

Installation / Operation Manual

Fully Automatic Manganese Greensand Water Filter

(2510 Control Valve)

For Model Numbers :

- IF10-25**
- IF15-25**
- IF25-25**

CSI Inc.

220 Ohio Street
Ashland, OH 44805
(419) 281-5767

| GENERAL SPECIFICATIONS | IF10-25 | IF15-25 | IF25-25 |
|--|---------------------|----------------|----------------|
| Filter Media | Manganese Greensand | | |
| Filter Media Capacity (cu. ft.) | 1.00 | 1.50 | 2.50 |
| Underbed "D" Gravel | 20 | 20 | 50 |
| Mineral Tank (polyglass) | 9 x 48 | 10 x 54 | 13 x 54 |
| Potassium Permanganate Solution Tank Size | 10 x 16 | | |
| Removal Capacities Iron & Manganese / Sulfur | 10 ppm / 3 ppm | 10 ppm / 3 ppm | 10 ppm / 3 ppm |
| pH Limitations | Greater than 6.8 | | |
| Service Flow Rate - Continuous (gpm) | 4 | 5 | 8 |
| Service Flow Rate - Intermittent (gpm) | 6 | 7 | 10 |
| Backwash Flow Rate (gpm) | 5.0 | 5.0 | 7.0 |
| Gallons Used / Regeneration | 128 | 130 | 193 |
| Space Required (D x W x H inches) | 9 x 21 x 57 | 10 x 22 x 62 | 13 x 23 x 62 |
| Approximate Shipping Weight (pounds) | 139 | 130 | 193 |

PLEASE NOTE THESE SPECIFICATIONS BEFORE PROCEEDING

**OPERATING PRESSURE RANGE : 20 - 125 PSI
 OPERATING TEMPERATURE RANGE : 33° F - 120° F
 INLET / OUTLET PIPE SIZE : 3/4" FNPT**

PLEASE COMPLY WITH ALL APPLICABLE PLUMBING CODES

PROTECT THE FILTER AND PIPING FROM FREEZING TEMPERATURES

*Please read the entire Owner's Manual and Instructions before installation.
 This Owner's Manual must stay with the unit.*

Pre-Installation Check List

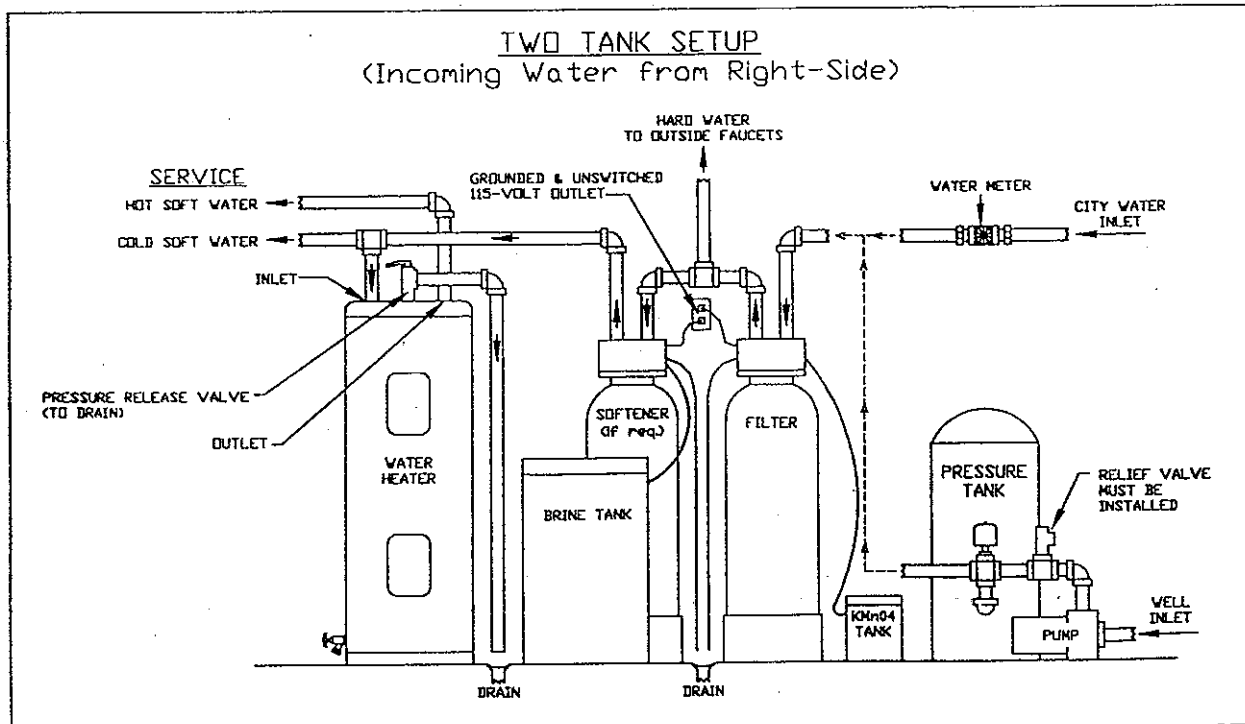
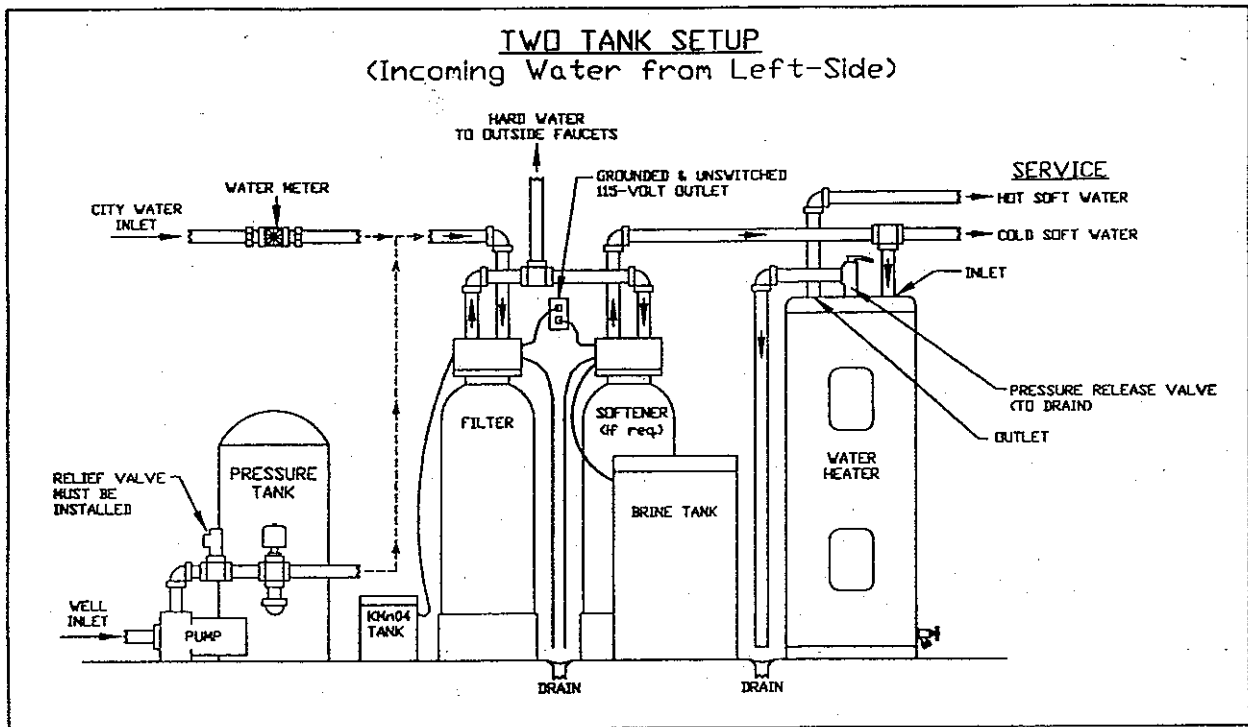
A water test should always be performed in order to determine water pH, total iron (in parts per million - ppm), total manganese (in parts per million - ppm) and sulfur gas (in parts per million - ppm). This is critical for proper equipment selection, sizing and for determining the program for regeneration frequency. Certain states may require a licensed plumber for installation.

NOTE : *Flexible water supply connectors and flexible drain line tubing may not be allowed in your locale. Please check with local plumbing code officials prior to installation.*

Installation Requirements

- A level floor position ahead of piping into water heater.
- Unit must be installed at least 10' ahead of the inlet to a water heater to prevent damage due to back-up of hot water.
- **DO NOT** install the unit in an area of direct sunlight or where freezing temperatures may occur!
(See Installation Diagrams for proper placement & plumbing connections.)

Typical Installations



Filter Location / Other Requirements

- Locate the unit near an unswitched, 120 volt / 60 Hz grounded electrical outlet.
- Check for distance and proper drain installation (e.g. floor drain, washing machine standpipe).
- Determine type and size of piping required for softener connection (e.g. copper, galvanized, PVC plastic).

NOTE : Where the drain line is elevated above the control valve or exceeds 20 feet in length to reach the drain, use 3/4" I.D. drain line tubing instead of 1/2" I.D. Drain line tubing is not included.

CAUTION : If sweat soldering copper pipe, (remember to always use lead free solder and flux) cover yoke and bypass valve with wet rags to prevent heat damage to connections and control valve! If using PVC or plastic pipe, primers and solvent cements specifically recommended for use with potable water are required.

NOTE : All plumbing lines not requiring *soft* water should be connected *upstream* of the filter. (See Typical Installation Diagrams.)

Installation Procedure

- Water Supply Connection and Bypass Valve -

To allow for filter servicing, swimming pool filling or lawn sprinkling, a manual Bypass Valve has been installed at the factory. The Bypass allows raw water to be manually routed around the filter.

1. Position filter at desired location for installation. If a water softener is to be installed, the filter should be positioned first and then the softener. (See Installation Diagrams.)
2. The filter material is shipped separately from the mineral tank. The tank must be loaded with material after tank has been placed at the desired location.
 - a. Remove the control valve by unscrewing from the tank.
 - b. Remove and inspect distributor tube and bottom basket.
 - c. Replace distributor tube and use a cork or tape to place over top of distributor tube to prevent mineral from entering tube while filling.
 - d. Place mineral funnel in hole on top of tank.
 - e. Pour several gallons of water in the tank.

CAUTION : Not following this procedure can cause damage to distributor tube or basket when loading material!
 - f. First pour in "D" gravel underbedding and then the filter material.

NOTE : The required quantity of gravel and material is listed in the filter specifications.
 - g. After filling the tank with material, use a garden hose or several buckets to fill the tank with water.

NOTE : This will permit the filtering material to become soaked while preparing the installation and will prevent the control valve from being plugged with floating material on initial backwash.
 - h. Remove funnel and clean filter material from tank threads.
 - i. Remove cork or tape from distributor tube.
 - j. Replace control valve on mineral tank.

CAUTION : Be extremely careful to position distributor tube into control valve distributor tube pilot hole.
3. Turn **off** main water supply and **open** nearest faucet to relieve pressure.
4. Loosen clips on each side of valve body, lubricate o-rings on adapters and firmly press bypass assembly (packed separately) onto the valve body. Align clips and tighten. **NOTE :** It is normal to have **play** in the bypass valve after installation.
5. Cut main line and install elbows and extensions. Inlet and outlet connections on the control valve are 3/4" FNPT.

NOTE : An optional 1" FNPT yoke is available.

CAUTION : Raised arrows located on the sides of control valve body and bypass valve indicate proper direction of water flow. Install inlet and outlet piping in direction of arrows.
6. Rotate inlet and outlet knobs on bypass valve to the bypass position (position of bypass knobs are at right angles to inlet / outlet piping).
7. Turn the main supply line on to restore water service to the home.

8. **Open** nearest faucet to evacuate air and repressurize plumbing lines.
9. Check for leaks!!

- Drain Line Connection -

1. Pull out clip and remove drain line assembly located on the left side of control valve. Remove drain line hose barb and wrap threads with Teflon tape. Reinstall drain line hose barb. **CAUTION** : Hand tighten only!!! Replace drain line assembly and reinstall clip.
2. Install 1/2" I.D. line tubing (not included) from hose barb to an open drain. A 4" gap between the end of the drain line and the open drain is required to prevent waste water backflow. Keep the drain line as short as possible. An overhead drain line can be used if necessary but should discharge below the control valve. A syphon trap (taped loop) at the outlet of the drain line is advisable to keep the drain line full and assure correct flow during regeneration. Elbows or other fittings must be kept at a bare minimum.

NOTE : Where the drain line is elevated above the control valve or exceeds 20' in length, 3/4" I.D. drain line tubing should be used.

- Potassium Permanganate Feed Rate -

The amount of potassium permanganate fed during regeneration is automatically controlled by the float assembly located inside the feed tank. This is an adjustable float, which must be set at a minimum of 4 1/4", but not higher than 5 1/2". This distance is measured between the bottom of chemical feed valve and the bottom of the float with the valve closed (float UP position). The float settings for each model are as follows :

| Model # | Float Setting | Media Amount |
|---------|---------------|--------------|
| IF10-25 | 4 1/4" | 1.0 cu. ft. |
| IF15-25 | 4 1/2" | 1.5 cu. ft. |
| IF25-25 | 5 1/2" | 2.5 cu. ft. |

1. To measure and set the float, remove the chemical well cap and float assembly.
2. Remove rubber band from float valve.
3. Measure distance from bottom of chemical feed valve to the bottom of float with the float in the UP position. To move float, slide rubber grommets up and down float shaft. Make certain both upper and lower grommets are tightly against float body. Replace float assembly and chemical well cap.

WARNING : *After adjustment, ensure that the float maintains proper up and down travel, otherwise, overflowing of the feed tank could occur!*

- Chemical Feed Line and Overflow Connections -

1. Position Potassium Permanganate Tank (KMNO₄) on a smooth, level surface near the filter media tank. If necessary, the KMNO₄ tank can be placed at a higher level than the resin tank, but **never at a lower level**.
2. Install one end of 3/8" O.D. by 1/4" I.D. chemical line tubing (included with unit) to compression fitting located on right side of control valve, behind backplate.
3. Remove KMNO₄ tank cover.
4. Insert opposite end of chemical line through outer hole in KMNO₄ tank.
5. Connect chemical line to compression fitting on float valve located on top of chemical well.
6. Install 1/2" I.D. drain line tubing (not included) to the overflow fitting on KMNO₄ tank located just below the chemical line.
7. Run the opposite end of KMNO₄ tank drain line to a suitable drain.

NOTE : The KMNO₄ tank drain is gravity flow and must discharge below the overflow fitting.

CAUTION : Do not ~~fee~~ to the main drain line from control valve.

NOTICE : The $KMNO_4$ overflow is provided as a back-up in the event the float shut-off should fail, allowing the $KMNO_4$ tank to overflow. This drain connection would then carry the excess chemical to the drain and prevent flooding of the floor, which could be hazardous to health or damage furniture or carpets. Therefore, no liability will or can be assumed by the manufacturer of the filter should this occur.

- Electrical Connection -

1. Remove control valve face cover.
2. The control valve **must be in the SERVICE position!** If needed, rotate manual regeneration knob on timer clockwise until white dot aligns with raised time of day arrow. (See Figure 1.)
3. Plug the cord from the control valve into a standard 115 volt / 60 Hz receptacle.
NOTE : Do not plug into an outlet controlled by a wall switch or pull chain that could inadvertently be turned off.
4. For your protection, this unit is equipped with a 3-prong plug and should be plugged into a grounded receptacle. If the receptacle is designed only to accept 2-prong plugs, obtain a 3-prong adapter and secure the ground wire to the receptacle plate mounting screw.

WARNING : Do not remove grounding prong! An improperly grounded unit could cause injury from electric shock!

- Pressurizing The System -

1. The control valve **must be in the SERVICE position!** If needed, rotate manual regeneration knob on timer clockwise until white dot aligns with raised time of day arrow. (See Figure 1.)

WARNING : NEVER turn the regeneration knob counter clockwise as this will cause damage to the control valve!

2. Slowly rotate inlet knob of the bypass valve to the SERVICE position. Slowly rotate outlet knob to the SERVICE position (position of bypass knobs are parallel to inlet / outlet piping).
3. Open the nearest faucet to evacuate air from plumbing lines.
4. Check for leaks!!

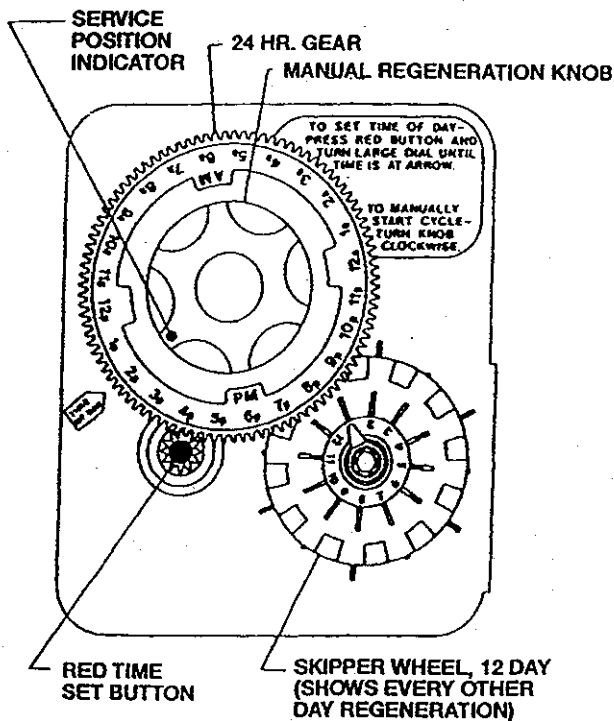


Figure 1

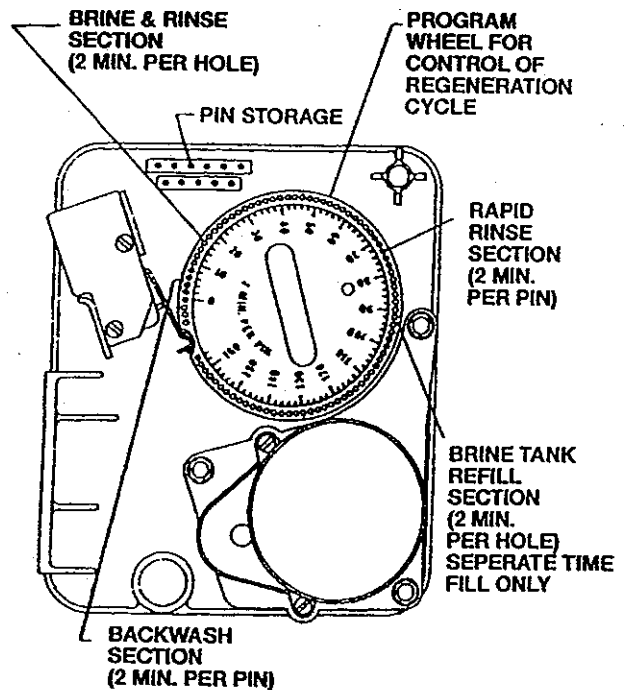


Figure 2

- Control Valve Operation -

Each control valve position can be manually selected by rotating the **manual regeneration knob** clockwise until first microswitch located on rear of timer door is aligned with each cycle position on the program wheel. (See Figure 2.)

NOTE : To expose program wheel, grasp upper left corner of the timer face and pull outward.

WARNING : When selecting cycle positions you *must wait* until position of the piston has stopped before advancing the timer further.

1. Manually index **manual regeneration knob** to **BACKWASH** position and allow water to run to drain for 3 - 4 minutes. (See Figure 2.)
2. Manually index **manual regeneration knob** to **BRINE REFILL** position and allow the $KMNO_4$ tank to fill until it stops. (See Figure 2.)
3. Manually index **manual regeneration knob** to **BRINE & RINSE** position and allow the control valve to draw water from the $KMNO_4$ tank until it stops.
4. Manually index **manual regeneration knob** to **SERVICE** position. (See Figure 2.)
5. Manually index **manual regeneration knob** to **BRINE TANK REFILL** position and allow the control valve to automatically fill the $KMNO_4$ tank. (See Figure 2.)

NOTE : Control valve will advance to service position automatically.

6. Snap timer door closed.
7. Fill the $KMNO_4$ tank with 5 pound container of potassium permanganate.

WARNING : *Install three (3) locking screws in lid of $KMNO_4$ tank for child safety after filling!!*

- Setting The Regeneration Schedule -

1. In general, units must be regenerated every 3,000 gallons / ppm per cubic foot. The capacity for each model is as follows :

| | | | | |
|---------|---|-------------|---|-----------------|
| IF10-25 | - | 1.0 cu. ft. | = | 3,000 gal / ppm |
| IF15-25 | - | 1.5 cu. ft. | = | 4,500 gal / ppm |
| IF25-25 | - | 2.5 cu. ft. | = | 7,500 gal / ppm |

EXAMPLE : Residence with a family of four. Water contains 4 ppm iron. Water consumption is estimated at 75 gallons per day. Four people x 75 gallons = 300 gallons per day. 300 gallons x 4 ppm = 1,200 gallons/ppm. If we have selected IF25-25, the capacity would be 7,500 gal/ppm. $7,500 \div 1,200 = 6$ days. Regeneration would be required every six (6) days.

For sulfur removal, capacity is half, or 1,500 gallons / ppm per cubic foot. Recommended for use only up to 3 ppm sulfur or 10 ppm iron.

2. Locate the skipper wheel just to the right of the manual regeneration knob. (See Figure 1.)
3. Rotate skipper wheel until the red pointer covers the number "1".

NOTE : The red pointer represents *tonight* in the regeneration program. (See Figure 1.)

4. Refer to the regeneration frequency (Figure 3) and select the number of days between regeneration desired.
5. Slide out the corresponding tab number(s) on the skipper wheel.

Figure 3

| Regeneration Frequency Days Between Backwash | Slide Out TAB NUMBER | | | | | | | | | | | |
|---|----------------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 2 | | ● | | ● | | ● | | ● | | ● | | ● |
| 3 | | | ● | | | ● | | | ● | | | ● |
| 4 | | | | ● | | | | ● | | | | ● |
| 6 | | | | | | ● | | | | | | ● |
| 12 | | | | | | | | | | | | ● |

NOTE : Figure 2 shows the skipper wheel set for every two (2) days.

- Setting The Time Of Day -

1. Depress the red button on lower left side of timer door. (See Figure 1.)
2. Rotate the 24 hour gear on the manual regeneration knob until the time of day is aligned with time of day arrow. (Note a.m. & p.m.)
3. Check that red button has engaged in the 24 hour gear.
4. The starting time for regeneration is factory pre-set to occur at 2:00 a.m. on each day for which a skipper tab is extended.

NOTE : If a different regeneration time is desired, adjust the time plate per instruction on page 5 of the 2510 Service Manual.

START-UP PROCEDURE

It is necessary to manually regenerate the system on initial installation as the manganese greensand media is supplied in the non-regenerated form.

WARNING : Allowing the KMNO₄ tank to run low on chemical may cause damage to the manganese greensand filter bed!

1. Remove the control valve face cover to access control panel.
2. Rotate manual regeneration knob **CLOCKWISE** one (1) click.

CAUTION : Do not rotate regeneration knob **COUNTER CLOCKWISE** as this will cause damage to the control valve!

3. Regeneration will begin immediately and the filter will automatically return to the **SERVICE** position.

NOTE : Water will not start flowing for several minutes. Only untreated water will be available until the regeneration cycle is complete.

4. Replace control valve face cover.

- Final Check -

1. Be certain the bypass valve is in the **SERVICE** position.
2. Make sure the electric cord is connected to an uninterrupted 115 volt outlet.
3. Check that the time of day is set.
4. Double check regeneration schedule.
5. Make final check for leaks!
6. Fill-out and mail warranty card.
7. Leave this manual with the unit.

Operation, Care and Cleaning

When the inlet / outlet knobs on the bypass valve are in the **SERVICE** position (position of bypass knobs are parallel to the inlet / outlet piping), water is directed through the water filter. Water may be bypassed by turning the inlet / outlet knobs to the bypass position (position of bypass knobs are at right angles to inlet / outlet piping). Water to the home will bypass the filter and be **untreated**.

You should manually bypass the filter if :

1. The outside lines do not bypass the water filter and water is to be used for lawn sprinkling or other similar uses.
2. Servicing the water filter.
3. A water leak from the water filter is evident.
4. **Shock Treating** water well and piping with chlorine or other disinfectant.

- Extra Regeneration -

If water demands are unusually heavy, an extra regeneration can be initiated manually :

1. Remove the control valve face cover to access control panel.
2. Rotate manual regeneration knob **CLOCKWISE** one (1) click.

CAUTION : Do not rotate regeneration knob **COUNTER CLOCKWISE** as this will cause damage to the control valve!

3. Regeneration will begin immediately and the filter will automatically return to the **SERVICE** position.

NOTE : Water will not start flowing for several minutes.

4. Replace control valve face cover.

- To Skip A Regeneration -

1. For vacations or extended periods of absence, the electric cord can be pulled from the receptacle.
2. Upon return, plug in cord and reset the time of day.

- General Care and Cleaning -

1. Do not place heavy or sharp objects on water filter or KMNO_4 tank.
2. Use only mild soap and warm water to clean exterior of the unit. Never use harsh, abrasive cleaners.
3. Protect the water filter and drain line from freezing.
4. Reset the time of day on the control valve after any interruption of the electrical power occurs in order to keep the unit on the proper regeneration schedule. Also, reset time for daylight saving time periods.
5. Always keep the KMNO_4 tank supplied with potassium permanganate.

How To Set The Regeneration Cycle Program :

The regeneration cycle program on your water filter has been factory preset, however, portions of the cycle or program may be lengthened or shortened in time to suit local conditions.

To expose cycle program wheel, grasp timer in upper lefthand corner and pull, releasing snap retainer and swinging timer to the right.

To change the regeneration cycle program, the program wheel must be removed. Grasp program wheel and squeeze protruding lugs towards center, lift program wheel off timer. (Switch arms may require movement to facilitate removal.)

How To Change The Length Of The Backwash Time :

The program wheel as shown in the drawing is in the service position. As you look at the numbered side of the program wheel, the group of pins starting at zero determines the length of time your unit will backwash.

FOR EXAMPLE : If there are six pins in this section, the time of backwash will be 12 minutes (2 minutes per pin). To change the length of backwash time, add or remove pins as required. The number of pins times two equals the backwash time in minutes. (Note : Do not add pins before "0" minutes designated.)

How To Change The Length OF Rapid Rinse :

The second group of pins on the program wheel determines the length of time that you water filter will rapid rinse (2 minutes per pin).

To change the length of rapid rinse time, add or remove pins at the higher numbered end of this section as required. The number of pins times two equals the rapid rinse in minutes.

