
INSTALLATION MANUAL

WATER SOFTENER SYSTEMS

FLEET FARM WATER SOFTENER




**FLEET FARM WATER TREATMENT, 1900 PROSPECT CT.
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Important Safety Information – Read All

	<p>CAUTION: Read and follow the information in this manual to minimize the risk of electric shock or personal injury.</p> <p>IMPORTANT! If you are unsure about installing your <i>Fleet Farm Water Treatment</i> water softener, contact the <i>Fleet Farm Water Treatment</i> helpline or consult a professional plumber.</p> <p>IMPORTANT! This system must be installed in compliance with applicable state and local codes, law, and regulations.</p>
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Instructions Before Using

- Before beginning installation, read these instructions completely. Then obtain all the materials and tools needed for installation.
 - NOTE:** Failure to install the *Fleet Farm Water Treatment* system correctly voids the warranty.
- Perform installation according to state and local plumbing codes.
 - Use only lead-free solder and flux for sweat-solder connections, as required by state and federal codes.
- Handle all components of the *Fleet Farm Water Treatment* system with care. Do not drop, drag or turn components upside down.
- Be sure the floor under the water softening system is clean and level.
- The *Fleet Farm Water Treatment* system uses 110volt 60 Hz electrical power.
 - Plug transformer into an indoor 120 volt, grounded outlet.
 - Properly ground *Fleet Farm Water Treatment* system to conform with all codes and ordinances.
- Install *Fleet Farm Water Treatment* system in a protected area. Be sure electric outlet and transformer do not come in contact with water. See *Where to Install the Softener*, in the installation section of the manual.
 - Do not attempt to treat water over 110°F with the *Fleet Farm Water Treatment* system. Always connect the *Fleet Farm Water Treatment* system to the main water supply pipe **before** water heater.
 - Do not expose *Fleet Farm Water Treatment* system to freezing temperatures. Water freezing in the system causes equipment damage.
 - Do not install in direct sunlight. Heat from sun may cause damage.
- Minimum inlet water pressure is 20 psi. Maximum inlet water pressure is 125 psi. Use pressure reducing valve if necessary.
- Use clean water softening salts only, at least 99.5% pure. Failure to use the correct salt may create a health hazard or maintenance problems.
 - Use nugget, pellet, block, solar, or coarse solar salts.
 - Do not use granulated or ice cream making salts.
- Always keep the salt lid in place unless servicing the unit or replenishing salt.

	<p>CAUTION:</p> <ul style="list-style-type: none">• Do not use with water that is unsafe or of unknown quality.• Test water periodically to verify that the system is performing satisfactorily.• Discard small parts remaining after the installation.
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Specifications

Feedwater

! Do not use this system on water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. !

- Minimum inlet pressure: 20 psig
- Maximum outlet pressure: 125 psig
- Minimum water temperature: 34 degrees F
- Maximum water temperature: 110 degrees F

Power

- Voltage: 120VAC
- Frequency: 60Hz
- Power consumption: 3 Watts Maximum

Installation

- Location: Indoors (Protect from direct sunlight)
- Minimum ambient temperature: 34 degrees F
- Maximum ambient temperature: 122 degrees F

Salt Capacity

All Models 300 lbs (181 Kg)

Model Number	Type of Media	Capacity									Flow Rate vs Pressure Drop						
		Minimum Salting			Medium Salting			Maximum Salting			Required pH	Total Iron Removal	Cont. Flow Rate	(GPM) Pressure Drop	(PSI) Peak Flow Rate	Pressure Drop	Backwash Rate (GPM)
		Hardness (Grains)	Salt (Lbs)	Eff. (kg/Lbs)	Hardness (Grains)	Salt (Lbs)	Eff. (kg/Lbs)	Hardness (Grains)	Salt (Lbs)	Eff. (kg/Lbs)							
FF-948-M	Red (resin)	24,100	6.1	4.0	26,700	9.3	2.9	33,400	15.9	2.1	7+	1.0	4.0	5.5	8.0	13.3	2.0
FFE-1054-M	Red (fine resin)	24,600	6.1	4.0	26,800	9.3	2.9	33,400	15.9	2.1	7+	5.0	3.2	5.2	6.5	15.0	2.0
FFC-835-M	Red (resin)	9,700	3.2	3.1	13,800	6.1	2.3	19,800	9.3	2.1	7+	1.0	5.0	7.1	9.0	14.4	1.5

Model Number	Media Tank		Brine Tank		Total Dimensions	
	Diameter	Height	Diameter	Height	Height	Length
	A	B	C	D	E	F
FF-948-M	9	48	18	33	56	27
FFE-1054-M	10	54	18	33	61	28
FFC-835-M	Total Dimensions: 14" W x 21" D x 44" H					

Water Test

Water test can be obtained at Fleet Farm in the plumbing department, water treatment professional or local laboratory. This information will be need to set up the control valve properly. Please record below.

Hardness _____ GPG (Grains per Gallon)
 Iron _____ PPM (Parts per Million)
 pH _____

Setup

Unpacking and Inspection

Check the *Fleet Farm Water Treatment* system components for damage or missing parts.

Where to Install the Softener

Consider the following points when determining where to install the water softener:

- Place the *Fleet Farm Water Treatment* system as close as possible to a sewer drain.
- Do not install the softener where it would block access to the water heater, or access to the main water shutoff, water meter, or electrical panels.
- Keep outside faucets on hard water to save soft water and salt.
- Install the softener in a place where water damage is least likely to occur if a leak develops.
- A 120V electrical outlet is needed to plug in the transformer. If the outlet is remote (up to 100 feet), use 18 gauge wire to connect.
- Always connect the *Fleet Farm Water Treatment* system to the main water supply pipe before the water heater.
- If using well water, always install the *Fleet Farm Water Treatment* system after the pressure tank, but before the water heater.
- Install the *Fleet Farm Water Treatment* system where it will not be subject to temperatures outside of the limits stated in the Specification section or to direct sunlight.

Hardness Setting

Municipal Water

Fleet Farm recommends that you bring in a sample of water in to be tested. *Fleet Farm* personnel will test your water free of charge. Or call your local water company to determine your water hardness in grains per gallon and iron in mg/l (or ppm).

Well Water

Again, *Fleet Farm* recommends you bring a sample to the store to be tested or have your water tested professionally for accurate hardness and iron content.

Installation

1. Turn off gas or electric supply to the water heater.
2. Turn off the water supply to pipes to be cut and drain the house water pipes.
3. Open both hot and cold faucets.
4. Move the softener assembly into installation position.
 - Be sure the installation surface is level and smooth.
 - Provisions should be made to by pass outside faucets.
5. Plumb IN and OUT connections to and from softener.

- Be sure the incoming hard water supply is directed to the INLET port of the valve.
- The valve body of the control is marked with arrows indicating the proper flow direction.
- Connections are illustrated below.

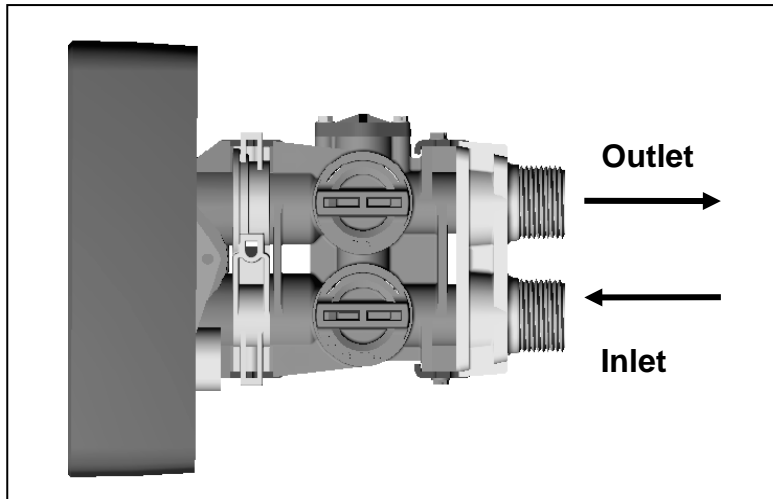


Figure 2

CAUTION: If making a soldered copper installation, do all sweat soldering before connecting pipes to the bypass valve. Torch heat will damage plastic parts.

CAUTION: When turning threaded pipe fittings onto plastic fittings, use care not to cross-thread.

CAUTION: Use Teflon tape on all external pipe threads. Do not use pipe joint compound.

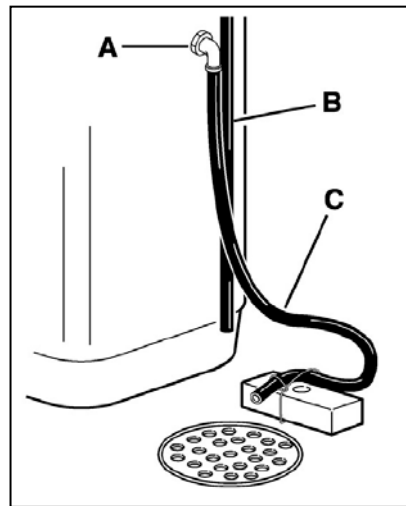
CAUTION: Support inlet and outlet plumbing in some manner (use pipe hangers) to keep the weight off of the valve fittings.

Perform steps 6-9 to install flexible drain hose.

Skip to step 10 to install rigid drain pipe.

6. Find barbed fitting. (Fig 4, A). Attach barbed hose fitting to the 1/2" male NPT drain outlet (not supplied with water softener).
7. Cut the length of the hose in half. One section will be used as a valve drain hose. The remaining section will be used as an overflow hose in Step 11.
8. Connect and route the valve drain hose.
 - To keep water pressure from blowing the hose off, use a hose clamp to secure.
9. Locate the other end of the hose at a suitable drain.
 - Tie or wire the hose in place at the drain point. Provide an air gap of at least 1-1/2" between the end of the hose and the drain point.

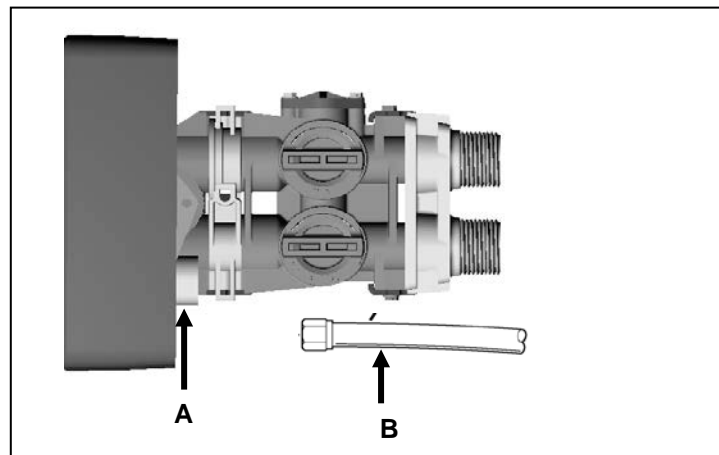
Figure 3



A – Hose barb from valve
B – Overflow hose off of brine tank
C – Valve drain hose

Use Step 10 to install rigid drain pipe.

10. To adapt a rigid drain pipe to the *Fleet Farm Water Treatment* system, unscrew the attached barbed hose fitting to valve. Instead, plumb rigid tubing directly to the 1/2" male NPT drain fitting.



A - 1/2" female NPT drain outlet
B - Rigid drain pipe

Figure 4

11. Take the other half of the cut hose and attach it to the overflow adapter elbow located on the side of the brine tank. Use a hose clamp to hold it in place. Locate the other end of the hose at the drain point as shown in Figure 3.
12. Fully open two (2) cold (soft) water faucets near the water softener.

13. Place bypass valve in "bypass" position.

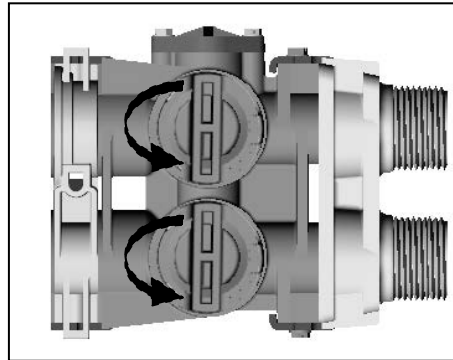


Figure 5

14. Fully open the house main water shutoff valve. Observe a steady flow from both faucets opened earlier.
15. Slowly, turn bypass valve back in the "service" position. Keep soft water faucets open.
16. After about 3 minutes, open a HOT water faucet for one (1) minute, or until all air is expelled, then close.
NOTE: If water appears cloudy or has salty taste, allow to run for several more minutes, or until clear.
17. Close all water faucets.
18. Check plumbing work for leaks and fix immediately if any are found.
19. Remove the cover and add water into the tank. Although the material used in the manufacturing of this water softener will not contaminate your water supply, the softener could become contaminated during shipment and installation. The media inside the resin tank may also have become disturbed during shipping. The following procedure will help re-position the media, sanitize, flush and condition your water softener:
 - a) Add 1-1/2 ounces of common household bleach to the water in the cabinet (brine tank).
 - b) Following the directions in the Control Service Manual, manually advance the softener through each step of regeneration pausing for 10 minutes in each cycle except the Fill cycle (see step c.).
 - c) Repeat step 19a and 19c after any service has been performed on your water softener.
20. Turn ON the gas or electric supply to the water heater.
21. Remove the cabinet cover and add salt into the tank. Use only nugget, pellet, block or coarse solar salt with a purity of 99.5% or higher. DO NOT use rock, granulated, and ice cream-making salts. Keep the brine tank cover on unless servicing or refilling with salt.
22. Connect electrical power by plugging into a (120 volt) outlet.
23. With the valve **In Service**, manually initiate regeneration as the final installation step. This regeneration will:
 - a) Fill the brine tank with the appropriate amount of water for the 1st regeneration
 - b) Complete the final flushing and conditioning of the water softener.
 - c) Re-classify the resin bed if the bed was disturbed during shipping.

Control Start-up Procedures

Models

FF-844M, FF-844EM, FF-844T
FF-948M, FF-948EM, FF-948T
FFE-1054M, FF-1054EM, FF-1054T
FFC-835M, FFC-835EM, FFC-835T

For replacement copies of these manual please contact Fleet Farm.

Programming

Setting time of day for all units

Set time of day: Press RED TIME SET BUTTON and turn 24 HOUR GEAR until present time of day is aligned with TIME OF DAY arrow. Figure 5

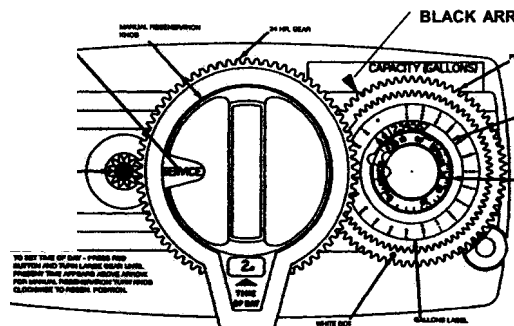


Figure 5

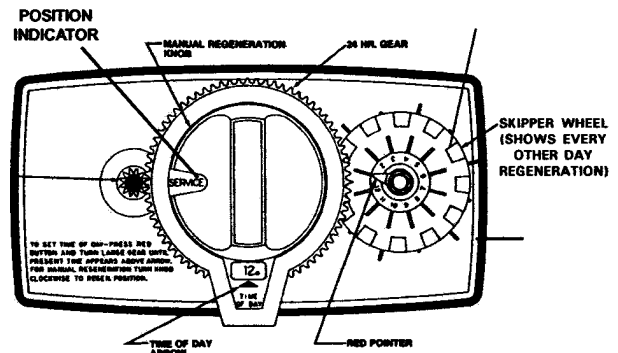


Figure 6

Programming metered softener control

Note: Hardness and iron can be found on Page 3.

Note: The manufacturer's predetermined salt setting is the most effective setting for your particular model. All softeners are set for a medium capacity salt setting which can be found under CAPACITY & PERFORMANCE SPECIFICATIONS on Page 2.

Check Salt Setting: Check the label on the back timer cover for the salt setting. Remove back cover and make sure the setting is correct. The salt cam is on the left hand side of the control. See flow diagram 8.

To program water softener: First you must know the hardness and iron content of your water. Set regeneration program by lifting (pulling) and rotating the PEOPLE DIAL so the number of people in the household is aligned with the "compensated" GRAINS PER GALLON of hardness (hardness dial) of your water.

Grains per Gallon of Hardness + (4 x Iron ppm) = Compensated hardness

Example: Hardness = 21 gpg and iron = 1 ppm
 $21 + (4 \times 1) = 25$ gpg compensated hardness

Release the dial and check for firm engagement of the gear teeth. See control valve diagram (Figure 5). The unit is set for a household of three people with a hardness of 10 grains per gallon. By doing this you have also just set the number of gallons between regenerations. Notice the white dot on the program wheel. This dot is adjacent to a number on the GALLON DIAL which is the amount of water available when fully regenerated. The control in Figure 5. indicates that it is set for 850 gallons.

Notice the black arrow which always points to the number of gallons remaining until the next regeneration. In Figure 5. the program wheel reads 0 (zero) gallons, indicating that there are no gallons remaining and that the unit will regenerate at the next 2:00 A.M. When the dial reaches zero there is a reserve capacity left equaling 75 gallons for each person in the household.

Programming time clock softener control

Set the softener to regenerate every 2 days (the factory setting) as a starting point See Figure 6. See care *and use Instructions*. Set the days that regeneration is to occur by sliding the desired TABS on the SKIPPER WHEEL outward away from the center of the WHEEL to expose TRIP FINGERS. Each TAB is one day. Be sure that the TABS for days that regeneration is *not* desired are pushed in fully toward the center of the WHEEL. The RED POINTER represents the upcoming 2:00 a.m. Moving clockwise from the RED POINTER, pull-out or push-in TABS to obtain the desired regeneration schedule.

Water softener start-up

NOTE: The various regeneration positions may be set manually by turning the MANUAL REGENERATION KNOB on the front of the control in a clockwise direction until the POSITION INDICATOR shows the desired position. See Figure 5.

1. Manually index the control into the SERVICE position and allow the tank to fill with water. When the flow stops, open a treated water tap until all air is released from the lines. Close the tap.
2. Manually index the control to the BACKWASH position and allow water to flow at the drain for 3 or 4 minutes or until free of air bubbles.
3. Manually index the control to the Refill position and allow brine tank to fill with approximately 8" or 8 gallons of water. Or, if desired, pour the same amount in manually.
4. Plug electrical cord into permanent 110 volt electrical socket which is not controlled by a wall switch.
(Note: See proper operating conditions page 2.)
5. SALT: Fill brine tank with salt. We recommend 50# salt blocks made for softeners, rock salt, solar salt, or pellet salt. Add 3 blocks to tank by "stacking" the blocks on top of each other.

NOTE: It is recommended that the brine tank be cleaned once a year, because of the accumulation of silt and sand from the salt.

6. Make sure that any bypass valving is left in the normal service position.
7. Be sure that you have set water usage program wheel for metered controls or set skipper wheel for time clock controls.

When using the FFE Series softeners on a known iron condition, rust removing salts such as AKZO NOBEL'S "RUST STOP TABS" are recommended.

Under heavy iron conditions chemical cleaning may be required. Products such as "Iron Out" may be used for this purpose. Caution: Follow directions carefully as these products may be dangerous if not properly used.

Softener Operation

As water enters the softener, it passes over a resin bed in a special tank. The resin consists of tiny beads of a plastic called styrene. These beads attract and hold sodium ions and exchange the sodium for hardness ions when encountered. Over time, the resin becomes saturated with hardness ions and no longer removes hardness materials. The softener goes into a "regeneration" to flush hardness materials to the drain and refresh the resin with sodium. Regeneration is typically programmed to take place in the middle of the night when little or no water is in use.

Regeneration consists of four cycles:

1. Service

When the softener is **In Service** it is flowing water through the system and removing hardness minerals from your water.

2. Backwash Position

Backwash is a rapid upward flow of water that loosens the resin bed and flushes iron particles, dirt and sediments filtered in the bed out to the drain.

3. Brine Draw / Slow Rinse Position

Brine Draw is the process in which brine is drawn out of the brine cabinet and passed through the resin in a downward direction. This rinses the resin and large amounts of sodium ions replace the hardness ions accumulated during service. **Slow Rinse.** After brine is completely removed from the brine cabinet into the resin tank the brine valve closes. Water replaces any remaining brine from the resin, flushing hardness ions removed from the resin to drain.

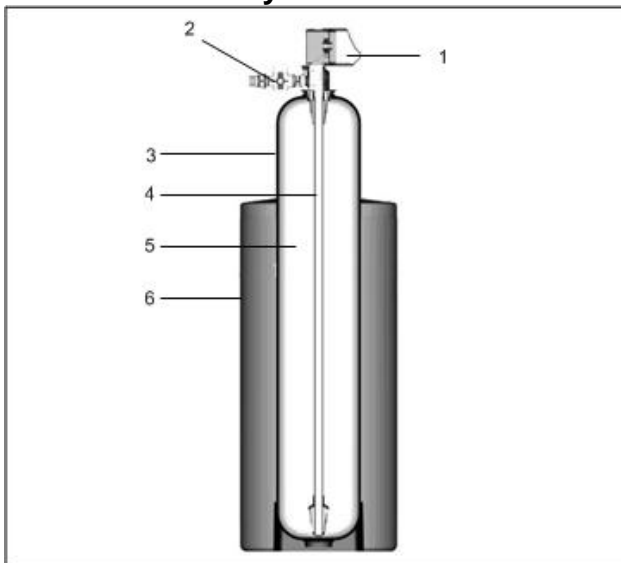
4. Fast Rinse Position

Fast Rinse is a fast flow of water down through the resin tank that follows a **Backwash**. This flushes all remaining brine from the tank and packs the resin bed for softening efficiency.

5. Brine Fill

Brine is water saturated with large amounts of a salt (sodium chloride). During **brine fill**, water flows into the salt storage area after each regeneration and dissolves salt. During the regeneration process, hardness ions on the resin beads are replaced or exchanged for sodium ions from the brine solution.

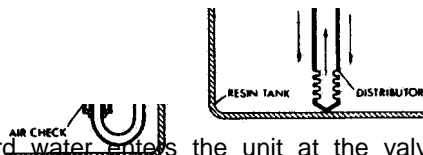
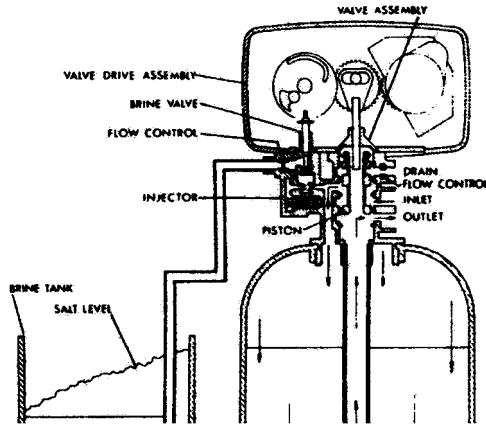
Softener Anatomy



- 1..... Valve
- 2..... Bypass
- 3..... Resin Tank
- 4..... Distributor
- 5..... Resin
- 6..... Salt Tank

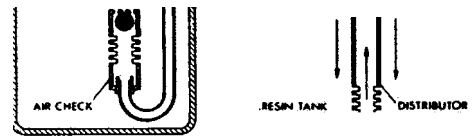
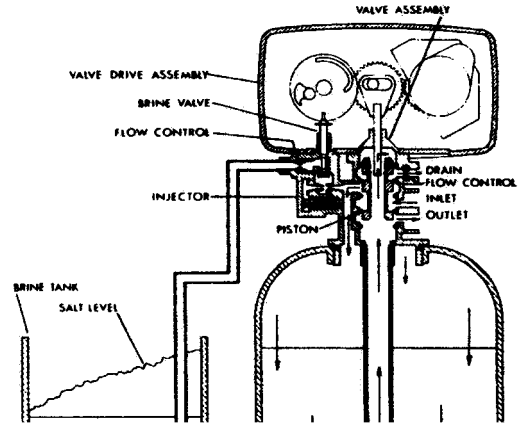
flow diagrams

1 Service position



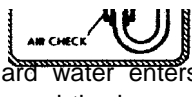
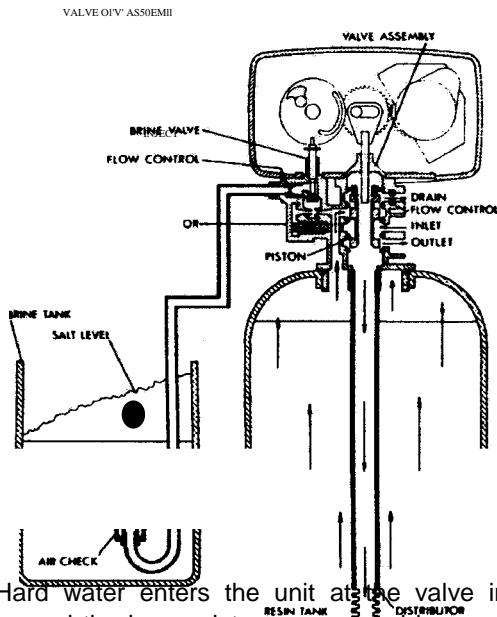
Hard water enters the unit at the valve inlet - flows around the lower piston groove - thru the passage to the top of tank - down thru the resin and enters the distributor as conditioned water. The conditioned water flows up thru the center tube to the valve outlet.

2 Pre Rinse 5 minutes



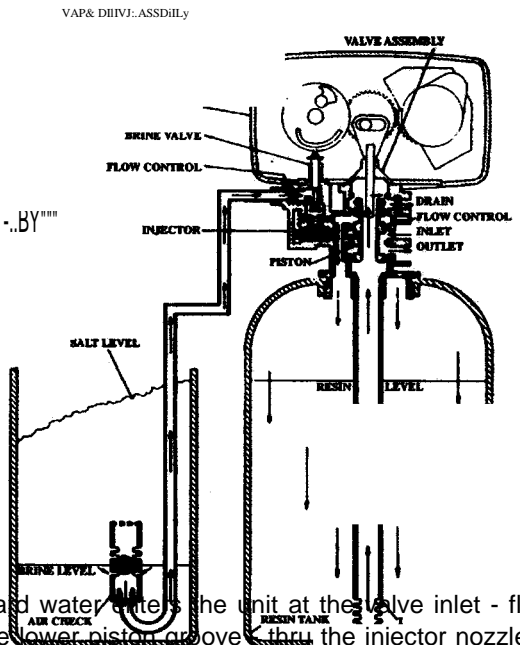
Hard water enters the unit at the valve inlet - flows around the lower piston groove - down thru the top of tank passage - downward thru the resin - up the distributor tube - thru the center hole in the piston - over the top edge of the piston and out the drain line.

3 Backwash 10 minutes



Hard water enters the unit at the valve inlet - flows around the lower piston groove and lower piston land - down thru the center tube and out the distributor - up thru the resin - thru the top of tank passage - around the upper piston groove and out the drain line.

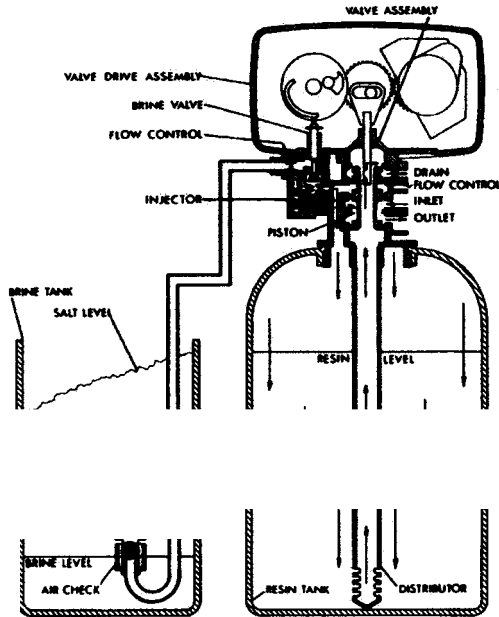
4 Brine Draw 15-20 of 50 minute cycle



Hard water enters the unit at the valve inlet - flows around the lower piston groove - thru the injector nozzle and orifice to draw brine from the brine tank. The brine flows down thru the resin - into the distributor - up thru the center tube - thru the center hole in the piston and out the drain line.

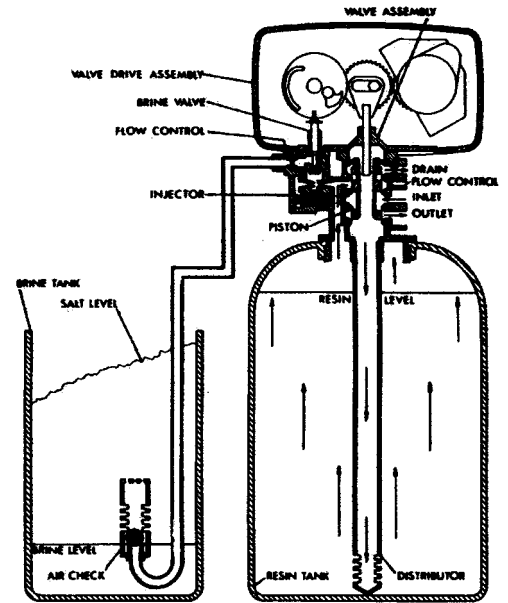
flow diagrams

5 Slow rinse balance of 50 minute cycle



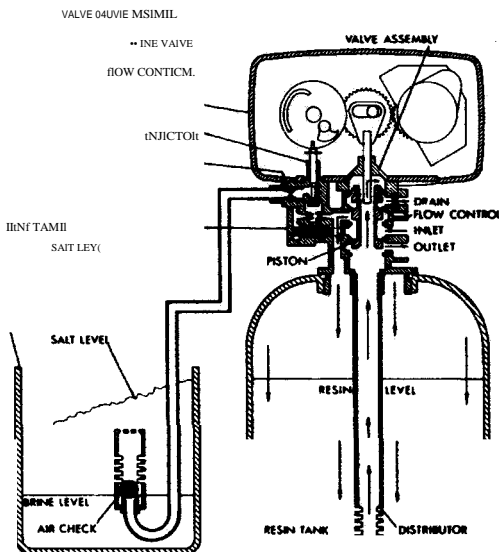
After all the brine has been drawn from the brine tank, hard water continues to enter thru the valve inlet - flows around the lower piston groove - thru the nozzle and orifice - down thru the resin and into the distributor - up thru the center tube - thru the center hole in the piston and out the drain line.

6 Rapid rinse 10 minutes



Hard water enters the unit at the valve inlet - flows around the lower piston groove and lower piston land - down thru the center tube and out the distributor - up thru the resin - thru the top of tank passage - around the upper piston groove and out the drain line.

7 Settling rinse 5 minutes

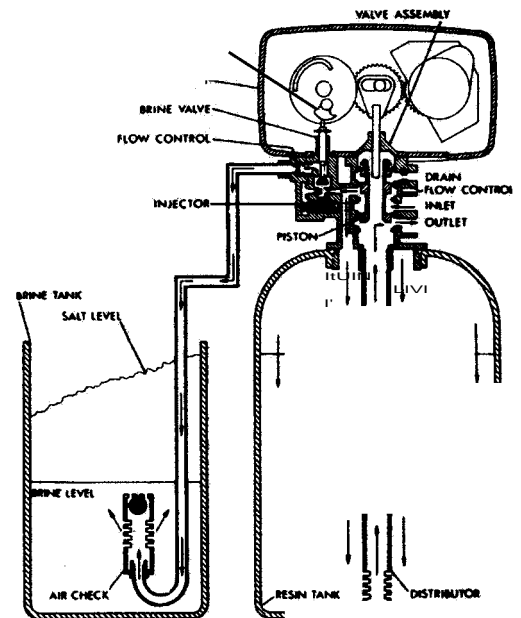


Hard water enters the unit at the valve inlet - flows around the lower piston groove - down thru the top of tank passage - downward thru the resin - up the distributor tube - thru the center hole in the piston - over the top edge of the piston and out the drain line.

8 Regenerant tank refill Adjustable 4-24 minutes

REFILL (SALT DOSE) ADJUSTMENT CAM

VALVE DRIVE ASSEMBLY



Service

Cleaning Iron Out of the Water Softening System

The *Fleet Farm Water Treatment* system is designed to remove minerals like calcium and magnesium from household water. *Fleet Farm Water Treatment* recommends periodic resin bed cleaning if your iron rating is high. Clean the bed at least every six months, or more if iron appears in the soft water between cleanings.

Checking for a Salt Bridge

A hard crust or "Salt Bridge" can form in the lower half of the salt storage tank. This can be deceiving because the tank will appear to have plenty of salt, but underneath, salt has hardened and when the system regenerates, water cannot quite reach this level to be made into brine (water and salt).

Breaking a Salt Bridge

Take a wooden broom handle and carefully push it down into the salt, working it up and down. If the tool strikes a hard object (be sure it's not the bottom or sides of the tank), it's probably a salt bridge. Carefully break the bridge with the broom handle. Do not pound on the walls of the tank.

NOTE: Salt bridges are typically caused by high humidity or using the wrong kind of salt. In humid areas it is best to fill with less salt, more often. Use only nugget, pellet, block, or coarse solar salt with a purity of 99.5% or higher. DO NOT granulated, and ice cream-making salts, or salt with iron-removing additives.

Cleaning the Injector and Screen

- 1) Turn off water supply to conditioner:
 - a) If the conditioner installation has a "three valve" by-pass system, first open the valve in the bypass line, and then close the valves at the conditioner inlet and outlet.
 - b) If the conditioner has an integral by-pass valve, put it in the by-pass position.
 - c) If there is only a shut-off valve near the conditioner inlet, close it.
- 2) Relieve water pressure in the conditioner by stepping the control into the backwash position momentarily. Return the control to the service position.
- 3) Unplug electrical cord from outlet.
- 4) Disconnect brine tube and drain line connections at the injector body.
- 5) Remove the two injector body mounting screws. The injector and brine module can now be removed from the control valve. Clean and reassemble.
- 6) To replace brine valve.
 - a) Pull brine valve from injector body, also remove and discard O-ring at bottom of brine valve hole.
 - b) Apply silicone lubricant to new O-ring and reinstall at bottom of brine valve hole.
 - c) Apply silicone lubricant to O-ring on new valve assembly and press into brine valve hole, shoulder on bushing should be flush with injector body.
- 7) To replace injectors and screen.
 - a) Remove injector cap and screen, discard O-ring. Unscrew injector nozzle and throat.
 - b) Screw in new injector throat and nozzle, be sure they are sealed tightly. Install a new screen.
 - c) Apply silicone lubricant to new O-ring and install around oval extension on injector cap.
- 8) Apply silicone lubricant to three new O-rings and install over three bosses on injector body.
- 9) Insert screws with washers thru injector cap and injector. Place this assembly thru hole in timer housing and into mating holes in the valve body.
- 10) Tighten screws.
- 11) Reconnect brine tube and drain line.
- 12) Return by-pass or inlet valving to normal service position. Water pressure should now be applied to the conditioner, and any by-pass line shut off.
- 13) Check for leaks at all seal areas. Check drain seal with the control in the backwash position.
- 14) Plug electrical cord into outlet.
- 15) Set time of day and cycle the control valve manually to assure proper function. Make sure control valve is returned to the service position.
- 16) Make sure there is enough salt in the brine tank.
- 17) Start regeneration cycle manually if water is hard.

Hard water enters the unit at the valve inlet -flows around the lower piston groove - thru the injector throat - thru the brine valve and flow control to fill the brine tank. Hard water also flows around the lower piston groove - thru the passage to the top of tank - down thru the resin and enters the distributor as conditioned water. The conditioned water flows up thru the center tube to the

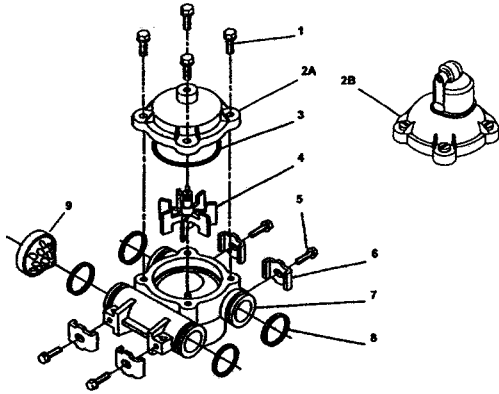
Troubleshooting

<p>1. Softener Fails To Regenerate.</p>	<p>A. Electrical service to unit has been interrupted. B. Timer programming bad (improper programming).</p>	<p>A. Assure permanent electrical service (check fuse, plug, pull chain or switch). B. Check programming and reset as needed.</p>
<p>2. Softener Delivers Hard Water.</p>	<p>A. By-pass valve is open. B. No salt in brine tank. C. Injectors or screen plugged. D. Insufficient water flowing into brine tank. E. Hot water tank hardness. F. Flow meter jammed. G. Flow meter cable disconnected or not plugged into meter. H. Improper programming. I. Plugged brine line or air check. J. Salt bridge has formed. K. No water in brine tank. L. Unit is plumbed backwards. M. Water hardness has increased or is set incorrectly. N. Water pressure is too low.</p>	<p>A. Close by-pass valve. B. Add salt to brine tank and maintain salt level above water level. C. Clean or replace injectors and screen. D. Check brine tank fill time and clean brine line flow if plugged. E. Repeated flushings of the hot water tank is required. F. Check flow indicator light for flow. Remove obstruction from flow meter. G. Check meter cable connection to timer and meter. H. Reprogram the control to the proper regeneration type, inlet water hardness, capacity or flow meter size. I. Remove and clean any sediment from brine tank and brine valve assembly. J. Refer to <i>Breaking a Salt Bridge</i> section in manual. K. Ensure safety float is not stuck. L. Check that the unit is plumbed correctly. M. Retest hardness and change settings N. Line pressure must be at least 20psi.</p>
<p>3. Unit Uses Too Much Salt.</p>	<p>A. Improper salt setting. B. Excessive water in brine tank. C. Improper programming.</p>	<p>A. Check salt usage and salt setting. B. See problem No. 7. C. Check programming and reset as needed.</p>
<p>4. Loss of Water Pressure.</p>	<p>A. Iron buildup in line to water conditioner. B. Iron buildup in water conditioner.</p>	<p>A. Clean line to water conditioner. B. Clean control and add resin cleaner to resin bed. Increase frequency of regeneration.</p>
<p>5. Loss of Resin Through Drain Line.</p>	<p>A. Air in water system. B. Drain line flow control is too large.</p>	<p>A. Assure that well system has proper air eliminator control and check for dry well condition. B. Ensure drain line flow control is sized correctly.</p>
<p>6. Iron in Conditioned Water.</p>	<p>A. Fouled resin bed. B. Iron content exceeds recommended parameters.</p>	<p>A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration. Increase backwash time. B. Add iron removal from filter or system.</p>

7. Excessive Water in Brine Tank.	<ul style="list-style-type: none"> A. Plugged drain line flow control. B. Brine valve failure. C. Improper programming. 	<ul style="list-style-type: none"> A. Clean flow control. B. Clean brine valve. C. Check programming and reset as needed.
8. Salt Water in Service Line.	<ul style="list-style-type: none"> A. Plugged injector system. B. Improper programming. C. Foreign material in brine valve. D. Foreign material in brine line flow control. E. Low water pressure. 	<ul style="list-style-type: none"> A. Clean injector and replace screen. B. Check programming and reset as needed. C. Clean or replace brine valve. D. Clean brine line flow control. E. Raise water pressure.
9. Softener Fails to Draw Brine.	<ul style="list-style-type: none"> A. Drain line flow control is plugged. B. Injector is plugged. C. Improper programming. D. Line pressure is too low. 	<ul style="list-style-type: none"> A. Clean drain line flow control. B. Clean or replace injectors. C. Check programming and reset as needed. D. Increase line pressure (line pressure must be at least 20psi at all times.)
10. Drain Flows Continuously.	<ul style="list-style-type: none"> A. Foreign material in control. 	<ul style="list-style-type: none"> A. Remove piston assembly and inspect bore, remove foreign material & check control in various ports.
12. Loss of capacity.	<ul style="list-style-type: none"> A. Increased raw water hardness B. Brine concentration and/or quantity. C. Resin fouling. Future fouling. D. Poor distribution, channeling (uneven bed surface). 	<ul style="list-style-type: none"> A. Reset unit to the new capacity. B. Keep brine tank full of salt at all times. Clean it yearly. Salt may be bridged. If using a salt grid plate ensure refill water is over it. C. Call Fleet Farm Water Treatment, find out how to confirm it, clean the resin and prevent. D. Call Fleet Farm Water Treatment. Check distributors and backwash flow.

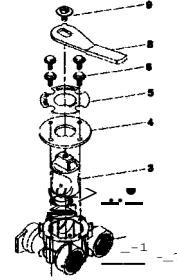
parts diagrams

meter assembly



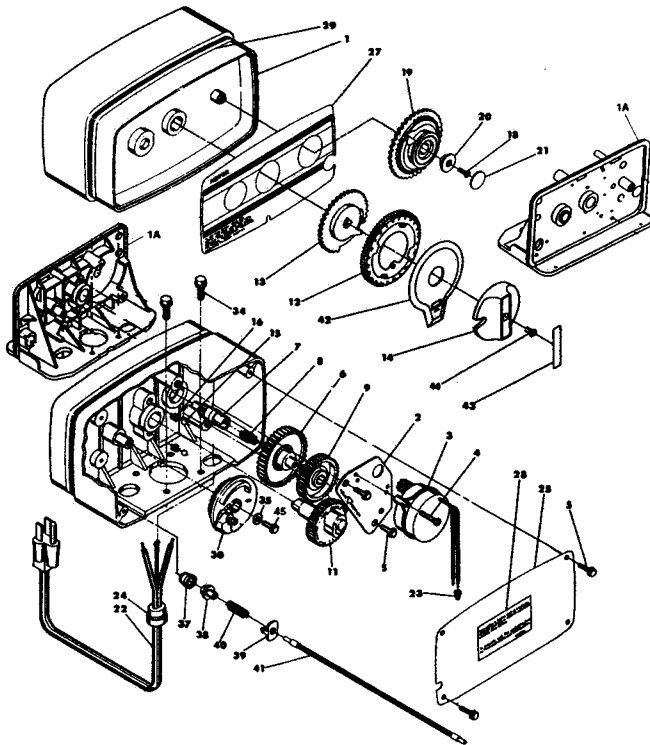
ITEMNO.	NO.REQ'O	PART NO.	DESCRIPTION
1	4	12473	Screw - Meter Cover Assembly
2	1	14038	Meter Cover Assembly- Standard
3	1	15100	Meter Cover Assembly-Extended Range (not shown)
4	1	13847	"O" Ring - Meter Cover Assembly
5	1	13009	InflleHer
6	4	13314	Screw - Adapter Clip
7	1	13256	Adapter Clip
8	4	13821	Meter Body
9	1	13305	"O" Ring - Meter Body
		14613	Row Straightener

by-pass valve assembly



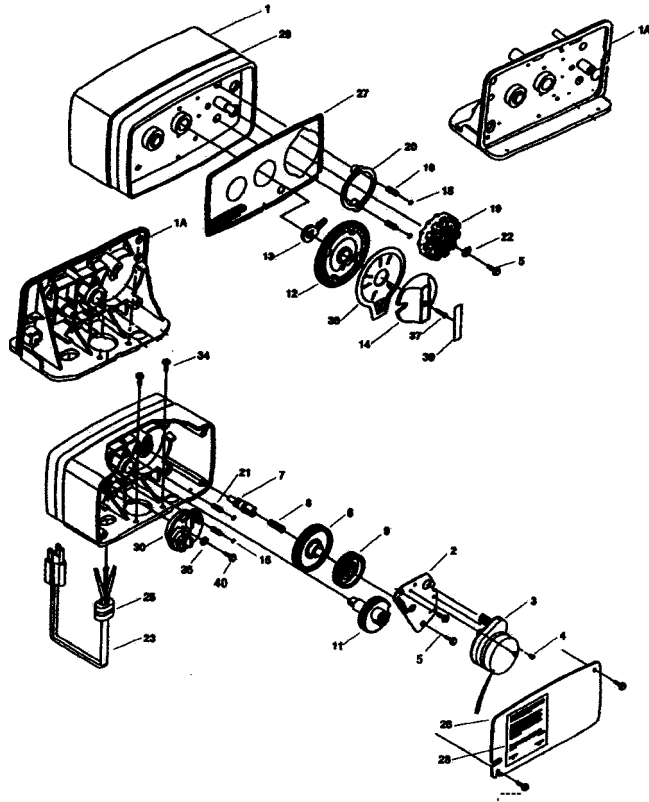
ITEMNO.	NO. REQ'O.	PART NO.	DESCRIPTION
1	1	11969	Round Head Machine Screw
2	1	11443	Plain Washer
3	1	11979	WwL.eYer
4	8	15727	Hex. Head Machine Screw
6	1	13604	WveLabel
7	1	11978	Side Cover
8	1	11972	Valve Plug
9	1	13254	Valve Body-3/4" N.P.T.
		13399	Valve Body -1" N.P.T.
10	1	11726	Valve Seal
11	1	11986	Side Cover

control assembly metered water softener



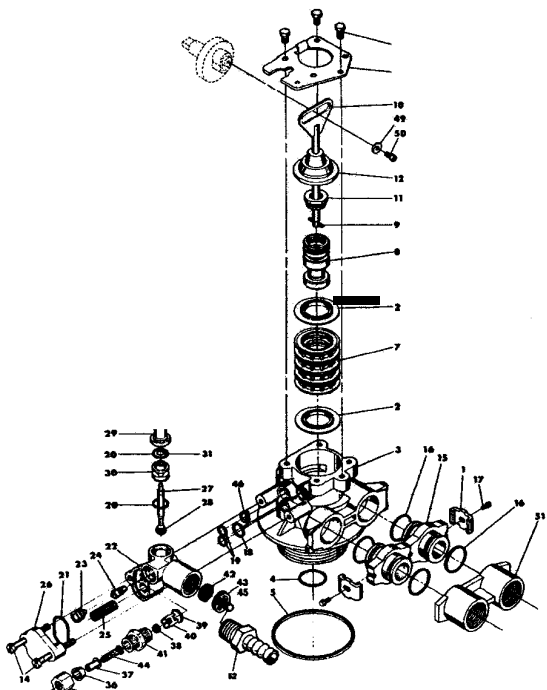
ITEMNO.	NO.REQ'O	PART NO.	DESCRIPTION
1	1	14448	Drive Housing Assembly
2	1	13175	Motor Mounting Plate
3	1	13400	Motor - 1/2 HP
		13494	Motor - 24V 60 Hz
4	3	11384	Screw - Motor Mig & Ground Wire
5	7	13296	Screw- Component Mounting
6	1	1:D17	Idler Gear
7	1	1:D18	Idler Pinion
8	1	13312	Spring - Idler
9	1	13164	Drive Gear
10	1	13299	Curved Washer
11	1	13170	Main Gear & Shaft
12	1	1:D09	24 Hour Gear
13	1	13802	Cycle Actuator Gear
14	1	14177	Knob - Manual Regeneration
15	2	13300	Ball-Dia.
16	2	14457	Spring - Detent
17	1	13969	24 Hour Label
18	1	13748	Screw- Program Wheel
19	1	14039	Program Wheel Assembly - Specify Hardness Capacity
		138re	Program Wheel Retainer
21	1	13953	Cover Label- Program Wheel
22	1	11842	Beclrical Cortl
23	2	12681	Wire Connector
24	1	13547	Strain Relief
25	1	13229	Back Cover
26			Not Assigned
27	1	13955	Front Label- Beige
		13958	Front Label- Silver
28	1	13899	Rear Label
29	1	13957	Tape Stripe - Beige
		138&l	Tape Stripe - Silver
31	1	13168	Brine Cam
31	1	11980	Screw - Time Fill Cam
32	1	11081	Nut- Time Fill Cam
33	1	13169	Time Rll Cam
34	2	12473	Screw - Drive Mounting
35	1	1:ll37	Washer
35	1	13:D7	Label"Lbs ri Sall- 3-18"
		13489	Label"Lbs of Salt- 6-36"
31	1	138:D	Drive Pinion - Program Wheel
38	1	13831	Clutch • Drive Pinion
38	1	14253	Spring Retainer
40	1	14276	Spring
41	1	14043	Flexible Cable Assembly
42	1	14176	Valve Position Dial - Standard
		14278	Valve Position Dial - Low Water
		15478	Valve Position Dial- Filter
43	1	14175	Knob Label- Beige
		14207	Knob Label- Silver
44	1	15151	Screw Knob

control valve assembly time clock parts diagrams



ITEMNO.	NO.REQ'D	PART NO.	DESCRIPTION
1	1	13162	Drive Housing
2	1	13175	Motor Mounting Plate
3	1	13400	Molot-110v.60Hz.
4	1	13494	Motor - 24v. 60Hz.
4	3	11384	Screw - Motor Mlg. & Ground Wire
5	8	13296	Screw - Component Mounting
6	1	1:D17	Idle Gear
7	1	1:D18	Idle Pinion
8	1	13312	Spring-Idle
9	1	13164	Drive Gear
10	1	13299	QJrved Washer
11	1	13170	Main Gear & Shall
12	1	1:nxll	24 Hour Gear
13	1	1:D11	Cycle Actuator Ann
14	1	14177	Knob - Manual Regeneration
15	4	13300	Ball-1/4" Dia.
16	2	13311	Spring - Detent - SkipperWheel
17	1	13959	24 Hour Label- Silver
18	1	13429	SkipperWheel Label-12 Day
	1	14732	Skipper Wheel Label- 7 Day
19	1	14381	Skipper Wheel Assembly-12 Day
	1	14860	Skipper Wheel Assembly - 7 Day
2J	1	13864	SkipperWheel Ring
21	2	14457	Spring - Detent - Main Gear
22	1	1:D14	Regeneration Plinter
23	1	11842	Beclrical Cord - Standard
24	2	12681	Wire Connec1cr
:15	1	13547	Strain Relief
26	1	13229	Back Cover
X/	1	133J9	Front Label- Brown on Beige
	1	13437	Froot Label- Blue/Silveron Black
28	1	13310	R_Label
29	1	13348	Tape Stripe- Brown on Beige
	1	13436	Tape Stripe - Blue on Sil_
31	1	13168	Brine Cam
31	1	11900	Screw- Time Fill Cam
32	1	11001	Nut - Time Fill Cam
33	1	13169	Time Fill Cam
34	2	12473	Screw-Drive Mounting
-	1	12037	Washer
-	1	133>7	Label- Lbs of Salt - 3-18"
-	1	13489	Label- Lbs of Salt - 6-36"
'3/	1	15151	Screw-Knob
38	1	14176	Valve Position Dial- Standard
	1	14278	Valve Position Dial- Low Water
	1	15478	Valve Position Dial- Chemical Riter
	1	16715	Valve Position Dial- Riter
31	1	14175	Knob Label- Beige
	1	14207	Knob Label- Silver

control valve body assembly



ITEM NO.	NO.REQ'D	PART NO.	DESCRIPTION
1	2	13255	Adapter Clip
2	5	13242	Seal
3	1	14449	Valve Body Assembly -1" Dist.
	1	14450	Valve Body Assembly -13/16 Dist.
4	1	13304	'0' Ring - Distributor Tube - 1" '0' Ring
	1	10244	- Distributor Tube - 13/16

ITEMNO.	NO.REQ'D	PART NO.	DESCRIPTION
5	1	12281	'0' Ring- Top of Tank
7	4	13241	Spacer
8	1	13247	Piston - Standard
	1	13781	Piston low Water
	1	13852	Piston, FFAN Filter
9	1	10696	Piston Pin
10	1	13>01	Piston Rod Assembly
11	1	12953	Piston Retainer
12	1	13446	End Plug Assembly
14	2	13315	Screw -Injector Mounting
15	2	13709	Adapter Coupling
16	4	13305	'0' Ring - Adapter Coupling
17	2	13314	Screw - Adapter Coupling
18	1	12638	'0' Ring - Drain
19	2	133>1	'0' Ring - Injector
2J	2	13302	'0' Ring - Brine Spacer
21	1	133>3	'0' Ring -Injector Cover
22	1	13163	Injector Body
23	1	10913	Injector Nozzle - Specify Size
24	1	10914	Injector Throat -Specify Size
:15	1	1022T	Injector Screen
26	1	13166	Injector Cover
X/	1	13172	Brine Valve Stem
28	1	12626	Brine Valve Seat
29	1	13165	Brine Valve Cap
31	1	13167	Brine Valve Spacer
31	1	12550	QuadRing
32	1	11973	Spring - Brine Valve
33	1	12J35	Washer - Brine Valve
34	1	11961	Retaining Ring
-	1	10329	B.I.F.C. Frtting Nut
'3/	1	1033>	B.I.F.C. Ferrule
'3/	1	10332	B.I.F.C. Tube Insert
38	1		B.I.F.C. Button - Specify Size
31	1	12977	'0' Ring - BLF.C.
40	1	13245	B.I.F.C. Button Retainer
41	1	13244	BLF.C. Fitting
42	1		DLF.C. Button - Specify Size
43	1	13173	DLF.C. Button Retainer
44	1	12767	Screen - BrineUne
45	1	15348	'0' Ring
46	1	13497	Air Dispenser
47	1	13546	End Plug Retainer
48	3	12112	Screw
49	1	13363	Washer
00	1	13296	Screw
51	1	13706	Adapter - 3/4" - N.P.T.
	1	13396	Adapter -1" N.P.T.



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