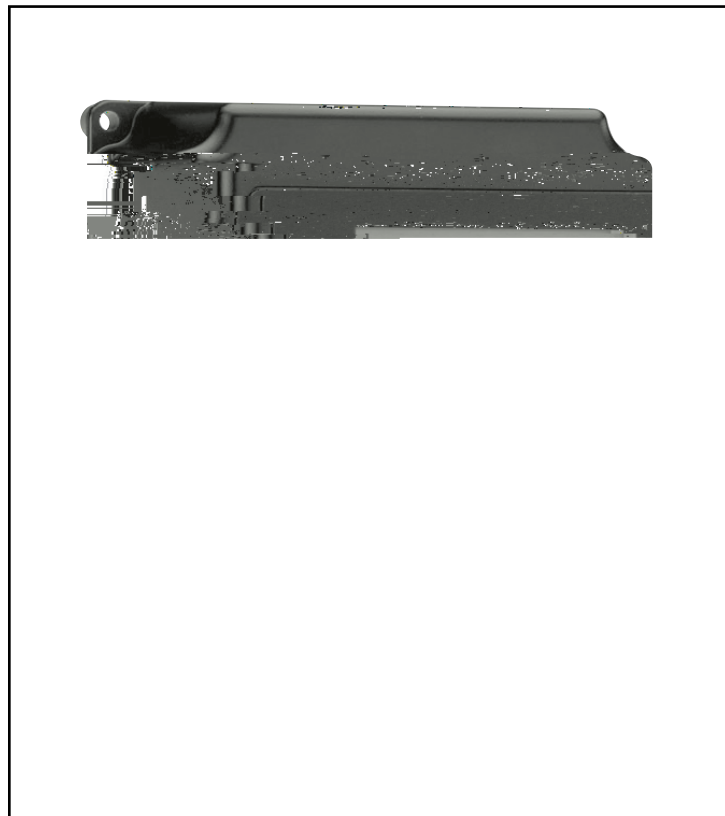




IMPORTANT: Fill in Pertinent Information on Page 3 for Future Reference

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IMPORTANT PLEASE READ:

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 1

Do not place the unit in direct sunlight. Units will absorb heat from the sun and become too hot to touch. Do not strike the valve or any of the components of the product with any sharp or hard object. The manufacturer's warranty does not cover damage caused by misuse, abuse, or neglect. A pressure reducing valve should be installed on all installations where the water pressure exceeds 80 psi. In some applications local municipalities may require a pressure reducing valve to be installed on the water supply line.

Job Specification Sheet

Please Circle and/or Fill in the Appropriate Data for Future Reference:

Programming Mode:

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: _____

Master Programming Mode:

Valve Type: 2750 / 2850 / 2900s / 3150 / 3900 / Stager
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_3
Capacity Safety Factor: Zero or _____ %
Feed Water Hardness: _____ Grains or milligrams CaCO_3/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 During Programming

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.

Timer Operation During A Power Failure

All 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 failure, and time of day is adjusted upon power up (as long as power is restored within 12 hours).

NOTE: 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.

Remote Lockout

The timer 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.

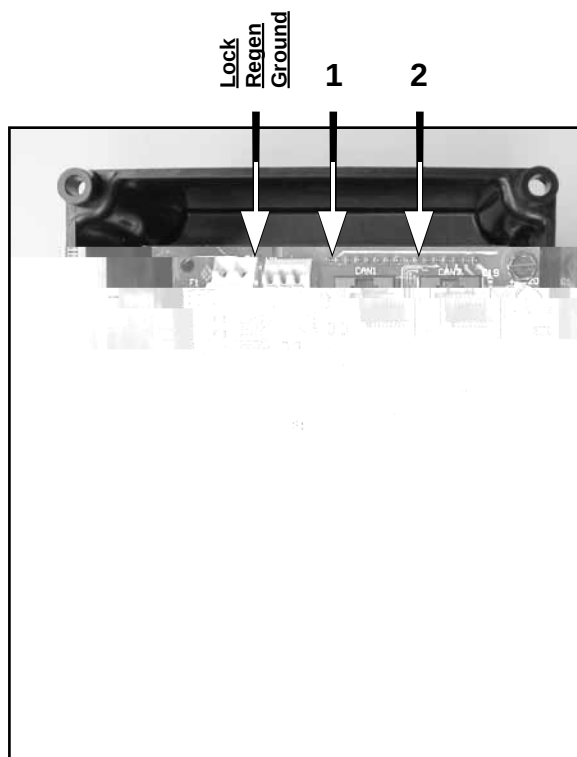
Regeneration Day Override Feature

If the Day Override option is turned on and the valve reaches the set Regeneration Day Override value, the

4# SRV 03:45PM
Page 3

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.



3200NXT Circuit Board

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

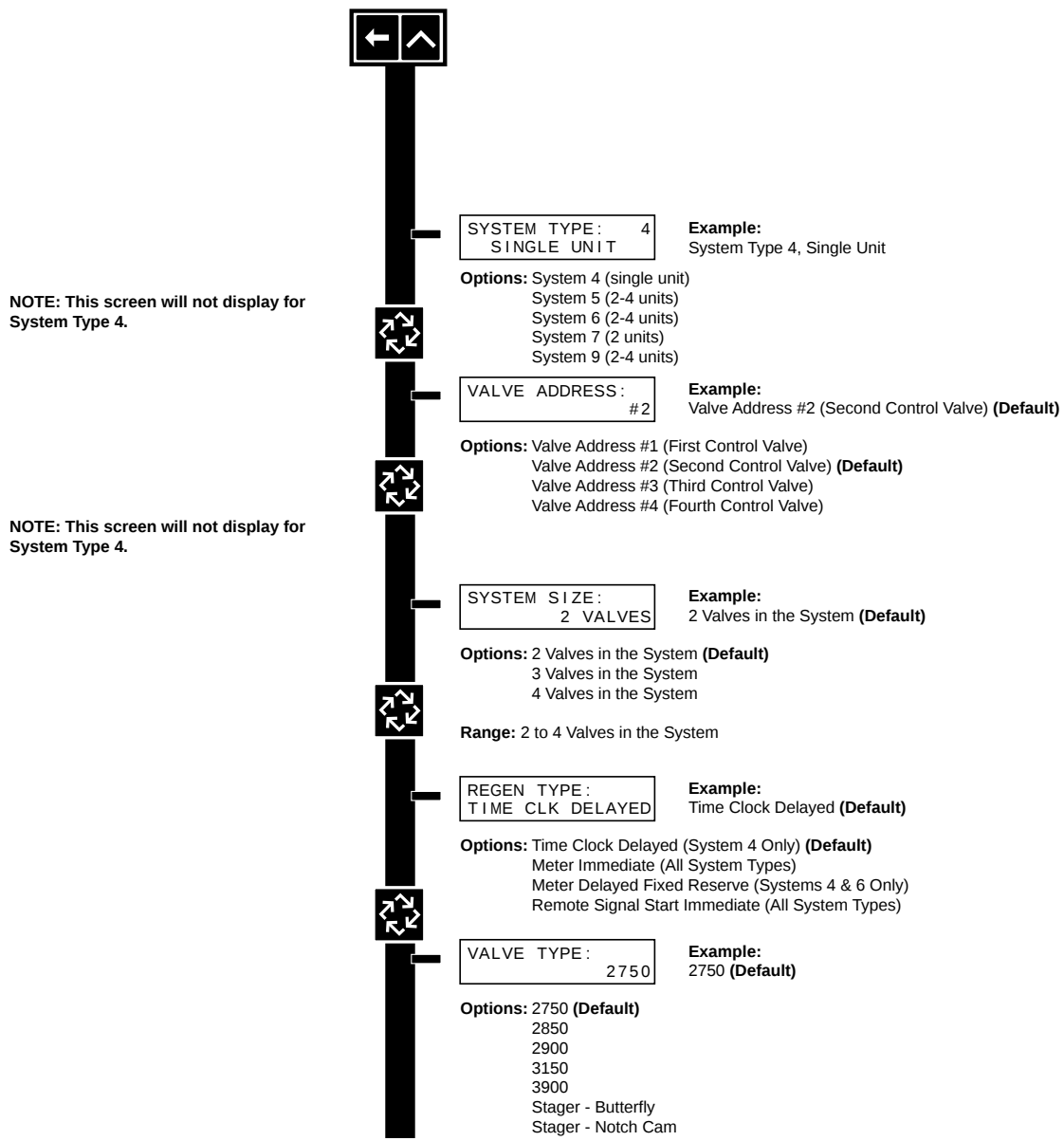
Two-Unit System:	One network/communication cable
Three-Unit System:	Two network/communication cables
Four-Unit Systems:	Three network/communication cables

Master Programming Mode Flow Chart

Entering Master Programming Mode:

1. 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.
2. Depending on current valve programming, certain displays may not be viewed or set.

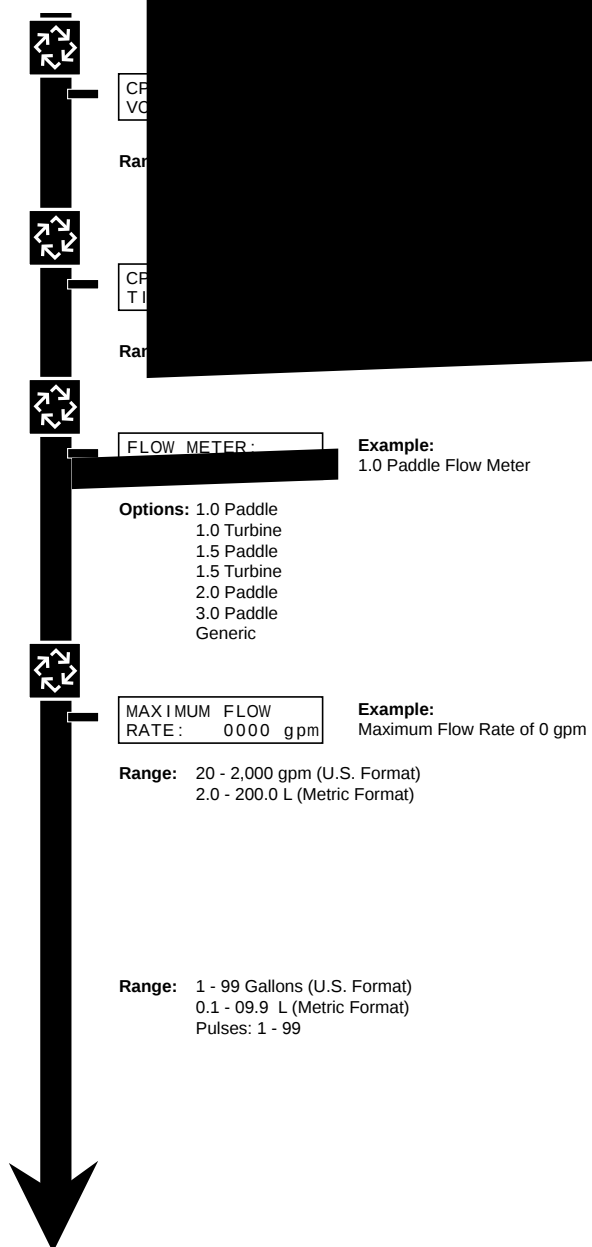
NOTE: If the “D” button is pressed while in master programming, no changes will be saved.



CAUTION: Before entering Master Programming, please contact your local professional water dealer.

Master Programming Mode Flow Chart

Master Programming M



CAUTION: Before entering Master Programming, please contact your local professional water dealer.

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

4. System Size

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

1. Use Up or Down buttons to adjust this value.
2. Press the Extra Cycle button.



SYSTEM SIZE:
2 VALVES

5. Regeneration Type

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

1. Use Up or Down buttons to adjust this value.
2. Press the Extra Cycle button.

6. Valve Type

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

1. Use Up or Down buttons to adjust this value.
2. Press the Extra Cycle button.

7. Regenerant Flow

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

1. Use Up or Down buttons to adjust this value.
2. Press the Extra Cycle button.



REGENERANT FLO 1

CAUTION: Before entering Master Programming, please contact your local professional water dealer.

8. Remote Signal Start

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.

1. Use Up or Down buttons to adjust this value.
2. Press the Extra Cycle button.

9. Display Format

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.

1. Use Up or Down buttons to adjust this value.
2. Press the Extra Cycle button.

10. Unit Capacity

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 CaCO_3 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 CaCO_3 (Default = 300.0 grams CaCO_3)

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

b

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4

11. Capacity Safety Factor

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

Range: 0 – 50% (Default = 0%)

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

33111

14. Regeneration Time

This program step sets time of day for a delayed regeneration to occur, or regeneration day override.

Default U.S.: 02:00 AM

Default Metric: 02:00 HR

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

15. Regeneration Cycle Steps

This program step programs the Regeneration Cycle step times 1 through 5. Please refer to the chart below for regenerant flow default cycle steps and times.

16. Auxiliary Relay Output

The next two displays are part of a series of settings used to program the optional relay output. The first setting turns the output on/off during Regeneration only. The second turns the output on during Service only, every time a set volume of water used has accumulated.

17. Timed Auxiliary Relay Output Window
(Start & End Time Setting, If Auxiliary Relay is Enabled)

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.

- Start Time:**
Anytime During Regeneration (Except Last Minute of the Regeneration Time)
- End Time:**
At start time, and anytime during the regeneration cycle.

18. Chemical Pump Auxiliary Relay Output Window

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.

- U.S. Range:** 0 – 999 Gallons (1 – 999 Seconds)
- Metric Range:** 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
TIME

CAUTION: Before entering Master Programming, please contact your local professional water dealer.

(Set to Valve Type)

generic flow meter.

value.

of the generic flow meter.

that you want to modify.

at this value.

on/liter for generic flow meters.

that you want to modify.

at this value.

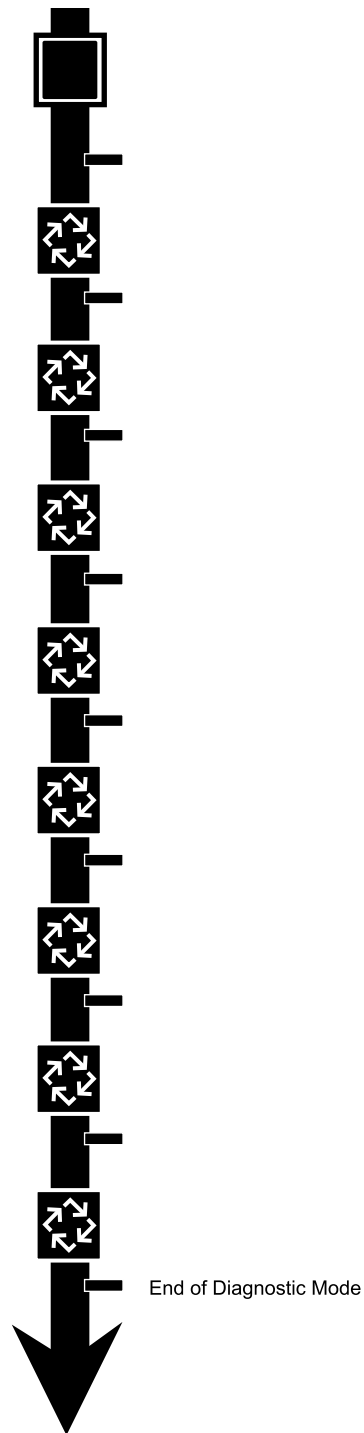
Mode

When entering Master Programming, please contact your local professional water dealer.

Diagnostic Mode Flow Chart

Entering Diagnostic Mode:

1. Push and release the "D" button.
2. Press the Extra Cycle button once per display until all displays are viewed and Normal Display is resumed.
3. Push and release the "D" button at anytime during diagnostic mode and the timer will exit the mode.
4. Depending on current valve programming, certain displays may not be able to be viewed or set.



Between Last Two Regenerations

...s between the last two regenerations will be saved and displayed.
...ess the Extra Cycle button.

...	...
-----	-----

Valve Address

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

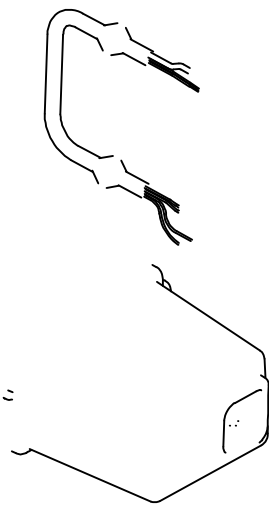
1. Depress the Extra Cycle button.

Software Version

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

1. Depress the Extra Cycle button to exit.

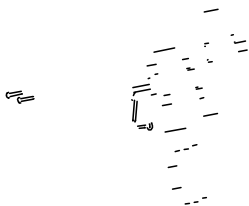
2750/2850/2900 Upper & 2900 Lower Powerhead Assy



2750/2850/2900 Upper & 2900 Lower Powerhead Assy

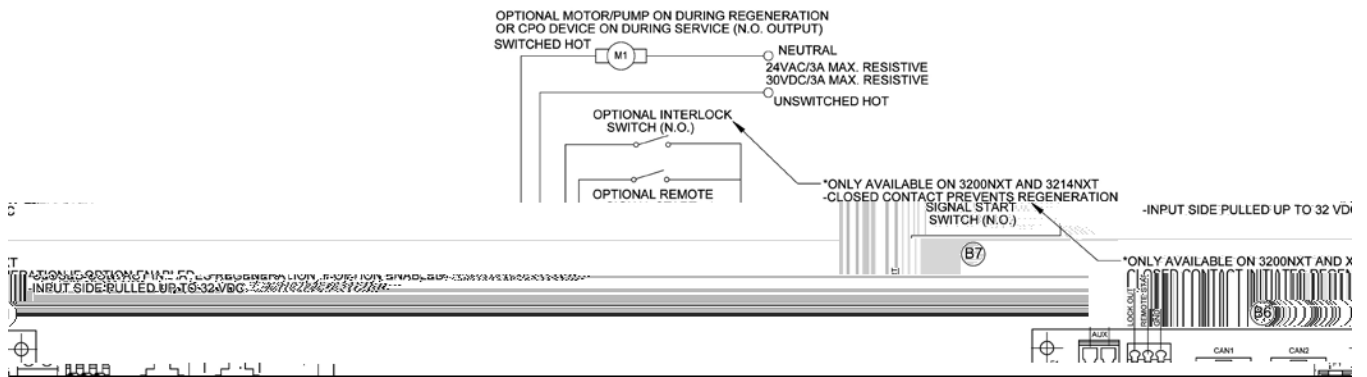
Item No.	Quantity	Part No.	Description
1.....	1.....	18697-15.....	backplate, hinged
2.....	1.....	60219-02.....	cover assy, environmental, black
3.....	1.....	60160-15.....	drive cam assy, stf, blue
4.....	1.....	10909.....	pin, link
5.....	2.....	14923.....	screw, pan hd mach, 4-40 x 1
6.....	5.....	10302.....	insulator, limit switch
7.....	3.....	10218.....	switch, micro
8.....	2.....	10231.....	screw, slot hex, 1/4 - 20 x 1/2
9.....	1.....	41544.....	motor, drive, 24V, 50/60 Hz
10.....	1.....	12777.....	cam, shut-off valve
11.....	2.....	10338.....	pin, roll, 3/32 x 7/8
12.....	1.....	41034.....	transformer, US, 120V, 24V, 108VA
		41049.....	transformer, euro, 230V/24V 108VA
		41050.....	transformer, aust, 230V/24V, 108VA
13.....	1.....	19691.....	plug, .750 dia, recessed, black
14.....	2.....	19800.....	plug, .140 dia, white
15.....	1.....	15806.....	plug, hole, heyco #2693
16.....	9.....	19801.....	plug, .190 dia, white, heyco #0307
17.....	1.....	17967.....	ftting assy, liquid tight, blk
18.....	1.....	10896.....	switch, micro
19.....	4.....	11805.....	screw, rd hd, 4-40 x 5/8 type 1
20.....	1.....	40943.....	wire harness, lower drive, w/molded strain relief
21.....	1.....	13547.....	strain relief, fat cord, heyco #30-1
22.....	1.....	19121.....	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
23.....	1.....	14202-01.....	screw, hex wsh mach, 8-32 x 5/16
24.....	1.....	40941.....	wire harness, upper drive
25.....	1.....	17421.....	plug, 1.20 hole, heyco #2733
26.....	2.....	41581.....	plug, hole, .125 dia, white
27.....	1.....	60217-02.....	cover assy, 2900, lower, black, environmental
28.....	1.....	18626.....	spacer, indicator
29.....	1.....	18746.....	bearing, connecting rod
30.....	2.....	11224.....	screw, hex hd 15/16 - 18 x 5/16, 18626 indicator

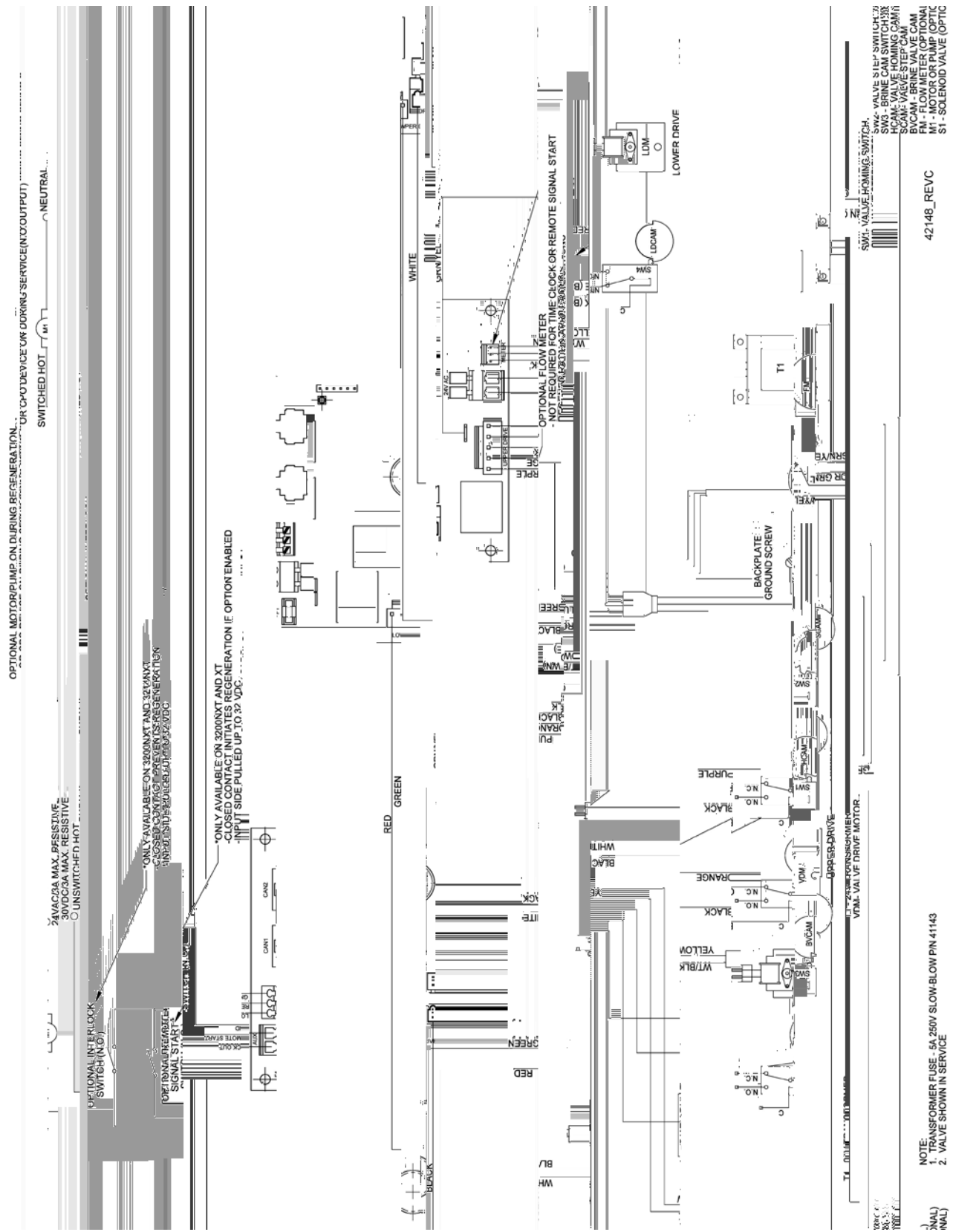
3150/3900 Upper & 3900 Lower Drive Powerhead Assy



3150/3900 Upper & 3900 Lower Drive Powerhead Assy

Item No.	Quantity	Part No.	Description
1	1	19304-04	backplate, 3150/3900
2	1	15120	bracket, motor mtg, 3150/3900
3	1	40391	motor, drive, 24V, 50/60 hz, sp
4	8	11224	screw, hex hd, 5/16 - 18 x 5/8, ss
5	4	16346	nut, hex, jam, 5/16 - 18, 18-8-ss
6	2	17797	bracket, switch, mounting, 3150/3900
7	5	10302	insulator, limit switch
8	4	10218	switch, micro
9	2	16053	bracket, brine side
10	2	12624	screw, phil pan, 40 x 1 1/2
11	4	16052	bushin, 3150/3900
12	4	17567	screw, hex, wsh hd, 8 x 1/2
13	1	16494	cam assy, 3150/3900
14	8	10231	screw, slot hex, 1/4 - 20 x 1/2 18-8 ss
15	2	16046	gear, drive
16	3	11774	ring, retaining
17	2	16047	link, drive
18	2	11709	pin, drive link
19	1	16048	bearing, drive link
20	2	11898	clip, 3150/3900
21	2	16045	pinion, drive
22	2	11381	pin, roll, 2900/3900
23	7	10872	screw, hex wsh, 8-32 x 17/64
24	8	11235	nut, hex, 1/4 - 20
25	2	16050	ring, retaining
26	2	16059	washer, ss, .88, 3150/3900
27	2	16051	ring, retaining, bowed
28	8	19800	plug, .140, white
29	1	15806	plug, hole, heyco, #2693
30	1	19591	plug, .8750 hole, recessed, black
31	3	11080	screw, ft hd mach, 8-32 x 3/8
32	2	17967	fitting assy, liquid tight, blk
33	1	40941	wire harness, upper drive
34	1	40943	wire harness, lower drive w/molded strain relief
35	1	41034	transformer, US, 120V, 24V, 108VA
		41049	transformer, euro, 230V/24V 108VA
		41050	transformer, aust, 230V/24V, 108VA
36	1	19121	meter c ⌀ 8VA
		41034	transformer, aust, 230V/24V, 108VA
		141034	transformer, aust, 230V/24V, 108VA





Troubleshooting

Detected Errors

NOTE: It can take up to 30 seconds for an error to be detected and displayed. All errors on each timer in the system must be displayed before the errors can be corrected.

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.

NOTE: 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.

Cause	Correction
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.	B. Co " sA me røme B. B oq l· M

→ Œ q otY 7l W yQs 7l d " ! N

Cause	Correction
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

Example Error Screens

DETECTED ERROR=
E2 RESET UNIT

Detected Error

1. Go through Master Programming to program the unit.

DETECTED ERROR=
NO MESSAGE #1

No Message #1

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

DETECTED ERROR=
NO MESSAGE #3

No Message #3

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

DETECTED ERROR=
PROGRAM MISMATCH

Program Mismatch

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

DETECTED ERROR=
EXCEED UNIT SIZE

Exceed Unit Size

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

DETECTED ERROR=
MATCHING ADDRESS

Matching Address

1. The unit is programmed the same # as another unit.
NOTE: The rest of the system will still function without this unit.
