

# Skuttle® Model 592-9

## 24-Volt Spray Humidifier for Heat Pumps and High-Efficiency Furnaces



# Skuttle®

## Indoor Air Quality Products

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### INSTALLATION INSTRUCTIONS

#### IMPORTANT:

**THIS HUMIDIFIER MUST BE INSTALLED BY A QUALIFIED CONTRACTOR. DO NOT INSTALL ON ANY SYSTEM WITH WATER PRESSURE LESS THAN 40 P.S.I.**

Installation on water systems with hardness ratings greater than 7 grains is not recommended. Such installations can result in nozzle blockage, dripping, erratic spray patterns and other maintenance problems. Hardness above 7 grains will also produce dust from solids in the water supply, which will be distributed throughout the home. Consult your municipal water provider before continuing.

#### SAFETY PRECAUTIONS

READ THESE PRECAUTIONS AND ALL INSTALLATION INSTRUCTIONS BEFORE INSTALLING THE HUMIDIFIER.

**NOTE:** Skuttle Mfg. Co. assumes no responsibility under warranty if installer does not follow these instructions and safety precautions.

- Do not install a humidifier where the heating temperatures can exceed 200°F. Excessive temperatures will damage the humidifier, possibly causing an overflow condition and water damage to the home.
- Do not install a humidifier where the surrounding temperature can be 32°F or colder. Frozen water will damage the humidifier and burst the supply pipe, resulting in home damage.
- Do not cut or drill into any air conditioning or electrical accessories during humidifier installation. **DANGER: Electrocutation is possible if you come in contact with a live wire; blindness can occur if refrigerant contacts your eyes.**
- When the humidifier is installed in an area where water damage could occur, connect the humidifier's overflow provision to a suitable drain pan.
- For above-ceiling installations, always install a drain safety pan, plumbed to a suitable drain.
- For initial recommended humidistat settings, refer to Table 1, below. (Because relative humidity affects people differently, these settings can be raised or lowered slightly to suit personal comfort levels.) **CAUTION: Setting the humidistat higher than the recommended setting can cause condensation, resulting in home damage.** If excessive moisture appears on windows or walls, reduce the humidistat's humidity setting enough to eliminate condensation. If the situation continues, turn off the humidifier's water source until condensation is gone.
- Make sure the installation, wiring and plumbing of the humidifier comply with local codes, ordinances and regulations.

Outside Temperature	Recommended Setting	Outside Temperature	Recommended Setting
-20°F	Low	+10°F	Med
-10°F	Low	+20°F	High
0°F	Med	Above +20°F	High

Table 1

#### INSTRUCTIONS

##### GENERAL INFORMATION:

1.0 This humidifier puts moisture into the home by spraying a fine mist of water into the warm air plenum, which is carried into the living area by the duct system.

1.1 When wired as recommended, the humidifier will operate only when the furnace blower is operating and the humidistat is calling for humidity.

1.2 The nozzle capacity (flow) is rated at 40 P.S.I. This capacity varies according to line pressure, as shown in Table 2, below. Select the nozzle that delivers the required spray in accordance with the pressure in your area.

Nozzle Size	Capacities in G.P.H. at Various Water Pressures				
	40 P.S.I.	60 P.S.I.	80 P.S.I.	100 P.S.I.	125 P.S.I.
.37	.37 G.P.H.	.45 G.P.H.	.55 G.P.H.	.60 G.P.H.	.70 G.P.H.
.50	.50 G.P.H.	.60 G.P.H.	.70 G.P.H.	.80 G.P.H.	.85 G.P.H.
.75	.75 G.P.H.	.89 G.P.H.	1.10 G.P.H.	1.20 G.P.H.	1.40 G.P.H.
1.00	1.00 G.P.H.	1.20 G.P.H.	1.40 G.P.H.	1.60 G.P.H.	1.70 G.P.H.
1.50	1.50 G.P.H.	1.80 G.P.H.	2.10 G.P.H.	2.40 G.P.H.	2.70 G.P.H.
2.00	2.00 G.P.H.	2.50 G.P.H.	2.80 G.P.H.	3.20 G.P.H.	3.50 G.P.H.

Table 2 **EXAMPLE:** A home which requires .50 gallons of water per hour for proper humidification, and which has a water pressure of 80 P.S.I., would need a .37 nozzle to do the job.

1.3 If the water pressure is excessive, a pressure regulator valve will be necessary to obtain the proper volume of moisture.

##### REQUIRED TOOLS:

2.0 Aviation Snips • #2 Flathead Screwdriver • #1 Phillips Screwdriver • Adjustable Wrench • Pliers • Electric Drill with 7/64", 3/32", 1/4" and 3/8" Drill Bits • Hammer • Center Punch

← ← ← BEGIN READING ON OPPOSITE PANEL

#### INSTALLING THE HUMIDIFIER:

3.0 **CAUTION:** When selecting a location for the humidifier, make sure the spray will not impinge or accumulate on any fan, limit controls, resistance heating coils or heating/air coils.

3.1 Select a location where the air will push the spray mist away from the humidifier.

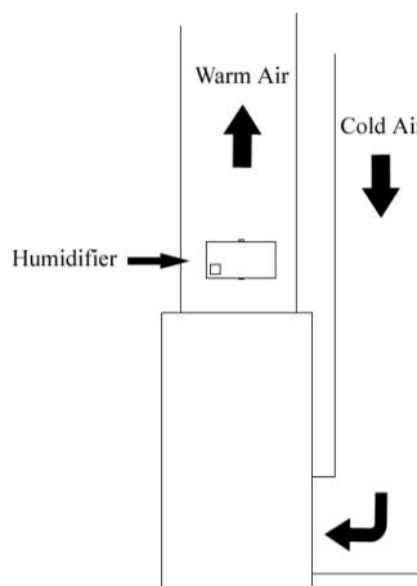


Figure 1

3.2 Mount the humidifier on the warm air plenum only, with the nozzle pointing up in the direction of airflow (see Figure 1, left). On narrow plenums, mount the humidifier on the narrow side.

3.3 If there is not enough room on the warm air plenum, mount the humidifier further downstream on the warm air duct, away from the heating and cooling coil.

3.4 If it is necessary to mount the spray nozzle further away from the humidifier (in order to move the nozzle further into the air stream for better absorption), remove the nozzle adapter and 45° fitting from the solenoid valve. Use the fittings supplied in the parts bag to relocate the nozzle using 1/4" copper tubing (not supplied). (See Figure 2, below, left.) **CAUTION: Do not allow copper tubing to come in contact with sharp edges or surfaces that may cause wear on the tubing.**

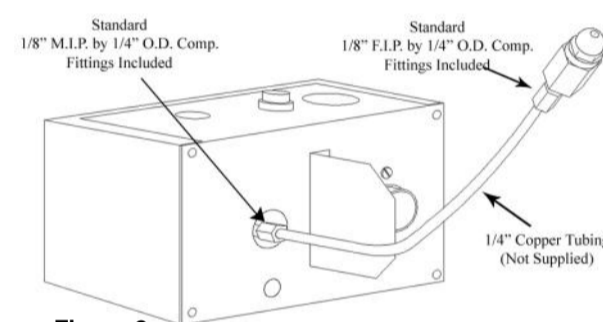


Figure 2

3.5 Tape the template (provided) on the warm air plenum in the location selected for the humidifier. **CAUTION: Make sure the template is level.**

3.6 Center punch and drill four 7/64" mounting holes, as shown on the template. **DANGER: Make sure you are not cutting or drilling into air conditioning or electrical accessories.**

3.7 Drill a 3/8" hole in the center of the shaded area of the template; cut a rectangular opening (staying within the shaded area), as indicated.

3.8 Install the drain cup over the nozzle; attach it with a #6 x 3/8" sheet metal screw. (See Figure 3, left.)

3.9 Install 3/16" I.D. tubing on the copper humidifier drain and run it to a waste drain. (An occasional drip from the drain tube when the humidifier is operating is normal.)

3.10 Attach the humidifier with four #8 sheet metal screws.

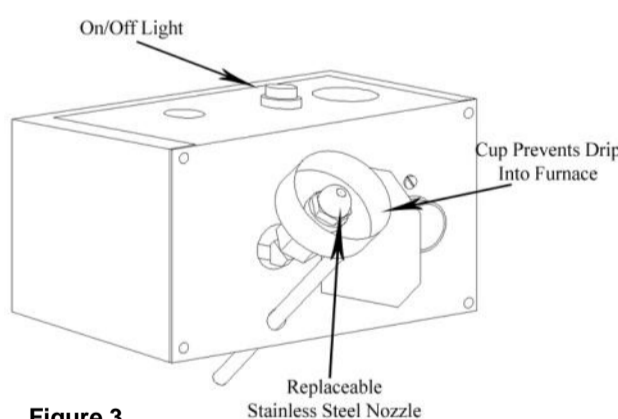


Figure 3

#### INSTALLING THE INSPECTION WINDOW:

**NOTE:** A clear, plastic window is supplied with the humidifier to be mounted on the ductwork. This allows you to observe whether the humidifier is functioning properly, and whether there is water impinging on parts or surfaces within the system.

4.0 Select a mounting location on the ductwork where the humidifier spray nozzle can be viewed easily.

4.1 Drill a 3/8" hole and cut a 4-1/2" x 2" rectangular opening. **DANGER: Make certain that you are not drilling or cutting into any air conditioning or electrical accessories during installation.**

4.2 Position the window over the opening; mark and center-punch the two mounting hole locations.

4.3 Drill the two 3/32" mounting holes.

4.4 Attach the window with the two #6 Phillips-head screws provided.

**PLUMBING THE HUMIDIFIER:**

5.0 Select the nearest cold water pipe and install the saddle connector and needle valve, supplied with this unit. **Use copper tubing only.**

- The needle valve is a self-piercing valve when installed on copper pipe. Follow the instructions supplied with the valve.
- Mount the valve so that water will come from the top or side. This will reduce the chance of minerals clogging the valve.

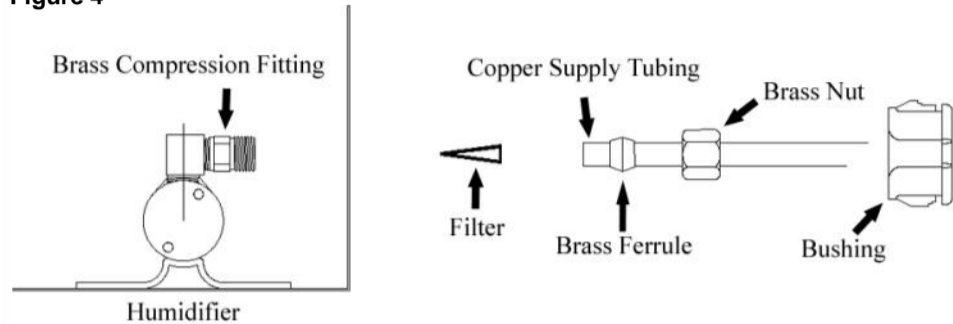
5.1 Follow these compression plumbing tips:

- Lightly clean the tubing ends with fine sandpaper before making connections.
- Make sure the tubing is fully inserted into the fitting before tightening the compression nut.

5.2 **IMPORTANT:** After attaching the saddle valve, thoroughly flush the supply tubing to clear the line. Otherwise, debris could block the water flow at the solenoid valve.

5.3 **IMPORTANT:** To assist you with cleaning, note the proper orientation of parts for assembly and disassembly (Figure 4, below).

Figure 4



5.4 Slide the hex nut over the copper tubing end. Slide the brass ferrule over the tubing. Push the end of the tubing into the threaded fitting and slide the hex nut up to the fitting. Tighten the nut.

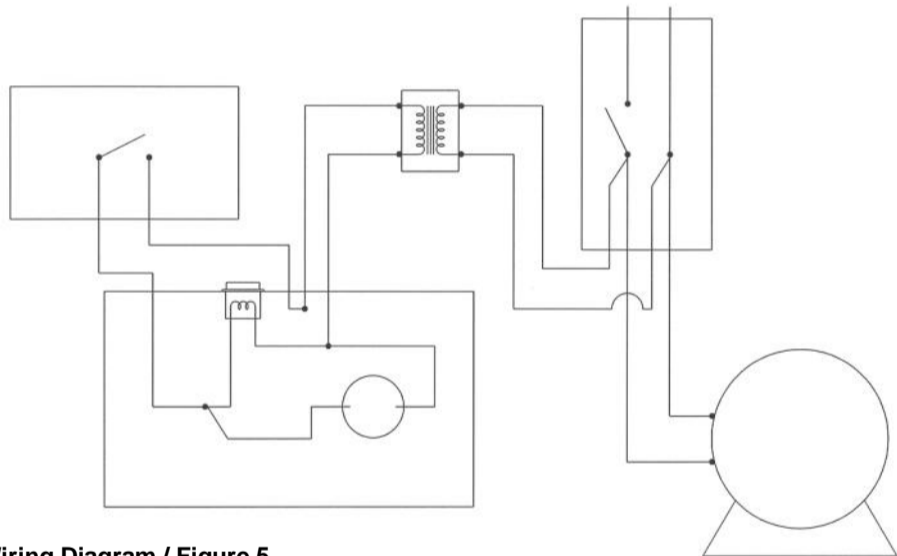
5.5 Slide the bushing over the tubing; insert the bushing through the humidifier wall until it snaps into place.

5.6 Open the needle valve at the cold water pipe. **IMPORTANT:** Check all fittings for leaks.

**MOUNTING THE HUMIDISTAT:**

6.0 **NOTE:** See the installation instructions packaged with the enclosed humidistat (humidity controller).

6.1 **NOTE:** When wiring the unit to a system that has a multi-speed blower motor, or that uses a motor other than 120 VAC, include the Skuttle A50 Interface Relay in your installation.



Wiring Diagram / Figure 5

**HUMIDIFIER CHECKOUT:**

Check the humidifier operation by following these procedures:

- 7.0 Turn on the water valve to the humidifier.
- 7.1 Turn the humidistat to the "ON" position.
- 7.2 Set the furnace thermostat high enough to allow the furnace to come on. When the furnace blower comes on, the humidifier should start spraying (provided there is enough heat reaching the humidifier thermostat).
- 7.3 Check the humidifier operation by turning the humidistat off, making sure the humidifier stops spraying. **NOTE:** If the humidifier continues spraying, there may be an error in wiring. Review the wiring diagram, above.
- 7.4 Set the furnace thermostat low enough to allow the furnace to shut off. The humidifier should stop spraying either before or as the furnace blower shuts off. **NOTE:** Again, if the humidifier continues spraying, there may be an error in wiring. Consult the wiring diagram.
- 7.5 If the humidifier shuts off correctly, repeat steps 6.2 through 6.4 at least five times. Each time, check to see that no water impinges on ductwork or any part of the heating system. **NOTE:** If water impingement or fallout could occur, you must install a suitable drain pan, plumbed with an adequate runoff drain.
- 7.6 Set the furnace thermostat to the desired setting.
- 7.7 Finally, set the humidistat as recommended in Table 1, on the front of these instructions.

**HUMIDIFIER PARTS:**

8.0 Parts may be ordered through your local heating or plumbing dealer. (See Figure 6, right, top).

8.1 When ordering repair parts, always give the following information:

- Model Number
- Serial Number (if possible)
- Part Number (See Table 3, right.)
- Part Name

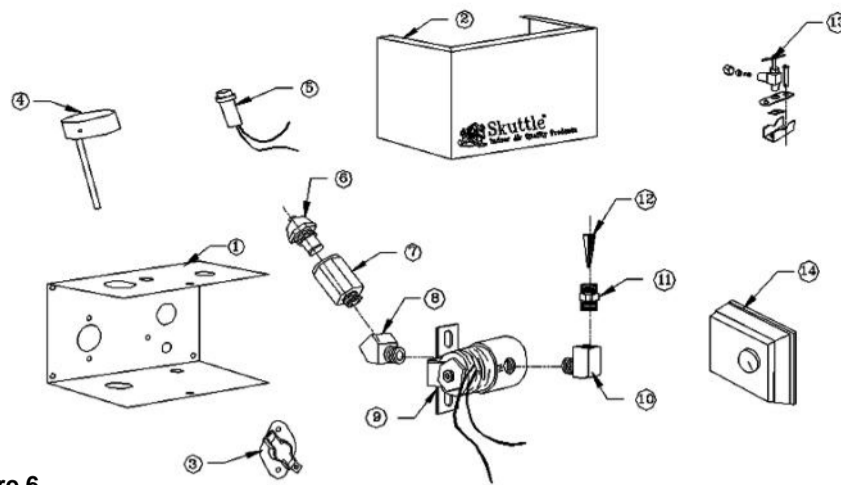


Figure 6

**PARTS LIST**

Key No.	Part No.	Description	Qty.
1	000-1715-013	Mounting Panel	1
2	A00-0641-099	Front Panel Assembly	1
3	000-0431-019	Thermostat (592-22 only)	1
4	A00-1319-034	Drain Basin Assembly	1
5	000-0814-070	Indicator Light, 24-Volt	1
6	000-1106-018 (Part no. varies w/size)	.50 Gal. Nozzle (Consult whslr. for available sizes)	1
7	000-1319-055	Nozzle Body	1
8	000-1319-054	45° Street Elbow	1
9	A01-0814-148	Solenoid Valve, 24-Volt (includes Key Nos. 10 & 12)	1
10	000-1319-070	90° Street Elbow	1
11	000-1154-000	Tubing Connector	1
12	000-1319-051	Inline Filter	1
13	A00-1128-005	Self-Piercing Valve	1
14	SK0-0055-001	Humidistat 24-Volt Wall or Duct Mounting	1

Table 3

**HOMEOWNER HUMIDIFIER TIPS:**

9.0 If the mineral content of the water in your home is above normal, a lime dust may form in the duct distribution system, as well as in your living areas. Even though these lime deposits may adhere to the sides of your ductwork, they will not significantly affect air distribution.

9.1 In a home that has had little or no humidification, a new humidifier may operate almost continuously to attain the desired level of relative humidity. This is because furniture, woodwork carpeting, plaster and houseplants will absorb the newly-produced humidity to reach normal moisture levels. This period of adjustment will take approximately three weeks.

9.2 Natural drafts in the home can cause humidified air to escape through open fireplace dampers. Make sure they are closed when not in use.

9.3 When the weather turns warmer, humidification is unnecessary. **IMPORTANT:** Turn the water and electrical power to your humidifier "OFF" after each heating season.

9.4 When water frequently flows through your humidifier, the nozzle and/or solenoid valve can become clogged by lime and other mineral deposits, thereby diminishing humidification effectiveness. When this occurs, you should replace the affected part(s). **NOTE:** It's a good idea to replace the spray nozzle at the start of each heating season to help ensure continuous, trouble-free operation of your humidifier. (You may wish to have your heating or plumbing contractor perform this service for you.)

9.5 The inline water filter should be cleaned at the end or beginning of each heating season. To do so, loosen the hex nut (see Figure 4, left, top), slide the tubing out of the tube connector and remove the filter. At this time, the solenoid valve may be disassembled for cleaning.

9.6 **IMPORTANT:** For parts and service, contact your local authorized dealer.

**CAUTION:** If excessive moisture appears on windows or walls, reduce the humidity setting on your humidistat enough to eliminate condensation. If the situation continues, turn off the water valve that permits water flow to the humidifier, and contact your heating or plumbing contractor.

**NOTES**