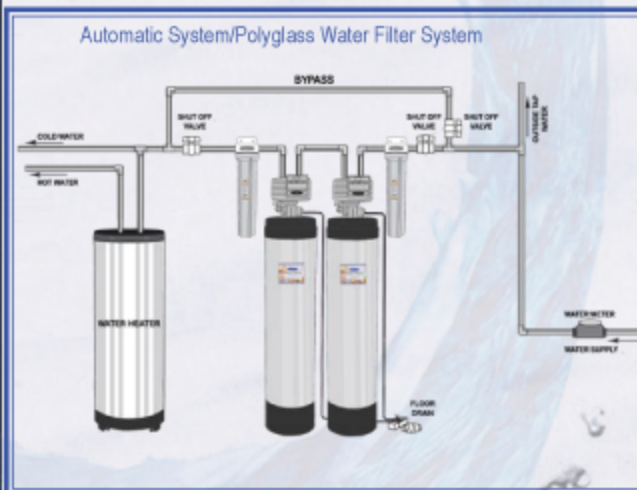
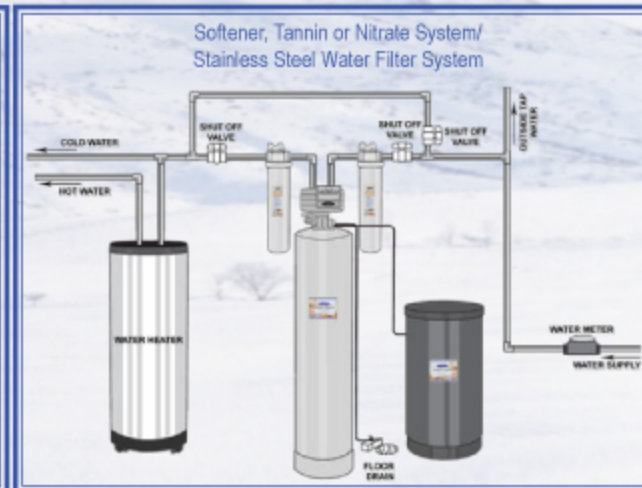




TYPICAL INSTALLATIONS AND SYSTEM LOCATIONS

(with backwash or regeneration features)

The system needs to be installed by a licensed plumber in any state or country. Specifically, the following states require a licensed plumber to install the system OR allow a *state-registered* installer or contractor: **AR, CA, GA, KS, MA, MI, MN, OK, RI, SC, SD, TX, VT, and WI.**



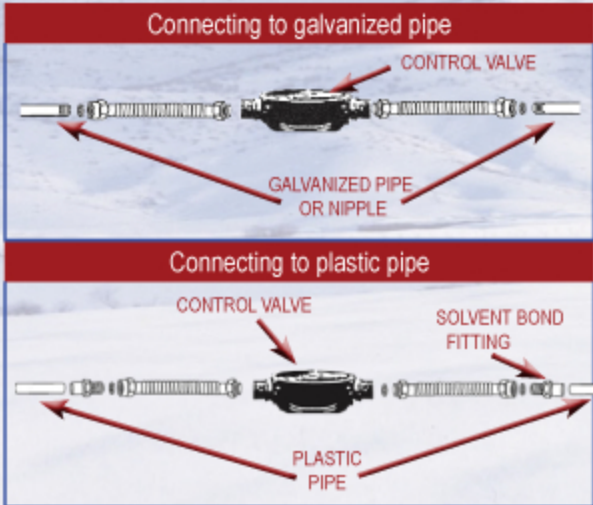
*Orientation of tanks are based on water report/conditions.

Combo systems can be customized based on water conditions/lab reports.

DOWNFLOW WITH NO BACKWASH WATER FILTER SYSTEMS



This system is ideal for acidic water conditions or as a post-filter for a reverse osmosis system to remineralize and enhance pH. This design will allow quick and easy media refill.



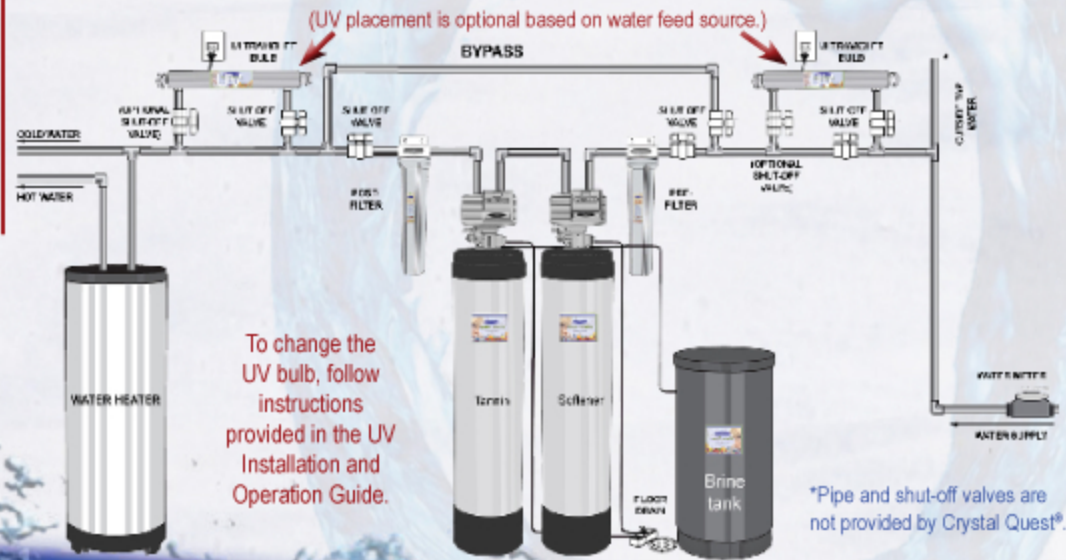
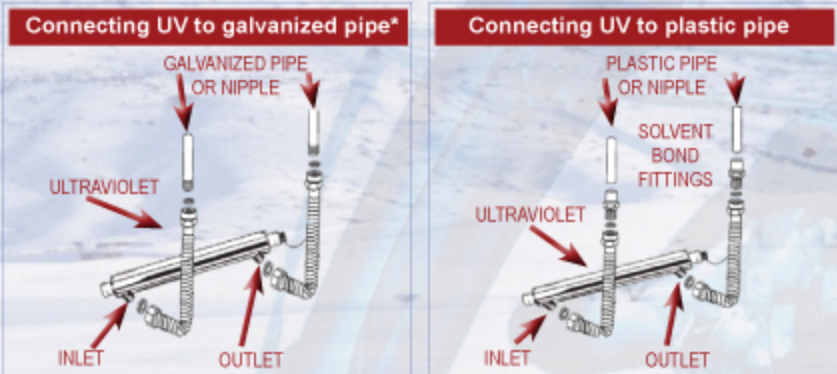
Refer to section "CONNECTING WATER FILTER SYSTEM TO WATER SUPPLY" for detailed instructions.

UV Install Hints

- Electronic ballast must be connected to a grounded outlet, and the lamp connector ground wire must be connected to the stainless steel reactor chamber.
- This disinfection system is designed to be mounted horizontally or vertically at the point of use or point of entry, depending on the specific flow rate of the unit.
- The UV disinfection system is intended for indoor use only.
- Do not install disinfection system where it may be exposed to the weather or temperatures above 100°F.

ULTRAVIOLET WATER STERILIZER SYSTEM

This system is great for well water and as an add-on to any whole house water filter. For detailed installation instructions, refer to the UV Installation and Operations Guide.



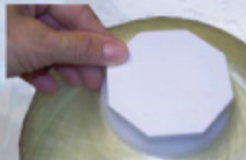
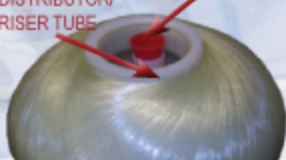


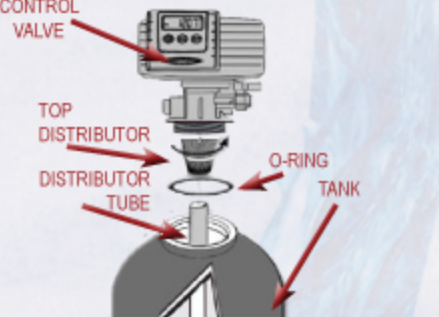


To change the UV bulb, follow instructions provided in the UV Installation and Operation Guide.

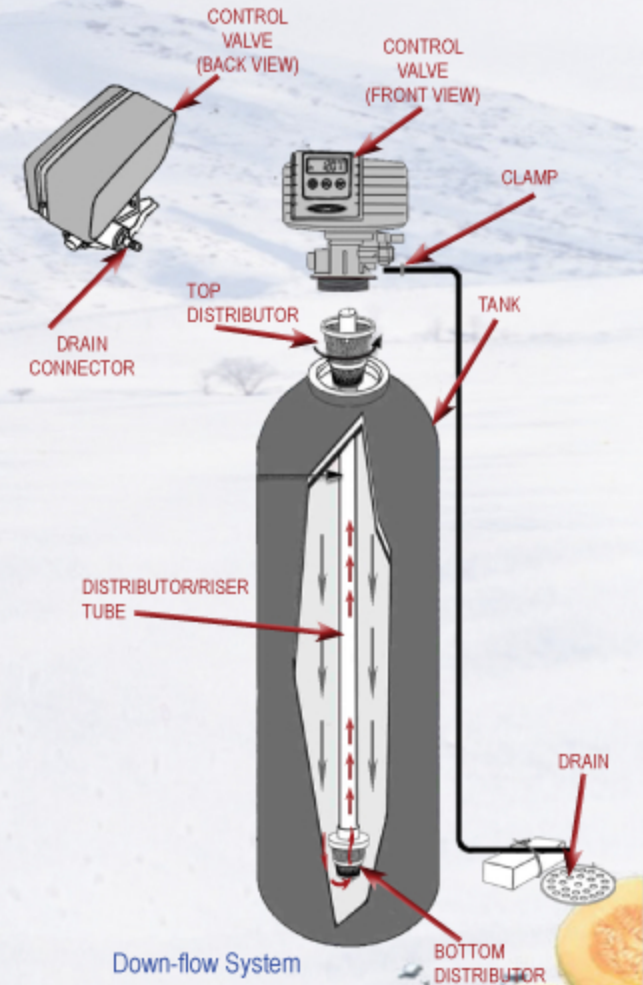
*Pipe and shut-off valves are not provided by Crystal Quest®.



ASSEMBLE WATER FILTER SYSTEM WITH CONTROL VALVE and BRINE TANK

Unpack the control valve from the shipping box. It is recommended that you keep the original boxes and packing materials.

<p>1</p> <p>Unscrew and remove the top cap from unit.</p> 	<p>2</p> <p>Unplug slip cap from the distributor/riser tube (also referred to as a PVC tube).</p> 	<p>3</p> <p>To prevent leaks, lubricate the inner and outer O-rings on the bottom of control valve with food grade silicone lubricant.</p> 	<p>4</p> <p>Twist and lock top distributor to the bottom of control valve. Ensure it is fully locked in place.</p> 
<p>5</p> <p>Attach control valve to the tank by sliding distributor tube into top distributor. Turn control valve clockwise to tighten. Distributor tube needs to be equal to the top of the resin tank (not more than 1/4" above). Lubricate the inner O-ring prior to attaching the control valve to the tank.</p> 	<p>6</p> <p>Attach bypass valve to the back ports of the control valve by sliding the bypass over the O-rings and tighten (it is held in place by two metal clips and two screws).</p> 	<p>7</p> <p>Attach drain line hose barb and compression nut of the brine tank by turning clockwise to tighten until snug. To prevent leaks, wrap threads of hose barb and compression nut with Teflon[®] tape clockwise, approximately 3 times around.</p> 	



CAUTION - DO NOT OVERTIGHTEN compression nut! Hand tighten and add a half turn with a wrench.



PROGRAMMING AUTOMATIC CONTROL VALVE

Programming to backwash non-regeneration systems once every 7 days:

- 1) Use the up or down arrows to set the time to **12:01 PM**. Once the time is changed to 12:01 PM, push the Recycle button (refer to Figure A1) to lock it in.
- 2) Push and hold both arrow buttons until screen changes to read **"GAL"**.
- 3) Push Recycle button. Screen will read **"DF 1b"**. This is set at factory and will not need to be changed.
- 4) Push Recycle button. Screen should read **"tc"**. If not, use up/down arrow buttons to set to "tc".
- 5) Push Recycle button. Screen will read **"NT ---1"**. This is the number of tanks the timer is controlling (one tank). Do not change this.
- 6) Push Recycle button. Screen should read **"DO 7"**. If not, use up/down arrow buttons to set number to 7.
- 7) Push Recycle button. Screen should read **"RT 2:00"**.^{*} If not, use up/down arrow buttons to set to 2:00.
- 8) Push Recycle button. Screen should read **"BW 10"**. If not, use up/down arrow buttons to set to 10.
- 9) Push Recycle button. Next screen will be **"BD 60"**. Use up/down arrow buttons to change screen to read **"OFF"**.
- 10) Push Recycle button. Screen will change to time display and programming is locked in.

Programming to backwash Softener, Nitrate, or Tannin systems to regenerate once every 7 days:

- 1) Use the up/down arrow buttons to set the time to **12:01 PM**. Once the time is changed to 12:01 PM, push the Recycle button to lock it in.
- 2) Push and hold both arrow buttons (Figure A2) until screen changes to read **"GAL"**.
- 3) Push Recycle button. Screen will read **"DF 1b"**. This is set at factory and will not need to be changed.
- 4) Push Recycle button. Screen should read **"tc"**. If not, use up/down arrow buttons to set to "tc".
- 5) Push Recycle button. Screen will read **"NT ---1"**. This is the number of tanks that timer is controlling (one tank). Do not change this.
- 6) Push Recycle button. Screen should read **"DO 7"**. If not, use up/down arrow buttons to set to 7.
- 7) Push Recycle button. Screen should read **"RT 2:00"**.^{*} If not, use up/down arrow buttons to set to 2:00.
- 8) Push Recycle button. Screen should read **"BW 10"**. If not, use up/down arrow buttons to set to 10.
- 9) Push Recycle button. Screen should read **"BD 60"**. If not, use up/down arrow buttons to set to 60.
- 10) Push Recycle button. Screen should read **"RR 10"**. If not, use up/down arrow buttons to set to 10.
- 11) Push Recycle button. Screen should read **"BF 12"**. If not, use up/down arrow buttons to set to 12.
- 12) Push Recycle button. Screen will change to time display and programming is locked in.

^{*}If more than one tank is being used, regeneration time (RT 2:00) should be staggered for each tank.

Programming to Backwash and Regenerate using an Automatic Valve

(Refer to instructions for programming Automatic Control Valve)



Programming to Backwash using the Mechanical Control Valve

(See instructions below)



- When programming the mechanical valve to backwash, firmly grip the handle, turning it counterclockwise from the service FILTER (M1) position.
- Lock the handle to the BACKWASH (M2) position.
- Allow the water to run through the unit for five minutes or until the water becomes clear and free of dust or media fines.
- Manually turn the control knob clockwise to the service FILTER (M3) position. Your unit is back in service and ready to operate.

CONNECTING WATER FILTER SYSTEM TO WATER SUPPLY

(Mechanical/Automatic Control Valve)



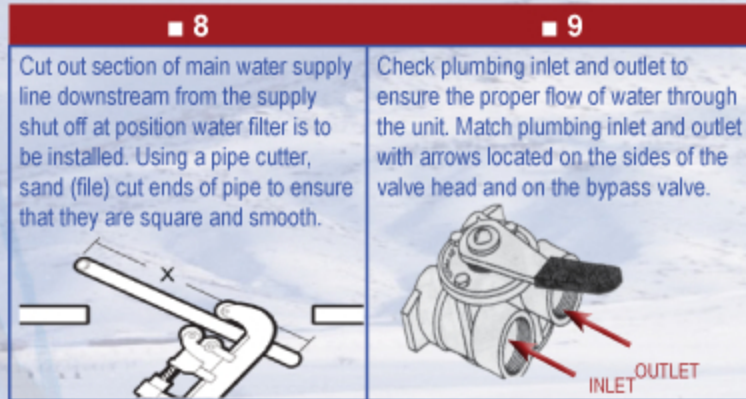
MINIMUM MATERIALS NEEDED

- 3/4" or 1" male thread adapters to plumb the system
- Wrenches, either open end or adjustable jaw, sized to fit compression adapters
- Pipe cutter
- Teflon[®] tape
- Sandpaper or emery cloth
- Before installing 3/4" or 1" fittings to the inlet and outlet of the bypass valve or manifold, wrap the threads 3 times around with Teflon[®] tape. Install 3/4" or 1" fittings.
- Soldering is no longer required to plumb with copper pipe. Instead, use 3/4" or 1" compression fittings. Connect plumbing as shown below (Fig 10), choosing appropriate connection for mechanical/automatic control valve.

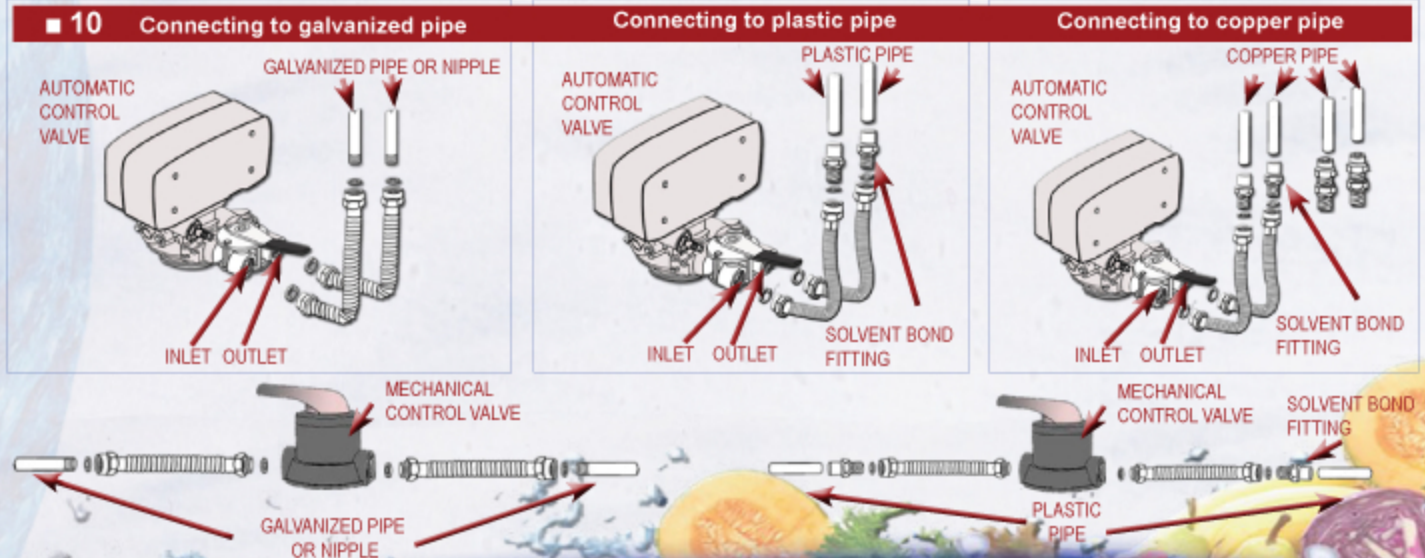
CAUTION:
Do not overtighten or cross-thread.

CAUTION:
Install water filter in direction of arrows.

- Turn off the main water shutoff valve.
- Open all plumbing fixtures in the house including all outside faucets in order to drain the lines of all water.
- Cut and remove a section of the main incoming water line near where the system is to be installed. Allow this line to drain thoroughly (Fig 8)
- If copper piping is used and soldered, remove the bypass from the valve assembly and attach your plumbing adapters to the bypass away from the valve. This simple step will ensure that you are not applying heat as you solder, or pressure as you tighten the adapters onto the bypass while they are mounted on the valve body itself.
- Solder a 3" to 5" piece of copper pipe into each of the two pipe adapters away from the valve, then let them cool before threading each one onto the yoke or bypass valve.
- Apply Teflon[®] tape onto the male adapters for the brass bypass valve when cool, and securely tighten them to the bypass valve. This is done before reattaching them onto the rear of the valve/meter body assembly.
- Close main water supply shutoff valve.
- Open nearest faucet to relieve pressure and drain plumbing lines.



(Choose appropriate connection below)

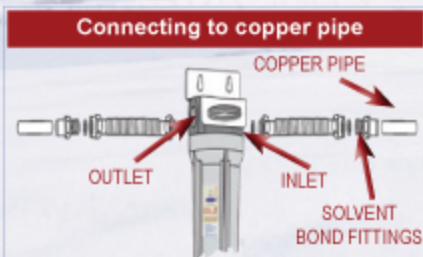
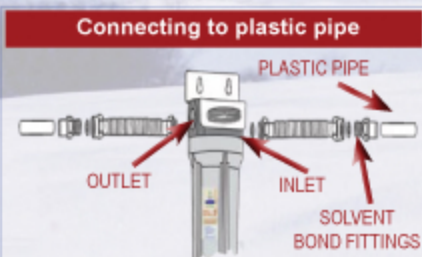




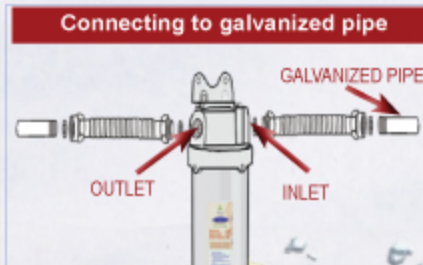
CONNECTING PRE- AND POST-FILTERS TO WATER SUPPLY

- Select a secure location surface to install filter and mounting bracket. The location should align the filter system with inlet and outlet pipe and should not cause the pipes to bend or get damaged. Mark the distance "X" on the pipe.
- The bracket can be used as a template for marking the location of the mounting screws.
- Use four hex washer-head screws to mount bracket firmly to wall. Use proper anchors on wall. Anchors and screws are NOT included.
- Apply 4 or 5 wraps of Teflon® tape, in a clockwise direction, to the pipe threads of each fitting. DO NOT use joint compound on any parts connecting to filter housing.
- Turn fittings clockwise to tighten. Do not overtighten.

13 POLYPROPYLENE FILTER - choose appropriate connection below



13 STAINLESS STEEL FILTER - choose appropriate connection below



11

Turn off the water supply and open a nearby faucet to drain the water out of pipes. Using a tape measure or ruler, measure the distance "X" as shown.



12

Using a pipe cutter, cut pipe. Sand (file) cut ends of pipe to assure that they are square and smooth.



MINIMUM MATERIALS NEEDED

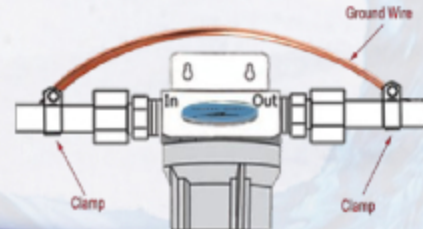
- Tape measure or ruler
- 4 hex washer-head screws
- Anchors
- Pipe cutter
- Teflon® tape
- Sandpaper or emery cloth
- Before installing 3/4" or 1" fittings to the inlet and outlet of the bypass valve or manifold, wrap the threads 3 times around with Teflon® tape. Install 3/4" or 1" fittings.
- Soldering is no longer required to plumb with copper pipe. Instead, use 3/4" or 1" compression fittings. Connect fitting as shown below (Fig 13).

! INSTALLING GROUND WIRE

IMPORTANT: A copper or galvanized cold water pipe is often used to ground electrical outlets in the home. Grounding protects you from electrical shock. The water filter housing may have broken this ground path. To restore connection, install an 18" long, 6-gauge copper wire across the filter, tightly clamped using UL approved 1/2"-1" bronze grounding clamps at both ends as shown. Zinc clamps should not be used on copper plumbing. Wire and clamps may be purchased separately from your local hardware store.

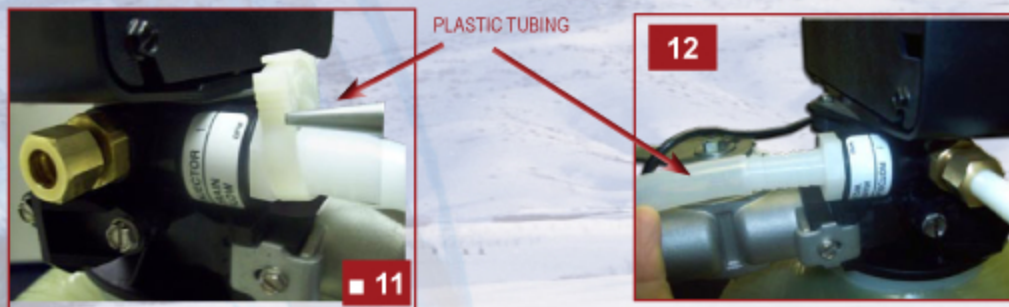
With emery cloth, clean copper pipe and ends of wire. Bare wire is recommended. If insulated wire is used, it should be stripped 3/4" at each end before cleaning with emery cloth.

- Attach bronze clamps to pipe. Tighten screws.
- Attach wire to clamps as shown. Tighten screws.



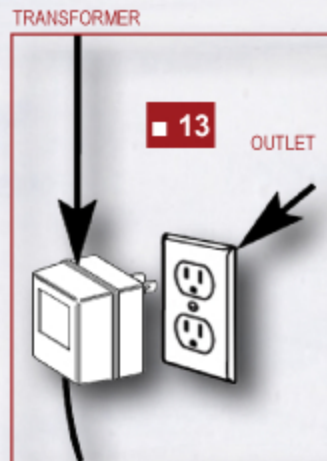
CONNECTING TUBING TO CONTROL VALVE - MECHANICAL AND AUTOMATIC

- Press 1/2" I.D. semi-rigid or non-collapsible plastic tubing onto drain line hose barb until snug and secure with a hose clamp (Figs 11 and 12).



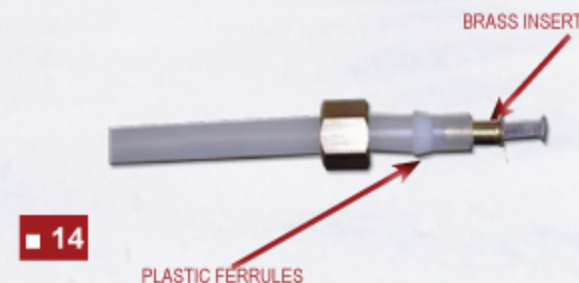
- Plug cord from control valve into 115V electrical outlet. Make certain that outlet is supplied with power at all times. Make sure area is dry before plugging the unit in (Fig 13). Open main water supply shutoff valve.
- **CHECK FOR LEAKS!** Close previously opened faucet.

NOTE: Do not run 1/2" drain line over 20'. If over 20', increase tube size to 3/4".



CONNECTING TUBE TO BRINE TANK

- Connect tubing to control valve as shown in Figs 11 and 12 for the mechanical and automatic water filter systems.
- For connecting tube to brine tank (softener, nitrate and tannin systems), see Fig 14 below:
 - (1) Slide plastic ferrules and brass insert into brine tube and slide compression nut onto brine tube.
 - (2) Turn compression nut clockwise with wrench to tighten. **DO NOT OVERTIGHTEN.**



CONNECTING TUBE TO BRINE TANK

CAUTION - DO NOT OVERTIGHTEN compression nut! Hand tighten and add a half turn with a wrench.

■ 15

Remove plug from brine tank lid.



■ 16 and ■ 17

Insert other end of 3/8" plastic tube, from control valve, through hole on brine tank.



■ 18

Remove brine well cover.



■ 19

Loosen the compression nut, turning counterclockwise to insert tubing. Turn compression nut clockwise with wrench to tighten.

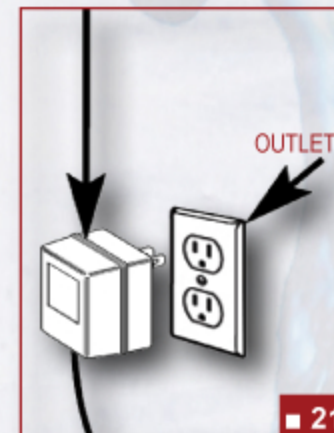


■ 20

- Install 1/2" I.D. semi-rigid or non-collapsible tubing (not included) to the overflow hose barb located on the side of the softener brine tank and run to a suitable drain. Do not connect to drain line off of softener (Fig 20).
- Plug cord from control valve into 110V grounded electrical outlet. Make certain that outlet is supplied with power at all times. Make sure area is dry before plugging the unit in (Fig 21).
- Open main water supply shutoff valve. **CHECK FOR LEAKS!** Close previously opened faucet.
- Pour the 5 gallon bucket of water into the brine tank.
- Pour 1-1/2 oz of chlorine bleach solution directly into the brine tank or salt/potassium permanganate compartment.
- Pour salt or potassium permanganate into brine tank compartment. Fill about 3/4 (do not pack full). If any red rust stains are apparent, mix iron control agents (Super Iron Out[®]) with the salt or potassium permanganate.



TRANSFORMER



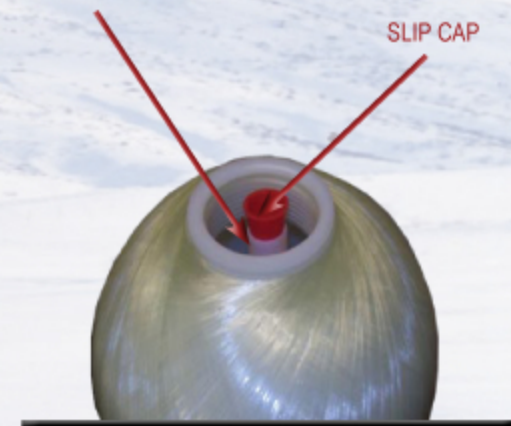
■ 21

GUIDE FOR REPLACING MEDIA

- Turn off the water to the unit and unplug from the power source.
- Disconnect the unit from your plumbing.
- Carefully unscrew the control valve off the top of the tank.
- Remove the riser tube from inside the mineral tank.
- Lay the tank on its side or lay over a trash can to remove media.
- Rinse the inside of the tank clean with a garden hose, discard old resin, and save the old gravel.
- Stand media tank upright. Plug a slip cap or put a piece of tape over the top of the distributor/riser tube to prevent media from entering the tube while loading the media.
- Place the media funnel in the top of the media tank with the riser tube still inside and centered.
- Begin replacing media by putting gravel into the tank first. Make sure the riser tube is firmly on the bottom of the tank. If the riser tube is pulled out of the gravel once the media is added, it is impossible to put it back in without removing the other media from the tank.
- Pour resin/media into the funnel, slowly letting it fall down inside the media tank around the riser tube. If you have a twin alternating system, divide the resin/media equally between the two tanks. The media tank should be approximately 3/4 full.
- Remove the funnel and the slip plug or tape from the top of the riser tube.
- Brush any loose resin/media off the top opening of the tank. Clean the top edge with a cloth so the O-ring can seal securely to the valve base.
- Look at the bottom of your control valve and locate the upper basket. Inside the basket, the control valve has O-rings that will seal on the riser tube. Install the valve on top of the media tank, making sure the top of the riser tube inserts inside the opening of the upper basket. Guide the riser into the O-ring seal and tighten gently. Be careful not to over-torque the valve as the threads are plastic.
- Screw the control valve back onto the top of the tank. Be sure to hold the control valve where there will be no damage to the valve from the pressure you exert from tightening the valve back onto the tank.
- Reconnect your plumbing to your unit and plug the control valve back in, making sure to set the correct time of day. Turn on the water to the unit and check for leaks.
- Leave all faucets turned off inside the house, and open a single faucet (such as an outside faucet), letting the water run for 3-5 minutes. This rinses the new resin/media inside the tank, and any particles or color will rinse out through the one open faucet, and not throughout your home plumbing system.
- Manually turn your regeneration/backwash control knob slowly through a complete cycle, allowing the water to run through the unit for a minute or so in each position.
- Once the regeneration/backwash knob is back in the service position, your unit is in service and ready to operate!

DISTRIBUTOR /
RISER TUBE

SLIP CAP



FUNNEL

