

READ COMPLETE SAFETY INSTRUCTIONS AND INSTALLATION TEMPLATE BEFORE STARTING

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. This product must be installed in compliance with all local, state and federal codes.

Aprilaire® HUMIDIFIER MODEL 500

⚠ WARNING

- 1. ELECTRICAL SHOCK HAZARD.** Disconnect electrical power to the furnace before starting installation. Failure to do so could result in serious injury from electrical shock.
- 2. SHARP EDGES HAZARD.** Sharp edges may cause serious injury from cuts. Use care when making plenum openings and handling ductwork.
- 3. RISK OF SCALDING.** Water temperature over 125°F can cause severe burns and scald instantly. Shut off the hot water supply before disconnecting or tapping into any hot water supply line.

⚠ CAUTION

RISK OF PROPERTY AND EQUIPMENT DAMAGE.

1. Do not install humidifier where freezing temperatures could occur. The water line could freeze and crack causing water damage to the home.
2. Do not install humidifier or bypass connection on the furnace jacket.
3. Do not install humidifier or bypass connection on a plenum face where the blanked off ends of the cooling coil will restrict air movement through the humidifier.
4. Do not set humidity level above recommended or to recommended level if condensation exists on inside windows of any unheated space, as condensation damage may result. Excess humidity can cause moisture accumulation which can allow the possibility for mold growth in the home.
5. Do not connect Model 500 transformer to blower motor wiring. Premature component failure may result.
6. When installing Humidistat on downflow furnace, ensure blower continues to run after a heat call is satisfied to eliminate high temperatures from damaging the Humidistat.
7. Do not install humidifier where water pressure exceeds 125 psi, since damage to the humidifier may result. Follow codes in effect concerning pressure reduction.
8. Do not install humidifier on systems with greater than 0.4 in. wg pressure differential between supply and return plenums.

SPECIFICATIONS

HUMIDIFIER DIMENSIONS

Width (including solenoid valve): 15 5/8"
Height (including drain spud): 13"
Depth: 10 1/4"

BYPASS DUCT OPENING

6" diameter

PLENUM OPENING

9 1/2"W x 9 1/2"H

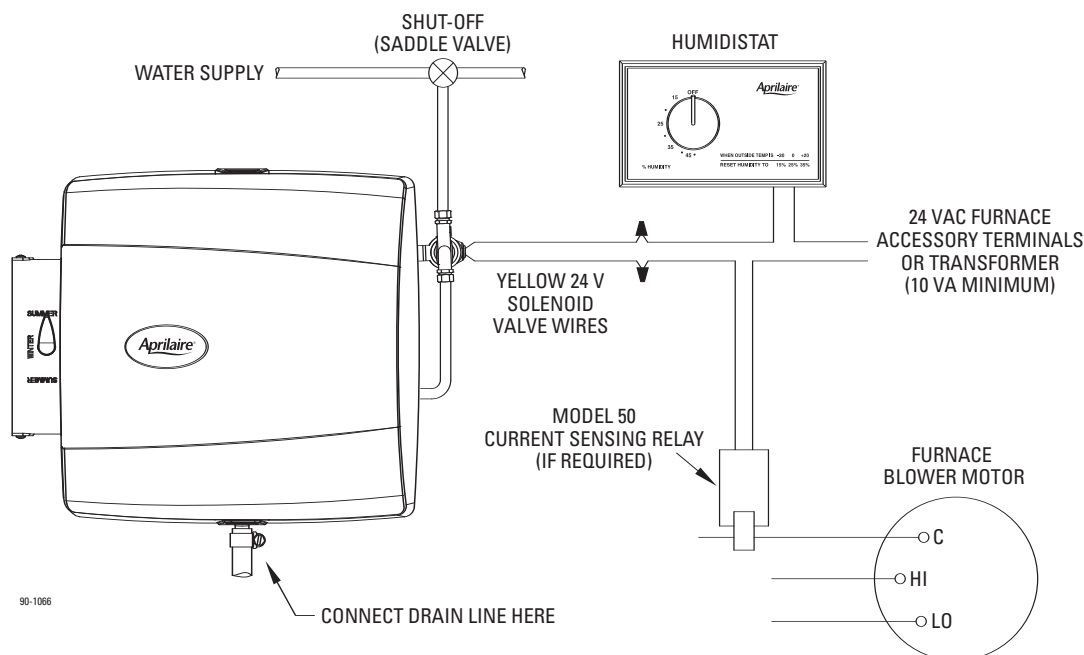
WATER FEED RATE

3 gph

ELECTRICAL DATA

24 VAC-60 Hz, 0.5 AMP

WIRING DIAGRAM



IMPORTANT

USE 120 VAC POWER SOURCE OTHER THAN FURNACE MOTOR CIRCUIT. HOWEVER, THE TRANSFORMER CAN BE POWERED OFF THE HOT 120 VAC LINE BEFORE IT ENTERS THE FURNACE.

- **DO NOT WIRE TRANSFORMER INTO FURNACE BLOWER CIRCUIT.**

IMPORTANT

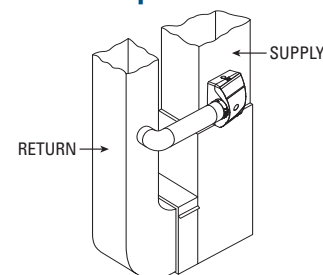
WHEN MODEL 50 CURRENT SENSING RELAY IS USED:

- WIRE MODEL 50 CURRENT SENSING RELAY INTO 24 VAC HUMIDIFIER CONTROL CIRCUIT ONLY! **DO NOT INSTALL IN TRANSFORMER PRIMARY CIRCUIT.**

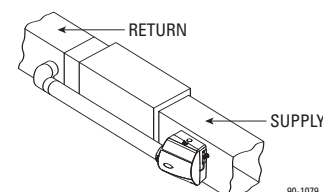
INSTALLATION OPTIONS

The Model 500 Aprilaire can be installed on either the supply or return plenum of a forced air handling system and is easily reversible for installation with right hand or left hand bypass duct connections. The humidifier dimensions and serviceability must be considered when selecting the best location for the humidifier. Here are 2 examples of many types of installations.

Upflow



Horizontal



NOTE: SOME FURNACES ARE EQUIPPED WITH ACCESSORY TERMINALS THAT CAN BE USED FOR THE HUMIDISTAT. THE RP MODEL 50 CURRENT SENSING RELAY (NOT FURNISHED) MAY NOT BE NECESSARY IN THIS CASE. CONSULT THE FURNACE MANUFACTURER'S RECOMMENDATIONS FOR WIRING.

READ REVERSE SIDE FIRST!

- TOP -

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FURNISHED ITEMS
Built-in bypass damper
24 VAC Humidistat
24 VAC Transformer
Saddle valve
Humidifier Installation Template
ITEMS NOT FURNISHED
Mounting screws (sheet metal screws)
Water supply line (1/4" copper)
Drain line (1/2" I.D. hose)
Low voltage wire
Bypass ductwork
Humidistat Adapter Plate
Model 50 Current Sensing Relay (if required)

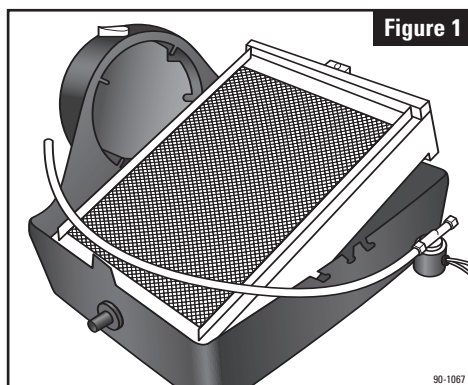


Figure 1

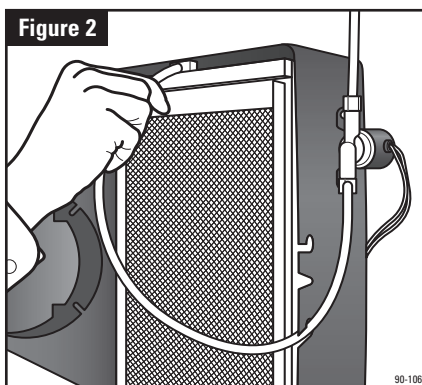


Figure 2

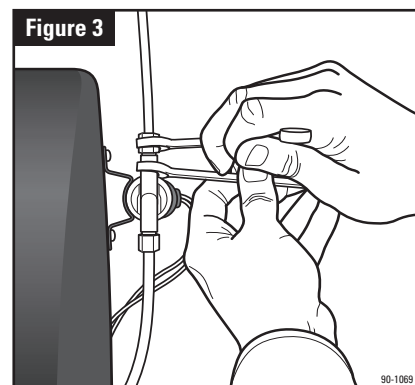


Figure 3

1. Remove front cover by pressing center tabs on top and bottom of the cover (1) and base (2). Pull feed tube (3) out of the water distribution tray (4). Tip the Water Panel® Evaporator assembly forward and lift it out of the humidifier. (See Figure 1)

2. The humidifier comes assembled for left side discharge. If converting to right side discharge, the base can be rotated so round collar is facing to the right. Swap the location of the hole plug (10) and drain spud (9) if using a right side discharge. To remove the cap, push and twist from inside the housing while lifting the cap up slightly on the outside. To remove the drain spud, twist and push from the outside of the base.

3. Using a level, position this template at least 3 inches above the furnace housing or cooling coil, if applicable, for clearance of the drain line. Trace around template edges. Remove the template and accurately cut the plenum opening 9 1/2" x 9 1/2", being careful to avoid injury from sharp edges.

4. Place the humidifier into the plenum opening, install six sheet metal mounting screws (not furnished) at the top and sides of the humidifier interior.

5. Install a 6" collar in a convenient location on the opposite plenum. Attach a 90° elbow and measure the length of 6" round duct required to make the connection. The design of the humidifier collar provides a solid connection with the bypass duct through the use of inside support ribs and pre-formed holes for sheet metal screws. Slip the duct inside the collar of the humidifier, up to the support ribs. Using the pre-formed holes at the top and bottom of the humidifier collar, secure the duct to the humidifier collar with two sheet metal mounting screws (not furnished).

Support bypass ducts longer than 4 feet to prevent sagging.

6. Reinstall the Water Panel® Evaporator assembly back into the base, with the bottom of the scale control insert (6) sitting firmly in the inside of the drain spud (9). Push the feed tube back into the water distribution tray. (See Figure 2) Put the front cover back on. If the nameplate (11) is upside down, remove it by gently squeezing the tabs of the nameplate from inside the cover and pushing out. Rotate the nameplate so it is right side up, and snap back into place. Turn damper handle (8) to the open position "WINTER" for the heating season, or closed position "SUMMER" for the cooling season.

7. Locate and install the humidistat by following the instructions shown in step #7A. **DISCONNECT ELECTRICAL POWER TO FURNACE BEFORE PROCEEDING TO STEP #7A!**

7A. HUMIDISTAT INSTALLATION INSTRUCTIONS:

Aprilaire Humidistat (Part No. 4016) is designed for low voltage service to control humidification equipment.

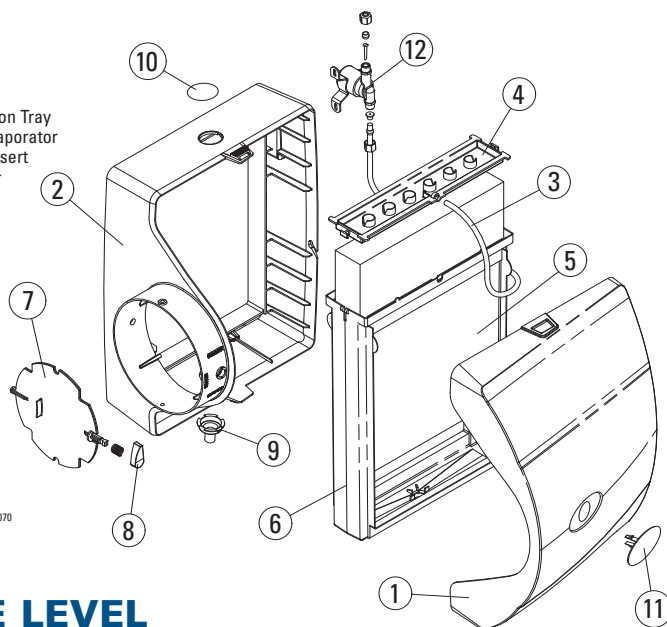
LOCATION

1. Locate on inside wall of living area approximately 5 feet above floor, or in the furnace return air plenum or duct. Adapter Plate Part No. 4039 is required for return air installation. If humidifier is mounted on return duct, humidistat must be at least 6" upstream of humidifier
2. Do not locate control in the direct path of furnace discharge air or drafts from open doors and windows.
3. Do not install where operation might be affected by lamps, sunlight, fireplace registers, radiators, concealed air ducts and pipes, or room occupants.
4. The basic rules for location of thermostats also apply to humidistats.

GENERAL INSTRUCTIONS

1. Do not attempt to repair or recalibrate humidistat. Humidistats requiring service should be returned to Research Products.
2. Use humidistat in low voltage (24 VAC) applications only. Install 24 VAC wiring to humidistat as shown in Wiring Diagram, opposite side.
3. Make sure no bare wires are exposed or insulation damaged. Insulation on wire should extend to head of screws.
4. Make sure all splices are mechanically and electrically secure.
5. To remove dirt or other foreign matter from nylon ribbon and control interior, dust lightly with a fine, soft brush.

1. Front Cover
2. Base
3. Feed Tube
4. Water Distribution Tray
5. Water Panel Evaporator
6. Scale Control Insert
7. Integral Damper
8. Damper Handle
9. Drain Spud
10. Hole Plug
11. Nameplate
12. Solenoid Valve



90-1070

8. The Model 500 humidifier solenoid valve and humidistat operate on 24 VAC. In order for the humidifier to turn on, the furnace blower must be operating and the humidistat must be calling for humidity. The interface between the Model 500 humidifier and the furnace to detect blower operation, and the means of providing 24 VAC to power the solenoid can be accomplished several different ways:

A. If the furnace has 24 VAC "ACC" or "HUM" terminals, which are activated only during furnace blower operation or a heat call, then the yellow wires from the humidifier and the humidistat can be connected in series with those terminals.

B. If the furnace has 120 VAC "ACC" or "HUM" terminals, which are activated only during furnace blower operation or a heat call, then the transformer provided can be connected to those terminals and the yellow wires from the humidifier and the humidistat can be connected in series with the transformer.

C. If the transformer is powered continuously, then a Model 50 Current Sensing Relay (not included) must be installed in series with the yellow wires from the humidifier and the humidistat.

Do not wire transformer into furnace blower circuit. The transformer can be powered from the 120 VAC line before it enters the furnace.

9. Tap into a water supply line with the saddle valve furnished. See instructions on saddle valve package. The humidifier will function with cold, hot, softened or unsoftened water. The use of service hot water (140°F MAX.) and constant blower operation will provide maximum evaporative capacity. **When installing humidifier**

on heat pump system, humidifier must be supplied with service hot water.

NOTE: The saddle valve is designed to be fully opened or closed. Do not use it to regulate water flow.

10. Connect tubing from the saddle valve to the inlet side of the solenoid valve using 1/4" O.D. copper tubing (not furnished). **DOUBLE WRENCH TO PREVENT LEAKING!** (See Figure 3)

11. Drain spud is designed to accept 1/2" I.D. plastic hose (not furnished). Run drain line from drain spud to floor drain. **CAUTION:** If hose clamp is used, do not over tighten, drain spud could crack. Be sure drain line has continuous slope. **NOTE:** Do not sweat or directly attach metal drain line to fitting. Do not use solvent type adhesive when connecting plastic drain line, since damage to fitting could result.

12. Open saddle valve completely and turn on furnace. Turn up humidistat so that humidifier will turn on. Allow humidifier to run until water is observed coming out of the drain line. Check to see if humidifier and saddle valve are watertight. Check operation to make sure that all electrical components function properly. Set humidistat to recommended level.

NOTE: BEFORE LEAVING THE JOB SITE, MAKE SURE:

1. Saddle valve is fully open.
2. All plumbing connections are watertight.
3. Humidifier functions properly.
4. Bypass damper is in proper position.

IMPORTANT! Be sure owner's manual containing instructions for operation and warranty information is given to owner in order to avoid unnecessary calls. Warranty is void unless humidifier is installed by qualified heating and air conditioning contractor due to possible misapplication of product.

TEMPLATE MUST BE LEVEL