WaterRight®
The Right Water for Life

Master Programming Manual

for Sanitizer Plus Models

Effective February 2019

Button appearance and position may be different than actual valve

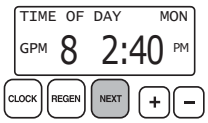
Cycle times, sequences, and settings in this guide are only examples of how your system may be programmed. Actual settings are determined by the manufacturer. Please contact them if more information is needed.

Important button sequences to note:

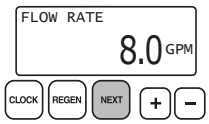
1. **UNLOCK VALVE SETTINGS:** Press buttons in the following order: **−**, ***NEXT***, **+**, ***CLOCK***. This will allow a user to change manufacturer's settings. When finished, lock settings by inputting the same sequence.
2. **CLEAR ERROR ON SCREEN:** Press and hold ***NEXT*** and ***REGEN*** for three seconds.
3. **CLEAR SERVICE ALARM:** If service alarm is triggered, press and hold **+** and **−** buttons simultaneously for three seconds to reset to original set points. This will reset both gallon and year alarms.
4. **REGEN BUTTON:** From a general operation screen, pressing the ***REGEN*** button schedules a regeneration for that night. Pressing it again will cancel the regeneration for that night. On most screens besides the general operation screens, the ***REGEN*** button works as a "back" button. Pressing it will return to the previous setting screen.

General Operation Screens

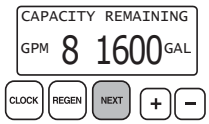
Press ***NEXT*** button to toggle between one of four displays.
Press ***REGEN*** button to schedule a regeneration for that night.



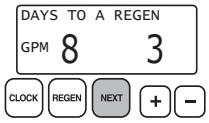
Displays current time
Unit defaults to this screen after a reset.



Displays current flow rate
"Current Flow Rate" is the amount of water currently flowing through, and being treated by, the unit. "GPM" and the flow rate flash while the turbine is rotating.



Displays a unit's remaining capacity
This screen will not display if the unit's gallons of capacity is set to OFF. "REGEN TODAY" will alternate with the current screen header if a regen is expected that night.



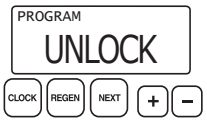
Displays days remaining until a regen
This screen will not display if the unit's day override is set to off.

If set, a scrolling dealer name and phone number screen will alternate with the selected general operation screen.

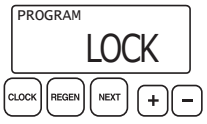
Displays scrolling dealer name and phone number
To change dealer name and phone number, see page 3.

Unlock and Lock Controller

The following screens will flash when the correct button sequence is inputted to unlock valve settings.



Indicates that the valve controller is unlocked
Unlocks access to advanced programming features within the controller.



Indicates that the valve controller is locked
It is strongly advised to lock the controller following any changes. This helps to prevent any accidental access to advanced programming settings.

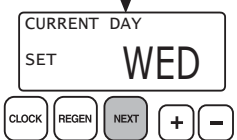
The 🔒 symbol on the following pages indicates that the screens below it will not display unless the controller is unlocked.

Set Time Screens

Accessed by pressing the ***CLOCK*** button.

Set hours with + or — buttons
AM/PM toggles after 12 AM.

Set minutes with + or — buttons
AM/PM toggles after 12 AM.



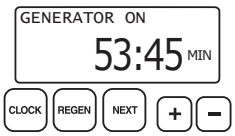
Set current day with + or — buttons
The default setting is WED.

Return to general display

Typical Regeneration Screens

Only visible when unit is in regeneration

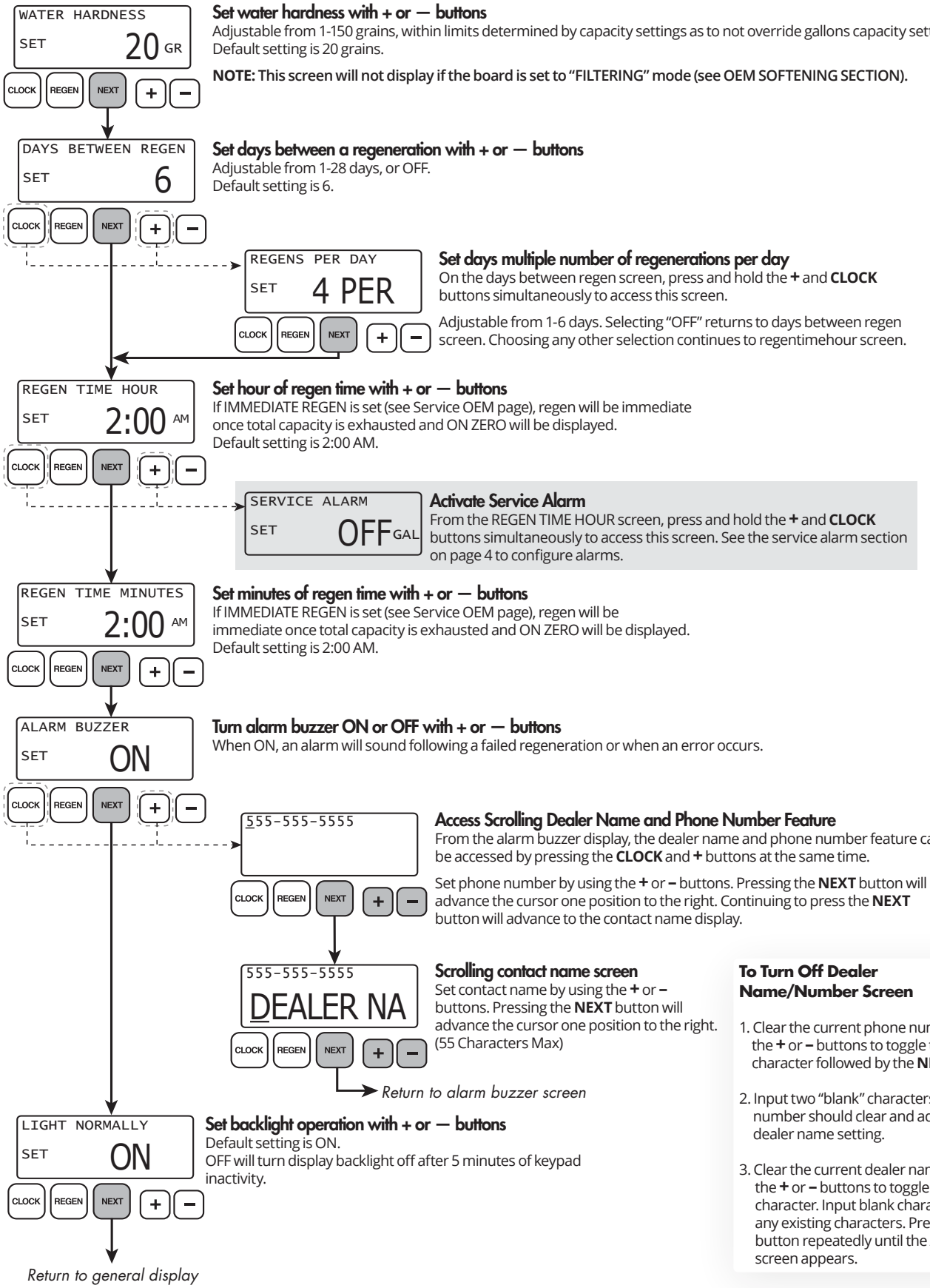
Displays time remaining in current regeneration cycle
"2" flashes for a second backwash if two backwashes are programmed.



Displays time remaining incurrent cycle
If a chlorine generator is connected and set to ON, the brine concentration will be checked during draw. Text will alternate between DRAW TIME & GENERATOR ON.

Installer/User Screens

Accessed by pressing and holding ***NEXT*** and **+** simultaneously for three seconds.
Returns to general display after five minutes of inactivity.



Set water hardness with + or — buttons
Adjustable from 1-150 grains, within limits determined by capacity settings as to not override gallons capacity setting.
Default setting is 20 grains.

NOTE: This screen will not display if the board is set to "FILTERING" mode (see OEM SOFTENING SECTION).

Set days between a regeneration with + or — buttons
Adjustable from 1-28 days, or OFF.
Default setting is 6.

Set days multiple number of regenerations per day
On the days between regen screen, press and hold the **+** and **CLOCK** buttons simultaneously to access this screen.

Adjustable from 1-6 days. Selecting "OFF" returns to days between regen screen. Choosing any other selection continues to regentimehour screen.

Set hour of regen time with + or — buttons
If IMMEDIATE REGEN is set (see Service OEM page), regen will be immediate once total capacity is exhausted and ON ZERO will be displayed.
Default setting is 2:00 AM.

Activate Service Alarm
From the REGEN TIME HOUR screen, press and hold the **+** and **CLOCK** buttons simultaneously to access this screen. See the service alarm section on page 4 to configure alarms.

Set minutes of regen time with + or — buttons
If IMMEDIATE REGEN is set (see Service OEM page), regen will be immediate once total capacity is exhausted and ON ZERO will be displayed.
Default setting is 2:00 AM.

Turn alarm buzzer ON or OFF with + or — buttons
When ON, an alarm will sound following a failed regeneration or when an error occurs.

Access Scrolling Dealer Name and Phone Number Feature
From the alarm buzzer display, the dealer name and phone number feature can be accessed by pressing the **CLOCK** and **+** buttons at the same time.

Set phone number by using the **+** or **–** buttons. Pressing the **NEXT** button will advance the cursor one position to the right. Continuing to press the **NEXT** button will advance to the contact name display.

Scrolling contact name screen
Set contact name by using the **+** or **–** buttons. Pressing the **NEXT** button will advance the cursor one position to the right. (55 Characters Max)

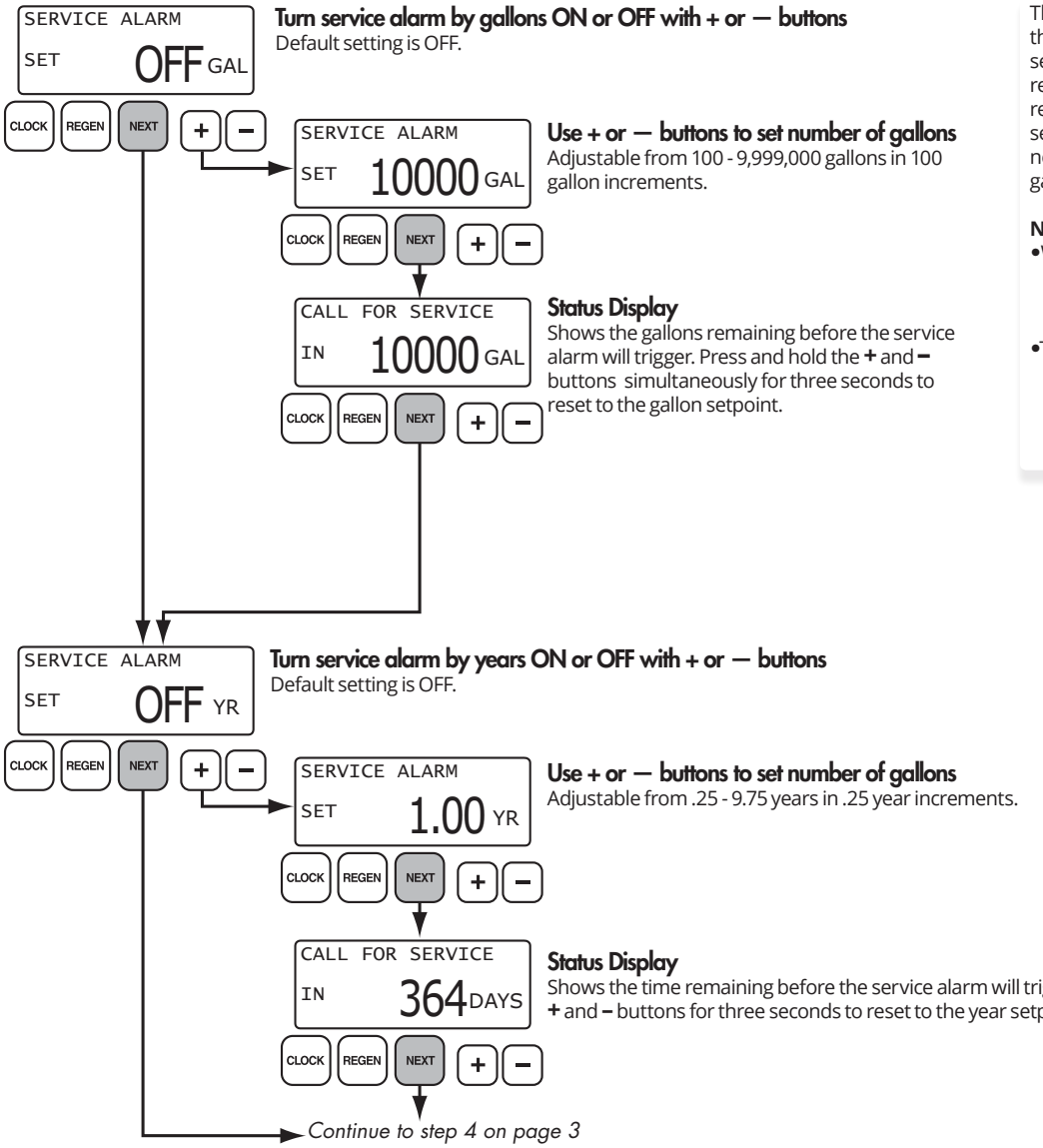
Set backlight operation with + or — buttons
Default setting is ON.
OFF will turn display backlight off after 5 minutes of keypad inactivity.

To Turn Off Dealer Name/Number Screen

1. Clear the current phone number by pressing the **+** or **–** buttons to toggle to the "blank" character followed by the **NEXT** button.
2. Input two "blank" characters. The phone number should clear and advance to the dealer name setting.
3. Clear the current dealer name by pressing the **+** or **–** buttons to toggle to the "blank" character. Input blank characters to replace any existing characters. Press the **NEXT** button repeatedly until the Alarm Buzzer screen appears.

Service Alarm Settings

Accessed by pressing and holding **+** and ***CLOCK*** buttons simultaneously for three seconds on the REGEN TIME HOUR screen. Returns to general display after five minutes of inactivity.



Turn service alarm by gallons ON or OFF with + or — buttons
Default setting is OFF.

Use + or — buttons to set number of gallons
Adjustable from 100 - 9,999,000 gallons in 100 gallon increments.

Status Display
Shows the gallons remaining before the service alarm will trigger. Press and hold the **+** and **–** buttons simultaneously for three seconds to reset to the gallon setpoint.

Turn service alarm by years ON or OFF with + or — buttons
Default setting is OFF.

Use + or — buttons to set number of gallons
Adjustable from .25 - 9.75 years in .25 year increments.

Status Display
Shows the time remaining before the service alarm will trigger. Press the **+** and **–** buttons for three seconds to reset to the year setpoint.

Continue to step 4 on page 3

The service alarm feature is used to warn the owner that the unit currently needs service. Some application examples includes reminding the owner when a filter needs replacement, when an R.O. system needs servicing, or when routine maintenance needs to be performed. This can be set by gallons, time, or both. Default is OFF for both.

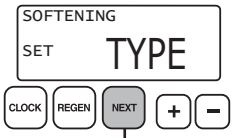
NOTE:

- When using service alarms, the top line will read "Call for Service" and will alternate with contact screen when in alarm mode.
- To reset a service alarm while in status display, press + and – buttons simultaneously for three seconds. This will reset both gallon and year alarms independently.

Service/OEM SOFTENING Screens

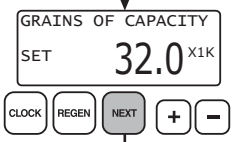
Accessed by pressing and holding ***NEXT*** and **−** simultaneously for three seconds.
Returns to general display after five minutes of inactivity.

1



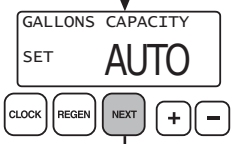
Select SOFTENING or FILTERING with + or — buttons
If you have selected FILTERING, please refer to "Service/OEM FILTERING screens", page 7-8.

2



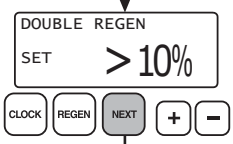
Set system's grains of capacity with + or — buttons
X1K = 1,000 grains.
The default setting is 32.0

3



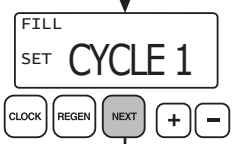
Set gallon capacity with + or — buttons
- AUTO automatically calculates gallon capacity.
- OFF will regen by days override setting only.
- GALS BETWEEN REGEN will regen by specific gallon setting.
- The default setting is AUTO.

4



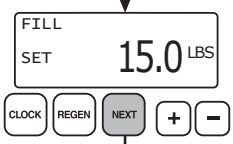
Set double regen point with + or — buttons
If unit's capacity is overrun by this percentage, the unit will regenerate two nights in a row. Default setting is 10%.

5



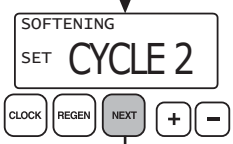
Set first cycle position with + or — buttons

6



Set salt pounds per regen with + or — buttons
The unit will deliver soft water during this position.
Default setting is 15.0 pounds.

7

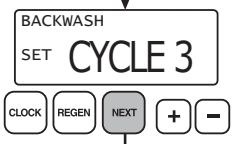


Set second cycle position with + or — buttons
This position is used between brine tank fill and the start of backwash. The unit will deliver soft water during this position.

8

Set softening time with + or — buttons
This time window allows the salt to dissolve and achieve proper brine strength. This process will start prior to regen time setting.
Default setting is 240:00 minutes.

9



Set third cycle position with + or — buttons

10

Set backwash time with + or — buttons
Default setting is 12:00 minutes.

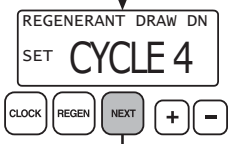
continue to next page

Service/OEM SOFTENING Screens

Accessed by pressing and holding ***NEXT*** and **–** simultaneously for three seconds.
Returns to general display after five minutes of inactivity.

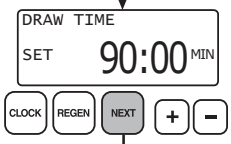
continued from previous page

11



Set fourth cycle position with + or — buttons

12

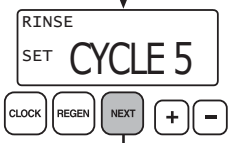


Set draw time with + or — buttons
Default setting is 90:00 minutes.

13

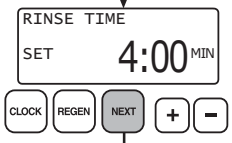
Turn chlorine generator ON or OFF or change amount of chlorine to be generated by pressing and holding the CLOCK and + buttons simultaneously. Press the + and – buttons to change to LOW, HIGH, or OFF.
Default setting is MEDIUM.
HIGH setting is used when additional chlorine production is necessary, such as in larger units.
Consult manufacturer before changing.
WARNING: If resin media is used, this setting MUST be set to OFF or LOW.

14



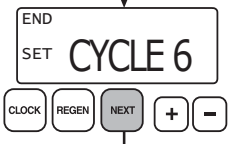
Set fifth cycle position with + or — buttons

15



Set final rapid rinse time with + or — buttons
Default setting is 4:00 minutes

16



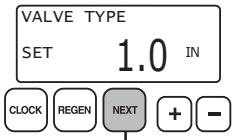
Set end cycle with + or — buttons
Up to fourteen cycle positions may be programmed into a regeneration.
An END position triggers the end of a regeneration and a return to service.

return to general display

Configuration Screens

Accessed by pressing and holding ***NEXT*** and **−** simultaneously for three seconds.
Once screen changes, press and hold ***NEXT*** and **−** simultaneously again for three seconds.

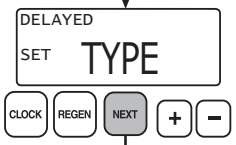
1



Select meter size with + or — buttons
Set to 1", 1.25", 1.5", 2" or 1.0T (for twin units). Upflow brining will not be an option if set to anything other than 1" or 1.0T.

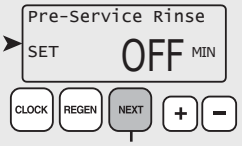
With 1.0T set:
- Meter calibration will be fixed with a different value for each tank.
- MAV 1 setting will not be viewed, but forced to be set to Alternator Mode w/ Immediate Regen and Post Fill Brining.
- The Backwash-Air regeneration step will not be available.
- Default setting is 1"

2



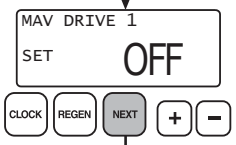
Set regen time control with + or — buttons
- DELAYED sets regen to specified regen time.
- DELAY + IMMEDIATE sets regen to occur after 10 minutes of no water usage.
- IMMEDIATE sets an immediate regen upon zero gallons of remaining capacity.
- Default setting is DELAYED.

Only appears on units set to 1.0T Mode



Set pre-service rinse time with + or — buttons
This option is only available if the valve type is set to 1.0T (twin).
Range is 0-20 minutes. Default setting is OFF.

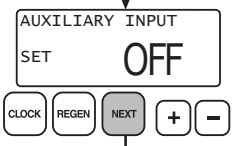
3



Set first MAV drive control with + or — buttons
- ALT A and ALT B are only used in twin configurations (see MAV manual for more details).
- SYSTEM CONTROLLER configures board to operate with the Clack System Controller.
- SEPARATE SOURCE changes state at the start and end of regen cycle.
- NO HARD BYPASS configures MAV as a no hard water bypass.
- TIME changes state at a set time referenced to the start of regen, for a preset duration of time independent of actual regen status. Inactive during alternate regeneration cycle.
- Default setting is OFF.
- Screen not visible when unit is set to 1.0T

WARNING: Leaving valve in ALT A, ALT B or ENABLED without proper hardware will result in errors.

4



Set auxilliary input with + or — buttons
- IMMED indicates unit will regen immediately.
- DELAY indicates that after a 2 minute signal from external contact, unit will regen at delayed regen time.
- HOLD indicates that unit will not regen while external contacts are closed.
- ALARM indicates that control valve's internal alarm will sound upon external contact closure.
- Default setting is OFF.

WARNING: External contact is needed to operate any of the above settings properly. If no external contact is connected, no setting is needed.

continue to next page

Configuration Screens cont'd

Accessed by pressing and holding ***NEXT*** and **–** simultaneously for three seconds.
Once screen changes, press and hold ***NEXT*** and **–** simultaneously again for three seconds.

continued from previous page

5 RELAY 1 TRIGGER SET OFF

CLOCK REGEN NEXT + –

Set first relay trigger with + button. Press + to reach desired triggering event. If not using a relay, make sure OFF is selected and press NEXT.
OFF indicates that no external devices are being used.
Default is OFF.

return to general display

If using Relay:

1. *Press + to engage one of the following Relay Triggers:*
   - *Time*
   - *Gallons*
   - *Regen*
   - *Error*
   - *Flow*
   - *Pulse*
2. *Press **NEXT** to program Setpoints and Durations*

RELAY 1 TRIGGER SET TIME

CLOCK REGEN NEXT + –

Set relay trigger with + or — buttons
TIME indicates that relay will be energized for a specified period of time during regen only. To set by this, press **NEXT**.

RELAY 1 SETPOINT SET 15 MIN

CLOCK REGEN NEXT + –

Set relay setpoint with + or — buttons
This is the delay time period after regen starts that relay will initially energize. 0 indicates an immediate start.

RELAY 1 DURATION SET 90:00 MIN

CLOCK REGEN NEXT + –

Set relay duration with + or — buttons
This is the duration of time, after relay setpoint, that relay will remain energized.

NOTE: Can be all or any part of total regen time, but will turn off at end of regen.

return to general display

RELAY 1 TRIGGER SET GALLONS

CLOCK REGEN NEXT + –

Set relay trigger with + or — buttons
GALLONS indicates that relay will be energized after a specified number of gallons are expended in service position only. To set by this, press **NEXT**.

RELAY 1 SETPOINT SET 25 GAL

CLOCK REGEN NEXT + –

Set relay setpoint with + or — buttons
This is the gallons that will be expended before relay will initially energize.

RELAY 1 DURATION SET 0:30 MIN

CLOCK REGEN NEXT + –

Set relay duration with + or — buttons
This is the duration of time, after relay setpoint, that relay will remain energized. Adjustable from 1 sec to 500 min.

NOTE: Will shut off if a regen is initiated

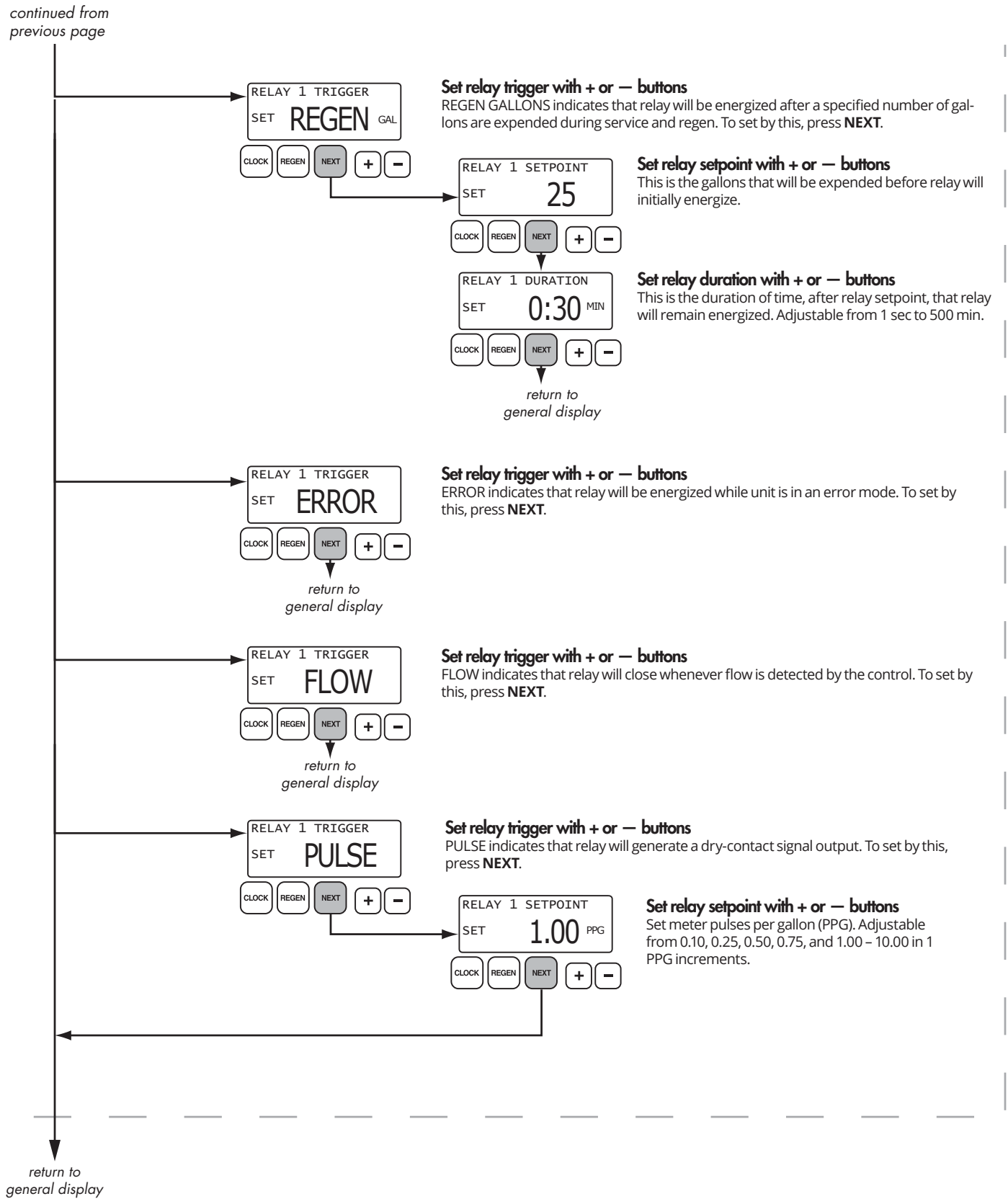
return to general display

continue to next page

Configuration Screens

cont'd

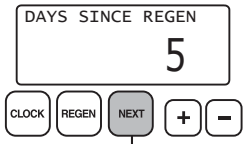
Accessed by pressing and holding ***NEXT*** and **−** simultaneously for three seconds.
Once screen changes, press and hold ***NEXT*** and **−** simultaneously again for three seconds.



First Level History Screens

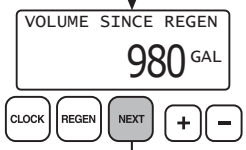
Accessed by pressing and holding **+** and **–** simultaneously for three seconds.
Returns to general display after five minutes of inactivity.

1



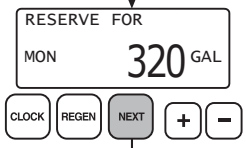
Displays number of days since last regen

2



Displays number of gallons since last regen

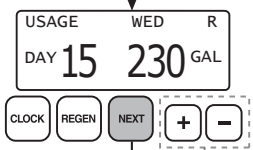
3



Displays reserve capacity
Use **+** or **–** buttons to scroll through each day of the week to view calculated reserve capacity.
This screen will not appear when Immediate Regeneration is set (See page 7)

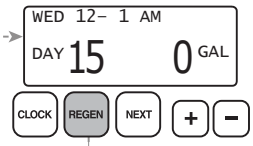
NOTE: Reserve capacity takes 21 days to generate.

4



Displays gallon usage history
Use **+** or **–** buttons to scroll through past 90 days of water usage history.
1.0T Mode: T1 and T2 usage for this day combined in this display

- "R" indicates a regen has occurred that day.
- "M" indicates a manual regeneration.
- "S" indicates a step through manual regeneration.
- "E" indicates a valve error has occurred.

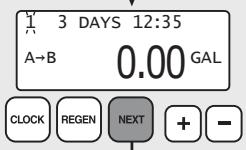


Displays gallon usage by hour any time within last 90 days
Access by pressing **+** and **–** buttons simultaneously for three seconds.
Use the **+** and **–** buttons to scroll through each hour of the day selected in the gallon usage history screen. To select a different day, press the **REGEN** button to return to the previous screen and select a new day with the **+** or **–** buttons.

NOTE: Reserve capacity takes 21 days to generate.

return to previous screen

Only appears on units set to 1.0T Mode



Displays tank transfer history
Use **+** or **–** buttons to scroll through last 10 tank transfers. Viewed in 1.0T Mode only.

- "1" indicates most recent tank transfer.
- "A" indicates service flow transferring away from tank.
- "B" indicates service flow transferring to tank.
- "3" indicates days ago of transfer (99 day max)
- "0.00" indicates gallons used at time of transfer.

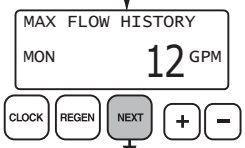
continue to next page

First Level History Screens cont'd

Accessed by pressing and holding **+** and **–** simultaneously for three seconds.
Returns to general display after five minutes of inactivity.

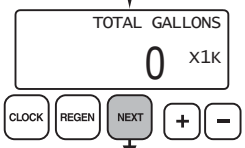
continued from previous page

5



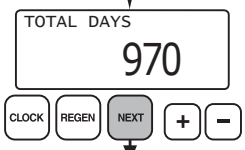
Displays peak flow rate history
Use **+** or **–** buttons to scroll through last 7 days to view peak flow rate for that day.

6



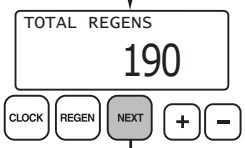
Displays total gallons used by Meter 1 input since last reset
Press and hold **+** and **–** buttons simultaneously for three seconds to reset this value back to 0 gallons.

7



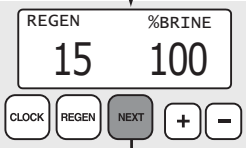
Displays total days unit has been in service

8

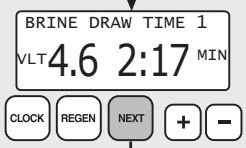


Displays total regens since startup

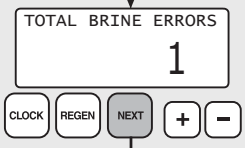
Only appears on units equipped with chlorine generator option



Displays brine concentration history
Use **+** or **–** buttons to scroll through last 50 regenerations to view brine concentration. Units with multiple brine cycles only record the first one.

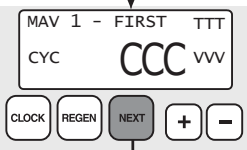


Displays voltage consumed and brine draw time
Use **+** or **–** buttons to scroll through last 50 regenerations to view voltage consumed along with the time it took to draw brine from tank.



Displays voltage consumed and brine draw time
Errors will be recorded from all brine cycles.

Only appears on units equipped with MAV.



Displays MAV drive time history for an active MAV 1 output
Use **+** or **–** buttons to select a MAV output. Pressing both **+** and **–** buttons will reset this display.

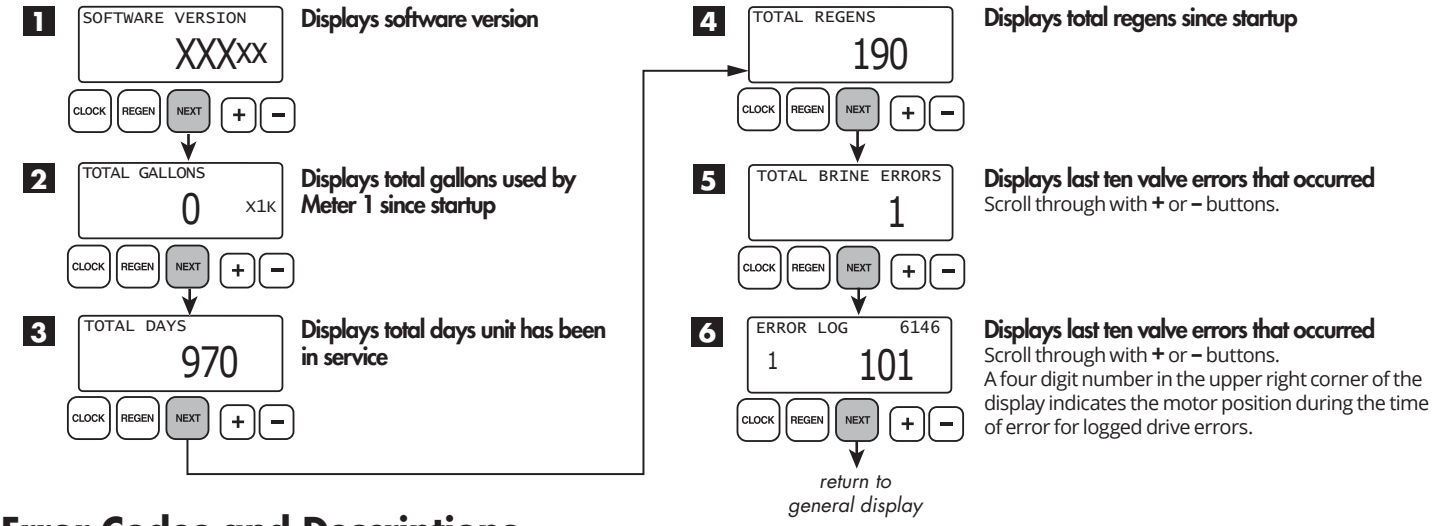
- First = Average of the first three drive times measured for that MAV in that direction.
- Last = Last drive time measured for that MAV in that direction.
- Ave = Current average drive time calculated for that MAV in that direction.
- TTT = Relative MAV drive time measured (First/Last/Ave).
- CCC = Total number of cycles in/out for that MAV.
- VVV = Relative MAV drive voltage measured (First/Last/Ave).

return to general display

Second Level History Screens

Accessed by pressing **+** and **−** simultaneously for three seconds.
Once screen changes, press **+** and **−** simultaneously again for three seconds.

Non-resettable history.



Error Codes and Descriptions

Error Code	Error Code Description	
101	UNABLE TO START:	Valve not sensing valve movement with motor 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	MAV 1 RAN TOO LONG:	MAV 1 motor ran too long. Unable to find proper park position.
107	MAV 1 STALLED:	MAV 1 motor ran too short. Unable to find proper park position (stalled).
109	INVALID MOTOR STATE:	Control can no longer operate properly due to detection of an invalid motor state.
116	MAV 2 RAN TOO LONG:	MAV 2 motor ran too long. Unable to find proper park position.
117	MAV 2 STALLED:	MAV 2 motor ran too short (stalled). Unable to find proper park position.
201	INVALID REGEN STEP:	Control can no longer operate properly due to detection of an invalid regeneration cycle step. Internal software issue.
204	LEAK DETECTED	
402	POWER DOWN MEMORY:	Check sum error for operational data and status section of EEPROM memory - specific type of memory error.
403	PROGRAM MEMORY:	Check sum error for programming section of EEPROM memory - specific type of memory error.
404	DIAGNOSTIC MEMORY:	Check sum error for diagnostic section of EEPROM memory - specific type of memory error.
405	HISTORY MEMORY:	Check sum error for history section of EEPROM memory - specific type of memory error.
406	CONTACT MEMORY:	Check sum error for contact screen section of EEPROM memory - specific type of memory error.
407	STATUS RAM MEMORY FAILURE:	Control can no longer operate properly due to corrupted data detected in the Operational Data and Status Section of RAM memory. Once generated, the Error Mode is not entered nor an error displayed, instead previously stored data (<6 hours old) is used to maintain control operation.
408	DIAGNOSTIC RAM MEMORY FAILURE:	Control can no longer operate properly due to corrupted data detected in the Operational Data and Status Section of RAM memory. Once generated, the Error Mode is not entered nor an error displayed, instead previously stored data (<6 hours old) is used to maintain control operation.
410	CONFIG DOWNLOAD:	Configuration file downloaded to the control was not originally uploaded from another control with the identical software revision.

REMINDER: Press and hold ***NEXT*** and ***REGEN*** for three seconds to perform a soft reset and clear an error on screen.

Notes

Notes

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