PENTAIR

# **FLECK** 2815
# WATER SOFTENER OR FILTER CONTROL VALVE
## SERVICE MANUAL

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## JOB SPECIFICATION SHEET

Job Number: _____

Model Number: _____

Water Hardness: _____ppm or gpg

Capacity Per Unit: _____

Mineral Tank Size (Height x Diameter): _____

Salt Setting per Regeneration: _____

1. **Type of Timer:**
   - A. 7 Day or 12 Day
   - B. Meter Initiated
2. **Regenerant Flow Direction: Downflow**
3. **Meter Size:**
   - A. 1-1/2 inch Std Range (625 - 10,625 gallon setting)
   - B. 1-1/2 inch Ext Range (3,125 - 53,125 gallon setting)
   - C. 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: 2-4 Tanks, Interlock Electronic Meter per unit
   - E. System #6: 2-4 Tanks, 1 Meter, Series Regeneration, Electronic
   - F. System #7: 2 Tanks only, 1 Meter, Alternating Regeneration
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 Number: _____**
9. **Piston Type:**
   - A. Hard Water Bypass
   - B. No Hard Water Bypass

## California Proposition 65 Warning

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

IMPORTANT PLEASE READ:

- The information, specifications and illustrations in this manual are based on the latest information available at the time of release. 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 product must be installed in compliance with all state and municipal plumbing and electrical codes. Permits may be required at the time of installation.
- Do not install the unit where ambient temperatures may fall below 32°F (0°C) or rise above 120°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. Misapplication of this product may result in failure to properly condition water, damage to product, or personal injury.
- 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 controller to maintain proper function.
- The system is intended to treat only potable quality water. It is not intended as the permanent primary treatment of water from a source that is contaminated, such as from radon, pesticides, insecticides, sewage or wastewater.
- This system is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children shall not play with the system.
- Cleaning shall not be made by children without supervision.
- Periodic cleaning and maintenance may be required to function properly.

## OPERATING PARAMETERS

| | |
|---|---|
| Minimum Pressure | 20 psi/1.38 bar/138 kPa |
| Maximum Pressure | 125 psi/8.62 bar/862 kPa |
| Minimum Water Temperature | 34°F/1°C |
| Maximum Water Temperature | 150°F/65°C |
| Maximum Humidity | 75% |

# INSTALLATION

### Water Pressure

A minimum of 20 psi/1.38 bar/138 kPa water pressure is required for control valve to operate effectively.

**CAUTION** **Water pressure is not to exceed 125 psi (8.6 bar), water temperature is not to exceed 150°F (65°C), and the unit cannot be subjected to freezing conditions.**

### Electrical Facilities

An uninterrupted alternating current (AC) supply is required.

**NOTE: Other voltages are available. Please make sure your voltage supply is compatible with your unit before installation.**

**NOTE: All electrical connections must be connected according to local codes. Be certain the electrical outlet is uninterrupted.**

### 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 System And Drain

You must have an air gap on the drain line to prevent back flow of drain water into the system. Follow local plumbing codes.

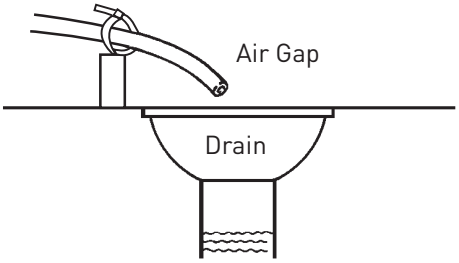



Figure 1

**⚠ IMPORTANT:** Use thread sealant intended for use with stainless steel connections and approved for use with potable water. To reduce the risk of seizing or galling, a nickel impregnated PTFE (polytetrafluoroethylene) thread sealing tape is recommended.

## Installation Locations

FOR DRY LOCATIONS ONLY.

### Bypass Valves

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

### 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.
4. Cut the distributor tube 0.12" (3 mm) below top of tank then chamfer the tube to prevent cutting the pilot o-ring.

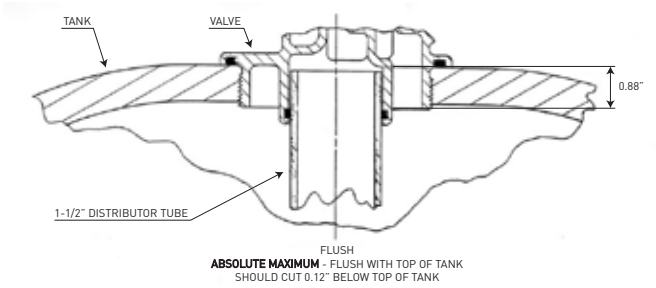



Figure 2

5. Lubricate the distributor o-ring seal and tank o-ring seal. Place the main control valve on tank. **Only use silicone lubricant that is approved for use with potable water.**
6. Solder joints near any plastic or rubber components must be done prior to installation. Leave at least 6 inches (15 cm) between any plastic parts and solder joints. Failure to do so could cause damage to plastic or rubber components.
7. Plumber tape is the preferred sealant to be used on the drain fitting. Plumbers tape can be used on any type of connection while pipe dope can only be used on metal to metal connections. Installations with multiple valves may be run through a common drain line flow control
8. Make sure that the floor is clean beneath the salt storage tank and that it is level.
9. Place approximately 1 inch (25 mm) of water above the grid plate. If a grid is not utilized, fill to the top of the air check (Figure 3) in the salt tank. Do not add salt to the brine tank at this time.
10. On units with a by-pass (or a three-ball valve 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. Install power supply (routing cable through backplate and using cord restaint to secure power cord). Refer to dimensional drawing for power cord entry point.
12. Program the timer as desired.
13. Slowly open the inlet ball valve letting water flow into the mineral tank. When water flow stops, put the control valve into the backwash position. Leave control valve in the backwash position until clear water is running smoothly out the drain line.

## INSTALLATION *Continued*

14. Manually advance the control valve through the cycle positions (checking for leaks at each position) and stopping at the brine fill position. Let the brine fill cycle automatically complete and the control valve advance to the service position to ensure the proper amount of water has been let into the brine tank. Add salt to the brine tank as needed. Make sure the salt level is always higher than the water level to maintain the correct salt dosage.
15. Open outlet ball valve. To purge air from the plumbing system, open each faucet starting from the closest location to the control valve to the farthest faucet location.

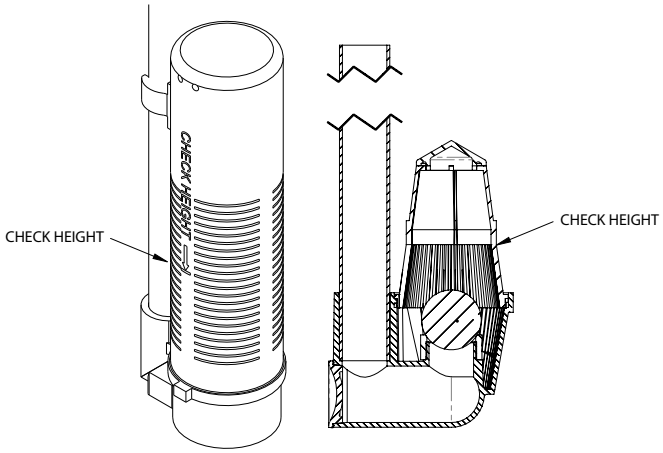



Figure 3 Air Check Valve

## START-UP INSTRUCTIONS (ELECTROMECHANICAL TIMER ONLY)

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

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

**NOTE: Always remove the meter cable from the meter cap before opening the timer door.**

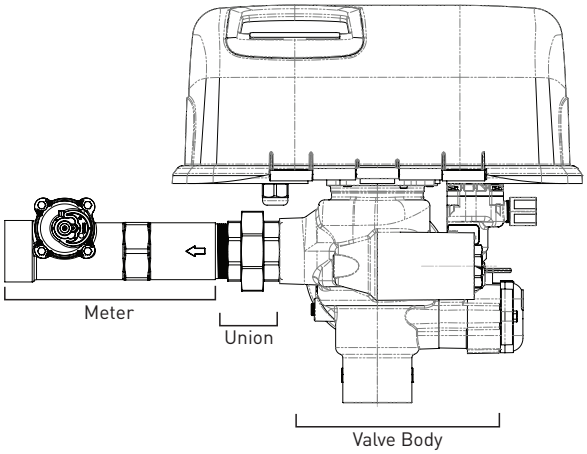
1. Open the timer door and urn the manual regeneraton knob slowly in a clockwise direction until the program micro switch lifts on top of the first set of pins. Allow the drive motor to move the piston to the first regeneration step and stop. Each time the program switch position changes, the valve will advance to the next regeneration step. Always allow the motor to stop before moving to the next set of pins or spaces.
2. Position the valve to backwash. Ensure the drain line flow remains steady for 10 minutes or until the water runs clear.
3. Position the valve to the brine / slow rinse position. Ensure the unit is drawing water from the brine tank.
4. Position the valve to the rapid rinse position. Check the drain line flow, and run for 5 minutes or until the water runs clear.
5. Position the valve to the start of the brine tank fill cycle. Ensure water goes into the brine tank at the desired rate. The brine valve drive cam will hold the valve in this position to fill the brine tank for the first regeneration.
6. Close and secure the control box cover.
7. Put salt in the brine tank.
   **Do not use granulated or rock salt.**
   **Salt level must always be above water level in brine tank.**

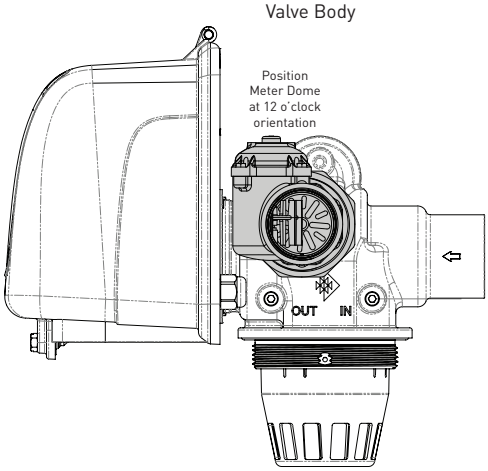
**Meter Dome and Union Orientation**

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

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

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



## 3200 TIMER SETTING PROCEDURE

**How To Set Days On Which Water Conditioner Is To Regenerate (Figure 4)**

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**

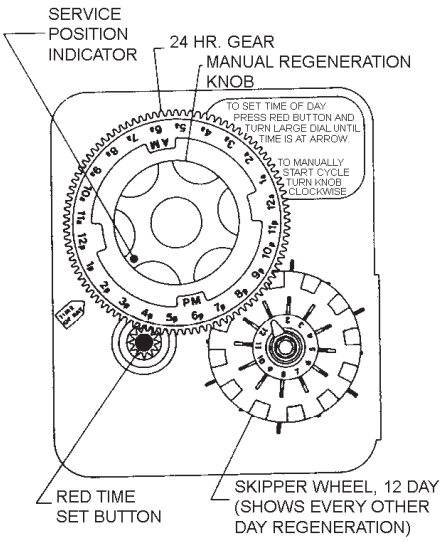
1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is at the time of day pointer.
3. Release the red button to again engage the drive gear.

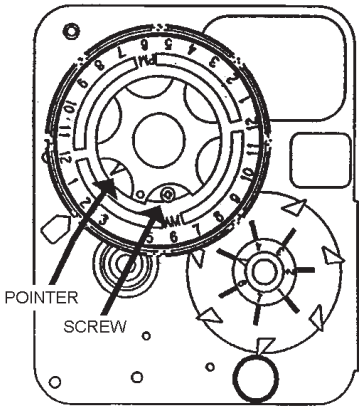
**How To Manually Regenerate Your Water Conditioner At Any Time**

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 approximately three hours.
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 Start 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 start 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 start time is correct.
8. Reset the time of day and restore power to the unit.




3200 ADJUSTABLE REGENERATION TIMER

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

61502-3200 Rev A

Figure 4

## 3210 TIMER SETTING PROCEDURE

**Typical Programming Procedure**

Calculate the gallon capacity of the system, subtract the necessary reserve requirement and set the gallons available opposite the small white dot on the program wheel gear (Figure 54).

**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**

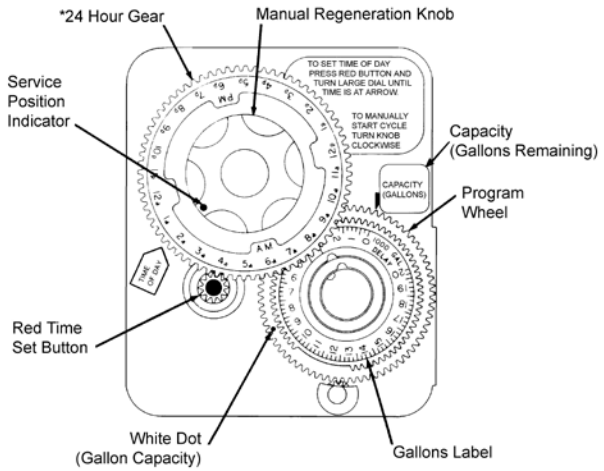
**NOTE: Always remove the meter cable from the meter cap before opening the timer door.**

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 a portion of this time.
5. In any event, conditioned water can be drawn after the rapid rinse cycle has completed or no water is flowing out the drain line.

**NOTE: The program wheel in Figure 4 may be different than the program wheel on the product.**

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

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




61502-3200 Rev A

Figure 5

# 3200, 3210 REGENERATION CYCLE SETTING PROCEDURE

**How To Set The Regeneration Cycle Program**

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

**3200 Series Timers**

**NOTE: Always remove the meter cable from the meter cap before opening the timer door.**

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

## Timer Setting Procedure

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

The program wheel as shown in Figure 6 is in the service position. As you look at the numbered side of the program wheel, the group of pins starting at zero determines the length of time your unit will backwash.

For example, if there are six pins in this section, the time of backwash will be 12 min. (2 min. per pin). To change the length of backwash time, add or remove pins as required. The number of pins times two (x2) equals the backwash time in minutes.

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

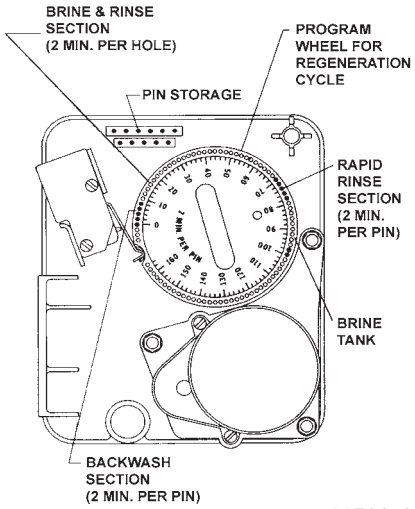
1. The group of holes between the last pin in the backwash section and the second group of pins determines the length of time that your unit will brine and rinse (2 min. per hole).
2. To change the length of brine and rinse time, move the rapid rinse group of pins to give more or fewer holes in the brine and rinse section. Number of holes times two (x2) equals brine and rinse time in minutes.

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

1. The second group of pins on the program wheel determines the length of time that your water conditioner will rapid rinse (2 min. per pin).
2. To change the length of rapid rinse time, add or remove pins at the higher numbered end of this section as required. The number of pins times two (x2) equals the rapid rinse time in minutes.

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

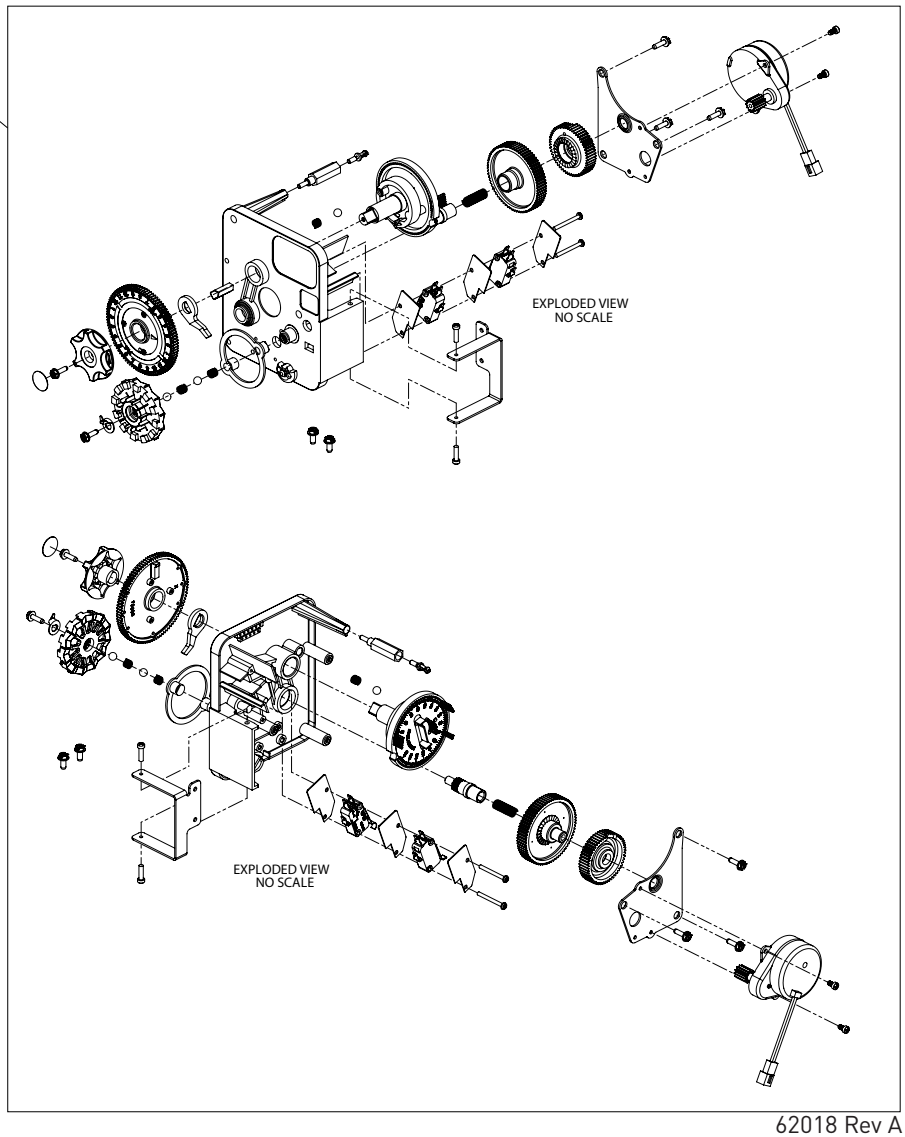
1. The second group of holes in the program wheel determines the length of time that your water conditioner will refill the brine tank (2 min. per hole).
2. To change the length of refill time, move the two pins at the end of the second group of holes as required.
3. The regeneration cycle is complete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




61502-3210 Rev A

Figure 6

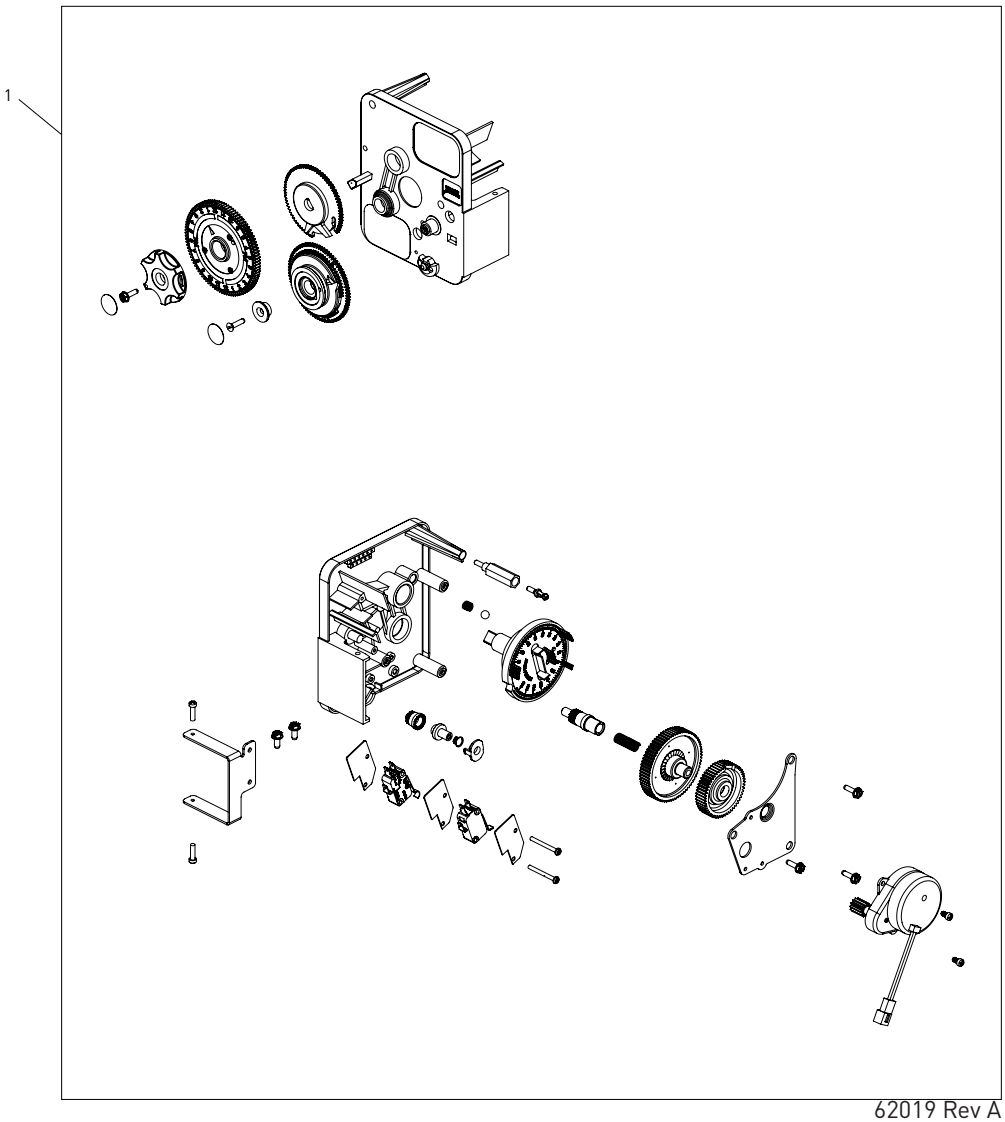
## 3200 TIME CLOCK TIMER ASSEMBLY




62018 Rev A

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 62018-10 | Timer Assy, EM, 2815, 12 Day, 60Hz |
| | 1 | 62018-11 | Timer Assy, EM, 2815, 12 Day, 50Hz |
| | 1 | 62018-20 | Timer Assy, EM, 2815, 7 Day, 60Hz |
| | 1 | 62018-21 | Timer Assy, EM, 2815, 7 Day, 50Hz |
| | 1 | 62018-30 | Timer Assy, EM, 2815, 12 Day, 60Hz 12AM |
| | 1 | 62018-31 | Timer Assy, EM, 2815, 12 Day, 50Hz 12AM |
| | 1 | 62018-40 | Timer Assy, EM, 2815, 7 Day, 60Hz 12AM |
| | 1 | 62018-41 | Timer Assy, EM, 2815, 7 Day, 50Hz 12AM |
| **Not Shown** | | | |
| | 1 | 62055 | Kit, Wire Harness, EM |
| | 1 | 44143 | Power Supply, AC |

## 3210 METER DELAYED TIMER ASSEMBLY



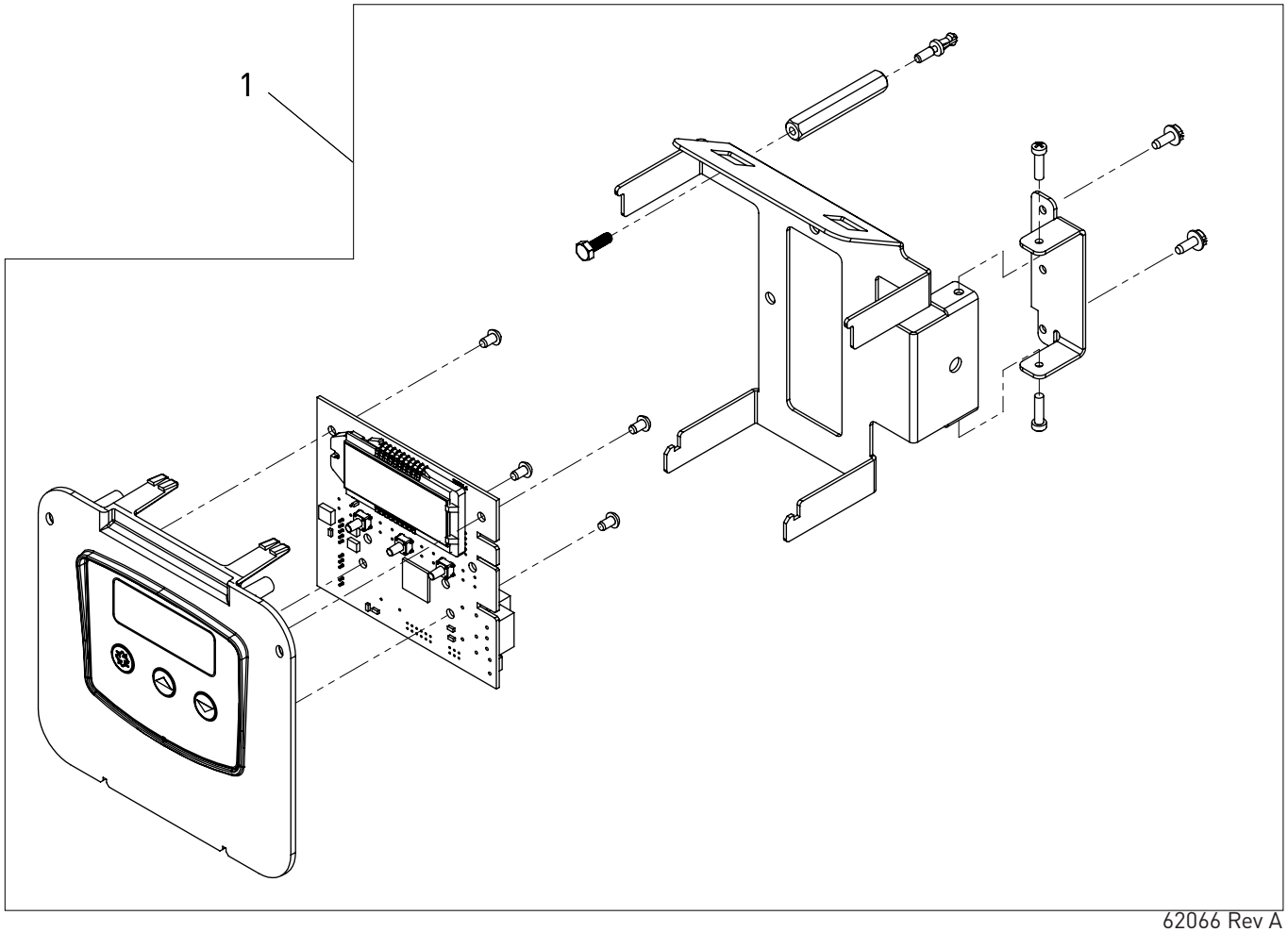

62019 Rev A

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 62019-11 | Timer Assy, EM, 2815, Delay, 60Hz 1-1/2"STD |
| | 1 | 62019-12 | Timer Assy, EM, 2815, Delay, 50Hz 1-1/2"STD |
| | 1 | 62019-13 | Timer Assy, EM, 2815, Delay, 60Hz 1-1/2", 40M3, EXT |
| | 1 | 62019-14 | Timer Assy, EM, 2815, Delay, 50Hz 1-1/2", 40M3, EXT |
| | 1 | 62019-21 | Timer Assy, EM, 2815, Delay, 60Hz 1-1/2", EXT |
| | 1 | 62019-22 | Timer Assy, EM, 2815, Delay, 50Hz 1-1/2", EXT |
| | 1 | 62019-23 | Timer Assy, EM, 2815, Delay, 60Hz 1-1/2", 200M3, EXT |
| | 1 | 62019-24 | Timer Assy, EM, 2815, Delay, 50Hz 1-1/2", 200M3, EXT |

**Not Shown**

| | | |
|---|---|---|
| 1 | 62055 | Kit, Wire Harness, EM |
| 1 | 44143 | Power Supply, AC |

## SXT TIMER ASSEMBLY



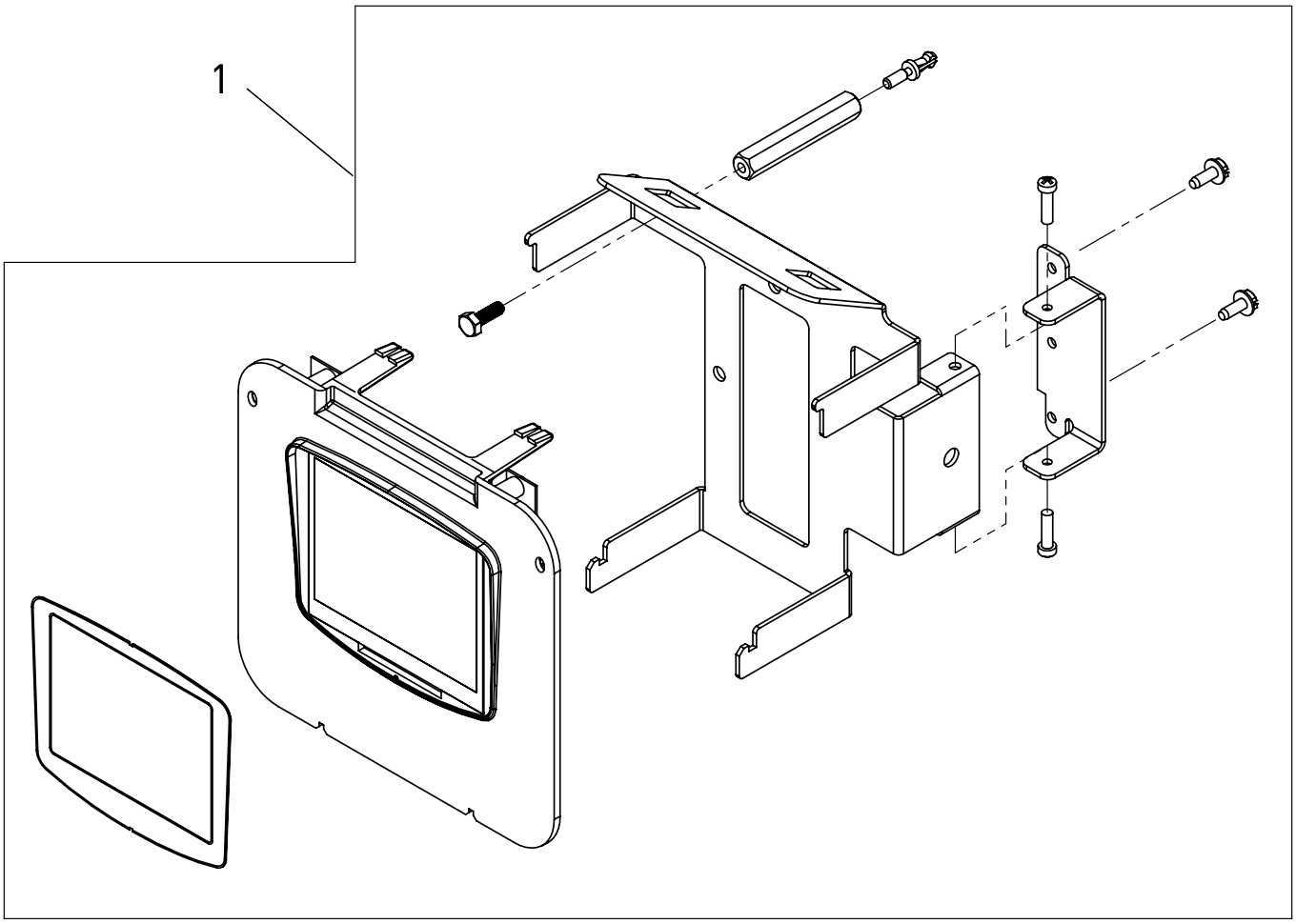

62066 Rev A

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 62066 | Timer Assy. SXT, DC, 2815 |

**Not Shown**

| | | |
|---|---|---|
| 1 | 62057 | Kit, Wire Harness, DC |
| 1 | 44164 | Power Supply, Intl, 24V DC 3M, 2A |

## XTR2 TIMER ASSEMBLY




62067 Rev A

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 62067 | Timer Assy, XTR2, 2815 |
| **Not Shown** | | | |
| | 1 | 62057 | Kit, Wire Harness, DC |
| | 1 | 44164 | Power Supply, Intl, 24V DC 3M, 2A |

## 2815 ELECTROMECHANICAL CONTROL VALVE ASSEMBLY

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 281501-001 | 2815, SOF, DNF, CLK, 12DA, 24-60, HW 2--, 1.0, LES, NP4, 1720, HWBP |
| | | 281500-003 | 2815, SOF, DNF, CLK, 7DAY, 24-60, HW 2--, 1.0, LES, NP4, 1720, HWBP |
| | | 281501-002 | 2815, SOF, DNF, CLK, 12DA, 24-60, HW 4--, 2.0, LES, NP4, 1720, NHWB |
| | | 281500-004 | 2815, SOF, DNF, CLK, 7DAY, 24-60, HW 4--, 2.0, LES, NP4, 1720, NHWB |
| | | 281502-001 | 2815, SOF, DNF, M15, MDEL, 24-60, HW 2--, 1.0, LES, NP4, 1720, HWBP |
| | | 281500-001 | 2815, FIL, DNF, CLK, 7DAY, 24-60, HW BWF, BWF, LES, NP4, BWF-, HWBP |
| | | 281501-003 | 2815, FIL, DNF, CLK, 12DA, 24-60, HW BWF, BWF, LES, NP4, BWF-, HWBP |
| | | 281500-002 | 2815, FIL, DNF, CLK, 7DAY, 24-60, HW BWF, BWF, LES, NP4, BWF-, NHWB |
| | | 281501-004 | 2815, FIL, DNF, CLK, 12DA, 24-60, HW BWF, BWF, LES, NP4, BWF-, NHWB |

**Above part numbers DO NOT include the following parts:**
**Distributor Adapter, Bypass Assembly, Connector Assembly Flow Washer, DLFC. See 2815 accessories page for options.**

## 2815 SXT CONTROL VALVE ASSEMBLY

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 281506-001 | 2815, SOF, DNF, CLK, SXT-, 24-DC, HW 2--, 1.0, LES, NP4, 1720, HWBP |
| | | 281506-002 | 2815, SOF, DNF, CLK, SXT-, 24-DC, HW 4--, 2.0, LES, NP4, 1720, NHWB |
| | | 281506-003 | 2815, FIL, DNF, CLK, SXT-, 24-DC, HW BWF, BWF, LES, NP4, BWF-, HWBP |
| | | 281506-004 | 2815, FIL, DNF, CLK, SXT-, 24-DC, HW BWF, BWF, LES, NP4, BWF-, NHWB |

**Above part numbers DO NOT include the following parts:**
**Distributor Adapter, Bypass Assembly, Connector Assembly Flow Washer, DLFC. See 2815 accessories page for options**

## 2815 XTR2 CONTROL VALVE ASSEMBLY

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 281508-001 | 2815, SOF, DFN, CLK, XTR2, 24-DC, HW 2--, 1.0, LES, NP4, 1720, HWBP |
| | | 281508-002 | 2815, SOF, DFN, CLK, XTR2, 24-DC, HW 4--, 2;0, LES, NP4, 1720, HWBP |

**Above part numbers DO NOT include the following parts:**
**Distributor Adapter, Bypass Assembly, Connector Assembly Flow Washer, DLFC. See 2815 accessories page for options.**

## 2815 VALVE ACCESSORIES

**Covers**

62069-01 .....2815 Black Cover/Blue Bezel, Clear Window
62069-02 .....2815 Black Cover/Black Bezel, Clear Window
62069-03 .....2815 Black Cover/Silver Bezel, Clear Window
62069-04 2815 Black Environmental Cover

**Meter Assemblies**

61933-10 .....Meter Assy, 1-1/2" NPT, STD, SS
61933-11 .....Meter Assy, 1-1/2" NPT, EXT, SS
44024.....Fitting, Union, 1.5", NPT
61560-09 .....Meter Assy, 1-1/2" Inln, NPT, Elec, Plas, Brs Nipples, Turb
61560-13 .....Meter Assy 1-1/2", Inln, NPT, Elec

**Meter Cables Assemblies**

19791-02 .....Meter Cable Assy, 30"
19791-04 .....Meter Cable Assy, Turbine, 100"
19791-05 .....Meter Cable Assy, Turbine, 304"

**Housing**

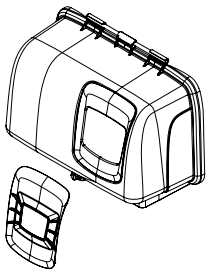
43773.....Housing, Internal DLFC

**Retainers**

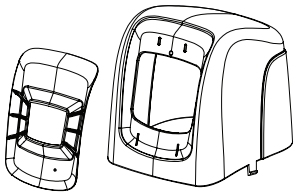
62033.....Retainer Assy,1.7-7 GPM, Flow Washer, 5812
62034.....Retainer Assy, 8-25 GPM, Flow Washer, 5812
62035.....Retainer Assy, 30-45 GPM, Flow Washer, 5812
44182.....Retainer, DLFC, 2815

**Washers**

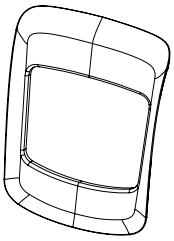
19151.....Washer, Flow, 1.0 GPM
12087.....Washer, Flow, 2.0 GPM
12090.....Washer, Flow, 3.5 GPM
12091.....Washer, Flow, 4.0 GPM
19147.....Washer, Flow, 4.5 GPM
12092.....Washer, Flow, 5.0 GPM
17814.....Washer, Flow, 6.0 GPM
12408.....Washer, Flow, 7.0 GPM
17943.....Washer, Flow, 8.0 GPM
17944.....Washer, Flow, 9.0 GPM
16529.....Washer, Flow, 10.0 GPM
16735.....Washer, Flow, 12.0 GPM
16736.....Washer, Flow, 15.0 GPM
16528.....Washer, Flow, 20.0 GPM
16737.....Washer, Flow, 25.0 GPM
43736.....Washer, Flow, 30 GPM
43737.....Washer, Flow, 35 GPM
43738.....Washer, Flow, 40 GPM
43739.....Washer, Flow, 45 GPM
43740.....Washer, Flow, 50 GPM
43766.....Washer, Flow, 55 GPM
43767.....Washer, Flow, 60 GPM
43768.....Washer, Flow, 65 GPM
43769.....Washer, Flow, 70 GPM



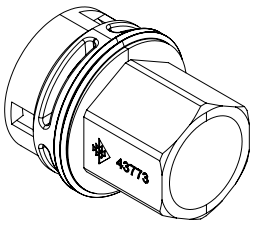
COVER



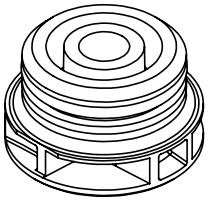
COVER, ENVIRONMENTAL



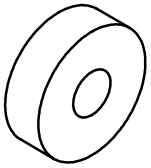
BEZEL




HOUSING, DLFC



RETAINER ASSY



FLOW WASHER

## 2815 VALVE ASSEMBLIES

**Injector Assemblies**
62058.....Kit, Injector Assembly
44150-01 .....Injector Assy, 1720, #1 VIOLET
44150-02 .....Injector Assy, 1720, #2 BLUE
44150-03 .....Injector Assy, 1720, #3 YELLOW
44150-04 .....Injector Assy, 1720, #4 GREEN
44150-05 .....Injector Assy, 1720, #5 WHITE
44150-06 .....Injector Assy, 1720, #6 RED

**Injector Screen**
44071 .....Injector Screen, 2815

**Brine Valves**
62020-10 .....Brine Valve, 1720, 1.0 GPM
62020-20 .....Brine Valve, 1720, 2.0 GPM
62020-50 .....Brine Valve, 1720, 5.0 GPM

**Program Wheel**
60405-20 .....Program Wheel, w/ 3/4" Ext Label
1-1/2" STD Set @ 100
60405-21 .....Program Wheel, 40M3 Ext
60405-70 .....Program Wheel, w/ 1-1/2" Ext Label
60405-71 .....Program Wheel, 200M3 Ext

**Powerhead/Timer Assemblies**
62067.....Timer Assy, XTR2, 2815
62066.....Timer Assy, SXT, 2815
62018-10 .....Timer Assy, EM, 2815, 12 Day, 60Hz
62018-11 .....Timer Assy, EM, 2815, 12 Day, 50Hz
62018-20 .....Timer Assy, EM, 2815, 7 Day, 60Hz
62018-21 .....Timer Assy, EM, 2815, 7 Day, 50Hz
62018-30 .....Timer Assy, EM, 2815, 12 Day, 60Hz 12am
62018-31 .....Timer Assy, EM, 2815, 12 Day, 60Hz 12am
62018-40 .....Timer Assy, EM, 2815, 7 Day, 60Hz 12am
62018-41 .....Timer Assy, EM, 2815, 7 Day, 50Hz 12am

**Timer Motors**
43978.....Motor, 24V, 60Hz, 1/30 RPM, Plug
44114.....Motor, 24V, 50 Hz 1/30 RPM, Plug

**Auxilary Switch Kits**
60320-02 .....Switch Kit, 3200/9000 Timer Auxilary

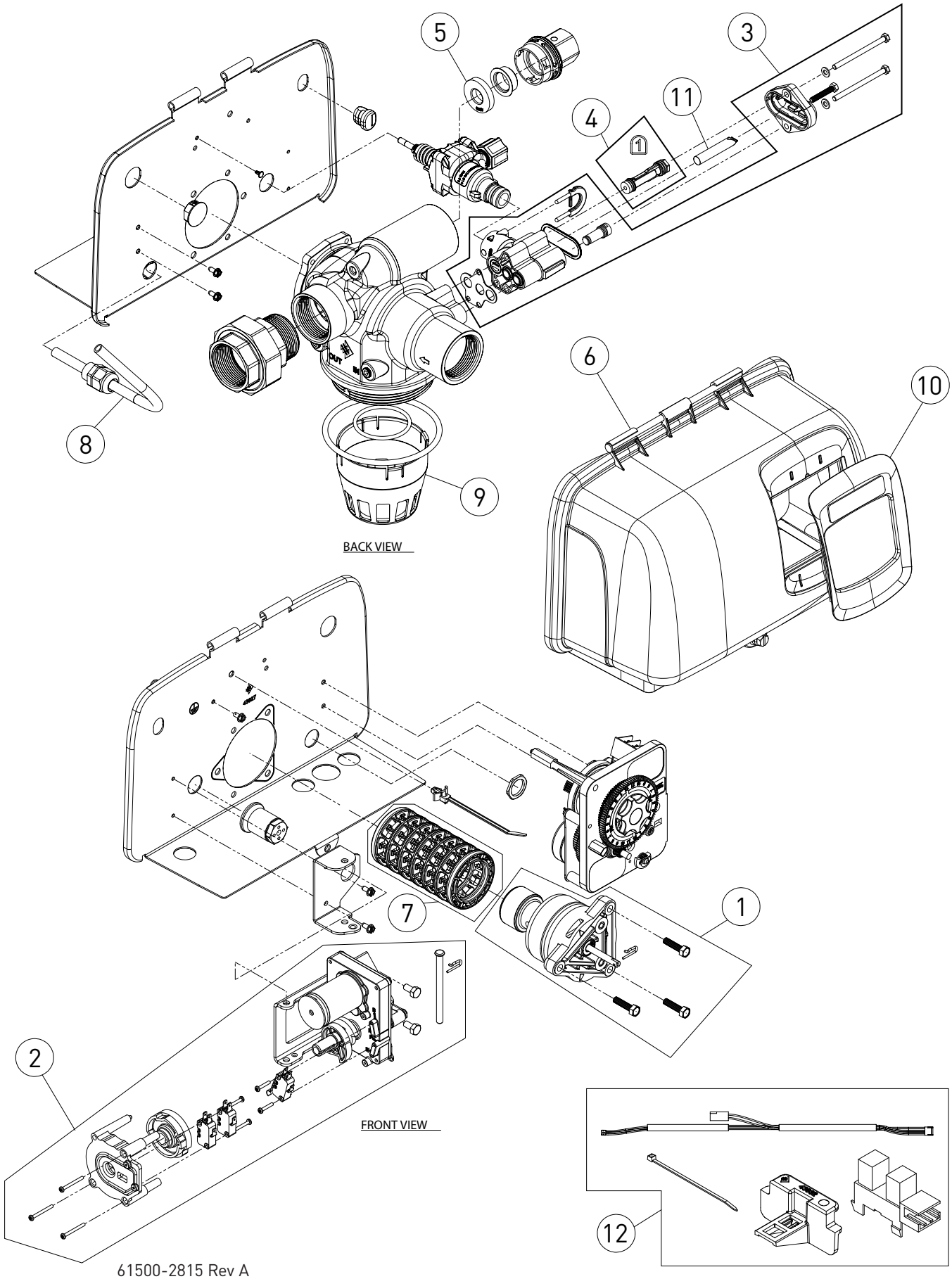
**Power Supplies**
44143.....Transformer, US, 24V, 40VA, Cord Conn
44164.....Power Supply, Intl 24V DC 3M, 2A

**Drive Moter Assemblies**
62046-01 .....Drive Assy, 2815, Switch
62046-02 .....Drive Assy, 2815, Switch, AUX SWT BF
62046-03 .....Drive Assy, 2815, Switch, AUX SWT RR
62047-01 .....Drive Assy, 2815, Optical
62047-02 .....Drive Assy, 2815, Optical, AUX SWT BF
62047-03 .....Drive Assy, 2815, Optical, AUX SWT RR

**No Hard Water (NHWBP) Piston Conversion Kits**
62050-01 .....Plug/Piston Ass, 2815, Bypass
62050-02 .....Plug/Piston Ass, 2815, NHWBP

**Filter Conversion Parts**
62081.....Filter Plate Kit, 2815

## 2815 CONTROL VALVE ASSEMBLY




61500-2815 Rev A

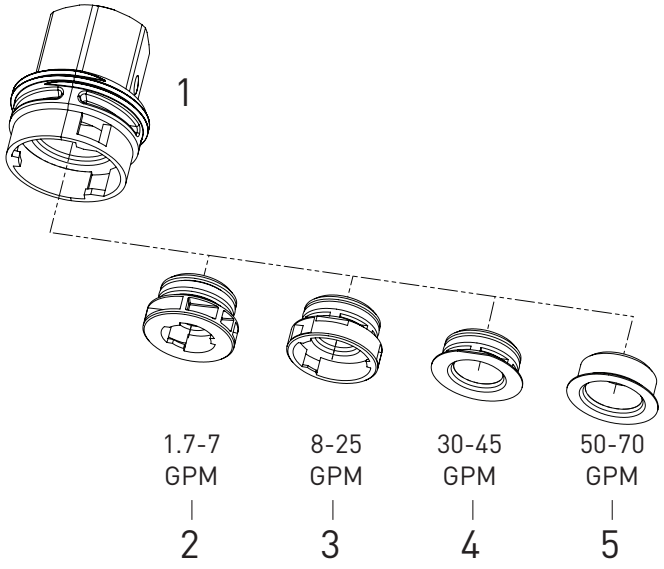
## 2815 CONTROL VALVE ASSEMBLY *CONTINUED*

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 62050-01 | End Plug / Bypass Piston Sub Assembly |
| | 1 | 62050-02 | End Plug / NHWBP Piston Sub Assembly |
| 2 | 1 | 62046-02 | Drive Assy, 2815, Switch, Aux, SWT BF |
| | 1 | 62047-02 | Drive Assy, 2815, Optical, Aux, SW BF |
| 3 | 1 | 62058 | Service Kit, Injector Assy |
| 4 | 1 | 44150-01 | Injector Assy, 1720, #1 Violet |
| | 1 | 44150-02 | Injector Assy, 1720, #2 Blue |
| | 1 | 44150-03 | Injector Assy, 1720, #3 Yellow |
| | 1 | 44150-04 | Injector Assy, 1720, #4 Green |
| | 1 | 44150-05 | Injector Assy, 1720, #5 White |
| | 1 | 44150-06 | Injector Assy, 1720, #6 Red |
| 5 | 1 | 19151 | Washer, Flow, 1.0 GPM |
| | 1 | 12087 | Washer, Flow, 2.0 GPM |
| | 1 | 12090 | Washer, Flow, 3.5 GPM |
| | 1 | 12091 | Washer, Flow, 4.0 GPM |
| | 1 | 19147 | Washer, Flow, 4.5 GPM |
| | 1 | 12092 | Washer, Flow, 5.0 GPM |
| | 1 | 17814 | Washer, Flow, 6.0 GPM |
| | 1 | 12408 | Washer, Flow, 7.0 GPM |
| | 1 | 17943 | Washer, Flow, 8.0 GPM |
| | 1 | 17944 | Washer, Flow, 9.0 GPM |
| | 1 | 16529 | Washer, Flow, 10.0 GPM |
| | 1 | 16735 | Washer, Flow, 12.0 GPM |
| | 1 | 16736 | Washer, Flow, 15.0 GPM |
| | 1 | 16528 | Washer, Flow, 20.0 GPM |
| | 1 | 16737 | Washer, Flow, 25.0 GPM |
| | 1 | 43736 | Washer, Flow, 30 GPM |
| | 1 | 43737 | Washer, Flow, 35 GPM |
| | 1 | 43738 | Washer, Flow, 40 GPM |
| | 1 | 43739 | Washer, Flow, 45 GPM |
| | 1 | 43740 | Washer, Flow, 50 GPM |
| | 1 | 43766 | Washer, Flow, 55 GPM |
| | 1 | 43767 | Washer, Flow, 60 GPM |
| | 1 | 43768 | Washer, Flow, 65 GPM |
| | 1 | 43769 | Washer, Flow, 70 GPM |
| 6 | 1 | 62069-01 | Cover Assy, Blue |
| | 1 | 62069-02 | Cover Assy, Black |
| | 1 | 62069-03 | Cover Assy, Silver |
| | 1 | 62069-04 | Cover Assy, Environmental |
| 7 | 1 | 62017 | Seals and Spacers Kit, 2815 |
| 8 | 1 | 17470 | Cable Guide Assy, 11.12" x 2.0"R |
| 9 | 1 | 19608-15 | Disperser, Commerical 1-1/2" 2850/2900/9500 |
| 10 | 1 | 43262-00 | Bezel, Blue, 2815, 5800 |
| | 1 | 43262-01 | Bezel, Black, 2815, 5800 |
| | 1 | 43262-02 | Bezel, Silver, 2815, 5800 |
| | 1 | 43407 | Bezel, 5800, Environmental |
| 11 | 1 | 44071 | Injector Screen, 2815 |
| 12 | 1 | 62057 | Kit, Wire Harness, DC |

**Not Shown**

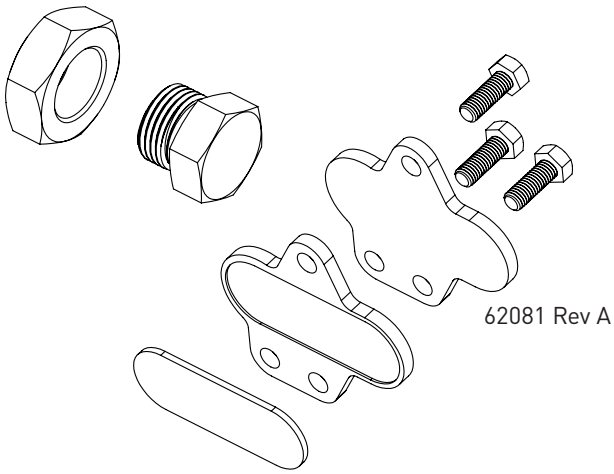
| | | | |
|---|---|---|---|
| | 1 | 62068 | Seals Kit 5 PK |
| | 1 | 62070 | Hardware Kit 5 PK |
| | 1 | 44143 | Power Supply, AC |
| | 1 | 44164 | Power Supply, Intl., 24V DC 3M, 2A |
| | 1 | 61415 | Sidemount Adapter, NPT |
| | 1 | 61415-20 | Sidemount Adapter, BSP |
| | 1 | 17744 | Meter Cable, 20.75" 1-1/2" STD |
| | 1 | 43822-01 | Label, Injector, #1 |
| | 1 | 43822-02 | Label, Injector, #2 |
| | 1 | 43822-03 | Label, Injector, #3 |
| | 1 | 43822-04 | Label, Injector, #4 |
| | 1 | 43822-05 | Label, Injector, #5 |
| | 1 | 43822-06 | Label, Injector, #6 |

## DLFC INSERT OPTIONS



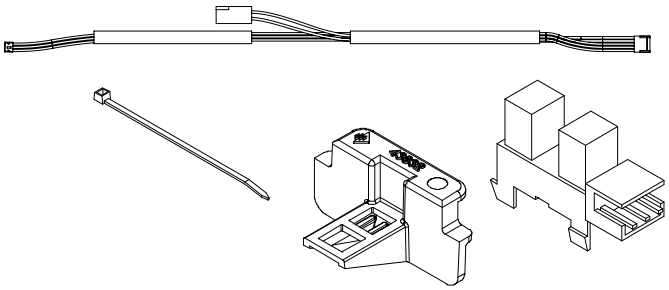

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 43773 | Housing, Internal DLFC |
| 2 | 1 | 62033 | Retainer Assy, 1.7-7 GPM, Flow Washer, 5812 |
| 3 | 1 | 62034 | Retainer Assy, 8-25 GPM, Flow Washer, 5812 |
| 4 | 1 | 62035 | Retainer Assy, 30-45 GPM, Flow Washer, 5812 |
| 5 | 1 | 44182 | Retainer, DLFC, 2815, 50-70 GPM |

## FILTER CONVERSION KIT



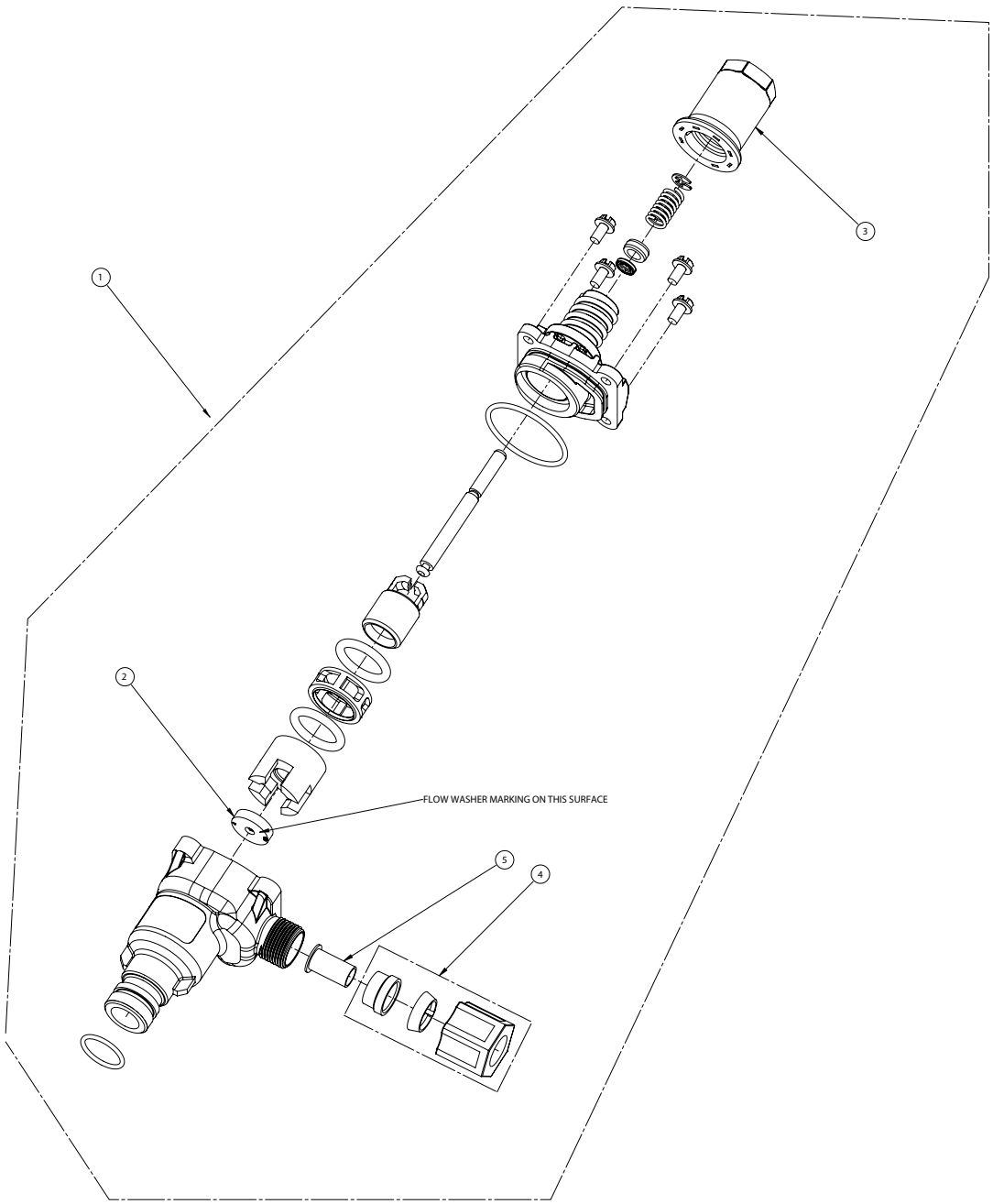

| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 62081 | Filter Plate Kit, 2815 |

## KIT, WIRE HARNESS, DC



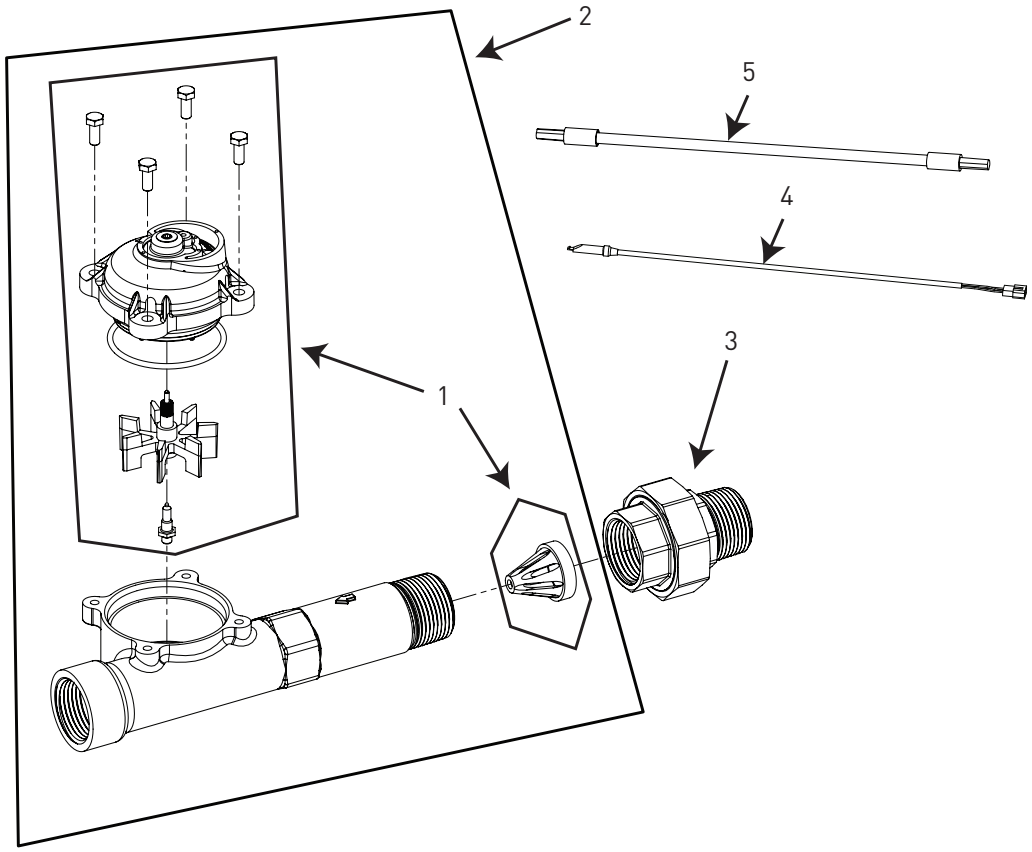
| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 62057 | Kit, Wire Harness, DC |

## 1720 BRINE SYSTEM ASSEMBLY




| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 62020-00 | Brine Valve Assy, No Flow Washer |
| | | 62020-10 | Brine Valve Assy, 1.0 GPM |
| | | 62020-20 | Brine Valve Assy, 2.0 GPM |
| | | 62020-50 | Brine Valve Assy, 5.0 GPM |
| 2 | 1 | 19151 | Washer, Flow, 1.0 GPM |
| | | 12087 | Washer, Flow, 2.0 GPM |
| | | 12092 | Washer, Flow, 5.0 GPM |
| 3 | 1 | 17906 | Guide, Brine Valve Stem |
| 4 | 1 | 41056 | Nut Assy, 1/2" |
| 5 | 1 | 15415 | Fitting, Insert, 1/2" Tube |

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

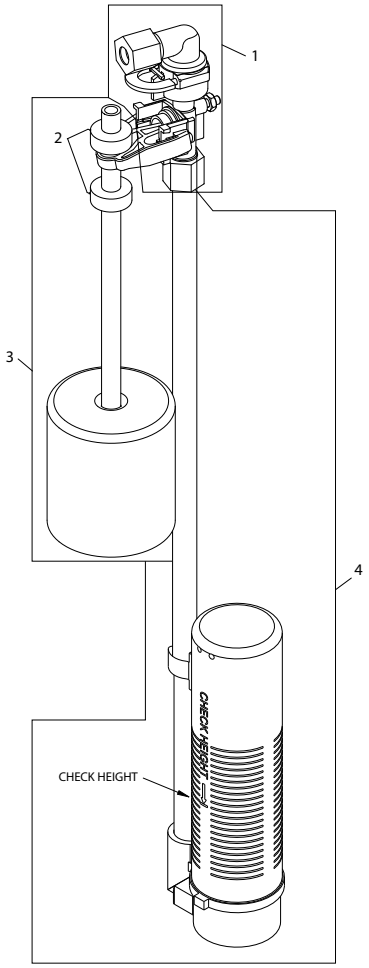



| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 62049-01 | Kit, 1" & 1-1/2" Meter, Std |
| | 1 | 62049-02 | Kit, 1" & 1-1/2" Meter, Ext |
| 2 | 1 | 61933-10 | Meter Assy, 1-1/2" NPT, Std, SS Inline, Paddle, Univ Cap |
| | 1 | 61933-11 | Meter Assy, 1-1/2" NPT, Ext, SS Inline, Paddle, Univ Cap |
| | 1 | 61933-20 | Meter Assy, 1-1/2" INLN, BSP, SS, PDL |
| | 1 | 61933-21 | Meter Assy, 1-1/2" INLN, BSP, EXT, SS, PDL |
| 3 | 1 | 44024 | Fitting, Union, 1.5", NPT |
| | 1 | 44025 | Fitting, Union, 1.5", BSP |
| 4 | 1 | 19791-02 | Meter Cable Assy, 30" |
| | | 19791-04 | Meter Cable Assy, Turbine 100" |
| | | 19791-05 | Meter Cable Assy, Turbine 304" |
| 5 | 1 | 17744 | Meter Cable, 20.75" 1-1/2" STD |
| **Not Shown (optional)** | | | |
| | 1 | 62072 | Kit, Meter Sleeve, 1-1/2" to 1" |

**⚠ IMPORTANT:** For valves equipped with electromechanical timers and stainless steel meters, refer to the Meter Dome and Union Orientation section on page 5.

**⚠ IMPORTANT:** Use thread sealant intended for use with stainless steel connections and approved for use with potable water. To reduce the risk of seizing or galling, a nickel impregnated PTFE (polytetrafluoroethylene) thread sealing tape is recommended.

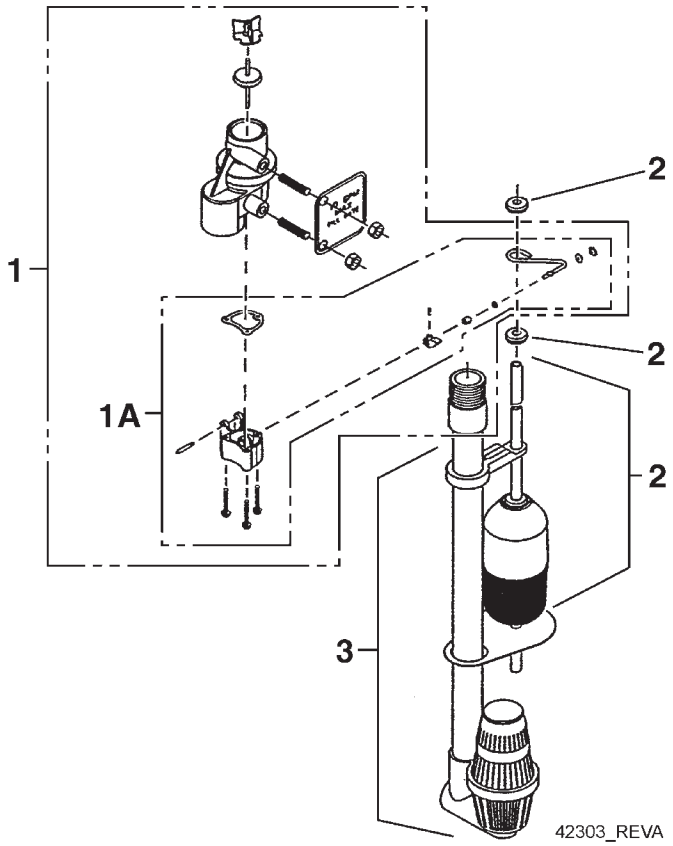
## 2310 SAFETY BRINE VALVE




| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 60014 | Safety Brine Valve Assy, 2310 |
| 2 | 2 | 10150 | Grommet, .30 Dia |
| 3 | 1 | 60068-30 | Float Assy, 2310, w/30-inch Rod |
| 4 | 1 | 60002-27 | Air Check, #500, 27 inches Long |
| | | 60002-32 | Air Check, #500, 32 inches Long |
| | | 60002-34 | Air Check, #500, 34 inches Long |
| | | 60002-36 | Air Check, #500, 36 inches Long |
| | | 60002-48 | Air Check, #500, 48 inches Long |

**NOTE: Not to be used with refill rates greater than 1.0 gpm.**

## 2350 SAFETY BRINE VALVE




| Item No. | QTY | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 60038 | Safety Brine Valve, 2350 |
| 1A | 1 | 61024 | Actuator Assy, 2350 Brine |
| 2 | 1 | 60028-30 | Float Assy, 2350, 30-inch Wht |
| | 1 | 60026-30SAN | Float Assy, 2350, 30-inch Hot Water |
| 3 | 1 | 60009-00 | Air Check, #900, Commercial Less Fittings |
| | 1 | 60009-01 | Air Check, #900, Commercial, Hot Water Less Fittings |
| **Not Shown** | | | |
| | 1 | 18603 | Kit, Fitting, 1700 Brine 2350 Safety |
| | 1 | 18602 | Kit, Fitting, 1700 Brine 900 Air Check |

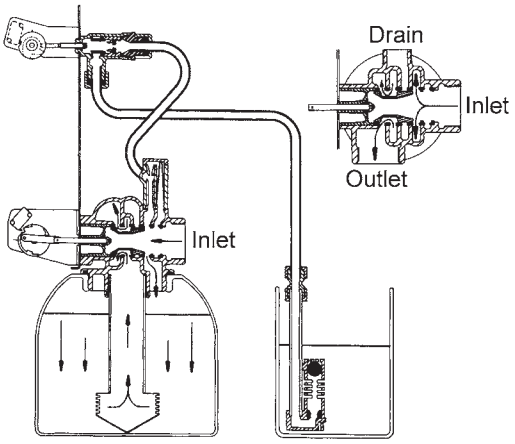
**NOTE: Not to be used with refill rates greater than 10 gpm.**

## TROUBLESHOOTING

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

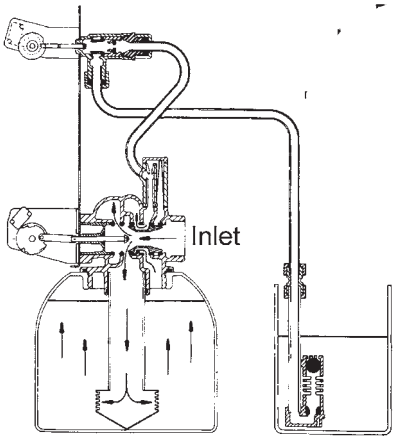
# WATER CONDITIONER FLOW DIAGRAMS

**1 Service Position**



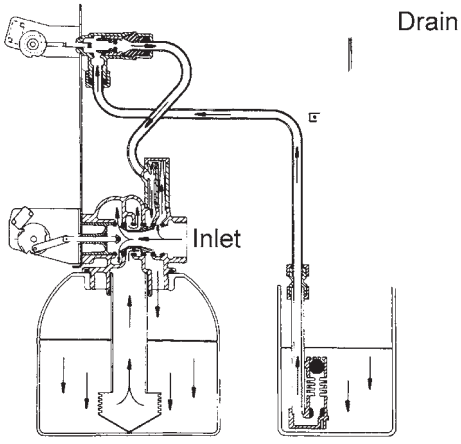

Hard water enters unit at valve inlet and flows down through the mineral in the mineral tank. Conditioned water enters center tube through the bottom distributor, then flows up through the center tube, around the piston, and out the outlet of the valve.

**2 Backwash Position**



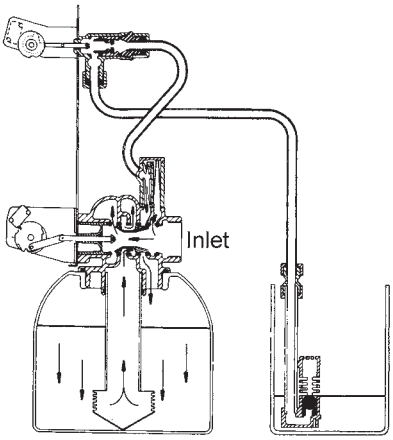

Hard water enters unit at valve inlet, flows through piston, down center tube, through bottom distributor, and up through the mineral, around the piston and out the drain line.

**3 Brine Position**



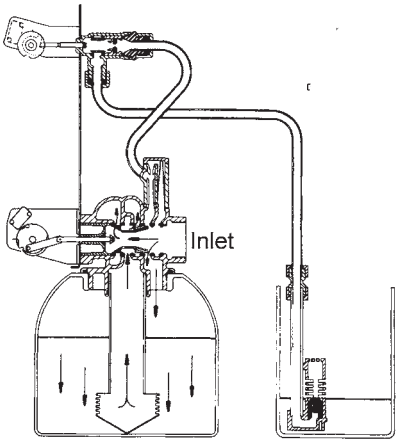

Hard water enters unit at valve inlet, flows up into injector housing and down through nozzle and throat to draw brine from the brine tank, brine flows down through mineral and enters the center tube through bottom distributor and out through the drain line.

**4 Slow Rinse Position**



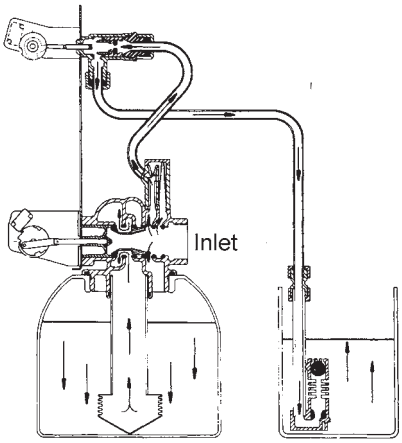

Hard water enters unit at valve inlet, flows up into injector housing and down through nozzle and throat, around the piston, down through mineral, enters center tube through bottom distributor, flows up through center tube, around piston and out through drain line.

**5 Rapid Rinse**



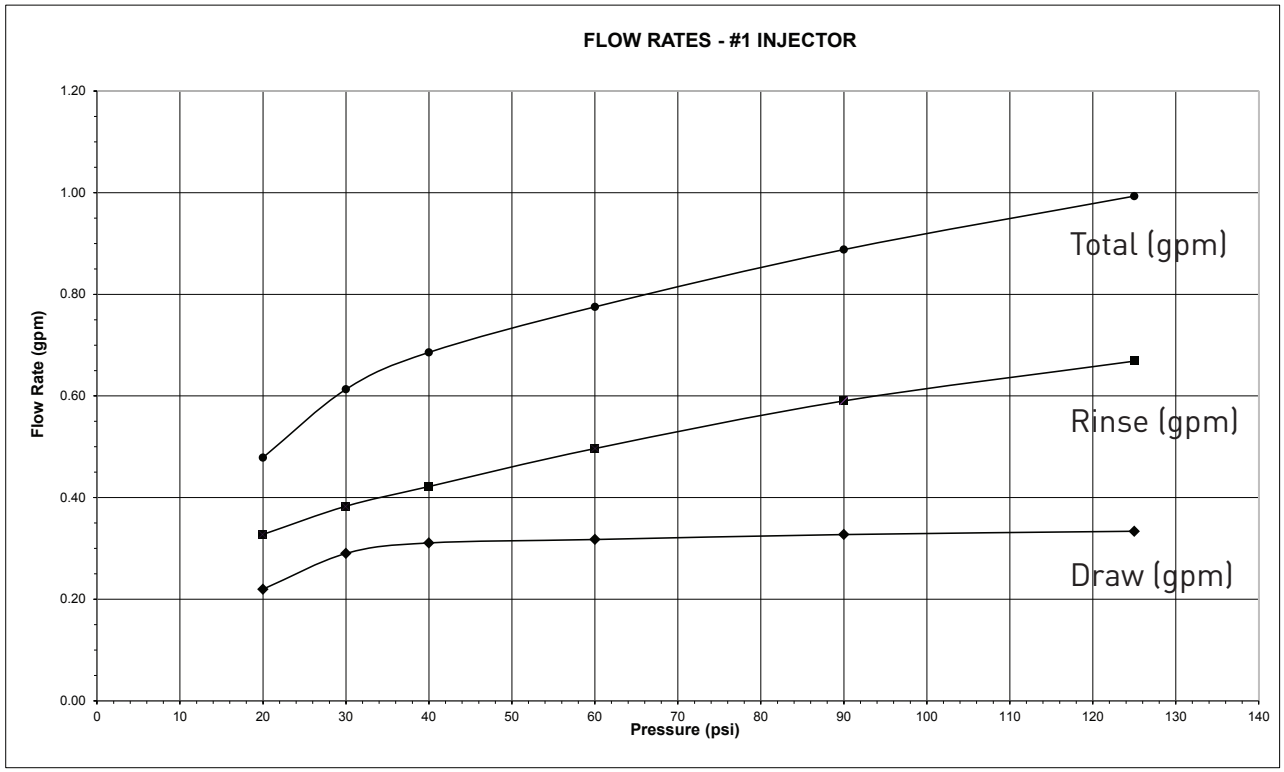

Hard water enters unit at valve inlet, flows directly from inlet down through mineral into center tube bottom distributor and up through center tube, around piston and out through the drain line.

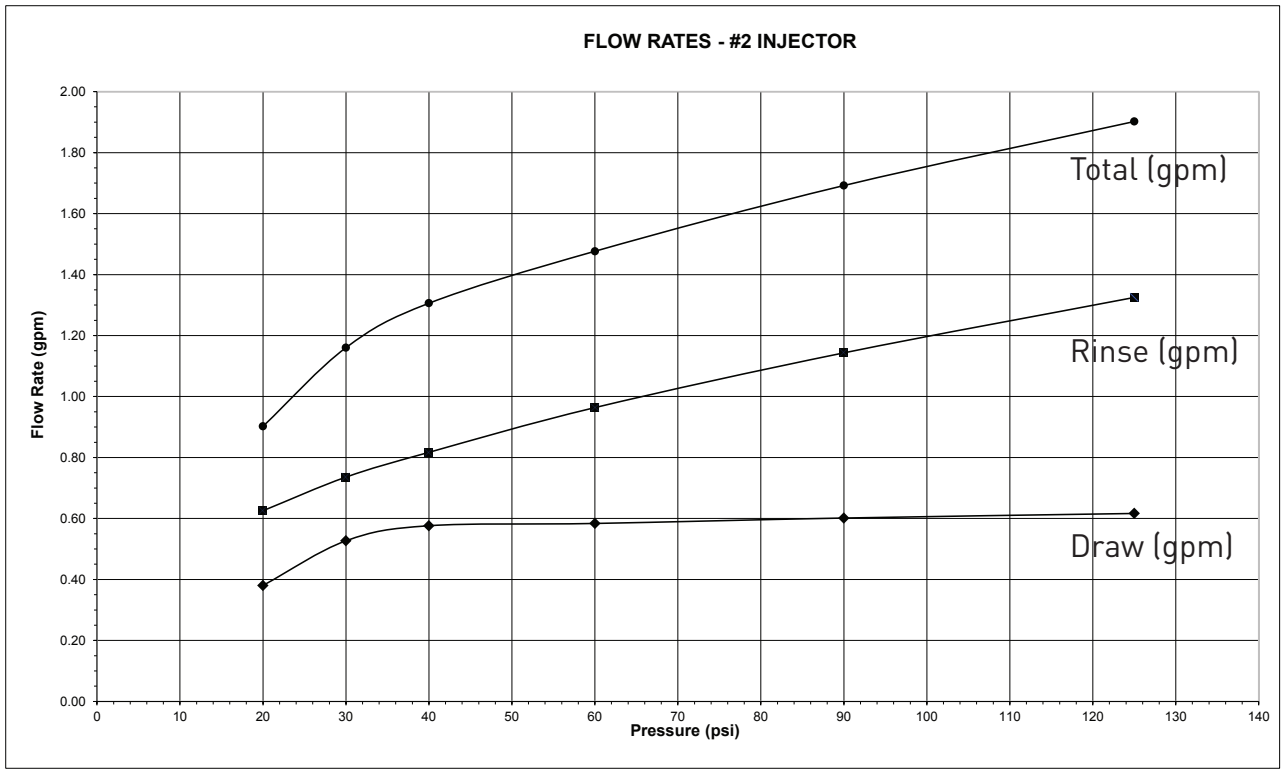
**6 Brine Tank Refill Position**



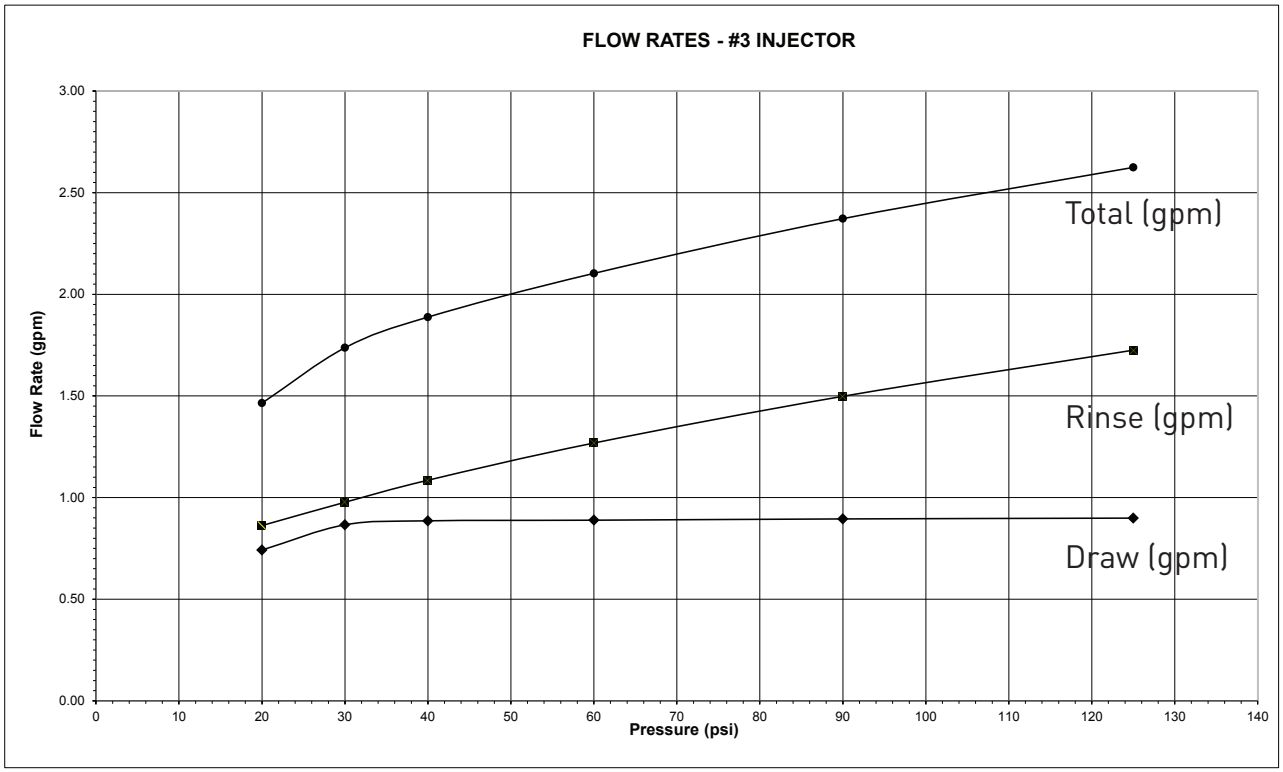

Hard water enters unit at valve inlet, flows up through the injector housing, through the brine valve to refill the brine tank.

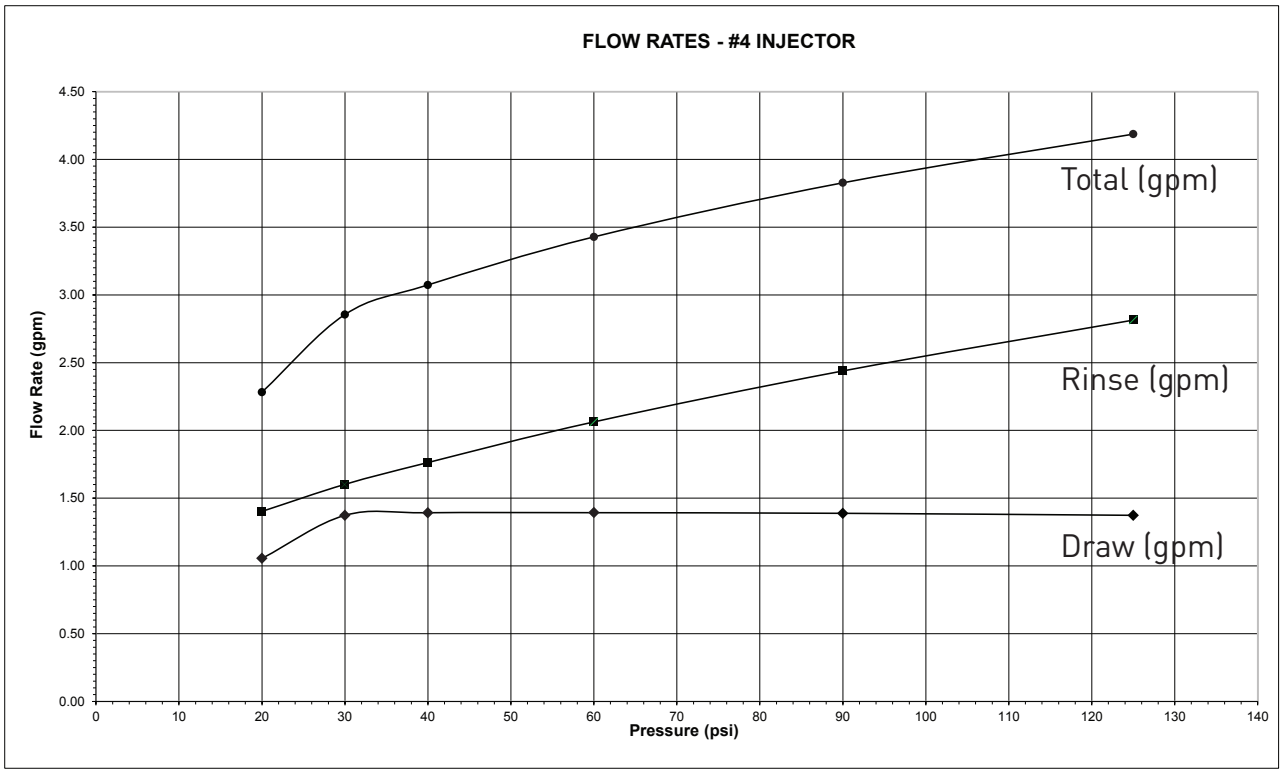
## FLOW DATA & INJECTOR DRAW RATES



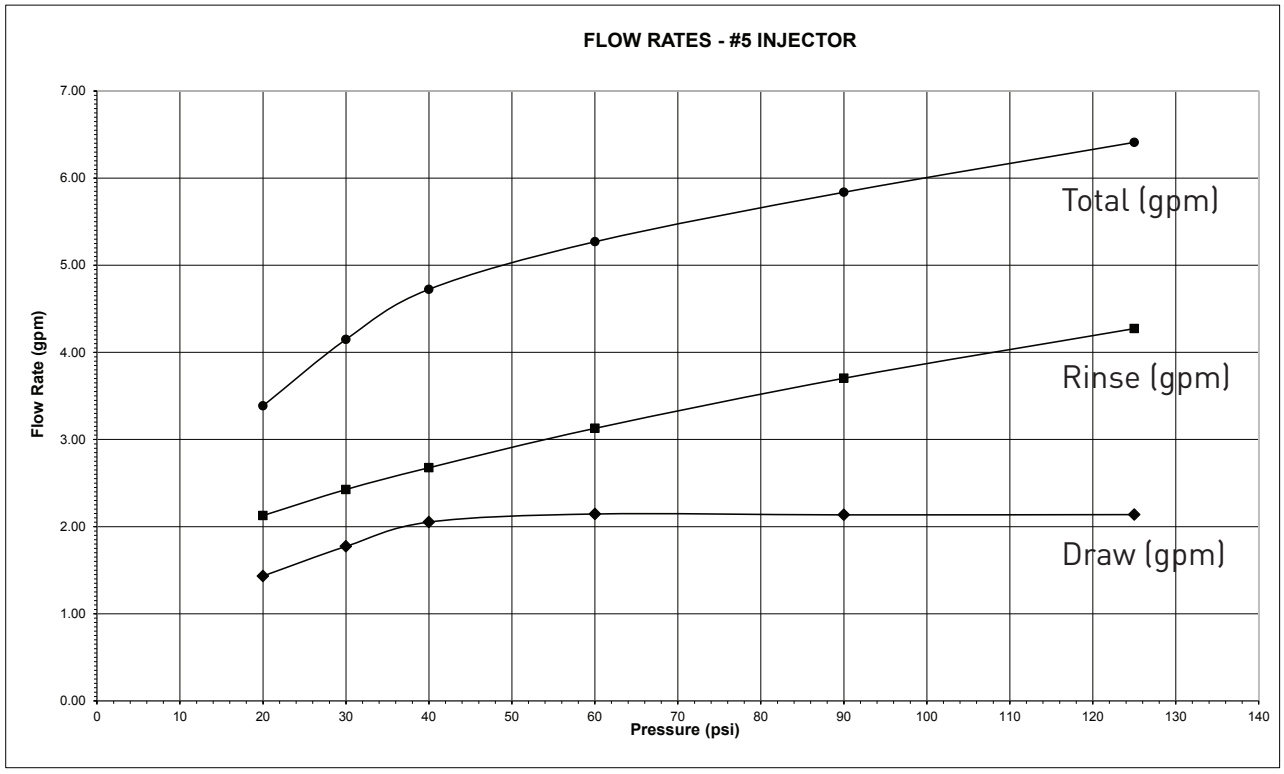



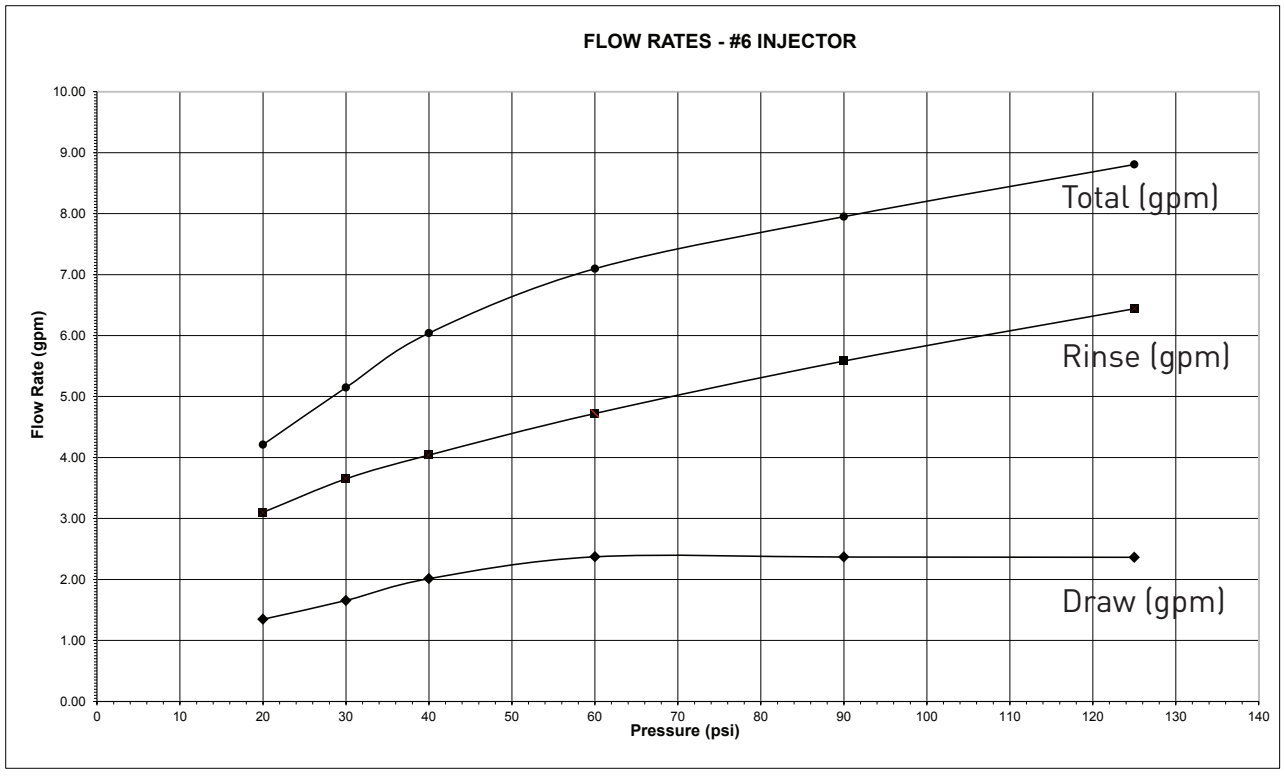
## FLOW DATA & INJECTOR DRAW RATES *continued*



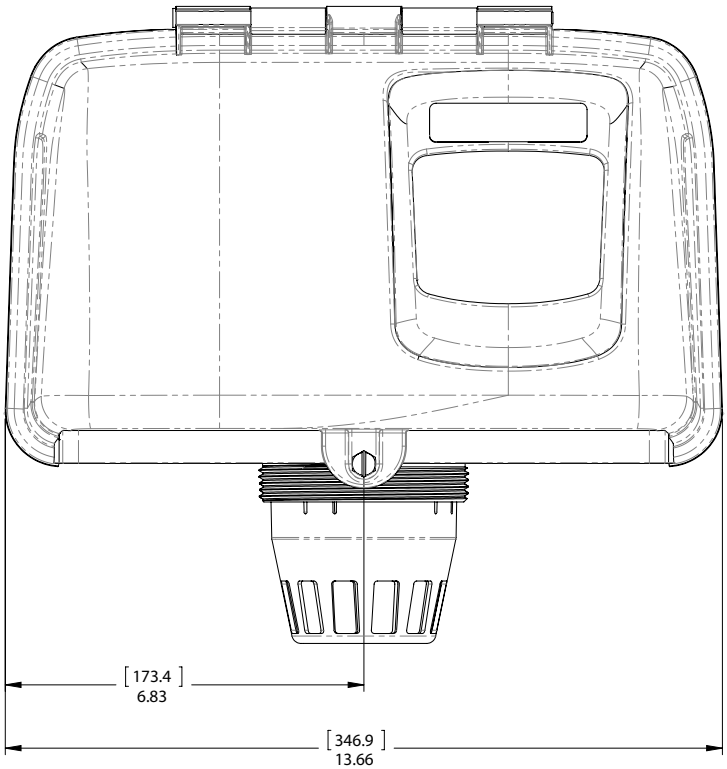



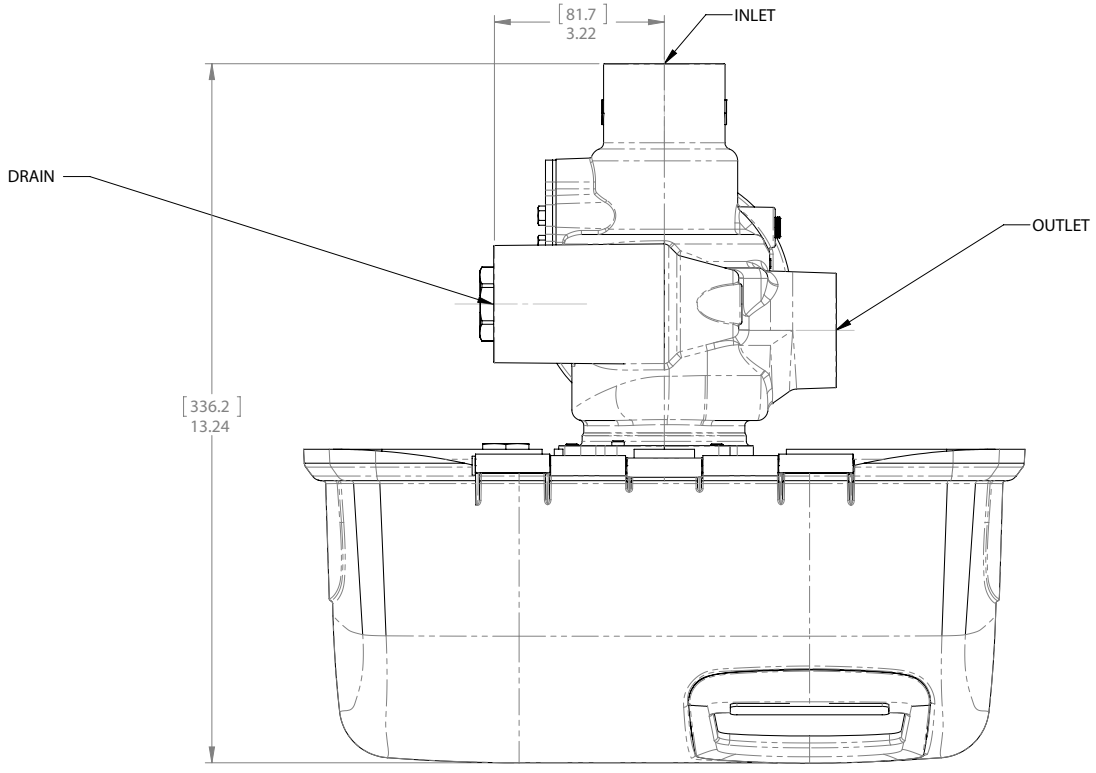
## FLOW DATA & INJECTOR DRAW RATES *continued*



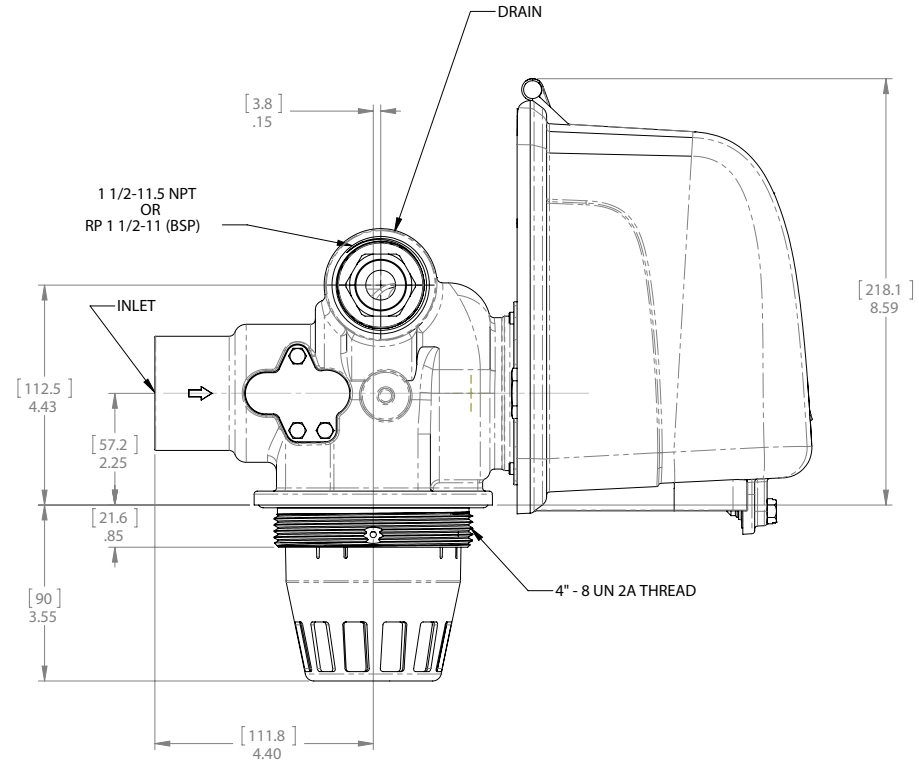



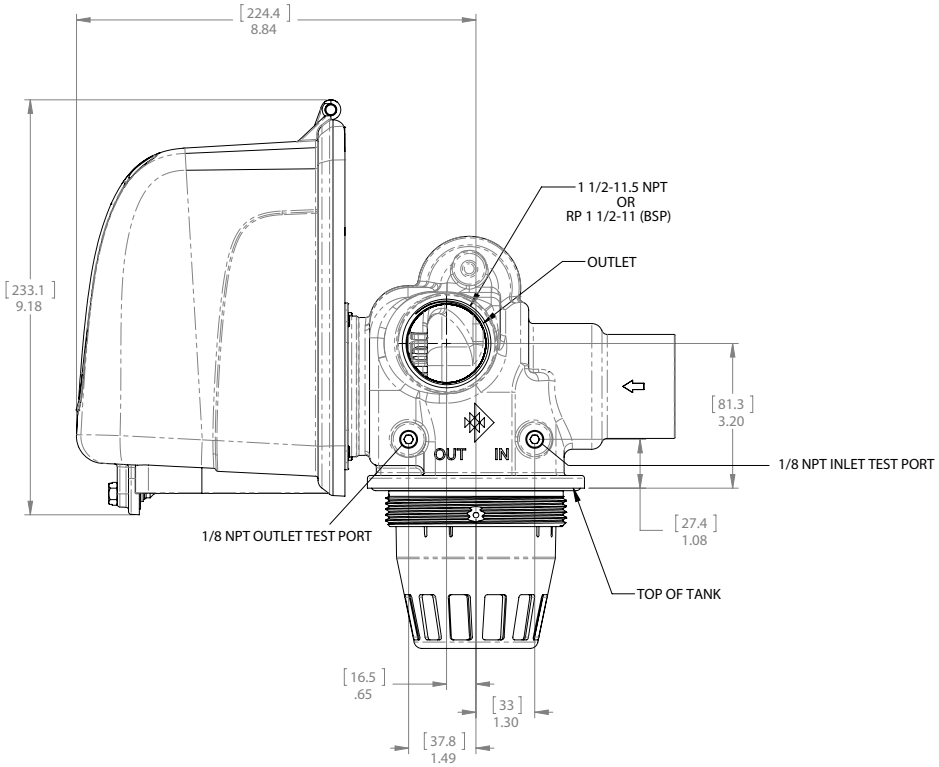
## DIMENSIONS



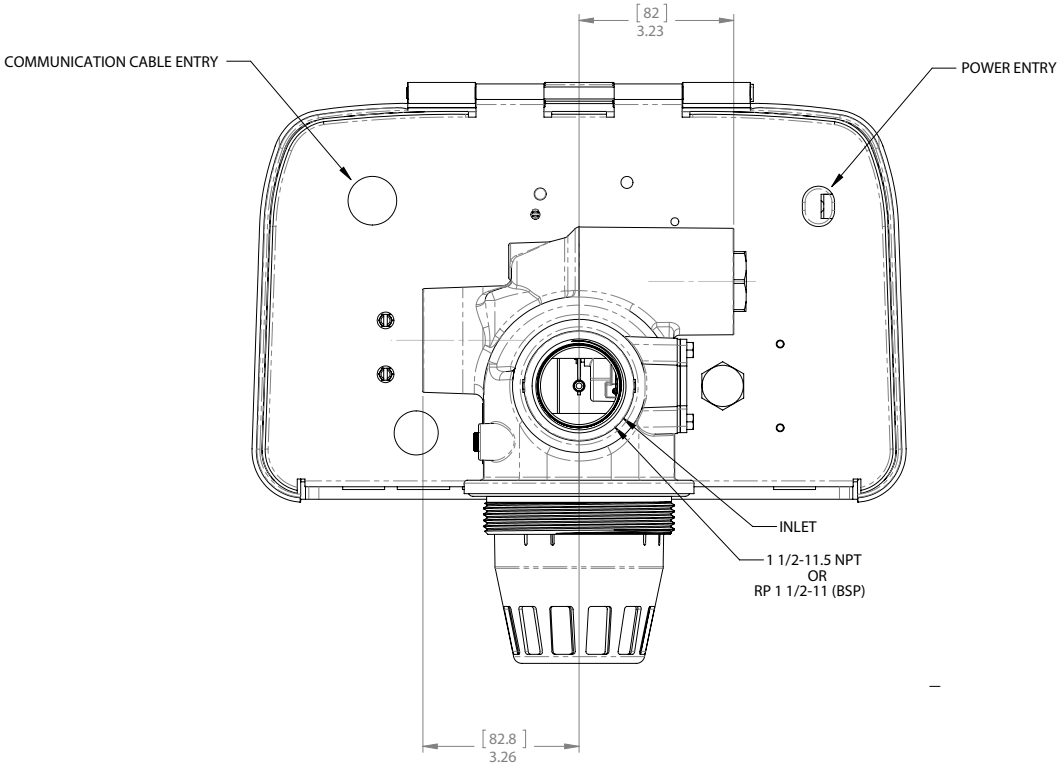



## **DIMENSIONS** *continued*



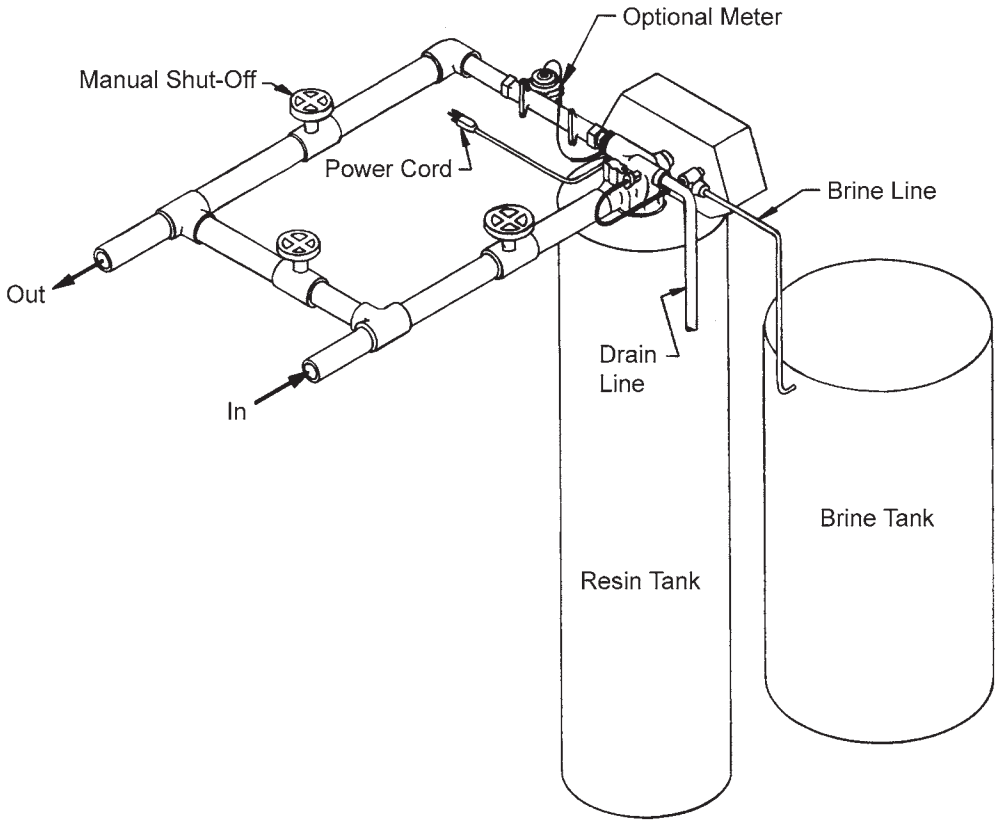



## **DIMENSIONS** *continued*



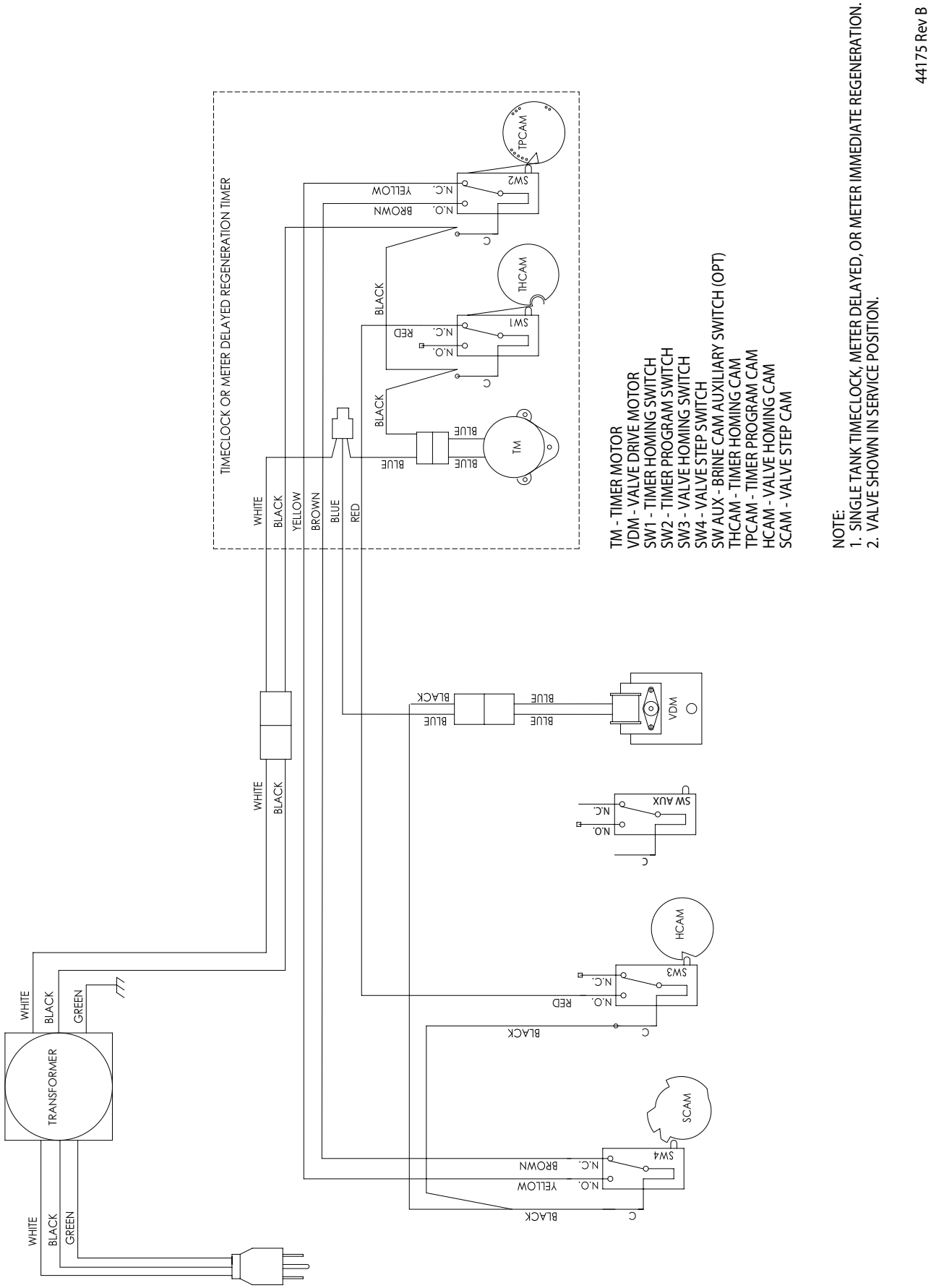
## SYSTEM #4

### Typical Single Tank Installation with Optional Meter

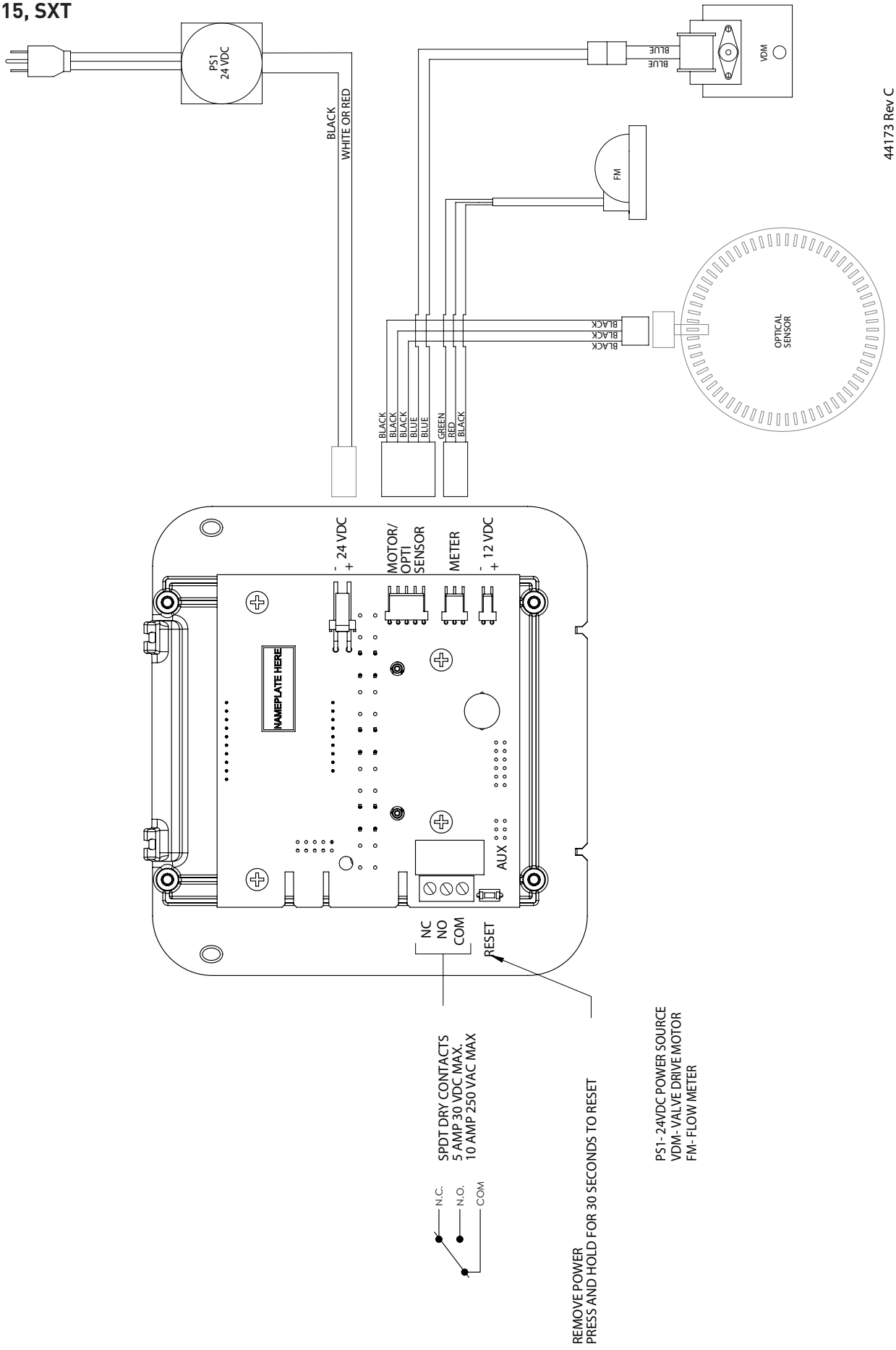


# WIRING

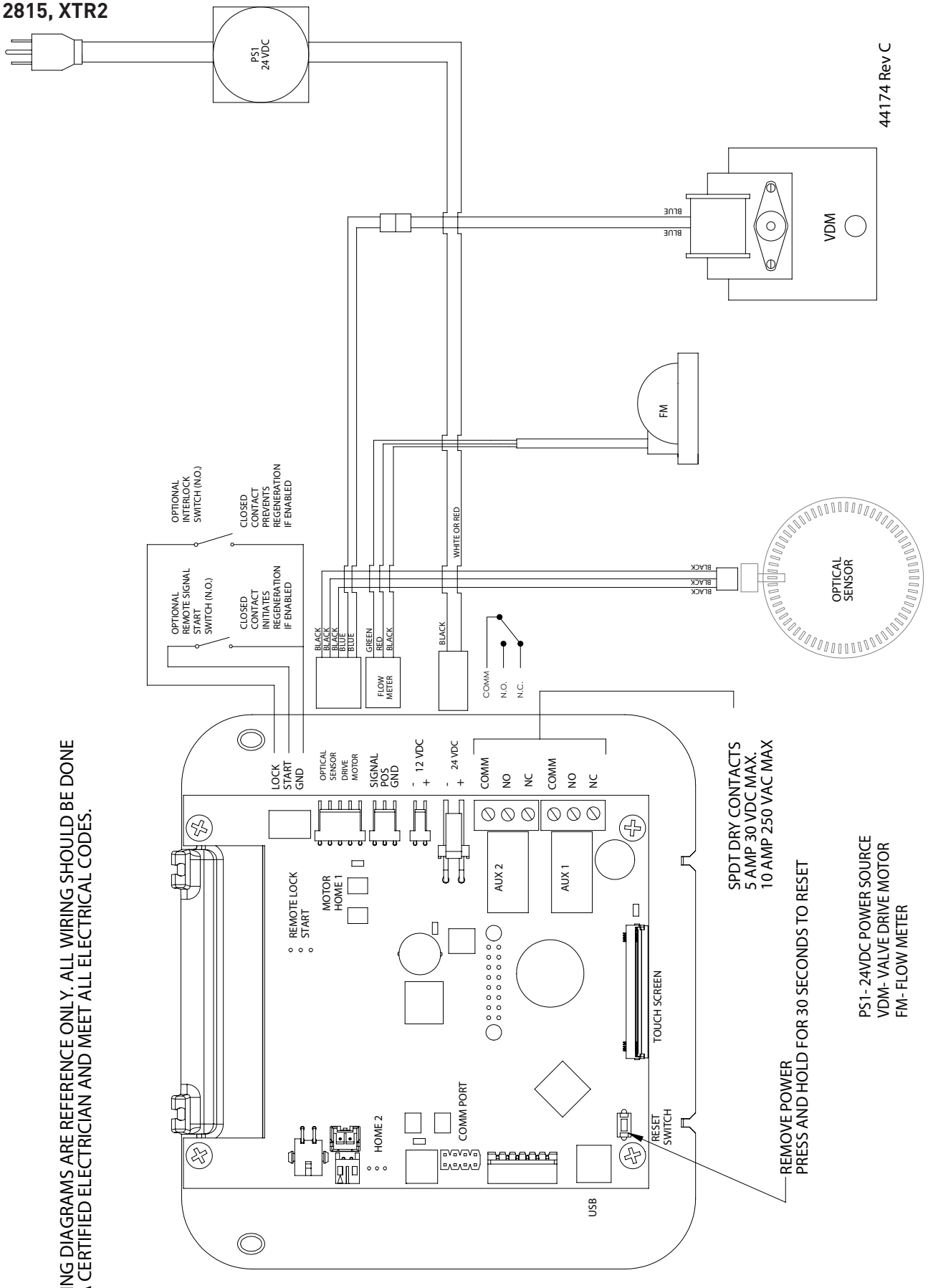
## 2815, Electromechanical



## 2815, SXT


PS1
24 VDC
BLACK
WHITE OR RED
BLUE
BLUE
VDM
FM
OPTICAL
SENSOR
BLACK
BLACK
BLACK
BLACK
BLACK
BLUE
BLUE
GREEN
RED
BLACK
- 24 VDC +
MOTOR/
OPTI
SENSOR
METER
- 12 VDC +
NAMEPLATE HERE
AUX
NC
NO
COM
RESET
SPDT DRY CONTACTS
5 AMP 30 VDC MAX.
10 AMP 250 VAC MAX
N.C.
N.O.
COM
REMOVE POWER
PRESS AND HOLD FOR 30 SECONDS TO RESET
PS1- 24VDC POWER SOURCE
VDM- VALVE DRIVE MOTOR
FM- FLOW METER
44173 Rev C

## 2815, XTR2




*WIRING DIAGRAMS ARE REFERENCE ONLY. ALL WIRING SHOULD BE DONE BY A CERTIFIED ELECTRICIAN AND MEET ALL ELECTRICAL CODES.

## PISTON ASSEMBLY/SEAL AND SPACER CARTRIDGE REPLACEMENT

1. Turn off water supply to valve.
2. Open/remove powerhead assembly cover.
3. Cycle valve to backwash position. Wait until there is no water flow at the drain to ensure the unit is depressurized then cycle valve to service position. If you are unable to advance the valve to the backwash position, open a water line to depressurize the system.
4. Remove electrical plug from outlet.
5. If present, detach the meter cable from the meter cap.
6. Detach the spring clip securing the timer to the powerhead assembly backplate and swing timer out of the way.
7. Remove the connecting rod spring pin from piston rod.
8. Remove the two bolts (10mm nut driver) securing the motor assembly to the end plug assembly.
9. Swing motor out of the way (depending upon the wire harness length tension you may need to disconnect/remove the wiring harness)
10. Remove the three bolts (10mm nut driver) from the end plug assembly.
11. Install the connecting rod spring pin back into the piston rod.
12. Using a needle-nosed pliers and the connecting rod spring pin as an anchor point, remove the endplug and piston assembly. Alternatively, you may pry the end plug assembly loose using a flat nosed screwdriver against the end plug assembly inlayed grooves.
13. Carefully remove the seal and spacer cage assembly
14. Lubricate the inner diameter and outer diameter of the new seal and spacer cage.

**Only use 100% silicone lubricant that is approved for use with potable water.**

15. Install the new seal and spacer cage (either end can be inserted; orientation is interchangeable)
16. Install the piston assembly and end plug (by lining up to the three bolt holes and noting the orientation of the two motor assembly bolt holes). The end plug will not be flush with the backplate until all three bolts are tightened.
17. Install the three bolts by hand only to hold the end plug assembly in place so you may adjust the piston rod in alignment with the motor assembly drive link. Swing motor asssembly into place and adjust piston rod as needed. Keep in mind the piston rod, motor assembly drive link, and clip pin all need to align.
18. Swing motor assembly out of the way and begin tightening the three end plug bolts. Tighten the three bolts evenly in a criss-cross sequence.
19. Swing the motor back into place, align the motor assembly drive link with the slotted piston rod and secure with the connecting rod spring clip.
20. Secure the motor assembly to the backplate using the two motor assembly bolts.
21. Swing timer back into place and secure to the backplate with the spring clip. Set time of day.
22. If present, reattach meter cable to meter cap.
23. Plug electrical plug into power outlet.
24. Restore water supply to valve (purging air). Cycle valve to backwash to purge the air from the system. Refer to startup instructions for more information about pressurizing the system.
25. Check for leaks.
26. Close powerhead assembly cover.

## BRINE ASSEMBLY REPLACEMENT

1. Turn off water supply to valve.
2. Open/remove the powerhead assembly cover
3. Cycle valve to backwash position. Wait until there is no water flow at the drain to ensure the unit is depressurized then cycle valve to service position.
4. Remove electrical plug from outlet.
5. Remove brine line
6. If present, detach the meter cable from the meter cap.
7. Detach the spring clip securing the timer to the powerhead assembly backplate and swing timer out of the way.
8. Remove the connecting rod spring pin from piston rod.
9. Remove the two bolts (10mm nut driver) securing the motor assembly to the end plug assembly.
10. Swing motor out of the way (depending upon the wire harness length tension you may need to disconnect/remove the wiring harness)
11. Remove brine nut using crescent wrench
12. On valve, remove the three bolts securing the injector assembly using an 8mm socket wrench
13. Slide injector assembly and brine assembly out of backplate
14. Remove the H-clip connecting the injector assembly to the brine assembly
15. Separate the injector assembly from the brine assembly
16. Lubricate the brine o-ring
17. Only use 100% silicone lubricant that is approved for use with potable water.
18. Install the new brine assembly
19. Reassembly is reverse of disassembly instructions.
20. Restore water supply to valve (purging air). Cycle valve to backwash to purge the air from the system. Refer to startup instructions for more information about pressurizing the system.
21. Check for leaks.

## INJECTOR REPLACEMENT

1. Turn off water supply to valve.
2. Open/remove the powerhead assembly cover
3. Cycle valve to backwash position. Wait until there is no water flow at the drain to ensure the unit is depressuriezed then cycle valve to service position.
4. Remove electrical plug from outlet.
5. Remove the two bolts securing the injector cap to the valve body
6. Remove injector cap
7. Remove injector (injector is not threaded; hex head can be used to loosen a jammed injector)
8. If present, inspect, replace or clean screen.
9. Lubricate injector o-rings
10. Only use 100% silicone lubricant that is approved for use with potable water.
11. Reassembly is reverse of disassembly instructions.
12. Restore water supply to valve (purging air). Cycle valve to backwash to purge the air from the system. Refer to startup instructions for more information about pressurizing the system.
13. Check for leaks.

## TIMER REPLACEMENT

1. Open/remove the powerhead assembly cover
2. Remove electrical plug from outlet.
3. Make note or take photos of how the wiring harness connects to timer.
4. If present, detach the meter cable from the meter cap
5. Remove the two bolts from backside of backplate that secure the timer to the backplate
6. Detach the spring clip securing the timer to the powerhead assembly backplate and remove timer
7. Install new timer using the two hinge bolts through backplate and secure to backplate using the spring clip
8. Reconnect wiring harness
9. If present, reconnect meter cable to the meter cap
10. If not in service position, advance timer to service position
11. Configure timer as desired. Refer to timer programming section as needed.
12. Reassembly is reverse of disassembly instructions.

## MOTOR DRIVE ASSEMBLY REPLACEMENT

1. Turn off water supply to valve.
2. Open/remove the powerhead assembly cover
3. Remove electrical plug from outlet.
4. Detach the spring clip securing the timer to the powerhead assembly backplate and swing timer out of the way.
5. Make note or take photos of how the wiring harness connects to motor assembly
6. Disconnect wiring harness
7. Remove the connecting rod spring pin from piston rod.
8. Remove the two bolts (10mm nut driver) securing the motor assembly to the end plug assembly
9. Swing the motor asssembly away from the end plug
10. Remove the hinge pin that connects the motor assembly to the hinge bracket
11. Remove the old motor assembly
12. Install new motor assembly
13. Reassembly is reverse of disassembly instructions
14. When powered is reapplied, motor will automatically drive to the backwash position
15. Restore water supply to valve.

## DLFC REPLACEMENT

1. Turn off water supply to valve.
2. Remove electrical plug from outlet.
3. Disconnect drain line piping from valve body
4. Remove DLFC retainer assembly
5. Remove DLFC washer from retainer assembly
6. Install DLFC washer. Markings on DLFC washer faces toward valve body.
7. Install DLFC retainer assembly
8. Connect drain line piping to valve body
9. Plug electrical plug into power outlet.
10. Restore water supply to valve.
11. Check for leaks

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