V·TROL
ELECTRONIC AND MANUAL VALVES

Vtrol V31 Flow Timer & Meter Control Valve (3150)



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MADE IN THE USA

ECO FRIENDLY

Eagle Redox Alloy® Filtration Media Technology

CERTIFIED ISO 9001:2015 COMPANY

V·TROL
ELECTRONIC AND MANUAL VALVES

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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. 3,750 to 63,750 gallon meter or
18,750 to 318,750 gallon meter or
Other _____
C. Meter Wiring Package
1) System #4 - 1 tank; 1 meter; immediate or delayed regeneration
2) System #5 - 2 tanks; 2 meters; interlock
3) System #6 - 2 tanks; 1 meter; series regeneration
4) System #7 - 2 tanks; 1 meter; alternator

2. Timer Program Settings:

A. Backwash: _____Minutes
B. Brine and Slow Rinse: _____Minutes
C. Rapid Rinse: _____Minutes
D. Brine Tank Refill: _____Minutes

3. Drain Line Flow Control: _____gpm
4. Brine Line Flow Controller: _____gpm
5. Injector Size#: _____
6. Service Valve Operation Units (SVO)
Size of Service Valve _____

CALIFORNIA PROPOSITION 65 WARNING

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

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GENERAL COMMERCIAL PRE-INSTALLATION CHECK LIST

Water Pressure
A minimum of 25 pounds of water pressure is required for regeneration valve to operate effectively.

Electrical Facilities
A continuous 115 volt, 60 Hertz current supply is required. (Other voltages available.) Make certain the current supply is always hot and cannot be turned off with another switch.

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.

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

CAUTION: WATER PRESSURE IS NOT TO EXCEED 120 PSI, WATER TEMPERATURE IS NOT TO EXCEED 110°F, AND THE UNIT CANNOT BE SUBJECTED TO FREEZING CONDITIONS.

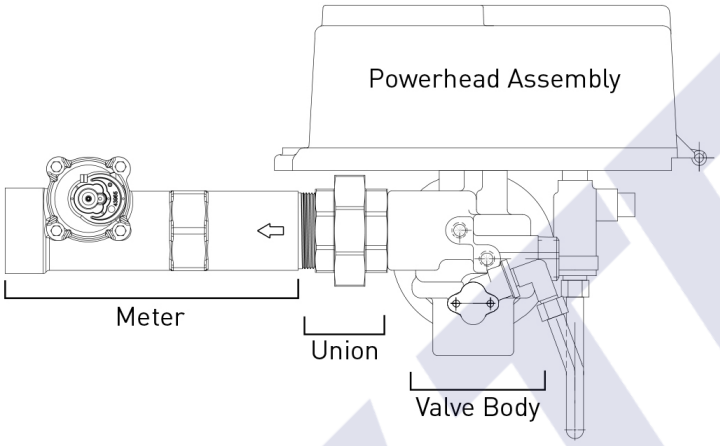
INSTALLATION INSTRUCTIONS

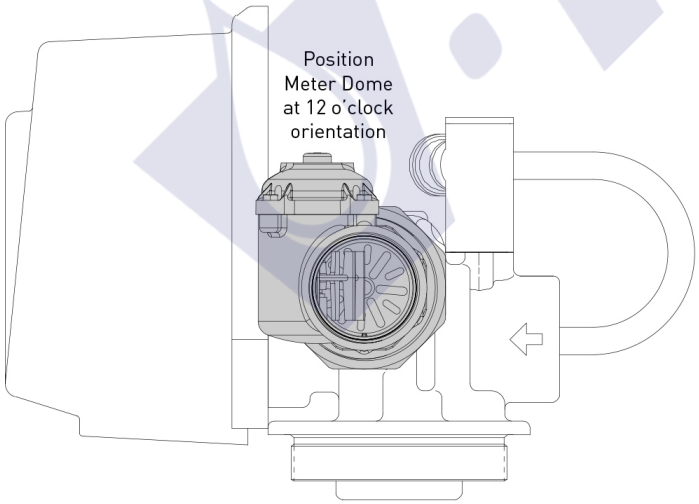
1. Place the softener tank where you want to install the unit making sure the unit is level and on a firm base. (Maximum 7 feet apart for twin units.)
2. All plumbing should be done in accordance with local plumbing codes. The pipe size for the drain line should be the same size as the drain line flow control connection. Water meters are to be installed on soft water outlets. Twi units with (1) one meter shall be installed on common soft water outlet of units.
3. **IMPORTANT:** For valves equipped with electromechanical timers and stainless steel meters, refer to the Meter Dome and Union Orientation section.
4. Make sure that the floor is clean beneath the salt storage tank and that it is level.
5. Place approximately 1 inch of water above the grid plate (if used) in your salt tank. Salt may be placed in the unit at this time.
6. 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.
7. Place the by-pass in service position.
8. Manually index the softener control into “service” position and let water flow into the mineral tank. When water flow stops, close inlet valve, place control in “brine and rinse” position to relieve head of air, then gradually open inlet valve to purge remaining air in tank Return control to “service” position.
9. Electrical: All electrical connections must be connected according to codes. Use electrical conduit if applicable. Plug into power supply.

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.

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.

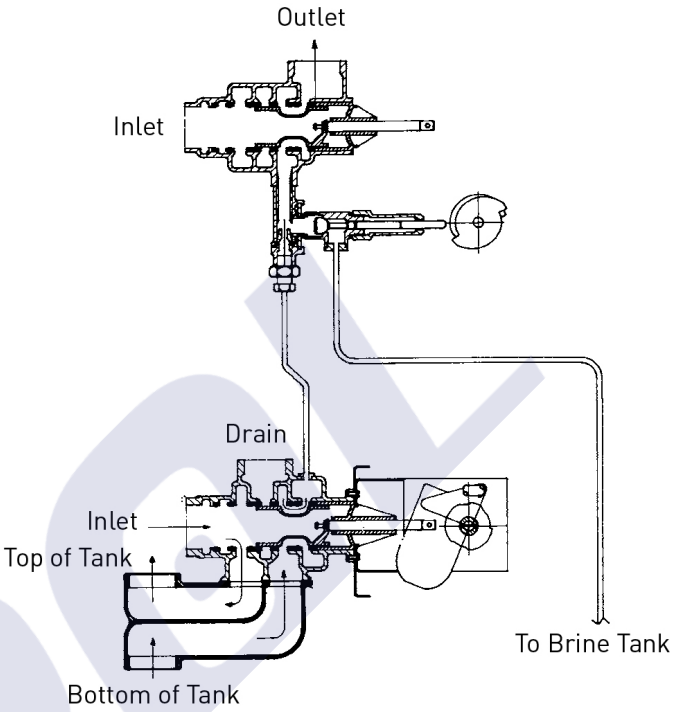
1. Apply a suitable thread sealant to the male threads of the union and meter body.
2. Thread the union into the OUTLET port of the control valve, then thread the meter into the union. See illustrations below.
3. Rotate the water meter body so the meter dome is at the 12 o'clock position. Loosen the 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.





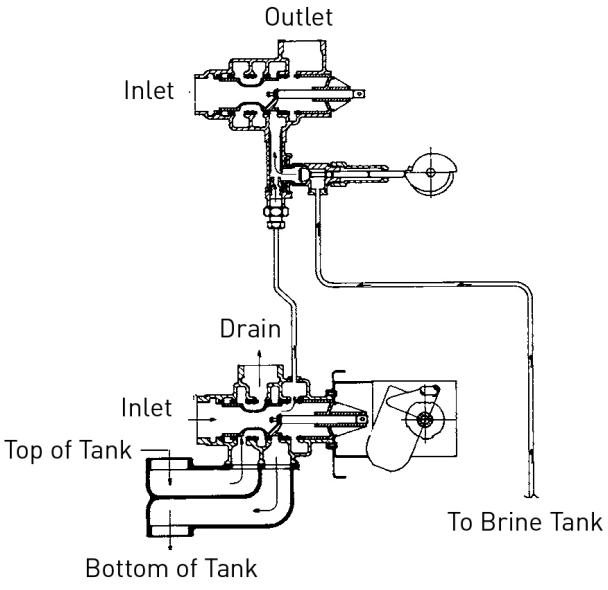
WATER CONDITIONER FLOW DIAGRAMS

1. Service Position



Hard water enters at valve inlet - flows through valve to the top of tank - down through mineral to the bottom distributor. Conditioned water flows to the valve, around the piston and out the outlet.

2. Brine And Slow Rinse Position

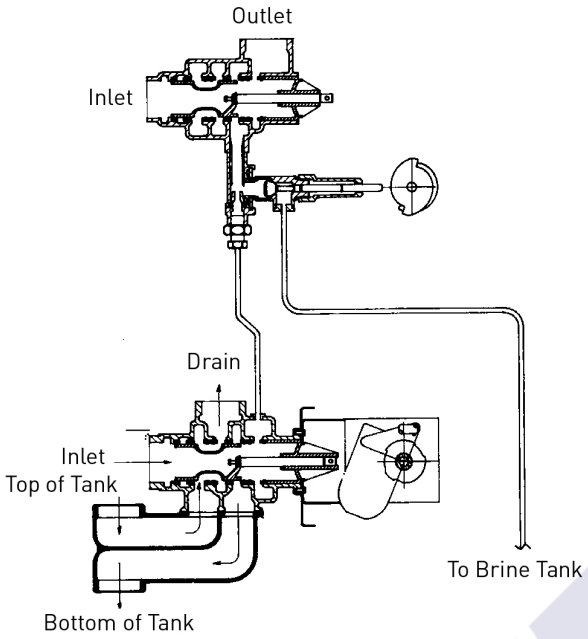


Hard water enters at valve inlet - flows through the piston to the injector nozzle and throat to draw brine from the brine tank - brine flows through valve to the bottom of tank - up through

WATER CONDITIONER FLOW DIAGRAMS *CONTINUED*

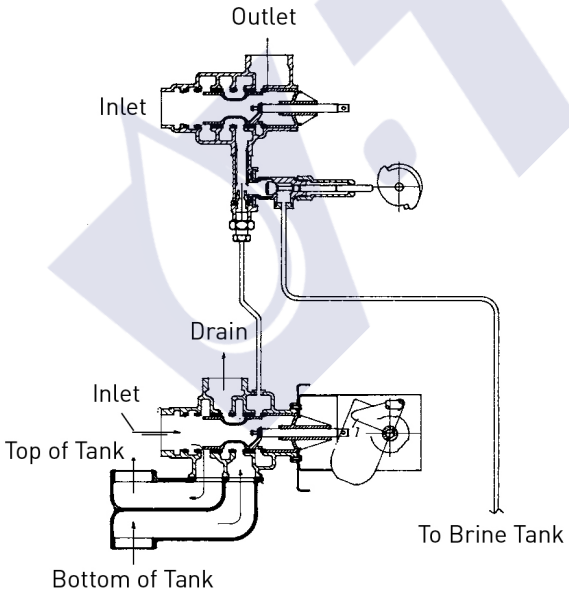
mineral to top of tank, around the piston and out the drain. Flow through injectors continues for slow rinse for remainder of cycle. Hard water is also available at valve outlet.

3. Backwash Position



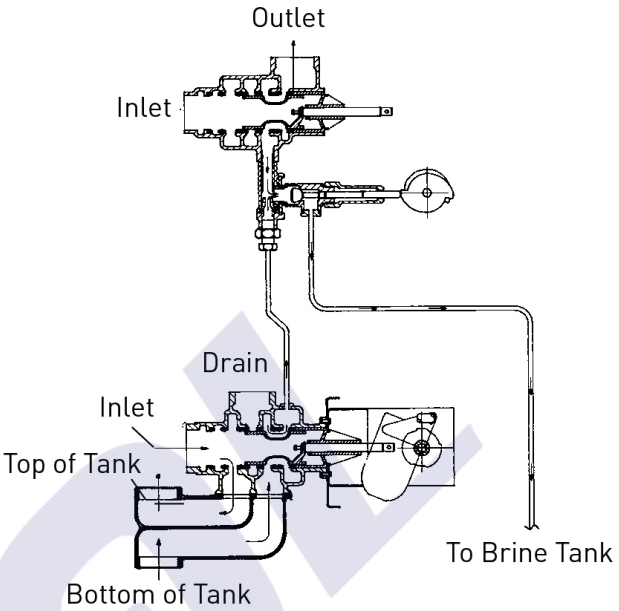
Hard water enters at valve inlet - flows through piston to the bottom of tank - up through mineral to top of tank, around the piston and out the drain. Hard water is also available at valve outlet.

4. Rapid Rinse Position



Hard water enters at valve inlet - flows through valve to the top bottom of tank - down through mineral to bottom distributor - back to top of tank, around the piston and out the drain. Hard water is also available at valve outlet.

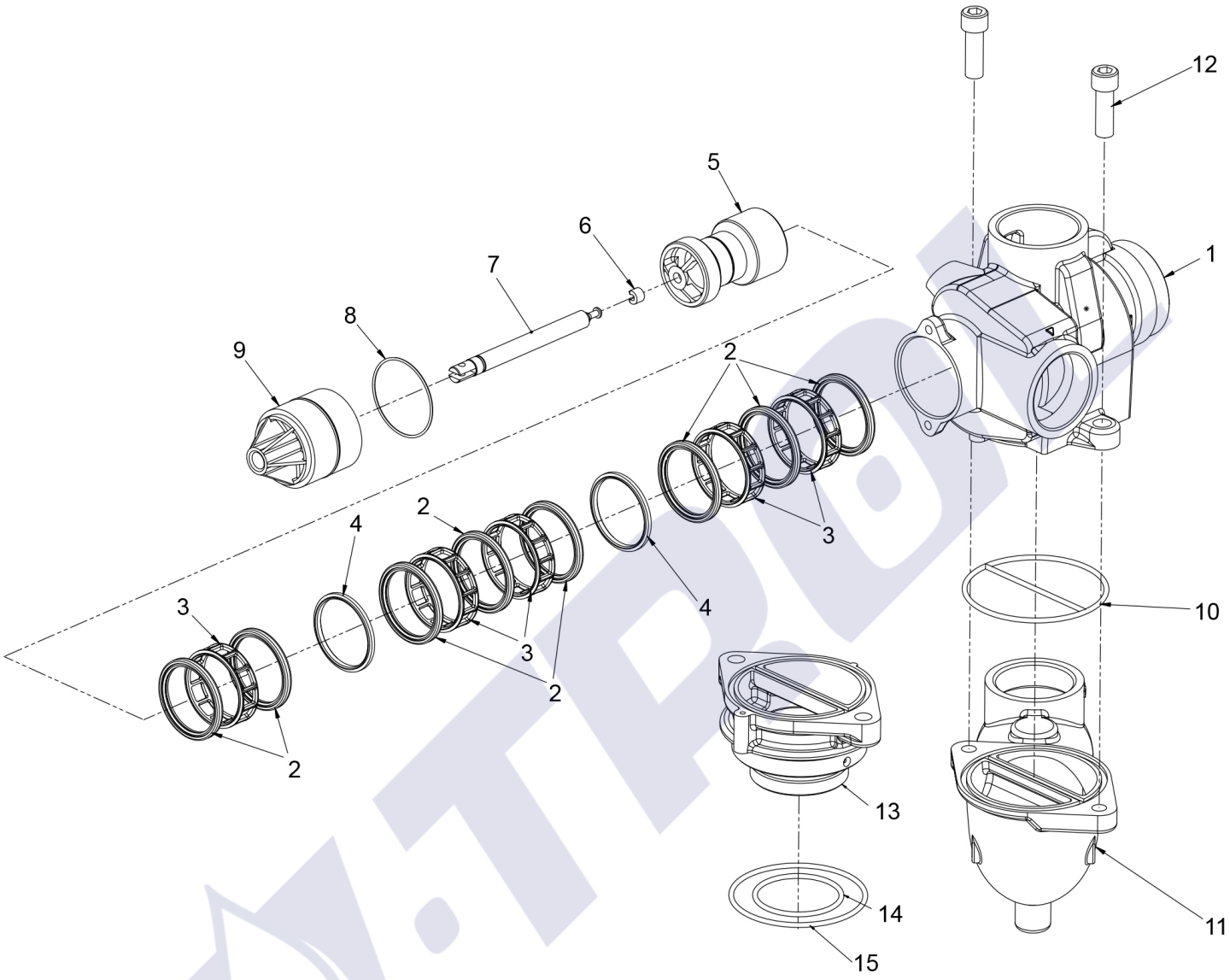
5. Brine Tank Refill Position



Hard water enters at valve inlet - flows through valve to the top of tank - down through mineral to the bottom distributor. Conditioned water flows up to valve outlet and through the throat and nozzle to fill brine tank.

V·TROL
ELECTRONIC AND MANUAL VALVES

CONTROL VALVE



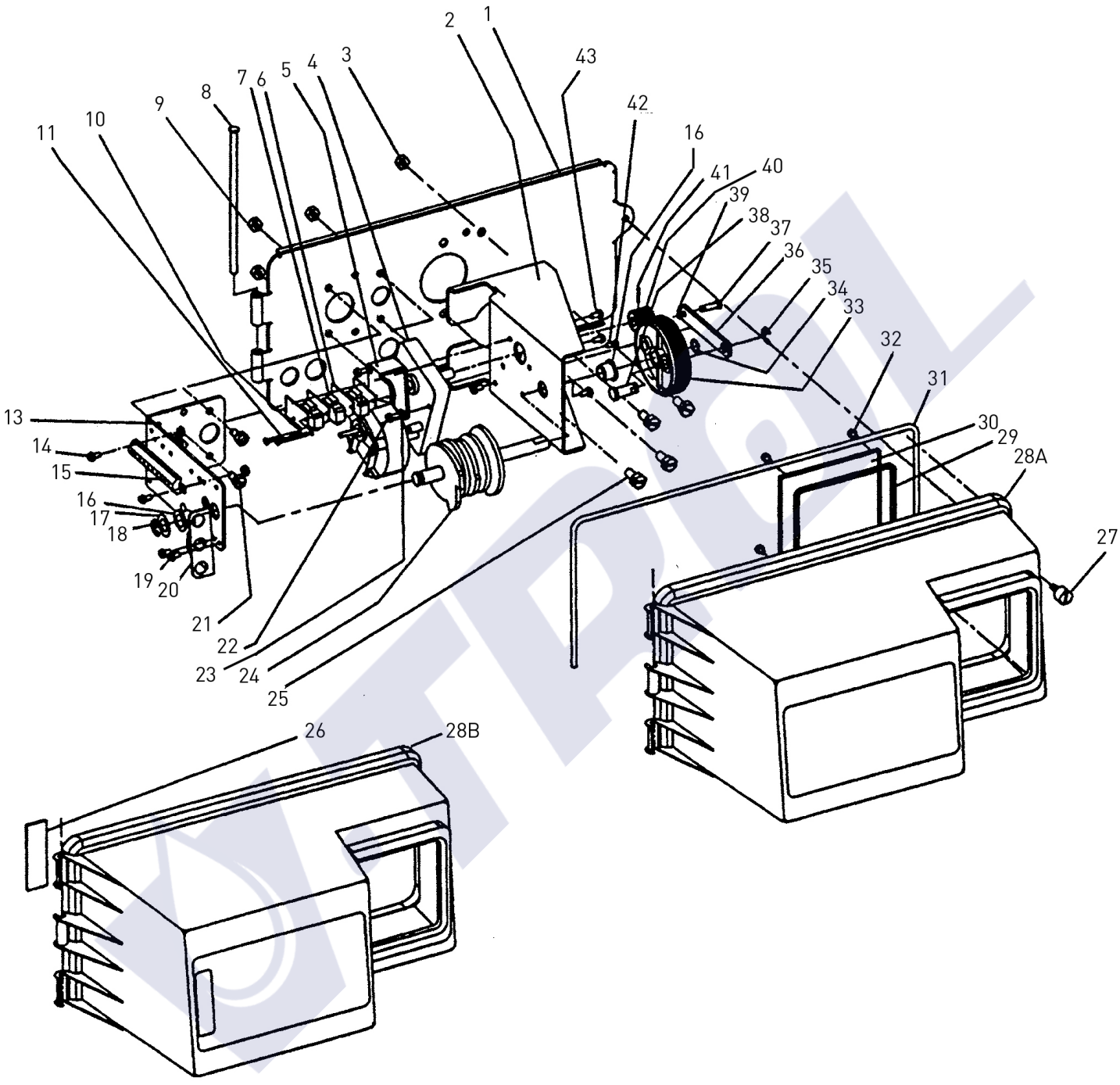
Item No.	QTY	Part No.	Description
1	1	15114	Valve Body
		15114-30NP	Valve Body, Bsp, Nickel Plated
2	8	11720	Seal
3	5	10369	Spacer - Port
4	2	10368	Spacer
5	1	16337	Piston
6	1	14818	Clip - Piston Rod
7	1	15125	Piston Rod
8	1	14922	O-ring - 035
9	1	16398-21	End Plug Assembly
10	1	15112	Seal

Item No.	QTY	Part No.	Description
11	1	17407	Adapter - Side Mount
12	2	16042	Screw - Hex Hd.
		17122	Metric

Options

13	1	15117-01	Adapter - Top Mount 4 inch-8 Th'd.
14	1	15247	O-ring - 229 (Dist.)
15	1	13575	O-ring - 240 (Tank)
	1	15210	O-ring (Park Tank)
	1	19608-20	Disperser (Not shown)

CONTROL DRIVE ASSEMBLY



CONTROL DRIVE ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description
1	1	19304-00	Back Plate -01, -02
2	1	15120-01	Bracket - Motor Mounting
3	2	16346	Nut - 5/16-18
4	1	16044	Drive Motor -115 V. 60 Hz.
		16500	Drive Motor -220 V.50 Hz.
		16501	Drive Motor - 24 V. 60 Hz.
5	1	17797	Bracket - Switch Mounting
6	4	10302	Insulator - Switch
7	3	10218	Switch
8	1	17845-03	Pin, Hinge
9	4	11235	Nut, 1/4-20
10	2	13365	Lockwasher
11	2	12624	Screw - Pan Hd.
13	1	16053	Bracket - Brine Side
14	2	40133	Screw - Round Hd.
15	1	15226	Terminal Block
16	2	16052	Bushing
17	1	16059	Washer
18	1	16051	Retaining Ring - Bowed "E"
•19	2	10300	Screw - Hex Hd. Thread Cutting
•20	1	19317	Light Bracket
21	4	10231	Screw - Hex Hd.
22	2	17567	Screw - Hex Hd.
23	2	12288	Washer, Lock, #8 Internal
24	1	16494-06	Cam Assembly - Service After RR
1		16494-04	Cam Assembly - Service After Brine Refill
25	4	11224	Screw - Hex Hd.
•26	1	19319	Lamp Window
27	1	18744	Screw
28A	1	19277-020	Cover, Black
•28B	1	19277-021	Cover, Lamp Window
29	1	18615-02	Seal, Window
30	1	18745	Window
31	1	18716-03	Seal, Cover
32	4	19203	Screw
33	1	16046	Drive Gear
34	1	16050	Retaining Ring
35	1	11774	Retaining Ring "E"
36	1	16047	Drive Link
37	1	11709	Pin - Drive Link
38	1	16048	Bearing - Drive Link
39	1	11898	Clip
40	1	16045	Drive Pinion
41	1	11381	Roll Pin
42	1	11080	Screw - Flat Hd.
43	3	10872	Screw - Hex Hd.

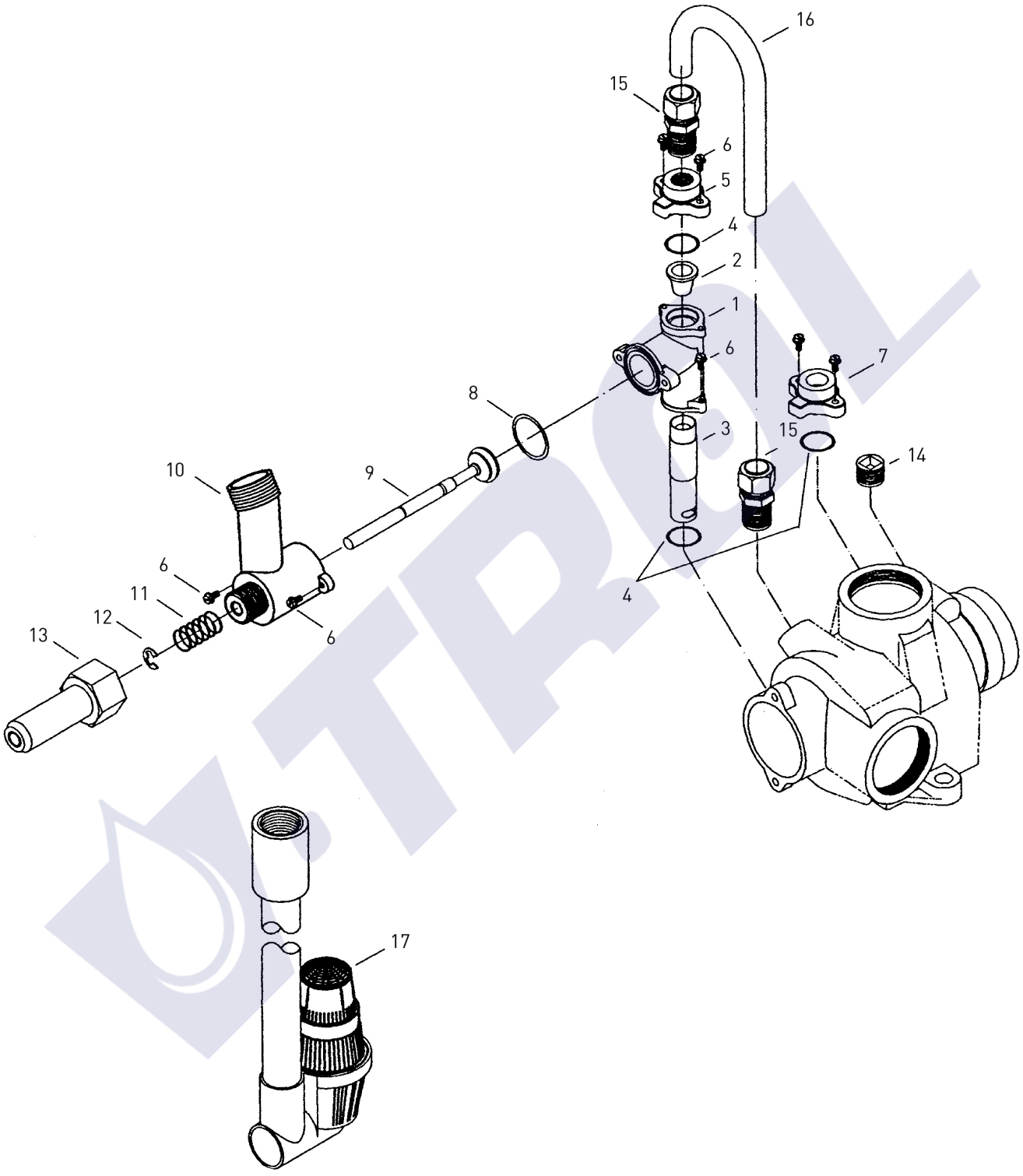
Specify number of terminals

• Optional Parts for Lamp Package

Not Shown

QTY	Part No.	Description
1		Timer - [3000, 3200, 3210, 3200E, 3200T]
1	12287	7 ft. Power Cord
	12287-12	12 ft. Power Cord
	19713	230V US Power Cord
1	17967	Strain Relief
1	16430	Harness
1	19691	Hole Plug - 3/4 Dia.
1	19591	Hole Plug - 7/8 Dia.
1	16427-04	Motor Lead Wire
1	16384	Wire Harness
1	14924	Strain Relief
1	15513	Meter Cable, 17.5 inch long, 2 inch Brass Meter
1	17744	Meter Cable, 20.75 inch long, 2 inch Stainless Steel Meter
2	15250	Label - Terminal Strip
1	17470	Cable Guide Assembly, 2850/3150

1800 SERIES BRINE SYSTEM ASSEMBLY



1800 SERIES BRINE SYSTEM ASSEMBLY
CONTINUED

Item No.	QTY	Part No.	Description
1		16340-01	Injector Body
2	1	15128	Injector Nozzle
3	1	15127	Injector Throat
4	3	15246	O-ring -116
5	1	16341-01	Injector Cover
6	6	12473	Screw - Hex Hd.
7	1	16341-02	Cover
8	1	16605	Retainer Plate
9	2	13303	O-ring - 021
10	1	16596	Nut - Q.C.
11	1	16203-01	Connector - Brine Valve
12	1	16497	Brine Stem
13	1	15241	Brine Valve Body
14	1	11772	Spring
15	1	11774	Retaining Ring
16	1	16498-01	Stem Guide Assembly
17	1	11912	Fitting - Brine Line

Not Shown

1	11183	O-ring - 017
1	11180	Screw - Round Hd.
1	16387	Pipe Plug - 1/2 NPT
2	16388	Tube Fitting - Straight
1	16491	Brine Tube - Not Shown
1	60007	Commercial Air Check
1		Flow Control - Specify Flow Rate Specify size

Option Without Brine Valve

1	16620	Fitting - Brine Tank
2	10231	Screw - Brine Side Bracket
2	11235	Nut - Brine Side Bracket
1	13303	O-ring - 021
		Delete: Items 9 through 19

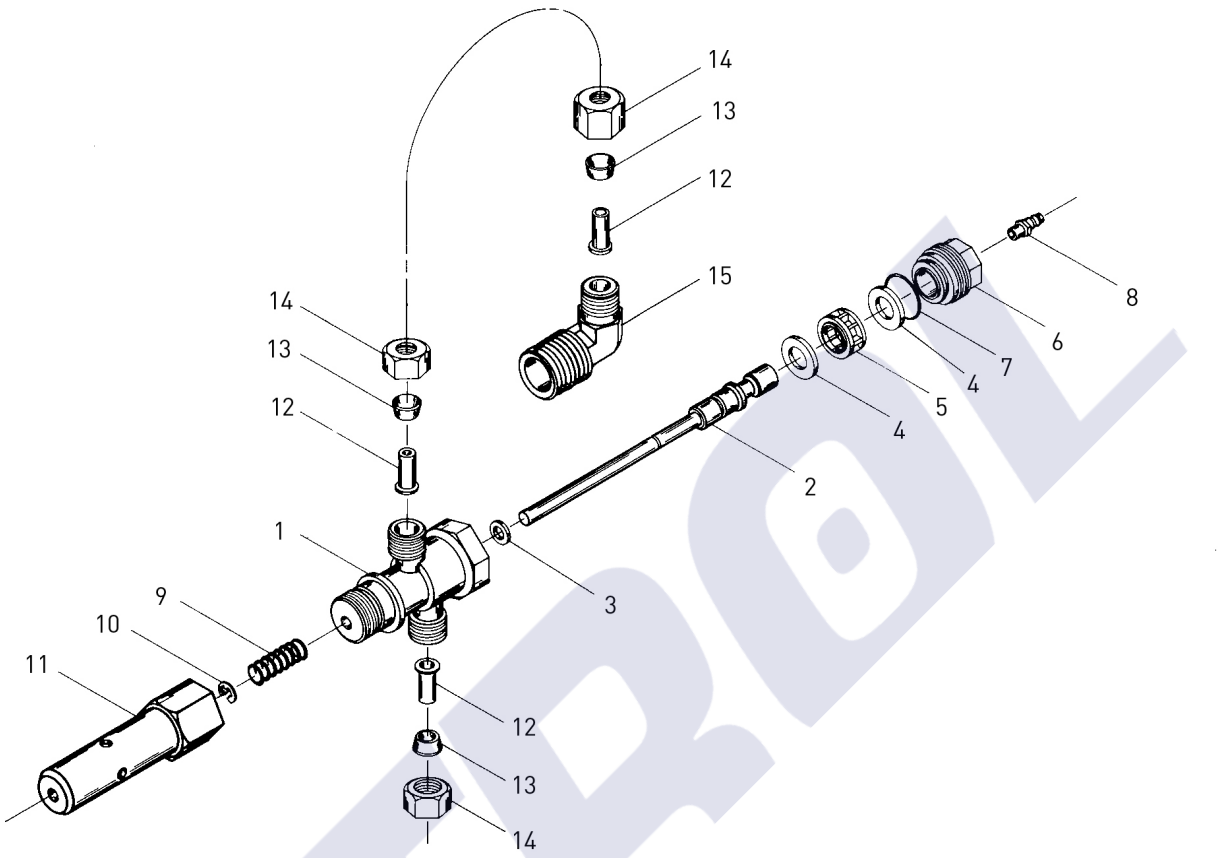
Injector Throat

	Size Color
15127-05	#5 Red
15127-06	#6 White
15127-07	#7 Blue
15127-08	#8 Yellow
15127-09	#9 Green
15127-10	#10 Black

Injector Nozzle

15128-05	#5 Red
15128-06	#6 White
15128-07	#7 Blue
15128-08	#8 Yellow
15128-09	#9 Green
15128-10	#10 Black

SERVICE VALVE OPERATOR

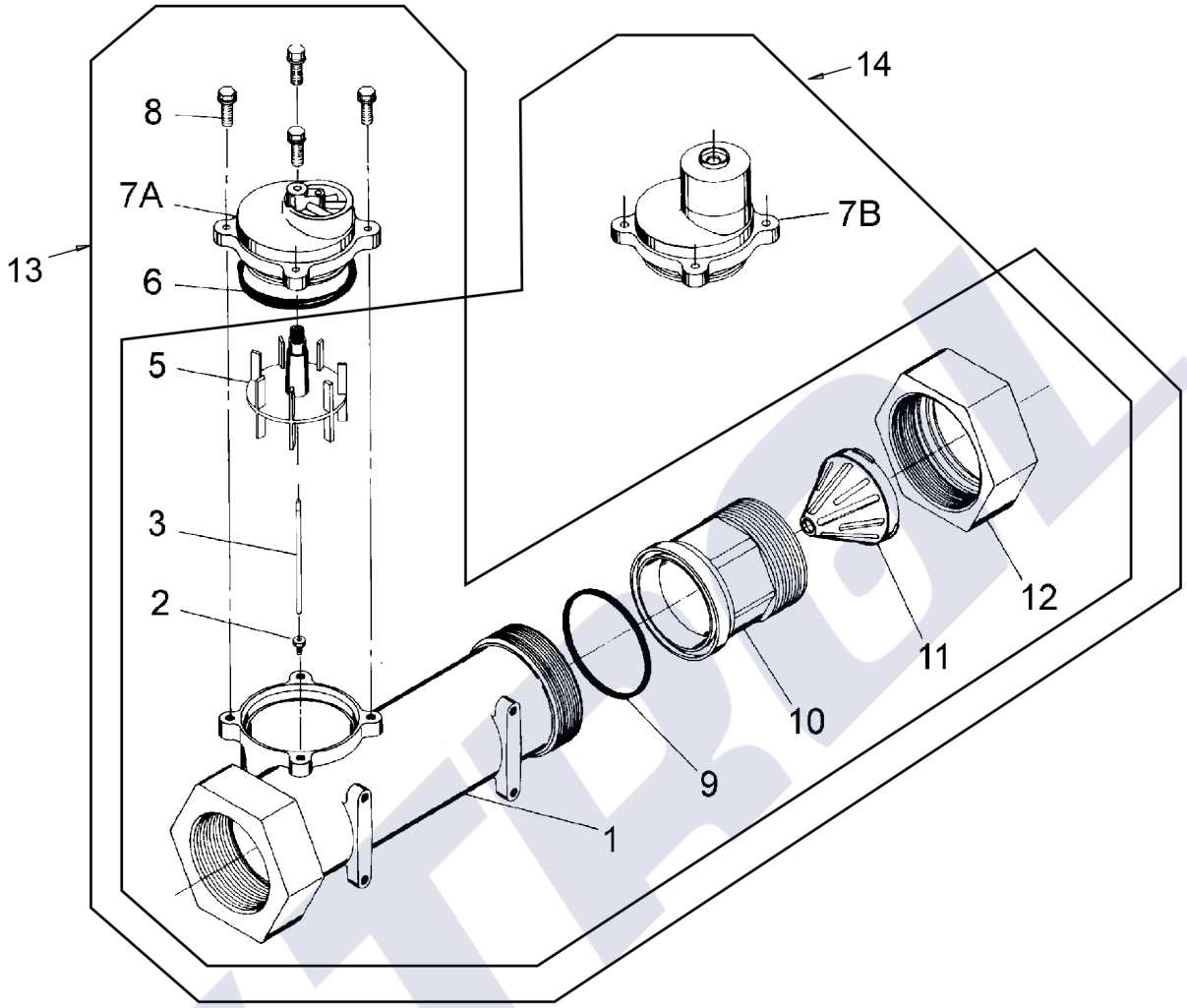


Item No.	QTY	Part No.	Description
1	1	15074	Valve Body
2	1	16065	Stem
3	1	10141	O-ring - 010
4	2	14835	Seal
5	1	14834	Spacer
6	1	16509	End Plug
7	1	14516	O-ring - 015
8	1	15965	Fitting - 1/4 Tube
9	1	10249	Spring
10	1	10250	Retaining Ring
11	1	16498-02	Stem Guide Assembly
12	3	10332	Insert
13	3	10330	Ferrule
14	3	10329	Nut
15	1	16503	Tube Fitting

Not Shown

	1	16511	SVO Tube

2-INCH BRASS METER ASSEMBLY



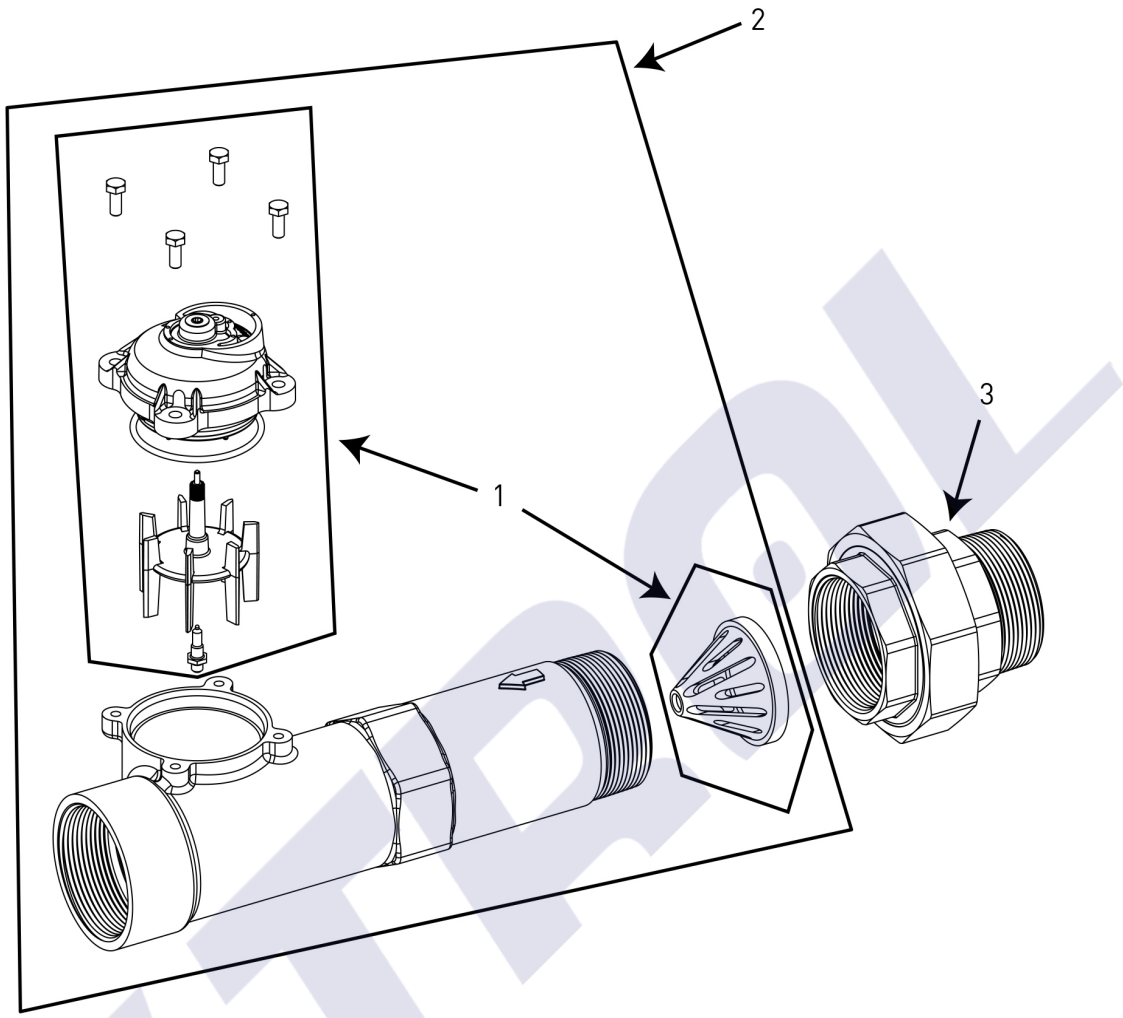
Item No.	QTY	Part No.	Description
1	1	14456	Body, Meter, 2-inch
		14456-20	Body, Meter, 2-inch, BSP, Metric
2	1	15532	Seat, Impeller Shaft, Hex
3	1	15432	Shaft
5	1	15374	Impeller Assy, 2-inch Meter
6	1	13847	O-ring, -137, Std/560CD, Meter
7A	1	14038	Meter Cap Assembly, Std, Plastic
7B	1	15150	Meter Cap Assembly, 3/4-inch to 2-inch, Ext Plastic, Pdl
8	4	12112	Screw, Hex Hd Mach, 10-24 x 1/2 18-8 Stainless Steel
		15886	Screw, Hex Hd, M5 x 12 SS, Metric
9	1	14679	O-ring, -227, Meter
10	1	14568	Fitting, Nipple, 2-inch
		14568-10	Fitting, Nipple, 2-inch BSP, Brass

Item No.	QTY	Part No.	Description
11	1	14680	Flow Straightener
12	1	14569	Nut, 2900 Meter
13			Meter Assy, 2-inch Inline, NPT, STD, Brass, Paddlewheel
			Meter Assy, 2-inch Inline, BSP, STD, Brass, Paddlewheel
14			Meter Assy, 2-inch Inline, NPT, EXT, Brass Paddlewheel
			Meter Assy, 2-inch Inline, BSP, EXT, Brass, Paddlewheel

Not Shown

		61439	Meter Sleeve w/O-rings, 1-1/2 inch

2-INCH STAINLESS STEEL METER ASSEMBLY



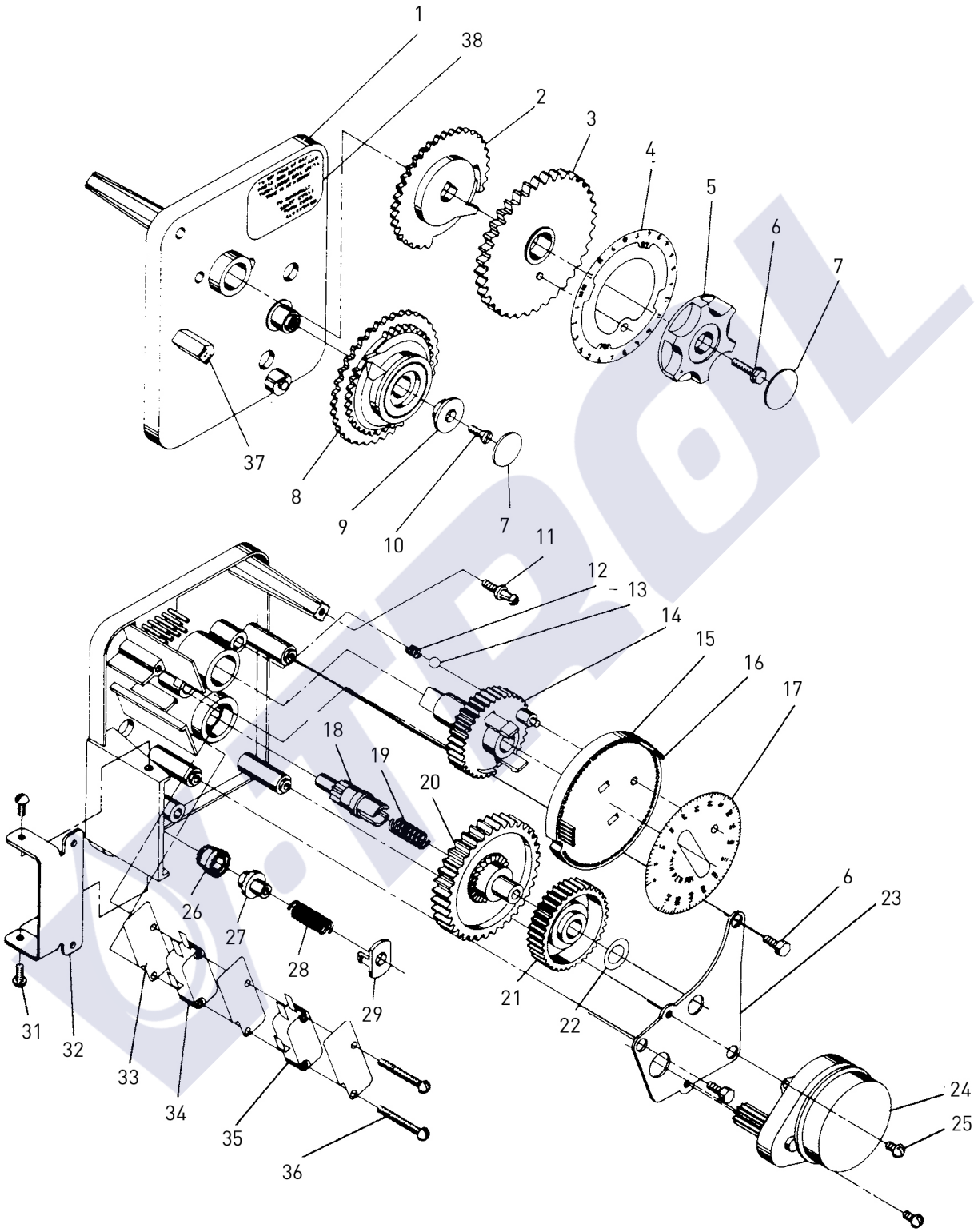
IMPORTANT: For valves equipped with electromechanical timers and stainless steel meters, refer to the Meter Dome and Union Orientation section.

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

Not Shown (optional)

	1	62073	Meter Sleeve , 2 inch to 1-1/2 inch (optional)

TIMER ASSEMBLY



TIMER ASSEMBLY *CONTINUED*

Item No.	QTY	Part No.	Description
1	1	14447	Timer Housing Assembly
2	1	13802	Cycle Actuator Gear
3	1	13009	24 Hour Gear
4	1	13959	24 Hour Label Silver
5	1	13886	Knob
6	4	13296	Screw - Timer Knob & Motor Plate Mtg.
7	2	11999	Button Decal
8	1	14039	Program Wheel Assembly - Specify Hardness Capacity
9	1	13806	Program Wheel Retainer
10	1	13748	Screw - Program Wheel Mtg.
11	1	14265	Spring Clip
12	1	15424	Spring - Detent
13	1	15066	Ball - 1/4 in. dia.
14	1	13911	Main Drive Gear
15	1	13880	Program Wheel
16	21	15493	Roll Pin
17	1	13901	Program Wheel Decal
18	1	13018	Idler Shaft
19	1	13312	Spring - Idler
20	1	13017	Idler Gear
21	1	13164	Drive Gear
22	1	13299	Curved Washer
23	1	13887	Motor Mounting Plate
24	1	13944	Motor - 110V., 60 Hz.
		14104	Motor - 24V., 60 Hz.
25	3	13278	Screw - Motor Mounting & Ground Wire
26	1	13830	Drive Pinion - Program Wheel
27	1	13831	Clutch - Drive Pinion
28	1	14276	Spring
29	1	14253	Spring Retainer
31	2	11384	Screw - Timer Hinge
32	1	13881	Hinge Bracket
33	3	14087	Insulator
34	1	10896	Switch
35	1	15320	Switch
36	2	11413	Screw - Switch Mounting
37	1	14007	Decal - Time of Day
38	1	14045	Decal - Instructions

Not Shown

1	13902	Harness
2	12681	Wire Connector
1	15354-01	Ground Wire

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3210 ECONOMINDER™

Commercial Demand Regeneration Control Timer Settings

Typical Programming Procedure
Calculate the gallon capacity of the system, subtract the necessary reserve requirement and set the gallons required by lifting the gallon dial and rotating it so that the number of gallons required is aligned with the white dot on program wheel gear. Release and check for firm engagement with gear. Note, drawing shows 8,750 gallon setting. The capacity (gallons) arrow denotes remaining gallons exclusive of fixed reserve.

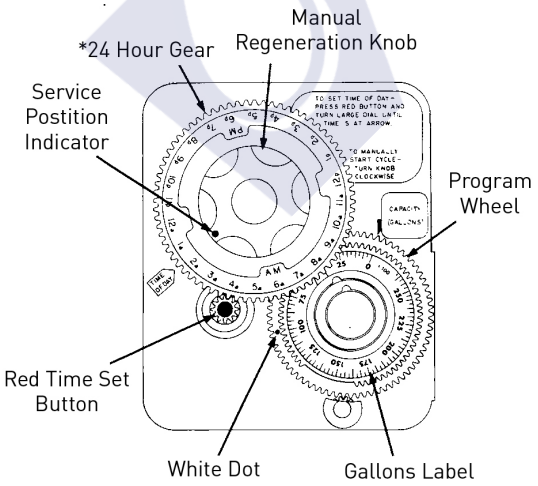
NOTE: To set meter capacity at initial start-up, either; 1. Rotate manual regeneration knob one full revolution. - or - 2. Rotate program wheel manually clockwise or counter clockwise and align white dot with capacity arrow.

This procedure must be followed any time the program wheel setting is changed.

How To Set The Time Of Day
Press and hold the red button in to disengage the 24 hour gear.
Turn the 24 hour gear until the actual time of day is at the time of day pointer.
Release the red button to again engage the 24 hour gear.

How To Manually Regenerate Your Water Conditioner At Any Time
Turn the manual regeneration knob clockwise one "click."
This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time. In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

Immediate Regeneration Timers
These timers do not have a 24 hour gear. Setting the gallons on the program wheel and manual regeneration procedure are the same as previous instructions.



3200 TIMER

Timer Setting Procedure

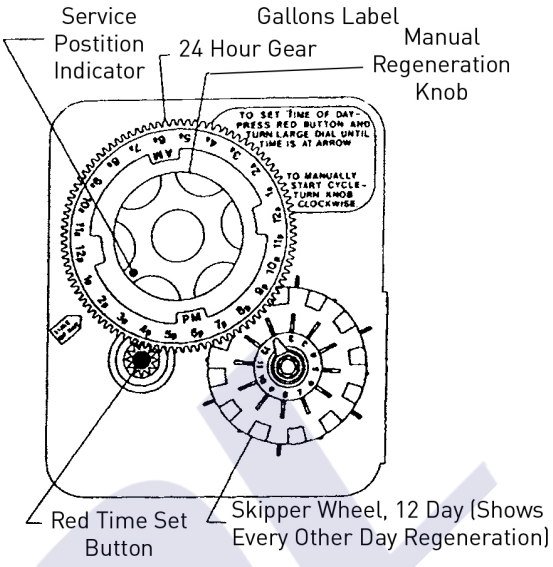
How To Set Days On Which Water Conditioner Is To Regenerate
Rotate the skipper wheel until the number "1" is at the red pointer. Set the days that regeneration is to occur by sliding tabs on the kipper wheel outward to expose trip fingers. Each tab is one day. Finger at red pointer is tonight. Moving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

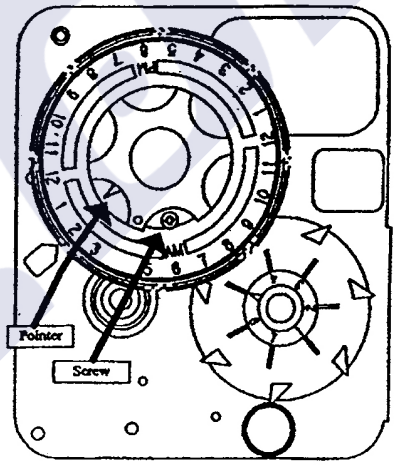
How To Set The Time Of Day
Press and hold the red button in to disengage the drive gear.
Turn the large gear until the actual time of day is at the time of day pointer.
Release the red button to again engage the drive gear.

How To Manually Regenerate Your Water Conditioner At Any Time
Turn the manual regeneration knob clockwise.
This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
Even thought it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set only one half of this time.
In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

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.

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





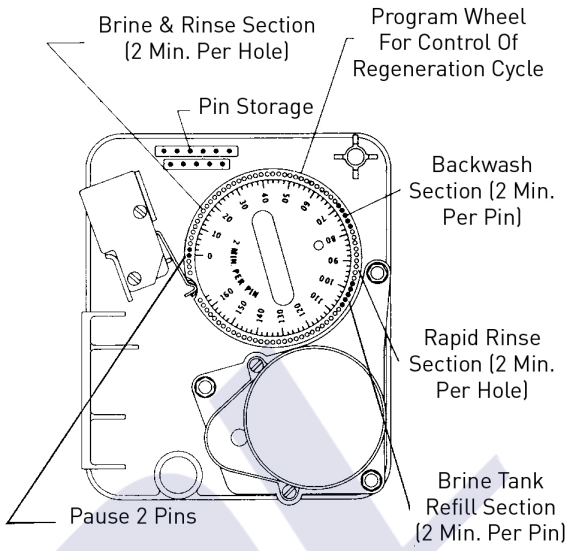
3200 Adjustable Regeneration Timer

3200 & 3210 TIMER SERIES

Regeneration Cycle Program Setting Procedure

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

3200 & 3210 Serles Timers (Figure to Right)
To expose cycle program wheel, grasp timer in upper left-hand corner and pull, releasing snap retainer and swinging time to the right.
To change the regeneration cycle program, the program wheel must be removed. Grasp program wheel and squeeze protruding lugs toward center, lift program wheel off timer. (Switch arms may require movement to facilitate removal.)
Return timer to closed position engaging snap retainer in back plate. Make certain all electrical wires locate above snap retainer post.



Timer Setting Procedure for 3200 & 3210 Timer

How to Change the Length of Brine and Rinse Time
The group of holes between the last pin in the pause section and the second group of pins determines the length of time that your unit will brine and rinse (2 min. per hole).
To change the length of brine and rinse time, move the backwash 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 the Backwash Time:
The group of pins after the last hole in the brine and rinse cycle determine the length of time that the unit will backwash (2 min. per pin).
To change the length of backwash time, add or remove pins at the higher numbered end of this section. The number of pins times two equals the backwash time in minutes.

How to Change the Length of Rapid Rinse:
The second group of holes on the program wheel determines the length of time that your water conditioner will rapid rinse (2 min. per hole).
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 holes times two equals the rapid rinse time in minutes.

How to Change the Length of Brine Tank Refill Time:
The third group of pins in the program wheel determines the length of time that your water conditioner will refill the brine tank (2 min. per pin).
To change the length of refill time, add or remove pins at the end of the third group of pins as required. The number of pins times two equals the refill time in minutes.
The regeneration cycle is complete when the outer micro-switch drops off the last pin at end of the brine tank refill section. The program wheel, however, will continue to rotate until the inner micro-switch drops into the notch on the program wheel.

TROUBLESHOOTING

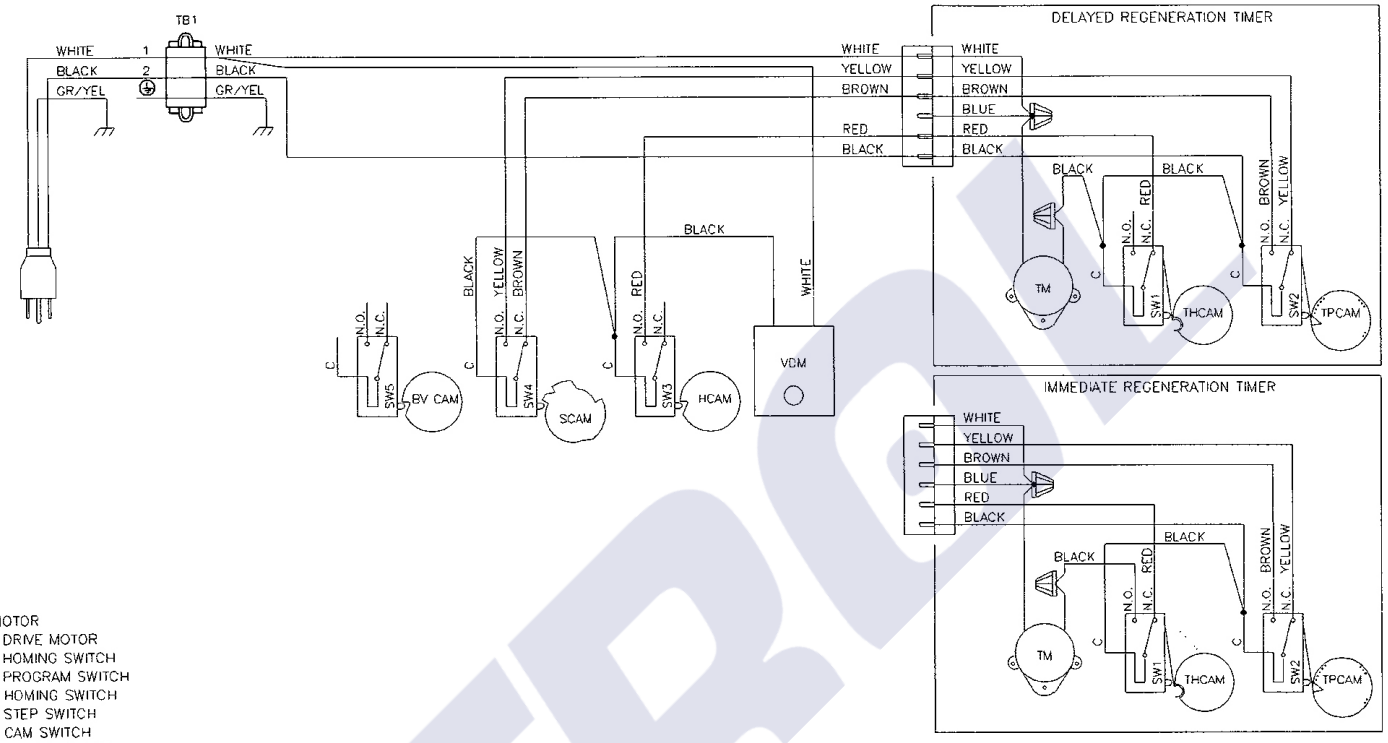
Problem	Cause	Correction
Water conditioner fails to regenerate.	Electrical service to unit has been interrupted.	Assure permanent electrical service (check fuse, plug, pull chain, or switch)
	Timer is defective.	Replace timer.
	Power failure.	Reset time of day.
Hard water.	By-pass valve is open.	Close 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 flushing 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.
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.	Check for proper drain rate.
	Improperly sized drain line flow control.	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.
Excessive water in brine tank.	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 brine line flow control.
	Injector is plugged.	Clean injector.
	Line pressure is too low.	Increase line pressure to 20 psi
	Internal control leak	Change seals, spacers, and piston assembly.
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.

General Service Hints For Meter Control

Problem	Cause	Correction
Softener Delivers Hard Water.	Reserve Capacity Has Been Exceeded.	Check salt dosage requirements and reset program wheel to provide additional reserve.
	Program Wheel Is Not Rotating With Meter Output.	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.
	Meter Is Not Measuring Flow.	Check meter with meter checker.

VALVE WIRING

System #4

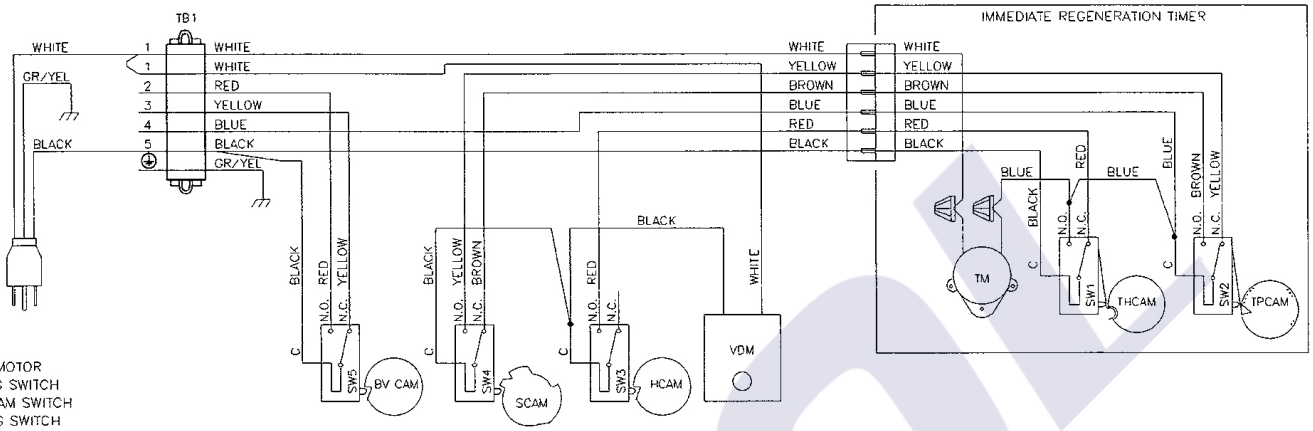


TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW4 – BRINE CAM SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM

NOTE:
SINGLE TANK TIMECLOCK, METER DELAYED, OR METER IMMEDIATE REGENERATION

VALVE WIRING *CONTINUED*

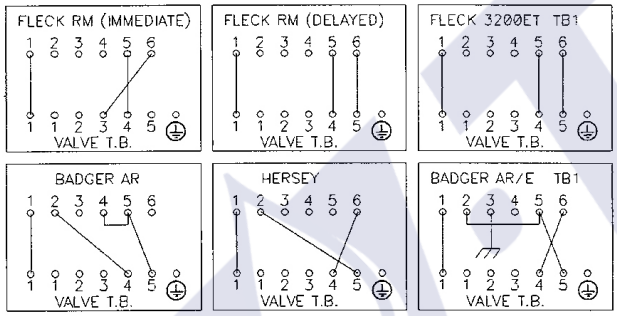
System #4 With Remote Meter



TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM

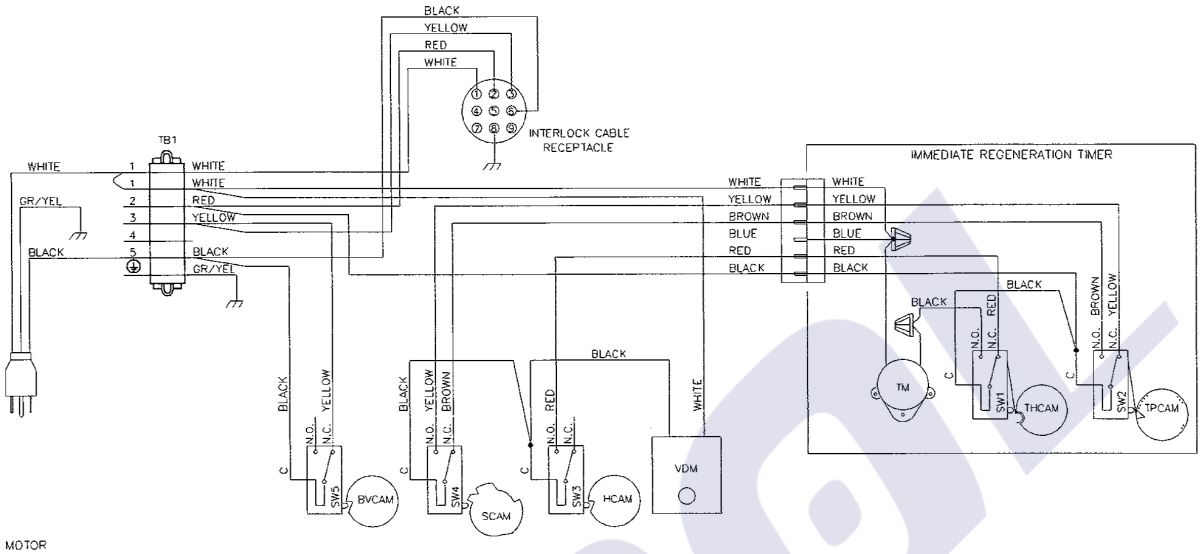
NOTE:
SINGLE TANK REMOTE METER INITIATED DELAYED, OR IMMEDIATE REGENERATION

REMOTE METER WIRING



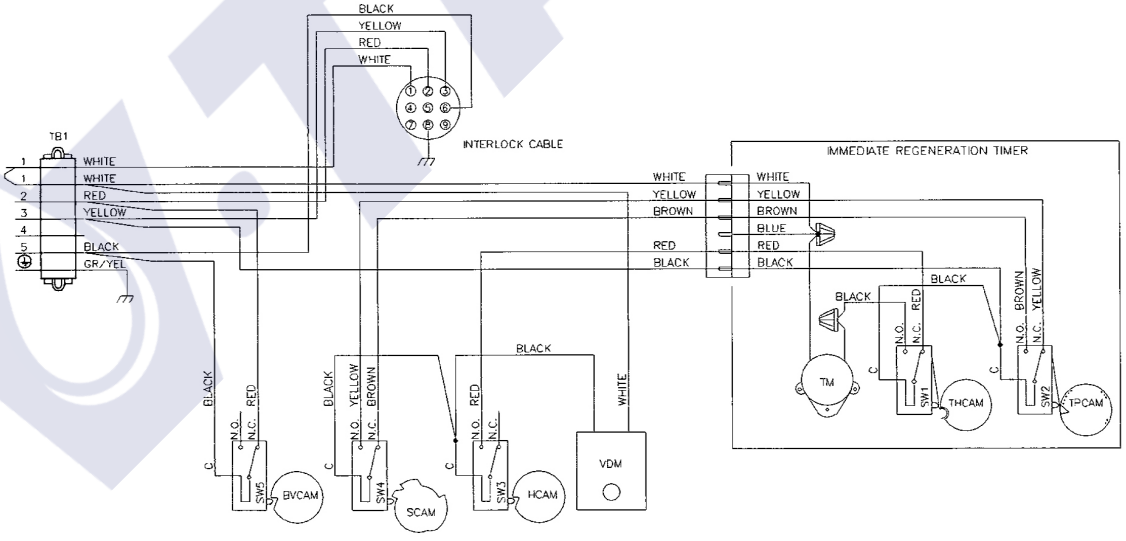
VALVE WIRING *CONTINUED*

System #5



TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM

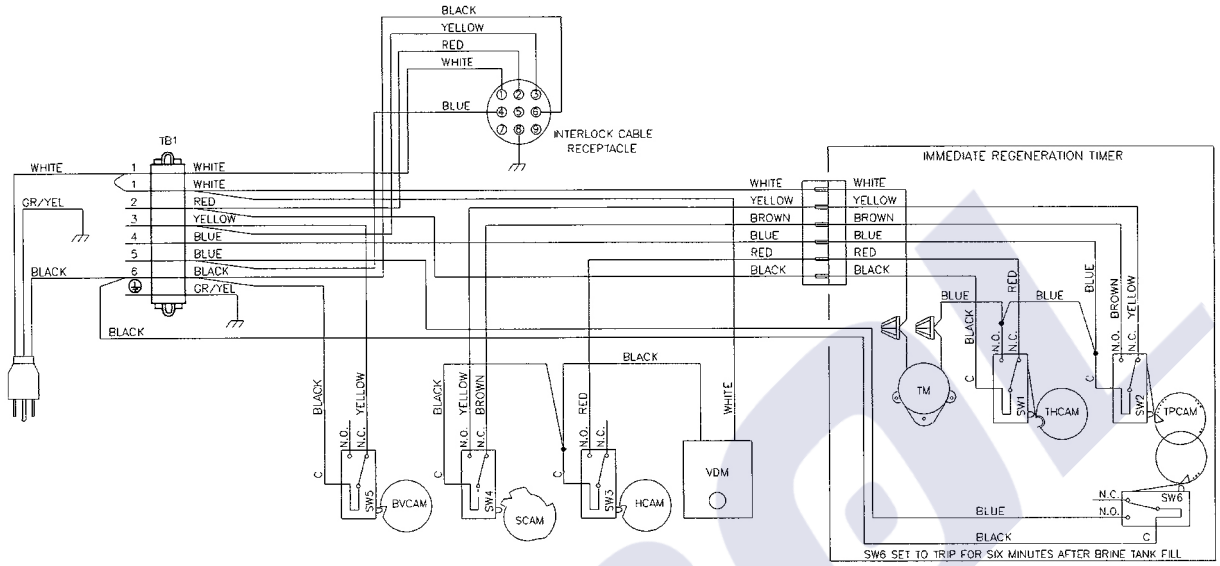
NOTE:
TWO TANK INTERLOCKED INDIVIDUAL METER IMMEDIATE REGENERATION.
ONLY ONE TANK IN REGENERATION THE OTHER IN SERVICE.



TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM

VALVE WIRING *CONTINUED*

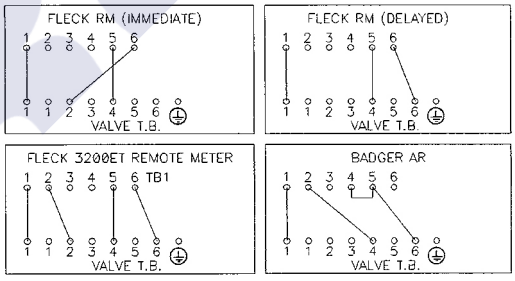
System #6

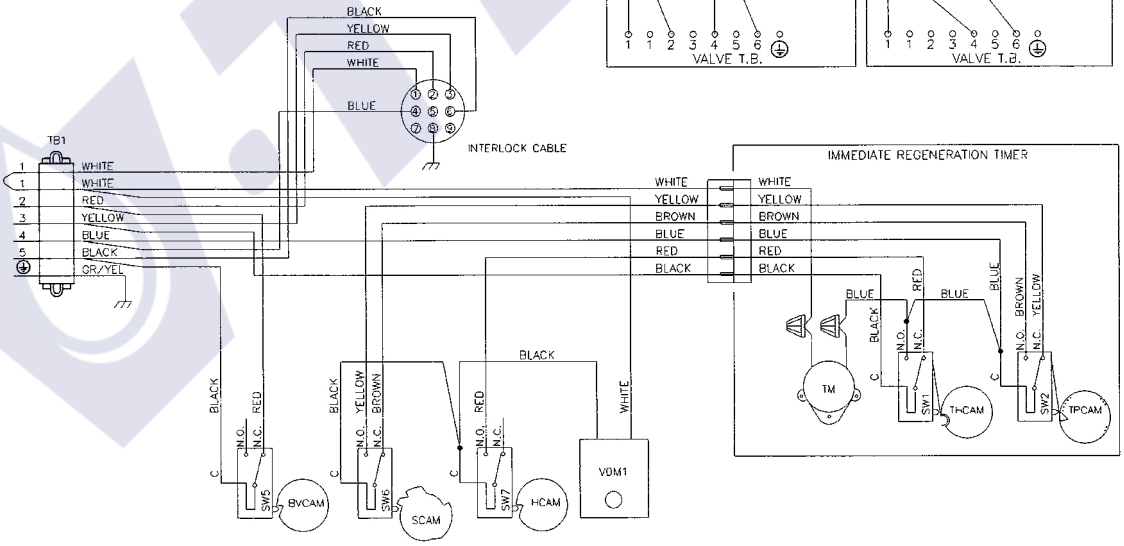


TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
SW6 – AUXILIARY TIMER SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM

NOTE:
TWO TANK INTERLOCKED SINGLE REMOTE METER SERIES REGENERATION.
ONLY ONE TANK IN REGENERATION THE OTHER IN SERVICE.
LEAD VALVE REGENERATES FIRST, FOLLOWED IMMEDIATELY BY LAG VALVE.

REMOTE METER WIRING

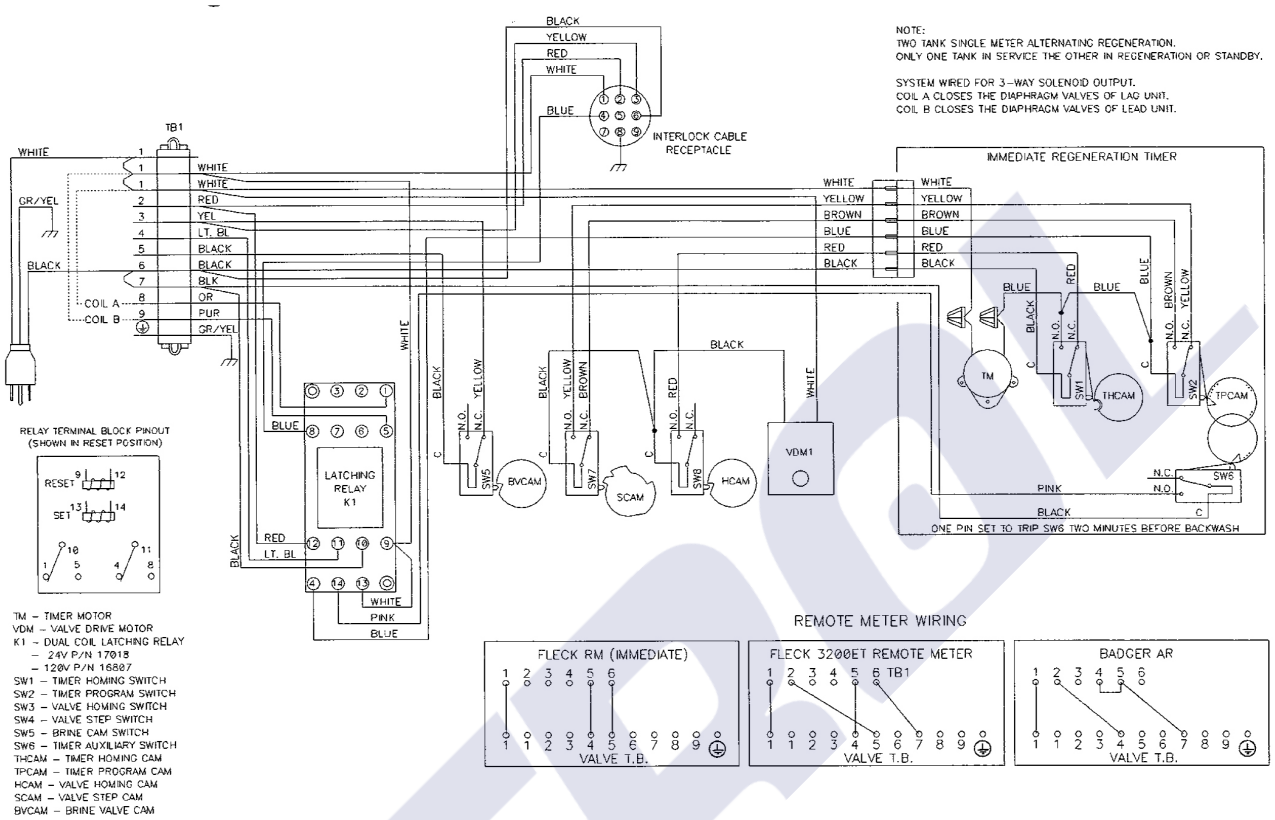




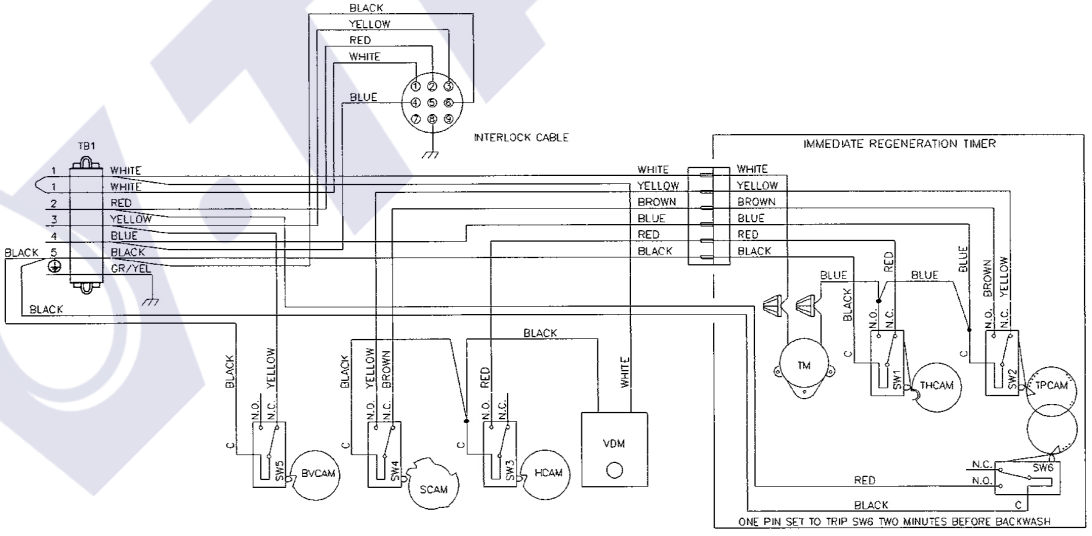
TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM

VALVE WIRING *CONTINUED*

24V/120V System #7

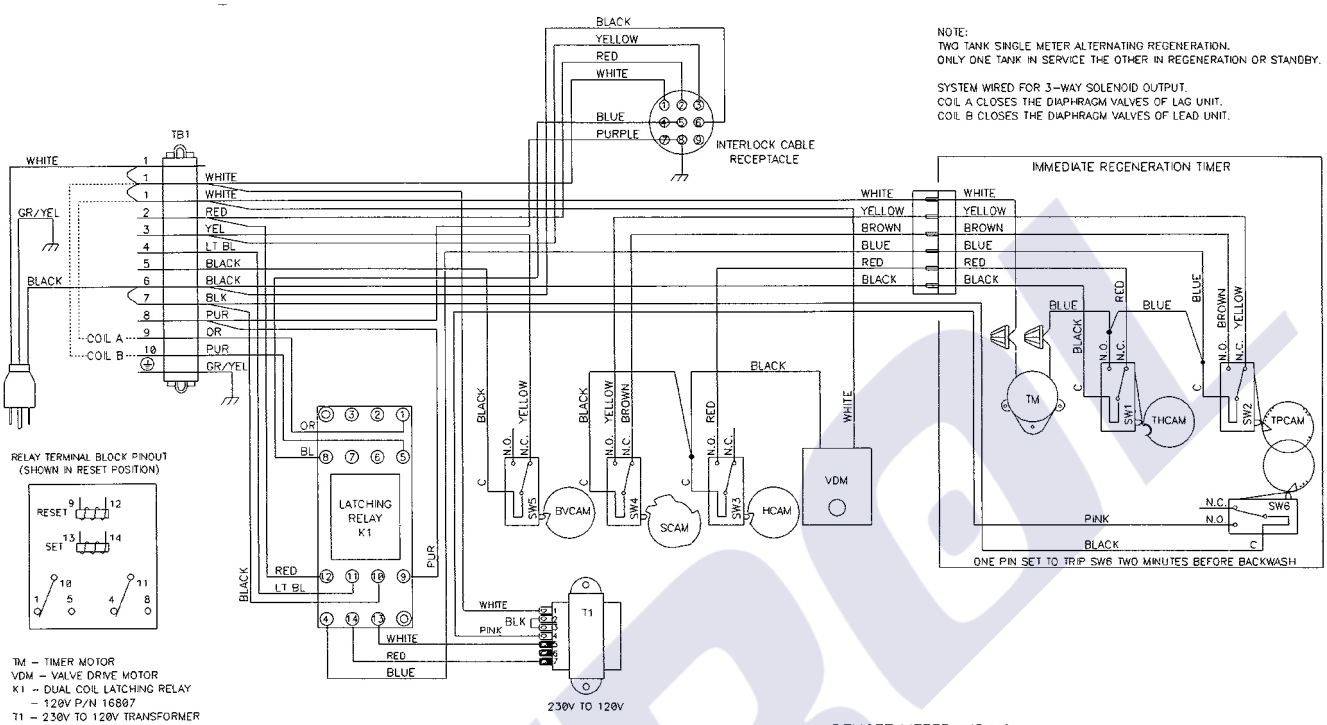


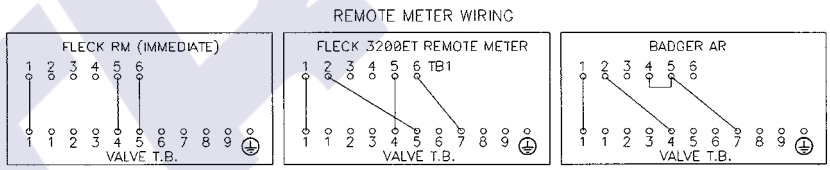
REMOTE METER WIRING

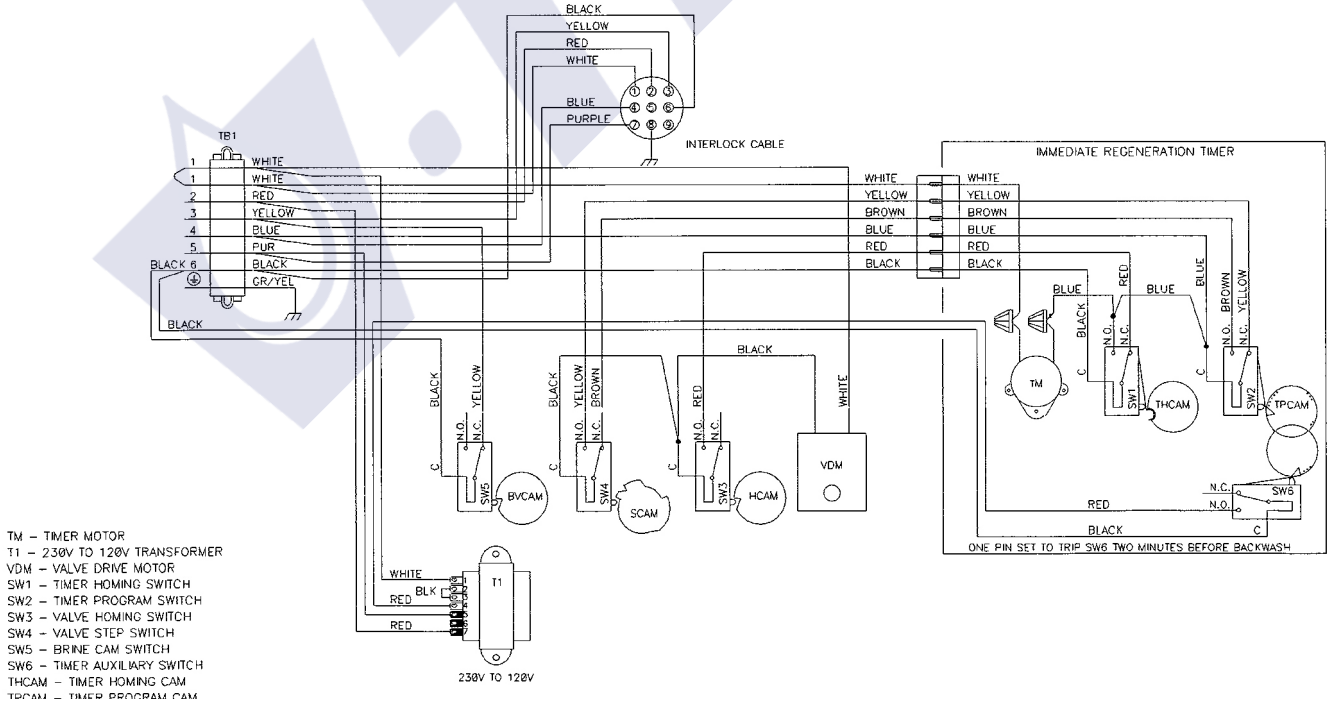


VALVE WIRING *CONTINUED*

230V System #7

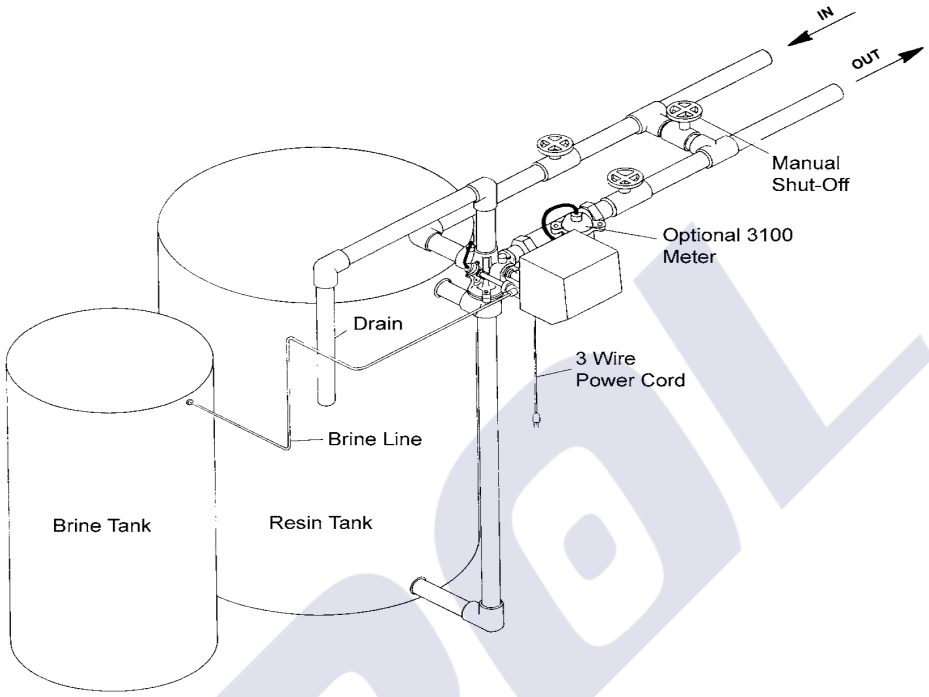




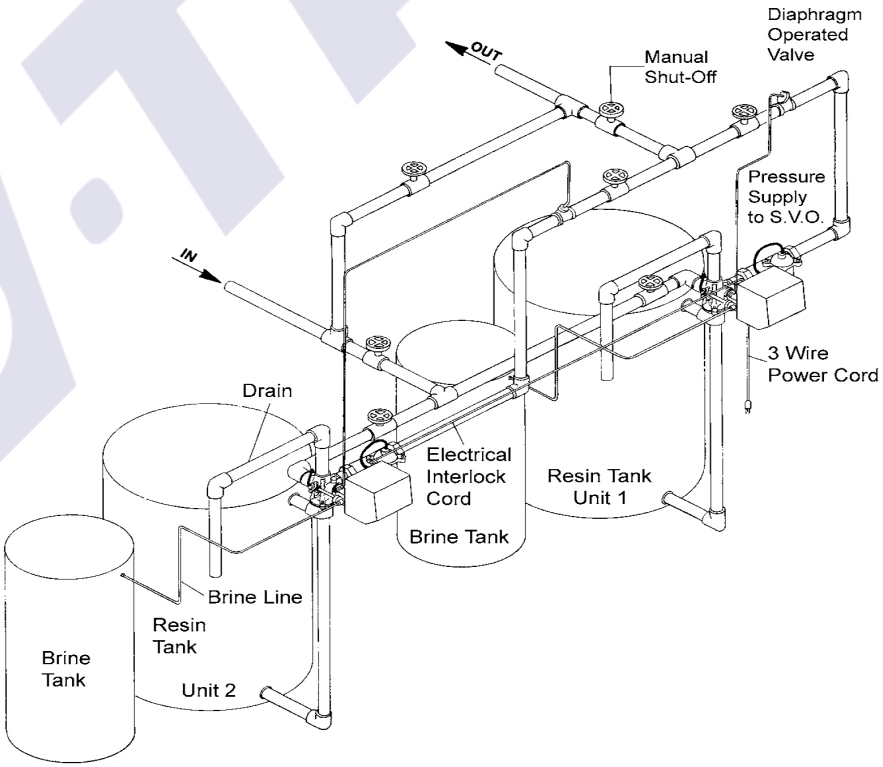


INSTALLATION DIAGRAMS

System #4 - Typical Single Tank Installation with Optional Meter

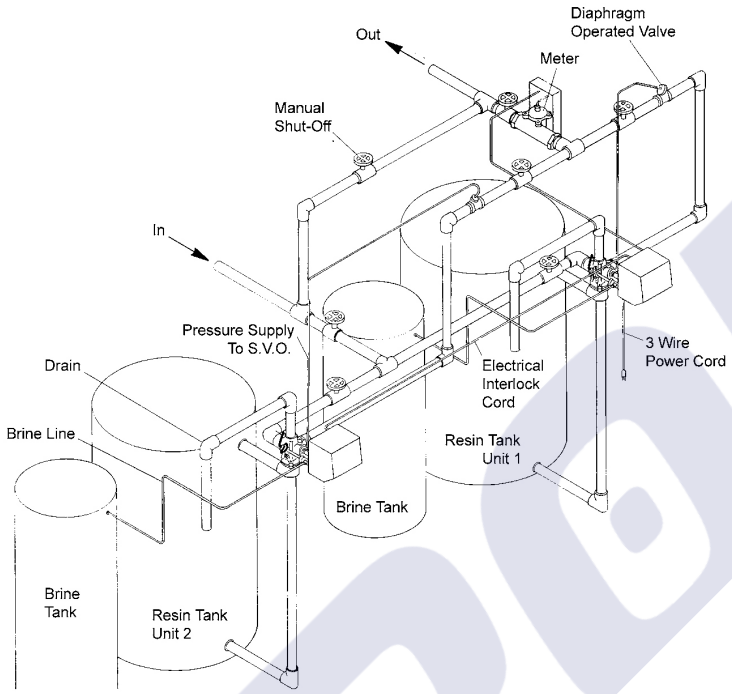


System #5 Interlock - Typical Twin Tank Installation with Optional Meter Interlock and No Hard Water Bypass

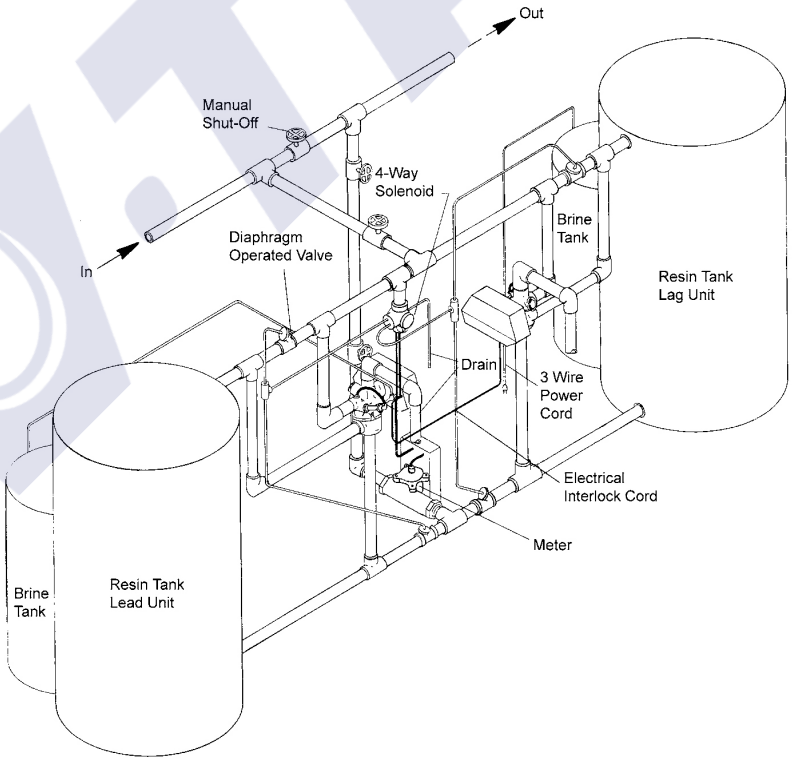


INSTALLATION DIAGRAMS *CONTINUED*

System #6 - Twin Series Regeneration Installation with a Remote Meter



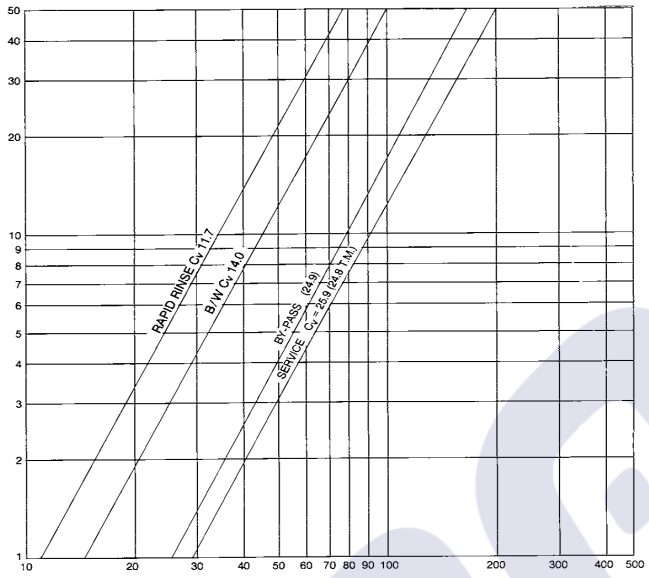
System #7 - Twin Alternator Installation with a Remote Meter



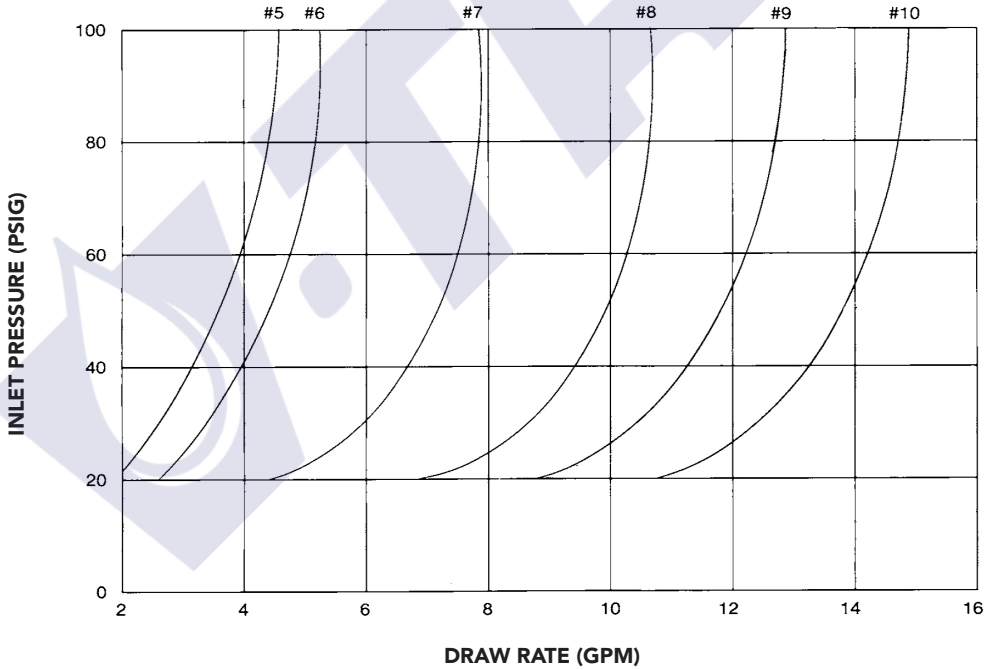
FLOW DATA & INJECTOR DRAW RATES

System #6

3150 VALVE SIDE MOUNT & TOP MOUNT



3150 ON EMPTY TANK



SERVICE ASSEMBLIES

60036-02 1800 Brine Valve

.....	11180	Screw - Round Hd.
1	11183	O-ring - 017
1	16596	Nut - Q.C.
1	11772	Spring
1	11774	Retaining Ring
1	11912	Fitting - Brine Line
2	13303	O-ring - 021
1	15241	Brine Valve Body
1	16203-01	Connector - Brine Valve
1	16497	Brine Stem Assembly
1	16498-01	Stem Guide Assembly
1	16605	Retainer Plate

60277 1800 Injector Assembly

4	12473	Screw - Hex Hd.
1	15127	Injector Throat - Specify Size
1	15128	Injector Nozzle - Specify Size
2	15246	O-ring - 116
1	16340	Injector Body
1	16341-01	Injector Cover

60106-10 3150 Piston Assembly

1	14818	Clip Piston Rod
1	14922	O-ring - 035
1	16337	Piston
1	15125	Piston Rod
1	16398-21	End Plug Assembly - Gray

60131 31505 Seal Kit

2	10368	Spacer
5	10369	Spacer - Port
8	11720	Seal

60057-01 3900 Upper Drive Motor
Assembly - 115 V.

4	10302	Insulator - Switch
3	10872	Screw - Hex Hd.
1	1080	Screw - Flat Hd.
3	1247	Switch
2	12660	Nut 10-24
2	13314	Screw - Hex Hd.
1	15120	Bracket - Motor Mounting
1	16044	Drive Motor - 115 V.
1	16052	Bushing
1	16054	Bracket - Switch Mounting
2	16055	Stand-Off
2	116056	Screw - Pan Hd.
2	116131	Spacer

60150-3150 3150 SVO Assembly
For Parts Breakdown

60393 2 Meter Assembly - Std.
Range
For Parts Breakdown

60394 2 Meter Assembly - Ext.
Range

61934-10 Meter Assy, 2 inch SS NPT Std
61934-11 Meter Assy, 2 inch SS NPT Ext
61934-20 Meter Assy, 2 inch SS BSP Std
61934-21 Meter Assy, 2 inch SS BSP Ext

60036-02 1800 Brine Valve

NOTES

NOTES

KEEP THIS MANUAL FOR FUTURE REFERENCE AND UNIT MAINTENANCE.

Product design is subject to change without notice.