506944-01
10/2012
Supersedes 2/2012

HOT WATER HEAT KIT

INSTALLATION INSTRUCTION FOR HOT WATER HEAT KIT (90W84)

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause personal injury, loss of life, or damage to property.

Installation and service must be performed by a licensed professional installer (or equivalent) or a service agency.

⚠ CAUTION

Physical contact with metal edges and corners while applying excessive force or rapid motion can result in personal injury. Be aware of, and use caution when working near these areas during installation or while servicing this equipment.

⚠ WARNING

Electric Shock Hazard. Can cause injury or death. Unit must be grounded in accordance with national and local codes.

Line voltage is present at all components when unit is not in operation on units with single-pole contactors. Disconnect all remote electric power supplies before opening access panel. Unit may have multiple power supplies.

Shipping and Packing List

Check unit for shipping damage. Consult last carrier immediately if damage is found.

Catalog Number	Part Names	Part Numbers	Qty.
90W84	DC Relay, 22VDC	102297-01	1
	3PDT Relay	67K6601	1
	Delay-On-Make Relay	99P41	1
	9-Pin Wiring Harness	609345-01	1
	Wiring Diagram	537516-01	1

Field-Provided Supplies

The following field-provided supplies may be required.

- 1/4” quick connects
- Control wiring (various lengths)

General

Hot water heat kit (90W84) adapts CBX32MV and CBX40UHV units for use with a boiler to provide hot water heating in select applications. When used with an air conditioner, the hot water provides first-stage heating. When used with a heat pump, the hot water provides second-stage heating.

This kit is only approved for use in systems using either the ComfortSense® 7000 thermostat or icomfort™ thermostat. Wiring modifications shown are in addition to field wiring detailed in the instructions provided with the air handler.

Thermostat Configuration

HEAT PUMP APPLICATIONS

The ComfortSense® 7000 will need to be reconfigured for use with:

- Heat pump with hot water heat (see figure 7).
- Compressor low balance set point of 40ºF.

Since the hot water coil is downstream of the coil, the heat pump and boiler can be operated simultaneously. In emergency heat mode, the blower CFM drops to the lower heat table CFM setting.

AIR CONDITIONER APPLICATIONS

In applications with condensing units, configure ComfortSense® 7000 for hot water heat (see figure 7).

In icomfort™-enabled systems, see figure 7 for heat discovery procedures and the icomfort™ thermostat installer guide to configure the thermostat.

Kit Installation

This kit can be installed for any of the following variations:

- Air handler - hot water heat and air conditioner
- Air handler - hot water heat and heat pump

FREEZESTAT INSTALLATION

Since the hot water coil is downstream of the indoor a freezestat will need to be installed to protect the indoor coil during summer air conditioning operation.

1. All units will require one field-provided properly sized freezestat (S49) for use with this kit. Order part using table 1.

Table 1. Freezestat Selection (S49)

Tubing Size	Wire Length	Wire Gauge	Lennox Catalog Number	Freezestat Set Points	
				Open	Close
3/8”	90-13/16”	18	93G35	29ºF (-2ºC)	58ºF (10ºC)
5/8”	36-1/2”	18	50A93	36ºF (2ºC)	58ºF (10ºC)

Installation Method 1 — (Non-Communicating Unit)

This installation method is applicable to systems that use standard thermostat wiring (see figure 2).

1. A freezestat, sized per table 1 and ordered separately, must be installed. Install the freezestat on one of the copper lines between the last hairpins and the suction manifold (see figure 1) of the indoor coil.
2. The freezestat senses the line temperature and cycles the compressor off when the line temperature fails below its setpoint. The freezestat will open and closed as listed in table 1.
3. Connect freezestat (S49) wires as exampled in figure 2.

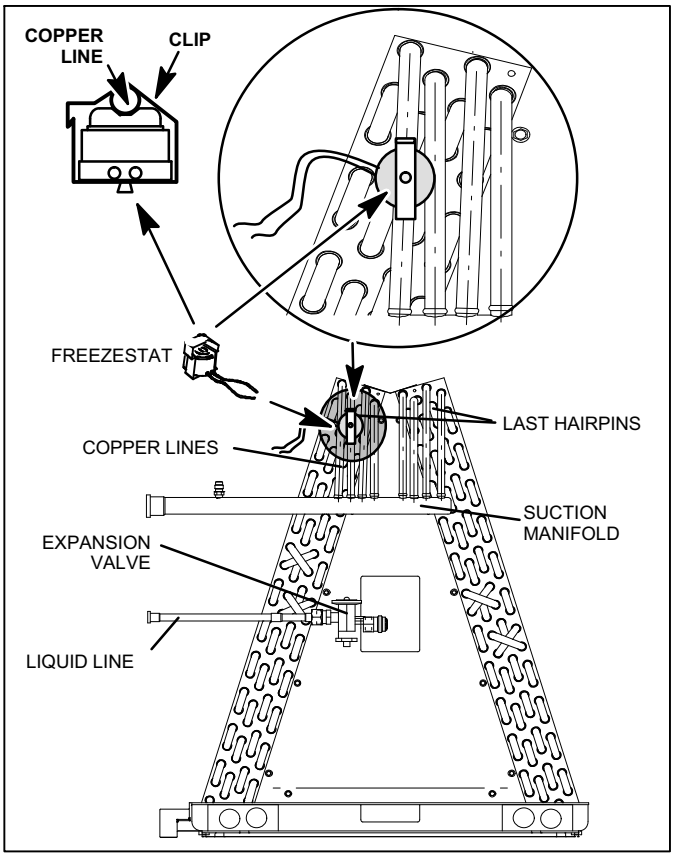
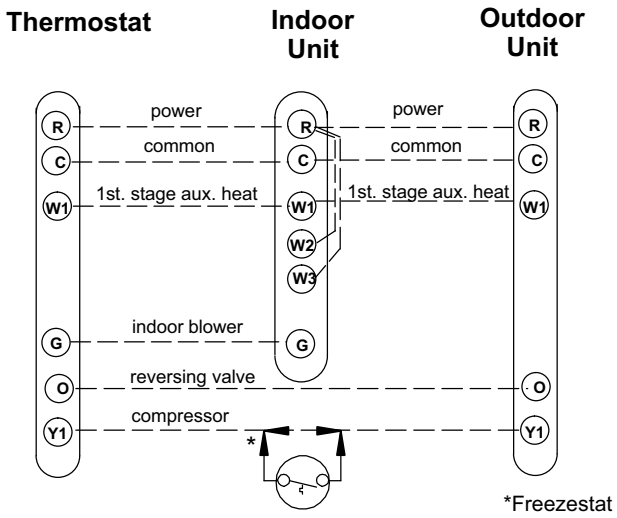


Figure 1. Typical Freezestat (S49) Installation (Indoor Coil)

Thermostat Designations

(Some connections may not apply.
Refer to specific thermostat and indoor unit.)



See figure 1. Typical Freezestat (S49) Installation (Indoor Coil)

Figure 2. S49 Freezestat Wiring

CAUTION

ELECTROSTATIC DISCHARGE (ESD) PRECAUTIONS AND PROCEDURES

Electrostatic discharge can affect electronic components. Take care during unit installation and service to protect the unit's electronic controls. Precautions will help to avoid control exposure to electrostatic discharge by putting the unit, the control and the technician at the same electrostatic potential. Touch hand and all tools on an unpainted unit surface before performing any service procedure to neutralize electrostatic charge.

Installation Method 2 — (Communicating Unit)

This installation method is applicable to the models listed below.

Table 2. Method 2 Models

XC17	In communicating mode only.
XP17 and XP17N	
XP19-XXX-230-06	
XC21-XX-230-04 and later	
XP21 and XP21N	

1. A freezestat, sized per table 1 and ordered separately, must be installed. Install the freezestat near last bend (tube) of the indoor coil before the suction manifold (see figure 1).
2. The freezestat senses the line temperature and cycles the compressor off when the line temperature fails below its setpoint. The freezestat will open and closed as listed in table 1.
3. Connect freezestat (S49) wires as exampled in the applicable unit wiring diagrams and figure 3.

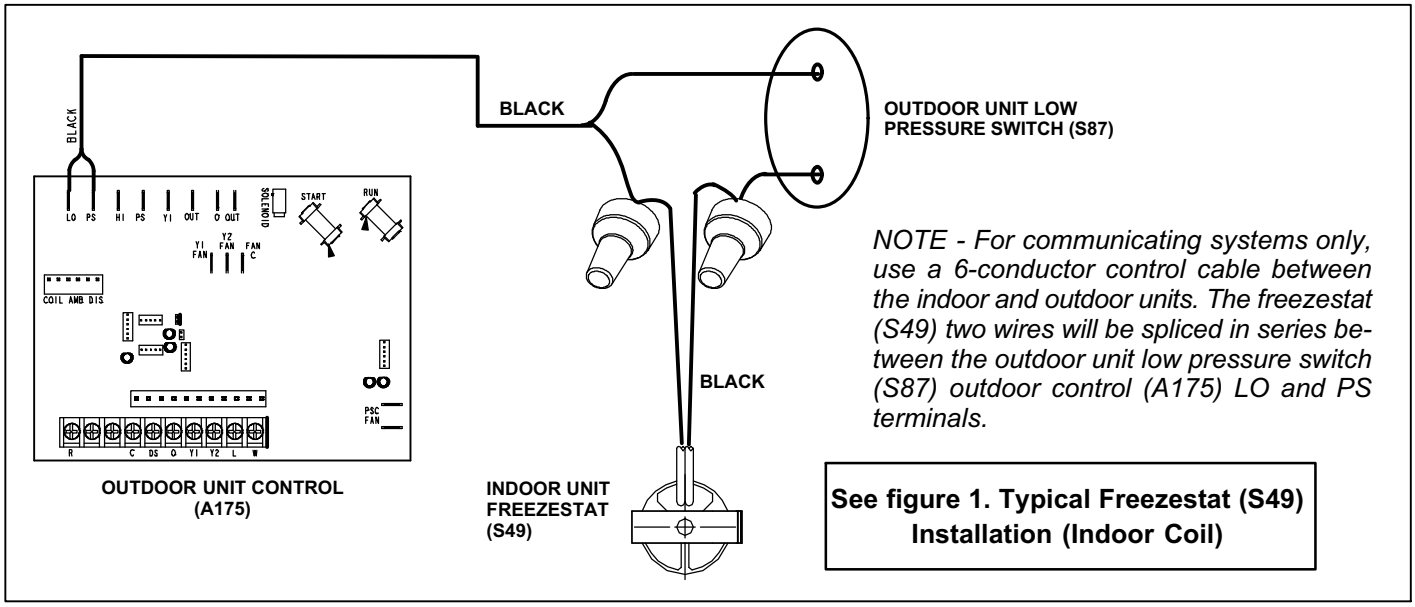


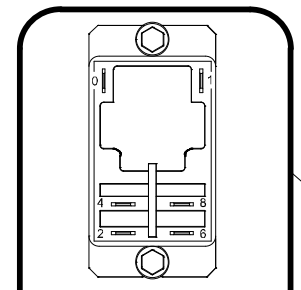
Figure 3. Freezestat (S49) Wiring for Communicating Systems

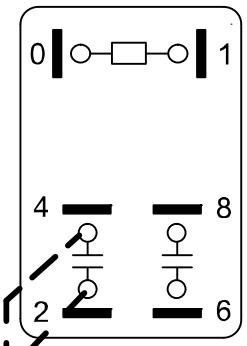
OPTION 1 — AIR HANDLER - HOT WATER HEAT AND HEAT PUMP / AIR CONDITIONER WITH ICOMFORT™ THERMOSTAT

Heat discovery must be completed before powering the icomfort™ thermostat, if not, the icomfort™ setup will need to be performed again after air handler heat discovery. The icomfort™ thermostat will control operation as single-stage hot water heat.

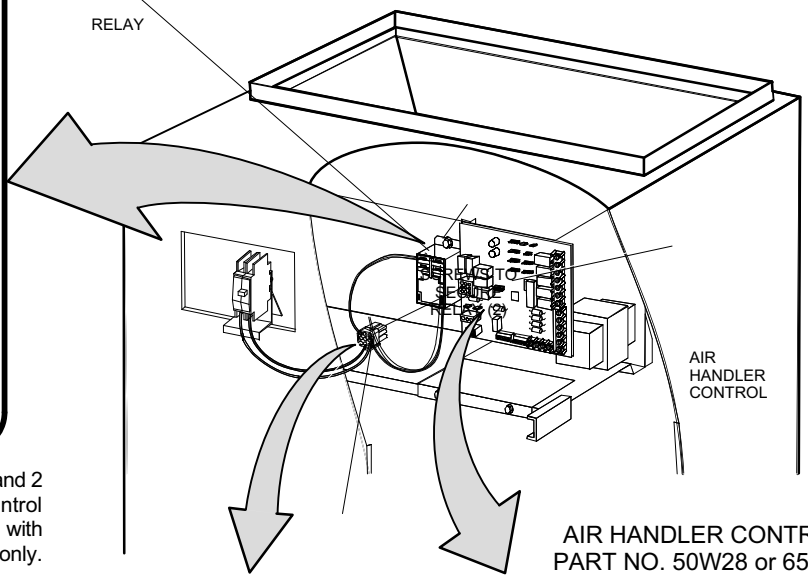
Refer to ***icomfort ™ Thermostat Installer's System Setup Guide,*** *Setting up Equipment Parameters* for configuring hot water heating equipment.

1. Press ***start***
2. Navigate to **equipment** tab.
3. Under system devices, select **AIR HANDER** and select **edit** to the right of the box.
4. Select **Electric heating Air flow** and select **edit** to the right of the box.
5. Use the **UP** or **DOWN** arrows to set the desired **CFM**. Select **save** when done.
6. Under **Equipment Name**, scroll down to **Heating Indoor Blower OFF Delay** and select **edit** to the right of the box.
7. Use the **UP** or **DOWN** arrows to set a maximum of 10 seconds. Select **save** when done
8. Under **Equipment Name**, scroll down to **Heating Indoor Blower ON Delay** and select **edit** to the right of the box.
9. Use the **UP** or **DOWN** arrows to set a maximum of five (5) seconds. Select **save** when done
10. Toggle to **exit**





RELAY

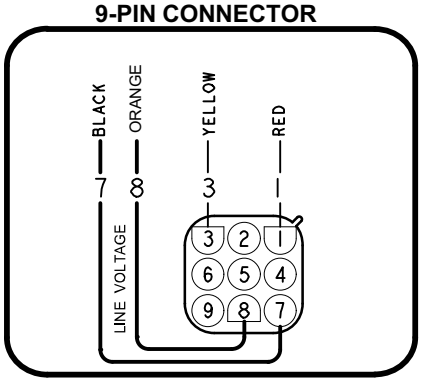


Heat relay contacts 4 and 2 must be used to control boiler when configured with icomfort™ thermostat only.

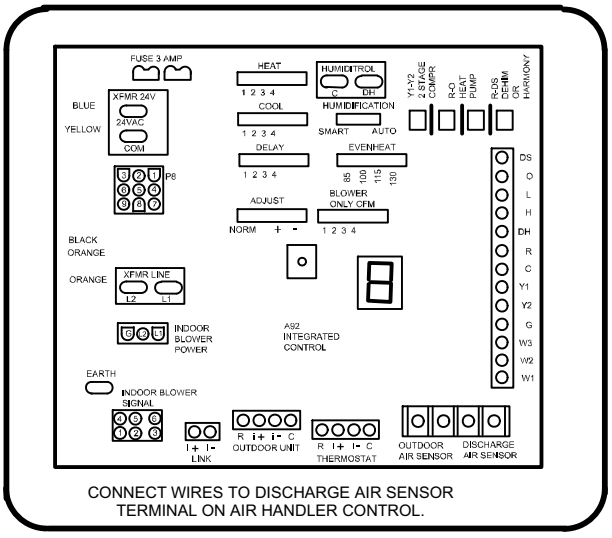
TO BOILER CONTROL

AIR HANDLER CONTROL
PART NO. 50W28 or 65W70

9-PIN CONNECTOR



DETAIL B



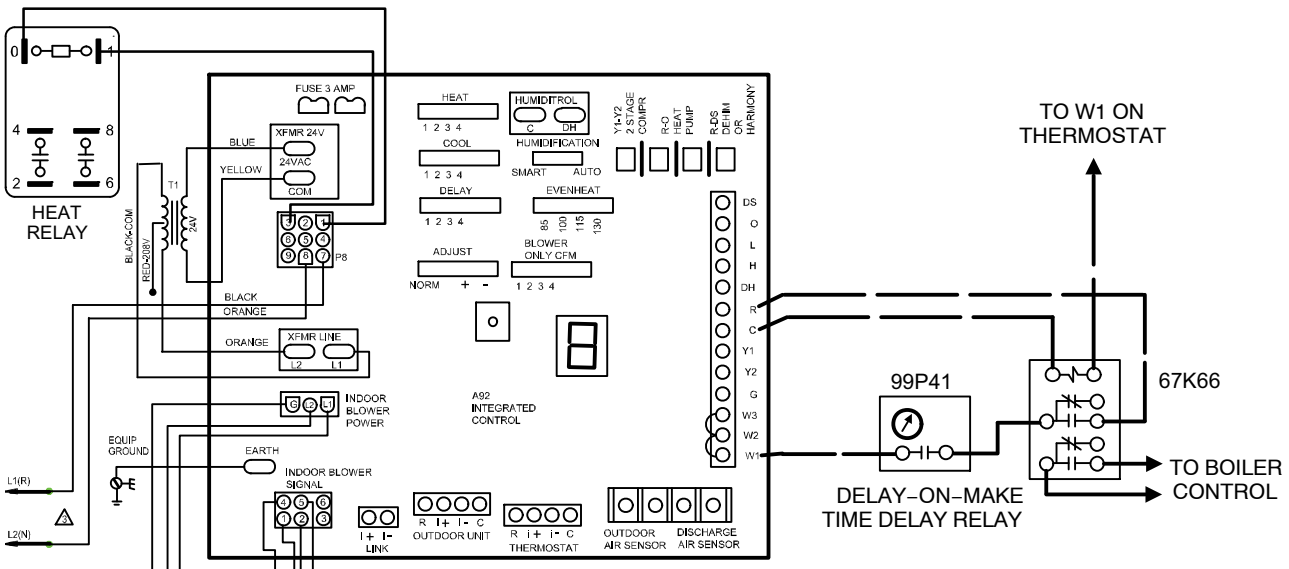
CONNECT WIRES TO DISCHARGE AIR SENSOR TERMINAL ON AIR HANDLER CONTROL.

All configurations will use the heat relay terminals **0** and **1** connected to pins **1** and **3** on the 9-pin connector.

NOTE — EVENHEAT MODE CANNOT BE ENABLED WITH HARMONY III DUE TO EACH CONTROL REQUIRING ITS OWN DISCHARGE AIR SENSOR.

Figure 4. Air Handler - Hot Water Heat and Heat Pump / Air Conditioner with icomfort™ Thermostat

OPTION 2 — AIR HANDLER - HOT WATER HEAT AND AIR CONDITIONER WITH COMFORTSENSE® 7000



KIT INSTALLATION

1. Remove factory-installed P8 cable assembly.
2. Install provided P8 cable assembly.
3. Initiate air handler control heat discovery mode (figure 7).
4. install 99P41 and 67K66 as shown.
5. Adjust 99P41 for average water warm-up time.
6. Adjust heat CFM for desired air temperature rise.

HEAT DEMAND

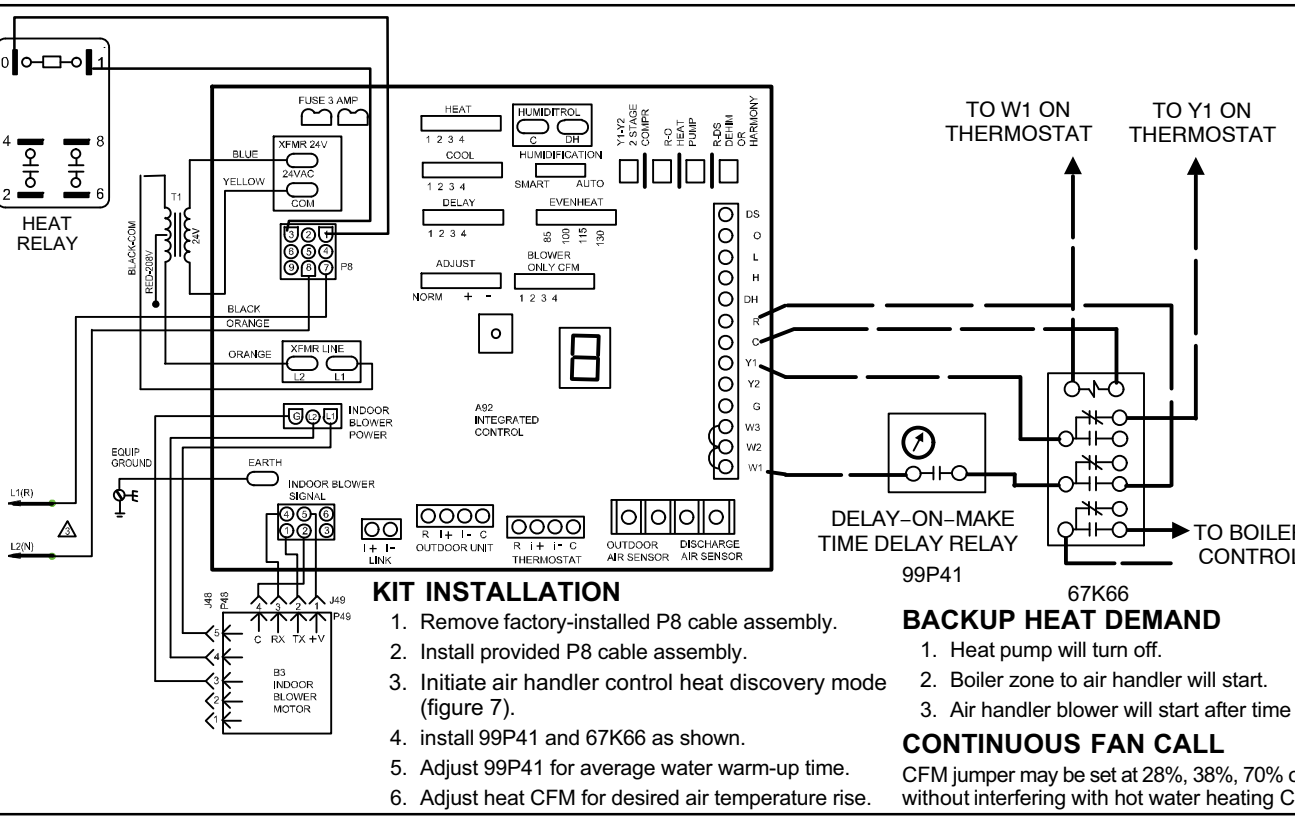
1. Boiler zone to air handler will start.
2. Air handler blower will start after time delay.

CONTINUOUS FAN CALL

CFM jumper may be set 28%, 38%, 70% or 100% without interfering with the hot water heating CFM.

Figure 5. Air handler - hot water heat and air conditioner with ComfortSense® 7000

OPTION 3 — AIR HANDLER - HOT WATER HEAT AND HEAT PUMP WITH COMFORTSENSE® 7000



KIT INSTALLATION

1. Remove factory-installed P8 cable assembly.
2. Install provided P8 cable assembly.
3. Initiate air handler control heat discovery mode (figure 7).
4. install 99P41 and 67K66 as shown.
5. Adjust 99P41 for average water warm-up time.
6. Adjust heat CFM for desired air temperature rise.

BACKUP HEAT DEMAND

1. Heat pump will turn off.
2. Boiler zone to air handler will start.
3. Air handler blower will start after time delay.

CONTINUOUS FAN CALL

CFM jumper may be set at 28%, 38%, 70% or 100% without interfering with hot water heating CFM.

Figure 6. Air handler - hot water heat and heat pump with ComfortSense® 7000

Configuring/Detecting Hot Water Heat Section

This procedure is for the installation of one hot water heat section. This procedure is typically used to configure hot water heat which is the same as configuring for electric heat.

- Set desired **Heating Mode Blower Speed** jumper pin.
- Hot water heat is stage by room thermostat. The air handler control comes with factory jumper between W1 and W2 and W2 and W3.
- Refer to air handler control checkout flow diagram for operation.

Configuration

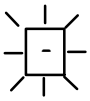
IMPORTANT — Hot water heat installation require the air handler control to be manually configured to detect hot water heat section.

Air handler control in **Idle Mode** (No heating cooling or indoor fan operation)

Yes

To enter **hot water heat configuration mode**, push and hold button next to single-character LED display until **dash** symbol (solid bar) appears. Then, release button.

Solid **dash** starts blinking on single character LED display



No

Turn room thermostat to **OFF**.

Push and hold button until the solid **H** symbol is displayed on the single-character LED display. Then, release button.

1 Air handler control will start the indoor blower motor to the selected heat jumper speed setting and cycle the hot water heat relay ON to automatically detect the hot water heat section.

2 Air handler control waits for maximum of ten seconds to detect the hot water heat 22VDC relay coil is energized:
- A If relay coil current is detected within 10 seconds, the air handler control will show a **1** on the single-character LED display indicating that the first-stage hot water heat has been detected. As each additional heat section is detected, the single-character LED will display that hot water heat number.
- B If relay coil current is not detected within 10 seconds, the air handler control will exit the current active mode and resume operation with hot water heat disabled.

3 The air handler control will automatically exit current active mode when configuration is completed. To verify that the hot water section detected matches the installed hot water heat package, the field MUST CONFIRM that the last number the single character LED display before exiting the configuring/detectionmode matches the hot water heat section. The air handler control stores the hot water heat stage in non-volatile memory.

4 After the detection is finished, unit will continue to operate for an additional 30 seconds.

NOTE — If the air handler control is unable to verify all 22 volt DC hot water heat relay(s) were energized using hot water heater detection after the air handler control button is pushed, or power to the air handler control is cycled, then the configuration procedure must be repeated.

Finished

Figure 7. Heat Discovery Mode