MARLO INCORPORATED ®

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

ACA 10G–18G

1” 2750 TIMECLOCK

COMMERCIAL WATER CONDITIONERS

COMPLETE FOR FUTURE REFERENCE:

MODEL NO:
SERIAL NO:
DATE INSTALLED:
DEALER:

Marlo Incorporated
2227 South Street
P.O. Box 044170
Racine, WI 53404-7003
Ph. (262) 681-1300
Fax (262) 681-1318
Info@Marlo-Inc.com
www.Marlo-Inc.com

ACA 10G–18G 1” 2750 TIMECLOCK

Please Circle and/or Fill in the Appropriate Data for Future Reference:

Filter Model:	**ACA/AGA/MID/MGA**
System Size:	**Single/Twin/Triple/Quad**
Configuration:	**Timeclock/Pressure Differential/Metered**
BW/Regen Time:	**_____ AM/PM or OFF**

Additional Notes: _____

_____

_____

_____

IMPORTANT PLEASE READ:

- **Warranty of this product extends to manufacturing defects.**
- **The information, specifications and illustrations in this manual are based on the latest information available at the time of printing. The manufacturer reserves the right to make changes at any time without notice.**
- **This product should be installed by a plumbing professional on potable water systems only.**
- **This product must be installed in compliance with all local and state and municipal plumbing and electrical codes. Permits may be required at the time of installation.**
- **If operating pressure exceeds 100 psi a pressure reducing valve must be installed. If operating pressure drops below 30 psi a booster pump must be installed.**
- **Do not install the unit where temperatures may drop below 32°F or rise above 100°F.**
- **A prefilter should be used on installations in which free solids are present.**
- **A constant voltage of 120V/60Hz (unless otherwise specified) must be supplied to the controller to maintain proper function.**
- **Union or flange fittings are recommended at the control valve’s inlet, outlet, and drain connections**
- **If distance of drain line is over a 10 ft. vertical or 25 ft. horizontal run, increase drain line one pipe size over that provided on the control valve.**
- **Do not make a direct connection to the drain. Provide an air gap of at least four times the diameter of the pipe to conform to sanitation codes and to permit observation of the flow.**

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COMMERCIAL AND INDUSTRIAL PRODUCT WARRANTY

Marlo, Inc. warrants all commercial and industrial water treatment products manufactured and/or distributed by it to be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If within that period any products shall be proven to Marlo, Inc.’s satisfaction to be defective, those products will be replaced or the price refunded at Marlo Inc.’s option.

Marlo Inc.’s obligations or nonperformance, defective, or any damage caused by its products or their use, and buyer’s exclusive remedy therefore, shall be limited to product replacement or refund and shall be conditioned upon Marlo Inc.’s receiving written notice together with a demand for such replacement or refund:

The foregoing warranty is exclusive and in lieu of all other expressed implied warranty (except of title) including but not limited to implied warranty of merchantability and fitness for particular purpose.

Marlo Inc. will not be subject to and disclaims the following:

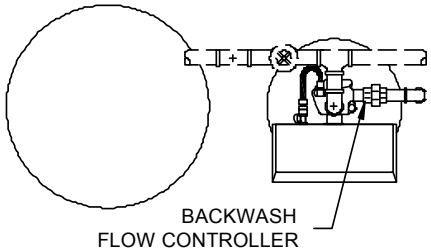
1. Any other obligations or liabilities arising out of breach of contract or out of warranty.
2. Any obligations whatsoever arising from tort claims (including negligence and strict liability) or arising under other theories of law with respect to products sold or services rendered by Marlo Inc. or any undertakings, acts, or omissions relating thereto.
3. All consequential, incidental, and contingent damages. Labor charges, change backs or handling charges are excluded from Marlo Inc.’s warranty provisions.

COMMERCIAL AND INDUSTRIAL WATER CONDITIONER GUARANTEE

Under normal operating conditions:

1. The loss of filter media through attrition during the first three (3) years shall not exceed 3% per year.
2. The filter media shall not be washed out of the system during backwash.
3. The color and turbidity of the softener effluent shall not be greater than the incoming water.

Any mechanical equipment proving defective in workmanship or material within one year after installation or eighteen (18) months after shipment, whichever comes first, shall be replaced FOB factory.

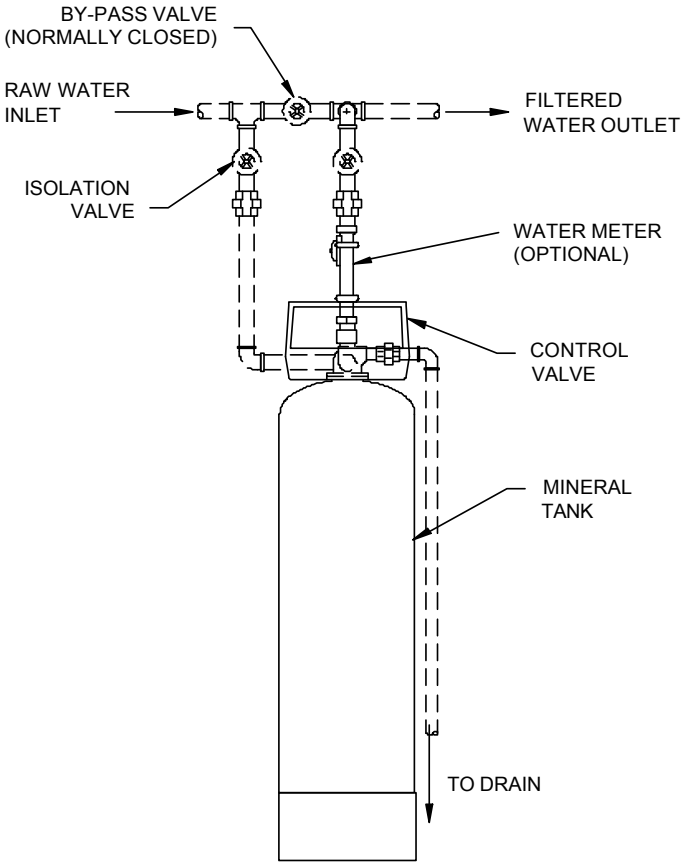


NOTES:

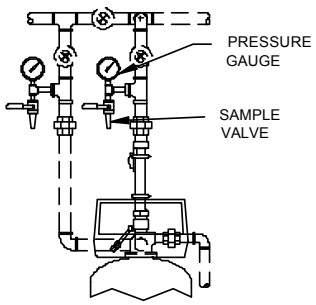
ALL PIPING, FITTINGS, ECT. SHOWN IN DOTTED LINES ARE SUPPLIED BY OTHERS.

GENERAL PLUMBING CONNECTIONS ARE SHOWN FOR CLARITY ONLY.

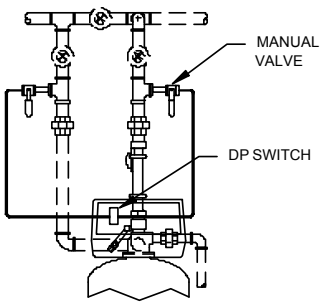
CONSULT I/O MANUAL FOR EXACT PLUMBING CONNECTIONS OF THE CONTROL VALVE.



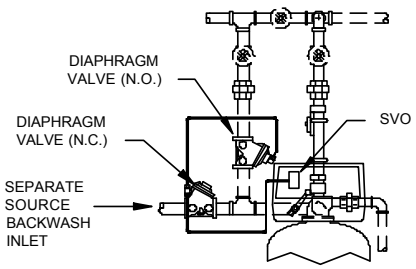
PRESSURE GAUGE &
SAMPLE VALVE OPTION



DIFFERENTIAL PRESSURE
SWITCH INITIATION OPTION



SEPARATE SOURCE
BACKWASH OPTION



MFG 1" (2750) SINGLE FILTER
GENERAL ARRANGEMENT DRAWING

FRAC.±	DEC. ±	FILE ID.	MFG 2750 SINGLE	SHEET 1 OF 1	REV. 0
DRN.	BCD	SCALE	NTS		
APP'D.		DRAWING NO.			
DATE	7-13-94				

CONTROL VALVE FILTER
STANDARD

REVISIONS

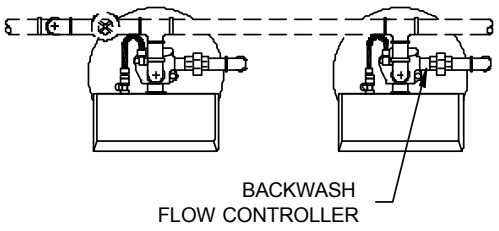
NO.	DATE	BY	REMARKS

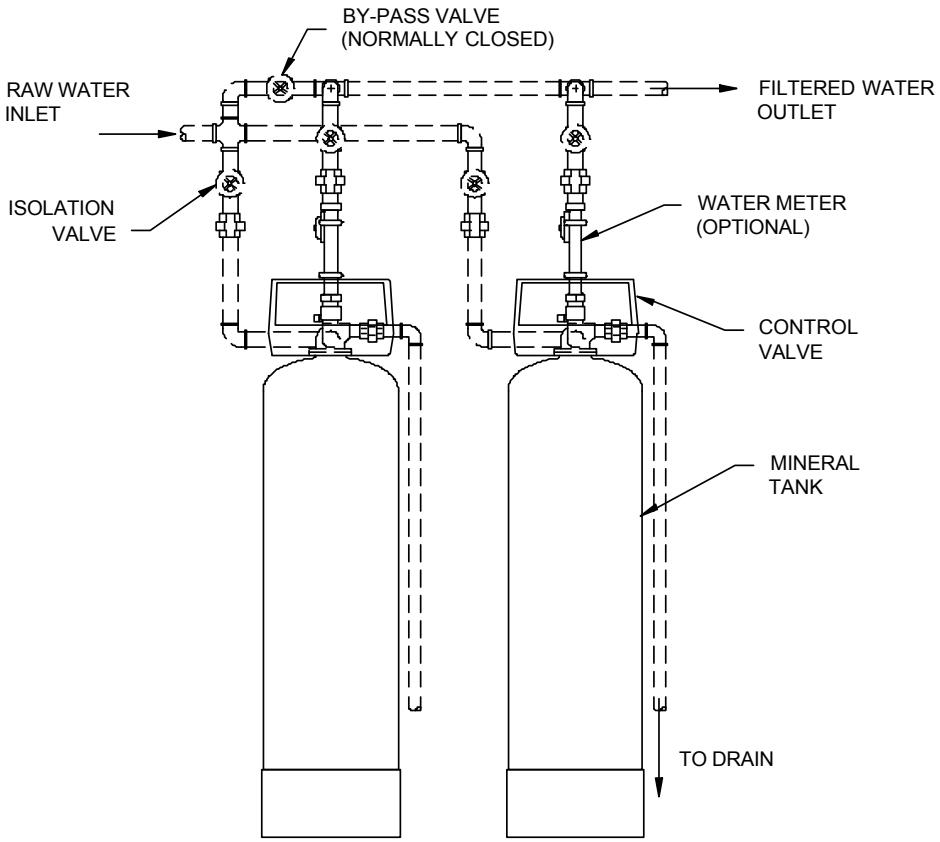
NOTES:

ALL PIPING, FITTINGS, ECT. SHOWN IN DOTTED LINES ARE SUPPLIED BY OTHERS.

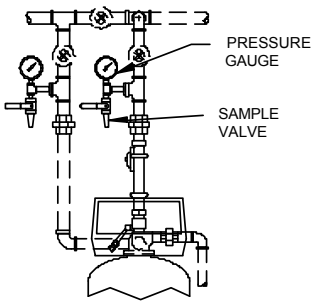
GENERAL PLUMBING CONNECTIONS ARE SHOWN FOR CLARITY ONLY.

CONSULT I/O MANUAL FOR EXACT PLUMBING CONNECTIONS OF THE CONTROL VALVE.

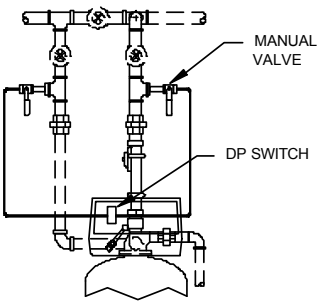




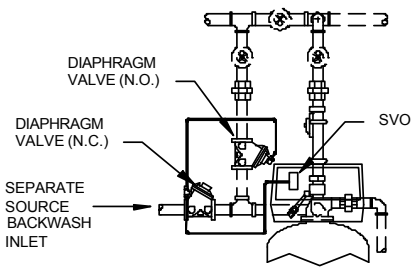
PRESSURE GAUGE & SAMPLE VALVE OPTION



DIFFERENTIAL PRESSURE SWITCH INITIATION OPTION



SEPARATE SOURCE BACKWASH OPTION



MFG 1" (2750) TWIN FILTER
GENERAL ARRANGEMENT DRAWING

FRAC. ±	DEC. ±	FILE ID.	MFG 2750 TWIN	SHEET 1 OF 1	REV. 0
DRN.	BCD	SCALE	NTS		
APP'D.		DRAWING NO.			
DATE	5-9-03				

CONTROL VALVE FILTER
STANDARD

REVISIONS

NO.	DATE	BY	REMARKS

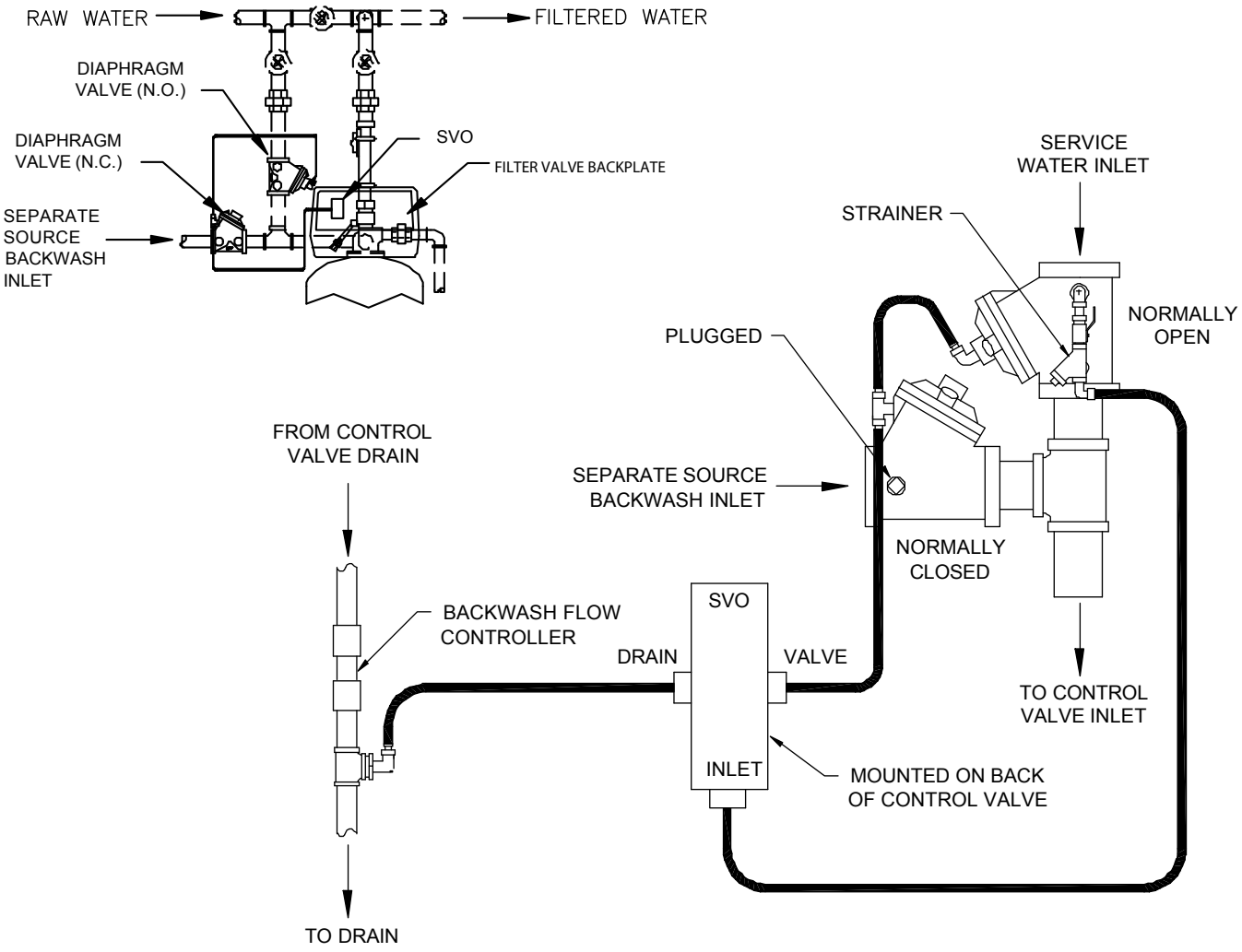
SPECIFICATION CHART

MODEL MID -			10G	12G	14G	16G	18G
SYSTEM SIZE	Service Connection (in)		1	1	1	1	1
	Drain Connection (in)		3/4	3/4	3/4	3/4	3/4
FLOWRATE (GPM)	Service - Normal (gpm)		2	4	5	7	9
	Service - DP (gpm)		2	3	3	4	4
	Service - Peak (gpm)		5	8	10	14	18
	Service - DP (gpm)		4	6	6	9	11
	Backwash & Fast Flush (gpm)		5	8	10	15	17
	Settle (gpm)		5	8	10	15	17
TIMER SETTINGS	Backwash	Pins	8	8	8	8	8
		Minutes	16	16	16	16	16
	Settle	Pins	3	3	3	3	3
		Minutes	6	6	6	6	6
	Fast Flush	Pins	3	3	3	3	3
		Minutes	6	6	6	6	6
	Settle	Pins	2	2	2	2	2
		Minutes	4	4	4	4	4
	Return to Service	Pins	2	2	2	2	2
		Minutes	4	4	4	4	4
TANK	Size - Dia. x Ht. (in)		10x54	12x52	14x65	16x65	18x65
	Gravel Subfill (lbs)		30	40	60	80	80
	Media		1	2	3	4	5

SEPARATE SOURCE BACKWASH (OPTIONAL)

This option allows the filter to use a separate water source for backwashing the system. The separate source uses diaphragm valves to control the flow of the backwash water. The diaphragm valves are controlled by a SVO (Service Valve Operator) that is mounted to the filter valve backplate.

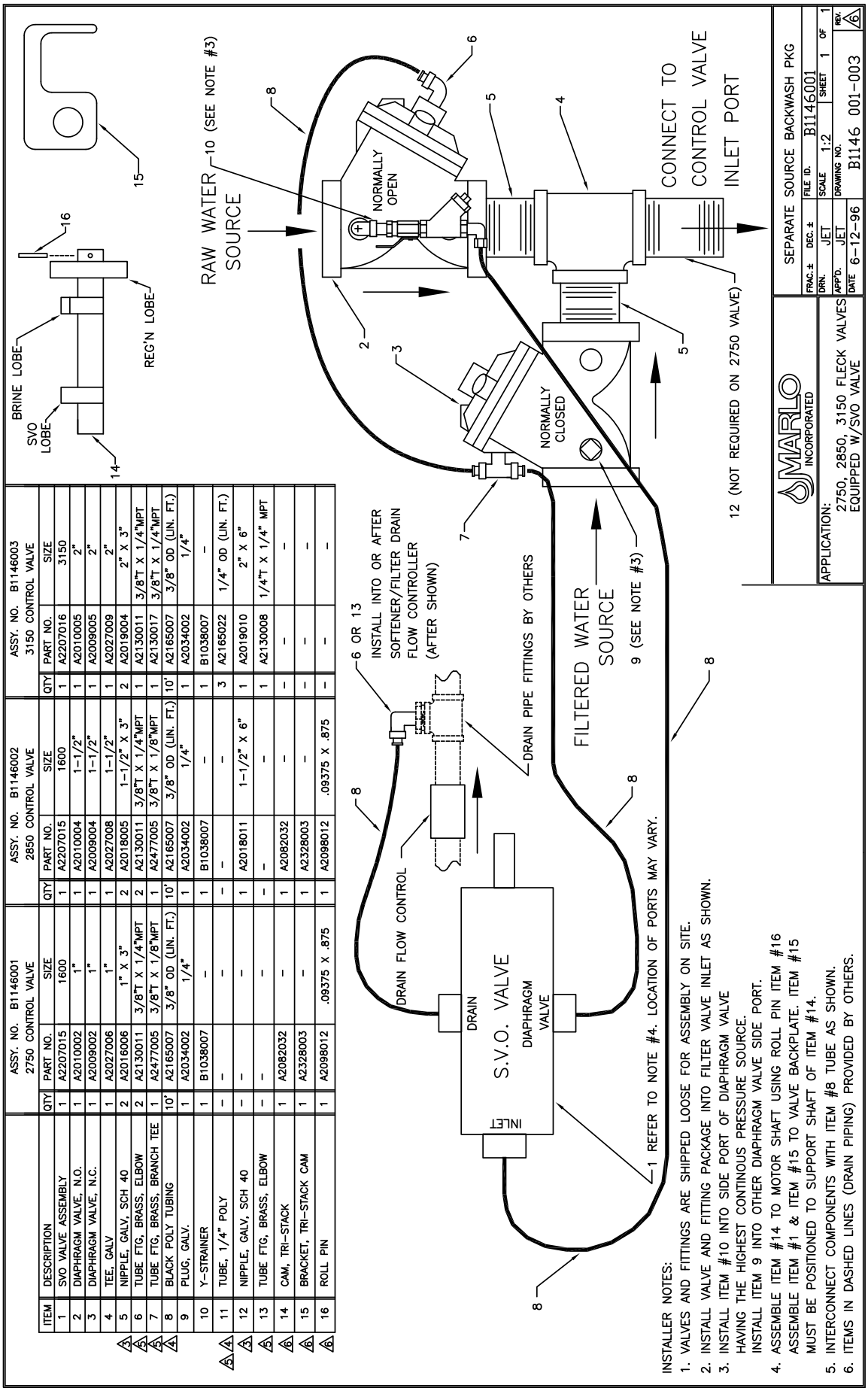
The piston in the SVO Valve is actuated by a cam on the filter valve motor shaft. Extending the piston will allow Raw Water flow. Depressing the piston will allow Separate Source water flow.



ACTUAL SVO PORT LOCATIONS MAY VARY.

DRAWING IS SHOWN FOR CLARITY ONLY.

INSTALL THE STRAINER ASSEMBLY INTO THE INLET BOSS OF THE VALVE WITH THE HIGHEST PRESSURE. PLUG THE OTHER VALVE'S INLET BOSS.



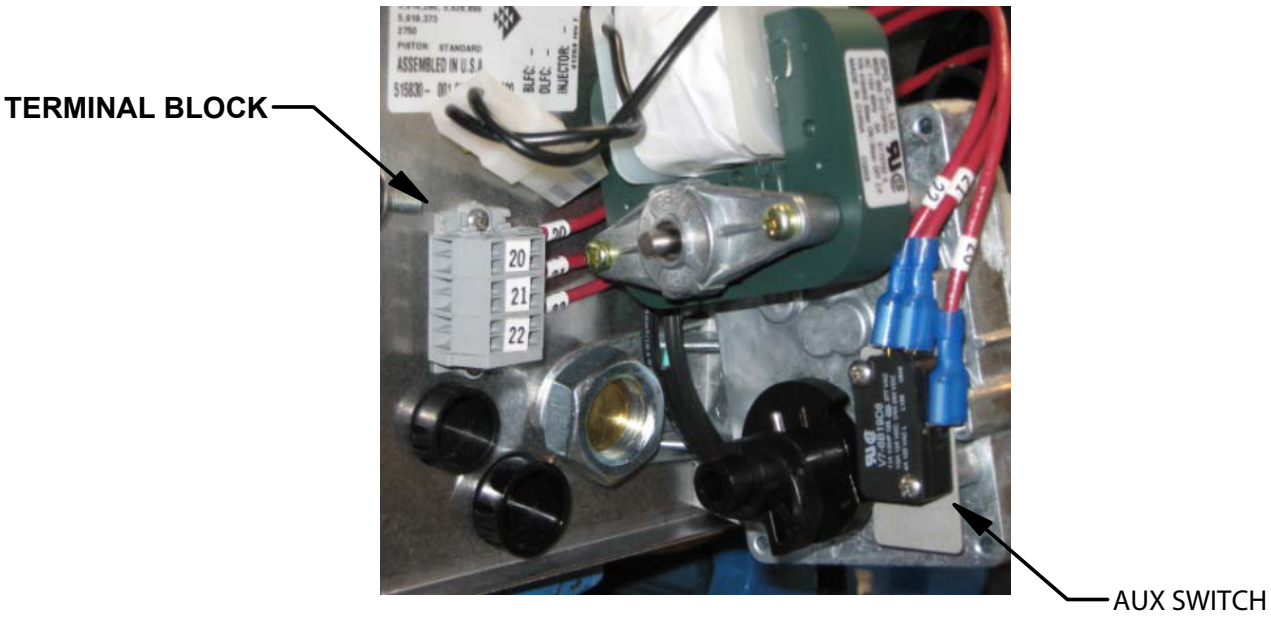
ITEM	DESCRIPTION	ASSY. NO. B1146001 2750 CONTROL VALVE QTY	PART NO.	SIZE	ASSY. NO. B1146002 2850 CONTROL VALVE QTY	PART NO.	SIZE	ASSY. NO. B1146003 3150 CONTROL VALVE QTY	PART NO.	SIZE
1	SVO VALVE ASSEMBLY	1	A2207015	1600	1	A2207015	1600	1	A2207016	3150
2	DIAPHRAGM VALVE, N.O.	1	A2010002	1"	1	A2010004	1-1/2"	1	A2010005	2"
3	DIAPHRAGM VALVE, N.C.	1	A2009002	1"	1	A2009004	1-1/2"	1	A2009005	2"
4	TEE, GALV	1	A2027006	1"	1	A2027008	1-1/2"	1	A2027009	2"
5	NIPPLE, GALV, SCH 40	2	A2016006	1" X 3"	2	A2018005	1-1/2" X 3"	2	A2019004	2" X 3"
6	TUBE FTG, BRASS, ELBOW	2	A2130011	3/8"T X 1/4"MPT	2	A2130011	3/8"T X 1/4"MPT	1	A2130011	3/8"T X 1/4"MPT
7	TUBE FTG, BRASS, BRANCH TEE	1	A2477005	3/8"T X 1/8"MPT	1	A2477005	3/8"T X 1/8"MPT	1	A2130017	3/8"T X 1/4"MPT
8	BLACK POLY TUBING	10'	A2165007	3/8" OD (LIN. FT.)	10'	A2165007	3/8" OD (LIN. FT.)	10'	A2165007	3/8" OD (LIN. FT.)
9	PLUG, GALV.	1	A2034002	1/4"	1	A2034002	1/4"	1	A2034002	1/4"
10	Y-STRAINER	1	B1038007	–	1	B1038007	–	1	B1038007	–
11	TUBE, 1/4" POLY	–	–	–	–	–	–	3	A2165022	1/4" OD (LIN. FT.)
12	NIPPLE, GALV, SCH 40	–	–	–	1	A2018011	1-1/2" X 6"	1	A2019010	2" X 6"
13	TUBE FTG, BRASS, ELBOW	–	–	–	–	–	–	1	A2130008	1/4"T X 1/4" MPT
14	CAM, TRI-STACK	1	A2082032	–	1	A2082032	–	–	–	–
15	BRACKET, TRI-STACK CAM	1	A2328003	–	1	A2328003	–	–	–	–
16	ROLL PIN	1	A2098012	.09375 X .875	1	A2098012	.09375 X .875	–	–	–

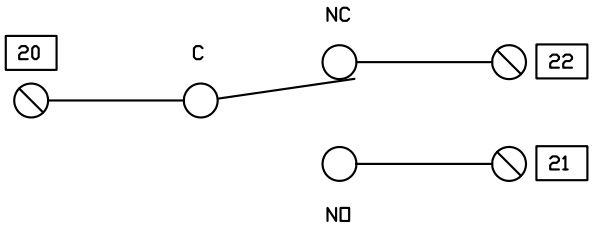
INSTALLER NOTES:
1. VALVES AND FITTINGS ARE SHIPPED LOOSE FOR ASSEMBLY ON SITE.
2. INSTALL VALVE AND FITTING PACKAGE INTO FILTER VALVE INLET AS SHOWN.
3. INSTALL ITEM #10 INTO SIDE PORT OF DIAPHRAGM VALVE HAVING THE HIGHEST CONTINOUS PRESSURE SOURCE. INSTALL ITEM 9 INTO OTHER DIAPHRAGM VALVE SIDE PORT.
4. ASSEMBLE ITEM #14 TO MOTOR SHAFT USING ROLL PIN ITEM #16 ASSEMBLE ITEM #1 & ITEM #15 TO VALVE BACKPLATE. ITEM #15 MUST BE POSITIONED TO SUPPORT SHAFT OF ITEM #14.
5. INTERCONNECT COMPONENTS WITH ITEM #8 TUBE AS SHOWN.
6. ITEMS IN DASHED LINES (DRAIN PIPING) PROVIDED BY OTHERS.

AUX SWITCH (OPTIONAL)

The Aux Switch Option provides an extra switch on the brine valve cam assembly that ties to the terminal strip located on the back-plate of the valve. The switch provides a dry contact circuit that changes status dependent on filter valve’s step. It is most commonly used to lockout an RO activate a pump, or activate separate source inlet valves.

The switch is normally closed during service and normally open during regeneration.





STEP	DRY CONTACT STATUS	
	OPEN	CLOSED
SERVICE	20-21	20-22
BACKWASH/ / REGENERATION	20-22	20-21

Contact Rating: 220 VAC Max. / 2.0 AMP Max.

CONSTRUCTION NOTES:

1. INSTALL MICROSWITCH ASSEMBLY NEXT TO BRINE VALVE CAM ASSEMBLY ON VALVE.
2. INSTALL THE 3 TERMINALS AND LABEL THE TERMINALS NUMBERS 20, 21, 22.
3. WIRE THE MICROSWITCH USING 16 AWG RED WIRE.
4. WIRE AS FOLLOWS:
   COMMON TO 20
   NORMALLY OPEN TO 21
   NORMALLY CLOSED TO 22

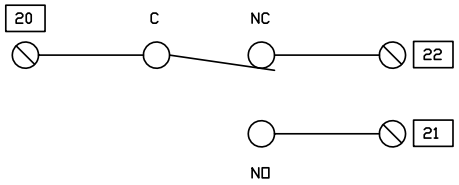
LOCKOUT SWITCH NOTES:

2900 AND 3900 VALVE ALREADY USES THIS SWITCH FOR ITS OPEERATION.
3150 VALVE SYSTEM 4 THIS SWITCH IS ALREADY INSTALLED ON THE VALVE
AND IS AVAILABLE FOR RD LOCKOUT USE.

PN	QTY	DESCRIPTION
MICROSWITCH ASSEMBLY		
A2154001	1	MICROSWITCH VALVE / STAGER RD LOCKOUT
A2083027	2	SCREW 4-40 X 1/2 SELF TAP PHIL MACH
A2490014	1	CAM SHUTOFF VALVE (12777)
A2098012	1	ROLL PIN .09375 X .875 (10338)
A2158001	1	INSULATOR LIMIT SWITCH (10302)
TERMINAL STRIP ASSEMBLY		
A2445043	1	END STOP W / FIXING FLANGE
A2307015	3	TERMINAL BLOCK GRAY 15A 300V
A2457003	2	SCREW 6-32 X 3/8 MACH RD HD SS
A2095048	2	6-32 NUTS SS
A2486021	2	WASHER LOCK #6 SPLIT SS
A2173009	3 FT	WIRE 16 RED

WIRINIG DIAGRAM OF AUXILLIARY SWITCH (5 AMP MAXIMUM)

SWITCH ON NORMALLY CLOSED SIDE DURING SERVICE. NORMALLY OPEN DURING REGENERATION.



REVISIONS			
NO.	DATE	BY	REMARKS

MARLO INCORPORATED

BRINE VALVE CAM SWITCH ADDITION TO TOP MOUNT MULTIPORT VALVE

FRAC.±	DEC.±	FILE ID.	B1055006
DRN.	JEC	SCALE NTS	SHEET 1 OF 1
APP'D.		DRAWING NO.	REV.
DATE	2-3-04	B1055006	0

INSTALLATION INSTRUCTIONS

GENERAL INFORMATION

1. Minimum operating pressure is 25 psi. If pressures less then 25 psi are encountered, a pump must be installed.
2. Maximum operating pressure is 120 psi. If pressures greater then 120 psi are encountered, a pressure regulator must be installed.
3. Power requirements are shown on inside cover of the control valve.
4. Standard units are designed to condition unheated water not to exceed 100° F. Special valve assemblies are available to handle heated water supplies exceeding 100°F. Consult factory if applicable.
5. Each mineral tank is shipped with distributor manifold and control valve preassembled. Take care when uncrating and erecting so that no items are damaged.
6. The distributor assembly has been shipped inside the fiberglass mineral tank. Check to make sure that there is no damage to the riser pipe, basket, laterals, or hub.

LOCATE MINERAL TANKS

1. Select a location that is accessible and near a floor drain that has adequate carrying capacity to handle the water conditioner backwash flow. See specification table for the backwash flow rate.
2. Erect the mineral tanks on a concrete or other firm foundation and level.
3. A grounded electric receptacle is required for the control valves.

LOAD FILTER TANKS

1. On sizes 10 and 12 the media has been pre-loaded at the factory. Skip this section and go to “Mount Control Valve Assembly”.
2. Fill tank(s) approximately 1/3 full of water using a hose, bucket, etc. Plug the PVC distributor manifold pipe using a plastic cap, cork, rag, etc. No gravel or resin should go into this distributor manifold pipe.
3. Verify the distributor manifold is center in the tank with the distributor resting on the bottom of the tank. Verify the riser pipe is still plugged.
   Note: Reference the specification table in the front of this manual for the correct quantities of gravel and media. Note that these quantities are for each tank. Make sure you have the required amounts on site before you begin.
4. With care not to damage any lateral, pour in the gravel provided for each tank through the top opening in the tank and level out evenly. This will cover the distributor assembly.
   Note: Wetting the gravel in the bags before loading will eliminate the normal amount of dust.
5. When gravel is loaded and leveling is completed, proceed as follows:
6. Refer to the specification table for the correct amounts and the order of media. Load the bottom layer first and work your way up to the top layer. With the distributor riser pipe still plugged, add the proper amount of media supplied for each tank through the top opening in the tank and then level the media layer.
7. Repeat step 6 for each type of media.
8. When loading is complete, remove plastic cap, cork, or rag that was used to plug the distributor riser pipe. Be careful not to let any foreign debris fall into the pipe. The result could be damage to system.
9. Repeat instruction steps 1-8 for each media tank.

MOUNT CONTROL VALVE ASSEMBLY

1. Verify that the distributor riser pipe is not plugged.
2. Lubricate the distributor O-ring on the bottom of the control valve with silicone.
3. Insert disperser in threaded base of control valve. The threaded base has a groove machined into the inside of the threaded part of the base to allow for the installation of this disperser.
4. Screw control valve into top opening of tank making sure the distributor riser pipe slides easily through the distributor O-ring. Care must be taken not to “nick” this O-ring as hard water leakage could result.
5. Tighten down the control valve to ensure positive O-ring seal at top of tank.
6. Repeat instruction steps 1-5 for each filter tank.

INSTALLATION OF CONNECTION PIPING

Note:

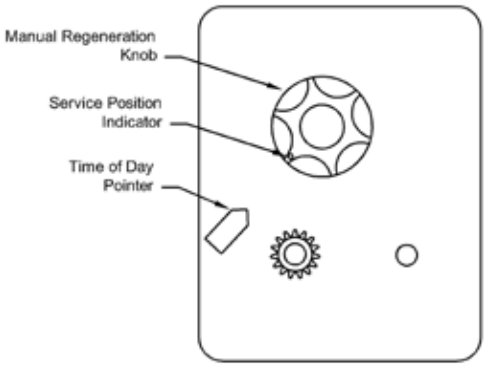
- Use thread sealing tape on all threaded piping connections.
- Install the piping conforming to federal, provincial, and local codes.
- Union or flanges are recommended at the control valve’s inlet, outlet, and drain connections
- To enhance the monitoring of the system’s performance sample valves and pressure gauges can be installed at the inlet and outlet piping to each control valve.
- If distance of drain line is over a 10 ft. vertical or 25 ft. horizontal run, increase drain line one pipe size over that provided on the control valve.
- Do not make a direct connection to the drain. Provide an air gap of at least four times the diameter of the pipe to conform to sanitation codes and to permit observation of the flow.

Caution: All piping must be properly supported. The tank and valve assemblies are not meant to support the connecting piping.

1. Install piping as shown on installation diagram. It is recommended that unions be installed on inlet and outlet connections to facilitate service of unit. Be sure piping is free of thread chips and other foreign matter. The connecting piping should be the same size or larger then the service inlet and outlet of the control valve. On multiple units that are both in service at the same time the common service inlet and outlet headers should be up-sized to accommodate the total flow.
2. Verify that the flow arrow stamped on the brass flow controller is pointing away from the control valve. See installation diagram or valve manual for the location. Install a drain line from backwash control assembly to an appropriate drain using a minimum of elbows. Install a union near the backwash control to facilitate cleaning. Do not install a valve on the drain line.

START-UP

Note: The Activated Carbon needs be allowed to soak for 1 to 2 hours before it can be backwashed. Dry Activated Carbon tends to float in water and will washout to drain.

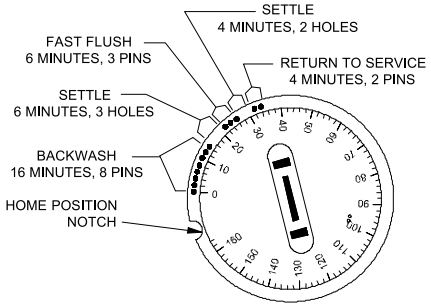


1. Make sure all plumbing is complete and tight including drain line(s). Make all electrical connections per wiring diagrams provided.
2. Make sure inlet and outlet isolation valves are closed, and then turn on power to the system.
3. Remove the black plastic cover from the control valve. The regeneration cycle timer is secured to the backplate of the control valve. The timer is hinged on the right side. Grab the upper left corner of the timer and pull towards you. The timer will swing out to the right. The backside of the timer has a program wheel with holes and pins in it. Each hole or pin represents two (2) minutes.

The holes and pins control the regeneration cycle times as follows:

Step 1 - (Backwash)	First group of pins
Step 2 - (Settle)	First group of holes
Step 3 - (Fast Rinse)	Second group of pins
Step 4 - (Settle)	Second group of holes
Step 5 - (Return to Service)	Third group of pins

PROGRAM WHEEL



4. Locate the manual regeneration knob on the front side of the timer. Slightly turn the knob clockwise. The control valve will advance to backwash position. Be patient this will take several minutes.
5. Remove electrical power from unit, and then slowly open inlet water valve approximately half open. Water will begin to fill through bottom distributor into tank. When tank is full, water will begin to flow out of drain line. Slowly pen the inlet valve until full open. Allow water to flow from drain line for approximately 15 minutes.

   Note: Carbon filters will normally have considerable black fines on the initial backwash and may take 10–15 minutes to run clear. Monitor this drain water flow carefully. There is a problem if you see media in the drain water. Turn off inlet water immediately and then consult factory.
6. Restore electrical power to unit. Advance the control valve to settle position, using the same method as step 5. There should also be to flow at the drain line.
7. Advance the control valve to the fast rinse position. Remove electrical power to the unit. Let water run to drain position for approximately 5 minutes or until water runs clear.
8. Advance control valve to service position.
9. Proceed to start up the next tank (if applicable), by repeating steps 1-8.

SETTING THE TIME / DAY CLOCK

How to set the time of day:

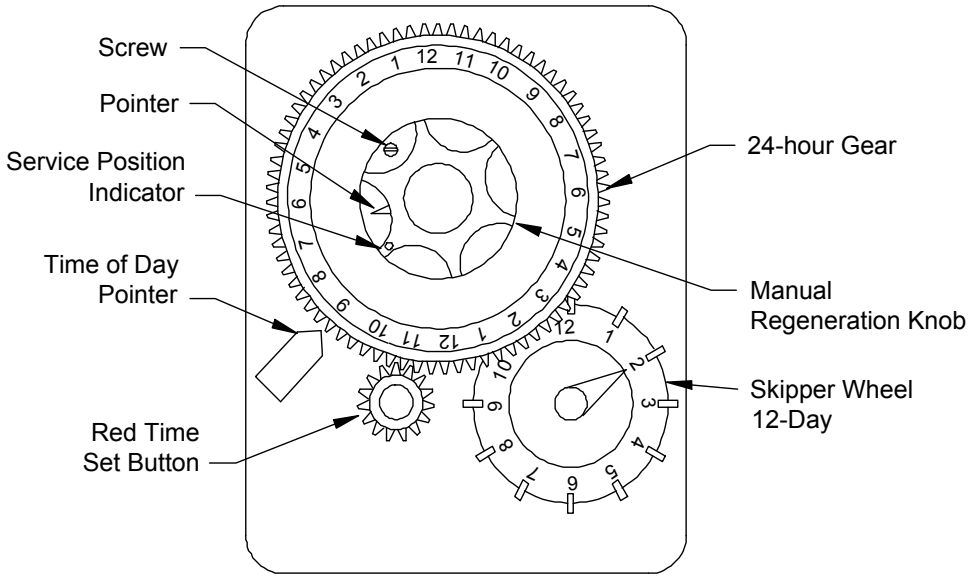
1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time is at the time of day pointer.
3. Release the red button to again engage the drive gear.

How to set days on which the filter is to regenerate:

1. Rotate the skipper wheel until the number “1” is at the red pointer.
2. Set the day 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.
3. Moving clockwise from the red pointer, extend or retract fingers to obtain the desired regeneration schedule.

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 manual regeneration knob will make one revolution in 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 only 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 the time of day regeneration occurs:

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 cutout. The pointer is hard to see.
5. Turn the time plate so the pointer on the desired regeneration time aligns next to the raised arrow.
6. Push the red button in and rotate the 24-hour dial. Tighten each to 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.

Note: On twin or triple unit filters with time clock controls, each unit should be set to regenerate on different days or different times to avoid simultaneous regenerations.

Note: The screw and pointer are shown for reference only. There is only one cutout in the knob

SETTING THE TIME CLOCK AND GALLONAGE (For filters with the water meter option)

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 the program wheel gear. Release the gallon dial and check for firm engagement with the gear.

Note: To set meter capacity at the initial start-up, either:

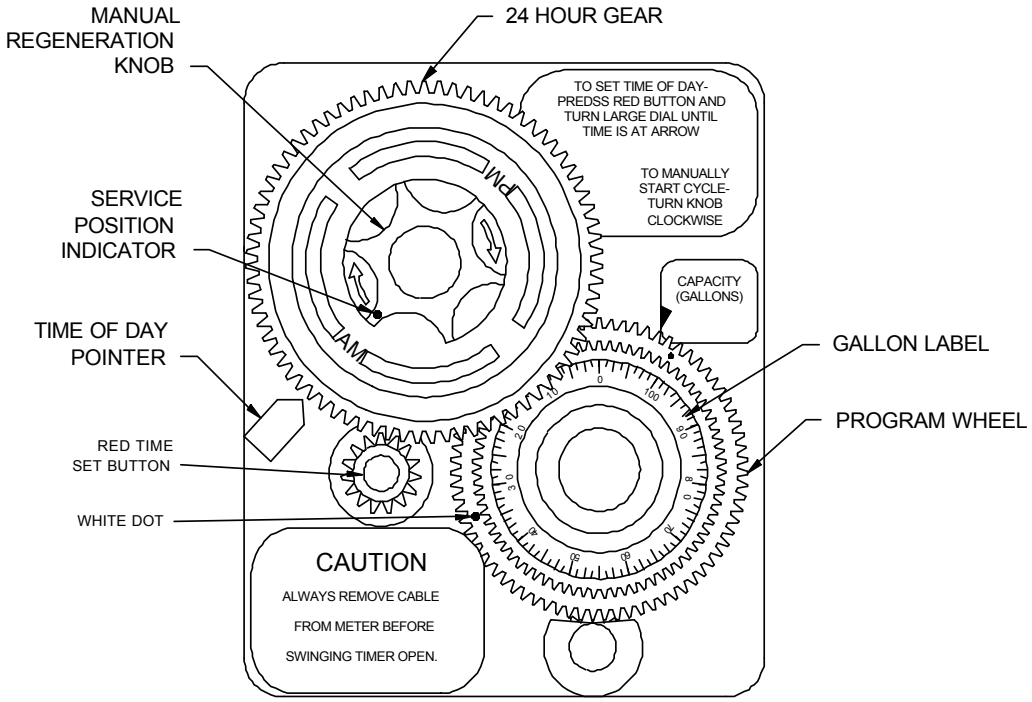
- Rotate the manual regeneration knob one full revolution.
- Rotate the program wheel manually clockwise and align the white dot with the capacity arrow.

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 is at the time of day pointer.
3. Release the red button to again engage the drive gear.

How to manually regenerate your filter 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 manual regeneration knob will make one revolution in 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 only half of this time. In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.



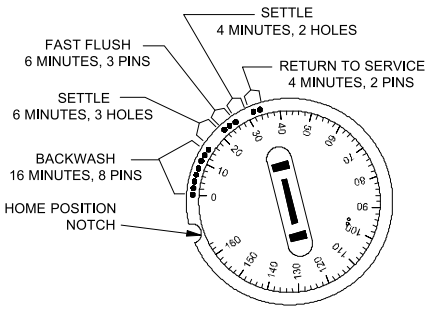
SETTING THE REGENERATION CYCLE PROGRAM TIMER

The regeneration cycle program on your water softener has been factory set. However, portions of the cycle program may be lengthened or shortened in time to suit local conditions. The regeneration cycle timer is secured to the back-plate of the control valve. The timer is hinged on the right side. Grab the upper left corner of the timer and pull towards you. The timer will swing out to the right. The backside of the timer has a program wheel with holes and pins in it.

The holes and pins control the regeneration cycle times as follows:

Step 1 - (Backwash)	First group of pins
Step 2 - (Settle)	First group of holes
Step 3 - (Fast Rinse)	Second group of pins
Step 4 - (Settle)	Second group of holes
Step 5 - (Return to Service)	Third group of pins

PROGRAM WHEEL



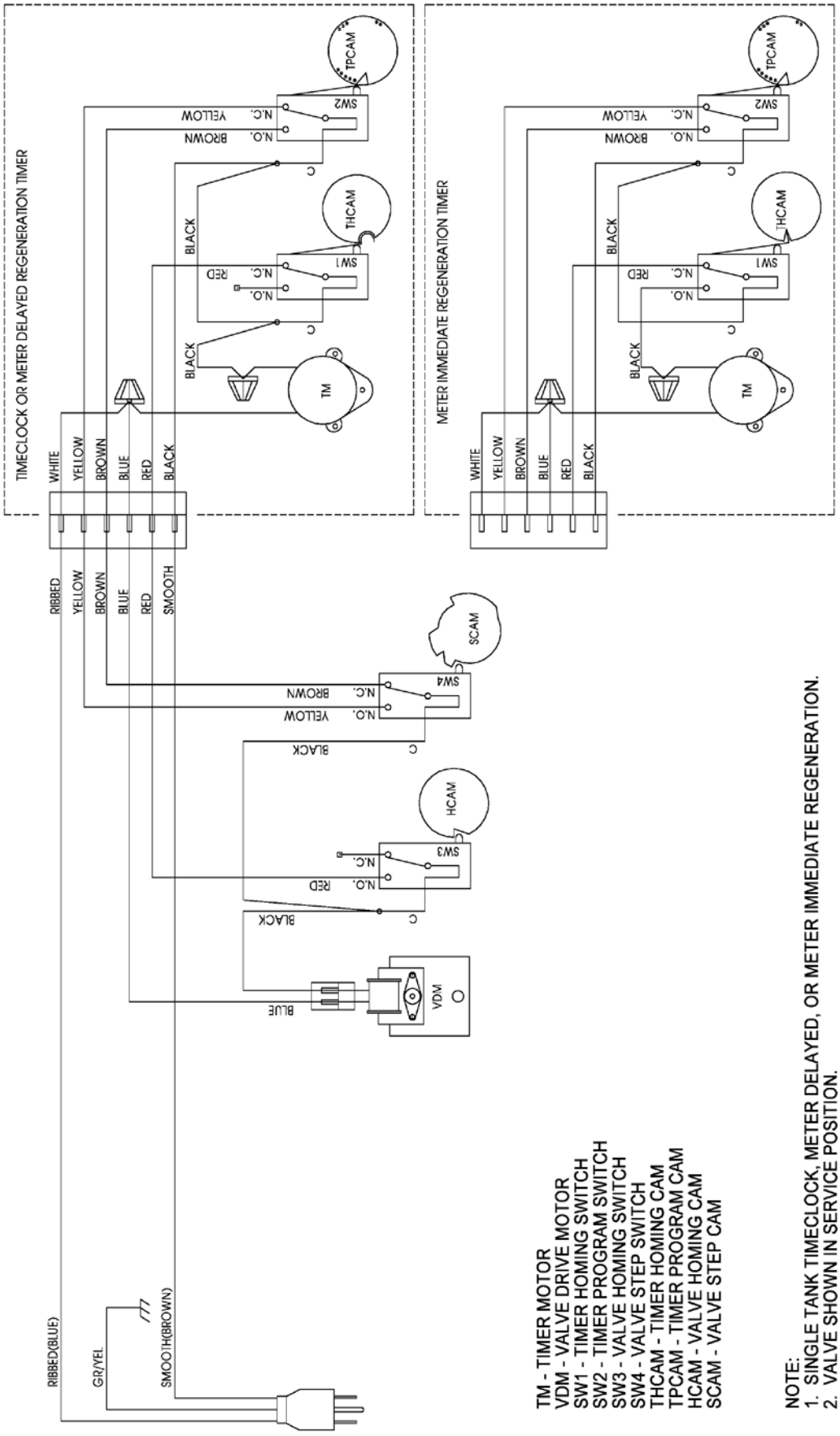
- **Backwash**: The cycle duration is factory set at 16 minutes for clean feed water applications. Increase time if turbidity is present in the feed water.
- **Settle**: The cycle duration is factory set at 6 minutes for clean feed water applications.
- **Fast Flush**: The cycle duration is factory set at 6 minutes.
- **Settle**: The cycle duration is factory set at 4 minutes.
- **Cycle End**: The cycle duration is factory set at 4 minutes. Its purpose is to identify the end of regeneration and advance the filter back to the service cycle.

To adjust the regeneration cycle program it is easier to remove the program wheel by pushing the two black tabs located in the center of the program wheel while pushing up on the program wheel.

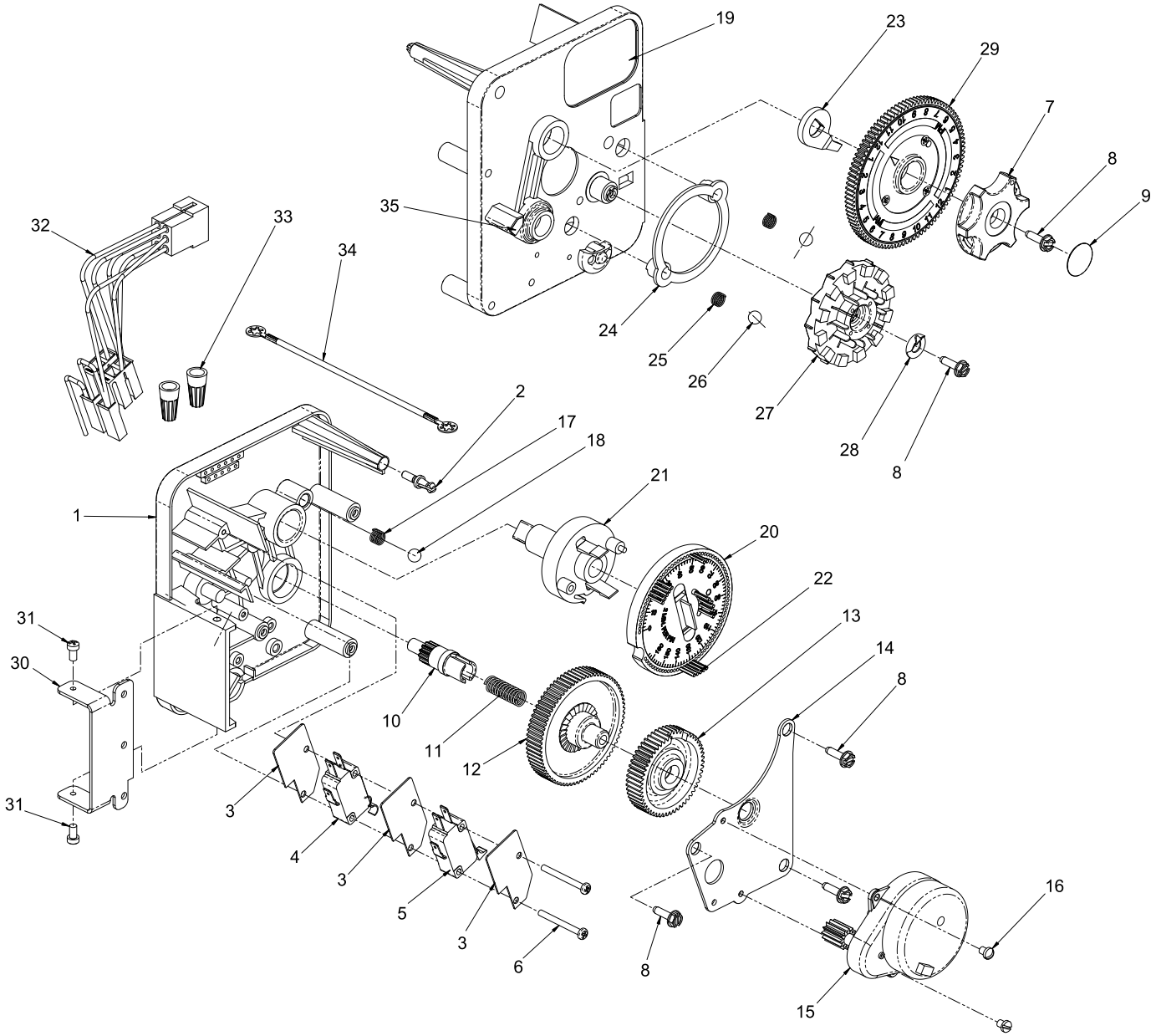
As you look at the number side of the program wheel, starting at zero the number of the group of pins determines the length of time that your unit will be in Backwash. If there are six pins in this section, the time of backwash will be 16 minutes (2 minutes per pin). You must add or remove pins to change the length of this time. All the following groups of holes or pins must be adjusted to maintain their original time.

Important: Changing the time duration in any cycle will require a readjustment of all pins and holes for all the following steps.

2750 WIRING DIAGRAM



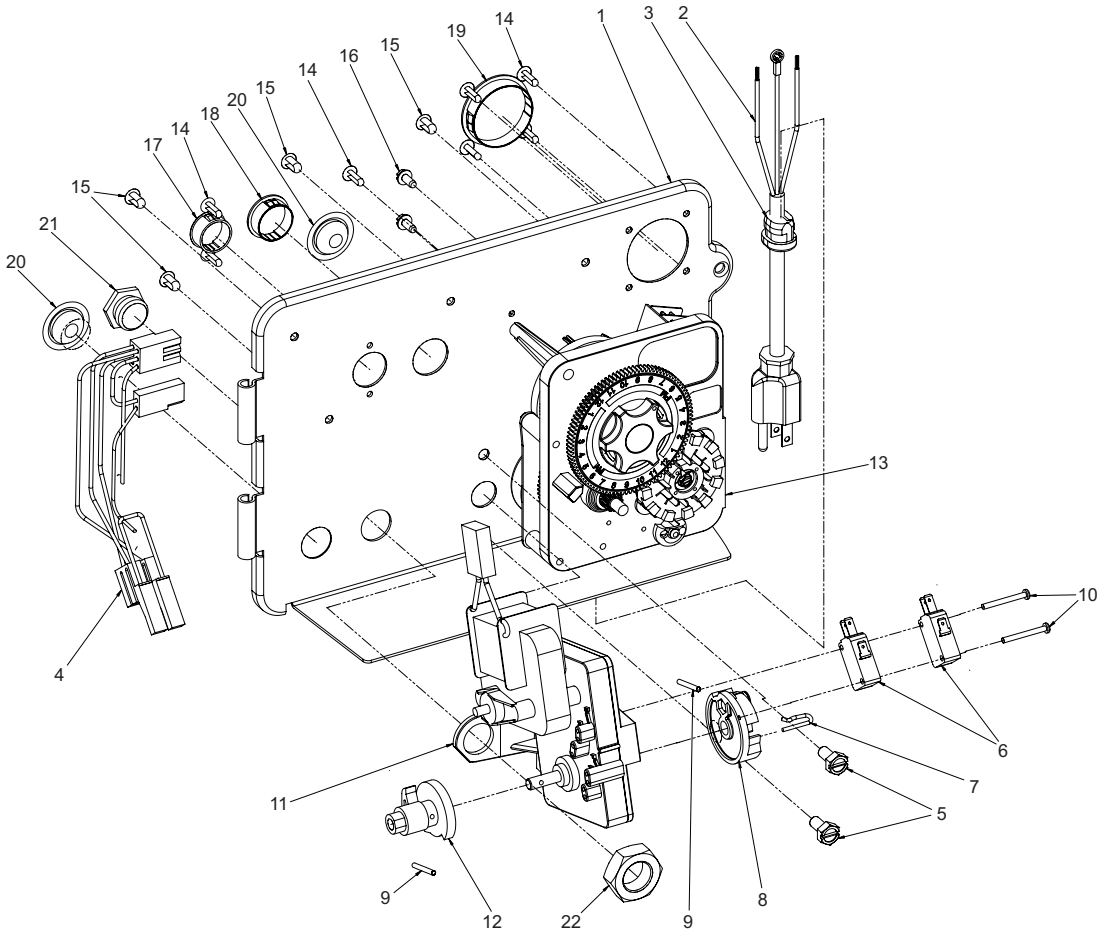
3200 TIMER ASSEMBLY



3200 TIMER ASSEMBLY PARTS LIST

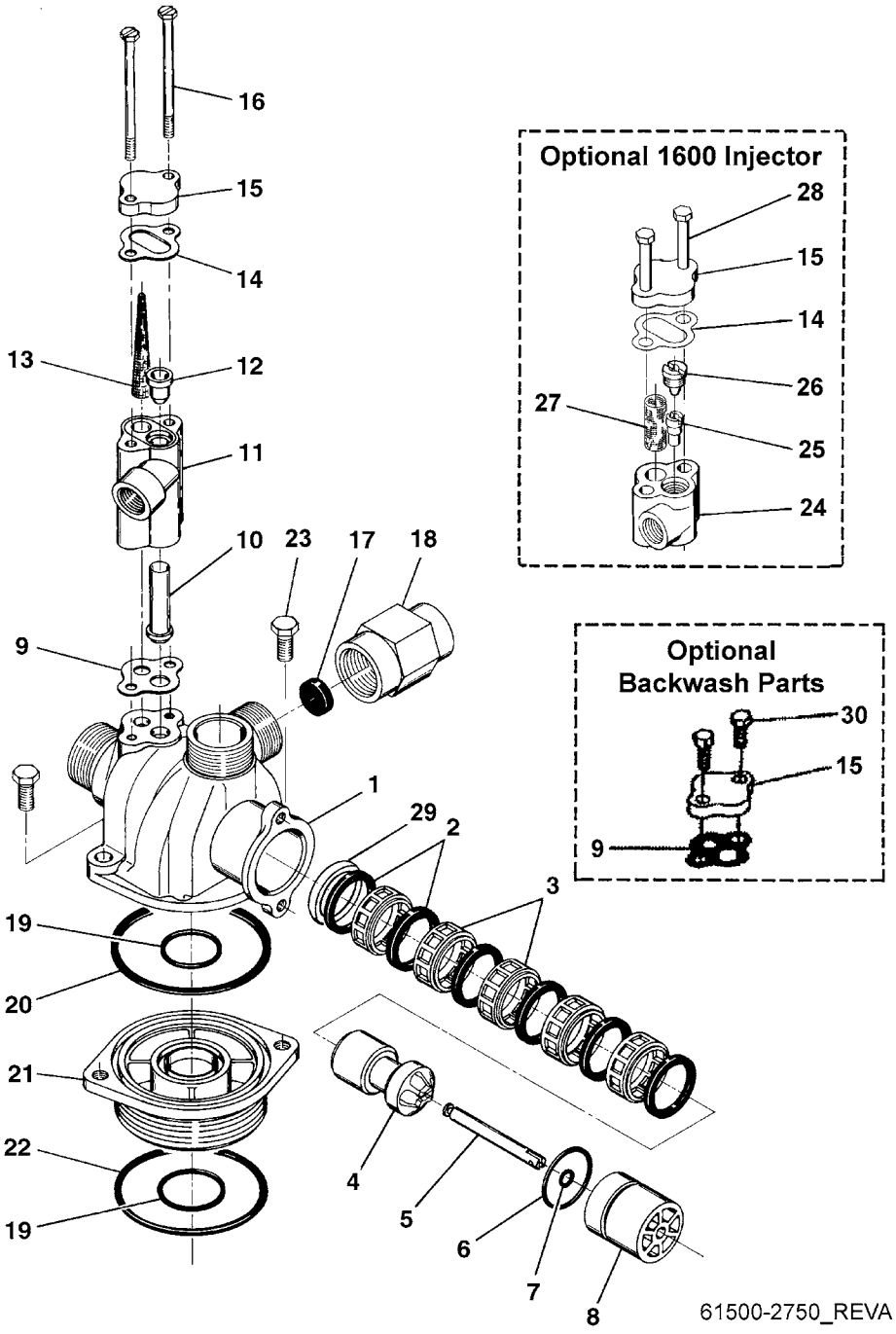
Item No.	Quantity	Part No.	Description
1	1	13870	Housing, Timer, 3200
2	1	14265	Clip, Sping
3	3	14087	Insulator
4	1	10896	Switch, Micro
5	1	15320	Switch, Micro, Timer
6	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8
7	1	13886	Knob, 3200
8	5	13296	Screw, Hex Wsh, 6-20 x 1/2
9	1	11999	Label, Button
10	1	13018	Pinion, Idler
11	1	13312	Spring, Idler Shaft
12	1	13017	Gear, Idler
13	1	13164	Gear, Drive
14	1	13887	Plate, Motor Mounting
15	1	18743-1	Motor, 120V, 60Hz, 1/30 RPM, 5600
		19659-1	Motor, 24V, 60Hz, 1/30 RPM
16	2	13278	Screw, Sltd Fillister Hd 6-32 x .156
17	1	15424	Spring, Detent, Timer
18	1	15066	Ball, 1/4”, Delrin
19	1	15465	Label, Caution
20	1	19210	Program Wheel 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
		14860	Skipper Wheel Assy, 7 Day
28	1	13014	Pointer, Regeneration
29	1	40096-24	Dial, 12 AM Regen Assy, Black
		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

2750 POWERHEAD - ENVIRONMENTAL



Item No.	Quantity	Part No.	Description
1	1	18697-13	Backplate, Hinged
2	1	11838	Power Cord, 6’ Fleck
3	1	13547	Strain Relief, Cord
4	1	40400	Harness, Drive, Designer/Enviromental
5	2	10231	Scrw, Slot Hex, 1/4-20 x 1/2
6	2	10218	Switch, Micro
7	1	10909	Pin, Connecting Rod Spring
8	1	60160-15	Drive Cam Assy, STF, Blue, 2900
9	2	10338	Pin, Roll, 3/32 x 7/8
10	2	14923	Screw, Pan HD Mach, 4-40 x 1
11	1	41543	Motor, Drive, 115V/60HZ
12	1	12777	Cam, Shut-off Valve
13	1	61502-3200	Timer Assy, 3200 Clock
14	7	19800	Plug (Hole Size: Dia .140)
15	4	19801	Plug, Dia .190
16	2	10300	Screw, Hx Wash Head, 8 x 3/8
17	1	15806	Hole Plug, Heyco
18	1	16493	Plug, Hole, Heyco, .88 Dia
19	1	40306	Plug, 1.50 Hole, Dome, Heyco
20	2	19691	Plug, .750 Dia. Hole, Flush
21	1	10712	Fitting, Brine Valve
22	1	10269	Nut, Jam, 3/4-16

2750 CONTROL VALVE



2750 CONTROL VALVE

Item No.	Quantity	Part No.	Description
1	1	14749	Valve Body, 2750
2	6	10545	Seal, Piston
3	5	11451	Spacer, 12 Hole
		16589	Spacer, HW
4	1	14451	Piston, 2750
5	1	14452	Rod, Piston
6	1	10234-01	O-Ring, -024, 560CD
7	1	10209	Quad Ring, -010
8	1	10598	End Plug Assembly
		10598-01	End Plug Assembly, Hot Water
9	1	14805	Gasket, Injector Body, 1600/1700
10	1	14802-xxc	Throat, Injector, -xxc is for Injector Size
11	1	17777	Body, Injector, 1700
12	1	14801-xxc	Nozzle, Injector, -xxc is for Injector Size
13	1	14803	Screen, Injector
14	1	10229	Gasket, Injector Cap, 1600
15	1	11893	Cap, Injector, Stainless Steel
		10228	Cap, Injector, Brass
16	2	14804	Screw, Hex Hd Mach, 10-24 x 2-3/4
17	1		Washer - Flow Control (specify size)
18	1	60365-00	Housing, DLFC, 1/2”F x 3/4”F
19	2	11710	O-ring, -215
20	1	11208	O-ring, -232
21	1	12461-01	Adapter Base, 1” 2-1/2” - 8 Quick Connect
22	1	10381	O-ring, -231
23	2	11224	Screw, Hex Hd, 5/16 - 18 x 5/8
24	1	17776	Body, Injector
25	1	10914-xx	Throat, Injector, -xx is for Injector Size
26	1	10913-xx	Nozzle, Injector, -xx is for Injector Size
27	1	10227	Screen, Injector
28	2	10692	Screw, Slot Hex Hd, 10-24 x 18-8 Stainless Steel
29	1	10757	Spacer, End
		10757B	Spacer, End, Brass
30	1	15137	Screw, Hex Wsh Mach, 10-24 x 3/8
Not Shown	1	16221	Disperser, Air, 1600
	1	17996	Disperser, Air, 1700

SERVICE ASSEMBLIES

ADAPTERS - SIDE MOUNT
A2285017 Side mount Adapter Assembly

AUXILIARY MICRO SWITCH
A2203010 3200 Series Timer
A2203108 Lower Drive (2nd Switch)

COVERS
A2103096 Environmental lower cover
A2103095 Environmental
A2103043 Designer 1 piece (only available in black)
A2103047 Designer Lower cover

DRAIN LINE FLOW CONTROLS
60366-_ _ 1” FNPT x ¾” FNPT (specify flow control .6 - 7.0)
60701-_ _ 1” FNPT x 1” FNPT (specify flow control 8.0 - 25.0)
60702-_ _ 1” FNPT x 1” MNPT (specify flow control 8.0 - 25.0)
60708-_ _ 1” FNPT x ¾” FNPT (specify flow control 8.0 - 25.0)
60721-_ _ 1” FNPT x 1” FNPT (specify flow control .6 - 7.0)

CAM ASSEMBLY
A2300002 Separate time fill drive cam (Black)
60160-20 Lower drive (Designer)
A2300013 Lower drive (Environmental)

PISTON ASSEMBLIES
A2309054 Upper Piston
A2309056 Lower piston, Hard Water By-Pass
A2309055 Lower Piston, No By-Pass

SEAL & SPACER KITS
A2435011 Upper kit
A2435026 Lower kit

SERVICE EQUIPMENT
A2475001 Seal & Spacer stuffer tool upper
A2474003 Spacer puller tool lower
A2475003 Seal & Spacer stuffer tool lower
A2474001 Spacer puller tool upper
A2423002 Silicone, 2 oz. Tube
A2164006 Meter Checker Std. Range
A2164005 Meter Checker Ext. Range

SERVICE VALVE OPERATOR ASSEMBLY (SVO)
A2207015 SVO (Old Style)
60150-01 SVO (New Style)

TROUBLESHOOTING 2750 VALVE

Problem	Cause	Correction
1. Water conditioner fails to regenerate.	**A.** Electrical service to unit has been interrupted	**A.** Assure permanent electrical service (check fuse, plug, pull chain, or switch)
	B. Timer is defective.	**B.** Replace timer.
	C. Power failure.	**C.** Reset time of day.
2. Untreated water.	**A.** By-pass valve is open.	**A.** Close by-pass valve
	B. Leak at distributor tube.	**B.** Make sure distributor tube is not cracked. Check O-ring and tube pilot.
	C. Internal valve leak.	**C.** Replace seals and spacers and/or piston.
3. Loss of water pressure.	**A.** Iron buildup in line to water conditioner.	**A.** Clean line to water conditioner.
	B. Iron buildup in water conditioner.	**B.** Clean control and add mineral cleaner to mineral bed. Increase frequency of regeneration.
	C. Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system.	**C.** Remove piston and clean control.
4. Loss of mineral through drain line.	**A.** Air in water system.	**A.** Assure that well system has proper air eliminator control. Check for dry well condition.
	B. Improperly sized drain line flow control.	**B.** Check for proper drain rate.
5. Iron in conditioned water.	**A.** Fouled mineral bed.	**A.** Check backwash, brine draw, and brine tank fill. Increase frequency of re-generation. Increase backwash time.
6. Control cycles continuously.	**A.** Misadjusted, broken, or shorted switch.	**A.** Determine if switch or timer is faulty and replace it, or replace complete power head.
7. Drain flows continuously.	**A.** Valve is not programming correctly.	**A.** Check timer program and positioning of control. Replace power head assembly if not positioning properly
	B. Foreign material in control.	**B.** Remove power head assembly and inspect bore. Remove foreign material and check control in various regeneration positions.
	C. Internal control leak.	**C.** Replace seals and piston assembly.