

Installation Manual

FLOOR HEATING KIT



PXE-100-001
For the 100 Series Heating Systems



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Caution Notes

As you read this information, take particular note of the NOTICE, CAUTION, WARNING, and DANGER symbols when they appear. This information is important for safe and efficient use of the Aqua-Hot system.

NOTICE signals a situation where potential damage to the Aqua-Hot could occur.



CAUTION signals a situation where potential harm or risk of minor or moderate injury could occur if you do not follow instructions.



WARNING signals a hazardous situation where potential harm, risk of serious injury, or death could result if instructions are not followed.



DANGER signals a situation where immediate risk of serious injury or death will result if instructions are not followed.



NOTE: This manual will also use notes sections similar to this one to draw attention to features and practices which must be observed.

Read all instructions before installing the Aqua-Hot floor heat kit. Aqua-Hot Heating Systems is not liable for damage resulting from failing to follow instructions contained in this, and any other Aqua-Hot documentation relevant to this unit.

- Read this manual before installing or using the Aqua-Hot System to reduce the risk of injury to persons or damage to the equipment.
- The product identity label contains specifications of the unit, to what standards it has been tested, and important safety notices.
- Disconnect electric wiring to the Aqua-Hot System before welding or plasma cutting the RV to avoid damage to equipment.
- This floor heating kit is only available for use in the AHM-125 & AHE-125 Series Heaters. Maximum testing air pressure to the tank and heating loop must not exceed 18 PSI. Exceeding this rating will cause internal damage to the Aqua-Hot.



- Use caution when working on or near any propane/diesel fuel system.
- DO NOT connect the 12-volt DC power to the Aqua-Hot if the vehicle requires welding.
- At maximum operating temperature, the coolant will be very hot and scalding. Hot vapor or coolant may cause serious burns or injury. Be aware of hot surfaces.
- Use special caution when children are present. Children must not be allowed to play with the heater or perform cleaning and maintenance.
- Installation and repairs may only be carried out by an authorized, factory-trained Aqua-Hot technician. The heating system must be installed in accordance with local codes, or in accordance with the Standard for Recreational Vehicles, (RVIA) ANSI A 119.2/NFPA 501C, NFPA 1192.
- At maximum operating temperature, the hot air outlet will be very hot that may result in serious burns or injury. Be aware of hot surfaces.



If the information in this manual is not followed exactly, a fire or explosion may result, causing property damage, personal injury or death.

Hydronic In-Floor Heating Kit

The in-floor heating accessory kit includes:

- Mixing Valve (adjustable)
- Quiet, powerful circulation pump
- Non-return check valve
- Clamps and fittings needed for install

Additional Accessories available:

- Clamps (1/2", 3/4", 5/8")
- Hose (3/4", 5/8")
- 90° Formed Hose (3/4")
- Thermistor



Figure 1

System Overview

The in-floor heating accessory kit uses the existing Aqua-hot heating system to provide auxiliary heat from the existing heating loop to heat the RV floor.

The in-floor coolant loop is independent of the interior heating zone. The kit may be used in the 100/125 Series hydronic Aqua-Hot models.

The Aqua-Hot floor heating kit creates a second coolant loop that branches off the heating zone loop. Reference the Aqua-Hot 100/125 Series manual for more information on that heating system.

Important Notes:

- A qualified installer or service technician must perform equipment installation or service. Contact Aqua-Hot for Factory Authorized Service Centers or Certified Technicians located near you at www.aquahot.com/service-help, or call us at 574-AIR-XCEL (574-247-9235).
- Warranty work must be performed by an Aqua-Hot Authorized Service Center.
- Please read this manual and follow instructions to avoid injuries during installation and/or operation.

NOTE: The diagram below is simply a reference/illustration for the layout of the floor heating loop. It is recommended to consult an expert in hydronic floor heat to ensure efficient performance.

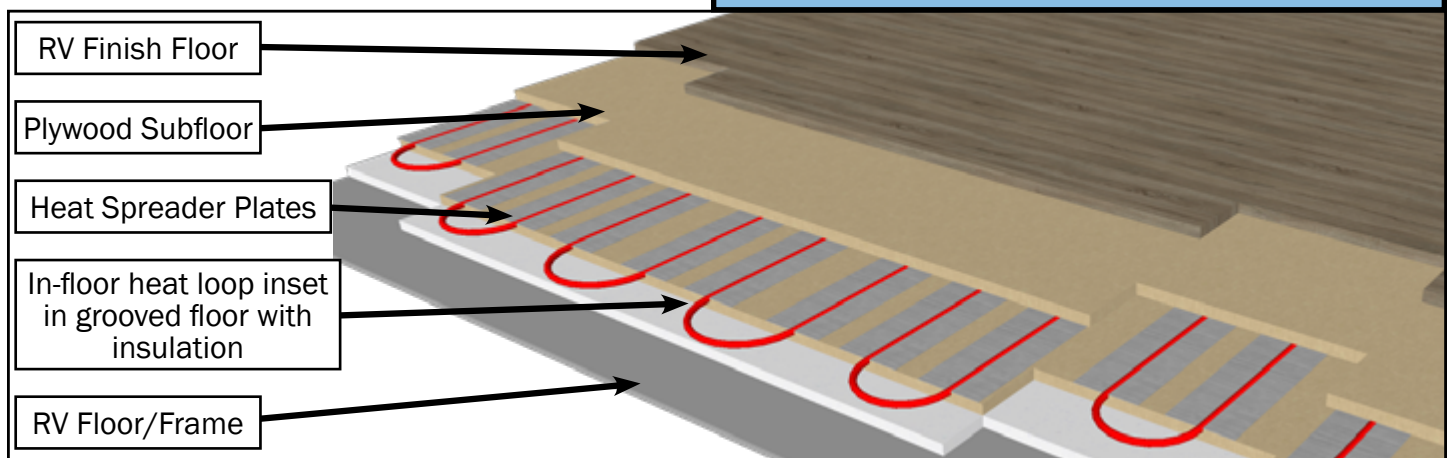


Figure 2

In-Floor Heating System

1. Boiler Tank (100/125 Series)
2. Non-Return Check Valve
3. Final Cozy Heat Exchanger
4. Mixing Valve
5. Circulation Pump
6. In-Floor Heat Loop

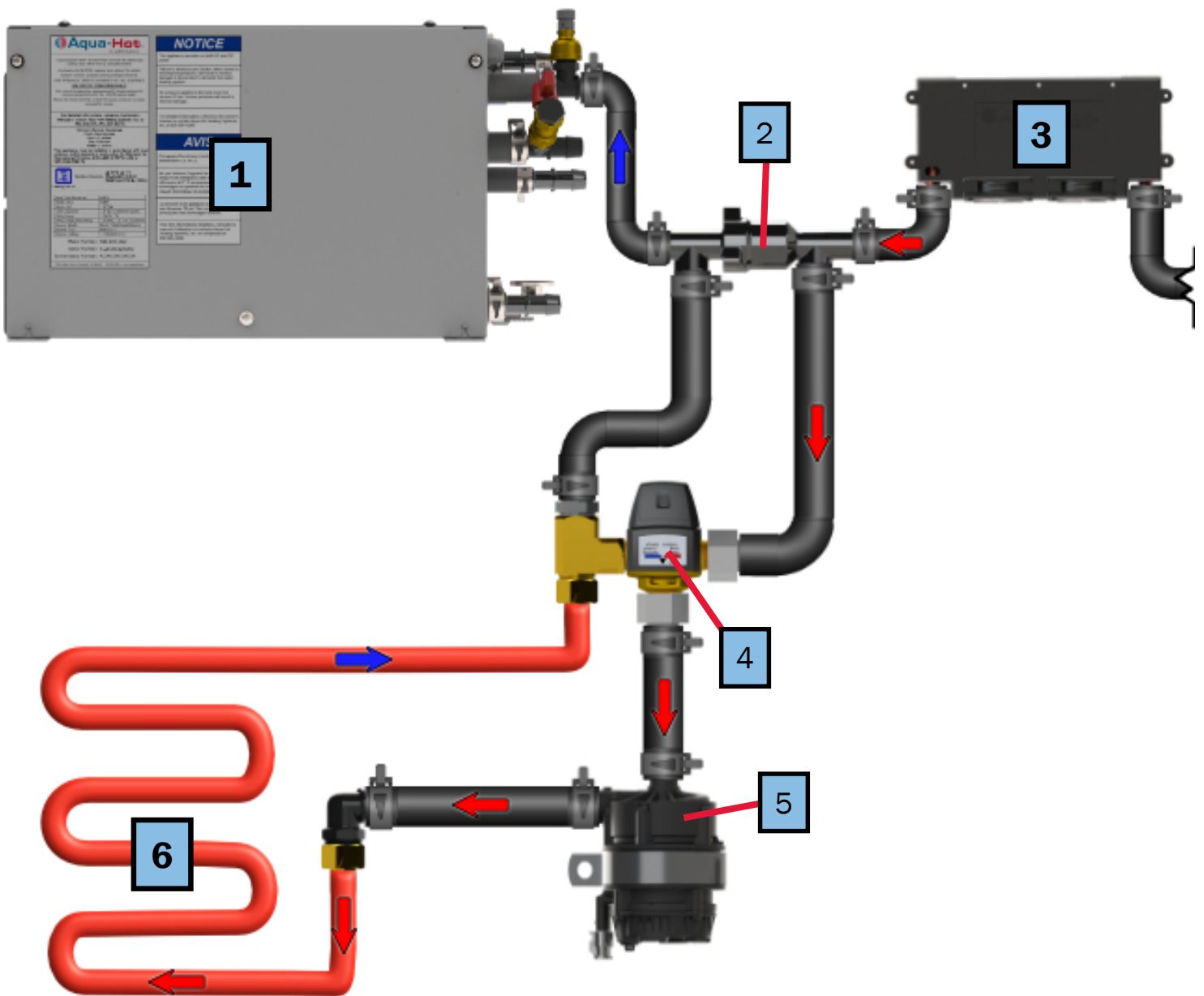


Figure 3

Mounting Components

Install the components in a compartment which protects the unit and components, and allows service access. Make the following considerations when supporting the components to ensure its most optimal operation and location.

Mixing Valve

The mixing valve regulates the temperature of the coolant in the floor heating loop to ensure proper, safe heating.

Considerations:

- Must be located below the boiler tank.
- Must be in a cabinet to prevent contact with hot parts.
- Choose a location that simplifies plumbing and limits undulations.

Mounting (Figure 4):

1. Wrap the provided P-clamps around the fittings on the mixing valve.
2. Using two fasteners, screw the P-clamps to the mounting location.

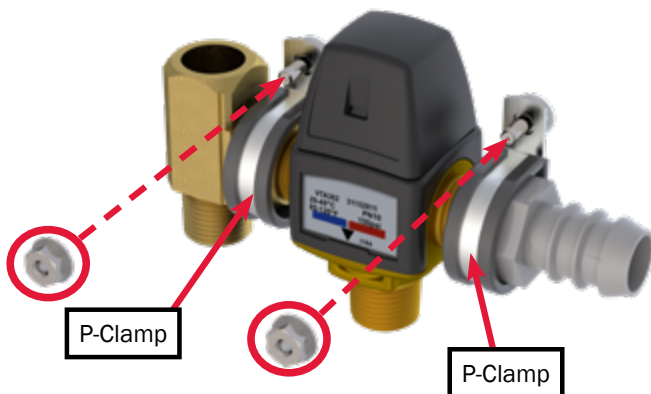


Figure 4

Circulation Pump

The floor loop pump cycles on and off to circulate hot coolant through the floor loop when the zone calls for heat.

Considerations:

- Must be located below the boiler tank.
- The wiring between the pump and the controller must not exceed 4ft in length.
- Choose a location that simplifies plumbing and limits undulations.

Mounting (Figure 5):

1. Using the supplied pump mount, fasten the pump to the mounting location.

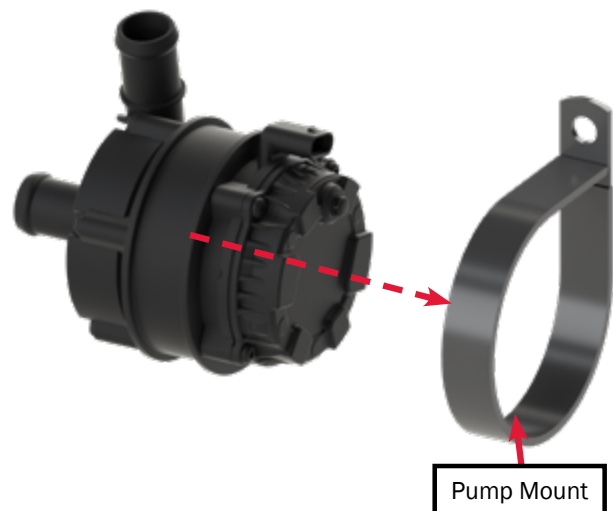


Figure 5

Plumbing

The floor heating kit creates a second coolant loop that branches off the zone heating loop.

Considerations:

- The 4-port check valve must be located at the end of the cozy loop between the final cozy and the return port to the boiler tank.

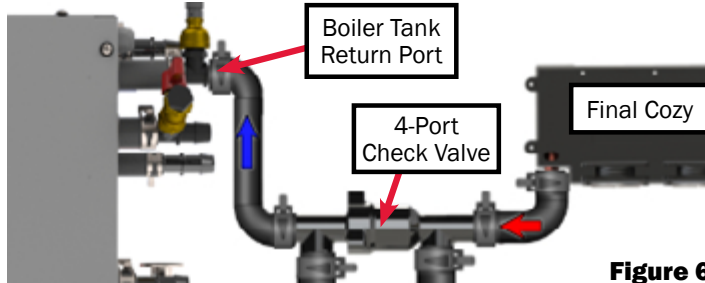


Figure 6

- The plumbing must match the diagram (Figure 3) in order to properly and safely heat the floor. Failure to do so could result in damage to the floor or burner.
- Floor loops up to 200ft may use $\frac{3}{8}$ " PEX tubing. Greater than 200ft must use $\frac{1}{2}$ " PEX.
- Floor loops must not be longer than 300ft.
- PEX tubing must be in contact with the bottom of the sub-floor.
- Heat spreader plates are recommended.
- Insulation must be installed beneath the floor loop tubing.
- All PEX tubing must be oxygen barrier type tubing.
- PEX tubing and PEX adapter fittings are not included in the kit.**
- Lay tubing as flat as possible. Avoid any undulations in the loop.
- Consult an expert in hydronic floor heat to ensure efficient performance.

Plumbing Procedure (Figures 7-10)

- Connect port 1 of the check valve to the exit of the final heat exchanger in the zone loop.
- Connect port 2 of the check valve to the Zone return port of the Aqua-Hot.
 - For Modular units, connect port 2 of the check valve to the "stir" port of the 3-way valve and the "coolant in" port of the tank using the tee fitting provided with the heater.
- Connect port 3 of the check valve to the hot port of the mixing valve. The hot port is denoted by a red line on the label of the mixing valve (Figure 10).
- Connect port 4 of the check valve to the tee fitting on the cold port of the mixing valve. The cold port is denoted by a blue line on the label of the mixing valve (Figure 10).

- Connect the remaining port of the mixing valve, the mixed port, to the in-port of the pump.
- Connect the out port of the pump to the supplied $\frac{3}{4}$ " barb to $\frac{1}{2}$ " NPT fitting.
- Connect the $\frac{3}{4}$ " barb to $\frac{1}{2}$ " NPT fitting to the floor loop PEX tubing using an appropriate adapter fitting.
 - The PEX to $\frac{1}{2}$ " NPT adapter fitting must be compatible with ethylene glycol and rated for 180°F minimum.
- Connect the return side of the PEX loop to the tee fitting on the cold port of the mixing valve using an appropriate adapter fitting.
 - The PEX to $\frac{1}{2}$ " NPT adapter fitting must be compatible with ethylene glycol and rated for 180°F minimum.

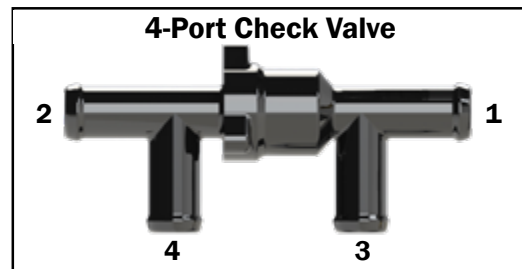


Figure 7

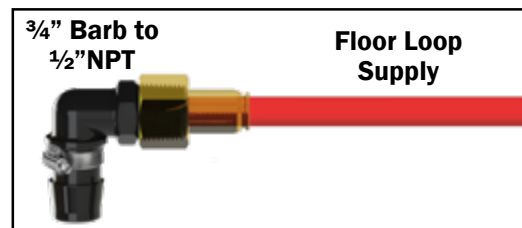


Figure 8

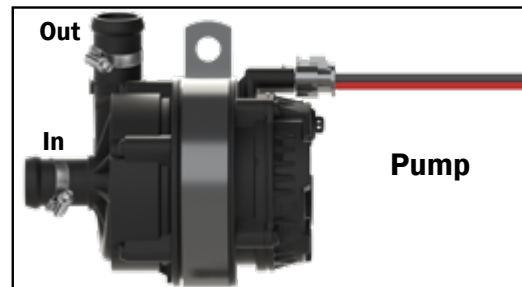


Figure 9

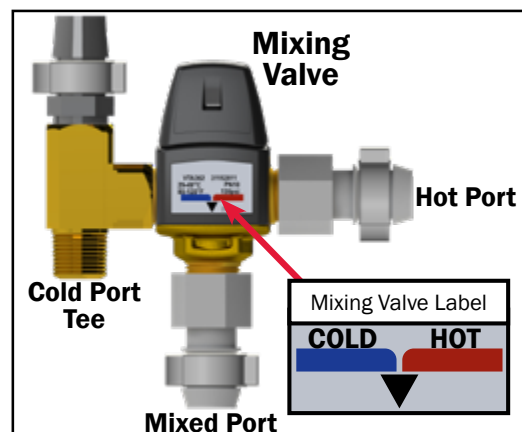


Figure 10

Wiring

The floor loop pump is controlled by the zone output of the controller. When the zone thermistor reads a temperature below the set point, the controller turns the pump on. The pump then circulates hot coolant until the zone thermistor reads higher than the set point.

The floor loop must be configured and wired to zone 2 with no cozies. This zone must have a dedicated thermistor or thermostat controlling it.

NOTE: It is important to not wire any cozies to zone 2 as it will over-current the output.

Cozies are necessary to properly heat the RV, but they must be wired to either zone 1 or zone 3.

Pump:

1. Decide which climate zone will control the floor loop.
2. Connect the red and black wires on the pump to the appropriate zone output pin. Red is positive, black is negative.

- Zone 2: J7-2(+) J7-5(-)

Thermistor:

1. Connect the thermistor or thermostat to the appropriate zone input, these are not polarity dependent.

- Zone 2: J8-4 J8-5

Configuring the Zone:

1. Following the zone configuration section of the install manual for your heater, configure any air heating zones.
2. Locate zone 2.
3. Set the zone label to “Floor” (Figure 11 **A**).
4. Choose the correct temperature input: thermistor or thermostat (Figure 11 **B**).

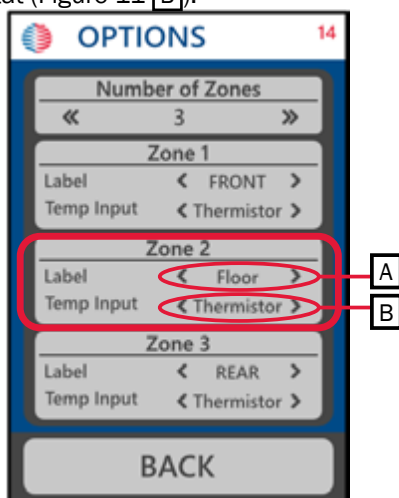


Figure 11

Fill Procedure

AHE-125 Heaters

1. Refer to the procedure detailed in the installation manual for your heater.
2. Before activating the external fill pump, navigate to the testing page on the LCD screen.
3. Under the “Fans” testing section, locate the fan 2 output.

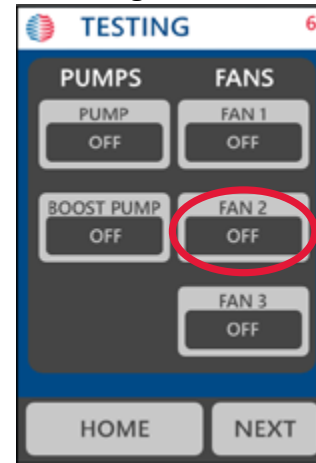


Figure 12

4. Activate the fan 2 output.
5. Continue the fill procedure detailed in the installation manual.

AHM-125 Heaters

Vacuum Method

1. Follow the procedure in the installation manual.
2. After filling the heater navigate to the testing page.
3. Under the “Fans” testing section, locate the fan 2 output (Figure 12).
4. Activate the corresponding fan output and the pump.
5. Let the system circulate coolant to flush any remaining air out of the system.

Alternate Method

1. Follow the procedure in the installation manual.
2. When activating the three-way valve and pump, also activate the fan 2.
3. Continue with the fill procedure in the installation manual.

Setting Temperature

Hydronic floor heating systems pump hot coolant through the floor to provide heat. The Aqua-Hot system can heat the coolant to 180°F or higher. These high temperatures could cause burns and damage the interior of the vehicle. To avoid this, the floor heating kit includes an adjustable mixing valve. This valve regulates the temperature of the floor to ensure proper, safe heating.

NOTE: The temperature setting of the mixing valve will be different for every vehicle and must be set by the installer.

- The temperature of the floor surface must never exceed 85°F.
- The recommended temperature of the floor surface is 5°F above the expected zone set-point.

Adjusting the Mixing Valve:

1. Locate the mixing valve and remove the black cap.
 - A screwdriver can be used to depress the clips on the cap during removal. (Figure 13)
 - A twisting motion can also be used to remove the cap.
2. Following the chart below, set the mixing valve to the expected temperature needed.
 - The surface of the floor will be 10-20°F cooler than the coolant temperature.

Mixing Valve Setting	1	2	3	4	5	6
Coolant (°F)	75	90	105	120	135	160

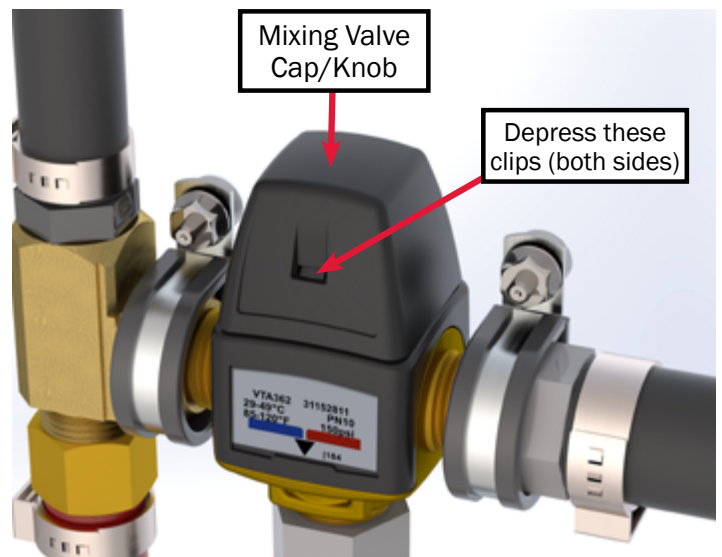


Figure 13

3. At the LCD screen, turn the burner on, and tap to activate “interior heat priority”. (Figure 14)
4. On the LCD screen, set the floor zone temperature to 86° and turn the zone on. (Figure 14)
 - If thermostats are used, adjust the thermostat to the maximum temperature and turn it on.
5. Let the unit run to heat the floor.
6. After the floor has heated up, measure the surface temperature in several locations.
7. Adjust the mixing valve to increase or decrease the surface temperature as needed.
8. Let the floor temperature stabilize and measure the surface temperature again.
9. Repeat until the desired temperature is achieved.

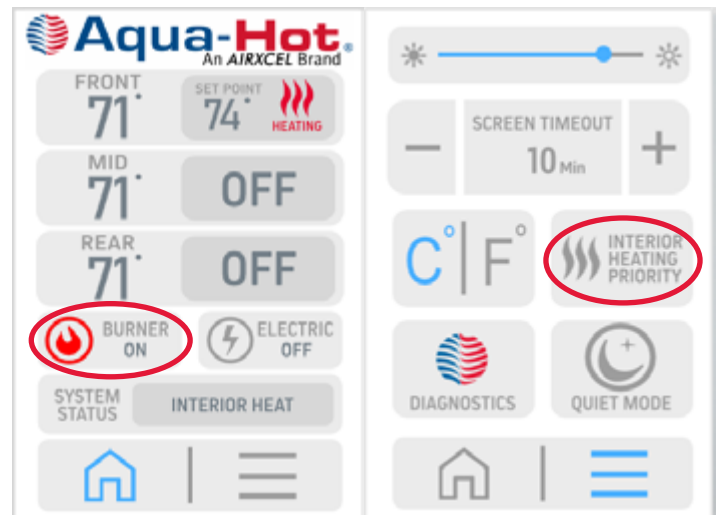


Figure 14

Electrical Schematic

The schematic below shows the floor loop connected to zone 2. The floor loop MUST be connected to zone 2.

- Installation must be performed by a qualified, professional according to current national regulations. Reference A119.2/ NFPA 501C Standard on Recreational Vehicles 1993 Edition for relevant national regulatory information.

CAUTION

DO NOT connect 12V DC power to the Aqua-Hot if the vehicle requires welding. Electrical welding will cause serious, irreversible damage to the Aqua-Hot.

Pump

- Zone 2: J7-2(+) J7-5(-)

Thermistor

- Zone 2: J8-4 J8-5

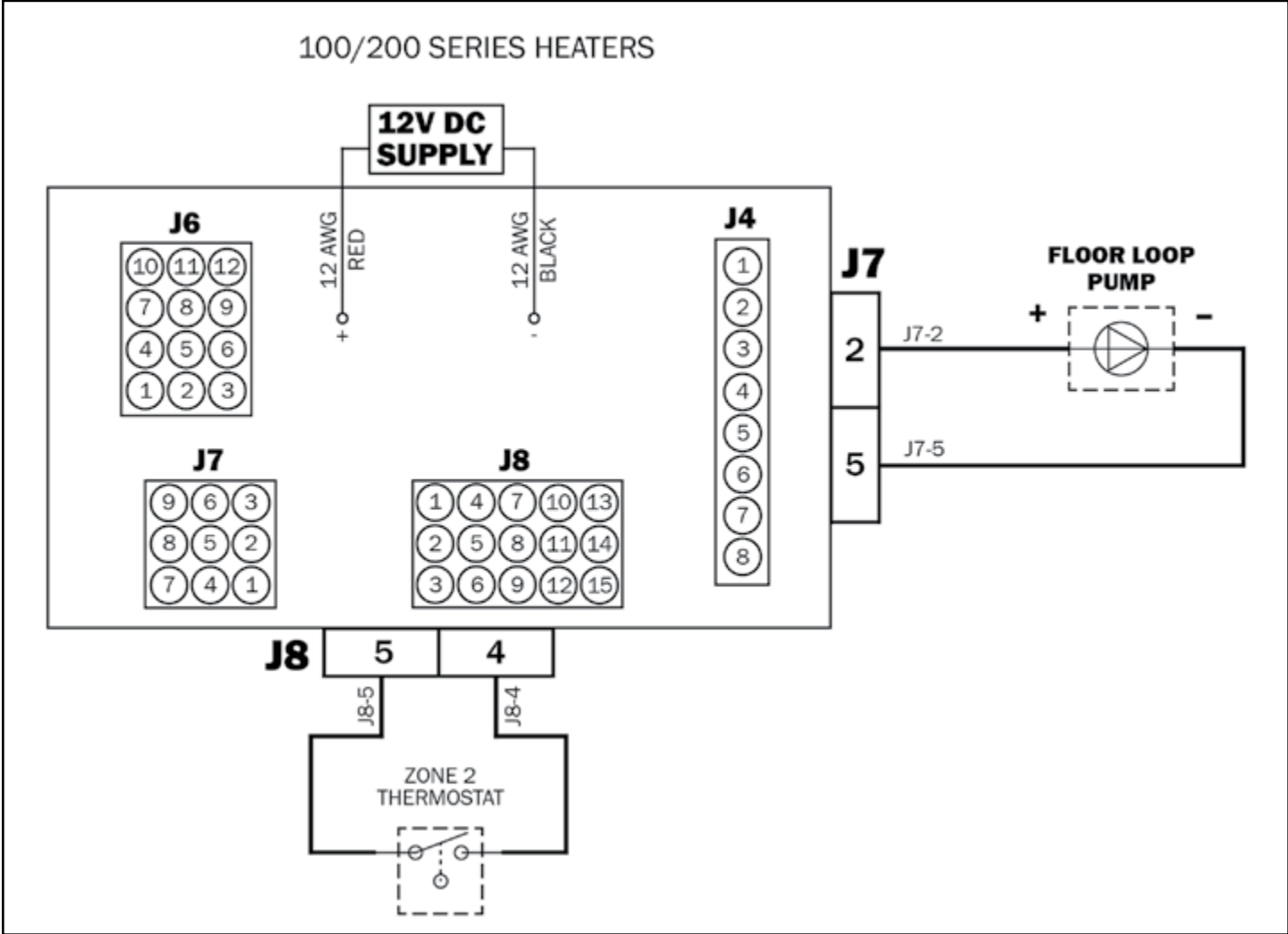


Figure 15

Warranty



2-YEAR LIMITED WARRANTY AQUA-HOT® HYDRONIC HEATING SYSTEM

Aqua-Hot Heating Systems Inc. warrants the Aqua-Hot Heater to be free from defects in material and workmanship under normal use and service for a period of two years on both parts and labor commencing upon the original date of registration of the vehicle. Replacement parts are warranted for the remainder of the Heater's standard warranty coverage or for six months, whichever is greater. The intent of this warranty is to protect the heater's end-user from such defects, which would occur in the manufacturing of the product. Thus, problems due to improper specifications, improper installations, improper use, the use of accessory parts or parts not authorized by Aqua-Hot Heating Systems Inc., repair by unauthorized persons, and damage or abuse of the heater are specially excluded from warranty coverage.

For additional information, or to obtain a warranty repair authorization, please contact the Aqua-Hot Heating Systems Warranty Administrator at 574-AIR-XCEL (574-274-9235) (7:00 AM to 4:00 PM Mountain Standard Time) or visit www.aquahot.com.

My Comfort Zones are On-Board

Vehicle:

Purchased From:

Dealer Information:

Name:

Location:

Phone Number:

Heating System:

Serial Number:



Scan the QR code on the right with your mobile device to take you to the website to register your Aqua-Hot product.

Installation Manual

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For the 100 Series Heating Systems



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