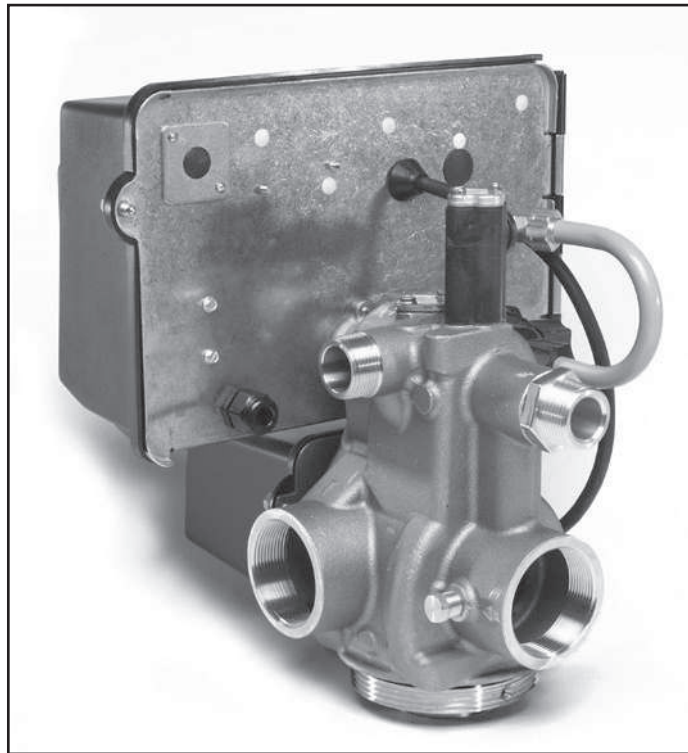


# Model 2900s

## *Service Manual*



**IMPORTANT: Fill in Pertinent Information on Page 3 for Future Reference**

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**IMPORTANT PLEASE READ:**

- The information, specifications and illustrations in this manual are based on the latest information available at the time of printing. The manufacturer reserves the right to make changes at any time without notice.
- This manual is intended as a guide for service of the valve only. System installation requires information from a number of suppliers not known at the time of manufacture. This product should be installed by a plumbing professional.
- This unit is designed to be installed on potable water systems only.
- This product must be installed in compliance with all state and municipal plumbing and electrical codes. Permits may be required at the time of installation.
- If daytime operating pressure exceeds 80 psi, nighttime pressures may exceed pressure limits. A pressure reducing valve must be installed.
- Do not install the unit where temperatures may drop below 32°F (0°C) or above 125°F (52°C).
- Do not place the unit in direct sunlight. Black units will absorb radiant heat increasing internal temperatures.
- Do not strike the valve or any of the components.
- Warranty of this product extends to manufacturing defects of the vessel and controller, not the membrane. Misapplication of this product may result in failure to properly condition water, or damage to product.
- A prefilter should be used on installations in which free solids are present.
- In some applications local municipalities treat water with Chloramines. High Chloramine levels may damage valve components.
- Correct and constant voltage must be supplied to the control valve to maintain proper function.

---

# 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, 2 Meters, Interlock  
E. System #6: 2-5 Tanks, 1 Meter, Series Regeneration  
F. System #7: 2-5 Tanks, 1 Meter, Alternating  
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 Instructions

---

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

**ELECTRICAL FACILITIES:** An uninterrupted alternating current (A/C) supply is required. Note: Other voltages are available. Please make sure your voltage supply is compatible with your unit before installation.

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

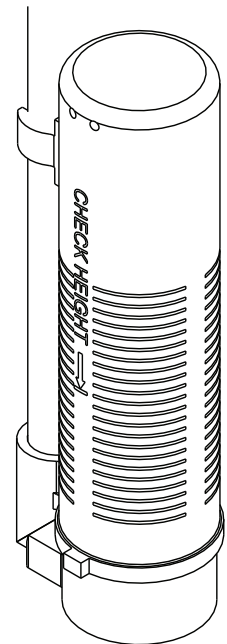
**LOCATION OF SOFTENER AND DRAIN:** The softener should be located close to a drain to prevent air breaks and back flow.

**BY-PASS VALVES:** Always provide for the installation of a by-pass valve if unit is not equipped with one.

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

## Installation Instructions

1. Place the softener tank where you want to install the unit making sure the unit is level and on a firm base.
2. During cold weather, the installer should warm the valve to room temperature before operating.
3. All plumbing should be done in accordance with local plumbing codes. The pipe size for residential drain line should be a minimum of 1/2" (13 mm). Backwash flow rates in excess of 7 gpm (26.5 Lpm) or length in excess of 20' (6 m) require 3/4" (19 mm) drain line. Commercial drain lines should be the same size as the drain line flow control.
4. Refer to the dimensional drawing for cutting height of the distributor tube. If there is no dimensional drawing, cut the distributor tube flush with the top of the tank.
5. Lubricate the distributor O-ring seal and tank O-ring seal. Place the main control valve on tank. Note: Only use silicone lubricant.
6. Solder joints near the drain must be done prior to connecting the Drain Line Flow Control fitting (DLFC). Leave at least 6" (15 cm) between the DLFC and solder joints when soldering pipes that are connected on the DLFC. Failure to do this could cause interior damage to the DLFC.
7. Teflon tape is the only sealant to be used on the drain fitting. The drain from twin tank units may be run through a common line.
8. Make sure that the floor is clean beneath the salt storage tank and that it is level.
9. Place approximately 1" (25 mm) of water above the grid plate. If a grid is not utilized, fill to the top of the air check (Figure 1) in the salt tank. Do not add salt to the brine tank at this time.
10. On units with a by-pass, place in by-pass position. Turn on the main water supply. Open a cold soft water tap nearby and let run a few minutes or until the system is free from foreign material (usually solder) that may have resulted from the installation. Once clean, close the water tap.
11. Slowly place the by-pass in service position and let water flow into the mineral tank. When water flow stops, slowly open a cold water tap nearby and let run until the air is purged from the unit.
12. Plug unit into an electrical outlet. Note: All electrical connections must be connected according to local codes. Be certain the outlet is uninterrupted.



60002-34REVC

**Figure 1 Residential Air Check Valve**

|  |  |
|--|--|
|  | <p><b>CAUTION</b></p> <ul style="list-style-type: none"><li>• Do not exceed 125 psi water pressure</li><li>• Do not exceed 110°F (43°C) water temperature</li><li>• Do not subject unit to freezing conditions</li></ul> |
|--|--|

# 3200 Timer Setting Procedure

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

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

## How To Set The Time Of Day:

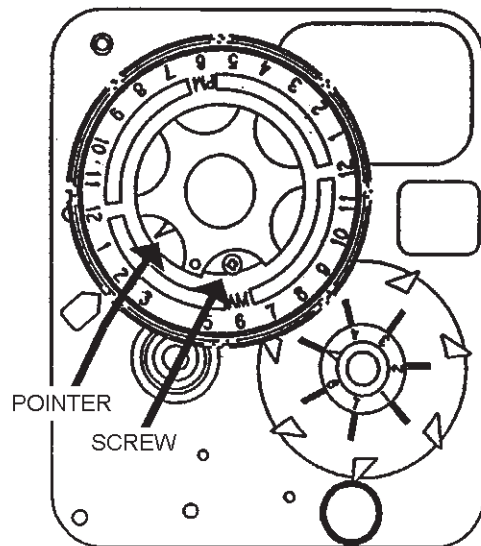
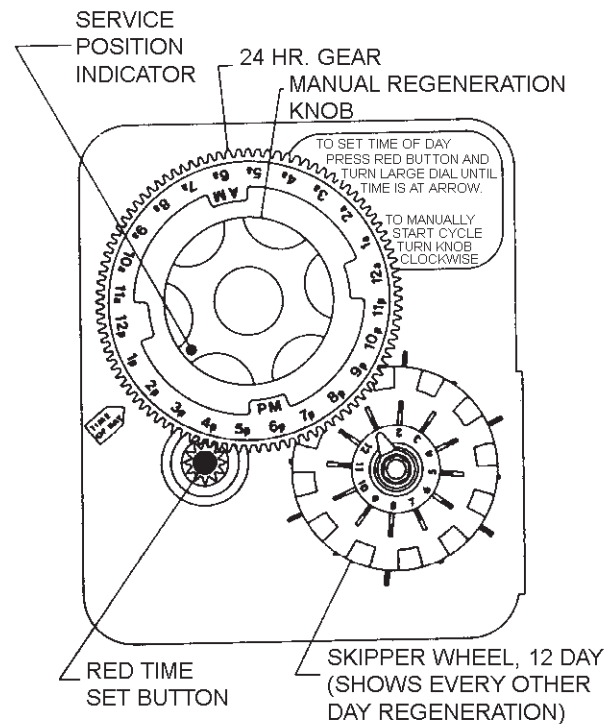
1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is at the time of day pointer.
3. Release the red button to again engage the drive gear.

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

1. Turn the manual regeneration knob clockwise.
2. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
3. The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
4. Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time.
5. In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

## How to Adjust Regeneration Time:

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



3200 ADJUSTABLE REGENERATION TIMER

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

61502\_3200REVA

Figure 2

# 3210 & 3220 Timer Settings

## Typical Programming Procedure

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

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

## How To Set The Time Of Day:

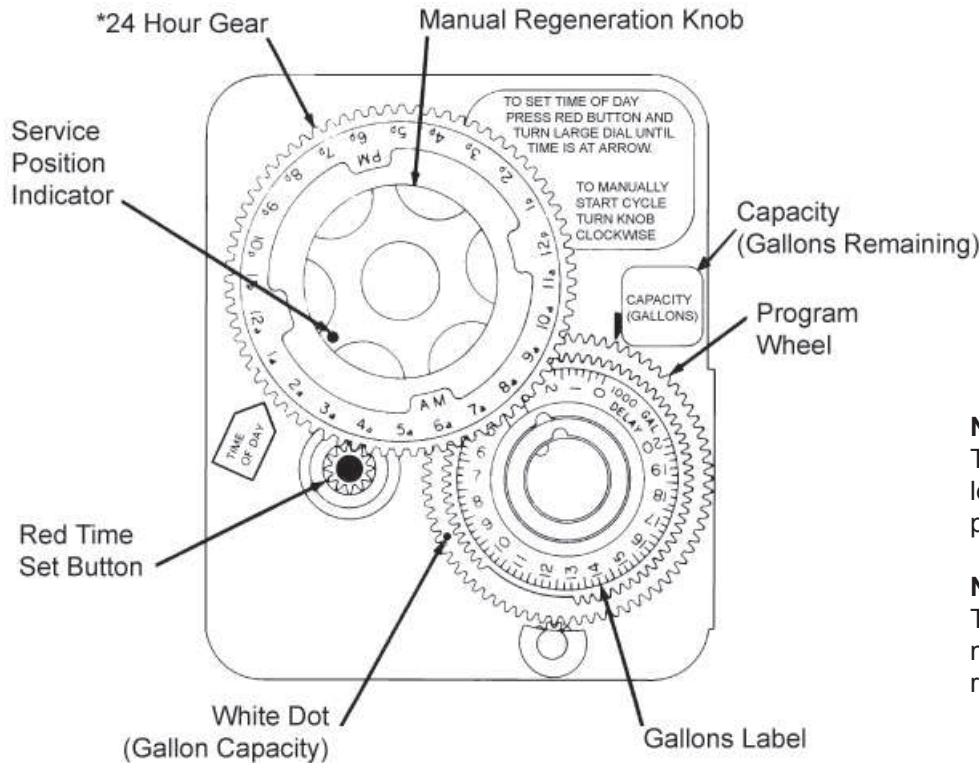
1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is opposite the time of day pointer.
3. Release the red button to again engage the drive gear.

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

1. Turn the manual regeneration knob clockwise.
2. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
3. The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
4. Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time.
5. In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

## Immediate Regeneration Timers:

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



### NOTE:

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

### NOTE:

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

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

61502\_3200REVA

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 & 3210 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 for 3200 & 3210 Timer

### 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.

**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.

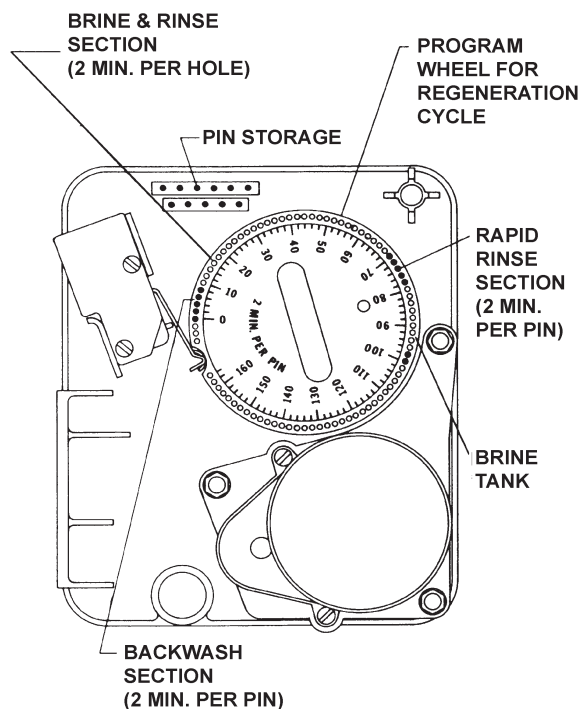


Figure 4

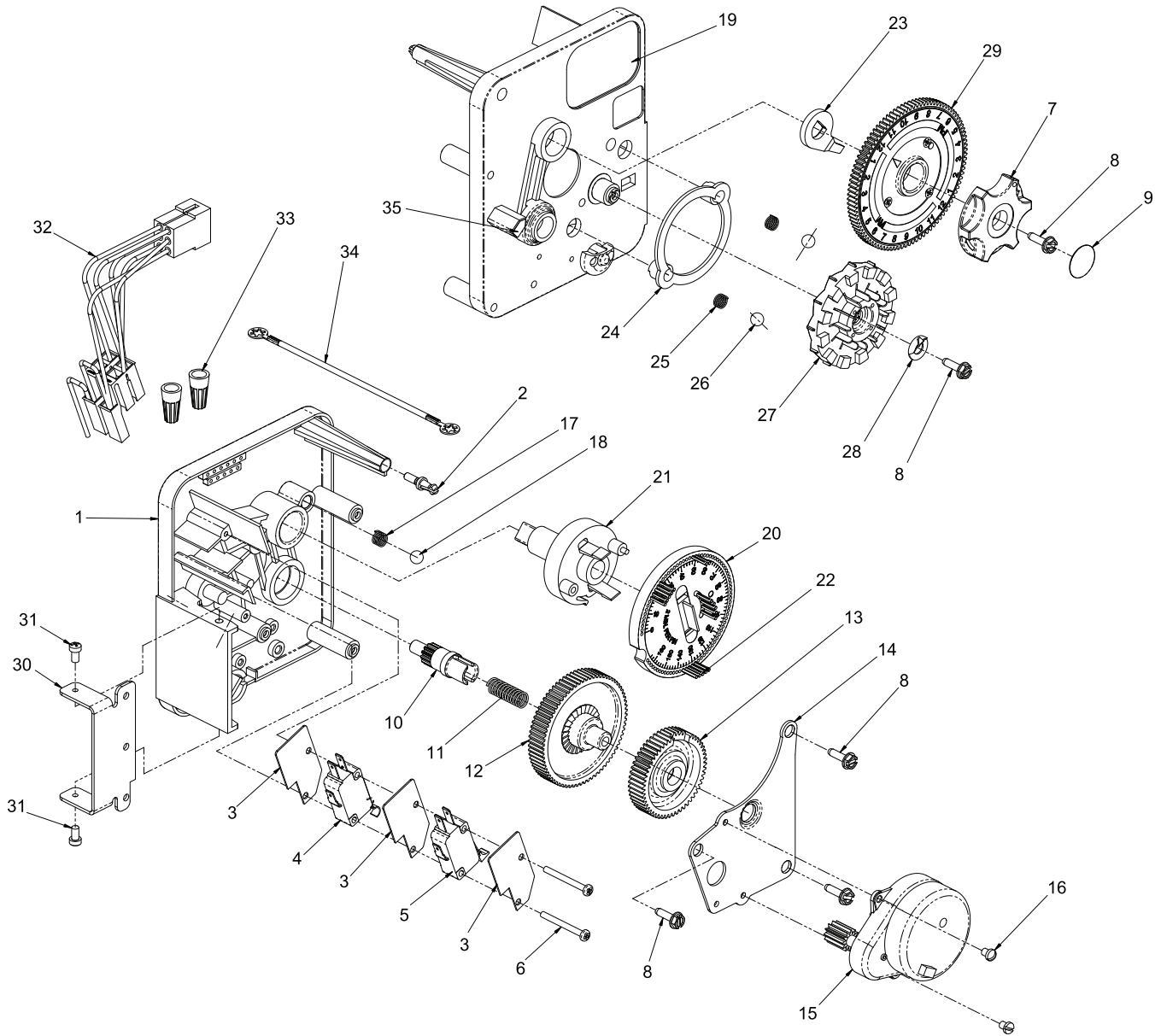
### How To Change The Length Of Rapid Rinse:

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.

# 3200 Time Clock Timer Assembly



61502-3200\_REVA

For Service Assembly Numbers, See the Back of this Manual



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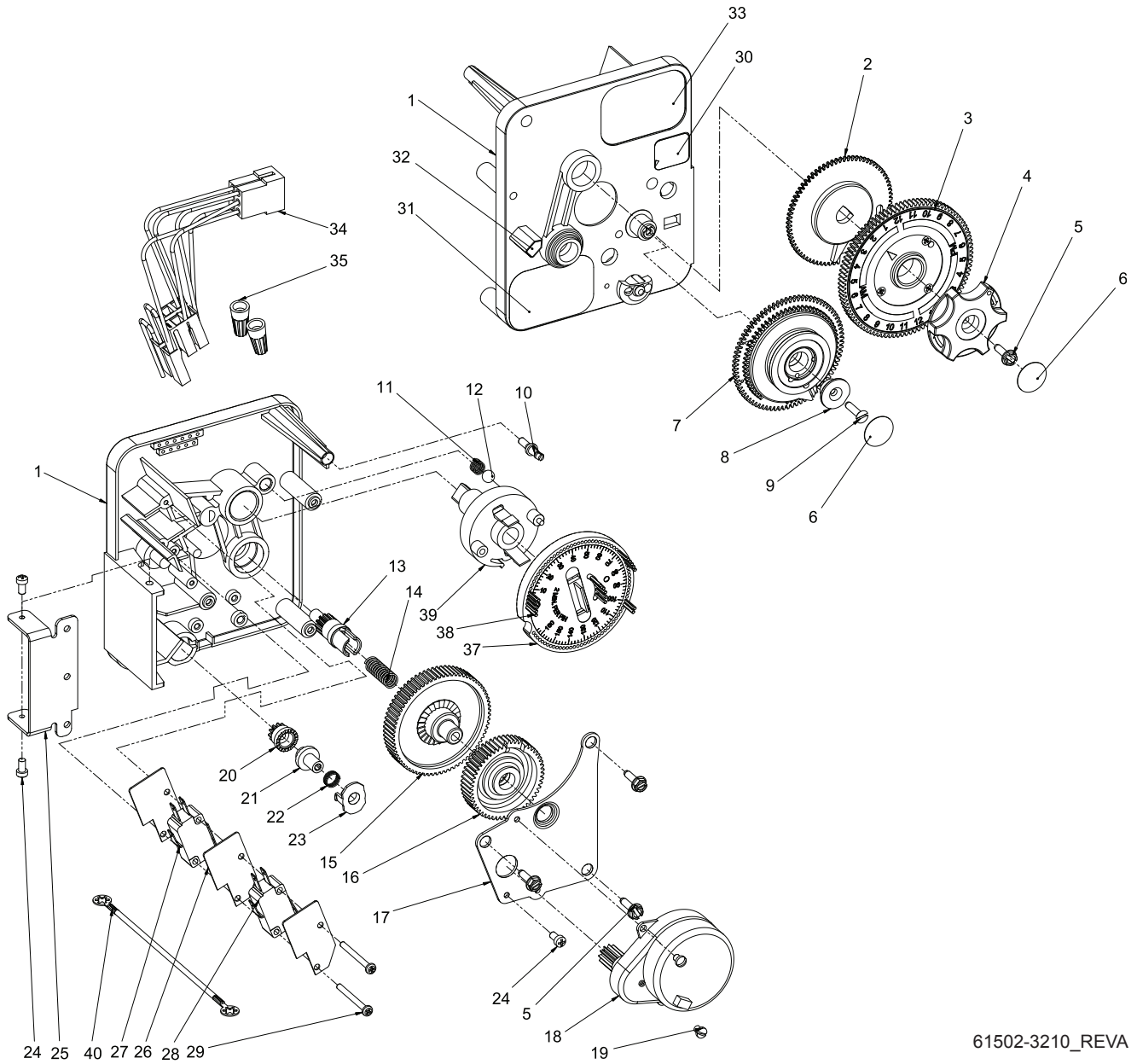
## 3200 Time Clock Timer Assembly

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| Item No. | Quantity | Part No.       | Description                                    |
|----------|----------|----------------|--|
| 1.....   | 1 .....  | 13870 .....    | Housing, Timer, 3200                           |
| 2.....   | 1 .....  | 14265 .....    | Clip, Spring                                   |
| 3.....   | 3 .....  | 14087 .....    | Insulator                                      |
| 4.....   | 1 .....  | 10896 .....    | Switch, Micro                                  |
| 5.....   | 1 .....  | 15320 .....    | Switch, Micro, Timer                           |
| 6.....   | 2 .....  | 11413 .....    | Screw, Pan Hd Mach, 4-40 x 1 1/8               |
| 7.....   | 1 .....  | 13886 .....    | Knob, 3200                                     |
| 8.....   | 5 .....  | 13296 .....    | Screw, Hex Wsh, 6-20 x 1/2                     |
| 9.....   | 1 .....  | 11999 .....    | Label, Button                                  |
| 10.....  | 1 .....  | 13018 .....    | Pinion, Idler                                  |
| 11.....  | 1 .....  | 13312 .....    | Spring, Idler Shaft                            |
| 12.....  | 1 .....  | 13017 .....    | Gear, Idler                                    |
| 13.....  | 1 .....  | 13164 .....    | Gear, Drive                                    |
| 14.....  | 1 .....  | 13887 .....    | Plate, Motor Mounting                          |
| 15.....  | 1 .....  | 18743-1 .....  | Motor, 120V, 60Hz, 1/30 rpm, 5600              |
|          |          | 19659-1 .....  | Motor, 24V, 60Hz, 1/30 rpm                     |
| 16.....  | 2 .....  | 13278 .....    | Screw, Sltd Fillister Hd 6-32 x .156           |
| 17.....  | 1 .....  | 15424 .....    | Spring, Detent, Timer                          |
| 18.....  | 1 .....  | 15066 .....    | Ball, 1/4", Delrin                             |
| 19.....  | 1 .....  | 15465 .....    | Label, Caution                                 |
| 20.....  | 1 .....  | 19210 .....    | Program Wheel Assembly                         |
| 21.....  | 1 .....  | 13911 .....    | Gear, Main Drive, Timer                        |
| 22.....  | 17 ..... | 41754 .....    | Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer |
| 23.....  | 1 .....  | 13011 .....    | Arm, Cycle Actuator                            |
| 24.....  | 1 .....  | 13864 .....    | Ring, Skipper Wheel                            |
| 25.....  | 2 .....  | 13311 .....    | Spring, Detent, Timer                          |
| 26.....  | 2 .....  | 13300 .....    | Ball, 1/4", Stainless Steel                    |
| 27.....  | 1 .....  | 14381 .....    | Skipper Wheel Assembly, 12 Day                 |
|          |          | 14860 .....    | Skipper Wheel Assembly, 7 Day                  |
| 28.....  | 1 .....  | 13014 .....    | Pointer, Regeneration                          |
| 29.....  | 1 .....  | 40096-24 ..... | Dial, 12 AM Regen Assembly, Black              |
|          |          | 40096-02 ..... | Dial, 2 AM Regen Assembly, Black               |
| 30.....  | 1 .....  | 13881 .....    | Bracket, Hinger Timer                          |
| 31.....  | 2 .....  | 11384 .....    | Screw, Phil, 6-32 x 1/4 Zinc                   |
| 32.....  | 1 .....  | 13902 .....    | Harness, 3200                                  |
| 33.....  | 2 .....  | 40422 .....    | Nut, Wire, Tan                                 |
| 34.....  | 1 .....  | 15354-01 ..... | Wire, Ground, 4"                               |
| 35.....  | 1 .....  | 14007 .....    | Label, Time of Day                             |

**For Service Assembly Numbers, See the Back of this Manual**

# 3210 Meter Delayed Timer Assembly



61502-3210\_REVA

For Service Assembly Numbers, See the Back of this Manual

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## **3210 Meter Delayed Timer Assembly**

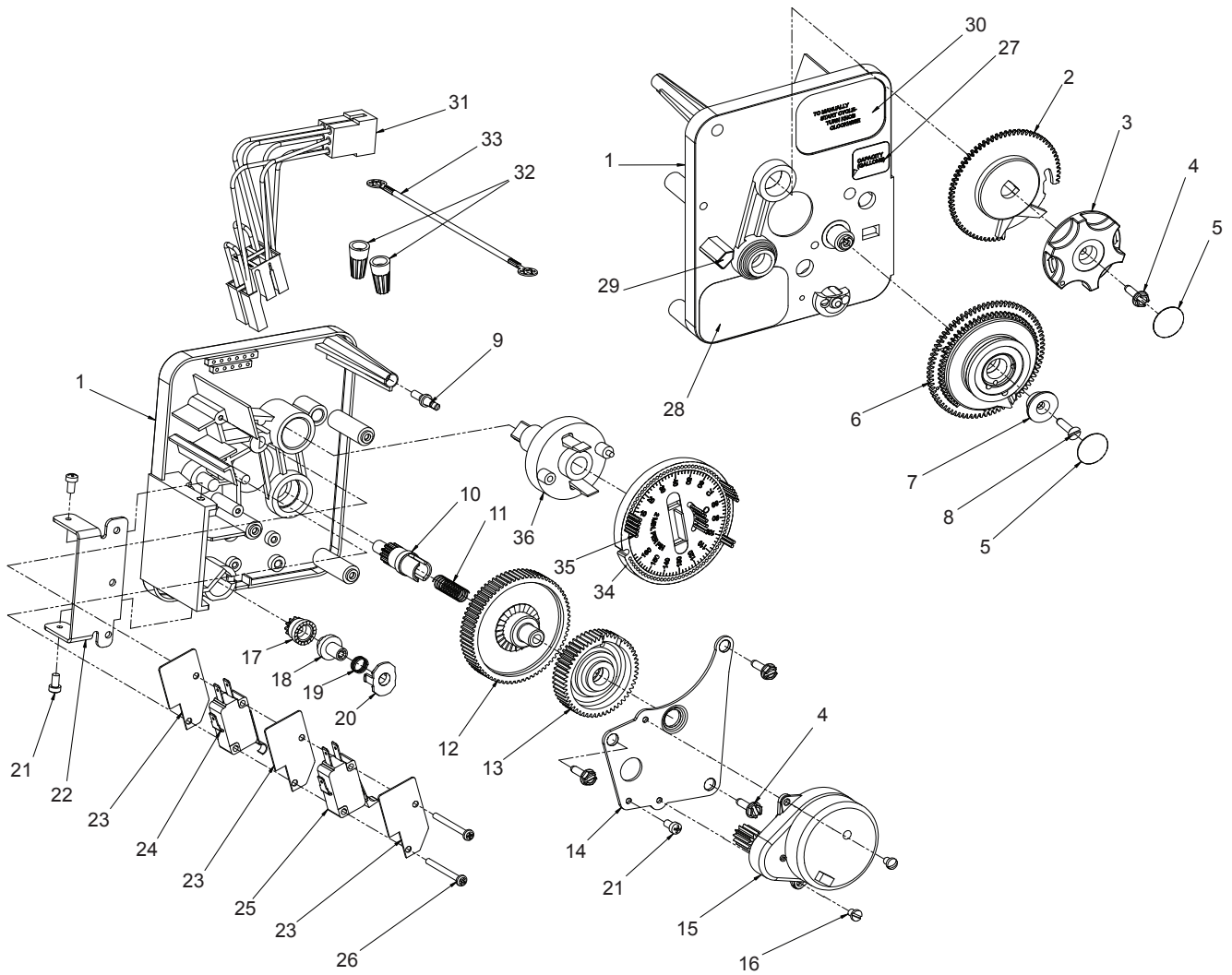
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| <b>Item No.</b> | <b>Quantity</b> | <b>Part No.</b> | <b>Description</b>                                     |
|-----------------|-----------------|-----------------|--|
| 1.....          | 1 .....         | 13870 .....     | Housing, Timer, 3200                                   |
| 2.....          | 1 .....         | 13802 .....     | Gear, Cycle Actuator                                   |
| 3.....          | 1 .....         | 40096-02 .....  | Dial 2AM Regen Assembly, Black                         |
| 4.....          | 1 .....         | 13886 .....     | Knob, 3200   |
| 5.....          | 4 .....         | 13296 .....     | Screw, Hex Wsh, 6-20 x 1/2                             |
| 6.....          | 2 .....         | 11999 .....     | Label, Button  |
| 7.....          | 1 .....         | 60405-50 .....  | Program Wheel, w/2" Std Label, w/People Label Set @ 21 |
| 8.....          | 1 .....         | 13806 .....     | Retainer, Program Wheel                                |
| 9.....          | 1 .....         | 13748 .....     | Screw, Flat Head St, 6-20 x 1/2                        |
| 10.....         | 1 .....         | 14265 .....     | Clip, Spring   |
| 11.....         | 1 .....         | 15424 .....     | Spring, Detent, Timer                                  |
| 12.....         | 1 .....         | 15066 .....     | Ball, 1/4" Delrin                                      |
| 13.....         | 1 .....         | 13018 .....     | Pinion, Idler  |
| 14.....         | 1 .....         | 13312 .....     | Spring, Idler Shaft                                    |
| 15.....         | 1 .....         | 13017 .....     | Gear, Idler  |
| 16.....         | 1 .....         | 13164 .....     | Gear, Drive  |
| 17.....         | 1 .....         | 13887 .....     | Plate, Motor Mounting                                  |
| 18.....         | 1 .....         | 18743-1 .....   | Motor, 120V, 60Hz 1/30 rpm, 5600                       |
| 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                                     |
| 33.....         | 1 .....         | 14045 .....     | Label, Instruction                                     |
| 34.....         | 1 .....         | 13902 .....     | Harness, 3200  |
| 35.....         | 2 .....         | 40422 .....     | Nut, Wire, Tan   |
| 36.....         | 1 .....         | 15354-01 .....  | Wire, Ground, 4"                                       |
| 37.....         | 1 .....         | 19210 .....     | Program Wheel Assembly                                 |
| 38.....         | 17 .....        | 41754 .....     | Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer         |
| 39.....         | 1 .....         | 13911 .....     | Gear, Main Drive, Timer                                |
| 40.....         | 1 .....         | 15354-01 .....  | Wire, Ground 4"  |

**For Service Assembly Numbers, See the Back of this Manual**

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# 3220 Meter Immediate Timer Assembly



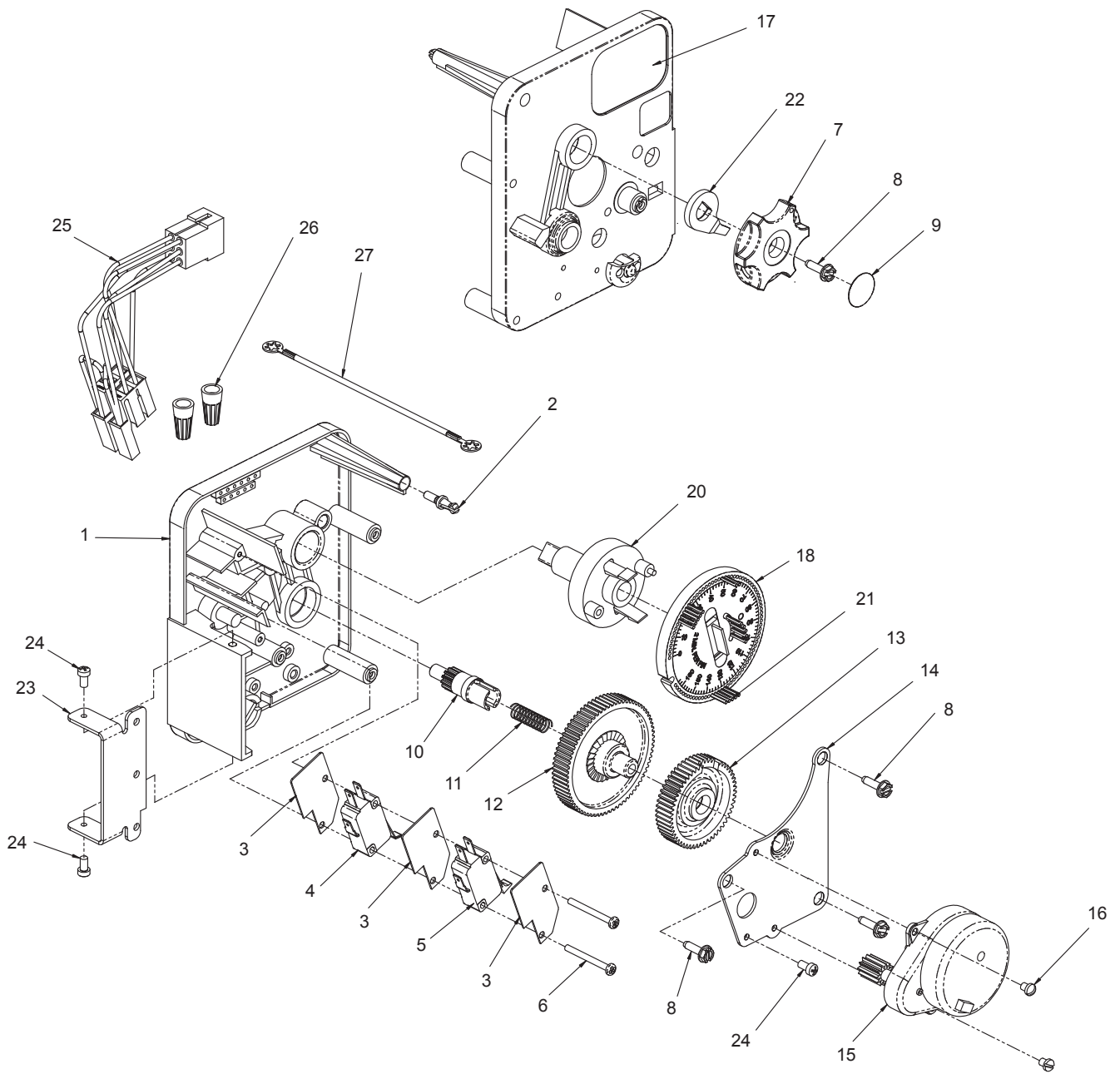
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## 3220 Meter Immediate Timer Assembly

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| Item No. | Quantity | Part No. | Description                                    |
|----------|----------|----------|--|
| 1        | 1        | 13870    | Housing, Timer                                 |
| 2        | 1        | 15431    | Gear, Cycle Actuator, System #5                |
| 3        | 1        | 13886    | Knob, 3200                                     |
| 4        | 4        | 13296    | Screw, Hex Wsh, 6-20 x 1/2                     |
| 5        | 2        | 11999    | Label, Button                                  |
| 6        | 1        | 60408-50 | Program Wheel, W/2" Std Label                  |
| 7        | 1        | 13806    | Retainer, Program Wheel                        |
| 8        | 1        | 13748    | Screw, Flt Hd St, 6-20 x 1/2                   |
| 9        | 1        | 14265    | Spring Clip                                    |
| 10       | 1        | 13018    | Pinion, Idler                                  |
| 11       | 1        | 18563    | Idler Shaft Spring                             |
| 12       | 1        | 13017    | Gear, Idler                                    |
| 13       | 1        | 13164    | Drive Gear                                     |
| 14       | 1        | 13887    | Plate, Motor Mounting                          |
| 15       | 1        | 18743-1  | Motor, 120V, 60 Hz, 1/30 rpm, 5600             |
| 16       | 2        | 13278    | Screw, Slt'd Fillister Hd                      |
| 17       | 1        | 14502    | Pinion, Program Wheel                          |
| 18       | 1        | 14501    | Clutch, Drive Pinion                           |
| 19       | 1        | 14276    | Meter Clutch Spring                            |
| 20       | 1        | 14253    | Retainer, Clutch Spring                        |
| 21       | 3        | 11384    | Screw, Phil, 6-32 x 1/4 Zinc                   |
| 22       | 1        | 13881    | Bracket, Hinge Timer                           |
| 23       | 3        | 14087    | Insulator                                      |
| 24       | 1        | 15414-00 | Micro Switch                                   |
| 25       | 1        | 15320    | Switch, Micro, Timer                           |
| 26       | 2        | 11413    | Screw, Pan Hd Mach, 4-40 x 1-1/8               |
| 27       | 1        | 14198    | Label, Indicator                               |
| 28       | 1        | 15465    | Label, Caution                                 |
| 29       | 1        | 14007    | Label, Time of Day                             |
| 30       | 1        | 15148    | Label, Instruction                             |
| 31       | 1        | 40617    | Harness, 3220                                  |
| 32       | 2        | 40422    | Nut, Wire, Tan                                 |
| 33       | 1        | 15354-01 | Wire, Ground, 4"                               |
| 34       | 1        | 19210-05 | Program Wheel Assembly, 9000/3230              |
| 35       | 17       | 41754    | Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer |
| 36       | 1        | 15055    | Gear, Main Drive                               |

# 3230 Remote Start Timer Assembly





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## 3230 Remote Start Timer Assembly

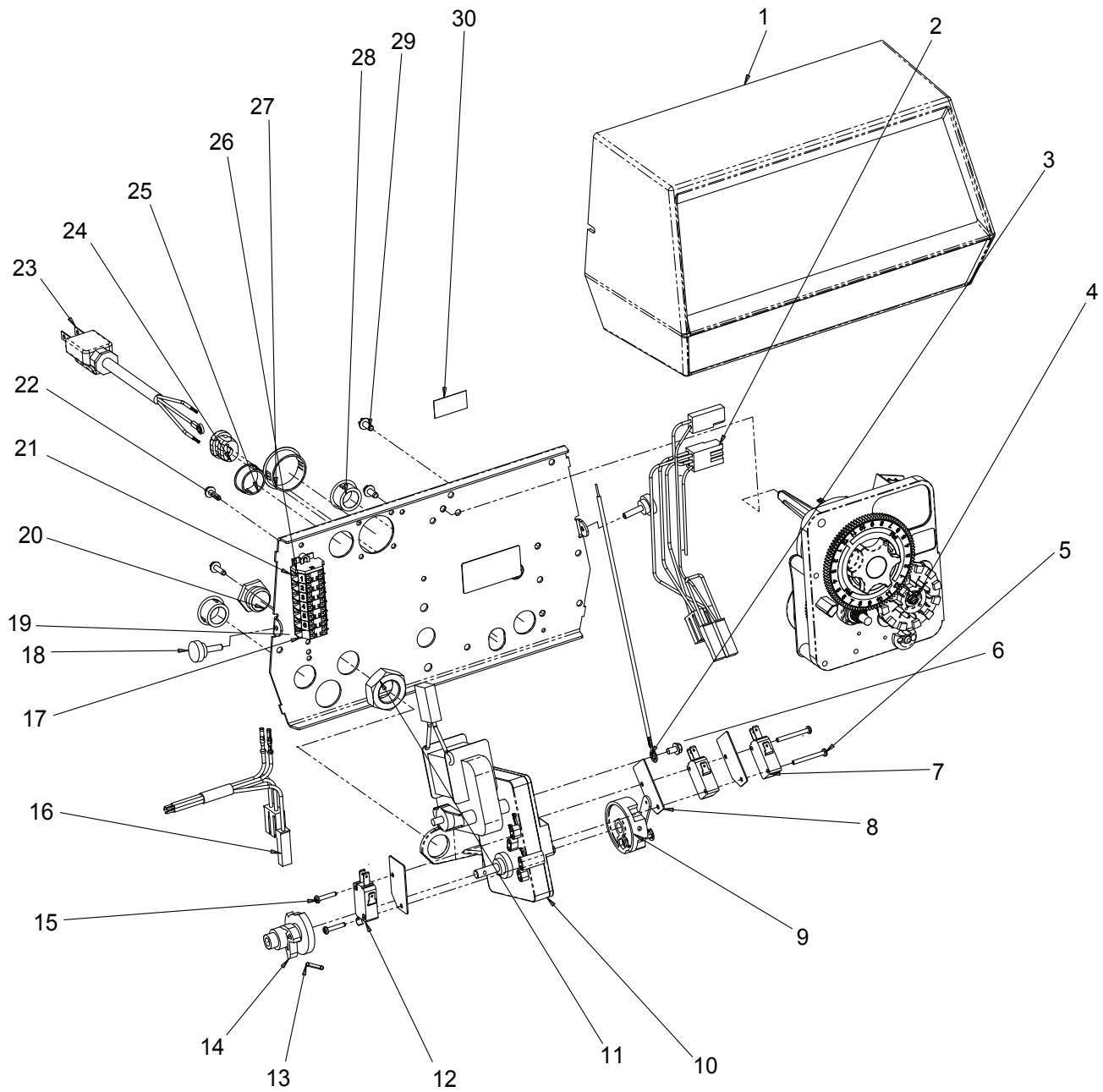
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| Item No. | Quantity | Part No. | Description                                    |
|----------|----------|----------|--|
| 1        | 1        | 13870    | Housing, Timer                                 |
| 2        | 1        | 14265    | Spring 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, 1/10 rpm                   |
|          | 1        | 19659-1  | Motor, 24V, 60 Hz 1/30 rpm                     |
| 16       | 2        | 13278    | Screw, Slt'd Fillister Hd                      |
| 17       | 1        | 15313    | Label, Caution                                 |
| 18       | 1        | 19210-05 | Program Wheel Assembly, 3200                   |
| 20       | 1        | 15055    | Main Drive Gear                                |
| 21       | 17       | 41754    | Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer |
| 22       | 1        | 13011    | Cycle Actuator Arm                             |
| 23       | 1        | 13881    | Bracket, Hinge Timer                           |
| 24       | 3        | 11384    | Screw, Phil, 6-32 x 1/4 Zinc                   |
| 25       | 1        | 16336    | Harness, 3230R                                 |
| 26       | 2        | 40422    | Nut, Wire, Tan                                 |
| 27       | 1        | 15354-01 | Wire, Ground, 4"                               |

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# Upper Designer Powerhead Assembly

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**For Service Assembly Numbers, See the Back of this Manual**

# Upper Designer Powerhead Assembly

| Item No. | Quantity | Part No.              | Description                                      |
|----------|----------|-----------------------|--|
| 1        | 1        | 19291-020             | Cover, Designer                                  |
| 2        | 1        | 14822                 | Harness, 2900                                    |
|          | 1        | 16563                 | Harness, 2900/3900/Sys 7                         |
|          | 1        | 18585                 | Harness, 3900, Aux Switch                        |
|          | 1        | 40395                 | Harness, Drive, Sys#7, Multi                     |
|          | 1        | 40400                 | Harness, Drive, Designer/Environmental           |
| 3        | 1        | 40175-01              | Wire, Ground, Commercial Valves                  |
| 4        | 1        | 3200 Meter Timer Assy | 3200 Meter Timer Assembly                        |
|          | -        | 3200 Clock Timer Assy | 3200 Clock Timer Assembly                        |
| 5        | 2        | 14923                 | Screw, Pan Hd Mach, 4-40 X 1                     |
| 6        | 5        | 10872                 | Screw, Hex Wsh, 8-32 X 17/64                     |
| 7        | 2        | 10218                 | Switch, Micro                                    |
| 8        | 3        | 10302                 | Insulator, Limit Switch                          |
| 9        | 1        | 60160-15              | Drive Cam Assy, STF, Blue, 2900                  |
|          | 1        | 60160-30*             | Drive Cam Assy, Upflow                           |
|          | 1        | 60160-31*             | Drive Cam Assy, Upflow, Variable                 |
| 10       | 1        | 41543                 | Motor, Drive, 115V, 50/60 Hz                     |
|          | 1        | 40384                 | Motor, Drive, 115V, 60Hz, SP, Fam 1              |
|          | 1        | 42579                 | Motor, Drive, 24VAC/DC, 50/60 Hz                 |
|          | 1        | 40386                 | Motor, Drive, 220V, 50/60 Hz, SP Fam 1           |
| 11       | 1        | 10269                 | Nut, Jam, 3/4-16                                 |
| 12       | 1        | 10896                 | Switch, Micro                                    |
| 13       | 1        | 10338                 | Pin, Roll, 3/32 x 7/8                            |
| 14       | 1        | 12472                 | Cam Assy, Tri-Stack, After RR                    |
|          | 1        | 12777                 | Cam, Shut-Off Valve                              |
|          | 1        | 15770                 | Cam Assy, Special Tri-Stack, After Brine Fill    |
|          | 1        | 15805                 | Cam, SVO   |
|          | 1        | 19749*                | Cam, Brine, 2750, U/F, Variable                  |
|          | 1        | 19887*                | Cam, Brine, 2750 U/F Std                         |
| 15       | 2        | 11805                 | Screw, Rd Hd, 4-40 X 5/8                         |
| 16       | 1        | 14822                 | Harness, 2900                                    |
| 17       | 1        | 40174                 | Terminal Block, Green/Yellow Commercial          |
| 18       | 1        | 40264                 | Backplate, w/t - Screws, 2750, 2850, 2900        |
| 19       | 2        | 15250                 | Label, Terminal Strip                            |
| 20       | 1        | 10712                 | Fitting, Brine Valve                             |
| 21       | 6        | 41084                 | Terminal Block, Segment, Gray                    |
| 22       | 2        | 13296                 | Screw, Hex Wsh, 6-20 X 1/2                       |
| 23       | 1        | 11545                 | Power Cord, 4' European, Black                   |
|          | 1        | 19303                 | Power Cord, 8', Australian                       |
|          | 1        | 19885                 | Power Cord, Japanese, 110V/120V                  |
|          | 1        | 40084-12              | Power Cord, 12' US, ROUND, 120V Sys 5, 6, 7      |
|          | 1        | 40085-12              | Power Cord, 12' US, Round, 240V                  |
| 24       | 1        | 13547                 | Strain Relief, Flat Cord Heyco #30-1             |
|          | 1        | 13547-01              | Strain Relief, Euro Round Cord                   |
|          | 1        | 13547-02              | Strain Relief, U.S. Round                        |
|          | 1        | 14924                 | Strain Relief, Heyco #1247                       |
| 25       | 1        | 15806                 | Plug, Hole, Heyco #2693                          |
| 26       | 1        | 41085                 | Endplate, Terminal Block, Gray                   |
| 27       | 1        | 17421                 | Plug, 1.20 Hole Heyco #2733                      |
| 28       | 1        | 13741                 | Plug, 3/4", Knock-Out, Heyco #2683               |
| 29       | 2        | 10300                 | Screw, Slot Hex Wsh, 8-18 X 3/8 Type "B" RC44-47 |
| 30       | 1        | 40038-03              | Label, Voltage, 120V, 3200ET                     |

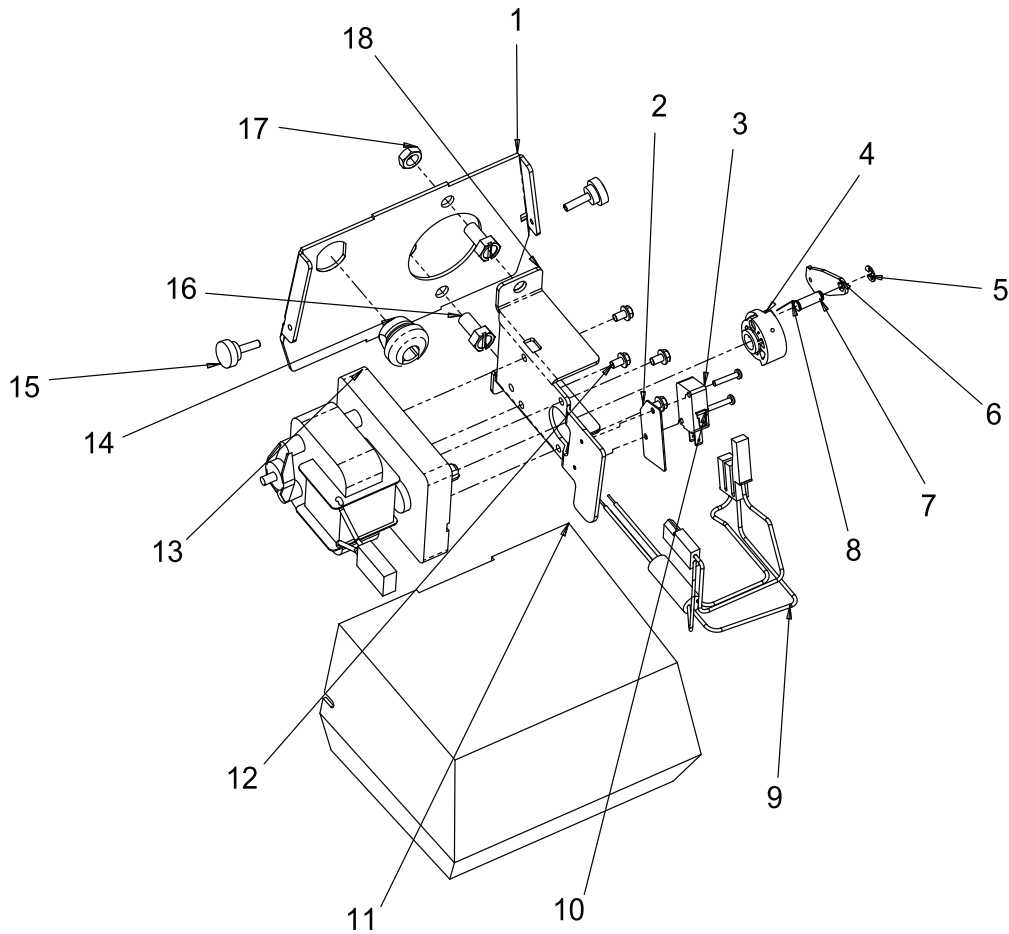
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|   |       |                          |
|---|-------|--------------------------|
| 1 | 15216 | Meter Cable Assy, 15.25" |
| 1 | 15879 | Cable Guide Assy, 2900   |

\*Upflow Only

**For Service Assembly Numbers, See the Back of this Manual**

# Lower Designer Powerhead Assembly

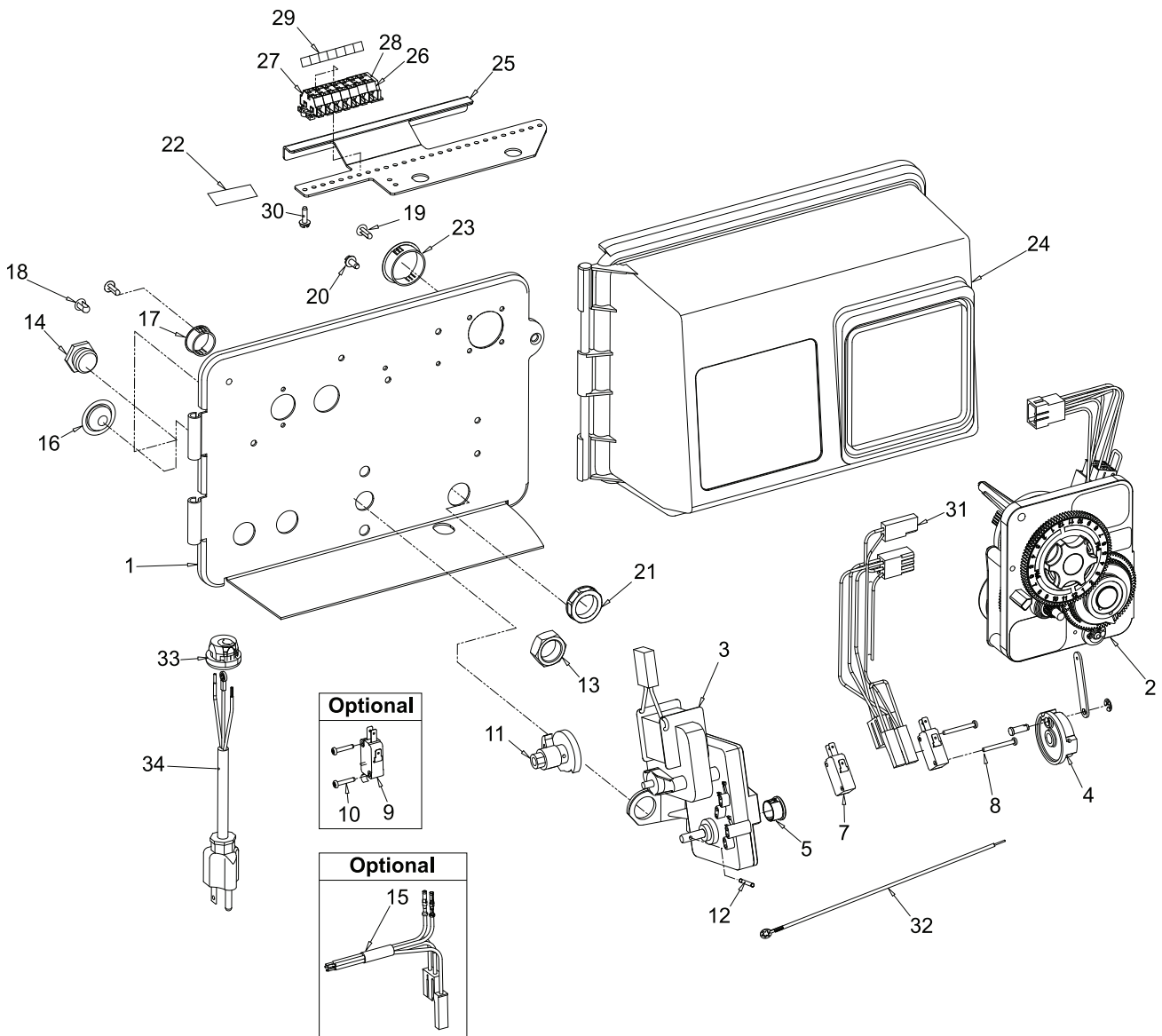


| Item No. | Quantity | Part No. | Description  |
|----------|----------|----------|--|
| 1        | 1        | 14770    | Backplate, Lower 2900                                |
| 2        | 1        | 10302    | Insulator, Limit Switch                              |
| 3        | 1        | 10218    | Switch, Micro  |
| 4        | 1        | 14775    | Cam, Drive, 2900                                     |
| 5        | 1        | 10250    | Ring, Retaining                                      |
| 6        | 1        | 14759    | Link, Piston Rod                                     |
| 7        | 1        | 14784    | Bearing, Connecting Rod                              |
| 8        | 1        | 41022    | Pin, Roll, 2900 Lower                                |
| 9        | 1        | 40402    | Harness, Lead, Sys #4, Designer                      |
| 10       | 2        | 19849    | Screw, Pan Hd, 4-40 X 5/8                            |
| 11       | 1        | 14800-02 | Cover, Dust, Lower, 2900, Black                      |
| 12       | 4        | 10872    | Screw, Hex Wsh, 8-32 X 17/64                         |
| 13       | 1        | 40387    | Motor, Drive, 115V, 60Hz, SP FAM 2                   |
|          | 1        | 42580    | Motor, Drive, 24VAC/DC, 50/60 Hz                     |
|          | 1        | 40389    | Motor, Drive, 220V, 50/60 Hz, Sp Fam 2               |
| 14       | 1        | 14924    | Strain Relief Heyco #1247                            |
| 15       | 2        | 19367    | Screw, Designer Cover, Thumb 8-32 Black UV Stable    |
| 16       | 2        | 11224    | Screw Hex Hd, 5/16 - 18 x 5/8 MS 410 Stainless Steel |
| 17       | 2        | 16346    | Nut, Hex, Jam, 5/16-18                               |
| 18       | 1        | 14769    | Bracket, Motor, 2900                                 |

For Service Assembly Numbers, See the Back of this Manual



# Upper Environmental Powerhead Assembly



61501-2900\_REV C

For Service Assembly Numbers, See the Back of this Manual



# Upper Environmental Powerhead Assembly

| Item No. | Quantity | Part No.              | Description  |
|----------|----------|-----------------------|--|
| 1        | 1        | 18697-15              | Backplate, Hinged  |
| 2        | 1        | 3200 Clock Timer Assy | 3200 Clock Timer Assembly                                |
|          | 1        | 3200 Meter Timer Assy | 3200 Meter Timer Assembly                                |
| 3        | 1        | 41543                 | Motor, Drive, 115V, 50/60 Hz                             |
|          | 1        | 42579                 | Motor, Drive, 24VAC/DC, 50/60 Hz                         |
|          | 1        | 41545                 | Motor, Drive, 230V, 50/60 Hz                             |
| 4        | 1        | 60160-15              | Drive Cam Assembly, STF, Blue, 2900                      |
|          | 1        | 60160-30*             | Drive Cam Assembly, Upflow                               |
|          | 1        | 60160-31*             | Drive Cam Assembly, Upflow, Variable                     |
| 5        | 1        | 17904                 | Bushing, Heyco 1/2, Heyco #2073                          |
| 7        | 2        | 10218                 | Switch, Micro  |
| 8        | 2        | 14923                 | Screw, Pan Hd Mach, 4-40 X 1 MS Steel Zinc               |
| 9        | 1        | 10896                 | Switch, Micro  |
| 10       | 2        | 11805                 | Screw, Rd Hd, 4-40 X 5/8 TYPE 1 Steel Zinc               |
| 11       | 1        | 12472                 | Cam Assy, Tri-Stack, After RR                            |
|          | 1        | 12777                 | Cam, Shut-Off Valve                                      |
|          | 1        | 15770                 | Cam Assy, Special Tri-Stack, After Brine Fill            |
|          | 1        | 15805                 | Cam, SVO   |
|          | 1        | 19887*                | Cam, Brine, 2750 U/F, Std                                |
| 12       | 2        | 10338                 | Pin, Roll 3/32 x 7/8                                     |
| 13       | 1        | 10269                 | Nut, Jam, 3/4-16   |
| 14       | 1        | 10712                 | Fitting, Brine Valve                                     |
| 15       | 1        | 14822                 | Harness, 2900  |
| 16       | 2        | 19691                 | Plug, .750 Dia Recessed, Black                           |
| 17       | 1        | 15806                 | Plug, Hole, Heyco #2693                                  |
| 18       | 1        | 19801                 | Plug, .190 Dia, White Heyco 0307                         |
| 19       | 7        | 19800                 | Plug, .140 Dia, White Heyco 0304                         |
| 20       | 4        | 10300                 | Screw, Slot Hex Wsh, 8-18 X 3/8 Type "B" RC 44-47        |
| 21       | 1        | 18691-02              | Nut, Conduit Fitting 1/2"                                |
| 22       | 1        | 40038-03              | Label, Voltage, 120V, 3200ET                             |
| 23       | 1        | 17421                 | Plug, 1.20 Hole Heyco #2733                              |
| 24       | 1        | 60219-02              | Cover Assembly, Environmental, Black w/Clear Window      |
| 25       | 1        | 19772                 | Bracket, Terminal Block                                  |
| 26       | 1        | 40174                 | Terminal Block, Green/Yellow Commercial, 809-260/141     |
| 27       | 6        | 41084                 | Terminal Block, Segment, Gray                            |
| 28       | 1        | 41085                 | Endplate, Terminal Block, Gray                           |
| 29       | 2        | 15250                 | Label, Terminal Strip                                    |
| 30       | 2        | 13296                 | Screw, Hex Wsh, 6-20 6-20 x 1/2 Type 25 Steel Zinc       |
| 31       | 1        | 40400                 | Harness, Drive, Designer/Environmental                   |
| 32       | 1        | 40175-01              | Wire, Ground, Commercial Valves                          |
| 33       | 1        | 13547                 | Strain Relief, Flat Cord Heyco #30-1                     |
|          | 1        | 13547-01              | Strain Relief, Euro Round Cord                           |
|          | 1        | 13547-02              | Strain Relief, U.S. Round                                |
| 34       | 1        | 11545                 | Powercord, 4' European, Black                            |
|          | 1        | 19303                 | Powercord, 8', Australian                                |
|          | 1        | 40084-12              | Powercord, 12' US, Round, 120V, Sys 5,6,7&2900/3150/3900 |
|          | 1        | 40085-12              | Powercord, 12' US, Round, 240V                           |

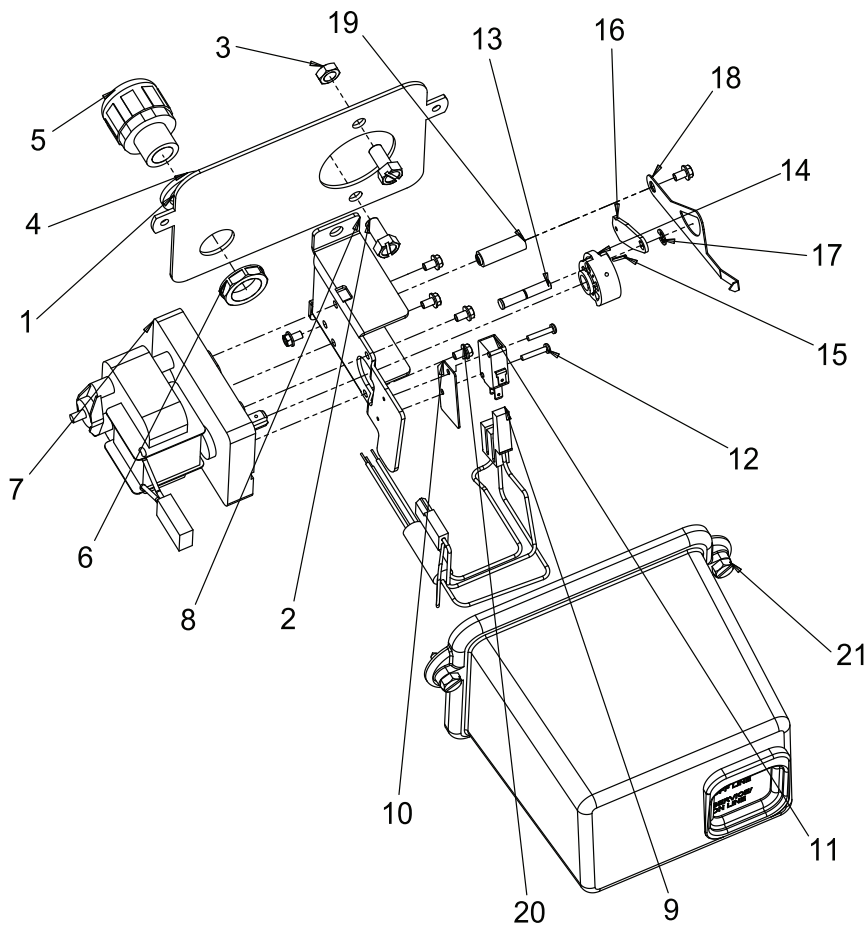
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|         |       |                              |
|---------|-------|------------------------------|
| ..... 1 | 15216 | Meter Cable Assembly, 15.25" |
| ..... 1 | 15879 | Cable Guide Assembly, 2900   |

\*Upflow Only

**For Service Assembly Numbers, See the Back of this Manual**

# Lower Environmental Powerhead Assembly



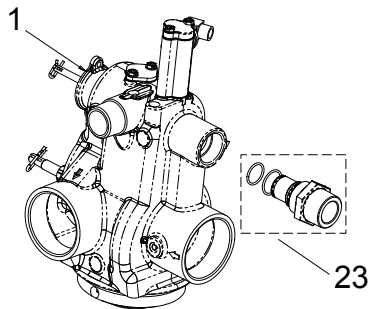
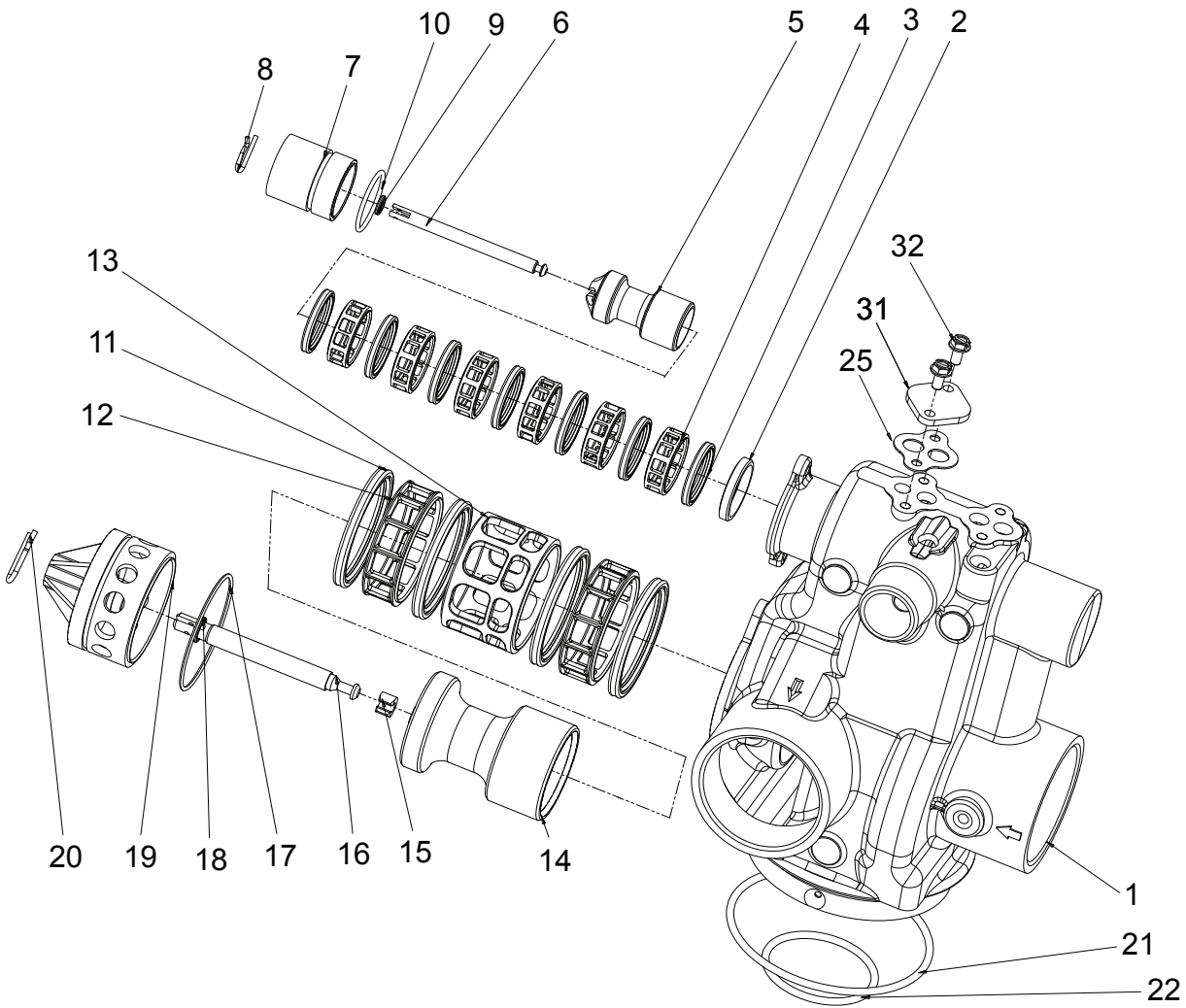
61501-2900\_REVC

| Item No. | Quantity | Part No. | Description                                       |
|----------|----------|----------|---|
| 1        | 1        | 18709    | Backplate, Lower                                  |
| 2        | 2        | 11224    | Screw, Hex Hd, 5/16 - 18 x 5/8                    |
| 3        | 2        | 16346    | Nut, Hex, JAM, 5/16-18, 18-8 Stainless Steel      |
| 4        | 1        | 18692    | Washer, 3/8, Sealing                              |
| 5        | 1        | 18691-01 | Fitting, Conduit                                  |
| 6        | 1        | 18691-02 | Nut, Conduit Fitting, 1/2"                        |
| 7        | 1        | 40387    | Motor, Drive, 115v, 60 Hz, SP, Fam 2              |
|          | 1        | 42580    | Motor, Drive, 24VAC/DC, 50/60 Hz                  |
|          | 1        | 40389    | Motor, Drive, 220V, 50/60 Hz, SP, Fam 2           |
| 8        | 1        | 14769    | Bracket, Motor, 2900                              |
| 9        | 1        | 40405    | Harness, Lower Drive, Sys4, Env                   |
| 10       | 1        | 10302    | Insulator, Limit Switch                           |
| 11       | 1        | 10218    | Switch, Micro                                     |
| 12       | 2        | 19849    | Screw, Pan Hd, 4-40 x 5/8                         |
| 13       | 1        | 18746    | Bearing, Connecting Rod                           |
| 14       | 1        | 14775    | Cam, Drive, 2900                                  |
| 15       | 1        | 41022    | Pin, Roll, 2900 Lower                             |
| 16       | 1        | 14759    | Link, Piston Rod                                  |
| 17       | 1        | 10250    | Ring, Retaining                                   |
| 18       | 1        | 18725    | Indicator, Service/Standby                        |
| 19       | 1        | 18726    | Spacer, Indicator                                 |
| 20       | 6        | 10872    | Screw, Hex Wsh, 8-32 X 17/64 18-8 Stainless Steel |
| 21       | 1        | 60217-02 | Cover Assembly, 2900, Lower, Black, Environmental |

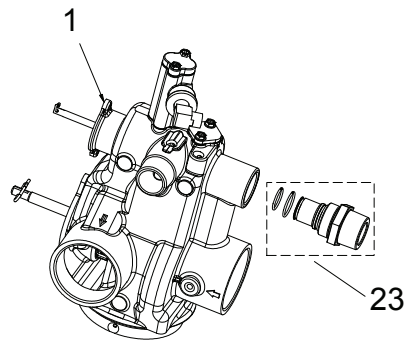
**For Service Assembly Numbers, See the Back of this Manual**



# Control Valve Assembly



Downflow



Upflow

61500-2900\_REVD

For Service Assembly Numbers, See the Back of this Manual

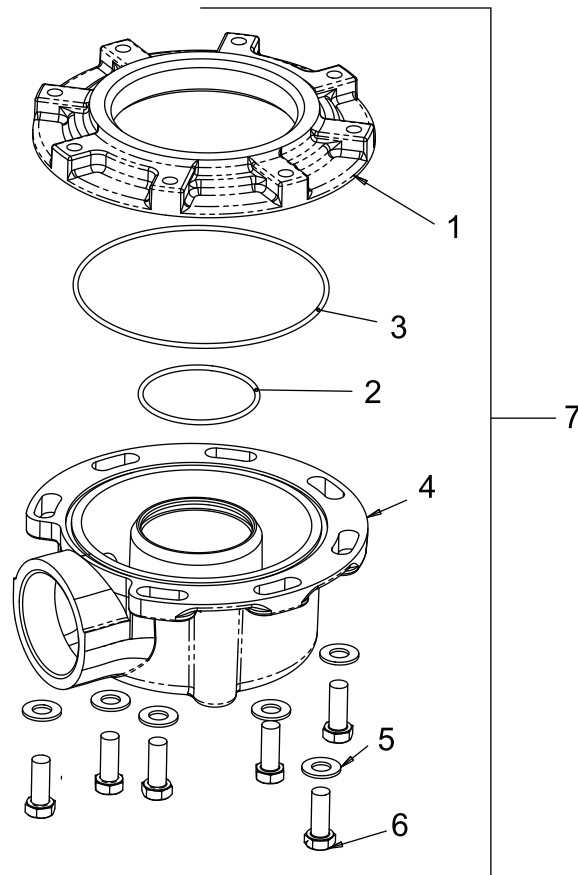
# Control Valve Assembly

| Item No. | Quantity | Part No. | Description                                       |
|----------|----------|----------|---|
| 1        | 1        | 41428-01 | Valve Body, 2900s, Machd, NPT U.S. Tap            |
|          |          | 41428-09 | Valve Body, 2900s, Machined, w/Soft Water Adapter |
| 2        | 1        | 10757    | Spacer, End                                       |
|          |          | 10757B   | Spacer, End, Brass, HW                            |
| 3        | 7        | 10545    | Seal, Piston                                      |
|          |          | 10545-01 | Seal, Piston, Viton                               |
|          |          | 10545-02 | Seal, Piston, Silicone                            |
| 4        | 6        | 11451    | Spacer, 12 Hole                                   |
|          |          | 16589    | Spacer, Hot Water                                 |
| 5        | 1        | 14451    | Piston, 2750                                      |
|          |          | 19454*   | Piston, 2750, Upflow                              |
| 6        | 1        | 41424    | Rod, Piston, 2900s, Upper                         |
| 7        | 1        | 41131    | Plug, End   |
|          | 1        | 10212    | Plug, End, 1500/2750, Brass                       |
| 8        | 1        | 10909    | Pin, Link   |
| 9        | 1        | 10209    | Quad Ring,-010                                    |
| 10       | 1        | 40078    | O-ring, 28mm X 2mm                                |
|          |          | 10234-01 | O-ring, -024, Hot Water                           |
| 11       | 4        | 11720    | Seal, Piston, 2900/3150                           |
|          |          | 10545-02 | Seal, Piston, Silicone                            |
| 12       | 2        | 10369    | Spacer, 2", 2900/3150                             |
|          |          | 14241-01 | Spacer, Hot Water                                 |
| 13       | 1        | 14753    | Spacer, 2900                                      |
|          |          | 16589    | Spacer, Hot Water                                 |
| 14       | 1        | 14757    | Piston, HWBP                                      |
|          |          | 14752    | Piston, 2900, NHWBP                               |
| 15       | 1        | 14818    | Ring, Piston Rod, Snap                            |
| 16       | 1        | 14758    | Rod, Piston, 2900                                 |
| 17       | 1        | 14922    | O-ring, -035, Piston                              |
| 18       | 1        | 14926    | Quad Ring, -012                                   |
| 19       | 1        | 14754-00 | End Plug Assy, 2900                               |
|          |          | 14754-01 | Plug, End, White, Machined                        |
|          |          | 14754-10 | End Plug Assembly, 2900/2930, NHWBP               |
|          |          | 19276-01 | End Plug Assembly, 2900s, Brass, HW               |
|          |          | 41427-01 | Plug, End, 2900s, Lower, White                    |
|          |          | 41427-11 | Plug, End, 2900s, Lower, Black                    |
| 20       | 1        | 14813    | Pin, Spring, Connecting Rod                       |
| 21       | 1        | 13575    | O-ring, -240                                      |
|          |          | 15210    | O-ring, -343, Park Tank                           |
| 22       | 1        | 13577    | O-ring, -226                                      |
| 23       | 1        | 61525    | Softwater Adapter Kit, 2900s                      |
| 25       | 2        | 19925    | Gasket, Injector Body, 1700                       |
| 31       | 1        | 11893    | Cap, Injector, Stainless Steel                    |
| 32       | 2        | 15137    | Screw, Hex Wsh Mach, 10 - 24 x 3/8                |

\*Upflow Only

**For Service Assembly Numbers, See the Back of this Manual**

# Control Valve Side Mount Adapter



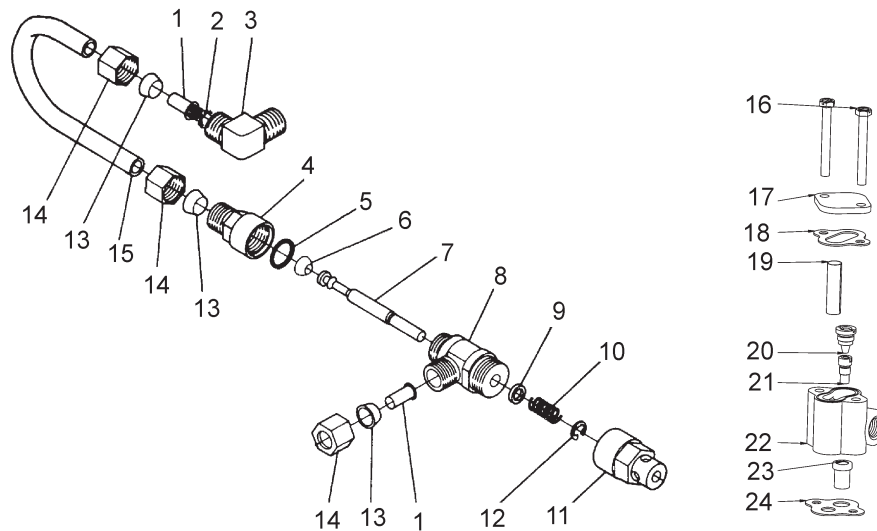
61415\_REVA

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

For Service Assembly Numbers, See the Back of this Manual



# 1600 Brine System



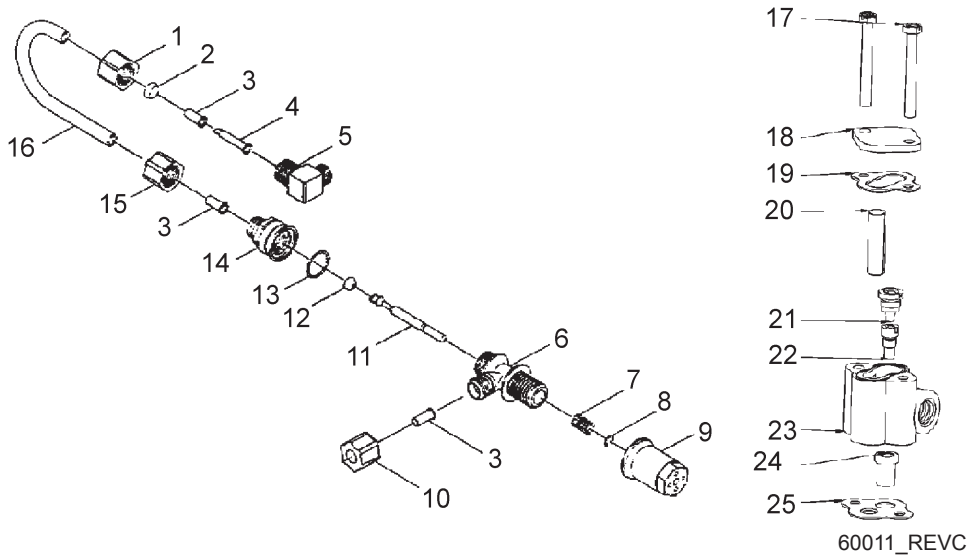
60029

| Item No. | Quantity | 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        | 1        | 60020-25  | BLFC, .25 GPM, 1600                               |
| 4        | 1        | 60020-50  | BLFC, .50 GPM, 1600                               |
| 4        | 1        | 60020-100 | BLFC, 1.0 GPM, 1600                               |
| 5        | 1        | 11982     | O-ring, -.016                                     |
| 6        | 1        | 12626     | Seat, Brine Valve                                 |
| 7        | 1        | 12552     | Brine Valve Stem, 1600                            |
| 8        | 1        | 12748     | Brine Valve Body Assy, 1600 w/Quad Ring           |
| 9        | 1        | 12550     | Quad Ring, -.009                                  |
| 10       | 1        | 10249     | Spring, Brine Valve                               |
| 11       | 1        | 11749     | Guide, Brine Valve Stem                           |
| 12       | 1        | 10250     | Ring, Retaining                                   |
| 13       | 3        | 10330     | Fitting, Sleeve, 3/8 Celcon                       |
| 14       | 3        | 10329     | Fitting, Tube, 3/8 Nut, Brass                     |
| 15       | 1        | 16508-01  | Tube, Brine Valve, 2850/2900                      |
|          | 1        | 12774     | Tube, Brine Valve, 1500                           |
|          | 1        | 40027     | Tube, Brine Valve, 2510                           |
|          | 1        | 15221     | Tube, Brine Valve, 2750                           |
|          | 1        | 42184     | Tube, Brine Valve, 2850s                          |
|          | 1        | 41683*    | Tube, Brine Valve, UF, 1600/1650                  |
| 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-xx  | Nozzle, Injector, -xx means injector size         |
| 21       | 1        | 10914-xx  | Throat, Injector, -xx means injector size         |
| 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                  |

\*Upflow Only

**For Service Assembly Numbers, See the Back of this Manual**

# 1650 Brine System Assembly



| Item No. | Quantity | 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 Assembly, 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", Plastic                           |
| 11.....  | 1.....   | 12552-02.....  | Brine Valve Stem, 1600, with Seat                 |
| 12.....  | 1.....   | 12626.....     | Seat, Brine Valve                                 |
| 13.....  | 1.....   | 16924.....     | O-ring, -018                                      |
| 14.....  | 1.....   | 60020-25.....  | BLFC, 1650, .25 GPM, Plastic                      |
| .....    | 1.....   | 60020-50.....  | BLFC, 1650, .50 GPM, Plastic                      |
| .....    | 1.....   | 60020-100..... | BLFC, 1650, 1.0 GPM, Plastic                      |
| 15.....  | 1.....   | 19625.....     | Nut Assembly, 3/8", Plastic                       |
| 16.....  | 1.....   | 16508-01.....  | Tube, Brine Valve, 2850/2900                      |
| .....    | 1.....   | 40027.....     | Tube, Brine Valve, 2510                           |
| .....    | 1.....   | 42184.....     | Tube, Brine Valve, 2850s                          |
| .....    | 1.....   | 12774.....     | Tube, Brine Valve, 1500                           |
| .....    | 1.....   | 15221.....     | Tube, Brine Valve, 2750                           |
| .....    | 1.....   | 41683*.....    | Tube, Brine Valve, UF, 1600/1650                  |
| 17.....  | 2.....   | 10692.....     | Screw, Slot Hex Hd, 10 - 24X 18-8 Stainless Steel |
| 18.....  | 1.....   | 11893.....     | Cap, Injector, Stainless Steel                    |
| 19.....  | 1.....   | 10229.....     | Gasket, Injector Cap, 1600                        |
| 20.....  | 1.....   | 10227.....     | Screen, Injector                                  |
| 21.....  | 1.....   | 10913-xx.....  | Nozzle, Injector, -xx means injector size         |
| 22.....  | 1.....   | 10914-xx.....  | Throat, Injector, -xx means injector size         |
| 23.....  | 1.....   | 17776.....     | Body, Injector, 1600                              |
| .....    | 1.....   | 17776-02*..... | Body, Injector, 1600 Upflow                       |
| 24.....  | 1.....   | 16221.....     | Disperser, Air                                    |
| 25.....  | 1.....   | 14805.....     | Gasket, Injector Body, 1600/1700                  |

\*Upflow Only

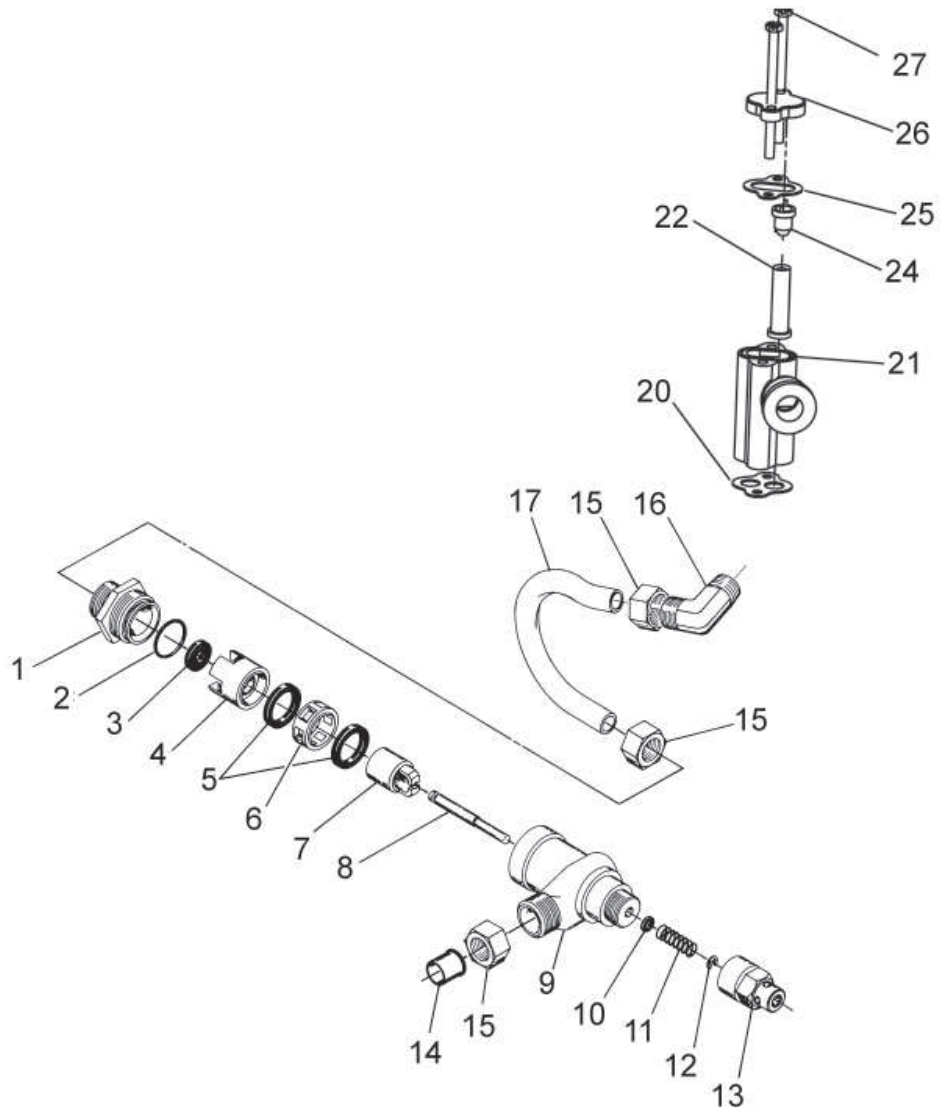
**For Service Assembly Numbers, See the Back of this Manual**



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# 1700 Brine System Assembly

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60034\_REVB

**For Service Assembly Numbers, See the Back of this Manual**

# 1700 Brine System Assembly

| Item No. | Quantity | Part No.  | Description                                  |
|----------|----------|-----------|--|
| 1        | 1        | 14792     | Plug, End, Brine Valve                       |
| 2        | 1        | 13201     | Quad Ring, -020                              |
| 3        | 1        | 12085     | Washer, Flow, 1.2 GPM                        |
|          | 1        | 12086     | Washer, Flow, 1.5 GPM                        |
|          | 1        | 12087     | Washer, Flow, 2.0 GPM                        |
|          | 1        | 12088     | Washer, Flow, 2.4 GPM                        |
|          | 1        | 12089     | Washer, Flow, 3.0 GPM                        |
|          | 1        | 12090     | Washer, Flow, 3.5 GPM                        |
|          | 1        | 12091     | Washer, Flow, 4.0 GPM                        |
|          | 1        | 12092     | Washer, Flow, 5.0 GPM                        |
| 4        | 1        | 14785     | Retainer, Flow Control                       |
| 5        | 3        | 14811     | O-ring, -210, 560CD, Brine                   |
| 6        | 1        | 14798     | Spacer, 1700, Brine                          |
| 7        | 1        | 14795     | Piston, Brine Valve                          |
| 8        | 1        | 14797     | Brine Valve Stem                             |
| 9        | 1        | 14790     | Brine Valve Body                             |
| 10       | 1        | 12550     | Quad Ring, -009                              |
| 11       | 1        | 15310     | Spring, Brine Valve                          |
| 12       | 1        | 10250     | Retaining Ring                               |
| 13       | 1        | 15517     | Guide, Stem                                  |
| 14       | 1        | 15415     | Fitting, Insert, 1/2", Tube                  |
| 15       | 2        | 15414     | Nut, 2900, w/Sleeve                          |
| 16       | 1        | 15413     | Fitting, Elbow, Male, 1/2T x 3/8 NPT         |
| 17       | 1        | 15416     | Tube, Brine, 2900/2750                       |
|          | 1        | 16460     | Tube, Brine, 2850/2900s                      |
|          | 1        | 41447*    | Tube, Brine, 2900s, U/F                      |
|          | 1        | 42183     | Tube, Brine, 1700, 2850s                     |
| 20       | 1        | 14805     | Gasket, Injector Body, 1600/1700             |
| 21       | 1        | 17777     | Body, Injector, 1700                         |
|          | 1        | 17777-02* | Body, Injector, 1700 U/F                     |
| 22       | 1        | 14802-xxc | Throat, Injector, -xxc is for Injector Size  |
| 24       |          | 14801-xxc | Nozzle, Injection, -xxc is for Injector Size |
| 25       | 1        | 10229     | Gasket, Injector Cap, 1600                   |
| 26       | 1        | 11893     | Cap, Injector, SS                            |
|          | 1        | 10228     | Cap, Injector                                |
| 27       | 2        | 14804     | Screw, Hex Hd Mach, 10 - 24 x 2 3/4" 18-8 SS |

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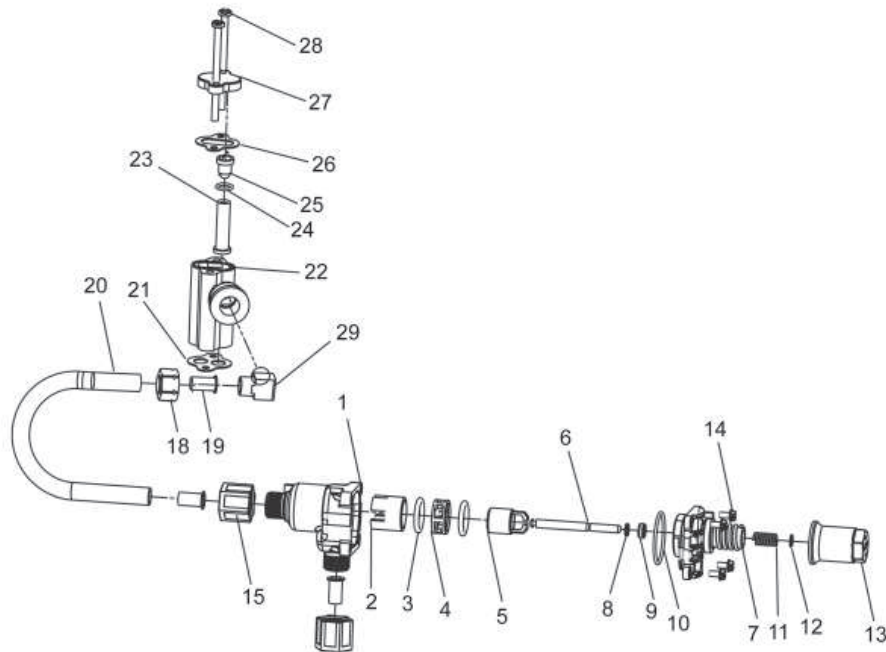
|  |   |       |  |
|--|---|-------|--|
|  | 1 | 16974 | Fitting, Plastic, Female, 3/4 x 3/4 Slip |
|  | 1 | 17996 | Dispenser, Air, Injector                 |

\*Upflow Only

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

**For Service Assembly Numbers, See the Back of this Manual**

# 1710 Brine System Assembly



60604\_REV F

| Item No. | Quantity | Part No.  | Description                                |
|----------|----------|-----------|--|
| 1        | 1        | 41202     | Brine Valve, 1700, Plastic, Top            |
| 2        | 1        | 14785-01  | Retainer, Flow Control                     |
| 3        | -        | 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" Plastic                 |
| 18       | 1        | 15414     | Nut, 2900, w/Sleeve                        |
| 19       | 1        | 15415     | Fitting, Insert, 1/2", Tube                |
| 20       | 1        | 15416     | Tube, Brine, 2900, Old Style/2750          |
|          | 1        | 16460     | Tube, Brine, 2850, 2900s                   |
|          | 1        | 41447*    | Tube, Brine, 2900s, U/F                    |
|          | 1        | 42183     | Tube, Brine, 1700, 2850s                   |
| 21       | 1        | 19925     | Gasket, Injector Body, 1700                |
| 22       | 1        | 17777     | Body, Injector, 1700                       |
|          | 1        | 17777-02  | Body, Injector, 1700, Up Flow              |
| 23       | 1        | 14802-xxc | Throat, Injector, -xxc means Injector Size |
| 24       | 1        | 13771     | O-ring, -012                               |
| 25       | 1        | 14801-xxc | Nozzle, Injector, -xxc means Injector Size |
| 26       | 1        | 10229     | Gasket, Injector Cap, 1600                 |
| 27       | 1        | 10228     | Cap, Injector                              |
| 28       | 2        | 14804     | Screw, Hex Head Mach, 10 - 24 x 2 3/4      |
| 29       | 1        | 15413     | Fitting, Elbow, Male, 1/2T X 3/8NPT        |

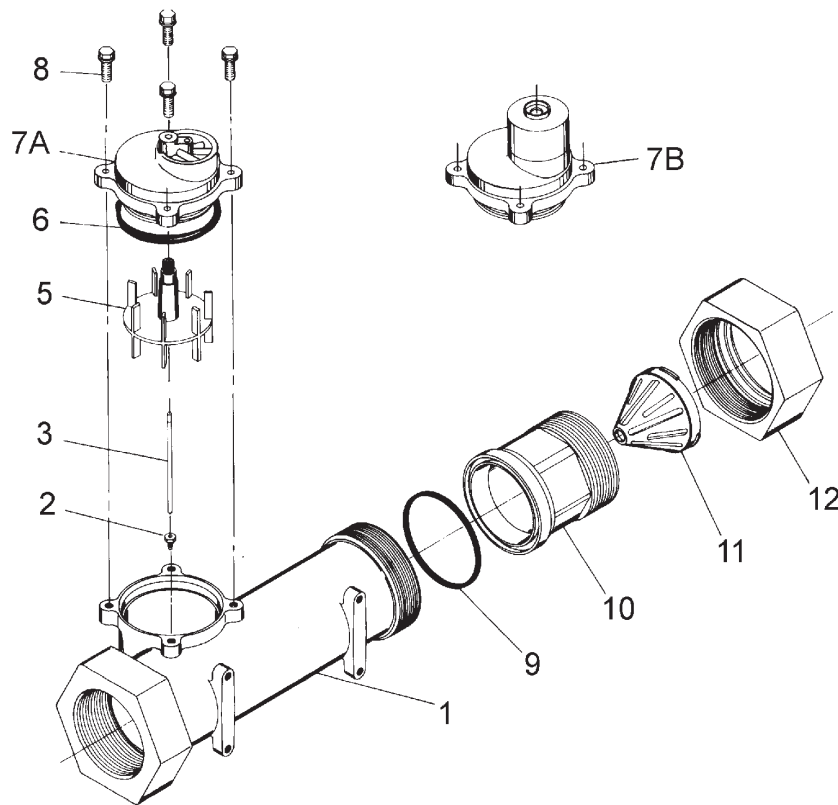
\*Upflow Only

**Not Shown:**

|       |   |          |                          |
|-------|---|----------|--------------------------|
| ..... | 1 | 17996    | Disperser, Air, Injector |
| ..... | 1 | 41493-00 | Label, Blank, BLFC, 1710 |

**For Service Assembly Numbers, See the Back of this Manual**

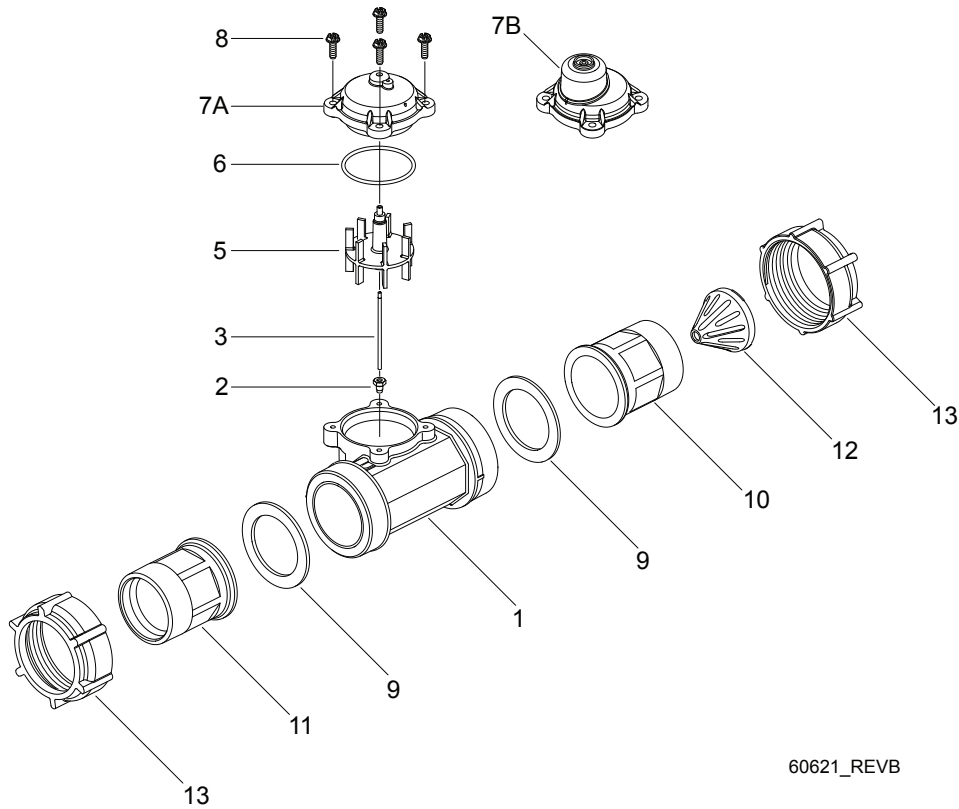
## 2" Brass Meter Assembly



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

**For Service Assembly Numbers, See the Back of this Manual**

# 2" Plastic Meter Assembly



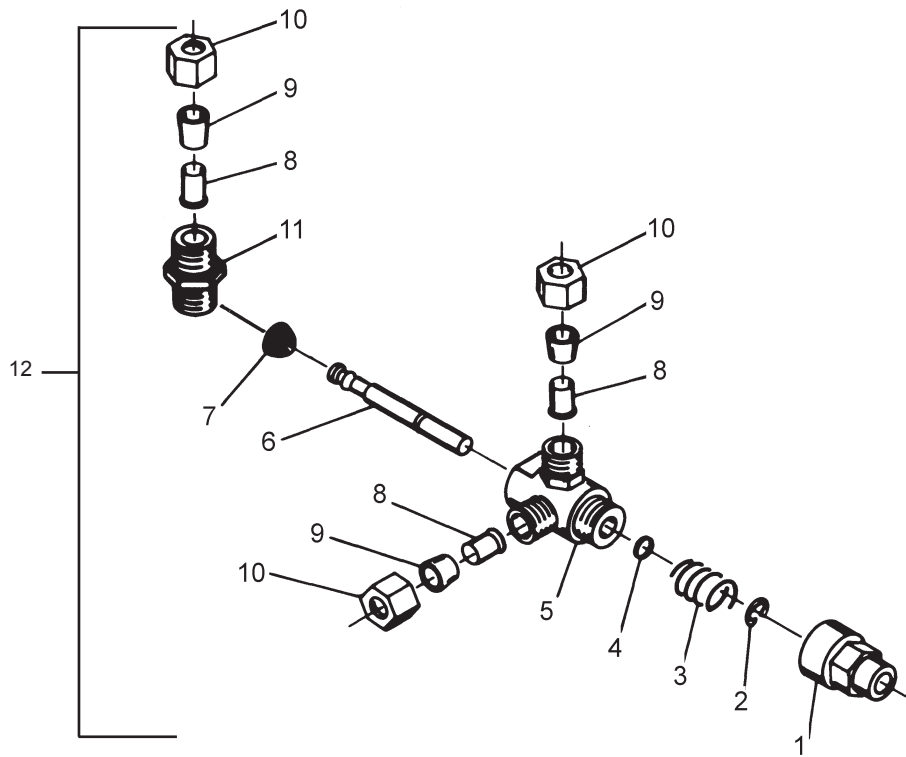
60621\_REV B

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

**For Service Assembly Numbers, See the Back of this Manual**



# 1600 Service Valve Operator Assembly (Old Style)

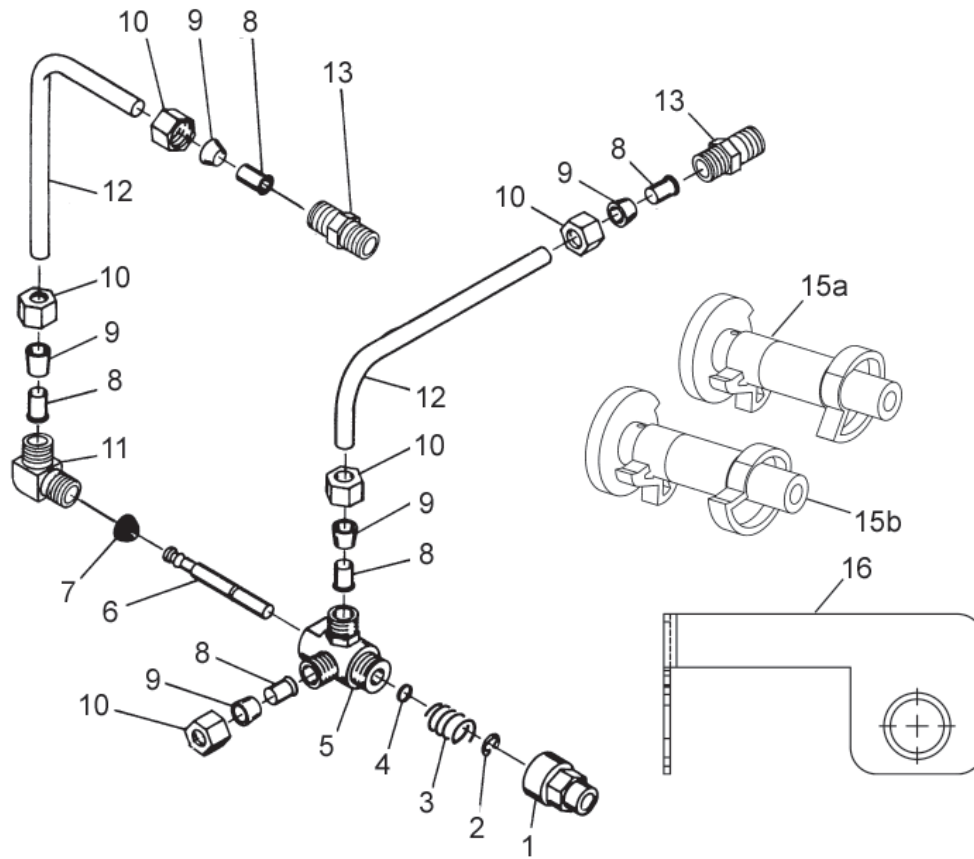


60150\_REVA

| Item No. | Quantity | 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..... | Brine Valve Stem, 1600            |
| 7.....   | 1.....   | 12626..... | Seat, Brine Valve                 |
| 8.....   | 3.....   | 10332..... | Fitting, Insert, 3/8              |
| 9.....   | 3.....   | 10330..... | Fitting, Sleeve, 3/8 Celcon       |
| 10.....  | 3.....   | 10329..... | Fitting, Tube, 3/8 Nut, Brass     |
| 11.....  | 1.....   | 10331..... | Fitting, Compression, 1/4" x 3/8" |
| 12.....  | 1.....   | 60150..... | SVO, Assembly, Old Style          |

**For Service Assembly Numbers, See the Back of this Manual**

# 1600 Service Valve Operator (New Style)

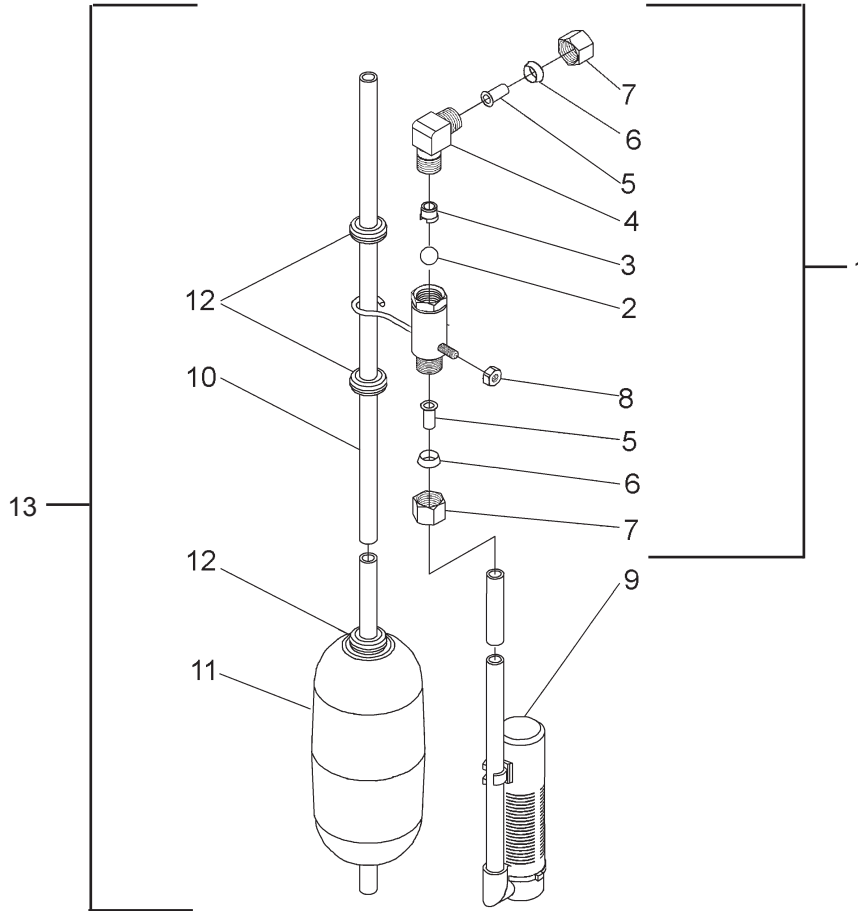


60150REVA

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

**For Service Assembly Numbers, See the Back of this Manual**

# 2300 Safety Brine Valve

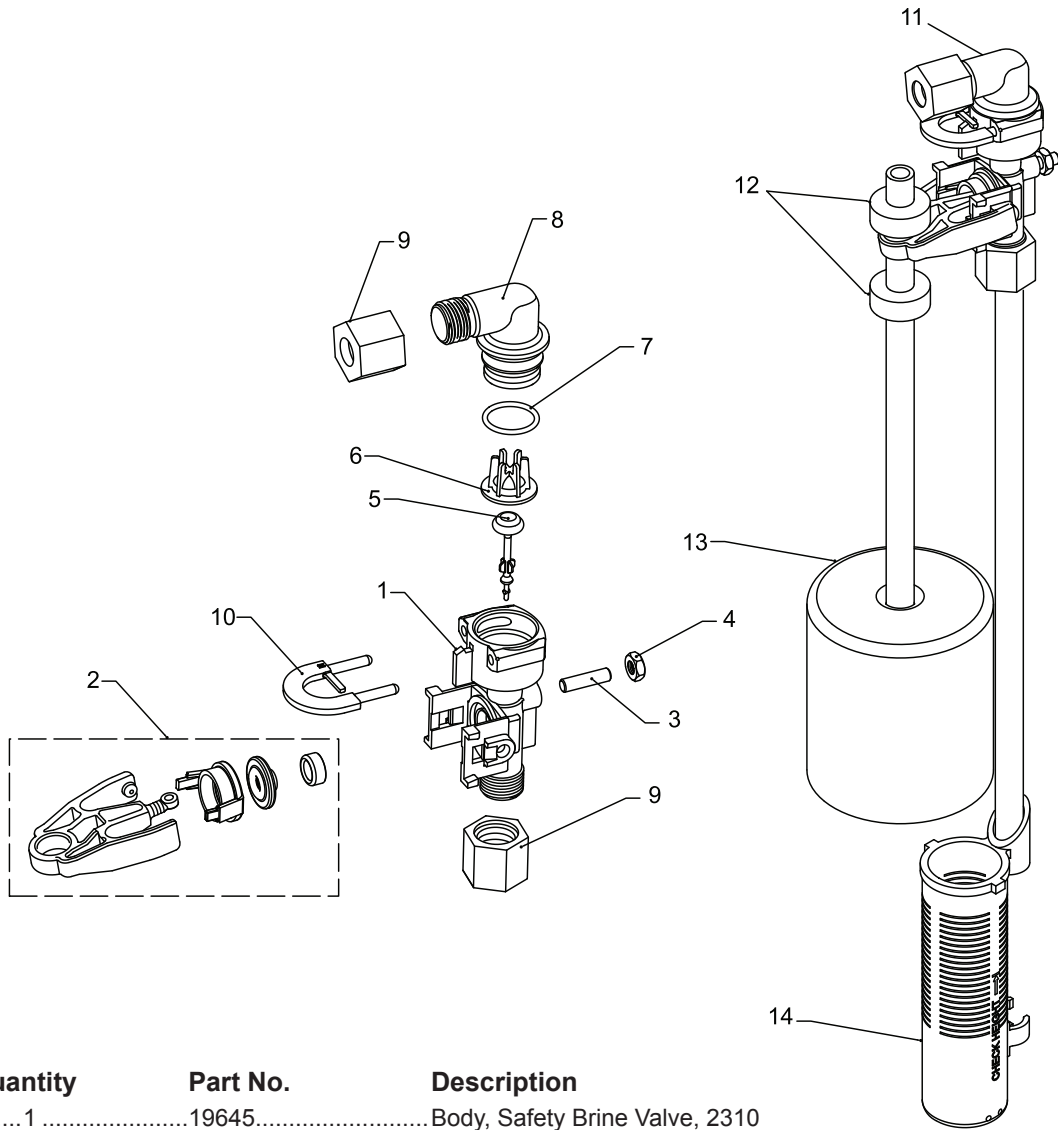


60027REVA

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

**For Service Assembly Numbers, See the Back of this Manual**

# 2310 Safety Brine Valve

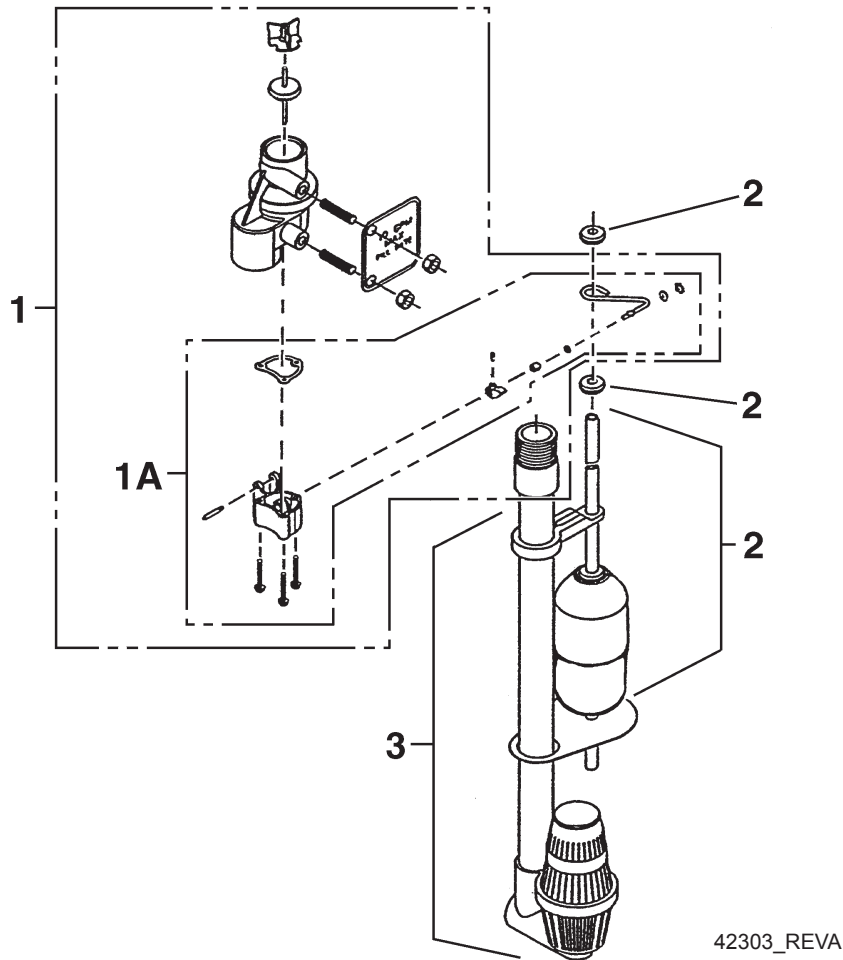


42112\_REVA

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

**For Service Assembly Numbers, See the Back of this Manual**

# 2350 Safety Brine Valve Assembly



| Item No. | Quantity | Part No.    | Description                                   |
|----------|----------|-------------|---|
| 1        | 1        | 60038       | Safety Brine Valve, 2350                      |
| 1A       | 1        | 61024       | Actuator Assembly, 2350 Brine                 |
| 2        | 1        | 60028-30    | Float Assembly, 2350, 30" Wht                 |
|          | 1        | 60026-30SAN | Float Assembly, 2350, 30", HW                 |
| 3        | 1        | 60009-00    | Air Check, #900, Commercial Less Fittings     |
|          | 1        | 60009-01    | Air Check, #900, Commercial, HW Less Fittings |

**Not Shown:**

|  |   |       |                                      |
|--|---|-------|--------------------------------------|
|  | 1 | 18603 | Fitting Assembly, 900 Air Check 2350 |
|  | 1 | 18602 | Fitting Assembly, 900 Air Check      |

**For Service Assembly Numbers, See the Back of this Manual**

# Troubleshooting

| <b>Problem</b>                            | <b>Cause</b>  | <b>Correction</b>   |
|---|---|---|
| 1. Water conditioner fails to regenerate. | A. Electrical service to unit has been interrupted  | A. Assure permanent electrical service (check fuse, plug, pull chain, or switch)                                |
|   | B. Timer is defective.  | B. Replace timer.   |
|   | C. Power failure.   | C. Reset time of day.   |
| 2. Hard water.                            | A. By-pass valve is open.   | A. Close by-pass valve.   |
|   | B. No salt is in brine tank.  | B. Add salt to brine tank and maintain salt level above water level.  |
|   | C. Injector screen plugged.   | C. Clean injector screen.   |
|   | D. Insufficient water flowing into brine tank.  | D. Check brine tank fill time and clean brine line flow control if plugged.                                     |
|   | E. Hot water tank hardness.   | E. Repeated flushings of the hot water tank is required.  |
|   | F. Leak at distributor tube.  | F. Make sure distributor tube is not cracked. Check O-ring and tube pilot.                                      |
|   | G. Internal valve leak.   | G. Replace seals and spacers and/or piston.   |
| 3. Unit used too much salt.               | A. Improper salt setting.   | A. Check salt usage and salt setting.   |
|   | B. Excessive water in brine tank.   | B. See problem 7.   |
| 4. Loss of water pressure.                | A. Iron buildup in line to water conditioner.   | A. Clean line to water conditioner.   |
|   | B. Iron buildup in water conditioner.   | B. Clean control and add mineral cleaner to mineral bed. Increase frequency of regeneration.                    |
|   | C. Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system. | C. Remove piston and clean control.   |
| 5. Loss of mineral through drain line.    | A. Air in water system.   | A. Assure that well system has proper air eliminator control. Check for dry well condition.                     |
|   | B. Improperly sized drain line flow control.  | B. Check for proper drain rate.   |
| 6. Iron in conditioned water.             | A. Fouled mineral bed.  | A. Check backwash, brine draw, and brine tank fill. Increase frequency of regeneration. Increase backwash time. |
| 7. Excessive water in brine tank.         | A. Plugged drain line flow control.   | A. Clean flow control.  |
|   | B. Plugged injector system.   | B. Clean injector and screen.   |
|   | C. Timer not cycling.   | C. Replace timer.   |
|   | D. Foreign material in brine valve.   | D. Replace brine valve seat and clean valve.  |
|   | E. Foreign material in brine line flow control.   | E. Clean brine line flow control.   |

| <b>Problem</b>                   | <b>Cause</b>                               | <b>Correction</b>  |
|----------------------------------|--|--|
| 8. Softener fails to draw brine. | A. Drain line flow control is plugged.     | A. Clean drain line flow control.  |
|                                  | B. Injector is plugged.                    | B. Clean injector  |
|                                  | C. Injector screen plugged.                | C. Clean screen.   |
|                                  | D. Line pressure is too low.               | D. Increase line pressure to 20 P.S.I.   |
|                                  | E. Internal control leak                   | E. Change seals, spacers, and piston assembly.   |
|                                  | F. Service adapter did not cycle.          | F. Check drive motor and switches.   |
| 9. Control cycles continuously.  | A. Misadjusted, broken, or shorted switch. | A. Determine if switch or timer is faulty and replace it, or replace complete power head.                                    |
| 10. Drain flows continuously.    | A. Valve is not programming correctly.     | A. Check timer program and positioning of control. Replace power head assembly if not positioning properly.                  |
|                                  | B. Foreign material in control.            | B. Remove power head assembly and inspect bore. Remove foreign material and check control in various regeneration positions. |
|                                  | C. Internal control leak.                  | C. Replace seals and piston assembly.  |

### ***General Service Hints For Meter Control***

#### **Problem: Softener delivers hard water**

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

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

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

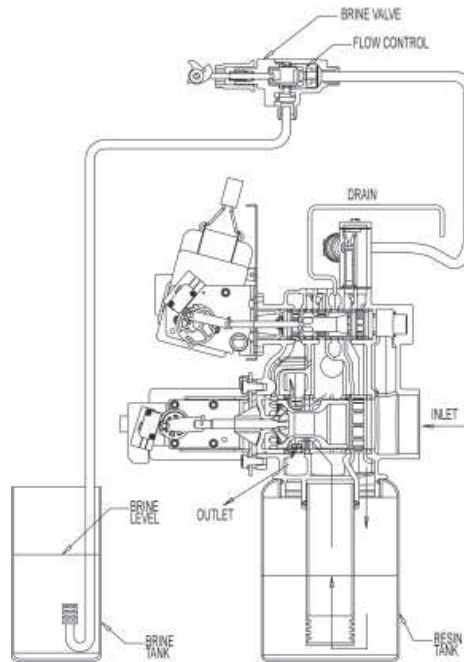
**Correction:** Pull cable out of meter cover and rotate manually. Program wheel must move without binding and clutch must give positive clicks when program wheel strikes regeneration stop. If it does not, replace timer.

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

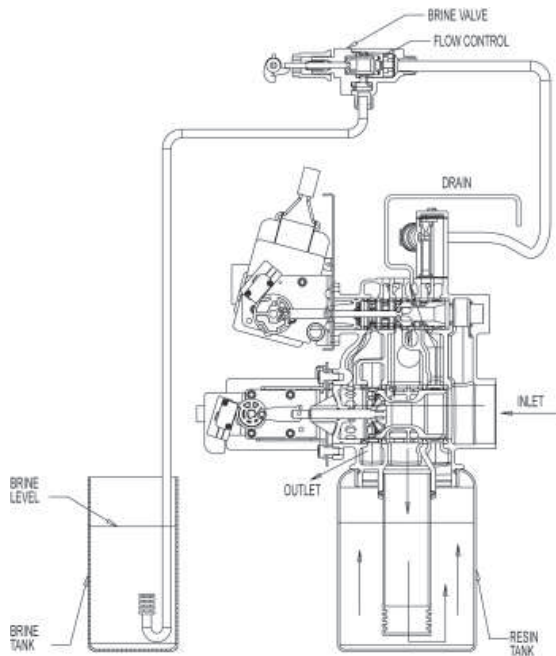
**Correction:** Check meter with meter checker.

# Water Conditioner Flow Diagrams - Downflow

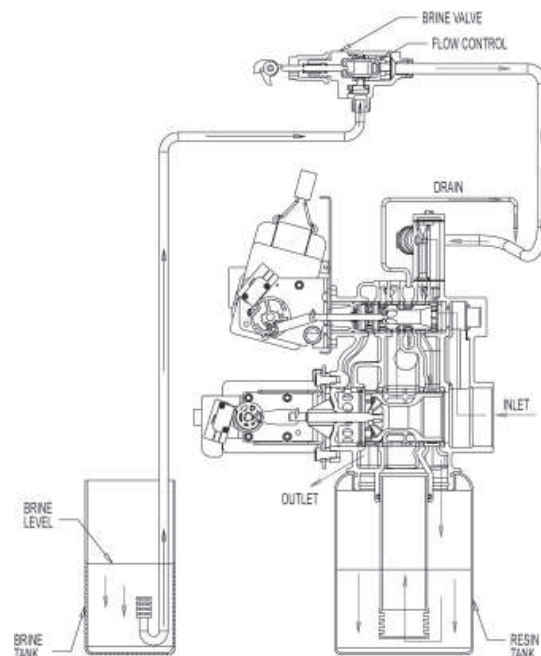
## 1 Service Position



## 2 Backwash Position



## 3 Brine Position

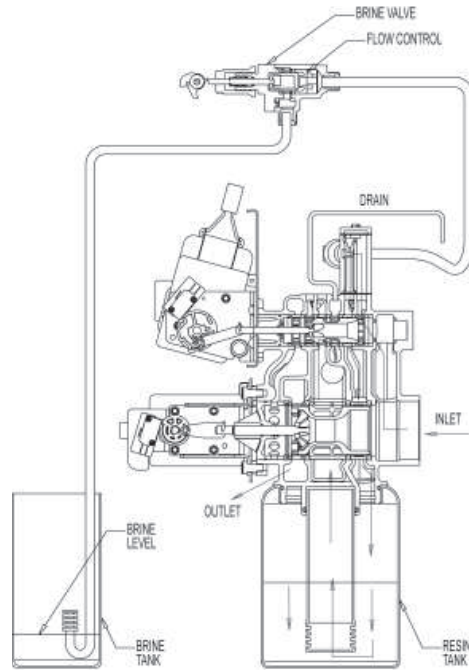


61500-2900 DOWNFLW\_REVB

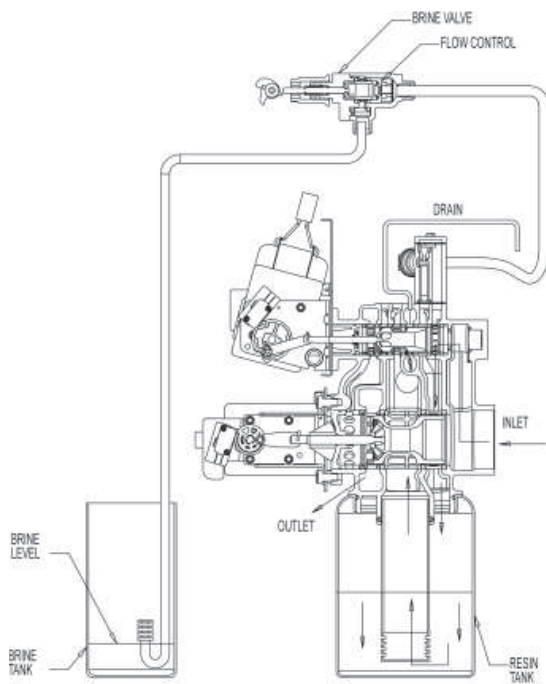


# Water Conditioner Flow Diagrams - Downflow

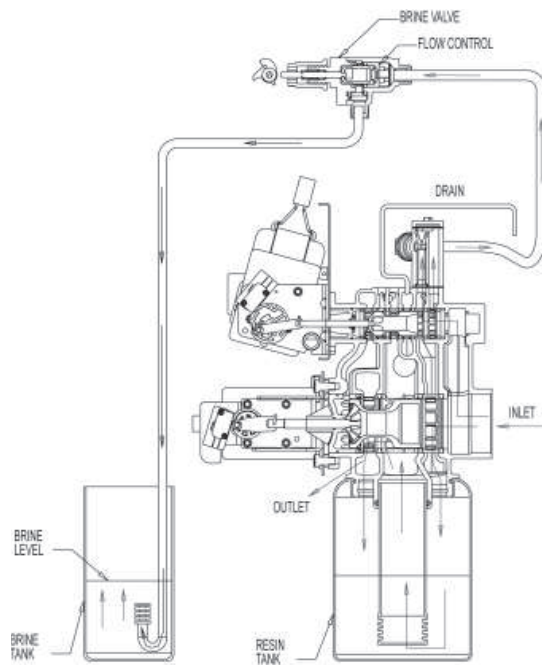
## 4 Slow Rinse Position



## 5 Rapid Rinse



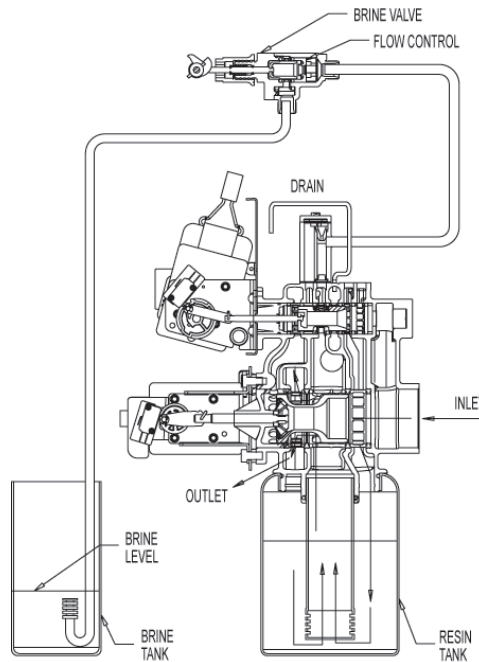
## 6 Brine Tank Refill Position



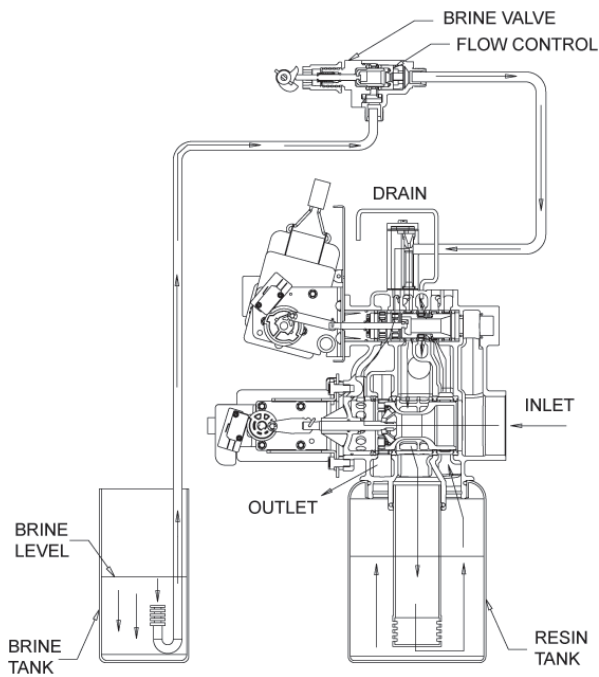
61500-2900 DOWNFLW\_REVB

# Water Conditioner Flow Diagrams - Upflow

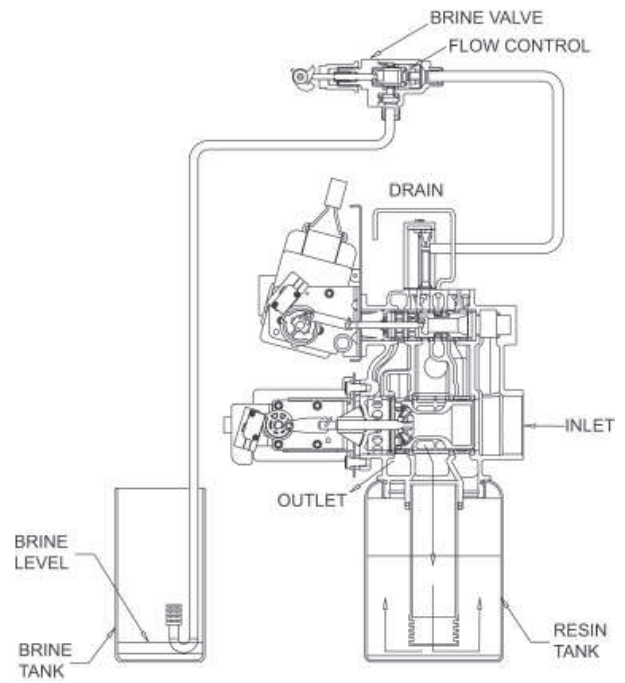
## 1 Service Position



## 2 Brine Position



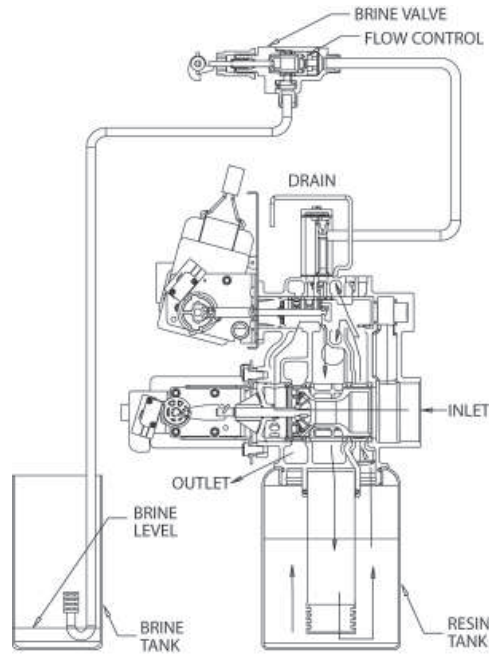
## 3 Slow Rinse Position



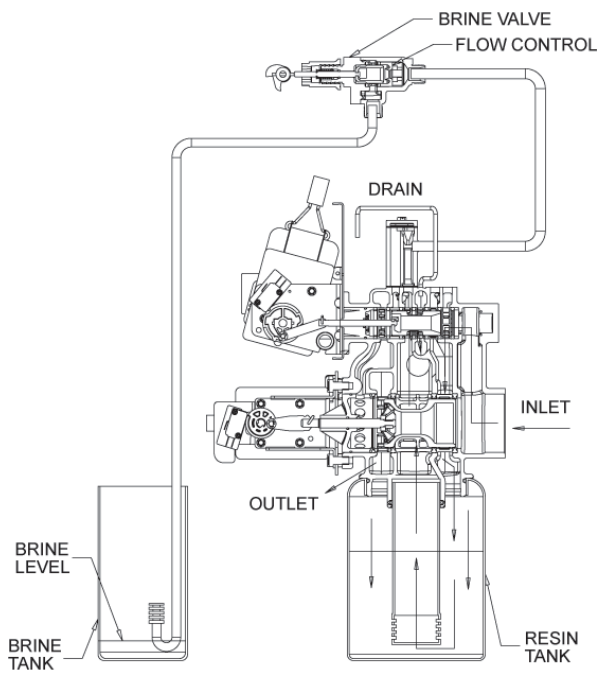
61500-2900 UPFLW\_REVB

# Water Conditioner Flow Diagrams - Upflow

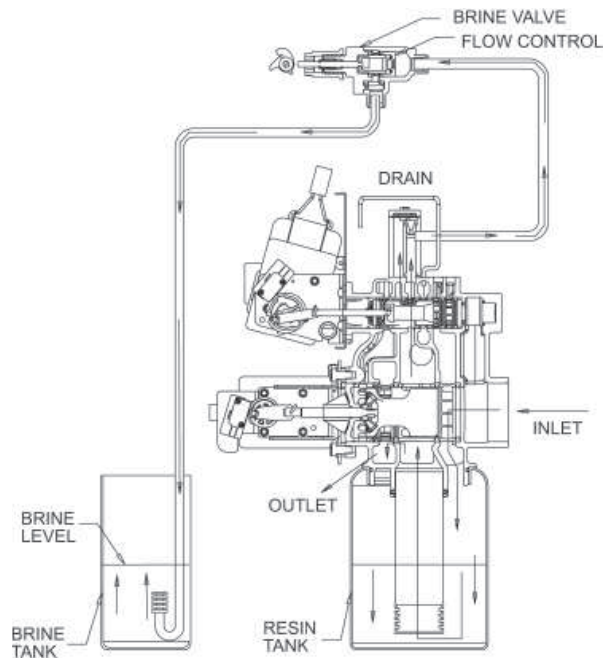
## 4 Back Wash Position



## 5 Rapid Rinse

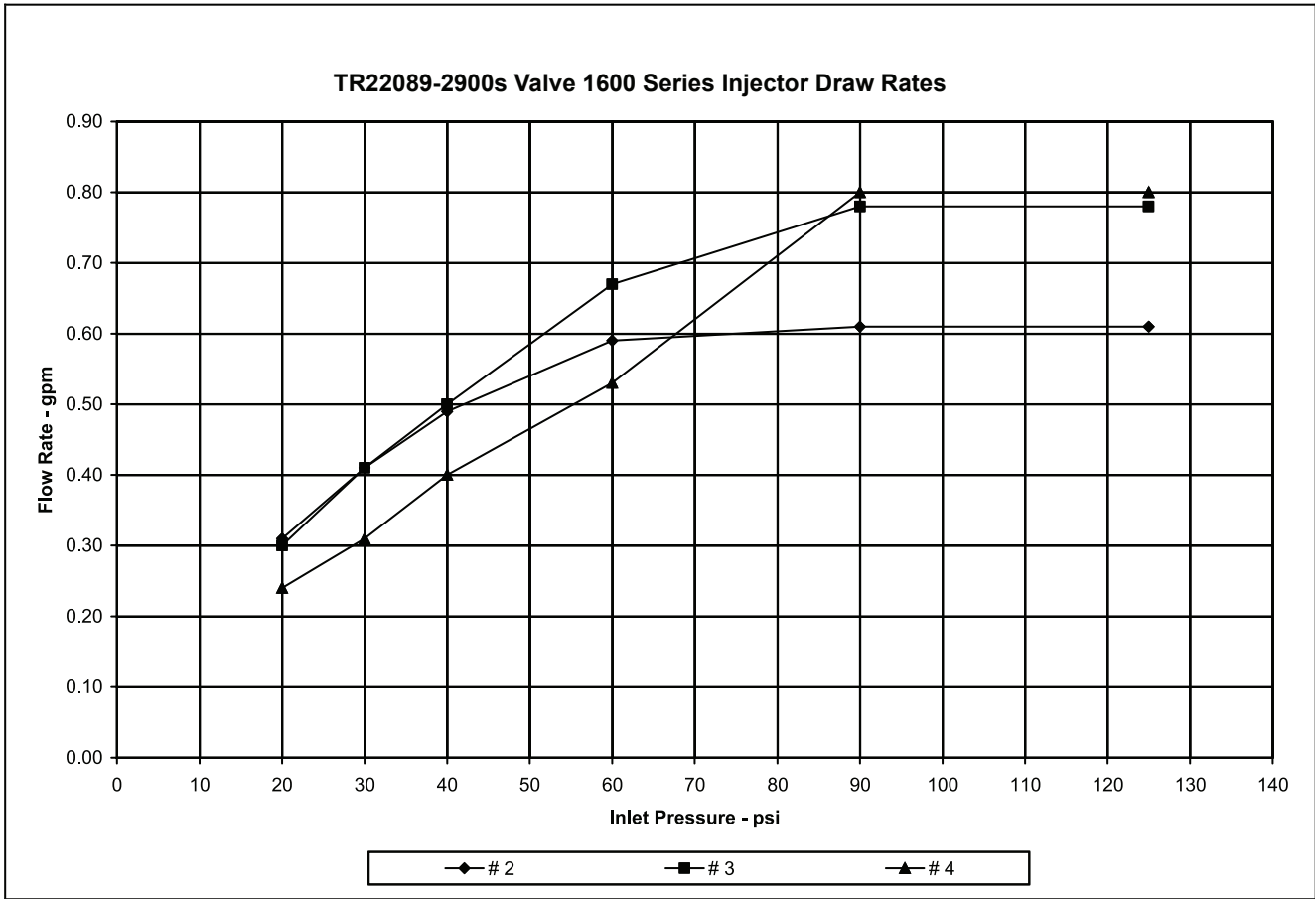


## 6 Brine Tank Fill Position



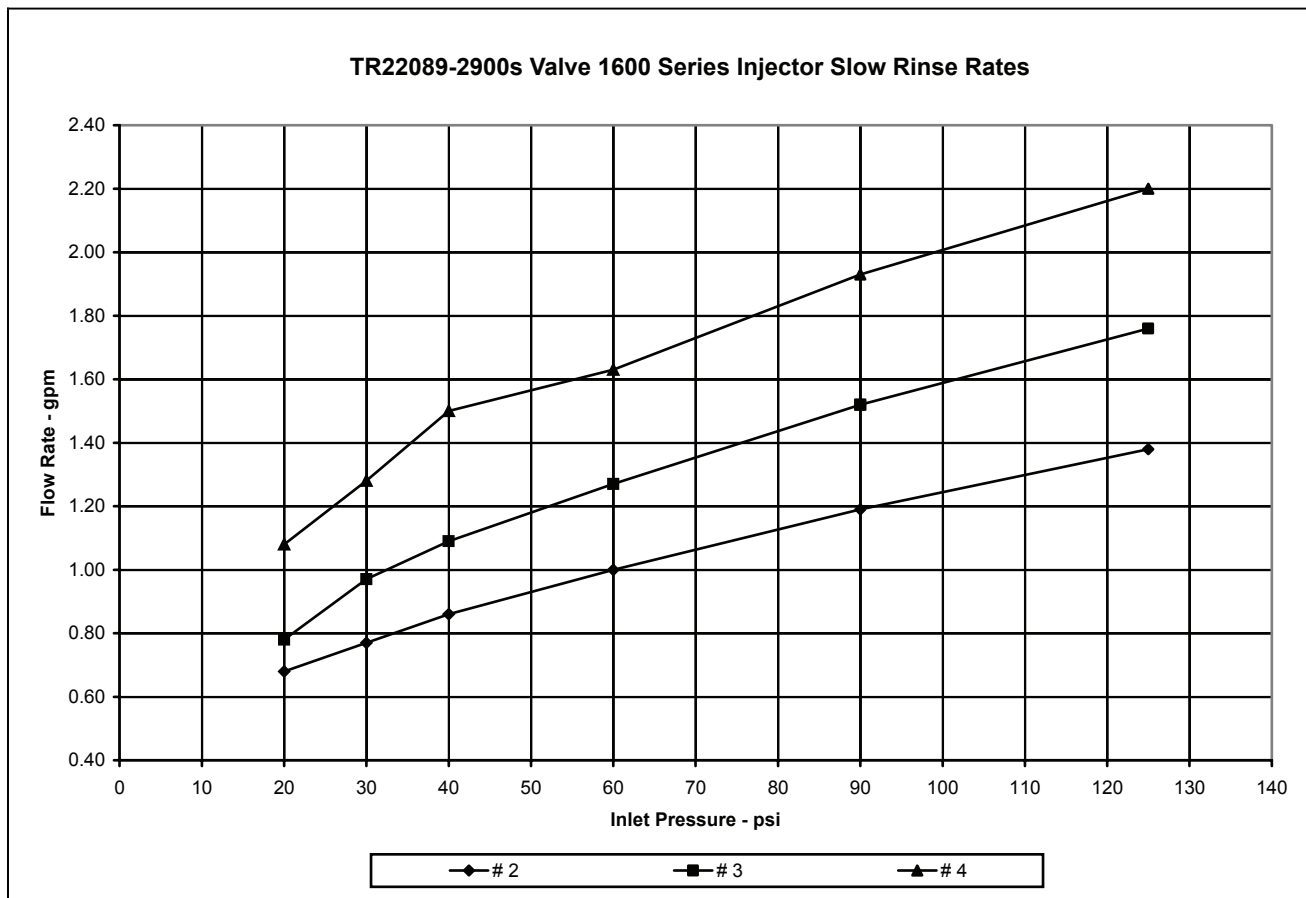
61500-2900 UPFLW\_REV B

# Flow Data & Injector Draw Rates - Downflow



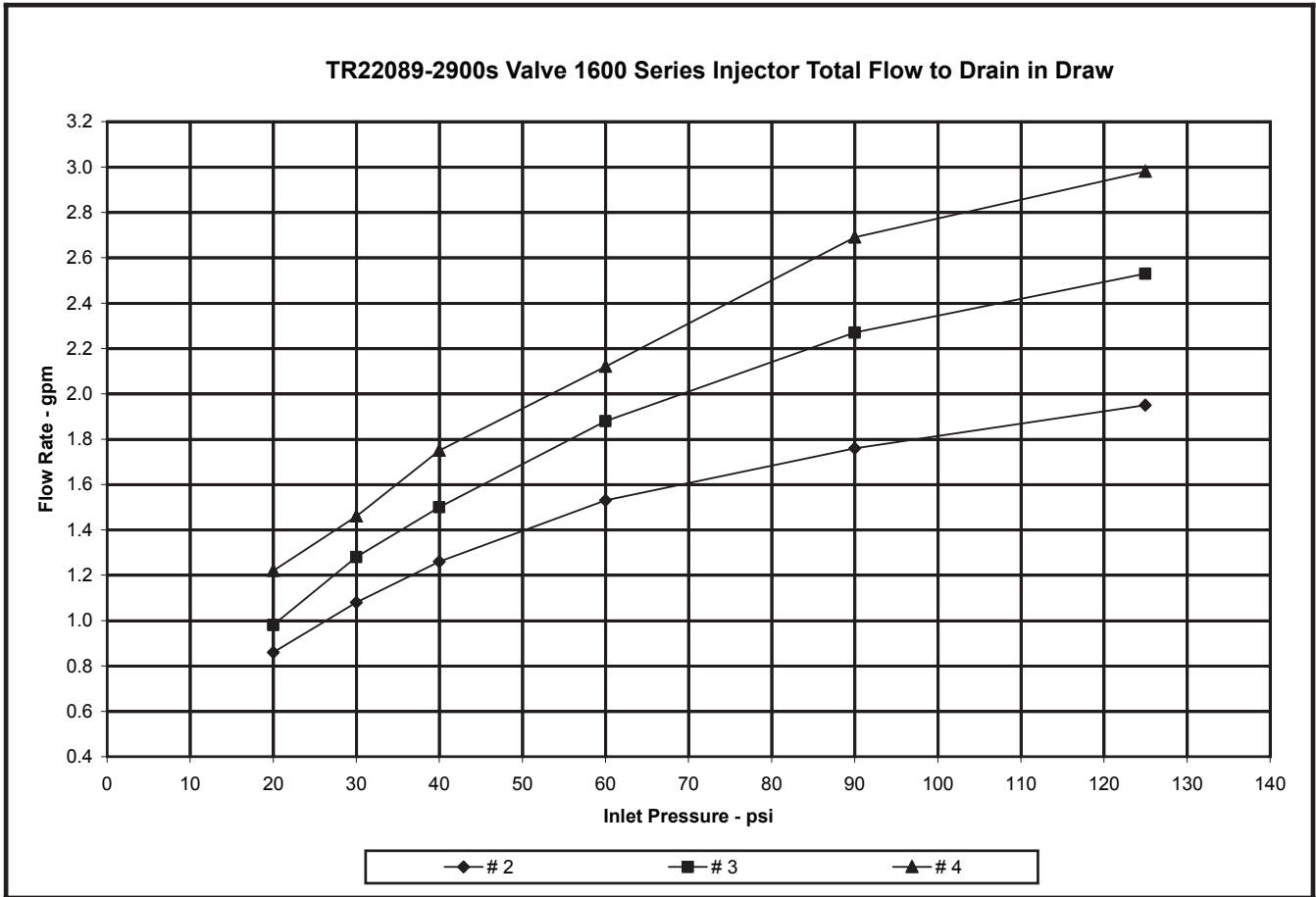
| 1600 series injectors                                 | Draw Rate - gpm |      |      |
|---|-----------------|------|------|
|   | # 2             | # 3  | # 4  |
| pressure  |                 |      |      |
| 20  | 0.31            | 0.30 | 0.24 |
| 30  | 0.41            | 0.41 | 0.31 |
| 40  | 0.49            | 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 |                 |      |      |

## Flow Data & Injector Draw Rates - Downflow

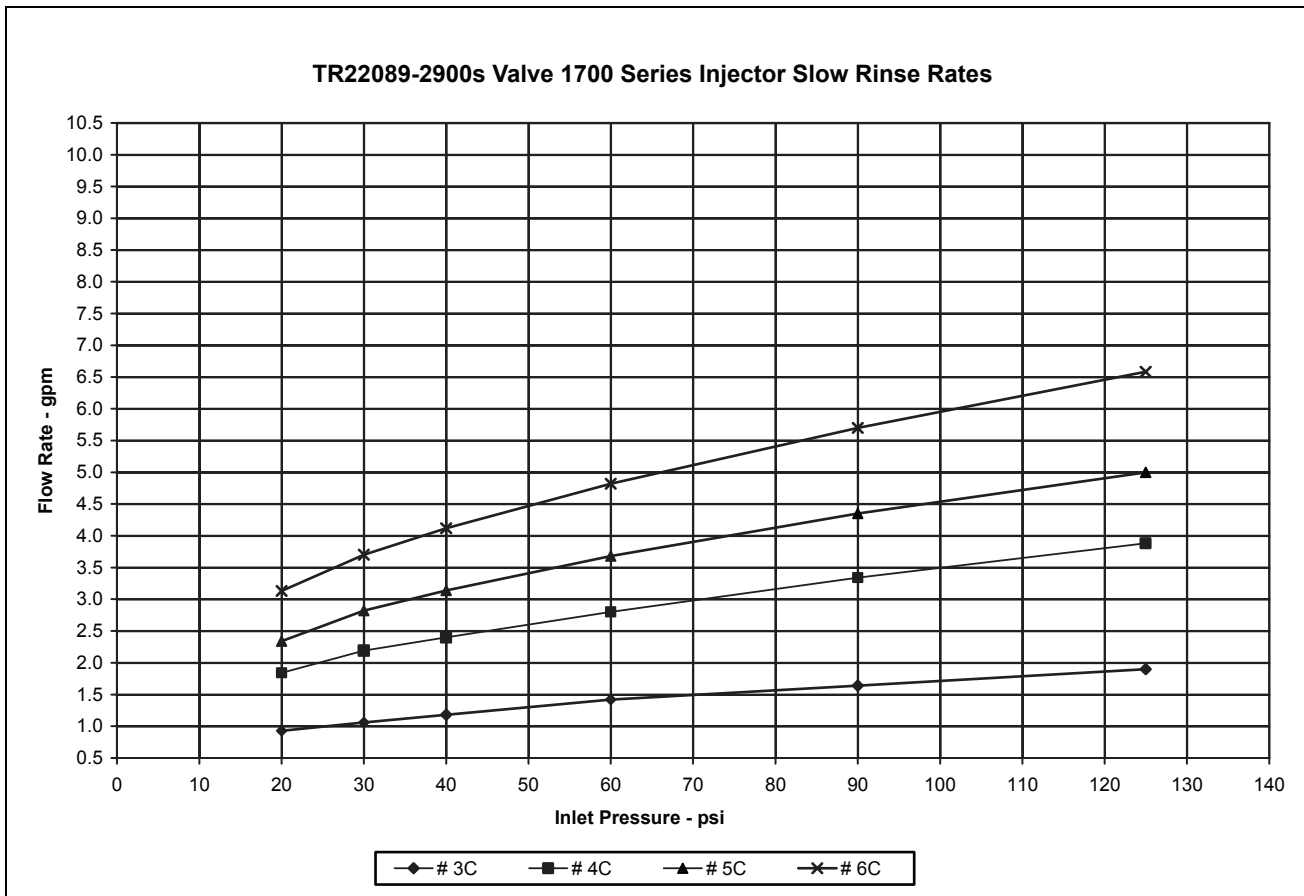


| 1600 series injectors                                 | Slow Rinse Rates - gpm |      |      |
|---|------------------------|------|------|
| pressure  | # 2                    | # 3  | # 4  |
| 20  | 0.68                   | 0.78 | 1.08 |
| 30  | 0.77                   | 0.97 | 1.28 |
| 40  | 0.86                   | 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 |                        |      |      |

# Flow Data & Injector Draw Rates - Downflow



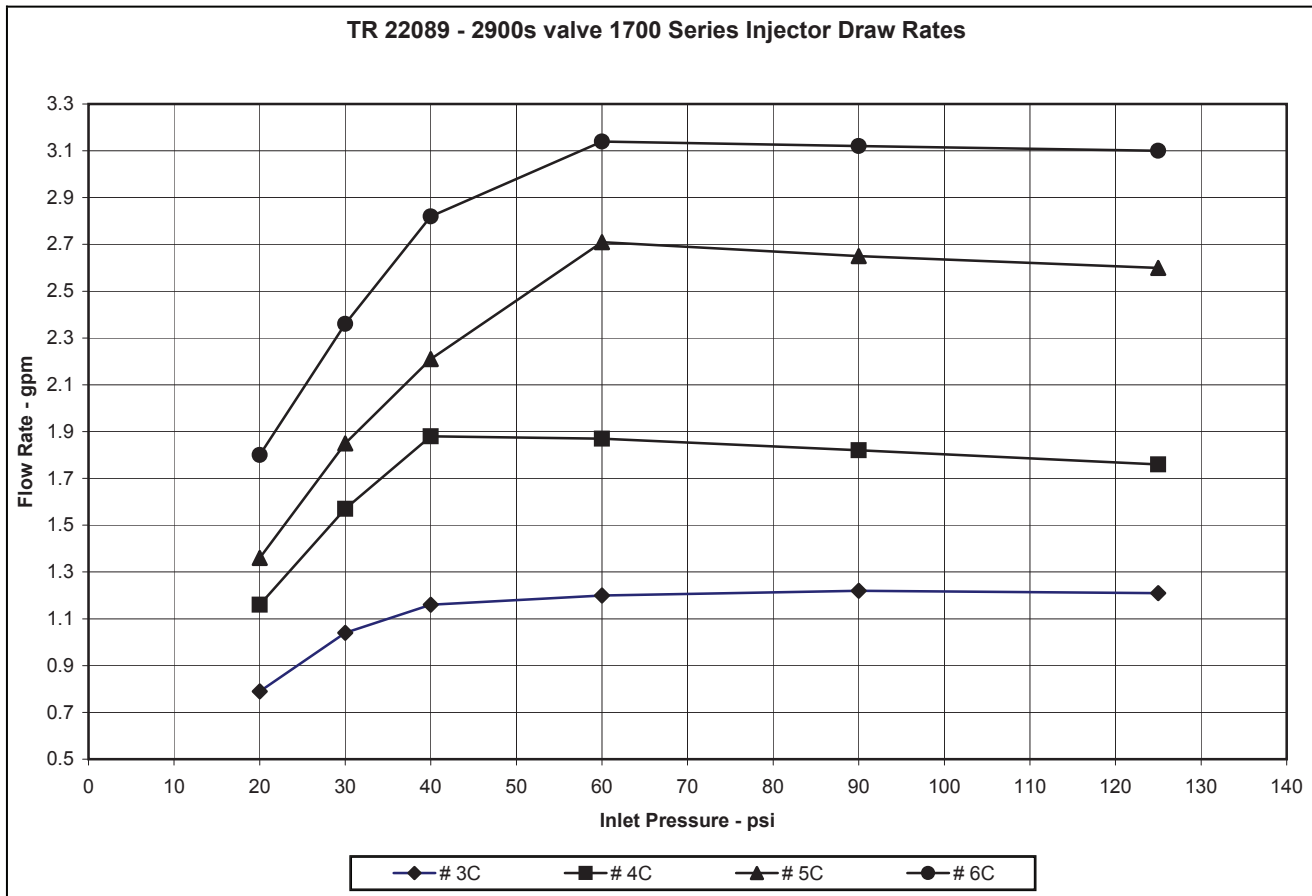
## Flow Data & Injector Draw Rates - Downflow



| 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

# Flow Data & Injector Draw Rates - Downflow



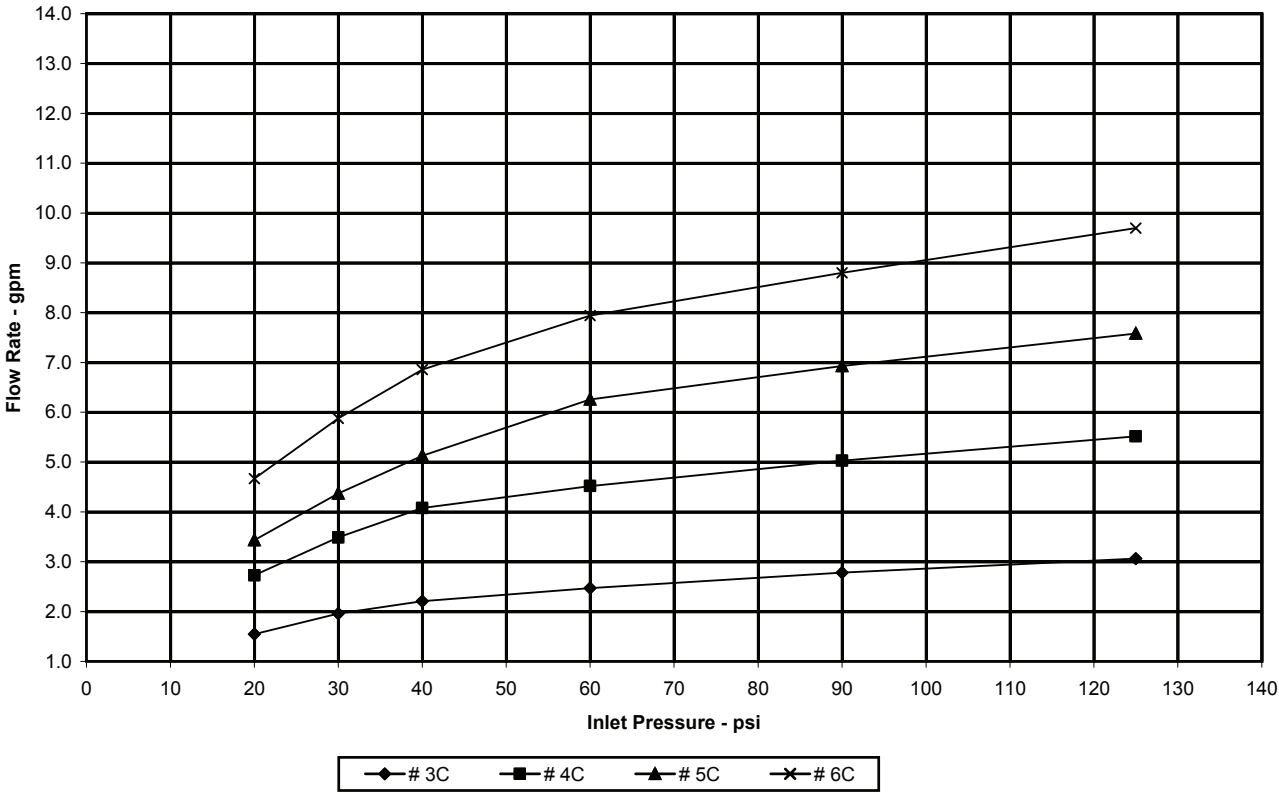
| 1700 series injectors | Draw Rate - gpm |      |      |      |
|-----------------------|-----------------|------|------|------|
| pressure              | # 3C            | # 4C | # 5C | # 6C |
| 20                    | 0.79            | 1.16 | 1.36 | 1.80 |
| 30                    | 1.04            | 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 - brass cap, o -ring, no air disperser

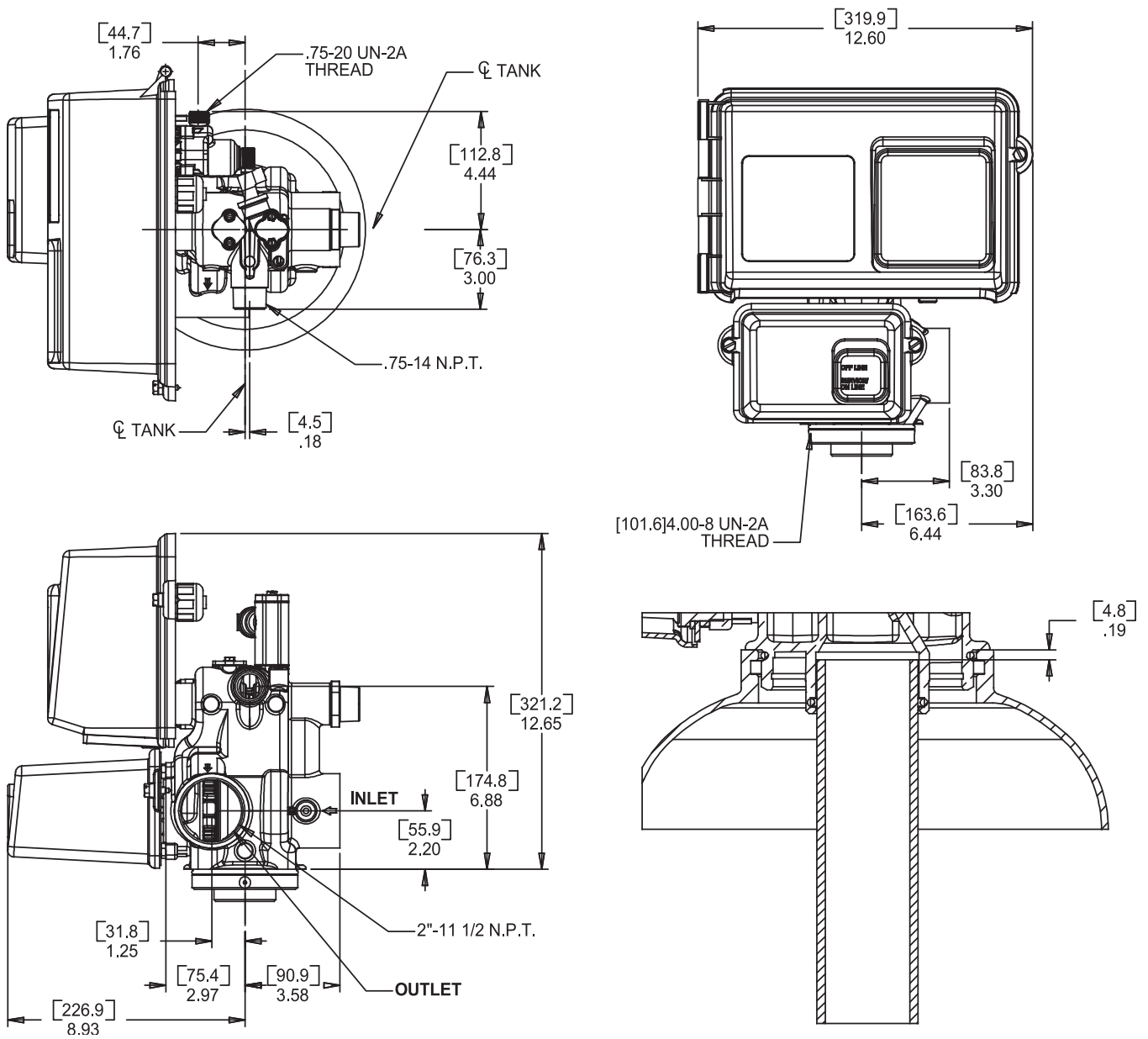


# Flow Data & Injector Draw Rates - Downflow

TR22089-2900s Valve 1700 Series Injector Total Flow to Drain in Draw

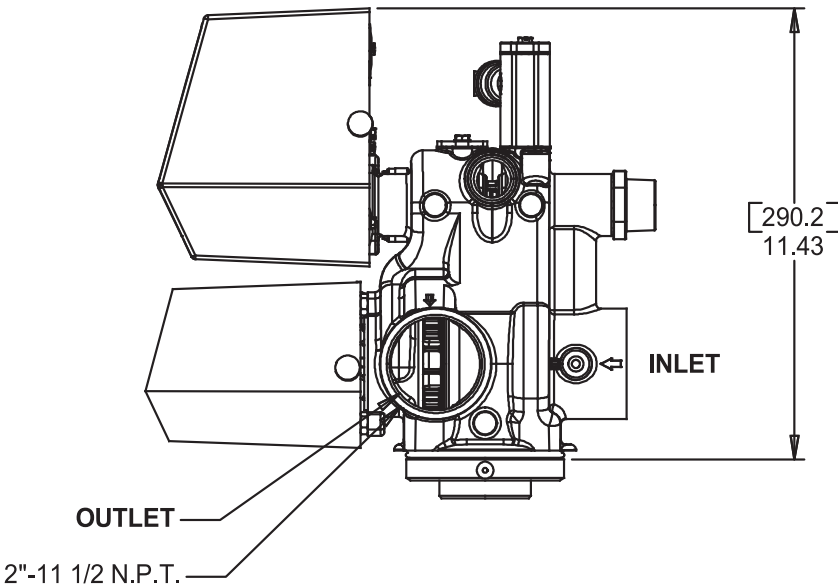
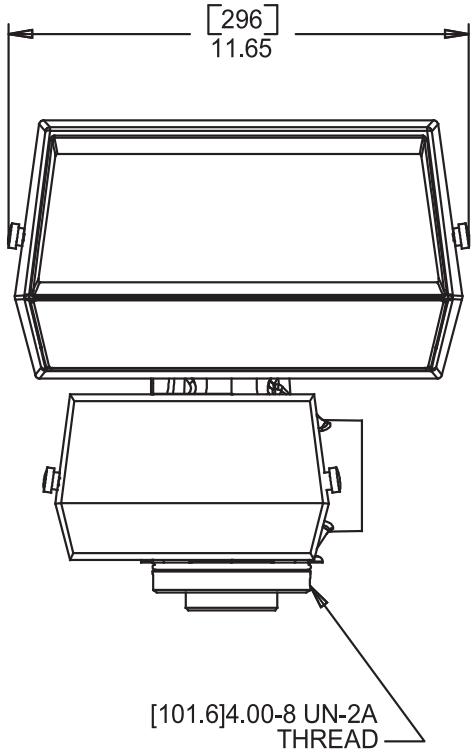
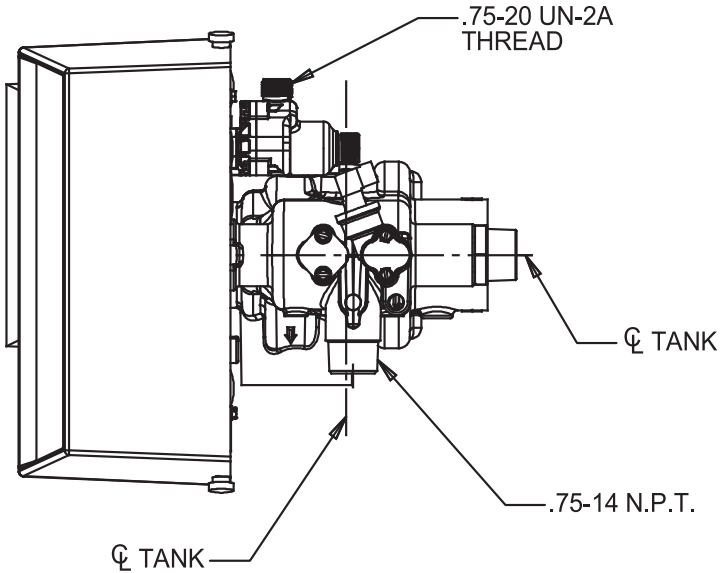


# Environmental Backplate Dimensions



61500-2900LNE\_REV B

# Designer Backplate Dimensions



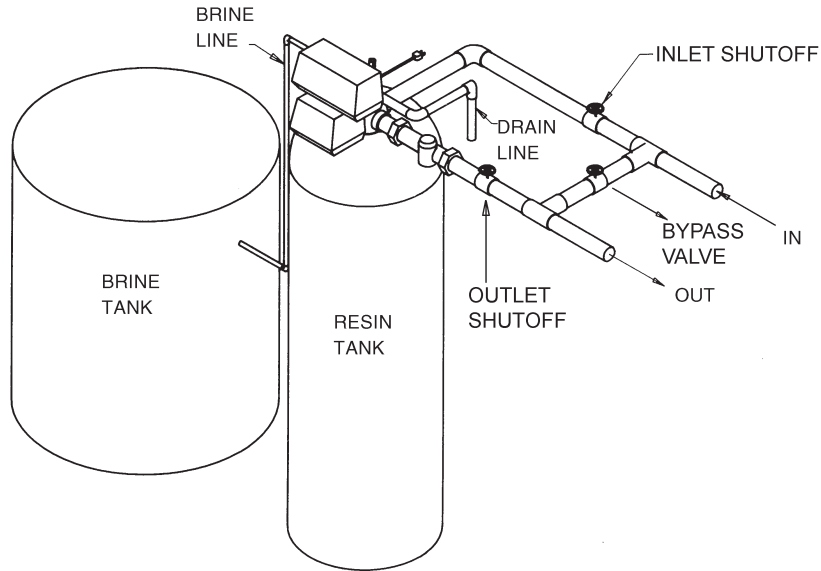
61500-2900LNE\_REVB

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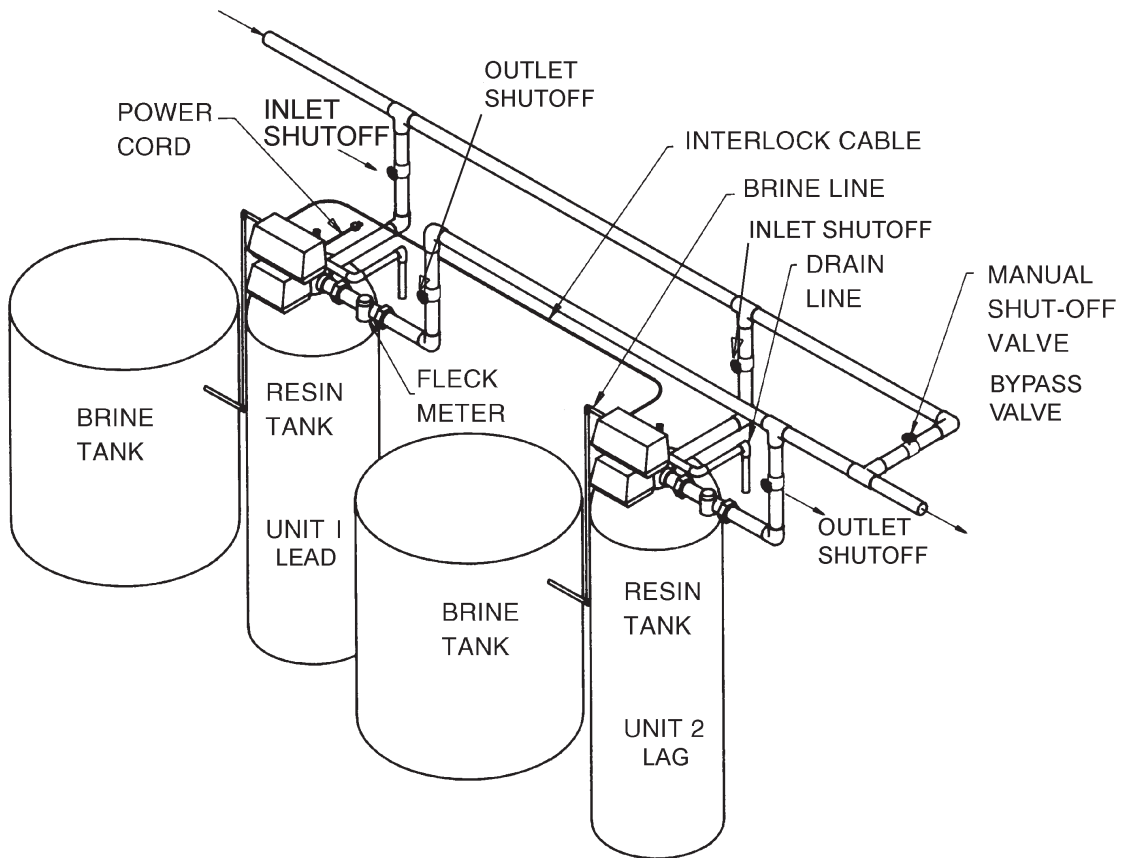
# Plumbing Diagrams

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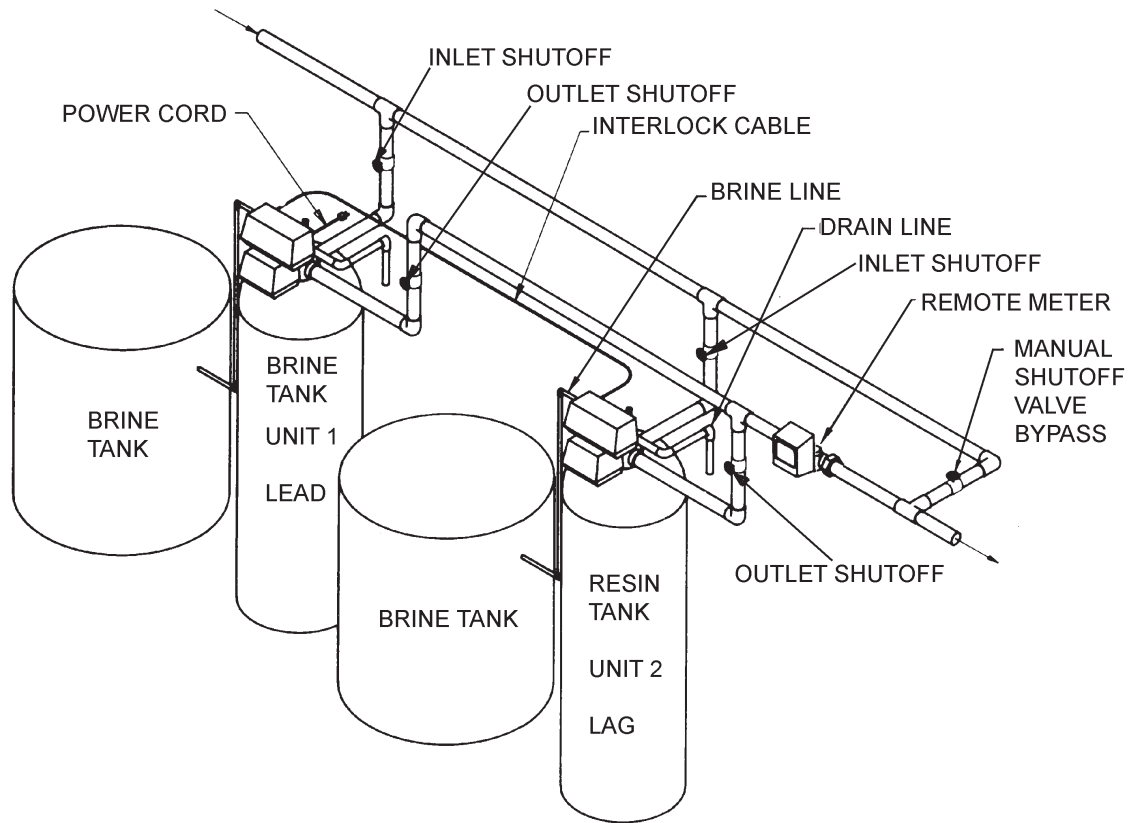
## System #4 - Typical Single Tank Installation With Optional Meter



## System #5 - Interlock - Typical Twin Tank Installation With Optional Meter Interlock And No Hard Water Bypass



## System #6 - Twin Series Regeneration & System #7 - Twin Alternator Installation

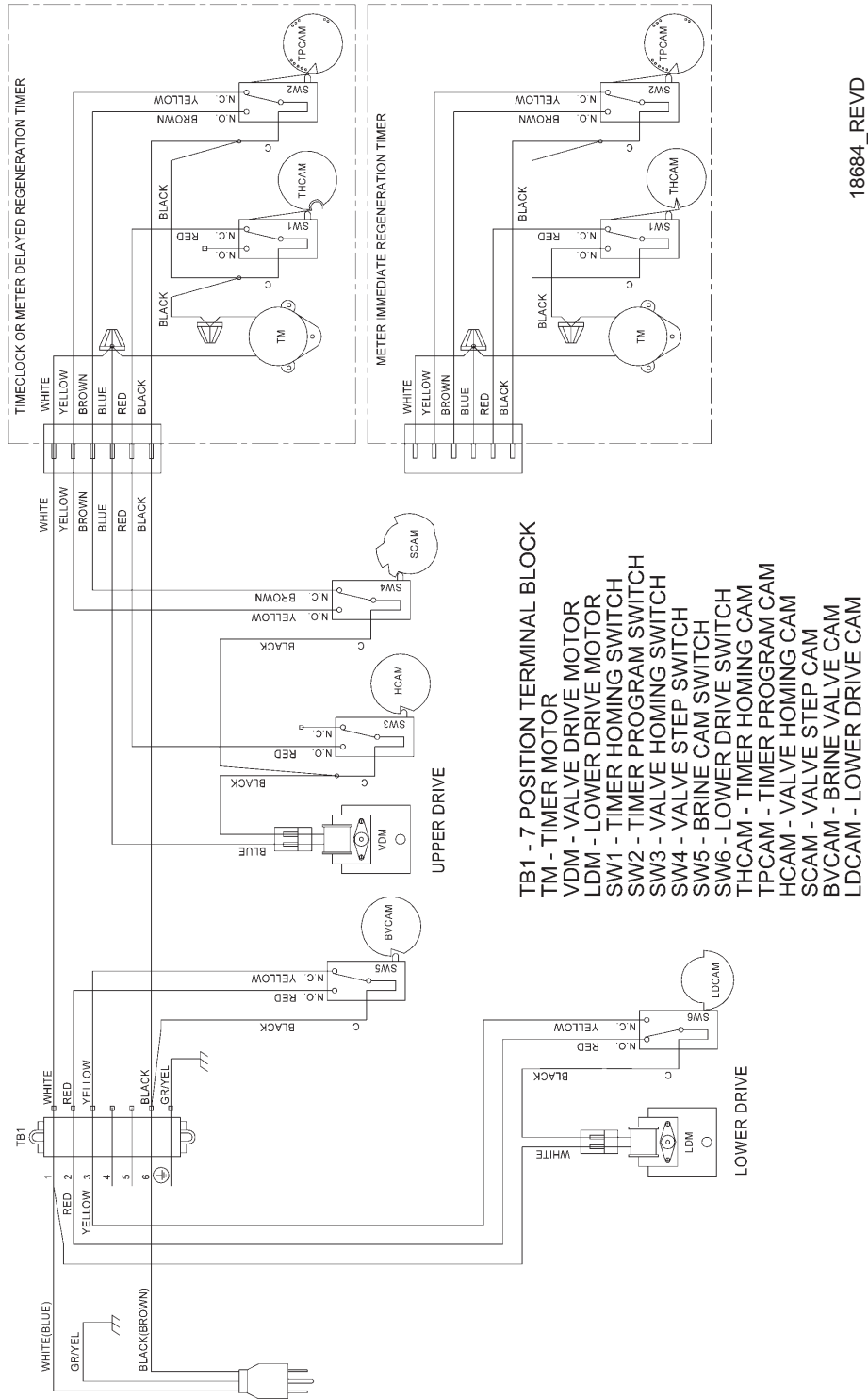


**NOTE:** On System 7, the power cord is on unit 2.

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

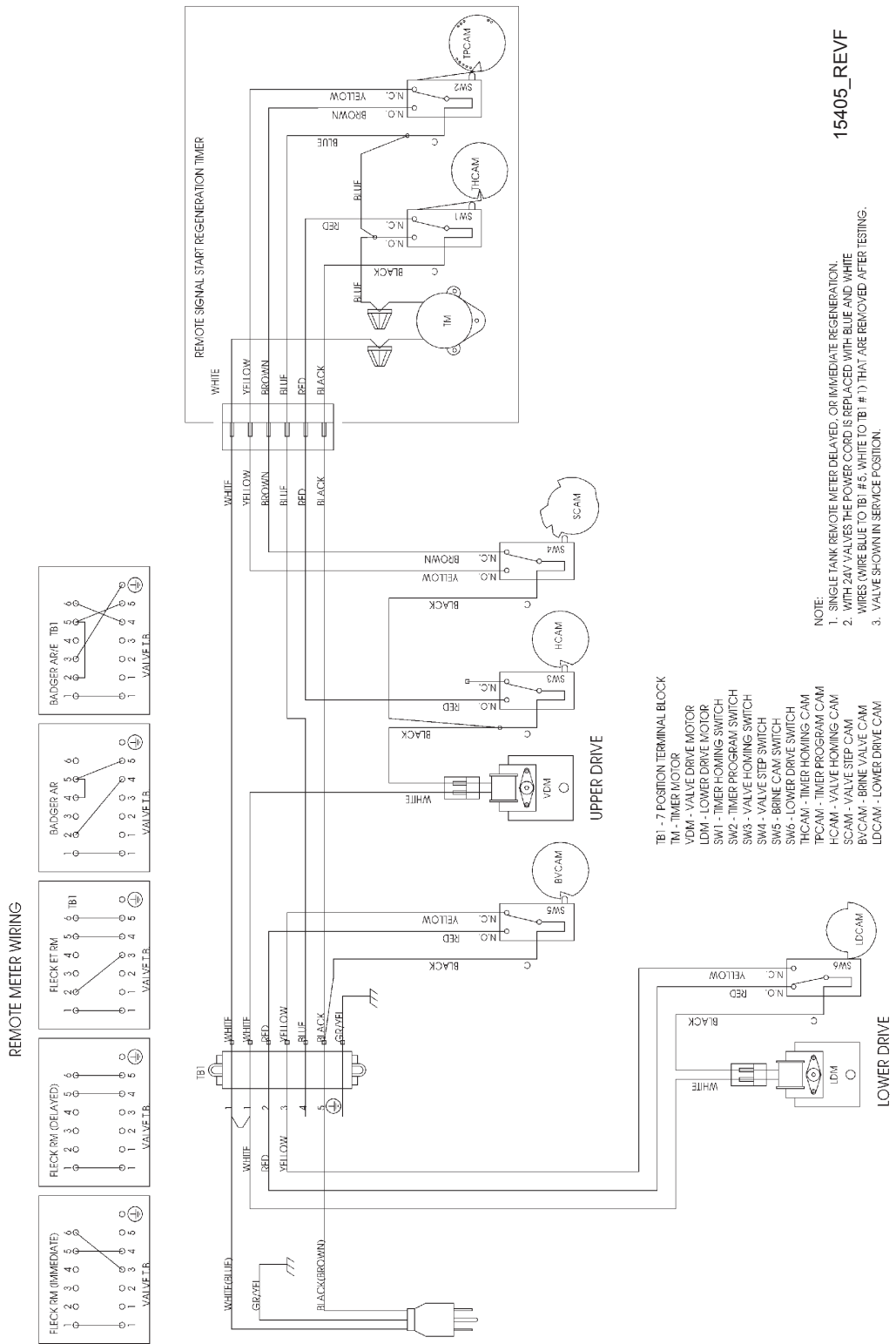
# Wiring Diagrams

## System #4 - Single Valve Regeneration Immediate and Delayed Valve Wiring



18684\_REVD

## System #4 - With Remote Signal Start Valve Wiring



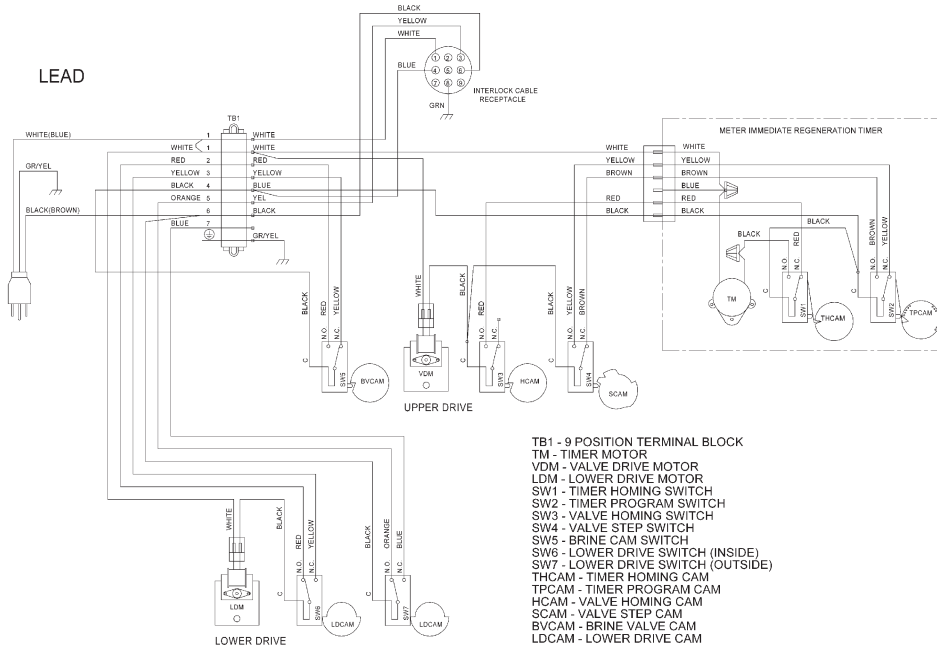
15405\_REV F

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

- TBI - 7 POSITION TERMINAL BLOCK  
 TM - TIMER MOTOR  
 VDM - VALVE DRIVE MOTOR  
 LDM - LOWER DRIVE MOTOR  
 SW1 - TIMER HOMING SWITCH  
 SW2 - TIMER PROGRAM SWITCH  
 SW3 - VALVE HOMING SWITCH  
 SW4 - VALVE STEP SWITCH  
 SW5 - BRINE CAM SWITCH  
 SW6 - LOWER DRIVE SWITCH  
 HCAM - TIMER PROGRAM CAM  
 BVCAM - VALVE HOMING CAM  
 SCAM - VALVE STEP CAM  
 LDCAM - BRINE VALVE CAM  
 LDCAM - LOWER DRIVE CAM

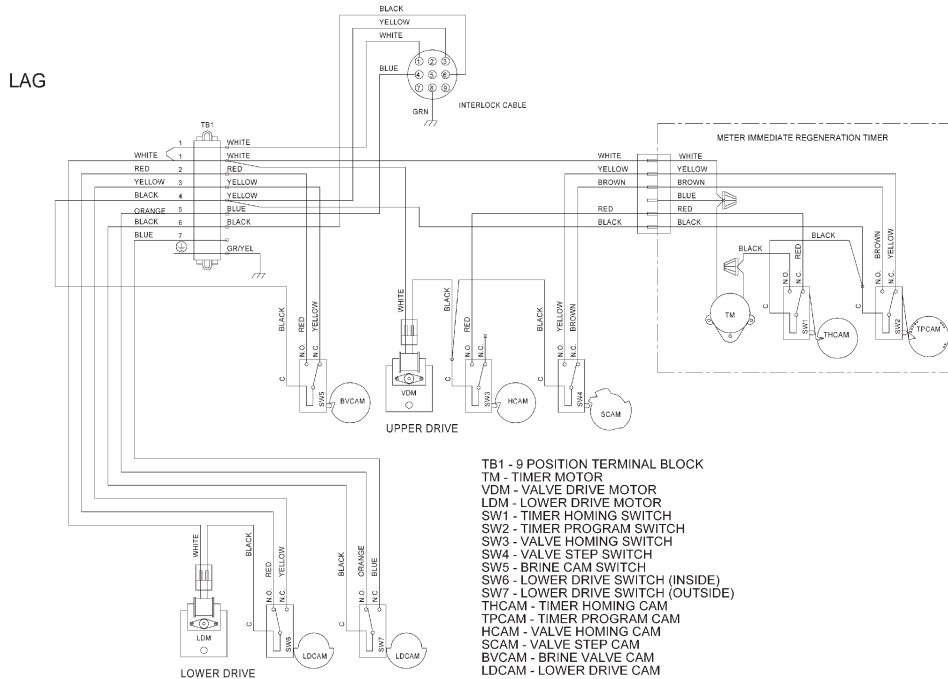
# Wiring Diagrams

## System #5 - Interlocked Regeneration Valve Wiring



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

18685-01\_REVD

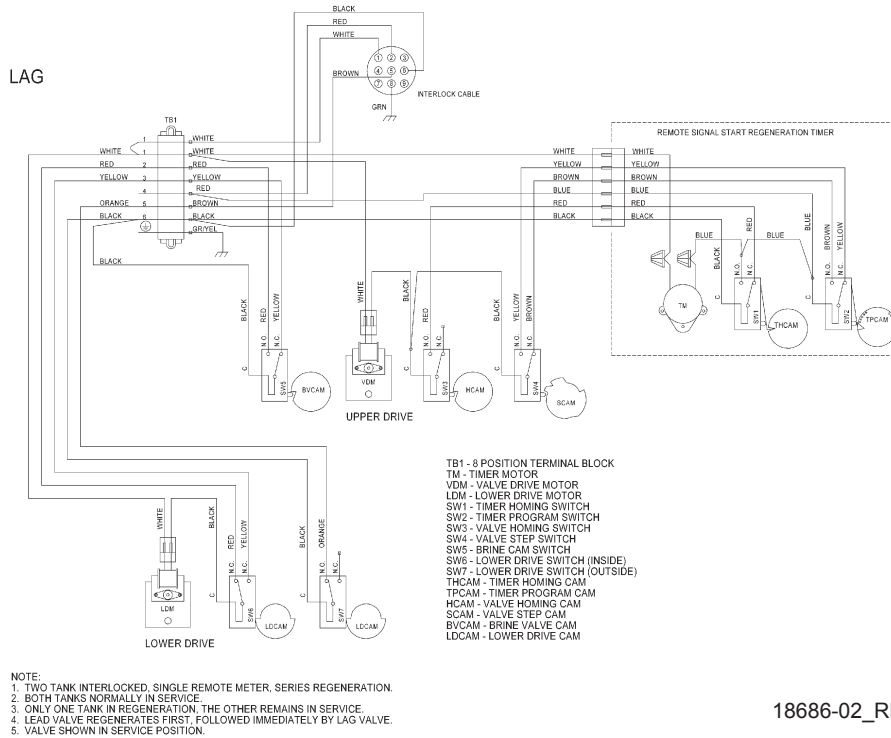
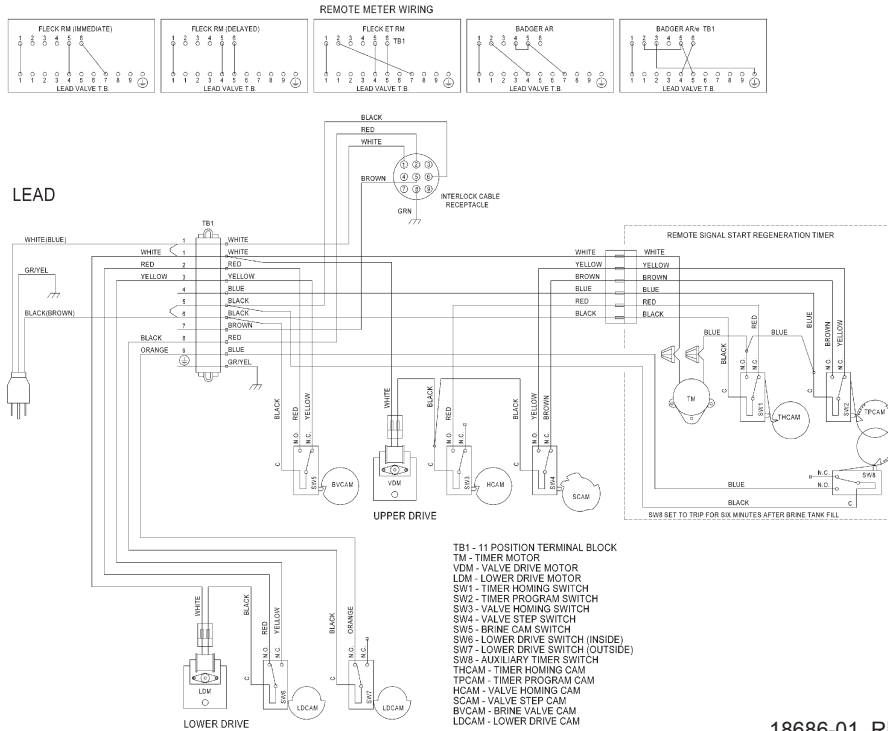


**NOTE:**  
 1. TWO TANK INTERLOCKED, INDIVIDUAL METER, IMMEDIATE REGENERATION.  
 2. BOTH TANKS NORMALLY IN SERVICE. ONLY ONE TANK IN REGENERATION, THE OTHER REMAINS IN SERVICE.  
 3. VALVE SHOWN IN SERVICE.

18685-02\_REVD

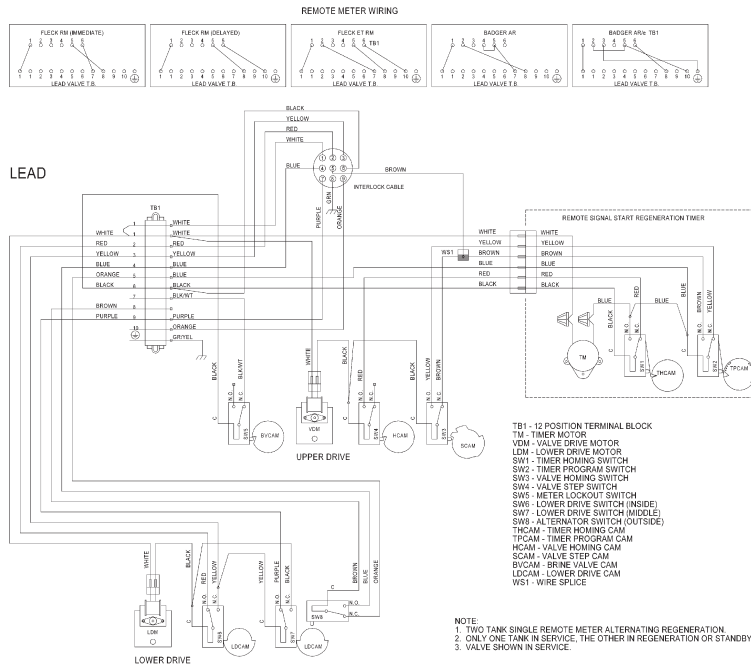


## System #6 - Series Regeneration Valve Wiring

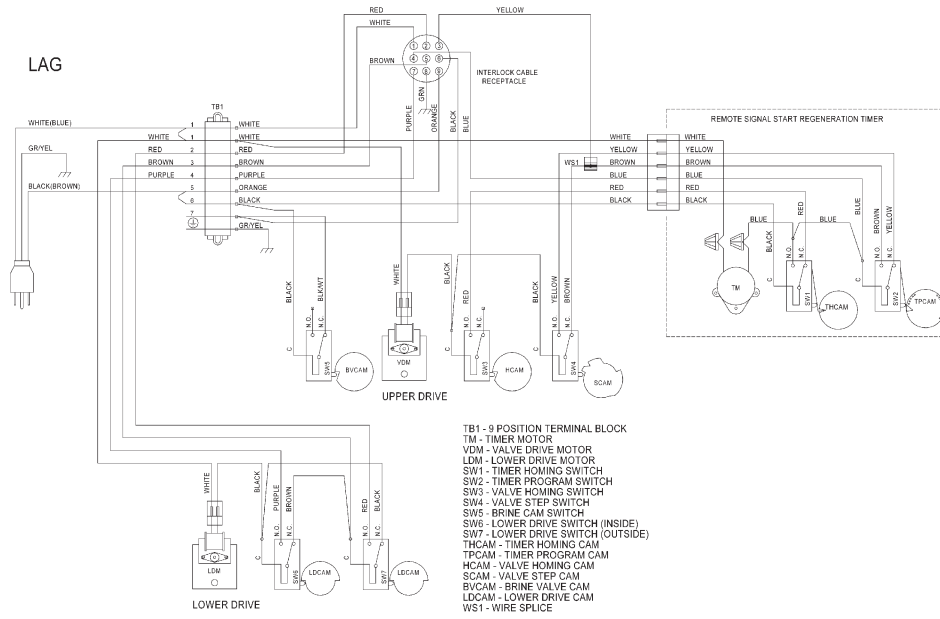


# Wiring Diagrams

## System #7 - Alternating Regeneration Valve Wiring



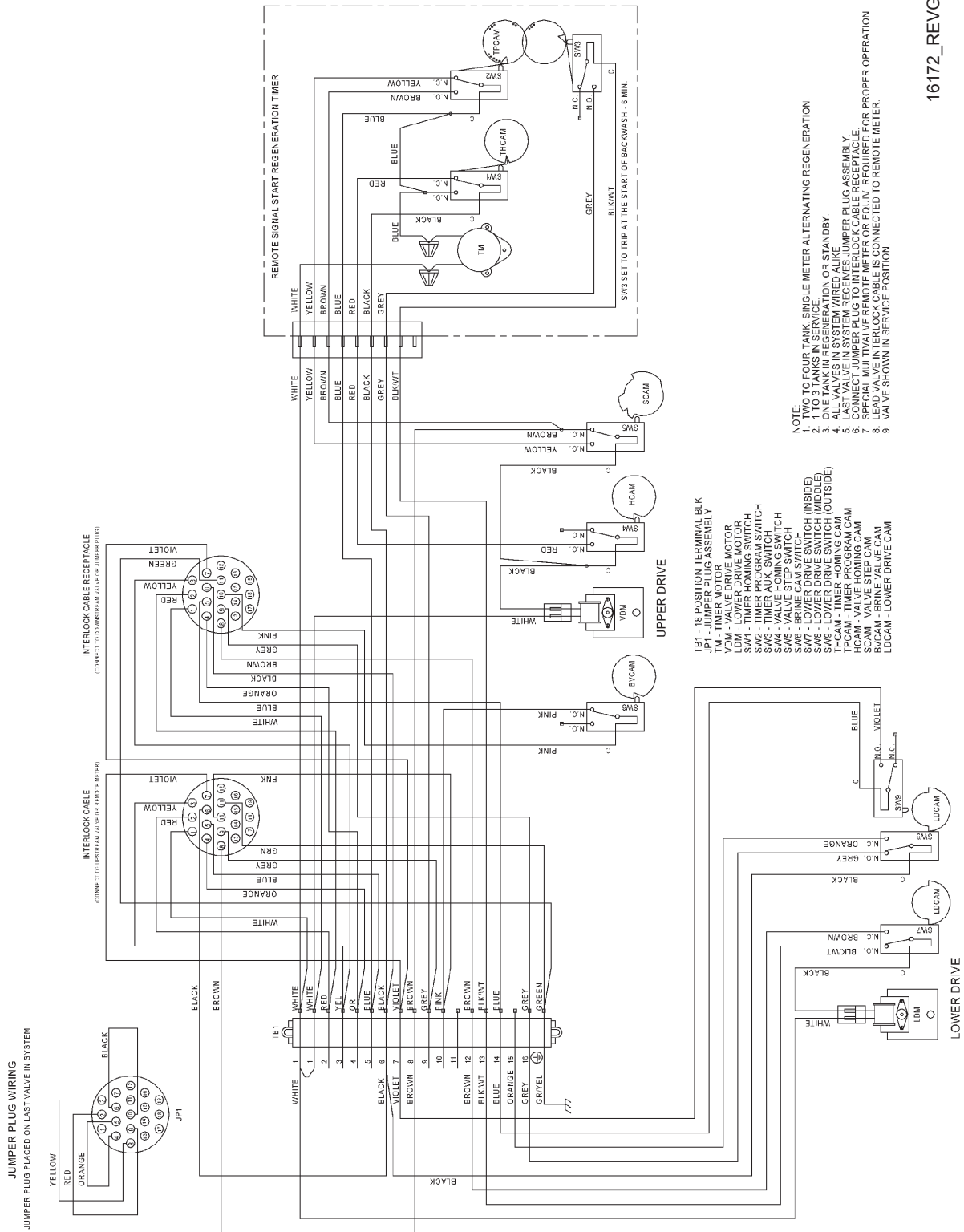
18687-01\_REVE



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

18687-02\_REVE

## System #7 - Alternating Regeneration Valve Wiring



16172\_REVG

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# 1600/1700 System Nozzle & Throat Chart

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## 1600 Brine System

### Standard

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

### PVC

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

### Stainless Steel

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

## 1700 Brine System

### Standard

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

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# Service Assemblies

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**Adapters:**

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

**Air Checks:**

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

**Auxiliary Micro Switch:**

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

**Brine Line Flow Controls (BLFC):**

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

**Brine Valves:**

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

**Covers:**

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

**Drain Line Flow Controls (DLFC):**

60366-XX..... 1" FNPT x 3/4" FNPT (specify flow control .6 - 7.0)  
60701-XX..... 1" FNPT x 1" FNPT (specify flow control 8.0 - 25.0)  
60702-XX..... 1" FNPT x 1" MNPT (specify flow control 8.0 - 25.0)  
60708-XX..... 1" FNPT x 3/4" FNPT (specify flow control 8.0 - 25.0)  
60721-XX..... 1" FNPT x 1" FNPT (specify flow control .6 - 7.0)

**Cam Assemblies:**

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

**24-Hour Gear Assemblies:**

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

**Injector Assemblies (Complete):**

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

**Meters:**

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

**Piston Assemblies:**

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

**Program Wheel Assemblies:**

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

**Safety Brine Valves:**

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

**Sales & Service Aids:**

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

**Seal & Spacer Kits:**

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

**Service Equipment:**

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

**Service Valve Operator Assemblies:**

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

**Skipper Wheel Assemblies:**

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

\*Upflow Only

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**Notes**

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