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## Installation Instructions

# Flow Through Thermostat

READ CAREFULLY FOR PROPER INSTALLATION AND OPERATION

INSTRUCTIONAL VIDEO PROVIDING ADDITIONAL SUPPORT CAN BE FOUND AT [www.hotstart.com](http://www.hotstart.com)

### OPERATING INFORMATION:

The HOTSTART flow-through thermostat installs in-line with coolant heater plumbing.

The thermostat assembly contains a Single Pole Single Throw (SPST) switch to disconnect power to the heater when the desired fluid temperature is achieved.

### MOUNTING AND INSTALLATION:

Install the thermostat assembly on the inlet side of the heater to monitor the temperature of fluid being pulled from the engine into the heater.

#### **NOTICE**

For engine heating systems to operate correctly, flow restrictions in the heater must be minimized. Reference the tank style heater installation instructions for minimum hose and fitting sizes. Fittings and hoses for the thermostat assembly must not be any smaller than the recommended size for the heater.

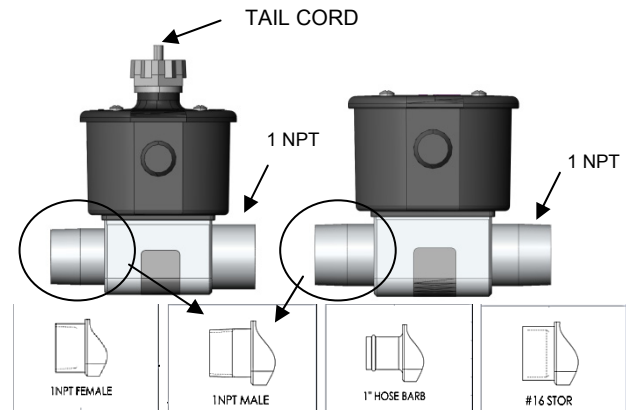


Figure 1 - OPTIONAL PORT SIZES

#### **CAUTION**

**Heater Damage:** Do not connect heater unit to electricity until the following steps have been completed. Never operate heater unless coolant is present in the heating chamber.

**Step 1:** Drain the cooling system.

**Step 2:** Apply thread sealer to the 1"NPT threads (Loctite 567 is recommended) and install into the inlet port of the heater. The thermostat assembly may also be installed in-line in the coolant supply hose. The thermostat assembly can be mounted in any orientation without affecting its operation.

**Step 3:** Attach the plumbing to the other end of the thermostat assembly. See Figure 1 for optional port sizes. Tighten all connections on the thermostat assembly prior to refilling the engine.

**Step 4:** Refill engine with heater outlet line disconnected at the engine until outlet line is full of coolant. Connect line to engine and finish filling.

**Step 5:** Run engine and top off with coolant if necessary. Check for leaks.

### WIRING THE THERMOSTAT ASSEMBLY

#### **CAUTION**

**Personal Injury:** Disconnect power supply before performing any electrical work. Wiring must be performed by a trained technician and in accordance with national and local electrical codes.

#### **CAUTION**

**Personal Injury:** The high-limit thermostat installed in the heater functions as a safety device. This thermostat must be kept in the circuit even if the control sensing unit in the thermostat assembly is used.

### ELECTRICAL RATINGS

0-24VDC: Pilot Duty Only  
0 - 240VAC: 25Amps  
277VAC – 480VAC: 12.5 Amps

### GROUNDING

If the thermostat assembly is installed directly into the engine heater, the thermostat will be electrically bonded through the pipe threads. If the assembly is not installed directly into a heater, a ground wire must be run to the ground lug on the assembly. (see figure 4)

**WIRING**

The thermostat assembly is available with or without a tail cord (see figure 1). If the assembly does not include a cord, appropriate conduit or cord connection must be made to the wiring enclosure.

**1 PHASE UP TO 480VAC:**

The assembly is rated to switch a single line up to 480VAC. For heaters meeting this criteria, the thermostat assembly can control the power directly without using a control circuit. See Figure 2.

**OVER 480 VAC OR 3 PHASE:**

If the power to the heater is greater than 480V or is 3 phase, the thermostat must be used in a control circuit with a contactor for switching the main power. See Figure 3.

The heater can be energized once the electrical connections are made and the heater is filled with coolant. The operation of the thermostat should be checked to ensure the thermostat is cycling the heater as desired.

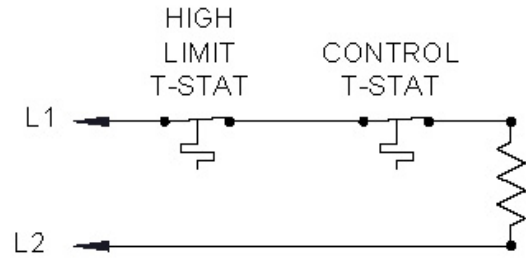


Figure 2 – Single Phase Wiring

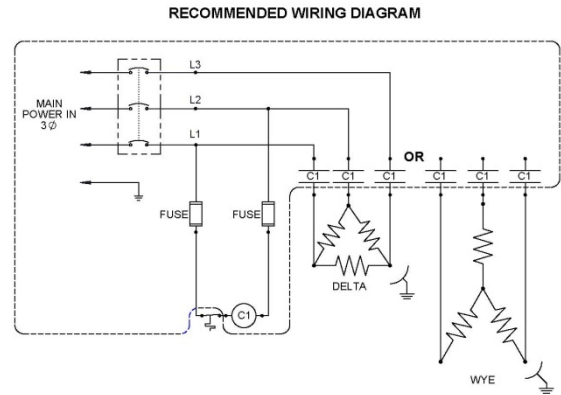


Figure 3 – Three Phase Wiring

**MAINTENANCE AND SERVICE:**



**Personal Injury:** Disconnect power supply before performing any electrical work. Wiring must be performed by a trained technician and in accordance with national and local electrical codes.

The sensing unit is rated for 100,000 cycles. Regular inspection of the electrical connections and replacement of the sensing unit will ensure reliable operation in the field.

**Every two years:**

1. Drain, clean, and flush cooling system
2. Check for cracked and/or weakened hoses and replace if necessary
3. Check electrical wiring and connections for wear and excessive heat

The sensing unit is not in direct contact with the liquid and can be changed without draining the coolant system.

1. Disconnect the power supply to the thermostat assembly.
2. Remove the four screws to remove the lid.
3. Remove the quick disconnect terminals from the sensing unit.
4. Remove the two screws holding the sensing unit in place.
5. Replace the parts in reverse order.
6. Re-connect the power and check to ensure the thermostat is cycling the heater as desired.

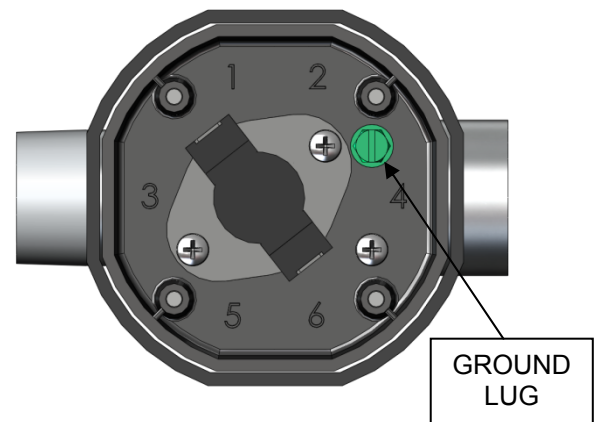


Figure 4 – Ground Lug Location