



Innovative Solutions for Your Water



HS / HL Valves & Systems Service Manual

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This valve is Tested and
Certified by NSF International
against NSF/ANSI Standard 44
for materials and structural
integrity requirements

COMPONENT



HS / HL Valves & Systems Service Manual

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1. Introduction

Thank you for choosing a **Hankscraft Runxin HS / HL Mechanical Valve**. HS and HL control valves take the timeless design of industry standard piston valves and updates them to exceed modern performance demands. Their durable, high-performance construction has down-flow regeneration, industry compatible pistons, injectors and seal/spacers, and an L bracket design for hassle-free operation and maintenance.

These valves utilize high efficiency that lowers annual power use and can be configured with optional 24V motors and extended meters. HS and HL valves also feature a quick-connect drain with optional offset, increasing flexibility for installs.

Hankscraft Runxin's mechanical control valves are manufactured using improved materials and process and are put through a rigid, 100% quality inspection before they leave the factory. Our products will give you peace of mind that will result in fewer warranty callbacks, provide a better product to your customers, and put more money in your pocket.

HS / HL Valves Feature:

- Improved manufacturing and durability, lower power usage
- 24V motor and extended meter options
- Quick-connect drain with optional offset



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2. System Specifications Form for Record Keeping

Installer

Name: _____

Address: _____ City/State: _____

Phone: _____ Install Date: _____

Softener System Configuration

Tank Size: Dia. _____ in. Height _____ in. Resin Volume: _____ cu/ft.

Brine Tank Capacity: 85L 100L 130L

Media: _____

Control Valve Serial Number (label located on valve body front): _____

Valve Style:

HS-FTC HS-STC HS-SMM HL-STC HL-SMM HL-SMM-24 HL-SMM-24-EXT

Day/Time of Regeneration: _____

Drain Line Flow Control (DLFC): _____ gpm Brine Line Flow Control (BLFC): _____ gpm

Injector Size: _____ Salt Setting: _____

Meter Gallon Setting: _____ gallons

Water Conditions and Quality

Total Hardness: _____ grains Iron (Fe): _____ ppm Acid (pH): _____ TDS: _____ ppm

Pressure of Inlet Water: _____ psi Other: _____

Water Source: Well Water City Water Other: _____



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3. Pre-Installation Checklist

IMPORTANT NOTICE

Read through the instructions thoroughly and obtain all materials and tools before proceeding with the installation. Be sure to follow all applicable national, state, county, and local plumbing codes and regulations.

All plumbing and electrical work should be performed by an accredited professional to ensure all local, state, and municipal guidelines are met.

During cold weather it is recommended that the installer warm the valve to room temperature before operating.

Required Operating Conditions

Working Conditions	Working Pressure	25psi ~ 120psi
	Water Temperature	40 °F ~ 100 °F
Working Environment	Environment Temperature	40 °F ~ 100 °F
	Relative Humidity	≤95%
	Power Source	AC100 ~ 240V / 50 ~ 60Hz



CAUTION



Do not exceed 120 psi water pressure.
Do not exceed 40° C / 100° F water temperature.
Do not subject unit to freezing conditions.

Failure to use this product within the described conditions may void the warranty.



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- All plumbing and electrical work should be performed by an accredited professional to ensure all local, state, and municipal guidelines are met.
- An uninterrupted alternating current (A/C) supply is required. Please make sure voltage supply is compatible with unit before installation.
- Conditions of existing plumbing should not be clogged with lime or iron build-up. Replace piping that has heavy lime and/or iron build-up. If there is an iron concern, install an iron filter unit ahead of the water softener. Plumbing that has heavy lime and iron buildup inhibits the operation of softening system.
- When there is moderate to high turbidity, a filter should be installed on the inlet before the water softening system.
- If the water pressure exceeds 120psi, a pressure reducing valve must be installed before the water inlet. If the water pressure exceeds 80 psi, installing a pressure reducing valve before the water inlet is highly recommended. If the water pressure is under 25psi, a booster pump must be installed before the water inlet.
- Ensure there is salt in the brine tank at all times when this valve is used for softening. The brine tank should contain clean water and softening salt only, at least 99.5% pure. Do not use small grain salt.
- Always install a bypass valve.
- Replacement parts for the valve should only be purchased through Hanks Craft Runxin resellers.
- Regular interval monitoring of the water quality and work environment is recommended to insure proper operation of the valve and system.



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4. System Installation

Product Dimensions – HS / HL Control Valves

Length (max.)		Width (max.)		Height (max.)		Regeneration Mode	
7.5"		4"		7.5"		Down-flow	
Inlet Port	Outlet Port	Drain Port	Brine Port	Base	Riser Pipe		
3/4"	3/4"	1/2" NPTF	3/8"	2.5"NPSM	1.05"		

These valve dimensions are for reference only.

Plumbing Rough-Ins – HS / HL Control Valves

Bypass	Tank Center to End of Bypass	Inlet/Outlet Center	Inlet/Outlet Height 9x48 Tank	Inlet/Outlet Height 10x44 Tank	Inlet/Outlet Height 10x54 Tank	Inlet/Outlet Height 12x52 Tank	Inlet/Outlet Height 13x54 Tank
1" Metal Bypass	5-3/8"	2"	50"	46-5/8"	56-3/4"	54-7/8"	56-7/8"
3/4" Metal Bypass	5-1/4"	2"	50"	46-5/8"	56-3/4"	54-7/8"	56-7/8"

These valve dimensions are for reference only.

Unit Location

- Locate the filter or softener close to a clean working floor drain away from direct sunlight and any heat sources. This will minimize consumer impact in the event of malfunction.
- Ensure the unit is installed with enough space for operation and maintenance.
- The installation surface should be clean, level and stable for both the pressure tank and brine tank.



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Plumbing and Mechanical Setup

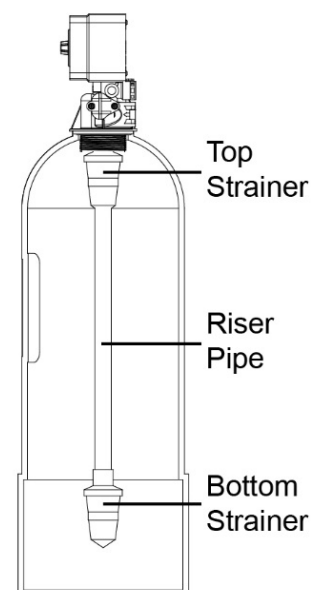
- Complete all plumbing according to local, state, and federal plumbing codes.
 - A 1/2" (13mm) minimum drain pipe should be used. However, if the backwash flow rates exceed 7gpm or the length exceeds 20 feet (6m) then a 3/4" (19mm) drain pipe should be used.
 - There must be an air gap between the drain line and the drain to prevent siphoning of contaminated water back into the resin tank.
- Use only Teflon tape on the drain fitting.
- Solder joints should be completed prior to connecting piping to the valve. Solder joints near the drain must be done before connecting the Drain Line Flow Control fitting (DLFC). Leave at least 6" (152mm) between the DLFC and solder joints when soldering pipes that are connected on the DLFC. Failure to do this could cause interior damage to valve. The valve manufacturer is not responsible for damage incurred during installation.
- When turning threaded pipe fittings onto plastic fitting, take precaution not to cross thread or over tighten.
- Ensure the unit is installed with enough space for operation and maintenance.



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Control Valve Installation

1. Cut the 1" (25mm) distributor tube (1.05" O.D.) flush with the top of the tank. Take care to keep foreign material out of mineral tank. If purchased as a complete system, the tube has already been cut and installed.
2. Insert distributor tube with lower basket into the center of the pressure tank.
3. Plug the riser pipe and fill the pressure tank with resin. If purchased as a complete system from Hankscraft Runxin the media has been installed. Media quantity is relative to desired capacity and tank size.
4. Lubricate the valve center hub O-ring with silicone lubricant only.
5. Install the upper basket with a twist and lock action to center hub of the valve.
6. Lubricate, with silicone lubricant, and install the valve base O-ring around the neck of the valve.
7. Place valve on tank with the distributor tube inserted down the middle of the upper basket. Twist the valve on to the tank to secure valve to the tank.



System Sizing Chart

Tank Size	Injector	Slow Rinse @ 40 psi	Brine Draw @ 40 psi	¹ BLFC	² DLFC
9"	#1 White	.45 gpm	.28 gpm	.25 gpm	2.0 gpm
10"	#1 White	.45 gpm	.38 gpm	.5 gpm	2.4 gpm
12"	#2 Blue	.84 gpm	.56 gpm	1.0 gpm	3.5 gpm
13"	#2 Blue	.84 gpm	.56 gpm	1.0 gpm	4.0 gpm
14"	#4 Green	1.0 gpm	.63 gpm	1.0 gpm	5.0 gpm
16"	#4 Green	1.0 gpm	.63 gpm	1.0 gpm	7.0 gpm

Due to varying water conditions, tank sizes, and water pressures, use the above as guidelines only.

¹BLFC (Brine Line Flow Control), refill rate for filling brine tank.

²DLFC (Drain Line Flow Control), backwash and rapid rinse flow rates.



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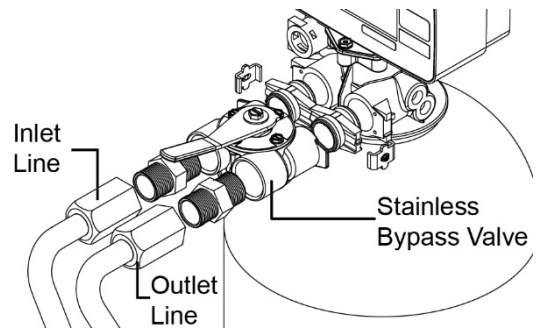
Bypass Installation

Stainless Steel Bypass – 1606K/1606KB

1. Grease bypass O-rings and press onto valve.
2. Secure with clips.



Before running the valve for the first time, flush out the water line and bypass:



3. Be sure the bypass is closed.
4. Turn the water source on at the inlet to the house.
5. Disconnect the bypass from the valve.
6. Put a container under the bypass. Open the bypass to remove any foreign material out of the water lines.
7. Close the bypass.
8. Re-connect the bypass to the valve.
9. Open the bypass slowly, to avoid water hammering.
10. Let water flow into the pressure tank. When water flow stops, slowly open a cold water tap nearby and let water run until it runs clear and air is purged from the unit. Then close tap.
11. Check for and repair any leaks.
12. Start-up procedures are shown on the following pages for each different valve type. Locate your valve type and follow the start-up procedures listed.



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Plumbing Connections Installation

1. Connect inlet pipe with inlet connector of bypass.
2. Connect outlet pipe with outlet connector of bypass.
3. See Fig. 1

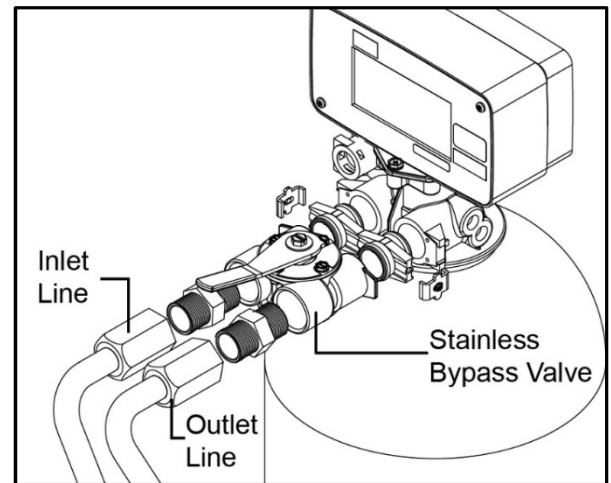


Fig. 1

Drain Line Installation

1. Install drain line with an air gap to the floor drain.
(*Valve drain hose not supplied*)
2. See Fig. 2

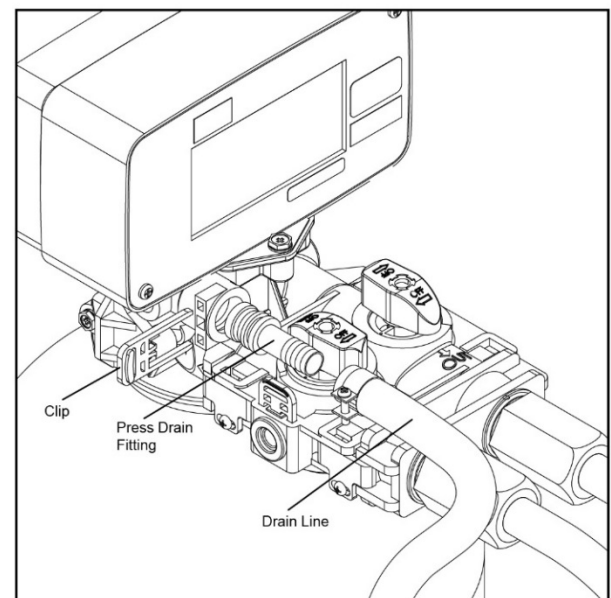
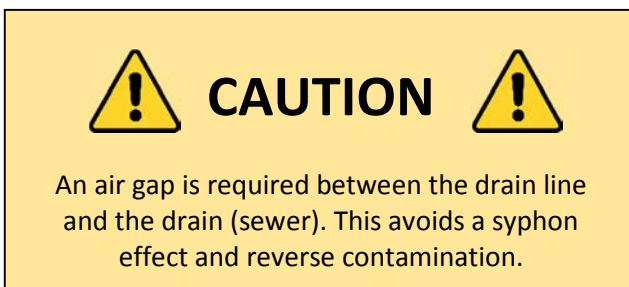


Fig. 2



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Brine Line Installation

1. Slide brine nut and Ferrule (with the tapered end facing the inside of the brine nut) onto the 3/8" brine tubing.
2. Install the filter screen into the tube insert and press both into the end of brine tube.
3. Insert tube into brine connector and secure brine nut to the brine connector.
4. See Fig. 3

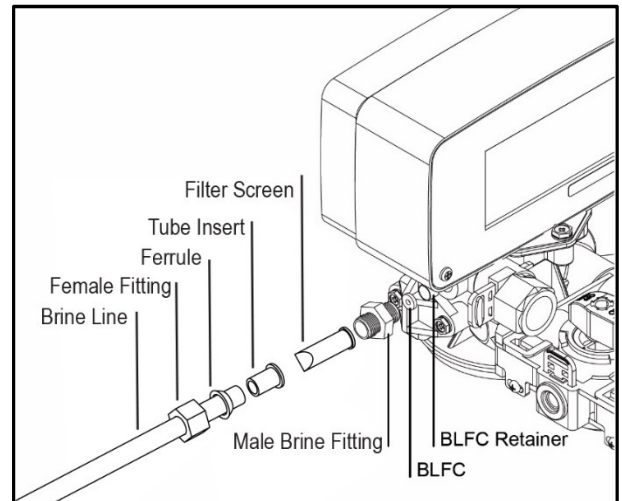


Fig. 3

Brine Tank Installation

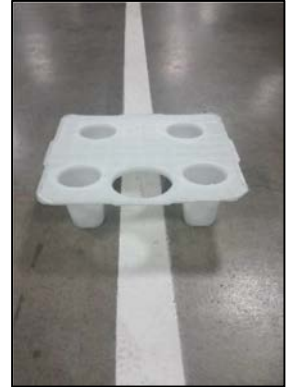
1. Unpack brine tank components
 - Brine tank standoff with nut and washer
 - Overflow elbow with nut and washer
 - Optional quick connect clips
2. Open brine well and remove float. Ensure the inside of the tank and brine well are free of debris.





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3. Assemble salt grid (4 feet, 1 base). Feet clip into the bottom of the base.

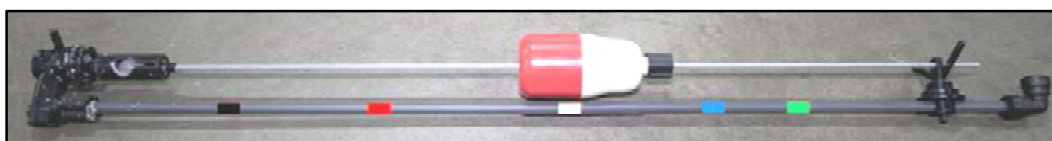


4. Insert assembled salt grid into brine tank by lining up the cut out hole with the drilled holes on the brine tank.



5. Hold float and connected ABS tubing (at the bottom; securing the ABS tubing), turn the black nut counterclockwise while the tubing is secured in place. Set to desired salt setting and retighten float nut.

Tank Size	Letter	Salt Level (See Fig. 4)	Salt Setting
9x48	A	To white tape or above	9 lbs.
10x44	B	Halfway between white/blue tape or above	~ 10.5 lbs.
10x54	C	To blue tape or above	12 lbs.
12x52	D	To green tape or above	15 lbs.
13x54	E	To green tape or above	> 15 lbs.





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6. Insert the brine well, making sure the bottom brine well cap is attached. Insert the float assembly by lining up the top cut out holes.



Through testing there have been some instances where the bottom float assembly cap can come off of the tube when force is applied. Therefore we strongly suggest using Gorilla Glue or any equivalent glue to glue the bottom (only) float assembly cap to the tube to prevent this cap from coming off the tube.



7. Install brine tank standoff over the float assembly and insert into top cut out hole. Attach washer on outside of tank and secure unit.



8. Insert brine line into the top cut out hole, through the standoff, and into the quick connect elbow (optional: attach blue clips). Press firmly to make sure brine line is fully inserted into the quick connect.





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9. Install overflow elbow fitting with washer on the outside of tank. Fasten nut on the inside of the tank.



10. Replace brine well lid.



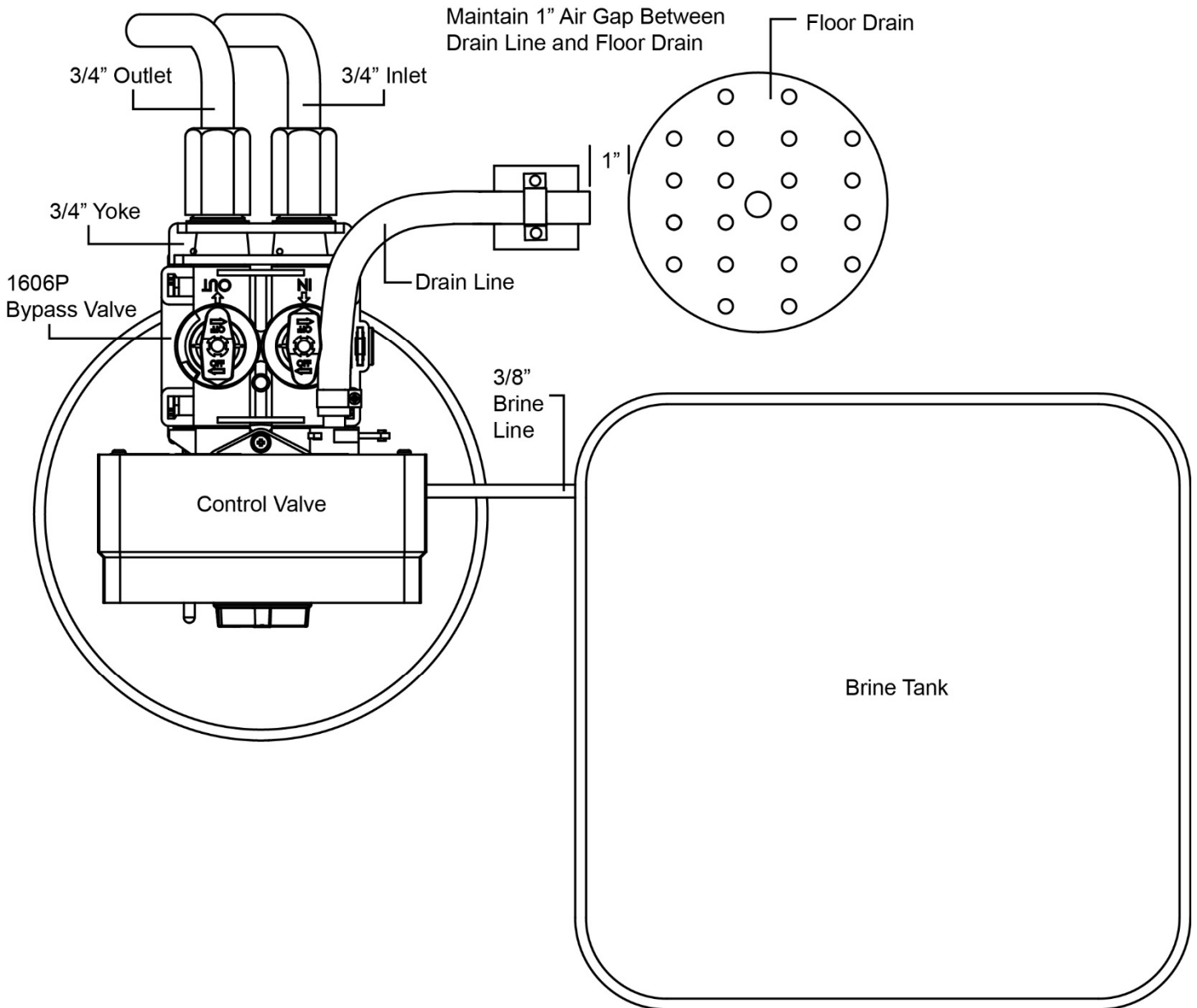
11. Replace brine tank lid.





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System Installation Chart

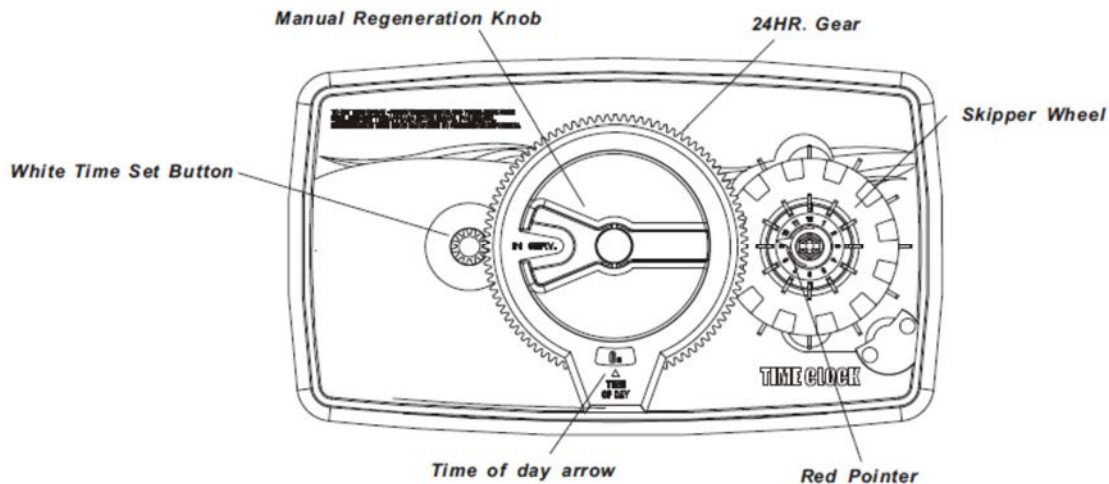




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5. Valve Start-Up Procedures

HS-STC / HL-STC Timer Control Valve Start-Up Procedure



1. Make sure the bypass valve is in the service position. Manually index the valve to the Service position and allow water to flow into the resin tank (pressure tank). When the water flow stops, open a softened water tap until all air is released from the lines. Close tap.



Regeneration cycles may be dialed manually by turning the knob clockwise until the desired cycle appears.

2. Manually index the valve to Backwash position; allow water to flow out the drain for 3 to 4 minutes for color throw.
3. Remove back cover plate. Make sure the salt wheel is set to desired dosage.
4. Manually index the control to the Brine Refill position and allow the brine tank to fill to the top of the air check.
5. Manually index the valve to the Brine Draw position, allow the valve to draw water from the brine tank until it stops.
6. Plug the valve into an approved power source. Preferably a GFI grounded outlet. Look in the sight hole in the back of the motor to see that it is running.



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7. Set the days that regeneration is to occur by sliding tabs on Skipper Wheel outward. Each tab is one day. Move clockwise from indicator to obtain the desired regeneration schedule. The tab at the red indicator is tonight.
8. Manually advance the valve to the beginning of the Brine Refill position and allow the valve to return to the In Service position automatically. This will fill the brine tank with the correct amount of water.
9. Now add salt to the brine tank. (40 lbs. minimum, 120 lbs. maximum)



We recommend using pellet salt, NOT solar or rock salt. Install brine tank cover.

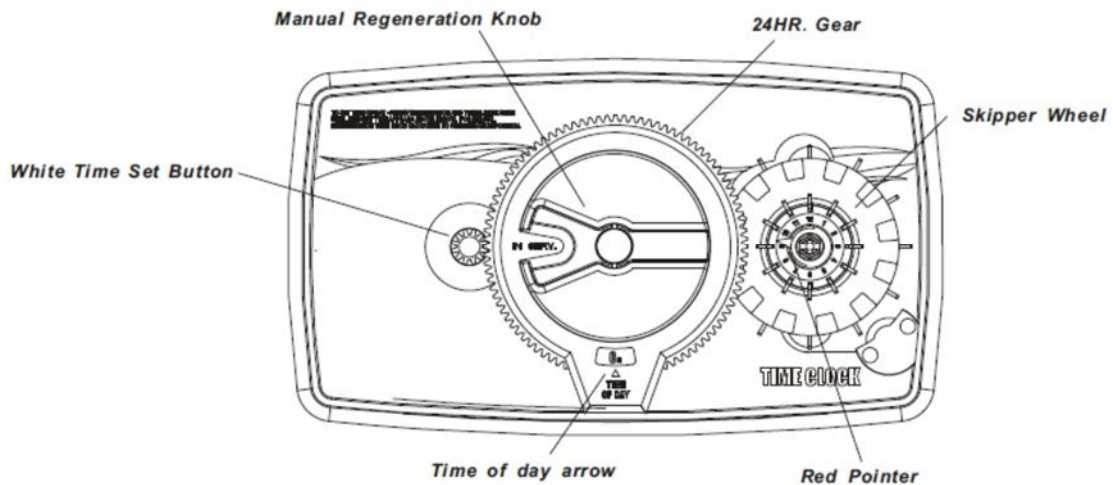
10. Replace back cover plate on the valve. Be sure cable is not pinched between cover and housing.
11. Turn a faucet on, away from the installation location, until the water from the plumbing lines has been purged.
12. Softening system is now fully operational.
13. Take a water sample to verify and test for hardness reduction.

Hardness PPM (GPG)	17-85 (1-5)	86-170 (6-10)	171-256 (11-15)	257-342 (16-20)	343-427 (21-25)	428-513 (26-30)	514-598 (31-35)	599-684 (36-40)	685-769 (41-45)	770-855 (46-50)	856-940 (51-55)	941-1026 (56-60)	1027-1111 (61-65)	1112-1197 (66-70)	1198-1282 (71-75)	1283-1368 (76-80)
No. Of People	Softeners - Calendar Clock Regeneration Frequency – Number Of Tab Pulls															
2	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	3
3	1	1	2	2	3	3	3	3	3	3	4	4	4	4	4	4
4	1	2	2	2	3	3	3	4	4	4	6	6	6	6	6	6
5	2	2	3	3	4	4	4	4	6	6	6	6	12	12	12	12
6	2	2	3	3	4	4	4	6	6	12	12	12	12	12	12	12
7	2	3	3	4	4	6	6	6	12	12	12	12	12	12	12	12
8	2	3	3	4	6	6	6	6	12	12	12	12	12	12	12	12
9	3	3	4	4	6	6	12	12	12	12	12	12	12	12	12	12
10	3	4	4	6	6	12	12	12	12	12	12	12	12	12	12	12



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HS-FTC / HL-FTC Timer Control Valve Start-Up Procedure



1. Manually index the valve to the Service position and allow water to flow into the resin tank (pressure tank). When the water flow stops, open a water tap until all air is released from the lines. Close tap.



Regeneration cycles may be dialed manually by turning the knob clockwise until the desired cycle appears.

2. Manually index the valve to Backwash position; allow water to flow out the drain for 3 to 4 minutes for color throw.
3. Plug the valve into an approved power source. Preferably a GFI grounded outlet. Look in the sight hole in the back of the motor to see that it is running.
4. Set the days that regeneration is to occur by sliding tabs on the Skipper Wheel outward. Each tab equals one day. Move clockwise from indicator to obtain the desired regeneration schedule. The tab at the red indicator is tonight.
5. Turn a faucet on, away from the installation location, until the water from the plumbing lines has been purged.
6. Filtering system is now fully operational.



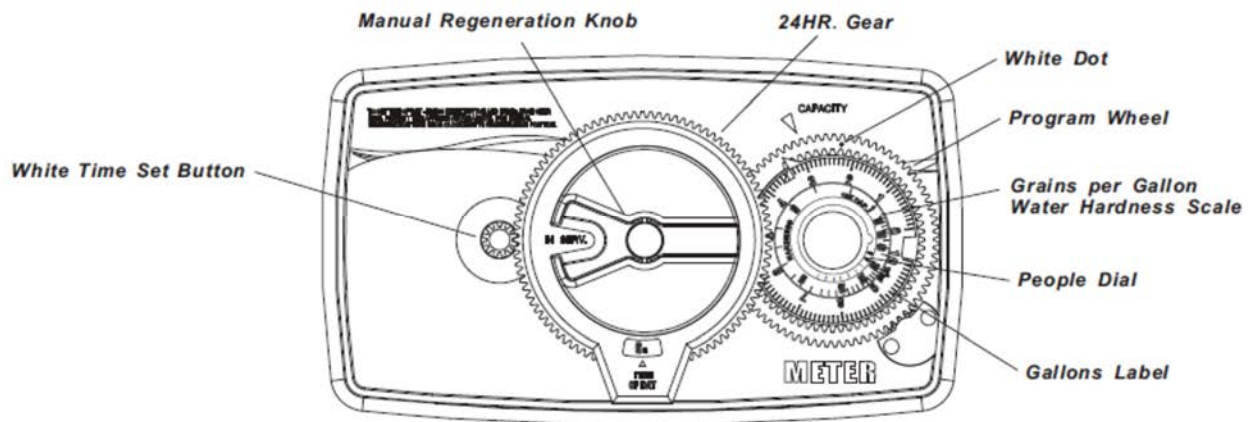
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Sand Filter	Sediment Turbidity	Mild						Average					Extreme					
Carbon Filters	Taste and Odor	Mild						Average					Extreme					
Iron Filters	PPM Ironx1 PPM Manganese1 PPM Sulfurx1	.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	
No. Of People		Softeners - Calendar Clock Regeneration Frequency – Number Of Tab Pulls																
2	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	3	
3	1	1	2	2	3	3	3	3	3	3	3	4	4	4	4	4	4	
4	1	2	2	2	3	3	3	4	4	4	4	6	6	6	6	6	6	
5	2	2	3	3	4	4	4	4	6	6	6	6	6	12	12	12	12	
6	2	2	3	3	4	4	4	4	6	6	12	12	12	12	12	12	12	
7	2	3	3	4	4	6	6	6	6	12	12	12	12	12	12	12	12	
8	2	3	3	4	6	6	6	6	12	12	12	12	12	12	12	12	12	
9	3	3	4	4	6	6	12	12	12	12	12	12	12	12	12	12	12	
10	3	4	4	6	6	12	12	12	12	12	12	12	12	12	12	12	12	



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HS-SMM / HL-SMM Mechanical Control Valve Start-Up Procedure



1. Manually index the control valve to the In Service position and allow water to flow into the resin tank (pressure tank). When the water flow stops, open a softened water tap until all air is released from the lines. Then close tap.



Regeneration cycles may be dialed manually by turning the knob clockwise until desired cycle appears.

2. Set water usage program wheel using one of the following procedures:
 - a. A Typical Residential Application - Set the time and hardness and it automatically monitors system needs and regenerates only when necessary. To set time of day press time set button and turn 24-hour gear until present time of day is at Time of day. Set program wheel by lifting the People dial and rotating it so that the number of people in the household is aligned with the household grains per gallon water hardness. Release the dial and check for firm engagement at setting. This method provides reserve capacity based on 75 gallons per person.
 - b. Optional Programming Procedure - Calculate the gallon capacity, take the total resin volume multiplied by .75. Divide by grains hardness of water supply. Ex: 1 Cu/Ft =32,000 at 15 grains hardness. $(32,000 \times .75) \div 15=1,600$ gal. Set the gallons available at the small white dot on program wheel gear. Reference table on Page 15.



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3. Rotate program wheel counterclockwise until it stops at the regeneration position.
4. Manually index valve to Backwash position; allow water to flow to the drain for 3 or 4 minutes for color throw.
5. Remove back cover plate. Make sure the salt wheel is set to desired dosage.
6. Manually index the valve to the Brine Refill position and allow the brine tank to fill to the top of the air check.
7. Manually index the valve to the Brine Rinse position and allow the valve to draw water from the brine tank until it stops.
8. Plug the valve into an approved power source. Preferably a GFI grounded outlet. Look in the sight hole in the back of the motor to see that it is running.
9. Manually advance the valve to the beginning of the Brine Refill position and allow the valve to return to the In Service position automatically. This will fill the brine tank with the correct amount of water.
10. Add salt into the brine tank (40 lbs. minimum, 120 lbs. maximum) and install brine tank cover.



We recommend using pellet salt, NOT solar or rock salt.

11. Replace back cover on the valve. Be sure cable is not pinched between cover and housing.
12. Turn a faucet on, away from the installation location, until the water from the plumbing lines has been purged.
13. Softening system is now fully operational.
14. Take a water sample to verify and test for hardness reduction.



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Capacity Reference Chart

Capacity 18,000		Hardness PPM (GPG)						
		85(5)	171(10)	256(15)	342(20)	513(30)	684(40)	855(50)
No. of People	1	2,100	1,725	1,125	825	525	375	285
	2	2,100	1,650	1,050	750	450	300	210
	3	2,100	1,575	975	675	375	225	135
	4	2,100	1,500	900	600	300	150	60
	5	2,100	1,425	825	525	225	75	0
	6	2,100	1,350	750	450	150	0	0

Capacity 24,000		Hardness PPM (GPG)						
		85(5)	171(10)	256(15)	342(20)	513(30)	684(40)	855(50)
No. of People	1	2,100	2,100	1,525	1,125	725	525	405
	2	2,100	2,100	1,450	1,050	650	450	330
	3	2,100	2,100	1,375	975	575	375	255
	4	2,100	2,100	1,300	900	500	300	180
	5	2,100	2,025	1,225	825	425	225	105
	6	2,100	1,950	1,150	750	350	150	30

Capacity 30,000		Hardness PPM (GPG)						
		85(5)	171(10)	256(15)	342(20)	513(30)	684(40)	855(50)
No. of People	1	2,100	2,100	1,925	1,425	925	675	525
	2	2,100	2,100	1,850	1,350	850	600	450
	3	2,100	2,100	1,775	1,275	775	525	375
	4	2,100	2,100	1,700	1,200	700	450	300
	5	2,100	2,100	1,625	1,125	625	375	225
	6	2,100	2,100	1,550	1,050	550	300	150

Capacity 32,000		Hardness PPM (GPG)						
		85(5)	171(10)	256(15)	342(20)	513(30)	684(40)	855(50)
No. of People	1	2,100	2,100	1,525	1,125	725	525	400
	2	2,100	2,100	1,400	1,050	650	450	325
	3	2,100	2,100	1,375	975	575	375	250
	4	2,100	2,100	1,300	900	500	300	175
	5	2,100	2,025	1,225	825	425	225	100
	6	2,100	1,950	1,150	750	350	150	25



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Capacity Reference Chart (Continued)

Capacity 36,000		Hardness PPM (GPG)						
		85(5)	171(10)	256(15)	342(20)	513(30)	684(40)	855(50)
No. of People	1	2,100	2,100	2,100	1,725	1,125	825	645
	2	2,100	2,100	2,100	1,650	1,050	750	570
	3	2,100	2,100	2,100	1,575	975	675	495
	4	2,100	2,100	2,100	1,500	900	600	420
	5	2,100	2,100	2,025	1,425	825	525	345
	6	2,100	2,100	1,950	1,350	750	450	270

Capacity 40,000		Hardness PPM (GPG)						
		85(5)	171(10)	256(15)	342(20)	513(30)	684(40)	855(50)
No. of People	1	2,100	2,100	1,925	1,425	925	675	525
	2	2,100	2,100	1,850	1,350	850	600	450
	3	2,100	2,100	1,775	1,275	775	525	375
	4	2,100	2,100	1,700	1,200	700	450	300
	5	2,100	2,100	1,625	1,125	625	375	225
	6	2,100	2,100	1,550	1,050	550	300	150

Capacity 48,000		Hardness PPM (GPG)						
		85(5)	171(10)	256(15)	342(20)	513(30)	684(40)	855(50)
No. of People	1	2,100	2,100	2,100	1,725	1,425	825	625
	2	2,100	2,100	2,100	1,650	1,050	750	550
	3	2,100	2,100	2,100	1,575	975	675	475
	4	2,100	2,100	2,100	1,500	900	600	400
	5	2,100	2,100	2,025	1,425	825	525	325
	6	2,100	2,100	1,950	1,350	750	450	250

Capacity 64,000		Hardness PPM (GPG)						
		85(5)	171(10)	256(15)	342(20)	513(30)	684(40)	855(50)
No. of People	1	2,100	2,100	2,100	2,100	1,525	1,125	875
	2	2,100	2,100	2,100	2,100	1,450	1,050	800
	3	2,100	2,100	2,100	2,100	1,375	975	725
	4	2,100	2,100	2,100	2,100	1,300	900	650
	5	2,100	2,100	2,100	2,025	1,225	825	575
	6	2,100	2,100	2,100	1,950	1,150	750	500



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6. Sanitizing Procedure

At the start up or after a period of one week the following procedure is recommended to remove the possibility of bacterial growth or contamination within the system. This procedure relates only to the original description of equipment and options described for this system. Any alterations to the configuration would require evaluation by a trained water professional.

1. Remove the brine tank cover and locate the brine well.
2. Remove the brine well cap.
3. Pour 1/3 cup of unscented bleach into the brine well.
4. Place cap back on brine well and cover back on brine tank.
5. The system must now be regenerated. At the control valve turn the knob clockwise until the indicator shows Regen.
6. Allow approximately 2 hours for the valve to complete its regeneration cycle and to return to service mode.

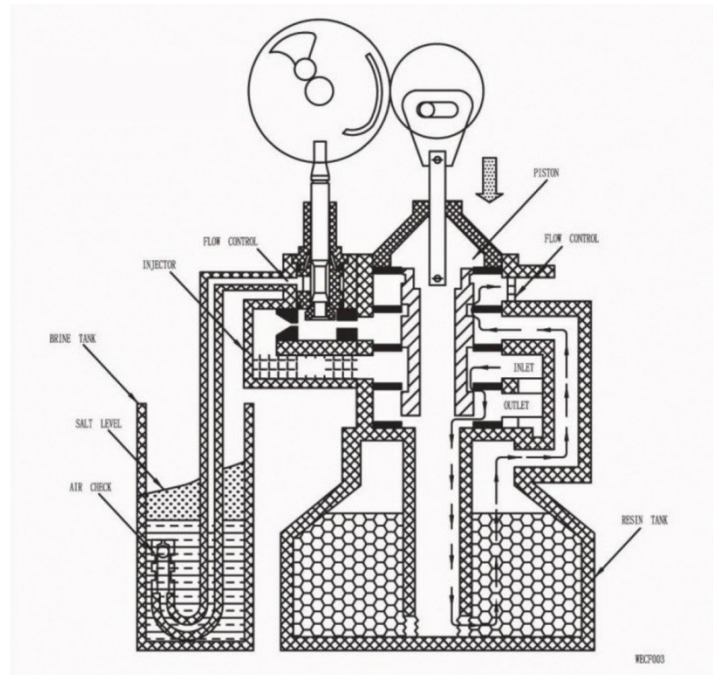


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7. Water Flow Diagrams

Backwash Rinse Mode

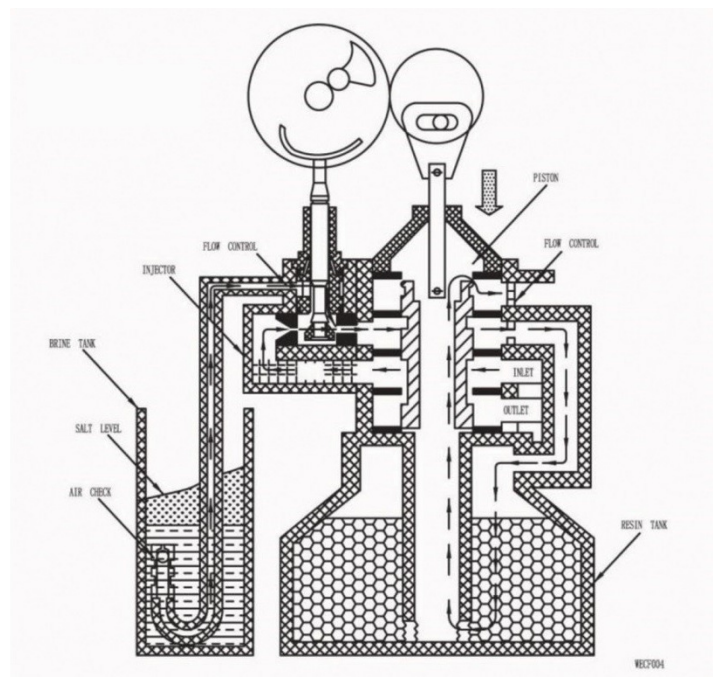
Hard water enters unit through the valve inlet, flows through the piston, down the center tube, through the distributor at the bottom, the up through the media and out the drain line.



Brine Rinse Mode (Softeners Only)

Hard water enters unit through the valve inlet, flows up into the injector housing, and down the nozzle/throat to draw brine from the brine tank.

Brine flows down through the media, into the distributor at the bottom, and out the drain line. This cleans the resin bed of deposits by releasing the charge held by them to attract the mineral and iron deposits naturally found in the water source.



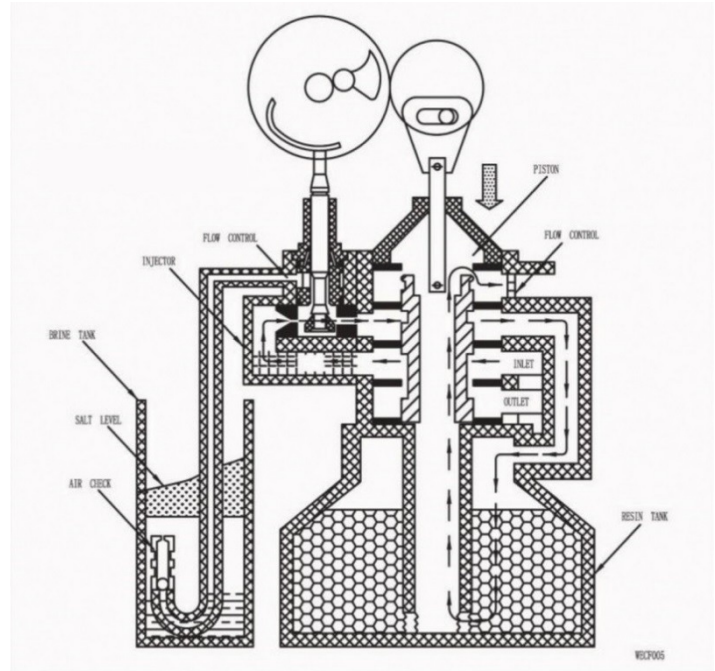


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Slow Rinse Mode (Softeners Only)

Once the brine has been drawn out from the brine tank, hard water continues to enter through the inlet valve.

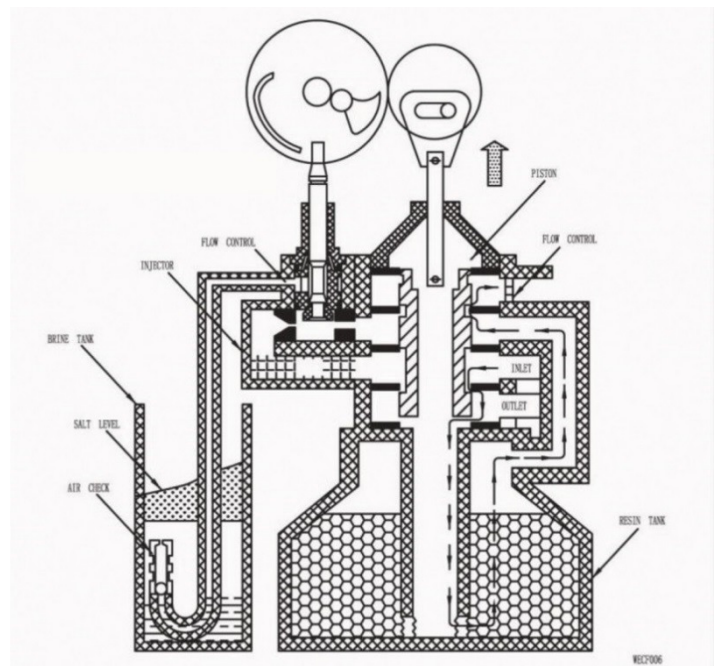
Water then flows around the lower piston groove, through the nozzle/throat, and down through the media. It then enters the distributor, travels through the center hole in the piston, and out to the drain line.



Rapid Rinse Mode (Second Backwash)

The media is rinsed to remove excess brine from the tank. After the process completes, the resin beads are once again ready to produce soft water.

Hard water enters unit through the valve inlet, flows through the piston, down the center tube, through the bottom distributor, up through the media, around the piston, and out the drain line.

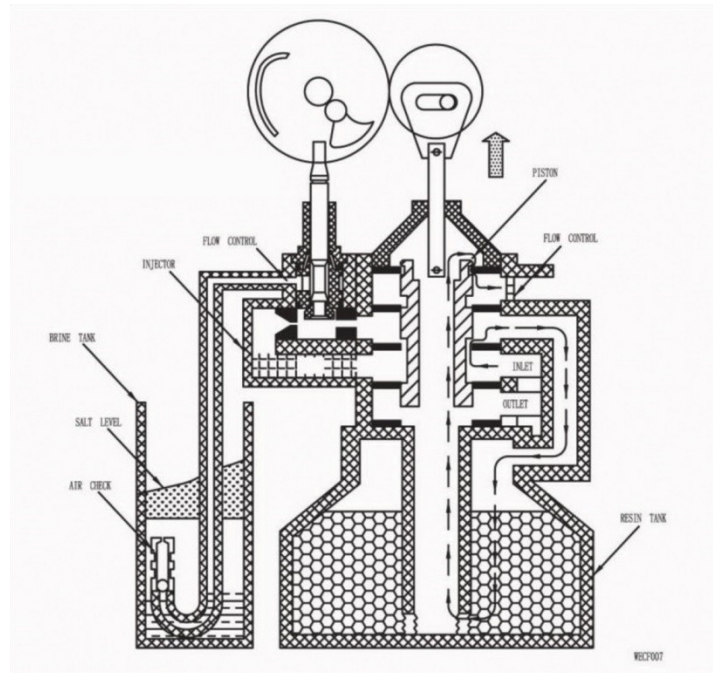




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Settling Rinse Mode

Slow rinse of the resin bed. Water flows down through the resin bed, up the bottom distributor, and out the drain line.



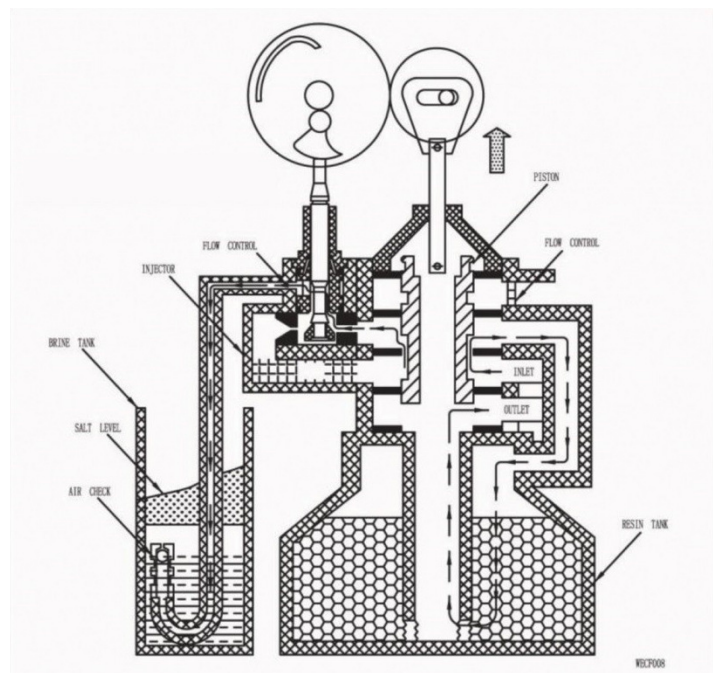
Brine Tank Refill Mode (Softeners Only)

Hard water enters unit through the valve inlet, flows up through the injector housing, and through the brine valve to refill the brine tank.

The system is now delivering soft water to the home. The brine tanks fills with untreated water in preparation for the next regeneration cycle.



When the valve is in regeneration, raw water is being passed to service until rapid rinse is complete.

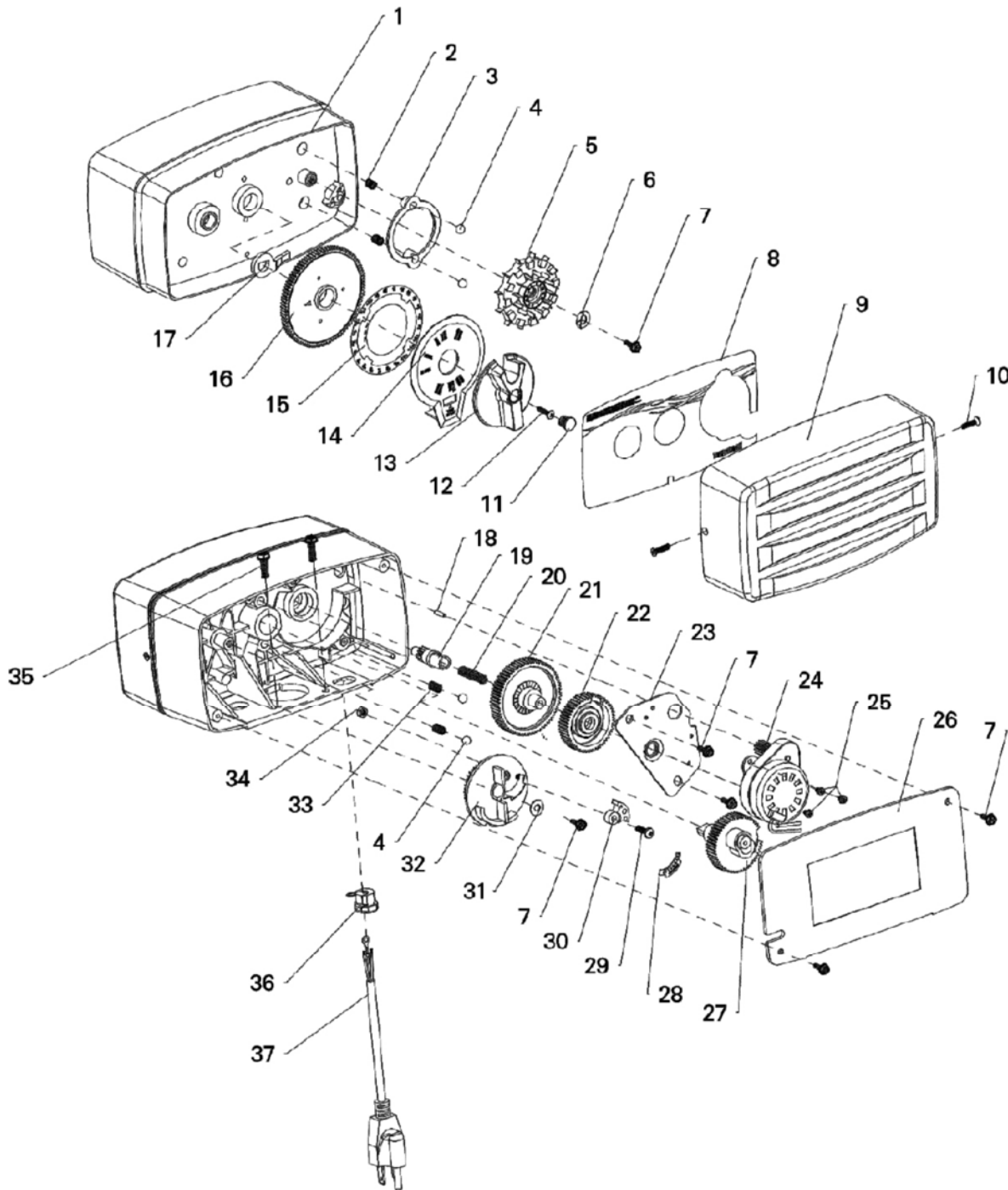




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8. Assembly Drawings and Parts List

HS-STC Timer Control Valve Assembly





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HS-STC Timer Control Valve Assembly Parts List

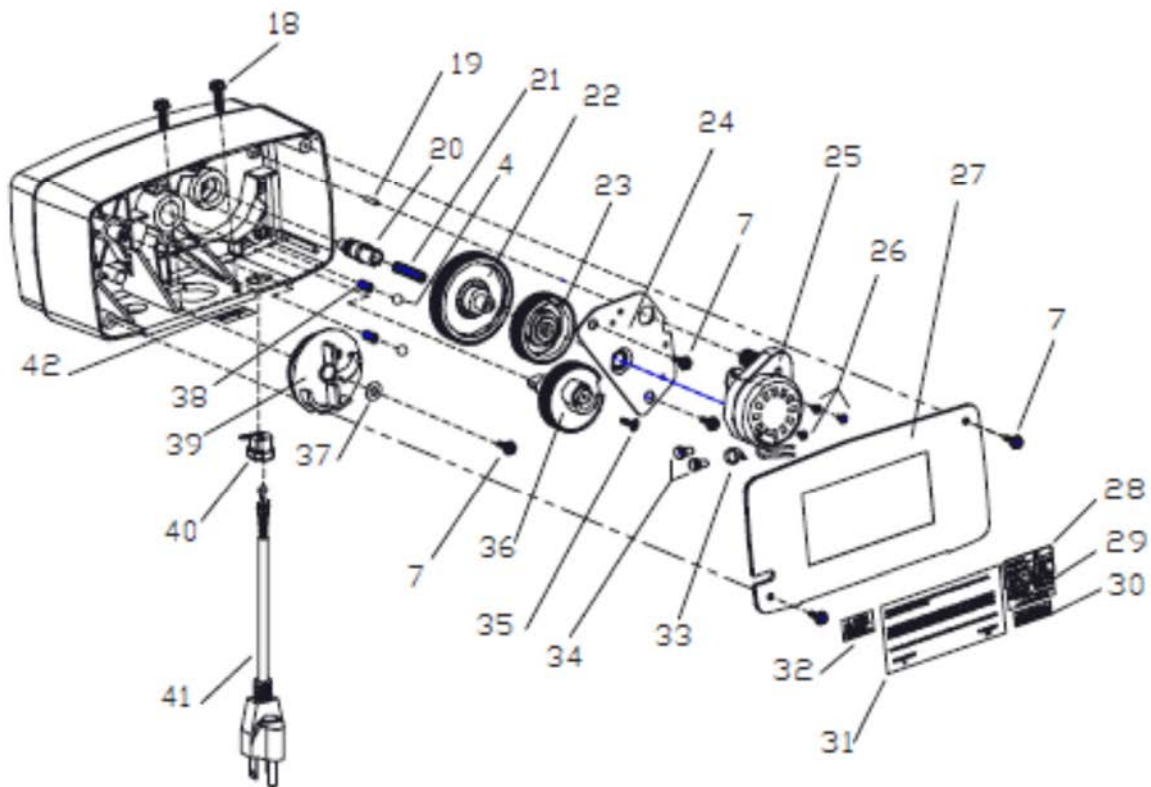
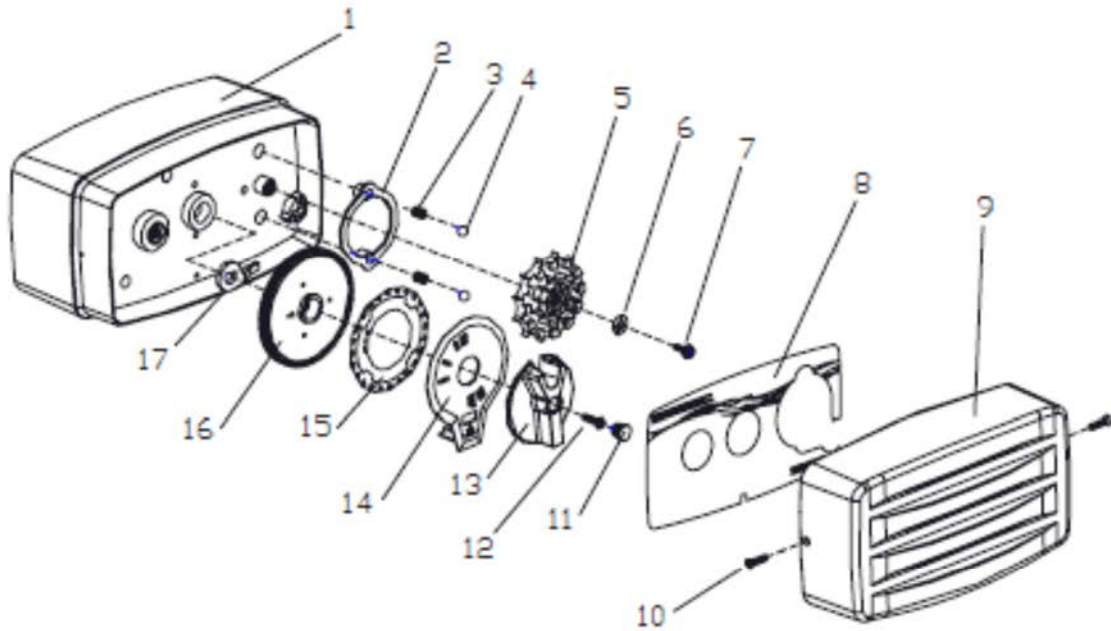
Item No.	Description	Quantity
1	Cover, Front	1
2	Spring	2
3	Skipper Wheel Ring	1
4	Ball	4
5	Skipper Wheel Assembly	1
6	Regeneration Pointer	1
7	Screw	6
8	Label, Front	1
9	Cover, Dust	1
10	Screw	2
11	Knob Cover	1
12	Screw	1
13	Knob, Regeneration	1
14	Valve Position Dial	1
15	24-Hour Gear Label	1
16	24-Hour Gear	1
17	Cycle Actuator Arm	1
18	Locating Pin	1
19	Time Set Button	1

Item No.	Description	Quantity
20	Spring	1
21	Gear, Drive	1
22	Gear, Passive	1
23	Motor Mounting Plate	1
24	Motor	1
25	Screw	3
26	Cover, Back	1
27	Main Gear & Shaft	1
28	Salt Label	1
29	Screw	1
30	Time Fill Cam	1
31	Washer	1
32	Brine Cam	1
33	Spring	2
34	Nut	1
35	Screw	2
36	Strain Relief	1
37	Electrical Cord	1



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HS-FTC Filter Timer Control Valve Assembly





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HS-FTC Filter Timer Control Valve Assembly Parts List

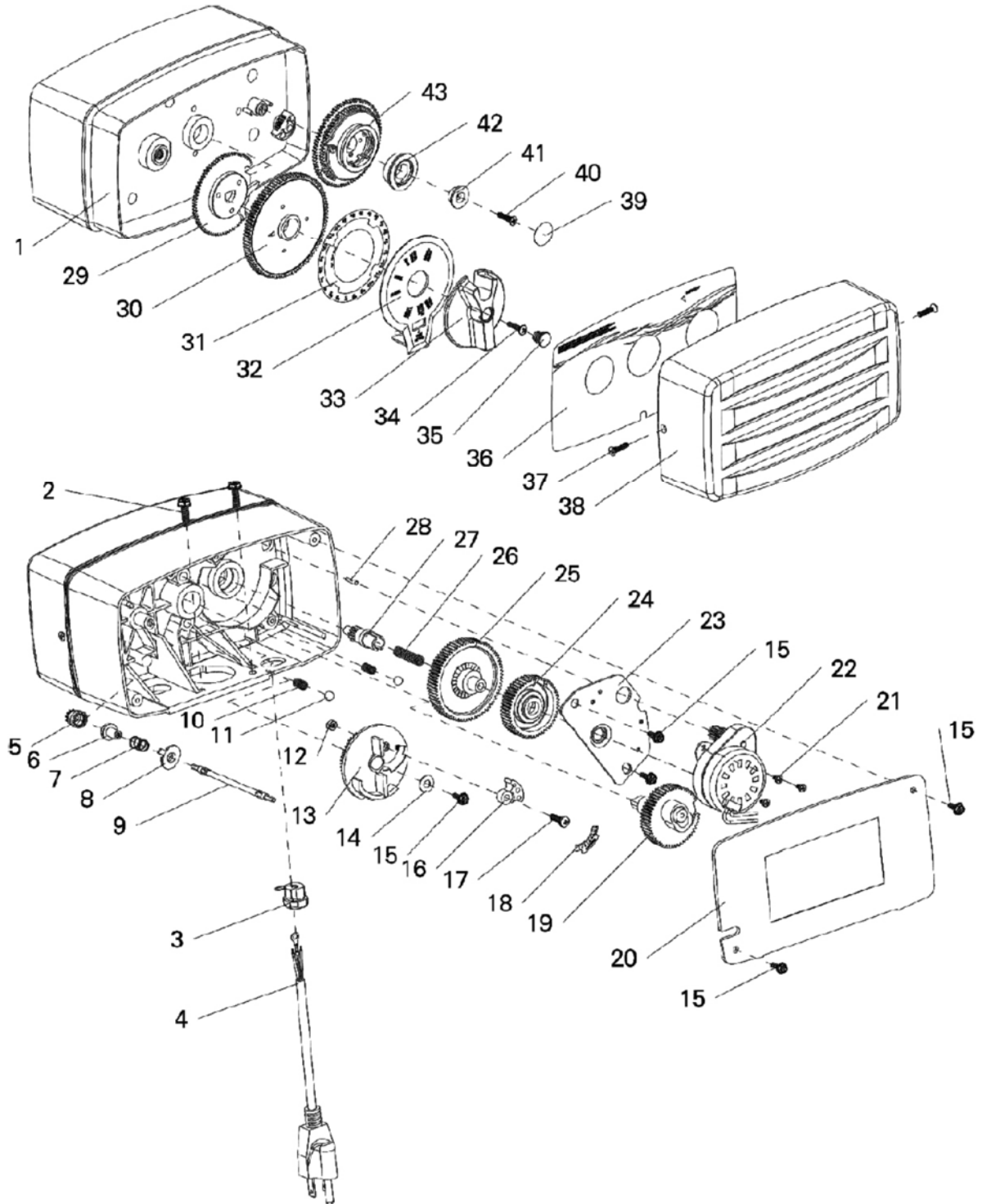
Item No.	Description	Quantity
1	Cover, Front	1
2	Skipper Wheel Ring	1
3	Spring	2
4	Ball	4
5	Skipper Wheel Assembly	1
6	Regeneration Pointer	1
7	Screw	6
8	Label, Front	1
9	Cover, Dust	1
10	Screw, Dust Cover	2
11	Cover, Knob	1
12	Screw	1
13	Knob, Regeneration	1
14	Valve Piston Dial	1
15	24-Hour Gear Label	1
16	24-Hour Gear	1
17	Cycle Actuator Arm	1
18	Screw	2
19	Locating Pin	1
20	Time Set Button	1
21	Spring	1

Item No.	Description	Quantity
22	Dear, Drive	1
23	Gear, Passive	1
24	Motor Mount Bracket	1
25	Motor	1
26	Screws	3
27	Cover, Back	1
28	Label, Flow	1
29	Label Logo	1
30	Label, Serial #	1
31	Label, Back Cover	1
32	Label, 120V Warning	1
33	Zip Tie	1
34	Wire Connectors	2
35	Screw, Piston	1
36	Gear, Main Piston	1
37	Washer	1
38	Spring	2
39	Brine Cam	1
40	Strain Relief	1
41	Power Cord	1
42	Label, Tested	1



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HS-SMM Mechanical Meter Control Valve Assembly





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HS-SMM Mechanical Meter Control Valve Assembly Parts List

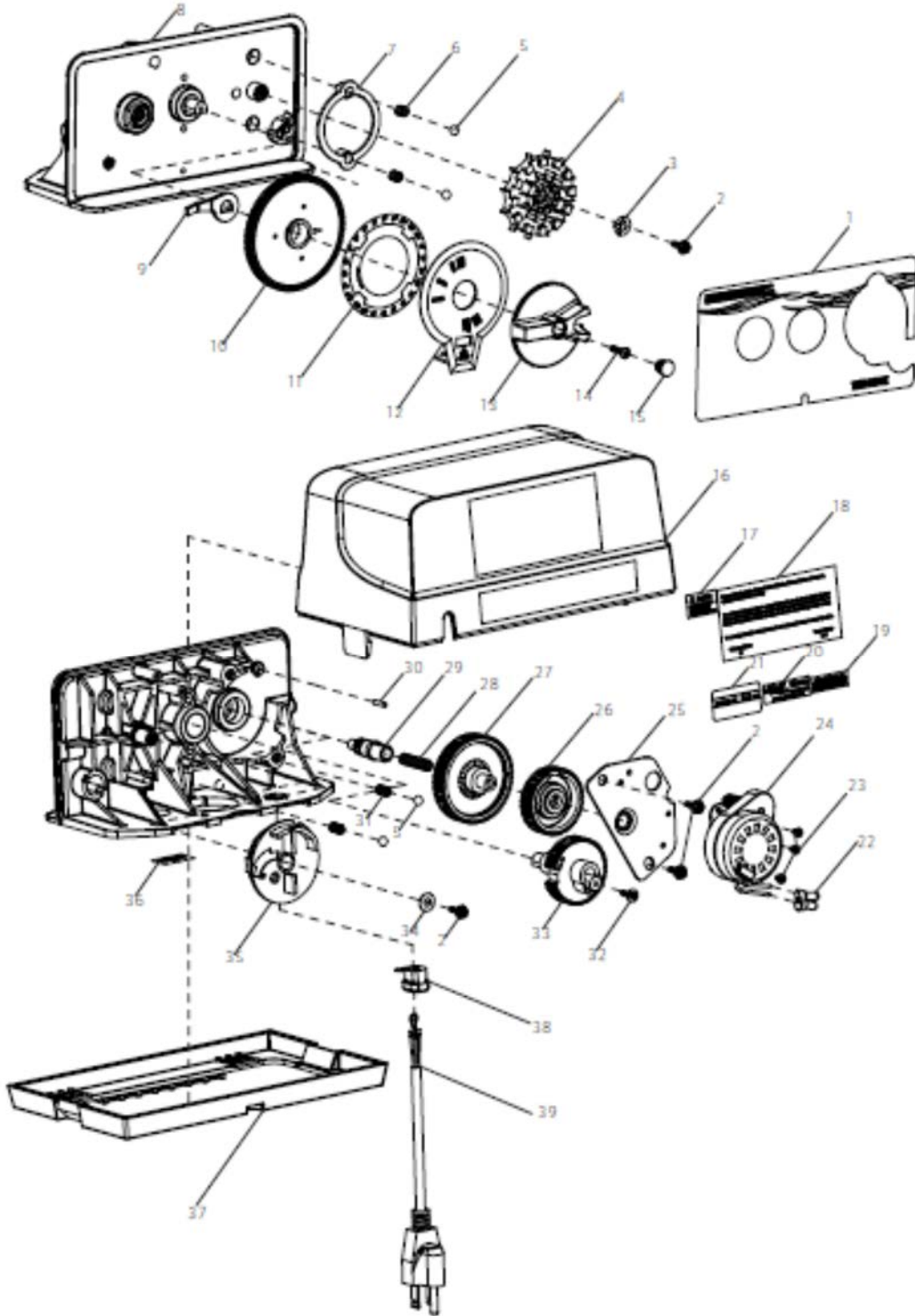
Item No.	Description	Quantity
1	Front Cover	1
2	Screw	2
3	Strain Relief	1
4	Electrical Cord	1
5	Meter Drive Pinion	1
6	Clutch	1
7	Spring	1
8	Spring Retainer	1
9	Meter Cable	1
10	Spring	2
11	Ball	2
12	Nut	1
13	Brine Cam	1
14	Washer	1
15	Screw	5
16	Time Fill Cam	1
17	Screw	1
18	Salt Label	1
19	Main Gear & Shaft	1
20	Back Plate	1
21	Screw	3
22	Motor	1

Item No.	Description	Quantity
23	Motor Mounting Plate	1
24	Drive Gear	1
25	Idler Gear	1
26	Spring	1
27	Idler Pinion	1
28	Locating Pin	1
29	Cycle Actuator Gear	1
30	24-Hour Gear	1
31	24-Hour Gear Label	1
32	Valve Position Dial	1
33	Type Knob	1
34	Screw	1
35	Type Knob Cover	1
36	Front Label	1
37	Screw	1
38	Front Cover	1
39	Program Wheel Cover Label	1
40	Screw	1
41	Program Wheel Retainer	1
42	Flow Plate Retainer	1
43	Program Wheel Assembly	1



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HL-STC Timer Control Valve Assembly





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HL-STC Timer Control Valve Assembly Parts List

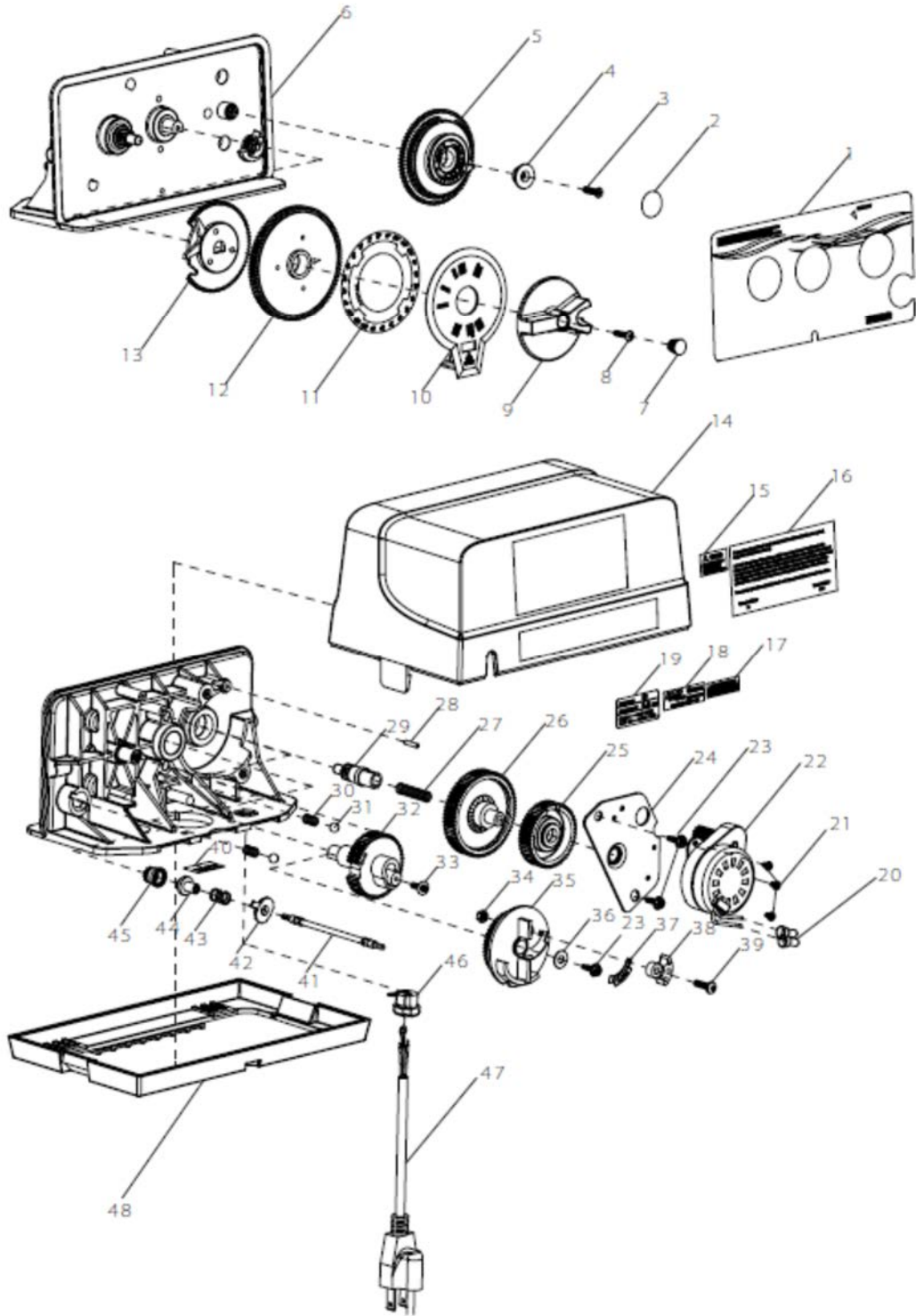
Item No.	Description	Quantity
1	Front Cover Label, Timer	1
2	Screw	4
3	Pointer	1
4	Timer Wheel Assembly	1
5	Ball	4
6	Spring	2
7	Timer Wheel Frame	1
8	L-bracket Frame	1
9	Reset Lever	1
10	24-Hour Time Gear	1
11	24-Hour Time Gear Label	1
12	Indicator Plate	1
13	Knob	1
14	Screw, Knob	1
15	Plug, Knob	1
16	Cover, Top	1
17	Label, Voltage	1
18	Label, Back Cover	1
19	Label, Serial #	1
20	Label, Logo	1
21	Label, Flow	1
22	Wire Connector	2

Item No.	Description	Quantity
23	Screws, Motor	1
24	Motor	1
25	Motor Mount Plate	1
26	Gear, Main Driving	1
27	Gear, Passive	1
28	Spring, Time Set	1
29	Time Set Button	1
30	Pin, Motor	1
31	Spring, Main Gear	1
32	Countersunk Screw & Washer	1
33	Gear, Main Piston	1
34	Washer	1
35	Screw	1
36	Salt Indicator	1
37	Label, Salt (.25)	1
38	Gear, Brine Valve	1
39	Nut, Indicator	1
40	Label, Tested	1
41	Base	1
42	Power Cord Clip	1
43	Power Cord	1



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HL-FTC Filter Timer Control Valve Assembly





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HL-FTC Filter Timer Control Valve Assembly Parts List

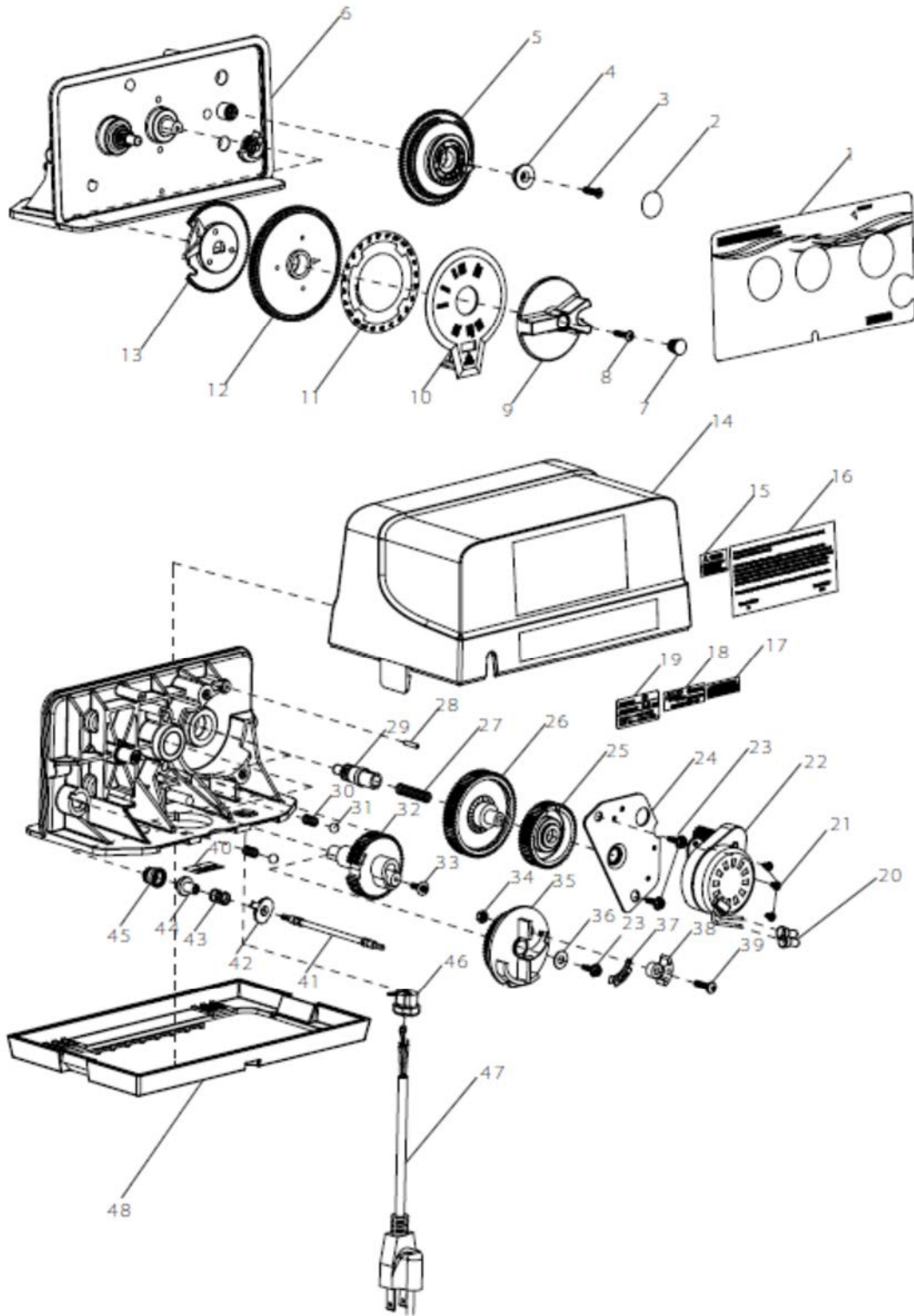
Item No.	Description	Quantity
1	Label, Front Cover Timer	1
2	Screws, Motor Mount	4
3	Pointer	1
4	Timer Wheel Assembly	1
5	Ball	4
6	Spring	2
7	Timer Wheel Frame	1
8	L-Bracket Frame	1
9	Reset Lever	1
10	24-Hour Time Gear	1
11	24-Hour Time Gear Label	1
12	Indicator Plate	1
13	Knob	1
14	Screw, Knob	1
15	Plug, Knob	1
16	Cover, Top	1
17	Label, Voltage	1
18	Label, Back Cover	1
19	Label, Serial #	1
20	Label, Logo	1

Item No.	Description	Quantity
21	Label, Flow	1
22	Wire Connector	2
23	Screws, Motor	3
24	Motor	1
25	Motor Mount Plate	1
26	Gear, Main Driving	1
27	Gear, Passive	1
28	Spring, Time Set	1
29	Time Set Button	1
30	Pin, Motor	1
31	Spring, Main Gear	1
32	Countersunk Screw & Washer	1
33	Gear, Main Piston	1
34	Washer	1
35	Gear, Brine Valve	1
36	Label, Tested	1
37	Base	1
38	Power Cord Clip	1
39	Power Cord	1



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HL-SMM Mechanical Meter Control Valve Assembly





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HL-SMM Mechanical Meter Control Valve Assembly Parts List

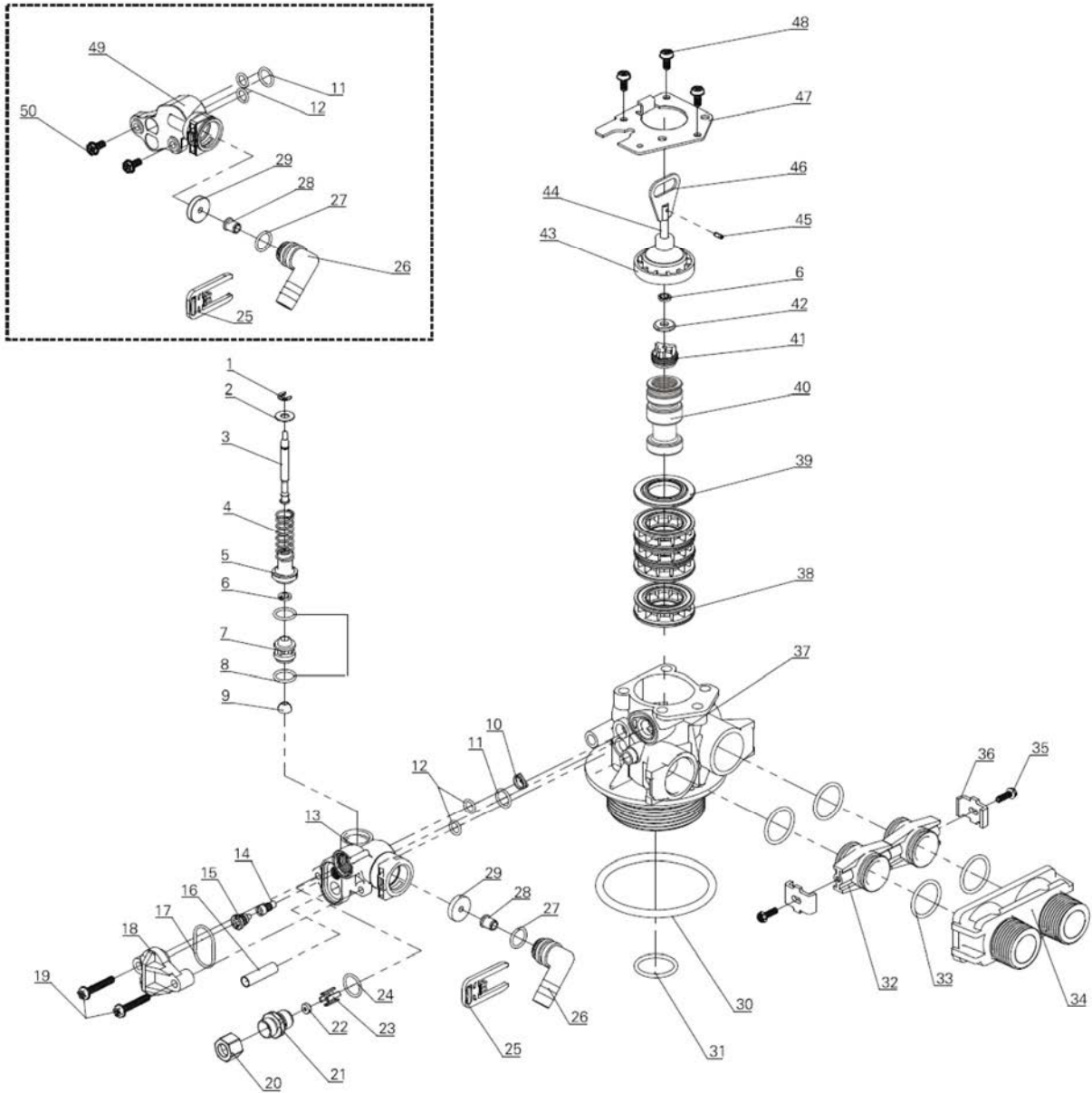
Item No.	Description	Quantity
1	Label, Front Cover Meter	1
2	Label, Cover	1
3	Screw	1
4	Cover	1
5	Capacity Gear Assembly	1
6	L-Bracket Frame	1
7	Plug, Knob	1
8	Screw, Knob	1
9	Knob	1
10	Indicator Plate	1
11	24-Hour Time Gear Label	1
12	24-Hour Time Gear	1
13	Reset Gear	1
14	Cover, Top	1
15	Label, Voltage	1
16	Label, Back Cover	1
17	Label, Serial #	1
18	Label, Logo	1
19	Label, Flow	1
20	Wire Connector	2
21	Screws, Motor	3
22	Motor	1
23	Screws, Motor Mount	3
24	Motor Mount Plate	1

Item No.	Description	Quantity
25	Gear, Main Driving	1
26	Gear, Passive	1
27	Spring, Time Set	1
28	Pin, Motor	1
29	Time Set Button	1
30	Spring, Main Gear	2
31	Ball	2
32	Gear, Main Piston	1
33	Countersunk Screw & Washer	1
34	Nut, Indicator	1
35	Gear, Brine Valve	1
36	Washer	1
37	Label, Salt (.25)	1
38	Salt Indicator	1
39	Screw	1
40	Label, Tested	1
41	Meter Cable	1
42	Clip, Clutch	1
43	Spring, Clutch	1
44	Clutch	1
45	Gear, Clutch Pinion	1
46	Power Cord Clip	1
47	Power Cord	1
48	Base	1



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HS / HL Valve Body Assembly





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HS / HL Valve Body Assembly Parts List

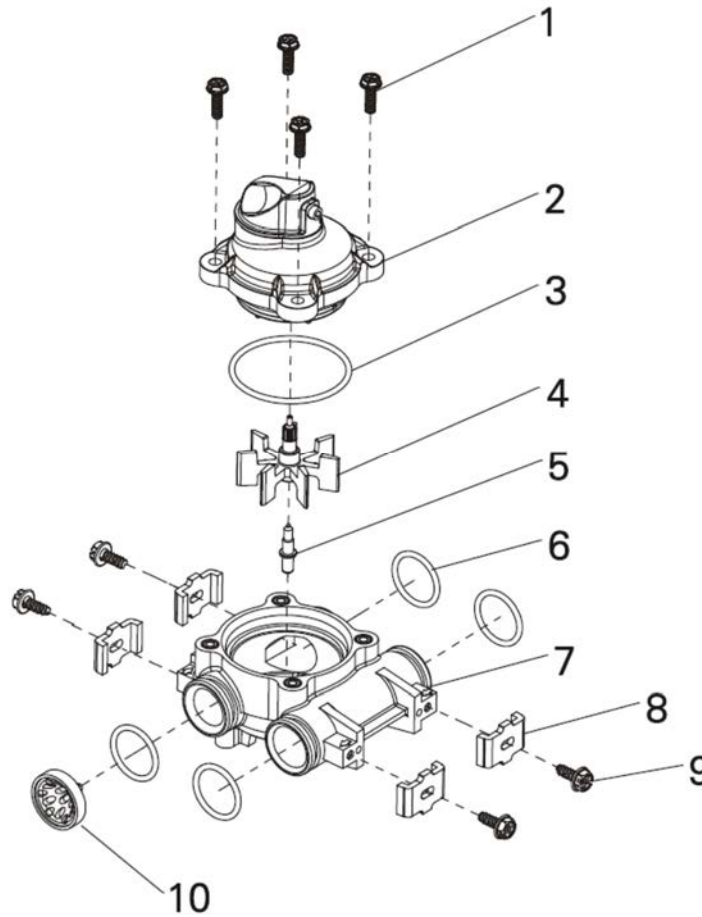
Item No.	Description	Quantity
1	Retainer Ring	1
2	Washer	1
3	Brine Valve Stem	1
4	Spring	1
5	Brine Valve Cap	1
6	O-Ring	2
7	Brine Valve Spacer	1
8	O-Ring	2
9	Brine Valve Seat	1
10	Air Disperser	1
11	O-Ring	1
12	O-Ring	2
13	Softener Injector Body	1
14	Injector Throat	1
15	Injector Nozzle	1
16	Injector Filer Screen	1
17	O-Ring	1
18	Injector Cover	1
19	Screw	2
20	Fitting Nut	1
21	BLFC Fitting	1
22	BLFC Button	1
23	BLFC Retainer	1
24	O-Ring	1
25	Retainer Latch	1

Item No.	Description	Quantity
26	Drain Elbow Barb	1
27	O-Ring	1
28	Bushing	1
29	DLFC Button	1
30	O-Ring	1
31	O-Ring	1
32	Adaptor Coupling	2
33	O-Ring	4
34	Yoke	1
35	Screw	2
36	Clip	1
37	Valve Body	1
38	Spacer	4
39	Seal	5
40	Piston	1
41	Piston Retainer	1
42	O-Ring Retainer	1
43	End Plug	1
44	Piston Rod	1
45	Pin	1
46	Drive Link	1
47	End Plug Retainer	1
48	Screw	3
49	Filter Injector Body	1
50	Screw	2



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HS-SMM / HL-SMM Meter Assembly and Parts List



Item No.	Description	Quantity
1	Screw	4
2	Meter Cover Assembly	1
3	O-Ring	1
4	Impeller	1
5	Post, Impeller	1
6	O-Ring	4
7	Meter Body	1
8	Clip	4
9	Screw	4
10	Flow Straightener	1



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Stainless Steel Bypass (Available in 3/4" and 1")





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9. Service Instructions

Replacing Brine Valve, Injectors, and Screen

1. Unplug electrical cord from outlet.
2. Turn off water supply to system.
3. Relieve water pressure in the valve by advancing it to Backwash position momentarily.
4. Return the valve to the In Service position.
5. Disconnect brine tube and drain line connections at the injector body.
6. Remove the two injector body mounting screws. The injector and brine module can now be removed from the control valve.
7. Remove and discard valve body O-Rings.
8. Replace brine valve.
 - a. Pull brine valve from injector body.
 - b. Remove and discard O-Ring at bottom of brine valve hole.
 - c. Apply silicone lubricant to new O-Ring and reinstall at bottom of brine valve hole.
 - d. Apply silicone lubricant to O-Ring on new valve assembly and press into brine valve hole. The shoulder on bushing should be flush with the injector body.
9. Replace injectors and screen.
 - a. Remove injector cap and screen, discard O-Ring.
 - b. Unscrew injector nozzle and throat from injector body.
 - c. Screw in new injector throat and nozzle, be sure they are seated tightly.
 - d. Install a new screen.



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- e. Apply silicone lubricant to new O-Ring and install around oval extension on injector cap.
10. Apply silicone lubricant to three new O-Rings and install over three bosses on injector body.
11. Insert screws with washers through injector cap and injector.
12. Place this assembly through hole in timer housing and into mating holes in the valve body. Tighten screws.
13. Reconnect brine tube and drain line.
14. Return bypass to In Service position. Water pressure automatically builds in the system.



Be sure to shut off any bypass line.

15. Check for leaks at all seal areas.
16. Check drain seal with the valve in the Backwash position.
17. Plug electrical cord into outlet.
18. Set time of day.
19. Return the control valve to the In Service position.



Make sure there is enough brine in the brine tank.

20. Rotate program wheel counterclockwise until it stops at regeneration position.
21. Start regeneration cycle manually if water is hard.

Replacing Timer

1. Unplug electrical cord from outlet.
2. Turn off water supply to system.



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3. Relieve water pressure in the system by putting the valve in the Backwash position momentarily.
4. Return the valve to the In Service position.
5. Pull cable out of meter cover.
6. Remove the valve back cover.
7. Remove screw and washer at drive yoke.
8. Remove timer mounting screws. The entire timer assembly should lift off easily.
9. Put new timer on top of valve. Be sure drive pin on main gear engages slot in drive yoke (rotate control knob if necessary).
10. Replace timer mounting screws
11. Replace screw and washer at drive yoke.
12. Return bypass to normal In Service position. Water pressure automatically builds in the system.



Be sure to shut off any bypass line.

13. Plug electrical cord into outlet.
14. Set time of day.
15. Return the control valve to the In Service position.
16. Replace the control valve back cover. Be sure grommet at cable hole is in place.



Make sure there is enough brine in the brine tank.

17. Rotate program wheel counterclockwise until it stops at Regeneration position.
18. Start regeneration cycle manually if water is hard.
19. Plug cable into meter cover. Rotate cable to align drive flat if necessary.



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Replacing Piston Assembly

1. Unplug electrical cord from outlet.
2. Turn off water supply to system.
3. Relieve water pressure in the system by putting the valve in the Backwash position momentarily.
4. Return the valve to the In Service position.
5. Pull cable out of meter cover.
6. Remove the valve back cover.
7. Remove screw and washer at drive yoke.
8. Remove timer mounting screws. The entire timer assembly should lift off easily.
9. Remove end plug retainer plate.
10. Pull upward on end of piston yoke until assembly is out of valve.
11. Inspect the inside of the valve to make sure that all spacers and seals are in place, and that there is no foreign matter that would interfere with the valve operation.
12. Take new piston assembly as furnished and push piston into valve by means of the end plug.
13. Twist yoke carefully in a clockwise direction to properly align it with drive gear.
14. Replace end plug retainer plate.
15. Place timer on top of valve. Be sure drive pin on main gear engages slot in drive yoke (rotate control knob if necessary).
16. Replace timer mounting screws.
17. Replace screw and washer at drive yoke.
18. Return bypass to normal In Service position. Water pressure automatically builds in the system.



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Be sure to shut off any bypass line.

19. Plug electrical cord into outlet.
20. Set time of day.
21. Return the control valve to the In Service position.
22. Replace the control valve back cover. Be sure grommet at cable hole is in place.



Make sure there is enough brine in the brine tank.

20. Rotate program wheel counterclockwise until it stops at Regeneration position.
21. Start regeneration cycle manually if water is hard.
22. Plug cable into meter cover. Rotate cable to align drive flat if necessary.

Replacing Seals and Spacers

1. Unplug electrical cord from outlet.
2. Turn off water supply to system.
3. Relieve water pressure in the system by putting the valve in the Backwash position momentarily.
4. Return the valve to the In Service position.
5. Pull cable out of meter cover.
6. Remove the valve back cover.
7. Remove screw and washer at drive yoke.
8. Remove timer mounting screws. The entire timer assembly should lift off easily.



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9. Remove end plug retainer plate.
10. Pull upward on end of piston rod yoke until assembly is out of valve.
11. Remove and replace seals and spacers with fingers.
12. Place timer on top of valve. Be sure drive pin on main gear engages slot in drive yoke (rotate control knob if necessary).
13. Replace timer mounting screws.
14. Replace screw and washer at drive yoke.
15. Return bypass to normal In Service position. Water pressure automatically builds in the system.



Be sure to shut off any bypass line.

16. Plug electrical cord into outlet.
17. Set time of day.
18. Return the control valve to the In Service position.
19. Replace the control valve back cover. Be sure grommet at cable hole is in place.



Make sure there is enough brine in the brine tank.

20. Rotate program wheel counterclockwise until it stops at Regeneration position.
21. Start regeneration cycle manually if water is hard.
22. Plug cable into meter cover. Rotate cable to align drive flat if necessary.



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Replacing Meter

1. Unplug electrical cord from outlet.
2. Turn off water supply to system.
3. Relieve water pressure in the system by putting the valve in the Backwash position momentarily.
4. Return the valve to the In Service position.
5. Pull cable out of meter cover.
6. Remove two screws and clips at bypass valve or yoke.
7. Pull resin tank away from plumbing connections.
8. Remove two screws and clips at control valve.
9. Pull meter module out of control valve.
10. Apply silicone lubricant to four new O-rings and assemble to four ports on new meter module.
11. Assemble meter to control valve.



Meter portion of module must be assembled at valve outlet.

12. Attach two clips and screws at control valve. Be sure clip legs are firmly engaged with lugs.
13. Push resin tank back to the plumbing connections and engage meter ports with bypass valve or yoke.
14. Attach two clips and screws at bypass valve or yoke. Be sure clip legs are firmly engaged with lugs.
15. Return bypass to normal In Service position. Water pressure automatically builds in the system.



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Be sure to shut off any bypass line.

16. Check for leaks at all seal areas.
17. Plug electrical cord into outlet.
18. Set time of day.
19. Return the control valve to the In Service position.
20. Replace the control valve back cover. Be sure grommet at cable hole is in place.



Make sure there is enough brine in the brine tank.

21. Rotate program wheel counterclockwise until it stops at Regeneration position.
22. Start regeneration cycle manually if water is hard.
23. Plug cable into meter cover. Rotate cable to align drive flat if necessary.

Replacing Meter Cover and Impeller

1. Unplug electrical cord from outlet.
2. Turn off water supply to system.
3. Relieve water pressure in the system by putting the valve in the Backwash position momentarily.
4. Return the valve to the In Service position.
5. Pull cable out of meter cover.
6. Remove four screws on cover.
7. Lift cover off of meter module, discard O-ring.



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8. Remove and inspect impeller for gear or spindle damage, replace if necessary.
9. Apply silicone lubricant to new O-ring and assemble to the smallest diameter on meter cover.
10. Assemble cover to meter module. Be sure impeller spindle enters freely into cover. Press firmly on cover and rotate if necessary to assist in assembly.
11. Replace four screws and tighten.
12. Return bypass to normal In Service position. Water pressure automatically builds in the system.



Be sure to shut off any bypass line.

13. Check for leaks at all seal areas.
14. Plug electrical cord into outlet.
15. Set time of day.
16. Return the control valve to the In Service position.
17. Rotate program wheel counterclockwise until it stops at Regeneration position.
18. Start regeneration cycle manually if water is hard.
19. Plug cable into meter cover. Rotate cable to align drive flat if necessary.



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10. Troubleshooting

Softener Systems

Problem	Cause	Correction
1. Loss of Resin Through the Drain Line	a. Air in water system.	a. Assure that well system has proper air elimination control, check for dry well condition.
2. Iron in Conditioned Water	a. Fouled resin bed.	a. Check backwash, brine draw and brine tank refill b. Increase frequency of regeneration c. Increase backwash time.
3. Excessive Water in the Brine Tank	a. Plugged DLFC.	a. Clean or replace DLFC.
4. Salt Water in the Service Line	a. Plugged injector system. b. Timer not cycling. c. Foreign material in brine valve. d. Foreign material in BLFC.	a. Clean injector and replace screen. b. Replace timer. c. Clean or replace brine valve. d. Clean or replace BLFC.
5. Softener Fails to Draw Brine	a. DLFC is plugged. b. Injector is plugged. c. Injector screen is plugged. d. Line pressure is too low. e. Internal control leak.	a. Clean or replace DLFC. b. Clean or replace injectors. c. Replace screen. d. Increase line pressure (minimum 20 psi (1.3 bar) at all times). e. Change seals, spacers and/or piston assembly.
6. Control Cycles Continuously	a. Faulty timer mechanism.	a. Replace timer.
7. Drain Flows Continuously	a. Foreign material in control. b. Internal control leak. c. Control valve jammed in Brine or Backwash position. d. Timer motor stopped or jammed.	a. Replace piston assembly and inspect bore, remove foreign material and check control in various regeneration positions. b. Replace seals and/or piston assembly. c. Replace seals and/or piston assembly. d. Replace timer.



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Filter Systems

Problem	Cause	Correction
1. Filter Fails to Backwash	<ul style="list-style-type: none"> a. Electrical service to unit has been interrupted. b. Timer is defective. c. Power failure. 	<ul style="list-style-type: none"> a. Assure permanent electrical service (check fuse, plug, pull chain or switch). b. Replace timer. c. Reset time of day.
2. Filter Bleeds Iron	<ul style="list-style-type: none"> a. Bypass valve is open. b. Excessive water usage. c. Hot water tank rusty. d. Leak at distributor tube. e. Fouled filter media bed. f. Inadequate backwash flow rate. 	<ul style="list-style-type: none"> a. Close bypass valve. b. Increase days between regenerations (see timer instructions), make sure that there is not a leaking valve in the toilet or sinks. c. Flush out the hot water tank. d. Verify distributor tube is not cracked e. Check O-rings and tube pilot. f. Replace bed. g. Make sure filter has correct DLFC. Be sure flow control is not clogged or drain line restricted. Be sure water pressure has not dropped.
3. Loss of Water Pressure	<ul style="list-style-type: none"> a. Iron or turbidity build-up in water filter. b. Inlet plugged due to foreign material broken loose from pipes. 	<ul style="list-style-type: none"> a. Reduce days between backwashing so filter backwashes more often b. Make sure filter is sized large enough to handle water usage. c. Remove piston and clean control.
3. Loss of Filter Media Through the Drain Line	<ul style="list-style-type: none"> a. Broken or missing upper or lower basket. 	<ul style="list-style-type: none"> a. Replace install or replace basket.
4. Drain Flows Continuously	<ul style="list-style-type: none"> a. Foreign material in control. b. Internal control leak. c. Control valve jammed in rinse or backwash. 	<ul style="list-style-type: none"> a. Remove piston assembly and inspect bore, remove foreign material and check control in various cycle positions. b. Replace seals and/or piston assembly. c. Replace piston, seals and spacers (and drive motor if necessary).



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11. Hankscraft Runxin, LLC Warranty Statement

LIMITED WARRANTY

As described herein, Hankscraft Runxin, LLC ("Hankscraft Runxin"), warrants its products are free from defects in material and workmanship only, when properly installed, operated, and maintained. This warranty is subject to the exceptions herein.

Hankscraft Runxin warrants to the original owner that the items listed below, excluding but not limited to wear parts like O-rings, gaskets and seals, will be free from defects in materials and workmanship for the period of time specified below from the original purchase date.

Product or Component	Warranty Period
Control Valves	Five (5) Years
Storage Tanks	Five (5) Years
Media Tanks	Ten (10) Years
Any Other Components	One (1) Year
Ceramic Discs for Rotary Valves	Lifetime
RO and UF Filter Systems	One (1) Year

Media/resin is not warrantied due to water supply quality differences.

Any parts used for replacement are warrantied for the remainder of the original warranty period applicable to the part from the date of manufacture so long as the parts are installed by a Hankscraft Runxin factory trained and authorized installer.

Hankscraft Runxin's obligation by this Limited Warranty, at its option, is to repair or replace any warrantied product only. Labor for repair or replacement is not included as part of this warranty. Prior to returning the product to Hankscraft Runxin, a valid return materials authorization number must be obtained from Hankscraft Runxin. Any product returned to Hankscraft Runxin without a valid return authorization number will be rejected. Any product found to be defective will, at the sole discretion of Hankscraft Runxin, be repaired or replaced. Hankscraft Runxin is not responsible for shipping cost to the repair facility. This section lists the sole remedies for any valid warranty claim.

This warranty does not apply to defects reported to Hankscraft Runxin outside of the warranty period.

This warranty does not apply to defects caused by installing, operating, servicing, modifying, repairing or maintaining (or lack of maintaining) the product outside of Hankscraft Runxin's recommendations. Filters, membrane elements and flow restrictors that become fouled or plugged due to excessive turbidity, dissolved solids, or microorganisms are not covered by this warranty. This warranty does not apply to defects caused by damage during shipment, neglect, misuse, modification, accident,



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noncompliance with local codes and ordinances, hot water, frozen water, sediment, corrosive liquids, gases, chemicals, bacteria, animals, sand, salt, flood, wind, fire, outdoor installations where the product is not reasonably covered, pneumatic use, natural disasters, war, terrorism or acts of God. No other person is authorized to make any other warranty on behalf of Hankscraft Runxin either during or after the applicable warranty period.

Hankscraft Runxin assumes no liability for determining the proper products and equipment or installation necessary to meet the requirements of the user of the product, and Hankscraft Runxin does not authorize others to assume such liability on its behalf.

THE WARRANTIES AND REMEDIES HEREIN ARE EXCLUSIVE AND IN LIEU OF ANY AND ALL OTHER WARRANTIES OR REMEDIES EITHER EXPRESSED OR IMPLIED, HEREIN OR ELSEWHERE, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, NON-INFRINGEMENT OR WARRANTIES RESULTING FROM COURSE OF PERFORMANCE, COURSE OF DEALING OR FROM USAGE OF TRADE. HANKSCRAFT RUNXIN HEREBY DISCLAIMS ALL OTHER WARRANTIES. HANKSCRAFT RUNXIN'S LIABILITY SHALL NOT EXCEED THE COST OF THE PRODUCT. HANKSCRAFT RUNXIN IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR EXPENSES OF ANY KIND WHATSOEVER, INCLUDING LOSS OF PROFITS, UNDER ANY CIRCUMSTANCES AND REGARDLESS OF WHETHER HANKSCRAFT RUNXIN WAS AWARE OF THE POSSIBILITY OF ANY SUCH LOSS.



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12. Contact Information



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