

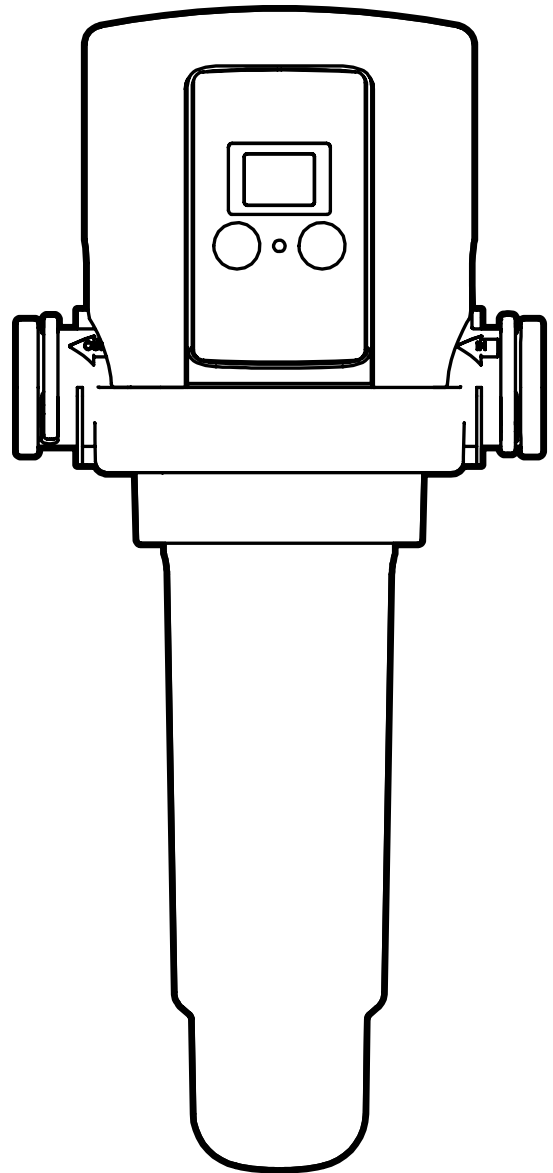
# OWNER'S MANUAL

How to install, operate and maintain your  
EcoWater Systems  
Automatic Sediment Filter



A Marmon Water/Berkshire Hathaway Company

## Model AFF



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## Before You Start

- Read this entire manual before installing and using your Automatic Sediment Filter. Then, obtain all the materials and tools you will need to make the installation. Follow all steps exactly and in order to correctly install.
- The Automatic Sediment Filter must only be installed vertically, with the head up and the sump down. It will not operate properly if installed horizontally or at an angle.
- Check local plumbing, electrical and sanitation codes. You must follow their guides as you install the system.
- Use only lead-free solder and flux for all sweat-solder connections, as required by federal codes.
- Maximum operating pressure: 6.9 bar.
- Maximum operating temperature: 49 °C.
- Avoid installing in direct sunlight. Excessive sun heat may cause distortion or other damage to non-metallic parts.
- For cold water use only. Do not install on a hot water line.
- Do not use this system to treat water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- Keep solvents and sprays away from the clear sump housing material. Surface cracking and failure can result.



European Directive 2002/96/EC requires all electrical and electronic equipment to be disposed of according to Waste Electrical and Electronic Equipment (WEEE) requirements. This directive or similar laws are in place nationally and can vary from region to region. Please refer to your state and local laws for proper disposal of this equipment.

# Unpacking

## INSPECT SHIPMENT

The Automatic Sediment Filter is shipped complete in one carton. Remove all items from the shipping carton and check against the packing list below.

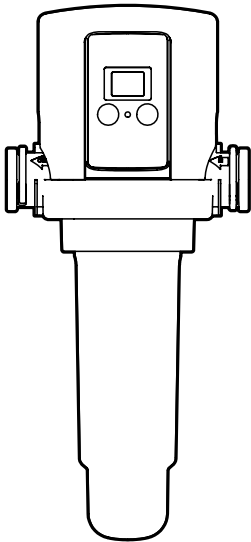
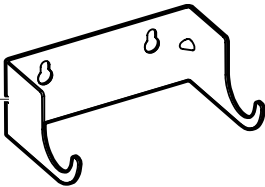
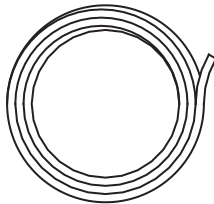
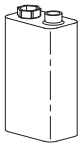
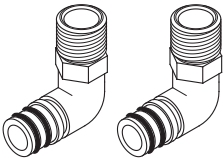


Packing List			
 <p>Filter Assembly</p>	 <p>Mounting Bracket</p>	 <p>10 ft. Drain Hose</p>	 <p>9V Battery</p>
	 <p>Installation Adaptors</p>	 <p>Clips</p>	 <p>Hose Clamp</p>

FIG. 1

## Dimensions

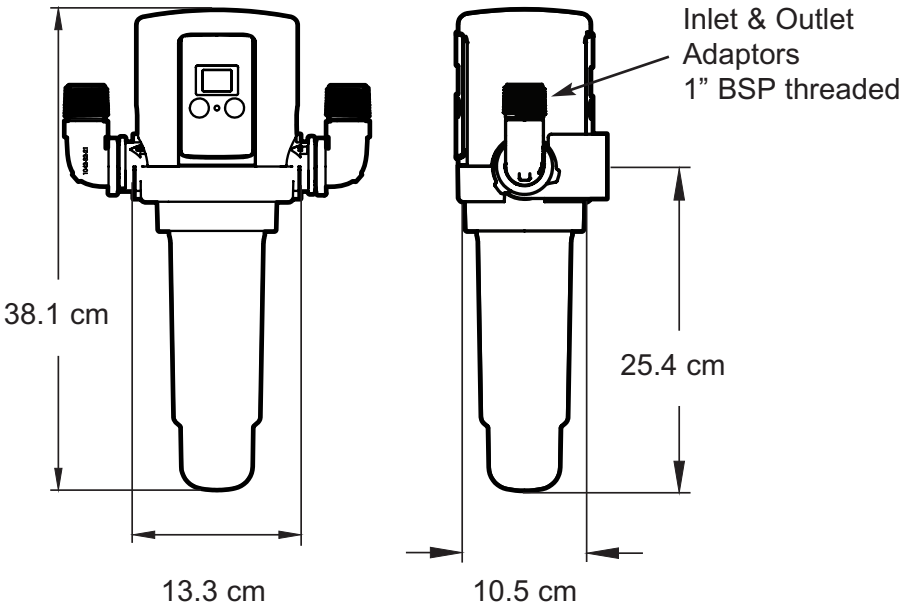


FIG. 2

# How the Automatic Sediment Filter Works

The EcoWater Automatic Sediment Filter is designed to be plumbed into a home's incoming water supply pipe, where it will capture particles of sediment from the water and periodically flush them down the drain.

**NOTE:** This product is designed to reduce sand, grit, debris, pipe scale and other loose matter. On water supplies that contain sticky sediment including mud, silt and clay, you may have to remove the sump and clean the screen periodically.

The unit has an electronic control that counts down the days until the next automatic flush of collected sediment particles. The number of days is programmable.

The electronic controller runs on a 9 volt battery. The controller will indicate when the battery needs to be replaced. An optional AC power adaptor (P/N 7302835) may also be purchased to eliminate the need for batteries.

Three sizes of filter mesh are available. A 60 micron filter is included with the AFF unit, and optional 100 or 150 micron filters can also be purchased (see spare parts list at the end of this manual).

## Specifications

Service Flow Rate	132 lpm (35 gpm)
Water Pressure Limits (minimum / maximum)	2.0 - 6.9 bar (30 - 100 psi)
Water Temperature Limits (minimum / maximum)	5 - 49 °C (40 - 120 °F)
Inlet - Outlet Adaptors	1" BSP male threaded

## Planning the Installation

### INSTALLATION LOCATION

To filter sediments from all household water, install the Automatic Sediment Filter on the household's main incoming water pipe. The Automatic Sediment Filter

should be installed upstream from the water softener (if any), the water heater and all inside faucets. See diagram below.

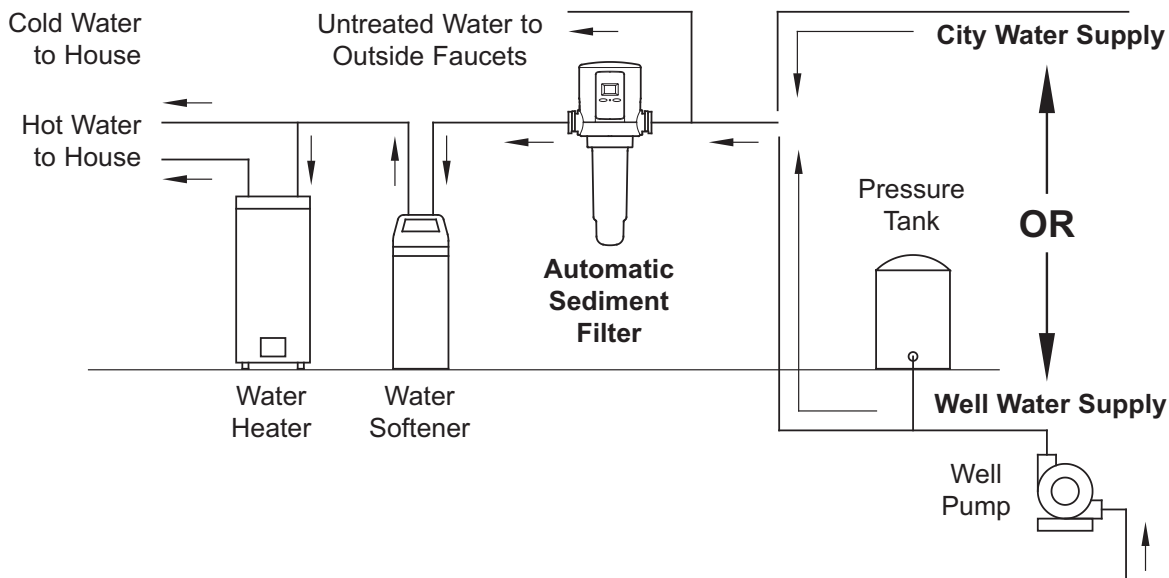


FIG. 3

# Planning the Installation

## ALWAYS INSTALL THE FILTER UPRIGHT

To operate properly, the Automatic Sediment Filter must be installed with the sump pointed straight down. When possible, install the filter on a horizontal section of the household's main incoming water pipe. If the available incoming main house water pipe runs vertically where you want to install the filter, buy 90° pipe elbows and plumb a detour, as shown in Figure 4. Allow enough space under the filter (15 cm minimum) to remove the sump (to clean or replace the filter screen). Allow enough space above the filter to remove the top cover (to change batteries, etc.), as shown in Figure 4.

## REVERSING THE FACEPLATE / DISPLAY

The Automatic Sediment Filter must be installed with the water flowing into the side of the filter marked **IN**. Remove the unit's top cover and observe the IN and OUT markings. Depending on the direction of water flow and the viewing angle, the faceplate may need to be reversed (turned around to face the opposite direction) so that it does not end up against a wall or other obstruction. This can be done either before or after the filter is installed on the plumbing:

1. Remove the top cover from the AFF by sliding it upward.
2. With a phillips screwdriver, remove the 2 screws holding the faceplate assembly to the filter head (See Figure 5).
3. Lift the faceplate assembly up and turn it around 180°, taking care not to pull on the wires between the electronic control board and the valve solenoid.
4. Lower the faceplate assembly into place on the opposite side of the head and reinstall the 2 screws.
5. Slide the top cover back onto the AFF and push it down to snap into place.

## MOUNTING BRACKET

A metal bracket is included with the Automatic Sediment Filter to support the assembled filter and plumbing when necessary. It may be mounted to a wall or wall framing member with 2 screws (included), as shown in Figure 6.

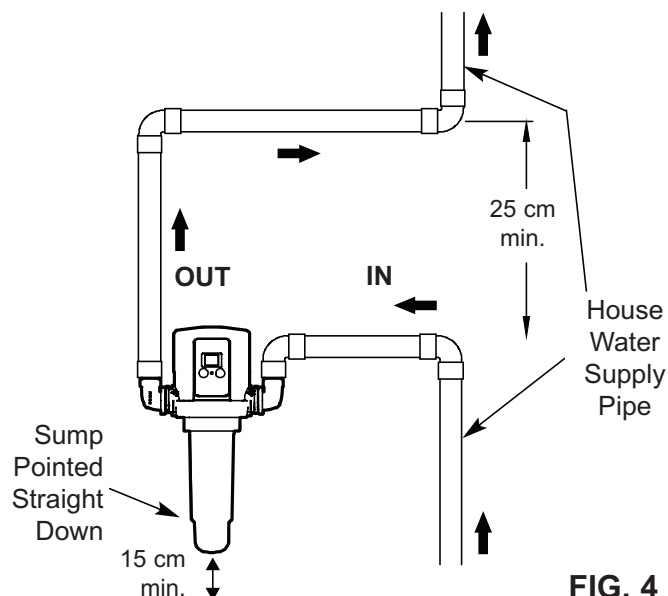


FIG. 4

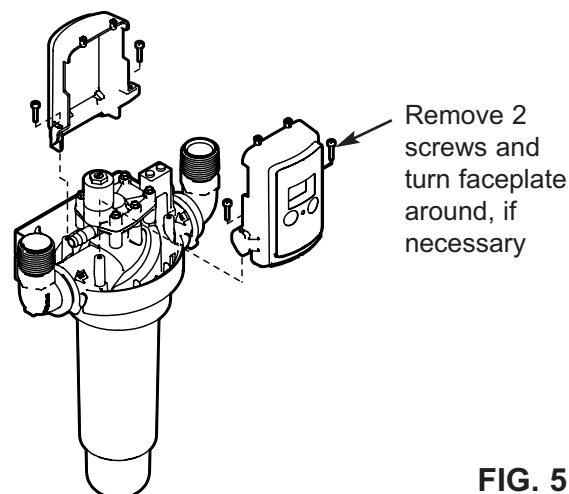


FIG. 5

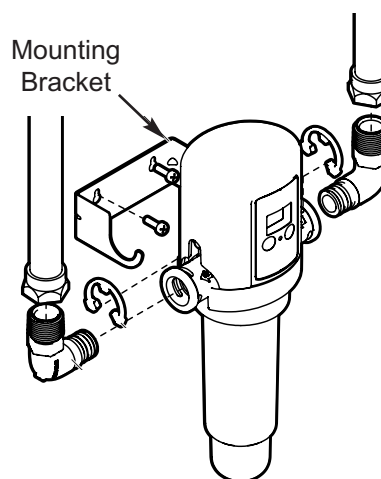


FIG. 6

# Installation Requirements

## PLUMBING CODES

All plumbing must be completed in accordance with national, state and local plumbing codes.

## AIR GAP REQUIREMENTS

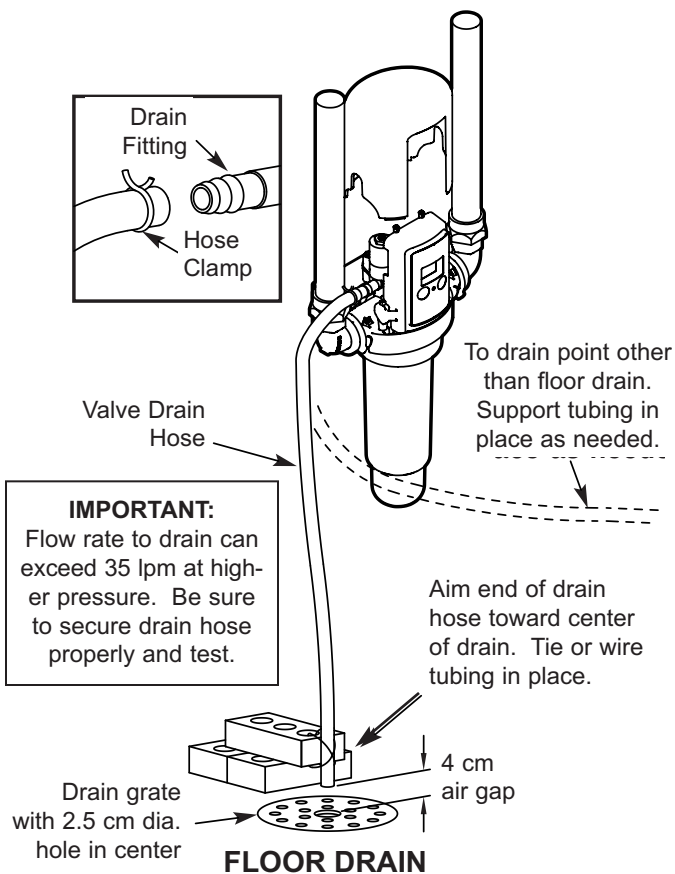
A drain is needed for sediment flush discharge water. A floor drain, close to the Automatic Sediment Filter, is preferred. A laundry tub, standpipe, etc. are other drain options. The valve drain hose must be secured in place, since drain water will be spraying from the end of the hose at a high rate during flush cycles. Leave an air gap of 4 cm between the end of the hose and the drain. This gap is needed to prevent backflow of sewer water into the Automatic Sediment Filter. Do not put the end of the drain hose into the drain.

## VALVE DRAIN REQUIREMENTS

Using the flexible drain hose (included), measure and cut to the length needed.

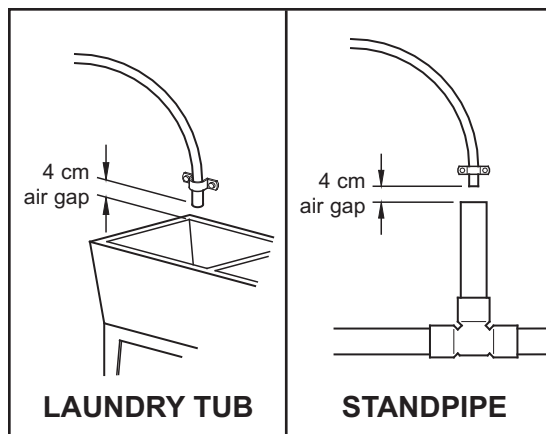
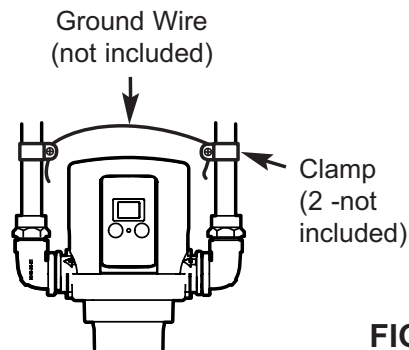
- Avoid drain hose runs longer than 3 meters. Make the valve drain line as short and direct as possible.
- If possible, avoid elevating the drain hose. This could reduce the effectiveness of the flush cycle, especially in a low pressure application.
- The drain must be capable of handling a flow of 20 to 40 liters per minute, depending on the home's water pressure.
- The drain must be capable of handling the sediment being flushed from the filter.

## CONNECTING VALVE TO DRAIN



## GROUNDING INFORMATION (for Installations on Metal Pipe)

The house main incoming water pipe is often used to ground electrical outlets in the home. Grounding protects you from electrical shock. Installing the Automatic Sediment Filter may break this ground. To restore it, buy and install a #4 copper wire across the filter, tightly clamped at both ends, as shown below.



# Installation

## A. ATTACH THE ADAPTORS AND CLIPS TO THE FILTER

1. Insert the adaptors into the holes on each side of the filter head (See Figure 9).
2. Secure in place with clips. Ensure all three tabs on the clips go through the matching holes and are fully in the channels on the adaptor (See Figure 10).

## B. CONNECT THE WATER SUPPLY LINES

**IMPORTANT:** Do not solder the metal plumbing while attached to plastic installation adaptors. Solder heat will damage the adaptors.

1. Seal the inlet and outlet threads on the filter adaptors (See Figure 11) with several wraps of sealant tape.
2. Connect the water supply lines to the inlet and outlet using 1 in. female NPT threaded adaptors (not included). Use caution to avoid cross-threading the adaptors.

## C. INSTALL THE DRAIN HOSE

Do the following before turning the water supply back on:

1. Measure, cut to needed length and connect the 9.5 mm drain line (provided) to the Automatic Sediment Filter's valve drain fitting (See Figure 8 on Page 6). Use a hose clamp to hold hose in place.
2. Run the drain hose or copper tubing to the floor drain. Secure drain hose. This will prevent the drain line from "whipping" during sediment flush cycles. See "Air Gap Requirements" section.

## D. CHECK FOR LEAKS

1. With the installation steps completed, fully open the home's main water supply valve.
2. Check for leaks at all the plumbing connections you made.
3. Make sure the electronics are completely dry before powering the unit up (as described in the next section).

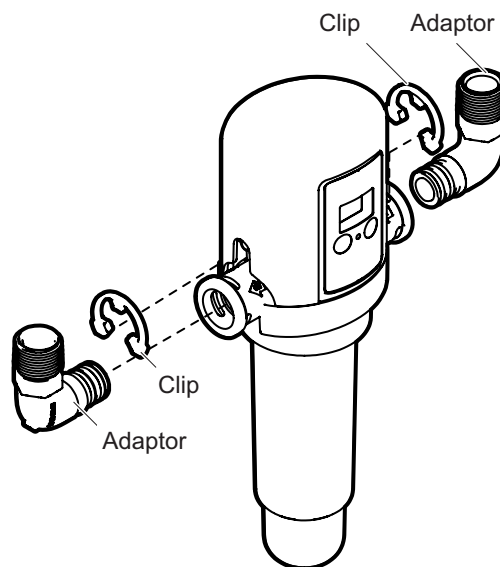


FIG. 9

### CORRECT ASSEMBLY

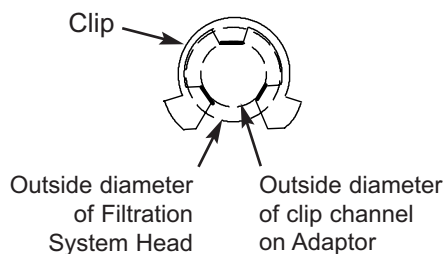


FIG. 10

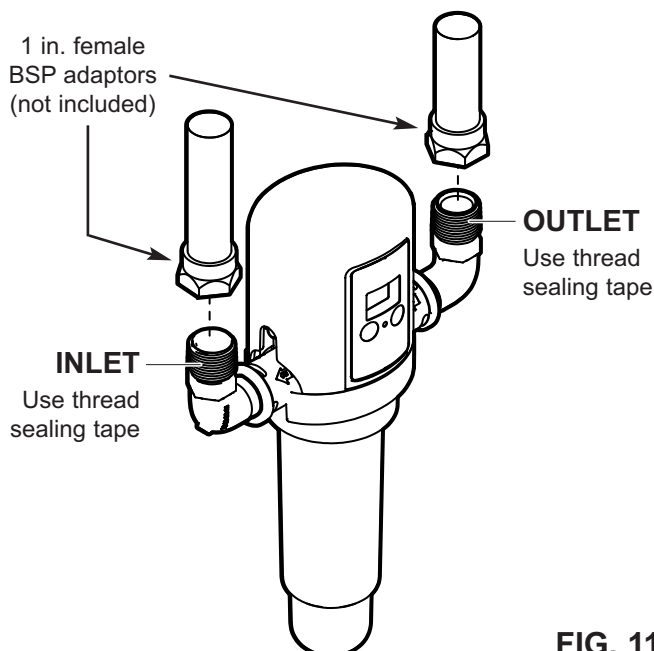


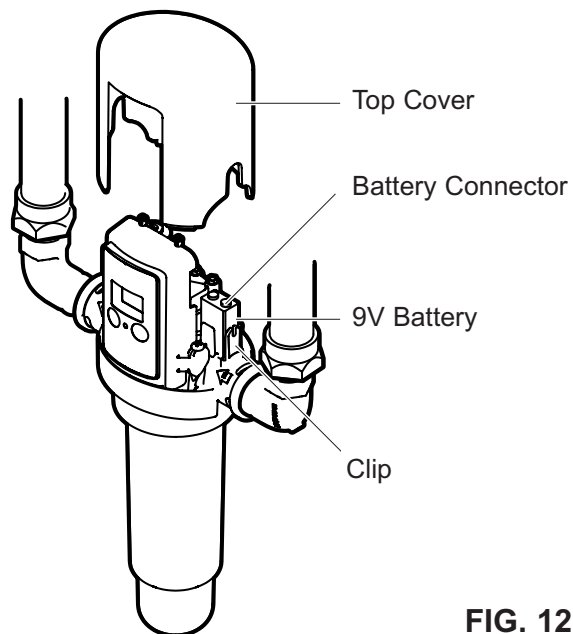
FIG. 11

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# Installation

## E. INSTALL THE BATTERY

1. Take the included 9V battery out of its plastic wrap.
2. Remove the top cover from the AFF by sliding it upward (See Figure 12).
3. Snap the battery connector onto both terminals of the 9V battery.
4. Place the connected battery into the clip provided for it directly above the IN port (See Figure 12).
5. Slide the top cover back onto the AFF and push it down to snap into place.



**FIG. 12**



# Programming the Electronic Controller

## POWER UP

When the controller is powered up (by installing the battery or plugging in the optional AC adaptor), the display will briefly show the software version (example "1.0"), then the number of days until the next automatic sediment flush.

## MANUALLY START A SEDIMENT FLUSH

After all installation steps have been completed, initiate a manual sediment flush as follows:

1. Press the CLEAN button and hold it for at least 2 seconds. When the 2-digit display changes to show moving dashes (See Figure 14), release the CLEAN button.
2. Check drain hose to ensure a secure connection.
3. The sediment flush sequence takes about 30 seconds to complete. The flow of water to the drain will start and stop several times.
4. Once the sediment flush has been completed, the 2-digit display will change to show the number of days until the next automatic flush (or if the automatic flush feature has been turned off it will show "-").

The AFF can be manually activated to flush sediment at any time, regardless of whether or not it is set to flush automatically.

## NORMAL OPERATION

During normal operation, the LED will momentarily blink green every 8 seconds and the 2-digit display (LCD) will show the number of days remaining until the next automatic sediment flush. Momentarily pressing the PROGRAM button shows the setting for the number of days between flushes.

## LCD BACKLIGHT

The 2-digit display has a backlight that goes on whenever a button is pressed. It goes off again after 10 seconds if no more buttons have been pressed (to conserve battery life). Momentarily press either the PROGRAM or CLEAN button to turn on the backlight.

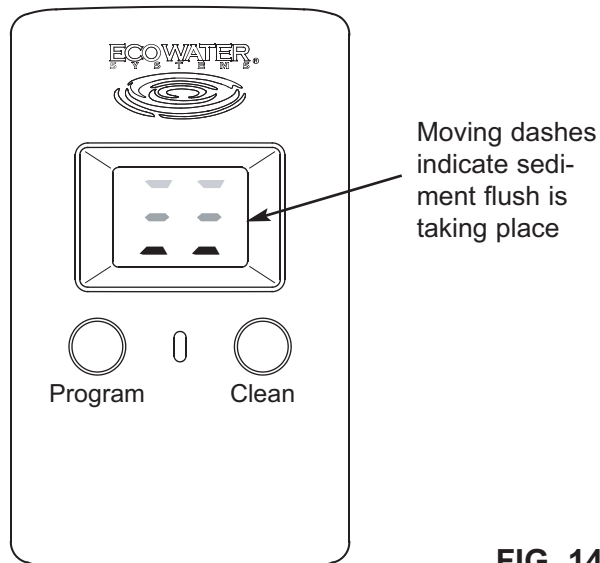


FIG. 14

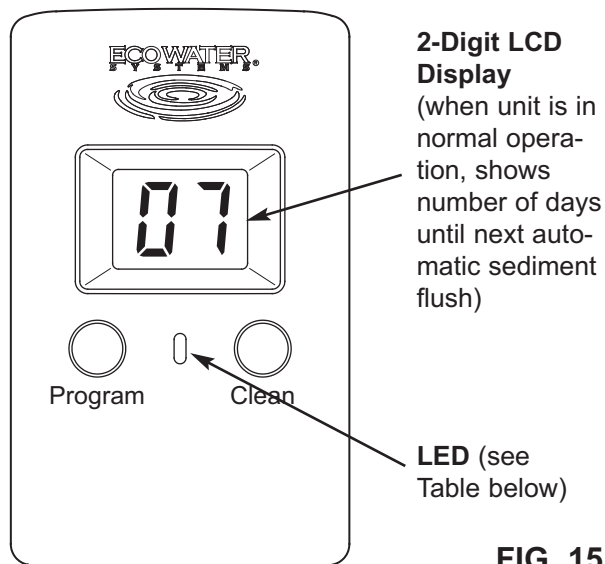


FIG. 15

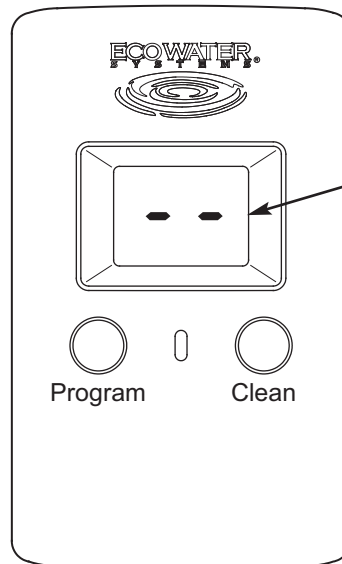
LED color	State of LED	Shows when...
Green	Blinks every 8 sec.	Unit is in normal operation
Amber	On steadily	You are programming the controller
Red	Blinks every 8 sec.	Battery is low
None	Completely Off	Battery is dead or disconnected

# Electronic Controller (continued)

## SETTING THE NUMBER OF DAYS BETWEEN AUTOMATIC SEDIMENT FLUSHES

The AFF controller is shipped with a default value of 7 days between automatic sediment flushes. To change the number of days (between 1 and 30) or to turn this feature off:

1. Press the PROGRAM button and hold it for at least 2 seconds. When the LED turns on steadily with an amber color, quickly release the PROGRAM button.
2. While the amber LED is on (it goes off after 10 seconds of button inactivity), repeatedly press the PROGRAM button until the desired number of days shows in the display. Each press increases the number of days by 1. When the number passes 30, it goes back to zero, indicated by “- -”, and counts up from 1 again.
3. Setting the number of days to “- -” (zero) turns off the automatic flush feature.
4. When the desired number of days shows in the display, wait 10 seconds (press no more buttons) for the amber LED to go off. The new number of days is programmed. This new setting will remain after battery change or power loss.



Two dashes (not moving) in the display indicate automatic flush is turned off

FIG. 16

## TIME OF DAY WHEN FLUSH OCCURS

The time of day when the automatic sediment flush will occur is the same time of day as when the most recent of the following was done:

- The filter was powered up
- The number of days was set
- A manual flush was initiated

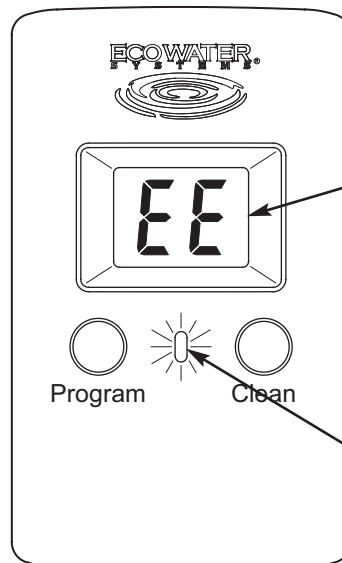
If a different time of day is desired for automatic flush, simply initiate a manual flush (as described on the previous page) at the desired time of day.

## LOW BATTERY INDICATION

If the LED is blinking red every 8 seconds (and the 2-digit display shows “EE”), then the battery needs to be replaced.

## BATTERY REPLACEMENT

1. Remove the top cover from the AFF by sliding it upward (See Figure 12 on Page 8).
2. Locate the old battery and unsnap it from the battery connector. Dispose of (recycle) old battery properly.
3. Take a new 9-volt battery and snap the battery connector onto both terminals.



“EE” in the display indicates battery is low

LED blinking red every 8 sec. indicates battery is low

FIG. 17

4. Place the connected battery into the clip provided for it directly above the IN port (See Figure 12 on Page 8).
5. Slide the top cover back onto the AFF and push it down to snap into place.

No reprogramming of the controller is necessary after battery replacement or a power outage.

# Routine Maintenance

## CLEANING THE FILTER SCREEN

It may be necessary to manually clean the filter screen from time to time. On water supplies that contain sticky sediment including mud, silt and clay, you may have to remove the sump and clean the screen frequently. Also, if the AFF has not been automatically flushing for any reason, such as a dead battery, a larger amount of sediment than normal may have accumulated in the sump. In this case it is recommended that the sump and filter be cleaned manually (an excess amount of sediment could plug the valve).

1. Before shutting off the water supply (as directed in Step 2), run a bucketful or sinkful of water to use for cleaning the filter screen.
2. Shut off the main house water supply valve upstream from the Automatic Sediment Filter.
3. Open a cold water faucet in the house (downstream from the AFF) to depressurize the system. Then close this faucet again.
4. Remove the sump by turning it to the left to unscrew it from the AFF head (See Figure 18). Be prepared for water to drip out of the AFF head when the sump is removed.
5. Remove the filter screen assembly by pulling it down out of the AFF head (See Figure 19).
6. Using the water you saved in Step 1, wash the filter screen assembly. If necessary, gently scrub the filter mesh with a soft brush to remove material from the pores.
7. The drain straw may have come out of the AFF head when the sump and filter screen were removed. If so, reinsert it into the small hole at the center of the head assembly (See Figure 19).
8. Make sure the o-ring is in place on the filter screen assembly (See Figure 19). Make sure that no sediment particles are on the o-ring or the corresponding sealing area in the head. Slide the filter screen over the drain straw and into the corresponding hole at the center of the AFF head. Push it in to engage the o-ring seal.
9. Make sure the large o-ring is in place on the sump (See Figure 19). Make sure no sediment particles are on the o-ring, sump threads or corresponding threads in the AFF head. Slide the sump over the filter screen and screw it into the AFF head to seal. Do not overtighten.
10. Open a cold water faucet in the house downstream from the AFF.
11. Turn the main house water supply back on.
12. Close the faucet that you opened in Step 10 after air has been expelled from the system and water is flowing smoothly with no spurting.
13. Check that there is no water leaking from the sump threads. Tighten sump if necessary.

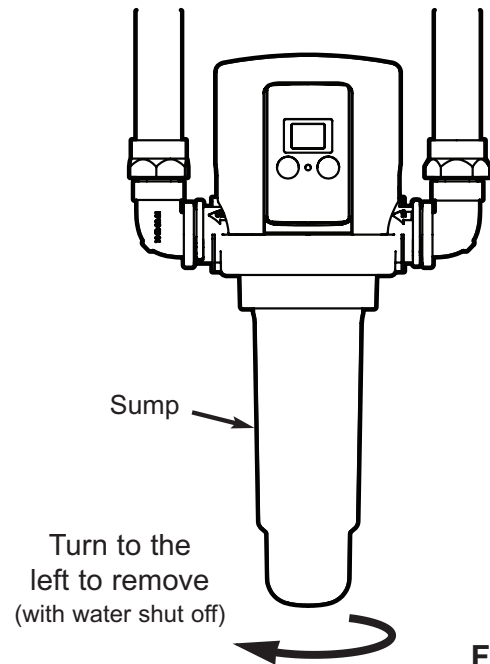


FIG. 18

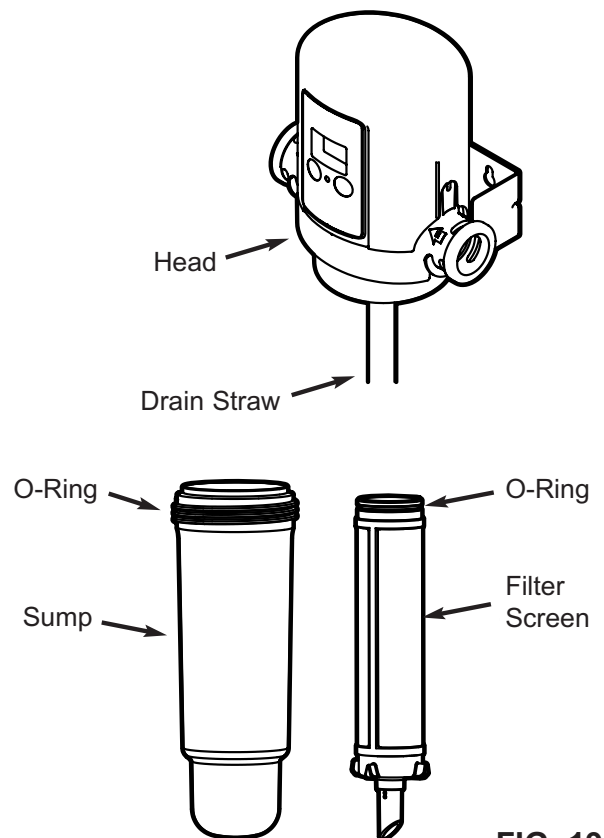


FIG. 19

# Troubleshooting

PROBLEM	CAUSE	CORRECTION
<b><i>Sediment flush does not initiate</i></b>	1. Battery is dead.	Replace battery (See "Battery Replacement" on Page 10).
<b><i>Low or no water flow through filter</i></b>	1. Filter is plugged.	Manually clean filter screen (See Page 11). May be necessary to reduce number of days between automatic sediment flushes (See Page 10).
<b><i>Sediment does not leave sump during sediment flush cycle</i></b>	1. Valve is plugged.	Manually clean filter screen (See Page 11). After water has been turned back on, initiate another clean cycle (hold CLEAN button for 2 sec.). Repeat if necessary. If caused by too great a volume of sediment, may be necessary to reduce number of days between automatic sediment flushes (See Page 10). If this does not clear plugged valve, it may be necessary to disassemble valve and clean manually (See "Disassembly of Valve," below).
	2. Drain hose is plugged.	Disconnect drain hose, remove obstruction and reconnect.
	3. Insufficient water pressure.	Make sure water pressure requirement (2.0 bar minimum) is met. Shorten drain line.
	4. Misapplication of product.	See application information ("How the Automatic Sediment Filter Works") on Page 4.
<b><i>Continuous leak to drain</i></b>	1. Solenoid seat is dirty.	Initiate several clean cycles. If leak continues, then remove valve solenoid and clean seat area (See "Disassembly of Solenoid", below).
	2. Valve is plugged or valve seat is dirty.	Manually clean filter screen (See Page 11). After water has been turned back on, initiate another clean cycle (hold CLEAN button for 2 sec.). Repeat if necessary. If caused by too great a volume of sediment, may be necessary to reduce number of days between automatic sediment flushes (See Page 10). If this does not clear plugged valve, it may be necessary to disassemble valve and clean manually (See "Disassembly of Valve," below).

## DISASSEMBLY OF SOLENOID

**(See Exploded View on Page 13)**

If the troubleshooting table, above, indicates that the solenoid seat requires cleaning, use the following procedure:

1. Before shutting off the water supply (as directed in Step 2), run a bucketful or sinkful of water to use for cleaning.
2. Shut off the main house water supply valve upstream from the Automatic Sediment Filter.
3. Open a cold water faucet in the house (downstream from the AFF) to depressurize the system. Close faucet again.
4. Remove the solenoid (Key No. 6 on Page 13) by unscrewing it from the top of the valve.
5. Using the water you saved in Step 1, clean the solenoid seat, plunger and hole.
6. Make sure the o-ring (Key No. 7) is in place and reinstall the solenoid, being careful not to cross-thread.
7. Open a cold water faucet downstream from the AFF.
8. Turn the main house water supply back on.
9. Close the faucet that you opened in Step 7 after air has been expelled from the system.
10. Check that there is no water leaking from the solenoid thread area. Tighten solenoid if necessary.

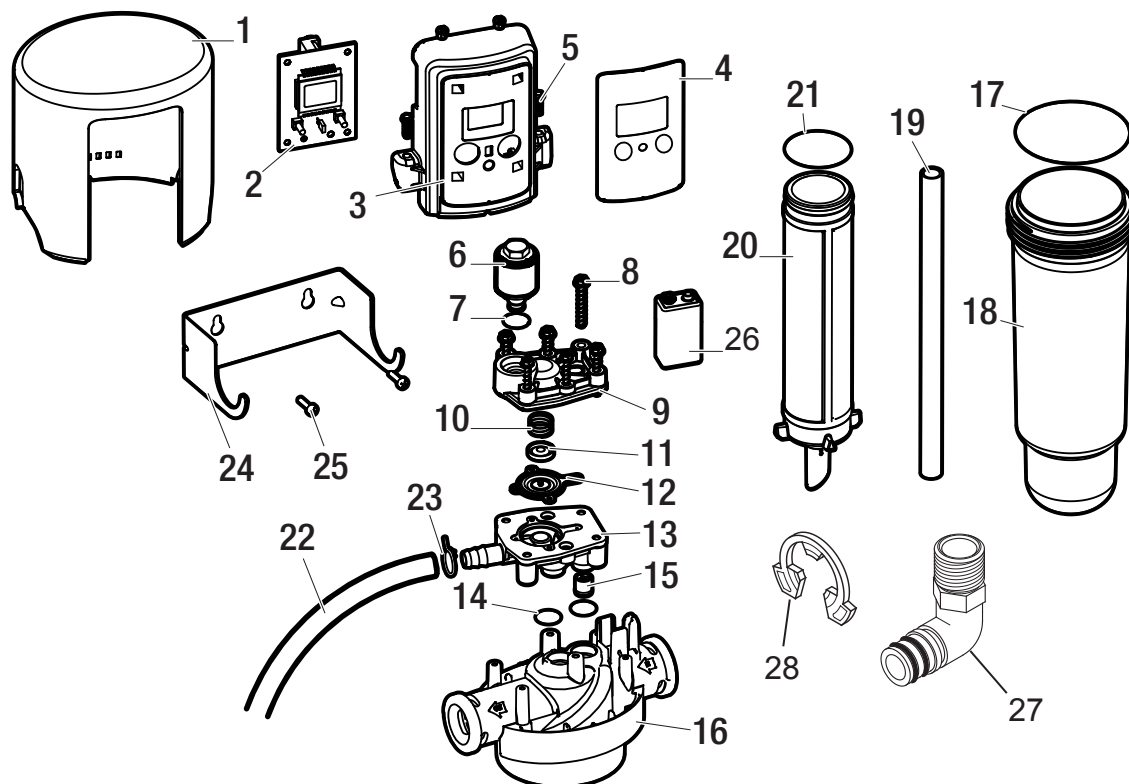
## DISASSEMBLY OF VALVE

**(See Exploded View on Page 13)**

If the troubleshooting table, above, indicates that the valve requires cleaning, use the following procedure:

1. Before shutting off the water supply (as directed in Step 2), run a bucketful or sinkful of water to use for cleaning.
2. Shut off the main house water supply valve upstream from the Automatic Sediment Filter.
3. Open a cold water faucet in the house (downstream from the AFF) to depressurize the system. Close faucet again.
4. Remove the six screws (Key No. 8 on Page 13) from the top of the valve and lift off the valve cover (Key No. 9).
5. Using the water you saved in Step 1, clean the diaphragm (Key No. 12) and seat area of valve body (Key No. 13).
6. Make sure the two small holes in the valve body under the diaphragm are not plugged.
7. Reassemble the valve, making sure the diaphragm is right side up (small knob at center points up) and the other components are properly placed, as shown on Page 13.
8. Open a cold water faucet downstream from the AFF.
9. Turn the main house water supply back on.
10. Close the faucet that you opened in Step 8 after air has been expelled from the system.
11. Check that there is no water leaking from the valve seal-ing area. Tighten screws if necessary.

# Repair Parts



Key No.	Part No.	Description
1	7298442	Top Cover
2	7295177	Electronic Control Board (PWA)
3	7298434	Faceplate (order decal below)
4	7300362	Decal, Faceplate, EcoWater
5	7300346	Screw, 6-19 x 12.7 mm (2 req.)
6	7301596	Solenoid
7	7301758	O-Ring, Solenoid
8	7300338	Screw, 10-16 x 31.8 mm (6 req.)
9	7298426	Valve Cover
10	7301520	Spring
11	7301685	Retainer, Spring
12	7301512	Diaphragm
13	7298418	Valve Body
14	7300320	O-Ring, Valve (2 req.)
15	7272658	Check Valve
16	1073-27-01	Head Assembly
17	7300312	O-Ring, Sump
18	7298395	Sump
19	7300304	Drain Straw

Key No.	Part No.	Description
20	7298808	Filter Screen Assembly, 60 Micron (includes Key No. 21)*
	7298816	Filter Screen Assembly, 100 Micron (includes Key No. 21)*
	7298824	Filter Screen Assembly, 150 Micron (includes Key No. 21)
21	7011086	O-Ring, Filter
22	7139999	Drain Hose, 6 meters
23	0900431	Clamp, Drain Hose
24	1073-27-03	Bracket, Mounting
25	9006053	Screw, 10-16 AB (2 req.)
26	–	Battery, 9 Volt, Standard
27	1073-27-AB	Installation Adaptor (2 req.)
28	1042-32-22	Clip (2 req.)
■	201-8402972	Owner's Manual

■ Not illustrated.

\* Optional - not included with Automatic Sediment Filter.