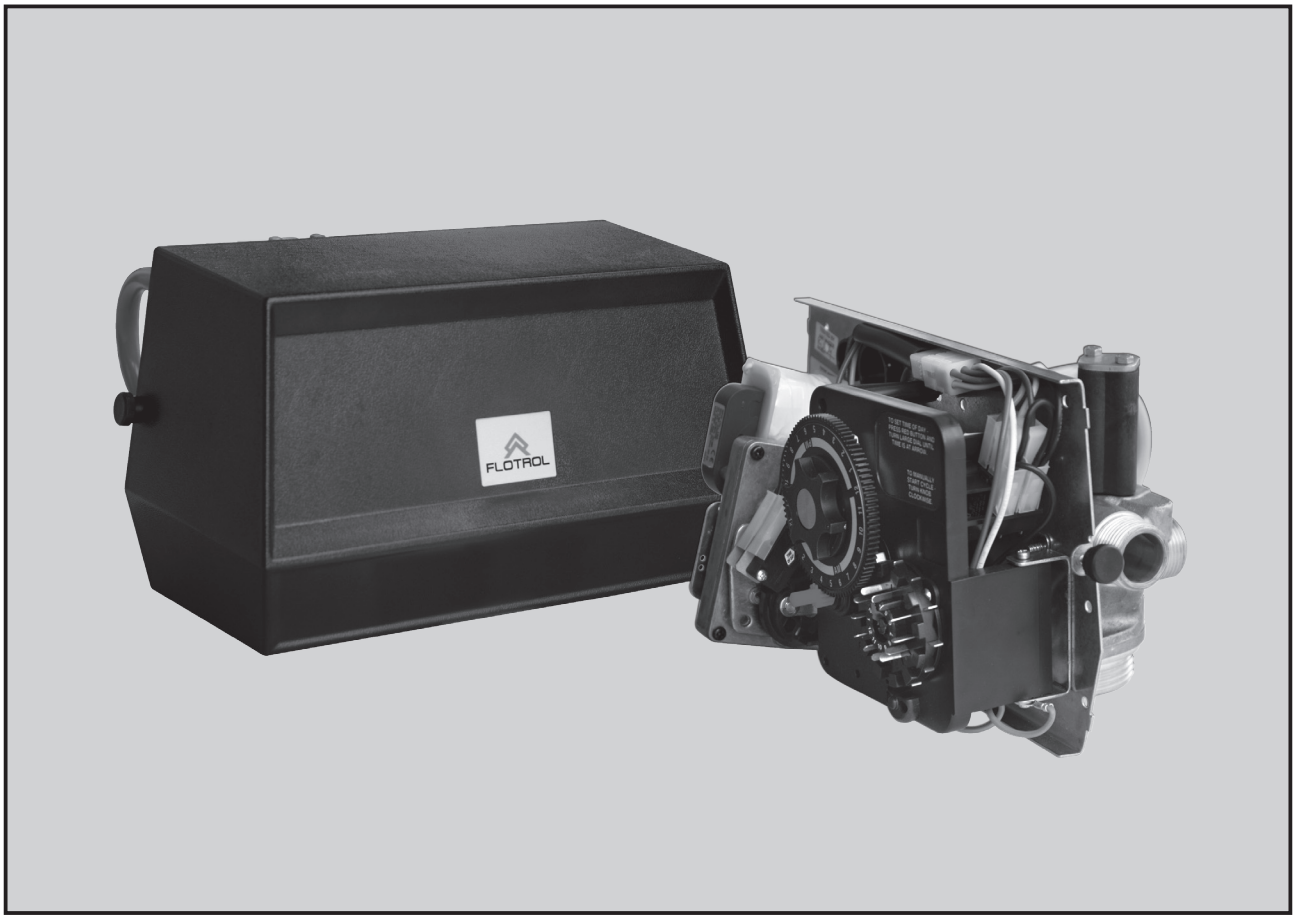
MODEL F30

Service Manual



IMPORTANT: Fill in pertinent information on page 2 for future reference.

MODEL F30

Job Specification Sheet

* JOB NO. _____
* MODEL NO. _____
* WATER TEST _____
* CAPACITY PER UNIT _____
* MINERAL TANK SIZE DIA. _____ HEIGHT _____
* BRINE TANK SIZE & SALT SETTING PER REGENERATION: _____

_____

* F30 CONTROL VALVE SPECIFICATIONS

1 Type of Timer (see pages 10,11, and 12)

A) 12 day

B) * 2 to 40 m^3 meter or

* 11 to 200 m^3 meter

* Other _____

C) Meter Wiring Package

1) System #4 - 1 tank; 1 meter; immediate or delayed regeneration
2) System #5 - 2 tanks; 2 meters; interlock
3) System #6 - 2 tanks; 1 meter; series regeneration
4) System #7 - 2 tanks; 1 meter; alternator

2 Timer Program Settings (see pages 10,11, and 12)

A) Backwash _____ min.

B) Brine & Slow Rinse _____ min.

C) Rapid Rinse _____ min.

D) Brine Tank Refill _____ min.

3 Drain Line Flow Control _____ gpm

4 Brine Line Flow Controller _____ gpm

5 Injector Size # _____

6 Service Valve Operation Units (SVO)

Size of Service Valve _____

MODEL F30

General Commercial Pre-Installation Check List

WATER PRESSURE: A minimum of 25 pounds of water pressure is required for regeneration valve to operate effectively.

ELECTP.ICAL PACILITIES: A continuous 115 volt, 60 Hertz current supply is required. Make certain the current supply is always hot and cannot be turned off with another switch.

EXISTING PLUMBING: Condition of existing plumbing should be free from lime and iron buildup. Piping that is built up heavily with lime 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.

BY-PASS VALVES: Always provide for the installation of a by-pass valve.

CAUTION: Water pressure is not to exceed 120 p.s.i., water temperature is not to exceed 100° F, and the unit cannot be subjected to freezing conditions.

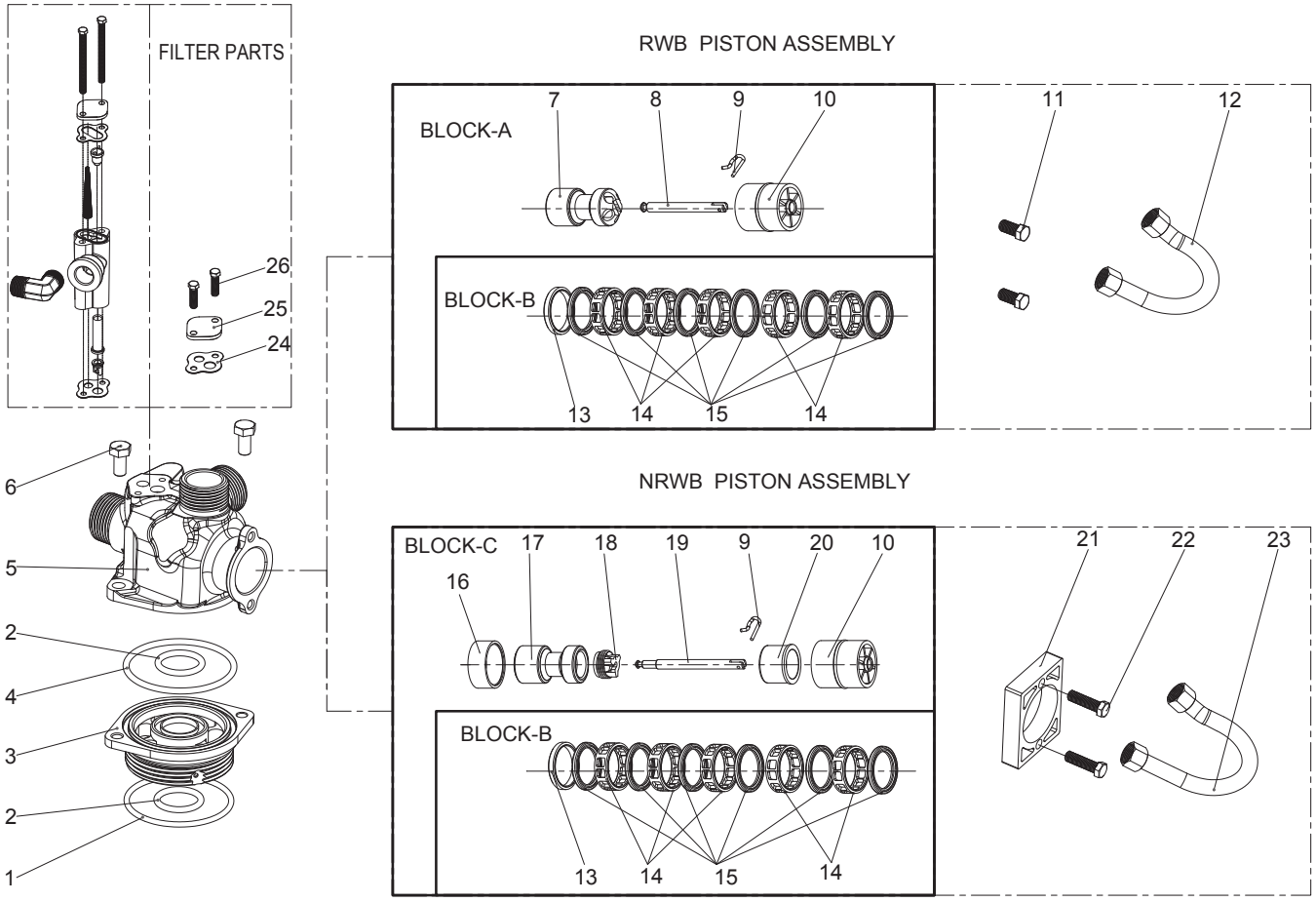
Installation Instructions

1. Place the softener tank where you want to install the unit making sure the unit is level and on a firm base. (Maximum 4 feet apart for twin units.)
2. All plumbing should be done in accordance with local plumbing codes. The pipe size for the drain line shouid be the same size as the drain line flow control connection. Water meters are to be installed on soft water outlets. Twin units with (1) one meter shall be installed on common soft water outlet of units.
3. Solder joints near the drain must be done prior to connecting the Drain Line Flow Control fitting. Leave at least 6" between the DLFC and solder joints when soldering when the pipes are connected on the DLFC. Faiiure to do this could cause interior damage to the DLFC.
4. Teflon tape is the only sealant to be used on the drain fitting. The drain from twin units may be run through a common line.
5. Make sure that the floor is clean beneath the salt storage tank and that it is level.
6. Place approximately 1" of water above the grid plate (if used) in your salt tank. Salt may be placed in the unit at this time.
7. Place in by-pass position. Turn on the main water supply. Open a cold soft water tap nearby and let run a few minutes or until the system is free from foreign material (usually solder) that may have resulted from the installation.
8. Place the by-pass in service position.
9. Manually index the softener control into "service" position and let water flow into the mineral tank. When water flow stops, close inlet valve, place control in "backwash" position to relieve head of air, then gradually open inlet valve to purge remain ing air in tank. Return control to service position.
10. Electrical: All electrical connections must be connected according to codes. Use electrical conduit if applicable. Plug into power supply.

MODEL F30

Assembly Drawings and Part Numbers

F30 Control Valve Assembly



MODEL F30

Assembly Drawings and Part Numbers

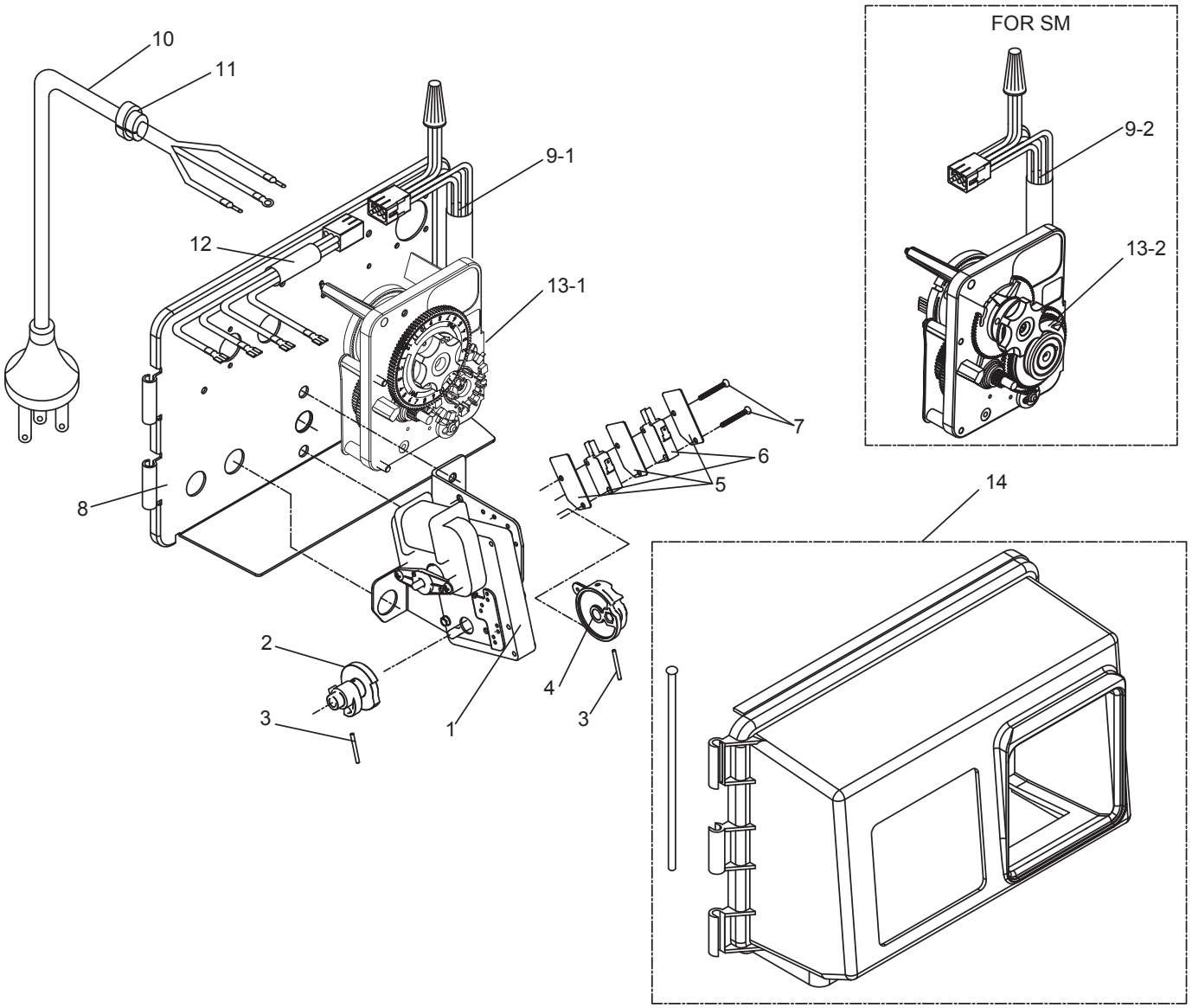
F30 Control Valve Assembly Parts List

Item No.	Quantity	Part No.	Description
1	**1**	**060-00062-00**	**Valve-Tank O-Ring - AS231**
2	**2**	**060-00061-00**	**Riser O-Ring - AS215**
3	1	052-00109-00	Adapter-Top Mount F30
4	**1**	**060-00006-00**	**Valve-Tank Adapter O-Ring - AS232**
5	1	052-00108-00	Valve Body(NPT)
	1	052-00274-00	Valve Body(BSP)
6	2	066-00030-00	Screw,ch,M8X16mm, A2-70
7	**1**	**052-00111-00**	**Piston(RWB)**
8	1	052-00112-00	Piston Rod(RWB)
9	1	052-00051-00	Connecting Link Pin
10	1	051-00406-00	End Plug-RWB Assembly
11	2	066-00024-00	Screw,ch,M6x12mm,A2-70
12	1	051-00116-00	Brine Tube(RWB)
13	1	051-00285-00	End Spacer
14	**5**	**051-00288-00**	**Spacer-Valve Assembly**
15	**6**	**060-00065-00**	**Seal-Valve Assembly**
16	1	051-00284-00	Retainer
17	**1**	**052-00110-00**	**Piston(NRWB)**
18	1	051-00011-00	Retainer, Piston Rod
19	1	052-00113-00	Piston Rod(NRWB)
20	1	052-00231-00	Piston Assembly(NRWB)
21	1	051-00286-00	NRWB-P Spacer
22	2	066-00023-00	Screw,ch,M6x25mm,A2-70
23	1	051-00115-00	Brine Tube(NRWB)
24	2	060-00040-00	Injector Body Gasket
25	1	052-00044-00	Injector Cover
26	1	066-00054-00	Screw,ch,M5x10mm,A20-70

Bold faced items are recommended spare parts.

MODEL F30

Control Drive Assembly (For F30 Mechanical)



MODEL F30

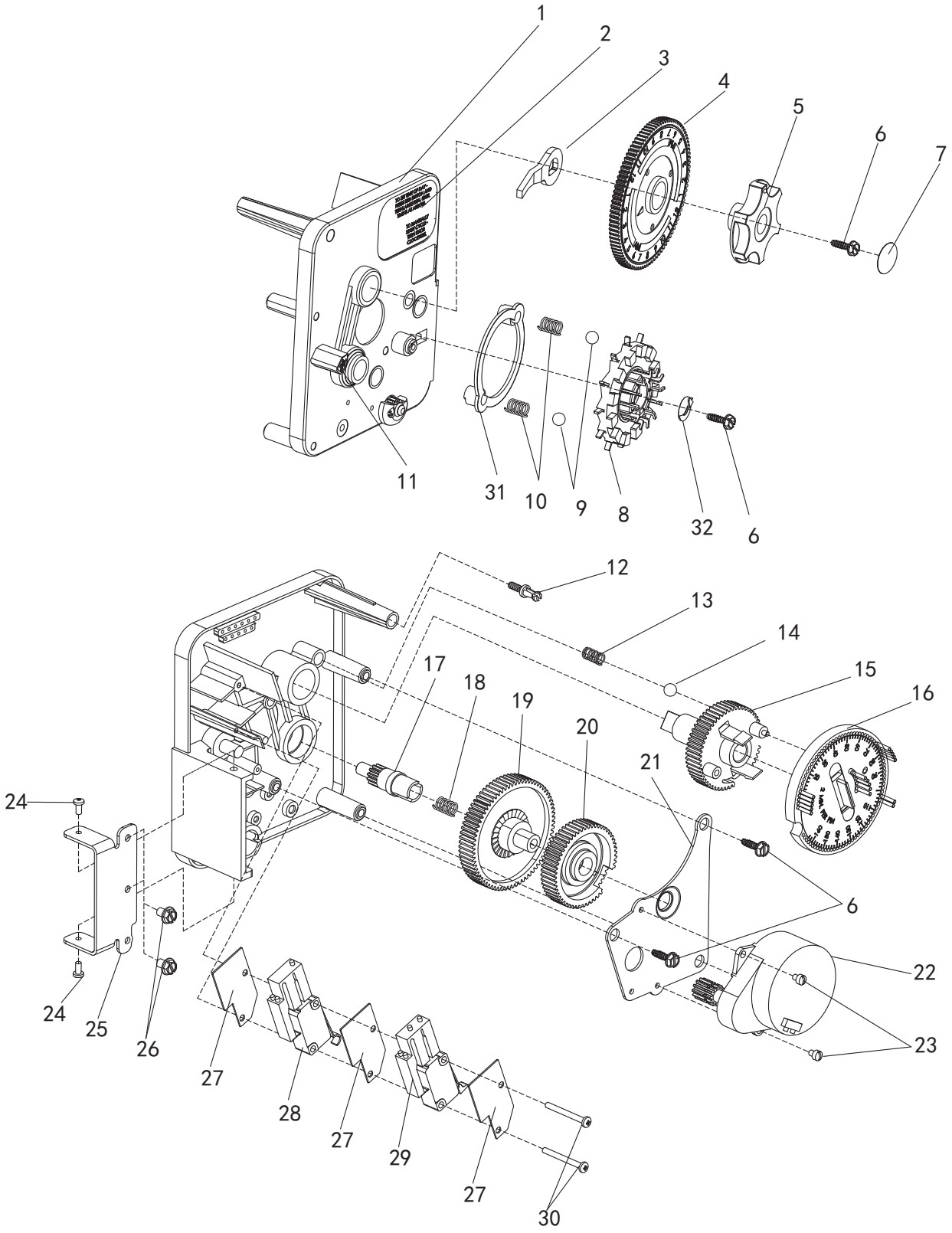
Control Drive Assembly (For F30 Mechanical)

Item No.	Quantity	Part No.	Description
1	**1**	**053-00014-00**	**Motor1 Assembly 220V**
2	**1**	**051-00084-00**	**Brine Valve Cam**
3	**2**	**068-00001-00**	**Roll Pin- Drive Assembly**
4	**1**	**099-00175-00**	**Drive Cam Assembly**
5	3	052-00049-00	Insulator -Drive Assembly
6	**2**	**043-00000-00**	**Switch 1**
7	2	066-00000-00	Screw,tcp,NO.4-40x1.125,b,Zn,1022
8	1	052-00039-00	Back Plate with Thumb Screws
9-1	1	047-00004-00	Line Group
9-2	1	047-00005-00	Line Group-SM
10	1	041-00001-00	Power Cord(Obligue3-Flat(Inverted V))
11	1	078-00143-00	Strain Relief
12	1	047-00003-00	Line Group-Motor
13-1	1	099-00204-00	Timer Assembly (220V/50HZ)
13-2	1	099-00188-00	Timer Assembly (220V/50HZ)-SM
14	1	051-00098-00	Cover Assembly

Bold faced items are recommended spare parts.

MODEL F30

Control Drive Assembly (For F30 & F40 Mechanical)



MODEL F40SE

Control Drive Assembly (For F30 & F40 Mechanical)

Item No.	Quantity	Part No.	Description
1	1	051-00078-00	Timer Housing
2	1	069-00180-00	Decal- Instructions
3	1	051-00074-00	Cycle Actuator Arm
4	1	099-00177-00	24 Hour Gear Assembly
5	1	051-00089-00	Knob
6	4	066-00002-00	Screw,tchw,NO.6-20x1/2,b,black,Zn,1022
7	1	069-00179-00	Button Decal
8	1	099-00176-00	Skipper Wheel Assembly
9	2	078-00008-00	Ball
10	2	058-00003-00	Spring –Detent- Skipper Wheel
11	1	069-00181-00	Decal- Time of Day
12	1	052-00013-00	Spring Clip
13	1	058-00002-00	Spring- Denent- Main Gear
14	1	051-00081-00	Plastic Ball-0.25inch Dia.
15	1	057-00023-00	Main Drive Gear
16	1	099-00178-00	Program Wheel(ST) Assembly
17	1	057-00016-00	Idler Pinion
18	1	058-00001-00	Spring- Idler
19	1	057-00014-00	Idler Gear
20	1	057-00013-00	Driver Gear
21	1	052-00046-00	Motor Mounting Plate
22	1	053-00022-00	Motor2 Assembly (220V/50HZ)
23	3	066-00010-00	Screw,ccch,NO.6-32x1/8,Zn,1022
24	2	066-00011-00	Screw,ccch,NO.6-32UNCx1/4,Zn,1022
25	1	052-00041-00	Hinge Bracket
26	2	066-00012-00	Screw,tchw,NO.8-18x3/8,Zn,1022
27	3	052-00048-00	Insulator- Drive Assembly
28	1	043-00003-00	Switch3
29	1	043-00002-00	Switch2
30	2	066-00055-00	Screw, tcp, NO. M3-24x1.125,b,Zn,1022
31	1	051-00070-00	Skipper Wheel Ring
32	1	051-00071-00	Regeneration Pointer

Bold faced items are recommended spare parts.

MODEL F30

Regeneration Cycle Program Setting Procedure

(Brine Tank Refill Separate From Rapid Rinse)

Typical Programming Procedure

Calculate the gallon capacity of the system, subtract the necessary reserve requirement and set the gallons required by lifting the gallon dial and rotating it so that the number of gallons required is aligned with the white dot on program wheel gear. Release and check for firm engagement with gear.

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

1. Rotate manual regeneration knob one full revolution.

—or—

2. Rotate program wheel manually clockwise and align white dot with capacity arrow.

This procedure must be followed any time the program wheel setting is changed.

How To Set The Time Of Day:

Press and hold the red button in to disengage the 24 hour gear.

Turn the 24 hour gear until the actual time of day is at the time of day pointer.

Release the red button to again engage the 24 hour gear.

How To Manually Regenerate Your Water Condition At Any Time:

Turn the manual regeneration knob clockwise one “click”. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.

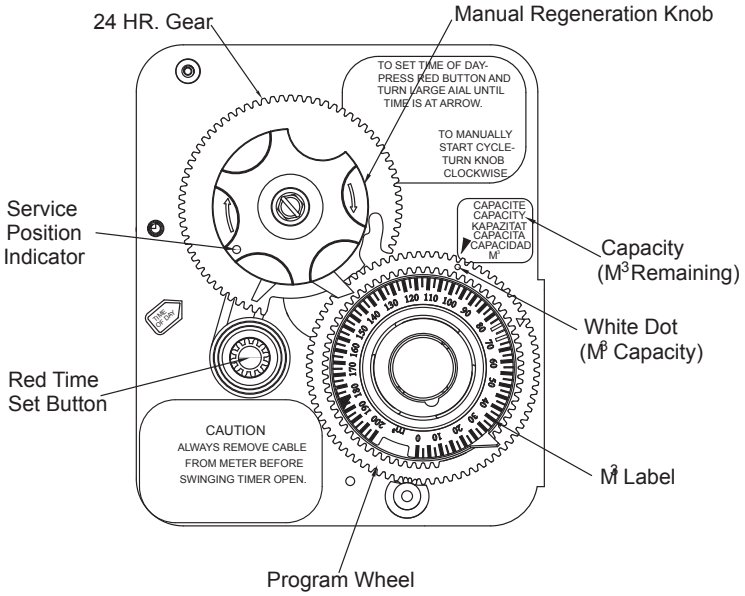
The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.

Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time.

In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

Immediate Regeneration Timers:

These timers do not have a 24 hour gear. Setting the gallons on the program wheel and manual regeneration procedure are the same as previous instructions.



MODEL 3200 TIMER

Timer Setting Procedure

How To Set Days On Which Water Conditioner Is To Regenerate:

Rotate the skipper wheel until the number "1" is at the red pointer. Set the days that regeneration is to occur by sliding tabs on the skipper wheel outward to expose trip fingers. Each tab is one day. Finger at red pointer is tonight. Moving clockwise from the red pointer, extend or retract fingers to obtain the desired regeneration schedule.

How To Set The Time Of Day:

Press and hold the red button in to disengage the drive gear. Turn the large gear until the actual time of day is at the time of day pointer.

Release the red button to again engage the drive gear.

How To Manually Regenerate Your Water Conditioner At Any Time:

Turn the manual regeneration knob clockwise.

This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program .

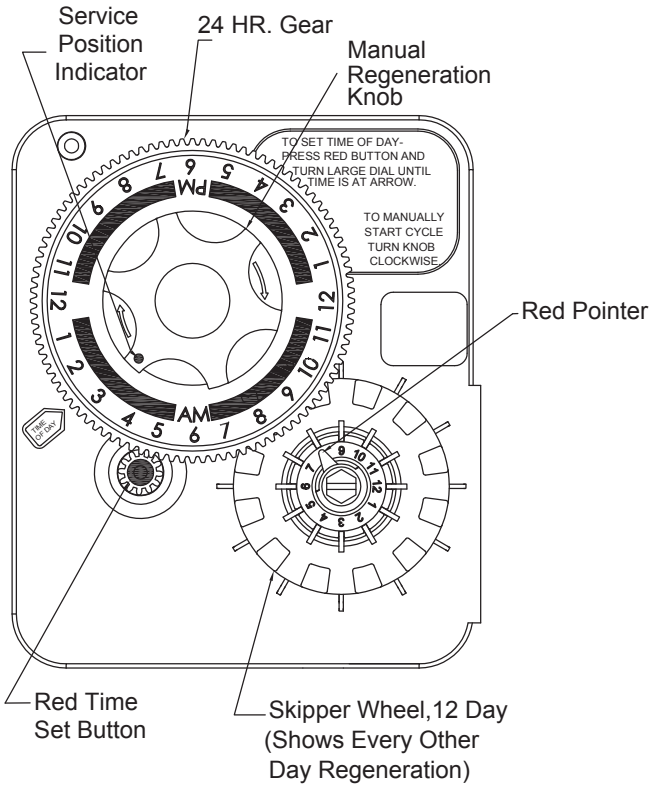
The black center knob will make one revolution in the following approximately three hours and stop in the posltion shown in the drawing.

Even thought it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set only one half of this time.

In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

How to Adjust Regeneration Time:

1. Disconnect the power source.
2. Locate the three screws behind the manual regeneration knob by pushing the red button in and rotating the 24 hour dial until each screw appears in the cut out portion of the manual regeneration knob.
3. Loosen each screw slightly to release the pressure on the time plate from the 24 hour gear.
4. Locate the regeneration time pointer on the inside of the 24 hour dial in the cut out.
5. Turn the time plate so the desired regeneration time aligns next to the raised arrow.
6. Push the red button in and rotate the 24 hour dial. Tighten each of the three screws.



7. Push the red button and locate the pointer one more time to ensure the desired regeneration time is correct.
8. Reset the time of day and restore power to the unit.

IMPORTANT

SALT LEVEL MUST ALWAYS BE ABOVE WATER LEVEL IN BRINE TANK.

MODEL 3200 & 3210 TIMER SERIES

Regeneration Cycle Program Setting Procedure

(Brine Tank Refill Separate From Rapid Rinse)

How To Set The Regeneration Cycle Program:
The regeneration cycle program on your water conditioner has been factory preset, however, portions of the cycle or program may be lengthened or shortened in time to suit local conditions.

3200 & 3210 Series Timers (Figure to Right)
To expose cycle program wheel, first pull cable out of meter dome of 3210 timers, grasp timer in upper left-hand comer and pull, releasing snap retainer and swinging timer to the right.
To change the regeneration cycle program, the program wheel must be removed. Grasp program wheel and squeeze protruding lugs toward center, lift program wheel off timer. (Switch arms may require movement to facilitate removal.)
Return timer to closed position engaging snap retainer in back plate. Make certain all electrical wires locate above snap retainer post. Reconnect meter cable.

Timer Setting Procedure for 3200 and 3210 Timer How To Change The Length Of The Backwash Time:
The program wheel as shown in the drawing is in the service position. As you look at the numbered side of the program wheel, the group of pins starting at zero determines the length of time your unit will backwash.
FOR EXAMPLE: If there are six pins in this section, the time of backwash will be 12 min. (2 min. per pin). To change the length of backwash time, add or remove pins as required. The number of pins times two equals the backwash time in minutes.

How To Change The Length Of Brine And Rinse Time:
The group of holes between the last pin in the backwash section and the second group of pins determines the length of time that your unit will brine and rinse (2 min. per hole.)

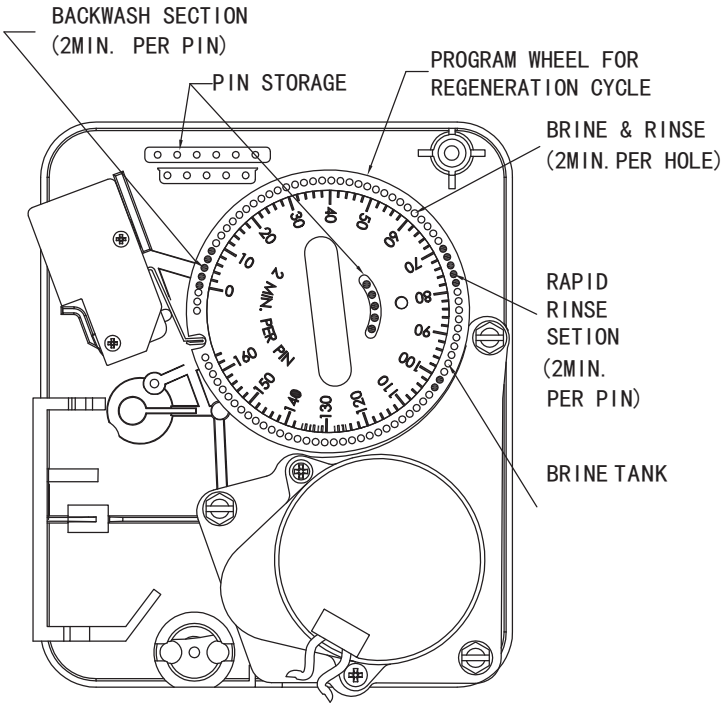
To change the length of brine and rinse time,move the rapid rinse group of pins to give more or fewer holes in the brine and rinse section. Number of holes times two equals brine and rinse time in minutes.

How To Change The Length Of Rapid Rinse:
The second group of pins on the program wheel determines the length of time that your water conditioner will rapid rinse. (2 min. per pin.)
To change the length of rapid rinse time, add or remove pins at the higher numbered end of this section as required. The number of pins times two equals the rapid rinse time in minutes.

How To Change The Length Of Brine Tank Refill Time:
The second group of holes in the program wheel determines the length of time that your water conditioner will refill the brine tank. (2 min. per hole.)

To change the length of refill time, move the two pins at the end of the second group of holes as required.

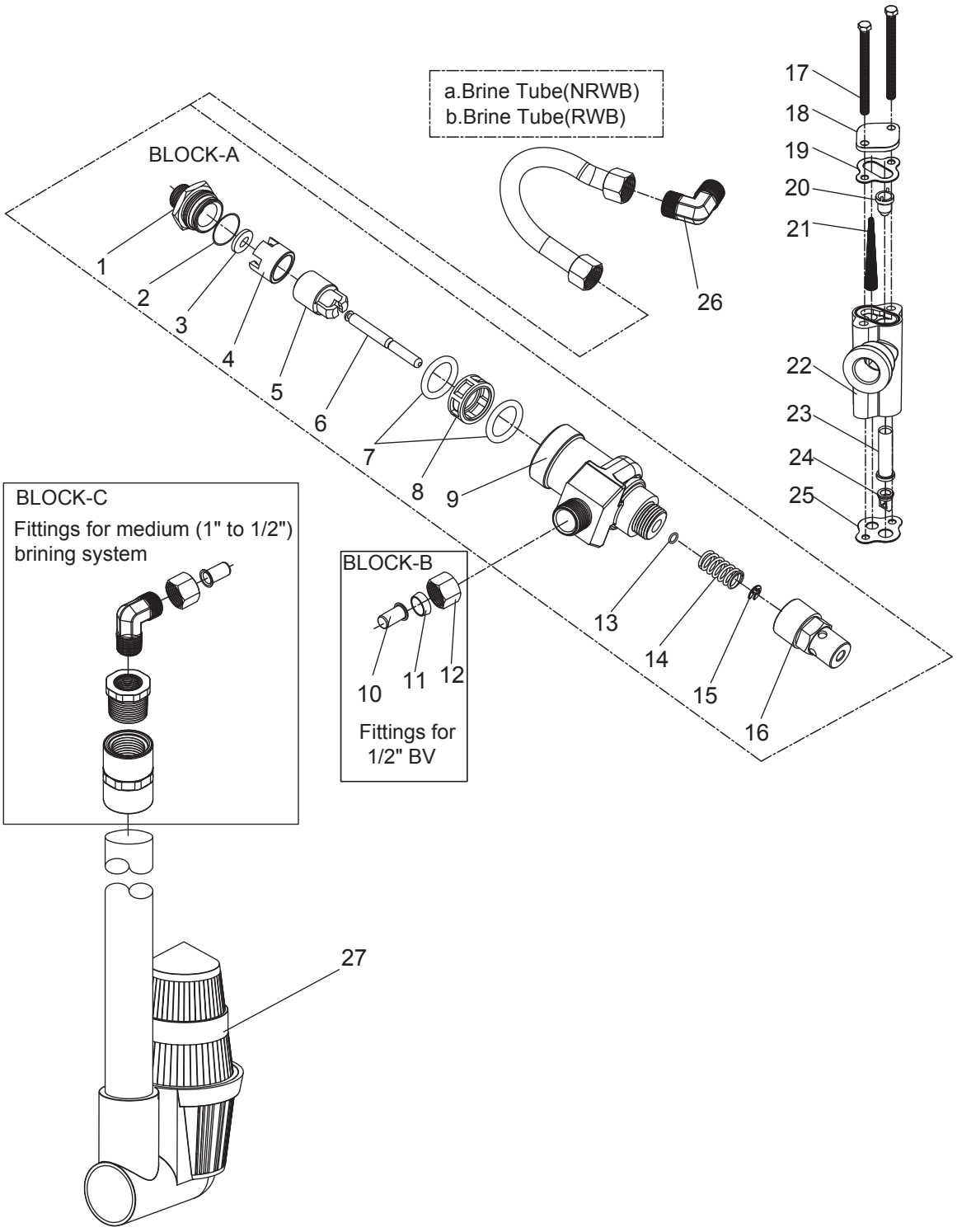
The regeneration cycle is complete when the outer micro-switch is tripped by the two pin set at end of the brine tank refill section. The program wheel, however, will continue to rotate until the inner micro-switch drops into the notch on the program wheel.



MODEL F30

Assembly Drawings and Part Numbers

Medium Brining System Assembly



MODEL F30

Regeneration Cycle Program Setting Procedure

(Brine Tank Refill Separate From Rapid Rinse)

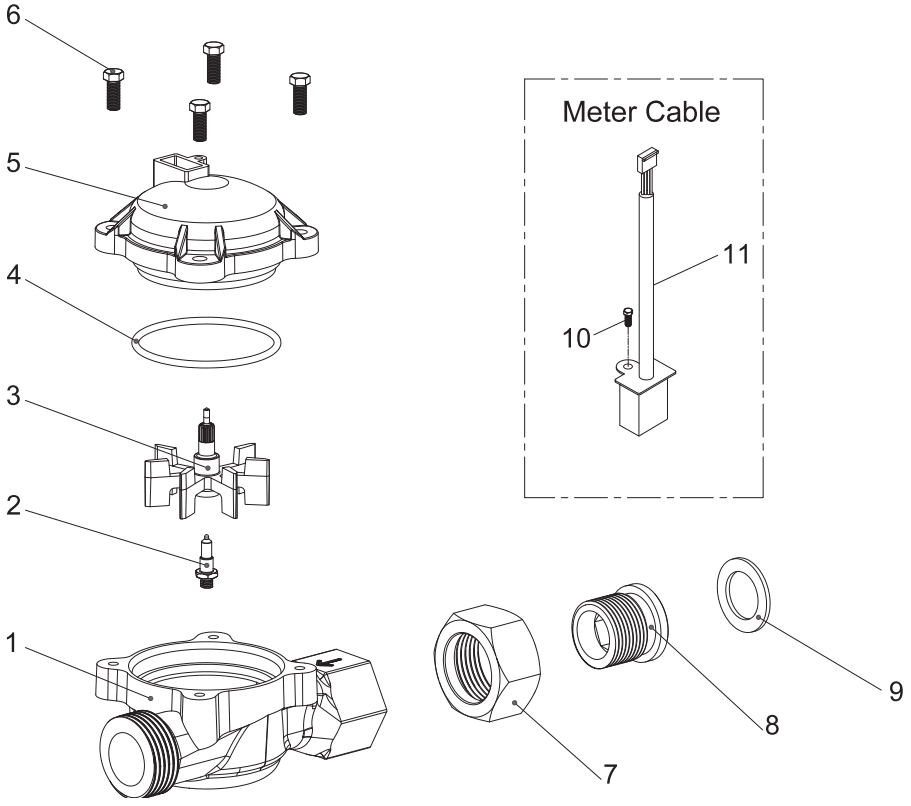
Item No.	Quantity	Part No.	Description
1	1	052-00000-00	End Plug-Brine System Assembly
2	**1**	**060-00046-00**	**O-Ring- AS020**
3	1	060-00050-00	RFC Washer-5.0 gpm
4	1	051-00121-01	Flow Control Retainer
5	**1**	**052-00131-00**	**Piston- Brine System Assembly**
6	**1**	**052-00130-00**	**Piston Rod- Brine System Assembly**
7	**2**	**060-00069-00**	**O-Ring- AS210**
8	1	051-00322-00	Spacer- Brine System Assembly
9	1	052-00054-00	Brine Valve Body
10	1	052-00045-00	Insert sleeve
11	1	051-00082-00	Retainer
12	1	052-00012-00	Nut
13	**1**	**060-00013-00**	**Quad Ring- ASQ009**
14	1	058-00008-00	Spring- Brine Valve
15	1	068-00019-00	Retaining Ring d3
16	1	052-00002-01	Stem Guide
17	1	066-00021-00	Screw,ch,M5x70mm,A2-70
18	1	052-00044-00	Injector Cover
19	1	060-00039-00	Injector Cover Gasket
20	1	051-00289-00	5# Injector Nozzle
	1	051-00102-00	6# Injector Nozzle
21	1	075-00003-00	Injector Screen
22	1	051-00101-00	Injector Body
23	1	051-00290-00	5# Injector Throat
	1	051-00107-00	6# Injector Throat
24	1	051-00093-00	Water Disperser
25	1	060-00040-00	Injector Body Gasket
26	1	052-00058-00	Elbow Fitting
27	1	051-00119-00	Air Check

Bold faced items are recommended spare parts.

MODEL F30

Assembly Drawings and Part Numbers

3/4” Electronic Flow Meter Assembly & Parts List



Item No.	Quantity	Part No.	Description
1	1	052-00107-00	Meter Body(NPT)
	1	052-00273-00	Meter Body(BSP)
2	1	052-00020-00	Post, Impeller
3	**1**	**051-00065-00**	**Impeller**
4	**1**	**060-00026-00**	**O-Ring - AS13**
5	**1**	**099-00881-00**	**Meter Cover Assembly**
6	4	066-00048-00	Screw,ch,M5x15mm,A2-70
7	1	052-00116-00	Nut - Quick Connect(NPT)
	1	052-00272-00	Nut - Quick Connect(BSP)
8	1	052-00115-00	Nipple - Quick Connect(NPT)
	1	052-00271-00	Nipple - Quick Connect(BSP)
9	1	078-00089-00	Gasket
10	1	066-00012-00	Screw,tchw,NO.8-18x3/8,Zn,1022
11	1	047-00019-00	Meter Cable Assembly(35”)
	1	047-00013-00	Meter Cable Assembly(99.5”)

Bold faced items are recommended spare parts.

PROBLEM	CAUSE	CORRECTION
1. Softener fails to regenerate.	A. Electrical service to unit has been interrupted.	A. Assure permanent electrical service (check fuse, plug, pull chain or switch).
	B. Timer is defective.	B. Replace timer.
	C. Power failure.	C. Reset time of day.
2. Hard water.	A. By-pass valve is open.	A. Close by-pass valve.
	B. No salt in brine tank.	B. Add salt to brine tank and maintain salt level above water level.
	C. Injector screen plugged.	C. Clean injector screen.
	D. Insufficient water flowing into brine tank.	D. Check brine tank fill time and clean brine line flow control if plugged.
	E. Hot water tank hardness.	E. Repeated flushings of the hot water tank is required.
	F. Leak at distributor tube.	F. Make sure distributor tube is not cracked. Check O-ring and tube pilot.
	G. Internal valve leak.	G. Replace seals and spacers and/or piston.
3. Unit used too much salt.	A. Improper salt setting.	A. Check salt usage and salt setting.
	B. Excessive water in brine tank.	B. See problem no. 7
4. Loss of water pressure.	A. Iron buildup in line to water conditioner.	A. Clean line to water conditioner.
	B. Iron buildup in water conditioner.	B. Clean control and add mineral cleaner to mineral bed. Increase frequency of regeneration.
	C. Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system.	C. Remove piston and clean control.
5. Loss of mineral through drain line.	A. Air in water system.	A. Assure that well system has proper air eliminator control. Check for dry well condition.
	B. Improperly sized drain line flow control.	B. Check for proper drain rate.
6. Iron in conditioned water.	A. Fouled mineral bed.	A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration. Increase backwash time.
7. Excessive water in brine tank.	A. Plugged drain line flow control.	A. Clean flow control.
	B. Plugged injector system.	B. Clean injector and screen.
	C. Timer not cycling.	C. Replace timer.
	D. Foreign material in brine valve.	D. Replace brine valve seat and clean valve.
	E. Foreign material in brine iine flow control.	E. Clean brine line flow control.

PROBLEM	CAUSE	CORRECTION
8. Softener fails to draw brine.	A. Drain line flow control is plugged.	A. Clean drain line flow control.
	B. Injector is plugged.	B. Clean injector.
	C. Injector screen plugged.	C. Clean screen.
	D. Line pressure is too low.	D. Increase line pressure to 20 P.S.I.
	E. Internal control leak.	E. Change seals, spacers and piston assembly.
	F. Service adapter did not cycle.	F. Check drive motor and switches.
9. Control cycles continuously.	A. Missadjusted, broken or shorted switch.	A. Determine if switch or timer is faulty and replace it, or replace complete power head.
10. Drain flows continuously.	A. Valve is not programing correctly.	A. Check timer program and positioning of control. Replace power head assembly if not positioning properly.
	B. Foreign material in control.	B. Remove power head assembly and inspect bore. Remove foreign material and check control in various regeneration positions.
	C. Internal control leak.	C. Replace seals and piston assembly.

General Service Hints For Meter Control

Problem: Softener Delivers Hard Water.

Cause could be that . . . Reserve Capacity Has Been Exceeded.

Correction: Check salt dosage requirements and reset program wheel to provide additional reserve.

Cause could be that . . . Program Wheel Is Not Rotating With Meter Output.

Correction: Pull cable out of meter cover and rotate manually. Program wheel must rnove without binding and clutch must give positive clicks when program wheel strikes regeneration stop. If it does not, replace timer.

Cause could be that . . . Meter Is Not Measuring Flow.

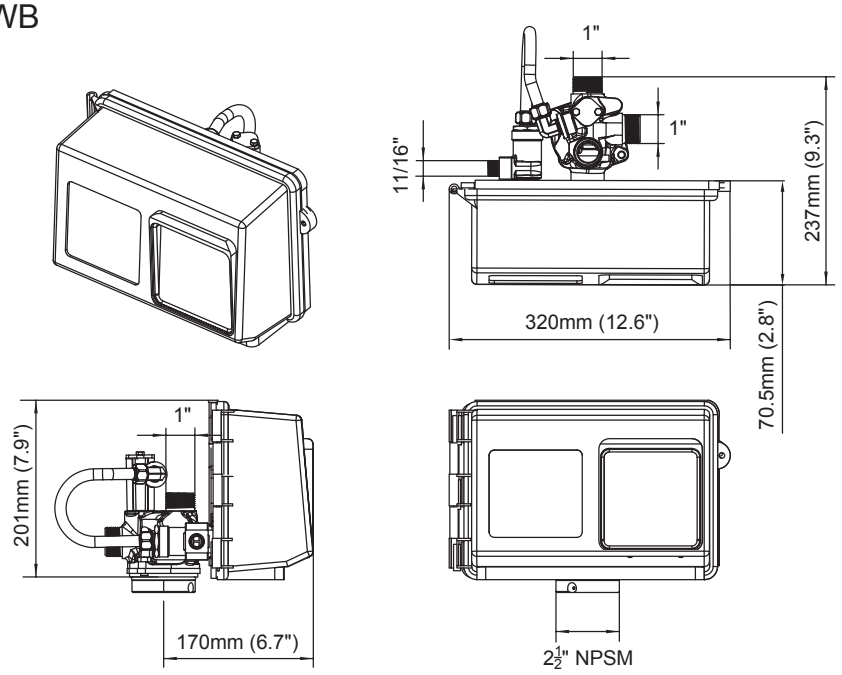
Correction: Check meter with meter checker.

MODEL F30

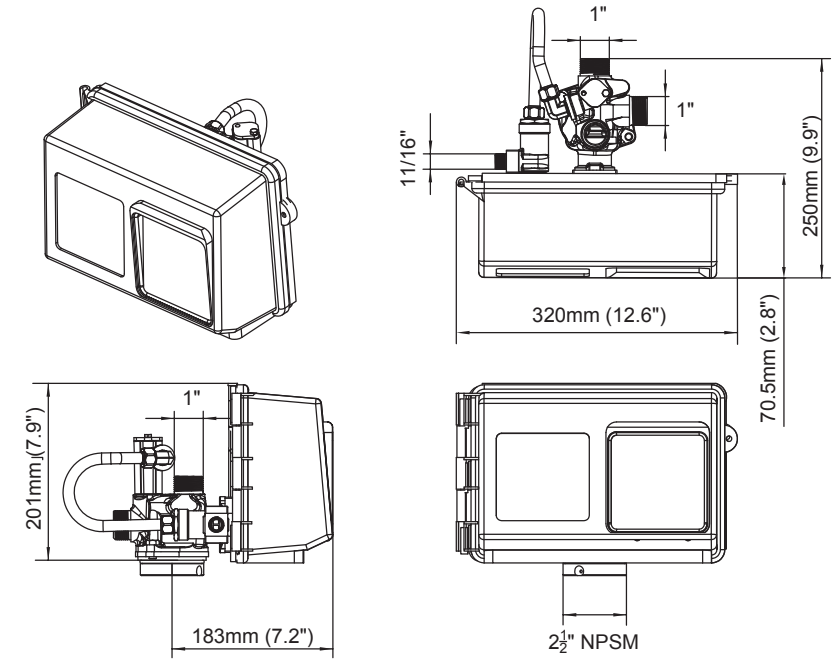
Dimensional Drawing

1)F30 Valve

RWB



NRWB



MODEL F30

Assembly Kits

Piston Kits 100-00009-00 Piston Kits-NRWB 100-00010-00 Piston Kits-RWB	**Adapters** 100-00003-00 Fittings for medium (1” to ½” brining system 100-00027-00 Fittings for 1/2” BV
Seals & Spacers 100-00046-00 F30 Spacers & Seals	**Injector** 100-00021-00 #5 Injector Assembly 100-00026-00 #6 Injector Assembly
Drive Cam Assembly 100-00130-00 Drive Cam Assembly	**Meter**(3/4" Electronic Flow Meter) 100-00012-00 35" Meter Cable-NPT
Medium ½” Brine Valve 100-00033-00 Brine Valve Assembly	**RFC Washers** 060-00100-00 5.0G
RFC Housing Assembly 100-00143-00 1” NPT Refill Flow Control with 10 gpm washer 100-00144-00 1” BSP Refill Flow Control with 10 gpm washer	
BWFC Washers 060-00072-00 0G 060-00118-00 9G 060-00122-00 10G 060-00119-00 12G 060-00066-00 15G 060-00120-00 20G 060-00047-00 25G	**BWFC Housing Assembly** 100-00134-00 1” NPT 10G 100-00135-00 1” BSP 10G 100-00138-00 1” NPT 15G 100-00139-00 1” BSP 15G 100-00013-00 1” NPT 25G 100-00142-00 1” BSP 25G