

# Operation Manual



## Pre-Treatment Control Valve (Fleck 2850s) & Timer (Fleck SXT)

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## TABLE OF CONTENTS

<b>Section 1</b>	<b>GENERAL</b>	
1.1	Warnings and Cautions.....	1
1.2	Theory of Operation.....	2
<b>Section 2</b>	<b>CONTROL VALVE</b>	
2.1	Service Manual .....	3
<b>Section 3</b>	<b>TIMER</b>	
3.1	Service Manual .....	59

**Section 1.1****WARNINGS AND CAUTIONS****WARNINGS**

- Read this manual in its entirety before operating the water Softener System.
- Misuse, improper operation, and/or improper monitoring of this equipment could result in serious injury, death, or other serious reactions to the end users of the equipment.

**CAUTIONS**

- When used as a medical device, Federal law restricts this device to sale by or on the authority of a physician. Per CFR 801.109 (b)(1).
- It is the responsibility of the governing body of the facility to ensure that all applicable regulations regarding the installation and operation of this system are observed.
- Only authorized personnel can install, perform service, or perform maintenance to the Ultrafiltration for High Purity Distribution System.

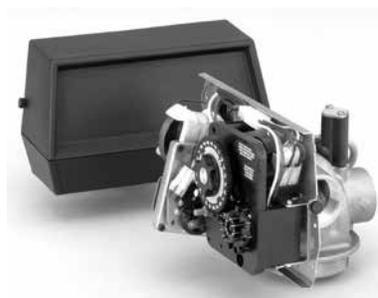
**Section 1.2****THEORY OF OPERATION**

All automatic backwashing filters and softeners are equipped with automatic control valves, which control the backwashing/regeneration times, cycles, and frequencies for the specific filter it operates. These feature a 7 day calendar time clock and has an interlock feature to prevent the RO from running while the filter is in backwash or regeneration.



## FLECK 2850S

### SERVICE MANUAL



## TABLE OF CONTENTS

JOB SPECIFICATION SHEET .....	2
INSTALLATION .....	3
START-UP INSTRUCTIONS .....	3
3200 TIMER SETTING PROCEDURE .....	4
3210 TIMER SETTING PROCEDURE .....	4
3200, 3210, 3220, 3230 REGENERATION CYCLE SETTING PROCEDURE .....	5
3200 TIME CLOCK TIMER ASSEMBLY.....	6
3210 METER DELAYED TIMER ASSEMBLY.....	8
3220 METER IMMEDIATE TIMER ASSEMBLY .....	10
3230 REMOTE START TIMER ASSEMBLY .....	12
CONTROL VALVE ASSEMBLY .....	14
POWERHEAD ASSEMBLY.....	16
MANUAL DRIVE ASSEMBLY.....	18
1600 SERIES BRINE SYSTEM .....	19
1650 BRINE SYSTEM ASSEMBLY.....	21
1700 BRINE SYSTEM ASSEMBLY.....	23
1710 BRINE SYSTEM ASSEMBLY.....	25
1600 SERVICE VALVE OPERATOR ASSEMBLY (OLD STYLE).....	26
1-INCH METER ASSEMBLY.....	27
1-1/2 INCH METER ASSEMBLY .....	28
2300 SAFETY BRINE VALVE .....	30
2310 SAFETY BRINE VALVE .....	31
2350 SAFETY BRINE VALVE .....	33
SEAL & SPACER TOOLS & REPLACEMENT .....	34
GENERAL SERVICE HINTS FOR METER CONTROL .....	35
TROUBLESHOOTING.....	36
WATER CONDITIONER FLOW DIAGRAMS .....	37
FLOW DATA & INJECTOR DRAW RATES - DOWNFLOW ....	38
DIMENSIONAL DRAWING.....	39
SYSTEM #4 .....	40
SYSTEM #5 INTERLOCK .....	40
SYSTEM #6 .....	41
SYSTEM #7.....	41
SYSTEM #4 WIRING .....	42
SYSTEM #5 WIRING .....	44
SYSTEM #6 WIRING .....	45
SYSTEM #7 WIRING .....	46
SERVICE ASSEMBLIES .....	48

## 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.

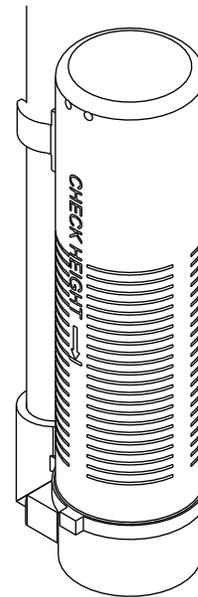
### Installation Instructions

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 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.
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

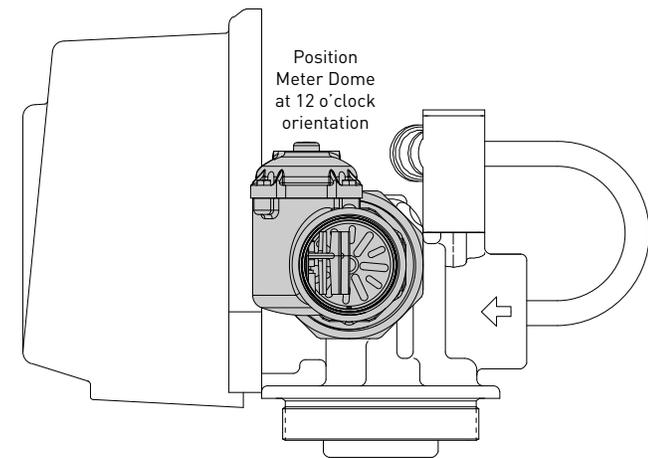
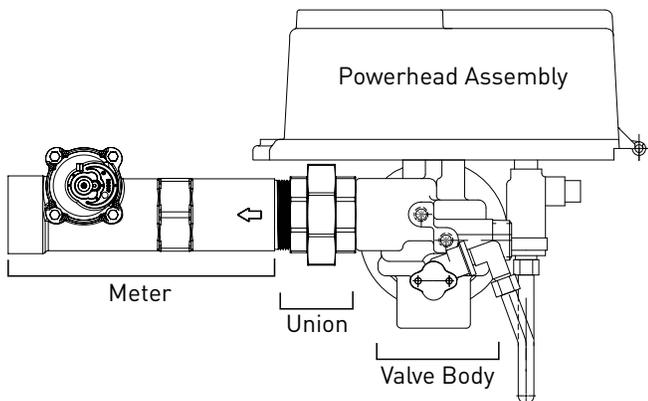
## INSTALLATION *CONTINUED*

### 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

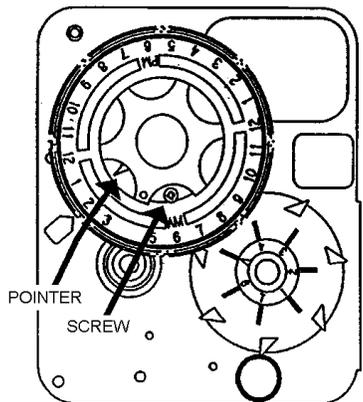
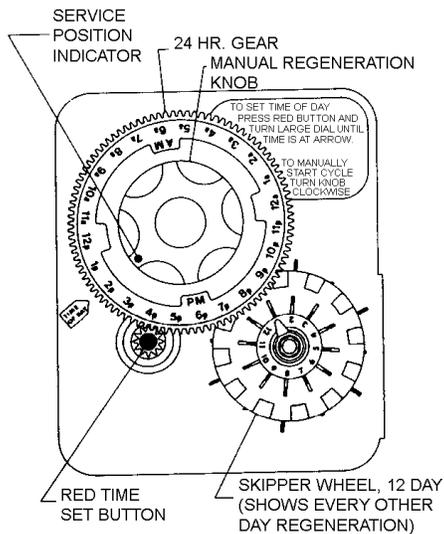
1. Turn the manual regeneration knob clockwise.
2. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
3. The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.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

## STARTUP INSTRUCTIONS *CONTINUED*

- 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 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 4).

**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

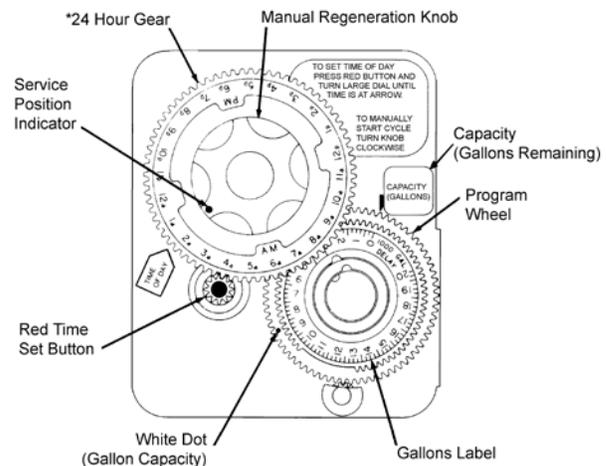
- Turn the manual regeneration knob clockwise.
- This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
- The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.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



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

61502-3200 Rev A

Figure 3

## 3200, 3210, 3220, 3230 REGENERATION CYCLE SETTING PROCEDURE

### How To Set The Regeneration Cycle Program

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

### 3200 Series Timers (Figure 4)

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

### Timer Setting Procedure

#### How To Change The Length Of The Backwash Time

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

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

#### How To Change The Length Of Brine And Rinse Time

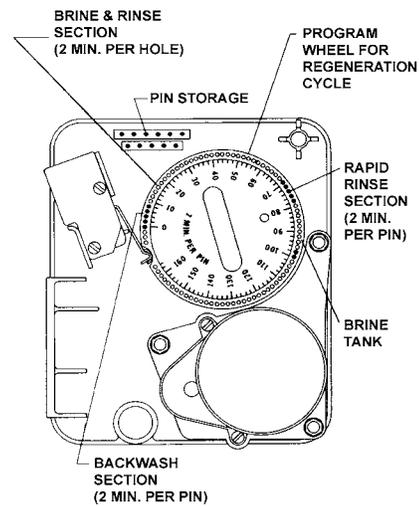
1. The group of holes between the last pin in the backwash section and the second group of pins determines the length of time that your unit will brine and rinse (2 min. per hole).
2. To change the length of brine and rinse time, move the rapid rinse group of pins to give more or fewer holes in the brine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

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

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

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

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

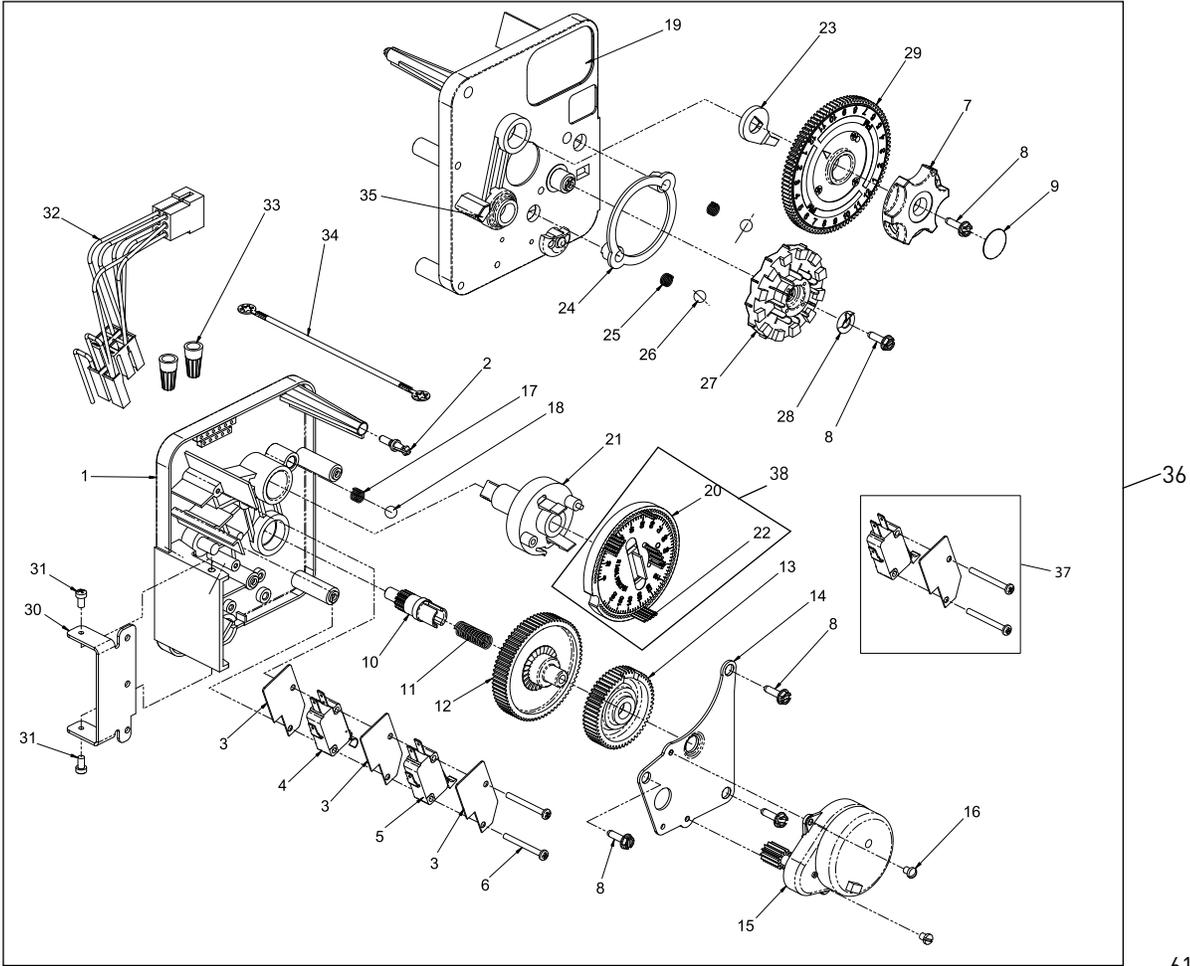


61502-3210 Rev A

Figure 4

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# 3200 TIME CLOCK TIMER ASSEMBLY



615023200 Rev A

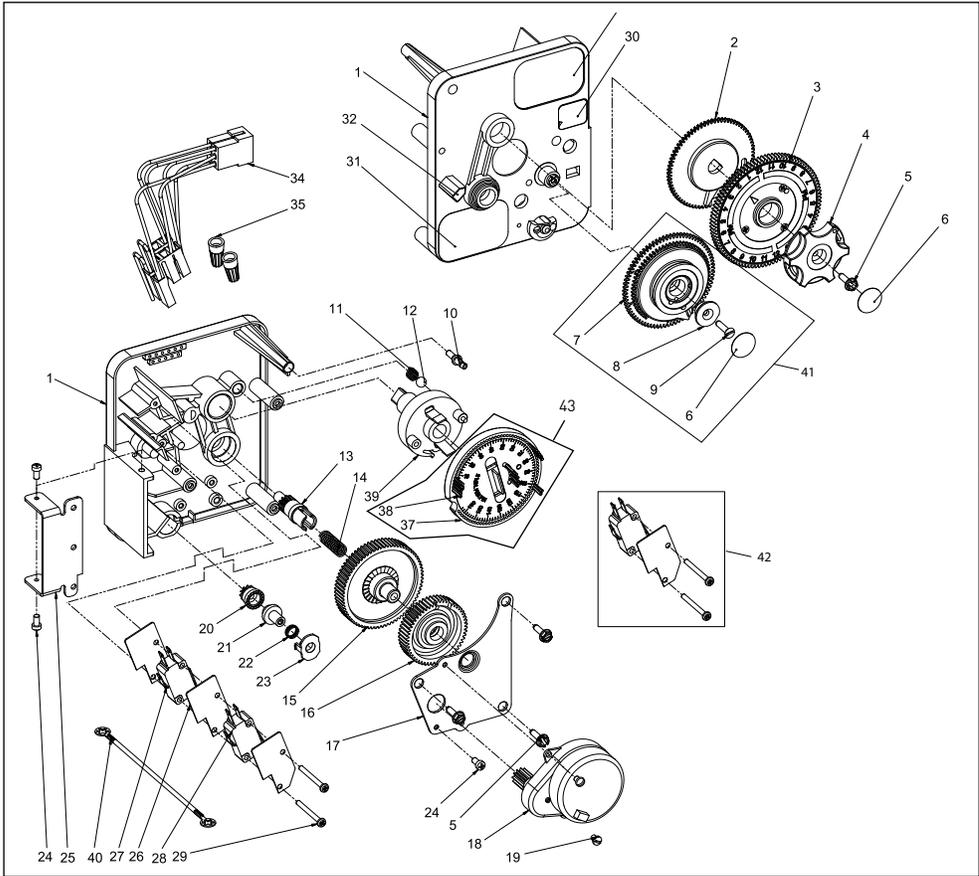
# 3200 TIME CLOCK TIMER ASSEMBLY

*CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer, 3200	24	1	13864	Ring, Skipper Wheel
2	1	14265	Clip, Sping	25	2	13311	Spring, Detent, Timer
3	3	14087	Insulator	26	2	13300	Ball, 1/4-inch, SS
4	1	10896	Switch, Micro	27	1	14381	Skipper Wheel Assy, 12 Day
5	1	15320	Switch, Micro, Timer		1	14860	Skipper Wheel Assy, 7 Day
6	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8	28	1	13014	Pointer, Regeneration
7	1	13886	Knob, 3200	29	1	40096-24	Dial, 12 AM Regen Assy, Black
8	5	13296	Screw, Hex Wsh, 6-20 x 1/2			40096-02	Dial, 2 AM Regen Assy, Black
9	1	11999	Label, Button	30	1	13881	Bracket, Hinger Timer
10	1	13018	Pinion, Idler	31	2	11384	Screw, Phil, 6-32 x 1/4 Zinc
11	1	13312	Spring, Idler Shaft	32	1	13902	Harness, 3200
12	1	13017	Gear, Idler	33	2	40422	Nut, Wire, Tan
13	1	13164	Gear, Drive	34	1	15354-01	Wire, Ground, 4 inches
14	1	13887	Plate, Motor Mounting	35	1	14007	Label, Time of Day
15	1	18743-1	Motor, 120V, 60Hz, 1/30 RPM	36	1	*	Complete 3200 Time Clock Timer Assembly
		18752-1	Motor, 100V, 50Hz, 1/30 RPM	37		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
		18824-1	Motor, 230V, 50Hz, 1/30 RPM	38		61420-03	Program Wheel, Gear Assy, Filter 2 Min Per Pin
		18826-1	Motor, 24V, 50Hz, 1/30 RPM			61420-04	Program Wheel, Gear Assy, Softener, 2 Min Per Pin
		19659-1	Motor, 24V, 60Hz, 1/30 RPM			61420-06	Program Wheel, Gear Assy, Soft Immed, 2 Min Per Pin
		19660-1	Motor, 230V, 60Hz, 1/30 RPM			61420-42	Program Wheel, Gear Assy, Filter Immed, 2 Min Per Pin
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				

\*Call your distributor for Part Number

# 3210 METER DELAYED TIMER ASSEMBLY



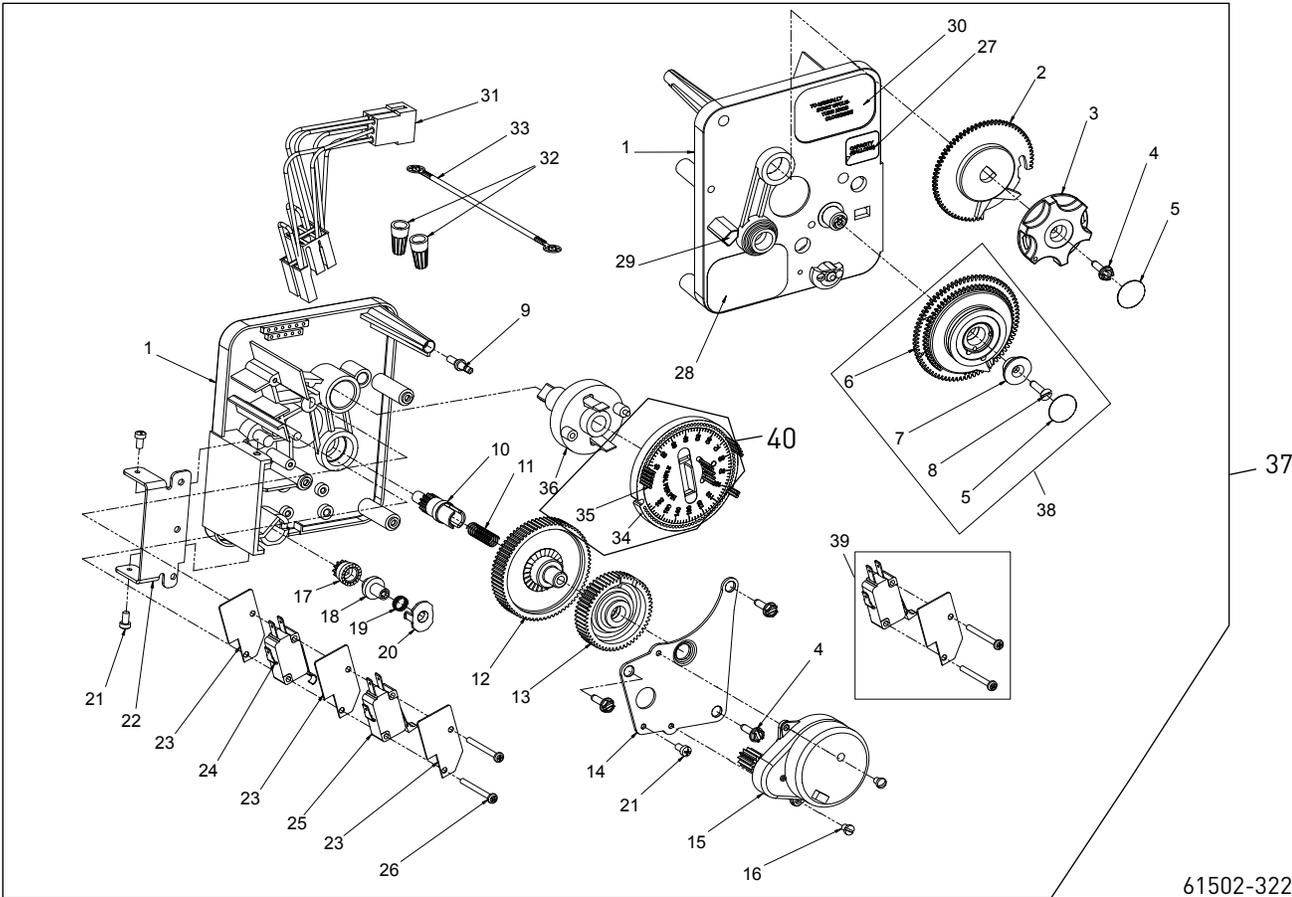
61502-3210 Rev A

# 3210 METER DELAYED TIMER ASSEMBLY

*CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer, 3200	33	1	14045	Label, Instruction
2	1	13802	Gear, Cycle Actuator	34	1	13902	Harness, 3200
3	1	40096-02	Dial 2 AM Regen Assy, Black	35	2	40422	Nut, Wire, Tan
4	1	13886	Knob, 3200	36	1	15354-01	Wire, Ground, 4 inches
5	4	13296	Screw, Hex Wsh, 6-20 x 1/2	37	1	19210	Program Wheel Assy
6	2	11999	Label, Button	38	17	41754	Pin, Spring, 1/16 x 5/8 SS, Timer
7	1	13803	Gear, Program Drive Wheel	39	1	13911	Gear, Main Drive, Timer
8	1	13806	Retainer, Program Wheel	40	1	*	Complete 3210 Meter Delayed Timer Assembly
9	1	13748	Screw, Flat Head St, 6-20 x 1/2	41		60405-10	Program Wheel, w/3/4-inch STD Label 0-2,100 gal
10	1	14265	Clip, Spring			60405-20	Program Wheel, w/3/4-inch EXT Label 0-10,000 gal
11	1	15424	Spring, Detent, Timer			60405-11	Program Wheel, w/3/4-inch STD Metric Label 0-8 m <sup>3</sup>
12	1	15066	Ball, 1/4-inch Delrin			60405-21	Program Wheel, w/3/4-inch EXT Range 0-40 m <sup>3</sup>
13	1	13018	Pinion, Idler			60405-70	Program Wheel, w/1-1/2 inch EXT Range Label, 0-50,000
14	1	13312	Spring, Idler Shaft	42		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
15	1	13017	Gear, Idler	43		61420-03	Program Wheel, Gear Assy, Filter 2 Min Per Pin
16	1	13164	Gear, Drive			61420-04	Program Wheel, Gear Assy, Softener, 2 Min Per Pin
17	1	13887	Plate, Motor Mounting			61420-06	Program Wheel, Gear Assy, Soft Immed, 2 Min Per Pin
18	1	18743-1	Motor, 120V, 60Hz, 1/30 RPM			61420-42	Program Wheel, Gear Assy, Filter Immed, 2 Min Per Pin
		18752-1	Motor, 100V, 50Hz, 1/30 RPM	*Call your distributor for Part Number			
		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				
31	1	15465	Label, Caution				
32	1	14007	Label, Time of Day				

# 3220 METER IMMEDIATE TIMER ASSEMBLY



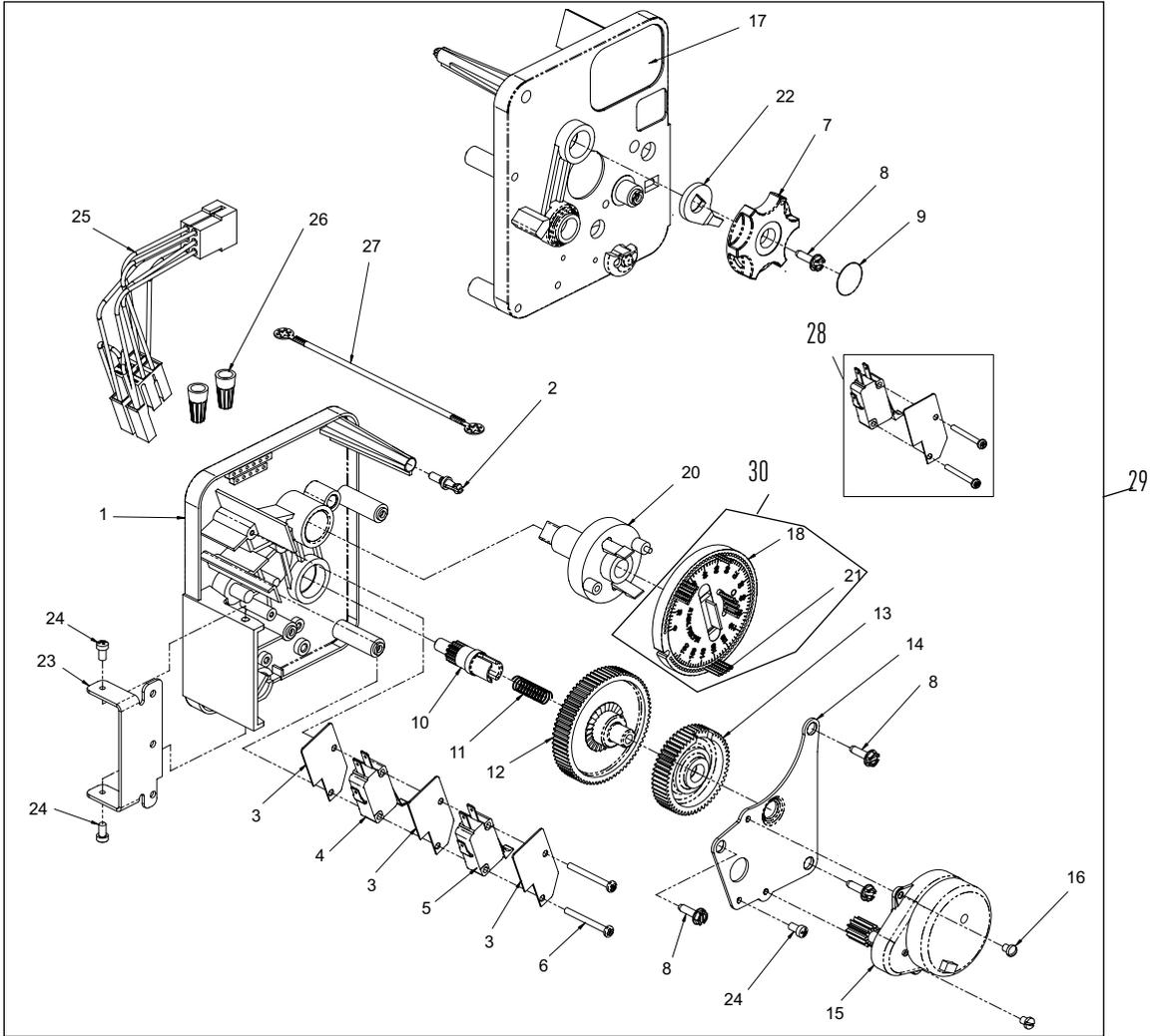
61502-3220 Rev B

# 3220 METER IMMEDIATE TIMER

## ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer	36	1	15055	Gear, Main Drive
2	1	15431	Gear, Cycle Actuator, System #5	37	1	*	Complete 3220 Meter Immediate Timer Assy
3	1	13886	Knob, 3200	38		60405-10	Program Wheel, w/3/4-inch STD Label 0-2,100 gal
4	4	13296	Screw, Hex Wsh, 6-20 x 1/2			60405-20	Program Wheel, w/3/4-inch EXT Label 0-10,000 gal
5	2	11999	Label, Button			60405-11	Program Wheel, w/3/4-inch STD Metric Label 0-8 m <sup>3</sup>
6	1	13807	Gear, Program Drive Wheel			60405-21	Program Wheel, w/3/4-inch EXT Range 0-40 m <sup>3</sup>
7	1	13806	Retainer, Program Wheel			60405-70	Program Wheel, w/1-1/2 inch EXT Range Label, 0-50,000
8	1	13748	Screw, Flt Hd St, 6-20 x 1/2	39		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
9	1	14265	Spring Clip	40		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	*Call your distributor for Part Number			
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, Sltd 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				
32	2	40422	Nut, Wire, Tan				
33	1	15354-01	Wire, Ground, 4 inches				
34	1	19210-05	Program Wheel Assembly, 9000/3230				
35	17	41754	Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer				

**3230 REMOTE START TIMER ASSEMBLY**



61502-3230R REV A

# 3230 REMOTE START TIMER ASSEMBLY

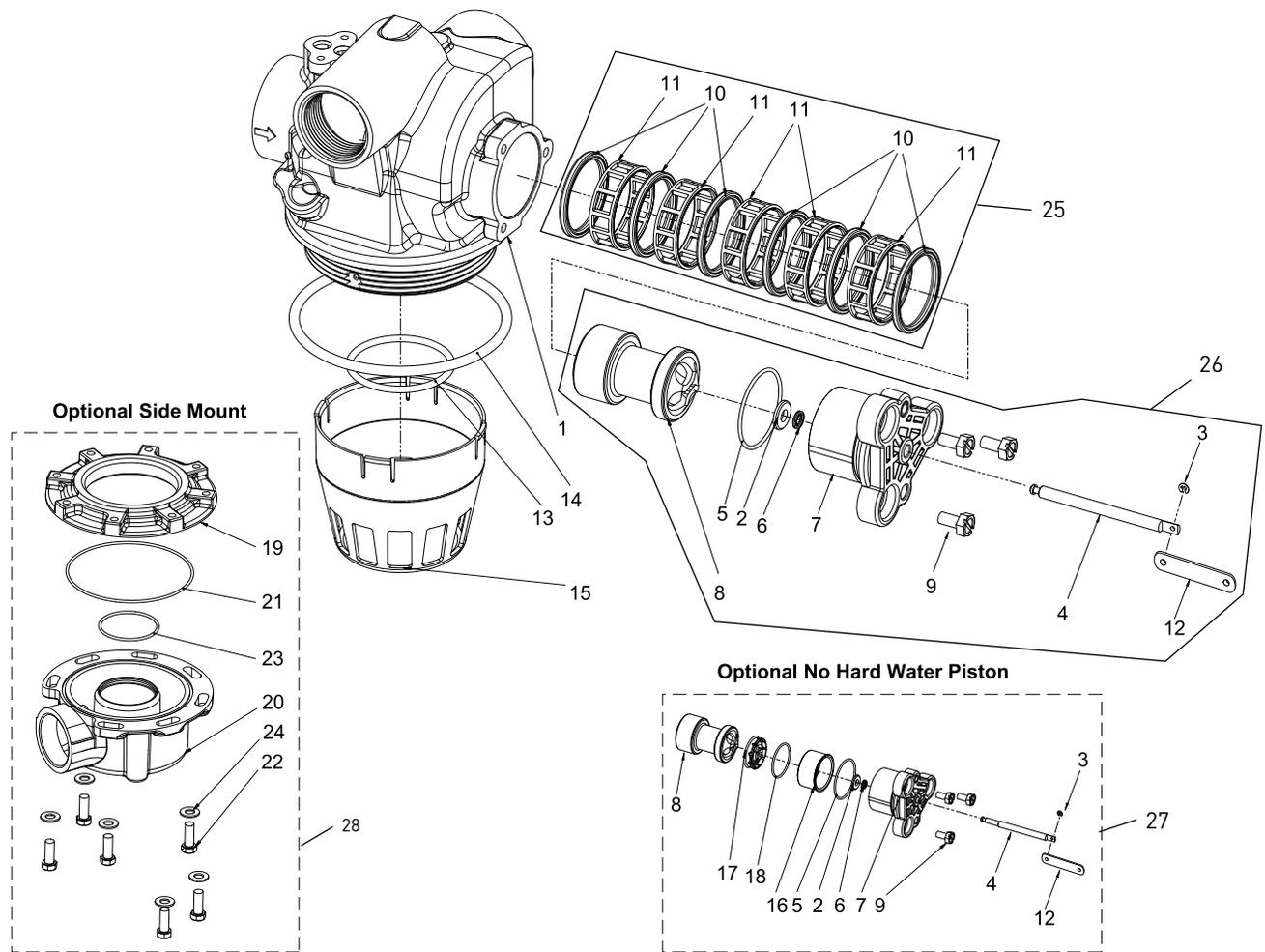
*CONTINUED*

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, 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

Item No.	QTY	Part No.	Description
22	1	13011	Cycle Actuator Arm
23	1	13881	Bracket, Hinge Timer
24	3	11384	Screw, Phil, 6-32 x 1/4 Zinc
25	1	16336	Harness, 3230R
26	2	40422	Nut, Wire, Tan
27	1	15354-01	Wire, Ground, 4 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 VALVE ASSEMBLY



61500-2850s Rev C

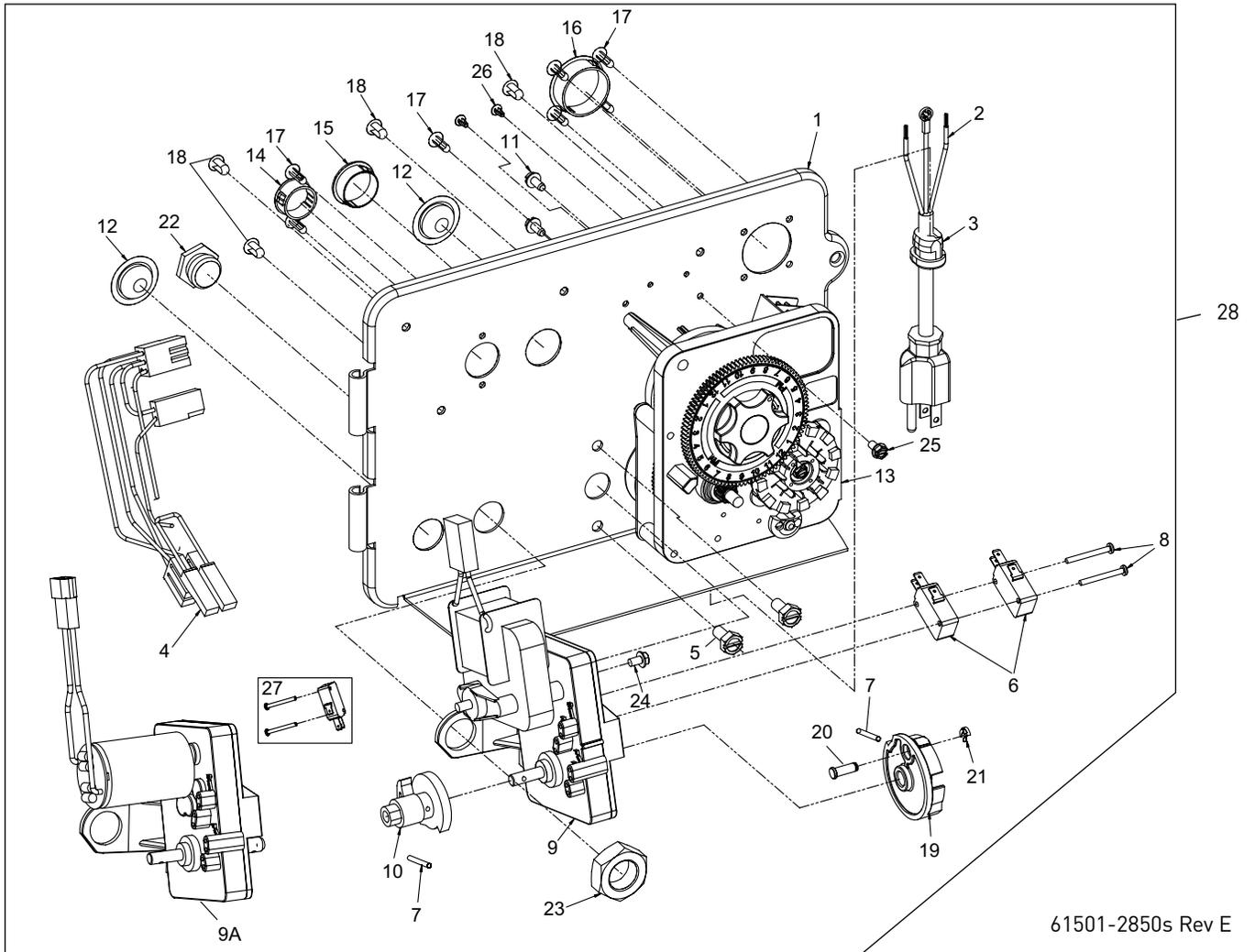
Item No.	QTY	Part No.	Description
1	1	42176-01	Valve Body, 2850s, Machd
2	1	13008	Retainer, End Plug Seal
3	1	42302	Ring, Retaining, .074
4	1	42178	Rod, NHWBP
	1	42394	Rod, Piston, 2850s, Std
	1	42394-01	Rod, Manual Valve
5	1	40952	O-ring, -030
6	1	10209	Quad Ring, -010
7	1	42181	Plug, End, 2850s, 3 Bolt, Black
		42181-02	Plug, End, 2850s, 3 Bolt, White
8	1	42177	Piston, 2850s
9	3	10231	Screw, Slot Hex, 1/4 - 20 x 1/2
10	6	42172	Seal, 2850s, LDF
11	5	42175	Spacer, 2850s, LDF
12	1	42179	Link, Drive, 2850s
*13	1	13577	O-ring, -226
14	1	16455	O-ring, -347

Item No.	QTY	Part No.	Description
15	1	19608-15	Disperser, Commercial, 1-1/2 inch 2850/2900/9500
16	1	42174	Piston, 2850s, NHWBP
17	1	42182	Retainer, NHWBP Piston, O-ring, 2850s
18	1	17242	O-ring, -026
19	1	40316	Adapter, Side Mount
20	1	40310	Base, 2850/2900/2930, Rotating
21	1	40368	O-ring, -160, Sidemount, Flange
22	7	19768	Screw, Hex Hd, 3/8 - 16 x 1
23	1	40372	O-ring, -142
24	7	40375	Washer, Flat, 3/8-inch, Type A
25		61632	Seal & Spacer Kit, 2850s
		61632-30	Seal & Spacer Kit, 2850s, 559PE
		61632-20	Seal & Spacer Kit, 2850s, Hot

## CONTROL VALVE ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
			Water	..... 61640-75.....			DLFC, Plastic, 75 gpm
26 .....		61630-00.....	Piston Assy, 2850s, STD, HWBP	..... 40565-11.....			Connector Assy, 1-1/4 inch BSP, Plastic, DLFC to Valve
		..... 61630-02.....	Piston Assy, 2850s, Manual Valve	..... 40565-01.....			Connector Assy, 1-1/4 inch NPT, Plastic, DLFC to Valve
		..... 61630-01HW...	Piston Assy, 2850s, Hot Water, HWBP	..... 61561-10.....			Connector Assy, 1-inch BSP, Brass, DLFC to Drain Piping
27 .....		61631-00.....	Piston Assy, 2850s, NHWBP	..... 40563-11.....			Connector Assy, 1-inch BSP, Plastic, DLFC to Drain Piping
28 .....		61415.....	Adapter Assy, Rotating 2850s/2850/2900s	..... 61561.....			Connector Assy, 1-inch NPT, Brass, DLFC to Drain piping
		..... 61415-20.....	Adapter Assy, BSP, Rotating 2850s/2850/2900s	..... 40563-01.....			Connector Assy, 1-inch NPT, Plastic, DLFC to Drain
<b>Not Shown:</b>				..... 41242-01.....			Connector Assy, 1-inch & 1-1/4 inch, Sweat, DLFC to Drain Piping
2 .....		15137.....	Screw, Hex, Wsh, Mach, 10-24 x 3/8	..... 61562-10.....			Connector Assy, 1-1/2 inch BSP, Brass, DLFC to Drain Piping
1 .....		11893.....	Cap, Injector, Stainless Steel	..... 42241-11.....			Connector Assy, 1-1/2 inch BSP, Plastic, DLFC to Drain Piping
1 .....		14805.....	Gasket, Injector Body	..... 61562.....			Connector Assy, 1-1/2 inch NPT, Brass, DLFC to Drain Piping
		..... 61643-00.....	DLFC Assy, 1-1/4 inch, Brass, Blank	..... 42241-01.....			Connector Assy, 1-1/2 inch NPT, Plastic, DLFC to Drain Piping
		..... 61643-8.0.....	DLFC Assy, 1-1/4 inch, Brass, 8.0 gpm	..... 41243-01.....			Connector Assy, 1-1/4 inch and 1-1/2 inch, DLFC to Drain Piping
		..... 61643-9.0.....	DLFC Assy, 1-1/4 inch, Brass, 9.0 gpm	..... 42414-11.....			Connector Assy, 3/4-inch BSP, DLFC to Drain Piping
		..... 61643-10.....	DLFC Assy, 1-1/4 inch, Brass, 10.0 gpm	..... 42414-01.....			Connector Assy, 3/4-inch NPT, DLFC to Drain Piping
		..... 61643-12.....	DLFC Assy, 1-1/4 inch, Brass, 12.0 gpm	..... 61626.....			Connector Assy, 3/4-inch and 1-inch, DLFC to Drain Piping
		..... 61643-15.....	DLFC Assy, 1-1/4 inch, Brass, 15.0 gpm	..... 41596.....			Connector, Brass, 1-inch NPT, DLFC to Drain Piping
		..... 61643-20.....	DLFC Assy, 1-1/4 inch, Brass, 20.0 gpm	*Do not use o-ring if control is side mounted			
		..... 61643-25.....	DLFC Assy, 1-1/4 inch, Brass, 25.0 gpm				
		..... 61640-00.....	DLFC, Plastic, Less Buttons				
		..... 61640-000.....	DLFC, Plastic, Less Buttons				
		..... 61640-01.....	DLFC, Plastic, Less Button				
		..... 61640-08.....	DLFC, Plastic, 8 gpm				
		..... 61640-09.....	DLFC, Plastic, 9 gpm				
		..... 61640-10.....	DLFC, Plastic, 10 gpm				
		..... 61640-15.....	DLFC, Plastic, 15 gpm				
		..... 61640-20.....	DLFC, Plastic, 20 gpm				
		..... 61640-25.....	DLFC, Plastic, 25 gpm				
		..... 61640-30.....	DLFC, Plastic, 30 gpm				
		..... 61640-35.....	DLFC, Plastic, 35 gpm				
		..... 61640-40.....	DLFC, Plastic, 40 gpm				
		..... 61640-45.....	DLFC, Plastic, 45 gpm				
		..... 61640-50.....	DLFC, Plastic, 50 gpm				
		..... 61640-55.....	DLFC, Plastic, 55 gpm				
		..... 61640-60.....	DLFC, Plastic, 60 gpm				
		..... 61640-65.....	DLFC, Plastic, 65 gpm				
		..... 61640-70.....	DLFC, Plastic, 70 gpm				

# POWERHEAD ASSEMBLY



61501-2850s Rev E

## POWERHEAD ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description
1	1	18697-15	Back Plate, Hinged
2	1	11839	Power Cord, 12-foot US, Flat, 120V
		40084-12	Power Cord, 12-foot Round, 120V
		40085-12	Power Cord, 12-foot Round, 240V
		19303	Power Cord, 8-foot Australian
		11545-01	Power Cord, 4-foot, Black, European
		19885-01	Power Cord Assy Japanese
3	1	13547	Strain Relief, Flat Cord
		13547-02	Strain Relief, Round Cord
4	1	40400	Harness, Drive, Designr/Envirmtl
5	2	10231	Screw, Slot, Hex 1/4 - 20 x 1/2
6	2	10218	Switch, Micro
7	2	10338	Pin, Roll, 3/32 x 7/8
8	2	14923	Screw, Pan Hd, Mach 4-40 x 1
9	1	41543	Motor, Drive, 115V, 50/60 Hz
		41545	Motor, Drive, 230V, 50/60 Hz
9A	1	42579	Motor, Drive, 24Vac/Dc, 50/60 Hz
10	1	12777	Cam, Shut-off Valve
11	2	10300	Screw, Hex Wash Hd, 8 x 3/8
12	2	19691	Plug, .750 Dia, Hole, Flush
13	1		Timer Assy, 3200
14	1	15806	Plug, Hole (Heyco)

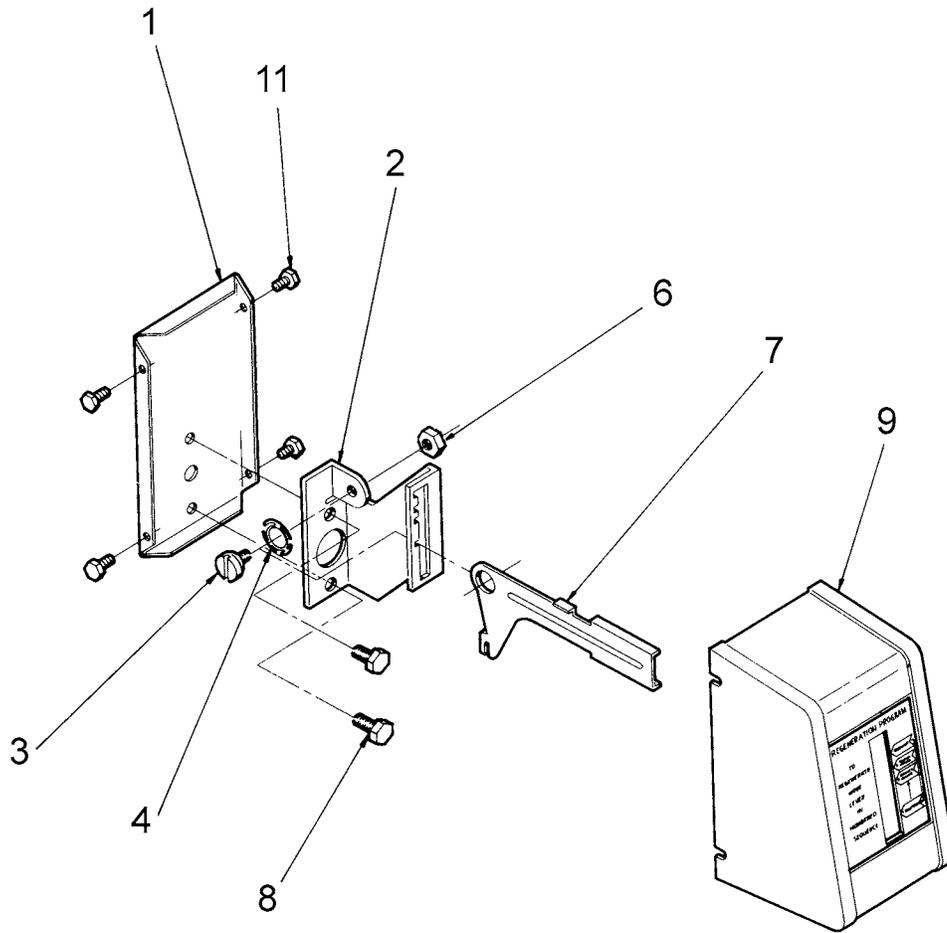
Item No.	QTY	Part No.	Description
15	1	16493	Plug, Hole, (Heyco) .88 Dia
16	1	17421	Plug, 1.20 Hole
17	7	19800	Plug, Hole, .140 Dia
18	4	19801	Plug, .190 Dia
19	1	60160-40	Cam, Drive, 2850s, STF, Gray
20	1	13366	Connecting Rod Bearing
21	1	42761	Ring, Retaining, 2850s, Clip
22	1	43560	Fitting, Brine Valve
23	1	10269	Nut, Jam, 3/4-16
24	1	10872	Screw, Hex Wsh, 8-32 x 17/64
25	1	14202-01	Screw, Hex Wsh, 8-32 x 5/16
26	2	41581	Plug, Hole, .125 Dia, White
27	1		Switch Kit Assy, 1500 thru 2850s
28	*		Powerhead Assy, 2850s

### Not Shown:

1		60219-02	Cover Assy, Enviromental, Black with Clear Window
1		17741	Meter Cable, 16.5 inch long, 1-1/2 inch Brass Meter
1		15513	Meter Cable, 17.5-inch long, 1-1/2 inch Stainless Steel Meter
1		17470	Cable Guide Assy, 2850/3150

\*Call your distributor for Part Number

# MANUAL DRIVE ASSEMBLY



60409 Rev G

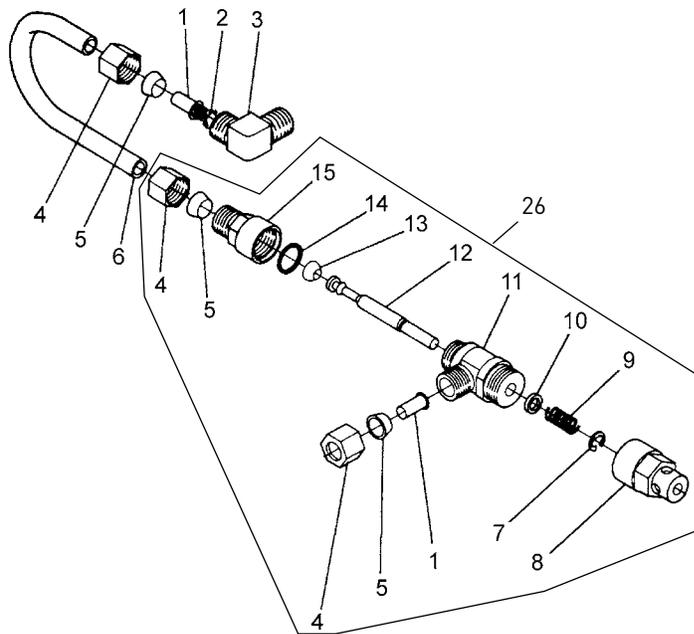
Item No.	QTY	Part No.	Description
1	1	12593	Backplate, Manual
2	1	42186	Bracket, 2850s, manual
3	1	12596	Screw, Spec Mach, 1/4 - 20 x 1/2
4	1	12707	Washer, Spring
6	1	11235	Nut, Hex, 1/4 - 20, Mach Screw, Zinc
7	1	42185	Lever, 2850s, Manual
8	2	10231	Screw, Slot Hex, 1/4 - 20 x 1/2 18-8 SS
9	1	60224-32	Cover Assy, Manual, Filter
	1	60224-33	Cover Assy, Manual, Softener
11	4	10300	Screw, Slot Hex Wsh, 8-18 x 3/8 Type "B" RC44-47

**Not Shown:**

1	1	10909	Pin, Link
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# 1600 SERIES BRINE SYSTEM



60029 Rev C

Item No.	QTY	Part No.	Description
1	2	10332	Fitting, Insert, 3/8
2	1	12767	Screen, Brine
3	1	10328	Fitting, Elbow, 90 Deg. 1/4 PT x 3/8 Tube
4	3	10329	Fitting, Tube, 3/8 Nut, Brass
5	3	10330	Fitting, Sleeve, 3/8 Celcon
6	1	16508	Tube, Brine, 1600, PVC
		16508-01	Tube, Brine Valve, 2850/2900s
		12774	Tube, Brine Valve, 1500
		40027	Tube, Brine Valve, 2510
		15221	Tube, Brine Valve, 2750/2900
		42184	Tube, Brine Valve, 2850s
		41683*	Tube, Brine Valve, UF, 1600/1650
7	1	10250	Ring, Retaining
8	1	11749	Guide, Brine Valve Stem
9	1	10249	Spring, Brine Valve
10	1	12550	Quad Ring, -009
11	1	12748	Brine Valve Body Assy, 1600 w/Quad Ring
12	1	12552-02	Brine Valve Stem, 1600, with seat
13	1	12626	Seat, Brine Valve

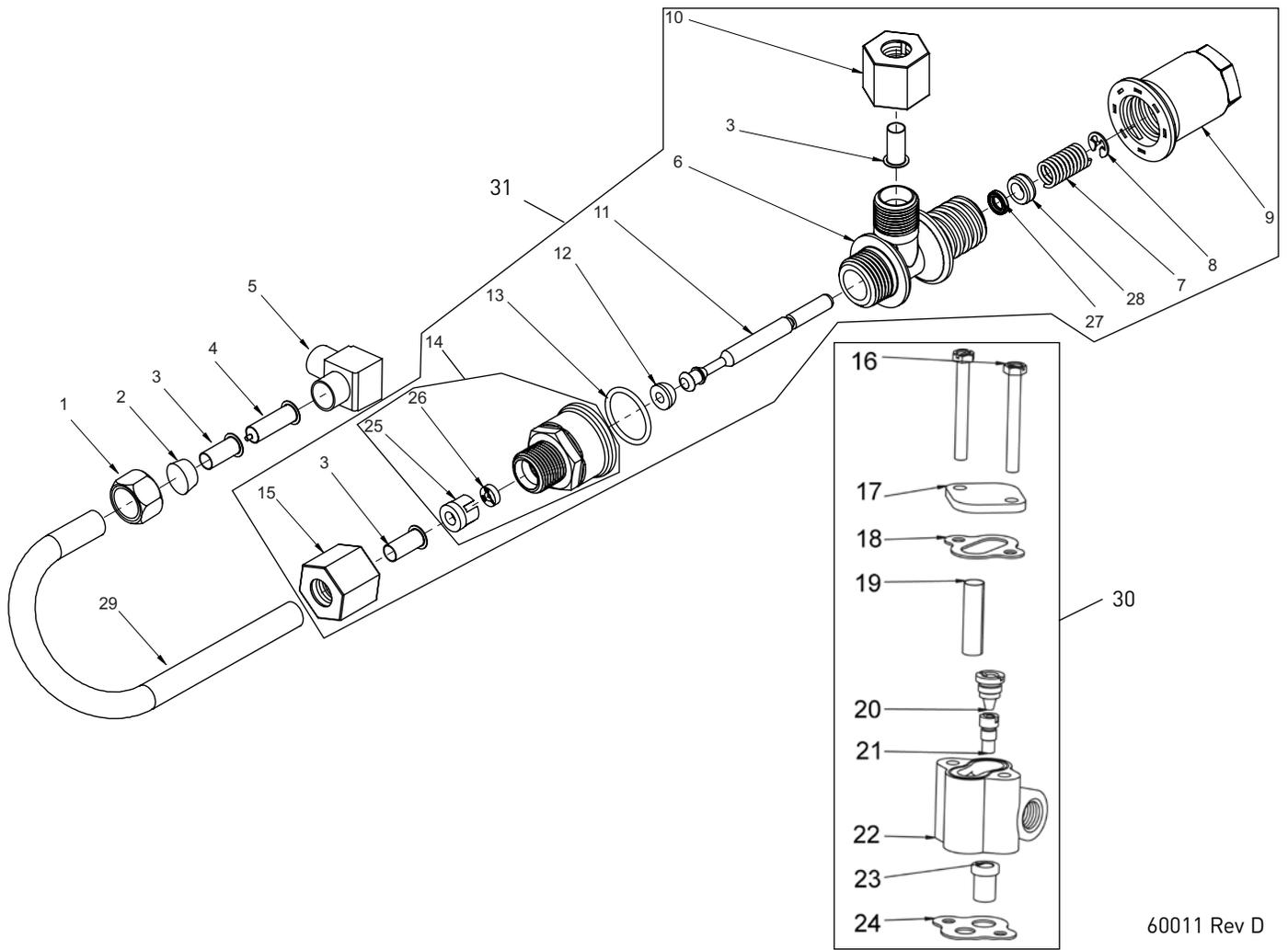
Item No.	QTY	Part No.	Description
14	1	11982	O-ring, -016
15	1	60020-25	BLFC, .25 GPM, 1600
		60020-50	BLFC, .50 GPM, 1600
		60020-100	BLFC, 1.0 GPM, 1600
16	2	10692	Screw, Slot Hex Hd, 10 - 24X 18-8 Stainless Steel
17	1	11893	Cap, Injector, SS
18	1	10229	Gasket, Injector Cap, 1600
19	1	10227	Screen, Injector
20	1	10913-000	Nozzle, Injector, #000, Brown
		10913-00	Nozzle, Injector, #00, Violet
		10913-0	Nozzle, Injector, #0, Red
		10913-1	Nozzle, Injector, #1, White
		10913-2	Nozzle, Injector, #2, Blue
		10913-3	Nozzle, Injector, #3, Yellow
		10913-4	Nozzle, Injector, #4, Green
		12973-0	Nozzle, Injector, #0, PVC Grey
		12973-1	Nozzle, Injector, #1, PVC Grey
		12973-2	Nozzle, Injector, #2, PVC Grey
		12973-3	Nozzle, Injector, #3, PVC Grey
		12973-4	Nozzle, Injector, #4, PVC Grey
		10225-0	Nozzle, Injector, #0, Stainless Steel
		10225-1	Nozzle, Injector, #1, Stainless

# 1600 SERIES BRINE SYSTEM *CONTINUED*

Item No.	QTY	Part No.	Description
			Steel
		10225-2	Nozzle, Injector, #2, Stainless Steel
		10225-3	Nozzle, Injector, #3, Stainless Steel
		10225-4	Nozzle, Injector, #4, Stainless Steel
21	1	10914-000	Throat, Injector, #000, Brown
		10914-00	Throat, Injector, #00, Violet
		10914-0	Throat, Injector, #0, Red
		10914-1	Throat, Injector, #1, White
		10914-2	Throat, Injector, #2, Blue
		10914-3	Throat, Injector, #3, Yellow
		10914-4	Throat, Injector, #4, Green
		12974-0	Throat, Injector, #0, PVC Grey
		12974-1	Throat, Injector, #1, PVC Grey
		12974-2	Throat, Injector, #2, PVC Grey
		12974-3	Throat, Injector, #3, PVC Grey
		12974-4	Throat, Injector, #4, PVC Grey
		10226-0	Throat, Injector, #0, Stainless Steel
		10226-1	Throat, Injector, #1, Stainless Steel
		10226-2	Throat, Injector, #2, Stainless Steel
		10226-3	Throat, Injector, #3, Stainless Steel
		10226-4	Throat, Injector, #4, Stainless Steel
22	1	17776	Body, Injector, 1600
	1	17776-02*	Body, Injector, 1600 Upflow
23	1	16221	Dispenser, Air
24	1	14805	Gasket, Injector Body, 1600/1700
25		60480-01	Injector Assy, 1600, #1 Plastic
		60480-02	Injector Assy, 1600, #2 Plastic
		60480-03	Injector Assy, 1600, #3 Plastic
		60480-04	Injector Assy, 1600, #4 Plastic
		60481-21	Injector Assy, 1600, #1, S.S. Brass
		60481-22	Injector Assy, 1600, #2, S.S. Brass
		60481-23	Injector Assy, 1600, #3, S.S. Brass
		60080-11	Injector Assy, 1600, #1, PVC
		60080-12	Injector Assy, 1600, #2, PVC
		60080-14	Injector Assy, 1600, #4, PVC
26		60029-010	Brine Valve, 1600, 0.25 gpm
		60029-020	Brine Valve, 1600, 0.50 gpm
		60029-030	Brine Valve, 1600, 1.0 gpm

\*Upflow Only

# 1650 BRINE SYSTEM ASSEMBLY



60011 Rev D

Item No.	QTY	Part No.	Description
1	1	10329	Fitting, Tube, 3/8 Nut, Brass
2	1	10330	Fitting, Sleeve, 3/8 Celcon
3	3	10332	Fitting, Insert, 3/8
4	1	12767	Screen, Brine
5	1	10328	Fitting, Elbow, 90 Deg 1/4 NPT x 3/8T
6	1	17884	Brine Valve Body Assy, 1650
7	1	10249	Spring, Brine Valve
8	1	10250	Ring, Retaining
9	1	17906	Guide, Brine Valve Stem
10	1	19625	Nut Assy, 3/8-inch, Plastic
11	1	12552-02	Brine Valve Stem, 1600
12	1	12626	Seat, Brine Valve
13	1	16924	O-ring, -018
14**	1	60010-25	BLFC, 1650, .25 GPM, Plastic

Item No.	QTY	Part No.	Description
1	1	60010-50	BLFC, 1650, .50 GPM, Plastic
1	1	60010-100	BLFC, 1650, 1.0 GPM, Plastic
15	1	19625	Nut Assy, 3/8-inch, Plastic
16	2	10692	Screw, Slot Hex Hd, 10 - 24X 18-8 Stainless Steel
17	1	11893	Cap, Injector, Stainless Steel
18	1	10229	Gasket, Injector Cap, 1600
19	1	10227	Screen, Injector
20	1	10913-000	Nozzle, Injector, #000, Brown
		10913-00	Nozzle, Injector, #00, Violet
		10913-0	Nozzle, Injector, #0, Red
		10913-1	Nozzle, Injector, #1, White
		10913-2	Nozzle, Injector, #2, Blue
		10913-3	Nozzle, Injector, #3, Yellow
		10913-4	Nozzle, Injector, #4, Green
		12973-0	Nozzle, Injector, #0, PVC Grey
		12973-1	Nozzle, Injector, #1, PVC Grey
		12973-2	Nozzle, Injector, #2, PVC Grey
		12973-3	Nozzle, Injector, #3, PVC Grey

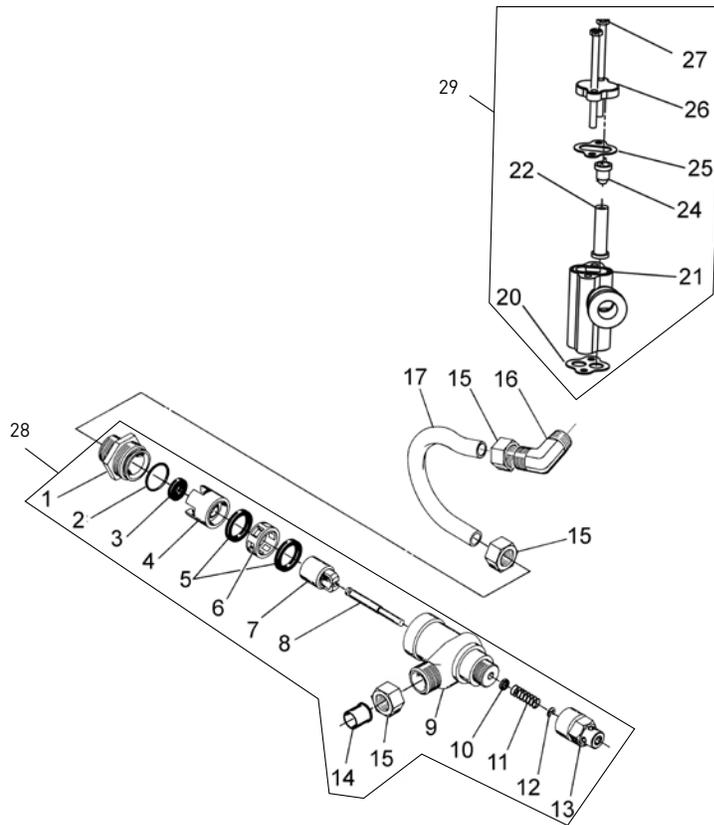
## 1650 BRINE SYSTEM ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
		12973-4	Nozzle, Injector, #4, PVC Grey	1		12094	Washer, Flow Control .25 GPM
		10225-0	Nozzle, Injector, #0, Stainless Steel	1		12097	Washer, Flow Control 1.0 GPM
		10225-1	Nozzle, Injector, #1, Stainless Steel	27	1	12550	Quad Ring -009
		10225-2	Nozzle, Injector, #2, Stainless Steel		1	12550-01	Quad Ring -009 560CD
		10225-3	Nozzle, Injector, #3, Stainless Steel	28	1	17908	Sleeve, Brine Valve Stem
		10225-4	Nozzle, Injector, #4, Stainless Steel	29	1	16508-01	Tube, Brine Valve, 2850/1600
21	1	10914-000	Throat, Injector, #000, Brown		1	40027	Tube, Brine Valve, 2510
		10914-00	Throat, Injector, #00, Violet		1	42184	Tube, Brine Valve, 2850s
		10914-0	Throat, Injector, #0, Red		1	12774	Tube, Brine Valve, 1500
		10914-1	Throat, Injector, #1, White		1	15221	Tube, Brine Valve, 2750
		10914-2	Throat, Injector, #2, Blue		1	41683*	Tube, Brine Valve, UF, 1600/1650
		10914-3	Throat, Injector, #3, Yellow	30		60480-01	Injector Assy, 1600, #1 Plastic
		10914-4	Throat, Injector, #4, Green			60480-02	Injector Assy, 1600, #2 Plastic
		12974-0	Throat, Injector, #0, PVC Grey			60480-03	Injector Assy, 1600, #3 Plastic
		12974-1	Throat, Injector, #1, PVC Grey			60480-04	Injector Assy, 1600, #4 Plastic
		12974-2	Throat, Injector, #2, PVC Grey			60481-21	Injector Assy, 1600, #1, S.S. Brass
		12974-3	Throat, Injector, #3, PVC Grey			60481-22	Injector Assy, 1600, #2, S.S. Brass
		12974-4	Throat, Injector, #4, PVC Grey			60481-23	Injector Assy, 1600, #3, S.S. Brass
		10226-0	Throat, Injector, #0, Stainless Steel			60080-11	Injector Assy, 1600, #1, PVC
		10226-1	Throat, Injector, #1, Stainless Steel			60080-12	Injector Assy, 1600, #2, PVC
		10226-2	Throat, Injector, #2, Stainless Steel			60080-14	Injector Assy, 1600, #4, PVC
		10226-3	Throat, Injector, #3, Stainless Steel	31		60011-010	Brine Valve, 1650, 0.25 gpm
		10226-4	Throat, Injector, #4, Stainless Steel			60011-020	Brine Valve, 1650, 0.50 gpm
22	1	17776	Body, Injector, 1600			60011-030	Brine Valve, 1650, 1.0 gpm
	1	17776-02*	Body, Injector, 1600 Upflow				
23	1	16221	Dispenser, Air				
24	1	14805	Gasket, Injector Body, 1600/1700				
25	1	12098	Retainer, Flow Control				
26	1	12095	Washer, Flow Control .50 GPM				

\*Upflow Only

\*\*Item 14 includes Items 25 and 26

# 1700 BRINE SYSTEM ASSEMBLY



60034 Rev D

# 1700 BRINE SYSTEM ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description
1	1	14792	Plug, End, Brine Valve
2	1	13201	Quad Ring, -020
3	1	12085	Washer, Flow, 1.2 GPM
		12086	Washer, Flow, 1.5 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
4	1	14785	Retainer, Flow Control
5	3	14811	O-ring, -210, 560CD, Brine
6	1	14798	Spacer, 1700, Brine
7	1	14795	Piston, Brine Valve
8	1	14797	Brine Valve Stem
9	1	14790	Brine Valve Body
10	1	12550	Quad Ring, -009
11	1	15310	Spring, Brine Valve
12	1	10250	Retaining Ring
13	1	15517	Guide, Stem
14	1	15415	Fitting, Insert, 1/2-inch, Tube
15	3	15414	Nut, 2900, w/Sleeve
16	1	15413	Fitting, Elbow, Male, 1/2T x 3/8 NPT
17	1	15416	Tube, Brine, 2900/2750
		16460	Tube, Brine, 2850/2900s
		41447*	Tube, Brine, 2900s, U/F
		42183	Tube, Brine, 1700, 2850s
20	1	14805	Gasket, Injector Body 1600/1700
21	1	17777	Body, Injector, 1700
		17777-02*	Body, Injector, 1700 U/F
22	1	14802-03c	Throat, Injector, #3c, Yellow
		14802-04c	Throat, Injector, #4c, Green
		14802-05c	Throat, Injector, #5c, White
		14802-06c	Throat, Injector, #6c, Red
24		14801-03c	Nozzle, Injector, #3c, Yellow
		14801-04c	Nozzle, Injector, # 4c, Green
		14801-05c	Nozzle, Injector, # 5c, White
		14801-06c	Nozzle, Injector, # 6c, Red
25	1	10229	Gasket, Injector Cap, 1600
26	1	11893	Cap, Injector, Stainless Steel
		10228	Cap, Injector
27	2	14804	Screw, Hex Hd Mach, 10 - 24 x 2-3/4 inch 18-8 Stainless Steel

Item No.	QTY	Part No.	Description
28	1	60034-00	Brine Valve, 1700, Blank
		60034-10	Brine Valve, 1700, 1.0 gpm
		60034-12	Brine Valve, 1700, 1.2 gpm
		60034-15	Brine Valve, 1700, 1.5 gpm
		60034-20	Brine Valve, 1700, 2.0 gpm
		60034-24	Brine Valve, 1700, 2.4 gpm
		60034-30	Brine Valve, 1700, 3.0 gpm
		60034-40	Brine Valve, 1700, 4.0 gpm
		60034-50	Brine Valve, 1700, 5.0 gpm
29	1	60381-03	Injector Assy, 1700, #3c, Complete
		60381-04	Injector Assy, 1700, #4c, Complete
		60381-05	Injector Assy, 1700, #5c, Complete
		60381-06	Injector Assy, 1700, #6c, Complete

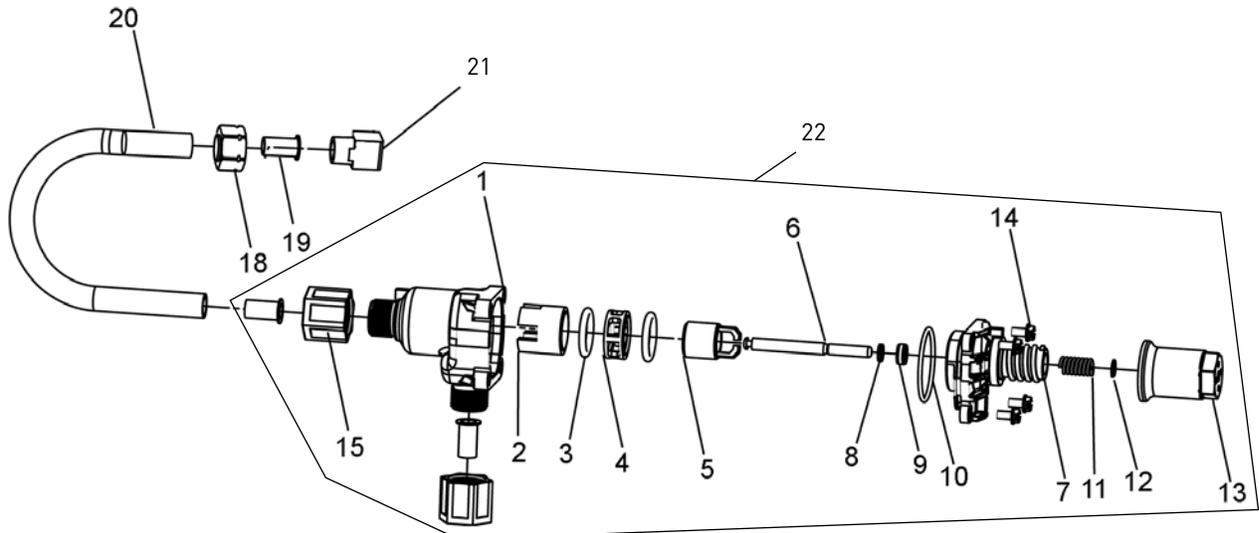
**Not Shown:**

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

\*Upflow Only

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

# 1710 BRINE SYSTEM ASSEMBLY



60604 Rev F

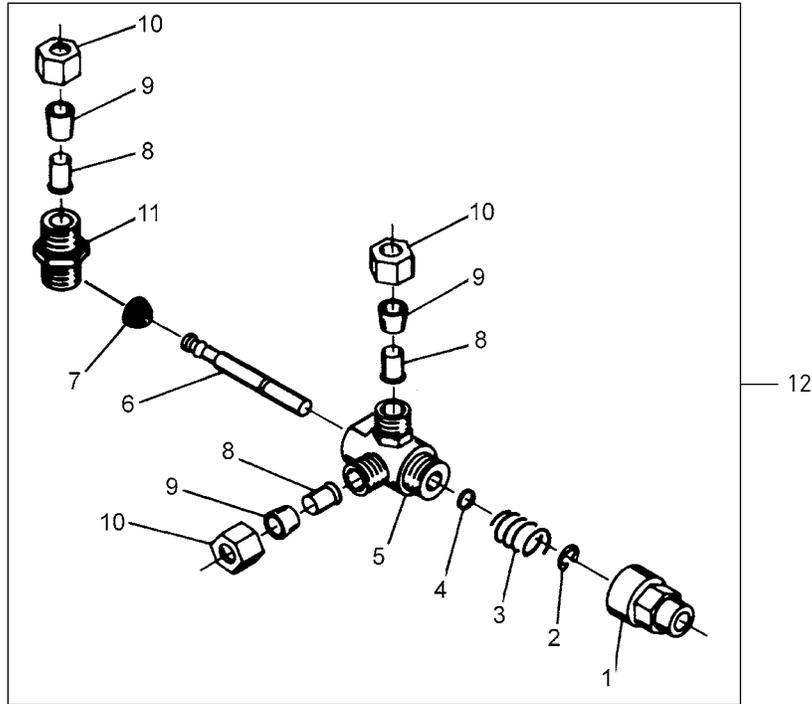
Item No.	QTY	Part No.	Description
1	1	41202	Brine Valve, 1700, Plastic, Top
2	1	14785-01	Retainer, Flow Control
3	1	14811	O-Ring, -210, 560CD, Brine
4	1	14798	Spacer, 1700, Brine
5	1	14795	Piston, Brine Valve
6	1	41203	Stem, Brine, 1710, Plastic, 2900
7	1	41201	Brine Valve, 1700, Plastic, Bottom
8	5	17908	Sleeve, Brine Valve Stem
9	1	12550	Quad Ring, -009
10	3	41547	O-Ring, 2mmx35mm
11	2	15310	Spring, Brine Valve
12	2	10250	Ring, Retaining
13	1	17906	Guide, Brine Valve Stem
14	2	14202-01	Screw, Hex Wsh Mach, 8-32 X 5/16
15	2	41056	Nut Assembly, 1/2-inch Plastic
18	1	15414	Nut, 2900, w/Sleeve
19	1	15415	Fitting, Insert, 1/2-inch, Tube
20	1	16460	Tube, Brine, 2850, 2900s
	1	42183	Tube, Brine, 1700/2850s
	1	15416	Tube, Brine, 2900/2750
	1	41447*	Tube, Brine, 2900s U/F
21	1	15413	Fitting, Elbow, Male, 1/2T X

Item No.	QTY	Part No.	Description
22		60605-00	Brine Valve, 1710, 2750, Blank
		60605-10	Brine Valve, 1710, 2750, 1.0 gpm
		60605-12	Brine Valve, 1710, 2750, 1.2 gpm
		60605-15	Brine Valve, 1710, 2750, 1.5 gpm
		60605-20	Brine Valve, 1710, 2750, 2.0 gpm
		60605-24	Brine Valve, 1710, 2750, 2.4 gpm
		60605-30	Brine Valve, 1710, 2750, 3.0 gpm
		60605-40	Brine Valve, 1710, 2750, 4.0 gpm
		60605-50	Brine Valve, 1710, 2750, 5.0 gpm

### Not Shown

1		19151	Washer, Flow, 1.0 gpm
1		17996	Disperser, Air, Injector
1		414193-00	Label, Blank, BLFC, 1710

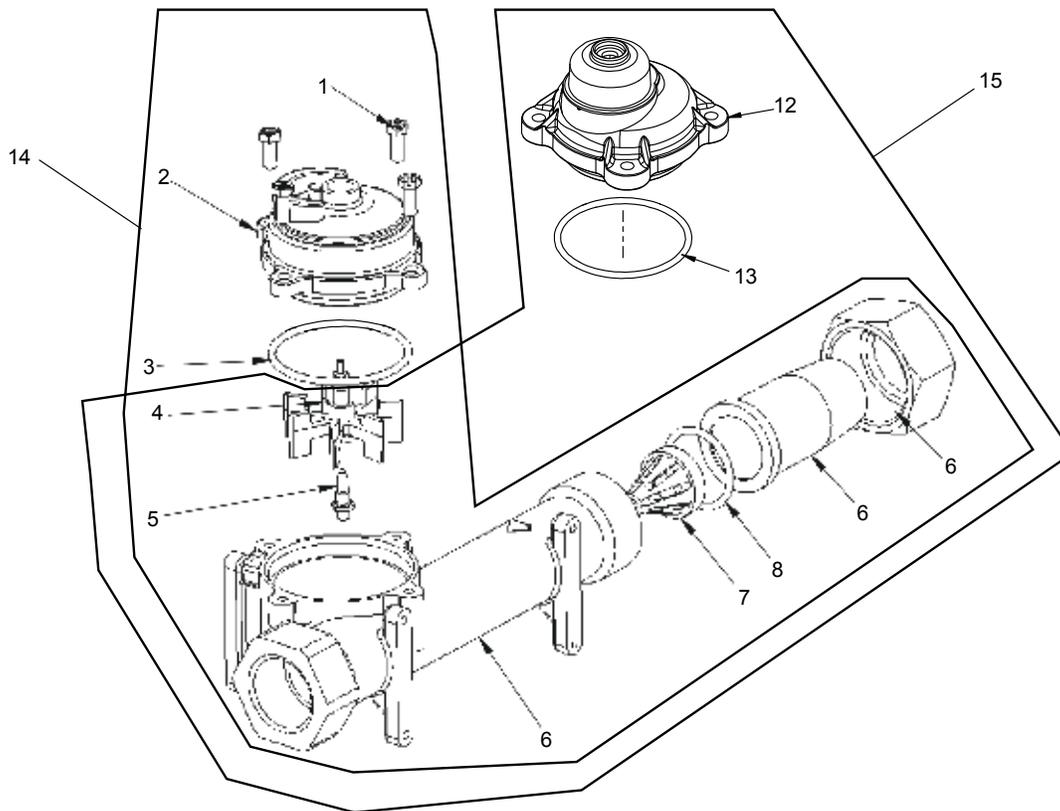
# 1600 SERVICE VALVE OPERATOR ASSEMBLY (OLD STYLE)



60150 Rev A

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

# 1-INCH BRASS METER ASSEMBLY



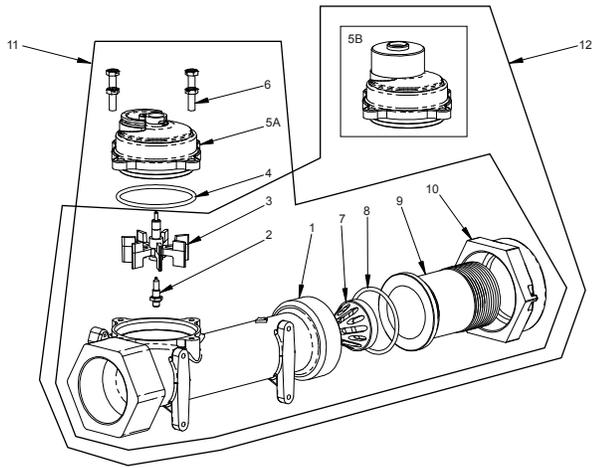
Item No.	QTY	Part No.	Description
1	4	12112	Screw, Slotted Hex Head, #10 - 24 x .50
2	1	14038	Cap, Meter, STD Range, Plastic
3	1	13847	O-ring, -137
4	1	13509	Impeller, Meter
	1	13509-01	Impeller, Celcon, Hot Water
5	1	13882	Post, Meter Impeller
6	1	14959	Body, Meter, 27550
	1	60628NP	Meter Assy, 1-inch, NP
		14959	Body, Meter, 2750
		14961	Fitting, Nipple, 1-inch, Quick Connect
		14962	Nut, 1-inch Meter, Quick Connect
7	1	14960	Flow Straightener
8	1	13287	O-ring, 123
12	1	15150	Meter Cap Assy, Ext, Range, Plastic
13	1	13847	O-ring, -137
14		60391	Meter Assy, 1-inch, NPT, STD Range, Brass, Paddlewheel
		60391NP	Meter Assy, 1-inch Inline, NPT, STD Nickel Plated, Paddlewheel
		60391HW	Meter Assy, 1-inch Inline, NPT, STD, Brass, Hot Water, Paddlewheel

Item No.	QTY	Part No.	Description
15		60392	Meter Assy, 1-inch Inline, NPT EXT Range
		60392NP	Meter Assy, 1-inch Inline, NPT, EXT Brass Body, Nickel Plated, Paddlewheel

### Not Shown

1		15218	Meter Cap Assy, STD Range, Brass, Hot Water
1		15237	Meter Cap Assy, EXT Range, Brass, Hot Water

# 1-1/2 INCH BRASS METER ASSEMBLY



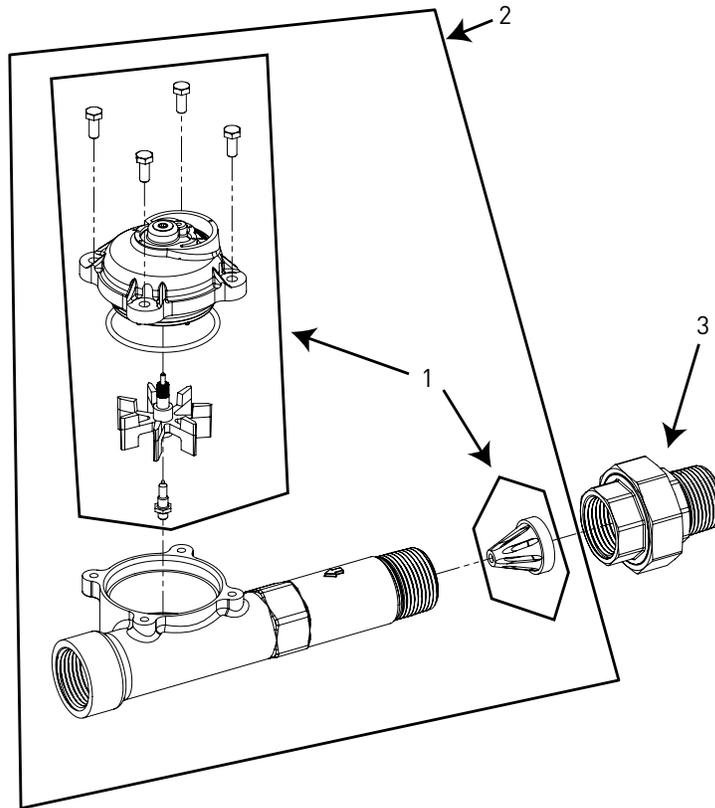
Item No.	QTY	Part No.	Description
1	1	17569	Body, Meter, 2850/9500
2	1	13882	Post, Meter Impeller
3	1	13509	Impeller, Meter
	1	13509-01	Impeller, Celcon, Hot Water
4	1	13847	O-Ring, -137, Std/560CD, Meter
5A	1	14038	Meter Cap Assy, STD Range, Plastic
5B	1	15150	Meter Cap Assy, Ext Range, Plastic
6	4	12112	Screw, Hex Hd Mach, 10-24 x 1/2 18-8 Stainless Steel
7	1	17542	Flow Straightener, 1-1/2 inch
8	1	12733	O-Ring, -132
9	1	17544	Fitting, 1-1/2 inch Quick Connector
10	1	17543	Nut, 1-1/2 inch, Q/C
11		60610-01	Meter Assy, 1-1/2 inch, NPT, STD, Brass, Paddlewheel
		60610-01NP	Meter Assy, 1-1/2 inch Inline, NPT, STD Brass Body, Nickel Plated, Paddlewheel
		60610-01HW	Meter Assy, 1-1/2 inch Inline, NPT, STD Brass, Hot Water, Paddlewheel
		60610-21	Meter Assy, 1-1/2 inch, BSP, STD, Brass, Paddlewheel
		60610-21NP	Meter Assy, 1-1/2 inch Inline, BSP, STD, Brass Body, Nickel Plated, Paddlewheel
		60611-01	Meter Assy, 1-1/2 inch Inline, NPT, STD, Brass Body, Paddlewheel, Sleeve to 1-inch
		60611-01NP	Meter Assy, 1-1/2 inch Inline, NPT, STD Nickel Plated, Paddlewheel, Sleeve to 1-inch

Item No.	QTY	Part No.	Description
		60611-23	Meter Assy, 1-1/2 inch Inline, BSP, STD, Paddlewheel, Sleeve to 1-inch
		60611-23NP	Meter Assy, 1-1/2 inch Inline, BSP/MET STD, Nickel Plated, Paddlewheel, 1-inch Sleeve
12		60610-02	Meter Assy, 1-1/2 inch, NPT, STD, Brass Paddlewheel
		60610-02NP	Meter Assy, 1-1/2 inch Inline, NPT, EXT Nickel Plate, Paddlewheel
		60610-02HW	Meter Assy, 1-1/2 inch Inline, NPT, EXT Brass, Hot Water, Paddlewheel
		60610-22	Meter Assy, 1-1/2 inch, BSP, EXT, Brass, Paddlewheel
		60610-22NP	Meter Assy, 1-1/2 inch Inline, BSP EXT, Brass Body, Nickel Plate, Paddlewheel
		60611-02	Meter Assy, 1-1/2 inch Inline, NPT, EXT Brass Body, Paddlewheel, Sleeve to 1-inch
		60611-02NP	Meter Assy, 1-1/2 inch Inline, NPT, EXT Nickel Plated, Paddlewheel, Sleeve to 1-inch
		60611-22	Meter Assy, 1-1/2 inch Inline, BSP, EXT Brass Body, Paddlewheel, Sleeve to 1-inch
		60611-22NP	Meter Assy, 1-1/2 inch Inline, BSP, EXT, Nickel, Paddlewheel, Sleeve to 1-inch

## Not Shown

1		17790	Sleeve, Meter, 1 1/2 inch x 1-inch
1		15218	Meter Cap Assy, STD Range, Brass, Hot Water
1		15237	Meter Cap Assy, EXT Range, Brass, Hot Water

## 1-1/2 INCH STAINLESS STEEL METER ASSEMBLY



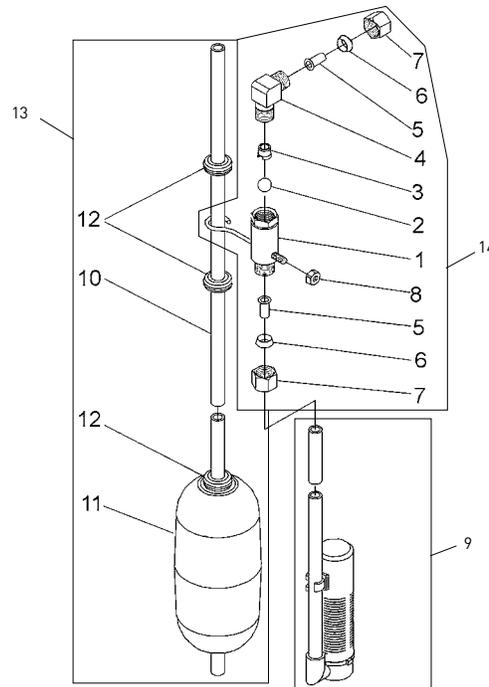
**⚠ IMPORTANT:** For valves equipped with electromechanical timers and stainless steel meters, refer to the Meter Dome and Union Orientation section.

Item No.	QTY	Part No.	Description
1	1	62049-01	Service Kit, 1 inch & 1-1/2 inch Meter, Standard Range
1	1	62049-02	Service Kit, 1 inch & 1-1/2 inch Meter, Extended Range
2	1	61933-10	Meter Assy, 1-1/2 inch, Inline, Stainless Steel, NPT, Standard Range
1	1	61933-11	Meter Assy, 1-1/2 inch, Inline, Stainless Steel, NPT, Extended Range
1	1	61933-20	Meter Assy, 1-1/2 inch, Inline, Stainless Steel, BSP, Standard Range
1	1	61933-21	Meter Assy, 1-1/2 inch, Inline, Stainless Steel, BSP, Extended Range
3	1	44024	Union, 1-1/2 inch, NPT (Optional on models with electronic controls)
1	1	44025	Union, 1-1/2 inch, BSP (Optional on models with electronic controls)

### Not Shown (optional)

1	1	62072	Meter Sleeve, 1-1/2 inch to 1 inch (optional)
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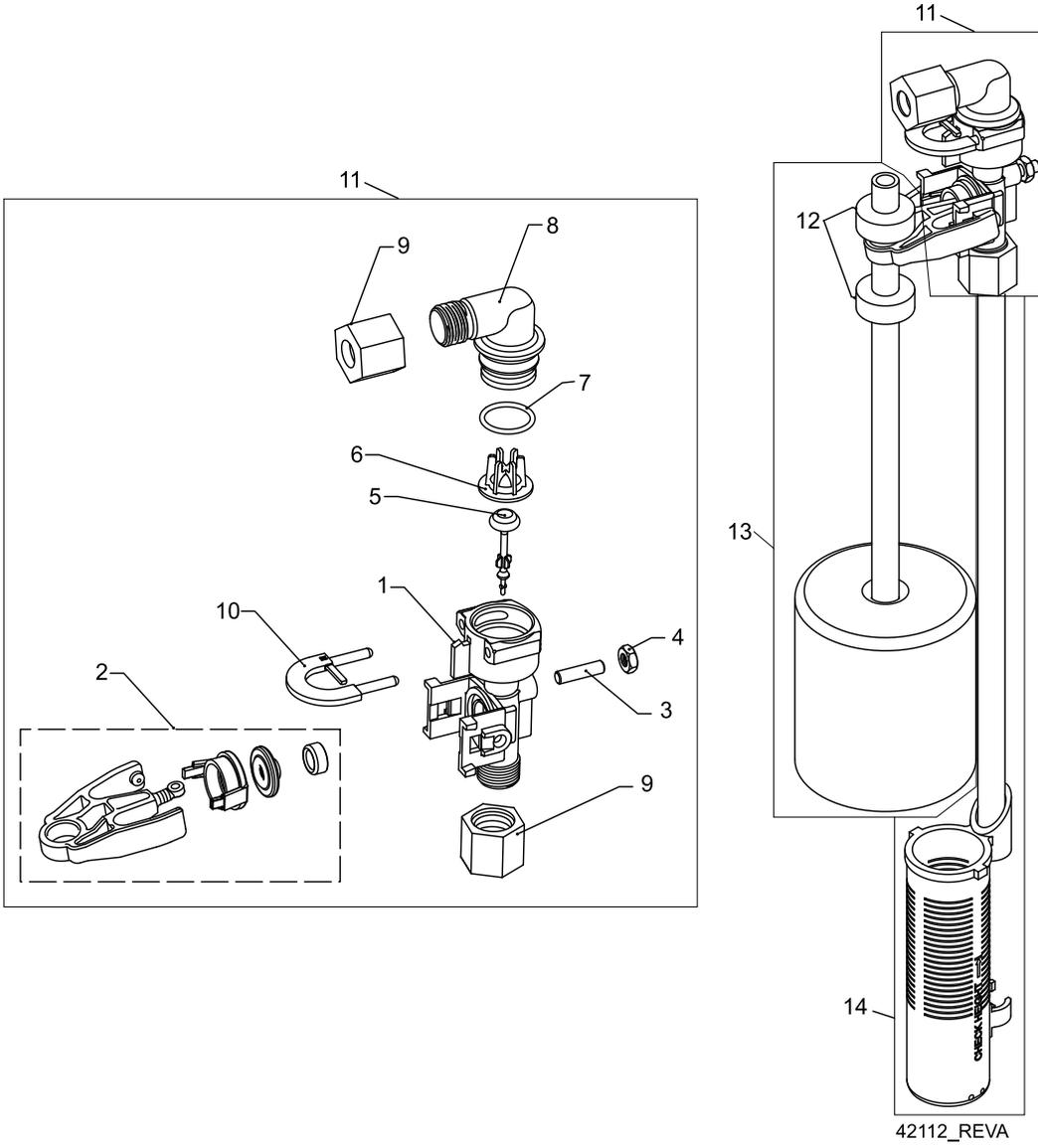
# 2300 SAFETY BRINE VALVE



60027 Rev D

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	60027-00	Safety Brine Valve, 2300, Less Elbow	10	1	10149	Rod, Float, 30-inch
2	1	10138	Ball, 3/8-inch, Brass	11	1	10700	Float Assy, White
3	1	11566	Ball Stop, Slow Fill	12	3	10150	Grommet, .30 Dia
4	1	10328	Fitting, Elbow, 90 Deg. 1/4 NPT x 3/8 Tube	13	1	60028-30	Float Assy, 2300, 30-inch White
5	1	10332	Fitting, Insert, 3/8	14	1	60027-FFA	Safety Brine Valve, 2300, Fitting Facing Arm
6	1	10330	Fitting, Sleeve, 3/8 Celcon	1	1	60027-FFS	Safety Brine Valve, 2300 Fitting Facing Stud
7	1	10329	Fitting, Tube, 3/8 Nut, Brass				
8	1	10186	Nut, Hex, 10-32				
9	1	60002-10	Air Check, #500, American Hydro				
		60002-11.38	Air Check, #500, 11.38 inches Long				
		60002-24	Air Check, #500, 24 inches Long				
		60002-27	Air Check, #500, 27 inches Long				
		60002-32	Air Check, #500, 32 inches Long				
		60002-34	Air Check, #500, 34 inches Long				
		60002-36	Air Check, #500, 36 inches Long				
		60002-48	Air Check, #500, 48 inches Long				
		60002-26.25	Air Check, #500, 26.25 inches Long				
		60002-33.25	Air Check, #500, 33.25 inches Long				

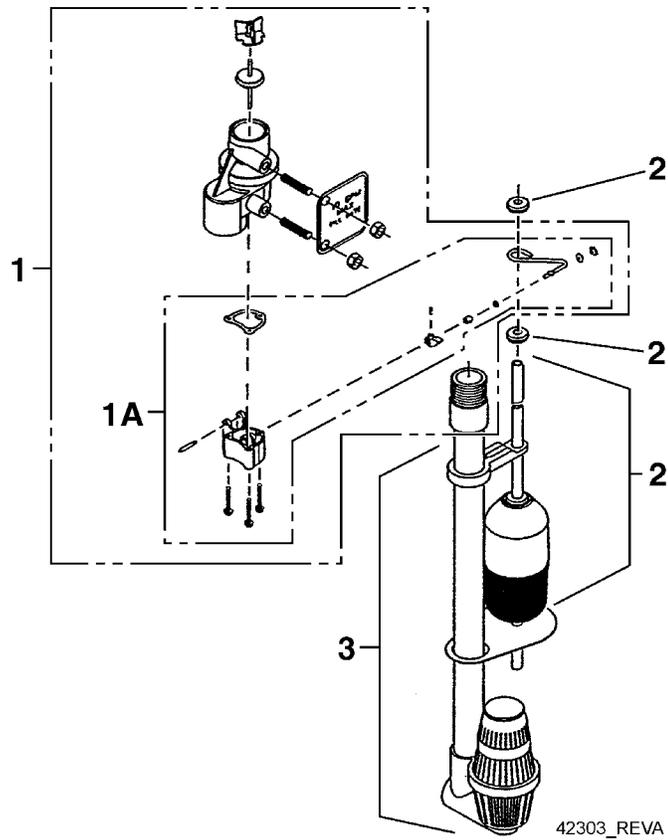
**2310 SAFETY BRINE VALVE**



## 2310 SAFETY BRINE VALVE *CONTINUED*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1	1	19645	Body, Safety Brine Valve, 2310	60002-11.38	1	60002-11.38	Air Check, #500, 11.38 inches Long
2	1	19803	Safety Brine Valve Assy	60002-24	1	60002-24	Air Check, #500, 24 inches Long
3	1	19804	Screw, Sckt Hd, Set, 10-24 x .75	60002-27	1	60002-27	Air Check, #500, 27 inches Long
4	1	19805	Nut, Hex, 10-24, Nylon Black	60002-32	1	60002-32	Air Check, #500, 32 inches Long
5	1	19652-01	Poppet Assy, SBV w/O-ring	60002-34	1	60002-34	Air Check, #500, 34 inches Long
6	1	19649	Flow Dispenser	60002-36	1	60002-36	Air Check, #500, 36 inches Long
7	1	11183	O-ring, -017	60002-48	1	60002-48	Air Check, #500, 48 inches Long
8	1	19647	Elbow, Safety Brine Valve	60002-26.25	1	60002-26.25	Air Check, #500, 26.25 inches Long
9	2	19625	Nut Assy, 3/8-inch Plastic	60002-33.25	1	60002-33.25	Air Check, #500, 33.25 inches Long
10	1	18312	Retainer, Drain				
11	1	60014	Safety Brine Valve Assy, 2310				
12	2	10150	Grommet, .30 Dia				
13	1	60068-8.06	Float Assy, 2310, w/8.06-inch Rod				
		60068-10.5	Float Assy, 2310, w/10.5-inch Rod				
		60068-11.5	Float Assy, 2310, w/11.5-inch Rod				
		60068-20	Float Assy, 2310, w/20-inch Rod				
		60068-30	Float Assy, 2310, w/30-inch Rod				
14	1	60002-10	Air Check, #500, American Hydro				

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

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## SEAL & SPACER TOOLS & REPLACEMENT

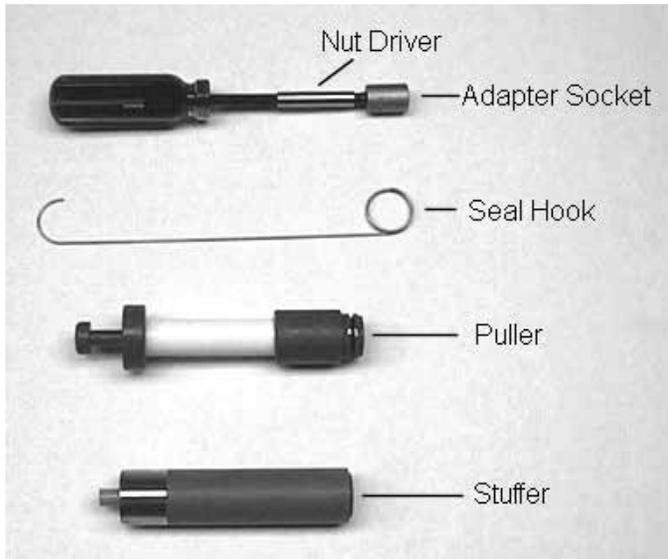


Figure 5

**NOTE: Photos shown are for reference only for replacing the seal and spacer. Actual valve may be different.**

1. Turn off water supply to valve. Next, cycle valve to backwash position, then to service. Now remove electrical plug from outlet.
2. Remove control box cover.
3. Disconnect the brine line from the injector housing to the brine valve (if your unit has timed brine tank fill).
4. Remove the two capscrews that hold the back plate to the valve.
5. Grasp the back plate on both sides and slowly pull end plug and piston assembly out of the valve body (see Figure 6) and lay aside.

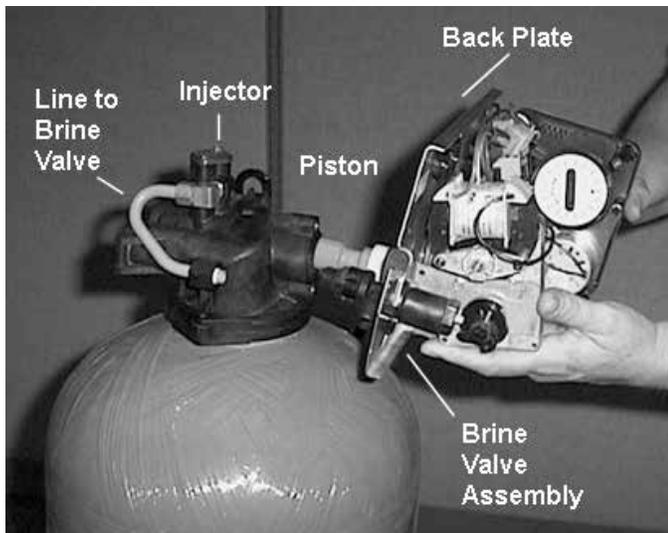


Figure 6

6. Remove the seal first using the wire hook with the finger loop (see Figure 7).

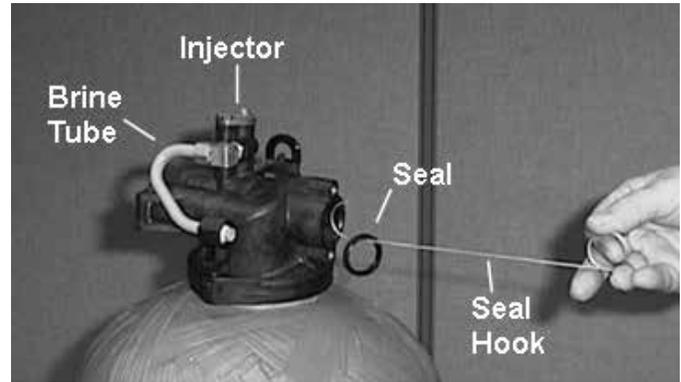


Figure 7

7. The spacer tool (use only for removing the spacers) has three retractable pins, retained by a rubber ring, at one end. They are retracted or pushed out by pulling or pushing the center button the opposite end.
8. Insert the pin end of the spacer tool into the valve body with the pins retracted (button pulled back). Push the tool tight against the spacer and push the button in, (see Figure 8). When the button is pushed in, the pins are pushed out to engage the 1/4 dia. holes in the spacer. Remove the tool from the valve body. The spacer will be on the end. Pull the center button back, the pins will be retracted and the spacer can be removed from the spacer tool.

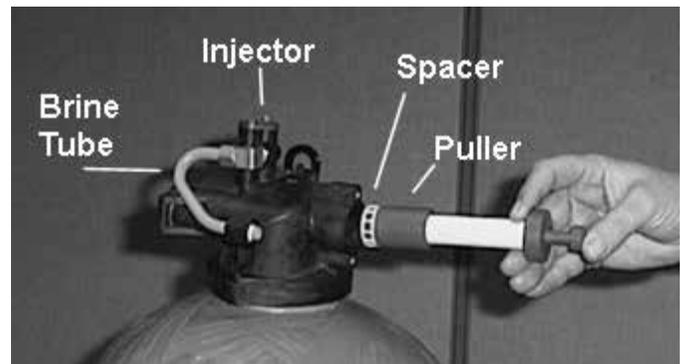


Figure 8

9. Alternately remove the remaining seals and spacers in accordance with steps No. 6 and 8.
10. The last or end spacer does not have any holes for the pins of the spacer tool to engage, therefore if the end spacer does not come out on the first try, try again using the wire hook with the finger loop.
11. To replace seals, spacers and end ring, use special tool with the brass sleeve on one end. This is a double-purpose tool (see Figure 9). The male end acts as a pilot to hold the spacers as they are pushed into the valve body and the brass female end is used to insert the seals into the valve

## SEAL & SPACER TOOLS & REPLACEMENT

*CONTINUED*

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body.

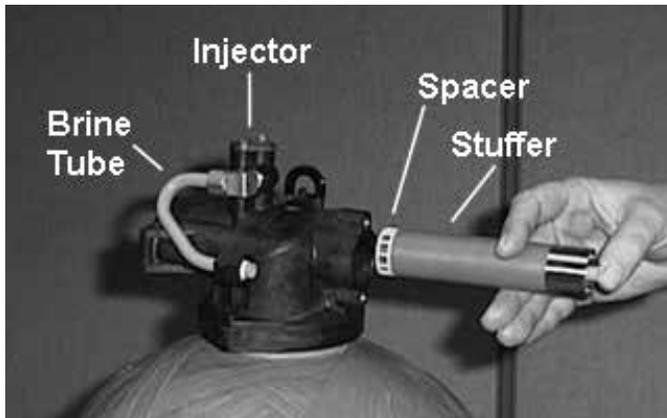


Figure 9

12. To restuff a valve body, first take the end ring (the plastic or brass ring without holes), then with your thumb press the button on the brass sleeve end. The large dia. inner portion is now exposed (see Figure 8). Place the end ring on this pilot with the lip on the end ring facing the tool. Push the tool into the valve body bore until it bottoms. While the tool is in the valve body, take a seal and press it into the inside diameter of the exposed brass female end.
13. Remove the tool, turn it end for end and insert it into the valve body bore. While holding the large dia. of the tool, slide it all the way into the valve body bore until it bottoms. Then push the center button to push the seal of the tool and leave it in place in the valve body.
14. Remove the tool from the valve body and push the center on the brass female end to expose the pilot on the opposite end. Place a spacer on this end and insert the spacer and tool into the valve.

## GENERAL SERVICE HINTS FOR METER CONTROL

---

**Problem: Softener delivers hard water**

**Reason:** Reserve capacity has been exceeded.

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

**Reason:** Program wheel is not rotating with meter output.

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

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

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

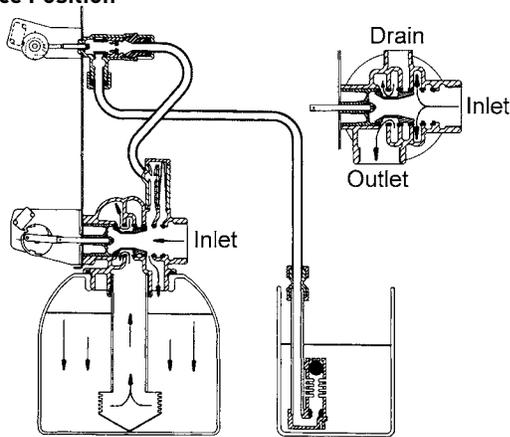
## TROUBLESHOOTING

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

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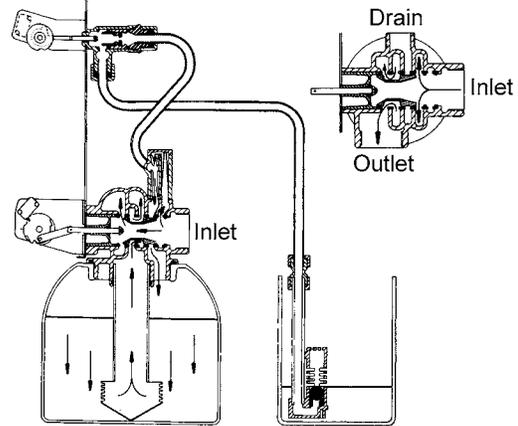
# WATER CONDITIONER FLOW DIAGRAMS

## 1 Service Position



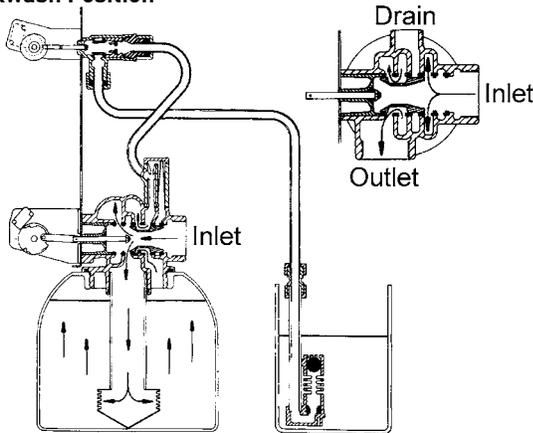
Hard water enters unit at valve inlet and flows down through the mineral in the mineral tank. Conditioned water enters center tube through the bottom distributor, then flows up through the center tube, around the piston, and out the outlet of the valve.

## 4 Slow Rinse Position



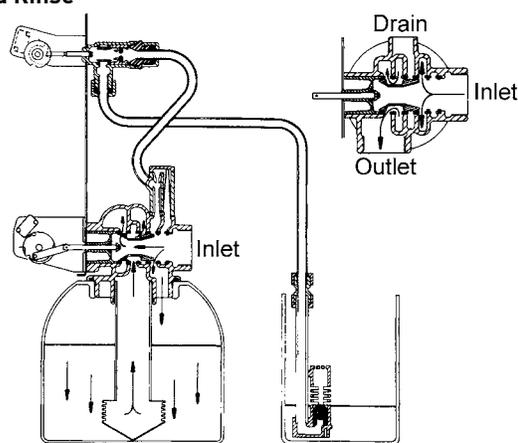
Hard water enters unit at valve inlet, flows up into injector housing and down through nozzle and throat, around the piston, down through mineral, enters center tube through bottom distributor, flows up through center tube, around piston and out through drain line.

## 2 Backwash Position



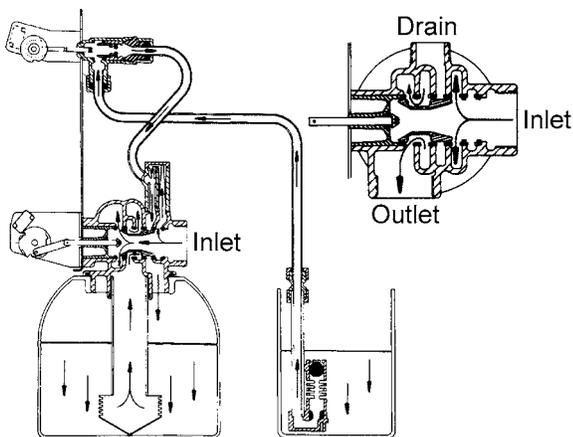
Hard water enters unit at valve inlet, flows through piston, down center tube, through bottom distributor, and up through the mineral, around the piston and out the drain line.

## 5 Rapid Rinse



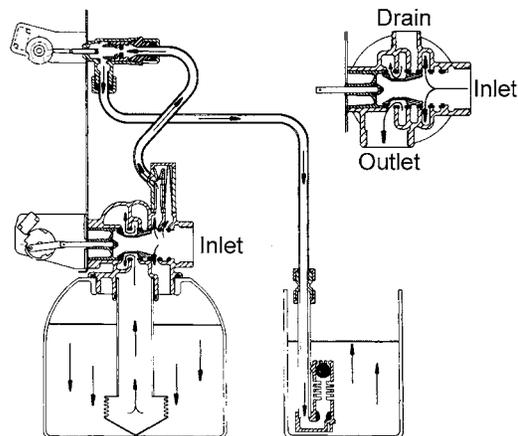
Hard water enters unit at valve inlet, flows directly from inlet down through mineral into center tube bottom distributor and up through center tube, around piston and out through the drain line.

## 3 Brine Position



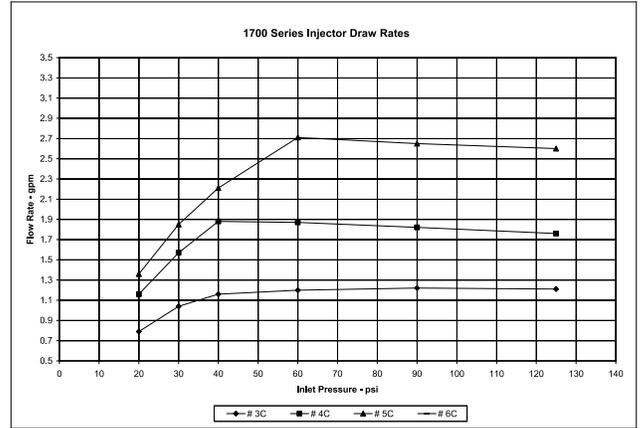
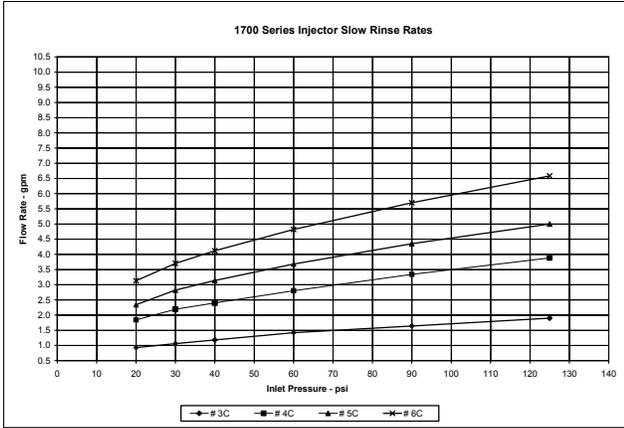
Hard water enters unit at valve inlet, flows up into injector housing and down through nozzle and throat to draw brine from the brine tank, brine flows down through mineral and enters the center tube through bottom distributor and out through the drain line.

## 6 Brine Tank Refill Position



Hard water enters unit at valve inlet, flows up through the injector housing, through the brine valve to refill the brine tank.

# FLOW DATA & INJECTOR DRAW RATES - DOWNFLOW

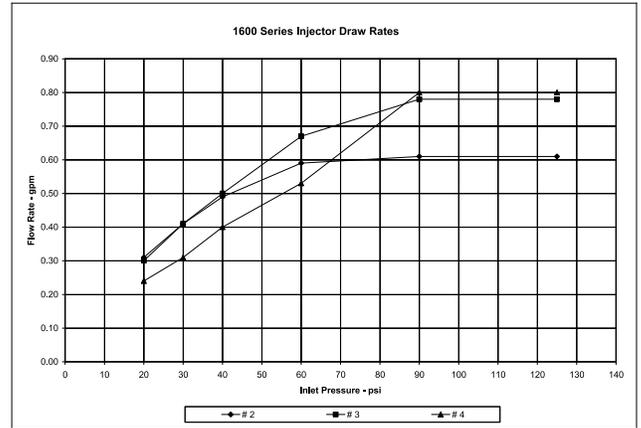
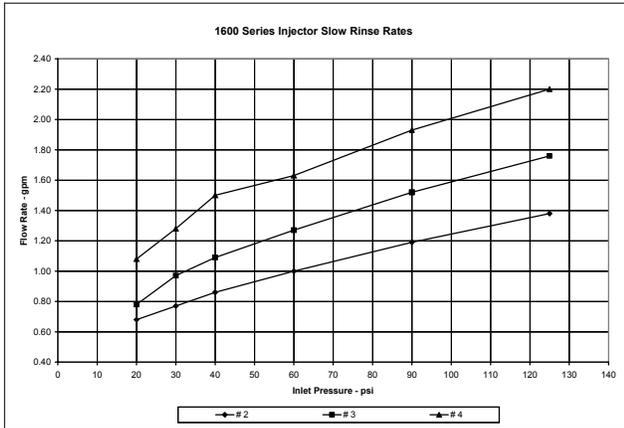


1700 series injectors	Slow Rinse - gpm			
pressure	#3C	#4C	#5C	#6C
20	0.93	1.84	2.34	3.13
30	1.06	2.19	2.82	3.70
40	1.18	2.40	3.14	4.12
60	1.42	2.80	3.68	4.82
90	1.64	3.34	4.35	5.70
125	1.90	3.88	5.00	6.58

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

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

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

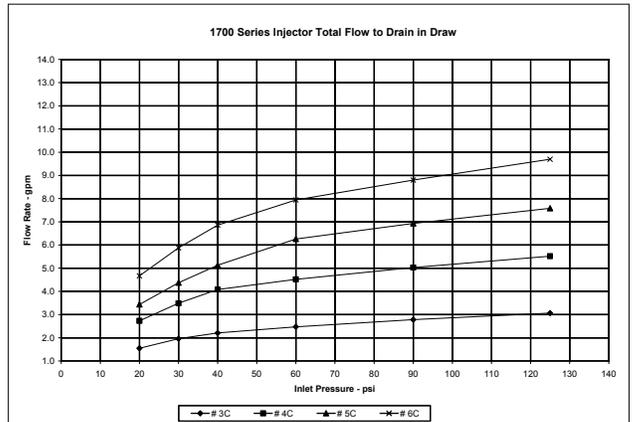
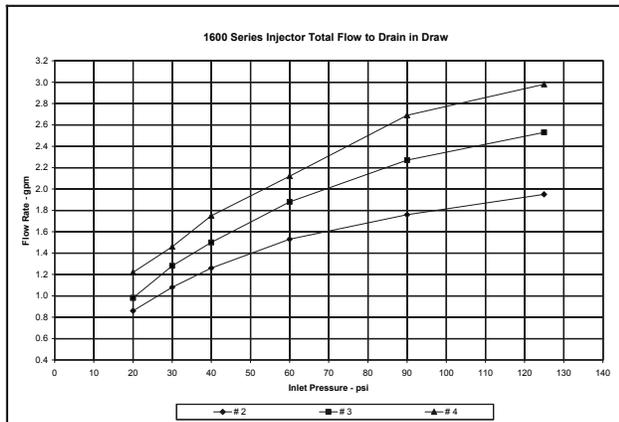


1600 series injectors	Slow Rinse Rates - gpm		
pressure	#2	#3	#4
20	0.68	0.78	1.08
30	0.77	0.97	1.28
40	0.86	1.09	1.50
60	1.00	1.27	1.63
90	1.19	1.52	1.93
125	1.38	1.76	2.20

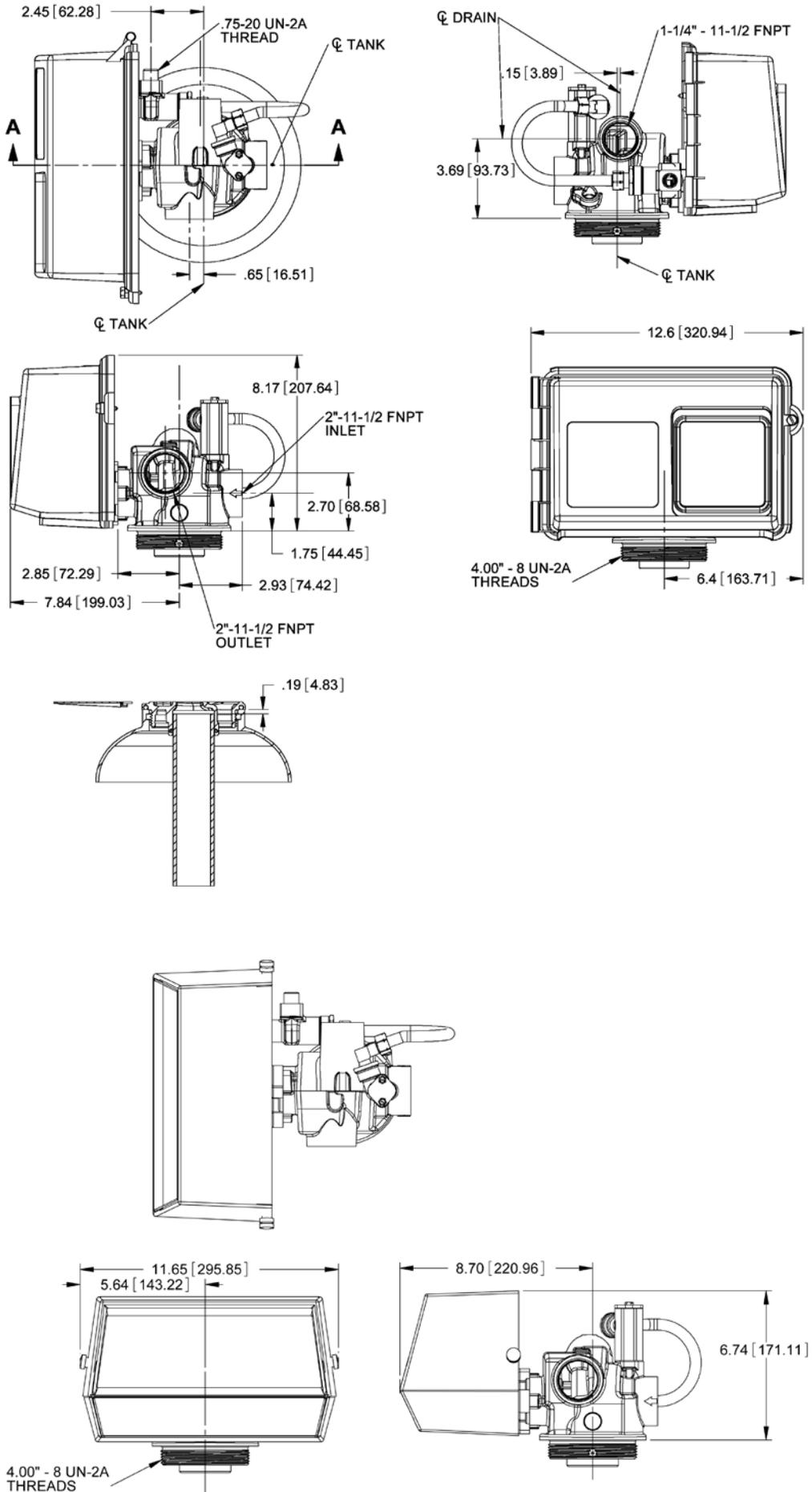
all injectors used the steel cap and an air disperser

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

all injectors used the steel cap and an air disperser

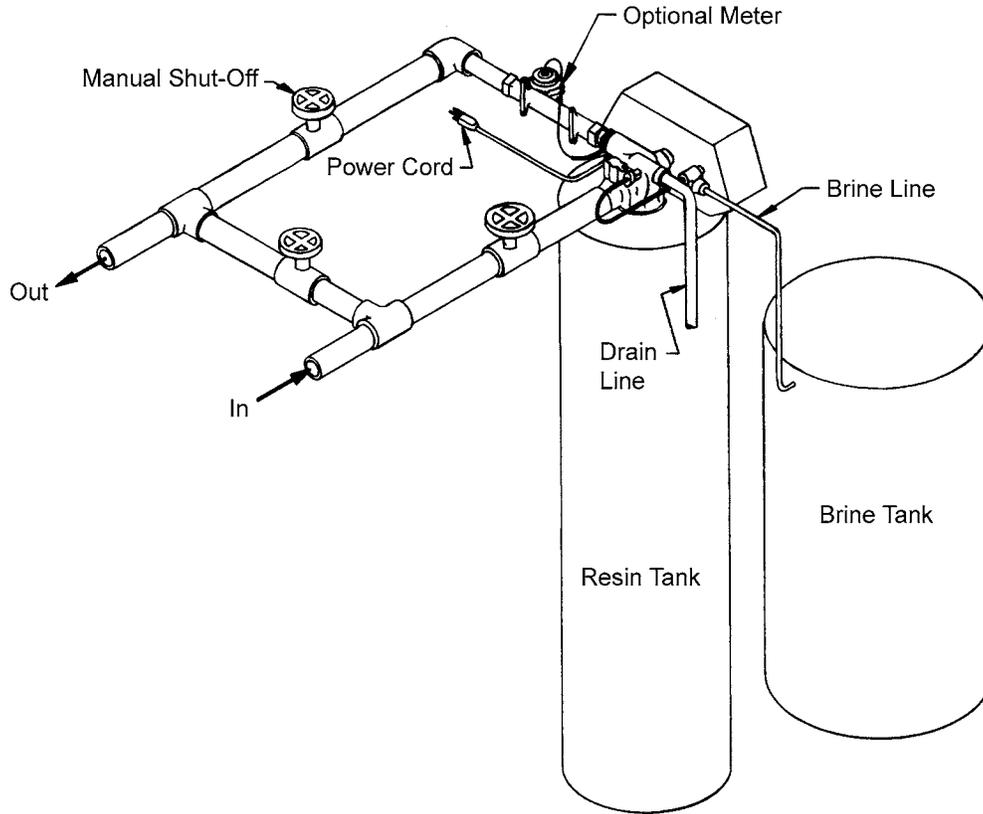


# DIMENSIONAL DRAWING



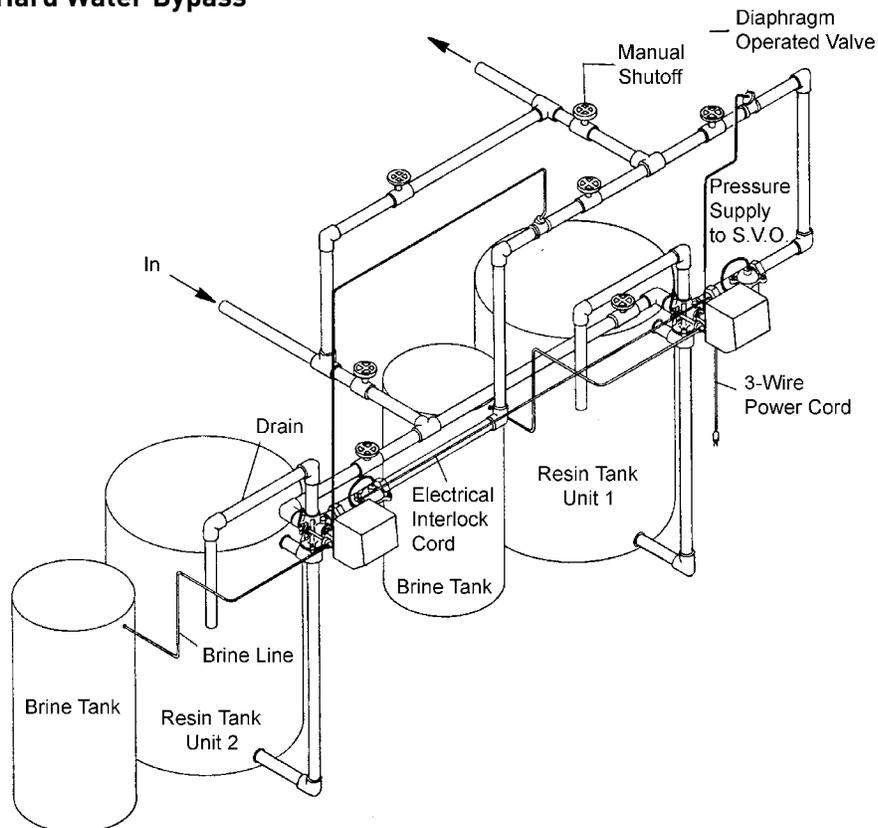
## SYSTEM #4

### Typical Single Tank Installation with Optional Meter



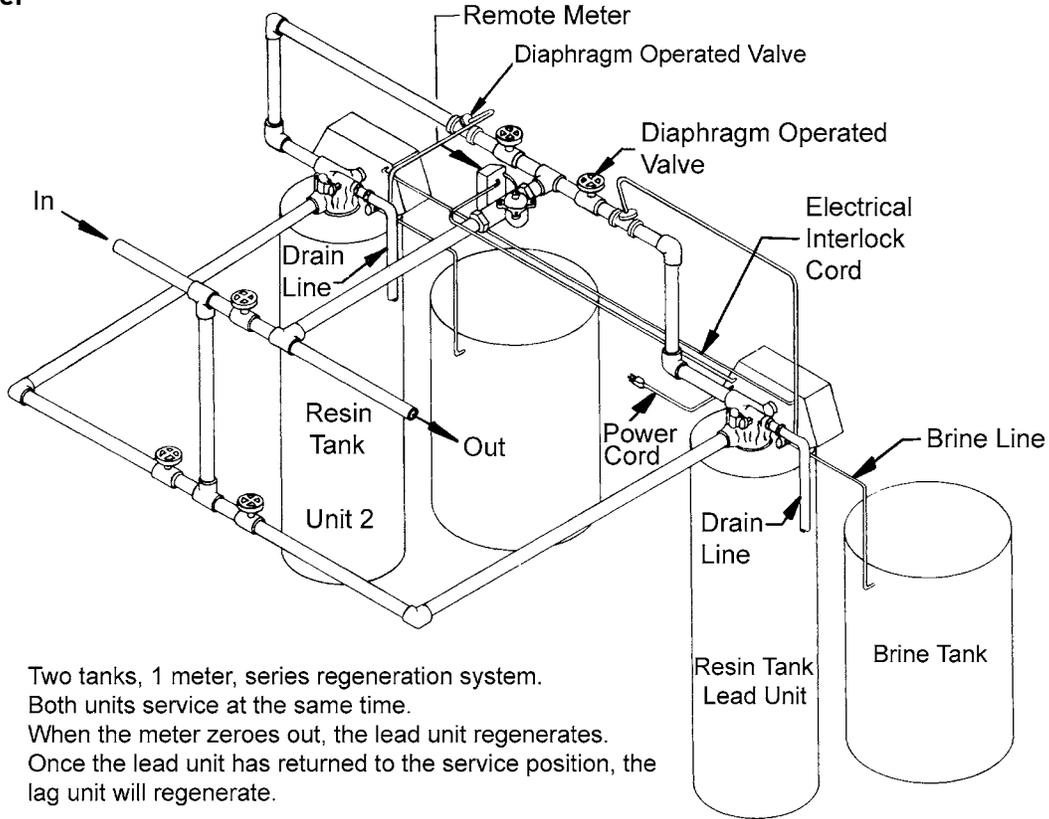
## SYSTEM #5 INTERLOCK

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



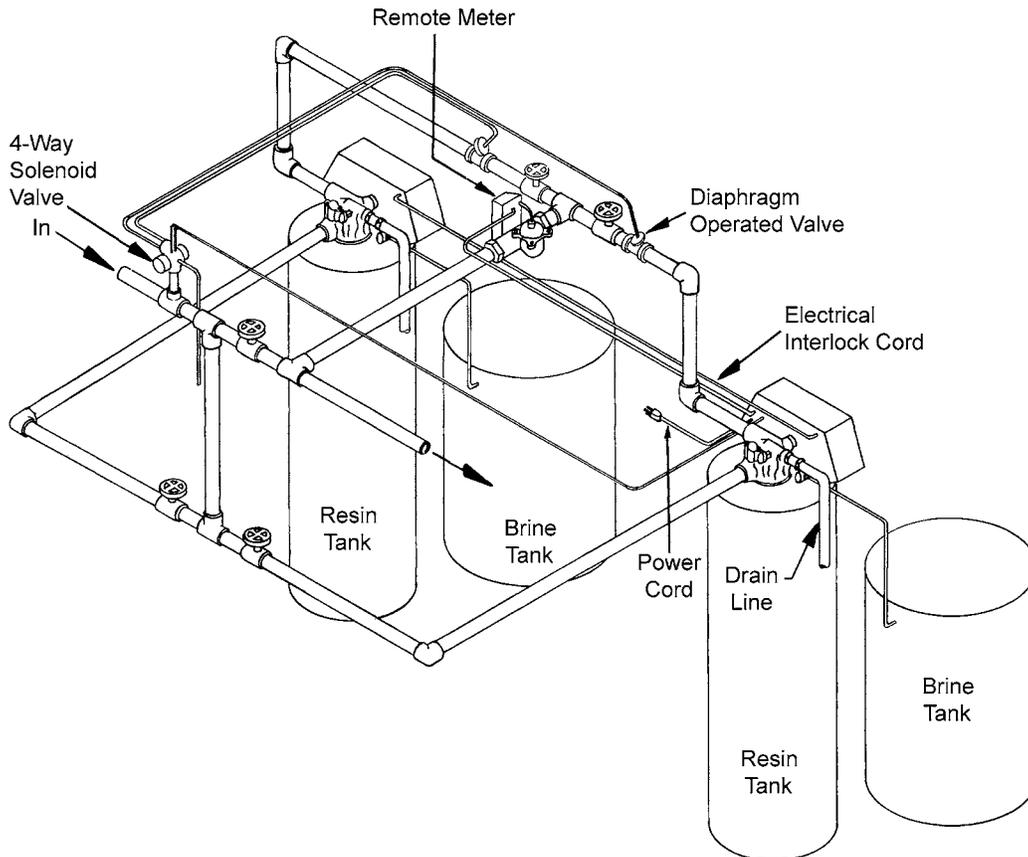
## SYSTEM #6

### Twin Series Regeneration Installation with a Remote Meter



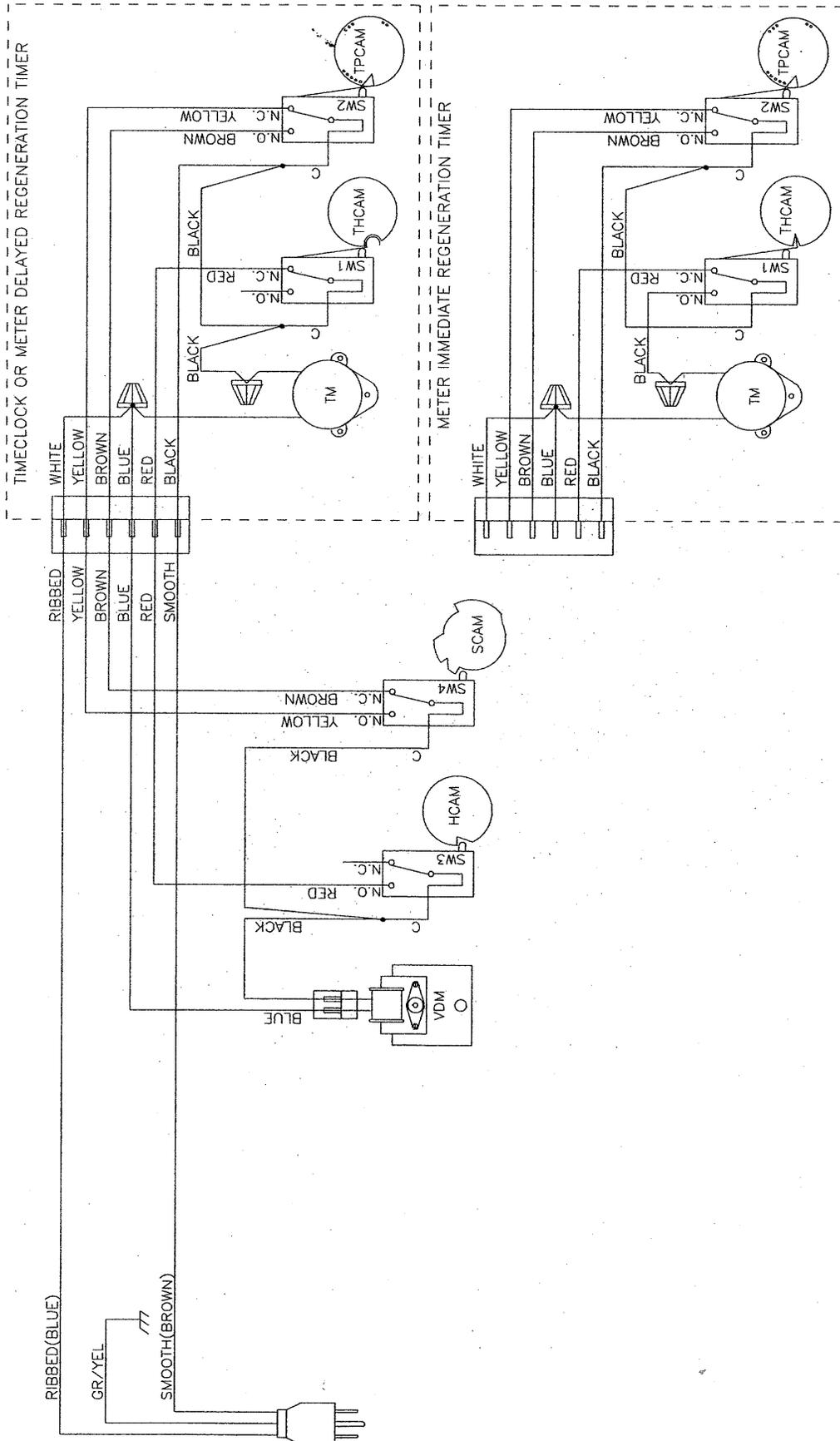
## SYSTEM #7

### Twin Alternator Installation with a Remote Meter



# SYSTEM #4 WIRING

## Single Valve Regeneration Immediate and Delayed Valve Wiring

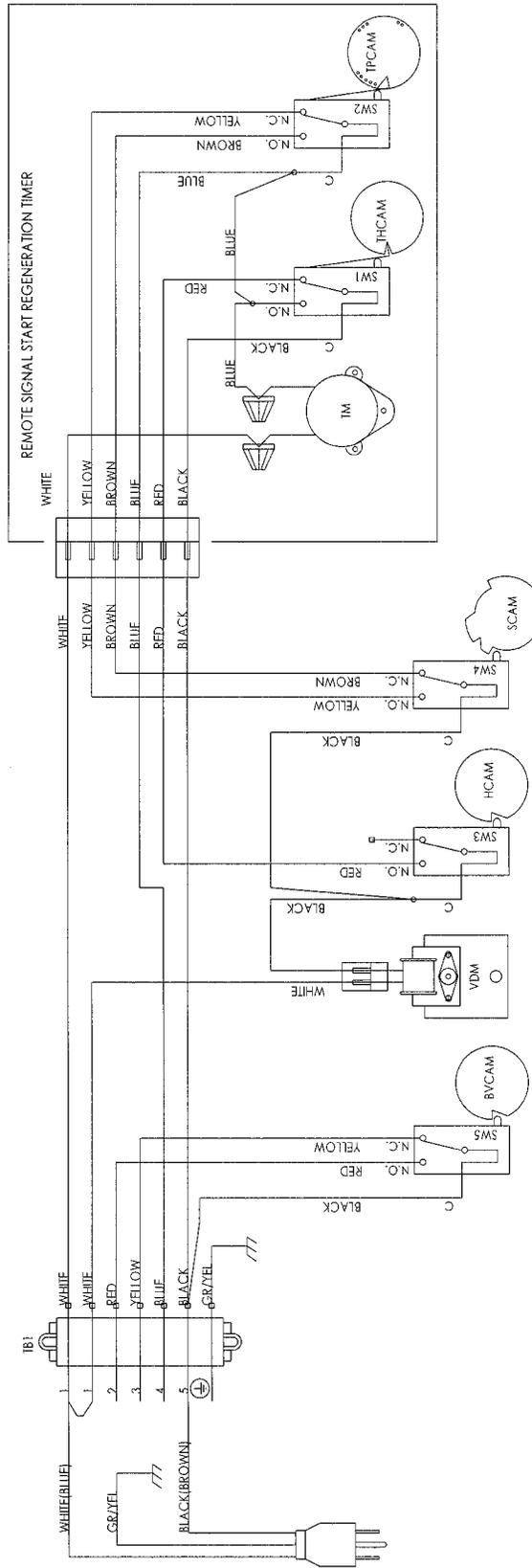
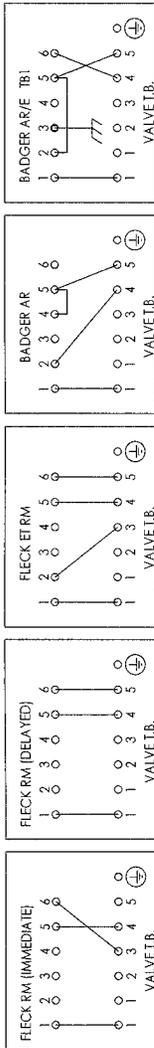


19201 Rev C

# SYSTEM #4 WIRING *CONTINUED*

## With Remote Starter Valve Wiring

### REMOTE METER 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
- HCAM - TIMER HOMING CAM
- TPCAM - TIMER PROGRAM CAM
- HCAM - VALVE HOMING CAM
- SCAM - VALVE STEP CAM
- BVCAM - BRINE VALVE CAM

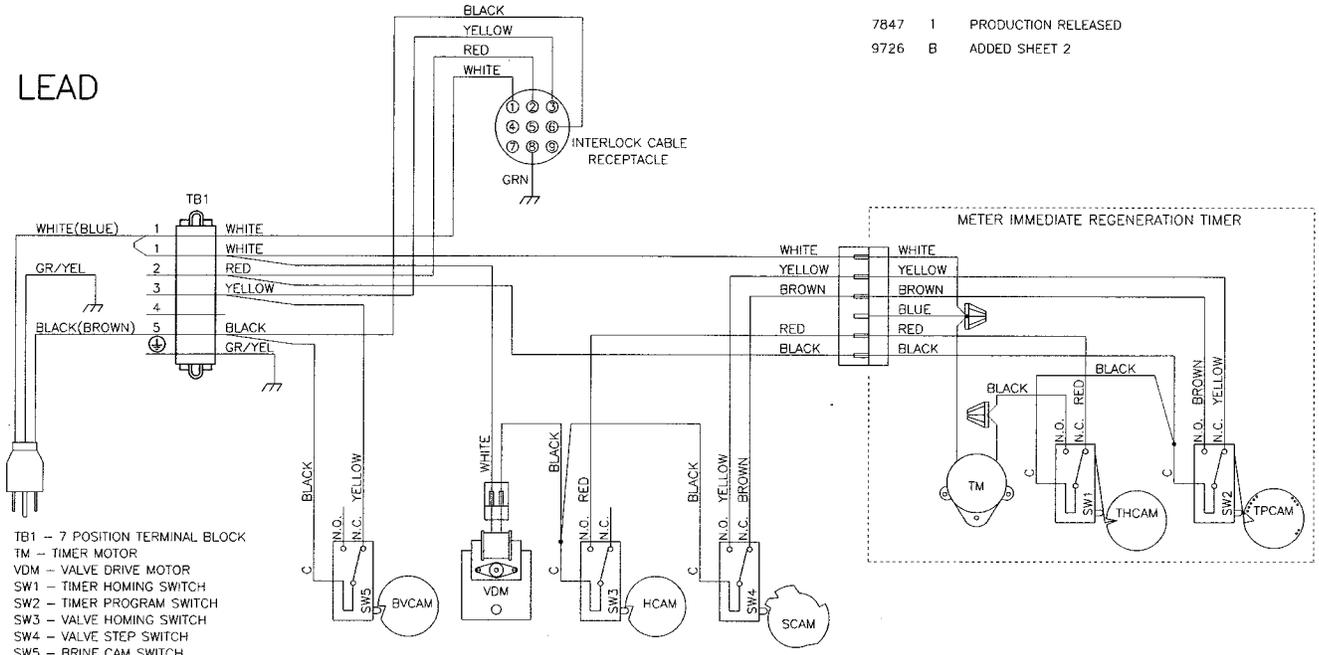
- NOTE:
1. SINGLE TANK REMOTE METER INITIATED DELAYED, OR IMMEDIATE REGENERATION.
  2. WITH 24V VALVES THE POWER CORD IS REPLACED WITH BLUE AND WHITE WIRES (WIRE BLUE TO TB1 #5, WHITE TO TB1 #1).
  3. VALVE SHOWN IN SERVICE POSITION.

# SYSTEM #5 WIRING

## Interlocked Regeneration Valve Wiring

7847 1 PRODUCTION RELEASED  
9726 B ADDED SHEET 2

LEAD

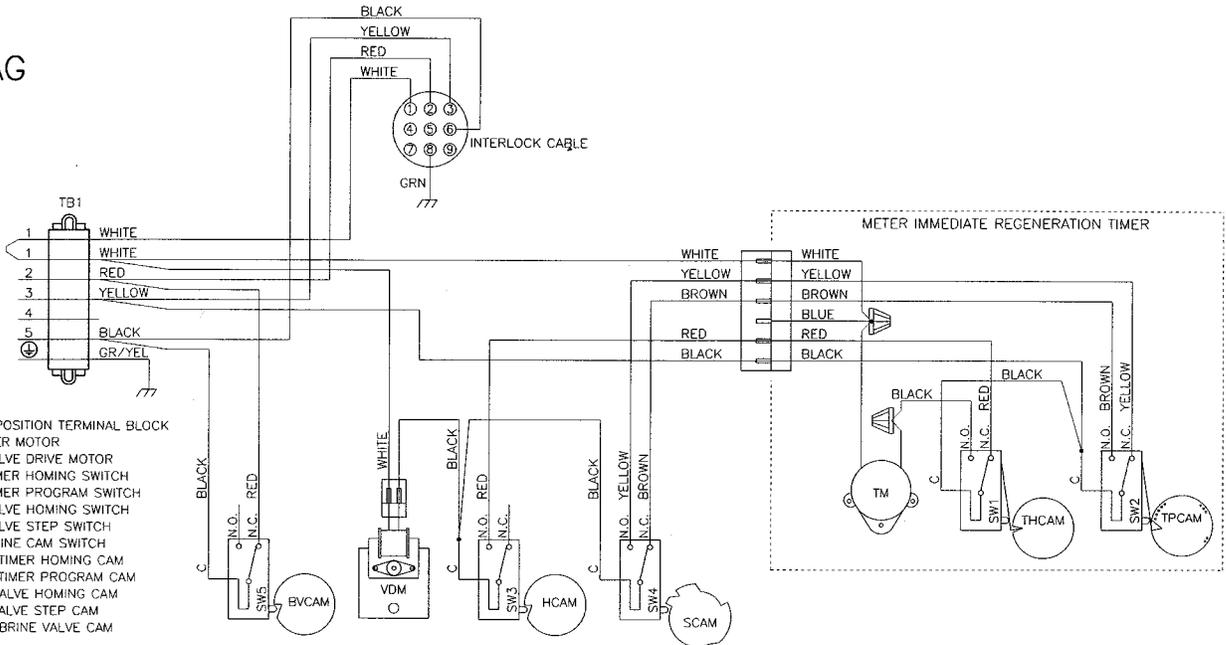


TB1 - 7 POSITION TERMINAL BLOCK  
TM - TIMER MOTOR  
VDM - VALVE DRIVE MOTOR  
SW1 - TIMER HOMING SWITCH  
SW2 - TIMER PROGRAM SWITCH  
SW3 - VALVE HOMING SWITCH  
SW4 - VALVE STEP SWITCH  
SW5 - BRINE CAM SWITCH  
THCAM - TIMER HOMING CAM  
TPCAM - TIMER PROGRAM CAM  
HCAM - VALVE HOMING CAM  
SCAM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

NOTE:  
1. BOTH VALVES IN SERVICE, ONLY ONE VALVE IN REGENERATION AT A TIME.  
2. INDIVIDUAL LOCAL METER REGENERATION.  
3. VALVE SHOWN IN SERVICE.

40502-01 Rev C

LAG



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

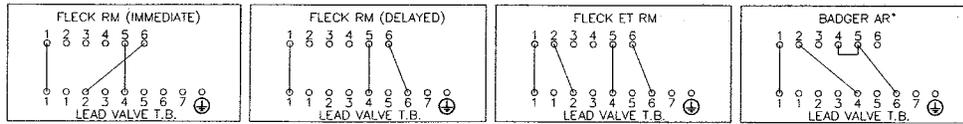
NOTE:  
1. BOTH VALVES IN SERVICE, ONLY ONE VALVE IN REGENERATION AT A TIME.  
2. INDIVIDUAL LOCAL METER REGENERATION.  
3. VALVE SHOWN IN SERVICE.

40502-02 Rev C

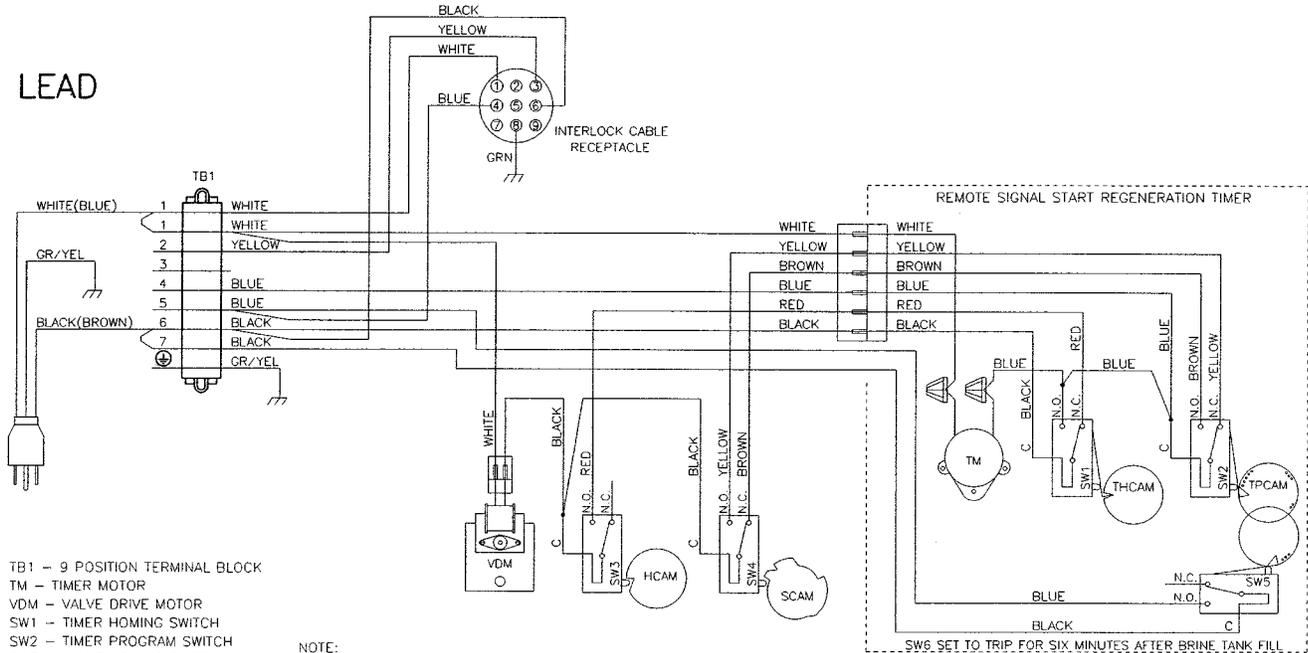
# SYSTEM #6 WIRING

## Series Regeneration Valve Wiring

### REMOTE METER WIRING



### LEAD



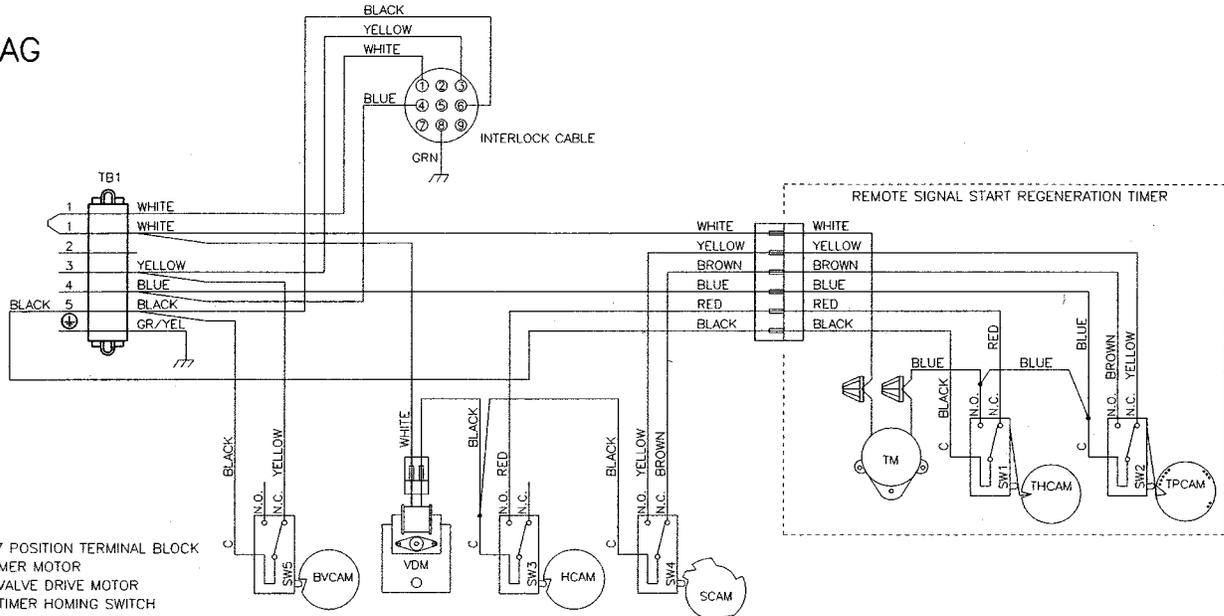
- TB1 - 9 POSITION TERMINAL BLOCK
- TM - TIMER MOTOR
- VDM - VALVE DRIVE MOTOR
- SW1 - TIMER HOMING SWITCH
- SW2 - TIMER PROGRAM SWITCH
- SW3 - VALVE HOMING SWITCH
- SW4 - VALVE STEP SWITCH
- SW5 - AUXILIARY TIMER SWITCH
- THCAM - TIMER HOMING CAM
- TPCAM - TIMER PROGRAM CAM
- HCAM - VALVE HOMING CAM
- SCAM - VALVE STEP CAM

**NOTE:**

1. TWO TANK INTERLOCKED, SINGLE REMOTE METER, SERIES REGENERATION.
2. BOTH TANKS NORMALLY IN SERVICE.
3. ONLY ONE TANK IN REGENERATION, THE OTHER REMAINS IN SERVICE.
4. LEAD VALVE REGENERATES FIRST, FOLLOWED IMMEDIATELY BY LAG VALVE.
5. WITH 24V VALVES THE POWER CORD IS REPLACED WITH BLUE AND WHITE WIRES (WIRE BLUE TO TB1 #6, WHITE TO TB1 #1).
6. VALVE SHOWN IN SERVICE POSITION.

13632-01 Rev L

### LAG



- 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:**

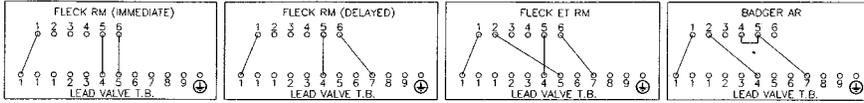
1. TWO TANK INTERLOCKED, SINGLE REMOTE METER, SERIES REGENERATION.
2. BOTH TANKS NORMALLY IN SERVICE.
3. ONLY ONE TANK IN REGENERATION, THE OTHER REMAINS IN SERVICE.
4. LEAD VALVE REGENERATES FIRST, FOLLOWED IMMEDIATELY BY LAG VALVE.
5. WITH 24V VALVES, THE POWER CORD IS REPLACED WITH BLUE AND WHITE WIRES (WIRE BLUE TO TB1 #6, WHITE TO TB1 #1).
6. VALVE SHOWN IN SERVICE POSITION.

13632-02 Rev L

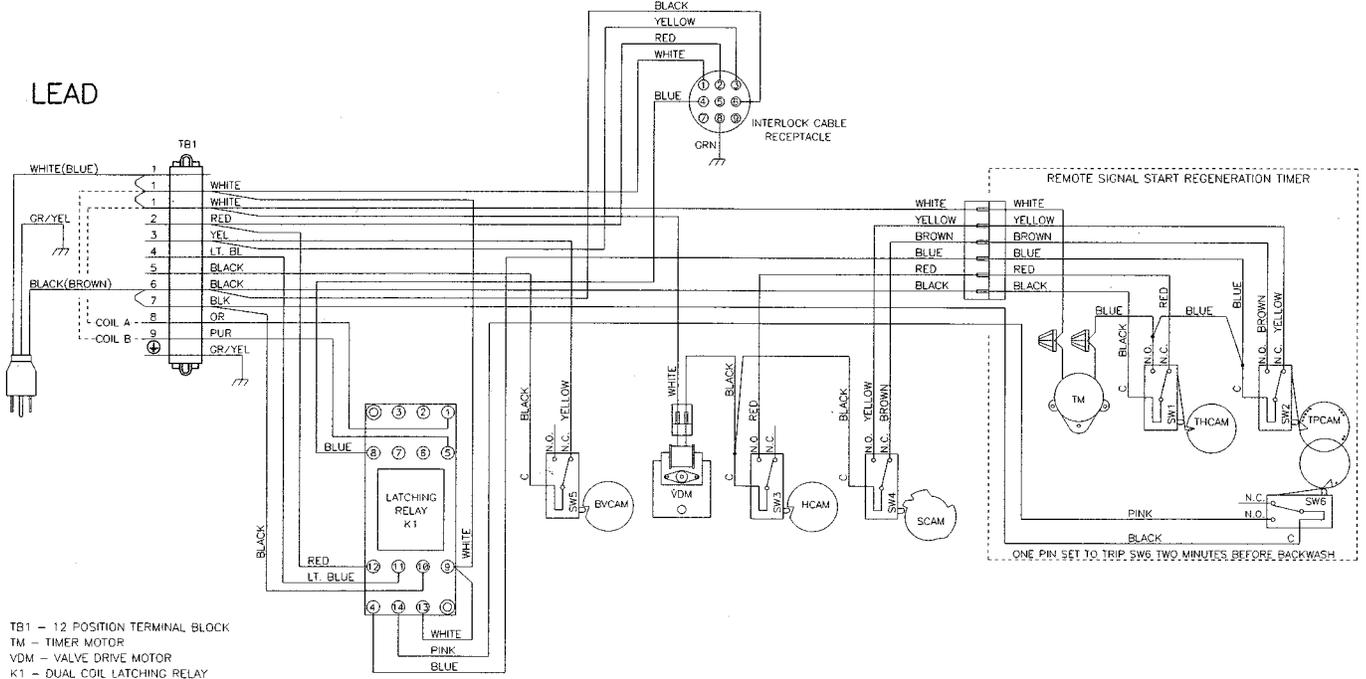
# SYSTEM #7 WIRING

## Alternating Regeneration 230V / 3-Way Solenoid Output Valve Wiring

REMOTE METER WIRING

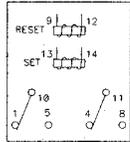


### LEAD



- TB1 - 12 POSITION TERMINAL BLOCK
- TM - TIMER MOTOR
- VDM - VALVE DRIVE MOTOR
- K1 - DUAL COIL LATCHING RELAY
  - 24V P/N 1701B
  - 120V P/N 16807
- SW1 - TIMER HOMING SWITCH
- SW2 - TIMER PROGRAM SWITCH
- SW3 - VALVE HOMING SWITCH
- SW4 - VALVE STEP SWITCH
- SW5 - BRINE CAM SWITCH
- SW6 - TIMER AUXILIARY SWITCH
- THCAM - TIMER HOMING CAM
- TPCAM - TIMER PROGRAM CAM
- HCAM - VALVE HOMING CAM
- SCAM - VALVE STEP CAM
- BVCAM - BRINE VALVE CAM

RELAY TERMINAL BLOCK PINOUT (SHOWN IN RESET POSITION)

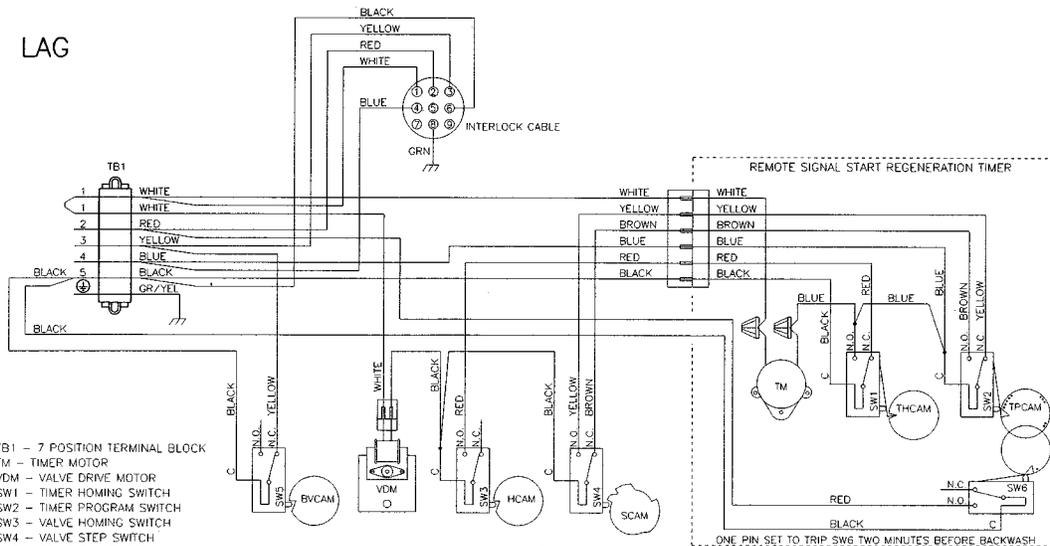


NOTE:

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.

19138-01 Rev E

### LAG



- 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
- SW6 - TIMER AUXILIARY SWITCH
- THCAM - TIMER HOMING CAM
- TPCAM - TIMER PROGRAM CAM
- HCAM - VALVE HOMING CAM
- SCAM - VALVE STEP CAM
- BVCAM - BRINE VALVE CAM

NOTE:

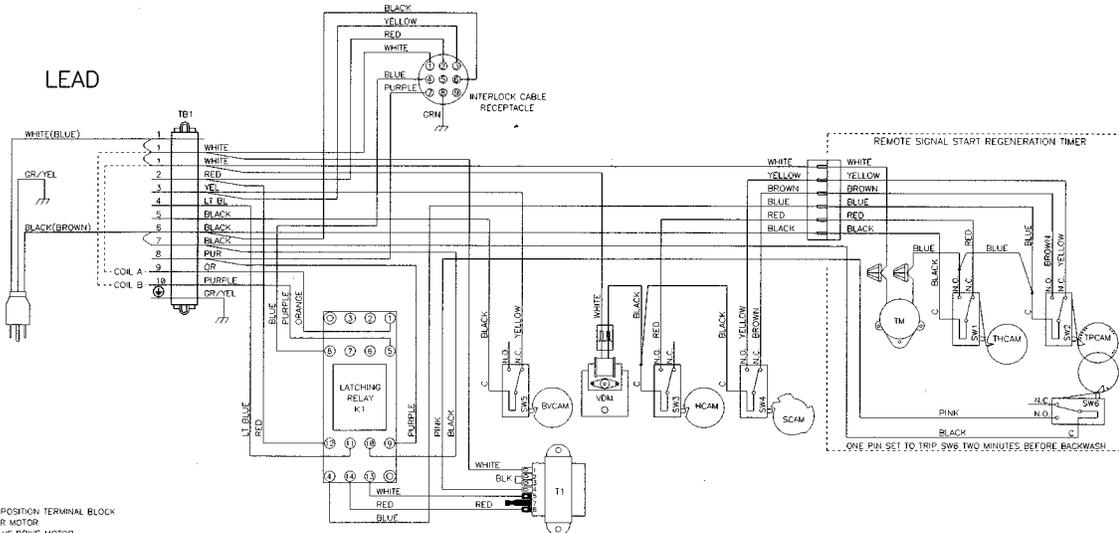
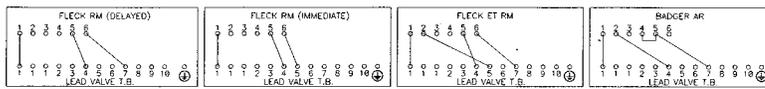
1. TWO TANK SINGLE REMOTE METER ALTERNATING REGENERATION. ONLY ONE TANK IN SERVICE THE OTHER IN REGENERATION OR STANDBY.
2. SYSTEM WIRED FOR 3-WAY SOLENOID OUTPUT. COIL A CLOSSES THE DIAPHRAGM VALVES OF LAG UNIT. COIL B CLOSSES THE DIAPHRAGM VALVES OF LEAD UNIT.
3. VALVE SHOWN IN SERVICE POSITION.

19138-02 Rev E

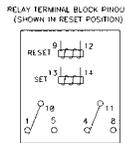
# SYSTEM #7 WIRING *CONTINUED*

## Alternating Regeneration 24V / 120V / 3-Way Solenoid Output Valve Wiring

REMOTE METER WIRING

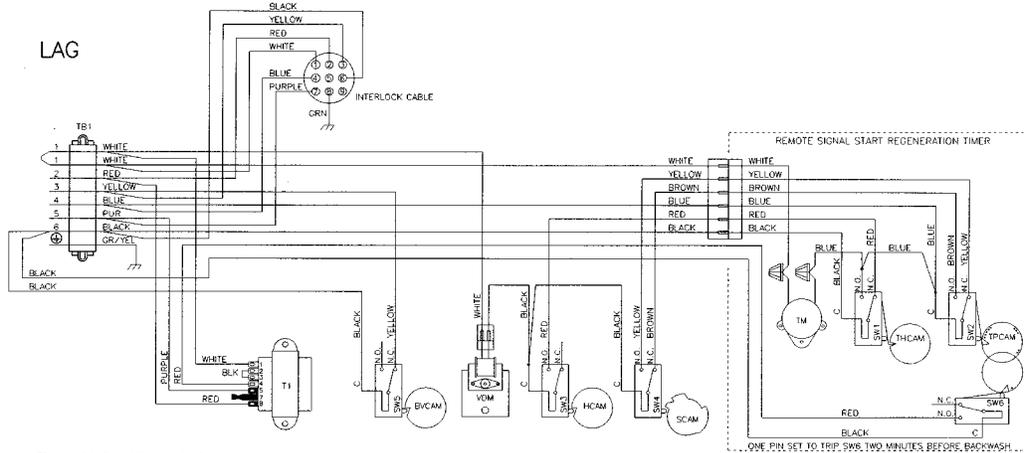


- TB1 - 13 POSITION TERMINAL BLOCK
- TM - TIMER MOTOR
- VDM - VALVE DRIVE MOTOR
- X1 - 120V DUAL COIL LATCHING RELAY P/N 16987
- T1 - 230V/120V TRANSFORMER P/N 40112
- SW1 - TIMER HOMING SWITCH
- SW2 - TIMER PROGRAM SWITCH
- SW3 - VALVE HOMING SWITCH
- SW4 - VALVE STEP SWITCH
- SW5 - BRINE CAM SWITCH
- SW6 - TIMER AUXILIARY SWITCH
- THCAM - TIMER HOMING CAM
- TPCAM - TIMER PROGRAM CAM
- HCCAM - VALVE HOMING CAM
- SCAM - VALVE STEP CAM
- EVCAM - 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.

17727-01 Rev E



- TB1 - 8 POSITION TERMINAL BLOCK
- TM - TIMER MOTOR
- T1 - 230V TO 120V TRANSFORMER P/N 40112
- 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
- THCAM - TIMER HOMING CAM
- TPCAM - TIMER PROGRAM CAM
- HCCAM - VALVE HOMING CAM
- SCAM - VALVE STEP CAM
- EVCAM - 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.

17727-02 Rev E

## SERVICE ASSEMBLIES

### 24 Hour Gear Assemblies

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

### Adapters

61415.....	Adapter Assy, Sidemount 2850/2900/2930
61415NP.....	Adapter Assy, Sidemount, NP 2850/2900/2930
61415-20 .....	Adapter Assy, Sidemount, BSP/MTC 2850/2900/2930
61415-20NP .....	Adapter Assy, Sidemount, BSP/NP 2850/2900/2930

### Air Checks

60002-34 .....	Air Check, #500, 34-inch Long
60003-34 .....	Air Check, #500, HW, 34-inch Tube
60009-00 .....	Air Check, #900, Commercial, Less Fittings
60009-01 .....	Air Check, #900, Commercial, HW Less Fittings

### Auxiliary Micro Switch

60320-02 .....	Switch Kit, 3200/9000 Timer Auxiliary
60320-07 .....	Switch Assy, 2850, Aux w/Self Tapping Screws
60320-12 .....	Switch Assy, 1500 through 2850

### Brine Line Flow Control (BLFC)

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

### Brine Valves

60011 .....	Brine Valve, 1650, Less BLFC
60029.....	Brine Valve, 1600, Short Stem Brass, Std O-rings
60029-010 .....	Brine Valve, 1600, Short Stem .25 GPM
60029-020 .....	Brine Valve, 1600, Short Stem .50 GPM
60029-020 .....	Brine Valve, 1600, Short Stem 1.0 GPM
60029HW.....	Brine Valve, 1600, Short Stem Hot Water
60034-xx.....	1700 Brine Valve Assy (Specify flow control 1.0 - 5.0)
60604-xx.....	Model 1710 Brine Valve Assy (Specify flow control 1.0 - 5.0)

### Cam Assemblies

60160-40 .....	Drive Cam Assy, Std, 2850s
----------------	----------------------------

### Covers

60219-xx.....	Environmental
60232-xx.....	Designer 2 Piece
60232-110 .....	Cover, Designer, 1 Pc Black

### Drain Line Flow Controls

60366-xx.....	1-inch FNPT x 3/4-inch FNPT (Specify flow control .6 - 7.0)
60701-xx.....	1-inch FNPT x 1-inch FNPT (Specify flow control 8.0 - 25.0)
60702-xx.....	1-inch FNPT x 1-inch MNPT (Specify flow control 8.0 - 25.0)
60708-xx.....	1-inch FNPT x 3/4-inch FNPT (Specify flow control 8.0 - 25.0)
60721-xx.....	1-inch FNPT x 1-inch FNPT (Specify flow control .6 - 7.0)

### Drive Assemblies

60050-25 .....	Drive Assy, 2850s, STF, 120V Softener/Filter
----------------	--

### Injector Assemblies (Complete)

60080.....	1600 Injector Assembly
60381.....	1700 Injector Assembly
60480-xx.....	1600 - 3/8-inch Brine (Specify size of injector)
60481-xx.....	1600 Brass - 3/8-inch Brine (Specify size of injector)
60483-xx.....	1700 - 1/2-inch Brine (Specify size of injector)

### Meters

61933-10 .....	1-1/2" NPT Stainless Steel Meter Assembly, Standard Range
61933-11 .....	1-1/2" NPT Stainless Steel Meter Assembly, Extended Range
61933-20 .....	1-1/2" BSP Stainless Steel Meter Assembly, Standard Range
61933-21 .....	1-1/2" BSP Stainless Steel Meter Assembly, Extended Range
61560-01 .....	Meter Assy, In-Line, w/1-inch NPT Plstc Connector
61560-07 .....	Meter Assy, In-Line, w/1-inch NPT Brass Connector
61560-09 .....	Meter Assy, In-Line, w/ 1-1/2 inch NPT Brass Connector

### Piston Assemblies

61630-00 .....	Piston Assy., 2850s, HW BP
61630-01HW .....	Piston Assy., 2850s, HW BP, Hot Water
61630-02 .....	Piston Assy., 2850s, Manual
61631-00 .....	Piston Assy, Filter, 2850s Conversion, NHWBP
61631-00HW .....	Piston Assy, Filter, 2850s, Conversion, NHWBP, Hot Water

### Program Wheel Assemblies

60405-20 .....	Program Wheel, w/3/4-inch Ext Label 1-1/2 inch Std Set @ 100
60405-30 .....	Program Wheel, w/1-inch Std Label Set @ 50
60405-40 .....	Program Wheel, w/1-inch Ext Label
60405-70 .....	Program Wheel, w/1-inch Ext Label

## **SERVICE ASSEMBLIES** *CONTINUED*

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### **Safety Brine Valves**

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

### **Sales and Service Aids**

42666.....	Literature, 2850s Spec Sheet
42319.....	Literature, 2850s S/Manual
40717.....	Literature, Catalog Assy, PWT Residential/Commercial

### **Seal & Spacer Kits**

61632.....	Seal & Spacer Kit, 2850s
61632-20 .....	Seal & Spacer Kit, 2850s, Hot Water
61632-30 .....	Seal & Spacer Kit, 2850s, 559 PE, Chemical Resistent Kit

### **Service Equipment**

16174.....	Silicone, 2 oz. Tube
16586-8 .....	Silicone, Dow #7 8 Lb
42227 .....	Stuffer Assy, 2850s
42228 .....	Puller Tool Assy, 2850s
60460.....	Meter Checker Kit, Std
60461.....	Meter Checker Kit, Ext

### **Service Valve Operator Assemblies (SVO)**

60150.....	SVO Assy, 1600 O/S
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### **Skipper Wheel Assemblies**

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



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## Fleck SXT Timer

### Service Manual



### TABLE OF CONTENTS

JOB SPECIFICATION SHEET .....1

INSTALLATION .....2

START-UP INSTRUCTIONS .....2

TIMER FEATURES .....3

TIMER OPERATION .....4

MASTER PROGRAMMING MODE CHART .....5

MASTER PROGRAMMING MODE.....6

USER PROGRAMMING MODE.....9

DIAGNOSTIC PROGRAMMING MODE .....10

CONTROL VALVE ASSEMBLY .....11

VALVE POWERHEAD ASSEMBLY .....12

3/4" TURBINE METER ASSEMBLY .....13

BYPASS VALVE ASSEMBLY (PLASTIC).....14

BYPASS VALVE ASSEMBLY (METAL) .....15

2300 SAFETY BRINE VALVE.....16

2310 SAFETY BRINE VALVE.....17

TROUBLESHOOTING .....18

WATER CONDITIONER FLOW DIAGRAMS .....20

WIRING DIAGRAM .....21

SERVICE INSTRUCTIONS .....22

SERVICE ASSEMBLIES .....24

### JOB SPECIFICATION SHEET

Job Number: \_\_\_\_\_

Model Number: \_\_\_\_\_

Water Hardness: \_\_\_\_\_ ppm or gpg

Capacity Per Unit: \_\_\_\_\_

Mineral Tank Size: \_\_\_\_\_ Diameter: \_\_\_\_\_ Height: \_\_\_\_\_

Salt Setting per Regeneration: \_\_\_\_\_

#### 1. Type of Timer:

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

#### 2. Downflow:                      Upflow                      Upflow Variable

#### 3. Meter Size:

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

#### 4. System Type:

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

#### 5. Timer Program Settings:

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

#### 6. Drain Line Flow Control: \_\_\_\_\_ gpm

#### 7. Brine Line Flow Controller: \_\_\_\_\_ gpm

#### 8. Injector Size#: \_\_\_\_\_

#### 9. Piston Type:

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

# TIMER FEATURES

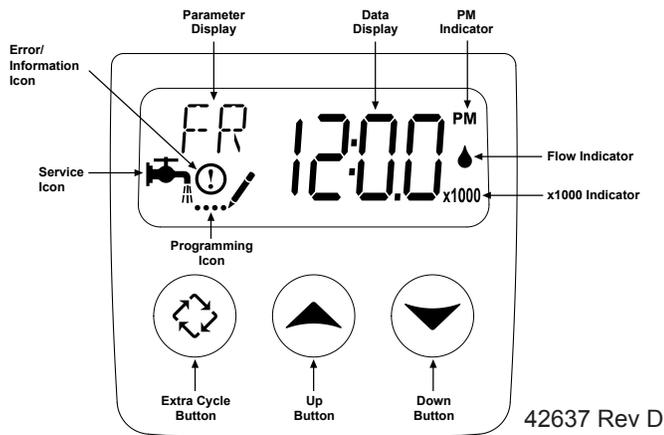


Figure 1

## Features of the SXT:

- Power backup that continues to keep time and the passage of days for a minimum of 48 hours in the event of power failure. During a power outage, the control goes into a power-saving mode. It does not monitor water usage during a power failure, but it does store the volume remaining at the time of power failure.
- Settings for both valve (basic system) and control type (method used to trigger a regeneration).
- Day-of-the-Week controls.
- While in service, the display alternates between time of day, volume remaining or days to regeneration, and tank in service (twin tank systems only).
- The Flow Indicator flashes when outlet flow is detected.
- The Service Icon flashes if a regeneration cycle has been queued.
- A Regeneration can be triggered immediately by pressing the Extra Cycle button for five seconds.
- The Parameter Display displays the current Cycle Step (BW, BF, RR, etc) during regeneration, and the data display counts down the time remaining for that cycle step. While the valve is transferring to a new cycle step, the display will flash. The parameter display will identify the destination cycle step (BW, BF, RR, etc) and the data display will read "----". Once the valve reaches the cycle step, the display will stop flashing and the data display will change to the time remaining. During regeneration, the user can force the control to advance to the next cycle step immediately by pressing the extra cycle button.

## Setting the Time of Day

1. Press and hold either the Up or Down buttons until the programming icon replaces the service icon and the parameter display reads DO.
2. Adjust the displayed time with the Up and Down buttons.
3. When the desired time is set, press the Extra Cycle button to resume normal operation. The unit will also return to normal operation after 5 seconds if no buttons are pressed.



## Queueing a Regeneration

1. Press the Extra Cycle button. The service icon will flash to indicate that a regeneration is queued.
2. To cancel a queued regeneration, press the Extra Cycle button.

## Regenerating Immediately

Press and hold the Extra Cycle button for five seconds.

## TIMER OPERATION

---

### Meter Immediate Control

A meter immediate control measures water usage and regenerates the system as soon as the calculated system capacity is depleted. The control calculates the system capacity by dividing the unit capacity (typically expressed in grains/unit volume) by the feedwater hardness and subtracting the reserve. Meter Immediate systems generally do not use a reserve volume. However, in twin tank systems with soft-water regeneration, the reserve capacity should be set to the volume of water used during regeneration to prevent hard water break-through. A Meter Immediate control will also start a regeneration cycle at the programmed regeneration time if a number of days equal to the regeneration day override pass before water usage depletes the calculated system capacity.

### Meter Delayed Control

A Meter Delayed Control measures water usage and regenerates the system at the programmed regeneration time after the calculated system capacity is depleted. As with Meter Immediate systems, the control calculates the system capacity by dividing the unit capacity by the feedwater hardness and subtracting the reserve. The reserve should be set to insure that the system delivers treated water between the time the system capacity is depleted and the actual regeneration time. A Meter Delayed control will also start a regeneration cycle at the programmed regeneration time if a number of days equal to the regeneration day override pass before water usage depletes the calculated system capacity.

### Time Clock Delayed Control

A Time Clock Delayed Control regenerates the system on a timed interval. The control will initiate a regeneration cycle at the programmed regeneration time when the number of days since the last regeneration equals the regeneration day override value.

### Day of the Week Control

This control regenerates the system on a weekly schedule. The schedule is defined in Master Programming by setting each day to either "off" or "on." The control will initiate a regeneration cycle on days that have been set to "on" at the specified regeneration time.

### Control Operation During Regeneration

During regeneration, the control displays a special regeneration display. In this display, the control shows the current regeneration step number the valve is advancing to, or has reached, and the time remaining in that step. The step number that displays flashes until the valve completes driving to this regeneration step position. Once all regeneration steps are complete the valve returns to service and resumes normal operation.

Pressing the Extra Cycle button during a regeneration cycle immediately advances the valve to the next cycle step position and resumes normal step timing.

### Control Operation During Programming

The control only enters the Program Mode with the valve in service. While in the Program Mode, the control continues to operate normally monitoring water usage and keeping all displays up to date. Control programming is stored in memory permanently, eliminating the need for battery backup power.

### Manually Initiating a Regeneration

1. When timer is in service, press the Extra Cycle button for 5 seconds on the main screen.
2. The timer advances to Regeneration Cycle Step #1 (rapid rinse), and begins programmed time count down.
3. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #2 (backwash).
4. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #3 (brine draw & slow rinse).
5. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #4 (brine refill).
6. Press the Extra Cycle button once more to advance the valve back to in service.

**NOTE: If the unit is a filter or upflow, the cycle step order may change.**

**NOTE: A queued regeneration can be initiated by pressing the Extra Cycle button. To clear a queued regeneration, press the Extra Cycle button again to cancel. If regeneration occurs for any reason prior to the delayed regeneration time, the manual regeneration request shall be cleared.**

### Control Operation During A Power Failure

The SXT includes integral power backup. In the event of power failure, the control shifts into a power-saving mode. The control stops monitoring water usage, and the display and motor shut down, but it continues to keep track of the time and day for a minimum of 48 hours.

The system configuration settings are stored in a non-volatile memory and are stored indefinitely with or without line power. The Time of Day flashes when there has been a power failure. Press any button to stop the Time of Day from flashing.

If power fails while the unit is in regeneration, the control will save the current valve position before it shuts down. When power is restored, the control will resume the regeneration cycle from the point where power failed. Note that if power fails during a regeneration cycle, the valve will remain in its current position until power is restored. The valve system should include all required safety components to prevent overflows resulting from a power failure during regeneration.

The control will not start a new regeneration cycle without line power. If the valve misses a scheduled regeneration due to a power failure, it will queue a regeneration. Once power is restored, the control will initiate a regeneration cycle the next time that the Time of Day equals the programmed regeneration time. Typically, this means that the valve will regenerate one day after it was originally scheduled. If the treated water output is important and power interruptions are expected, the system should be setup with a sufficient reserve capacity to compensate for regeneration delays.

# MASTER PROGRAMMING MODE

## CHART

**Caution: Before entering Master Programming, please contact your local professional water dealer.**

Master Programming Options			
Abbreviation	Parameter	Option Abbreviation	Options
DF	Display Format	GAL	Gallons
		Ltr	Liters
VT	Valve Type	dF1b	Standard Downflow/Upflow Single Backwash
		dF2b	Standard Downflow/Upflow Double Backwash
		Fltr	Filter
		UFbd	Upflow Brine First
		UFtr	Upflow Filter
		Othr	Other
CT	Control Type	Fd	Meter (Flow) Delayed
		FI	Meter (Flow) Immediate
		tc	Time Clock
		dAY	Day of Week
NT	Number of Tanks	1	Single Tank System
		2	Two Tank System
TS	Tank in Service	U1	Tank 1 in Service
		U2	Tank 2 in Service
C	Unit Capacity		Unit Capacity (Grains)
H	Feedwater Hardness		Hardness of Inlet Water
RS	Reserve Selection	SF	Percentage Safety Factor
		rc	Fixed Reserve Capacity
SF	Safety Factor		Percentage of the system capacity to be used as a reserve
RC	Fixed Reserve Capacity		Fixed volume to be used as a reserve
DO	Day Override		The system's day override setting
RT	Regen Time		The time of day the system will regenerate
BW, BD, RR, BF	Regen Cycle Step Times		The time duration for each regeneration step. Adjustable from OFF and 0-199 minutes. <b>NOTE: If "Othr" is chosen under "Valve Type", then R1, R2, R3, etc, will be displayed instead</b>
D1, D2, D3, D4, D5, D6, & D7	Day of Week Settings		Regeneration setting (On or OFF) for each day of the week on day-of-week systems
CD	Current Day		The Current day of the week
FM	Flow Meter Type	t0.7	3/4" Turbine Meter
		P0.7	3/4" Paddle Wheel Meter
		t1.0	1" Turbine Meter
		P1.0	1" Paddle Wheel Meter
		t1.5	1.5" Turbine Meter
		P1.5	1.5" Paddle Wheel Meter
		P2.0	2" Paddle Wheel Meter
		Gen	Generic or Other Meter
K	Meter Pulse Setting		Meter pulses per gallon for generic/other flow meter

**Notes: Some items may not be shown depending on timer configuration. The timer will discard any changes and exit Master Programming Mode if any button is not pressed for sixty seconds.**

# MASTER PROGRAMMING MODE

When the Master Programming Mode is entered, all available option setting displays may be viewed and set as needed. Depending on current option settings, some parameters cannot be viewed or set.

## Setting the Time of Day

1. Press and hold either the Up or Down buttons until the programming icon replaces the service icon and the parameter display reads DO.
2. Adjust the displayed time with the Up and Down buttons.
3. When the desired time is set, press the Extra Cycle button to resume normal operation. The unit will also return to normal operation after 5 seconds if no buttons are pressed.



## Entering Master Programming Mode

Set the Time Of Day display to 12:01 P.M. Press the Extra Cycle button (to exit Setting Time of Day mode). Then press and hold the Up and Down buttons together until the programming icon replaces the service icon and the Display Format screen appears.

## Exiting Master Programming Mode

Press the Extra Cycle button to accept the displayed settings and cycle to the next parameter. Press the Extra Cycle button at the last parameter to save all settings and return to normal operation. The control will automatically disregard any programming changes and return to normal operation if it is left in Master Programming mode for 5 minutes without any keypad input.

## Resets

**Soft Reset:** Press and hold the Extra Cycle and Down buttons for 25 seconds while in normal Service mode. This resets all parameters to the system default values, except the volume remaining in meter immediate or meter delayed systems and days since regeneration in the time clock system.

**Master Reset:** Hold the Extra Cycle button while powering up the unit. This resets all of the parameters in the unit. Check and verify the choices selected in Master Programming Mode.

## 1. Display Format (Display Code DF)

This is the first screen that appears when entering Master Programming Mode. The Display Format setting specifies the unit of measure that will be used for volume and how the control will display the Time of Day. This option setting is identified by "DF" in the upper left hand corner of the screen. There are three possible settings:

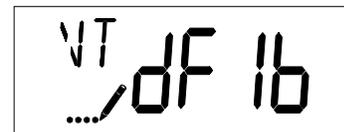
Display Format Setting	Unit of Volume	Time Display
GAL	U.S. Gallons	12-Hour AM/PM
Ltr	Liters	24-Hour



## 2. Valve Type (Display Code VT)

Press the Extra Cycle button. Use this display to set the Valve Type. The Valve Type setting specifies the type of cycle that the valve follows during regeneration. Note that some valve types require that the valve be built with specific subcomponents. Ensure the valve is configured properly before changing the Valve Type setting. This option setting is identified by "VT" in the upper left hand corner of the screen. There are 6 possible settings:

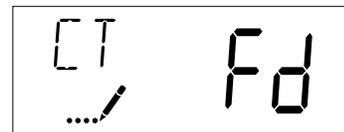
Abbreviation	Parameter
dF1b	Standard Downflow/Upflow, Single Backwash
dF2b	Standard Downflow/Upflow, Double Backwash
Fltr	Filter
UFbd	Upflow Brine First
UFtr	Upflow Filter
Othr	Other



## 3. Control Type (Display Code CT)

Press the Extra Cycle button. Use this display to set the Control Type. This specifies how the control determines when to trigger a regeneration. For details on how the various options function, refer to the "Timer Operation" section of this service manual. This option setting is identified by "CT" in the upper left hand corner of the screen. There are four possible settings:

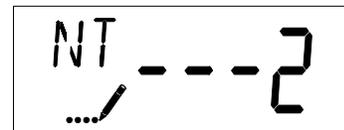
- Meter Delayed: Fd
- Meter Immediate: FI
- Time Clock: tc
- Day of Week: dAY



## 4. Number of Tanks (Display Code NT)

Press the Extra Cycle button. Use this display to set the Number of Tanks in your system. This option setting is identified by "NT" in the upper left hand corner of the screen. There are two possible settings:

- Single Tank System: 1
- Two-Tank System: 2



# MASTER PROGRAMMING MODE

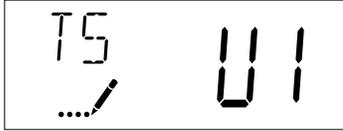
*continued*

## 5. Tank in Service (Display Code TS)

Press the Extra Cycle button. Use this display to set whether tank one or tank two is in service. This option setting is identified by "TS" in the upper left hand corner of the screen. This parameter is only available if the number of tanks has been set to 2. There are two possible settings:

Tank One in Service: U1

Tank Two in Service: U2



## 6. Unit Capacity (Display Code C)

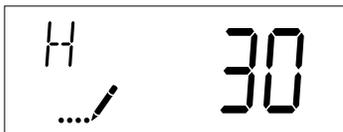
Press the Extra Cycle button. Use this display to set the Unit Capacity. This setting specifies the treatment capacity of the system media. Enter the capacity of the media bed in grains of hardness when configuring a softener system, and in the desired volume capacity when configuring a filter system. This option setting is identified by "C" in the upper left hand corner of the screen. The Unit Capacity parameter is only available if the control type has been set to one of the metered options. Use the Up and Down buttons to adjust the value as needed.



Range: 1-999,900 gallons (100-9,999,000 Liters)

## 7. Feedwater Hardness (Display Code H)

Press the Extra Cycle button. Use this display to set the Feedwater Hardness. Enter the feedwater hardness in grains per unit volume for softener systems, or 1 for filter systems. This option setting is identified by "H" in the upper left hand corner of the screen. The feedwater hardness parameter is only available if the control type has been set to one of the metered options. Use the Up and Down buttons to adjust the value as needed.

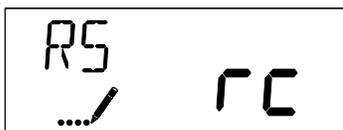


Range: 1-199 hardness

## 8. Reserve Selection (Display Code RS)

Press the Extra Cycle button. Use this display to set the Safety Factor. Use this display to select the type of reserve to be used in your system. This setting is identified by "RS" in the upper left-hand corner of the screen. The reserve selection parameter is only available if the control type has been set to one of the metered options. There are two possible settings.

FS	Safety Factor
rc	Fixed Reserve Capacity



## 9. Safety Factor (Display Code SF)

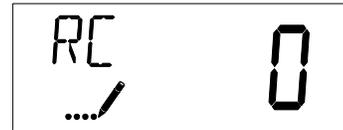
Press the Extra Cycle button. Use this display to set the Safety Factor. This setting specifies what percentage of the system capacity will be held as a reserve. Since this value is expressed as a percentage, any change to the unit capacity or feedwater hardness that changes the calculated system capacity will result in a corresponding change to the reserve volume. This option setting is identified by "SF" in the upper left hand corner of the screen. Use the Up and Down buttons to adjust the value from 0 to 50% as needed.



Range: 0-50%

## 10. Fixed Reserve Capacity (Display Code RC)

Press the Extra Cycle button. Use this display to set the Reserve Capacity. This setting specifies a fixed volume that will be held as a reserve. The reserve capacity cannot be set to a value greater than one-half of the calculated system capacity. The reserve capacity is a fixed volume and does not change if the unit capacity or feedwater hardness are changed. This option setting is identified by "RC" in the upper left-hand corner of the screen. Use the Up and Down buttons to adjust the value as needed.



Range: 0-half the calculated capacity

## 11. Day Override (Display Code DO)

Press the Extra Cycle button. Use this display to set the Day Override. This setting specifies the maximum number of days between regeneration cycles. If the system is set to a timer-type control, the day override setting determines how often the system will regenerate. A metered system will regenerate regardless of usage if the days since last regeneration cycle equal the day override setting. Setting the day override value to "OFF" disables this function. This option setting is identified by "DO" in the upper left hand corner of the screen. Use the Up and Down buttons to adjust the value as needed.



Range: Off-99 days

# MASTER PROGRAMMING MODE

*continued*

## 12. Regeneration Time

Press the Extra Cycle button. Use this display to set the Regeneration Time. This setting specifies the time of day the control will initiate a delayed, manually queued, or day override triggered regeneration. This option setting is identified by “RT” in the upper left-hand corner of the screen. Use the Up and Down buttons to adjust the value as needed.



## 13. Regeneration Cycle Step Times

Press the Extra Cycle button. Use this display to set the Regeneration Cycle Step Times. The different regeneration cycles are listed in sequence based on the valve type selected for the system, and are identified by an abbreviation in the upper left-hand corner of the screen. The abbreviations used are listed below. If the system has been configured with the “OTHER” valve type, the regeneration cycles will be identified as R1, R2, R3, R4, R5, and R6. Each cycle step time can be set from 0 to 199 minutes. Setting a cycle step time to 0 will cause the control to skip that step during regeneration, but keeps the following steps available. Use the Up and Down buttons to adjust the value as needed. Press the Extra Cycle button to accept the current setting and move to the next parameter.

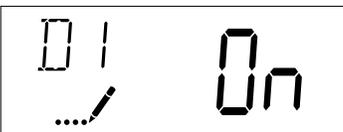
Abbreviation	Cycle Step
BD	Brine Draw
BF	Brine Fill
BW	Backwash
RR	Rapid Rinse
SV	Service



Range: 0-199 minutes

## 14. Day of Week Settings

Press the Extra Cycle button. Use this display to set the regeneration schedule for a system configured as a Day of Week control. The different days of the week are identified as D1, D2, D3, D4, D5, D6, and D7 in the upper left-hand corner of the display. Set the value to “ON” to schedule a regeneration or “OFF” to skip regeneration for each day. Use the Up and Down buttons to adjust the setting as needed. Press the Extra Cycle button to accept the setting and move to the next day. Note that the control requires at least one day to be set to “ON.” If all 7 days are set to “OFF”, the unit will return to Day One until one or more days are set to “ON.”



## 15. Current Day (Display Code CD)

Press the Extra Cycle button. Use this display to set the current day on systems that have been configured as Day of Week controls. This setting is identified by “CD” in the upper left-hand corner of the screen. Use the Up and Down buttons to select from Day 1 through Day 7.



## 16. Flow Meter Type (Display Code FM)

Press the Extra Cycle button. Use this display to set the type of flow meter connected to the control. This option setting is identified by “FM” in the upper left-hand corner of the screen. Use the Up and Down buttons to select one of the 7 available settings.

t0.7	Fleck 3/4” Turbine Meter
P0.7	Fleck 3/4” Paddle Wheel Meter
t1.0	Fleck 1” Turbine Meter
P1.0	Fleck 1” Paddle Wheel Meter
t1.5	Fleck 1 1/2” Turbine Meter
P1.5	Fleck 1 1/2” Paddle Wheel Meter
P2.0	Fleck 2” Paddle Wheel Meter
GEn	Generic/Other Meter



## 17. Meter Pulse Setting (Display Code K)

Press the Extra Cycle button. Use this display to specify the meter pulse setting for a non-standard flow meter. This option setting is identified by “K” in the upper left-hand corner of the screen. Use the Up and Down buttons to enter the meter constant in pulses per unit volume.



## 18. End of Master Programming Mode

Press the Extra Cycle button to save all settings and exit Master Programming Mode.

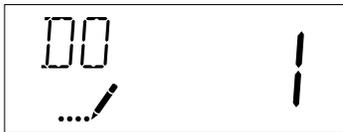
## USER PROGRAMMING MODE

User Programming Mode Options		
Abbreviation	Parameter	Description
DO	Day Override	The timer's day override setting
RT	Regeneration Time	The time of day that the system will regenerate (meter delayed, timeclock, and day-of-week systems)
H	Feed Water Hardness	The hardness of the inlet water - used to calculate system capacity for metered systems
RC or SF	Reserve Capacity	The fixed reserve capacity
CD	Current Day	The current day of week

**NOTE: Some items may not be shown depending on timer configuration. The timer will discard any changes and exit User Mode if any button is not pressed for sixty seconds.**

### User Programming Mode Steps

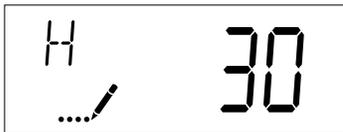
1. Press the Up and Down buttons for five seconds while in service, and the time of day is NOT set to 12:01 PM.
2. Use this display to adjust the Day Override. This option setting is identified by "DO" in the upper left hand corner of the screen.



3. Press the Extra Cycle button. Use this display to adjust the Regeneration Time. This option setting is identified by "RT" in the upper left hand corner of the screen.



4. Press the Extra Cycle button. Use this display to adjust the Feed Water Hardness. This option setting is identified by "H" in the upper left hand corner of the screen.



Range: 1-199 hardness

5. Press the Extra Cycle button. Use this display to adjust the Fixed Reserve Capacity. This option setting is identified by "RC" or "SF" in the upper left-hand Corner of the screen.



6. Press the Extra Cycle button. Use this display to set the Current Day of the Week. This option setting is identified by "CD" in the upper left hand corner of the screen.



7. Press the Extra Cycle button to end User Programming Mode.

# DIAGNOSTIC PROGRAMMING MODE

Diagnostic Programming Mode Options		
Abbreviation	Parameter	Description
FR	Flow Rate	Displays the current outlet flow rate
PF	Peak Flow Rate	Displays the highest flow rate measured since the last regeneration
HR	Hours in Service	Displays the total hours that the unit has been in service
VU	Volume Used	Displays the total volume of water treated by the unit
RC	Reserve Capacity	Displays the system's reserve capacity calculated from the system capacity, feedwater hardness, and safety factor
SV	Software Version	Displays the software version installed on the controller

**NOTE: Some items may not be shown depending on timer configuration. The timer will exit Diagnostic Mode after 60 seconds if no buttons are pressed. Press the Extra Cycle button to exit Diagnostic Mode at any time.**

## Diagnostic Programming Mode Steps

1. Press the Up and Extra Cycle buttons for five seconds while in service.
2. Use this display to view the current Flow Rate. This option setting is identified by "FR" in the upper left hand corner of the screen.



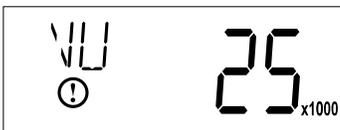
3. Press the Up button. Use this display to view the Peak Flow Rate since the last regeneration cycle. This option setting is identified by "PF" in the upper left hand corner of the screen.



4. Press the Up button. Use this display to view the Hours in Service since the last regeneration cycle. This option setting is identified by "HR" in the upper left hand corner of the screen.



5. Press the Up button. Use this display to view the Volume Used since the last regeneration cycle. This option setting is identified by "VU" in the upper left hand corner of the screen.



6. Press the Up button. Use this display to view the Reserve Capacity. This option setting is identified by "RC" in the upper left hand corner of the screen.

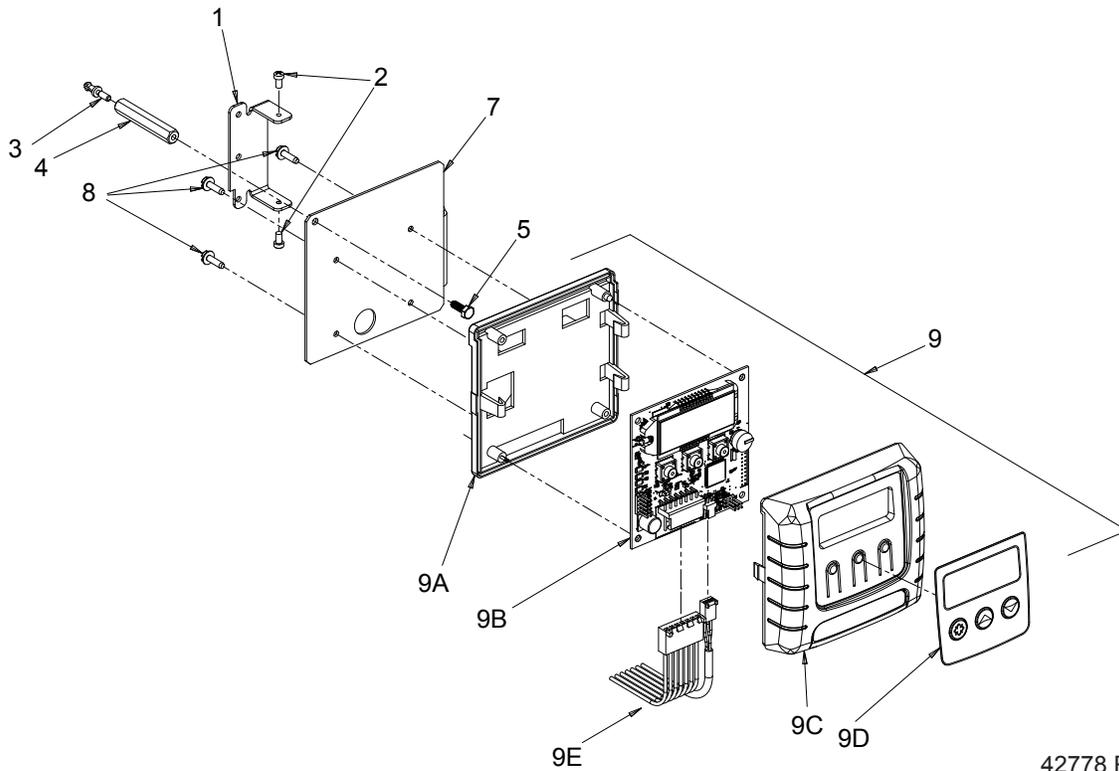


7. Press the Up button. Use this display to view the Software Version. This option setting is identified by "SV" in the upper left hand corner of the screen.



8. Press the Extra Cycle button to end Diagnostic Programming Mode.

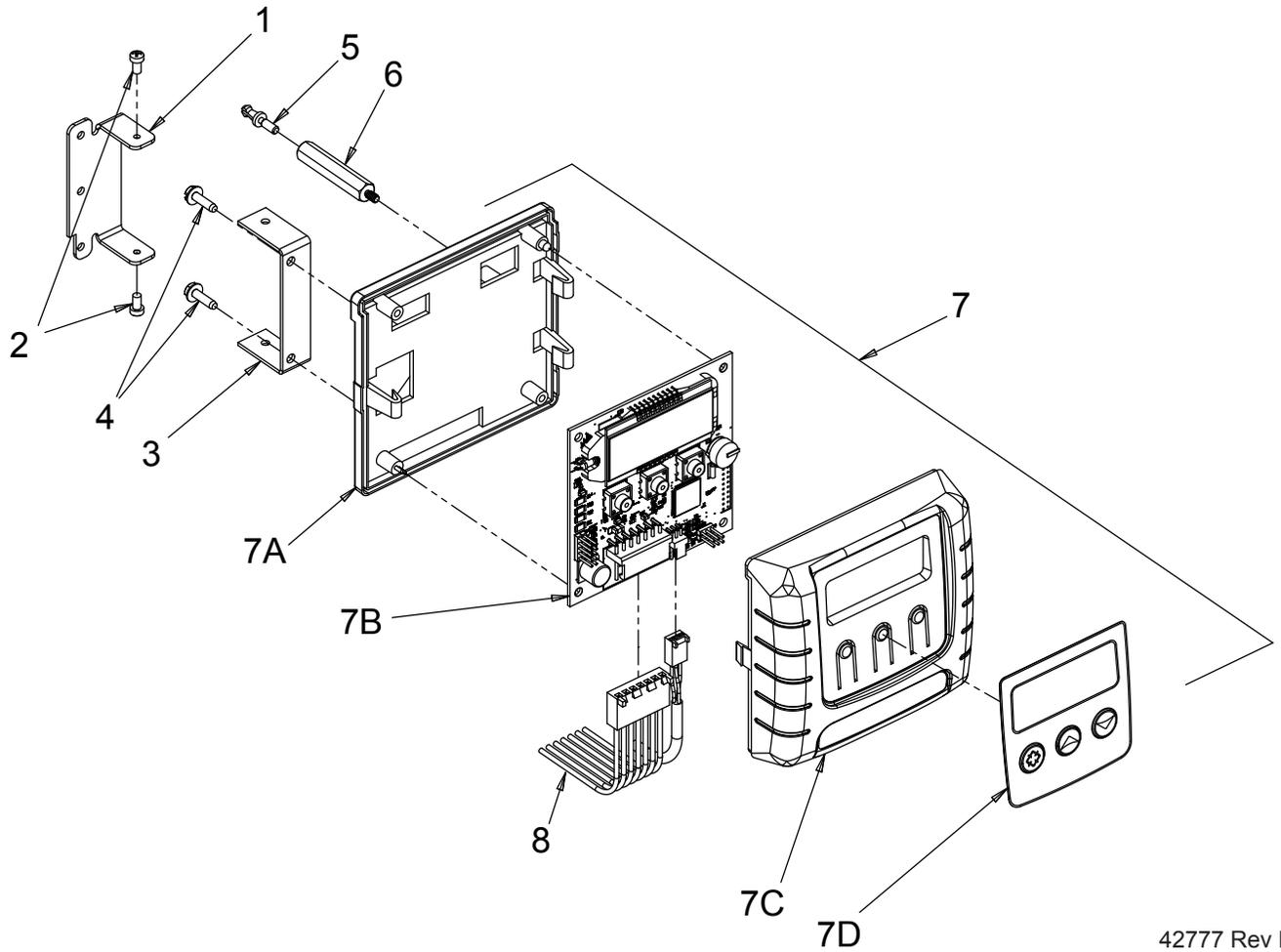
# 2510/2750/2850S TIMER ASSEMBLY



42778 Rev E

Item No.	QTY	Part No.	Description
1.....	1	13881.....	Bracket, Hinge Timer
3.....	1	14265.....	Clip, Spring
4.....	1	27172.....	Stand-off, Timer, 2510SXT, 2750SXT
5.....	1	21363.....	Screw, Hex HD, M4 X 12 MM
7.....	1	27168.....	Bracket, Timer, 2510SE/2750SXT
8.....	3	13296.....	Screw, Hex Washer, 6-20 X 1/2
9.....	1	42778.....	Timer, SXT, 2510/2750, DF
9A.....	1	19889.....	Housing, Circuit Board
9B.....	1	42196.....	Circuit Board, SXT
9C.....	1	42635-01.....	Cover, Front, SXT, Square
9D.....	1	42637.....	Label, Display, SXT
9E.....	1	42864.....	Wire Harness, SXT

# 9000/9100/9500 TWIN TANK TIMER ASSEMBLY

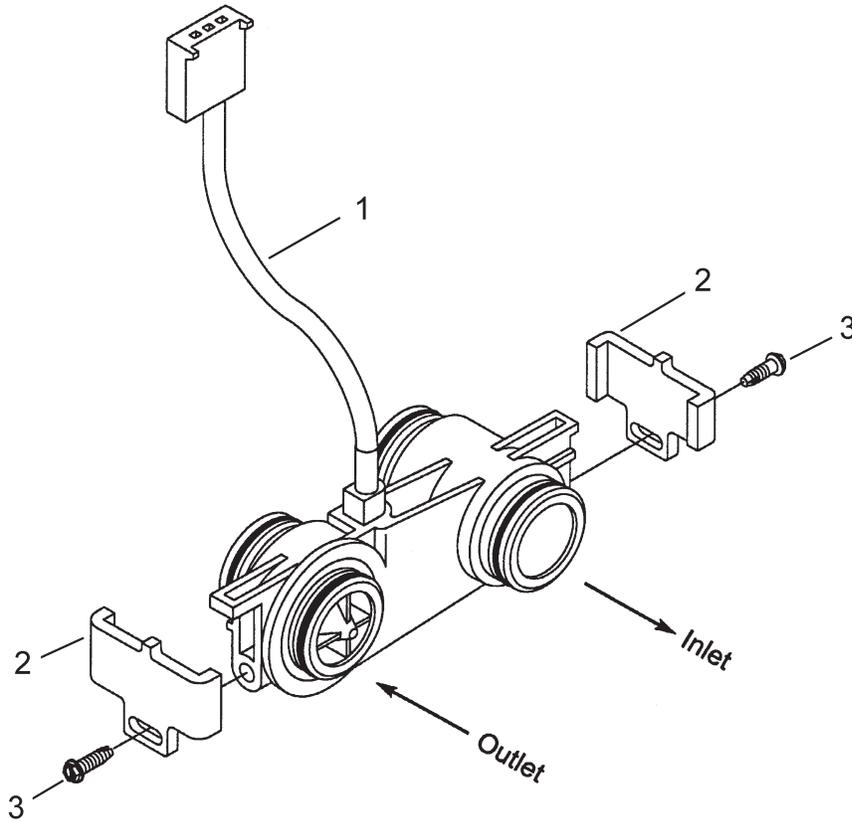


42777 Rev D

Item No.	QTY	Part No.	Description
1.....	1	13881.....	Bracket, Hinge Timer
2.....	2	11384.....	Screw, Phillips, 6-32 X 1/4
3.....	1	42732.....	Bracket, Timer, 9000SXT
4.....	2	13296.....	Screw, Hex Washer Hd, 6-20 X 1/2
5.....	1	14265.....	Clip, Spring
6.....	1	42733.....	Stand-off, Timer, 9000SXT
7.....	1	42777.....	Timer, SXT, D/F, 9000/9100/9500
7A.....	1	19889.....	Housing, Circuit Board
7B.....	1	42196.....	Circuit Board, SXT
7C.....	1	42635-01.....	Cover, Front, SXT, Square
7D.....	1	42637.....	Label, Display, SXT
8.....	1	19474-01.....	Harness, SXT

# 3/4" PLASTIC TURBINE METER ASSEMBLY

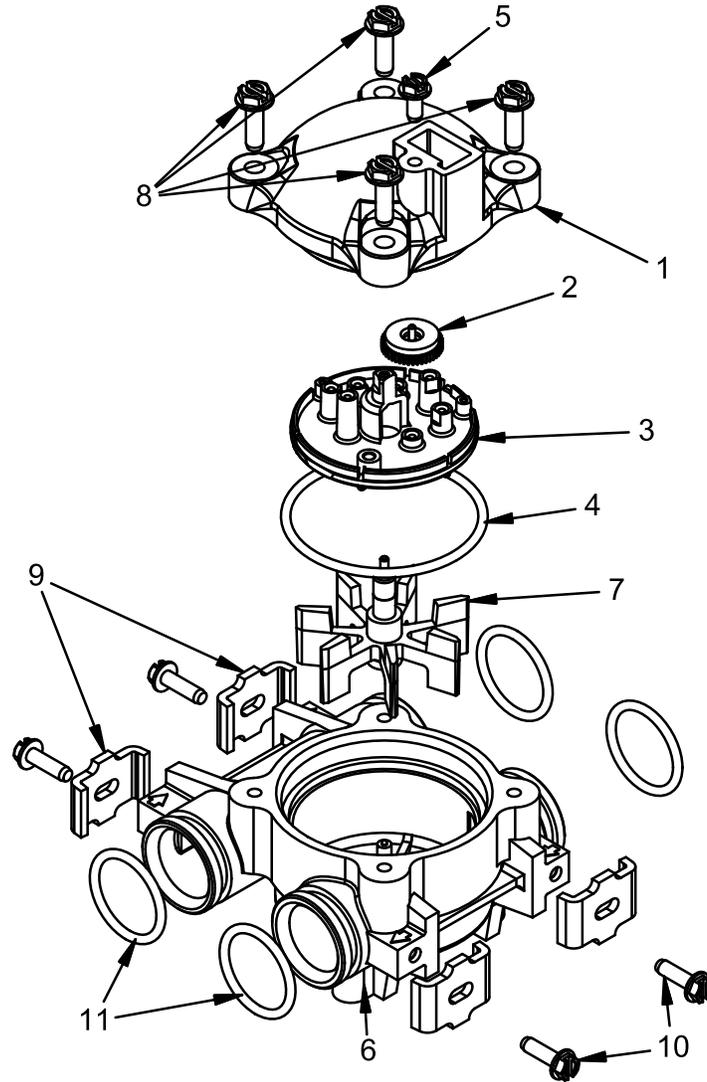
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19797 Rev A

Item No.	QTY	Part No.	Description
1.....	1 .....	19791-01.....	Meter Cable Assy, Turbine/SXT
2.....	2 .....	19569.....	Clip, Flow Meter
3.....	2 .....	13314.....	Screw, Slot Ind Hex, 8-18 x .60

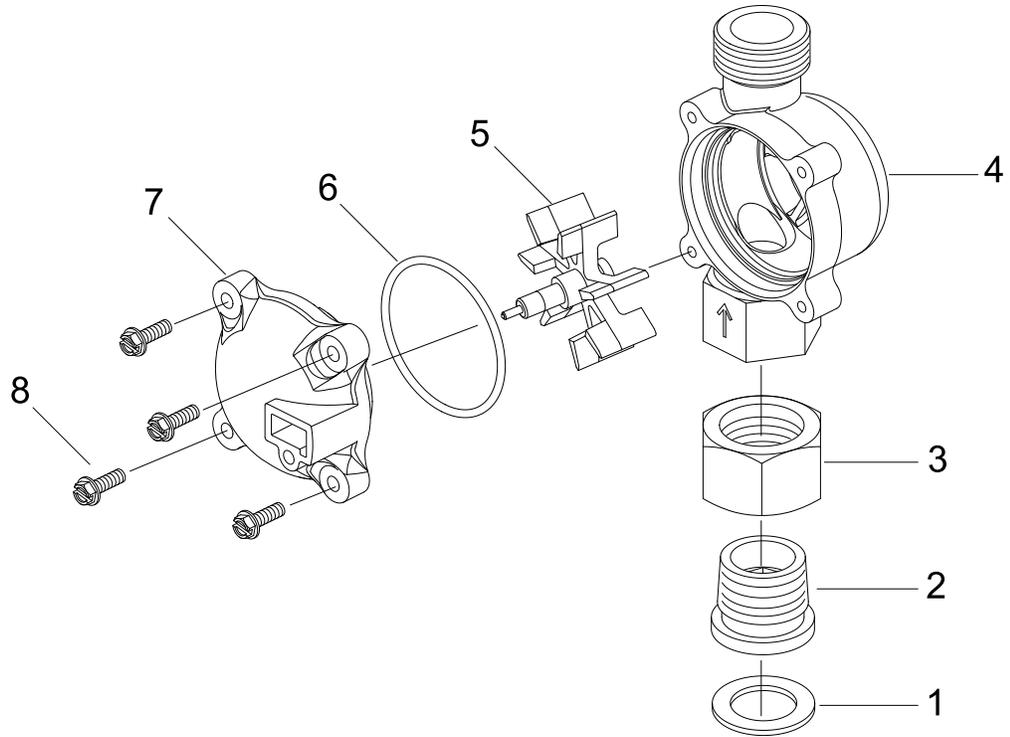
# METER ASSEMBLY



60086 Rev D

Item No.	QTY	Part No.	Description
1.....	1	13874.....	Body, Meter, 5600
2.....	1	14715.....	Gear Assy, Electronic Meter Cap
3.....	1	41055.....	Plate, Intermediate
4.....	1	13847.....	O-ring, -137, Std, Meter
5.....	5	17798.....	Screw, Slot Hex Washer Head
6.....	1	13821.....	Body, Meter, 5600
7.....	1	13509.....	Impeller, Meter
8.....	4	12473.....	Screw, Hex Wsh, 10-24 x 5/8
9.....	4	13255.....	Clip, Mounting
10.....	1	13314.....	Screw, Slot Ind Hex, 8-18 x .60
11.....	1	13305.....	O-ring, -119
12.....	1	14613.....	Flow Straightener

# 3/4" BRASS PADDLE METER ASSEMBLY



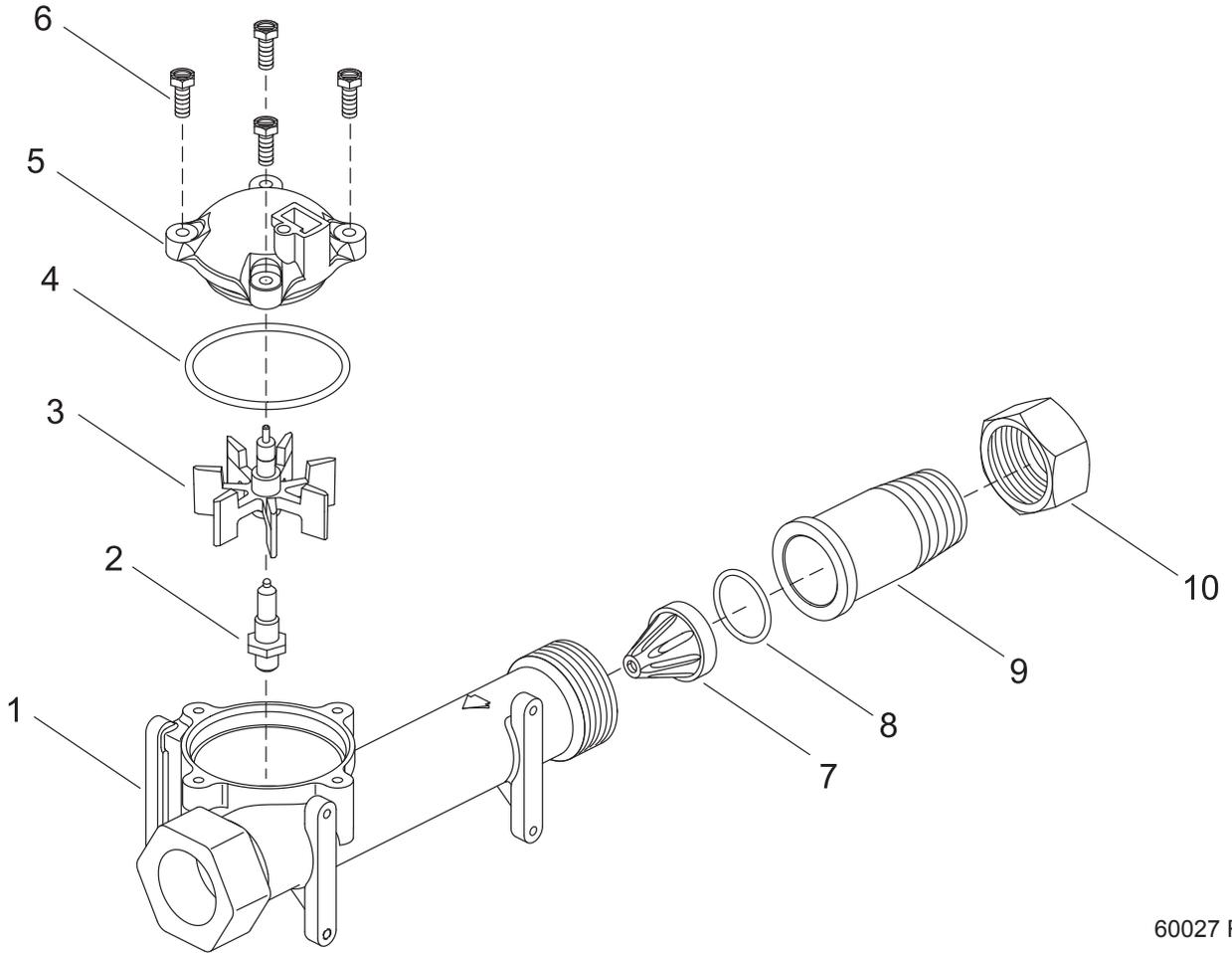
60618 Rev B

Item No.	QTY	Part No.	Description
1.....	1 .....	11206 .....	Gasket, Fitting
2.....	1 .....	13942 .....	Retainer, Nut
3.....	1 .....	11207 .....	Nut, Special, Quick Connect
4.....	1 .....	13906 .....	Body, Meter, 3/4"
5.....	1 .....	13509 .....	Impeller, Meter
		13509-01 .....	Impeller, Celcon
6.....	1 .....	13847 .....	O-ring, -137 Std/560CD, Meter
7.....	1 .....	14716 .....	Meter Cap Assy, ET/NT
8.....	1 .....	12473 .....	Screw, Hex Wsh, 10-24 x 5/8

**Not Shown**

- ..... 19121-08..... Meter Cable Assy, NT, 35" w/ Connector
- ..... 19121-09..... Meter Cable Assy, NT, 99.5" w/ Connector
- ..... 19121-10..... Meter Cable Assy, NT, 303.5" w/ Connector

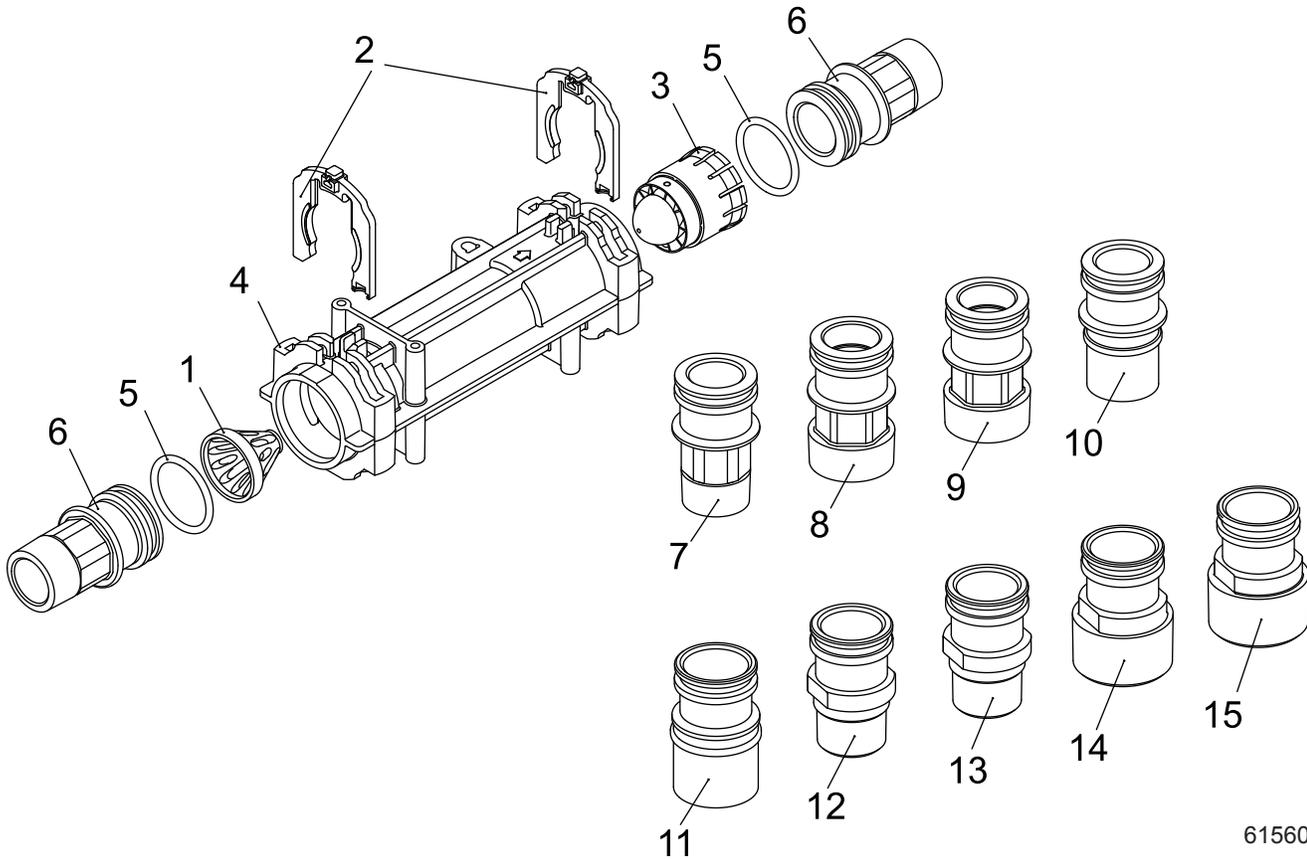
# 1" BRASS PADDLE METER ASSEMBLY



60027 Rev D

Item No.	QTY	Part No.	Description
1.....	1	14959.....	Body, Meter, 2750
2.....	1	13882.....	Post, Meter Impeller
3.....	1	13509.....	Impeller, Meter
4.....	1	13847.....	O-ring, -137, Std/560CD, Meter
5.....	1	14716.....	Meter Cap Assy, ET/NT
6.....	4	12112.....	Screw, Hex Hd Mach, 10-24 x 1/2
7.....	1	14960.....	Flow Straightener, 1"
8.....	1	13287.....	O-ring, -123
9.....	1	14961.....	Fitting, 1" Quick Connect
10.....	1	14962.....	Nut, 1" Meter, Quick Connect

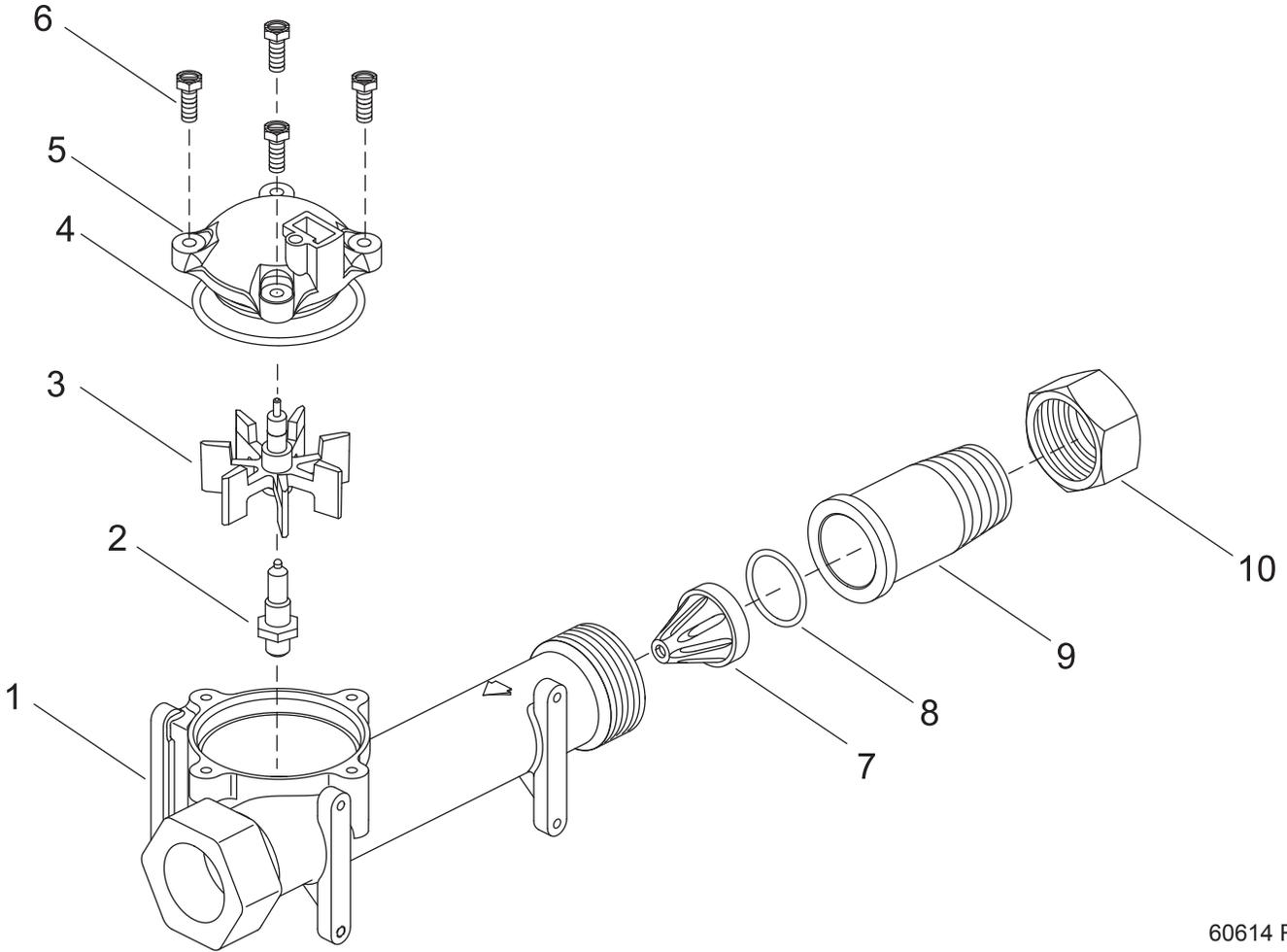
# INLINE PLASTIC TURBINE METER ASSEMBLY



61560 Rev D

Item No.	QTY	Part No.	Description
1.....	1 .....	17542.....	Flow Straightener
2.....	2 .....	40576.....	Clip, H, Plastic, 7000
3.....	1 .....	40577.....	Turbine Meter Assy, 7000
4.....	1 .....	41555.....	Body, Remote Meter
5.....	2 .....	40951.....	O-ring, -220
6.....	2 .....	40563.....	Connector, 1" NPT, 7000
7.....	2 .....	40563-10.....	Connector, 1" BSP, 7000
8.....	2 .....	40565.....	Connector, 1-1/4" NPT, 7000
9.....	2 .....	40565-10.....	Connector, 1-1/4" BSP, 7000
10.....	2 .....	41242.....	Connector, 1" & 1-1/4" Sweat
11.....	2 .....	41243.....	Connector, 1-1/4 & 1-1/2" Sweat
12.....	2 .....	41596.....	Connector, Brass, 1" NPT
13.....	2 .....	41596-10.....	Connector, Brass, 1" BSP
14.....	2 .....	41597.....	Connector, Brass, 1-1/2" NPT
15.....	2 .....	41597-10.....	Connector, Brass, 1-1/2" BSP

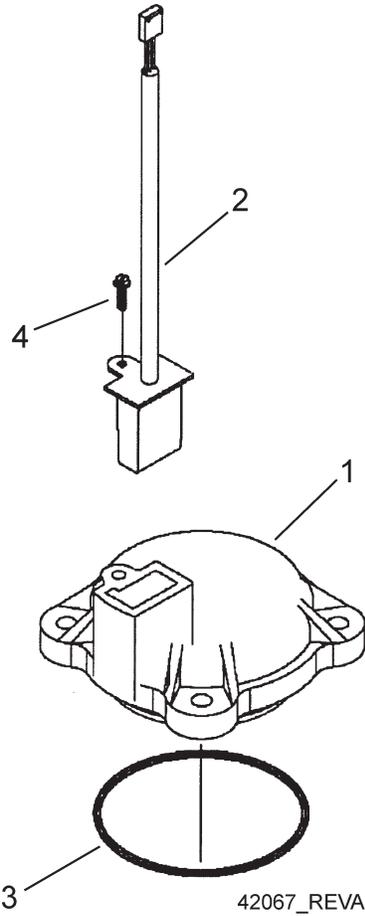
# 1-1/2" BRASS PADDLE METER ASSEMBLY



60614 Rev B

Item No.	QTY	Part No.	Description
1.....	1	17569.....	Body, Meter, 2850/9500
2.....	1	13882.....	Post, Meter Impeller
3.....	1	13509.....	Impeller, Meter
4.....	1	13847.....	O-ring, -137, Std/560CD, Meter
5.....	1	14716.....	Meter Cap Assy, NT
6.....	4	12112.....	Screw, Hex Hd Mach, 10-24 x 1/2
7.....	1	17542.....	Flow Straightener, 1-1/2"
8.....	1	12733.....	O-ring, -132
9.....	1	17544.....	Fitting, 1-1/2" Quick Connect
10.....	1	17543.....	Nut, 1-1/2", Quick Connect

**3/4", 1" or 1-1/2" PADDLE WHEEL  
METER CAP ASSEMBLY**



Item No.	QTY	Part No.	Description
1.....	1 .....	14716.....	Meter Cap Assy, NT
2.....	1 .....	19121-01.....	Meter Cable Assy, SXT, Paddle 6700XTR
3.....	1 .....	13847.....	O-ring, -137, Std/560CD, Meter
4.....	1 .....	17798.....	Screw, Slot Hex Wsh Hd

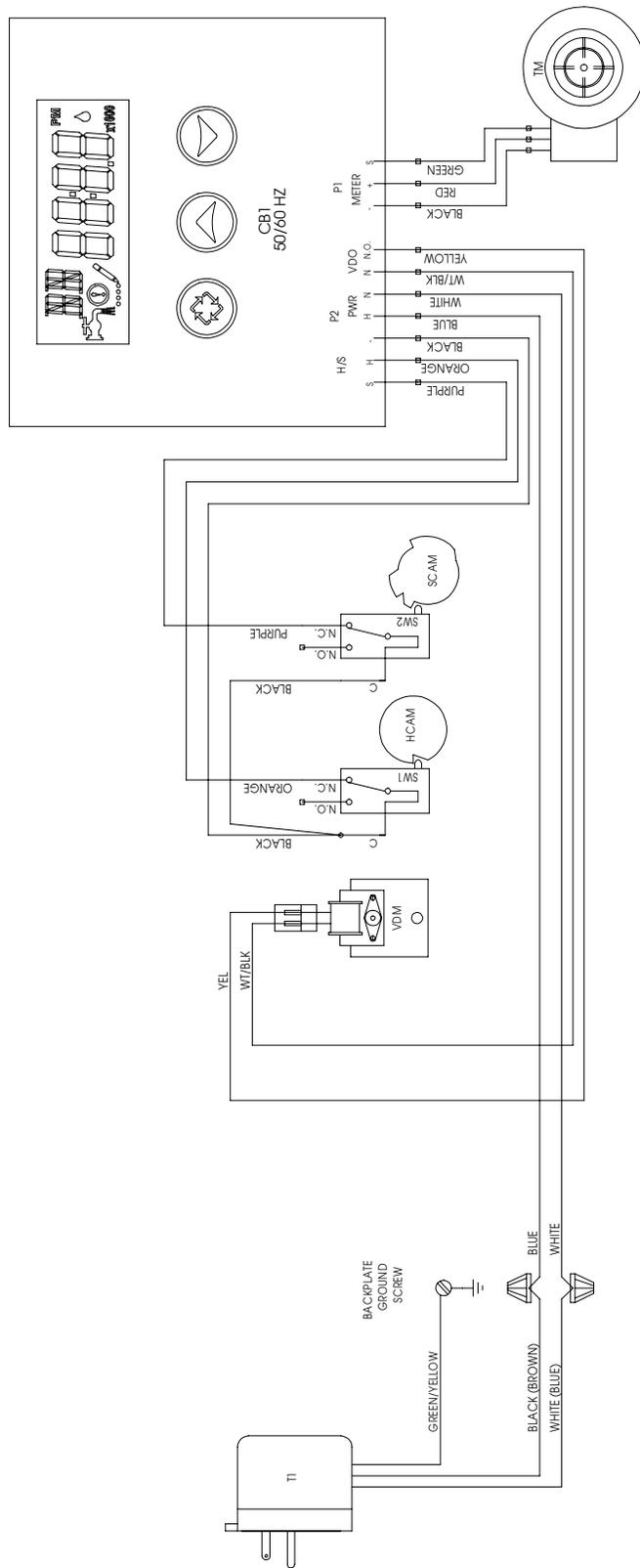
# TROUBLESHOOTING

## Error Codes

**NOTE: Error codes appear on the In Service display.**

Error Code	Error Type	Cause	Reset and Recovery
0	Cam Sense Error	The valve drive took longer than 6 minutes to advance to the next regeneration position	<p>Unplug the unit and examine the powerhead. Verify that all cam switches are connected to the circuit board and functioning properly. Verify that the motor and drive train components are in good condition and assembled properly. Check the valve and verify that the piston travels freely. Replace/reassemble the various components as necessary.</p> <p>Plug the unit back in and observe its behavior. The unit should cycle to the next valve position and stop. If the error re-occurs, unplug the unit and contact technical support.</p>
1	Cycle Step Error	The control experienced an unexpected cycle input	<p>Unplug the unit and examine the powerhead. Verify that all cam switches are connected to the circuit board and functioning properly. Enter Master Programming mode and verify that the valve type and system type are set correctly with regard to the unit itself.</p> <p>Step the unit through a manual regeneration and verify that it functions correctly. If the error re-occurs unplug the unit and contact technical support.</p>
2	Regen Failure	The system has not regenerated for more than 99 days (or 7 days if the Control Type has been set to Day-of-Week)	<p>Perform a Manual Regeneration to reset the error code.</p> <p>If the system is metered, verify that it is measuring flow by running service water and watching for the flow indicator on the display. If the unit does not measure flow, verify that the meter cable is connected properly and that the meter is functioning properly.</p> <p>Enter a Master Programming Mode and verify that the unit is configured properly. As appropriate for the valve configuration, check that the correct system capacity has been selected, that the day override is set properly, and that meter is identified correctly. If the unit is configured as a Day-of-Week system, verify that at least one day is set ON. Correct the settings as necessary.</p>
3	Memory Error	Control board memory failure	Perform a Master Reset and reconfigure the system via Master Programming Mode. After reconfiguring the system, step the valve through a manual regeneration. If the error re-occurs unplug the unit and contact technical support.
UD	Upper Drive Sync	Power failure install programming change	Valve will automatically recover.

# 2510SXT WIRING DIAGRAM

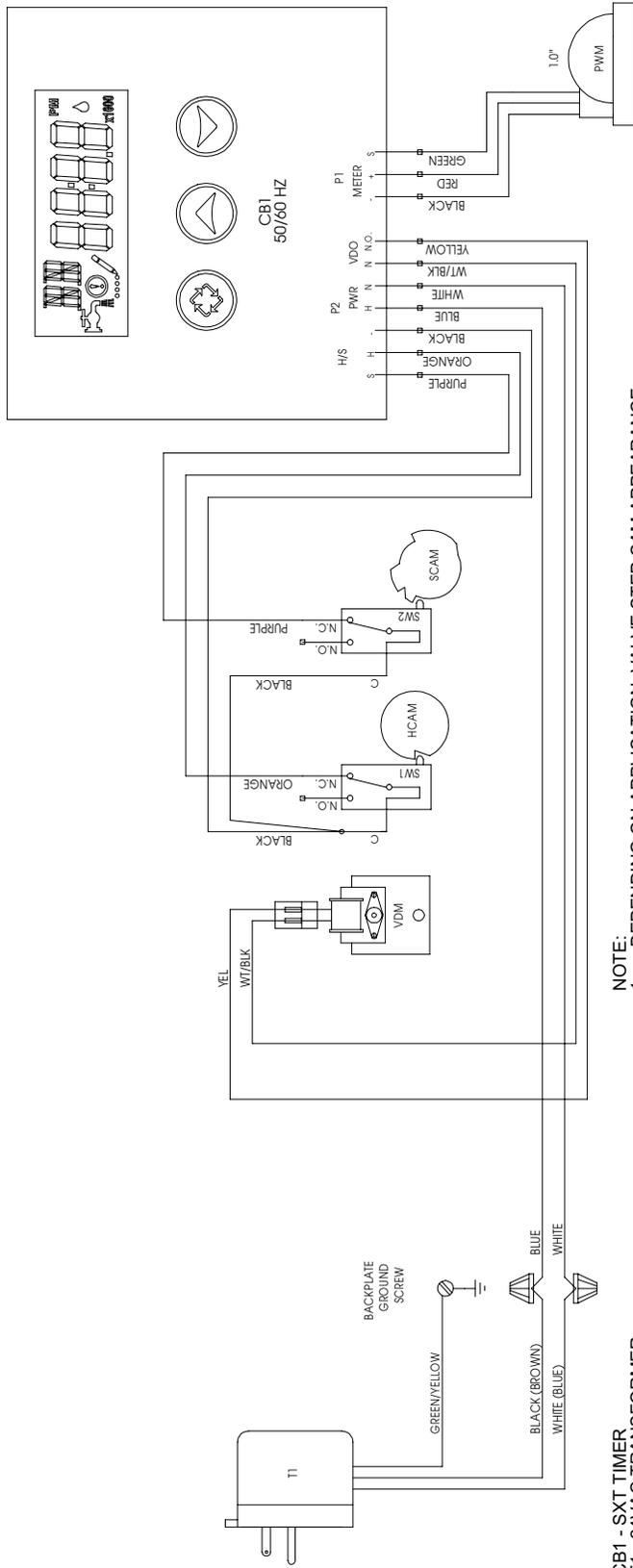


NOTE:  
 1. DEPENDING ON APPLICATION, VALVE STEP CAM APPEARANCE WILL VARY.  
 2. REGARDLESS OF CAM TYPE USED, WIRING TO SWITCHES SW1 AND SW2 WILL REMAIN AS SHOWN.  
 3. VALVE SHOWN IN SERVICE POSITION.

- CB1 - SXT TIMER
- T1 - 24VAC TRANSFORMER
- K1 - 24VAC VALVE DRIVE RELAY
- TM - 3/4" TURBINE FLOW METER (OPTIONAL)
- VDM - VALVE DRIVE MOTOR
- SW1 - VALVE HOMING SWITCH
- SW2 - VALVE STEP SWITCH
- HCAM - VALVE HOMING CAM
- SCAM - VALVE STEP CAM

42741 Rev B

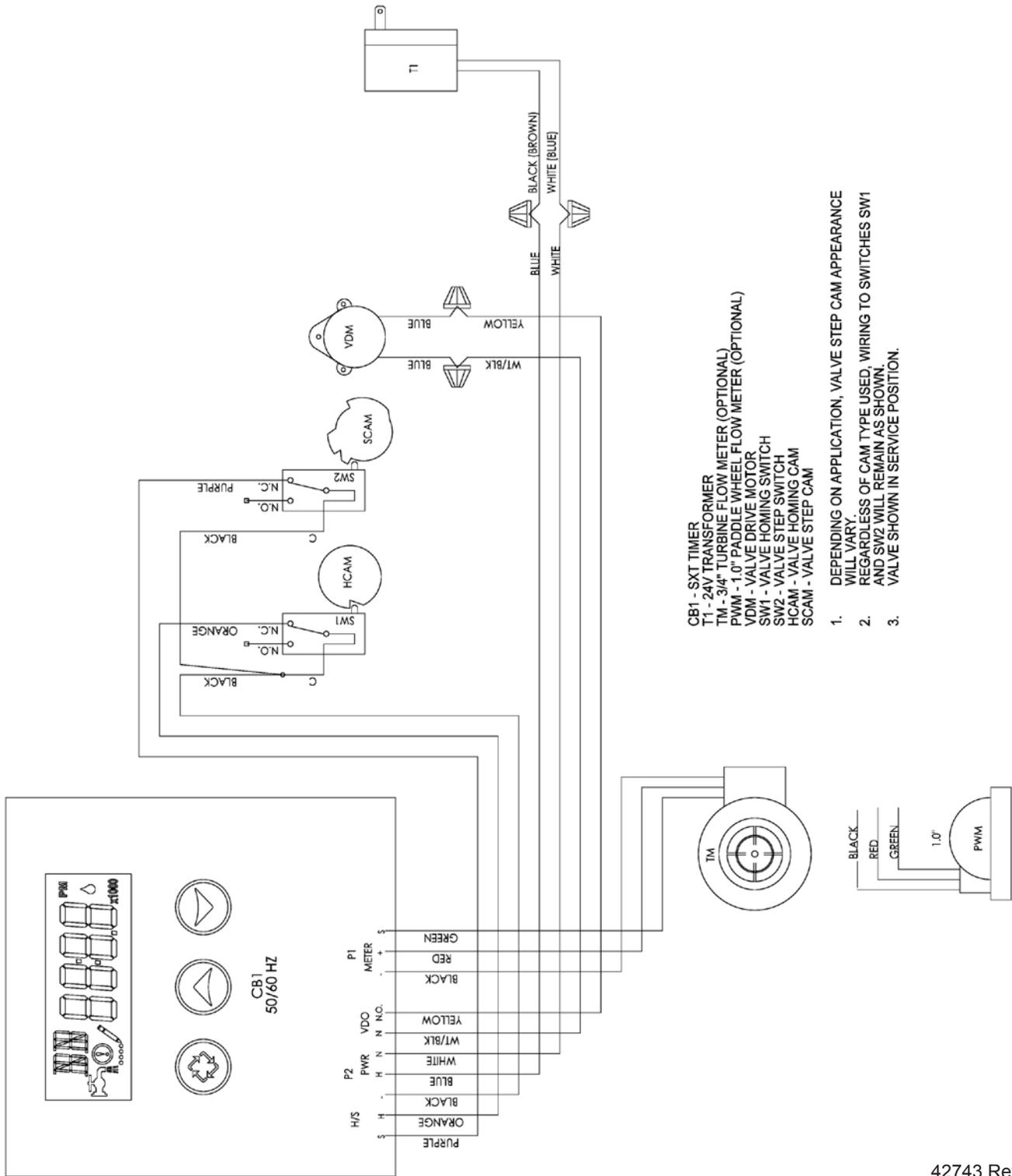
# 2750SXT/2850SXT WIRING DIAGRAM



**NOTE:**  
 1. DEPENDING ON APPLICATION, VALVE STEP CAM APPEARANCE WILL VARY.  
 2. REGARDLESS OF CAM TYPE USED, WIRING TO SWITCHES SW1 AND SW2 WILL REMAIN AS SHOWN.  
 3. VALVE SHOWN IN SERVICE POSITION.

- CB1 - SXT TIMER
- T1 - 24VAC TRANSFORMER
- K1 - 24VAC VALVE DRIVE RELAY
- PMM - 1.0" OR 1.5" PADDLE WHEEL FLOW METER (OPTIONAL)
- VDM - VALVE DRIVE MOTOR
- SW1 - VALVE HOMING SWITCH
- SW2 - VALVE STEP SWITCH
- HCAM - VALVE HOMING CAM
- SCAM - VALVE STEP CAM

# 9000SXT/9100SXT/9500SXT WIRING DIAGRAM



42743 Rev A

## SERVICE ASSEMBLIES

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### Meter

60086-50 .....	Meter Assy, 3/4", Electronic 2510/6600/6700
60613.....	Meter Assy, 2750 Electronic 1"
60613-20 .....	Meter Assy, 2750, Electronic 1" BSP/ Metric
60613NP.....	Meter Assy, 2750, Electronic 1" Nickel Plated
60614.....	Meter Assy, 2850/9500, Electronic 1-1/2" Meter
60614NP.....	Meter Assy, 2850/9500, Electronic 1-1/2" Meter, NP
60618.....	Meter Assy, Electronic, 3/4"
60619-20 .....	Meter Assy, 1-1/2" Electronic BSP/Metric
60626.....	Meter Assy, Turbine, Electronic 3/4" with Clips and Screws
60626-01 .....	Meter Assy, Turbine, 3/4" w/Clips, Screws, Mtr/Cable
61560-01 .....	Meter Assy, In-Line, w/1" NPT Plastic Connector
61560-02 .....	Meter Assy, In-Line, w/1" BSP Plastic Connector
61560-07 .....	Meter Assy, In-Line, w/1" NPT Brass Connector
61560-08 .....	Meter Assy, In-Line, w/1" BSP Brass Connector
61560-05 .....	Meter Assy, In-Line, w/1" I.D. & 1-1/4" O.D. Sweat Connector
61560-09 .....	Meter Assy, In-Line, w/ 1-1/2" NPT Brass Connector
61560-10 .....	Meter Assy, In-Line, w/ 1-1/2" BSP Brass Connector





Control Valve Timer Operation Manual 2850S  
Manual P/N: OM-CONTROL-VALVE-TIMER-2850S  
Rev. 6\_2017

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