

Series 168

**Water Conditioning Control System
Installation, Operation and Maintenance Manual**



Table of Contents

Installation	4	Removing Control Module for Servicing	7
Location Selection		Preventive Maintenance	7
Water Line Connection		Flow Diagrams	8
Drain Line Connection		Specifications	11
Brine Line Connection		Disinfection of Water Conditioners	11
Overflow Line Connection		Replacement Parts	13
Electrical Connection		Troubleshooting	15
Placing Conditioner into Operation	5		
Adjustment of Timer	6		
Special Features of Timer			
Adjustment of Brine Control	7		
How to Set Salt Dial			

Installation

All Plumbing and electrical connections must conform to local codes.

Inspect conditioner carefully for carrier shortage or shipping damage.

Location Selection

1. The distance between the conditioner and a drain should be as short as possible.
2. It is likely that supplementary water treating equipment will be required, make certain adequate space is available.
3. Do not install conditioner closer to a water heater than a total run of 10 feet (3 m) of piping between the outlet of the conditioner and the inlet to the heater. Water heaters can sometimes overheat to the extent they will transmit heat back down the cold pipe into the conditioner control valve.

Hot water can severely damage the conditioner. A 10-foot (3-m) total pipe run, including bends, elbows, etc., is a reasonable distance to help prevent this possibility. A positive way to prevent hot water from flowing from heat source to the conditioner, in the event of a negative pressure situation, is to install a check valve in the water piping from the conditioner. **If a check valve is installed, make certain the water heating conditioner is equipped with a properly rated temperature and pressure safety relief valve. Also, be certain that local codes are not violated.**

4. Do not locate conditioner where it or its' connections (including the drain and overflow lines) will ever be subjected to room temperatures under 34°F (1°C) or over 120°F (4°C).
5. Do not install conditioner near acid or acid fumes.

Note: The use of resin cleaners in an unvented enclosure is not recommended.

Water Line Connection

The installation of a bypass valve system is recommended to provide for occasions when the water conditioner must be bypassed for untreated water or for servicing.

The most common bypass systems are the Autotrol Series 165 Bypass Valve (Figure 1) and plumbed-in globe valves (Figure 2). Though both are similar in function, the 165 Autotrol Bypass offers simplicity and ease of operation.

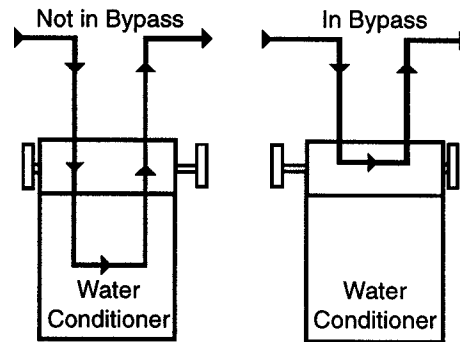


Figure 1 - Autotrol Series 165 Bypass Valve

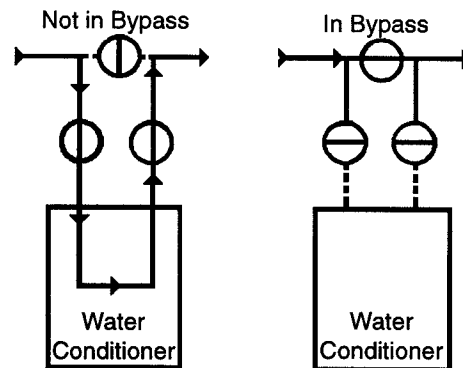


Figure 2 - Typical Globe Valve Bypass System

Drain Line Connection

1. Ideally located, the conditioner will be above and not more than 20 feet (6.1 m) from the drain. For such installations, using an appropriate adapter fitting (not supplied), connect 1/2-inch (1.3-cm) plastic tubing to the drain line connection of the control valve.
2. If the conditioner is located more than 20 feet (6.1 m) from the drain, using an appropriate adapter fitting (not supplied) connect 3/4-inch (1.9 cm) plastic tubing to the drain line connection of the control valve for runs up to 40 ft (12.2 m).
3. If the conditioner is located where the drain line must be elevated, you may elevate the line up to 6 feet (1.8 m) providing the run does not exceed 15 feet (4.6 m) and water pressure at conditioner is not less than 40 psi (2.8 bar). You may elevate the drain line an additional 2 feet (61 cm) for each additional 10 psi (.7 bar).

IMPORTANT: If conditioner has a sensor timer, maximum elevation is 4 feet (1.2 m) regardless of water pressure.

4. Where the drain line is elevated but empties into a drain below the level of the control valve, form a 7-inch (18-cm) loop at the far end of the line so that the bottom of the loop is level with the drain line connection. This will provide an adequate siphon trap.
5. Where the drain empties into an overhead sewer line, a sink-type trap must be used.
6. Where the drain empties into a floor drain, refer to Figure 3.

IMPORTANT: Never connect drain line directly into a drain, sewer line or trap. Always allow an air gap between the drain line and the wastewater to prevent the possibility of sewage being backsiphoned into conditioner.

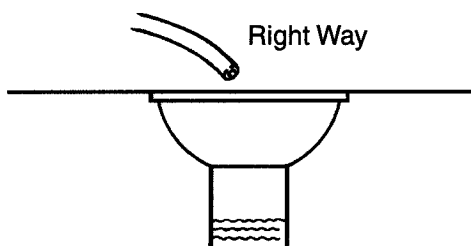


Figure 3

Note: Standard commercial practices have been expressed here. Local codes may require changes to these suggestions.

Brine Line Connection

Install an appropriate length of 3/8-inch O.D. flexible plastic tubing (polyethylene) between the tube fitting on the brine valve (in the brine tank) and the tube fitting on the control valve (code 5 on page 12).

Brine Tank Overflow Line Connection

In the absence of a safety overflow and in the event of a malfunction, the brine tank overflow will direct "overflow" to the drain instead of spilling on the floor where it could cause considerable damage. This fitting should be on the side of the cabinet of brine tank.

To connect overflow, locate hole on side of brine tank. Insert overflow fitting into tank and tighten with plastic thumb nut and gasket as shown (Figure 4). Attach a length of 1/2-inch (1.3-cm) I.D. tubing (not supplied) to fitting and run to drain. Do not elevate overflow line higher than 2 inches (7.6 cm) below bottom of overflow fitting. Do not tie into drain line of control unit. Overflow line must be a separate line from overflow fitting to drain, sewer or tub. Allow an air gap as per drain line instructions.

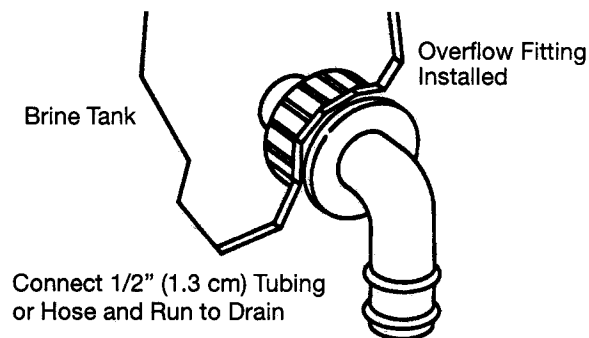


Figure 4

Electrical Connection

100VAC, 115VAC and 230VAC Units

Remove the twist tie from the power cord and extend cord to its full length. Make sure the power source matches the electrical rating of the automatic timer. Plug into an outlet that will accept a 3-prong plug or install a 3-prong adapter in standard outlet. Be sure the outlet you select is not controlled by a wall switch.

12VAC and 24 VAC Units

The power supply transformer should have a minimum rating of 3 Volt-Amps. Connect the plug of the transformer secondary cable to the mating socket at the rear of timer housing.

Be certain the transformer is plugged into the correct voltage source that is not controlled by a wall switch.

Placing Conditioner into Operation

After all previous steps have been completed, the unit is ready to be placed into operation. Follow these steps carefully.

1. Remove control valve cover by first removing the plastic clip from the back of the cover. Pull back of cover outward and lift up.

Note: The following steps will require turning the pointer knob. (Figure 5), to various positions. Insert a wide blade screwdriver into arrow slot in pointer knob and press in firmly. With knob held in, rotate **COUNTERCLOCKWISE** only until arrow or knob points to desired position. (Rotation is made much easier if you grasp the camshaft with your free hand and turn it at the same time.) Then permit knob to spring back out.

2. Insert screwdriver into slot in pointer knob. (Figure 5). Press in and rotate pointer knob **COUNTERCLOCKWISE** until arrow points directly to the word **BACKWASH**.
3. Fill mineral tank with water.

- a. With the water supply off, place the bypass valve(s) into the "not in bypass" position.
- b. Open water supply valve very slowly to approximately the 1/4 open position.
- c. When all of the air has been purged from the tank (water begins to flow steadily from the drain), open the main supply valve all the way.

IMPORTANT: If opened too rapidly or too far, filter media may be lost. In this position, you should hear air escaping slowly from the drain line.

- d. Allow water to run to drain until clear.
 - e. Turn off water supply and let the conditioner stand for about 5 minutes. This will allow all trapped air to escape from the tank.
4. Add water to brine tank (initial refill).

With a bucket or hose, add approximately four gallons (15 liters) of water to brine tank. If the tank has a salt platform above the bottom of the tank, add water until the level is approximately 1 inch (25 mm) above the platform.

5. Put into operation.
 - a. Open water supply valve slowly to full open position.
 - b. Carefully rotate pointer knob **COUNTERCLOCKWISE** to center of **BRINE REFILL/PURGE** position and hold there until water starts to flow through brine line into brine tank. Do not run for more than 1 or 2 minutes.
 - c. Rotate pointer knob **COUNTERCLOCKWISE** until arrow points to the center of the **BRINE/RINSE** position.
 - d. With the conditioner in this position, check to see if water is being drawn from the brine tank. The water level in the brine tank will recede very slowly. Observe for at least 3 minutes. If the water level does not recede or goes up, reference the **Troubleshooting** section.
 - e. Rotate pointer knob **COUNTERCLOCKWISE** to **SERVICE**.
 - f. Run water from a nearby faucet until the water is clear and soft.

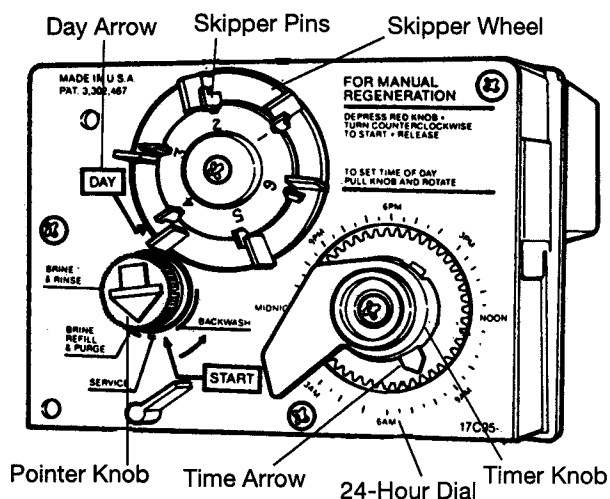


Figure 5

Adjustment of Timer

A Demand System is available for this control. For information contact your water treatment dealer.

1. Set days of regeneration on skipper wheel (Figure 5).
 - Pull all skipper pins outward away from timer.
 - Rotate skipper wheel until day arrow points to current day or number 1.
 - Depress skipper pin(s) at day(s) for which regeneration is desired.
2. Set the time of day.
 - Grasp timer knob and pull outward.
 - Rotate in either direction until actual time of day on time dial is in line with time arrow.
 - Release timer knob.

Note: With the time of day properly set, the conditioner will regenerate at about 2:30 a.m. If you prefer to have the conditioner regenerate at an earlier or later time, simply set the current time of day accordingly. (e.g., To have the conditioner **REGENERATE/BACKWASH** at 4:30 a.m. - 2 hours later - set the clock 2 hours earlier than the actual current time).

Special Features of Timer

Guest Cycle. When abnormally high water usage exhausts your water conditioner's capacity ahead of schedule, an extra regeneration can be achieved by depressing the pointer knob with a wide blade screwdriver and turning **COUNTERCLOCKWISE** to **START**. It will take a few minutes for regeneration to start. Normal regeneration schedule will not be disrupted.

Manual Regeneration. Electricity is used only to run the timer and to rotate the camshaft. All other functions

are operated by water pressure. Therefore, in the event of a power outage, all the various regeneration positions may be dialed manually by depressing the pointer knob and turning **COUNTERCLOCKWISE**.

Manual time cycle:

- BACKWASH...14 minutes
- BRINE AND RINSE...52 minutes
- BRINE REFILL...10 minutes
- PURGE...6 minutes

Do not exceed 10 minutes for the BRINE/REFILL cycle as this will cause excessive salt usage during the next regeneration and possibly a salt residue in the softened water.

Adjustment of Brine Control

All models may be adjusted to produce maximum to minimum conditioning capacities by setting the salt dial (Figure 6) which controls the amount of salt used per regeneration. When desired, the minimum setting may be used on installations if the frequency of regeneration is increased to compensate for the lower regenerated conditioning capacity. Your installing dealer will set the conditioner for proper salt usage. Further adjustments are needed only if the hardness of the water supply changes or if water use changes dramatically.

How to Set Salt dial

Insert a small screwdriver into pointer knob and move pointer window to correct salt setting (Figure 6).

Note: To convert salt dial settings from English to Metric, divide by 2.2 (e.g., 12 pounds \div 2.2 = 5.5 kg).

The amount of salt placed into the regenerant storage tank has nothing to do with the amount of salt used during the REGENERATION/BACKWASH program. Water will dissolve and absorb salt only until it becomes saturated. A given amount of brine (salt saturated water) contains a specific amount of salt. The salt dial controls the amount of brine used during the REGENERATION/BACKWASH program (e.g., when set at 15 lbs. [6.8 kg] the amount of brine the conditioner will use for each program will contain 15 lbs. [6.8 kg] of salt, etc.)

Never let the amount of salt in the regenerant storage tank be lower than the normal liquid level. Do not overload the brine tank with salt. The chances of salt conditions that may interfere with brining are greatly reduced if you limit the salt loading to 160 lbs. (72.7 kg) at a time.

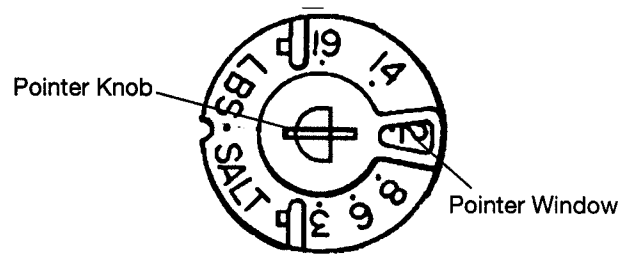


Figure 6

Removing the Control Module for Servicing

1. Unplug electrical cord.
2. Shut off water supply or put bypass valve(s) into bypass position.
3. Remove cover and, with a screwdriver, relieve tank pressure by pushing open valve No. 5 on the control.
4. Disconnect the brine line, the drain line and the inlet and outlet water lines; save the gaskets for reinstallation.
5. Rotate the valve counterclockwise from the mineral tank; save the large O-ring.
6. To replace control module, reverse above procedure.

Preventive Maintenance

Inspect and clean brine tank and screen filter on end of brine pick-up tube once a year or when sediment appears in the bottom of the brine tank.

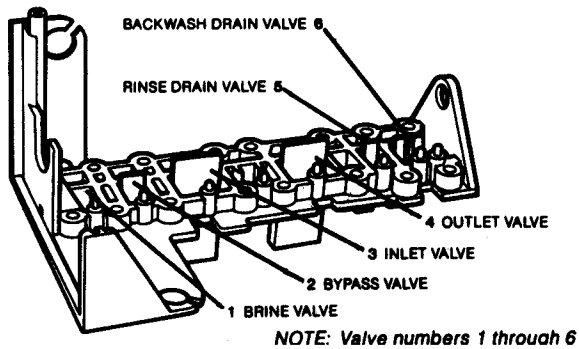
Clean injector screen and injector once a year:

1. Unplug electrical cord.
2. Shut-off water supply or put bypass valve(s) into bypass position.
3. Relieve tank pressure by opening valve No. 5 with a screwdriver.
4. Using a screwdriver, remove the injector screen and injector cap.
5. Clean screen with a fine brush. Flush with water until clean.
6. Using a needle-nose pliers, pull the injector straight out.
7. Flush water into the injector screen recess of the valve body to flush debris out through the injector recess.
8. Clean and flush the injector.
9. Lubricate the O-rings on the injector, injector cap and injector screen with silicone lubricant.

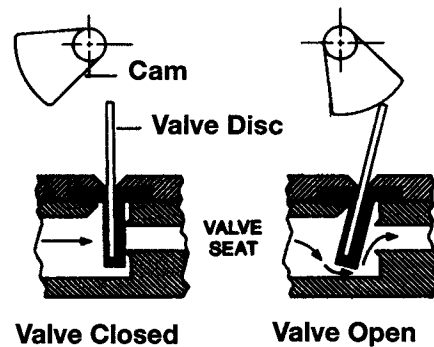
10. Reinstall the injector, injector cap and injector screen (refer to **Caution** note).
11. Reconnect electrical power, reset time of day.
12. Open water supply valve or return bypass valves to the "Not-in-Bypass" position.

IMPORTANT: Do not overtighten the plastic cap. Seat the cap lightly into position. Overtightening may cause breakage of the plastic cap that may not be immediately evident.

Flow Diagrams

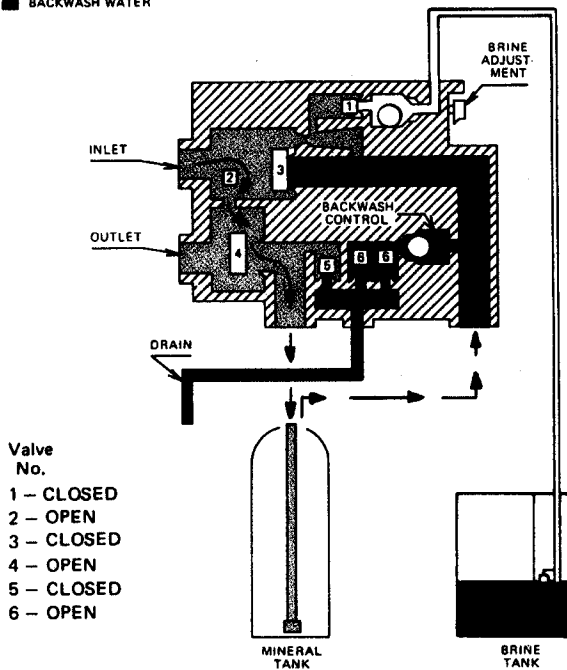


Valve Disc Operation



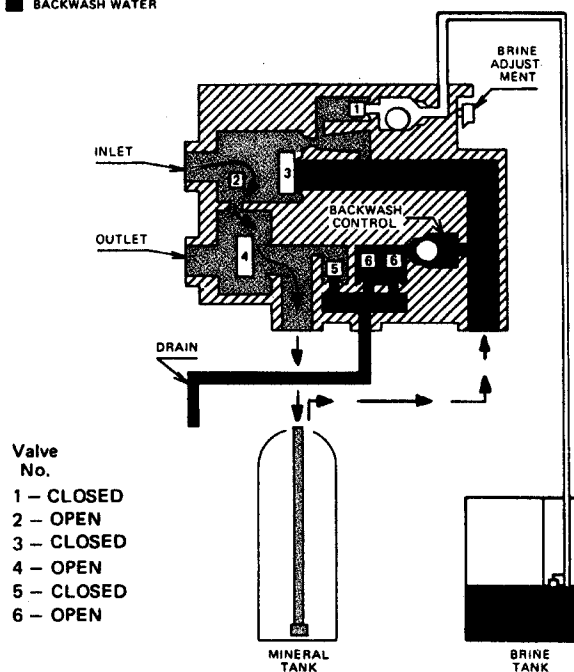
1. Service Position

HARD WATER
 BACKWASH WATER





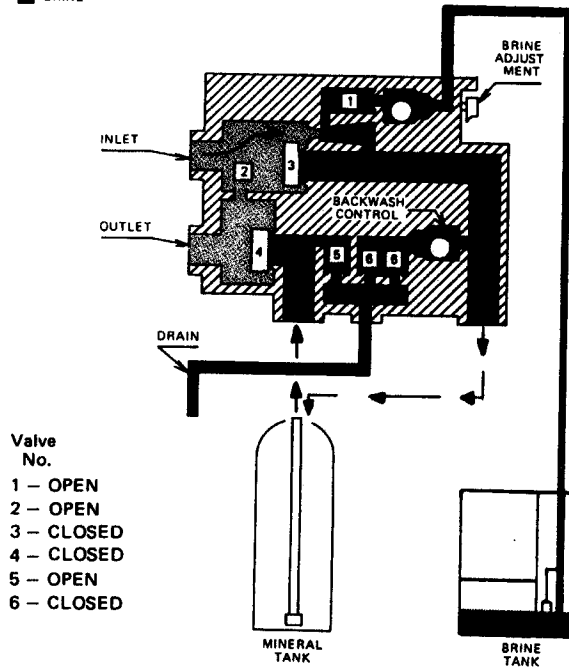
2. Backwash Position

HARD WATER
 BACKWASH WATER





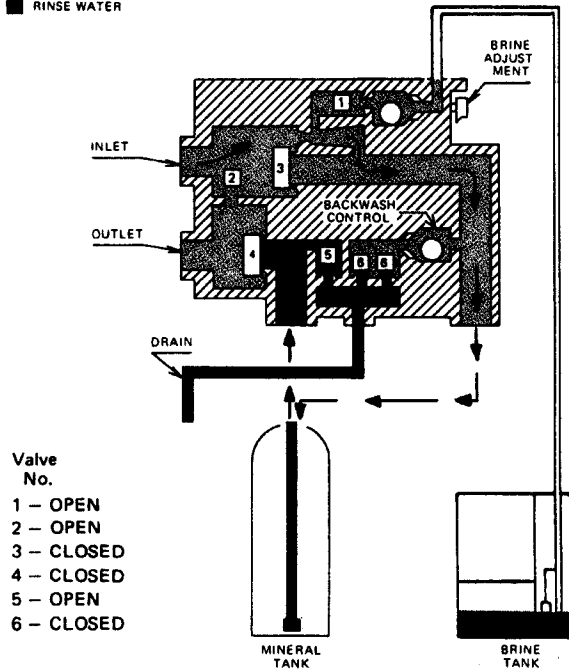
3. Brining Position

 HARD WATER
 BRINE





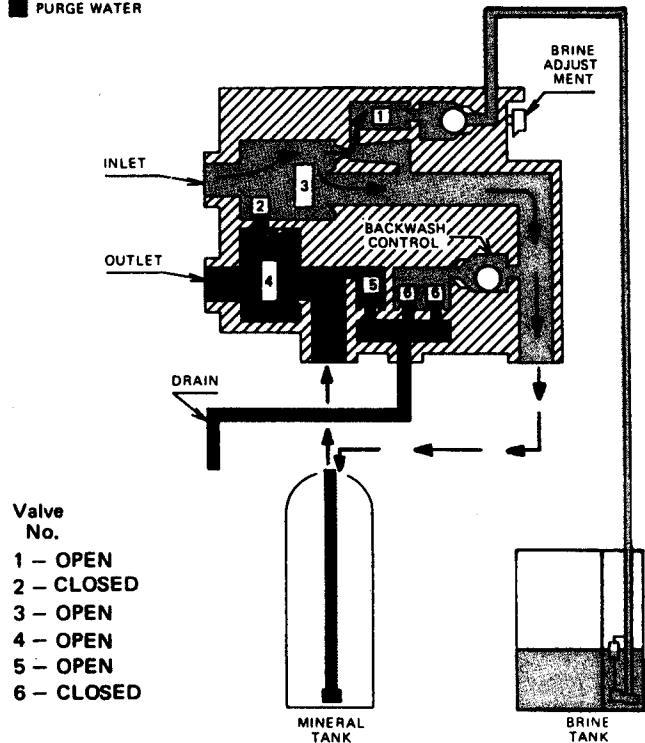
4. Slow Rinse Position

 HARD WATER
 RINSE WATER

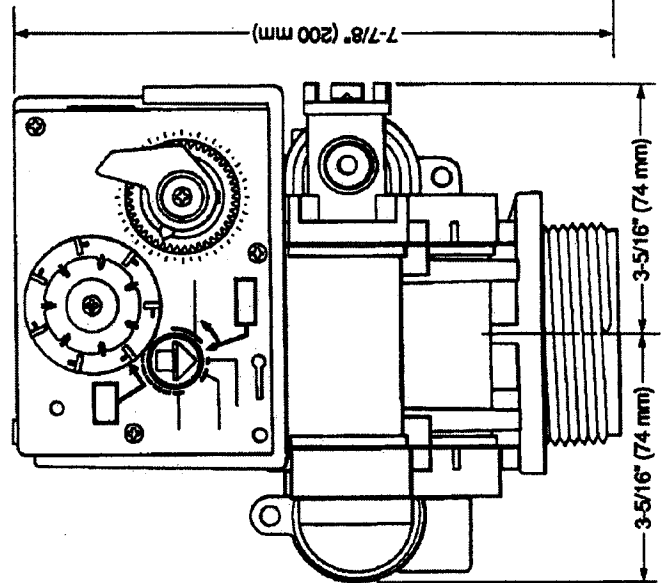
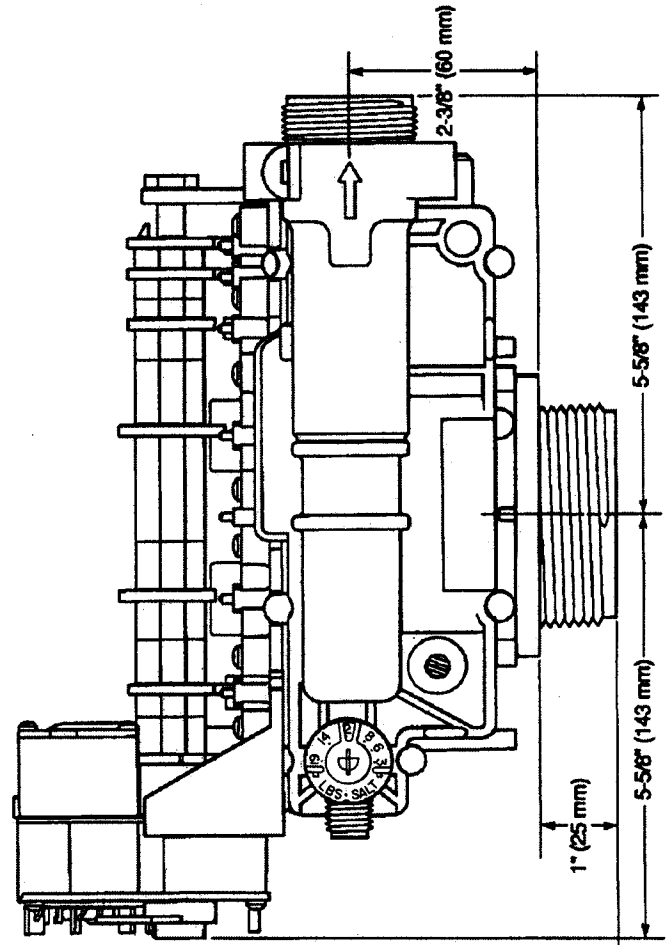
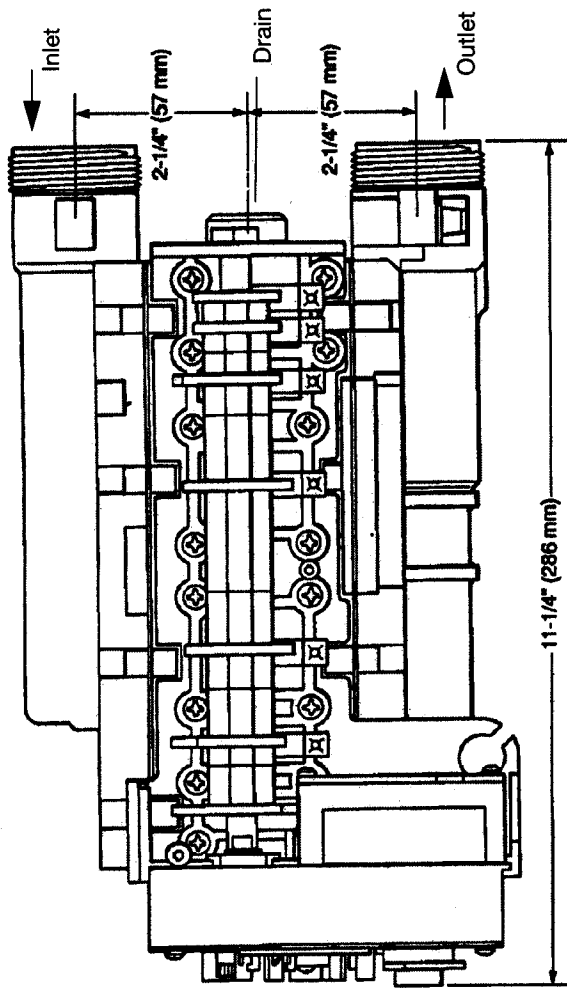


5. Brine Refill and Purge Position

 HARD WATER
 PURGE WATER



168 Control with 440 Timer



Specifications

Hydrostatic Test Pressure	300 psi (20.68 bar)
Working Pressure	20 to 127 psi (1.38 to 8.76 bar)
Standard Electrical Rating	115V 60Hz
Optional Electrical Rating	115V 50Hz, 230V 50Hz, 200V 60Hz, 24V 60Hz, 24V 50Hz, 100V 60Hz, 100V 50Hz, 12V 50Hz/transformer, 12V 60Hz/transformer
Electrical Cord (standard rating)	60 inch (1.5 m) 3-wire with plug
Pressure Tank Thread	2-1/2 inch - 8 Male
Riser Pipe Diameter Required	1.050 inch OD (26.7 mm)/optional 13/16 inch OD (20.6 mm)
Riser Pipe Length	1-1/4 inch (31.8 mm) higher than top of mineral tank
Standard Connection	1-inch (25.4-mm) copper tube adapters
Optional Connections	3/4-inch, 22-mm, and 28-mm copper tube adapters; 3/4-inch BSPT, 1-inch BSPT and 1-inch NPT brass pipe adapters
Brine Line Connection	3/8 inch tube fitting
Drain Line Connection	3/8 inch NPT, female
Optional Bypass Valve	3/4-inch (19.1-mm) or 1-inch (25.4-mm) copper tailpiece, 1/2-inch NPT male drain Control Module, Optional Bypass Valve
Reinforced NORYL Rubber Goods	Reinforced NORYL
Rubber Goods	Compounded for cold water service
Program Clock (Timer)	Available in 6- or 7-day English, German, French, Italian, Spanish, or Japanese
Brine Refill Control	1 to 10 lbs (0.45 to 4.5 kg) of salt or 3 to 19 lbs (1.3 to 8.6 kg) of salt
Injector Size "A" White	Nozzle .042 inch (1.1 mm) diameter, throat .089 inch (2.3 mm) diameter
Injector Size "B" Blue	Nozzle .052 inch (1.3 mm) diameter, throat .099 inch (2.5 mm) diameter
Injector Size "C" Red	Nozzle .059 inch (1.5 mm) diameter, throat .099 inch (2.5 mm) diameter
Backwash Controllers Available for	.6 inch through 14 inch (15.2 cm through 35.6 cm) diameter mineral tanks. All sizes to flow 4.5 gpm/sq ft (183 l/m ²) of bed area

Disinfection of Water Conditioners

The materials of construction of the modern water conditioner will not promote bacterial growth, nor will these materials contaminate a water supply. However, the normal conditions that exist during shipment, storage and installation make it advisable to disinfect a conditioner after installation, before the conditioner is used to treat potable water. In addition, during normal use, a conditioner may become fouled with organic matter, or in some cases, with bacteria from the water supply.

Thus every conditioner should be disinfected after installation, some will require periodic disinfection during their normal life, and in a few cases disinfection with every regeneration would be recommended.

Depending upon the conditions of use, the style of conditioner, the type of ion exchanger and the disinfectant available, a choice can be made among the following methods.

Sodium or Calcium Hypochlorite

Application

These materials are satisfactory for use with commercially available water conditioning resins.

5.25% Sodium Hypochlorite

These solutions are available under trade names such as Chlorox, Linco, Bo Peep, White Sail and Eagle Brand Bleach. If stronger solutions are used, such as those sold for commercial laundries, adjust the dosage accordingly.

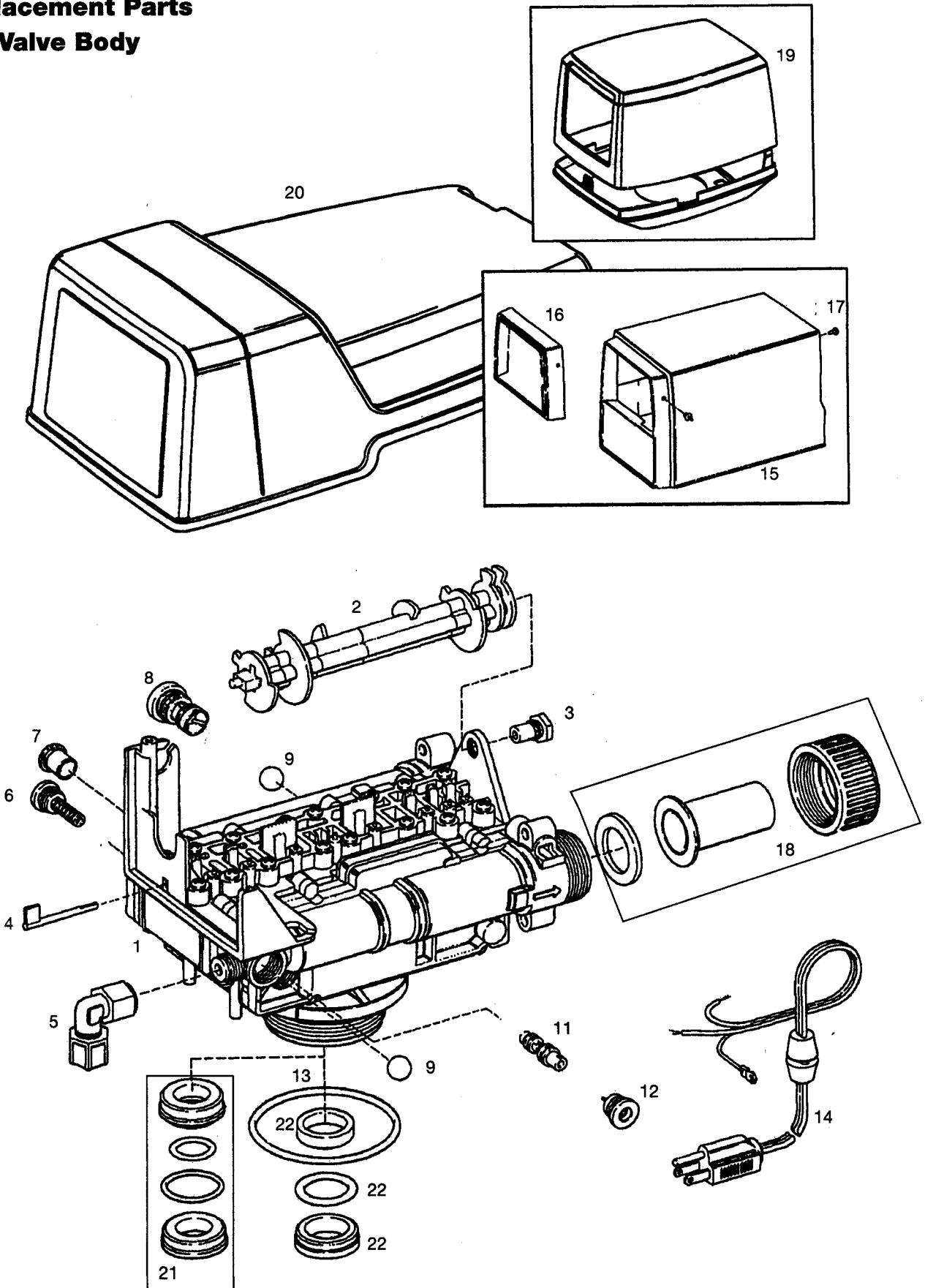
1. Dosage:
 - a. Polystyrene resin: 1.2 fluid ounces per cubic foot.
 - b. Non-resinous exchangers: 0.8 fluid ounces per cubic foot.
2. Brine tank conditioners:
 - a. Backwash the conditioner and add the required amount of hypochlorite solution to the brine well of the brine tank. (The brine tank should have water in it to permit the solution to be carried into the conditioner).
 - b. Proceed with the normal regeneration.

Calcium Hypochlorite

Calcium hypochlorite, 70% available chlorine, is available in several forms including tablets and granules. These solid materials may be used directly, without dissolving before use.

1. Dosage:
 - a. 2 grains (approximately 0.1 ounce) per cubic foot.
2. Brine tank conditioners:
 - a. Backwash the conditioner and add the required amount of hypochlorite to the brine well of the brine tank. The brine tank should have water in it to permit the chlorine solution to be carried into the conditioner.
 - b. Proceed with the normal regeneration.

Replacement Parts 168 Valve Body



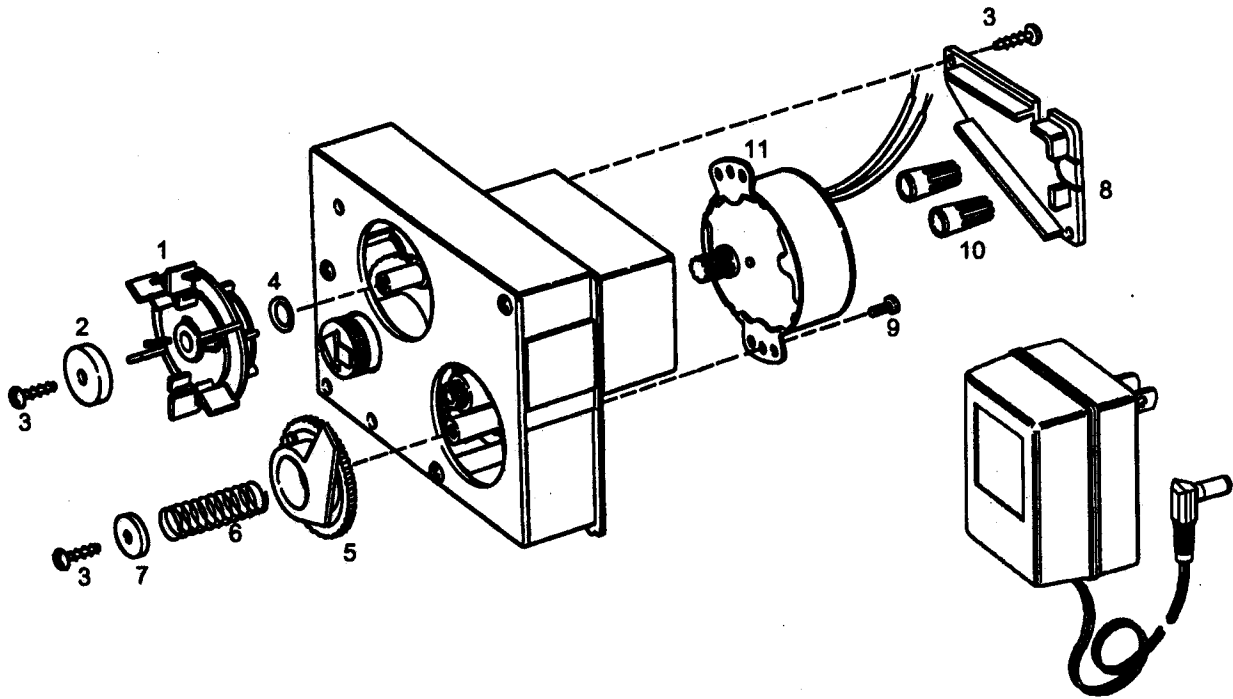
Code	Part No.	Description	Qty.	Code	Part No.	Description	Qty.
1		Valve Body Assembly:	1	13	1010429	O-Ring	1
	1033740	w/1-inch Riser Adapter		14	1007490	Power Cord, Flat (SPT-2)	1
	1033741	w/ 13/16-inch Riser Adapter		15	1032605	Valve Cover, Old Style	
2		Camshaft Assembly:	1	16	1033430	Faceplate Cover Kit	1
	1033036	Standard Camshaft		17	1004104	Cover Clip	1
	1033037	Extra Salt Camshaft		18	1001606	3/4-inch Copper Tube Adapter Kit	1
	1030038	Long Rinse Camshaft			1001670	1-inch Copper Tube Adapter Kit	1
3	1030501	Camshaft Bearing	1		1001608	22-mm Copper Tube Adapter Kit	1
4	1031391	Timer Locking Pin	1		1001609	28-mm Copper Tube Adapter Kit	1
5	1002735	Elbow Connector	1		1001613	3/4-inch CPVC Tube Adapter Kit	1
6	1032992	Screen Cap w/ O-Ring	1		1001614	1-inch CPVC Tube Adapter Kit	1
7	1009056	Plug	1		1001615	25-mm CPVC Tube Adapter Kit	1
8		Backwash Control w/ O-Rings:	1		1001769	3/4-inch NPT Plastic Pipe Adapter Kit	1
	1000208	No. 6 (.09 GPM)			1001603	1-inch NPT Plastic Pipe Adapter Kit	1
	1000209	No. 7 (1.2 GPM)			1001604	3/4-inch BSPT Plastic Pipe Adapter Kit	1
	1000210	No. 8 (1.6 GPM)			1001605	1-inch BSPT Plastic Pipe Adapter Kit	1
	1000211	No. 9 (2.0 GPM)			1001611	3/4-inch BSPT Brass Pipe Adapter Kit	1
	1000212	No. 10 (2.5 GPM)			1001610	1-inch NPT Brass Pipe Adapter Kit	1
	1000213	No. 12 (3.5 GPM)			1001612	1-inch BSPT Brass Pipe Adapter Kit	1
	1000214	No. 13 (4.15 GPM)**		19		High Style Covers:	Opt.
	1000215	No. 14 (4.81 GPM)**			1041089	Beige/Tan	
9	1030502	Ball	1		1041090	Black/White	
10		Brine Refill Control w/ O-Rings:	1		1041092	Beige/Black	
	1034261	1 to 10 lbs Salt		20	1000062	Standard Cover, i-lid	
	1034263	3 to 19 lbs Salt		*		Valve Disc Kits	
11		Injector w/ O-Rings	1		1033013	Standard	
	1032970	"A" Injector, White			1040526	Severe Service	
	1032971	"B" Injector, Blue		21	1040527	13/16-inch Riser Kit	
	1032972	"C" Injector, Red		22	1040528	1-inch Riser Kit	
12		Injector Cap w/ O-Ring	1				
	1032973	"A" Cap					
	1032974	"B" Cap					
	1021975	"C" Cap					

* Not Shown

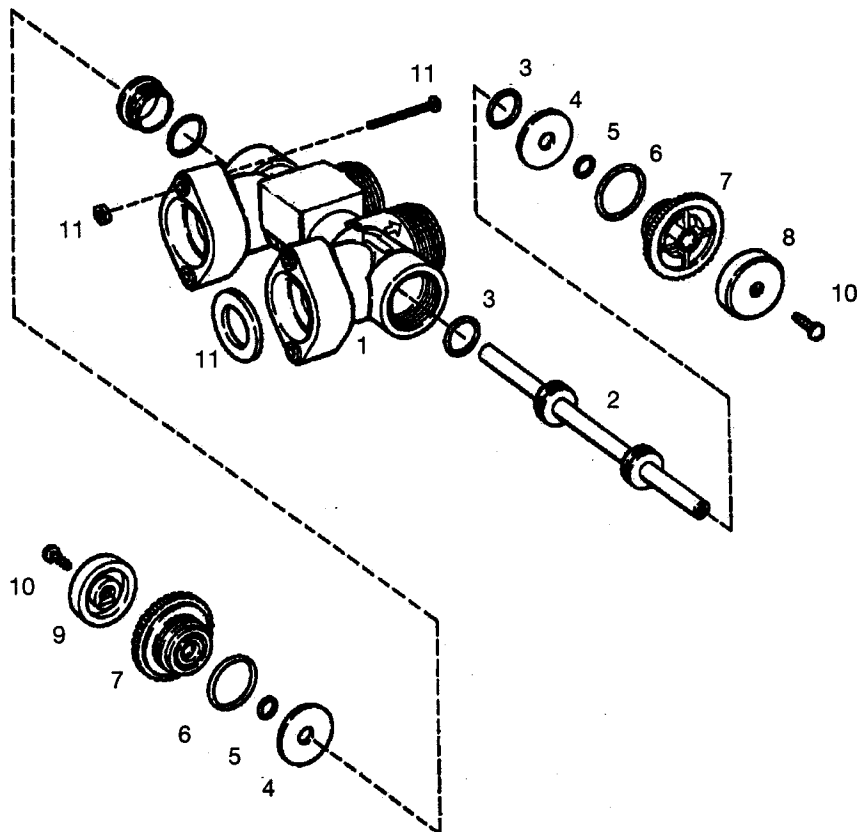
**Flow control does not use 4F ball.

*Nominal flow rate at 60psi (414 kPa).

440 Timer



Bypass Valve



Code	Part No.	Description	Qty.	Code	Part No.	Description	Qty.
1		Skipper Wheel Assembly:	1	1	1033516	Bypass Valve Assembly	1
	1031740	6-Day		2	1033511	Valve Stem w/ O-Rings	1
	1031742	7-Day		3	1010419	O-Ring	2
				4	1030538	Washer	2
2	1030659	Washer	1	5	1010402	O-Ring	2
3	1006091	Screw, No. 6 x 1/2 inch	7	6	1010412	O-Ring	2
4	1006601	Bowed Washer	1	7	1030533	End Cap	2
5	1031756	Tripper Arm Assembly	1	8	1030534	Knob, White	1
6	1030830	Spring	1	9	1030535	Knob, Black	1
7	1030821	Retainer	1	10	1006093	Screw, No. 8 x 9/16 inch	2
8	1031751	Motor Cover	1	11	1033512	165 BP Install Kit	1
	1001317	Motor Cover, Low Voltage (12V)					
9	1005615	Screw, No. 4-40 x 1/4 inch	2				
10	1007483	Wire Nut	2				
11		Motor:	1				
	1030846	115V, 60Hz					
	1030848	230V, 50 Hz					
	1030850	24V, 60 Hz					
	1030847	115V, 50 Hz					
	1031557	220V, 60 Hz					
	1030849	24V, 50 Hz					
	1031348	100V, 60 Hz					
	1031347	100V, 50 Hz					
	1008205	12V, 50 Hz					
	1008206	12V, 60 Hz					
*	1001316	Conn. Assy., Low Volt Motor					
12	1000811	Wall Transformer	1				
		North American Plug 12V, 60 Hz					

*Not Shown

Troubleshooting

The technology upon which the Series 168 control is based, is well established and proven in service over many years. However, should a problem or question arise regarding the operation of the system, the control can be very easily serviced. For parts mentioned, refer to exploded views in the **Replacement Parts** section of this manual.

IMPORTANT: Service procedures that require the water pressure to be removed from the system are marked with a ! after the possible cause. To remove

water pressure from the system, put the bypass valve or three-valve bypass into the bypass position and open the Backwash Drain Valve (the sixth valve back from the control) with a screwdriver. Restore system water pressure when the service work is completed.

Problem	Cause	Solution
1. Control will not regenerate automatically.	<ul style="list-style-type: none"> a. Electric cord unplugged. b. Defective timer motor. c. Skipper pins not down on time skipper wheel (item 14F). d. Binding in gear train of timer. 	<ul style="list-style-type: none"> a. Connect power. b. Replace motor. c. Depress pins for days regeneration required. d. Replace timer.
2. Control regenerates at wrong time of day.	<ul style="list-style-type: none"> a. Timer set incorrectly. 	<ul style="list-style-type: none"> a. Make correct setting according to instructions.
3. Control will not draw brine.	<ul style="list-style-type: none"> a. Low water pressure. b. Restricted drain line. c. Injector plugged. ! d. Injector defective. ! e. Valve (2 and /or 3) not closed. 	<ul style="list-style-type: none"> a. Set pump to maintain 30 psi at conditioner. b. Remove restriction. c. Clean injector and screen. d. Replace injector. e. Remove foreign matter from disc and check disc for closing by pushing in on stem. Replace if needed.
4. Brine tank overflow.	<ul style="list-style-type: none"> a. Brine valve (1) being held open. b. Uncontrolled brine refill flow rate. ! c. Valve (3 or 4) not closed during brine draw causing refill. d. Air leak in brine line. 	<ul style="list-style-type: none"> a. Manually operate valve stem to flush away obstruction. b. Remove variable salt controller to clean. c. Flush out foreign matter by holding disc open and manually operating valve stem. d. Check all connections in brine line for leaks. Refer to instructions.
5. System using more or less salt than salt control is set for.	<ul style="list-style-type: none"> a. Inaccurate setting. b. Foreign matter in controller causing incorrect flow rates. ! c. Defective controller. 	<ul style="list-style-type: none"> a. Correct setting. b. Remove variable salt controller and flush out foreign matter. Manually position control to brine draw to clean controller (after so doing, position control to "purge" to remove brine from tank). c. Replace controller.
6. Intermittent or irregular brine draw.	<ul style="list-style-type: none"> a. Low water pressure. b. Defective injector. ! 	<ul style="list-style-type: none"> a. Set pump to maintain 30 psi at conditioner. b. Replace both injector and injector cap.
7. No conditioned water after regeneration.	<ul style="list-style-type: none"> a. Unit did not regenerate. b. No salt in brine tank. c. Plugged injector. ! 	<ul style="list-style-type: none"> a. Check for power. b. Add salt. c. Clean injector. Flush with water.
8. Control backwashes at excessively low or high rate.	<ul style="list-style-type: none"> a. Incorrect backwash controller used. b. Foreign matter effecting controller operation. ! 	<ul style="list-style-type: none"> a. Replace with correct size controller. b. Remove controller and ball. Flush with water.
9. Flowing or dripping water at drain or brine line after regeneration.	<ul style="list-style-type: none"> a. Drain valve (5 or 6) or brine valve (1) held open by foreign matter or particle. b. Valve stem return spring on top plate weak. 	<ul style="list-style-type: none"> a. Manually operate valve stem to flush any obstruction. b. Replace spring.
10. Hard water leakage during service.	<ul style="list-style-type: none"> a. Improper regeneration. b. Leaking of bypass valve. ! c. O-ring around riser tube damaged. ! 	<ul style="list-style-type: none"> a. Repeat regeneration making certain that the correct salt dosage is set. b. Replace O-ring. c. Replace O-ring.