Installation / Operation Manual

Fully Automatic Water Filter

WARNING

Lubricants

Do NOT use Vaseline, oils, hydrocarbon lubricants or spray silicone anywhere! Petroleum base lubricants will cause swelling of o-rings and seals. The use of other lubricants may attack plastic Noryl®. It is recommended that Dow Corning® silicone grease be used as a lubricant for all control valves. Dow Corning® 7 Release Compound is used in the manufacture of Chandler Systems control valves.
(Part # LT-150)

Sealants

Pipe dope and liquid thread sealers may contain a carrier that attacks some plastic materials. It is recommended that Teflon® tape be used to seal plastic Noryl® threaded fittings.

Installation Requirements

- A level floor position ahead of pipe into water heater.
- Unit must be installed at least 10 feet ahead of the inlet to a water heater to prevent damage to back up hot water.
- ***Do not*** install the unit in an area of direct sunlight or where freezing temperatures may occur!
- Locate the unit near an unswitched, 115 volt / 60 Hz grounded electrical outlet.
- Check for distance and proper drain installation (e.g. floor drain, washing machine standpipe).
- Determine type and size of piping required for filter connection (e.g. copper, galvanized, PVC plastic).

Note : If household plumbing is galvanized and you intend to make the installation with copper (or vice versa), obtain di-electric unions to prevent dissimilar metal corrosion.

Note : Where the drain line is elevated above the control valve or exceeds 20 feet in length to reach the drain, use 3/4" I.D. drain line tubing instead of 1/2" I.D. drain line tubing is not included.

Caution : *If sweat soldering copper pipe (remember to always use lead free solder and flux), cover bypass valve with wet rags to prevent heat damage to connections and control valve. If using PVC or plastic pipe, primers and solvent cements specifically recommended for use with potable water are required.*

Installation Procedure

Water Supply Connection and Bypass Valve

To allow for filter servicing, swimming pool filling or lawn sprinkling, a manual bypass valve has been installed at the factory. The bypass allows raw water to be manually routed around the filter.

1. Position filter at desired location for installation. If a water softener is to be installed, the filter should be positioned first and then the softener.

2. The filter material is shipped separately from the mineral tank. The tank must be loaded with material after tank has been placed at the desired location.
   A. Remove the control valve by unscrewing from the tank.
   B. Remove and inspect distributor tube and bottom basket.
   C. Replace distributor tube and use a cork or tape to place over top of distributor tube to prevent mineral from entering tube while filling.
   D. Place mineral funnel in hole on top of tank.
   E. Pour several gallons of water in the tank.
   F. First pour in the “D” gravel underbedding and then the filter media.
   G. After filling the tank with material, use a garden hose or several buckets to fill the tank with water.

Note: This will permit the filtering material to become soaked while preparing the installation and will prevent the control valve from being plugged with floating material on initial backwash.

H. Remove funnel and clean filter material from tank threads.
I. Remove cork or tape from distributor tube.
J. Replace control valve on mineral tank.

Caution: *Be extremely careful to position distributor tube into control valve distributor pilot hole.*

3. Turn OFF main water supply and OPEN nearest faucet to relieve pressure.

4. Cut main line and install appropriate elbows and extensions. Inlet and outlet connection on the control valve are 1" FNPT.

Caution: *Raised arrows located on the sides of control valve body and bypass valve indicated proper direction of water flow. Install inlet and outlet piping in direction of arrows.*

Drain Line Connection

1. Remove drain line hose barb and wrap threads with Teflon tape. Reinstall drain line hose barb.

Caution: *Hand tighten only!!*

2. Install 1/2" I.D. drain line tubing (not included) from hose barb to an open drain. A 4" gap between end of the drain line and the open drain is required to prevent wastewater back flow. Keep the drain line as short as possible an overhead drain line can be used, if necessary, but should discharge below the control valve. A siphon trap (taped loop) at the outlet of the drain line is advisable to keep the drain line full and assure correct flow during regeneration. Elbows or other fittings must be kept at a bare minimum.

Note: Where the drain line is elevated above the control or exceeds 20 feet in length, 3/4" I.D. drain line tubing should be used. A hose clamp (optional, not included) can be used to secure drain line tubing to drain barb.

Electrical Connection

1. Plug the cord from the control valve into a standard 115 volt / 60 Hz receptacle.

Note: Do not plug into an outlet controlled by a wall switch or pull chain that could inadvertently be turned off.

2. For your protection, this unit is equipped with a 3-prong plug and should be plugged into a grounded receptacle. If the receptacle is designed only to accept 2-prong plugs, obtain a 3-prong adapter and secure the ground wire to the receptacle plate mounting screw.

Warning: **Do not remove grounding plug!! An improperly grounded unit could cause injury from electric shock!!**

Pressurizing the System

1. Slowly rotate handle of the bypass valve to the SERVICE position.

2. Open the nearest faucet to evacuate air from plumbing lines.

3. Check for leaks!

Control Valve Operation

Each control valve position can be manually selected by rotating the knob **clockwise** until the desired position appears in the knob notch.

1. Manually index **regeneration knob** to **BACKWASH** position and allow water to run to drain for 3-4 minutes.

2. Manually index **regeneration knob** to **RAPID RINSE** position and allow water to run to drain 3-4 minutes.

3. Manually index **regeneration knob** to **SERVICE** position.

Set The Backwash Schedule

Under most circumstances a backwash schedule of every six (6) days should suffice. However, depending upon water usage and local water conditions, the backwash cycle may need to be accomplished more frequently.

Note: A significant pressure drop in the home before the filter backwashes would be an indication that a more frequent backwash schedule is needed.

1. Locate the skipper wheel just to the right of the manual regeneration knob.

2. Rotate skipper wheel until the red pointer covers the number “1”.

Note: The red pointer represents *tonight* in the regeneration program.

3. Refer to the regeneration frequency chart (Figure 1) and select the number of days between backwash desired.

4. Slide out corresponding tab number(s) on the skipper wheel.

Figure 1

Regeneration Frequency Days Between Regeneration	Slide Out TAB NUMBER											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪
2		▪		▪		▪		▪		▪		▪
3			▪			▪			▪			▪
4				▪				▪				▪
6						▪						▪
12												▪

Setting The Time Of Day

1. Depress the red button on lower left side of time gear.

2. Rotate the 24-hour gear on the manual regeneration knob until the time of day is aligned with time of day arrow. (Note: a.m. and p.m.)

3. Check that red button has engaged in the 24-hour gear.

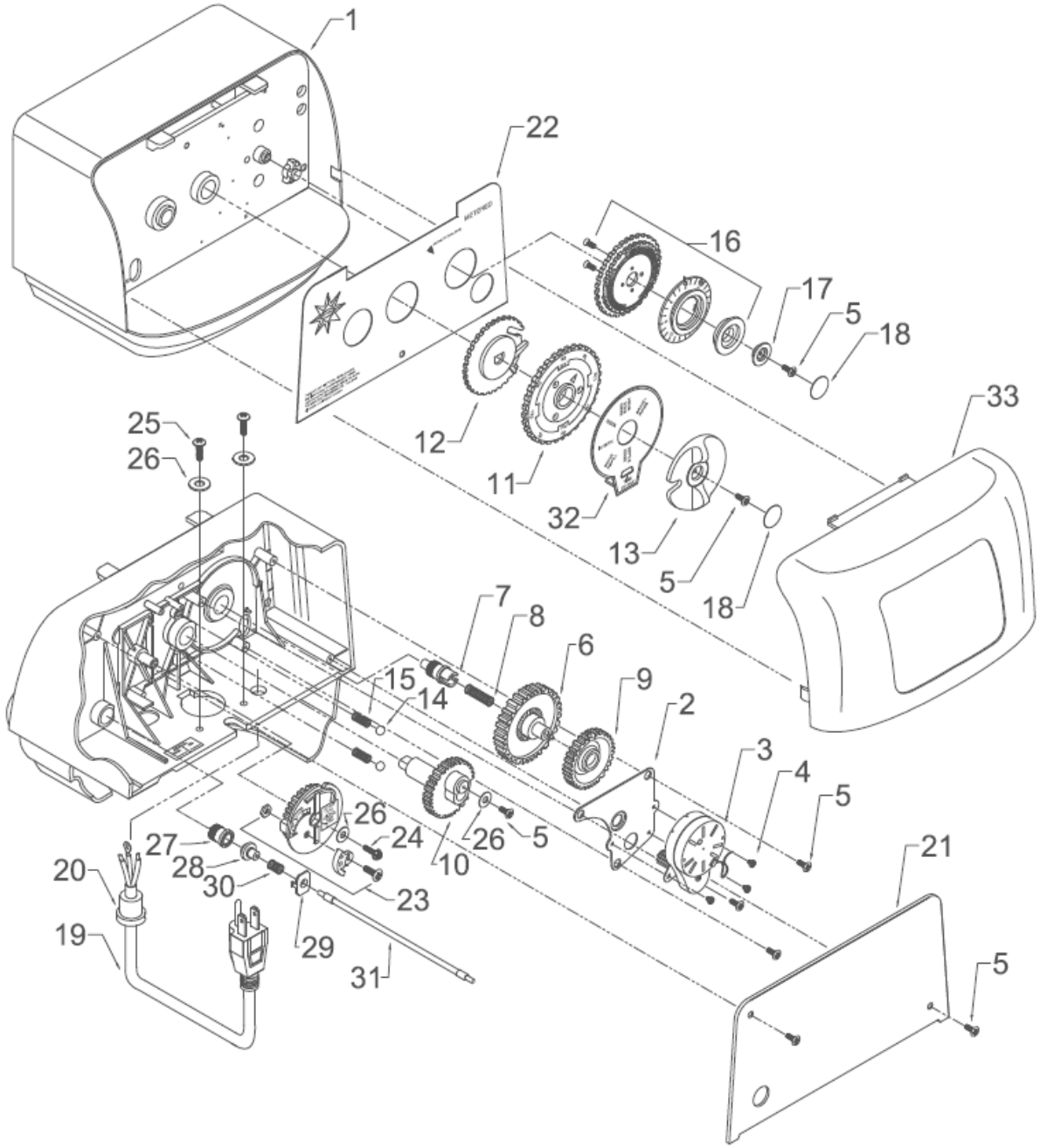
4. The starting time for regeneration is factory preset to occur at 1:00 a.m. on each day for which the skipper tab is extended.

Note: If a different backwash time is desired, set the time of day ahead or behind the actual time of day.

Final Check

1. Be certain the bypass is in the **SERVICE** position.
2. Make sure the electric cord is connected to an uninterrupted 115 volt outlet.
3. Check that the time of day is set.
4. Double check backwash schedule.
5. Make final check for leaks.
6. Leave this manual with the unit.

Control Valve Drive Assembly *(Metered Version)*

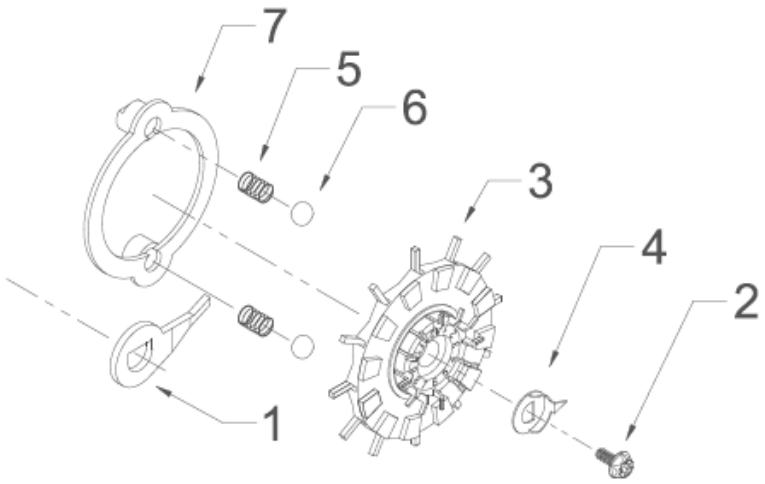


Valve Drive Assembly Parts List *(Metered Version)*

Ref #	Description	Part #	Qty
0	Metered Softener Powerhead Assy. Complete	20563H100	1
1	Drive Housing	20563X101	1
2	Motor Mounting Plate	20251X102	1
3	Motor, 110 V / 60 Hz	20251X425	1
4	Motor Mount and Ground Screw	20251X427	3
5	Component Mounting Screw	20251X406	8
6	Idler Gear	20251X421	1
7	Idler Pinion	20251X419	1
8	Idler Spring	20251X420	1
9	Drive Gear	20251X422	1
10	Main Gear and Shaft	20561X111	1
11	24 Hour Gear	20251X403	1
12	Cycle Actuator Arm	20253X110	1
13	Manual Regeneration Knob	20561X114	1
14	Ball,1/4" Diameter SST	20251X413	2
15	Spring Detent	20251X414	2
16	Program Wheel Assy.-Specify "K"	20563X119	1
17	Program Wheel Retainer	20253X111	1
18	Program Wheel Cover Label	20563X121	2
19	Power Cord	20561X123	1
20	Strain Relief	20251X102	1
21	Back Cover	20561X126	1
22	Silver Front Label	20563X127	1
23	Brine CAM Assembly 6-36 – Inc. CAM, CAM Screw, CAM Nut & "LBS OF SALT" Label	20561X130	1
24	Brine CAM Mounting Screw	20561X131	1
25	Drive Mounting Screw	20561X134	2
26	Washer	20561X135	1
27	Program Wheel Drive Pinion	20563X137	1
28	Drive Pinion Clutch	20563X138	1
29	Spring Retainer	20563X139	1
30	Spring	20563X140	1
31	Cable Assy. Standard 8.25"	20563X141	1
	Cable Assy. Ext. 6.75"	20563X142	1
32	Valve Position Dial Standard	20561X138	1
33	Designer Cover	N/A	1

Shaded Ref # Indicates Assembly or Kit

Control Valve Drive Assembly *(Timeclock Version)*



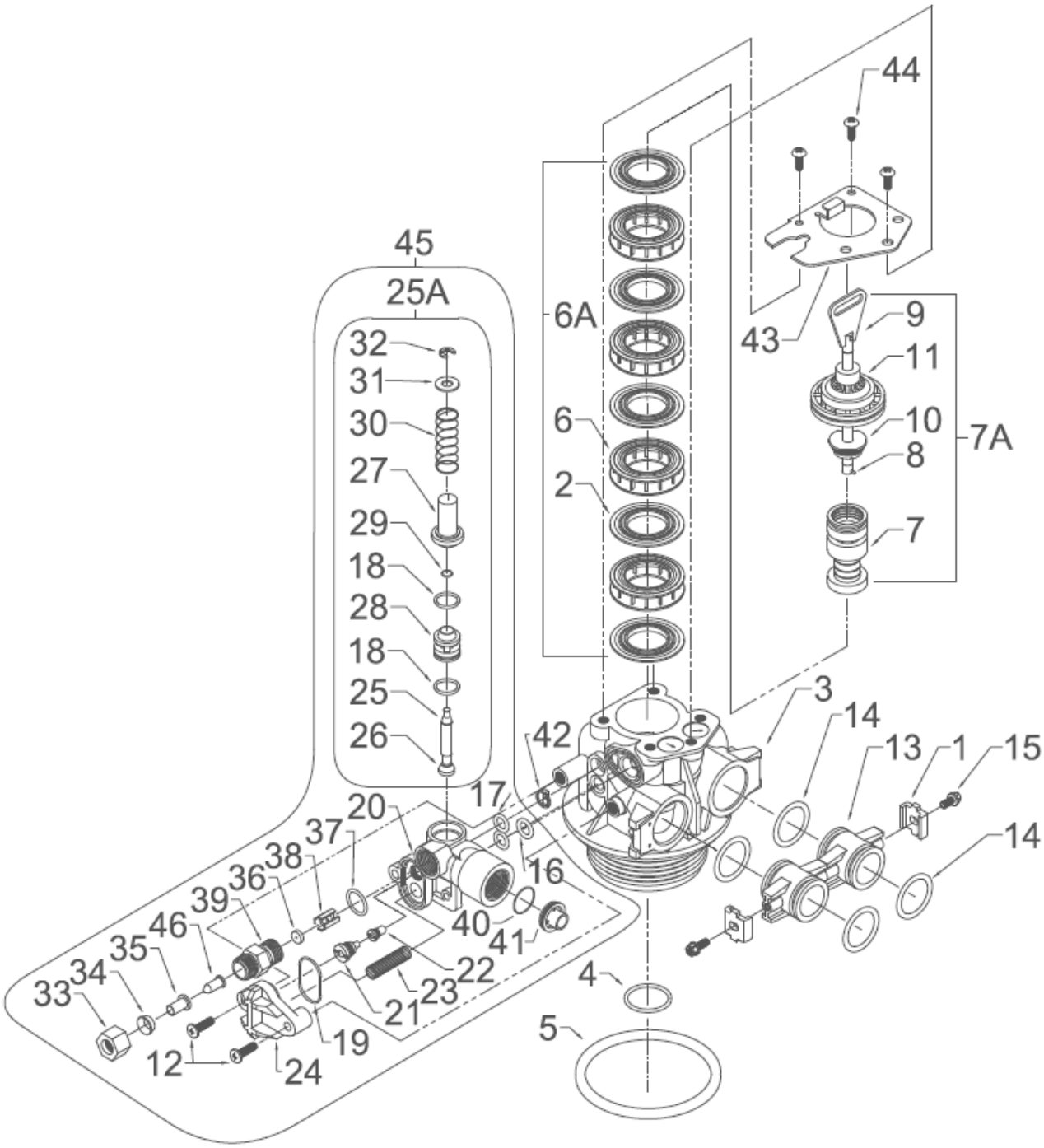
Control Drive Assembly Parts List *(Timeclock Version)*

Ref #	Description	Part #	Qty
0	Timered 12 Day Softener Powerhead Assy. Complete	20561H100	1
Not Shown	Drive Housing	20561X101	1
Not Shown	Front Label – Blue/Silver	20561X217	1
1	Cycle Actuator Alarm	20251X402	1
2	Component Mounting Screw	20251X406	1
3	Skipper Wheel Assy. – 12 Day	20251X408	1
4	Regen Pointer	20251X410	1
5	Skipper Wheel Detent Spring	20251X412	2
6	Ball, 1/4" DIA SST	20251X413	2
7	Skipper Wheel Ring	20251X435	1

All Items Same as Metered Version Except :

#1 Replaces Metered Item #12
#2 thru #7 Replace Metered Items
#16 thru #18 Metered Items
#27 thru #31 Are Not Included
Shaded Ref # Indicates Assembly or Kit

Control Valve Drive Assembly *(Metered or Clock Version)*



Control Valve Drive Assembly Parts List

(Metered or Clock Version)

Ref #	Description	Part #	Qty
0	Valve Body Complete	20561X200	1
1	Adapter Clip	20561X201	2
2	Seal	20561X202	5
3	Valve Body Only 1.05” Dist.	20561X203	1
4	Dist Tube O-Ring 1.05” O.D.	20561X204	1
5	Valve to Tank O-Ring	20561X205	1
6	Spacer	20561X207	4
6A	Seal & Spacer Kit – Incl. 5-#2 & 4- #6	20561X253	1
7	Piston Only	20561X208	1
7A	Piston & End Plug Assy. – Incl. #7 to #11	20561X254	1
8	Piston Pin	20561X209	1
9	Piston Rod Assembly	20561X210	1
10	Piston Retainer	20561X211	1
11	End Plug Assembly	20561X212	1
12	Injector Mounting Screw	20561X214	2
13	Bypass Adapter (Automatic Only)	20561X215	2
14	Bypass Adapter O-Ring	20561X216	4
15	Adapter Clip Screw 9-18 x 5/8”	20561X217	2
16	Drain O-Ring	20561X218	1
17	Injector O-Ring	20561X219	2
18	Brine Spacer O-Ring	20561X220	2
19	Injector Cover O-Ring	20561X221	1
20	Injector Body	20561X222	1
21	Injector Nozzle, #1 White	20251X205	1
	Injector Nozzle, #2 Blue	20251X241	1
	Injector Nozzle, #2 PVC	20251X235	1
22	Injector Throat, #1 White	20251X206	1
	Injector Throat, #2 Blue	20251X242	1
	Injector Throat, #2 PVC	20251X236	1
23	Injector Screen	20251X204	1
24	Injector Cover	20561X226	1
25	Brine Stem Only	N/S	1
25A	Brine Valve Assy. - Incl. #18, #25 to #32	20561X225	1
26	Brine Valve Seat	2025X315	1
27	Brine Valve Cap	N/S	1
28	Brine Valve Spacer	N/S	1
29	Quad Ring	20251X312	1
30	Brine Valve Spring	N/S	1
31	Brine Valve Washer	N/S	1
32	Retaining Ring	N/S	1

Ref #	Description	Part #	Qty
33	Brine Line Compression Nut	20251X304	1
34	Brine Line Ferrule	20251X305	1
35	Brine Line Brass Insert	20251X303	1
36	BLFC Button .5 GPM	20251X318	1
37	Brine Line O-Ring	20561X239	1
38	BLFC Button Retainer	20561X240	1
39	BLFC Brass Fitting	20561X241	1
40	Flow Control Button 1.5 GPM	20251X266	1
	Flow Control Button 2.0 GPM	20251X267	1
	Flow Control Button 2.4 GPM	20251X268	1
	Flow Control Button 3.0 GPM	20251X269	1
	Flow Control Button 3.5 GPM	20251X270	1
	Flow Control Button 4.0 GPM	20251X271	1
	Flow Control Button 5.0 GPM	20251X272	1
	Flow Control Button 7.0 GPM	20251X274	1
41	DLFC Button Retainer	20561X246	1
42	Air Dispenser	20561X248	1
43	End Plug Retainer	20561X249	1
44	10-24 X 1/2" Screw	20561X240	3
45	Injector Model Assy. #1 Inj., .5 BLFC, Specify DLFC, Incl. (2) #12, (1) #16, (2) #17 & #18, (1) each #19 thru #25, (1) each #26 thru #38	20561X260	1

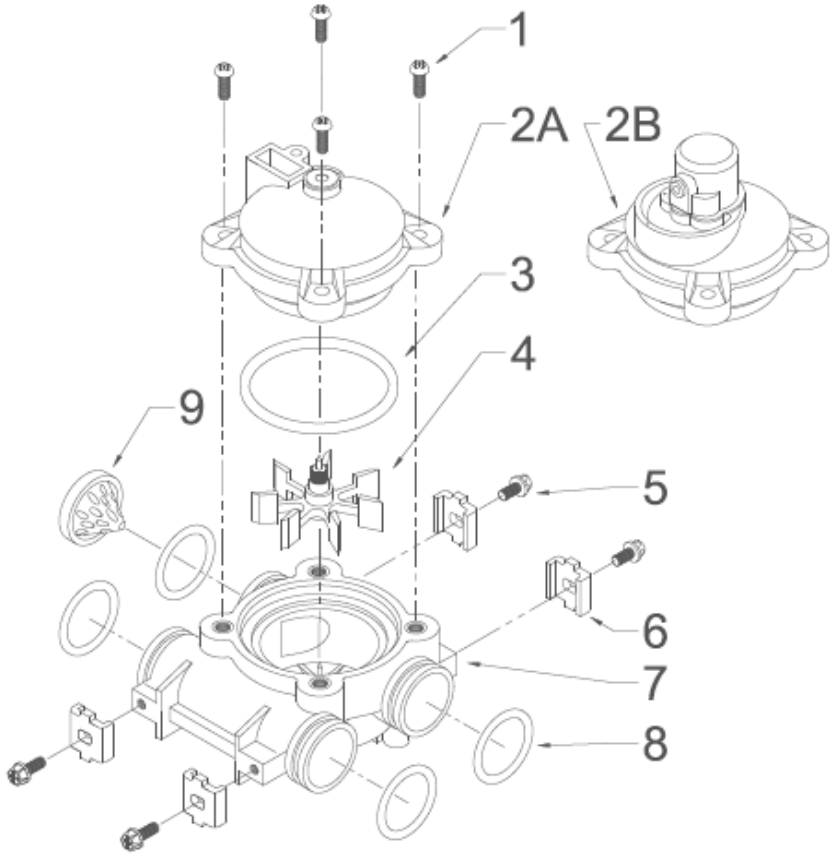
Filter Components Not Shown

	Description	Part #	Qty
	Filter Module Assy. Specify DLFC	20562X263	1
	Drain Line Fitting Straight 1/2” NPT x 1/2" Tubing	20561X256	1
	Drain Line Fitting 90º Elbow 1/2" NPT x 1/2" Tubing	20251X255	1
	Brine Valve Plug – Filter Only	20562X102	1
	Brine Valve Plug O-Ring	20561X220	1
	BLFC Plug – Filter Only	20562X103	1
	BLFC Plug O-Ring	20561X239	1
	Piston Assy. – Filter Only	20562X254	1
	Injector Nozzle Undrilled		1

N/S – Indicates Non-Stocked Item

Shaded Ref # - Indicates Assembly or Kit

Meter Assembly



Meter Assembly Parts List

Ref #	Description	Part #	Qty
0	Meter Module Complete – Std. Range	20563X200	1
1	Meter Cover Assy. Screw	20561X134	4
2A	Meter Cover Assy. – Std. Range	20563X202	1
	Meter Cover Assy. – Ext. Range	20563X211	1
2B	Meter Cover – Right Angle – Std. Range	20253X202	1
	Meter Cover – Right Angle – Ext. Range	20253X211	1
3	Meter Cover Assy. O-Ring	20563X203	1
4	Impeller	20563X204	1
5	Adapter Clip Screw	20561X217	4
6	Adapter Clip	20561X201	4
7	Meter Body	20563X207	1
8	Meter Body O-Ring	20561X216	4
9	Flow Straightener	20563X209	1

Troubleshooting Guide

SYMPTOM	PROBABLE CAUSE	CORRECTION
1. Softener fails to regenerate automatically	Power supply plugged into intermittent or dead power source	Connect to constant power source.
	Disconnected meter cable	Reconnect cable.
	Improper control valve programming	Reset program settings.
	Defective power supply	Replace power supply.
	Defective meter	Replace or repair.
	Defective drive motor	Check motor operation.
2. Regeneration at wrong time	Time of day improperly set, due to power failure	Reset time of day programming.
3. Loss of capacity	Increase raw water hardness	Reset unit to the new hardness.
	Brine concentration and/or quantity	Keep brine tank full of salt at all times. Clean it yearly. Salt may be bridged. If using a salt grid plate, ensure refill water is over it.
	Resin fouling	Call Dealer, find out how to confirm it. Clean the resin and prevent future fouling.
	Poor distribution, channeling (uneven bed surface)	Call Dealer. Check distributors and backwash flow.
	Internal valve leak	Call Dealer. Replace spacers, seals and/or piston.
	Resin age	Call Dealer. Check for resin oxidation caused by chlorine. Mushy resin.
	Resin loss	Call Dealer. Check for correct bed depth. Broken distributors. Air or gas in bed, well gas eliminator, loose brine line.
4. Poor water quality	Not regenerating enough	Check regeneration cycle.
	Bypass valve open	Close bypass valve.
	Channeling	Check for too slow or high service flow. Check for media fouling.
5. High salt usage	High salt setting	Adjust brine tank refill time.
	Excessive water in brine tank	See symptom # 7.
	Constant flow through the unit	Indicates plumbing leak (i.e. toilet tank).
	Improperly set hardness, regeneration frequency or regeneration day override programming	Reset programming.
6. Loss of water pressure	Sealing / fouling of inlet pipe	Clean or replace pipeline. Pre-treat to prevent.
	Fouled resin	Clean resin. Pre-treat to prevent.
	Improper backwash	Too many resin fines and/or sediment. Call Dealer. Reset backwash flow rate and/or adjust.

SYMPTOM	PROBABLE CAUSE	CORRECTION
7. Excessive water in brine tank and/or salty water to service	Plugged drain line	Check flow to drain. Clean flow control.
	Dirty or damaged brine valve	Clean or replace brine valve.
	Plugged injectors	Clean injectors and replace screen.
	Low inlet pressure	Increase pressure to allow injector so perform properly (20 psig minimum)
	Excessive brine refill cycle time	Check salt setting.
8. Softener fails to use salt	Check items listed in #1	
	Improper control valve programming	Check and reset settings.
	Plugged/restricted drain line	Clean drain line and/or flow control
	Injectors are plugged	Clean or replace injectors and screen
	No water in brine tank	Check for restriction in BLFC. Ensure safety float is not stuck. Check brine tank for leaks.
	Water pressure is too low	Line pressure must be at least 20 psi
	Brine line injects air during brine draw	Check brine line for air leaks
	Internal control leak	Check piston, seals and spacers for scratches and dents
9. Control cycles continuously	Debris in seal and spacers	Clean or replace seals & spacers/ piston assembly
10. Continuous flow to drain	Foreign material in control	Clean valve or rebuild unit
	Internal control leak	Same as above.
	Valve jammed in backwash, brine or rapid rinse position	Same as above.
	Motor stopped or jammed	Replace motor.