



## HUMIDIFIERS

506368-01  
04/2011  
Supersedes 09/2009

## HEALTHY CLIMATE® HUMIDIFIER

### OPERATING INSTRUCTIONS FOR HEALTHY CLIMATE HUMIDIFIER MODELS HCWB3-12, HCWB3-12K, HCWB3-12A, HCWB3-12AK, HCWB3-17, HCWB3-17K, HCWB3-17A, HCWB3-17AK, HCWP3-18 & HCWP3-18A

Includes Safety, Operating, and Maintenance Instructions

#### Introduction

Thank you for your recent Healthy Climate® Humidifier purchase. We sincerely appreciate your business and are pleased to add your name to our growing list of customers. Now, please take a few minutes and read this booklet. This will familiarize you with the benefits you will receive from the equipment you just purchased and help you understand the routine maintenance that will be required.

#### **WARNING**

##### **Electrical Shock Hazard**



Can cause injury or death.

Disconnect all electrical power supplies before servicing.

Shut off water supply before disconnecting or tapping into any water supply line.

#### **CAUTION**

##### **Risk of Equipment Damage**

Do not use the saddle valve to regulate water flow.

It is designed to be completely opened or closed.

The minerals and solid residue (white dust) not trapped by the replaceable humidifier pad are flushed down the drain. The drain also eliminates the problems caused by stagnant water. This is the most effective and least expensive method to dispose of trouble-causing minerals.

Trouble-free performance and minimum maintenance are assured by the design features of the Healthy Climate® Humidifier. All humidifier housing parts that come in contact with water are non-metal and will never rust or corrode. Neither heat nor water will affect them under normal operating conditions.

The humidifier pad, designed especially for uniform, high evaporation, and the scale control insert also efficiently trap mineral deposits which are often the cause of damage to working parts in ordinary humidifiers. When properly maintained, no "white dust" will be distributed through the living quarters. **The humidifier pad must be in good condition to assure high capacity trouble-free performance. It should be changed at least annually.**

#### Principle of Operation

You have purchased a humidifier that operates on the evaporative principle. It will provide the proper relative humidity (see operating instructions) all during the heating season. It is very possible that you have questions concerning what your new humidifier can do for you, and what you should do to receive maximum benefits from it. This booklet is intended to answer these questions.

The humidifier operates in conjunction with the furnace blower motor. When the humidifier control calls for humidity and the blower motor is operating, water flows to the distribution tray located at the top of the humidifier. The water is uniformly distributed across the width of the tray and through a scientifically designed system of outlets. It flows by gravity over the humidifier pad. Dry, hot air is moved through the moisture-laden humidifier pad where evaporation takes place. The now-humidified air carries moisture in vapor form throughout the home.

**The correct water flow is determined by an orifice in each humidifier. When the humidifier is operating, there will be a small, steady stream of water to drain, which flushes away most of the trouble-causing minerals.**

Older design water distribution trays have a granular coating in the bottom of the distribution tray to provide equal distribution of water to each of the openings assuring an even flow of water over the humidifier pad. **Do not clean the mineral scale off the bottom of the water distribution tray at the end of the humidification season.** If the granular coating is removed, it is not necessary to purchase a new distribution tray. You can accomplish the same uniform performance by applying a small amount of liquid dishwashing soap over the entire inside surface of the water distribution tray. This will allow the water to flow evenly through each of the openings, provided the humidifier is level, in order to achieve maximum capacity.

The current distribution tray incorporates a synthetic fabric liner that replaces the granular coating and is designed to deliver water uniformly over the entire top surface of the humidifier pad, provided it is mounted level. It is normal for some mineral deposits to form in the distribution tray as it dries out between humidification cycles. These deposits can actually help distribute water in the tray, but if they form enough to block the openings, they should be removed as described in the "Required Maintenance" section of this manual.

## Operating Instructions

(Humidifier Models HCWB3-12, HCWB3-12K, HCWB3-17, HCWB3-17K & HCWP3-18)

Your new Healthy Climate® Humidifier is controlled by a manual humidifier control installed either in the living area or in the cold air return. It is important to anticipate a drop in temperature and reduce the setting accordingly to avoid excessive condensation. For example, with an outside temperature of 20° the correct setting will be 35% relative humidity. If the temperature is expected to fall to 0° that evening, then reduce the setting to 25% several hours prior to the temperature change.

### OUTDOOR-INDOOR RELATIVE HUMIDITY TABLE

Outside Temperature	Recommended R.H.
+40°	45%
+30°	40%
+20°	35%
+10°	30%
0°	25%
-10°	20%
-20°	15%

Observance of the recommended relative humidity level on your humidifier control (see table) is an important safeguard. Condensation of water on inside windows in the form of fogging or frost is usually an indication of excessive relative humidity. The same condensation can take place in other areas in your home with the possibility of resulting damage.

## CAUTION

Excess humidity can cause moisture accumulation which allows possible mold growth in your home.

Be sure to keep fireplace dampers closed when not in use. They provide an excellent escape route for heat, as well as humidity.

The humidifier control can be used to determine the relative humidity in your home during the winter. Turn the dial to the lower setting then reverse the dial direction slowly until a "click" is heard. At this point, read the relative humidity on the dial. This will be very close to the actual relative humidity in your home.

To check the humidifier operation, set the humidifier control above the click point, make sure that the water saddle valve is open and that there is electricity to the humidifier. The furnace blower motor must be operating for the humidifier to function. After the humidifier has operated for several minutes and water is entering the humidifier and coming out at the drain, reduce the humidifier control setting below the click point and the humidifier should automatically shut off. Now, set the humidifier control dial at the recommended inside relative humidity, depending on the outside temperature. Follow the suggested settings prior to a drop in the outside temperature.

## Automatic Humidifier Controls

(Humidifier Models HCWB3-12A, HCWB3-12AK, HCWB3-17A, HCWB3-17AK & HCWP3-18A)

HCWB3-12A, HCWB3-12AK, HCWB3-17A, HCWB3-17AK and HCWB3-18A humidifiers are controlled by an automatic humidifier control, which offers two modes of operation: automatic and manual. When installed in the automatic mode, the system benefits you in the following ways:

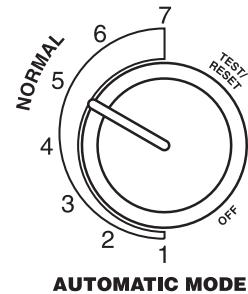
1. The control automatically adjusts your home's RH based on the outdoor temperature.
2. The control eliminates the need to manually adjust the control.
3. The automatic humidifier control precisely controls the RH in your home, ensuring maximum comfort for a greater percentage of time. The automatic humidifier control also prevents excess condensation or low humidity in the home.
4. The automatic humidifier control also eliminates the need to turn the dial setting to **OFF** during the summer season.

## Operating Instructions – Automatic Mode

Immediately after installation, the automatic humidifier control must be set to match your home's condition. Follow these steps to adjust the automatic humidifier control. See **Figure A**.

1. Turn the knob to setting 5, which is within the normal range. During the next 24 to 48 hours, it may be necessary to adjust the dial for more or less humidity, depending on your personal comfort and home's requirements. See Table 1.

Figure A



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Table 1 – OPERATION GUIDE

Condition	Solution
Condensation on windows.	Reduce the setting on the control dial by one increment at a time.
Lack of humidity.	Increase the setting on the control dial by one increment at a time.
Humidifier does not operate. (solenoid does not "click" when control is moved to <b>TEST</b> position).	Make sure power is available to the solenoid valve. Turn dial to <b>TEST</b> . Make certain furnace blower is operating and furnace is calling for heat. If unit still does not operate, consult a heating contractor.
Humidifier won't shut off.	Turn dial to <b>OFF</b> . If unit continues to operate, consult a heating contractor.
Test Mode.	System operation is checked by setting the knob to <b>TEST</b> . Make certain that the furnace blower is operating and furnace is calling for heat. Humidifier will operate for one minute.

2. During the coldest portion of the first heating season, minor adjustments may be necessary, depending on the home's construction. See Table 1.

The RH in your home will be accurately controlled to meet your needs and should not need further adjustment during future heating seasons. Make note of the dial setting in the event the knob gets moved.

Your humidifier is part of a system that will accurately maintain the RH in your home. For every 1°F change in outdoor temperature, the automatic humidifier control will automatically adjust the indoor relative humidity by 0.5% RH. If you would like to determine the RH in your home, follow these steps:

1. Determine the outdoor temperature.
2. Activate the furnace blower by setting your thermostat fan switch to the **ON** position, or by setting your thermostat to a higher temperature.
3. Turn the control dial setting to the **OFF** position. Then, slowly turn the dial clockwise until you hear the solenoid valve click on. Slowly turn the dial counterclockwise until you hear the solenoid valve click off. At this point, make note of the dial setting.
4. Locate your dial setting on Table 2. Follow the dial setting to the right until it intersects with the current outdoor temperature. This is the RH in your home under existing conditions.
5. Return the thermostat and control to their original settings.

**Table 2 – % RELATIVE HUMIDITY GUIDE**

Dial Setting	Outdoor Temperature (°F)					
	-10	0	10	20	30	40
1	10	10	10	15	20	25
2	10	10	15	20	25	30
3	10	15	20	25	30	35
4	15	20	25	30	35	40
5	20	25	30	35	40	45
6	25	30	35	40	45	45
7	30	35	40	45	45	45

As an example, if the outdoor temperature is 20°F and, following step 3, the humidifier turns off at "5" on the dial range, then the RH in your home is 35%.

The automatic humidifier control will accurately control the humidity in your home to a maximum of 45% RH and a minimum of 10% RH. The values of outdoor temperature and dial settings may fall in between or outside of the listed values in Table 2. In these cases, you will be able to approximate your home's actual indoor RH.

## Operating Instructions – Manual Mode

If an outdoor temperature sensor has not been installed with your automatic humidifier control, the control is installed in the cold air return and is set for manual mode operation. In this case, it is important to keep the humidifier control setting at the recommended level in order to avoid excessive indoor RH. This will prevent the formation of condensation on inside windows (fogging or frost on windows). For example, with an outside temperature of 20°F, the correct setting will be 35% RH. If the temperature is expected to fall to 0°F that evening, then adjust the setting to provide 25% RH several hours prior to the temperature change.

The recommended settings on the sticker on the front of the control and in the table on page 2 are based on years of research and experience. For example, a winter time indoor RH of 50% may be considered ideal for your personal comfort, however, this setting may result in damage to your home. Observance of the recommended RH levels on your humidifier control, therefore, is an important safeguard. These settings represent a compromise between RH levels that are desirable for comfort reasons and humidity levels, which will avoid condensation on your windows.

The humidifier control can be used to accurately determine the RH in your home during the winter. With the furnace blower operating at the heating speed, turn the dial to the lowest setting, then reverse the dial direction slowly until you hear the solenoid valve click on. At this point, read the RH on the dial. This will be very close to the actual RH in your home. To check the humidifier operation, set the knob to **TEST**. Make sure that the water saddle valve is open and that there is electricity to the unit. Generally, the furnace blower motor must be operating for the humidifier to function. After the humidifier has operated for one minute and water is entering the unit and coming out at the drain, reduce the humidifier control setting to the recommended inside RH, depending on the outside temperature. Do not leave the control in the test mode. The humidifier will not operate properly in the test mode. Anticipate a drop in the outside temperature and lower the setting several hours before the drop in outside temperature occurs.

### Effect of Water Characteristics

Your humidifier will operate effectively using either hard or mechanically softened water.

Any type of water (hard, soft, hot, or cold) is acceptable for use with the HCWB3 or HCWP3 drain-type humidifiers. Hot supply water, 140° maximum, is recommended for all heat pump applications. The use of hot supply water will also increase the humidifier's capacity.

### **WARNING**

#### Risk of Scalding

Water temperature over 125°F can cause severe burns and scald instantly.

Shut off the hot water supply before disconnecting or tapping into any hot water supply line.

## Annual Maintenance

For best performance, you should replace the humidifier pad in your humidifier at least annually.

- Call your Lennox dealer for preventative maintenance and replacement components.

## Annual Summer Shutdown

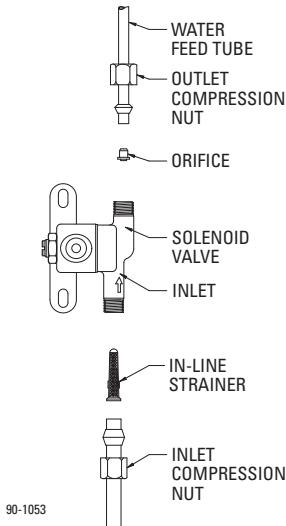
For the summer humidifier shutdown, simply turn the humidifier control to the "OFF" setting (all humidifier models) and close the damper (Models HCWB3-12, HCWB3-12K, HCWB3-12A, HCWB3-12AK, HCWB3-17, HCWB3-17K, HCWB3-17A and HCWB3-17AK).

## Dealer Instructions for Preventative Maintenance

**NOTE:** Annual inspection and preventative maintenance of your total heating system is important for efficient and safe operation. Call your Lennox dealer for humidifier service and maintenance inspection.

Your humidifier is equipped with an in-line water strainer and orifice as shown below. These parts should be inspected and cleaned periodically to assure continued proper humidifier performance. Inspect more often if seeing "white dust".

## I. Water Line Inspection and Service Instructions

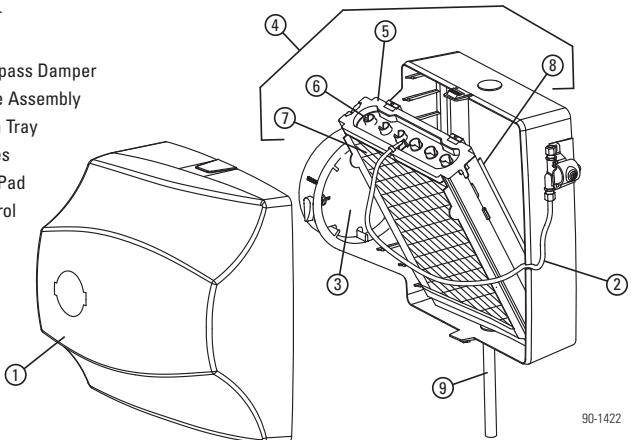


1. Disconnect electrical power to the furnace and shut off water supply.
2. Disconnect the water line at the inlet compression nut.
3. Remove the in-line strainer from inside the inlet side of the valve by using a small nail or wire.
4. Flush the in-line strainer clean or replace with a new strainer, Service Department, Catalog No. 22N14.
5. Reconnect the inlet water line. **Use 7/16" wrench to hold valve while tightening compression nut with 1/2" wrench to prevent damage to valve bracket and to ensure watertight connection.**

6. Disconnect the water feed tube at the outlet compression nut.
7. Inspect the water feed tube by gently flexing it and looking for cracks or signs of wear. Replace tube if it is cracked, brittle, or has been damaged.
8. Remove the orifice from the copper or plastic water feed tube and make sure this small opening is unplugged.
9. Replace the orifice and reconnect the water feed tube. **Use 7/16" wrench to hold valve while tightening compression nut with 1/2" wrench to prevent damage to valve bracket and to ensure watertight connection.**
10. Remove the drain line from the bottom of the humidifier. If applicable, flex it to loosen any mineral deposits or blockages. Flush the drain line with water under pressure to clear it of any debris, and slip it back onto the drain fitting. If drain line does not clean properly, replace it. Inspect the drain line to make sure it has a constant downward slope and is not flattened or blocked.
11. Turn on water supply and reconnect electrical power to the furnace.

## II. Required Maintenance (Humidifier Models HCWB3-12, HCWB3-12K, HCWB3-12A, HCWB3-12AK, HCWB3-17, HCWB3-17K, HCWB3-17A & HCWB3-17AK)

1. Front Cover
2. Feed Tube
3. Integral Bypass Damper
4. Evaporative Assembly
5. Distribution Tray
6. "V" Notches
7. Humidifier Pad
8. Scale Control Insert
9. Drain Line



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## WARNING



### Electrical Shock Hazard

Can cause injury or death.

Disconnect all electrical power supplies before servicing.

Shut off water supply before disconnecting or tapping into any water supply line.

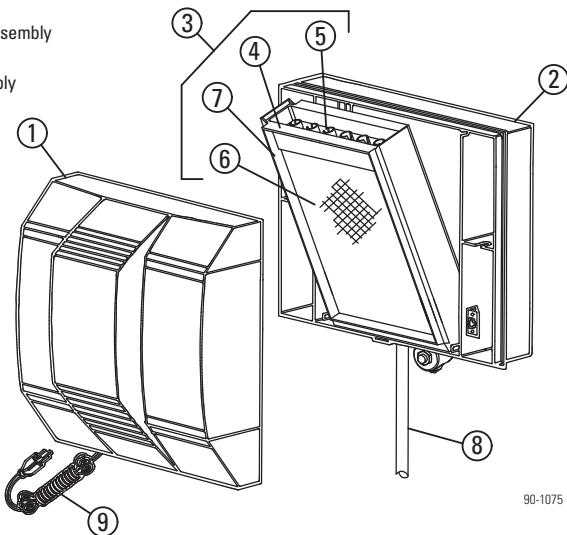
1. Disconnect main power to furnace.
2. Note Humidifier Control setting and turn dial to the "OFF" position.
3. Turn off water supply. Turn the integral bypass damper (3) to the SUMMER position.
4. Press the tabs in the latches on the top and bottom of front cover (1) and pull cover off base with both hands. Set aside.
5. Carefully pull the plastic feed tube (2) out of the evaporative assembly (4) at the top of the evaporative assembly (4). Pull this assembly out by grasping at top and tipping out.
6. Unsnap the distribution tray (5) from the scale control insert (8). Lightly scrape out or brush off any mineral deposits, being careful not to stretch or loosen the synthetic fabric liner. Soaking the tray in vinegar or a lime-removing agent is helpful when trying to remove stubborn mineral deposits.
7. Slide the Humidifier Pad (7) out from the scale control insert (8). Clean the scale control insert of mineral deposits. Replace the Humidifier Pad annually or if performance drops (Catalog No. X2660 for Models HCWB3-12, HCWB3-12K, HCWB3-12A and HCWB3-12AK, and Catalog No. X2661 for Models HCWB3-17, HCWB3-17K, HCWB3-17A and HCWB3-17AK). Slide the Humidifier Pad back into the scale control insert with the colored spot up and snap the distribution tray (5) back into place.
8. Inspect the plastic feed tube (2) by gently flexing it and looking for cracks or signs of wear. Replace tube if it is cracked, brittle, or has been damaged.
9. Reinstall the evaporative assembly (4) into the humidifier by fitting its drain into the round receptacle at the base of the humidifier. Push the assembly in at the top until it snaps into place. Push the end of the feed tube (2) back firmly into the distribution tray and replace the front cover (1).

10. Remove the drain line (9) from the bottom of the humidifier. If applicable, flex it to loosen any mineral deposits or blockage. Then flush it with water under pressure. If it does not properly clear, replace it. Slip drain line back onto the drain fitting. Make sure the drain line has a constant downward slope and is not flattened or blocked.
  11. Turn on the water supply. Return integral bypass damper (3) to appropriate position.
  12. Check system operation:
- Manual Humidifier Control:** With the furnace blower operating and the furnace calling for heat, turn up Control and check system operation.
- Automatic Humidifier Control:** (Automatic or Manual mode) Check system operation and reset Change Humidifier Pad indicator by setting the knob to "Test/Reset". With furnace blower operating and furnace calling for heat, humidifier will operate for one minute. DO NOT LEAVE IN TEST MODE AS HUMIDIFIER WILL NOT OPERATE.
13. Set Humidifier Control to its original position.

### III. Required Maintenance

(Humidifier Models HCWP3-18 & HCWP3-18A)

- 1. Humidifier Cover Assembly
- 2. Base Assembly
- 3. Evaporative Assembly
- 4. Distribution Tray
- 5. "V" Notches
- 6. Humidifier Pad
- 7. Scale Control Insert
- 8. Drain Line
- 9. Power Cord



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#### WARNING



##### Electrical Shock Hazard

Can cause injury or death.

Disconnect all electrical power supplies before servicing.

Shut off water supply before disconnecting or tapping into any water supply line.

1. Disconnect main power to furnace.
2. Note humidifier control setting and turn humidifier control to the "OFF" position.

3. Disconnect electrical power and turn off water supply.
  4. Unlatch humidifier cover assembly (1) from base assembly (2) at the bottom of the cover, lift, and set aside.
  5. Pull out the evaporative assembly (3) by grasping at the top and tipping out.
  6. Remove the distribution tray (4) from the evaporative assembly (3) by unsnapping the black plastic ends of the scale control insert (7), from the tabs at the end of the tray. Follow the instructions below depending upon the type of distribution tray in your humidifier:
- For trays with a synthetic fabric liner:** Lightly scrape out or brush off any mineral deposits, being careful not to stretch or loosen the synthetic fabric liner. Soaking the tray in vinegar or a lime-removing agent is helpful when trying to remove stubborn mineral deposits.
- For trays with granular coating:** Do not scrape off the granular coating, but lightly scrape any calcium deposits out of the "V" notches (5). This textured surface helps ensure even water flow for maximum performance. If the granular coating has been removed, place several drops of liquid dishwashing soap on the distribution tray. This will only need to be done if there is no granular coating.
7. Slide the humidifier pad (6) out from the plastic scale control insert (7). Clean the insert frame by twisting and flexing it to loosen the calcium deposits or use a putty knife. Replace humidifier pad annually or if performance of the humidifier drops. (Catalog No. X2661) Insert pad with the colored spot up and snap the distribution tray (4) back into place.
  8. Reinstall the evaporative assembly (3) into the base assembly (2). Push the evaporative assembly (3) in at the top between the retaining ribs that hold the assembly in place in a vertical position.
  9. Remove the drain line (8) from the bottom of the humidifier. If applicable, flex it to loosen any mineral deposits or blockage. Then flush it with water under pressure. If it does not clear, replace it. Slip drain line back onto the drain fitting. Make sure the drain line has a constant downward slope and is not flattened or blocked.
  10. Reinstall cover assembly (1) by hooking at the top of base assembly (2) and latching at the bottom.
  11. Reconnect electrical power (9) and turn on water supply.

12. Check system operation:

**Manual Humidifier Control:** With the furnace blower operating and the furnace calling for heat, turn up humidifier control and check system operation.

**Automatic Humidifier Control:** (Automatic or Manual mode) Check system operation and reset Change Humidifier Pad indicator by setting the knob to "Test/Reset". With furnace blower operating and furnace calling for heat, humidifier will operate for one minute. DO NOT LEAVE IN TEST MODE AS HUMIDIFIER WILL NOT OPERATE.

13. Set Humidifier Control to its original position.

**NOTE:** The motor is permanently lubricated and does not need to be oiled.