MODEL EZ

Service Manual

MODEL EZ

Job Specification Sheet

Job Number _____

Model Number _____

Water Test _____

Capacity of Unit _____ Max. _____ Per Regeneration

Mineral Tank Size: Diameter _____ Height _____

Brine Tank Size and Salt Setting Per Regeneration: _____

Type of Timer: ___ Std. ___ "L" ___ 12-day ___ Meter, Std. ___ Meter, Ext.

Day/Time of Regeneration _____

Drain Line Flow Control _____ gpm

Brine Refill Rate _____ gpm

Injector Size _____

Meter Gallon Setting _____ gal

Tank Size (diameter)	Injector	Slow Rinse Rate (gpm) @ 40 psi	Brine Draw Rate (gpm) @ 40 psi	[1]BLFC	[2]DLFC
6"	#0 red	.31 gpm	.28 gpm	.5 gpm	1.2 gpm
7"	#0 red	.31 gpm	.28 gpm	.5 gpm	1.2 gpm
8"	#1 white	.45 gpm	.38 gpm	.5 gpm	1.5 gpm
9"	#1 white	.45 gpm	.38 gpm	.5 gpm	2.0 gpm
10"	#1 white	.45 gpm	.38 gpm	.5 gpm	2.4 gpm
12"	#2 blue	.84 gpm	.56 gpm	1.0 gpm	3.5 gpm
13"	#2 blue	.84 gpm	.56 gpm	1.0 gpm	4.0 gpm
14"	#4 green	1.0 gpm	.63 gpm	1.0 gpm	5.0 gpm
16"	#4 green	1.0 gpm	.63 gpm	1.0 gpm	7.0 gpm

NOTE: Due to varying water conditions, tank sizes and water pressures, use the above settings as guidelines only.

1. BLFC (Brine Line Flow Control), refill rate for filling brine tank.
2. DLFC (Drain Line Flow Control), backwash and rapid rinse flow rates.

General Residential Installation Check List

Water Pressure

A minimum of 25 psi (1.7 bar) of water pressure is required for regeneration valve to operate effectively.

Electrical Facilities

An uninterrupted alternating current (A/C) supply is required. Please make sure voltage supply is compatible with unit before installation.

Existing Plumbing

Condition of existing plumbing should be free from lime and iron buildup. Replace piping that has heavy lime and/or iron build-up. If piping is clogged with iron, install a separate iron filter unit ahead of the water softener.

Location of Softener and Drain

Locate the softener close to a clean working drain and connect according to local plumbing codes.

Bypass Valves

Always provide for the installation of a bypass valve if unit is not equipped with one.

CAUTION
Do not exceed 120 psi water pressure.
Do not exceed 40°C water temperature.
Do not subject unit to freezing conditions.

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Valve Installation and Start-up Procedures

1. Place the softener tank where you want to install the unit.

   NOTE: Be sure the tank is level and on a firm base.

2. During cold weather it is recommended that the installer warm the valve to room temperature before operating.
3. Perform all plumbing according to local plumbing codes.

   # Use a 1/2" (13 mm) minimum pipe size for the drain.

   # Use a 3/4" (19 mm) drain line for backwash flow rates that exceed 7 gpm (25.6 Lpm) or length that exceeds 20′ (6 m).

4. Cut the 1" (25 mm) distributor tube (1.050 O.D.) flush with top of each tank.

   NOTE: Only use silicone lubricant.

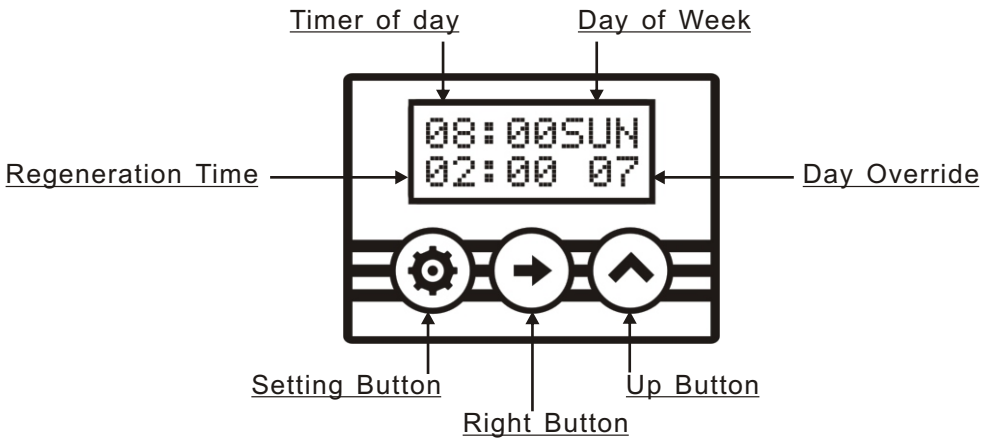
5. Lubricate the distributor O-ring seal and tank O-ring seal. Place the main control valve on tank.
6. Solder joints near the drain must be done before connecting the Drain Line Flow Control fitting (DLFC). Leave at least 6" (152 mm) between the DLFC and solder joints when soldering pipes that are connected on the DLFC. Failure to do this could cause interior damage to DLFC.
7. Use only *Teflon* tape on the drain fitting.
8. Be sure the floor under the salt storage tank is clean and level.
9. Place approximately 1" (25 mm) of water above the grid plate. If a grid is not utilized, fill to the top of the air check in the salt tank. Do not add salt to the brine tank at this time.
10. On units with a bypass, place in Bypass position.

    # Turn on the main water supply.

    # Open a cold soft water tap nearby and let water run a few minutes or until the system is free of foreign material (usually solder) resulting from the installation. Close the water tap when water runs clean.

11. Place the bypass in the In Service position and let water flow into the mineral tank. When water flow stops, slowly open a cold water tap nearby and let water run until air is purged from the unit. Then close tap.
12. Plug the valve into an approved power source. When the valve has power it drives to the In Service position.

Display Instroduction & Feature



Setting Button

1. Press ⚙ for 5 seconds to enter Programming Mode.

2. When the valve is in Programming Mode,
press ⚙ to confirm the setting and enter into next menu.

Right Button

1. Press → for 5 seconds to start immediate regeneration manually.

2. Press → during a Regeneration Cycle to immediately advance the valve to the next cycle step position and resume normal step timing.

3. When the valve is in Programming Mode,
press → to move the cursor.

Up Button

1. Press ^ for 5 seconds to display exisiting configured parameter.

2. When the valve is in Programming Mode,
press ^ to adjust setting.

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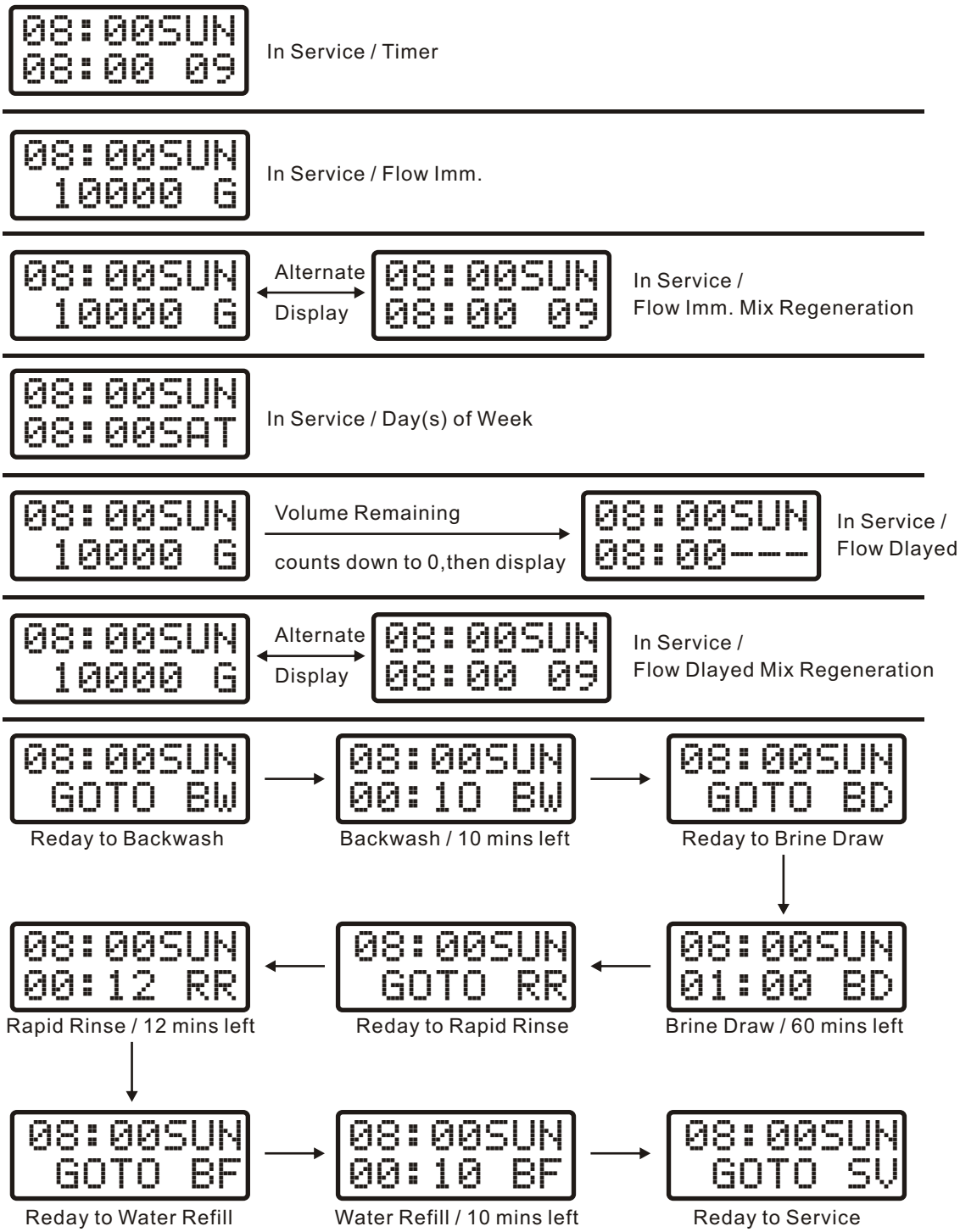
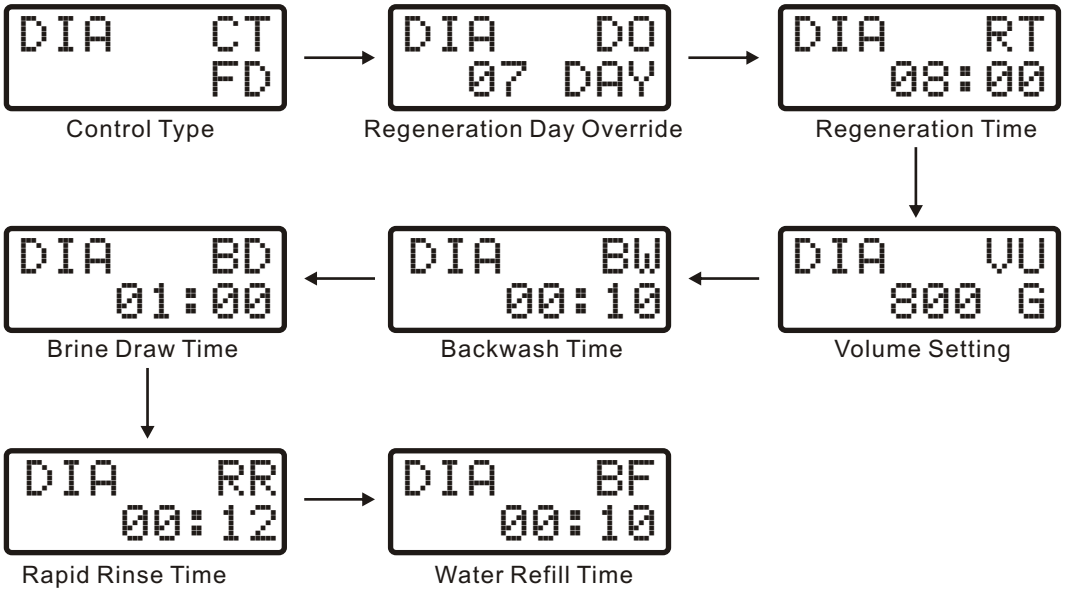
Display Status



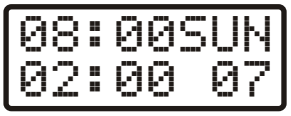
Display Status (Cont'd.)

Press ^ for 5 seconds to enter into the diagnositc Mode, display exisiting configured parameter.

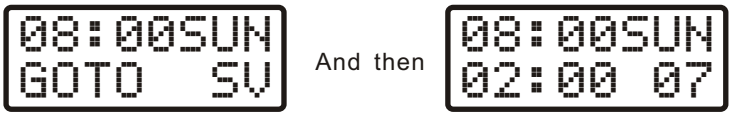


Press and Hold ⚙ , power on. Reset all parameter to the factory settings.
Factory setting:
Control Type – Timer / Time of Day – 08:00AM / Day of the Week – Sunday /
Days Override – 7 days / Time of Regeneration – 02:00AM /
Backwash Time – 10 mins / Brine Draw Time – 60 mins /
Rapid Rinse Time – 10 mins / Water Rifill Time – 12 mins

1. If the valve is in service, reset the valve, display



2. If the valve is in regeneration, reset the valve, display



In the event of power failure, the control shifts into a power-saving mode.
The control stops monitoring water usage, and the display and motor shut down, but it continues to keep track of the time and day for a minimum of 72 hours.

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Programming Mode Setting

1.Time of day & Day of *Week Setting*

Press setting button 5 seconds to enter into Programming Mode. Time of day& day of Week be set first. The display shows time of day is 08:00 am. and Sundy.

2.Control Type Setting

Day Override

Flow Imm.

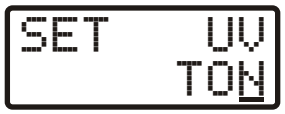
Flow Delayed

Day(s) of Week Type

3.Unit of Volume Setting

US Gallon

Litre



Cubic Meter

4.Reference Setting On or Off

5.Reference Setting

Little Capacity

Middle Capacity

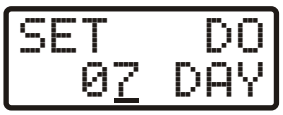
Big Capacity

6.Volume Setting

For US Gallon,1-99999
For Litre,1-999999
For Cubic Meter,0.01-999.99

7.Regeneration Time Setting

8.Day Override Setting



Day override setting,1-99
Time or Mix regeneration Or off.

9.Day of Week to regenerate Setting

The display shows the day of week to regerate is
Tuesday,Friday and Satarday.

10.Time of Regeneration Setting

Backwash
10 mins

Rapid Rinse
12 mins

Brine Draw
1 hour

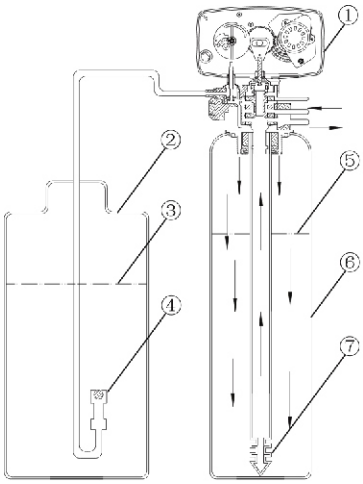
Water Refill
10 mins

Regeneration	Capacity	Day of Override	Volume(G)	Volume(L)	Volume(T)	Day(s) of Week Regeneration	Regeneration Time
Timer	L	7 days	/	/	/	/	2:00 AM
	M	3 days	/	/	/	/	2:00 AM
	B	1 day	/	/	/	/	2:00 AM
Flow Delayed	L	/	1000 gal	4000 L	4 M^3	/	2:00 AM
	M	/	5000 gal	20000 L	20 M^3	/	2:00 AM
	B	/	26000 gal	100000 L	100 M^3	/	2:00 AM
Flow Imm.	L	/	2100 gal	8000 L	8 M^3	/	/
	M	/	10600 gal	40000 L	40 M^3	/	/
	B	/	52000 gal	200000 L	200 M^3	/	/
Day(s) of Week	L	/	/	/	/	Sunday	2:00 AM
	M	/	/	/	/	Tuesday/Thursday/Saturday	2:00 AM
	B	/	/	/	/	Everyday	2:00 AM

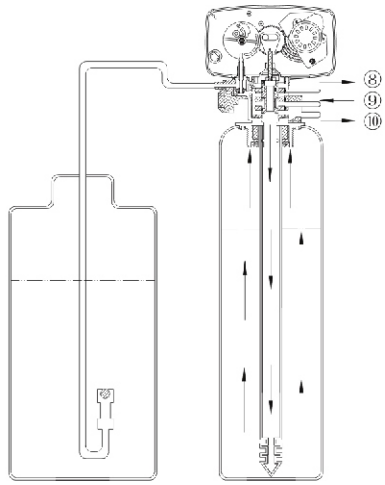
Regeneration Time (Timer / Day(s) of Week)	Capacity	Backwash Time	Brine Draw Time	Rapid Rinse Time	Water Refill Time
	L	8 mins	60 mins	8 mins	8 mins
	M	10 mins	60 mins	10 mins	12 mins
	B	12 mins	60 mins	12 mins	15 mins

Regeneration Time (Flow Delayed /Flow Imm.)	Capacity	Backwash Time	Brine Draw Time	Rapid Rinse Time	Water Refill Time
	L	8 mins	60 mins	8 mins	8 mins
	M	10 mins	60 mins	10 mins	12 mins
	B	15 mins	60 mins	15 mins	20 mins

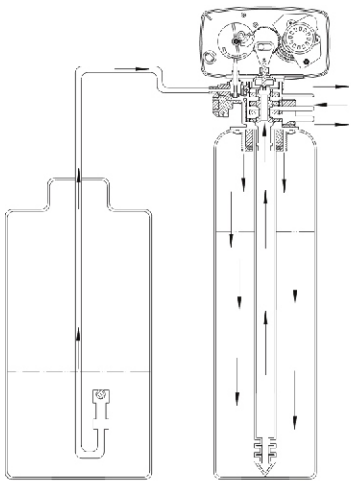
SERVICE POSITION



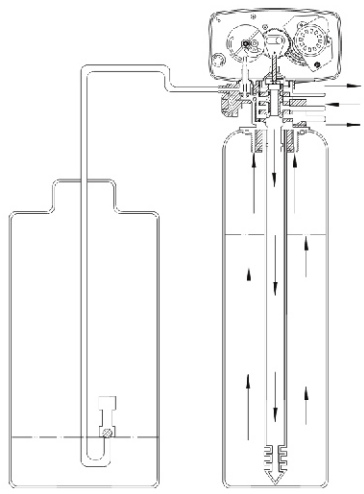
BACKWASH POSITION



BRINE & SLOW RINSE POSITION



RAPID RINSE POSITION



WATER REFILL POSITION

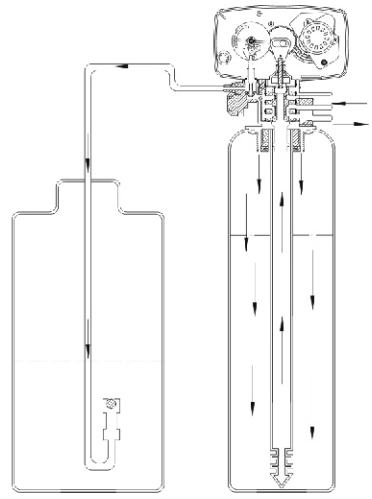


Figure 3 Model *MZ* Water Conditioner Flow Diagrams

Note:
① Valve Assembly ② Brine Tank ③ Brine Level ④ Air Check ⑤ Resin
⑥ ResinTank ⑦ Distributor ⑧ Drain ⑨ Inlet ⑩ Outlet

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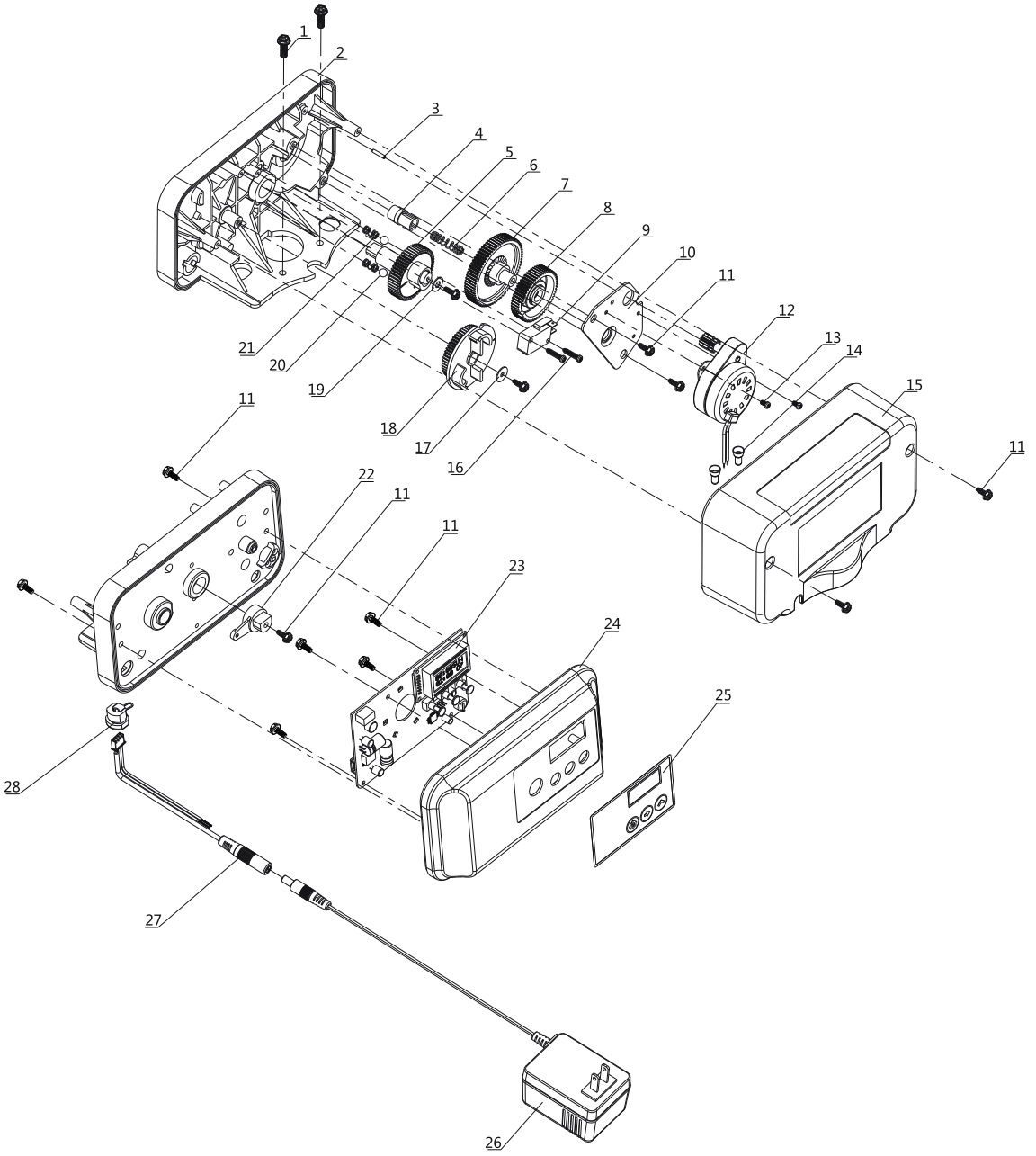
Valve Drive Assembly



Valve Drive Assembly Parts List

Item No.	Quantity	Part No.	Description
1	2	24257013	Screw
2	1	15257107	Bracket
3	1	24257021	Pin
4	1	15257114	Pinion
5	1	15257106	Main Driver Gear & Shaft
6	1	24257006	Spring
7	1	15257015	Idler Gear
8	1	15257014	Driver Gear
9	1	15357001	Switch
10	1	16257002	Motor Mounting Plate
11	13	24257002	Screw
12	1	18258010	Motor
13	2	24257004	Screw
14	2	17357016	Wire Connector
15	1	15257108	Back Cover
16	2	24257033	Screw
17	1	24257008	Gasket
18	1	15257110	Brine Cam
19	1	24257011	Gasket
20	2	24257003	Ball
21	2	24257007	Spring
22	1	15257071	Cycle Actuator Arm
23	1	15357004	Circuit Board Assembly
24	1	15257109	Front Cover
25	1	19257021	Panel Label
26	1	17357005	Transformer
27	1	17358002	Connector Assembly
28	1	15357003	Strain Relief

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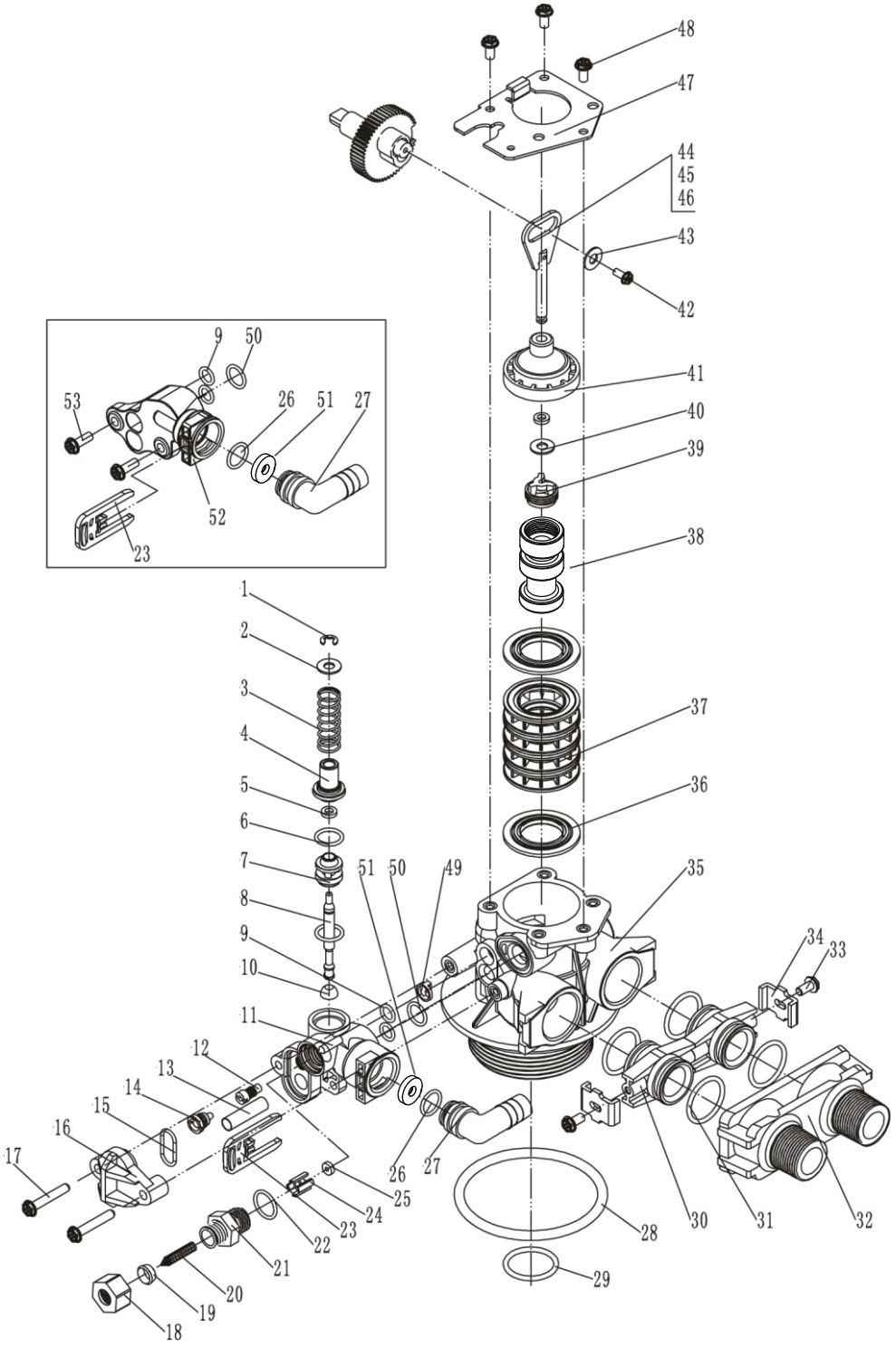
Valve Body Assembly



Valve Body Assembly Parts List

Item No.	Quantity	Part No.	Description
1	1	24257016	Retainer Ring
2	1	24257015	Washer
3	1	24257017	Spring
4	1	15257028	Brine Valve Cap
5	2	21257002	"X" Ring
6	2	21257007	"O" Ring
7	1	15257029	Brine Valve Spacer
8	1	11257007	Brine Valve Stem
9	2	21257011	"O" Ring
10	1	21257009	Brine Valve Seat
11	1	15257025	Softener Injector Body
12	1	15457004	Injector Throat
13	1	24257022	Injector Filter Screen
14	1	15457003	Injector Nozzle
15	1	21257010	"O" Ring
16	1	15257031	Injector Cover
17	2	24257018	Screw
18	1	11257003	Fitting Nut
19	1	15257033	Ferrule
20	1	24257023	Brine tube Screen
21	1	11257002	B.L.F.C. Fitting
22	1	21257008	"O" Ring
23	1	15257027	Retainer Latch
24	1	15257035	B.L.F.C. Button Retainer
25	1	21247022	B.L.F.C. Button
26	1	21257006	"O" Ring
27	1	15257026	Drain Elbow Barb
28	1	21257004	"O" Ring
29	1	21257003	"O" Ring
30	2	15257024	Adaptor Coupling
31	4	21257005	"O" Ring
32	1	15257038	Yoke
33	2	24257014	Screw
34	1	16257005	Clip
35	1	15258018	Valve Body
36	5	21257001	Seal
37	4	15257022	Spacer
38	1	11257010	Piston
39	1	15257019	Piston Retainer
40	1	15257021	"O" Ring Retainer
41	1	15257020	End Plug
42	1	24257002	Screw
43	1	24257011	Washer
44	1	16257007	Drive Link
45	1	24257020	Pin

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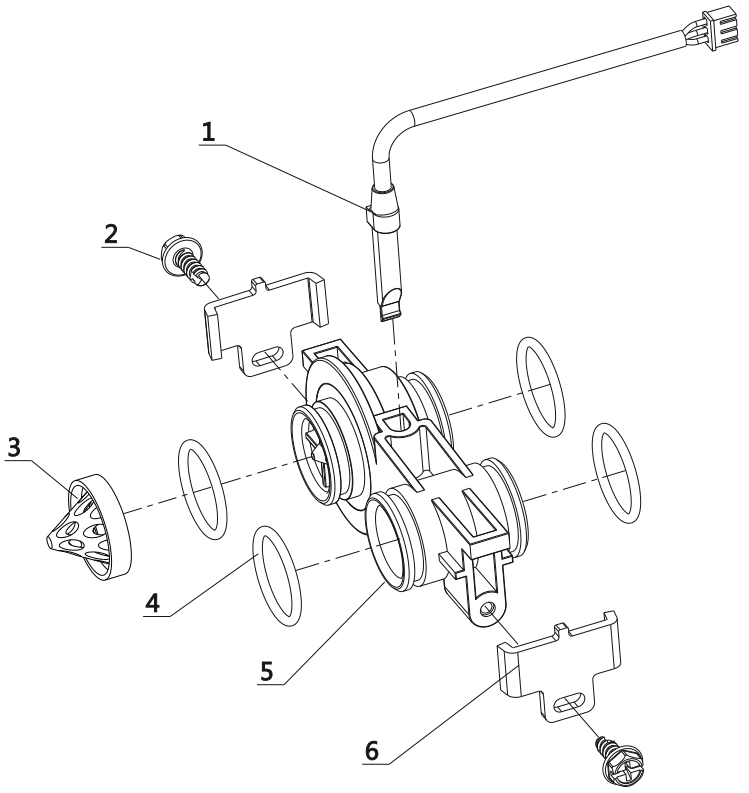
Valve Body Assembly Parts List (Cont'd.)

Item No.	Quantity	Part No.	Description
46	1	11257002	Piston Rod
47	1	16257003	End Plug Retainer
48	3	24257013	Screw
49	1	15257030	Air Disperser
50	1	21257012	"O" Ring
51	1	21257002	D.L.F.C. Button
52	1	15257039	Filter Injector Body
53	2	24257013	Screw

Flow Meter Assembly

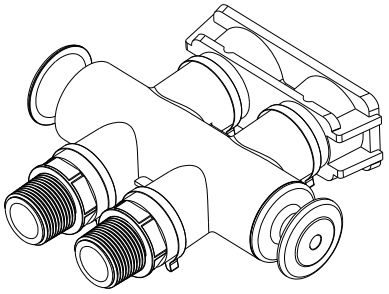


Flow Meter Assembly Parts List

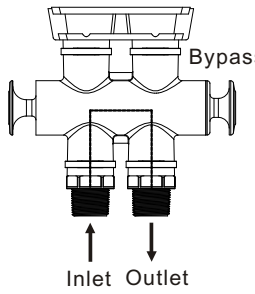
Item No.	Quantity	Part No.	Description
1	1	17358001	Harness Assembly
2	2	24257014	Screw
3	1	15257054	Flow Straightener
4	4	21257005	"O" Ring
5	1	15258007	Meter Body Assembly
6	2	16257006	Clip

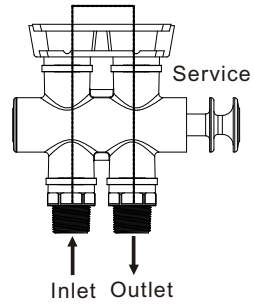
MODEL EZ

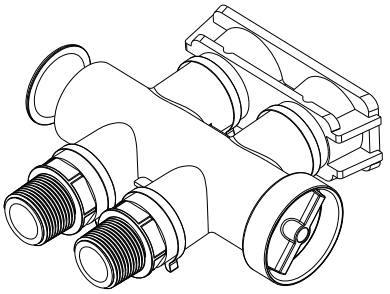
Bypass / Bypass & mixing valve



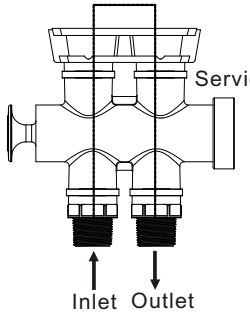
Bypass valve

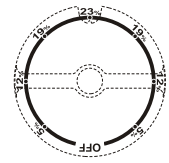






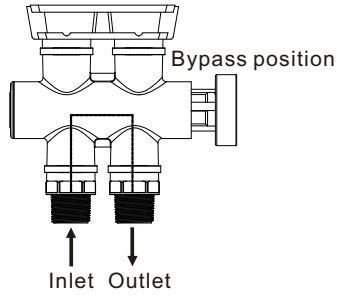
Bypass & mixing valve



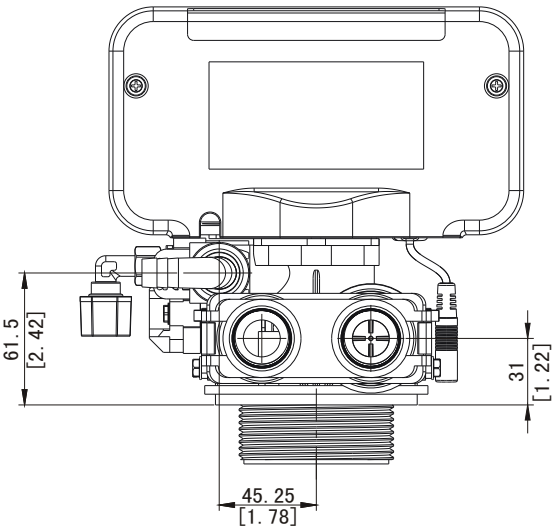


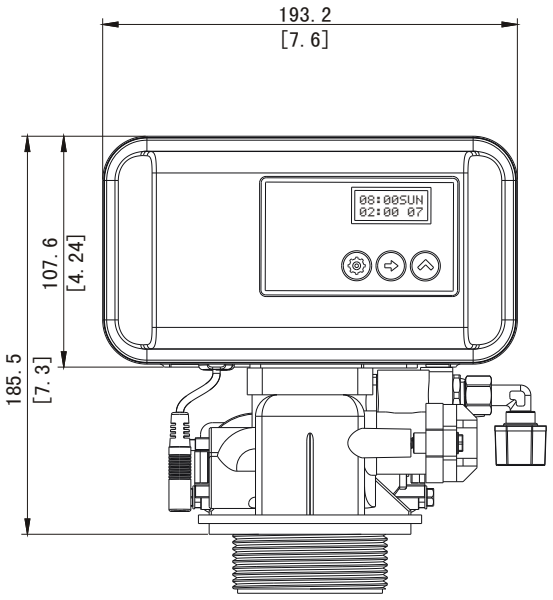
Adjustable percentage of mixing

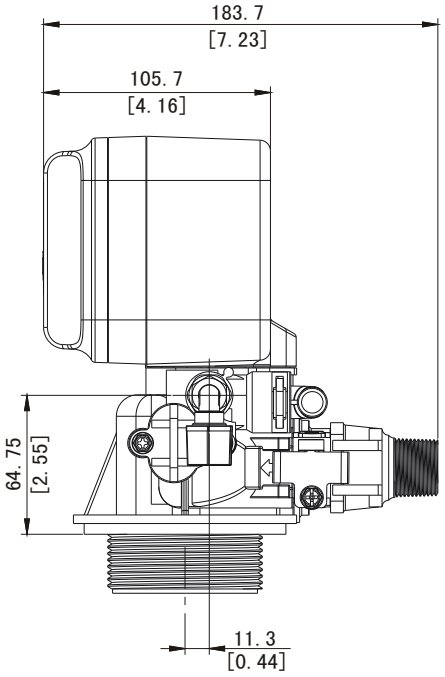
$$\frac{\text{Mixing water}}{\text{Outlet water}} = 0 \sim 23\%$$



Dimensional Drawing







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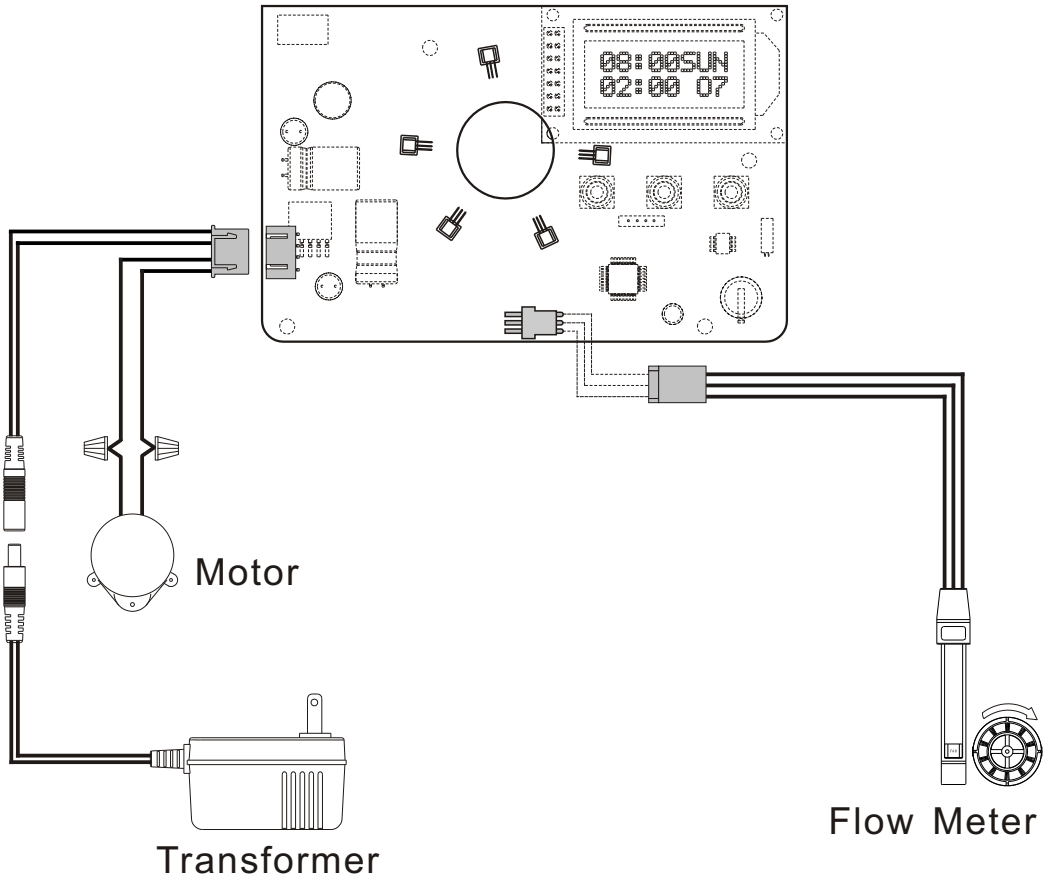
Wiring Diagram



PROBLEM	CAUSE	CORRECTION
1. Softener fails to regenerate.	A. Electrical service to unit has been interrupted.	A. Assure permanent electrical service (check fuse, plug, pull chain or switch).
	B. Timer is not operating properly.	B. Replace timer.
	C. Defective valve drive motor.	C. Replace drive motor.
	D. Timer programming bad (improper programming).	D. Check programming and reset as needed.
2. Softener delivers hard water.	A. Bypass valve is open.	A. Close bypass valve.
	B. No salt in brine tank.	B. Add salt to brine tank and maintain salt level above water level.
	C. Injectors or screen plugged.	C. Replace injectors and screen.
	D. Insufficient water flowing into brine tank.	D. Check Brine tank fill time and clean brine line flow control if plugged.
	E. Hot water tank hardness	E. Repeated flushings of the hot water tank is required.
	F. Leak at distributor tube	F. Make sure distributor tube is not cracked. Check o-ring and tube pilot.
	G. Internal valve leak.	G. Replace seals and spacers and/or piston.
	H. Flow meter jammed.	H. Remove obstruction from flow meter.
	I. Flow meter cable disconnected or not plugged into meter.	I. Check meter cable connection to timer and meter.
	J. Improper programming.	J. Reprogram the control to the proper regeneration type, inlet water hardness, capacity or flow meter size.
3. Unit uses too much salt.	A. Improper salt setting.	A. Check salt usage and salt setting.
	B. Excessive water in brine tank.	B. See problem 7,
	C. Improper programming.	C. Check programming and reset as needed.
4. Loss of water pressure.	A. Iron buildup in line to water conditioner.	A. Clean line to water conditioner.
	B. Iron buildup in water conditioner.	B. Clean control and add resin cleaner to resin bed. Increase frequency of regeneration.
	C. Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system.	C. Remove piston and clean control.
5. Loss of resin through drain line.	A. Air in water system.	A. Assure that well system has proper air eliminator control check for dry well condition.
	B. Drain line flow control is too large.	B. Ensure drain line flow control is sized correctly.
6. Iron in conditioned water.	A. Fouled resin bed.	A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration. Increase backwash time.
	B. Iron content exceeds recommended parameters.	B. Add iron removal from filter or system.

PROBLEM	CAUSE	CORRECTION
7. Excessive water in brine tank.	A. Plugged drain line flow control.	A. Clean flow control.
	B. Brine valve failure.	B. Replace brine valve.
	C. Improper programming.	C. Check programming and reset as needed.
8. Salt water in service line.	A. Plugged injector system.	A. Clean injector and replace screen.
	B. Timer not operating properly.	B. Replace timer.
	C. Foreign material in brine valve.	C. Clean or replace brine valve.
	D. Foreign material in brine line flow control.	D. Clean brine line flow control.
	E. Low water pressure.	E. Raise water pressure.
	F. Improper programming.	F. Check programming and reset as needed.
9. Softener fails to draw brine.	A. Drain line flow control is plugged.	A. Clean drain line flow control.
	B. Injector is plugged.	B. Clean or replace injectors.
	C. Injector screen plugged.	C. Replace screen.
	D. Line pressure is too low.	D. Increase line pressure (line pressure must be at least 25 psi at all times.)
	E. Internal control leak.	E. Change seals and spacers and/or piston assembly.
	F. Improper programming.	F. Check programming and reset as needed.
	G. Timer not operating properly.	G. Replace timer.
10. Control cycles continuously.	A. Timer not operating properly.	A. Replace timer.
	B. Faulty microswitches and or harness.	B. Replace faulty microswitch or harness.
	C. Faulty cycle cam operation.	C. Replace cycle cam or reinstall.
11. Drain flows continuously.	A. Foreign material in control.	A. Remove piston assembly and inspect bore, remove foreign material and check control in various regeneration positions.
	B. Internal control leak.	B. Replace seals and/or piston assembly.
	C. Control valve jammed in brine or backwash position.	C. Replace piston and seals and spacers.
	D. Timer motor stopped or jammed.	D. Replace timer motor and check all gears for missing teeth.
	E. Timer not operating properly.	E. Replace timer.