

**AUTOMATIC WATER FILTRATION
with high-flow 1" valve**

**Chloramine, Chlorine Taste,
Odor & Sediment Filter**

Sediment Filter

Water Neutralizer

All Purpose Filter

**Installation • • Operation • • Maintenance
• • Repair Parts • •**



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

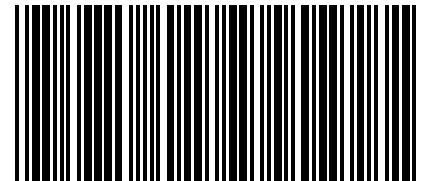


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UNPACKING / INSPECTION

The filter is shipped in one master carton. It is completely assembled at the factory, except as required at installation. All purpose filters do not include the mineral bed, gravel and sand.

Be sure to check the entire filter for any shipping damage or parts loss. Also note damage to the ship-

ping cartons. Contact the transportation company for all damage and loss claims. *The manufacturer is not responsible for damages in transit.*

Small parts, needed to install the filter, are in a separate bag. To avoid loss of the small parts, keep them together until you are ready to use them.

SAFETY GUIDES

FOLLOW THE INSTALLATION INSTRUCTIONS CAREFULLY. FAILURE TO INSTALL THE FILTER PROPERLY VOIDS THE WARRANTY.

BEFORE YOU BEGIN INSTALLATION, READ THIS ENTIRE MANUAL. THEN, OBTAIN ALL THE MATERIALS AND TOOLS YOU WILL NEED TO MAKE THE INSTALLATION.

CHECK LOCAL PLUMBING AND ELECTRICAL CODES. THE INSTALLATION MUST CONFORM TO THEM. Plumbing codes of Massachusetts shall be adhered to. Consult with your licensed plumber.

USE ONLY LEAD – FREE SOLDER AND FLUX FOR ALL SWEAT – SOLDER CONNECTIONS, AS REQUIRED BY STATE AND FEDERAL CODES.

USE CARE WHEN HANDLING THE FILTER. DO NOT TURN UPSIDE DOWN, DROP, OR SET ON SHARP PROTRUSIONS.

DO NOT LOCATE THE FILTER WHERE FREEZING TEMPERATURES OCCUR. DO NOT ATTEMPT TO TREAT WATER OVER 120°F. **FREEZING, OR HOT WATER DAMAGE VOIDS THE WARRANTY.**

AVOID INSTALLING IN DIRECT SUNLIGHT. EXCESSIVE SUN HEAT MAY CAUSE DISTORTION OR OTHER DAMAGE TO NON – METALLIC PARTS.

THE FILTER REQUIRES A MINIMUM WATER FLOW OF 4.5 GALLONS PER MINUTE AT THE INLET. **MAXIMUM ALLOWABLE INLET WATER PRESSURE IS 125 PSI.** IF DAYTIME PRESSURE IS OVER 80 PSI, NIGHTTIME PRESSURE MAY EXCEED THE MAXIMUM. USE A PRESSURE REDUCING VALVE IF NECESSARY. (ADDING A PRESSURE REDUCING VALVE MAY REDUCE THE FLOW.)

THE FILTER WORKS ON 24 VOLT – 60 Hz ELECTRICAL POWER ONLY. BE SURE TO USE THE INCLUDED TRANSFORMER, AND PLUG IT INTO A NOMINAL 120V, 60 CYCLE HOUSEHOLD OUTLET THAT IS GROUNDED AND PROPERLY PROTECTED OVER – CURRENT DEVICE SUCH AS A CIRCUIT BREAKER OR FUSE.

UNPLUG THE FILTER FROM ELECTRICAL POWER BEFORE REMOVING OUTER VALVE COVERS, OR IF THE POWER CABLE SHOULD BECOME DAMAGED OR FRAYED. MAKE REPAIRS AND REPLACE COVERS BEFORE PLUGGING INTO THE POWER OUTLET AGAIN.



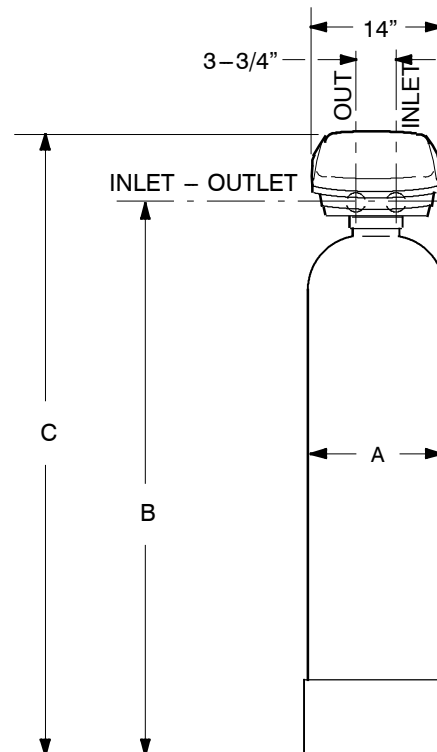
EUROPEAN DIRECTIVE 2002/96/EC REQUIRES ALL ELECTRICAL AND ELECTRONIC EQUIPMENT TO BE DISPOSED OF ACCORDING TO WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) REQUIREMENTS. THIS DIRECTIVE OR SIMILAR LAWS ARE IN PLACE NATIONALLY AND CAN VARY FROM REGION TO REGION. PLEASE REFER TO YOUR STATE AND LOCAL LAWS FOR PROPER DISPOSAL OF THIS EQUIPMENT.

SPECIFICATIONS / DIMENSIONS

	FILTER TYPE			
	CHLORAMINE, CHLORINE TASTE, ODOR & SEDIMENT NSCCTOSSA	SEDIMENT NSSFSSA	NEUTRALIZER NSANSSA	
	10" APF* NSAPFSSA	10" APF* NSAPFSSA	10" APF* NSAPFSSA	12" APF* NSAPFXLA
Type of mineral	Catalytic Carbon	Aggregate	Neutralite/Mag- nesium Oxide	*
Amount of mineral (cu ft)	7.1	1.0	1.0 ⑦	2.0
Amount of gravel base (lbs)	17	17	17	29
Amount of filter sand (lbs)	10	10	10	15
Inlet water pressure limits (psi)	20 – 125	20 – 125	20 – 125	20 – 125
Maximum water temperature (°F)	120	120	120	120
Minimum inlet water flow (gal/hour)	270	270	270	420
Service flow rate (gal/min) ①	10 ④	10	12	-- --
Backwash flow rate (gal/min) ②	5	5	5	7
Inlet–outlet pipe size (inch) ③	1	1	1	1
Filtering micron rating	20	20	--	--
Supply water pH limits	--	--	6.0 – 6.8 ⑧	--
Capacity (gal)	34,000 ⑤	8,600 ⑥	15,500 ⑨	--

① at 10 psi maximum pressure drop. ② at 35 psi inlet pressure. ③ Valve inlet, outlet and sweat copper tubes provided are 1". Recommended supply pipe size 3/4" to 1-1/4". ④ Chloramine, Chlorine Taste, Odor & Sediment Filter. ⑤ >70% removal of chloramines @ 10 gpm ⑥ tested with 5.0 NTU (AC coarse test dust). ⑦ 75% neutralite, 25% magnesium oxide. ⑧ The filter may help to neutralize supply water having lower pH, depending on geographic location. ⑨ tested with 6.0 – 6.2 pH.
* APF models do not include mineral, gravel and sand. It is the choice of your contractor depending on the type of filtering required for your water supply.

	ALL 10" DIAMETER FILTERS	12" DIAMETER APF
A	10"	12"
B	49-3/4"	55-1/2"
C	58-1/8"	64-1/4"
Nominal Mineral Tank Size	10" diameter by 47" high	12" diameter by 54" high



BEFORE STARTING INSTALLATION

► WHERE TO INSTALL THE FILTER

- Place the filter as close as possible to the pressure tank (well system) or water meter (city water).
- Place the filter as close as possible to a floor drain, or other acceptable drain point (laundry tub, sump, standpipe, etc.). **The drain point must be able to discharge the backwash flow rates shown on page 3.**
- Connect the filter to the main water supply pipe BEFORE or AHEAD OF the water heater. **DO NOT RUN HOT WATER THROUGH THE FILTER.** Temperature of water passing through the filter must be less than 120°F (49°C).
- Keep outside faucets on unfiltered water to conserve filtering capacity.
- Do not install the filter in a place where it could freeze. **Damage caused by freezing is not covered by the warranty.**
- Put the filter in a place water damage is least likely to occur if a leak develops. The manufacturer will not repair or pay for water damage.
- A 120 volt electric outlet, to plug the included transformer into, is needed near the filter. The transformer has an attached power cable. **Be sure the electric outlet and transformer are in an inside location, to protect from wet weather.**
- If installing in an outside location, you must take the steps necessary to assure the filter, installation plumbing, wiring, etc., are as well protected from the elements, contamination, vandalism, etc., as when installed indoors.
- **Keep the filter out of direct sunlight.** The sun's heat may soften and distort plastic parts.

► TOOLS, PIPE and FITTINGS, OTHER MATERIALS YOU WILL NEED (see page 5)

- Plastic inlet and outlet fittings included with the filter allow water flow equivalent to 1" (nominal) pipe. To maintain full valve flow, 1" pipes to and from the filter fittings are recommended. Some local codes require a minimum of 1" pipe size. **Do not** reduce the pipes to less than 3/4" size.
- Use copper, brass, or galvanized pipe and fittings. Some codes may also allow CPVC plastic pipe.
- ALWAYS install the included bypass valve, or 3

shut-off valves. Bypass valves let you turn off water to the filter for repairs if needed, but still have water in the house pipes.

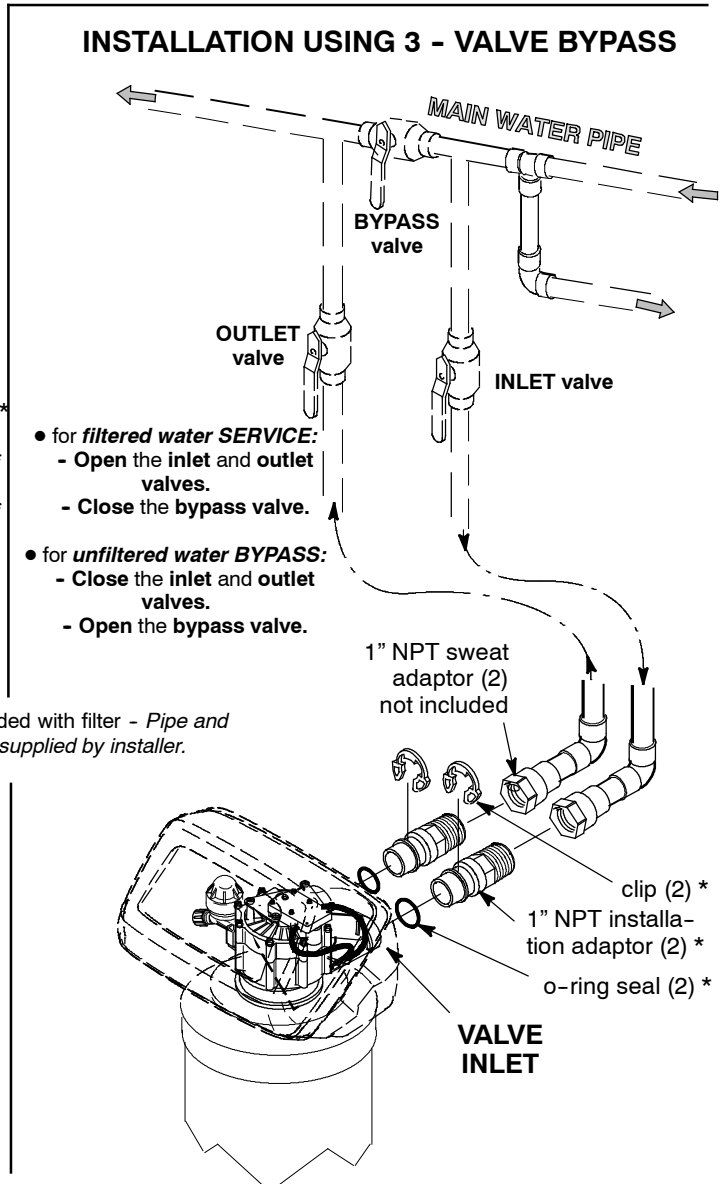
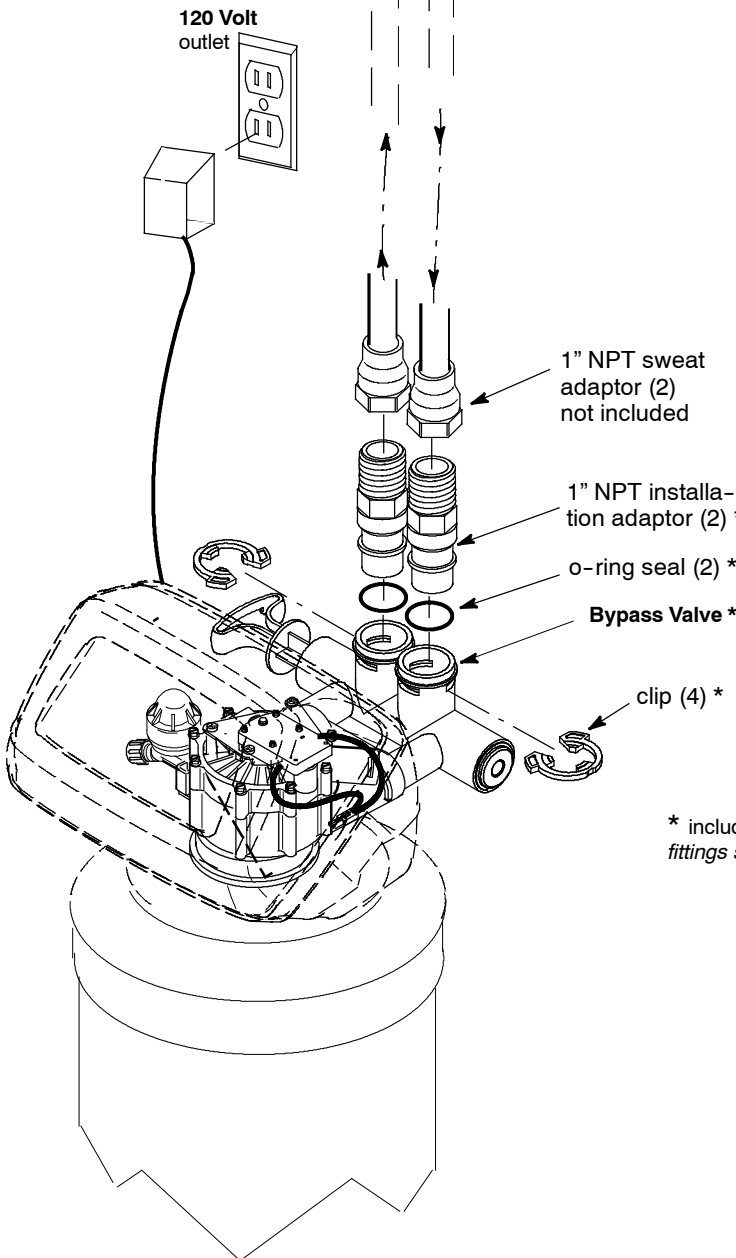
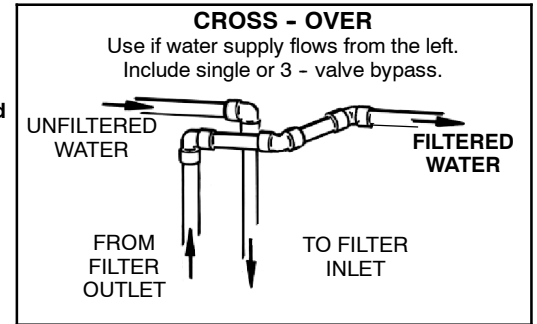
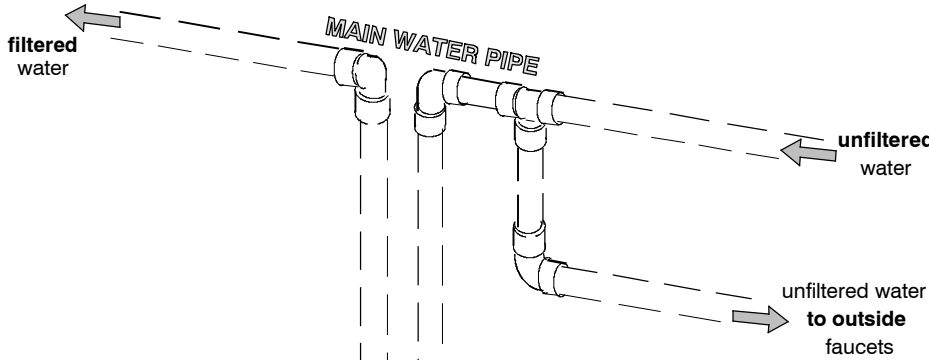
- Drain hose (5/8" inside diameter **minimum**), with a garden hose connection on one end, is needed for the valve drain. See step 5 on page 8.
- If a rigid valve drain is needed, to comply with plumbing codes, you can buy the parts needed (see page 7) to connect a 1/2 in. copper tubing drain.

► PLAN HOW YOU WILL INSTALL THE FILTER

You must first decide how to run in and out pipes to the filter. Look at the house main water pipe at the point where you will connect the filter. Is the pipe soldered copper, glued plastic, or threaded brass/galvanized? What is the pipe size?

Now look at the typical installation illustration on page 6. Use it as a guide when planning your particular installation. **Be sure to direct raw, unfiltered water to the filter valve inlet fitting.** The valve is marked IN and OUT.

TYPICAL SOLDERED COPPER or CPVC INSTALLATIONS



INSTALLATION STEPS

IMPORTANT SANITIZING PROCEDURES: 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. For this reason, sanitizing as follows is suggested^① when installing.

A. Pour about 1 ounce of the following disinfectant into the valve **inlet** fitting.

- a. calcium hypochlorite, available in granular or tablet form, under trade names such as Perchloron or HTH **– OR –**
- b. common 5.25% household bleach (Clorox, Lincoc, Bo Peep, White Sail, Eagle, etc., brands)

B. Complete the sanitizing procedures in steps 6 and 9, page 8.

^① NOTE: Sanitizing is recommended by the Water Quality Association for disinfecting. On some water supplies, they suggest periodic sanitizing.

1. INSTALL BYPASS VALVE and/or PLASTIC INSTALLATION ADAPTORS:

► Push the bypass valve, with lubricated o-ring seals in place, into the valve inlet and outlet ports...Figures 1A and 1C.

– AND/OR –

► Slide plastic installation adaptors, with lubricated o-ring seals in place, into the valve inlet and outlet ports...Figure 1A.

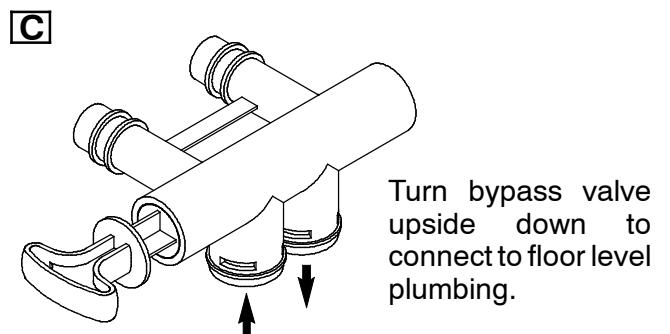
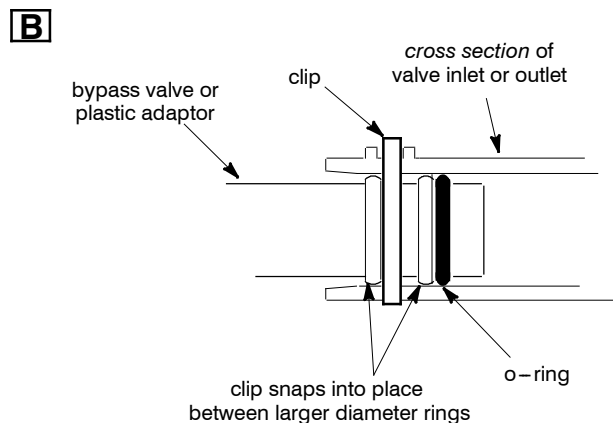
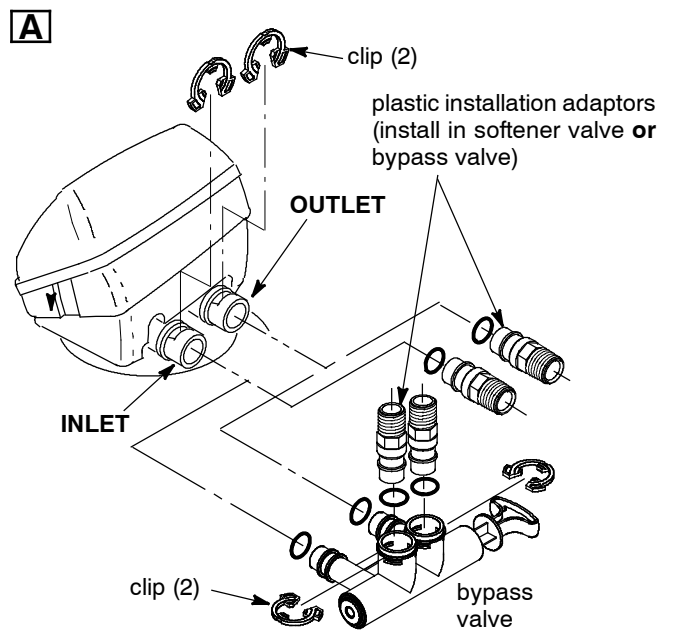
Note: **Be sure the support is in place in the valve outlet**, as shown in Figure 1A.

► Snap the two large plastic clips in place, from the top, down...Figures 1A and 1B. **Be sure they snap into place. Pull on the installation adaptors, or bypass valve, to make sure they are held securely in place.**

2. MOVE THE FILTER ASSEMBLY INTO INSTALLATION POSITION:

► Be sure the installation surface is level and smooth. If needed, place the tank on a section of 3/4" thick (min.) plywood. Then, place shims under the plywood as needed to level the filter.

FIGURE 1



INSTALLATION STEPS, continued

3. PLUMB IN AND OUT PIPES TO AND FROM FILTER:

CAUTIONS: Observe all of the following cautions while you connect inlet and outlet plumbing.

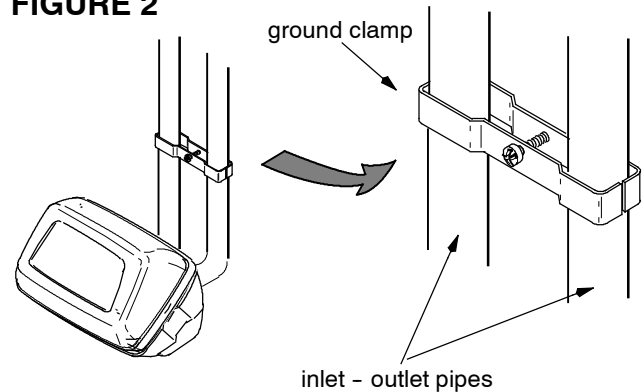
- ▶ Turn off the house water supply valve and open faucets to relieve pressure in the pipes.
- ▶ BE SURE RAW, UNFILTERED WATER IS DIRECTED TO THE VALVE INLET PORT.
- ▶ Be sure to use bypass valve(s).
- ▶ If making a soldered copper installation, do all sweat soldering before connecting pipes to the filter fittings. Torch heat will damage plastic parts.
- ▶ When turning threaded pipe fittings onto plastic fittings, use care not to cross-thread.
- ▶ Use pipe joint compound on all external pipe threads.
- ▶ Support inlet and outlet plumbing in some manner (use pipe hangers) to keep the weight off of the valve fittings.

4. INSTALL GROUND CLAMP (IF NEEDED):

NOTE: A 3 valve bypass system maintains ground continuity.

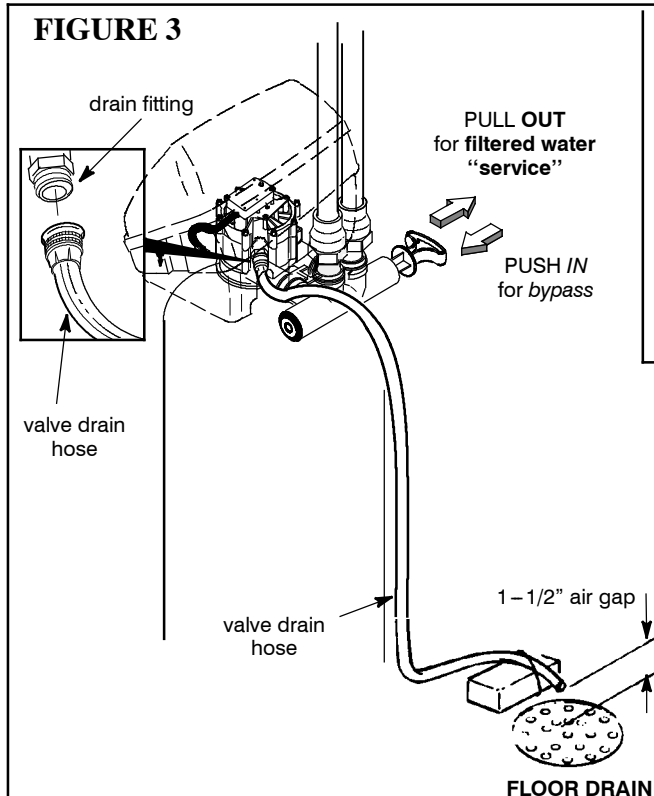
- ▶ To maintain electrical ground continuity in the house cold water piping, install the included ground clamp as shown. Be sure the pipes are clean, under the clamps, to assure good contact.

FIGURE 2



continued

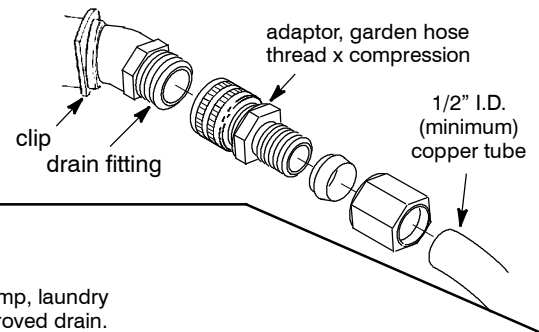
FIGURE 3



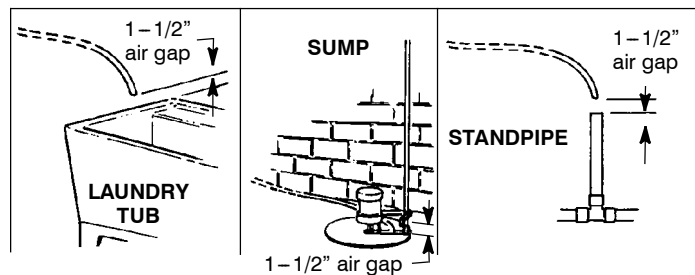
CONNECTING A RIGID VALVE DRAIN TUBE

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

FIGURE 4



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



INSTALLATION STEPS, continued

5. CONNECT AND RUN THE VALVE DRAIN HOSE:

▶ Take a length of 5/8" inside diameter garden hose and attach to the valve drain fitting.

▶ Locate the other end of the hose at a suitable drain point...floor drain, sump, laundry tub, etc. **Check and comply with local codes.**

IMPORTANT: Use high quality, thick wall hose that will not easily kink or collapse. *The filter will not back-wash properly if water cannot exit this hose during regenerations.*

Refer to Figure 4 if codes require a rigid pipe drain run.

▶ Tie or wire the hose in place at the drain point. Water pressure will cause it to whip during the back-wash and fast rinse cycles of regeneration. Also provide an air gap of at least 1–1/2" between the end of the hose and the drain point. An air gap prevents possible siphoning of sewer water, into the filter, if the sewer should back up.

▶ If raising the drain hose overhead is required to get to the drain point, **do not raise higher than 8' above the floor.** Elevating the hose may cause a back pressure that could reduce backwash flow and proper mineral bed cleaning.

6. FLUSH PIPES, CIRCULATE DISINFECTANT, EXPEL AIR FROM FILTER, AND TEST YOUR INSTALLATION FOR WATER LEAKS:

CAUTION: To avoid water or air pressure damage to filter inner parts, be sure to do the following steps exactly as listed.

A. Fully open two cold, **filtered** water faucets nearby the filter.

B. Place bypass valve(s) in "**bypass**" position. On a single valve, slide the stem inward to BY-PASS...see page 7. On a 3 valve system, close the inlet and outlet valves, and open the bypass valve...see page 5.

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

D. Place bypass valve(s) in "**service**", **EXACTLY** as follows. **KEEP FILTERED WATER FAUCETS OPEN.**

1. **SINGLE BYPASS VALVE:** **SLOWLY**, pull the valve stem outward to "service", pausing several times to allow the filter to pressurize slowly.

2. **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. The sanitizing bleach also circulates through the filter.

E. **After about three minutes, open a HOT water faucet** for one minute, or until all air is expelled, then close.

F. Close both cold water faucets.

G. Check your plumbing work for leaks and fix right away, if any are found. *Be sure to observe previous caution notes.*

H. Turn on the gas or electric supply to the water heater. Light the pilot, if applicable.

7. CONNECT TO ELECTRICAL POWER:

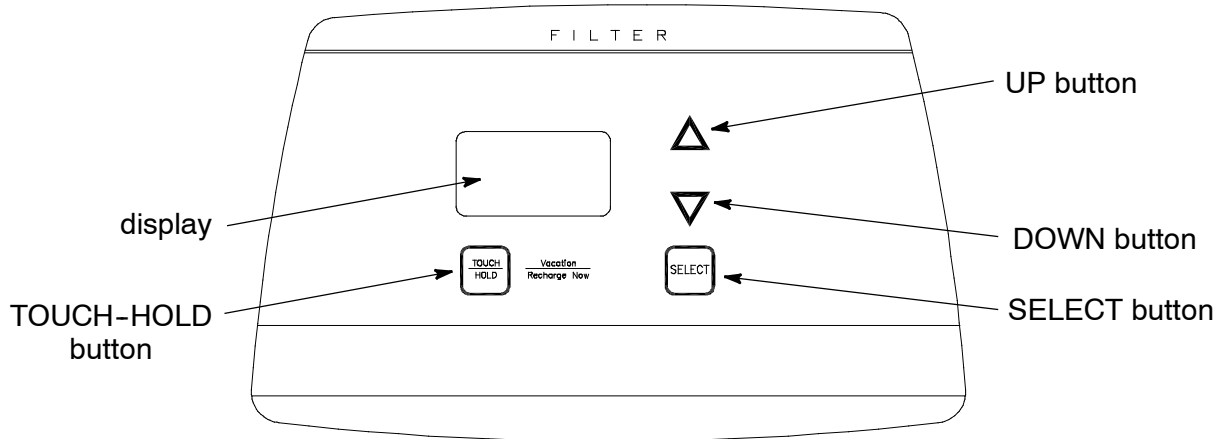
▶ The filter works on 24 volt, 60 Hz electric power. The included transformer changes standard 120 volt AC house power to 24 volts. **Plug the transformer into a 120 volt outlet only.** Be sure the outlet is always "live" so it can not be switched off by mistake.

Plug the transformer into the electrical outlet.

8. PROGRAM THE TIMER...see page 9.

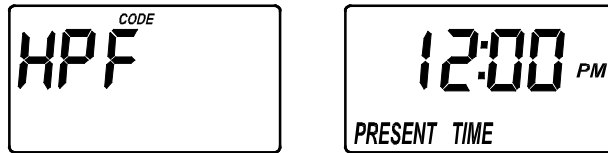
9. About 20 minutes after completing step 6, use the RECHARGE NOW feature, on the timer, to start an immediate backwash. Any remaining sanitizing bleach is drawn through the filter and discharged to the drain. The backwash and following fast rinse is over in about 40 minutes. Then, **filtered water** is available for your use.

PROGRAMMING THE TIMER





► **TIMER SETTINGS REQUIRED...** upon installation, and after an extended power outage (see Power Outage Memory, page 11).

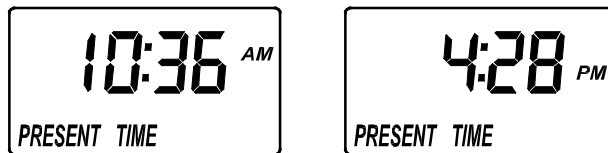
When the transformer is plugged into the electrical outlet, the model code and a test number (example: J3.4), begins to flash in the faceplate display. Then, 12:00 PM and PRESENT TIME begins to flash. Program the timer as follows.



► SET PRESENT TIME OF DAY

If the words *PRESENT TIME* do not show in the display, press the  SELECT button until they do.



Press the  UP or  DOWN buttons to set the present time. Up moves the display ahead; down moves the time backward. Be sure AM or PM, is correct.



Press buttons and quickly release to slowly advance the display. Hold for fast advance. This procedure applies for all following settings.

Press the  SELECT button to set present time and advance to the next set up screen.

► SET DAYS TO RECHARGE


The default setting is 3 days. This means the filter will recharge every 3 days. If a change is needed, use the  UP or  DOWN buttons to set from 1 to 99 days between recharges.



PROGRAMMING THE TIMER

Number of People	Iron (parts per million)			
	1 - 2	3 - 4	5 - 7	8 - 20
1	4 days	3 days	2 days	1 day
2	4 days	3 days	2 days	1 day
3	4 days	3 days	1 day	1 day
4	3 days	2 days	1 day	1 day
5	3 days	2 days	1 day	1 day
6	2 days	1 day	1 day	1 day
7	2 days	1 day	1 day	1 day

NOTE: If the water supply has high turbidity (sand, silt, sediments, etc.) set the filter to regenerate more often than the table above shows. Carbon and neutralizing filters may only need to backwash once a week, depending on application.


Press the  SELECT button to set and advance to the next set up screen.

► *SET RECHARGE TIME*

The default setting is 12:00 AM. This is a good time if you have a water softener or another filter installed, the recharge time should be offset to assure adequate water flow and pressure. For example, set the filter to start backwash at 12:00 AM, or 4:00 AM, if the water softener is set to begin recharge at 2:00 AM.

If a change is needed, use the  UP or  DOWN buttons to set time.



Press the  SELECT button to set and return to the normal run display.

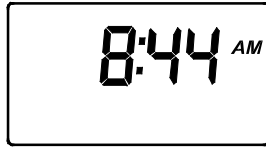
THE INSTALLATION AND PROGRAMMING STEPS ARE COMPLETE

NOTE: After you have completed all preceding instructions, your house water supply is filtered immediately. However, **your water heater is filled with unfiltered water** and, as hot water is used, it will refill with filtered water. When all the water is replaced in the water heater, all water will be filtered. If you want totally filtered water immediately, drain the water heater after the backwash initiated on page 8 is over (no water running from filter drain hose). Drain until the water runs cold. **If you do drain the water heater, use extreme care as the hot water could cause severe burns.**

FACEPLATE TIMER FEATURES, SETTINGS AND SERVICE

NORMAL OPERATION, TIMER DISPLAYS

During normal operation, the present time of day, and AM or PM, show in the time display area. When a regeneration begins, *RECHARGE NOW*



starts to flash in the display, along with the present time of day. *RECHARGE NOW* flashes until the regeneration is over.



feature: *RECHARGE NOW*

For times you expect to use more water than usual, use the *RECHARGE NOW* control. Press the Touch-Hold button until *RECHARGE NOW* begins to flash in the time display.



A regeneration begins immediately. The filter begins to filter your water again in about 2 hours.

NOTE: Avoid using **HOT** water during the regeneration, because the water heater will refill with unfiltered water.

feature: *VACATION CONTROL*

Before going on vacation, or other long absence, press (do not hold in) the Touch-Hold button so *VAC* starts to flash in the display. The timer continues to keep time, but regenerations will not occur and waste water.



When you return, press the Touch-Hold button again to return the filter to service, and the present time in the display. **REMEMBER TO DO THIS**, or the filter will not regenerate until you do.

NOTE: To shut off the water supply to the filter, use the plumbing bypass valve(s).

feature: *POWER OUTAGE MEMORY*

If electrical power to the timer is interrupted, the "memory" built into timer circuitry keeps **all** settings for several hours. The display is blank and the filter will not regenerate. When electrical power comes on, one of two things will happen.

1. The present time of day will show, meaning the timer memory has kept all time settings.

NOTE: If the filter was regenerating when power was lost, it will now finish the cycle.

2. The display will show a time, but it will be flashing. The timer memory did **not** keep the time of day and

it may need to be reset (page 9). The display returns to a flashing time, then begins to keep time again. If you do not reset the time of day, the filter will regenerate based on the days to recharge, however, regenerations will most likely be at the wrong time of day.

NOTE: The flashing display is to remind you to reset the timer.

If the filter was regenerating when power was lost, the valve will return to service position without finishing the cycle. Use *RECHARGE NOW* (see above) to start another cycle if needed.

FACEPLATE TIMER FEATURES, SETTINGS AND SERVICE

feature: *ERROR CODES*

An error code could appear in the faceplate display if a problem occurs in the filter. If you see an error code, for exam-



ple Err03, instead of the present time of day, please call your local dealer for service, or see your warranty on page 24.

CODE	POSSIBLE DEFECTS
Err01	Motor, Valve Position Switch
Err03	Motor, Valve Position Switch, Wire Harness
Err04	Valve Position Switch
Err05	PWA

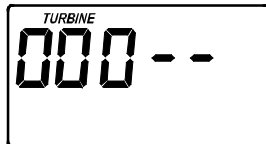
TO REMOVE AN ERROR CODE: (1) unplug transformer (2) correct defect (3) plug transformer in (4) Do the manual advance diagnostics. The error code will return within 12 minutes if the reason for the error code was not corrected.

service: *REGENERATION CYCLE TIME ADJUSTMENTS*

The default settings for fill (0 minutes), solution draw/rinse (0 minutes), (backwash (25 minutes), and fast rinse (5 minutes) cycles of regeneration are factory set for maximum performance of the filter. Use the following procedures to check for correct cycle times, or to change if desired. However, only trained technicians should change the time settings.

service: *ADJUSTABLE FILL TIME*

Press and hold the Select button until the display shows "000--", then press the Select button once again to advance to the Fill time adjust screen.

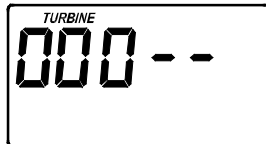


Using the Up or Down buttons adjust the fill time from 0:00 minutes to 99:59 minutes (zero to just under 1 hour and 40 minutes).

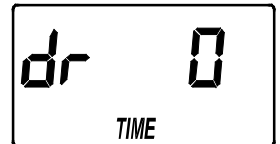


service: *ADJUSTABLE DRAW/RINSE TIME*

Press and hold the Select button until the display shows "000--", then press the Select button twice to advance to the Draw/Brine/Rinse time adjust screen.

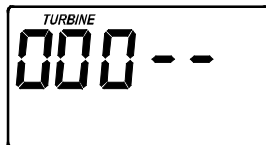


Using the Up or Down buttons adjust the brine/draw/rinse time from 0 minutes to 255 minutes (zero to 4 hours and 15 minutes).

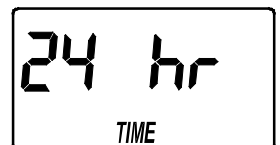
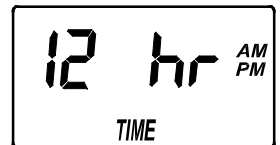


service: *12 OR 24 HOUR CLOCK*

Press and hold the Select button until the display shows "000--", then press the Select button three times to advance to the "12 hr" or "24 hr" time format screen.



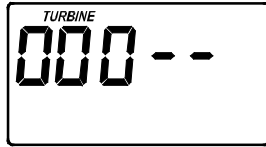
Using the Up or Down buttons set the time format to 12 or 24 hours.



FACEPLATE TIMER FEATURES, SETTINGS AND SERVICE

service: *ADJUSTABLE BACKWASH TIME*

Press and hold the Select button until the display shows "000--", then press the Select button four times to advance to the Backwash time adjust screen.

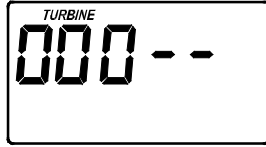


Using the Up or Down buttons adjust the backwash time from 0 minutes to 99 minutes.

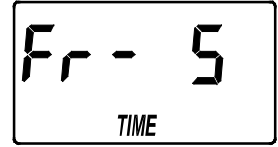


service: *ADJUSTABLE FAST RINSE TIME*

Press and hold the Select button until the display shows "000--", then press the Select button five times to advance to the Fast Rinse time adjust screen.



Using the Up or Down buttons adjust the Fast Rinse time from 0 minutes to 99 minutes.



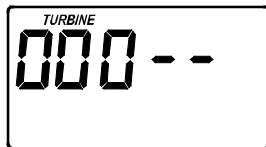
service: *AUXILIARY OUTPUT CONTROL*

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 Page 20). The table below explains the choices available for when the auxiliary output will be on during various portions of the recharge cycle:

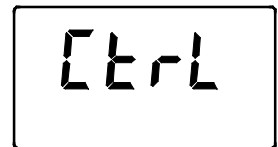
SELECTION	NAME	AUXILIARY OUTPUT FUNCTION
OFF	Off	Remains off indefinitely.
BP	Bypass	On during the entire recharge.
CL	Chlorine	On during the brine draw portion of the recharge (softeners only).
FS	Flow Switch	On when water is flowing past the turbine. It will shut off 8 seconds after water flow stops.
CF	Chemical Feeder	After the set volume of water has flowed past the turbine, turns on for the time set (see Steps 4 & 5, below, to set volume and time).
FR	Fast Rinse	On during the fast rinse 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 the display shows "000--".



2. Press the Select button six times and "Ctrl" will flash in the display.



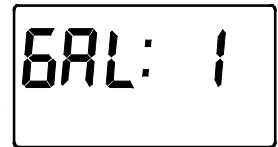
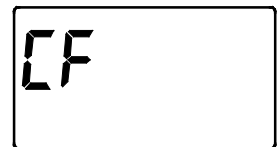
3. Use the UP or DOWN buttons to display the selection, then press SELECT. If you selected anything other than CF, the display will return to the normal run (time of day) screen.



If setting to CF (Chemical Feeder), there will be two additional settings to make for operating the chemical feeder in Steps 4 and 5, below.

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 shown at right, use the UP or DOWN buttons to set the trip volume, in gallons. Then press SELECT to display the next screen.



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 SELECT to accept and return to the normal run (time of day) screen.



FACEPLATE TIMER FEATURES, SETTINGS AND SERVICE

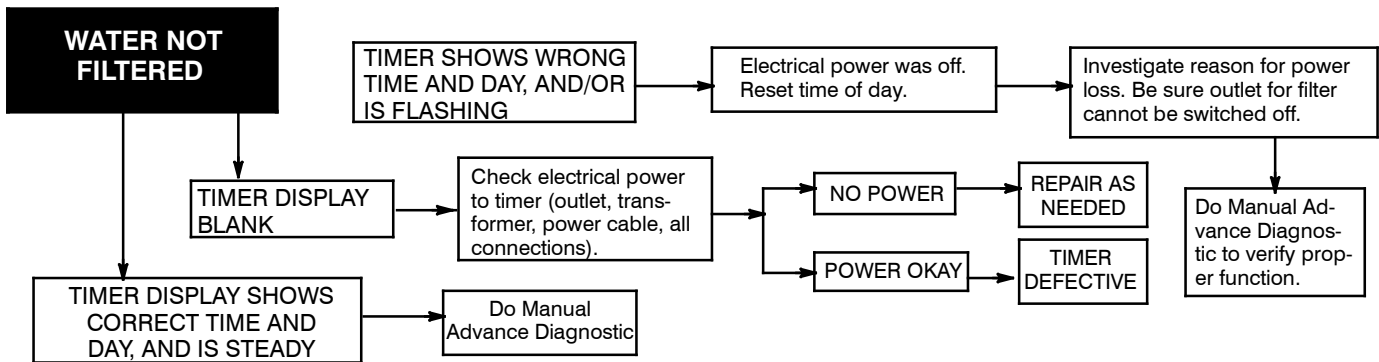
service: *TIMER / FILTER, SERVICE CHECKOUT PROCEDURE*

If you are not getting filtered water, use the procedures below to find the problem. First, make the following visual checks.

1. Is there electrical power to the outlet the filter transformer is plugged into?
2. Is the plumbing bypass valve, or valves, directing

water for filtered water service (see page 5 or 7)?
3. Is the valve drain hose open to the drain, not elevated too high, and unobstructed?

If you do not find a problem with the visual checks, continue below.



service: *MANUAL ADVANCE DIAGNOSTIC*

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

Remove the top cover to observe cam and switch operation during valve rotation.

DISPLAY MUST SHOW TIME AND DAY

1. Press and hold the Touch-Hold button for 3 seconds until RECHARGE NOW flashes in the display and the filter moves into the backwash cycle.



Look for a fast flow of water from the drain hose (see specifications).

...An obstructed flow indicates a plugged top distributor, backwash flow plug, or drain hose.

NOTE: Be sure household water pressure (well system) is maintained at a minimum of 20 psi. Adjust the pump switch upward, if needed.

2. Press the Touch-Hold button to move the filter into fast rinse. Again, look for a drain flow rate about the same as backwash.

3. To return the filter to service, press the Touch-Hold button once.

NOTE: While in manual advance, the time display will automatically return to the present time if a button is not pressed within 4 minutes.

...If the motor does not run, check the motor and all wiring connections.

service: *RESETTING TO FACTORY DEFAULTS*

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

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

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, hardness, etc., as described on pages 9 & 10.

OTHER SERVICE

UNFILTERED WATER BYPASS (unfiltered water "bleeds" into filtered water supply).

1. Missing or defective o-ring(s) at resin tank to valve connection (see Figure 5, page 18).
2. Defective rotor disc, seal or wave washer (see

pages 22 and 23).

WATER LEAKS FROM DRAIN HOSE (during service)

1. Defective rotor disc, seal, or wave washer.
2. Defective o-ring on disc shaft.

GENERAL FILTER INFORMATION

► *SEDIMENT FILTER*

A sediment filter removes sand, dirt, clay, silt, and fine organic matter from water. You can see sediment in water by filling a clear drinking glass and holding it up to a light. The sediment particles are either suspended in the water, or settled to the bottom of the glass.

The mineral bed in the sediment filter is a “filter aggregate” material. The bed traps and holds the sediments as water flows through it. When properly maintained, the mineral can last indefinitely.

► *WATER NEUTRALIZING FILTER*

All water, when chemically analyzed, is either acid, neutral, or base (alkaline). To measure this, the water is given a pH value between 0 and 14. Water having a pH from 0 to 6.9 is acid. A pH of 7 is neutral. Above 7, the water is alkaline.

An acid neutralizer filter is used to treat water with a pH of 6.0 to 6.8. The filter is filled with a bed of neutralite/magnesium oxide mineral. As acid water passes through the filter, some of the mineral dissolves to raise the pH and neutralize the acid. Because the mineral does dissolve, the filter needs to be refilled. How often depends on the amount of acidity, and how much water is used. See page 17 to determine when refilling is needed.

Acid water, although sometimes clear in appearance, shortens the life of iron pipe and corrodes copper or brass pipe and fittings. It causes green or blue stains on plumbing fixtures, and may etch porcelain enamel over a period of time.

► *TASTE & ODOR FILTER*

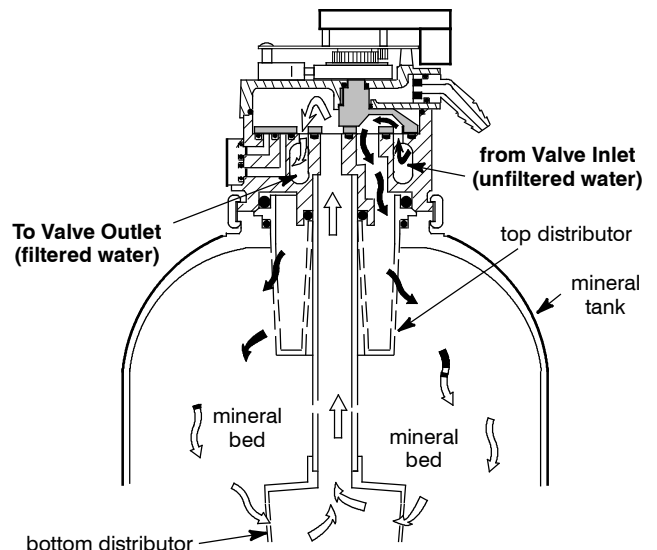
Taste & odor filters remove most tastes, odors and certain organic colors from water. Bad tastes and odors are due to a variety of causes (chlorine, petroleum, tannins, etc.). Activated carbon mineral, used in this filter, has a high capacity for adsorbing these impurities.

The activated carbon mineral bed usually lasts for about one year before it's exhausted. High amounts of tastes and odors, and/or higher water usages may shorten this time. Activated carbon can't be regenerated and must be replaced when exhausted (see page 19).

► *HOW THE SEDIMENT, NEUTRALIZING, AND TASTE & ODOR FILTERS WORK*

FILTERED WATER "SERVICE": Unfiltered water enters the valve inlet port. Internal valve porting routes the water down and out the top distributor and into the mineral tank. As water flows downward through the mineral bed, sediment or taste and odor is removed, or mineral is dissolved to neutralize acid. Filtered water enters the bottom distributor, goes up the riser pipe and to the valve outlet port. Filtered water is directed to a house faucet when opened.

FILTERED WATER "SERVICE" CYCLE



In time, the filter needs cleaning to remove sediments, dirt, iron, etc., and to mix the mineral bed to remove water channels. This cleaning is done in two stages or cycles, *backwash* and *fast rinse*. The cleaning cycle is started automatically by the timer.

continued

GENERAL FILTER INFORMATION

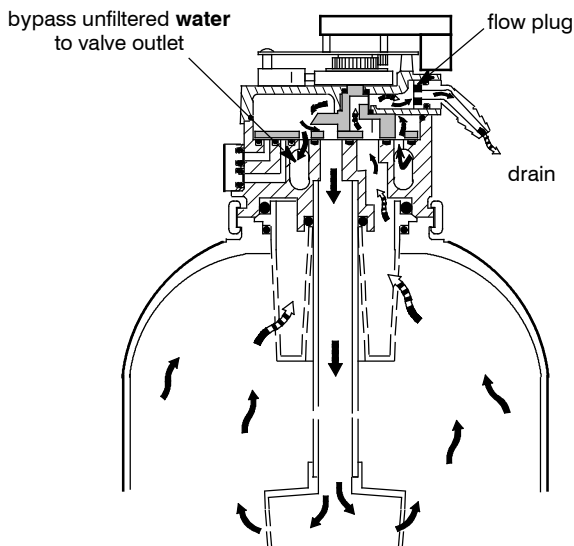
BACKWASH: The timer energizes the valve motor which positions internal valve porting for backwash. Water flow is reversed upward through the filter, and at a fast rate to flush the sediments, dirt, iron, etc., from the bed. The valve drain port is also opened to allow discharge of the cleaned materials to the drain point. The accelerated flow lifts and expands the mineral bed for maximum cleaning. The filter backwashes for 25 minutes, or as otherwise set.

During the backwash cycle, valve porting provides **bypass unfiltered supply water** to house faucets for emergency needs. However, you should avoid the use of **hot** water because the water heater will refill with the unfiltered water. In most households, water is not in use since the cleaning cycles occur during early morning hours (at timer default values).

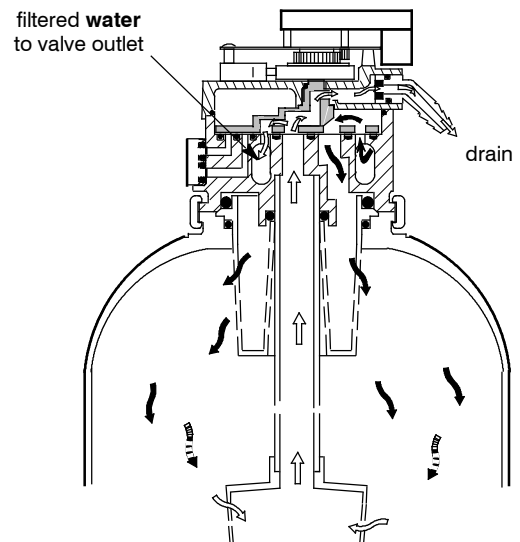
FAST RINSE: Backwash is followed by the fast rinse cycle. Valve porting is changed again to return a downward flow of water through the mineral bed. As in backwash, flow is at a fast rate to flush unfiltered water and remaining sediments to the drain, and to pack the mineral bed in preparation for return to "service".

The timer default fast rinse time is 5 minutes.

BACKWASH CYCLE



FAST RINSE CYCLE



GENERAL FILTER MAINTENANCE

The filters require a minimum of care. A backwash at regular intervals will keep the filter mineral bed clean and operating at top efficiency. Eventually, a neutralizer filter will require a refill of mineral because it does dissolve away. The activated carbon in a taste & odor filter, will need to be replaced after it has exhausted its ability to adsorb. Be sure to protect your filter from freezing temperatures.

► *PROTECT THE FILTER FROM FREEZING*

If the filter is installed where it could freeze (summer cabin, lake home, etc.), you must drain all water from it to prevent possible damage caused by freezing. To drain the filter...

1. Close the shut-off valve on the house main water pipe, near the water meter or pressure tank.
2. Open a *filtered* water faucet to vent pressure in the filter.
3. Refer to page 5, or to Figure 3 on page 3. Move the stem in a single bypass valve to bypass. Close the inlet and outlet valve in a 3 valve bypass system, and open the bypass valve. If you want water in the house pipes again, reopen the shut-off valve on the main water pipe.
4. Unplug the transformer at the wall outlet.

Refer to the parts drawings on pages 22–21 when doing the following steps.

5. Pull the clip holding the drain fitting to the valve and remove the fitting with the drain hose attached.

► *ADDING MINERAL TO THE NEUTRALIZING FILTER*

The neutralite/magnesium oxide mineral slowly dissolves to neutralize acid in the water. If the filter is not serviced, *all* of the mineral would dissolve. How fast it dissolves depends on the pH of the water, how much water is used, and other water conditions. Because of the variables, it is difficult to determine exactly when to add more mineral. When you have had the filter for a period of time, experience will tell you when to add more mineral. You can use the instructions following step 7, page 18, as a guide to determine when to refill the next time.

ADDING MINERAL

Refill the filter with mineral the first time about 6 months after installation. See step 7, page 18, to determine the next time to refill.

Do not lose the flow plug assembly located in the drain fitting.

6. Carefully remove the large holding clips at the filter inlet and outlet (Figure 1, page 6). Separate the filter from the copper tubes, or from the bypass valve.

7. Move the filter close to the drain. **SLOWLY** and **CAREFULLY** (the filter is heavy), tip the filter over so the valve inlet and outlet are over the drain. **Do not allow the filter's weight to rest on the inlet and outlet fittings or they will break.** Tip the bottom of the filter up a few inches and hold until all water has drained.

Notes:

Leave the filter laying like this until you are ready to use it again. Plug the inlet and outlet with rags to keep dirt, bugs, etc. out.

Sanitizing (see page 6) is suggested when putting the filter back into service.

1. Press the Touch–Hold button until **RECHARGE NOW** begins to flash in the time display.

2. Wait until water begins to flow from the valve drain hose. Then, place the bypass valve(s) in bypass position. Refer to page 5, and to Figure 3 on page 7.

Important: To relieve pressure in the tank, be sure to do steps 1 and 2 as instructed.

3. Unplug the transformer at the wall outlet.

4. Carefully remove the clips at the filter valve inlet and outlet. Then, separate the filter from the copper tubes, or from the bypass valve (Figure 1, page 6).

continued

GENERAL FILTER MAINTENANCE

5. Remove the two clamp retainers and two clamp sections that hold the valve to the tank. Lift the valve assembly up and off the tank.

6. Remove three o-ring seals and the top distributor from the tank. Inspect the o-rings to be sure they are reusable (see repair parts pages). Set the parts safely aside so they won't be lost or broken.

7. To make room in the tank for new mineral, use a hose to siphon water out. Run the hose about 36" down the inside of the bottom distributor. **Be careful not to damage the top edge of the tube.**

DETERMINE MINERAL ADDING FREQUENCY

At this time, take a yard stick or tape rule and measure down to the *top* of the mineral bed. Use a flashlight so you can visually see the top of the bed. Measure inches as shown in Figure 5.

If the measurement is 32" or less, over half of the mineral bed remains. You could wait for 9 – 10 months before refilling the next time (assuming water usage remains about the same).

If the measurement is 38" or more, less than 1/4 of the bed remains. It may be better to add mineral more often than every 6 months.

8. Plug the end of the bottom distributor tube with a rag. Then, use a large neck funnel to add new mineral into the tank.

CAUTIONS:

Do not pour mineral into the bottom distributor tube.

Do not overfill the tank. Freeboard area (Figure 5) is needed for proper backwash cleaning of the mineral bed.

9. Use water to flush the tank top opening. It must be clean for good o-ring sealing surfaces.

10. Be sure the three o-ring seals are lubricated (use silicone grease or vaseline). Then, referring to

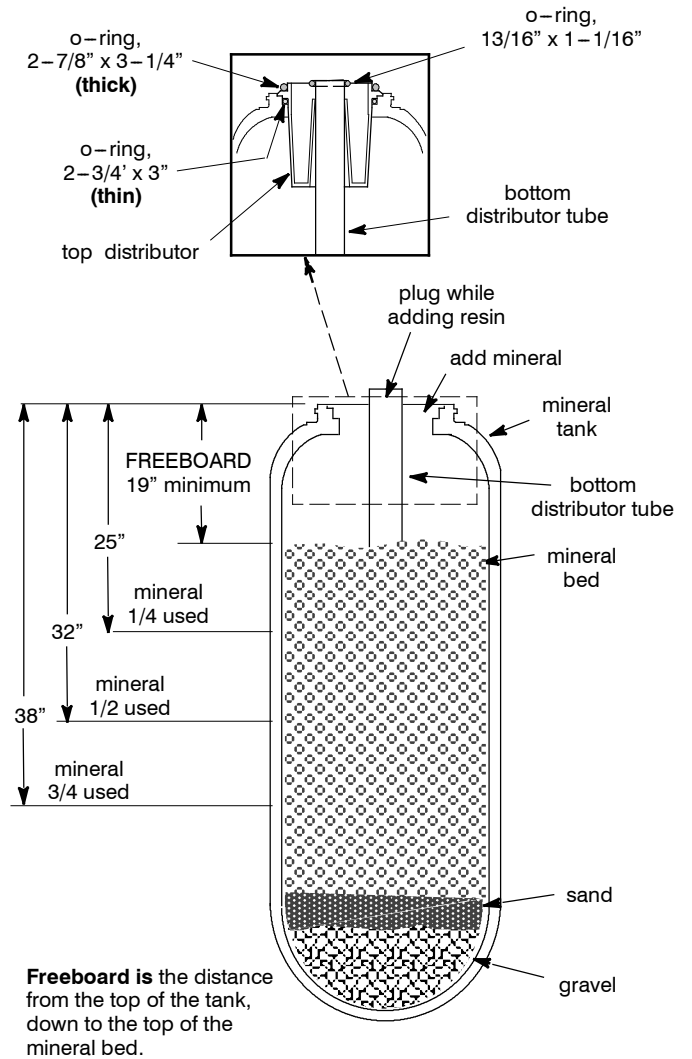
the inset drawing in Figure 5, place in position along with the top distributor.

11. *Carefully*, lower the valve assembly onto the tank adaptor. **Install the clamps and retainers, being sure they are securely fastened.**

12. Do step 1 on page 6.

13. Do steps 6 and 7 on page 8. The filter will complete the backwash you started in step 1 on page 17.

FIGURE 5



GENERAL FILTER MAINTENANCE

► REPLACING MINERAL IN THE TASTE & ODOR FILTER

The activated carbon mineral adsorbs tastes and/or odors in the water supply. How long it lasts depends on how much water is used, and other conditions. Average life of the mineral is about one year. When tastes and/or odors return in your filtered water, mineral bed replacement is needed.

MINERAL REPLACEMENT

1. Press the Touch–Hold button until *RECHARGE NOW* begins to flash in the time display.

2. Wait until water begins to flow from the valve drain hose. Then, place the bypass valve(s) in bypass position. Refer to page 5, and to Figure 3 on page 7.

Important: To relieve pressure in the tank, be sure to do steps 1 and 2 as instructed.

3. Unplug the transformer at the wall outlet.

4. Carefully remove the clips at the filter valve inlet and outlet. Then, separate the filter from the copper tubes, or from the bypass valve (Figure 1, page 6).

5. Remove the two clamp retainers and two clamp sections that hold the valve to the tank. Lift the valve assembly up and off the tank.

6. Remove three o–ring seals and the top distributor from the tank. Inspect the o–rings to be sure they are reusable (see repair parts pages). Set the parts safely aside so they won't be lost or broken.

CAUTION: Handle the tank carefully when doing the following step. Do not attempt to lift the tank. Wet carbon is very heavy.

7. At a floor drain, carefully tip the tank over to empty the contents. Catch the carbon in a burlap sack or

other suitable container. Remove the bottom distributor when you are able to do so.

8. Flush the inside of the tank with fresh water to thoroughly clean.

9. Stand the tank upright and replace the bottom distributor. Plug the end of the bottom distributor tube with a rag.

10. Use a large neck funnel to add the new bed. First, add 17 lbs of gravel, followed by 10 lbs of filter sand. Finally, *being sure the bottom distributor is centered*, add 1 cu ft of activated carbon mineral into the tank. Use water sparingly to assist the flow of mineral through the funnel.

11. Use water to flush the tank top opening. It must be clean for good o–ring sealing surfaces.

12. Be sure the three o–ring seals are lubricated (use silicone grease or vaseline). Then, referring to the inset drawing in Figure 5, place in position along with the top distributor.

13. *Carefully*, lower the valve assembly onto the tank adaptor. **Install the clamps and retainers, being sure they are securely fastened.**

14. Do step 1 on page 6.

15. Do steps 6 and 7 on page 8. The filter will complete the backwash you started in step on page .

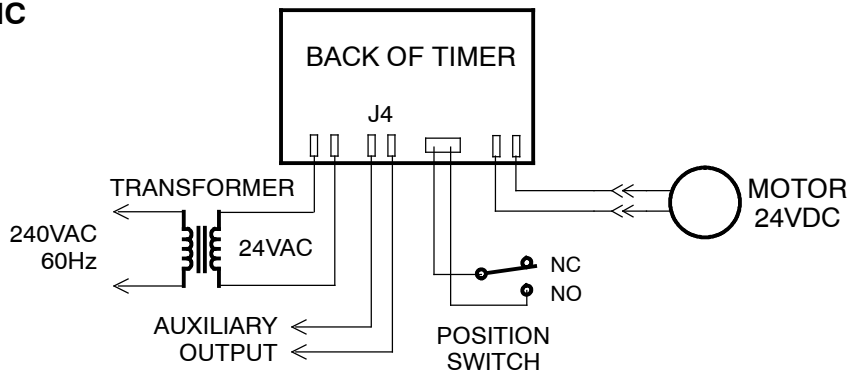
NOTE: Backwashing removes carbon “fines” (too small or fine particles) from the new mineral. If the filtered water still contains fines, after the backwash, repeat step 1 to initiate another backwash, or open faucets and let the water run until clear.

GENERAL FILTER MAINTENANCE

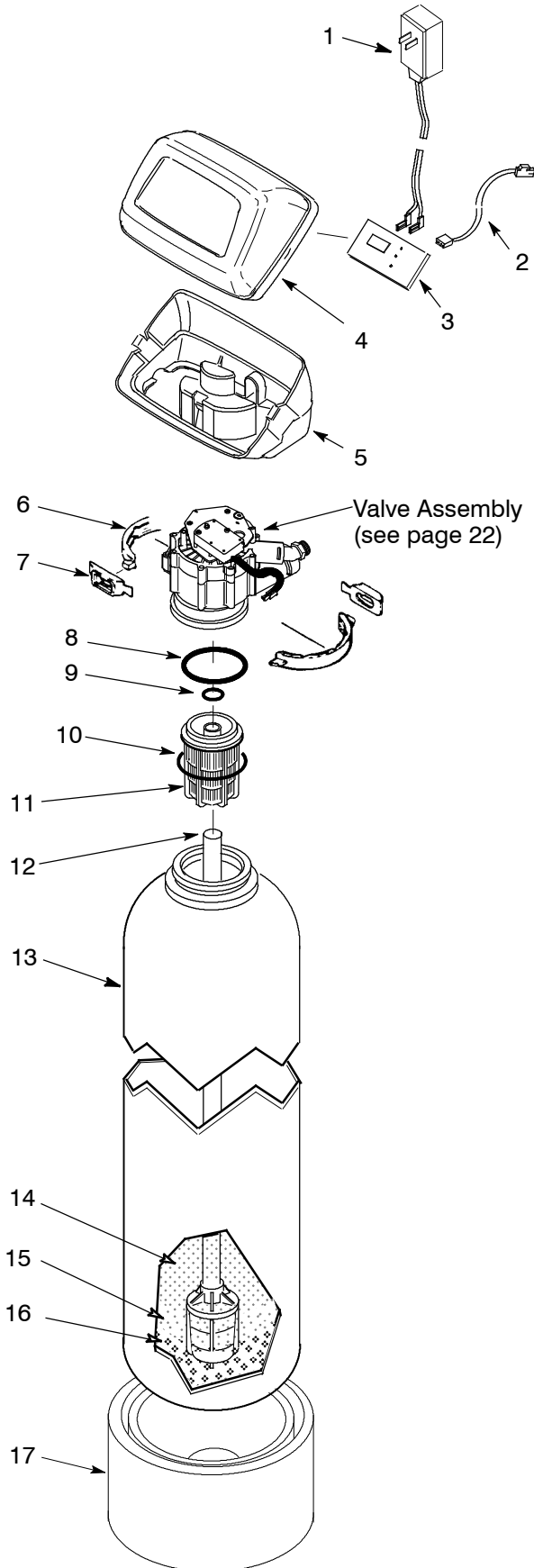
► CHECKLIST BEFORE YOU CALL FOR SERVICE

PROBLEM	CAUSE	CORRECTION
<i>FILTER WILL NOT BACKWASH</i>	Manual plumbing bypass valve(s) in bypass position	Refer to page 5, or to Figure 3, page 7 and position for filtered water “service”.
	Transformer unplugged at wall outlet, power cable disconnected from back of circuit board, fuse blown/circuit breaker popped, circuit switched off	Check for loss of power and correct as needed. Reset the timer and use the RECHARGE NOW feature, page 11.
	Timer set for vacation (VAC)	Press the Touch–Hold button once to return the filter to “service”, see page 11.
	Timer programmed for backwash, but time too short	See page 13 to set.
	Error code shows in timer display	Refer to page 12.
	Backwash flow control, drain hose restricted or plugged	Check drain hose. Remove drain elbow on filter valve to check flow control. See page 22 to check for correct assembly and orientation.
<i>LOW WATER PRESSURE AT HOUSE FAUCETS</i>	Well pump pressure switch set too low	Adjust to a <i>minimum</i> of 20 psi.
	Backwash needed more often to keep filter mineral clean	See page 9 to set.
<i>FILTERED WATER CONTAINS SEDIMENT, IRON, DIRT, ETC.</i>	See all conditions above	
<i>NEUTRALIZER FILTER ONLY: FILTERED WATER IS ACID OR PARTLY ACID</i> NOTE: Trace plumbing to be sure faucet is connected to with filtered water.	Manual plumbing bypass valve(s) in bypass position	see above
	Filter low on neutralite mineral	Add new mineral, see pages 17 and 18.
<i>TASTE & ODOR FILTER ONLY: FILTERED WATER HAS BAD TASTE AND/OR ODOR</i> NOTE: Trace plumbing to be sure faucet is connected to with filtered water.	Manual plumbing bypass valve(s) in bypass position	see above
	Activated carbon mineral exhausted	Replace mineral bed, page 19.

WIRING SCHEMATIC

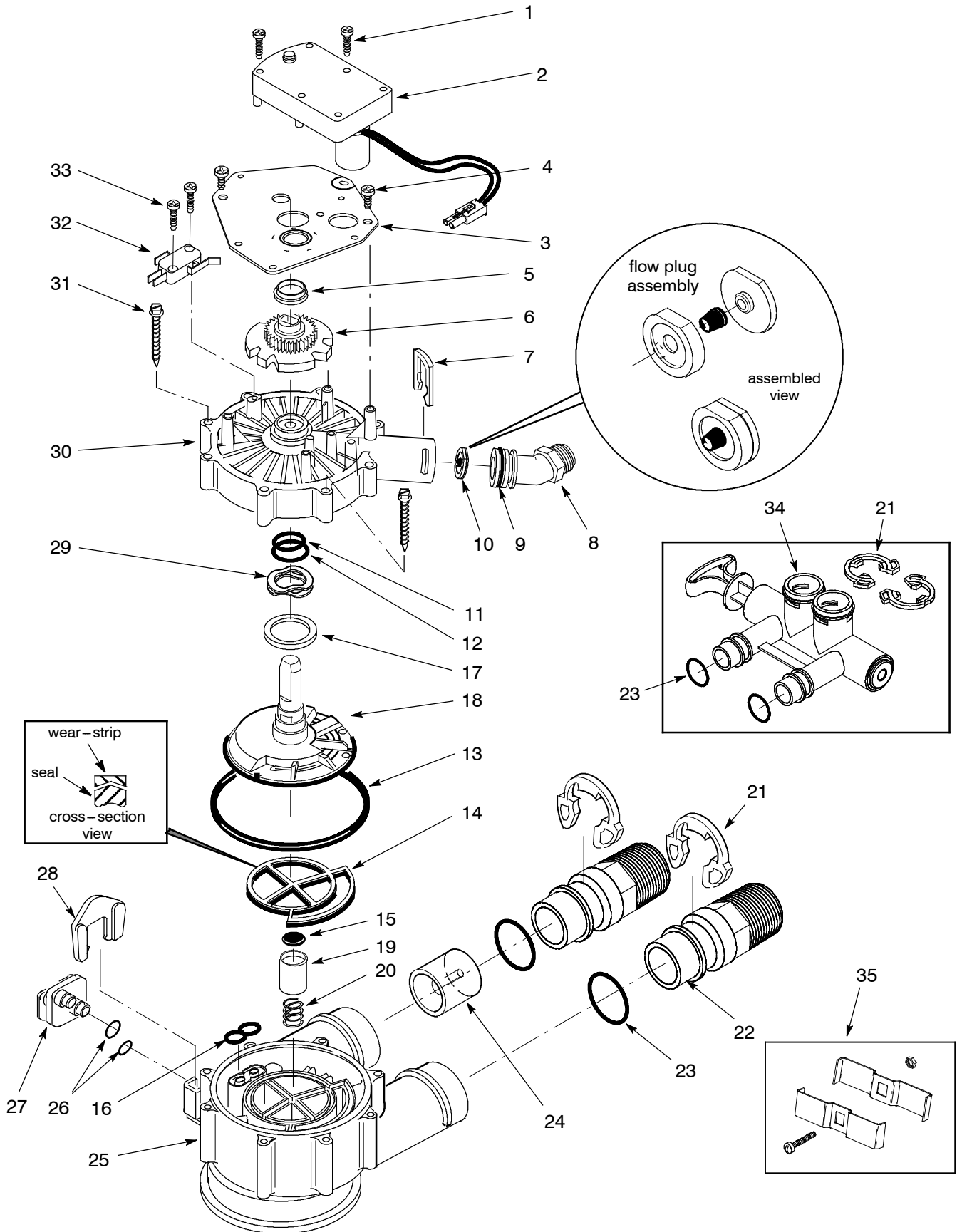


REPAIR PARTS - FILTER ASSEMBLY



KEY NO.	PART NO.	DESCRIPTION
1	7275907	Transformer, 24V – 10VA
2	7259927	Wire Harness
3	7336363	Repl. Timer (PWA)
4	7260554	Cover (order req'd decal below)
–	7285279	Decal, Cover
5	7189449	Bottom Cover
–	7331177	Tank Neck Clamp Kit (includes 2 ea. of Key Nos. 6 & 7)
6	↑	Clamp Section (2)
7	↑	Retainer Clip (2)
–	7112963	Distributor O–ring Kit (includes Key Nos. 8–10)
8	↑	O–ring, 2–7/8" x 3–1/4"
9	↑	O–ring, 13/16" x 1–1/16"
10	↑	O–ring, 2–3/4" x 3"
11	7088855	Top Distributor
12	7105047	Repl. Distributor
13	7092202	Mineral Tank, 10"
	7113074	Mineral Tank, 12"
14	7336141	Catalytic Carbon, 1 cu ft (Chloramine, Chlorine Taste, Odor & Sediment Filter)
	0505647	Aggregate, 1 cu ft (Sediment Filter)
	7161912	Neutralite Mix, 1/2 cu ft bag (Water Neutralizer)
15	0501783	Filter Sand, 10 lbs
16	7124415	Gravel, 17 lbs
17	7302039	Tank Foot, 10" tanks
	7139222	Tank Foot, 12" tanks

REPAIR PARTS - VALVE ASSEMBLY

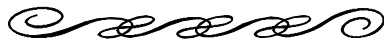


REPAIR PARTS - VALVE ASSEMBLY

KEY NO.	PART NO.	DESCRIPTION
1	7224087	Screw, #8-32 x 1" (2 req.)
2	7286039	Motor (incl. 2 ea. of Key No. 1)
3	7231393	Motor Plate
4	0900857	Screw, #6-20 x 3/8 (3 req.)
5	7171250	Bearing
6	7283489	Cam and Gear
-	7331711	Drain Hose Adaptor Kit, 10" dia. APF (includes Key Nos. 7-10)
	7331729	Drain Hose Adaptor Kit, 12" dia. APF (includes Key Nos. 7-10)
7	↑	Clip (Drain)
8	↑	Drain Hose Adaptor
9	↑	O-ring, 15/16 x 1-3/16
10	↑	Flow Plug, 5 gpm (10" dia. APF)
		Flow Plug, 7 gpm (12" dia. APF)
-	7185487	Seal Kit (incl. Key Nos. 11-16)
11	↑	O-ring, 5/8 x 13/16
12	↑	O-ring, 1-1/8 x 1-1/2
13	↑	O-ring, 4-1/2 x 4-7/8
14	↑	Rotor Seal
15	↑	Seal
16	↑	Seal (Nozzle & Venturi)

KEY NO.	PART NO.	DESCRIPTION
17	7174313	Bearing, Wave Washer
18	7185500	Rotor & Disc
19	7171187	Plug (Drain Seal)
20	7129889	Spring
21	7089306	Clip (4 req.)
22	7271204	Installation Adaptor, 1" (2 req.)
23	7311127	O-ring, 1-1/16 x 1-5/16 (4 req.)
24	7078240	Support
25	7171145	Valve Body
26	7170319	O-ring, 1/4 x 3/8 (2 req.)
27	7100940	Plug
28	7081201	Retainer
29	7175199	Wave Washer
30	7171161	Valve Cover
31	7172997	Screw, #10 x 2-5/8 (8 req.)
32	7305150	Switch
33	7140738	Screw, #4-24 x 3/4 (2 req.)
34	7214317	Bypass Valve (Includes 2 ea. of Key Nos. 21 & 23)
35	7248706	Ground Clamp Kit

WARRANTY



TEN YEAR LIMITED WARRANTY

GENERAL CONDITIONS

Damage to any part of this water filter because of misuse, misapplication, neglect, alteration, accident, installation or operation contrary to our printed instructions, or damage caused by any unusual force of nature such as, but not limited to, freezing, flood, hurricane, tornado, or earthquake is not covered by this warranty. In all such cases, regular parts and service charges will apply.

We assume no warranty liability in connection with this water filter other than specified herein. This warranty is in lieu of all other warranties, expressed or implied, including warranties of fitness for a particular purpose. We do not authorize any person or representative to assume for us any other obligations on the sale of this water filter.

Should a defect or malfunction occur, contact your contractor. If you are unable to contact your contractor, return the part, freight prepaid, directly to the factory at the address below. Enclose with the part a full description of the problem, with your name, full address, date purchased, model and serial numbers, and selling contractor's name and address. We will repair or replace the part and return it to you at no cost if our repair department determines it to be defective under the terms of the warranty.

This warranty gives you specific legal rights and you may have other rights which vary from state to state.

This water filter is manufactured by Ecodyne Water Conditioning, PO Box 64420, St. Paul, MN 55164-0420; customer information telephone no. 1-800-972-0136.

WARRANTY POLICY

Ecodyne Water Conditioning, St. Paul, MN, warrants this water filter as stated herein:

From the date of purchase, within the warranty period described below, we will repair or replace any part which we find defective because of faulty materials and workmanship, or corrosion. You pay only freight to our factory and local labor charges.

* ONE YEAR ON COMPLETE UNIT

*THREE YEARS ON ELECTRONIC CONTROL * THREE YEARS ON CONTROL VALVE BODY

* TEN YEARS ON MINERAL TANK, EXCLUDING MINERAL

