

Hellenbrand[®]

IRON CURTAIN[®]
SYSTEM 2.0

ProMate-6 / Iron Curtain[®] 2.0 Demand Aeration Manual



U.S. Patent No. 7,156,995 B2, 7,491,321 & 7,638,063

Owner's Manual

108038
Updated 5/25/17-LBRY
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Manufactured by:
HELLENBRAND, INC.
404 Moravian Valley Road • Waunakee, Wisconsin 53597
www.hellenbrand.com • info@hellenbrand.com

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 _____ 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 four 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 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 25 psi at a predetermined continuous flow rate is required to backwash the filter properly, with a maximum of 80 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: Iron Curtain System controls and/or air pumps are NOT designed to be installed outdoors with direct exposure to the elements. Hellenbrand recommends filter systems to be installed indoors or under a protective shelter protected from the elements. Contact your Hellenbrand representative to inquire about rainproof covers. The water pressure is not to exceed 80 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 27 and 28

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 COM+, 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 26-27 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, this will occur in filtering mode.

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

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.

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

Demand Aeration – Factory Settings

Press NEXT and DOWN arrows together until display changes. Release and press NEXT and DOWN arrows together until valve type displayed

Use NEXT button to advance through the screens:

Valve Type	1.0 or 1.25 or 1.5 or 2.0
Meter Size	1.5 or 2.0 or 2.0 valves only
Alternator Options	OFF
Aux Valve Options	OFF
Auxiliary Input	OFF
Cycle 1	FILTERING
Cycle 2	BACKWASH
Cycle 3	RINSE
Cycle 4	END
ALT Fill Trigger	OFF

Press NEXT and DOWN together until display changes:

Set TYPE	Filtering
Cycle 1	Filtering - 10
Cycle 2	Backwash - 12 Min
Cycle 3	Rinse - 6 Min
Gallons Capacity	OFF
Set Regen	Delayed
Relay 1 Time/Gal/Regen	GALLONS
Relay 1 Setpoint	500 Gallons
Relay 1 Duration	10:00 Min
Relay 2 Time/Gal/Regen	TIME
Relay 2 Setpoint	0 Min
Relay 2 Duration	10:00 Min
Service Alarm	OFF
Scheduled Service	OFF

Back to Scrolling Display

Installation Diagram

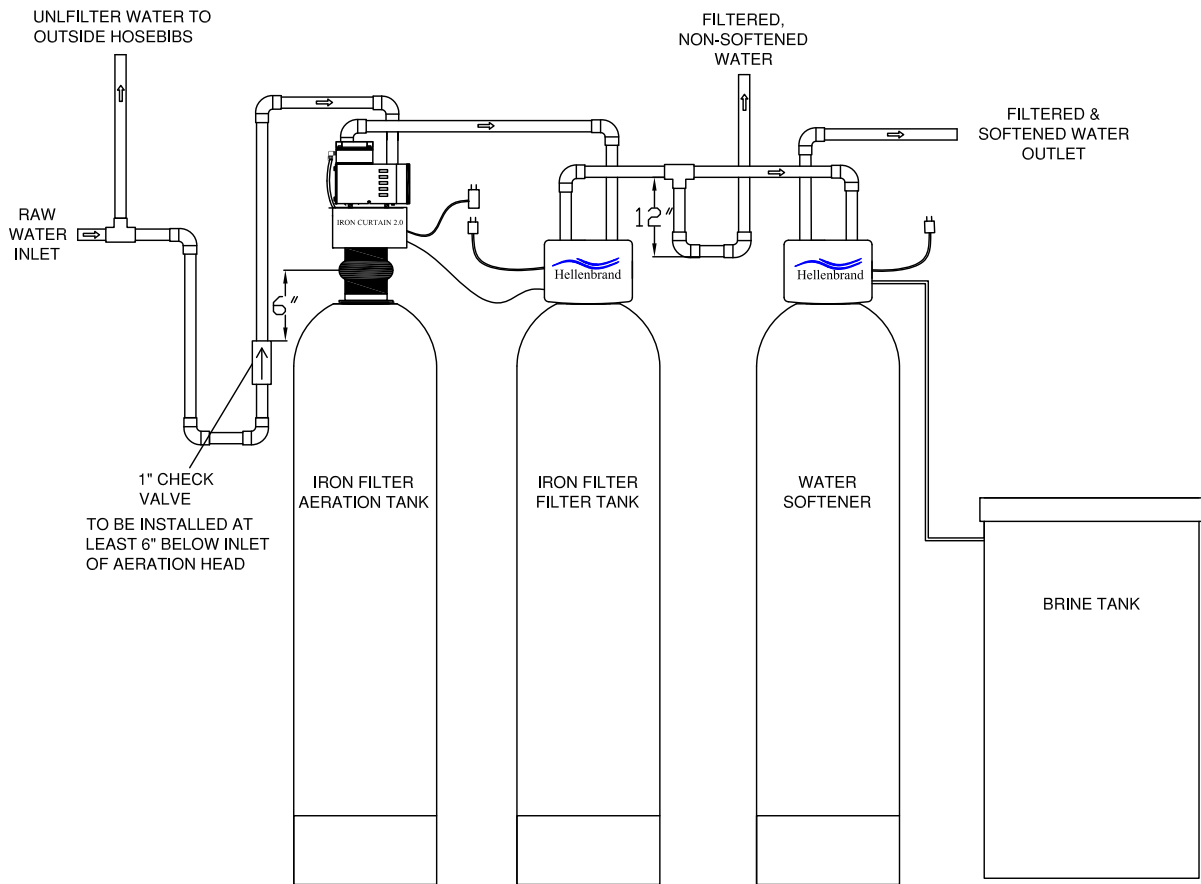


Figure 1

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 aertation tanks.

Part Number

104174
(when ordered with IC)



Description

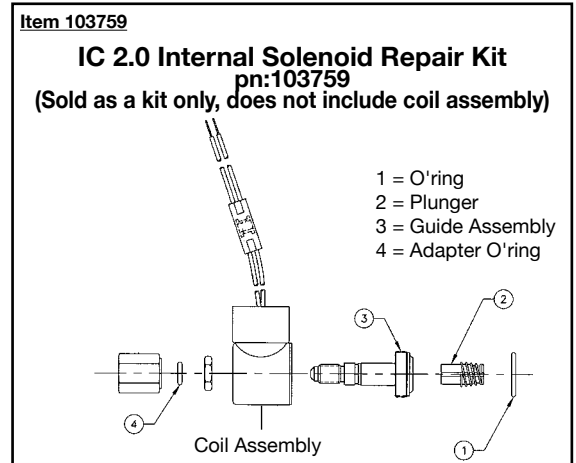
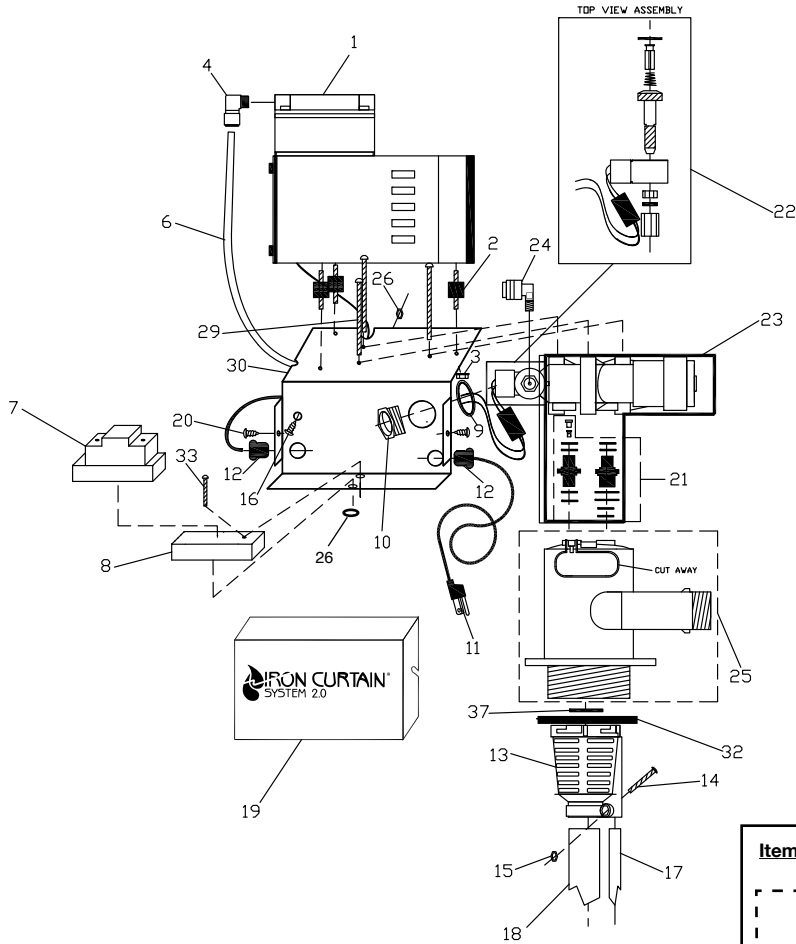
Brass Check Valve

Part Number

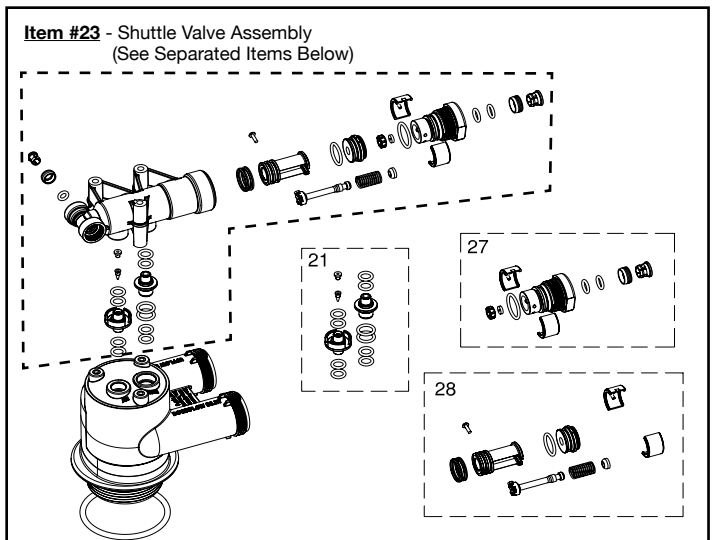
102792
(when ordered with IC)



IC-2.0 Assembly



Item No.	Part No.	Description	Qty.
1	110269	Hellenbrand Pump	1
2	101631	IC Pump Feet	3
3	102137	IC Pump Feet Nut	3
4	110470	Elbow, IC Pump 1/4" NPT x 1/4" Tubing	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



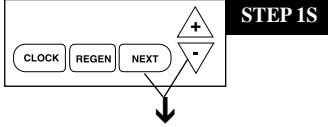
26	107995	Relay Base Nut	2
27	101390	End Cap Assembly	1
28	102259	Piston Assembly	1
29	102476	Back Plate Bolt	3
30	108030	Back Plate	1
	102792	1" Brass Inlet Check Valve (Not Shown, See pg 7)	
	104174	Vertical Adapter Inlet Check Valve	
31	104136	Complete Aeration Assembly	1
32	102192	O'Ring-Tank Adapter	1
33	107994	Relay Base Screw	1
36	102894	Solenoid Spanner Wrench (Not Shown)	1
37	102165	O'Ring Pick-Up Tube	1

Demand Aeration Programming

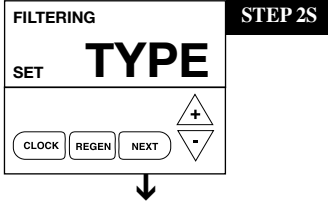
Must be Super HP Revs P100.13 or Greater, X-Mega Revs 101.02 or Greater

FILTER SETUP

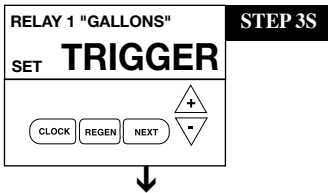
▲ = ▲ Up Arrow ▼ = ▼ Down Arrow



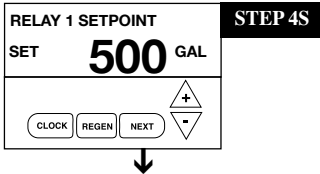
STEP 1S – Press NEXT and ▼ simultaneously for 3 seconds. If screen in Step 2S does not appear in 5 seconds the lock on the valve is activated.



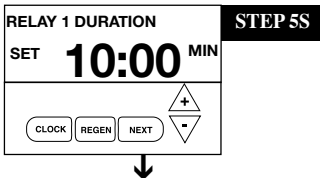
STEP 2S – Select between softening or filtering. A flashing "SOFTENING" or "FILTERING" will appear. Choose FILTERING using ▼ or ▲ button. **Factory setting is Filtering.** Press NEXT to step through filter programming to relay programming displayed on Step 3S. Press REGEN to exit Filter System Setup.



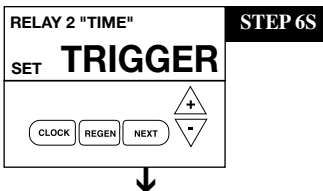
STEP 3S – Set Relay 1 Trigger. Gallons chosen to activate relay. If Off or Time was selected in previous steps, this screen does not appear use ▲ or ▼ down arrows to set relay trigger to gallons. Press NEXT to get to step 4S. Meter does not read during regeneration.



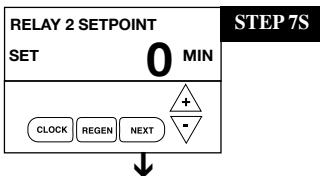
STEP 4S – Use up and down arrows to select number of gallons per relay activation of regen gallon setting. Range = 0.1-20,000 gallons. Press NEXT to go to Step 5S.



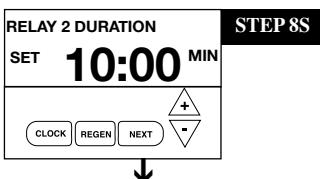
STEP 5S – Use up and down arrows to set duration of relay activation in minutes. Range = 1 second - 500 minutes. Recommended duration is 10:00 minutes. Press NEXT to go to Step 6S. Press REGEN to return to previous step.



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



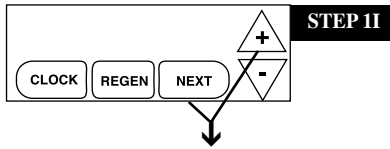
STEP 7S – Use up and down arrows to select number of minutes after start of regeneration that relay closes and initiates air recharge cycle. Range = 20 - 500 minutes. Press NEXT to go to Step 8S.



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. Press NEXT to program service alarm if desired.

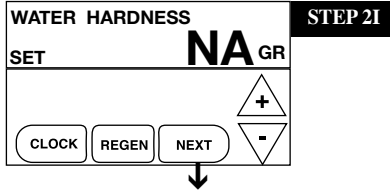
INSTALLER PROGRAMMING

▲ = ▲ Up Arrow ▼ = ▼ Down Arrow



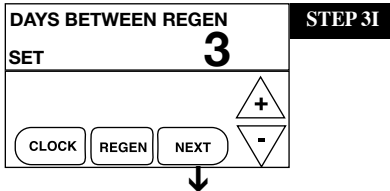
STEP 1I

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



STEP 2I

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

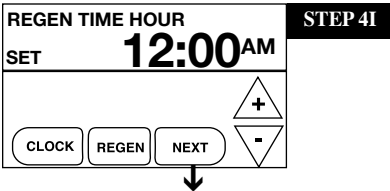


STEP 3I

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.**

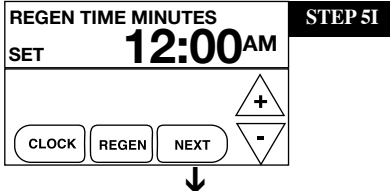
- number of days between regeneration (1 to 28); or
- "oFF"

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



STEP 4I

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. Press NEXT to go to step 5. Press REGEN to return to previous step.



STEP 5I

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/Settings. Press REGEN to return to previous step.

RETURN TO NORMAL MODE

CYCLE SEQUENCE

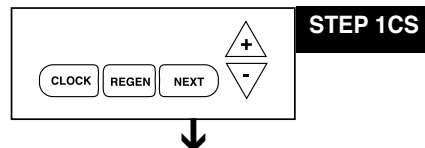
Anytime cycle sequence is modified, filter set-up will revert to manufacturer setting and must be reprogrammed as desired.

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 is used as air recharge cycle.

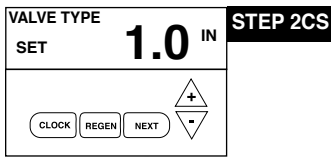
The following is an example of how to set a valve so that when regeneration is initiated, FILTERING occurs first, BACKWASH occurs second, RINSE occurs third, and END occurs fourth.

Cycle Options		
BACKWASH	REGENERANT DRAW	FILL
RINSE	FILTERING	END

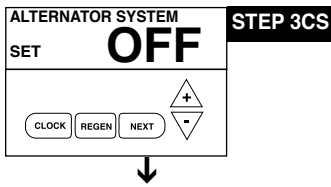


STEP 1CS

STEP 1CS – Press NEXT and ▼ simultaneously until TYPE appears on screen and release. Then press NEXT and ▼ simultaneously again for 3 seconds and release. If screen in step 2CS does not appear in 5 seconds the lock on the valve is activated.

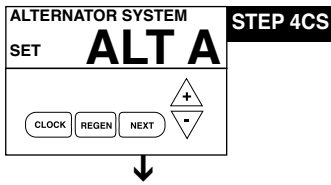


STEP 2CS – Valve Type. Use the ▲ or ▼ to select from 1.0", 1.25", 1.50", 2.0L", 2.0" valve. ProMate-6.0 is a 1.0" meter. Press NEXT to go to Step 3CS.



STEP 3CS – Use the ▲ or ▼ to select one of the following:

- **Twin Alternating System** – Select Alt A or Alt B, See instructions in Step 4CS; or
- **System Board - Allows Demand Recall Programming** – See instructions in Step 9CS.
- **No Hard Water Bypass During Regeneration** – See instructions in Step 6CS.
- **Reclaim Enabled** - Allows control to operate in Reclamation Mode, up to 3 reclaim events can be programmed – See instructions in Step 8CS.
- **Separate Source Enabled** - Allows control to have a separate water source during the regeneration cycle. See instructions in Step 7CS.
- **System Board Enabled** - See Step 9CS.
- **OFF; Factory Setting is OFF** - Press NEXT to go to Step 10CS.



STEP 4CS –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. Press NEXT to select alternating options.

Select ALT A for the control valve that has the two-pin connector labeled MAV DRIVE connected to the alternator valve.

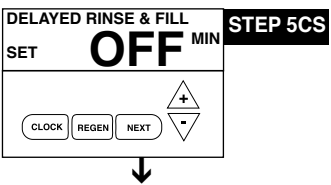
Select ALT B for the control valve that will be connected via three-prong connector labeled INTERCONNECT. Must use 3-wire interconnect cable. Press NEXT to go to Step 5CS.

For Alternating System, change programming:

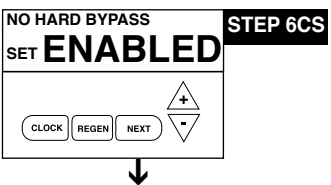
- Set softener, with volume capacity in GALLONS and select Regeneration Time Option "IMMEDIATE" or "DELAYED" and select DAYS BETWEEN REGEN as desired.
- For complete programming, see Twin Alternating MAV manual.

Select Twin Alternating Options

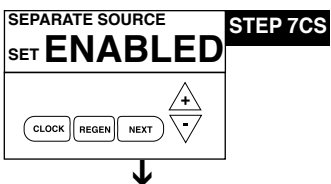
- Standard - Standard Alternating function
- Refresh Rinse - Alternates every 6am & 6pm and runs programmable number of gallons to service before alternating back.
- Delayed Rinse and Fill - See Step 5CS



STEP 5CS – This option delays the last two cycles of regeneration (only "Rinse" and "Fill"). This feature splits the regeneration into two portions. The first portion of the regeneration will start immediately and all programmed cycles before the "Rinse" and "Fill" cycles will be performed. After all programmed cycles before "Rinse" and "Fill" are completed the control valve will drive to the stand-by position (displaying "Delayed Rinse + Fill Pending"). When the volume of the on-line unit is depleted to 10% of its programmed capacity, the control valve will be triggered to finish the second portion of the regeneration and complete the "Rinse" and "Fill" cycles and return to Service and be placed into Standby mode, to wait to come on-line for service. Filter must be programmed as post fill. Press NEXT to go to Step 10CS.



STEP 6CS – No Hard Water Bypass Enabled - 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 FILTERING, and be driven open after the last regeneration cycle that is not FILL. NOTE: If the control valve enters into an error state during regeneration mode, the no hard water bypass valve will remain in its current state until the error is corrected and reset. Press NEXT to go to Step 10CS.



STEP 7CS – Configuring the Control Valve for Separate Source Operation - Select Separate Source Enabled for control operation. For separate source operation, the three wire connector is not used. Selection requires that a connection to a MAV is made to the two pin connector labeled ALTERNATOR MAV DRIVE located on the printed circuit board. The C port of the MAV must be connected to the valve inlet and the A port connected to the separate source used during regeneration. The B port must be connected to the feed water supply. When set to Separate Source Enabled the MAV will be driven closed before the first regeneration cycle, and be driven to open after the last regeneration cycle.

NOTE: If the control valve enters into an error state during regeneration mode, the MAV will remain in its current state until the error is corrected and reset. Press NEXT to go to Step 10CS.

RECLAIM
SET **ENABLED** **STEP 8CS**

CLOCK REGEN NEXT

+
-

MAV RECLAIM START
SET **10:00** MIN

CLOCK REGEN NEXT

+
-

RECLAIM DURATION
SET **15:00** MIN

CLOCK REGEN NEXT

+
-

MAV RECLAIM 2 START
SET **26:00** MIN

CLOCK REGEN NEXT

+
-

RECLAIM 2 DURATION
SET **10:00** MIN

CLOCK REGEN NEXT

+
-

SYSTEM BOARD
SET **ENABLED** **STEP 9CS**

CLOCK REGEN NEXT

+
-

AUX MAV OFF
SET **TRIGGER** **STEP 10CS**

CLOCK REGEN NEXT

+
-

AUX MAV RECLAIM
SET **TRIGGER** **STEP 11CS**

CLOCK REGEN NEXT

+
-

AUX RECLAIM START
SET **30:00** MIN **STEP 12CS**

CLOCK REGEN NEXT

+
-

STEP 8CS – Configuring the Control Valve for Water Reclamation Mode - Select Reclamation Enabled for control operation. Motorized Alternating Valve will advance to Bypass at a set time after the beginning of regeneration, and return to Service after a set duration.

The start of regeneration is defined as the first cycle that is not FILL or FILTERING. The Alternating MAV will transition back to Service after the completion of the preset duration time, labeled Reclaim Duration. Three reclaim events are possible. Select either Reclaim Enabled, Reclaimed 2x for two events and Reclaim 3X for three separate reclaim events.

Use the ▲ or ▼ to select minutes after start of regeneration to activate MAV to reclaim position for 1st reclaim event. Press NEXT to set duration of reclaim

Use the ▲ or ▼ buttons to select minutes of 1st reclaim duration. Press NEXT to go to next reclaim event if more than one event is selected. Press NEXT to go to Step 10CS if only one reclaim event is selected.

Only displays if more than one reclaim event is selected. Use ▲ or ▼ buttons to select number of minutes after start of regeneration for **second** reclaim event.

Press NEXT to program **second** reclaim duration. Use ▲ or ▼ buttons to set length of second duration.

Press NEXT to program third reclaim event or to Step 10CS.

STEP 9CS – Configuring the Control Valve to operate with the Hellenbrand System Controller - Select System Board Enabled to link the Control Valve to the SystemMate Controller. For communication between the Control Valve and the System Controller, a three wire communication cable is required.

Press NEXT to go to Step 10CS. Press REGEN to return to previous step.

STEP 10CS – Use the ▲ or ▼ buttons to select one of the following:

- **Reclaim** – Allows water or regenerant reclamation. Up to 3 reclaim events can be programmed – See instructions below.
- **Separate Source** –Allows Auxiliary MAV to switch positions before the start of regeneration and to switch back at the end of regeneration. See instructions in Step 14CS.
- **Off - Factory Setting is Off**

Press NEXT to go to Step 11CS when reclaim selected as trigger. Press REGEN to return to previous step.

STEP 11CS – Use the ▲ or ▼ buttons to select reclaim as Aux MAV Trigger. This option is usually done with softeners for brine reclaim but can be used to reclaim water used during regeneration. Three reclaim events are possible. RECLAIM is one event. RECLAIM 2X is two events and RECLAIM 3X is selected for 3 different reclaim events.

STEP 12CS – Only displays if reclamation of brine is enabled in Step 11CS. Use the ▲ or ▼ buttons to select the number of minutes after the start of regeneration before the MAV will divert the waste water from the plumbing drain receptacle to the storage tank. Start of regeneration is defined as any mode that is not fill or softening.

Press NEXT to go to Step 13CS. Press REGEN to return to previous step.

AUX RECLAIM DURATION **STEP 13CS**
 SET **6:00** MIN
 CLOCK REGEN NEXT

STEP 13CS – Only displays if reclamation is enabled in Step 11CS. Use the ▲ or ▼ buttons to select the number of minutes to divert the waste water to the storage tank. After the minutes count down to zero the waste water will once again be diverted to the plumbing drain receptacle. Press NEXT to program next reclamation event if more than one selected. Press NEXT to go to Step 15CS if only one reclaim event desired. Press REGEN to return to previous step.

MAV RECLAIM 2 START
 SET **38:00** MIN
 CLOCK REGEN NEXT

Only displays if RECLAIM 2X is selected. Use ▲ or ▼ buttons to select number of minutes after start of regeneration for Aux MAV to divert waste water. Press NEXT to program number of minutes for duration of second reclaim event. Use the ▲ or ▼ buttons to select number of minutes of duration of second reclaim event. Press NEXT to program next reclaim event or go to Step 15 CS if no further reclaim required.

RECLAIM 2 DURATION
 SET **15:00** MIN
 CLOCK REGEN NEXT

AUX MAV SEP SOURCE **STEP 14CS**
 SET **TRIGGER**
 CLOCK REGEN NEXT

STEP 14CS – Separate 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 Separate 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 15CS. Press REGEN to return to previous step.

AUXILIARY INPUT **STEP 15CS**
 SET **ON 0** REG
 CLOCK REGEN NEXT

STEP 15CS – 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:

- IMMED – 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.
- OFF - **Factory setting is off**

Press NEXT to go to Step 16CS. Press REGEN to return to previous step.

FILTERING **STEP 16CS**
 SET **CYCLE 1**
 CLOCK REGEN NEXT

STEP 16CS – Press the ▲ or ▼ buttons until selection of first cycle appears in left upper corner, in this example FILTERING is selected. Press NEXT to go to Step 17CS. Press REGEN to return to previous step.

BACKWASH **STEP 17CS**
 SET **CYCLE 4**
 CLOCK REGEN NEXT

STEP 17CS – Press the ▲ or ▼ buttons until selection of fourth cycle appears in left upper corner, in this example BACKWASH is selected. Press NEXT to go to Step 18CS. Press REGEN to return to previous step.

RINSE **STEP 18CS**
 SET **CYCLE 6**
 CLOCK REGEN NEXT

STEP 18CS – Press the ▲ or ▼ button until selection of third regeneration cycle appears (up to 9 regeneration modes are possible). **End must be selected as last cycle.** Press NEXT to go to Step 19CS.

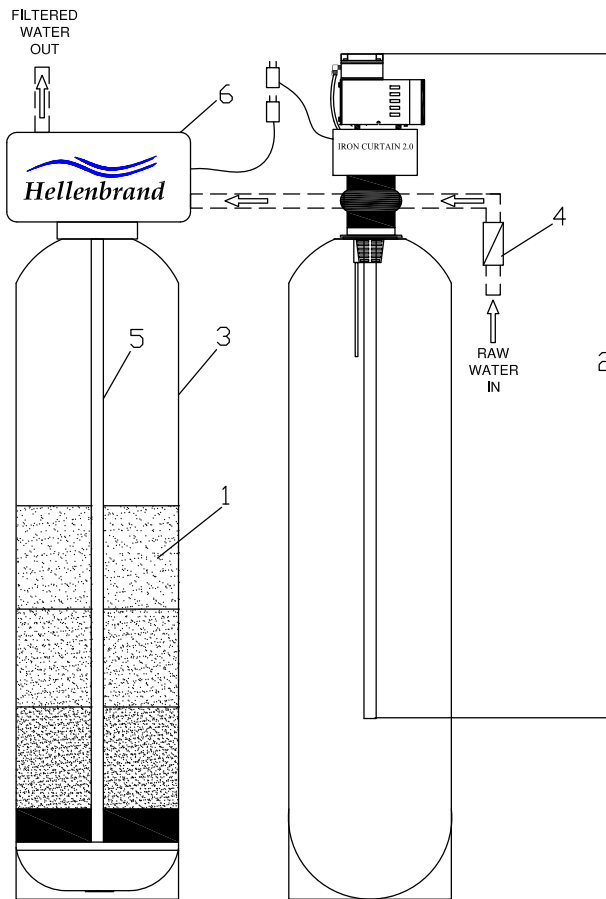
ALT FILL TRIGGER **STEP 19CS**
 SET **REGENS OFF**
 CLOCK REGEN NEXT

STEP 19CS – Press the ▲ or ▼ button to select number of standard regenerations which would trigger one alternate regenerant fill amount. Brine elbow must be installed for this to function. Range: 1-99. **Factory setting is Off.** Press NEXT to go to Step 20CS.

ALT FILL AMOUNT **STEP 20CS**
 SET **15.0** LBS
 CLOCK REGEN NEXT

STEP 20CS – Select amount of regenerant to be used when alternate regeneration requested. Brine elbow usually contains 0.5 gpm flow control button. This screen is not displayed if off is selected in previous step. Softener Range 0.1–200 lbs. Software assumes 0.5 gpm flow control is in place to determine length of fill time. Filter Range 0.05–20.0 Gallons.

Iron Curtain® System – IC-10/IC-12



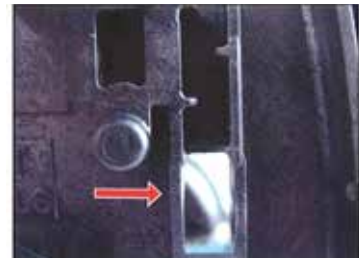
ITEM NO.	QTY. REQ'D.	PART NO.	DESCRIPTION
1	1	101065	IC-10 Rebed Mix
		101069	IC-10A Rebed Mix
		101068	IC-10+ Rebed Mix
		101070	IC-12 Rebed Mix
		101072	IC-12A Rebed Mix
		101071	IC-12+ Rebed Mix
2	1	107585	Aeration Assembly
3	1	104554	1054 Vortech IC Filter Tank
		104561	1252Vortech IC Filter Tank
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
Not Shown		108038	Manual

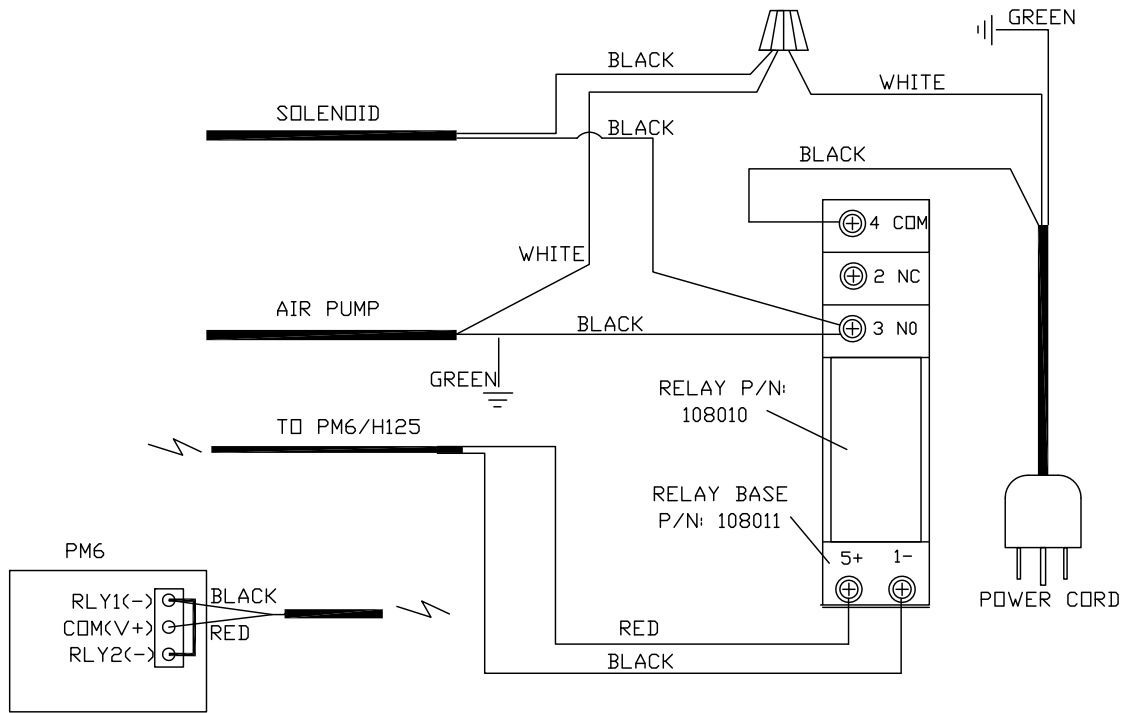
FIGURE 8

Start-Up Instructions – Complete wiring as seen on page 15 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.

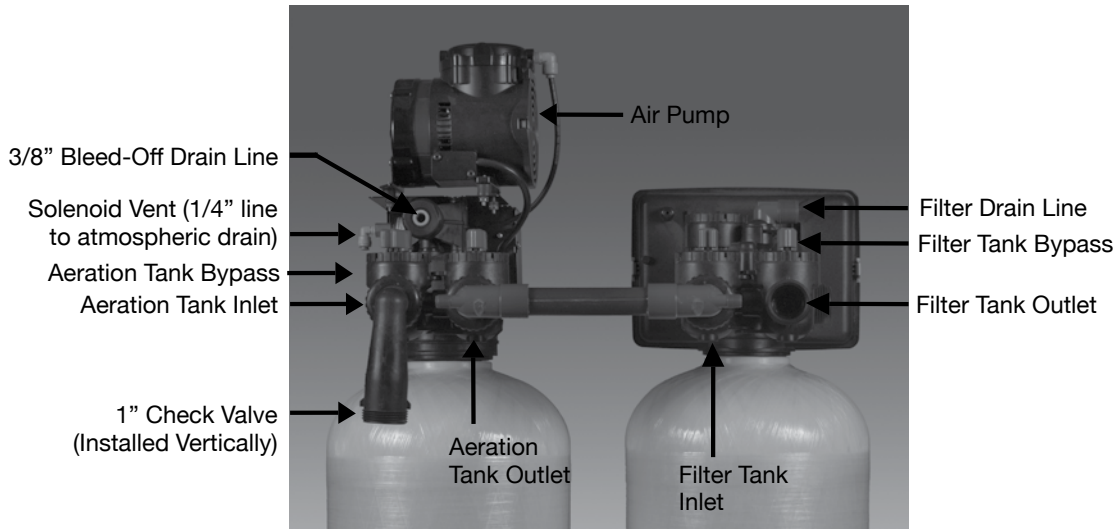
Iron Curtain® 2.0 Aeration Wiring



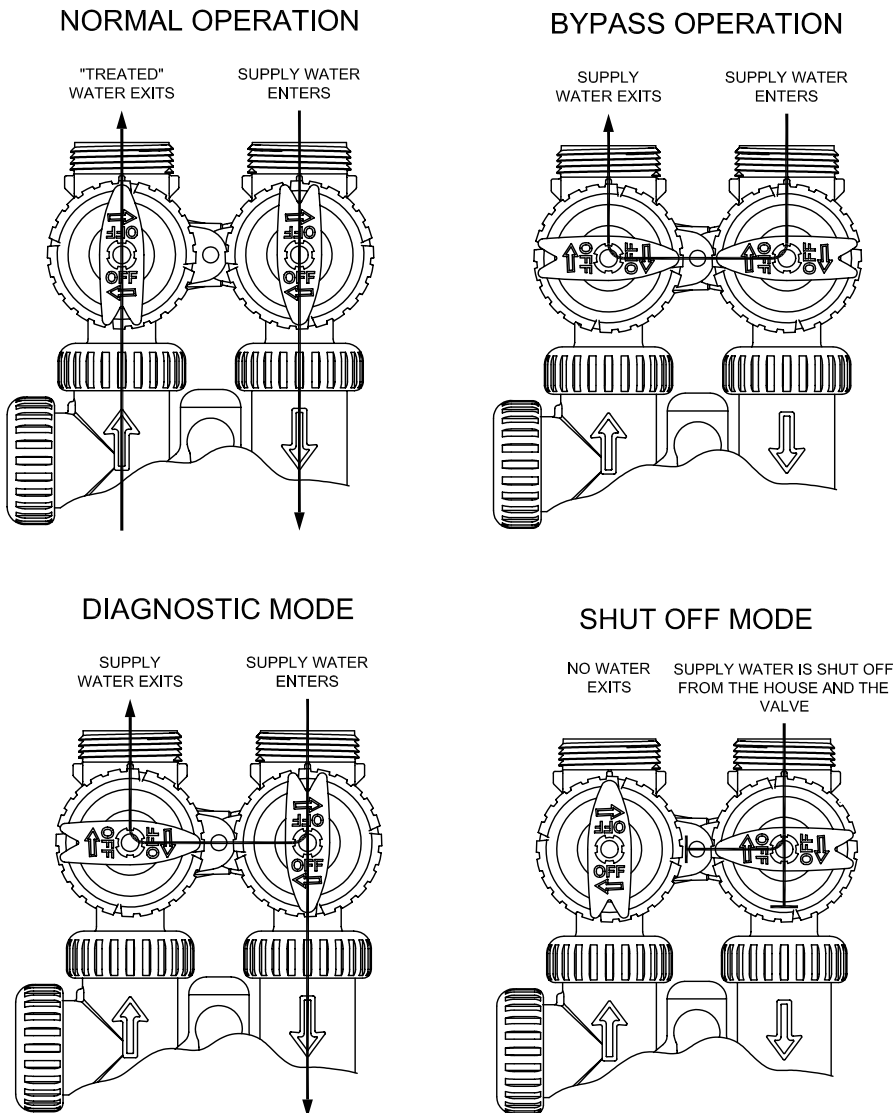
- EACH GREEN GROUND WIRE TO BE CONNECTED DIRECTLY TO BACK PLATE
- CONNECT RELAY POWER SUPPLY TO FILTER CONTROL BY WIRING TO RLY1 & COM BLACK TO RLY1(-) RED TO COM (+)
- AIR RECHARGE TIME IS ADJUSTABLE BY GALLONS & TIME

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

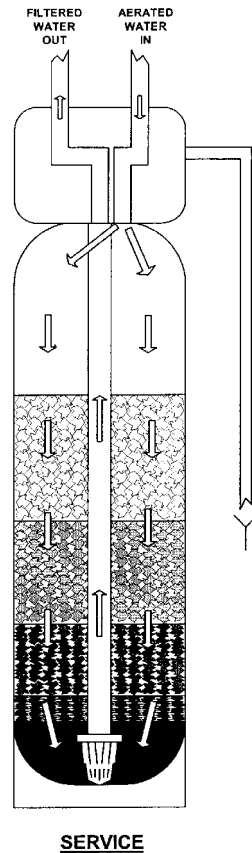
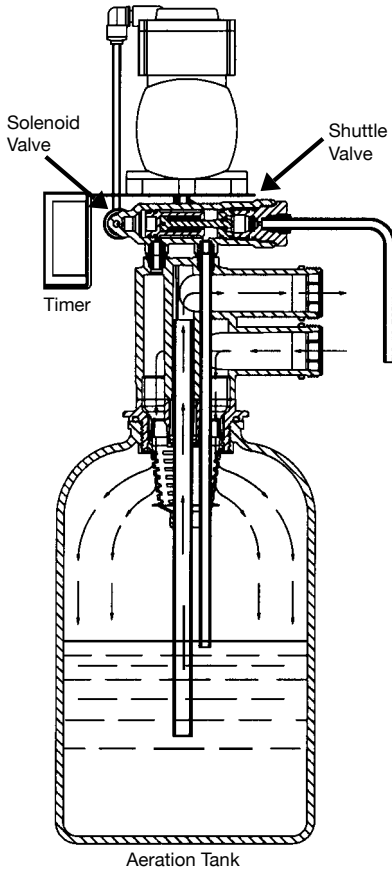
ProMate® Filter Valve Option



BYPASS VALVE OPERATION COMPLETE BYPASS, PART #101325



IRON CURTAIN® FLOW DIAGRAMS



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.

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7,491,321 & 7,638,063

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

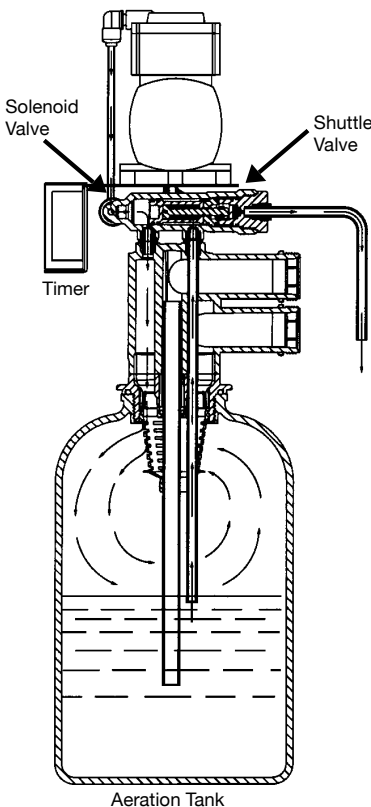
How often the air recharge cycle occurs is based on the number of gallons that pass the meter. The timer simultaneously energizes the air pump and the solenoid valve. After a factory set amount of time, the relay shuts off the air pump and de-energizes the solenoid valve. Both the frequency and duration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

Solenoid Valve Operation

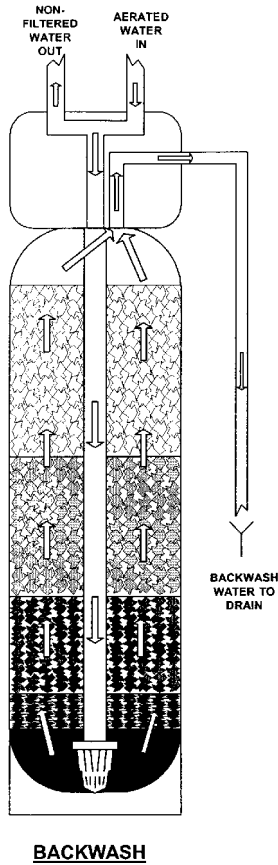
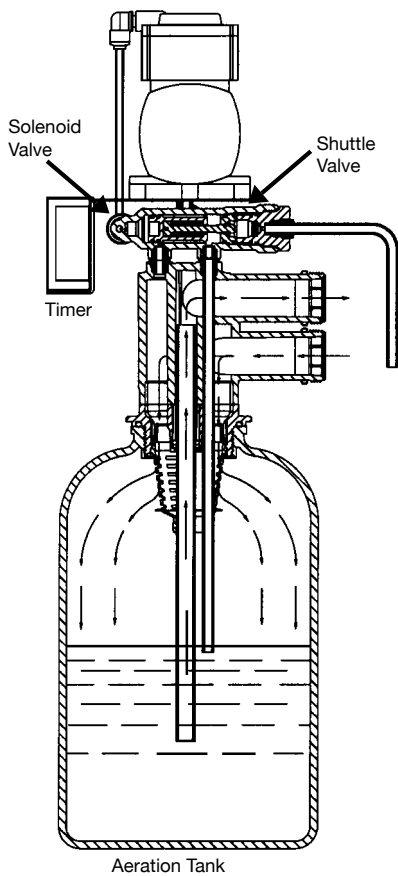
The solenoid valve is a three-way valve having ports that connect to the air pump, shuttle valve and the atmosphere. In the service cycle, the solenoid valve is de-energized and closes the port to the air pump, providing a positive shut-off to the pump. This prevents water from backing up into the air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



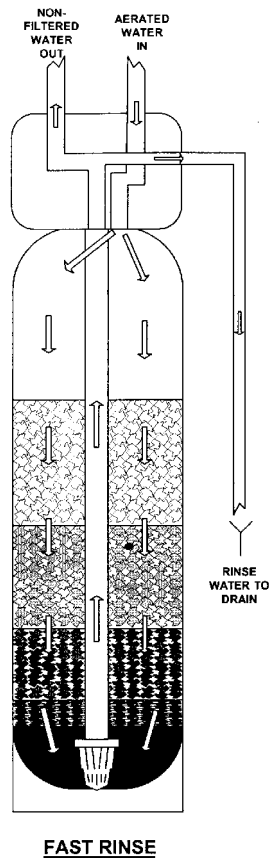
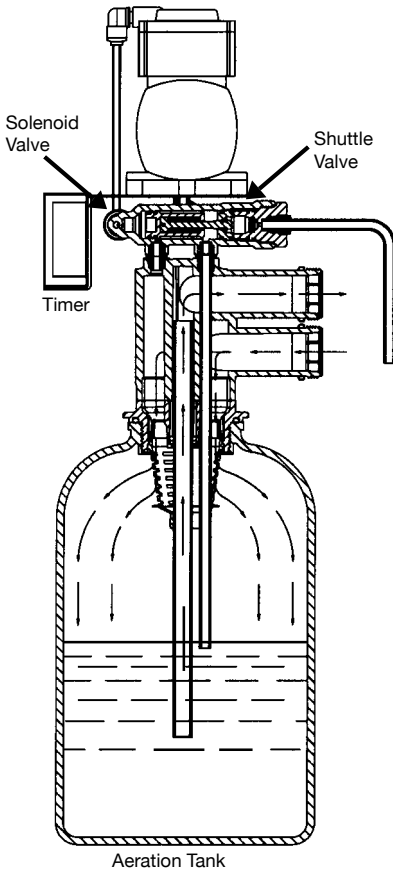
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7,491,321 & 7,638,063



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.

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 7,491,321 & 7,638,063



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.

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Troubleshooting

Complaint	Problem	Cause	Solution	
1. Iron or manganese* bleed-through or staining	A. Inadequate backwash of filter	1. Plugged drain line flow control	1a. Clean or replace drain line flow control	
		2. Insufficient water supply from well	2a. Check for minimum specified flow and pressure requirements of filter system	
		3. Plugged aeration tank inlet diffuser or pick-up tube	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	
4. Media bed fouled		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	2a. Check aeration tank assembly for any air leaks and repair (Note: soapy water solution works well for locating air leaks)	
			3. Faulty aeration pump due to:	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
		c. Damp environment	3c. Clean, repair or replace aeration pump, ventilate environment or provide external air source	
		4. Air loss through high demand	4a. Increase air recharge frequency of filter. See page 6	
		5. Relay does not energize air compressor	5a. Verify correct programming-see page 12	
			5b. Wired incorrectly from PC board. See wiring diagram-page 15 Faulty relay. Verify 12V DC power at terminals 1 & 5.	
			5c. Faulty PC Board. No power to rly 1 and common or rly2 and common	
	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	

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

Complaint	Problem	Cause	Solution
	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 19	1. Plugged Inlet 2. Fouled Media Bed can also cause loss of pressure.	1a. See 3a under #1 Solutions, pg 19 2a. See 4a under #1 Solutions, pg 19
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
8. Excessive noise during regeneration	A. Howling or whistling noise during regeneration cycle	1. Inadequate drain line size 2. Drain line is vibrating against other pipes, conduits, pipe hangers, heat ducts, floor joists, etc.	1a. Increase drain line size 2a. Insulate drain line, specifically at points of contact with other materials

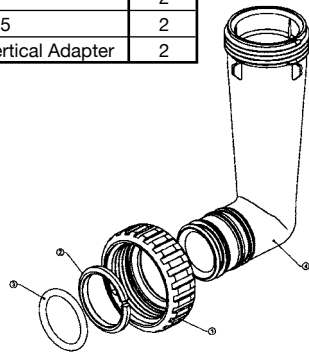
Complaint	Problem	Cause	Solution
9. Water running to drain continuously from filter control	A. Control valve is stuck in regeneration cycle. See specific control manual	1. Electrical service to control(s) has been interrupted	1a. Assure continuous electrical service is available (check plug, breaker, fuse, etc.)
		2. Faulty timer motor	2a. Replace timer motor
		3. Faulty drive motor	3a. Replace drive motor
		4. Foreign material lodged in piston	4a. Disassemble and clean control valve, replace seals, spacers, and piston assemblies
		5. Timer is lodged in regeneration cycle	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.	A. Did not plug in aeration pump prior to filling	1. Drain port open	1a. Plug in aeration pump. (See start-up instructions - page 5.)
		B. Shuttle valve stuck in the open position.	1b. Clean or replace shuttle valve and piston assembly 2b. Reduce water supply pressure
	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.	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	1. Low pH condition of the raw water supply. On type "A" filters, the pH correction media may be depleted	1a. On type "A" filters add pH correction media to filter tank, see Installation and Operation manual
		2. In rare occasions, highly aerated water in combination with a specific water supply can create a slightly corrosive condition	2a. Install a polyphosphate cartridge filter after the Iron Curtain Filter System to protect the distribution piping
		3. Shorten bleed off tube, reduce recharge frequency	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

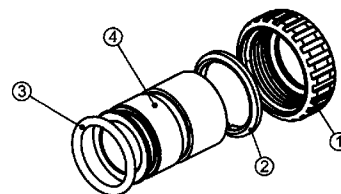
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106858	Bypass Vertical Adapter	2



Order No: 108618

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

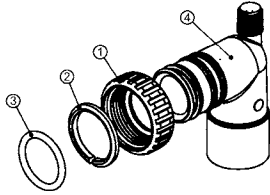


Iron Curtain® 2.0 Aeration Assembly In/Out Options

Order No: 101640

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

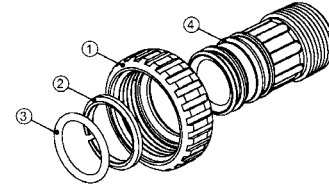
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106762	Bypass Vertical Adapter	2



Order No: 101643

Description: IC 2.0 Fitting 1" Plastic Male NPT Assembly

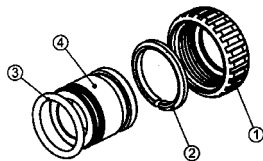
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106765	Fitting 1" Plastic Male NPT	2



Order No: 108617

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

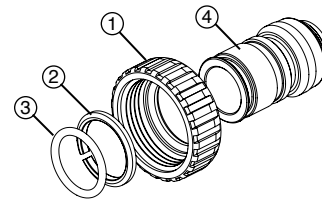
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106764	Fitting 3/4" Brass Sweat	2



Order No: 110135

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

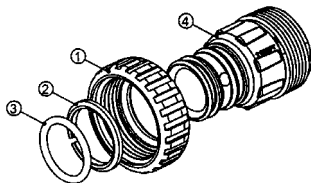
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106769	Fitting 3/4" Brass SharkBite	2



Order No: 101644

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

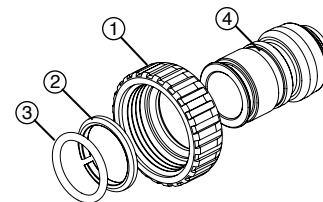
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106766	Fitting 1-1/4" Plastic Male NPT	2
1-4	101644	Fitting 1-1/4" Male NPT (Set of 2)	1



Order No: 110136

Description: IC 2.0 Fitting 1" Brass SharkBite Assembly

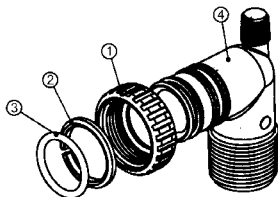
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106770	Fitting 1" Brass SharkBite	2



Order No: 101639

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

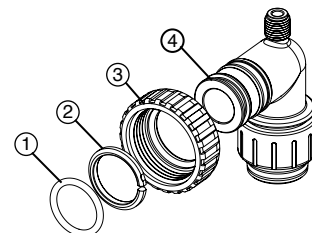
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106761	Fitting 1" PVC Male NPT Elbow	2



Order No: 108478

Description: IC 2.0 Fitting 1" John Guest

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



SERVICE INSTRUCTIONS FOR HELLENBRAND COMPRESSOR

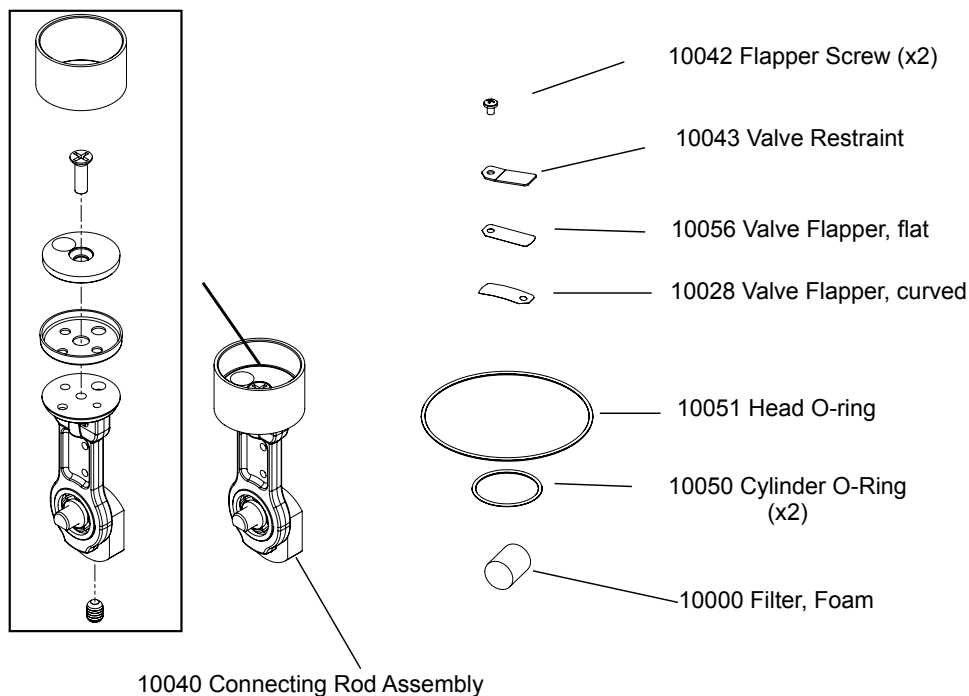
SERVICE KIT PART NUMBER-110350

COMPRESSOR SERVICE KIT

⚠ CAUTION: Unplug/disconnect all electrical power prior to beginning disassembly.

⚠ CAUTION: Improper assembly or use of damaged parts may lead to premature failure. To avoid frequent repairs follow the recommended assembly procedures.

This kit includes the following parts:



NOTE: Before you begin, read these instructions thoroughly and assemble the necessary tools. You will need:

- #2 Phillips bit for torque wrench (head and valve screws)
- 1/8" Hex wrench bit for torque wrench (eccentric set screw)
- Torque wrench (18-55 inch pounds)
- Clean cloths

SERVICE INSTRUCTIONS FOR HELLENBRAND COMPRESSOR

SERVICE KIT PART NUMBER-110350

DISASSEMBLY

STEP 1. Clean external surfaces of compressor.

(see Figure 1)

STEP 2. Loosen and remove the 4 head screws (1) and compressor head (2).

STEP 3. Carefully separate valve plate (5) from head.

STEP 4. Remove both head O-rings (3 and 4) and discard. Carefully remove and discard cylinder O-ring (6) from underside of valve plate.

STEP 5. Remove and discard screw, valve restraint and valve flapper (7) from valve plate.

STEP 6. Remove and discard screw and valve (8) from underside of valve plate.

STEP 7. Remove and discard intake filter from head. (see Figure 5)

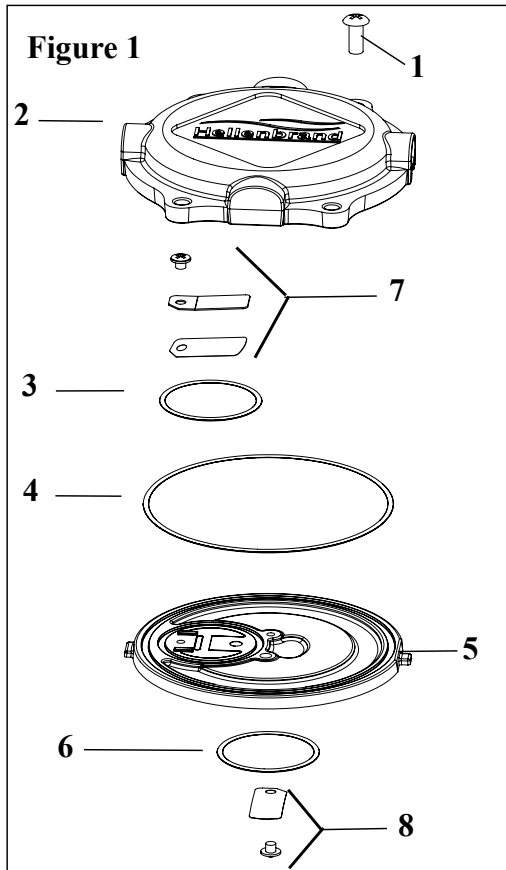
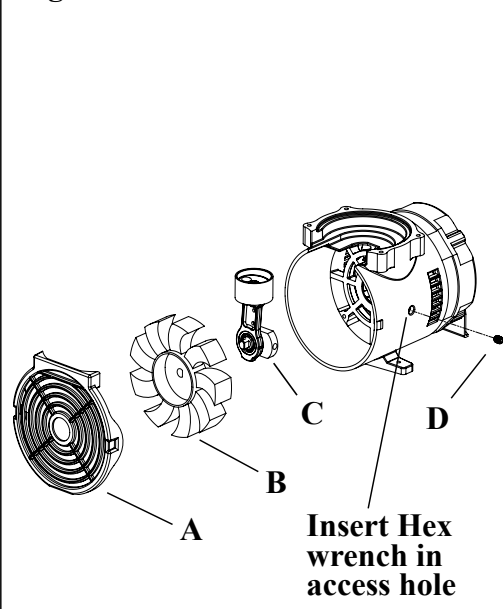


Figure 2



(see Figure 2)

STEP 8. Lift fanguard (A) off tabs and pull straight off to remove. Remove fan (B).

STEP 9. Rotate eccentric bearing assembly(C) to align set screw (D) with access hole. Loosen set screw with 1/8" Hex wrench. Slide connecting rod assembly off shaft and discard.

SERVICE INSTRUCTIONS FOR HELLENBRAND COMPRESSOR

SERVICE KIT PART NUMBER-110350

REASSEMBLY

(see Figure 3)

STEP 10. Clean top and bottom of valve plate with a clean, soft cloth. Install exhaust valve flapper (1). Place restraint (2) on top of flapper with alignment chamfers positioned together. Install valve flapper screw (3) and torque to 18 inch pounds.

STEP 11. Insert new rod assembly (see figure 2,C & D). **Align eccentric set screw with the flat of the shaft.** Push assembly onto shaft until eccentric contacts housing bearing. Torque eccentric set screw to 55 inch pounds.

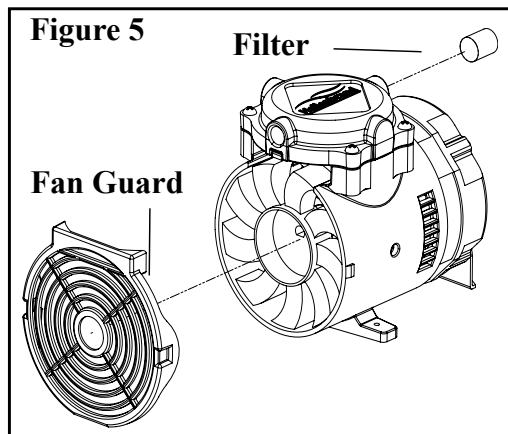
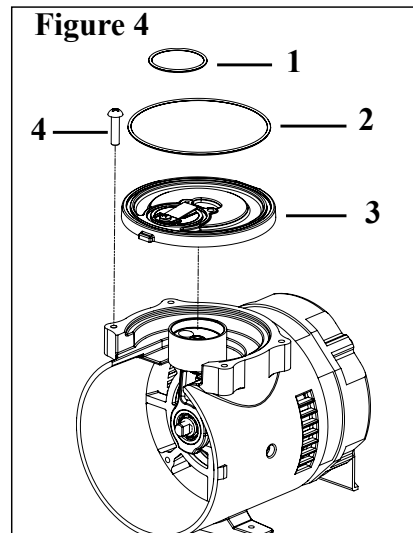
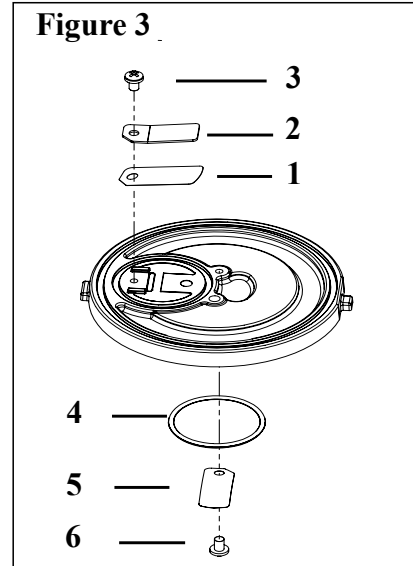
STEP 12. Carefully install intake valve (5) with valve screw (6), ensuring curvature is facing away from the valve plate, torque to 18 inch pounds. Install cylinder O-ring (4), seating it firmly into groove.

(see Figure 4)

STEP 13. Carefully install valve plate on compressor, ensuring exhaust valve facing front with O-ring and cylinder inside of O-ring groove.

STEP 14. Carefully install small (1) and large (2) O-rings into O-ring grooves on top of valve plate (3).

STEP 15. Install head over valve plate. Insert and tighten 4 head screws (4) to 40 inch pounds in a criss crossed pattern.



(see Figure 5)

STEP 16. Assemble fan ensuring flat on fan is aligned with flat on eccentric. Install fan guard, ensuring it snaps into place.

STEP 17. Assemble intake filter by turning clockwise while pushing in until it is flush with the intake port face.

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.

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 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.

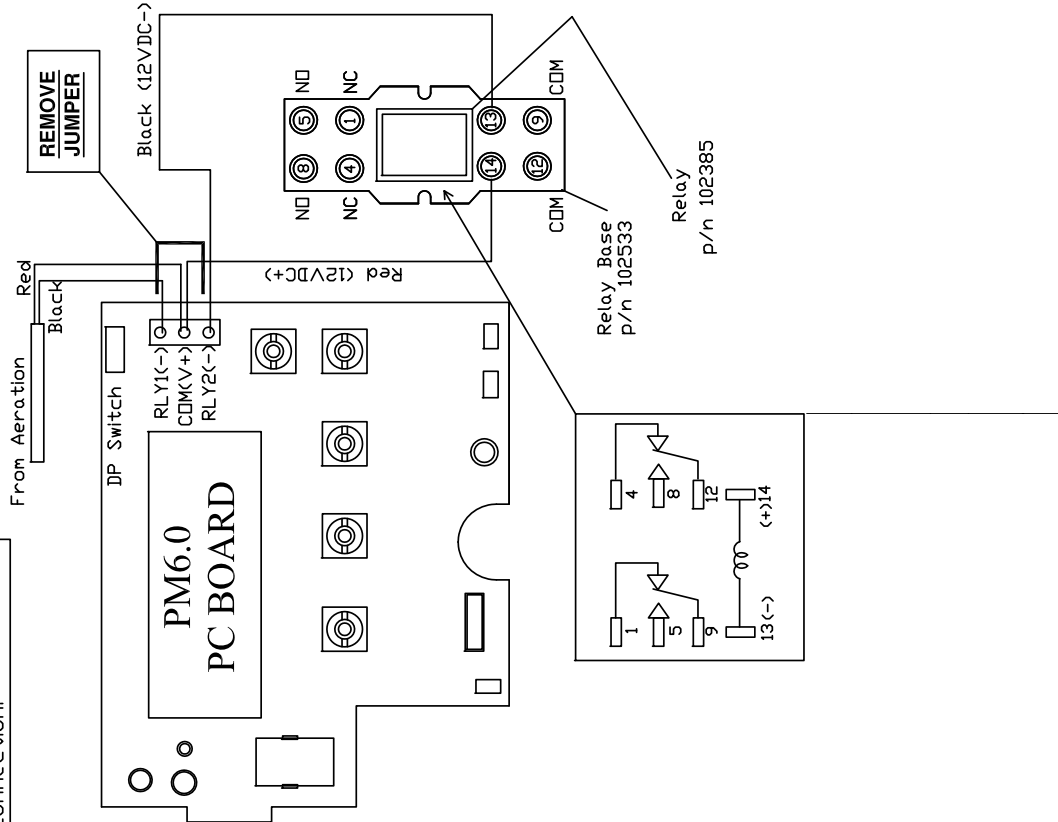
RELAY 1 GALLONS SET **TRIGGER**
Push NEXT

Use ▲▼ buttons to set relay for 500 GAL. As shown below.

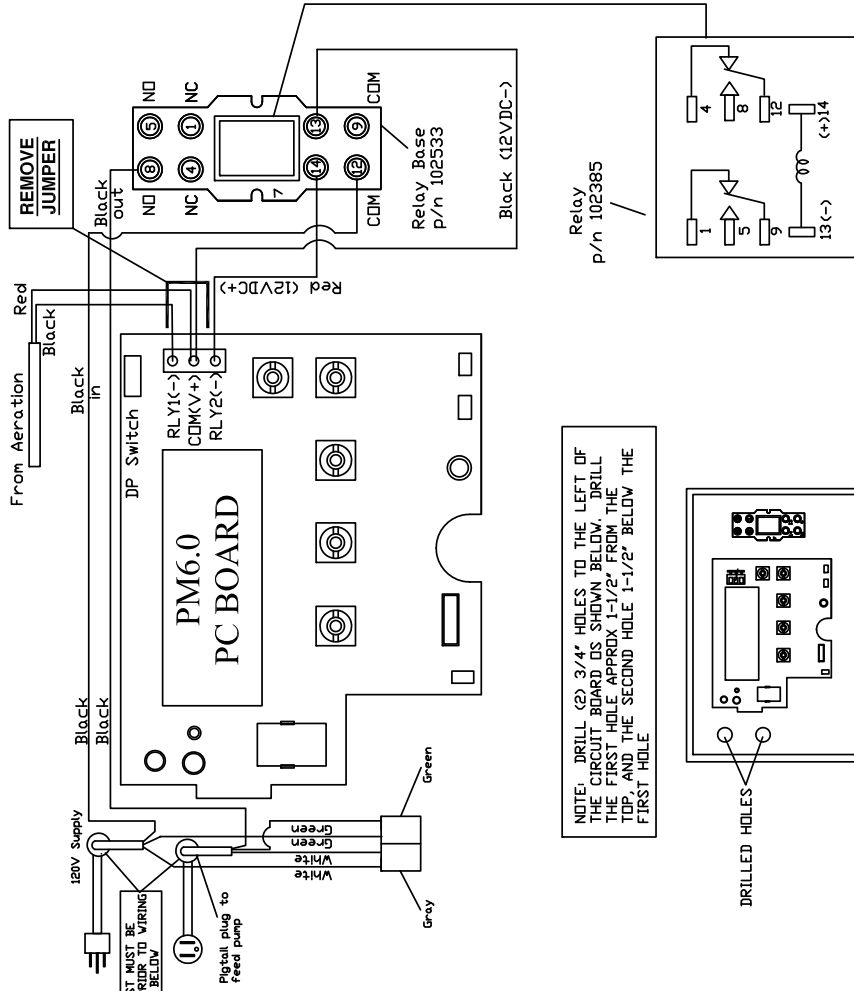
RELAY 1 SETPOINT SET **500** GAL
Push NEXT

Use ▲▼ buttons to set for 10 minutes. As shown below.

RELAY 1 DURATION SET **10:00** MIN



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



HOLE MUST BE DRILLED PRIOR TO WIRING SEE NOTE BELOW

NOTE: DRILL (2) 3/4" HOLES TO THE LEFT OF THE CIRCUIT BOARD AS SHOWN BELOW. DRILL THE FIRST HOLE APPROX 1-1/2" FROM THE TOP, AND THE SECOND HOLE 1-1/2" BELOW THE FIRST HOLE

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 0 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 16 minutes. As shown below.

RELAY 2 SETPOINT
SET **16:00** 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.

FILTER WARRANTY

Includes – Iron Curtain® 2.0, Iron Curtain® Jr. and Storm Filter Systems

Hellenbrand, Inc., warrants to the original consumer purchaser that the system 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 electrical parts including the motor and board, control valve body, excluding internal parts.

For a Period of FIVE YEARS: The IC-2.0 Aeration Macromatic Timer.

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 Ozone Generator.

For a Period of ONE YEAR: The entire unit system ("System").

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

THIS WARRANTY IS EFFECTIVE TO THE ORIGINAL CONSUMER PURCHASER ONLY, AND ONLY FOR AS LONG AS THE SYSTEM REMAINS AT THE ORIGINAL INSTALLATION SITE. COVERAGE TERMINATES IF YOU SELL OR OTHERWISE TRANSFER THE SYSTEM OR IF THE SYSTEM IS MOVED FROM THE ORIGINAL INSTALLATION SITE.

No sales representative, distributor, agent, dealer, reseller, authorized seller or any other person or entity is authorized to make any other warranty, or modify or expand the warranty provided herein on behalf of Hellenbrand. Upon expiration of the applicable warranty period, Hellenbrand shall have no further liability related to the System/parts to which the warranty period applies, except with respect to valid warranty claims asserted during the appropriate warranty period.

If the System or any part described above becomes defective within the specified warranty period, you should notify your local authorized seller of Hellenbrand products, and arrange a time during normal business hours for the inspection of the System at the original installation site. You may also contact Hellenbrand and we will provide you with the contact information for your local authorized seller of Hellenbrand products. Hellenbrand, at its option, will repair or replace the System or any part found defective within the terms of this warranty. You are responsible for freight from our factory and any service fees charged by the local authorized seller of Hellenbrand products for installation, repair, removal, replacement, service, etc., of any System or parts. This warranty does not include any labor charges. This paragraph sets forth the exclusive remedy for any valid warranty claims against Hellenbrand.

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's printed instructions, or installation, repair or service by anyone other than Hellenbrand or an authorized seller of Hellenbrand products.

IN ADDITION, THIS WARRANTY DOES NOT COVER UNPROTECTED OUTDOOR INSTALLATIONS. This System, including all of the electrical components, must be protected against windblown dust, falling and windblown rain, freezing temperatures and the formation of ice, with an appropriate enclosure consisting of a floor, roof, walls, ventilation and heat.

As a manufacturer, we do not know the characteristics of your water supply or the purpose for which you are purchasing this system. You should be aware 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 may change considerably if this System is moved to a new location. For these reasons, Hellenbrand assumes no liability for the determination of the proper equipment necessary to meet your needs; and Hellenbrand does not authorize others to assume such obligations for Hellenbrand.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, REMEDIES FOR DEFECTS OR FAILURES ARE LIMITED TO THE REMEDIES PROVIDED IN THIS WARRANTY. THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE SET FORTH HEREIN. ANY IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, NON-INFRINGEMENT, OR ANY WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING, OR FROM USAGES OF TRADE, ARE LIMITED IN DURATION TO THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE.

UNDER NO CIRCUMSTANCES SHALL HELLENBRAND BE LIABLE TO THE ORIGINAL CONSUMER PURCHASER OR TO ANY OTHER PERSON FOR ANY INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR FOR ANY OTHER LOSS, DAMAGE, OR EXPENSE OF ANY KIND, INCLUDING LOSS OF PROFITS, WHETHER ARISING OUT OF BREACH OF WARRANTY, BREACH OF CONTRACT, IN TORT OR OTHERWISE, AND REGARDLESS OF WHETHER HELLENBRAND WAS AWARE OF THE POSSIBILITY OF SUCH LOSS. THESE LIMITATIONS WILL APPLY REGARDLESS OF ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Similarly, some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion 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.