VESTA®
WATER SOLUTIONS

# Dealer Programming Guide

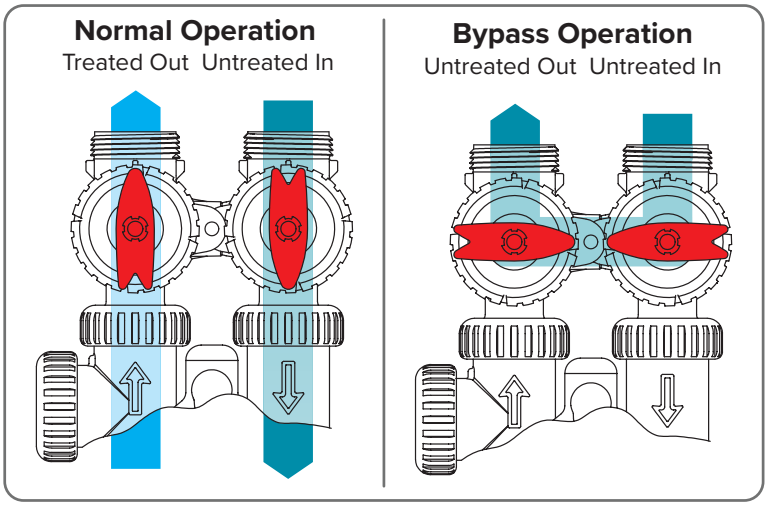
## 1", 1-1/4", 1-1/2", 2" & Twin Control Valves

# Table of Contents



# ByPass Operation

To shut off water to the system, please position arrow handles as shown in the bypass operation diagram to the right.



## Cycle Sequence/Adjustable Default Times

| Type | Brining | Location | Fill | Softening | Backwash | *Rinse** | Draw | Backwash | Rinse | Fill | *Fill** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Softening, 1.0"/1.25"/1.5"/1.0T" Valves | dn | Post | | | 8 | | 60 | 8 | 8 | 9.5 lbs | |
| Softening, 1.0"/1.25"/1.5"/1.0T" Valves | dn | Pre | 9.5 lbs | 240 | 8 | | 60 | 8 | 8 | | *0:05* |
| Softening, 1.0"/1.25"/1.5"/1.0T" Valves | Up | Post | | | | *0:30* | 60 | 8 | 8 | 9.5 lbs | |
| Softening, 1.0"/1.25"/1.5"/1.0T" Valves | Up | Pre | 9.5 lbs | 240 | | *0:30* | 60 | 8 | 8 | | *0:05* |
| Softening, 2.0" Valves | dn | Post | | | 8 | | 60 | 8 | 8 | 6.0 min | |
| Softening, 2.0" Valves | dn | Pre | 6.0 min | 240 | 8 | | 60 | 8 | 8 | | *0:05* |
| Softening, 2.0" Valves | Up | Post | | | | *0:30* | 60 | 8 | 8 | 6.0 min | |
| Softening, 2.0" Valves | Up | Pre | 6.0 min | 240 | | *0:30* | 60 | 8 | 8 | | *0:05* |
| Filtering Backwash, All Valves | N/A | N/A | | | 8 | | | | 8 | | |
| Filter Regen, 1.0"/1.25"/1.5"/1.0T Valves | dn | Post | | | 8 | | 60 | 8 | 8 | .95 gal | |
| Filtering Regen 2.0" Valves | dn | Post | | | 8 | | 60 | 8 | 8 | 6.0 min | |

Default duration in minutes, fill amounts in pounds of salt or gallons. *Italic = Cycles are non-adjustable, do not show in cycle sequence programming and are in seconds. 1.5" Valve may be set to LBS Fill (Default = 9.5 LBS) or MIN Fill (Default = 6.0 Min)

## Air Cycle Sequence/Default Durations (Min)

| Type | Air Release (Fill) | Backwash | AirCharge (Draw) | Rinse |
|---|---|---|---|---|
| Air Cycle | 4.0 | 14 | 40 | OFF |

## Control Operation While In Error Mode

1. The regeneration valve itself will complete regeneration only if already in regeneration and the current Error Code# generated is not 101/102/103/104.

2. The regeneration valve itself will not enter regeneration if the control is already in Error Mode, regardless of the Error Code # generated.

3. All relays will deactivate immediately, and remain deactivated until control reset, once any Error Code # has been generated by the control. This excludes relays set to non-regeneration related functions -Gallons, Regen Gallons, and Error where they should continue to function as set.

4. With the generation of any valve motor related error codes (101/102/103/104), regeneration is immediately canceled, and all MAVs are then either kept in the Service Position or returned sequentially to Service, remaining there until control reset. This excludes the Alt MAV in alternator systems (with Alt MAV set to Alt A or Alt B), which should remain in its current position, and System Controller applications whenever the ALT MAV has already transitioned to Bypass during regeneration, and an Error Code # was then generated sometime later on that same control. The Alt MAV in this case should remain in Bypass until the control is reset.

5. With the generation of any MAV errors (106/107/116/117) before regeneration is entered, regeneration is immediately canceled, with the regeneration valve and any remaining functional MAVs either kept in the Service Position or returned sequentially to Service, remaining there until control reset. This excludes the Alt MAV in alternator systems (with Alt MAV set to Alt A or Alt B), which should remain in its current position, and System Controller applications whenever a ALT MAV generates an error (106/107) during a non-regeneration transition, the ALT MAV valve in this case should remain in whatever position it is currently in until the control is reset. While in this state, service flow will still be monitored by that same control.

6. With the generation of any MAV errors (106/107116/117) during regeneration, the regeneration valve will continue to proceed normally with regeneration. However, all remaining scheduled MAV drives will be immediately canceled and all remaining functional MAVs returned sequentially to Service, remaining there until the control is reset. This excludes the Alt MAV in alternator systems (with Alt MAV set to Alt A or Alt B), which should remain in its current position.

## Operation of Regeneration Cycle with Alternator Systems

When Step 2S is set to Softening XX Post, Configuration 1 to 1.0, 1.25, or 1.5, Configuration 3CS set to Valve A or B, and Configuration 2ALT MAV set to ON. Regeneration will advance and complete all steps normally, except for the last two (which should be programmed for Rinse and Fill). Once the valve reaches the point in regeneration where all but the last two steps are complete, it will immediately return to the Service Position (Standby Mode with Alt MAV in Bypass). These last two steps of the regeneration cycle (Rinse and Fill) will then be completed once the capacity of the Online Unit falls below 10%. Once the capacity of the Online Unit falls below 10%, the valve will advance from the Service Position to Rinse, then Fill, before returning to the Service Position (Standby Mode with Alt MAV in Bypass) and remaining there until the unit online is fully depleted and requesting regeneration.

In alternator systems with one of the following settings - Step 2F set to FILTERING XXX, Configuration 5CS (DP Input) set to IMMED REG or DELAY REG, Step 5F Filtering is set to OFF, Step 8F is set to OFF, RINSE and FILL are not the last two steps of regen, regeneration will proceed normally, without the delayed completion of regeneration described above. If the valve has been requested to be brought online, but has not yet completed Rinse, then the tank in service alternation will be delayed until it has. Whenever the delayed Rinse and Fill feature is active, a manually initiated immediate regeneration will force the immediate Rinse and Fill of the Standby Unit, regardless the present capacity of the unit online, prior to tank in service alternation and regeneration.

# Regen & Error Screens

## Regen Screen


Displays the time remaining in the current cycle. 2nd backwash cycle will flash.

Pressing **REGEN** advances to the next cycle.

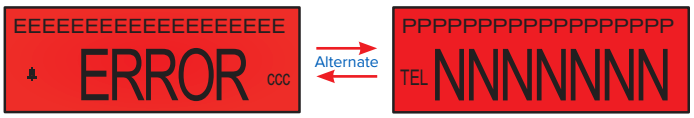

In Alternator Systems when a unit is waiting to initiate the first cycle step of regeneration, "REGEN PENDING" is displayed. "STAND BY" is displayed in Alternator Systems when a valve is in Standby state.


"DELAYED RINSE+FILL" is displayed whenever a zero-capacity tank has transferred to an off-line state and is currently waiting to initiate the second portion of a regeneration cycle. Viewed only when Delayed Rinse and Fill is set to ON.


## Error Screens


ERROR Screen displays when error occurs and no Dealer Information is present. Top line will display specific error while the 3 digits in the lower right side will display specific error code. Top line error display longer than 18 characters will scroll across display from right to left.

Alternating ERROR and Dealer Contact Information will display




when an error occurs and Dealer Contact Information is present.

# Button Operation & Functions

## Button Operation and Function


Scrolls to the next display.


Pressing once and releasing will schedule a regeneration at the preset delayed regeneration time.

Pressing again and releasing will cancel the regeneration.

Pressing and holding for 3 seconds will initiate an immediate regeneration

Pressing and release while in regeneration will advance to the next cycle.

Pressing in the program levels will go backwards to the previous screen.


Changes variable being displayed.


Holding **NEXT** and **REGEN** simultaneously for 3 seconds initiates a control reset. The software version is displayed and the piston returns to the home/service position re-synchronizing the valve.


Used with a twin valve, 1.0T, holding for at least 3 seconds causes a switch in the tank in Service without cycling the regeneration valve. After tank switch, days remaining and capacity remaining status is retained for each tank until the next regeneration.

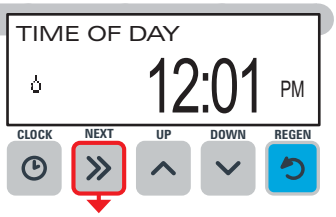

Holding ▲ and ▼ simultaneously for 3 seconds in Control Programming initiates a master reset. Resets programming and diagnostic level. Displays to factory defaults. Retains current history level back displays.


Press any button to activate display.

# User Displays

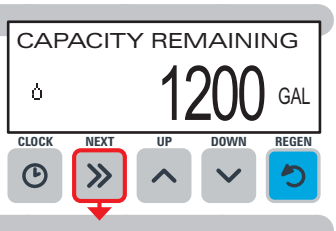
When the system is operating, one of five displays may be shown. Pressing **NEXT** will alternate between the displays shown below.

## User 1



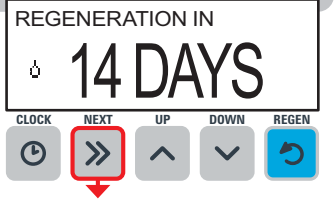

Typical user display. Shows Time of Day and droplet of water indicates water flow.

## User 2



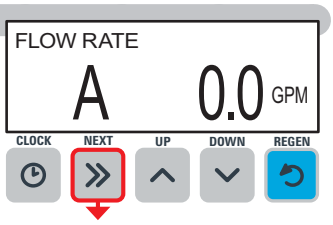

Shows volume remaining to regeneration. This screen will not be viewed if the control is set for time-clock operation.

## User 3




Displays number of days to next regeneration. Not shown when day override set to off.

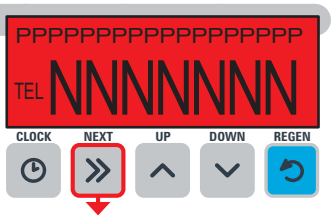
## User 4




Flow Rate. Displays the current flow rate of treated water through the valve. If Configuration 3CS is set to ALT A or B and the valve is in Standby, this display and the flashing Flow Indicator viewed in other User Screens will not be viewed.

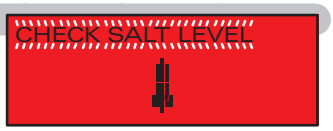
A Tank In Service Indicator (A or B) is active whenever 1.0T Mode is set in Configuration 2CS.

## User 5




Displays dealer contact name and number when programmed in the Installer Level. Steps 7IL & 8IL.

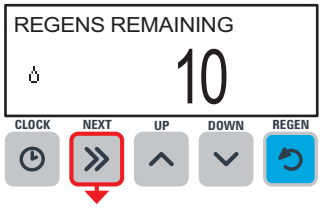
## User 6 - Resetting Salt




To Reset the Salt Level, the Salt Alarm must be turned ON in Step 6CS. Salt Alert 1 will be displayed when salt needs checked.

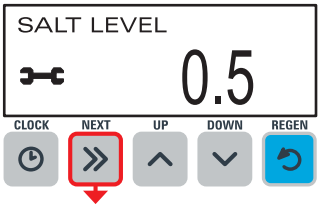
# User Displays - Continued

Push **NEXT** to display Regens Remaining. Press the ▲ or ▼ button to display Salt Level. A new amount is determined by noting the current salt level on the calibrated level indicator located inside the brine tank.




Set 0.5 – 5.5 in increments of 0.5 with the ▲ or ▼ button. Value displayed is automatically rounded up or down to the nearest increment.

Push **NEXT** to exit Salt Level.

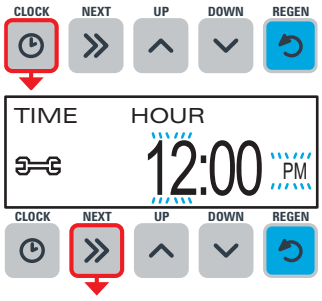



# Setting Time of Day

Press and hold **CLOCK** until **TIME HOUR** is displayed and the Hour and AM/PM flashes. Press ▲ or ▼ until the correct hour is displayed.

Then press **NEXT**. The Minutes will flash. Press ▲ or ▼ until the correct minute is displayed.

Press **NEXT** to return to the Time of Day screen.

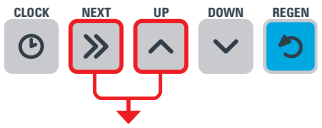



Time of day should only need to be set after power outages lasting more than 8 hours, if the battery has been depleted and a power outage occurs, or when daylight savings time begins or ends. If a power outage lasting more than 8 hours occurs, the time of day will flash on and off which indicates the time of day should be reset. If a power outage lasts less than 8 hours and the time of day flashes on and off, the time of day should be reset and the battery replaced.


# Installer Level

## Step 1IL

Press any button to activate display. Press **NEXT** and ▲ simultaneously for 3 seconds and release. If the screen in **Step 2IL** does not appear, the Dealer Lockout is activated.




See Dealer Lockout instructions on page 4 to enter password.

## Step 2IL

Press ▲ or ▼ to adjust the inlet water hardness.

Does not show in Filter mode.

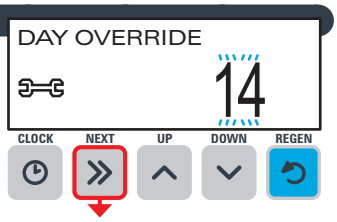
Press **NEXT** to go to Step 3IL.


## Step 3IL

Press ▲ or ▼ to adjust the Day Override. 1 - 28 days or "OFF" is selectable.

Press **NEXT** to go to Step 4IL.

Press **REGEN** to return to previous step.

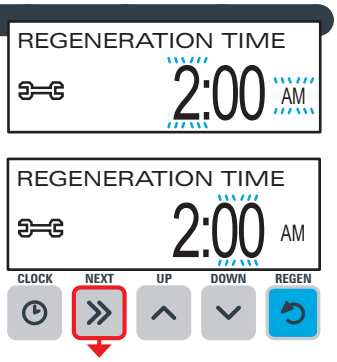



## Step 4IL

Press ▲ or ▼ to adjust the Regeneration Time Hours and AM/PM. Press **NEXT** to adjust Time Minutes.

Press **NEXT** to go to Step 5IL.

Press **REGEN** to return to previous step.

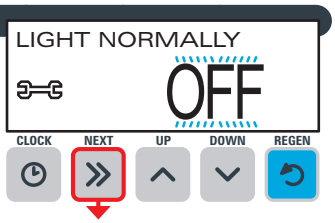



## Step 5IL

Press ▲ or ▼ to turn Light On or Off.

Press **NEXT** to **EXIT** or to set **MINIMUM REGEN.**

Press **REGEN** to return to previous step.




## Step 6IL

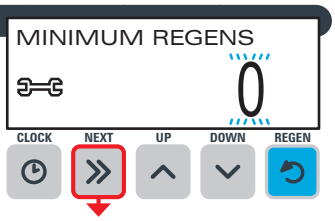
Step 6IL will only show when **SALT ALARM** is turned ON.

Press ▲ or ▼ to adjust the minimum number of Regens before Salt Alarm activates.

Press **NEXT** to go to EXIT

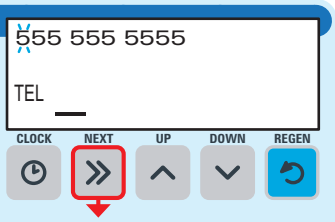
Go to 7IL & 8IL to input Dealer Information.

Press **REGEN** to return to previous step.




## Set Dealer Phone

From Step 5IL, press **CLOCK** and ▲ simultaneously for 3 seconds and release to enter your dealer contact phone number. Press ▲ or ▼ to adjust the number. Press **NEXT** to go to the next digit position. Repeat until the dealer phone number is complete.

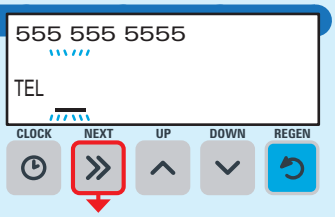



Continue to Press **NEXT** to go to Set Dealer Name.

Press **REGEN** to return to previous step.

## Set Dealer Name

Press ▲ or ▼ to adjust the dealer contact name. Press **NEXT** to go to the next digit position. Repeat until the dealer name is complete.




Press **NEXT** to **EXIT** Installer Level Settings.

Press **REGEN** to return to previous step.

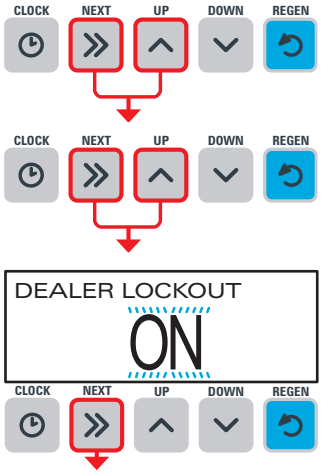
# Dealer Lockout Level

### Step 1DL

Press any button to activate display. Press **NEXT** and ▲ simultaneously for 3 seconds and release. Press **NEXT** and ▲ simultaneously for 3 seconds again and release.

Dealer Lockout default is set to OFF. Press ▲ or ▼ to turn dealer lockout to ON;

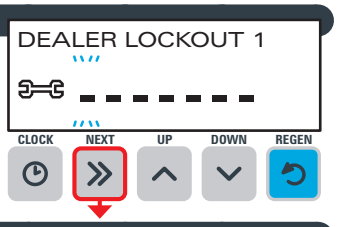
Press **NEXT** to go to Step 2DL to enter password.




### Step 2DL

Press ▲ or ▼ to change the first position to your desired digit.

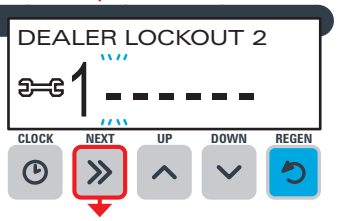
Press **NEXT** to go to Step 3DL.




### Step 3DL

Press ▲ or ▼ to change the second position to your desired digit.

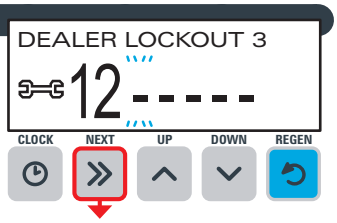
Press **NEXT** to go to Step 4DL.




### Step 4DL

Press ▲ or ▼ to change the third position to your desired digit.

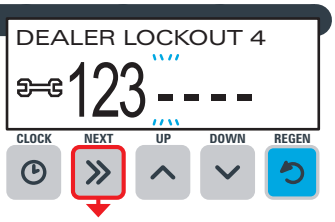
Press **NEXT** to go to Step 5DL.




### Step 5DL

Press ▲ or ▼ to change the fourth position to your desired digit.

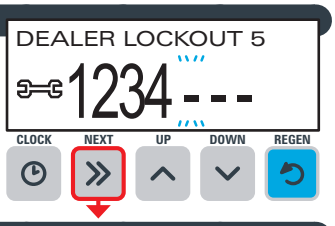
Press **NEXT** to go to Step 6DL.




### Step 6DL

Press ▲ or ▼ to change the fifth position to your desired digit.

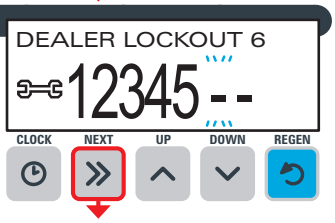
Press **NEXT** to go to Step 7DL.




### Step 7DL

Press ▲ or ▼ to change the sixth position to your desired digit.

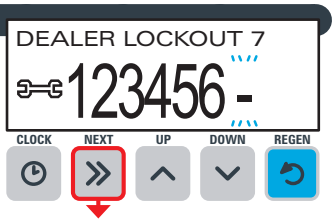
Press **NEXT** to go to Step 8DL.




### Step 8DL

Press ▲ or ▼ to change the seventh position to your desired digit.

Press **NEXT** to **EXIT** Dealer Lockout Settings.



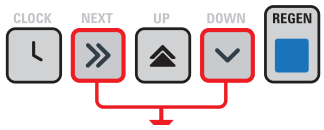

Password is set and active. Installer Level as well as Service OEM Level will now require password to be entered and Password Lockout turned to OFF for programming to be accessible.

**NOTE:** Once Password is turned OFF it will need to be turned ON again and a Password entered to be active.

# VESTA Controller - Softeners w/Brine Down Post Fill

### Step 1S

Press any button to activate display. Press **NEXT** and ▼ simultaneously for 3 seconds and release. If the screen in **Step 2SS** does not appear, the Dealer Lockout is activated.



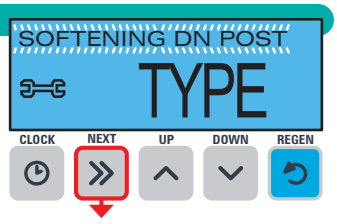

See Dealer Lockout instructions above to enter password.

### Step 2S

Choose SOFTENING DN POST using ▲ or ▼.

Press **NEXT** to go to Step 3S.

Press **REGEN** to exit Softener System Setup.




### Step 3S

Press the ▲ or ▼to adjust the duration of the first Backwash cycle.

Press **NEXT** to go to Step 4S.

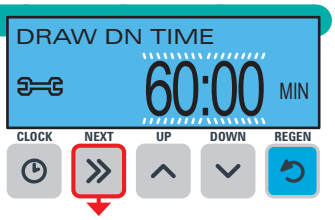
Press **REGEN** to return to previous step.


### Step 4S

Press the ▲ or ▼to adjust the duration of Draw Down Time.

Press **NEXT** to go to Step 5S.

Press **REGEN** to return to previous step.



# VESTA Controller - Softeners w/Brine Down Post Fill - Continued

## Step 5S


Press the ▲ or ▼to adjust the duration of the second Backwash cycle.

Press **NEXT** to go to Step 6S.

Press **REGEN** to return to previous step.

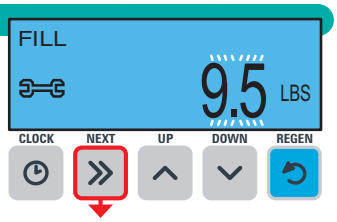
## Step 6S


Press the ▲ or ▼to adjust the duration of the Rinse cycle.

Press **NEXT** to go to Step 7S.

Press **REGEN** to return to previous step.

## Step 7S

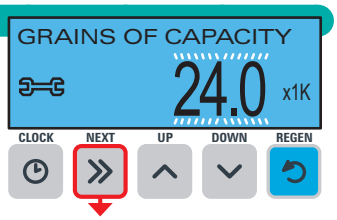



Press the ▲ or ▼to select the pounds of your salt setting.

Press **NEXT** to go to Step 8S.

Press **REGEN** to return to previous step.

## Step 8S

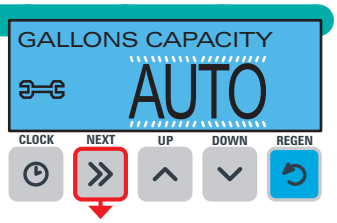



Press the ▲ or ▼to set the system capacity. The System Capacity setting should be based on the volume of resin and LBS of salt fill set in Step 7S.

Press **NEXT** to go to Step 9S.

Press **REGEN** to return to previous step.

## Step 9S




Set the Volume Capacity using the ▲ or ▼. If value is set to:

- AUTO = The control will automatically determine softening capacity and daily reserve
- GAL = The end user will manually determine softening capacity (less any fixed reserve) and enter it in this display
- OFF = Time clock regeneration

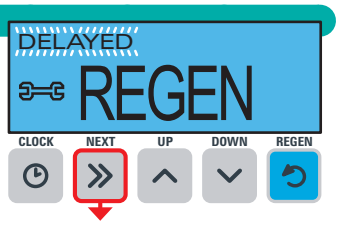
AUTO will not be an option with a filter sequence set in Step 2S. OFF will not be an option if 3IL is already set to OFF.

- AUTO is the Default.

Press **NEXT** to go to Step 10S.

Press **REGEN** to return to previous step.

## Step 10S




Set Regeneration Type Options using ▲ or ▼. If value is set to:

- DELAYED = Means regeneration at a specified time;
- IMMEDIATE = Immediate regeneration at 0 capacity;
- DELAY + IMMEDIATE = Means delayed regeneration with override at 0 capacity. 10 minutes without water usage will trigger this override at 0 capacity, 1 hour maximum wait DELAY + IMMEDIATE setting is not available with 1.0T set in Configuration 2CS, Valve A, Valve B or System Controller set in Configuration 3CS.
- DELAY is the Default.

Press **NEXT** to go to Step 11S.

Press **REGEN** to return to previous step.

## Step 11S


Set Relay 1 Options using ▲ or ▼. If value is set to:

- TIME = This relay closes a set time after the start of regeneration, activation time referenced to start of the backwash or up-flow/down-flow brine whichever comes first;
- GALLONS = Relay closes every set number of gallons while in service;
- REGEN GALLONS = Relay closes every set number of gallons while in service or regeneration;
- OFF is the Default.

See Page 16 for Relay Settings.

Press **NEXT** to go to Step 12S.

Press **REGEN** to return to previous step.

## Step 12S


Set Relay 2 Options using ▲ or ▼. If value is set to:

- TIME = This relay closes a set time after the start of regeneration, activation time referenced to start of the backwash or up-flow/down-flow brine whichever comes first;
- GALLONS = Relay closes every set number of gallons while in service;
- REGEN GALLONS = Relay closes every set number of gallons while in service or regeneration;
- ERROR = Relay closes whenver the control enters the Error Mode and immediately reactivating once power is restored;
- OFF is the Default.

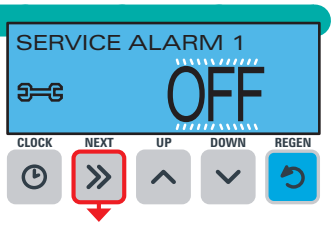
See Page 16 for Relay Settings.

Press **NEXT** to go to Step 13S.

Press **REGEN** to return to previous step.

# VESTA Controller - Softener w/Brine Down Post Fill Setup - Continued

### Step 13S




Set Service Alarm 1 Trigger using ▲ or ▼. Select between TIME, GALLONS or BOTH.

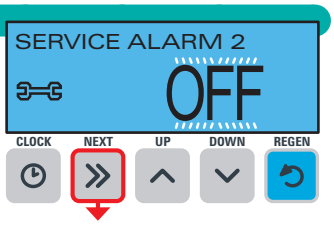
OFF is the Default

See Page 17 for Alarm Settings.

Press **NEXT** to go to Step 14S.

Press **REGEN** to return to previous step.

### Step 14S




Set Service Alarm 2 Trigger using ▲ or ▼. Select between TIME, GALLONS or BOTH.

OFF is the Default

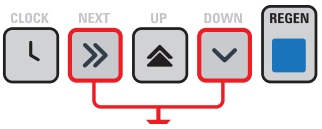
See Page 17 for Alarm Settings.

Press **NEXT** to **EXIT** Softener Post Fill Settings.

Press **REGEN** to return to previous step.

# VESTA Controller - Softeners w/Brine Up Pre Fill Setup

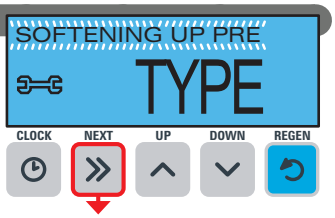
### Step 1SS




Press any button to activate display. Press **NEXT** and ▼ simultaneously for 3 seconds and release. If the screen in **Step 2SS** does not appear, the Dealer Lockout is activated.

See Dealer Lockout instructions on page 4 to enter password.

### Step 2SS

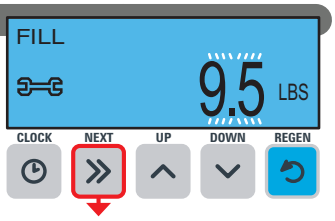



Choose SOFTENING UP PRE using ▲ or ▼.

Press **NEXT** to go to Step 3SS.

Press **REGEN** to exit Softener System Setup.

### Step 3SS




Press the ▲ or ▼to select the pounds salt being used.

Press **NEXT** to go to Step 4SS.

Press **REGEN** to return to previous step.

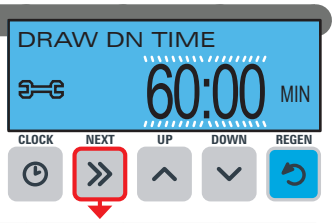
### Step 4SS


Press the ▲ or ▼to select the duration of time prior to regeneration the brine tank is to be filled.

Press **NEXT** to go to Step 5SS.

Press **REGEN** to return to previous step.

### Step 5SS




Press the ▲ or ▼to adjust the duration of Draw Down Time.

Press **NEXT** to go to Step 6SS.

Press **REGEN** to return to previous step.

### Step 6SS


Press the ▲ or ▼to adjust the duration of the Backwash cycle.

Press **NEXT** to go to Step 7SS.

Press **REGEN** to return to previous step.

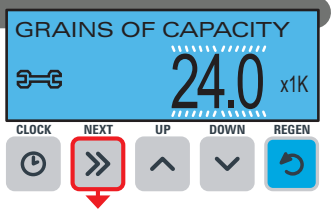
### Step 7SS


Press the ▲ or ▼to adjust the duration of the Rinse cycle.

Press **NEXT** to go to Step 8SS.

Press **REGEN** to return to previous step.

### Step 8SS

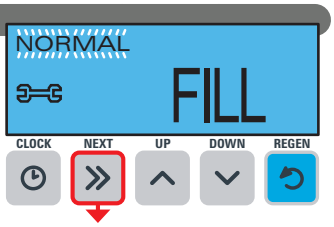



Press the ▲ or ▼to set the system capacity. The System Capacity setting should be based on the volume of resin and LBS of salt fill set in Step 3SS.

Press **NEXT** to go to Step 9SS.

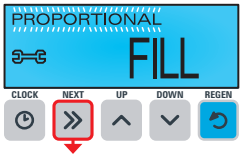
Press **REGEN** to return to previous step.

### Step 9SS




Using the ▲ or ▼adjust your fill setting. If the system is set up as a Up-flow Prefill softener the control valve can be set to normal or proportional brining.

• NORMAL FILL - System always prefills with the salt level selected.

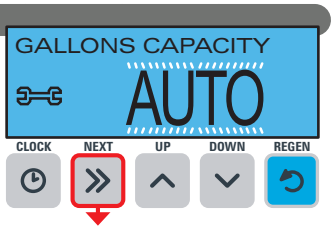



• PROPORTIONAL FILL - If proportional brining is selected, the actual salt fill time will be calculated by dividing the actual volume of treated water used by the full volumetric capacity, then multiplying this value by the maximum salt fill time.

Press **NEXT** to go to Step 10SS.

Press **REGEN** to return to previous step.

### Step 10SS




Set the Volume Capacity using the ▲ or ▼. If value is set to:

• AUTO = The control will automatically determine softening capacity and daily reserve

• GAL = The end user will manually determine softening capacity (less any fixed reserve) and enter it in this display

• OFF = Time clock regeneration

AUTO will not be an option with a filter sequence set in Step 2S.

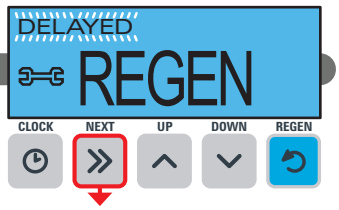
# VESTA Controller - Softeners w/Brine Up Pre Fill Setup - Continued

OFF will not be an option if 3IL is already set to OFF.

• AUTO is the Default.

Press **NEXT** to go to Step 11SS.

Press **REGEN** to return to previous step.




## Step 11SS

Set Regeneration Type Options using ▲ or ▼. If value is set to:

• DELAYED = Means regeneration at a specified time;

• IMMEDIATE = Immediate regeneration at 0 capacity;

• DELAY + IMMEDIATE = Means delayed regeneration with override at 0 capacity. 10 minutes without water usage will trigger this override at 0 capacity, 1 hour maximum wait DELAY + IMMEDIATE setting is not available with 1.0T set in Configuration 2CS, Valve A, Valve B or System Controller set in Configuration 3CS.

• DELAY is the Default.

Press **NEXT** to go to Step 12SS.

Press **REGEN** to return to previous step.


## Step 12SS

Set Relay 1 Options using ▲ or ▼. If value is set to:

• TIME = This relay closes a set time after the start of regeneration, activation time referenced to start of the backwash or up-flow/down-flow brine whichever comes first;

• GALLONS = Relay closes every set number of gallons while in service;

• REGEN GALLONS = Relay closes every set number of gallons while in service or regeneration;

• OFF is the Default.

See Page 16 for Relay Settings.

Press **NEXT** to go to Step 13SS.

Press **REGEN** to return to previous step.


## Step 13SS

Set Relay 2 Options using ▲ or ▼. If value is set to:

• TIME = This relay closes a set time after the start of regeneration, activation time referenced to start of the backwash or up-flow/down-flow brine whichever comes first;

• GALLONS = Relay closes every set number of gallons while in service;

• REGEN GALLONS = Relay closes every set number of gallons while in service or regeneration;

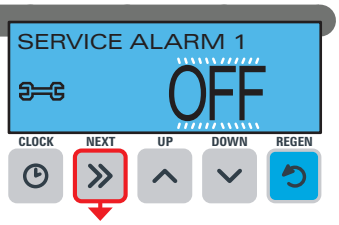
• ERROR = Relay closes whenver the control enters the Error Mode and immediately reactivating once power is restored;

• OFF is the Default.

See Page 16 for Relay Settings.

Press **NEXT** to go to Step 14SS.

Press **REGEN** to return to previous step.




## Step 14SS

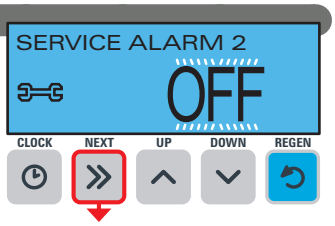
Set Service Alarm 1 Trigger using ▲ or ▼. Select between TIME, GALLONS or BOTH.

• OFF is the Default.

See Page 17 for Alarm Settings.

Press **NEXT** to go to Step 15SS.

Press **REGEN** to return to previous step.




## Step 15SS

Set Service Alarm 2 Trigger using ▲ or ▼. Select between TIME, GALLONS or BOTH.

• OFF is the Default.

See Page 17 for Alarm Settings.

Press **NEXT** to **EXIT** Softener Pre Fill Settings.

Press **REGEN** to return to previous step.

| Salting Capacity Chart Per ft³ | | | | |
|---|---|---|---|---|
| **Resin Volume Cubic Foot** | **6#** | **9#** | **12#** | **15#** |
| 1.0 | 20,000 | 24,000 | 27,000 | 30,000 |
| 1.5 | 30,000 | 36,000 | 40,500 | 45,000 |
| 2.0 | 40,000 | 48,000 | 54,000 | 60,000 |
| 2.5 | 50,000 | 60,000 | 67,500 | 75,000 |
| 3.0 | 60,000 | 72,000 | 81,000 | 90,000 |
| 4.0 | 80,000 | 96,000 | 108,000 | 120,000 |
| 5.0 | 100,000 | 120,000 | 135,000 | 150,000 |
| 6.0 | 120,000 | 144,000 | 162,000 | 180,000 |
| 7.0 | 140,000 | 168,000 | 189,000 | 210,000 |
| 8.0 | 160,000 | 192,000 | 216,000 | 240,000 |
| 9.0 | 180,000 | 216,000 | 243,000 | 270,000 |
| 10.0 | 200,000 | 240,000 | 270,000 | 300,000 |
| 12.0 | 240,000 | 288,000 | 324,000 | 360,000 |
| 15.0 | 300,000 | 360,000 | 405,000 | 450,000 |
| 20.0 | 400,000 | 480,000 | 540,000 | 600,000 |
| 25.0 | 500,000 | 600,000 | 675,000 | 750,000 |
| 30.0 | 600,000 | 720,000 | 810,000 | 900,000 |
| 35.0 | 700,000 | 840,000 | 945,000 | 1,050,000 |
| 40.0 | 800,000 | 960,000 | 1,080,000 | 1,200,000 |

# VESTA Controller - Setting Options Table

**Filters should only use shaded options**

| Mode | Volume Capacity | Regen Time Option | Day Override | Result[1] |
|---|---|---|---|---|
| Softening | Auto | Normal | 1-28 days | Reserve capacity automatically estimated.<br>Regeneration occurs when volume capacity falls below the reserve capacity at the next Regen Set Time. |
| Softening | Auto | Normal | OFF | Reserve capacity automatically estimated.<br>Regeneration occurs at the next Regen Set Time when volume capacity falls below the reserve capacity or the specified number of days between regenerations is reached. |
| Softening or Filtering | 20-1,500,000 Gallons | Normal | 1-28 Days | Regeneration occurs at the next regeneration time when volume capacity reaches 0, or the specified number of days is reached, whichever comes first. |
| Softening or Filtering | 20-1,500,000 Gallons | Normal | OFF | Regeneration occurs at the next regeneration time when volume capacity reaches 0. |
| Softening or Filtering | OFF | Normal | 1-28 Days | Time Clock operation.<br>Regeneration occurs at the next regeneration time the specified number of days is reached. |
| Softening | Auto 20-1,500,000 Gallons | On 0 | 1-28 Days | Regeneration occurs immediately when volume capacity reaches 0, or the specified number of days is reached, whichever comes first. |
| Softening or Filtering | 20-1,500,000 Gallons | On 0 | OFF | Regeneration occurs immediately when volume capacity reaches 0. |
| Softening | Auto | Normal + On 0 | 1-28 Days | Regeneration occurs at the next regeneration time when volume capacity falls below the reserve capacity, or the specified number of days is reached, or regeneration occurs after 10 minutes of no water usage when volume capacity reaches 0. |
| Softening or Filtering | 20-1,500,000 Gallons | Normal + On 0 | 1-28 Days | Regeneration occurs at the next regeneration time the specified number of days is reached or regeneration occurs after 10 minutes of no water usage when volume capacity reaches 0. |
| Softening | Auto | Normal + On 0 | OFF | Regeneration occurs at the next regeneration time when volume capacity falls below the reserve capacity, or regeneration occurs after 10 minutes of no water usage when volume capacity reaches 0. |

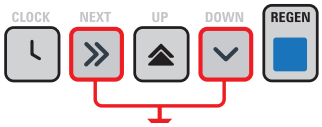
[1]Reserve Capacity estimate is based on history of water usage. Reserve Capacity estimate is not available with alternator systems or Twin Tank Valve.

# Regeneration Cycles & Times

| | RANGE | | |
|---|---|---|---|
| Cycle | Softening | Filtering Regen | Filtering Backwash |
| Backwash | 0ff-120 minutes | 0ff-120 minutes | 0ff-120 min. |
| Regenerant Draw/Slow Rinse (UP or DN) | 0ff-180 minutes | 0ff-180 minutes | NA |
| Fast Rinse | 0ff-120 minutes | 0ff-120 minutes | 0ff-120 min. |
| Regenerant Refill | 0.1-200.0 lbs. | 0ff-99.0 GAL | NA |
| Regenerant Refill 2.0 or 1.5 set to MIN (softening only) | 0.1-99.0 minutes | 0.1-99.0 minutes | NA |
| Service | 1-480 minutes | NA | NA |

# VESTA Controller - Filter System Setup

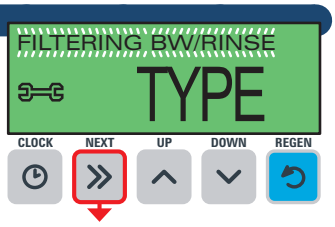
## Step 1F




Press any button to activate display. Press **NEXT** and ▼ simultaneously for 3 seconds and release. If the screen in **Step 2F** does not appear, the Dealer Lockout is activated.

See Dealer Lockout instructions on page 4 to enter password.

## Step 2F




Choose FILTERING BACKWASH or FILTERING DOWN POST (see table) using ▲ or ▼.

Press **NEXT** to go to Step 3F.

Press **REGEN** to exit Filter System Setup.

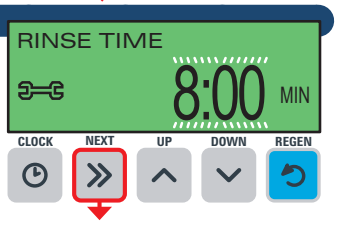
## Step 3F


Select the Backwash Time for the first cycle using ▲ or ▼.

Press **NEXT** to go to Step 4F.

Press **REGEN** to return to previous step.

## Step 4F



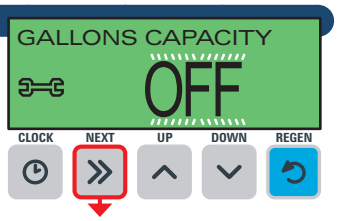

Select the Rinse Time for the second cycle using ▲ or ▼.

If Step 2F is set to FILTERING REGEN, press **NEXT** to program the rest of the cycle times/ gallons.

If Step 2F is set to FILTERING BACKWASH, press **NEXT** to go to Step 5F.

Press **REGEN** to return to previous step.

## Step 5F




Set Regeneration trigger using ▲ or ▼. If value is set to:

- GAL = The end user will manually determine trigger capacity (less any fixed reserve) and enter it in this display;
- OFF = Time clock regeneration (w/o flow meter);
- 1000 is the Default.

Press **NEXT** to go to Step 6F.

Press **REGEN** to return to previous step.

## Step 6F


Set Relay 1 Options using ▲ or ▼. If value is set to:

- TIME = This relay closes a set time after the start of regeneration, activation time referenced to start of the backwash or up-flow/down-flow brine whichever comes first;
- GALLONS = Relay closes every set number of gallons while in service;
- REGEN GALLONS = Relay closes every set number of gallons while in service or regeneration;
- OFF is the Default.

See Page 16 for Relay Settings.

Press **NEXT** to go to Step 7F.

Press **REGEN** to return to previous step.

| Cycle Sequence, Adjustable Default Times (minutes) | | | | | | |
|---|---|---|---|---|---|---|
| Type | Backwash | Draw | Backwash | Rinse | Backwash* | Fill |
| Filtering Backwash Rinse | 8 | | | 4 | | |
| Filtering Down Post | 8 | 60 | 8 | 8 | 0:30 | .95 GAL |
| Filtering Down Post (2.0") | 8 | 60 | 8 | 8 | 0:30 | 6 |

*Cycle is non-adjustable, not shown in cycle sequence programming.

# VESTA Controller - Filter System Setup - Continued

## Step 7F


Set Relay 2 Options using ▲ or ▼. If value is set to:

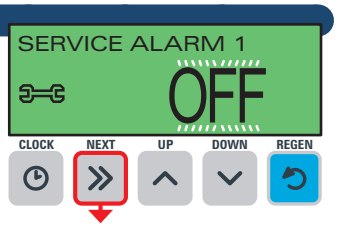
- TIME = This relay closes a set time after the start of regeneration, activation time referenced to start of the backwash or up-flow/down-flow brine whichever comes first;
- GALLONS = Relay closes every set number of gallons while in service;
- REGEN GALLONS = Relay closes every set number of gallons while in service or regeneration;
- ERROR = Relay closes whenver the control enters the Error Mode and immediately reactivating once power is restored;
- OFF is the Default.

See Page 16 for Relay Settings.

Press **NEXT** to go to Step 8F.

Press **REGEN** to return to previous step.

## Step 8F




Set Service Alarm 1 Trigger using ▲ or ▼. Select between TIME, GALLONS or BOTH.

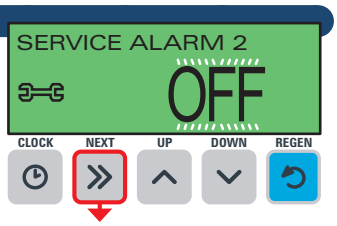
- OFF is the Default.

See Page 17 for Alarm Settings.

Press **NEXT** to go to Step 9F.

Press **REGEN** to return to previous step.

## Step 9F




Set Service Alarm 2 Trigger using ▲ or ▼. Select between TIME, GALLONS or BOTH.

- OFF is the Default.

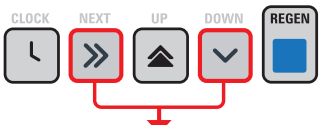
See Page 17 for Alarm Settings.

Press **NEXT** to **EXIT** Filter Settings.

Press **REGEN** to return to previous step.

# VESTA Controller - AIO System Settings

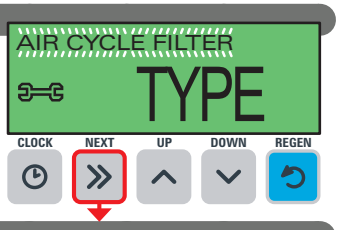
## Step 1AIO




Press any button to activate display. Press **NEXT** and ▼ simultaneously for 3 seconds and release. If the screen in **Step 2F** does not appear, the Dealer Lockout is activated.

See Dealer Lockout instructions on page 4 to enter password.

## Step 2AIO




Use ▲ or ▼ to select AIR CYCLE FILTERING.

Press **NEXT** to go to Step 3AIO.

## Step 3AIO


Use ▲ or ▼ to adjust first cycle air release time.

While in Regen, during Air Release, time counts down only during periods of non-flow up to a maximum of 20 minutes. If after 20 minutes the air release countdown has not yet reached zero, the control will skip the remaining air release time and continue on to the next Regen cycle step in the sequence. With Step 8AIO set to OFF (Time Clock Mode), this flow delay feature is inactive. During Regen, when Air Release occurs, Regen Screen 3 will be active.

Press **NEXT** to go to Step 4AIO.

Press **REGEN** to return to previous step.

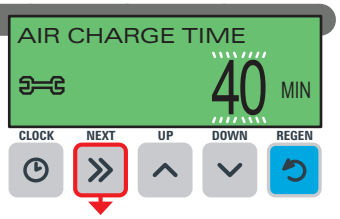
## Step 4AIO


Use ▲ or ▼ to adjust second cycle backwash time.

Press **NEXT** to go to Step 5AIO.

Press **REGEN** to return to previous step.

## Step 5AIO



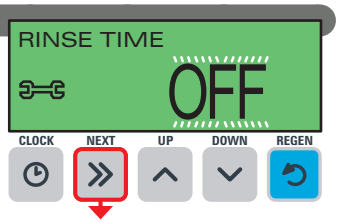

Use ▲ or ▼ to set third cycle air charge duration.

The direction of brining “DN” will NOT alternate with the current duration setting.

Press **NEXT** to go to Step 6AIO.

Press **REGEN** to return to previous step.

## Step 6AIO

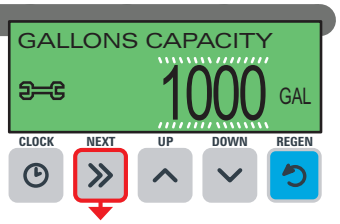



Use ▲ or ▼ to set fourth cycle to OFF.

Press **NEXT** to go to Step 7AIO.

Press **REGEN** to return to previous step.

## Step 7AIO



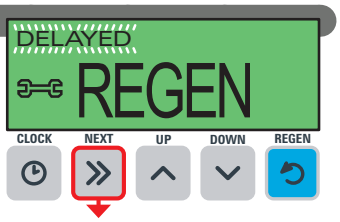

Use ▲ or ▼ to set regen trigger capacity (less any fixed reserve).

Press **NEXT** to go to Step 8AIO.

Press **REGEN** to return to previous step.

# VESTA Controller - AIO System Settings - Continued

## Step 8AIO




Use ▲ or ▼ to set Regeneration type.

Immediate = Immediate Regeneration @ 0 capacity without service flow delay.

However, w/Day Override initiated regenerations, Regen will not initiate until there is no service flow for at least 10 minutes.

NORMAL = Delayed regeneration @ specified time with service flow delay.

While in Air Cycle Mode and set to Delayed, Regen will not initiate until there is no service flow for at least 10 minutes. With Step 8AIO set to Off (Time Clock Mode), this flow delay feature is inactive.

Press **NEXT** to go to Step 9AIO.

Press **REGEN** to return to previous step.

## Step 9AIO


Set Relay 1 Options using ▲ or ▼. If value is set to:

- TIME = This relay closes a set time after the start of regeneration, activation time referenced to start of the backwash or up-flow/down-flow brine whichever comes first;
- GALLONS = Relay closes every set number of gallons while in service;
- REGEN GALLONS = Relay closes every set number of gallons while in service or regeneration;
- OFF is the Default.

See Page 16 for Relay Settings.

Press **NEXT** to go to Step 10AIO.

Press **REGEN** to return to previous step.

## Step 10AIO


Set Relay 2 Options using ▲ or ▼. If value is set to:

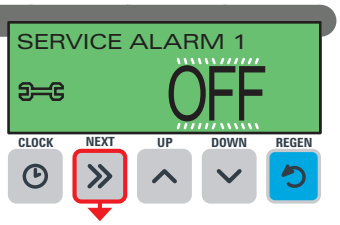
- TIME = This relay closes a set time after the start of regeneration, activation time referenced to start of the backwash or up-flow/down-flow brine whichever comes first;
- GALLONS = Relay closes every set number of gallons while in service;
- REGEN GALLONS = Relay closes every set number of gallons while in service or regeneration;
- ERROR = Relay closes whenver the control enters the Error Mode and immediately reactivating once power is restored;
- OFF is the Default.

See Page 16 for Relay Settings.

Press **NEXT** to go to Step 11AIO.

Press **REGEN** to return to previous step.

## Step 11AIO




Set Service Alarm 1 Trigger using ▲ or ▼. Select between TIME, GALLONS or BOTH.

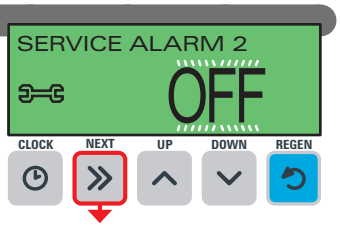
OFF is the Default

See Page 17 for Alarm Settings.

Press **NEXT** to go to Step 12AIO.

Press **REGEN** to return to previous step.

## Step 12AIO




Set Service Alarm 2 Trigger using ▲ or ▼. Select between TIME, GALLONS or BOTH.

- OFF is the Default.

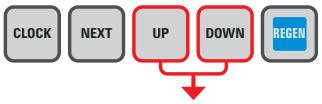
See Page 17 for Alarm Settings.

Press **NEXT** to **EXIT** Filter AIO Settings.

Press **REGEN** to return to previous step.

# VESTA Controller - Diagnostics

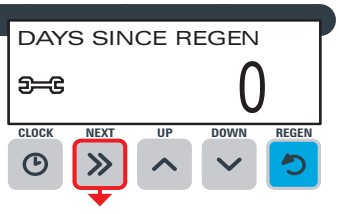
## Step 1D




Press any button to activate display. Press ▲ and ▼ simultaneously for 3 seconds and release. If the screen in **Step 2D** does not appear, the Dealer Lockout is activated

See Dealer Lockout instructions on page 4 to enter password.

## Step 2D



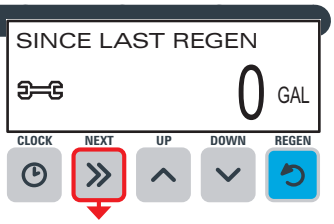

Displays the days since the last regeneration cycle.

Press **NEXT** to go to Step 3D.

Press **REGEN** to exit history.

# VESTA Controller - Diagnostics - Continued

### Step 3D

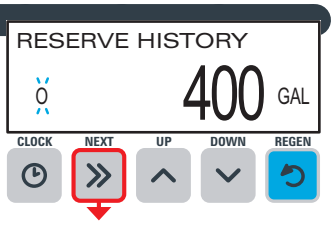



Displays the gallons since the last regeneration cycle.

Press **NEXT** to go to Step 4D.

Press **REGEN** to exit history.

### Step 4D




Displays the Reserve History. Use the ▲ or ▼ buttons to review past reserve capacities.

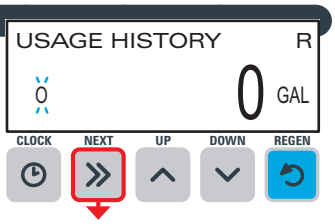
- 0 = Basic Reserve for the current day based on that days usage for the previous 4-6 weeks;
- 1 = Reserve for yesterday;
- 6 = Reserve for 6 days ago;

Display viewed only when the reserve capacity is determined by the control.

Press the **NEXT** button to go to Step 5D.

Press **REGEN** to return to previous step.

### Step 5D




Displays the Usage History. Use the ▲ or ▼ buttons to review past usage.

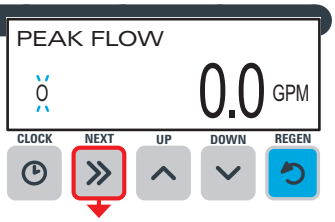
- 0 = Today;
- 1 = Yesterday;
- 63 = 63 days ago (max);
- R = Is shown for the 24 hour time period in which regeneration occured;

T1 and T2 usage for this day is combined in this display (1.0T Mode Only).

Press the **NEXT** button to go to Step 6D.

Press **REGEN** to return to previous step.

### Step 6D




Displays the Max Flow Rate History for the past 7 days. Use the ▲ or ▼ buttons to select the day.

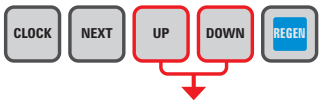
Reset by pushing both the ▲ and ▼ buttons simultaneously for 3 seconds. If configuration 3 is set to ALT A or B and the valve is currently in Standby, this display will be viewed but will not update.

Press **NEXT** to Exit Diagnostic Level.

Press **REGEN** to return to previous step.

# VESTA Controller History

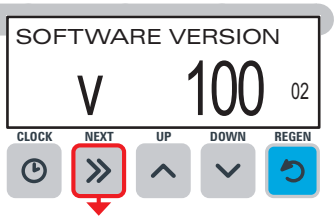
### Step 1H




Press any button to activate display. Press ▲ and ▼ simultaneously for 3 seconds and release. Press ▲ and ▼ simultaneously for 3 seconds again and release. If the screen in **Step 2H** does not appear, the Dealer Lockout is activated

See Dealer Lockout instructions on page 4 to enter password.

### Step 2H

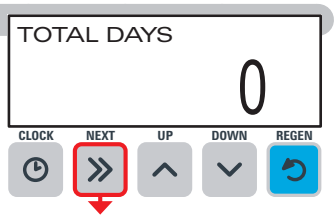



Displays the current software version programmed.

Press **NEXT** to go to Step 3H.

Press **REGEN** to exit history.

### Step 3H

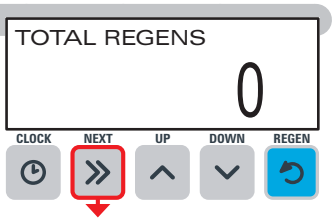



Displays the total days since valve startup. Time accumulates only when unit is plugged in.

Press **NEXT** to go to Step 4H.

Press **REGEN** to return to previous step.

### Step 4H

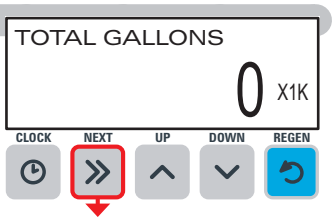



Displays the total number of regenerations since valve startup.

Press **NEXT** to go to Step 4H.

Press **REGEN** to return to previous step.

### Step 5H

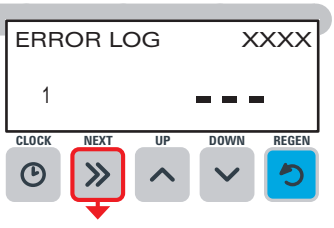



Displays the total gallons used since valve startup.

Press **NEXT** to go to Step 4H.

Press **REGEN** to return to previous step.

### Step 6H



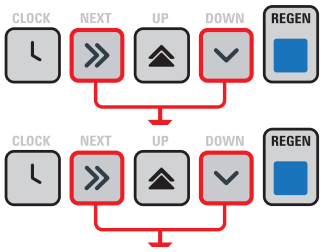

Displays the Error Log. Use the ▲ or ▼ buttons to review the last 10 logged error codes. With logged drive errors, motor position at the time of error detection is recorded in the top line of this display.

Press **NEXT** to Exit History Level.

Press **REGEN** to return to previous step.

# VESTA Controller - Configuration Settings

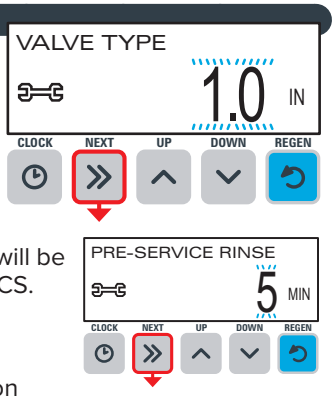
## Step 1CS




Press any button to activate display. Press **NEXT** and ▼ simultaneously for 3 seconds and release. Press **NEXT** and ▼ simultaneously for 3 seconds again and release. If the screen in **Step 2CS** does not appear, the Dealer Lockout is activated.

See Dealer Lockout instructions on page 4 to enter password.

## Step 2CS

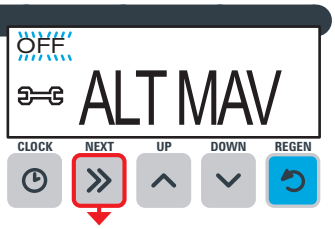



Displays Valve Type. Use ▲ or ▼ to select 1.0 for 1" valve, 1.25 for 1.25" valve, 1.5 for 1.5" valve, 2.0 for 2" valve or 1.0T for twin valve. With 1.0T set, meter calibration will be fixed, with a different value for each tank. With 1.0T set, the Pre-Service Rinse setting will be viewed instead of Configuration 3CS. Default is 1.0.

Press **NEXT** to go to Step 3CS.

Press **REGEN** to **EXIT** Configuration Settings.

## Step 3CS



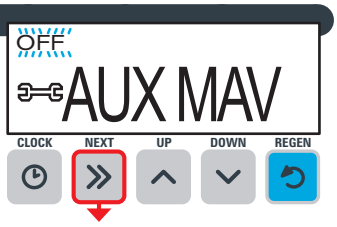

Use ▲ or ▼ to select the ALT MAV Output Operation.

- VALVE A or VALVE B = Configures a 2-unit alternator system. With delayed alternator systems at 0 capacity, a unit transfers offline immediately, then waits for regeneration until Regen Time. Time Since Regen only reactivates on return to Service;
- NO HARD BYPASS = NHBP system with Bypass for the full regeneration cycle;
- SEPARATE SOURCE = NHBP system with Bypass for the full regeneration cycle;
- SYSTEM CONTROLLER = Configures board to operate as part of a non-alternator system;
- OFF is the Default.

Press **NEXT** to go to Step 4CS.

Press **REGEN** to return to previous step.

## Step 4CS



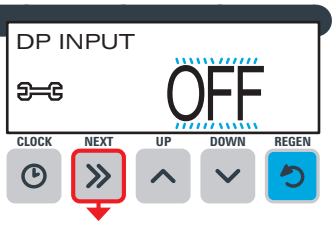

Use ▲ or ▼ to select the AUX MAV Output Operation.

- TIME = Output changes state at a set time referenced to the start of regeneration, for a preset duration of time independent of actual regeneration status;
- SEPARATE SOURCE = Configures a separate source NHBP system, with Bypass for the full regeneration cycle;
- OFF is the Default.

Press **NEXT** to go to Step 5CS.

Press **REGEN** to return to previous step.

## Step 5CS



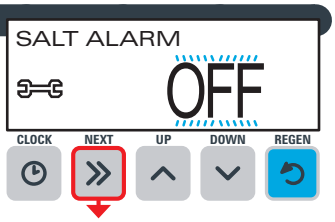

Use ▲ or ▼ to select the Auxiliary (DP) Input Operation.

- TIMED reg = Input signal triggers an immediate regeneration after 2 minutes;
- DELAY reg = Input signal triggers a delayed regeneration after 2 minutes;
- HOLD reg = Input signal delays the start of regeneration until the signal is removed. Removing this signal for 15 sec minimum/non-cumulative, allows immediate regeneration, but skips delayed regeneration until Regeneration Time;
- OFF is the Default.

Press **NEXT** to go to Step 6CS.

Press **REGEN** to return to previous step.

## Step 6CS

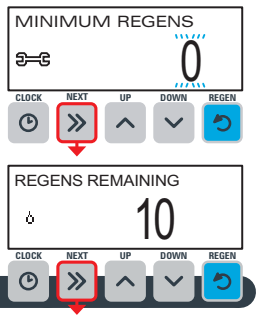



Use ▲ or ▼ to select the SALT ALARM Operation.

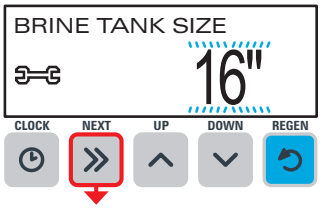
- ON = Activates the Salt Alarm Feature and makes MINIMUM REGEN, REGEN REMAINING and SALT ALERT1 able to be viewed/set;
- OFF = Deactivates the Salt Alarm Feature and makes MINIMUM REGEN, REGEN REMAINING and SALT ALERT1 not able to be viewed/set;
- OFF is the Default.

Press **NEXT** to go to Step 7CS.

Press **REGEN** to return to previous step.




## Step 7CS




Use ▲ or ▼ to select the BRINE TANK Size.

- 16" = 16 inch diameter brine tank with or without grid. Each 16 inch tank graduation equals 50 pounds;
- 18" = 18 inch diameter brine tank with or without grid. Each 16 inch tank graduation equals 63 pounds;

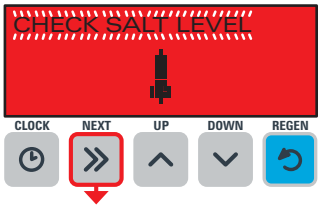
Viewed only with Configuration 6CS set to ON

- DEFAULT = 16"

Press **NEXT** to **EXIT** Configuration Settings or continue onto Step 8CS.

Press **REGEN** to return to previous step.

## Step 8CS - Setting Salt



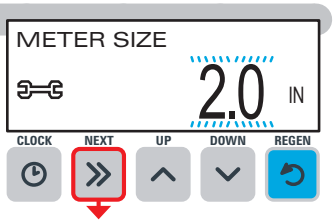

Press the ▲ or ▼ button to Set Salt Level in increments of 0.5 from 0.5 – 5.5

Push **NEXT** to exit Salt Level.

| Twin Softener Valve Programming Steps | | | |
|---|---|---|---|
| Configuration Settings | Step 5CS | Set to ALT A<br>Connect the outlet plumbing of ALT A valve to the MAV's A port and connect the MAV's two pin wire connector to the two pin connector labeled "DRIVE" on the ALT A valve | Set to ALT b<br>Connect the outlet plumbing of ALT B valve to the MAV's B port.<br>No electrical connections are required between the ALT b valve and the MAV. |
| Softener System Setup | Step 10S | Set System Capacity | Set System Capacity |
| Softener System Setup | Step 11S | Set to 'AUTO' | Set to 'AUTO' |
| Softener System Setup | Step 12S | Set regeneration time option to 'on 0'. | Set regeneration time option to 'on 0'. |
| Installer Display Settings | Step 3i | Set Day Override to "oFF" | Set Day Override to "oFF" |

# VESTA Controller - Conditional Configuration Screens

### Step 1CCS



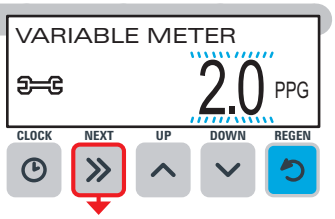

Using the ▲ or ▼ buttons, select the meter size, 1.5, 2.0, 3.0, 1.0r or VARIABLE METER.

Setting viewed when 2.0 or 1.5 are set in 2CS. When set to VARIABLE METER enter pulses per gallon.

Press **NEXT** to go to Step 3CS.

Press **REGEN** to **EXIT** Configuration Settings.

### Step 2CCS



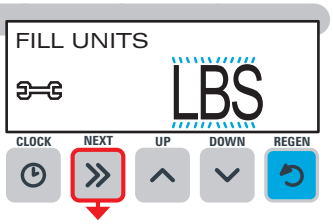

Setting viewed with VARIABLE METER option set. Set meter calibration in pulses per gallon.

- DEFAULT = 2.0 IN.

Press **NEXT** to go to Step 3CS.

Press **REGEN** to return to previous step.

### Step 3CCS



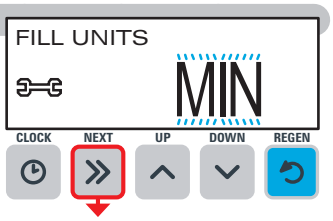

Display viewed when set to pounds of NaCL. Display only viewed in softener systems with Configuration 1 set to 1.5 IN and Fill is currently part of the regeneration cycle sequence.

- DEFAULT = LBS.

Press **NEXT** to **EXIT** Configuration Settings.

Press **REGEN** to return to previous step.

### Step 4CCS




Display viewed when set to minutes of Fill. Display only viewed in softener systems with Configuration 1 set to 1.5 IN and Fill is currently part of the regeneration cycle sequence.

- DEFAULT = LBS.

Press **NEXT** to **EXIT** Configuration Settings.

Press **REGEN** to return to previous step.

# VESTA Controller - Conditional User Screens

### Conditional User 1


DP Regeneration Signal Status. Present only when DP switch contacts are closed with IMMEDreg or DELAYreg set in Configuration 5.

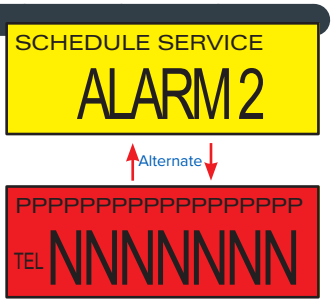
### Conditional User 2


DP Hold Signal Status. Present only when DP switch controls are closed with HOLD reg set in Configurtion 5. This display takes precedence over USER 3 or 4

### Service Alert 1


Scheduled Service Alert 1. Service Alarm 1 and 2 Screen WITHOUT a Contact Shown in User 5. Reset this display by pushing and holding both the ▲ and ▼ buttons for 3 seconds.

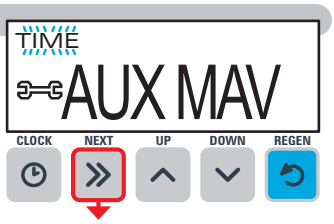
### Service Alert 2




Service Alarm 1 and 2 Screen WITH a Contact Shown in User 5. While in Service Alarm Mode, these two screens will alternate being viewed. The top screen indicates that a service alarm has been triggered. The top line of the lower screen contains the set contact phone number, the large bottom line contains the set contact name. (NNNNNNN) scrolls. While either screen is viewed, push and hold both the ▲ and ▼ buttons for 3 seconds will reset the screen and its associated trigger.

# VESTA Controller - Conditional Aux MAV Screens

## Step 1AUX MAV Screens

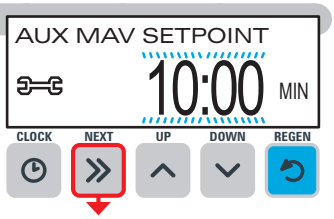



Auxillary MAV Drive set to operate in Time Mode. Aux MAV transitions to Bypass at a set time referenced to the start of regeneration, AFTER Valve Motor deactivation. Aux MAV transitions back to Service at the completion of the preset duration time. The start of regeneration is defined as the first regeneration cycle that is NOT Fill, Softening or Filtering. Aux MAV will automatically return to Service with power loss or when the REGEN Button is pushed DURING Bypass.

Press **NEXT** to go to Step 2AUX.

Press **REGEN** to **EXIT** Configuration Settings.

## Step 2AUX MAV Screens



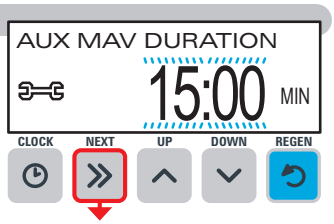

Set the start time for the Aux MAV transitioin to Bypasss. Setpoit referenced to start of the first backwash or up-flow/ down-flow brine cycle, whichever comes first.

- DEFAULT = 10:00 MIN.

Press **NEXT** to go to Step 3AUX.

Press **REGEN** to return to previous step.

## Step 3AUX MAV Screens



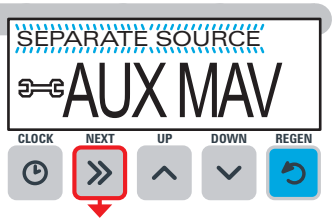

Set duration of Aux MAV transition to Bypass.

- DEFAULT = 15:00 MIN.

Press **NEXT** to go to Step 5CS.

Press **REGEN** to return to previous step.

## Step 4AUX MAV Screens



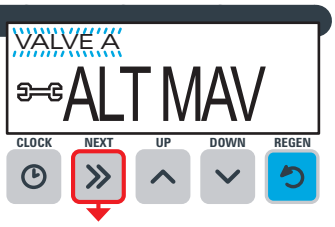

Auxillary MAV Drive set to operate in Separate Source Mode. Aux MAV transitions to Bypass before the start of Regen Cycle #1, AFTER Alt MAV Motor transition. Aux MAV transitions back to Service at the completion of the last programmed regen cycle, once the Valve Motor deactivates and BEFORE Alt MAV transition (if scheduled). Aux MAV will NOT automatically return to Service while manually stepping valve throught regeneration, or after power loss. MAV will instead remain in Byupass until regeneration cycle end.

Press **NEXT** to go to Step 5CS.

Press **REGEN** to return to previous step.

# VESTA Controller - Conditional Alternator MAV Screens

## Step 1ALT MAV Screen




Alternator MAV set to operate as part of an alternator system.

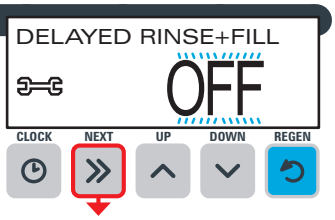
MAV gear retracted IN for Valve A in Service, Valve B in Standby.

MAV gear extended OUT for Valve A in Standby, Valve B in Service.

Press **NEXT** to go to Step 2ALT MAV.

Press **REGEN** to **EXIT** Configuration Settings.

## Step 2ALT MAV Screen



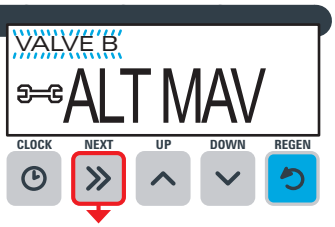

Displays Alternator System Type.

- ON = Valve wil proceed with last 2 steps of regeneration (Rinse + Fill) just prior to a retrun to Service. Priot to that time, upon completion of the initial regeneration cycle steps, the valve will enter Standby;
- OFF = Standard alternator system operation, without delays between any cycle steps;
- OFF is the Default.

Press **NEXT** to go to Step 4CS.

Press **REGEN** to return to previous step.

## Step 3ALT MAV Screen




Alternator MAV set to operate as part of an alternator system.

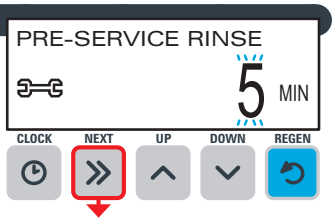
MAV gear retracted IN for Valve A in Service, Valve B in Standby.

MAV gear extended OUT for Valve A in Standby, Valve B in Service.

Press **NEXT** to go to Step 4ALT MAV.

Press **REGEN** to **EXIT** Configuration Settings.

## Step 4ALT MAV Screen




Displays Alternator System Type.

Valve Motor Drive set to operate in Pre-Service Rinse Mode.

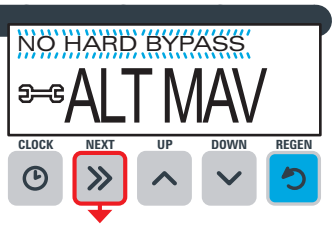
- w/DURATION SET = Valve in Standby drives to the Rinse Position for a set duration just prior to Service return. This duration is selectable from 1-20 minutes in 1 minute increments, including OFF;
- OFF = Standard alternator system operation, without any rinse prior to Service return;
- DEFAULT = OFF (1.0T Valve Type);
- DEFAULT = 5 minutes (2.0 Valve Type).

Press **NEXT** to go to Step 4CS.

Press **REGEN** to return to previous step.

# VESTA Controller - Conditional Alternator MAV Screens - Continued

### Step 5ALT MAV Screen




Alternator MAV set to operate in No Hard Water Bypass Mode.

Bypass begins at the start of the first cycle step encountered that is NOT Fill, or at the end of SOFTENING or FILTERING in Pre-Fill systems. Bypass ends at the beginning of Fill in Post-Fill systems, or after the last cycle step has ended in Pre-Fill systems.

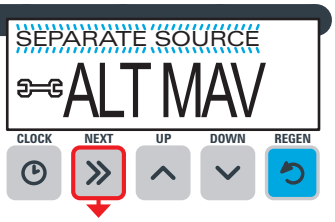
MAV gear extended OUT for service.

MAV gear retracted IN for bypass.

Press **NEXT** to go to Step 6ALT MAV.

Press **REGEN** to **EXIT** Configuration Settings.

### Step 6ALT MAV Screen




Alternator MAV set to operate in Separate Source Mode.

Bypass begins in Post-Fill and Pre-Fill systems before the initial drive to the first cycle step.

Bypass then continues until after the last cycle step has ended.

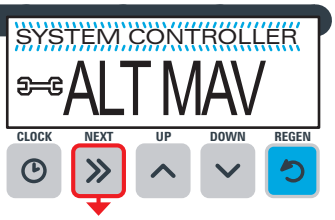
MAV gear extended OUT for service.

MAV gear retracted IN for bypass.

Press **NEXT** to go to Step 4CS.

Press **REGEN** to return to previous step.

### Step 7ALT MAV Screen




Alternator MAV set to operate in System Controller Mode as part of a non-alternator system.

MAV gear extended OUT for service.

MAV gear retracted IN for bypass.

Press **NEXT** to go to Step 4CS.

Press **REGEN** to return to previous step.

# VESTA Controller - Conditional Relay Screens

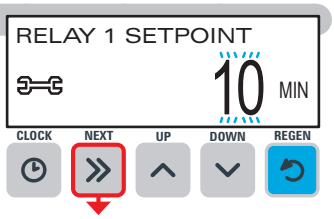
### Step 1RS


Relay 1 set to operate in a Time Mode. Relay activates at a set time referenced to the start of regeneration. Relay deactivation is at the completion of the preset duration time. The start of regeneration is defined as the first regeneration cycle that is NOT Fill, Softening, or Filtering. Relay operation during regen is immediately concluded when the REGEN button is pushed, or after power loss DURING Relay 1 activation. If OFF is selected, the next two screeens do not appear.

Press **NEXT** to go to Step 2RS.

Press **REGEN** to **EXIT** Configuration Settings.

### Step 2RS




Set relay activation time from the start of regen.

Press **NEXT** to go to Step 3RS.

Press **REGEN** to return to previous step.

### Step 3RS


Set duration of relay activation.

Press **NEXT** to go to Step 12S.

Press **REGEN** to return to previous step.

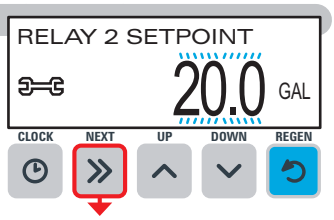
### Step 4RS


Relay 2 set to operate in a Volume Mode during Normal Operation only. Relay activation is after the preset amount of service flow has been registered. Relay deactivation is at the completion of the preset duration time, or after the meter stops registering flow, whichever comes first. Setting not available with 1.0T set in 2CS.

Press **NEXT** to go to Step 5RS.

Press **REGEN** to **EXIT** Configuration Settings.

### Step 5RS




Set relay activation volume.

Press **NEXT** to go to Step 6RS.

Press **REGEN** to return to previous step.

### Step 6RS


Set duration of relay activation.

Press **NEXT** to go to Step 13S.

Press **REGEN** to return to previous step.

### Step 7RS


Relay 1 set to operate in a Volume Mode during Normal Operation as well as Regeneration. Relay activation is after the preset amount of flow has been registered. Relay deactivation is at the completion of the set duration time, or after the meter stops registering flow, whichever comes first. Setting not available with Valve A or B set in Configuration 2.

Press **NEXT** to go to Step 5RS.

Press **REGEN** to **EXIT** Configuration Settings.

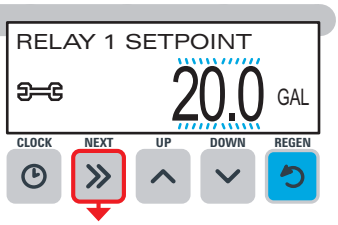
# VESTA Controller - Conditional Relay Screens - Continued

### Step 8RS

Set relay activation volume.

Press **NEXT** to go to Step 6RS.

Press **REGEN** to return to previous step.




### Step 9RS

Set duration of relay activation.

Press **NEXT** to go to Step 12S.

Press **REGEN** to return to previous step.

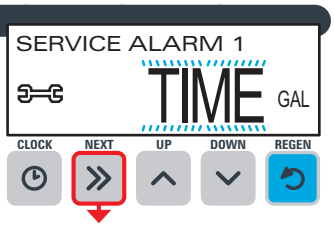

# VESTA Controller - Conditional Service Alarms 1 & 2

### Step 1SA

A Service Alarm is triggered by the passing of the amount of time as set in the next display.

Press **NEXT** to go to Step 6SA.

Press **REGEN** to **EXIT** Configuration Settings.

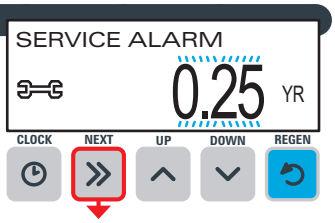



### Step 2SA

Set the duration between scheduled service calls based on the previously chosen format..

Press **NEXT** to go to Step 3SA.

Press **REGEN** to return to previous step.

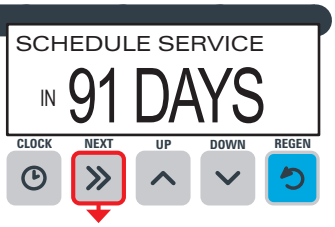



### Step 3SA

Time remaining to service alarm. To reset this value back to the initial value press ▲ and ▼ simultaneously for 3 seconds.

Press **NEXT** to go to Step 14S.

Press **REGEN** to return to previous step.

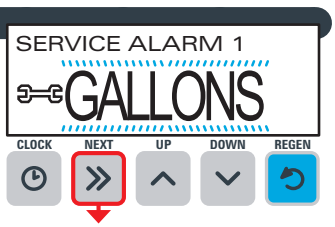



### Step 4SA

A Service Alarm is trigered by the amount of treated water usage as set in the next display.

Press **NEXT** to go to Step 5SA.

Press **REGEN** to return to previous step.

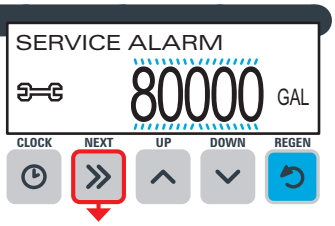



### Step 5SA

Set the duration between scheduled service calls based on the previously chosen format.

Press **NEXT** to go to Step 6SA.

Press **REGEN** to return to previous step.

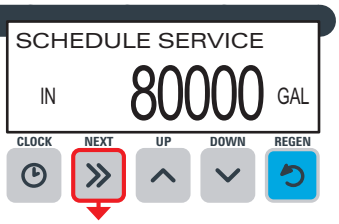



### Step 6SA

Time remaining to service alarm. To reset this value back to the initial value press ▲ and ▼ simultaneously for 3 seconds.

Press **NEXT** to go to Step 14S.

Press **REGEN** to return to previous step.

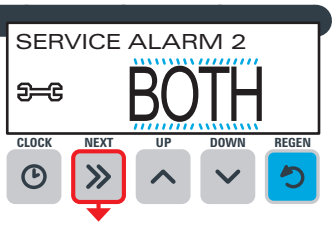



### Step 7SA

Service Alarm set to Both Mode. A Service Alarm is triggered by the passing of the amount of time as set in 8SA or by the settings in 9SA.

Press **NEXT** to go to Step 8SA.

Press **REGEN** to return to previous step.

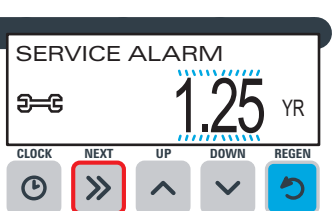



### Step 8SA

Set the duration between scheduled service calls based on the previously chosen format.

Press **NEXT** to go to Step 9SA.

Press **REGEN** to return to previous step.

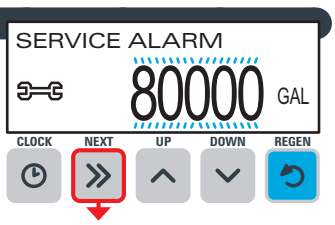



### Step 9SA

Set the duration between scheduled service calls based on the previously chosen format.

Press **NEXT** to go to Step 10SA.

Press **REGEN** to return to previous step.

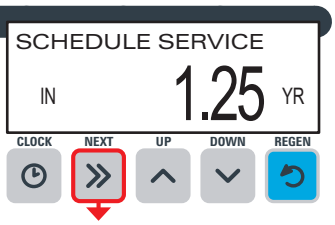



### Step 10SA

Time remaining to service alarm. To reset this value back to the initial value press ▲ and ▼ simultaneously for 3 seconds.

Press **NEXT** to go to Step 11SA.

Press **REGEN** to return to previous step.

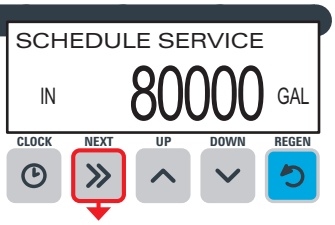



### Step 11SA

Time remaining to service alarm. To reset this value back to the initial value press ▲ and ▼ simultaneously for 3 seconds.

Press **NEXT** to go to Step 14S.

Press **REGEN** to return to previous step.



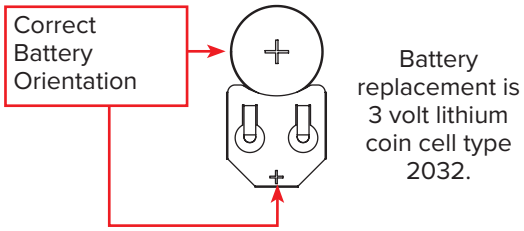
# Front Cover and Drive Assembly

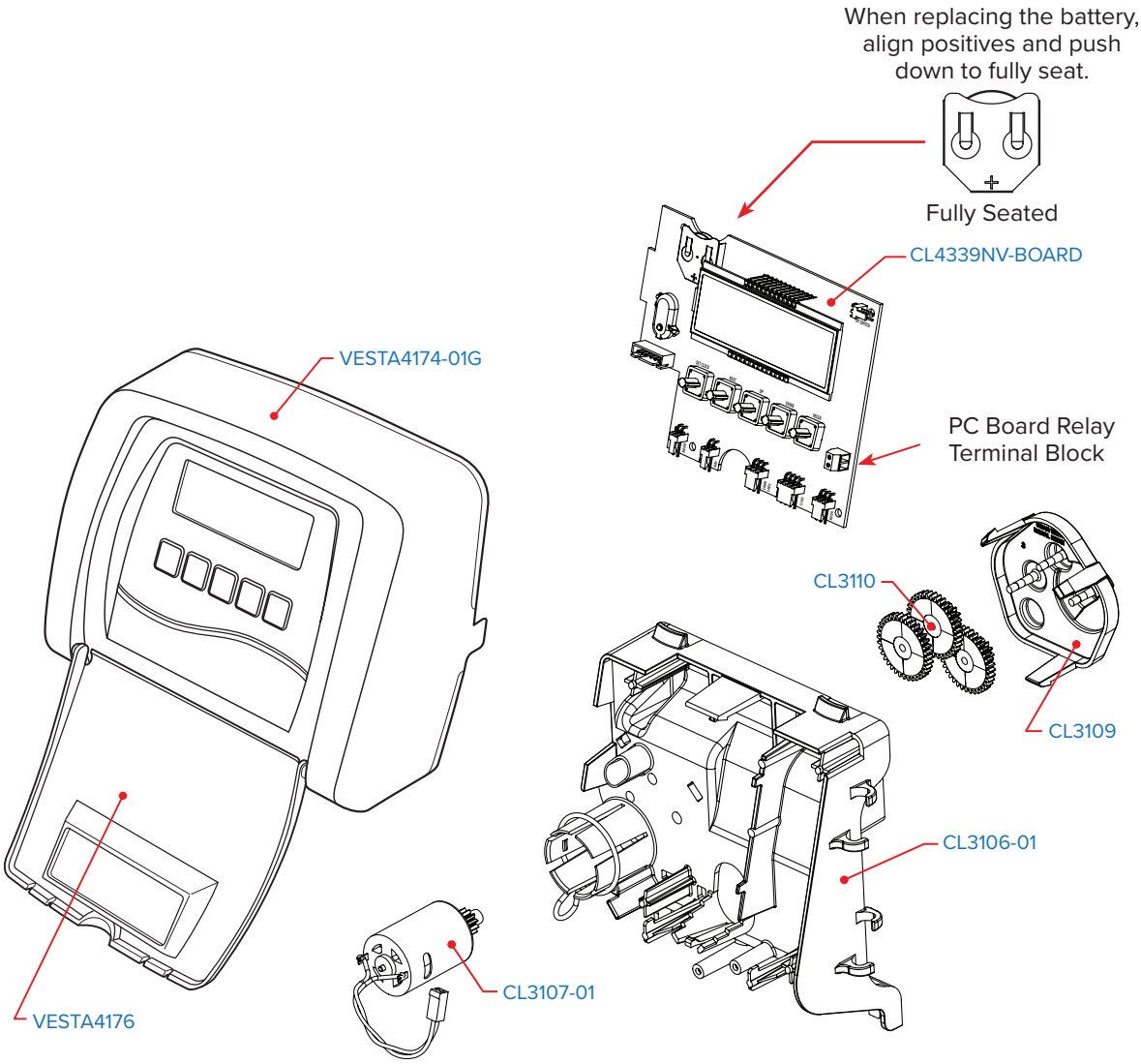
| Part No. | Description | Qty |
|---|---|---|
| NWTS4174-01G | NWTS Front Cover | 1 |
| CL3107-01 | Motor Assembly | 1 |
| CL3106-01 | Drive Bracket & Spring Clip | 1 |
| V4080NL-BOARD | 1" thru 2" NWTS PCB 5 Digit Rpl Board | 1 |
| CL3110 | Drive Reducing Gear 12 x 36 | 3 |
| CL3109 | Drive Gear Cover | 1 |
| CL3002TC | TC Drive Assembly | * |
| **Not Shown** | | |
| CL3186 | AC Adapter 120V-12V | 1 |
| CL3186-01 | AC Adapter Cord Only | 1 |

Relay Specifications: 12V DC Relay with a coil resistance not less than 80 ohms. If mounting relay under the cover, check for proper mounting dimensions on the backplate.

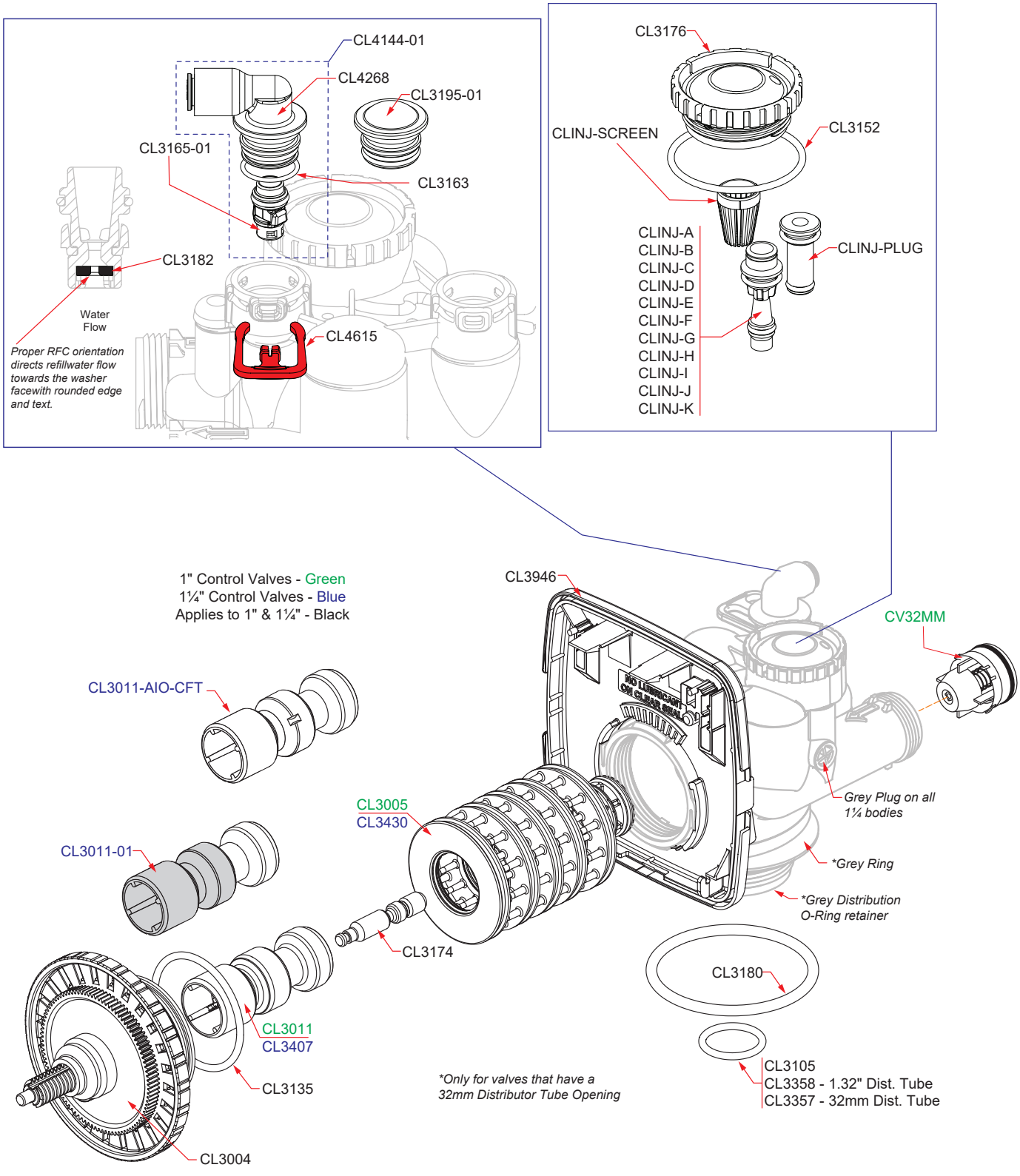
Wiring for Correct On/Off Operation

PC Board Relay Terminal Block ..... Relay
RLY 1 ..... Coil -+
COM ..... Coil +

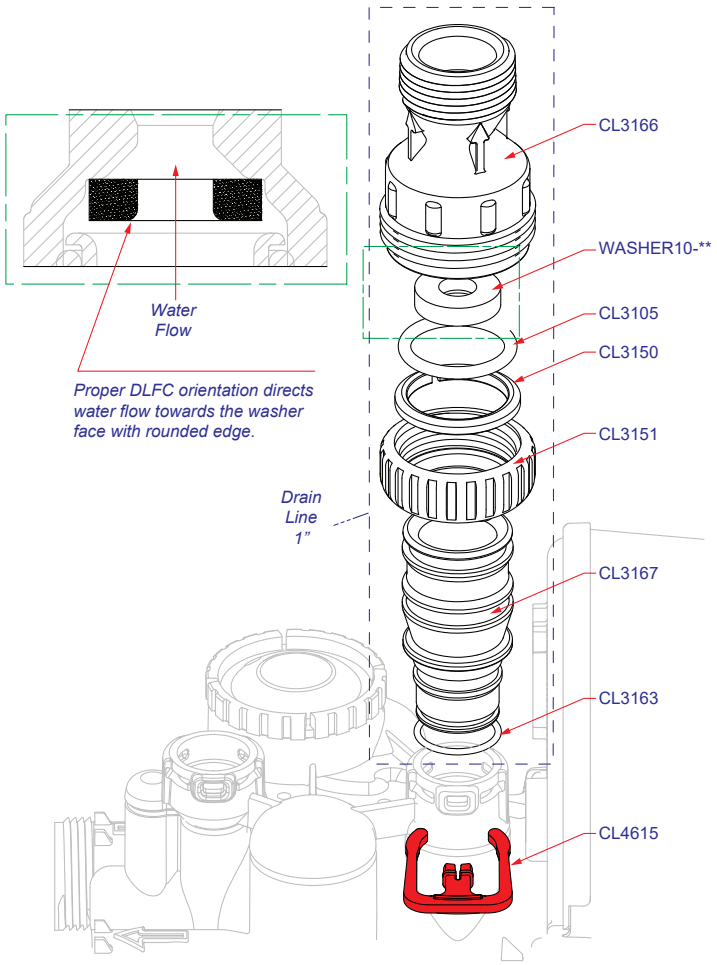


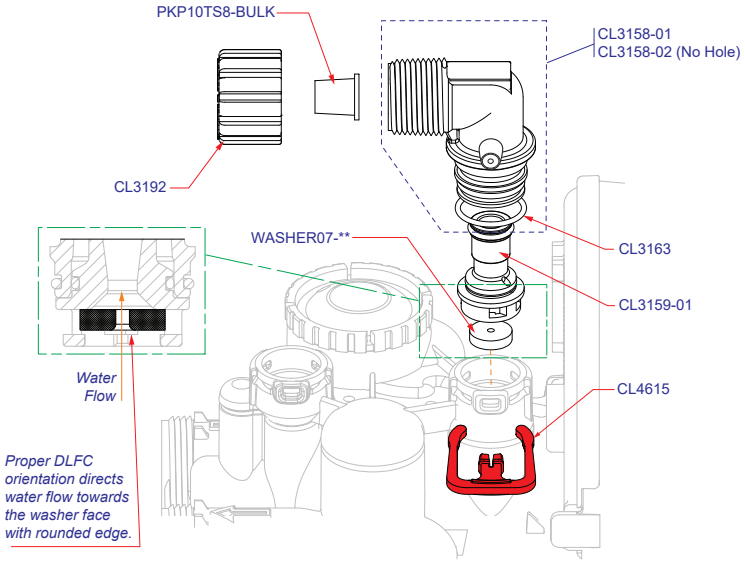
# Drive Cap - Spacer Assembly



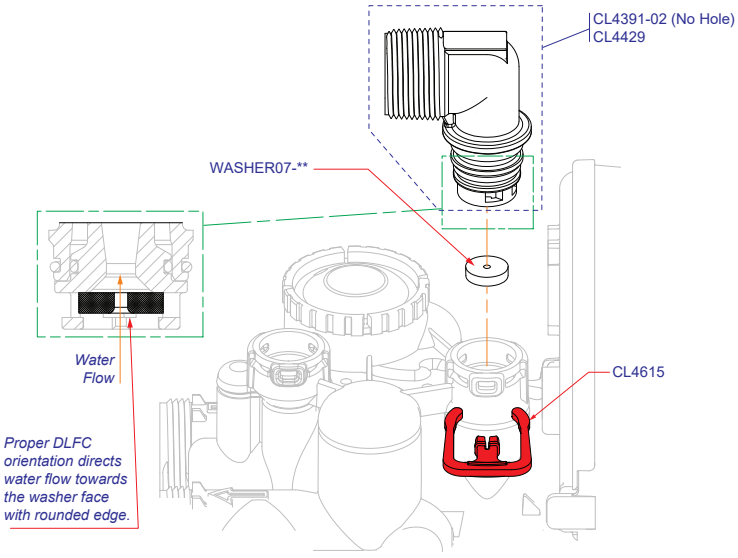
## 1" Drain Line Assembly



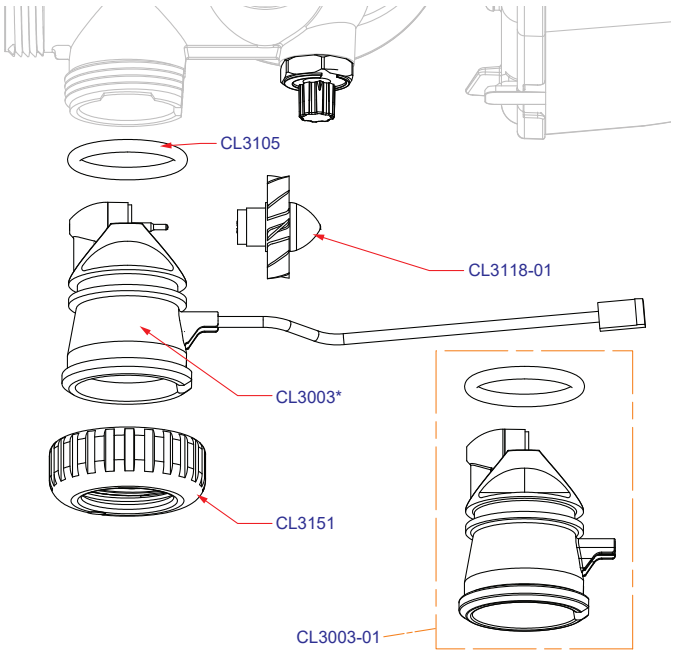

## ¾" Drain Line Elbow Assembly



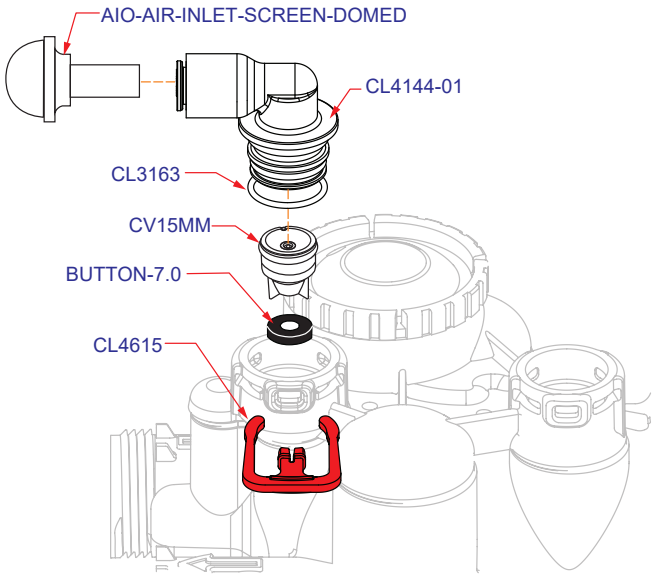

## 1" Drain Line Elbow Assembly




## Water Meter Assembly

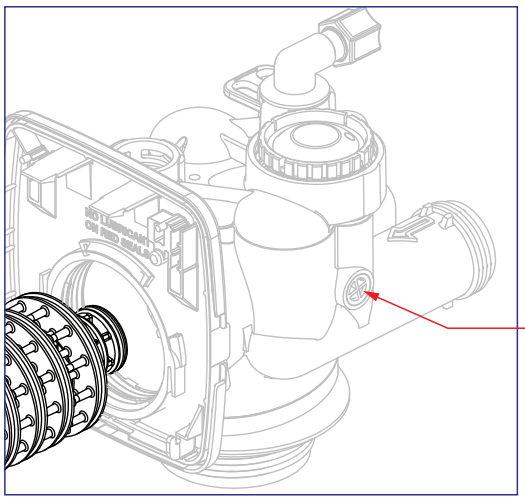


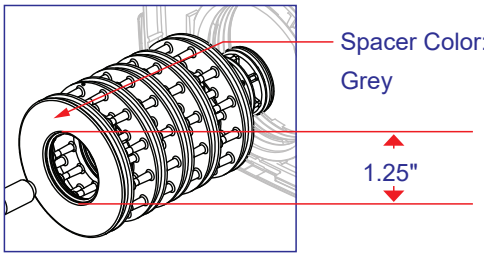

## Air Check Valve Assembly

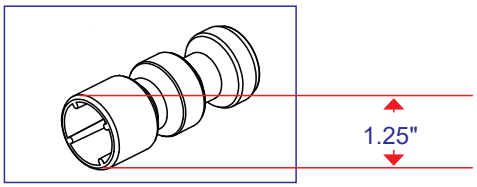


# Distributor Identification

## WS1 with 1.050" Distributor Tube Opening Identification

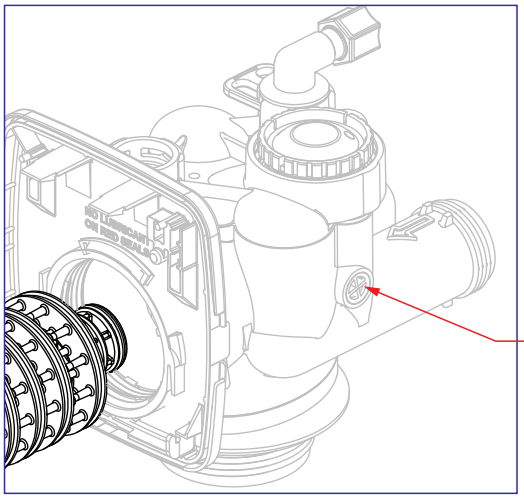


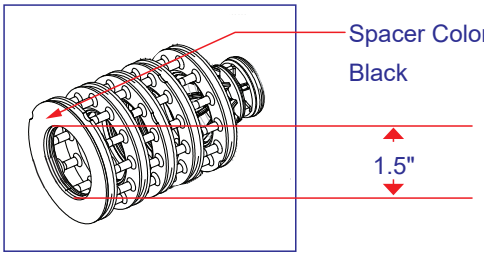



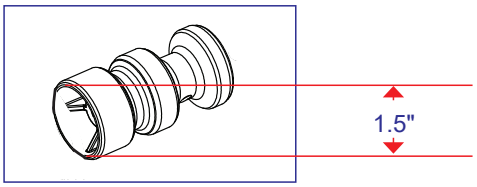




Note: The WS1 down

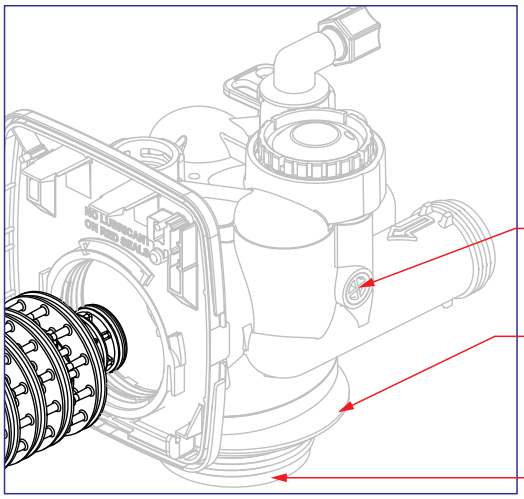
## WS1.25 with 1.32" Distributor Tube Opening Identification

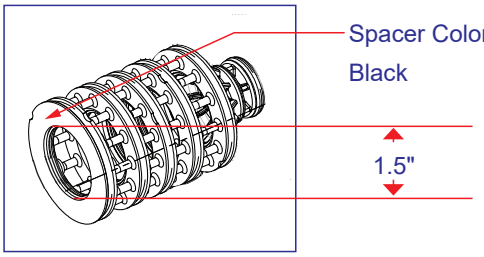


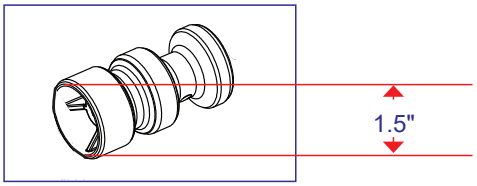




## WS1.25 with 32mm Distributor Tube Opening Identification



# Troubleshooting

| | | | | | |
|---|---|---|---|---|---|
| 1. | No Display on PC Board | a. | No power at electric outlet | a | Repair outlet or use working outlet |
| | | b. | Control valve Power Adapter not plugged into outlet or power cord end not connected to PC board connection | b. | Plug Power Adapter into outlet or connect power cord end to PC Board connection |
| | | c. | Improper power supply | c. | Verify proper voltage is being delivered to PC Board |
| | | d. | Defective Power Adapter | d. | Replace Power Adapter |
| | | e. | Defective PC Board | e. | Replace PC Board |
| 2. | PC Board does not display correct time of day | a. | Power Adapter plugged into electric outlet controlled by light switch | a. | Use uninterrupted outlet |
| | | b. | Tripped breaker switch and/ or tripped GFI | b. | Reset breaker switch and/or GFI |
| | | c. | Power outage | c. | Reset time of day. If PC Board has battery back up present the battery may be depleted. See front cover and drive assembly drawing for instructions |
| | | d. | Defective PC Board | d. | Replace PC Board |
| 3. | Display does not indicate that water is flowing. Refer to user instructions for how the display indicates water is flowing | a. | Bypass valve in bypass position | a. | Turn bypass handles to place bypass in service position |
| | | b. | Meter is not connected to meter connection on PC Board | b. | Connect meter to three pin connection labeled METER on PC Board |
| | | c. | Restricted/stalled meter turbine | c. | Remove meter and check for rotation or foreign material |
| | | d. | Meter wire not installed securely into three pin connector | d. | Verify meter cable wires are installed securely into three pin connector labeled METER |
| | | e. | Defective meter | e. | Replace meter |
| | | f. | Defective PC Board | f. | Replace PC Board |
| 4. | Control valve regenerates at wrong time of day | a. | Power outage | a. | Reset time of day. If PC Board has battery back up present the battery may be depleted. See front cover and drive assembly drawing for instructions |
| | | b. | Time of day not set correctly | b. | Reset to correct time of day |
| | | c. | Time of regeneration set incorrectly | c. | Reset regeneration time |
| | | d. | Control valve set at ”on 0“ (immediate regeneration) | d. | Check programming setting and reset to NORMAL (for a delayed regen time) |
| | | e. | Control valve set at ”NORMAL + on 0“ (delayed and/or immediate) | e. | Check programming setting and reset to NORMAL (for a delayed regen time) |
| 5. | Time of day flashes on and off | a. | Power outage | a. | Reset time of day. If PC Board has battery back up present the battery may be depleted. See front cover and drive assembly drawing for instructions |
| 6. | Control valve does not regenerate automatically when the REGEN button is depressed and held | a. | Broken drive gear or drive cap assembly | a. | Replace drive gear or drive cap assembly |
| | | b. | Broken Piston Rod | b. | Replace piston rod |
| | | c. | Defective PC Board | c. | Defective PC Board |

# Troubleshooting

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| 7. | Control valve does not regenerate automatically but **does** when the REGEN button is depressed and held | a. | Bypass valve in bypass position | a. | Turn bypass handles to place bypass in service position |
| | | b. | Meter is not connected to meter connection on PC Board | b. | Connected meter to three pin connection labeled METER on PC Board |
| | | c. | Restricted/stalled meter turbine | c. | Remove meter and check for rotation or foreign material |
| | | d. | Incorrect programming | d. | Check for programming error |
| | | e. | Meter wire not installed securely into three pin connector | e. | Verify meter cable wires are installed securely into three pin connector labeled METER |
| | | f. | Defective meter | f. | Replace meter |
| | | g. | Defective PC Board | g. | Replace PC Board |
| 8. | Hard or untreated water is being delivered | a. | Bypass valve is open or faulty | a. | Fully close bypass valve or replace |
| | | b. | Media is exhausted due to high water usage | b. | Check program settings or disgnostics for abnormal water usage |
| | | c. | Meter not registering | c. | Remove meter and check for rotation or foreign material |
| | | d. | Water quality fluctuation | d. | Test water and adjust program values accordingly |
| | | e. | No brine or low level of brine in brine tank | e. | Add proper salt to tank |
| | | f. | Control fails to draw in brine | f. | Refer to Trouble Shooting Guide number 12 |
| | | g. | Insufficient brine level in brine tank | g. | Check refill setting in programming. Check refill flow control for restrictions or debris and clean or replace |
| | | h. | Damaged seal/stack assembly | h. | Replace seal/stack assembly |
| | | i. | Control valve body type and piston type mix matched | i. | Verify proper control valve body type and piston type match |
| | | j. | Fouled media bed | j. | Replace media bed |
| 9. | Control valve uses too much brine | a. | Improper refill setting | a. | Check refill setting |
| | | b. | Improper program settings | b. | Check program setting to make sure they are specific to the water quality and application needs |
| | | c. | Control valve regenerates frequently | c. | Check for leaking fixtures that may be exhausting capacity or system is undersized |
| 10. | Residual brine being delivered to service | a. | Low water pressure | a. | Check incoming water pressure - water pressure must remain at minimum of 25 psi |
| | | b. | Incorrect injector size | b. | Replace injector with correct size for the application |
| | | c. | Restricted drain line | c. | Check drain line for restrictions or debris and clean |
| 11. | Excessive water in brine tank | a. | Improper program settings | a. | Check refill setting |
| | | b. | Plugged injector | b. | Remove injector and clean or replace |
| | | c. | Drive cap assembly not tightened in properly | c. | Re-tighten the drive cap assembly |
| | | d. | Damaged seal/stack assembly | d. | Replace seal/stack |
| | | e. | Restricted or kinked drain line | e. | Check drain line for restrictions or debris and or un-kink drain line |
| | | f. | Plugged backwash flow controller | f. | Remove backwash flow controller and clean or replace |
| | | g. | Missing refill flow controller | g. | Replace refill flow controller |
| 12. | Control valve fails to draw in brine | a. | Injector is plugged | a. | Remove injector and clean or replace |
| | | b. | Faulty brine piston | b. | Replace brine piston |
| | | c. | Brine line connection leak | c. | Inspect brine line for air leak |
| | | d. | Drain line restriction or debris cause excess back pressure | d. | Inspect drain line and clean to correct restriction |
| | | e. | Drain line too long or too high | e. | Shorten length and or height |
| | | f. | Low water pressure | f. | Check incoming water pressure - water pressure must remain at minimum of 25 psi |

# Troubleshooting

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| 13 | Water running to drain | a. | Power outage during regeneration | a. | Upon power being restored control will finish the remaining regeneration time. Reset time of day |
| | | b. | Damaged seal/stack assembly | b. | Replace seal/stack assembly |
| | | c. | Piston assembly failure | c. | Replace piston assembly |
| | | d. | Drive cap assembly not tightened in properly | d. | Re-tighten the drive cap assembly |
| 14. | E1, Err - 1001, Err - 101 = Control unable to sense motor movement | a. | Motor not inserted full to engage pinion, motor wires broken or disconnected | a. | Disconnect power, make sure motor is fully engaged, check for broken wires, make sure two pin connector on motor is connected to the two pin connection on the PC Board labeled MOTOR. Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | b. | PC Board not properly snapped into drive bracket | b. | Properly snap PC Board into drive bracket and then Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | c. | Missing reduction gears | c. | Replace missing gears |
| 15. | E2, Err - 1002, Err - 102 = Control valve motor ran too short and was unable to find the next cycle position and stalled | a. | Foreign material is lodged in control valve | a. | Open up control valve and pull out piston assembly and seal/stack assembly for inspection. Press **NEXT** and **REGEN** buttons for 3 seconds to re synchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | b. | Mechanical binding | b. | Check piston and seal/stack assembly, check reduction gears, check drive bracket and main drive gear interface. Press **NEXT** and **REGEN** buttons for 3 seconds to re synchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | c. | Main drive gear too tight | c. | Loosen main drive gear. Press **NEXT** and **REGEN** buttons for 3 seconds to re synchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | d. | Improper voltage being delivered to PC Board | d. | Verify that proper voltage is being supplied. Press **NEXT** and **REGEN** buttons for 3 seconds to re synchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| 16. | E3, Err - 1003, Err - 103 = Control valve motor ran too long and was unable to find the next cycle position | a. | Motor failure during a regeneration | a. | Check motor connection then Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | b. | Foreign matter built up on piston and stack assemblies creating friction and drag enough to time out motor | b. | Replace piston and stack assemblies. Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | c. | Drive bracket not snapped in properly and out enough that reduction gears and drive gear do not interface | c. | Snap drive bracket in properly then Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| 17. | Err - 1004, Err - 104 = Control valve motor ran too long and timed out trying to reach home position | a. | Drive bracket not snapped in properly and out enough that reduction gears and drive gear do not interface | a. | Snap drive bracket in properly then Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |

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|---|---|---|---|---|---|
| 18. | Err - 1006, Err - 106, Err - 116 = MAV/ SEPS/NHBP/AUX MAV valve motor ran too long and unable to find the proper park position<br>**MAV** = Motorized Alternating Valve<br>**SEPS** = Separate Source<br>**NHBP** = No Hard Water Bypass<br>**AUX MAV** = Auxiliary MAV | a. | Control valve programmed for ALT A or B, NHBP, SEPS, or AUX MAV with out having a MAV or NHBP valve attached to operate that function | a. | Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect. Then re-program valve to proper setting |
| | | b. | MAV/NHBP motor wire not connected to PC Board | b. | Connect MAV/NHBP motor to PC Board two pin connection labeled DRIVE. Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | c. | MAV/NHBP motor not fully engaged with reduction gears | c. | Properly insert motor into casing, do not force into casing. Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | d. | Foreign matter built up on piston and stack assemblies creating friction and drag enough to time out motor | d. | Replace piston and stack assemblies. Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| 19. | Err - 1007, Err - 107, Err - 117 = MAV/ SEPS/NHBP/AUX MAV valve motor ran too short (stalled) while looking for proper park position<br>**MAV** = Motorized Alternating Valve<br>**SEPS** = Separate Source<br>**NHBP** = No Hard Water Bypass<br>**AUX MAV** = Auxiliary MAV | a. | Foreign material is lodged in MAV/NHBP valve | a. | Open up MAV/NHBP valve and check piston and seal/stack assembly for foreign material. Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |
| | | b. | Mechanical binding | b. | Check piston and seal/stack assembly, check reduction gears, drive gear interface, and check MAV/NHBP black drive pinion on motor for being jammed into motor body. Press **NEXT** and **REGEN** buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect |

# Error Codes

| Error | Description of Error | |
|---|---|---|
| 101 | UNABLE TO START | Valve not sensing valve movement with motor output energized |
| 102 | MOTOR STALLED | Valve unable to find next cycle position (stalled) |
| 103 | MOTOR RAN TOO LONG | Valve unable to find next cycle position |
| 104 | VALVE HOMING | Valve unable to find Home position |
| 106 | ALT MAV RAN TOO LONG | Alt MAV motor RAN TO LONG - unable to find proper park position |
| 107 | ALT MAV STALLED | Alt MAV motor RAN TO SHORT, STALLED - unable to find proper park position |
| 109 | INVALID MOTOR STATE | Control can no longer operate properly due to the detection of an invalid motor state |
| 116 | AUX MAV RAN TOO LONG | Aux MAV motor RAN TOO LONG - unable to find proper park position |
| 117 | AUX MAV STALLED | Aux MAV motor RAN TOO SHORT, STALLED - unable to find proper park position |
| 201 | INVALID REGEN STEP | Control can no longer operate properly due to the detection of an invalid regeneration cycle step - Internal Software Error |
| 202 | UNEXPECTED STALL | Motor encountered a unexpected stall which it was able to recover from and proceed normally |
| 402 | POWER DOWN MEMORY | Control can no longer operate properly due to a check sum error for the Operational Data and Status Section of $E^2$PROM memory |
| 403 | PROGRAM MEMORY | Control can no longer operate properly due to a check sum error for the Programming Section of $E^2$PROM memory |
| 404 | DIAGNOSTIC MEMORY | Control can no longer operate properly due to a check sum error for the Diagnostic Section of $E^2$PROM memory |
| 405 | HISTORY MEMORY | Control continues to operate normally w/check sum error for the History Section of $E^2$PROM memory, however error is recorded in Error Log |
| 406 | CONTACT MEMORY | Control can no longer operate properly due to a check sum error for the Contact Screen Section of $E^2$PROM memory |
| 407 | STATUS RAM | STATUS RAM MEMORY FAILURE - Error generated when the microcontroller can't operate properly due to corrupted data contained in the Operational Data/Status Section of RAM memory. When this error is generated, like a "405" or "408" Error, a "407" is recorded in the Error Log, but the control does not enter Error Mode and continues to operate normally using previously stored Status RAM data (that can be up to 6 hrs. old). This portion of memory includes the state of motors, relays, flow, regen, and more. Most things that are tracked on a moment-by-moment basis that need to be able to recover in the event of a power loss or reset is saved here. |
| 408 | DIAGNOSTIC RAM | DIAGNOSTIC RAM MEMORY FAILURE - Error generated when the microcontroller can't operate properly due to corrupted data contained in the Diagnostic Section of RAM memory. When this error is generated, like a "405" or "407" Error, a "408" is recorded in the Error Log, but the control does not enter Error Mode and continues to operate normally using previously stored Diagnostic RAM data (that can be up to 6 hrs. old). This portion of memory includes parameters normally displayed in the diagnostic branch of the menu map. |
| 410 | CONFIG DOWNLOAD | Configurator file downloaded to the control was not originally uploaded from another control with the identical software revision |

# Display Screen Background Color

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|---|---|
| RED SCREEN | Red indicates a low salt level or an error has occured. |
| PURPLE SCREEN | Purple indicates a service reminder. Contact your dealer. |
| YELLOW SCREEN | Yellow indicates a service reminder. Contact your dealer. |
| BLUE SCREEN | Blue indicates the control is in Softening mode. |
| GREEN SCREEN | Green indicates the control is in Filtering mode. |