

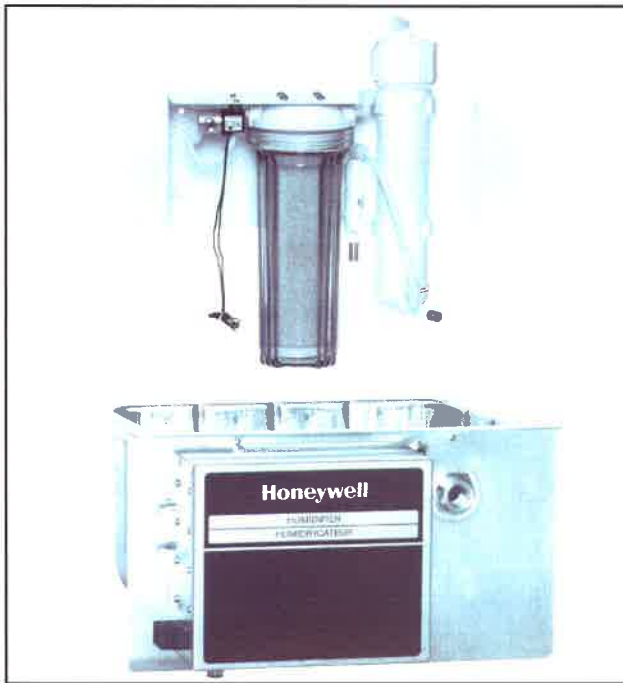
# Honeywell

## HE440A Steam Power Humidifier

### PRODUCT DATA/OWNER'S GUIDE

### FEATURES

- Humidifies the air without a call for heat from the thermostat so relative humidity fluctuates less, optimizing homeowner comfort.
- Two-stage water treatment system keeps reservoir clean; maintains operation and reduces maintenance.
- Low water cut-off switch, built-in overflow and thermal cut-off switch protection are integral safety features.
- Capable of humidifying a large area.
- Ideal for homes with extensive woodwork, hardwood floors, antiques, oil paintings, leather furniture, pianos, and fine collectibles.
- Compact size allows easy installation.
- Includes easy-to-use humidity control that mounts on the wall or duct for more installation flexibility.



### APPLICATION

HE440A Steam Power Humidifier uses a thermal fan interlock control to provide whole house humidification on demand. A two-stage water treatment system keeps the reservoir clean, maintains operation and reduces maintenance. Steam power humidifiers work with furnaces, heat pumps, setback thermostats and virtually any Honeywell humidity control. Use Honeywell H1008 Automatic Humidity Control for optimal performance.

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## SPECIFICATIONS

**Capacity:**

HE440A: 12 gallons per day (gpd) or 45 liters per day (lpd).

**Humidified Area:**

For precise sizing and product selection, use the Honeywell HumidiCalc™ Humidifier Sizing software. If unavailable, refer to Table 1.

**Internal Heating Source:**

Nickel-plated brass sheathed element.  
HE440A: 120 Vac, 1.5 kW, 12.5A.

**Duct Opening (Height x Width):**

8-1/2 in. x 11-1/2 in. (215 mm x 290 mm).

**Dimensions:**

See Fig. 1.

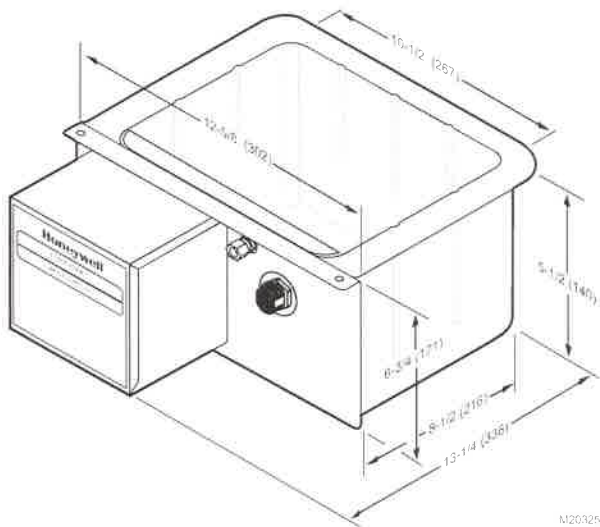


Fig. 1. HE440A dimensions in in. (mm).

**Approvals:**

Underwriter's Laboratories Inc: Listed 56BL.  
Canadian Underwriter's Laboratories: Listed 56BL.  
Air Conditioning and Refrigeration Institute Tested: Standard 610.

**Models:**

HE440A TRADELINE® Steam Power Humidifier package includes select hardware and H8908B Humidity Control and two-stage water treatment system with reverse osmosis (RO) membrane and chlorine filter.

**Accessories:**

C7089H Outdoor Temperature Sensor for use with H1008, H1008A Automatic Humidity Control with HumidiCalc™ Software (software calculates dewpoint to prevent moisture condensation).  
H8908B Convertible Humidity Control (included with steam power humidifier).  
50-8578 HumidiCalc™ Humidifier Sizing Software (software calculates required humidifier capacity for application).

Table 1. Size of Humidified Area.

House Description	Air Changes (per hour)	Humidified Area	
		(sq ft)	(sq m)
Loose	Two	1,415	131
Average	One	1,970	183
Tight	One-half	3,095	288

## ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care  
1885 Douglas Drive North  
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

# INSTALLATION

## When Installing this Product ...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the rating given in the instructions and on the product to make sure the product is suitable for your operation.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation.

## Select Location and Mounting Configuration

### Steam Power Humidifier

There are three typical mounting configurations:

- Horizontally, under at least an 11 in. (280 mm) wide duct, using the mounting bracket (preferred mounting method).
- Horizontally, under a reinforced duct.
- Horizontally, under a duct extension, using the mounting bracket.

Select the appropriate mounting method and follow these mounting instructions. (See Fig. 2 through 4.)

- Select a location where the humidifier can be plugged in without an extension cord. (The preferred installation location is on the warm air side of the furnace.)
- If that location is not possible, mount the humidifier a minimum of 6 ft (1.8m) upstream from the furnace filter.
- Depending on the location selected, additional duct reinforcement may be necessary because the humidifier weighs 18 lb (8 kg) when filled with water.

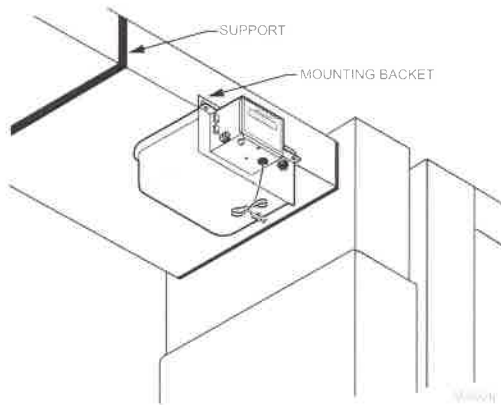


Fig. 2. Mounting humidifier horizontally under duct using mounting bracket.

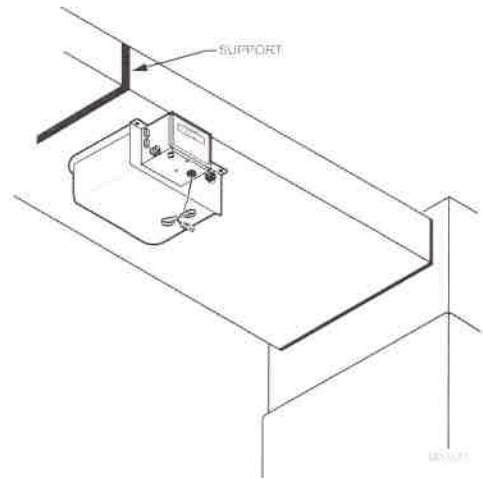


Fig. 3. Mounting humidifier horizontally under duct.

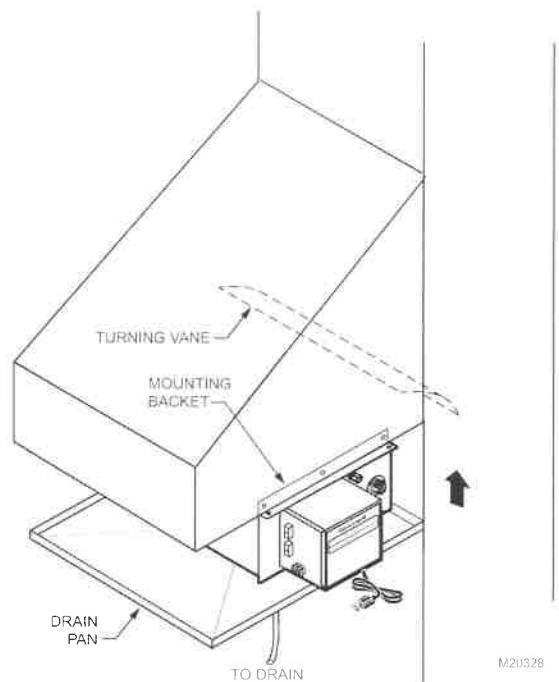


Fig. 4. Mounting humidifier horizontally under duct extension using mounting bracket.

## Two-Stage Water Treatment System

Mounting holes are provided for two mounting configurations:

- Between two exposed wall studs.
- Wall mounted.

NOTE: Do not mount on duct or furnace cabinet.

Choose a location convenient for running a drain line, water supply and wiring between the humidifier, water treatment system and equipment fan.

### **⚠ WARNING**

**Electrocution, Heavy Equipment and Chemical Hazard.**

**Can cause death, blindness, water damage to home and heater failure.**

Do not cut into any air conditioning or electrical line. Mount the humidifier in level position to avoid water damage and heater failure.

Wear safety glasses when cutting or drilling.

Reinforce duct, as necessary, to ensure stability.

### **⚠ CAUTION**

**Steam Condensation, Fire and Freezing Water Hazard.**

**Can cause fan or limit control failure or result in water damage in home.**

Do not install humidifier where return air duct sidewalls are constructed of wood (floor joist).

Do not install humidifier where temperature is lower than 40°F (4°C) or higher than 160°F (71°C).

## Mounting Steam Power Humidifier

### Mount Horizontally Using Mounting Bracket (Preferred Mounting Method)

#### **IMPORTANT**

*Be sure duct is at least 11 in. (280 mm) wide to use this mounting method.*

The duct is the strongest when using the mounting bracket method because less duct reinforcement is required to support the bracket using this bracket location. It is important to evaluate if reinforcement is necessary to help support the weight of the humidifier and keep it level.

1. Measure and mark an 8-1/2 in. (215 mm) x 11-1/2 in. (290 mm) outline on the bottom of the duct in the desired location.
2. Drill 3/8 in. hole (10 mm) within the outlined mounting hole location. See Fig. 5.

#### **IMPORTANT**

*Be sure to carefully cut around the marked lines.*

3. Use the tin snips to cut around the outline.
4. Remove the sheet metal.
5. Place the two 8-1/2 in. (215 mm) S-cleat pieces (provided) on the narrow sides of the rectangular opening so the opening (slot) protrudes down and out from the duct.

6. Place the 11-1/2 in. (290 mm) piece of S-cleat on the long side of the rectangular opening closest to the center of the duct so the opening (slot) shows below the duct.
7. Use two machine screws and nuts (provided) to attach the mounting bracket (L-shaped with six holes) to the top/front surface of the humidifier. (The humidifier is now ready for mounting.)
8. Slide the humidifier tabs into the installed S-cleat. Be sure the back tab engages completely with the S-cleat and the mounting bracket touches the side of the duct.
9. Using the mounting bracket as a guide, drill three 7/64 in. (3 mm) holes through the duct.
10. Secure the humidifier to the duct with three no. 8 sheet metal screws (not provided).

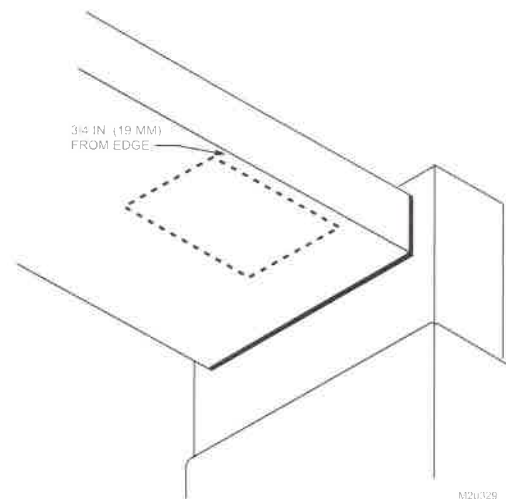


Fig. 5. Mounting hole location.

### Mount Horizontally on Reinforced Duct

This method usually requires duct reinforcement to support the humidifier weight and keep it level. See Fig. 3. The mounting bracket is not used.

1. Measure and mark an 8-1/2 in. (215 mm) x 11-1/2 in. (290 mm) outline on the bottom of the duct in the desired location.
2. Drill 3/8 in. hole (10 mm) within the outlined mounting hole location.

#### **IMPORTANT**

*Be sure to carefully cut around the marked lines.*

3. Use the tin snips to cut around the outline.
4. Remove the sheet metal.
5. Place the two 8-1/2 in. (215 mm) S-cleat pieces on the narrow sides of the rectangular opening so the opening (slot) protrudes down and out of the duct.
6. Place the 11-1/2 in. (290 mm) piece of S-cleat on the long side of the rectangular opening, opposite the two holes previously drilled. Position so the opening (slot) protrudes down and out of the duct.
7. Slide the humidifier tabs into the installed S-cleat. Be sure the back tab engages completely with the S-cleat.
8. Secure the humidifier to the duct with two no. 8 sheet metal screws (not provided).

### Mount Horizontally on Vertical Duct

Horizontal mounting on a vertical duct requires the installation of a duct extension. See Fig. 4. Additional duct reinforcement may also be necessary to help support the humidifier weight and keep it level. Create and install the duct extension.

Then follow steps 1 through 10 in Mount Horizontally Using Mounting Bracket section to complete installation.

Place a drain pan correctly connected to a suitable drain below the humidifier. See Fig. 4.

### Mount Two-Stage Water Treatment System Bracket to Wall

NOTE: Be sure bracket is level.

Use four screws (not provided) to secure mounting bracket to exposed wall studs or flat wall through mounting holes provided. See Fig. 6.

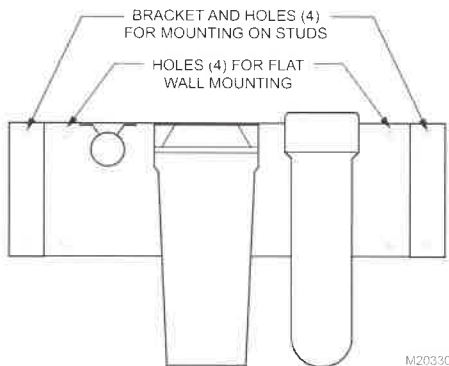


Fig. 6. Mounting water system on wall.

NOTE:

- Be sure there is an accessible drain near the water treatment system.
- Plan system location considering 20 ft (6m) cable (provided) to connect water treatment system to humidifier.
- Be sure there is adequate clearance above and below the system to replace the filters. See Fig. 12.

### WIRING

All wiring must comply with local codes and ordinances. When selecting a location for mounting the humidifier, be sure connections can be made to the power source without using an extension cord.

### **⚠️ WARNING**

**Voltage or Fire Hazard.  
Can cause death or fire.**

Use a receptacle rated at 120 Vac, 15/20A (NEMA configuration 5-15R) for the HE440A Humidifier.

### Equipment Fan Applications

### **⚠️ CAUTION**

**Moisture Condensation and Wiring Hazard.  
Moisture can destroy furnace electronic controls  
and miswiring can burn out electrical components.**  
Do not alter any heating and cooling system functions.  
Be sure to wire only the system fan.

See wiring diagrams in Fig. 7-9 for typical wiring applications.

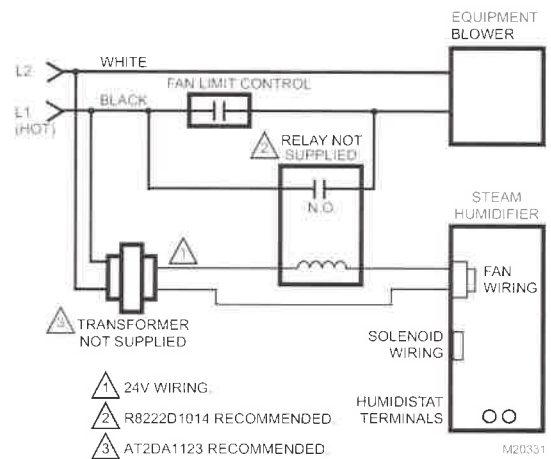


Fig. 7. Typical wiring diagram for humidifier in single-speed fan applications without air conditioning (switching through external relay).

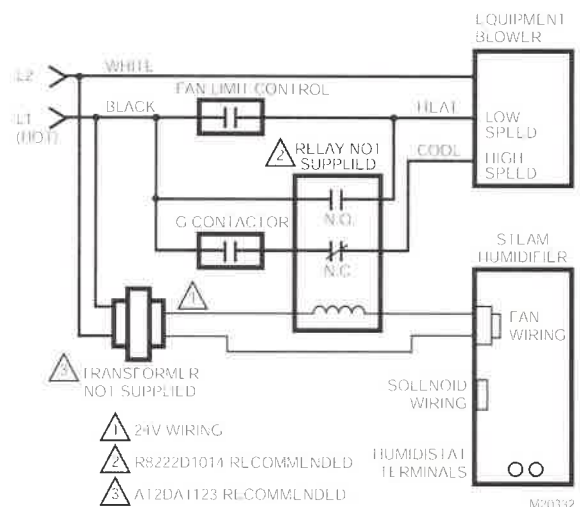
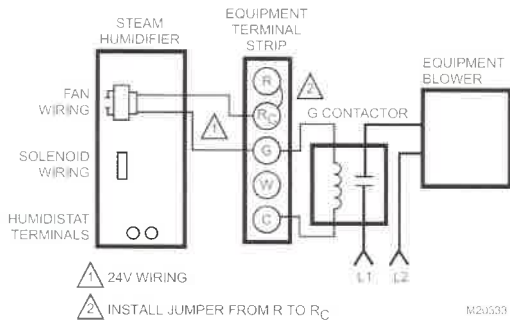


Fig. 8. Typical wiring diagram for humidifier in dual-speed fan applications with air conditioning.



**Fig. 9. Typical wiring diagram for humidifier in single-speed fan applications without air conditioning (switching through G contactor).**

The humidifier has a sealed switch with a thermostatic sensor that is designed only for low voltage applications. The sealed switch is attached to the humidifier wall and is wired through a thermal switch fan plug. The switch is preset to turn on the fan when the water temperature is 170°F (76°C) and turn off the fan when the water temperature falls below 120°F (50°C).

**Heat Pumps**

No wiring diagrams can be suggested due to many variations and wiring complexity of heat pumps. If humidifier control fan operation is desired, be sure to design a safe control circuit using equipment diagrams and tracing the equipment wiring.

In heat pump applications, a fan sail switch must be installed due to almost continuous system fan operation. Wire the fan sail switch in series with the low voltage humidity control circuit so the humidifier is on only when the fan is operating. (In most cases, the humidifier does operate in conjunction with the system fan.)

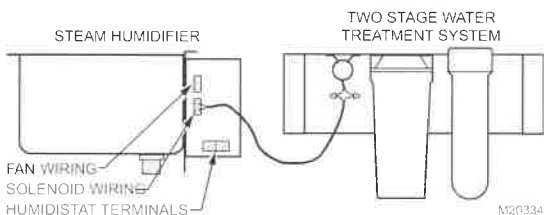
NOTE: Wiring the humidifier to operate with the system fan limits the humidification output.

**Variable-Speed Motors**

Continuous speed on variable speed motors may need to be increased to provide enough air flow to prevent condensation inside the ductwork. Minimum recommended air flow, under most conditions, would be 400 cfm (680 cmh) in the duct where the humidifier is mounted.

**Water Treatment**

Use cable (provided) to connect plug end to humidifier and wire to solenoid using wire nuts (provided). See Fig. 10.



**Fig. 10. Wiring water treatment system and humidifier.**

**Fan Failure Safety Lockout Circuit (HE440)**

It is recommended using a fan failure safety lockout circuit that stops the humidifier operation if the system fan fails.

**IMPORTANT**

*Failure to install a fan failure lockout can result in excessive condensation in the event of a motor/ blower failure.*

If a safety lockout is used, be sure to design a safety control circuit:

- Use equipment diagrams and trace the equipment wiring.
- In most cases, a fan sail switch must be installed to allow the humidifier to operate only when the system fan is operating. Wire the sail switch in series with the low voltage humidity control circuit so the humidifier is on only when the system fan is operating.
- In cases where the humidifier fan wiring terminals are used to control the system fan, a time delay relay may be required to allow time for the system fan to start, prior to using the sail switch to check for fan operation.

**CAUTION**

**Excessive Condensation Hazard.  
Can damage ductwork.**

Install fan failure safety lockout circuit to stop humidifier operation if system fan fails.

**Humidistat Wiring**

Wire the humidistat terminals directly to the humidistat control using low voltage (18 gauge) wiring.

**PLUMBING**

**CAUTION**

**Chemical Hazard.  
Can cause damage to environment or air conditioning system.**

Do not use any refrigerant line connected to an air conditioner.

NOTE: Use either hard or soft water in the water treatment system.

**IMPORTANT**

*Use only copper tubing to plumb from the humidifier to the water treatment system.*

1. Locate the cold water pipe closest to water treatment system.
2. Plumb between the saddle valve (provided) and the solenoid on the water treatment system. See Fig. 11.
3. Use the saddle valve instructions to install the valve (provided). The valve is self-piercing when installed on copper pipe.

**IMPORTANT**

- Position the valve so water flows from the top or side to reduce the chance of clogging the valve with minerals
- Lightly clean the copper tubing ends with fine sandpaper before making any connections.

- Run 1/2 in. (12.7 mm) ID drain line from barbed fitting on water treatment system to floor drain.
- Run 1/4 in. (6.35 mm) OD copper tubing from water treatment system to humidifier.

**IMPORTANT**

*Do not overtighten the compression nut. Moderate tightness prevents leaking.*

## CAUTION

**Flooding Hazard.**

**Can cause water damage to equipment or home.** Connect humidifier overflow drain to a suitable waste drain.

- Use a male 3/8 in. NPT fitting (not supplied) or a 3/4 in. female NPT fitting, standard garden hose (not supplied) to connect the overflow provision of the humidifier to a suitable waste drain.
- Support the drain line at several locations to prevent kinks. Be sure to provide support near any heat source.

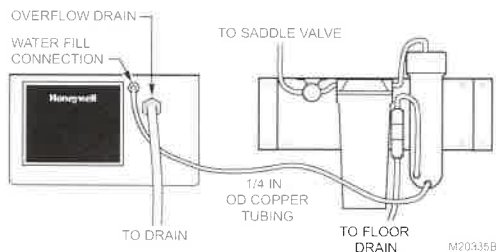


Fig. 11. Plumbing water treatment system and humidifier.

## CHECKING INSTALLATION

After installation is complete, use the following procedure to check humidifier operation:

- Turn on the humidifier water supply.
- Plug in the humidifier and check that the humidifier has power. Wait a few minutes for the reservoir to fill.
- Turn the Convertible Humidity Control to the highest setting.
- Check that the furnace blower comes on to circulate the moist air. The blower may take as long as fifteen minutes to turn on.
- Reset the Convertible Humidity Control to a comfortable setting.

## OPERATION

The HE440A Humidifier is controlled by the Convertible Humidity Control that is installed either on the interior wall in the living area or on the return air duct.

- Choose the humidity control setting using the combination relative humidity/outdoor temperature setting scale on your humidity control.
- Match the dial setting to the outdoor temperature to optimize the humidity level while reducing the moisture condensation on your windows.
- Use Table 2 to adjust the humidity control to the recommended setting.

**NOTE:** As the outside temperature drops, lower the recommended setting to accommodate the effects of dewpoint. These settings should reduce the accumulation of moisture and ice on the windows and in other areas of the house.

Some indoor activities such as cooking, showering and clothes drying can cause excessive levels of humidity and start the accumulation of moisture on the windows.

**NOTE:** If this condition persists for more than a few hours, set the humidity control to the lowest setting to turn off the humidifier. If the condition does not improve, ventilate the house to remove the moisture.

Table 2. Recommended Convertible Humidity Control Settings.

At Outside Temperature	Use This Setting	At Outside Temperature	Use This Setting
-20°F (-29°C)	15	+10°F (-12°C)	30
-10°F (-23°C)	20	+20°F (-7°C)	35
-0°F (-18°C)	25	Above 20°F (-7°C)	40

The HE440A Humidifier uses the principle that hot water creates water vapor. As dry air and vapor mix, the relative humidity of the air rises. The humidity control monitors the relative humidity and activates the humidifier accordingly.

When the humidity control calls for humidity, the humidifier underwater heater starts heating the water in the humidifier reservoir. When the water is warm enough, the humidifier activates a relay that turns on the furnace fan. The warm dry air from the furnace picks up the water vapor and circulates it through the home. The fan continues to circulate the air until the water cools down and then turns off the fan.

Humidified air feels warmer and more comfortable so you may be able to lower the thermostat heating setpoint and save money on heating fuel bills to give you a more comfortable environment that is also energy efficient.