pH Neutralizer Installation

Installation of an pH neutralizer is very similar to the installation procedure used for a water softener. A water softener system contains a brine tank, while an pH neutralizer does not, however, there will be a few added steps in adding the neutralizer media and flushing of the system.

Important: <u>If installing a neutralizer in combination with a water softener, always place the neutralizer upstream of the softener.</u>

Your **CAI** pH neutralizer comes with a manual covering the control valve and system. The manual should explain all necessary detail required for successful installation and operation of your pH neutralizer system. Many different valves and controls are supplied depending on which model you have purchased. Refer to the manual that was supplied with your neutralizer for specific instructions on unit installation and programming of your control.

Below we describe the basic installation steps that are common to every neutralizer unit that uses our standard Autotrol Performa control. Depending on customer requirements, we may configure a neutralizer with a different brand of control, and installation procedures may vary slightly from those as described below. If this applies to you, please contact our customer service department at 800-580-3033 with any questions that are not specifically addressed in this procedure.

If you are mechanically inclined and have a little experience doing basic plumbing, installing a neutralizer can be very easy. These instructions are lengthy and detailed, but we want our customer's installation experience to be a pleasant one and want our customers to be satisfied with their own "professional" installation.

- If you have an electric water heater, we recommend that you turn off the electricity to the heater while installing the neutralizer. Once you are satisfied with the installation, turn on a few hot and cold-water faucets, and let them run. Once there is no more air in your pipes, then turn the electricity back on to the water heater.

- The neutralizer system can safely handle a pressure range of 25-95psi; however, like most residential plumbing, for best operation and least wear on critical parts, we recommend an operating range of 45-55psi.

Step 1:
The location of your neutralizer is important. It should be in a protected dry, level and non-freezing area (34-120 degrees F).

Step 2:
You will need a standard 3-prong, 120V, grounded outlet that is not controlled by a switch. The outlet can be up to 50 feet from your neutralizer. The furnished 12V transformer has 10 feet of cord attached. If it is necessary to extend the length of the transformer cord, it may be spliced to a maximum of 50 feet. Basic 18/2 AWG or thicker wire may be used. Splice connectors and extension wire are not included, but are readily available at electrical or hardware stores.

Step 3:
You will need a drain for the backwashing cycles. If possible, the drain should be no farther than 20 feet from the neutralizer. You will need to purchase this flexible 5/8" diameter (1/2" inside diameter) plastic tubing from CAI or your local hardware or building supply store. The tubing can be vinyl, polyethylene, polybutylene, etc. The drain line will be under pressure when the backwash cycle is working, therefore make sure the drain line is secured. The drain line will need to dump into a drain that is a minimum diameter of 1 1/2" and ideally be below the top of the head of your neutralizer. All local building codes should be adhered to. Never connect the drain line directly into a drain. Allow an air gap between the drain tubing and waste line to prevent the possibility of reverse siphoning. Often times, a washing machine drain is a conveniently located and can be used.

Step 4:
(Only required for units that do not have the media pre-installed; otherwise, skip to the next step)

Once you have determined the exact location of your neutralizer it is time to fill the tank with the furnished gravel. Put the distributor tube into the mineral tank, the screen intake will be at the bottom and the open end will be at the top. The screen intake should be resting on the bottom and centered.

Use masking tape or scotch tape to tape cover the open end of the distributor tube. This is to keep any media from falling into the distributor tube while pouring the media into the mineral tank.

Place a funnel into the mineral tank, and pour the larger "gravel" supplied into the tank. The gravel aids in even distribution of the water flow throughout neutralizer media to soon be placed on top. While filling the bottom of the tank with gravel, be careful to keep the distributor tube centered as best you can.

Now you can pour the neutralizer media onto the top of the gravel. The media is supplied to you in bags or buckets. Fill the tank with all of the neutralizer powder supplied (normally white or off-white in color). Add the media slowly, it can get the room dusty if added to rapidly. The powder will not fill the tank completely – this is intentional, and insures proper operation of the neutralizer. Make sure that

you do not overfill the media tank! At full charge, the top level of the neutralizer media should not be more than 10 to 12 inches from the top of the tank.

Once the filling of the mineral tank is completed, remove the tape from the distributor tube. Do not pull upwards on the distributor tube.

Step 5:
Now that the media is all in the tank, check to be sure that the dome hole plug is well seated into the tank. This plug is used to allow easy refilling of the media, without having to remove the control valve. Carefully remove the threaded plug found on the side of the tank dome. Hand tighten the threaded plug back into the tank. If you have some, a small amount of silicon grease coated onto the O-ring will help insure a good seal, and make future removal easy. Do not over tighten – a very slight turn with an adjustable wrench will properly seat the threaded plug into the tank. DO NOT USE ANY TEFLON TAPE OR PIPE DOPE ON THIS PUG!

Step 6:
The control valve (head) can now be attached to the mineral tank. As you start to screw the control valve onto the tank, make sure the hole in the center of the control valve fits over the distributor tube. NO pipe dope should be used on the threads. The control valve should be hand tightened, snugly, clockwise. Try not to over tighten the control valve, over tightening can make future removal difficult.

You will note a thumbwheel that is located on the bottom of the valve, around the threads that will screw into the media tank. This thumbwheel contains an O-ring in a grooved slot, and serves as the primary tank-to-valve seal. After the control is threaded into the tank, rotate the thumbwheel down onto the tank to make sure that it's O-ring is firmly seated onto the tank – again, do not over-tighten – just hand tight to prevent leakage.

Step 7:
You are now ready to install the bypass valve to the control valve (head). The in and out arrows on the bypass valve should be pointing the same direction as the in and out arrows on the outside of the control valve. The arrows are molded into the plastic (Noryl) on both the bypass valve and the control valve. The bypass attaches to the head with two (2) female threaded nuts found on the bypass valve. The control valve has two male threaded ends on the back of the valve these are the inlet and outlet water connections. The two female nuts on the bypass thread onto the 2 male threaded ends of the control valve. Make sure that the two (2) gaskets provided are installed inside of the female nuts on the bypass valve to insure a good seal. Tighten the screws until the bypass valve is firmly seated, but be sure not to over tighten.

Step 8:
Water connections to and from the neutralizer will now be connected to the bypass male threads by using the two female nuts provided. Slip one female nut over one of the flanged copper tailpieces, so that the tube is sticking through the nut and the flanged piece is resting on the inside of the female threaded part of the nut. The two other gaskets provided fit into the female part of the nut on top of the flanged tailpiece. Screw the nut onto the male threads on the bypass valve. Do the same for the other side. Now connect your water source to the tailpieces.

Caution: A common problem for beginners is overheating the copper tailpiece stub-outs during the soldering process. This can melt the plastic (bakelite) nuts that connect to the Noryl bypass valve. We recommend that you solder first and then install the nuts. The important thing is not to overheat the tailpiece stub-outs. If you have to solder your water connections with the plastic nuts in place on the copper tailpiece, you can wrap the flanged part of the tailpiece (now positioned inside of the plastic nuts) in a wet towel during the soldering process for an additional measure of safety.

Located between the inlet and outlet water connection on the by-pass valve, you will find a male 3/4 inch threaded (NPT) nipple. This is the connection for your drain line. Be sure it is connected as per the instructions in step 3 (above). Depending on the size of your system, we may substitute the internal backwash flow control with an external one. If this is the case, refer to the pictures of this control at the end of this document to see proper installation orientation. The external flow control will need to be threaded onto this nipple, with the drain line then connected to it. Note: only some systems will require this device – do not be concerned if your unit is not supplied with one. You can connect flexible tubing to the included 90° hose barb fitting. If you decide to use this connection method, wrap the threaded nipple with Teflon tape prior to connecting the 90° fitting. It's advisable to use a metal hose clamp to secure the tubing onto the barb fitting.

Step 9:
Make sure the main water supply is off. Depress the Red Pointer Knob and turn the knob counter-clockwise into the backwash position. With the water supply off, place the bypass valve into the service position. Open the water supply valve very slowly to approximately the 1/4 open position. In this position, you should hear air escaping slowly from the drain line. CAUTION: If opened too rapidly or too far, some neutralizer media may be lost and plugging of the valve is possible.

Step 10:
Check for leaks and tighten any loose fittings

Step 11:
When water begins to flow steadily from the drain, signifying the air has been purged from the tank, open the main water supply valve all the way. You will

notice that the water running in the drain line is slightly cloudy. This is normal, and you are now backwashing a small amount of “fine” material contained in the neutralizer media from the bed. After the water in the drain line is running clear to the drain (this can sometimes take up to ½ hour), initiate a manual backwash by turning the red pointer knob to the indicated position, and allow the unit to run through a complete cycle.

Step 12:
Now refer to the manual that was supplied with you specific model and set the time and backwash cycle frequency as directed. We recommend that you set the neutralizer to backwash one to two times each week. You can now enjoy you pH neutral water!

Additional Notes:

- If a water softener is to be installed downstream of an pH neutralizer, make sure that the by-pass valve on the water softener is in by-pass during neutralizer installation. This will guarantee that the softener is not contaminated with an excessive amount of neutralizer media. You can take the softener out of by-pass when water from the neutralizer is running clear. If some amount of cloudy water from the neutralizer media initial backwash makes its way into the home’s downstream piping, do not worry – the media (crushed marble) is non-hazardous, and opening the house faucets for a time until no cloudiness is detected in the water will solve the problem.

- Keep in mind that the pH neutralizer media is sacrificial in nature, slowly dissolves in water, and will require replenishment from time to time. This is normally required on an annual basis, but will depend on your incoming water pH and overall water usage. When the tank level is approximately 1/3 full, we recommend refilling the tank with fresh material to the original full level. One way to easily track this is to draw a line at the fill level on the tank after initially placing the media into the tank (the tank is semi-transparent, and placing a flashlight behind it in a darkened room will allow you to see the fill level of the media). Divide the bed into even increments, and mark the tank accordingly. When your media has dissolved down to the 1/3 full level, you will know you are ready for a refill. Follow the backwashing procedure outlined above to remove cloudiness from the added media.

- If you are using copper pipe, we recommend using type L copper. Type L is thicker than type M copper.

- We highly recommend that you install a surge protector before the power supply. As in the case of most electronic devices, the power supply is susceptible to damage by power surges.

- Remember to check with local building code officials and do your installation per local codes. Please work slowly and carefully for personal safety and a proper installation!

- External Flow Control. If your unit requires an external flow control, please note the pictures below for proper installation orientation: