

41151
NT001-1

Valve Serial Number _____

Valve Position 1-LEAd 2-LAg 3-LAg 4-LAg

IMPORTANT: Fill in pertinent information on *page 3* for future reference.

3200NT Timer

Table of Contents

Job Specifications Sheet	3
Timer Operation	4
<i>Set Time of Day</i>	4
<i>Manually Initiating a Regeneration</i>	4
<i>Timer Operation During Regeneration</i>	4
<i>Start a Regeneration Tonight</i>	4
<i>Day Regeneration Timer</i>	4
<i>Flow Meter Equipped Timer</i>	4
Timer Operation	5
<i>Immediate Regeneration Timer with Regeneration Day Override Set</i>	5
<i>Delayed Regeneration Timer with Regeneration Day Override Set</i>	5
<i>Timer Operation During Programming</i>	5
<i>Timer Operation During A Power Failure</i>	5
<i>Remote Lockout</i>	5
<i>Remote Signal Start Regeneration</i>	5
<i>Day Override Feature</i>	5
System Operations	6
<i>System 4</i>	6
<i>System 5</i>	6
<i>System 6</i>	6
System Operations	7
<i>System 7</i>	7
<i>System 9</i>	7
<i>Important System Operations Tips</i>	7
Timer Displays	8
<i>Timer Display Description</i>	8
Timer Programming Mode	9
Timer Operation Display Definitions and Examples	10
Timer Diagnostics Display Definitions and Examples	11
Power Head Assembly Parts List	
2750/2850/2900 Upper Drive and 2900 Lower Drive	13
Power Head Assembly,	
3150/3900 Upper Drive and 3900 Lower Drive	14
Power Head Assembly Parts List,	
3150/3900 Upper Drive and 3900 Lower Drive	15
2750/2850 Timer Wiring Diagram	16
3150 Timer Wiring Diagram	17
2900 Timer Wiring Diagram	18
3900 Timer Wiring Diagram	19
Network Timer System Configuration Wiring Diagrams	20
<i>Interlocking 3200NT</i>	20
<i>Installing and Grounding the Transformer</i>	21
Troubleshooting	22
<i>Communication Error</i>	22
Troubleshooting	23
<i>Programming Error</i>	23
<i>Simultaneous Communication and Programming Errors</i>	23

IMPORTANT: 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.

Job Specifications 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 _____ a.m. / p.m. or Immediate
 Regeneration Day Override Off or Every _____ Days

Master Programming Mode:

Valve Model	2750	2850	2900	3150	3900
Regeneration Type	Downflow	Upflow Brine Draw First		Upflow Brine Fill First	
System Type	4 Time Clock	4 Meter Immediate		4 Meter Delayed	
	5 Interlock	6 Series		7 Alternating	9 Alternating
Valve Position	LEAd	or	LAg		
Remote Signal Start	Off	or	On	Signal Time needed _____ Minutes	
Display Format	US Gallons	or	m ³		
Unit Capacity	_____		Grains	or	Degrees
Capacity Safety Factor	Zero	or	____%		
Regeneration Cycle Step #1			____ Minutes		
Regeneration Cycle Step #2	Off	or	____ Minutes		
Regeneration Cycle Step #3	Off	or	____ Minutes		
Regeneration Cycle Step #4	Off	or	____ Minutes		
Regeneration Cycle Step #5	Off	or	____ Minutes		
Time Auxiliary Relay Output					
Window #1	Off	or	Start Time _____		
			End Time _____		
Time Auxiliary Relay Output					
Window #2	Off	or	Volume _____		
			Seconds _____		
Fleck Flow Meter size	1"	1.25"	1.5"	2"	3" or Non Fleck _____ Pulses
Line Frequency	50Hz	or	60Hz		

3200NT Timer

Timer Operation

Set Time of Day

When the timer is **In Service**, push either the **Set Up** or **Set Down** button once to adjust the **Time of Day** by one digit. Push and hold to adjust by several digits.

Manually Initiating a Regeneration

1. When timer is **In Service**, press the **Extra Cycle** button for 5 seconds to force a manual regeneration.
2. The timer reaches **Regeneration Cycle** Step #1.
3. Press the **Extra Cycle** button once to advance valve to Regeneration Cycle Step #2 (if active).
4. Press the **Extra Cycle** button once to advance valve to Regeneration Cycle Step #3 (if active).
5. Press the **Extra Cycle** button once to advance valve to Regeneration Cycle Step #4 (if active).
6. Press the **Extra Cycle** button once to advance valve to Regeneration Cycle Step #5 (if active).
7. Press the **Extra Cycle** button once more to advance the valve back to **In Service**

Timer Operation During Regeneration

In the **Regeneration Cycle** step display, the timer shows the current regeneration step number the valve is advancing to, or has reached, and the time remaining in that step. The step number that displays flashes until the valve completes driving to this regeneration step position. Once all regeneration steps are complete the timer returns to **In Service** and resumes normal operation.

Example:



Less than 10 Minutes Remaining in Regen Step #1



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.

Start a Regeneration Tonight

With metered delayed timers, press the **Extra Cycle** button momentarily. The **In Service** indicator dot flashes and starts a **Regeneration** tonight at the programmed **Regeneration Time**.

Day Regeneration Timer

During normal operation the **Time of Day** display is visible at all times. The timer operates normally until the number of days since the last regeneration reaches the **Regeneration Day Override** setting. Once this occurs, a regeneration cycle is initiated at the preset **Regeneration Time**.

Flow Meter Equipped Timer

During normal operation the **Time of Day** display alternates with the **Volume Remaining** display (gallons or m³).

- As treated water is used, the **Volume Remaining** display counts down from the calculated system capacity to zero or (---). When this occurs a **Regeneration Cycle** begins or delays to the set Regeneration Time.
- Water flow through the valve is indicated by the Flow Dot that flashes in a direct relationship to flow rate.

Timer Operation

Immediate Regeneration Timer with Regeneration Day Override Set

When the valve reaches the set **Days Since Regeneration Override** value, a **Regeneration Cycle** initiates immediately. This occurs even if the **Volume Remaining** display has not reached zero.

Delayed Regeneration Timer with Regeneration Day Override Set

When the timer reaches the set **Days Since Regeneration Override** value a **Regeneration Cycle** initiates at the preset **Regeneration Time**. This occurs even if the **Volume Remaining** display has not reached zero.

Timer Operation During Programming

The timer only enters the Program Mode with the timer **In Service**. While in the Program Mode the timer continues to operate normally monitoring water usage and keeping all displays up to date. Timer programming is stored in memory permanently. There is no need for battery backup power.

Timer Operation During A Power Failure

During a power failure all timer displays and programming are stored for use upon power re-application. The timer retains all values, without loss. The timer is fully inoperative and any calls for regeneration are delayed. The timer, upon power re-application, resumes normal operation from the point that it was interrupted.

NOTE: An inaccurate **Time of Day** display may indicate a power outage.

Remote Lockout

The timer does not allow the unit/system to go into **Regeneration** until the Regeneration Lockout Input signal to the unit/system is cleared. This requires a contact closure to activate. The recommended gauge wire is 20 with a maximum length of 500 feet. See P4 remote inputs in the wiring diagrams on *pages 16 - 20*.

Remote Signal Start Regeneration

The control valve monitors treated water other than a flow meter. When timer receives a contact closure for the programmed amount of time, regeneration begins. The recommended gauge wire is 20 with a maximum length of 500 feet. See P4 remote inputs in the wiring diagrams on *pages 16 - 20*.

Day Override Feature

If the **Day Override** option is turned on and the valve reaches the set Regeneration Day Override value without the water meter initiating a **Regeneration Cycle**, a **Regeneration Cycle** queues. This occurs regardless of the remaining volume available.

	<p>WARNING Transformer must be grounded and ground wire must be terminated to the back plate where grounding label is located before installation. See instructions for <i>Installing and Grounding the Transformer</i>, page 21.</p>
---	--

3200NT Timer

System Operations

System 4

Time Clock (1 Valve)

During normal operation the **Time of Day** display may be viewed at all times. The control operates normally until the number of days since the last regeneration reaches the **Regeneration Day Override** setting. Once this occurs, a **Regeneration Cycle** initiates at the preset **Regeneration Time**.

Meter Delayed (1 Valve)

During normal operation the **Time of Day** display alternates with the **Volume Remaining** display (gallons or m³).

- As treated water is used, the **Volume Remaining** display counts down from the calculated system capacity.
- The system monitors the volume of water used. When the system calculates that there is not a sufficient capacity for the next day's operation, a regeneration cycle is initiated at the preset regeneration time.
- Water flow through the valve is indicated by the Flow Dot that flashes in a direct relationship to flow rate.

Meter Immediate (1 Valve)

During normal operation the **Time of Day** display alternates with the **Volume Remaining** display (gallons or m³).

- As treated water is used, the **Volume Remaining** display counts down from the calculated system capacity to zero or (----). When this occurs a **Regeneration Cycle** is started.
- Water flow through the valve is indicated by the Flow Dot that flashes in a direct relationship to flow rate.

System 5

Interlock (2 – 4 Valves)

During normal operation the **Time of Day** display alternates with the **Volume Remaining** display (gallons or m³).

- As treated water is used, the **Volume Remaining** display counts down from the calculated system capacity to zero or (----). When this occurs a **Regeneration Cycle** queues.
- If no other valve is in **Regeneration** the valve sends a lock command and starts a **Regeneration Cycle**.
- If another valve is in **Regeneration** (i.e. the system is already locked) the valve remains **In Service** with **Regeneration** queued until other valves complete **Regeneration**. Then the system locks and **Regeneration** begins.
- Water flow through the valve is indicated by the Flow Dot that flashes in a direct relationship to flow rate.

System 6

Series (2 – 4 Valves)

During normal operation the **Time of Day** display alternates with the **Volume Remaining** display (gallons or m³). The **Volume Remaining** is the total volume for all units in the system.

- As treated water is used, the **Volume Remaining** display counts down from the calculated system capacity to zero or (----). When this occurs a **Regeneration Cycle** queues.
- If no other valve is in regeneration the lead valve sends a lock command and starts a **Regeneration Cycle**.
- When the LEAd valve completes regeneration cycle the remaining valve(s) in the system regenerate sequentially until all valves regenerate.
- Water flow through the valve is indicated by the Flow Dot that flashes in a direct relationship to flow rate.
- LAg valve volume remaining is updated every 5 seconds from the LEAd valve.
- A manually forced regeneration (EC key) can only be done on the LEAd valve and only if the system is not in **Regeneration**.

System Operations

System 7

Alternating (2 Valves)

During normal operation the **Time of Day** display alternates with the **Volume Remaining** display (gallons or m³). The **Volume Remaining** is for the individual unit.

- As treated water is used, the **Volume Remaining** display counts down from the calculated capacity to zero or (----). When this occurs a **Regeneration Cycle** queues.
- The valve requiring **Regeneration** sends a lock command to the standby valve. The standby valve goes to **In Service** and exhausted valve starts a **Regeneration Cycle**.
- If a valve is in **Regeneration** and the other valve exhausts its volume remaining, then the exhausted valve remains **In Service** with **Regeneration** queued until the other valve goes into standby. The exhausted valve goes into standby after completing **Regeneration**.
- Water flow through the valve is indicated by the Flow Dot that flashes in a direct relationship to flow rate.

System 9

Alternating (2 – 4 Valves)

During normal operation the **Time of Day** display alternates with the **Volume Remaining** display (gallons or m³). The **Volume Remaining** is for the individual unit.

- As treated water is used, the **Volume Remaining** display counts down from the calculated capacity to zero or (----). When this occurs a **Regeneration Cycle** queues.
- The valve requiring **Regeneration** sends a lock command to the standby valve. The standby valve goes to **In Service** and exhausted valve starts a **Regeneration Cycle**.
- If a valve is in **Regeneration** and another valve exhausts its volume remaining, then the exhausted valve remains **In Service** with **Regeneration** queued until the other valve goes into standby. The exhausted valve goes into standby after completing **Regeneration**.
- All units remain **In Service** except those in standby or **Regeneration**.
- Water flow through the valve is indicated by the Flow Dot that flashes in a direct relationship to flow rate.

Important System Operations Tips

- When programming multi-unit systems, program LAG units first and then LEAd unit. This eliminates or minimizes lower drive movement due to system type changes and errors.
- When changing a valve from one system type to another system type, perform a Master Reset first.
- System 6, 7 and 9 valves coming out of program mode or on power-up calculate their volume (display = **CALc**) and then wait for a good communication signal.
 - When a good communication signal is received, the system resume normal operations.
 - If the system does not receive a good communication signal, **CALc** displays and the system goes into a wait. Press the EC key to force the system out of the wait and resume normal operation. A communication error may appear after one minute.
- The System 4, 5 and 6 LEAd valve drive sequence going into **Regeneration** is:
 - The lower drive moves to off-line and the upper drive moves to first **Regeneration** position.
- All system 7 and 9 valves:
 - The off-line valve moves to online, the valve requiring **Regeneration** moves its lower drive to off-line and then the upper drive moves to first **Regeneration** position.
- Reserve capacity—System 4Fd only. After power-up or Master Reset, the reserve is set by using the safety factor. Reserve is limited to a range of 0% - 50% of the unit capacity.
- System 6 and 7, LEAd units only, respond to remote lock and chemical pump. Also chemical pump is available only if the auxiliary relay in regeneration is not used [**AroF**]

3200NT Timer

Timer Displays

Timer Display Description

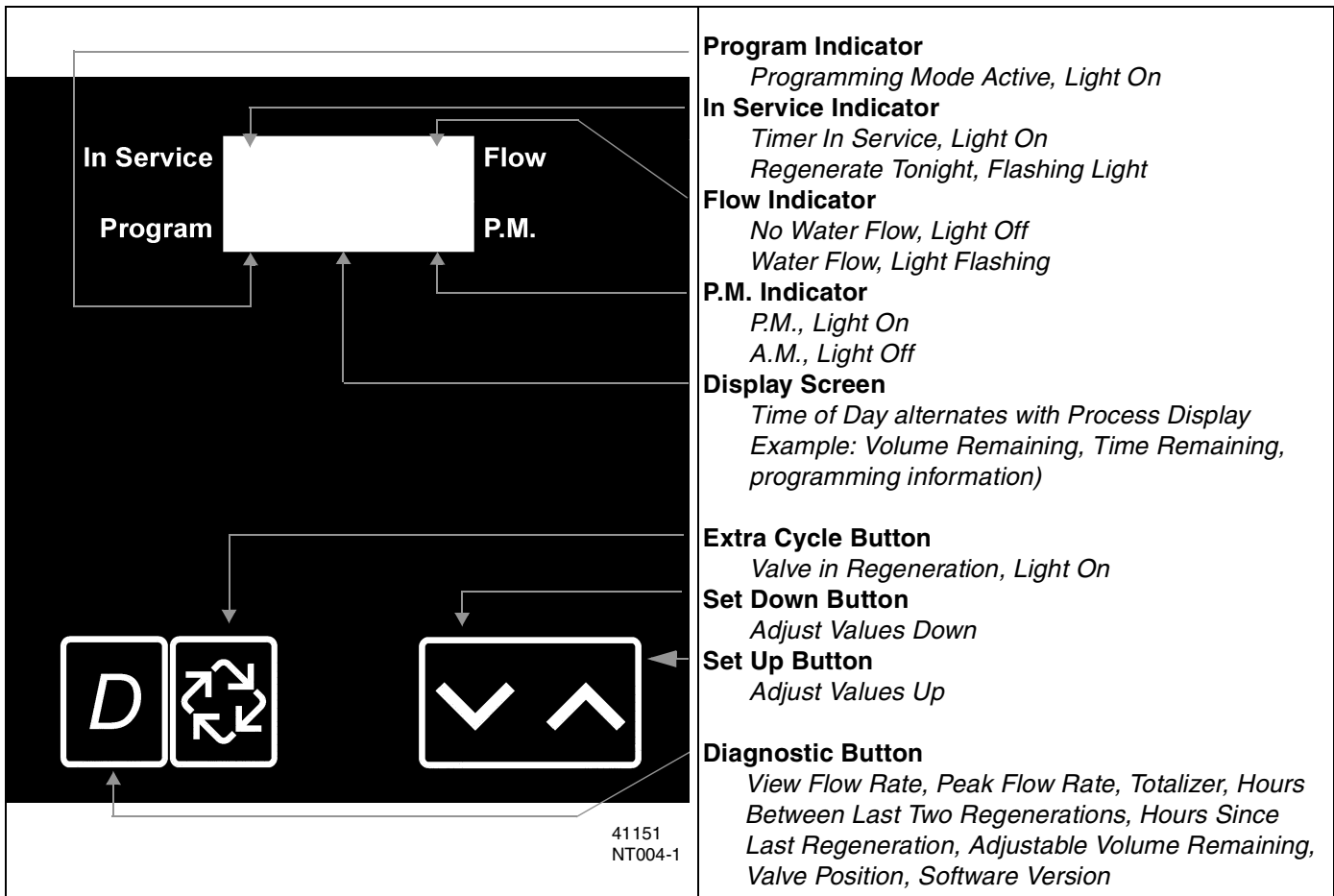
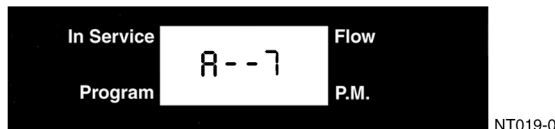


Figure 1: Control Panel and Display

Timer Programming Mode



1. Enter 3200NT Programming Mode

Press and hold both the **Set Up** and **Set Down** buttons for five (5) seconds to enter Programming Mode. When the program mode is entered, the program light illuminates.

2. Set Feed Water Hardness

The feed water hardness setting displays only if the Regeneration Type is set to Meter Immediate or Meter Delayed.

- Press the **Set Up** and **Set Down** buttons to set the amount of feed water hardness (in grains/gallon). The system automatically calculates treated water capacity based on the feed water hardness and the system capacity.
- Press the **Extra Cycle** button to proceed to the next step.

3. Set Regeneration Time

A non-flashing colon between two sets of numbers identifies the **Regeneration Time** display. Set the desired time of day that you want **Regeneration** to occur.

- Press the **Set Up** and **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button to proceed to the next step.

4. Set Regeneration Day Override

Use this display to set the maximum amount of time (in days) the unit can be **In Service** without a **Regeneration**.

- For System 4 Time Clock regeneration mode the system regenerates at the time set in Step 4 after the number of days programmed in this step.
- For all other System Types (4 Meter Immediate, 4 Meter Delayed, 5, 6, 7, 9) the system regenerates after the number of days programmed in this step unless the meter initiates a **Regeneration** cycle earlier.
- Press the **Extra Cycle** button to proceed to the next step.

Timer programming is complete and exits from the Programming Mode. Normal operation resumes.

3200NT Timer

Timer Operation Display Definitions and Examples

Time of Day

Format = US/Gallons



NT005-0

Calculating the Volume Remaining



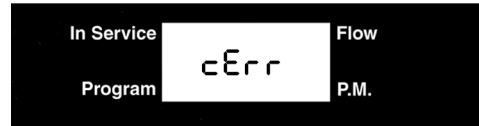
NT011-0

Format = Metric/Meter³



NT007-0

Communication Error



NT010-0

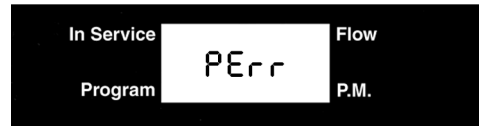
Volume Remaining

L = Display Code (X 1,000,000)
Range = 1,000,000 - 2,900,000



NT020-0

Programming Error



NT012-0

t = Display Code (X 1000)
Range = 10,000 - 999,999



NT021-0

Timer is Locked Out



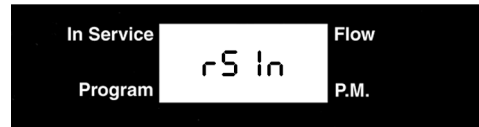
NT013-0

No Display Code
Range = 1 - 9,999



NT022-0

Remote Signal Start Signal is Communicating



NT014-0

Zero



NT009-0

Remote Lock Out Signal Is On

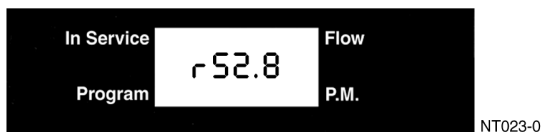


NT015-0

Timer Diagnostics Display Definitions and Examples

Flow Rate

r = Display Code
Range = 1 - 99.9



Hours Between Last Two Regenerations

II = Display Code
Range = 1 - 199



Range = 100 - 500



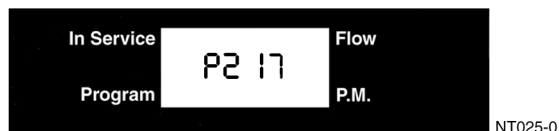
Hours Since Last Regeneration

≡ = Display Code
Range = 1 - 199



Peak Flow Rate

P = Display Code
Range = 0 - 500



Adjustable Volume Remaining

L = Display Code (X 1,000,000)
Range = 1,000,000 - 2,900,000



Totalizer

L = Display Code (X 1,000,000)
Range = 1,000,000 - 99,999,999



t = Display Code (X 1000)
Range = 10,000 - 999,999



t = Display Code (X 1000)
Range = 10,000 - 999,999



No Display Code
Range = 1 - 9,999



No Display Code
Range = 1 - 9,999



Valve Position

No Display Code (Lead or Lag)



Software Version

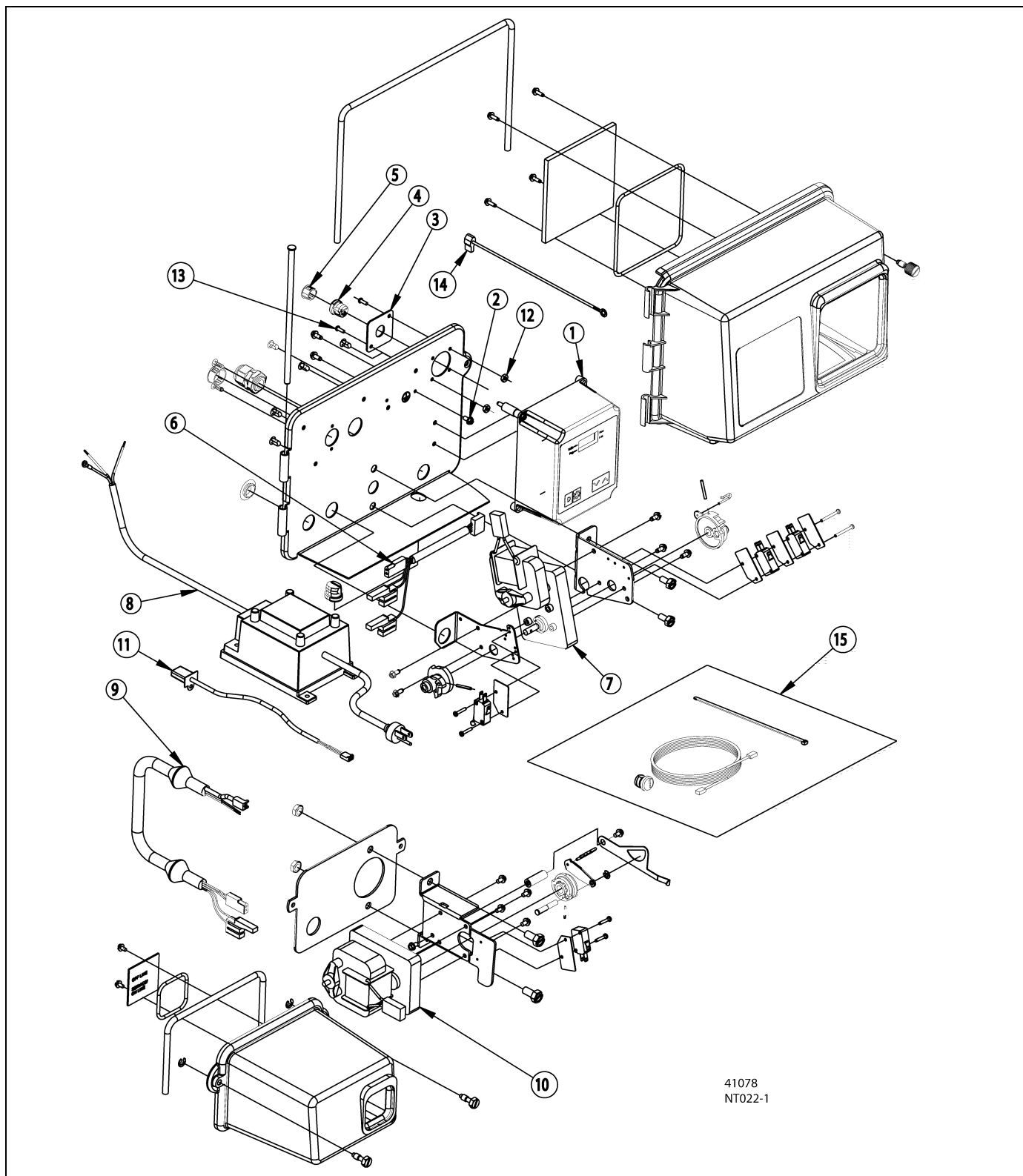
SP = Display Code



3200NT Timer

Power Head Assembly

2750/2850/2900 Upper Drive and 2900 Lower Drive



41078
NT022-1

Figure 2: 2750/2850/2900 Upper Drive and 2900 Lower Drive Power Head Assembly

Power Head Assembly Parts List

2750/2850/2900 Upper Drive and 2900 Lower Drive

<i>Item</i>	<i>Quantity</i>	<i>Part Number</i>	<i>Description</i>
1	1	41062	3200NT timer assembly
2	1	14202-01	screw, slotted hex washer head, #8-32 x .31
3	1	40959	bracket, strain relief, EZ NET
4	1	41071	bushing, strain relief
5	1	41035	plug, strain relief
6	1	40941	harness, upper drive
7	1	40385	motor, drive, 24V 50/60 Hz
8	1	41034	transformer, 120 / 24V, US
	1	41049	transformer, 230V/24V, European
	1	41050	transformer, 230V/24V, Australian
9	1	40943	harness, lower drive
10	1	40388	motor, drive, 24V 50/60 Hz
11	1	19121-08	meter cable assembly, 35"
	1	19121-09	meter cable assembly, 99.5"
	1	19121-10	meter cable assembly, 303.5"
12	2	12732	nut, hex, machine, #5-40
13	2	10299	screw, slotted round head, #5-40 x .38
14		40175-03	wire, ground, 7.5 lg w/ crimp connector
15	1	41047	kit, communication cable
Not shown			
16	1	41228	card, program/Diagnostics

NOTE: For all other service part numbers, see the Service Manual that accompanies the control valve.

3200NT Timer

Power Head Assembly, 3150/3900 Upper Drive and 3900 Lower Drive

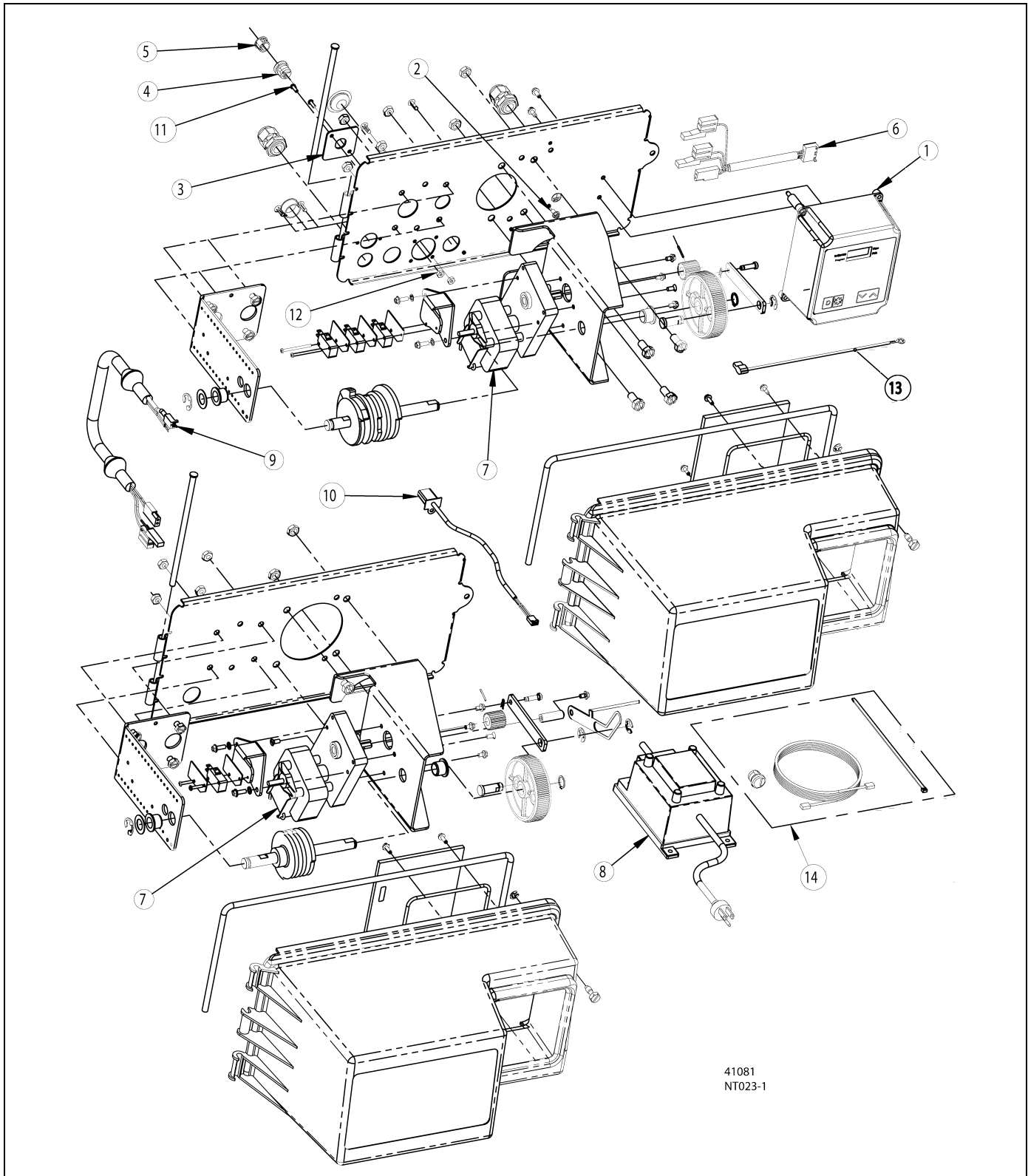


Figure 3: 3150/3900 Upper Drive and Lower Drive Power Head Assembly

Power Head Assembly Parts List, 3150/3900 Upper Drive and 3900 Lower Drive

<i>Item</i>	<i>Quantity</i>	<i>Part Number</i>	<i>Description</i>
1	1	41062	3200NT timer assembly
2	1	14202-01	screw, slotted, hex washer head, #8-32 x .31
3	1	40959	bracket, strain relief, EZ NET
4	1	41071	bushing, strain relief
5	1	41035	plug, strain relief
6	1	40941	harness, upper drive
7	2	40391	motor, drive, 24V, 50/60 Hz
8	1	41034	transformer, 120V/24V
	1	41049	transformer, 230V/24V, European
	1	41050	transformer, 230V/24V, Australian
9	1	40943	harness, lower drive
10	1	19121-08	meter cable assembly, 35"
	1	19121-09	meter cable assembly, 99.5"
	1	19121-10	meter cable assembly, 303.5"
11	2	10299	screw, slotted round head, #5-40 x .375
12	2	12732	nut, hex, machine, #5-40
13		40175-03	wire, ground, 7.5 lg w/ crimp connector
14	1	41047	kit, communication cable
Not shown			
15	1	41228	card, program/Diagnostics

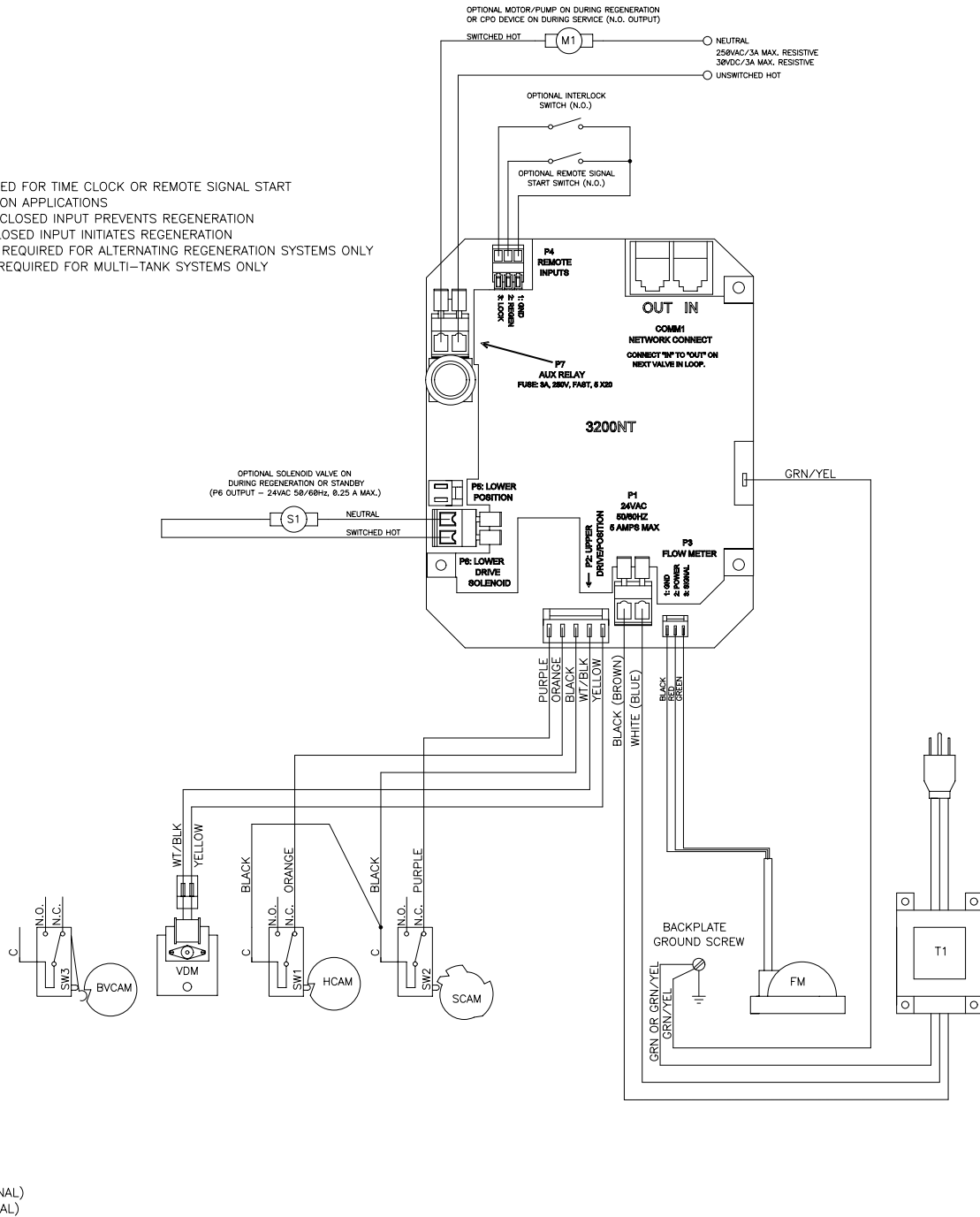
NOTE: For all other service part numbers, see the Service Manual that accompanies the control valve.

3200NT Timer

2750/2850 Timer Wiring Diagram

OPTIONAL CUSTOMER WIRING:

- P3 FLOW METER – NOT REQUIRED FOR TIME CLOCK OR REMOTE SIGNAL START REGENERATION APPLICATIONS
- P4 REMOTE LOCKOUT INPUT – CLOSED INPUT PREVENTS REGENERATION
- P4 REMOTE SIGNAL START – CLOSED INPUT INITIATES REGENERATION
- P6 SOLENOID DRIVE OUTPUT – REQUIRED FOR ALTERNATING REGENERATION SYSTEMS ONLY
- COMM1 NETWORK CONNECT – REQUIRED FOR MULTI-TANK SYSTEMS ONLY



- T1 – 24V TRANSFORMER
- VDM – VALVE DRIVE MOTOR
- SW1 – VALVE HOMING SWITCH
- SW2 – VALVE STEP SWITCH
- SW3 – BRINE CAM SWITCH
- HCAM – VALVE HOMING CAM
- SCAM – VALVE STEP CAM
- BVCAM – BRINE VALVE CAM
- FM – FLOW METER (OPTIONAL)
- M1 – MOTOR OR PUMP (OPTIONAL)
- S1 – SOLENOID VALVE (OPTIONAL)

NOTE:

1. TRANSFORMER FUSE – 5A 250V SLOW-BLOW P/N 41143
2. VALVE SHOWN IN SERVICE

41187
NT035-0

Figure 4: 2750/2850 Timer Wiring Diagram, System #4—Single Valve Regeneration

3150 Timer Wiring Diagram

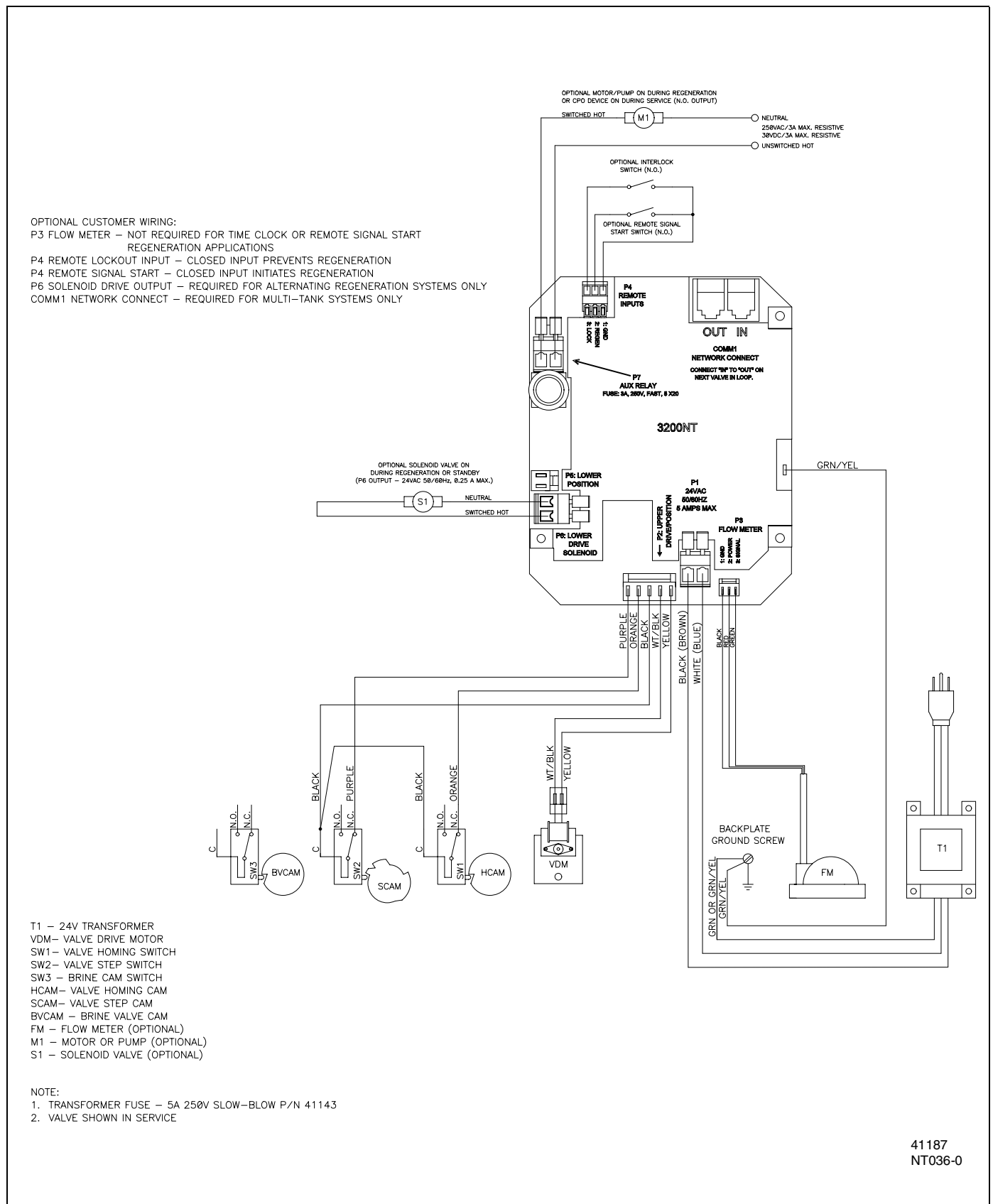


Figure 5: 3150 Timer Wiring Diagram, System #4—Single Valve Regeneration

3200NT Timer

2900 Timer Wiring Diagram

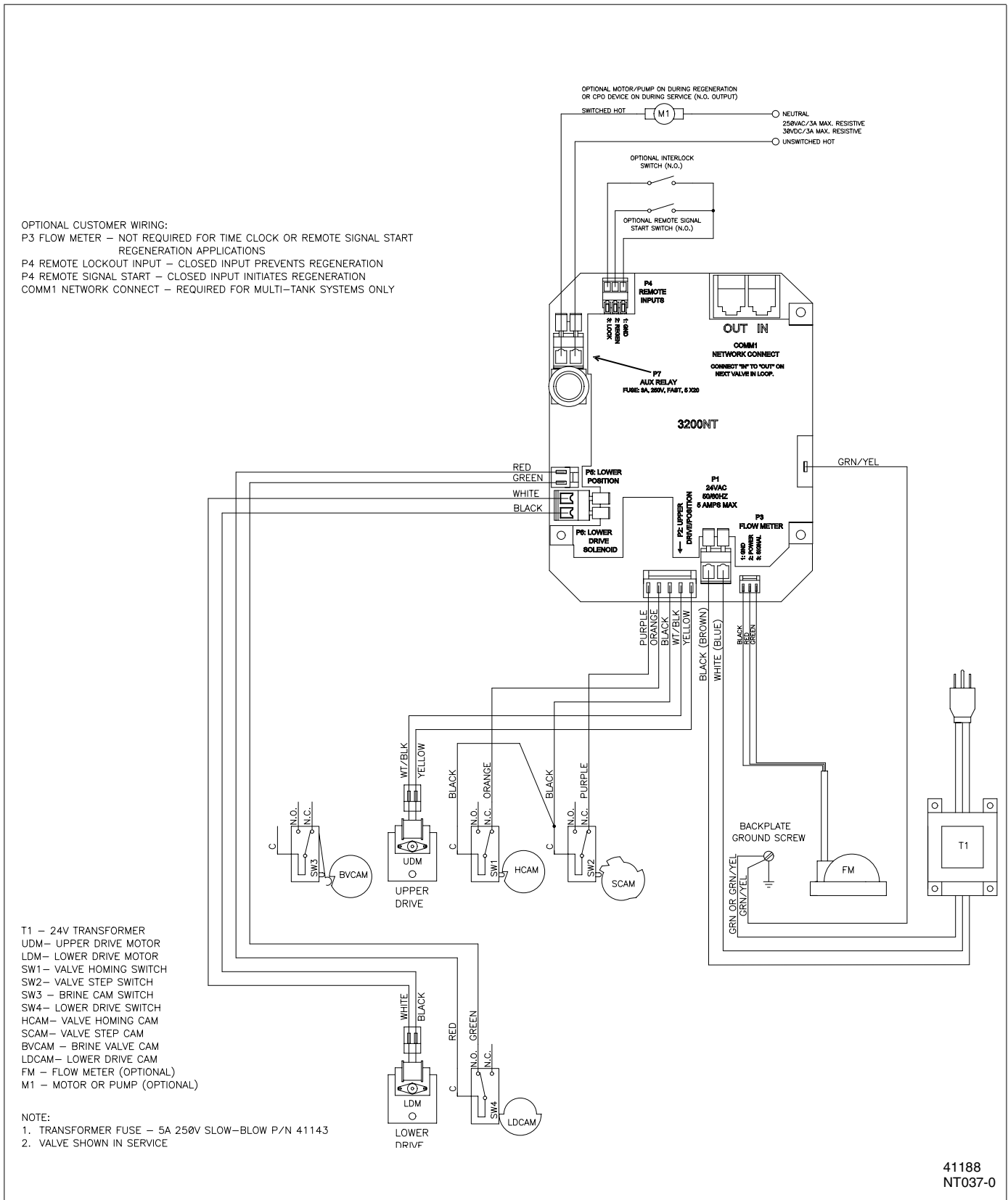


Figure 6: 2900 Timer Wiring Diagram, System #4—Single Valve Regeneration

3900 Timer Wiring Diagram

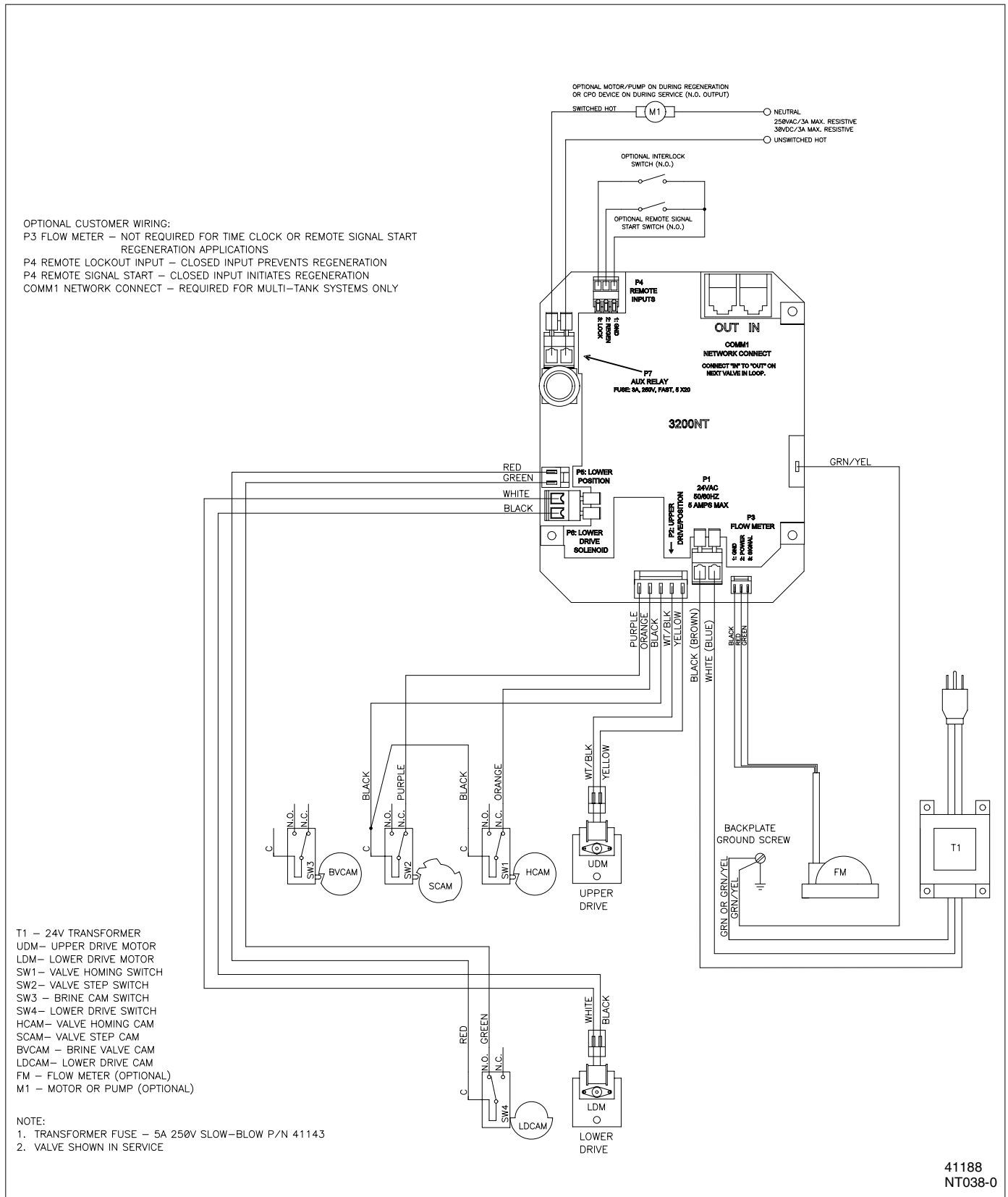


Figure 7: 3900 Timer Wiring Diagram, System #4—Single Valve Regeneration

3200NT Timer

Network Timer System Configuration Wiring Diagrams

Two Timers

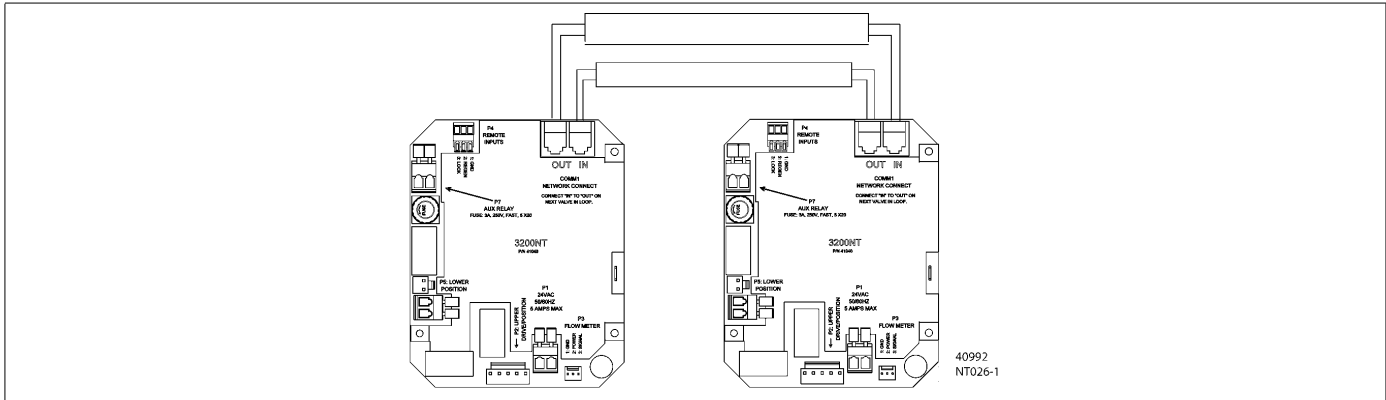


Figure 8: Network Timer System Wiring Diagram for System 5, 6, 7 and 9 Duplex

Three Timers

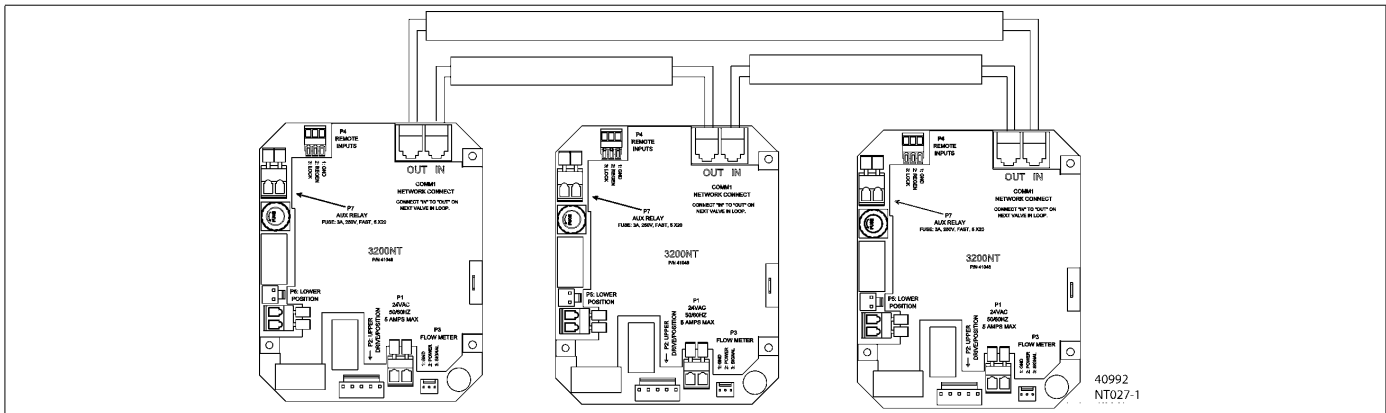


Figure 9: Network Timer System Wiring Diagram for System 5, 6 and 9 Triplex

Four Timers

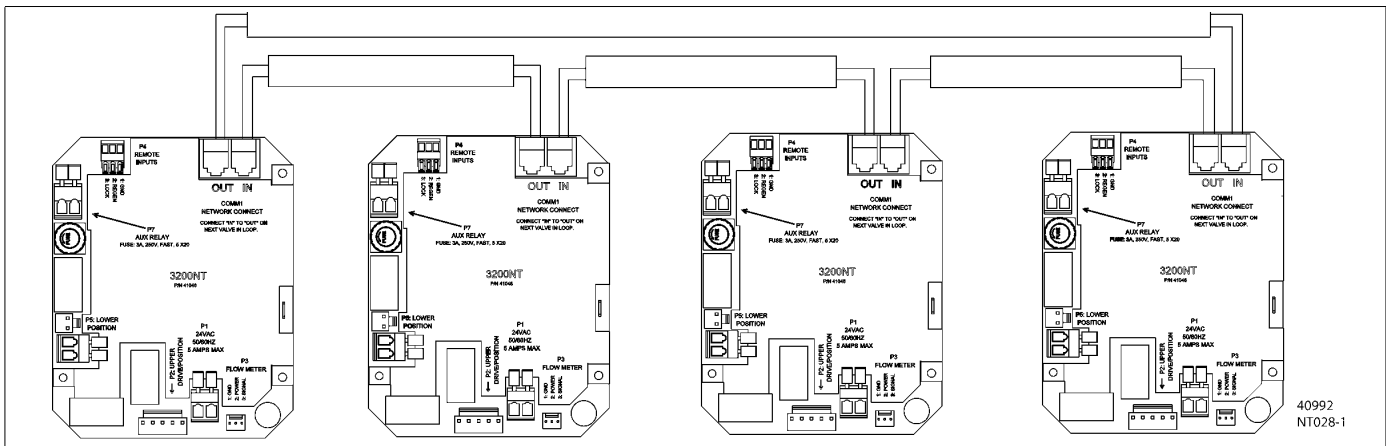


Figure 10: Network Timer System Wiring Diagram for System 5, 6 and 9 Quadplex

Interlocking 3200NT

NOTE: Use only 6-place, 4-conductor, RJ11 phone or extension cables.

1. Connect phone or extension cables first before programming.
 - System Type 7 and 6: flow meter cable must be connected to the timer programmed as the LEAd Timer.
2. A maximum cable length of 100' cable can be used between timers.
3. Always connect "IN" communication network port to the "OUT" communication port of the next timer. Connect the last timer back to the first timer.

Transformer, Phone Cable and Meter Cable Installation

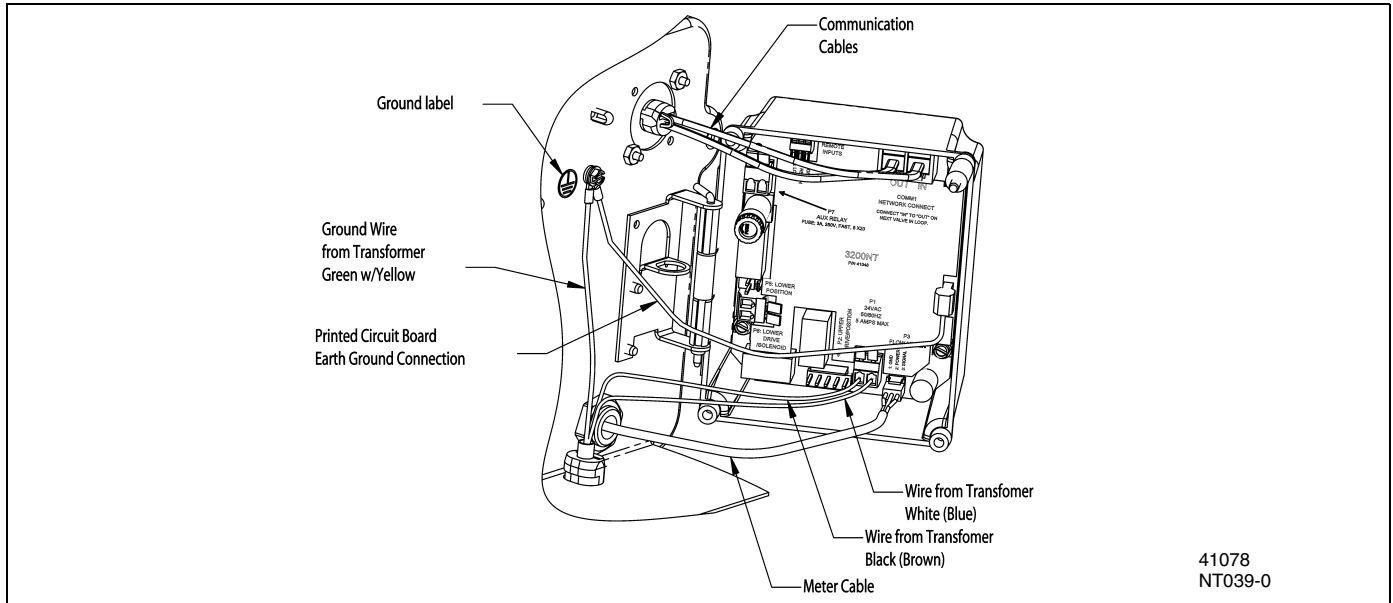


Figure 11: Installing Ground Wire on Transformer, **2750/2850/2900** Valves

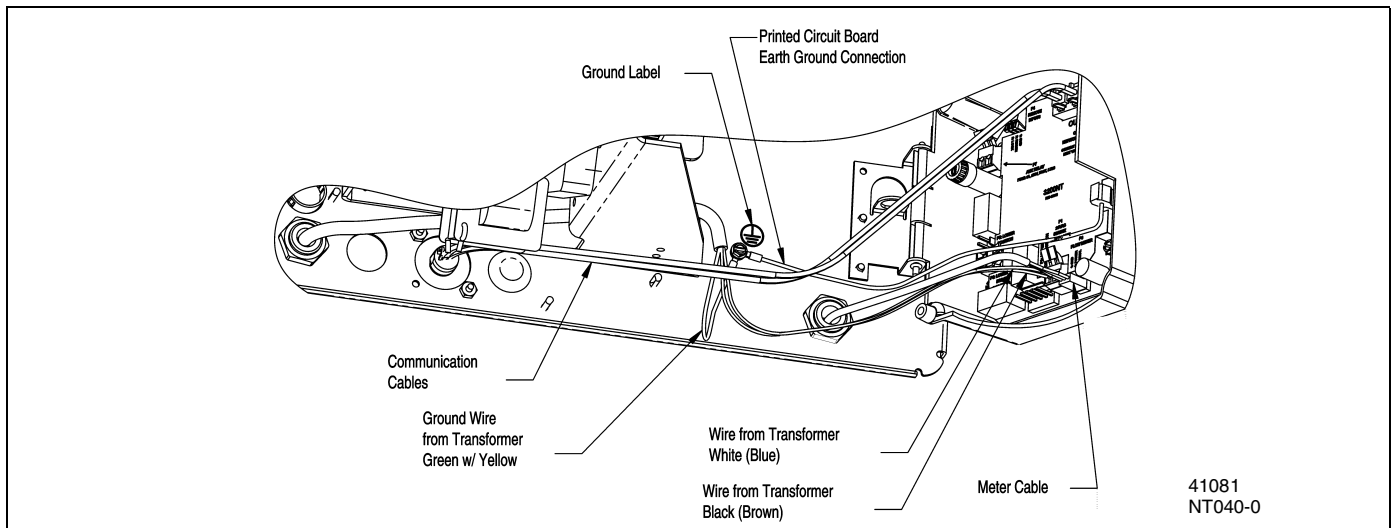


Figure 12: Installing Ground Wire on Transformer, **3150/3900** Valves

<i>Item</i>	<i>Description</i>
A	ground label
B	ground wire from transformer
C	wires from transformer

Installing and Grounding the Transformer

1. Locate the ground label (A) to find ground screw.
2. Remove the screw and attach the transformer ground wire (B).
3. Re-attach the screw.

Troubleshooting

Communication Error

If a communication error is detected, **cErr** displays. It may take several minutes for all of the units in a system to display the error message.

- 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.
- When the communication problem is corrected and the error no longer displays (it may take several minutes 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 remaining volume. 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).

NOTE: System 4 units retain their normal display and do not display **cErr**.

Cause	Correction
A. One or more units have a missing or bad communication cable.	A. Connecting the communication cables.
B. One or more units has a communication cable plugged into the wrong receptacle.	B. Connecting the communication cable as shown on the wiring diagrams.
C. One or more units is not powered.	C. Powering all units.
D. One or more of the units programmed as a stand alone system 4tc, 4FI or 4Fd and one or more units programmed as a multi-unit system 5FI, 6FI, 7FI or 9FI.	D. Programming the units for the same system type in the Master Programming Mode.
E. All of the units programmed as LAg. With no unit programmed as a LEAd (there is no unit to start the communications).	E. Programming the units correctly in the Master Programming Mode.

Troubleshooting

Programming Error

Timers display **PErr** when a programming error occurs.

- If multiple timers are programmed as LEAd, **PErr** displays on all units.
- If multiple timers are programmed with different system types, feed water hardness, regeneration day override and line frequency, a **PErr** will be displayed.
- 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.
- When the problem is corrected and the error no longer displays (it may take several minutes 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 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).

NOTE: System 4 units retain their normal display and do not display **PErr**.

Cause	Correction
A. One or more timers are programmed as System type different from the LEAd unit.	A. Programming the units correctly in the Master Programming Mode.
B. More than one timer is programmed as the LEAd unit.	B. Programming the units correctly in the Master Programming Mode.
C. One or more timers are programmed with different hardness, day override or line frequency values.	C. Program these values to be the same on all units.

Simultaneous Communication and Programming Errors

If both a communication and programming errors occur simultaneously, the communications error (**cErr**) has precedence and masks the programming error (**PErr**). When the communications error (**cErr**) is corrected, the programming error (**PErr**) displays until corrected.

