



Fleck 2900s

Service Manual

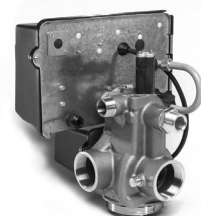


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JOB SPECIFICATION SHEET

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

1. Type of Timer:

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

2. Downflow:

Upflow

Upflow Variable

3. Meter Size:

- 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 _____

4. System Type:

- 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.

5. Timer Program Settings:

- 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

6. Drain Line Flow Control: _____ gpm

7. Brine Line Flow Controller: _____ gpm

8. Injector Size#: _____

9. Piston Type:

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

INSTALLATION

Water Pressure

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

Electrical Facilities

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.

Existing Plumbing

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.

Location Of Softener And Drain

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

BY-PASS VALVES

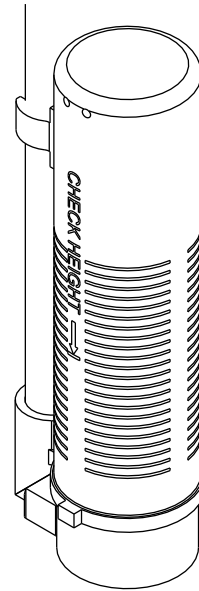
Always provide for the installation of a by-pass valve if unit is not equipped with one.

CAUTION Water pressure is not to exceed 125 psi (8.6 bar), water temperature is not to exceed 110°F (43°C), and the unit cannot be subjected to freezing conditions.

Installation Instructions

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.
4. Refer to the dimensional drawing for cutting height of the distributor tube. If there is no dimensional drawing, cut the distributor tube flush with the top of the tank.
5. Lubricate the distributor O-ring seal and tank O-ring seal. Place the main control valve on tank. Note: Only use silicone lubricant.
6. Solder joints near the drain must be done prior to connecting the Drain Line Flow Control fitting (DLFC). Leave at least 6" (15 cm) between the DLFC and solder joints when soldering pipes that are connected on the DLFC. Failure to do this could cause interior damage to the DLFC.
7. Teflon tape is the only sealant to be used on the drain fitting. The drain from twin tank units may be run through a common line.
8. Make sure that the floor is clean beneath the salt storage tank and that it is 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 (Figure 1) in the salt tank. Do not add salt to the brine tank at this time.
10. On units with a by-pass, place in by-pass position. Turn on the main water supply. Open a cold soft water tap nearby and let run a few minutes or until the system is free from foreign material (usually solder) that may have resulted from the installation. Once clean, close the water tap.

11. Slowly place the by-pass in service position and let water flow into the mineral tank. When water flow stops, slowly open a cold water tap nearby and let run until the air is purged from the unit.
12. Plug unit into an electrical outlet. Note: All electrical connections must be connected according to local codes. Be certain the outlet is uninterrupted.



60002 Rev E

Figure 1 Residential Air Check Valve

START-UP INSTRUCTIONS

The water softener should be installed with the inlet, outlet, and drain connections made in accordance with the manufacturer's recommendations, and to meet applicable plumbing codes.

1. Turn the manual regeneration knob slowly in a clockwise direction until the program micro switch lifts on top of the first set of pins. Allow the drive motor to move the piston to the first regeneration step and stop. Each time the program switch position changes, the valve will advance to the next regeneration step. Always allow the motor to stop before moving to the next set of pins or spaces.

NOTE: For electronic valves, please refer to the manual regeneration part of the timer operation section. If the valve came with a separate electronic timer service manual, refer to the timer operation section of the electronic timer service manual.

2. Position the valve to backwash. Ensure the drain line flow remains steady for 10 minutes or until the water runs clear (see above).
3. Position the valve to the brine / slow rinse position. Ensure the unit is drawing water from the brine tank (this step may need to be repeated).
4. Position the valve to the rapid rinse position. Check the drain line flow, and run for 5 minutes or until the water runs clear.
5. Position the valve to the start of the brine tank fill cycle. Ensure water goes into the brine tank at the desired rate. The brine valve drive cam will hold the valve in this position to fill the brine tank for the first regeneration.
6. Replace control box cover.
7. Put salt in the brine tank.

NOTE: Do not use granulated or rock salt.

3200 TIMER SETTING PROCEDURE

How To Set Days On Which Water Conditioner Is To Regenerate (Figure 2)

Rotate the skipper wheel until the number "1" is at the red pointer. Set the days that regeneration is to occur by sliding tabs on the skipper wheel outward to expose trip fingers. Each tab is one day. Finger at red pointer is tonight. Moving clockwise from the red pointer, extend or retract fingers to obtain the desired regeneration schedule.

How To Set The Time Of Day

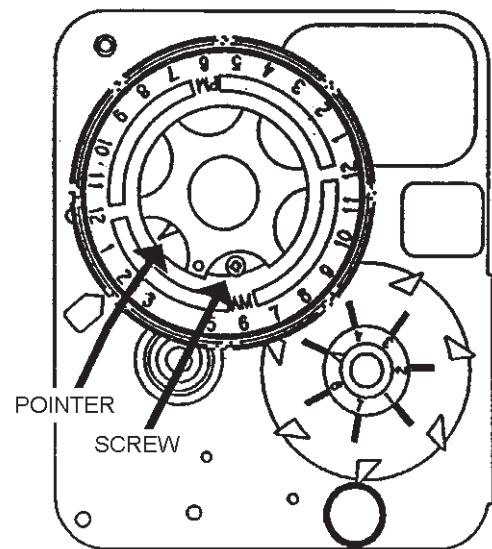
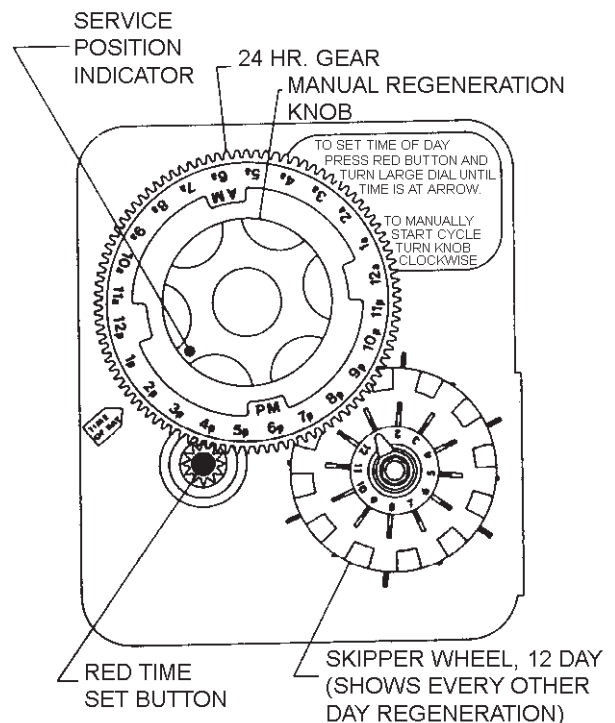
1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is at the time of day pointer.
3. Release the red button to again engage the drive gear.

How To Manually Regenerate Your Water Conditioner At Any Time

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.

How to Adjust Regeneration Time

1. Disconnect the power source.
2. Locate the three screws behind the manual regeneration knob by pushing the red button in and rotating the 24 hour dial until each screw appears in the cut out portion of the manual regeneration knob.
3. Loosen each screw slightly to release the pressure on the time plate from the 24 hour gear.
4. Locate the regeneration time pointer on the inside of the 24 hour dial in the cut out.
5. Turn the time plate so the desired regeneration time aligns next to the raised arrow.
6. Push the red button in and rotate the 24 hour dial. Tighten each of the three screws.
7. Push the red button and locate the pointer one more time to ensure the desired regeneration time is correct.
8. Reset the time of day and restore power to the unit.



3200 ADJUSTABLE REGENERATION TIMER

IMPORTANT!
SALT LEVEL MUST ALWAYS BE ABOVE
WATER LEVEL IN BRINE TANK

61502-3200 Rev A

Figure 2

3210 & 3220 TIMER SETTING PROCEDURE

Typical Programming Procedure

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).

NOTE: Drawing shows 8,750 gallon setting. The capacity (gallons) arrow (15) shows zero gallons remaining. The unit will regenerate tonight at the set regeneration time.

How To Set The Time Of Day

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.

How To Manually Regenerate Your Water Conditioner At Any Time

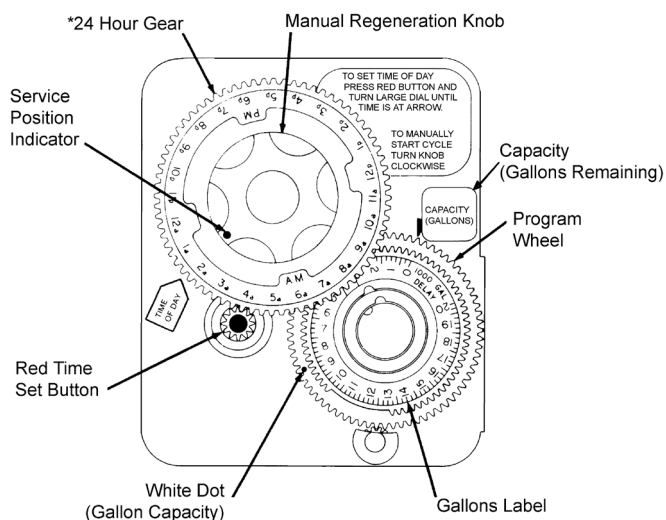
1. Turn the manual regeneration knob clockwise.
2. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
3. The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
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.

Immediate Regeneration Timers

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.

NOTE: The program wheel to the left may be different than the program wheel on the product.

NOTE: To set meter capacity rotate manual knob one - 360° revolution to set gallonage.



*Immediate regeneration timers do not have a 24-hour gear. No time of day can be set.

61502-3200 Rev A

Figure 3

3200, 3210, 3220, 3230 REGENERATION CYCLE SETTING PROCEDURE

How To Set The Regeneration Cycle Program

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.

3200 Series Timers (Figure 4)

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.

Timer Setting Procedure

How To Change The Length Of The Backwash Time

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.

How To Change The Length Of Brine And Rinse Time

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.

How To Change The Length Of Rapid Rinse

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.

How To Change The Length Of Brine Tank Refill Time

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.

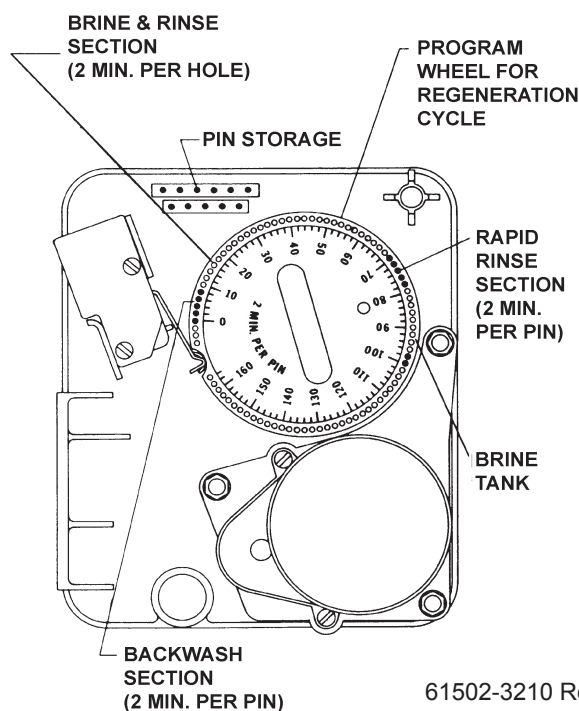
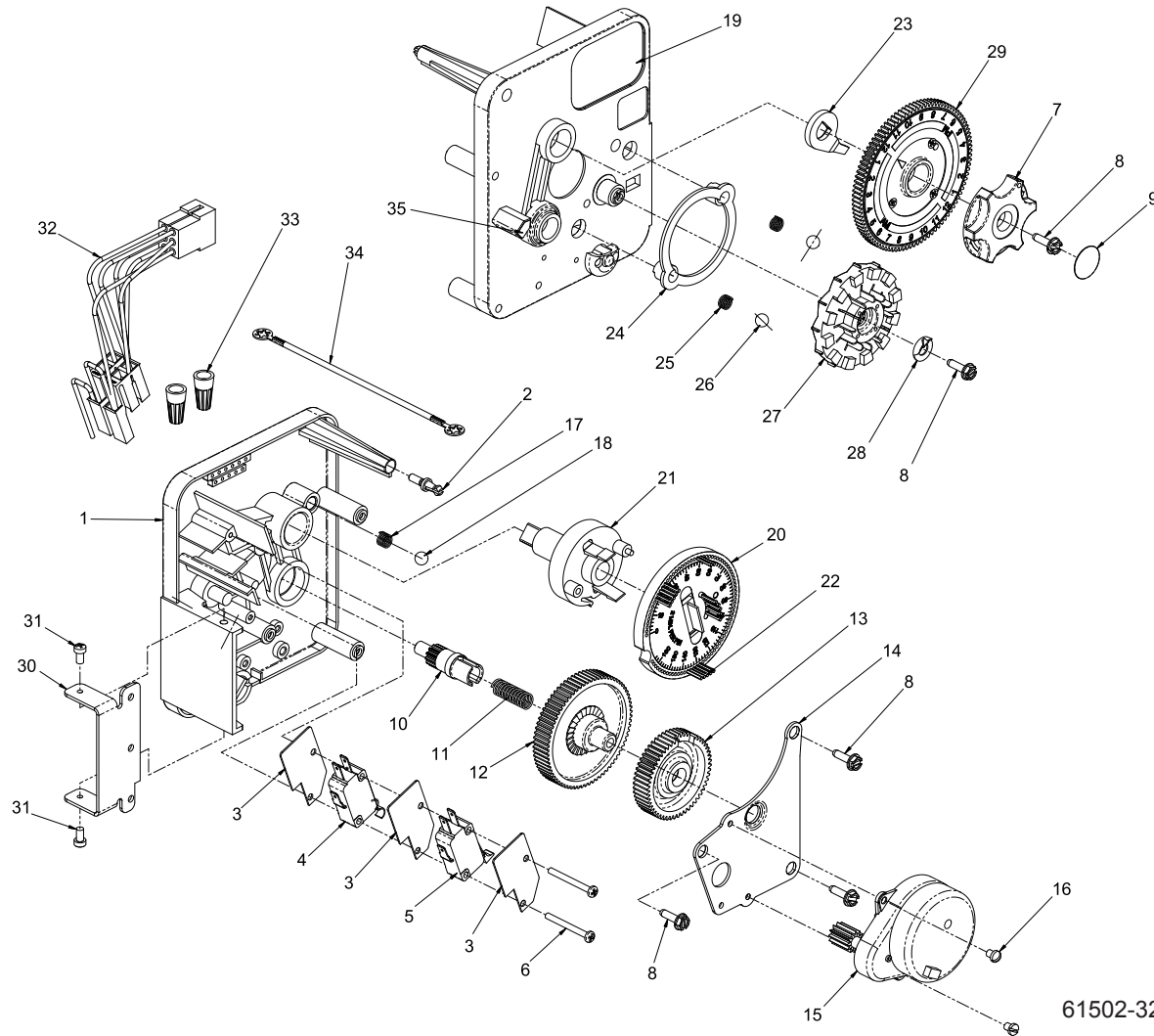


Figure 4

61502-3210 Rev A

3200 TIME CLOCK TIMER ASSEMBLY

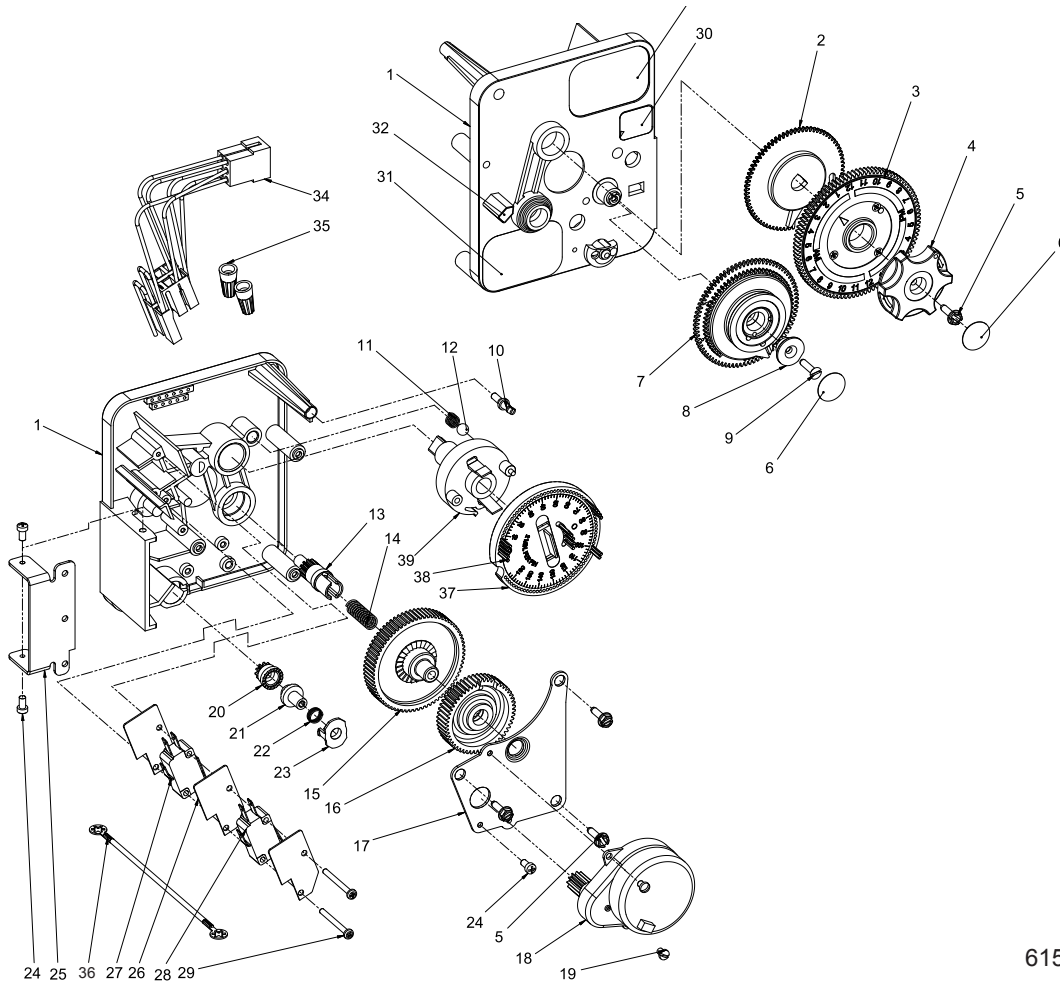


61502-3200 Rev A

Item No.	QTY	Part No.	Description
1.....	1	13870.....	Housing, Timer, 3200
2.....	1	14265.....	Clip, Sping
3.....	3	14087.....	Insulator
4.....	1	10896.....	Switch, Micro
5.....	1	15320.....	Switch, Micro, Timer
6.....	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8
7.....	1	13886.....	Knob, 3200
8.....	5	13296.....	Screw, Hex Wsh, 6-20 x 1/2
9.....	1	11999.....	Label, Button
10.....	1	13018.....	Pinion, Idler
11.....	1	13312.....	Spring, Idler Shaft
12.....	1	13017.....	Gear, Idler
13.....	1	13164.....	Gear, Drive
14.....	1	13887.....	Plate, Motor Mounting
15.....	1	18743-1.....	Motor, 120V, 60Hz, 1/30 RPM
	1	18752-1.....	Motor, 100V, 50Hz, 1/30 RPM
	1	18824-1.....	Motor, 23V, 50Hz, 1/30 RPM
	1	18826-1.....	Motor, 24V, 50Hz, 1/30 RPM
	1	19659-1.....	Motor, 24V, 60Hz, 1/30 RPM
	1	19660-1.....	Motor, 230V, 60Hz, 1/30 RPM
16.....	2	13278.....	Screw, Slt'd Fillister Hd 6-32 x .156

Item No.	QTY	Part No.	Description
17.....	1	15424.....	Spring, Detent, Timer
18.....	1	15066.....	Ball, 1/4", Delrin
19.....	1	15465.....	Label, Caution
20.....	1	19210.....	Program Wheel Assy
21.....	1	13911.....	Gear, Main Drive, Timer
22.....	17	41754.....	Pin, Spring, 1/16 x 5/8 SS, Timer
23.....	1	13011	Arm, Cycle Actuator
24.....	1	13864.....	Ring, Skipper Wheel
25.....	2	13311	Spring, Detent, Timer
26.....	2	13300.....	Ball, 1/4", SS
27.....	1	14381.....	Skipper Wheel Assy, 12 Day
	1	14860.....	Skipper Wheel Assy, 7 Day
28.....	1	13014.....	Pointer, Regeneration
29.....	1	40096-24.....	Dial, 12 AM Regen Assy, Black
	1	40096-02.....	Dial, 2 AM Regen Assy, Black
30.....	1	13881.....	Bracket, Hinger Timer
31.....	2	11384	Screw, Phil, 6-32 x 1/4 Zinc
32.....	1	13902.....	Harness, 3200
33.....	2	40422.....	Nut, Wire, Tan
34.....	1	15354-01.....	Wire, Ground, 4"
35.....	1	14007.....	Label, Time of Day

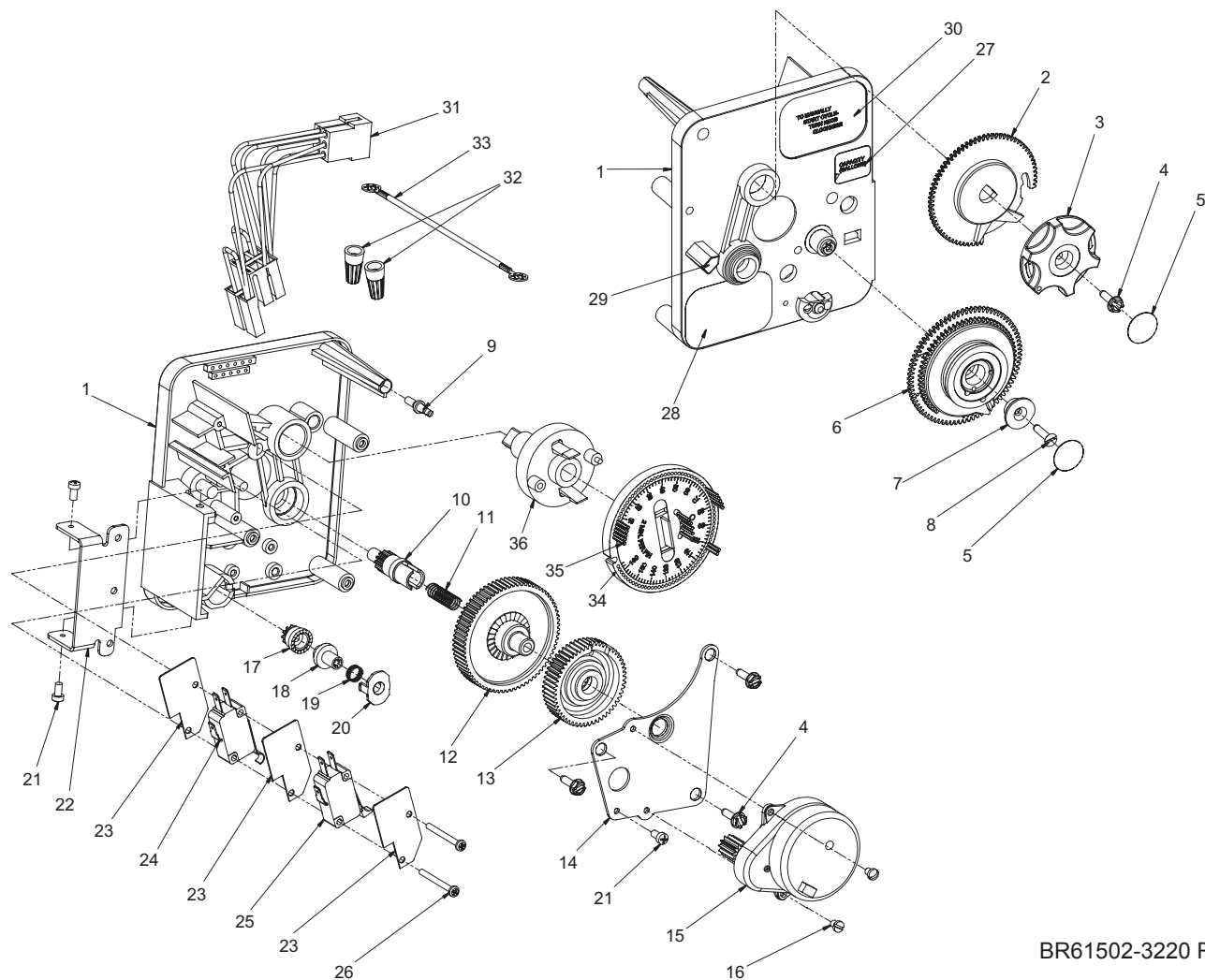
3210 METER DELAYED TIMER ASSEMBLY



61502-3210 Rev A

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1.....	1	13870	Housing, Timer, 3200	1	1	19660-1	Motor, 230V, 60Hz, 1/30 RPM
2.....	1	13802	Gear, Cycle Actuator	19.....	1	13278	Screw, Fillister Hd, 6-32 x .156
3.....	1	40096-02	Dial 2 AM Regen Assy, Black	20.....	1	13830	Pinion, Program Wheel Drive
4.....	1	13886	Knob, 3200	21.....	1	13831	Clutch, Drive Pinion
5.....	4	13296	Screw, Hex Wsh, 6-20 x 1/2	22.....	1	14276	Spring, Meter, Clutch
6.....	2	11999	Label, Button	23.....	1	14253	Retainer, Clutch Spring
7.....	1	60405-50	Program Wheel, w/2" Std Label, w/People Label Set @ 21	24.....	3	11384	Screw, Phil, 6-32 x 1/4
8.....	1	13806	Retainer, Program Wheel	25.....	1	13881	Bracket, Hinge Timer
9.....	1	13748	Screw, Flat Head St, 6-20 x 1/2	26.....	3	14087	Insulator
10.....	1	14265	Clip, Spring	27.....	1	10896	Switch, Micro
11.....	1	15424	Spring, Detent, Timer	28.....	1	15320	Switch, Micro, Timer
12.....	1	15066	Ball, 1/4" Delrin	29.....	2	11413	Screw, Pan Hd Mach, 4-40 x 1/8
13.....	1	13018	Pinion, Idler	30.....	1	14198	Label, Indicator
14.....	1	13312	Spring, Idler Shaft	31.....	1	15465	Label, Caution
15.....	1	13017	Gear, Idler	32.....	1	14007	Label, Time of Day
16.....	1	13164	Gear, Drive	33.....	1	14045	Label, Instruction
17.....	1	13887	Plate, Motor Mounting	34.....	1	13902	Harness, 3200
18.....	1	18743-1	Motor, 120V, 60Hz 1/30 RPM	35.....	2	40422	Nut, Wire, Tan
1	1	18752-1	Motor, 100V, 50Hz, 1/30 RPM	36.....	1	15354-01	Wire, Ground, 4"
1	1	18824-1	Motor, 23V, 50Hz, 1/30 RPM	37.....	1	19210	Program Wheel Assy
1	1	18826-1	Motor, 24V, 50Hz, 1/30 RPM	38.....	17	41754	Pin, Spring, 1/16 x 5/8 SS, Timer
1	1	19659-1	Motor, 24V, 60Hz, 1/30 RPM	39.....	1	13911	Gear, Main Drive, Timer

3220 METER IMMEDIATE TIMER ASSEMBLY

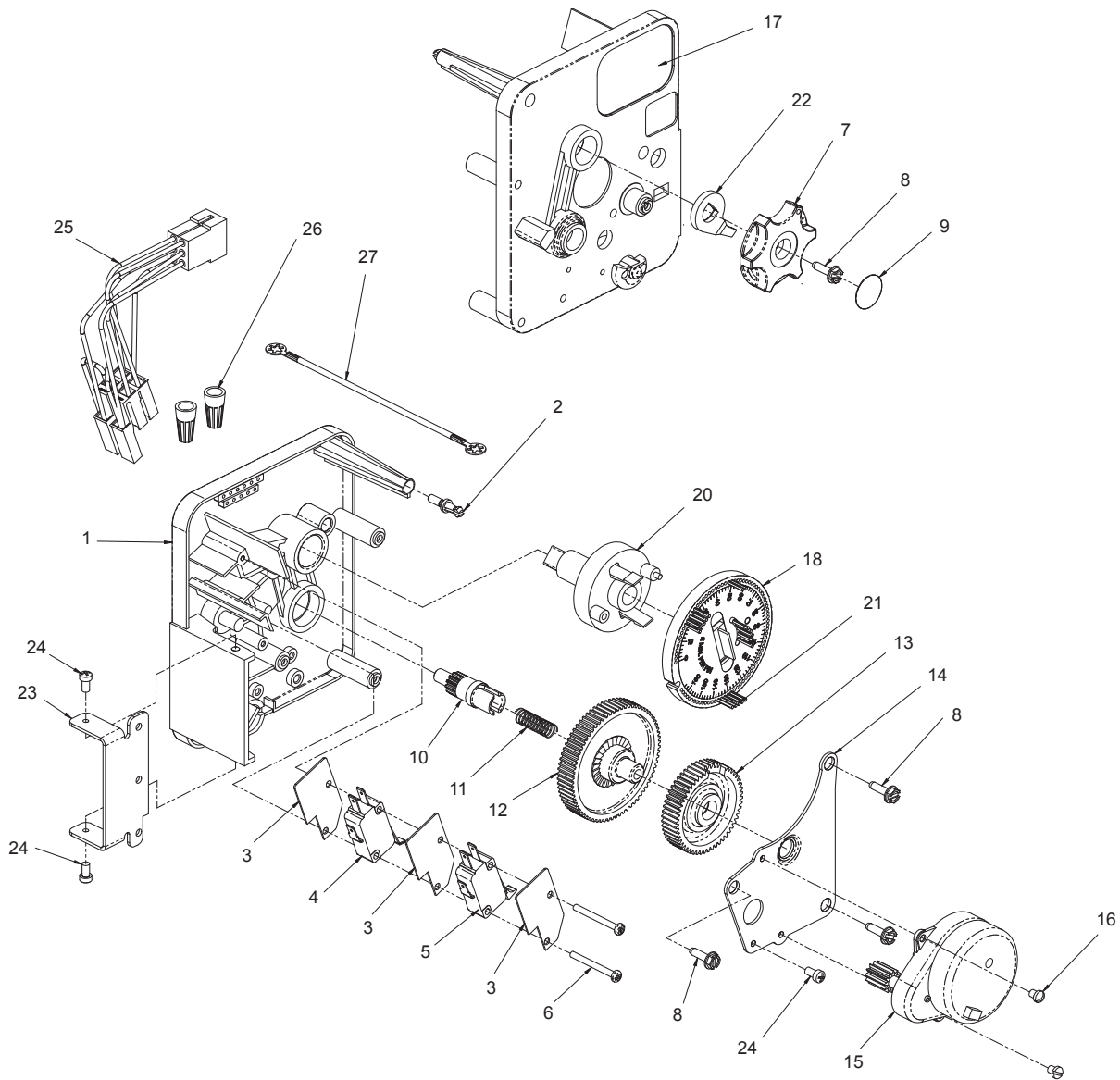


BR61502-3220 Rev B

Item No.	QTY	Part No.	Description
1.....	1	13870	Housing, Timer
2.....	1	15431	Gear, Cycle Actuator Sys #5
3.....	1	13886	Knob, 3200
4.....	4	13296	Screw, Hex Wsh, 6-20 x 1/2
5.....	2	11999	Label, Button
6.....	1	60405-50	Program Wheel, w/2" Std Label
7.....	1	13806	Retainer, Program Wheel
8.....	1	13748	Screw, Flt Hd St, 6-20 x 1/2
9.....	1	14265	Spring Clip
10.....	1	13018	Pinion, Idler
11.....	1	18563	Idler Shaft Spring
12.....	1	13017	Gear, Idler
13.....	1	13164	Drive Gear
14.....	1	13887	Plate, Motor Mounting
15.....	1	18743-1	Motor, 120V, 60 Hz 1/30 RPM
	1	18752-1	Motor, 100V, 50Hz, 1/30 RPM
	1	18824-1	Motor, 23V, 50Hz, 1/30 RPM
	1	18826-1	Motor, 24V, 50Hz, 1/30 RPM
	1	19659-1	Motor, 24V, 60Hz, 1/30 RPM
	1	19660-1	Motor, 230V, 60Hz, 1/30 RPM
16.....	2	13278	Screw, Sltd Fillister Hd

Item No.	QTY	Part No.	Description
17.....	1	14502	Pinion, Program Wheel
18.....	1	14501	Clutch, Drive Pinion
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	15314-00	Micro Switch
25.....	1	15320	Switch, Micro, Timer
26.....	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8
27.....	1	14198	Label, Indicator
28.....	1	15465	Label, Caution
29.....	1	14007	Label, Time of Day
30.....	1	15148	Label, Instruction
31.....	1	40617	Harness, 3220
32.....	2	40422	Nut, Wire, Tan
33.....	1	15354-01	Wire, Ground, 4"
34.....	1	19210-05	Program Wheel Assy, 9000/3230
35.....	17	41754	Pin, Spring, 1/16 x 5/8 SS, Timer
36.....	1	15055	Gear, Main Drive

3230 REMOTE START TIMER ASSEMBLY

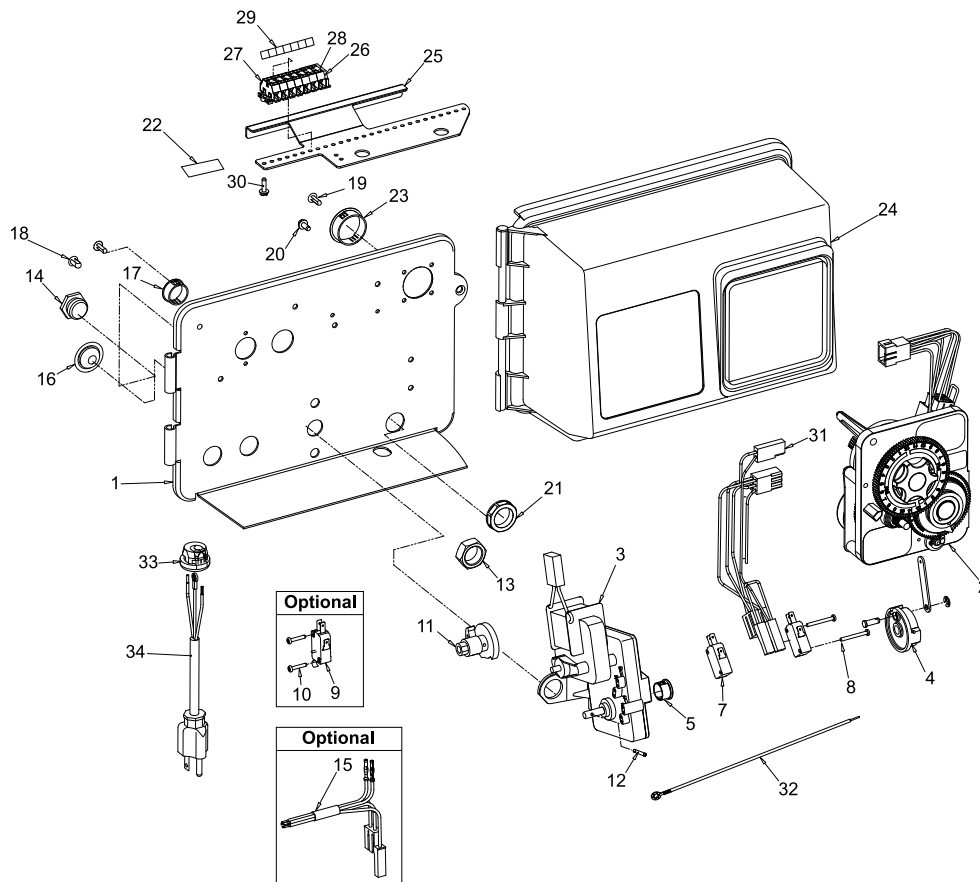


61502-3230R REV A

Item No.	QTY	Part No.	Description
1.....	1	13870	Housing, Timer
2.....	1	14265	Spring Clip
3.....	3	14087	Insulator
4.....	1	15314	Micro Switch
5.....	1	15320	Switch, Micro, Timer
6.....	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8
7.....	1	13886	Knob, 3200
8.....	4	13296	Screw, Hex Wsh, 6-20 x 1/2
9.....	1	11999	Label, Button
10.....	1	13018	Pinion, Idler
11.....	1	18563	Idler Shaft Spring
12.....	1	13017	Gear, Idler
13.....	1	15055	Drive Gear
14.....	1	13887	Plate, Motor Mounting
15.....	1	18743-1	Motor, 120V, 60 Hz, 1/30 RPM
1	1	18752-1	Motor, 100V, 50Hz, 1/30 RPM

Item No.	QTY	Part No.	Description
1	1	18824-1	Motor, 23V, 50Hz, 1/30 RPM
1	1	18826-1	Motor, 24V, 50Hz, 1/30 RPM
1	1	19659-1	Motor, 24V, 60Hz, 1/30 RPM
1	1	19660-1	Motor, 230V, 60Hz, 1/30 RPM
16.....	2	13278	Screw, Slt'd Fillister Hd
17.....	1	15313	Label, Caution
18.....	1	19210-05	Program Wheel Assembly, 3200
20.....	1	15055	Main Drive Gear
21.....	17	41754	Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer
22.....	1	13011	Cycle Actuator Arm
23.....	1	13881	Bracket, Hinge Timer
24.....	3	11384	Screw, Phil, 6-32 x 1/4 Zinc
25.....	1	16336	Harness, 3230R
26.....	2	40422	Nut, Wire, Tan
27.....	1	15354-01	Wire, Ground, 4"

UPPER ENVIRONMENTAL POWERHEAD ASSEMBLY



61501-2900 Rev G

Item No.	QTY	Part No.	Description
1.....	1.....	18697-15.....	Backplate, Hinged
2.....	1.....	3200 Clock Timer Assembly	
	1.....	3200 Meter Timer Assembly	
3.....	1.....	41543.....	Motor, Drive, 115V, 50/60 Hz
	1.....	42579.....	Motor, Drive, 24VAC/DC, 50/60 Hz
	1.....	41545.....	Motor, Drive, 230V, 50/60 Hz
4.....	1.....	60160-15.....	Drive Cam Assembly, STF, Blue, 2900
	1.....	60160-30*.....	Drive Cam Assembly, Upflow
	1.....	60160-31*.....	Drive Cam Assembly, Upflow, Variable
5.....	1.....	17904.....	Bushing, Heyco 1/2, Heyco #2073
7.....	2.....	10218.....	Switch, Micro
8.....	2.....	14923.....	Screw, Pan Hd Mach, 4-40 X 1 MS Steel Zinc
9.....	1.....	10896.....	Switch, Micro
10.....	2.....	11805.....	Screw, Rd Hd, 4-40 X 5/8 TYPE 1 Steel Zinc
11.....	1.....	12472.....	Cam Assy, Tri-Stack, After RR
	1.....	12777.....	Cam, Shut-Off Valve
	1.....	15770.....	Cam Assy, Special Tri-Stack, After Brine Fill
	1.....	15805.....	Cam, SVO
	1.....	19887*.....	Cam, Brine, 2750 U/F, Std
12.....	2.....	10338.....	Pin, Roll 3/32 x 7/8
13.....	1.....	10269.....	Nut, Jam, 3/4-16
14.....	1.....	10712.....	Fitting, Brine Valve
15.....	1.....	14822.....	Harness, 2900
16.....	2.....	19691.....	Plug, .750 Dia Recessed, Black
17.....	1.....	15806.....	Plug, Hole, Heyco #2693
18.....	1.....	19801.....	Plug, .190 Dia, White Heyco 0307
19.....	7.....	19800.....	Plug, .140 Dia, White Heyco 0304

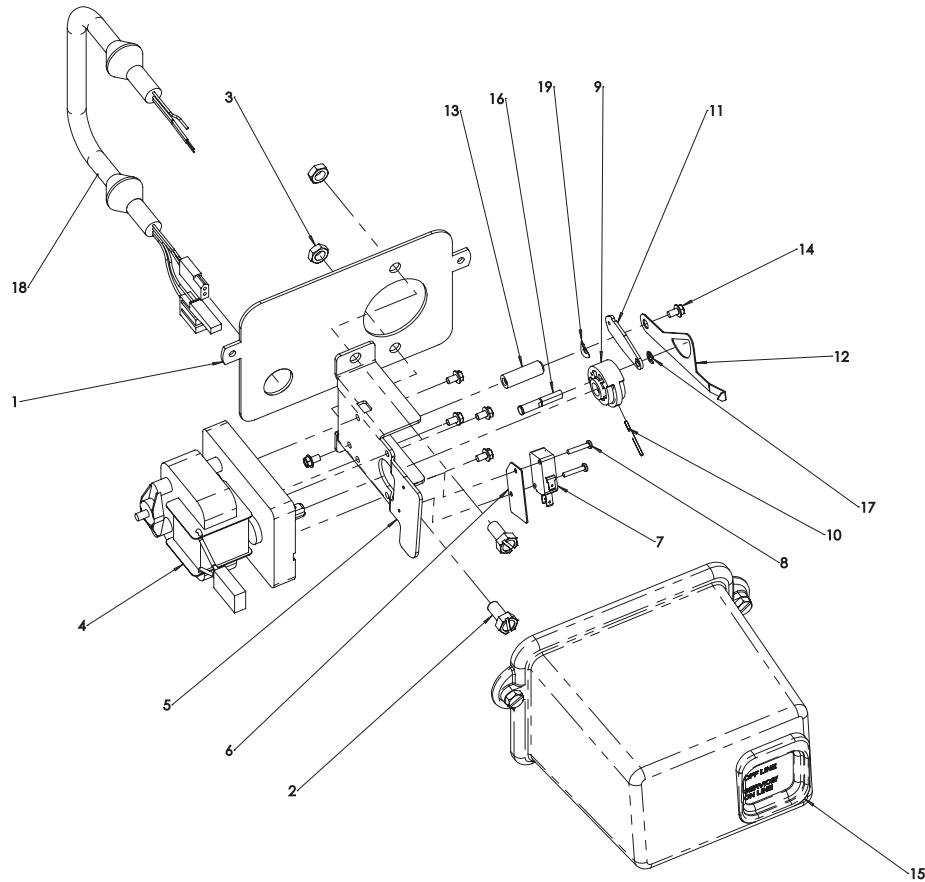
Item No.	QTY	Part No.	Description
20.....	4.....	10300.....	Screw, Slot Hex Wsh, 8-18 X 3/8 Type "B" RC 44-47
21.....	1.....	18691-02.....	Nut, Conduit Fitting 1/2"
22.....	1.....	40038-03.....	Label, Voltage, 120V, 3200ET
23.....	1.....	17421.....	Plug, 1.20 Hole Heyco #2733
24.....	1.....	60219-02.....	Cover Assembly, Environmental, Black w/Clear Window
25.....	1.....	19772.....	Bracket, Terminal Block
26.....	1.....	40174.....	Terminal Block, Green/Yellow Commercial, 809-260/141
27.....	6.....	41084.....	Terminal Block, Segment, Gray
28.....	1.....	41085.....	Endplate, Terminal Block, Gray
29.....	2.....	15250.....	Label, Terminal Strip
30.....	2.....	13296.....	Screw, Hex Wsh, 6-20 6-20 x 1/2 Type 25 Steel Zinc
31.....	1.....	40400.....	Harness, Drive, Designer/Environmental
32.....	1.....	40175-01.....	Wire, Ground, Commercial Valves
33.....	1.....	13547.....	Strain Relief, Flat Cord Heyco #30-1
	1.....	13547-01.....	Strain Relief, Euro Round Cord
	1.....	13547-02.....	Strain Relief, U.S. Round
34.....	1.....	11545.....	Powercord, 4' European, Black
	1.....	19303.....	Powercord, 8', Australian
	1.....	40084-12.....	Powercord, 12' US, Round, 120V, Sys 5,6,7&2900/3150/3900
	1.....	40085-12.....	Powercord, 12' US, Round, 240V

Not Shown:

1.....	15216.....	Meter Cable Assembly, 15.25"
1.....	15879.....	Cable Guide Assembly, 2900

*Upflow Only

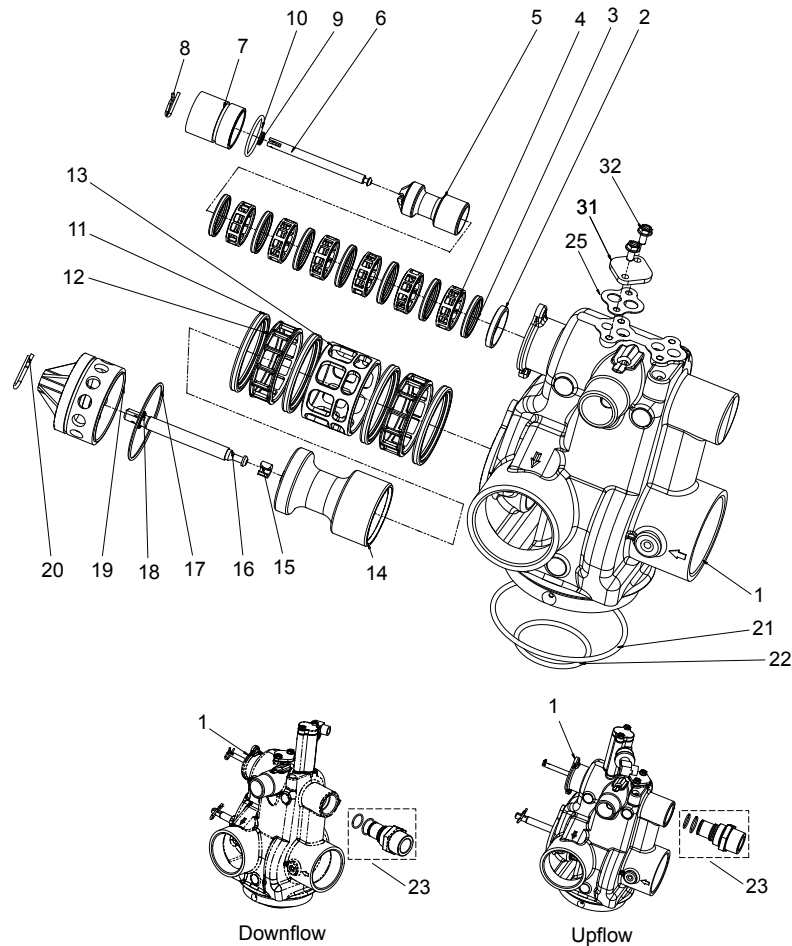
LOWER ENVIRONMENTAL POWERHEAD ASSEMBLY



61501-2900 Rev G

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1.....	1	BR18709	Backplate, Lower	13.....	1	BR18726	Spacer, Indicator
2.....	2	BR11224	Screw, Slotted Hex Head	14.....	6	BR10872	Screw, Hex WSH, 8-32 x 5/16
3.....	2	BR16346	Nut, Hex, Jam, 5/16-18, 18-8-SS	15.....	1	BR60217-02	Cover Assy, 2900, Lower, Black
4.....	1	BR40387	Motor, Drive, 115V, 60 Hz, SP FAM	16.....	1	BR42979	Bearing, Connecting Rod
5.....	1	BR14769	Bracket, Motor, 2900	17.....	1	BR42980	Ring, Retaining
6.....	1	BR10302	Insulator, Limit Switch	18.....	1	BR42446	Harness, Lower Drive SYS4, ENV
7.....	1	BR10218	Switch, Micro	19.....	1	BR18727	Washer, Curved Spring, /265 ID
8.....	2	BR19849	Screw, Pan HD, 4-40 x 5/8	Not Shown:			
9.....	1	BR14775	Cam, Main Drive, 2900 Lower	1	BR14044	Tie, Cable, HeyCo VNT # 4-18	
10.....	1	BR41022	Pin, Roll 2900 Lower	1	BR43062	Grease, Lubriplate, 630-2	
11.....	1	BR14759	Link, Piston Rod				
12.....	1	BR18725	Indicator, Service/Standby				

CONTROL VALVE ASSEMBLY



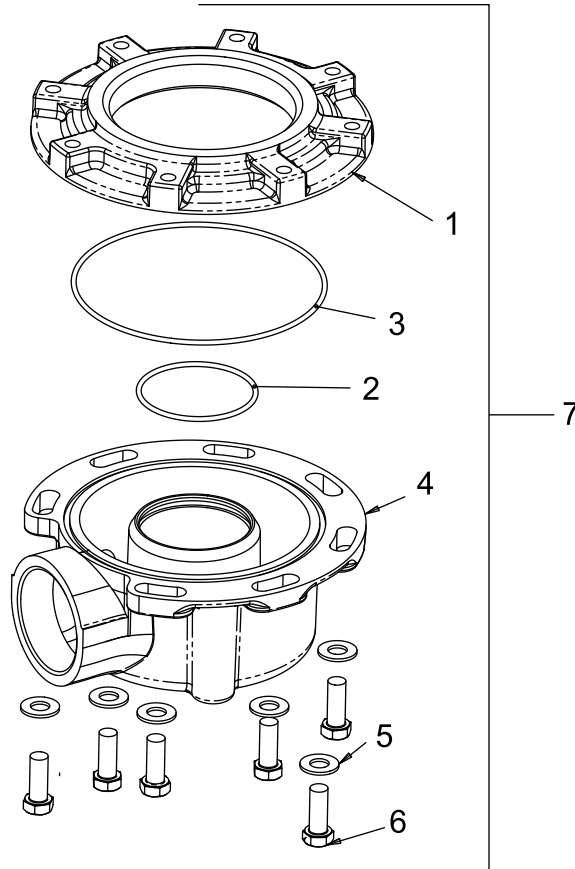
61500-2900 Rev F

Item No.	QTY	Part No.	Description
1.....	1	41428-01.....	Valve Body, 2900s, Machd, NPT U.S. Tap
		41428-09.....	Valve Body, 2900s, Machined, w/ Soft Water Adapter
2.....	1	10757.....	Spacer, End
		10757B.....	Spacer, End, Brass, HW
3.....	7	10545.....	Seal, Piston
		10545-01.....	Seal, Piston, Viton
		10545-02.....	Seal, Piston, Silicone
4.....	6	11451.....	Spacer, 12 Hole
		16589.....	Spacer, Hot Water
5.....	1	14451.....	Piston, 2750
		19454*.....	Piston, 2750, Upflow
6.....	1	41424.....	Rod, Piston, 2900s, Upper
7.....	1	41131.....	Plug, End
	1	10212.....	Plug, End, 1500/2750, Brass
8.....	1	10909.....	Pin, Link
9.....	1	10209.....	Quad Ring,-010
10.....	1	40078.....	O-ring, 28mm X 2mm
		10234-01.....	O-ring, -024, Hot Water
11.....	4	11720.....	Seal, Piston, 2900/3150
		10545-02.....	Seal, Piston, Silicone
12.....	2	10369.....	Spacer, 2", 2900/3150
		14241-01.....	Spacer, Hot Water
13.....	1	14753.....	Spacer, 2900
		16589.....	Spacer, Hot Water

Item No.	QTY	Part No.	Description
14.....	1	14757.....	Piston, HWBP
		14752.....	Piston, 2900, NHWBP
15.....	1	14818.....	Ring, Piston Rod, Snap
16.....	1	14758.....	Rod, Piston, 2900
17.....	1	14922.....	O-ring, -035, Piston
18.....	1	14926.....	Quad Ring, -012
19.....	1	14754-00.....	End Plug Assy, 2900
		14754-01.....	Plug, End, White, Machined
		14754-10.....	End Plug Assembly, 2900/2930, NHWBP
		19276-01.....	End Plug Assembly, 2900s, Brass, HW
		41427-01.....	Plug, End, 2900s, Lower, White
		41427-11.....	Plug, End, 2900s, Lower, Black
20.....	1	14813.....	Pin, Spring, Connecting Rod
21.....	1	13575.....	O-ring, -240
		15210.....	O-ring, -343, Park Tank
22.....	1	13577.....	O-ring, -226
23.....	1	61525.....	Softwater Adapter Kit, 2900s
25.....	2	19925.....	Gasket, Injector Body, 1700
31.....	1	11893.....	Cap, Injector, Stainless Steel
32.....	2	15137.....	Screw, Hex Wsh Mach, 10 - 24 x 3/8

*Upflow Only

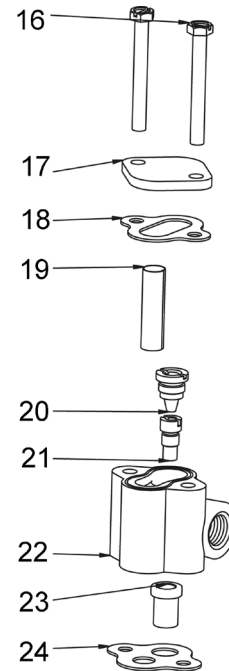
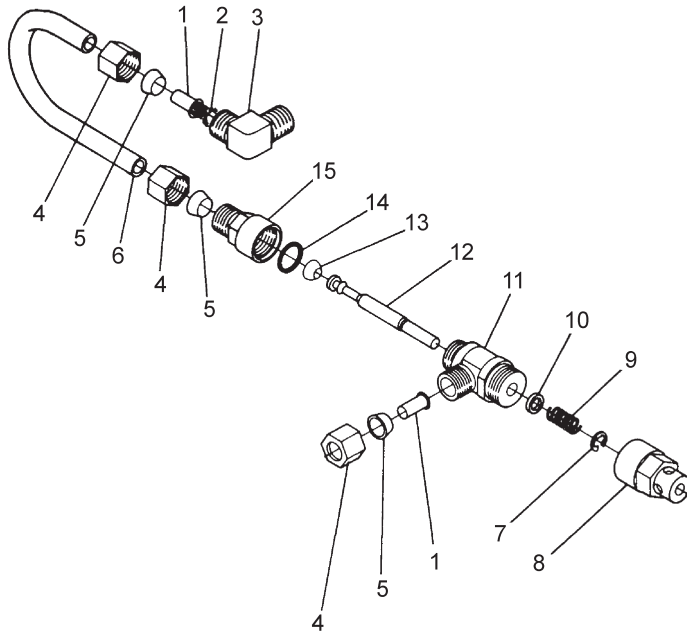
**CONTROL VALVE SIDE MOUNT
ADAPTER**



61415 Rev B

Item No.	QTY	Part No.	Description
1.....	1	40316.....	Adapter, Sidemount
2.....	1	40372.....	O-ring - 142
3.....	1	40368.....	O-ring - 160, Sidemount, Flange
4.....	1	40310.....	Base, 2850/2900/3930, Rotating
5.....	7	40375.....	Washer, Flat, 3/8, Type A, N-SERS
6.....	7	19768.....	Screw, Hex Hd, 3/8 - 16 x 1, Cap 18-8
7.....	1	61415.....	Adapter Assy, Sidemount 2850/2900/2930
		61415NP.....	Adapter Assy, Sidemount, NP 2850/2900/2930
		61415-20.....	Adapter Assy, Sidemount, BSP/ MTC 2850/2900/2930
		61415-20NP.....	Adapter Assy, Sidemount, BSP/ NP 2850/2900/2930

1600 SERIES BRINE SYSTEM



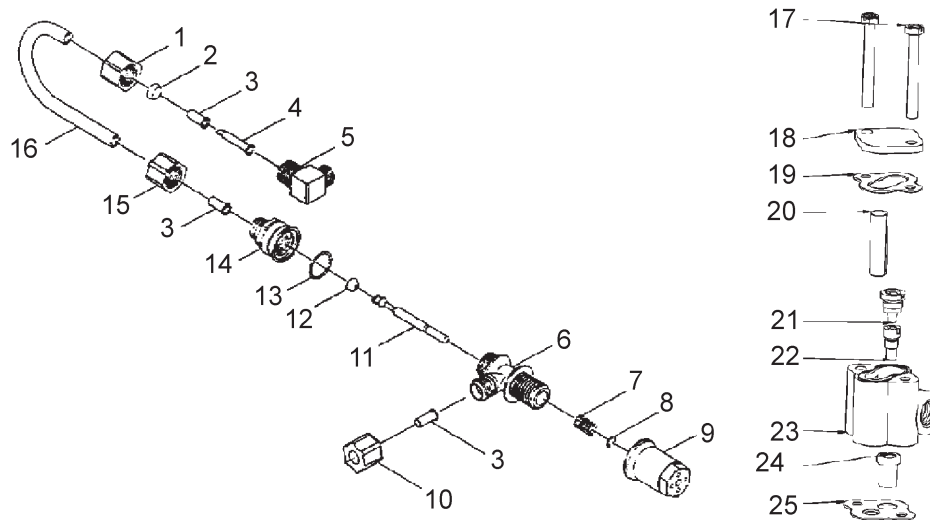
60029 Rev C

Item No.	QTY	Part No.	Description
1.....2	10332.....	Fitting, Insert, 3/8	
2.....1	12767.....	Screen, Brine	
3.....1	10328.....	Fitting, Elbow, 90 Deg. 1/4 PT x 3/8Tube	
4.....3	10329.....	Fitting, Tube, 3/8 Nut, Brass	
5.....3	10330.....	Fitting, Sleeve, 3/8 Celcon	
6.....1	16508.....	Tube, Brine, 1600, PVC	
	1	16508-01.....	Tube, Brine Valve, 2850/2900s
	1	12774.....	Tube, Brine Valve, 1500
	1	40027.....	Tube, Brine Valve, 2510
	1	15221.....	Tube, Brine Valve, 2750/2900
	1	42184.....	Tube, Brine Valve, 2850s
	1	41683*	Tube, Brine Valve, UF, 1600/1650
7.....1	10250.....	Ring, Retaining	
8.....1	11749.....	Guide, Brine Valve Stem	
9.....1	10249.....	Spring, Brine Valve	
10.....1	12550.....	Quad Ring, -009	
11.....1	12748.....	Brine Valve Body Assy, 1600 w/ Quad Ring	

Item No.	QTY	Part No.	Description
12.....	1	12552-02.....	Brine Valve Stem, 1600, with seat
13.....	1	12626.....	Seat, Brine Valve
14.....	1	11982	O-ring, -016
15.....	1	60020-25.....	BLFC, .25 GPM, 1600
	1	60020-50.....	BLFC, .50 GPM, 1600
	1	60020-100.....	BLFC, 1.0 GPM, 1600
16.....	2	10692.....	Screw, Slot Hex Hd, 10 - 24X 18-8 Stainless Steel
17.....	1	11893	Cap, Injector, SS
18.....	1	10229.....	Gasket, Injector Cap, 1600
19.....	1	10227	Screen, Injector
20.....	1	10913-xx	Nozzle, Injector, -xx is for injector size
21.....	1	10914-xx	Throat, Injector, -xx is for injector size
22.....	1	17776.....	Body, Injector, 1600
	1	17776-02*	Body, Injector, 1600 Upflow
23.....	1	16221.....	Disperser, Air
24.....	1	14805.....	Gasket, Injector Body, 1600/1700

*Upflow Only

1650 BRINE SYSTEM ASSEMBLY

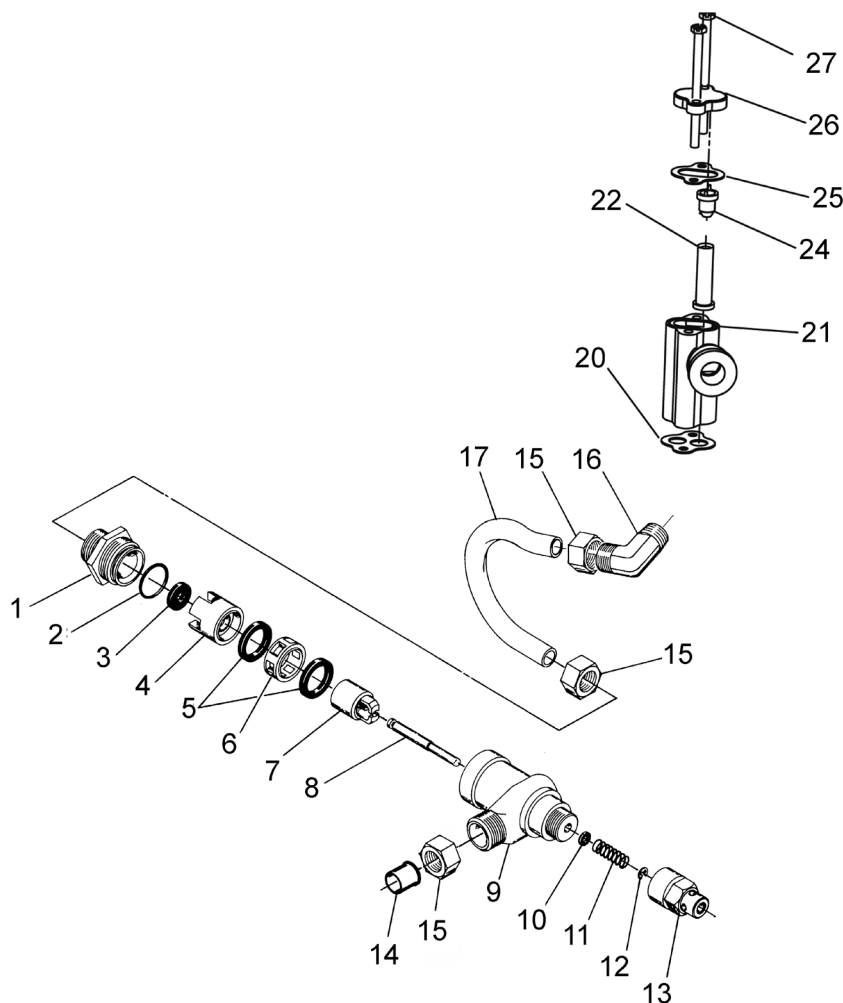


60011 Rev D

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1.....	1	10329.....	Fitting, Tube, 3/8 Nut, Brass	16.....	1	16508-01.....	Tube, Brine Valve, 2850/2900
2.....	1	10330.....	Fitting, Sleeve, 3/8 Celcon	1	40027.....	Tube, Brine Valve, 2510	
3.....	3	10332.....	Fitting, Insert, 3/8	1	42184.....	Tube, Brine Valve, 2850s	
4.....	1	12767.....	Screen, Brine	1	12774.....	Tube, Brine Valve, 1500	
5.....	1	10328.....	Fitting, Elbow, 90 Deg 1/4 NPT x 3/8T	1	15221.....	Tube, Brine Valve, 2750	
6.....	1	17884.....	Brine Valve Body Assembly, 1650	1	41683*	Tube, Brine Valve, UF, 1600/1650	
7.....	1	10249.....	Spring, Brine Valve	17.....	2	10692.....	Screw, Slot Hex Hd, 10 - 24X 18-8 Stainless Steel
8.....	1	10250.....	Ring, Retaining	18.....	1	11893.....	Cap, Injector, Stainless Steel
9.....	1	17906.....	Guide, Brine Valve Stem	19.....	1	10229.....	Gasket, Injector Cap, 1600
10.....	1	19625.....	Nut Assy, 3/8", Plastic	20.....	1	10227.....	Screen, Injector
11.....	1	12552-02.....	Brine Valve Stem, 1600, with Seat	21.....	1	10913-xx.....	Nozzle, Injector, -xx means injector size
12.....	1	12626.....	Seat, Brine Valve	22.....	1	10914-xx.....	Throat, Injector, -xx means injector size
13.....	1	16924.....	O-ring, -018	23.....	1	17776.....	Body, Injector, 1600
14.....	1	60020-25.....	BLFC, 1650, .25 GPM, Plastic		1	17776-02*	Body, Injector, 1600 Upflow
	1	60020-50.....	BLFC, 1650, .50 GPM, Plastic	24.....	1	16221.....	Disperser, Air
	1	60020-100.....	BLFC, 1650, 1.0 GPM, Plastic	25.....	1	14805.....	Gasket, Injector Body, 1600/1700
15.....	1	19625.....	Nut Assembly, 3/8", Plastic				
	</						

*Upflow Only

1700 BRINE SYSTEM ASSEMBLY



60034 Rev D

Item No.	QTY	Part No.	Description
1.....	1	14792	Plug, End, Brine Valve
2.....	1	13201	Quad Ring, -020
3.....	1	12085	Washer, Flow, 1.2 GPM
1	1	12086	Washer, Flow, 1.5 GPM
1	1	12087	Washer, Flow, 2.0 GPM
1	1	12088	Washer, Flow, 2.4 GPM
1	1	12089	Washer, Flow, 3.0 GPM
1	1	12090	Washer, Flow, 3.5 GPM
1	1	12091	Washer, Flow, 4.0 GPM
1	1	12092	Washer, Flow, 5.0 GPM
4.....	1	14785	Retainer, Flow Control
5.....	3	14811	O-ring, -210, 560CD, Brine
6.....	1	14798	Spacer, 1700, Brine
7.....	1	14795	Piston, Brine Valve
8.....	1	14797	Brine Valve Stem
9.....	1	14790	Brine Valve Body
10.....	1	12550	Quad Ring, -009
11.....	1	15310	Spring, Brine Valve
12.....	1	10250	Retaining Ring
13.....	1	15517	Guide, Stem
14.....	1	15415	Fitting, Insert, 1/2", Tube
15.....	3	15414	Nut, 2900, w/Sleeve
16.....	1	15413	Fitting, Elbow, Male, 1/2T x 3/8

Item No.	QTY	Part No.	Description
			NPT
17.....	1	15416	Tube, Brine, 2900/2750
1	1	16460	Tube, Brine, 2850/2900s
1	1	41447*	Tube, Brine, 2900s, U/F
1	1	42183	Tube, Brine, 1700, 2850s
20.....	1	14805	Gasket, Injector Body 1600/1700
21.....	1	17777	Body, Injector, 1700
1	1	17777-02*	Body, Injector, 1700 U/F
22.....	1	14802-xxc	Throat, Injector, -xxc is for Injector Size
24.....	1	14801-xxc	Nozzle, Injection, -xxc is for Injector Size
25.....	1	10229	Gasket, Injector Cap, 1600
26.....	1	11893	Cap, Injector, Stainless Steel
1	1	10228	Cap, Injector
27.....	2	14804	Screw, Hex Hd Mach, 10 - 24 x 2-3/4" 18-8 Stainless Steel

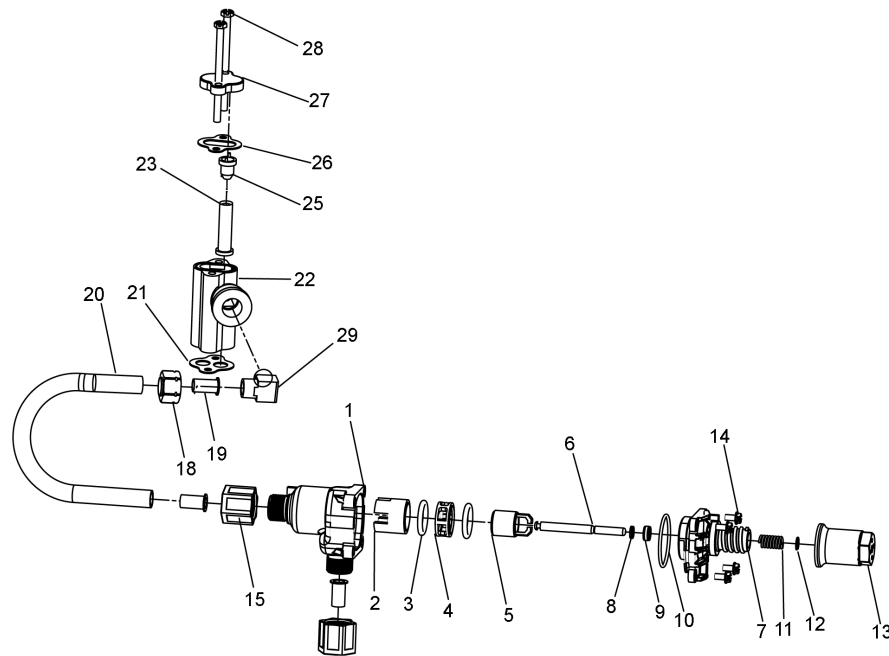
Not Shown:

1	16974	Fitting, Plastic, Female, 3/4 x 3/4 Slip
1	17996	Disperser, Air, Injector

*Upflow Only

NOTE: Item number 26 (11893) is used on injector sizes 2 through 5C. Part number 10228 is used on injector sizes 6C.

1710 BRINE SYSTEM ASSEMBLY



60604 Rev F

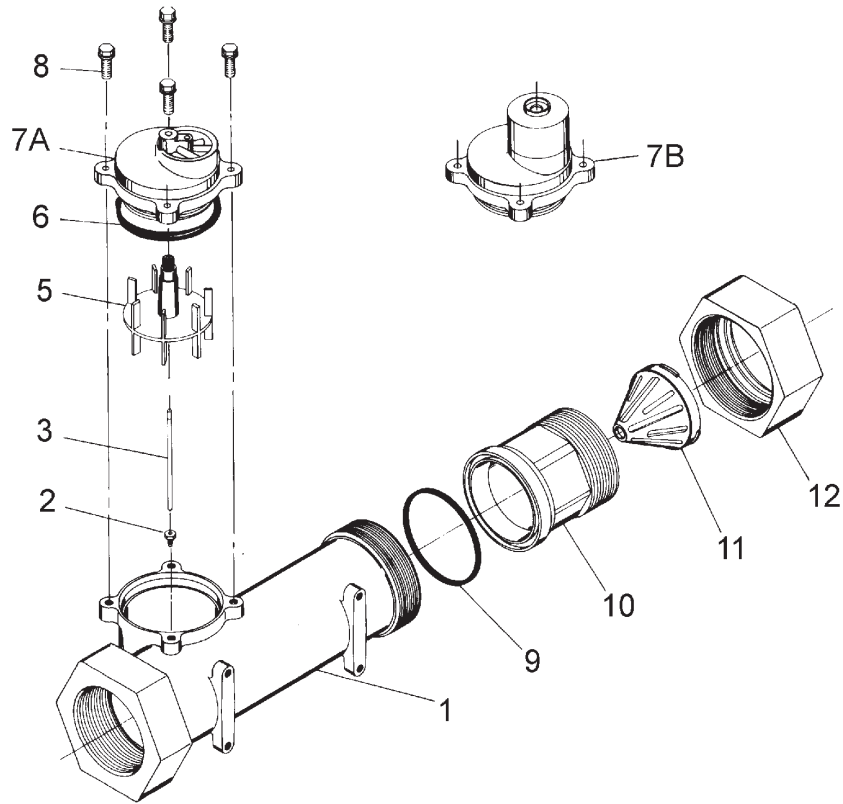
Item No.	QTY	Part No.	Description
1.....	1	41202	Brine Valve, 1700, Plastic, Top
2.....	1	14785-01	Retainer, Flow Control
3.....	1	14811	O-Ring, -210, 560CD, Brine
4.....	1	14798	Spacer, 1700, Brine
5.....	1	14795	Piston, Brine Valve
6.....	1	41203	Stem, Brine, 1710, Plastic, 2900
7.....	1	41201	Brine Valve, 1700, Plastic, Bottom
8.....	5	17908	Sleeve, Brine Valve Stem
9.....	1	12550	Quad Ring, -009
10.....	3	41547	O-Ring, 2mmx35mm
11.....	2	15310	Spring, Brine Valve
12.....	2	10250	Ring, Retaining
13.....	1	17906	Guide, Brine Valve Stem
14.....	2	14202-01	Screw, Hex Wsh Mach, 8-32 X 5/16 18-8 Stainless Steel
15.....	2	41056	Nut Assembly, 1/2" Plastic
18.....	1	15414	Nut, 2900, w/Sleeve
19.....	1	15415	Fitting, Insert, 1/2", Tube

Item No.	QTY	Part No.	Description
20.....	1	16460	Tube, Brine, 2850, 2900s
	1	42183	Tube, Brine, 2850s
	1	15416	Tube, Brine, 2900/2750
	1	41447	Tube, Brine, 2900s U/F
21.....	1	19925	Gasket, Injector Body, 1700
22.....	1	17777	Body, Injector, 1700
23.....	1	14802-xxc	Throat, Injector, -xxc is Injector Size
25.....	1	14801-xxc	Nozzle, Injector, -xxc is Injector Size
26.....	1	10229	Gasket, Injector Cap, 1600
27.....	1	10228	Cap, Injector
28.....	2	14804	Screw, Hex Head Mach, 10 - 24 x 2-3/4 18-8 Stainless Steel
29.....	1	15413	Fitting, Elbow, Male, 1/2T X 3/8NPT

Not Shown

1	17996	Dispenser, Air, Injector
1	41493-00	Label, Blank, BLFC, 1710

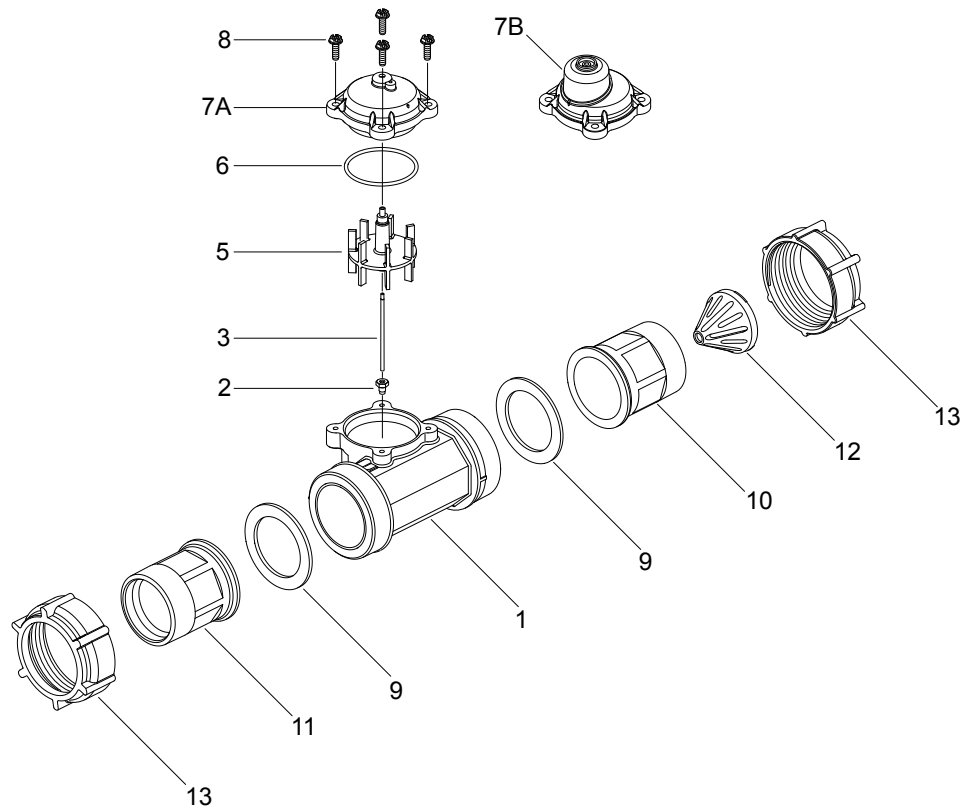
2" BRASS METER ASSEMBLY



60393 Rev E

Item No.	QTY	Part No.	Description
1.....	1	14456.....	Body, Meter, 2"
2.....	1	15532.....	Seat, Impeller Shaft, Hex
3.....	1	15432.....	Shaft
5.....	1	15374.....	Impeller Assy, 2" Meter
6.....	1	13847.....	O-ring, -137, Std/560CD, Meter
7A.....	1	14038.....	Meter Cap Assembly, Std, Plastic
7B.....	1	15150.....	Meter Cap Assembly, 3/4" to 2", Ext Plastic, Pdl
8.....	4	12112.....	Screw, Hex Hd Mach, 10-24 x 1/2 18-8 Stainless Steel
9.....	1	14679.....	O-ring, -227, Meter
10.....	1	14568.....	Fitting, Nipple, 2"
11.....	1	14680.....	Flow Straightener
12.....	1	14569.....	Nut, 2900 Meter

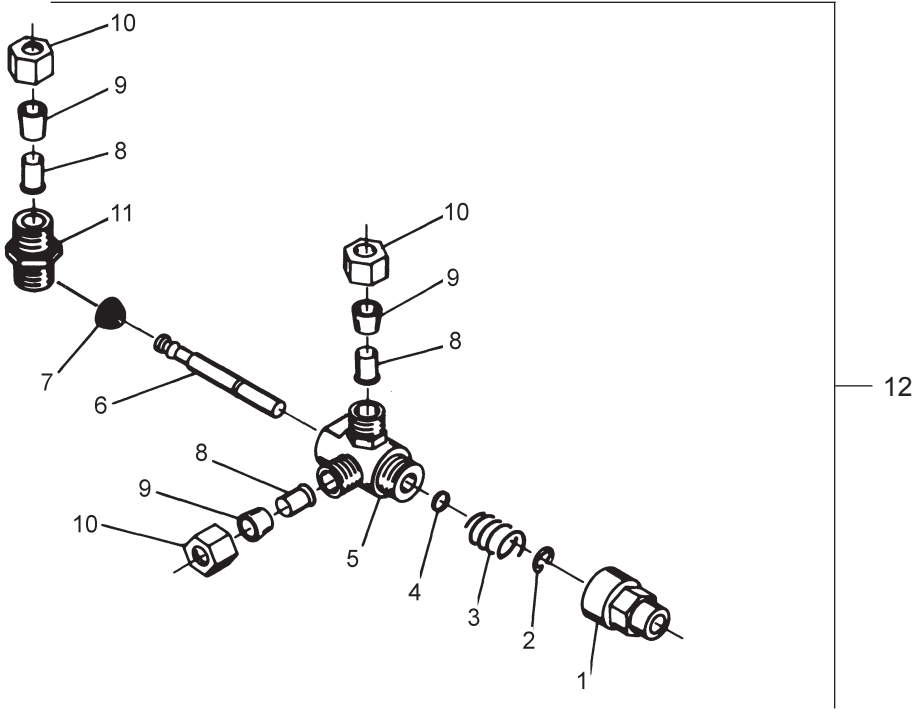
2" PLASTIC METER ASSEMBLY



60621 Rev D

Item No.	QTY	Part No.	Description
1.....1	1	17689	Body, Meter, 2" Plastic w/Impeller Shaft Seat
2.....1	1	15532	Seat, Impeller Shaft, Hex
3.....1	1	15432	Shaft, Impeller, Stainless Steel
5.....1	1	15374	Impeller Assy, 2" Meter
6.....1	1	13847	O-ring, -137, Std/560CD, Meter
7A.....1	1	14038	Meter Cap Assembly
7B.....1	1	15150	Meter Cap Assembly, Ext
8.....4	4	12473	Screw, Hex Wsh, 10-24 x 5/8 18-8 Stainless Steel
9.....2	2	40666	Seal, Face, 2", Plastic Meter
10A.....1	1	17987-001	Fitting, Nipple, 2", Plastic, NPT, Machined, Flow Straightener
10B.....1	1	17987-101	Fitting, Nipple, 2", Plastic, BSP, Machined, Flow Straightener
11A.....1	1	17987-000	Fitting, Nipple, 2", Plastic, NPT
11B.....1	1	17987-100	Fitting, Nipple, 2", Plastic, BSP
12.....1	1	14680	Flow Straightener
13.....2	2	17988	Nut, 2" Meter

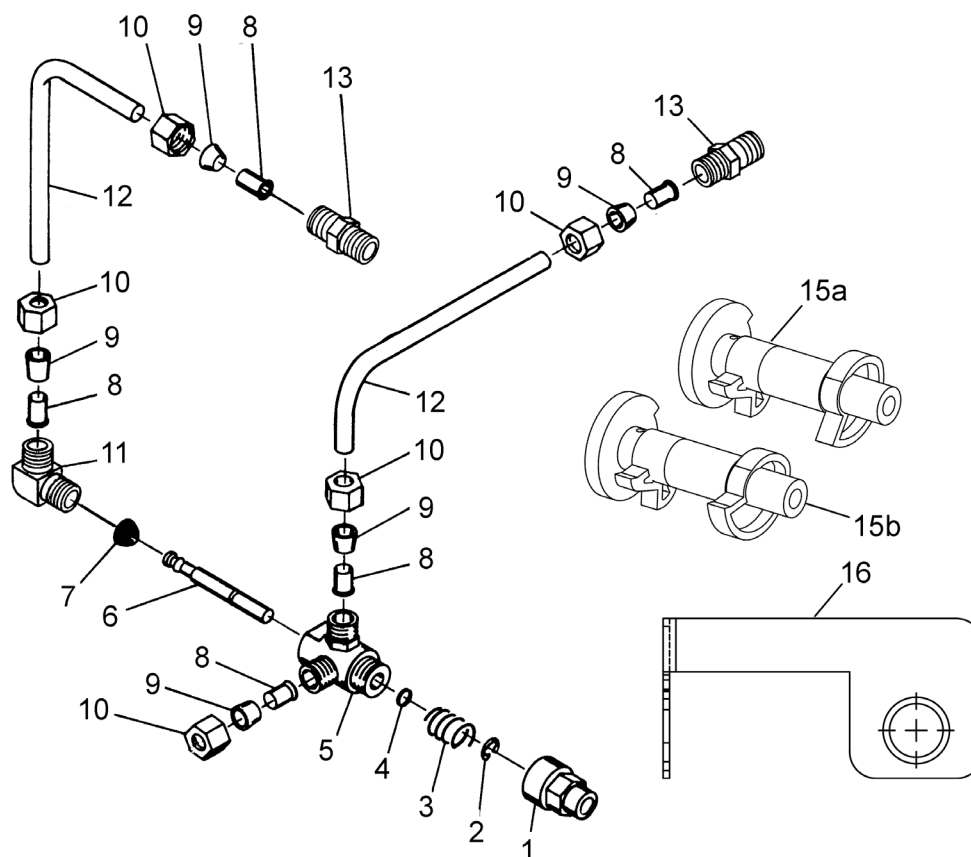
1600 SERVICE VALVE OPERATOR ASSEMBLY (OLD STYLE)



60150 Rev A

Item No.	QTY	Part No.	Description
1.....	1	11749	Guide, Brine Valve Stem
2.....	1	10250	Ring, Retaining
3.....	1	10249	Spring, Brine Valve
4.....	1	12550	Quad Ring, -009
5.....	1	10785	SVO Body Assy Brass Valves
6.....	1	12552-02.....	Brine Valve Stem, 1600, w/Seat
7.....	1	12626	Seat, Brine Valve
8.....	3	10332	Fitting, Insert, 3/8
9.....	3	10330	Fitting, Sleeve, 3/8 Celcon
10.....	3	10329	Fitting, Tube, 3/8 Nut, Brass
11.....	1	10331	Fitting, Compression, 1/4" x 3/8"
12.....	1	60150	Service Valve Operator, Assy, 1600, Old Style, Complete

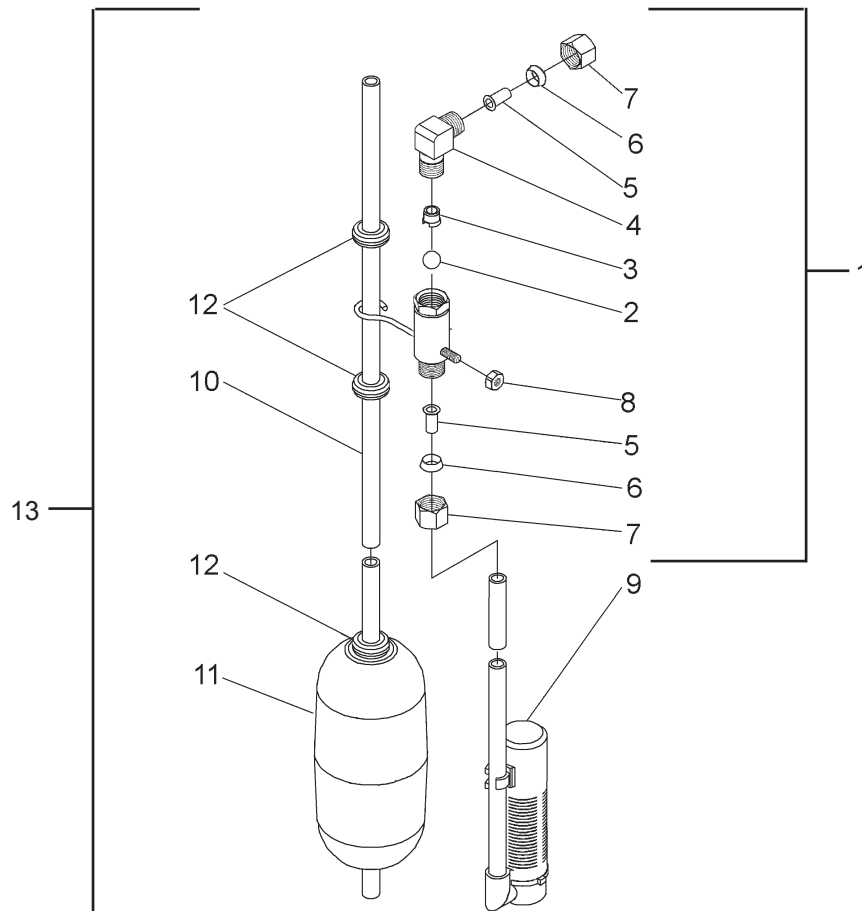
1600 SERVICE VALVE OPERATOR (NEW STYLE)



60150 Rev A

Item No.	QTY	Part No.	Description
1.....	1	11749	Guide, Brine Valve Stem
2.....	1	10250	Ring, Retaining
3.....	1	10249	Spring, Brine Valve
4.....	1	12550	Quad Ring, -009
5.....	2	10785	SVO Body Assy Brass Valves
6.....	1	12552	Brine Valve Stem, 1600
7.....	1	12626	Seat, Brine Valve
8.....	5	10332	Fitting, Insert, 3/8
9.....	5	10330	Fitting, Sleeve, 3/8" Celcon
10.....	5	10329	Fitting, Tube, 3/8 Nut, Brass
11.....	1	10328	Fitting, Elbow, 90 Deg 1/4 NPT x 3/8 Tube
12.....	2	12897	Tube, Fitting, 3/8 x 9 3/4
13.....	1	16730	Fitting, Male, 1/4 x 1
14.....	2	15415	Fitting, Insert, 1/2" Tube
15a.....	1	12472	Cam Assembly, Tri-Stack, After RR
15b.....	1	15770	Cam Assembly, Special Tri-Stack After Brine Fill
16.....	1	12114	Bracket, Motor Outboard, Coated
17.....	1	60150-01	Service Valve Operator Assembly, 1600, New Style, Item No's 1-11

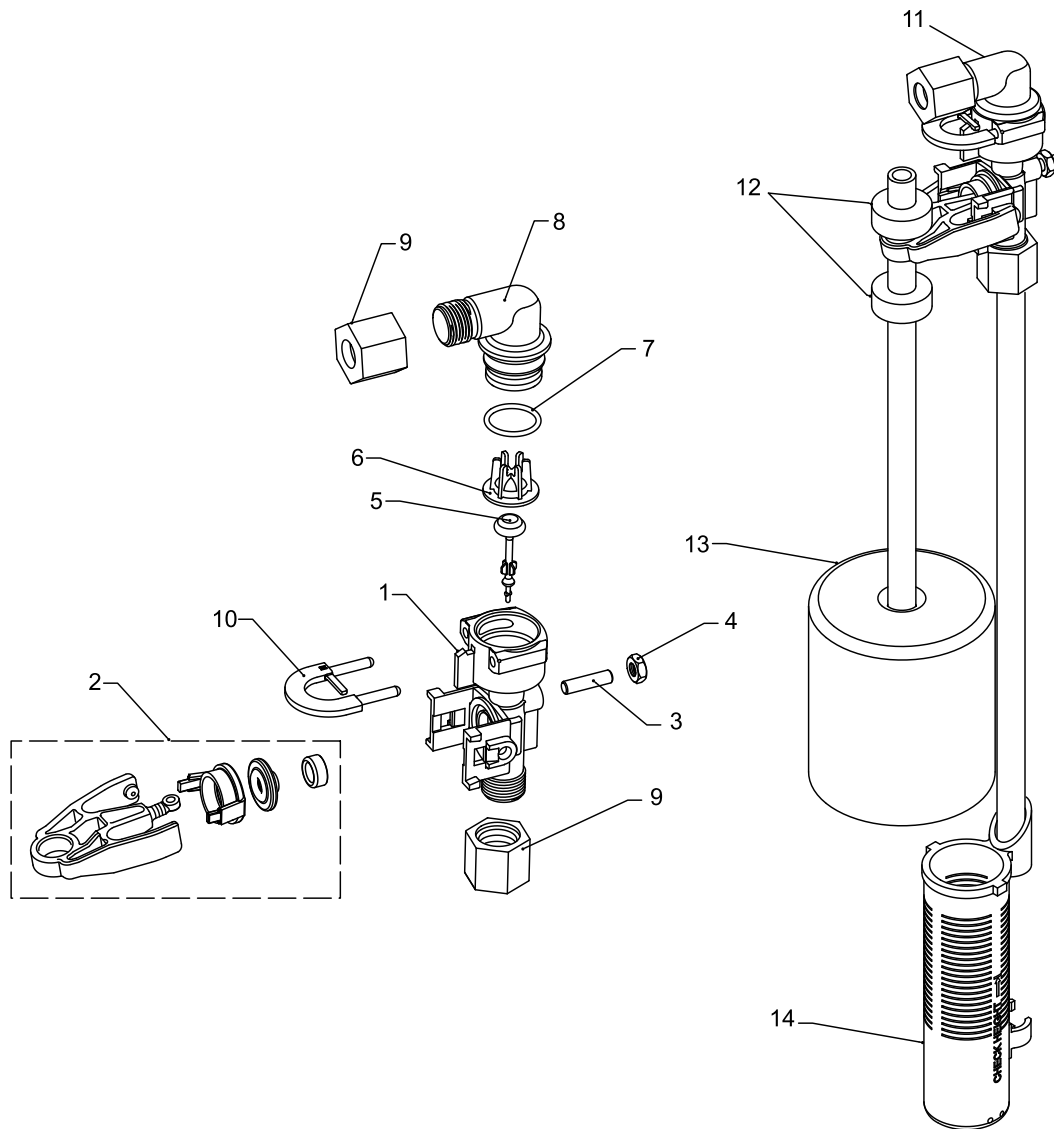
SAFETY BRINE VALVE 2300



60027 Rev A

Item No.	QTY	Part No.	Description
1.....	1	60027-FF	Safety Brine Valve Body, 2300, Fitting Facing Arm
1A.....	1	60027-FFS	Safety Brine Valve Body, 2300, Fitting Facing Stud
2.....	1	10138	Ball, 3/8", Brass
3.....	1	11566	Ball Stop, Slow Fill
4.....	1	10328	Fitting, Elbow, 90 Deg. 1/4 NPT x 3/8 Tube
5.....	1	10332	Fitting, Insert, 3/8
6.....	1	10330	Fitting, Sleeve, 3/8 Celcon
7.....	1	10329	Fitting, Tube, 3/8 Nut, Brass
8.....	1	10186	Nut, Hex, 10-32
9.....	1	60002-34	Air Check, #500, 34" Long
		60003-34	Air Check, #500, HW, 34" Tube
10.....	1	10149	Rod, Float
11.....	1	10700	Float Assembly, White
12.....	3	10150	Grommet, .30 Dia
13.....	1	60028-30	Float Assembly, White
13A.....	1	60028-30SAN	Float Assembly, San, Hot Water

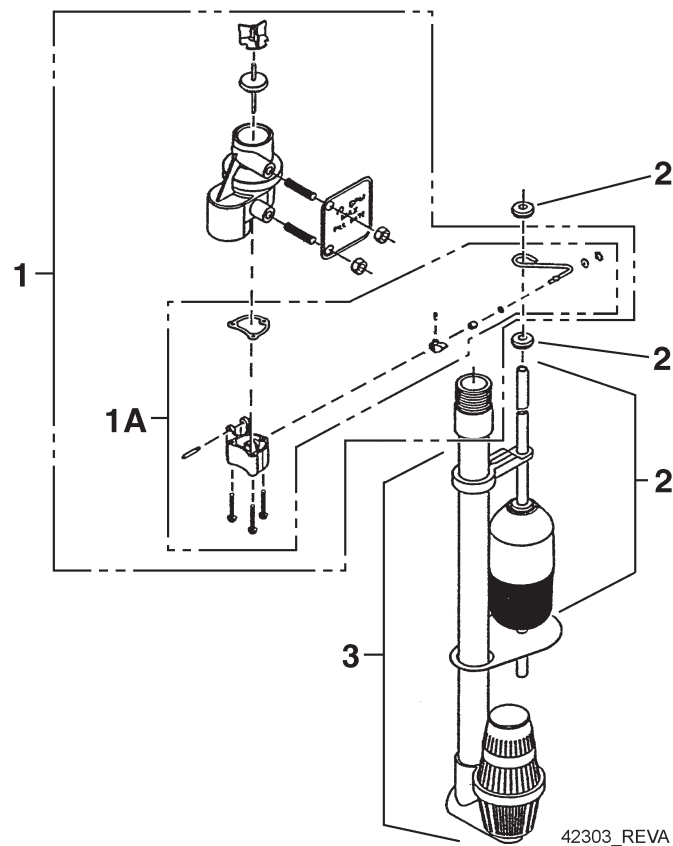
2310 SAFETY BRINE VALVE



42112_REVA

Item No.	QTY	Part No.	Description
1.....	1	19645.....	Body, Safety Brine Valve, 2310
2.....	1	19803.....	Safety Brine Valve Assy
3.....	1	19804.....	Screw, Sckt Hd, Set, 10-24 x .75
4.....	1	19805.....	Nut, Hex, 10-24, Nylon Black
5.....	1	19652-01.....	Poppet Assy, SBV w/O-ring
6.....	1	19649.....	Flow Dispenser
7.....	1	11183	O-ring, -.017
8.....	1	19647	Elbow, Safety Brine Valve
9.....	2	19625.....	Nut Assy, 3/8" Plastic
10.....	1	18312.....	Retainer, Drain
11.....	1	60014.....	Safety Brine Valve Assy, 2310
12.....	2	10150.....	Grommet, .30 Dia
13.....	1	60068-30.....	Float Assy, 2310, w/30" Rod
14.....	1	60002-34.....	Air Check, #500, 34" Long

2350 SAFETY BRINE VALVE



Item No.	QTY	Part No.	Description
1.....	1	60038.....	Safety Brine Valve, 2350
1A.....	1	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

Not Shown

.....	1	18603.....	Fitting Assy, 900 Air Check 2350
.....	1	18602.....	Fitting Assy, 900 Air Check

GENERAL SERVICE HINTS FOR METER CONTROL

Problem: Softener delivers hard water

Reason: Reserve capacity has been exceeded.

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

Reason: Program wheel is not rotating with meter output.

Correction: 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.

Reason: Meter is not measuring flow.

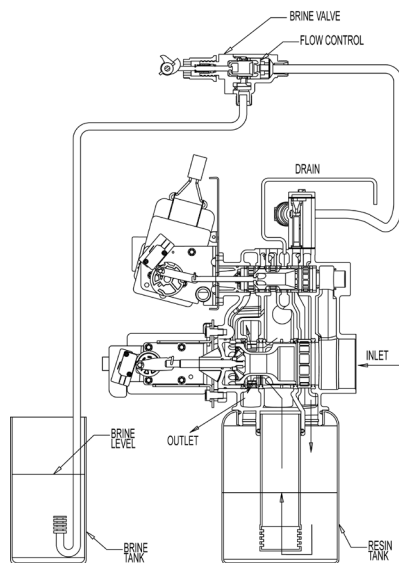
Correction: Check meter with meter checker.

TROUBLESHOOTING

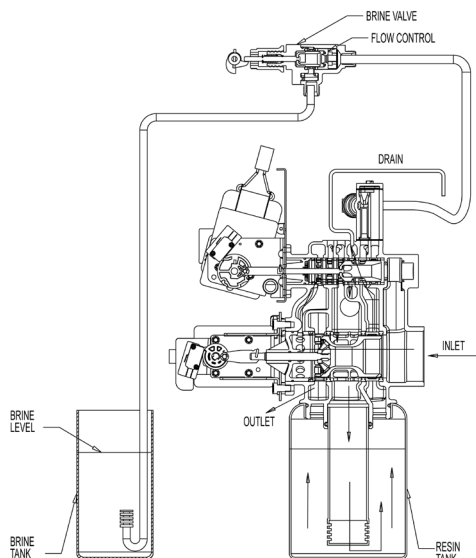
Problem	Cause	Correction
Water conditioner fails to regenerate.	Electrical service to unit has been interrupted	Assure permanent electrical service (check fuse, plug, pull chain, or switch)
	Timer is defective.	Replace timer.
	Power failure.	Reset time of day.
Hard water.	By-pass valve is open.	Close 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.

WATER CONDITIONER FLOW DIAGRAMS - DOWNFLOW

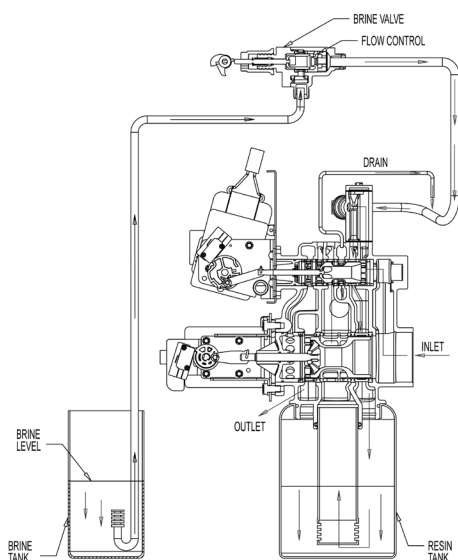
1 Service Position



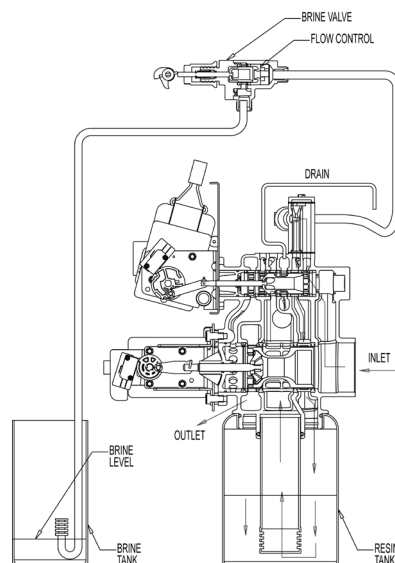
2 Backwash Position



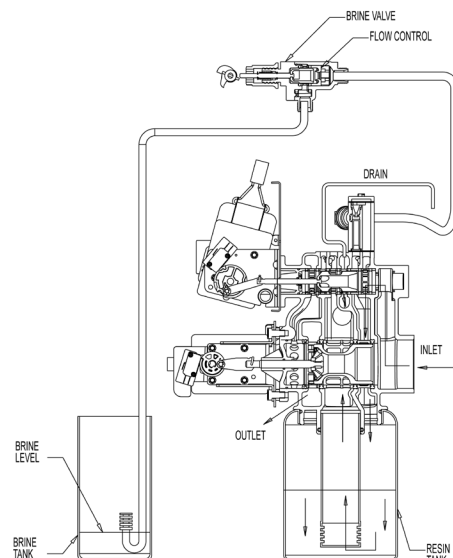
3 Brine Position



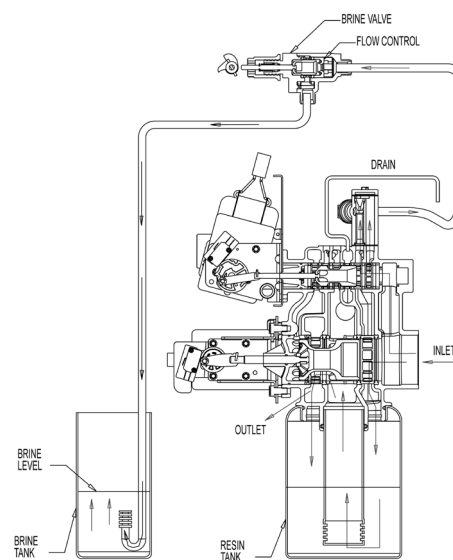
4 Slow Rinse Position



5 Rapid Rinse

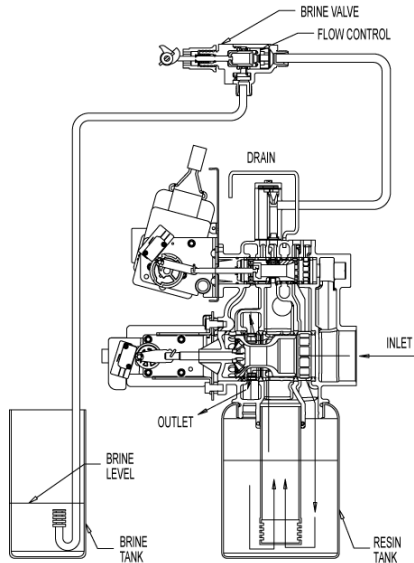


6 Brine Tank Refill Position

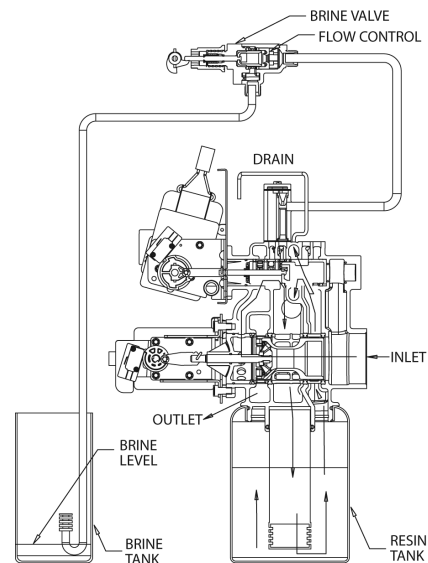


WATER CONDITIONER FLOW DIAGRAMS - UPFLOW

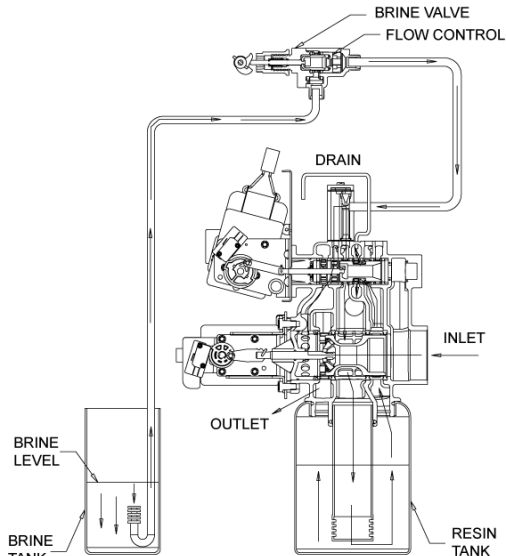
1 Service Position



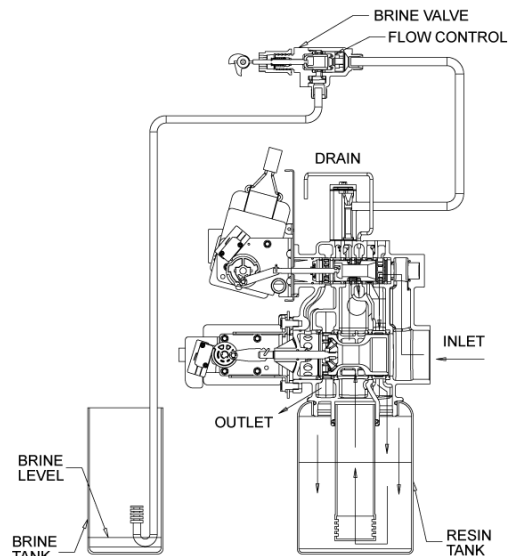
4 Back Wash Position



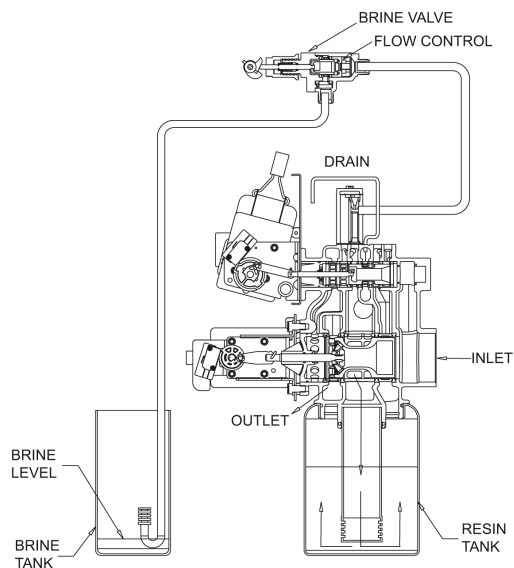
2 Brine Position



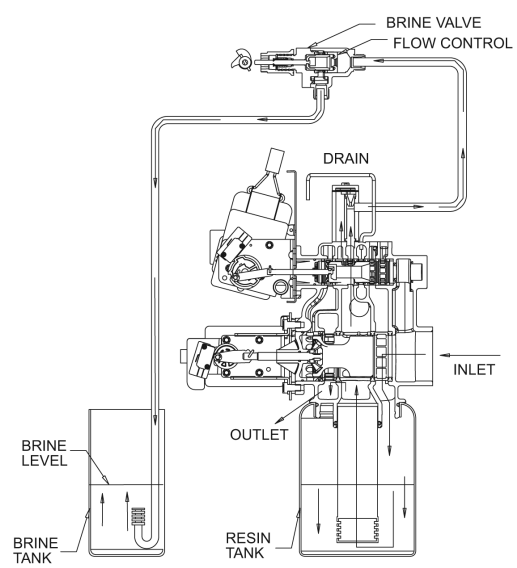
5 Rapid Rinse



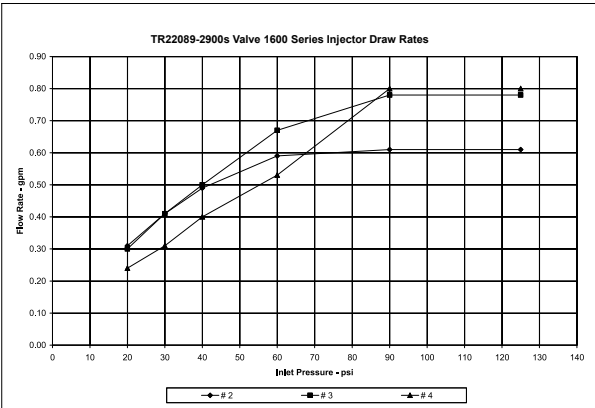
3 Slow Rinse Position



6 Brine Tank Fill Position

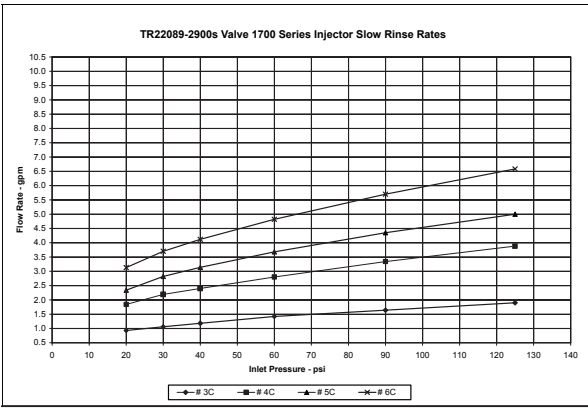


FLOW DATA & INJECTOR DRAW RATES - DOWNFLOW



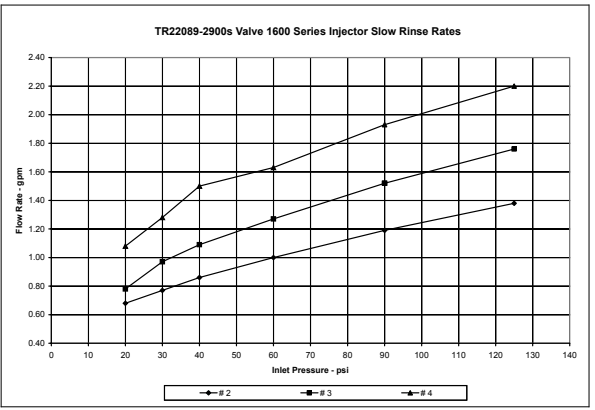
1600 series injectors			
pressure	Draw Rate - gpm		
	# 2	# 3	# 4
20	0.31	0.30	0.24
30	0.41	0.41	0.31
40	0.49	0.50	0.40
60	0.59	0.67	0.53
90	0.61	0.78	0.80
125	0.61	0.78	0.80

all injectors used the steel cap and an air disperser



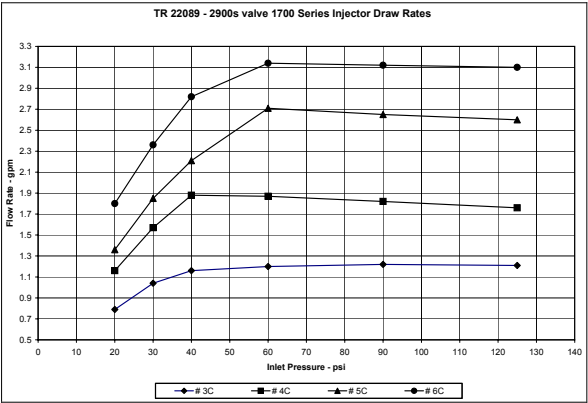
1700 series injectors				
pressure	Slow Rinse - gpm			
	# 3C	# 4C	# 5C	# 6C
20	0.93	1.84	2.34	3.13
30	1.06	2.19	2.82	3.70
40	1.18	2.40	3.14	4.12
60	1.42	2.80	3.68	4.82
90	1.64	3.34	4.35	5.70
125	1.90	3.88	5.00	6.58

3C - steel cap, no o-ring, air disperser
4C & 5C - steel cap, o-ring, air disperser
6C & 7C - brass cap, o-ring, no air disperser



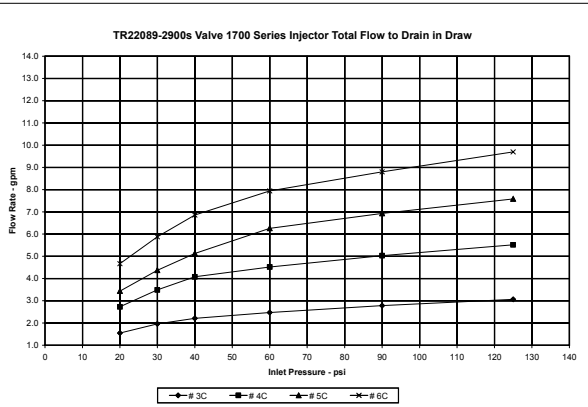
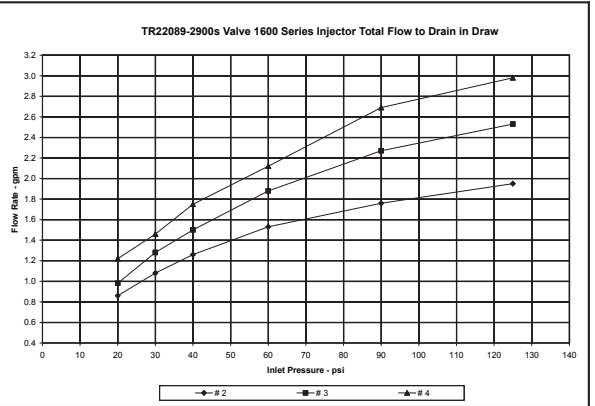
1600 series injectors			
pressure	Slow Rinse Rates - gpm		
	# 2	# 3	# 4
20	0.68	0.78	1.08
30	0.77	0.97	1.28
40	0.86	1.09	1.50
60	1.00	1.27	1.63
90	1.19	1.52	1.93
125	1.38	1.76	2.20

all injectors used the steel cap and an air disperser

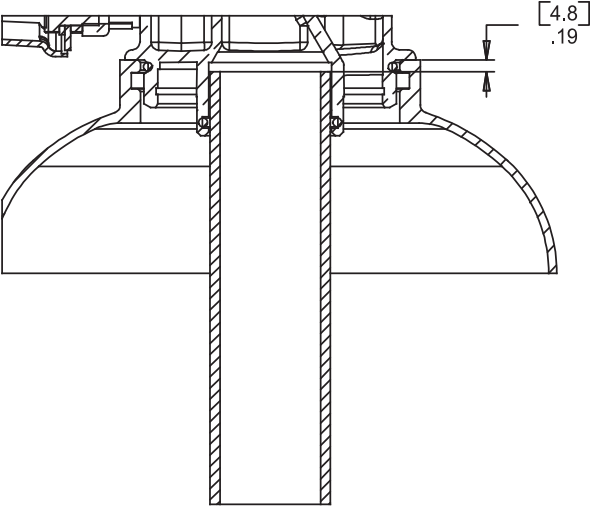
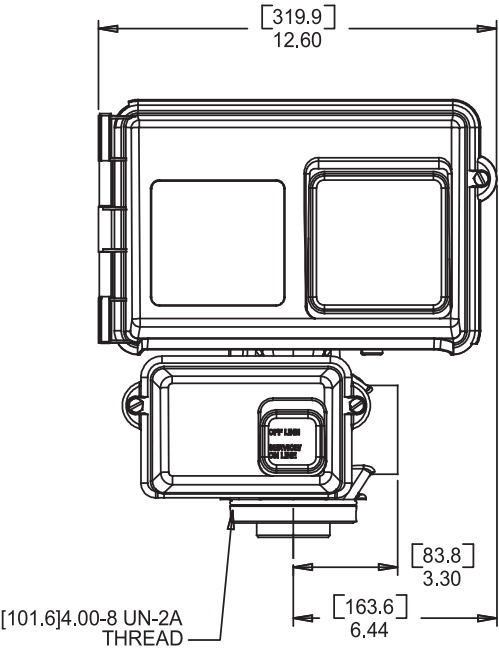
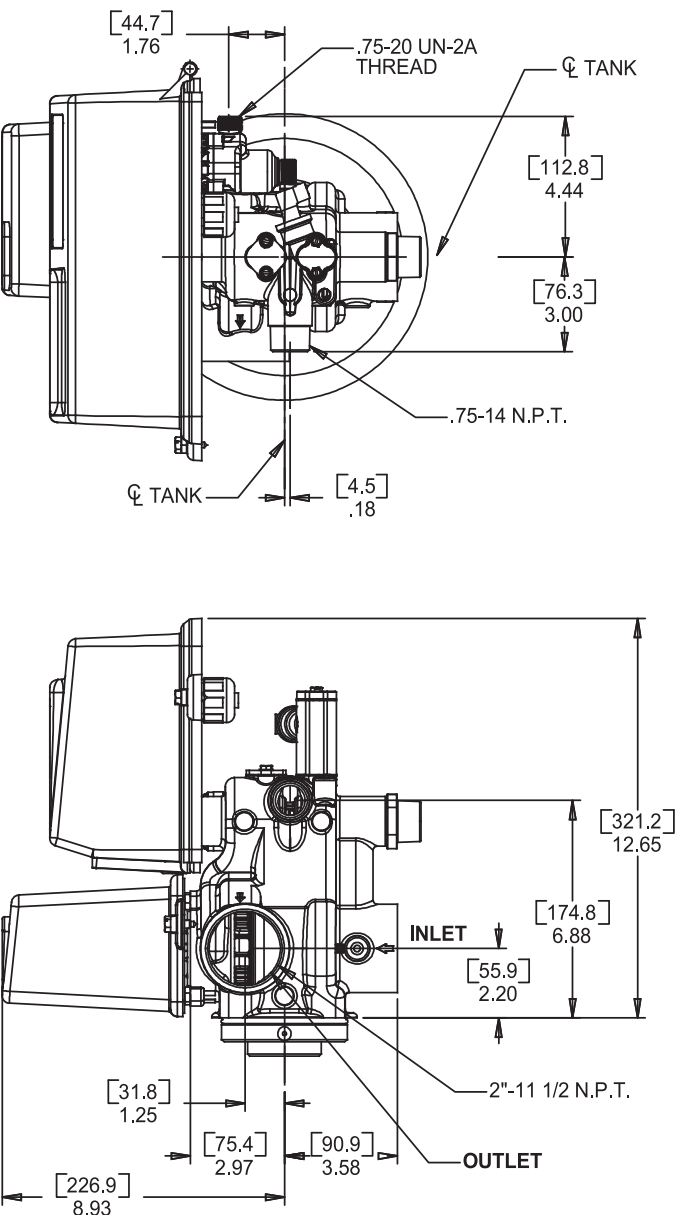


1700 series injectors				
pressure	Draw Rate - gpm			
	# 3C	# 4C	# 5C	# 6C
20	0.79	1.16	1.36	1.80
30	1.04	1.57	1.85	2.36
40	1.16	1.88	2.21	2.82
60	1.20	1.87	2.71	3.14
90	1.22	1.82	2.65	3.12
125	1.21	1.76	2.60	3.10

3C - steel cap, no o-ring, air disperser
4C & 5C - steel cap, o-ring, air disperser
6C - brass cap, o-ring, no air disperser



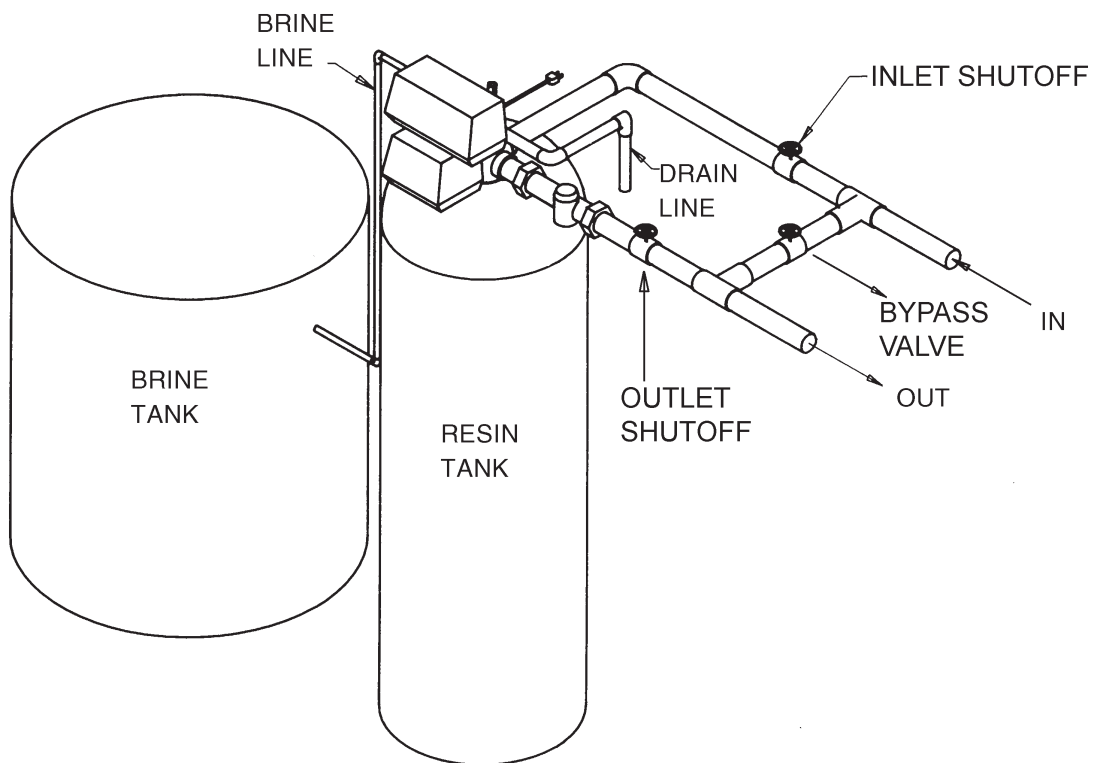
ENVIRONMENTAL BACKPLATE
DIMENSIONS



61500-2900LNE Rev B

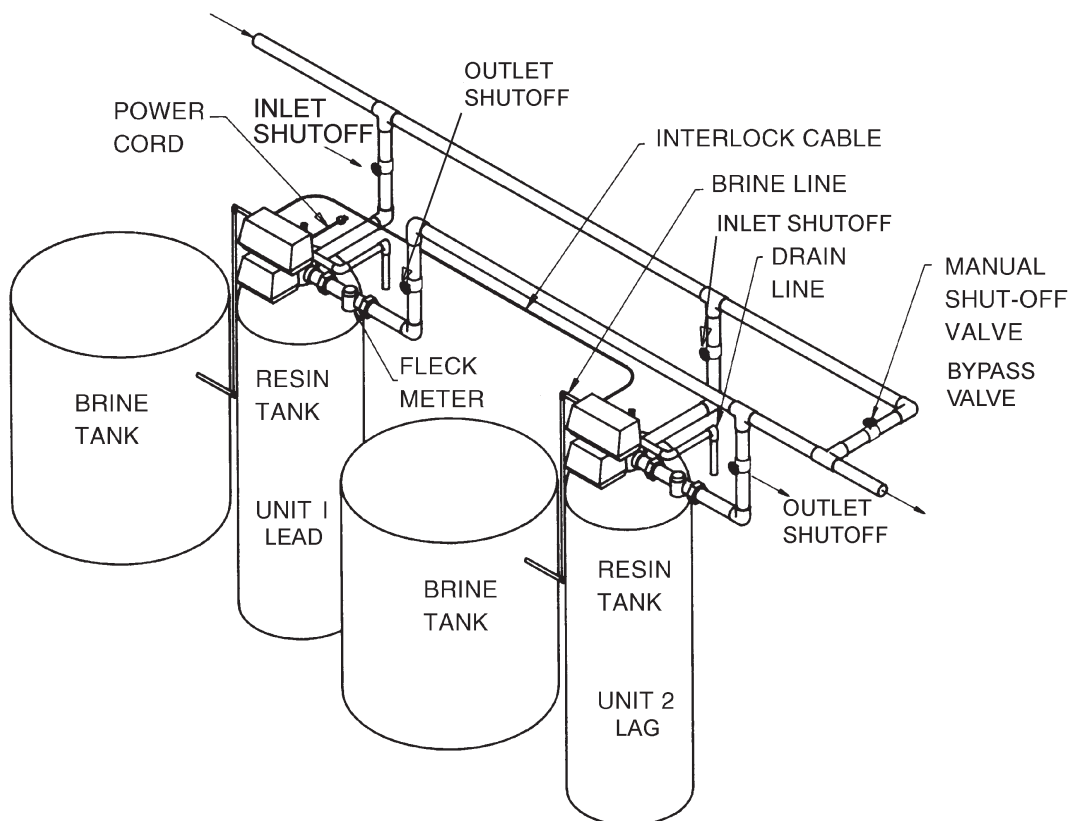
SYSTEM #4

Typical Single Tank Installation with Optional Meter



SYSTEM #5 INTERLOCK

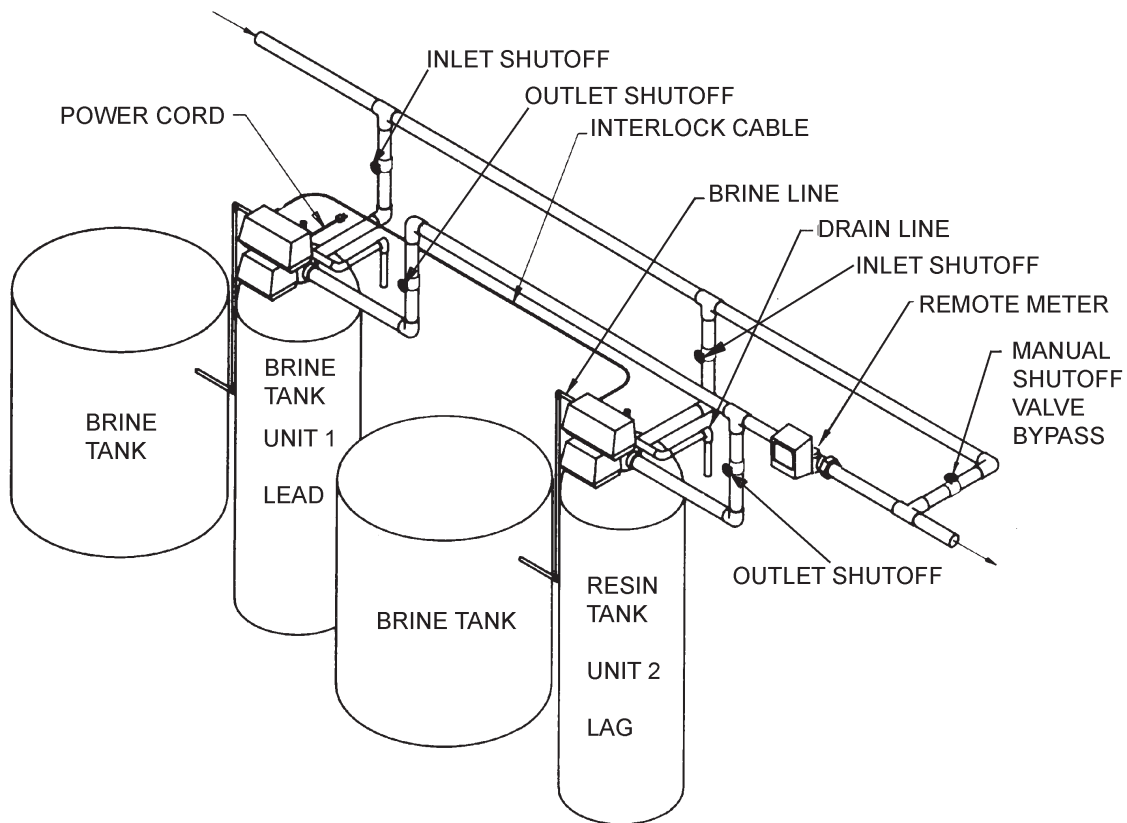
Typical Twin Tank Installation with Optional Meter Interlock and No Hard Water Bypass



SYSTEM #6 & #7

Twin Series Regeneration Installation with a Remote Meter

Twin Alternator Installation

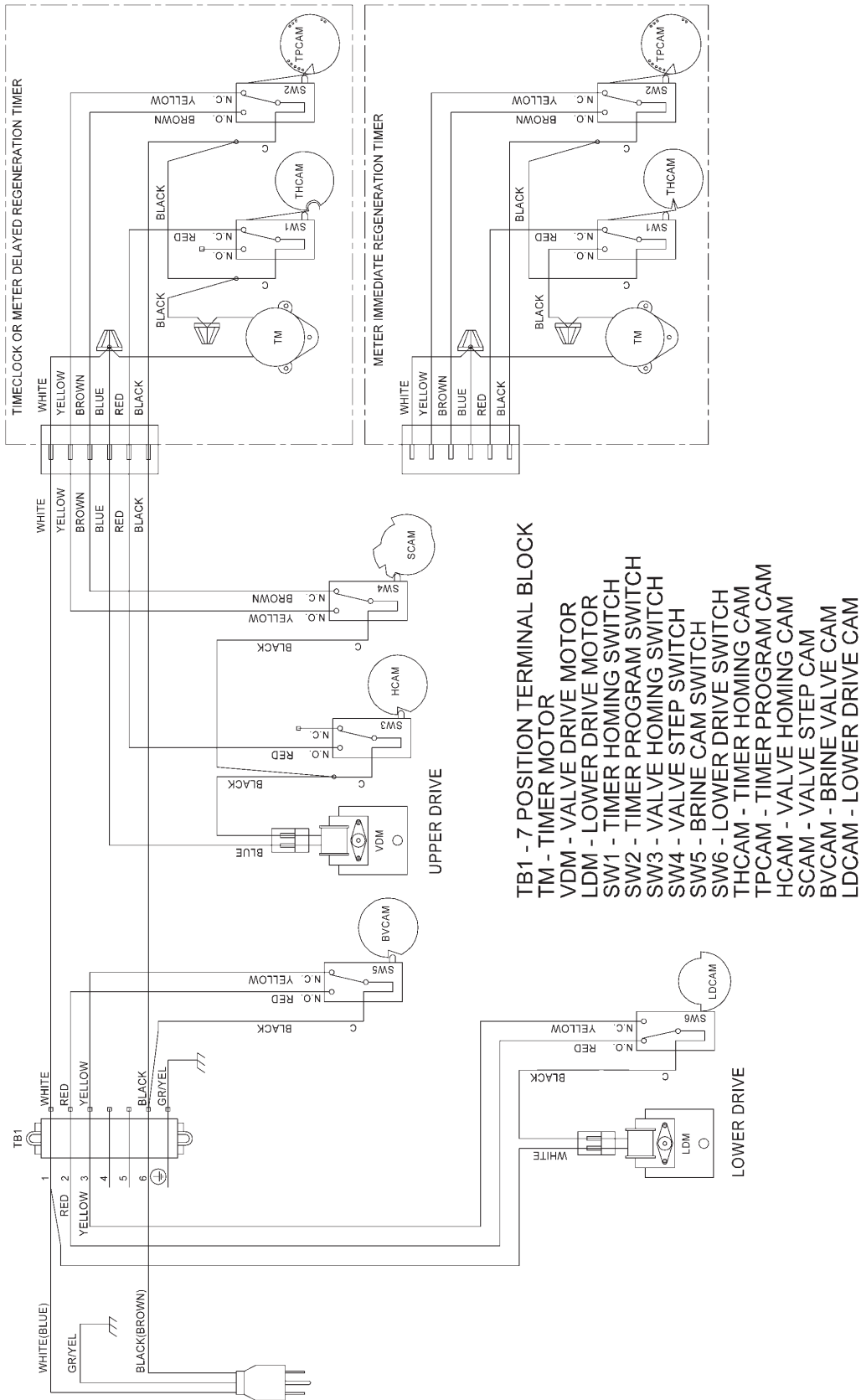


NOTE: On System 7, the power cord is on Unit 2.

NOTE: System 7 can run with either one or two brine tanks. Two brine tanks should be used if regeneration is less than 4 hours.

SYSTEM #4 WIRING

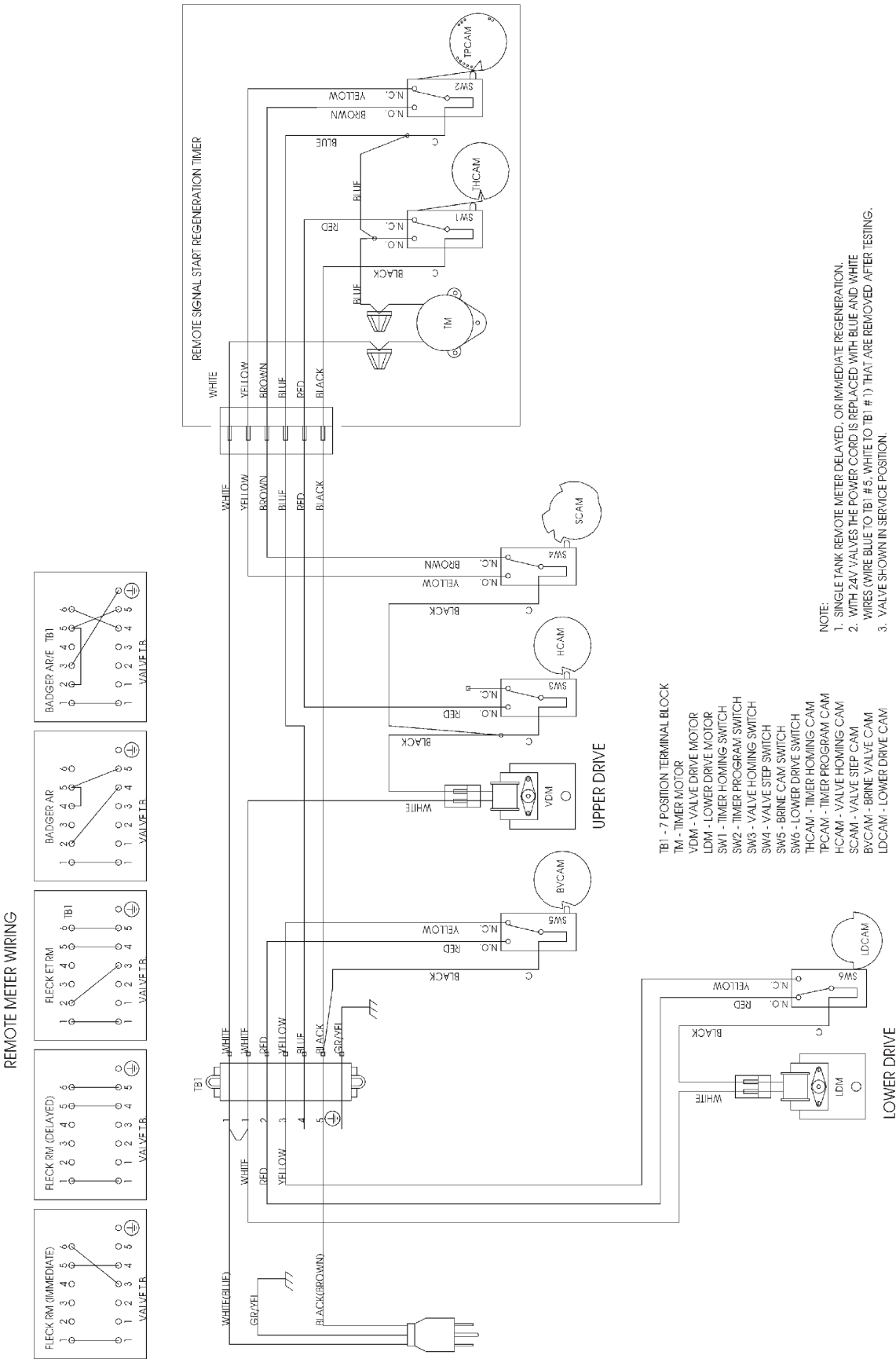
Single Valve Regeneration Immediate and Delayed Valve Wiring



NOTE:
1. SINGLE TANK TIMECLOCK, METER DELAYED, OR METER IMMEDIATE REGENERATION.
2. VALVE SHOWN IN SERVICE.

SYSTEM #4 WIRING *continued*

With Remote Starter Valve Wiring



Interlocked Regeneration Valve Wiring



LAG

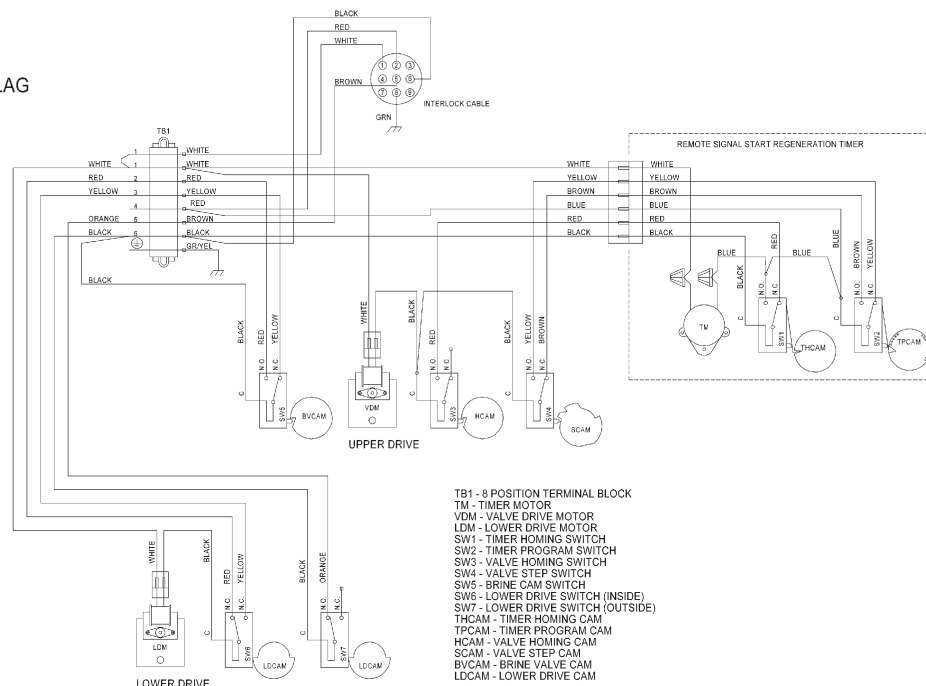


Fleck 2900s OC10 • 35

Series Regeneration Valve Wiring



LAG



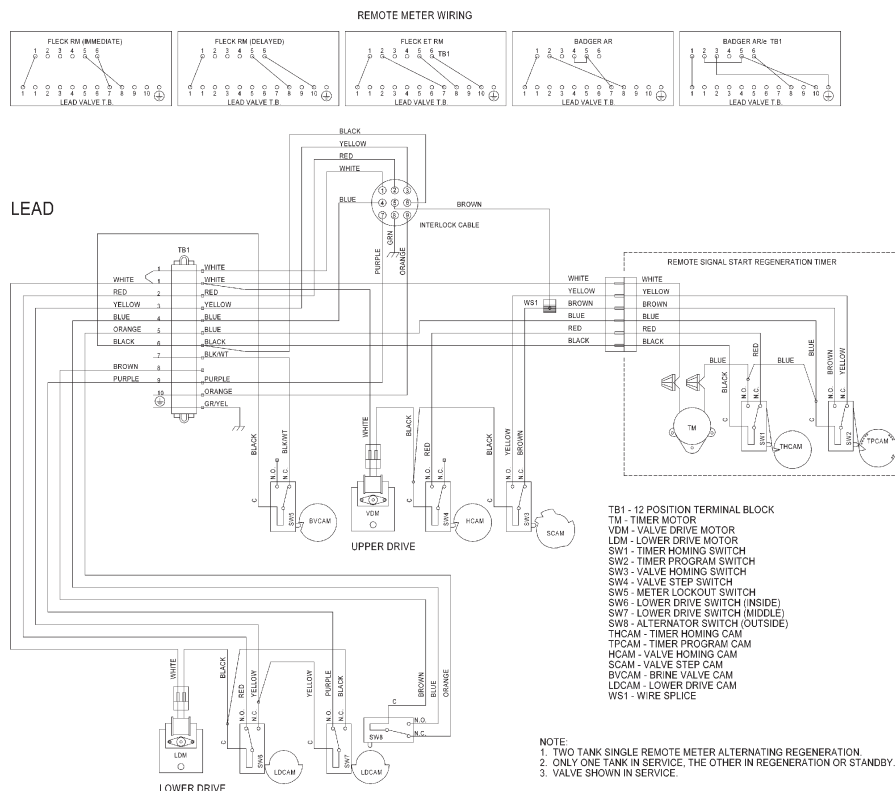
NOTE:

1. TWO TANK INTERLOCKED, SINGLE REMOTE METER, SERIES REGENERATION.
2. BOTH TANKS NORMALLY IN SERVICE.
3. ONLY ONE TANK IN REGENERATION, THE OTHER REMAINS IN SERVICE.
4. LEAD VALVE REGENERATES FIRST, FOLLOWED IMMEDIATELY BY LAG VALVE.
5. VALVE SHOWN IN SERVICE POSITION.

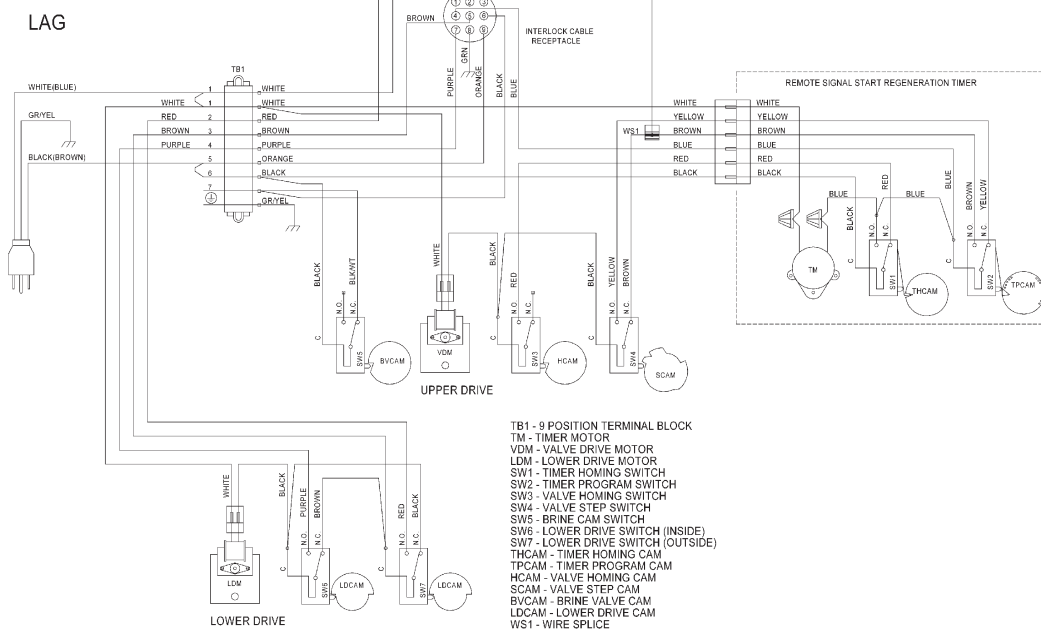
36 • OC10 Fleck 2900s

SYSTEM #7 WIRING

Alternating Regeneration Valve Wiring



18687-01 Rev E

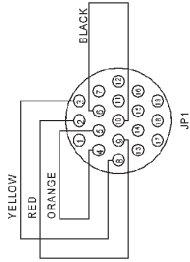


NOTE:
 1. TWO TANK SINGLE REMOTE METER ALTERNATING REGENERATION.
 2. ONLY ONE TANK IN SERVICE, THE OTHER IN REGENERATION OR STANDBY.
 3. VALVE SHOWN IN STANDBY.

18687-02 Rev E

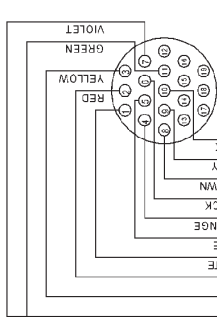
JUMPER PLUG WIRING

JUMPER PLUG PLACED ON LAST VALVE IN SYSTEM



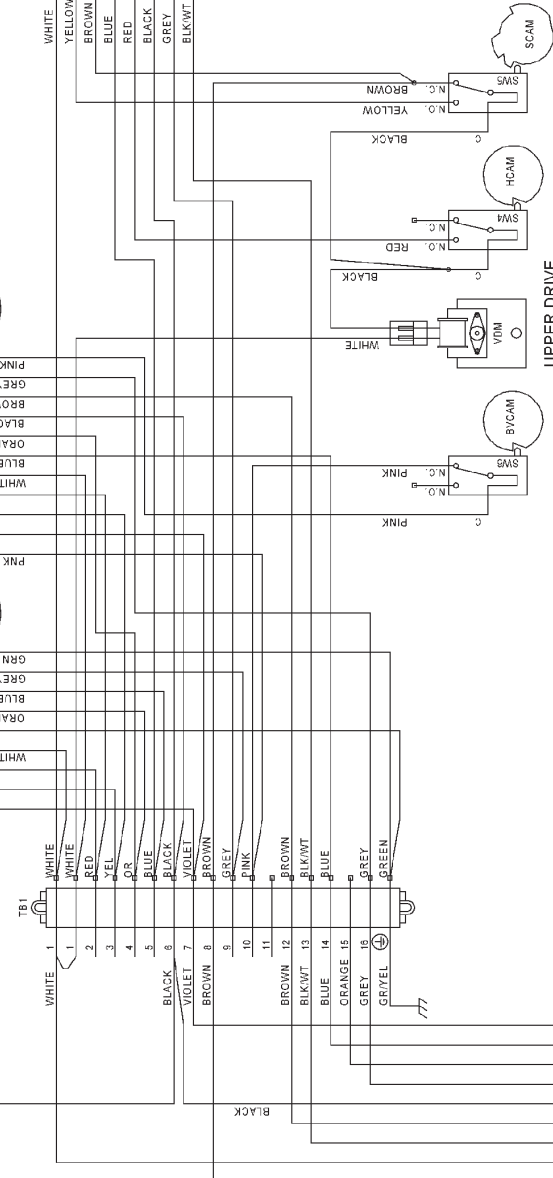
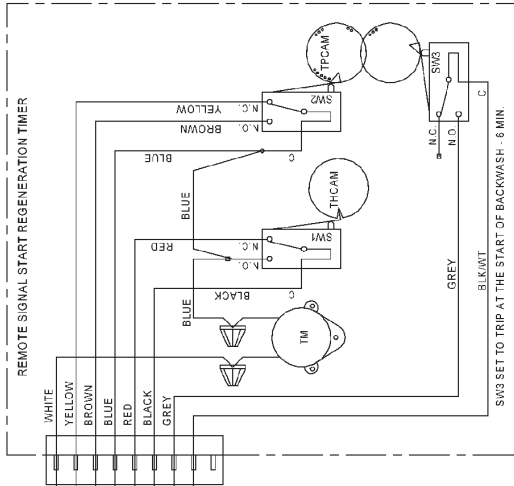
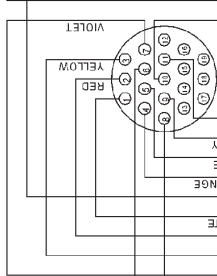
INTERLOCK CABLE RECEPTACLE

(CONNECT TO DOWNSTREAM VALVE OR REMOTE METER)



INTERLOCK CABLE

(CONNECT TO UPSTREAM VALVE OR REMOTE METER)



UPPER DRIVE

LOWER DRIVE

- Legend for components:
- TB1 - 16 POSITION TERMINAL BLK
 - JP1 - JUMPER PLUG ASSEMBLY
 - TM - TIMER MOTOR
 - VDM - VALVE DRIVE MOTOR
 - LDM - LOWER DRIVE MOTOR
 - SW1 - TIMER HOMING SWITCH
 - SW2 - TIMER PROGRAM SWITCH
 - SW3 - TIMER AUX. SWITCH
 - SW4 - VALVE HOMING SWITCH
 - SW5 - VALVE STEP SWITCH
 - SW6 - BRINE CAM SWITCH
 - SW7 - LOWER DRIVE SWITCH (INSIDE)
 - SW8 - UPPER DRIVE SWITCH (OUTSIDE)
 - THCAM - TIMER HOMING CAM
 - TPCAM - TIMER PROGRAM CAM
 - BVCAM - BRINE VALVE CAM
 - LDCAM - LOWER DRIVE CAM

- NOTE:
1. TWO TO FOUR TANK, SINGLE METER ALTERNATING REGENERATION.
 2. 1 TO 3 TANKS IN SERVICE.
 3. ONE TANK IN REGENERATION OR STANDBY.
 4. ALL VALVES IN SYSTEM WIRING ALIKE.
 5. LAST VALVE IN SYSTEM RECEIVES JUMPER PLUG ASSEMBLY.
 6. CONNECT JUMPER PLUG TO INTERLOCK CABLE RECEPTACLE.
 7. SPECIAL METER VALVE REMOTE METER OR EQUIV. REQUIRED FOR PROPER OPERATION.
 8. SPECIAL METER VALVE REMOTE METER OR EQUIV. REQUIRED FOR PROPER OPERATION.
 9. VALVE SHOWN IN SERVICE POSITION.

1600/1700 SYSTEM NOZZLE & THROAT CHART

1600 Brine System

Standard

Size	Color	Nozzle	Throat
#0.....	Red	10913-0	10914-0
#1.....	White.....	10913-1	10914-1
#2.....	Blue.....	10913-2	10914-2
#3.....	Yellow.....	10913-3	10914-3
#4.....	Green.....	10913-4	10914-4

PVC

Size	Color	Nozzle	Throat
#0.....	Gray	12973-0	12974-0
#1.....	Gray	12973-1	12974-1
#2.....	Gray	12973-2	12974-2
#3.....	Gray	12973-3	12974-3
#4.....	Gray	12973-4	12974-4

Stainless Steel

Size	Color	Nozzle	Throat
#0.....	Silver.....	10225-0	10226-0
#1.....	Silver.....	10225-1	10226-1
#2.....	Silver.....	10225-2	10226-2
#3.....	Silver.....	10225-3	10226-3
#4.....	Silver.....	10225-4	10226-4

1700 Brine System

Standard

Size	Color	Nozzle	Throat
#3.....	Yellow.....	14801-03C ..	14802-03C
#4.....	Green.....	14801-04C ..	14802-04C
#5.....	White.....	14801-05C ..	14802-05C
#6.....	Red	14801-06C ..	14802-06C

SERVICE ASSEMBLIES

Adapters:

61525.....	Softwater Adapter Kit, 2900s
61415.....	Adapter Assy, Sidemount 2850/2900/2930
61415NP.....	Adapter Assy, Sidemount, NP 2850/2900/2930
61415-20.....	Adapter Assy, Sidemount, BSP/MTC 2850/2900/2930
61415-20NP.....	Adapter Assy, Sidemount, BSP/NP 2850/2900/2930

Air Checks:

60002-34.....	Air Check, #500, 34" Long
60003-34.....	Air Check, #500, HW, 34" Tube
60009-01.....	Air Check, #900, Commercial, HW Less Fittings

Auxiliary Micro Switch:

60320-02.....	Switch Kit, 3200/9000 Timer Auxiliary
60320-11.....	Switch Assy, 2900, Lower Drive (For Adding 2nd Switch)
60320-08.....	Switch Assy, 2900, Lower Drive Aux (For Adding Third Switch)

Brine Line Flow Controls (BLFC):

60020-25.....	BLFC, .25 GPM, 1600
60020-50.....	BLFC, .50 GPM, 1600
60020-100.....	BLFC, 1.0 GPM, 1600
60011-090.....	Brine Valve, 1650, Short Stem
60010-25.....	BLFC, 1650, .25 GPM, Plastic
60010-50.....	BLFC, 1650, .50 GPM, Plastic
60010-100.....	BLFC, 1650, 1.0 GPM, Plastic

Brine Valves:

60011.....	Brine Valve, 1650, Less BLFC
60029.....	Brine Valve, 1600, Short Stem Brass, Std O-rings
60029HW.....	Brine Valve, 1600, Short Stem Hot Water
60034-XX.....	Model 1700 brine valve assy (specify flow control 1.0 - 5.0)
60604-XX.....	Model 1710 brine valve assy (specify flow control 1.0 - 5.0)

Covers:

60217-02.....	Environmental Lower Cover, Black
60219-02.....	Environmental, Cover, Black
60232-XX.....	Designer 2 Piece
60232-110.....	Cover, Designer, 1 Piece Black
14800-02.....	Cover, Dust, Lower, 2900, Black

Drain Line Flow Controls (DLFC):

60366-XX.....	1" FNPT x ¾" FNPT (specify flow control .6 - 7.0)
60701-XX.....	1" FNPT x 1" FNPT (specify flow control 8.0 - 25.0)
60702-XX.....	1" FNPT x 1" MNPT (specify flow control 8.0 - 25.0)
60708-XX.....	1" FNPT x ¾" FNPT (specify flow control 8.0 - 25.0)
60721-XX.....	1" FNPT x 1" FNPT (specify flow control .6 - 7.0)

Cam Assemblies:

60160-00.....	Drive Cam Assy, RR, White
60160-20.....	Drive Cam Assy, Std
60160-22.....	Drive Cam Assy, Link, Environmental 2900 Lower Drive
60160-30*.....	Drive Cam Assy, Upflow
60160-31*.....	Drive Cam Assy, Upflow, Variable

24-Hour Gear Assemblies:

19205.....	Gear Assy, 24 Hour, Silver, 5600, 12 A.M.
60519-02.....	Gear Assy, 3200 24 Hour 2 Times/Day, w/Silver Label
60519-03.....	Gear Assy, 3200, 24 Hour 3 Times/Day, w/Silver Label
60519-04.....	Gear Assy, 3200, 24 Hour 4 Times/Day, w/Silver Label
60519-06.....	Gear Assy, 3200, 24 Hour (12:00) 6 Times/Day, w/Silver Label

Injector Assemblies (Complete):

60480-XX.....	1600/1650 - 3/8" brine (specify size of injector)
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Meters:

60393.....	Meter Assy, 2900, 2" Std
60394.....	Meter Assy, 2900, 2" Ext
60616.....	Meter Assy, Elec 2"
60620.....	Meter Assy, 2" Plastic, Std
60621.....	Meter Assy, 2" Plastic, Ext
60625.....	Meter Assy, 2" Plastic Electronic
61439.....	Meter Sleeve w/O-ring, Machd

Piston Assemblies:

60103.....	Piston Assy, 2900/2930, HWBP Lower
60103-01.....	Piston Assy, 2900/2930, HWBP, HW, Lower
60104.....	Piston Assy, 2900/2930, NHWP Lwr, 2900s, Soft Wtr Rgn
60104-01.....	Piston Assy, 2900/2930, NHWP, HW Lwr, 2900s Soft Wtr Rgn
61540.....	Piston Assy, 2900s, Downflow Upper
61540-01.....	Piston Assy, 2900s Downflow Upper, HW
61545*.....	Piston Assy, 2900s, Upflow Upper
61545-01*.....	Piston Assy, 2900s, Upflow Upper, HW
61550.....	Piston Assy, 2900s, HWBP Lower
61550-03.....	Piston Assy, 2900s, HWBP Lower, HW
61555.....	Piston Assy, 2900s, NHWP Lower
61555-03.....	Piston Assy, 2900s, NHWP Lower, HW

Program Wheel Assemblies:

60405-20.....	Program Wheel, w/3/4" Ext Label 1 1/2" Std Set @ 100
60405-50.....	Program Wheel, w/2" Std Label Set @ 21
60405-60.....	Program Wheel, w/2" Ext Label
60405-70.....	Program Wheel, w/1 1/2" Ext Label

SERVICE ASSEMBLIES *continued*

Safety Brine Valves:

60014.....	Safety Brine Valve Assy, 2310
60038.....	Safety Brine Valve , 2350
60027-FFA.....	Safety Brine Valve Body, 2300 Fitting Facing Arm
60027-FFS.....	Safety Brine Valve Body Fitting Facing Stud
60026-30SAN.....	Float Assy, 400A/2350, 30" HW
60028-30.....	Float Assy, 2300, 30" White
60028-30.....	Float Assy, 2300, 30", Blue/White
60068-30.....	Float Assy, 2310, w/30" Rod

Sales & Service Aids:

40738.....	Literature, 2900 Spec Sheet
41689.....	Literature, 2900s S/Manual
40717.....	Literature, Catalog Assy, PWT Residential/Commercial

Seal & Spacer Kits:

61530.....	Seal & Spacer Kit, 2900s Upper
61530-01.....	Seal & Spacer Kit, 2900s, HW Upper
60128.....	Seal & Spacer Kit, 2900/2930 Lower
60128-01.....	Seal & Spacer Kit, 2900/2930, HW Lower

Service Equipment:

11098.....	Stuffer Tool Assy, Complete
12682.....	Puller Tool Assy, 2900/3150
12683.....	Stuffer Tool Assy, 2900/3150
13061.....	Puller Assy, Port Ring
16174.....	Silicone, 2 oz. Tube
60460.....	Meter Checker Kit, Std
60461.....	Meter Checker Kit, Ext
16586-8.....	Silicone, Dow #7 8 Lb

Service Valve Operator Assemblies:

60150.....	SVO Assy, 1600 O/S
60150-01.....	SVO Assy, 1600 N/S

Skipper Wheel Assemblies:

14860.....	Skipper Wheel Assy, 7 Day
14381.....	Skipper Wheel Assy, 12 Day

*Upflow Only

