



Service Manual

TABLE OF CONTENTS.....	1
JOB SPECIFICATION SHEET	1
INSTALLATION	2
START-UP INSTRUCTIONS	2
3200 TIMER SETTING PROCEDURE.....	3
3210 & 3220 TIMER SETTING PROCEDURE	4
3200, 3210, 3220, 3230 REGENERATION CYCLE SETTING PROCEDURE.....	5
3200 TIME CLOCK TIMER ASSEMBLY.....	6
3210 METER DELAYED TIMER ASSEMBLY	7
3220 METER IMMEDIATE TIMER ASSEMBLY	8
3230 REMOTE START TIMER ASSEMBLY.....	9
CONTROL DRIVE ASSEMBLY	10
ADAPTER CONTROL DRIVE LOWER POWERHEAD	12
CONTROL VALVE	13
1800 SERIES BRINE SYSTEM AND DRAIN LINE FLOW CONTROL ASSEMBLY	15
3" METER ASSEMBLY	18
SERVICE VALVE OPERATOR ASSEMBLY	19
2350 SAFETY BRINE VALVE.....	20
TROUBLESHOOTING	21
GENERAL SERVICE HINTS FOR METER CONTROL	22
WATER CONDITIONER FLOW DIAGRAMS	22
FLOW DATA & INJECTOR DRAW RATES	24
DIMENSIONAL DRAWING 3900 TOP MOUNT	25
DIMENSIONAL DRAWING 3900 SIDE MOUNT	26
TYPICAL INSTALLATIONS	27
VALVE WIRING	28
SERVICE ASSEMBLIES	33



Job Number: _____
Model Number: _____
Water Hardness: _____ ppm or gpg
Capacity Per Unit: _____
Mineral Tank Size: _____ Diameter: _____ Height: _____
Salt Setting per Regeneration: _____

- A. 7 Day or 12 Day
- B. Meter Initiated

- A. 3/4" Std Range (125 - 2,100 gallon setting)
- B. 3/4" Ext Range (625 - 10,625 gallon setting)
- C. 1" Std Range (310 - 5,270 gallon setting)
- D. 1" Ext Range (1,150 - 26,350 gallon setting)
- E. 1-1/2" Std Range (625 - 10,625 gallon setting)
- F. 1-1/2" Ext Range (3,125 - 53,125 gallon setting)
- G. 2" Std Range (1,250 - 21,250 gallon setting)
- H. 2" Ext Range (6,250 - 106,250 gallon setting)
- I. 3" Std Range (3,750 - 63,750 gallon setting)
- J. 3" Ext Range (18,750 - 318,750 gallon setting)
- K. Electronic _____ Pulse Count _____ Meter Size _____

- A. System #4: 1 Tank, 1 Meter, Immediate, or Delayed Regeneration
- B. System #4: Time Clock
- C. System #4: Twin Tank
- D. System #5: 2-5 Tanks, Interlock Mechanical
2-4 Tanks, Interlock Electronic
Meter per unit for Mechanical and Electronic
- E. System #6: 2-5 Tanks, 1 Meter, Series Regeneration, Mechanical
2-4 Tanks, 1 Meter, Series Regeneration, Electronic
- F. System #7: 2-5 Tanks, 1 Meter, Alternating Regeneration,
Mechanical
2 Tanks only, 1 Meter, Alternating Regeneration,
Electronic
- G. System #9: Electronic Only, 2-4 Tanks, Meter per Valve, Alternating
- H. System #14: Electronic Only, 2-4 Tanks, Meter per Valve. Brings
units on and offline based on flow.

- A. Backwash: _____ Minutes
- B. Brine and Slow Rinse: _____ Minutes
- C. Rapid Rinse: _____ Minutes
- D. Brine Tank Refill: _____ Minutes
- E. Pause Time: _____ Minutes
- F. Second Backwash: _____ Minutes

- A. Hard Water Bypass
- B. No Hard Water Bypass

A minimum of 20 pounds (1.4 bar) of water pressure is required for regeneration valve to operate effectively.

An uninterrupted alternating current (A/C) supply is required.

Note: Other voltages are available. Please make sure your voltage supply is compatible with your unit before installation.

Condition of existing plumbing should be free from lime and iron buildup. Piping that is built up heavily with lime and/or iron should be replaced. If piping is clogged with iron, a separate iron filter unit should be installed ahead of the water softener.

The softener should be located close to a drain to prevent air breaks and back flow.

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

CAUTION

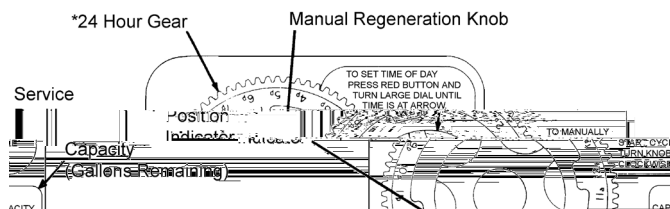
1. Place the softener tank where you want to install the unit making sure the unit is level and on a firm base.
2. During cold weather, the installer should warm the valve to room temperature before operating.
3. All plumbing should be done in accordance with local plumbing codes. The pipe size for residential drain line should be a minimum of 1/2" (13 mm). Backwash flow rates in excess of 7 gpm (26.5 Lpm) or length in excess of 20' (6 m) require 3/4" (19 mm) drain line. Commercial drain lines should be the same size as the drain line flow control.

Rotate the skipper wheel until the number “1” is at the red

Calculate the gallon capacity of the system, subtract the necessary reserve requirement and set the gallons available opposite the small white dot on the program wheel gear (Figure 3).

1. Press and hold the red button in to disengage the drive gear.
 2. Turn the large gear until the actual time of day is opposite the time of day pointer.
 3. Release the red button to again engage the drive gear.
-
1. Turn the manual regeneration knob clockwise.
 2. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
 3. The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
 4. Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time.
 5. In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

These timers do not have a 24 hour gear. Setting the gallons on the program wheel and manual regeneration procedure are the same as previous instructions. The timer will regenerate as soon as the capacity gallons reaches zero.



61502-3200 Rev A

Figure 3

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

1. To expose cycle program wheel, grasp timer in upper left-hand corner and pull, releasing snap retainer and swinging timer to the right.
2. To change the regeneration cycle program, the program wheel must be removed. Grasp program wheel and squeeze protruding lugs toward center, lift program wheel off timer. Switch arms may require movement to facilitate removal.
3. Return timer to closed position engaging snap retainer in back plate. Make certain all electrical wires locate above snap retainer post.

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

For example, if there are six pins in this section, the time of backwash will be 12 min. (2 min. per pin). To change the length of backwash time, add or remove pins as required. The number of pins times two equals the backwash time in minutes.

1. The group of holes between the last pin in the backwash section and the second group of pins determines the length of time that your unit will brine and rinse (2 min. per hole).
2. To change the length of brine and rinse time, move the rapid rinse group of pins to give more or fewer holes in the brine and rinse section. Number of holes times two equals brine and rinse time in minutes.

1. The second group of pins on the program wheel determines the length of time that your water conditioner will rapid rinse (2 min. per pin).
2. To change the length of rapid rinse time, add or remove pins at the higher numbered end of this section as required. The number of pins times two equals the rapid rinse time in minutes.

1. The second group of holes in the program wheel determines the length of time that your water conditioner will refill the brine tank (2 min. per hole).
2. To change the length of refill time, move the two pins at the end of the second group of holes as required.
3. The regeneration cycle is complete when the outer microswitch is tripped by the two pin set at end of the brine tank refill section.
4. The program wheel, however, will continue to rotate until the inner micro switch drops into the notch on the program wheel.

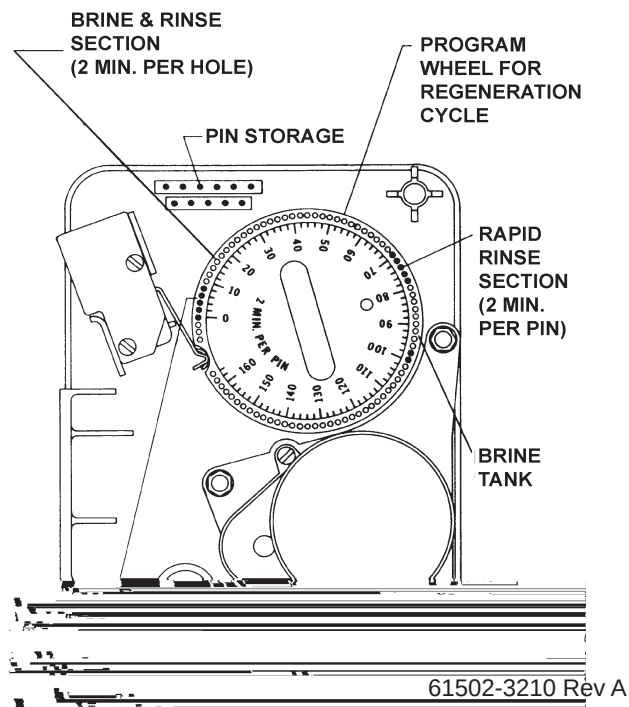
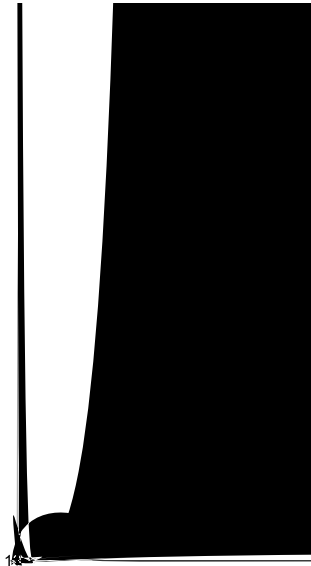


Figure 4



32

33

34

2

17

18

1

31

30

8

31

3

4

3

5

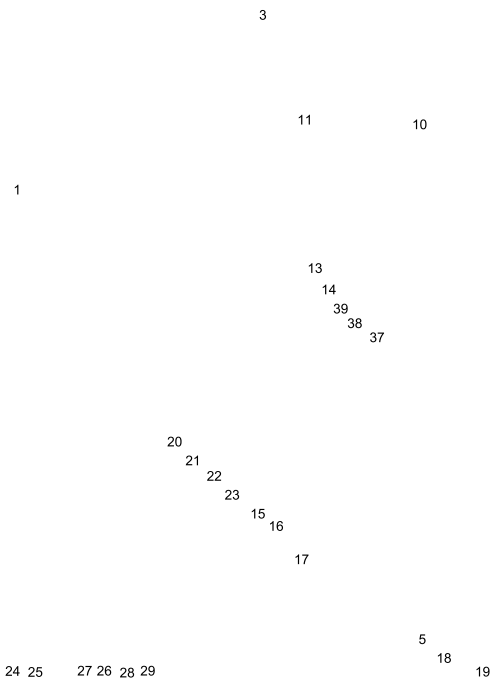
3

6

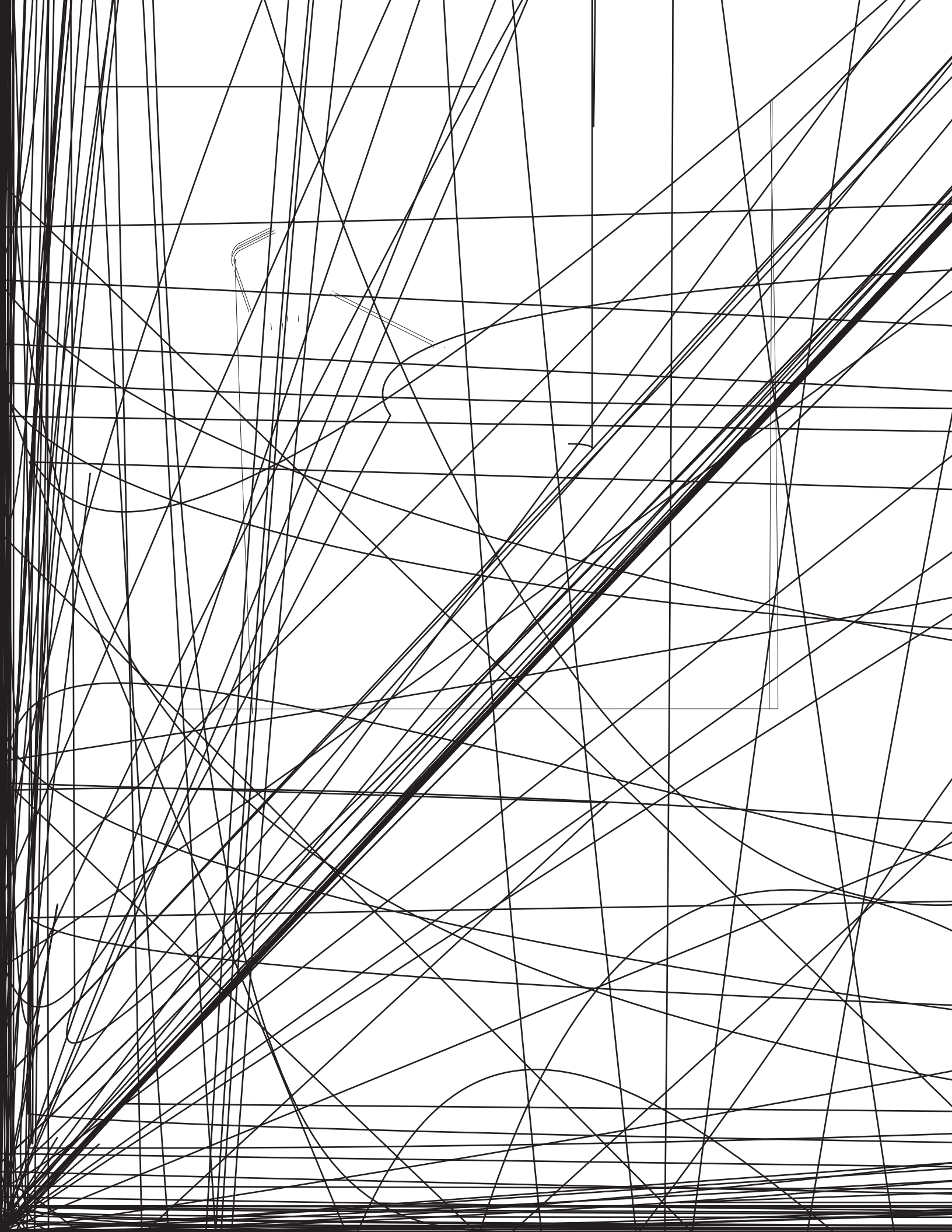
8

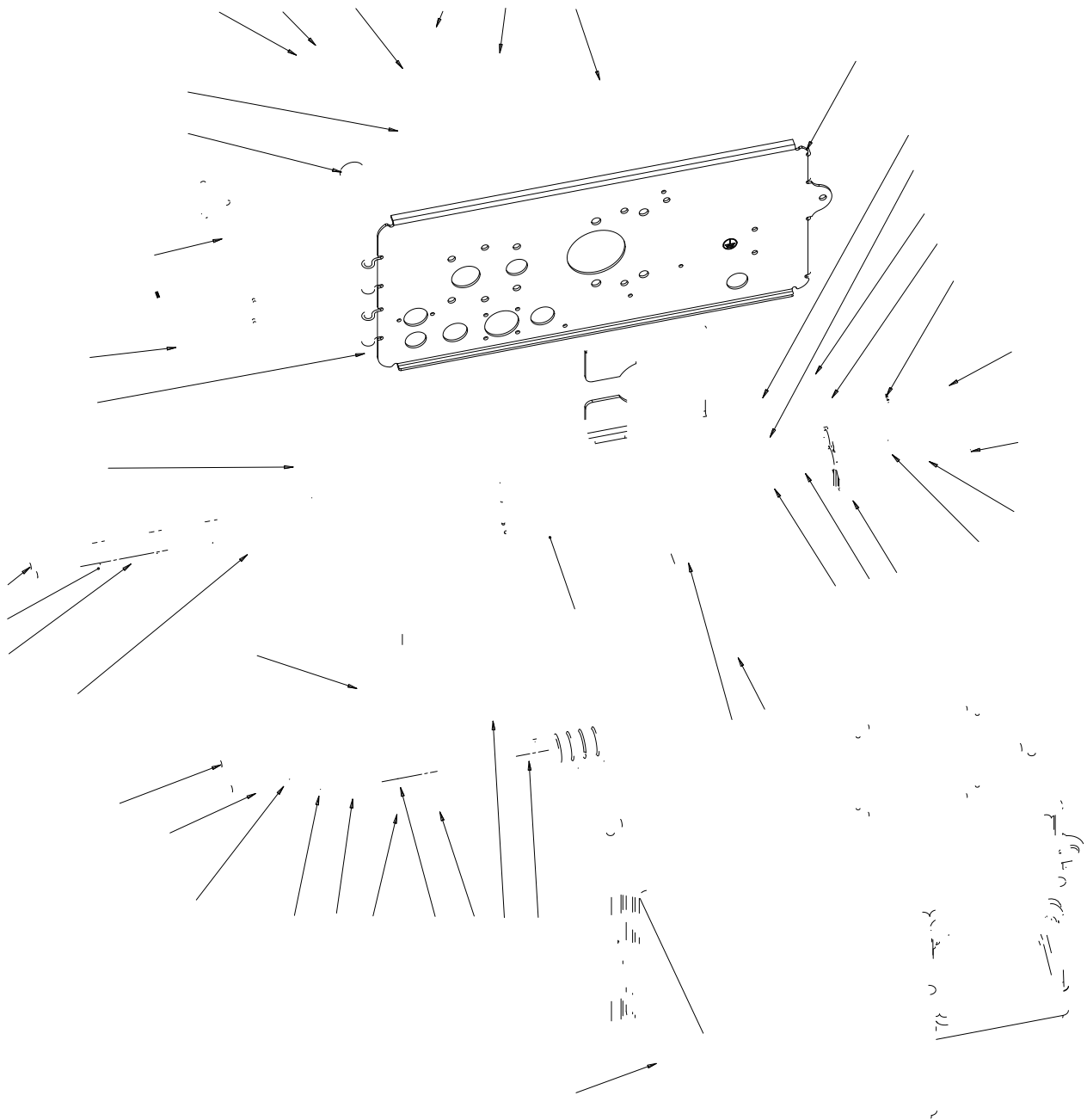
15

16



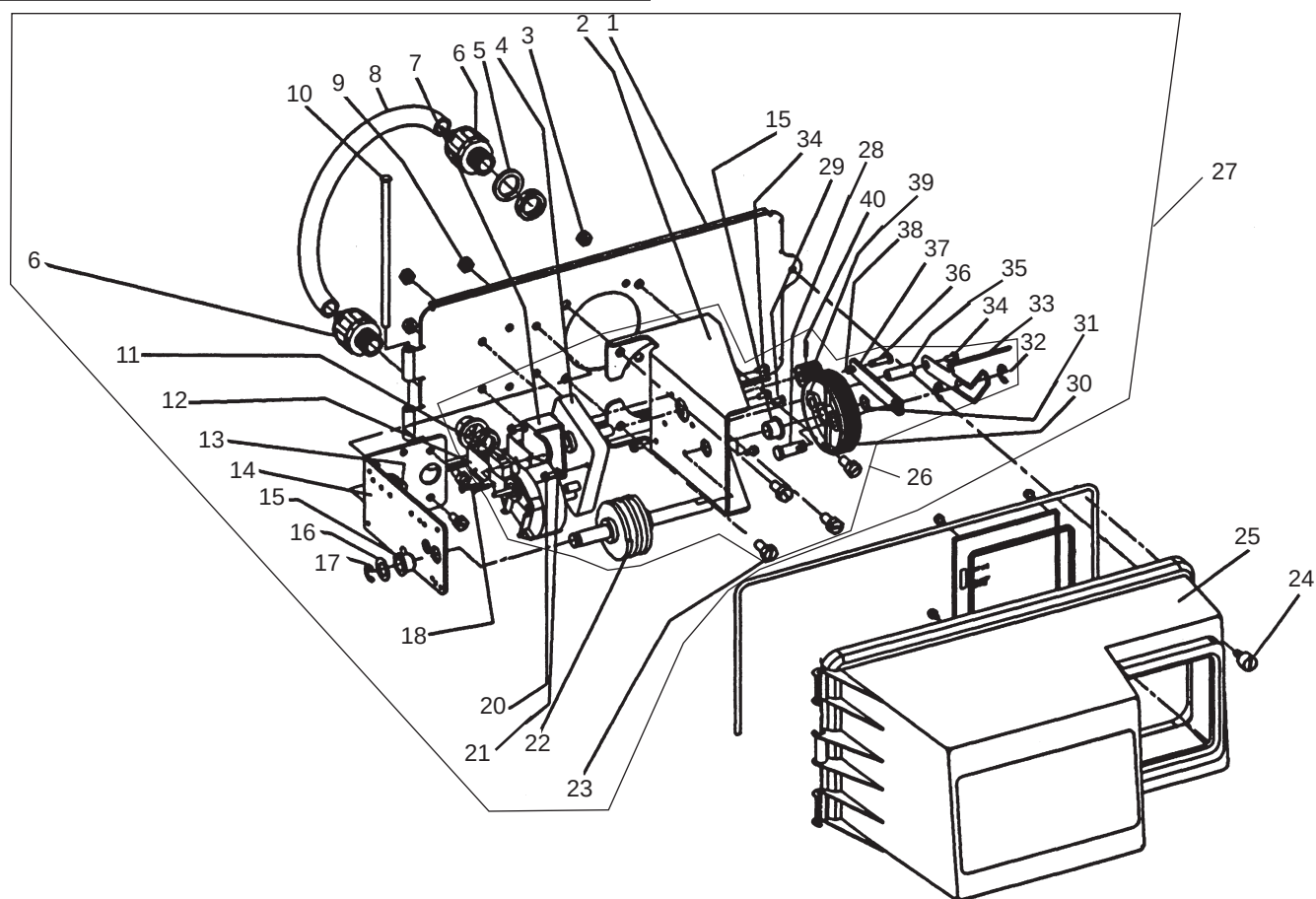
1.....1.....	13870.....	Housing, Timer	25.....1.....	15320.....	Switch, Micro, Timer
2.....1.....	15431.....	Gear, Cycle Actuator, System #5	26.....2.....	11413.....	Screw, Pan Hd Mach, 4-40 x 1-1/8
3.....1.....	13886.....	Knob, 3200	27.....1.....	14198.....	Label, Indicator
4.....4.....	13296.....	Screw, Hex Wsh, 6-20 x 1/2	28.....1.....	15465.....	Label, Caution
5.....2.....	11999.....	Label, Button	29.....1.....	14007.....	Label, Time of Day
6.....1.....	13807.....	Gear, Program Drive Wheel	30.....1.....	15148.....	Label, Instruction
7.....1.....	13806.....	Retainer, Program Wheel	31.....1.....	40617.....	Harness, 3220
8.....1.....	13748.....	Screw, Flt Hd St, 6-20 x 1/2	32.....2.....	40422.....	Nut, Wire, Tan
9.....1.....	14265.....	Spring Clip	33.....1.....	15354-01.....	Wire, Ground, 4"
10.....1.....	13018.....	Pinion, Idler	34.....1.....	19210-05.....	Program Wheel Assembly, 9000/3230
11.....1.....	18563.....	Idler Shaft Spring	35.....17.....	41754.....	Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer
12.....1.....	13017.....	Gear, Idler	36.....1.....	15055.....	Gear, Main Drive
13.....1.....	13164.....	Drive Gear	37.....1.....	*	Complete 3220 Meter Immediate Timer Assembly
14.....1.....	13887.....	Plate, Motor Mounting	38.....	60405-80.....	Program Wheel, w/3" STD Label 63,750 gal
15.....1.....	18743-1.....	Motor, 120V, 60 Hz, 1/30 RPM		60405-90.....	Program Wheel, w/3" EXT Label 320,000 gal
	1.....	18752-1.....			
	1.....	18824-1.....			
	1.....	18826-1.....			
	1.....	19659-1.....			
	1.....	19660-1.....			
16.....2.....	13278.....	Screw, Sltd Fillister Hd	39.....	60320-02.....	Switch Kit, 3200/9000 Timer Auxiliary, Optional
17.....1.....	14502.....	Pinion, Program Wheel	40.....	61420-06.....	Program Wheel, Gear Assy, Softener Immediate 2 Min Per Pin
18.....1.....	14501.....	Clutch, Drive Pinion		61420-42.....	
19.....1.....	14276.....	Meter Clutch Spring			
20.....1.....	14253.....	Retainer, Clutch Spring			
21.....3.....	11384.....	Screw, Phil, 6-32 x 1/4 Zinc			
22.....1.....	13881.....	Bracket, Hinge Timer			
23.....3.....	14087.....	Insulator			
24.....1.....	15414-00.....	Micro Switch			





continued

1.....1.....19304-04.....	Backplate, 3150/3900, Upper, NEMA 3R	11545.....	Power Cord, 4' European, Black
2.....1.....15120-01.....	Bracket, Motor Mtg, 3150/3900 Environmental	19303.....	Power Cord, 8', Australian
3.....2.....16346.....	Nut, Hex, Jam, 5/16 - 18	19885.....	Power Cord, Japanese, 110V/120V
4.....1.....40392.....	Motor, Drive, 115V, 50/60 Hz, Sp	40.....1.....17967.....	Fitting Assy, Liquid Tight, Blk
.....40390.....	Motor, Drive, 220V, 50 Hz, Sp, Fam 3	41.....1.....19691.....	Plug, .750 Dia, Recessed, Black
.....42581.....	Motor, Drive, 24VAC/DC, 50-60 Hz, Fam 3	42.....3.....19591.....	Plug, .8750 Hole, Recessed, Black
5.....1.....17797.....	Bracket, Switch Mounting, 3150/3900	43.....2.....15250.....	Label, Terminal Strip
6.....4.....10302.....	Insulator, Limit Switch	44.....10.....19800.....	Plug, .140 Dia, White
7.....3.....10218.....	Switch, Micro	45.....1.....15806.....	Plug, Hole, Heyco #2693
8.....1.....17845-03.....	Pin, Hinge, 3150/3900, Env	46.....1.....17421.....	Plug, 1.20 Hole
9.....4.....11235.....	Nut, Hex, 1/4 -20, Mach Screw, Zinc	47.....	60057-01.....Drive Assy, 3150, 120V, SYS 5 & 7, Signal After Brine Tank Fill
10.....2.....13365.....	Washer, Lock, #4, External	60057-03.....	Drive Assy, 3150, 24V, 3900 Upper, SYS #5 or SYS #7
11.....2.....40080.....	Screw, Rd Hd, 4-40 x 1 1/2"	60057-11.....	Drive Assy, 3150, 120V, 3900 Upper, SYS #4 or SYS #6
12.....1.....16053.....	Bracket, Brine Side	60057-21.....	Drive Assy, 3150, 120V, Upfow, 3900 Upper, SYS 5 or SYS 7, Brine Draw First
13.....2.....40133.....	Screw, Pan Hd, 4-40 x 1/4	48.....	*3150 Powerhead Assembly
14.....2.....40133.....	Screw Pan HD, 4-40 x 1/4"	1.....17470.....	Cable Guide Assy, 2850/3150
15.....2.....16052.....	Bushing, 3150/3900	1.....19856.....	Ring, Retaining (Used on Cover)
16.....1.....16059.....	Washer, SS, .88, 3150/3900	1.....	Timer (See Timer Section)
17.....1.....16051.....	Ring, Retaining, Bowed	1.....16427-04.....	Wire, Lead, 12", White
18.....2.....10300.....	Screw, Slot Hex Wsh, 18-8 x 3/8	1.....40396.....	Harness, Drive, Environmental
19.....4.....10231.....	Screw, Slot Hex, 1/4 - 20 x 1/2	1.....14924.....	Strain Relief Heyco #1247
20.....2.....14202-01.....	Screw, Hex Wsh Hd, 8 x 5/16	1.....15513.....	Meter Cable, 17.5", 2"
21.....1.....10475-01.....	Wire, Ground	1.....15216.....	MeterCable, 15.25", 1.5"
22.....1.....16494-03.....	Cam Assy, 3150/3900 Signal After Brine Fill	1.....18585.....	Harness, 3900, Aux Switch
.....16494-05.....	Cam Assy, 3150/3900 Upper Signal After Rapid Rinse	*Call your distributor for Part Number	
.....16494-06.....	Cam Assy, 3150/3900, Upper, Upfow, Signal After Rapid Rinse		
23.....4.....11224.....	Screw, Hex Hd, 5/16 - 18 x 5/8		
24.....1.....60240-02.....	Cover Assy, 3150/3900 Env, Black, NEMA 3R		
25.....5.....41084.....	Terminal Block, Segment, Gray		
26.....1.....41085.....	Endplate, Terminal Block, Gray		
27.....1.....40174.....	Terminal Block, Green/Yellow		
28.....1.....16046.....	Gear, Drive		
29.....1.....16050.....	Ring, Retaining		
30.....1.....11774.....	Ring, Retaining		
31.....1.....16047.....	Link, Drive		
32.....1.....11709.....	Pin, Drive Link		
33.....1.....16048.....	Bearing, Drive Link		
34.....1.....11898.....	Clip, 3150/3900		
35.....1.....16045.....	Pinion, Drive		
36.....1.....11381.....	Pin, Roll, 2900/3900		
37.....1.....11080.....	Screw, Flt Hd Mach, 8-32 x 3/8		
38.....3.....10872.....	Screw, Hex Wsh, 8-32 x 17/64		
39.....1.....40084-12.....	Power Cord, 12' US, Round, 120V		
.....40085-12.....	Power Cord, 12' US, Round, 240V		

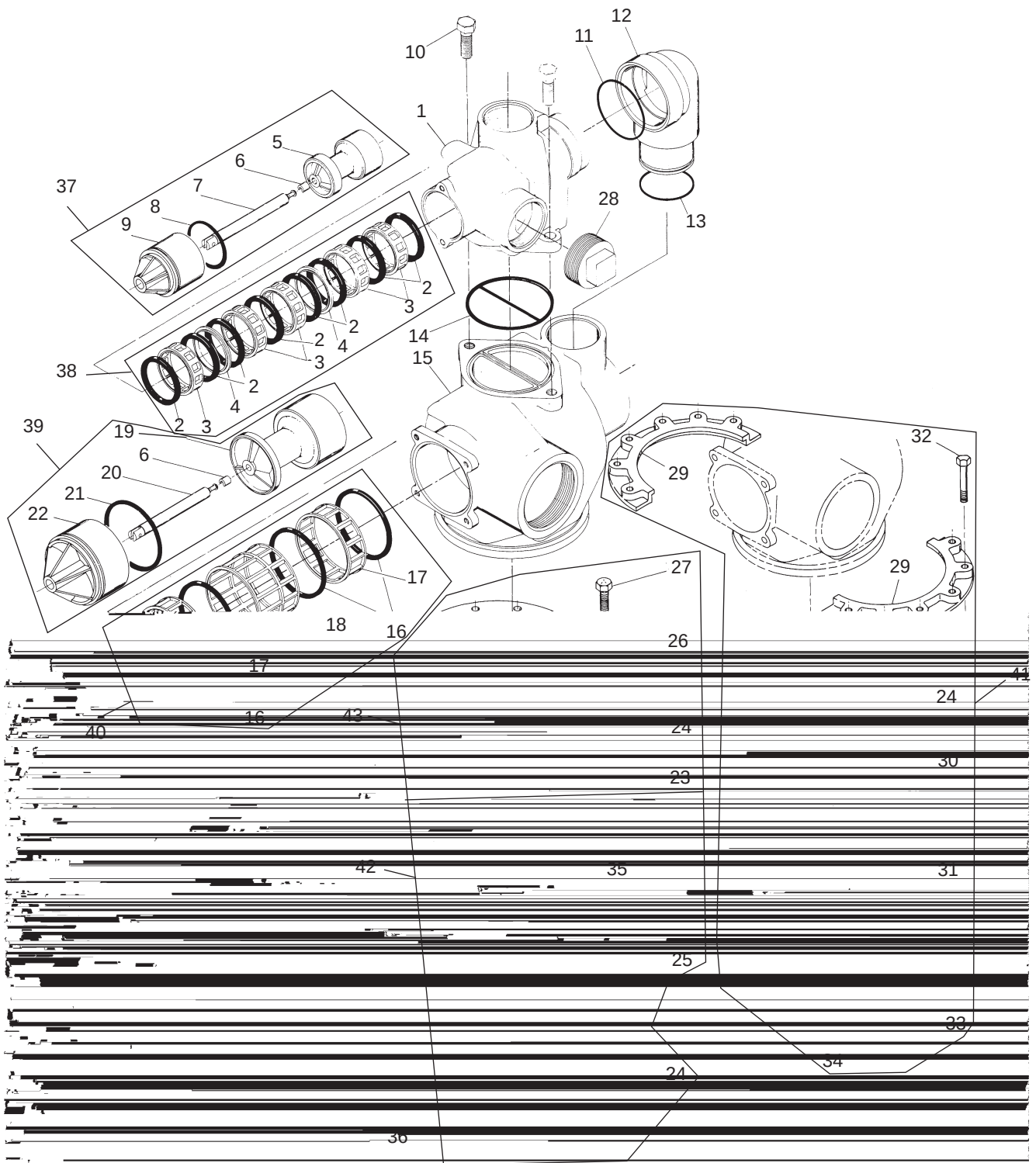


1.....1	19305	Back Plate, 3900 Lower, Enviromental
2.....1	16086	Bracket - Motor Mounting
3.....2	16346	Nut
4.....1	40392	Drive Motor - 115 V. 50/60 Hz.
	40390	Drive Motor - 220 V. 50/60 Hz.
	42581	Drive Motor - 24 VAC/DC 50/60 Hz.
5.....2	18692	Washer, Sealing
6.....2	18691	Connector, Conduit
7.....1	17797	Bracket - Switch Mounting
8.....1	18693	Conduit, Interdrive
9.....4	11235	Nut, 1/4-20
10.....1	17845-03	Pin, Hinge
11.....1	10218	Switch
12.....2	10302	Insulator - Switch
13.....4	10231	Screw - Hex Head, 1/4-20 x 1/2, 18-8 S.S.
14.....1	16053	Bracket - Brine Side
15.....2	16052	Bushing
16.....1	16059	Washer
17.....1	16051	Retaining Ring - Bowed "E"
18.....2	11805	Screw, RD HD, 4-40 x 5/8", Type 1, Steel/Zinc
20.....2	17567	Screw - Hex Head, WSH, 8 x 1/2, Type B, 18-8, S.S.
21.....2	12288	Washer, Lock, Internal #8
22.....1	16495	Cam Assembly
23.....4	11224	Screw - Hex Head, 5/16-18 x 5/8, S.S.

24.....1	19813/41536	Screw O-ring, Cover
25.....1	60240-22	Cover, Black, Lower, Enviromental
26.....		Includes Item No: 2, 4, 7, 11, 12, 15, 18, 20, 21, 22, 23, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40
	60058-01	Lower Drive Assy, 3900, 120V
	60058-03	Lower Drive Mtr Assy, 3900, 24V
27.....*		3900 Lower Powerhead Assy
28.....1	16048-01	Bearing - Drive Link
29.....2	11080	Screw - Flt HD Mach, 8-32 x 3/8, Steel Zinc
30.....1	16046	Drive Gear
31.....1	16050	Retaining Ring
32.....2	11774	Retaining Ring - "E"
33.....1	19315	Indicator
34.....4	10872	Screw - Hex Head, 8-32 x 17/64, Steel/Trivalent Zinc
35.....1	18726	Space, Indicator
36.....1	11709	Pin - Drive Link
37.....1	16047	Drive Link
38.....1	11898	Clip
39.....1	16045	Drive Pinion
40.....1	11381	Roll Pin

1 40405.....Wire Harness, Enviromental, System 4, Lower

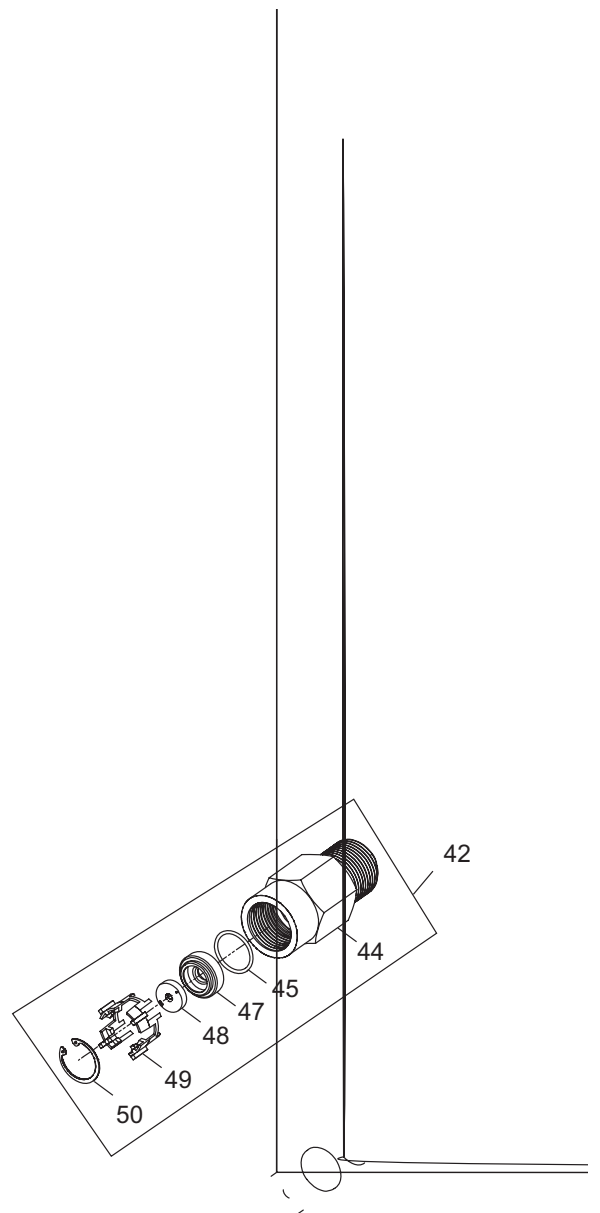
*Call your distributor for Part Number



61500-3900

continued

1.....1.....15114.....Valve Body	
2.....8.....11720.....Seal	29.....2.....16482.....Flange Segment
8.....11720-02.....Seal, Silicone	30.....1.....16483.....Flange Ring
3.....5.....10369.....Spacer - Port	31.....1.....16484.....O-Ring -442
4.....2.....10368.....Spacer	32.....12.....16517.....Screw, Park Tank
5.....1.....16130.....Piston	12.....19592.....Screw, Structural Tank
6.....2.....14818.....Clip - Piston Rod	33.....12.....18619.....Washer
7.....1.....15125.....Piston Rod	34.....12.....16346.....Nut
8.....1.....14922.....O-ring -035	36.....1.....18584.....Adapter, Side Mount
9.....1.....16398-01.....End Plug Assembly	
10.....2.....40118.....Screw - Hex Head	
11.....1.....16078.....O-ring - 149	
12.....1.....16074.....Coupling	
13.....1.....16077.....O-ring - 140	
14.....1.....15112.....Seal	
15.....1.....16067-02.....3" Adapter Body	
16.....4.....16068.....Seal	
4.....41534.....Seal, 3900, 558 BP	
17.....2.....16069.....Spacer - Narrow	
18.....1.....16070.....Spacer - Wide	
19.....1.....16071.....Piston	
1.....16082.....Piston - No Hard Water Bypass	
20.....1.....16072.....Piston Rod	
21.....1.....16076.....O-ring - 042	
22.....1.....16399-01.....End Plug Assy - White	
1.....16399-11.....End Plug Assy - Black, NHWB-P	
23.....1.....16800.....O-ring - 238	
24.....2.....16345.....O-ring - 362	
25.....1.....16255.....Tank Adapter - 6" -8	
26.....2.....16257.....Flange Segment	
27.....12.....11238.....Screw - Hex Head	
28.....1.....16088.....Pipe Plug - 2" NPT	
35.....1.....16258.....Flow Disperser	
37.....60106-00.....Piston Assy, 3900/3150 STD	
.....60106-10.....Piston Assy, 3150, Upfow	
38.....60131.....Seal & Spacer Kit, 3900 Upper, 3150	
.....60131-10.....Seal & Spacer Kit, Silicone, Chemical Resistent, 3900 Upper, 3150	
39.....60107-00.....Piston Assy, 3900, HWBP, Lower	
.....60107-10.....Piston Assy, 3900, NHWBP, Lower	
40.....60132.....Seal & Spacer Kit, 3900, Lower	
.....60132-10.....Seal & Spacer Kit, 3900, 558BP Chemical Resistent, Lower	
41.....60190.....Flange Kit, Park & Structural, 09/05 and After	
.....60191.....Flange Kit, Park, 08/05 and Prior	
42.....60193.....Flange Kit, 6" Thread	
43.....60192.....Flange Kit, Welded	

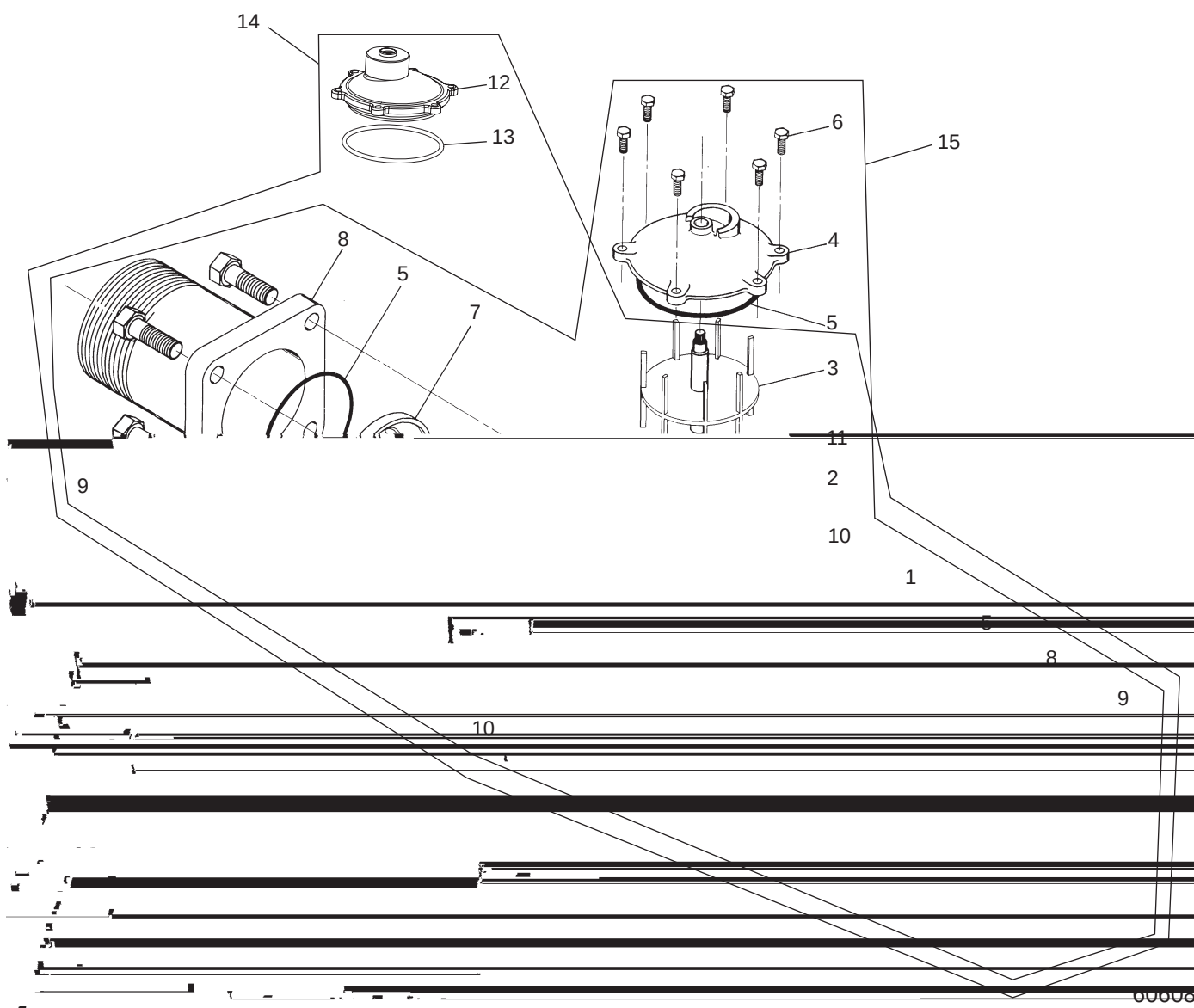


continued

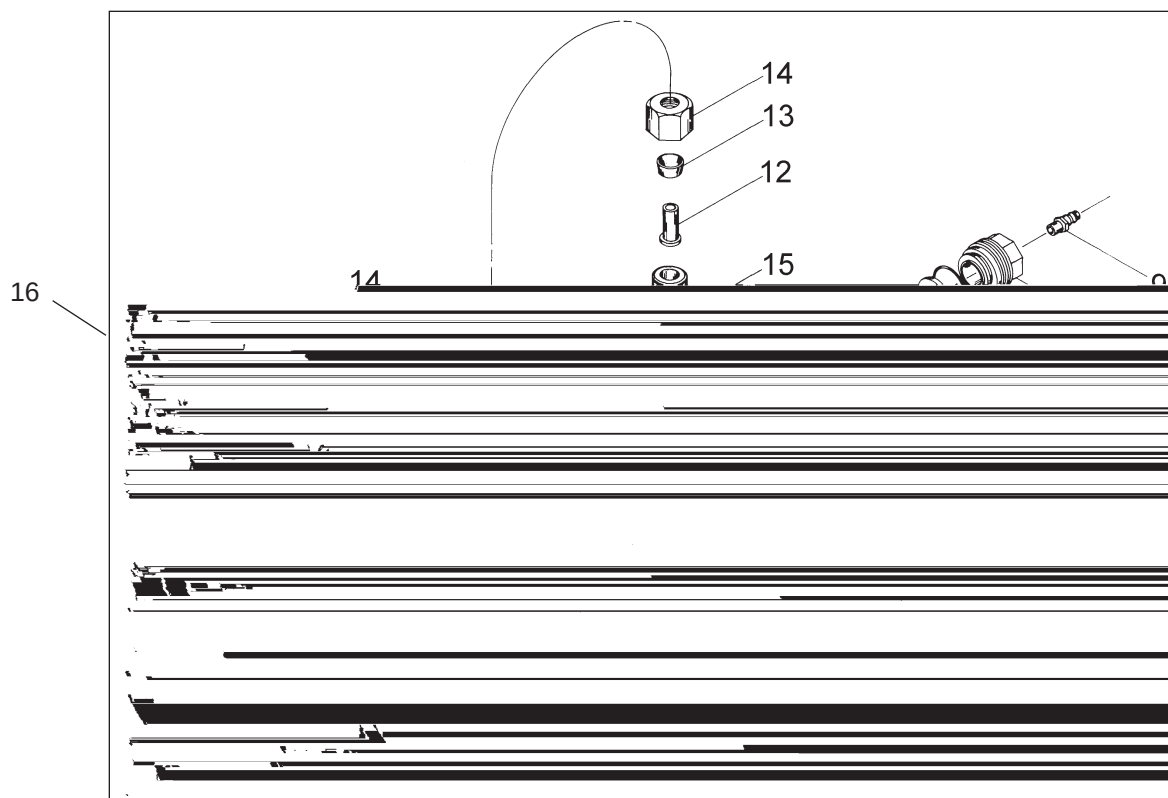
1.....1	16340.....	Body, Injector, 1800 D/F	18.....	60277-04.....	Injector Assy, 1800, #4, Downfow
.....	16340-20.....	Body, Injector, 1800, Downfow, Metric	.....	60272-04.....	Injectory Assy, 1800, #4, Upfow
.....	16340-01.....	Body, Injector, 1800 Upfow	.....	60277-05.....	Injectory Assy, 1800 #5, Downfow
.....	16340-21.....	Body, Injector, 1800, Upfow, Metric	.....	60272-05.....	Injector Assy, 1800, #5, Upfow
2.....1	15128-xx	Injector Nozzle	.....	60277-06.....	Injector Assy, 1800, #6, Downfow
.....	15128-04.....	#4 Green	.....	60277-07.....	Injector Assy, 1800, #7, Downfow
.....	15128-05.....	#5 Red	.....	60272-07.....	Injector Assy, 1800, #7, Upfow
.....	15128-06.....	#6 White	.....	60277-08.....	Injector Assy, 1800, #8, Downfow
.....	15128-07.....	#7 Blue	.....	60277-09.....	Injectory Assy, 1800 #9, Downfow
.....	15128-08.....	#8 Yellow	.....	60277-10.....	Injectory Assy, 1800 #10, Downfow
.....	15128-09.....	#9 Violet			
.....	15128-10.....	#10 Black			
3.....1	15127-xx	Injector Throat	19.....	60036-02.....	Brine Valve, 1800, Design 3
.....	15127-04.....	#4 Green	.....	60276-01.....	Brine Valve, 1800, Retroft Kit, Downfow 1800 Injector and Brine Valve, Update to Design 3
.....	15127-05.....	#5 Red	20.....	60734.....	Regulator, 3150/3900, Pressure, Upfow
.....	15127-06.....	#6 White			
.....	15127-07.....	#7 Blue			
.....	15127-08.....	#8 Yellow			
.....	15127-09.....	#9 Violet			
.....	15127-10.....	#10 Black			
4.....3	15246.....	O-ring, -116			
5.....1	16341-01.....	Cap, Injector, 1800			
6.....8	12473.....	Screw, Hex Wsh, 10-24 x 5/8			
7.....1	16341-02.....	Plug, Injector, 1800			
8.....1	19054.....	O-ring, -021, 560CD			
9.....1	16497-01.....	Stem Assy, 1800, Brine Valve			
10.....1	18713.....	Brine Valve Body, 1800			
11.....1	11772.....	Spring, 3150 Brine Valve			
12.....1	11774.....	Ring, Retaining			
13.....1	16498-01.....	Stem Guide Assy, Brine			
14.....1	16387.....	Plug, Pipe, 1/2" NPT			
15.....2	18702.....	Fitting, Tube, 1/2 NPT 5/8			
16.....1	18703.....	Tube, Brine, 5/8 OD Annealed			
.....	18703-01.....	Tube, Brine, 5/8 OD, Short, Upfow			
17.....1	60009-00.....	Air Check, #900, Commercial Less Fittings			
.....	60009-01.....	Air Check, #900, Commercial, HW Less Fittings			

continued

21.....	60711-000.....	DLFC, 2" NPT, Less BTTNS, w/4 HLS	33.....1	19095.....	Diaphragm, Regulator 3150
.....	60711-00.....	DLFC, 2" NPT, Less BTTNS, W/2 HLS	34.....1	19094.....	Washer, Regulator 3150
.....	60711-01.....	DLFC, 2" NPT, Less BTTNS, W/1 HLS	35.....1	19092.....	Retainer, Regulator 3150
.....	60711-20.....	DLFC, 2" NPT, 20 gpm	36.....1	19101.....	Spring, Regulator 3150
.....	60711-25.....	DLFC, 2" NPT, 25 gpm	37.....1	19399.....	Washer, Calibration 3150
.....	60711-30.....	DLFC, 2" NPT, 30 gpm	38.....1	19090.....	Cap, Regulator 3150
.....	60711-35.....	DLFC, 2" NPT, 35 gpm	39.....1	19278.....	Fitting, Tube, 90 Deg
.....	60711-40.....	DLFC, 2" NPT, 40 gpm	40.....1	19693.....	Pressure Gauge
.....	60711-45.....	DLFC, 2" NPT, 45 gpm	41.....1	41232.....	Bushing Reducer 1/4 x 1/8
.....	60711-50.....	DLFC, 2" NPT, 50 gpm	42.....	60710-1.2.....	BLFC, 1"F x 1"M, NPT, 1.2 gpm
.....	60711-55.....	DLFC, 2" NPT, 55 gpm	.....	60710-2.0.....	BLFC, 1"F x 1"M, NPT, 2.0 gpm
.....	60711-60.....	DLFC, 2" NPT, 60 gpm	.....	60710-2.4.....	BLFC, 1"F x 1"M, NPT, 2.4 gpm
.....	60711-65.....	DLFC, 2" NPT, 65 gpm	.....	60710-3.0.....	BLFC, 1"F x 1"M, NPT, 3.0 gpm
.....	60711-70.....	DLFC, 2" NPT, 70 gpm	.....	60710-3.5.....	BLFC, 1"F x 1"M, NPT, 3.5 gpm
.....	60711-75.....	DLFC, 2" NPT, 75 gpm	.....	60710-4.0.....	BLFC, 1"F x 1"M, NPT, 4.0 gpm
.....	60711-80.....	DLFC, 2" NPT, 80 gpm	.....	60710-5.0.....	BLFC, 1"F x 1"M, NPT, 5
.....	60711-85.....	DLFC, 2" NPT, 85 gpm			
.....	60711-90.....	DLFC, 2" NPT, 90 gpm			
.....	60711-95.....	DLFC, 2" NPT, 95 gpm			
.....	60711-100.....	DLFC, 2" NPT, 100 gpm			
.....	60812-30.....	DLFC, 2" BSP/Metric, 30 gpm			
.....	60812-35.....	DLFC, 2" BSP/Metric, 35 gpm			
.....	60812-45.....	DLFC, 2" BSP/Metric, 45 gpm			
.....	60812-50.....	DLFC, 2" BSP/Metric, 50 gpm			
.....	60812-55.....	DLFC, 2" BSP/Metric, 55 gpm			
.....	60812-70.....	DLFC, 2" BSP/Metric, 70 gpm			
.....	60812-75.....	DLFC, 2" BSP/Metric, 75 gpm			
.....	60812-80.....	DLFC, 2" BSP/Metric, 80 gpm			
.....	60812-90.....	DLFC, 2" BSP/Metric, 90 gpm			
.....	60812-95.....	DLFC, 2" BSP/Metric, 95 gpm			
.....	60812-100.....	DLFC, 2" BSP/Metric, 100 gpm			
22.....	2.....	27913-21.....	Housing, Flow Control, 2" BSP		
23.....	.....	16804.....	O-ring, -150		
24.....	1.....	16649.....	Holder, DLFC Button		
25.....	1.....	16650.....	Cover Plate DLFC		
26.....	1.....	13898.....	Screw, Flat HD, Phil, Steel		
27.....	6.....	13386.....	Screw, Hex HD MACH, 1/4-20 x 1 OR Slot Hex Cap Screw 18-8 S.S.		
	6.....	17976.....	Screw, Hex HD, M6 x 25 mm		
28.....	.....	16529.....	Washer, Flow, 10.0 gpm		
	.....	16736.....	Washer, Flow, 15.0 gpm		
	.....	16528.....	Washer, Flow, 20.0 gpm		
	.....	16737.....	Washer, Flow, 25.0 gpm		
29.....	1.....	19089.....	Body Regulator 3150		
30.....	1.....	10242.....	Fitting, Nipple, 1/2", Close		
31.....	1.....	19091.....	Pin, Regulator 3150		
32.....	1.....	19093.....	Stand-Off Regulator 3150		

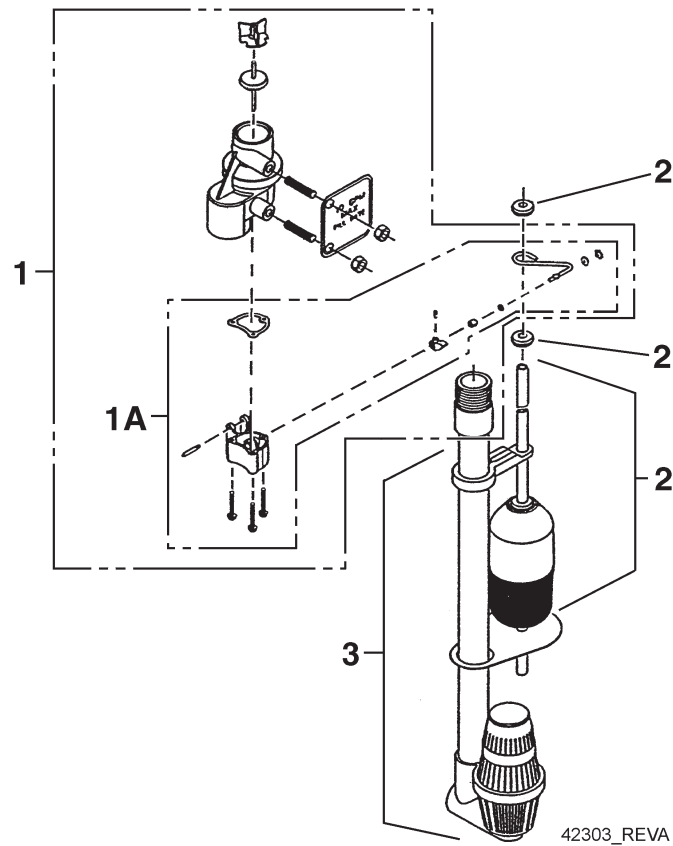


1.....1	16254.....	Meter Body	14.....	60608-02.....	Meter Assy, 3" Inline, NPT, EXT, Brass, Paddlewheel
2.....1	16279.....	Impeller Shaft		 60608-22.....	Meter Assy, 3" Inline, BSP/ Metric, EXT, Paddlewheel
3.....1	16575.....	Impeller Assembly	15.....	60608-01.....	Meter Assy, 3" Inline, NPT, STD, Brass, Paddlewheel
4.....1	16400.....	Meter Cover Assembly - Standard		 60608-21.....	Meter Assy, 3" Inline, BSP/ Metric, STD, Paddlewheel
1	16401.....	Meter Cover Assembly - Extended Range			
5.....3	15707.....	O-Ring - 236			
6.....6	12112	Screw - Hex Head			
6	15886.....	Screw - Hex Head (Metric)			
7.....1	16280.....	Flow Straightener			
8.....2	16328.....	Connecting Flange			
9.....8	40118.....	Screw - Hex Head			
8	17122.....	Screw - Hex Head (Metric)			
10.....8	16386.....	Nut - 1/2-13			
11.....1	16574.....	Stainless Steel Washer			
12.....1	16401.....	Meter Cap, 3", EXT, BRS, PDL			
13.....1	15707.....	O-ring - 236			



BR60150-3150REVA

1.....1	15074.....	Body, SVO
2.....1	16065.....	Piston & Stem, SVO
3.....1	10141.....	O-ring, -010
4.....2	14835.....	Seal, 3150
5.....1	14834.....	Spacer, Softwater Fill
6.....1	16509.....	Plug, End, SVO
7.....1	12977.....	O-ring, -015
8.....1	15965.....	Fitting, Bias
9.....1	10249.....	Spring, Brine Valve
10.....1	10250.....	Ring, Retaining
11.....1	16498-02.....	Stem Guide Assy, SVO
12.....3	10332.....	Fitting, Insert, 3/8
13.....3	10330.....	Fitting, Sleeve, 3/8 Celcon
14.....3	10329.....	Fitting, Tube, 3/8 Nut, Brass
15.....1	16503.....	Fitting, Elbow, 90 Deg.
16.....1	60150-3150.....	SVO Assy, 3150/3900 (Includes Items 1-15)
.....1	16511.....	Tube, 3150, PVC, SVO



- 1.....1 60038.....Safety Brine Valve, 2350
- 1A1 61024.....Actuator Assy, 2350 Brine
- 2.....1 60028-30.....Float Assy, 2350, 30" Wht
-1 60026-30SAN ...Float Assy, 2350, 30" Hot Water
- 3.....1 60009-00.....Air Check, #900, Commercial
Less Fittings
-1 60009-01.....Air Check, #900, Commercial,
Hot Water Less Fittings
-1 18603.....Fitting Assy, 900 Air Check 2350
-1 18602.....Fitting Assy, 900 Air Check

Water conditioner fails to regenerate.	Electrical service to unit has been interrupted	Assure permanent electrical service (check fuse, plug, pull chain, or switch)
	Timer is defective.	Replace timer.
	Power failure.	Reset time of day.
Hard water.	By-pass valve is open.	Close by-pass valve.
	No salt is in brine tank.	Add salt to brine tank and maintain salt level above water level.
	Injector screen plugged.	Clean injector screen.
	Insufficient water flowing into brine tank.	Check brine tank fill time and clean brine line flow control if plugged.
	Hot water tank hardness.	Repeated flushings of the hot water tank is required.
	Leak at distributor tube.	Make sure distributor tube is not cracked. Check O-ring and tube pilot.
	Internal valve leak.	Replace seals and spacers and/or piston.
Unit used too much salt.	Improper salt setting.	Check salt usage and salt setting.
	Excessive water in brine tank.	See "Excessive water in brine tank".
Loss of water pressure.	Iron buildup in line to water conditioner.	Clean line to water conditioner.
	Iron buildup in water conditioner.	Clean control and add mineral cleaner to mineral bed. Increase frequency of regeneration.
	Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system.	Remove piston and clean control.
Loss of mineral through drain line.	Air in water system.	Assure that well system has proper air eliminator control. Check for dry well condition.
	Improperly sized drain line flow control.	Check for proper drain rate.
Iron in conditioned water.	Fouled mineral bed.	Check backwash, brine draw, and brine tank fill. Increase frequency of regeneration. Increase backwash time.
Excessive water in brine tank.	Plugged drain line flow control.	Clean flow control.
	Plugged injector system.	Clean injector and screen.
	Timer not cycling.	Replace timer.
	Foreign material in brine valve.	Replace brine valve seat and clean valve.
	Foreign material in brine line flow control.	Clean brine line flow control.
Softener fails to draw brine.	Drain line flow control is plugged.	Clean drain line flow control.
	Injector is plugged.	Clean injector
	Injector screen plugged.	Clean screen.
	Line pressure is too low.	Increase line pressure to 20 psi
	Internal control leak	Change seals, spacers, and piston assembly.
	Service adapter did not cycle.	Check drive motor and switches.
Control cycles continuously.	Misadjusted, broken, or shorted switch.	Determine if switch or timer is faulty and replace it, or replace complete power head.
Drain flows continuously.	Valve is not programming correctly.	Check timer program and positioning of control. Replace power head assembly if not positioning properly.
	Foreign material in control.	Remove power head assembly and inspect bore. Remove foreign material and check control in various regeneration positions.
	Internal control leak.	Replace seals and piston assembly.

Reserve capacity has been exceeded.

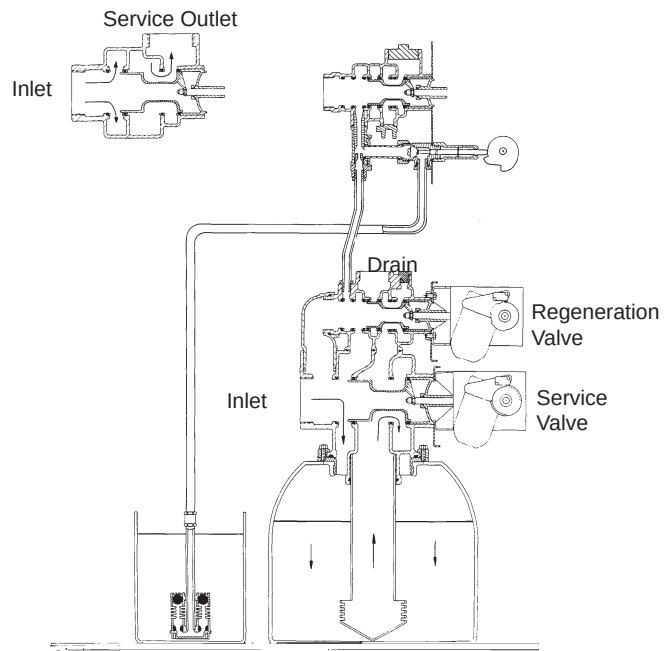
Check salt dosage requirements and reset program wheel to provide additional reserve.

Program wheel is not rotating with meter output.

Pull cable out of meter cover and rotate manually. Program wheel must move without binding and clutch must give positive clicks when program wheel strikes regeneration stop. If it does not, replace timer.

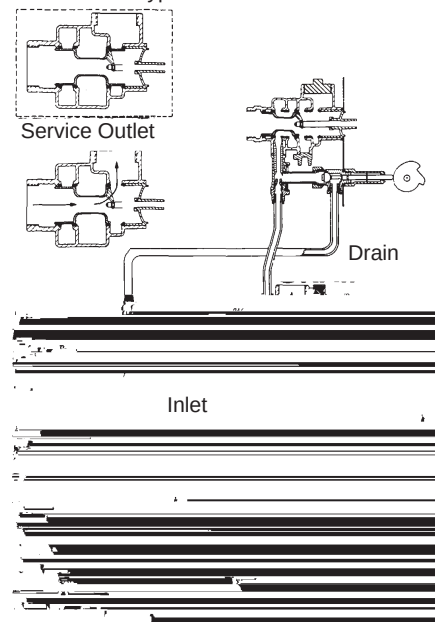
Meter is not measuring flow.

Check meter with meter checker.

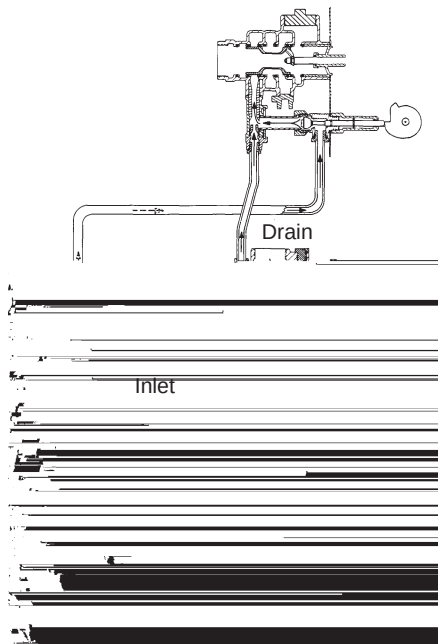


Hard water enters at valve inlet and flows down thru mineral to the bottom distributor. Conditioned water flows up thru the distributor tube, around the piston and out the outlet.

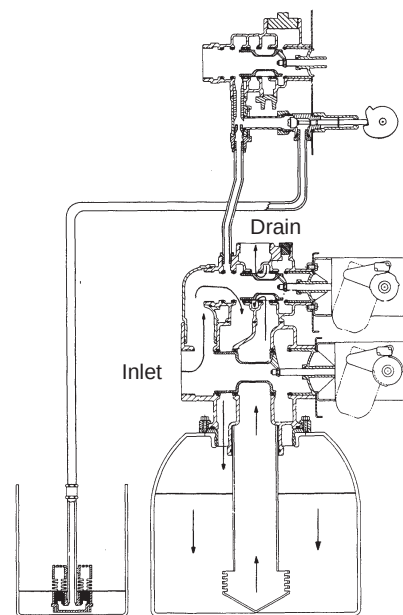
No Hard Water Bypass



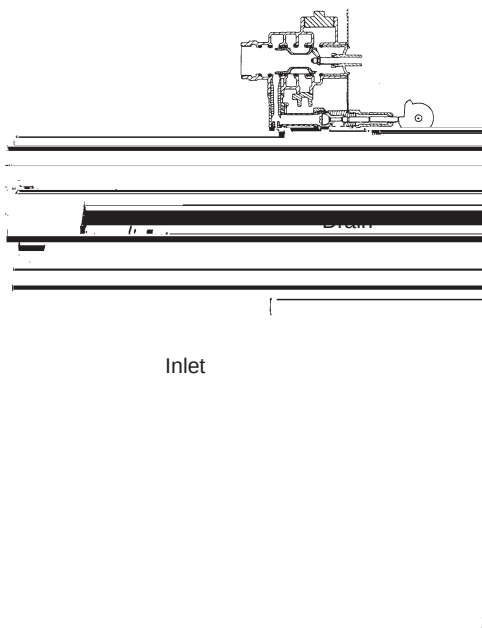
Hard water enters at valve inlet – flows thru service adapter piston for by-pass, and up thru coupling to regeneration valve inlet. Flow continues thru the regeneration valve piston – down the distributor tube – thru the bottom distributor and up thru the mineral – around the piston and out the drain. If optional no hard water by-pass piston is used, water flow to service outlet is prevented by an extension on the service outlet until the end of the rapid rinse cycle or brine tank refill cycle, depending on options chosen.



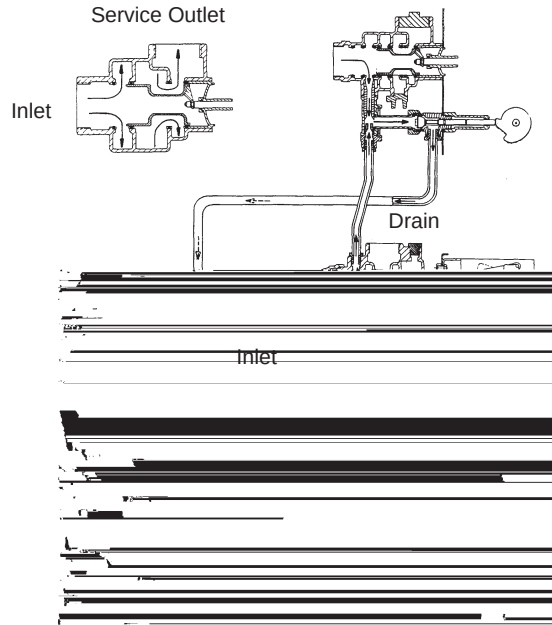
Hard water enters at valve inlet – flows thru injector nozzle and throat to draw brine from the brine tank. Brine flows down thru the mineral – into the bottom distributor – up the distributor tube – around the piston and out the drain.



Hard water enters at valve inlet – flows thru the regeneration valve directly down thru the mineral – into the bottom distributor – up the distributor tube – around the piston and out the drain.

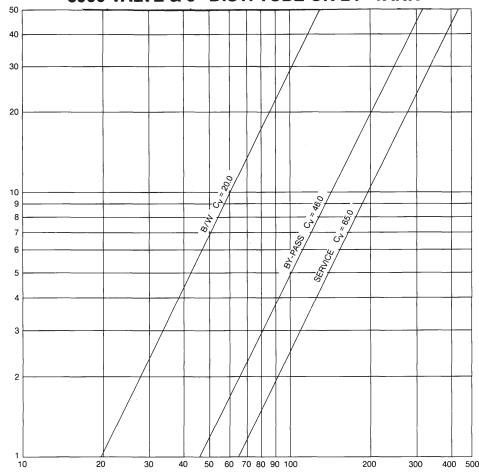


Hard water enters at valve inlet – flows thru injector nozzle and throat – down thru the mineral – into the bottom distributor – up the distributor tube – around the piston and out the drain.

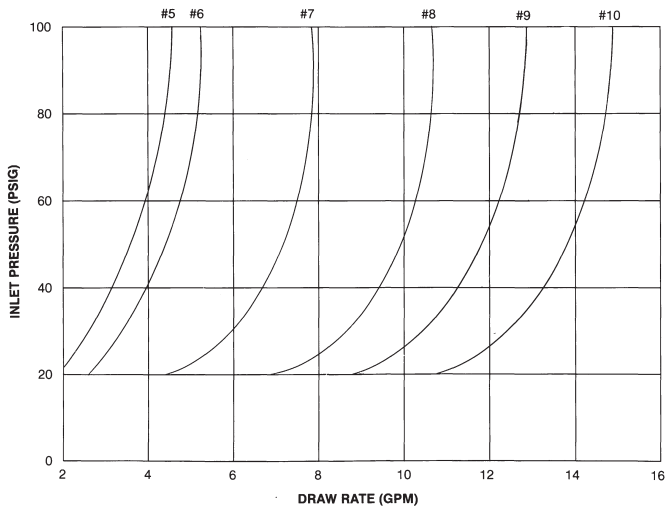


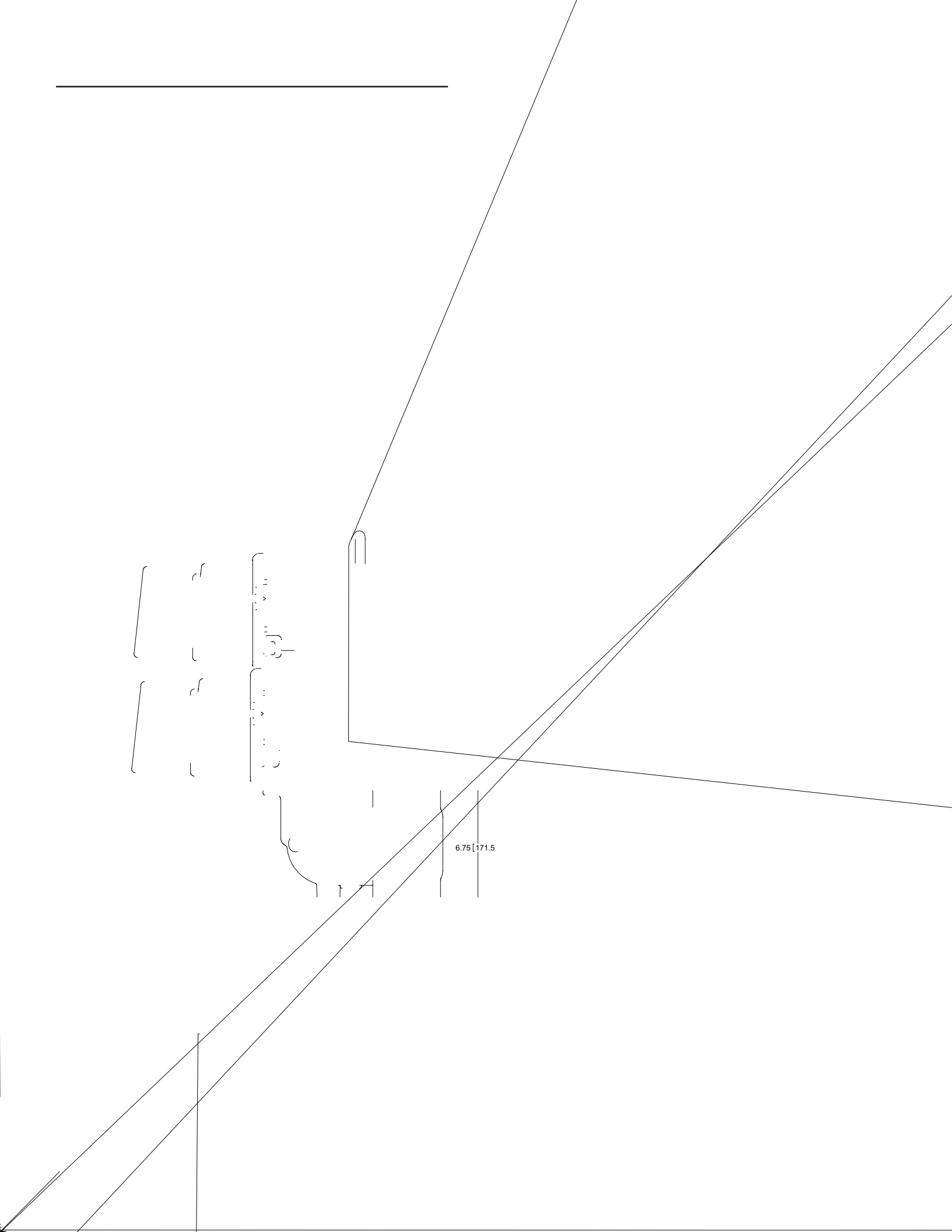
Hard water enters at valve inlet – flows thru nozzle and thru throat to brine valve to refill the brine tank. Inlet flow also continues down thru mineral to the bottom distributor. Conditioned water flows up thru the distributor tube, around the piston and out the outlet. Note: An option is available to keep service valve in by-pass position until the end of brine tank refill cycle.

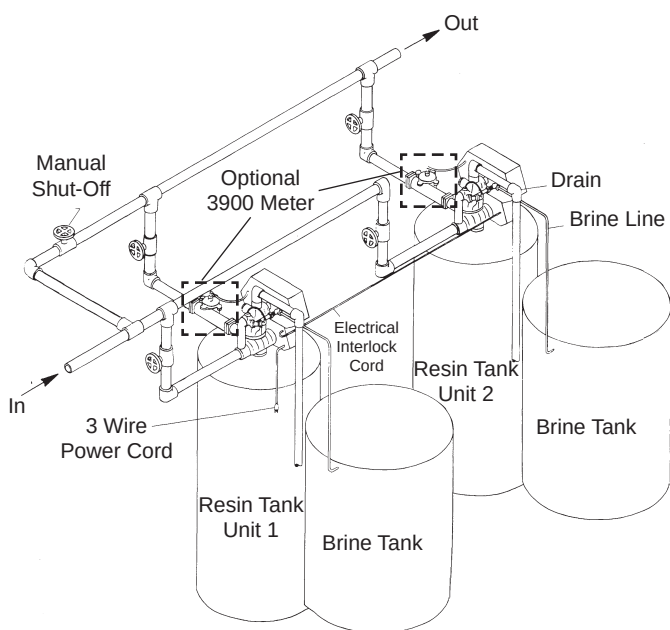
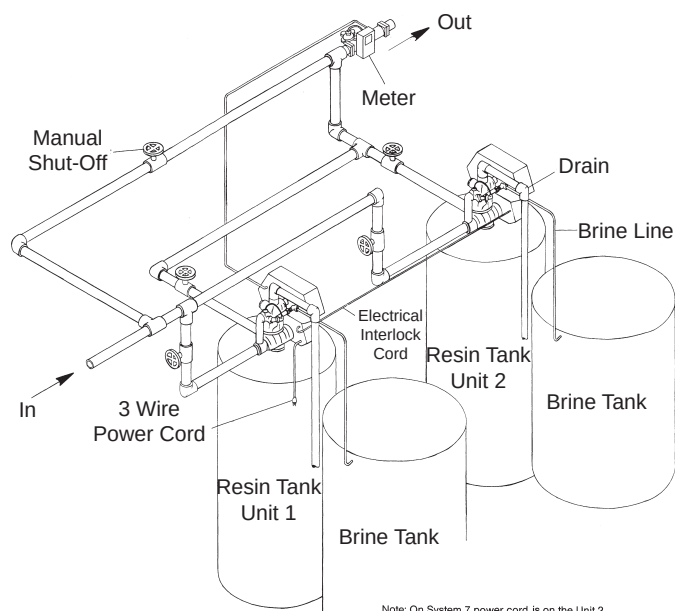
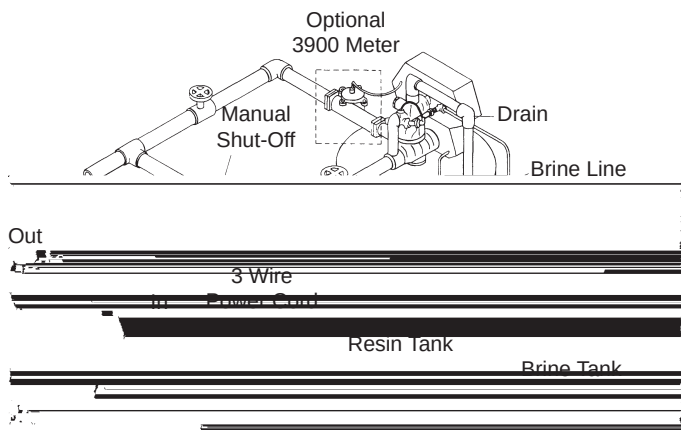
3900 VALVE & 3" DIST. TUBE ON 24" TANK

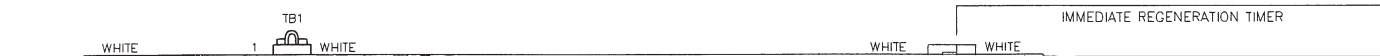
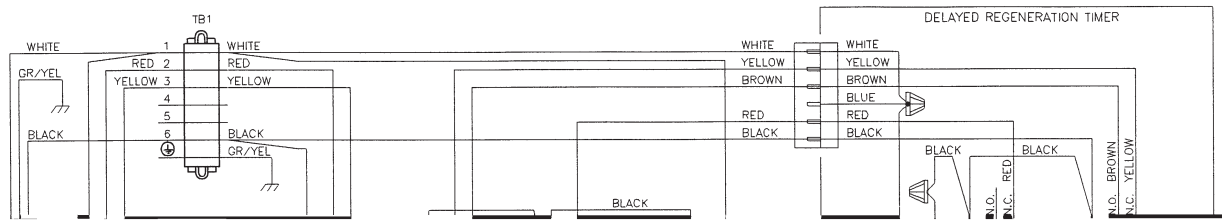


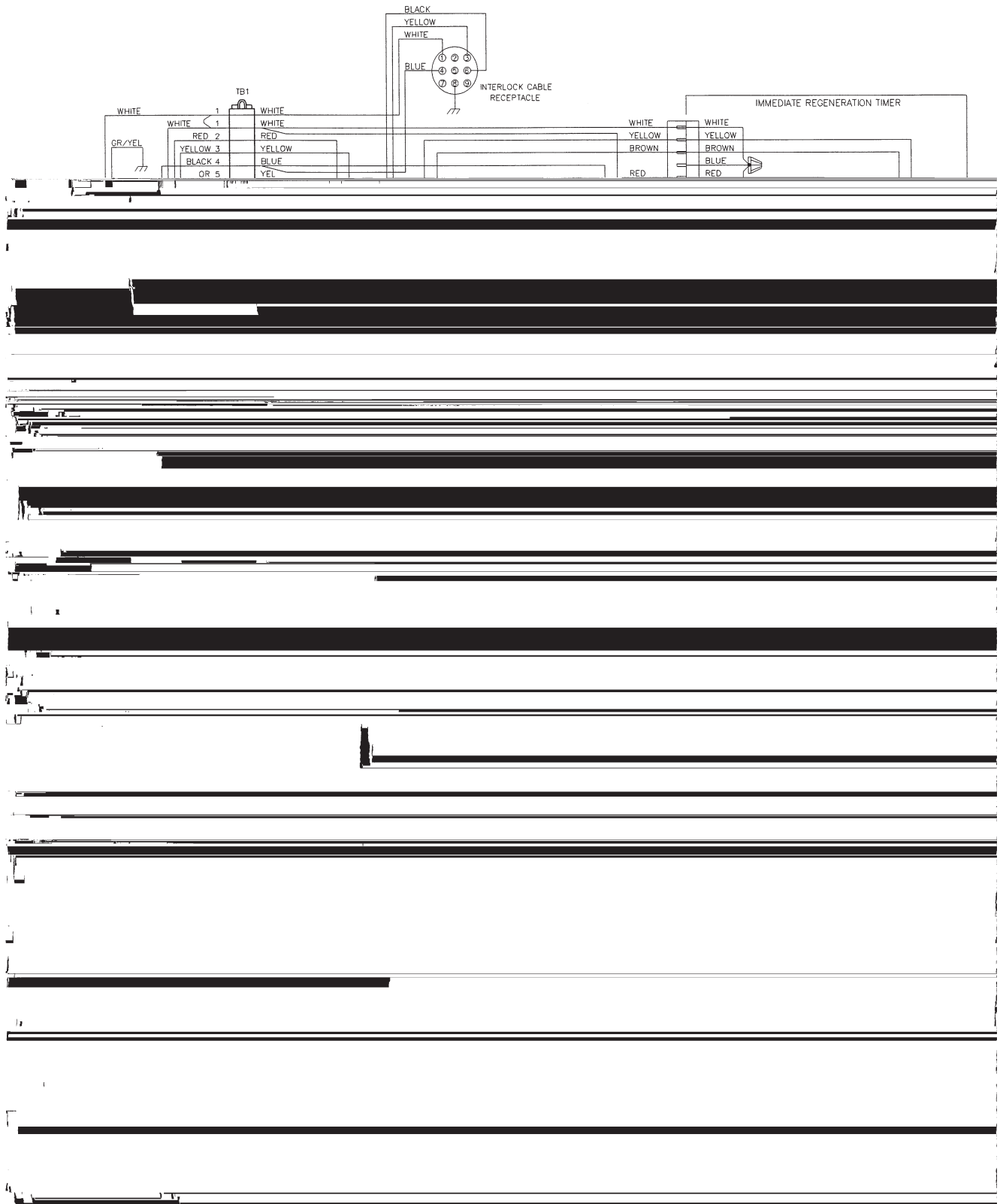
3900 ON EMPTY TANK

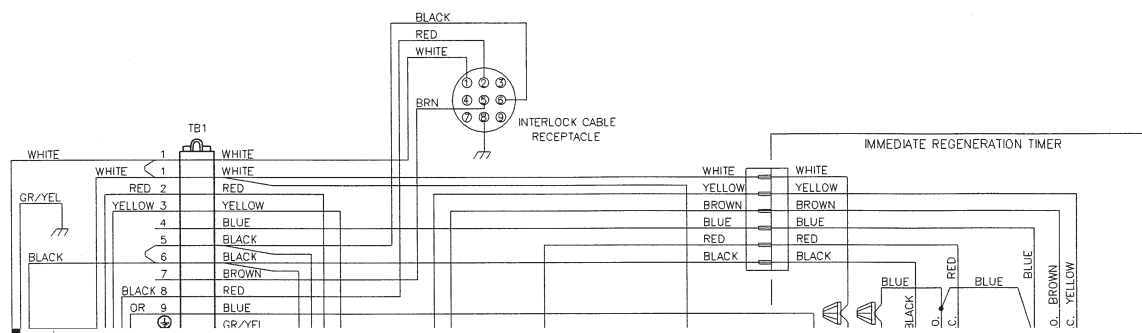




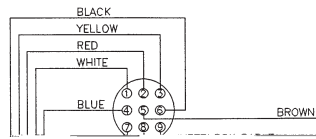








TB1



INTERLOCK CABLE
(CONNECT TO NEXT UPSTREAM VALVE OR REMOTE METER)

INTERLOCK CABLE RECEPTACLE
(CONNECT TO NEXT DOWNSTREAM VALVE OR JUMPER PLUG)

NOTE:
TWO TO FIVE TANK SINGLE METER ALTERNATING REGENERATION.
1 TO 4 TANKS IN SERVICE. ONE TANK IN REGENERATION OR STANDBY.
ALL VALVES AT FULLY CLOSED. FIRST VALVE AT STANDBY.

11772.....Spring
11774.....Retaining Ring
18713.....Brine Valve Body
16497-01Brine Stem Assembly
16498-01Stem Guide Assembly

12473.....Screw - Hex Head
15127-xx.....Injector Throat
15128-xx.....Injector Nozzle
15246.....O-ring -116
16340.....Injector Body
16341-01Injector Cover
-xx Specify Size

14818.....Clip Piston Rod
14922.....O-ring -035
15125.....Piston Rod
16130.....Piston
16389-0End Plug Assembly

14818.....Clip Piston Rod
16071.....Piston
16072.....Piston Rod
16076.....O-ring -042
16399-01End Plug Assembly - White

14818.....Clip Piston Rod
16082.....Piston - No Hard Water Bypass
16072.....Piston Rod
16076.....O-ring -042
16399-11.....End Plug Assembly - Black

10368.....Spacer
10369.....Spacer - Port
11720.....Seal

16068.....Seal
16069.....Spacer - Narrow
16070.....Spacer - Wide

10302.....Insulator - Switch
10872.....Screw - Hex Head
11080.....Screw - Flat Head
10218.....Switch
10300.....Screw - Hex Head
15120.....Bracket - Motor Mounting
40392.....Drive Motor - 115 V. 50/60 Hz
16052.....Blushing
17797.....Bracket - Switch Mounting
12624.....Screw - Pan Head

10302.....Insulator - Switch
10872.....Screw - Hex Head
11080.....Screw - Flat Head
10218.....Switch
10300.....Screw - Hex Head
11805.....Screw - Pan Head
40392.....Drive Motor - 115V. 50/60 Hz
17797.....Bracket - Switch Mounting
16086.....Bracket - Motor Mounting

10368.....Spacer
10369.....Or. ~~Spacer~~ 1549 BDC BT/TT0 1 Tf9 0 0 9 414 589.247
11720-02.....Seal, 1-1/2", Silicone

41534

continued

60711-00.....	2" NPT, Less BTTNS, w/2 Holes
60711-000.....	2" NPT, Less BTTNS, w/3 Holes
60711-01.....	2" NPT, Less BTTNS, w/1 Hole
60711-20.....	2" NPT, 20 gpm
60711-25.....	2" NPT, 25 gpm, Brass
60711-30.....	2" NPT, 30 gpm
60711-35.....	2" NPT, 35 gpm
60711-40.....	2" NPT, 40 gpm
60711-45.....	2" NPT, 45 gpm
60711-50.....	2" NPT, 50 gpm
60711-55.....	2" NPT, 55 gpm
60711-60.....	2" NPT, 60 gpm
60711-65.....	2" NPT, 65 gpm
60711-70.....	2" NPT, 70 gpm
60711-75.....	2" NPT, 75 gpm
60711-80.....	2" NPT, 80 gpm
60711-85.....	2" NPT, 85 gpm
60711-90.....	2" NPT, 90 gpm
60711-95.....	2" NPT, 95 gpm
60711-100.....	2" NPT, 100 gpm
60812-30	2" BSP/ Metric, 30 gpm
60812-35	2" BSP/ Metric, 35 gpm
60812-45	2" BSP/ Metric, 45 gpm
60812-50	2" BSP/ Metric, 50 gpm
60812-55	2" BSP/ Metric, 55 gpm
60812-70	2" BSP/ Metric, 70 gpm
60812-75	2" BSP/ Metric, 75 gpm
60812-80	2" BSP/ Metric, 80 gpm
60812-90	2" BSP/ Metric, 90 gpm
60812-95	2" BSP/ Metric, 95 gpm
60812-100	2" BSP/ Metric, 100 gpm

