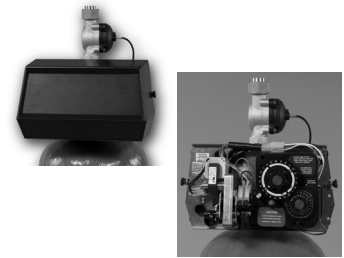




## Fleck 1500

### Service Manual



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## 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

## 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

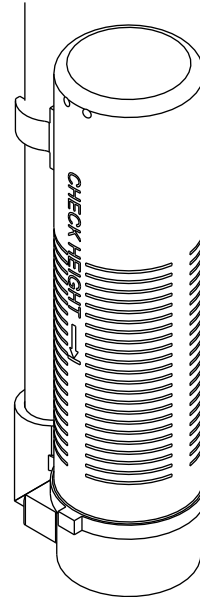
Always provide for the installation of a by-pass valve if unit is not equipped with one.

**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 Rev E

Figure 1 Residential Air Check Valve

## START-UP INSTRUCTIONS

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

1. Turn the manual regeneration knob slowly in a clockwise direction until the program micro switch lifts on top of the first set of pins. Allow the drive motor to move the piston to the first regeneration step and stop. Each time the program switch position changes, the valve will advance to the next regeneration step. Always allow the motor to stop before moving to the next set of pins or spaces.

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

2. Position the valve to backwash. Ensure the drain line flow remains steady for 10 minutes or until the water runs clear (see above).
3. Position the valve to the brine / slow rinse position. Ensure the unit is drawing water from the brine tank (this step may need to be repeated).
4. Position the valve to the rapid rinse position. Check the drain line flow, and run for 5 minutes or until the water runs clear.
5. Position the valve to the start of the brine tank fill cycle. Ensure water goes into the brine tank at the desired rate. The brine valve drive cam will hold the valve in this position to fill the brine tank for the first regeneration.
6. Replace control box cover.
7. Put salt in the brine tank.

**NOTE: Do not use granulated or rock salt.**

## 3200 TIMER SETTING PROCEDURE

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

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

### How To Set The Time Of Day

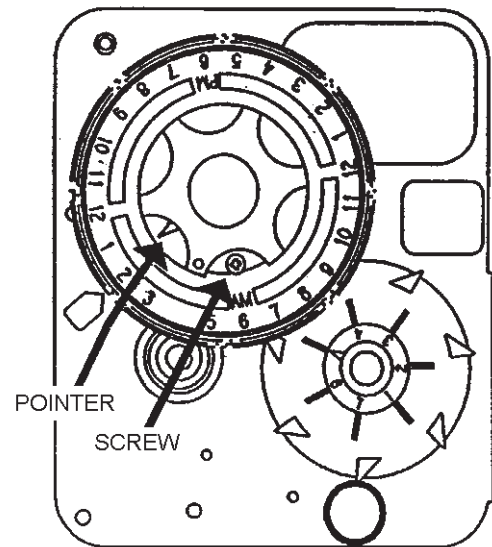
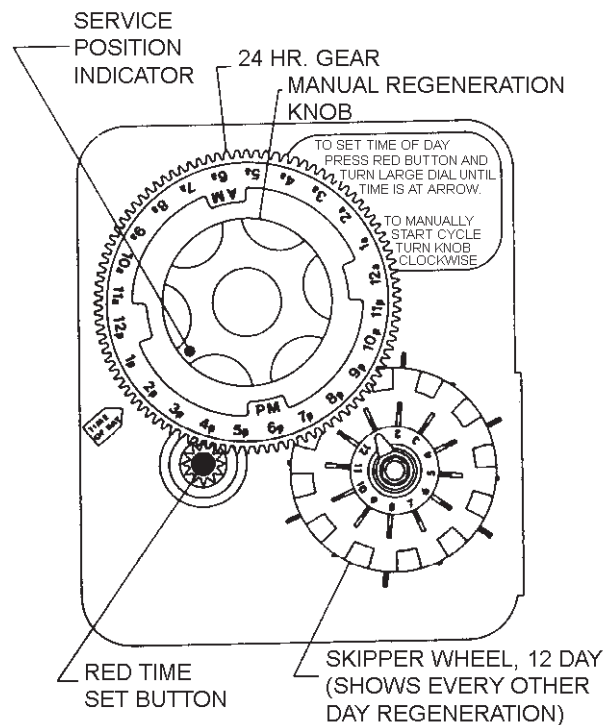
1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is at the time of day pointer.
3. Release the red button to again engage the drive gear.

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

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

### How to Adjust Regeneration Time

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



3200 ADJUSTABLE REGENERATION TIMER

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

61502-3200 Rev A

Figure 2

## 3210 TIMER SETTING PROCEDURE

### Typical Programming Procedure

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

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

### How To Set The Time Of Day

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

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

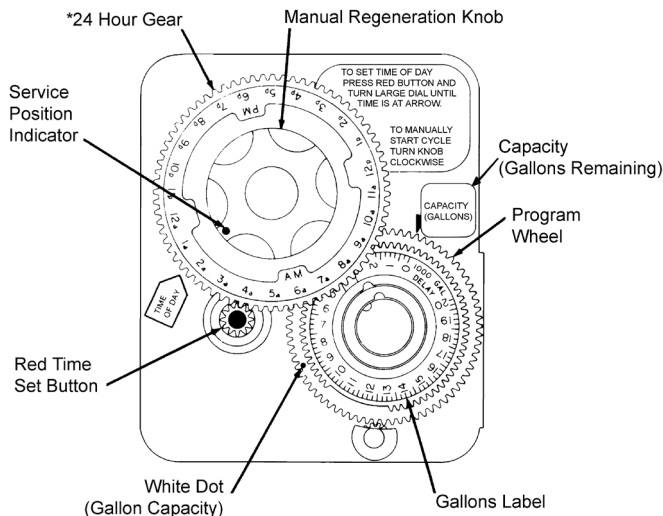
1. Turn the manual regeneration knob clockwise.
2. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
3. The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.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

61502-3200 Rev A

Figure 3

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

### How To Set The Regeneration Cycle Program

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

#### 3200 Series Timers (Figure 4)

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

### Timer Setting Procedure

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

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

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

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

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

### How To Change The Length Of Rapid Rinse

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

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

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

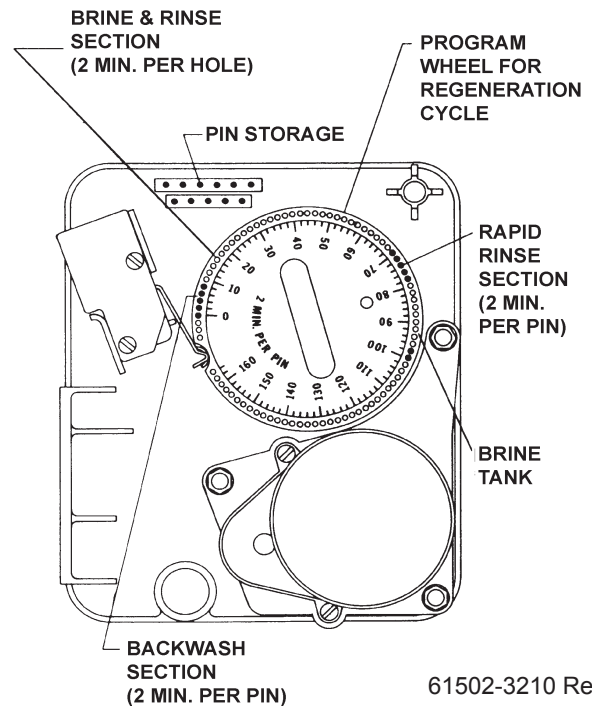
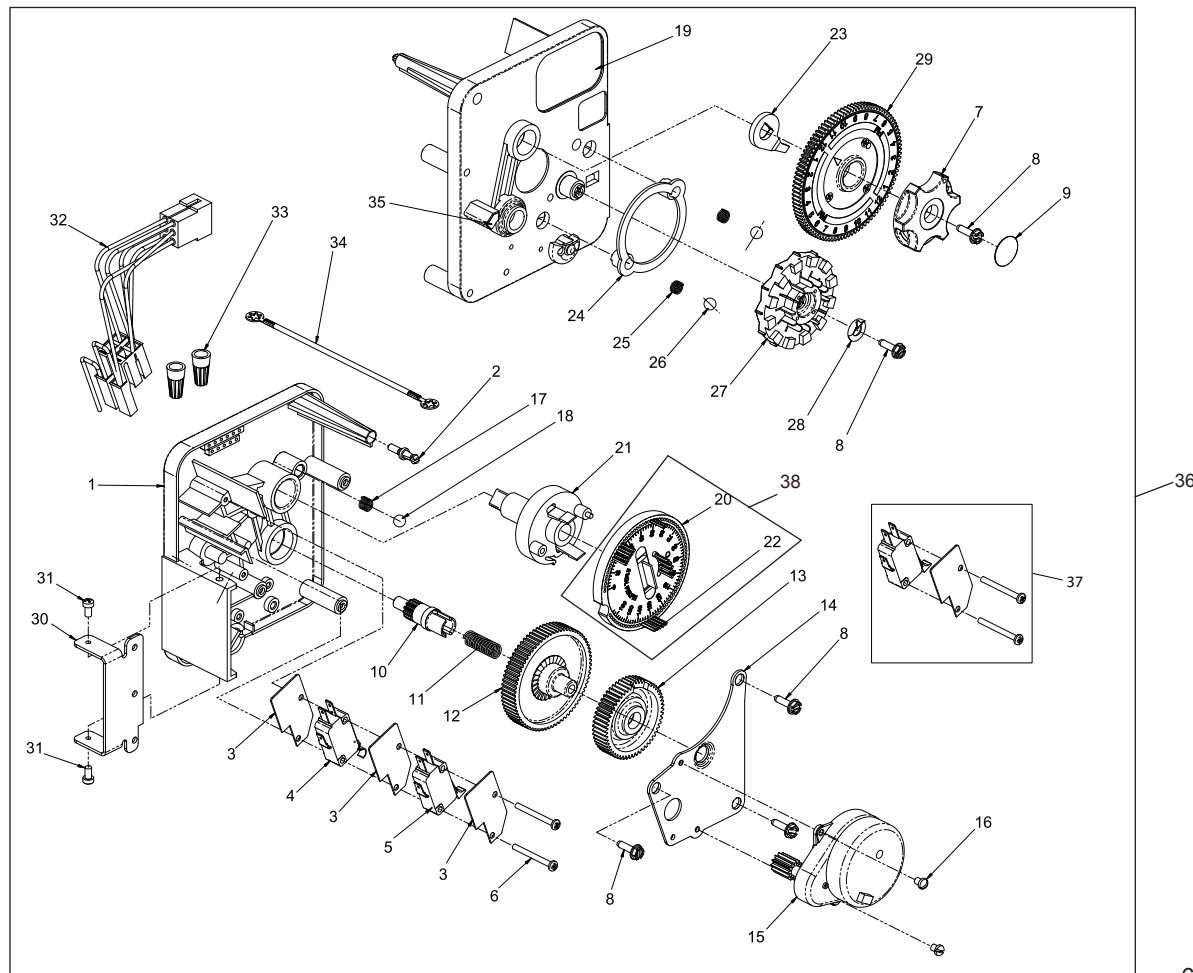


Figure 4



## 3200 TIME CLOCK TIMER ASSEMBLY



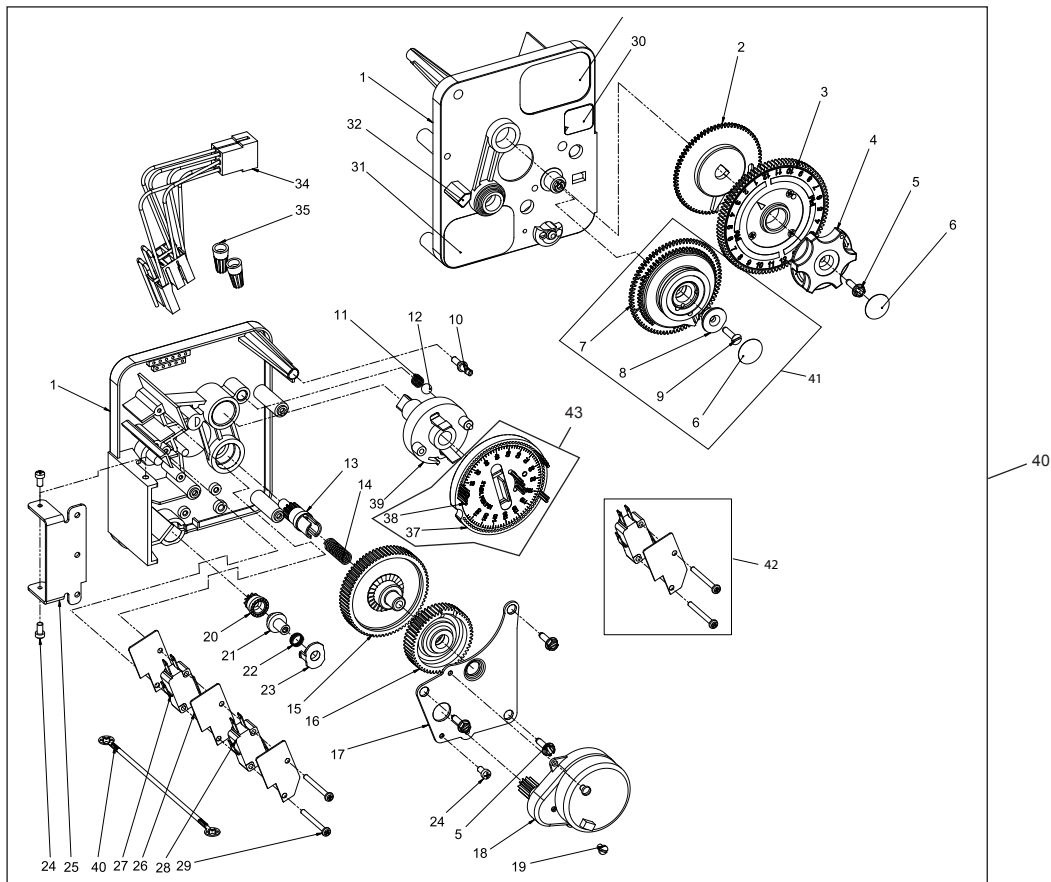
61502-3200 Rev A

Item No.	QTY	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
	1	18752-1	Motor, 100V, 50Hz, 1/30 RPM
	1	18824-1	Motor, 230V, 50Hz, 1/30 RPM
	1	18826-1	Motor, 24V, 50Hz, 1/30 RPM
	1	19659-1	Motor, 24V, 60Hz, 1/30 RPM
	1	19660-1	Motor, 230V, 60Hz, 1/30 RPM
16.....	2	13278	Screw, Slt'd Fillister Hd 6-32 x .156
17.....	1	15424	Spring, Detent, Timer
18.....	1	15066	Ball, 1/4", Delrin
19.....	1	15465	Label, Caution

Item No.	QTY	Part No.	Description
20.....	1	19210	Program Wheel Assy
21.....	1	13911	Gear, Main Drive, Timer
22.....	17	41754	Pin, Spring, 1/16 x 5/8 SS, Timer
23.....	1	13011	Arm, Cycle Actuator
24.....	1	13864	Ring, Skipper Wheel
25.....	2	13311	Spring, Detent, Timer
26.....	2	13300	Ball, 1/4", SS
27.....	1	14381	Skipper Wheel Assy, 12 Day
	1	14860	Skipper Wheel Assy, 7 Day
28.....	1	13014	Pointer, Regeneration
29.....	1	40096-24	Dial, 12 AM Regen Assy, Black
	1	40096-02	Dial, 2 AM Regen Assy, 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
36.....	1	*	Complete 3200 Time Clock Timer Assembly
37.....		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
38.....		61420-03	Program Wheel, Gear Assy, Filter 2 Min Per Pin
		61420-04	Program Wheel, Gear Assy, Softener, 2 Min Per Pin

\*Call your distributor for Part Number

# 3210 METER DELAYED TIMER ASSEMBLY

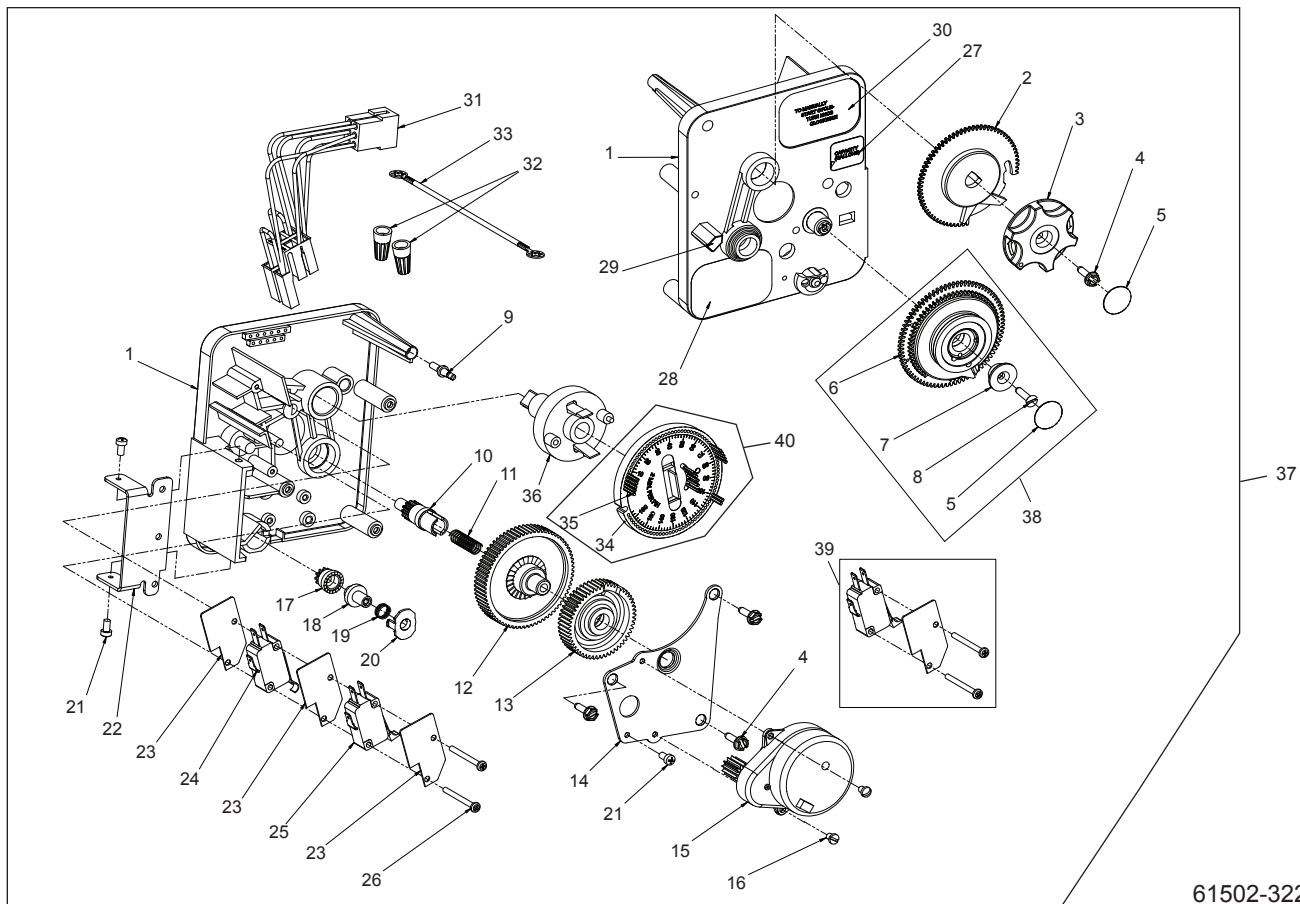


61502-3210 Rev A

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1.....	1	13870.....	Housing, Timer, 3200	26.....	3	14087.....	Insulator
2.....	1	13802.....	Gear, Cycle Actuator	27.....	1	10896.....	Switch, Micro
3.....	1	40096-02.....	Dial 2 AM Regen Assy, Black	28.....	1	15320.....	Switch, Micro, Timer
4.....	1	13886.....	Knob, 3200	29.....	2	11413.....	Screw, Pan Hd Mach, 4-40 x 1 1/8
5.....	4	13296.....	Screw, Hex Wsh, 6-20 x 1/2	30.....	1	14198.....	Label, Indicator
6.....	2	11999.....	Label, Button	31.....	1	15465.....	Label, Caution
7.....	1	13803.....	Gear, Program Drive Wheel	32.....	1	14007.....	Label, Time of Day
8.....	1	13806.....	Retainer, Program Wheel	33.....	1	14045.....	Label, Instruction
9.....	1	13748.....	Screw, Flat Head St, 6-20 x 1/2	34.....	1	13902.....	Harness, 3200
10.....	1	14265.....	Clip, Spring	35.....	2	40422.....	Nut, Wire, Tan
11.....	1	15424.....	Spring, Detent, Timer	36.....	1	15354-01.....	Wire, Ground, 4"
12.....	1	15066.....	Ball, 1/4" Delrin	37.....	1	19210.....	Program Wheel Assy
13.....	1	13018.....	Pinion, Idler	38.....	17	41754.....	Pin, Spring, 1/16 x 5/8 SS, Timer
14.....	1	13312.....	Spring, Idler Shaft	39.....	1	13911.....	Gear, Main Drive, Timer
15.....	1	13017.....	Gear, Idler	40.....	1	*	Complete 3210 Meter Delayed Timer Assembly
16.....	1	13164.....	Gear, Drive	41.....		60405-10.....	Program Wheel, w/3/4" STD Label 0-2,100 gal
17.....	1	13887.....	Plate, Motor Mounting			60405-20.....	Program Wheel, w/3/4" EXT Label 0-10,000 gal
18.....	1	18743-1.....	Motor, 120V, 60Hz 1/30 RPM			60405-11.....	Program Wheel, w/3/4" STD Metric Label 0-8 m3
	1	18752-1.....	Motor, 100V, 50Hz, 1/30 RPM			60405-21.....	Program Wheel, w/3/4" EXT Range 0-40 m3
	1	18824-1.....	Motor, 230V, 50Hz, 1/30 RPM	42.....		60320-02.....	Switch Kit, 3200/9000 Timer Auxiliary, Optional
	1	18826-1.....	Motor, 24V, 50Hz, 1/30 RPM	43.....		61420-03.....	Program Wheel, Gear Assy, Filter 2 Min Per Pin
	1	19659-1.....	Motor, 24V, 60Hz, 1/30 RPM			61420-04.....	Program Wheel, Gear Assy, Softener, 2 Min Per Pin
	1	19660-1.....	Motor, 230V, 60Hz, 1/30 RPM				
19.....	1	13278.....	Screw, Fillister Hd, 6-32 x .156				
20.....	1	13830.....	Pinion, Program Wheel Drive				
21.....	1	13831.....	Clutch, Drive Pinion				
22.....	1	14276.....	Spring, Meter, Clutch				
23.....	1	14253.....	Retainer, Clutch Spring				
24.....	3	11384.....	Screw, Phil, 6-32 x 1/4				
25.....	1	13881.....	Bracket, Hinge Timer				

\*Call your distributor for Part Number

# 3220 METER IMMEDIATE TIMER ASSEMBLY



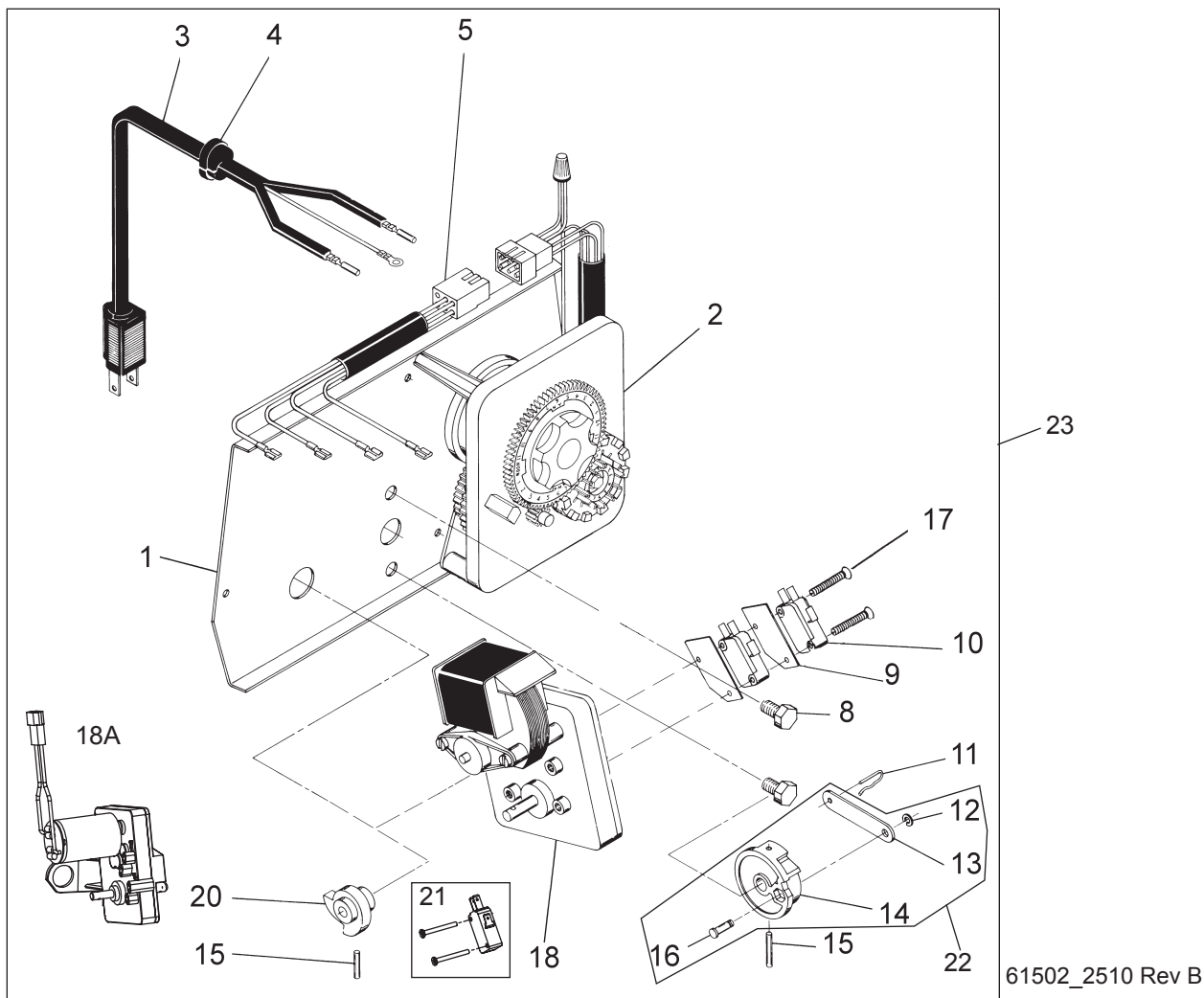
61502-3220 Rev B

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1.....	1	13870.....	Housing, Timer	25.....	1	15320.....	Switch, Micro, Timer
2.....	1	15431.....	Gear, Cycle Actuator, System #5	26.....	2	11413.....	Screw, Pan Hd Mach, 4-40 x 1-1/8
3.....	1	13886.....	Knob, 3200	27.....	1	14198.....	Label, Indicator
4.....	4	13296.....	Screw, Hex Wsh, 6-20 x 1/2	28.....	1	15465.....	Label, Caution
5.....	2	11999.....	Label, Button	29.....	1	14007.....	Label, Time of Day
6.....	1	13807.....	Gear, Program Drive Wheel	30.....	1	15148.....	Label, Instruction
7.....	1	13806.....	Retainer, Program Wheel	31.....	1	40617.....	Harness, 3220
8.....	1	13748.....	Screw, Flt Hd St, 6-20 x 1/2	32.....	2	40422.....	Nut, Wire, Tan
9.....	1	14265.....	Spring Clip	33.....	1	15354-01.....	Wire, Ground, 4"
10.....	1	13018.....	Pinion, Idler	34.....	1	19210-05.....	Program Wheel Assembly, 9000/3230
11.....	1	18563.....	Idler Shaft Spring	35.....	17	41754.....	Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer
12.....	1	13017.....	Gear, Idler	36.....	1	15055.....	Gear, Main Drive
13.....	1	13164.....	Drive Gear	37.....	1	*	Complete 3220 Meter Immediate Timer Assembly
14.....	1	13887.....	Plate, Motor Mounting	38.....		60405-10.....	Program Wheel, w/3/4" STD Label 0-2,100 gal
15.....	1	18743-1.....	Motor, 120V, 60 Hz, 1/30 RPM			60405-20.....	Program Wheel, w/3/4" EXT Label 0-10,000 gal
	1	18752-1.....	Motor, 100V, 50Hz, 1/30 RPM			60405-11.....	Program Wheel, w/3/4" STD Metric Label 0-8 m3
	1	18824-1.....	Motor, 230V, 50Hz, 1/30 RPM			60405-21.....	Program Wheel, w/3/4" EXT Range 0-40 m3
	1	18826-1.....	Motor, 24V, 50Hz, 1/30 RPM	39.....		60320-02.....	Switch Kit, 3200/9000 Timer Auxiliary, Optional
	1	19659-1.....	Motor, 24V, 60Hz, 1/30 RPM	40.....		61420-06.....	Program Wheel, Gear Assy, Softener Immediate 2 Min Per Pin
	1	19660-1.....	Motor, 230V, 60Hz, 1/30 RPM			61420-42.....	Program Wheel, Gear Assy, Filter Immediate 2 Min Per Pin
16.....	2	13278.....	Screw, Sltd Fillister Hd				
17.....	1	14502.....	Pinion, Program Wheel				
18.....	1	14501.....	Clutch, Drive Pinion				
19.....	1	14276.....	Meter Clutch Spring				
20.....	1	14253.....	Retainer, Clutch Spring				
21.....	3	11384.....	Screw, Phil, 6-32 x 1/4 Zinc				
22.....	1	13881.....	Bracket, Hinge Timer				
23.....	3	14087.....	Insulator				
24.....	1	15414-00.....	Micro Switch				

\*Call your distributor for Part Number



# POWERHEAD ASSEMBLY (DESIGNER)



Item No.	QTY	Part No.	Description
1.....	1	40264	Backplate, SS/Service Valve Operator, W-T-Screws
2.....	1		3200, Timer 7 or 12 Day
3.....	1	11838	Power Cord, North America
		19303-01	Austrailian Cord
		19885-01	Japanese Cord
		11545-01	European Cord
4.....	1	13547	Strain Relief
5.....	1	40400	Harness, Drive, Designer/Environmental
8.....	2	10231	Screw - Drive Mounting
9.....	2	10302	Insulator
10.....	2	10218	Switch
11.....	1	10909	Connecting Link Pin
12.....	1	10250	Retaining Ring
13.....	1	10621	Connecting Link
14.....	1	12576	Drive Cam - STF (Black)
15.....	2	10338	Roll Pin
16.....	1	13366	Drive Bearing
17.....	2	14923	Screw - Switch Mounting
18.....	1	41543*	Motor, Drive, 115V, 50/60Hz
		41545*	Motor, Drive, 230V, 50/60Hz

Item No.	QTY	Part No.	Description
18A.....	1	42579**	Motor, Drive, 24VAC/VDC, 50/60Hz
20.....	1	12777	Brine Valve Cam - Separate Time Fill (Black)
21.....	***		Switch Kit, 1500 thru 2850, Optional
22.....	1	60160-15	Drive Cam Assy STF, Blue
23.....	***		Powerhead Assy

## Not Shown:

2 .....	10300	Screw - Timer Mounting
1 .....	13741	Hole Plug
1 .....	17904	Hole Plug
2 .....	19367	Screw, Thumb
1 .....	15441	Cable Guide Assy
1 .....	15495	Meter Cable, 13.87"
1 .....	60232-110	Cover, Designer, 1 Pc. Black

\* Bracket is integrated into the motor.

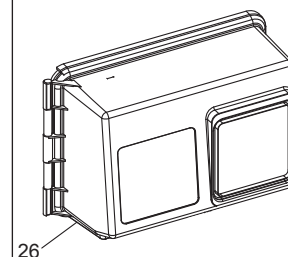
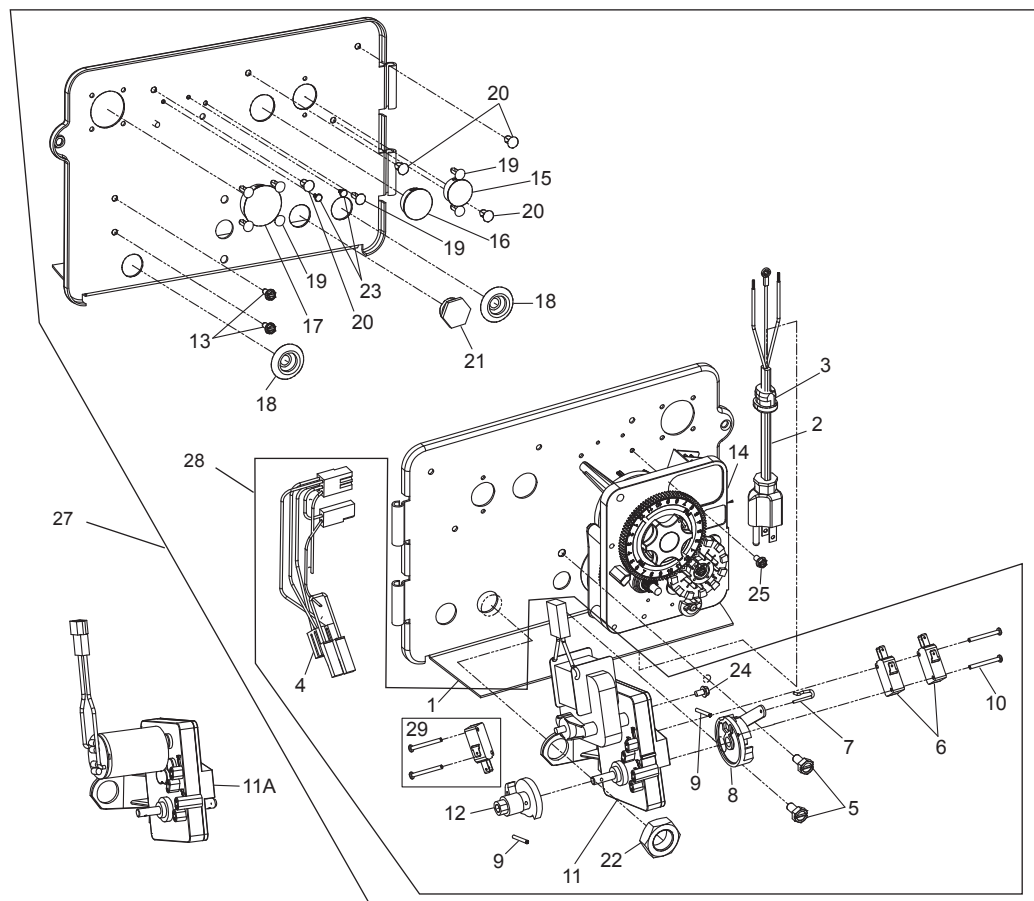
\*\* Bracket is integrated into the motor and picture may not reflect actual component.

\*\*\*Call your distributor for Part Number

Motor drawing may not resemble actual.

For Service Assembly Numbers, See the Back of this Manual

# POWERHEAD ASSEMBLY (ENVIRONMENTAL)



BR61501-1500 Rev C

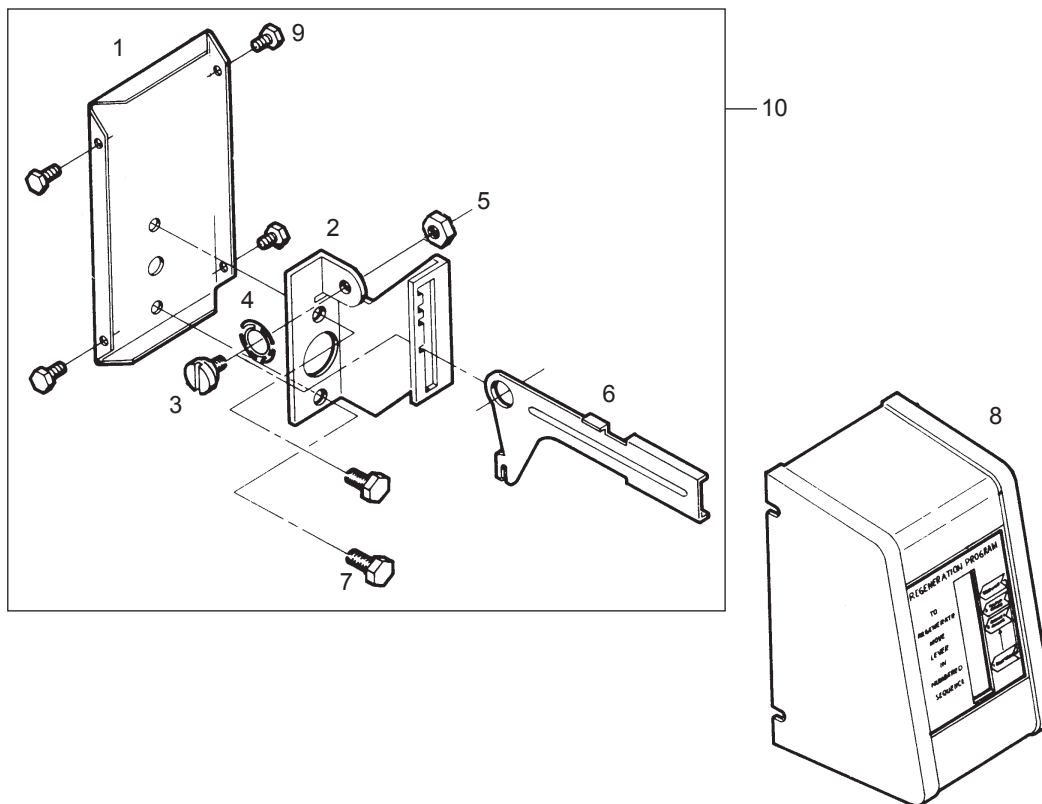
Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1.....	1	18697-15	Backplate, Hinged	16.....	1	16493	Plug, Hole, HeyCo, .88 Dia
2.....	1	11838	Power Cord, 6', North American, Flat	17.....	1	17421	Plug, 1.20 Hole
		19303-01	Power Cord, 6', Austrailian	18.....	2	19691	Plug, .750 Dia. Hole, Flush
		19885-01	Power Cord, 6', Japanese	19.....	7	19800	Plug (Hole Size: Dia .140)
		11545-01	Power Cord, 6', European	20.....	4	19801	Plug, Dia .190
3.....	1	13547	Strain Relief, Cord	21.....	1	10712	Fitting, Brine Valve (Used on Filter Valves)
4.....	1	40400	Harness, Drive Designr/Envirmntl	22.....	1	10269	Nut, Jam, 3/4-16 (Used on Filter Valves) Wrench Tighten
5.....	2	10231	Screw, Slot Hex 1/4-20 x 1/2 35 IN-LBS ±20%	23.....	2	41581	Plug, Hole .125 Dia, White
6.....	2	10218	Switch, Micro	24.....	1	10872	Screw, Hex WSH, 8-32 x 5/16 20 IN-LBS ±20%
7.....	1	10909	Pin, Connecting Rod Spring	25.....	1	14202-01	Screw, Hex Washer #8-32 x 5/16 Hand Tighten
8.....	1	60160-15	Drive Cam Assy, STF, Blue, 2900	26.....	1	60219-02	Cover Assy, Environmental, Black, Clear Window
9.....	2	10338	Pin, Roll, 3/32 x 7/8			60219-12	Cover Assy, Environmental, Black, Black Window
10.....	2	14923	Screw, Pan Hd MACH, 4-40 x 1 5.0 IN-LBS ±10%	27.....	1	*	Powerhead Assembly
11.....	1	41543	Motor, Drive, 115V/60 Hz	28.....	1	60050-23	Drive Motor Assy, 24 VAC/DC, 50-60 Hz FAM 1
		41545	Motor, Drive, 220V, 50-60Hz, SP, Fam 1			60050-21	Drive Motor Assy, 115V/60 Hz
11A.....		42579	Motor, Drive, 24 VAC/DC, 50-60 Hz, Fam 1			60050-22	Drive Motor Assy, 220V, 50-60 Hz SP FAM1
12.....	1	12777	Cam, Shut-off Valve	29.....		60320-12	Switch Kit, 1500-2850 Drive Motor
13.....	2	10300	Screw, Hx Wash Head, 8 x 3/8 20 IN-LBS ±20%				
14.....	1	3200	Timer Assy, 3200 7 or 12 Day				
			3210 Meter Delay				
			3220 Meter Immediate				
15.....	1	15806	Hole Plug, (HeyCo)				

## Not Shown:

1	15441	Cable Guide Assy, 2510
1	15495	Meter Cable, 13.87"

\*Call your distributor for Part Number

# MANUAL POWERHEAD ASSEMBLY



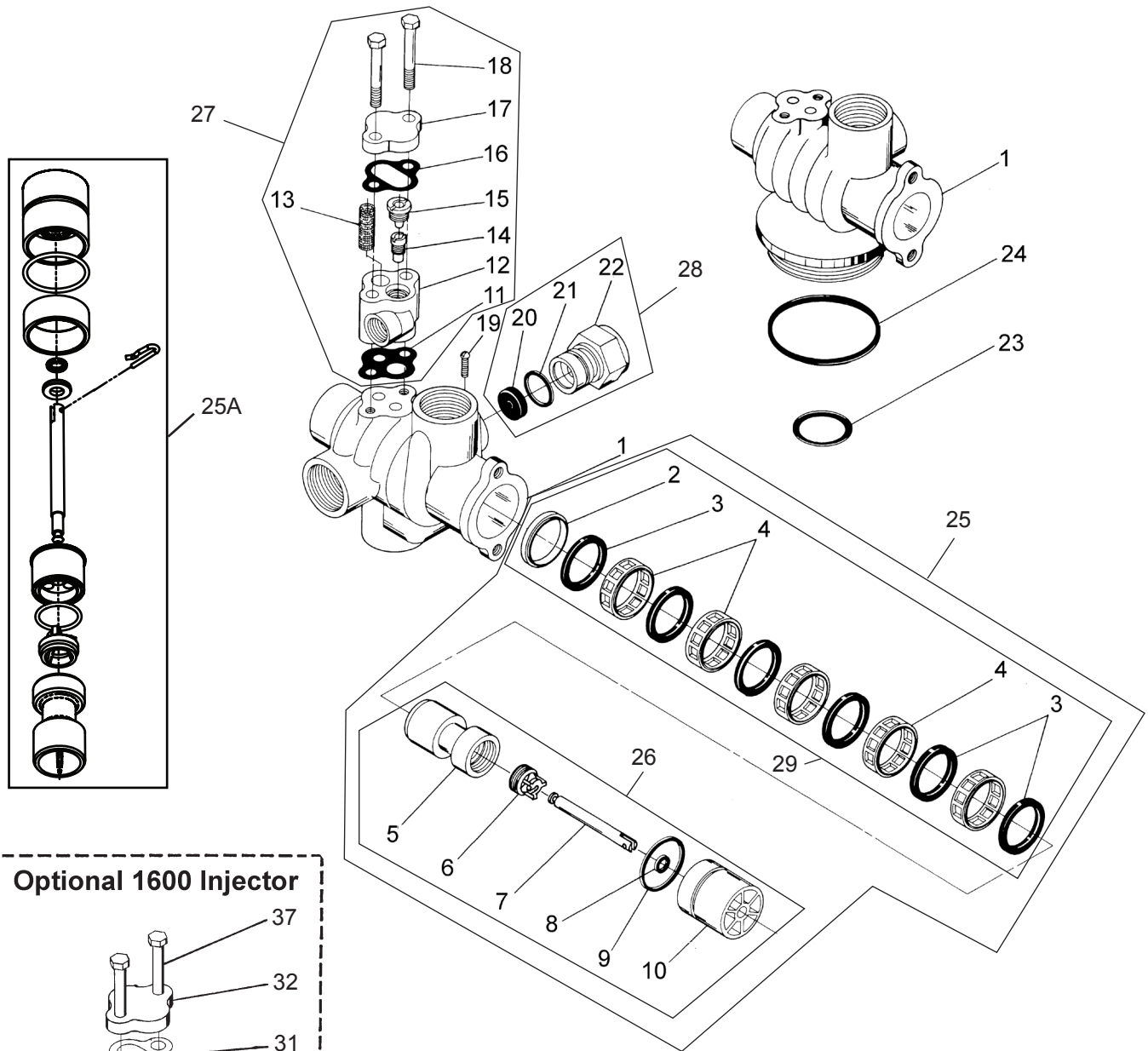
60409 Rev A

Item No.	QTY	Part No.	Description
1.....1	.....	12593.....	Backplate, Manual
2.....1	.....	12592.....	Bracket, Lever Position
3.....1	.....	12596.....	Screw, Spec Mach, 1/4 - 20 x 1/2
4.....1	.....	12707.....	Washer, Spring
5.....1	.....	11235.....	Nut, Hex, 1/4 - 20, Mach Screw, Zinc
6.....1	.....	12594.....	Lever, Valve Position
7.....2	.....	10231.....	Screw, Slot Hex, 1/4 - 20 x 1/2 18-8 SS
8.....1	.....	60224-32.....	Cover Assy, Manual, Filter
	.....	60224-33.....	Cover Assy, Manual, Softener
9.....4	.....	10300.....	Screw, Slot Hex Wsh, 8-18 x 3/8 Type "B" RC44-47
10.....	.....	60409.....	Powerhead Assy, Manual

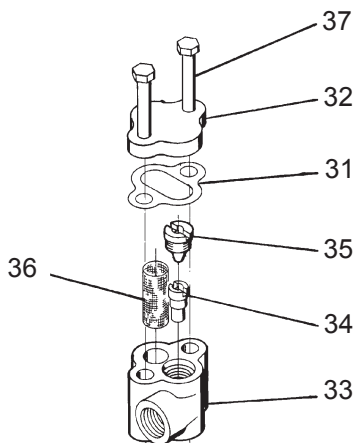
## Not Shown:

1 .....	10909.....	Pin, Link
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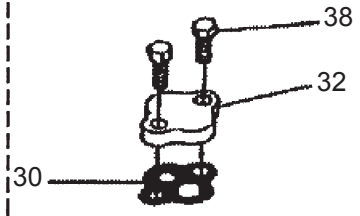
# CONTROL VALVE ASSEMBLY



## Optional 1600 Injector



## Optional Backwash Parts



61500-1500 Rev B

## CONTROL VALVE ASSEMBLY *continued*

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1.....	1 .....	10729.....	Valve Body, 1500, Sm	15.....	1 .....	10913-000.....	Nozzle, Injector #000, Brown
	1 .....	10680.....	Valve Body, 1500			10913-00.....	Nozzle, Injector #00, Violet
2.....	1 .....	10757b.....	Spacer, End, Brass			10913-0.....	Nozzle, Injector #0, Red
3.....	6 .....	10545.....	Seal, Piston, 560CD			10913-1.....	Nozzle, Injector #1, White
4.....	5 .....	16589.....	Spacer, HW			10913-2.....	Nozzle, Injector #2, Blue
5.....	1 .....	15168.....	Piston			10913-3.....	Nozzle, Injector #3, Yellow
6.....	1 .....	16590.....	Piston Rod Retainer, Hot Water			10913-4.....	Nozzle, Injector #4, Green
7.....	1 .....	14452.....	Piston Rod			12973-0.....	Nozzle, Injector #0, PVC, Grey
8.....	1 .....	10209-01.....	Quad Ring, -010,560CD			12973-1.....	Nozzle, Injector #1, PVC, Grey
9.....	1 .....	10234-01.....	O-ring, -024,560CD			12973-2.....	Nozzle, Injector #2, PVC, Grey
10.....	1 .....	10598-01.....	End Plug Assembly, Hot Water			12973-3.....	Nozzle, Injector #3, PVC, Grey
11.....	1 .....	14805.....	Gasket,injector Body,1600/1700			12973-4.....	Nozzle, Injector #4, PVC, Grey
12.....	1 .....	17776.....	Body, Injector, 1600			10225-0.....	Nozzle, Injector #0, Stainless Steel
	1 .....	11483 .....	Body, Injector, Brass			10225-1.....	Nozzle, Injector #1, Stainless Steel
13.....	1 .....	10227 .....	Screen, Injector			10225-2.....	Nozzle, Injector #2, Stainless Steel
14.....		10914-000.....	Throat, Injector #000, Brown			10225-3.....	Nozzle, Injector #3, Stainless Steel
		10914-00.....	Throat, Injector, #00, Violet			10225-4.....	Nozzle, Injector #4, Stainless Steel
		10914-0.....	Throat, Injector, #0, Red	16.....	1 .....	10229.....	Gasket, Injector Cap, 1600
		10914-1.....	Throat, Injector, #1, White	17.....	1 .....	10228.....	Cap, Injector, Brass
		10914-2.....	Throat, Injector, #2, Blue		1 .....	11893 .....	Cap, Injector, Stainless Steel
		10914-3.....	Throat, Injector, #3, Yellow	18.....	1 .....	10692.....	Screw, Slot Hex Hd, 10-24 X 18-8S
		10914-4.....	Throat, Injector, #4, Green	19.....	1 .....	11180 .....	Screw, Rd Hd Mach, 6-32 X 1/2
		12974-0.....	Throat, Injector, #0, PVC, Grey	20.....	1 .....		Flow Control Washer (Specify Flow Rate In GPM)
		12974-1.....	Throat, Injector, #1, PVC, Grey	21.....	1 .....	11183 .....	O-ring, -017
		12974-2.....	Throat, Injector, #2, PVC, Grey	22.....	1 .....	11385-01 .....	Dlfc, Plastic, Blank
		12974-3.....	Throat, Injector, #3, PVC, Grey		1 .....	11385-03.....	Housing, Flow Control, Brass
		12974-4.....	Throat, Injector, #4, PVC, Grey		1 .....	11385-13.....	Dlfc, Brass Bored
		10226-0.....	Throat, Injector, #0, Stainless Steel	23.....	1 .....	10244.....	O-ring, -211
		10226-1.....	Throat, Injector, #1, Stainless Steel	24.....	1 .....	12570.....	O-ring, Park Tank, 1500, -343
		10226-2.....	Throat, Injector, #2, Stainless Steel	25.....	1 .....	60090.....	Piston Assy w/Seal & Spacer Kit
		10226-3.....	Throat, Injector, #3, Stainless Steel	25A .....		60101-01.....	Piston Assy, NHWP, DF 1500, 2510, 2750
		10226-4.....	Throat, Injector, #4, Stainless Steel	26.....		??.....	??



## CONTROL VALVE ASSEMBLY *continued*

Item No.	QTY	Part No.	Description
27.....	1 .....	60480-000.....	Injector Assy, 1600 #00, Plastic
		..... 60480-00.....	Injector Assy, 1600 #0, Plastic
		..... 60480-01.....	Injector Assy, 1600 #1, Plastic
		..... 60480-02.....	Injector Assy, 1600 #2, Plastic
		..... 60480-03.....	Injector Assy, 1600 #3, Plastic
		..... 60480-04.....	Injector Assy, 1600 #4, Plastic
		..... 60481-21.....	Injector Assy, 1600, #1, S.S. Complete, Brass
		..... 60481-22.....	Injector Assy, 1600, #2, S.S. Complete, Brass
		..... 60481-23.....	Injector Assy, 1600, #3, S.S. Complete, Brass
		..... 60080-11.....	Injector Assy, 1600, #1, PVC
		..... 60080-12.....	Injector Assy, 1600, #2, PVC
		..... 60080-14.....	Injector Assy, 1600, #4, PVC
28.....	1 .....	60705-00.....	DLFC, Plastic Blank
		..... 60705-06.....	DLFC, Plastic 0.60 gpm
		..... 60705-08.....	DLFC, Plastic 0.80 gpm
		..... 60705-10.....	DLFC, Plastic 1.0 gpm
		..... 60705-12.....	DLFC, Plastic 1.2 gpm
		..... 60705-13.....	DLFC, Plastic 1.3 gpm
		..... 60705-15.....	DLFC, Plastic 1.5 gpm
		..... 60705-17.....	DLFC, Plastic 1.7 gpm
		..... 60705-20.....	DLFC, Plastic 2.0 gpm
		..... 60705-24.....	DLFC, Plastic 2.4 gpm
		..... 60705-30.....	DLFC, Plastic 3.0 gpm
		..... 60705-35.....	DLFC, Plastic 3.5 gpm
		..... 60705-40.....	DLFC, Plastic 4.0 gpm
		..... 60705-45.....	DLFC, Plastic 4.5 gpm
		..... 60705-50.....	DLFC, Plastic 5.0 gpm
		..... 60705-60.....	DLFC, Plastic 6.0 gpm
		..... 60705-70.....	DLFC, Plastic 7.0 gpm
		..... 60706-8.0.....	DLFC, QC x 3/4"F, 8.0 gpm
		..... 60706-9.0.....	DLFC, QC x 3/4"F, 9.0 gpm
		..... 60706-10.....	DLFC, QC x 3/4"F, 10 gpm
		..... 60706-12.....	DLFC, QC x 3/4"F, 12 gpm
		..... 60706-15.....	DLFC, QC x 3/4"F, 15 gpm
		..... 60706-20.....	DLFC, QC x 3/4"F, 20 gpm
29.....	1 .....	60121.....	Seal Kit, 1500, 2510, 2750
30.....	1 .....	14805.....	Gasket, Injector Body, 1600/1700
31.....	1 .....	10229.....	Gasket, Injector Cap, 1600
32.....	1 .....	11893.....	Cap, Injector, Stainless Steel
		..... 10228.....	Cap, Injector, Brass
33.....	1 .....	17776.....	Body, Injector
34.....	1 .....	10914-xx.....	Throat, Injector, -xx is for Injector Size
35.....	1 .....	10913-xx.....	Nozzle, Injector, -xx is for Injector Size
36.....	1 .....	10227.....	Screen, Injector
37.....	2 .....	10692.....	Screw, Slot Hex Hd, 10-24 x 18-8 Stainless Steel
38.....	1 .....	15137.....	Screw, Hex Wsh Mach, 10-24 x 3/8

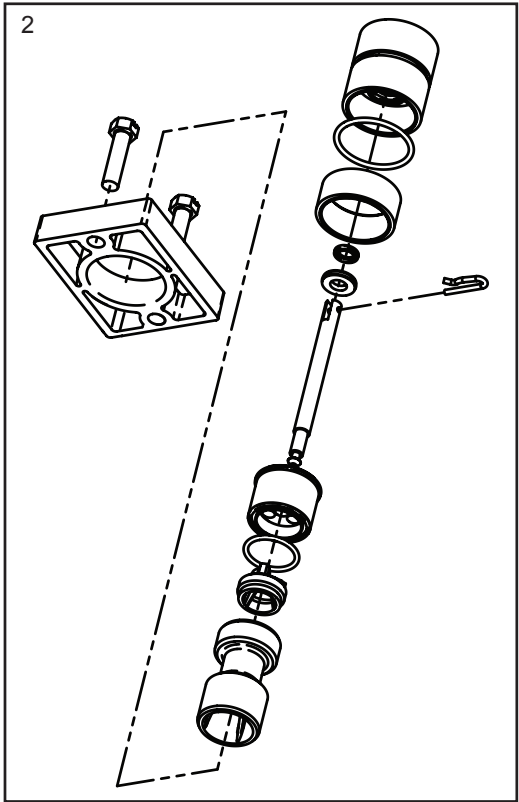
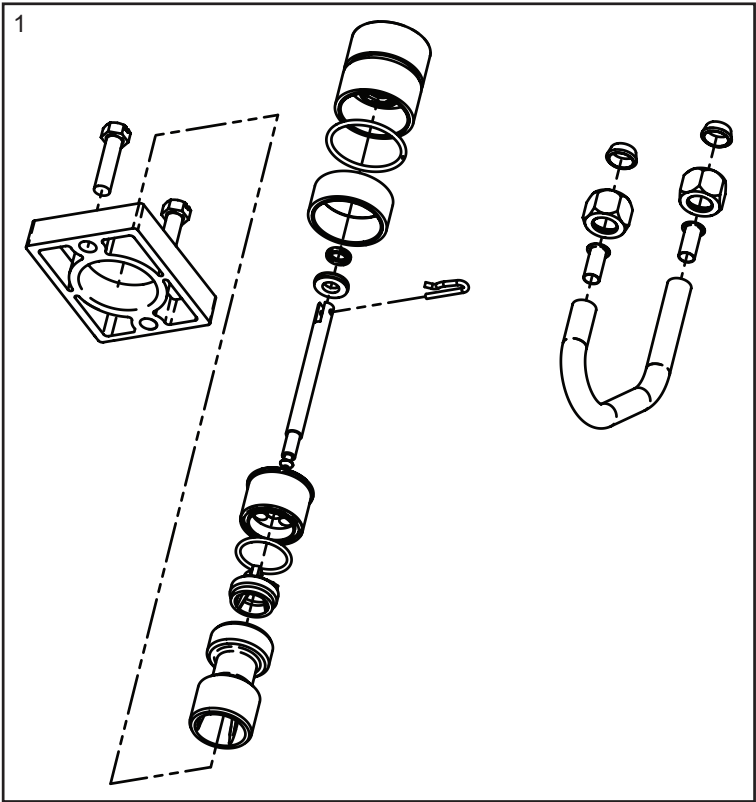
**NOTE:** For flat cap/backwash filter valve less items 12 thru 18.

Item No.	QTY	Part No.	Description
<b>Not Shown:</b>			
.....	1 .....	11893.....	Cap, Injector, SS
.....	1 .....	16221.....	Disperser, Air
.....	2 .....	15137.....	Screw, Hex Wsh Mach, 10-24 X 3/8

**NOTE:** For optimal seal life, the use of lubricants is not recommended.

For Service Assembly Numbers, See the Back of this Manual

**SOFTENER FILTER CONVERSION KITS**



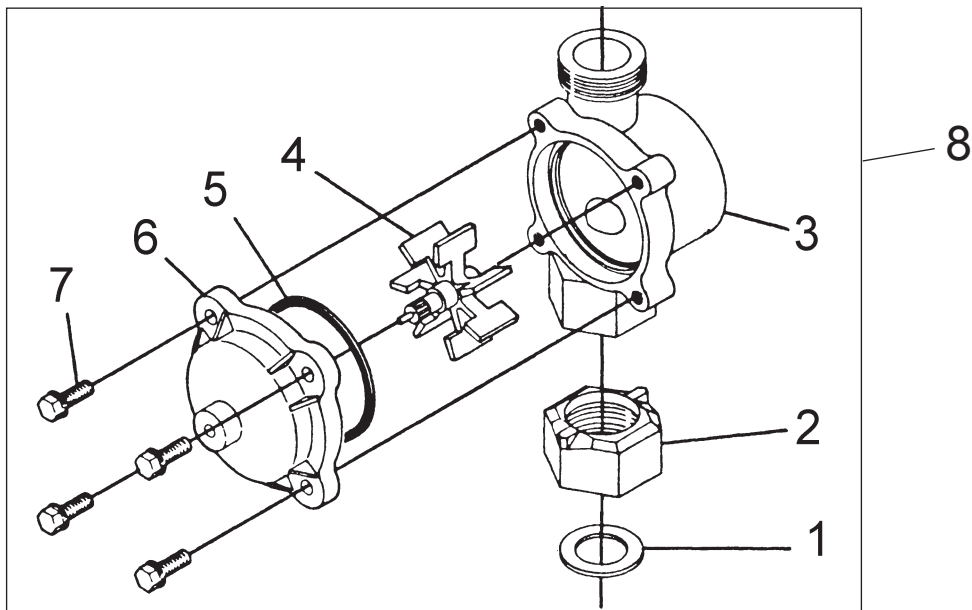
61671 Rev E

**Item No.    QTY    Part No.    Description**

1..... 60101-02..... Piston Conversion, No Seals, No  
Spacers, 2510 NHWBP 1600

2..... 60101-00..... Piston Kit, No Seals, No  
Spacers, 2510 NHWBP Filter

## METER ASSEMBLY



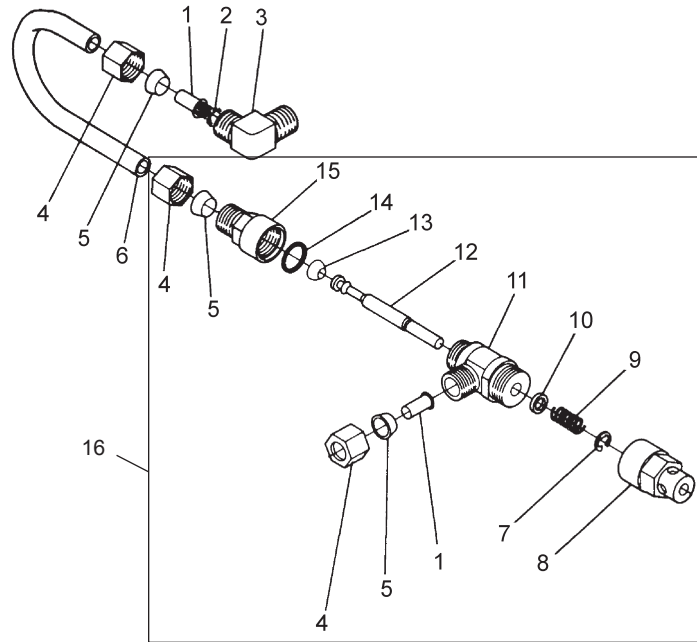
60397 Rev B

Item No.	QTY	Part No.	Description
1.....	1 .....	11206 .....	Gasket, Fitting
2.....	1 .....	11207 .....	Nut, Special, Quick Connect
3.....	1 .....	13906 .....	Body, Meter, 3/4"
4.....	1 .....	13509 .....	Impeller, Meter
5.....	1 .....	13847 .....	O-ring,-137, Std, Meter
6.....	1 .....	14038 .....	Meter Cap Assy, Std, Plastic
	1 .....	15218 .....	Meter Cap Assy, Std, Plastic, Brass Paddle
	1 .....	15150 .....	Meter Cap Assy, 3/4 to 2", Ext, Plastic Paddle
	1 .....	15237 .....	Meter Cap Assy, 3/4 to 2", Ext, Brass Paddle
7.....	4 .....	12473 .....	Screw, Hex Wsh, 10-24 X 5/8
8.....		60397 .....	Meter Assy, 3/4" Inline, NPT, STD, Brass, Paddlewheel
		60398 .....	Meter Assy, 3/4" Inline, NPT, EXT, Brass Paddlewheel

### Not Shown:

1 .....	11205 .....	Fitting, Tube Quick Connect
1 .....	13882 .....	Post, Meter Impeller

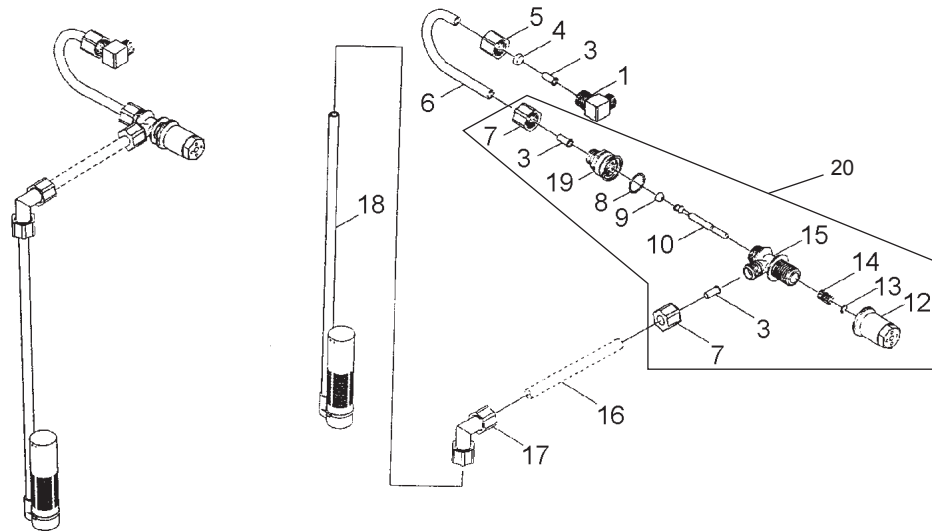
## 1600 BRINE SYSTEM ASSEMBLY



60029 Rev C

Item No.	QTY	Part No.	Description	Item No.	QTY	Part No.	Description
1.....	2 .....	10332.....	Fitting, Insert, 3/8	9.....	1 .....	10249.....	Spring, Brine Valve
2.....	1 .....	12767.....	Screen, Brine	10.....	1 .....	12550.....	Quad Ring, -009
3.....	1 .....	10328.....	Fitting, Elbow, 90 Deg. 1/4" PT x 3/8Tube	11.....	1 .....	12748.....	Brine Valve Body Assy, 1600 w/ Quad Ring
4.....	3 .....	10329.....	Fitting, Tube, 3/8 Nut, Brass	12.....	1 .....	12552-02.....	Brine Valve Stem, 1600, with Seat
5.....	3 .....	10330.....	Fitting, Sleeve, 3/8 Celcon	13.....	1 .....	12626.....	Seat, Brine Valve
6.....	1 .....	16508-01.....	Tube, Brine Valve, 2850/2900s	14.....	1 .....	11982 .....	O-ring, -016
	1 .....	12774.....	Tube, Brine Valve, 1500	15.....	1 .....	60020-25.....	BLFC, .25 GPM, 1600
	1 .....	40027 .....	Tube, Brine Valve, 2510, HWBP		1 .....	60020-50.....	BLFC, .50 GPM, 1600
	1 .....	14228.....	Tube, Brine Valve, 2510, NHHWP		1 .....	60020-100.....	BLFC, 1.0 GPM, 1600
	1 .....	15221-01.....	Tube, Brine Valve, 2750/2900	16.....	1 .....	60029-010.....	Brine Valve, 1600 Short Stem, 0.25 gpm
	1 .....	42184.....	Tube, Brine Valve, 2850s			60029-020.....	Brine Valve, 1600 Short Stem, 0.50 gpm
	1 .....	41683.....	Tube, Brine Valve, UF, 2900S 1600/1650			60029-030.....	Brine Valve, 1600 Short Stem, 1.00 gpm
7.....	1 .....	10250.....	Ring, Retaining				
8.....	1 .....	11749 .....	Guide, Brine Valve Stem				

## 1650 BRINE SYSTEM



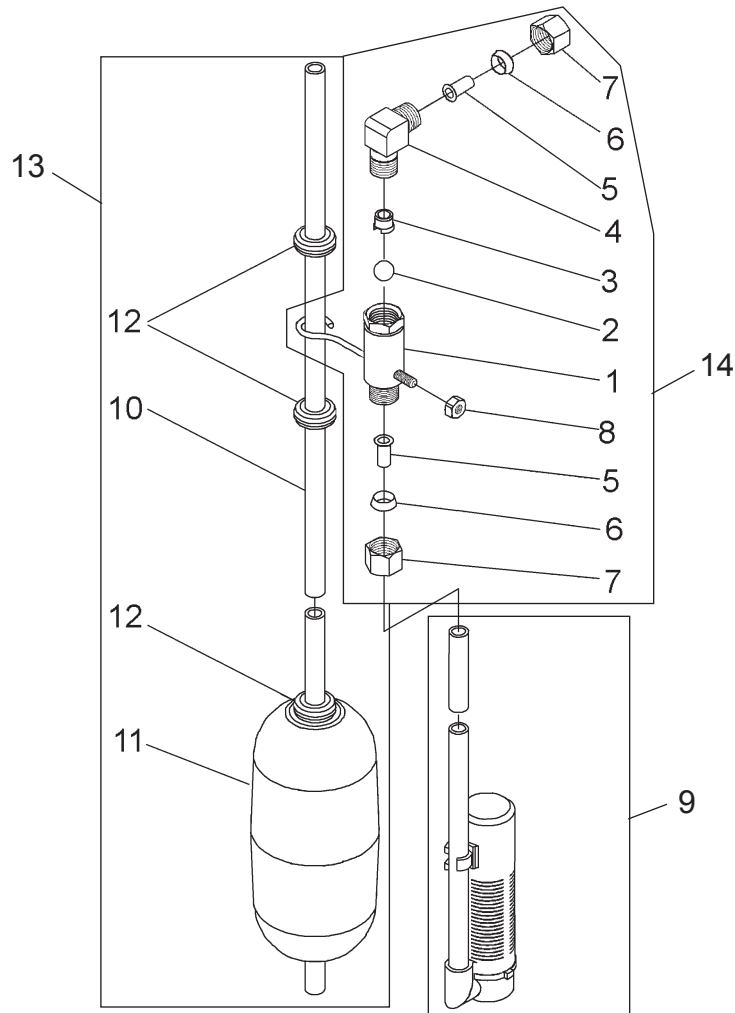
60011 Rev D

Item No.	QTY	Part No.	Description
1.....	1	10328	Elbow, 90 1/4 NPT x 3/8
3.....	3	10332	Insert, 3/8
4.....	1	10330	Sleeve, 3/8 Nut Brine
5.....	1	10329	Tube Fitting, 3/8 Nut Brine
6.....	1	16508-01	Tube, Brine Valve, 2850/2900s
	1	12774	Tube, Brine Valve, 1500
	1	40027	Tube, Brine Valve, 2510, HWBP
	1	14228	Tube, Brine Valve, 2510, NHWBP
	1	15221-01	Tube, Brine Valve, 2750/2900
	1	42184	Tube, Brine Valve, 2850s
	1	41683	Tube, Brine Valve, UF, 2900S 1600/1650
7.....	2	19625	Assy., GFN Nut
8.....	1	16924	O-ring, -018
9.....	1	12626	Seat, Brine Valve
10.....	1	12552	Brine Valve Stem, 1600
12.....	1	17906	Guide, Brine Valve Stem
13.....	1	10250	Retaining Ring
14.....	1	10249	Spring, Brine Valve
15.....	1	17884	Brine Valve Body Assy., Plastic
17.....	1	12794	Elbow, 3/8 Tube Poly, White
18.....	1	60002	#500 Air Check

Item No.	QTY	Part No.	Description
19.....		<b>60010-25 BLFC Assy. (Parts)</b>	
	1	17907	Housing
	1	12128	.25 GPM Label
	1	12094	.25 Flow Washer
	1	12098	Retainer
		<b>60010-50 BLFC Assy. (Parts)</b>	
	1	17907	Housing
	1	10759	.50 GPM Label
	1	12095	.50 Flow Washer
	1	12098	Retainer
		<b>60010-100 BLFC Assy. (Parts)</b>	
	1	17907	Housing
	1	10760	1.0 GPM Label
	1	12097	1.0 Flow Washer
	1	12098	Retainer
20.....		60011-010	Brine Valve, 1650, Short Stem, 0.25 gpm
		60011-020	Brine Valve, 1650, Short Stem, 0.50 gpm
		60011-030	Brine Valve, 1650, Short Stem, 1.00 gpm



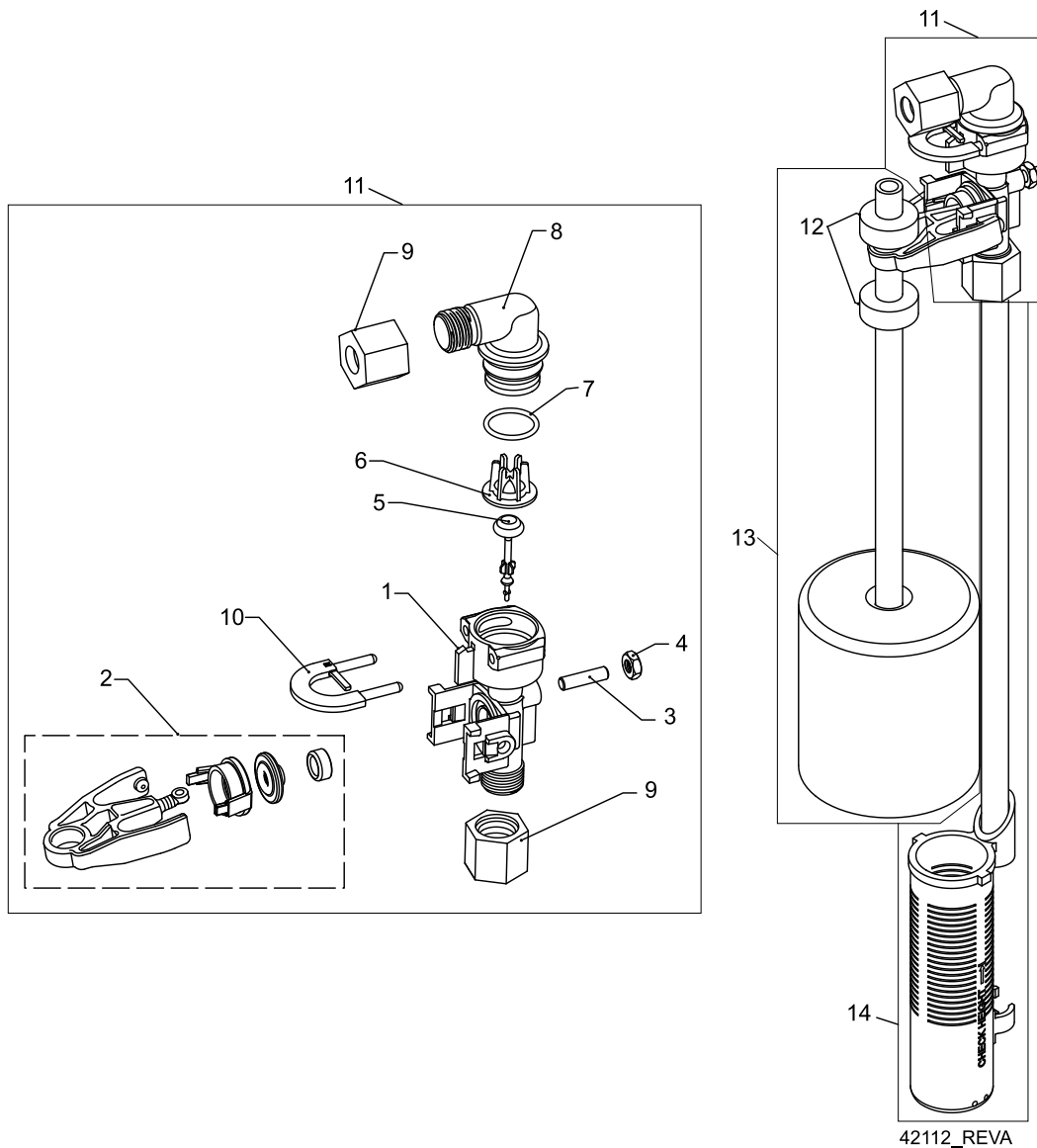
## 2300 SAFETY BRINE VALVE



60027 Rev D

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

## 2310 SAFETY BRINE VALVE



Item No.	QTY	Part No.	Description
1.....	1	19645.....	Body, Safety Brine Valve, 2310
2.....	1	19803.....	Safety Brine Valve Assy
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 Assy, 3/8" Plastic
10.....	1	18312.....	Retainer, Drain
11.....	1	60014.....	Safety Brine Valve Assy, 2310
12.....	2	10150.....	Grommet, .30 Dia
13.....	1	60068-8.06.....	Float Assy, 2310, w/8.06" Rod
		..... 60068-10.5.....	Float Assy, 2310, w/10.5" Rod
		..... 60068-11.5.....	Float Assy, 2310, w/11.5" Rod
		..... 60068-20.....	Float Assy, 2310, w/20" Rod
		..... 60068-30.....	Float Assy, 2310, w/30" Rod

Item No.	QTY	Part No.	Description
14.....	1	60002-10.....	Air Check, #500, American Hydro
		..... 60002-11.38.....	Air Check, #500, 11.38" Long
		..... 60002-24.....	Air Check, #500, 24" Long
		..... 60002-27.....	Air Check, #500, 27" Long
		..... 60002-32.....	Air Check, #500, 32" Long
		..... 60002-34.....	Air Check, #500, 34" Long
		..... 60002-36.....	Air Check, #500, 36" Long
		..... 60002-48.....	Air Check, #500, 48" Long
		..... 60002-26.25.....	Air Check, #500, 26.25" Long
		..... 60002-33.25.....	Air Check, #500, 33.25" Long

## SEAL & SPACER TOOLS & REPLACEMENT

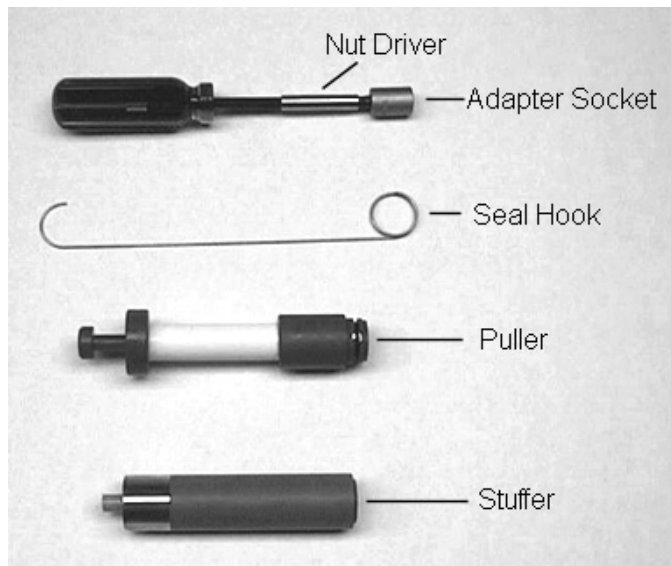


Figure 5

### Tools Used in the Seal and Spacer Replacement

Description	Part No.
Nut Driver .....	12664
Socket Adapter .....	16906
Socket 7/16" .....	12665
Seal Hook .....	12874
Puller .....	13061
Stuffer .....	11098

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

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

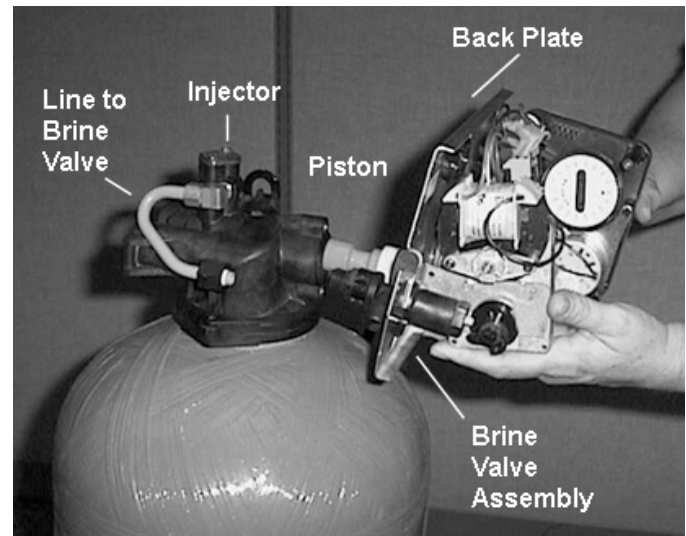


Figure 6

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

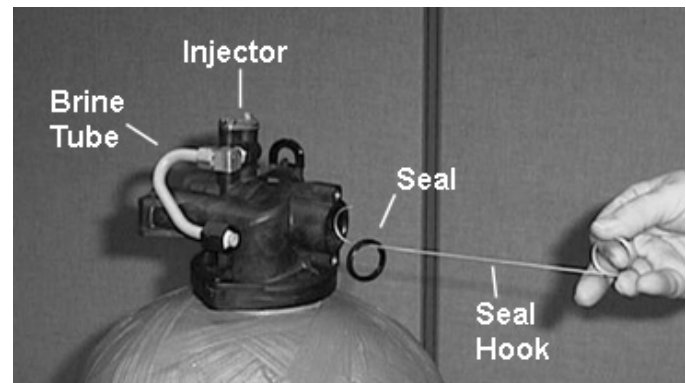


Figure 7

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

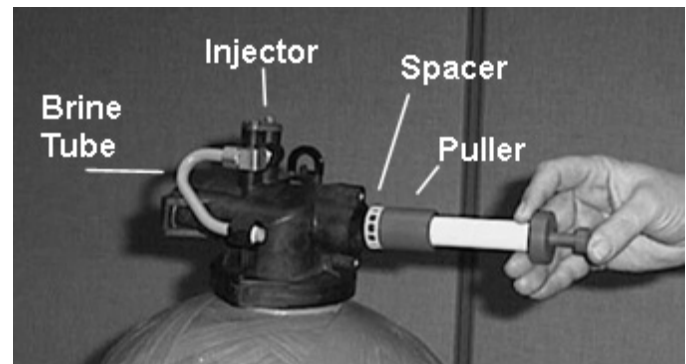


Figure 8

## SEAL & SPACER TOOLS & REPLACEMENT *continued*

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

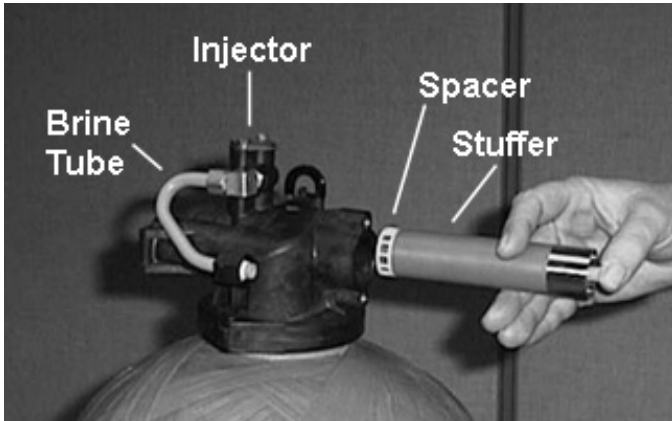


Figure 9

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

## GENERAL SERVICE HINTS FOR METER CONTROL

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**Problem:** Softener delivers hard water

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

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

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

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

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

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

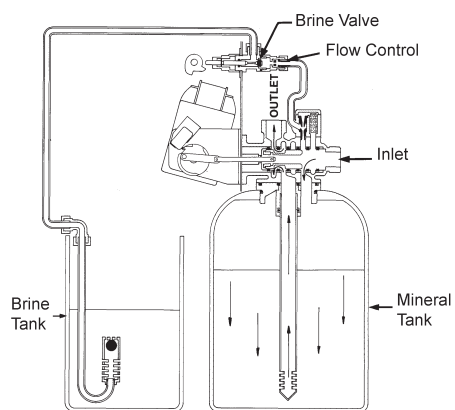
## TROUBLESHOOTING

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

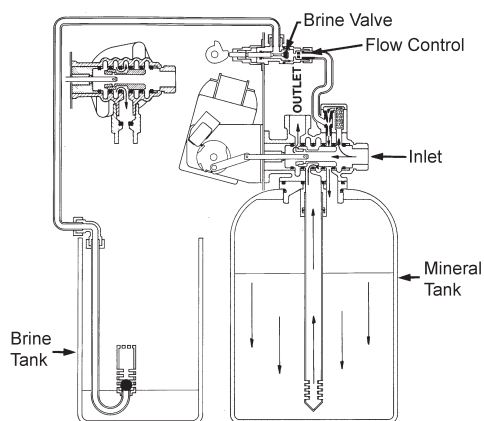


# WATER CONDITIONER FLOW DIAGRAMS

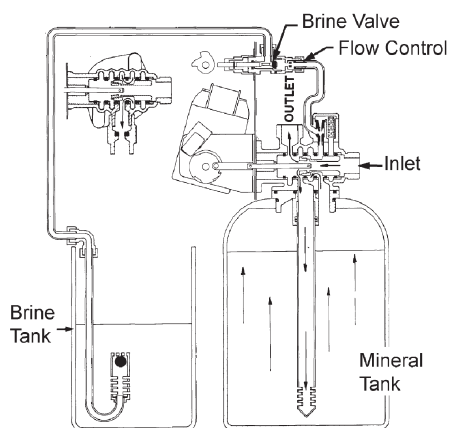
**Service Position**



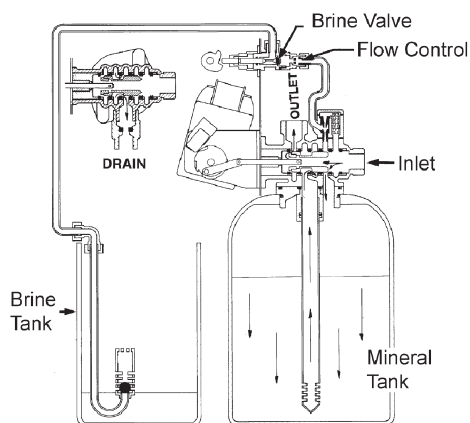
**Slow Rinse Position**



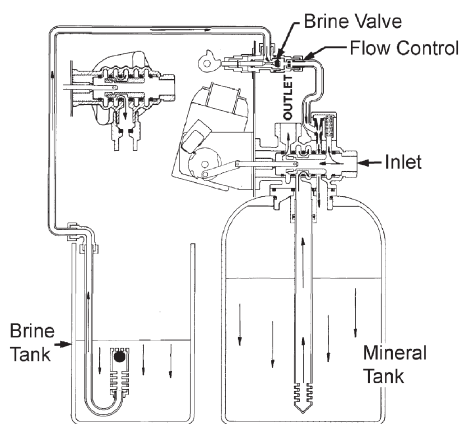
**Backwash Position**



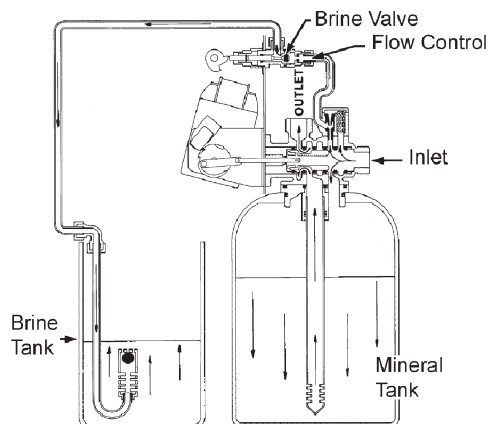
**Rapid Rinse**



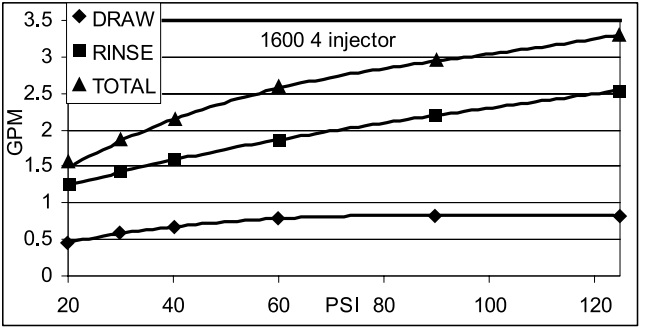
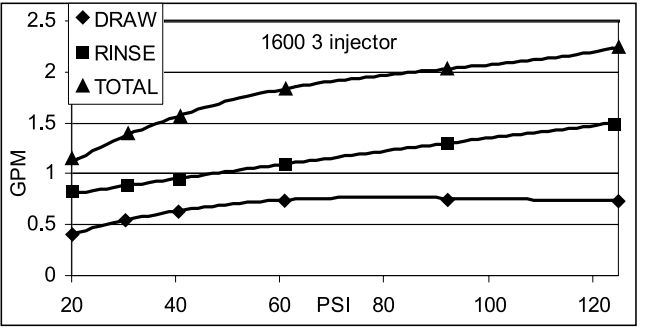
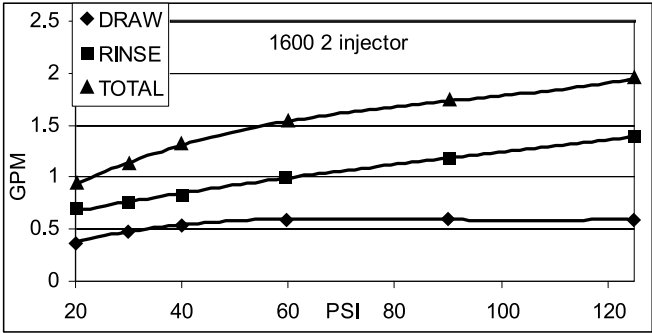
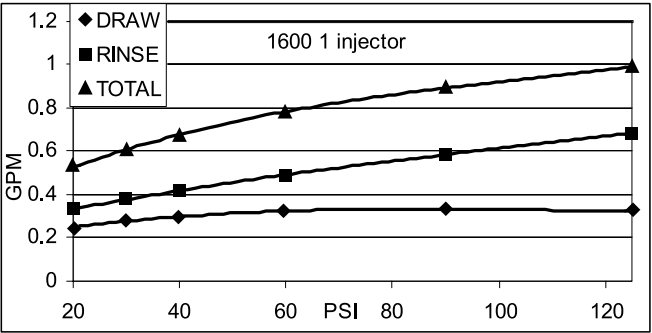
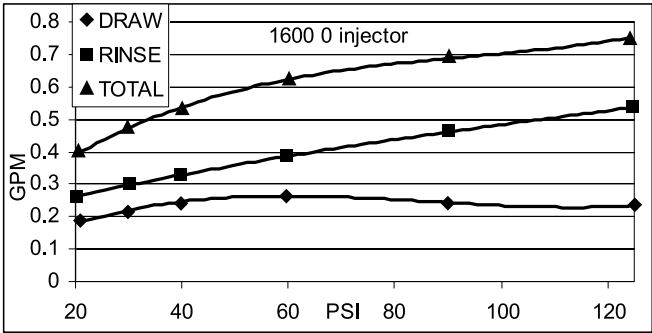
**Brine Position**



**Brine Tank Fill Position**

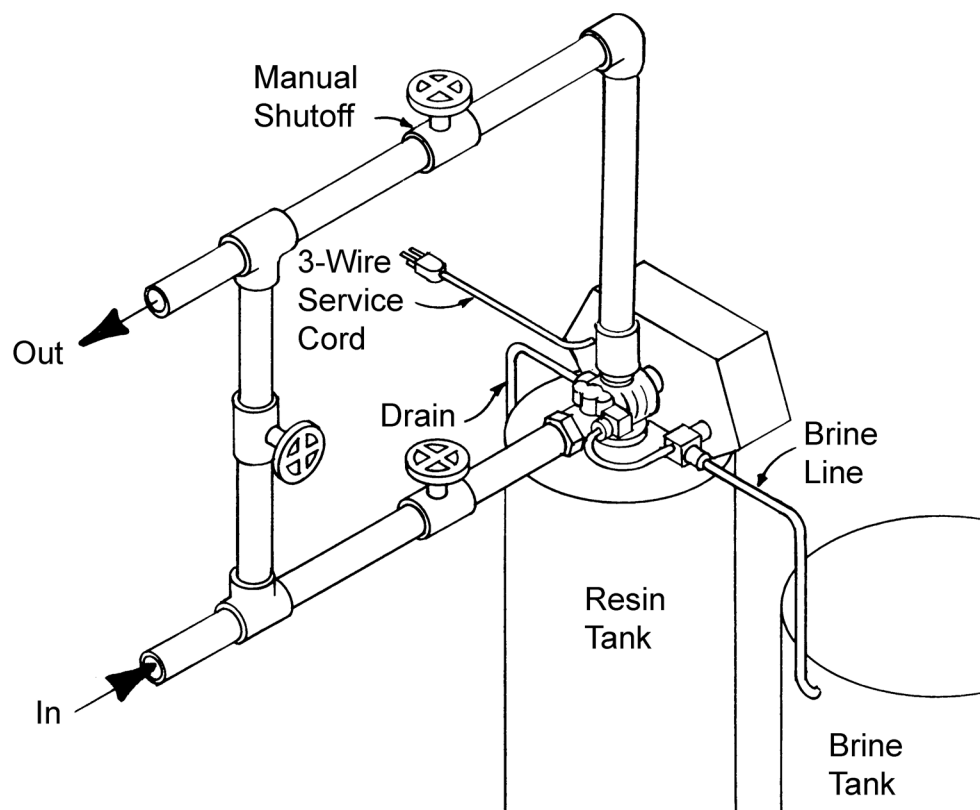


**FLOW DATA & INJECTOR DRAW RATES**



TR20391 Rev A

# PLUMBING DIAGRAM: TYPICAL TOP MOUNTING INSTALLATION

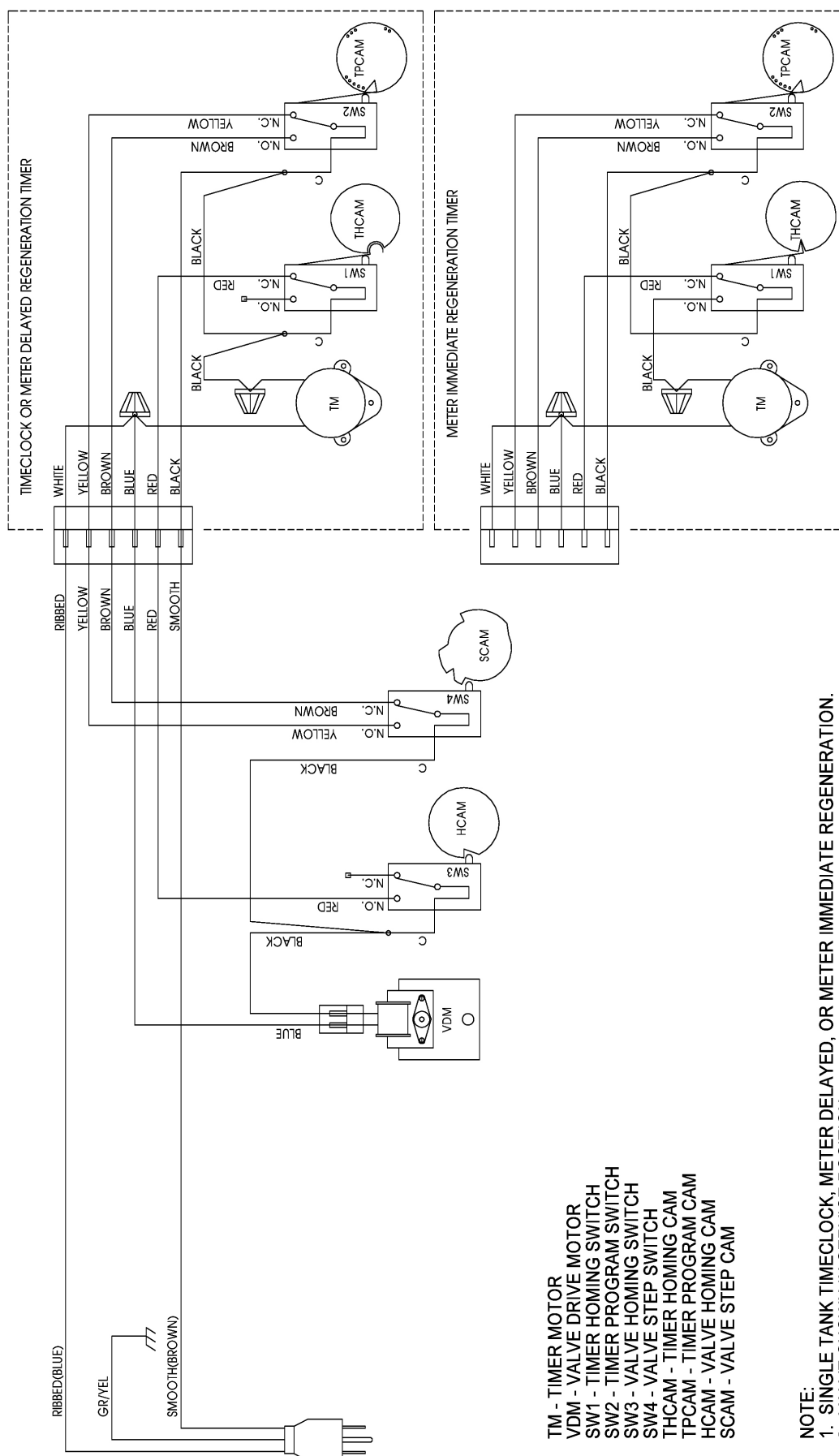


Typical Control Valve Information					
Tank Size Dia	Injector	Slow Rinse Rate (GPM) @ 40 PSI	Brine Draw Rate (SPM) @ 40 PSI	BLFC <sup>1</sup>	DLFC <sup>2</sup>
6"	#0 Red	.31 GPM	.28 GPM	.5 GPM	1.2 GPM
7"	#0 Red	.31 GPM	.28 GPM	.5 GPM	1.2 GPM
8"	#1 White	.45 GPM	.38 GPM	.5 GPM	1.5 GPM
9"	#1 White	.45 GPM	.38 GPM	.5 GPM	2.0 GPM
10"	#1 White	.45 GPM	.38 GPM	.5 GPM	2.4 GPM
12"	#2 Blue	.84 GPM	.56 GPM	1.0 GPM	3.5 GPM
13"	#2 Blue	.84 GPM	.56 GPM	1.0 GPM	4.0 GPM
14"	#3 Yellow	1.0 GPM	.63 GPM	1.0 GPM	5.0 GPM
16"	#3 Yellow	1.0 GPM	.63 GPM	1.0 GPM	7.0 GPM

**NOTE:** Due to varying water conditions, tank sizes, and water pressures, the above settings should only be used as a guideline.

<sup>1</sup>BLFC (Brine Line Flow Control) refill rate for filling brine tank  
<sup>2</sup>DLFC (Drain Line Flow Control) backwash and rapid rinse flow rates

## WIRING DIAGRAM



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

19201 Rev C

## SERVICE ASSEMBLIES

### 24 Hour Gear

40096-02 .....	Dial 2AM Regen Assy, Black
40096-24 .....	Dial 12AM Regen Assy, Black
60519-02 .....	Gear Assy, 3200, 24 Hour 2 Times/Day
60519-03 .....	Gear Assy, 3200, 24 Hour 3 Times/Day
60519-04 .....	Gear Assy, 3200, 24 Hour 4 Times/Day
60519-06 .....	Gear Assy, 3200, 24 Hour (12:00) 6 Times/Day

### BLFC (Brine Line Flow Controls):

60020-25 .....	BLFC .25 GPM
60020-50 .....	BLFC .50 GPM
60020-100 .....	BLFC 1.0 GPM
60010-50 .....	BLFC, 1650, .50 GPM, Plastic
60010-100 .....	BLFC, 1650, 1.0 GPM, Plastic

### Brine Valves:

10249 .....	Brine Valve Spring
10250 .....	Retaining Ring
10329 .....	3/8" Brass Nut
10330 .....	3/8" Ferrule
10332 .....	3/8" Sleeve
11749 .....	B/V Stem Guide
11982 .....	O-ring Brine Valve
12552 .....	1600 Brine Valve Stem
12626 .....	Shut-Off Valve Seat
12748 .....	Brine Valve Body
12550 .....	Quad Ring
60011-010 .....	Brine Valve, 1650, Short Stem, .25 GPM, Less Tube
60011-030 .....	Brine Valve, 1650, Short Stem, 1.0 GPM, Less Tube
60029-010 .....	Brine Valve, 1600, Short Stem, .25 GPM
60029-010 .....	Brine Valve, 1600, Short Stem, .50 GPM
60029-030 .....	Brine Valve, 1600, Short Stem, 1.0 GPM

### Cams:

12777 .....	Cam, Shut-Off Valve
60160-15 .....	Drive Cam Assy, STF, Blue

### Drain Line Flow Controls (DLFC):

60704-00 .....	DLFC, Brass, Blank
60704-06 .....	DLFC, Brass, .60 GPM
60704-08 .....	DLFC, Brass, .80 GPM
60704-10 .....	DLFC, Brass, 1.0 GPM
60704-12 .....	DLFC, Brass, 1.2 GPM
60704-13 .....	DLFC, Brass, 1.3 GPM
60704-15 .....	DLFC, Brass, 1.5 GPM
60704-17 .....	DLFC, Brass, 1.7 GPM
60704-20 .....	DLFC, Brass, 2.0 GPM
60704-24 .....	DLFC, Brass, 2.4 GPM
60704-30 .....	DLFC, Brass, 3.0 GPM
60704-35 .....	DLFC, Brass, 3.5 GPM
60704-40 .....	DLFC, Brass, 4.0 GPM
60704-45 .....	DLFC, Brass, 4.5 GPM
60704-50 .....	DLFC, Brass, 5.0 GPM
60704-60 .....	DLFC, Brass, 6.0 GPM
60704-70 .....	DLFC, Brass, 7.0 GPM
60705-00 .....	DLFC, Plastic, Blank
60705-06 .....	DLFC, Plastic, .60 GPM
60705-08 .....	DLFC, Plastic, .80 GPM
60705-10 .....	DLFC, Plastic, 1.0 GPM
60705-12 .....	DLFC, Plastic, 1.2 GPM
60705-13 .....	DLFC, Plastic, 1.3 GPM
60705-15 .....	DLFC, Plastic, 1.5 GPM
60705-17 .....	DLFC, Plastic, 1.7 GPM
60705-20 .....	DLFC, Plastic, 2.0 GPM
60705-24 .....	DLFC, Plastic, 2.4 GPM
60705-30 .....	DLFC, Plastic, 3.0 GPM
60705-35 .....	DLFC, Plastic, 3.5 GPM
60705-40 .....	DLFC, Plastic, 4.0 GPM
60705-45 .....	DLFC, Plastic, 4.5 GPM
60705-50 .....	DLFC, Plastic, 5.0 GPM
60705-60 .....	DLFC, Plastic, 6.0 GPM
60705-70 .....	DLFC, Plastic, 7.0 GPM

### Drives:

60050-21 .....	2750 Drive Assy, STF 120V
10218 .....	Micro Switch
10338 .....	Pin, Roll 3/32 x 7/8
41543 .....	Motor Drive, 115V, 50/60HZ
40400 .....	Harness, Drive, Designer/Environmental
14923 .....	Screw, Pan HD Mach 4-40 x 1
17904 .....	Bushing, Heyco 1/2
12777 .....	Cam, Shut-off Valve

### Injectors:

60480-XX .....	1600 Injector Assembly
10227 .....	Injector Screen
11893 .....	Injector Cap
10229 .....	Injector Cover Gasket
10328 .....	90° Elbow 1/4" NPT x 3/8 Tube
10692 .....	Screw
10913 .....	Injector Nozzle
10914 .....	Injector Throat
11475 .....	Injector Body Gasket
16221 .....	Disperser, Air
17776 .....	Injector Body



## **SERVICE ASSEMBLIES *continued***

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### **Meters:**

60387.....	Meter Assy, 3/4" InIn, NPSM/BSP, Ext, Brs Bdy, Pdl
60397.....	Meter Assy, 3/4" InIn, NPT, Std Brass Body, Paddle
60398.....	Meter Assy, 3/4" InIn, NPT, Ext Brass Body, Paddle

### **Pistons:**

61670-00 .....	Piston Assy w/Seal & Spacer Kit, 2510 Piston, 1500
61670-01 .....	Piston Assy w/Seal & Spacer Kit 2510 Piston, NHWBP, 1500
60091-HF.....	Piston Assy, 2750, Hot Water

### **Program Wheels:**

60405-10 .....	Program Wheel w/3/4" Std Label Set @ 21
60405-15 .....	Program Wheel w/3/4" Std Label w/People Label Set @ 21

### **Sales & Service Aids:**

15856.....	Literature, 1500, S/Manual
40728.....	Literature, 1500, Spec Sheet

### **Seal & Spacers:**

60121.....	Seal and Spacer Kit
60122.....	Seal and Spacer Kit, Hot Water
10545.....	Seal, Piston, Hot Water
10757B .....	End Spacer, Hot Water
16589.....	Spacer, Hot Water

### **Skipper Wheels:**

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





