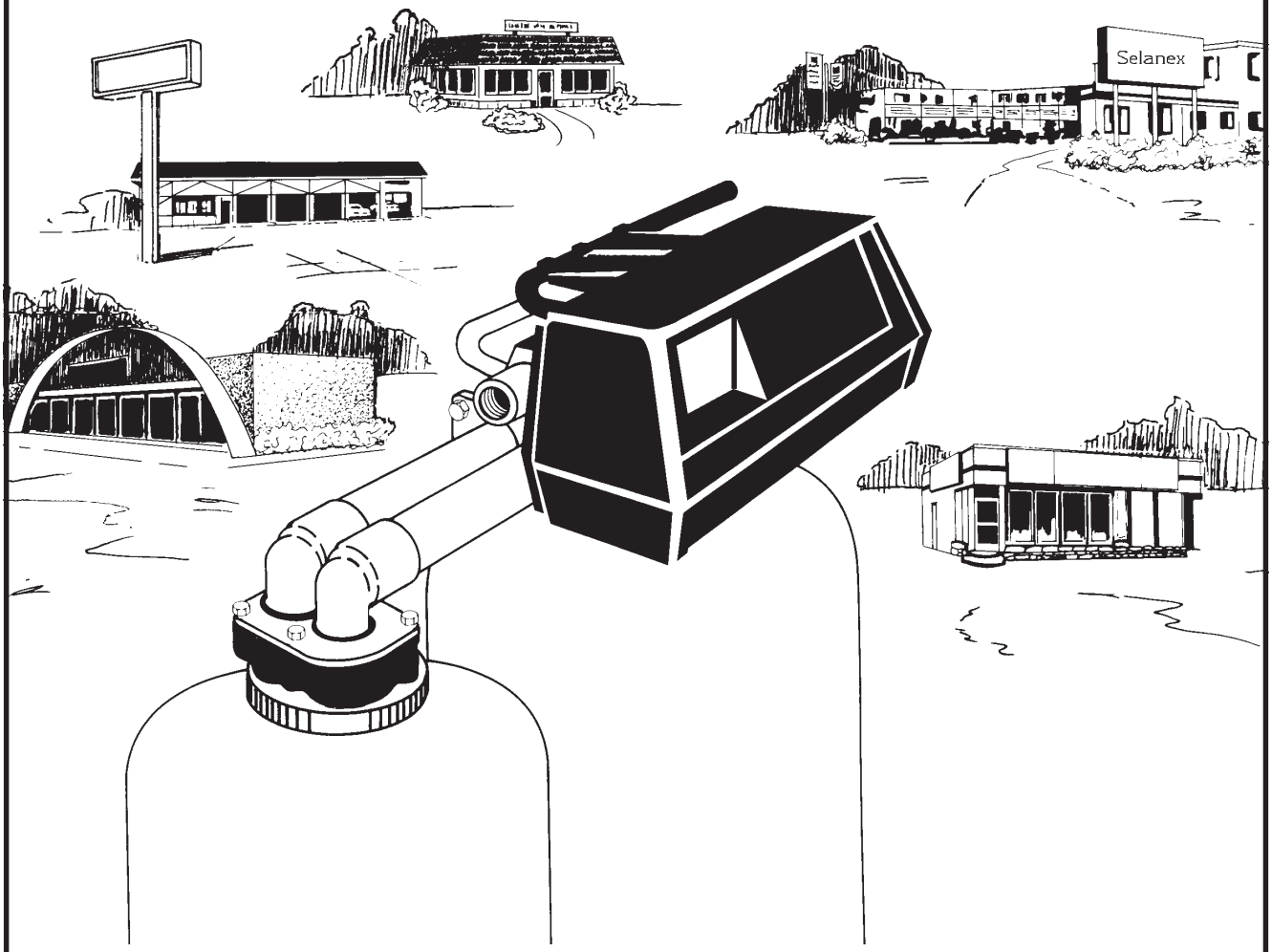
Model 9500SE
Customer Manual



CM9500SE-12/2006

MODEL 9500SE

Installation information

JOB NO: . . . . . .

MODEL NO: . . . . . .

DESIGN HARDNESS: . . . . . mg/l as $CaCO_3$

CAPACITY PER UNIT: . . . . . kg. $CaCO_3$

RESIN VESSEL SIZE: . . . . . DIA. x . . . . . HIGH

BRINE TANK SIZE: . . . . . DIA. x . . . . . HIGH

SALT SETTING PER REGENERATION: . . . . . Kg. NaCl

RESIN VOLUME: . . . . . LITRES

9500SE CONTROL VALVE SPECIFICATIONS & SETTINGS:

1) Type of Timer: SE electronic - Immediate meter initiation

2) Regeneration programme settings:

   a) Backwash . . . . . min.

   b) Brine & Slow Rinse . . . . . min.

   c) Rapid Rinse . . . . . min.

   c) Brine tank refill . . . . . min.

3) Drain Line Flow Control . . . . . lpm / US gpm.

4) Brine refill rate: . . . . . US gpm

5) Ejector size: . . . . . #

6) Electrical: 24 volt 50 Hz 15VA

FOR SERVICE CONTACT:

MODEL 9500SE

General installation check list

WATER PRESSURE: A minimum water pressure of 1,8 bar is required for the regeneration valve to operate effectively. The maximum water pressure must not exceed 8,6 bar.

ELECTRICAL FACILITIES: A continuous 24 volt, 50 Hz. current supply is required. Make certain the current supply is always live and cannot be turned off with another switch.

EXISTING PLUMBING: Existing plumbing should be free from hardness scale and iron buildup. Piping that is built up heavily with hardness scale 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.

BYPASS VALVES: Always provide for the installation of a bypass valve system.

CAUTION: Water pressure is not to exceed 8,5 bar. Water temperature is not to exceed 43°C. The unit must not be subjected to freezing conditions.

Physical installation *(see back page for layout)*

1. Place to water softener assembly in its final position, making sure that the assembly is on a firm and level base.

2. All plumbing connections should be made in accordance with the appropriate Regulations. The pipe size for the drain should not be less than 3/4" n.b.

3. If the main control valve and second tank adaptor are not already assembled to the pressure vessels then ensure that the centre distributor / riser tube is cut **10mm below** the top of the pressure vessel *(which includes any adaptor part).* Ensure that the top of the riser tube is cut square, deburred and chamfered.

4. Lightly lubricate the outside of the distributor tube - the top 10mm is sufficient - and also the large O-Ring that seals the valves to the pressure vessels. *NOTE: Use only silicone lubricant. Do not use petroleum grease or aerosol based lubricants.*

5. Interconnection between the main valve and the second tank adaptor is via the supplied copper pipe assembly. Ensure that the O-Rings are properly fitted during assembly to the valve ports. **See page 24**

6. If soldering pipework close to the final valve connections, ensure that heat cannot be transmitted or conducted to the plastic components. Failure to observe this requirement may cause permanent damage.

7. All inlet / outlet pipework threaded connections to the control valve must only be sealed with PTFE tape.

8. Ensure that when finally positioning the system that the floor under the components is clean and flat.

9. When all plumbing connections are completed, place the bypass valve system into the bypass position. Turn on the water supply and open a nearby cold water tap to allow water to flush out the new pipework. When it is running clean and clear, turn off the cold water tap but leave the system in bypass.

10. Connect the system to the electrical supply via a suitable transformer. NOTE: The control system is designed to operate at 24vac only. DO NOT CONNECT DIRECTLY TO THE MAINS ELECTRICAL SUPPLY.

Now you must set-up the control system

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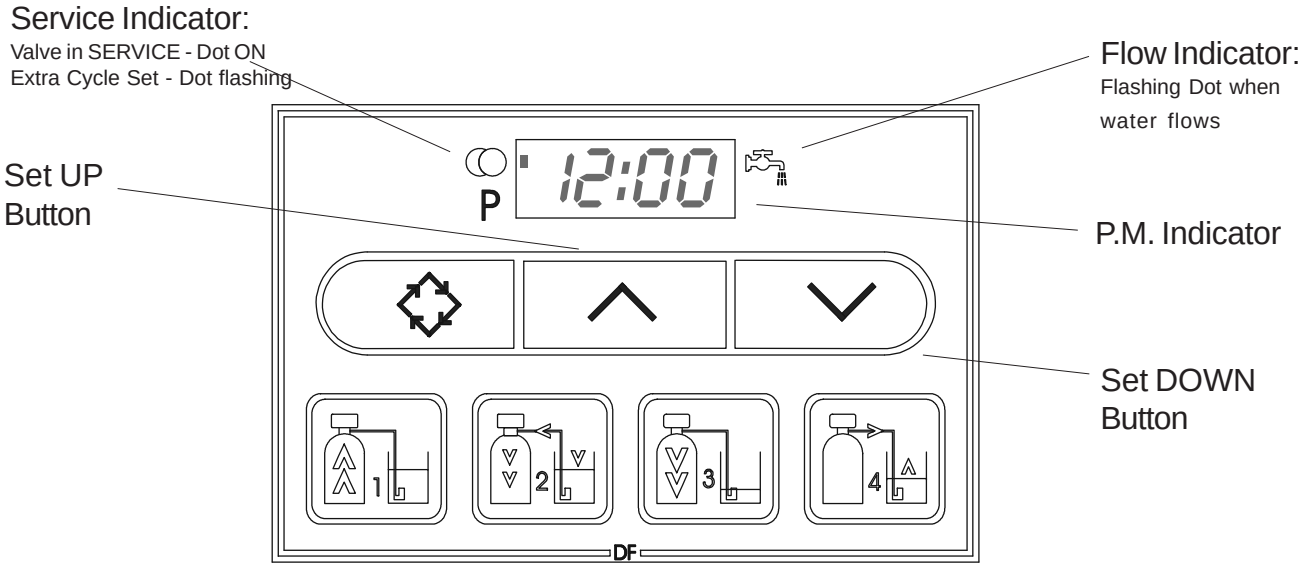
Control Start-Up Procedures

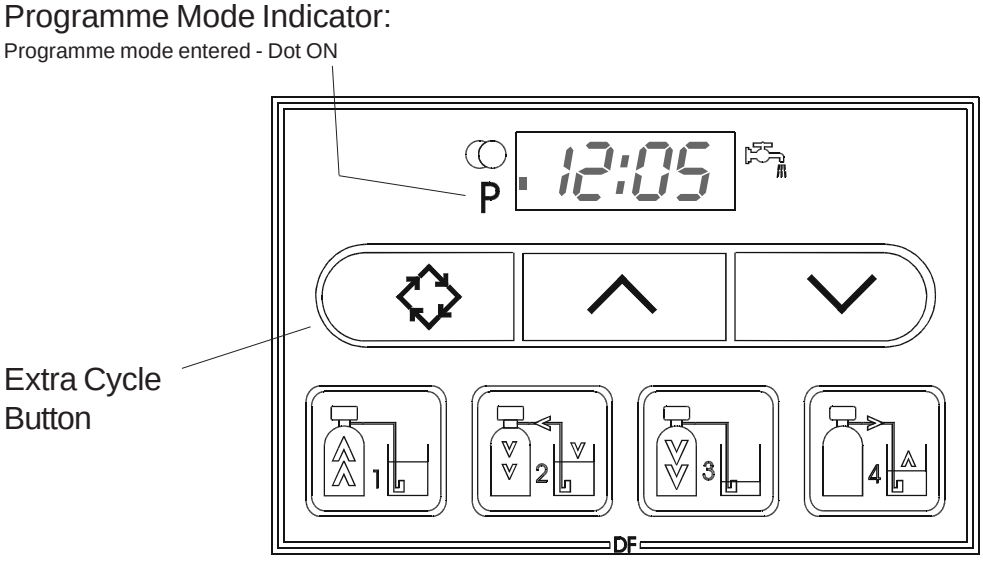
1. Set Time of Day

Whenever the valve is in Service the current time of day can be adjusted, the control programmed or an extra regeneration initiated



Push either the UP or DOWN set button once to adjust the Time of DAY display by one digit.
Push and HOLD either the UP or DOWN set button to adjust the Time of Day display by multiple digits

2. Enter Control Programming Mode



1. Push and HOLD both the UP & DOWN set buttons for 5 seconds to enter Programming Mode.
2. Push the Extra Cycle Button once per display until all have been viewed and this mode is exited and normal operation is resumed.

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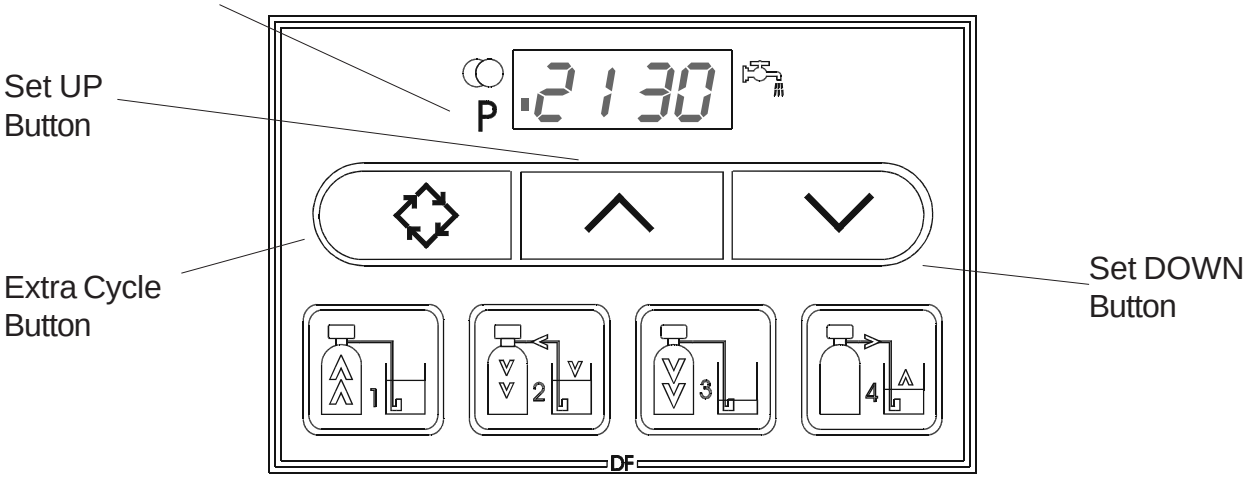
Control Start-Up Procedures

3. Set Control Programming

Programme Mode Indicator:
Programme mode entered - Dot ON



1. The first option setting display that appears in the Programme Mode is Treated Water Capacity. Using the Set UP or DOWN button, set the display to the capacity of the system in LITRES or CUBIC METRES. For example, in LITRES:

   2130 litres treated water capacity

   The maximum capacity setting in LITRES is 9999. If the softening capacity is greater than 9999 litres then the valve should have been programmed for a volume display in CUBIC METRES with an accuracy of one decimal place. If not, contact your supplier.
   If the control expects values in CUBIC METRES you will see a decimal point to the left of the extreme RH digit. The maximum setting range becomes 999.9m^3

2. Push the Extra Cycle button. The second option setting that appears is the Regeneration Day Override. Using the set UP or DOWN button, adjust the display to show OFF

3. Control programming is now complete. Push the Extra Cycle button again to exit the programming mode and return to normal service.

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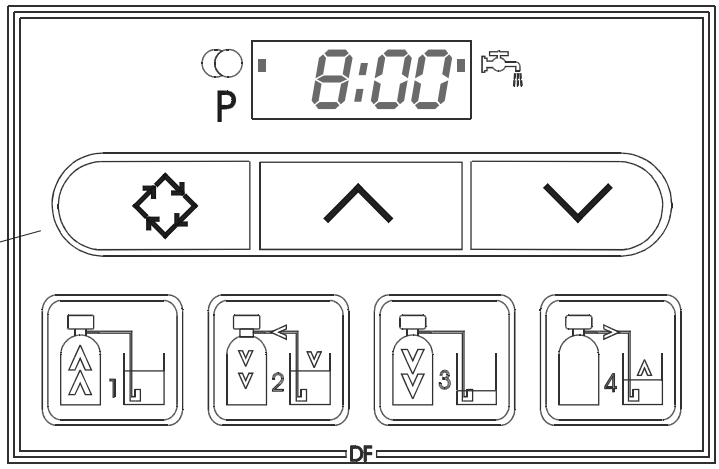
Control Start-Up Procedures

4. Start an Immediate Regeneration



Extra Cycle Button

1. Press and Release the Extra Cycle button:

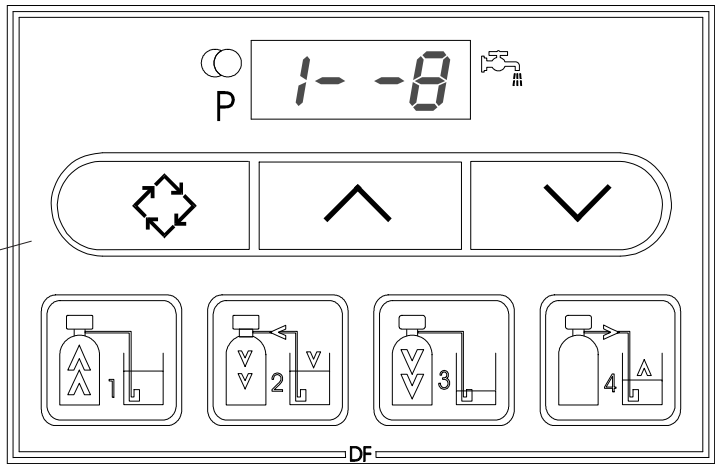
- With this ***Immediate Regeneration*** control the control will go into regeneration immediately.

5. Regeneration Cycle Displays

The following series of displays appear when the control enters a regeneration cycle *(times indicated are examples only)*:

Valve driving to regen step #1	P 1 - - -	Then	P 1 - - 8	Less than 9 min. remains in regen step #1
Valve driving to regen step #2	P 2 - - -	Then	P 2 - 5 8	Less than 59 min. remains in regen step #2
Valve driving to regen step #3	P 3 - - -	Then	P 3 - - 8	Less than 9 min. remains in regen step #3
Valve driving to regen step #4	P 4 - - -	Then	P 4 - 1 1	Less than 12 min. remains in regen step #4
Regen complete Valve driving to service position	P - - - -	Then	P 8:8 8	Valve has returned to service

6. Fast Cycling the Valve through a Regeneration



Extra Cycle Button

A. Initiate a regeneration - see step 4. Once the valve reaches Regen step #1 let water flow to drain for approx. 5 minutes.

Next, manually step the valve through a regeneration cycle, check valve function in each step:

B. Push the ***Extra Cycle*** button once to advance the valve to Regen. step # 2
C. Push the ***Extra Cycle*** button once to advance the valve to Regen. step # 3
D. Push the ***Extra Cycle*** button once to advance the valve to Regen. step # 4
E. Push the ***Extra Cycle*** button a last time to advance the valve back to SERVICE

Repeat this process for the other tank.

7. Final Set-Up

With proper valve operation verified:

A. Add water to the salt container until the top of the air check is covered. Manually step the valve into the **BRINE DRAW** position (step #2) and allow the valve to draw water out of the salt container until the water level reduces no further. The water level should be at the mid-point of the screen section of the screen intake area,

B. Manually step the valve to the **BRINE REFILL** position and then allow the valve to return to the **SERVICE** position automatically.

C. With the valve in the **SERVICE** position, place salt into the salt container to the recommended level. - Use the type of salt recommended by your supplier.

Set-Up is now completed and the control can be left to run automatically.

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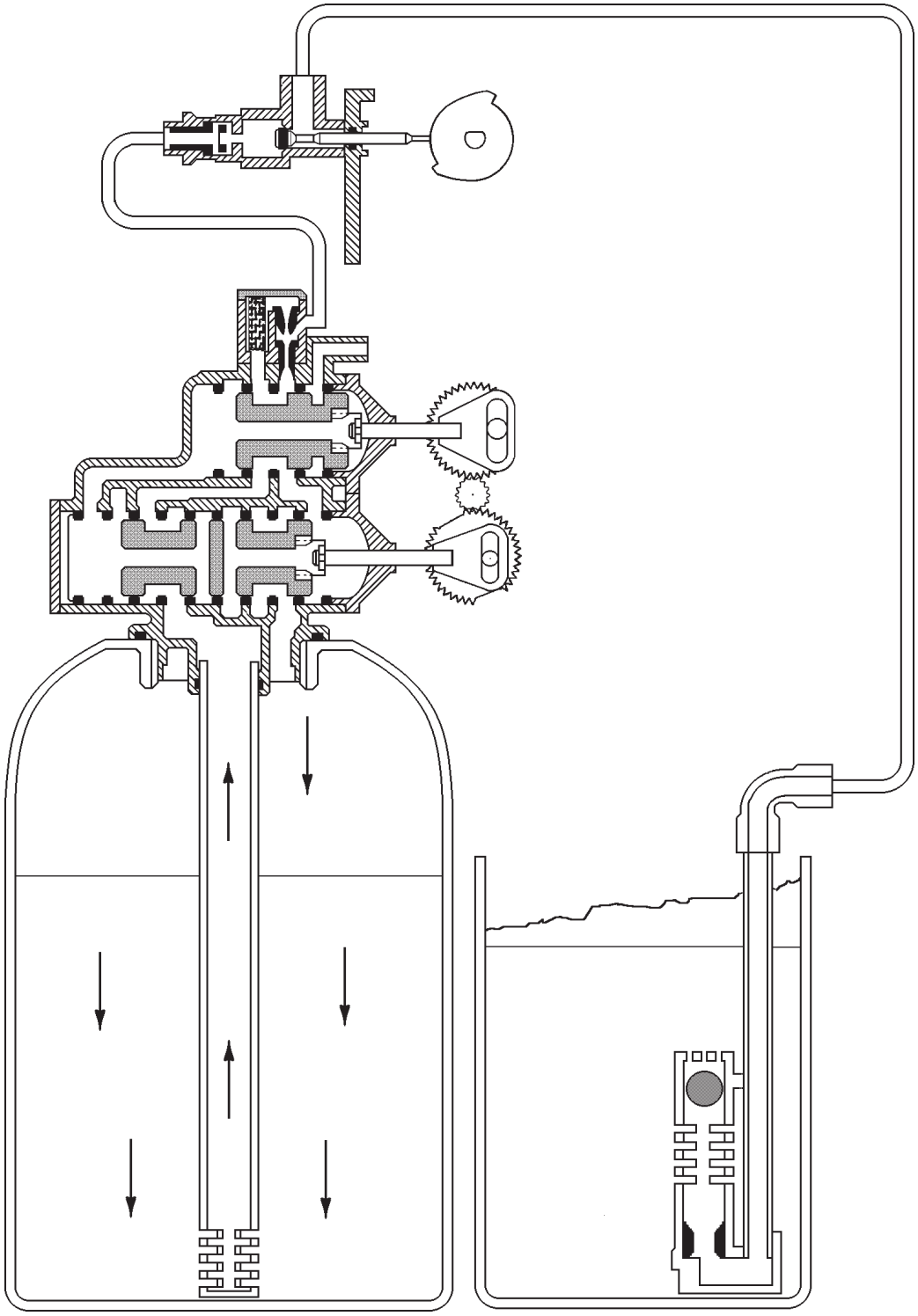
Service position



Hard water enters the system at the valve inlet, flows around the lower piston & down through the resin in the first pressure vessel. Softened water exits via the bottom collector system in the resin vessel, flows around the lower piston and flows to service via the system water meter. The second resin vessel is regenerated & on standby.

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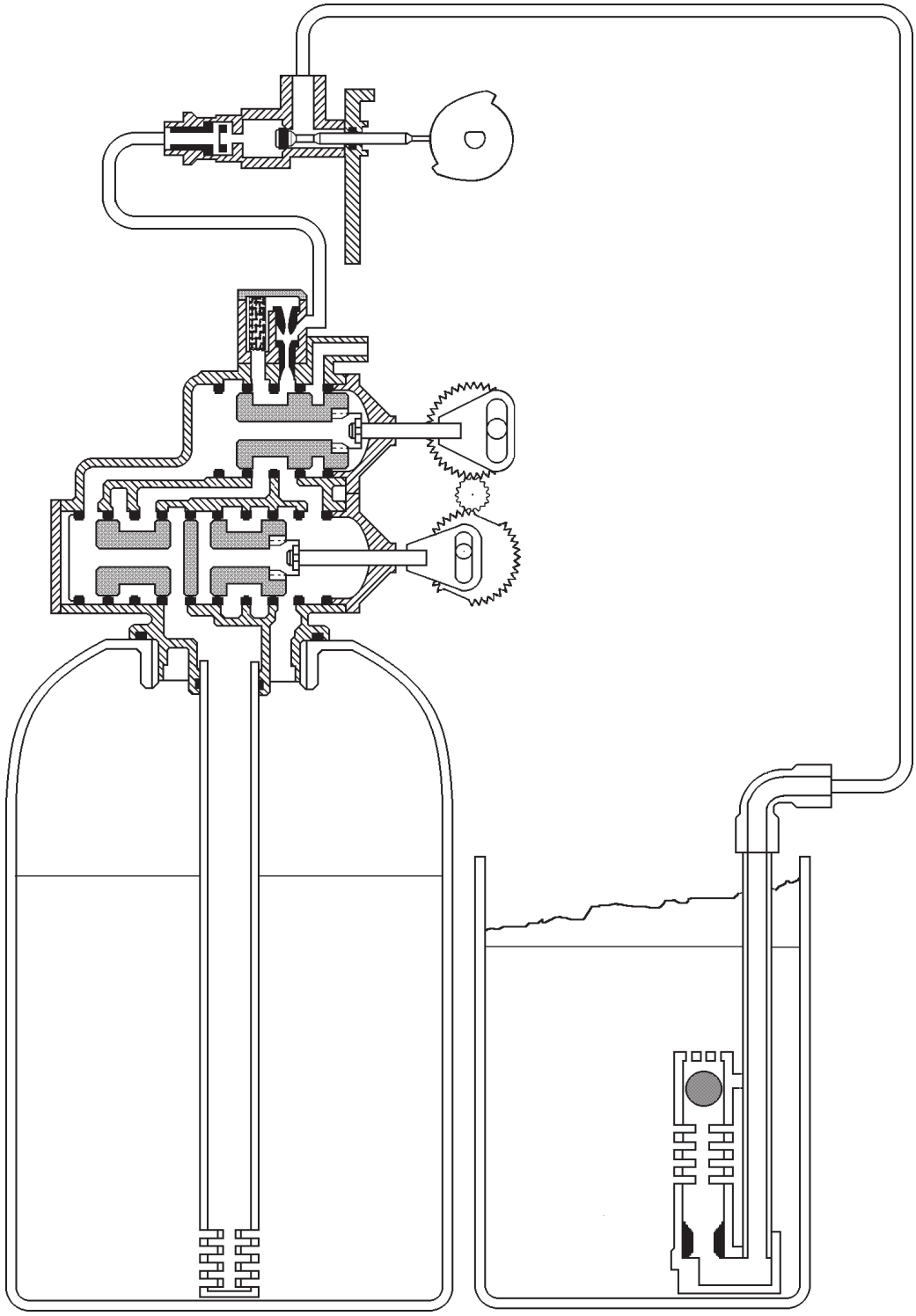
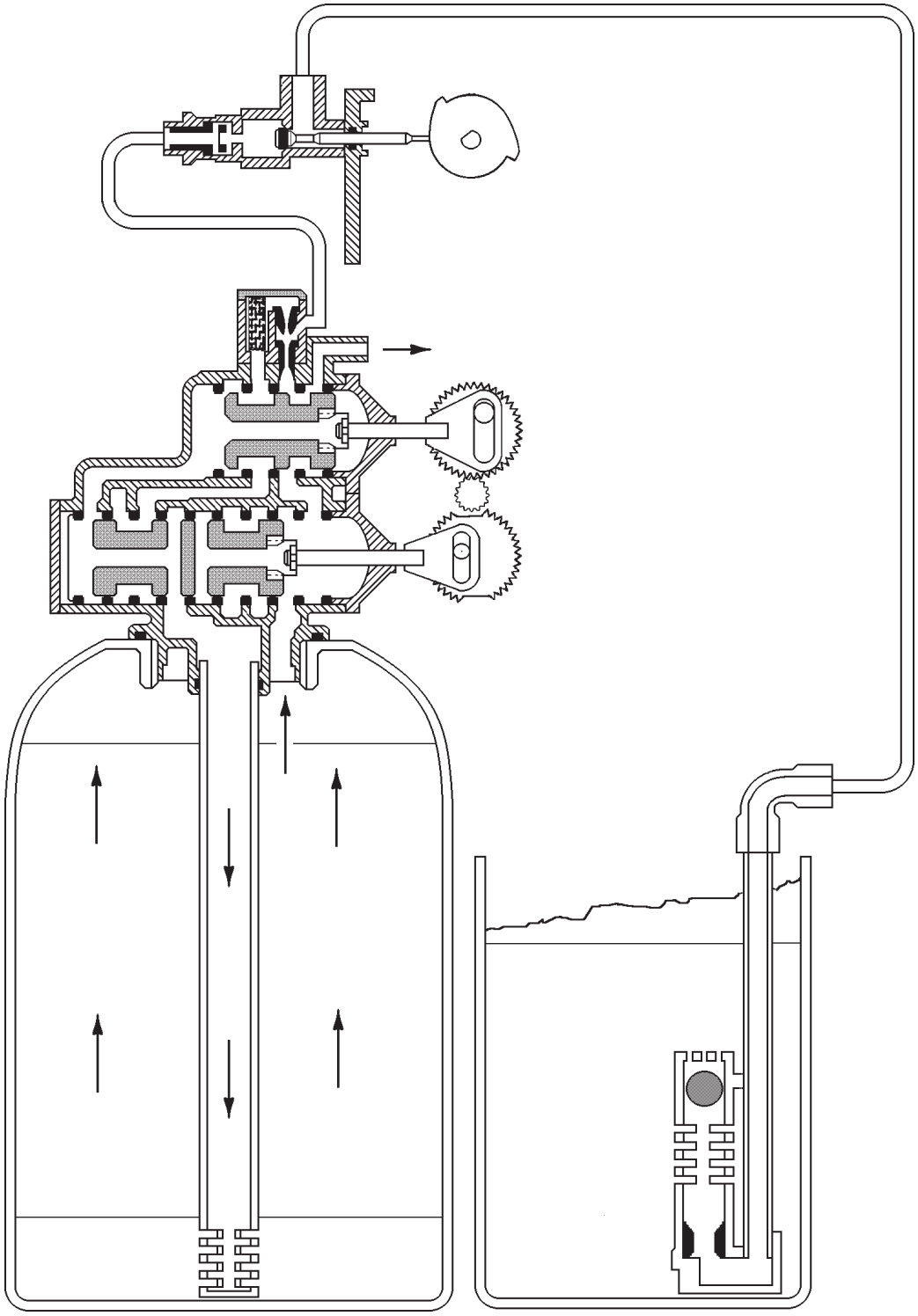
Tanks switching (meter has initiated regeneration)



Hard water enters the system at the valve inlet, flows around the lower piston & through the pipe leading to the second vessel, passing through the resin in the second vessel. Softened water exits via the bottom collector system in the second vessel. It transfers via the connecting pipe to the valve, flows around the lower piston and flows to service via the water meter. The first resin vessel is out of the service flow path & is ready for regeneration.

Backwash position



Softened water from the second pressure vessel flows around the lower piston, around the upper piston and exits into the bottom of the first vessel via the bottom screen. The resin bed is expanded by the upflow of water, which then exits the valve via the upper piston and flows to drain.

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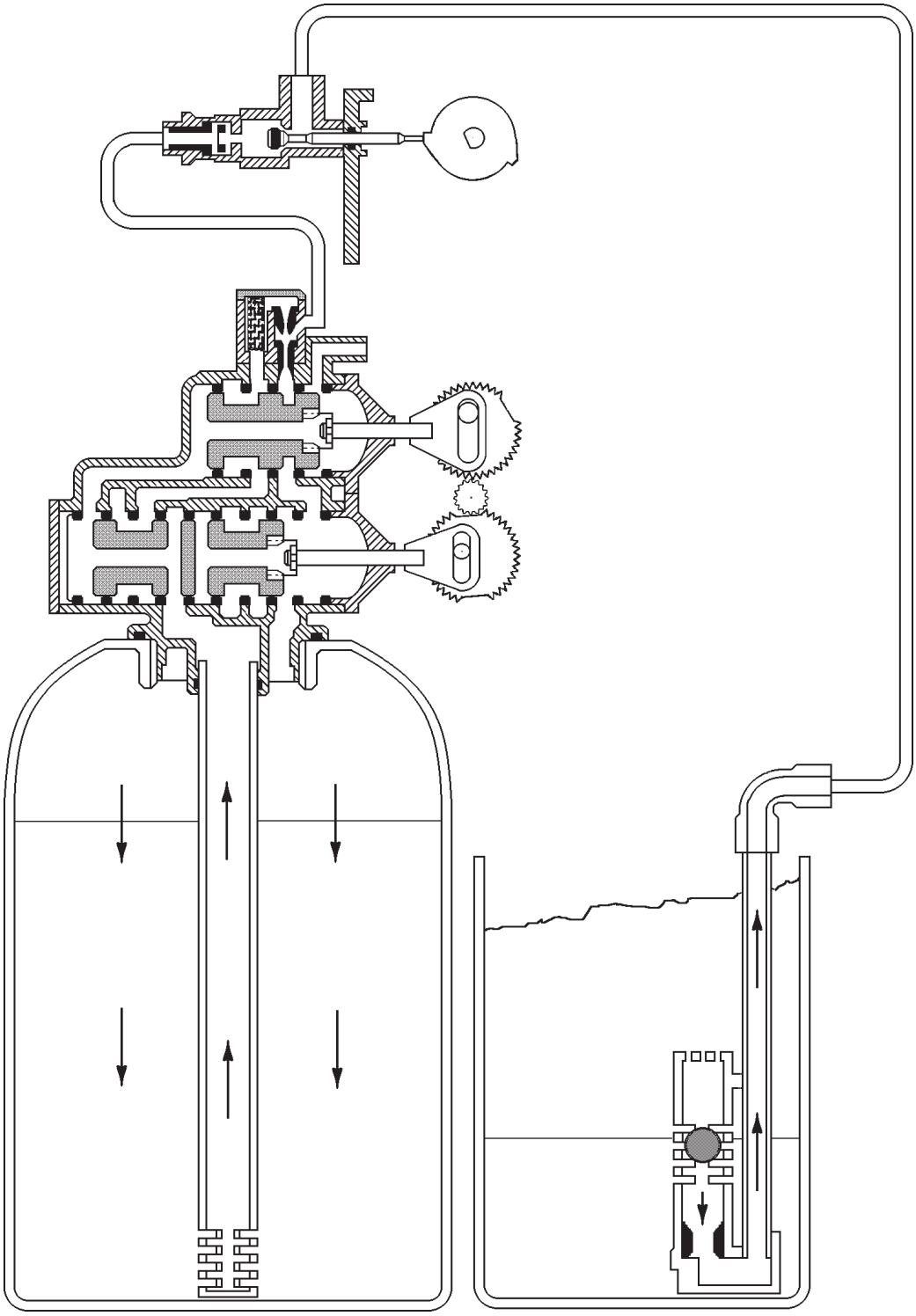
Brine draw position



Softened water from the second pressure vessel flows around the lower piston, around the upper piston & into the ejector housing. As it passes through the ejector nozzle, a vacuum is generated which draws brine up from the brine tank. Brine flows around the upper piston, down through the resin bed and exits via the bottom screen. It flows up the centre tube, through the bore of the lower piston and up into the upper valve section where it exits via the bore of the upper piston to drain.

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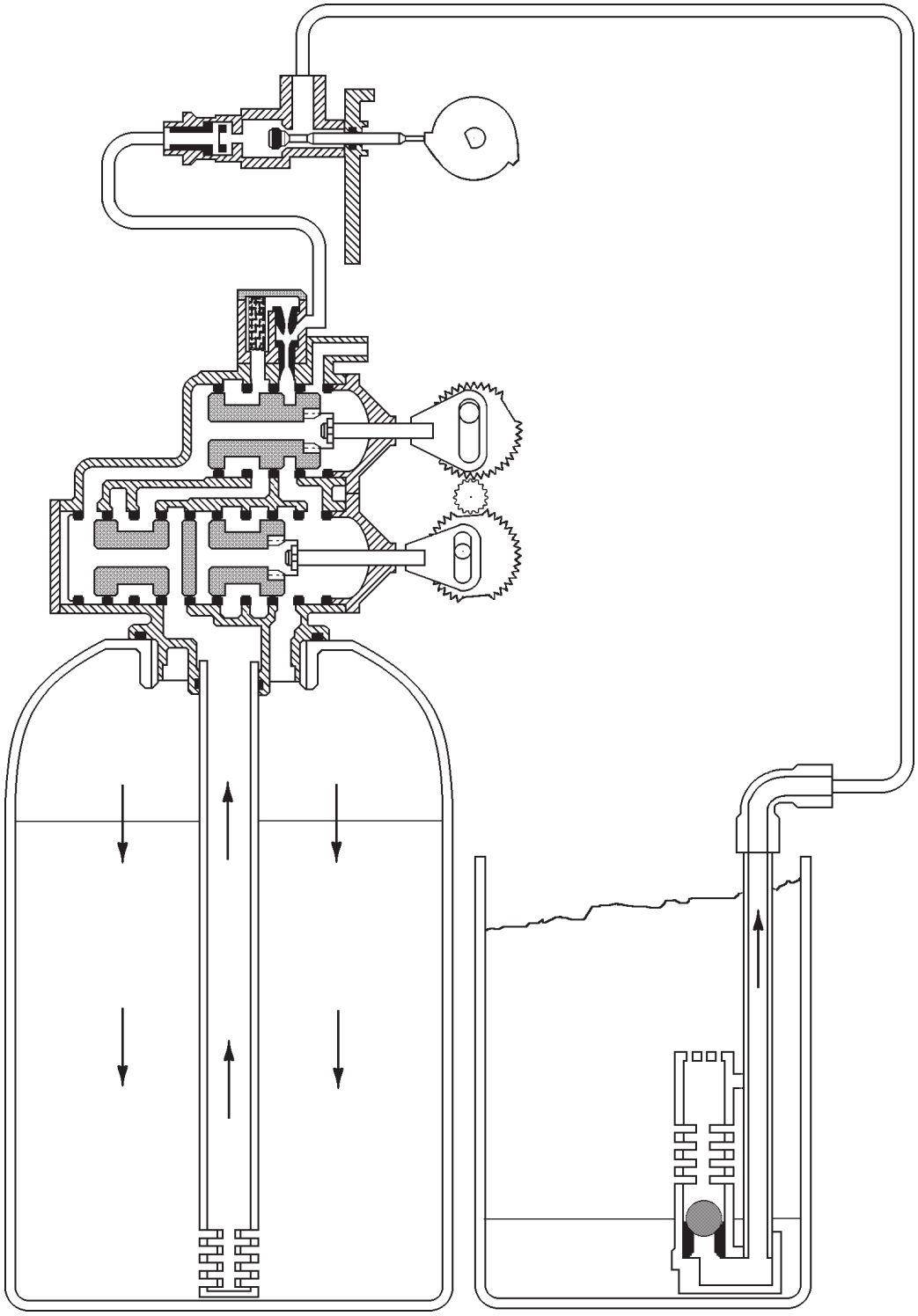
Slow rinse position



<R>Softened water from the second pressure vessel flows around the lower piston, around the upper piston & into the ejector housing. As it passes through the ejector nozzle, a vacuum is still generated but the brine air check assembly has shut off preventing further brine/air suction. The softened water flows around the upper piston, down through the resin bed and exits via the bottom screen. It flows up the centre tube, through the bore of the lower piston and up into the upper valve section where it exits via the bore of the upper piston to drain.

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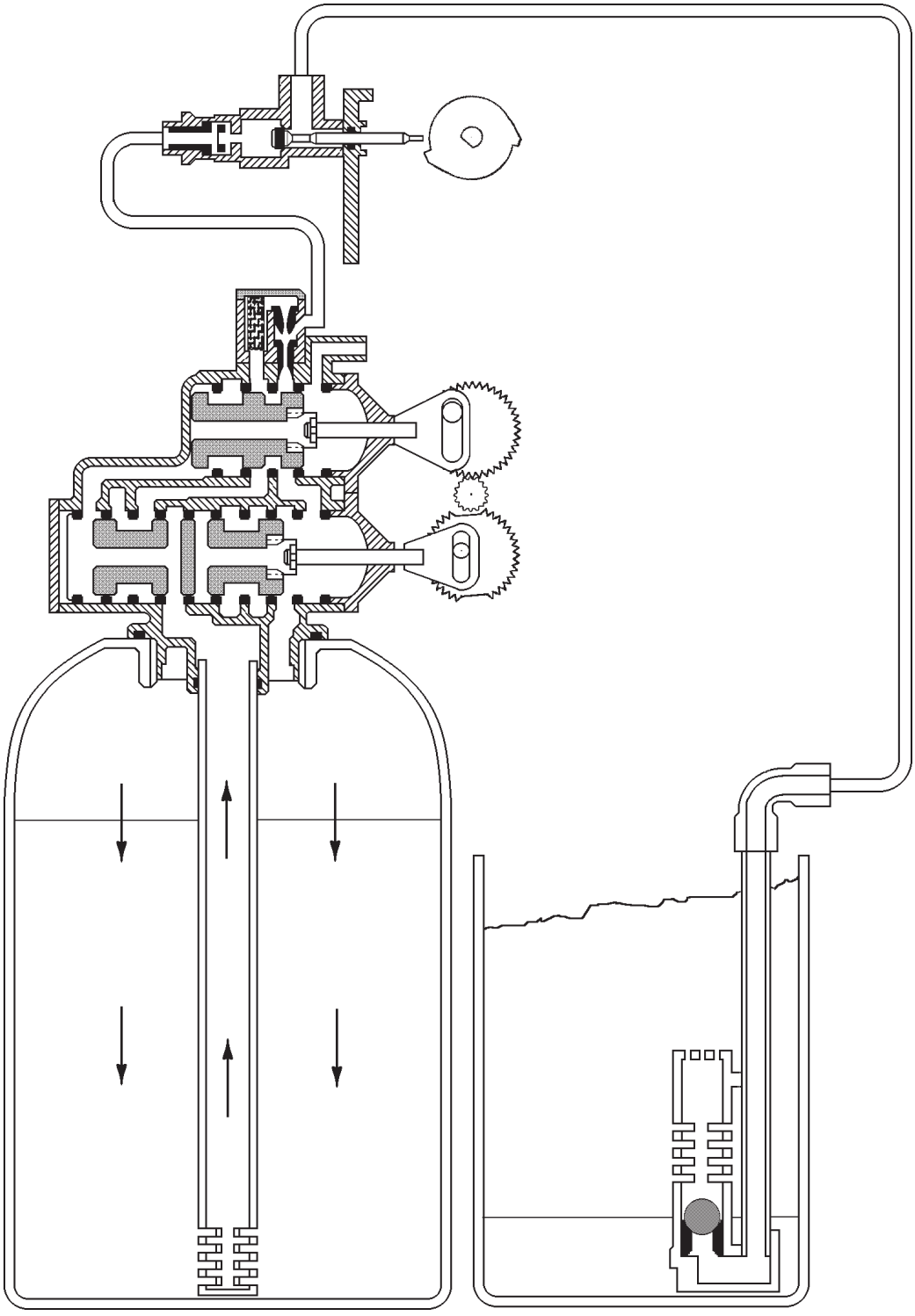
Rapid rinse position



Softened water from the second pressure vessel flows around the lower piston, around the upper piston & down through the resin in the first vessel. The rinse water exits the first vessel via the bottom screen. It flows up the centre tube, through the bore of the lower piston and up into the upper valve section where it exits via the bore of the upper piston to drain.

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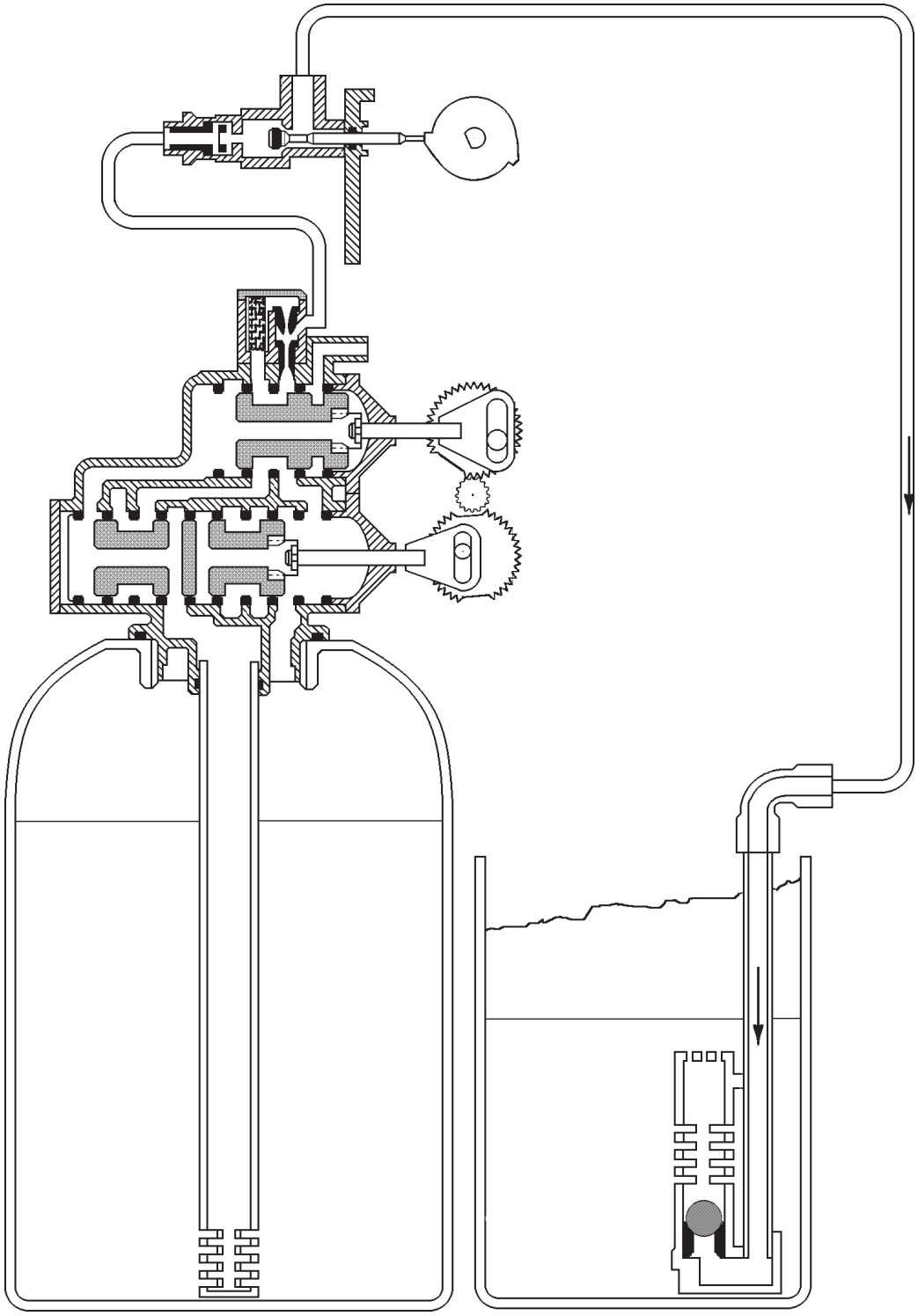
Brine tank fill position



Softened water from the second pressure vessel flows around the lower piston, around the upper piston & into the ejector housing. The flow rate is regulated by a flow orifice as the softened water exits via the brine valve and into the brine tank. In addition to refilling the brine tank, the softened water also flushes the brine system and resets the air check ball. No water flows through the first vessel at this stage.

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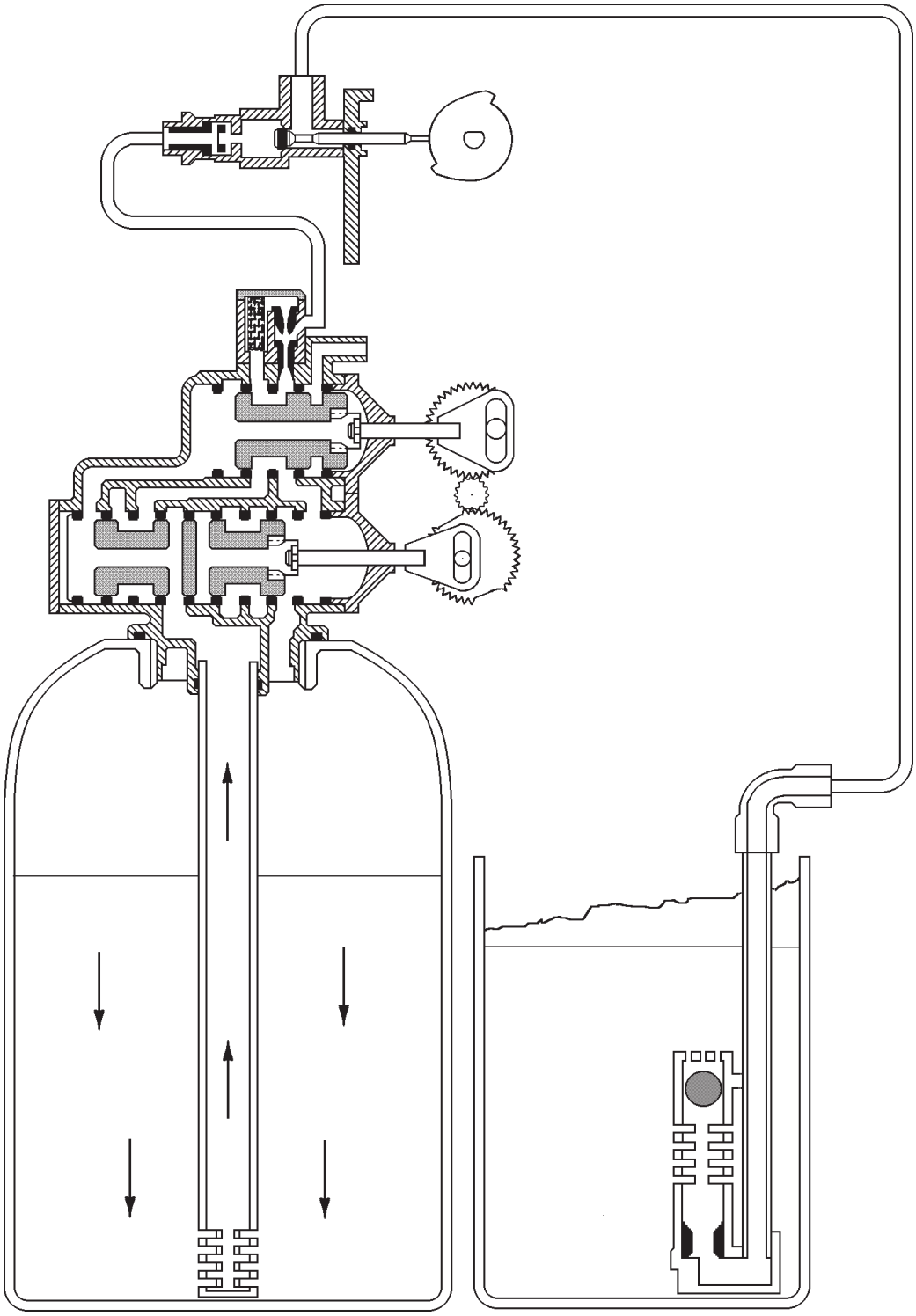
Service position, tanks switched



Hard water enters the system at the valve inlet, flows around the lower piston & through the pipe connecting to the second vessel. It flows down through the resin in the second pressure vessel and exits via the bottom screen, flowing up the centre tube and back across to the main valve via the connection pipe. The softened water exits via the lower piston, through the water meter and away to service. The regenerated first pressure vessel is out of the flow path and on standby, ready for duty when the second tank becomes exhausted.

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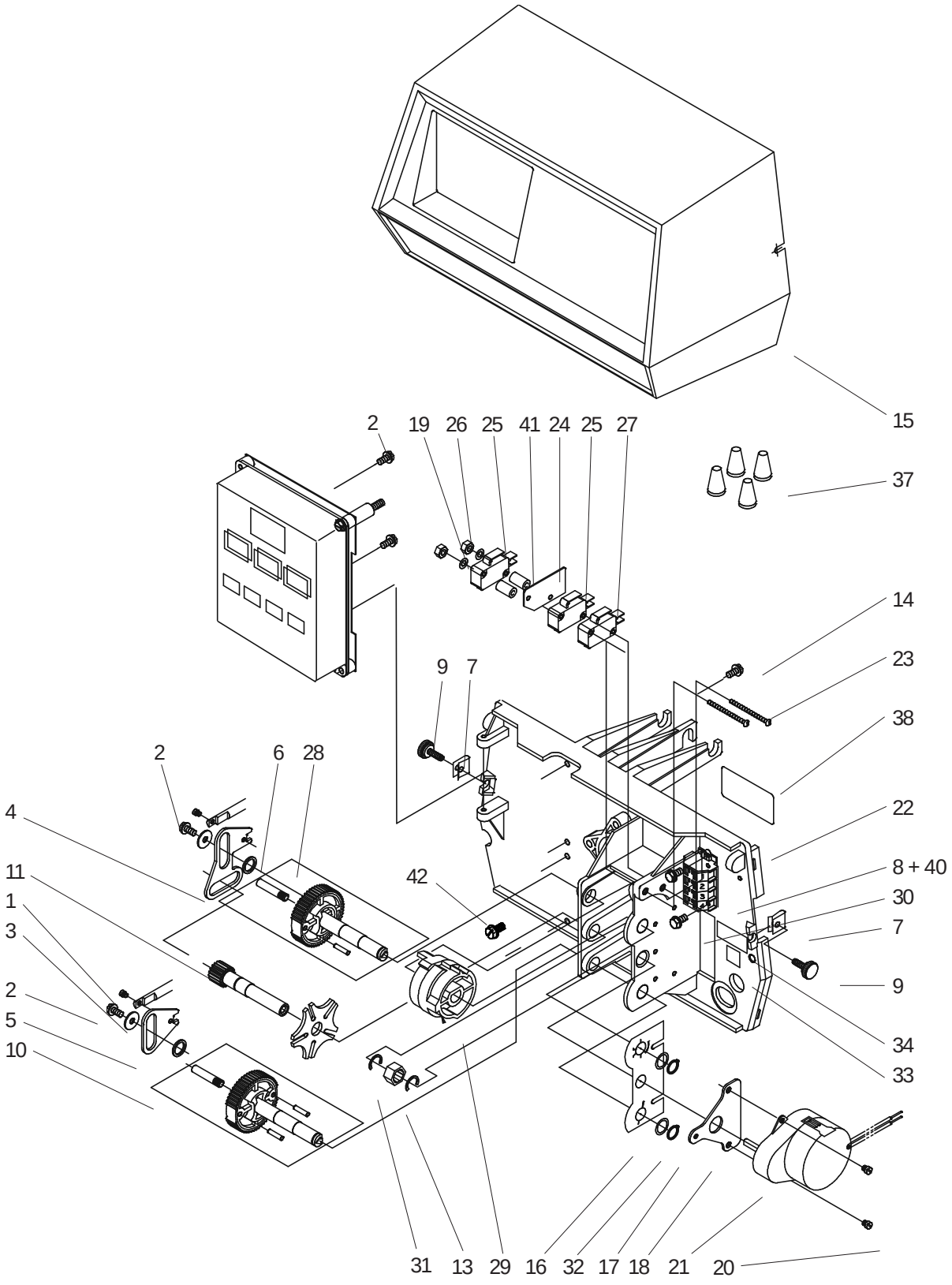
Control Power Head Assembly



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Control Power Head Assembly

Item	Qty	Part Number	Description
1	2	11335	Screw
2	4	13296	Screw
3	2	23250	Washer
4	1	14921	Piston rod link - Upper
5	1	15019	Piston rod link - Lower
6	2	15372	Washer
7	2	18728	Clip nut
8	1	23511	Terminal strip - 4 position
9	2	19367	Cover screw
10	1	25870	Lower drive gear assy
11	1	15135	Drive gear
12	1	14896	Geneva wheel
13	1	17315	Manual regeneration nut
14	1	10300	Screw
15	1	26473	Cover assembly
16	1	27002	Shaft position label
17	2	14917	Retaining ring
18	1	15199	Motor plate
19	2	11663	Lockwasher
20	2	19160	Screw
21	1	18373	Drive motor 24vac
22	1	15131	Backplate
23	2	16442	Screw
24	1	10302	Insulator
25	2	10218-01	Microswitch
26	2	10339	Nut
27	1	16433	Microswitch
28	1	25868	Upper drive gear assy
29	1	17765	Triple cam assy - 9500
30	2	10299	Screw
31	2	15810	Retaining ring
32	2	15692	Spacer
33	1	23474	Label - "Assembled By"
34	1	21271	Label - "Serial Number"
35	1	26984	SE Timer assy
36	1	17967	Meter cable connector
37	4	12681	Wire nut
38	1	26210-90	Label - "CE"
39	1	14822	Wire harness - *not shown*
40	2	n/a	Label - Terminal strip
41	2	16443	Stand-off
42	7	21761	Backplate mount screw

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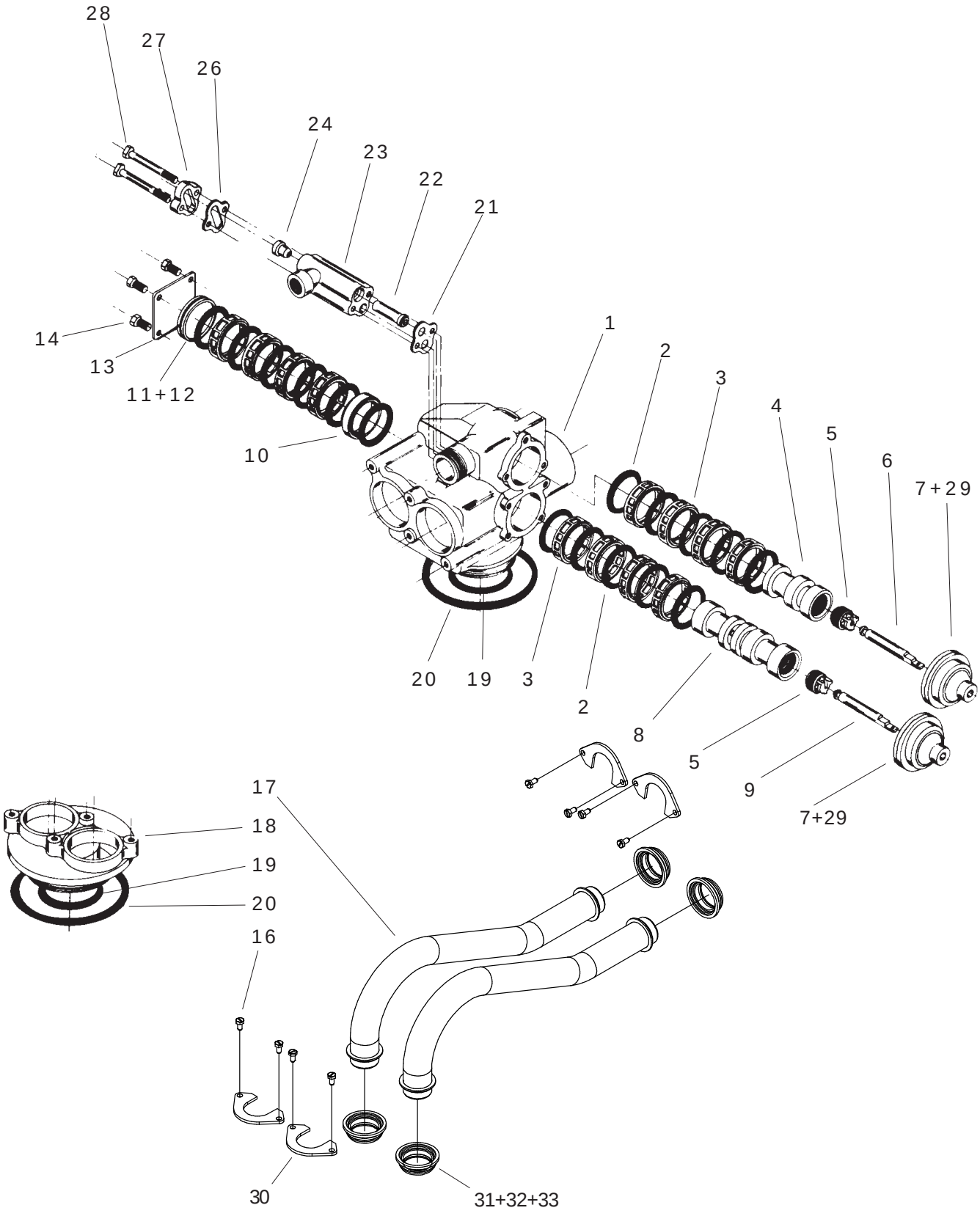
Valve body assembly



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Valve body assembly

Item	Qty	Part No.	Description
1	1	16919-21	Valve body
2	16	16101	Seal
3	12	16638-01	Spacer
4	1	17110	Upper piston
5	2	14309	Piston rod retainer
6	1	16957	Upper piston rod
7	2	17212	End plug assembly
8	1	17111	Lower piston
9	1	16956	Lower piston rod
10	1	17092	Spacer disc
11	1	16955	End plug
12	1	16394	O-Ring
13	1	14906	End plate
14	4	24874	Screw
15	-	-	-
16	8	23728	Screw
17	1	27982-16	Connection pipe assy
or	1	27982-24	Connection pipe assy
18	1	16916-21	2nd tank adaptor
19	2	13577	O-Ring
20	2	16455	O-Ring
21	1	23304	Injector body gasket
22	1	14802-*	Injector throat - *specify size
23	1	17777	Injector body
24	1	14801-*	Injector nozzle - *specify size
26	1	10229	Injector cover gasket
27	1	11893	Injector cover
28	2	23477	Screw
29	2	17558	End plug spacer disc
30	4	28107	Flange
31	4	28139	Spacer assembly with o-rings
32	4	28103	O-Ring (Small)
33	4	28104	O-Ring (Large)
Sub assemblies			
	1	18052	Upper piston assembly
	1	18053	Lower piston assembly
	1	18054	Upper seal & spacer kit
	1	18129	Lower seal & spacer kit
	1	24173-3	3C Injector assembly
	or	24173-4	4C Injector assembly

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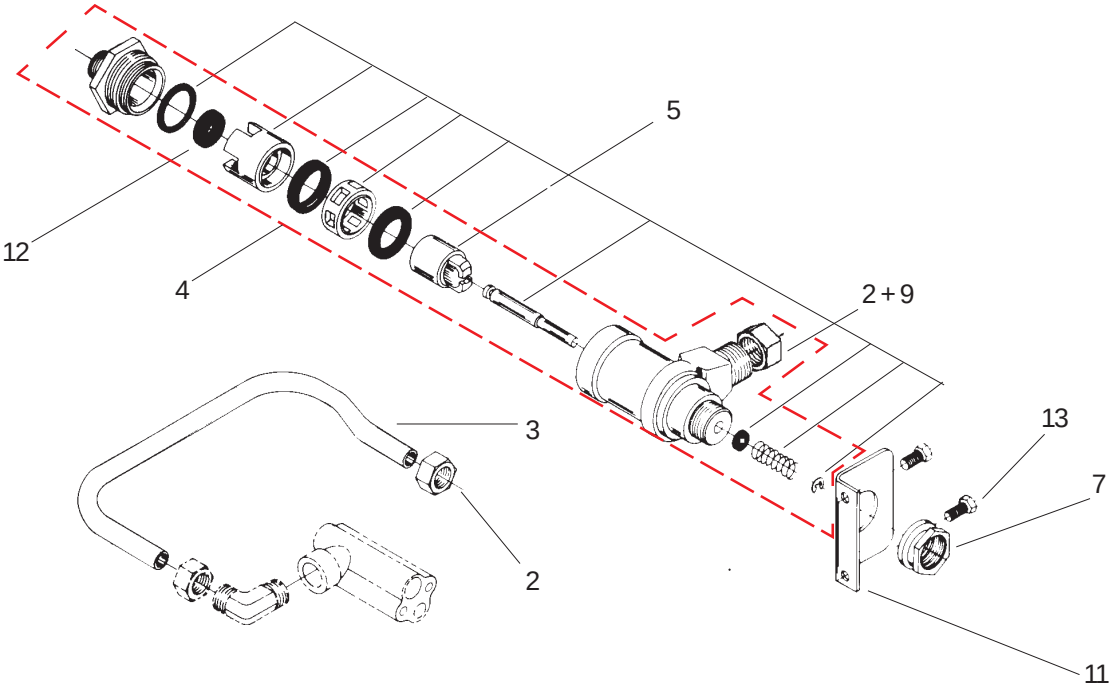
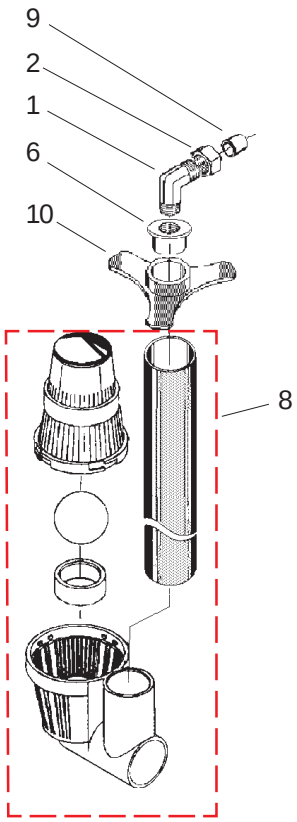
1700 Brine valve system





Item	Qty	Part No.	Description
1	2	15413-N	Elbow - 3/8in x 1/2in tube
2	2	16123-N	Compression nut
2A	1	16124	Plastic sleeve - not shown
3	1	28109	Brine tube 9500
4	1	18057-*	1700 brine valve assy - **specifiy size*
5	1	18016	1700 brine valve repair kit
6	1	23804	Reducer coupling
7	1	10269	Holding nut
8	1	18979	900 series air check assy
9	2	15415	Insert sleeve
10	1	11763	Stand off
11	1	16922	Brine valve bracket
12	1	12087	Flow washer - 2.0 USgpm
13	2	24874	Screw

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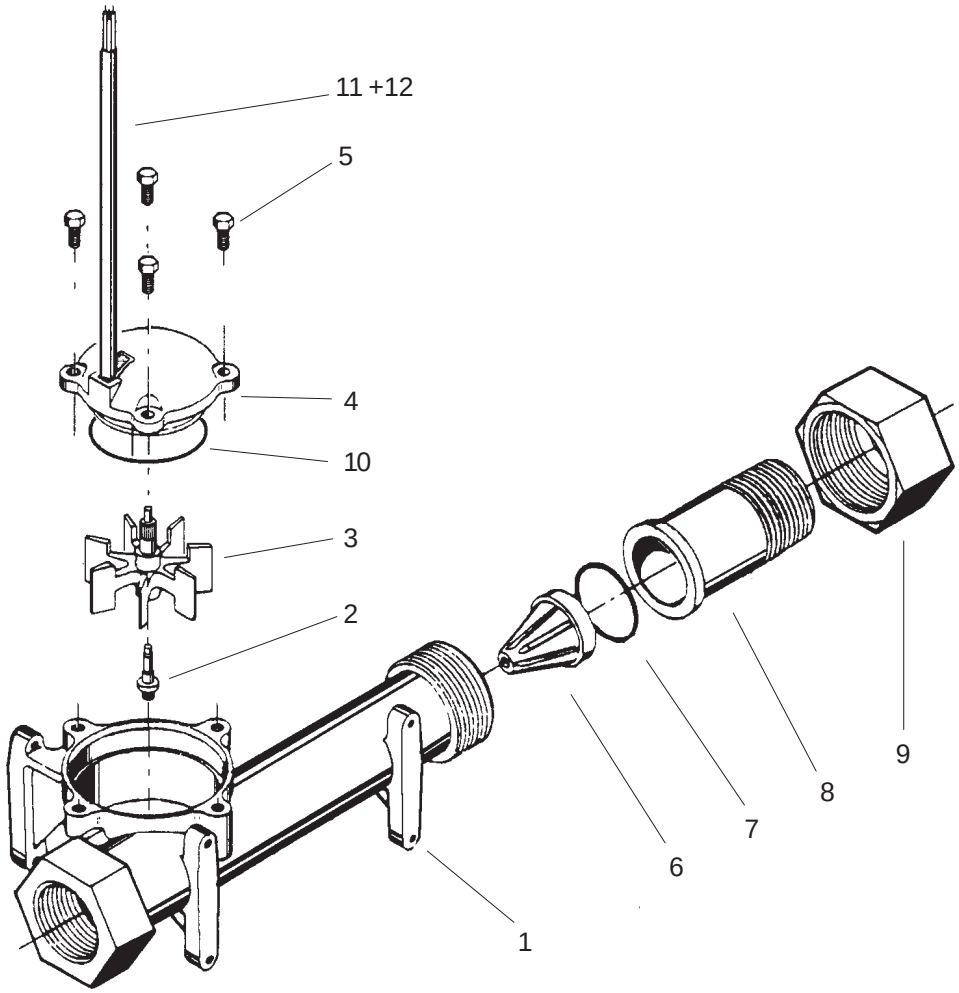
1-1/2in meter assembly



Item	Qty	Part No.	Description
1	1	17569.20-N	M<eter body 1-1/2in
2	1	13882	Impeller post
3	1	13509	Impeller
4	1	18330	Electronic meter cover assy
5	4	21716	Screw
6	1	17542	Flow straightener
7	1	12733	Quick connect O-Ring
8	1	17544	Quick connect nipple
9	1	17543	Quick connect nut
10	1	13847	O-Ring
11	1	28114-06	Electronic meter harness - 0.55m
12	1	17798	Screw

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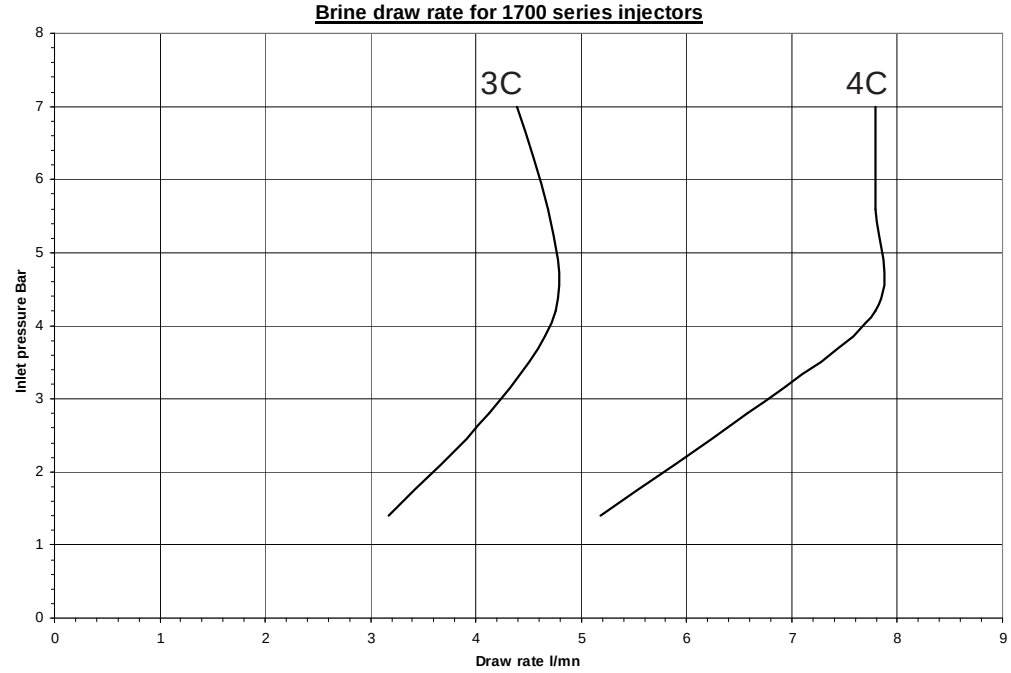
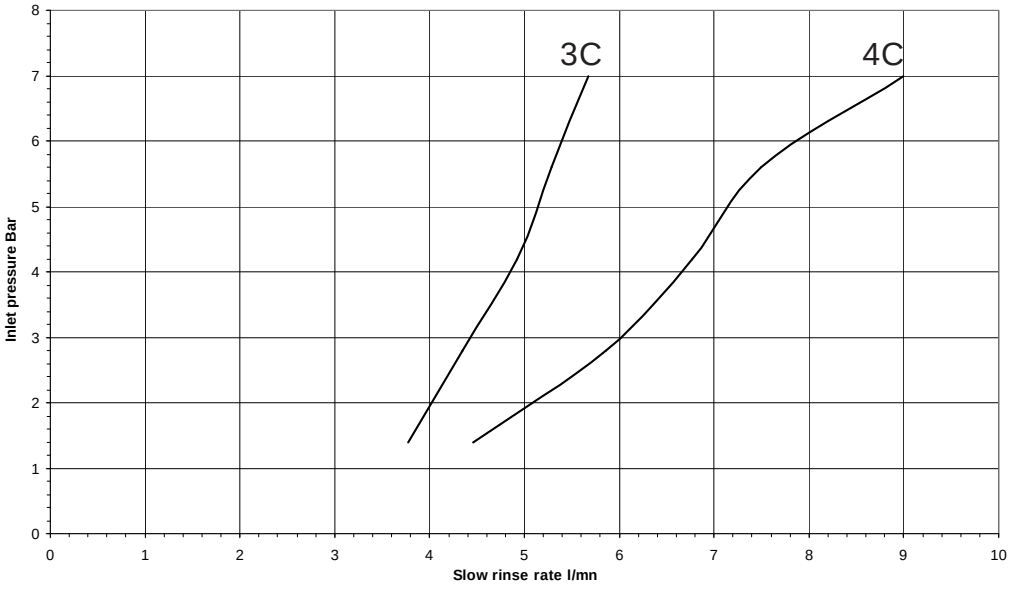
ejector performance data

Please carefully note: *The indicated ejector data is for guidance only on the relative performance between sizes. Many factors influence actual performance, particularly the Ejector Draw Rate. As a result, the Brine Draw & Slow Rinse phase of the regeneration cycle should be established as part of the on site commissioning procedure.*

Brine draw rate for 1700 series injectors



Slow rinse rate for 1700 series injectors



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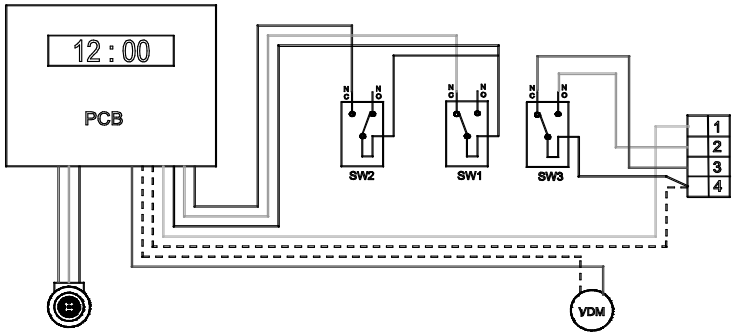
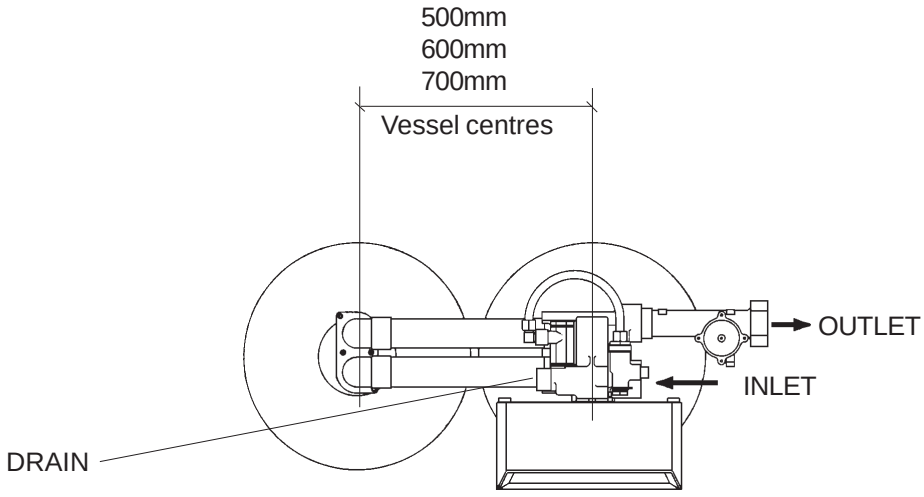
wiring Schematic



Electrical supply connections:
24vac 50 Hz. 10 Va
Negative to TERMINAL 1
Positive to TERMINAL 4

pipe connections



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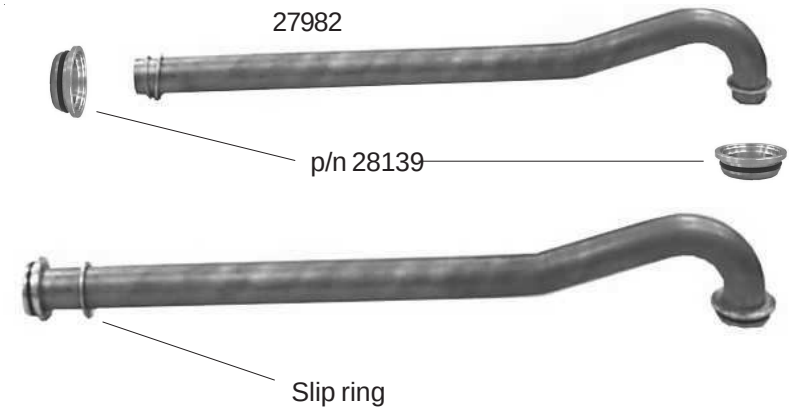
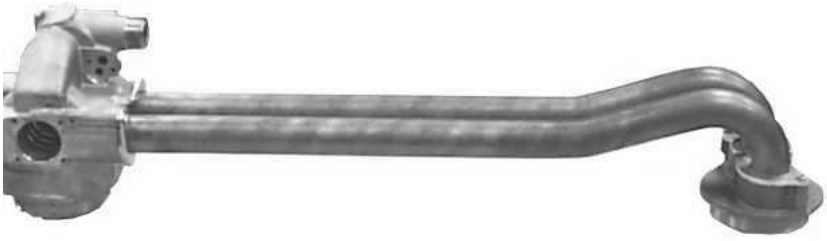
interconnecting pipe assembly



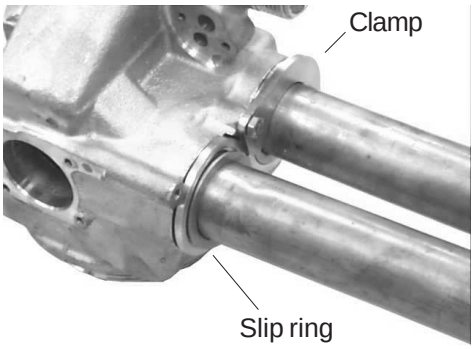
Step 1
Fit adaptor p/n 28139 on each end of the two tubes p/n 27982, ensuring that the o-rings are lightly lubricated first.



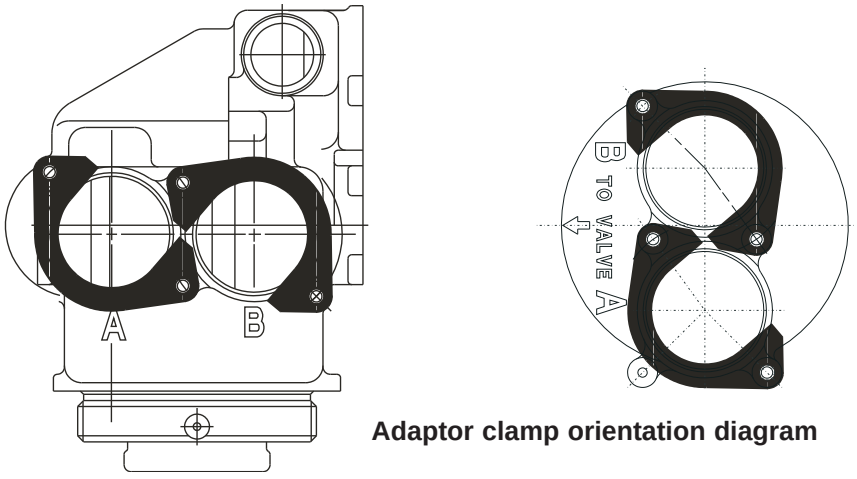
Step 2
Insert the tube assemblies into the 9500 valve body and 2nd. tank adaptor. Ensure that the connections are port A to port A and port B to port B


p/n 23728


p/n 28107



Step 3
Slide the slip rings against the tube ribs and secure the adaptor clamps p/n 28109 using the set screws p/n 23728. The orientation of the clamps is shown below. Remember, the slip ring goes between the adaptor clamp and the tube rib.



Adaptor clamp orientation diagram