Contents

The Aqua-Hot Reporter .................................. 1
  Introduction: ........................................... 1
  Functionality: ......................................... 1
  Basic Features: ........................................ 1
  Heartbeat Function ................................... 2
  Technical Information .............................. 2
  Mounting: ............................................. 2
  Boost Pumps .......................................... 3

Electrical Specifications ............................. 3
  Output Current Capacity ......................... 3
  Connection Terminal Information ............ 3

Filling and Purging the Aqua-Hot ............ 4
  Introduction: ......................................... 4
  Instructions: .......................................... 4

Fault Conditions ..................................... 5
  Introduction: ......................................... 5
  Reset Feature ........................................ 5
  Over-Current ....................................... 5
  Over-Temperature (Reporter 2.0) ............ 5
  Low-voltage ........................................ 5
  Low-level cut off ................................... 5
  Ignition failure ..................................... 5

Testing .................................................. 5
  Introduction: ......................................... 5
  Pumps ................................................ 5
  Fans .................................................. 6
  Heating ............................................. 6
  Diagnostic .......................................... 6

Pin-Out Information ................................. 6
  Introduction: ......................................... 6
  J8 ................................................... 6
  J1 ................................................... 6
  J7 ................................................... 7
  J3 ................................................... 7
  J9 ................................................... 7
  J2 ................................................... 8

System Schematics ................................. 9

400D ..................................................... 9

  Power Inputs, Pumps and Safeties ............ 9
  Burner .............................................. 10

  Electric Elements and High-Limit Thermostats ... 11
  Switch Panel ...................................... 12
  Heating Zones ................................... 13
  Heating Zones ................................... 14

400P ...................................................... 15

  Power Inputs, Pumps and Safeties ............ 15
  Burner ............................................. 16
  Electric Elements and High Limit Thermostats ... 17
  Switch Panel ...................................... 18
  Heat Exchangers .................................. 19
  Heating Zones ................................... 20

450D ...................................................... 21

  Power Inputs, Pumps and Safeties ............ 21
  Burner ............................................. 22
  Electric Elements and High Limit Thermostats ... 23
  Switch Panel ...................................... 24
  Heat Exchangers .................................. 25
  Heating Zones ................................... 26

600D ...................................................... 27

  Power Inputs, Pumps and Safeties ............ 27
  Burner ............................................. 28
  Electric Elements and High Limit Thermostats ... 29
  Switch Panel ...................................... 30
  Heat Exchangers .................................. 31
  Heating Zones ................................... 32

675D ...................................................... 35

  Burner ............................................. 36
  Electric Elements and High Limit Thermostats ... 37
  Switch Panel ...................................... 38
  Heat Exchangers .................................. 39
  Heating Zones ................................... 40
The Aqua-Hot Reporter

Introduction:

The Aqua-Hot Reporter is a new generation of command and control module which manages all functions of the Aqua-Hot from start-up to shutdown. The Reporter is used across the 400, 450, 600, and 675 units. The previously used electronic control board has been retired on new units in favor of the Reporter.

There are two series of Reporters presently in use: Reporter 1.0, and Reporter 2.0. Reporter 1.0 was launched November 30, 2018, and Reporter 2.0 was launched September 9, 2019.

The launch of Reporter 2.0 allowed an opportunity to improve upon the 1.0 design where ever it was deemed necessary. The Reporter 2.0 features the following design improvements:

- Over-Temperature Fault Functionality
- Precise fluid coolant temperature display
- Boost Pumps are now powered directly by the Reporter
- 600D/675D Owners may now select a pump for fluid stir

Functionality:

The Reporter was designed with a touch-screen interface to simplify and standardize unit use, and troubleshooting. Screen navigation and access is now standardized across the Aqua-Hot 400 Series Propane (D02/P02 and newer,) 450 Series Diesel (DE5 and newer,) and 600 Series (D04 and newer.)

The Reporter also contains fault logging functionality, troubleshooting tools, and testing functions. Each of these functions will be explained in-detail later in this supplement.

Basic Features:

Upon accessing the Reporter, you will be met with one of two home screens depending on whether the Aqua-Hot in use utilizes a Reporter 1.0 or a Reporter 2.0.

Perhaps the most substantial user-facing difference between the Reporter 1.0 and the Reporter 2.0 is the inclusion of a thermistor in place of the traditional control thermostat. This allows specific Aqua-Hot coolant tank temperatures to be displayed on the Reporter, and relayed to the onboard comfort control systems should the manufacturer opt for that use-case. The tank temperature sensor allows more granular control of the Aqua-Hot by switching away from the static temperature limitations imposed by the previous control thermostat.

As stated previously, the Reporter contains a host of diagnostic and troubleshooting tools to more easily repair and operate Aqua-Hot units. These features are organized into pages, or sections, which are explained hereafter.

Home Screen

The home screen contains information about the Aqua-Hot system status, as well as model and serial number information.

![Figure 1](image1.png)

Fault Status

The fault status page contains the last seven faults which were experienced by the Reporter, regardless of the time which has passed.

![Figure 2](image2.png)

Coach-Side I/O

This page of the reporter will indicate the current status of elements and switches within the coach. Examples are whether the coach is requesting heat, or hot water.

![Figure 3](image3.png)

Aqua-Hot I/O

The Aqua-Hot I/O page will show the current status of elements, sensors, and components within the Aqua-Hot itself.

![Figure 4](image4.png)
Heat Testing
The heat testing page of the Reporter will allow the electric, and burner heating subsystems to be independently activated for troubleshooting purposes.

Fan Testing
The fan testing section of the Reporter will allow the heat exchanger fans within the coach to be activated independently of the rest of the Aqua-Hot.

Pump Testing
The pump testing page of the Reporter functions similarly to the fan testing page in that, from this page, pumps within the Aqua-Hot can be activated independently from other elements for their functionality to be verified.

Heartbeat Function
Aqua-Hot Reporter units with at least firmware version 1V5 and all Reporter 2.0 units are equipped with a “heartbeat” function which establishes a signal between the RVC system and the Reporter.

The Reporter will be constantly awaiting a signal from the RVC network indicating to the Reporter that it is to continue normal operation. Loss of 6 consecutive signals from the RVC network will trigger the Reporter to de-activate the Aqua-Hot.

This serves as a safety feature to ensure that the Aqua-Hot does not continue to operate if the coach loses power. Once power is restored to the coach and the Reporter unit, “BATTERY DISCONNECT SWITCH OFF” will be displayed in the fault log, indicating that the Reporter has lost connectivity with the RVC network, and subsequently deactivated.

Technical Information
Mounting:
The Aqua-Hot Reporter can be mounted in two different fashions, either surface mount, or recessed mounting are available. Dimensional specifications are shown below. When surface mounting, use a #10 or larger screw. If recessed mounting is desired use a #6 screw.

There is a slot located at the bottom of the Reporter which serves as the access route for the harness and power connections. Take these into consideration when choosing a mounting location for the Reporter. Circular dimensions are edge to center.

Aqua-Hot sheet metal cabinets have reference features indented into them for mounting the Reporter to the Aqua-Hot if that option is desired.
Boost Pumps

Boost pump functionality has changed with the implementation of the Reporter 2.0.

On Reporter 1.0 units, any boost pumps at use within the coach required a relay connected to wires 3b and 5b in order to operate.

With Reporter 2.0, that relay can now be eliminated, with boost pump power and functionality now being handled directly by the Reporter. Using a flag-terminal, connect the boost pump directly to the harness bearing in mind the requirements below.

- **Zone 1: Connect to Wire 3b**
  - Max Current Draw: 5.0A
  - Over-Current Condition: 8.0A

- **Zone 2: Connect to Wire 5b**
  - Max Current Draw: 3.0A
  - Over-Current Condition: 5.0A

Original Equipment Manufacturers (OEMs) will need to provide the ground for operating boost pumps from the Reporter.

Electrical Specifications

The Reporter contains a single Amphenol ATP family connector that serves as the power connection to the coach-side 12V DC power system. Mating connection components are not supplied by Aqua-Hot. Compatible part numbers and manufacturers are supplied below. The Reporter must be operated to the below listed specifications.

- Minimum Voltage: 11.0V DC
- Maximum Voltage: 15.0V DC
- Minimum Current: 75mA
- Maximum Current: 15A

Please note that the minimum current rating is the minimum requirement for what will operate the Reporter. Operating at this current rating will not provide sufficient power to any components dependent upon the Reporter.

Input Load Currents

- Zone Thermostats (each) ......................... appx. 1mA
- Diesel-Burner Switch ............................... appx. 1mA
- Electric Element Switch .......................... appx. 1mA
- Low-Level Cutoff Switch .......................... appx. 8mA
- Control Thermostat (Reporter 1.0) .............. appx. 1mA
- Tank Temperature Sensor (Reporter 2.0) ....... appx. 1mA
- Low-Temperature Cutoff Thermostat ............. appx. 1mA

Output Current Capacity

- Zone Fans (Reporter 1.0 all) ...................... 3.0A max
- Zone Fan 1 (Reporter 2.0) ........................ 8.0A max
- Zone Fans 2-5 (Reporter 2.0) ..................... 5.0A max
- Zone Fans (all) ...................................... 0.25A max
- Circulation Pumps (each) ......................... 2.0A max
- AC relay ............................................. 0.5A max
- Burner Power ....................................... 6.0A max
- Burner Master Control ............................ 2.0A max
- Burner Thermostat Control ....................... 1.0A max

Connection Terminal Information

<table>
<thead>
<tr>
<th>Mfg.</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M</td>
<td>37104-A165-00E-MB</td>
<td>RVC Connection Housing</td>
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</tbody>
</table>

12V DC Power Connections

<table>
<thead>
<tr>
<th>Pins</th>
<th>Housing</th>
<th>Wedge</th>
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<tbody>
<tr>
<td>1060-12-0222</td>
<td>DPT04-2P</td>
<td>WP-2P</td>
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Harness Connections

<table>
<thead>
<tr>
<th>Mfg</th>
<th>Part Number</th>
<th>Description</th>
<th>Mate</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE</td>
<td>1-480706-0</td>
<td>09P UMN PLUG</td>
<td>J1</td>
</tr>
<tr>
<td>TE</td>
<td>1-480710-0</td>
<td>15P UMN PLUG</td>
<td>J2</td>
</tr>
<tr>
<td>3M</td>
<td>37104-2165-000 FL 100</td>
<td>CONN PLUG 2MM 4POS 20-22 AWG</td>
<td>J3</td>
</tr>
<tr>
<td>TE</td>
<td>1-480708-0</td>
<td>12P UMN PLUG</td>
<td>J7</td>
</tr>
<tr>
<td>TE</td>
<td>1-480704-0</td>
<td>06P UMN PLUG</td>
<td>J8</td>
</tr>
<tr>
<td>TE</td>
<td>640582-1</td>
<td>08P UMN PLUG</td>
<td>J9</td>
</tr>
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</table>

Sockets

<table>
<thead>
<tr>
<th>Mfg</th>
<th>Part Number</th>
<th>Description</th>
<th>Mate</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE</td>
<td>350551-1</td>
<td>UMN SOK 20-14 TIN/PHBZ L/P</td>
<td>J1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>J2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>J3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>J7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>J8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>J9</td>
</tr>
</tbody>
</table>

Socket Crimping Tool

<table>
<thead>
<tr>
<th>Mfg</th>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>TE</td>
<td>90547-1</td>
<td>ASSY Pro-Crimper Univ M-N-L</td>
</tr>
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</table>
Filling and Purging the Aqua-Hot

Introduction:

Filling the Aqua-Hot will be one of the last steps to be completed after installing an Aqua-Hot. The fill procedure differs from older Aqua-Hot units due to the introduction of the Aqua-Hot Reporter.

Instructions:

1. Locate the fluid drain port of the Aqua-Hot. This is located at the front of the unit near the bottom of the tank face.
2. Connect an external fluid fill pump to the fluid drain valve. A 1/2” NPT barbed fitting is best suited for this task.
3. Place the supply line of the pump in a source of GRAS propylene glycol antifreeze.
4. Locate the Reporter, and navigate to the “INPUTS FROM AQUA-HOT” page.
5. Pay attention to the “LOW LEVEL SENSOR” item on this page.
6. Fill the tank to approximately 3/4 full, or until the “LOW LEVEL SENSOR” item displays “TANK FULL.”
7. Once the tank is partially full, deactivate the external fluid fill pump and close the fluid drain valve. DO NOT disconnect the fluid pump.
8. Navigate to the “PUMPS” page of the “TESTING” section.
9. Tap each of the pumps to independently activate them, beginning the heating loop purge procedure. These pumps will remain active for a maximum of five minutes only. They will need to be reactivated as needed until the purge procedure is complete.
10. Continue to fill the unit as air is purged from the interior heating loop.
11. Once air is no longer returned from the heating zone return ports, deactivate the fluid circulation pumps.
12. Open the fluid drain valve, and activate the external fluid fill pump. Fill the unit with GRAS propylene glycol antifreeze and water heating solution until it reaches the “COLD” mark on the fluid expansion bottle.

NOTE: Do not fill this unit completely. A completely full unit runs the risk of air-locking, preventing the heating zone from correctly circulating and draining of air.
Fault Conditions

Introduction:

The Reporter contains five distinct categories of fault condition which will assist in diagnosing and repairing the Aqua-Hot should problems arise. Low-voltage, over-temperature, and over-voltage fault conditions will be accompanied by the component which triggered the fault. It is best practice to record all conditions at the “FAULT” screen. Fault conditions are also recorded in the fault log on the “TEST” tab. When using the fault log, it is important to know that this log cannot be cleared, and may contain information on faults not pertaining to a present issue.

Reset Feature

The RESET button shown above on the Reporter fault screen can be used to reset the Reporter after a component has been changed or modified. Some components will require a full power-cycle in order to fully reset the Aqua-Hot system.

Over-Current

An over-current fault condition occurs when too much current is drawn by a component (output channel,) usually a fan or pump. When an over-current condition occurs, the Reporter will deactivate the Aqua-Hot heater as a safety measure to prevent damage. This fault can only be cleared once the Reporter has been reset. Please note, that if the responsible component is not repaired or replaced, it can continually cause over-current fault conditions, thereby impacting the functionality of the Aqua-Hot unit.

Over-Temperature (Reporter 2.0)

The Over-Temperature fault condition occurs when the tank temperature sensor indicates that the unit has overheat. An overheat is realized when the antifreeze and water heating solution within the Aqua-Hot exceeds 210 °F.

Low-voltage

The Reporter is designed to operate between 11V Direct Current (DC) and 16V DC. If the Reporter detects that it is receiving less than 11.8V DC it will display a low-voltage fault. If the Reporter drops below 11.2V DC for more than 30 seconds, a safety mechanism will activate, shutting down the Aqua-Hot.

Low-level cut off

Aqua-Hot units require a minimum amount of anti-freeze in order to function correctly. Keep in mind that the exact fluid volume may differ depending on the layout of your coach. If the heater drops below the minimum fill level as indicated on the expansion bottle, the Reporter will shut down all fans, pumps and heat sources until the unit has been refilled and the Reporter has been reset.

Ignition failure

Ignition failure fault conditions will occur if, for some reason the burner inside your heater fails to ignite. This is all the fault condition will display. Precise diagnosis herein will require in-depth troubleshooting.

Testing

Introduction:

The Reporter retains the functionality to independently activate certain components and sub-systems within the Aqua-Hot heater. The systems that can be independently activated are the burner, electric heater, and the burner indicator light. For testing procedures, only one system can be activated at any given time. Multiple fans and pumps can be activated as independent components. These components and sub-systems will remain active for only five minutes, and are NOT a substitute for normal operation. Aqua-Hot Heating Systems is not liable for damages resulting from attempting to use testing functions in place of standard operation.

Pumps

Pumps on your heater can be independently activated using the Reporter. These can be used to verify functionality, or to purge fluid lines of air. Select each pump from the screen to activate. Keep in mind that these testing screens will ignore input from the fluid level sensor. On Reporter units with firmware version 1v7 and earlier, pump 2 will serve as the stir pump on a 600 Series unit and Pump 3 serves as the stir pump on a 400 Series unit.

600D and 675D Aqua-Hot units with firmware version 1v8 and later, and all Reporter 2.0 units allow for stir pump selection between zone 2 and zone 3 pumps. This setting can be accessed by pressing and holding the serial number panel on the Home screen.
Pin-Out Information

**Fans**

Using the “FANS” screen, it is possible to activate fans in each zone to test for functionality. This is similar to the pumps screen, allowing you to activate one, or multiple fans at the same time by selecting the desired fan.

**Heating**

The heating tab will allow the burner, burner indicator light, and the electric element to be activated and run for five minutes to test for functionality. During this time, inputs from the control thermostat are ignored to allow the test to take place. Do NOT activate the burner heat test without allowing the unit to cool. Not doing so could complicate further diagnosis and may cause damage to the Aqua-Hot.

**Diagnostic**

The “DIAG” tab of the Reporter allows the user or technician to access input and output information to record communication information within the Aqua-Hot heater, and between the heater and the coach. This tab is read-only and will not allow the manipulation of the elements listed. There are four screens maintained under this tab, Inputs from Coach, Outputs to Coach, Inputs from Aqua-Hot, and Outputs to Aqua-Hot.

---

### J8 Pin-Out Information

**Introduction:**

The following section will detail the precise pin-out information for all of the terminals which are to be connected to the Reporter.

**J8**

The J8 plug is responsible for connections which pertain to sensor monitoring within the coach, and is standardized across all Reporter-bearing Aqua-Hot heating systems.

<table>
<thead>
<tr>
<th>J8 Pin No.</th>
<th>Description</th>
<th>Wire No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low-Level Sensor Input</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>Low-Temp Sensor Input</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Control Thermostat or Tank Temp Sensor (Reporter 2.0) Input</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>Low-Level Power Supply (12V DC+)</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>Low-Temp Power Supply (12V DC+)</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>Control Thermostat or Tank Temp Sensor (Reporter 2.0) Input</td>
<td>13</td>
</tr>
</tbody>
</table>

**J1**

The J1 plug manages heating zone inputs from the coach.

<table>
<thead>
<tr>
<th>J1 Pin No.</th>
<th>Description</th>
<th>Wire No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diesel Input</td>
<td>51</td>
</tr>
<tr>
<td>2</td>
<td>Electric Low Input</td>
<td>53</td>
</tr>
<tr>
<td>3</td>
<td>Electric High Input (600/675 only)</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>Engine Preheat Input (N/A on 400P/D)</td>
<td>55</td>
</tr>
<tr>
<td>5</td>
<td>Zone 1 Input (400/450)</td>
<td>95</td>
</tr>
<tr>
<td>6</td>
<td>Zone 2 Input (400/450)</td>
<td>91</td>
</tr>
<tr>
<td>7</td>
<td>Zone 3 Input (600/675)</td>
<td>87</td>
</tr>
<tr>
<td>8</td>
<td>Zone 4 Input (600/675)</td>
<td>83</td>
</tr>
<tr>
<td>9</td>
<td>Zone 5 Input (600/675)</td>
<td>79</td>
</tr>
</tbody>
</table>
### J7

J7 manages zone fans and the burner switch indicator light.

<table>
<thead>
<tr>
<th>J7 Pin No.</th>
<th>Description</th>
<th>Wire No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Zone Fan 4 (Switched 12V+)</td>
<td>80</td>
</tr>
<tr>
<td>2</td>
<td>Zone Fan 2 (Switched 12V+)</td>
<td>88</td>
</tr>
<tr>
<td>3</td>
<td>Burner Indicator Light</td>
<td>56</td>
</tr>
<tr>
<td>4</td>
<td>Zone Fan 4 Ground</td>
<td>81</td>
</tr>
<tr>
<td>5</td>
<td>Zone Fan 2 Ground</td>
<td>77</td>
</tr>
<tr>
<td>6</td>
<td>Burner Indicator Light Ground</td>
<td>57</td>
</tr>
<tr>
<td>7</td>
<td>Zone Fan 5 Ground</td>
<td>78</td>
</tr>
<tr>
<td>8</td>
<td>Zone Fan 3 Ground</td>
<td>85</td>
</tr>
<tr>
<td>9</td>
<td>Zone Fan 1 Ground</td>
<td>93</td>
</tr>
<tr>
<td>10</td>
<td>Zone Fan 5 (Switched 12V+)</td>
<td>76</td>
</tr>
<tr>
<td>11</td>
<td>Zone Fan 3 (Switched 12V+)</td>
<td>84</td>
</tr>
<tr>
<td>12</td>
<td>Zone Fan 1 (Switched 12V+)</td>
<td>92</td>
</tr>
</tbody>
</table>

#### LED Activity

<table>
<thead>
<tr>
<th>LED Activity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Green</td>
<td>Reporter is connected to network and communicating properly</td>
</tr>
<tr>
<td>OFF</td>
<td>Reporter has no power, or has failed completely</td>
</tr>
<tr>
<td>Solid Red</td>
<td>Reporter has gone offline and is not connected to network</td>
</tr>
<tr>
<td>Flashing Green (4/s)</td>
<td>Reporter is attempting to make an initial connection to the network</td>
</tr>
<tr>
<td>Flashing Green (1/s)</td>
<td>The Reporter is online, but it has not received a valid network message for at least 5 seconds</td>
</tr>
<tr>
<td>Alternating Red and Orange</td>
<td>Reporter has gone offline and is attempting to re-connect (within 30 seconds)</td>
</tr>
<tr>
<td>Alternating Green and Orange</td>
<td>Reporter is currently online but has gone offline 2 or more times.</td>
</tr>
</tbody>
</table>

### J3

J3 serves as the RVC connection to the coach-side comfort system (if applicable.) The RVC indicator light located on the back of the Reporter serves as a valuable diagnostic tool when the need to determine RVC functionality arises.

<table>
<thead>
<tr>
<th>J3 Pin No.</th>
<th>Description</th>
<th>Wire No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12V DC+ Current Out (Optional)</td>
<td>54</td>
</tr>
<tr>
<td>2</td>
<td>CAN-HIGH</td>
<td>52</td>
</tr>
<tr>
<td>3</td>
<td>CAN-LOW</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>Ground</td>
<td>78</td>
</tr>
</tbody>
</table>

### J9

The J9 plug is an optional use terminal that provides constant 12V DC current to any attachments which may be added to the coach.

<table>
<thead>
<tr>
<th>J9 Pin No.</th>
<th>Description</th>
<th>Wire No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Engine Preheat</td>
<td>54</td>
</tr>
<tr>
<td>2</td>
<td>Electric</td>
<td>52</td>
</tr>
<tr>
<td>3</td>
<td>Diesel 12V DC Switch</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>Zone 5 Thermostat</td>
<td>78</td>
</tr>
<tr>
<td>5</td>
<td>Zone 4 Thermostat</td>
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</tr>
<tr>
<td>6</td>
<td>Zone 3 Thermostat</td>
<td>86</td>
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<td>7</td>
<td>Zone 2 Thermostat</td>
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<tr>
<td>8</td>
<td>Zone 1 Thermostat</td>
<td>94</td>
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</tbody>
</table>
The J2 plug is responsible for managing return signals from within the coach.

### J2 Pin-Out Information

**Wire Insertion View Shown**

<table>
<thead>
<tr>
<th>J2 Pin No.</th>
<th>Description</th>
<th>Wire No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pump 1 Output (12V DC+)</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Pump 1 Ground</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Zone 1 Boost Pump (400 Series)</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Pump 2 Output (12V DC+)</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Pump 2 Ground</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Power On Signal</td>
<td>24</td>
</tr>
<tr>
<td>7</td>
<td>Pump 3 Output (12V DC+)</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Pump 3 Ground</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Electric High On-Signal (600 Series)</td>
<td>39</td>
</tr>
<tr>
<td>10</td>
<td>Pump 4 Output (12V DC+)</td>
<td>7</td>
</tr>
<tr>
<td>11</td>
<td>Pump 4 Ground</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>Electric Element On-Signal</td>
<td>11</td>
</tr>
<tr>
<td>13</td>
<td>AC Ground</td>
<td>12</td>
</tr>
<tr>
<td>14</td>
<td>Burner Ground</td>
<td>21</td>
</tr>
<tr>
<td>15</td>
<td>Diesel Burner Status Input</td>
<td>19</td>
</tr>
</tbody>
</table>
System Schematics

400D

Power Inputs, Pumps and Safeties
Electric Elements and High-Limit Thermostats
Power Inputs, Pumps and Safeties

- Two Position Connector
  - Pin 1, 12V+ DC Power
  - Pin 2, Ground

- 400P System Schematics

- Thermostat - LITCO
- Temperature Sensor
- Level Sensor
- Tank Stud Ground

- 12VDC Pump
- Zone 1
- Zone 2
- Zone 3
- Optional Boiler Pump

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Electric Elements and High Limit Thermostats
Electric Elements and High Limit Thermostats
Switch Panel

Engine Preheat

Electric

High

Burner
Heat Exchangers

[Diagram showing heat exchangers with labeled zones and connections]

Zone 1 Heat Exchanger

Zone 2 Heat Exchanger

Zone 3 Heat Exchanger

Zone 4 Heat Exchanger

12V DC

Burner 12V+ Output
Power Inputs, Pumps and Safeties

Two Position Connector
- Pin 1, 12V+ DC Power
- Pin 2, Ground

TEMPERATURE SENSOR

LEVEL SENSOR

TANK STUD GROUND

12V DC Pump
one 1

12V DC Pump
one 2

12V DC Pump
one 3

engine

12V DC Pump
e-Heat

1 2 3

1 2 3

1 2 3

1 2 3
Electric Elements and High Limit Thermostats
Power Inputs, Pumps, and Safeties

- **12V DC Pump**
  - Zone 1
  - Zone 2
  - Zone 3
  - Engine Pre-Heat

- **Burner 12V Output**

- **Two Position Connector**
  - Pin 1, 12V+ DC Power
  - Pin 2, Ground
Burner
Power Inputs, Pumps, and Safeties

675D System Schematics
Electric Elements and High Limit Thermostats

675D System Schematics
Heat Exchangers

Zone 1 Heat Exchanger
- 12V DC
+ 12V DC

Zone 2 Heat Exchanger
- 12V DC
+ 12V DC

Zone 3 Heat Exchanger
- 12V DC
+ 12V DC

Zone 4 Heat Exchanger
- 12V DC
+ 12V DC

Burner 12V+ Output

Diagram showing connections and labels for each heat exchanger and burner output.