

# 6700XTR Upflow

## *Service Manual*



**IMPORTANT: Fill in Pertinent Information on Page 3 for Future Reference**

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# Table of Contents

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\*\*\*\*Update Once Manual Finalized\*\*\*\*



**IMPORTANT PLEASE READ:**

- The information, specifications and illustrations in this manual are based on the latest information available at the time of printing. The manufacturer reserves the right to make changes at any time without notice.
- This manual is intended as a guide for service of the valve only. System installation requires information from a number of suppliers not known at the time of manufacture. This product should be installed by a plumbing professional.
- This unit is designed to be installed on potable water systems only.
- This product must be installed in compliance with all state and municipal plumbing and electrical codes. Permits may be required at the time of installation.
- If daytime operating pressure exceeds 80 psi, nighttime pressures may exceed pressure limits. A pressure reducing valve must be installed.
- Do not install the unit where temperatures may drop below 32°F (0°C) or above 125°F (52°C).
- Do not place the unit in direct sunlight. Black units will absorb radiant heat increasing internal temperatures.
- Do not strike the valve or any of the components.
- Warranty of this product extends to manufacturing defects. Misapplication of this product may result in failure to properly condition water, or damage to product.
- A prefilter should be used on installations in which free solids are present.
- In some applications local municipalities treat water with Chloramines. High Chloramine levels may damage valve components.
- Correct and constant voltage must be supplied to the control valve to maintain proper function.

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# Job Specification Sheet

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**NOTE: Some options may not be available depending on valve model or other options chosen.**

**Circle and/or Fill in the Appropriate Data for Future Reference.**

**System Type:** Meter Immediate / Time Clock Delayed / Volume Override Delayed  
Volume Override Immediate / Meter Delayed Weekly Reserve  
Meter Delayed Variable Reserve / Meter Delayed Fixed Reserve

**Valve Type:** 56XT/6700 Proprietary C

**Regenerant Flow:** Down Flow / Up Flow / Downflow Double Backwash / Up Flow Back Wash  
Back Wash Filter / Up Flow Variable Flow

**Display Format:** U.S. or Metric (French Degrees, German Degrees, or PPM)

**Unit Capacity:** \_\_\_\_\_ Grains/French Degrees/German Degrees/PPM

**Water Hardness:** \_\_\_\_\_ Grains/French Degrees/German Degrees/PPM

**Capacity Safety Factor:** Zero or \_\_\_\_\_ %

**Volume Override:** \_\_\_\_\_ (Gallons or M<sup>3</sup>)

**Regeneration Day Override:** Off or Every \_\_\_\_\_ Days

**Regeneration Time:** Delayed \_\_\_\_\_ AM/PM or \_\_\_\_\_ Immediate

**Regeneration Cycle Step #1:** \_\_ : \_\_ : \_\_  
**Regeneration Cycle Step #2:** \_\_ : \_\_ : \_\_  
**Regeneration Cycle Step #3:** \_\_ : \_\_ : \_\_  
**Regeneration Cycle Step #4:** \_\_ : \_\_ : \_\_  
**Regeneration Cycle Step #5:** \_\_ : \_\_ : \_\_

**Media Volume:** \_\_\_\_\_ (CuFt or Liter)

**Salt Dosage:** \_\_\_\_\_ (lbs/CuFt or grams/Liter)

**BLFC Size:** \_\_\_\_\_ gpm

**Auxiliary Relay:** Enabled or Disabled

**Auxiliary Relay Start 1:** \_\_ : \_\_ : \_\_  
**Auxiliary Relay End 1:** \_\_ : \_\_ : \_\_  
**Auxiliary Relay Start 2:** \_\_ : \_\_ : \_\_  
**Auxiliary Relay End 2:** \_\_ : \_\_ : \_\_

**Chemical Pump:** Enabled or Disabled

**CPO Aux Relay Volume:** \_\_\_\_\_ (Gallons or M<sup>3</sup>)

**CPO Aux Relay:** \_\_ : \_\_ : \_\_

**Flow Meter Size:** .75" Paddle .75" Turbine

**Generic Flow Meter:** Maximum Flow Rate: Add \_\_ Gallons every \_\_ Pulses

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# General Residential Installation Check List

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## Water Pressure

A minimum of 25 lbs of water pressure is required for regeneration valve to operate effectively.

## Electrical Facilities

An uninterrupted alternating current (A/C) supply is required. Please make sure voltage supply is compatible with unit before installation.

## Existing Plumbing

Condition of existing plumbing should be free from lime and iron buildup. Replace piping that has heavy lime and/or iron build-up. If piping is clogged with iron, install a separate iron filter unit ahead of the water softener.

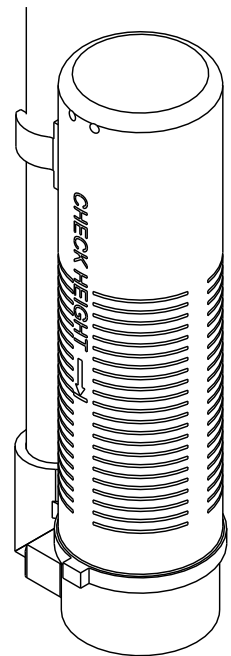
## Location of Softener and Drain

Locate the softener close to a clean working drain and connect according to local plumbing codes.

## Valve Installation and Start-Up Procedures

### Bypass Valves

1. Always provide for the installation of a bypass valve if unit is not equipped with one.
2. Place the softener tank where you want to install the unit. **NOTE: Be sure the tank is level and on a firm base.**
3. During cold weather it is recommended that the installer warm the valve to room temperature before operating.
4. Perform all plumbing according to local plumbing codes.
  - Use a 1/2" minimum pipe size for the drain.
  - Use a 3/4" drain line for backwash flow rates that exceed 7 gpm or length that exceeds 20' (6 m).
5. Cut the 1" distributor tube (1.050 O.D.) flush with top of each tank.
6. Lubricate the distributor o-ring seal and tank o-ring seal. Place the main control valve on the tank. **NOTE: Use only non-petroleum based silicone lubricant.**
7. Solder joints near the drain must be done before connecting the Drain Line Flow Control fitting (DLFC).
8. Leave at least 6" (152 mm) between the DLFC and solder joints when soldering pipes that are connected on the DLFC. Failure to do this could cause interior damage to DLFC. Use only Teflon tape on the drain fitting.
9. Be sure the floor under the salt storage tank is clean and level.
10. With a grid plate ensure the air check fill mark is above the grid plate. With or without a grid plate, fill the brine tank with water to the mark indicated on the air check assembly. See illustration to the right.
11. On units with a bypass, place in the bypass position.
  - Turn on the main water supply.
  - Open a cold soft water tap nearby and let water run a few minutes or until the system is free of foreign material (usually solder) resulting from the installation. Close the water tap when water runs clean.
12. Place the bypass in the in service position and let water flow into the mineral tank. When water flow stops, slowly open a cold water tap nearby and let water run until air is purged from the unit. Then close tap.
13. Plug the valve into an approved power source. When the valve has power it drives to the in service position.



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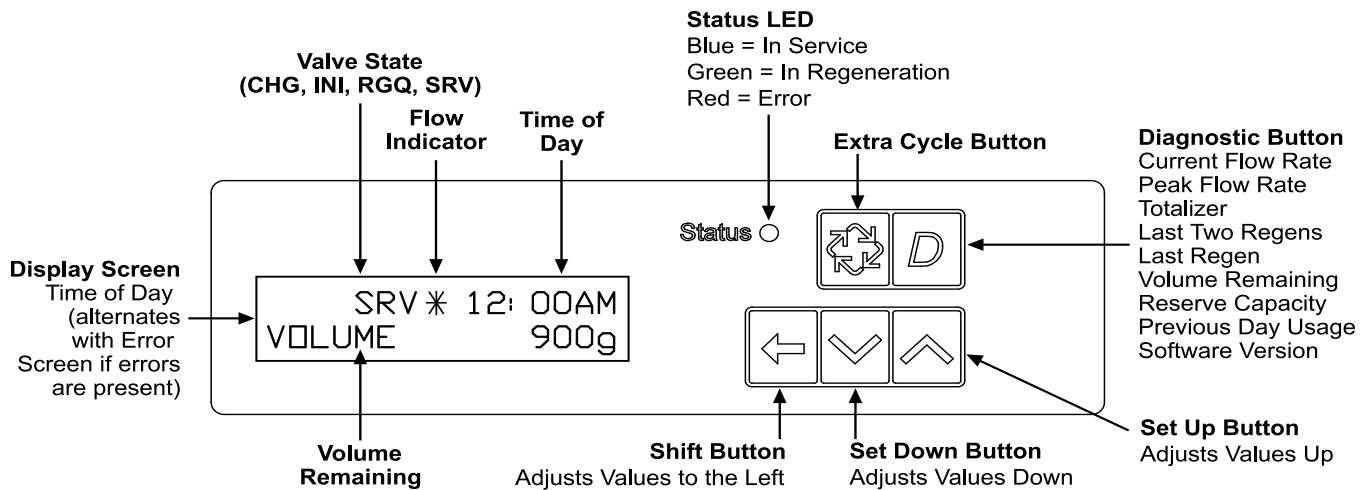
### CAUTION

- Do not exceed 120 psi water pressure
- Do not exceed 100°F water temperature
- Do not subject unit to freezing conditions

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# Timer Operation

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## Valve State:

### CHG (Change of State)

CHG will be displayed when the lower drive changes from one state to another in dual piston valves.

### INI (Initializing)

INI will display on the screen for 30 to 45 seconds when initializing after a power failure reset or programming.

### RGQ (Regeneration Queued)

RGQ indicates that the reserve has been entered in a delayed system and regeneration has been queued. When in the main screen, press the Shift button to toggle service (SRV) with RGQ.

### Service (SRV)

SRV will display when the unit is in service.

## LED Status Lights:

### Blue LED:

Illuminates while the unit is in service and no errors exist. The unit will always be in service unless a regeneration trigger has occurred (green LED light will be displayed).

### Green LED:

Illuminates when the unit is in Regeneration mode, unless an error condition exists.

### Red LED:

Illuminates when there is an error.

## Flow Indicator:

A rotating line (appearing as a rotating star shape) will display on the screen when flow is going through the meter.

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## Timer Operation

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### Regeneration:

- A time initiated control valve regenerates when the number of programmed days has been reached
- A flow initiated control valve regenerates when the volume count is zero or is below reserve capacity

System Type	Regeneration Trigger
Time Clock Delayed	A) Day override parameter is reached and B) the time of day matches the regeneration day override time
Meter Immediate	Regenerates as soon as the volume remaining has been depleted
Meter Delayed Fixed Reserve	A) Volume remaining has been depleted to the fixed reserve volume and B) the regeneration time has been reached
Meter Delayed Variable Reserve	A) Volume remaining has been depleted to the variable reserve volume and B) the regeneration time has been reached
Meter Delayed Weekly Reserve	A) Volume remaining has been depleted to the weekly variable reserve volume and B) the regeneration time has been reached
Volume Override Immediate	As soon as the programmed volume remaining has been depleted from the tank
Volume Override Delayed	As soon as soon as the programmed volume remaining has been depleted from the tank and the regeneration time has been reached

### Setting the Time of Day

1. Press and hold the Up or Down button for 2 seconds.
2. Press the Shift button to select the digit you want to modify.
3. Press the Up or Down buttons to adjust the value.
4. Press the Extra Cycle button to return to the normal display screen, or after a 5 second timeout.

**NOTE: The “D” button (Diagnostic) can be pressed to exit without saving.**

### Manually Initiating a Regeneration

1. When timer is in service, press the Extra Cycle button for 5 seconds on the main screen.
2. The timer advances to Regeneration Cycle Step #1, and begins programmed time count down.
3. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #2 (if active).
4. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #3 (if active).
5. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #4 (if active).
6. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #5 (if active).
7. Press the Extra Cycle button once more to advance the valve back to in service.

**NOTE:** A manually initiated or queued regeneration can be cleared by pressing the Extra Cycle button for less than 5 seconds. A system queued regeneration cannot be manually cleared. If regeneration occurs for any reason prior to the delayed regeneration time, the manual regeneration request shall be cleared. Pressing the Extra Cycle button while in regeneration will cause the upper drive to advance to the next step immediately.

## Queued Regeneration (RGQ)

From the display screen, while the unit is in service, hold down the Extra Cycle button until "RGQ" displays. The valve will regenerate when the set regeneration time has been reached.

## Timer Operation During Regeneration

In the main display screen, the timer shows the current regeneration cycle and the time for that step. The **green LED light** will display when the unit is in regeneration. Once all regeneration steps are complete, the timer returns to in service, displays a **blue LED light**, and resumes normal operation.

## Timer Operation During Programming

The timer enters program mode (unit must be in service). While in the program mode the timer continues to operate normally, monitoring water usage. Timer programming is stored in memory permanently upon a normal exit from programming mode.

## Timer Operation During A Power Failure

All program settings are stored in permanent memory. Current valve position, cycle step time elapsed, and time of day are stored during a power failure, and will be restored upon power re-application. Time is kept during a power failure, and time of day is adjusted upon power up (as long as power is restored within 12 hours).

**NOTE:** The time of day on the main display screen will flash for 5 minutes when there has been a power outage. The flashing of the time of day can be stopped by pressing any button on the display.

## Regeneration Day Override Feature

If the Day Override option is turned on and the valve reaches the set Regeneration Day Override value, the Regeneration Cycle starts at the programmed regeneration time.

## Flow Meter Equipped Timer

As treated water is used, the Volume Remaining display counts down from the calculated system capacity, less the reserve volume. Once capacity reaches zero or reserve, if the immediate system the unit will regenerate immediately. If it is a Fixed, Variable, or Weekly reserve, the unit will queue a regeneration (RGQ) and count down Reserve Volume until the set regeneration time.

**NOTE:** Reserve Volume is only available in a RGQ system.

### Volume Remaining (Less Reserve)

SRV * 08:45AM
VOLUME 1000G

### Reserve Volume

RGQ * 09:32AM
VOLUME 100G



### WARNING

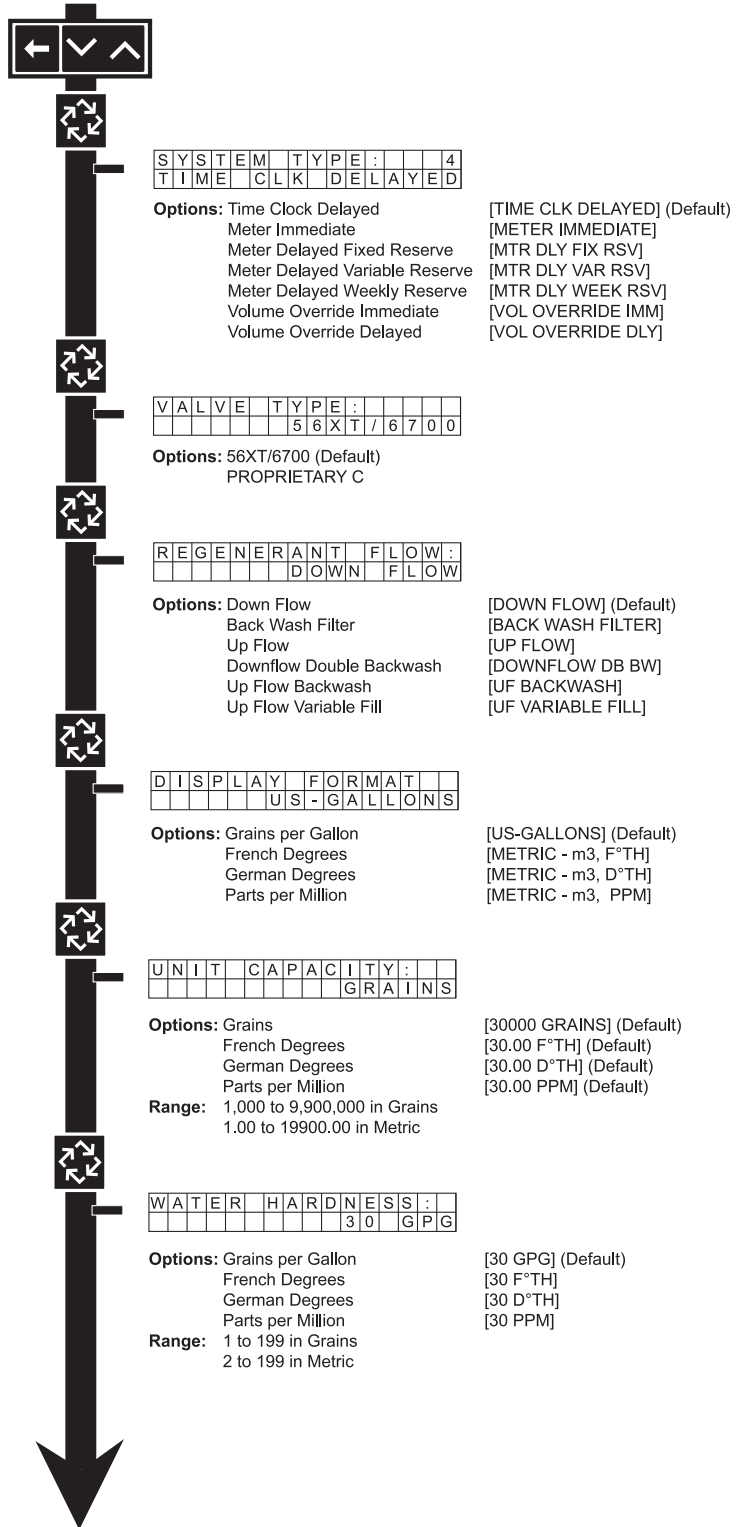
Transformer must be grounded and ground wire must be terminated to the back plate where grounding label is located before installation.

# Master Programming Mode Flow Chart

NOTE: Depending on current option settings, some displays cannot be viewed or set.

## Entering Master Programming Mode:

1. Press and hold the Shift and Set Up buttons for 5 seconds.  
OR
2. Set the Time of Day display to **12:01 P.M.** or **12:01HR** (See the User Programming Section). Then go to the main display screen, press the Set Up and Set Down buttons at the same time for 5 seconds.



**CAUTION: Before entering Master Programming, please contact your local professional water dealer.**

# Master Programming Mode Flow Chart

**NOTE:** Depending on current option settings, some displays cannot be viewed or set.

**NOTE:** Only shown when System Type is Meter Delayed Fixed Reserve or Volume Override Delayed



CAPACITY SAFETY
FACTOR: 00%

**Options:** Capacity Safety Factor [00%] = Default  
**Range:** 0 to 50%



**NOTE:** Only shown when System Type is Volume Override Immediate or Volume Override Delayed

VOLUME OVERRIDE:
1000g

**Options:** U.S. Format [1000g] = Default  
 Metric [m3]



REGENERATION DAY
OVERRIDE: OFF

**Options:** Override On [12 DAYS](Example)  
 Override Off [OFF] (Default)

**Range:** OFF (0) to 99 Days  
 4 Time Clock: 1 to 99 Days



REGENERATION
TIME: 02:00AM

**Options:** A.M. or P.M. [02:00AM] (Default)  
 Military Time [02:00 HR] (Default)



CYCLE	0:10:00
BACK WASH	

**NOTE:** See the Master Programming Mode section for details regarding the regeneration cycle steps.

**Options:** Regeneration Cycle Step #1  
 Regeneration Cycle Step #2  
 Regeneration Cycle Step #3  
 Regeneration Cycle Step #4  
 Regeneration Cycle Step #5



**NOTE:** Only shown when Regenerant Flow is UF Variable Fill

MEDIA VOLUME:
000.00 CuFt

**Options:** Cubic Feet [CuFt] (Default)  
 Liter [ltr]

**Range:** .25 to 999 cubic feet or 1 to 9999 liters



**NOTE:** Only shown when Regenerant Flow is UF Variable Fill

SALT DOSAGE:
00.0 lb\CuFt

**Options:** Pounds per Cubic Foot [lb\CuFt] (Default)  
 Grams per Liter [g\ltr]

**Range:** 0.1 to 99.9 pounds per cubic foot for U.S. values and  
 0.1 to 99.9 grams per liter for Metric values.



**CAUTION:** Before entering Master Programming, please contact your local professional water dealer.

# Master Programming Mode Flow Chart

NOTE: Depending on current option settings, some displays cannot be viewed or set.

NOTE: Only shown when Regenerant Flow is UF Variable Fill



B	L	F	C	S	I	Z	E	:							
				0	.	1	2	5							g p m

- Options:** 0.125 Gallons per Minute [0.125 gpm] (Default)  
 0.250 Gallons per Minute [0.250 gpm]  
 0.500 Gallons per Minute [0.500 gpm]  
 1.000 Gallons per Minute [1.000 gpm]  
 1.200 Gallons per Minute [1.200 gpm]  
 1.500 Gallons per Minute [1.500 gpm]  
 2.000 Gallons per Minute [2.000 gpm]  
 3.000 Gallons per Minute [3.000 gpm]  
 4.000 Gallons per Minute [4.000 gpm]  
 5.000 Gallons per Minute [5.000 gpm]  
 6.000 Gallons per Minute [6.000 gpm]  
 7.000 Gallons per Minute [7.000 gpm]  
 8.000 Gallons per Minute [8.000 gpm]  
 9.000 Gallons per Minute [9.000 gpm]  
 10.000 Gallons per Minute [10.000 gpm]

NOTE: BLFC size is only displayed in gallons per minute despite units of measure configuration setting.

A	U	X	I	L	I	A	R	Y	R	E	L	A	Y	:							
									D	I	S	A	B	L	E	D					

- Options:** Auxiliary Relay Disabled [DISABLED] (Default)  
 Auxiliary Relay Enabled [ENABLED]

A	U	X	R	E	L	A	Y	O	U	T	P	U	T	
S	T	A	R	T	1	:		0	:	0	0	:	0	0

- Options:** Auxiliary Relay Output Start 1 [0:00:00] (Default)  
**Range:** Adjustable from 0 to the sum of all regeneration cycle steps minus one minute.

A	U	X	R	E	L	A	Y	O	U	T	P	U	T	
E	N	D	1	:				0	:	0	0	:	0	0

- Options:** Auxiliary Relay Output End 1 [0:00:00] (Default)  
**Range:** Adjustable from auxiliary relay start 1 minutes to the sum of all regeneration cycle step times.

A	U	X	R	E	L	A	Y	O	U	T	P	U	T	
S	T	A	R	T	2	:		0	:	0	0	:	0	0

- Options:** Auxiliary Relay Output Start 2 [0:00:00] (Default)  
**Range:** From auxiliary relay end 1 (minutes) to the sum of all regeneration step times minus one minute.

A	U	X	R	E	L	A	Y	O	U	T	P	U	T	
E	N	D	2	:				0	:	0	0	:	0	0

- Options:** Auxiliary Relay Output End 2 [0:00:00] (Default)  
**Range:** From auxiliary relay start 2 (minutes) to the sum of all regeneration step times.

CAUTION: Before entering Master Programming, please contact your local professional water dealer.



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# Master Programming Mode

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When the Master Programming Mode is entered, parameters can be set to make the timer function as needed.

**NOTE: Depending on current option settings, some displays cannot be viewed or set.**

## Entering Master Programming Mode:

1. Press and hold the Shift and Up buttons for 5 seconds.  
OR
2. Set the time of day display to **12:01 PM** or **12:01HR** (See the User Programming section to learn how to do this). Then go to the main display screen, press the Up and Down buttons at the same time for 5 seconds.

## Exiting Master Programming Mode:

1. Press the Extra Cycle button once per display until all are viewed. Master Programming Mode is exited and the normal display screen appears.
2. To exit the Master Programming Mode without saving, press the Diagnostic button.

**NOTE: If no keypad activity is made for 5 minutes while in the Master Programming Mode, or if there is a power failure, no changes will be made, and the unit will go back to the main display screen.**

## Resets:

**Soft Reset:** Press and hold the Up and Down buttons for 25 seconds until 12:00PM (or 12:00HR) appears. This resets all parameters except for the flow meter totalizer volume.

**Master Reset:** Hold the Extra Cycle button while powering up the unit. This resets all of the parameters in the unit. Check and verify the choices selected in Master Programming Mode.

### 1. System Type

This program step selects the system type.

- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

```
SYSTEM TYPE:   4
TIME CLK DELAYED
```

### 2. Valve Type

This program step selects the valve type.

- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

```
VALUE TYPE:
56XT/6700
```

**CAUTION: Before entering Master Programming, please contact your local professional water dealer.**

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## Master Programming Mode

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### 3. Regenerant Flow

This program step selects how the regenerant flows through the tank (must match cam). The selections available will vary depending on the previously chosen valve model.

- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

```
REGENERANT FLOW:
      DOWN FLOW
```

### 4. Display Format

This program step selects the display format.

- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

```
DISPLAY FORMAT:
US - GALLONS
```

### 5. Unit Capacity

This program step selects the timer's total capacity of hardness that can be removed.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

```
UNIT CAPACITY:
0030000 GRAINS
```

### 6. Feed Water (Hardness)

This program step is used to set the feed water hardness. The system will automatically calculate volume remaining based on the unit capacity, capacity safety factor (reserve systems only), and feed water hardness entered.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

```
WATER HARDNESS:
      030 GPG
```

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**CAUTION:** Before entering Master Programming, please contact your local professional water dealer.

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# Master Programming Mode

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## 1. Capacity Safety Factor

This program step is used to set the reserve capacity of the unit. This is a percentage by which the unit's capacity is reduced.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

```
UNIT CAPACITY:
 0030000 GRAINS
```

## 2. Volume Override

This program step is used to set the volume override of the unit.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

## 3. Regeneration Day Override

This program step sets the maximum amount of time (in days) the unit can be in service without a regeneration.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

```
REGENERATION DAY
OVERRIDE: 01 DAYS
```

## 4. Regeneration Time

This program step sets the time of day for the regeneration to occur in delayed systems.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

```
REGENERATION
TIME: 02:00AM
```

**CAUTION:** Before entering Master Programming, please contact your local professional water dealer.

# Master Programming Mode

## 5. Regeneration Cycle Step Programming

This program step programs the Regeneration Cycle step times 1 through 5. Please refer to the chart below for regenerant flow default cycle steps and times.

```
CYCLE 1 00:10:00
BACK WASH
```

Regenerant Flow	Cycle 1	Time	Cycle 2	Time	Cycle 3	Time	Cycle 4	Time	Cycle 5	Time
Down Flow	Back Wash	10 Minutes	Brine & Slow Rinse	1 Hour	Rapid Rinse	10 Minutes	Brine Tank Fill	12 Minutes	N/A	N/A
Back Wash Filter	Back Wash	15 Minutes	Draw	0	Settling Rinse	10 Minutes	Refill	0	N/A	N/A
UF Back Wash	Backwash	10 Minutes	Brine & Slow Rinse	1 Hour	Rapid Rinse	10 Minutes	Brine Tank Fill	12 Minutes	N/A	N/A
Down Flow Double Backwash	Back Wash	10 Minutes	Brine & Slow Rinse	1 Hour	Back Wash	10 Minutes	Rapid Rinse	10 Minutes	Brine Tank Fill	12 Minutes
Up Flow	Brine Rinse	60	Back Wash	10	Rapid Rinse	10 Minutes	Brine Tank Fill	12 Minutes	N/A	N/A
Upflow Variable Fill	Brine Rinse	Variable	Pause	60 minutes	Brine Rinse	60 Minutes	Back Wash	12 Minutes	Rapid Rise	10 Minutes

## 6. Media Volume

This program step sets the volume of the media in the resin tank.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

## 7. Salt Dosage

This program step sets the salt dosage in the unit.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

## 8. Brine Line Flow Control Size

This program step allows the selection of the desired brine line flow control size in the unit (must match physical brine line flow control).

- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

## 9. Auxiliary Relay Output

The next two displays are part of a series of settings used to program the optional relay output. The first setting turns the output on/off during regeneration only. The second turns the output on during service only, every time a set volume of water used has accumulated.

**NOTE: When auxiliary outputs are in the OFF (default) setting, press the Up or Down buttons to set**

**CAUTION: Before entering Master Programming, please contact your local professional water dealer.**

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# Master Programming Mode

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**1. the first setting. Then press the Extra Cycle button to advance to the second setting.**

**a. Timed Auxiliary Relay Output Window (Start & End Time Setting)**

This option setting consists of two displays. The first display sets the turn-on time of the output, referenced to the start of the first regeneration cycle. The second display sets the output turn-off time, referenced again to the start of the first regeneration cycle. An OFF setting cancels this setting. All settings are in minutes and output timing is synchronized with regeneration cycle timing.

**Start Time:** Any time during regeneration.

**End Time:** At start time, and anytime during the regeneration cycle.



AUXILIARY RELAY:  
DISABLED

**b. Chemical Pump Auxiliary Relay Output Window**

This option setting consists of two displays. The first display sets the volume of water flow at which the output turns on. The second display sets the on time (in seconds) of the output.

- Activate output after volume set is reached.
- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.



CHEMICAL PUMP:  
DISABLED

**2. Flow Meter Size**

This program step sets the size of the flow meter.

- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.



FLOW METER:  
.75 TURBINE

**3. Maximum Flow Rate**

This program step sets maximum flow rate of the generic flow meter.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

**4. Pulses per Gallon/Liter**

This program step sets the pulses per gallon/liter for generic flow meters.

- Press the Shift button to select the digit you want to modify.
- Press the Up or Down buttons to adjust this value.
- Press the Extra Cycle button.

**5. End of Master Programming Mode**

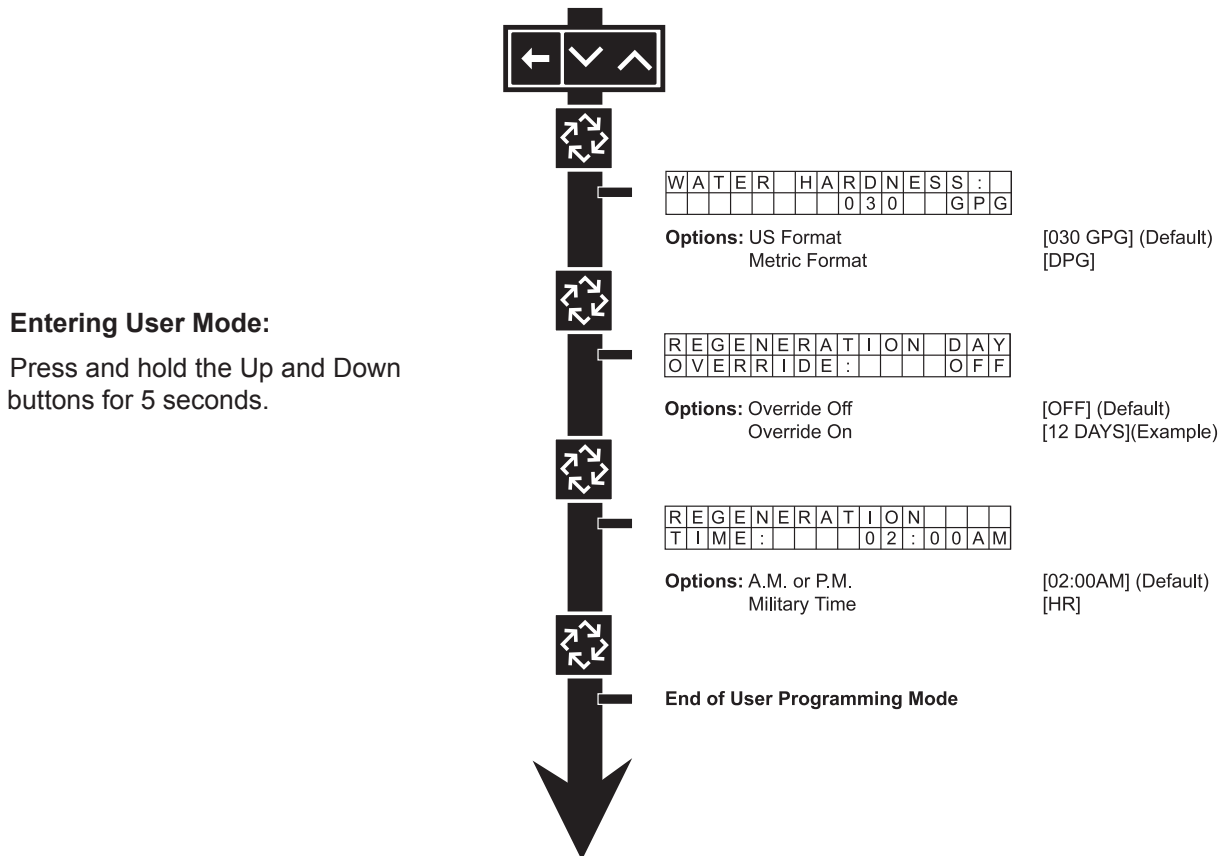
**CAUTION:** Before entering Master Programming, please contact your local professional water dealer.

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# User Programming Mode & Flow Chart

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**NOTE:** Depending on current option settings, some displays cannot be viewed or set.



**NOTE:** Depending on current option settings, some displays cannot be viewed or set.

## 1. Enter User Mode

- Press and hold the Up and Down buttons for 5 seconds.

## 2. Set Feed Water Hardness

- Press the Shift, Up, and Down buttons to move the cursor and change the value of the numbers.
- Press the Extra Cycle button to proceed to the next step.

**NOTE:** Only displayed when a metered option is chosen under System Type.

## 3. Set Regeneration Day Override

- To turn on and set the days, press the Down button.
- Press the Shift, Up, and Down buttons to move the cursor and change the value of the numbers.
- Press the Extra Cycle button to proceed to the next step.

## 4. Regeneration Time

- Press the Shift, Up, and Down buttons to move the cursor and change the value of the numbers.
- Press the Extra Cycle button

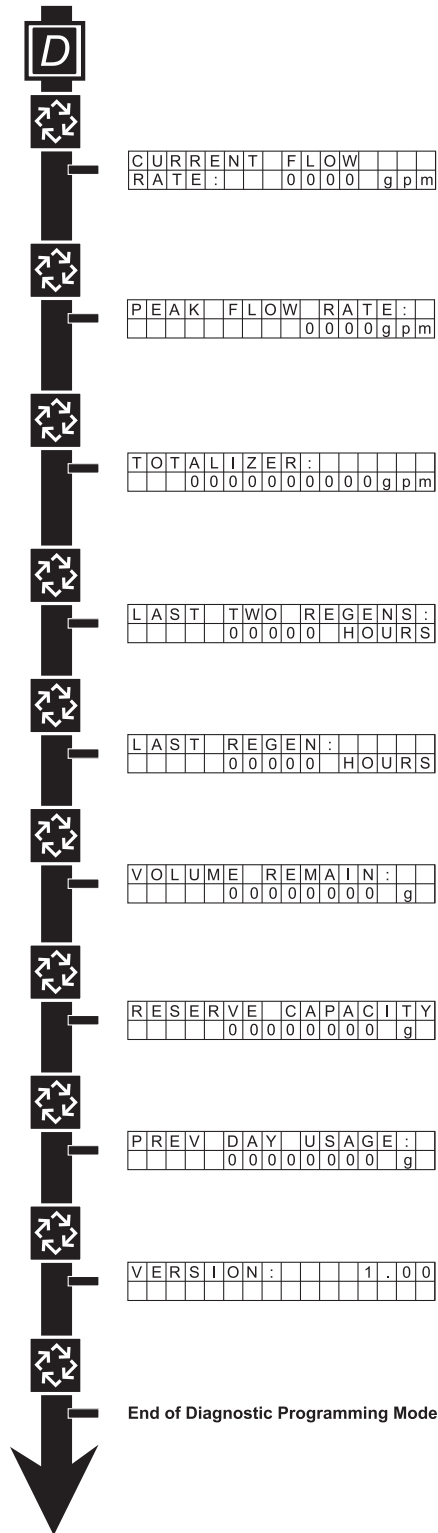
## 5. End of User Programming Mode

# Diagnostic Programming Mode Flow Chart

NOTE: Depending on current option settings, some displays cannot be viewed or set.

## Entering Diagnostic Mode:

1. Press and release the "D" button.
2. Press the Extra Cycle button once per display until all displays are viewed and the normal display screen appears.
3. Press and release the "D" button during this mode to exit the Diagnostic Mode.
4. Depending on current option settings, some displays cannot be viewed.



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# Diagnostic Programming Mode

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**NOTE:** Depending on current option settings, some displays cannot be viewed.

## Overview Diagnostic Mode

The current Diagnostic Programming Mode screen will display until either the Extra Cycle button is pressed through for each screen, or the Diagnostic button is pressed. In the event of regeneration occurring while in the Diagnostic Programming Mode, the regeneration step and time remaining will be displayed. When regeneration completes, the display will return to the normal time of day display screen.

## Entering and Exiting Diagnostic Mode

Press and release the “D” button to enter the Diagnostic Programming Mode. Pressing the Extra Cycle button will move to the next diagnostic screen. Press the Extra Cycle button once per display until all are viewed. Pressing the Diagnostic button while in Diagnostic Mode will cause the unit to leave the Diagnostic Mode and return to the normal time of day display screen.

### 1. Current Flow Rate

This program step displays the calculated flow rate for the timer. The below flow rates are the maximum flow rate the timer will read for each meter.

**.75” Paddle:** 15 gpm (0.06 m<sup>3</sup>/m)      **.75” Turbine:** 15 gpm (0.06 m<sup>3</sup>/m)  
— Press the Extra Cycle button.

### 2. Peak Flow Rate

This program step displays the peak flow rate since the last regeneration.  
— Press the Extra Cycle button.

### 3. Totalizer

This program step displays the total volume of treated water that passes through the meter.  
— Reset to zero by holding the Up and Down buttons for five seconds while in the totalizer screen.  
— Press the Extra Cycle button.

### 4. Hours Between Last Two Regenerations

This program step displays the time between the last two regenerations saved.  
— Press the Extra Cycle button.

### 5. Hours Since Last Regeneration

This program step displays the hours since the last regeneration.  
— Press the Extra Cycle button.

### 6. Volume Remaining

This program step displays the volume remaining. The timer will regenerate if the volume remaining is set to zero. The maximum ranges are the same as the maximum volume calculated on the main screen.  
— Press the Extra Cycle button.

### 7. Reserve Capacity

This program step displays the reserve capacity, ensuring soft water is available at all times.  
— Press the Extra Cycle button.

### 8. Previous Day’s Water Usage

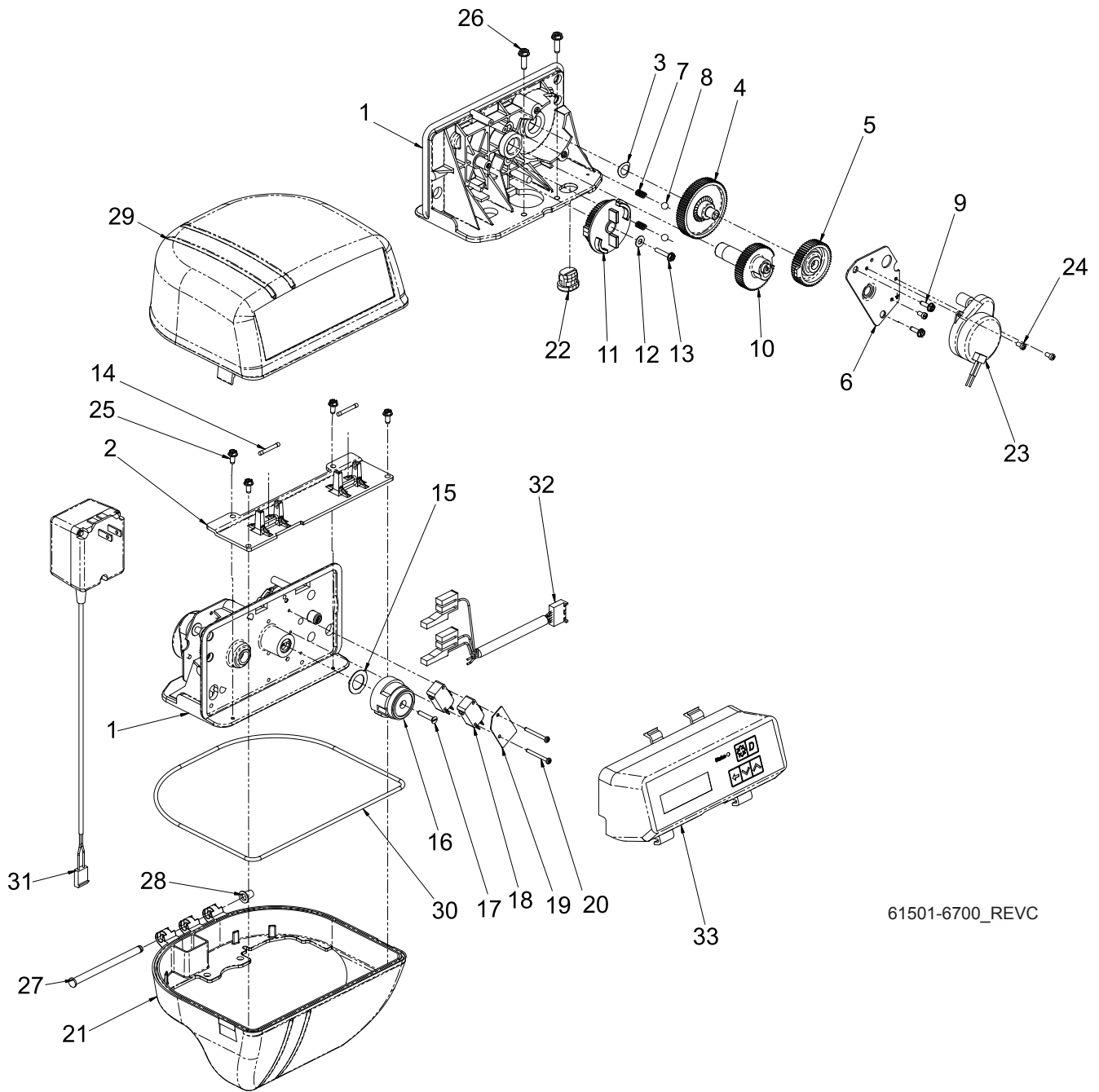
This program step displays the previous day’s water usage.  
— Press the Extra Cycle button.

### 9. Software Version

This program step displays the timer’s software program version number.  
— Press the Extra Cycle button to exit.

**NOTE:** Diagnostic Programming Mode will stop if the system goes into a regeneration.

# 6700 Powerhead Assembly



61501-6700\_REVC

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## 6700 Power Head Assembly

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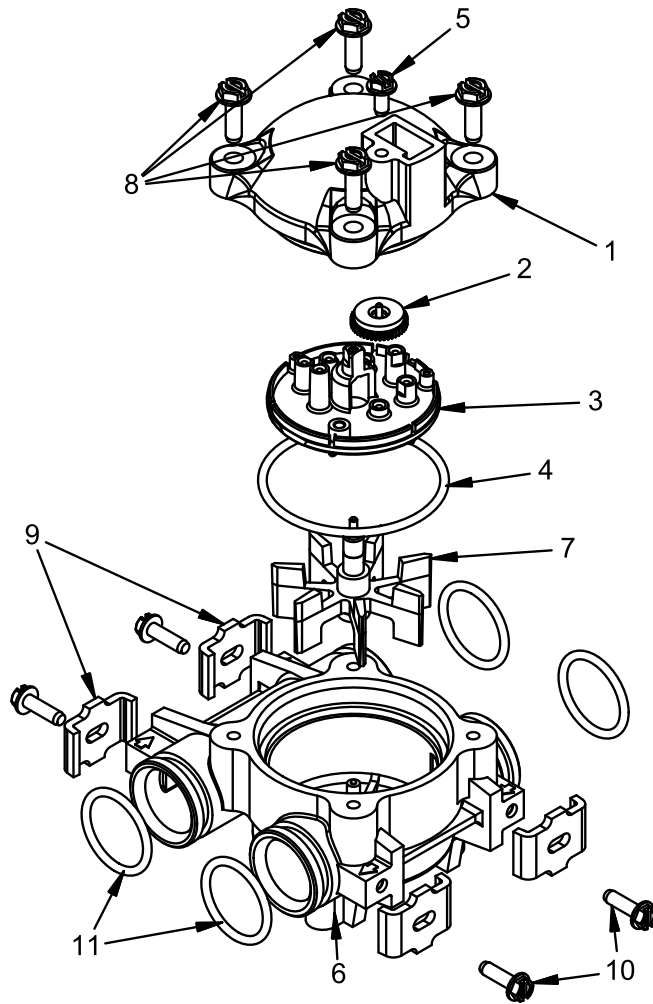
Item No.	Quantity	Part No.	Description
1.....	1 .....	15494-04 .....	Drive Panel Assy, 6700
2.....	1 .....	17844 .....	Bracket, Support, 6700
3.....	1 .....	13299 .....	Washer, Spring, 3/8
4.....	1 .....	13017 .....	Gear, Idler
5.....	1 .....	23045 .....	Gear, Drive, 6700
6.....	1 .....	13175 .....	Plate, Motor Mounting
7.....	2 .....	19080 .....	Spring, Compression, 6700
8.....	2 .....	13300 .....	Ball, 1/4" SS
9.....	2 .....	13296 .....	Screw, Hex Wsh, 6-20 x 1/2
10.....	1 .....	25005-10 .....	Gear, Main Drive, ET, SE
11.....	1 .....	18722 .....	Cam, Brine Valve, 6600/6700, Blk
		19025 .....	Cam, Brine Valve, Variable
12.....	1 .....	12037 .....	Washer, Plain, #10
13.....	1 .....	40214 .....	Screw, Hex Wsh, 6-20 x 3/4
14.....	2 .....	18754 .....	Pin, 6700
15.....	1 .....	19079 .....	Washer, Friction
16.....	1 .....	17438 .....	Cam, 6600, Downflow
		40609 .....	Cam, Double Backwash, D/F
		17919 .....	Cam, Variable Brining, Gray
17.....	1 .....	15151 .....	Screw, Flat Head St, 6-20 x 3/4
18.....	2 .....	10218 .....	Switch, Micro
19.....	1 .....	10302 .....	Insulator, Limit Switch
20.....	2 .....	17876 .....	Screw, Phil Pan, 4-40 x 1 1/8
21.....	1 .....	17841-XXX .....	Cover, Bottom, 6700
22.....	1 .....	13547 .....	Strain Relief, Flat Cord
23.....	1 .....	16944 .....	Motor Drive, 24V, 60 Hz, 2RPM
24.....	3 .....	11384 .....	Screw, Phil, 6-32 x 1/4
25.....	4 .....	17798 .....	Screw, Slot Hex Hd
26.....	2 .....	12473 .....	Screw, Hex Wsh, 10-24 x 5/8
27.....	1 .....	17845 .....	Pin, Hinge, 6700
28.....	1 .....	18679 .....	Cap, Tapered, Black
29.....	1 .....	17842-XX .....	Cover, Top 6700
30.....	1 .....	18615 .....	Seal, Neoprene, .125
31.....	1 .....	19674 .....	Transformer, 24V, 9.6VA, Residential Valves
		41475 .....	Transformer, 24V, 9.6VA, European
32.....	1 .....	42115 .....	Harness Assy, 5066/6600/6700
33.....	1 .....	19313-XX .....	Circuit Board Housing Assy



# Control Valve Assembly

Item No.	Quantity	Part No.	Description
1	1	19707-30	Valve Body, 5600 Upflow, Bayonet
2	1	13255	Clip, Mounting
3	5	13242	Seal, 5600
4	1	13304	O-ring, -121
5	1	12281	O-ring, -338
6	4	14241	Spacer, 5600
7	1	14309	Retainer, Piston Rod
8	1	13030	Retainer, Dist Tube, O-ring
9	3	12112	Screw, Hex Hd Mach, 10-24 x 1/2
10	1	13302	O-ring, -014
11	1	10913-XX	Nozzle, Injector (specify size)
12	1	10914-XX	Throat, Injector (specify size)
13	1	11973	Spring, Brine Valve
14	1	11981-01	Ring, Retaining
15	1	12088	Washer, Flow 2.4 GPM
16	1	12550	Quad Ring, -009
17	1	12626	Seat, Brine Valve
18	1	12638	O-ring, -013, Injector
19	1	12977	O-ring, -015
20	1	13163	Body, Injector
21	1	13165	Cap, Brine Valve
22	1	13167	Spacer, Brine Valve
23	1	13172	Brine Valve Stem
24	1	13173	Retainer, DLFC Button
25	1	13244	Adapter, BLFC
26	1	13245	Retainer, BLFC
27	2	13301	O-ring, -011, Injector
28	1	13303	O-ring, -021
29	1	13497	Dispenser, Air, 5600
30	1	15348	O-ring, -563
31	1	16098	Washer, Nylon Brine
32	1	13302-01	O-ring, -014, 560CD
33	1	13296	Screw, Hex Wsh, 6-20 x 1/2
34	2	13314	Screw, Slot Ind Hex, 8-18 x .60
35	1	13363	Washer, Plain, .145 ID SS
36	1	13546	Retainer, End Plug
37	2	19228	Coupling, Adapter
38	4	13305	O-ring, -119
39	1	14067	Adapter, Upflow Brine
40	1	15449	Body, Regulator
41	1	14851	Cap, Regulator
42	1	17307	Washer, Flow, .125 gpm
43	2	15607	Screw, Hex Hd Mach, 10-24 x 1 3/8
44	1	15548	Screen, Pressure Regulator
45	1	23391	Seat, Regulator Spring
46	1	23393	Poppet, Regulator
47	1	14850	Spring, Compression
48	1	14846	Washer, Pressure Regulator
49	1	14847	Diaphragm, Regulator
50	1	14848	Ring, Slip, Regulator, SS
51	1	24602	Link, Piston Rod
52	1	15558	Rod, Piston, Upflow
53A	1	41026-01	Yoke, 1", NPT, Cast, Machd, SS
		41027-01	Yoke, 3/4", NPT, Cast, Machd
53B	1	18706	Yoke, 1", NPT, Plastic
		18706-02	Yoke, 3/4", NPT, Plastic
<b>Not Shown:</b>			
	1	12638	O-ring, -013, Injector
	1	12626	Seat, Brine Valve
	1	14613	Flow Straightener
	1	14846	Washer, Pressure Regulator
	1	14847	Diaphragm, Regulator
	1	14848	Ring, Slip, Regulator SS
	1	14850	Spring, Compression
	1	14851	Cap, Regulator
	1	15449	Body, Regulator
	1	23391	Seat, Regulator Spring
	1	23393	Poppet, Regulator
	1	15548	Screen, Pressure Regulator
	2	15607	Screw, Hex Hd Mach, 10-24 x 1 3/8

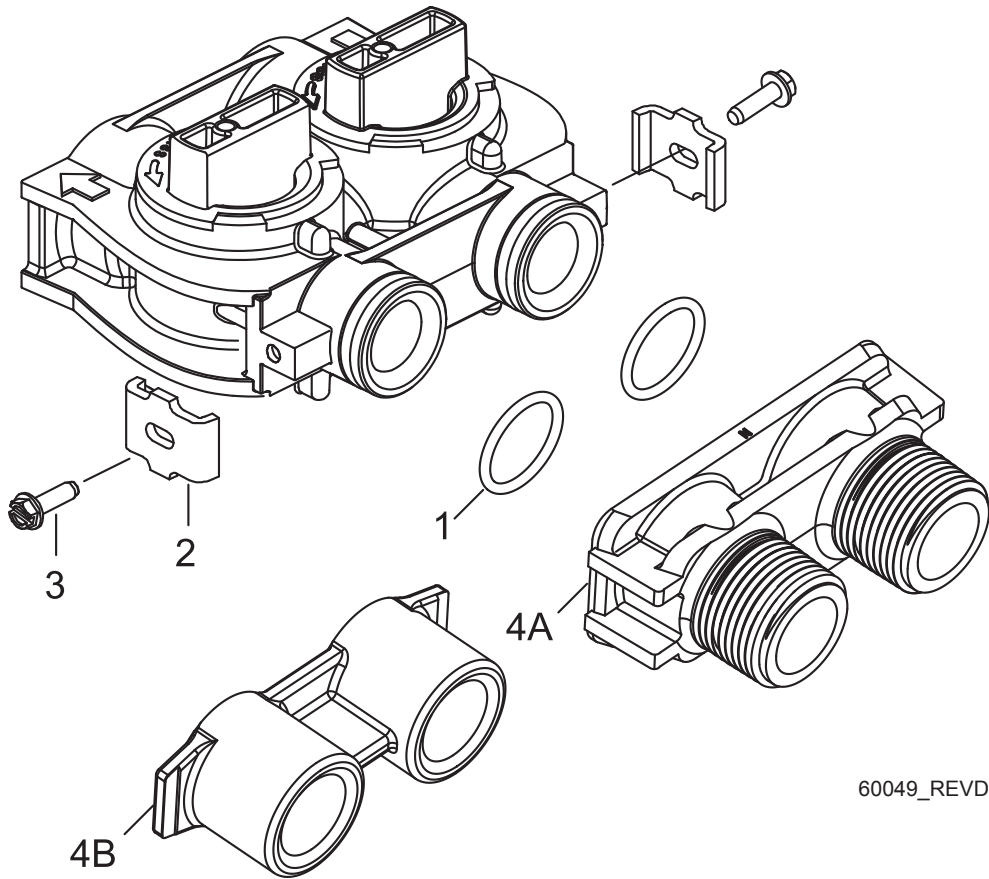
# Meter Assembly



60086\_REVD\_60086-50

Item No.	Quantity	Part No.	Description
1.....	1 .....	13874 .....	Cap, Meter, Electronic
2.....	1 .....	14715 .....	Gear Assy, Electronic Meter Cap
3.....	1 .....	41055 .....	Plate, Intermediate
4.....	1 .....	13847 .....	O-ring, -137, Std, Meter
5.....	5 .....	17798 .....	Screw, Slot Hex Wsh Hd
6.....	1 .....	13821 .....	Body, Meter, 5600
7.....	1 .....	13509 .....	Impeller, Meter
8.....	4 .....	12473 .....	Screw, Hex Wsh, 10-24 x 5/8
9.....	4 .....	13255 .....	Clip, Mounting
10.....	4 .....	13314 .....	Screw, Slot Ind Hex, 8-18 x .60
11.....	4 .....	13305 .....	O-ring, -119
12.....	1 .....	14613 .....	Flow Straightener

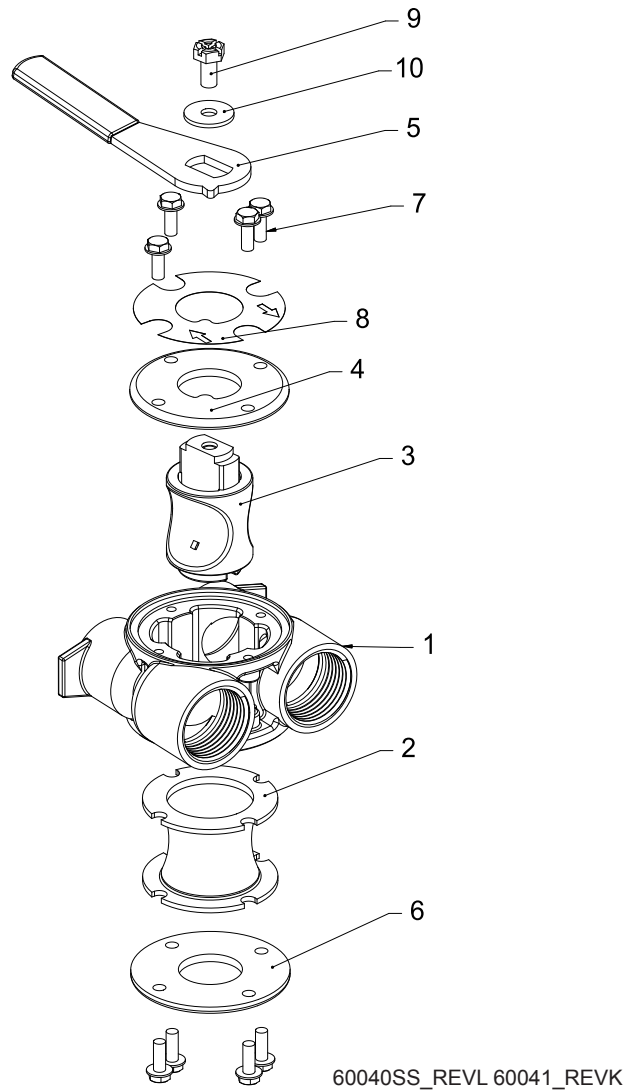
# Bypass Valve Assembly, Non-Metallic



60049\_REVD

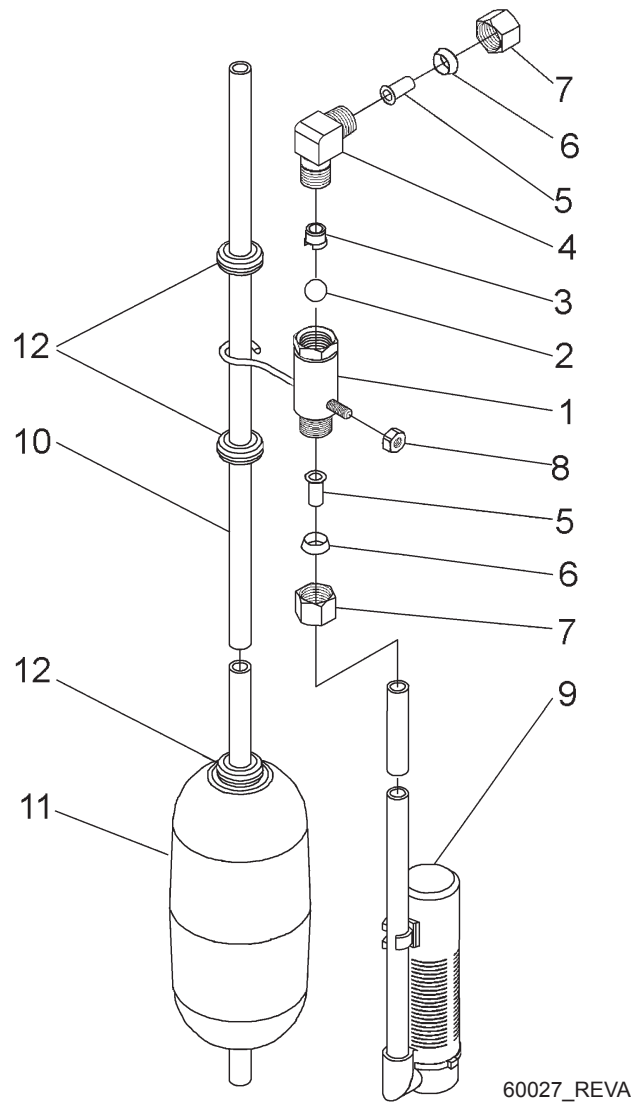
Item No.	Quantity	Part No.	Description
1.....	2 .....	13305 .....	O-ring, -119
2.....	2 .....	13255 .....	Clip, Mounting
3.....	2 .....	13314 .....	Screw, Slot Ind Hex, 8-18 x .60
4A .....	1 .....	18706 .....	Yoke, 1", NPT, Plastic
		18706-02 .....	Yoke, 3/4", NPT, Plastic
4B .....	1 .....	41027-01 .....	Yoke, 3/4", NPT, Cast, Machd
		41026-01 .....	Yoke, 1", NPT, Cast, Machd, SS

# Bypass Valve Assembly, Brass



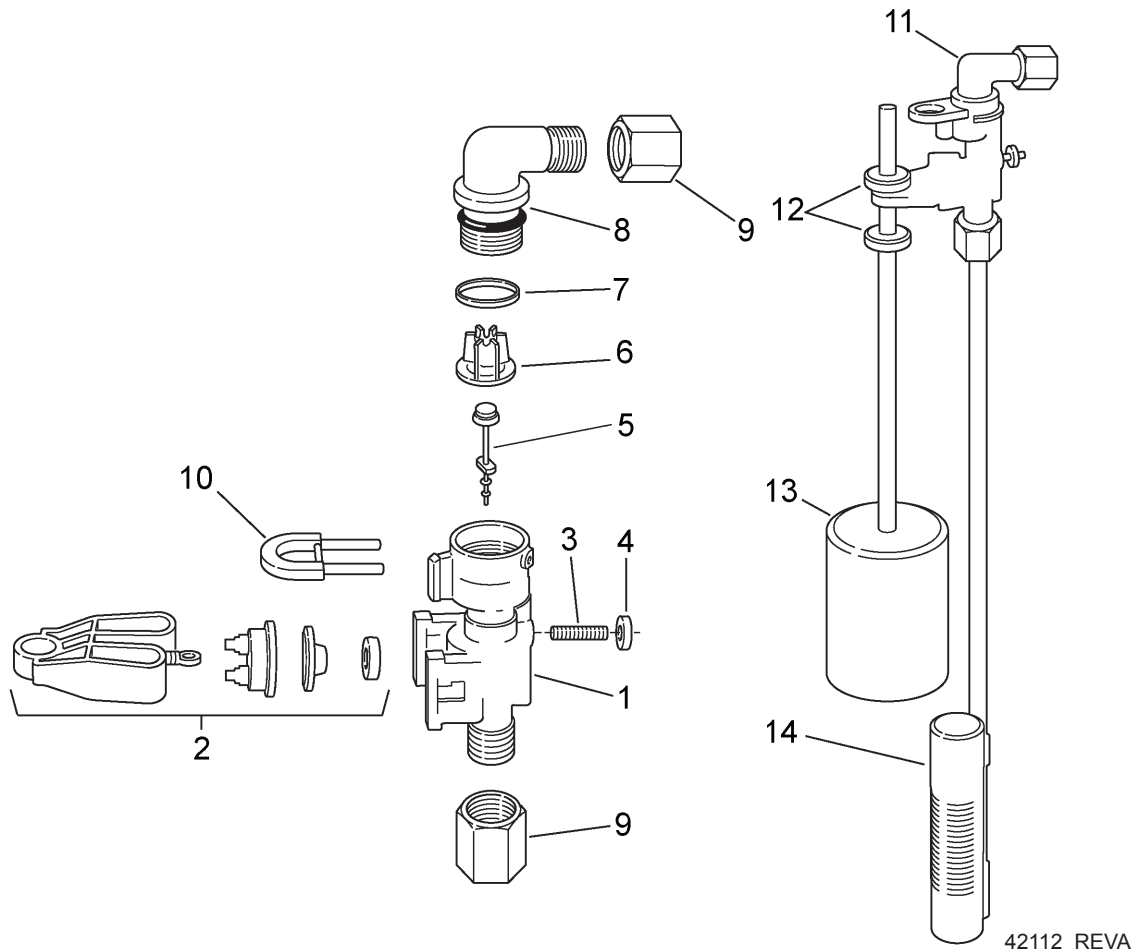
Item No.	Quantity	Part No.	Description
1	1	40614	By-pass Body, 3/4"
		40634	By-pass Body, 1", SS
2	1	14105	Seal, By-pass, 560CD
3	1	11972	Plug, By-pass
4	1	11978	Plate, By-pass, Top
5	1	11979-02	Lever, By-pass, Black
6	1	11986	Plate, By-pass, Bottom
7	8	15727	Screw, Hex Wsh Hd, 10-24 x 1/2
8	1	13604-03	Label, By-pass, Standard Mount
		13604-04	Label, By-pass, Reverse Mount, Blue
9	1	40974	Washer, Plain, 3/8"
10	1	40973	Screw, Phil Hd, Indented Hex Hd 1/4-14 x .50

# 2300 Safety Brine Valve



Item No.	Quantity	Part No.	Description
1.....	1	60027-00	Safety Brine Valve, 2300 Less Elbow
2.....	1	10138	Ball, 3/8" Brass
3.....	1	11566	Ball Stop, Slow-Fill
4.....	1	10328	Fitting, Elbow, 90 Deg. 1/4 NPT x 3/8 T
5.....	2	10332	Fitting, Insert, 3/8
6.....	2	10330	Fitting, Sleeve, 3/8 Celcon
7.....	2	10329	Fitting, Tube, 3/8 Nut, Brass
8.....	1	10186	Nut, Hex, 10-32 Nylon
9.....	1	60002	Air Check, #500
10.....	1	10149	Rod, Float
11.....	1	10700	Float Assy, Blue/White
12.....	4	10150	Grommet, .30 Dia.

# 2310 Safety Brine Valve



Item No.	Quantity	Part No.	Description
1.....	1	19645	Body, Safety Brine Valve, 2310
2.....	1	19803	Safety Brine Valve, Arm Assy
3.....	1	19804	Screw, Sckt Hd, Set, 10-24 x .75
4.....	1	19805	Nut, Hex, 10-24, Nylon Black
5.....	1	19652-01	Poppet Assy, SBV w/o O-ring
6.....	1	19649	Flow Dispenser
7.....	1	11183	O-ring, -.017
8.....	1	19647	Elbow, Safety Brine Valve
9.....	2	19625	Nut Assy, 3/8" Plastic
10.....	1	18312	Retainer, Drain
11.....	1	60014	Safety Brine Valve Assy, 2310 (includes items 1-10)
12.....	2	10150	Grommet, .30 Dia (included with item 13)
13.....	1	60068	Float Assy, 2310, w/30" Rod
14.....	1	60002	Air Check, #500

## Troubleshooting - Timer

If an error is detected, an error screen will alternate with the main display screen every few seconds, and the **LED light will be red**.

During an error condition, the unit continues to monitor the flow meter and update the remaining capacity. Once an error condition is corrected, the unit returns to the operating status it was in prior to the error, and regeneration resumes according to normal programming. If an error is cleared by reprogramming the unit in the Master Programming Mode, the volume remaining may be reset to the full unit capacity (as though it had just regenerated). If an error is present, a regeneration can only occur manually by pressing and holding the Extra Cycle button for 5 seconds. If the unit was in regeneration when the error occurred, it will complete the regeneration cycle and go into service.

When the problem is corrected, and the error no longer displays (it may take several seconds for the unit to stop displaying the error message), the unit will return to normal operation. The **LED light** will no longer be **red**, and will turn **Green** if the unit is regenerating, or **Blue** if the unit is in service.

Problem	Correction
A. Flashing/blinking display	A. Power outage has occurred. Either wait 5 minutes for blinking to stop, or press any key on the keypad.
B. Unit not responding after going into regeneration	B. Verify the unit is configured correctly (ex: wiring valve type). Perform a Master Reset by holding the Extra Cycle button and cycling power. Check and verify the choices selected in Master Programming Mode.
C. Unit displays "ERROR CODE: REPLACE UNIT" (corrupted UAP)	C. Contact your local water treatment professional.

### Error Codes

Error Code	Display Message	Correction
01	ERROR CODE: PROGRAM UNIT	Go through all screens in Master Programming Mode.
02	ERROR CODE: PROGRAM UNIT	Go through all screens in Master Programming Mode.
03	ERROR CODE: SERVICE UNIT	Perform a Master Reset by holding the Extra Cycle button and cycling power. Go through all screens in Master Programming Mode. Manually initiate a regeneration cycle by pressing the Extra Cycle button for 5 seconds.
04	ERROR CODE: SERVICE UNIT	Perform a Master Reset by holding the Extra Cycle button and cycling power. Go through all screens in Master Programming Mode. Manually initiate a regeneration cycle by pressing the Extra Cycle button for 5 seconds.
05	ERROR CODE: SERVICE UNIT	Call your local water treatment professional as soon as possible. Leave the unit running (do not unplug).

**NOTE: If the above corrections do not work, please contact your local water treatment professional.**

### Error Display Screen Examples

E	R	R	O	R	C	O	D	E	:				
S	E	R	V	I	C	E	U	N	I	T			

E	R	R	O	R	C	O	D	E	:				
P	R	O	G	R	A	M	U	N	I	T			

E	R	R	O	R	C	O	D	E	:				
R	E	P	L	A	C	E	U	N	I	T			

## Troubleshooting - Control Valve

Problem	Cause	Correction
1. Water conditioner 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 is 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 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 line flow control.	E. Clean brine line flow control.

## Troubleshooting - Control Valve

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. Misadjusted, 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 programming 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**

**Reason:** Reserve capacity has been exceeded.

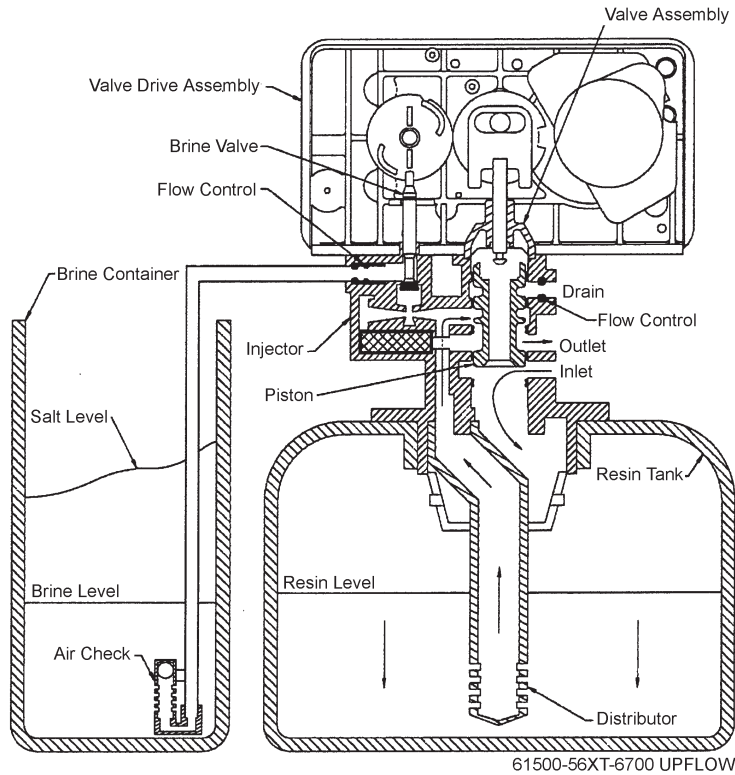
**Correction:** Check salt dosage requirements and reset program wheel to provide additional reserve.

**Reason:** Meter is not measuring flow.

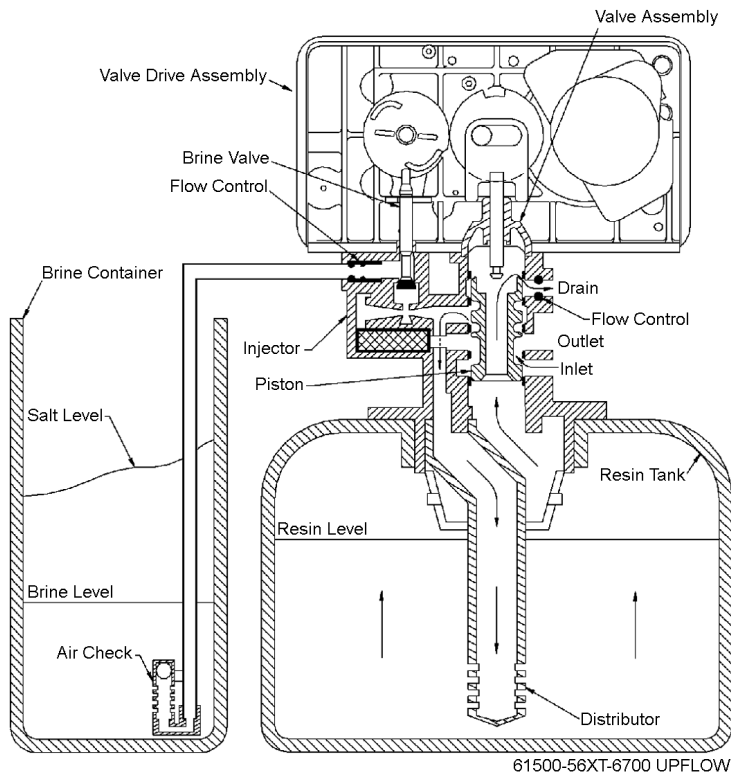
**Correction:** Check meter with meter checker.

# Water Conditioner Flow Diagrams

## Service Position (Yellow, Red, & Gray Cams)

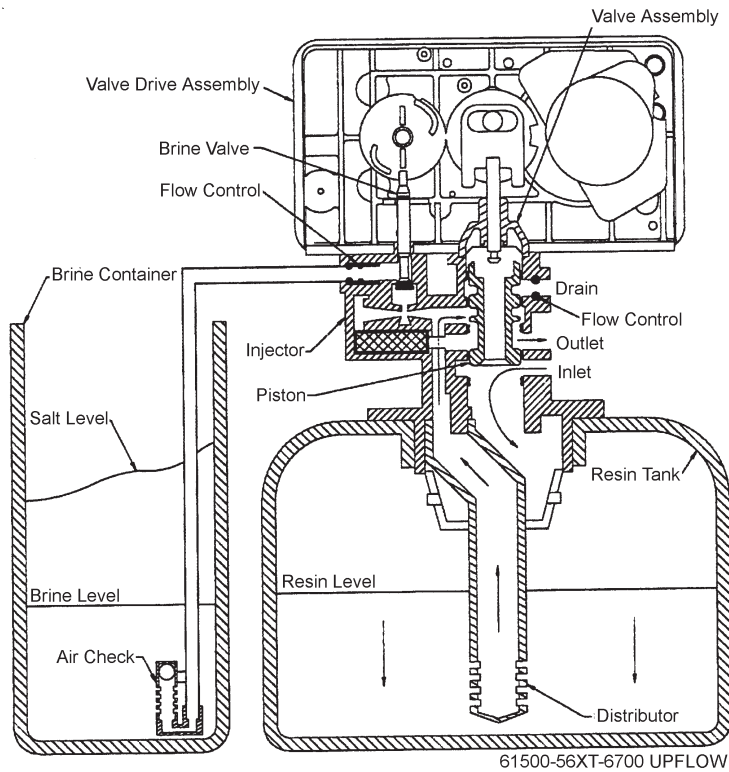


## Backwash Position (Yellow & Red Cams)

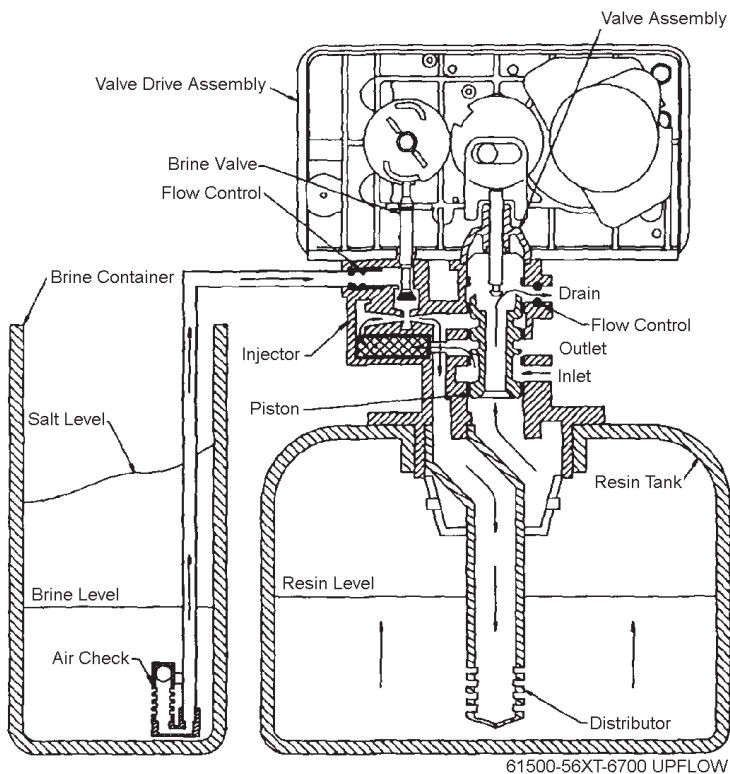


# Water Conditioner Flow Diagrams

## Brine/Slow Rinse Position (Regeneration Cycle Step #1, Red Cam)

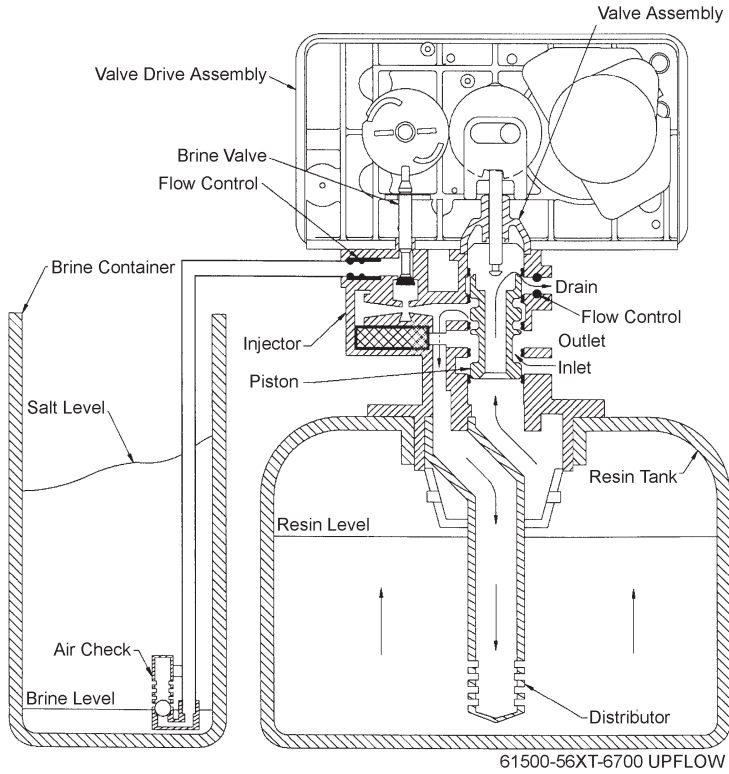


## Brine/Slow Rinse Position (Regeneration Step #2, Yellow Cam)

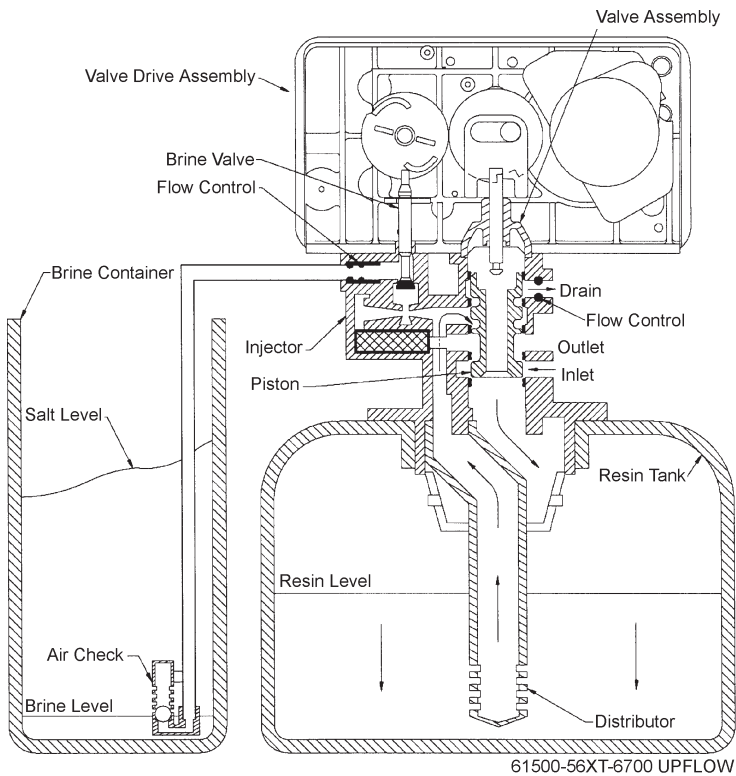


# Water Conditioner Flow Diagrams

## Brine Making Position (Regeneration Cycle Step #2, Gray Cam)

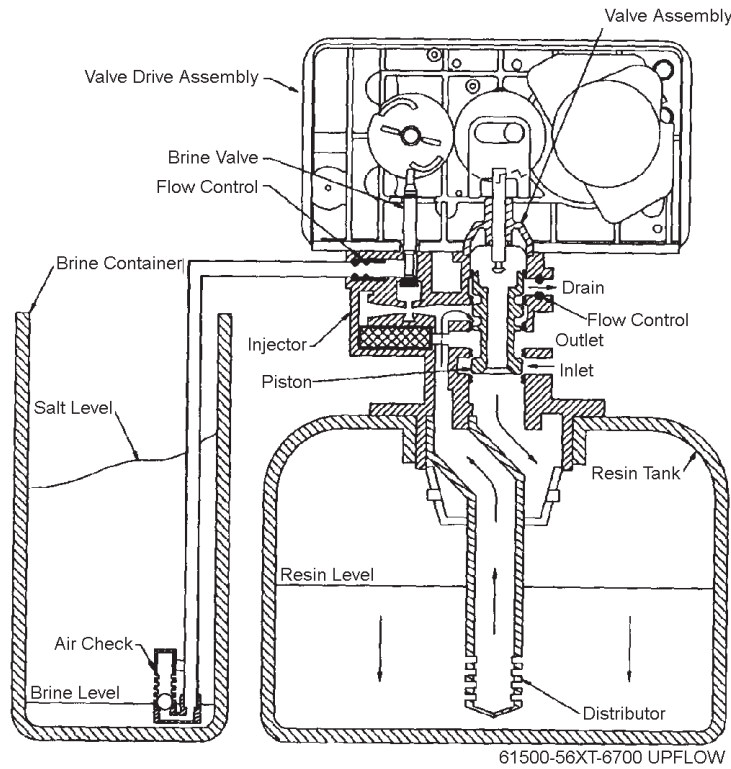


## Brine/Slow Rinse Position (Regeneration Cycle Step #3, Gray Cam)

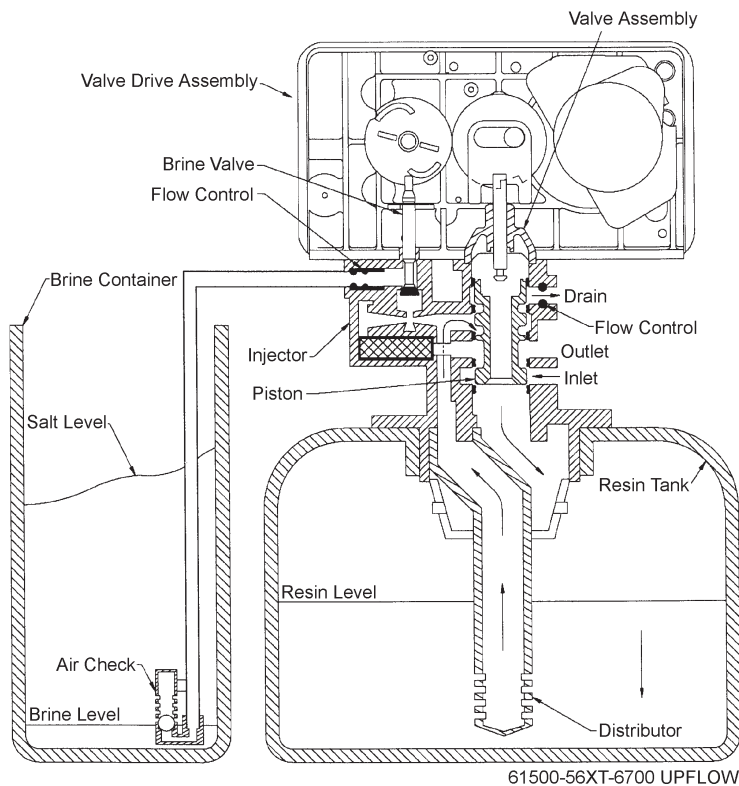


# Water Conditioner Flow Diagrams

## Rapid Rinse Position (Regeneration Step #3, Yellow, Red, & Gray Cams)

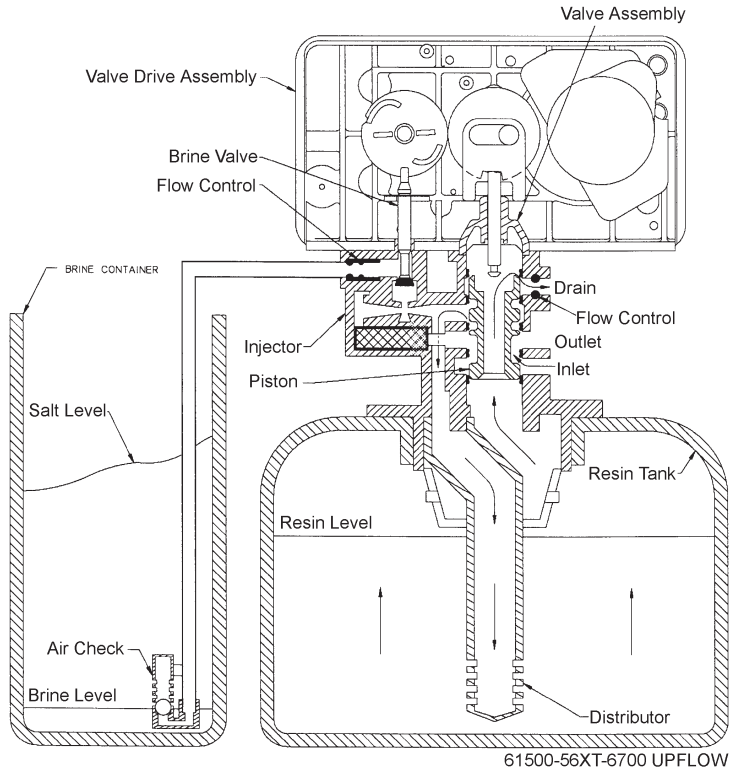


## Brine Tank Fill Position (Regeneration Cycle Step #4, Red Cam)

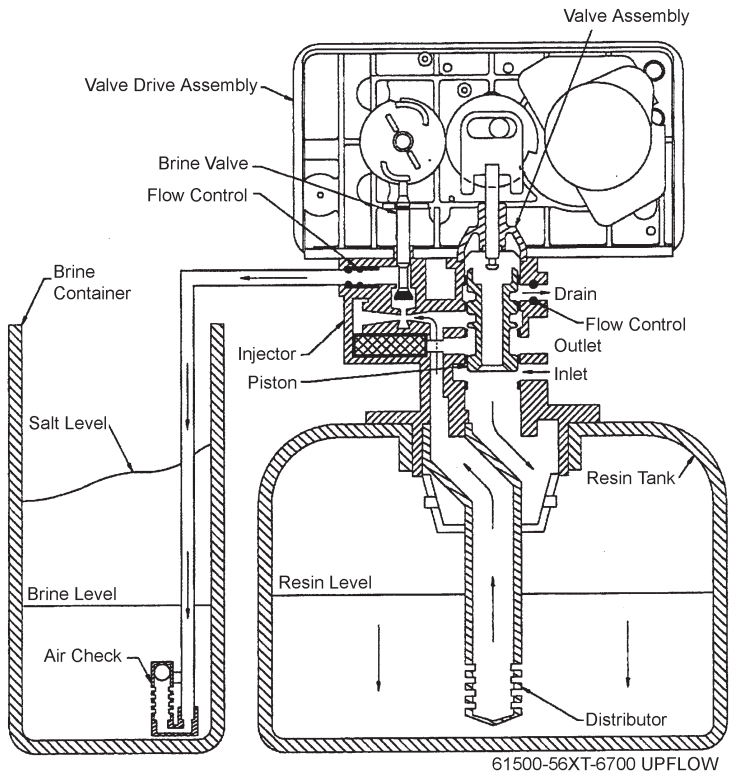


# Water Conditioner Flow Diagrams

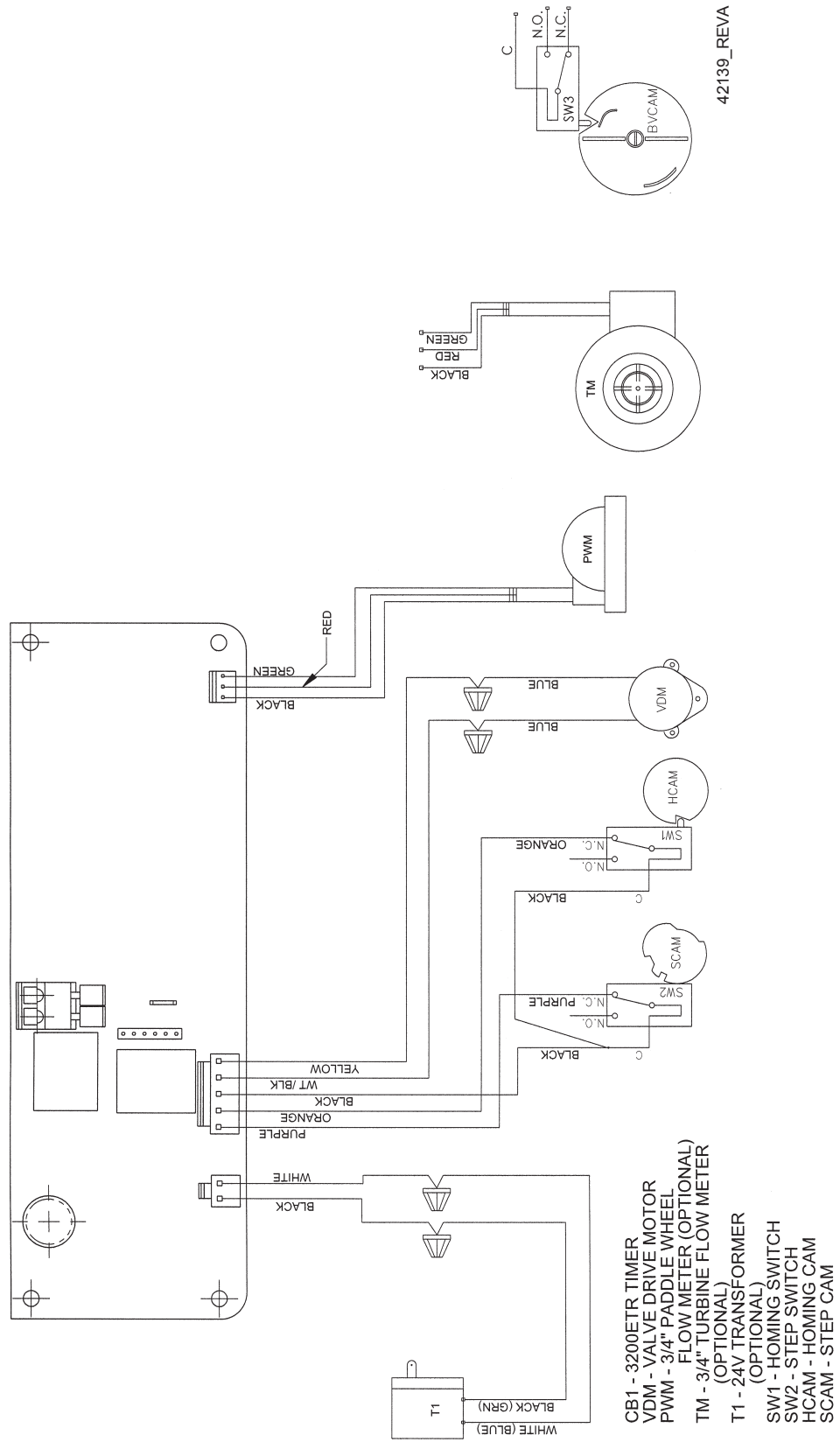
## Backwash Position (Regeneration Cycle Step #4, Gray Cam)



## Brine Tank Fill Position (Regeneration Cycle Step #4, Yellow & Gray Cams)



# Valve Wiring Diagram



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## Service Assemblies

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**Air Check:**

60002-34 ..... Air Check, #500, 34" Long

**Brine Line Flow Control:**

60022-12 ..... BLFC, .125 GPM, 5000/5600/9000

60022-25 ..... BLFC, .25 GPM, 5000/5600/9000

60022-50 ..... BLFC, .50 GPM, 5000/5600/9000

60022-100 ..... BLFC, 1.0 GPM, 5000/5600/9000

17307..... Washer, Flow, .125 GPM

12094..... Washer, Flow, .25 GPM

12095..... Washer, Flow, .50 GPM

12097..... Washer, Flow, 1.0 GPM

12977..... O-ring, -015

13244..... Adapter, BLFC

13245..... Retainer, BLFC

60032..... Brine Valve, 4600/5600

**Bypass:**

60040SS..... Bypass Assy, 3/4" NPT SS

60041SS..... Bypass Assy, 1" NPT SS

60049..... Bypass Plastic Assy

**Control Valve:**

11973..... Spring, Brine Valve

11981-01..... Ring, Retaining

12550..... Quad Ring, -009

13165..... Cap, Brine Valve

13167..... Spacer, Brine Valve

13302..... O-ring, -014

16098..... Washer, Nylon Brine

13172..... Brine Valve Stem

12626..... Seat, Brine Valve

**Floats:**

60028-XX..... 2300 Blue/White Float

60068-XX..... 2310 Blue/White Float

**Injector:**

60084-XX..... Injector, Module Assembly

**Meter:**

60086-50 ..... Meter Assy, 3/4", Electronic

**Pistons:**

60102-62 ..... Piston Assy, 6600/6700, Upflow

14309..... Retainer, Piston Rod

13001-03 ..... Piston Rod Assy, 6600, Upflow

15561..... End Plug Assy, 6600

18848..... Piston, 6600, Upflow

**Powerhead:**

60751-121 ..... Panel, 6600, Front, 24V, Black

**Safety Brine Valve:**

60014..... 2310 Safety Brine Valve Assy

60027-FFA..... 2300 Safety Brine Valve Assy

60027-FFS..... 2300 Safety Brine Valve Assy

**Seal & Spacer Kit:**

60125..... Seal & Spacer Kit, 5600/9000 Top

13242..... Seal, 5600

14241..... Spacer, 5600

**Timer:**

42274..... Assy, XTR Timer, 6700

**Yokes:**

18706..... Yoke, 1", NPT, Plastic

18706-02 ..... Yoke, 3/4", NPT, Plastic

41026-01 ..... Yoke, 1", NPT, SS

41027-01 ..... Yoke, 3/4" NPT



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## **Notes**

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## **Notes**

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