

AprilAire®

Humidifier

SAFETY AND INSTALLATION INSTRUCTIONS

Model 60 & 62

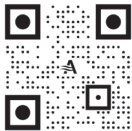
Automatic Digital Humidifier Control



Model 60 shown.

THESE INSTALLATION INSTRUCTIONS ARE FOR THE APRILAIRE® AUTOMATIC DIGITAL HUMIDIFIER CONTROL ONLY. For AprilAire® Humidifier installation, follow AprilAire Humidifier Installation Instructions.

Product Info &
Digital Manual



⚠ WARNING

ATTENTION INSTALLER: This product must be installed by a qualified heating and air conditioning contractor. Failure to do so could result in serious injury from electrical shock.

HIGH VOLTAGE CAN CAUSE SERIOUS INJURY: Disconnect electrical power to the furnace and humidifier before starting installation.

SHARP EDGES: Wear gloves and use care when cutting plenum openings and handling ductwork.

⚠ CAUTION

CONDENSATION DAMAGE MAY OCCUR.

- Do not set humidifier control higher than recommended.
- Lower the humidity setting if there is excess condensation on the inside of any windows in unheated living spaces.
- Install according to the enclosed installation instructions.

CONTROLLER DAMAGE OR MALFUNCTION MAY OCCUR IF INSTALLATION INSTRUCTIONS ARE NOT FOLLOWED.

- Install humidifier control on return plenum only.
- Install humidifier control upstream of the bypass outlet or steam dispersion tube.
- Do not install humidifier control facing downward.

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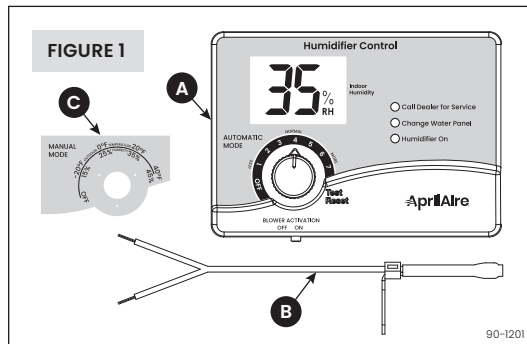
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GETTING STARTED

STEP 1: UNPACK THE HUMIDIFIER CONTROL CARTON

Make sure all components are present (see **FIGURE 1**):

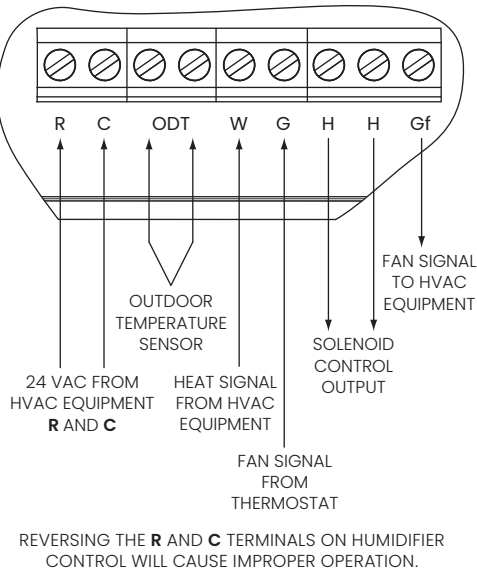
- A** Humidifier control
- B** Outdoor temperature sensor
- C** Manual mode label



STEP 2: DISASSEMBLE THE HUMIDIFIER CONTROL

Remove the knob. Remove the cover by pulling at the bottom and swinging it out and upward. See **FIGURE 2** to become familiar with the terminal positions. **FIGURES 10 & 11** show complete installation wiring diagrams for AprilAire humidifiers.

**FIGURE 2 – DIGITAL HUMIDIFIER CONTROL
24V TERMINALS**

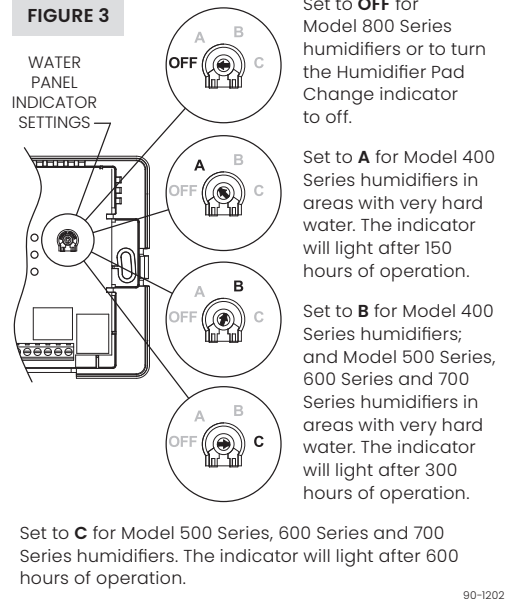


90-1397

STEP 3: SET THE CHANGE WATER PANEL INDICATOR

This setting will control when the indicator light turns on, reminding you to change your water panel. If your control came with a humidifier, the control is pre-set for the humidifier. If the installation site has a 3-month or shorter heating season or very hard water, you may want to adjust the setting (see **FIGURE 3**).

FIGURE 3



90-1202

The Model 62 shipped with the Model 800 steam humidifier is factory set to **OFF**. The Model 62 does not have the **Change Water Panel** light on the control. The canister change indicator for the Model 800 is on the humidifier.

STEP 4: BLOWER ACTIVATION FEATURE EXPLANATION

The Blower Activation switch is set to the **ON** position to allow the humidifier control to activate the HVAC fan for maximum humidification. For this setting, the Models 500, 600 and 700 must be connected to hot water.

If the HVAC system has been idle for 1 hour, the humidifier control will activate the HVAC system fan to sample the air for 3 minutes. If the RH is lower than the set point, the humidifier control will activate the humidifier and keep the fan running. The humidifier will continue to operate for 2 hours or until the humidification set point is reached.

If the RH set point has not been reached by the end of a heat call or fan cycle, the control will continue to operate the humidifier and the HVAC fan until the humidification set point is reached or 2 hours have elapsed.

When the Blower Activation switch is in the **OFF** position, the humidifier control will only operate the humidifier if humidity is required and the HVAC system fan is operating or the HVAC system is producing heat.

INSTALLATION

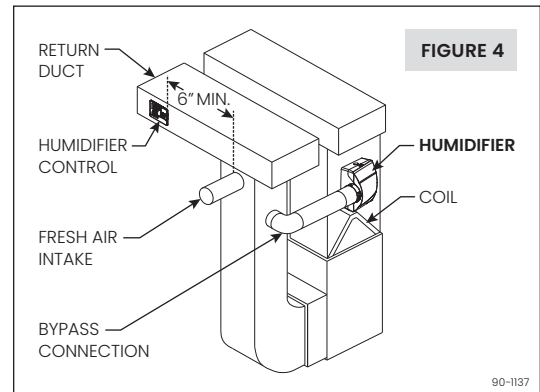
STEP 1: MOUNT THE HUMIDIFIER CONTROL

Humidifier control must be mounted on the return duct, at least 6 inches upstream of the following (see **FIGURE 4**):

- Humidifier
- Humidifier bypass ductwork (if applicable)
- Fresh air intake ductwork (if applicable)

For accurate humidity control, mount the humidifier control at least 12 inches upstream of the steam humidifier dispersion tube.

Ambient operating temperature of the humidifier control is to be from 20°F to 120°F to prevent damage to the control display.



CAUTION

CONTROLLER DAMAGE OR MALFUNCTION MAY OCCUR IF INSTALLATION INSTRUCTIONS ARE NOT FOLLOWED.

- Install humidifier control on return plenum only.
- Install humidifier control upstream of the bypass outlet or steam dispersion tube.
- Do not install humidifier control facing downward.

DUCT (SHEET METAL) MOUNT

After location for control is selected, drill a 3/4 inch hole for the RH sensor (the RH sensor extends from the back of the humidifier control).

Use 2 sheet metal screws, 3/4 inch long (not provided), to mount the humidifier control. Use the mounting slot to level the control, then secure the control with the second sheet metal screw.

Make sure the humidifier control sensor gasket is seated tightly around the drilled hole. Do not install control without the gasket.

DUCT (FIBER BOARD) MOUNT

After location for control is selected, cut a rectangular hole in the duct board, no smaller than 6-9/16 inches long by 4-3/8 inches wide.

Cut a rectangular piece of sheet metal to fit behind the hole in duct board for mounting the humidifier control.

Drill a 3/4 inch hole for the RH sensor (the RH sensor extends from the back of the humidifier control) into the sheet metal plate.

Use 2 sheet metal screws, 3/4 inch long (not provided), to mount the humidifier control.

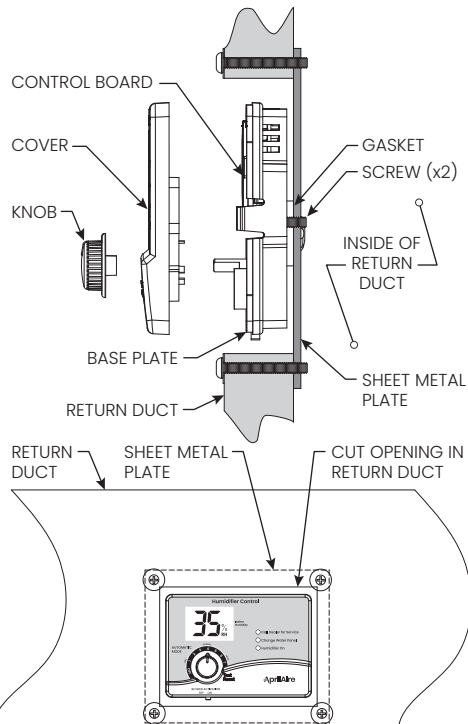
Make sure the humidifier control sensor gasket is seated tightly around the drilled hole. **Do not install control without the gasket.**

Secure the sheet metal plate, with the humidifier control mounted, inside the duct (see **FIGURE 5**).

CONTROL REPLACEMENT

When replacing an existing control, the duct opening left by the removed control must be covered completely. Locate and install the new control as instructed previously in this step.

FIGURE 5 – FIBER BOARD DUCT MOUNT



90-1203

STEP 2: DETERMINE LOCATION FOR AND MOUNT OUTDOOR TEMPERATURE SENSOR

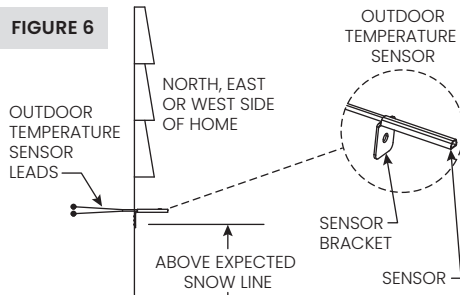
The location of the outdoor temperature sensor must meet these 3 requirements:

1. Must be mounted on north, east or west side of house out of direct sunlight.
2. Must be at least 3 feet from all exhaust vents.
3. Must be above expected snow line (see **FIGURE 6**).

Incorrect humidity levels will result if these requirements are not met.

Secure sensor bracket with a #8 galvanized screw.

FIGURE 6



90-998

NOTE: A convenient way to get the sensor wire outside is to make use of unused wires running to the A/C condensing unit (if applicable). Other ways are to use existing holes for cable TV lines, telephone lines, A/C lines, etc. Read all equipment instructions beforehand for possible conflicts and warnings.

STEP 3: ALTERNATE LOCATION FOR OUTDOOR TEMPERATURE SENSOR

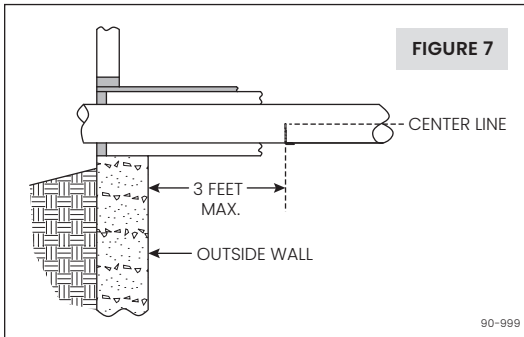
When mounting the outdoor temperature sensor (ODT) in an intake air duct, turn the Blower Activation switch to **OFF** (see **FIGURE 9**). If left in the **ON** position, over-humidification and condensation damage could occur.

The sensor can be mounted with a #8 galvanized screw in the center of either:

- PVC fresh air intake pipe for the HVAC system
- A fresh air intake duct

In both cases, the sensor must be no more than 3 feet from the outside wall. See **FIGURE 7**.

If it is not feasible to use the outdoor temperature sensor in any of the ways described, the humidifier control can be installed for manual operation. See **Installing the Humidifier Control for Manual Operation** and **FIGURE 9** for details.



STEP 4: ROUTE THE WIRE FROM CONTROL TO SENSOR

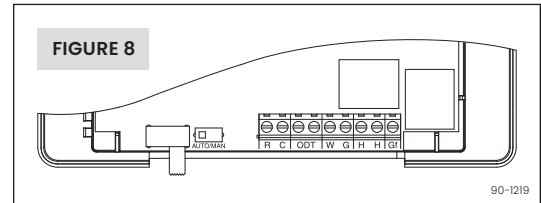
Run wire to the ODT. Sensor is accurate with lead lengths up to 300 feet.

⚠ CAUTION

Do not run ODT alongside wires carrying high voltage (120 VAC or higher).

STEP 5: ATTACH SENSOR WIRE TO HUMIDIFIER CONTROL

Strip wire 1/4 inch, and insert the wires from the sensor into the terminals labeled **ODT** on the humidifier control. See **FIGURE 8** for location of terminals.

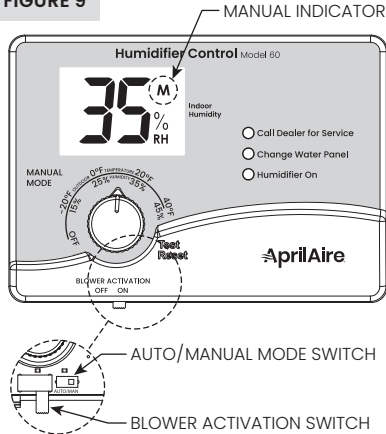


INSTALLING THE HUMIDIFIER CONTROL FOR MANUAL OPERATION

If it is not feasible to install the ODT, the humidifier control can be operated in Manual Mode.

1. Position the mode switch in the **MAN** position. Manual indicator **M** will be displayed.
2. Apply the **MANUAL MODE** label to the cover, aligning the sticker and knob holes.

FIGURE 9



90-1236

NOTE: If control setting was changed between Automatic and Manual mode, power to the control must be cycled by removing then reinstalling the **R** wire.

STEP 6: MODEL 60 WIRING FOR MODEL 400, 500, 600, AND 700* SERIES (GRAY HOUSING) HUMIDIFIERS – SEE FIGURE 10

⚠ WARNING

120 volts can cause serious injury from electrical shock. Disconnect electrical power to the furnace before starting installation.

Strip the wires used for all humidifier control terminal connections 1/4 inch.

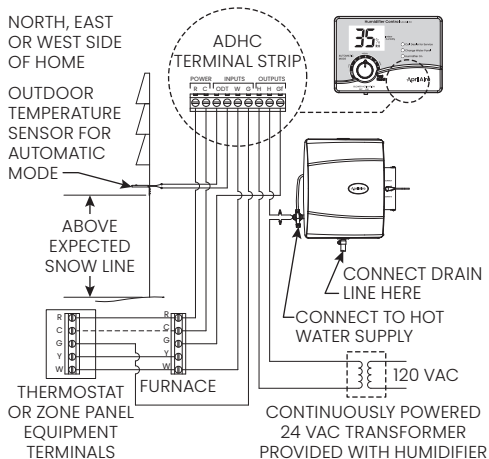
NOTES:

- The Model 60 must be continuously powered from **R** and **C** on the furnace to function properly.
- The minimum volt-ampere required is **2.0 VA**.
- In order for the humidifier to operate, the HVAC blower must be running and the Model 60 must be calling for humidity.

WIRING DESCRIPTION:

- Wire external 24 VAC transformer into a constant power source other than the heating, ventilation and air conditioning equipment (HVAC) blower circuit. The transformer can be powered off the 120 VAC line at the junction box before it enters the HVAC equipment. Connect the 24 volt side of the transformer to one of the **H** terminals on the humidifier control and to one of the humidifier solenoid valve wires. Connect the other solenoid valve wire to the other **H** terminal.
- Wire **R** and **C** on the Model 60 to **R** and **C** on the furnace terminal strip.
- Remove the thermostat **G** wire from the furnace terminal strip and wire it to **G** on the Model 60 control.
- Wire **Gf** on the Model 60 to **G** on the furnace terminal strip.
- Wire **W** on the Model 60 to **W** on the furnace terminal strip.
- Replace cover and knob.

FIGURE 10 – MODEL 60 WIRING FOR MODEL 400, 500, 600 AND 700* SERIES (GRAY HOUSING) HUMIDIFIERS



⚠ CAUTION

Model 700 series humidifiers with almond housings (produced prior to October 2007) wired per **FIGURE 10** will experience circuit board damage rendering the unit inoperable. See **FIGURE 11** for proper wiring diagram.

*See note on page 18.

STEP 7: MODEL 62 WIRING FOR MODEL 800 SERIES STEAM HUMIDIFIER AND MODEL 60 WIRING FOR MODEL 700* SERIES (ALMOND HOUSING) HUMIDIFIERS – SEE FIGURE 11

⚠ WARNING

120/240 volts may cause serious injury from electrical shock. Disconnect electrical power to the furnace and humidifier before starting installation.

Strip the wires used for all humidifier control terminal connections 1/4 inch.

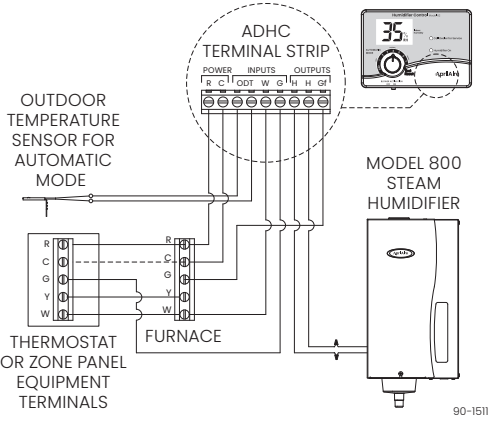
NOTES:

- The Model 62 must be continuously powered from **R** and **C** on the furnace to function properly.
- The minimum volt-ampere required is **2.0 VA**.
- In order for the humidifier to operate, the HVAC blower must be running and the Model 62 must be calling for humidity.

WIRING DESCRIPTION:

- Wire **H** terminals on the Model 62 to the **Humidifier** terminals on the Model 800 control board.
- Wire **R** and **C** on the Model 62 to **R** and **C** on the furnace terminal strip.
- Remove the thermostat **G** wire from the furnace terminal strip and wire it to **G** on the Model 62 control.
- Wire **Gf** on the Model 62 to **G** on the furnace terminal strip.
- Wire **W** on the Model 62 to **W** on the furnace terminal strip.
- Replace cover and knob.

FIGURE 11 – MODEL 62 WIRING FOR MODEL 800 SERIES STEAM HUMIDIFIER AND MODEL 60 WIRING FOR MODEL 700* SERIES (ALMOND HOUSING) HUMIDIFIERS



*Model 700 Series humidifiers produced prior to October 2007 have an almond color housing and internal transformer providing 24VAC to the solenoid valve. Models produced after October 2007 have a gray housing and external transformer provided with the unit. For zoned HVAC systems, refer to the THERMOSTAT IN A ZONED HVAC SYSTEM section found in the **Series 800 Steam Humidifier Installation and Maintenance Instructions** for instructions pertaining to ductwork and wiring.

SYSTEM CHECKOUT

1. Replace the cover by snapping it into the humidifier control base. Also replace the knob onto the control.
2. Turn Blower Activation switch to **OFF**.
3. Restore power to the HVAC system.
4. Activate the HVAC system or heat pump (fan or heat).
5. Once the blower is operating, rotate the knob of the humidifier control clockwise to the **Test/Reset** position. When the knob is set in the **Test/Reset** position, the green **Humidifier On** light will illuminate. After 5 seconds, the green **Humidifier On** light will blink, indicating a system reset.
6. If the humidifier control and humidifier are set up properly, you should hear the solenoid valve click into the open position. On the Model 800 steam humidifier, the **Steam** light will illuminate green. In the **Test/Reset** position, the humidifier will operate for 1 minute. If the humidifier control is left in the **Test/Reset** position for more than 1 minute, the **H** terminals will open (closing the solenoid valve). The knob and display backlights will flash, and the digital display will show the software revision level (e.g., **r1**) indicating that the humidifier control is still in the **Test/Reset** position.
7. If the humidifier does not activate with the humidifier control in the **Test/Reset** position, refer to the troubleshooting guide.

Blower Activation Test

- Deactivate HVAC system or heat pump.
- Turn knob to **OFF**.
- Set switch to Blower Activation **ON**.

- Turn the knob to **Test/Reset**. The **Humidifier On** light will illuminate. After 5 seconds, the green **Humidifier On** light will blink, indicating a system reset.
 - If the humidifier control and humidifier are set up properly, the solenoid valve should click and the HVAC blower should activate.
 - If the humidifier does not activate with the humidifier control in the **Test/Reset** position, refer to the troubleshooting guide.
 - If HVAC blower does not activate with the humidifier control in the **Test/Reset** position, refer to the troubleshooting guide.
- 8. Setting the humidifier control:**
- If the home is vacant, set the humidifier control to **OFF**.
 - If in Manual Mode and the system is installed during cooling season, set the humidifier control to **OFF**.
 - If the home is occupied, set the humidifier control to **Normal**. For Manual Mode, set to **35%**.
 - The Blower Activation feature will not activate immediately even if there is low humidity. The humidifier control will wait for the next HVAC call or 1 hour, whichever comes first, before starting the humidifier. To start the humidifier before these conditions are satisfied, set the humidifier control to test mode. When the humidifier starts, set the humidifier control to **Normal**.
- 9.** Instruct the homeowner to refer to the AprilAire Owner's Manual for the initial adjustment period.
- 10.** Make sure the red **Call Dealer for Service** light is not flashing. If the red **Call Dealer for Service** light is flashing, refer to the troubleshooting guide.

TROUBLESHOOTING GUIDE

SYMPTOM

Call Dealer For Service light flashing (see **FIGURE 12**).

TROUBLESHOOTING PROCEDURE

Applies to both Automatic and Manual operation unless indicated otherwise.

DISPLAY ERROR CODE **E1: RH SENSOR**

Rotate humidifier control knob to the **Test/Reset** position. After 5 seconds, the green **Humidifier On** light will blink, resetting the error. If **E1** returns, replace the humidifier control.

DISPLAY ERROR CODE **E2: CONTROL KNOB**

Rotate humidifier control knob to the **Test/Reset** position. After 5 seconds, the green **Humidifier On** light will blink, resetting the error. If **E2** returns, replace the humidifier control.

DISPLAY ERROR CODE

E3: OUTDOOR TEMPERATURE SENSOR

Auto Mode (switch in AUTO position).

1. Make sure that the ODT sensor is properly connected to the ODT terminals on the humidifier control.
2. Measure the resistance of the ODT sensor by removing the leads from the humidifier control terminals and measuring the resistance across the wires with an ohmmeter. Confirm the reading with the temperature in **TABLE 1** on page 23. Reconnect the ODT sensor leads. If the resistance value does not match the temperature value, replace the ODT sensor.

TROUBLESHOOTING PROCEDURE (CONTINUED)

3. Rotate humidifier control knob to the **Test/Reset** position. After 5 seconds, the green **Humidifier On** light will blink, resetting the error. If **E3** returns, replace the humidifier control.

Manual Mode (switch in MAN position)

1. Make sure the ODT terminals are clear of any wires that may short the terminals together other than the ODT sensor.
2. Rotate humidifier control knob to the **Test/Reset** position. After 5 seconds, the green **Humidifier On** light will blink, resetting the error. If **E3** returns, replace the humidifier control.

DISPLAY SOFTWARE REVISION **r#**

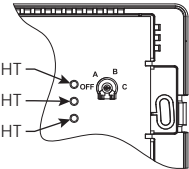
r followed by a number (e.g., **r3**) indicates the humidistat has been in test/reset for greater than 1 minute. Set the humidistat to the desired level to clear the display and enable humidistat operation.

TABLE 1

Outdoor Temperature (°F)	Resistance (kΩ) ±10
-30	231.8
-20	163.4
-10	117.3
0	84.8
10	62.2
20	46.1
30	34.4
40	26.1
50	19.9
60	15.3
70	11.9
80	9.3
90	7.3
100	5.8

FIGURE 12

RED CALL DEALER FOR SERVICE LIGHT
YELLOW CHANGE WATER PANEL LIGHT
GREEN HUMIDIFIER ON LIGHT



90-1227

SYMPTOM
Humidifier does not operate in Test/Reset mode.
TROUBLESHOOTING PROCEDURE
<ul style="list-style-type: none"> • Check wiring diagrams for correct humidifier control installation. <ol style="list-style-type: none"> 1. For Model 700 Series humidifiers with gray color housings, ensure that wiring diagram in FIGURE 10 is used. 2. For Model 700 Series humidifiers with almond color housings, ensure that wiring diagram in FIGURE 11 is used. • Make sure that the blower is operating and the HVAC system is calling for heat. • If connected to a Model 400 Series humidifier, make sure both floats in the bottom of the scale control insert are in the down position. If necessary, dump out water to lower the floats. • Check voltage at the humidifier control R and C terminals. Voltage should be 22 VAC minimum to 30 VAC maximum. • Make sure that the saddle valve is open. • In Test/Reset mode, the humidifier will operate for 1 minute only. DO NOT LEAVE THE HUMIDIFIER CONTROL IN TEST/RESET MODE AS THE HUMIDIFIER WILL NOT OPERATE.

SYMPTOM
Yellow Change Water Panel light is blinking (see FIGURE 12).
TROUBLESHOOTING PROCEDURE
<p>Check the condition of the water panel and replace it if mineral deposits are blocking air flow. Follow the instructions on the water panel box. Rotate the knob to the Test/Reset position for at least 5 seconds to reset water panel change timer. Check that the timer setting is correct for the humidifier model and water conditions (see FIGURE 3). DO NOT LEAVE THE HUMIDIFIER CONTROL IN TEST/RESET MODE AS THE HUMIDIFIER WILL NOT OPERATE.</p>

SYMPTOM
Humidifier blower does not activate during Blower Activation Test.
TROUBLESHOOTING PROCEDURE
<ul style="list-style-type: none"> • Set the Blower Activation switch to ON. • Check wiring diagrams for correct humidifier control installation.

SYMPTOM

Humidifier operates only in **Test/Reset** mode.

- If outdoor temperature is less than -30°F, the humidifier control will only operate in the **Test/Reset** mode (for 1 minute).
- If the humidity level in the home is higher than the humidifier control knob setting, the humidifier control will not operate the humidifier.

TROUBLESHOOTING PROCEDURE

- Measure the resistance of the ODT sensor by removing the leads from the humidifier control terminals and measuring the resistance across the wires with an ohmmeter. Confirm the reading with the temperature in **TABLE 1**. Reconnect the ODT sensor leads. If the resistance value does not match the temperature value, replace the ODT sensor.
- Make sure that the ODT sensor is mounted completely outside the house on the north, east or west side of the house and out of direct sunlight (Automatic Mode only).
- Make sure that the ODT sensor is located at least 3 feet away from all exhaust vents (Automatic Mode only).
- If the ODT sensor is mounted in the fresh air intake duct, make sure that the sensor is no more than 3 feet from the outside wall (Automatic Mode only).
- Make sure the **R** and **C** terminals are wired per enclosed wiring diagrams.
- If control setting was changed from Automatic to Manual, power to the control must be disconnected, then restored.

SYMPTOM

Humidifier operates constantly.

- If the humidity level in the home is less than the humidifier control knob setting and there is a continuous fan call or heat call (depending on setup), the humidifier control will operate the humidifier until the humidity level is higher than the humidifier control knob setting.

TROUBLESHOOTING PROCEDURE

- Set Blower Activation switch to **OFF**.
- In the **Test/Reset** mode, verify that the humidifier turns off after 1 minute.
- Check the ODT sensor resistance and location, as instructed on the previous page.
- Rotate the humidifier control knob counterclockwise to the **OFF** position, and observe whether the humidifier turns off. If the humidifier still operates in the **OFF** position, perform the following:
 1. Check the wiring diagram for correct humidifier control installation.
 2. Remove the wires from the **H** terminals on the humidifier control. If the humidifier continues to operate, replace the solenoid valve.
- Ensure humidifier control is installed per instructions in **STEP 1** of the **INSTALLATION** section.

SYMPTOM

Humidifier or humidifier control “chatters” or clicks ON and OFF rapidly.

TROUBLESHOOTING PROCEDURE

- Check for steady 22 VAC to 30 VAC across the **R** and **C** terminals of the humidifier control with a voltmeter.
- Check, with a voltmeter, that the HVAC signal across the **W** and **C** and **G** and **C** terminals of the humidifier control is a steady 22 VAC to 30 VAC.
- **G** wires between thermostat, humidistat and HVAC system not correct. See **FIGURES 10 and 11** for correct wiring.
- Make sure that the ODT sensor wiring is not running alongside other wires carrying high voltage (120 VAC or higher) (Automatic Mode only).



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