



## Installation and Operating Instructions For 3M™ Iron Reduction Filtration Systems

**MODELS:**  
3MAPPM150  
3MAPPM200



**Homeowner: Please retain for operation and future maintenance instructions.**



# SAFETY INFORMATION



Read, understand, and follow all safety information contained in these instructions prior to installation and use of the 3M™ Series Iron Reduction Filtration System 3MAPPM Series. Retain these instructions for future reference. Failure to follow installation, operation and maintenance instructions may result in property damage and will void warranty.

This product includes a GAST® component. Please refer to GAST website at [www.gastmfg.com](http://www.gastmfg.com) for detailed information on GAST LOA-P109-AA compressor or contact your Dealer/Installer or our Customer Care Team at 855-3M-WATER (855-369-2837).

## Intended use:

The 3M™ Series Iron Reduction Filtration System 3MAPPM Series is intended for use in reducing iron in water in homes and has not been evaluated for other uses. The system must be installed indoors near the point of entry of a home water line, and be installed by qualified professional installers according to these installation instructions.

## EXPLANATION OF SIGNAL WORD CONSEQUENCES

 <b>WARNING</b>	Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury and/or property damage.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage.
<b>CAUTION</b>	Indicates a potentially hazardous situation, which, if not avoided, may result in property damage.

## WARNING

### To reduce the risk associated with choking:

- Do not allow children under 3 years of age to have access to small parts during the installation of this product.

### To reduce the risk associated with ingestion of contaminants:

- Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

### To reduce the risk of physical injury:

- Shut off inlet water supply and depressurize system as shown in manual prior to service.
- Do not operate system with air release valve (ARVTA-1X) in the closed position.

### To reduce the risk associated with a hazardous voltage:

- If the home electrical system requires use of the cold water system as an electrical safety ground, a jumper must be used to ensure a sufficient ground connection across the filter installation piping — refer installation to qualified personnel.
- Do not use the system if the power cord is damaged — contact qualified service personnel for repair.

### To reduce the risk associated with back strain due to the heavy weight of the various system components:

- Follow safe lifting procedures.

## CAUTION

### To reduce the risk associated skin, eye, and respiratory tract irritation from gravel and filter media during installation:

- Gravel and several types of filter media may be used in this product, depending upon the application. During installation, dust may cause irritation to skin, eyes, and respiratory tract.
- Utilize a NIOSH-approved dust filter mask, protective gloves, and appropriate eye protection when handling and pouring gravel and filter media.
- To request an MSDS relating to this product, call 203-238-8965 or go to [www.3M.com](http://www.3M.com), select country, and use the search engine to search MSDS. For emergencies, call 800-364-3577 or 651-737-6501 (24 hours).

## CAUTION

### To reduce the risk associated with property damage due to water leakage:

- **Read and follow** Use instructions before installation and use of this water treatment system.
- Installation and use **MUST** comply with existing state or local plumbing codes.
- **Protect from freezing**, relieve pressure and drain system when temperatures are expected to drop below 33°F (0.6°C).
- **Do not** install on hot water supply lines. The maximum operating water temperature of this filter system is 110°F (43.3°C).
- **Do not** install if water pressure exceeds 50 psi. If your water pressure exceeds 50 psi (345 kPa), you must install a pressure limiting valve. Contact a plumbing professional if you are uncertain how to check your water pressure.
- **Do not** install where water hammer conditions may occur. If water hammer conditions exist you must install a water hammer arrester. Contact a plumbing professional if you are uncertain how to check for this condition.
- Where a backflow prevention device is installed on a water system, a device for controlling pressure due to thermal expansion must be installed.
- **Do not** use a torch or other high temperature sources near filter system, cartridges, plastic fittings or plastic plumbing.
- On plastic fittings, never use pipe sealant or pipe dope. **Use PTFE thread tape only**, pipe dope properties may deteriorate plastic.
- Take care when using pliers or pipe wrenches to tighten plastic fittings, as damage may occur if over tightening occurs.
- **Do not** install in direct sunlight or outdoors.
- Install system in such a position as to prevent it from being struck by other items used in the area of installation.
- Ensure all tubing and fittings are secure and free of leaks.
- **SHUT OFF FUEL OR ELECTRIC POWER SUPPLY TO WATER HEATER** after water is shut off.
- **Do not** install system where water lines could be subjected to vacuum conditions without appropriate measures for vacuum prevention.
- **Do not** apply heat to any fitting connected to bypass or control valve as damage may result to internal parts or connecting adapters.

### To reduce the risk associated with property damage due to plugged water lines:

- Pay particular attention to correct orientation of control valve. Water flow should match arrow on control valve. The Inlet and Outlet of other water treatment equipment products will vary depending on the control valve brand used.

## IMPORTANT NOTES

- Failure to follow instructions will void warranty.

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## SECTION 1: GENERAL INFORMATION

This 3MAPPM Series Iron Reduction Filtration System reduces dissolved, precipitated and bacterial iron from your water supply. Contrary to conventional methods, the 3MAPPM Series Iron Reduction Filtration System requires NO chemicals (either added to the water supply or the filter). The unique process requires ONLY periodic backwashing for a few minutes to flush out entrapped iron that has accumulated in the media tank.

The 3MAPPM Series Iron Reduction Filtration System was designed to be used primarily on jet pump applications where the operating pressures do not exceed 50 psi. The MAXIMUM PRESSURE for proper operation of the aeration tank is 50 psi. If you have a private water system, refer to page 2-1 to determine your system's capability. If your system produces the required flow rate at 50 psi or higher, contact your Dealer/Installer or our Customer Care Team at 855-3M-WATER (855-369-2837).

When properly installed, the 3MAPPM Series Iron Reduction Filtration System will provide years of dependable service. Read this manual all the way through first, and then follow the instruction steps in the proper sequence.

### DESCRIPTION AND OPERATION OF THE SYSTEM:

The 3MAPPM Series Iron Reduction Filtration System consists of two major components which are:

- 1) An aeration tank, with GAST LOA-P109-AA compressor, installed after the existing pressure tank. Every time the well pump runs, the compressor injects air into the iron laden water.
- 2) A backwashing type filter containing a special media that causes the iron to precipitate throughout the filter bed (rather than on the surface as in chemical oxidizing filters). This process produces an iron reduction capacity from 30,000 to 50,000 parts per million (ppm) compared to 6,000 to 8,000 ppm for chemical oxidation processes. The media DOES NOT require a chemical regenerant (such as potassium permanganate) for oxygen enrichment, salt, chlorine or any other chemicals.

The 3MAPPM Series Iron Reduction Filtration System automatically adjusts the pH to neutral or higher on acid water WITHOUT an acid neutralizer (a required piece of equipment with chemical oxidation filters whenever the pH is less than 6.7). The ability to raise pH when it is below neutral (7 or less) greatly enhances the filtration system's ability to reduce iron efficiently.

### IMPORTANT NOTE

Replenishment of the component of the filter media that adjusts pH, "pH Plus", may be required periodically, the frequency of which is dependent on the raw water pH, the manganese (Mn) concentration in the water (if any) and the water consumption rate.

Periodic backwashing of the filter bed flushes the precipitated iron to the drain and readies the filter for use again. The duration of the backwash procedure is approximately ten (10) minutes. The frequency of backwashing depends on iron concentration and water usage, and ranges from daily to once every twelve (12) days.

### IMPORTANT NOTE

Due to the aeration process, the water will probably appear milky when drawn from the tap. Allow the water to stand and the air will dissipate.



- **Professional Installation Required:** Installation requires shutting water off to home, cutting home water supply pipe and using a welding torch to add piping and fittings. Specialized tools and skills are required. Not a do-it-yourself type of project.

## SECTION 2: BEFORE INSTALLATION

### INSPECTING AND HANDLING YOUR FILTRATION SYSTEM:

Inspect the equipment for shipping damage. If damaged, notify the transportation company and request a damage inspection.

Handle the filter unit with care. Damage can result if dropped or if set on sharp, uneven projections on the floor. Do not turn the filter unit upside down.

### MAKE SURE YOUR WATER HAS BEEN THOROUGHLY TESTED:

An analysis of your water should be made prior to the selection of your water conditioning equipment and filter media. Enter your water analysis results below for a permanent record.

<b>IMPORTANT NOTE</b>
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Hydrogen sulfide (H <sub>2</sub> S) must be tested for at the well site. For accuracy, the sample must be drawn with the pump RUNNING, and the test be completed within ONE minute after the sample is drawn.
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### Analysis Of Your Water

Hardness _____ gpg	Tannins (Humic Acid) _____ ppm
Iron (Fe) _____ ppm	Hydrogen Sulfide (H <sub>2</sub> S) _____ ppm
Manganese (Mn) _____ ppm	Other _____ ppm
pH _____	Other _____ ppm

### IRON (Fe)

Iron concentrations as low as 0.3 ppm (0.1 ppm under some conditions) will cause staining. The iron concentration, together with the flow rate demand and the consumption rate of the water determines the basic size filter system. The higher these factors are, the larger the required system. The 3MAPPM Series Iron Reduction Filtration System is capable of reducing the three main types of iron found in water supplies; Dissolved iron (also known as “clear water” or ferrous iron), precipitated iron (also known as “red water” or ferric iron) and bacterial iron (also known as iron bacteria). Special care must be taken when selecting a filter model if your water has a combination of high iron, very low pH and/or manganese levels above 0.2 ppm. The MAXIMUM CONCENTRATION of iron which can be treated with this system is 10 ppm or less. If your water contains higher concentrations, contact your Dealer/Installer or our Customer Care Team at 855-3M-WATER (855-369-2837).

The 3MAPPM Series Iron Reduction Filtration System is not bactericidal, i.e. it does not remove or kill “bacterial iron”. It reduces the iron and slime deposits in your plumbing line and fixtures upon which the bacteria may live, thus minimizing its effects.

### pH

The pH of water is a measurement of Hydrogen Ion concentration in water. Water with a pH of less than 7.0 is acidic, above 7.0 it is base, and a pH of 7.0 is neutral. The lower the pH value the greater the acidity, and the higher the pH value the more base. Acidic water (pH less than 7.0) is corrosive to pipes, appliances, etc. A pH of 7.0 or higher facilitates iron reduction – which is why the 3MAPPM Series Iron Reduction Filtration System is designed to increase the pH when it is less than 7.0.

The pH increasing component of the media is “sacrificial,” that is, it slowly dissolves during the process of increasing pH. The rate this occurs is proportional to the degree of the pH increase and the water consumption rate (i.e., the greater the pH increase and water consumption, the greater the sacrificial rate). Thus, when the pH is increased to 8.2 or more, as is necessary when manganese is present, the sacrificial rate is even greater. Under the most severe conditions, the MpH component of the media may have to be replenished two to four times per year. On the other hand, if the raw water pH is 7.0 or above and no manganese is present, the sacrificial rate is very slight.

### HYDROGEN SULFIDE (H<sub>2</sub>S)

Hydrogen sulfide (often referred to as “sulfur”), is easily detectable by its objectionable “rotten egg” odor. Sulfur corrodes iron, brass, copper and silver. While the 3MAPPM Iron Reduction Filtration System is not intended to be used as a sulfur filter, it is capable of reducing sulfur in concentrations of up to 2 or 3 ppm. Whenever hydrogen sulfide is present, backwashing must be performed at more frequent intervals.

### CHECK YOUR WATER PRESSURE AND PUMPING RATE:

To avoid unsatisfactory operation or equipment damage, the following system condition must be carefully checked.

### WATER PRESSURE

Low \_\_\_\_\_ psi    High \_\_\_\_\_ psi

The pumping rate of your well pump must be sufficient to BACKWASH the filter. To measure the pumping rate of your pump, follow these instructions:

1. Make certain no water is being drawn. Open spigot nearest pressure tank. When pump starts, close spigot and measure time (in seconds) to refill pressure tank (when pump shuts off). This figure represents CYCLE TIME.

2. With the pressure tank full, draw water into a container of known volume, measure the number of gallons drawn until the pump starts again. This is DRAW-DOWN. Divide this figure by CYCLE TIME and multiply the result by 60 to arrive at the PUMPING RATE in gallons per minute (gpm). To aid in your calculation, insert the data in the following formula:

$$\text{DRAW-DOWN} \frac{\text{_____}}{\text{(gals.)}} \div \text{CYCLE TIME} \frac{\text{_____}}{\text{(secs.)}} \times 60 = \text{PUMPING RATE} \frac{\text{_____}}{\text{(gpm)}}$$

EXAMPLE: CYCLE TIME is 63 secs.; DRAW-DOWN is 8 gals.; then PUMPING RATE equals: 8 gals. ÷ 63 secs. x 60 = 7.6 gpm

### IMPORTANT NOTE

The addition of other water treatment devices (such as an acid neutralizer) may reduce the flow rate at the filter drain to an inadequate level to properly backwash the filter. If you are uncertain whether your flow rate is adequate, contact your Dealer/Installer or our Customer Care Team at 855-3M-WATER (855-369-2837) BEFORE installing the 3MAPPM Series Iron Reduction Filtration System, so that corrective action, if required, may be taken.

### LOCATE WATER CONDITIONING EQUIPMENT CORRECTLY:

Select the location of your media tank with care. Various conditions which contribute to proper location are as follows:

- 1) Locate as close as possible to water supply source.
- 2) Locate as close as possible to a floor or laundry tub drain.
- 3) Locate in correct relationship to other water conditioning equipment (See Figure 1, in Section 3).
- 4) Filtration systems and softeners (if applicable) should be located in the supply line BEFORE the water heater. Temperatures above 110°F (43.3°C) damage filters and softeners and will void the factory warranty.
- 5) Do NOT install a filtration system or softener (if applicable) in a location where freezing temperatures occur. Freezing may cause permanent damage to this type of equipment and will also void the factory warranty.
- 6) Allow sufficient space around the unit for easy servicing.
- 7) If your water source is a community water supply, a public water supply, OR you wish to bypass water used for a geothermal heat pump, lawn sprinkling, out buildings or other high demand applications, the purchase of an FS1 Flow Switch is suggested. Instructions accompanying the flow switch will describe the proper installation for these types of applications.

### THE IMPORTANCE OF YOUR PRESSURE TANK:

The 3MAPPM Series Iron Reduction Filtration System will perform satisfactorily with either a captive-air (“bladder”) type pressure tank or a standard air-to-water type with an air volume control (air-relief valve).

A PROPERLY SIZED PRESSURE TANK OF EITHER STYLE WILL REQUIRE A MINIMUM PUMP CYCLE OF 60 SECONDS TO REFILL FROM THE WELL PUMP ON-TO-OFF PRESSURE SETTINGS.

### IMPORTANT NOTE

If your pressure tank (or any part of your water system) is not functioning properly, corrective action MUST be taken BEFORE installation of the 3MAPPM Series Iron Reduction Filtration System.

### FACTS TO REMEMBER WHILE PLANNING THE INSTALLATION:

### WARNING

**To reduce the risk associated with a hazardous voltage:**

- If the home electrical system requires use of the cold water system as an electrical safety ground, a jumper must be used to ensure a sufficient ground connection across the filter installation piping — refer installation to qualified personnel.
- Do not use the system if the power cord is damaged — contact qualified service personnel for repair.

If lawn sprinkling, geothermal heating/cooling or water for other devices/activities are to be treated by the filter, a larger model filter MUST be selected to accommodate the higher demands of these items. The pumping rate of the well pump must be sufficient to accommodate these items plus the backwashing requirement of the softener. Consult your Dealer/Installer or our Customer Care Team at 855-3M-WATER (855-369-2837) for alternative instructions if the pumping rate is insufficient.

Remember that the filter **INLET** is attached to the pipe that supplies water (i.e. runs to the pump) and **OUTLET** is the line that runs toward the water heater or other water treatment equipment device.

Before commencing the installation, it is advisable to study the existing piping system and to determine the size, number and type of fittings required. Typical system schematics shown in Figure 1 will be of assistance (page 3-1).

## SECTION 3: INSTALLATION

Proper installation sequence of water conditioning equipment is very important.  
Refer to the diagram following for your particular water supply.

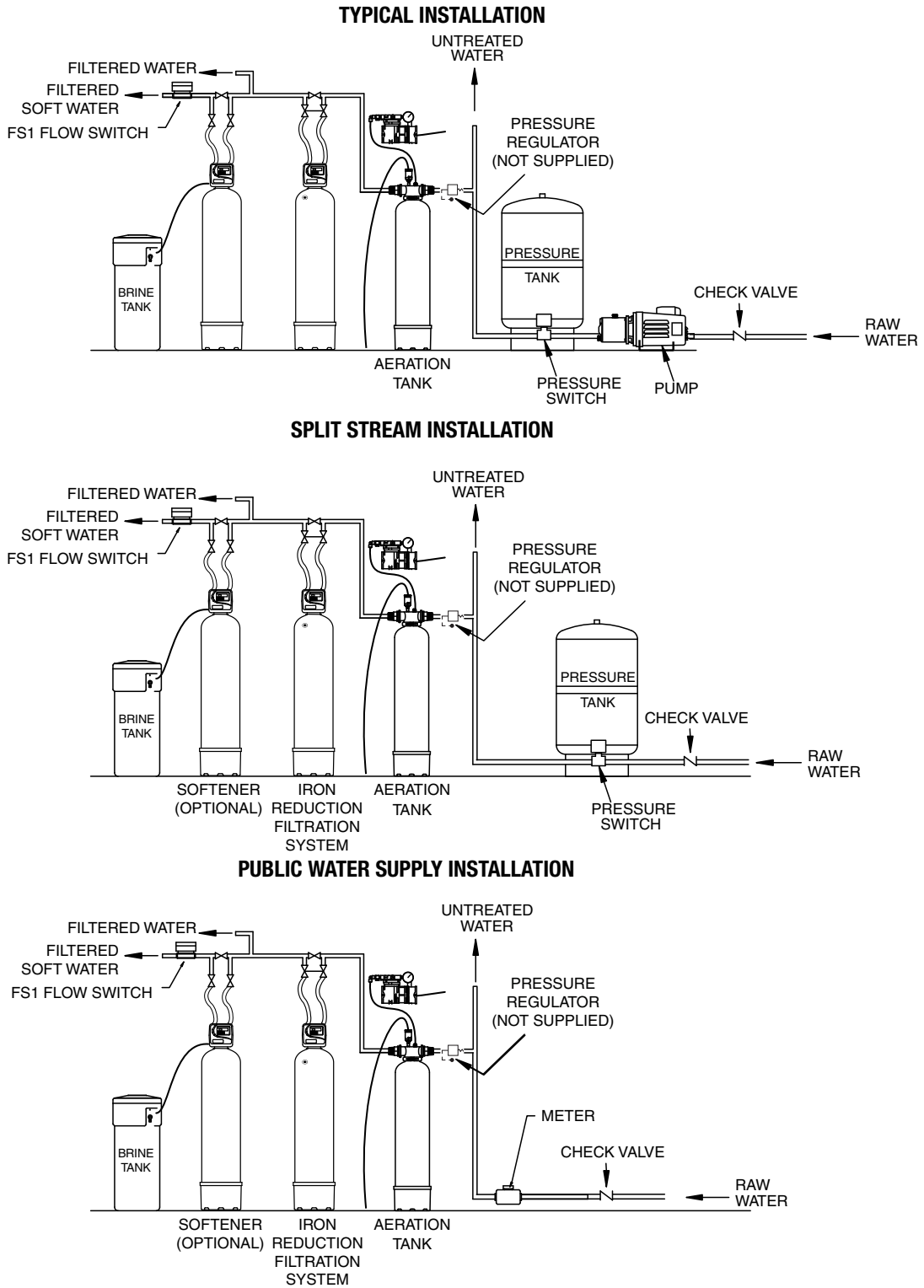


FIGURE 1

### CAUTION

**To reduce the risk associated with property damage due to plugged water lines:**

- Pay particular attention to correct orientation of control valve. Water flow should match arrow on control valve. The Inlet and Outlet of other water treatment equipment products will vary depending on the control valve brand used.

## MOUNTING & SET-UP INSTRUCTIONS FOR GAST LOA-P109-AA COMPRESSOR UNIT

Prior to using the system, some assembly and adjustments are required. Please locate these parts and ensure all items are present. These items are required to mount and set-up the GAST LOA-P109-AA Compressor assembly as well as to connect the tubing to the GAST LOA-P109-AA Compressor and aeration tank.

- GAST LOA-P109-AA Compressor/Bracket Assembly
- RETROFIT KIT
- 1/4" Polyethylene Tubing (10 feet)
- A4FE4-MG (1/4" NPT x 1/4" Quick Connect Elbow)

### IMPORTANT NOTE

This product includes a GAST® component. Refer to the GAST's website @ [www.gastmfg.com](http://www.gastmfg.com) for their instruction and operation manual for detailed instructions and safety information related to Model # LOA-P109-AA Oil-less Compressor.

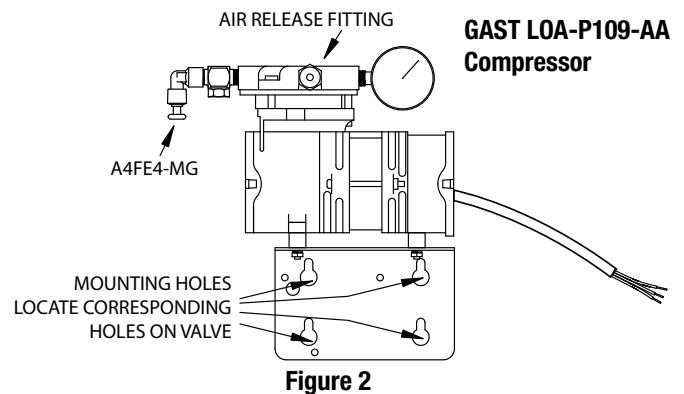
### How It Works:

When the GAST LOA-P109-AA Compressor is running, it injects air into the water which causes iron to precipitate. The precipitated iron is then filtered as it passes through the 3MAPPM Iron Reduction Filtration System. There are two ways to turn the GAST LOA-P109-AA Compressor on.

1. For Private Water Well Systems — The GAST LOA-P109-AA Compressor can be wired to either a pressure switch in the water well system or a flow switch installed in the service side of the iron reduction filtration system. The GAST LOA-P109-AA Compressor is activated on a standard well pump system by a pressure switch that senses pressure in the water line. When the preset low pressure side of the switch is met, the GAST LOA-P109-AA Compressor is turned on and will continue to run until the high pressure setting is reached, at which time the GAST LOA-P109-AA Compressor is turned off. On a flow switch application the GAST LOA-P109-AA Compressor is wired into the flow switch and is energized when water flows through the flow switch and turns on the GAST LOA-P109-AA Compressor. The GAST LOA-P109-AA Compressor will continue to run until water flow is no longer detected.
2. For Split Stream or Public Water Supply – An FS1 Flow Switch (sold separately) is installed in the service line and turns on the GAST LOA-P109-AA Compressor when water flow exceeds 0.5 gpm. See Page 3-1 for installation diagram.

### GAST LOA-P109-AA Compressor Mounting Instructions:

1. Locate the GAST LOA-P109-AA Compressor/Bracket Assembly within six (6) feet of the aeration tank.
2. Thread A4FE4-MG onto the brass check valve located on the compressor. The quick connect end of the elbow should already be plugged with a Plug00007. Keep the plug installed to set the air release fitting. Fitting should point to the floor as shown in Figure 2.
3. The mounting bracket should be mounted on a surface that will support vibration, preferably to studs or a concrete wall. The installer must choose and supply the appropriate fastener for mounting the bracket to the wall.
4. When using the FS1 Flow Switch, the power supply must be connected to a dedicated 110 VAC, minimum 15 amps, 60 Hz. Power supply. Follow NEC and/or all relevant codes for your area.
5. If the system is being serviced, insert the Plug00007 plug found in the RETROFIT KIT into the quick connect fitting on top of the air release tank head to set the air release fitting. This is the only component of the RETROFIT KIT you will use.



### Wiring Instructions:

#### ⚠ WARNING

To reduce the risk associated with hazardous voltage:

- Disconnect line circuit power before wiring the switch and compressor. Consult a licensed electrician for correct and safe connection of the flow switch and GAST LOA-P109-AA Compressor to the home electrical system.

1. For Well Systems – The GAST LOA-P109-AA Compressor can be wired to run in parallel to the well pump pressure switch. The air compressor runs on 110 VAC and has a standard 3 wire connection (black, white, and green wires). The leads of the GAST LOA-P109-AA Compressor must be made on the well pump motor contacts. All contacts must be made in accordance with NEC and local codes and standards. Use a licensed electrician to perform this task to ensure safety and correctness.
2. For Use With A Flow Switch – An FS1 Flow Switch should be installed in the service line after all water treatment equipment (e.g. 3MAPPM Iron Reduction Filtration System, 3MWS Water Softener, etc.). The FS1 plumbing connection is 1" PVC socket (solvent weld) and must be installed horizontally and the top in an upright position or it will not function correctly. Make sure the direction of water flow matches the arrows on the FS1 Flow Switch. The FS1 comes with a power cord installed, but the GAST LOA-P109-AA Compressor power cord must be connected to the flow switch in order to operate. The GAST LOA-P109-AA Compressor must be wired to run when water flow is detected in the treated water line. The electrical leads must be fed through the strain relief on the flow switch and attached to the wire leads provided on the micro switch under the cover of the flow switch. Follow the instructions provided by the manufacturer of the flow switch. The flow switched power cord must be plugged into a 110 volt, 60 hertz circuit with a minimum 15 amp rating on a non-switched electrical outlet. A licensed electrician must perform the wiring needs for this application to ensure the electrical connections are made in accordance with the NEC and local codes and standards.



## IMPORTANT NOTE

It is suggested that a licensed electrician perform the wiring needs for this application to ensure the electrical connections are made in accordance with the NEC and local codes and standards.

### FS1 Specifications:

- a. 10 Amp Max @ 110 VAC
- b. 0.5 gpm minimum actuation flow
- c. 110° F maximum temperature

### Compressor Specifications

- a. 120 VAC
- b. 1/16 HP
- c. 0.05 KW
- d. 1575 RPM (@ 60Hz)

### GAST LOA-P109-AA Compressor Set-Up:

1. Screw assembly ARVTA-1X into the 1/4" threaded hole on top of air release tank in the tank head. Attach the 3/8" polyethylene tubing to the top of the air release valve. To be able to do so remove the red cap and slip tubing over the threaded boss of the air release valve. The ARTVA-1X assembly can be found in its own box in the aeration tank shipping box. This tubing needs to be run to a waste drain to accommodate water that may be expelled during the venting cycles. It is recommended to keep the tubing as short as possible to ensure proper performance in venting air and water correctly. Ensure the air release valve is open by examining the side of the air release valve (see Figure 3). It should always remain open.

## ⚠ WARNING

### To reduce the risk of physical injury:

- Do not operate system with air release valve (ARVTA-1X) in the closed position.

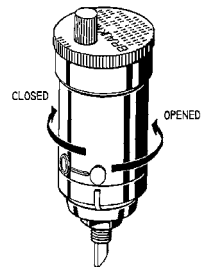


Figure 3

2. The air release fitting requires adjustment before the system is operational. Your water system operating pressure range needs to be determined to allow for adjustment of the air release valve. This can be performed by observing the pressure gauge on your pressure tank while the well pump is running. If you are on a municipal, community or constant pressure / variable speed pump observe the pressure in the water system on the water line.
3. Locate and install the MAXRETRO kit into the quick connect check valve on the air release tank prior to adjusting the air release valve mounted on the air compressor, see Figure 4. If you're replacing the compressor on an older style system with threaded nut fittings, cut the 1/4" polyethylene tubing about 2 inches above the nut. Care needs to be taken to ensure the tubing is cut square and clean. Remove the 1/4" polyethylene from the MAXRETRO kit and slide the union connector onto the 1/4" polyethylene tubing left in the threaded nut, see Figure 4. **NOTE: Relieve any pressure from the aeration tank before cutting the tubing.**
4. Connect the GAST LOA-P109-AA Compressor to either the pressure switch or flow switch; please note the compressor is rated for 110 VAC, minimum 15 amps, 60 cycles. Be sure the plug is installed in the Compressor Assembly as shown in Figure 4 during this step. Start the GAST LOA-P109-AA Compressor. by running water down stream of the pressure tank or flow switch. Open the brass air release mechanism on the side of the compressor. Control the setting by turning the adjustment nut in or out to set the operating pressure of the GAST LOA-P109-AA Compressor. The correct adjustment would be when the pressure gauge maintains a pressure of 10 to 15 pounds less than the shut off pressure of the water system. Once the adjustment is correct, lock the setting by tightening the second nut on the air release mechanism to secure the setting.
5. Once the air release mechanism is adjusted, turn off the GAST LOA-P109-AA Compressor, relieve pressure on the air release tank by opening the air release valve. Remove the plug from the quick release elbow on the air compressor and the MAXRETRO fitting on air release tank. Connect the 1/4" polyethylene tubing between the two quick connect fittings. Ensure the tubing is seated correctly into the quick connect fittings. The MAXRETRO will need to stay in place if you are replacing the compressor on an older style system. In this case, just remove the plug from the MAXRETRO kit.
6. Pressurize the water system and check for leaks, correct as needed.

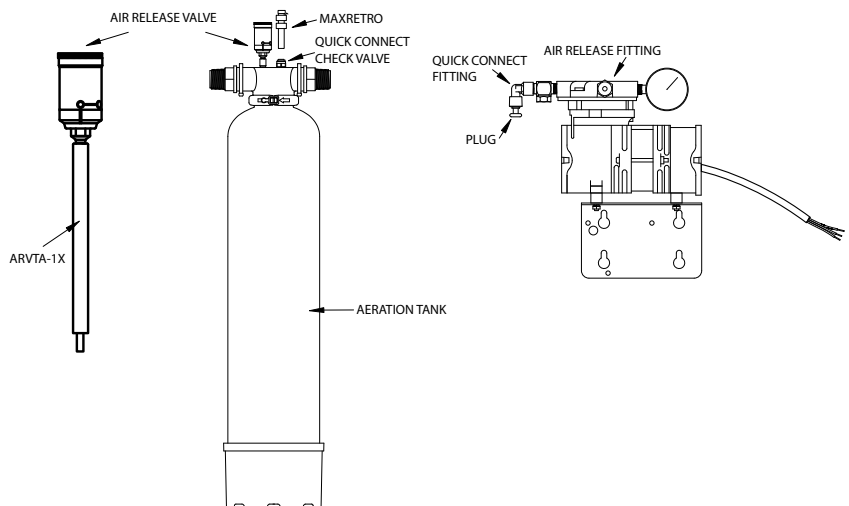


Figure 4

Please visit GAST's website @ [www.gastmfg.com](http://www.gastmfg.com) for their instruction manual and additional information

([http://www.gastmfg.com/pdf/OM/saa\\_soa\\_RP\\_OM.pdf](http://www.gastmfg.com/pdf/OM/saa_soa_RP_OM.pdf))

## SYSTEM AND PLUMBING SET-UP INSTRUCTIONS

### CAUTION

**To reduce the risk associated with property damage due to water leakage:**

- Installation must comply with existing state or local plumbing codes, even if they are contrary to our instructions.
- Do not use a torch or other high temperature sources near filter system, cartridges, plastic fittings or plastic plumbing.
- On plastic fittings, never use pipe sealant or pipe dope. Use PTFE thread tape only, pipe dope properties may deteriorate plastic.
- Take care when using pliers or pipe wrenches to tighten plastic fittings, as damage may occur if over tightening occurs.

### IMPORTANT NOTES

- Damage due to heat is not covered under the manufacturer's warranty and will void the warranty.
- The use of flexible drain lines are prohibited in some states, check with your local code officer for requirements. Distance and height affects the performance of the drain line to discharge at the proper rate to effectively backwash the filter media. The following are guidelines for drain line size installation. Do not bend the drain line too sharply if using flexible tubing. Secure the drain line over the discharge line to prevent splashing or blow out during regeneration. Do not use garden hose or vinyl tubing as a drain line as this may cause a failure to regenerate properly.

#### Step 1

Inspect and open factory sealed box to ensure all components required for installation are present. If media was ordered, verify the amount and type of filter media (ordered separately) is correct. (See Section 6, page 6-2.)

#### Step 2

Remove filtration system from shipping carton and inspect to ensure there is no damage to product from shipping. Inspect any packing for components that have been attached for shipping before discarding. If any items intended for installation are missing at this time contact your Dealer/Installer or our Customer Care Team at 855-3M-WATER (855-369-2837) to notify them of this situation. Provide the model number and serial number when contacting your Dealer/Installer or our Customer Care Team.

#### Step 3

Follow the steps to center the distributor tube and load the filter media into the media tank for successful installation of the 3MAPPM Iron Reduction Filtration System.

- a. Remove the control valve from the media tank by rotating the valve head assembly to the left (counter-clockwise) and set aside to reassemble after media is loaded into tank.
- b. Tilt media tank to a 45 degree angle until gravel shifts to the side of the tank and dimple at bottom of media tank is visible. This will allow you to place the distributor tube basket assembly in the dimple on the bottom of the media tank.
- c. Place media tank back in upright position and ensure gravel at the bottom of the media tank is level. Place red plastic cap on the distributor tube that is provided in the parts bag.
- d. Locate the filter media that will be used in the iron reduction filter and load into the media tank. Note: fill only to the labeled line on the outside of the media tank. Refer to Section 6 Specification and Operating Data, page 6-1, for the correct quantity for your filter system. Use a clean rag to wipe the opening of the media tank to remove any dust or sediment before moving to the next step.

### CAUTION

**To reduce the risk associated skin, eye, and respiratory tract irritation from gravel and filter media during installation:**

- Gravel and several types of filter media may be used in this product, depending upon the application. During installation, dust may cause irritation to skin, eyes, and respiratory tract.
- Utilize a NIOSH-approved dust filter mask, protective gloves, and appropriate eye protection when handling and pouring gravel and filter media.
- To request an MSDS relating to this product, call 203-238-8965 or go to [www.3M.com](http://www.3M.com), select country, and use the search engine to search MSDS. For emergencies, call 800-364-3577 or 651-737-6501 (24 hours).

#### Step 4

Once the filter media has been loaded, fill the media tank with water using a pail or water hose to saturate the media and expel any air out of the filtration system. Remove the centering tool from the distributor tube and the fill funnel from the opening of the mineral tank.

#### Step 5

Use silicone lubricant to lubricate the distributor tube, control valve o-ring and pilot tube o-ring. Insert the distributor tube into the pilot tube adapter and attach the valve head to the media tank by rotating the valve head assembly to the right (clockwise). Caution should be taken to prevent cross threading the valve thread with mineral tank.

#### Step 6

Locate the installation assembly packet and assemble as the enclosed instructions dictate, refer to Figure 5. Attach the bypass assembly and connection fitting to the control valve and hand-tighten only. Study the installation drawings provided (Figure 1, page 3-1) to determine the proper location of the filtration system in relation to the other components of the water system (i.e. 3MWTS water softener, or water heater, if present) and install appropriately.

#### Step 7

Shut off all water at main supply. On a PRIVATE WELL SYSTEM, turn off power to pump and drain pressure tank. Make certain pressure is relieved from complete system by opening nearest faucet to drain system. SHUT OFF FUEL SUPPLY TO HOT WATER HEATER.

- a) Cut main supply line as required to fit plumbing to the INLET and OUTLET of the pressure regulating valve (not supplied). Pressure regulating valve to be set at no greater than 50 psi. Hold nipples with a wrench while tightening. Use only thread tape on all plastic pipe threads as most pipe dope compounds can deteriorate plastics. DO NOT apply heat to any plumbing attached to the pressure regulating valve as damage may result.
- b) Cut main supply line as required to fit plumbing to the INLET and OUTLET of the AERATION TANK. Hold nipples with a wrench while tightening. Use only thread tape on all plastic pipe threads as most pipe dope compounds can deteriorate plastics. DO NOT apply heat to any plumbing attached to the AERATION TANK as damage may result. You may consider installing a 3-valve bypass.
- c) Cut main supply line as required to fit plumbing to the INLET and OUTLET of the filtration system. Hold nipples with a wrench while tightening. Use only thread tape on all plastic pipe threads as most pipe dope compounds can deteriorate plastics. DO NOT apply heat to any plumbing attached to the filtration system as damage may result.
- d) GAST LOA-P109-AA Compressor must be wired to be powered whenever the well pump runs. Suggest a qualified electrician be contacted if there is any doubt about this procedure. Voltage requirements are 110V/60Hz. Connecting improper voltage may result in damage to the GAST LOA-P109-AA Compressor. An alternate method to power the air compressor is to use a flow switch, see Page 3-2 "Wiring Instructions" on how to install and wire the flow switch (Model FS-1).
- e) Run air vent line from AERATION TANK to a drain. This is done so any entrained moisture will go to drain when the air release vents.

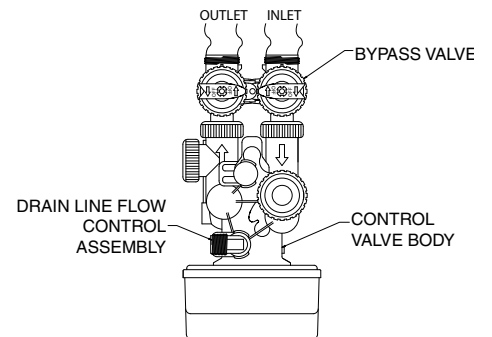


Figure 5

### CAUTION

To reduce the risk associated with property damage due to water leakage:

- Do not install system where water lines could be subjected to vacuum conditions without appropriate measures for vacuum prevention;
- **SHUT OFF FUEL OR ELECTRIC POWER SUPPLY TO WATER HEATER** after water is shut off.
- Do not apply heat to any fitting connected to Bypass or Control Valve as damage may result to internal parts or connecting adapters.

## Step 8

The drain line connection can utilize either a 3/4" NPT or a 5/8" COMPRESSION connection. To utilize the 5/8" connection use the provided nut and insert sleeve with a 5/8" OD rigid or semi-rigid material. Slide the nut over the tubing or piping first, and then insert the sleeve into the piping or tubing until flush. Finally insert piping or tubing in the drain elbow and thread the nut onto the elbow and hand tighten only. To utilize the 3/4" NPT feature for a drain line connection, remove the 5/8" nut from the elbow and provide your own connection device and piping for a drain line. Ensure the retaining clip is securely in place before moving on. The discharge end of the drain line requires an air gap to prevent a cross connection between grey water (sewage) and potable water (domestic). Refer to Figure 6 to help with the installation.

- a. 5/8" ID lengths up to 15 feet and heights lower or slightly higher than the control valve.
- b. 3/4" ID length up to 25 feet in length and up to 4 feet above the control valve.
- c. For distances higher or longer than previously stated, relocate the filter closer to the desired discharge point or consult factory for advice. Avoid overhead drain lines as it may prevent desirable performance.

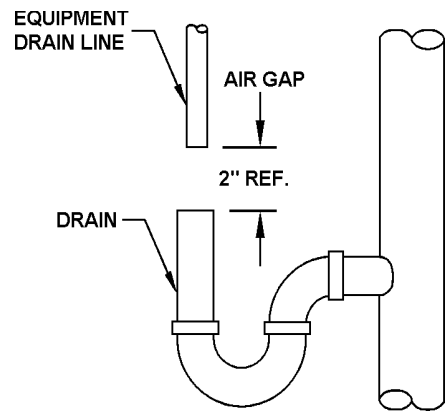


Figure 6

## Step 9

Connect the transformer to a suitable power supply that is non-switched to plug the transformer into that meets the local electrical code. The required power source is 110V 60Hz.

## Step 10

Set the time clock for the correct time of day and set the frequency for regeneration appropriately. See "HOW TO SET TIME OF DAY" on page 3-7 for setting the time of day correctly.

## Step 11

Determine proper backwashing frequency (See Section 4: Backwashing Instructions, page 4-1). To change the number of days between regenerations see "HOW TO CHANGE DAYS BETWEEN REGENERATION" on page 3-8.

## Step 12

Turn on the power supply to the well pump or open the valve in the water line to pressurize the water system. Check for leaks, correct as required. Locate the regeneration button on the control valve and initiate a manual regeneration (see "HOW TO MANUALLY INITIATE IMMEDIATE REGENERATION", shown on page 3-7), ensure the bypass valve is in the bypass position. Once the control valve stops in the first position, unplug control valve so the valve will not stage to another position to ensure proper start up and media classification. Open the INLET side of bypass 1/4 turn to allow water to run slowly to the waste drain until no air is heard in the drain line. Then slowly open the inlet side of bypass fully and let run until the waste water is clear, it should take about 10 minutes. Then open the OUTLET side of the bypass into the fully open position. During the initial backwash cycle it is normal for a small amount of "fines" to appear at the drain for proper preparation of media bed. It will subside within a few regeneration cycles and should not alarm you.

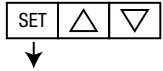
## Step 13

Plug the control valve into the 110V/60Hz power source once again and ensure the time clock is properly set for time and frequency of regeneration. The control valve will stage by itself and back to the service position.

Installation is complete and system is ready for use.

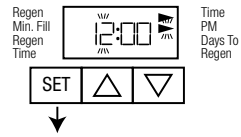
## HOW TO SET TIME OF DAY

### STEP 1



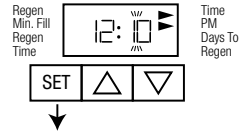
Step 1) Press SET

### STEP 2



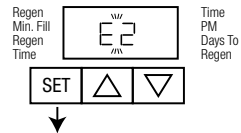
Step 2) Use ▲ and ▼ to adjust the current time hour. Time display will be 12 hour with PM indicator with 60 Hz line frequency detection on power-up. Time display will be 24 hour without the PM indicator with 50 Hz line frequency on power-up. Press SET and proceed to step 3.

### STEP 3



Step 3) Use ▲ and ▼ to adjust the current time minutes. Press SET to exit Set Time of Day.

### Power Loss

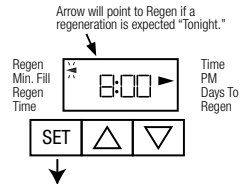


If power is lost for more than 8 hours, the current time of day will need to be reset. If the system is in the middle of regeneration upon power loss, the control will continue regeneration at the point of interruption when power is restored.

### Error Message

Contact the OEM for assistance if the display shows “E1,” “E2,” “E3” or “E4.” These messages are indications the valve did not function properly.

## HOW TO MANUALLY INITIATE IMMEDIATE REGENERATION



If a system needs to be regenerated before the next scheduled time, manual regeneration can be initiated. This may be necessary during times of heavy water usage, including house guests or heavy laundry days.

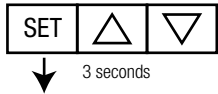
To initiate an immediate manual regeneration, press ▲ and ▼ simultaneously for three seconds. This request cannot be cancelled.

## HOW TO MANUALLY INITIATE DELAYED REGENERATION

To initiate a manual regeneration at the preset delay time, press ▲ and ▼ simultaneously. Release. An arrow will point to REGEN if regeneration is expected “tonight.” To cancel, press ▲ and ▼ simultaneously. Release.

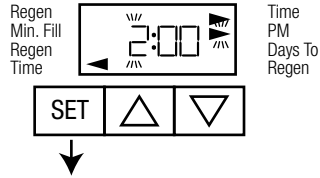
## TO SET TIME OF REGENERATION AND DAYS BETWEEN REGENERATION

### STEP 1



Follow these steps for initial set-up of or to make adjustments to the time of regeneration and/or the days between regenerations. The number of days between regenerations may need to be varied based on usage and water conditions.

### STEP 2



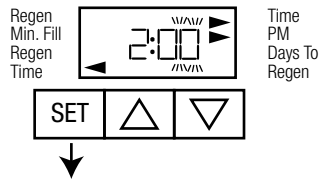
#### STEP 1

Press "SET" and ▲ for approximately 3 seconds. (This step will not appear if the 7-day clock option is selected.)

#### STEP 2

Set Regeneration Time Hour. Set the time for regeneration to start using the ▲ and ▼ arrows. Press SET to go to the next step.

### STEP 3



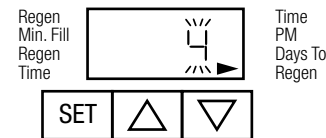
#### STEP 3

Set Regeneration Time Minutes using the ▲ and ▼ arrows. Press SET to go to the next step.

#### STEP 4

Set Number of Days between regeneration cycles using the ▲ and ▼ arrows.

### STEP 4



#### STEP 5

Press SET to complete and return to normal operation.

## HOW TO CHANGE THE REGENERATION PROGRAM SETTINGS

**STEP 1** - Press and hold SET HOUR and ▲ buttons simultaneously until the display begins flashing (usually about three (3) seconds).

**STEP 2** - Press and hold SET HOUR and ▲ buttons simultaneously until the display begins flashing (usually about three (3) seconds).

**STEP 3** - Press the SET HOUR to change the display to P8 or P9.

**STEP 4** - Press the SET HOUR button five (5) times to return to the display mode. The time of day should be in the display.

## Control Valve Function and Cycles of Operation

The AC adapter comes with a 15 foot power cord that is designed for use with the control valve. **The AC adapter is for dry location use only.** If the power goes out, only the time of day needs to be reset. All other settings are permanently stored in the non-volatile memory.

The following chart shows the time for the backwash and rapid rinse cycles for the three available programming options.

**Regeneration Cycles and Times for Different Programs**

Program Number	Length of Cycle Times (Minutes)	
	BACKWASH (C1)	RAPID RINSE (C4)
P7	6	4
P8	10	6
P9	14	8

**Note:** The 3MAPPM Iron Reduction Filtration System is factory preset to program number P7, changing the setting to P8 or P9 is rarely needed. But if a change is desired, please refer to “How to Change the Regeneration Program Settings” on page 3-8.

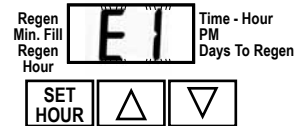
### HOW TO SET TIMER CONTROL

**Power Loss**

If the power goes out, current time of day will need to be reset. If the power goes out while the system is regenerating, the cycle picks up where it was when the power went out.

**Error Message**

If “E1” “E2” or “E3” appears on the display, contact your Dealer/Installer or our Customer Care Team at 855-3M-WATER (855-369-2837). These are error codes and will need to be resolved before the control valve will function. These codes indicate that the control valve did not function properly.

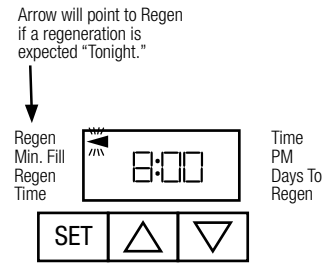


### USER DISPLAYS

**General Operation**

When operating, the system will either display the current time of day or the days remaining until the next regeneration. Use ▲ or ▼ to toggle between the two displays. If the remaining days is at 1, the system will regenerate at the preset time.

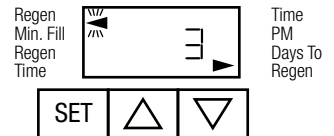
An arrow will appear pointing to REGEN when the system calls for regeneration.



**Regeneration Mode**

When the system is regenerating, untreated water will be used. Therefore, systems are typically set to regenerate during times of low water usage—such as when the household is asleep.

During regeneration, the arrow will point to REGEN and the display will change to Regeneration Cycle Display, indicating the time remaining. The system automatically runs through the steps of regeneration; upon completion, treated water is ready for use.



<b>CAUTION</b>
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<b>To reduce the risk associated with property damage due to water leakage:</b>
---

- |  |
|--|
| <ul style="list-style-type: none"><li>• <b>Read and follow</b> Use Instructions before installation and use of this system.</li><li>• <b>Installation must comply</b> with existing state or local plumbing codes.</li></ul> |
|--|

<b>IMPORTANT NOTES</b>
------------------------

- |  |
|--|
| <ul style="list-style-type: none"><li>• Failure to follow instructions may result in leakage and will void warranty.</li></ul> |
|--|

**Special Service Instructions:**

Under normal circumstances removal of valve should never be required. However, if it must be removed, it can be done by rotating the valve head assembly to the left (counter-clockwise). Pressure should be relieved before attempting any disassembly. Upon reassembly, all o-rings should be lubricated with silicone grease.



# BYPASS VALVE OPERATION

Figure 7

NORMAL OPERATION

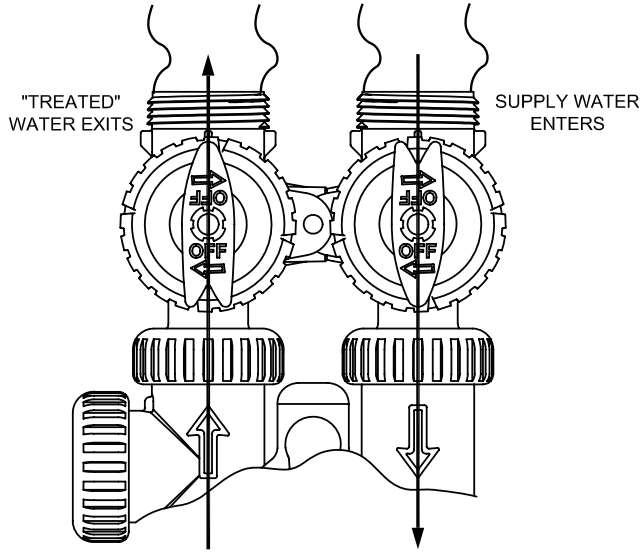


Figure 8

BYPASS OPERATION

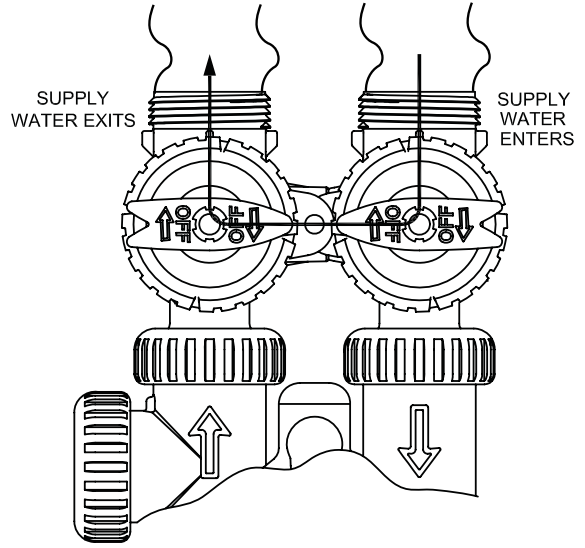


Figure 9

DIAGNOSTIC MODE

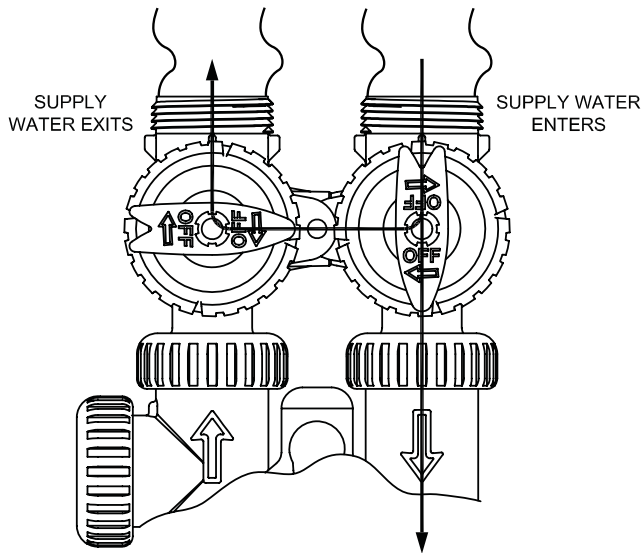
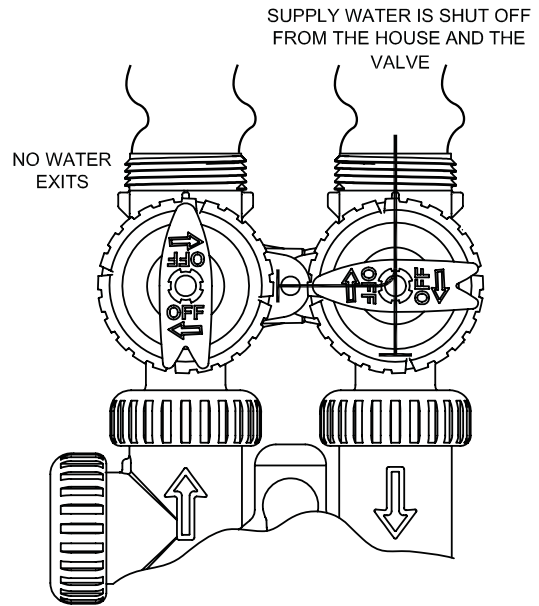


Figure 10

SHUT OFF MODE



## Section 4: BACKWASHING INSTRUCTIONS

Periodic BACKWASHING of the 3MAPP Series Iron Reduction Filtration System bed is required to flush out the entrapped iron that has accumulated. This procedure is performed automatically at 1:00 a.m. for a period of approximately ten (10) minutes, and will not interfere with a softener regeneration which is usually set for 2:00 a.m.

### TO SET BACKWASH FREQUENCY FOR NORMAL HOUSEHOLD APPLICATIONS:

To determine and set BACKWASH FREQUENCY, follow these instructions:

- 1) Select BACKWASHING FREQUENCY SCHEDULE corresponding to your model (please see next page).
- 2) Locate box intersected by number of persons in your family and iron concentration of water (if iron concentration is between two numbers in SCHEDULE, use higher number.)
- 3) Number in box represents number of times, in 12 days, timer should be set to regenerate. Refer to HOW TO SET TIME CONTROL, page 3-9 to set timer.

EXAMPLE: You have model 3MAPP150, 4 in family and 8 ppm iron. Refer to SCHEDULE for model 3MAPP150 and locate box intersected by 4 in family and 8 ppm iron. The figure "2" in box indicates a BACKWASH frequency of two times per 12 days (if a "1", "3", "4", "6", or "12" were in box, frequencies of once, three, four, six and twelve times per twelve days, respectively, would be indicated.)

### IMPORTANT NOTE

The BACKWASHING FREQUENCY SCHEDULES are based on average water consumption rates and are merely guides. They are NOT intended to be used if water used by outside spigots, a swimming pool, geothermal heat pump, or other high water usage devices or activities are to be treated by the 3MAPP Series Iron Reduction Filtration System. If your application includes any of these, and you have already determined your model 3MAPP Series Iron Reduction Filtration System is capable of handling the flow rates involved, refer to the next paragraph for instructions on setting BACKWASH FREQUENCY.

### TO SET BACKWASH FREQUENCY FOR NON-STANDARD HOUSEHOLD APPLICATIONS:

If your filter is to be used for reasons covered above, the BACKWASHING FREQUENCY SCHEDULE is not applicable, determine the backwashing frequency as follows:

- 1) Estimate DAILY IRON REDUCTION by multiplying iron concentration by estimated daily water consumption (use 75 gals. per person per day for normal household applications):

$$\begin{array}{rcccl} \text{Est. Daily Water Usage} & \text{_____} & \times & \text{Iron Concentration} & \text{_____} & = & \text{Daily Iron Reduction} & \text{_____} \\ & \text{(gals.)} & & \text{(ppm)} & & & \text{(ppm - gals.)} & \end{array}$$

- 2) Calculate BACKWASH FREQUENCY by inserting DAILY IRON REDUCTION from above into following formula (refer to specifications for IRON REDUCTION CAPACITY of your model):

$$\begin{array}{rcccl} \text{Iron Reduction Capacity of Your Model} & \text{_____} & \div & \text{Daily Iron Reduction} & \text{_____} & = & \text{Backwash Frequency} & \text{_____} \\ & \text{(ppm-gals)} & & \text{(ppm-gals.)} & & & \text{(days)} & \end{array}$$

The resulting number of days between backwashings should be converted to the nearest MORE FREQUENT obtainable timer setting (i.e., a calculated frequency of 3.7 days should be converted to a 3 day interval, and a 9.2 frequency to a 6 day interval). It is not possible, however, to set the timer less frequently than once every twelve (12) days.

If your water contains a high iron concentration, manganese, tannins or hydrogen sulfide it may be advisable to increase the backwash frequency up to daily, if necessary. It should be noted, however, that increasing the frequency or duration of backwashing WILL NOT overcome an insufficient pumping rate.

## BACKWASHING FREQUENCY SCHEDULES

### MODEL: 3MAPPM150

Persons in Family	IRON CONTENT (PPM)				
	2	4	6	8	10
1	1	1	1	1	1
2	1	1	1	1	1
3	1	1	1	1	2
4	1	1	1	2	2
5	1	1	1	2	2
6	1	1	2	2	3

### MODEL: 3MAPPM200

Persons in Family	IRON CONTENT (PPM)				
	2	4	6	8	10
1	1	1	1	1	1
2	1	1	1	1	1
3	1	1	1	1	1
4	1	1	1	1	1
5	1	1	1	2	2
6	1	1	2	2	2
7	1	1	2	2	2
8	1	1	2	2	2
9	1	2	2	3	3
10	1	2	2	3	3

## Section 5: TROUBLESHOOTING - CONTROL VALVE

Problem	Possible Cause	Solution
1. Timer does not display time of day	a. AC adapter unplugged	a. Connect power
	b. No electric power at outlet	b. Repair outlet or use working outlet
	c. Damaged AC adapter	c. Replace AC adapter
	d. Damaged PC board	d. Replace PC board
2. Timer does not display correct time of day	a. Switched outlet	a. Use an unswitched outlet
	b. Time of day not set correctly	b. Reset time of day
3. Control Valve regeneration at wrong time of day	a. Power outages	a. Reset control valve to correct time of day
	b. Time of day not set correctly	b. Reset to correct time of day
	c. Time of regeneration incorrect	c. Reset regeneration time
4. Error followed by a code number Error code E1- Unable to recognize start of regeneration  Error code E2- Unexpected stall  Error code E3- Motor ran too long. Timed out trying to reach next cycle position  If other codes appear contact factory	a. Control valve has just been serviced	a. Press SET HOUR and DOWN for 3 seconds or unplug power source jack (black wire) from the circuit board and plug back in to reset control valve
	b. Foreign matter is lodged in control valve	b. Check piston and spacer stack assembly for foreign matter
	c. High drive forces on piston	c. Replace piston(s) and spacer stack assembly
	d. Control valve piston not in home position	d. Press SET HOUR and DOWN for 3 seconds or unplug power source jack (black wire) from the circuit board and plug back in to reset control valve.
	e. Motor not inserted fully to engage pinion, motor wires broken or disconnected, motor damaged	e. Check motor and wiring. Replace motor if necessary
	f. Drive gear label dirty or damaged, missing or broken gear	f. Replace or clean drive gear
	g. Drive bracket incorrectly aligned to drive bracket	g. Reseat drive bracket properly
	h. PC board incorrectly aligned to drive bracket	h. Replace PC board
	i. PC board incorrectly aligned to drive bracket	i. Ensure PC board is correctly snapped on to drive bracket
5. Control valve stalled in regeneration	a. Motor not operating	a. Replace motor
	b. No electric power at outlet	b. Repair outlet or use working outlet
	c. Damaged AC adapter	c. Replace AC adapter
	d. Damaged PC board	d. Replace PC board
	e. Broken drive gear or drive cap assembly	e. Replace drive gear or drive cap assembly
	f. Broken piston retainer	f. Replace piston retainer
	g. Broken main or regenerant piston	g. Replace main or regenerant piston
6. Control valve does not regenerate automatically when UP and DOWN buttons are depressed and held.	a. AC adapter unplugged	a. Connect AC adapter
	b. No electric power at outlet	b. Repair outlet or use working outlet
	c. Broken drive gear or drive cap assembly	c. Replace drive gear or drive cap assembly
	d. Damaged PC board	d. Replace PC board
7. Control valve does not regenerate automatically, but does when UP and DOWN buttons are depressed and held	a. Damaged PC board	a. Replace PC board
	b. Set-up error	b. Check control valve set-up procedure

## Section 5: TROUBLESHOOTING - GENERAL

PROBLEM		POSSIBLE CAUSE		SOLUTION	
1)	Water CLEAR when drawn, turns RED upon standing (Stain producing).	A.	Insufficient air injection.	A.	Check for proper compressor operation.
		B.	Bypass open or leaking.	B.	Close bypass valve and/or repair as necessary.
		C.	Filter bed overloaded with precipitated iron due to insufficient backwash, or failure to backwash due to malfunction of control timer or unplugged control valve power cord.	C.	Upon correction of problem (increase backwash frequency if problem determined to be insufficient frequency), manually backwash until backwash water starts to clear (in more severe iron fouling cases, filter bed may need chemical cleaning- contact Customer Care Team at 855-3M-WATER (855-369-2837).
		D.	Presence of manganese or tannins.	D.	Recheck water analysis.
		E.	Flow rate excessive for model.	E.	Reread section 2, FACTS TO REMEMBER WHILE PLANNING YOUR INSTALLATION, page 2-1.
		F.	pH of treated water too low (should be 7.0 or higher; with manganese, pH must be 8.2).	F.	Replenish MpH component in media (contact Customer Care Team at 855-3M-WATER (855-369-2837).
2)	Water RED when drawn from tap.	A.	Filter bed overloaded with precipitated iron due to insufficient backwash flow rate.	A1.	Recheck well pumping rate and repair or replace as required.
				A2.	Check for obstructions or kink in drain line.
				A3.	Check for improper drain line flow controller (see specs.) Upon correction of this problem, if manually backwashing does not clear bed of iron, filter bed may need chemical cleaning- contact Customer Care Team at 855-3M-WATER (855-369-2837).
		B.	Filter bed overloaded with precipitated iron due to insufficient backwash, or failure to backwash due to malfunction of control timer or unplugged control valve power cord.	B.	Upon correction of problem (increase backwash frequency if problem determined to be insufficient frequency), manually backwash until backwash water starts to clear (in more severe iron fouling cases, filter bed may need chemical cleaning — contact Customer Care Team at 855-3M-WATER (855-369-2837).
C.	Aeration tank installed too far from media tank causing iron to precipitate before media tank.	C.	Relocate to a location closer to filter inlet.		
3)	Excessive pressure loss through filter.	A.	Filter bed overloaded with precipitated iron.	A.	Refer to Section 2 above.
		B.	Control bypass valve not fully open.	B.	Open as necessary.
		C.	Sand, silt or mud collecting in filter bed.	C.	Check well for these conditions.
		D.	Filter bed not properly “classified.”	D.	Manually backwash to reclassify.
		E.	“Cementing” or “channeling” of filter media.	E.	Prod (stir) filter bed to break up hardened layer. Increase backwash frequency to prevent reoccurrence.
4)	“Milky” or “bubbly” water (appears to contain small bubbles which do not quickly dissipate).	A.	Excess gases in water (Carbon Dioxide, Hydrogen Sulfide, Methane).	A.	May require draining of water system or installation of air relief control on the fillport cap of valve adapter base, (contact Customer Care Team at 855-3M-WATER (855-369-2837).

## Section 6: SPECIFICATION & OPERATING DATA

ITEM	3MAPPM150	3MAPPM200
Filter Media Volume, (Note 1) Cu ft. (Cu meters)	1.5 (0.04)	2 (0.06)
Gravel Underbed, Lbs. (kg)	13 (5.9)	18 (8.2)
Nominal Capacity, (ppm-gal)	45,000	60,000
Flow Rate gpm, (Note 2)		
Service – gpm (lpm)	7 (26.5)	9 (34)
Backwash – gpm (lpm)	5.3 (20)	7.5 (28.4)
Pressure Loss at Service Flow Rate – psi (kPa)	5 (34.47)	5 (34.47)
Backwash Rate, (Note 3), gpm (lpm)	5.3 (20.1)	7.5 (28.4)
Service Pipe Size, Inches (NPT)	1	1
Aeration Tank Diameter x Height, Inch (cm)	10 x 54 (26 x 137)	10 x 54 (26 x 137)
Media tank Diameter x Height, Inch (cm)	10 x 54 (26 x 137)	12 x 54 (31 x 137)
Minimum Space Required,		
Width Inch (cm)	30 (72.6)	32 (81.3)
Depth w/Bypass Inch (cm)	16 (41)	16 (41)
Height Inch (cm)	63 (160)	63 (160)
Approximate Ship Weight; Lbs. (kg)	186 (84.4)	257 (116.6)

Maximum Operating Temperature 110°F (43.3°C)

Electrical requirements 110V/60Hz

Operating Pressure 20-50 psi.

Specifications subject to change without notice.

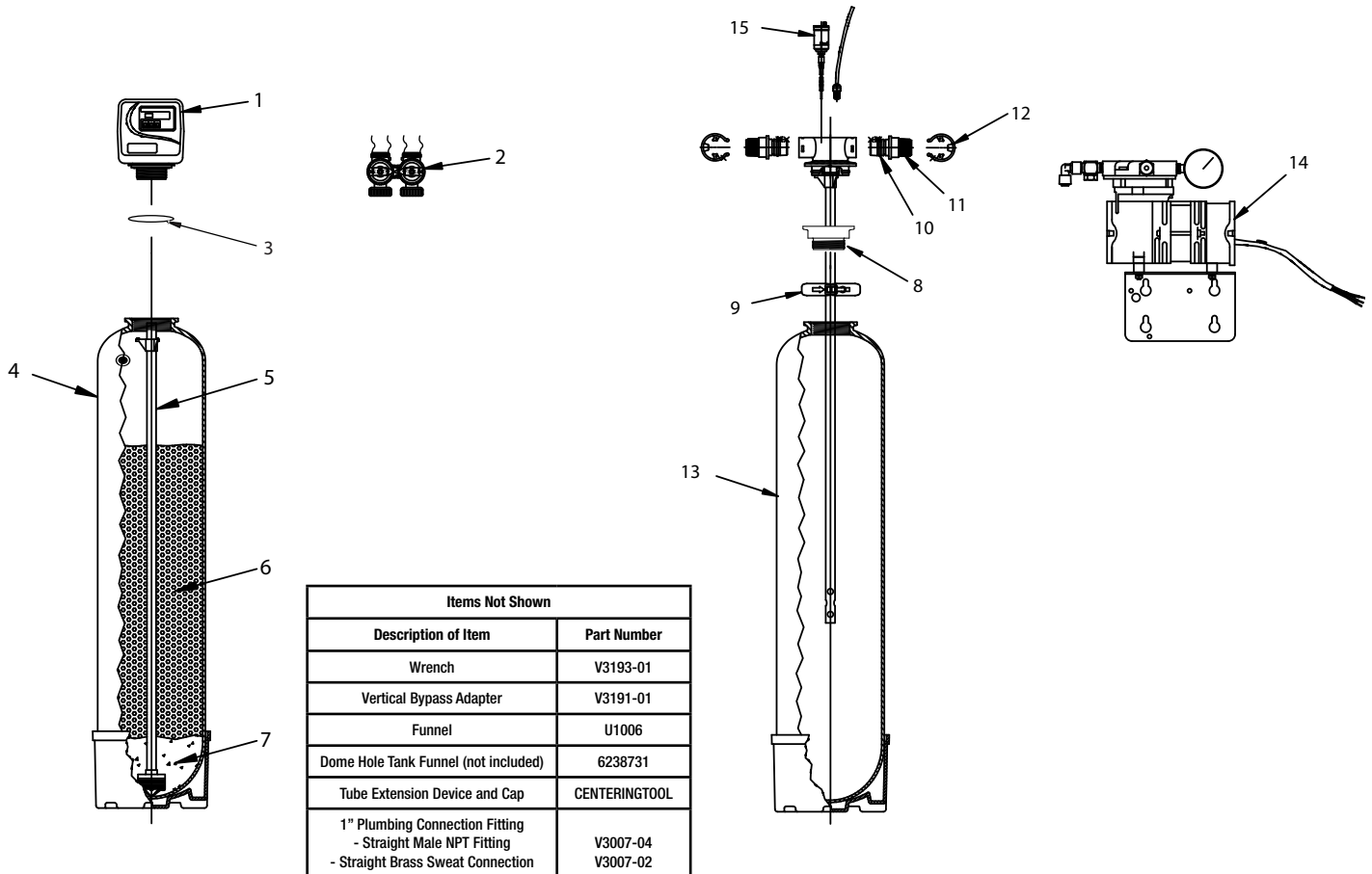
### NOTES:

- 1) Replenishment of pH adjusting component of media may be required periodically, the frequency of which is dependent on raw water pH, manganese concentration and water consumption rate. Consult Customer Care Team at 855-3M-WATER (855-369-2837) for more information.
- 2) For satisfactory performance, indicated durations should not be exceeded. Flow rates specified are adequate for normal residential applications. Do not use Service or Peak flow rates when sizing applications if treated water is to supply a geothermal heat pump, swimming pool, etc. (contact Customer Care Team at 855-3M-WATER (855-369-2837) before selecting equipment).
- 3) For system to operate properly, pumping rate of well pump MUST be sufficient to backwash unit at rate specified.

## Section 6: SPECIFICATIONS & OPERATING DATA

### (COMPONENTS PARTS LIST)

Ref No.	Description	3MAPPM150	3MAPPM200
1	Control Valve Complete w/Cover less Bypass	W217530-003-3M	W217750-003-3M
2	Bypass Valve	V3006	V3006
3	O-ring (Included with Item #1)	V3180	V3180
4	Dome Hole Media Tank w/ Base	6238601-1054	6238601-1252
5	Distributor Tube	6236437	6236437
6	Filter Media Standard Models (S) Manganese Models (M)	MC-050P (3) MC-050MP (3)	MC-050P (4) MC-050MP (4)
7	Gravel Underbed	QC-15P	QC-18P
8	Threaded Tank Adapter	FA45RX	FA45RX
9	Clamp Assembly	FC45XX	FC45XX
10	O-ring	ORG-214	ORG-214
11	Nipple Kit, 1" (Incl. 2 ea. Ref 10 & 12)	PKNPL100	PKNPL100
12	Quick Release Clip	QRC20	QRC20
13	Aeration Tank w/Base	6236002-1054	6236002-1054
14	Compressor (GAST LOA-P109-AA) & Bracket Assy.	MAX-COMPRSR	MAX-COMPRSR
15	Air Release	ARVTA-1X	ARVTA-1X



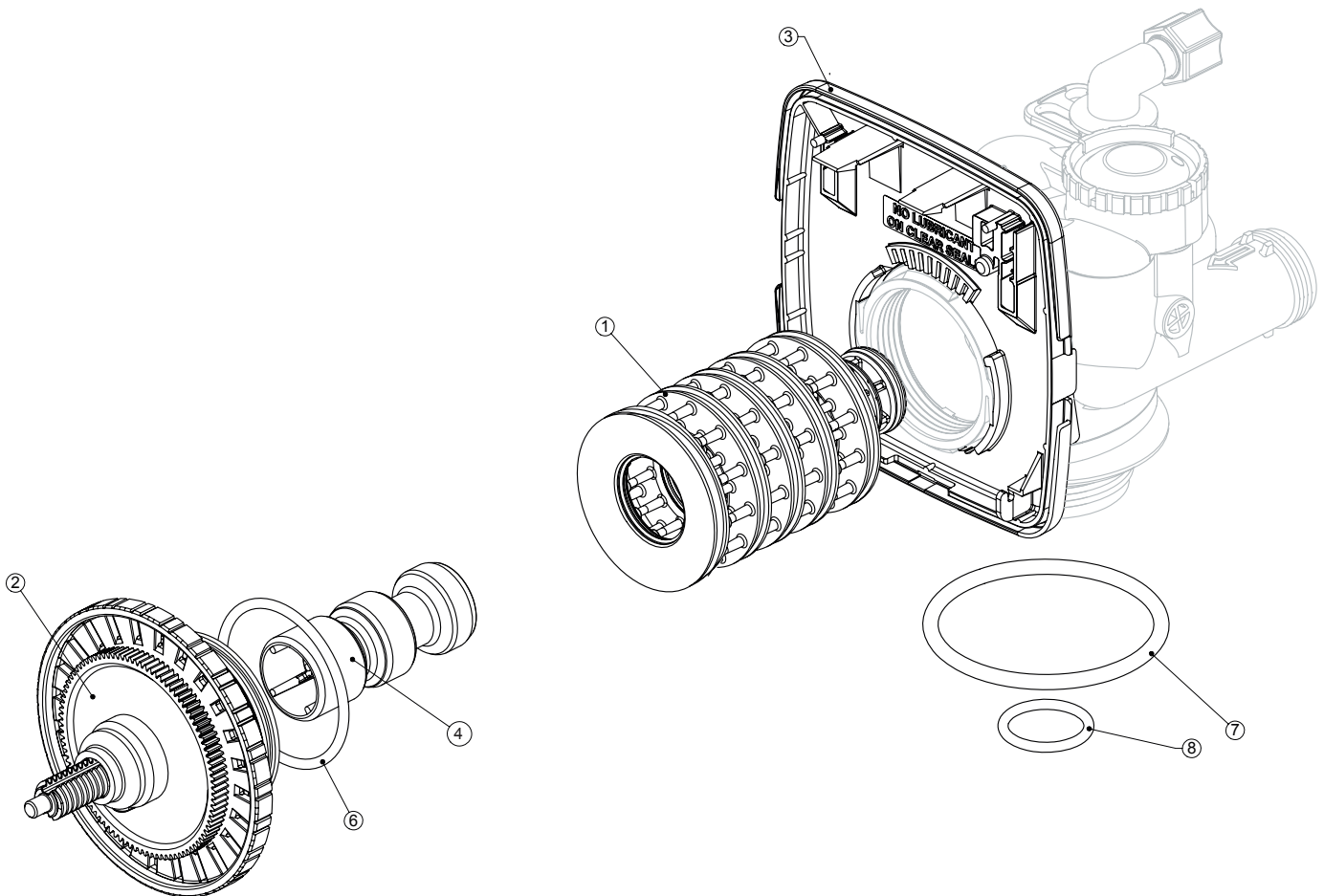
\* see assembly drawings for individual components.

## Section 6: SPECIFICATIONS & OPERATING DATA

### (COMPONENTS ASSEMBLIES)

#### Iron Reduction Filtration System ASSEMBLIES AND COMPONENTS DRIVE CAP ASSEMBLY, DOWNFLOW PISTON, AND SPACE STACK ASSEMBLIES

Reference No.	Part No.	Description	Quantity
1	V3005	Spacer Stack Assembly	1
2	V3004	Drive Cap Assembly	1
3	V3178	Drive Back Plate	1
4	V3001	Piston Downflow Assembly	1
6	V3135	O-ring 228	1
7	V3180	O-ring 337	1
8	V3105	O-ring 215 Pilot Tube	1
NOT SHOWN	V3001	Downflow body Assembly	1

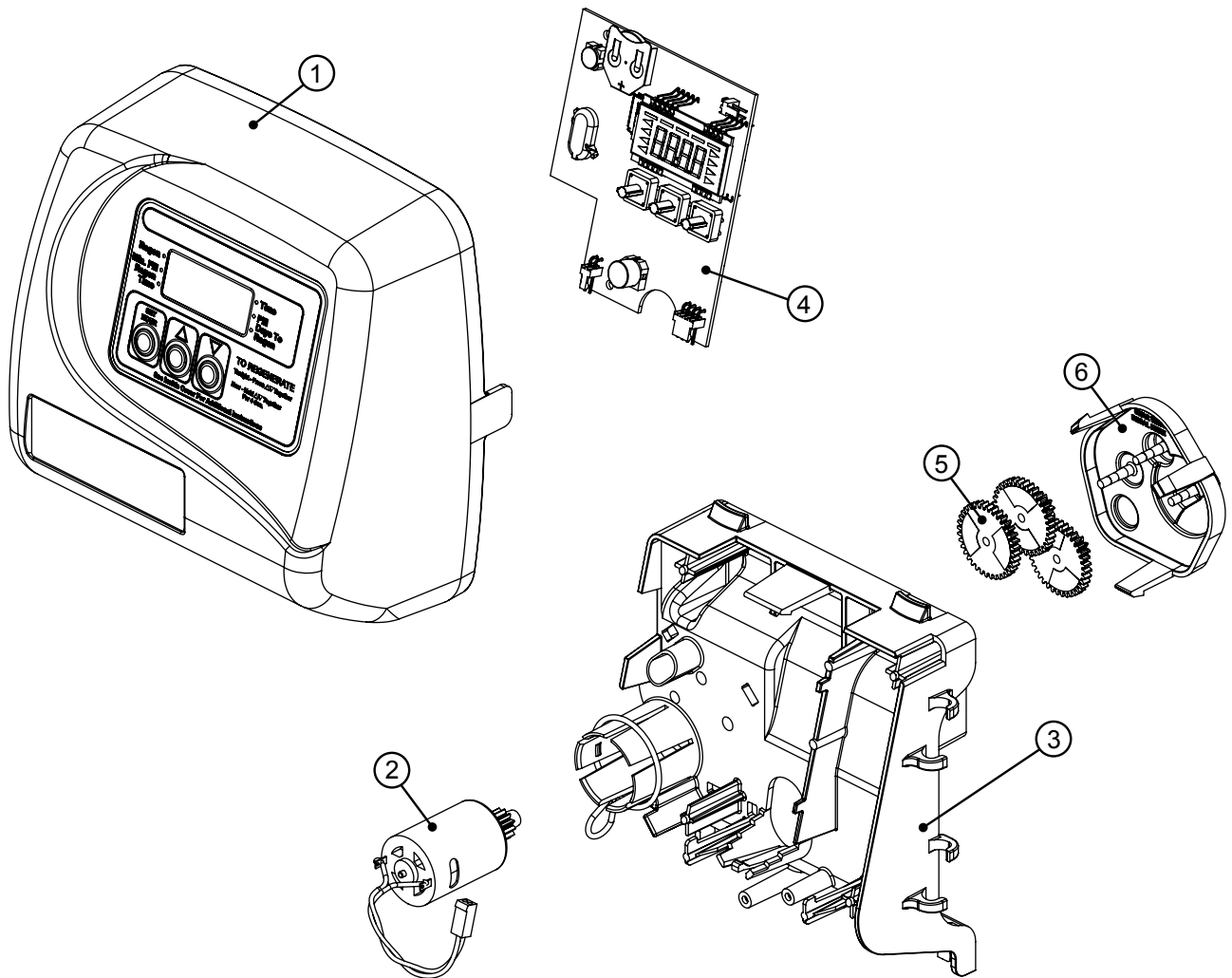




**Section 6: SPECIFICATIONS & OPERATING DATA  
(FRONT COVER AND DRIVE ASSEMBLY)**

Reference No.	Part No.	Description	Quantity
1	V3175TC-01	Time Clock Front Cover Assembly	1
2	V3107-01	Motor	1
3	V3106-01	Drive Bracket & Spring Clip	1
4	V3108TC	Time Clock PC Board	1
5	V3110	Drive Gear 12 x 36	1
6	V3109	Time Clock Cover	1
	V3002TC	Time Clock Drive Assembly	1
NOT SHOWN	V3186	AC Adapter 110V - 12V	1
NOT SHOWN	V3175WC-A	Weather Cover, Almond	1
NOT SHOWN	V3176WC-W	Weather Cover, White	1

Drawing number parts 2 through 6 may be purchased as a complete assembly, part V3202.



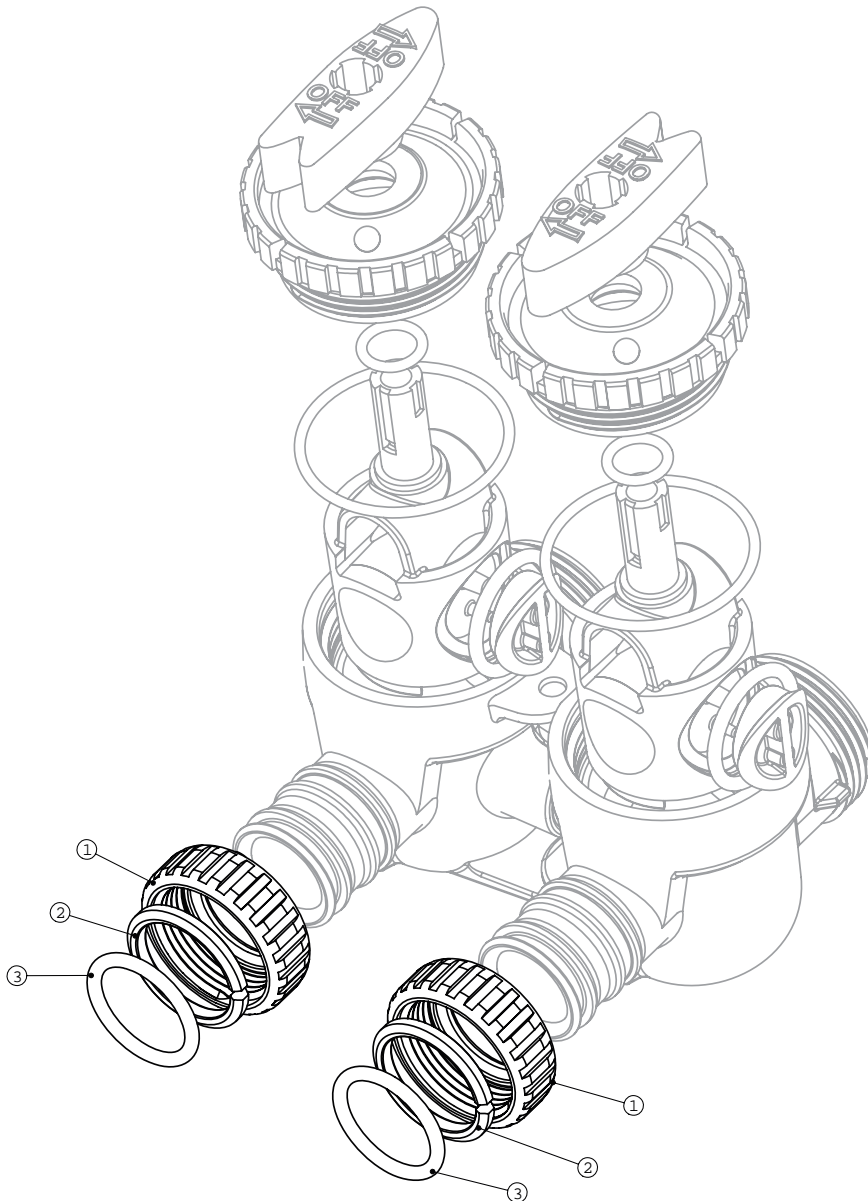
## Section 6: SPECIFICATIONS & OPERATING DATA

### (QUICK CONNECT BYPASS)

#### Part Number V3006

Reference No.	Part No.	Description	Quantity
1	V3151	Nut 1" Quick Connect	2
2	V3150	Split Ring	2
3	V3105	O-ring	2

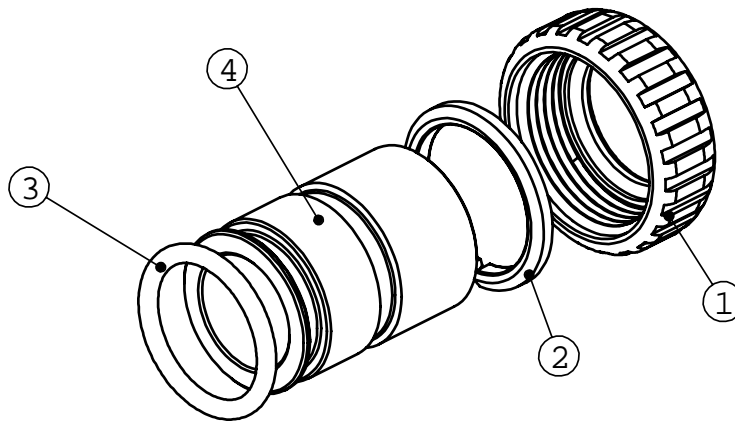
V3151	1" Quick Connect Nut	2
V3150	Split Ring	2
V3105	O-ring 215	2
V3191	Vertical Bypass Adapter (Not Shown)	1



**Section 6: SPECIFICATIONS & OPERATING DATA  
(INSTALLATION FITTING AND ASSEMBLIES)**

**Quick Connect Assemblies  
Part # V3007-02  
1" Copper Brass Sweat Adapter**

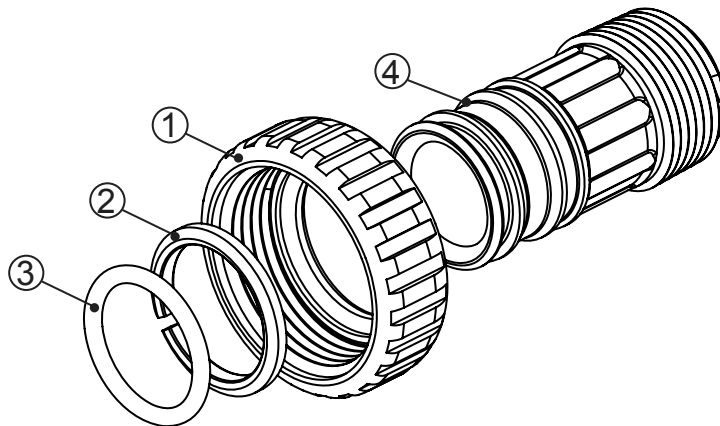
Reference No.	Part No.	Description: 1" Brass Sweat Assembly	Quantity
1	V3151	1" Quick Connect Nut	2
2	V3150	1" Quick Connect Split Ring	2
3	V3105	1" Quick Connect O-Ring 215	2
4	V3188	1" Quick Connect Brass Sweat Assembly	2



**Part # V3007-04**

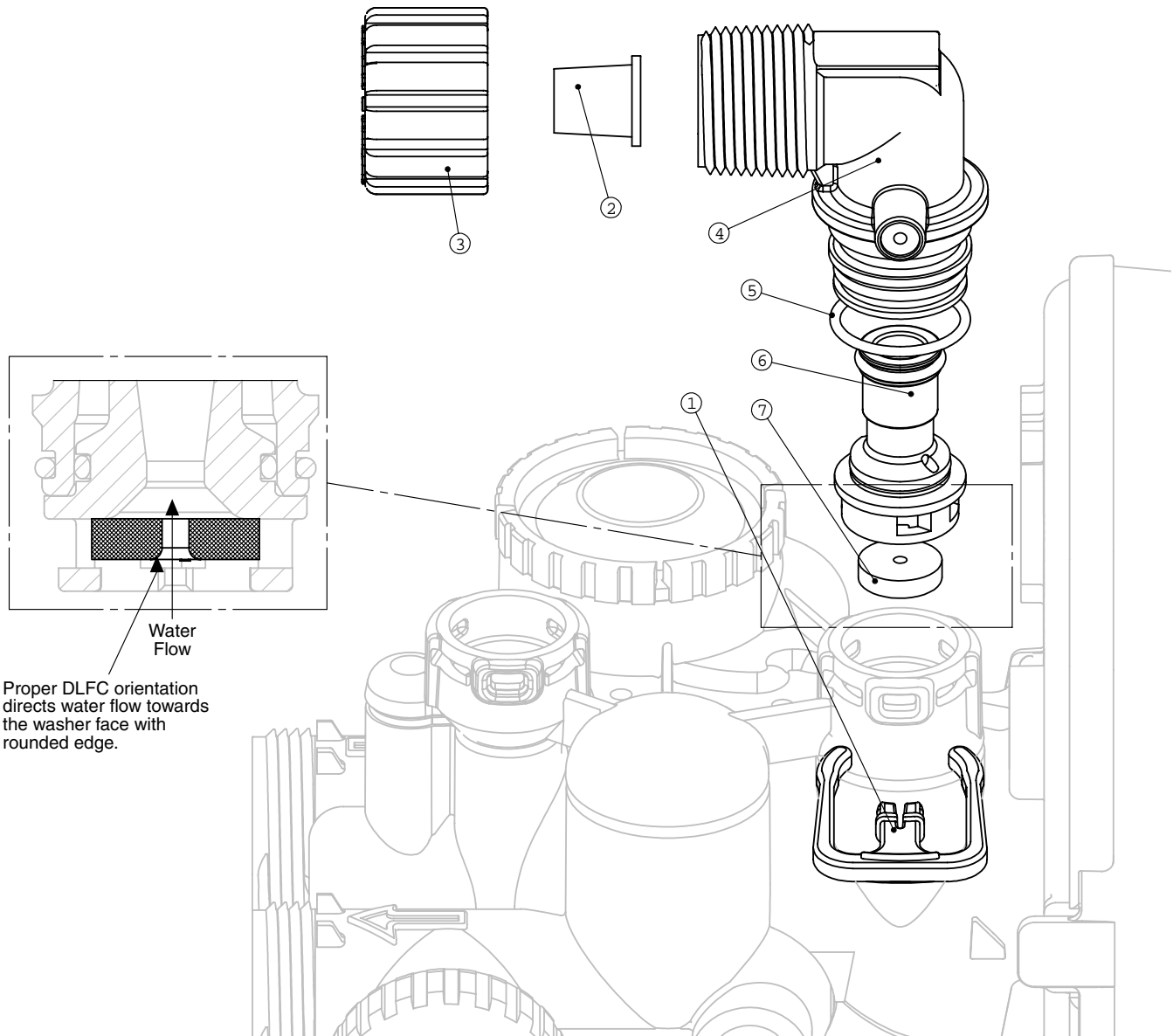
**1" Plastic Male NPT Assembly**

Reference No.	Part No.	Description	Quantity
1	V3151	1" Quick Connect Nut	2
2	V3150	1" Quick Connect Ring	2
3	V3105	1" Quick Connect O-Ring 215	2
4	V3164	1" NPT Quick Connect Plastic Male Assembly	2



**Section 6: SPECIFICATIONS & OPERATING DATA**  
**(INSTALLATION FITTING AND ASSEMBLIES CONTINUED)**

Reference No.	Part No.	Description	Quantity
1	H4615	Elbow Locking Clip	1
2	PKP10T58S-BLK	5/8" Insert Sleeve	1
3	V3192	Quick Connect 3/4" Drain Elbow Nut	1
4	V3158-01	Quick Connect 3/4" Drain Elbow	1
5	V3163	O-ring 019	1
6	V3159-01	Drain Line Flow Control Retainer Assembly	1
7	V3162-053	5.3 gpm Drain Line Flow Control Button	1
7	V3162-075	7.5 gpm Drain Line Flow Control Button	1
7	V-3262-100	10.0 GPM Drain Line Flow Control Button	1



## Section 7: MAINTENANCE

### Plumbing System Clean-Up

For your new system to operate properly, you may need to clean the entire plumbing system of the precipitated iron that has collected in it or iron “bleed” (staining) will continue to be a problem. The plumbing system includes all water treatment equipment (such as water softeners), water heaters, toilets, and dishwashers. Please refer to the appropriate owner’s manual for instructions.

### General Maintenance

To ensure optimal performance of the 3MAPPM Residential Iron Reduction System, you should check the water quality and verify the level of the filter media every three (3) months. It will be necessary to perform maintenance on your filtration system in order to ensure continued performance. This is due to low pH, high manganese and/or the sacrificial nature of the filter media. The severity of your pH or the amount of water used will determine how often the filtration system will need to be serviced. To correct this condition, it will be necessary to add pH Plus to the filter bed. To correct this condition, it will be necessary to add pH Plus to the filter bed, which can be purchased as a single unit or in a case of 6. Either of these items can be purchased through your Dealer/Installer or our Customer Care Team at 855-3M-WATER (855-369-2837) . pH Plus is a pH boosting material that replenishes the same material that was dissolved into your water to make iron and manganese reduction possible.

3M Purification Inc. recommends that you test your treated water pH once every three (3) months. When Iron is the only problem, a water pH needs to be 7.2 higher. When manganese and iron are present, the treated water pH needs to 8.2 or higher. The levels can be checked on location with the use of an inexpensive pH test kit that can be purchased locally or from 3M Purification. Our part number is “17N”. When the pH falls below the recommended level and iron or manganese is bleeding through into the finished water, it is time to add the pH Plus component to the filtration system. The amount of material to add to a filtration system is as follows.

#### Standard bed filters

1- 3 ½ pound container of pH Plus for each cubic foot of filter material

Bed Type	FILTER MODELS (NUMBER OF CONTAINERS TO ADD)	
	Standard Filter Media	3MAPPM150 (1 ½)

### Step By Step Procedure To Add Iron Reduction Replacement Media (pH Plus) To Your Iron Reduction System.

- 1) Turn the inlet and outlet knobs of the bypass valve located on the back side of the control valve. See Figure 5, page 3-5 in Section 3 for proper orientation.
- 2) Manually initiate a backwash cycle to relieve water pressure from the inside of the filtration system.
- 3) Remove the dome hole cap by rotating the cap to the left (counter clockwise) for access to the media tank.
- 4) Using a 1/2” diameter flexible tubing, siphon about 12” of water from the media tank to allow for adding the pH Plus.
- 5) Using the optional dome hole funnel (part # 6238731), pour the recommended amount of pH Plus into the filter media and add water back to filter to expel any air pockets in the media tank.
- 6) Remove funnel and clean the threads of the mineral tank dome hole to ensure fines or media are not trapped in them. Replace the dome hole cap in media tank by rotating the cap to the right (clockwise).
- 7) Slowly open the inlet side of the bypass and pressurize the filter, check for leaks, correct if necessary.
- 8) Manually stage the control to backwash and clean the filter media of any fines that would be present until clear. Allow the control to complete regeneration cycle completely and return to service. Refer to “HOW TO MANUALLY INITIATE IMMEDIATE REGENERATION”, page 3-7.
- 9) Slowly open the outlet side of the bypass and pressurize the dwelling.

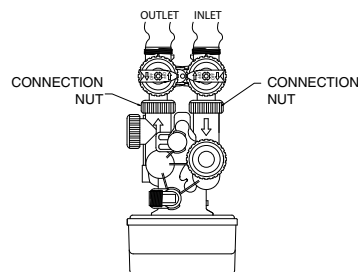


Figure 11

## 3MAPPM Aeration Tank Maintenance (MAXAPRT)

The following components that make up the “MAXAPRT” aeration tank will require maintenance from time to time.

**Air Release Valve (AR1).** This is the air release device that controls the amount of air that is retained in the aeration tank. We recommend cleaning this air release valve at least once every six (6) months to help prevent plugging of the dip tube. To perform this task:

1. Close the air release valve by turning the upper body so the dot on the lower side of the body lines up with the line on the brass base.
2. While holding the body, grasp the serrated top and turn counter clockwise. Completely remove the top from the body.
3. Next slowly open the upper body of the air release valve to allow water and air to be discharged out the top of the upper body. Slowly turn the upper body toward the raised dot to allow full flow to clear the dip tube of iron and possibly bio mass.
4. After about a minute of allowing air and water to be purged, close the upper body to the closed position and replace the cap by turning clockwise.
5. Then open the upper body again to allow air to be release externally as needed by turning the upper body so the circle lines up with the line on the brass base of the AR1 (Figure 11).

### Air Release Tank Check Valve

The ¼” poly tube that runs from the air compressor to the aeration tank is connected to a check valve to prevent water from migrating back to the air compressor. Over a period of time, rust or iron can build up and cause the check valve to stick open allowing for water to migrate into the poly tubing causing problems with the air compressor. To prevent this from occurring we recommend changing the check valve once a year. To change out the check valve part number MAX-6: (Figure 12)

1. Shut off the water to the water treatment system and depressurize the water treatment system by opening a faucet down stream.
2. Using a tubing removal tool, depress the dark grey ferrule on top of the aeration tank and pull straight up on the tubing to remove it from the fitting.
3. Using a crescent wrench or similar tool, remove the existing check valve and discard.
4. Replace with a new check valve that has had the threads wrapped with thread tape and screw into the aeration tank. Screw hand tight into the vessel by hand and then an additional 1 & ½ turns. Do not over tighten as damage to the housing is possible.
5. Take the ¼” poly tubing used earlier and push into the new check valve until it stops and then push again to ensure it is seated properly and forms a water tight seal.
6. Turn back on the water supply allow the system to pressurize and check for leaks.

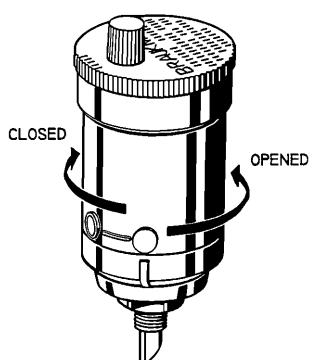


Figure 12

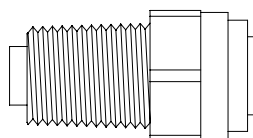


Figure 13

## Section 8: LIMITED WARRANTY

**Limited Warranty:** 3M Purification Inc. warrants this Product will be free from defects in material and manufacture for the following periods from the date of purchase:

- Ten (10) year on the filter tank
- Five (5) years on the valve body
- Five (5) years on the resins and media
- Five (5) years on the electronics

This warranty does not cover failures resulting from abuse, misuse, alteration or damage not caused by 3M Purification Inc. or failure to follow installation and use instructions.

**3M PURIFICATION INC. MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOMER OR USAGE OF TRADE.** If the Product fails to satisfy this Limited Warranty during the warranty period, 3M Purification Inc. will replace the Product or refund your Product purchase price. This warranty does not cover labor. **The remedy stated in this paragraph is Customer's sole remedy and 3M Purification's exclusive obligation.**

This warranty gives you specific legal rights, and you may have other rights which may vary from state to state, or country to country. For any warranty questions, please call 855-3M-WATER (855-369-2837) or mail your request to: Warranty Claims, 3M Purification Inc., 400 Research Parkway, Meriden, CT 06450. Proof of purchase (original sales receipt) must accompany the warranty claim, along with a complete description of the Product, model number and alleged defect.

**Limitation of Liability:** 3M Purification Inc. will not be liable for any loss or damage arising from this 3M product, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability. Some states and countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

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