



## FLECK 3900

### SERVICE MANUAL



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## CALIFORNIA PROPOSITION 65 WARNING

**⚠ WARNING:** This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

## 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-inch Std Range (125 - 2,100 gallon setting)
- B. 3/4-inch Ext Range (625 - 10,625 gallon setting)
- C. 1-inch Std Range (310 - 5,270 gallon setting)
- D. 1-inch Ext Range (1,150 - 26,350 gallon setting)
- E. 1-1/2 inch Std Range (625 - 10,625 gallon setting)
- F. 1-1/2 inch Ext Range (3,125 - 53,125 gallon setting)
- G. 2-inch Std Range (1,250 - 21,250 gallon setting)
- H. 2-inch Ext Range (6,250 - 106,250 gallon setting)
- I. 3-inch Std Range (3,750 - 63,750 gallon setting)
- J. 3-inch 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

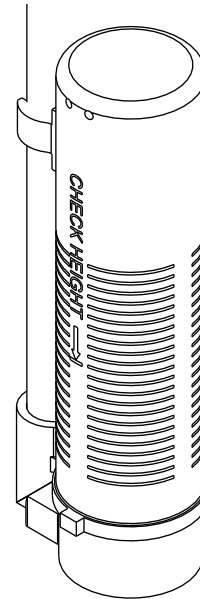
1. Place the softener tank where you want to install the unit making sure the unit is level and on a firm base.
2. During cold weather, the installer should warm the valve to room temperature before operating.
3. All plumbing should be done in accordance with local plumbing codes. The pipe size for residential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

## STARTUP INSTRUCTIONS *CONTINUED*

- 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.
- Replace control box cover.
- 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

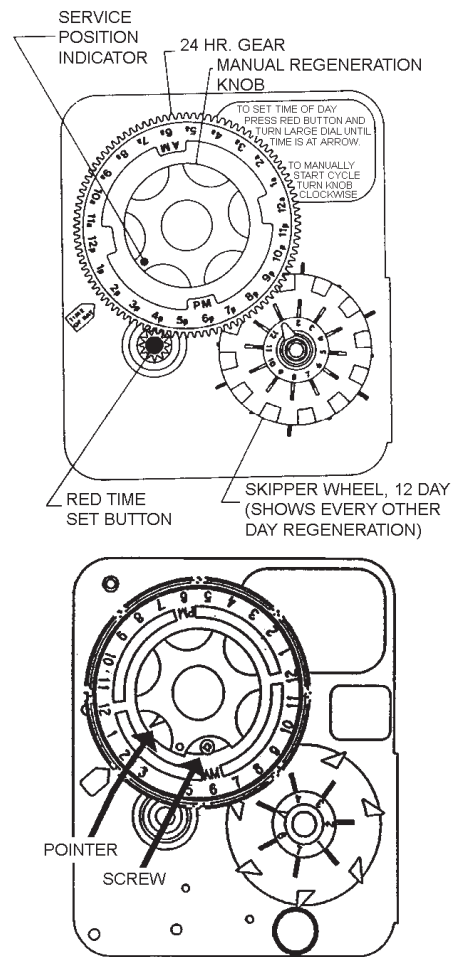
- Press and hold the red button in to disengage the drive gear.
- Turn the large gear until the actual time of day is at the time of day pointer.
- Release the red button to again engage the drive gear.

### How To Manually Regenerate Your Water Conditioner At Any Time

- Turn the manual regeneration knob clockwise.
- This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
- The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
- 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.
- In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

### How to Adjust Regeneration Time

- Disconnect the power source.
- 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.
- Loosen each screw slightly to release the pressure on the time plate from the 24-hour gear.
- Locate the regeneration time pointer on the inside of the 24-hour dial in the cut out.
- Turn the time plate so the desired regeneration time aligns next to the raised arrow.
- Push the red button in and rotate the 24-hour dial. Tighten each of the three screws.
- Push the red button and locate the pointer one more time to ensure the desired regeneration time is correct.
- 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

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

### How To Manually Regenerate Your Water Conditioner At Any Time

- Turn the manual regeneration knob clockwise.

## 3210 & 3220 TIMER SETTING

### PROCEDURE *CONTINUED*

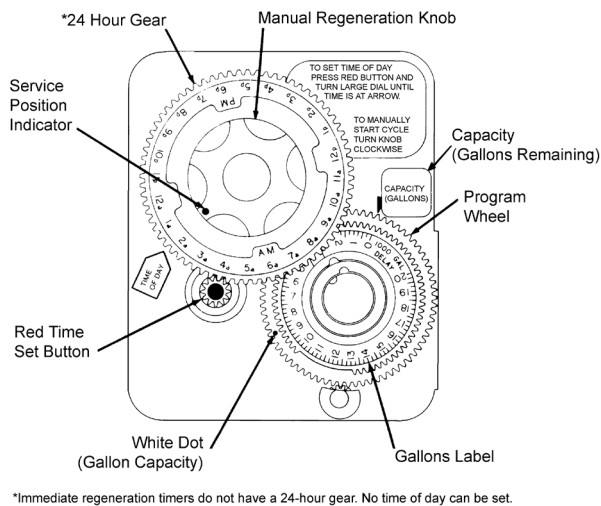
- This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
- The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
- Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time.
- 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.**



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)

- To expose cycle program wheel, grasp timer in upper left-hand corner and pull, releasing snap retainer and swinging timer to the right.
- 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.

- 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

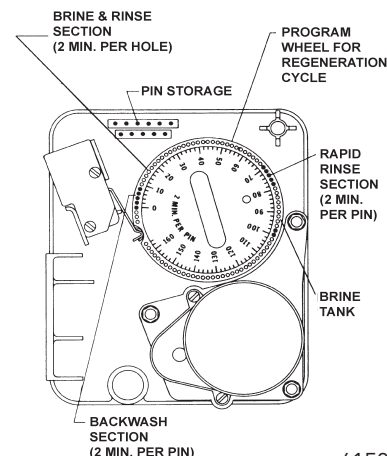
- The group of holes between the last pin in the backwash section and the second group of pins determines the length of time that your unit will brine and rinse (2 min. per hole).
- To change the length of brine and rinse time, move the rapid rinse group of pins to give more or fewer holes in the brine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

##### How To Change The Length Of Rapid Rinse

- 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).
- 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

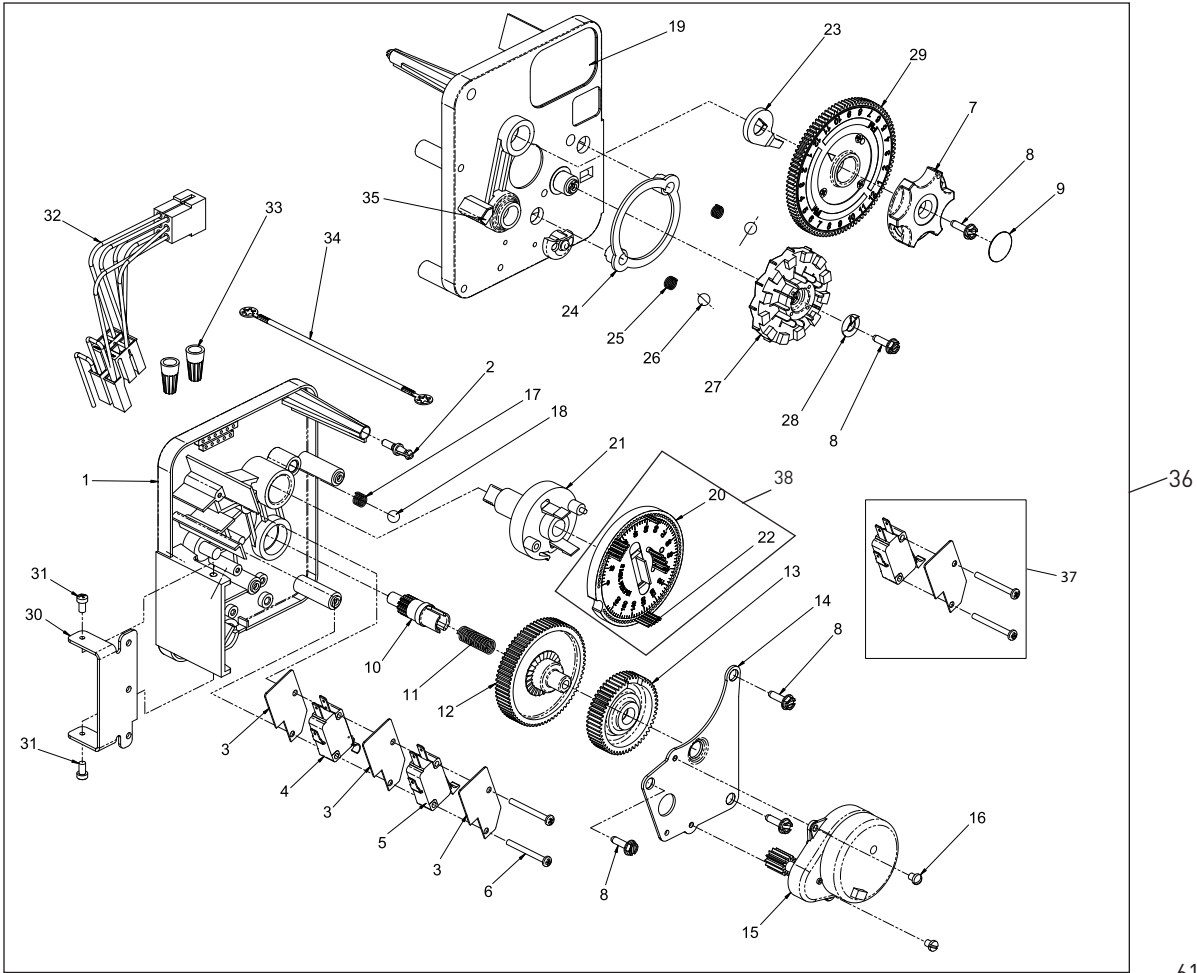
- The second group of holes in the program wheel determines the length of time that your water conditioner will refill the brine tank (2 min. per hole).
- To change the length of refill time, move the two pins at the end of the second group of holes as required.
- The regeneration cycle is complete when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



61502-3210 Rev A

Figure 4

# 3200 TIME CLOCK TIMER ASSEMBLY



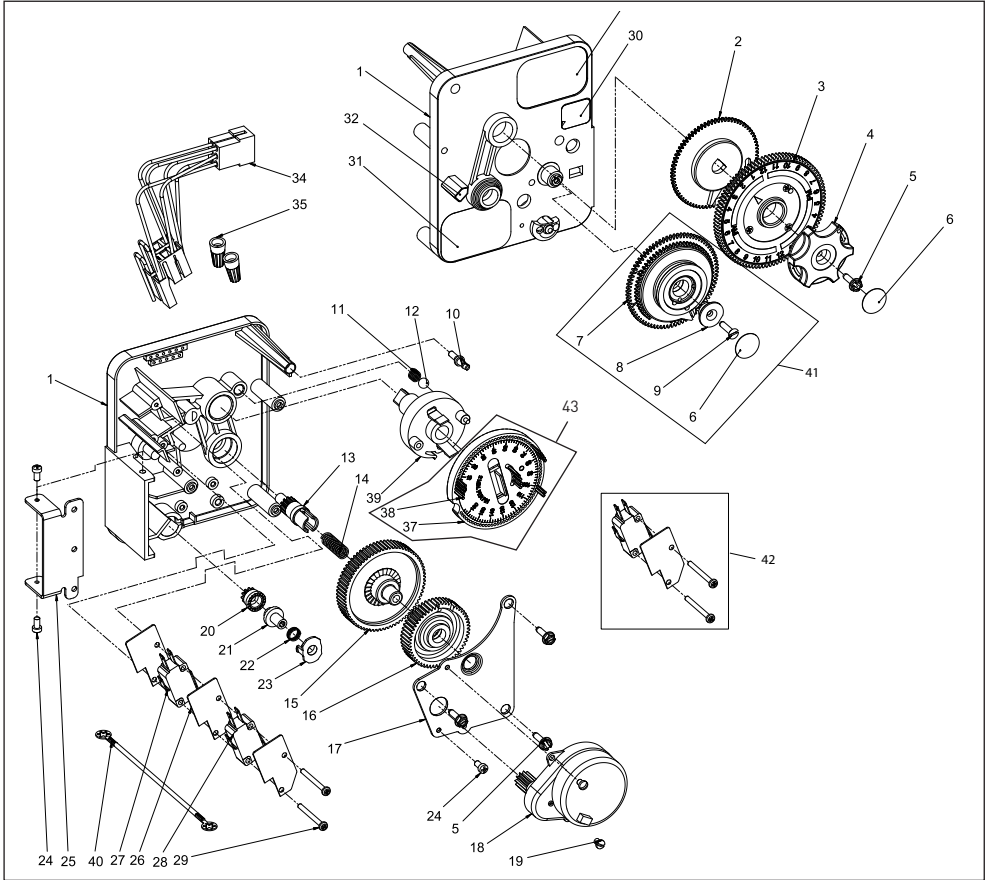
615023200 Rev A

## 3200 TIME CLOCK TIMER ASSEMBLY

*CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer, 3200	25	2	13311	Spring, Detent, Timer
2	1	14265	Clip, Sping	26	2	13300	Ball, 1/4-inch, SS
3	3	14087	Insulator	27	1	14381	Skipper Wheel Assy, 12 Day
4	1	10896	Switch, Micro			14860	Skipper Wheel Assy, 7 Day
5	1	15320	Switch, Micro, Timer	28	1	13014	Pointer, Regeneration
6	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8	29	1	40096-24	Dial, 12 AM Regen Assy, Black
7	1	13886	Knob, 3200			40096-02	Dial, 2 AM Regen Assy, Black
8	5	13296	Screw, Hex Wsh, 6-20 x 1/2	30	1	13881	Bracket, Hinger Timer
9	1	11999	Label, Button	31	2	11384	Screw, Phil, 6-32 x 1/4 Zinc
10	1	13018	Pinion, Idler	32	1	13902	Harness, 3200
11	1	13312	Spring, Idler Shaft	33	2	40422	Nut, Wire, Tan
12	1	13017	Gear, Idler	34	1	15354-01	Wire, Ground, 4 inches
13	1	13164	Gear, Drive	35	1	14007	Label, Time of Day
14	1	13887	Plate, Motor Mounting	36	1	*	Complete 3200 Time Clock Timer Assembly
15	1	18743-1	Motor, 120V, 60Hz, 1/30 RPM	37		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
		18752-1	Motor, 100V, 50Hz, 1/30 RPM	38		61420-03	Program Wheel, Gear Assy, Filter 2 Min Per Pin
		18824-1	Motor, 230V, 50Hz, 1/30 RPM			61420-04	Program Wheel, Gear Assy, Softener, 2 Min Per Pin
		18826-1	Motor, 24V, 50Hz, 1/30 RPM	*Call your distributor for Part Number			
		19659-1	Motor, 24V, 60Hz, 1/30 RPM				
		19660-1	Motor, 230V, 60Hz, 1/30 RPM				
16	2	13278	Screw, Slt'd Fillister Hd 6-32 x .156				
17	1	15424	Spring, Detent, Timer				
18	1	15066	Ball, 1/4-inch, 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				

# 3210 METER DELAYED TIMER ASSEMBLY



61502-3210 Rev A



# 3210 METER DELAYED TIMER ASSEMBLY

*CONTINUED*

Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer, 3200
2	1	13802	Gear, Cycle Actuator
3	1	40096-02	Dial 2 AM Regen Assy, Black
4	1	13886	Knob, 3200
5	4	13296	Screw, Hex Wsh, 6-20 x 1/2
6	2	11999	Label, Button
7	1	13803	Gear, Program Drive Wheel
8	1	13806	Retainer, Program Wheel
9	1	13748	Screw, Flat Head St, 6-20 x 1/2
10	1	14265	Clip, Spring
11	1	15424	Spring, Detent, Timer
12	1	15066	Ball, 1/4-inch Delrin
13	1	13018	Pinion, Idler
14	1	13312	Spring, Idler Shaft
15	1	13017	Gear, Idler
16	1	13164	Gear, Drive
17	1	13887	Plate, Motor Mounting
18	1	18743-1	Motor, 120V, 60Hz, 1/30 RPM
		18752-1	Motor, 100V, 50Hz, 1/30 RPM
		18824-1	Motor, 230V, 50Hz, 1/30 RPM
		18826-1	Motor, 24V, 50Hz, 1/30 RPM
		19659-1	Motor, 24V, 60Hz, 1/30 RPM
		19660-1	Motor, 230V, 60Hz, 1/30 RPM
19	1	13278	Screw, Fillister Hd, 6-32 x .156
20	1	13830	Pinion, Program Wheel Drive
21	1	13831	Clutch, Drive Pinion
22	1	14276	Spring, Meter, Clutch
23	1	14253	Retainer, Clutch Spring
24	3	11384	Screw, Phil, 6-32 x 1/4
25	1	13881	Bracket, Hinge Timer
26	3	14087	Insulator
27	1	10896	Switch, Micro
28	1	15320	Switch, Micro, Timer
29	2	11413	Screw, Pan Hd Mach, 4-40 x 1 1/8
30	1	14198	Label, Indicator

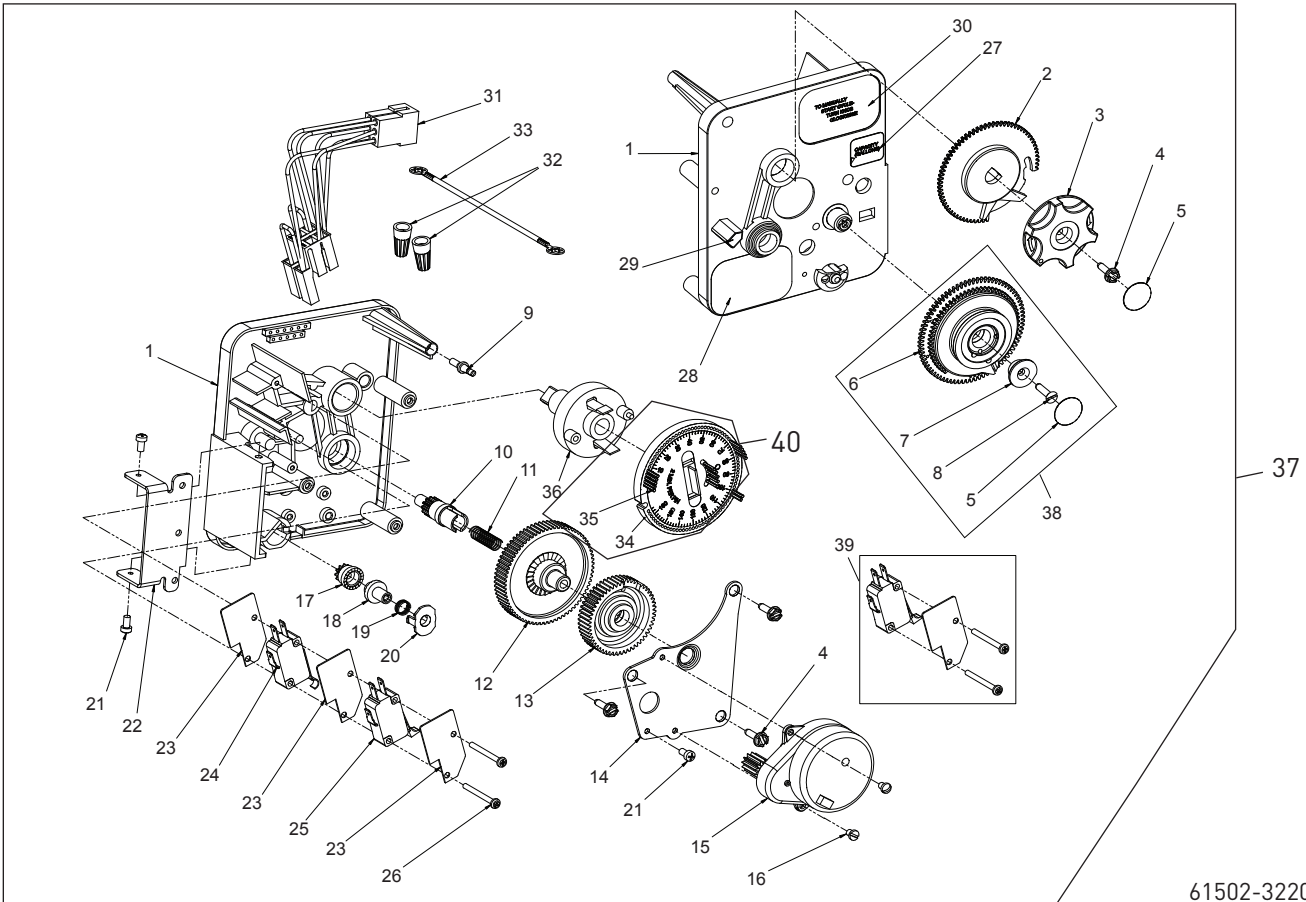
Item No.	QTY	Part No.	Description
31	1	15465	Label, Caution
32	1	14007	Label, Time of Day
33	1	14045	Label, Instruction
34	1	13902	Harness, 3200
35	2	40422	Nut, Wire, Tan
36	1	15354-01	Wire, Ground, 4 inches
37	1	19210	Program Wheel Assy
38	17	41754	Pin, Spring, 1/16 x 5/8 SS, Timer
39	1	13911	Gear, Main Drive, Timer
40	1	*	Complete 3210 Meter Delayed Timer Assembly
41		60405-80	Program Wheel, w/3-inch STD Label 63,750 gal
		60405-90	Program Wheel, w/3-inch EXT Label 320,000 gal
42		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
43		61420-03	Program Wheel, Gear Assy, Filter 2 Min Per Pin
		61420-04	Program Wheel, Gear Assy, Softener, 2 Min Per Pin

**Not Shown:**

.....	25141	Label, STD M <sup>3</sup> , Gallon 240, 3-inch
.....	25142	Label, EXT M <sup>3</sup> , Gallon 1200, 3-inch

\*Call your distributor for Part Number

# 3220 METER IMMEDIATE TIMER ASSEMBLY



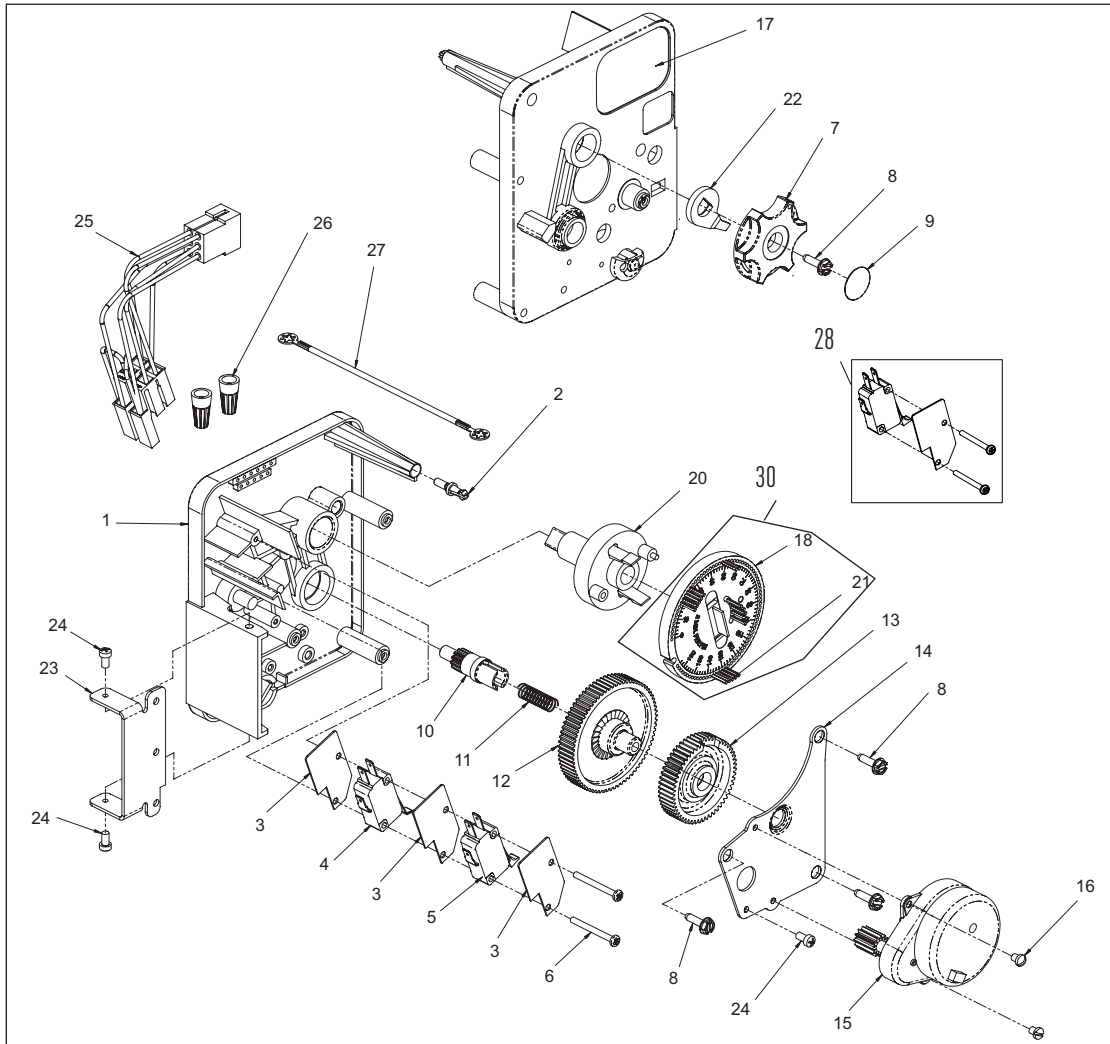
61502-3220 Rev B

# 3220 METER IMMEDIATE TIMER

## ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer	28	1	15465	Label, Caution
2	1	15431	Gear, Cycle Actuator, System #5	29	1	14007	Label, Time of Day
3	1	13886	Knob, 3200	30	1	15148	Label, Instruction
4	4	13296	Screw, Hex Wsh, 6-20 x 1/2	31	1	40617	Harness, 3220
5	2	11999	Label, Button	32	2	40422	Nut, Wire, Tan
6	1	13807	Gear, Program Drive Wheel	33	1	15354-01	Wire, Ground, 4 inches
7	1	13806	Retainer, Program Wheel	34	1	19210-05	Program Wheel Assembly, 9000/3230
8	1	13748	Screw, Flt Hd St, 6-20 x 1/2	35	17	41754	Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer
9	1	14265	Spring Clip	36	1	15055	Gear, Main Drive
10	1	13018	Pinion, Idler	37	1	*	Complete 3220 Meter Immediate Timer Assembly
11	1	18563	Idler Shaft Spring	38		60405-80	Program Wheel, w/3-inch STD Label 63,750 gal
12	1	13017	Gear, Idler			60405-90	Program Wheel, w/3-inch EXT Label 320,000 gal
13	1	13164	Drive Gear	39		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
14	1	13887	Plate, Motor Mounting	40		61420-06	Program Wheel, Gear Assy, Softener Immediate 2 Min Per Pin
15	1	18743-1	Motor, 120V, 60 Hz, 1/30 RPM			61420-42	Program Wheel, Gear Assy, Filter Immediate 2 Min Per Pin
		18752-1	Motor, 100V, 50Hz, 1/30 RPM	<b>Not Shown:</b>			
		18824-1	Motor, 230V, 50Hz, 1/30 RPM			25141	Label, STD M <sup>3</sup> , Gallon 240, 3-inch
		18826-1	Motor, 24V, 50Hz, 1/30 RPM			25142	Label, EXT M <sup>3</sup> , Gallon 1200, 3-inch
		19659-1	Motor, 24V, 60Hz, 1/30 RPM	*Call your distributor for Part Number			
		19660-1	Motor, 230V, 60Hz, 1/30 RPM				
16	2	13278	Screw, Sldt Fillister Hd				
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	15414-00	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				

# 3230 REMOTE START TIMER ASSEMBLY



61502-3230R REV A

# 3230 REMOTE START TIMER ASSEMBLY

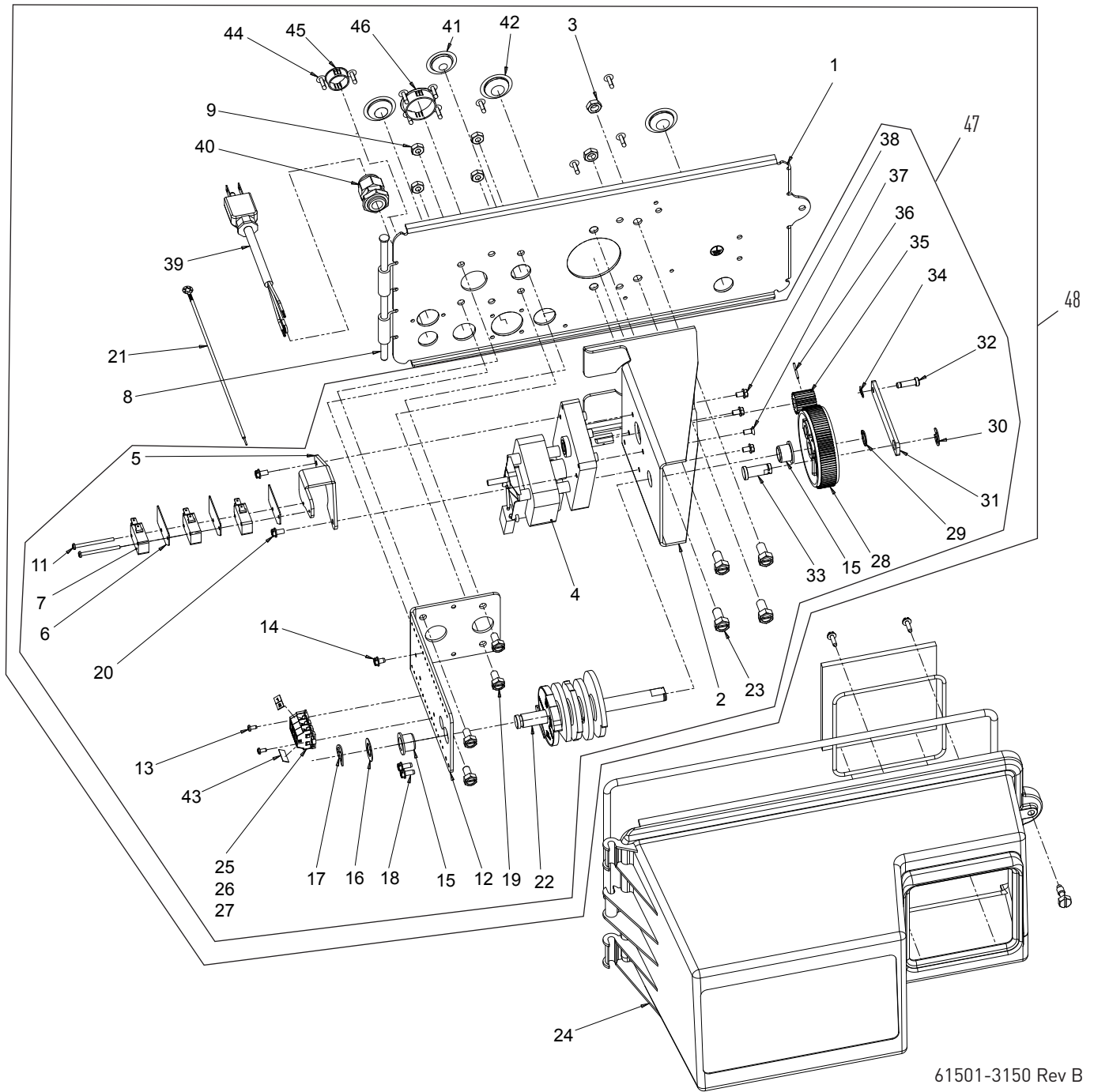
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Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer
2	1	14265	Spring Clip
3	3	14087	Insulator
4	1	15314	Micro Switch
5	1	15320	Switch, Micro, Timer
6	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8
7	1	13886	Knob, 3200
8	4	13296	Screw, Hex Wsh, 6-20 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
		18752-1	Motor, 100V, 50Hz, 1/30 RPM
		18824-1	Motor, 23V, 50Hz, 1/30 RPM
		18826-1	Motor, 24V, 50Hz, 1/30 RPM
		19659-1	Motor, 24V, 60Hz, 1/30 RPM
		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

Item No.	QTY	Part No.	Description
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 inches
28		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
29		*	3230 Timer Assy
30		61420-06	Program Wheel, Gear Assy, Softener Immediate 2 Min Per Pin
		61420-42	Program Wheel, Gear Assy, Filter Immediate 2 Min Per Pin

\*Call your distributor for Part Number

# CONTROL DRIVE ASSEMBLY



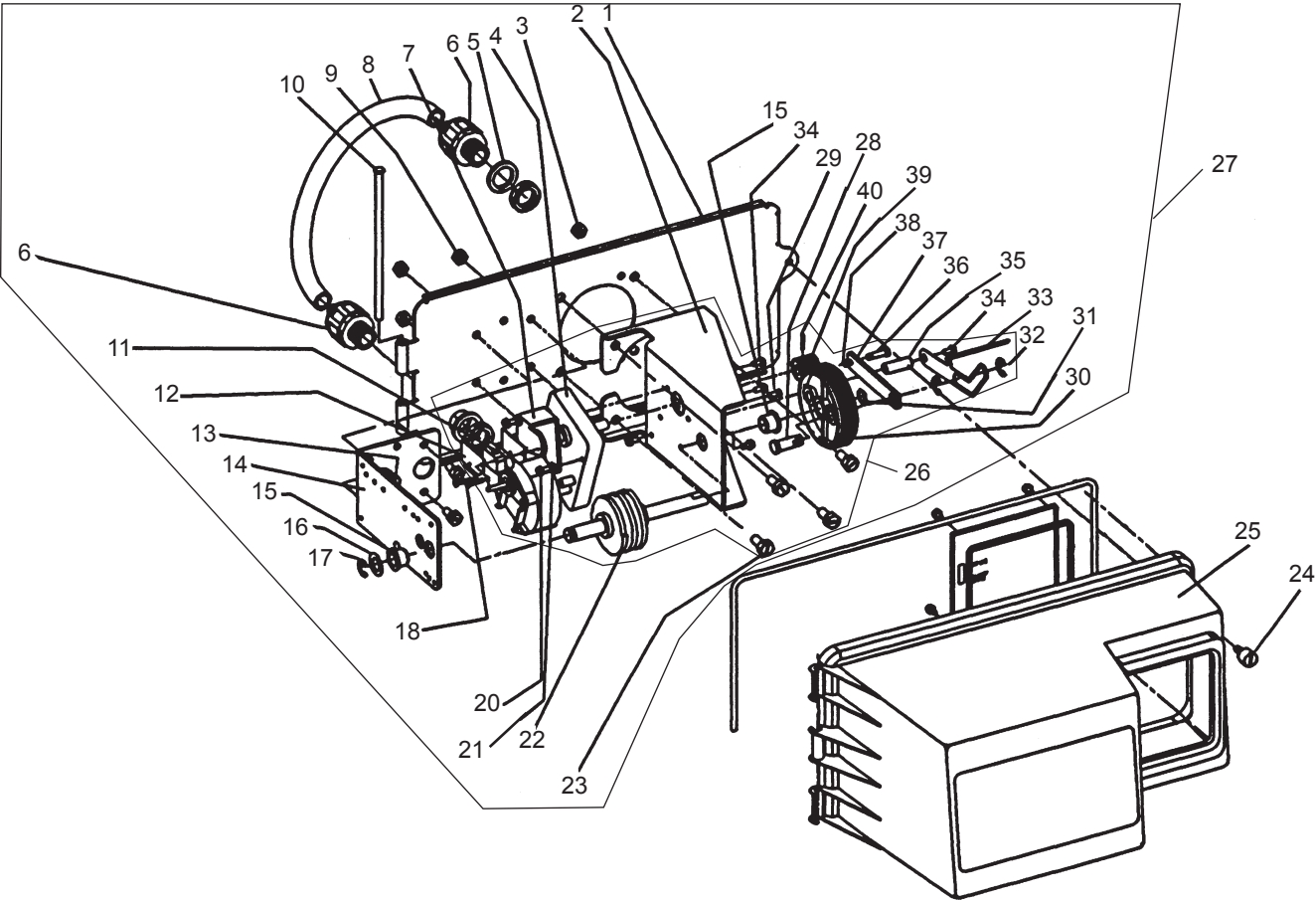
61501-3150 Rev B

## CONTROL DRIVE ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	19304-04	Backplate, 3150/3900, Upper, NEMA 3R	31	1	16047	Link, Drive
2	1	15120-01	Bracket, Motor Mtg, 3150/3900 Environmental	32	1	11709	Pin, Drive Link
3	2	16346	Nut, Hex, Jam, 5/16 - 18	33	1	16048	Bearing, Drive Link
4	1	40392	Motor, Drive, 115V, 50/60 Hz, Sp	34	1	11898	Clip, 3150/3900
		40390	Motor, Drive, 220V, 50 Hz, Sp, Fam 3	35	1	16045	Pinion, Drive
		42581	Motor, Drive, 24VAC/DC, 50-60 Hz, Fam 3	36	1	11381	Pin, Roll, 2900/3900
5	1	17797	Bracket, Switch Mounting, 3150/3900	37	1	11080	Screw, Flt Hd Mach, 8-32 x 3/8
6	4	10302	Insulator, Limit Switch	38	3	10872	Screw, Hex Wsh, 8-32 x 17/64
7	3	10218	Switch, Micro	39	1	40084-12	Power Cord, 12 feet US, Round, 120V
8	1	17845-03	Pin, Hinge, 3150/3900, Env			40085-12	Power Cord, 12 feet US, Round, 240V
9	4	11235	Nut, Hex, 1/4 -20, Mach Screw, Zinc			11545	Power Cord, 4 feet European, Black
10	2	13365	Washer, Lock, #4, External			19303	Power Cord, 8 feet, Australian
11	2	40080	Screw, Rd Hd, 4-40 x 1-1/2 inch			19885	Power Cord, Japanese, 110V/120V
12	1	16053	Bracket, Brine Side	40	1	17967	Fitting Assy, Liquid Tight, Blk
13	2	40133	Screw, Pan Hd, 4-40 x 1/4-inch	41	1	19691	Plug, .750 Dia, Recessed, Black
14	2	40133	Screw Pan HD, 4-40 x 1/4-inch	42	3	19591	Plug, .8750 Hole, Recessed, Black
15	2	16052	Bushing, 3150/3900	43	2	15250	Label, Terminal Strip
16	1	16059	Washer, SS, .88, 3150/3900	44	10	19800	Plug, .140 Dia, White
17	1	16051	Ring, Retaining, Bowed	45	1	15806	Plug, Hole, Heyco #2693
18	2	10300	Screw, Slot Hex Wsh, 18-8 x 3/8	46	1	17421	Plug, 1.20 Hole
19	4	10231	Screw, Slot Hex, 1/4 - 20 x 1/2	47		60057-01	Drive Assy, 3150, 120V, SYS 5 & 7, Signal After Brine Tank Fill
20	2	14202-01	Screw, Hex Wsh Hd, 8 x 5/16			60057-03	Drive Assy, 3150, 24V, 3900 Upper, SYS #5 or SYS #7
21	1	10475-01	Wire, Ground			60057-11	Drive Assy, 3150, 120V, 3900 Upper, SYS #4 or SYS #6
22	1	16494-03	Cam Assy, 3150/3900 Signal After Brine Fill			60057-21	Drive Assy, 3150, 120V, Upflow, 3900 Upper, SYS 5 or SYS 7, Brine Draw First
		16494-05	Cam Assy, 3150/3900 Upper Signal After Rapid Rinse	48		*	3150 Powerhead Assembly
		16494-06	Cam Assy, 3150/3900, Upper, Upflow, Signal After Rapid Rinse	<b>Not Shown</b>			
23	4	11224	Screw, Hex Hd, 5/16 - 18 x 5/8	1		17470	Cable Guide Assy, 2850/3150
24	1	60240-02	Cover Assy, 3150/3900 Env, Black, NEMA 3R	1		19856	Ring, Retaining (Used on Cover)
25	5	41084	Terminal Block, Segment, Gray	1			Timer (See Timer Section)
26	1	41085	Endplate, Terminal Block, Gray	1		16427-04	Wire, Lead, 12 inches, White
27	1	40174	Terminal Block, Green/Yellow	1		40396	Harness, Drive, Environmental
28	1	16046	Gear, Drive	1		14924	Strain Relief Heyco #1247
29	1	16050	Ring, Retaining	1		15513	Meter Cable, 17.5 inches, 2 inches
30	1	11774	Ring, Retaining	1		15216	Meter Cable, 15.25 inches, 1.5 inches
				1		18585	Harness, 3900, Aux Switch

\*Call your distributor for Part Number

# ADAPTER CONTROL DRIVE LOWER POWERHEAD



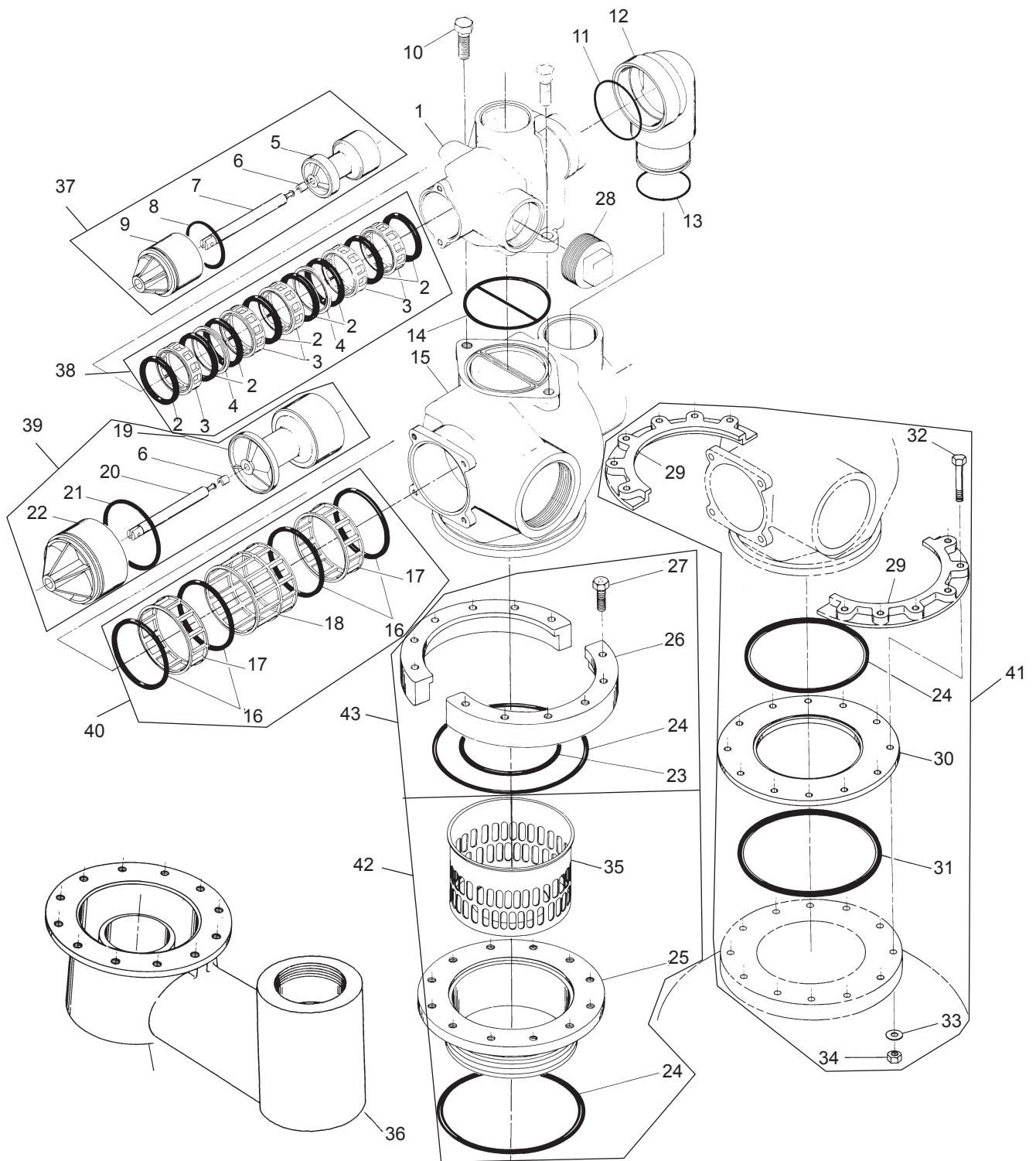


# ADAPTER CONTROL DRIVE LOWER

## POWERHEAD *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	19305	Back Plate, 3900 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
2	1	16086	Bracket - Motor Mounting			60058-01	Lower Drive Assy, 3900, 120V
3	2	16346	Nut			60058-03	Lower Drive Mtr Assy, 3900, 24V
4	1	40392	Drive Motor - 115 V. 50/60 Hz.	27	*		3900 Lower Powerhead Assy
		40390	Drive Motor - 220 V. 50/60 Hz.	28	1	16048-01	Bearing - Drive Link
		42581	Drive Motor - 24 VAC/DC 50/60 Hz.	29	2	11080	Screw - Flt HD Mach, 8-32 x 3/8, Steel Zinc
5	2	18692	Washer, Sealing	30	1	16046	Drive Gear
6	2	18691	Connector, Conduit	31	1	16050	Retaining Ring
7	1	17797	Bracket - Switch Mounting	32	2	11774	Retaining Ring - "E"
8	1	18693	Conduit, Interdrive	33	1	19315	Indicator
9	4	11235	Nut, 1/4-20	34	4	10872	Screw - Hex Head, 8-32 x 17/64, Steel/Trivalent Zinc
10	1	17845-03	Pin, Hinge	35	1	18726	Space, Indicator
11	1	10218	Switch	36	1	11709	Pin - Drive Link
12	2	10302	Insulator - Switch	37	1	16047	Drive Link
13	4	10231	Screw - Hex Head, 1/4-20 x 1/2, 18-8 S.S.	38	1	11898	Clip
14	1	16053	Bracket - Brine Side	39	1	16045	Drive Pinion
15	2	16052	Bushing	40	1	11381	Roll Pin
16	1	16059	Washer	<b>Not Shown</b>			
17	1	16051	Retaining Ring - Bowed "E"	1	1	40405	Wire Harness, Environmental, System 4, Lower
18	2	11805	Screw, RD HD, 4-40 x 5/8-inch, Type 1, Steel/Zinc	*Call your distributor for Part Number			
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, Environmental				

# CONTROL VALVE

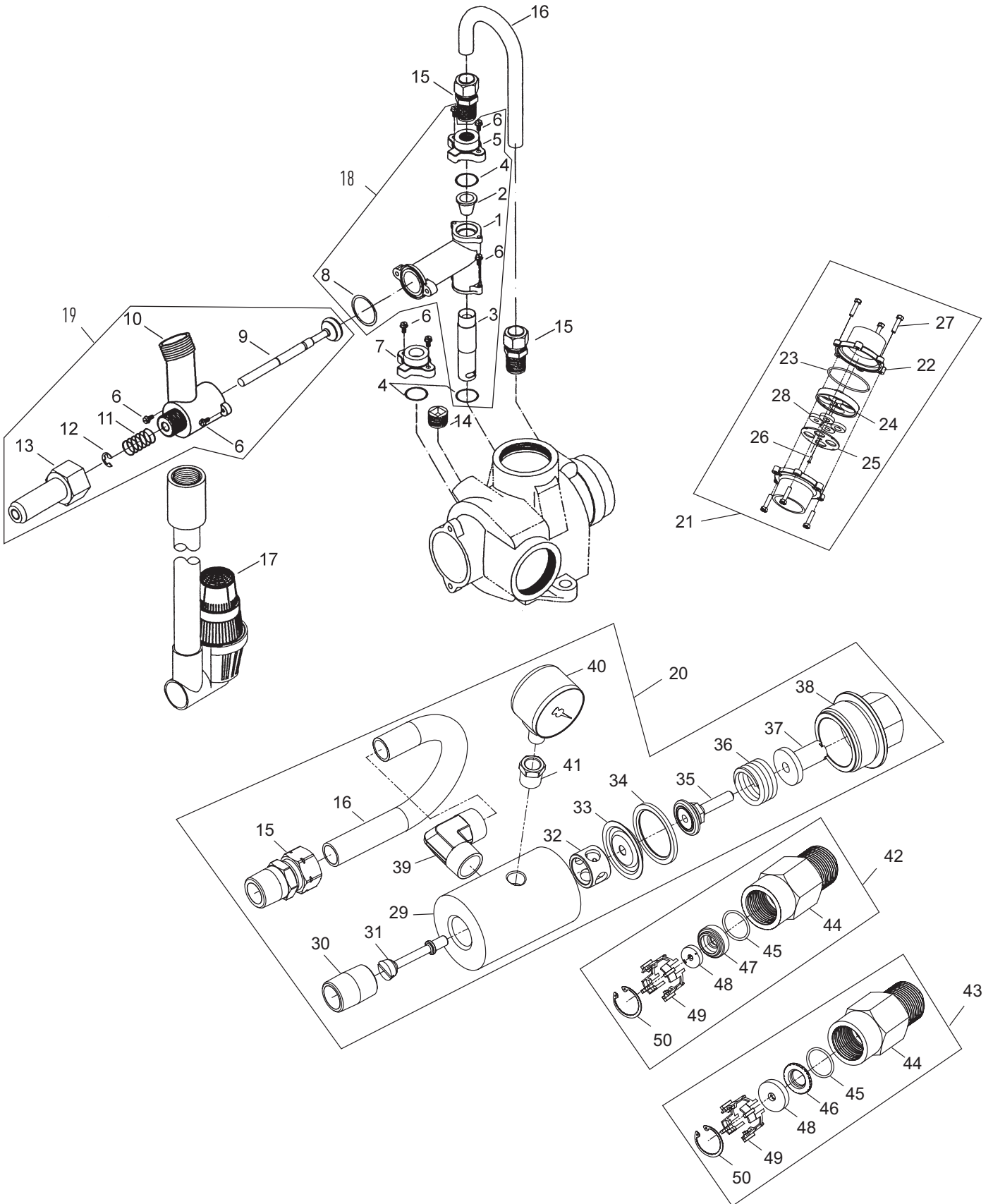


61500-3900

## CONTROL VALVE *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	15114	Valve Body			60107-10	Piston Assy, 3900, NHWBP, Lower
2	8	11720	Seal				
		11720-02	Seal, Silicone	40		60132	Seal & Spacer Kit, 3900, Lower
3	5	10369	Spacer - Port				
4	2	10368	Spacer			60132-10	Seal & Spacer Kit, 3900, 558BP Chemical Resistent, Lower
5	1	16130	Piston				
6	2	14818	Clip - Piston Rod	41		60190	Flange Kit, Park & Structural, 09/05 and After
7	1	15125	Piston Rod				
8	1	14922	O-ring -035			60191	Flange Kit, Park, 08/05 and Prior
9	1	16398-01	End Plug Assembly	42		60193	Flange Kit, 6-inch Thread
10	2	40118	Screw - Hex Head	43		60192	Flange Kit, Welded
11	1	16078	O-ring - 149	<b>Options</b>			
12	1	16074	Coupling	29	2	16482	Flange Segment
13	1	16077	O-ring - 140	30	1	16483	Flange Ring
14	1	15112	Seal	31	1	16484	O-Ring -442
15	1	16067-02	3-inch Adapter Body	32	12	16517	Screw, Park Tank
16	4	16068	Seal			19592	Screw, Structural Tank
		41534	Seal, 3900, 558 BP	33	12	18619	Washer
17	2	16069	Spacer - Narrow	34	12	16346	Nut
18	1	16070	Spacer - Wide	36	1	18584	Adapter, Side Mount
19	1	16071	Piston				
		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				
		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-inch -8				
26	2	16257	Flange Segment				
27	12	11238	Screw - Hex Head				
28	1	16088	Pipe Plug - 2-inch NPT				
35	1	16258	Flow Disperser				
37		60106-00	Piston Assy, 3900/3150 STD				
		60106-10	Piston Assy, 3150, Upflow				
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				

# 1800 SERIES BRINE SYSTEM AND DRAIN LINE FLOW CONTROL ASSEMBLY



# 1800 SERIES BRINE SYSTEM AND DRAIN

## LINE FLOW CONTROL ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	16340	Body, Injector, 1800 D/F	15	2	18702	Fitting, Tube, 1/2 NPT 5/8
		16340-20	Body, Injector, 1800, Downflow, Metric	16	1	18703	Tube, Brine, 5/8 OD Annealed
		16340-01	Body, Injector, 1800 Upflow			18703-01	Tube, Brine, 5/8 OD, Short, Upflow
		16340-21	Body, Injector, 1800, Upflow, Metric	17	1	60009-00	Air Check, #900, Commercial Less Fittings
2	1	15128-xx	Injector Nozzle			60009-01	Air Check, #900, Commercial, HW Less Fittings
		15128-04	#4 Green	18		60277-04	Injector Assy, 1800, #4, Downflow
		15128-05	#5 Red			60272-04	Injectory Assy, 1800, #4, Upflow
		15128-06	#6 White			60277-05	Injectory Assy, 1800 #5, Downflow
		15128-07	#7 Blue			60272-05	Injector Assy, 1800, #5, Upflow
		15128-08	#8 Yellow			60277-06	Injector Assy, 1800, #6, Downflow
		15128-09	#9 Violet			60277-07	Injector Assy, 1800, #7, Downflow
		15128-10	#10 Black				
3	1	15127-xx	Injector Throat				
		15127-04	#4 Green				
		15127-05	#5 Red				
		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-inch NPT				

# 1800 SERIES BRINE SYSTEM AND DRAIN

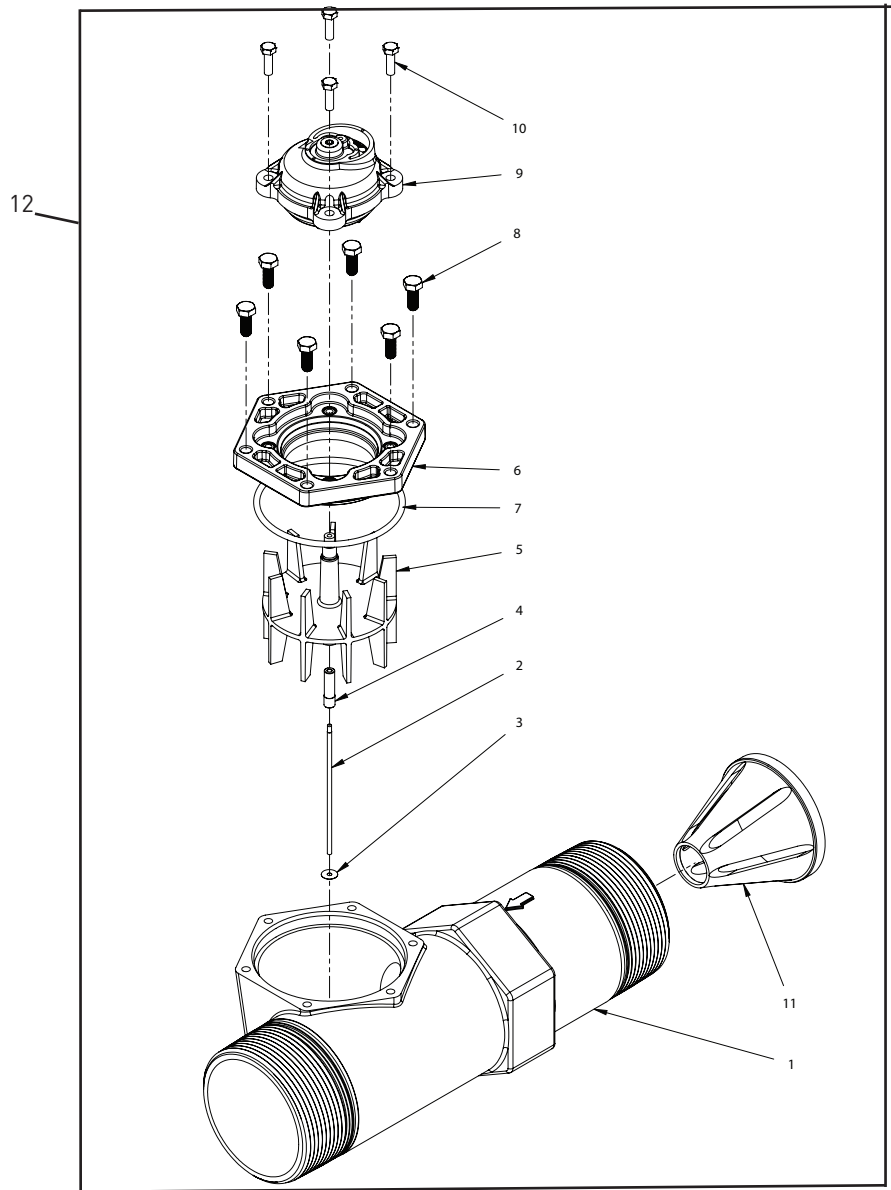
## LINE FLOW CONTROL ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
		..... 60272-07.....	Injector Assy, 1800, #7, Upflow				70 gpm
		..... 60277-08.....	Injector Assy, 1800, #8, Downflow	..... 60812-75.....			DLFC, 2-inch BSP/Metric, 75 gpm
		..... 60277-09.....	Injectory Assy, 1800 #9, Downflow	..... 60812-80.....			DLFC, 2-inch BSP/Metric, 80 gpm
		..... 60277-10.....	Injectory Assy, 1800 #10, Downflow	..... 60812-90.....			DLFC, 2-inch BSP/Metric, 90 gpm
19.....		60036-02.....	Brine Valve, 1800, Design 3	..... 60812-95.....			DLFC, 2-inch BSP/Metric, 95 gpm
		..... 60276-01.....	Brine Valve, 1800, Retrofit Kit, Downflow 1800 Injector and Brine Valve, Update to Design 3	..... 60812-100.....			DLFC, 2-inch BSP/Metric, 100 gpm
20.....		60734.....	Regulator, 3150/3900, Pressure, Upflow	22.....	2	27913-21.....	Housing, Flow Control, 2-inch BSP
21.....		60711-000.....	DLFC, 2-inch NPT, Less BTTNS, w/4 HLS	23.....		16804.....	O-ring, -150
		..... 60711-00.....	DLFC, 2-inch NPT, Less BTTNS, W/2 HLS	24.....	1	16649.....	Holder, DLFC Button
		..... 60711-01.....	DLFC, 2-inch NPT, Less BTTNS, W/1 HLS	25.....	1	16650.....	Cover Plate DLFC
		..... 60711-20.....	DLFC, 2-inch NPT, 20 gpm	26.....	1	13898.....	Screw, Flat HD, Phil, Steel
		..... 60711-25.....	DLFC, 2-inch NPT, 25 gpm	27.....	6	13386.....	Screw, Hex HD MACH, 1/4-20 x 1 OR Slot Hex Cap Screw 18-8 S.S.
		..... 60711-30.....	DLFC, 2-inch NPT, 30 gpm			..... 17976.....	Screw, Hex HD, M6 x 25 mm
		..... 60711-35.....	DLFC, 2-inch NPT, 35 gpm	28.....		16529.....	Washer, Flow, 10.0 gpm
		..... 60711-40.....	DLFC, 2-inch NPT, 40 gpm			..... 16736.....	Washer, Flow, 15.0 gpm
		..... 60711-45.....	DLFC, 2-inch NPT, 45 gpm			..... 16528.....	Washer, Flow, 20.0 gpm
		..... 60711-50.....	DLFC, 2-inch NPT, 50 gpm			..... 16737.....	Washer, Flow, 25.0 gpm
		..... 60711-55.....	DLFC, 2-inch NPT, 55 gpm	29.....	1	19089.....	Body Regulator 3150
		..... 60711-60.....	DLFC, 2-inch NPT, 60 gpm	30.....	1	10242.....	Fitting, Nipple, 1/2-inch, Close
		..... 60711-65.....	DLFC, 2-inch NPT, 65 gpm	31.....	1	19091.....	Pin, Regulator 3150
		..... 60711-70.....	DLFC, 2-inch NPT, 70 gpm	32.....	1	19093.....	Stand-Off Regulator 3150
		..... 60711-75.....	DLFC, 2-inch NPT, 75 gpm	33.....	1	19095.....	Diaphragm, Regulator 3150
		..... 60711-80.....	DLFC, 2-inch NPT, 80 gpm	34.....	1	19094.....	Washer, Regulator 3150
		..... 60711-85.....	DLFC, 2-inch NPT, 85 gpm	35.....	1	19092.....	Retainer, Regulator 3150
		..... 60711-90.....	DLFC, 2-inch NPT, 90 gpm	36.....	1	19101.....	Spring, Regulator 3150
		..... 60711-95.....	DLFC, 2-inch NPT, 95 gpm	37.....	1	19399.....	Washer, Calibration 3150
		..... 60711-100.....	DLFC, 2-inch NPT, 100 gpm	38.....	1	19090.....	Cap, Regulator 3150
		..... 60812-30.....	DLFC, 2-inch BSP/Metric, 30 gpm	39.....	1	19278.....	Fitting, Tube, 90 Deg
		..... 60812-35.....	DLFC, 2-inch BSP/Metric, 35 gpm	40.....	1	19693.....	Pressure Gauge
		..... 60812-45.....	DLFC, 2-inch BSP/Metric, 45 gpm	41.....	1	41232.....	Bushing Reducer 1/4 x 1/8
		..... 60812-50.....	DLFC, 2-inch BSP/Metric, 50 gpm	42.....		60710-1.2.....	BLFC, 1-inch F x 1-inch M, NPT, 1.2 gpm
		..... 60812-55.....	DLFC, 2-inch BSP/Metric, 55 gpm			..... 60710-2.0.....	BLFC, 1-inch F x 1-inch M, NPT, 2.0 gpm
		..... 60812-70.....	DLFC, 2-inch BSP/Metric,			..... 60710-2.4.....	BLFC, 1-inch F x 1-inch M, NPT, 2.4 gpm
						..... 60710-3.0.....	BLFC, 1-inch F x 1-inch M, NPT, 3.0 gpm
						..... 60710-3.5.....	BLFC, 1-inch F x 1-inch M,

# 1800 SERIES BRINE SYSTEM AND DRAIN LINE FLOW CONTROL ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description
			NPT, 3.5 gpm
	.....	60710-4.0.....	BLFC, 1-inch F x 1-inch M, NPT, 4.0 gpm
	.....	60710-5.0.....	BLFC, 1-inch F x 1-inch M, NPT, 5.0 gpm
	.....	60710-7.0.....	BLFC, 1-inch F x 1-inch M, NPT, 7.0 gpm
43	.....	60710-9.0.....	BLFC, 1-inch F x 1-inch M, NPT, 9.0 gpm
	.....	60710-10.....	BLFC, 1-inch F x 1-inch M, NPT, 10 gpm
	.....	60710-12.....	BLFC, 1-inch F x 1-inch M, NPT, 12 gpm
	.....	60710-15.....	BLFC, 1-inch F x 1-inch M, NPT, 15 gpm
	.....	60710-20.....	BLFC, 1-inch F x 1-inch M, NPT, 20 gpm
	.....	60710-25.....	BLFC, 1-inch F x 1-inch M, NPT, 25 gpm
44	.....	16530	Housing, BLFC, 1"M x 1"F
45	.....	19292	O-ring, -020
46	.....	19279	Retainer, Flow Control, Flow 9.0 - 25 gpm
47	.....	19053	Retainer, Flow Control, Flow 2.0 - 7.0 gpm
48	.....	12085	Washer, Flow, 1.2 gpm
	.....	12087	Washer, Flow, 2.0 gpm
	.....	12088	Washer, Flow, 2.4 gpm
	.....	12089	Washer, Flow, 3.0 gpm
	.....	12090	Washer, Flow, 3.5 gpm
	.....	12091	Washer, Flow, 4.0 gpm
	.....	12092	Washer, Flow, 5.0 gpm
	.....	12408	Washer, Fow, 7.0 gpm
	.....	17944	Washer, Flow, 9.0 gpm
	.....	16529	Washer, Flow, 10.0 gpm
	.....	16735	Washer, Flow, 12.0 gpm
	.....	16736	Washer, Flow, 15.0 gpm
	.....	16528	Washer, Flow, 20.0 gpm
	.....	16737	Washer, Flow, 25.0 gpm
49	.....	16738	Retainer,Flow Control
50	.....	16805	Ring, Retaining
<b>Not Shown - Option Without Brine Valve</b>			
	1	..... 16605	Retainer Plate
	1	..... 19860	Fitting, Brine Valve, 1800

# 3-INCH METER ASSEMBLY

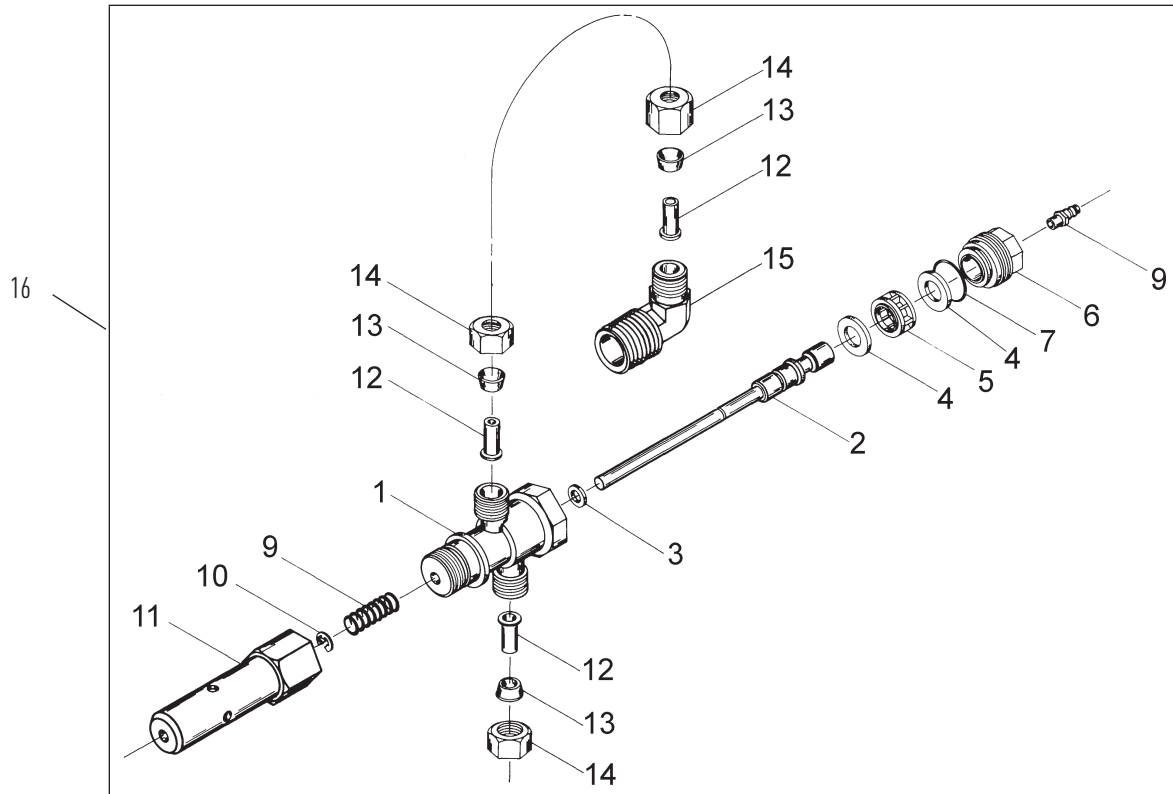


61935 Rev B

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	43787-10	Body, Meter, 3", SS, NPT	11	1	16280	Flow Straightener, 3"
	1	43787-20	Body, Meter, 3", SS, BSP	12		61935-10	Meter Assy, 3" INLN, SS, NPT STD
2	1	16279	Shaft, Impeller			61935-11	Meter Assy, 3" INLN, SS, NPT EXT
3	1	16574	Washer, Plain, SS			61935-20	Meter Assy, 3" INLN, SS, BSP STD
4	1	15381	Plug, Impeller			61935-21	Meter Assy, 3" INLN, SS, BSP STD
5	1	16252-01	Impeller, 3900, PP				
6	1	43982	Meter Plate, 3"				
7	1	15707	O-Ring, -236				
8	6	44074	Screw - Hex HD, M6X16MM, SS				
9	1	61936	Meter Cap ASSY				
		61936-01	Meter Cap ASSY, EXT Range				
10	4	21716	Screw, Hex Head, MS X 16				



## SERVICE VALVE OPERATOR ASSEMBLY



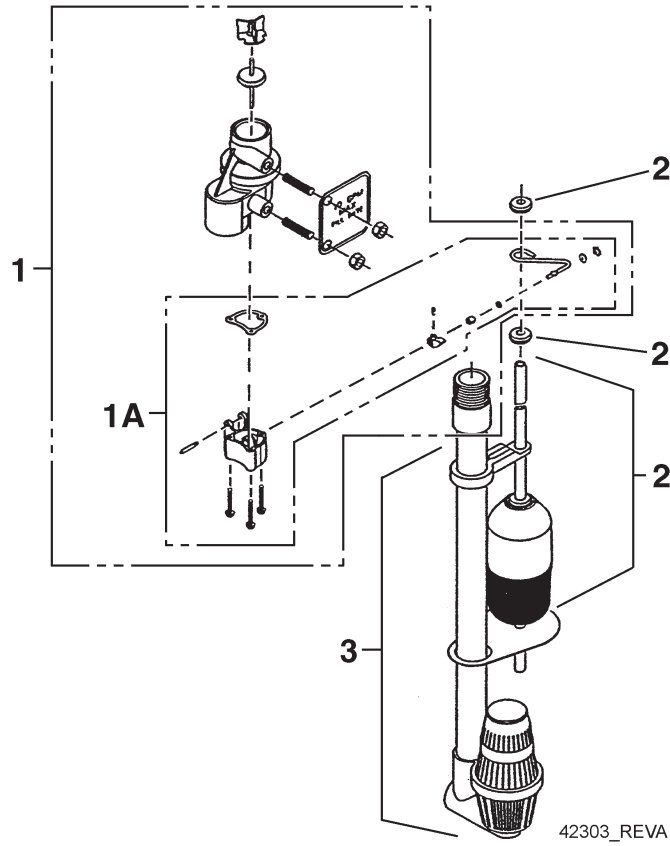
BR60150-3150REVA

Item No.	QTY	Part No.	Description
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)

### Not Shown

1	1	16511	Tube, 3150, PVC, SVO
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# 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-inch Wht
		60026-30SAN	Float Assy, 2350, 30-inch Hot Water
3	1	60009-00	Air Check, #900, Commercial Less Fittings
		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

## 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.

## 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.

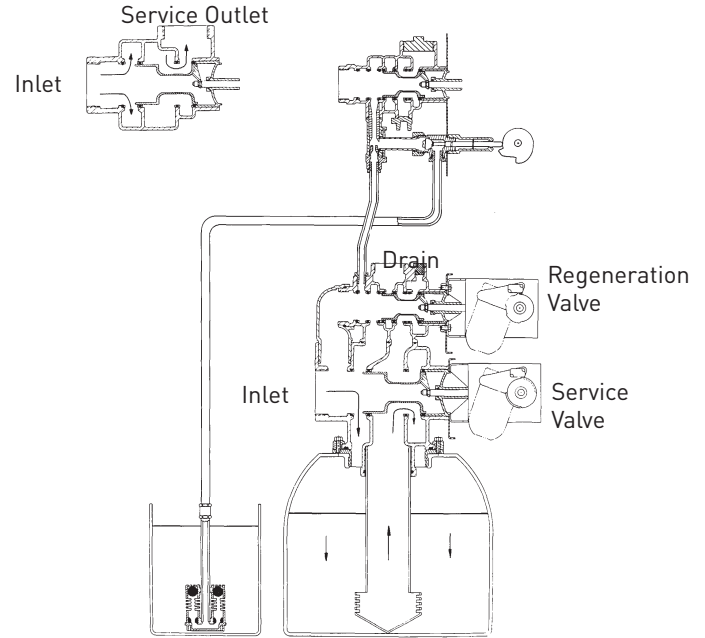
**Correction:** Pull cable out of meter cover and rotate manually. Program wheel must move without binding and clutch must give positive clicks when program wheel strikes regeneration stop. If it does not, replace timer.

**Reason:** Meter is not measuring flow.

**Correction:** Check meter with meter checker.

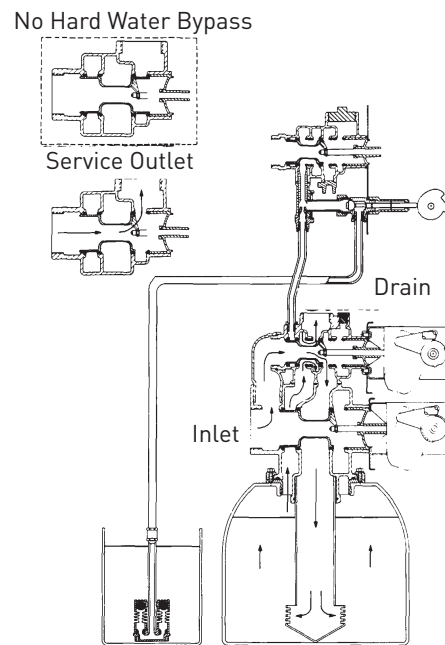
## WATER CONDITIONER FLOW DIAGRAMS

### 1 Service Position



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.

### 2 Backwash Position

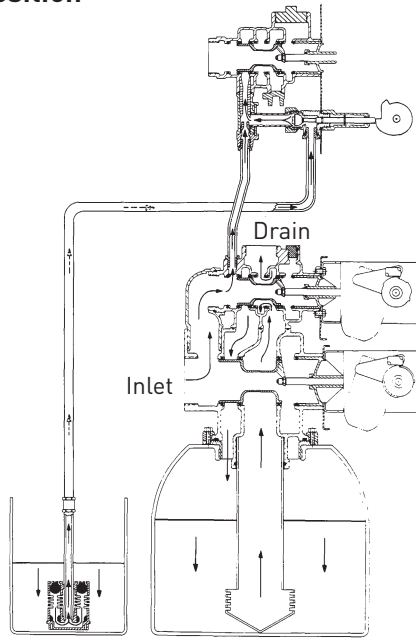


Hard water enters at valve inlet – flows thru service adapter piston for by-pass, and up thru coupling to regeneration valve inlet. Flow continues thru the regeneration valve piston – down the distributor tube – thru the bottom distributor and up thru the mineral – around the piston and out the drain. 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.

# WATER CONDITIONER FLOW DIAGRAMS

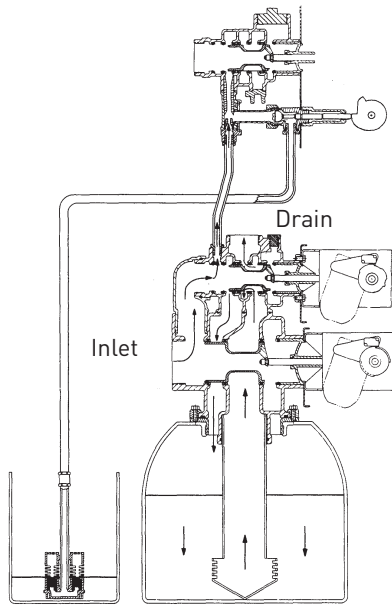
CONTINUED

## 3 Brine Position



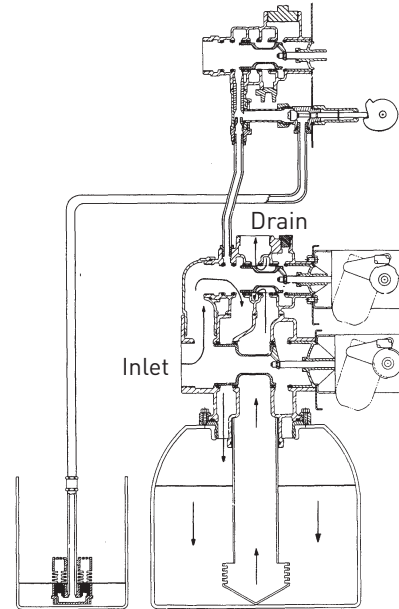
Hard water enters at valve inlet – flows thru injector nozzle and throat to draw brine from the brine tank. Brine flows down thru the mineral – into the bottom distributor – up the distributor tube – around the piston and out the drain.

## 4 Slow Rinse Position



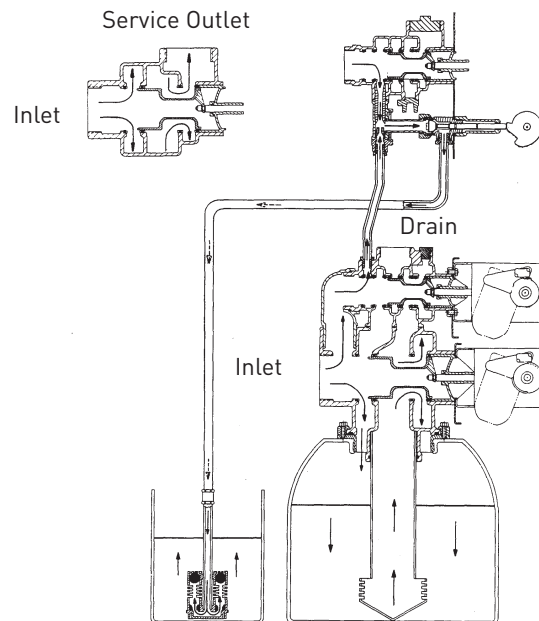
Hard water enters at valve inlet – flows thru injector nozzle and throat – down thru the mineral – into the bottom distributor – up the distributor tube – around the piston and out the drain.

## 5 Rapid Rinse Position



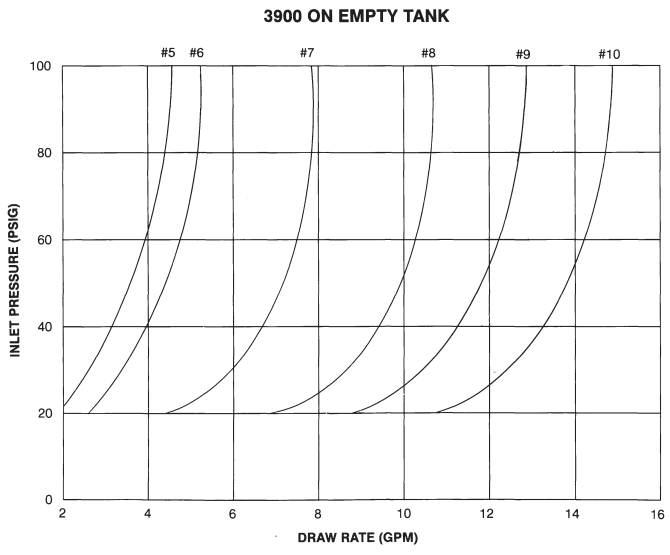
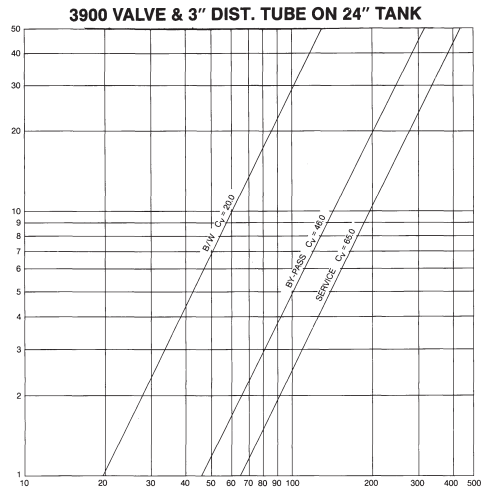
Hard water enters at valve inlet – flows thru the regeneration valve directly down thru the mineral – into the bottom distributor – up the distributor tube – around the piston and out the drain.

## 6 Brine Tank Refill Position

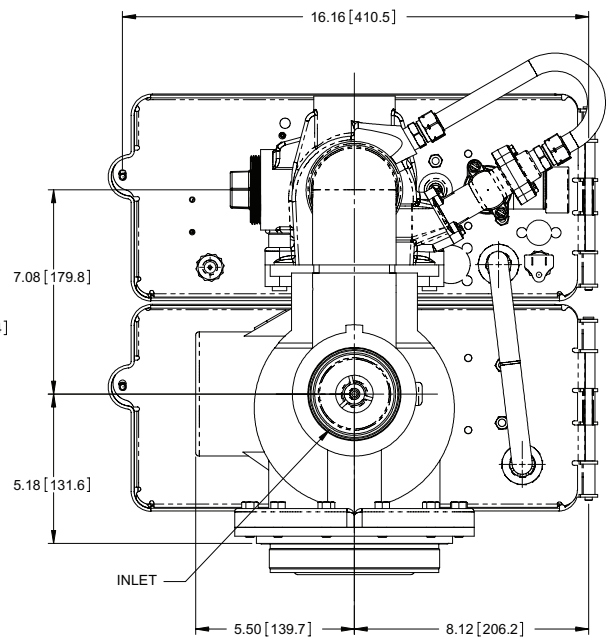
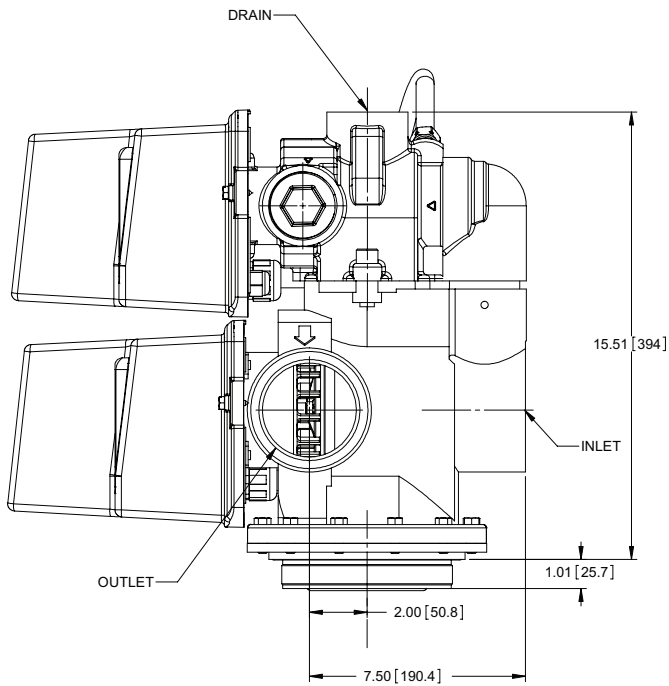
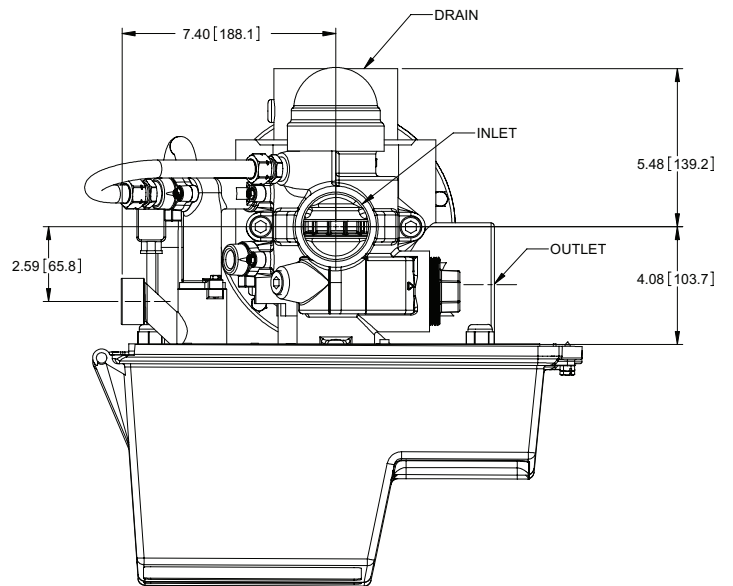
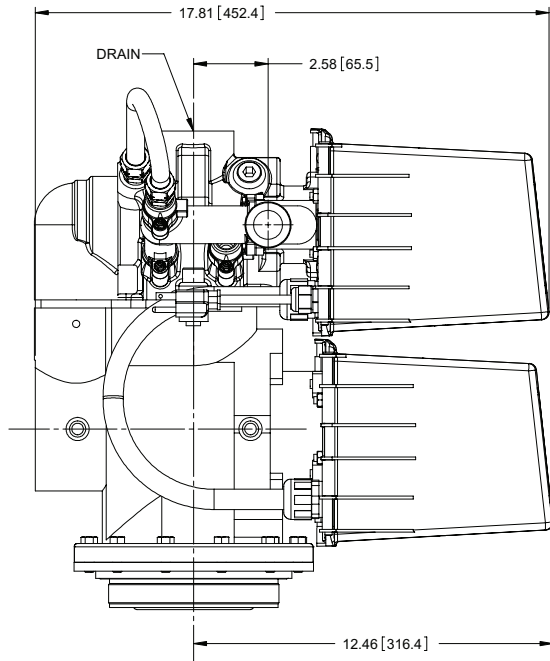


Hard water enters at valve inlet – flows thru nozzle and thru throat to brine valve to refill the brine tank. Inlet flow also continues down thru mineral to the bottom distributor. Conditioned water flows up thru the distributor tube, around the piston and out the outlet. Note: An option is available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

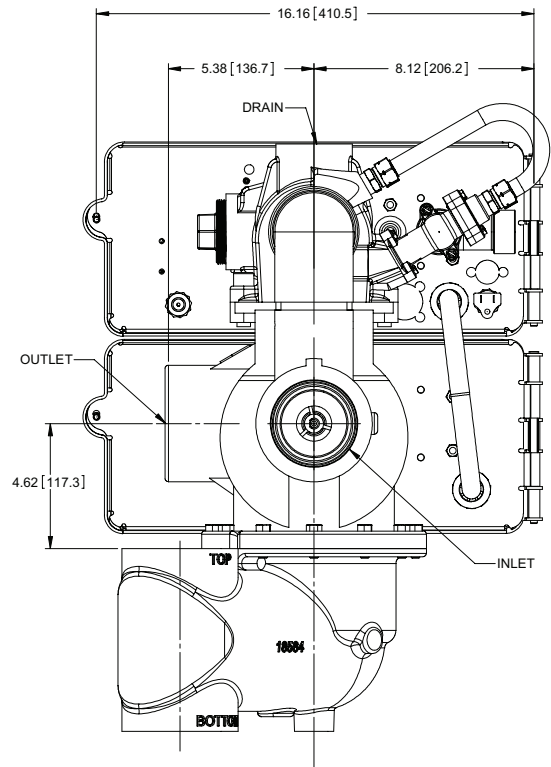
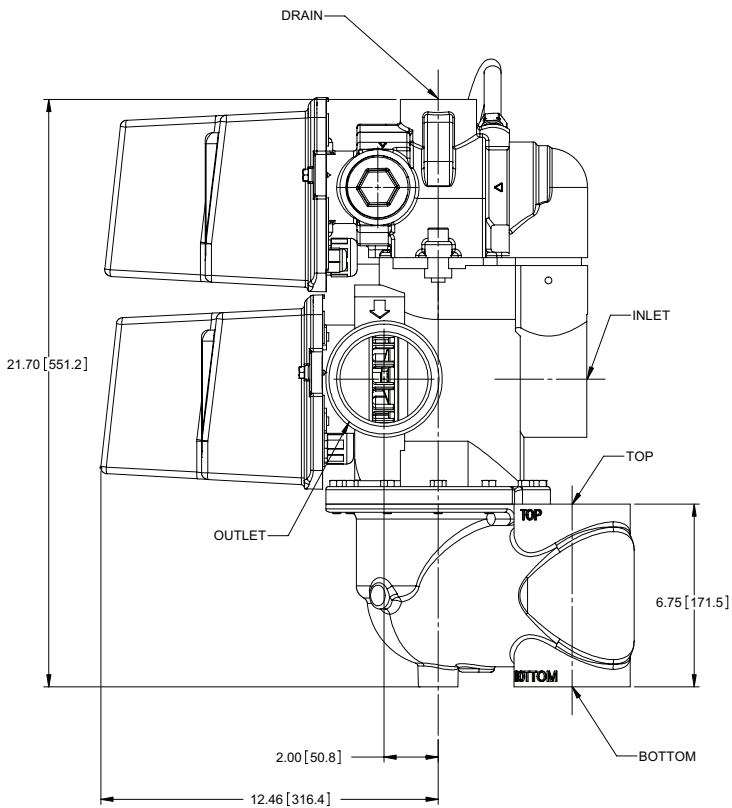
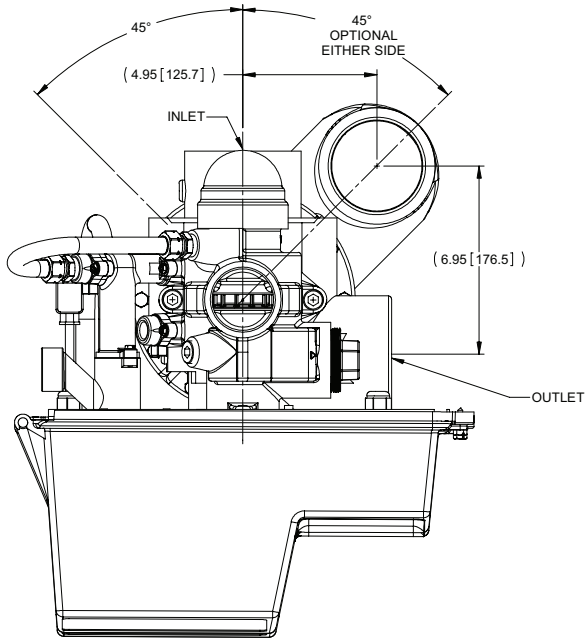
# FLOW DATA & INJECTOR DRAW RATES



# DIMENSIONAL DRAWING 3900 TOP MOUNT



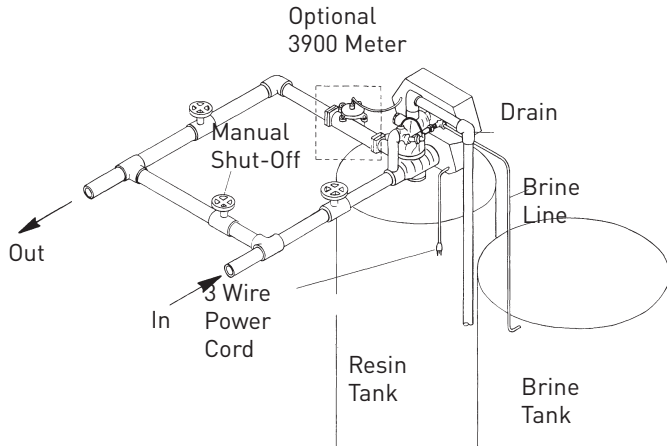
# DIMENSIONAL DRAWING 3900 SIDE MOUNT



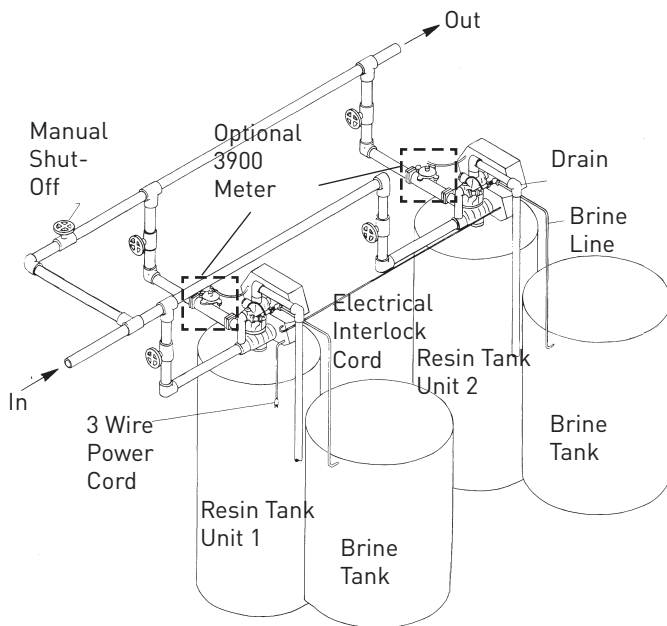


# TYPICAL INSTALLATIONS

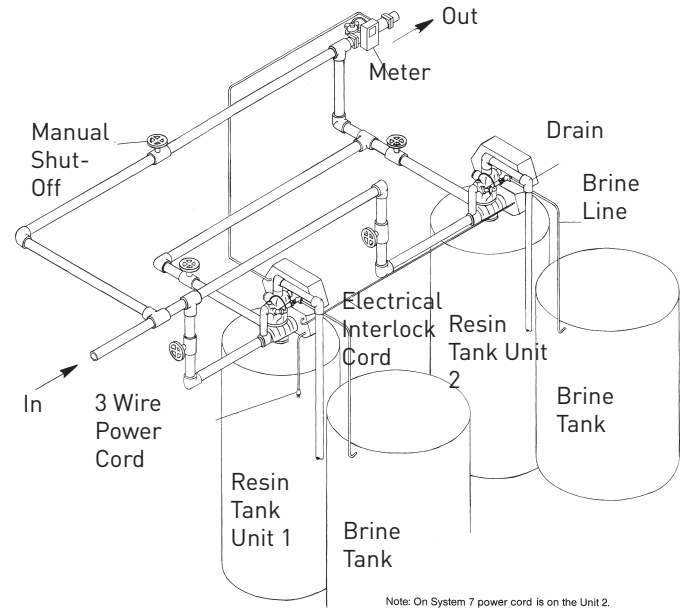
**System #4 - Typical Single Tank Installation with Optional Meter**



**System #5 Interlock - Typical Twin Tank Installation with Optional Meter Interlock and No Hard Water Bypass**



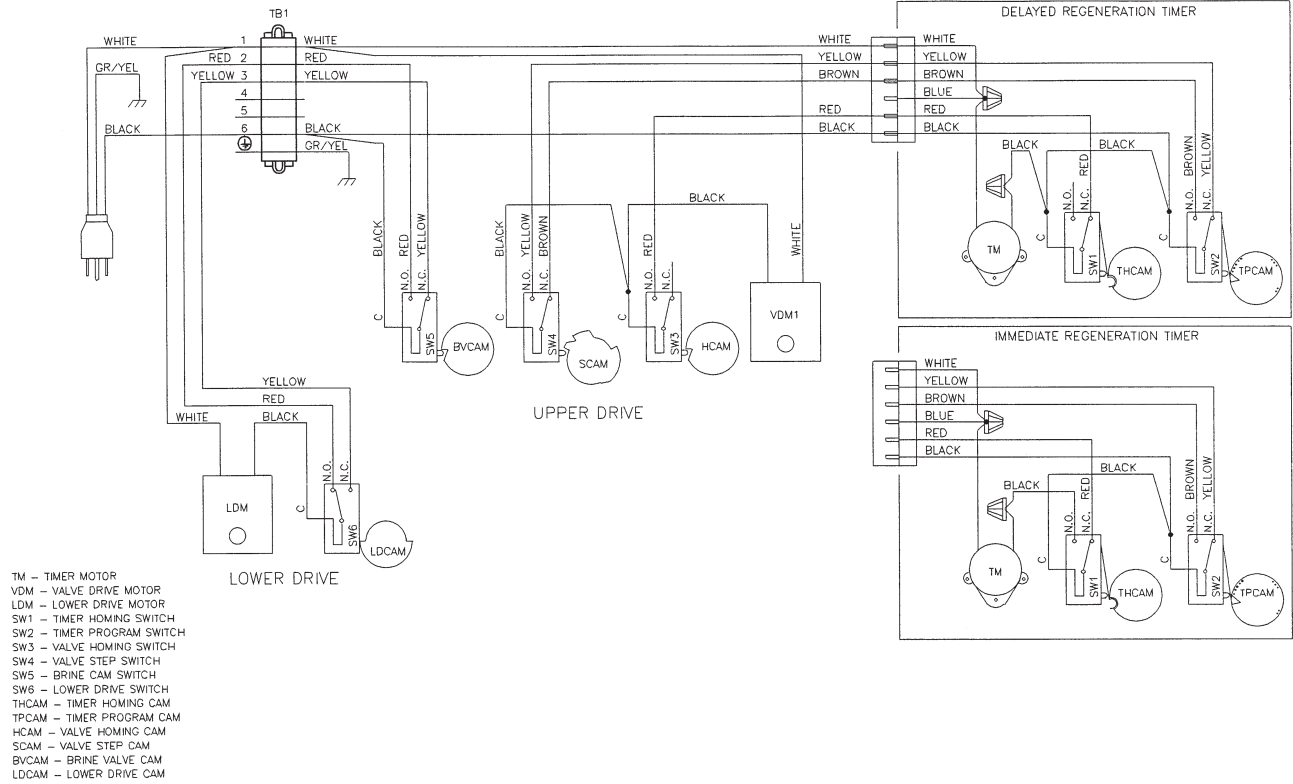
**System #6 Interlock - Typical Twin Tank Installation with Optional Meter Interlock and No Hard Water Bypass**



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

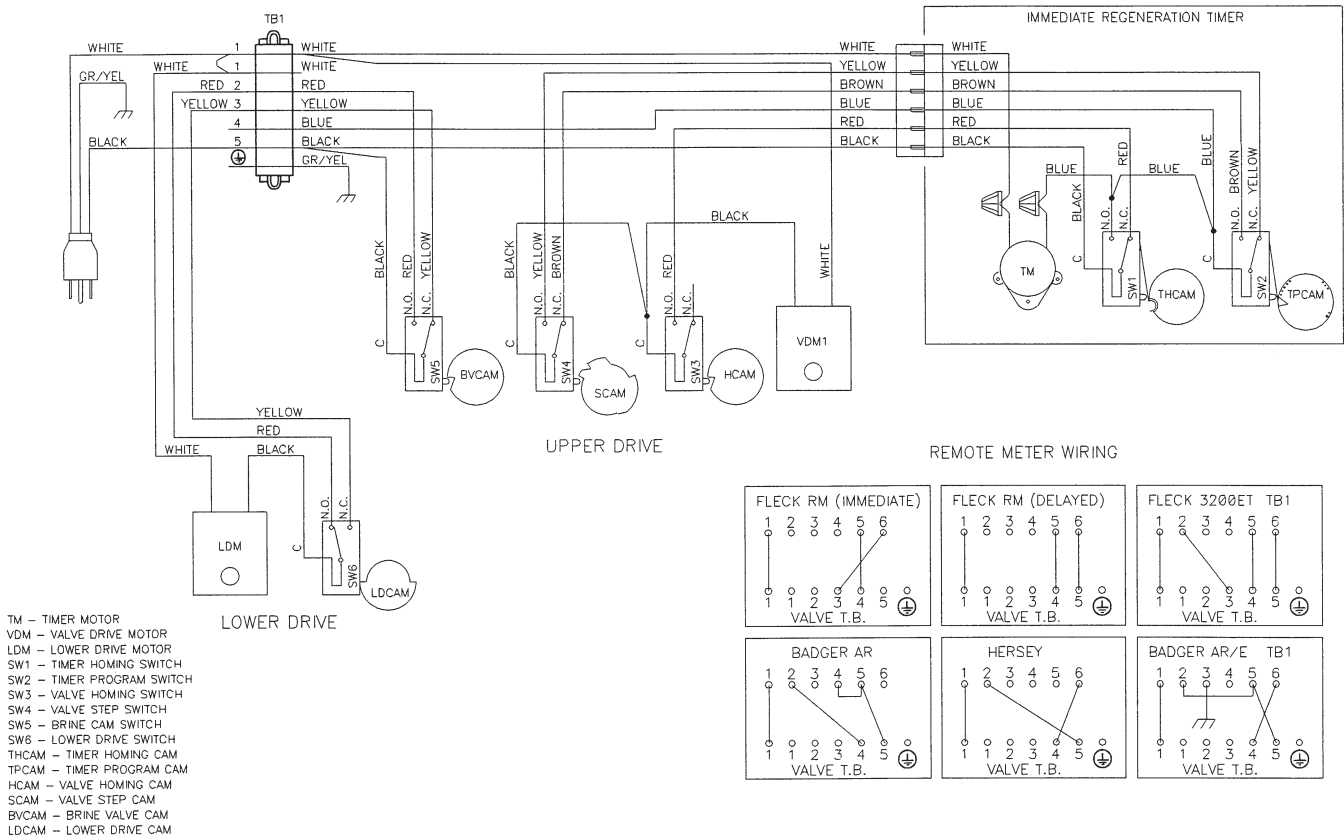
# VALVE WIRING

## System #4



NOTE:  
SINGLE TANK TIMECLOCK, METER DELAYED, OR METER IMMEDIATE REGENERATION

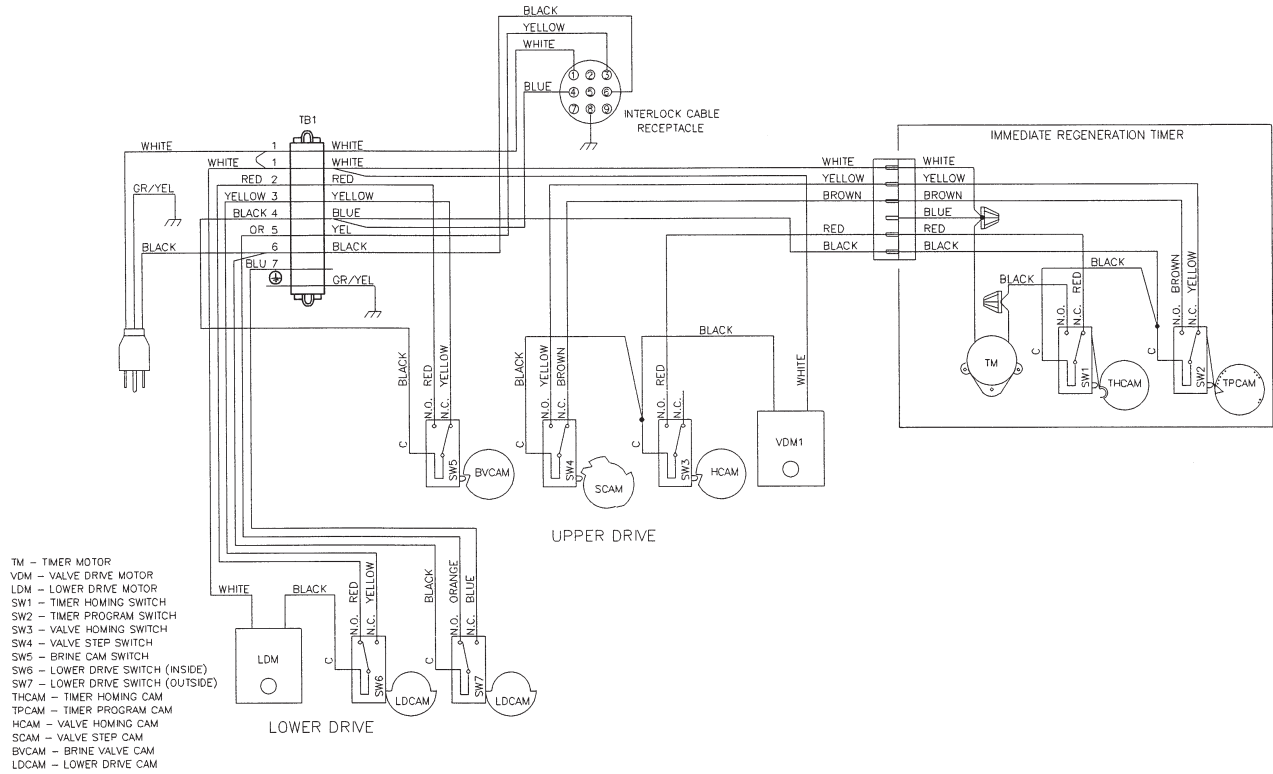
## System #4 with Remote Meter



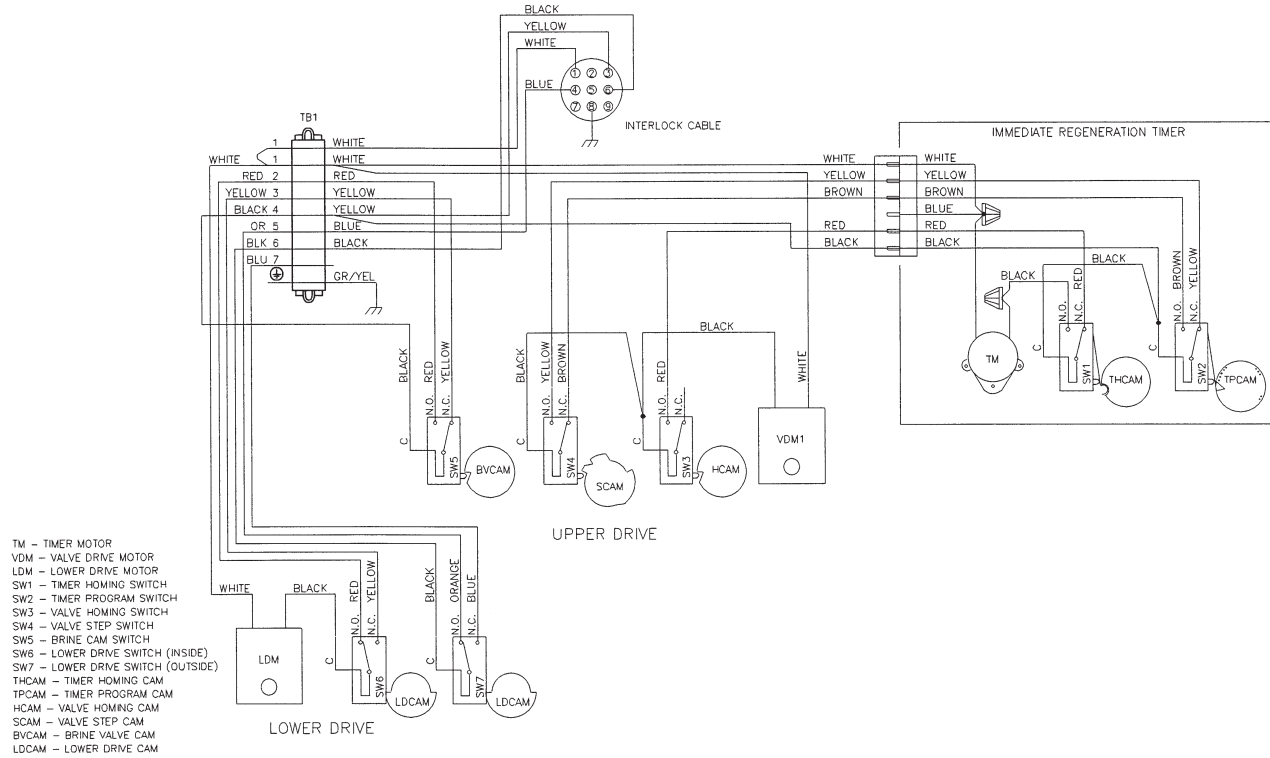
NOTE:  
SINGLE TANK REMOTE METER DELAYED, OR IMMEDIATE REGENERATION

# VALVE WIRING *CONTINUED*

## System #5



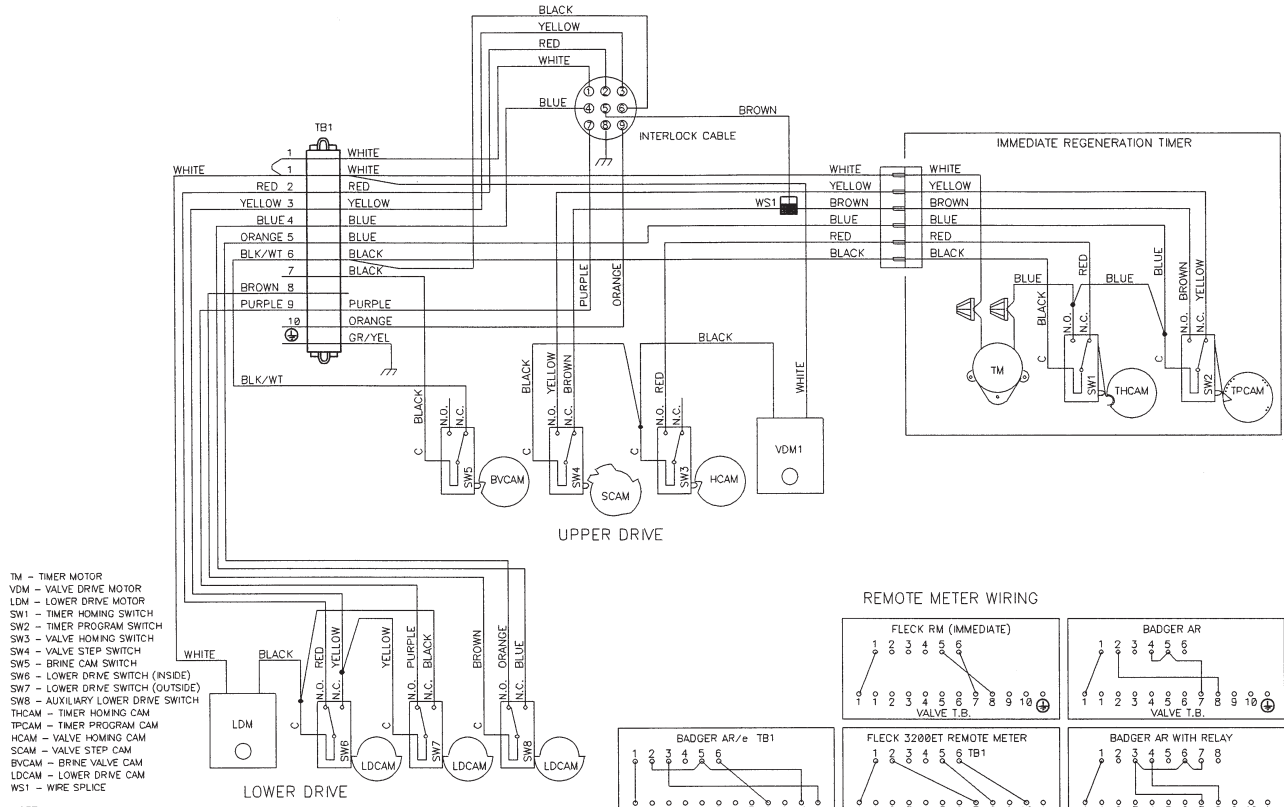
NOTE:  
TWO TANK INTERLOCKED, INDIVIDUAL METER, IMMEDIATE REGENERATION.  
ONLY ONE TANK IN REGENERATION THE OTHER IN SERVICE.



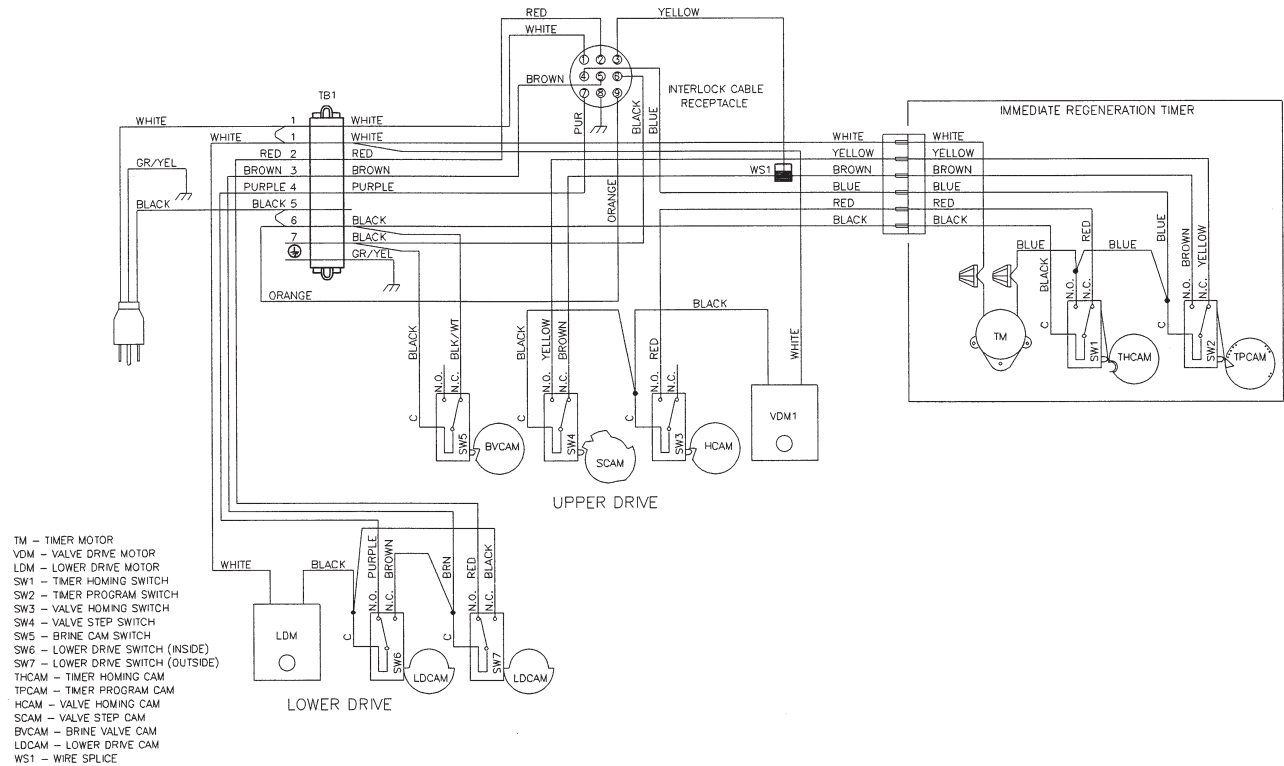


# VALVE WIRING *CONTINUED*

## System #7

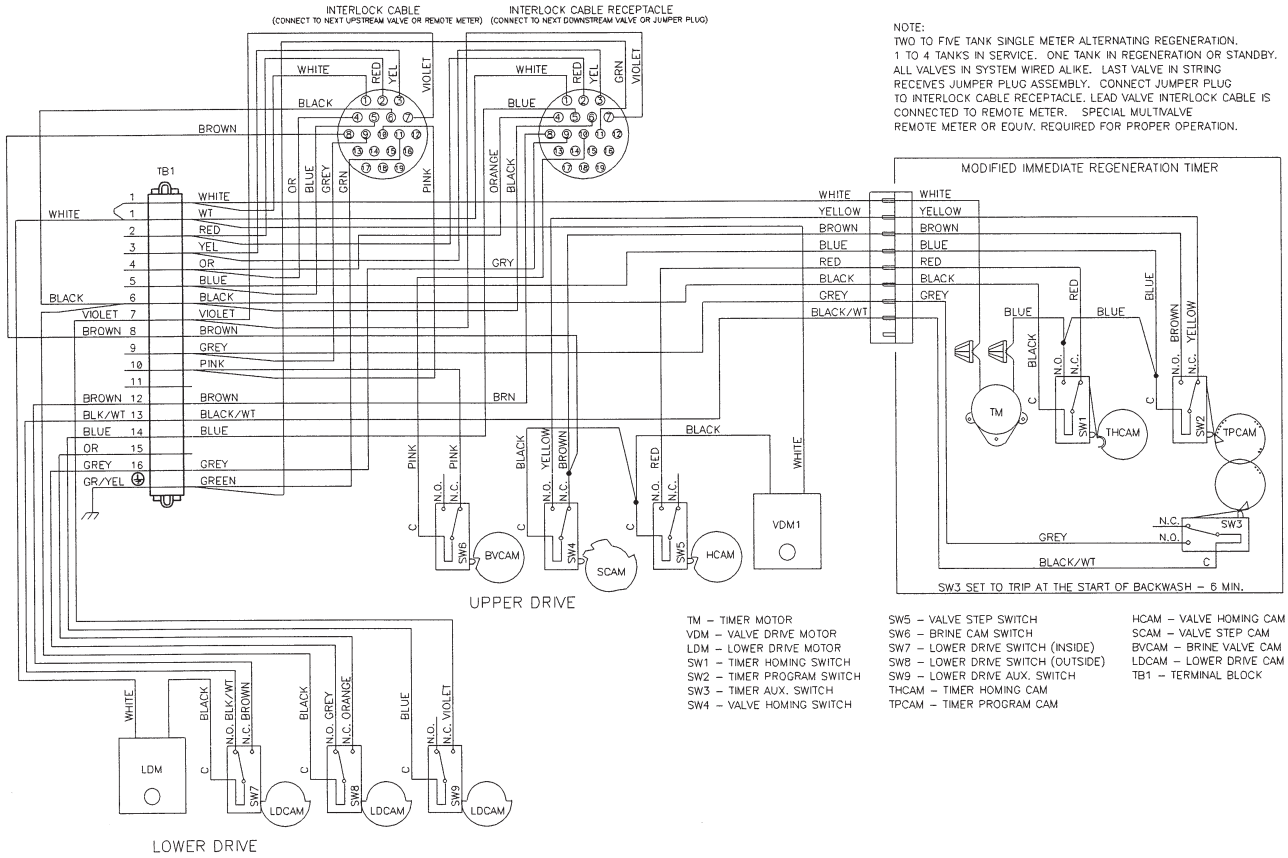


NOTE:  
TWO TANK SINGLE METER ALTERNATING REGENERATION,  
ONLY ONE TANK IN SERVICE, THE OTHER IN REGENERATION OR STANDBY.



# VALVE WIRING *CONTINUED*

## System #7 Multivalve



## SERVICE ASSEMBLIES

<b>60036-02</b>	<b>1800 Brine Valve:</b>
11772.....	Spring
11774.....	Retaining Ring
18713.....	Brine Valve Body
16497-01.....	Brine Stem Assembly
16498-01.....	Stem Guide Assembly
<b>60277-xx</b>	<b>1800 Injector Assembly:</b>
12473.....	Screw - Hex Head
15127-xx.....	Injector Throat
15128-xx.....	Injector Nozzle
15246.....	O-ring -116
16340.....	Injector Body
16341-01.....	Injector Cover
-xx	Specify Size
<b>60106-00</b>	<b>3900 Upper Piston Assembly:</b>
14818.....	Clip Piston Rod
14922.....	O-ring -035
15125.....	Piston Rod
16130.....	Piston
16389-0.....	End Plug Assembly
<b>60107-00</b>	<b>3900 Lower Piston - Hard Water Bypass:</b>
14818.....	Clip Piston Rod
16071.....	Piston
16072.....	Piston Rod
16076.....	O-ring -042
16399-01.....	End Plug Assembly - White
<b>60107-10</b>	<b>3900 Lower Piston - No Hard Water Bypass:</b>
14818.....	Clip Piston Rod
16082.....	Piston - No Hard Water Bypass
16072.....	Piston Rod
16076.....	O-ring -042
16399-11.....	End Plug Assembly - Black
<b>60131</b>	<b>3900 Upper Seal Kit:</b>
10368.....	Spacer
10369.....	Spacer - Port
11720.....	Seal
<b>60132</b>	<b>3900 Lower Seal Kit:</b>
16068.....	Seal
16069.....	Spacer - Narrow
16070.....	Spacer - Wide
<b>60057-01</b>	<b>3900 Upper Drive Motor Assembly - 115 V:</b>
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

<b>60058-01</b>	<b>3900 Lower Drive Motor Assembly - 115 V System #4:</b>
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

<b>60131-10</b>	<b>3900 Upper Seal Kit:</b>
10368.....	Spacer
10369.....	Spacer
11720-02.....	Seal, 1-1/2-inch, Silicone

<b>60132-10</b>	<b>3900 Lower Seal Kit:</b>
41534.....	Seal, 3900, 558 Bypass
16069.....	Spacer, 3900
16070.....	Spacer, 3900

<b>60038</b>	<b>Safety Brine Valve, 2350:</b>
60028-30.....	Float Assembly, White
60009-00.....	#900 Air Check, Less Fittings
18602.....	Kit, Fitting, 1700 Brine, 900 Air Check
18603.....	Kit, Fitting, 1700 Brine, 2350 Safety

<b>61417</b>	<b>Adapter Assy, Side Mount, 3900:</b>
18584-02.....	Adapter, 3900 Side Mount
16257.....	Segment, Flange
11238.....	Screw, Hex, 5/16-18 x 1, 18-8 Stainless Steel
16345.....	O-ring, 362
16800.....	O-ring, 238
11533.....	Plug, Pipe 1/4-inch

<b>60150-3150</b>	<b>SVO, Assembly, 3150/3900 Drain Line Flow Controls (DLFC):</b>
60711-00.....	2-inch NPT, Less BTTNS, w/2 Holes
60711-000.....	2-inch NPT, Less BTTNS, w/3 Holes
60711-01.....	2-inch NPT, Less BTTNS, w/1 Hole
60711-20.....	2-inch NPT, 20 gpm
60711-25.....	2-inch NPT, 25 gpm, Brass
60711-30.....	2-inch NPT, 30 gpm
60711-35.....	2-inch NPT, 35 gpm
60711-40.....	2-inch NPT, 40 gpm
60711-45.....	2-inch NPT, 45 gpm
60711-50.....	2-inch NPT, 50 gpm
60711-55.....	2-inch NPT, 55 gpm
60711-60.....	2-inch NPT, 60 gpm
60711-65.....	2-inch NPT, 65 gpm
60711-70.....	2-inch NPT, 70 gpm
60711-75.....	2-inch NPT, 75 gpm
60711-80.....	2-inch NPT, 80 gpm
60711-85.....	2-inch NPT, 85 gpm
60711-90.....	2-inch NPT, 90 gpm
60711-95.....	2-inch NPT, 95 gpm
60711-100.....	2-inch NPT, 100 gpm
60812-30.....	2-inch BSP/ Metric, 30 gpm
60812-35.....	2-inch BSP/ Metric, 35 gpm
60812-45.....	2-inch BSP/ Metric, 45 gpm
60812-50.....	2-inch BSP/ Metric, 50 gpm
60812-55.....	2-inch BSP/ Metric, 55 gpm
60812-70.....	2-inch BSP/ Metric, 70 gpm
60812-75.....	2-inch BSP/ Metric, 75 gpm
60812-80.....	2-inch BSP/ Metric, 80 gpm
60812-90.....	2-inch BSP/ Metric, 90 gpm
60812-95.....	2-inch BSP/ Metric, 95 gpm
60812-100.....	2-inch BSP/ Metric, 100 gpm

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