



# **5600 & 2510 Valve Automatic Iron & Sulfur Filter**

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## **Water Filter Operation Manual**



# Performance and Specifications

Calendar Clock Model	Meter Initiated Model	Manganese Greensand Volume cu. ft.	Potassium Permanganate per Regen. oz.	Iron Removal Capacity ppm	Service Flow Rate <sup>(1)</sup> USGPM	Backwash Flow Rate USGPM	Mineral Tank Size <sup>(2)</sup> inches	Installation Space w x d x h (inches)	Shipping Weight Lbs.
5600CC-948IF-100	5600MI-948IF-100	1.00	4	6,000	4	4	9 x 48	22 x 12 x 56	135
5600CC-1047IF-100	5600MI-1047IF-100	1.00	4	6,000	5	5	10 x 47	24 x 14 x 55	145
2510CC-948IF-100	2510MI-948IF-100	1.00	4	6,000	4	4	9 x 48	22 x 12 x 56	135
2510CC-1047IF-100	2510MI-1047IF-100	1.00	4	6,000	5	5	10 x 47	24 x 14 x 55	145
2510CC-1054IF-150	2510MI-1054IF-150	1.50	6	9,000	8	7	12 x 52	26 x 16 x 60	180
2510CC-1252IF-200	2510MI-1252IF-200	2.00	6	12,000	10	10	14 x 50	28 x 18 x 58	207

**ADDITIONAL INFORMATION:** Operating Temperature Range = 34° to 110°F (1° to 43°C). Operating Pressure Range = 20 to 120 psi (1.37 to 8.27 bar). The manufacturer reserves the right to make product improvements which may deviate from the specifications and descriptions shown above, without obligation to change previously manufactured products or to note the change.

**CAUTION:** These products are not intended to be used to treat water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

**NOTES:** <sup>(1)</sup> The Service Flow Rate given will not exceed a pressure drop of 15psi. Peak flow rates are intended for intermittent use only (10 minutes or less). <sup>(2)</sup> Dimensions of cylindrical tanks shown are diameter (or width) x height.

## How Your Water Filter Works

Your automatic iron filter is an ingeniously simple and reliable design. The unit consists of a bed of filter media contained in a fiberglass tank; a specially designed feeder containing potassium permanganate for the regeneration of the filter and a proven automatic control.

Raw water enters your home through the main supply line, enters your iron filter and passes down through the filter media. Any iron, manganese or hydrogen sulfide present in your water supply is exposed to oxygen stored in the filter media. The oxygen causes precipitation of the minerals and they are trapped in the filter media. Only clean filtered water flows to your household water line. The filter media is periodically regenerated, automatically backwashing the trapped minerals to the drain and replacing the oxygen. This is done by introducing potassium permanganate to the media.

1. Your automatic iron filter can be programmed to operate according to your needs by making the appropriate settings on the timer. On the days your filter regenerates, the operating cycles will be automatically performed. In the service position, filtered water is supplied for household use.
2. The automatic control reverses the flow of the water through the filter, backwashing minerals trapped in the filter to the drain.
3. The control pulls a vacuum on the feeder. This causes an exact volume of saturated potassium permanganate solution to be drawn into the filter tank.
4. The control slowly rinses the chemical through the media tank. The potassium permanganate supplies oxygen to the filter media.
5. The control fast rinses the media bed to settle it and to ensure that all the chemical and mineral precipitate is removed.
6. The control adds water to entirely fill the previously evacuated feeder. The feeder is now ready for the next regeneration. The control puts the system into service, supplying iron-free water to the household. All this is performed automatically over a period of 2 ¾ hours. Water runs to the drain for approximately 80 minutes.

# Sizing and Operating Requirements

## Water Pressure

The water system must have a pump big enough to deliver the recommended backwash rate with a minimum pressure at the inlet of the filter of 20 psi (137 kPa). If the existing system cannot do this, it must be upgraded to do so. Whenever possible, the water system should be adjusted to deliver at least 30 psi (206.8 kPa) for even more satisfactory results. Maximum pressure should not exceed 100 psi (689 kPa).

## Backwash Flow Rates

The most important criteria in sizing an iron filter is the capacity of the pump. The water must pass through the filter media at a service flow rate that allows it to oxidize and collect the iron. The filter must also be backwashed at a flow rate sufficient to dislodge and remove the captured iron. Failure to provide sufficient water will cause a build-up of iron in the filter media, impairing its iron removing ability and resulting in iron bleeding out into the service water.

In order for your filter to backwash and rinse properly, your pump must be capable of providing the backwash flow rates indicated in the above specification chart.

## Capacity

An iron filter with one cubic foot of filter media regenerated with one Potassium Permanganate feeder will work well for most residential applications. For example, with iron in the range of 3-6 ppm, most filters will need to regenerate every two or three days providing an average family size of four or five people.

The specification chart above shows the iron removal capacity in ppm that can be expected on automatic iron filters. The specifications are based on obtaining 6,000 ppm of capacity for each cubic foot of filter media. Two different Potassium Permanganate feeders are available – one feeding 2 oz. per regeneration, the other feeding 4 oz.

In order to obtain the above capacities, the pH of the water being treated must be 7.0 or above. In the event the water is below 7.0, it must be treated with the appropriate equipment before going through the filter.

## Removal of Iron, Manganese & Hydrogen Sulfide

For the purpose of sizing a filter, consider 1 ppm of manganese equal to 2 ppm of iron and 1 ppm of hydrogen sulfide equal to 3 ppm of iron. Manganese and hydrogen sulfide (sulfur) are more difficult to oxidize than iron. Therefore, we suggest that, when making your sizing calculations and regeneration frequency calculations, calculate iron x 1, manganese x 2 and hydrogen sulfide x 3. All three must equal less than 10 ppm. Manganese is often present in water when iron is present. Hydrogen sulfide can normally be identified by a strong rotten egg odor.

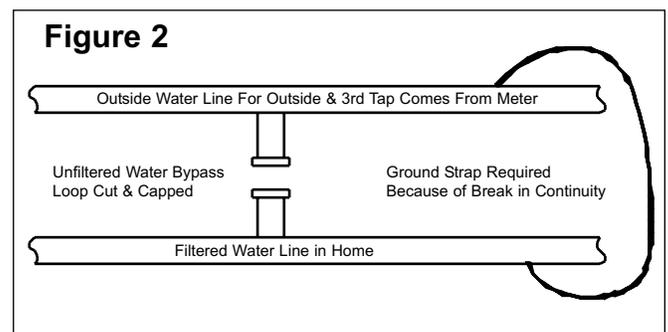
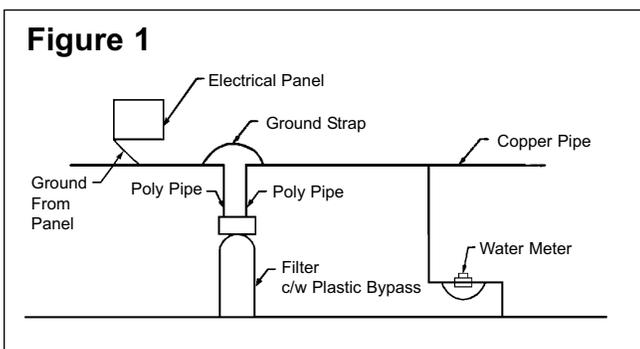
## Installation Instructions

**All government codes and regulations governing the installation of these devices must be observed.**

**CAUTION:** If the ground from the electrical panel or breaker box to the water meter or underground copper pipe is tied to the copper water lines and these lines are cut during installation of the Noryl bypass valve and/or poly pipe, an approved grounding strap must be used between the two lines that have been cut in order to maintain continuity. The length of the grounding strap will depend upon the number of units being installed and/or the amount of copper pipe being replaced with poly. See Figure 1.

In all cases where metal pipe was originally used and is later interrupted by poly pipe or the Noryl bypass valve as in Figure 1 or by physical separation as in Figure 2, an approved ground clamp with no less than #6 copper conductor must be used for continuity, to maintain proper metallic pipe bonding.

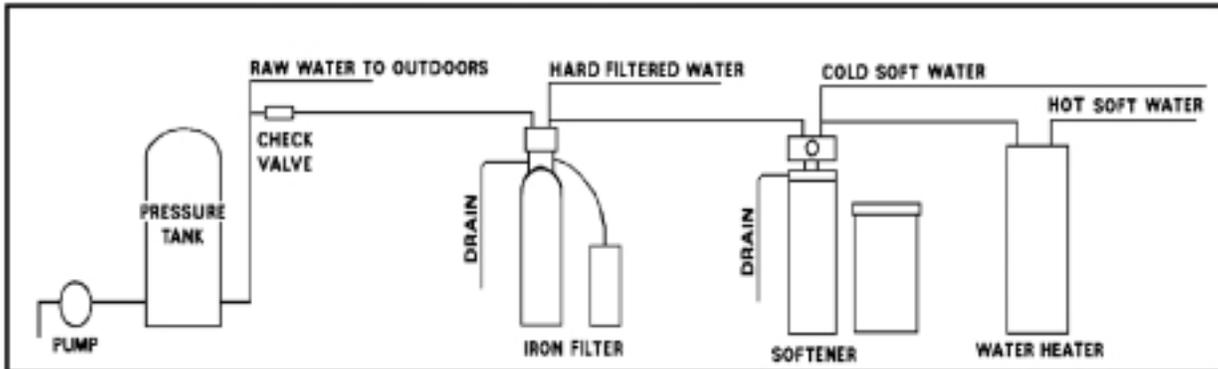
Check your local electrical code for the correct clamp and cable size.



- Place the iron filter and the chemical feeder container on a flat surface in desired location, near a drain and 120 volt AC outlet. Subjecting your filter to freezing or to water temperatures above 110°F (43°C) will void the warranty.

**NOTE:** Some units are shipped with the media bed in separate bags. To install, unscrew the control valve from the top of the fiberglass tank, position the riser tube in the center of the tank plugging the tube with a cloth and pour the media into the tank in the following order: coarse, fine gravel and then the filter media. Remove the cloth and carefully screw the valve into the tank (When replacing the media, the tank must first be inverted and the old media bed removed. See instructions provided with the replacement media).

## Rural Well Supply - Iron & Hardness Removal



- Attach the installation kit or bypass to the control valve. Make the inlet and outlet connections to meet applicable plumbing codes. A 3/4" inlet line is recommended. When sweat fittings are used, solder the adapters for the inlet and outlet to a short length of copper pipe first. This procedure is necessary because the controls MUST NOT be subjected to temperatures above 160°F (71°C). Then, using Teflon tape, screw the adapters for the inlet, outlet and drain into the valve.  
**CAUTION:** Do not use pipe thread compound as it may attack the material in the valve body.
- On the drain, use the 1/2" hose barb supplied and a full 1/2" ID hose (not supplied) for the drain line and make the shortest run to a suitable drain. The drain lines must be secured in position at the ends which discharges into the drain so it cannot be inadvertently moved from the drain, resulting in chemical spillage.
- Connect the feeder container to the control valve with the flexible polyethylene tubing provided. The connection to the container is made with the fitting nut provided (do not over-tighten).
- Attach the 5/8" hose (supplied) to the over flow fitting on the feeder and run the hose to the floor drain.
- Make sure the bypass valve is in the service position.
- Turn the large knob to the backwash position. Turn the water supply to the valve and wait until water starts running at the drain. Allow the water to run at the drain for 2 to 3 minutes.
- Advance to the brine refill position. Allow to fill for 5 minutes. Make sure there are no leaks in the top connection to the feeder container.
- Advance to the Brine/Rinse position. Proper draw is indicated by upward motion of water droplets in the tube connected to the feeder container. Allow to draw for 5 minutes to pull the air out of the feeder container.
- Put control into the service position.
- Set the time of day and gallons between regeneration following the information on Pages 4-5.
- Make sure any bypass is in the service position.
- Cautiously pour the Potassium Permanganate into the feeder and replace the cover and safety screws. (See the refilling instructions on page 8).
- Manually initiate regeneration after about one hour for the potassium permanganate to activate the manganese greensand.

**ALL STATE AND LOCAL GOVERNMENT CODES GOVERNING INSTALLATIONS OF THESE DEVICES MUST BE OBSERVED.**

# Operating Instructions

## Setting the Frequency of Automatic Regeneration

### Setting the 24 Hour Timer

The 24 hour timer must correspond with the correct time of day to ensure proper cycling of your filter.

- Disengage the drive gear by pressing and holding in the red button on the left side of the control.
- Now turn the large dial until the actual time of day is at the time of day arrow at the bottom of the panel.
- Release the red button and check for firm engagement at setting.
- The correct time of day on the 24 hour clock has now been set.

### Time of Automatic Regeneration

The time of automatic regeneration is factory set at 12:00 a.m.

### 5600CC Model

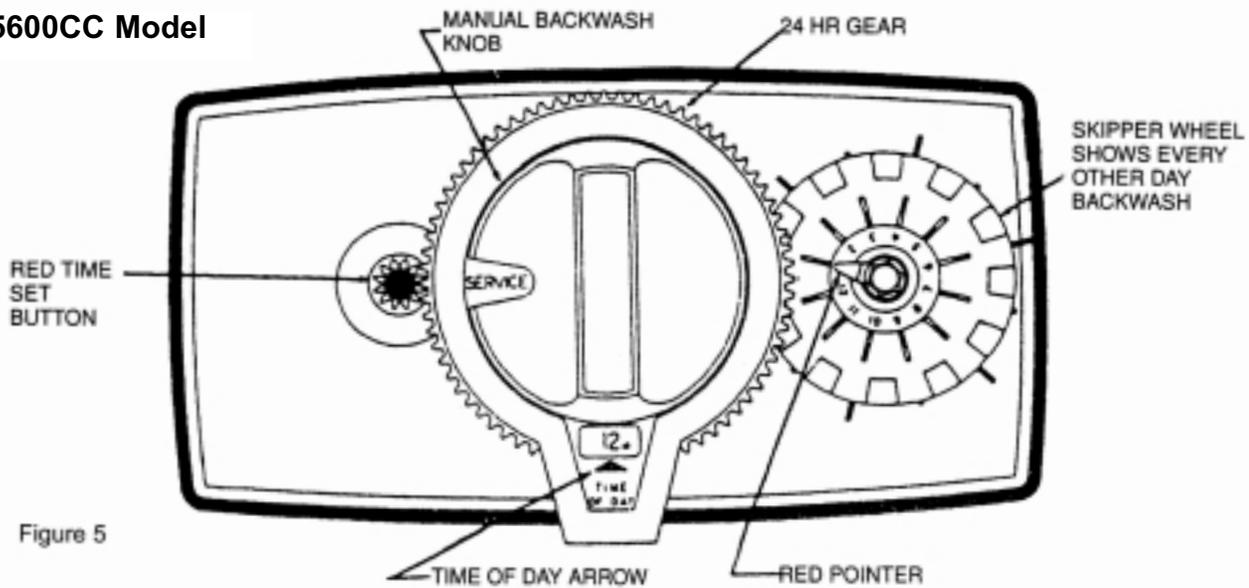
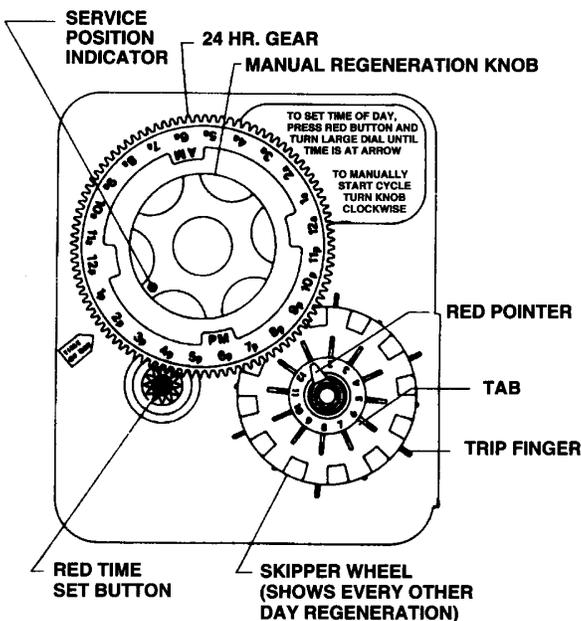


Figure 5

### 2510CC Model



The amount of iron, manganese and sulfur to be removed per day must first be determined using the following calculations:

$$\begin{aligned} & \text{Number of people in the household} \\ & \times 60 \text{ gallons of water per person} \\ & = \text{Number of gallons of filtered water required per day} \\ & \times \text{ppm of iron in the water sample} \\ & = \text{TOTAL AMOUNT OF IRON TO BE REMOVED PER DAY.} \end{aligned}$$

To determine the frequency of regeneration, use this procedure:

$$\frac{\text{Total amount of iron to be removed between regenerations}}{\div \text{ppm of iron to be removed per day}} = \text{NUMBER OF DAYS BETWEEN REGENERATIONS}$$

Example:

$$\begin{array}{r} 5 \text{ people in the household} \\ \times 60 \text{ gallons of filtered water per person} \\ \hline = 300 \text{ gallons of filtered water per day} \\ \times 8 \text{ ppm of iron} \\ \hline = 2400 \text{ PPM OF IRON TO BE REMOVED PER DAY} \end{array}$$

Using 948IF-100 + 1 Feeder

$$\begin{array}{r} 6000 \text{ ppm capacity} \\ \div 2400 \text{ ppm to be removed per day} \\ \hline = 2 \text{ DAYS BETWEEN REGENERATIONS} \end{array}$$

Upon delivery of your filter, every 4th tab in the skipper wheel is pushed outward. After determining the frequency of regeneration using the above calculations, simply reset the skipper wheel by pulling the tabs inward on the days regeneration is not needed and pushing the tabs outward on the days regeneration is desired. From the above example where a regeneration is required once in two days, only every second tab on the skipper wheel should be pushed outward.

## Setting the Frequency of Automatic Regeneration

### 5600 MI Model

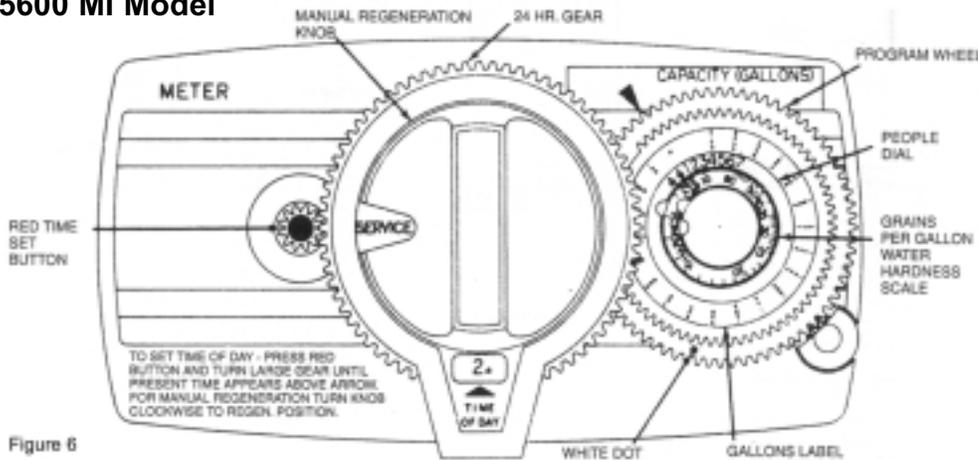
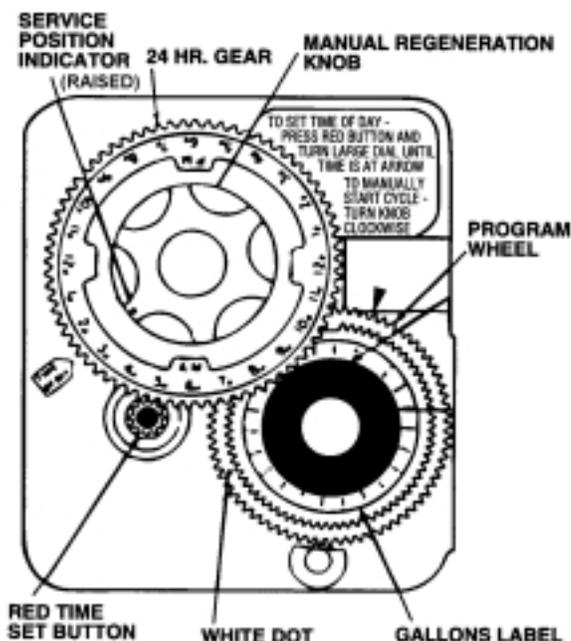


Figure 6

### 2510 MI Model



The number of gallons of filtered water your iron filter can supply between regenerations must first be determined using the following calculations:

$$\begin{array}{l} \text{ppm of capacity between regenerations (see Specifications on Page 1)} \\ \div \text{ppm of iron in the water sample}^* \\ = \text{number of gallons supplied between regenerations} \\ - \text{reserve capacity (number of people} \times 60 \text{ gallons)} \end{array}$$

Example: Using 948IF-100 + 1 Feeder

$$\begin{array}{r} 6000 \text{ ppm between regenerations} \\ \div 8 \text{ ppm of iron} \\ = 750 \text{ gallons between regenerations} \\ - 300 \text{ gallons reserve capacity (5 people} \times 60 \text{ gallons)} \\ = 450 \text{ GALLONS SETTING ON THE PROGRAM WHEEL} \end{array}$$

To obtain this setting, grasp the program wheel and, while pulling it towards you, turn it until the number of gallons is aligned with the white dot on the circumference. Release the dial and check for firm engagement at setting.

\* 1 ppm of manganese = 2 ppm of iron; 1 ppm of hydrogen sulfide = 3 ppm of iron

## **Manual Regeneration Cycle**

If you run out of filtered water because of inadequate regeneration frequency, inadequate reserve capacity, power failure or unusually high water usage, you can initiate a manual regeneration simply by pressing the extra cycle button. The filter will now automatically complete a regeneration cycle and return to service. If possible, avoid water use during the regeneration cycle.

Once you have set your filter you may experience frequent loss of water pressure, you may have to increase the frequency of regeneration by decreasing the number of gallons between regeneration.

## **Potassium Permanganate Feeder**

The potassium permanganate feeder assembly incorporates a non-pressurized storage tank and innovative new grid design along with a dependable float valve.

The attractive 10" x 16" black tank is made of tough blow-molded high density polyethylene. It has a potassium permanganate capacity of 30 lbs. and a liquid capacity of 5 gallons.

The black injection molded cover is securely fastened with three stainless steel safety screws to prevent access by children and pets. Also, the potassium chemical tank should be placed where it is free from possible upset or access by children or pets.

Chemical warning label and drain caution label are affixed to unit.

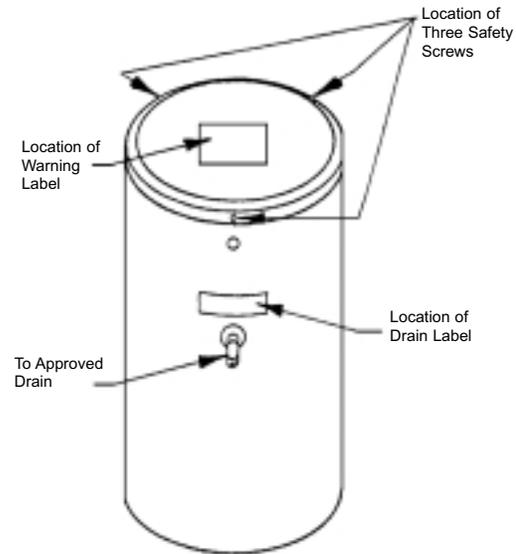
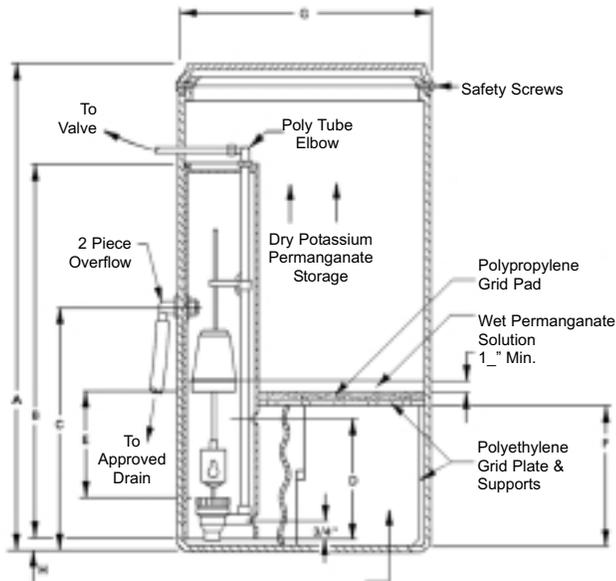
The unique polypropylene grid pad refuses to allow even the finest grade of undissolved potassium permanganate to pass through the grid. This permits efficient use of our assembly with all grades of potassium permanganate. Standard grid platform height is 6". Additional heights are available - consult factory.

The unit is shipped fully tested and assembled and weighs approximately 7 lbs. The feeder assembly includes:

- 10" x 16" black tank
- 3 Stainless steel safety screws
- 4" Well and cap
- 15 ft of 5/8" x 1/2" poly drain tubing\*
- Drain caution label
- 1/4" PVC riser pipe
- 1/4" or 3/8" poly tube elbow

- Black injection molded cover
- Grid with polypropylene grid pad
- Float valve
- Chemical warning label
- 4 ft of 1/4" or 3/8" suction tubing
- 1/2" Overflow fitting

The potassium storage tank placement should be such to permit the installation of the overflow line to a permanent drain facility.



**Dimensions - Inches**

- A = 16-1/2"      E = See Table
- B = 14-1/2"      F = 5-3/4" (2 oz. to 4 oz.)
- C = 10-1/2"      7-5/8" (6 oz.)
- D = 5-1/4"      G = 10-1/2"
- H = 1/8"

Oz. Of Potassium Permanganate	Gallons of Solution	Float Setting	Riser Pipe Length
2	3/4	2-1/2	11
4	1	4	12-1/2
6	1-1/2	5-5/8	12-1/2

Correct water temperature is important for obtaining properly dissolved potassium permanganate.

Tables based on permanganate solubility of 4 oz/gal at 50°F or 8 oz/gal at 72°F.

Float setting is based on distance between brine valve top body nut and the bottom of the float with the valve in the closed (float up) position.

All dimensions nearest 1/4 inch.

**Iron and Manganese Removal**

A recommended dose of 2 oz. to 6 oz. of potassium permanganate per cubic foot of manganese greensand is suggested for regeneration. Correct water temperature is important in obtaining proper dissolving of potassium permanganate. At 50°F (10°C), 4 oz. of potassium permanganate can dissolve in one gallon of water. At room temperature 72°F (22°C), 8 oz. will dissolve in one gallon of water.

## Potassium Permanganate

Potassium permanganate refills in 10 lb. (4.5 kg) packages can be obtained from your dealer. Exercise care when handling potassium permanganate. Wear rubber gloves and avoid contact with skin or clothing. Avoid inhaling. Clean any spillage immediately. Stains can be cleaned with a mild solution of sodium hydrosulfite (Pro-Rust Out).

## INSTALLATION & REPLACEMENT OF FILTER MEDIA PAK

Check to ensure all media parts are received.

The first step in replacing the media bed is to shut off the water supply to the filter. Then place the unit into the backwash position to release any pressure in the lines. At this point, you must disconnect the plumbing from the inlet and outlet. Then unscrew the control valve from the fiberglass tank. Once this has been done, remove the distributor tube. Then you can remove the filter media and two types of gravel from the tank. The quickest way to do this is by simply tipping the tank upside down into a large drum or pails. The tank must be rinsed out completely and have no media or gravel left in it at all.

### Loading the Media-Pak

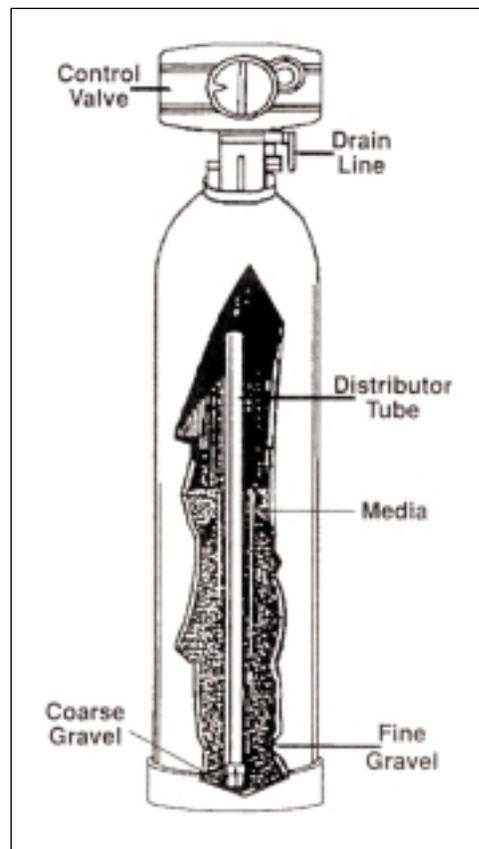
Place the distributor tube back down the center of the tank. NOTE: The top of this tube should be plugged with a rag or cork to prevent media from entering. Pour the bag of coarse gravel into the tank, then pour the bag of fine gravel into the tank.

***It is important that the distributor tube is not moved or pulled out as it would not be possible to put it down to the bottom of the tank once gravel or media are in the tank.***

Once this is done, the rag or cork should be removed from the distributor tube. Clean off the top of the tank. Finally, place the control valve on the tank and on to the distributor tube. Tighten the control valve onto the tank. Connect or reconnect the inlet and outlet and drain. The control valve should be in the backwash position. Slowly open the inlet valve water supply and slowly fill the filter tank until water appears at the open drain line. Return the control to the service position and shut the inlet off for approximately one hour to allow the media to soak in the water.

After one hour, turn inlet water on slowly and place the control into the backwash position and plug the unit's electrical cord into a constant power source. Let the unit continue through its regeneration cycle automatically.

The regeneration is necessary so all media fines are backwashed down the drain to ensure clean filtered water. After this media has been replaced, it may be necessary to reset the present time of day on the control valve timer as it will have been unplugged for some time.



### Refilling the Potassium Feeder

The feeder container must be refilled on a regular basis. If it is not, the media bed can become stripped and therefore will require replacement. Make sure the filter is not in a regeneration cycle when refilling the container.

It is recommended that the injector be removed, checked and cleaned each time the container is refilled.

Refilling of the container is to be done by the local dealer or the homeowner.

Fill the container with dry granular potassium permanganate and install a new filter pad periodically.

***USE CAUTION WHEN REFILLING TO AVOID SPLASHING OF THE CHEMICAL.***

# Operating Instructions

## Sounds

You will notice new sounds as your filter operates such as the hum of the timer or click of the actuator arm. During regeneration, it will not be uncommon to hear the sounds of water running to the drain.

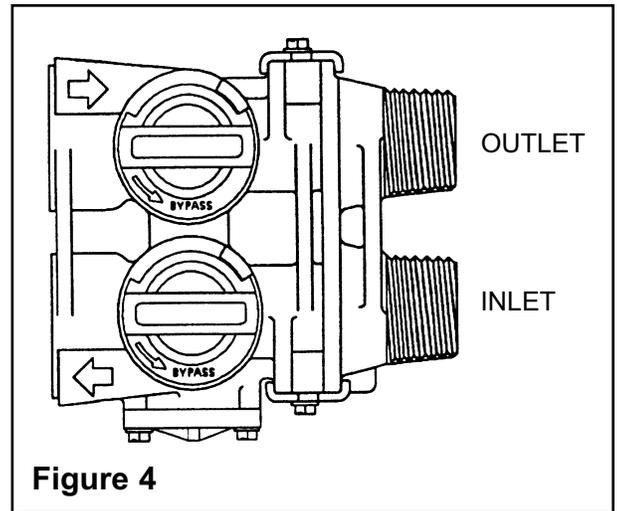
## Manual Bypass (Figure 4)

In case of an emergency you can isolate your water filter from the water supply using the bypass valve located at the back of the control.

In normal operation the bypass is open with the ON/OFF knobs in line with the INLET and OUTLET pipes. To isolate the filter, simply rotate the knobs clockwise (as indicated by the word BYPASS and arrow) until they lock.

You can use your water related fixtures and appliances as the water supply is bypassing the filter. However, the water you use will be untreated.

To resume filtered water service, open the bypass valve by rotating the knobs counter-clockwise.



**Figure 4**

# Maintenance Instructions

Maintenance of your new water filter requires very little time or effort but it is essential. Regular maintenance will ensure many years of efficient and trouble free operation.

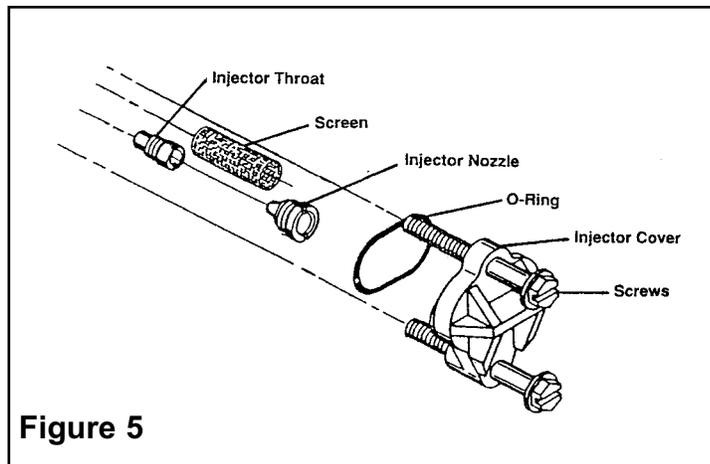
**PLEASE NOTE: THE FOLLOWING MAINTENANCE PROCEDURES MUST BE PERFORMED REGULARLY FOR YOUR GUARANTEE TO BE VALID.**

## Cleaning The Injector Assembly (Figure 5)

The presence of iron and sediment will restrict and clog the injector assembly which is located on the right hand side of the control valve. This assembly is easy to clean.

Shut off the water supply to your unit and reduce the pressure by turning the large knob to backwash. Using a screwdriver, remove the two screws holding the injector assembly to the control valve body. Carefully remove the assembly and disassemble.

The injector nozzle is removed for the injector body by carefully turning it out with a large screwdriver. Carefully flush all parts with water. Use a mild acid such as vinegar or Iron Out to clear the small holes in the nozzle and throat. Reassemble using the reverse procedure.



**Figure 5**

## Care Of Your Filter

Your filter tank and chemical feeder container can be cleaned with a mild soap solution. Never subject the unit to freezing. Do not strike or drop the chemical feeder container. If the container is found to be leaking, shut off the water supply to your filter and replace the container at once.

# Trouble Shooting Guide

PROBLEM	CAUSE	CORRECTION
1. Filter fails to regenerate or regenerates at wrong times	<ul style="list-style-type: none"> <li>A. Electrical service to unit has been interrupted</li> <li>B. Timer is defective</li> <li>C. Power failure</li> <li>D. Timer motor does not run</li> </ul>	<ul style="list-style-type: none"> <li>A. Assure permanent electrical service (check fuse, plug or switch)</li> <li>B. Repair or replace timer</li> <li>C. Reset time of day</li> <li>D. Replace defective motor</li> </ul>
2. Filter bleeds iron or odor	<ul style="list-style-type: none"> <li>A. Bypass valve is open</li> <li>B. Container is depleted</li> <li>C. Excessive water usage</li>   <li>D. Insufficient water flowing into chemical container</li> <li>E. Hot water tank rusty</li>   <li>F. Leak at distributor tube</li>   <li>G. Defective or stripped media bed</li> <li>H. Not backwashing enough</li>   <li>I. Internal valve leak</li> <li>J. Electrical Service to unit has</li>   <li>K. Control will not draw chemical properly (see below)</li>   <li>L. Quality of water has worsened</li>   <li>M. Filter capacity is too small</li> </ul>	<ul style="list-style-type: none"> <li>A. Close bypass valve</li> <li>B. Replace or refill container</li> <li>C. Increase frequency of regeneration and/or settings. Make sure there are no leaks in toilets and sinks</li> <li>D. Check refill setting. Check for plugged container tube and flow control</li> <li>E. Repeated flushings of the hot water tank are required. Do not use hot water during regeneration</li> <li>F. Make sure distributor tube is not cracked. Check O-ring and tube pilot</li> <li>G. Replace media</li> <li>H. Be sure flow control is not clogged or drain line restricted. Be sure water pressure has not dropped and that pump has sufficient capacity.</li> <li>I. Replace seals and spacers and/or piston</li> <li>J. Assure permanent electrical service (check been interrupted fuse, plug or switch)</li> <li>K. Maintain water pressure at 20 psi (139.9 kPa) minimum. Clean or replace injector assembly. Check for air leaks along brine line and tighten all connections.</li> <li>L. Have water sample analyzed to determine any change</li> <li>M. Replace with larger unit</li> </ul>
3. Filter regenerates every day	<ul style="list-style-type: none"> <li>A. Faulty gear train</li> </ul>	<ul style="list-style-type: none"> <li>A. Check the mechanical linkage on the timer control to eliminate possible binding in the gear train.</li> </ul>
4. Iron filter uses too much chemical	<ul style="list-style-type: none"> <li>A. Defective chemical container</li> </ul>	<ul style="list-style-type: none"> <li>A. Replace container</li> </ul>
5. Loss of water pressure	<ul style="list-style-type: none"> <li>A. Iron or turbidity build-up in filter</li>   <li>B. Inlet to control blocked with iron build-up or foreign matter</li> </ul>	<ul style="list-style-type: none"> <li>A. Increase frequency of regeneration so filter backwashes more often. NOTE: Make sure filter is sized large enough to handle water usage</li> <li>B. Clean inlet line. Remove piston and clean control.</li> </ul>
6. Loss of media through line	<ul style="list-style-type: none"> <li>A. Air in water system</li>   <li>B. Backwash rate too fast</li> </ul>	<ul style="list-style-type: none"> <li>A. Assure that well system has proper air eliminator control. Check for dry well condition.</li> <li>B. Check drain flow control for proper flow rate</li> </ul>

## Trouble Shooting Guide Cont'd

PROBLEM	CAUSE	CORRECTION
7. Iron filter fails to draw chemical	<ul style="list-style-type: none"> <li>A. Drain line flow control is plugged</li> <li>B. Injectors and/or screen plugged</li> <li>C. Line pressure is too low</li> <li>D. Internal control leak</li> </ul>	<ul style="list-style-type: none"> <li>A. Clean drain line flow control</li> <li>B. Clean or replace injectors and/or screen</li> <li>C. Maintain line pressure at 20 psi (139.9 kPa) minimum</li> <li>D. Change seals and spacers and/or piston assembly</li> </ul>
8. Drain flows continuously	<ul style="list-style-type: none"> <li>A. Foreign material in control</li> <li>B. Internal control leak</li> <li>C. Control valve jammed in brine or backwash position</li> <li>D. Timer motor stopped or jammed</li> </ul>	<ul style="list-style-type: none"> <li>A. Remove piston assembly and inspect bore, remove foreign material and check control in various regeneration positions</li> <li>B. Change seals and spacers and/or piston assembly</li> <li>C. Replace piston and seals and spacers (and drive motor if necessary)</li> <li>D. Replace timer motor</li> </ul>
9. Pink color (potassium permanganate) present after regeneration; medicinal water taste	<ul style="list-style-type: none"> <li>A. Poor water pressure or insufficient pump capacity</li> <li>B. Chemical in water supply</li> </ul>	<ul style="list-style-type: none"> <li>A. Be sure pump is set at 20 psi (139.9 kPa) minimum and is capable of producing 5 - 12 USGPM according to filter size</li> <li>B. Decrease frequency of regeneration</li> </ul>



# **GUARANTEE**

**HYDROTECH** guarantees that your new water conditioner is built of quality material and workmanship. When properly installed and maintained, it will give years of trouble-free service.

## **FIVE YEAR COMPLETE PARTS GUARANTEE**

**HYDROTECH** will replace any part which fails within 60 months from date of manufacture, provided the failure is due to a defect in material or workmanship. The only exception shall be when proof of purchase or installation is provided and then the warranty period shall be from the date thereof.

## **TEN YEAR GUARANTEE ON MINERAL AND BRINE TANKS**

**HYDROTECH** will provide a replacement mineral or brine tank to any original equipment purchaser in possession of a tank that fails within 120 months, provided that the water conditioner is at all times operated in accordance with specifications and not subject to freezing or exposure to direct sunlight.

## **GENERAL PROVISIONS**

**HYDROTECH** assumes no responsibility for consequential damage as a result of escaped water from the water filter; labor or expense incurred as a result of a defect or for failure to meet the terms of these guarantees because of circumstances beyond its control.