OWNERS GUIDE TO INSTALLATION AND OPERATION

FULLY AUTOMATIC WATER SOFTENER



MODEL 340 SAFETY INFORMATION

Read the instructions carefully and learn the specific details regarding installation and use. Failure to follow them could cause serious bodily injury and/or property damage.

• Make certain the electrical outlet is grounded by having it checked by an electrician or by using a UL Listed circuit analyzer. Units are furnished with 3-prong grounded plugs to protect you against the possibility of electrical shock.



AWARNING DO NOT UNDER ANY CIRCUMSTANCES REMOVE THE GROUND PRONG AND NEVER SPLICE OR CUT THE ELECTRICAL CORD.

• The outlet must be within reach of the power cord. DO NOT USE AN EXTENSION CORD. Extension cords that are too long or too light do not deliver sufficient voltage to the unit and could present a safety hazard if the insulation were to become damaged. The receptacle should be located 4 feet above the basement floor to guard against the possibility of immersion.



AWARNING DISCONNECT POWER AT THE MAIN ELECTRICAL BOX BEFORE INSTALLING OR SERVIC-ING THE UNIT. DO NOT PLUG IN UNIT OR CHANGE FUSES WHILE STANDING ON WET OR DAMP SUR-FACES AND DO NOT TOUCH ANY OTHER METAL SURFACES WHILE PLUGGING IN PRODUCT OR CHANGING FUSES. DO IT WITH ONE HAND WHILE KEEPING THE OTHER HAND FREE.

- Check to be sure that your power source is capable of handling the voltage requirements of the unit. Plug into a grounded receptacle which contains a fuse or circuit breaker of 20 amps or less.
- All water treatment installations must conform to local plumbing, electrical, and sanitation codes. These codes are established for your protection.

IMPORTANT

INSTALL WATER CONDITIONERS IN AN AREA PROTECTED FROM FLOODING, RAIN, DIRECT SUNLIGHT, DUST, SNOW AND FREEZING. THE WARRANTY DOES NOT COVER DAMAGE INCURRED AS A RESULT OF EXPOSURE TO THE WEATHER. FAILURE TO PROTECT UNIT WILL CAUSE DAMAGE.

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IMPORTANT NOTICE

Pay special attention to the following points.

- Installation must be made within an area protected from sunlight, rain, dust, flooding, snow and freezing. Failure to do so will damage the unit and void the warranty.
- Check plumbing inlet and outlet to ensure the proper flow of water through the unit. Match plumbing inlet and outlet with arrows located on the sides of the valve head and on the manifold (especially if replacing an existing unit).
- Make sure the unit is plugged into a 115 volt grounded outlet which contains a fuse or circuit breaker of 20 amps or less.
- Make sure the unit is plugged into a 115 volt grounded outlet that will not be turned off accidentally by a wall switch or pull chain.
- Excessive length or height of the drain line can disrupt the operation of the softener. If the drain line length is greater than 20 ft., use 3/4" ID tube. For both 1/2" and 3/4" ID tube, the maximum height cannot exceed 8 ft.
- Initially fill the salt brine tank only 3/4 full of salt. (Do not pack full).
- If any rust stains are apparent, use a type of salt available containing iron control agents.
- After installing the unit, manually regenerate by following the valve control instructions.
- Make sure that the control head is correctly set for your specific water needs. A proper installation must include a complete water analysis.

REMEMBER, YOUR PURCHASE IS AN INVESTMENT AND NEEDS TO BE PROPERLY MAINTAINED.

If any parts are missing, damaged, unit does not seem to be working properly, or if you have any questions, call

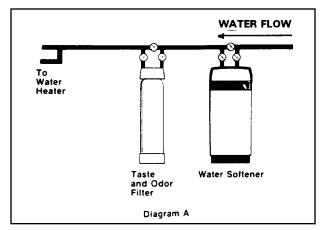
1-800-928-PUMP

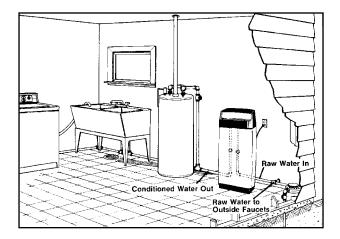
BEFORE CALLING,

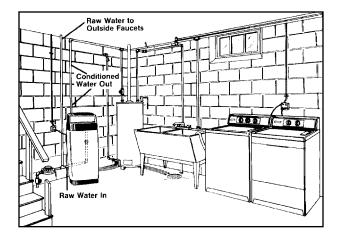
PLEASE HAVE THE FOLLOWING INFORMATION AVAILABLE:

MODEL # DATE	DATE INSTALLED:			
HARDNESS:GPG IRON: PPM	(TANNINS IF APPLICABLE):PPM			
SULFUR: PPM MANGANESE:PPM				
MUNICIPAL WATER: WELL WATER:	PUMP SIZE:HP			
OTHER KNOWN CONTAMINANTS:				

TYPICAL INSTALLATIONS AND EQUIPMENT LOCATION







LOCATE WATER CONDITIONING EQUIPMENT CORRECTLY:

Select the location of your water softener with care. Various conditions which contribute to proper location are as follows:

- 1. Locate as close as possible to water supply source.
- 2. Locate as close as possible to a floor or laundry tube drain.
- Locate unit in correct relationship to other water conditioning equipment, if applicable (See Diagram A.) Or, contact factory.
- Select location where floor is level. If floor is rough and/or uneven, you can level by placing cabinet or tanks on 3/4" plywood, and shim to level as needed.
- Locate the softener in the supply line BEFORE the water heater. Temperatures above 100°F (38°C) will damage the softener and void the warranty.

INSTALL WATER CONDITIONER IN AN AREA PROTECTED FROM FLOODING, RAIN, DIRECT SUNLIGHT, DUST, SNOW AND FREEZING. THE WARRANTY DOES NOT COVER DAMAGE INCURRED AS A RESULT OF EXPOSURE TO THE WEATHER.

- 6. Allow sufficient space around the installation for easy servicing.
- 7. Provide a non-switched 110/120V, 60 Hz power source for the control valve.





Carefully cut box corners down to allow for easy removal of unit from carton.
Care should be taken to avoid cutting into unit.

1. Remove all inner packing from around the softener.



3. Draw untreated water sample into container. Open test kit and dip tester into water sample.



4. Compare strip with chart to determine water hardness. Retain this number for setting control valve later in the installation process.



5. Carefully move unit into approximate installation position.



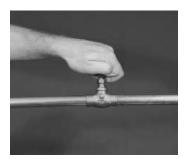
Loosen compression nut located on right side of control valve by turning counter clockwise. Insert end of 3/8" O.D. tube, making sure tube is pushed in fully. Visually check brine tubing for cracks or kinks. Tighten the compression nut.
ACAUTION Do not over tighten.



- 7. Select installation location in the water line ahead of the water heater, close to a drain and a 115 volt grounded outlet on a flat surface. NOTE: Make sure electric outlet is grounded and cannot be turned off by a switch or a pull chain. Photo shows typical finished installation.
- 8. Remove the brine tank cover.



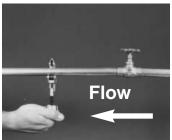
9. Position softener near the main water supply line, a drain, and an electrical outlet. Position so that main water supply shut off valve is between the softener and the main water source. NOTE: Install unit in an area protected from the elements and freezing.



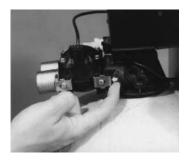
10. Close the main water supply shut-off valve.

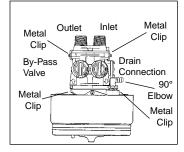


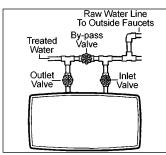
11. Open nearest water faucet to relieve pressure and drain plumbing lines.



12. On a new installation not already plumbed for a water softener, cut out section of main water supply line downstream from the supply shut-off, at position softener is to be installed.









13. Check inlet and outlet for correct water flow by matching arrows on valve head and on manifold (especially if replacing existing unit).
ACAUTION Install in direction of arrows.

- 14. Diagram shows the valve with bypass and manifold installed. Install bypass and manifold as follows:
 - A) Remove metal clips from side of control valve and bypass valve by removing screws.
 - B) Apply silcone lubricant to both o-rings on control valve and bypass valve.
 - C) Slide bypass valve onto control valve, making sure knobs are facing up.
 - D) Slide manifold onto bypass valve, making sure inlet/outlet labels face up.
 - E) Secure all four clips on control valve, bypass valve and manifold with screws.
- 15. Diagram shows a 3 valve by-pass system. Many new homes are plumbed water softener ready in this manner.

16. Before installing 3/4" fittings on the inlet and outlet of the manifold, wrap the manifold threads three times around with teflon tape. Install fittings.
ACAUTION DO NOT OVER TIGHTEN!



17. Soldering is no longer required to plumb with copper pipe. Instead use compression fittings. Connect plumbing as required for the specific application.



18. Typical finished installation using rigid copper pipe. Make sure bypass is in the service position to ensure household service of treated water.

19. Typical installation using flexible, high pressure hose provided with unit.

- 20. Press 1/2" I.D. rigid or non-collapsible plastic tubing (not included) onto drain line hose barb until snug and secure with a hose clamp. (Not included.) NOTE: Do not run 1/2" drain line over 8 feet vertically or 20 feet in length. If over 20 feet, 3/4" tube is recommended.



21. Typical drain line ran into stand pipe with proper 4" air gap. NOTE: An air gap is required by most local plumbing codes to prevent waste water back flow. Check and follow your local codes.



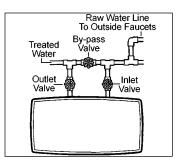
22. Install 1/2" I.D. rigid or non-collapsible tubing (not included) to the overflow hose barb located on the back of the softener brine tank and run to a drain located below the level of the hose barb.



23. Plug cord from control valve into a 115V grounded electrical outlet. Make certain that outlet is supplied with power at all times. Make sure area is dry before plugging the unit in.



24. Open main water supply shut-off valve. CHECK FOR LEAKS! Close previously opened faucet (step 15).



25. On a three valve bypass system, open the inlet and outlet valves and close the bypass valve (see diagram).



26. Draw a two gallon bucket of water to be used in the brine tank.



27. Pour two gallon bucket of water into the brine tank.



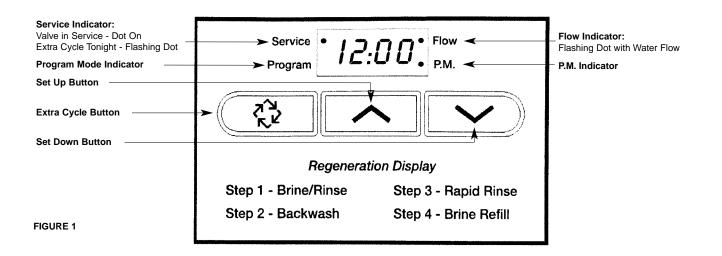
28. Measure 1-1/2 oz of chlorine bleach and pour solution directly into the brine tank. (Required on initial installations only.) Manually regenerate the softener by pressing the extra cycle button for 8 seconds to run bleach through the softener.



29. Pour salt into compartment. Fill about 3/4 full initially. Do not pack full. This is also where iron control salts will be put if you have rust stains.

SETTING THE CONTROL VALVE

FOLLOW THE INSTRUCTIONS STEP BY STEP! DO NOT DEPRESS THE BUTTONS OUT OF SEQUENCE!



A. SET CURRENT TIME OF DAY

1) Plug unit into a 115 volt grounded outlet that is independent from a wall switch or pull chain. When unit is plugged in, the valve will show an alternating display, first showing a flashing time of day, followed by the volume of soft water left in the system.

2) Locate the SET UP and SET DOWN buttons with arrows pointing up and down.

3) Set time of day by depressing either SET UP or SET DOWN button to the current time of day. Time must be set correctly to AM or PM, as shown with dot next to P.M. indicator.

B. SET GALLONS BETWEEN REGENER-ATIONS

 Depress both the SET UP and SET DOWN buttons at the same time and hold for five seconds. A number 800 should appear. This is the amount of treated water that can flow through the unit before a regeneration is required. This number can be determined from the chart shown in Figure 2.

Figure 2 - Step 2 Setting

Number	Water Hardness - Grains/Gallon							
people in family	0 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40
		Gallons/Regeneration						
1	3500	1720	1127	830	652	533	449	385
2	3440	1660	1067	770	592	473	389	325
3	3380	1600	1007	710	532	413	329	265
4	3320	1540	947	650	472	353	269	205
5	3260	1480	887	590	412	293	209	145

For example, for a family of three with a water hardness value of 24 and little or no iron in the water, the gallons/regeneration value that should be set in the valve would be 532.

Water hardness will vary by location. For best efficiency, the valve should be programmed for each specific installation. Use hardness test strip provided for initial setting.

 Set to desired gallons/regeneration setting by depressing the SET UP or SET DOWN buttons.

NOTE FOR WATER WITH RUST STAINS:

If iron is present in the water as evidenced by red stains on clothes, fixtures, toilets, etc., add 12 grains per gallon to the previous water hardness setting and have water retested.

Mix 2 ounces of Super Iron Out® or similar iron cleaner with every 80 lbs. of salt used (if above 5 ppm of iron, increase to 4 oz.) or use a salt with iron control agent.

C. SETTING REGENERATION TIME

Depress the EXTRA CYCLE button and the 2:00 AM factory preset regeneration time will appear on the display. This setting may be changed by using the up and down set buttons; however, it is best to have this set at a time when there is low water usage. Note AM and PM setting.

Depress the EXTRA CYCLE button again and the display will read AOFF. This sets the maximum number of days before a regeneration cycle must occur. This should remain in the off setting.

Press the EXTRA CYCLE button again to return to the time of day setting and exit the programming mode.

In the event of a power outage, the time of day will have to be reset. All other functions are maintained in memory and not affected by power interruptions.

D. EXTRA REGENERATION

1) The unit is factory preset to regenerate at 2:00 AM.

- 2) To initiate an extra regeneration, two methods are available:
 - A. By pressing and releasing the EXTRA CYCLE button, the service dot will begin to flash and the unit will regenerate at the next scheduled regeneration time (2:00 AM).
 - B. By pressing and holding the EXTRA CYCLE button for five seconds, the unit will immediately begin regeneration.

The entire regeneration cycle will last approximately 34 minutes.

MODEL 340 SPECIFICATIONS

Hardness Removal	75 GPG Max
Iron Removal	3 PPM Max
Flow Rate - Service	4.0 GPM
Flow Rate - Backwash	2.4 GPM
Cycle Time	34 Minutes
Water Used*	25 Gals.
Dimensions (Inches)	25 x 15.5 x 24
Ship Weight	95 lbs.
* F = 1 = m =	

*Factory programmed water usage per regeneration. Water usage may vary depending on application.

ADDITIONAL VALVE FEATURES

To check the advanced programming valve features, set the time of day display to 12:01 PM. Push and hold at the same time the SET UP and SET DOWN button for five seconds.

1) US/Metric Display Format (U)

This display is used to set the desired display format. This option setting is identified by the letter U in the first digit. There are two possible settings:

US Format uses gallons for volume with a 12 hour time keeping format. Regeneration timing in whole minutes.

Example - [U - - I]

Metric Format uses liters for volume with a 24 hour time keeping format. Regeneration timing in tenths of minutes.

Example - [U - - 2]

The SET UP and DOWN buttons will adjust this value.

OPTION #1 IS THE REQUIRED SET-TING.

Example - [U - - 1]

2) REGENERATION TYPE (7)

Depress the EXTRA CYCLE button. This display is used to set the Regeneration Type by use of the UP and DOWN arrow buttons.

Three options are available:

A. TIME CLOCK DELAYED. The control will determine that regeneration is required when the set Regeneration Time has been reached. The regeneration Day Override setting will determine on which days a regeneration cycle will be initiated. B. METER IMMEDIATE. The control will determine that regeneration is required when available volume of softened water drops to or below zero. Regeneration to begin immediately.

Example - [7 - - - 2]

C. METER DELAYED. (This is the factory setting.) The control will determine that a regeneration is required when the available volume of softened water drops to or below the reserve capacity. Regeneration is to begin immediately at the set regeneration time only when service flow has not been detected. Regeneration is to be delayed, in two 10 minutes sections, for up to an additional 20 minutes, with service flow. Regeneration then to begin immediately. There will be no delay if the volume remaining is zero.

Example - [7 - - - 3]

 TREATED WATER CAPACITY (No display code)

Depress the EXTRA CYCLE button. This display is used to set the amount of treated water (gallons) that can be produced by the unit before a regeneration cycle is required. This value was determined previously in Section B (Set Gallons Between Regenerations.)

Example - Regenerate every 947 gallons - [947]

The SET UP and DOWN buttons will adjust this value.

4) REGENERATION TIME (No display code)

Depress the EXTRA CYCLE button. The next display viewed is the option setting for regeneration time. It is identified by a non-flashing colon between two sets of

Example - [7 - - - 1]

numbers. This value was set in Section C and is recommended to be set at 2:00 AM.

Example - 2 AM regeneration time [2:00]

The SET UP and DOWN buttons will adjust this value.

5) REGENERATION DAY OVERRIDE (A)

Depress the EXTRA CYCLE button. This display is used to set the Regeneration Day Override Option Setting. This sets the maximum number of days that the softener can be in service without regenerating. This option should be canceled by using the SET UP and DOWN buttons until display reads, "off."

Example - [A - - - off]

6) REGENERATION STEP PROGRAM-MING (1 - 5)

Depress the EXTRA CYCLE button. The next five displays viewed are part of a series of option settings used to program the Regeneration Cycle. Each display is used to set the duration time in minutes of that specific step in the regeneration cycle. A step # will turn on for the regeneration cycle step being programmed. The first display in the series is Regeneration Cycle #1 (Backwash.) Steps are skipped by setting the display to 0 and regeneration ended by setting the step # after the last active step to OFF, as shown below.

Examples:

Cycle Step #1 (backwash) 2 min. [1 - - - 02.0] Cycle Step #2 (brine & slow rinse) 30 min. [2 - - - 30.0] Cycle Step #3 (rapid rinse) 2 min. [3 - - - 02.0] Cycle Step #4 (brine tank refill) 7 min. [4 - - - 07.0] Cycle Step #5 not currently used with this valve. Must be in off position. [5 - - - off]

Depress the EXTRA CYCLE button once per display to advance through Regeneration Cycle Step Programming.

7) FLOW METER SIZE (F)

Depress the EXTRA CYCLE button. This display is used to set the flow meter size. The required setting is F133.

Example - [F133]

8) VALVE TYPE (O)

Depress the EXTRA CYCLE button. This display is used to set the type of valve used with the control. OPTION #1 IS THE REQUIRED SETTING.

Example - [O - - - - 1]

9) LINE FREQUENCY (LF)

Depress the EXTRA CYCLE button. This display is used to set the frequency of the power applied to the control. When properly set, all time keeping functions will remain accurate. OPTION #1 IS THE REQUIRED SETTING.

Example - [LF60]

EXITING THIS OPTION SETTING LEVEL.

Depressing the EXTRA CYCLE button once after step 9 will return the display back to Time of Day.

WATER SOFTENER TROUBLE SHOOTING

WHAT TO CHECK	HOW TO CORRECT
Has unit been properly installed?	Reread instructions to see that all steps were followed.
Shut-off valves in piping haven't been properly shut off, causing hard water to by-pass unit.	Make sure shut-off valves on piping going into and out of soft- ener are open and the valve in between is closed.
Three valve bypass in service mode.	Open inlet and outlet valves, close bypass valve.
Is unit piped in backwards?	Check arrows where pipe threads into valve head and make sure water is flowing consistent with the direction arrows.
Hot water tank hardness.	Allow sufficient time for hardness that has built up in your water heater and pipes to run through the system. Repeated flushing of the water heater tank can also be done.
Is there resin in the tank?	Softeners ship with resin already in the tank. Make sure the resin has not been emptied or dumped. Put a trouble light behind resin tank and you should be able to see the resin through the mineral tank. (approximately 3/4 full.)
Valve head not working correctly and causing water flow not to go through softener.	Shut off water supply, depressurize the unit, unscrew the valve head from unit and exchange it.
Softener has been undersized and does not effective- ly remove the amount of hardness in your water.	Draw a sample of untreated water before it goes through the soft- ener and a sample of treated water after the softener. Have the samples analyzed to see if any hardness is being removed.
Water flow rate going through the softener is not allowing time for the unit to soften.	Open an outside faucet and fill a measured bucket up with water for 1 minute. The amount of gallons in the bucket tells you how many gallons per minute is being run through the softener. Call 1-800-928-PUMP to see what the GPM limit is on the specific unit you have purchase. Add a flow control accessory to your unit if needed. Maximum flow through unit is 8 gallons per minute.

WATER TASTES SALTY OR BRINE TANK FILLS WITH WATER			
WHAT TO CHECK	HOW TO CORRECT		
Is backwash water flowing freely down to drain with an air gap and no back siphoning?	Inspect drain line. Where the drain line is elevated above the valve (limit 8 feet) and/or exceeds 20 feet in length, 3/4" I.D. drain line is recommended. Elbows and other fittings in the drain line must be kept to a minimum.		
Brine line and connections not allowing salt solution into mineral tank to regenerate.	Visually check tubing for cracks or kinks. Check fittings for proper assembly and tightness.		
Injector or injector screen plugged.	Remove the 2 screws and clean screen and injector nozzle and venturi.		

WATER SOFTENER TROUBLE SHOOTING Cont.)

WATER WAS SOFT BUT NOW FEELS HARD

WHAT TO CHECK	HOW TO CORRECT		
No salt in brine tank?	Add salt to brine tank and maintain salt level above water level. Manually initiate the regeneration cycle and allow soft-ener to totally go through all regeneration cycles.		
Electrical service to unit has been interrupted.	Make sure permanent electricity is going to valve. Is valve power cord plugged in? Is the unit plugged into an outlet that is con- trolled by a wall switch? Are fuses blown, or has there been an electrical power failure? Reset time of day.		
Is water bypassing unit?	Open inlet and outlet valves and close bypass valves.		
Has the bypass been used and not connected back into service?	Make sure the knobs on the bypass valve are in the service posi- tion. On a 3 valve bypass position, open the inlet and outlet valves and close the bypass valve.		
Salt is bridging in tank.	Salt in bottom of tank has hardened and is not allowing water/salt mixture to get to the bottom of salt, and consequently over to mineral tank. Do not fill salt tank completely (3/4 full.) Use a stick or broom handle and poke into salt, making sure it is broken up.		
Salt tube going from brine tank to mineral tank is plugged or insufficient water flowing into brine tank.	Clean or replace brine valve. Clean and unplug brine line so water flows uninterrupted.		
Brine salt line and connections not allowing salt solu- tion into mineral tank to regenerate.	Visually check tubing for cracks or kinks. Check fittings for proper assembly and tightness.		
Injector or injector screen is plugged.	Depressurize unit. There are 2 screws on valve neck where brine line tube enters softener. Remove screws, clean screen and injector nozzle and venturi.		
Line pressure is too low.	Line pressure must be at least 20 PSI at all times.		
Too much iron has fouled the bed.	A water softener is only effective for up to 3 parts of iron. Draw water before it goes into and after it flows thru softener. Have both samples tested to see if iron is being removed, or if mineral bed is already fouled.		
Valve head or timer is not cycling.	Shut off water supply, depressurize tank, unplug unit and replace valve head motor.		
Has softening mineral been exposed to freezing?	Freezing weather causes the resin to mush and become ineffec- tive. Replace resin, properly insulate and shield unit from direct elements and freezing temperatures.		
Leak in distributor tube.	Check for cracks in distributor tube. Check "O" ring and tube inlet in bottom of valve. Replace if necessary.		

MAINTENANCE

 SALT REFILL - During each regeneration of the water softener a specific amount of salt is consumed, thus requiring periodic replenishment. The frequency of this depends upon the regeneration schedule. Always replenish salt before the supply is exhausted to ensure a continuous supply of softened water.

We suggest using a pellet type salt or grade A rock salt that contains no dirt or sediment. Fill tank about 3/4 full. <u>Do not pack full and</u> <u>do not use block salt</u>. Potassium chloride may be used.

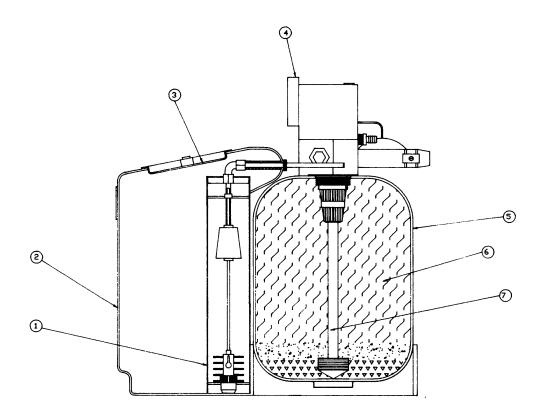
 PREVENTING IRON FOULING OF RESIN BED - If iron is present in the water supply, the softener will eventually become iron fouled, resulting in reduced softening capacity and rust stained fixtures. Use a type of salt available on the market that contains iron control agents to aid in cleansing the resin bed.

- 3. BRINE TANK CLEAN OUT To prevent service problems, the brine tank should be emptied and cleaned when dirt and other insolubles accumulate. THIS CLEAN OUT SHOULD BE DONE WHEN THE SALT LEVEL IS LOW.
- PERIODICALLY CHECK THE TIME OF DAY SETTING - Power outages will cause TIME OF DAY timer setting to become incorrect. To reset, refer to SETTING THE CONTROL VALVE.
- 5. CHANGE OF OPERATING CONDITIONS -Should your family size, your water usage habits or your water quality change, the regeneration program setting may have to be adjusted.

OTHER FINE QUALITY PRODUCTS AVAILABLE BY ZOELLER

344-0006	DELUXE UNDERCOUNTER FOR TASTE, ODORS AND MANY OTHER CONTAMINANTS
344-0005	"BOTTLED WATER FACTORY" FOR EVERY OUTLET IN YOUR HOME
343-0005	REVERSE OSMOSIS FOR LEAD, NITRATES, SALT & OTHER TDS

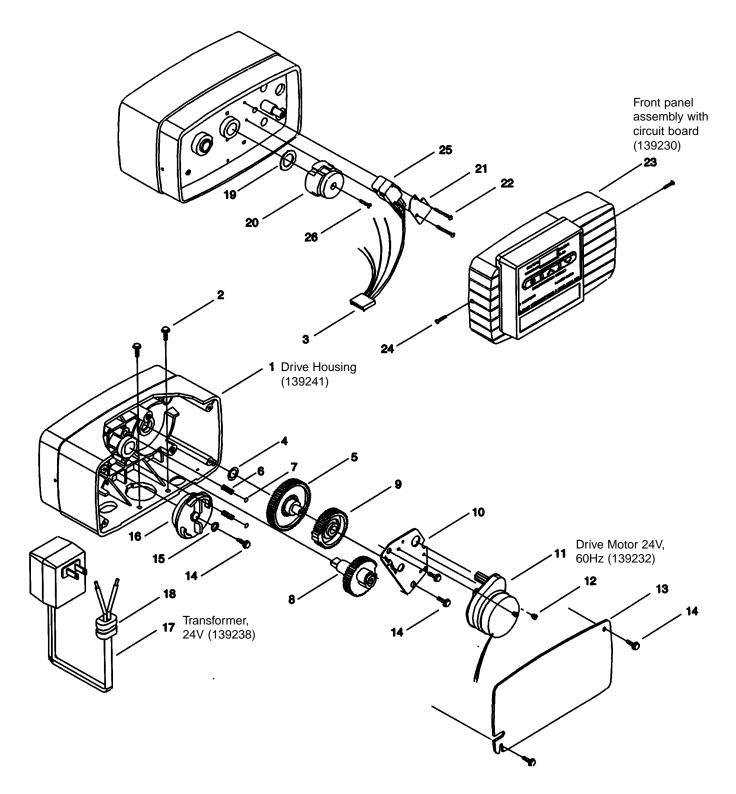
REPAIR PARTS Compact Water Softener MODEL 340



ITEM	PART NUMBER	DESCRIPTION
1	137774	Brine well/valve assembly
2	138964	Brine tank (less lid) w/holes
3	137776	Brine tank lid
4	137918	Complete valve (upflow brine)
5	137778	Mineral tank (13 x 17)
6	138460	Resin package (Incl. 12# gravel)
7	138171	Distributor tube

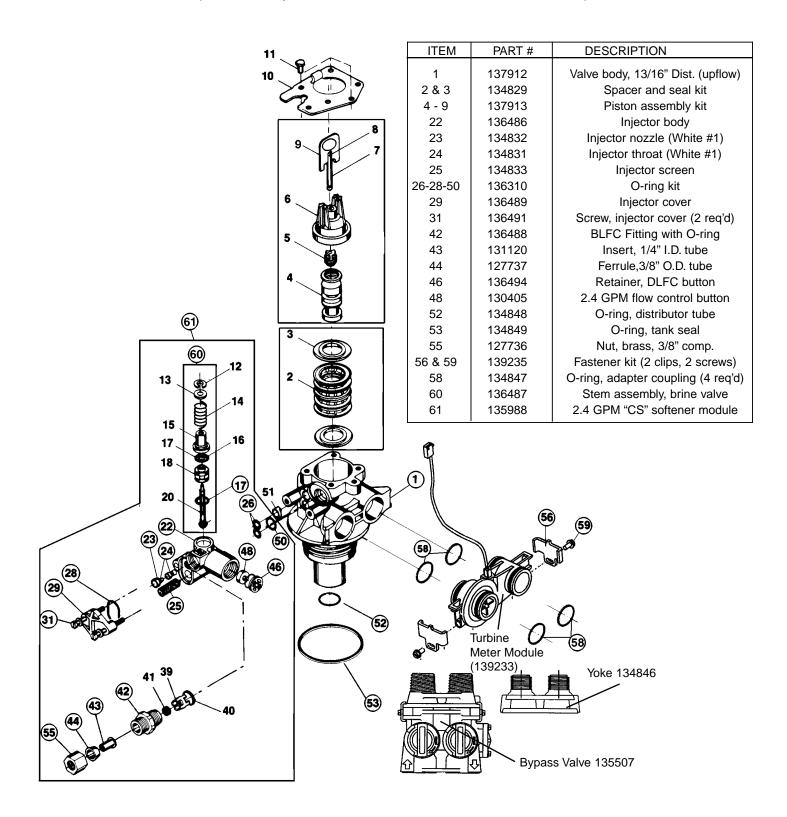
REPAIR PARTS Digital Noryl® Control Valve Power Head Used on Upflow Brine Softeners

Power head (meter) for upflow brine softener 139228 used with Model 340



REPAIR PARTS Digital Noryl® Control Valve Used on Upflow Brine Softener MODEL 340

(Available parts are items with circled numbers)



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