



# **FLECK** 3150 DOWNFLOW 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

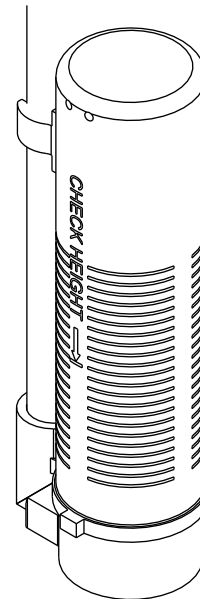
1. Place the softener tank where you want to install the unit making sure the unit is level and on a firm base.
2. During cold weather, the installer should warm the valve to room temperature before operating.
3. All plumbing should be done in accordance with local plumbing codes. The pipe size for residential 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. **▲ IMPORTANT:** For valves equipped with electromechanical timers and stainless steel meters, refer to the Meter Dome and Union Orientation section.
7. Solder joints near the drain must be done prior to connecting the Drain Line Flow Control fitting (DLFC). Leave at least 6 inch (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.
8. 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.
9. Make sure that the floor is clean beneath the salt storage tank and that it is level.

10. 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.
11. 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.
12. 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.
13. 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

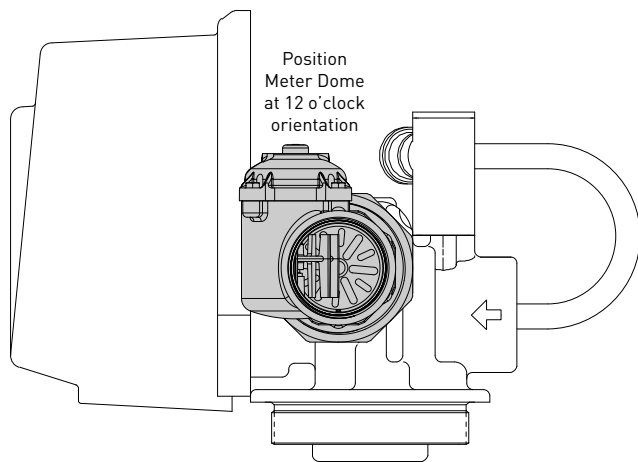
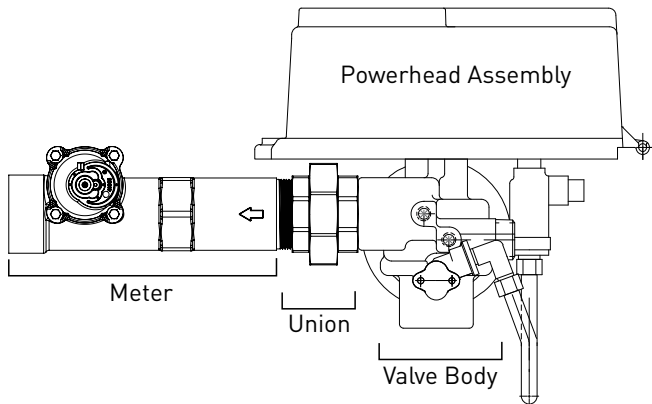
## INSTALLATION *CONTINUED*

### Meter Dome and Union Orientation

Control valves outfitted with an electromechanical timer and stainless steel water meter include a special male x female threaded stainless steel union to insure proper installation and operation of the water meter.

**⚠ WARNING:** The location of this union in relation to the control valve and water meter is critical for proper operation. DO NOT omit or substitute this special union; it positions the meter dome at the correct distance from the control valve and allows re-positioning the water meter dome for proper operation.

1. Apply a suitable thread sealant to the male threads of the union and meter body.
2. Thread the union into the OUTLET port of the control valve, then thread the meter into the union. See illustrations below.
3. Rotate the water meter body so the meter dome is at the 12 o'clock position. Loosen the nut on the union to facilitate this if required. Once in position, tighten the union nut.
4. Connect the meter cable to the open port in the center of the meter dome.
5. Continue with the installation of the control 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

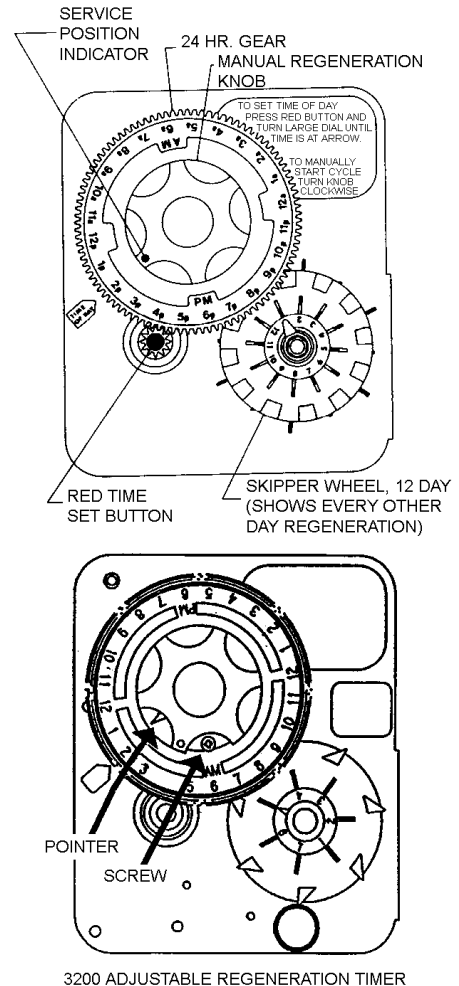
1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is at the time of day pointer.
3. Release the red button to again engage the drive gear.

### 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 5

## 3210 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.

## 3210 TIMER SETTING PROCEDURE

### *CONTINUED*

#### 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

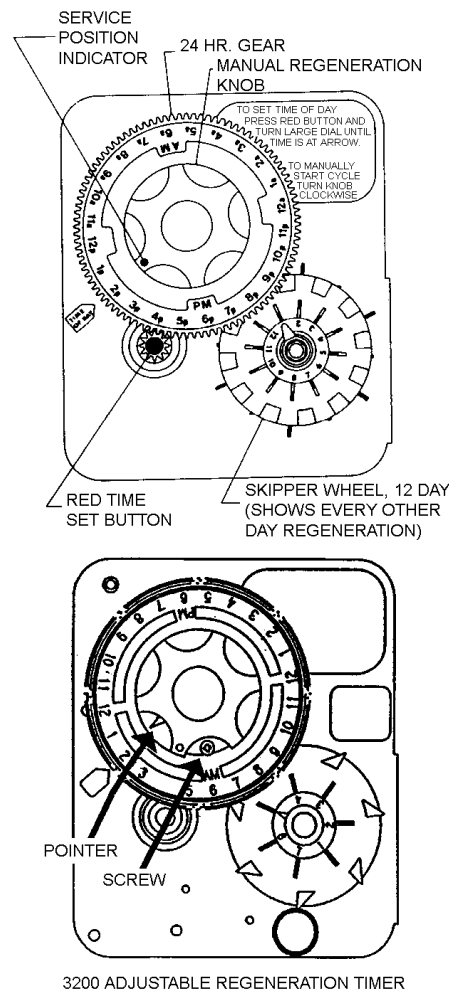
1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is at the time of day pointer.
3. Release the red button to again engage the drive gear.

#### 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

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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.



IMPORTANT!  
SALT LEVEL MUST ALWAYS BE ABOVE  
WATER LEVEL IN BRINE TANK 61502-3200 Rev A

Figure 2

## 3210 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.

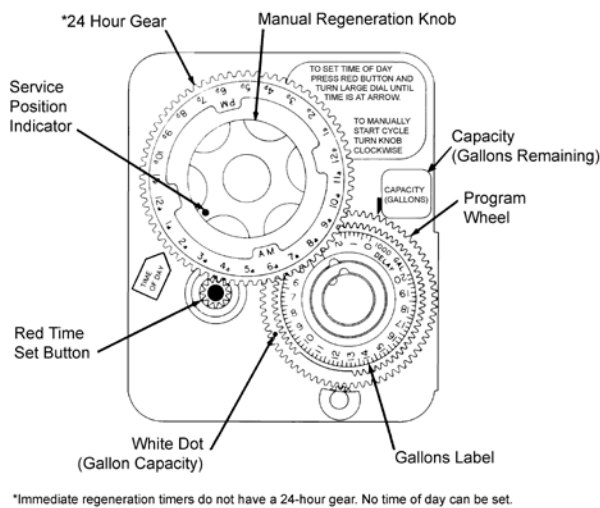
- The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
- Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time.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

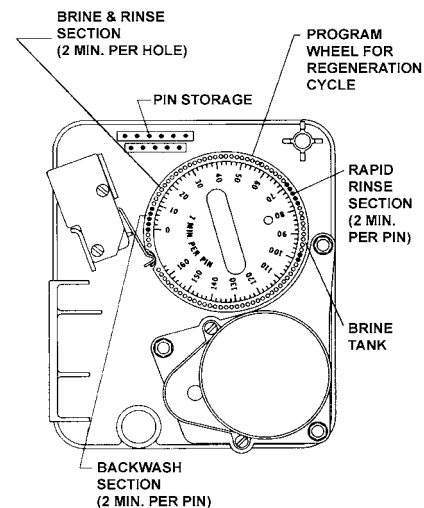
- The group of holes between the last pin in the backwash section and the second group of pins determines the length of time that your unit will brine and rinse (2 min. per hole).
- To change the length of brine and rinse time, move the rapid rinse group of pins to give more or fewer holes in the brine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

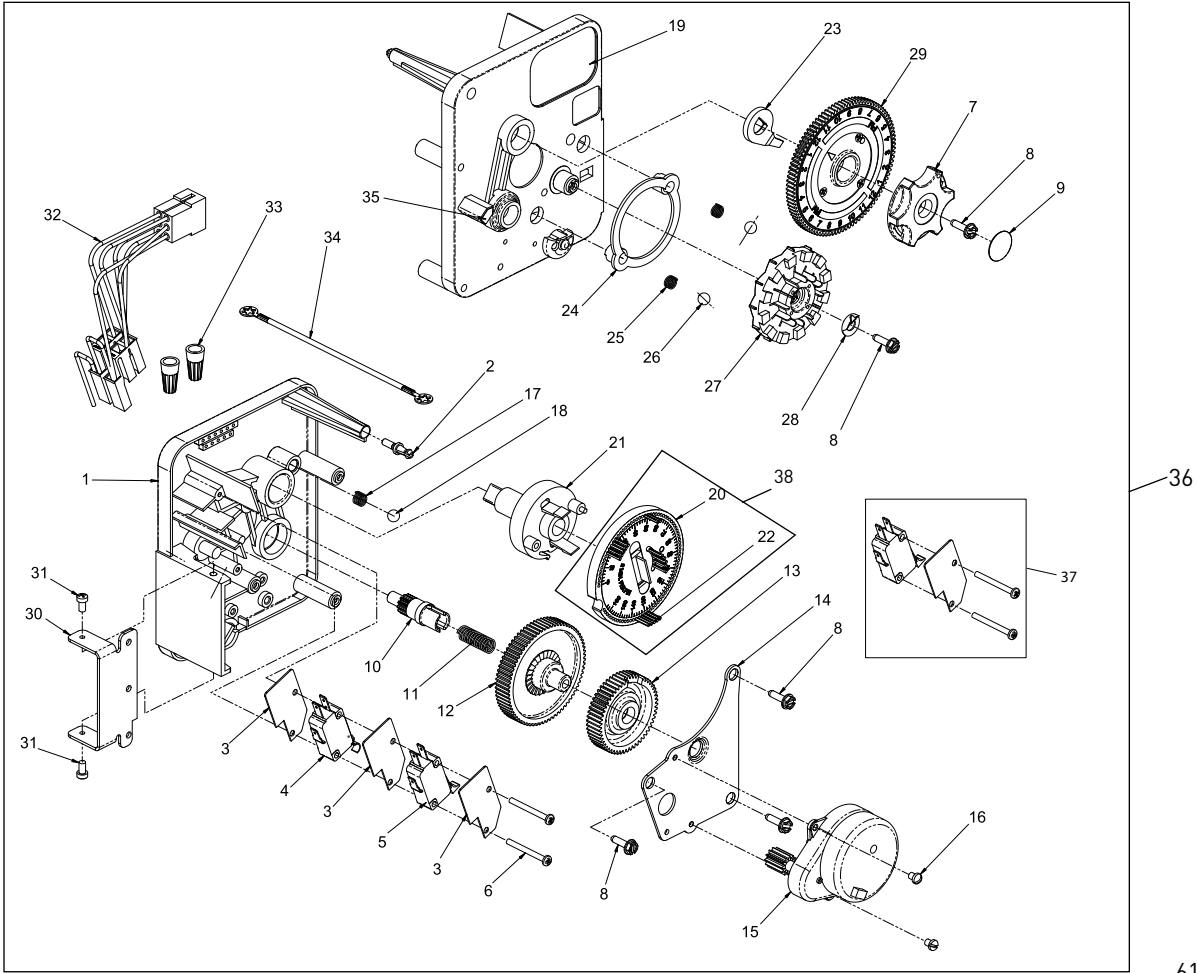
### How To Change The Length Of Brine Tank Refill Time

- 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

# 3200 TIME CLOCK TIMER ASSEMBLY



615023200 Rev A

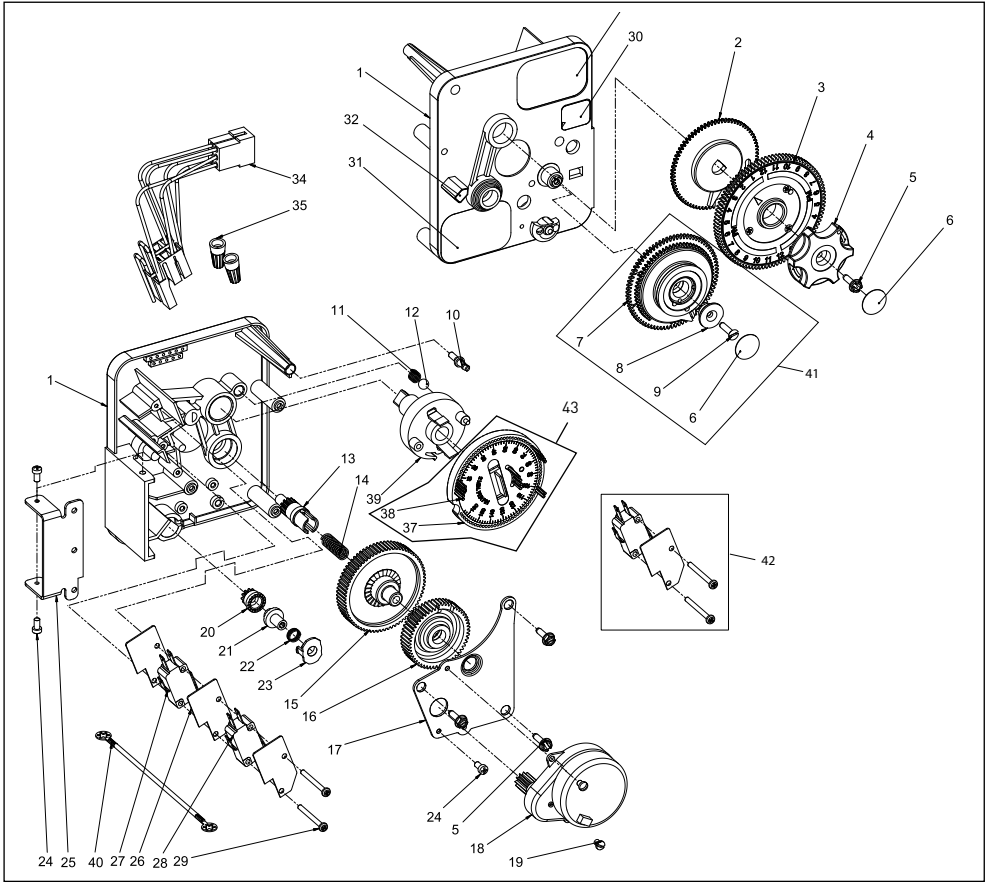


## 3200 TIME CLOCK TIMER ASSEMBLY

*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		1	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		1	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-inch
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
	1	18752-1	Motor, 100V, 50Hz, 1/30 RPM	38		61420-03	Program Wheel, Gear Assy, Filter 2 Min Per Pin
	1	18824-1	Motor, 230V, 50Hz, 1/30 RPM			61420-04	Program Wheel, Gear Assy, Softener, 2 Min Per Pin
	1	18826-1	Motor, 24V, 50Hz, 1/30 RPM	*Call your distributor for Part Number			
	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 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**



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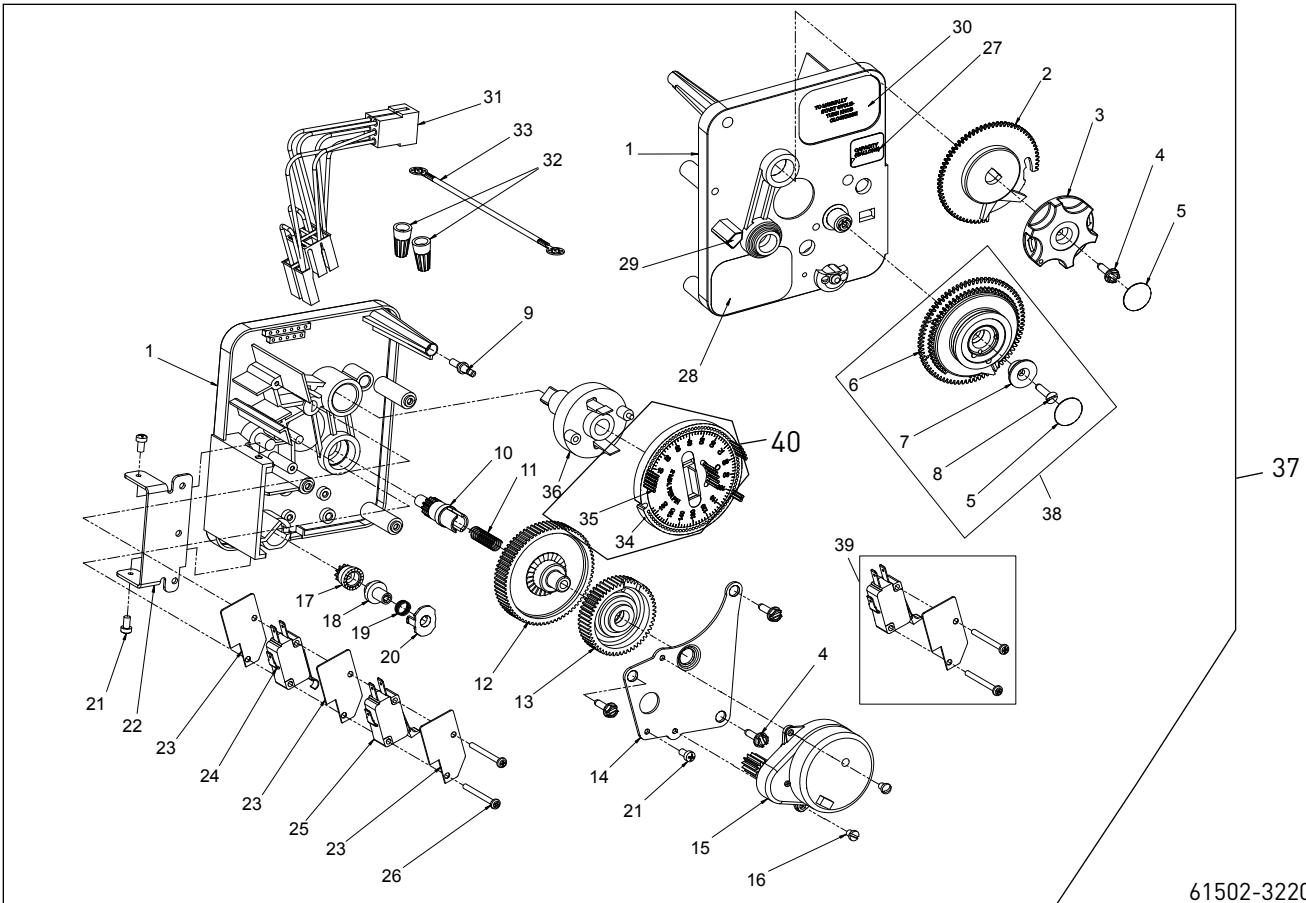
61502-3210 Rev A

# 3210 METER DELAYED TIMER ASSEMBLY

*CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer, 3200	30	1	14198	Label, Indicator
2	1	13802	Gear, Cycle Actuator	31	1	15465	Label, Caution
3	1	40096-02	Dial 2 AM Regen Assy, Black	32	1	14007	Label, Time of Day
4	1	13886	Knob, 3200	33	1	14045	Label, Instruction
5	4	13296	Screw, Hex Wsh, 6-20 x 1/2	34	1	13902	Harness, 3200
6	2	11999	Label, Button	35	2	40422	Nut, Wire, Tan
7	1	13803	Gear, Program Drive Wheel	36	1	15354-01	Wire, Ground, 4-inch
8	1	13806	Retainer, Program Wheel	37	1	19210	Program Wheel Assy
9	1	13748	Screw, Flat Head St, 6-20 x 1/2	38	17	41754	Pin, Spring, 1/16 x 5/8 SS, Timer
10	1	14265	Clip, Spring	39	1	13911	Gear, Main Drive, Timer
11	1	15424	Spring, Detent, Timer	40	1	*	Complete 3210 Meter Delayed Timer Assembly
12	1	15066	Ball, 1/4-inch Delrin	41		60405-50	Program Wheel, w/2-inch STD Label 0-2,100 gal
13	1	13018	Pinion, Idler			60405-60	Program Wheel, w/2-inch EXT Label 0-10,000 gal
14	1	13312	Spring, Idler Shaft			60405-61	Program Wheel, w/2-inch EXT Range 375 m3
15	1	13017	Gear, Idler	42		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
16	1	13164	Gear, Drive	43		61420-03	Program Wheel, Gear Assy, Filter 2 Min Per Pin
17	1	13887	Plate, Motor Mounting			61420-04	Program Wheel, Gear Assy, Softener, 2 Min Per Pin
18	1	18743-1	Motor, 120V, 60Hz 1/30 RPM	*Call your distributor for Part Number			
		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				

# 3220 METER IMMEDIATE TIMER ASSEMBLY



61502-3220 Rev B

# 3220 METER IMMEDIATE TIMER

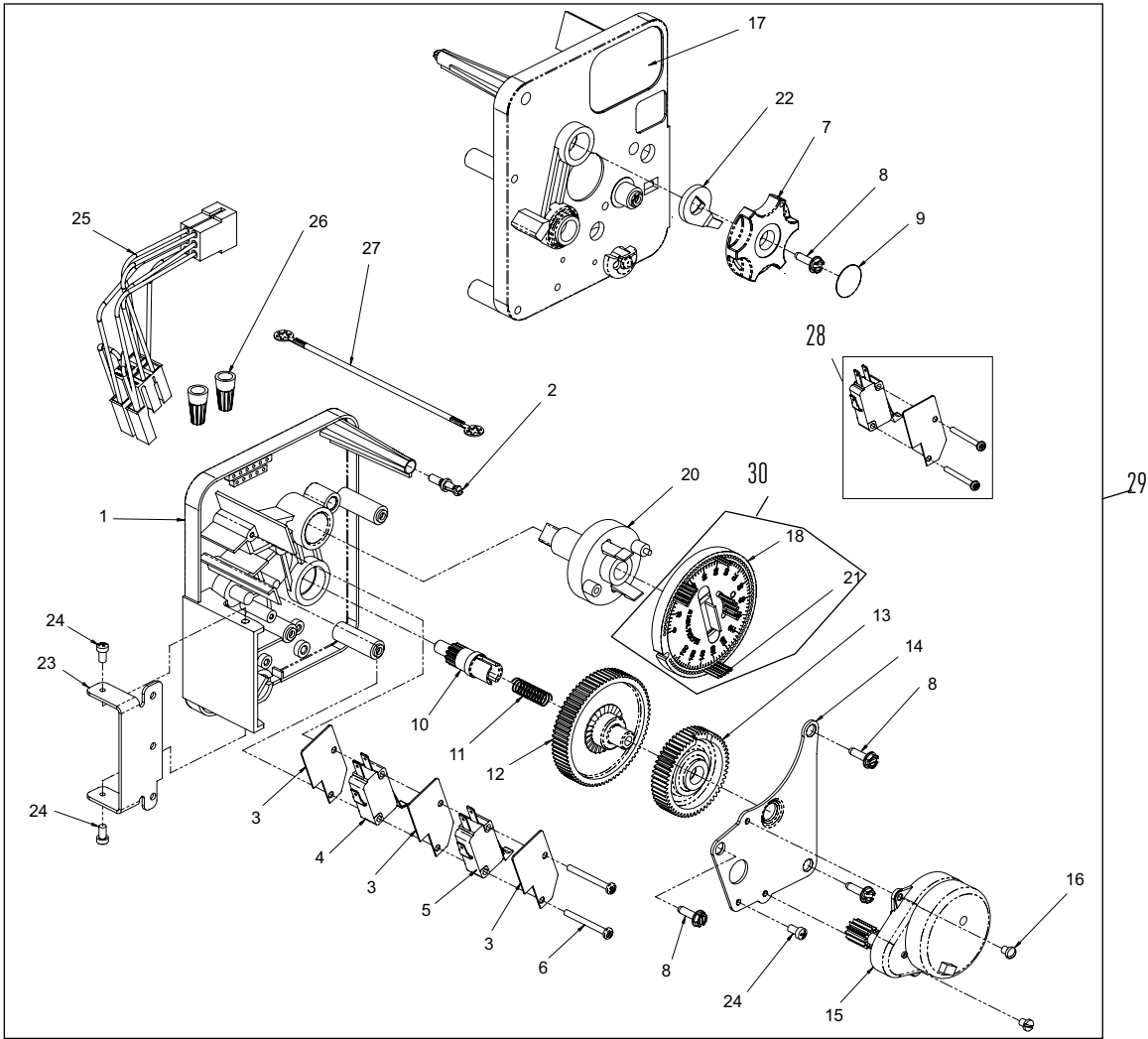
## ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer
2	1	15431	Gear, Cycle Actuator, System #5
3	1	13886	Knob, 3200
4	4	13296	Screw, Hex Wsh, 6-20 x 1/2
5	2	11999	Label, Button
6	1	13807	Gear, Program Drive Wheel
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
		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
16	2	13278	Screw, Slt'd 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
28	1	15465	Label, Caution
29	1	14007	Label, Time of Day
30	1	15148	Label, Instruction
31	1	40617	Harness, 3220

Item No.	QTY	Part No.	Description
32	2	40422	Nut, Wire, Tan
33	1	15354-01	Wire, Ground, 4-inch
34	1	19210-05	Program Wheel Assembly, 9000/3230
35	17	41754	Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer
36	1	15055	Gear, Main Drive
37	1	*	Complete 3220 Meter Immediate Timer Assembly
38		60405-50	Program Wheel, w/2-inch STD Label 0-2,100 gal
		60405-60	Program Wheel, w/2-inch EXT Label 0-10,000 gal
		60405-61	Program Wheel, w/2-inch EXT Range 375 m <sup>3</sup>
39		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
40		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

# 3230 REMOTE START TIMER ASSEMBLY



61502-3230R REV A

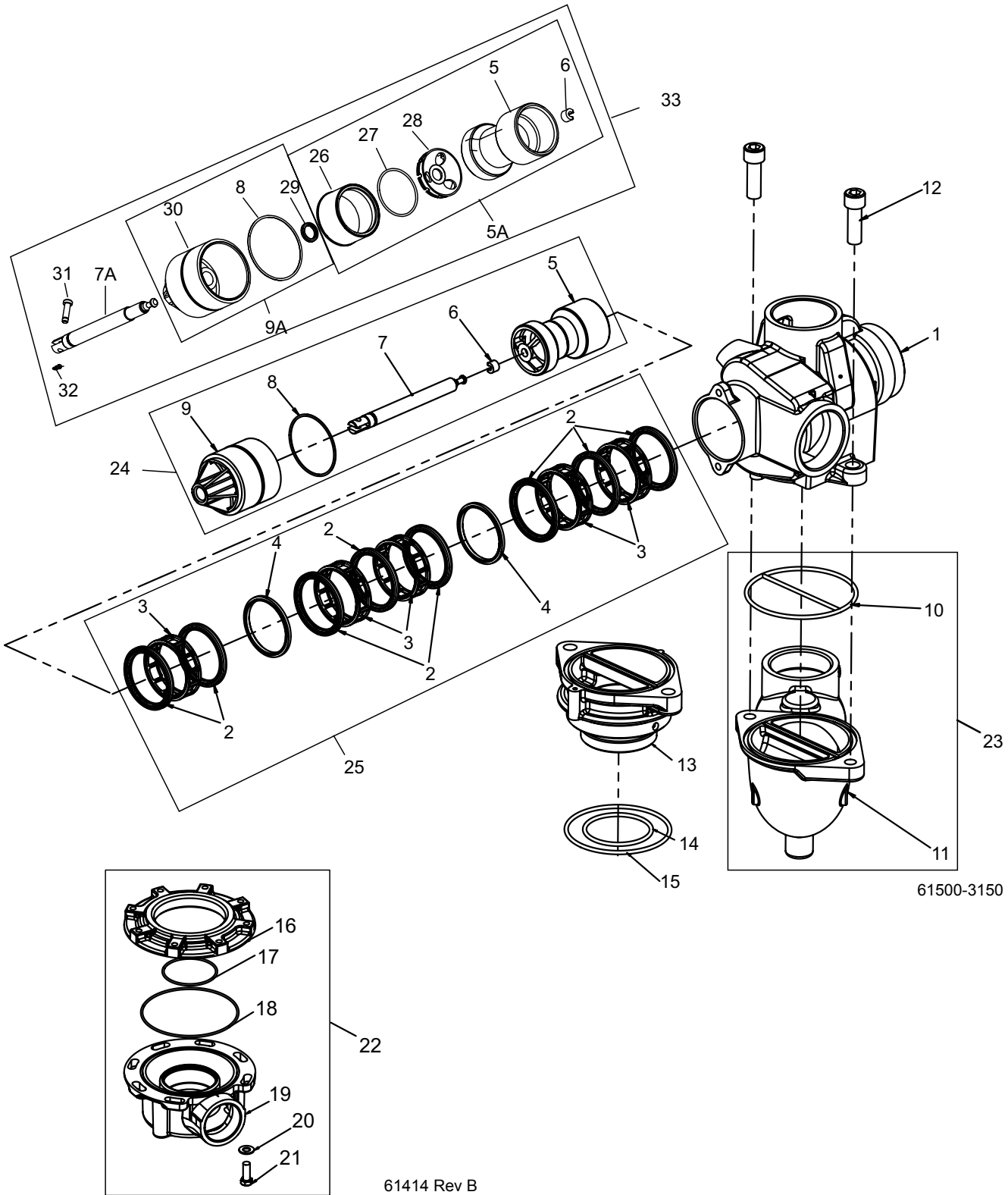
## 3230 REMOTE START TIMER ASSEMBLY

*CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer	22	1	13011	Cycle Actuator Arm
2	1	14265	Spring Clip	23	1	13881	Bracket, Hinge Timer
3	3	14087	Insulator	24	3	11384	Screw, Phil, 6-32 x 1/4 Zinc
4	1	15314	Micro Switch	25	1	16336	Harness, 3230R
5	1	15320	Switch, Micro, Timer	26	2	40422	Nut, Wire, Tan
6	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8	27	1	15354-01	Wire, Ground, 4-inch
7	1	13886	Knob, 3200	28		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
8	4	13296	Screw, Hex Wsh, 6-20 x 1/2	29	*		3230 Timer Assy
9	1	11999	Label, Button	30		61420-06	Program Wheel, Gear Assy, Softener Immediate 2 Min Per Pin
10	1	13018	Pinion, Idler			61420-42	Program Wheel, Gear Assy, Filter Immediate 2 Min Per Pin
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, Sltd 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				

\*Call your distributor for Part Number

# CONTROL VALVE ASSEMBLY

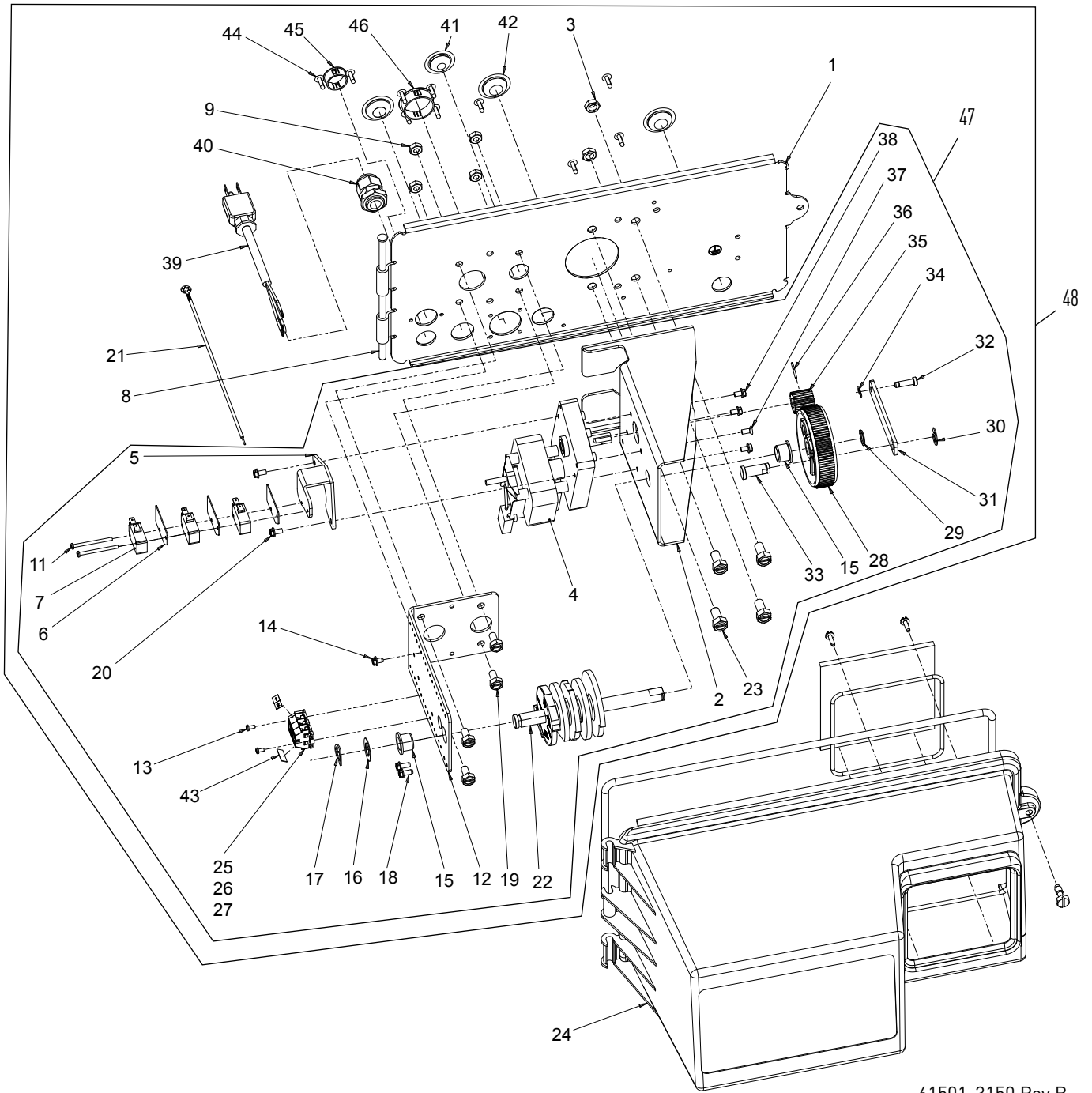




## CONTROL VALVE ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	15114	Valve Body, 3150	16	1	19608-20	Disperser, Commercial, 2-inch, 3150 (Not used with a rotating or fixed sidemount)
		15114NP	Valve Body, 3150, Nickel Plated	16	1	40316	Adapter, Sidemount
		15114-20	Valve Body, 3150, BSP/Metric	17	1	16804-01	O-ring, -150
		15114-20NP	Valve Body, 3150, BSP/Metric, Nickel Plated	18	1	40368	O-ring, -160, Sidemount, Flange
2	8	11720	Seal, Piston, 2900/3150	19	1	40365	Base, 3130/3150, Rotating
		11720-02	Seal, 1-1/2 inch, Silicone	20	7	40375	Washer, Flat, 3/8, Type A
3	5	10369	Spacer, 2-inch, 2900/3150	21	7	19768	Screw, Hex Hd, 3/8 - 16 x 1, Cap 18-8
		16141	Spacer, Port Ring, HW, 180°	22	1	61414	Adapter Assy, Sidemount, 3150, Rotating
4	2	10368	Spacer, Narrow, 3150/3900			61414NP	Adapter Assy, SDMNT, 3150, Nickel Plated, Rotating
		10368-01	Spacer, Quad Ring, Brass, HW, 180°	23	1	61418	Adapter Assy, Sidemount, 3150, Fixed
5	1	16130	Piston, High Backwash			61418-22	Adapter Assy, SDMNT, 3150, BSP/Metric
5A	1	19611-01	Piston Assy, 3150, NHWBP, O-ring	24	1	60106-00	Piston Assy, 3900/3150 STD
6	1	14818	Ring, Piston Rod, Snap			60106-01	Piston Assy, 3900/3150, HWBP, Hot Water 180 degrees
7	1	15125	Rod, Piston, 3150			60106-10	Piston Assy 3900/3150, HWBP, Upflow
7A	1	19708	Rod, Piston, 3150 NHWBP	25		60131	Seal & Spacer Kit, 3900/3150, Upper
8	1	14922	O-ring, -035, Piston			60131-01	Seal & Spacer Kit, Hot Water, 180 Degrees, 3150
9	1	16398-01	End Plug Assy, 3150, White, HWBP			60131-10	Seal & Spacer Kit, Silicone, 3150/3900 Upper
9A		16398-11	End Plug Assy, 3150, Black, NHWBP	26	1	BR42008	Piston, 3150, NHWBP
10	1	15112	Seal, 3150 Adapter Base	27	1	BR40952	O-ring, -030
11	1	17407-02	Adapter, 3150, Sidemount, Aux Tap	28	1	BR42009	Retainer, 3150 NHWBP O-ring
		17407-02NP	Adapter, 3150, Sidemount, Aux, Nickel Plated	29	1	BR11242	Quad, Ring, -112, 560CD
		17407-22	Adapter, 3150, Sidemount, Aux Tap, BSP, Metric	30	1	BR15118-11	Plug, End, 3150, Black, Machined
		17407-22NP	Adapter, 3150, Sidemount, Aux Tap, BSP/MTRC, Nickel Plated	31	1	BR11709	Pin, Connecting Rod
12	2	40118	Screw, Sckt Hd, 1/2 - 13 Unc	32	1	BR11898	0.35 M.B. Spring Wire
		17122	Screw, Socket HD, M12 x 35, 18-8, SS, Metric	33	1	60113-01	Piston Assy, 3150, NHWBP, D/Flow Conversion/Replacement
13	1	15117-01	Adapter, 3150, Machined (Not used with a fixed sidemount)				
		15117-01NP	Adapter, 3150, Machined, Nickel Plated				
		15117-21	Adapter, 3150, Metric, Machined				
14	1	15247	O-ring, -229 (Not used with a rotating or fixed sidemount)				
15	1	13575	O-ring, -240 (Not used with a fixed sidemount)				
		15210	O-ring, -343, Park Tank				

# CONTROL DRIVE ASSEMBLY

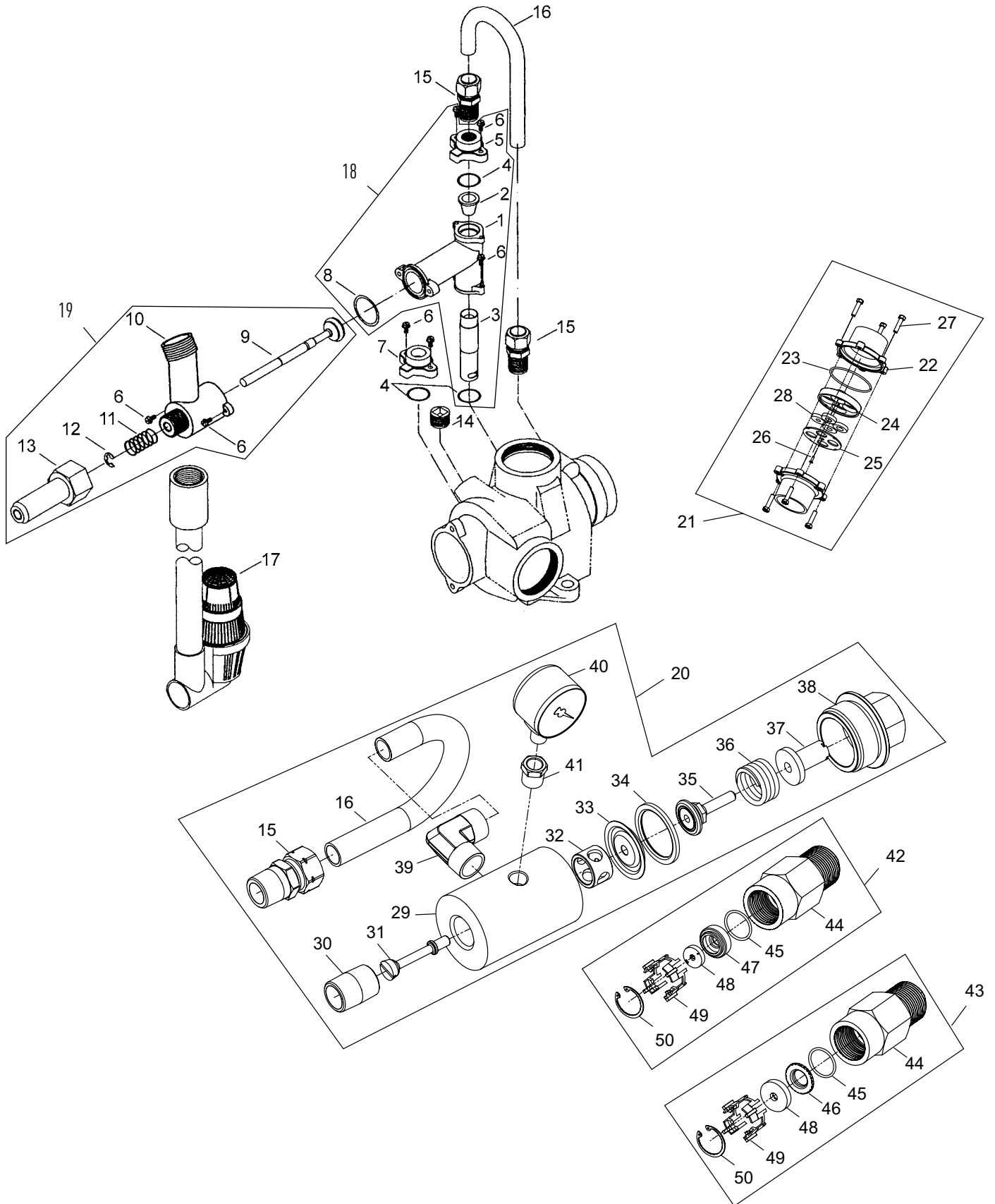


61501-3150 Rev B

## 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-foot US, Round, 120V
8	1	17845-03	Pin, Hinge, 3150/3900, Env	40	1	17967	Fitting Assy, Liquid Tight, Blk
9	4	11235	Nut, Hex, 1/4 - 20, Mach Screw, Zinc	41	1	19691	Plug, .750 Dia, Recessed, Black
10	2	13365	Washer, Lock, #4, External	42	3	19591	Plug, .8750 Hole, Recessed, Black
11	2	40080	Screw, Rd Hd, 4-40 x 1-1/2 inch	43	2	15250	Label, Terminal Strip
12	1	16053	Bracket, Brine Side	44	10	19800	Plug, .140 Dia, White
13	2	40133	Screw, Pan Hd, 4-40 x 1/4	45	1	15806	Plug, Hole, Heyco #2693
14	1	15226-6	Terminal Block	46	1	17421	Plug, 1.20 Hole
15	2	16052	Bushing, 3150/3900	47		60057-01	Drive Assy, 3150, 120V, SYS 5 & 7, Signal After Brine Tank Fill
16	1	16059	Washer, SS, .88, 3150/3900			60057-03	Drive Assy, 3150, 24V, 3900 Upper, SYS #5 or SYS #7
17	1	16051	Ring, Retaining, Bowed			60057-11	Drive Assy, 3150, 120V, 3900 Upper, SYS #4 or SYS #6
18	2	10300	Screw, Slot Hex Wsh, 18-8 x 3/8			60057-21	Drive Assy, 3150, 120V, Upflow, 3900 Upper, SYS 5 or SYS 7, Brine Draw First
19	4	10231	Screw, Slot Hex, 1/4 - 20 x 1/2	48	*		3150 Powerhead Assembly
20	2	14202-01	Screw, Hex Wsh Hd, 8 x 5/16	<b>Not Shown</b>			
21	1	10475-01	Wire, Ground	1		17470	Cable Guide Assy, 2850/3150
22	1	16494-03	Cam Assy, 3150/3900 Signal After Brine Fill	1		19856	Ring, Retaining (Used on Cover)
		16494-05	Cam Assy, 3150/3900 Upper Signal After Rapid Rinse	1			Timer (See Timer Section)
		16494-06	Cam Assy, 3150/3900, Upper, Upflow, Signal After Rapid Rinse	1		40396	Harness, Drive, Environmental
23	4	11224	Screw, Hex Hd, 5/16 - 18 x 5/8	1		16427-04	Wire, Lead, 12-inch, White
24	1	60240-02	Cover Assy, 3150/3900 Env, Black, NEMA 3R	1		40396	Harness, Drive, Environmental
25	2	41084	Terminal Block, Segment, Gray	1		14924	Strain Relief Heyco #1247
26	1	41085	Endplate, Terminal Black, Gray	1		15513	Meter Cable, 17.5 inch long, 2 inch Brass Meter
27	1	40174	Terminal Block, Green/Yellow	1		17744	Meter Cable, 20.75 inch long, 2 inch Stainless Steel Meter
28	1	16046	Gear, Drive	1		15216	Meter Cable, 15.25 inch long, 1-1/2 inch Brass Meter
29	1	16050	Ring, Retaining	*Call your distributor for Part Number			
30	1	11774	Ring, Retaining				

# 1800 SERIES BRINE SYSTEM AND DRAIN LINE FLOW CONTROL ASSEMBLY



60036 Rev C

# 1800 SERIES BRINE SYSTEM AND DRAIN

## LINE FLOW CONTROL ASSEMBLY *CONTINUED*

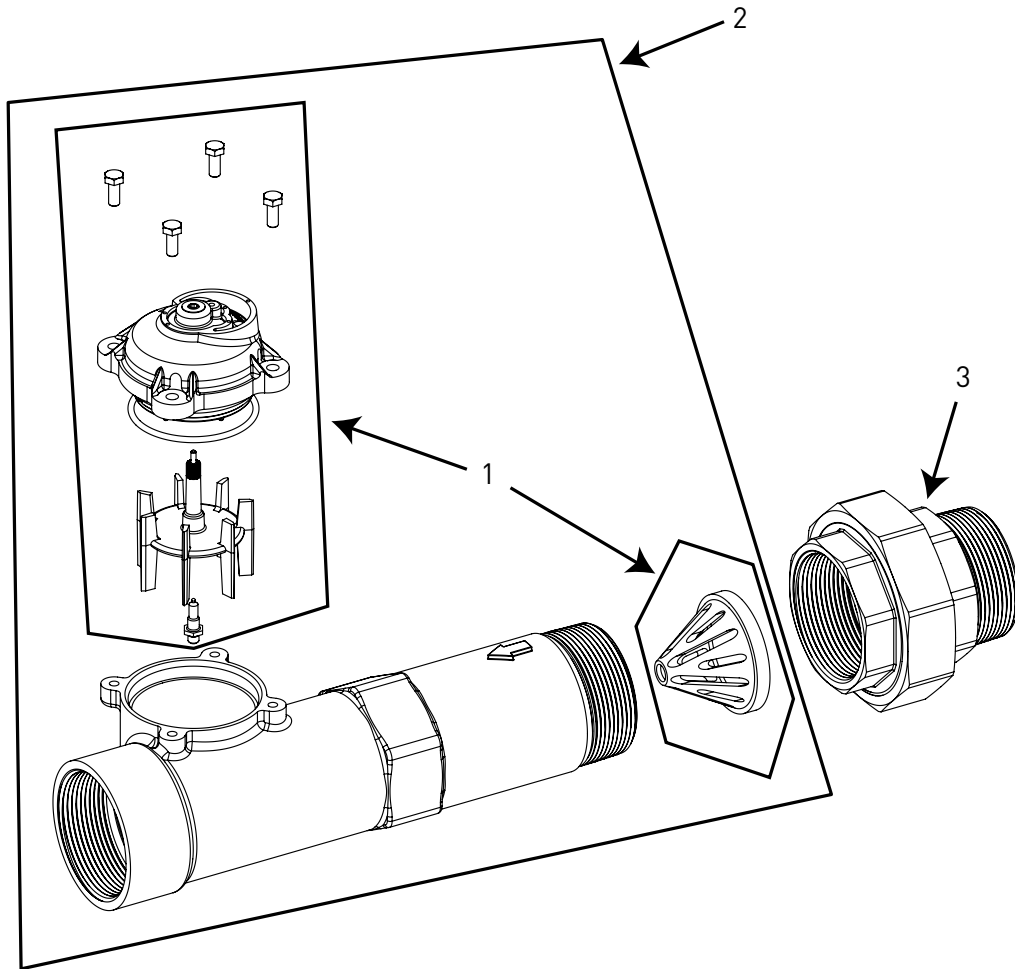
Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	16340	Body, Injector, 1800 D/F			60277-05	Injectory Assy, 1800 #5, Downflow
		16340-20	Body, Injector, 1800, Downflow, Metric			60272-05	Injector Assy, 1800, #5, Upflow
		16340-01	Body, Injector, 1800 Upflow			60277-06	Injector Assy, 1800, #6, Downflow
		16340-21	Body, Injector, 1800, Upflow, Metric			60277-07	Injector Assy, 1800, #7, Downflow
2	1	15128-xx	Injector Nozzle			60272-07	Injector Assy, 1800, #7, Upflow
		15128-04	#4 Green			60277-08	Injector Assy, 1800, #8, Downflow
		15128-05	#5 Red			60277-09	Injectory Assy, 1800 #9, Downflow
		15128-06	#6 White			60277-10	Injectory Assy, 1800 #10, Downflow
		15128-07	#7 Blue				
		15128-08	#8 Yellow				
		15128-09	#9 Violet				
		15128-10	#10 Black				
3	1	15127-xx	Injector Throat	19		60036-02	Brine Valve, 1800, Design 3
		15127-04	#4 Green			60276-01	Brine Valve, 1800, Retrofit Kit, Downflow 1800 Injector and Brine Valve, Update to Design 3
		15127-05	#5 Red				
		15127-06	#6 White				
		15127-07	#7 Blue	20		60734	Regulator, 3150/3900, Pressure, Upflow
		15127-08	#8 Yellow				
		15127-09	#9 Violet	21		60711-000	DLFC, 2-inch NPT, Less BTNS, w/4 HLS
		15127-10	#10 Black			60711-00	DLFC, 2-inch NPT, Less BTNS, W/2 HLS
4	3	15246	O-ring, -116			60711-01	DLFC, 2-inch NPT, Less BTNS, W/1 HLS
5	1	16341-01	Cap, Injector, 1800			60711-20	DLFC, 2-inch NPT, 20 gpm
6	8	12473	Screw, Hex Wsh, 10-24 x 5/8			60711-25	DLFC, 2-inch NPT, 25 gpm
7	1	16341-02	Plug, Injector, 1800			60711-30	DLFC, 2-inch NPT, 30 gpm
8	1	19054	O-ring, -021, 560CD			60711-35	DLFC, 2-inch NPT, 35 gpm
9	1	16497-01	Stem Assy, 1800, Brine Valve			60711-40	DLFC, 2-inch NPT, 40 gpm
10	1	18713	Brine Valve Body, 1800			60711-45	DLFC, 2-inch NPT, 45 gpm
11	1	11772	Spring, 3150 Brine Valve			60711-50	DLFC, 2-inch NPT, 50 gpm
12	1	11774	Ring, Retaining			60711-55	DLFC, 2-inch NPT, 55 gpm
13	1	16498-01	Stem Guide Assy, Brine			60711-60	DLFC, 2-inch NPT, 60 gpm
14	1	16387	Plug, Pipe, 1/2-inch NPT			60711-65	DLFC, 2-inch NPT, 65 gpm
15	2	18702	Fitting, Tube, 1/2 NPT 5/8			60711-70	DLFC, 2-inch NPT, 70 gpm
16	1	18703	Tube, Brine, 5/8 OD Annealed			60711-75	DLFC, 2-inch NPT, 75 gpm
		18703-01	Tube, Brine, 5/8 OD, Short, Upflow			60711-80	DLFC, 2-inch NPT, 80 gpm
						60711-85	DLFC, 2-inch NPT, 85 gpm
17	1	60009-00	Air Check, #900, Commercial Less Fittings			60711-90	DLFC, 2-inch NPT, 90 gpm
		60009-01	Air Check, #900, Commercial, HW Less Fittings			60711-95	DLFC, 2-inch NPT, 95 gpm
						60711-100	DLFC, 2-inch NPT, 100 gpm
18		60277-04	Injector Assy, 1800, #4, Downflow			60812-30	DLFC, 2-inch BSP/Metric, 30 gpm
		60272-04	Injectory Assy, 1800, #4, Upflow			60812-35	DLFC, 2-inch BSP/Metric, 35 gpm

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

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
		60812-45	DLFC, 2-inch BSP/Metric, 45 gpm				NPT, 2.0 gpm
		60812-50	DLFC, 2-inch BSP/Metric, 50 gpm			60710-2.4	BLFC, 1-inch F x 1-inch M, NPT, 2.4 gpm
		60812-55	DLFC, 2-inch BSP/Metric, 55 gpm			60710-3.0	BLFC, 1-inch F x 1-inch M, NPT, 3.0 gpm
		60812-70	DLFC, 2-inch BSP/Metric, 70 gpm			60710-3.5	BLFC, 1-inch F x 1-inch M, NPT, 3.5 gpm
		60812-75	DLFC, 2-inch BSP/Metric, 75 gpm			60710-4.0	BLFC, 1-inch F x 1-inch M, NPT, 4.0 gpm
		60812-80	DLFC, 2-inch BSP/Metric, 80 gpm			60710-5.0	BLFC, 1-inch F x 1-inch M, NPT, 5.0 gpm
		60812-90	DLFC, 2-inch BSP/Metric, 90 gpm			60710-7.0	BLFC, 1-inch F x 1-inch M, NPT, 7.0 gpm
		60812-95	DLFC, 2-inch BSP/Metric, 95 gpm	43		60710-9.0	BLFC, 1-inch F x 1-inch M, NPT, 9.0 gpm
		60812-100	DLFC, 2-inch BSP/Metric, 100 gpm			60710-10	BLFC, 1-inch F x 1-inch M, NPT, 10 gpm
22	2	27913-21	Housing, Flow Control, 2-inch BSP			60710-12	BLFC, 1-inch F x 1-inch M, NPT, 12 gpm
23		16804	O-ring, -150			60710-15	BLFC, 1-inch F x 1-inch M, NPT, 15 gpm
24	1	16649	Holder, DLFC Button			60710-20	BLFC, 1-inch F x 1-inch M, NPT, 20 gpm
25	1	16650	Cover Plate DLFC			60710-25	BLFC, 1-inch F x 1-inch M, NPT, 25 gpm
26	1	13898	Screw, Flat HD, Phil, Steel	44		16530	Housing, BLFC, 1-inch M x 1-inch F
27	6	13386	Screw, Hex HD MACH, 1/4-20 x 1 OR Slot Hex Cap Screw 18-8 S.S.	45		19292	O-ring, -020
	6	17976	Screw, Hex HD, M6 x 25 mm	46		19279	Retainer, Flow Control, Flow 9.0 - 25 gpm
28		16529	Washer, Flow, 10.0 gpm	47		19053	Retainer, Flow Control, Flow 2.0 - 7.0 gpm
		16736	Washer, Flow, 15.0 gpm	48		12085	Washer, Flow, 1.2 gpm
		16528	Washer, Flow, 20.0 gpm			12087	Washer, Flow, 2.0 gpm
		16737	Washer, Flow, 25.0 gpm			12088	Washer, Flow, 2.4 gpm
29	1	19089	Body Regulator 3150			12089	Washer, Flow, 3.0 gpm
30	1	10242	Fitting, Nipple, 1/2-inch, Close			12090	Washer, Flow, 3.5 gpm
31	1	19091	Pin, Regulator 3150			12091	Washer, Flow, 4.0 gpm
32	1	19093	Stand-Off Regulator 3150			12092	Washer, Flow, 5.0 gpm
33	1	19095	Diaphragm, Regulator 3150			12408	Washer, Fow, 7.0 gpm
34	1	19094	Washer, Regulator 3150			17944	Washer, Flow, 9.0 gpm
35	1	19092	Retainer, Regulator 3150			16529	Washer, Flow, 10.0 gpm
36	1	19101	Spring, Regulator 3150			16735	Washer, Flow, 12.0 gpm
37	1	19399	Washer, Calibration 3150			16736	Washer, Flow, 15.0 gpm
38	1	19090	Cap, Regulator 3150			16528	Washer, Flow, 20.0 gpm
39	1	19278	Fitting, Tube, 90 Deg			16737	Washer, Flow, 25.0 gpm
40	1	19693	Pressure Gauge	49		16738	Retainer, Flow Control
41	1	41232	Bushing Reducer 1/4 x 1/8	50		16805	Ring, Retaining
42		60710-1.2	BLFC, 1-inch F x 1-inch M, NPT, 1.2 gpm	<b>Not Shown - Option Without Brine Valve</b>			
		60710-2.0	BLFC, 1-inch F x 1-inch M,	1		16605	Retainer Plate
				1		19860	Fitting, Brine Valve, 1800



## 2-INCH STAINLESS STEEL METER ASSEMBLY



Item No.	QTY	Part No.	Description
1	1	62048-01	Service Kit, 2 inch Meter, Standard Range
1	1	62048-02	Service Kit, 2 inch Meter, Extended Range
2	1	61934-10	Meter Assy, 2 inch, Inline, Stainless Steel, NPT Standard Range
1	1	61934-11	Meter Assy, 2 inch, Inline, Stainless Steel, NPT Extended Range
1	1	61934-20	Meter Assy, 2 inch, Inline, Stainless Steel, BSP Standard Range
1	1	61934-21	Meter Assy, 2 inch, Inline, Stainless Steel, BSP Extended Range
3	1	44026	Union, 2 inch, NPT (Optional on models with electronic controls)
1	1	44027	Union, 2 inch, BSP (Optional on models with electronic controls)

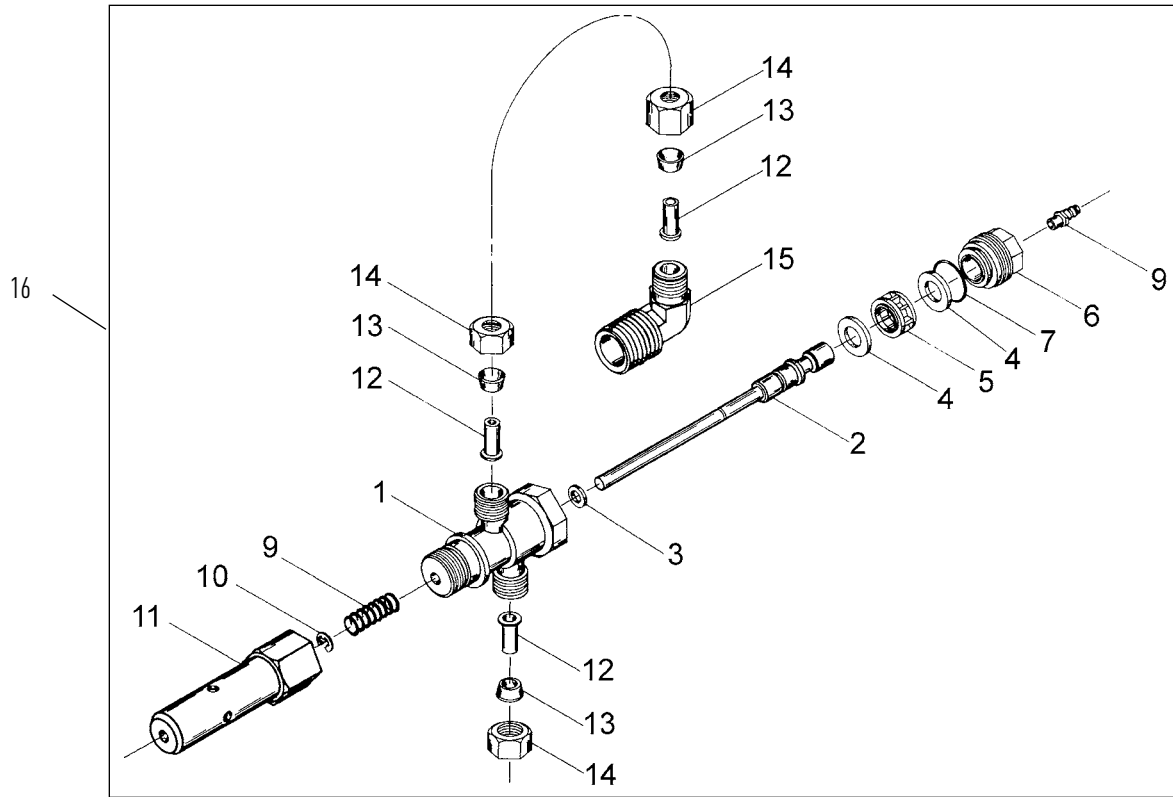
**⚠ IMPORTANT:** For valves equipped with electromechanical timers and stainless steel meters, refer to the Meter Dome and Union Orientation section.

### Not Shown (optional)

1	1	62073	Meter Sleeve, 2 inch to 1-1/2 inch (optional)
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# SERVICE VALVE OPERATOR ASSEMBLY



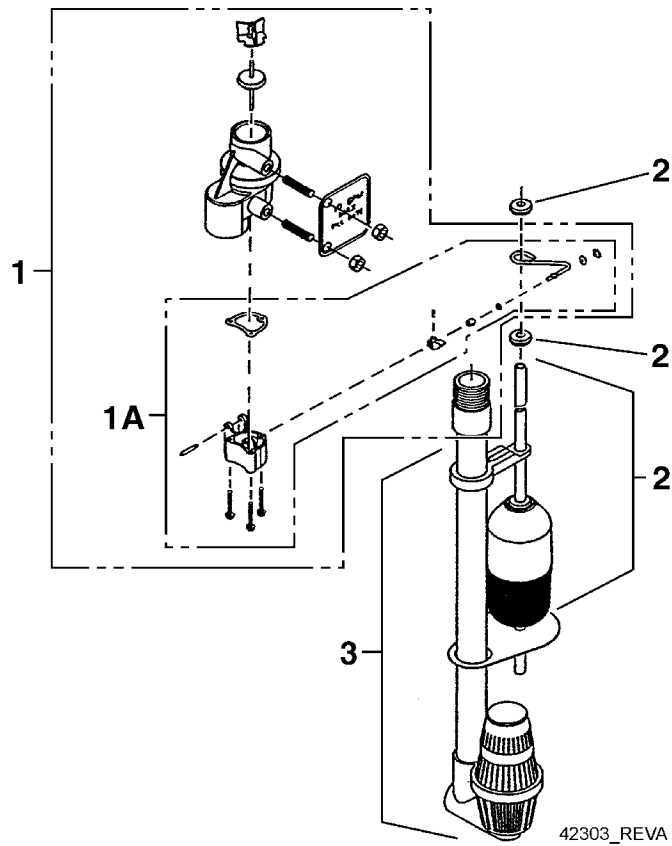
BR60150-3150REVA

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
	1	60026-30SAN	Float Assy, 2350, 30 inch 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

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**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.

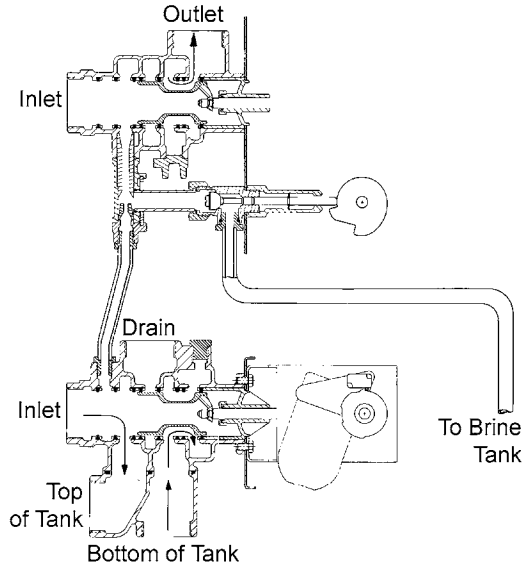
**Correction:** Check meter with meter checker.

## TROUBLESHOOTING

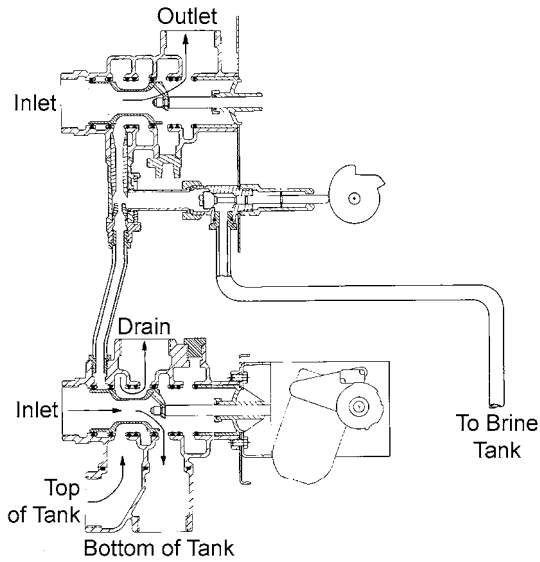
Problem	Cause	Correction
Water conditioner fails to regenerate.	Electrical service to unit has been interrupted	Assure permanent electrical service (check fuse, plug, pull chain, or switch)
	Timer is defective.	Replace timer.
	Power failure.	Reset time of day.
Hard water.	By-pass valve is open.	Close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

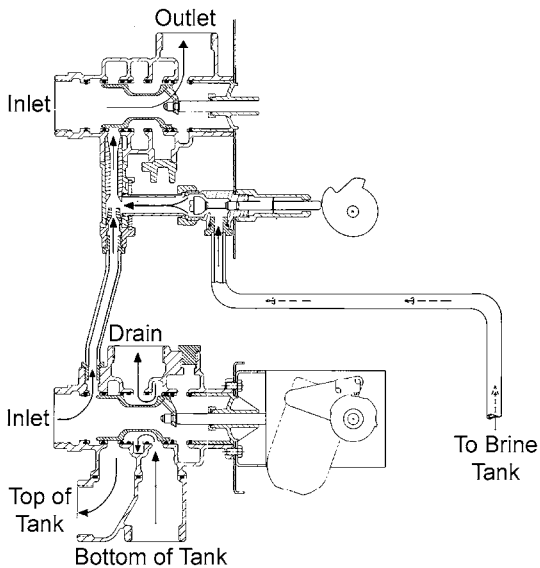
## 1 Service Position



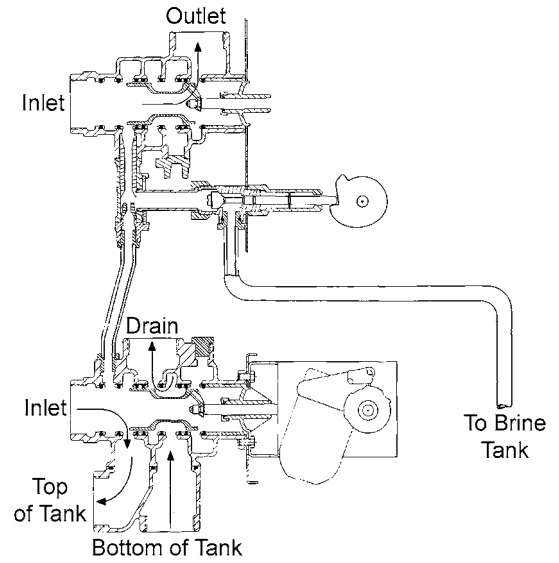
## 2 Backwash Position



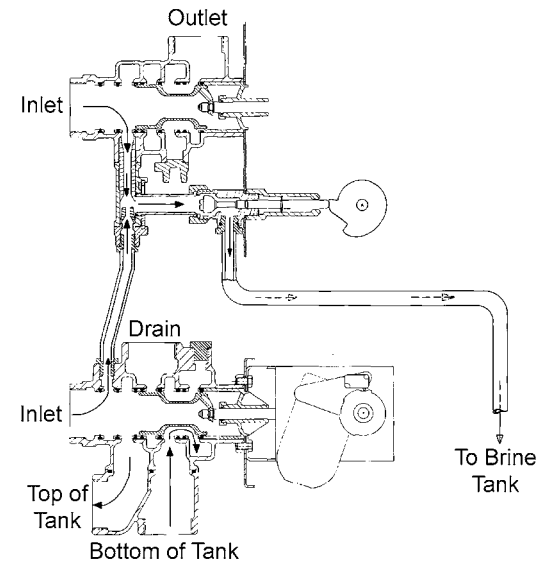
## 3 Brine and Slow Rinse Position



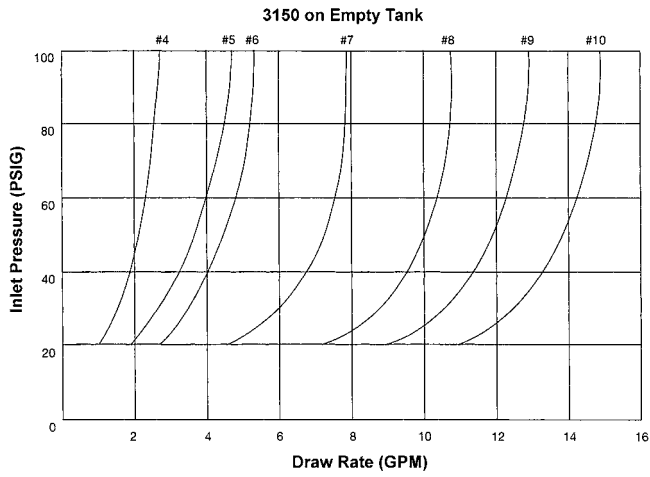
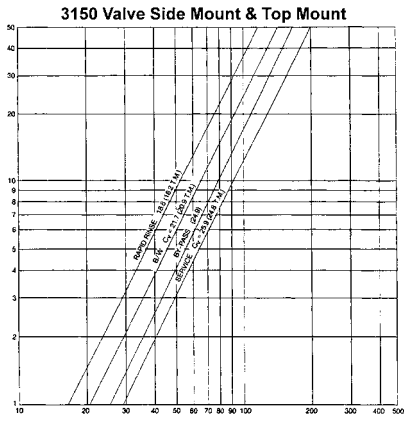
## 4 Rapid Rinse



## 5 Brine Tank Refill Position

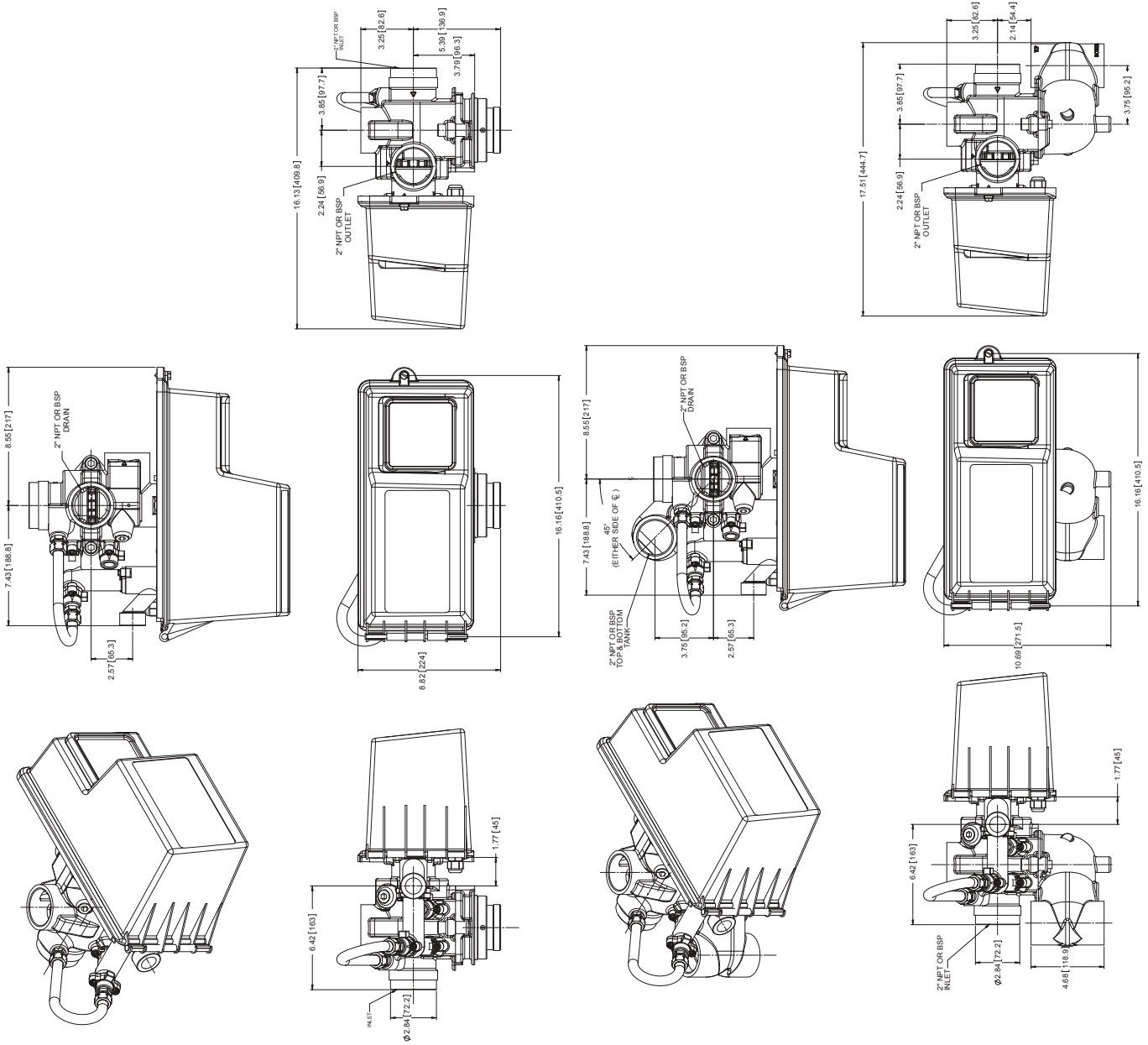


# FLOW DATA & INJECTOR DRAW RATES



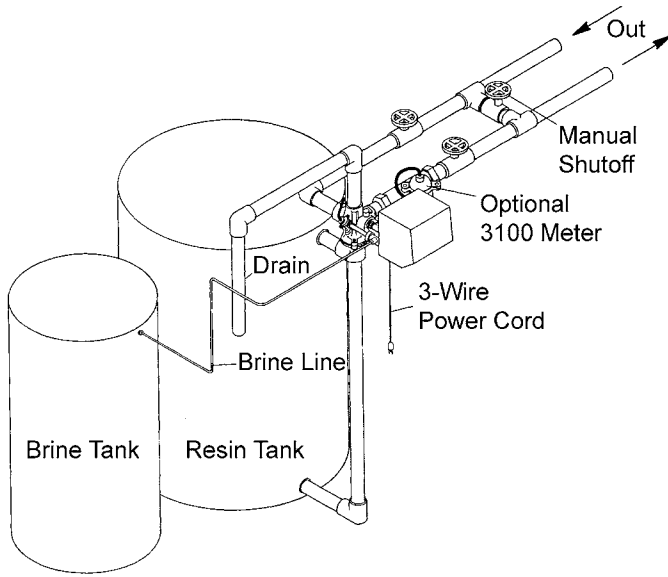
TR20395

# DIMENSIONAL DRAWING



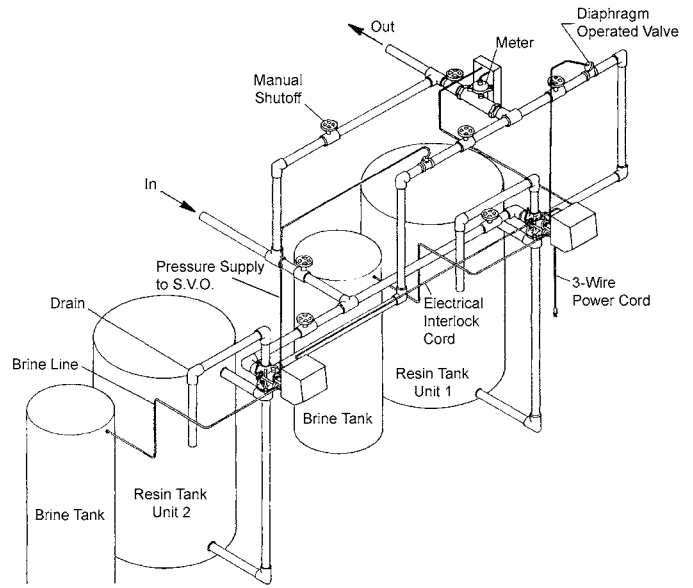
## SYSTEM #4

### Typical Single Tank Installation with Optional Meter



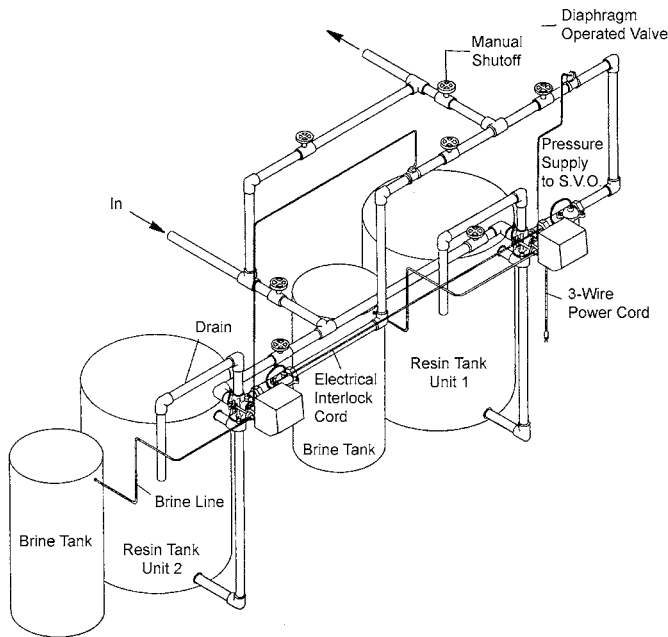
## SYSTEM #6

### Twin Series Regeneration Installation with a Remote Meter



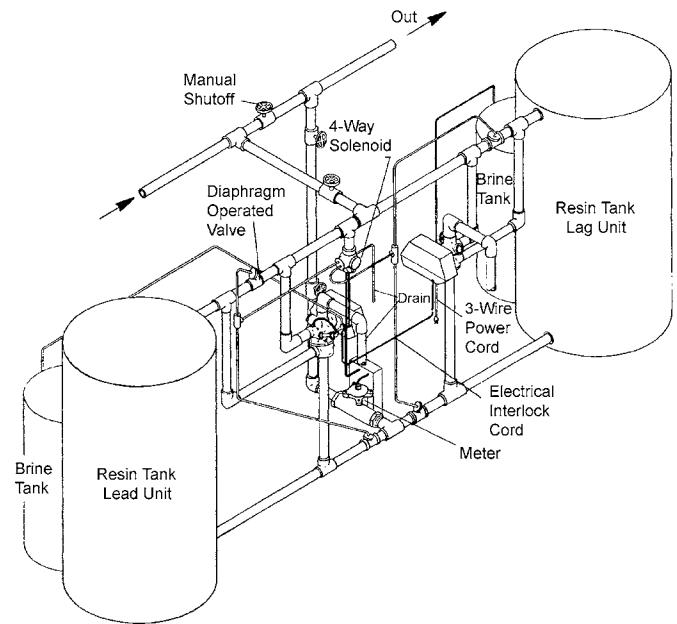
## SYSTEM #5

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



## SYSTEM #7

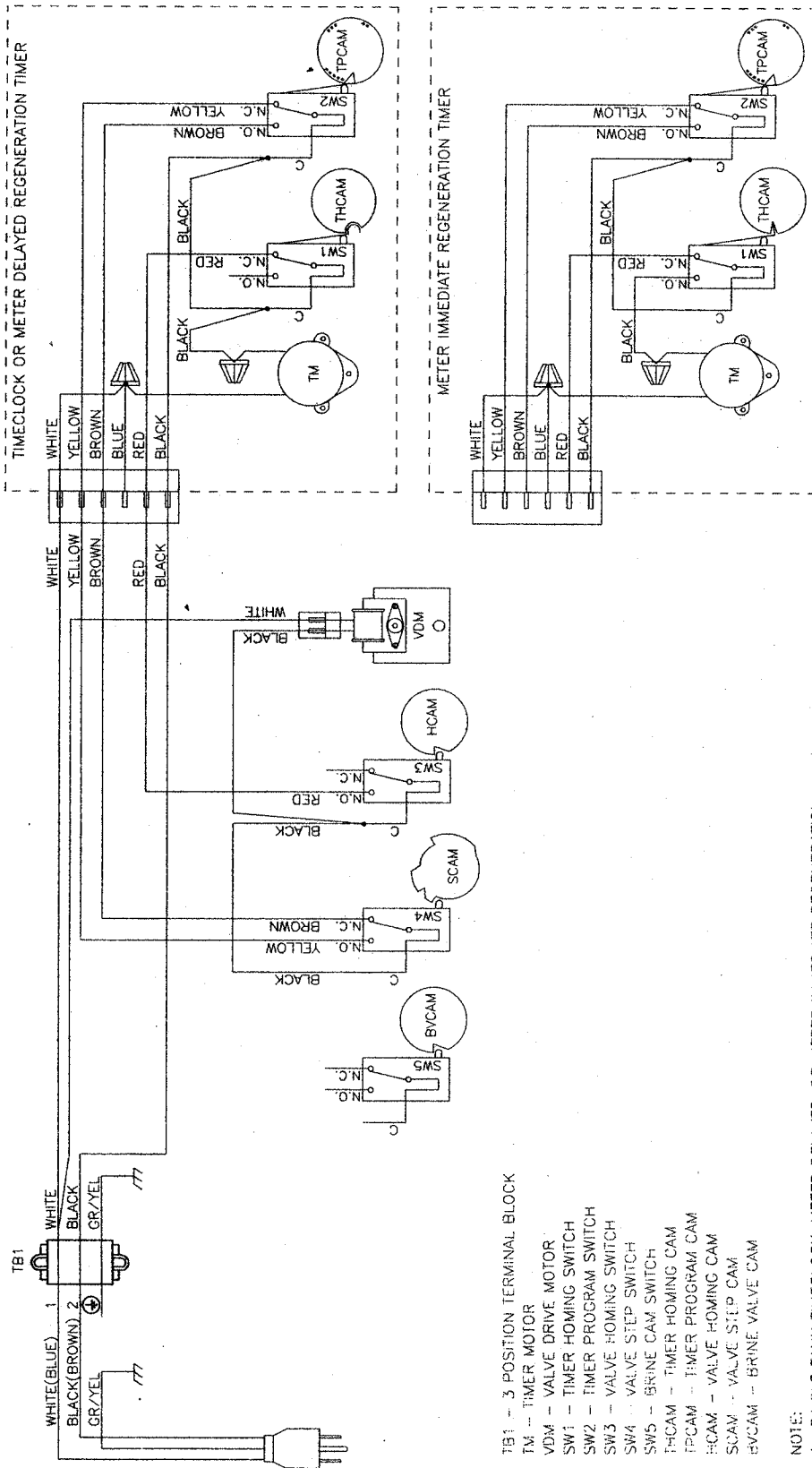
### Twin Alternator Installation with a Remote Meter





# VALVE WIRING

## System #4 Immediate/Delayed Regeneration Valve Wiring

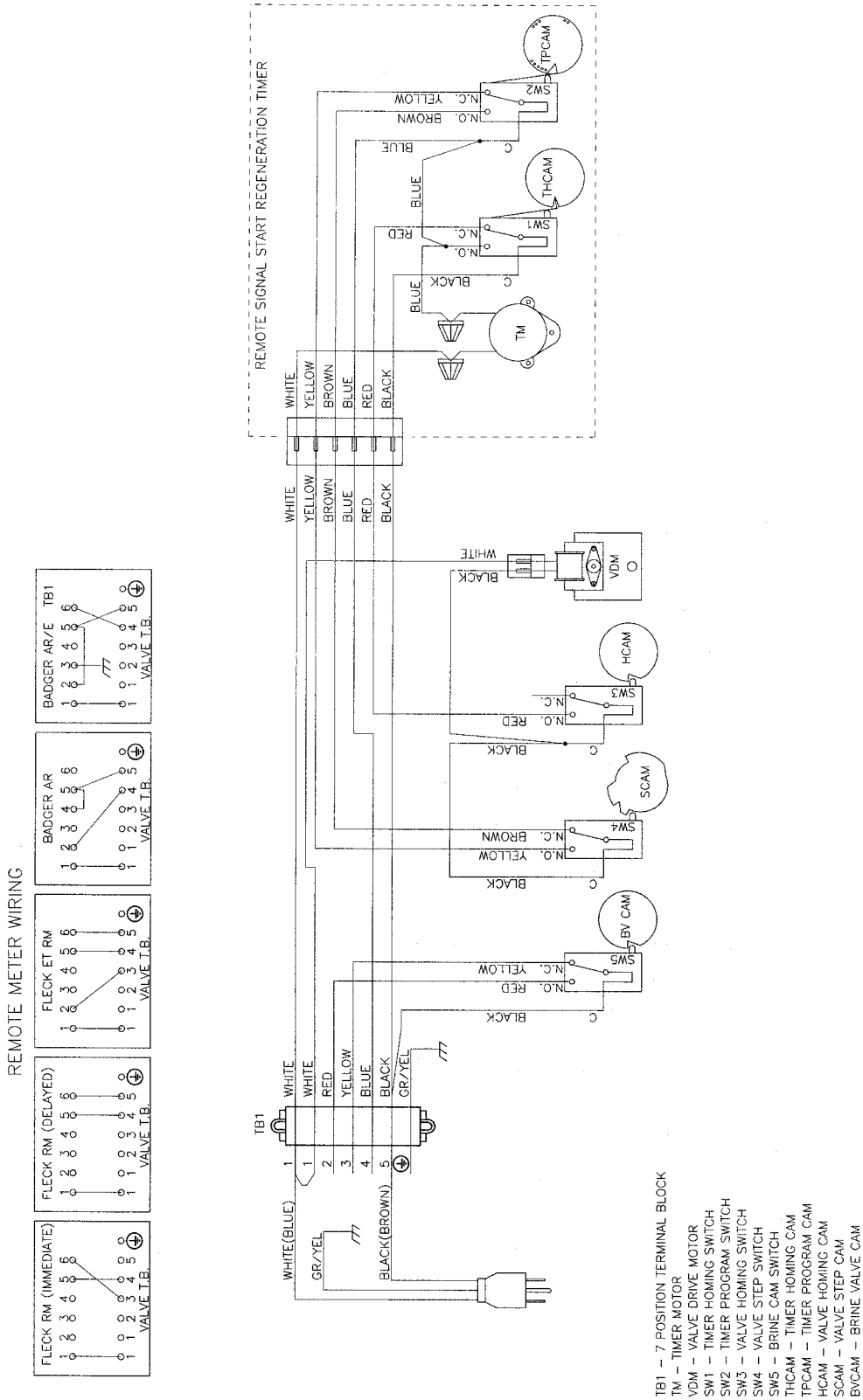


- TB1 -- 3 POSITION TERMINAL BLOCK
- TM -- TIMER MOTOR
- VDM -- VALVE DRIVE MOTOR
- SW1 -- TIMER HOMING SWITCH
- SW2 -- TIMER PROGRAM SWITCH
- SW3 -- VALVE HOMING SWITCH
- SW4 -- VALVE STEP SWITCH
- SW5 -- BRINE CAM SWITCH
- THCAM -- TIMER HOMING CAM
- TPCAM -- TIMER PROGRAM CAM
- HCAM -- VALVE HOMING CAM
- SCAM -- VALVE STEP CAM
- BVCAM -- BRINE VALVE CAM

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

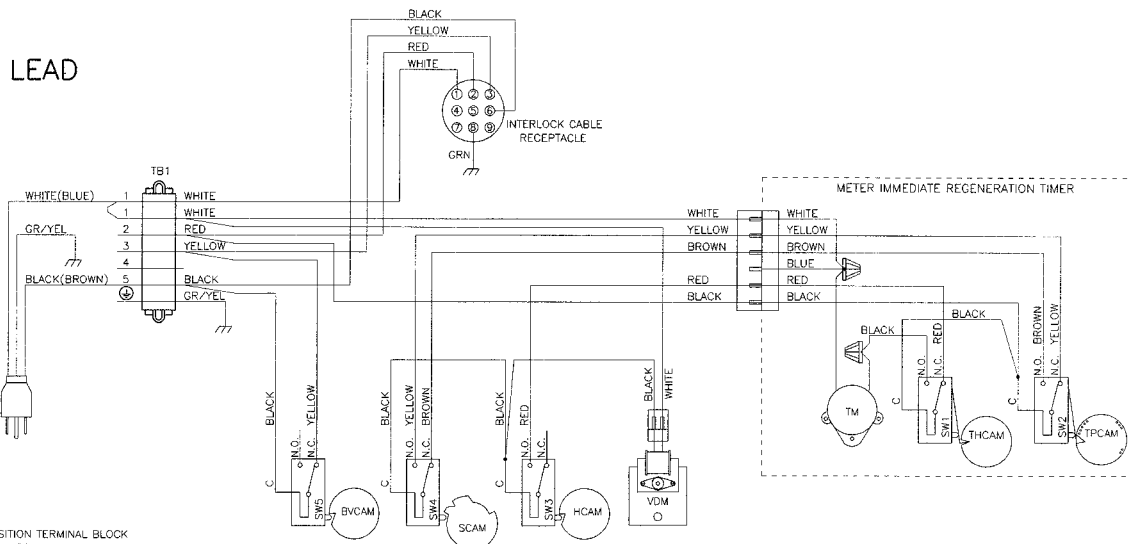
# VALVE WIRING *CONTINUED*

## System #4 Remote Signal Start Valve Wiring



# VALVE WIRING *CONTINUED*

## System #5 Duplex Valve Wiring

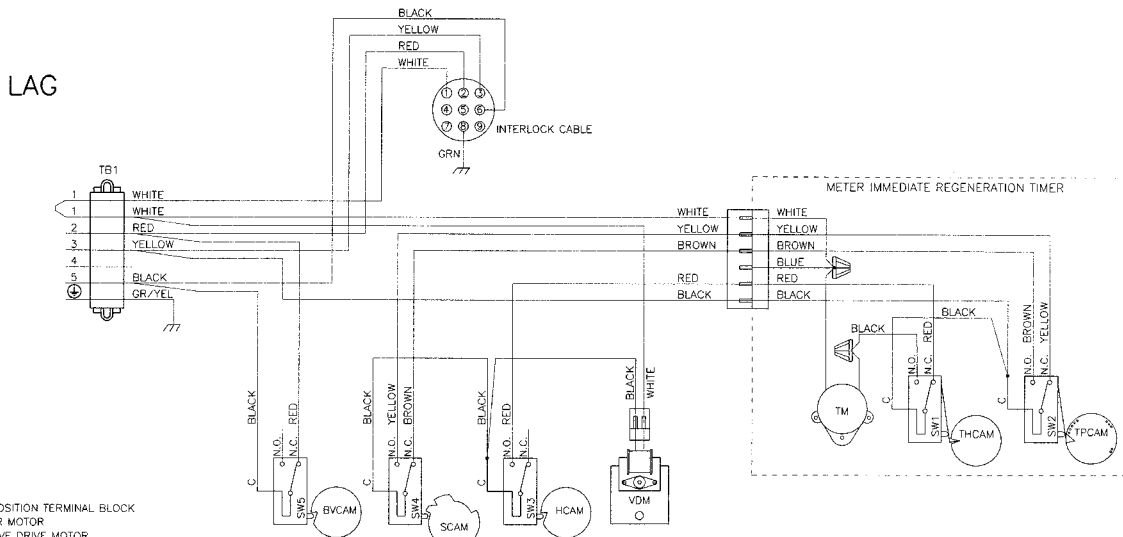


- TB1 - 7 POSITION TERMINAL BLOCK  
 TM - TIMER MOTOR  
 VDM - VALVE DRIVE MOTOR  
 SW1 - TIMER HOMING SWITCH  
 SW2 - TIMER PROGRAM SWITCH  
 SW3 - VALVE HOMING SWITCH  
 SW4 - VALVE STEP SWITCH  
 SW5 - BRINE CAM SWITCH  
 THCAM - TIMER HOMING CAM  
 TPCAM - TIMER PROGRAM CAM  
 HCAM - VALVE HOMING CAM  
 SCAM - VALVE STEP CAM  
 BVCAM - BRINE VALVE CAM

**NOTE:**

1. TWO TANK INTERLOCKED, INDIVIDUAL METER, IMMEDIATE REGENERATION.
2. BOTH TANKS NORMALLY IN SERVICE.
3. ONLY ONE TANK IN REGENERATION THE OTHER REMAINS IN SERVICE.
4. VALVE SHOWN IN SERVICE.

18690-01 Rev E



- TB1 - 7 POSITION TERMINAL BLOCK  
 TM - TIMER MOTOR  
 VDM - VALVE DRIVE MOTOR  
 SW1 - TIMER HOMING SWITCH  
 SW2 - TIMER PROGRAM SWITCH  
 SW3 - VALVE HOMING SWITCH  
 SW4 - VALVE STEP SWITCH  
 SW5 - BRINE CAM SWITCH  
 THCAM - TIMER HOMING CAM  
 TPCAM - TIMER PROGRAM CAM  
 HCAM - VALVE HOMING CAM  
 SCAM - VALVE STEP CAM  
 BVCAM - BRINE VALVE CAM

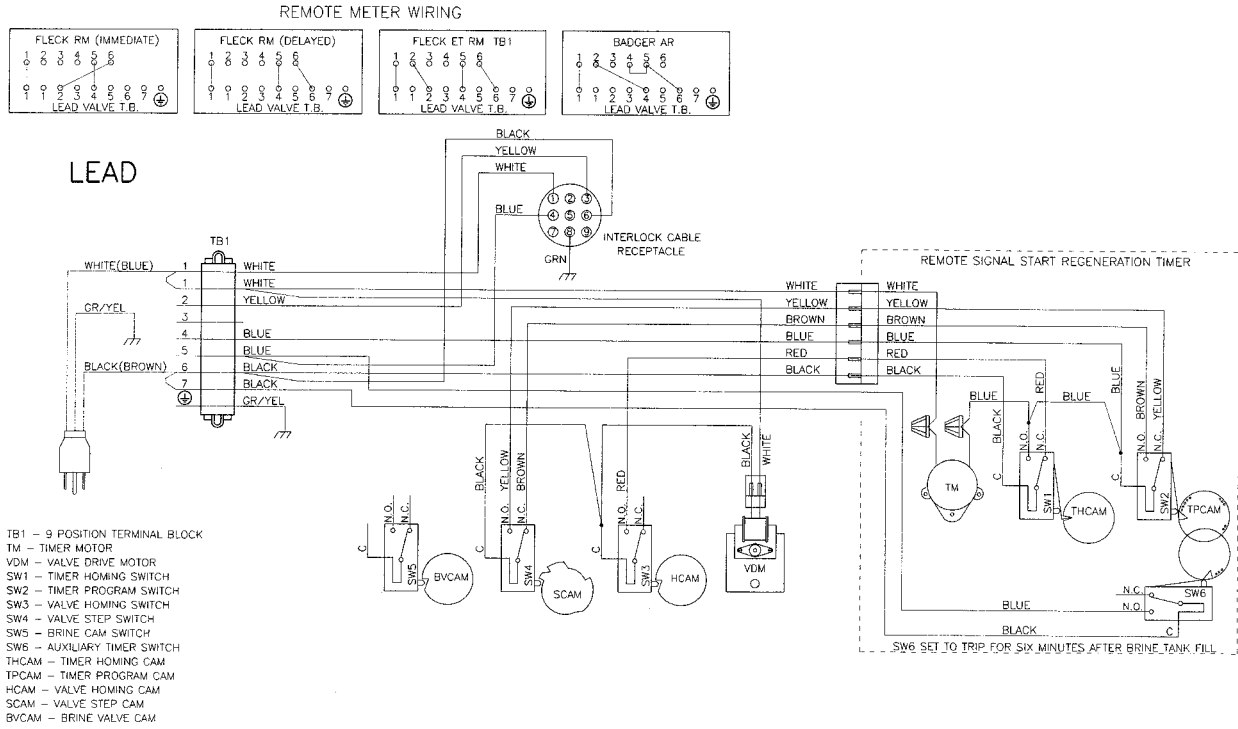
**NOTE:**

1. TWO TANK INTERLOCKED, INDIVIDUAL METER, IMMEDIATE REGENERATION.
2. BOTH TANKS NORMALLY IN SERVICE.
3. ONLY ONE TANK IN REGENERATION THE OTHER REMAINS IN SERVICE.
4. VALVE SHOWN IN SERVICE.

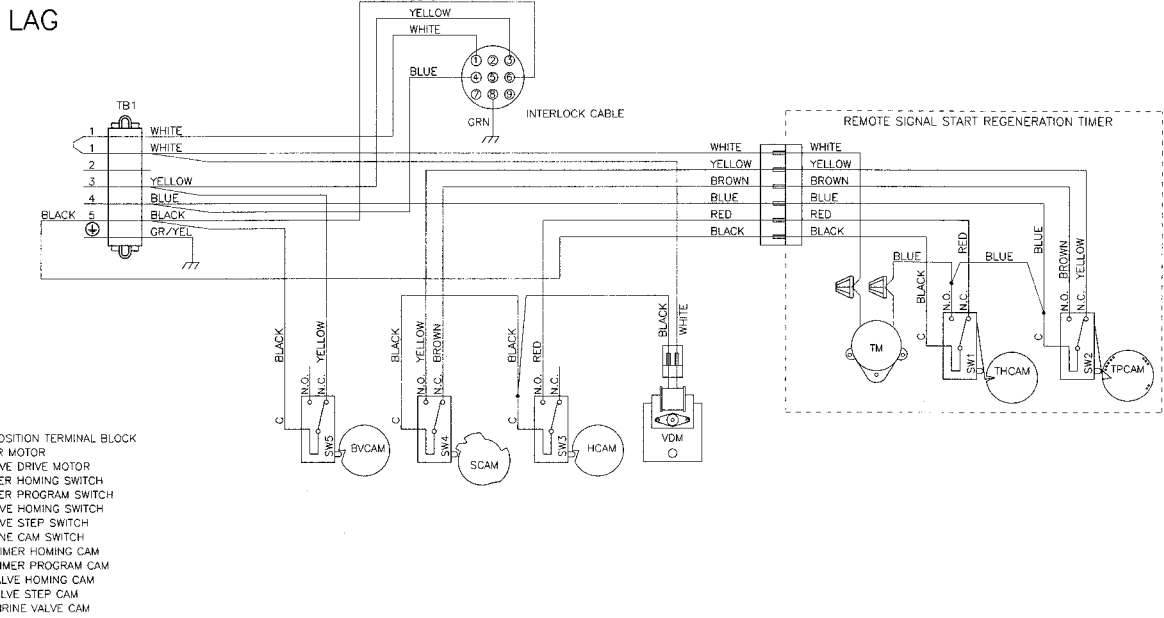
18690-02 Rev E

# VALVE WIRING *CONTINUED*

## System #6 Duplex Valve Wiring



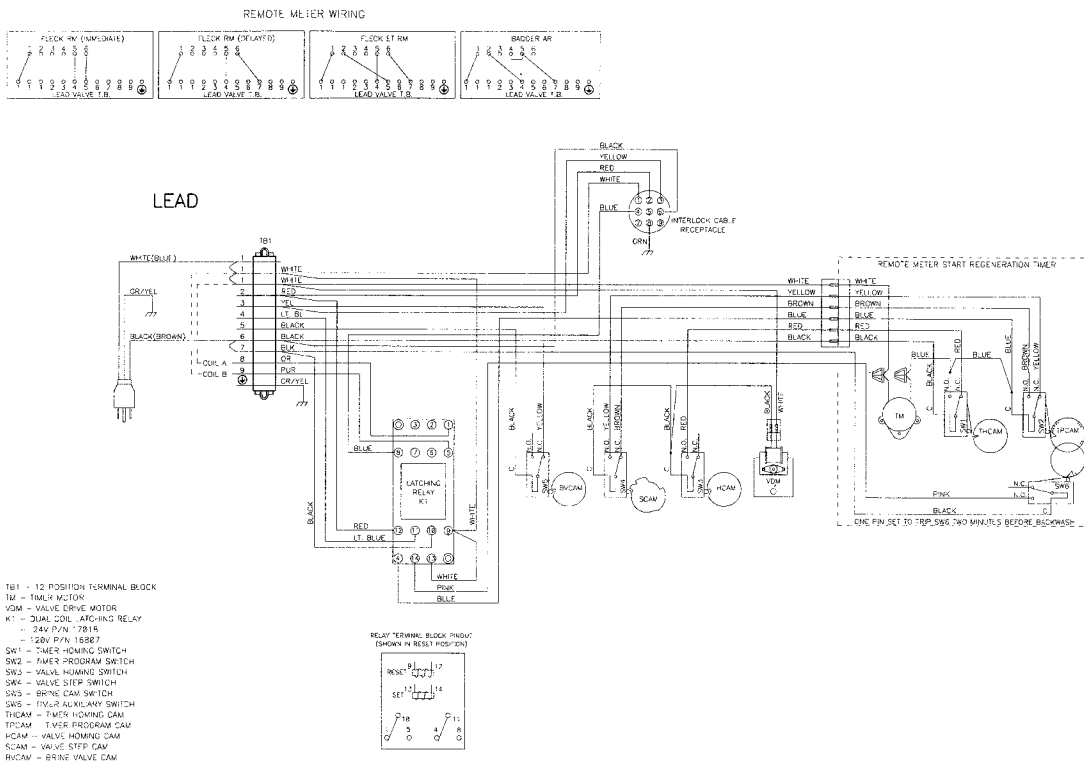
18671-01 Rev E



18671-02 Rev E

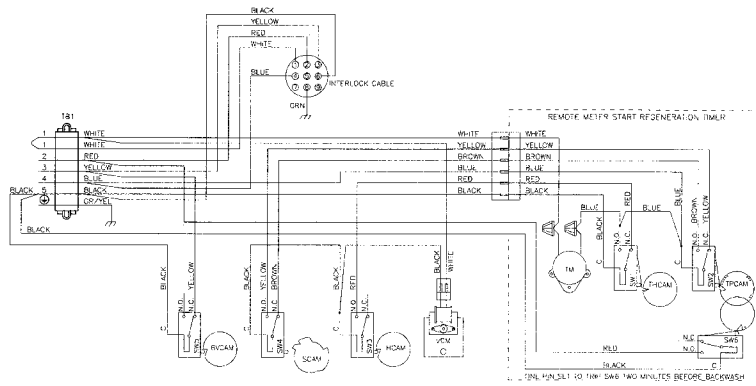
# VALVE WIRING *CONTINUED*

## System #7 Duplex 24V / 120V 3-Way Valve Wiring



40503-01 Rev C

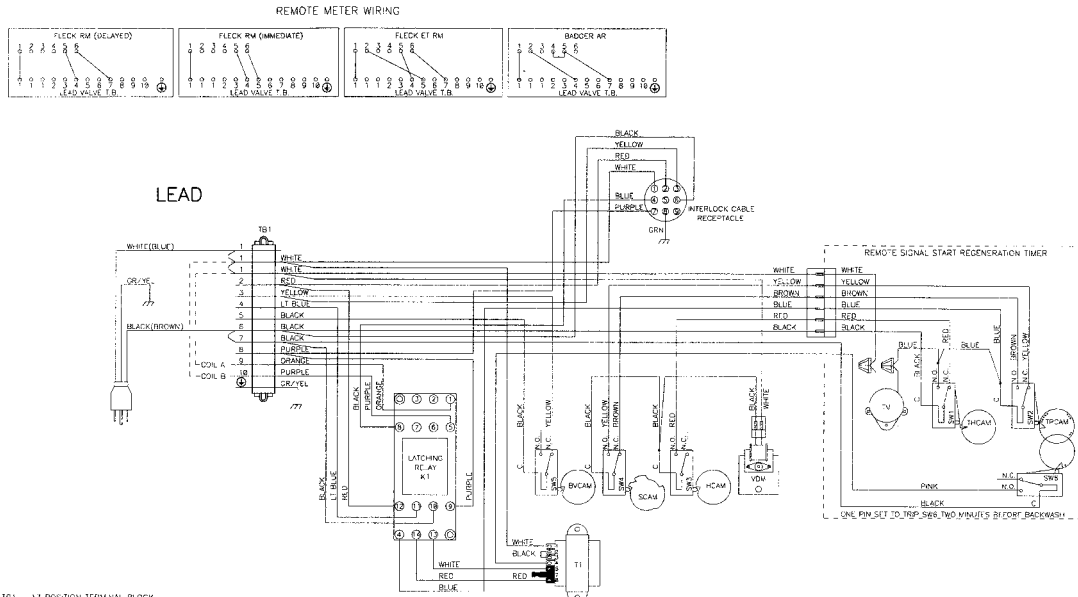
### LAG



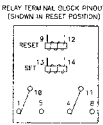
40503-02 Rev C

# VALVE WIRING *CONTINUED*

## System #7 Duplex 230V 3-Way Valve Wiring

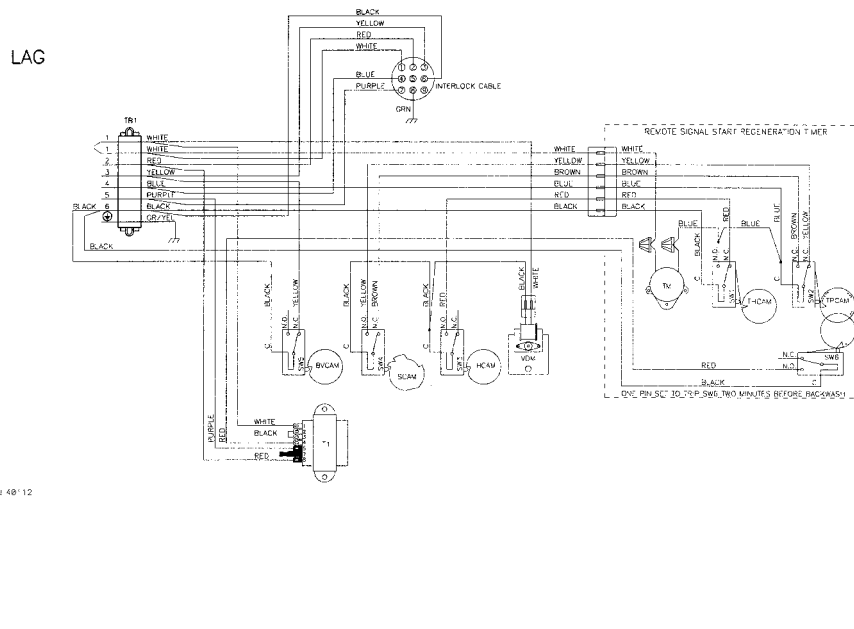


- T81 - 13 POSITION TERMINAL BLOCK
- TM - TIMER MOTOR
- VDM - VALVE DRIVE MOTOR
- K1 - 120V DUAL COIL LATCHING RELAY P/N: 16587
- T1 - 230V/120V TRANSFORMER P/N: 48112
- SW1 - TIMER HOMING SWITCH
- SW2 - TIMER PROGRAM SWITCH
- SW3 - VALVE HOMING SWITCH
- SW4 - VALVE STEP SWITCH
- SW5 - BRINE CAM SWITCH
- SW6 - TIMER AUXILIARY SWITCH
- HCAM - HURR HOMING CAM
- TPCAM - TIMER PROGRAM CAM
- HCAM - VALVE HOMING CAM
- SCAM - VALVE STEP CAM
- SVCAM - BRINE VALVE CAM



- NOTE:
1. TWO TANK SINGLE REMOTE METER ALTERNATING REGENERATION. ONLY ONE TANK IN SERVICE THE OTHER IN REGENERATION OR STANDBY.
  2. SYSTEM WIRED FOR 3-WAY SOLENOID OUTPUT. COIL A CLOSSES THE DIAPHRAGM VALVES OF LAG UNIT. COIL B CLOSSES THE DIAPHRAGM VALVES OF LEAD UNIT.
  3. VALVE SHOWN IN SERVICE POSITION.

40504-01\_REVC



- T81 - 13 POSITION TERMINAL BLOCK
- TM - TIMER MOTOR
- T1 - 230V/120V TRANSFORMER P/N: 48112
- VDM - VALVE DRIVE MOTOR
- SW1 - TIMER HOMING SWITCH
- SW2 - TIMER PROGRAM SWITCH
- SW3 - VALVE HOMING SWITCH
- SW4 - VALVE STEP SWITCH
- SW5 - BRINE CAM SWITCH
- SW6 - TIMER AUXILIARY SWITCH
- HCAM - HURR HOMING CAM
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- HCAM - VALVE HOMING CAM
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- SVCAM - BRINE VALVE CAM

- NOTE:
1. TWO TANK SINGLE REMOTE METER ALTERNATING REGENERATION. ONLY ONE TANK IN SERVICE THE OTHER IN REGENERATION OR STANDBY.
  2. SYSTEM WIRED FOR 3-WAY SOLENOID OUTPUT. COIL A CLOSSES THE DIAPHRAGM VALVES OF LAG UNIT. COIL B CLOSSES THE DIAPHRAGM VALVES OF LEAD UNIT.
  3. VALVE SHOWN IN SERVICE POSITION.

40504-02\_REVC

## SERVICE ASSEMBLIES

<b>60036-02</b>	<b>Brine Valve, 1800, Design 3</b>
11772.....	Spring, 3150 Brine Valve
11774.....	Ring, Retaining
18713.....	Brine Valve Body, 1800
16497-01.....	Stem Assy, 1800 Brine Valve New Style
16498-01.....	Stem Guide Assy, Brine

<b>60277-xx</b>	<b>1800 Injector Assembly</b>
12473.....	Screw, Hex Wsh, 10-24 x 5/8
15127.....	Injector Throat Assy
15128-xx.....	Injector Nozzle - Specify Size
15246.....	O-ring, -116
16340.....	Body, Injector, 1800, D/F
16341-01.....	Cap, Injector, 1800

<b>60106-00</b>	<b>Piston Assy, 3900/3150 Std</b>
14818.....	Ring, Piston Rod, Snap
14922.....	O-ring, -035, Piston
16130.....	Piston, High Backwash
15125.....	Rod, Piston, 3150
16398-01.....	End Plug Assy, 3150, White

<b>60113-01</b>	<b>Piston Assy, 3150, NHWBP, D-Flow Conversion/Replacement</b>
16398-01.....	End Plug Assy, 3150, White
19611-01.....	Piston Assy, 3150, NHWBP, O-ring
19708.....	Rod, Piston, 3150 NHWBP
14818.....	Ring, Piston Rod, Snap

<b>60131</b>	<b>Seal &amp; Spacer Kit 2930/3130/3150</b>
10368.....	Spacer, Narrow, 3150/3900
10369.....	Spacer, 2-inch, 2900/3150
11720.....	Seal, Piston, 2900/3150

<b>60057-01</b>	<b>Drive Assy, 3150, 120V, B/Fill 3900 Upper Sys #5 or Sys #7</b>
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<b>60057-11</b>	<b>Drive Assy, 3150, 120V, 3900 Upper Sys #4 or Sys #6</b>
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<b>60150-3150</b>	<b>SVO Assy, 3150</b>
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<b>60393</b>	<b>Meter Assy, 2900, 2 inch Std</b>
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<b>60394</b>	<b>Meter Assy, 2900, 2 inch Ext</b>
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<b>61394-10</b>	<b>Meter Assy, 2 inch SS NPT Std</b>
<b>61394-11</b>	<b>Meter Assy, 2 inch SS NPT Ext</b>
<b>61394-20</b>	<b>Meter Assy, 2 inch SS BSP Std</b>
<b>61394-21</b>	<b>Meter Assy, 2 inch SS BSP Ext</b>

### Side Mount Adapter

61414.....	Adapter, Assy, Sdmnt, 3130/3150 Rotating
61414NP.....	Adapter Assy, Sdmnt, 3130/3150 Nickel Plated Rotating
61418.....	Adapter Assy, Sdmnt, 3150

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

<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

### Drain Line Flow Controls (DLFC):

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

### BLFC Assy

60710-1.2.....	BLFC, 1-inch F x 1-inch M, NPT, 1.2 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
60710-2.0.....	BLFC, 1-inch F x 1-inch M, NPT, 2.0 GPM
60710-2.4.....	BLFC, 1-inch F x 1-inch M, NPT, 2.4 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
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, NPT, 3.5 GPM
60710-30.....	BLFC, 1-inch F x 1-inch M, NPT, 30 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
60710-9.0.....	BLFC, 1-inch F x 1-inch M, NPT, 9.0 GPM

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