INDOOR AIR QUALITY
HCWH-135
Healthy Climate®
Whole-Home Dehumidifier

Bulletin No. 210718
September 2015
Supersedes August 2014

PRODUCT SPECIFICATIONS

Nominal Capacity - 135 pints per day

MODEL NUMBER IDENTIFICATION

HCWH - 135

Unit Type
HCWH = Healthy Climate Whole Home Dehumidifier

Nominal Capacity
135 = 135 pints per day

FEATURES

CONTENTS

WARRANTY

All Covered Components - Limited five year warranty in residential applications, one year in non-residential applications.
Refer to Lennox Equipment Limited Warranty certificate included with equipment for details.

APPROVALS

ETL Listed.

APPLICATIONS

The *Healthy Climate* Whole Home Dehumidifier is designed to control humidity throughout the home or in specific locations such as an attic or basement. Also used for air cycling and ventilation control.

Equipped with a humidity sensor that automatically and continually measures the relative humidity. Based on that measurement, the unit will operate to control the humidity based on the set point.

Features a built-in, automatic air cycling feature can be utilized to activate the furnace/air handler blower to cycle air throughout the whole home for proper balance and comfort.

Patented built-in ventilation feature allows fresh air to be brought into the home from the outside. The dehumidifier will condition the incoming air, if needed.

FILTER

Includes washable, MERV 8 (Minimum Efficiency Reporting Value) filter.

BLOWER

Blower assembly includes shaded-pole, heavy-duty, direct drive blower and blower wheel.

Operates during both ventilation and dehumidification modes.

COMPRESSOR

R-410A, rotary-type compressor.

CABINET

Constructed of 22 gauge, post-painted steel. Interior is lined with 1 in., foil-faced, expanded polystyrene to eliminate noise, condensation and air loss.

The supply outlet is equipped with a built-in backflow damper.

Duct start collars are included.

Adjustable feet up to 3 in. to level unit.

If the dehumidifier is installed in an attic or location requiring leak protection, the unit should be placed in a secondary condensate drain pan with a normally closed condensate overflow safety switch (float switch).

CONTROLS

Factory installed control handles operation of unit.

Terminal strip for connections of furnace/air handler, float switch, ventilation dampers, outdoor air sensor, and optional Whole-Home Dehumidistat.

DIP switches are used to configure system set (whole house, zoned or combination system) and ventilation times (from 0 to 60 minutes).

DIP switches are used to configure ventilation cycle periods (1/2, 1, 2, or 3 hours) and a knob for configuring cycle times (from 0 to 60 minutes).

Knob on the front of the unit sets the desired humidity level.

On-board humidity sensing allows for better whole home monitoring and control of humidity.
Optional remote Whole-Home Dehumidistat can be used to provide easy humidity control accessibility.

On-board LED provides instant status of operation and maintenance required.

- Normal Operation – Green
- Air Sampling or Defrosting – Flashing Green
- Service Required – Flashing Red

When equipped with overflow safety switch (field provided and installed), the dehumidifier will continue to ventilate but the compressor is disabled when the switch is open.

REQUIRED COMPONENTS

Drain Pan
Required if unit is installed in an attic or a location requiring leak protection.

OPTIONAL ACCESSORIES

iComfort® S30 Thermostat (part of the iComfort® Residential Communicating Control System)
The iComfort® S30 Thermostat recognizes and connects to all iComfort®-enabled products to automatically configure and control the heating/ cooling system (based on user-specified settings) for the highest level of comfort, performance and efficiency. Also recognizes model and serial number information for iComfort®-enabled products to simplify system setup.

Wi-Fi remote temperature monitoring and adjustment through a home wireless network for desktop PCs, laptops and apps for smartphones or tablets. Also displays service alerts and reminders.

Dealer Dashboard features online real-time monitoring of installed iComfort® systems.

A simple easy-to-use touchscreen allows complete system configuration. Scheduled maintenance alerts, system warnings and troubleshooting are also displayed on thermostat screen.

Easy to read 7 in. high definition color display (measured diagonally).

Conventional outdoor units (not iComfort®-enabled) can easily be added and controlled by the iComfort® S30 Thermostat.

High Definition Color Display, Mag-Mount, Smart Hub Controller, wallplate (for retrofit installations) furnished for easy installation.

See the iComfort® S30 Thermostat Product Specifications bulletin in the Controls section for more information.

OPTIONAL CONTROLS (continued)

iComfort Wi-Fi® Thermostat (part of the iComfort® Residential Communicating Control System)

The iComfort Wi-Fi® Thermostat recognizes and connects to all iComfort®-enabled products to automatically configure and control the heating/cooling system (based on user-specified settings) for the highest level of comfort, performance and efficiency. Also recognizes model and serial number information for iComfort®-enabled products to simplify system setup.

Wi-Fi remote temperature monitoring and adjustment through a home wireless network for desktop PCs, laptops and apps for smartphones or tablets. Also displays service alerts and reminders.

Dealer Dashboard features online real-time monitoring of installed iComfort systems.

A simple easy-to-use touchscreen allows complete system configuration. Scheduled maintenance alerts, system warnings and troubleshooting are also displayed on thermostat screen.

Easy to read 7 inch color screen (measured diagonally).

Conventional products (not iComfort®-enabled) can easily be added and controlled by the *iComfort Wi-Fi® Thermostat*.

See the *iComfort Wi-Fi® Thermostat* Product Specifications bulletin in the Controls section for more information.

NOTE - HCWH Whole-Home Dehumidifier is not iComfort®-enabled. The iComfort® humidity sensor can control the dehumidification features in the dehumidifier; however, it can not control zoning or ventilation.

NOTE - An iComfort®-enabled indoor unit (furnace or air handler) or the optional iComfort® Equipment Interface Module (EIM) is required for proper operation with a conventional outdoor unit.

iComfort®-enabled Equipment Only (Indoor and Outdoor Units)

Installer setup screens allow quick and simple system configuration without a manual, Installer can also run tests on complete system or individual components for easy maintenance and troubleshooting.

Serial communications bus (RSBus), with less wiring than a conventional heating/cooling system, allows system communication. Uses 4-wire, 18-gauge standard thermostat wiring.

iComfort® Equipment Interface Module (EIM)

Allows iComfort® Thermostats to be used with most non-communicating HVAC systems (24VAC).

The EIM emulates an iComfort®-enabled communicating indoor unit (with reduced communication features).

See the Equipment Interface Module (EIM) Product Specifications bulletin for additional information.

ComfortSense® 7500 Touchscreen Thermostat

Electronic 7-day, universal, multi-stage, programmable, touchscreen thermostat.

4 Heat/2 Cool.

Auto-changeover.

Dual-fuel control with optional outdoor sensor.

Controls dehumidification during cooling mode and humidification during heating mode.

Offers enhanced capabilities including humidification / dehumidification / dewpoint measurement and control, Humiditrol® control, and equipment maintenance reminders.

Easy-to-use, menu driven thermostat with a back-lit, LCD touchscreen.

See the ComfortSense® 7500 Product Specifications bulletin in the Controls section for more information.

Remote Outdoor Temperature Sensor for ComfortSense® 7500 Thermostat

Allows the thermostat to display outdoor temperature. Required in dual-fuel and *Humiditrol®* applications.

OPTIONAL ACCESSORIES (continued)

Healthy Climate® Digital Automatic Humidistat

Basic humidification/ dehumidification control and temperature display.

Control Buttons:

- Power button
- °F/°C display
- Set button for changing humidification dehumidification setpoints.
- SLEEP button for changing day/night modes.
- PRG button for programming timed settings and setting the clock.
- Up/Down buttons to change setpoint and time.

Built-in sensor.

Outdoor temperature sensor furnished.

24VAC powered directly by the dehumidifier.

LCD with alphanumeric characters and icon graphics for Humidity and Temperature (indoor/outdoor), Humidity/Dehumidify Mode, Sleep Mode, Auto Mode, Lock Mode, Program Timer On.

Large LCD display shows humidity (or temperature) setpoint while the small display shows temperature (or time) setpoint.

Built-in clock (with backup) for automatic control. Two time settings per day.

Error code display.

Lock mode indicates a parameter has been set.

Dimension (H x W x D): 3-3/8 x 5-1/2 x 1-3/8 in.

Whole-Home Dehumidistat

Whole-Home Dehumidistat is used to control the dehumidifier if the unit is installed in a difficult to access location such as an attic or crawl space.
Provides an accessible

means of turning the dehumidifier on and off and allows for adjustment of the humidity level set point (dew point control setting).
Control contains its own sensors that override the dehumidifier's main control board sensors.

Basement Kit

Includes components typically needed for basement dehumidification application.

Includes two 8-in. normally open dampers, two 8-in. normally closed dampers and one 24V, 40VA transformer.

Ventilation and Zone Dampers

Constructed of rolled galvanized steel with stiffening ribs to maintain rigidity. A single steel offset blade is attached to a one piece aluminium shaft connected with nylon bearings for smooth operation. Spring return with a normally closed or normally open configurations are available.Requires 24V transformer ordered separately.

Transformer

120V primary, 24V secondary, 40VA transformer for powering dampers.

Outdoor Air Temperature Sensor

Prevents the HCWH from using outside air for ventilation if the outdoor temperature is above 100°F or below 0°F.

VENTILATION

The built-in ventilation feature is designed to be meet ASHRAE 62.2 Standard for Ventilation.
Utilizes the dehumidifier and furnace/air handler blower to make-up any remaining ventilation required based on chosen set point.
In hot, humid climates, supplemental dehumidification of fresh air is recommended.
Automatically monitors and controls the humidity of the incoming air. The dehumidifier can also operate an optional ventilation damper to bring air in from outside. To keep it from using outdoor air above 100°F or below 0°F, an optional Outdoor Temperature Sensor must be field installed.

AIR CYCLING

An integrated air cycling feature can activate the furnace/air handler blower to cycle air through the house to balance the indoor air conditions.
Monitors furnace/air handler blower run-time to efficiently ventilate the whole home,
Air cycling will cycle furnace/air handler blower to the values set on the control.

SPECIFICATIONS

Model No.	HCWH-135
Energy Star Qualified	No
Capacity	[1] 135 pints per day
Energy Factor	[1] 1.8 L/kW-h
Capacity in Non-Rating Conditions	70°F / 60% RH = 103 ppd
At 520 cfm - HCWH-135	65°F / 60% RH = 60 ppd
	60°F / 60% RH = 17 ppd
	80°F / 50% RH = 114 ppd
	70°F / 50% RH = 50 ppd
	65°F / 50% RH = 15 ppd
Discharge Air Temperature Rise (°F)	10 - 30
Refrigerant	R-410A
Sound Level (dBA) — Ducted	53
Unducted	67
Connections - in. — Drain diameter (PVC)	[2] 3/4
Duct diameter	8
Operating Conditions (temperature, RH) — Inlet Air	50 - 105°F, 40° dew point minimum
Installation (ambient)	40 - 140°F, 0 - 95% RH (non-condensing)
Blower Data — Air Flow (external static pressure - dry coil)	580 cfm @ 0.0 in. w.c.
	565 cfm @ 0.3 in. w.c.
	530 cfm @ 0.6 in. w.c.
	500 cfm @ 0.9 in. w.c.
Filter — Type	Washable, MERV 8
Size - in.	17 x 18 x 1
Electrical — General	120V - 60 hz - 1 ph
Power Supply	20 Amps
Rated Amperage	[1] 14.5 Amps
Connection	8 ft., 3-prong power cord
Weight - lbs.	100

REQUIRED COMPONENTS

Drain Pan - 36 x 36 in. (required for attic installations)	**25P64**

OPTIONAL ACCESSORIES

Basement Kit - includes 2-8 in. NO dampers, 2-8 in. NC dampers, one 24V, 40VA transformer.	**X4471**
Dampers — Ventilation Damper - 6 in. Normally Closed (NC)	**X4152**
Zone Damper - 8 in. Normally Open (NO)	**X4209**
Damper Transformer, 24V, 40VA	**22N03**

CONTROLS

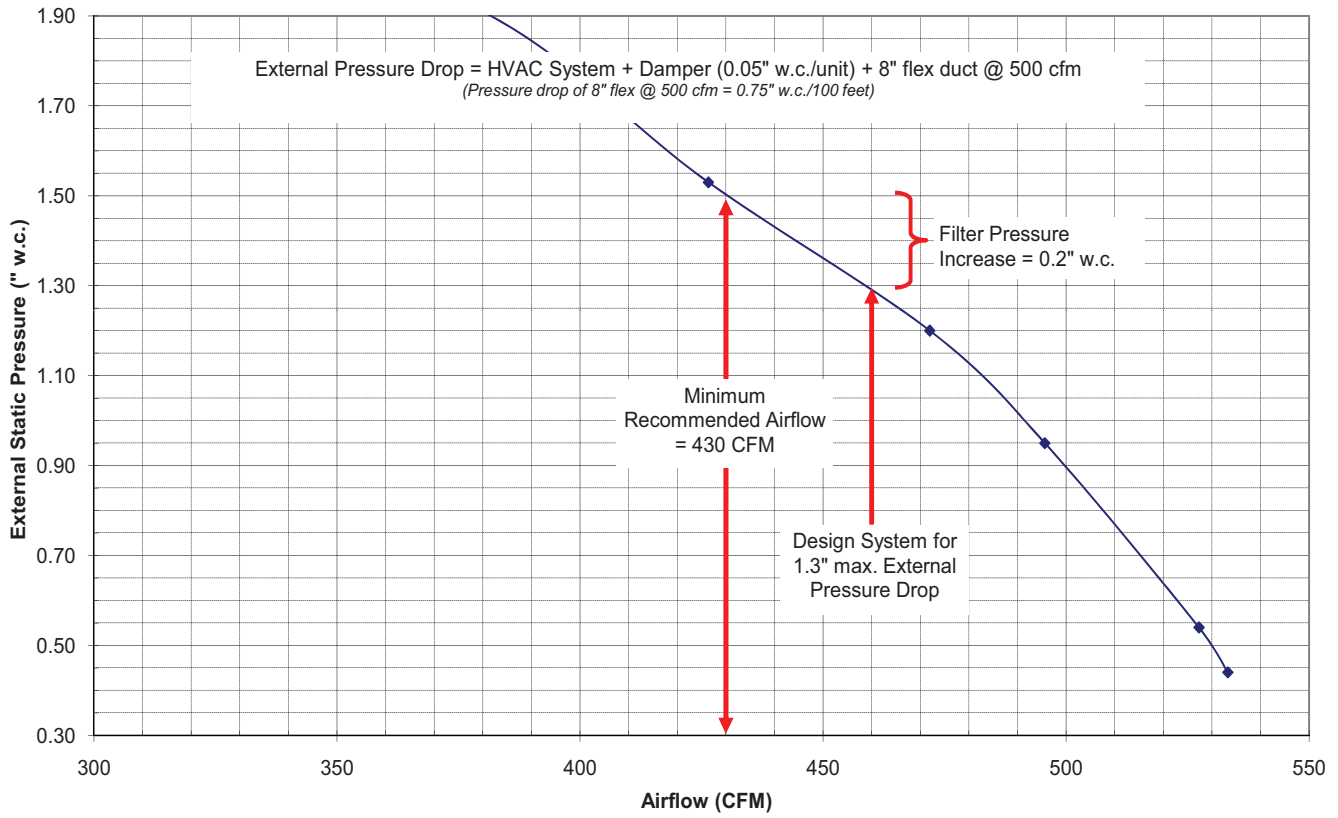|	
iComfort® S30 Thermostat	**12U67**
iComfort Wi-Fi® Thermostat	**10F81**
Equipment Interface Module (EIM) NO Dual-Fuel capable non-comm. heat pumps	**99W23**
Equipment Interface Module (EIM) Dual-Fuel capable non-comm. heat pumps	**10T50**
[3] **Universal Bundle (EIM + iComfort Wi-Fi® Thermostat)**	**99W24**
Outdoor Air Temperature Sensor	**X2658**
Discharge Air Temperature Sensor	**88K38**
ComfortSense® 7500 Thermostat	**13H14**
Healthy Climate® Digital Automatic Humidistat	**Y3760**
Whole-Home Dehumidistat	**Y2188**
Outdoor Air Temperature Sensor	**58N66**

[1] Rated capacity, Energy Factor test and current draw measured in accordance with AHAM DH-1 2008 at 80°F/60% RH inlet air at 500 cfm.

[2] Trap and 90° elbow furnished.

[3] Universal Bundle is not for dual-fuel operation with a non-communicating heat pump outdoor unit.

HCWH-135 Dehumidifier Pressure/Airflow Curve
Coil Dry, Air Filter Clean

External Pressure Drop = HVAC System + Damper (0.05" w.c./unit) + 8" flex duct @ 500 cfm
(Pressure drop of 8" flex @ 500 cfm = 0.75" w.c./100 feet)

Filter Pressure
Increase = 0.2" w.c.

Minimum
Recommended Airflow
= 430 CFM

Design System for
1.3" max. External
Pressure Drop

External Static Pressure (" w.c.)

Airflow (CFM)

PERFORMANCE

HCWH-135 - CAPACITY - PINTS PER DAY

Relative Humidity	Temperature °F						
	60	65	70	75	80	85	90
50	- - -	15	50	74	99	114	130
55	19	32	76	97	117	129	142
60	17	60	103	119	135	144	154
65	39	81	123	138	153	161	169
70	62	102	142	157	171	177	184
75	82	119	155	170	186	193	201
80	103	136	168	184	200	209	217

HCWH-135 - ENERGY USE - PINTS PER KW/HR

Relative Humidity	Temperature °F						
	60	65	70	75	80	85	90
50	- - -	0.84	1.65	2.11	2.32	2.53	2.96
55	0.91	1.55	2.32	2.75	3.17	3.38	3.59
60	1.06	1.69	2.96	3.38	3.85	3.80	4.01
65	1.48	2.53	3.38	3.80	4.22	4.22	4.22
70	2.11	3.17	4.01	4.44	4.65	4.44	4.35
75	2.96	3.80	4.65	4.86	4.86	4.86	4.86
80	3.59	4.22	5.07	5.28	5.49	5.49	5.70

HCWH-135 - LEAVING AIR TEMPERATURE

Relative Humidity	Temperature °F						
	60	65	70	75	80	85	90
50	- - -	71	84	92	100	105	111
55	68	74	87	94	102	108	114
60	73	81	90	97	105	111	117
65	76	84	92	99	106	113	119
70	79	87	95	101	108	115	123
75	82	89	95	103	110	117	124
80	85	91	96	104	112	119	126

HCWH-135 - LEAVING AIR % RELATIVE HUMIDITY

Relative Humidity	Temperature °F						
	60	65	70	75	80	85	90
50	- - -	40	28	24	21	21	20
55	43	40	28	23	21	21	21
60	42	36	28	23	21	21	21
65	41	36	28	24	21	21	22
70	39	34	28	24	21	21	22
75	38	31	28	23	21	21	21
80	38	32	28	25	21	20	19

HCWH-135 CAPACITY AND ENERGY USAGE VS. STATIC PRESSURE

Static Pressure - in. w.g.	0	0.5	0.7	0.9	1.3	1.5
Capacity - Pints Per Day	137	136	135	135	133	131
Energy Usage - Pints per kW/Hr	3.92	3.86	3.84	3.85	3.78	3.61

NOTE - Tested at 80°F/60% relative humidity.

SIZING GUIDELINES

1. Find the home location (and corresponding region) in the map below

2. Estimate the air change rate of the home:

   a. 1.00 air change per hour is an older home, that is not particularly tight.

   b. 0.50 air change per hour is a reasonably tight home.

   c. 0.35 air change per hour is a very tight home, typical of new home construction.

3. Determine how many dehumidifiers are required by comparing the actual home size and corresponding air change rate, to the "Maximum Recommended Home Size" in the table.

4. This is a general guideline. Consider any special circumstances that may require more water removal capacity and, if necessary, adjust your dehumidifier choice(s) accordingly.
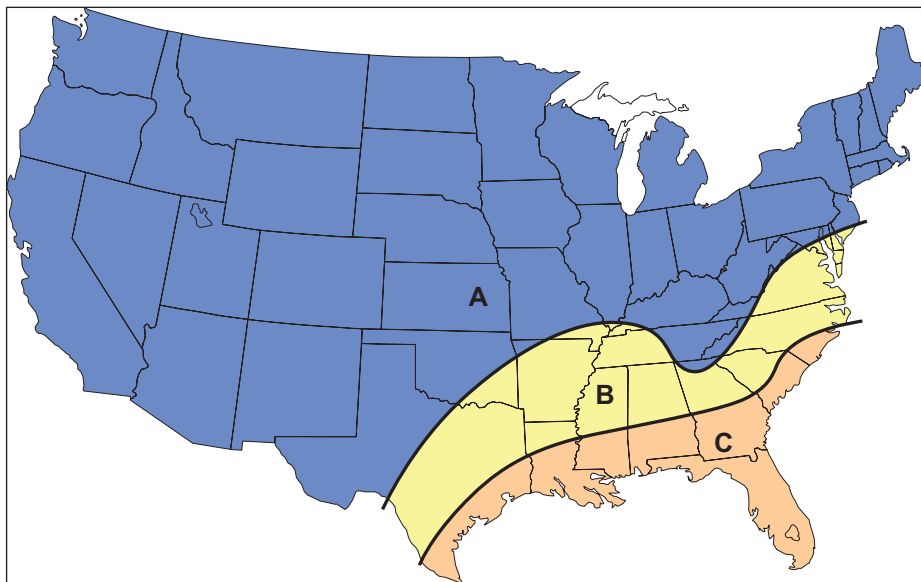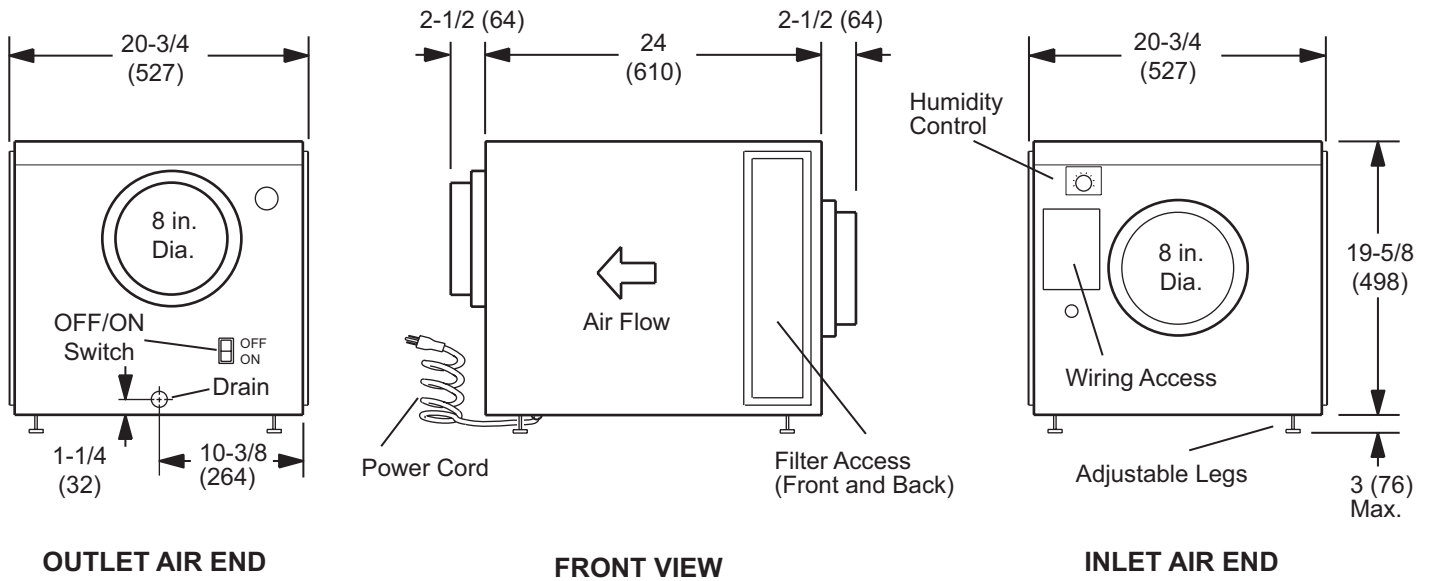

	HCWH-135		
	Air Change Per Hour (ACH)		
	1.00	**0.50**	**0.35**
	Maximum Recommended Home Size (sq. ft.)		
Region A	5400	7400	7400
Region B	4100	6700	7400
Region C	2500	3800	5000

NOTES:
- Based on a single-story, slab construction home with four occupants.
- Dehumidistats set to less dry; thermostat set to auto-fan.
- Air conditioner with thermostat cooling set to at least 79°F.
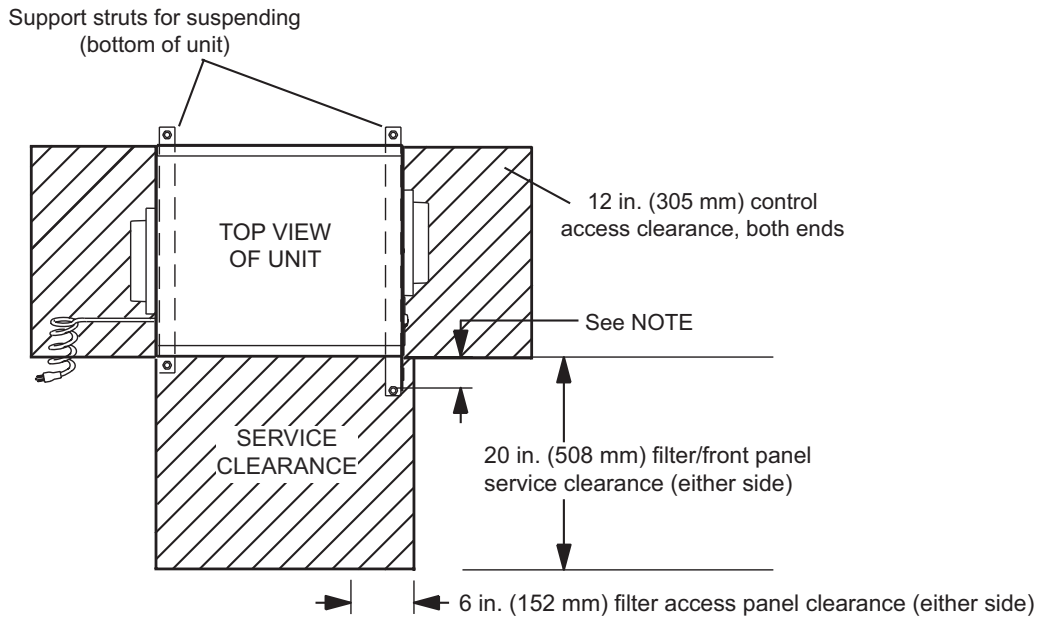- TMY 2 (Typical Meteorological Year) weather data; 1.00 lb./hr. internal moisture gain due to occupants.

DIMENSIONS - INCHES (MM)

HCWH-135

20-3/4 (527)

8 in. Dia.

OFF/ON Switch

OFF ON

Drain

1-1/4 (32)

10-3/8 (264)

Power Cord

OUTLET AIR END

2-1/2 (64)

24 (610)

2-1/2 (64)

Air Flow

Filter Access (Front and Back)

FRONT VIEW

Humidity Control

20-3/4 (527)

8 in. Dia.

Wiring Access

19-5/8 (498)

Adjustable Legs

3 (76) Max.

INLET AIR END

INSTALLATION CLEARANCES - INCHES (MM)

HCWH-135

Support struts for suspending (bottom of unit)

TOP VIEW OF UNIT

12 in. (305 mm) control access clearance, both ends

See NOTE

SERVICE CLEARANCE

20 in. (508 mm) filter/front panel service clearance (either side)

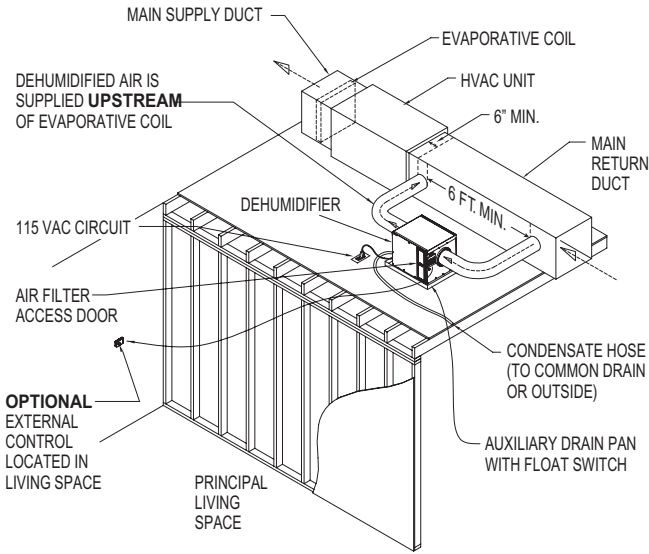6 in. (152 mm) filter access panel clearance (either side)

If suspending the unit, use two struts to support the base on the outside edges of the feet locations.
NOTE - Minimum clearance of 3 in. (76 mm) from unit to strut suspension rod (access panel side only) is required for filter panel access removal.
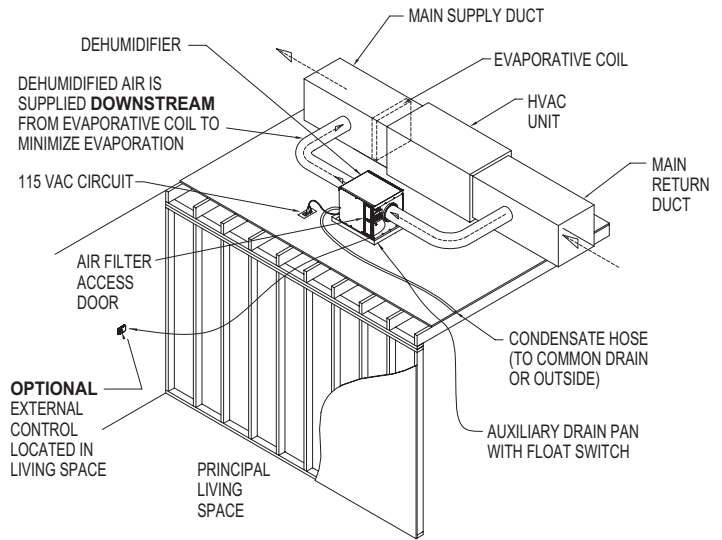
TYPICAL APPLICATIONS

ATTIC DUCTING AND WIRING
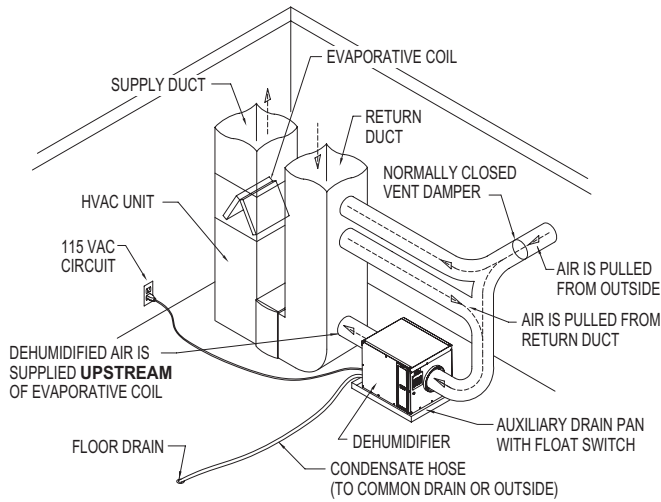
Whole-Home Preferred Attic Installation

MAIN SUPPLY DUCT
EVAPORATIVE COIL
HVAC UNIT
6" MIN.
DEHUMIDIFIED AIR IS SUPPLIED **UPSTREAM** OF EVAPORATIVE COIL
MAIN RETURN DUCT
6 FT. MIN.
DEHUMIDIFIER
115 VAC CIRCUIT
AIR FILTER ACCESS DOOR
OPTIONAL EXTERNAL CONTROL LOCATED IN LIVING SPACE
PRINCIPAL LIVING SPACE
CONDENSATE HOSE (TO COMMON DRAIN OR OUTSIDE)
AUXILIARY DRAIN PAN WITH FLOAT SWITCH

Whole-Home Alternate Attic Installation

MAIN SUPPLY DUCT
DEHUMIDIFIER
EVAPORATIVE COIL
HVAC UNIT
DEHUMIDIFIED AIR IS SUPPLIED **DOWNSTREAM** FROM EVAPORATIVE COIL TO MINIMIZE EVAPORATION
MAIN RETURN DUCT
115 VAC CIRCUIT
AIR FILTER ACCESS DOOR
OPTIONAL EXTERNAL CONTROL LOCATED IN LIVING SPACE
PRINCIPAL LIVING SPACE
CONDENSATE HOSE (TO COMMON DRAIN OR OUTSIDE)
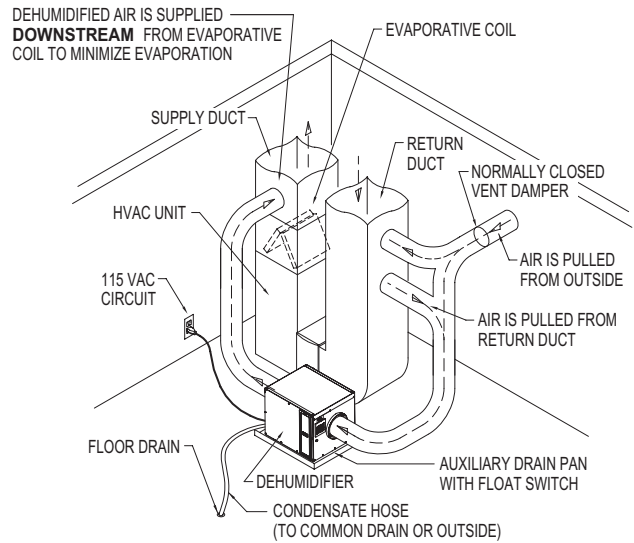AUXILIARY DRAIN PAN WITH FLOAT SWITCH

Dip Switch Note: HVAC fan must be activated during dehumidification.

BASEMENT DUCTING AND WIRING
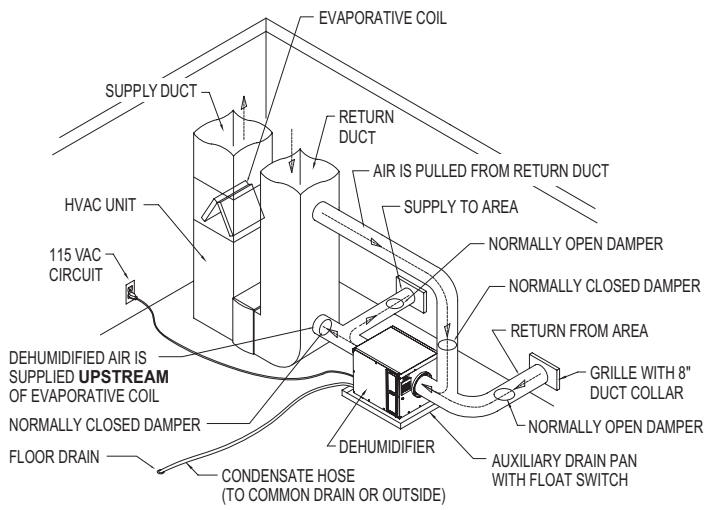
Whole-Home Preferred Basement Installation

EVAPORATIVE COIL
SUPPLY DUCT
RETURN DUCT
NORMALLY CLOSED VENT DAMPER
HVAC UNIT
115 VAC CIRCUIT
AIR IS PULLED FROM OUTSIDE
AIR IS PULLED FROM RETURN DUCT
DEHUMIDIFIED AIR IS SUPPLIED **UPSTREAM** OF EVAPORATIVE COIL
FLOOR DRAIN
DEHUMIDIFIER
AUXILIARY DRAIN PAN WITH FLOAT SWITCH
CONDENSATE HOSE (TO COMMON DRAIN OR OUTSIDE)

Whole-Home Alternate Basement Installation

DEHUMIDIFIED AIR IS SUPPLIED **DOWNSTREAM** FROM EVAPORATIVE COIL TO MINIMIZE EVAPORATION
EVAPORATIVE COIL
SUPPLY DUCT
RETURN DUCT
NORMALLY CLOSED VENT DAMPER
HVAC UNIT
AIR IS PULLED FROM OUTSIDE
115 VAC CIRCUIT
AIR IS PULLED FROM RETURN DUCT
FLOOR DRAIN
DEHUMIDIFIER
AUXILIARY DRAIN PAN WITH FLOAT SWITCH
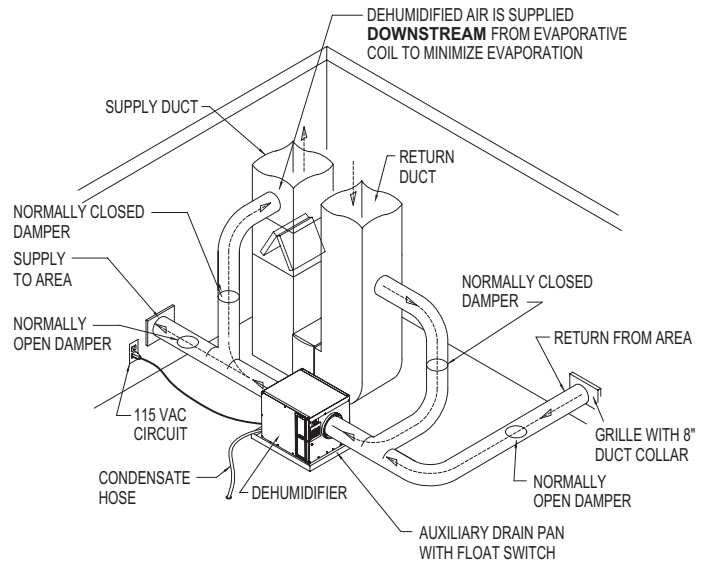CONDENSATE HOSE (TO COMMON DRAIN OR OUTSIDE)
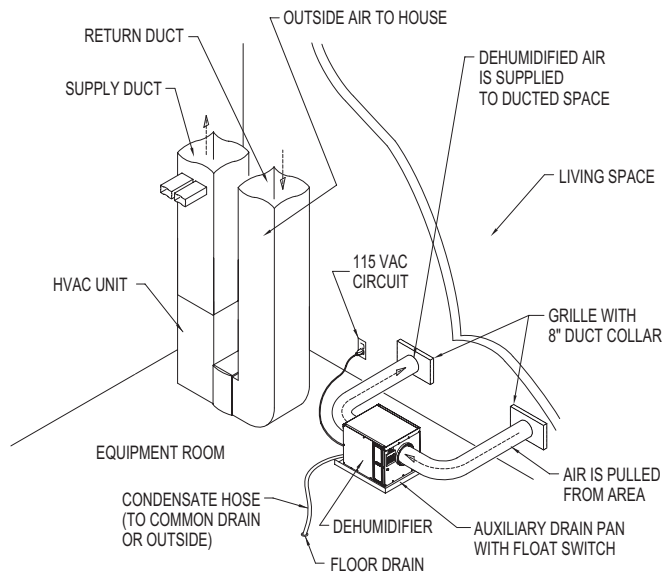
CONVERTIBLE DUCTING AND WIRING

Preferred Convertible Installation

Alternate Convertible Installation

SPOT DUCTING AND WIRING

REVISIONS

Sections	Description of Change
Optional Controls	Added new iComfort® S30 thermostat and new ComfortSense® 7500 thermostat.