Model 5600SE
Customer Manual

CM5600SE -09/2005

MODEL 5600SE

installation information

JOB NO: . . . . . .

MODEL NO: . . . . . .

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

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

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

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

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

RESIN VOLUME: . . . . . LITRES

5600SE CONTROL VALVE SPECIFICATIONS & SETTINGS:

1) Type of Timer: Electronic - Time initiation only
Immediate meter initiation *(delete as appropriate)*
Delayed 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 . . . . . USgpm.

4) Brine refill rate: . . . . . 0.25 US gpm

5) Ejector size: . . . . . #

6) Electrical: 24 volt 50 Hz 15VA

FOR SERVICE CONTACT:

MODEL 5600SE

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 43C. The unit must not be subjected to freezing conditions.

physical installation

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 local Water Regulations. The pipe size for the drain should not be less than 1/2" n.b. hose.

3. If the control valve is not already assembled to the pressure vessel then ensure that the centre distributor / riser tube is cut **+10mm above** the top of the pressure vessel and all sharp edges are removed.

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

5. 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.

6. All threaded connections to the control valve must only be sealed with PTFE tape.

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

8. 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.

9. 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 setup the control system

MODEL 5600SE

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

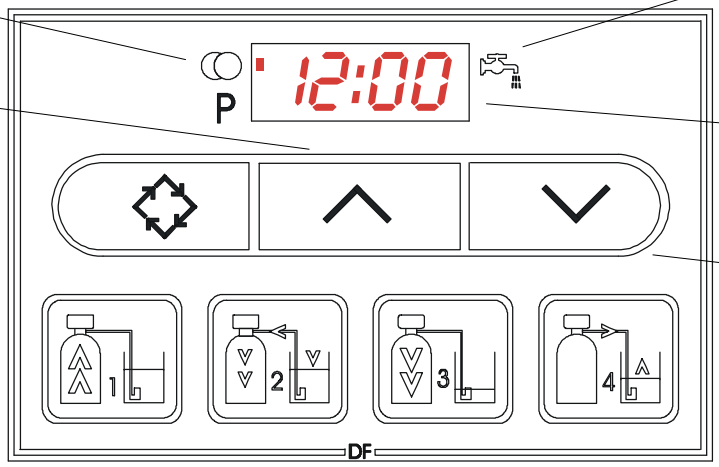
Service Indicator:
Valve in SERVICE - Dot ON
Extra Cycle Set - Dot flashing

Flow Indicator:
Flashing Dot when water flows

Set UP Button

P.M. Indicator

Set DOWN Button

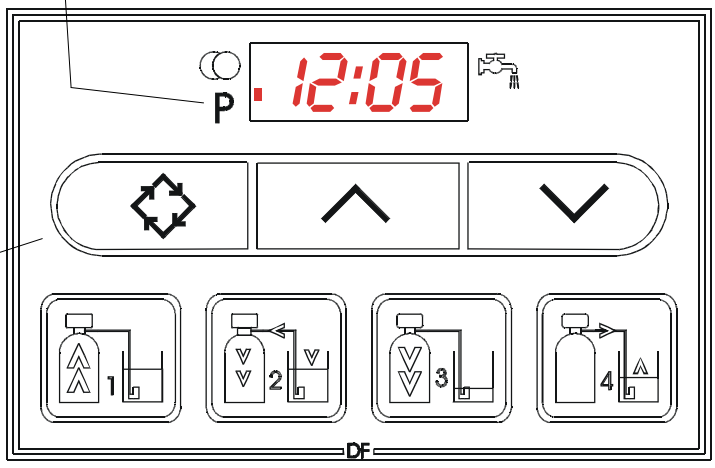


Push either the UP or DOWN set button once to adjust the Time of DAY display by one digit.
Push and HOLD either the UP or DOWN set button to adjust the Time of Day display by multiple digits

2. Enter Control Programming Mode

Programme Mode Indicator:
Programme mode entered - Dot ON

Extra Cycle Button



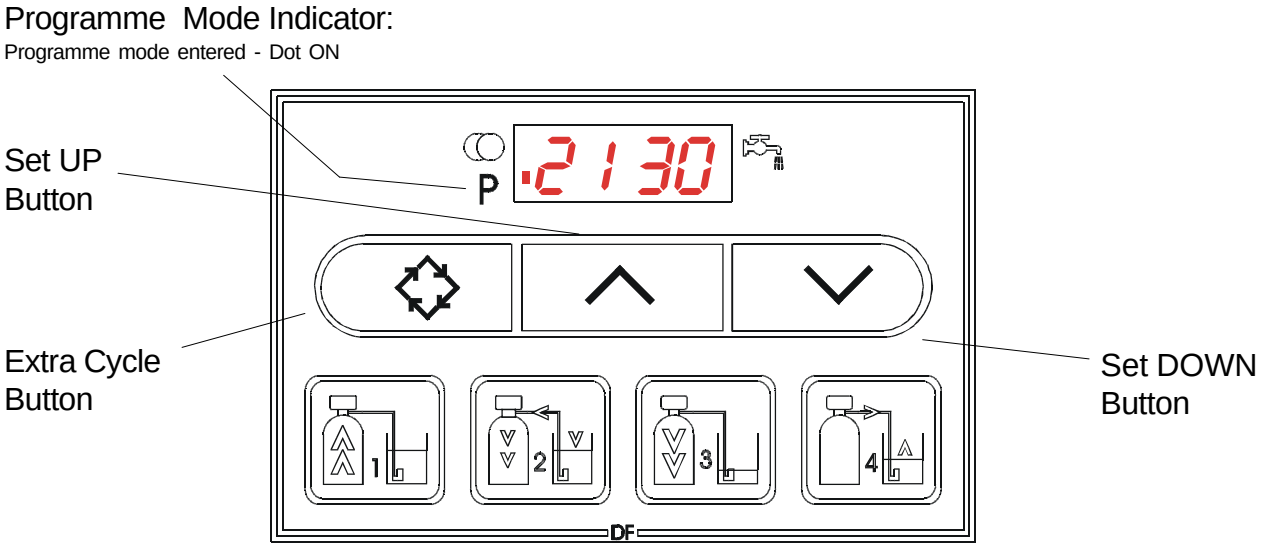
1. Push and HOLD both the UP or DOWN set button to enter Programming Mode.
2. Push the Extra Cycle Button once per display until all have been viewed and this mode is exited and normal operation is resumed.

MODEL 5600SE

Control Start-Up Procedures

3. Set Control Programming

Depending on current control programming, option setting displays that are not required to be set will not be viewed.



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. For example:

   2130 litres treated water capacity

2. Push the Extra Cycle button. The second option setting display that appears is Regeneration Time. Using the set UP or DOWN buttons, adjust the display to the time of day when you want a regeneration cycle to start. For example:

   2:00 AM regeneration start

3. Push the Extra Cycle button. The third option setting that appears is the Regeneration Day Override. Using the set UP or DOWN button, adjust the maximum number of days before a regeneration MUST occur *(4 days is the recommended setting).* For example:

   Regenerate at least every 4 days

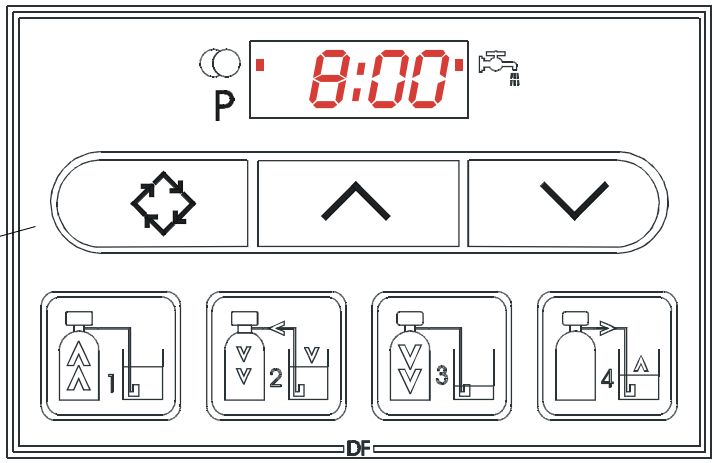
4. Control programming is now complete. Push the Extra Cycle button again to exit the programming mode and return to normal service.

MODEL 5600SE

Control Start-Up Procedures

4. Start an Immediate Regeneration

When starting an extra regeneration cycle you will have one or two options, depending on how your control is set up:



Extra Cycle Button

1. Press and Release to Extra Cycle button:

- With ***Immediate Regeneration*** controls the control will go into regeneration immediately.
- With ***Delayed Regeneration*** controls the service arrow will begin to flash immediately and a regeneration will occur at the preset regeneration time.

2. Press and HOLD for the Extra Cycle button for 5 seconds:

- With ***Delayed Regeneration*** controls this will force an immediate regeneration.

5. Regeneration Cycle Displays

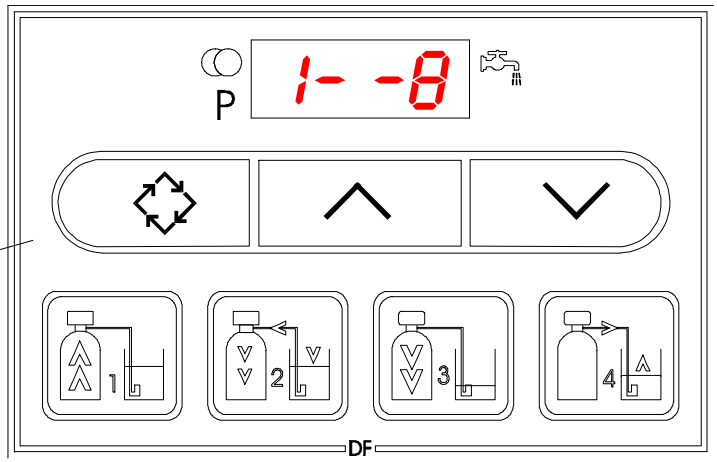
The following series of displays appear when the control enters a regeneration cycle *(times indicated are examples only)*:

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

MODEL 5600SE

Control Start-Up Procedures

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

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 midpoint 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.

Time Initiation Valves
In normal operation the Time of Day display will be viewed at all times. The control will operate normally until the number of days since the last regeneration reaches the Day Override setting. At this point a regeneration will be initiated at the Preset regeneration time.

Volume Initiated Valves
In normal operation the Time of day display will alternate with a Volume Remaining display. This volume display will be in LITRES. As treated water is produced, the Volume remaining display will count down towards zero, displayed as [- - - -]. On reaching zero, a regeneration will be initiated either immediately or delayed until the preset regeneration time, depending on how the control is configured. Water flow through the valve is indicated by the Flow Dot flashing in direct relationship to the flow rate.

Immediate Regeneration setup with Day Override programmed.
If the valve reaches the Day Override value before the zero volume point is reached then the valve will regenerate at the same time as the previous regeneration. On completion of the regeneration cycle the system capacity will be reset to the preset maximum system capacity.

Delayed Regeneration setup with Day Override programmed.
If the valve reaches the Day Override value before the zero volume point is reached then the valve will set to regenerate at the preset regeneration time. On completion of the regeneration cycle the system capacity will be reset to the preset maximum system capacity.

Control Operation during regeneration.
During regeneration the control will display the system status. The display window will indicate the regeneration step that the valve is advancing to, or has reached, and the time remaining in that step. The step number displayed will flash until the valve has completed driving to its next step position. Once all regeneration steps have been completed the valve will return automatically to the SERVICE position and resume normal operation. NOTE: Pushing the Extra Cycle button during a regeneration cycle will immediately advance the valve to the next cycle step position. Avoid doing this unless you understand the consequences of your actions.

Control Operation during programming.
The control will only enter the Programming Mode with the valve in the SERVICE position. While in the Programme Mode the control will continue to operate normally, monitoring water flow and maintaining time etc. NOTE: Control programming is stored in permanent memory so battery backup is not required.

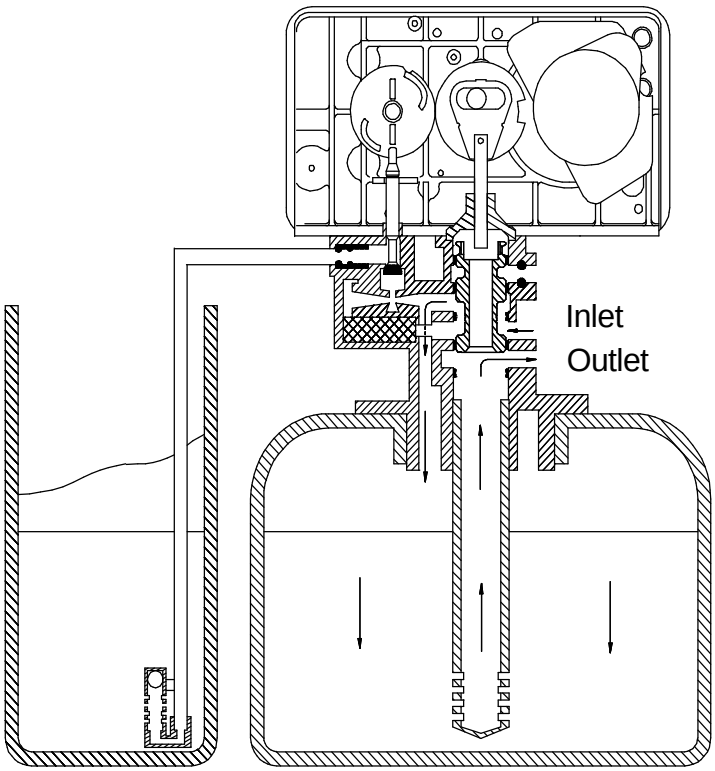
Control Operation during power failure.
During a power failure all displays and programming will be retained. Water will continue to flow but the volume will not be monitored. When power is restored the control will resume operation from the point when power was lost. An indication of power loss is an inaccurate Time of Day display.

MODEL 5600SE

System Flow Diagrams

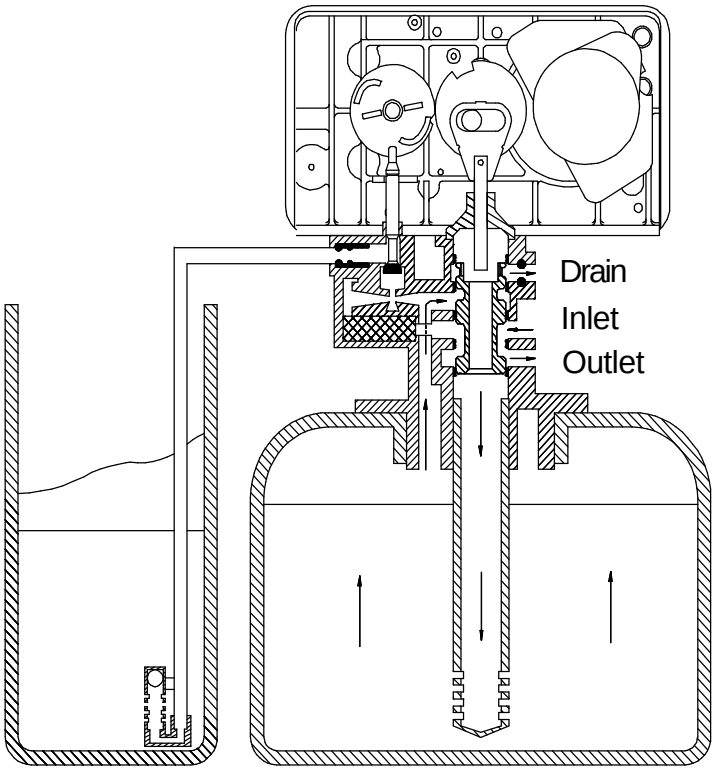
Service Position

Hard water enters the unit via the valve inlet, flows around the lower piston groove and enters the top of the pressure vessel. The water passes downwards through the ion exchange resin and exits via the lower screen. It flows up through the centre tube and exits to service via the valve outlet



Backwash Position - step #1

Hard water enters the unit via the valve inlet, flows around the lower piston groove and enters the centre tube. It exits via the lower screen and flows upwards through the ion exchange resin and flows though the valve body and exits via the valve drain port.
Unsoftened water is available to service via the internal bypass channel.

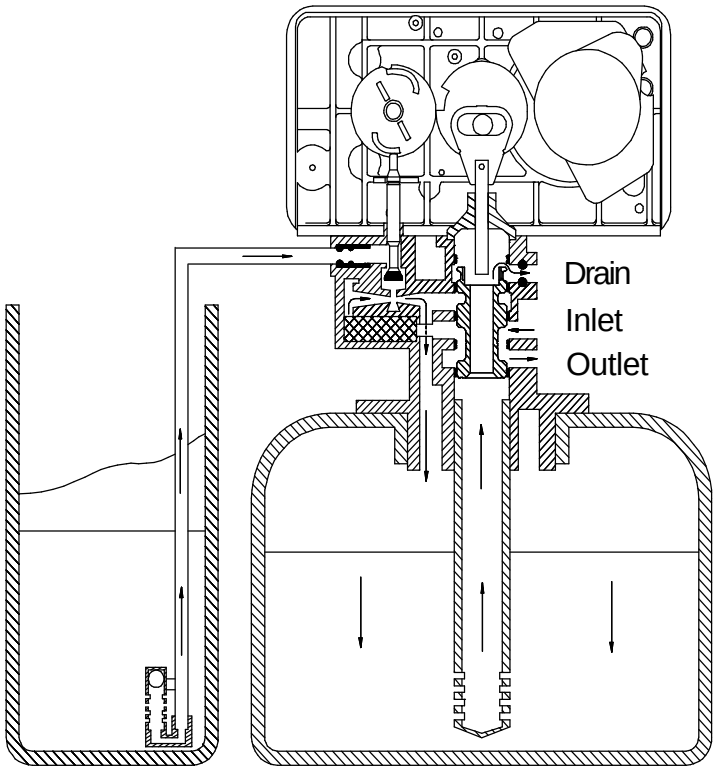


MODEL 5600SE

System Flow Diagrams

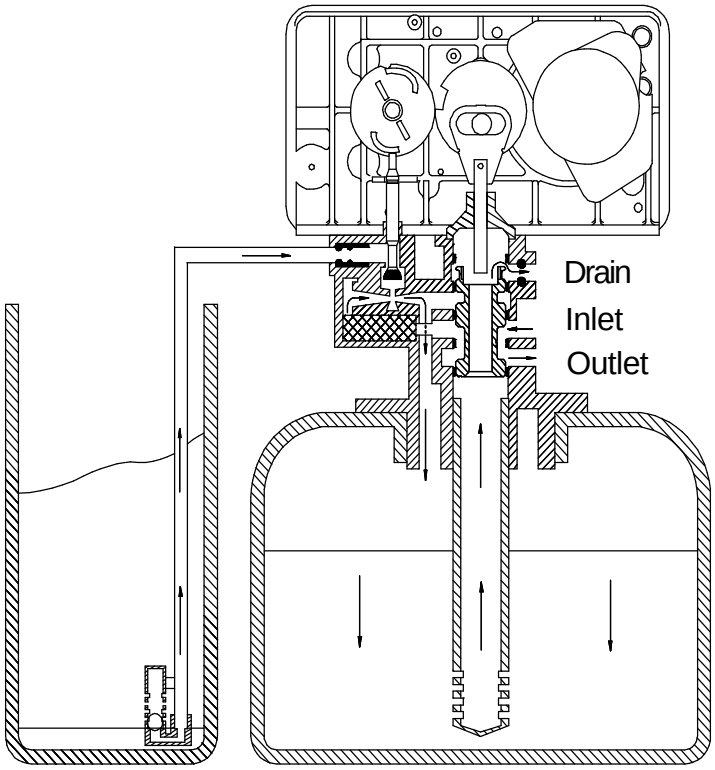
Brine injection - step #2 first phase

Hard water enters the unit via the valve inlet, flows around the lower piston groove and enters the venturi ejector device, drawing up and diluting a concentrated brine solution from the brine tank. The dilute brine enters the top of the pressure vessel and passes down through the ion exchange resin. It exits via the lower screen, flows up the centre tube and exits the system via the valve drain port.
Unsoftened water is available to service via the internal by-pass channel.



Slow rinse - step #2 second phase

Hard water enters the unit via the valve inlet, flows around the lower piston groove and enters the venturi ejector device. The brine tank air check device has closed so the dilution water only enters the top of the pressure vessel and passes down through the ion exchange resin. It exits via the lower screen, flows up the centre tube and exits the system via the valve drain port.
Unsoftened water is available to service via the internal by-pass channel.

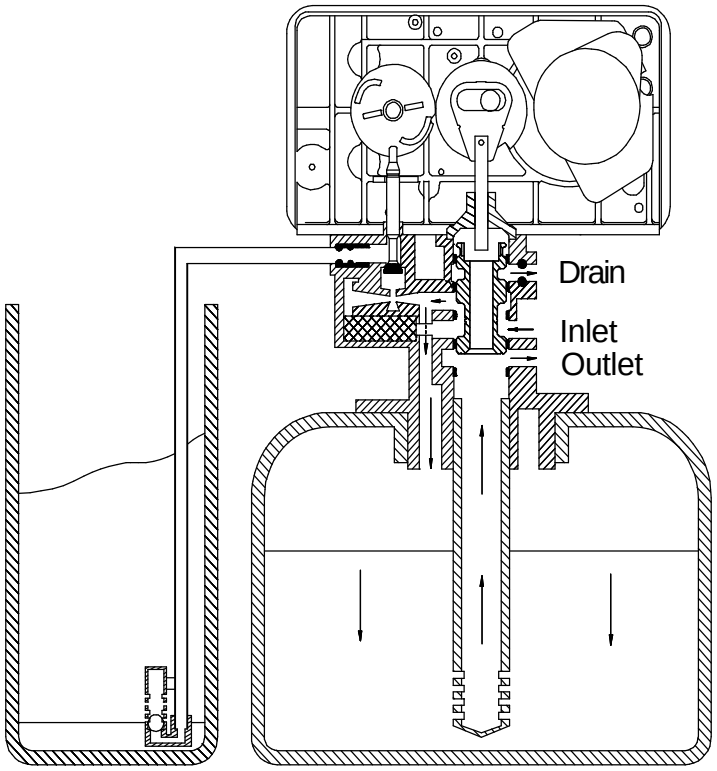


MODEL 5600SE

System Flow Diagrams

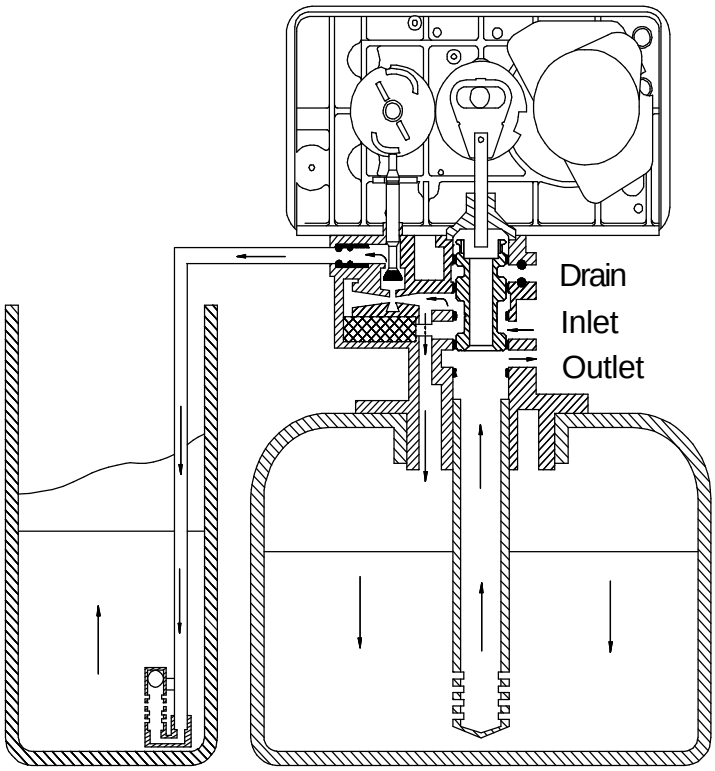
Rapid rinse - step #3

Hard water enters the unit via the valve inlet, flows around the lower piston groove and enters the top of the pressure vessel. The water flows down through the ion exchange resin and exits via the lower screen. It flows up the centre tube and exits the system via the valve drain port.
Unsoftened water is available to service via the internal by-pass channel.



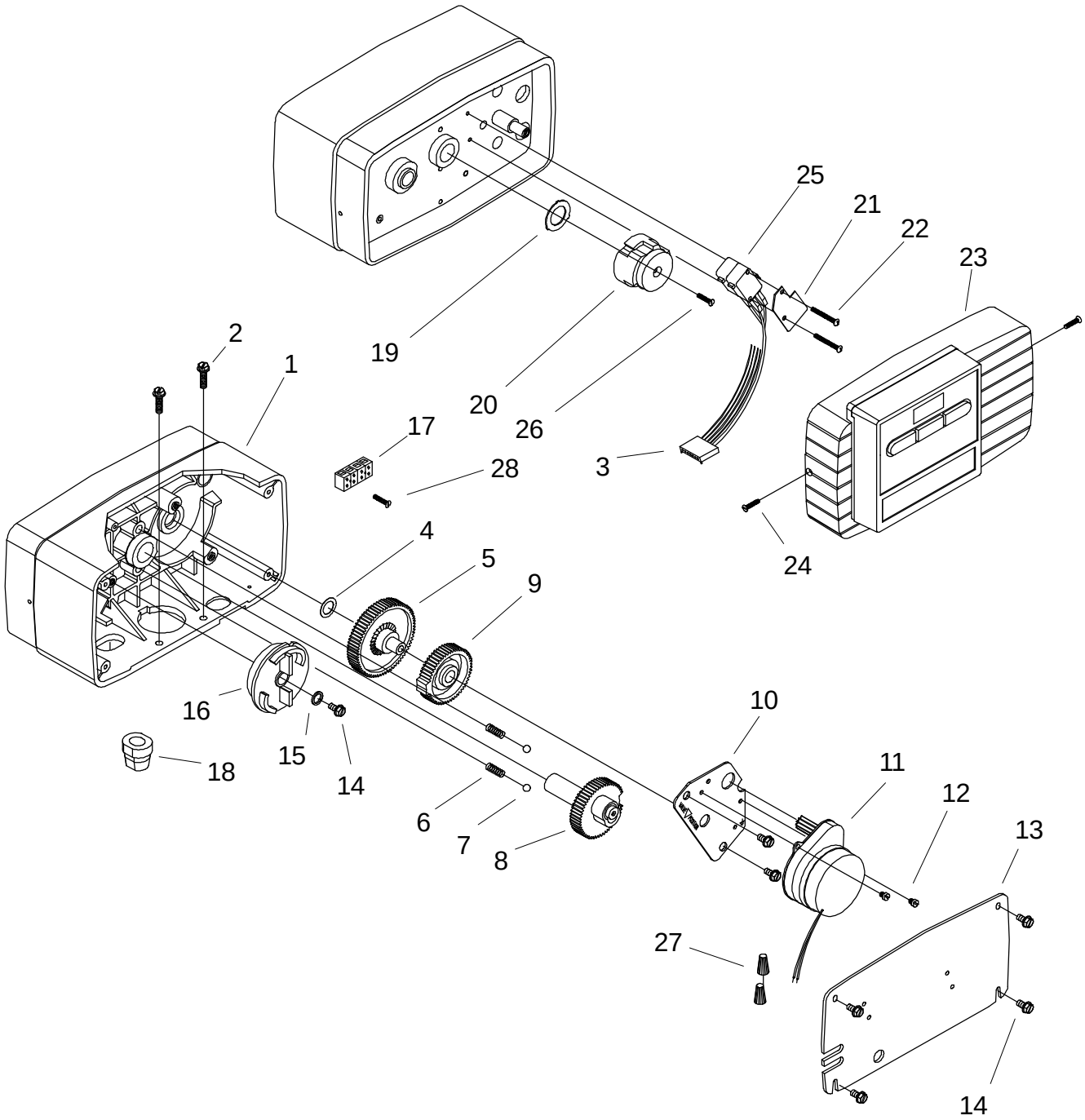
Brine tank refill - step #4

Hard water enters the unit via the valve inlet, flows around the lower piston groove and enters the venturi device where if flows back into the brine tank via the brine valve. During this phase, hard water enters the top of the pressure vessel and flows down through the ion exchange resin. It exits via the lower screen and flows upwards through the centre tube and is available to service via the valve outlet port.



MODEL 5600SE

control drive assembly



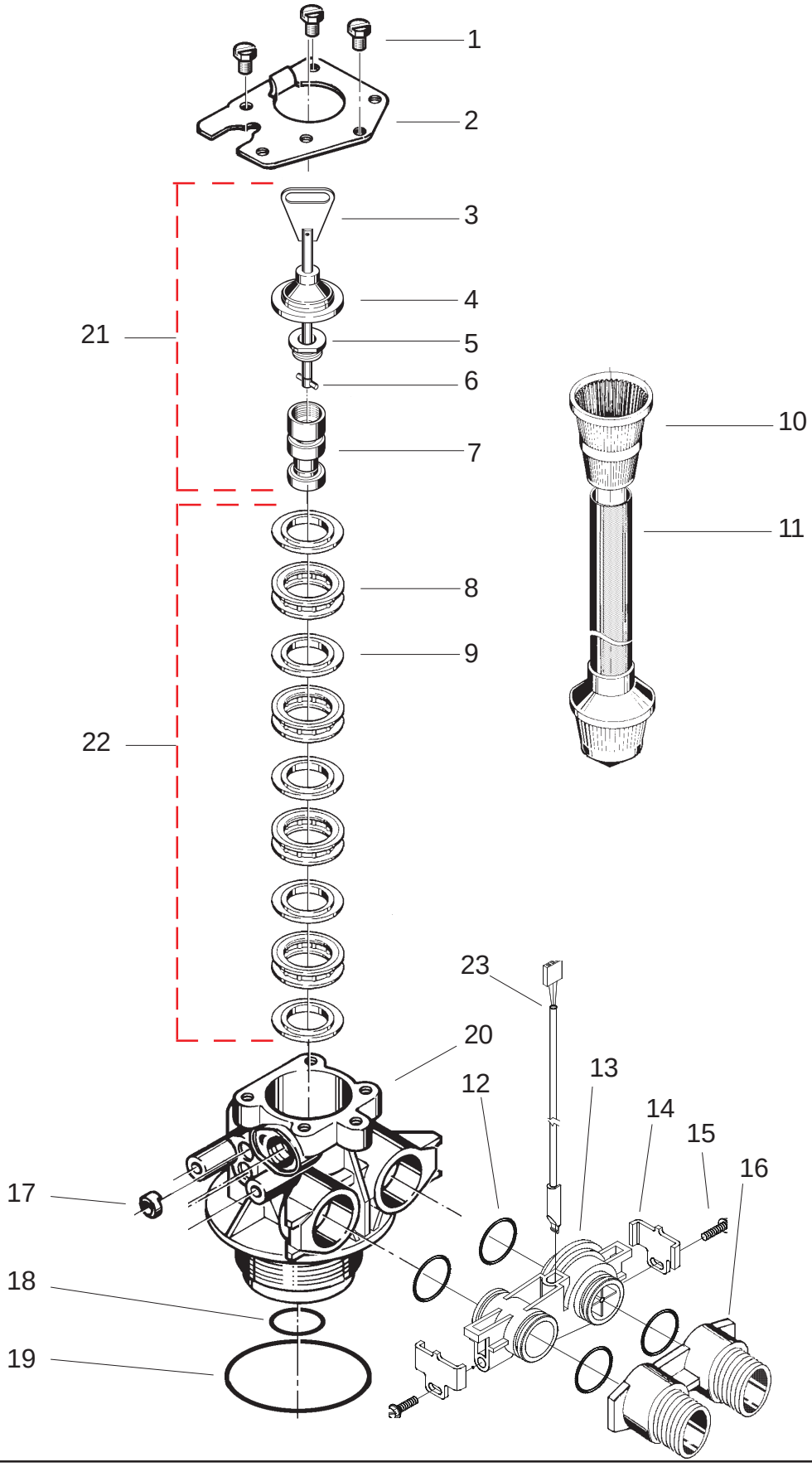
MODEL 5600SE

control drive assembly

Item	Qty	Part No.	Description
1	1	26001-02	Drive housing
2	2	12473	Drive mount screw
3	1	19474	Wire harness
4	1	13299	Spring washer
5	1	13017	Idler gear
6	2	19080	Detent spring
7	2	13300	1/4in dia. ball
8	1	25005	Main drive gear
9	1	23045	Drive gear
10	1	13175	Motor mount plate
11	1	16944	Drive motor 2rpm - 24vac
12	3	11384	Screw
13	1	13229	Backplate
14	5	13296	Screw
15	1	12037	Washer
16	1	18722	Brine valve cam
17	1	23277	Terminal strip - 4 position
18	1	13547	Strain relief
19	1	19079	Washer
20	1	17438	Cycle cam
21	1	10302	Insulator
22	2	17876	Screw
23	1	60755-021	Front panel assembly
24	2	13898	Screw
25	2	10218-01	Microswitch
26	1	15151	Screw
27	2	12681	Wire nut
28	1	18158	Screw

MODEL 5600SE

valve body assembly



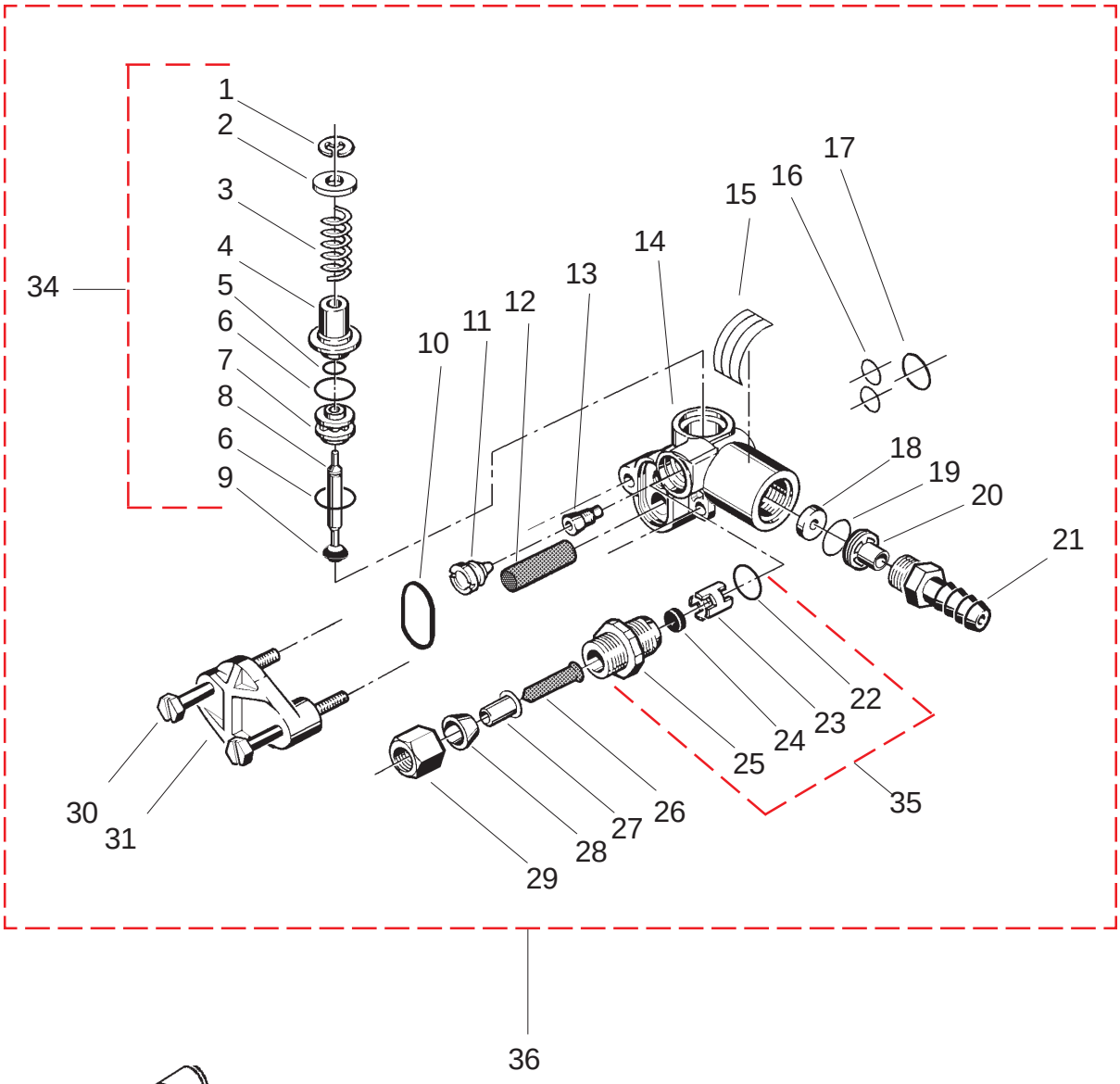
MODEL 5600SE

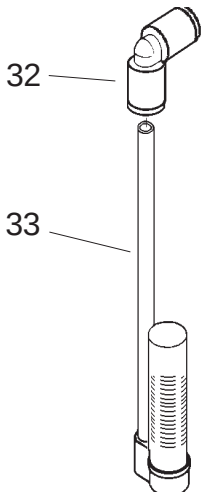
valve body assembly

Item	Qty	Part No.	Description
1	3	21716	Screw
2	1	13546	End plug retainer
3	1	18091	Piston rod assembly
4	1	18088	End plug assembly
5	1	12953	Piston retainer
6	1	10696	Piston pin
7	1	13781	Piston
8	4	14241	Spacer
9	5	13242	Seal
10	1	18280	1in. Top screen - Bayonett fit
11	1	27828	Riser assembly
12	4	13305	O-Ring
13	1	19797	Meter body assembly
14	2	19569	Clip
15	2	13314	Screw
16	1	18706	Plastic yoke - 3/4in. BSP male
17	1	13497	Air disperser
18	1	13304	O-Ring
19	1	12281	O-Ring
20	1	14066	Valve body
21	1	27077	Piston assembly
22	1	24115	Seal and spacer kit
23	1	19791-01	Harness assembly
24	1	14613	Flow straightener - *not shown*

MODEL 5600SE

injector / drain assembly





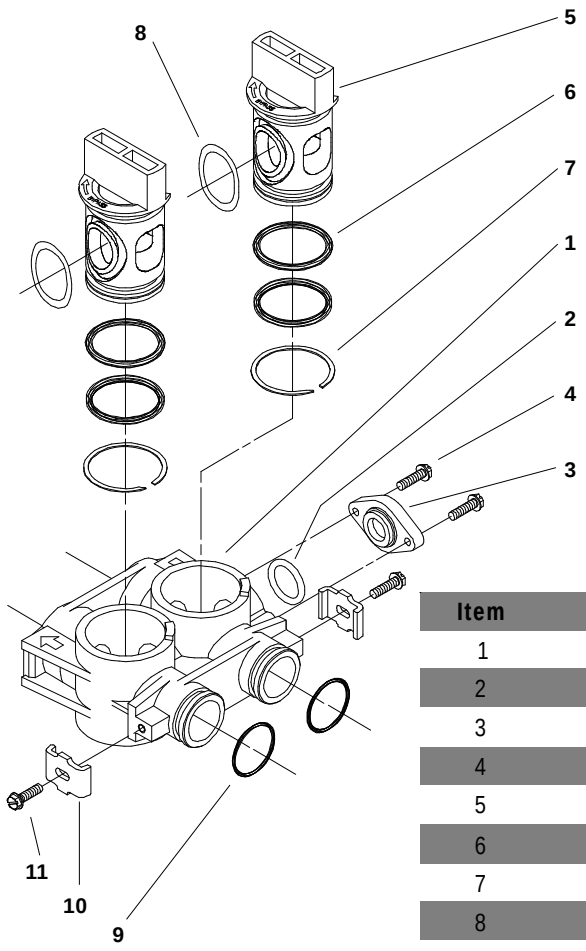
MODEL 5600SE

injector / drain assembly

Item	Qty	Part Number	Description
1	1	11981	Retaining ring
2	1	12035	Washer
3	1	11973	Brine valve spring
4	1	13165	Brine valve cap
5	1	12550	Quad ring
6	2	13302	O-Ring
7	1	13167	Brine valve spacer
8	1	13172	Brine valve stem
9	1	12626	Brine valve seat
10	1	13303	O-Ring
11	1	10913-0	Injector nozzle - # 0
12	1	10227	Injector screen
13	1	10914-0	Injector throat - # 0
14	1	BU28408	Injector body/drain housing
15	1	24052	Injector label
16	2	13301	O-Ring
17	1	21741	O-Ring
18	1	12085	Flow washer - 1,2 USgpm
or	1	12086	Flow washer - 1,5 USgpm
19	1	15348	O-Ring
20	1	13173	DLFC button retainer
21	1	13308	Drain hose barb
22	1	12977	O-Ring
23	1	13245	BLFC button retainer
24	1	12094	BLFC button - 0.25 USgpm
25	1	13244	BLFC fitting
26	1	12767	Screen - Brine line
27	1	10332	Insert sleeve
28	1	10330	Delrin sleeve
29	1	10329	BLFC fitting nut
30	2	13315	Screw
31	1	13166	Injector cover
32	1	12794	Elbow 3/8in x 3/8in
33	1	18168	500A air check assy
34	1	24114	1600 Brine valve assy
35	1	18332-25	BLFC fitting - 0.25USgpm
36	1	24118	Injector assy

MODEL 5600SE

bypass assembly (option)



Item	Qty	Part Number	Description
1	1	17819	By-pass valve body
2	1	11183	O-Ring
3	1	18582	Cap - By-pass
4	2	17512	Screw
5	2	17820	Plug - By-pass
6	4	18661	O-Ring
7	2	18662	Retaining ring
8	2	18660	O-Ring
9	2	13305	O-Ring
10	2	13255	Mounting clip
11	2	13314	Screw

wiring scheme

Connect 24 Vac 50Hz
supply to terminals 3 & 4