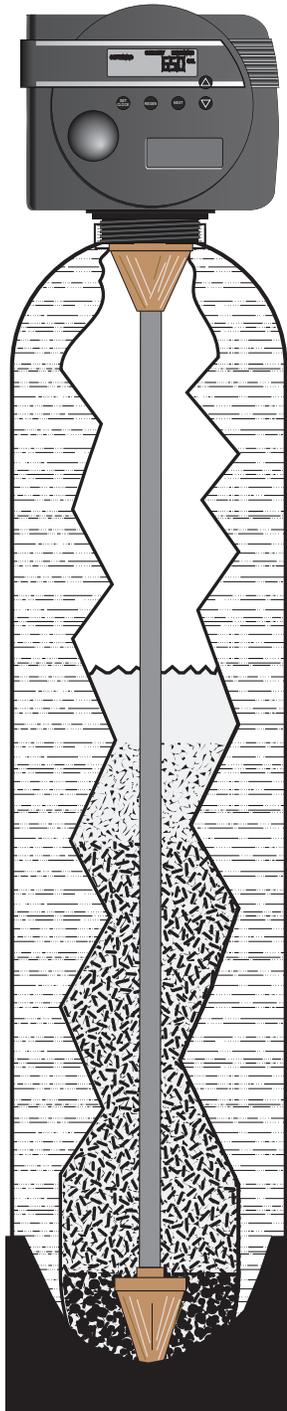


Pro Choice Filters

Air Injection Filter Systems



Installation, Operation,
and Maintenance Manual
Supplement



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Patent # 7,300,569

How Pro Choice Air Injection Filtration Systems Work

Air is a powerful oxidizer for both iron and sulfur. Historically, air has been utilized in water treatment through aeration towers, injection of compressed air, or by using an inline venturi. Aqua Systems AIF technology is a breakthrough because air is introduced through an induction venturi that is built into the control valve. This allows a single tank to be used as an aerator and a filtration system.

The AIF systems retain a head of air in the top of the tank during each treatment cycle. Each regeneration process purges that air from the tank before backwashing the media bed. Fresh air is introduced after the media has been cleared of the debris it has filtered from the water. The fresh air is introduced through the venturi. As the air is introduced, it displaces the water in the tank, exposing the media to fresh air. This exposure of air to the media sets up oxygen sites on the surface of the media, which provides the action it needs to perform. The head of air begins the oxidation process, while the oxygen sites on the media complete the process by holding the iron and sulfur in the media bed.

Limitations of Pro Choice Systems:

- In order for the Pro Choice Iron Filters to function, the pH of the source water must be at or above 7. If the pH is below 7, you must include the pH adjustment option when treating iron.
- The water supply must have adequate flow and pressure to backwash the applied system. Be sure to reference the required backwash rate of a specific model when considering an application. The minimum requirement for the smallest system is 5 gallons per minute while maintaining a minimum of 20 psi.
- Water supplies may change over time. It is possible for the source water conditions to deteriorate beyond the capability of an applied system months, or even years, after the initial installation.
- There will always be some effervescence to the water with this system. This effervescence is caused by residual air in the water. This milky appearance is most noticeable immediately after a new installation. It could take 30 to 90 days to settle out as the media fully absorbs the water, and expels the excess air.
- If you have a reverse osmosis (RO) system, the air will be noticeable in the drinking water as well. In fact, the membrane in the RO system will actually concentrate the air and make it more noticeable. This too will soon settle to a minimum.
- This residual air in the effluent water may loosen iron, or sulfur, build up from plumbing systems. If you are installing a Pro Choice Filtersystem where the water pipes have a build-up inside, it may take a few weeks, or more, to clear out the water lines. You may notice debris expelled from the tap on occasion as this build up is released and cleaned from the plumbing system. This may require you to clean the faucet aerators, until the debris is clear.
- **You should never introduce chlorine into an Pro Choice Iron Filter.** Chlorine, and other strong oxidizers, will damage the special media.

Pre Install Review

Requirements for Proper Operation:

Water Pressure: The system requires a minimum of 20 psi to be sustained with flowing water of 5 gallons per minute or greater. Maximum is 125 psi.

Flow Rate: A minimum of 5 gallons per minute is required for proper operation. If less than 5 gallons per minute is available, consult with your dealer for possible custom configurations.

Water Temperature: The range of water temperature for these systems is 40° F to 110° F.

Drain: A drain within 20' of the system can be run with 1/2" tubing. Drains running over 20' should use 3/4" tubing. Maximum overhead rise should be ≤ 8'. Consult your dealer for any drain > 30' in length.

Special Drain Note: The drain must be a legal connection with a code compliant air gap. It is critical that the drain be secured tightly at each end, and anchored throughout the run. The Pro Choice Filter systems will jolt the drain line during the release of air. Be sure to protect the immediate area from any spray that may occur at the air gap. The drain connections should be thoroughly tested before completing the installation.

Electricity: An uninterrupted 110volt A.C. source is required to operate the Pro Choice Filter systems.

Special Electrical Note: You must make sure that the power outlet is not connected to a timer, or a switch.

Tips:

Source water pH: If the pH of the source water is < 7, you must consult with your dealer. The pH adjustment option must be added if pH is below this specification.

Freezing: The Pro Choice Filter system, drain, plumbing and all other water fixtures, must be protected from freezing temperatures. Be sure that the installation site is not exposed to temperatures below 32° F.

Positioning: Be sure to position the Pro Choice Filter system so it can be removed or accessed for future servicing.

Outside Faucets: Outside faucets must be bypassed from any Pro Choice Filter system. These systems are not designed for watering lawns, filling pools, or any other outdoor use.

Sand: If sand or sediment is present you must install a sand separator, or sediment filter ahead of the Pro Choice Filter system.

Chlorine: Most Pro Choice Filter systems will not work on chlorinated water supplies. Chlorine, and other strong oxidizers will damage the media bed in Pro Choice Filter iron filters.

Location Data

Bypassed Hard Water Lines:

Outside Spigots _____

Swimming Pool Fill Line _____

Kitchen Cold _____

Irrigation Systems _____

Sizing Information:

Hardness _____ grains per gallon

Iron _____ parts per million

pH _____

Inlet Water Line Size _____

No. in Family _____

No. Baths _____



Installation

Filter System Placement

Special Note:

The Pro Choice Filter systems are to be installed before a water conditioner. This allows the iron and sulfur to be treated before the softening process. This also protects the water softeners' performance from being hampered from the iron, or sulfur. A water softener can normally be installed next to the outlet of the filter system. Never route the outside faucets, or an irrigation system, through an Pro Choice Iron or Sulfur system. These systems are not designed for the volume load of lawn watering, or other outside uses.

1. Find a location with:
 - A. Enough room to pull the system away from the plumbing if necessary.
 - B. The main inlet water supply or pre-plumbed connection point.
 - C. Adequate drain fixture, capable of 5 gallons per minute flow.
 - D. An electrical outlet that is **not** operated by a switch or timer.
2. Place unit in the desired location. If floor is not level the unit may be leveled with the built in adjustable base by lightly tapping the unit on the floor.
3. There should be a minimum of 12' of water line between the filter system connection and the water heater.

All plumbing must be done in accordance with local plumbing codes.

Caution:

The control valve, fittings and/or bypass are designed to accommodate minor plumbing misalignments but are not designed to support the weight of a system or the plumbing.

Do not use Vaseline, oils, other hydrocarbon lubricants or spray silicone anywhere. A silicon lubricant may be used on black o-rings but is not necessary. **Avoid any type of lubricants, including silicone, on red or clear lip seals.**

The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic wrench. If necessary, pliers can be used to unscrew the nut or cap. Do not use a pipe wrench to tighten or loosen nuts or caps. Do not place screwdriver in slots on caps and/or tap with a hammer.

Do not use pipe dope or other sealants on threads. Teflon tape must be used on the threads of the 1" NPT elbow or the 1/4" NPT connection (for the Test Port). Teflon tape is not necessary on the nut connection or caps because of o-ring seals.

When assembling the installation fitting package (inlet and outlet), connect the fitting to the plumbing system first and then attach the nut, split ring and o-ring. Heat from soldering or solvent cements may damage the nut, split ring or o-ring. Solder joints should be cool and solvent cements should be set before installing the nut, split ring and o-ring. Avoid getting primer and solvent cement on any part of the o-rings, split rings, bypass valve or control valve.

Tip:

If there is a three way bypass in the existing plumbing, inspect it to make sure the bypass valve shuts off 100% when closed



Installation

4. Before connecting the water lines:
 - A. Turn off the electric or gas to the water heater.
 - B. Turn off the main water supply to the building, and drain off the pressure to all cold water outlets.
 - C. Determine which outlets are to be bypassed and make provisions to connect them before the filter system.
 - D. It is highly recommended to provide an inlet shut off valve near the unit.
 - E. The inlet water line should be a minimum of 3/4" in size. If yours is smaller, consult your dealer for required adjustments.
5. With the above considerations, connect the water line to the inlet of the unit, which is designated by an arrow on the bypass pointing toward the control valve.
6. Connect the outlet which is designated by an arrow pointing away from the control valve to the water line that feeds the softener, or back to the main if a softener is not being used.
7. If the plumbing system is metal pipe (ex. – copper), install a jumper ground wire and grounding clamps between the inlet and outlet pipes to retain continuity of the plumbing.
8. Connect the drain on the filter system to an approved air gap drain. When using the 5/8" poly tubing for the drain line, connect the nut to the line as illustrated in figure 1. If copper line is used, be sure to pre-sweat and cool pipe & fittings before attaching to the drain fitting on the valve.

Turning on the water:

1. With all plumbing connections made, make sure the bypass is in the "bypass" position. (See figure 3). Slowly turn on the water supply valve until lines are pressurized. At nearby faucet, turn on cold water and let it run for 2 – 3 minutes to flush debris from the plumbing. Check for water leaks, repair any leaks immediately before proceeding.
2. After confirming no leaks, and flushing the lines, proceed to the Start Up instructions.

Caution:

Make sure all plumbing connections are completed before turning on water. Check for and repair any leaks before proceeding with start up of system.

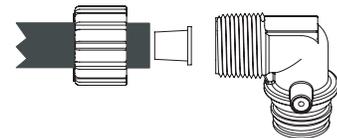


figure 1 Drain Fitting

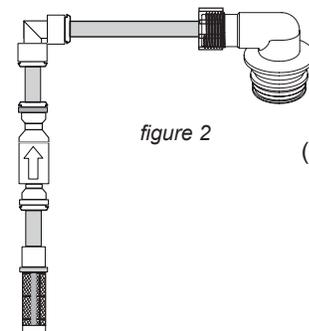


figure 2 Air Injection Fitting (pre-assembled)

BYPASS OPERATION

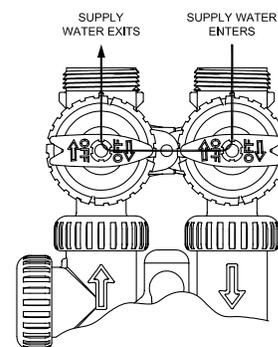


figure 3

Caution:

The drain line on the filter system must be secure at all points along the length of the drain run. The drain line will jolt when the air is released during the cycle. You must test the drain line security before leaving any installation site.

Start Up

Put Unit into Service:

1. Plug transformer into 110v receptacle. The control will place itself into the Filtering mode, and will flash a time on the display.
2. Set the current time of day. (See page 13)

Turning Water On to the Filter System:

1. Water should be turned on to the Pro Choice Filter system while in the filtering mode. Do not initiate a "Regen" cycle before turning water on to the system. To turn the water on, open the inlet side of the bypass to the system. Water will fill the unit, and trap a head of air in the top of the tank. This initial head of air will be used to check the drain connection.
2. Once water has filled the tank, and is no longer flowing into the tank, you can test the drain connection. Review both connection points of the drain line, and all fasteners over the length of the drain line. Make sure that every part of the drain line is secure.
3. Once drain line security has been verified, you can initiate the first cycle. This will allow you to check the drain line to make sure that it is sending water to the drain, and that it is stable. Push the "Regen" button and hold for 3 seconds. This will move the control to the back wash cycle. Immediately check the drain line for secure positioning, and leaks. If the drain line is functioning properly, let the system complete the backwash cycle.
4. The Pro Choice Filter system control valve will automatically advance to the air induction cycle after backwashing for the appropriate amount of time. You must let the system complete the air induction cycle, which will be 30 – 40 minutes depending on the system size.
5. Once the air induction cycle has been completed, the Pro Choice control valve will automatically turn off, returning the system to the "Filtering" mode. Once the system has returned to the Filtering mode it is time to turn the system on to the facility. To turn the filter system on, turn the outlet handle on the bypass to point toward the line of the piping. At this point the bypass should be in the service position, with one handle pointing toward the control valve, the other pointing away from the control valve.
6. With the filter system placed in service you need to rinse the system down. Turn on a cold water line in the facility. The Pro Choice display should show the spinning flow indicator. This verifies that the water is flowing through the filter system. Let the water run until it is clear.

Note:

Make sure that the electrical outlet used is an uninterrupted outlet (such as outlet that is operated by a switch).

All electrical connections must be connected according to local codes.

Note:

When pushing the "REGEN" button to advance cycles, let the control reach the next cycle before pushing the "REGEN" button again.

Special Note:

The Pro Choice Filter system will retain a lot of air in the first 30 - 90 days of operation. This air will make the water in the facility have a milky look to it. This is to be expected as normal until the dry media has had the opportunity to fully absorb the water. Water from the filter system will always have effervescence to it because of the air in the treatment process. However, it is much more significant in the first 90 days.

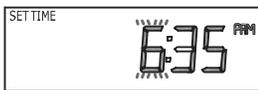


Programming

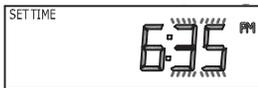
Set Time of Day:



1. Press "SET CLOCK"



2. Current Time (hour): Set the hour of the day using "Up" or "Down" buttons. AM/PM toggles after 12. Press "NEXT" to go to step 3.



3. Current Time (minutes): Set the minutes of the day using "Up" or "Down" buttons. Press "NEXT" to exit Set Clock. Press "REGEN" to return to previous step.

Return to
Normal Operation

Note:

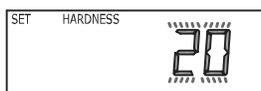
If the power goes out, the current time will remain correct as long as the battery has sufficient charge (up to 2 years). If the battery expires, the screen will state "Low Battery". The battery should be replaced and the time reset. All other programming will be retained.

Programming

Installer Displays/Settings:



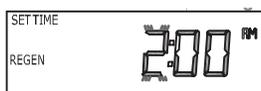
1. Press “NEXT” and “Up” simultaneously for 3 seconds.



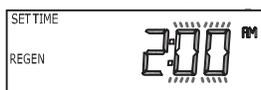
2. Hardness: Will read -nA-. Skip and press “NEXT” to go to the next step.



3. Day Override: Maximum allowable days between regenerations. Leave this setting on “OFF”. Press “NEXT” to go to the next step.



4. Regeneration Time (hour): Set the hour of day for regeneration using the “Up” or “Down” buttons. Press “NEXT” to set minutes.



5. Regeneration Time (minutes): Set the minutes of day for regeneration using the “Up” or “Down” buttons. Press “NEXT” to set energy saver.

Press “NEXT” to exit program and return to normal operation.

Return to
Normal Operation

Note:

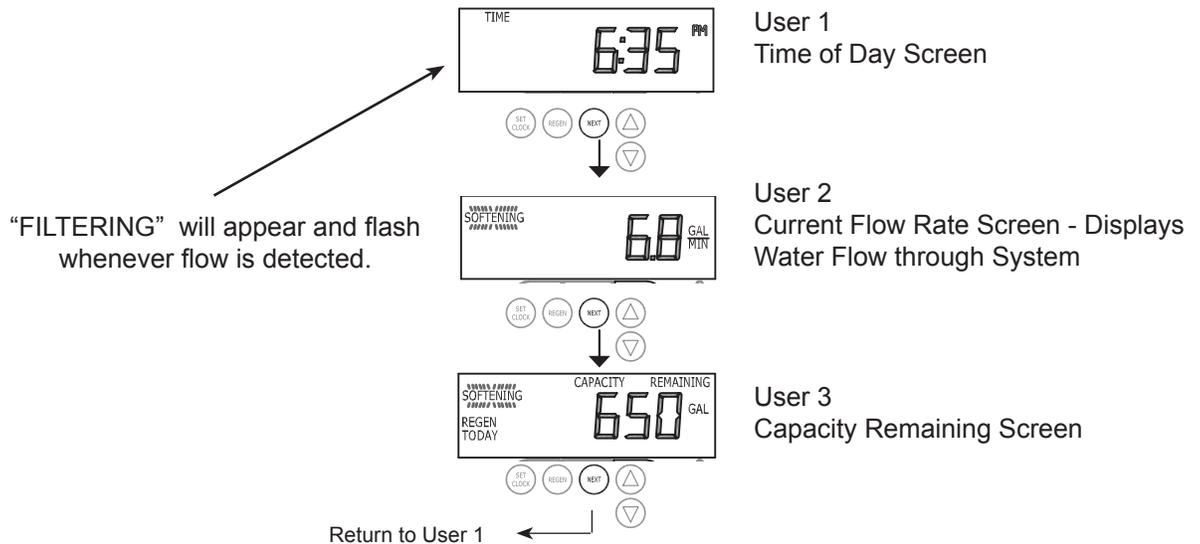
If a softener is installed or existing after the filter, it is recommended that the regeneration time for the softener be set at a time after the filter regen.

Note:

To initiate a manual regeneration immediately, press and hold the “REGEN” button for three seconds until the system starts the regen cycle. For a manual regeneration at the normal scheduled time, push and release the “REGEN” button once. “REGEN TODAY” will alternate with the current screen display.

Programming

User Displays/Settings:



Regeneration Mode:

1. Typically a system is set to regenerate at a time of low water usage. An example of a time with low water usage is when a household is asleep. If there is a demand for water when the system is regenerating, untreated water will be used.
2. When the system begins to regenerate, the display will change to include information about the step of the regeneration process and the time remaining for that step to be completed. The system runs through the steps automatically and will reset itself to provide treated water when the regeneration has been completed.
3. Sometimes there is a need to regenerate the system, sooner than the system calls for it, usually referred to as manual regeneration. There may be a period of heavy water usage because of guests or a heavy laundry day.
4. To initiate a manual regeneration immediately, press and hold the “REGEN” button for three seconds until the system starts the regen. To initiate a regeneration at the normal scheduled time, push and release the “REGEN” button. The display will alternate from the current screen to “REGEN TODAY”.



Parts Diagrams

Air Injection Port

No.	Part No.	Description	Qty.
2	03310730	Elbow Locking Clip	1
3	03310738	Polytube Insert 3/8"	1
4	03310732	Nut 3/8"	1
5	03310740	Elbow Cap	1
6	02910154	O-Ring 019	1

