



**Skuttle<sup>®</sup>**  
Indoor Air Quality Products

**MODEL 55 & 86  
UNDER DUCT**

**WHOLEHOUSE CENTRAL HUMIDIFIER**

**OWNER'S  
MANUAL**

**Includes Safety, Operating and Maintenance  
Instructions and Warranty**

**CAUTION: READ THESE INSTRUCTIONS THOROUGHLY  
BEFORE STARTING INSTALLATION**

**FILL IN FOR HOME AND OWNER REFERENCE:**

**Model No.** \_\_\_\_\_

**Serial No.** \_\_\_\_\_

**Installation Date** \_\_\_\_\_

## SAFETY PRECAUTIONS

### PLEASE READ BEFORE INSTALLING HUMIDIFIER

1. Do not install a humidifier where the heating temperatures will exceed 180°F. Excessive temperatures will damage your humidifier and possibly cause an overflow condition and water damage to the home.
2. Do not install a humidifier where the surrounding temperature may be 32°F or colder. Freezing water will damage the humidifier and burst the supply pipe, resulting in home damage.
3. Do not cut or drill into any air conditioning or electrical accessories during humidifier installation. Fatal electrocution is possible if you come into contact with a live electrical wire. Blindness can occur if freon contacts your eyes.
4. When the humidifier is in a finished basement or any area that water damage could occur, **always connect the overflow provision of the humidifier to a suitable drain.**
5. For above ceiling installation, always install a drain pan plumbed to a suitable drain.
6. Although high levels of humidity are usually preferred, especially when colder temperatures present dryer conditions, these settings may not always be maintained for your home. High levels of humidity cannot be maintained in homes without reasonably insulated walls and windows. These areas could accumulate condensation and cause damage to the home because of cold surface temperatures. Listed below are some initial recommended settings for your humidifier.

| At Outside Temperature | Recommended Setting |
|------------------------|---------------------|
| -20°F.                 | 15                  |
| -10°F.                 | 20                  |
| 0°F.                   | 25                  |

| At Outside Temperature | Recommended Setting |
|------------------------|---------------------|
| +10°F.                 | 30                  |
| +20°F.                 | 35                  |
| Above 20°              | 40                  |

Your unit may be equipped with a humidistat that has different relative humidity settings; if so use the following recommended settings:

#### At Outside Temperatures

-20°F  
0°F  
+10°F  
+20°Or Above

#### Recommended Setting

Low  
Low-Medium  
Medium  
Medium-High

7. The installation, wiring and plumbing of the humidifier must comply with local codes, ordinances and regulations.
8. Read all installation instructions before installing humidifier.
9. Manufacturer assumes no responsibility under warranty if user does not follow stated precautions.

### **TOOLS & MATERIALS NEEDED**

1. Safety Goggles
2. Tin snips or aviation snips
3. Electric drill or hand drill
4. Drill bits  $\frac{3}{8}$ " and  $\frac{7}{64}$ "
5. Pliers
6. Screwdriver (flat point, medium size)
7. Pencil or grease pencil
8. Level
9. Hammer
10. Small Adjustable Wrench
11. Center punch
12. Knife
13. Straight edge ruler (yardstick)
14.  $\frac{1}{4}$ " water line copper

### **FOR SOME INSTALLATIONS**

15. Additional 2 conductor low voltage wire
16.  $\frac{1}{2}$ " I.D. Vinyl tubing for model 55 Drain
17.  $\frac{1}{2}$ " I.D. Vinyl tubing for Model 86 Overflow

### **WHAT IS RELATIVE HUMIDITY?**

You've heard the term, "Relative Humidity"? Usually, it is used in connection with local weather reports. Relative humidity refers to the percentage of water vapor present in the atmosphere at any given temperature, compared to the amount of vapor that the air can fully absorb at the same temperature. In other words, 50% humidity means the air is presently holding one half of the moisture it is capable of holding at the existing temperature. Naturally, complete filling of the air with water vapor is designated as 100% humidity.

When air is heated by your central heating system, the warmer air now has the ability to hold more water than before. Without a central humidifier, moisture is not added and the relative humidity decreases.

The following table shows the drastic humidity changes when outside air is heated to 72°F.

|                                  |      |      |     |      |      |      |      |      |     |
|----------------------------------|------|------|-----|------|------|------|------|------|-----|
| <b>Outdoor Relative Humidity</b> | 100% | 2%   | 3%  | 6%   | 9%   | 14%  | 21%  | 31%  | 46% |
|                                  | 90%  | 2%   | 2%  | 5%   | 8%   | 12%  | 19%  | 28%  | 41% |
|                                  | 80%  | 2%   | 2%  | 5%   | 7%   | 11%  | 17%  | 25%  | 37% |
|                                  | 70%  | 1%   | 2%  | 4%   | 6%   | 10%  | 15%  | 22%  | 32% |
|                                  | 60%  | 1%   | 2%  | 3%   | 5%   | 8%   | 13%  | 19%  | 28% |
|                                  | 50%  | 1%   | 1%  | 3%   | 4%   | 7%   | 10%  | 16%  | 23% |
|                                  | 40%  | 1%   | 1%  | 2%   | 4%   | 6%   | 8%   | 12%  | 18% |
|                                  | 30%  | 1%   | 1%  | 2%   | 3%   | 4%   | 6%   | 9%   | 14% |
|                                  | 20%  | + %  | 1%  | 1%   | 2%   | 3%   | 4%   | 6%   | 10% |
|                                  | 10%  | + %  | + % | 1%   | 1%   | 1%   | 2%   | 3%   | 5%  |
|                                  | 0%   | 0%   | 0%  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%  |
|                                  | -20° | -10° | 0°  | +10° | +20° | +30° | +40° | +50° |     |

Compare the above dry conditions to famous dry places in the world such as the Sahara Desert and Death Valley, whose humidity is approximately 20%. As you can see, desert dry conditions can be created in homes without a central humidifier.

### HUMIDITY QUESTIONS & ANSWERS

1. What is the safe humidity level for my home?

Below are listed the recommended settings for your humidity control. Because relative humidity affects everyone differently, these settings can be raised or lowered to suit your personal comfort. **WARNING:** Setting your humidity control higher than the listed setting could cause condensation that would damage your home. If excessive moisture appears on windows or walls, reduce humidity setting at humidistat enough to eliminate condensation. If the situation continues, turn off water valve until condensation is gone.

| At Outside Temperature | Recommended Setting | At Outside Temperature | Recommended Setting |
|------------------------|---------------------|------------------------|---------------------|
| -20°F.                 | 15                  | +10°F.                 | 30                  |
| -10°F.                 | 20                  | +20°F.                 | 35                  |
| 0°F.                   | 25                  | Above 20°              | 40                  |

Your unit may be equipped with a humidistat that has different relative humidity settings, if so use the following recommended settings:

#### At Outside Temperatures

-20°F  
0°F  
+10°F  
+20° Or Above

#### Recommended Settings

Low  
Low-Medium  
Medium  
Medium-High

2. How long will it take my humidifier to build up the humidity in my home? The period of adjustment can take up to three weeks. This is understandable since furniture, woodwork, carpeting, plaster and house plants will absorb the newly produced moisture until they reach normal levels.
3. Is it true that a humidifier can save me money on my heating bill? Not only does a dry indoor temperature affect you, but it also has a decided influence on how much fuel you use to heat your home. Engineering reports show it takes more fuel to make you feel comfortable in a dry atmosphere than it does when the air is properly moisturized or humidified. Dry air absorbs or evaporates moisture from your skin. This evaporation process draws heat from the surrounding atmosphere, automatically lowering the temperature at the surface of your skin. You feel cooler. With adequate moisture in the air, evaporation is slowed. Even at a lower temperature, you feel more comfortable.
4. What else causes static shock besides low humidity? Some fabrics and carpets produce extreme amounts of static electricity. Proper humidity can reduce the static level but it cannot eliminate it entirely.
5. Should my humidifier be connected to softened water? Either hard or soft water may be used. If installed on softened water, maintenance will be easier because the mineral build-up will be softer and easier to remove.

### **HOW THE MODEL 55 HUMIDIFIER WORKS**

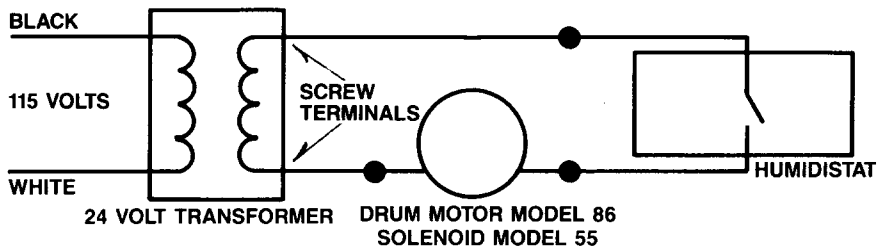
Warm dry air is forced across the evaporator pad by the furnace blower. When the home is dryer than the selected humidity, the humidistat turns on the low voltage solenoid allowing water to flow across the unit's media. The warm dry air then evaporates some of this water. The moist air is then circulated throughout the home by the heating system.

### **HOW THE MODEL 86 HUMIDIFIER WORKS**

Warm dry air is forced across the evaporator pad by the furnace blower. When the home is dryer than the selected humidity, the humidistat turns on the low voltage drum motor. The drum motor rotates a polyurethane foam evaporator pad that lifts water into the dry air stream out of the water pan. The moist air is then circulated throughout the home by the heating system.

### **SELECTING A LOCATION**

Review the typical installations shown in Figures 1 through 4 for the Model 55 and Figures 5 through 8 for Model 86. Familiarize yourself with the heating system before installing the humidifier.



26. Mount humidistat to the return (cold) air plenum with two self tapping sheet metal screws.
27. Route the wire coming from the humidistat to the humidifier.
28. **Do not allow the wiring to contact any heated surface or sharp edges.** Use a wire nut to connect one of the wires from the humidistat to one of the humidifier wires. Do not pre-twist wires. Set wire nut over conductors and turn clockwise until tight.
29. With the wire cut to reach from the transformer to the humidifier wires, on one end connect one wire to humidifier wire with a wire nut. Connect the other wire on the same end to the wire coming from the humidistat with a wire nut. See wiring diagram.
30. Connect the remaining end of the low voltage wire to the two screw terminals on the 24 volt transformer. See wiring diagram.  
**NOTE:** If you are installing a Model 55, return to Section 9 of Plumbing Instructions to check for operation.
31. Make sure the transformer is powered. If wired into the blower circuit turn the thermostat up and wait until the blower starts.
32. Turn the humidistat setting to "100" and observe that the evaporator drum turns slowly.
33. Turn the humidistat setting to "off" and observe that the drum has stopped.
34. Read the operation section and set control for automatic operation.

## HUMIDISTAT SETTINGS

1. Set the humidistat control for automatic operation. Readjust the humidistat control as outdoor temperature changes occur. (See below.)  
Below are listed the recommended settings for your humidity control. Because relative humidity affects everyone differently, these settings can be raised or lowered to suit your personal comfort. **WARNING:** Setting your humidity control higher than the listed setting could cause condensation that would damage your home. If excessive moisture appears on windows or walls, reduce humidity setting at humidistat enough to

eliminate condensation. If the situation continues, turn off water valve until condensation is gone.

| At Outside Temperature | Recommended Setting | At Outside Temperature | Recommended Setting |
|------------------------|---------------------|------------------------|---------------------|
| -20°F.                 | 15                  | +10°F.                 | 30                  |
| -10°F.                 | 20                  | +20°F.                 | 35                  |
| 0°F.                   | 25                  | Above 20°              | 40                  |

Your unit may be equipped with a humidistat that has different relative humidity settings, if so use the following recommended settings:

| At Outside Temperatures | Recommended Settings |
|-------------------------|----------------------|
| -20°F.                  | Low                  |
| - 0°F.                  | Low-Medium           |
| +10°F.                  | Medium               |
| +20° Or Above           | Medium-High          |

2. See routine maintenance for further information.

## DRAIN TUBING — OVERFLOW TUBING INSTALLATION

**Model 55** Attach vinyl drain tubing (1/2" I.D. NOT SUPPLIED) with a suitable clamp. Run drain tubing continuously downward with no restrictions to a suitable waste drain. **CAUTION: DO NOT ALLOW DRAIN TUBING TO TOUCH ANY HEATED SURFACES OR SHARP EDGES.**

**MODEL 86** Attach vinyl drain tubing (1/2" I.D. NOT SUPPLIED) with a suitable clamp. Run overflow tubing continuously downward with no restrictions to a suitable waste drain. **CAUTION: DO NOT ALLOW DRAIN TUBING TO TOUCH ANY HEATED SURFACES OR SHARP EDGES.**

## IMPORTANT MAINTENANCE INSTRUCTIONS FOR MODEL 55

### DANGER

**HAZARD OF ELECTRICAL SHOCK OR BURN.  
TURN OFF POWER SUPPLYING THIS EQUIPMENT  
BEFORE SERVICING.**

1. Shut off water supply.
2. Reverse the final assembly instructions for pad removal and replacement.
3. Lift out the distribution tray and evaporator pad assembly.
4. All plastic and metal parts (except electrical parts and components) can be washed in humidifier cleaner or a 50% solution of vinegar and water.

5. Evaporator media should be replaced at least once a year (once each heating season).
6. Wipe any loose sediment from the water tray (make certain no particles are allowed to plug the drain hole).
7. To replace evaporator media, return to the final assembly instructions for the Model 55.

## **IMPORTANT MAINTENANCE INSTRUCTIONS FOR MODEL 86**

### **DANGER**

### **HAZARD OF ELECTRICAL SHOCK OR BURN. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE SERVICING.**

1. Shut off water supply and drain unit by removing the threaded plug in the bottom.
2. To remove drum and disassemble unit, return to and reverse the final assembly instructions for the Model 86.
3. Remove evaporator pad from drum by squeezing finger prongs on clip, holding the drum end in place and pulling. Each time the humidifier is serviced, it is recommended all parts be cleaned thoroughly with a 50% solution of vinegar and water or humidifier cleaner. Following cleaning, rinse all parts thoroughly with fresh water before putting unit back into operation. It is recommended the pad be replaced at least once during the heating season with an identical evaporator pad, to maintain the high evaporating efficiency.
4. When cleaning evaporator pad, discard water in water pan and remove mineral deposits from bottom of pan. Clean mineral deposits from around water valve. The rubber valve seat is reversible. When replacing the valve seat, be sure the rubber is facing the valve jet opening. **TURN CLOCKWISE TO LOWER OR TURN COUNTERCLOCKWISE TO INCREASE WATER LEVEL.**
5. Cleaning may be required every three (3) to four (4) weeks in hard water areas and every four (4) to eight (8) weeks in a soft water area.

### **GENERAL MAINTENANCE**

1. At the end of each humidification season, which is approximately the same period as the heating season, this humidifier should be thoroughly cleaned and the water and electric turned off until the next season. **DO NOT** leave water in the pan over the summer season.
2. If the home is left unattended for any length of time, turn the humidistat and water supply to humidifier "OFF".
3. A proper maintenance program will prolong the life of your humidifier and provide better humidity in your home.



## TROUBLE SHOOTING MODEL 55

|                              | WHAT TO LOOK FOR   | WHAT TO DO  |
|------------------------------|--|---|
| <b>PROBLEM-LOW HUMIDITY</b>  | <p>1. No water flow in humidifier. Note: First turn thermostat up to activate heat and blower operation.</p> <p>2. Heavy mineral build up</p> <p>3. Short blower cycles</p> <p>4. Rapid air changes (drafts)</p> | <p>1. A. Turn water on at saddle valve.<br/>           B. Turn water off and check for obstruction in saddle valve and filter.<br/>           C. Set humidistat higher.<br/>           D. Check for blown circuit breaker.<br/>           E. Turn thermostat up to activate heat and blower operation.<br/>           F. Check all wiring connections.<br/>           G. Check output voltage of transformer (24 to 29 V.A.C.).<br/>           H. Test solenoid, connect good transformer directly to leads.<br/>           I. Check humidistat switch for continuity.</p> <p>2. A. Mineral build up on pad closes off pores in pad and restricts air flow. Clean the evaporator pad per the routine maintenance instructions.</p> <p>3. A. Call a professional heating contractor. By derating the furnace, the furnace runs longer on less fuel and the humidifier produces more moisture.</p> <p>4. A. Keep doors and windows closed.<br/>           B. Close fireplace damper when not in use.<br/>           C. Keep exhaust fan running time to a minimum.<br/>           D. Cold air is dry and is an added load to the humidifier. Seal around doors and windows.</p> |
| <b>PROBLEM-HIGH HUMIDITY</b> | <p>5. Condensation on walls</p> <p>6. Heavy condensation on windows</p>  | <p>5. A. Turn humidistat off and turn water off until condensation is completely evaporated.</p> <p>6. A. Turn humidistat down enough to eliminate condensation.<br/>           B. This may be a temporary condition caused by moisture from bathing, mopping, cooking, etc.</p>  |

## TROUBLE SHOOTING MODEL 86

|                                      | WHAT TO LOOK FOR                                     | WHAT TO DO   |
|--------------------------------------|--|--|
| <b>PROBLEM-LOW HUMIDITY</b>          | 1. Low water level (less than 2" deep at the center) | 1. A. Turn adjustment screw ( <b>counterclockwise</b> ) to raise water level.  |
|                                      | 2. No water in reservoir                             | 2. A. Turn water on at saddle valve.<br>B. Turn off water main and check for possible obstruction in saddle valve or float valve.  |
|                                      | 3. Drum not rotating                                 | 3. A. Set humidistat higher.<br>B. Check for blown circuit breaker.<br>C. Turn thermostat up to activate heat and blower operation.<br>D. Check all wiring connections.<br>E. Check output voltage of transformer (24 to 29 V.A.C.).<br>F. To test motor, connect good transformer directly to motor leads. <b>NOTE:</b> Completely disconnect humidistat from circuit.<br>G. Check the humidistat switch for continuity.<br>H. Check to see that the drum shaft is engaged with motor drive coupling.<br>I. Clean excessive mineral deposits off of drum. |
|                                      | 4. Heavy mineral build up                            | 4. A. Mineral build up on pad closes off pores in pad and restricts air flow. Clean the evaporator pad per the routine maintenance instructions.   |
|                                      | 5. Short blower cycles                               | 5. A. Call a professional heating contractor. By derating the furnace, the furnace runs longer on less fuel and the humidifier produces more moisture.   |
|                                      | 6. Rapid air changes (drafts)                        | 6. A. Keep doors and windows closed.<br>B. Close fireplace damper when not in use.<br>C. Keep exhaust fan running time to a minimum.<br>D. Cold air is dry and is an added load to the humidifier. Seal around doors and windows.  |
| <b>PROBLEM-HIGH HUMIDITY</b>         | 7. Condensation on walls                             | 7. A. Turn humidistat off and turn water off until condensation is completely evaporated.  |
|                                      | 8. Heavy condensation on windows                     | 8. A. Turn humidistat down enough to eliminate condensation.<br>B. This may be a temporary condition caused by moisture from bathing, mopping, cooking, etc.   |
| <b>PROBLEM-HUMIDIFIER OVER-FLOWS</b> | 9. High water level                                  | 9. A. Inspect valve seat for defects. Valve seat is reversible.<br>B. Inspect valve nozzle for cracks or erosion.<br>C. Turn adjustment screw clockwise to lower water level.<br>D. Humidifier must be level.  |

## SKUTTLE LIMITED ONE-YEAR PRODUCT WARRANTY

This limited one-year warranty covers this Skuttle product as designated on the return portion of the warranty registration card, excluding wiring, plumbing and installation.

Skuttle Manufacturing Company warrants that this product is free from defects in material and workmanship under normal, non-commercial use and service. Skuttle will remedy any such defects if they appear within 12 months from the date of the original installation as evidenced by receipt of the warranty registration card, subject to the terms and conditions of this limited one-year warranty stated below:

1. THIS LIMITED ONE-YEAR WARRANTY IS GRANTED BY SKUTTLE MANUFACTURING COMPANY, 101 MARGARET STREET, MARIETTA, OHIO 45750.

2. This warranty shall extend only to any non-commercial owner who has purchased this residential product other than for purposes of resale.

3. The completion and return of the warranty registration card is a condition **precedent** to warranty coverage and performance. Warranty is not valid unless this card is completed and mailed to the factory within fifteen (15) days of equipment installation.

4. All components are covered by this limited warranty except expendable items.

5. If within the warranty period this product or any component requires service, it must be performed by a competent heating and/or plumbing contractor (preferably the installing contractor). Skuttle will not pay shipping charges, or labor charges to remove or replace such defective parts or components. If the part or component is found by inspection to contain such defective material and/or workmanship, it will be either repaired or exchanged, free of charge, at Skuttle's option, and returned freight collect.

6. In order to obtain the benefits of this limited one-year warranty, the owner must notify the dealer or distributor in writing of any defects within thirty (30) days of the discovery. If after reasonable time you have not received an adequate response from the dealer or distributor, notify in writing, Skuttle Manufacturing, 101 Margaret Street, Marietta, Ohio 45750.

**SKUTTLE WILL RECEIVE, FREIGHT PREPAID, ONLY REMOVABLE PARTS OR COMPONENTS OF SUCH DEFECTIVE PRODUCTS.**

7. This limited warranty does not apply to any part or component that is: damaged in transit or handling has been subject to abuse, neglect or accident; has not been installed, operated and serviced according to Skuttle's instructions, has been operated beyond the factory rated capacity; or altered in any such way that its performance is affected. There is no warranty due to neglect, alteration or ordinary wear and tear. Skuttle's liability is limited to replacement of defective parts or components and does not include the payment of the cost of labor charges to remove or replace such defective components or parts.

8. Skuttle will not be responsible for loss of use of any product: loss of time, inconvenience, or any other indirect, incidental or consequential damages with respect to person or property, whether as a result of breach of contract, neglect or otherwise. **SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE LIMITATION OF EXCLUSION IN THE PRECEDING SENTENCE MAY NOT APPLY TO YOU.**

9. **THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.**

10. Any warranty work will be performed within a reasonable time, usually within one hundred twenty (120) days after notice of defect and delivery to the Skuttle factory, subject to delays beyond the manufacturer's control.

11. Any warranty by Skuttle of merchantability, fitness for use or any other warranty (express, implied or statutory), representation or guarantee other than what was set forth herein shall expire at the expiration date of this limited warranty. **SOME STATES DO NOT ALLOW LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE LIMITATION IN THE PRECEDING SENTENCE MAY NOT APPLY TO YOU.**

12. Skuttle reserves the right to make changes in the design and material of its products without incurring any obligation to incorporate such changes in the units completed on the effective date of such change.