WS2EE
WATER SPECIALIST CONTROL VALVE
WS2 CONTROL VALVE HIGHLIGHTS

• 2” Top mount suited for commercial/industrial applications
• Lead free brass construction
• NSF/FDA Approved Black Coating
• Economical stainless steel optional meter
• Service flow rate of 115 gpm, Backwash 80 gpm
• Microprocessor control with easy access front panel settings
• Front panel display for time of day, days until next regeneration, volume remaining, current flow rate, and total volume used
• Four methods to initiate regeneration; meter immediate, meter delayed, time clock delayed, or pressure differential
• Optional Double backwash feature, offers optimum regeneration, enhanced efficiency and cleaning ability
WS2 CONTROL VALVE HIGHLIGHTS

• Fully adjustable cycle times with 6 fixed cycles
• Days override feature 1 - 28 days or off available
• Softener brining from 12” - 48” diameter tanks
• Backwash filters from 12” - 36” diameter filter tanks at 10 gpm of backwash per square foot of bed area
• Downflow Regeneration
• Configuration and operation data stored in non volatile memory
• Lithium Coin Cell Battery with 8 hour power carry over
• 12-volt UL Output AC Adapter Energy Star Rated
• Treated water regenerant refill
Specifications

- Service 115 gpm @ 15psi drop
- Backwash 80 gpm @ 25 psi drop
- Operating Pressures 20psi - 125psi
- Operating Temperatures 40° - 110° F
- 2” Female NPT Inlet / Outlet
- 1.5” distributor pilot
- 1.5” Female NPT drain line connection (see optional DLFC adapters)
- Brine line adapters included with valve:
  - 1” Male NPT elbow
  - ¾” x 1” solvent weld elbow with a ½” OD poly tube compression
- 2.2 gpm BLFC button in refill flow control
- Mounting base is 4” – 8 UN
- Height from top of tank is 8.5”
- Shipping weight with meter 29lbs
- 12-volt AC adapter with 15’ cord.
- Materials suitable for most regenerants.
Control Valve Ports

- **INLET TAP**
- **OUTLET TAP**
- **INLET**
- **OUTLET**
- **DRAIN**
- **BRINE CONNECTION**
WS2 Weather Covers

V3783WC-A

V3783WC-W
WS2 DLFC ADAPTERS
Will Require additional pipe fittings to adapt to WS2H control valve drain port
WS2 Drain Elbow ¾” Male NPT without Silencer

V3158-04

For Flows up to 10 GPM

Proper DLFC orientation directs water flow toward the washer face with rounded edge.

Lubricate o-rings with silicone.

Order DLFC separately
WS2 Drain Fitting 1” Male NPT Straight without Silencer V3008-05 For Flows up 25 GPM

Proper DLFC orientation directs water flow toward the washer face with rounded edge.
Lubricate o-rings with silicone.
Order DLFC separately
WS2 1.5” Drain Flow Control
1.5” Male NPT x 1.5” Female NPT
V3080

For Flows up to 85 GPM

INLET

OUTLET

DLFC
Button Retainer
WS2 Control Valve Typical
Service Tools Required

- WS1 Service Wrench V3193-02
- 5/32 Allen Wrench
- Your Hands & Fingers
Front Cover Removal

Pull out on each side of the covers locking tabs
PC Board Removal

Lift up on PC Board locking tab
Last to remove PC Board

Disconnect Power 1st

Disconnect Motor Wire 2nd
WS2 EE PC BOARD
V3408EE-03

Lithium Coin Cell Battery
3 volt type 2032

Motor Connection
MAV/NHBP Drive Connection
Interconnect Cable Connection
12 VAC Power Connection

Software REV. Level
External DP Connection
Meter Connection
Drive Bracket Removal

Lift up on both release tabs with thumbs and use index fingers to pull out on pull tabs.
Drive Bracket Breakdown
Remove Wire Cables
Backplate Removal

• Locate two release tabs on drive cap
• Squeeze in on release tabs and turn backplate counterclockwise
Drive Cap Removal

• Use a 5/32 Allen Wrench to Remove Drive Cap Bolts
Pull Out Drive Cap with Main Piston & Brine Piston
WS2 Drive Cap Assembly
V3728
WS2 Downflow Piston & Brine Piston

V3725

V3726

- Main piston & Brine piston have a friction reducing coating
- Coating increases seal life & reduces drag force on piston
- Both main piston and brine piston have seal lip support ribs for high pressure applications
WS2 Stack Assembly

V3729

- Brine
- Distributor
- Outlet
- Inlet
- Top of Tank (TOT)
- Drain
Use service wrench to remove injector cap
Removal of Injector

You can use your service wrench to remove injector by gently prying the injector underneath its curled rim.
The standard injector size can be visually identified by the letter that is stamped into the injector body.
WS2 Injector Adapter for 12”- 16” Tanks

WS1.5 Injector

WS2 Injector Adapter
## WS2 Injector Tank Size Chart

<table>
<thead>
<tr>
<th>Injector Order Number</th>
<th>Injector Identification</th>
<th>Typical Tank Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>V3010-2R-15B</td>
<td>Violet Nozzle</td>
<td>12”</td>
</tr>
<tr>
<td>V3010-2S-15C</td>
<td>Red Nozzle</td>
<td>13”</td>
</tr>
<tr>
<td>V3010-2T-15D</td>
<td>White Nozzle</td>
<td>14”</td>
</tr>
<tr>
<td>V3010-2U-15E</td>
<td>Blue Nozzle</td>
<td>16”</td>
</tr>
<tr>
<td>V3010-2A</td>
<td>Letter “A” Stamp with White Nozzle</td>
<td>18”</td>
</tr>
<tr>
<td>V3010-2B</td>
<td>Letter “B” Stamp with White Nozzle</td>
<td>21”</td>
</tr>
<tr>
<td>V3010-2C</td>
<td>Letter “C” Stamp with White Nozzle</td>
<td>24”</td>
</tr>
<tr>
<td>V3010-2D</td>
<td>Letter “D” Stamp with White Nozzle</td>
<td>30”</td>
</tr>
<tr>
<td>V3010-2E</td>
<td>Letter “E” Stamp with White Nozzle</td>
<td>36”</td>
</tr>
<tr>
<td>V3010-2F</td>
<td>Letter “F” Stamp with White Nozzle</td>
<td>42”</td>
</tr>
<tr>
<td>V3010-2G</td>
<td>Letter “G” Stamp with White Nozzle</td>
<td>48”</td>
</tr>
</tbody>
</table>
WS2 Brine Connections
WS2 Refill Flow Control

Standard 2.2 GPM BLFC

Included with Valve

Other Flow Ranges available from 0.7 to 10 GPM
Control Valve Regeneration Cycle Positions
WS2 2” M x F NPT Meter Assemblies

V3094

- Comes with WS2 metered valves

V3094-15

- Used for remote in-line meter or for twin alternating systems
Programming Screens
Six Levels of Programming/Display Information Plus Lockout Feature

- User screens
- Setting the Time of Day
- Valve Configuration Settings
- Setting Cycle Timers
- Installer Display Settings
- Diagnostic screens
- Lockout feature only allows access to User and installer screens
**Button Operation and Functions**

**NEXT**
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 while in regeneration will advance to the next cycle. Pressing in the program levels will go backwards to the previous screen.

**REGEN**
Changes variable being displayed.

**Key sequence to lock and unlock program settings.**

**Holding for 3 seconds initiates a control reset.** The software version is displayed and the piston returns to the home/service position, resynchronizing the valve.

**NEXT**
Medium Reset:
Press NEXT and ▼ at the same time until screen changes;
Then from the Set SOFTENING screen press and hold ▲ and ▼ at the same time for 5 seconds. This will reset control back to factory defaults.
Regeneration and Error Screens

**Regen Screen**
Displays the time remaining in the current cycle. Pressing REGEN advances to the next cycle.

**Error Screen**
Alternated flashing Err and error code every 3 seconds. Clear by disconnecting the power supply at the PC board and reconneting, or press the NEXT and REGEN simultaneously for 3 seconds.
# Regeneration Cycles and Times

<table>
<thead>
<tr>
<th>Cycle</th>
<th>Range of times (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Backwash 1\textsuperscript{st} (upflow)</td>
<td>Softening: 1 - 95</td>
</tr>
<tr>
<td></td>
<td>Filtering: 1 - 95</td>
</tr>
<tr>
<td>2. Regenerant Draw/Slow Rinse (downflow)</td>
<td>Softening: 1 - 180</td>
</tr>
<tr>
<td></td>
<td>Filtering: N/A</td>
</tr>
<tr>
<td>3. Backwash 2\textsuperscript{nd} (upflow)</td>
<td>Softening: 1 - 95</td>
</tr>
<tr>
<td></td>
<td>Filtering: N/A</td>
</tr>
<tr>
<td>4. Fast Rinse (downflow)</td>
<td>Softening: 1 - 95</td>
</tr>
<tr>
<td></td>
<td>Filtering: 1 - 95</td>
</tr>
<tr>
<td>5. Regenerant Refill (with treated water)</td>
<td>Softening: 0.1 - 99.9 or OFF</td>
</tr>
<tr>
<td></td>
<td>Filtering: N/A</td>
</tr>
<tr>
<td>6. Service (downflow)</td>
<td></td>
</tr>
</tbody>
</table>
Setting Time of Day

Push NEXT until time of day screen is displayed. Press and hold ▲ or ▼ until the SET indicator is displayed, and the hour 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 Display Screens. 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 saving 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.
User Displays

General Operation

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. If volume is selected in Configuration Settings Step 4CS, shows volume remaining to regeneration. If volume is not selected in Configuration Settings Step 4CS, this screen will not be shown. If a meter is not used this display will not change.

User 2
Displays number of days to next regeneration.

User 3
Displays flow rate in gallons per minute. If a meter is not used this display will be shown but 0 will be displayed. This screen will not be shown if 7 day or 28 day is selected in Configuration Settings Step 4CS.

User 4
Displays total flow in gallons since last reset. If a meter is not used this display will be shown but 0 will be displayed. This screen will not be shown if 7 day or 28 day is selected in Configuration Settings Step 4CS.

PRESS ▼ FOR 3 SECONDS TO RESET TO 0.

User 5
Shows current time.
Conditional Operation Display Screens

In Alternator Systems when a unit is waiting to initiate the first cycle step of regeneration, “REGEN PndG” is displayed.

“STbY” is displayed in Alternator Systems when a valve is in Standby state.

“REGEN PndG 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.
**To Access Valve Configuration Screens**

**Step 1CS** – Press ▲ and ▼ simultaneously for 5 seconds and release. If screen in Step 2CS does not appear, the lock on the valve is activated. To unlock press ▼, NEXT, REGEN, ▲ in sequence, then press ▲ and ▼ simultaneously for 5 seconds and release.

**Step 2CS** – Choose 1.0 for 1”, 1.25” for 1.25”, 1.5 for 1.5”, 2.0L for 2L, 2.0 for 2” valve¹. Press NEXT to go to Step 3CS. Press REGEN to exit Configuration Settings.
Note: When using the WS2 valve, if “2L” is set instead of “2.0” for valve type, when the valve is in regeneration and the piston drives to the “Draw” cycle the piston will stall and generate a 1002 error code. Clear error code by pressing NEXT and REGEN simultaneously until the valve resets, then re-program to proper valve type setting.

**Step 3CS** – When 2.0L or 2.0 are selected, an additional screen will appear. It is used to select which size flow meter is to be used with the valve, 1.5 or 2.0. Press NEXT to go to Step 4CS. Press REGEN to return to previous step.

¹ When using the WS2 control valve, the circuit board software must have meter selection choices of 2.0 and 2.0L. The WS2 valve must be set for the 2.0 meter selection during programming. If the software version does not have both the 2.0 and 2.0L selections, consult your equipment supplier for a replacement circuit board. When using the WS2L valve with older version software that does not have both 2.0 and 2.0L selection choices, the valve must be set to 2.0 during programming. If a WS2L valve is being used with newer version software that has both 2.0 and 2.0L selection choices, the valve must be set to 2.0L during programming.
To Access Valve Configuration Screens

Step 4CS – Press ▲ or ▼ to select one of the following:

- If Volume (gallons) is selected the regeneration will occur after the specific volume has been used or on the day override (if selected) whichever comes first.

- If 28/Volume (gallons) is selected the regeneration will occur on the day (1 through 28) selected in Installer Display Settings. If a meter is not used the total flow and flow rate user displays and the volume display in Diagnostics will be shown as 0.

- If 7/Volume (gallons) is selected the regeneration will occur on the selected day(s) of the week (see instructions contained in Installer Display Settings). If a meter is not used the total flow and flow rate user displays and the volume display in Diagnostics will be shown as 0.

- If 28 is selected the regeneration will occur on the day (1 through 28) selected in Installer Display Settings. The total flow and flow rate user displays and the volume display in Diagnostics will not be shown even if a meter is used.

- If 7 is selected the regeneration will occur on the selected day(s) of the week (see instructions contained in Installer Display Settings). The total flow and flow rate user displays and the volume display in Diagnostics will not be shown even if a meter is used.

Press NEXT to go to Step 5CS. Press REGEN to return to previous step.

Step 5CS – Press ▲ or ▼ to select to regenerate immediately on 0 or at delayed time. Immediately on 0 can only be selected if Volume (gallons) was selected in step 4CS and a meter must be installed. Delay is the only option for the other Step 4CS selections. Press NEXT to go to Step 6CS. Press REGEN to return to previous step.
Valve Configuration Screens

Step 6CS – Allows selection of one of the following using ▲ or ▼:
• the Control Valve to have no hard water bypass;
• the Control Valve to act as an alternator; or
• the Control Valve to have a separate source during the regeneration cycle.

Select OFF when none of these features are used.

Only use Clack No Hard Water Bypass Valves or Clack Motorized Alternating Valves (MAV) with these selections. Clack No Hard Water Bypass Valves (1” or 1.25” V3070FF or V3070FM) are not designed to be used with the alternator or separate source functions. The V3063 and V3063BSPT motorized alternating valves are not designed to be used as a no hard water bypass or separate source inlet if the pressure differential is more than 60 psi.

Selecting the Control Valve to act as an alternator:
519.0 and higher = Use 3-wire Interconnect Cables for all communication between units.
518.3 and lower = Use 2-wire Interconnect Cables for twin alternators with independent flow meters.

<table>
<thead>
<tr>
<th>Configuration Settings</th>
<th>Step 4CS</th>
<th>Select Volume</th>
<th>Set Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration Settings</td>
<td>Step 5CS</td>
<td>Set regeneration time option to “On O”.</td>
<td>Set regeneration time option to “On O”.</td>
</tr>
<tr>
<td>Configuration Settings</td>
<td>Step 6CS</td>
<td>Set to ALTA Connect ALTA 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 ALTA valve</td>
<td>Set to ALTB Connect ALTB valve to the MAV’s B port. No connections between the ALTB valve and the MAV are made.</td>
</tr>
<tr>
<td>Installer Display Setting</td>
<td>Step 2I</td>
<td>Enter the Volumetric Capacity for the System</td>
<td>Enter the Volumetric Capacity for the System (the same as Valve A)</td>
</tr>
<tr>
<td>Installer Display Setting</td>
<td>Step 3I</td>
<td>Set Day Over ride to “oFF”</td>
<td>Set Day Over ride to “oFF”</td>
</tr>
</tbody>
</table>

NOTE: If the control valve is in an error state during regeneration mode the MAV will close the B port and keep open the A port until the error is corrected and reset.
Twin Alternating Programming Options

Valve “A” in Service Position = MAV piston rod Retracted
Valve “B” in Service Position = MAV piston rod Extended

NOTE: Clack twin alternators can be set up to operate with a day over-ride setting in conjunction with the main volume based regeneration setting. If a system is programmed for twin alternating with a delayed regeneration, a Clack twin alternator can perform an immediate transfer of the MAV to place a fully regenerated tank on-line and have a delayed regeneration time for the exhausted unit. Clack twin alternators will only count days on the unit that is on-line which will allow the twin alternating system to regenerate based on only a day over-ride setting when programmed to regenerate based on days.

For Clack Corporation alternator systems using WS1, WS1.25, WS1.5, and WS2L valves there will be an option to delay the last two cycles of regeneration (only “Rinse” and “Fill”). This feature splits the regeneration into two portions. The first portion of the regeneration will start immediately and all programmed cycles before the “Rinse” and “Fill” cycles will be performed. After all programmed cycles before “Rinse” and “Fill” are completed the control valve will drive to the service position (displaying “Delayed Rinse + Fill Pending”). When the volume of the on-line unit is depleted to 10% of its programmed capacity, the control valve will be triggered to finish the second portion of the regeneration and complete the “Rinse” and “Fill” cycles and return to Service and be placed into Standby mode, and wait to come on-line for service.
For Clack Corporation alternator systems using the WS2 valve, when NEXT is pressed after selecting ALTA or ALTB, a display will allow the user to set the amount of pre-service rinse time for the stand by tank just prior to returning to service.
2” Motorized Alternating Valve (MAV) Revision 2

Current Design

- 2” Female NPT
- Lead Free Brass Casting with NSF/FDA Approved Black Coating
- Allows for WS2 & WS2H to become Twin Alternating
- Full 2” Ports with minimal pressure loss
- Hydraulically Balanced
- Provides for No Hard Water Bypass during Regeneration
- Provides Choices of Treated or Non-Treated Water Regeneration
- Proven and Reliable Clack DC drive assembly
- Low voltage drive assembly controlled by valves circuit board
- Flow from Port A to Common has a 2.1 PSI drop at 90 GPM
- Flow from Port B to Common has a 1.4 PSI drop at 90 GPM
- Operating Pressures of 20 PSI to 125 PSI
- Operating Temperature of 40° - 110° F
<table>
<thead>
<tr>
<th>Drawing No.</th>
<th>Order No.</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V3073</td>
<td>MAV/NOHWBY COVER ASY</td>
<td>V3076: 1</td>
</tr>
<tr>
<td>2</td>
<td>V3476</td>
<td>WS MOTOR ASY 8 FT</td>
<td>V3076: 1</td>
</tr>
<tr>
<td>3</td>
<td>V3592</td>
<td>SCREW #8-34 PHPN T-25 SS</td>
<td>V3076: 3</td>
</tr>
<tr>
<td>4</td>
<td>V3262-01</td>
<td>WS1 S4ALT/28BY REDUCGEAROVRAST</td>
<td>V3076: 1</td>
</tr>
<tr>
<td>5</td>
<td>V3110</td>
<td>WS1 DRIVE REDUCING GEAR 12X36</td>
<td>V3076: 3</td>
</tr>
<tr>
<td>6</td>
<td>V3264</td>
<td>WS2 BYPASS REDUCTION GEAR AXLE</td>
<td>V3076: 3</td>
</tr>
<tr>
<td>7</td>
<td>V3527</td>
<td>SCREW 1/4-20 X 3/4 BHSCS SS</td>
<td>V3076: 3</td>
</tr>
<tr>
<td>8</td>
<td>V3078</td>
<td>MAV/NOHWBY 2 DRIVE ASY</td>
<td>V3076: 1</td>
</tr>
<tr>
<td>9</td>
<td>V3634-01</td>
<td>MAV/NOHWBY 2 PISTON</td>
<td>V3076: 1</td>
</tr>
<tr>
<td>10</td>
<td>V3077</td>
<td>MAV/NOHWBY 2 STACK ASY</td>
<td>V3076: 1</td>
</tr>
<tr>
<td>11</td>
<td>V3633-01</td>
<td>WS2 MAV BODY NPT</td>
<td>V3076: 1</td>
</tr>
<tr>
<td></td>
<td>V3633-01BSPT</td>
<td>WS2 MAV BODY BSPT</td>
<td></td>
</tr>
</tbody>
</table>

Not Shown: V3474 WS ALT CONNECT CORD 8FT BLK.

- Operating Pressures:
  20 PSI Minimum / 125 PSI Maximum
- Operating Temperatures:
  40°F Minimum / 110°F Maximum
No Hard Water Bypass Programming Option

Configuring the Control Valve for No Hard Water Bypass Operation:

Select nHbP for control operation. For no hard water bypass operation the three wire connector is not used.

Selection requires that a connection to MAV or a Clack No Hard Water Bypass Valve is made to the two pin connector labeled ALTERNATOR DRIVE located on the printed circuit board. If using a MAV, the A port of the MAV must be plugged and the valve outlet connected to the B port. When set to nHbP the MAV will be driven closed before the first regeneration cycle that is not FILL or SOFTENING or FILTERING, and be driven open after the last regeneration cycle that is not FILL.

NOTE: If the control valve enters into an error state during regeneration mode, the no hard water bypass valve will remain in its current state until the error is corrected and reset.

Shown with optional meter
Separate Source Regeneration Programming Option

Configuring the Control Valve for Separate Source Operation:

Select SEPS for control operation. For separate source operation the three wire connector is not used.

Selection requires that a connection to a Clack Motorized Alternator Valve (MAV) is made to the two pin connector labeled ALTERNATOR DRIVE located on the printed circuit board. The C port of the MAV must be connected to the valve inlet and the A port connected to the separate source used during regeneration. The B port must be connected to the feed water supply.

When set to SEPS the MAV will be driven closed before the first regeneration cycle, and be driven open after the last regeneration cycle.

NOTE: If the control valve enters into an error state during regeneration mode, the MAV will remain in its current state until the error is corrected and reset.
Step 7CS

Selecting the use of an outside signal to initiate a regeneration:
Selection only matters if a connection is made to the two pin connector labeled DP SWITCH located on the printed circuit board. Following is an explanation of the options:

off - Feature not used.

NOTE: In a twin alternating system each control must have a separate dp signal or dp switch. One dp signal or one dp switch cannot be used for both controls.

on0 – If the dp switch is closed for an accumulative time of 2 minutes a regeneration will be signaled to the unit. In a twin alternating system the MAV will transition first to switch units so that the signaled unit can start regeneration. After the MAV has fully transitioned, the regeneration begins immediately. Note: For WS1 – WS2L control valves programmed for twin alternating if the dp function “on0” is set, the Delayed Rinse and Fill feature is not available.

dELy – If the dp switch is closed for an accumulative time of 2 minutes a regeneration will occur at the scheduled delayed regeneration time. In a twin alternating system once the dp switch is triggered the PC Board will display “REGEN TODAY” and when the delayed regen time comes the control will switch tanks and the triggered unit will then go into regeneration. Note: For WS1 – WS2L control valves programmed for twin alternating if the dp function “dEL” is set, the Delayed Rinse and Fill feature is not available.

Hold – If the dp switch is closed a regeneration will be prevented from occurring while there is switch closure. In a twin alternating system the regeneration of a unit can be prevented upon switch closure. If the unit depletes the capacity down to zero, it will not be allowed to switch tanks to regenerate until the switch is open. Note: For WS1 – WS2L control valves programmed for twin alternating the Delayed Rinse and Fill feature can be set in conjunction with the “Hold” if desired.

Press NEXT to exit Configuration Settings. Press REGEN to return to previous step.
Setting Regeneration Cycle Times

**Step 1CT** - Press NEXT and ▼ simultaneously for 5 seconds and release. If screen in Step 2CT does not appear, the lock on the valve is activated. To unlock press ▼, NEXT, REGEN, ▲ in sequence, then press NEXT and ▼ simultaneously for 5 seconds and release.

**Step 2CT** - Select between SOFTENING or FILTERING. When set to FLTr, only Steps 3CT and 6CT are available. Press NEXT to go to Step 3CT. Press REGEN to exit Regeneration Cycle Times.

**Step 3CT** - Adjust the length of the backwash from 1-95 minutes using ▲ or ▼.

Press NEXT to go to Step 4CT. Press REGEN to return to previous step.
Setting Regeneration Cycle Times

**Step 4CT** - Adjust the length of the regenerant draw from 1-180 minutes using ▲ or ▼.

Press NEXT to go to Step 5CT. Press REGEN to return to previous step.

**Step 5CT** - Adjust the length of the second backwash from 1-95 minutes using ▲ or ▼.

Press NEXT to go to Step 6CT. Press REGEN to return to previous step.
Setting Regeneration Cycle Times

**Step 6CT** - Adjust the length of rinse from 1-95 minutes using ▲ or ▼.

Press NEXT to go to Step 7CT. Press REGEN to return to previous step.

**Step 7CT** - Adjust the length of fill from 0.1-99.0 minutes or OFF. WS2 valves are shipped from the factory with a refill flow control of 2.2 gpm (8.3 lpm). All other control valves are shipped from the factory with a refill flow control of 0.5 gpm (1.9 lpm).

Press NEXT to exit Regeneration Cycle Times. Press REGEN to return to previous step.
Installer Display Settings

One of three sets of displays will be shown depending on what was selected in Configuration Settings Step 4CS.

Volume (Gallons) selected in Configuration Settings Step 4CS

**Step 1I** - To enter Installer Display press NEXT and ▲ simultaneously for 5 seconds and release.

**Step 2I** - Volumetric capacity in gallons to regeneration. Press NEXT to go to Step 3I. Press REGEN to exit Installer Display.

**Step 3I** - Adjust day override from 1 - 28 or OFF. Press NEXT to go to Step 4I. Press REGEN to return to previous step.

**Step 4I** - Use ▲ or ▼ to set the regen hour. Press NEXT to go to Step 5I. Press REGEN to return to the previous step.

**Step 5I** - Use ▲ or ▼ to set the regen minutes. Press NEXT to exit Installer Display. Press REGEN to return to previous step.
Installer Display Settings

28 Day or 28/Volume (Gallons) selected in Configuration Settings Step 4CS

- **Step 1I** - To enter Installer Display press NEXT and ▲ simultaneously for five seconds and release.

- **Step 2I** - Adjust days from 1 - 28. Press NEXT to go to Step 3I. Press REGEN to exit Installer Display.

- **Step 3I** - Use ▲ or ▼ to set time of the regen hour. Press NEXT to go to Step 4I. Press REGEN to return to previous step.

- **Step 4I** - Use ▲ or ▼ to set the regen minutes. Press NEXT to exit Installer Display. Press REGEN to return to previous step.
7 Day or 7/Volume (Gallons) selected in Configuration Settings Step 4CS

**Step 11** - To enter Installer Display press NEXT and ▲ simultaneously for 5 seconds and release.

**Step 21** - Use ▲ or ▼ to set the current day of the week.
Default = 2 (Monday)
1 = SUNDAY
2 = MONDAY
3 = TUESDAY
4 = WEDNESDAY
5 = THURSDAY
6 = FRIDAY
7 = SATURDAY
Press NEXT to go to Step 31. Press REGEN to exit Installer Display.

**Step 31** - Scroll through days 1 to 7 using NEXT. Use ▲ or ▼ to turn regen on or off for each individual day (regen indicator on means regeneration will happen).
After completing the 7th day, press NEXT to go to Step 41. Press REGEN to go to previous display.

**Step 41** - Use ▲ or ▼ to set the regen hour.
Press NEXT to go to Step 51. Press REGEN to go to previous display.

**Step 51** - Use the ▲ or ▼ to set the regen minutes. Press NEXT to exit Installer Display.
Press REGEN to return to previous display.

EXIT TO DISPLAY SCREENS
Diagnostics

Step 1D - Press ▲ and ▼ simultaneously for 5 seconds and release. Then press ▲ and ▼ simultaneously for 3 seconds and release. If screen in Step 2D does not appear the lock on the valve is activated. To unlock press ▼, NEXT, REGEN, ▲ in sequence, then press ▲ and ▼ simultaneously for 5 seconds and release. Then press ▲ and ▼ simultaneously for 3 seconds and release.

Step 2D - Display shows the number of days since a regeneration last occurred. Press NEXT to go to Step 3D. Press REGEN to exit Diagnostics.

Step 3D - Display shows the volume of water treated in gallons treated since the last regeneration. If Volume (gallons), 28/Volume (gallons), or 7/Volume (gallons) was selected in Step 4CS and no meter is installed this display will read 0. Press NEXT to go to Step 4D. Press REGEN to return to previous step.
Diagnostics

**Step 4D** - Display shows the days in service since start up. Press NEXT to go to Step 5D. Press REGEN to return to previous step.

**Step 5D** - Display shows the total number of regeneration cycles since start up. Press NEXT to exit Diagnostics. Press REGEN to return to previous step.