

ProMate-6 / Iron Curtain-2.0 Demand Aeration Manual



U.S. Patent No. 7,156,995, 7,491,321 & 7,638,063

Owner's Manual

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Congratulations on your purchase of one of the finest water treatment systems available today – the Iron Curtain System. This patented, non-chemical filter system, will remove iron, manganese and/or hydrogen sulfide from your water supply when properly applied.

This owner's manual is designed to assist owners and installers with the operation, maintenance, and installation of your new iron removal system. It is our sincere hope that this manual is clear, concise, and helpful to both owner and installer. We have included detailed instructions of general operating conditions, pre-installation, installation, start-up, and timer settings.

Questions? Should you have any questions regarding the installation, operation or servicing of this system, please **contact the dealer you purchased this system from**. Your dealer will be familiar with your particular situation, your water conditions, etc. and should be able to address your concerns promptly and efficiently.

INSTALLATION DATA

Date of Installation _____

Filter Model Number _____

Aeration Model Number _____

Address of Installation _____

Installed By _____

Raw Water Test: Iron _____ Manganese _____ pH _____ Hydrogen Sulfide _____
 TDS _____ Iron Bacteria _____ yes _____ no Tannins _____
 Hardness _____ Alkalinity _____

Automatic Filter Regeneration: Every _____ Days

Frequency of Air Recharge: Every _____ 500 Gallons

Continuous Water Supply Flow Rate @ 30 PSI (While the pump is running) _____ Gallons Per Minute (gpm)

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IRON CURTAIN 2.0

Iron Filtration System

Aeration/precipitation/multi-media filtration for:

1. Iron Reduction/Removal
2. Manganese Reduction/Removal
3. Hydrogen Sulfide Reduction/Removal

Principle of Operation

The Iron Curtain System uses a **three step process of oxidation, precipitation, and mechanical filtration** for the reduction/removal of iron, manganese, and hydrogen sulfide. The process of how the Iron Curtain System does each one of these separate procedures is the key to the successful results this product has obtained in the market place. **There are two main components that make up the Iron Curtain System.** They are:

1. Iron Curtain 2.0 Aeration Assembly
2. Iron Curtain Multi-Media Depth Filter

1 The first step in any oxidizing process is to bring the raw water into intimate contact with a strong oxidant. This will begin to convert the dissolved element such as iron or manganese to a physical particle or nonsoluble precipitate. A strong, inexpensive, environmentally-safe oxidant is oxygen, which makes up about 21% of ambient air. To do this, the Iron Curtain System sprays water through a regulated head of air in the aeration tank.

2 The second step in this three step process is to provide adequate reaction or contact time for the precipitation reaction to go to completion. This allows time for the iron and/or manganese particles to become large enough to filter out. The aeration tank with the Iron Curtain System allows for several minutes of contact time at the rated service flows, compared to only seconds on other systems.

It should be noted that this reaction time will also be affected by temperature; the warmer the water the faster the reaction. A low pH can slow the oxidation reaction of the iron. This reaction time may also be affected by the presence of organic material (such as tannins). **If tannins are present, field tests have shown that they will not be removed and will also hinder the ability of this system to effectively remove iron, manganese, and/or hydrogen sulfide. Installation of this system on water supplies with more than 0.5 ppm of tannins will void warranty.**

3 The third and final step is filtration for the removal of the precipitates from the water. A WQA Water Filtration Study Guide states:

"The ideal filter bed would be one with large grains at the top to prevent the formation of a surface cake and to provide large pores for coarse particles and small grains at the bottom to entrap smaller particles. This allows the entire depth of the bed to be used as a filter. This also allows for longer filter runs and faster flow rates. Unfortunately, such an ideal bed, when consisting of a single media is not possible, the way to solve this problem is to use layers of media."

The advantages of a multi-media bed are:

1. Longer runs between backwash times.
2. Caking of the bed and breakthrough turbidity are virtually eliminated.
3. Much higher service flow rates per square foot.
4. Higher degree of clarity because of the heavier, finer filter media in the bottom.

The standard Iron Curtain System uses five layers of filter media. The top layer is made up of large, lighter weight particles. The second layer contains a slightly heavier media. The third layer contains a much heavier media, smaller in size than the one above. The fourth layer contains an even heavier media. The fifth layer is a special support bed to retain filter media so it does not pass through the distribution system, and allows an even distributed flow of backwash water.

Operation of Aeration System

The Iron Curtain System introduces air into the aeration tank and bleeds off the old head of air automatically. A relay controls the air recharge cycle and how frequently it occurs. The relay turns on the air pump, opening the drain port and the top air recharge port of the aeration tank. The air pump runs for a pre-set amount of time, replenishing the head of air and discharging excess water and/or air to drain.

Advantages Over Other Systems

1. The original system was tested and validated by WQA.
2. Uses no chemicals or salt.
3. Eliminates the need for air injectors, venturis, or micronizers that can plug with iron.
4. No floats or air volume controls are used to regulate air volume in aeration tank which "foul" from iron.
5. Two-tank system consisting of a pressurized aeration tank and multi-media depth filter.
6. 110V aeration pump to recharge aeration tank.
7. "Piggy-back" plug allows control valve to be plugged into same outlet.
8. Can be used on shared wells, municipal water supplies, or with buried pressure tanks without additional equipment.
9. Higher service flow rates.
10. Better filtration results.
11. U.S. Patents #B1 5,096,596 and 7,156,995.
12. Variable settings on air recharge that is independent of backwash frequency.
13. Can reduce both dissolved and particulate iron.

Operating Conditions

The original Iron Curtain System has been validated by the WQA under their S-200 Filter Standard for the reduction/removal of iron, manganese, and/or hydrogen sulfide. The concentration limits listed below reflect the maximum individual limit that each contaminant was tested for separately without any interference of other contaminants in the influent water.

In reality, these contaminants may be present in combination which may limit the filter's ability to remove these contaminants in higher concentrations. In some cases, individual sellers of this equipment have had success removing higher concentrations of contaminants—iron, for example—above the limitations we have listed. If you are considering the installation of this system for the reduction/removal of iron, manganese and/or hydrogen sulfide levels that are above operating conditions listed below, we recommend that you consult your dealer for proper application. Installation of this system under these circumstances may void part(s) and/or all of the system warranty.

pH — The pH level of the influent water must be 7.0 or higher for iron oxidation reaction to proceed per the engineering specifications.*

Iron — This system is rated for a maximum of 10 ppm of ferrous (clear water) and/or ferric (red water) iron.*

Iron Bacteria — If iron bacteria are present; more frequent service may result, life of the Iron Curtain system may be limited and the system may be unable to properly remove iron. **By properly controlling the iron bacteria with chlorine or other approved methods for bacterial reduction, the Iron Curtain System will function properly. One option to control iron bacteria within the Iron Curtain is chlorine injection during the regeneration cycle. In some instances, continuous chlorination of the water supply may be needed.**

Hydrogen Sulfide — Sometimes referred to as "rotten egg" odor. This system is rated for a maximum of 10 ppm hydrogen sulfide. Hydrogen sulfide levels vary depending on barometric pressure.*

Manganese — Limit 2.0 ppm; amounts present over 2.0 ppm may gradually prevent iron removal. Note: For optimum manganese reduction, pH should be greater than 8.5.*

Organic Matter (Tannins) — The presence of organic matter such as tannins will prevent the oxidation process of converting the dissolved element, such as iron or manganese, to a nonsoluble precipitate or solid substance. In other words, organics can tie up the iron preventing filtration. **The presence of organics such as tannins above 0.5 ppm voids any claims for this system to perform as stated above. In some applications, tannin levels below 0.5 ppm or the presence of other organics may hinder the operation of this system.***

Chlorine — The presence of chlorine in the raw water supply ahead of this system should be limited to a maximum of 1.0 ppm residual and 0.5 ppm or less when fed continuously.

Total Dissolved Solids (TDS) — While TDS does not directly affect iron removal, it is a good indicator of potential interference. Most waters have TDS less than 500 and generally present no problems to iron reduction. If any ion becomes excessive, it may cause failure of iron removal. **A TDS more than 750 ppm voids any claims for this system to perform as stated above.***

Pre-Installation Check List

Water Pressure: A minimum of 30 psi at a predetermined continuous flow rate is required to backwash the filter properly, with a maximum of 70 psi to be used.*

Actual Influent Flow Rate: (Water available from well pump, service inlet, etc.) The actual flow rate must exceed the backwash rate for the model of filter selected at a minimum of 30 psi for the entire length of the backwash cycle. See actual backwash rates in the Specifications section on page 6.

Electrical Requirements for Filter Control: A continuous 110 volts is required to cycle the controls and aeration pump. Make certain the electrical supply is always on and cannot be turned off with another switch.

Existing Plumbing: The condition of the existing plumbing should be free from lime and iron build-up. Piping that is heavily built-up with lime and/or iron should be replaced.

Equipment Location: See Figure 1, on page 7.

Location of Aeration and Filter Tank: See Figure 1 on page 7. These two tanks should be installed after the pressure tank and as close to each other as practical. If you want to filter outside hosebibs, be sure the filter system is properly sized to handle the flow rates required for extended periods of time, in addition to the normal household demand.

Drain Lines: All filter system drain lines must be a **minimum of 3/4"** or equal to the size of the drain line connection at the control valve **or larger**. Avoid overhead drain lines when possible. If used, overhead drain lines are not to exceed a height of five feet above the control valve and should be no more than fifty feet in length.

Check Valve: On applications where there is a non-filtered demand for water such as joint wells (where the filter system is only installed in one of two or more homes), outside hosebibs, farms with outbuildings, yard hydrants, etc. a spring loaded check valve is provided and must be installed ahead of the aeration tank. See Figure 1, on page 7. Install the check valve in a vertical upflow position with a minimum 6" water column above the check valve. This prevents air from escaping past the check valve. If the check valve is installed in a horizontal position, and there is a simultaneous demand for both non-filtered and filtered water, the air head in the aeration tank may escape backwards past the check valve into the non-filtered water line.

By-Pass Valves: Always provide for a bypass on the filter system. It is recommended that a bypass be placed on both the aeration tank and the filter tank.

Filtered Water: Normally, filtered water is furnished to all household lines; however, outside faucets are typically left on raw water. If filtered water is provided to outside faucets, the filter system must be sized accordingly.

Caution: The water pressure is not to exceed 70 p.s.i.; water temperature is not to exceed 110° F; filter system cannot be subject to freezing conditions; filter system cannot be subject to a negative pressure or vacuum. On installations where there is the possibility of a negative pressure or vacuum, a vacuum breaker or check valve must be installed at the inlet of the conditioner. For example, if the water service is interrupted due to a water pipe break, well pump being serviced, etc., a back siphon could occur causing a vacuum or negative pressure on the filtration equipment.

***For application parameters outside the specified operation conditions or additional information regarding the listed items, contact your dealer.**

Installation Instructions

Your new Iron Curtain™ model IC-2.0 allows for simple installation and start up. Installation diagrams are provided to assist you. Use of these diagrams and the following procedures will ensure that the system is properly installed.

1. **Follow all state and local plumbing and electrical codes!**
2. The inlet check valve must be installed in the upflow position on the raw water supply feeding the aeration tank. (See figure 1 page 7 for proper check valve installation procedures)
3. When installing an Iron Curtain Filter system it is common to provide filtered water to some fixtures such as the kitchen cold faucet. This is typically done as a matter of personal preference. In rare occasions it has been noted that the customer may experience some air in the filtered water line on the morning after regeneration. It has proven to be beneficial to plumb the line for the filtered-only water fixture in a downward direction before the inlet to the softener (12 inches recommended), then make a reverse turn and go upward toward the fixture. Understanding that air always rises to the highest point in a water system, and it cannot naturally flow downward. (Figure 1, page 7)
4. The raw water supply from the outlet of the check valve must be connected to the down-flow inlet connection on

the aeration tank. **Refer to the stickers marked inlet/outlet for proper connections.** A factory by-pass valve is available and should be installed on the aeration tank assembly. Leave the aeration tank on by-pass at this time.

5. The outlet from the aeration tank is then connected to the inlet of the filter tank. A factory by-pass valve is available and should be installed on the filter tank assembly.
6. Connect the outlet of the filter system to the water system lines you are filtering.
7. The IC-2.0 aeration head assembly has a 3/8" drain connection that must be run to a drain. This can tee into the drain line of the filter or to a drain independent of the filter drain. Drain line emits surges of excess air from aeration tank and must be secured. Tubing has been supplied.
8. There is a 1/4" tube size vent port off of the solenoid valve which is vented to the atmosphere. This will normally expel very little moisture unless an internal seal fails within the valve body. **This vent should be run to a drain to prevent any water damage to the surrounding area, should the solenoid fail. This must drain downward to an open atmospheric drain separate from the filter drain.**
9. Recommend 1" diameter pipe between aeration tank and filter tank.

Demand Aeration Iron Curtain 2.0 Start-up Instructions

READ COMPLETELY PRIOR TO STARTING SYSTEM

For start-up instructions with chemical feed, see pages 25 and 26

DO NOT OPEN FILTER BYPASS UNTIL INSTRUCTED TO DO SO!

Wire aeration cable to ProMate6 control, (black wire to RLY 1 and red wire to V+, install jumper wire between RLY 1 & RLY 2). Plug power connection to PC board and plug unit into 120V outlet, unit will cycle to service mode.

Must install bypass on each tank
Do not backwash in first 24 hours

Complete all plumbing connections; inlet, outlet, drain line and connect 3/8" line at back of aeration assembly and run to drain (ok to connect to filter drain line).

1. Verify both tanks are bypassed.
2. Flush cold water piping to nearest faucet until air gone and water is clear.
3. Slowly open inlet valve on **AERATION TANK ONLY** to fully open position, slowly open aeration tank outlet.
4. **Leave filter in bypass.**

5. Push & hold REGEN button; this will initiate an air recharge cycle, filter automatically advances to Backwash when air recharge complete, push REGEN button to advance to Rinse position.
6. **Slowly open filter inlet**, unplug power from board.
7. Rinse until clear and **close inlet to filter; wait until water stops running to drain.**
8. Plug power back into PC board, unit will cycle to service.
9. Open filter inlet and outlet.
10. Push SET CLOCK button and use UP/DOWN arrows to set time of day.

For application specific gallon setting, see page 6 of manual.

Failure to follow proper start-up may result in equipment malfunction not covered by warranty.

Aeration Control Center

Your new IC-2.0 Aeration Control is factory pre-set to cycle the air compressor every 500 gallons or approximately once every 24 hours and during filter regeneration. If chem feed option is used, only one means of initiating air recharge will be available, see page 25-26 for wiring and programming. The air pump will begin to run and will automatically shut off and not affect the functioning of the Iron Curtain.

Iron Curtain Filter Control

Your Iron Curtain Filter is factory preset to backwash every third day. Adjust as necessary but never backwash less often than every three days. See filter control owners manual for details.

Regeneration Frequency

Your Iron Curtain Filter System contains a special filter media mixture which allows it to filter iron longer than standard filters between backwash regenerations. However, it is our recommendation to leave factory settings as is, unless you wish to backwash more frequently. You will have to backwash more frequently if you have higher amounts of iron, iron bacteria, hydrogen sulfide, and/or manganese present in your water supply. You will also have to regenerate more frequently if you notice iron bleed through before the end of the normal service run.

For manual air recharge, push REGEN button until display changes.

Backwash Frequency

Iron Applications

0.3 - 3.0 ppm Iron - Every 3rd Day
3.0 - 6.0 ppm Iron - Every Other Day
6.0 - 10.0 ppm Iron - Every Day
10+ ppm Iron - Consult Factory

Air Recharge Frequency

Recommended duration of pump run time is 10 minutes, and is factory set to that duration. (Settings Based on Average Pressure (50psi) and <500 Gallons Daily Use).

Iron Applications

0.3 - 3.0 ppm Iron - Every 500 Gallons
3.0 - 6.0 ppm Iron - Every 500 Gallons
6.0 - 10.0 ppm Iron - Every 250 Gallons
10+ ppm Iron - Consult Factory

Hydrogen Sulfide Applications

Hydrogen Sulfide (H₂S) consumes 7 times the amount of oxygen to oxidize than iron does. Therefore, for Hydrogen Sulfide Applications, we use the following guideline;

0 - 4 ppm H₂S - Every 250 Gallons
4 - 8 ppm H₂S - Every 200 Gallons
8 - 10 ppm H₂S - Every 100 Gallons

Specifications

Models	Filter & Aeration Tank Size	Media Cu. Ft	(1) Inlet/Outlet	Max. Service Flow GPM	(2) Backwash Rate GPM	Floor Space (WxHxD)
IC-10 PM6.0-IC2.0	10"x54"	1.5	1"	5.0	5.0	26"x68"x16"
IC-10A PM6.0-IC10A-2.0	10"x54"	1.5	1"	5.0	5.0	26"x68"x16"
IC-10+ PM6.0-IC10A-2.0	10"x54"	1.5	1"	5.0	5.0	26"x68"x16"
IC-12 PM6.0-IC12A-2.0	12"x52"	2.0	1"	7.0	8.0	30"x66"x18"
IC-12A PM6.0-IC12A-2.0	12"x52"	2.0	1"	7.0	8.0	30"x66"x18"
IC-12+ PM6.0-IC12A-2.0	12"x52"	2.0	1"	7.0	8.0	30"x66"x18"
IC-13 PM6.0-IC13A-2.0	13"x54"	3.0	1"	8.0	10.0	32"x68"x20"
IC-13A PM6.0-IC13A-2.0	13"x54"	3.0	1"	8.0	10.0	32"x68"x20"
IC-13+ PM6.0-IC13A-2.0	13"x54"	3.0	1"	8.0	10.0	32"x68"x20"

(1) Aeration Head and Check Valve have 1" Inlet/Outlet.

(2) Water temps above 60° F will require a higher backwash rate. Consult factory.

Installation Diagram

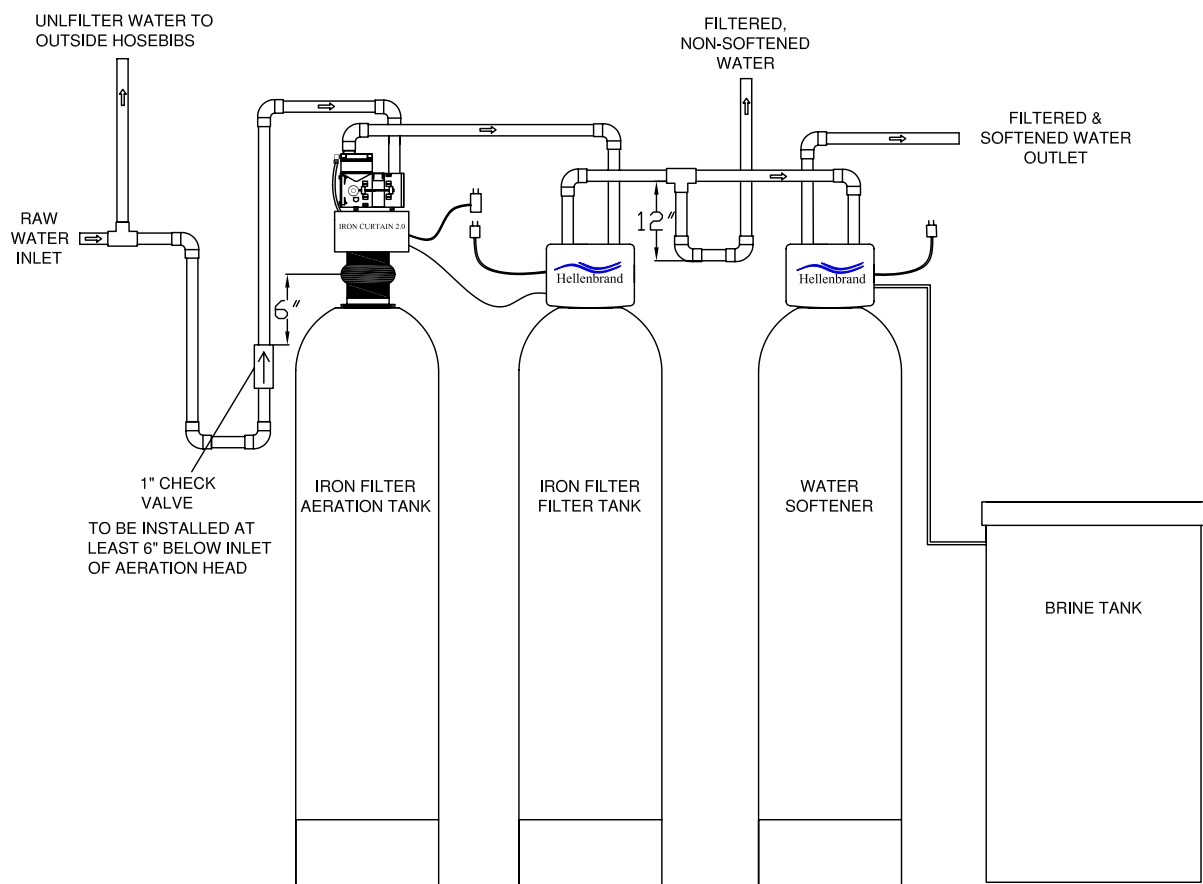


Figure 1

When installing an Iron Curtain Filter system it is common to provide filtered only water to some fixtures such as the kitchen cold faucet. This is typically done as a matter of personal preference. On rare occasions, the customer may experience some air in the filtered water line the morning after regeneration. It has proven beneficial to plumb the line for the filtered only water fixture in a downward direction from the inlet of the softener (12 inches recommended), then make a reverse turn and go upward toward the fixture. Any accumulated air always rises to the highest point in a water system and cannot naturally flow downward.

Inlet Check Valve

Iron Curtain 2.0 users will now have two options for the 1" inlet check valve. A new in-line check valve is now available in a plastic vertical elbow connection. The new in-line check valve can shorten installation time and ease future cleaning. Contained in a vertical adaptor which maintains the protective water column, the quick-connect fittings eliminate two pipe connections, thus shortening installation or service time. The original brass check valve, as an individual item, part number: 102792 is always available. When ordering, please specify which check valve is preferred.

Description

Plastic Check Valve Assy
Used only on 10-14" diameter
aeration tanks.

Part Number

104174
(when ordered with IC)



Description

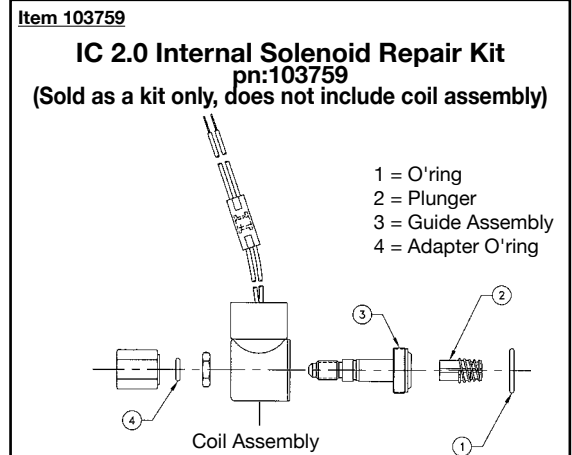
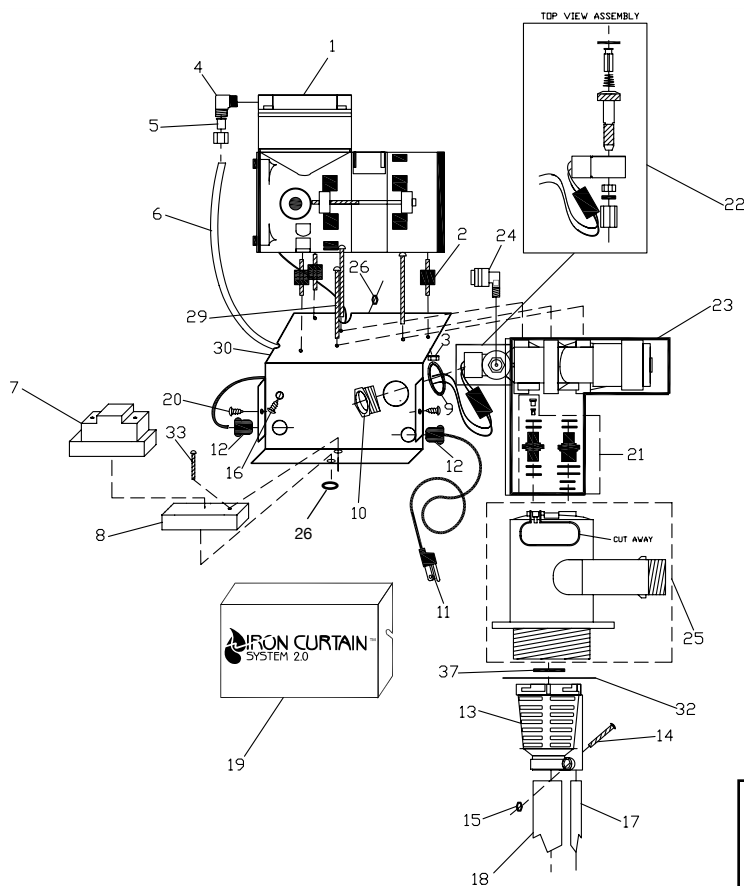
Brass Check Valve

Part Number

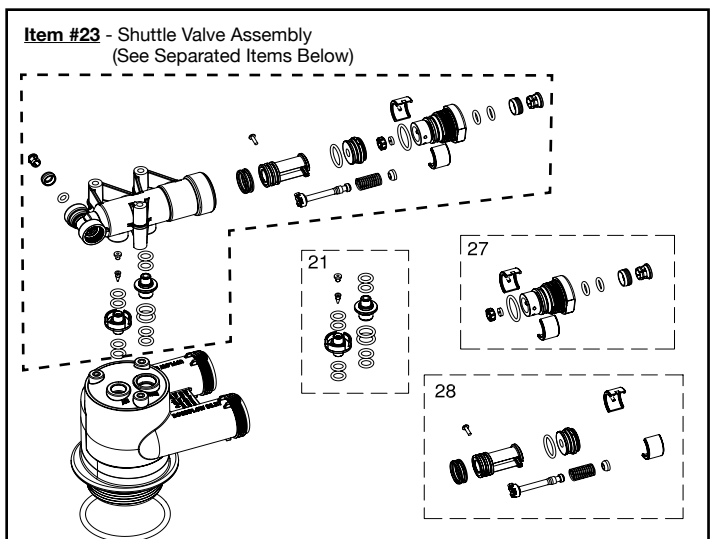
102792
(when ordered with IC)



IC-2.0 Assembly



Item No.	Part No.	Description	Qty.
1	107586	Air Pump, Gast	1
2	107991	IC Pump Feet	3
3	107990	IC Pump Feet Nut	3
4	107453	Brass Str L 1/4" NPT x 1/4" Compression with Nut & Ferrele	1
5	101874	1/4" Tubing Brass Insert	1
6	102666	1/4" Polypropylene Tubing (9" required)	1
7	108010	Relay	1
8	108011	Relay Base	1
9	102433	Conduit Seal	1
10	101318	Electrical Bushing, 1/2"	1
11	103073	Power Cord, 8 ft.	1
12	103108	Strain Relief, Elec. Cords	2
13	101547	Upper Distributor Basket	1
14	102479	Screw, Upper Distributor Basket 6-32 x 3/4" 8-18SS	1
15	102133	Nut, Upper Distributor Basket 6-32 316SS	1
16	102477	Grounding Screw	1
17	102247	Bleed off Tube	1
18	102663	Pick Up Tube	1
19	103469	Cover	1
20	102477	Screw, Cover	2
21	101152	Adapter Assembly Kit w/Duckbill Check Valve Installed	1
22	103914	Solenoid Operator Assembly	1
22-RK	103759	IC 2.0 Internal Solenoid Repair Kit	1
23	102847	Shuttle Assembly	1
24	100479	1/4" Vent Port Adapter	1

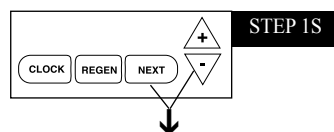


25	101766	Aeration Head	1
26	107995	Relay Base Nut	2
27	101390	End Cap Assembly	1
28	102259	Piston Assembly	1
29	102476	Back Plate Bolt	3
30	108030	Back Plate	1
	102792	1" Brass Inlet Check Valve (Not Shown, See pg 7)	
	104174	Vertical Adapter Inlet Check Valve	
31	104136	Complete Aeration Assembly	1
32	102192	O'Ring-Tank Adapter	1
33	102477	Relay Base Screw	1
36	102894	Solenoid Spanner Wrench (Not Shown)	1
37	102165	O'Ring Pick-Up Tube	1

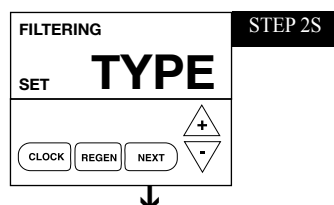
Programming – Must be Rev P100.13 or Greater

FILTER SETUP

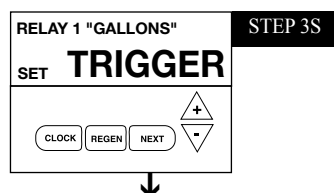
▲ = ▲ Up Arrow ▼ = ▼ Down Arrow



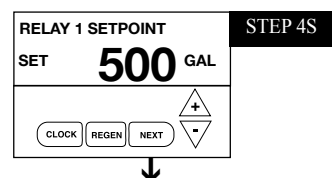
STEP 1S – Press NEXT and ▼ simultaneously for 3 seconds. If screen in Step 2S does not appear in 5 seconds the lock on the valve is activated.



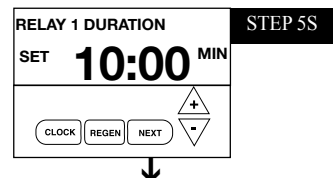
STEP 2S – **Select between softening or filtering.** A flashing "SOFTENING" or "FILTERING" will appear. Choose FILTERING using ▼ or ▲ button. **Factory setting is Filtering.** Press NEXT to step through filter programming to relay programming displayed on Step 3S. Press REGEN to exit Filter System Setup.



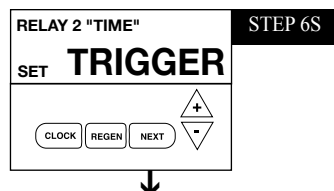
STEP 3S – **Set Relay 1 Trigger.** Gallons chosen to activate relay. If Off or Time was selected in previous steps, this screen does not appear use ▲ or ▼ down arrows to set relay trigger to gallons. Press NEXT to get to step 4S. Meter does not read during regeneration.



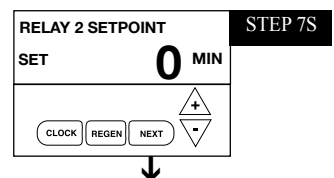
STEP 4S – Use up and down arrows to select number of gallons per relay activation of regen gallon setting. Range = 0.1-20,000 gallons. Press NEXT to go to Step 5S.



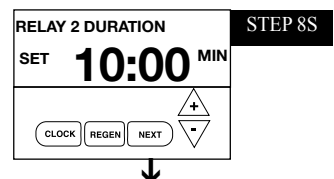
STEP 5S – Use up and down arrows to set duration of relay activation in minutes. Range = 1 second - 500 minutes. Recommended duration is 10:00 minutes. Press NEXT to go to Step 6S. Press REGEN to return to previous step.



STEP 6S – **Set Relay 2 Trigger.** Use ▲ or ▼ down arrows to set relay 2 trigger to time. Press NEXT to go to step 7S. Meter does not read during regeneration.



STEP 7S – Use up and down arrows to select number of minutes after start of regeneration that relay closes and initiates air recharge cycle. Range = 20 - 500 minutes. Press NEXT to go to Step 8S.



STEP 8S – Use up and down arrows to set duration of relay activation in minutes. Range = 1 second - 500 minutes. Recommended duration is 10:00 minutes. Press REGEN to return to previous step.

CYCLE SEQUENCE

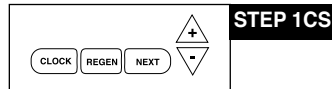
Anytime cycle sequence is modified, filter set-up will revert to manufacturer setting and must be reprogrammed as desired.

Cycle Sequence instructions allows the operator to set the order of the cycles. The Filter System Setup allows the operator to set how long the cycles will last. The operator may choose up to 9 cycles in any order.

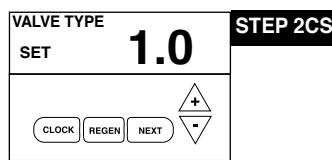
END must be used as the last cycle option. The FILTERING cycle should only be used in regenerant prefill applications.

See Step 9CS for an example of how to set a valve so that when regeneration is initiated, BACKWASH occurs first, REGENERANT DRAW DN occurs second, RINSE occurs third, and FILL occurs fourth.

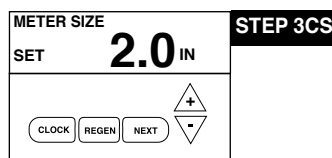
Cycle Options		
BACKWASH	REGENERANT DRAW	FILL
RINSE	FILTERING	END



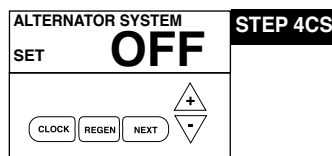
STEP 1CS – Press NEXT and ▼ simultaneously until display changes and release. Then press NEXT and ▼ simultaneously again until valve type displayed and release. If screen in step 2CS does not appear in 5 seconds the lock on the valve is activated.



STEP 2CS – Valve Type. Use the ▲ or ▼ to select from 1.0", 1.25", 1.50", 2.0L", 2.0" valve. ProMate-6.0 is a 1.0" meter. Press NEXT to go to Step 3CS.

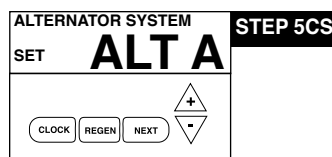


STEP 3CS – Meter Size. This display is only viewed when 2.0" or 2.0L" is selected in Step 2CS.



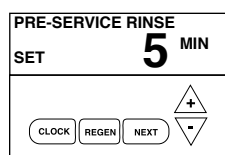
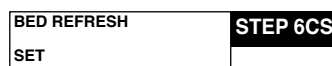
STEP 4CS – Use the ▲ or ▼ to select one of the following:

- OFF; or
- Twin Alternating – Select Alt A or Alt B, Step 5CS System; or
- No Hard Water Bypass During Regeneration – Step 7CS.
- System Board - Allows Demand Recall Programming.
- **Factory Setting is OFF** - Press NEXT to go to Step 8CS.



STEP 5CS –Twin Alternating System – Allows automatic alternation between two units to provide filtered water 24 hours a day. Use ▲ or ▼ buttons to select ALT A or ALT B. Select ALT A for the control valve that has the two pin connector labeled MAV DRIVE connected to the alternator valve motor. Select ALT B for the control valve that will be connected via three prong connector labeled INTERCONNECT. Press NEXT to go to Step 6CS. For Alternating System, must do one of the following:

- If set up for a softener, Volume Capacity in GALLONS, select Regeneration Time Option "IMMEDIATE" and select DAYS BETWEEN REGEN "OFF".
- For complete programming, see MAV manual.



STEP 6CS – Use the ▲ or ▼ to select refresh rinse or preservice rinse:

- Refresh Rinse - If no alternation has occurred due to capacity reduction, Alternator MAV changes to service mode on Standby unit every 6:00am & 6:00pm for a preset bed refresh volume, then returns to previous unit. Press NEXT to select "volume" of rinse, selectable from 5-100 gallons.
- Pre-Service Rinse - Auxiliary MAV of standby value will drive to rinse for preset time before returning to service. MAV must be plumbed to drain for this selection. Press NEXT to select time duration of pre-service rinse.
- **Off - Factory setting is off**

NO HARD BYPASS
SET **ENABLED**

CLOCK REGEN NEXT

▲
▼

STEP 7CS

STEP 7CS – No Hard Water Bypass Enabled - Use ▲ or ▼ buttons to select NO HARD WATER BYPASS ENABLE. Selection requires that a connection to a Motorized Alternator Valve (MAV) is made to the two pin-connector labeled ALTERNATOR MAV DRIVE located on the printed circuit board. The MAV will be driven closed before the first regeneration cycle that is not FILL or SOFTENING or FILTERING, and be driven open after the last regeneration cycle that is not FILL. Press NEXT to go to Step 8C.

AUX MAV OFF
SET **TRIGGER**

CLOCK REGEN NEXT

▲
▼

STEP 8CS

STEP 8CS – Use the ▲ or ▼ buttons to select one of the following:

- Reclaim
- Seperate Source
- Off

Press NEXT to go to Step 9CS. Press REGEN to return to previous step.

RECLAIM START
SET **30:00** MIN

CLOCK REGEN NEXT

▲
▼

STEP 9CS

STEP 9CS – Only displays if reclamation is enabled in Step 8CS. Use the ▲ or ▼ buttons to select the number of minutes after the start of regeneration before the MAV will divert waste water from the plumbing drain receptacle to a specified drain. Start of regeneration is defined as first mode that is NOT draw or filtering. Press NEXT to go to Step 10CS. Press REGEN to return to previous step.

RECLAIM DURATION
SET **6:00** MIN

CLOCK REGEN NEXT

▲
▼

STEP 10CS

STEP 10CS – Only displays if reclamation is enabled in Step 8CS. Use the ▲ or ▼ buttons to select the number of minutes to divert the brine waste water. After the minutes count down to zero, the waste water will once again be diverted to the plumbing drain receptacle. Press NEXT to go to Step 11CS. Press REGEN to return to previous step.

AUX MAV SEP SOURCE
SET **TRIGGER**

CLOCK REGEN NEXT

▲
▼

STEP 11CS

STEP 11CS – Seperate source selection requires connection of motorized alternator valve (MAV) to Auxiliary Drive two-pin connection on board.

Auxiliary MAV Drive set to operate with a Seperate Source trigger. Auxiliary MAV transitions to Bypass before the start of regen cycle #1, AFTER Alternator MAV motor transition. Auxiliary MAV transitions back to Service at the completion of the last programmed regen cycle, once the Valve Motor deactivates and BEFORE Alternator MAV transition (if scheduled). Auxiliary MAV will NOT automatically return to Service while manually stepping valve through regen, MAV will remain in Bypass until regen cycle end. Press NEXT to go to Step 12CS. Press REGEN to return to previous step.

AUXILIARY INPUT
SET **ON 0** REG

CLOCK REGEN NEXT

▲
▼

STEP 12CS

STEP 12CS – This display will be available to select the use of an outside signal to control the initiation of a regeneration. Selection only matters if a connection is made to the two pin connector labeled DP SWITCH located on the printed circuit board. Following is an explanation of the options:

- ON 0 REGEN – If the dP switch is closed for an accumulative time of 2 minutes, a regeneration will occur immediately.
 - DELAY REGEN – If the dP switch is closed for an accumulative time of 2 minutes, a regeneration will occur at the schedule regeneration time.
 - HOLD REGEN – If the dP switch is closed a regeneration will be prevented from occurring.
- Press NEXT to go to Step 13CS. Press REGEN to return to previous step.

BACKWASH
SET **CYCLE 1**

CLOCK REGEN NEXT

▲
▼

STEP 13CS

STEP 13CS – Press the ▲ or ▼ buttons until selection of first cycle appears in left upper corner, in this example BACKWASH is selected. Press NEXT to go to Step 14CS. Press REGEN to return to previous step.

RINSE
SET **CYCLE 2**



CLOCK REGEN NEXT

▲
▼

STEP 14CS



STEP 14CS – Press the ▲ or ▼ buttons until selection of third cycle appears in left upper corner, in this example RINSE is selected. Press NEXT to go to Step 15CS. Press REGEN to return to previous step.

END
SET **CYCLE 3** STEP 15CS

CLOCK REGEN NEXT  



STEP 15CS – Press the ▲ or ▼ buttons until last regeneration cycle; END appears. (Up to 9 regeneration modes are possible). **END MUST BE SELECTED AS LAST CYCLE.**

SET **REGENS OFF** STEP 16CS

CLOCK REGEN NEXT  



STEP 16CS – Press the ▲ or ▼ button to select number of standard regenerations which would trigger one alternate fill amount. Range: 1-99. **Factory setting is Off.** Press NEXT to go to Step 17CS.

ALT FILL AMOUNT
SET **15.0 LBS** STEP 17CS



CLOCK REGEN NEXT  

STEP 17CS – Select amount of regenerant to be used when alternate regeneration requested. This screen is not displayed if off is selected in previous step. Range 1-200 lbs.

INSTALLER PROGRAMMING

 = ▲ Up Arrow  = ▼ Down Arrow



STEP 1I

CLOCK REGEN NEXT  

Step 1I - Press NEXT and ▲ simultaneously for 3 seconds.

Step 2I - Hardness: Not Applicable (nA) Press NEXT to go to Step 3.



WATER HARDNESS
SET **NA GR** STEP 2I

CLOCK REGEN NEXT  

Step 3I - Day Override: This sets the number of days between regenerations. If value set to “oFF” regeneration initiation is based solely on gallons used. If value is set as a number (allowable range from 1 to 28) a regeneration initiation will be called for on that day even if sufficient number of gallons were not used to call for a regeneration. Set Day Override using ▲ or ▼ buttons: **Factory setting is 3 days.**



- number of days between regeneration (1 to 28); or
- “oFF”

DAYS BETWEEN REGEN
SET **3** STEP 3I

CLOCK REGEN NEXT  



Press NEXT to go to step 4. Press REGEN to return to previous step.

REGEN TIME HOUR
SET **12:00 AM** STEP 4I

CLOCK REGEN NEXT  

Step 4I - Regeneration Time (hour): Set the hour of day for regeneration using ▲ or ▼ buttons. AM/PM toggles after 12. **The factory setting time is 12:00 a.m.** This display will show REGEN IMMEDIATE ON ZERO GAL if system is set for immediate regeneration. See page 26. Press NEXT to go to step 5. Press REGEN to return to previous step.

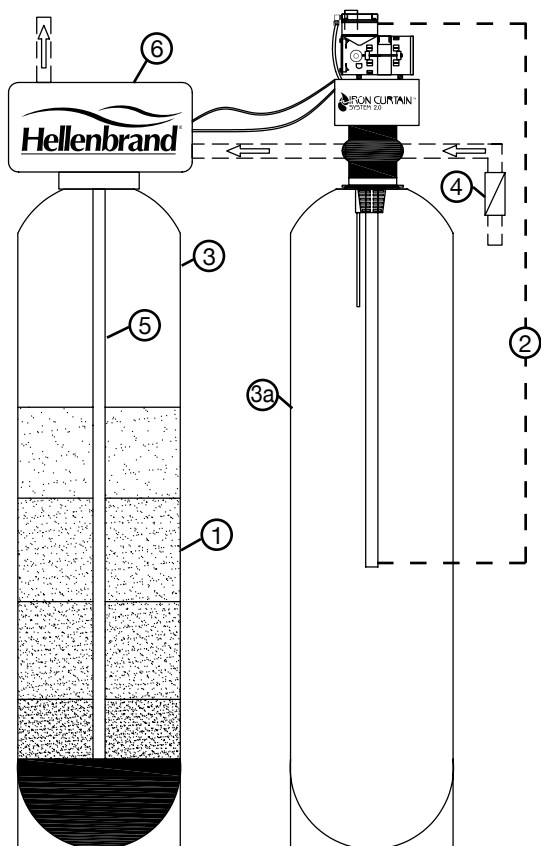
REGEN TIME MINUTES
SET **12:00 AM** STEP 5I

CLOCK REGEN NEXT  

Step 5I - Regeneration Time (minutes): Set the minutes of day for regeneration using ▲ or ▼ buttons. This display will not be shown if system is set for immediate regeneration. Press NEXT to exit Installer Displays/Setttings. Press REGEN to return to previous step.

RETURN TO
NORMAL MODE

Iron Curtain System – IC-10/IC-12



ITEM NO.	QTY. REQ'D.	PART NO.	DESCRIPTION
1.....1.....		101065	IC-10 Rebed Mix
.....		101069	IC-10A Rebed Mix
.....		101068	IC-10+ Rebed Mix
.....		101070	IC-12 Rebed Mix
.....		101072	IC-12A Rebed Mix
.....		101071	IC-12+ Rebed Mix
2.....1.....		107585	Aeration Assembly
3.....1.....		104554	1054 Vortech IC Filter Tank
.....		104561	1252Vortech IC Filter Tank
3A.....1.....		104552	10x54 IC-10 Aeration Tank
.....		104559	12x52 IC-12 Aeration Tank
4.....1.....		102792	1" Check Valve (See pg 7)
.....		104174	Check Valve
5.....1.....		102241, 101173	Distributor Tube for IC-10
.....		102238, 101173	Distributor Tube for IC-12

Control Valve Options for Filter Valves

6.....1.....		104301	ProMate6-IC-10
.....		104302	ProMate6-IC-12

Not Shown.....101235 Bypass

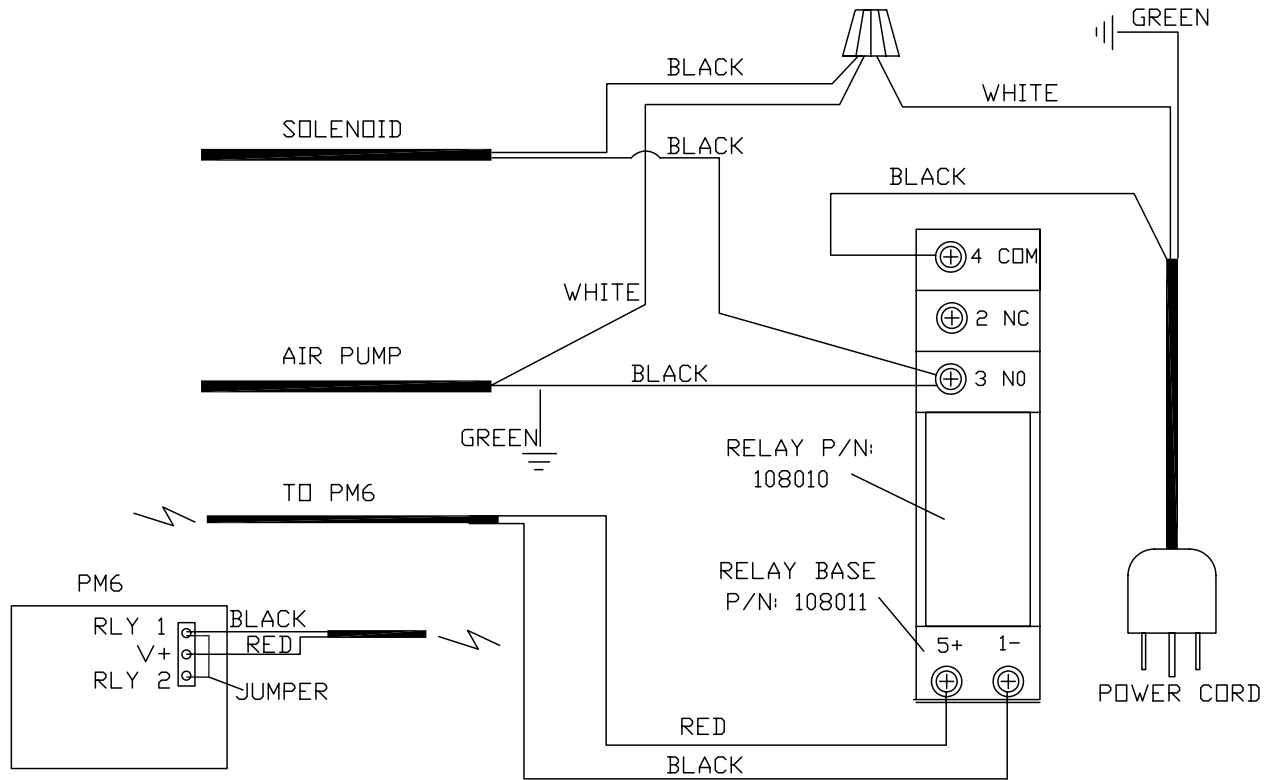
FIGURE 8

Start-Up Instructions – Complete wiring seen on page 14 prior to startup.



1. Remove valve cover.
2. Remove drive bracket by lifting two tabs at top of back plate and lift bracket out of bottom supports; set aside.
3. With needle nose pliers, break plastic tab off bottom of LEFT cable guides so relay power supply can fit through.

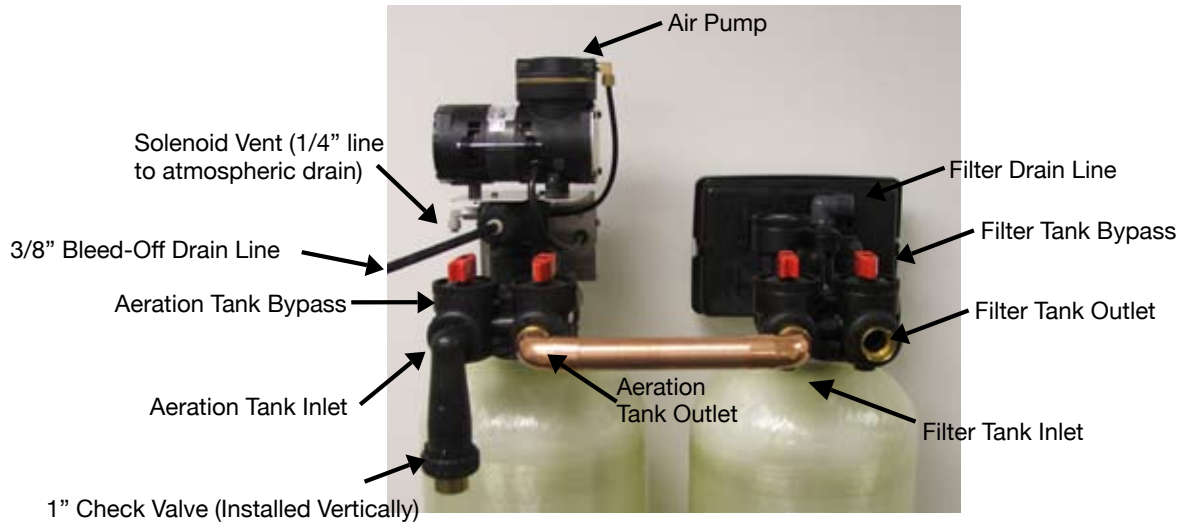
Iron Curtain 2.0 Aeration Wiring



- EACH GREEN GROUND WIRE TO BE CONNECTED DIRECTLY TO BACK PLATE
- AIR RECHARGE TIME IS ADJUSTABLE BY GALLONS & TIME
- TO INITIATE MANUAL CYCLE, REGNERATE THE FILTER

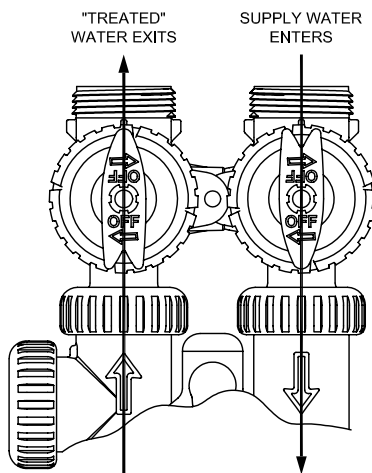
Connect relay power supply to filter control by wiring to Rly1 & Com Black to Rly1(-) Red to Com(+).

ProMate6® Filter Valve Option

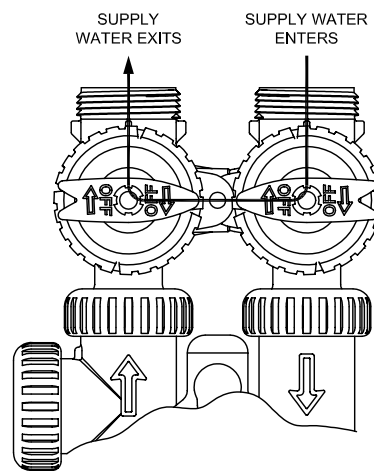


BYPASS VALVE OPERATION COMPLETE BYPASS, PART #101325

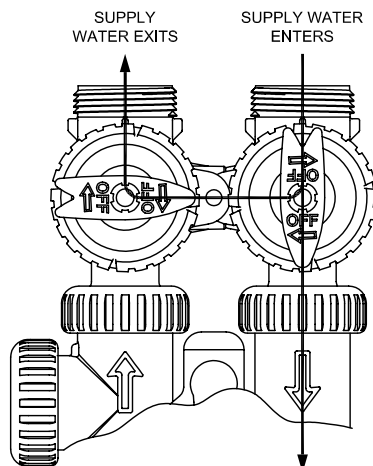
NORMAL OPERATION



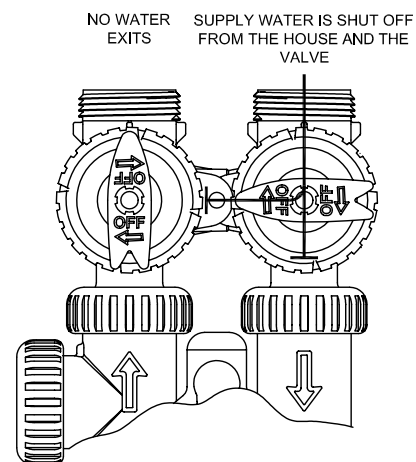
BYPASS OPERATION



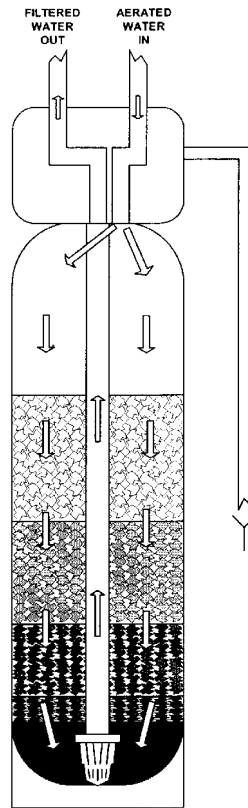
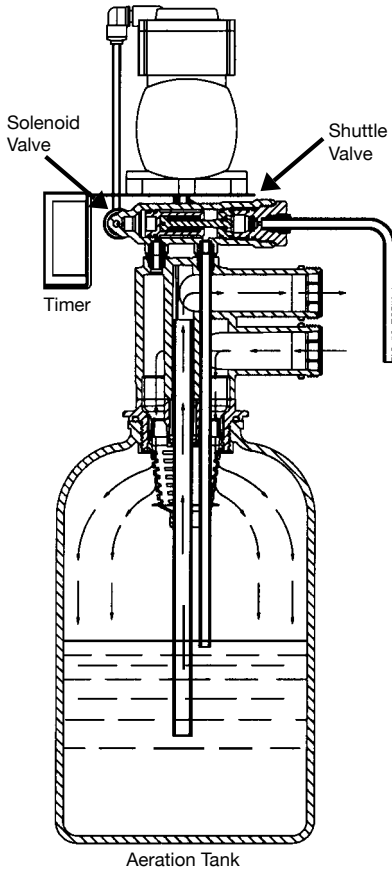
DIAGNOSTIC MODE



SHUT OFF MODE



IRON CURTAIN FLOW DIAGRAMS



SERVICE

Step 1.

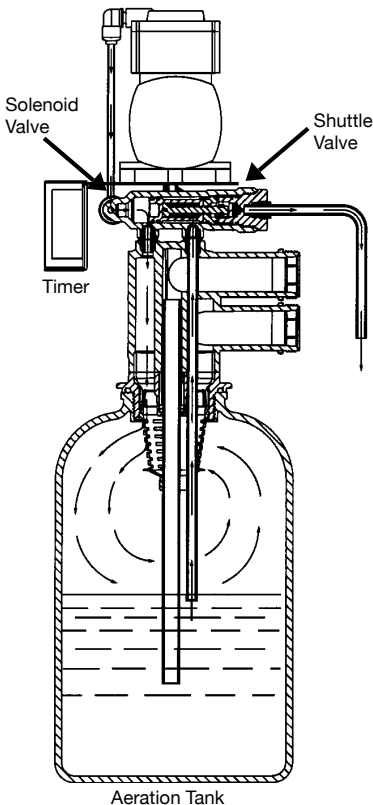
Aeration Operation Service Cycle

In the service cycle, raw water enters the inlet port of the aeration tank and is directed through the inlet diffuser. The oxidation process begins when the water passes through the inlet diffuser and cascades through a head of air. This air/water contact oxidizes the iron, manganese, hydrogen sulfide in the water. The water is directed toward the bottom of the tank and travels through the pick-up tube. It then passes through the outlet of the aeration tank to the inlet of the filter tank.

Filter Tank Operation Service Cycle

Raw water enters the filter tank through the inlet port of the filter control valve. Upon system demand for filtered water, water is directed to the top of the tank and flows downward through the multimedia filter bed toward the lower distributor. Oxidized iron particles are trapped by the filter bed as the water passes through. Filtered water enters the lower distributor and travels up the distributor tube to the outlet port on the filter valve.

U.S. Patent #7,156,995



Step 2.

Aeration Operation Air Recharge Cycle

When energized, the air pump sends air through the solenoid valve into one end of the shuttle valve. Once air pressure in the shuttle valve is greater than the water supply pressure at the other end of the shuttle valve, the piston shifts to the open position. In the open position, the bleed-off port discharges excess water and old air to the drain port through a flow restrictor. Simultaneously, the air inlet port opens to provide a direct connection between the air pump and the top of the aeration tank. The air pump runs for a preset period of time recharging the head of air in the aeration tank.

Air Recharge Shut Off

The programming in conjunction with a relay turns power off to the air pump and the solenoid valve at the end of the recharge cycle. The solenoid valve then closes the port between the air pump and the shuttle valve. The port between the shuttle valve and the atmosphere opens and releases air pressure. This allows water pressure to shift the piston to the closed position. With the piston in the closed position, the air recharge inlet port is closed and direct communication between the bleed off tube and the drain port is also closed.

Relay Operation

How often the air recharge cycle occurs is based on the number of gallons that pass the meter. The timer simultaneously energizes the air pump and the solenoid valve. After a factory set amount of time, the relay shuts off the air pump and de-energizes the solenoid valve. Both the frequency and duration can be modified based on application parameters.

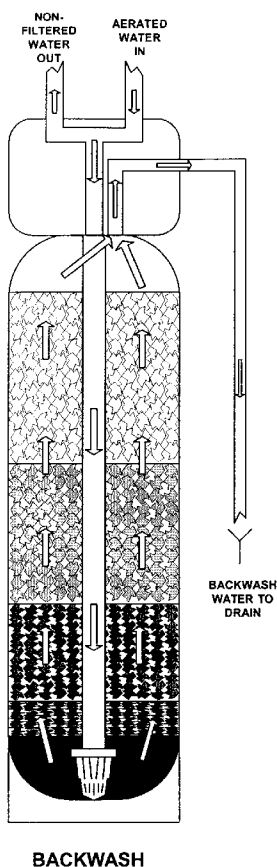
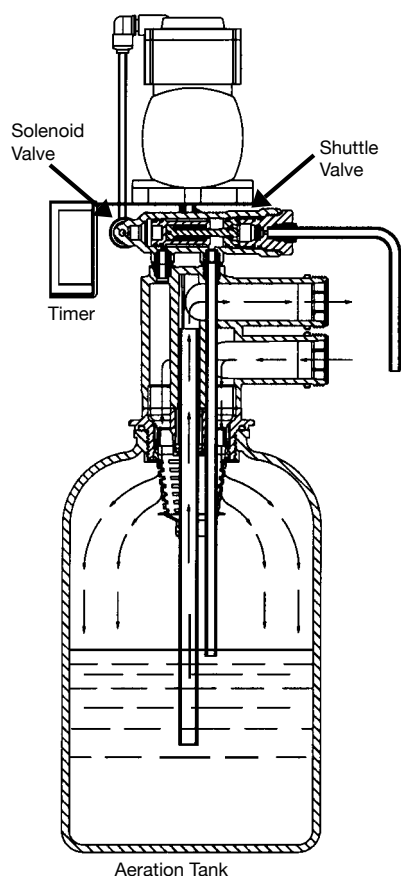
Solenoid Valve Operation

The solenoid valve is a three-way valve having ports that connect to the air pump, shuttle valve and the atmosphere. In the service cycle, the solenoid valve is de-energized and closes the port to the air pump, providing a positive shut-off to the pump. This prevents water from backing up into the air pump and damaging the pump. In the air recharge cycle, the solenoid valve closes the port to the atmosphere and opens the port from the air pump.

Shuttle Valve Operation

In the service position, water pressure holds the shuttle valve piston in the closed position, trapping the airhead in the aeration tank and closes the air recharge inlet port and drain port. During air recharge cycle, air pressure is greater than the water pressure and forces the shuttle valve piston in the open piston. The shuttle valve has an internal pressure relief valve that relieves high pressure that may build up in the aeration tank. This precautionary function protects components from failure due to excessive pressure.

U.S. Patent #7,156,995



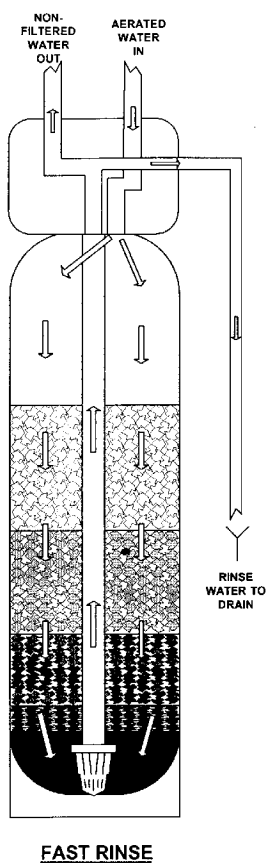
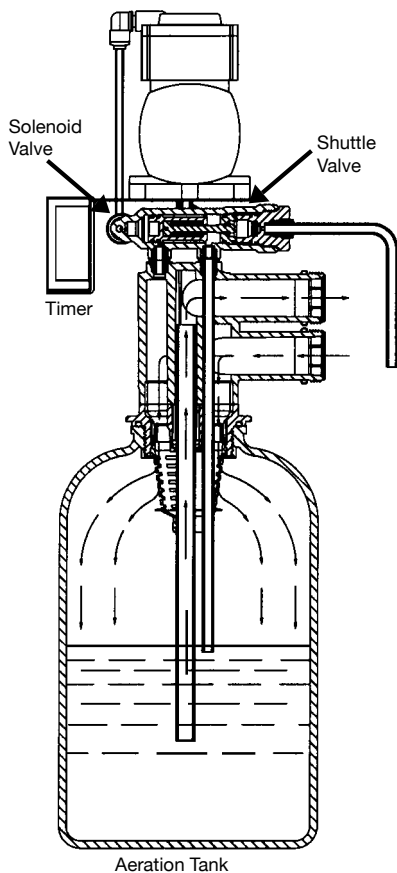
Step 3.

Filter Tank Operation

Backwash Cycle

Reversing the flow of water through the filter bed and backwashing dirty water to the drain cleans the filter bed. Raw water enters the filter control valve through the inlet port and is directed down the distributor tube and out the lower distributor at the bottom of the tank, flowing upward through the multimedia filter bed toward the top of the tank into the control valve. Water is then directed through a specific flow restrictor and out the drain port to be discharged to drain.

U.S. Patent #7,156,995



Step 4.

Filter Tank Operation

Rinse Cycle

The rinse cycle packs the clean filter bed. Raw water enters the control valve through the inlet port and is directed downward through the filter bed into the bottom distributor, up the distributor tube into the control valve. Water is then directed through a specific flow restrictor and out the drain port to be discharged to drain.

U.S. Patent #7,156,995

Iron Curtain Aeration Pump

Repair Kit – 108061

Contents:

- (1) Valve Plate Assembly
- (4) Retainer Plate Screws (2 phillips head and 2 allen head)
- (1) Cup
- (1) Head Gasket
- (1) Cylinder O-ring
- (2) Filter Felts

Kits are used for several models and may contain extra parts not applicable for your specific model.

MAINTENANCE AND INSPECTION

Intake filter and mufflers require periodic inspection and replacement. Initial inspection is suggested at 500 hours, then the user should determine the frequency thereafter. Most problems can be prevented by keeping filters and mufflers clean. Dirty filters and mufflers decrease pump performance and can decrease pump life.

FILTER INSPECTION AND REPLACEMENT

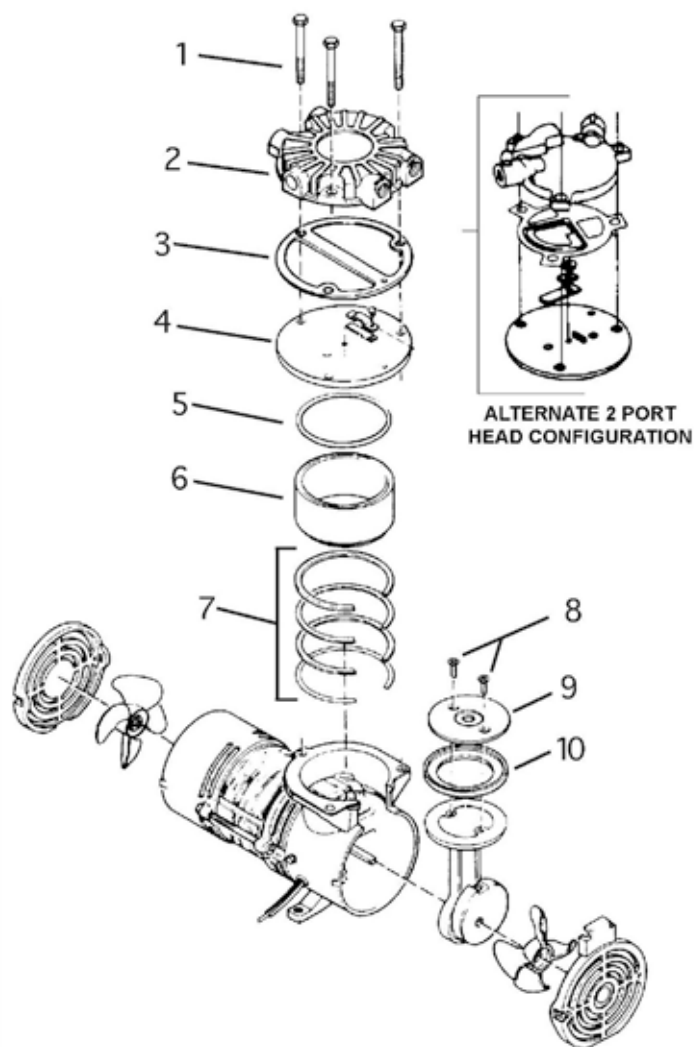
Some filter element(s) are held together by a snap fit. Remove the cover to replace the felt, and reassemble.

WARNING

The head surface(s) on some models can be very hot during operation. Do not touch these parts until the pump has been turned off and allowed to cool.

Ref. No.	Description
1	Head Bolts
2	Head
3*	Head Gasket
4*	Valve Plate Assembly
5*	Cylinder O-Ring
6	Cylinder
7	Shims
8	Retainer Screws
9	Retainer Plate
10*	Cup

*Denotes part included in Service Kit(s).



TROUBLE SHOOTING GUIDE

REASON	LOW PRESSURE	HIGH PRESSURE	LOW VACUUM	EXCESSIVE NOISE	OVER HEATING	WON'T START
Dirty Filter	X				X	
Dirty Muffler			X		X	X
Dirty Valves	X		X			
Damaged Valves	X		X	X		X
Worn/Damaged Cup	X		X			
Improper Cylinder Shimming	X	X	X	X	X	X
Leaky Hose	X		X			
Leaky Check Valve						X
Plugged Vac. or Press. Line	X	X	X		X	X
Low Voltage	X		X		X	X
Leaky Relief Valve	X		X			

SERVICE KIT INSTRUCTIONS

Tools Required:

$\frac{7}{16}$ " socket or wrench and/or $\frac{1}{8}$ " allen wrench,
torque wrench, phillips and standard screwdriver

NOTE: Gast will not guarantee the performance of a field rebuilt pump. You can return the pump to a Gast authorized facility, or perform the rebuild procedures described below.



WARNING



PLEASE READ THIS MANUAL COMPLETELY BEFORE INSTALLING AND USING
THIS AIR PUMP. SAVE THIS MANUAL FOR FUTURE REFERENCE AND
KEEP IN THE VICINITY OF THE AIR PUMP.

**Your safety and the safety of others
is extremely important.**

We have provided many important safety messages in this manual and on your product. Always read and obey all safety messages.



This is the safety alert symbol. This symbol alerts you to hazards that can kill or hurt you and others. The safety alert symbol and the words "DANGER" and "WARNING" will precede all safety messages. These words mean:



DANGER

You will be killed or seriously injured if you don't follow instructions.



WARNING

You can be killed or seriously injured if you don't follow instructions.

All safety messages will identify the hazard, tell you how to reduce the chance of injury, and tell you what can happen if the safety instructions are not followed.

WARNING



Before attempting repair, determine if the pump has been exposed to/or contains biological, toxic, or radioactive materials, so that the repair personnel are not exposed to these items.

SERVICE KIT INSTALLATION

WARNING



Disconnect unit from power source and vent all air lines to unit to remove pressure before servicing it. Failure to do so can result in severe personal injury.

WARNING



The head and motor surface(s) can become very hot. Do not touch these parts until the pump has been turned off and allowed to cool.

Disassembly: Keeping accessories such as, relief valves, gauges, cross-over tubes, etc., in place at the ports while you remove the head can reduce system leaks. Refer to exploded view drawing.

1. Loosen all head bolts and remove head. Note orientation of head and valve plate for later reassembly.
2. Remove head gasket and discard.
3. Remove valve plate assembly and o-ring, and discard.
4. Remove two retainer screws (may require heat to break adhesive) and discard. Be careful to avoid damaging cylinder walls.
5. Remove retainer plate, cup, and cylinder. Discard old cup.
6. Remove shims under the cylinder. Note: Be sure to replace all shims, as they are matched to the cylinder and rod assembly height dimensions.
7. Clean residue from cylinder walls with soft cloth using a non-petroleum, non-oil based solvent. DO NOT use kerosene, gasoline, or any flammable substance.

Reassembly:

Replace shims and cylinder onto the body.

1. Place retainer plate down into the new cup and push both directly down into the cylinder using even pressure. Use care when installing cup, as it is common to pinch cup between retainer and cylinder wall, this will reduce performance, or can cause unit to fail. Be sure cup is in the proper position.
2. Install new retainer plate screws, and torque to 36 in.-lbs. You may optionally apply a loctite sealant to countersunk area of retainer plate.
3. Remove grille and turn fan blade, checking that it turns freely. Place straight edge across top of cylinder, rotate rod until retainer plate is at it's highest point, making sure there is no contact with the straight edge. Reinstall grille(s).
4. Install new o-ring in groove on top of cylinder.
5. Align valve plate assembly onto cylinder in original orientation.
6. Place new head gasket onto valve plate assembly.
7. Place head on top of gasket and install head bolts, use cross pattern to tighten bolts and torque to 80in.-lbs.

Troubleshooting

Complaint	Problem	Cause	Solution
1. Iron or manganese* bleed-through or staining	A. Inadequate backwash of filter	1. Plugged drain line flow control 2. Insufficient water supply from well 3. Plugged aeration tank inlet diffuser or pick-up tube 4. Media bed fouled	1a. Clean or replace drain line flow control 2a. Check for minimum specified flow and pressure requirements of filter system 3a. (Generally will only plug with the presence of iron bacteria) Clean aeration assembly and shock treat the water supply with chlorine as needed to control iron bacteria 4a. Rebed filter and correct the cause of fouling
	B. Fails to regenerate	1. Interrupted electrical service	1a. Assure continuous electrical supply (check plug, breaker, fuses, etc.)
	C. Water contaminant levels are greater than limits established by the manufacturer	1. It is not uncommon for local water conditions to change	1a. Consult dealer
Sulphur odor bleed-through	D. Inadequate aeration	1. Loss of air through inlet check valve	1a. Check installation position of check valve – Consult Installation and Operation Manual for proper position 1b. Check for foreign material in seat of check valve, clean or replace as required
		2. Loss of air through air leak 3. Faulty aeration pump due to: a. Electrical failure b. Pneumatic failure c. Damp environment 4. Air loss through high demand 5. Relay does not energize air compressor	2a. Check aeration tank assembly for any air leaks and repair (Note: soapy water solution works well for locating air leaks) 3a. Assure permanent electrical service (check plug, breaker, fuses, terminal block on control valve, etc.) 3b. Check for adequate pressure and volume production from air pump. Repair or replace air pump 3c. Clean, repair or replace aeration pump, ventilate environment or provide external air source 4a. Increase air recharge frequency of filter. See page 6 5a. Verify correct programming-see page 9 5b. Wired incorrectly from PC board. See wiring diagram-page 14 . Faulty relay. Verify 12V DC power at terminals 1 & 5. 5d. Faulty PC Board. No power to rly 1 and common or rly2 and common

*Manganese can be slow to oxidize when the pH is less than 8.5

Complaint	Problem	Cause	Solution
	E. Exceeding recommended filter system flow rate	1. Service flow rate demand is higher than filter system design flow rate	1a. Install a flow control at filter system outlet equal to or less than the design flow rate of filter system 1b. Install additional filter(s) or a larger single filter system which meets both the service flow demand and backwash flow requirements available
	F. Regeneration during service flow demand	1. Time of day set incorrectly	1a. Reset timer
	G. Raw water bleeding through filter See specific control manual	1. Internal control valve leak	1a. Assure all adapter base o-ring seals are in place 1b. Replace seals, spacer and piston assemblies
2. Water leaking from vent port adapter	A. Seals failed internally B. Shuttle valve stuck in the open position.	1. Pressure has exceeded rating on system Refer to complaint #10	1a. Check pressure on system. Adjust if necessary. Replace shuttle assy. 1b. Refer to complaint #10
3. Water is effervescent	A. This can be expected when water is aerated under pressure	1. Water supply has been naturally aerated under well system pressure. As water is released to the atmosphere, air molecules separate from the water.	1a. This natural phenomenon will typically dissipate to the atmosphere in a matter of seconds. If preferred, water can be drawn and stored in an open container prior to use (i.e. fill a pitcher and store in the refrigerator for cool fresh drinking water)
4. Loss of pressure	A. See complaint #1, Page 16	1. Plugged Inlet 2. Fouled Media Bed can also cause loss of pressure.	1a. See 3a under #1 Solutions, pg 20 2a. See 4a under #1 Solutions, pg 20
5. Air spurting at outside or non-filtered water fixtures	A. Inlet check valve not sealing	1. Improper installation location 2. Foreign material preventing check valve from sealing 3. Worn or faulty check valve	1a. See installation and operation manual for proper location of inlet check valve 2a. Clean or replace check valve 3a. Replace check valve
6. Air spurting from filtered water fixtures* *For further details - see air spitting document on our website under Water News.	A. Reduced pressure in distribution system	1. Service flow demand is greater than water supply available from well pump system 2. Water flow is restricted by supply piping and/or water treatment equipment	1a. Repair or replace well pump system 2a. Eliminate restrictions in supply pipings to water treatment equipment such as iron bacteria plugging the upper diffuser assembly, etc. 2b. Install larger water treatment system to provide less pressure drop
7. Loss of media through drain line of filter control	A. New filter backwashed during first 24 hours after installation B. Air passing through filter during backwash	1. New filter media is shipped in a dry condition and must soak for 24 hours to become fully saturated before a backwash cycle 1. Excess air accumulated in aeration tank from aeration pump 2. Excess air accumulated in filter system from water supply or well pump	1a. Clean drain line flow control, control valve body, seals, spacers and piston assemblies 1a. Bleed-of flow control in piston assy is plugged with foreign material – clean or replace 2a. Repair well pump system 2b. If the cause was due to temporary loss of water main pressure; the problem will most likely correct itself with the return of continuous pressure

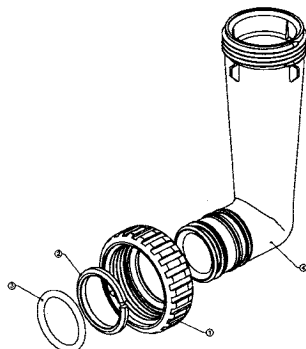
Complaint	Problem	Cause	Solution
8. Excessive noise during regeneration	A. Howling or whistling noise during regeneration cycle	<ol style="list-style-type: none"> 1. Inadequate drain line size 2. Drain line is vibrating against other pipes, conduits, pipe hangers, heat ducts, floor joists, etc. 	<ol style="list-style-type: none"> 1a. Increase drain line size 2a. Insulate drain line, specifically at points of contact with other materials
9. Water running to drain continuously from filter control	A. Control valve is stuck in regeneration cycle. See specific control manual	<ol style="list-style-type: none"> 1. Electrical service to control(s) has been interrupted 2. Faulty timer motor 3. Faulty drive motor 4. Foreign material lodged in piston 5. Timer is lodged in regeneration cycle 	<ol style="list-style-type: none"> 1a. Assure continuous electrical service is available (check plug, breaker, fuse, etc.) 2a. Replace timer motor 3a. Replace drive motor 4a. Disassemble and clean control valve, replace seals, spacers, and piston assemblies 5a. Check program wheel pins, to assure back pins are not catching on timer gears 5b. Check to assure timer gears are clean and free from foreign materials such as solder or pipe burrs
10. Water running to drain continuously from 3/8" bleed off tube on aeration tank.	<p>A. Did not plug in aeration pump prior to filling</p> <p>B. Shuttle valve stuck in the open position.</p>	<ol style="list-style-type: none"> 1. Drain port open 1. Shuttle valve fouled with foreign material. 2. Excessive pressure from water supply system causing internal pressure relief valve to open. 3. Solenoid vent port fouled with foreign material or faulty solenoid. 4. Seat on end of piston assembly dislodged or damaged by foreign material 5. Vent port connected to bleed off drain line or filter 6. Faulty timer stuck in the ON position 7. Bleed off tube in aeration tank restricted. 8. Air pump failed during air recharge cycle. 	<ol style="list-style-type: none"> 1a. Plug in aeration pump. (See start-up instructions - page 5.) 1b. Clean or replace shuttle valve and piston assembly 2b. Reduce water supply pressure 3b. Clean or replace solenoid assembly 4b. Clean or replace piston assembly 5b. Vent port MUST vent to an atmospheric drain site. 6b. Replace timer 7b. Remove aeration head and clean or replace bleed off tube. 8b. Replace/Repair pump
11. Blue green staining	A. Corrosive water condition in copper distribution piping system	<ol style="list-style-type: none"> 1. Low pH condition of the raw water supply. On type "A" filters, the pH correction media may be depleted 2. In rare occasions, highly aerated water in combination with a specific water supply can create a slightly corrosive condition 3. Shorten bleed off tube, reduce recharge frequency 	<ol style="list-style-type: none"> 1a. On type "A" filters add pH correction media to filter tank, see Installation and Operation manual 2a. Install a polyphosphate cartridge filter after the Iron Curtain Filter System to protect the distribution piping 3a. See page 9 for recharge frequency changes. Shorten bleed-off tube to 9" (Page 8- #17)

Iron Curtain 2.0 Aeration Assembly In/Out Options

Order No: 101172

Description: IC 2.0 Bypass Vertical Adapter Assembly

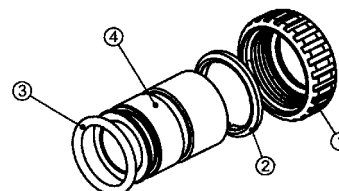
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106858	Bypass Vertical Adapter	2



Order No: 101641

Description: IC 2.0 Fitting 1" Brass Sweat Assembly

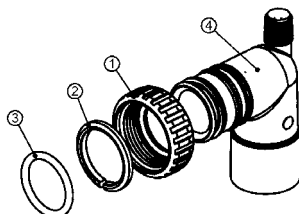
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106763	Fitting 1" Brass Sweat	2



Order No: 101640

Description: IC 2.0 Fitting 3/4" & 1" PVC Solvent 90° Assembly

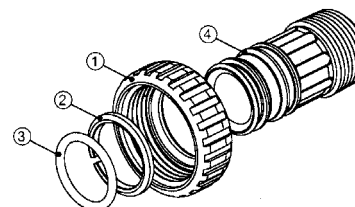
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106762	Bypass Vertical Adapter	2



Order No: 101643

Description: IC 2.0 Fitting 1" Plastic Male NPT Assembly

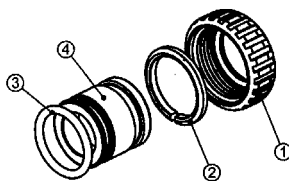
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106765	Fitting 1" Plastic Male NPT	2



Order No: 101642

Description: IC 2.0 Fitting 3/4" Brass Sweat Assembly

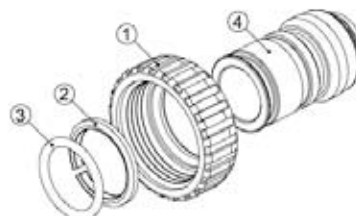
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106764	Fitting 3/4" Brass Sweat	2



Order No: 106062

Description: IC 2.0 Fitting 3/4" Brass SharkBite Assembly

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106769	Fitting 3/4" Brass SharkBite	2

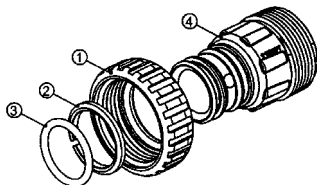


Iron Curtain 2.0 Aeration Assembly In/Out Options

Order No: **101644**

Description: **IC 2.0 Fitting 1-1/4" Plastic MNPT**

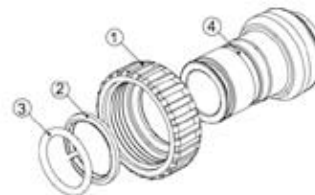
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106766	Fitting 1-1/4" Plastic Male NPT	2
1-4	101644	Fitting 1-1/4" Male NPT (Set of 2)	1



Order No: **106063**

Description: **IC 2.0 Fitting 1" Brass SharkBite Assembly**

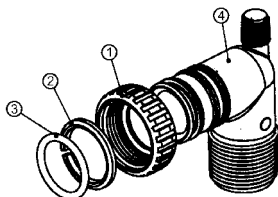
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106770	Fitting 1" Brass SharkBite	2



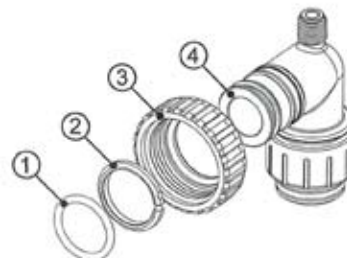
Order No: **101639**

Description: **IC 2.0 Fitting 1" PVC Male NPT Elbow Assembly**

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106761	Fitting 1" PVC Male NPT Elbow	2



ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	V3790	Fitting 3/4" John Guest	2
1-4	108478	Fitting 3/4" JG QC Assy (Set of 2)	1



WIRING & PROGRAMMING INSTRUCTIONS TO MODIFY DEMAND AERATION IC2.0
TO INCLUDE PROPORTIONAL CHEMICAL FEED DURING SERVICE

NOTE: Wire Stenner PCM or 115V hot lead to #5 (ND) and #9 (CDM), does not matter which wire goes to which connection.

DEMAND AERATION PROGRAMMING

Push the NEXT & ▼ Buttons simultaneously for 3 seconds.

Push the NEXT button to step through the programming screens. Stop once you get to the Relay screen (see picture below)

RELAY 1 OFF

SET

TRIGGER

Use the ▲ arrow to select on-GAL. Correct programming is shown below.

RELAY 1 GALLONS

SET

TRIGGER

Push NEXT

Use ▲▼ buttons to set relay for 1 GAL. As shown below.

RELAY 1 SETPOINT

SET

500 GAL

Push NEXT

Use ▲▼ buttons to set for 1 second. As shown below.

RELAY 1 DURATION

SET

10:00 MIN

PROPORTIONAL FEED PROGRAMMING

Push the NEXT & ▼ Buttons simultaneously for 3 seconds.

Push the NEXT button to step through the programming screens. Stop once you get to the Relay screen (see picture below)

RELAY 2 OFF

SET

TRIGGER

Use the ▲ arrow to select on-GAL. Correct programming is shown below.

RELAY 2 GALLONS

SET

TRIGGER

Push NEXT

Use ▲▼ buttons to set relay for 1 GAL. As shown below.

RELAY 2 SETPOINT

SET

1 GAL

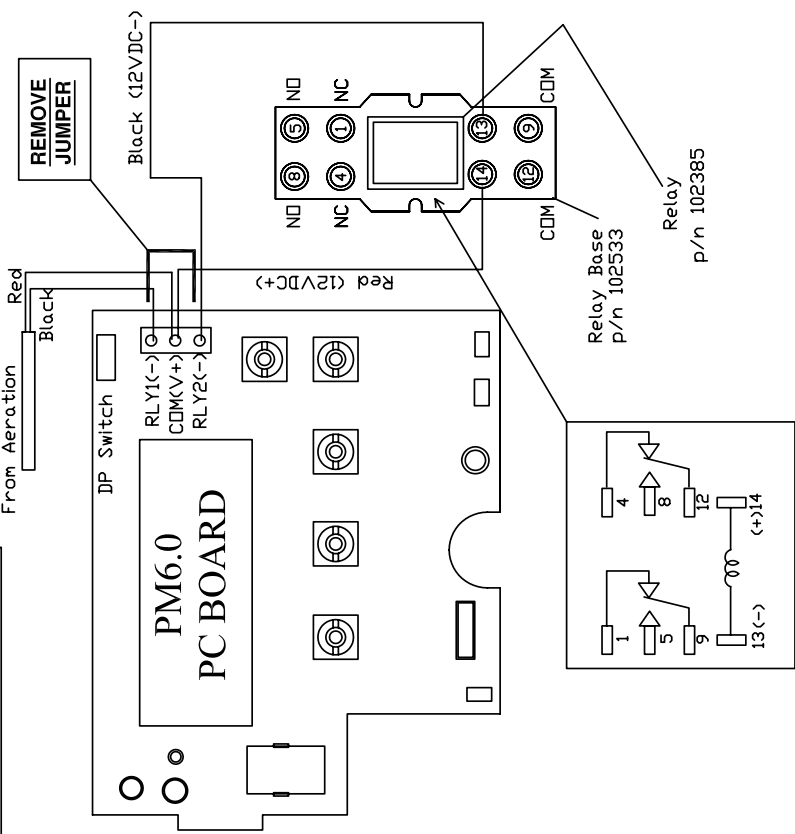
Push NEXT

Use ▲▼ buttons to set for 1 second. As shown below.

RELAY 2 DURATION

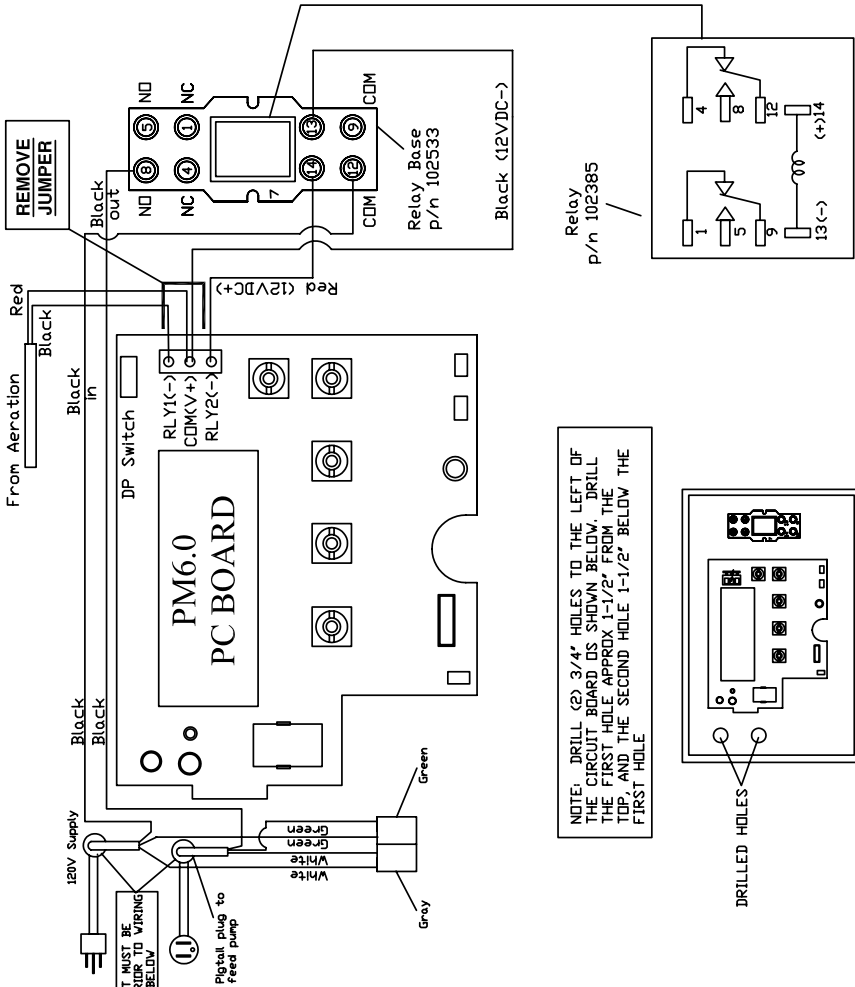
SET

0:01 MIN



DEMAND AERATION PCM RELAY WIRING	
DWG #	800367
6-1-10	
dwg by:	Waunakee, WI 53597
J.W.AACK	(608)849-3050
Approved by Engineer:	J. McDONALD

WIRING & PROGRAMMING INSTRUCTIONS TO MODIFY DEMAND AERATION IC2.0 TO INCLUDE TIMED
CHEMICAL FEED DURING REGENERATION



DEMAND AERATION PROGRAMMING

Push the NEXT & ▼ Buttons simultaneously for 3 seconds. Push the NEXT button to step through the programming screens. Stop once you get to the Relay screen (see picture below)

RELAY 1 OFF
SET
TRIGGER

Use the ▲ arrow to select time. Correct programming is shown below.

RELAY 1 TIME
SET
TRIGGER

Push NEXT

Use ▲▼ buttons to set relay for 6 minutes. As shown below.

RELAY 1 SETPOINT
SET
0:00 MIN

Push NEXT

Use ▲▼ buttons to set the number of minutes relay should be closed (how long feed pump should be run). See below for correct setting.

RELAY 1 DURATION
SET
10:00 MIN

PROGRAMMING FOR TIMED RELAY SETTINGS /FOR CHEMICAL FEED DURING REGENERATION

Push the NEXT & ▼ Buttons simultaneously for 3 seconds. Push the NEXT button to step through the programming screens. Stop once you get to the Relay screen (see picture below)

RELAY 2 OFF
SET
TRIGGER

Use the ▲ arrow to select time. Correct programming is shown below.

RELAY 2 TIME
SET
TRIGGER

Push NEXT

Use ▲▼ buttons to set relay for 6 minutes. As shown below.

RELAY 2 SETPOINT
SET
6:00 MIN

Push NEXT

Use ▲▼ buttons to set the number of minutes relay should be closed (how long feed pump should be run). See below for correct setting.

RELAY 2 DURATION
SET
6:00 MIN

* NOTE: Timed settings must be calculated for each filter system size.

DEMAND AERATION PROGRAM W/ 120v CHEM FEED	
DWG #	800368
dwg by:	6-1-10
J.W.AACK	Waunakee, WI 53597 (608)849-3050
Approved by Engineer	J. McDONALD

NOTES

IRON CURTAIN 2.0™ PROMATE6® LIMITED WARRANTY

Hellenbrand, Inc., warrants to the original consumer purchaser that the Iron Curtain 2.0™ and the parts listed below will be free from defects in material and/or workmanship from the date of the original installation for the following time periods:

For a Period of FIVE YEARS: The filter control valve body, excluding its internal parts.

For a Period of FIVE YEARS: The IC-2.0 aeration control body, excluding its internal parts, solenoid and air pump assemblies.

For a Period of TEN YEARS: The fiberglass aeration or mineral tanks, 6" Diameter - 13" Diameter.

For a Period of FIVE YEARS: The fiberglass aeration or mineral tanks, 14" Diameter - Up.

For a Period of ONE YEAR: The entire filter.

Any parts used for replacement are warranted for the remainder of the original warranty period applicable to the part.

THIS WARRANTY IS EFFECTIVE TO THE ORIGINAL CONSUMER PURCHASER ONLY, AND ONLY AS LONG AS THE IRON CURTAIN 2.0™ REMAINS AT THE ORIGINAL INSTALLATION SITE.

No sales representative, distributor, agent, dealer, reseller or any other person is authorized to make any other warranty on behalf of Hellenbrand, Inc. Upon expiration of the applicable warranty period(s), Hellenbrand, Inc., shall have no further liability related to the products/parts to which the warranty period(s) apply, except with respect to valid warranty claims asserted during the appropriate warranty period(s).

If a part described above becomes defective within the specified warranty period, you should notify your Iron Curtain 2.0™ sales representative and arrange a time during normal business hours for the inspection of the water conditioner at the original installation site. Any part found defective within the terms of this warranty will, at Hellenbrand, Inc.'s option, be repaired or replaced. You are responsible for freight from our factory and local service charges. This paragraph sets forth the exclusive remedy for any valid warranty claims against Hellenbrand, Inc.

THIS WARRANTY DOES NOT COVER defects caused by sand, sediment or bacteria fouling, accident, fire, flood, Act of God, misuse, misapplication, neglect, alteration, installation or operation contrary to Hellenbrand, Inc.'s printed instructions, or installation, repair or service by anyone other than Hellenbrand, Inc., or an authorized Hellenbrand reseller.

As a manufacturer, we do not know the characteristics of your water supply or the purpose for which you are purchasing this water conditioner. Please understand that the quality of water supplies may vary seasonally or over a period of time, and that your water usage rate may vary as well. Water characteristics can also change considerably if your water conditioner is moved to a new location. For these reasons, we assume no liability for the determination of the proper equipment necessary to meet your requirements and we do not authorize others to assume such obligations for us.

REMEDIES FOR DEFECTS OR FAILURES, TO THE EXTENT PERMITTED BY APPLICABLE LAW, ARE LIMITED TO THE REMEDIES PROVIDED IN THIS WARRANTY. ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY WARRANTY WHICH MIGHT ARISE BY IMPLICATION OR OPERATION OF LAW, WHETHER FROM THE SELLER AND/OR MANUFACTURER OF THIS PRODUCT, IS HEREBY EXCLUDED AND DISCLAIMED, TO THE EXTENT ENFORCEABLE UNDER APPLICABLE LAW, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR NON-INFRINGEMENT, OR ANY WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING, OR FROM USAGES OF TRADE.

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Some states do not allow limitations on how long an implied warranty lasts or exclusions or limitations of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.