

Water Specialist CU Control Valve Programming Manual

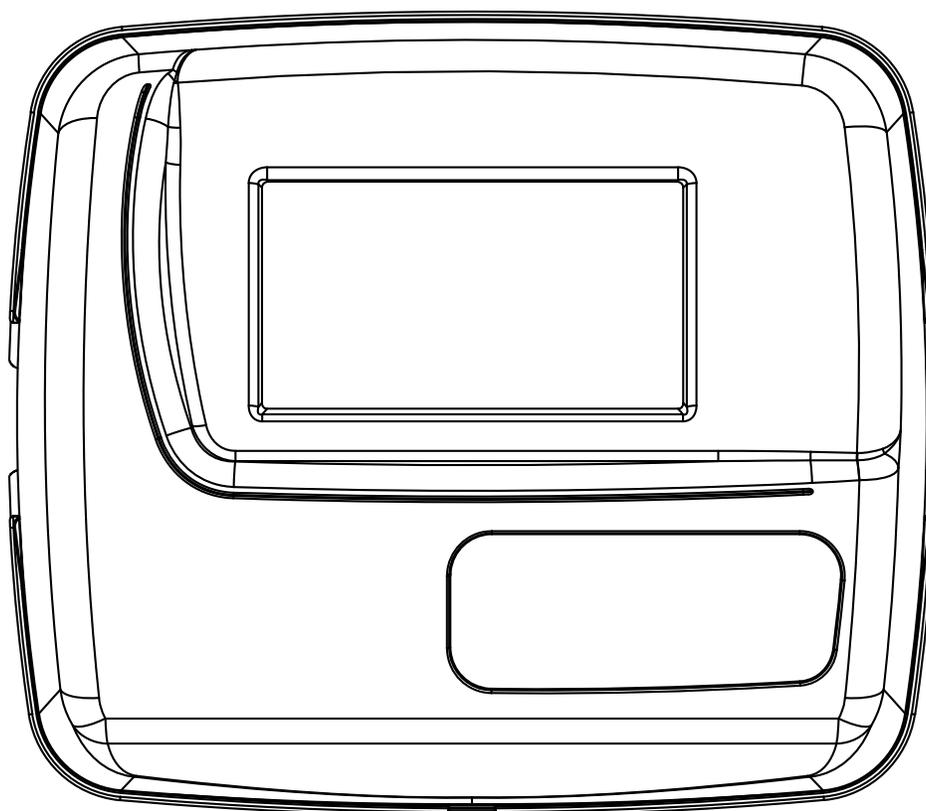


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FRONT COVER AND DRIVE ASSEMBLY

Drawing No.	Order No.	Description	Quantity
1	V4374-01	FRONT Touchscreen Cvr Asy	1
2	V3107-01	WS1 MOTOR	1
3	V3002-A	WS1 DRIVE BRACKET ASY	1
4	V4371CU-BOARD	WS1THRU2 CU PCB REPLACE	1
5	V3110	WS1DRIVE REDUCING GEAR W/DECAL	3
6	V3109	WS1 DRIVE GEAR COVER	1
Not shown	V3186-06	WS1 POWER SUPPLY US 15VDC HOCP	1
Not shown	V3946	WIDE DRIVE BACK PLATE	1

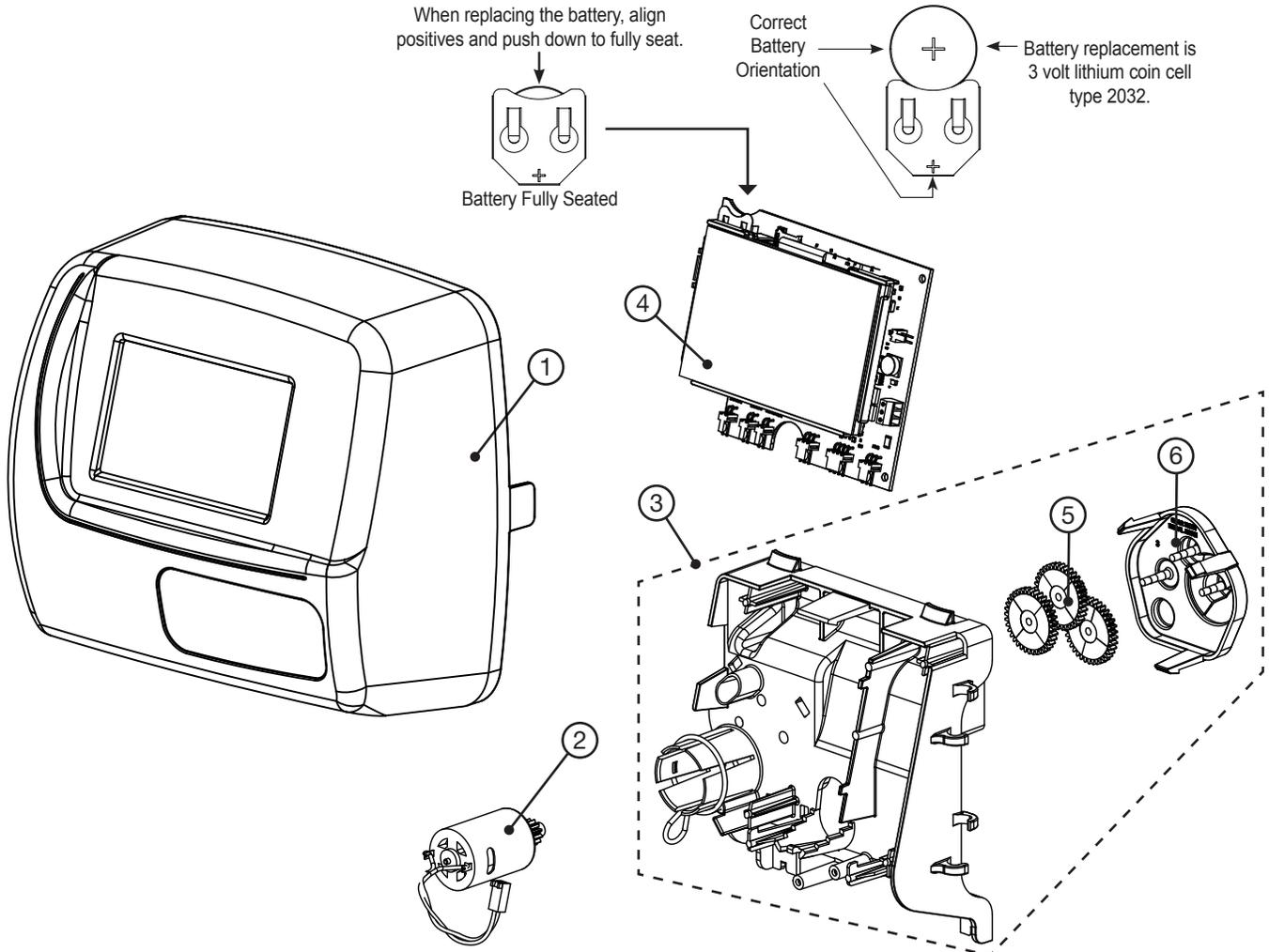
Refer to Control Valve Service Manual for other drawings and part numbers.

Relay Driver Output Type – Dual Solid-State 12VDC “wet” contacts - N.O.
 Relay Driver Output Capacity - 12VDC @100mA per relay output (total current through both outputs not to exceed 200mA).

NOTE: Check for proper mounting dimensions on valve back plate prior to mounting an external relay under control cover.

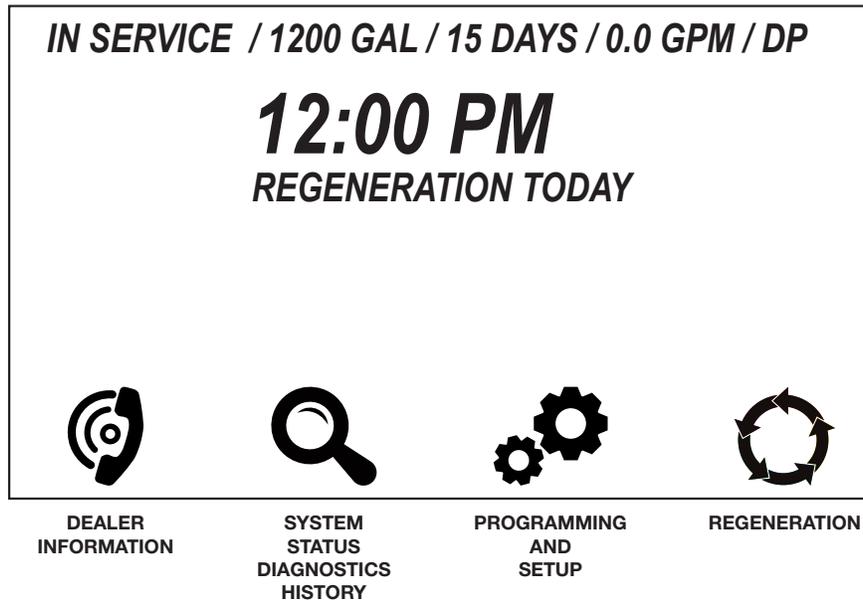
Power Supply	
Supply voltage	100-120 VAC
Supply Frequency	50/60 Hz
Output voltage	15 VDC
Output Current	500 mA

Wiring for Correct On/Off Operation	
PC Board Relay Terminal Block	Relay
RLY 1	Coil -
+COM	Coil +
RLY 2	Coil -



QUICK REFERENCE

NORMAL USER DISPLAY



DISPLAY NAVIGATION

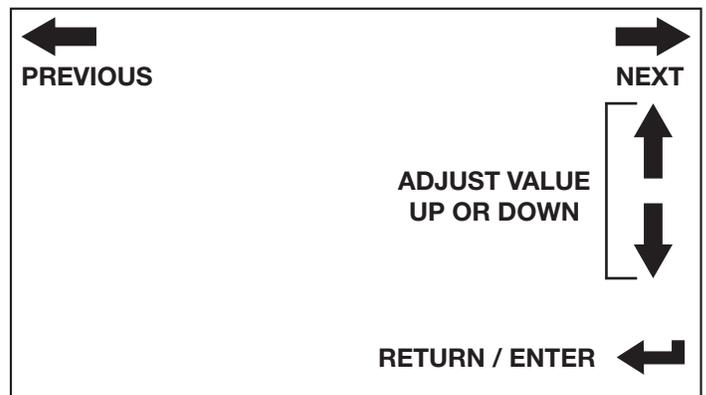
Pressing Home from any screen will return control to the normal display. Pressing and holding Home for >3 seconds activates LCD test, software version display, rehomes the valve and all active MAVs, and resets manual regeneration requests.

MASTER RESET

To reset the control, go to Set Up Screen #3. Press and hold the area **NEXT TO** the text “Set Up Screen #3” until the display blanks. This rehomes the valve and any active MAVs, resets a manual regeneration request, and resets Programming and Diagnostics displays to factory defaults. Valve History is retained.

RETURN/ENTER

Pressing the Enter button will save any values that have been changed using UP or DOWN.

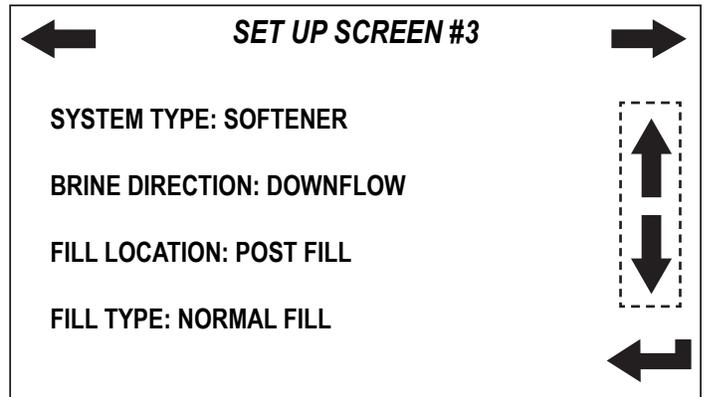
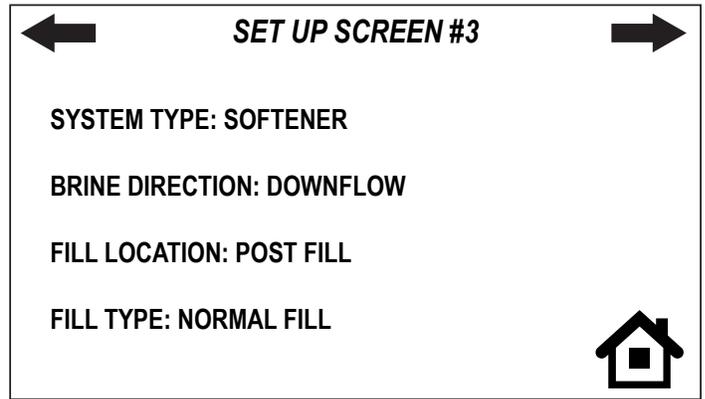


CHANGING SETTINGS

To update a setting, touch the line to be changed so that it is highlighted. Use UP or DOWN to change the value. Press and hold to change value rapidly.

After making the adjustments, press ENTER to return to the main SET UP SCREEN.

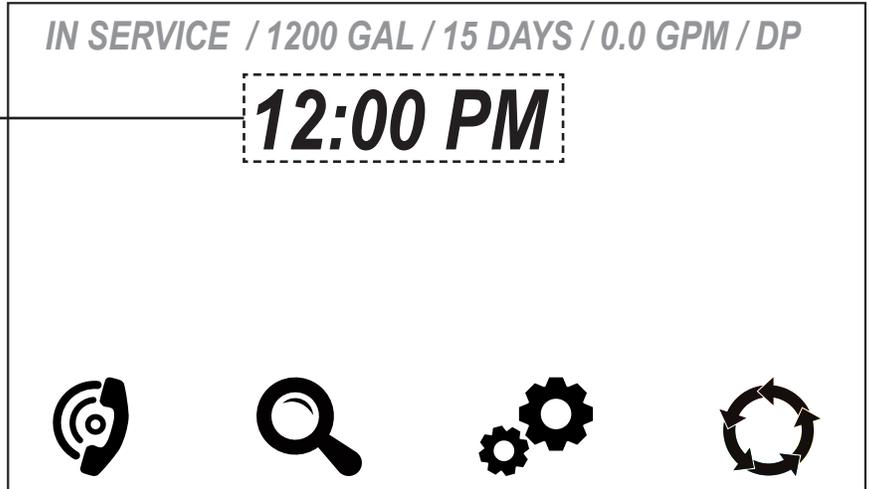
NOTE: Settings available will vary depending on what valve size and/or what system type is selected.



SET TIME OF DAY



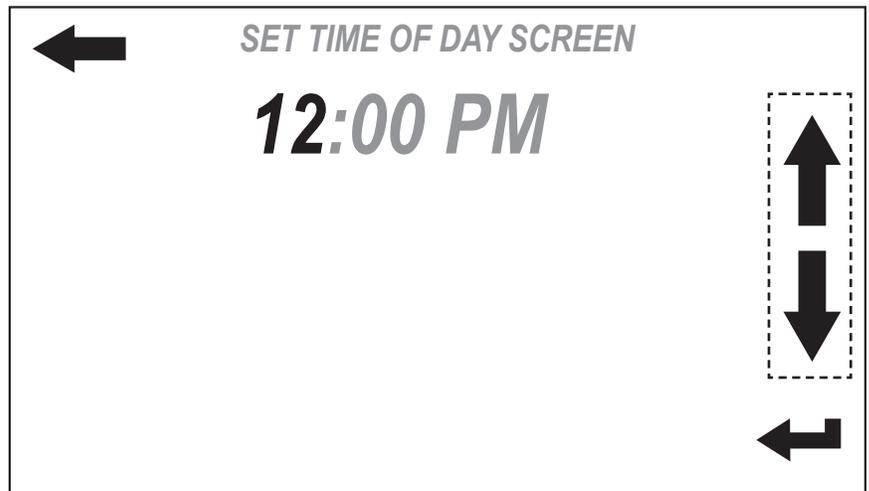
PRESS AND HOLD the Time of Day area on the Normal Display screen **UNTIL** the SET TIME OF DAY SCREEN appears.



Use **UP** or **DOWN** to change the hour. AM/PM will toggle at 12:00.

NOTE: Pressing and holding the arrow will rapidly change the value.

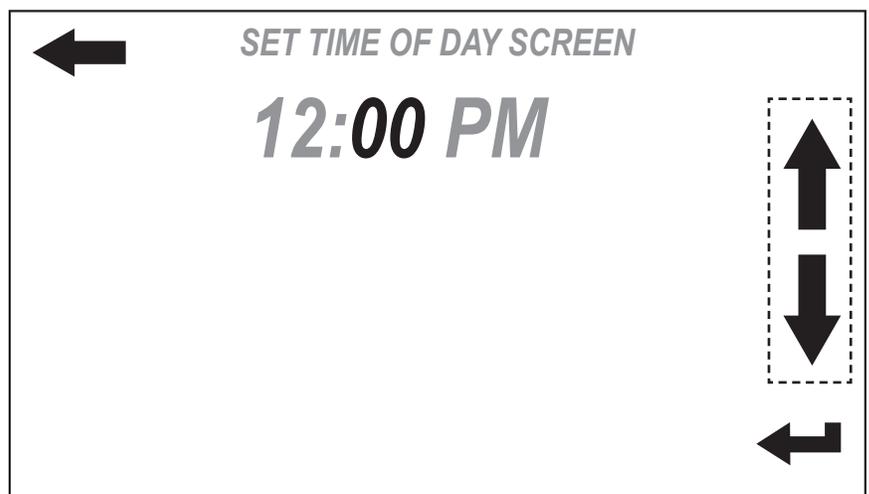
After setting the minutes, press **ENTER** to return to set the minutes.



Use **UP** or **DOWN** to change the minutes.

NOTE: Pressing and holding the arrow will rapidly change the value.

After setting the minutes, press **ENTER** to return to return to the Normal Display.



REGENERATION



DELAYED REGENERATION

Press and release the regeneration button to initiate a delayed regeneration.

REGENERATION TODAY will be displayed when a regeneration will occur in the next 24 hours.

Pressing again will cancel the request.



Pressing and holding the regeneration button will force an immediate regeneration. This request cannot be cancelled.

IN SERVICE / 1200 GAL / 15 DAYS / 0.0 GPM / DP

12:00 PM
REGENERATION TODAY



PROGRAMMING AND SET UP

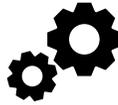


Type	Fill	Service	Backwash	Draw	Backwash	Rinse	Fill
Softening DN Post			8	60	8	8	9.5 LBS
Softening DN Pre	9.5 LBS	240	8	60	8	8	
Softening UP Post				60	8	8	9.5 LBS
Softening UP Pre	9.5 LBS	240		60	8	8	
Softening DN Post 2.0" Valve and 1.5" MIN			8	60	8	8	6 MIN
Softening DN Pre 2.0" Valve and 1.5" MIN	6 MIN	240	8	60	8	8	

Type	Backwash	Draw	Backwash	Rinse	Fill	
Filtering DN Post	8	60	8	8		0.95 GAL
Filtering DN Post (1.5" MIN or 2" valve)	8	60	8	8		6 MIN
Iron Breaker	8			8	20	

Cycle	Units	Range	Default
Backwash	MIN	1-120 or OFF	8
Rinse	MIN	1-120 or OFF	8
Draw (Up or Down)	MIN	1-160 or OFF	60
Fill (all but 2" valve, Softening)	LBS	0.1-200 or OFF	9.5
Fill (1.5" MIN or 2" valve, Softening or Filtering)	MIN	0.1-99.0 or OFF	6
Fill (all but 2" valve, Filtering)	GAL	0.05-20.00 or OFF	0.95
Brine Makeup (Service)	MIN	1-480 or OFF	240

PROGRAMMING AND SET UP



The control valve offers multiple procedures that allow the valve to be modified to suit the needs of the installation.

Energy Saver Mode:

OFF: Backlight always on
 ON: Backlight off after 5 minutes of touchpad inactivity

Display Language: English or Español

Inlet Water Hardness: 1-150 Grains

Day Override: 1-28 days or OFF

Regeneration Time: set in the same manner as Time of Day

System Type: Select SOFTENER, FILTER or IRON BREAKER

Brining Direction: Select DOWN FLOW or UP FLOW

Fill Location: Select POST FILL or PRE-FILL

Regeneration Trigger: Select AUTO (calculated), OFF (time clock) or 20-1500000 Gallons Capacity

Ionic Capacity: 5000 to 3000000 Grains Softening Capacity

Regeneration Type: Select DELAYED, IMMEDIATE or BOTH

FILL TYPE: Select NORMAL FILL or PROPORTIONAL FILL (This selection will only be available if SYSTEM TYPE is set to SOFTENER, BRINING DIRECTION is set to UP FLOW, and FILL LOCATION is set to PRE-FILL.)

← SET UP SCREEN #1 →

DISPLAY LANGUAGE: ENGLISH

ENERGY SAVER: ON

← SET UP SCREEN #2 →

INLET WATER HARDNESS: 20 GARINS/GAL

DAY OVERRIDE: 14

REGENERATION TIME: 2:00 AM

← SET UP SCREEN #3 →

SYSTEM TYPE: SOFTENER

BRINING DIRECTION: DOWNFLOW

FILL LOCATION: POST FILL

FILL TYPE: NORMAL FILL

PROGRAMMING AND SET UP CONTINUED



Regeneration Trigger: Select AUTO (calculated), OFF (time clock) or 20-1500000 Gallons Capacity

Ionic Capacity: 5000 to 3000000 Grains Softening Capacity

Regeneration Type: Select DELAYED, IMMEDIATE or BOTH

Cycle Times: The cycle order is determined in SET UP SCREEN #3; set duration for each regeneration cycle; OFF setting is available for all cycles

Service Alarm: Select **TIME**, **GALLONS**, **BOTH** or **OFF**.
The **SERVICE ALARM SETUP SCREEN** is reached by pressing **ENTER** after selecting **Service Alarm Type**.

TIME ranges from 0.25 to 9.75 years.

VOLUME ranges from 100 to 9999000 gallons.

Pressing **ENTER** saves the set point selected.

NOTE: To reset the time or volume remaining, press and hold the area around the **TIME REMAINING** or **VOLUME REMAINING** line, until the value resets to the set point.
After setting to the time or volume desired, press **BACK** to return to **SET UP SCREEN #6**.

Salt Alarm: Set the trigger level for activation of the Low Salt Display. Adjustable from 0-400 lbs. in 10 lb. increments or OFF. Salt Alarm is not available when set to FILTER, IRON BREAKER, 2.0 Valve Type or 1.5 Valve Type w/Minute Fill.

← SET UP SCREEN #4 →

REGENERATION TRIGGER: AUTO

IONIC CAPACITY: 24,000 GRAINS

REGENERATION TYPE: DELAYED



← SET UP SCREEN #5 →

BACKWASH TIME: 8:00 MIN

DRAW TIME: 60:00 MIN

BACKWASH TIME: 8:00 MIN

RINSE TIME: 4:00 MIN

FILL AMOUNT: 9.5 LBS



← SET UP SCREEN #6 →

SERVICE ALARM: OFF

SALT LEVEL ALARM: OFF



← SERVICE ALARM SETUP →

FUNCTION: BOTH

TIME SETPOINT: 1.0 YEARS

SCHEDULE SERVICE IN: 300 DAYS

VOLUME SETPOINT: 10000 GALLONS

SCHEDULE SERVICE IN: 3000 GALLONS



PROGRAMMING AND SET UP CONTINUED



Valve Type: Select WS1, WS1.25, WS1.5, WS2.0 or WS1.0T valve

Meter Calibration: When WS1.5 or WS2.0 is selected, meter calibration is available. Select 1.5, 2.0, 3.0, 1.0r, or 0.1 to 150 pulses/gallon

DP Input Operation: Select IMMEDIATE REGEN, DELAYED REGEN, HOLD REGEN or OFF

ALT MAV OPERATION: Select VALVE A, VALVE B, SYSTEM (Controller), SEPERATE SOURCE, NHBP (no hard water bypass), PROGRESSIVE FLOW or OFF. Not available when set to 1.0T valve.

AUX MAV OPERATION: Select TIME, SEPERATE SOURCE or OFF

For 1, 1.25 and 1.5 Valve, when Valve A or Valve B is selected and RINSE and FILL are the last two cycles, DELAYED RINSE AND FILL can be set ON or OFF. To change the setting, select that line, use UP or DOWN to change the setting, then press ENTER to return to Set Up Screen #7.

For 2.0 Valve, when Valve A or Valve B is selected, the pre-service rinse time can be adjusted. To change the setting, select that line, use UP or DOWN to change the setting, then press ENTER to return to Set Up Screen #7.

When Set to Progressive Flow, on Unit #1, set the flow rate of a valve in the system (ADD ANOTHER UNIT) before another unit is brought online. When that has been set, press PREVIOUS to return to Set Up Screen #7.

For AUX MAV operation, when TIME is selected, change the start and duration times as desired, then press PREVIOUS to return to Set Up Screen #7.

SET UP SCREEN #7

←

VALVE TYPE: WS1.5

METER CALIBRATION: 37 PULSES PER GALLON

DP INPUT OPERATION: OFF

ALT MAV OPERATION: OFF

AUX MAV OPERATION: TIME

→

ALT MAV OPERATION

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FUNCTION: ALT A

DELAYED RINSE AND FILL: OFF

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ALT MAV OPERATION

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FUNCTION: ALT B

PRE-SERVICE RINSE DURATION: 5 MIN

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ALT MAV OPERATION

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FUNCTION: PROGRESSIVE FLOW

UNIT NAME: VALVE 1

ADD ANOTHER UNIT: 10 GPM

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ALT MAV OPERATION

←

FUNCTION: TIME

EVENT START: 10 MIN

EVENT DURATION: 15:00 MIN

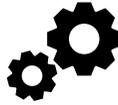
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PROGRAMMING AND SET UP CONTINUED



RELAY 1 & 2 OPERATION: Select REGEN TIME, REGEN VOLUME, VOLUME, HOLD VOLUME, LOW SALT LEVEL (RELAY 1), ERROR MONITOR (RELAY 2) or OFF.

FILL UNITS: Viewed when set to SOFTENER, 1.5 Valve type, and FILL is part of the regeneration series. Select POUNDS or Minutes.

Relay Operation

REGEN TIME – Relay closes at a set time after the start of regeneration (backwash or brine, whichever comes first) for a set amount of time.

REGEN VOLUME – Relay closes every set number of gallons while in service and during regeneration, for a set amount of time.

VOLUME – Relay closes every set number of gallons while in service, for a set amount of time.

HOLD VOLUME – Relay activates every set number of gallons, and deactivates when any button is pressed.

LOW SALT LEVEL – Relay activates when the Low Salt Trigger level is reached, and deactivates when the salt level is reset.

ERROR MONITOR – Relay closes when the control enters error mode, and deactivates when the control exits error mode.

←
SET UP SCREEN #8

FUNCTION: TIME

EVENT START: 10:00 MIN

EVENT DURATION: 15:00 MIN

←

FUNCTION: REGEN TIME

EVENT START: 00:01 MIN

EVENT DURATION: 00:01 MIN

←
RELAY 1 OPERATION

FUNCTION: REGEN VOLUME

EVENT START: 1 GALLONS

EVENT DURATION: 00:01 MIN

←
RELAY 1 OPERATION

FUNCTION: HOLD VOLUME

EVENT START: 50 x 1K GALLONS

Relay Trigger Settings		
	Units	Range
REGEN TIME	Minutes	0 – 500
REGEN VOLUME, VOLUME	Gallons	0.1 – 20,000
HOLD VOLUME	Gallons	1000 – 99,000,000
Relay Duration Settings		
REGEN TIME, REGEN VOLUME, VOLUME	Minutes, Seconds	0:01 – 500:00

DEALER INFORMATION

Dealer Information: Information set in this screen will be added to the Service Alarm and Valve Error Screens.

Press and hold the area immediately around the line to be edited.

Press **UP** or **DOWN** arrows to change the value of each field.

Press RETURN after updating each field to advance to the next field.

Press **HOME** to return to the **NORMAL USER DISPLAY**.

DEALER INFORMATION SCREEN

NAME

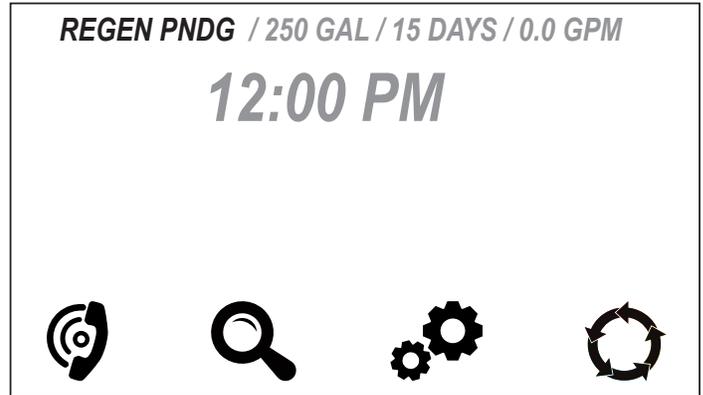
PHONE

PUSH TO LOAD DEALER LOGO



USER DISPLAYS

REGEN PENDING will be displayed in Alternator Systems whenever a unit is waiting to initiate the first cycle step of regeneration.

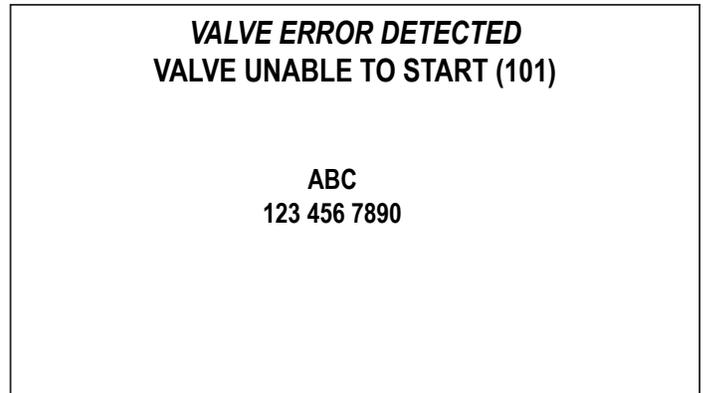


IN STANDBY will be displayed in Alternator Systems when a valve is in Standby state.



Valve Error Screen: The error screen activates as the primary screen when an error has been detected.

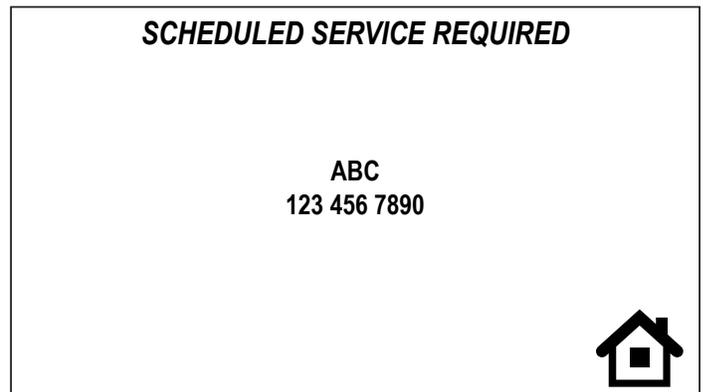
To reset the valve and clear the error, press and hold the area around "VALVE ERROR DETECTED" until the Normal User Display appears.



The **SCHEDULED SERVICE REQUIRED** screen appears when the set point has been reached.

The dealer information only appears if it has been set in the Dealer Information screens.

To reset the Service Alarm, press and hold the area around "SCHEDULED SERVICE REQUIRED" until the screen returns to the **NORMAL DISPLAY**.



SYSTEM STATUS/DIAGNOSTICS/VALVE HISTORY



SYSTEM STATUS

The **SYSTEM STATUS SCREEN** displays the current status of the control.

When set to 1.0T valve type, the tank currently in service is displayed.

SALT LEVEL: Displays the current amount of salt remaining in the brine tank. When the salt alarm has been activated and salt has been added, touch the SALT LEVEL line and adjust the amount of salt in the tank.

DIAGNOSTIC and **HISTORY SCREENS** document usage and past activity of the control.

Displays viewed will depend on control configuration; not all displays will be available for all configurations. Use UP or DOWN to view data.

← **SYSTEM STATUS SCREEN**

**IN SERVICE
TANK A**

1200 GALLONS TO REGENERATION
14 DAYS TO REGENERATION
0.0 GPM
DP
SALT LEVEL: 250 LBS

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← **DIAGNOSTIC SCREEN #1** →

DAYS SINCE LAST REGENERATION: 0
GALLONS SINCE LAST REGENERATION: 14
RESERVE CAPACITY HISTORY -[PUSH TO VIEW]
WATER USAGE -[PUSH TO VIEW]
MAX FLOW HISTORY -[TOUCH TO VIEW]

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← **RESERVE CAPACITY HISTORY**

DAY: 0
TODAY
RESERVE CAPACITY: 400 GALLONS

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← **WATER USAGE**

DAY: 0
TODAY
VOLUME USED: 0 GALLONS
REGENERATION CYCLE

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← **PEAK FLOW HISTORY**

DAY: 0
TODAY
MAX FLOW: 0.0 GPM

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SYSTEM STATUS/DIAGNOSTICS/VALVE HISTORY

CONTINUED



DIAGNOSTIC and HISTORY SCREENS document usage and past activity of the control.

Displays viewed will depend on control configuration; not all displays will be available for all configurations.

Use UP or DOWN to view data.

DIAGNOSTICS SCREEN #2

TANK TRANSFER HISTORY: PUSH TO VIEW

MAX DRIVE HISTORY: PUSH TO VIEW

MAV DRIVE HISTORY

ALT MAV DRIVE HISTORY

DRIVE DIRECTION: -

FIRST: 0

LAST: 0

AVE: 0

NUMBER OF DRIVES: 0

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VALVE HISTORY SCREEN

SOFTWARE VERSION G500.01

TOTAL DAYS SINCE STARTUP: 0

TOTAL GALLONS SINCE STARTUP: 0

TOTAL REGENS SINCE STARTUP: 0

VALVE ERROR LOG - PUSH TO VIEW

VALVE ERROR LOG

ERROR NUMBER: 0

VALVE ERROR: 102

VALVE MOTOR STALLED

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Revision History:

6/15/2020

PAGE 4:

Removed #7 - V3106-01 - table and drawing

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