Controller Assembly

Air Aspirated Chemical-Free Iron Filter

Installation

Operation

Troubleshooting

Repair Parts

Designed, Engineered &
Assembled in the U.S.A.

Manufactured and warranted by
Water Channel Partners
1890 Woodlane Drive
Woodbury, MN 55125

7336973 (Rev. K 6/6/23)

Typical Installation Illustrations

INSTALLATION USING ECOWATER BYPASS VALVE

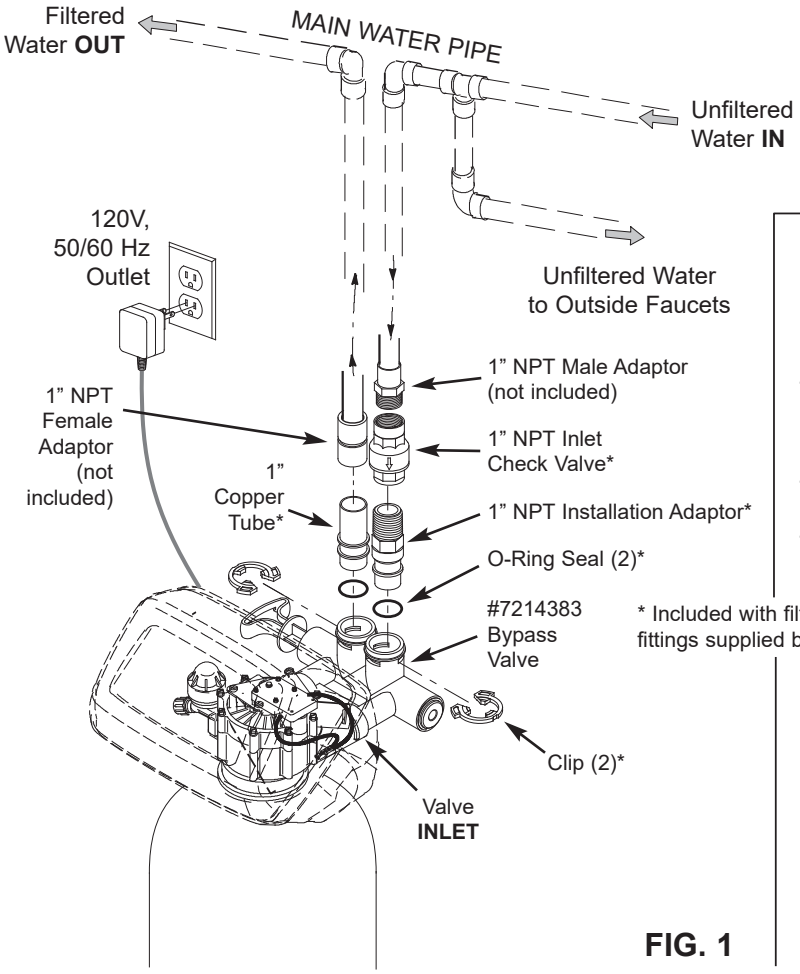
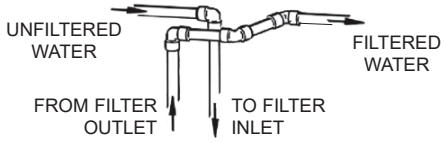


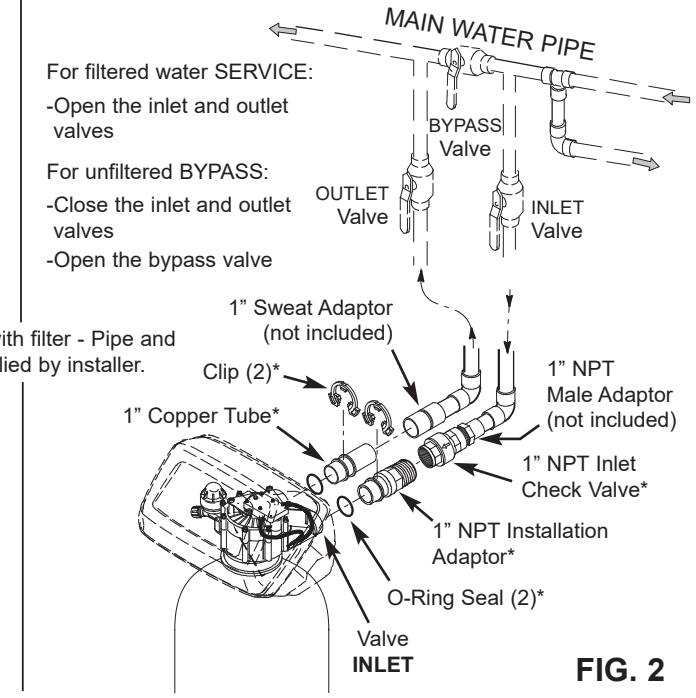
FIG. 1

CROSS-OVER

Use if water supply flows from the left. Include single or 3-valve bypass.

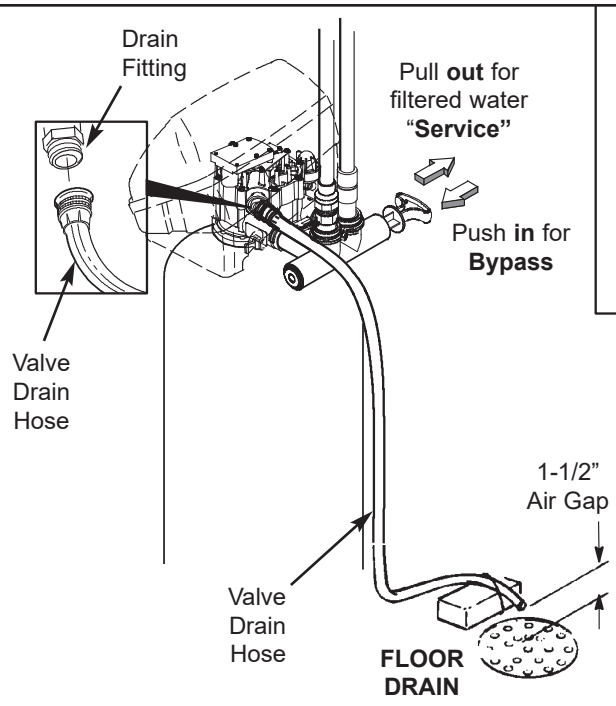


INSTALLATION USING 3-VALVE BYPASS



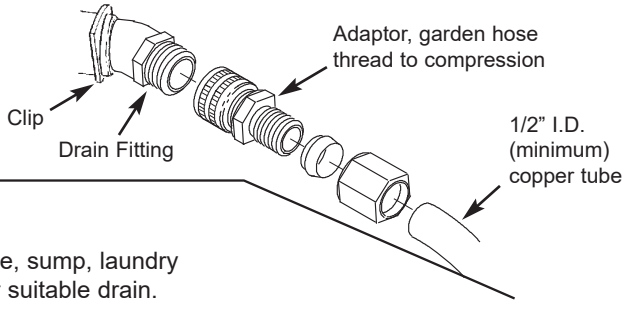
* Included with filter - Pipe and fittings supplied by installer.

FIG. 2



CONNECTING A RIGID VALVE DRAIN TUBE

To adapt a copper tube to the filter, buy a compression fitting (garden hose thread to 1/2" I.D. minimum tube and necessary tubing from your local hardware store.



To standpipe, sump, laundry tub or other suitable drain.

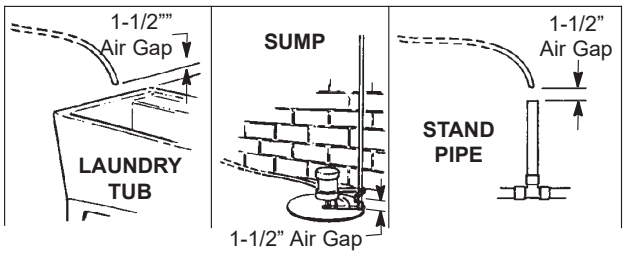


FIG. 3

Installation

1. TURN OFF WATER SUPPLY

Close the main water supply shutoff and depressurize the plumbing system by opening faucets.

2. REMOVE EXISTING CONTROLLER, VALVE AND TOP DISTRIBUTOR

3. INSTALL THE NEW TOP DISTRIBUTOR ON THE EXISTING STANDPIPE

4. CHANGE THE DRAIN FLOW PLUG, AS NEEDED

The valve assembly is shipped from the factory with a 10 gpm drain flow plug installed (See Key No. 59 on Page 10). Refer to the table below and, if necessary, change the drain flow plug to a flow rate appropriate for the media and tank size of your installation.

		Tank diameter	
		10”	**12”**
Media	**Birm**	5 gpm	7 gpm
	Zeolite	7 gpm	10 gpm

5. INSTALL THE NEW VALVE

Be sure to install a drain hose, as shown on Page 2.

6. CONNECT INLET/OUTLET PLUMBING

Be sure to install the included 1” NPT check valve on the inlet side, as shown in Figures 1 & 2.

7. COLD WATER PIPE GROUNDING

If necessary to ground the house electrical system, clamp a #4 copper wire jumper between the inlet and outlet metal pipes. Parts not included.

8. FLUSH PIPES AND TEST FOR LEAKS

a. Fully open two filtered water faucets, one cold and one hot, nearby the filter.

b. Place bypass valve(s) into “bypass” position. On a single valve, slide the stem inward to BYPASS. On a 3 valve system, close the inlet and outlet valves, and open the bypass valve.

c. Fully open the house main water pipe shutoff valve. Observe a steady flow from both opened faucets.

d. Close both faucets.

e. Check your plumbing work for leaks and, if any are found, fix right away.

9. CONNECT CONTROLLER TO ELECTRICAL POWER

Plug the included power supply into a 120V, 60/50 Hz electrical outlet.

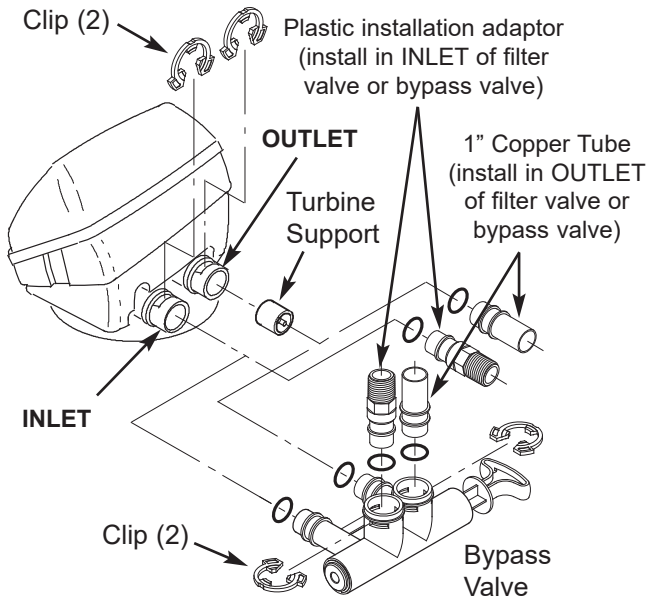


FIG. 4

10. PROGRAM THE CONTROLLER

See pages 5-6 for instructions to program the electronic controller.

11. START-UP PROCEDURE

a. Confirm that the filter’s main valve is in the “service” position (“S” on the cam).

b. Place bypass valve(s) into “service”, EXACTLY as follows:

- **Single Bypass Valve:** SLOWLY, pull the valve stem outward to ”service” position, pausing several times to allow the filter to pressurize slowly.
- **3 Valve Bypass:** Fully close the bypass valve and open the outlet valve. SLOWLY, open the inlet valve, pausing several times to allow the filter to pressurize slowly.

c. Check all connections for leaks.

d. Push and hold the RECHARGE button until the filter starts a RECHARGE NOW cycle. Verify that the valve advances to “backwash” (BW) position.

e. Allow the unit to remain in “backwash” (BW) while air is purged and water exits the drain line. Ensure that the drain line is secure and will withstand the mix of air and water exiting.

f. Allow the unit to complete the 15 minute “backwash” cycle and automatically advance to the “aspirate” (A) position. Allow it to remain there as it aspirates air into the mineral tank. After 75 minutes, the filter will then automatically return to “service”. Start up is complete.

Description of Operation

Service water enters the filter and passes through air captured at the top of the mineral tank. Dissolved iron, manganese and sulphur are oxidized and then removed by the media in the tank. When the system recharges, it first backwashes the contaminants to the drain, then empties the tank of water, replacing it with air drawn through the aspirator. When the system returns to "service", the water pressure will compress the air in the mineral tank and leave an 8-14" head of air on the top of the tank.

Sanitizing Procedure

Care is taken at the factory to keep your water filter clean and sanitary. Materials used to make the filter will not infect or contaminate your water supply, and will not cause bacteria to form or grow. However, during shipping, storage, installing and operating, bacteria could get into the filter or media. For this reason, sanitizing as follows is suggested* when installing.

1. Obtain pharmaceutical grade 12% hydrogen peroxide solution. One quart (0.95 L) is required for a 10" filter, 2 quarts (1.9 L) for a 12" filter.

2. Remove air inlet screen from check valve on the valve's nozzle & venturi assembly (See Figure 5).

3. Connect a length of 3/8 I.D. tubing to the barb on the aspirator check valve (See Figure 6).

4. Insert the free end of the tubing into the hydrogen peroxide container.

5. Push and hold the RECHARGE button until the filter starts a RECHARGE NOW cycle. The filter will backwash for 15-17 minutes, then advance automatically to the "aspirate" position. It will draw the hydrogen peroxide into the filter and pass it through the zeolite media, cleaning and sanitizing the media.

6. Allow the filter to draw air for the remainder of the time in the "aspirate" cycle after the hydrogen peroxide has been drawn into the filter.

7. The filter will return to "service" automatically when the "aspirate" cycle is complete.

8. Remove tubing and reinstall the aspirator inlet screen onto the barbed fitting on aspirator check valve.

9. Cleaning/sanitizing process is complete.

***NOTE:** Sanitizing is recommended by the Water Quality Association for disinfecting. On some water supplies, they suggest periodic sanitizing.

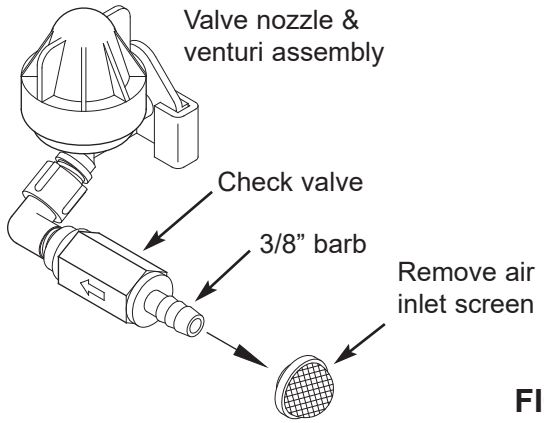


FIG. 5

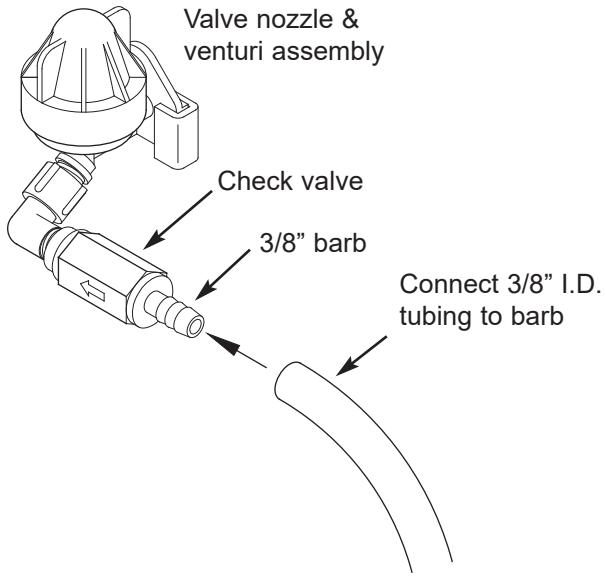


FIG. 6

Programming the Electronic Controller

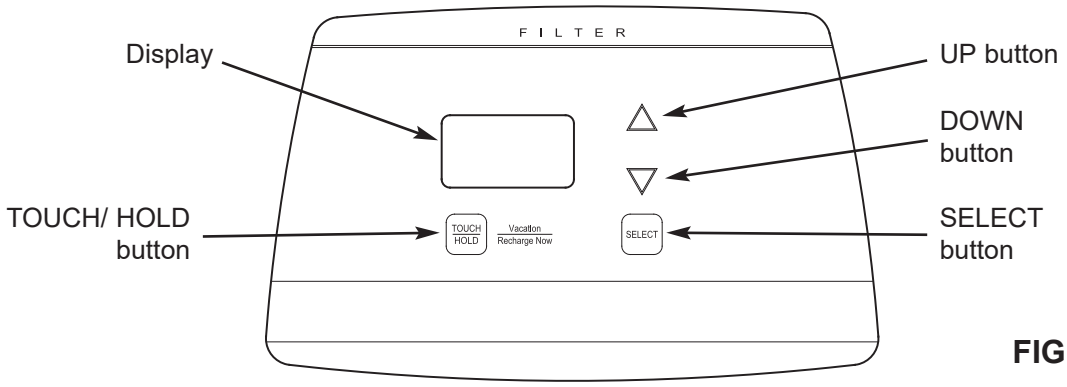


FIG. 7

CONTROLLER SETTINGS REQUIRED

upon installation, and after an extended power outage.

When the power supply is plugged into the electrical outlet, a model code (HAAIF) and a test number (example: J2.0), are briefly shown in the display. Then the words “PRESENT TIME” appear and 12:00 PM begins to flash.

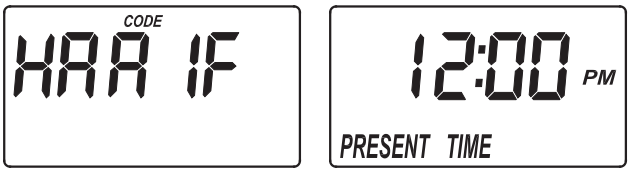


FIG. 8

A. SET PRESENT TIME OF DAY

If the words “PRESENT TIME" do not show in the display, press the SELECT button several times until they do.

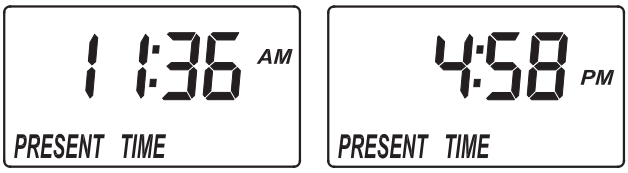


FIG. 9

1. Press the △ UP or ▽ DOWN buttons to set the present time. Up moves the display ahead; down sets the time back. Be sure AM or PM is correct.

NOTE: Press buttons and quickly release to slowly advance the display. Hold the buttons down for fast advance.

2. When the correct time is displayed, press the SELECT button, and the display will change to show the “Hardness” screen.

B. SET DAYS BETWEEN RECHARGES

1. If you completed the previous step, the word “RECHARGE" should show in the display (See Figure 10). Otherwise, press the SELECT button several times until it does.

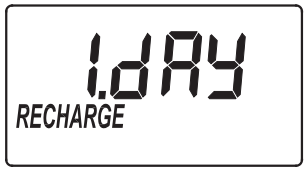


FIG. 10

2. The default setting is 1 day. This means that the filter will recharge every day. To change the number of days between recharges, use the △ UP or ▽ DOWN buttons to adjust from 1 to 99 days.

Use the table below to determine the number of days between recharges, based on the number of people in the household and the iron ppm (parts per million) in the water supply.

	No. of People	**Iron** (parts per million)			
		1 - 2	**3 - 5**	**6 - 10**	**11 - 20**
10” dia. Tank	**1 - 2**	3 days	2 days	1 day	use 12” tank
	3 - 4	2 days	2 days	1 day	use 12” tank
	5 - 7	1 day	1 day	use 12” tank	use 12” tank
12” dia. Tank	**1 - 2**	4 days	3 days	2 days	1 day
	3 - 4	3 days	2 days	1 day	1 day
	5 - 7	2 days	1 day	1 day	1 day

NOTE: If the water supply has high turbidity (sand, silt, sediments, etc.) set to recharge more often than the table shows.

3. When the desired number of days is displayed, press the SELECT button, and the display will change to show the “Recharge Time” screen.

continued on next page

Programming the Electronic Controller (continued)

C. SET RECHARGE START TIME

1. If you completed the previous step, the words "RECHARGE TIME" should show in the display (See Figure 11). Otherwise, press the SELECT button several times until they do.

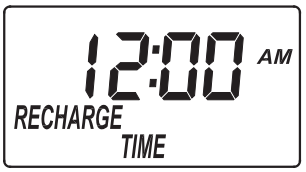


FIG. 11

2. The filter's default recharge start time is 12:00 AM. This is normally a time of day when water is not being used in the household. If you have a water softener or another filter installed, the recharge start times should be offset to assure adequate water flow and pressure. For example, if the water softener is set to begin recharge at 2:00 AM, set the filter to start recharge at 12:00 AM, or 4:00 AM. Use the △ UP or ▽ DOWN buttons to adjust the recharge start time.

3. When the desired recharge time is displayed, press the SELECT button, and the display will change to show the normal run time display.

Controller Features / Options

NORMAL OPERATION

During normal operation, the present time of day shows in the display.

FIG. 12

POWER OUTAGE MEMORY

If electrical power to the filter's control is lost, internal memory will maintain most settings such as the days between recharge and recharge time. However, unless the power outage was very brief, the clock's present time will need to be reset. During a power outage, the display will be blank and the filter will not recharge. When electrical power is restored:

1. Check the display.

2a. If the present time is displayed steadily (not flashing), the controller did not lose time and you do not need to reset the clock.

2b. If a time is flashing in the display, then the clock needs to be reset to the correct present time. See "Set Present Time of Day" on page 5. The flashing display is to remind you to reset the clock. If you do not reset the clock, then recharges will most likely occur at the wrong time of day.

NOTE: If the filter was recharging when power was lost, it will finish the cycle when power returns.

RECHARGE NOW

For times when you expect to use more water than usual, it may be desirable to perform a manually initiated recharge. To manually start a recharge cycle, press and hold the RECHARGE button for a few seconds, until "RECHARGE NOW" flashes in the display. The filter begins an immediate backwash. Once started, you cannot cancel this recharge. Avoid using hot water during this time, as the water heater will refill with unfiltered water.

FIG. 13

VACATION CONTROL

1. **Before going on vacation**, or other long absence, press (but do not hold) the TOUCH/HOLD button, so that "VAC" begins to flash in the display. The timer continues to keep time, but recharges will not occur, saving water.

FIG. 14

2. **When you return**, press the TOUCH/HOLD button again. This cancels the flashing "VAC" and returns the filter to normal service. You must remember to do this, or the filter will not recharge.

Controller Features / Options (continued)

RECHARGE CYCLE TIME ADJUSTMENTS

The default setting for **backwash** and **aspirate** times of the recharge cycle are factory set for maximum performance of the filter. Use the following procedures to check for correct cycle times, or to change, if desired. It is recommended that only trained technicians should change the time settings.

NOTE: Fill and **brine** times are adjustable, but set at the factory to zero. It is recommended to leave these settings at zero, unless the filter is used in a custom application by the installer.

A. ADJUSTABLE BACKWASH TIME

1. Press and hold for 3 seconds the SELECT button, until the display shows "000 - -", then press the SELECT button again to display the backwash time adjust screen (See Figure 15).

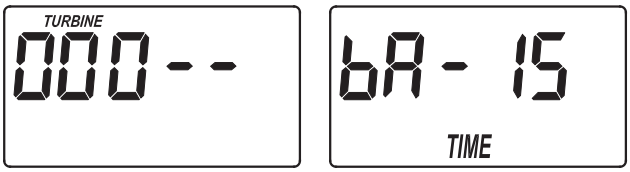


FIG. 15

2. The default setting is 15 minutes. Use the △ UP or ▽ DOWN buttons to adjust backwash time from 0 to 99 minutes.

3. When the desired backwash time is displayed, press the SELECT button, and the display will change to show the next cycle time adjust screen.

B. ADJUSTABLE ASPIRATE TIME

1. If you completed the previous step, the aspirate time adjust screen should show in the display (See Figure 16). Otherwise, press and hold for 3 seconds the SELECT button, until the display shows "000 - -", then press the SELECT button twice to display the aspirate time adjust screen.

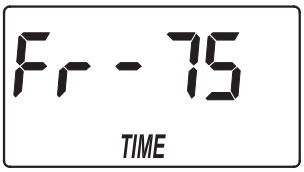


FIG. 16

2. The default setting is 75 minutes. Use the △ UP or ▽ DOWN buttons to adjust aspirate time from 0 to 99 minutes.

3. When the desired aspirate time is displayed, press the SELECT button twice, and the display will change to show the normal run time display.

AUXILIARY OUTPUT CONTROL

The electronic controller's auxiliary output may be used to operate various types of external equipment, such as a chlorine generator or chemical feeder. It provides a 24V DC, up to 500 mA, current from terminal J4 on the electronic control board (see Schematic on the next page). The table below explains the choices available for when the auxiliary output will be on during various portions of the recharge cycle:

SELECTION	NAME	AUXILIARY OUTPUT FUNCTION
OFF	Off	Remains off indefinitely.
BP	Bypass	On during the entire recharge.
CL	Chlorine	On during the brine draw portion of the recharge (softeners only).
FS	Flow Switch	On when water is flowing past the turbine (on units with a turbine). It will shut off 8 seconds after water flow stops.
CF	Chemical Feeder	After the set volume of water has flowed past the turbine (on units with a turbine), turns on for the time set (see Steps 4 & 5, on the next page, to set volume and time).
FR	Aspirate	On during the aspirate portion of the recharge.

The default is OFF. If you wish to change to one of the other selections shown in the table above:

1. Press and hold the SELECT button until "000 - -" shows in the display.

2. Press the SELECT button three times and "Ctrl" will flash in the display.

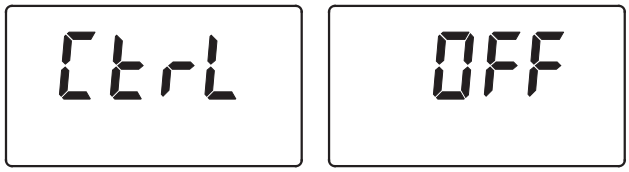


FIG. 17

3. Use the △ UP or ▽ DOWN buttons to display the desired selection, then press the SELECT button. If you selected anything other than CF, the display will return to the normal run (time of day) screen. If setting to CF (Chemical Feeder), there will be two additional settings to make for operating the chemical feeder in Steps 4 and 5, on the next page.

Controller Features / Options (continued)

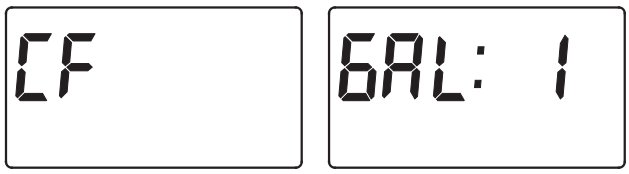


FIG. 18

4. **CHEMICAL FEEDER TRIP VOLUME:** If you have set the auxiliary output control to CF (Chemical Feeder), you will need to set the volume of water which must flow past the turbine before the auxiliary output is turned on. With the alternating screens in Fig. 18 shown, use the △ UP or ▽ DOWN buttons to set the trip volume, in gallons. Then press the SELECT button to display the screen shown in Fig. 19.

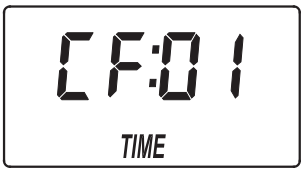


FIG. 19

5. **CHEMICAL FEEDER TIME:** Use the △ UP or ▽ DOWN buttons to set the length of time, in seconds, that the auxiliary output will be turned on. Then press the SELECT button to accept and return to the normal run (time of day) screen.

Wiring Schematic

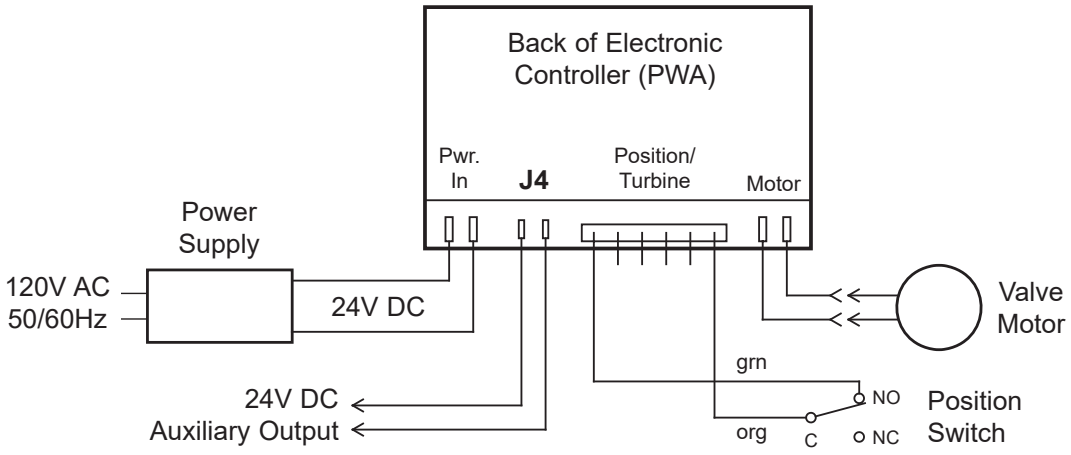


FIG. 20

Troubleshooting

AUTOMATIC ELECTRONIC DIAGNOSTICS

This filter has a self-diagnostic function for the electrical system. The computer monitors electronic components and circuits for correct operation. If a malfunction occurs, an error code appears in the display.

FIG. 21

Code	Possible Problems
Err01	Motor, Valve Position Switch
Err03	Motor, Valve Position Switch, Wire Harness
Err04	Valve Position Switch
Err05	Electronic Control Board (PWA)

The chart at above shows the error codes that could appear, and the possible malfunctions for each code.

While an error code appears in the display, all buttons are inoperable except the SELECT button. SELECT remains operational so the service person can perform the Manual Initiated Electronic Diagnostics, see next page, to further isolate the problem.

Troubleshooting (continued)

TO REMOVE AN ERROR CODE:

1. Unplug the power supply.

2. Correct the problem.

3. Plug the power supply back in.

4. Wait for at least 8 minutes while the timer operates the valve through an entire cycle. The error code will return if the problem was not corrected.

MANUALLY INITIATED ELECTRONIC DIAGNOSTICS

Use the following procedures to advance the filter through the recharge cycles to check operation.

Remove the top cover faceplate assembly by unlocking the tabs and lifting, to observe cam and switch operation during valve rotation (See Figure 23).

1. Press and hold for 3 seconds the SELECT button, until one of the screens shown in Figure 22 is displayed. If the valve is in service, backwash or aspirate position (observe markings on the valve cam), the display should show “000 - -”, meaning the position switch is open. When the valve is moving, the display should show “000 - P”, meaning that the position switch is closed.

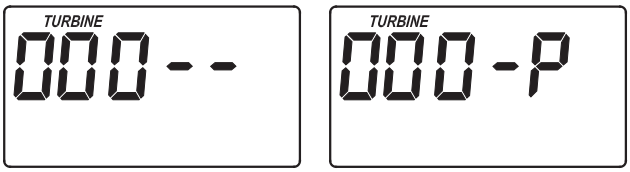


FIG. 22

2. Use the TOUCH/HOLD button to manually advance the valve into each position and check correct switch operation.

3. While in this diagnostic screen, the following information is available and may be beneficial for various reasons. This information is retained by the computer from the first time electrical power is applied to the electronic controller.

a. Press the △ UP button to display the number of days this electronic control has had electrical power applied.

b. Press the ▽ DOWN button to display the number of recharges initiated by this electronic control since the model code number was entered.

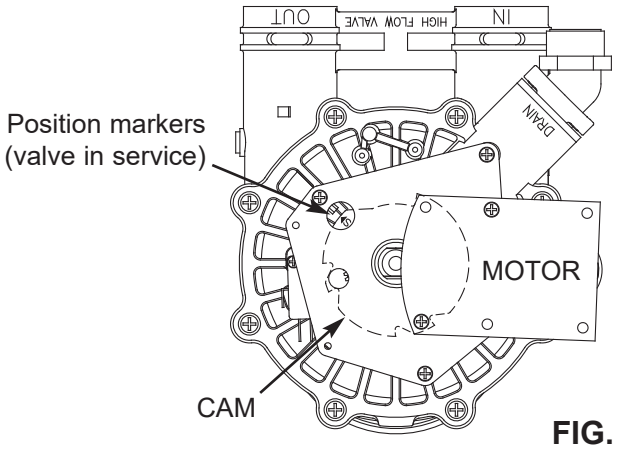


FIG. 23

4. Press the SELECT button and hold in for 3 seconds until the model code shows in the display. The model code should be “HAAIF”. If the wrong number shows, the filter will operate on incorrect configuration data.

5. To change the code number - Press the △ UP or ▽ DOWN button until the correct code shows.

6. To return to the present time display, press the SELECT button. **If the model code was changed, make all controller settings.**

NOTE: If the electronic control is left in a diagnostic display (or a flashing display when setting times or hardness), present time automatically returns if a button is not pressed within 4 minutes.

RESETTING TO FACTORY DEFAULTS

To reset the electronic controller to its factory default for all settings (time, days between recharges, etc.):

1. Press the SELECT button and hold it until the display changes twice to show “CODE” and the flashing model code.

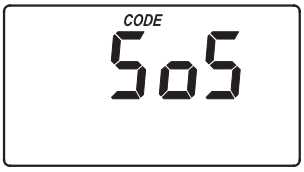


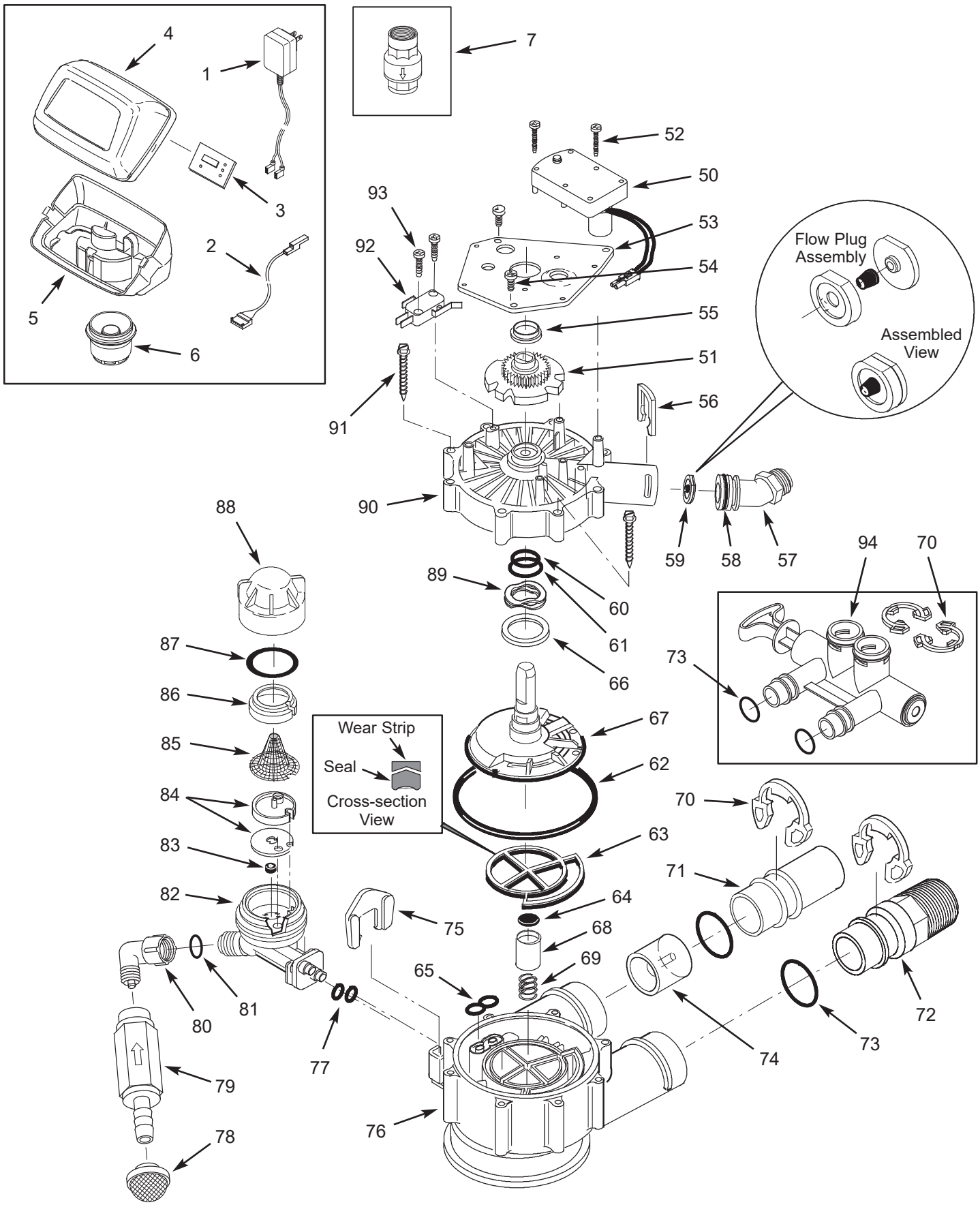
FIG. 24

2. Press the △ UP button (a few times, if necessary) to display a flashing “SoS”.

3. Press the SELECT button, and the electronic controller will restart.

4. Set the present time, days between recharges, etc., as described on pages 5 & 6.

Repair Parts



Repair Parts

Key No.	Part No.	Description
1	7351054	Power Supply, 24V DC
2	7259927	Wire Harness
3	7366677	Repl. Electronic Controller (PWA)
4	7260554	Top Cover (order decal below)
■	7285279	Decal, Faceplate
5	7189449	Bottom Cover
6	7335757	Top Distributor, Filter
7	7336185	Inlet Check Valve, 1”
–	7384706	Motor, Cam & Gear Kit, AIV (includes Key Nos. 50-52)
50	↑	Motor
51	↑	Cam & Gear
52	7224087	Screw, #8-32 x 1” (2 req.)
53	7231393	Motor Plate
54	0900857	Screw, #6-20 x 3/8” (3 req.)
55	7171250	Bearing
56	7169180	Clip, Drain
57	7172793	Drain Hose Adaptor
58	7170288	O-Ring, 15/16” x 1-3/16”, single
	7336402	O-Ring, 15/16” x 1-3/16”, pack of 20
59	7178189	Flow Plug, 5 gpm ✱
	7178202	Flow Plug, 7 gpm
	7178210	Flow Plug, 10 gpm
	7336981	Flow Plug, 12 gpm
	7178228	Flow Plug, 15 gpm
–	7185487	Seal Kit (includes Key Nos. 60-65)
60	↑	O-Ring, 5/8” x 13/16”
61	↑	O-Ring, 1-1/8” x 1-1/2”
62	↑	O-Ring, 4-1/2” x 4-7/8”
63	↑	Rotor Seal
64	↑	Seal
65	↑	Seal, Nozzle & Venturi
66	7174313	Bearing, Wave Washer
67	7387267	Rotor & Disc
68	7171187	Plug, Drain Seal
69	7129889	Spring
70	7089306	Clip, 1”, single (2 req.)
	7336428	Clip, 1”, pack of 20

Key No.	Part No.	Description
71	7077642	Copper Tube, 1”, single
	7344138	Copper Tube, 1”, pack of 10 (includes 10 ea. of Key No. 73)
72	7271204	Installation Adaptor, 1”, single
	7336614	Installation Adaptor, 1”, pack of 10 (includes 10 ea. of Key No. 73)
73	7311127	O-Ring, 1-1/16” x 1-5/16”, single (2 req.)
	7336410	O-Ring, 1-1/16” x 1-5/16”, pack of 20
74	7078240	Turbine Support & Shaft
75	7081201	Retainer, Nozzle & Venturi
76	7171145	Valve Body
77	7170319	O-Ring, 1/4” x 3/8” (2 req.)
78	7336208	Air Inlet Screen
79	7336193	Aspirator Check Valve
80	7120526	Elbow, 90°
81	7292323	O-Ring, 3/16” x 7/16”
–	7085247	Nozzle & Venturi Assembly (includes Key Nos. 82-88)
82	7081104	Housing, Nozzle & Venturi
83	1148800	Flow Plug, .3 gpm
84	7114533	Nozzle & Venturi Kit w/Gasket
	7204362	Gasket only, single
	7336486	Gasket only, pack of 20
85	7146043	Screen
86	7167659	Screen Support
87	7170262	O-Ring, 1-1/8” x 1-3/8”, single
	7336436	O-Ring, 1-1/8” x 1-3/8”, pack of 20
88	7199729	Cap
89	7175199	Wave Washer
90	7171161	Valve Cover
91	7172997	Screw, #10 x 2-5/8” (8 req.)
92	7305150	Switch
93	7140738	Screw, #4-24 x 3/4” (2 req.)
94	7214383	Bypass Valve, 1” ✱ (includes 2 ea. of Key Nos. 70 & 73)

■ Not illustrated.

✱ Optional parts, not included with this kit.