



Skuttle[®]

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	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 Setting
-20°F	Low
0°F	Low-Medium
+10°F	Medium
+20°Or Above	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.

Outdoor Relative Humidity	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	Recommended Settings
-20°F	Low
0°F	Low-Medium
+10°F	Medium
+20° Or Above	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.

CAUTION: When installing the humidifier make certain that air flows across the units mounting hinges before entering the humidifier's evaporative media. The unit must always be mounted this way.

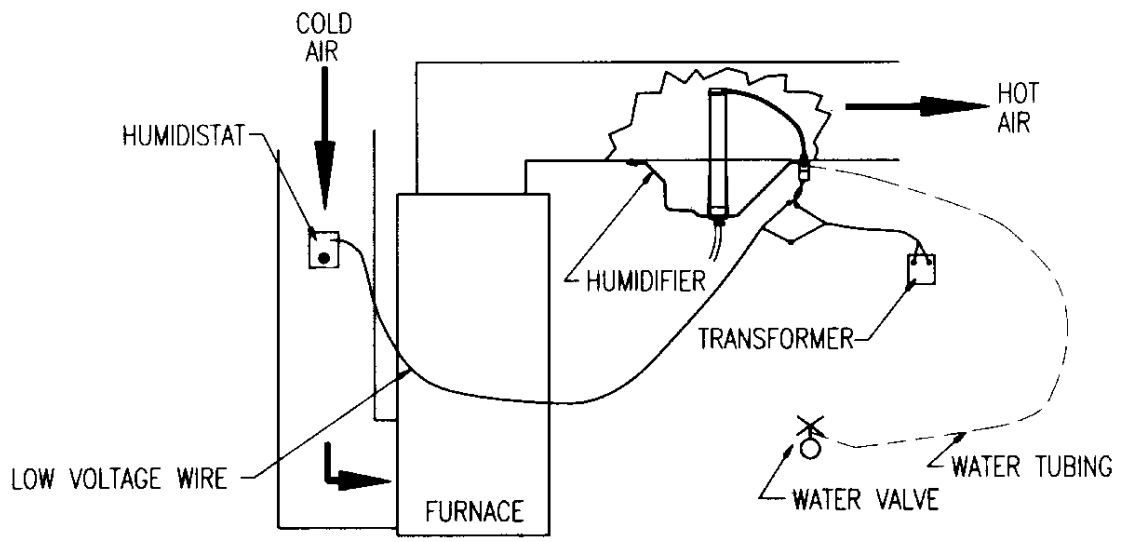
Using the Figures, select a location on the horizontal part of the duct that is at least 12 inches wide and preferably about 2 or more feet from the furnace; this distance from the furnace is not always necessary but will allow air turbulence to subside slightly before entering humidifier. In some installations this distance may not be obtainable; when this occurs it may become necessary for additional baffling in the duct to obtain adequate humidification.

Locate a cold water pipe. Locate a 120 volt power supply for the humidifier transformer within 5 feet of the humidifier (additional wire is required for additional distance). Wiring into the blower circuit is an acceptable power source for the transformer, providing the blower is not multi-speed. **NOTE:** Wiring the Model 86 independent of the blower operation is suggested. This allows the humidifier evaporator pad to remain wet. This allows full usage of the blower on time. If the system contains a multi-speed blower motor, it is necessary to isolate the humidifier transformer to prevent premature burn out caused by the inductive current produced by the motor during high speed operation. This can be accomplished by many different types of wiring and accessories, such as using a pressure sensor or fan sail switch (to detect blower operation) and using an independent electrical circuit to power the humidifier transformer. **CAUTION:** You must comply with all local codes, ordinances and regulations pertaining to plumbing and electrical wiring.

NOTE: Model 55 Flow-Thru humidifier must be electrically wired to operate only during blower motor operation (requiring use of one of the previously described wiring methods). This is to eliminate the waste of water during periods that the heating system is off.

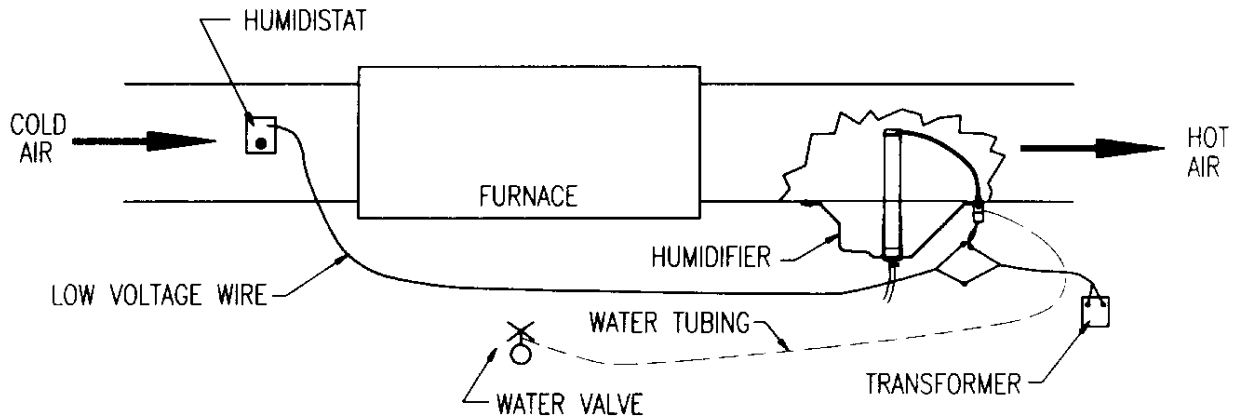
INSTALLATION

1. At the selected location, hold the mounting frame on the bottom horizontal side of the duct with the long sides of the frame parallel to the length of the duct, and the end with the hinges toward the heating unit so that the air flow is in the direction indicated in Figure 9.
2. **DANGER:** Do not cut into any air conditioning or electrical accessories during installation. Fatal electrocution is possible if you come into contact with a live electrical circuit. Blindness can occur if Freon contacts your eyes.



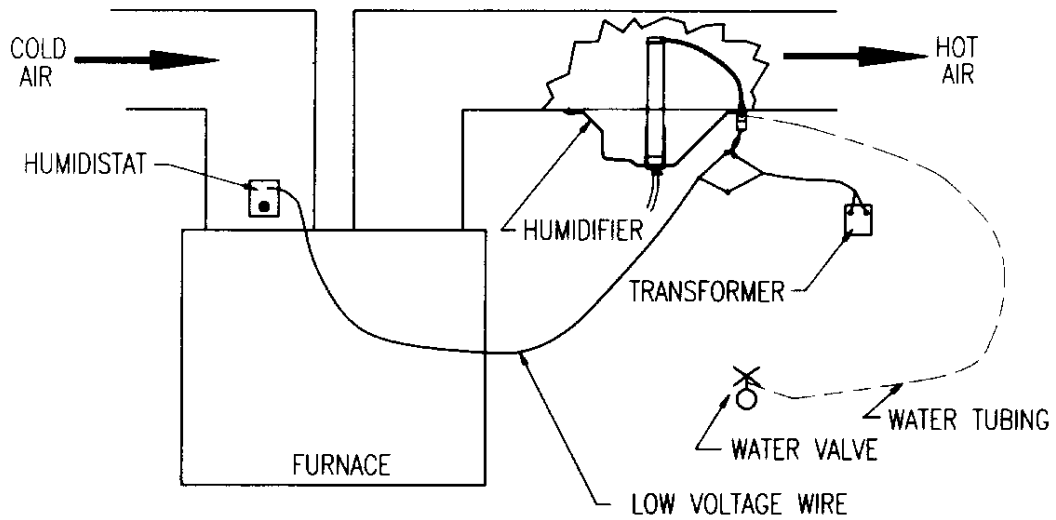
HIGHBOY FURNACE

FIGURE 1



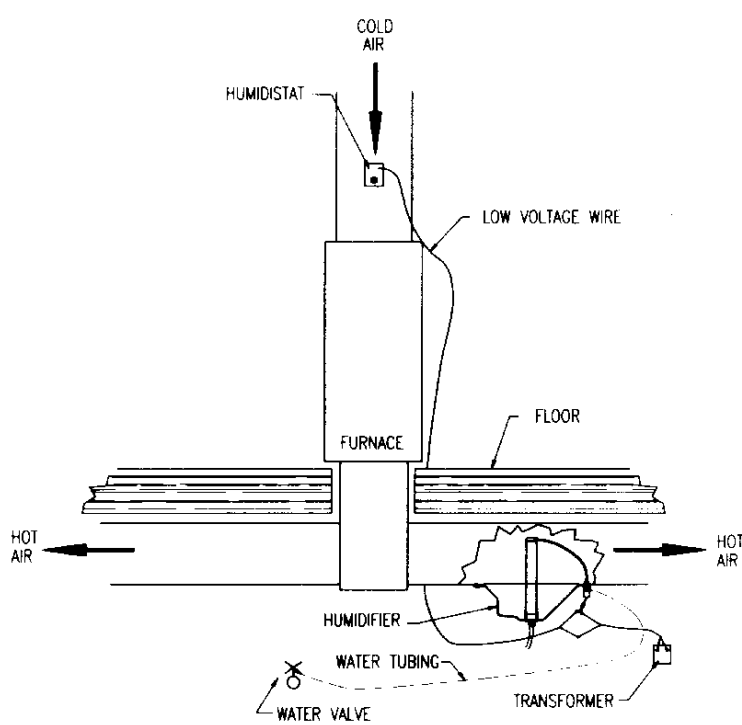
HORIZONTAL FURNACE

FIGURE 2

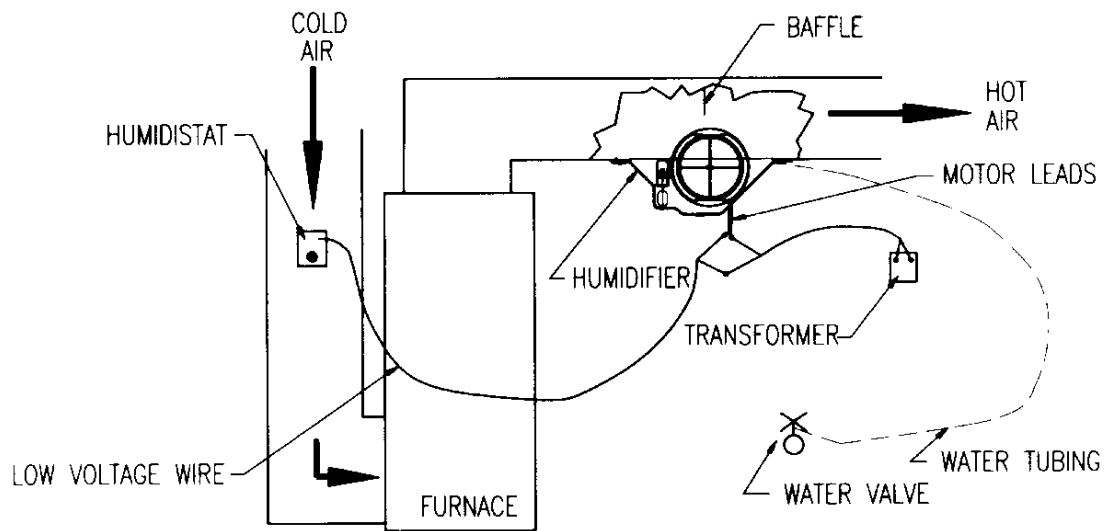


LOWBOY FURNACE

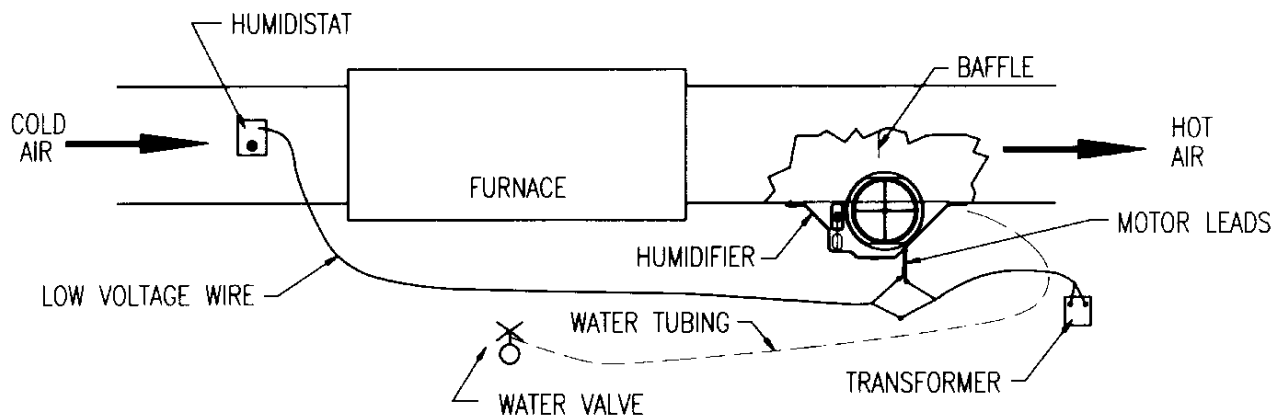
FIGURE 3



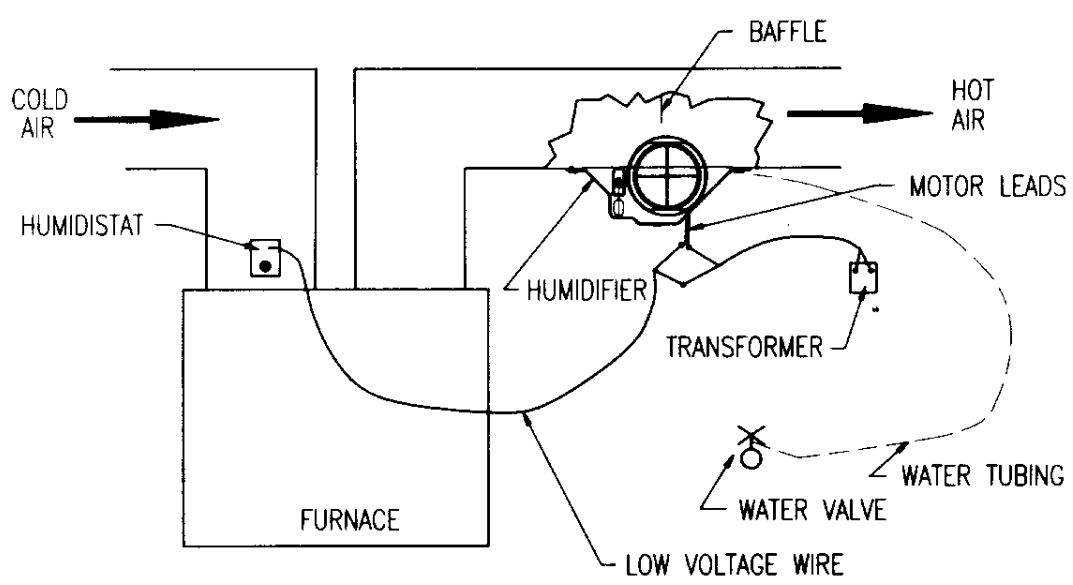
COUNTER FLOW FURNACE
FIGURE 4



HIGHBOY FURNACE
FIGURE 5

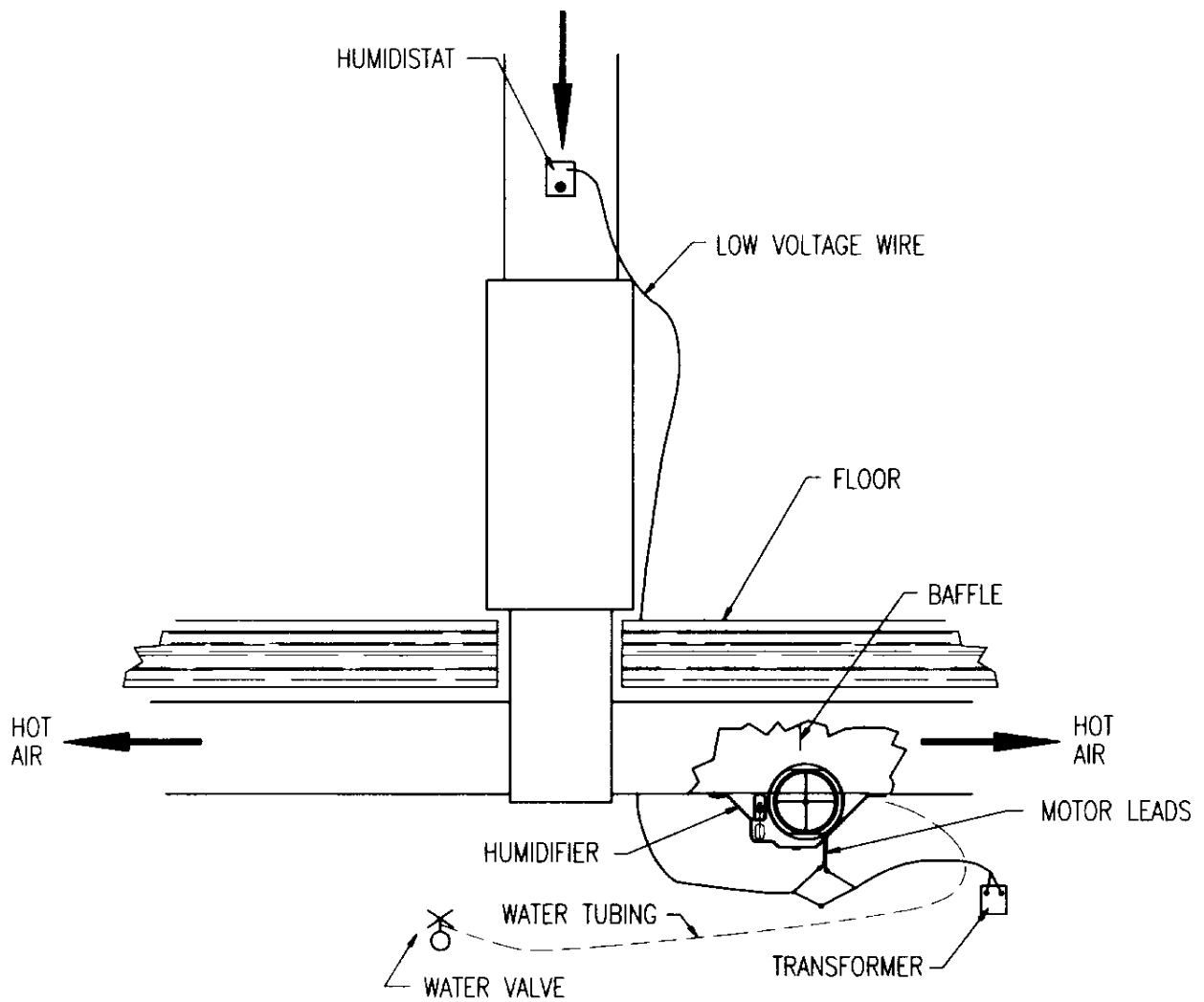


HORIZONTAL FURNACE
FIGURE 6



LOWBOY FURNACE

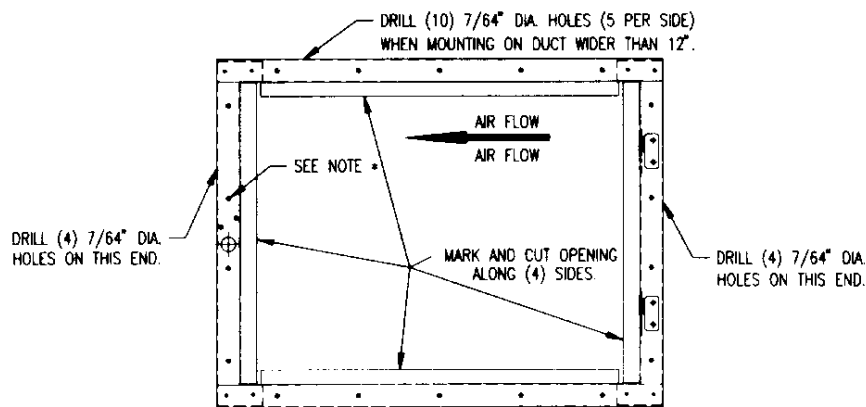
FIGURE 7



COUNTER FLOW FURNACE

FIGURE 8

3. Mark and drill 2 or 3 of the mounting holes $\frac{7}{64}$ " dia. and temporarily attach the mounting frame with the #8 sheet metal screws provided and mark the remaining holes and center opening as described in Figures 10 and 11.
4. Now remove the frame and drill the remaining mounting holes $\frac{7}{64}$ " dia. Drill a $\frac{3}{8}$ " dia. hole within the center section and cut and remove the rectangular section as previously marked.
5. When mounting the Model 55, an additional notch is required as shown in Figure 10. Measure and mark as indicated and cut out this section.
6. Now mount the mounting frame on the duct with the screws provided, in the direction as shown in Figures 9, 10, 11 while making certain of the correct direction of air flow.



• DO NOT DRILL THIS HOLE WHEN MOUNTING MODEL 55

FIGURE 9

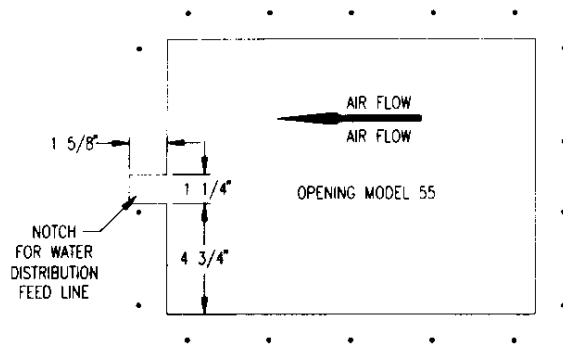


FIGURE 10

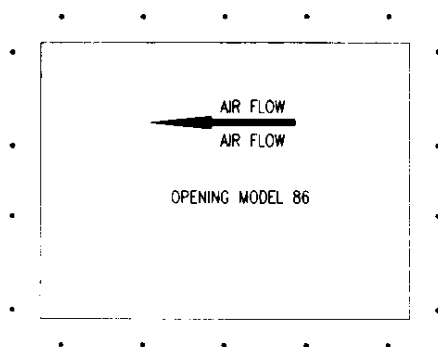


FIGURE 11

FINAL ASSEMBLY MODEL 55

1. Place the humidifier housing (pan) on the mounting frame by inserting hinge pins into mating hinge halves on the mounting frame.
2. Place the evaporator pad between the two guide rails in the bottom inside sides of the pan, then place the pad frame combination drip tray assembly over the evaporator pad, with the rubber grommet facing you. Insert the plastic water tube in reverse to the procedures shown in Figure 13.
3. Now raise the unit into a closed position and securely fasten in place.

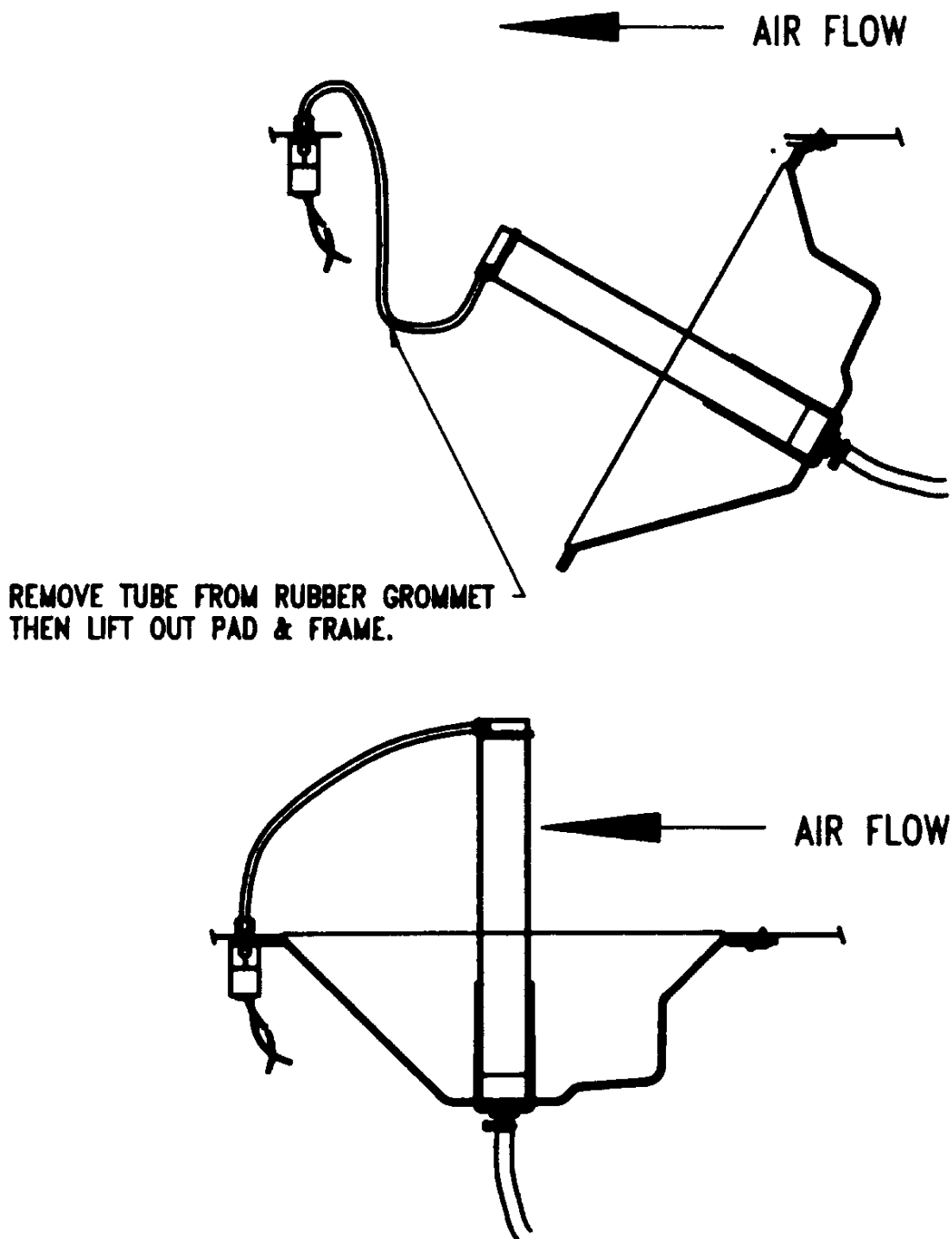


FIGURE 13

FINAL ASSEMBLY MODEL 86

1. To install the drum assembly, simply reverse the direction of the arrows in Figure 14 showing drum assembly removal. Start by inserting the drum shaft end opposite the metal tabs into the round bearing in the side of the pan. Some force will be needed to deflect the plastic retaining spring on the outside of the pan. Then, align the metal tabs with the slotted opening in the motor coupling and engage them in the coupling.

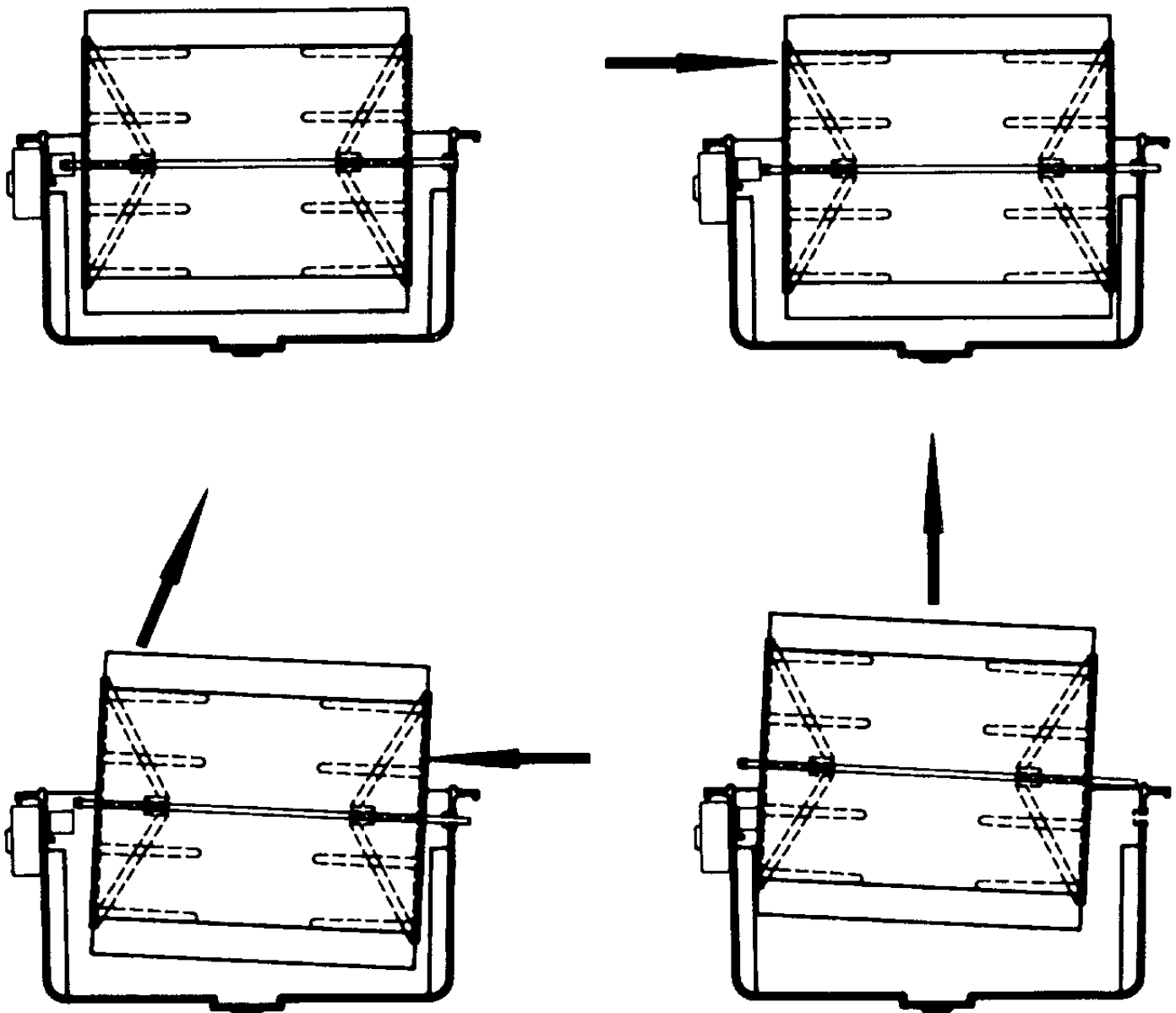


FIGURE 14

2. Install the baffle in the inside of the duct as shown in Figure 15. First, mark the two holes on the top inside of the duct, by holding the baffle in place about 6" from the side of the opening as shown in Figure 15, then drill two holes $\frac{7}{64}$ " dia. through the top inside of the duct and attach with two #8 sheet metal screws provided.
3. Proceed to the plumbing instructions prior to completing the installation, then return to here for correct water level adjustment.
4. The water must be adjusted prior to mounting the pan on the duct; correct level is approximately 2" or when the water is level inside the drum assembly as shown in Figure 16.
5. Place the humidifier housing (pan) on the mounting frame by inserting pins into mating hinge halves on the mounting frame.
6. Raise the unit into a closed position and securely fasten in place.

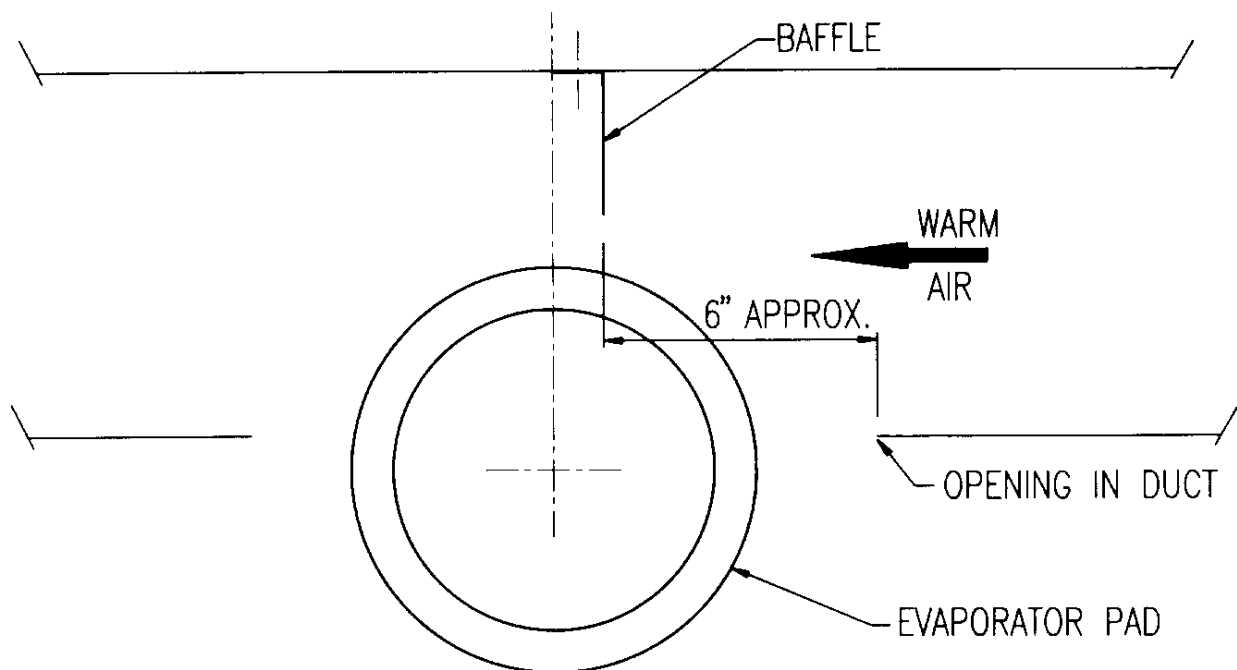


FIGURE 15

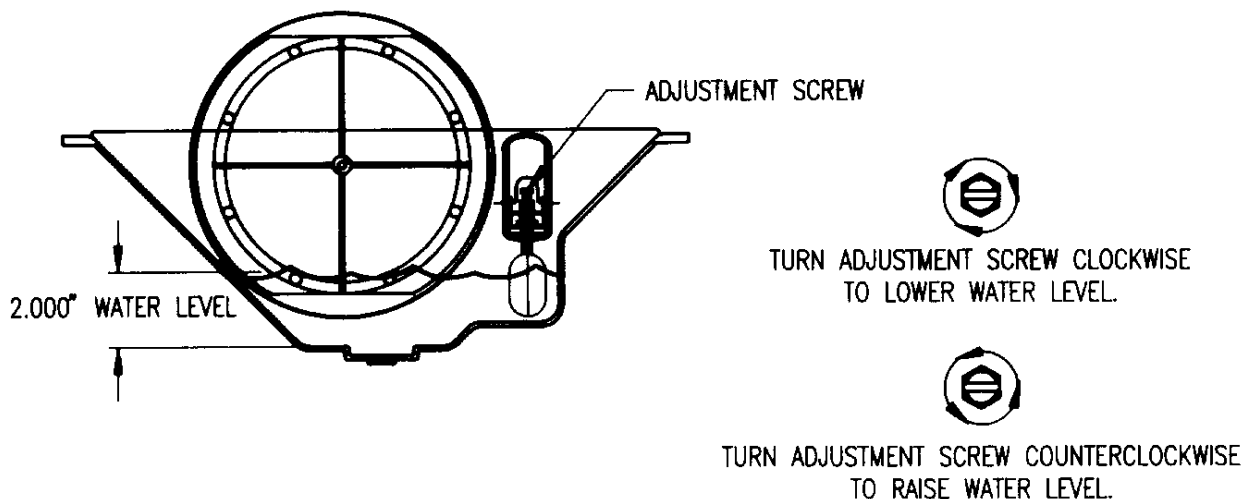
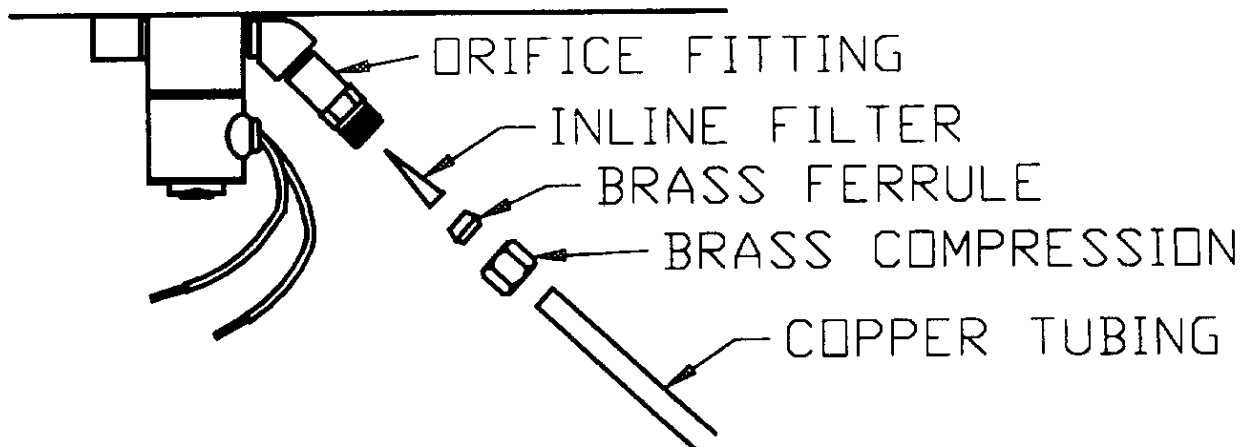


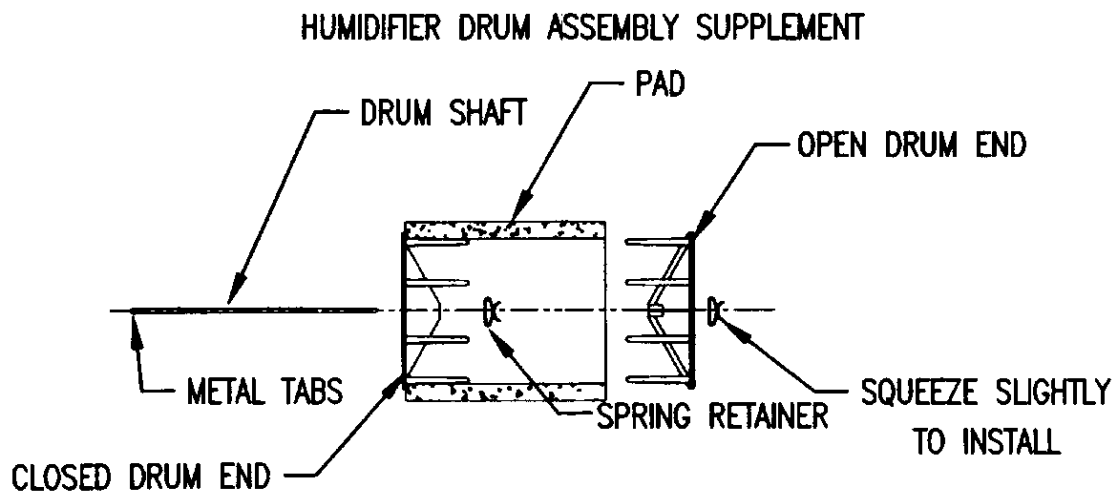
FIGURE 16

PLUMBING

1. Select the nearest cold water pipe and install saddle connector and needle valve supplied with this unit. Mount valve so water will come from top or side. This will reduce the chance of minerals, etc. from clogging the valve. It is a self-piercing unit when installed on copper pipe. Follow the instructions that are supplied with the valve. Either hard or soft water may be used. However, soft water will require more frequent maintenance but the cleaning will be easier. **ATTENTION:** Do not use any line connected to an air conditioner.
2. **PLEASE READ:**
COMPRESSION PLUMBING TIPS
 - a) Make sure that the tubing is fully inserted into fitting before tightening compression nut.
 - b) Use a brass ferrule with copper tubing.
 - c) Lightly clean the tubing ends with fine sandpaper before making any connections.
 - d) Fully insert the tubing into the valve fittings and tighten the compression nut. Do not over-tighten. Moderate tightness should prevent leaking.
3. **Thoroughly flush supply tubing** after attaching to saddle valve to clear line of debris which could block water flow at the float valve.
4. Route the tubing to the humidifier float valve. Be sure to keep the tubing off of hot surfaces and away from sharp edges.
5. For water line connection to the Model 55 skip ahead to #6.
For water line connection to the Model 86 you must use the instructions found in the individual part bags for copper tubing.
6. Shown below, in order of assembly, are the parts for completing the water connection for the Model 55. Pay close attention to the proper orientation of parts for assembly and disassembly. This will assist you when cleaning the orifice fitting and filter.



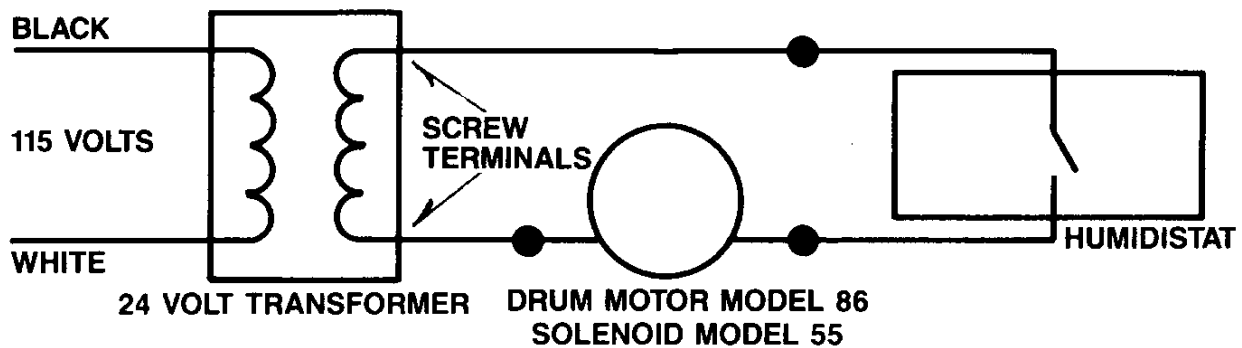
7. Now connect the supply tubing, turn water on and check for leaks. Stop leaks by further tightening fittings.
8. If wiring is complete at this point, you may test for water flow by activating the furnace blower and allowing a few minutes for operation, then check for a flow of water exiting the drain fitting on the bottom of the humidifier. If wiring is not complete, proceed on and return to this procedure after completion.



HUMIDITY CONTROL & TRANSFORMER

1. This humidifier is supplied with a patented Universal Humidistat which can be wall mounted or duct mounted. The wall mounted humidistat will allow fingertip control in the living area.
2. Pull off control knob nameplate and remove cover. If wall mount is desired, read on or if a duct mount is desired, skip to step 15.
3. Drill a 1/4" hole in base plate through the depression provided.
4. Select a location for the wall humidistat. The humidistat must be located on an inside wall, away from register discharges. Also, avoid sources of heat, cold or extreme humidity variation; i.e. bathrooms, kitchens, basements.
5. The humidistat should be mounted at approximately the same height as the thermostat, and you may wish to install the humidistat right next to the thermostat.
6. Cut two lengths of low voltage wire that will easily reach from the humidistat to the humidifier wires and easily reach from the 24 volt transformer to the humidifier wires. **NOTE:** Some installations may require the purchase of additional two-conductor low voltage wire.
7. Strip the plastic insulation 1/4" to expose the copper conductor on both wires [Four (4) wires, eight (8) ends].

8. Route the wire you cut to reach the humidistat, through an access hole you make in the wall to the humidifier. Seal the hole in the wall to eliminate false readings caused by drafts. See wiring diagram.
9. Take two brass terminal adapters and press on the humidistat terminals. Start two machine screws (6-32 x $\frac{5}{16}$) into the terminal adapters.
10. Route the wires through the drilled $\frac{1}{4}$ " hole and attach one wire to each terminal. See wiring diagram.
11. Mount the humidistat base plate to the wall with the long dimension horizontal and the control knob on the right side. Two 1" self tapping screws are provided.
12. Attach the control cover with two #6 self tapping screws. Tighten evenly for best results.
13. Remove paper backing on name plate and press on cover. Press control knob on shaft.
14. If you have just completed a wall humidistat, skip to step 28. If you desire a duct humidistat, go to step 15.
15. The duct humidistat must be located on the return (cold) air plenum or duct work. **CAUTION: DO NOT** install humidistat on supply (hot) air plenum. Permanent damage will occur to the humidistat and improper control will result.
16. Remove the two screws that attach the base plate to the humidistat. Reattach the base plate over the control shaft, using the screws just removed. Press control knob on shaft.
17. The humidistat mounts in a vertical (long dimension up and down) position. (See figures 1 through 5). Attach template to return (cold) air plenum in the proper location, keeping the template level.
18. Center punch and drill the two mounting holes with a $\frac{7}{64}$ " drill.
19. Drill a $\frac{3}{8}$ " hole within the center portion of the template.
20. Starting at the $\frac{3}{8}$ " hole, cut out the center opening with tin snips or aviation snips.
21. Remove the template.
22. Cut two lengths of low voltage wire that will easily reach from the humidistat to the humidifier wires and easily reach from the 24 volt transformer to the motor wires. **NOTE:** Some installations may require the purchase of additional two-conductor low voltage wire.
23. Strip the plastic insulation $\frac{1}{4}$ " to expose the copper conductor on both wires. [Four (4) wires, eight (8) ends].
24. Take two brass terminal adapters and press onto the humidistat terminals. Start two machine screws (6-32 x $\frac{5}{16}$) into the terminal adapters.
25. Place one end of the correct (see step 22) wire through the $\frac{3}{8}$ " diameter hole in the humidistat mounting plate. Fasten one wire to each terminal. See wiring diagram.



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
PROBLEM-LOW HUMIDITY	<ol style="list-style-type: none"> 1. No water flow in humidifier. Note: First turn thermostat up to activate heat and blower operation. 2. Heavy mineral build up 3. Short blower cycles 4. Rapid air changes (drafts) 	<ol style="list-style-type: none"> 1. <ol style="list-style-type: none"> A. Turn water on at saddle valve. B. Turn water off and check for obstruction in saddle valve and filter. C. Set humidistat higher. D. Check for blown circuit breaker. E. Turn thermostat up to activate heat and blower operation. F. Check all wiring connections. G. Check output voltage of transformer (24 to 29 V.A.C.). H. Test solenoid, connect good transformer directly to leads. I. Check humidistat switch for continuity. 2. <ol style="list-style-type: none"> A. Mineral build up on pad closes off pores in pad and restricts air flow. Clean the evaporator pad per the routine maintenance instructions. 3. <ol style="list-style-type: none"> A. Call a professional heating contractor. By derating the furnace, the furnace runs longer on less fuel and the humidifier produces more moisture. 4. <ol style="list-style-type: none"> A. Keep doors and windows closed. B. Close fireplace damper when not in use. C. Keep exhaust fan running time to a minimum. D. Cold air is dry and is an added load to the humidifier. Seal around doors and windows.
PROBLEM-HIGH HUMIDITY	<ol style="list-style-type: none"> 5. Condensation on walls 6. Heavy condensation on windows 	<ol style="list-style-type: none"> 5. <ol style="list-style-type: none"> A. Turn humidistat off and turn water off until condensation is completely evaporated. 6. <ol style="list-style-type: none"> A. Turn humidistat down enough to eliminate condensation. B. This may be a temporary condition caused by moisture from bathing, mopping, cooking, etc.

TROUBLE SHOOTING MODEL 86

	WHAT TO LOOK FOR	WHAT TO DO
PROBLEM-LOW HUMIDITY	<ol style="list-style-type: none"> 1. Low water level (less than 2" deep at the center) 2. No water in reservoir 3. Drum not rotating 4. Heavy mineral build up 5. Short blower cycles 6. Rapid air changes (drafts) 	<ol style="list-style-type: none"> 1. A. Turn adjustment screw (counterclockwise) to raise water level. 2. A. Turn water on at saddle valve. B. Turn off water main and check for possible obstruction in saddle valve or float valve. 3. A. Set humidistat higher. B. Check for blown circuit breaker. C. Turn thermostat up to activate heat and blower operation. D. Check all wiring connections. E. Check output voltage of transformer (24 to 29 V.A.C.). F. To test motor, connect good transformer directly to motor leads. NOTE: Completely disconnect humidistat from circuit. G. Check the humidistat switch for continuity. H. Check to see that the drum shaft is engaged with motor drive coupling. I. Clean excessive mineral deposits off of drum. 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. A. Call a professional heating contractor. By derating the furnace, the furnace runs longer on less fuel and the humidifier produces more moisture. 6. A. Keep doors and windows closed. B. Close fireplace damper when not in use. C. Keep exhaust fan running time to a minimum. D. Cold air is dry and is an added load to the humidifier. Seal around doors and windows.
PROBLEM-HIGH HUMIDITY	<ol style="list-style-type: none"> 7. Condensation on walls 8. Heavy condensation on windows 	<ol style="list-style-type: none"> 7. A. Turn humidistat off and turn water off until condensation is completely evaporated. 8. A. Turn humidistat down enough to eliminate condensation. B. This may be a temporary condition caused by moisture from bathing, mopping, cooking, etc.
PROBLEM-HUMIDIFIER OVER-FLOWS	<ol style="list-style-type: none"> 9. High water level 	<ol style="list-style-type: none"> 9. A. Inspect valve seat for defects. Valve seat is reversible. B. Inspect valve nozzle for cracks or erosion. C. Turn adjustment screw clockwise to lower water level. 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.