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- The information, specifications and illustrations in this manual are based on the latest information available at the time of printing. The manufacturer reserves the right to make changes at any time without notice.
- This manual is intended as a guide for service of the valve only. System installation requires information from a number of suppliers not known at the time of manufacture. This product should be installed by a plumbing professional.
- This unit is designed to be installed on potable water systems only.
- This product must be installed in compliance with all state and municipal plumbing and electrical codes. Permits may be required at the time of installation.
- If daytime operating pressure exceeds 80 psi, nighttime pressures may exceed pressure limits. A pressure reducing valve must be installed.
- Do not install the unit where temperatures may drop below 32°F (0°C) or above 110°F (43°C).
- Do not place the unit in direct sunlight. Black units will absorb radiant heat increasing internal temperatures.
- Do not strike the valve or any of the components.
- Warranty of this product extends to manufacturing defects. Misapplication of this product may result in failure to properly condition water, or damage to product.
- A prefilter should be used on installations in which free solids are present.
- In some applications local municipalities treat water with Chloramines. High Chloramine levels may damage valve components.
- Correct and constant voltage must be supplied to the control valve to maintain proper function.

Job Specification Sheet

Feed Water Hardness: _____ Grains per Gallon or Degrees
Regeneration Time: Delayed _____ AM/PM or _____ Immediate
Regeneration Day Override: Off or Every _____ Days
Time of Day: _____

Regenerant Flow: Downfow / Upfow Brine Draw First / Upfow Brine Fill First
Valve Address: #1 / #2 / #3 / #4
Display Format: US Gallons or Liters
Unit Capacity: _____ Grains or grams CaCO
Capacity Safety Factor: Zero or _____ %
Feed Water Hardness: _____ Grains or milligrams CaCO /L
System Size: 1 Valve / 2 Valves / 3 Valves / 4 Valves
Regeneration Cycle Step #1: __ : __ : __
Regeneration Cycle Step #2: __ : __ : __
Regeneration Cycle Step #3: __ : __ : __
Regeneration Cycle Step #4: __ : __ : __
Regeneration Cycle Step #5: __ : __ : __
Timed Auxiliary Relay Output Window:
Off or Start Time __ : __ : __
End Time __ : __ : __
Chemical Pump Output Auxiliary Relay: Off or Volume (Gallons or Liters)
Time: __ : __ : __
Fleck Flow Meter Size: Paddle: 1" 1.5" 2" 3"
Turbine: 1" 1.5"
Generic Flow Meter: Maximum Flow Rate:
Add __ _ Gallons every __ _ Pulses

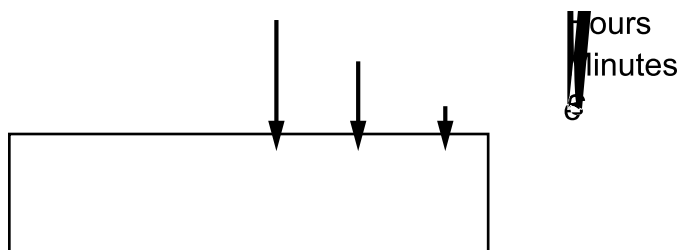
Timer Operation

Press and hold the Up or Down button for 2 seconds.
Press the Shift button to select the digit you want to modify.
Press the Up or Down buttons to adjust the value.
Press the Extra Cycle button to return to the normal display screen, or after a 5 second timeout.

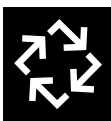
When timer is in service or stand by, press the Extra Cycle button for 5 seconds on the main screen.
The timer advances to Regeneration Cycle Step #1, and begins programmed time count down.
Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #2 (if active).
Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #3 (if active).
Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #4 (if active).
Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #5 (if active).
Press the Extra Cycle button once more to advance the valve back to in service.

A manually initiated or queued regeneration can be cleared by pressing the Extra Cycle button for less than 5 seconds. A system queued regeneration can only be cleared by stepping through a manual regeneration. If regeneration occurs for any reason prior to the delayed regeneration time, the manual regeneration request shall be cleared. Pressing the Extra Cycle button while in regeneration will cause the upper drive to advance to the next step immediately.

In the Regeneration Cycle Step display, the timer shows the current regeneration cycle number the valve is on, or has reached, and the time remaining in that step. Once all regeneration steps are complete the timer returns to in Service and resumes normal operation.



12 Minutes Remaining in Cycle 1 (Back Wash)



Press the Extra Cycle button during a Regeneration Cycle to immediately advance the valve to the next cycle step position and resume normal step timing.

- During normal operation, the Time of Day screen alternates with the error screen (if errors are present).
- As treated water is used, the Volume Remaining display counts down from the calculated system capacity to zero. When this occurs a Regeneration Cycle begins if no other units are in regeneration.

Timer Operation

The timer enters the Program Mode in standby or service mode as long as it is not in regeneration. While in the Program Mode the timer continues to operate normally monitoring water usage. Timer programming is stored in memory permanently.

Program settings are stored in permanent memory. Current valve position, cycle step time elapsed, and time of day are stored during a power failure, and will be restored upon power re-application. Time is kept during a power outage and time of day is adjusted upon power up (as long as power is restored within 12 hours).

The time of day on the main display screen will flash for 5 minutes when there has been a power outage. The flashing of the time of day can be stopped by pressing any button on the display.

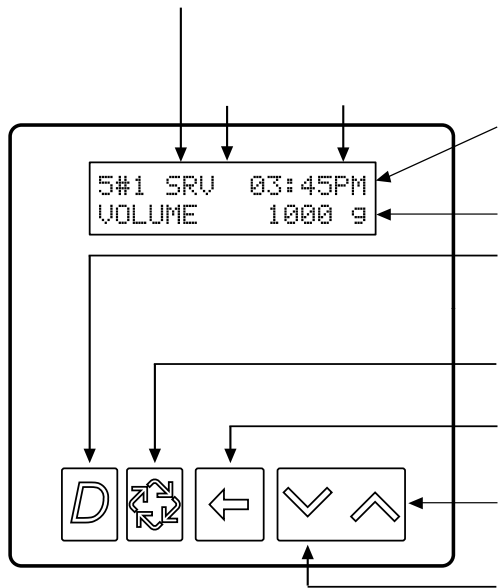
The unit does not allow the unit/system to go into Regeneration until the Regeneration Lockout Input signal to the unit is cleared. This requires a contact closure to activate the unit. The recommended gauge wire is 20 with a maximum length of 500 feet. See P4 remote inputs in the wiring diagrams in the service manual.

If the Regeneration Day Override option is turned on and the valve reaches the set Regeneration Day Override value, the regeneration cycle starts if no other unit is in Regeneration. If other units are in regeneration, it is added to a queue. This occurs regardless of the remaining volume available.

REG

Regeneration must be g

Timer Display Features



Timer Display - Screen Examples

```
4#  SRV  03:45PM  
REGEN IN 07 DAYS
```

In Service:
System 4 Time Clock

```
4#  SRV* 03:45PM  
VOLUME  1000 g
```

In Service:
System 4 Flow Meter Initiated

System 4 Flow Meter Delayed

```
5#1 SRV* 03:45PM  
VOLUME  1000 g
```

In Service:
System 5 Flow Meter Initiated (Lead Unit)

```
5#3 SRV  03:45PM  
VOLUME  1000 g
```

In Service:
System 5 Flow Meter Initiated (Lag Unit #3)

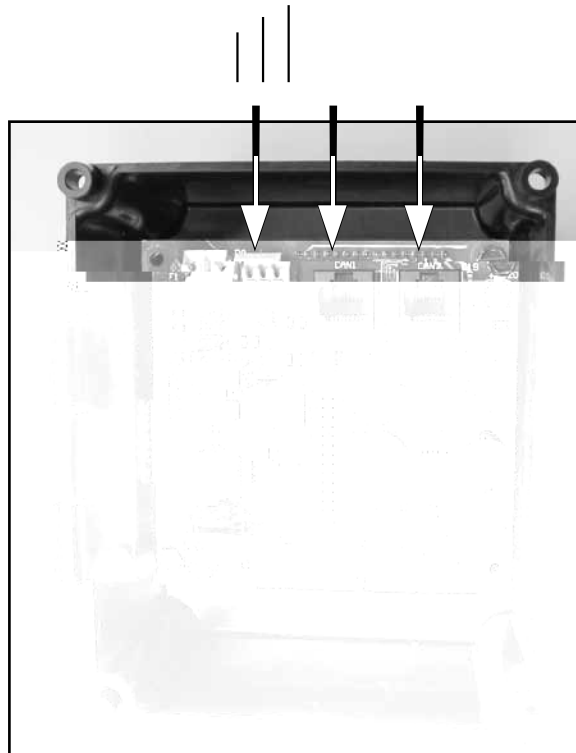
```
6#1 SRV* 03:45PM  
SYSVOL  4000 g
```

In Service:
System 6 Flow Meter Initiated (Lead Unit)

Network/Communication Cables & Connections

Use either a CAT3 or CAT5 Network/Communication cable.

1. Connect the network/communication cable first before programming.
2. The maximum cable length between timers is 100 feet.
3. Connect each unit together from one communication port to the next communication port. It does not matter which one goes to the next one.



The number of network/communication cables needed for setup is one less than the total number of valves.

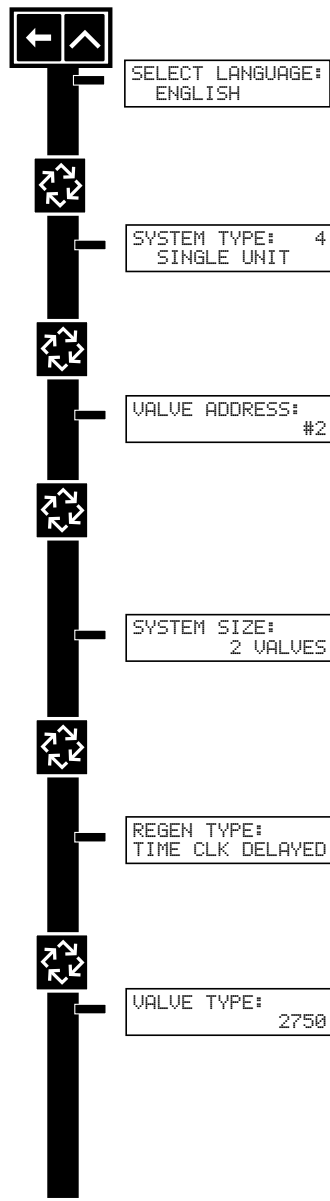
One network/communication cable
Two network/communication cables
Three network/communication cables

Master Programming Mode Flow Chart

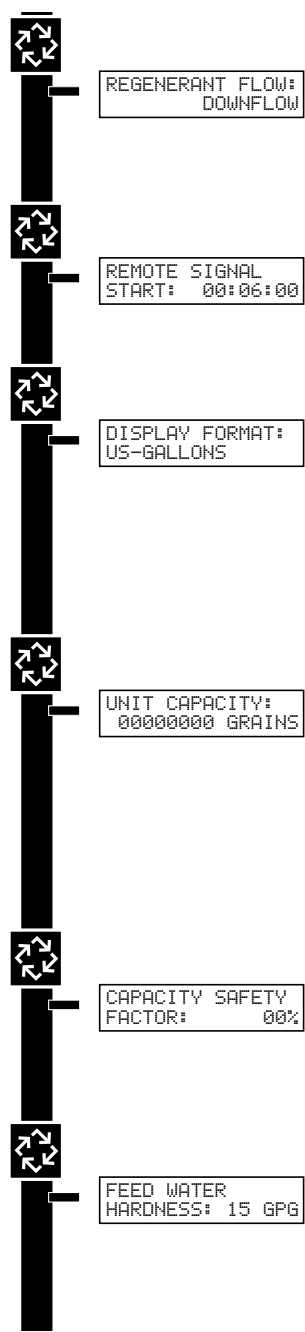
Press and hold the Shift and Up buttons for 5 seconds.

Press the Extra Cycle button once per display until all displays are viewed and Normal Display is resumed. Option setting displays may be changed as required by pressing either the Up or Down button. Use the Shift button to move one space to the left.

Depending on current valve programming, certain displays may not be viewed or set.

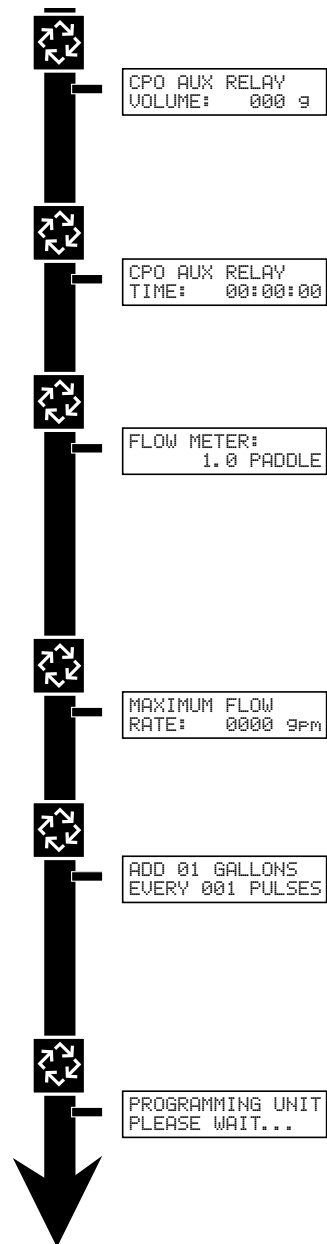


Master Programming Mode Flow Chart



Master Programming Mode Flow Chart

Master Programming Mode Flow Chart



Master Programming Guide

When the Master Programming Mode is entered, parameters can be set to make the timer(s) function as needed.

1. Press and hold the Shift and Up buttons for 5 seconds.
2. Set the time of day display to (See the "Setting the Time of Day" section on the "Timer Operation" page). Then go to the main display screen, press the Up and Down buttons at the same time for 5 seconds.
1. Press the Extra Cycle button once per display until all are viewed. Master Programming Mode is exited and the normal display screen appears.
2. To exit the Master Programming Mode without saving, press the Diagnostic button.

Press and hold the Up and Down buttons for 25 seconds until 12:00PM (or 12:00HR) appears. This resets all parameters except for the flow meter totalizer volume.

Hold the Extra Cycle button while powering up the unit. This resets all of the parameters in the unit. Check and verify the choices selected in Master Programming Mode.

This option selects the language for programming and display.

Use Up or Down to select language.

Press the Extra Cycle button.

```
SELECT LANGUAGE
ENGLISH
```

This program type selects the system type (4, 5, 6, 7, or 9).

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

```
SYSTEM TYPE:    4
SINGLE UNIT
```

This program step selects the valve address (1, 2, 3, or 4) within the network needed for each timer for communication. The #1 is the "master" or "lead" which contains programmed parameters, that will be used by all of the timer(s) in the network to control Regeneration, in Service, or Standby of all the valve(s) in the system.

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

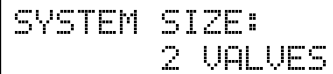
```
VALVE ADDRESS:
# 2
```

Master Programming Guide

This program step is used to set up the number of valves (1, 2, 3, or 4) in the system.

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.



SYSTEM SIZE:
2 VALVES

This program step is used to set up the trigger type.

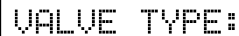
Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

This program step selects the valve type (2750, 2850, 2900s, 3150, 3900, Stager-Butterfly, or Stager-Notch Cam)

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.



VALVE TYPE:

This program step selects the regenerant flow type (Downflow, Upflow, or Upflow Fill First)

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.



REGENERANT FLOW:
DOWN FLOW

This program step selects the remote signal start. Hours, minutes, and seconds can be changed. When Remote Signal Start is active, the main screen will display. The options are either Off or set to the desired time.

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

This program step is used to set the desired volume display format. This option must be the same on all system units. U.S. will display volumes in gallons and is in 12 hour timekeeping. Metric will display volumes in liters and is in 24 hour timekeeping.

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

This program selects the individual timer's total capacity of hardness that can be removed. The unit capacity is measured in grains if in U.S. mode and grams CaCO₃ in Metric mode.

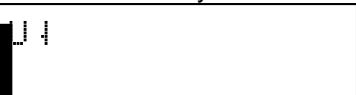
U.S. Range: 9,000 to 9,900,000 Grains (Default = 300,000 Grains)

Metric Range: 90.0 to 199,000.0 grams CaCO₃ (Default = 300.0 grams CaCO₃)

Use the Shift button to select the digit you want to modify.

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button d w IfM Ä S I S M



Master Programming Guide

This program step is used to adjust the capacity of the system. This is a percentage by which the unit's capacity is reduced.

0 – 50% (Default = 0%)

Use the Shift button to select the digit you want to modify.

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

```
CAPACITY SAFETY  
FACTOR: 00%
```

This program step is used to set the feed water hardness. The system will automatically calculate volume remaining based on the Unit Capacity, Capacity Safety Factor and Feed Water Hardness entered.

1 – 199 gpg (Grains per Gallon)(Default = 15)

2 – 199 milligrams CaCO /Liter (Default = 30)

Use the Shift button to select the digit you want to modify.

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

```
FEED WATER  
HARDNESS:015 GPG
```

This program step sets the maximum amount of time (in days) the unit can be In Service without a Regeneration.

OFF

1 - 99 Days

If "On," the screen for regeneration time will display.

Use the Shift button to select the digit you want to modify.

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

```
REGENERATION DAY  
OVERRIDE: OFF
```

```
REGENERATION DAY  
OVERRIDE:01 DAYS
```

Master Programming Guide

The **Regeneration Day** sets time of day for a delayed regeneration to occur, or regeneration day override.

00:00 AM

02:00 HR

Master Programming Guide

This option setting consists of two displays. The first display sets the turn-on time of the output, referenced to the start of the first Regeneration Cycle. The second display sets the output turn-off time, referenced again to the start of first Regeneration Cycle.

Anytime During Regeneration (Except Last Minute of the Regeneration Time)

At start time, and anytime during the regeneration cycle.

```
AUX RELAY OUTPUT  
START 00:00:00
```

```
AUX RELAY OUTPUT  
END 00:00:00
```

This option setting consists of two displays. The first display sets the volume of water flow at which the output turns on. The second display sets the time of the output.

0 – 999 Gallons (1 – 999 Seconds)

0.00 – 9.99 m3 (1 – 999 Seconds)

Activate Output After Volume Set is Reached.

Use the Shift button to move one space to the left for each number entered.

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

```
CHEMICAL PUMP:  
ENABLED
```

```
CPO AUX RELAY  
VOLUME: 000 9
```

```
CPO AUX RELAY  
TIME: 00:00:00
```

This program step sets the size of the Fleck flow meter.

- 1.0" Paddle (2750 Default)
- 1.5" Paddle (2850/2900 Default)
- 2.0" Paddle (3150 Default)
- 3.0" Paddle (3900 Default)
- 1.0" Turbine
- 1.5" Turbine
- Generic Flow Meter

Use Up or Down buttons to adjust this value.

Press the Extra Cycle button.

```
FLOW METER:
. 75 PADDLE
```

This program step sets maximum flow rate of the generic flow meter.

1. Press the Shift button to select the digit you want to modify.
2. Press the Up or Down buttons to adjust this value.
3. Press the Extra Cycle button.

```
MAXIMUM FLOW
RATE: 0000 GPM
```

This program step sets the pulses per gallon/liter for generic flow meters.

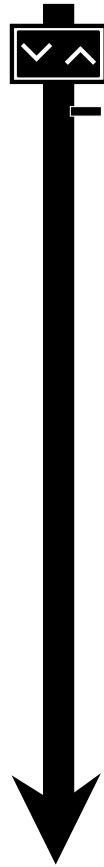
1. Press the Shift button to select the digit you want to modify.
2. Press the Up or Down buttons to adjust this value.
3. Press the Extra Cycle button.

```
ADD 01 GALLONS
EVERY 001 PULSES
```

```
PROGRAMMING UNIT
PLEASE WAIT...
```

User Mode Programming Flow Chart

Hold the Up and Down buttons for 5 seconds.



Use the Up and Down buttons to change from OFF to days desired.

Use the Up and Down buttons _____

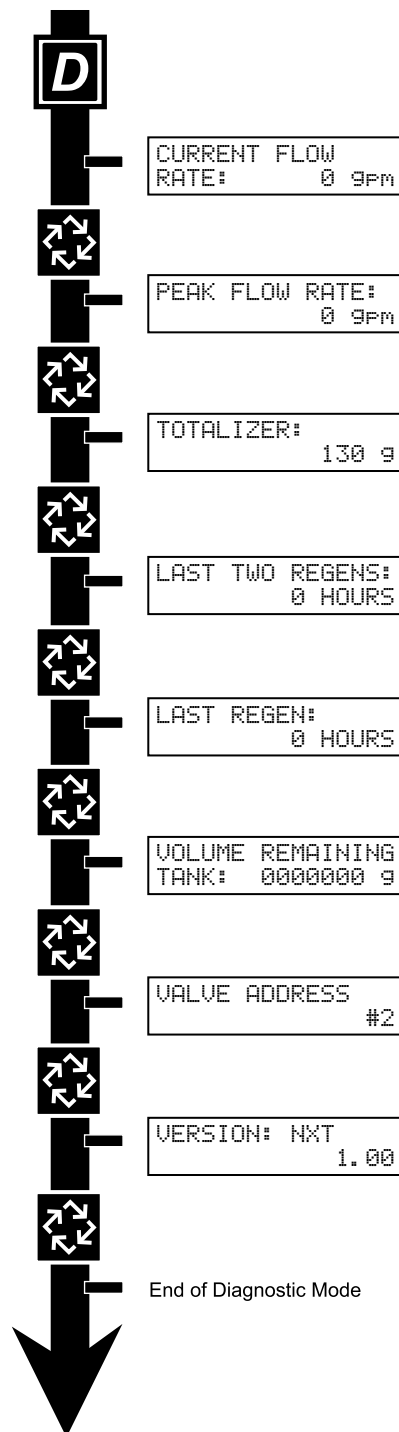
Diagnostic Mode Flow Chart

Push and release the "D" button.

Press the Extra Cycle button once per display until all displays are viewed and Normal Display is resumed.

Push and release the "D" button at anytime during diagnostic mode and the timer will exit the mode.

Depending on current valve programming, certain displays may not be able to be viewed or set.



Diagnostic Programming Guide

When the Diagnostics Mode is entered, all available displays are viewed as needed. Depending on current option settings, some displays cannot be viewed.

The current diagnostic will be displayed until Extra Cycle key is pressed. There is no time limit on each display. The timer will display individual valve information, not system information. In the event of regeneration occurring while displaying diagnostics, the regeneration step and time remaining will be displayed. When regeneration has been completed, the display will return to the normal Time of Day display.

Push and Release the "D" button to enter. Pressing the Extra Cycle button will move to the next diagnostic to be displayed. Push the Extra Cycle button once per display until all are viewed. Pressing the Diagnostic button, while in the Diagnostic Mode, will cause the unit to leave the Diagnostic Mode and return to the normal time of day display.

Flow Rate for this particular Timer will be calculated and displayed. Flow rates will be calculated every second. The display updates once per second. Flow rates are dependent upon the meter used.

- 75 gpm (.28 m3/m)
- 90 gpm (.34 m3/m)
- 175 gpm (.66 m3/m)
- 350 gpm (1.32 m3/m)
- 75 gpm

Press the Extra Cycle button.

CURRENT FLOW
RATE: 0 gpm

The Peak Flow Rate since the last regeneration will be captured.

- 0 to Maximum Number

Press the Extra Cycle button.

PEAK FLOW RATE:
0 gpm

The total volume of treated water that passes through a meter will be counted.

Reset to zero by holding the Up and Down arrow keys for 5 seconds during the Totalizer display.

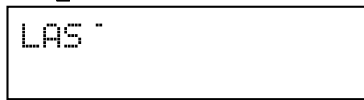
Press the Extra Cycle button.

TOTALIZER:
00000000 g

Diagnostic Programming Guide

The hours between the last two regenerations will be saved and displayed.

Depress the Extra Cycle button.



The hours since the last regeneration will be saved and displayed.

Depress the Extra Cycle button.

Volume remaining in the current tank will be adjustable when displayed in this mode. Regeneration will occur if set to zero.

The maximum ranges are the same as the maximum volume calculated on the main screen.

Press the Shift button to select the digit you want to modify.

Use Up or Down buttons is used to adjust this value.

Depress the Extra Cycle button

Volume remaining in the system cannot be edited when displayed in this mode, except for the Lead unit. It can only be viewed on the Lag unit.

Depress the Extra Cycle button

Diagnostic Programming Guide

This diagnostic display is for 2 control valves or more in a system (a single valve will not display).


Depress the Extra Cycle button.



```
VALUE ADDRESS:
              # 2
```

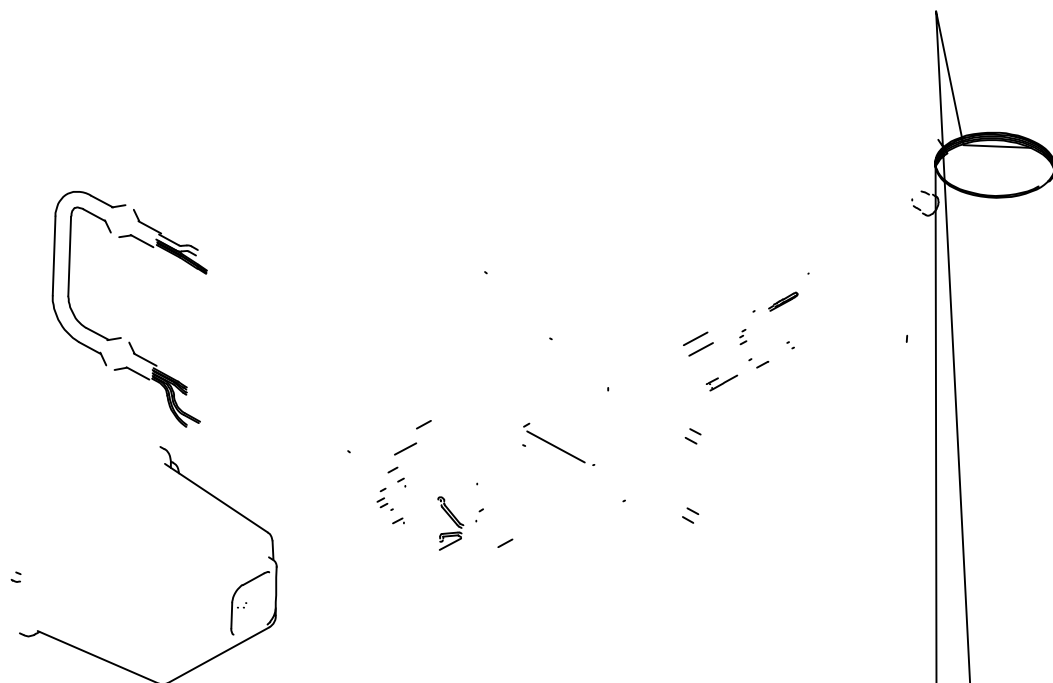
The electronic timer's software program version number will be displayed.

Depress the Extra Cycle button to exit.



```
VERSION: NXT
          X. XX
```

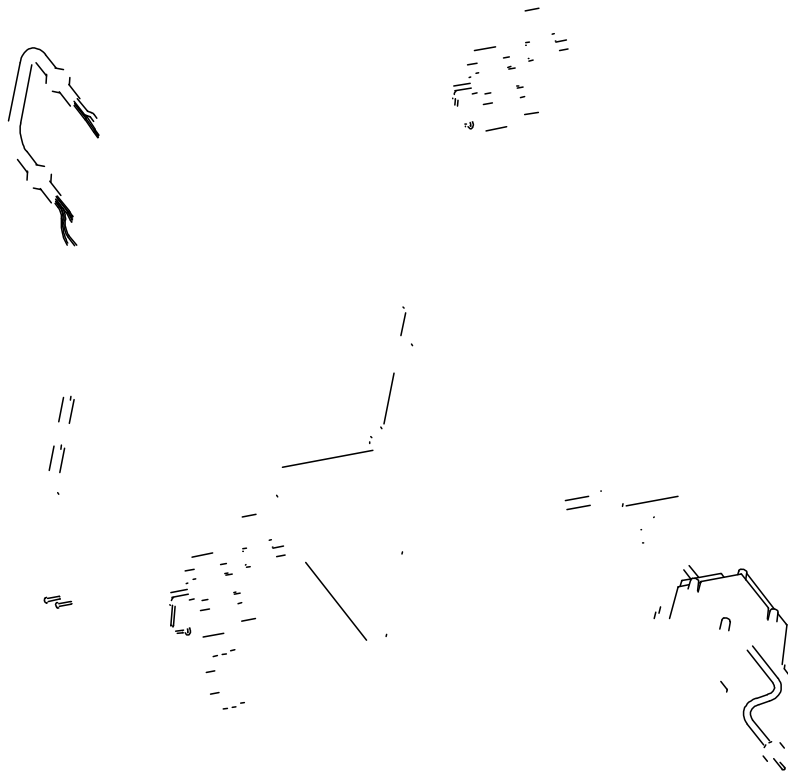
2750/2850/2900 Upper & 2900 Lower Powerhead Assy



2750/2850/2900 Upper & 2900 Lower Powerhead Assy

18697-15	backplate, hinged
60219-02	cover assy, environmental, black
60160-15	drive cam assy, stf, blue
	pin, link
	screw, pan hd mach, 4-40 x 1
	insulator, limit switch
	switch, micro
	screw, slot hex, 1/4 - 20 x 1/2
	motor, drive, 24V, 50/60 Hz
	cam, shut-off valve
	pin, roll, 3/32 x 7/8
	transformer, US, 120V, 24V, 108VA
	transformer, euro, 230V/24V 108VA
	transformer, aust, 230V/24V, 108VA
	plug, .750 dia, recessed, black
	plug, .140 dia, white
	plug, hole, heyco #2693
	plug, .190 dia, white, heyco #0307
	ftting assy, liquid tight, blk
	switch, micro
	screw, rd hd, 4-40 x 5/8 type 1
	wire harness, lower drive, w/molded strain relief
	strain relief, fat cord, heyco #30-1
	meter cable assy, 3200NT
19121-08	meter cable assy, NT, 35" w/connector
19121-09	meter cable assy, NT, 99.5" w/connector
19121-10	meter cable assy, NT, 303.5" w/connector
14202-01	screw, hex wsh mach, 8-32 x 5/16
	wire harness, upper drive
	plug, 1.20 hole, heyco #2733
	plug, hole, .125 dia, white
60217-02	cover assy, 2900, lower, black, environmental
	spacer, indicator
	bearing, connecting rod
	screw, hex hd 5/16 - 18 x 5/8, SS
	ring, retaining
	screw, hex wsh, 8-32 x 17/64
	backplate, lower
	pin, roll, 2900/3900
	link, piston rod
	bracket, motor, 2900
	cam, drive, 2900
	nut, hex, jam, 5/16-18, 18-8-SS
	indicator, service/standby
	motor, drive, 24V, 50/60Hz, SP
	pin, spring, connecting rod
	label, 3200NT, ground
	nut, jam, 3/4 - 16
	ftting, brine valve
42466-11	kit, can communication cable
	timer assy, NXT, right hand

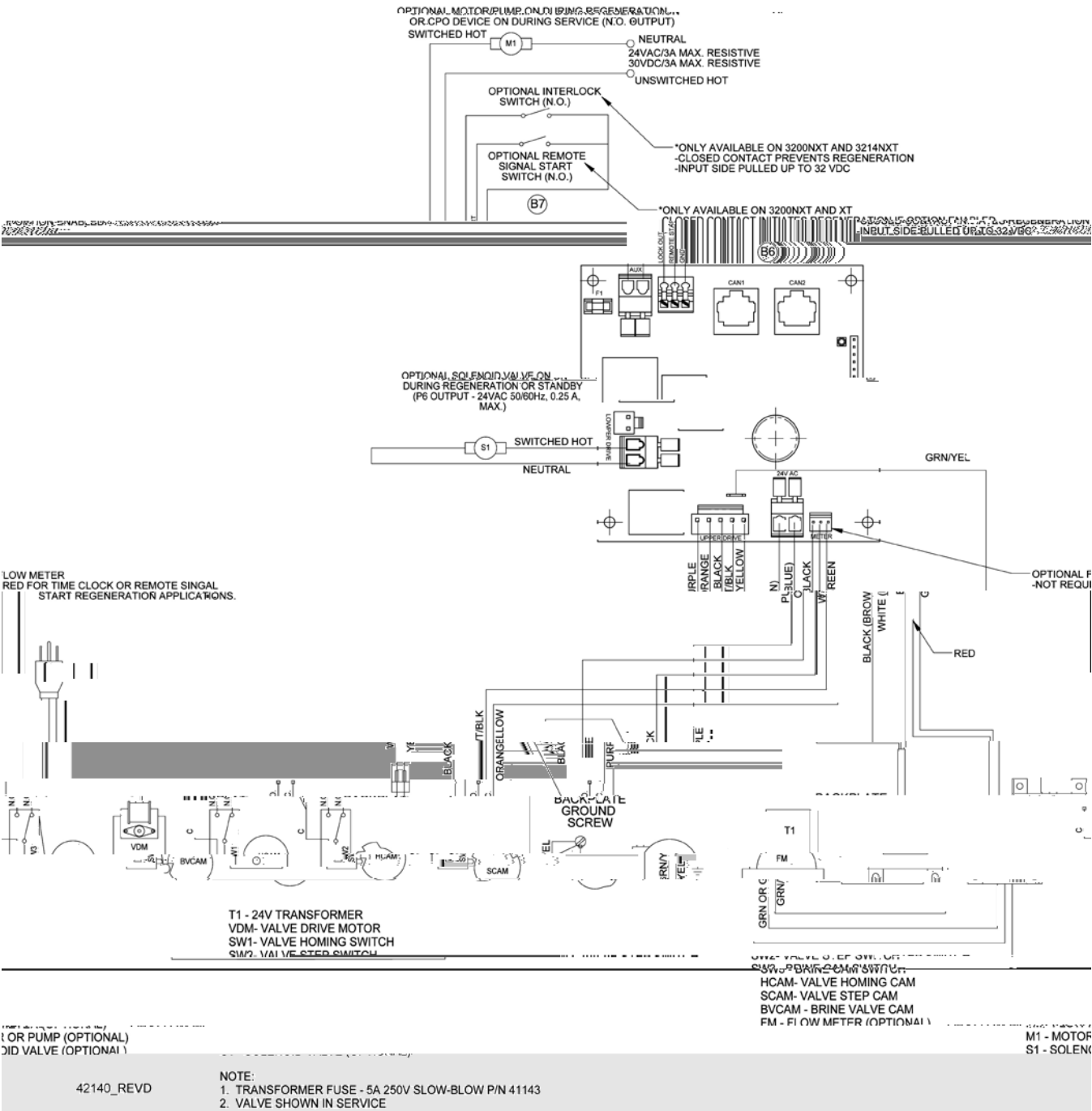
3150/3900 Upper & 3900 Lower Drive Powerhead Assy



3150/3900 Upper & 3900 Lower Drive Powerhead Assy

19304-04	backplate, 3150/3900 bracket, motor mtg, 3150/3900 motor, drive, 24V, 50/60 hz, sp screw, hex hd, 5/16 - 18 x 5/8, ss nut, hex, jam, 5/16 - 18, 18-8-ss bracket, switch, mounting, 3150/3900 insulator, limit switch switch, micro bracket, brine side screw, phil pan, 40 x 1 1/2 bushin, 3150/3900 screw, hex, wsh hd, 8 x 1/2 cam assy, 3150/3900 screw, slot hex, 1/4 - 20 x 1/2 18-8 ss gear, drive ring, retaining link, drive pin, drive link bearing, drive link clip, 3150/3900 pinion, drive pin, roll, 2900/3900 screw, hex wsh, 8-32 x 17/64 nut, hex, 1/4 - 20 ring, retaining washer, ss, .88, 3150/3900 ring, retaining, bowed plug, .140, white plug, hole, heyco, #2693 plug, .8750 hole, recessed, black screw, ft hd mach, 8-32 x 3/8 ftting assy, liquid tight, blk wire harness, upper drive wire harness, lower drive w/molded strain relief transformer, US, 120V, 24V, 108VA transformer, euro, 230V/24V 108VA transformer, aust, 230V/24V, 108VA meter cable assy, 3200NT
19121-08	meter cable assy, NT, 35" w/connector
19121-09	meter cable assy, NT, 99.5" w/connector
19121-10	meter cable assy, NT, 303.5" w/connector
14202-01	screw, hex wsh, 8-32 x 5/16 plug, 1.20 hole
60240-02	cover assy, 3150/3900, env, black motor, drive, 115V, 50/60Hz, sp backplate, 3900, lower, env bracket, motor mounting indicator, service/standby, 3900 spacer, indicator bearing, drive link screw, rd hd, 4-40 x 5/8, type 1 cam assy, 3900, lower label, 3200NT, ground plug, .190 dia, white plug, .750 dia, recessed, black kit, can communication cable
42466-11	timer assy, NXT, right hand

2750/2850/3150 Input & Output Wiring



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Troubleshooting

If a communication error is detected, an Error Screen will alternate with the main (time of day) screen every few seconds.

- All units In Service remain in the In Service position.
- All units in Standby go to In Service.
- Any unit in Regeneration when the error occurs completes Regeneration and goes to In Service.
- No units are allowed to start a Regeneration Cycle while the error condition exists, unless they are manually forced into Regeneration.
- When an error is corrected and the error no longer displays (it may take several seconds for all of the units in a system to stop displaying the error message), the system returns to normal operation.

During the error condition the control continues to monitor the flow meter and update the volume remaining. Once the error condition is corrected all units return to the operating status they were in prior to the error. Regeneration queue is rebuilt according to the normal system operation. Or, if more than one unit has been queued for regeneration, then the queue is rebuilt according to which one communicates first.

A. One or more units have a missing or bad communication cable.	A. Connect the communication cables and/or replace.
B. One or more units has a communication cable plugged into the wrong receptacle.	B. Connect the communication cable as shown in the wiring diagrams.
C. One or more units is not powered.	C. Power all units.

During the error condition the control continues to monitor the flow meter and update the remaining capacity. Once the error condition is corrected all units return to the operating status they were in prior to the error and regeneration is queued according to the normal system operation. If reprogramming the unit in the Master Programming Mode clears the error, the volume remaining may be reset to the full unit capacity (i.e. as though it were just regenerated).

1. All units in standby go In Service.
2. Any unit in regeneration when the error occurs completes regeneration and goes to In Service.
3. No units are allowed to start a regeneration cycle while the error condition exists.

When the problem is corrected and the error no longer displays (it may take several seconds for all of the units in a system to stop displaying the error message), the system returns to normal operation.

- Duplicate unit addresses or numbers
- Size of system (ex: if sized for a 4 units, and only have 2 units)
- Display format mismatches

- Program the units correctly in the Master Programming Mode.

If these errors are detected, numbers 1 through 3 become true, and the main screen (time of day) will alternate with an error screen.

Troubleshooting

A. Any or all of two or more units programmed with the same unit number (Matching Address Error)	A. Program the units correctly in the Master Programming Mode
B. Flashing/blinking display	B. Power outage has occurred
C. Format Mismatch (Units have both U.S. and Metric Formats)	C. Verify all units have same Format selected (all U.S. or all Metric)
D. No messages displayed/small black squares appear in display	D. Turn the contrast button on the back of unit until text appears (see "Problems Viewing Display/Changing Contrast of Display" below)
E. Size Error (Units not correctly numbered/more than one unit has the same number assigned)	E. Check each unit and verify each as the correct number, and that only one unit has that number
F. Com Error (Communication Error)	F. Check the wiring of the system and verify it is correct and that all are connected

DETECTED ERROR=
E2 RESET UNIT

Go through Master Programming to program the unit.

DETECTED ERROR=
NO MESSAGE #1

Make sure all communication cables are connected.
If "No Message #1" ensure it is the lead unit.
Ensure #1 is configured for the correct system type.

DETECTED ERROR=
NO MESSAGE #3

Make sure all communication cables are connected.
If "No Message #3" ensure it is unit #3.
Ensure #3 is configured for the correct system type.

DETECTED ERROR=
PROGRAM MISMATCH

Ensure the units on the network are not configured the same as #1/the Lead unit.

DETECTED ERROR=
EXCEED UNIT SIZE

There are more units on the system than the Lead is programmed for.

DETECTED ERROR=
MATCHING ADDRESS

The unit is programmed the same # as another unit.

Notes
