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INSTALLATION INSTRUCTIONS FOR HEALTHY CLIMATE® DEHUMIDIFIER MODEL HCWHD3-070, HCWHD3-095 AND HCWHD3-130

READ COMPLETE SAFETY INSTRUCTIONS AND INSTALLATION INSTRUCTIONS BEFORE STARTING

Safety Instructions

⚠ WARNING

The State of California has determined that this product may contain or produce a chemical or chemicals, in very low doses, which may cause serious illness or death. It may also cause cancer, birth defects or reproductive harm.

⚠ WARNING

1. 120 Volts may cause serious injury from electric shock. Disconnect electrical power before starting installation or servicing. Leave power disconnected until installation/service is completed.
2. Sharp edges may cause serious injury from cuts. Use care when cutting plenum openings and handling duct system.
3. Dropping may cause personal injury or equipment damage. Handle with care and follow installation instructions.

⚠ CAUTION

1. Read all instructions before beginning installation.
2. Improper installation may cause property damage or injury. Installation, service, and maintenance must be performed by a qualified service technician.
3. Do not use in pool applications. Pool chemicals can damage the dehumidifier.
4. Do not use solvents or cleaners on or near the circuit board. Chemicals can damage circuit board components.
5. Wait 24 hours before running the unit if it was not shipped or stored in the upright position
6. Do not use dehumidification to prevent window condensation in the winter. During the winter the dehumidifier does not run enough to effectively prevent window moisture. The dehumidifier has a 40° dew point lower limit and the moisture level in a home during the winter is usually below this value. The window condensation is a result of the cold outdoor air/window temperature. Ventilation is the most effective and efficient means of dealing with window condensation in the winter.

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Specifications

	Model HCWHD3-070		Model HCWHD3-095		Model HCWHD3-130	
Weight	67 lbs.		70 lbs.		113 lbs.	
Capacity AHAM DH-1-2008 80°F, 60% RH Conditions	70 pints per day @ 155 CFM		95 pints per day @ 245 CFM		130 pints per day @ 310 CFM	
Power 115 VAC, Single Phase, 60Hz	6.3A operating current		8A operating current		8.3A operating current	
Dehumidifier Inlet Air Conditions	**Dehumidification:** 50°F – 104°F, 40°F dew point minimum **Ventilation:** 40°F – 140°F, 0%RH – 99%RH (non-condensing)					
Filter	MERV 8, washable					
Airflow	**External Static Pressure ("w.c.)**	**Airflow (CFM)**	**External Static Pressure ("w.c.)**	**Airflow (CFM)**	**External Static Pressure ("w.c.)**	**Airflow (CFM)**
	0.0	155	0.0	245	0.0	310
	0.2	115	0.2	215	0.2	270
	0.4*	70	0.4	185	0.4	225
			0.6*	150	0.6	175
					0.7*	160

**Maximum design external static pressure.*

Packaging Content

1. Dehumidifier
2. Inlet/Outlet Collars
3. Literature
   a. Installation Instructions
   b. Owner's Manual
   c. Application Quick Start Guide
4. Parts Bag
   a. Screws (9)
   b. T20 Torx Bit
5. Barbed fitting for drain connections

Set Up Dehumidifier for Installation

⚠ IMPORTANT

Cut the strap securing the compressor shipping support bracket and remove the strap and shipping bracket. See **Figure 1**.

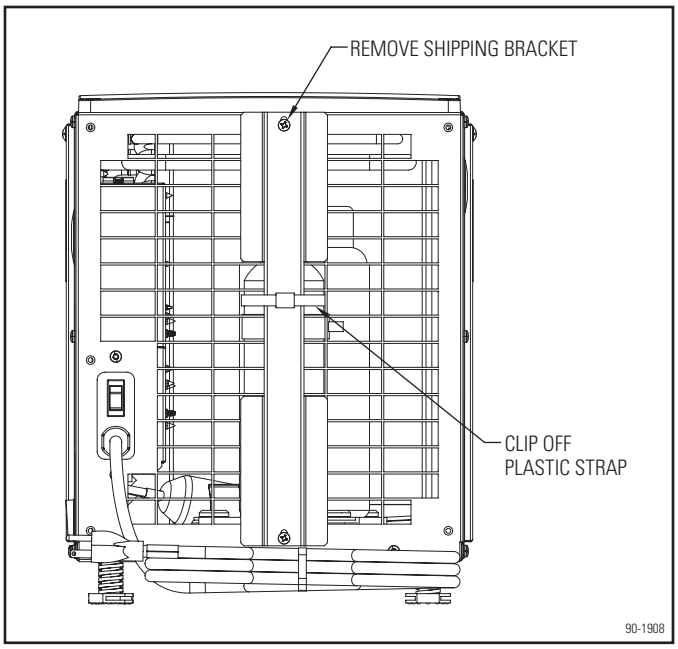


Figure 1. Remove Shipping Bracket

DUCT COLLARS

Standard Basement and Attic Installations (Fully Ducted)

- Use the screws in the parts bag to attach the duct collars to the inlet and outlet of the dehumidifier. The outlet collar has a backflow damper.
- The outlet duct collar may be attached to the top or end of the unit. Move the outlet cover to the location not being used. See **Figure 2**.
- Make sure there are no bends in the duct coming off the outlet for a minimum of 4". This will ensure that the duct will not interfere with the backflow damper function.

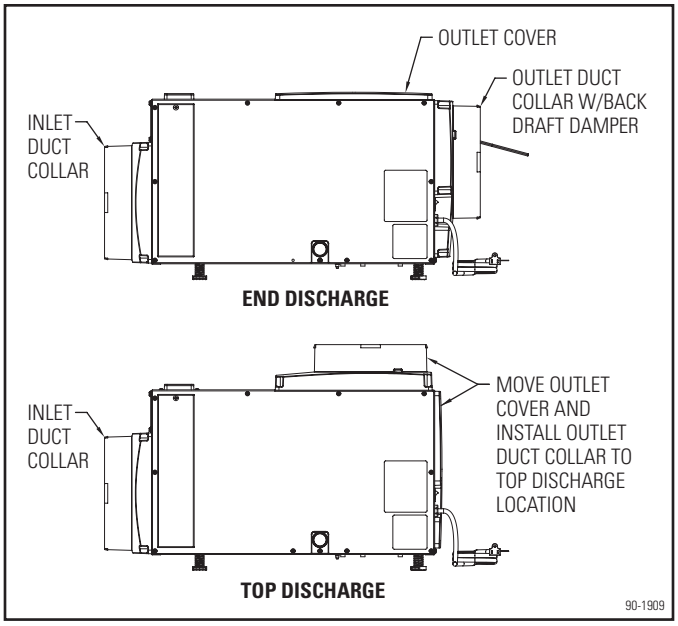


Figure 2. Fully Ducted Installations

Crawl Space, Sealed Attics or Basement Installations

If dehumidifying the space in which the dehumidifier is installed, the duct collars do not need to be installed. Leave the outlet cover on top of the unit. See **Figure 3**.

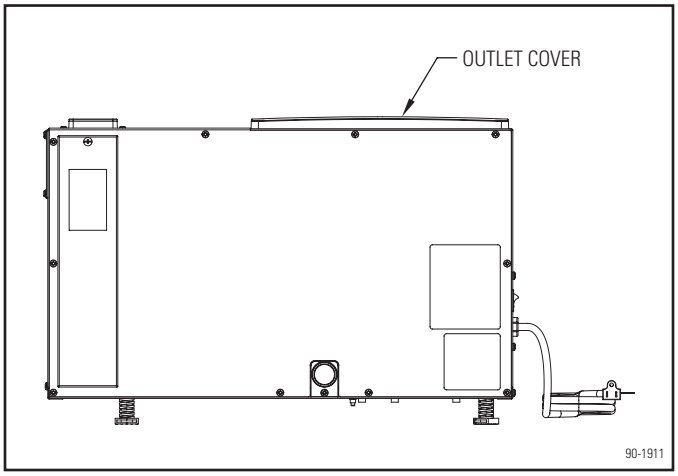


Figure 3. Non-ducted Installations

CONTROL LOCATION

The on-board control can be located on the top of the dehumidifier or can be relocated to the front of the dehumidifier if the control can not be seen/accessed in the top orientation.

To move the control:

1. Remove the front control panel cover.
2. Remove the filter access door and filter.
3. Detach the on-board control by removing the four (4) screws around the control. **NOTE:** Use one hand to support the bottom of the on-board control when removing.
4. Keep the control in the unit and relocate to the front access hole.
5. Secure the control with the same four screws used to attach the control to the top of the unit.
6. Secure the control panel cover to the top of the unit.

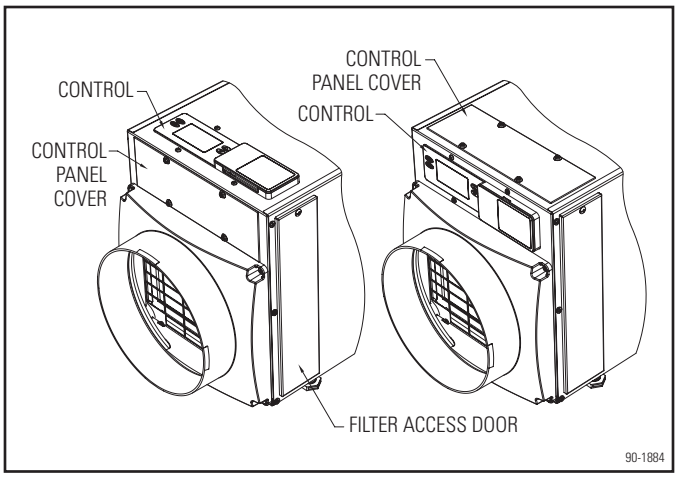


Figure 4. Control Location

Hard Wire Modification

IMPORTANT NOTE: Hard wiring instructions are for Model HCWHD3-070 only.

⚠ WARNING

ELECTRICAL SHOCK HAZARD: 115-volts may cause serious injury or death from electrical shock. Disconnect and tag electrical service before starting installation or field-service. Leave electrical service disconnected until installation or field-service is complete.

ELECTRICAL SHOCK HAZARD: An interrupted or broken ground may cause property damage, serious injury or death should an electrical fault occur. The cabinet must be grounded in accordance with NEC ANSI/NFPA 70-2011 or local codes. In Canada, refer to Canadian Electrical Code CSA C22.1.

FIRE HAZARD: Use of improper wire may cause serious injury, property damage or death due to fire. Do not use aluminum wire for electrical service to the dehumidifier. Use only copper wire.

The HCWHD3-070 dehumidifier can be modified for applications where hard power to 115VAC is required. An electrical disconnect switch can be installed as needed to comply with appropriate codes or ordinances. The ON/OFF switch on the dehumidifier interrupts the 115VAC service to the internal components of the dehumidifier, but does not disconnect the power supply at the 115VAC terminals on the dehumidifier.

United States Installations: Make all electrical connections in accordance with the current edition of the NEC ANSI/NFPA 70 and any local codes or ordinances that may apply.

Canada Installations: Make all electrical connections in accordance with the current edition of the Canadian Electrical Code CSA C22.1 and any local codes or ordinances that may apply.

ELECTRICAL SPECIFICATIONS FOR HARD WIRING

Voltage	110-120 VAC, 60 Hz, 1 phase
Minimum Circuit Capacity	9A
Maximum Fuse or Circuit Breaker Amps	16A
Minimum Wire Size AWG	14

WIRING INSTRUCTIONS

1. Disconnect electrical service at the main fuse or circuit breaker box.
2. Install any code required electrical disconnects to the line service.
3. Remove the side panel and electrical service panel from the dehumidifier. See **Figure 5**.
4. Disconnect the power cord connections from the terminals in the electrical service box. See **Figure 6**.
5. Use pliers to pinch the strain relief and pull it out of the dehumidifier cabinet along with the power cord. See **Figure 5**.
6. Route the service cable through the 7/8" diameter hole where the power cord was removed. USE ONLY COPPER SUPPLY WIRES.
7. Secure the cable/conduit to the dehumidifier using fittings/connectors approved for the type of cable/ conduit used.
8. Connect the ground wire of the service cable to the ground lug in the electrical service box. See **Figure 6**.
9. Connect the line voltage wires of the service cable to the LINE BLK and NTRL WHT terminals. See **Figure 6**.
10. Reattach the electrical service panel and side panel.
11. Restore electrical service at the main fuse or circuit breaker box.

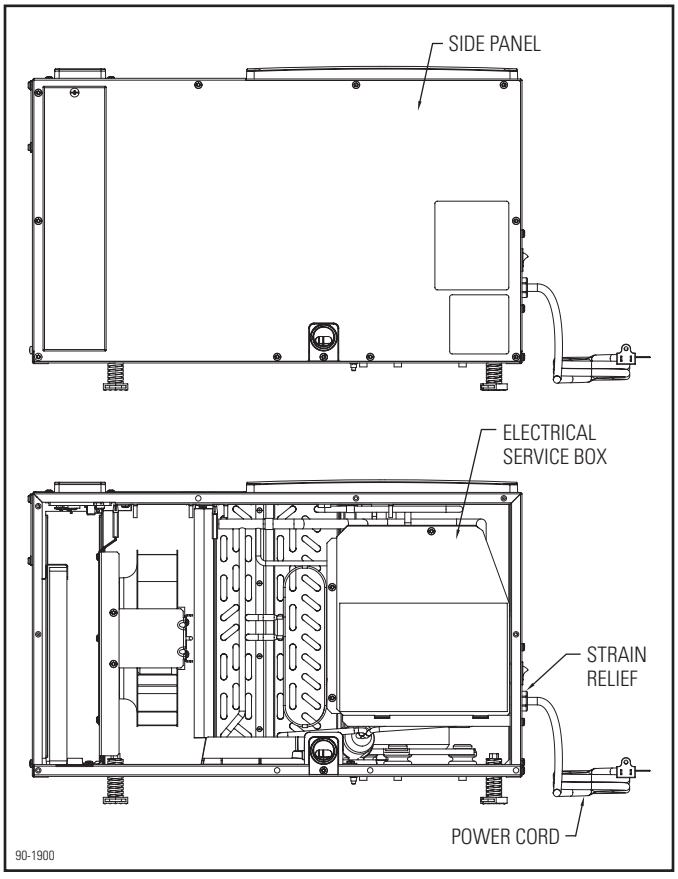


Figure 5. Electrical Service Box Location

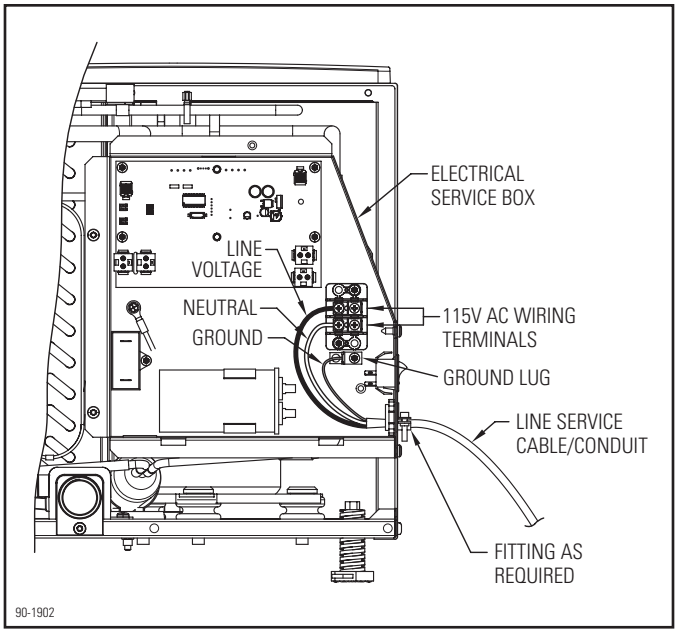


Figure 6. Hard Wire to 115 VAC Service

Location Considerations

- Allow sufficient clearance for filter removal and to prevent airflow obstruction
- Electrical service access will require the removal of the side panel shown. Allow sufficient space for service on this side of the unit.
- If locating the unit in an attic or crawl space, a Lennox iComfort® S30 Thermostat, iComfort Wi-Fi® Thermostat, ComfortSense® 7000 Thermostat, or a Y6456 Control mounted in the living space is recommended.
- For attic installations, it is recommended that the dehumidifier be suspended.
- Always install the dehumidifier in a condensate pan when locating in or over a finished space.

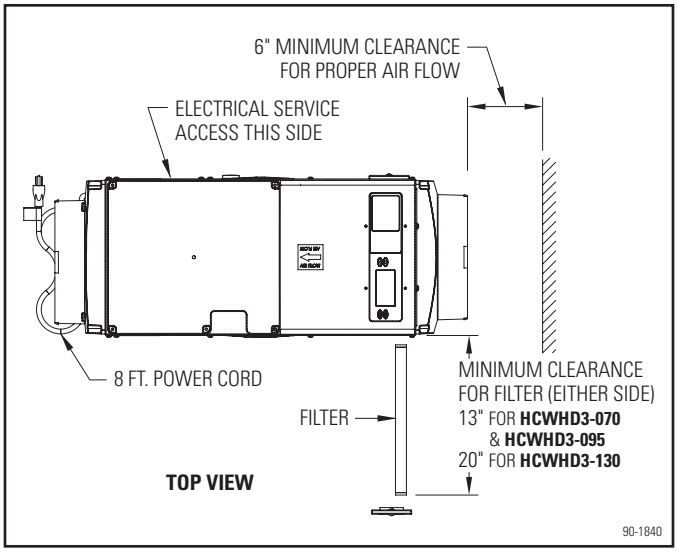


Figure 7. Filter Access Clearance

Suspended Installation

If hanging the unit, use 1/4" (minimum) threaded rod and two unistruts to support the base, just inside the leveling feet. It is recommended that vibration isolators be placed between the unistruts and dehumidifier base. See **Figure 8**. Do not position threaded rods over filter access doors. Allow 3" between the unit and threaded rods on the service access to remove the side panel if service is required. There must be a minimum clearance of 12" on one side of the unit to allow for removal of the filter.

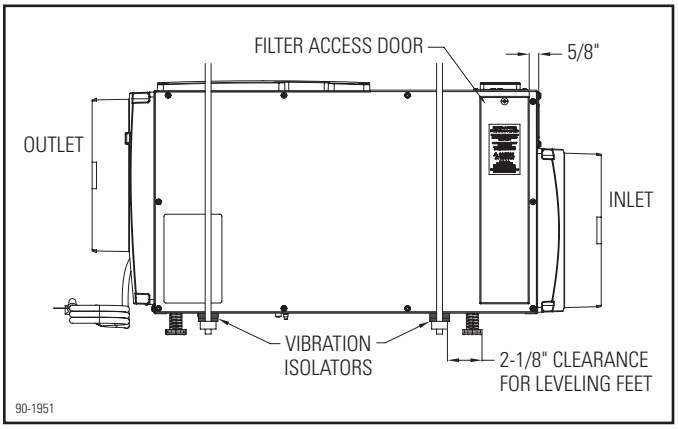


Figure 8. Suspended Installation

Drain Installation

The drain outlet on the dehumidifier can be hard piped using 3/4" nominal drain tubing or the provided fittings and 1/2" clear PVC tubing can be used to drain the dehumidifier. Always maintain a 1/4" constant downward slope from the dehumidifier to the drain and do not allow soft tubing to curl up which may result in air lock.

LEVELING

The feet can be adjusted to level the unit, and if required, to accommodate drain fittings and a secondary condensate pan. Leveling is required to ensure proper drainage from the dehumidifier. See **Figure 9**.

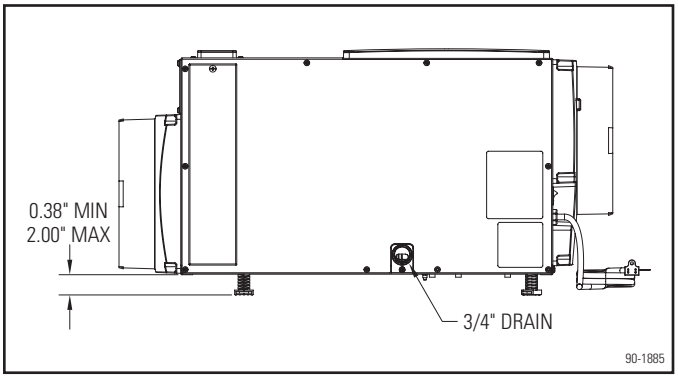


Figure 9. Level the Unit

CONDENSATE PAN, CONDENSATE PUMP AND FLOAT SWITCH

Always install the dehumidifier in a condensate pan when locating in or above a finished space. Adhere to local codes regarding draining of the condensate pan. If a condensate pump is needed, install it in the condensate pan as well.

Install a condensate overflow safety switch (i.e. float switch) in the condensate pan, remove the factory installed jumper wire between the Float Switch terminals on the control and wire the float switch to the dehumidifier as shown in **Figure 10**. Overflow safety switches on condensate pumps can be wired to the Float Switch terminals in a similar fashion.

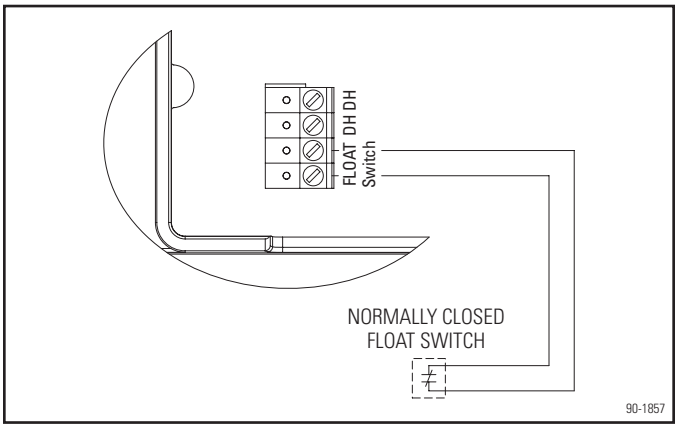


Figure 10. Float Switch Wiring

Ducting to HVAC System – Basement and Attic Installations

The **Preferred Installation** is to duct the dehumidifier to pull air from and return dehumidified air to the HVAC return duct. This installation will ensure warm, dehumidified air is thoroughly mixed with the HVAC system air before being discharged into the living space.

The dehumidifier must be wired to turn on the HVAC fan when operating (see page 11).

Required Component
10" Duct

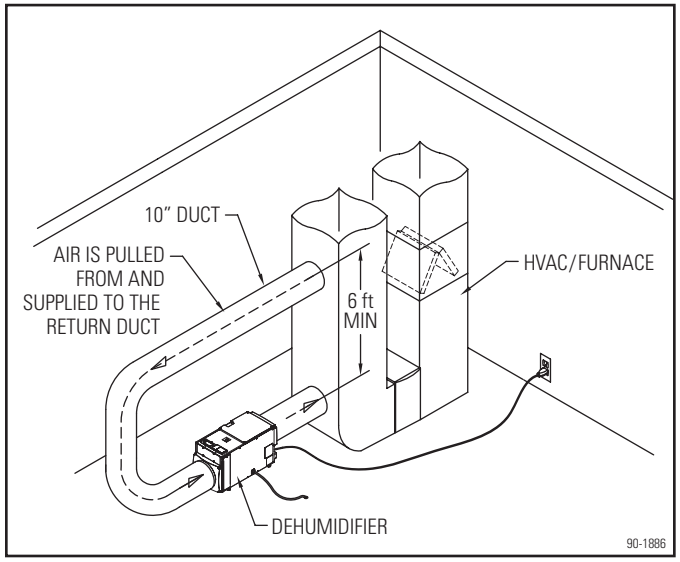


Figure 11. Preferred Basement Installation

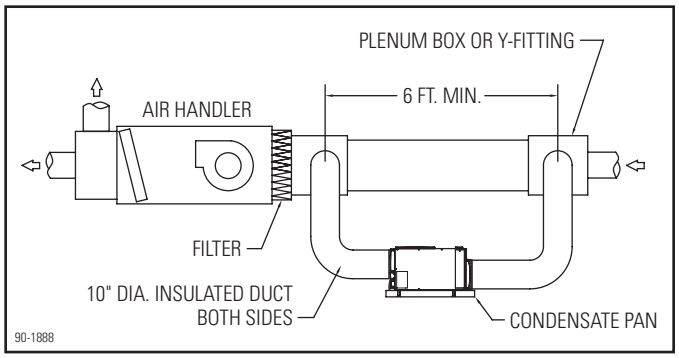


Figure 12. Preferred Attic Installation

Ducting Notes:

- Use insulated duct when the dehumidifier is located in an unconditioned space such as an attic or a garage.
- Use a minimum of 12" of flex duct at the dehumidifier inlet and outlet to prevent vibration noise transmission.
- When ducting return to supply, allow adequate space before the first branch duct to ensure the warm dehumidified air is thoroughly mixed with the HVAC system air.

Ducting for Stand Alone Installations or Non-Ducted Installations

In this installation the dehumidifier is not ducted to the HVAC system and is used to dehumidify a specific area. This installation is typically in basements or crawl spaces.

Optional Components
10" Duct
Grilles with 10" Duct Collars

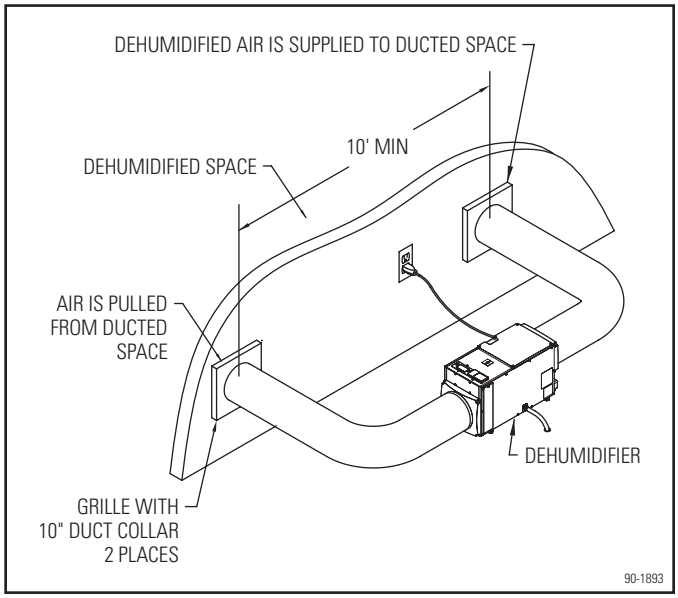


Figure 13. Stand Alone Ducted

Ducting for Two Zone Installations (This is not iHarmony® Zoning System)

In this installation the dehumidifier controls the humidity in two separate zones, a Primary and Secondary Zone. The dehumidifier will dehumidify the Primary Zone as the first priority, and will switch to the Secondary Zone after the dehumidification needs of the Primary Zone have been satisfied. **NOTE: Dehumidifier controls will not work with iHarmony® Zoning Systems.**

IMPORTANT: Normally Closed dampers must be installed in the ducts serving the Primary Zone and Normally Open dampers installed in the ducts serving the Secondary Zone.

Required Components
10" Duct and Fittings
Grilles with 10" Duct Collars
Drain Line
Y6451 Zoning Kit: Includes 2 – Y6483 Normally Closed Dampers, 2 – X4211 Normally Open Dampers and Y7128 24VAC (40VA) transformer

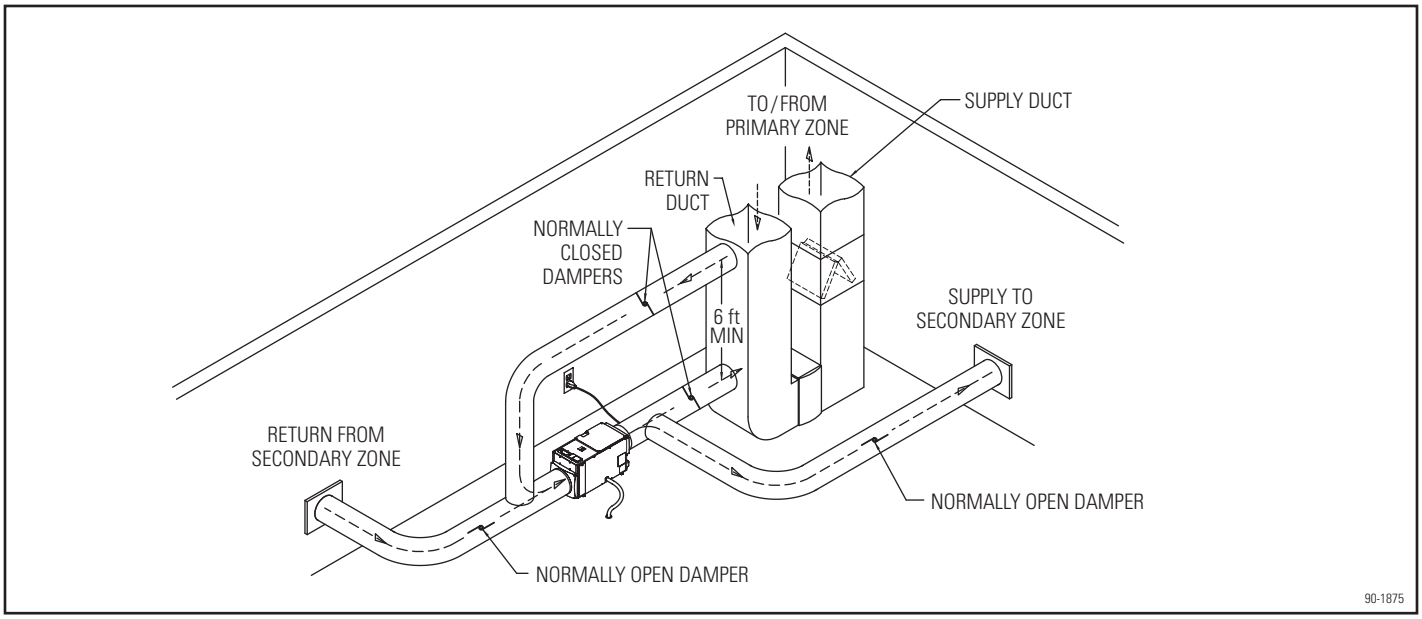
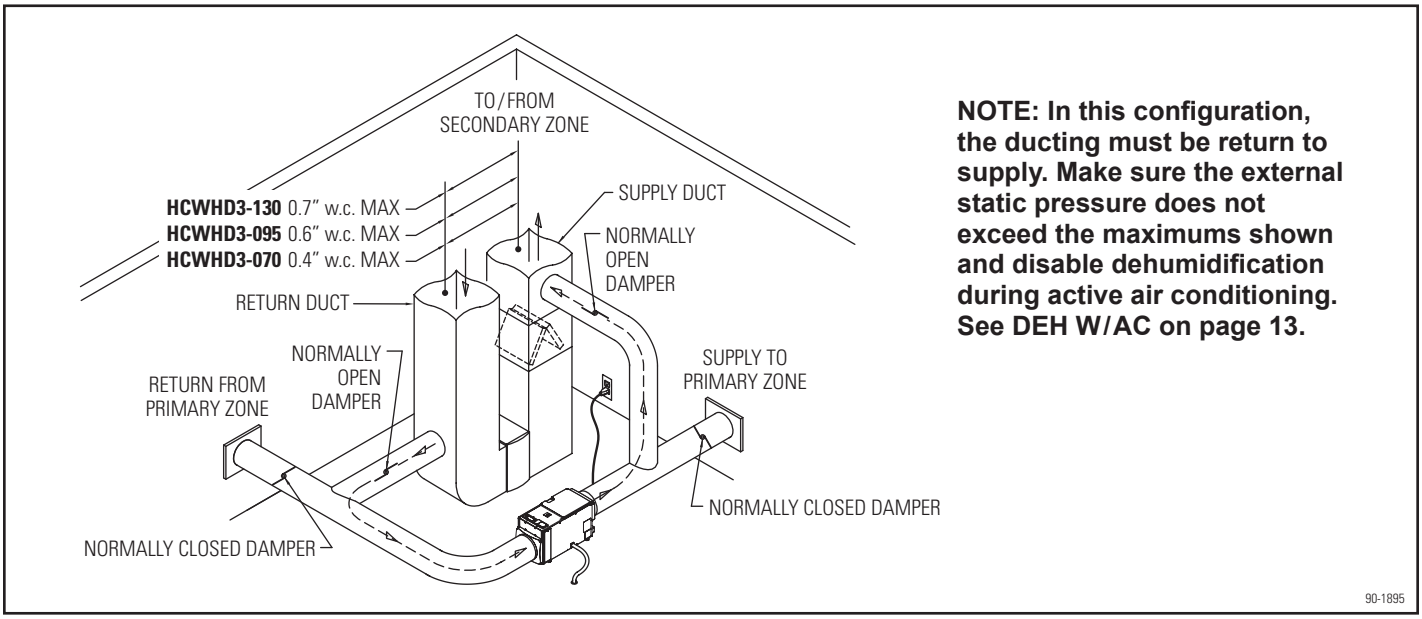


Figure 14. Whole Home as Primary Zone



NOTE: In this configuration, the ducting must be return to supply. Make sure the external static pressure does not exceed the maximums shown and disable dehumidification during active air conditioning. See DEH W/AC on page 13.

Figure 15. Whole Home as Secondary Zone

Lennox Control

The ComfortSense® 7000/7500 Thermostat, the iComfort Wi-Fi® Thermostat, or the iComfort® S30 Thermostat (when using an iComfort® enabled HVAC system) can be used as an external control, if used with a relay. The recommended relay is Catalog # 69J79. See **Figures 18 & 19** for wiring. The NC NO slide switch should remain in the NO position.

When an external control is enabled, "EXTERNAL" will be displayed on the dehumidifier control. External controls are recommended when the dehumidifier is installed in an attic and is ducted to the HVAC system.

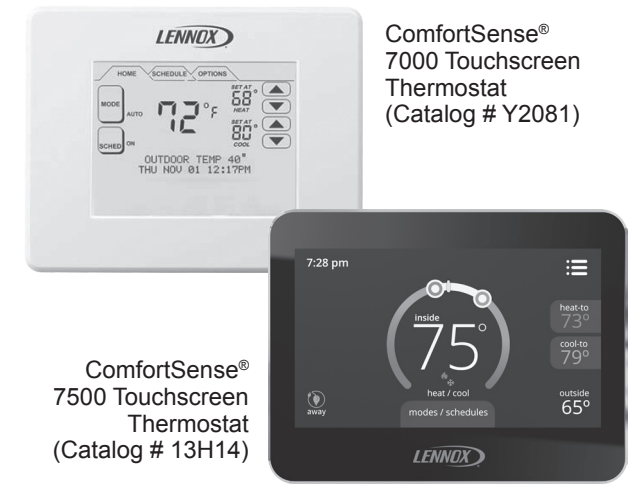
If an external control is used in a zoned application, it must be located in the Primary Zone (refer to TWO ZONE – PRIMARY AND SECONDARY zoned installation on page 15 for details).

NOTE: When using an external control, there is a 3 minute delay at start-up or whenever power is cycled to the dehumidifier. As with any configuration, the compressor has a 3 minute minimum on and off time.

iComfort® S30 Thermostat (Catalog # 12U67)

iComfort Wi-Fi® Thermostat (Catalog # 10F81)

Figure 16. iComfort® Thermostats



ComfortSense® 7000 Touchscreen Thermostat (Catalog # Y2081)

ComfortSense® 7500 Touchscreen Thermostat (Catalog # 13H14)

Figure 17. ComfortSense® Touchscreen Thermostats

NOTE: Both the ComfortSense® 7000/7500 Thermostat and the iComfort® Thermostats use reverse logic for dehumidification. There is 24VAC between the DH and C terminals when there is no call for dehumidification. **Figures 18 & 19** show relay position when there is a call for dehumidification and 0VAC between the DH and C terminals.

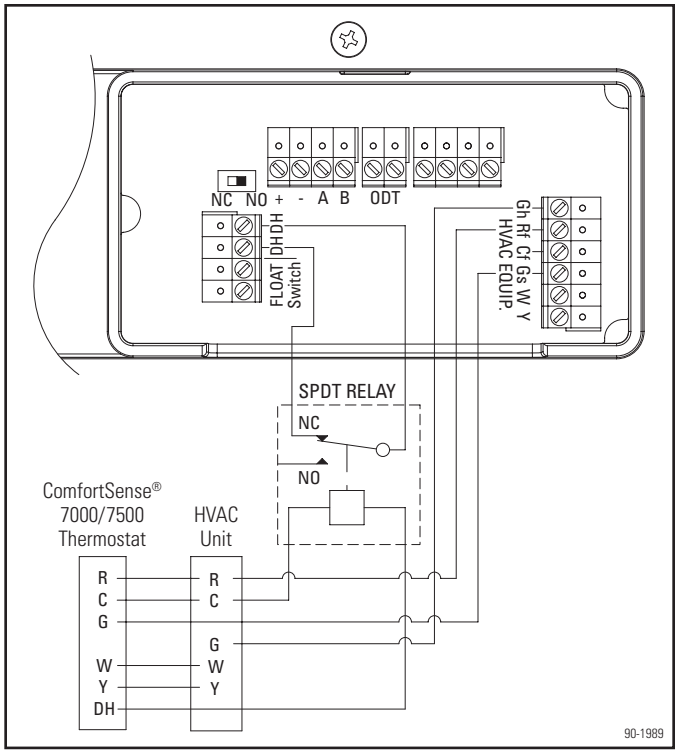


Figure 18. ComfortSense® 7000/7500 Thermostat Wiring

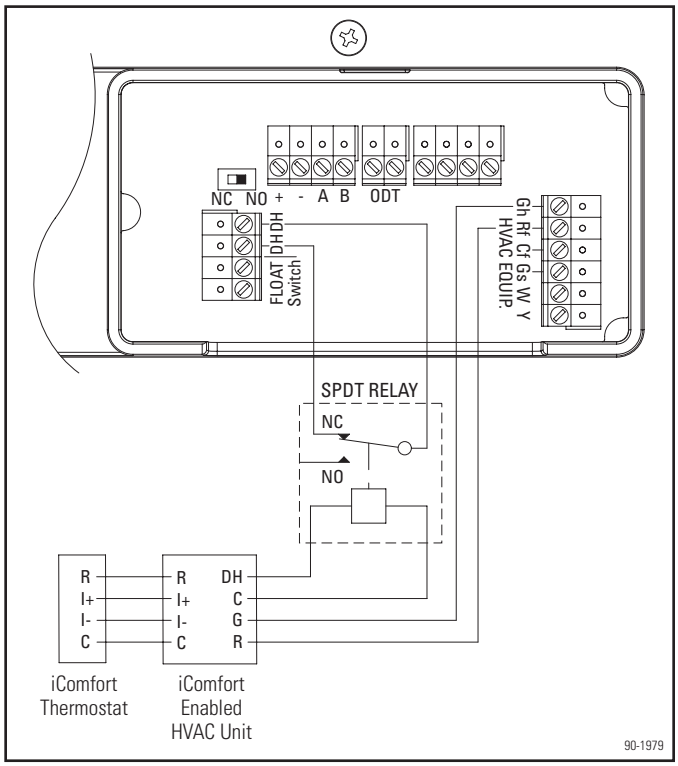


Figure 19. iComfort® Thermostat Wiring

Y6456 – External Control or Crawl Space/Sealed Attic Control and Wiring

NOTE: Use 18-22 AWG wire for control wiring.

EXTERNAL CONTROL

Used as an external control, the Y6456 is mounted in the space that is to be dehumidified. When the dehumidifier is powered, the display on the dehumidifier control will show “EXTERNAL” to indicate that an external control is being used. External controls are recommended when the dehumidifier is installed in an attic and is ducted to the HVAC system.

The Y6456 uses a normally open (NO), dry contact (i.e. not a triac or other semiconductor) relay to complete the circuit between the DH terminals of the dehumidifier control. If using other controls such as a thermostat with dehumidification outputs, ensure the output is a dry contact type and set the NO/NC switch on the dehumidifier control (see **Figure 20**) to correspond with the control being used.

If an external control is used in a zoned application, it must be located in the Primary Zone (refer to TWO ZONE – PRIMARY AND SECONDARY zoned installation on page 15 for details).

NOTE: When using an external control, there is a 3 minute delay at start up or whenever power is cycled to the dehumidifier.

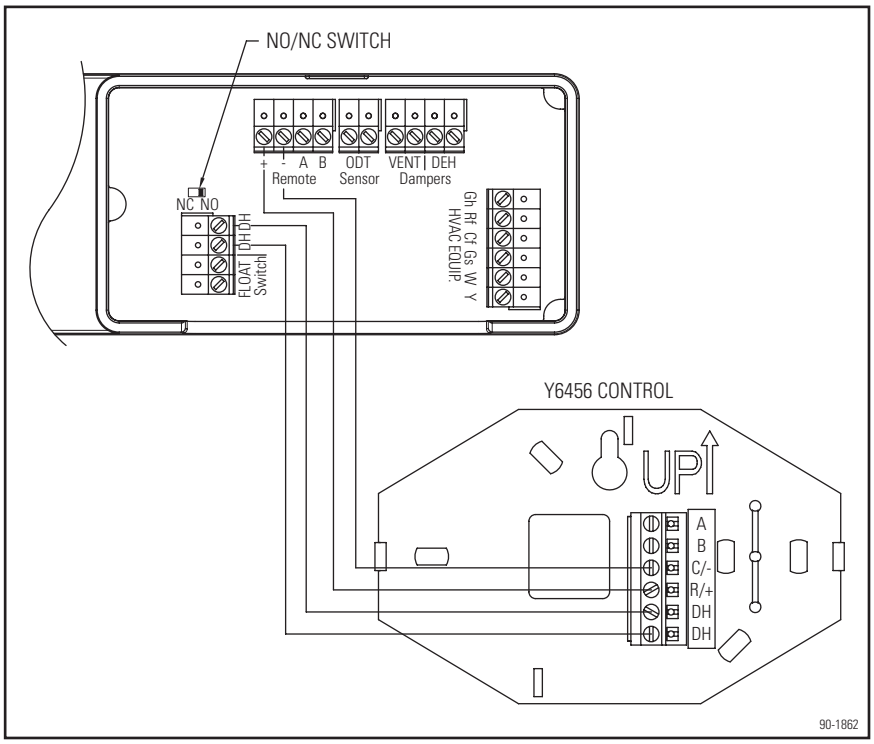


Figure 20. Y6456 External Control Wiring

CRAWL SPACE/SEALED ATTIC CONTROL

Used as crawl space or sealed attic control (or wired remote control), the Y6456 is mounted in the living space while the dehumidifier is located in the area to be dehumidified. When the dehumidifier is powered, the display on the dehumidifier control will show “REMOTE” to indicate that a wired remote control is being used. The RH shown on the Y6456 is the RH measured at the dehumidifier.

Wired remote control is typically used for crawl space or sealed attic applications, but is also recommended when the dehumidifier and the space being dehumidified are inconvenient or difficult for the homeowner to access. Examples of this type of application include basements that may be inconvenient to access or storage areas.

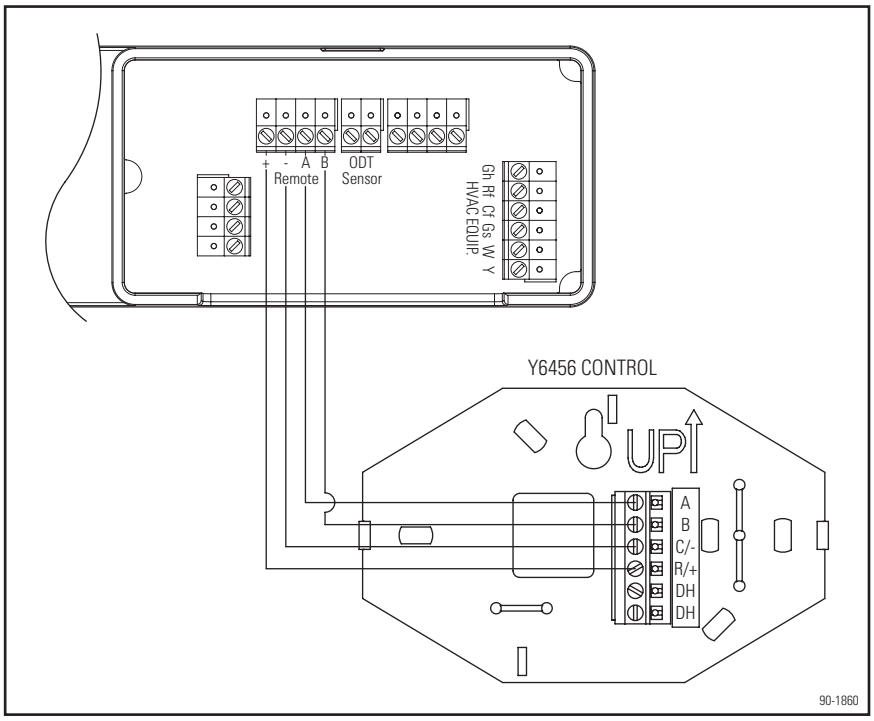


Figure 21. Y6456 Crawl Space/Sealed Attic (Wired Remote) Wiring

Wiring the Dehumidifier to the HVAC System and Zone Dampers

NOTE: Use 18-22 AWG wire for wiring to HVAC system and zone dampers.

Pull off the wiring access cover near the dehumidifier control to access the wiring terminals. Snap the wiring access cover back into place after completing all wiring.

WIRING TO THE HVAC SYSTEM

When the dehumidifier is ducted to the HVAC system, it is recommended that it also be wired to the HVAC system as shown in **Figure 22**. If ducted to the HVAC system in return to return configuration, the dehumidifier **must** be wired to the HVAC system to prevent short circuiting dehumidified air directly back to the dehumidifier inlet. In return to supply ducting configuration, running the HVAC fan with the dehumidifier ensures the warm dry air is mixed with room air before being discharged to the home. **NOTE: Make sure the external static pressure does not exceed the maximums shown on page 2, and disable dehumidification during active air conditioning (see DEH W/AC on page 13).**

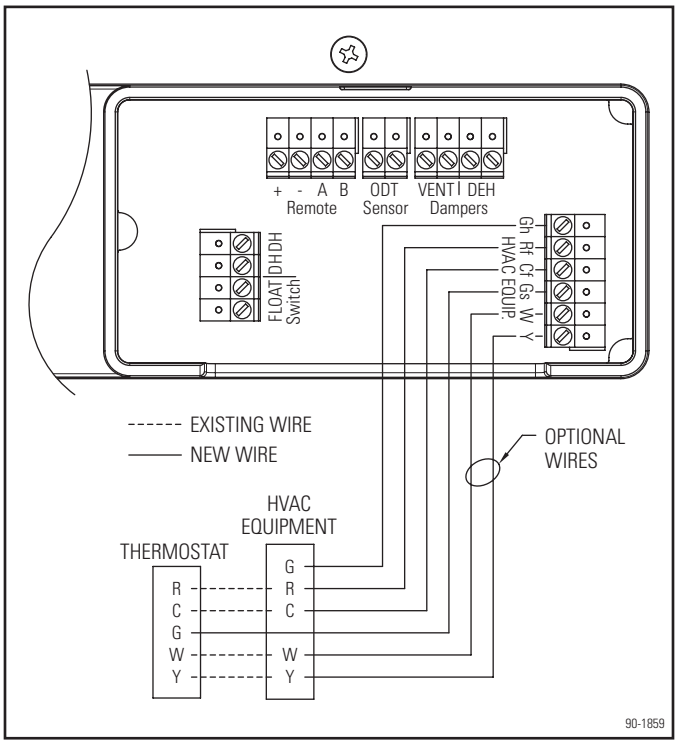


Figure 22. Wiring to HVAC System

Optional W & Y Wiring

Wire the W and/or Y terminal to the HVAC system when using the ventilation feature of the dehumidifier (see **Ventilation** on page 16).

Wire the dehumidifier Y terminal to the HVAC system if it is desired to disable the dehumidifier compressor from operating when the air conditioning is running. See **DEH W/AC** in **System Set-up** on page 13 for additional set up steps required to access this feature.

WIRING TO ZONE DAMPERS

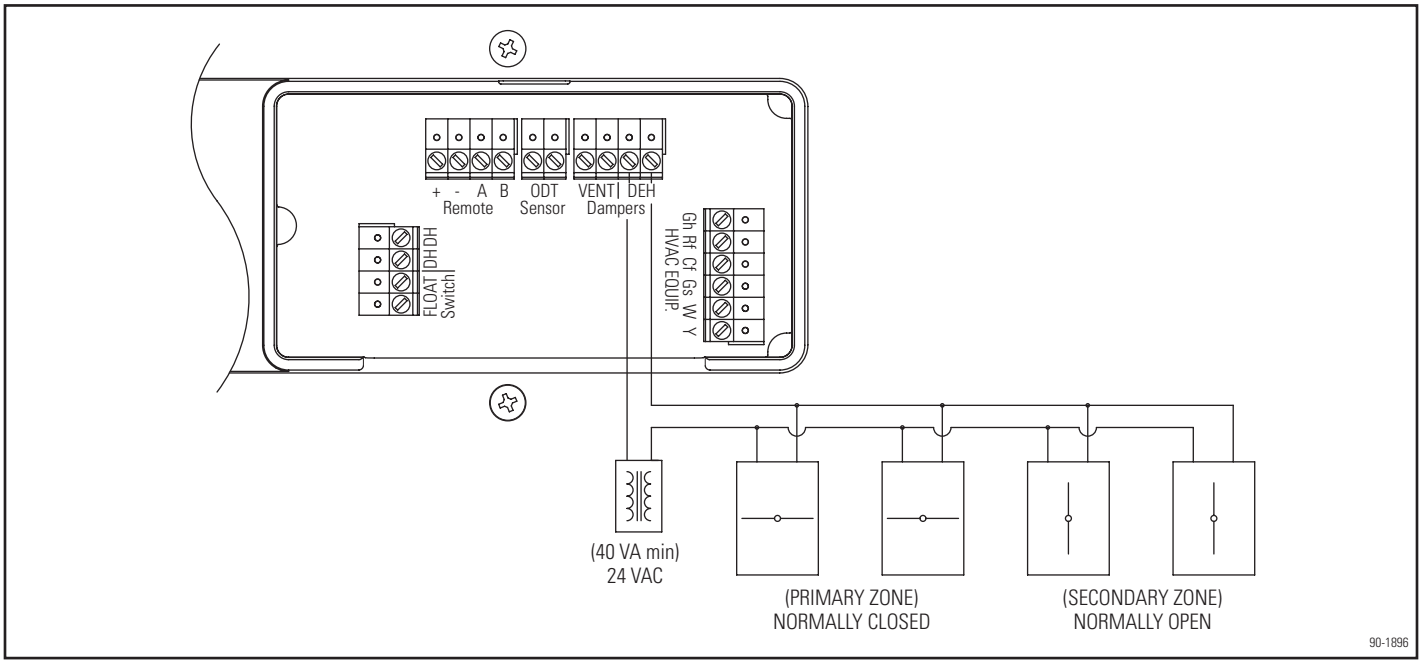
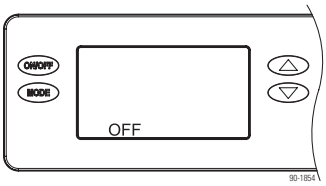


Figure 23. Two Zone Wiring On-Board Control

System Set-up and Checkout

If dehumidifier installation does not include ventilation or zoning and will not be wired to an external control, remote control or the HVAC system, proceed to **INSTALLER TEST MODE** section on page 14.

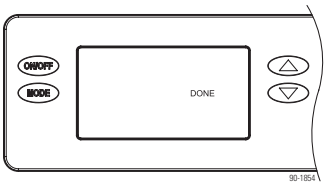
1. Check all wiring.
2. Make sure the wire access cover has been snapped back onto the on-board control.
3. Plug unit in and turn power switch to ON.
4. The on-board control screen should display OFF.

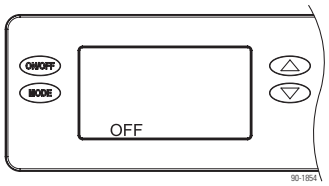


NOTE: If the display backlight is not on, the first button press (any button) will only turn on the backlight. Press the button a second time to achieve function.

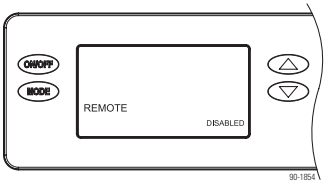
5. Hold the MODE button on the on-board control for 3 seconds to enter the Installer Set-up Menu.
6. Navigate through the following screens to set up the dehumidifier for the installed application.

   Use the UP or DOWN arrows to select items and use MODE to switch to the next set-up option. To exit installer set-up, all options must be scrolled through using the MODE button.
7. After the installer set up options have been completed, DONE will blink for 3 seconds and the control will return to the OFF screen.

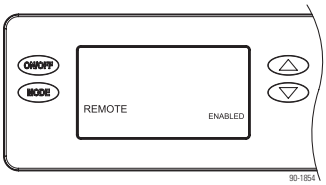




REMOTE CONTROL – CRAWL SPACE/SEALED ATTIC

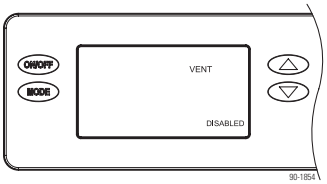


If not installing in a crawl space or sealed attic with Y6456 remote control, press MODE to go to VENT screen selections

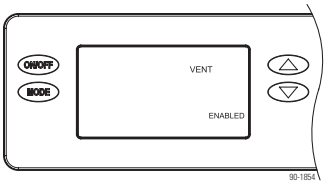


If installing in a crawl space or sealed attic with remote control, Enable and press MODE. The installer set-up is complete, proceed to **INSTALLER TEST MODE** section on page 14.

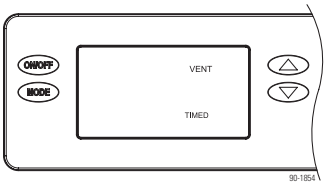
VENTILATION



If not using the dehumidifier to bring in outdoor air, press MODE to go to ZONE screen selections.

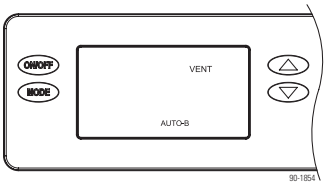


If using the dehumidifier for ventilation, Enable and press MODE to select TIMED or AUTO.

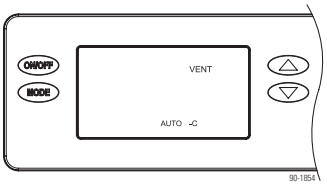


If ventilating based on time only (no outdoor temperature restrictions), press MODE at the VENT TIMED screen to go to ventilation time selection screen.

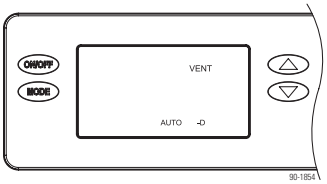
If ventilating with outdoor temperature restrictions, use the UP arrow to go from VENT TIMED to VENT AUTO –B and then the UP/DOWN arrows to select the desired ventilation mode, B, C, or D. Press MODE to go to the ventilation time selection screen.



Vent-Auto-B: Ventilation prevented when outdoor temperature is below 0°F and above 100°F. Between 0°F – 20°F ventilation is only allowed during a HVAC heat call.

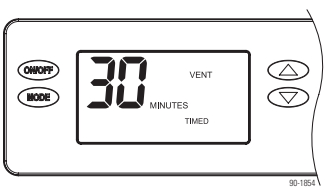


Vent-Auto-C: Ventilation prevented when outdoor temperature is below 0°F and above 100°F.



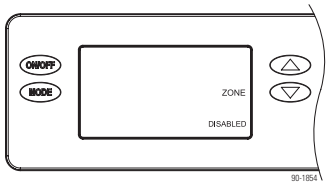
Vent-Auto-D: Ventilation prevented when outdoor temperature is below 0°F and above 90°F. Between 0°F – 40°F ventilation is only allowed during a HVAC heat call.

Vent-Auto-B, -C, -D modes apply outdoor temperature limits and require an outdoor temperature sensor to be installed.

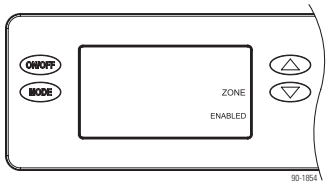


Press the UP or DOWN arrows to adjust the ventilation time per hour from 0 to 60 minutes. After selecting time, press MODE to go to the ZONE screen selections.

ZONE

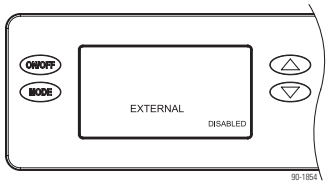


If installing the dehumidifier in a single zone application, select DISABLED and press MODE to go to the EXTERNAL control screen selections.

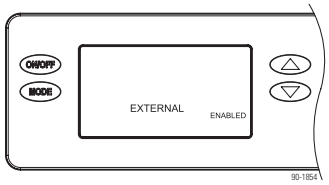


If installing the dehumidifier in a two-zone application, use the UP or DOWN arrows to select ENABLED and press MODE to go to the EXTERNAL control screen selections.

EXTERNAL CONTROL

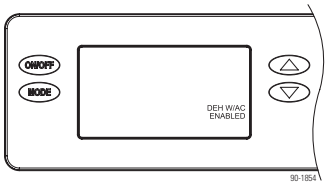


If using the dehumidifier on-board control select DISABLED and press MODE to go to the dehumidification with air conditioning (DEH W/AC) screen selections.

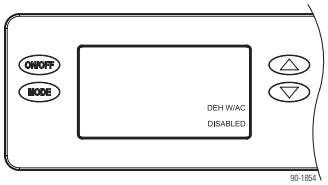


If using an iComfort® Thermostat or a Y6456 as an external control or other third-party external control, such as a thermostat with dehumidifier outputs, use the UP or DOWN arrows to select ENABLED and press MODE to go to the dehumidification with air conditioning (DEH W/AC) screen selections.

DEH W/AC

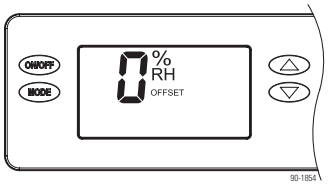


To allow dehumidification during active air conditioning, select ENABLED and press MODE.



To disable dehumidification when the air conditioning is on, select DISABLED and Press MODE.

RH OFFSET



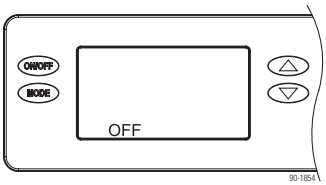
An offset can be applied to the on-board humidity reading to avoid discrepancies with other humidity measuring devices in the home. Use the UP/ DOWN arrows to select an offset from -5% to 5%. Press MODE to exit the installer set-up screens.

INSTALLER TEST MODE

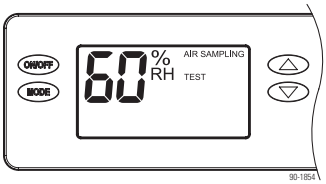
If everything is properly wired, the dehumidifier and all of the wired components will turn on and off during Installer Test Mode to demonstrate that all are properly operating. Installer Test Mode lasts for four (4) minutes. If the ON/OFF button is pressed during test mode, the dehumidifier will exit Installer Test Mode and return to the OFF screen.

If any of the outputs in the Installer Test do not turn on or an error code is displayed, see the Troubleshooting section beginning on page 19.

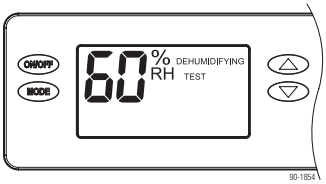
Dehumidification Only



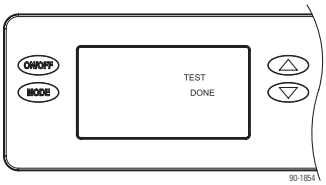
If the dehumidifier is not already OFF, press the ON/OFF button to turn it off.



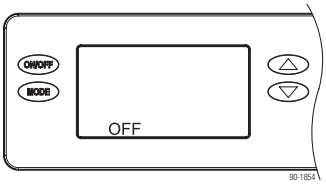
Press and hold the ON/OFF button and MODE buttons for 3 seconds. The measured humidity, AIR SAMPLING and TEST will show on the display. If wired to the HVAC system, the HVAC blower will turn on and if there is/are damper(s) wired to the DEH DAMPER terminals of the control, the damper(s) will energize.



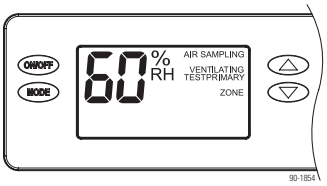
After three (3) minutes the dehumidifier compressor will turn on and DEHUMIDIFYING will replace AIR SAMPLING on the control screen.



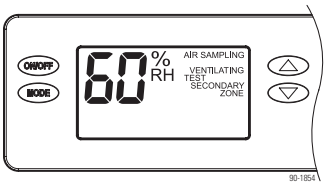
After one minute of compressor operation, all outputs will turn off and DONE will blink for 3 seconds and then return to the OFF screen.



Zoning and/or Ventilation



If the dehumidifier has been set up for ventilation, VENTILATING will appear on the display throughout Installer Test Mode, and the ventilation damper will be energized.



If the dehumidifier has been set up for zoning, PRIMARY ZONE will show on the display for the first minute of dehumidifier blower operation. After one minute, SECONDARY ZONE will show on the display and the zone dampers will de-energize.

Start Up and Sequence of Operation

SINGLE ZONE WHOLE HOUSE OR STAND ALONE USING THE DEHUMIDIFIER CONTROL

1. Press the ON/OFF button to turn the dehumidifier control ON. The display will show the current setting, and the dehumidifier blower and HVAC blower (if wired to the HVAC system) will turn on to start sampling the air.

   The setting will be replaced by the measured humidity and “AIR SAMPLING” will show on the display.

2. Use the UP or DOWN button to adjust the humidity setting as desired. The recommended initial setting is 55%.

3. After three (3) minutes of sampling, the measured humidity will be compared to the setting:

   a. If the humidity is above the setting, the dehumidifier compressor turns on and “AIR SAMPLING” will be replaced by “DEHUMIDIFYING”. The compressor remains on until the measured humidity falls 3% RH below the setting.

   b. If the measured humidity is below the setting, the blowers turn off and the display returns to showing the RH setting.

4. The dehumidifier will sample again every 60 minutes, or at any time if the humidity setting is lowered.

SINGLE ZONE WHOLE HOUSE OR STAND ALONE USING AN iCOMFORT® THERMOSTAT OR Y6456 EXTERNAL CONTROL

1. Press the ON/OFF button to turn the dehumidifier control ON. “EXTERNAL” will show on the display to indicate that an external control is wired to the dehumidifier.

2. At the iComfort® Thermostat, make sure the Aux dehumidifier is selected in installer setup and humidity display is turned on from the HO system settings screen. At the Y6456, press the ON button; the Y6456 will display the measured RH.

3. From the iComfort® Thermostat home screen, press the arrow on the right side of the screen to access the features screen, then select system setting icon and adjust dehumidify setting to desired setting. Use the UP or DOWN button on the Y6456 to adjust the humidity setting as desired. The recommended initial setting is 55%.

4. If the %RH measured by the iComfort® Thermostat rises above the dehumidification setting, the dehumidifier will turn on as will the indoor blower, and the home screen will show the system is dehumidifying. The system will turn off when the %RH set point is reached. If the RH measured by the Y6456 rises above the setting, the dehumidifier will turn on as will the HVAC blower (if wired to the HVAC system). “DEHUMIDIFYING” will appear on the dehumidifier control display to show that the Y6456 is calling for dehumidification. The dehumidifier and HVAC blower (if on) will turn off when the RH measured by the Y6456 drops 3% RH below the setting.

CRAWL SPACE OR SEALED ATTIC (REMOTE) CONTROL USING Y6456

1. Press the ON/OFF button to turn the dehumidifier control ON. “REMOTE” will show on the display to indicate that a remote control is wired to the dehumidifier.

2. At the Y6456, press the ON button; the Y6456 will display the RH measured at the dehumidifier, and the dehumidifier blower will turn on to start sampling the air.

3. Use the UP or DOWN button on the Y6456 to adjust the dryness level as desired. The dryness levels are from 1 to 7, with 1 being least dry and 7 being most dry; the recommended initial setting is 3.

4. After three (3) minutes of sampling, the measured humidity will be compared to the setting:

   a. If the humidity is above the setting, the dehumidifier compressor turns on and “ON” flashes on the Y6456 display.

   b. If the measured humidity is below the setting, the dehumidifier blower turns off.

5. The dehumidifier will sample again every 60 minutes, or at any time if the dryness level is increased.

TWO ZONE – PRIMARY AND SECONDARY

1. Press the ON/OFF button to turn the dehumidifier control ON.

   Dehumidification of the Primary Zone follows the same sequence as described to the left for Single Zone, with or without a Y6456 external control installed in the Primary Zone. The dehumidifier control display will show “PRIMARY ZONE” in addition to that described to the left when sampling or dehumidifying the Primary Zone. The zone dampers are energized when sampling or dehumidifying the Primary Zone.

2. The Secondary Zone uses the humidity setting on the dehumidifier control. During Secondary Zone sampling or dehumidification, the zone dampers are de-energized and the HVAC blower (if on) stops. “SECONDARY ZONE” will show on the dehumidifier control display when the Secondary Zone is either sampling or dehumidifying. If the Primary Zone had just finished a dehumidification demand, the compressor will continue to run during Secondary Zone sampling to prevent short cycling of the compressor.

   The Secondary Zone is sampled immediately after the Primary Zone has finished sampling, or if there is a call for dehumidification from the Primary Zone, immediately after the call has been satisfied. When a Y6456 external control is installed, the Secondary Zone will be sampled once per hour if there has not been a call for dehumidification from the Primary Zone. Secondary Zone sampling will also occur whenever the setting on the dehumidifier control is lowered.

Ventilation

The dehumidifier can activate a normally closed damper to bring in outdoor air through a fresh air intake duct. This feature can not be used when a Y6456 has been installed in a Remote Control application, and is not recommended for two-zone installations.

Required Components
X4152 Ventilation Damper – 6 in. Normally Closed (NC)
6" Insulated Duct for Fresh Air Intake Duct
22N03 (24 VAC, 40 VA) 24 VAC Transformer for Ventilation Damper
Intake Hood
18-22 AWG Wire

Optional Component
58N66 Outdoor Temperature Sensor

INSTALLATION & WIRING

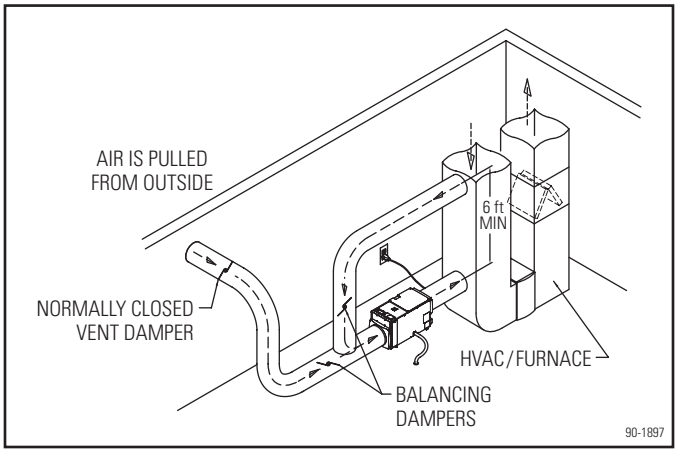


Figure 24. Single Zone, On-Board Control Ventilation Installation

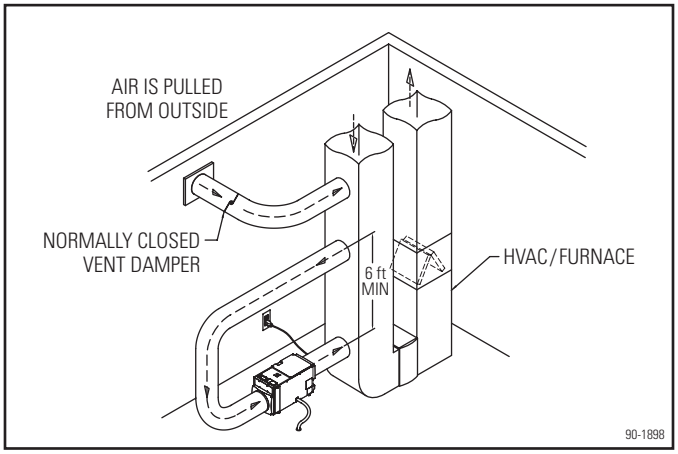


Figure 25. Single Zone, External Control Ventilation Installation

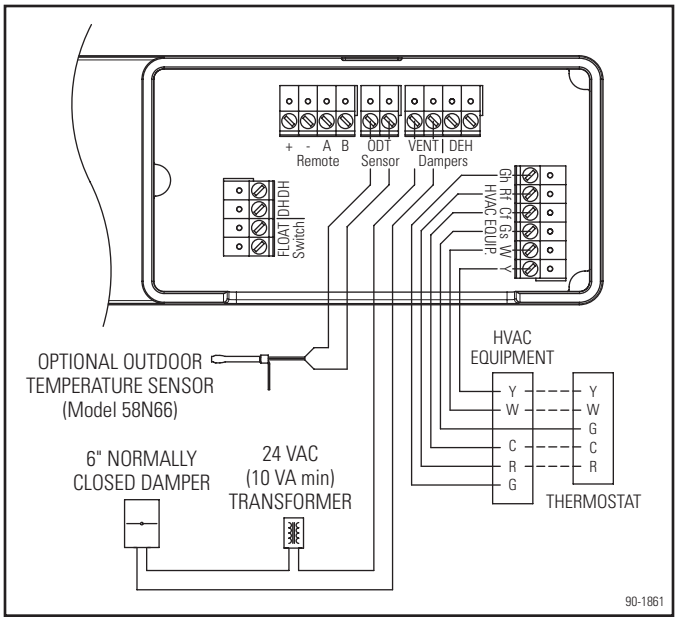


Figure 26. Ventilation Wiring

VENT-AUTO & VENT-TIMED

The dehumidifier can ventilate in four modes.

Vent-Timed: Ventilation occurs based only on time setting; no temperature restrictions.

Vent-Auto-B: Ventilation prevented when outdoor temperature is below 0°F and above 100°F. Between 0°F – 20°F ventilation is only allowed during a HVAC heat call.

Vent-Auto-C: Ventilation prevented when outdoor temperature is below 0°F and above 100°F.

Vent-Auto-D: Ventilation prevented when outdoor temperature is below 0°F and above 90°F. Between 0°F – 40°F ventilation is only allowed during a HVAC heat call.

Vent-Auto-B, -C, -D modes apply outdoor temperature limits and require the 58N66 Outdoor Temperature Sensor to be installed.

OUTDOOR TEMPERATURE SENSOR INSTALLATION

The 58N66 Outdoor Temperature Sensor should be installed outside in a shaded location, or in the outdoor air intake duct.

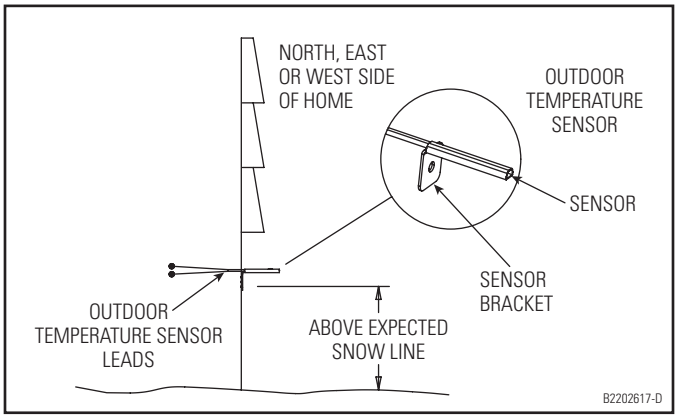


Figure 27. ODT Mounted Outside

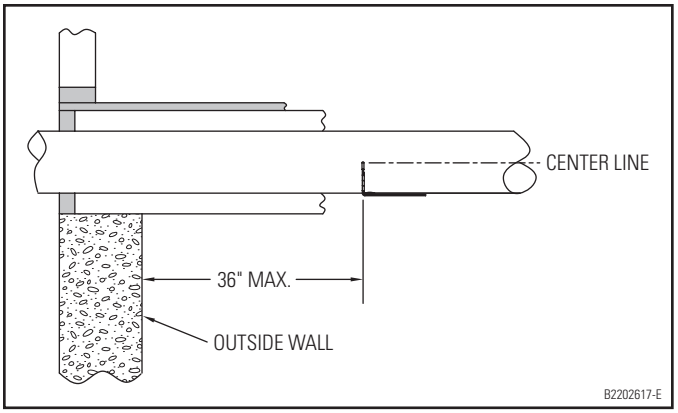


Figure 28. ODT Mounted in Intake Duct

DETERMINE VENTILATION REQUIREMENTS

Calculating Airflow Requirement

1. The MINIMUM ventilation requirement is calculated using ASHRAE 62.2-2010.

   ASHRAE Airflow in CFM = [House Area in Sq. Ft. x 0.01] + [(Number of Bedrooms +1) x 7.5]

   NOTE: Use 'Number of Bedrooms + 1' or 'Number of Occupants', whichever is larger.

2. **Table 1** shows the calculated airflow values to the nearest 5 CFM.

3. Record the required CFM. _____

Table 1. CFM Required

House Sq. Ft.	Number of Bedrooms				
	2	3	4	5	6
1000	35	40	50		
1500	40	45	55	60	70
2000	45	50	60	65	75
2500	50	55	65	70	80
3000	55	60	70	75	85
3500			75	80	90

Determine Fresh Air Delivery Rate

1. Measure the negative static pressure of the return system at the location where the fresh air intake duct enters the return duct or dehumidifier inlet.

2. See **Table 2** for estimated inlet airflow in CFM, based on duct type, length and available negative pressure. Use an airflow measuring device for a more accurate airflow delivery rate.

3. Record the delivered CFM. _____

Table 2. CFM Delivered

Duct Length	Negative Static Pressure ("w.c.) as Measured for Return Duct or Plenum											
	0.05		0.1		0.15		0.2		0.25		0.3	
	Flex	Pipe	Flex	Pipe	Flex	Pipe	Flex	Pipe	Flex	Pipe	Flex	Pipe
10 ft.	60	65	85	90	105	110	120	125	135	140	150	160
20 ft.	55	60	80	85	100	105	115	120	130	135	140	150
30 ft.	50	55	75	80	95	100	110	115	125	130	130	140

NOTE: For the table above, 6" flex duct is laid loose with two, wide 90° bends and a fully opened damper. Rigid pipe values are based on 6" duct, two 90° elbows, and a fully open damper. In both cases, the air intake is through a metal vent hood with inlet screen. Airflow may need to be adjusted up or down for variations in duct system.

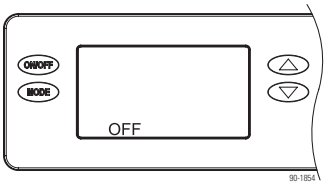
Determine Cycle Time

1. Use the Required CFM and Delivered CFM from the above steps to determine the Cycle Time from **Table 3**.
2. The values highlighted in gray cannot be set due to the maximum 60 minute Cycle Time. A second ventilation device (i.e., bigger duct or second duct) will be required to meet ventilation needs.

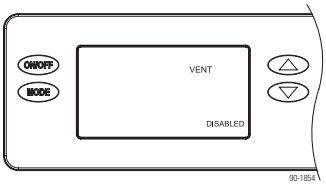
Table 3. Cycle Time Setting (minutes) for Airflow Delivered vs. Airflow Required for 1 Hour Cycle

CFM Delivered	CFM Required								
	20	30	40	50	60	70	80	90	100
60	20	30	40	50	60	**70**	**80**	**90**	**100**
80	15	25	30	40	45	55	60	**70**	**75**
100	15	20	25	30	35	40	50	55	60
120	10	15	20	25	30	35	40	45	50
140	10	15	15	20	25	30	35	40	45
160	10	10	15	20	25	25	30	35	40

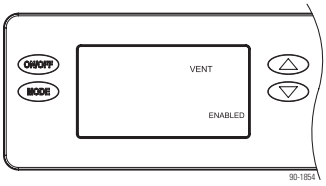
INSTALLER SETTINGS



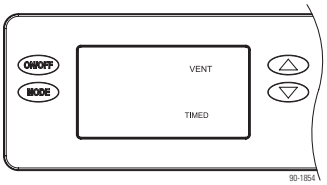
With the dehumidifier power switch on, press the ON/OFF button to turn the dehumidifier off.



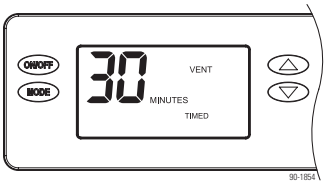
Press and hold the MODE button for 3 seconds to access the installer settings menu. Press and release the MODE button repeatedly until the VENT DISABLED screen appears.



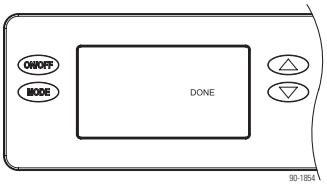
Press the UP or DOWN button to ENABLE ventilation, then press the MODE button to set Timed or Auto ventilation.



Press the UP or DOWN to toggle between VENT TIMED, VENT AUTO-B, VENT AUTO-C and VENT AUTO-D (refer to page 16 for a description of each). Press the MODE button to select the desired ventilation method and adjust the ventilation time.



Press the UP or DOWN button to set the desired amount of ventilation time per hour from 0 to 60 minutes.



To complete, press the MODE button repeatedly until DONE appears on the display.

SEQUENCE OF OPERATION

When wired as shown in **Figure 26**, the ventilation damper will open whenever there is an HVAC heating (W), cooling (Y) or fan (Gs) call, allowing fresh air to be brought in when the HVAC blower is running (see VENTILATION WITH AN EXTERNAL CONTROL section below for exceptions). The ventilation damper will also open if the dehumidifier is operating. “VENTILATING” will show on the dehumidifier control when the dehumidifier is actively ventilating. When the HVAC call ends, the dehumidifier stops, or after the set amount of ventilation time has been met, the ventilation damper will be closed.

If the set amount of ventilation time has not been met before the end of the one-hour cycle, the dehumidifier will open the ventilation damper and turn on the HVAC blower to ensure the desired ventilation time is satisfied.

If the dehumidifier has been set up to operate ventilation with outdoor temperature restrictions (AUTO-B, AUTO-C or AUTO-D – refer to page 16) then ventilation will be limited as described.

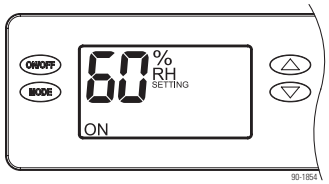
Dehumidifying the Fresh Air

When the dehumidifier is set up for single zone and there is no external control installed, the dehumidifier will turn on its blower and measure the RH of the air entering the dehumidifier during ventilation when ducted as shown in **Figure 24**. If the relative humidity of the air entering the dehumidifier is higher than the setting, the dehumidifier compressor will turn on to remove moisture.

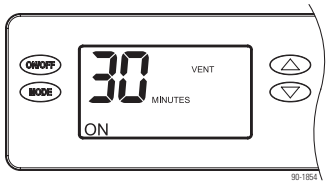
Ventilation with an External Control

When an external control is installed the dehumidifier will open the ventilation damper only when there is a cooling call (Y) or when the dehumidifier is operating, unless the ventilation need has not been met. If the set amount of ventilation time has not been met before the end of the one-hour cycle, the dehumidifier will open the ventilation damper and turn on the HVAC blower to ensure the desired ventilation time is satisfied.

Adjusting Ventilation Time After Initial Set Up



1. Press the UP or DOWN button to access the RH adjustment screen or to turn on the backlight if using an External Control.



2. Press the MODE button to toggle to the VENT TIME setting.

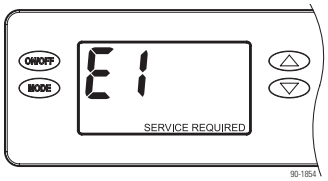
3. Press the UP or DOWN button to adjust the ventilation time (minutes). After adjusted, press nothing else; the screen will return to home screen after three (3) seconds.

Troubleshooting

Technical Support is available Monday through Friday, 6:30 a.m. to 6:30 p.m. CST, at 1-800-LENNOX (800-453-6669). Use the guides on the following pages to identify and correct system faults. Contact Technical Support before replacing the unit or any components and for additional troubleshooting.

ERROR CODES

When an error occurs, the Error Code along with SERVICE REQUIRED will be displayed on the control screen. See **Table 4** for possible Error Codes and **Table 5** for the Troubleshooting Guide.



NOTE: Do not try to service the refrigeration components in the dehumidifier. Call Technical Support for assistance.

Table 4. Error Codes

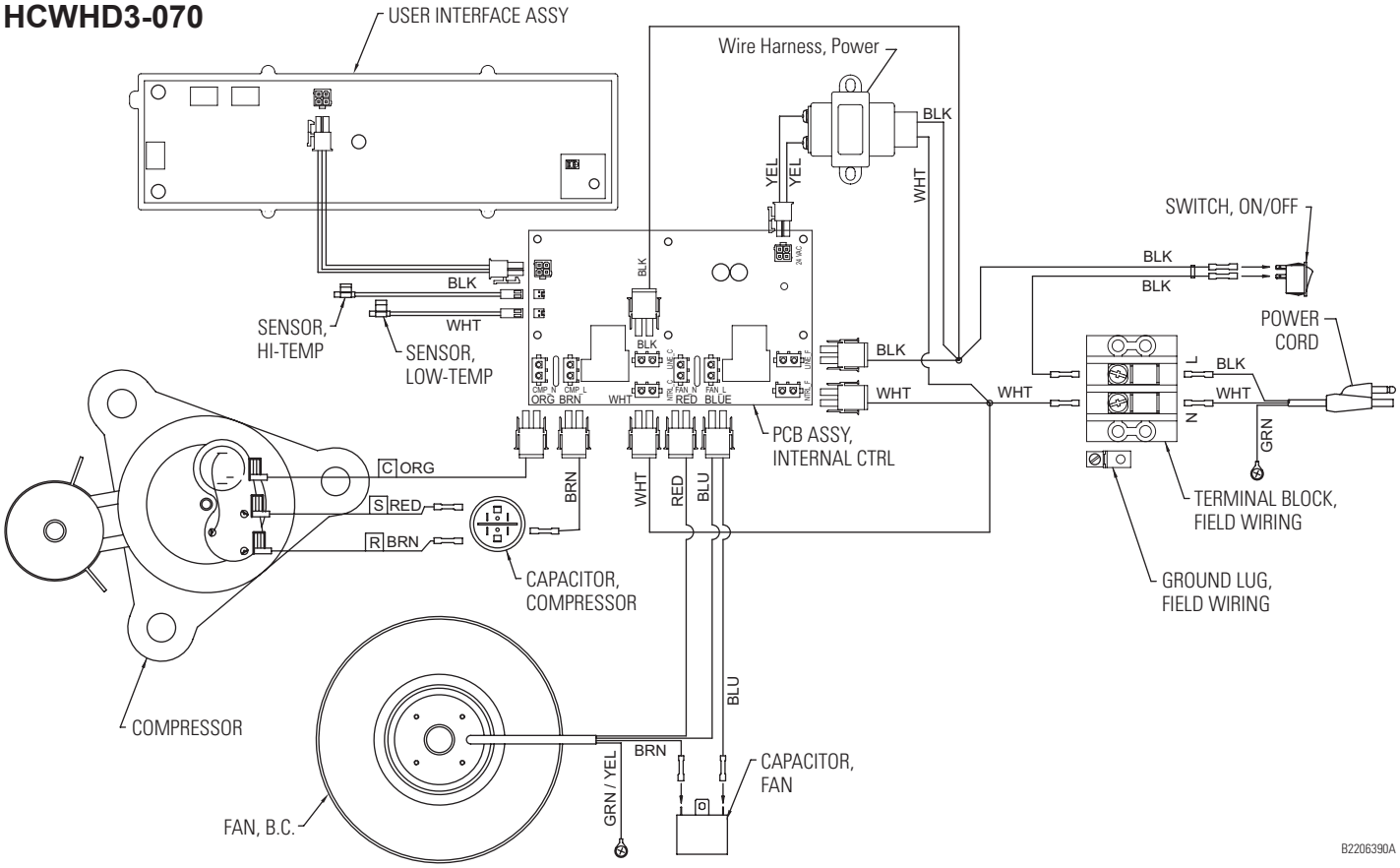
<table>
<tr><th>Error Code</th><th>Failure Mode</th><th>Action</th><th>Reset</th></tr>
<tr><td>E1</td><td>Internal Humidity or Temperature Sensor Open or Shorted</td><td>1. Check the connection between the sensor board and control board.
2. If connection okay, replace sensor board, Part No. Y6476.</td><td>Cycle Power</td></tr>
<tr><td>E2</td><td>High Refrigeration Pressure</td><td>1. Verify that the fan works, the backflow damper swings freely and there is no blocked or restricted duct.
2. If the fault persists, call Technical Support.</td><td>Cycle Power</td></tr>
<tr><td>E3</td><td>Y6456 Remote Control Communication Loss</td><td>1. Check connections between Y6456 and dehumidifier control board. Terminals should be fully inserted and secured in the control board and Y6456 control terminals.
2. If connections are correct and secure, turn off the dehumidifier and remove the Y6456. Use a short section of 4-wire cable to reconnect the Y6456 to the control board. Turn the dehumidifier back on and increase the dryness level setting on the Y6456. If the dehumidifier turns on, the problem is with the wiring between the dehumidifier and control.
3. If the dehumidifier does not turn on, call Technical Support at 1-800-453-6669.</td><td>Self-Correcting</td></tr>
<tr><td>E4</td><td>Insufficient Capacity</td><td>1. Check the frost sensor connection at the power board. Terminal should be fully seated on the power board pins.
2. Remove the side access panel and verify that the sensor is secured to the suction line.
3. If the sensor is connected and secured to the refrigeration line proceed to the next step.
4. Reset the fault by cycling power to the dehumidifier.
5. Turn the humidity setting down (below room/home humidity level) to make a dehumidification call.
6. Allow the fan and compressor to run for approximately 10-15 minutes and then enter diagnostic test mode by simultaneously pressing the UP ARROW and MODE buttons for 3 seconds. The LCD will display the temperature measured by the internal sensor while also displaying AIR SAMPLING and ON, the humidity measured by the internal sensor while also displaying %RH and ON, and the frost sensor temperature while also displaying ON. Scroll through these values and by using the UP/DOWN arrow buttons.
7. Record values and call Technical Support.</td><td>Cycle Power</td></tr>
<tr><td>E5</td><td>High Temperature Thermistor Failure</td><td>1. Check the high temperature sensor connection at the power board. Terminal should be fully seated on the power board pins.
2. Remove the side access panel and verify the sensor is not damaged and connected to the refrigeration line coming from the compressor.
3. If the sensor is connected and secured to the refrigeration line, contact Technical Support.</td><td>Cycle Power</td></tr>
<tr><td>E6</td><td>Low Temperature Thermistor Failure</td><td>1. Check the low temperature sensor connection at the power board.
2. Remove the side access panel and verify the sensor is not damaged and connected to the suction line.
3. If the sensor is connected and secured to the refrigeration line, contact Technical Support.</td><td>Cycle Power</td></tr>
<tr><td>E7</td><td>Float Switch Open</td><td>1. Empty the condensate pan.
2. Check the float switch connection at the control board.
3. If not using a float switch, verify jumper is between float switch terminals on dehumidifier control board.
4. If the problem persists, replace the float switch.</td><td>Self-Correcting</td></tr>
<tr><td>E8</td><td>Inlet Air Temperature Out of 50°F – 104°F or dew point below 40°F</td><td>1. Verify all duct is properly sealed.
2. If no signs of leak points, contact Technical Support.</td><td>Self-Correcting</td></tr>
<tr><td>E9</td><td>Outdoor Temperature Sensor Open or Shorted</td><td>1. Check the sensor connection at the power board.
2. Remove the wires from the terminals and measure the resistance. An short circuit will have a resistance very close to 0 Ohms and an open circuit will have a very very high resistance. The table at right can be used to approximate the resistance based on outdoor temperature.
3. If the sensor is not reading correctly, replace the sensor, Part No. 58N66.
<table>
<tr><th>Outdoor Temperature</th><th>Resistance</th></tr>
<tr><td>0°F</td><td>84,500 Ohms</td></tr>
<tr><td>20°F</td><td>46,000 Ohms</td></tr>
<tr><td>40°F</td><td>26,000 Ohms</td></tr>
<tr><td>60°F</td><td>15,500 Ohms</td></tr>
<tr><td>80°F</td><td>9,500 Ohms</td></tr>
<tr><td>100°F</td><td>6,000 Ohms</td></tr>
</table></td><td>Self-Correcting</td></tr>
</table>

Table 5. Troubleshooting Guide

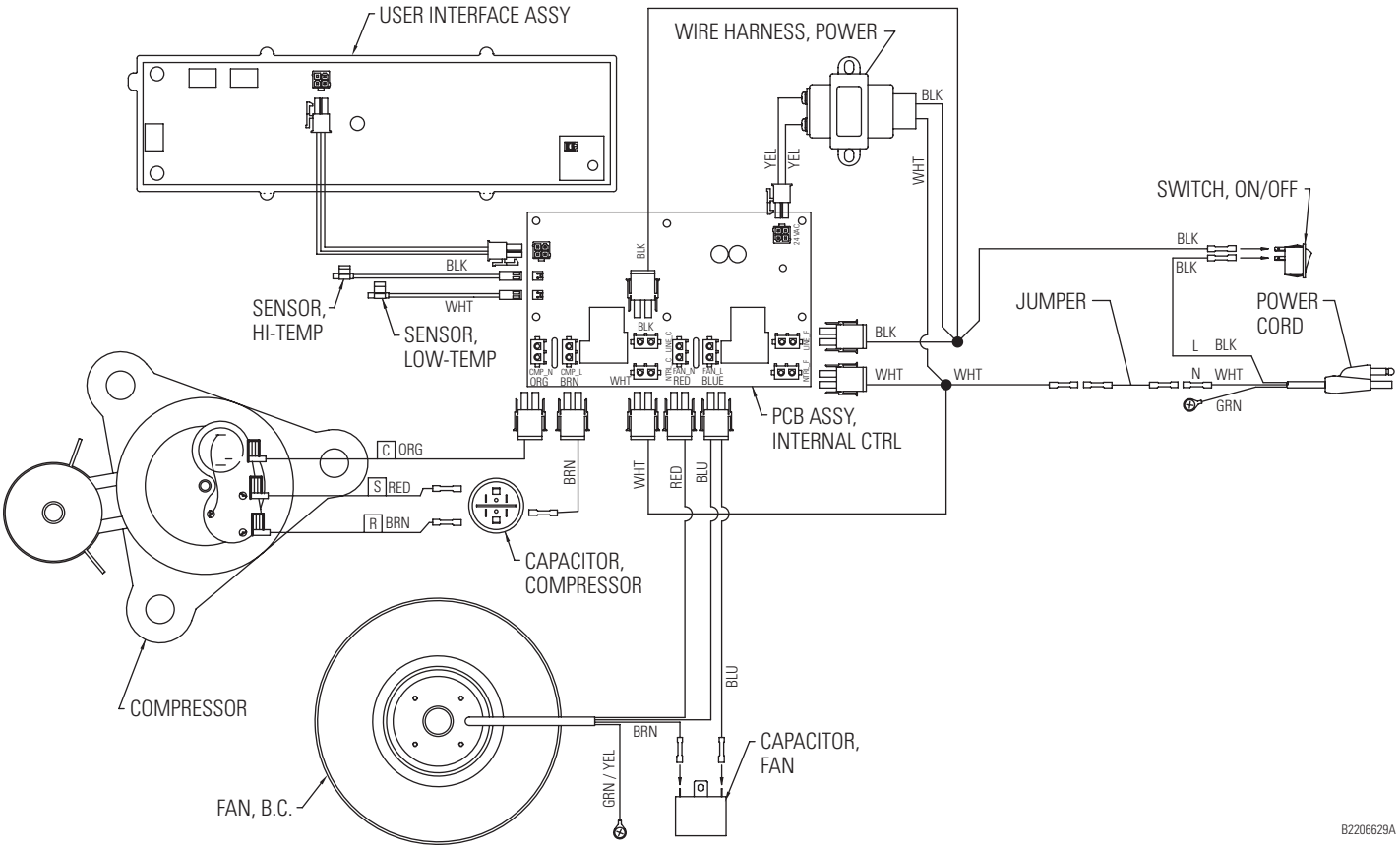
<table>
<tr><th>Symptom</th><th>Possible Reason</th><th>Troubleshooting Procedure</th></tr>
<tr><td>Dehumidifier does not turn on/run.</td><td>No power to unit.</td><td>• Check that the dehumidifier is plugged in.
• Check that the power switch is turned ON.
• Check that the control is turned ON.
• Check that the circuit breaker has not tripped.</td></tr>
<tr><td>Dehumidifier blower is running but with little or no airflow.</td><td>Pressure drop across dehumidifier is higher than 0.4"w.c. for HCWHD3-070, 0.6"w.c. for HCWHD3-095, or 0.7"w.c. for HCWHD3-130.</td><td>• Check dehumidifier air filter and wash or replace.
• Check for blocked duct and clear.
• Verify that the outlet collar with backflow damper is installed on the outlet side of the dehumidifier.
• Check if backflow damper is blocked or stuck and remove obstruction.</td></tr>
<tr><td rowspan="3">Dehumidifier blower is running but compressor is not.</td><td>Float switch open.</td><td>• If float switch installed, check connections at control board and empty condensate pan.
• If no float switch installed check that the jumper is installed at the float switch terminals on the control board.</td></tr>
<tr><td>Coil frosting.</td><td>• Lack of or reduced airflow. Check dehumidifier air filter and wash or replace.
• Check for blocked duct.
• Inlet air conditions below 60°F. Increase the humidity setting.</td></tr>
<tr><td>Inlet air temperature is outside of the 50°F – 104°F range or the dew point is below 40°F and there is a demand for dehumidification.</td><td>• Verify all duct is properly sealed.</td></tr>
<tr><td>When zoned, the dehumidifier damper does not open in INSTALLER TEST mode.</td><td>Incorrect damper wiring or bad connection.</td><td>• Verify wiring between dampers and 24 VAC transformer.
• If wired for Two Zone operation, verify that 24 VAC transformer is 40 VA minimum.
• Check all wiring connections between dampers and control board.
• Verify the normally closed dampers are in the Primary Zone duct system and the normally open dampers are in the Secondary Zone duct system.</td></tr>
<tr><td rowspan="2">The ventilation damper does not open when the HVAC fan is active.</td><td>Cycle time has been met.</td><td>• The damper will not open if the Ventilation Time has already been met.</td></tr>
<tr><td>ODT error or outdoor air outside of ODT range.</td><td>• Check that the ODT is wired correctly to the dehumidifier control board and connections are secure.
• Check that the ODT is installed in the outdoor air intake according to the set-up specified in the Ventilation Section beginning on page 16.
• Remove the ODT leads from the dehumidifier control board and check the resistance. Compare the reading with the table shown.
<table>
<tr><th>Outdoor Temperature</th><th>Resistance</th></tr>
<tr><td>0°F</td><td>84,500 Ohms</td></tr>
<tr><td>20°F</td><td>46,000 Ohms</td></tr>
<tr><td>40°F</td><td>26,000 Ohms</td></tr>
<tr><td>60°F</td><td>15,500 Ohms</td></tr>
<tr><td>80°F</td><td>9,500 Ohms</td></tr>
<tr><td>100°F</td><td>6,000 Ohms</td></tr>
</table></td></tr>
<tr><td>Dehumidifier is not draining properly.</td><td>Drain line blocked or unit not level.</td><td>• Verify that the unit is level.
• Check the drain line blockages and for a continuous downward slope.</td></tr>
<tr><td>The HVAC fan turns on unexpectedly.</td><td>Dehumidifier is sampling or ventilation in progress.</td><td>• The dehumidifier will turn on the HVAC fan during air sampling or as needed to meet the ventilation time.</td></tr>
<tr><td>Dehumidifier is producing hot air.</td><td>Normal function.</td><td>• Air is reheated across the condenser coil, resulting in a temperature rise between inlet and outlet.</td></tr>
</table>

Wiring Schematics

HCWHD3-070

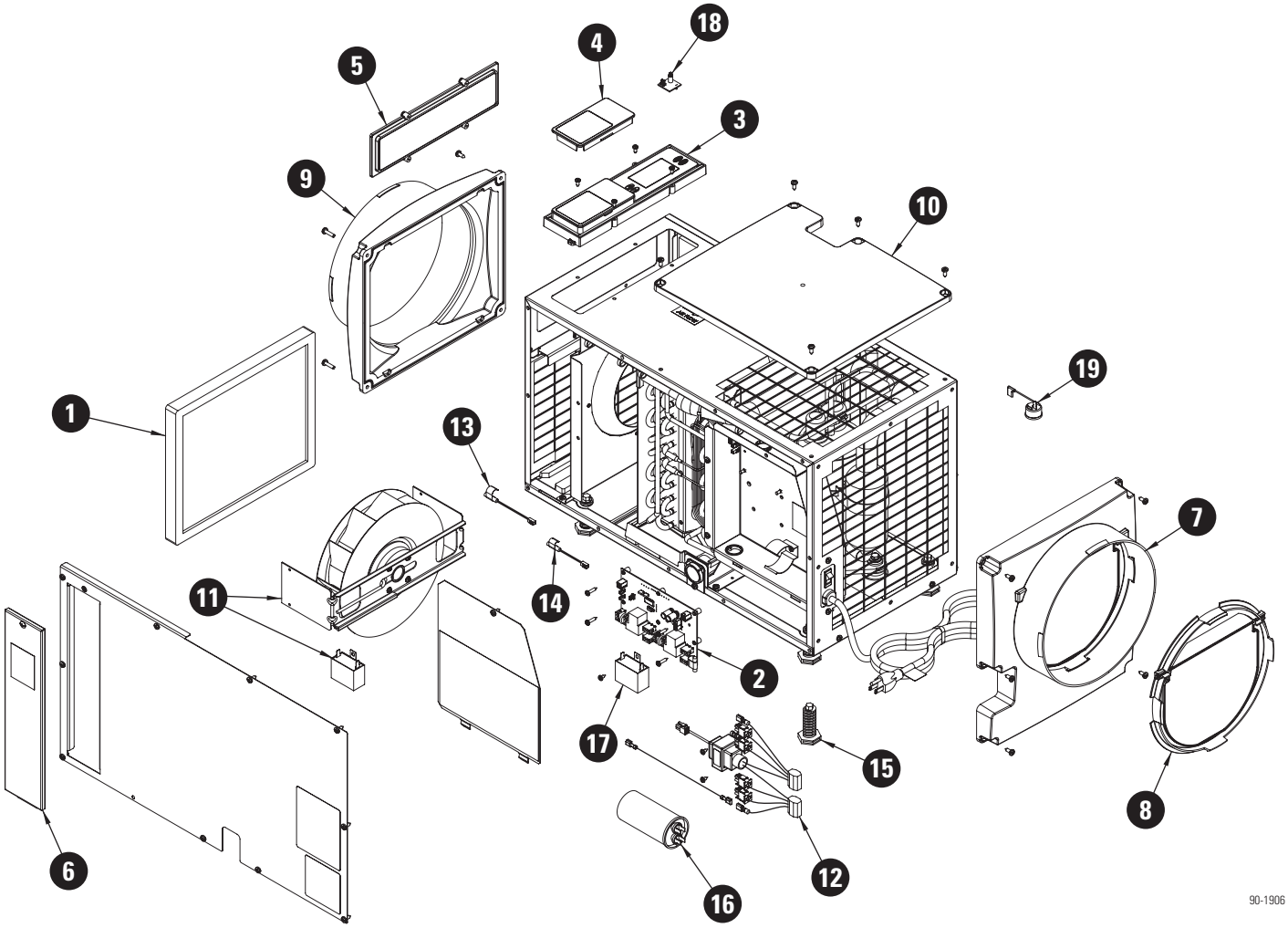


HCWHD3-095 or HCWHD3-130



Service Parts

HCWHD3-070 and HCWHD3-095

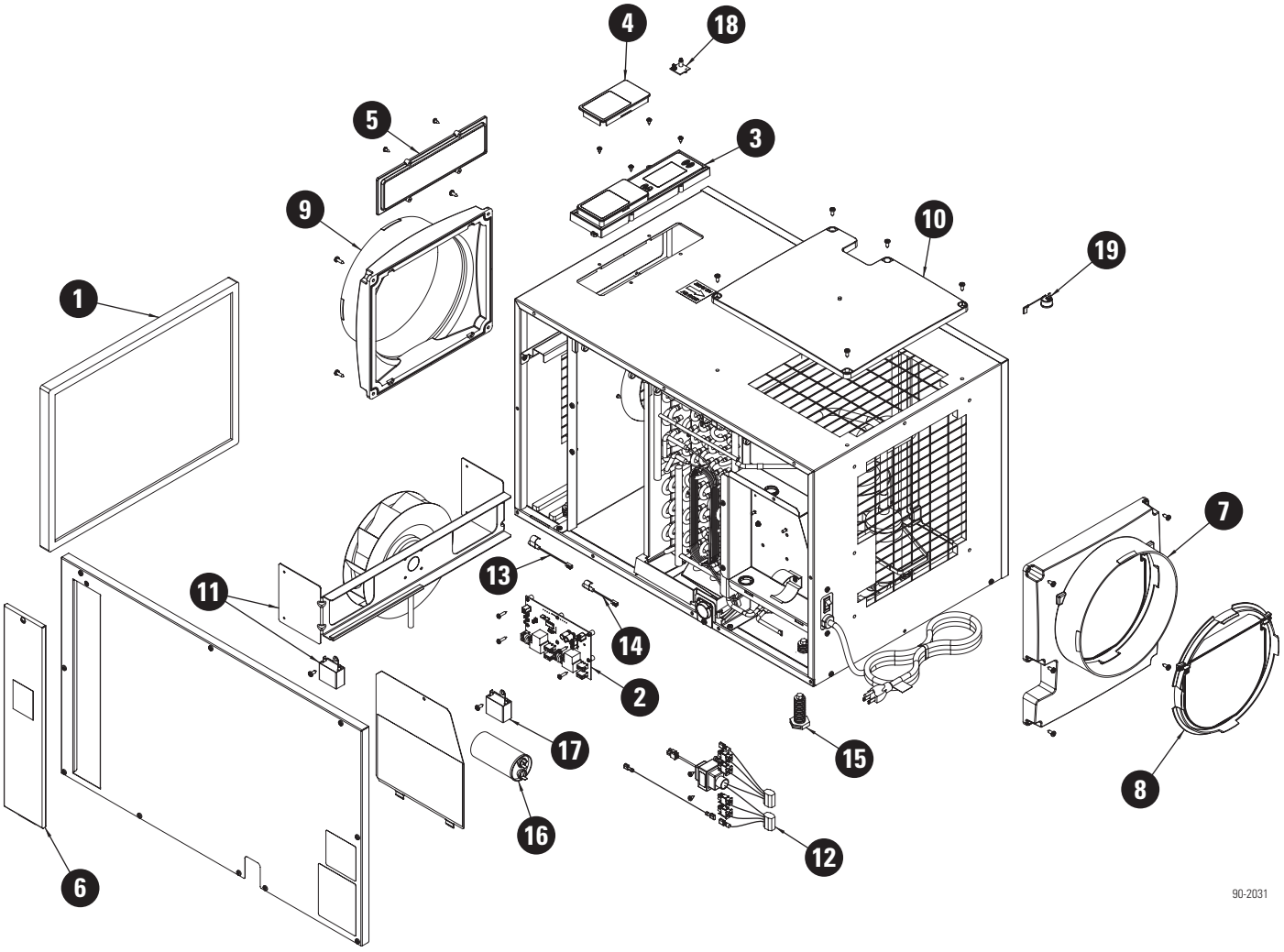


No.	Part Description	Part No.
1	Filter, 10" x 12" x 1" EZK	Y6457
2	Internal Control Board, Deh	Y6458
3	User Interface Assembly, Deh	Y6459
4	Wiring Access Door, Deh	Y6460
5	Hole Cover, UI Ctrl, Deh	Y6461
6	Door, Filter Access, Deh	Y6462
7	Outlet Duct Panel, Deh	Y6463
8	Backflow Damper, 10", Deh	Y6464
9	Inlet Duct Panel, Deh	Y6465
10	Cover, Outlet, Deh	Y6466
11	Fan, 70pt Deh	Y6467
	Fan, 95pt Deh	Y6468

No.	Part Description	Part No.
12	Wire Harness, Power, Deh	Y6469
13	Sensor, Low Temperature, Deh	Y6470
14	Sensor, High Temperature, Deh	Y6471
15	Leveling Foot, Deh	Y6472
16	Capacitor, 45MFD, 370VAC	Y6473
17	Capacitor, 8MFD, 450VAC, 70pt Deh	Y6474
	Capacitor, 12MFD, 450VAC, 95pt Deh	Y6475
18	RH Sensor, Deh	Y6476
19	Compressor Overload Switch, 70pt Deh	Y7125
	Compressor Overload Switch, 95pt Deh	Y7126
Not Shown	Outdoor Temperature Sensor	58N66

Service Parts

HCWHD3-130



No.	Part Description	Part No.
1	Filter, 14” x 19” x 1” EZK	Y7120
2	Internal Control Board, Deh	Y6458
3	User Interface Assembly, Deh	Y6459
4	Wiring Access Door, Deh	Y6460
5	Hole Cover, UI Ctrl, Deh	Y6461
6	Door, Filter Access, Deh	Y7121
7	Outlet Duct Panel, Deh	Y6463
8	Backflow Damper, 10”, Deh	Y6464
9	Inlet Duct Panel, Deh	Y6465
10	Cover, Outlet, Deh	Y6466

No.	Part Description	Part No.
11	Fan, 130pt Deh, with 10MFD Capacitor	Y7122
12	Wire Harness, Power, Deh	Y6469
13	Sensor, Low Temperature, Deh	Y6470
14	Sensor, High Temperature, Deh	Y6471
15	Leveling Foot, Deh	Y6472
16	Capacitor, 50MFD, 370VAC	Y7123
17	Capacitor, 10MFD, 250VAC	Y7124
18	RH Sensor, Deh	Y6476
19	Compressor Overload Switch	Y7127