C-SERIES

EE SERIES MODELS



1" & 1-1/4" CONTROL VALVE

EE PROGRAMMING GUIDE

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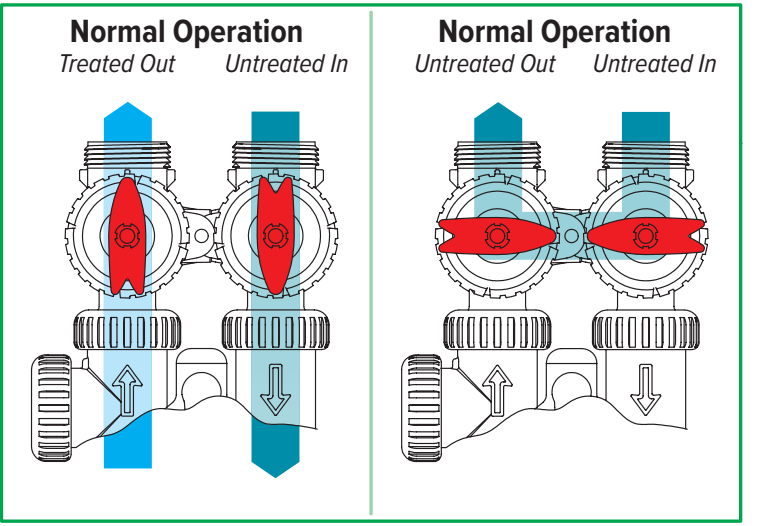
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TABLE OF CONTENTS

Control Valve Function & Cycles of Operation 2
Regeneration Cycles & Times 2
User Displays/Setting Time of Day 3
Configuration Settings . . . . . 4 - 7
Softener System Settings . . . . . 8 - 10
Setting Options Table 11
Filter System Settings . . . . . 12 - 13
Installer Displays/Settings 14
Diagnostics 15
Valve History 16
Drawings & Part Numbers
Front Cover & Drive Assembly 17

BYPASS OPERATION

To shut off water to the system, please position arrow handles as shown in the bypass operation diagram to the right. If your valve doesn't look like the diagram, contact your service technician for instructions on how to shut off water.



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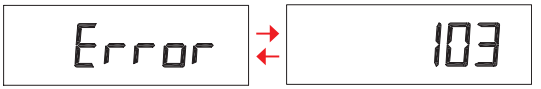
REGENERATION & ERROR SCREENS, BUTTON OPERATION & FUNCTION



Regen Screen

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

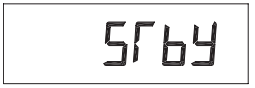
Error Screen



Alternated flashing Err and error code every 3 seconds. Clear by disconnecting the power supply at the PC board and reconnecting, or press **NEXT** and **REGEN** simultaneously for 3 seconds.



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.

Button Operation and Function

NEXT — Scrolls to the next display.

REGEN — 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

△ ▽ — Changes variable being displayed.

▽ NEXT △ REGEN — Key sequence to lock and unlock program settings.

NEXT REGEN — 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.

REGEN △ — Used with valve type 1.0 Γ, 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.

REGENERATION CYCLES & TIMES

If 1.5 or 2.0 is selected in Step 2CS, cycles can be set to "oFF".

The user can initiate manual regeneration. The user has the option to request the manual regeneration at the delayed regeneration time or to have the regeneration occur immediately:

	RANGE		
Cycle	**Softening**	**Filtering Regen**	**Filtering Backwash**
Backwash	**1-120 minutes**	**1-120 minutes**	**1-120 min.**
Regenerant Draw/Slow Rinse (UP or DN)	**1-180 minutes**	**1-180 minutes**	**NA**
Fast Rinse	**1-120 minutes**	**1-120 minutes**	**1-120 min.**
Regenerant Refill	**0.1-200.0 lbs.**	**1-99.0 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**

1. Pressing and releasing the **REGEN** button. " REGEN TODAY" will flash on the display and the regeneration will occur at the delayed regeneration time. The user can cancel the request by pressing and releasing the **REGEN** button.
2. Pressing & holding the **REGEN** button for approximately 3 seconds will immediately start the regeneration. The user cannot cancel this request, except by resetting the control by pressing **NEXT** and **REGEN** simultaneously for 3 seconds.

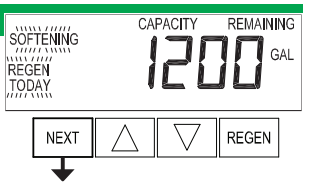
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USER DISPLAYS

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

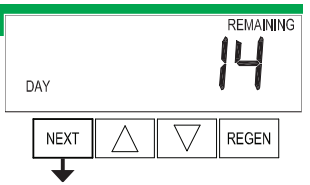
USER 1

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



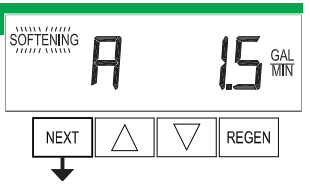
USER 2

Displays number of days to next regeneration.



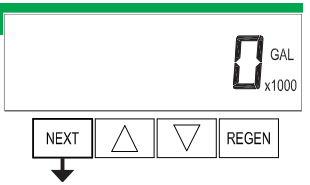
USER 3

Flow Rate. Displays present flow rate. Not viewed (along with SOFTENING or FILTERING Icon) if ALT A or ALT b is set in CONFIGURATION 4 and the valve is currently in Standby. When 1.0 Γ is set in CONFIGURATION 1, the display will indicate the tank currently in Service ("A" or "b") in the left most digit.



USER 4

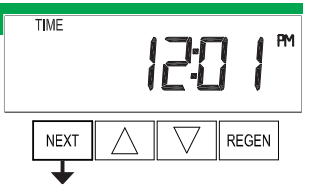
Displays total volume in gallons since last reset. If a meter is not used this display will be shown but 0 will be displayed.



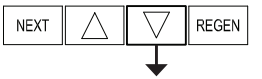
PRESS ▼ FOR 3 SECONDS TO RESET TO 0.

USER 5

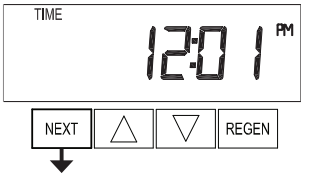
Shows current time.



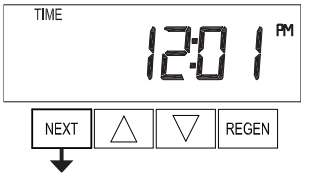
SETTING TIME OF DAY



Push **NEXT** until time of day screen is displayed. Press and hold ▼ until **SET TIME** is displayed and the hour flashes once. Press ▲ or ▼ until the correct hour is displayed.



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

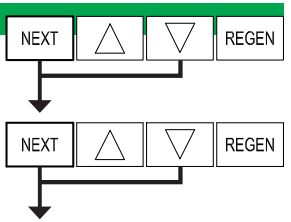


Press **NEXT** to return to the User Displays. Time of day should only need to be set after power outages lasting more than 8 hours, if the battery has been depleted and a power outage occurs, or when daylight savings time begins or ends. If a power outage lasting more than 8 hours occurs, the time of 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.

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EE CONTROLLER - CONFIGURATION SETTINGS

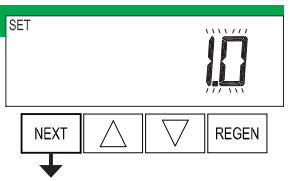
Step 1CS



Press **NEXT** and ▼ simultaneously for 5 seconds and release. Press **NEXT** and ▼ simultaneously for 5 seconds and release. If the screen in **Step 2CS** does not appear, the lock on the valve is activated.

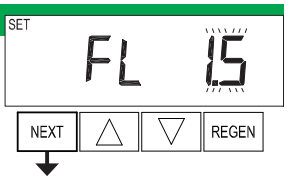
To unlock, press ▼, NEXT, ▲ and **REGEN** in sequence, then press **NEXT** and ▼ simultaneously for 5 seconds and release. Press **NEXT** and ▼ simultaneously for 5 seconds and release.

Step 2CS



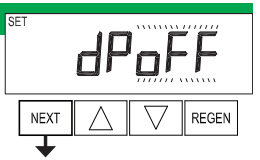
Use ▼ or ▲ to select 1.0 for 1" valve, 1.25 for 1.25" valve, 1.5 for 1.5" valve, 2.0 for 2" valve or 1.0T for twin valve. If 1.0, 1.25 or 1.0 are selected, press **NEXT** to go to *Step 4CS*. If 1.5 or 2.0 are selected, press **NEXT** to go to *Step 3CS*.
Press **REGEN** to *exit* Configuration Settings.

Step 3CS



Use ▼ or ▲ to select meter size. Settings available are 1.5, 2.0, 3.0, 1.0r (1.0 Remote Meter) or PUL (Variable Meter Calibration.) Variable meter pulses of 0.1-150.0 PPG can be selected.
Press **NEXT** to go to *Step 4CS*.
Press **REGEN** to return to *previous step*.

Step 4CS



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 – WS1.5 control valves programmed for twin alternating: if the dP function “on0” is set, the Delayed Rinse and Fill feature is not available.

dEL – 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 – WS1.5 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.

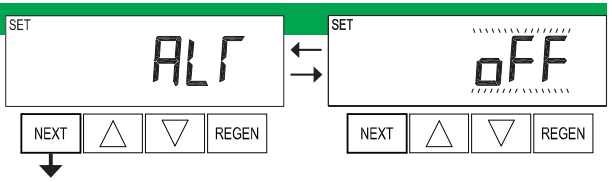
NOTE: For WS1 – WS1.5 control valves programmed for twin alternating the Delayed Rinse and Fill feature can be set.

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

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EE CONTROLLER - CONFIGURATION SETTINGS

Step 5CS



This display will not appear if 1.0 Γ was selected in Step 2CS. 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;
- the Control Valve to have a separate source during the regeneration cycle; or
- the Control Valve to operate with the System Controller.

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.

Configuring the Control Valve for No Hard Water Bypass Operation:



Select **nHbP** for control operation. For no hard water bypass operation the three wire communication cable 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 MAV 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 return to the open position, if not already there.

Configuring the Control Valve for Separate Source Operation:



Select **SEPS** for control operation. For separate source operation the three wire communication cable is not used.

Selection requires that a connection to a Clack Motorized Alternator Valve (MAV) is made to the two pin connector labeled MAV 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 return to the open position, if not already there.

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EE CONTROLLER - CONFIGURATION SETTINGS

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.

Prior to starting the programming steps, connect the communication cable to each control valve board's three pin connector labeled 'COMM CABLE'. Also connect the meter cord to either control valve to the three pin connector labeled 'METER'.

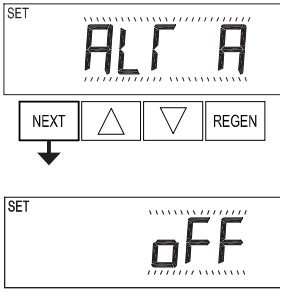
Softener Valve Programming Steps			
Configuration Settings	**Step 5CS**	**Set to ALT A Connect the outlet plumbing of ALT A valve to the MAV's A port and connect the MAV's two pin wire connector to the two pin connector labeled "DRIVE" on the ALT A valve**	**Set to ALT b Connect the outlet plumbing of ALT b valve to the MAV's B port. 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"**

If set up for a filter, in *Step 5F* set Volume Capacity in Gallons; in *Step 6F* select Regeneration Time Option "on 0"; and in *Step 3i* select Day Override "oFF".

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.*

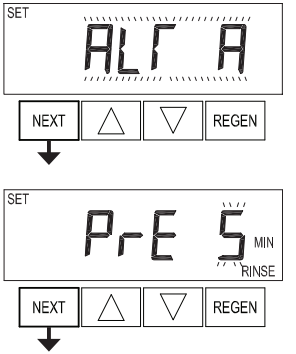
WS1, WS1.25 and WS1.5 Valves

For Clack Corporation alternator systems using WS1, WS1.25 and WS1.5 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. Set to oFF to deactivate this feature.



WS2 Valve

For Clack Corporation alternator systems using the WS2 valve, when **NEXT** is pressed after selecting ALT A or ALT B, 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. Set to oFF to deactivate this feature. With 1.0 set, the same display appears and is set in a similar manner.

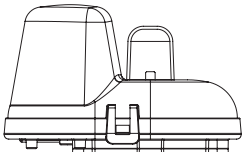


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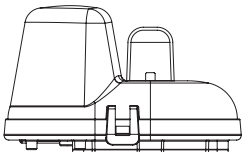
EE CONTROLLER - CONFIGURATION SETTINGS

MAV Service Position

NOTE: *Clack Twin Alternator Operations*



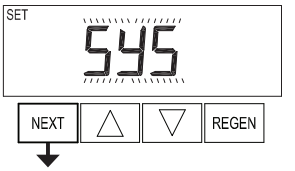
Retracted
Valve "A" in Service Position = MAV Piston Rod Retracted



Extended
Valve "B" in Service Position = MAV Piston Rod Retracted

- Twin alternating systems can be programmed with a day override setting combined with the normal volume-based regeneration programming. A twin alternating system in this configuration will then regenerate based on the volume used or the day override if there is a period of low water usage.
- Twin alternating systems can be programmed as a time clock only based regenerating system. In this configuration, the days remaining are counted only on the unit that is in service. The unit in Stand-by Mode only notes days in diagnostics, which results in time clock only twin regeneration initiation.
- Twin alternating systems can be programmed for a delayed regeneration time. The system will allow an immediate transfer of the MAV to switch tanks and place a fully regenerated unit in service once a unit becomes exhausted. The exhausted unit will then be placed into Stand-by Mode and allowed to have a delayed regeneration at the pre-set time.

Configuring the Control Valve for System Controller Operation:

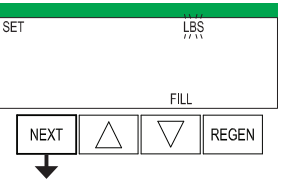


Select "SYS" to link control valve to System Controller. For communication between control valve and System Controller, a three-wire communication cable is required.

Selection requires that a connection to a Clack No Hard Water Bypass (CL-NWBP-125) be made to the two-pin connector labeled MAV located on the printed circuit board for WS1 and WS1.25 control valves. For valve types WS1.5 and WS2, a connection from a Clack No Hard Water Bypass (CL-NWBP-15 or CL-NWBP-20) to the two pin connector labeled MAV located on the printed circuit board is required.

Press **NEXT** to go to *Step 6CS*.
Press **REGEN** to return to *previous step*.

Step 6CS



Fill Units: If set as a softener, if *Step 2CS* is set to 1.5, and FILL is part of the Regeneration Cycle Sequence, FILL UNITS of MIN or LBS can be selected.

EXIT TO DISPLAY SCREENS

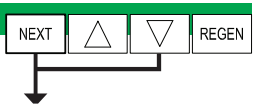


Press **NEXT** to exit Configuration Setup.
Press **REGEN** to return to *previous step*.

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EE CONTROLLER - SOFTENER SYSTEM SETUP

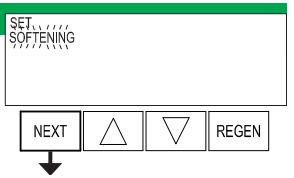
Step 1S



Press any button to activate the screen and Push **NEXT** and ▼ simultaneously for 5 seconds and release. If screen in *Step 2S* does not appear, the lock on valve programming has been activated.

To unlock, press ▼, **NEXT**, ▲, **REGEN** in sequence, then press **NEXT** and ▼ simultaneously for 5 seconds and release.

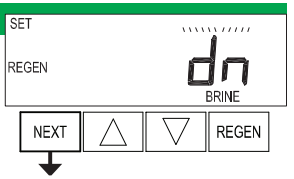
Step 2S



Choose SOFTENING using ▲ or ▼.

Press **NEXT** to go to Step 3S.
Press **REGEN** to exit Softener System Setup.

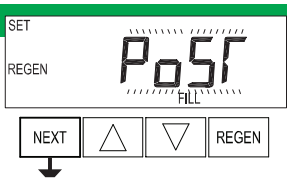
Step 3S



Choose Brining Direction using ▲ or ▼. This screen is not viewed when *Step 2S* is set to Filtering.

Press **NEXT** to go to *Step 4S*.
Press **REGEN** to return to previous step.

Step 4S

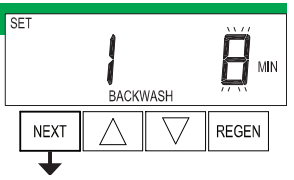


Set Refill location using ▲ or ▼:

- "PoST" to refill the brine tank after the final rinse; or
- "PrE" to refill the brine tank four hours before the regeneration time set. This screen is not viewed when *Step 2S* is set to Filtering.

Press **NEXT** to go to *Step 5S*.
Press **REGEN** to return to previous step.

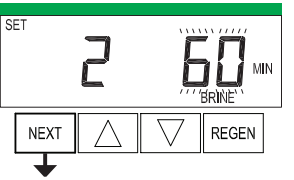
Step 5S



Select the time for the first cycle using ▲ or ▼. For valve types 1.5 and 2.0, "oFF" is also available.

Press **NEXT** to go to *Step 6S*.
Press **REGEN** to return to previous step.

Step 6S

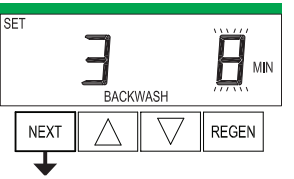


Select the time for the second cycle using ▲ or ▼. For valve types 1.5 and 2.0, "oFF" is also available.

NOTE: The display will flash between cycle number and time, and brine direction (UP or dn).

Press **NEXT** to go to *Step 7S*.
Press **REGEN** to return to previous step.

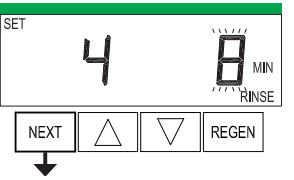
Step 7S



Select the time for the third cycle using ▲ or ▼. For valve types 1.5 and 2.0, "oFF" is also available.

Press **NEXT** to go to *Step* 8S.
Press **REGEN** to exit Softener System Setup.

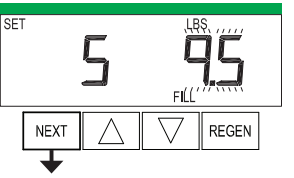
Step 8S



Select the time for the fourth cycle using ▲ or ▼. For valve types 1.5 and 2.0, "oFF" is also available.

Press **NEXT** to go to *Step 9S*.
Press **REGEN** to return to previous step.

Step 9S



Select the pounds for the fifth cycle using ▲ or ▼. For valve types 1.5 and 2.0, "oFF" is also available.

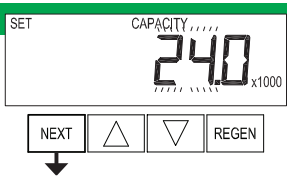
NOTE: if *Step 2CS* is set to 2.0 or *Step 7CS* is set to MIN, Fill will be in minutes.

Press **NEXT** to go to *Step 10S*.
Press **REGEN** to return to previous step.

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EE CONTROLLER - SOFTENER SYSTEM SETUP

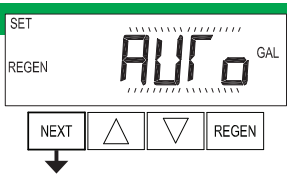
Step 10S



Set System Capacity using ▲ or ▼. The System Capacity setting should be based on the volume of resin and LBS of salt fill set in *Step 9S*.

Press **NEXT** to go to *Step 11S*.
Press **REGEN** to return to previous step.

Step 11S



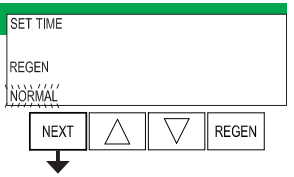
Set Volume Capacity using ▲ or ▼. If value is set to:

- "AUTO" capacity will be automatically calculated and reserve capacity will be automatically estimated;
- "oFF" regeneration will be triggered solely by the day override setting (see Installer Display/Settings Step 4I);
- a number, regeneration will be triggered by the value specified (in Gallons).

If "oFF" or a volume is used, the hardness display will not be allowed to be set in Installer Display Settings *Step 2i*. See Setting Options Table for more detail.

Press **NEXT** to go to *Step 12S*.
Press **REGEN** to return to previous step.

Step 12S



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

- "NORMAL" means regeneration will occur at the preset time;
- "on 0" means regeneration will occur immediately when the volume capacity reaches 0 (zero); or
- "NORMAL + on 0" means regeneration will occur at one of the following:

— the preset time when the volume capacity falls below the reserve or the specified number of days between regenerations is reached whichever comes first; or
— immediately after 10 minutes of no water usage when the volume capacity reaches 0 (zero).

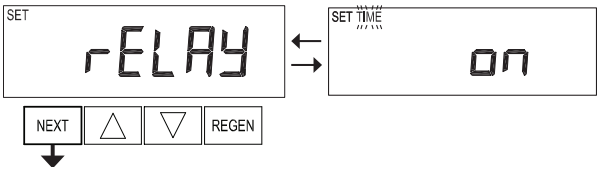
Step 12S (Continued)

"NORMAL" is the default if Step 5CS is set to ALT A or ALT B, and "NORMAL + on 0" is not available.

"on 0" is the default if *Step 2CS* is set to 1.0 , and "NORMAL + on 0" is not available. This step will not appear if *Step 11S* is set to oFF or *Step 5CS* is set to "SYS". See Setting Options Table for more detail.

Press **NEXT** to go to *Step 13S*.
Press **REGEN** to return to previous step.

Step 11S



Set Relay Operation using ▲ or ▼. The choices are:

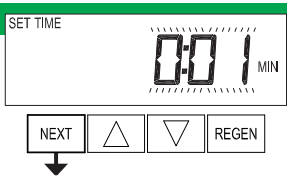
- Set Time on: Relay activates after a set time at the beginning of a regeneration and then deactivates after a set period of time. The start of regeneration is defined as the first backwash cycle or Dn brine cycle, whichever comes first.
- Set Gallons Softening on: Relay activates after a set number of gallons have been used while in service and then deactivates after a set period of time or after the meter stops registering flow, whichever comes first.
- Set Gallons Softening Regen on: Relay activates after a set number of gallons have been used while in service or during regeneration and then deactivates after a set period of time or after the meter stops registering flow, whichever comes first.
- ERROR: Relay closes whenever the valve enters error mode, and immediately deactivates when error mode is exited. If set to ERROR, *Steps 14S* and *15S* will not be shown.
- Set Off: If set to Off, *Steps 14S* and *15S* will not be shown.

Press **NEXT** to go to *Step 14S*.
Press **REGEN** to return to previous step.

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EE CONTROLLER - SOFTENER SYSTEM SETUP

Step 14S

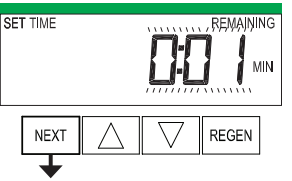


Set Relay Actuation Time or Gallons using ▲ or ▼. The choices are:

- Relay Actuation Time: After the start of a regeneration the amount of time that should pass prior to activating the relay. The start of regeneration is defined as the first backwash cycle, Dn brine cycle or UP brine cycle whichever comes first. Ranges from 1 second to 200 minutes.
- Relay Actuation Gallons: Relay activates after a set number of gallons has passed through the meter. Ranges from 1 to 200 gallons.

Press **NEXT** to go to *Step 15S*.
Press **REGEN** to return to previous step.

Step 15S



Set Relay Deactivate Time using ▲ or ▼.

- If Set Time on is selected in Step 13S the relay will deactivate after the time set has expired. Ranges from 1 second to 200 minutes.
- If Set Gallons Softening on or Set Gallons Softening Regen on is selected in Step 13S the relay will deactivate after the time set has expired or after the meter stops registering flow, whichever comes first. Ranges from 1 second to 20 minutes.

Exit Softener System Setup

Press **NEXT** to exit Softener System Setup.
Press **REGEN** to return to previous step.

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EE CONTROLLER - SETTING OPTIONS TABLE

Filters should only use shaded options

Volume Capacity	Regeneration Time Option	Day Override	Result[1]
AUTO	NORMAL	oFF	Reserve capacity automatically estimated. Regeneration occurs when volume capacity falls below the reserve capacity at the next Regen Set Time.
AUTO	NORMAL	Any Number	Reserve capacity automatically estimated. 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.
Any Number	NORMAL	oFF	Reserve capacity NOT automatically estimated. Regeneration occurs at the next Regen Set Time when volume capacity reaches 0.
oFF	NORMAL	Any Number	Reserve capacity NOT automatically estimated. Regeneration occurs at the next Regen Set Time when the specified number of days between regenerations is reached.
Any Number	NORMAL	Any Number	Reserve capacity NOT automatically estimated. Regeneration occurs at the next Regen Set Time when volume capacity reaches 0 or the specified number of days between regenerations is reached.
AUTO	On 0	oFF	Reserve capacity NOT automatically estimated. Regeneration occurs immediately when volume capacity reaches 0. Time of regeneration will not be allowed to be set because regeneration will always occur when volume capacity reaches 0.
Any Number	On 0	oFF	Reserve capacity NOT automatically estimated. Regeneration occurs immediately when volume capacity reaches 0. Time of regeneration will no be allowed to be set because regeneration will always occur when volume capacity reaches 0.
AUTO	NORMAL on 0	oFF	Reserve capacity automatically estimated. Regeneration occurs when volume capacity falls below the reserve capacity at the next Regen Set Time or regeneration occurs after 10 minutes of no water usage when volume capacity reaches 0.
AUTO	NORMAL on 0	Any Number	Reserve capacity automatically estimated. 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 or regeneration occurs after 10 minutes of no water usage when volume capacity reaches 0.
Any Number	NORMAL on 0	Any Number	Reserve capacity NOT automatically estimated. Regeneration occurs at the next Regen Set Time when the specified number of days between regenerations is reached 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.

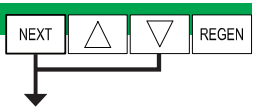
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EE CONTROLLER - FILTER SYSTEM SETUP

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

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

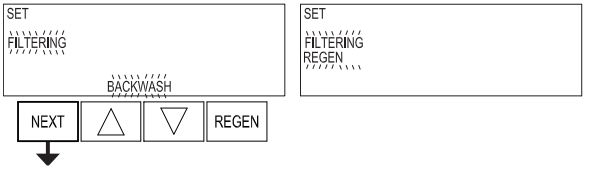
Step 1F



Press **NEXT** and ▼ simultaneously for 5 seconds and release. If screen in *Step 2S* does not appear, the lock on valve programming has been activated.

To unlock, press ▼, **NEXT**, ▲, **REGEN** in sequence, then press **NEXT** and ▼ simultaneously for 5 seconds and release.

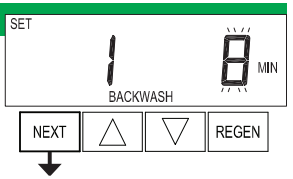
Step 2F



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

Press **NEXT** to go to *Step 3F*.
Press **REGEN** to exit Filter System Setup.

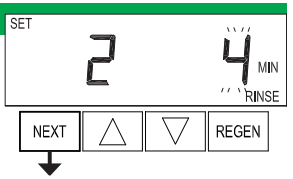
Step 3F



Select the time for the first cycle using ▲ or ▼.

Press **NEXT** to go to *Step 4F*. Press **REGEN** to return to previous step.

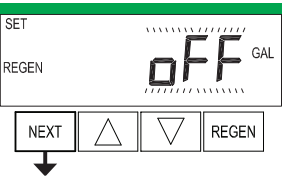
Step 4F



Select the 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.

If Step 2F is set to FILTERING BACKWASH, press **NEXT** to go to *Step 5F*. Press **REGEN** to return to previous step.

Step 5F



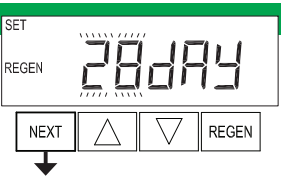
Set Regeneration trigger using ▲ or ▼. If value is set to:

- "OFF" regeneration will be triggered solely by the day override setting (see Installer Display/Settings *Step 4i*);
- a number, regeneration will be triggered by the value specified (in gallons).

See Setting Options Table on Page 11 for more detail.

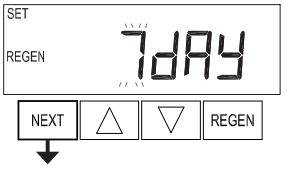
Press **NEXT** to go to *Step 6F*.
Press **REGEN** to return to previous step.

Step 6F



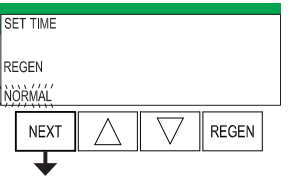
Set Regeneration Trigger using ▲ or ▼. If Step 5F is set to:

OFF, Regeneration Trigger can be set to 28 day or 7 day.



Press **NEXT** to go to Step *7F*. Press **REGEN** to return to previous step.

Step 7F



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

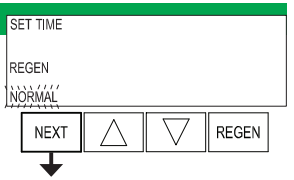
- "NORMAL" means regeneration will occur at the preset time;
- "on 0" means regeneration will occur immediately when the volume capacity reaches 0 (zero); or

(Continued on next page)

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EE CONTROLLER - FILTER SYSTEM SETUP

Step 7F



- "NORMAL + on 0" means regeneration will occur at one of the following:

- the preset time when the volume capacity falls below the reserve or the specified number of days between regenerations is reached whichever comes first; or

- immediately after 10 minutes of no water usage when the volume capacity reaches 0 (zero).

"NORMAL" is the default if Step 5CS is set to ALT A or ALT B, and "NORMAL + on 0" is not available.

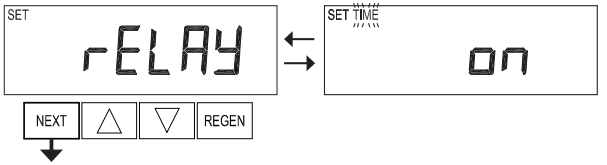
"on 0" is the default if Step 2CS is set to 1.0 , and "NORMAL + on 0" is not available.

This step will not appear if *Step 5F* is set to off or *Step 5CS* is set to "SYS".

See Setting Options Table on Page 11 for more detail.

Press **NEXT** to go to *Step 8F*.
Press **REGEN** to return to previous step.

Step 8F



Set Relay Operation using ▲ or ▼. The choices are:

- Set Time on: Relay activates after a set time at the beginning of a regeneration and then deactivates after a set period of time. The start of regeneration is defined as the first backwash cycle or Dn brine cycle, whichever comes first.

- Set Gallons Filtering on: Relay activates after a set number of gallons have been used while in service and then deactivates after a set period of time or after the meter stops registering flow, whichever comes first.

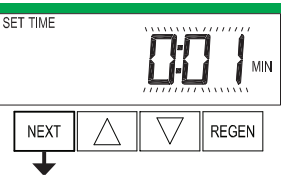
- Set Gallons Filtering Regen on: Relay activates after a set number of gallons have been used while in service or during regeneration and then deactivates after a set period of time or after the meter stops registering flow, whichever comes first.

- ERROR: Relay closes whenever the valve enters error mode, and immediately deactivates when error mode is exited. If set to ERROR, *Steps 9F* and *10F* will not be shown.

- Set Off: If set to Off, *Steps 9F* and *10F* will not be shown.

Press **NEXT** to go to *Step 9F*.
Press **REGEN** to return to previous step.

Step 9F



Set Relay Actuation Time or Gallons using ▲ or ▼. The choices are:

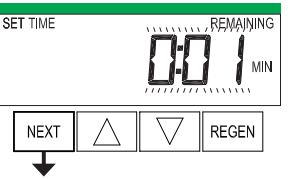
- Relay Actuation Time: After the start of a regeneration the amount of time that should pass prior to activating the relay. The start of regeneration is defined as the first backwash cycle or brine cycle, whichever comes first. Ranges from 1 second to 200 minutes.

- Relay Actuation Gallons: Relay activates after a set number of gallons has passed through the meter.

Ranges from 1 to 200 gallons.

Press **NEXT** to go to *Step 10F*.
Press **REGEN** to return to previous step.

Step 10F



Set Relay Deactivate Time using ▲ or ▼.

- If Set Time on is selected in Step *9F* the relay will deactivate after the time set has expired. Ranges from 1 second to 200 minutes.

- If Set Gallons Filtering on or Set Gallons Filtering Regen on is selected in Step *9F* the relay will deactivate after the time set has expired or after the meter stops registering flow, whichever comes first.

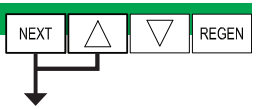
Ranges from 1 second to 20 minutes.

Press **NEXT** to exit Filter System Setup.
Press **REGEN** to return to previous step.

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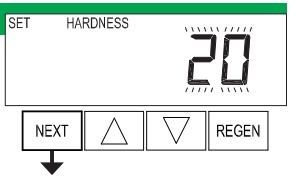
EE CONTROLLER - INSTALLER DISPLAY SETTINGS

Step 1i



To enter Installer Display press **NEXT** and ▲ simultaneously for about 5 seconds and release.

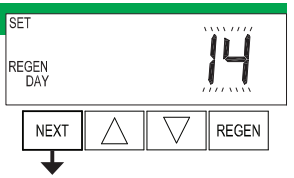
Step 2i



Hardness: Set the amount of influent hardness using ▲ or ▼. This display will not be viewed if FILTERING BACKWASH or FILTERING REGEN is selected in Step 2F or if “oFF” or a number was selected in Step 11S.

Press **NEXT** to go to step 3i.
Press **REGEN** to exit Installer Display Settings.

Step 3i

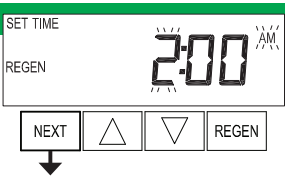


Day Override: When volume capacity is set to “oFF”, sets the number of days between regenerations. When volume capacity is set to AUTO or to a volume, sets the maximum number of days between regenerations. If value set to “oFF”, regeneration initiation is triggered solely by volume used. If value is set in days (allowable range from 1 to 28) regeneration initiation will be called for on that day regardless of actual water usage.
Set Day Override using ▲ or ▼:
• number of days between regeneration (1 to 28); or
• “oFF”.

See Setting Options Table for more detail on setup.

Press **NEXT** to go to step 4i.
Press **REGEN** to return to previous step.

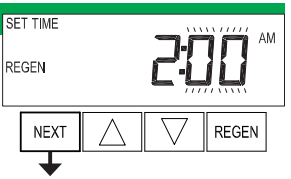
Step 4i



Next Regeneration Time (hour): Set the hour of day for regeneration using ▲ or ▼. The default time is 2:00. This display will show “REGEN on 0 GAL” if “on 0” is selected in Set Regeneration Time Option in Softener System Setup or Filter System Setup.

Press **NEXT** to go to step 5i.
Press **REGEN** to return to previous step.

Step 5i



Next Regeneration Time (minutes): Set the minutes of day for regeneration using ▲ or ▼. This display will not be shown if “on 0” is selected in Set Regeneration Time Option in Softener System Setup or Filter System Setup.

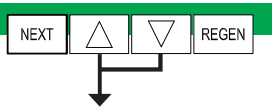
Exit to Display Screens

Press **NEXT** to exit Installer Display Settings.
Press **REGEN** to return to previous step.

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EE CONTROLLER - DIAGNOSTICS

Step 1D

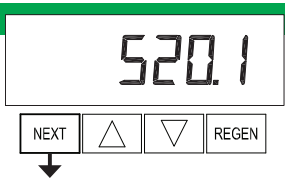


Press ▲ and ▼ simultaneously for 5 seconds and release. If screen in *Step 2D* does not appear the lock on the valve is activated.

To unlock press ▼, **NEXT**, ▲, **REGEN** in sequence, then press ▲ and ▼ simultaneously for 5 seconds and release.

Step 2D

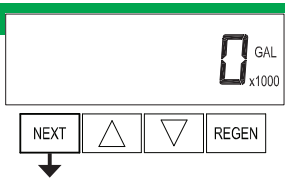
Software Version.



Press **NEXT** to go to *Step 3D*.
Press **REGEN** to *exit* Diagnostics.

Step 3D

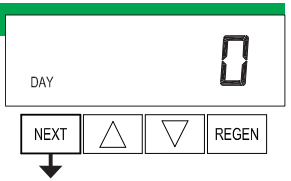
Volume, total used since start-up: This display shows the total gallons treated since startup. This display will equal zero if a water meter is not installed.



Press the **NEXT** button to go to *Step 4D*.
Press **REGEN** to return to *previous step*.

Step 4D

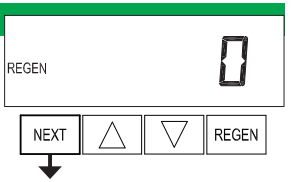
Days, total since start-up: This display shows the total days since startup.



Press the **NEXT** button to go to *Step 5D*.
Press **REGEN** to return to *previous step*.

Step 5D

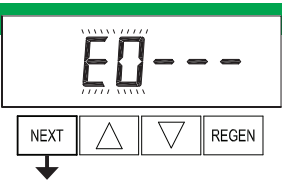
Regenerations, total number since start-up: This display shows the total number of regenerations that have occurred since startup.



Press the **NEXT** button to go to *Step 6D*.
Press **REGEN** to return to *previous step*.

Step 6D

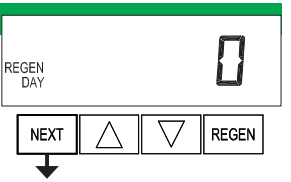
Error Log: This display shows a history of the last 10 errors generated by the control during operation.
Press ▲ or ▼ to view each recorded error.



Press **NEXT** to go to *Step 7D*.
Press **REGEN** to return to *previous step*.

Step 7D

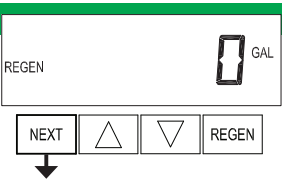
Days, since last regeneration: This display shows the days since the last regeneration occurred.



Press **NEXT** to go to *Step 8D*.
Press **REGEN** to return to *previous step*.

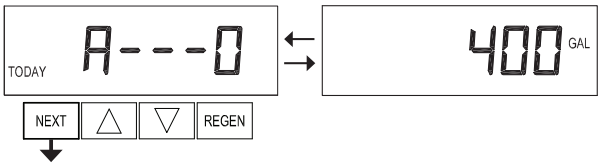
Step 8D

Volume, since last regeneration: This display shows the volume of water that has been treated since the last regeneration. This display will equal zero when a water meter is not installed.



Press **NEXT** to go to *Step 9D*.
Press **REGEN** to return to *previous step*.

Step 9D



Volume, reserve capacity used for last 7 days: If the valve is set up as a softener, a meter is installed, and Set Volume Capacity is set to "Auto," this display shows day 0 (for today) and flashes the reserve capacity. Pressing ▲ will show day 1 (which would be yesterday) and flashes the reserve capacity used. Pressing ▲ again will show day 2 (the day before yesterday) and the reserve capacity. Keep pressing ▲ to show the capacity for days 3, 4, 5 and 6. ▼ can be pressed to move backwards in the day series.

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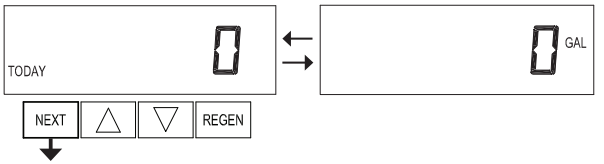
VALVE HISTORY

Step 9D *Continued*

This display does not appear if 1.0 Γ is set in *Step 2CS*, if ALT A or ALT B are selected in *Step 5CS*, or anytime the reserve capacity is not determined by the control.

Press **NEXT** at any time to go to *Step 10D*.
Press **REGEN** to return to *previous step*.

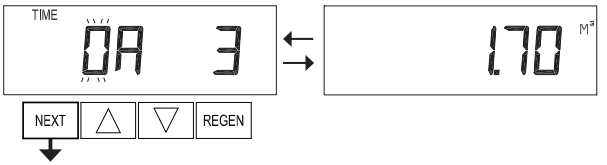
Step 10D



Volume, 63-day usage history: This display shows day 0 (for today) and flashes the volume of water treated today. Pressing ▲ will show day 1 (which would be yesterday) and flashes the volume of water treated on that day. Continue to press ▲ to show the maximum volume of water treated for the last 63 days. If a regeneration occurred on the day the word "REGEN" will also be displayed. This display will show dashes if a water meter is not installed.

Press **NEXT** at any time to go to *Step 11D*.
Press **REGEN** to return to *previous step*.

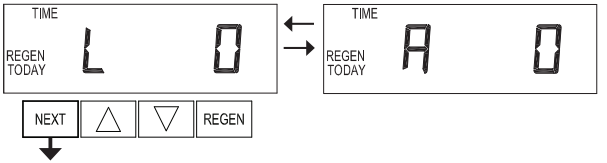
Step 11D



Twin Tank Valve transfer history: only displays when 1.0 Γ was selected in *Step 2CS*. Use ▲ or ▼ to scroll through the last 10 tank transfers. The first position in the display ranges from 0 to 9 with the lowest number being the most recent transfer. The second position in the display will be either "A" or "b". If "A" then the tank with the valve on it was in service, if "b" the tank with the in/out head on it was in service. The next three digits represent the number of hours ago that the transfer occurred. The display alternates with the volume that was treated before the tank transferred.

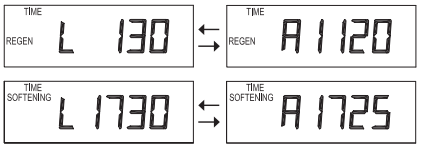
Press **NEXT** at any time to go to *Step 12D*.
Press **REGEN** to return to *previous step*.

Step 12D *Continued*

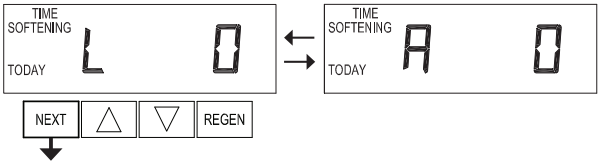


MAV Drive History in the direction of retracted piston rod position. Display will only be shown if 1.0 Γ is selected in *Step 2CS*, or OFF is not selected in *Step 5CS*. Up to a four digit number will appear after the "L" which stands for latest and "A" which stands for average. Drive time is measured in 1/100 of a second; i.e., a 17.10 second move is displayed as "1710".
Press **NEXT** at any time to go to *Step 13D*.
Press **REGEN** to return to *previous step*.

Press and hold ▲ and ▼ buttons for 3 seconds while in *Step 12D* to reset the MAV drive history in both the retracted and extended piston rod position. To view the old MAV drive history data for retracted and extended rod position press and hold REGEN and ▲ while in *Step 12D*. Press **NEXT** to advance display to the old MAV drive history.



Step 13D



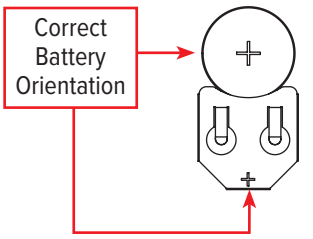
Step 13D – MAV Drive History in the direction of extended piston rod position. Display will only be shown if 1.0 Γ is selected in *Step 2CS*, or OFF is not selected in *Step 4CS*. Up to a four digit number will appear after the "L" which stands for latest and "A" which stands for average. Drive time is measured in 1/100 of a second; i.e., a 17.15 second move is displayed as "1715". Press and hold ▲ and ▼ for 3 seconds while in *Step 13D* to reset the MAV drive history in both the extended and retracted piston rod position. To view the old MAV drive history data see *Step 12D*.

Press **NEXT** at any time *exit Diagnostics*.
Press **REGEN** to return to *previous step*.

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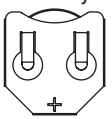
FRONT COVER AND DRIVE ASSEMBLY

Part No.	Description	Qty
CL3175EE-01	WS1 Front Cover Assembly	1
CL3107-01	Motor Assembly	1
CL3106-01	Drive Bracket & Spring Clip	1
CL3408EE-04BOARD	WS1 thru 2 EE 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
CL3186EU	AC Adapter 220-240V-12V EU	
CL3186UK	AC Adapter 220-240V-12V UK	
CL3186-01	AC Adapter Cord Only	



Battery replacement is 3 volt lithium coin cell type 2032.

When replacing the battery, align positives and push down to fully seat.

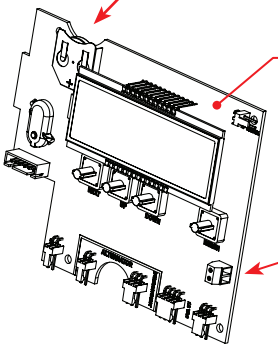


Fully Seated

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.

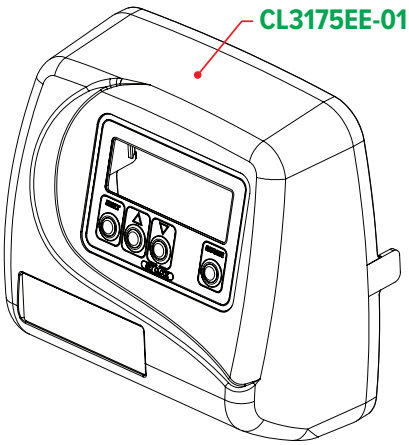
Wiring for Correct On/Off Operation

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

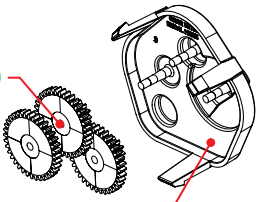


CL3408EE-04BOARD

PC Board Relay Terminal Block

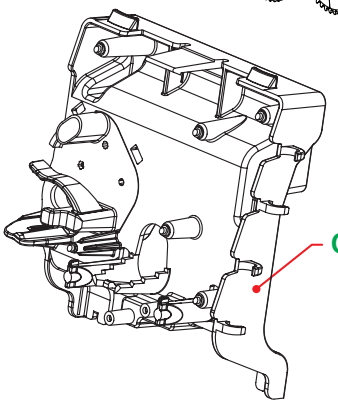


CL3175EE-01



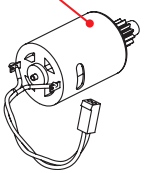
CL3110

CL3109



CL3107-01

CL3106-01



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