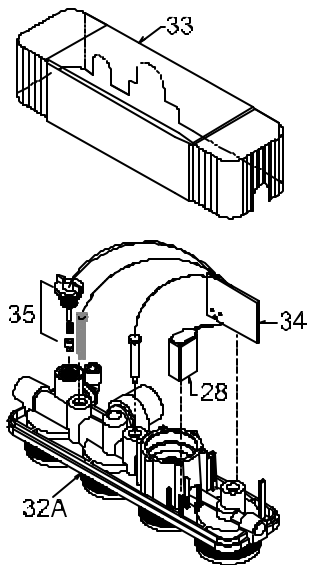


Figure 10.B: Exploded Schematic, 12302, 12303 and 12304 Model Series

ACTIVATING THE SYSTEM

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

NOTE: Item callouts refer to Page 10, Figure 10.A, and Page 11, Figure 10.B.

1. Open source water supply 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.

Optional Smartap^a Water Quality Monitor
Perform Steps 4 - 7

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 3). Gently pull manifold cover (Item 27 - Pushbutton Monitor, Item 33 - Faucet Monitor) up and away from the manifold body.

5. **CAUTION:** Verify battery connector alignment before making connection (Page 14, Figure 11).

CAUTION: Connect battery 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 28) on manifold by pressing clip onto battery terminals (Figure 11).

6. Replace manifold cover and tighten screws.
7. Test battery connection by activating monitor. Press pushbutton or open faucet. If an indicator light illuminates, connection is good.
8. Open product water faucet and let water flow until all air has been expelled from system. Lock faucet by rotating the handle 90° or by lifting handle, as 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.

MAINTENANCE PROCEDURE PREPARATION

RECOMMENDATIONS

HAVE ALL EQUIPMENT AND REPLACEMENT 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)

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)
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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 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:
Proceed 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® 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.

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.
18. **CAUTION:** Do not attempt to remove filter housings until water flow stops. This reduces pressure inside the system so housings may be removed safely.
Remove filter housings and dispose of water. Rinse filter housings and manifold ports thoroughly with clean potable water.

CLEANING, SANITIZING, AND CARTRIDGE REPLACEMENT PROCEDURE

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 10, Figure 10.A., or Page 11, Figure 10.B. 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.

Optional Smartap Water Quality Monitor

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 12, 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. Carefully slide new battery into its holder.

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

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.

Connect battery by pressing clip onto battery terminals.

28. Test battery connection by activating monitor. Press

pushbutton or open faucet. If an indicator light illuminates, connection is good.

NOTE: Release button or close faucet immediately after light illuminates. Test is to confirm battery connection, not water quality.

29. Replace manifold 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® TROUBLESHOOTING INDICATORS AND COMMON SOLUTIONS

Table 4

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 Restrictor.	Replace Flow Restrictor.
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. NOTE: Polymer faucet air gap discharge port located on rear of faucet (Page 9, Figure 9).	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.
Noise from system and/or faucet air gap.	Trapped air in system. Typical of new system or as a result of filter changes.	Nothing, system usage will purge trapped air.
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.

LIMITED WARRANTY

Subject to the conditions and limitations described below, HYDROTECH, Inc. warrants its Model 12301, 12302, and 12304 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 to the original end-user of the system only.

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 unit.
Your Unit was installed by: