EDA(K)

DAVE LENNOX *SIGNATURE*® COLLECTION

Humiditrol® Dehumidification System | R-454B

COMMERCIAL
PRODUCT SPECIFICATIONS (EHB)

NOTE - EDA is not applicable to variable-capacity outdoor units!

2025 COMPLIANT
REFRIGERANT

MODEL NUMBER IDENTIFICATION

EDA - 036 C K

Model Number
EDA = Enhanced Dehumidification Accessory
(Liquid Reheat Dehumidification System)

Refrigerant Type
K = R-454B

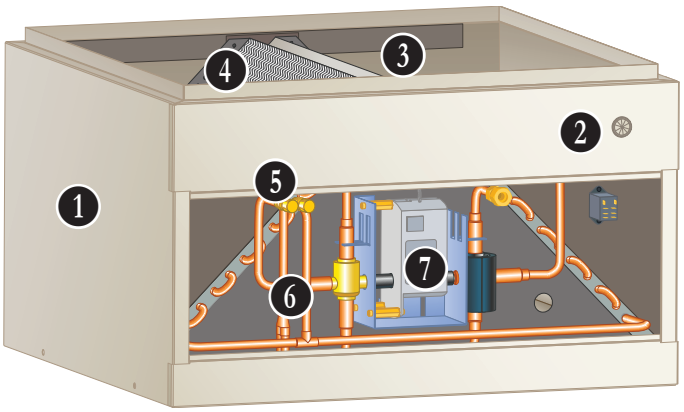
Nominal Capacity
024 = 2 tons
036 = 3 tons
060 = 5 tons

Cabinet Width
B = 17-1/2 in.
C = 21 in.
D = 24-1/2 in.

Form Number 211269 | December 2025
Supersedes all previous versions

FEATURE HIGHLIGHTS

1. Heavy Gauge Steel Cabinet
2. Low Voltage Electrical Inlet
3. Fully Insulated Cabinet
4. Dehumidification Coil
5. Sweat Connections
6. Dual Refrigerant Diverter Valves
7. 3-Way Diverter Valve Actuator



CONTENTS

APPROVALS AND WARRANTY

APPROVALS

- ETL Listed to US and Canadian safety standards and components within are bonded for grounding to meet safety standards for servicing required by NEC and CEC
- All models meet UL 60335-2-40 Refrigerant Detector Requirements
- ISO 9001 Registered Manufacturing Quality System

WARRANTY

- All covered components:
  - Limited five years in residential installations
  - Limited one year in non-residential installations

NOTE - Refer to Lennox® Basic Limited Warranty at www.Lennox.com for additional details.

NOTE - Lennox warranties do not cover damage or defect resulting from operation with system components (indoor unit, outdoor unit and refrigerant control devices) which do not match or meet the specifications recommended by Lennox. This unit is intended to operate with specific air handlers only. See System Decision Tree on page 13.

FEATURES

APPLICATIONS

NOTE - The Humiditrol® Dehumidification System is not applicable to variable-capacity outdoor units.

- The Humiditrol® Dehumidification System is designed for use with Lennox R-454B outdoor unit expansion valve systems only that are matched with specific air handlers
- See System Decision Tree on page 13 for available matches
- For indoor installations in upflow, downflow or horizontal applications
- Height, space and air flow restrictions or the unit's stability in a stacked configuration will limit the use of downflow applications

OVERVIEW

- The EDA unit is installed in an HVAC system downstream from the air handler
- In dehumidification mode, the coil becomes an extension of the outdoor coil and rejects heat into the indoor air stream
- This dehumidification mode allows significantly improved control of the humidity in the conditioned space without overcooling the space
- The EDA unit includes a set of 3-way diverter valves which route refrigerant through the EDA coil (Dehumidification ON), or which cause the refrigerant to bypass the EDA coil (Dehumidification OFF)

1 CABINET

- Low-profile allows easy installation in upflow or horizontal applications
- Heavy-gauge, cold rolled steel construction
- Pre-painted cabinet finish
- Flanges provided on supply air opening for ease of plenum connection
- Slots on perimeter of inlet opening help facilitate secure connection to indoor coil / air handler flanges

2 • Low voltage electrical inlet (for refrigerant valve actuator) provided on front of cabinet

3 • Fully insulated with foil faced insulation

COMPONENTS

4 Dehumidification Coil

- Durable copper tubing
- Ripple-edged aluminum fins
- Lanced fins provide maximum exposure of fin surface to air stream
- Rifled tubing provides superior refrigerant heat transfer
- Twin coil construction assembled in an A" configuration for large surface area (036C and 060D models)
- Single slab coil construction (024B model)

5 • Sweat connections

- High pressure testing insures leak-proof construction

Combination Check/Flow Limiting Piston

- Furnished with unit for field installation on the EDA unit
- See dimension drawing
- Prevents refrigerant from flowing into the inactive components when the EDA coil is inactive

6 Dual Refrigerant Diverter Valves

- Heavy duty valves control refrigerant flow depending on mode

7 3-Way Diverter Valve Actuator

- Controls operation of refrigerant valves during EDA operation
- 24VAC
- Three position actuator shaft for maintenance - Cooling, Evacuate or Bypass

Insulation and Piping Kit

- Includes all necessary piping, fittings and insulation required for EDA installation

Dehumidification Relay Kit

- Furnished with the EDA unit for field installation in CBK45UHVT, CBK45UHET and CBK47UHET air handlers

FEATURES

REFRIGERANT DETECTION SYSTEM (RDS)

- Complies with UL 60335-2-40 approved standard
- Required for all systems using R-454B refrigerant
- Consists of a factory installed Refrigerant Detection System (RDS) sensor and a Refrigerant Detection System (RDS) Blower Control Board
- Blower Control Board furnished with the EDA replaces the existing Blower Control Board in the air handler

Refrigerant Detection System (RDS) Sensors

- Factory installed sensor ensures safe operation for systems equipped with R-454B refrigerant
- Indoor sensor will detect any R-454B refrigerant

NOTE - RDS sensor in the EDA is used in conjunction with the RDS Sensor furnished in the air handler.

NOTE - Sensor must be repositioned for horizontal-right, horizontal-left, and downflow applications.

Blower Control Board (Furnished with EDA unit)

NOTE - Contains two RDS sensor inputs. Board replaces the existing Blower Control Board in Air Handlers equipped with a single RDS sensor input.

- Connected to the RDS sensors (one in the EDA, one in the air handler)
- Used as interface between EDA, air handler and thermostat to control system
- Ensures safe operation for systems equipped with R-454B refrigerant
- If R-454B refrigerant is detected, the refrigerant detection system will stop compressor and/or heating operation and operate the blower to reduce concentrations in the conditioned space
- Once safe levels are reached, the HVAC system will resume normal operation
- Multi-color LED for system status and as an aid in troubleshooting
  - Flashing LED codes for system status (Green/Blue) and diagnosing Sensor errors (Red)
- Alarm relay can trigger an external alarm if R-454B refrigerant is detected
- Zone relay opens all zone dampers (if part of a zoning system) if R-454B refrigerant is detected
- Power is disabled to thermostat to prevent demand if R-454B refrigerant is detected
- On initial system restart, blower will run for five minutes and any thermostat demands are disabled

NOTE - Refer to the Installation Instructions for additional information.

REQUIRED COMPONENTS

Transformer

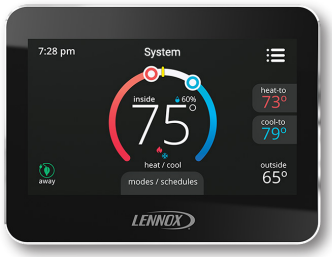
- 75VA, 24VAC indoor unit transformer is required when EDA unit is installed with a two-stage heat pump system

OPTIONAL ACCESSORIES

REQUIRED CONTROLS

NOTE - Third-party thermostats are not compatible with the EDA Dehumidification System. One of these Lennox thermostats with integrated EDA control logic is required for proper operation.

M30 Smart Wi-Fi Thermostat



- Wi-Fi-enabled, 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 read 4.3 in. color touchscreen (measured diagonally)
- LCD display with backlight shows the current and set temperature, time, inside relative humidity, system status (operating mode and schedules) and outside temperature (optional outdoor sensor required)
- Smooth Setback Recovery starts system early to achieve setpoint at start of program period
- Compressor short-cycle protection (5 minutes)
- Up to four separate schedules are available plus Schedule IQ™
- One-Touch Away Mode - A quick and easy way to set the cooling and heating setpoints while away
- Smart Away™ - Uses geo-fencing technology to determine when the homeowner is within a predetermined distance from the building to operate the system when leaving, away and arriving
- Wi-Fi remote monitoring and adjustment through a building wireless network for desktop PCs, laptops and apps for smartphones or tablets
- Smart home automation compatible with Amazon Alexa® and Google Assistant

NOTE - See the Lennox® M30 Smart Wi-Fi Thermostat Product Specifications bulletin for more information.

CS7500 Commercial 7-Day Programmable Thermostat

- Electronic 7-day, universal, multi-stage, programmable, touchscreen thermostat
- 4 Heat/3 Cool
- Remote Indoor Temperature Sensing with Averaging
- Outside or Discharge Air Temperature Display
- Occupancy Scheduling with Economizer Relay Control
- Away mode
- Offers enhanced capabilities including humidification / dehumidification / dewpoint measurement and control, Humiditrol® control, and notifications/reminders
- Performance reports
- Economizer relay control
- Easy-to-use, menu driven thermostat with a back-lit, LCD touchscreen
- See the CS7500 Commercial Thermostat Product Specifications bulletin more information

Remote Outdoor Temperature Sensor

- Used with Lennox M30 and CS7500 thermostats
- When installed outdoors, sensor allows thermostat to display outdoor temperature

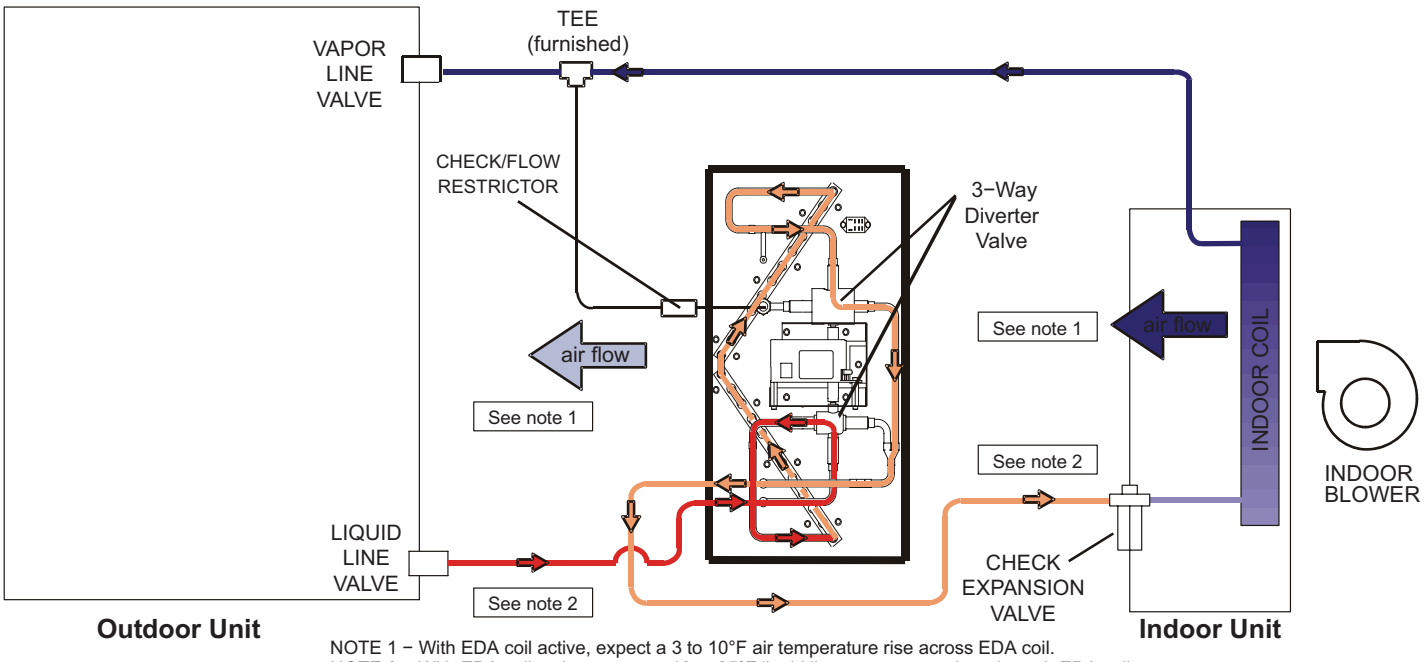
NOTE - Sensor is required for Humiditrol® applications.

SEQUENCE OF OPERATION

Cooling Cycle With EDA Active

- Dehumidification mode begins when there is a demand from the room thermostat
- The room thermostat sends a signal to the EDA unit's diverter valve actuator to begin operating in the dehumidification mode
- Refrigerant from the outdoor unit enters the EDA unit, passes through the first 3-way diverter valve and then enters the EDA coil
- There, heat from the warm refrigerant is rejected into the indoor air stream
- The refrigerant leaves the coil, passes through the second 3-way diverter valve and into the indoor coil expansion valve in a highly subcooled state
- During dehumidification, the indoor air blower operates at a lower air volume
- The warm refrigerant entering the EDA unit from the outdoor unit will be subcooled in the EDA coil and enter the expansion valve at a lower-than-normal temperature
- Liquid temperatures can be in the 60 to 70°F range depending on the indoor temperature and outdoor temperature, with a 10 to 25°F temperature drop through the EDA coil
- The air temperature leaving the indoor coil and entering the EDA coil will be normal for the reduced airflow, but will be warmed as it passes over the EDA coil
- Air temperature rise across the EDA can be from 3 to 10°F, depending on the operating ambient and air-conditioned space conditions
- If the cooling demand has been satisfied, but a dehumidify demand still exists and the room temperature is not more than 2° below the setpoint, the blower will operate at reduced airflow while the compressor operates on 2nd stage cooling (two-stage systems only)
- When outdoor ambient temperatures reach 95º, the system runtime requirements are high and dehumidification requirements are met without activating the dehumidification mode
- By design the system, which is controlled by the thermostat, will not allow operation in the dehumidification mode when outdoor temperatures exceed 95º
- The system will operate more efficiently and will avoid unfavorable operating conditions
- When operating in normal cooling (or heat pump heating) mode, all temperatures and pressures will be the same as a standard heating/cooling system

Cooling Cycle With EDA Active

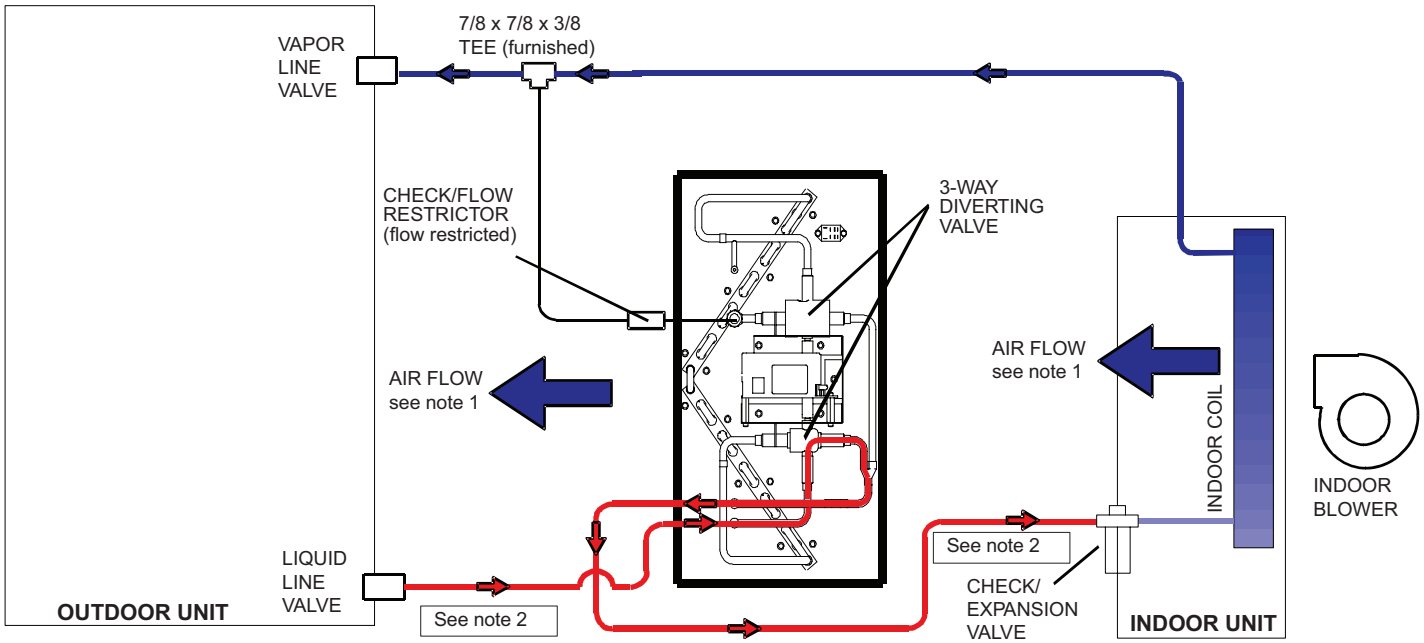


NOTE 1 – With EDA coil active, expect a 3 to 10°F air temperature rise across EDA coil.
NOTE 2 – With EDA coil active, expect a 10 to 25°F liquid line temperature drop through EDA coil.

Cooling Cycle With EDA Inactive

- In normal cooling mode (dehumidification mode OFF), the liquid refrigerant from the outdoor unit enters the first 3-way diverter valve
- The diverter valve actuator directs the refrigerant flow to bypass the EDA coil and flow directly to the indoor unit expansion valve

Cooling Cycle With EDA Inactive

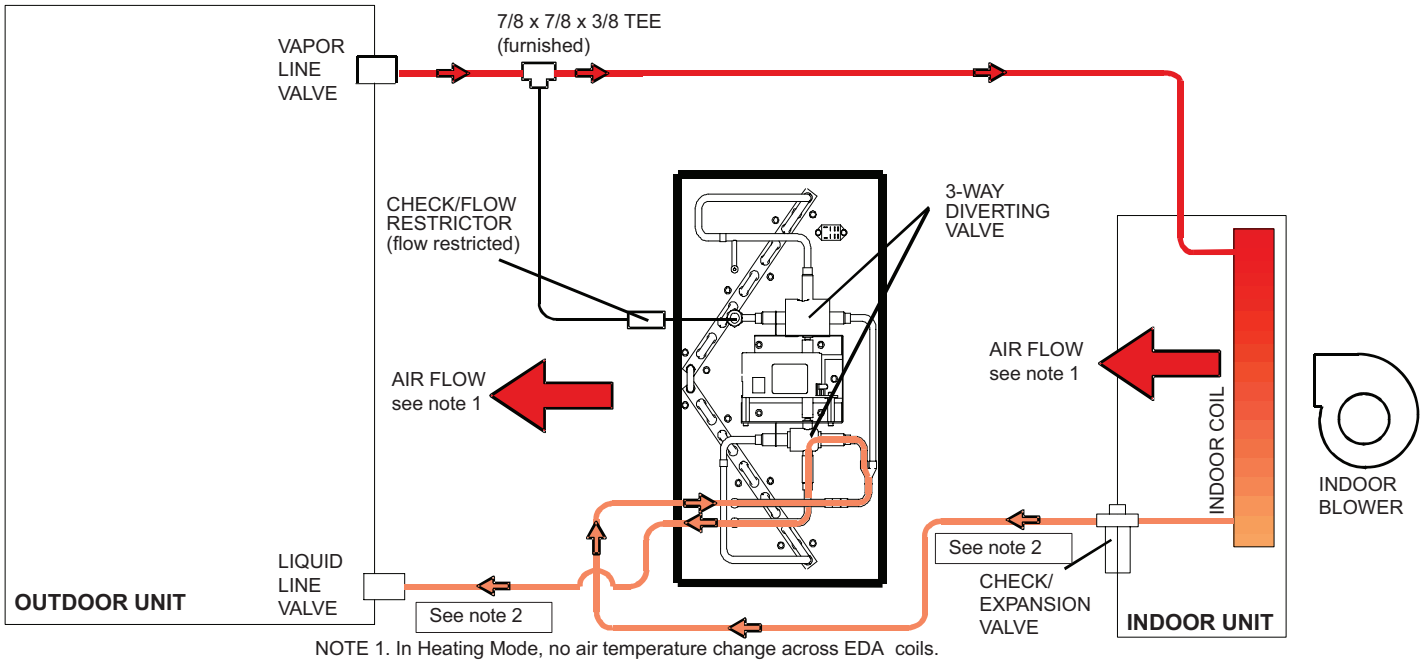


NOTE 1. In Cooling Mode, no air temperature change across EDA coils.
NOTE 2. In Cooling Mode, no liquid line temperature change across EDA coils.

Heat Pump Heating Cycle With EDA Inactive

- In heat pump heating mode, a system that includes an EDA unit will operate as a conventional heat pump; there is no requirement for EDA unit operation in heat pump heating mode

Heat Pump Heating Cycle With EDA Inactive



NOTE 1. In Heating Mode, no air temperature change across EDA coils.
NOTE 2. In Heating Mode, no liquid line temperature change across EDA coils.

SPECIFICATIONS

Model		EDA-024BK	EDA-036CK	EDA-060DK
Line Connections in. (sweat)	Liquid to Indoor TXV (OD)	3/8	3/8	3/8
	Liquid from Outdoor Unit (OD)	3/8	3/8	3/8
	Check/Flow Restrictor to Vapor Line Tee (OD)	3/8	3/8	3/8
EDA Coil	Net face area - ft.^{2}	2.0	3.0	4.0
	Tube diameter - in.	3/8	3/8	3/8
	Fins - in.	20	20	14
	Rows	1	1	1
Shipping Data - lbs.		36	41	49

CONTROLS - ORDER SEPARATELY

NOTE - Third-party thermostats are not compatible with the EDA Dehumidification System.
One of these Lennox thermostats with integrated EDA control logic is required for proper operation.

Model	EDA-024BK	EDA-036CK	EDA-060DK
M30 Smart Wi-Fi Thermostat (4 heat / 2 cool)	**15Z69**	**15Z69**	**15Z69**
CS7500 Commercial Thermostat (4 heat / 3 cool)	**24K41**	**24K41**	**24K41**
[1] **Remote Outdoor Temperature Sensor** (all thermostats) (for dual fuel, Humiditrol® and outdoor temperature display)	**X2658**	**X2658**	**X2658**

[1] Remote Outdoor Temperature Sensor is used with conventional (non-Lennox® Communicating) outdoor units. Allows the thermostat to display outdoor temperature. Required in dual-fuel and Humiditrol® applications.

REQUIRED COMPONENTS - ORDER SEPARATELY

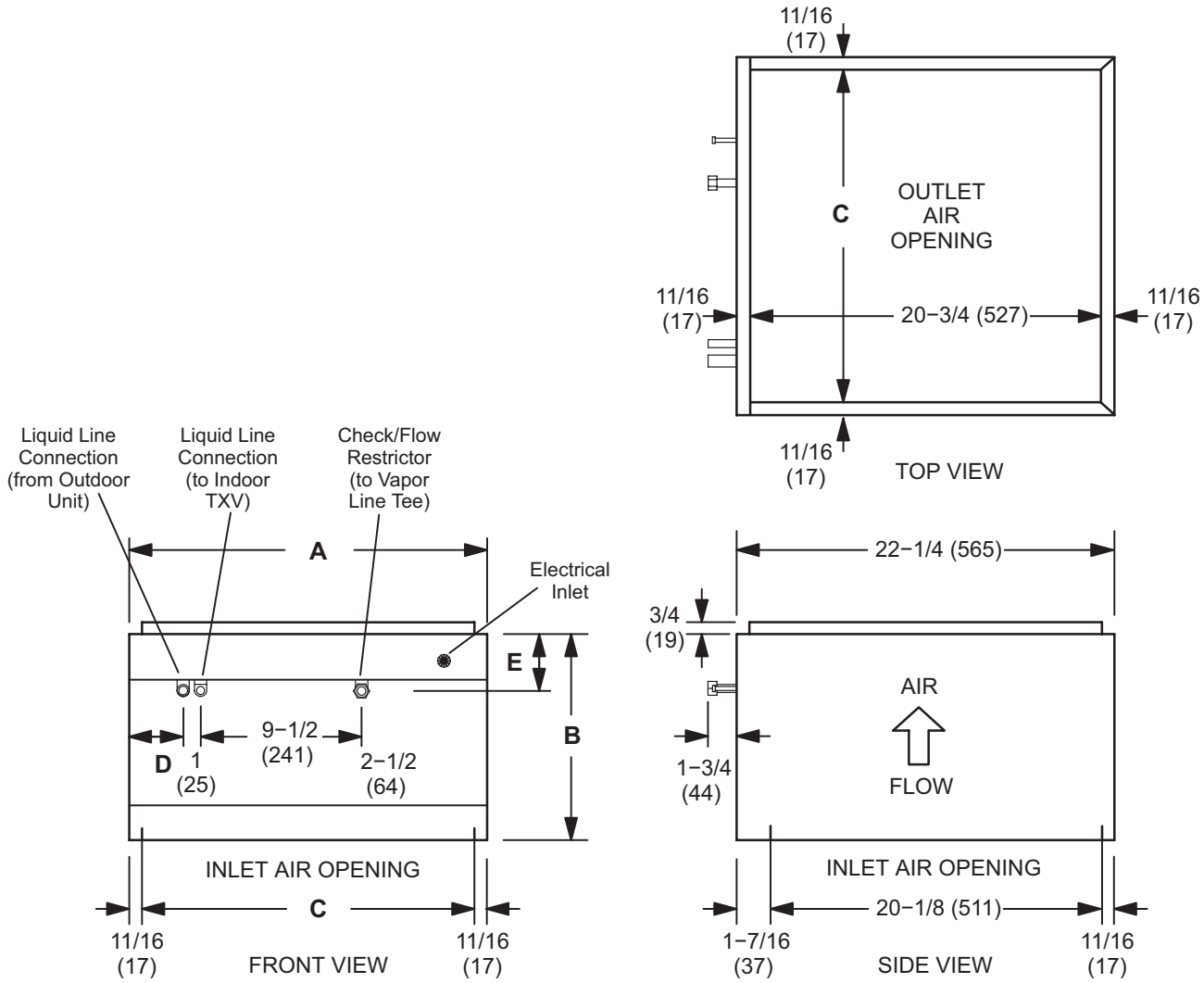
Model	EDA-024BK	EDA-036CK	EDA-060DK
ELECTRICAL			
[1] Transformer	**12P61** - 75VA, 120/208/240V primary, 24VAC secondary		

[1] Required when EDA unit is installed with two-stage heat pump system.

AIR RESISTANCE

Model	Air Volume (cfm)	Total Air Resistance (in. w.g.)	
		Upflow/Horizontal Position	Downflow Position
EDA-024BK	400	0.06	0.07
	600	0.11	0.13
	800	0.17	0.20
	1000	0.24	0.29
EDA-036CK	600	0.06	0.07
	800	0.09	0.10
	1000	0.12	0.14
	1200	0.17	0.20
	1400	0.22	0.26
EDA-060DK	1000	0.06	0.07
	1200	0.08	0.09
	1400	0.10	0.12
	1600	0.13	0.16
	1800	0.15	0.18
	2000	0.19	0.22
	2200	0.22	0.26

DIMENSIONS



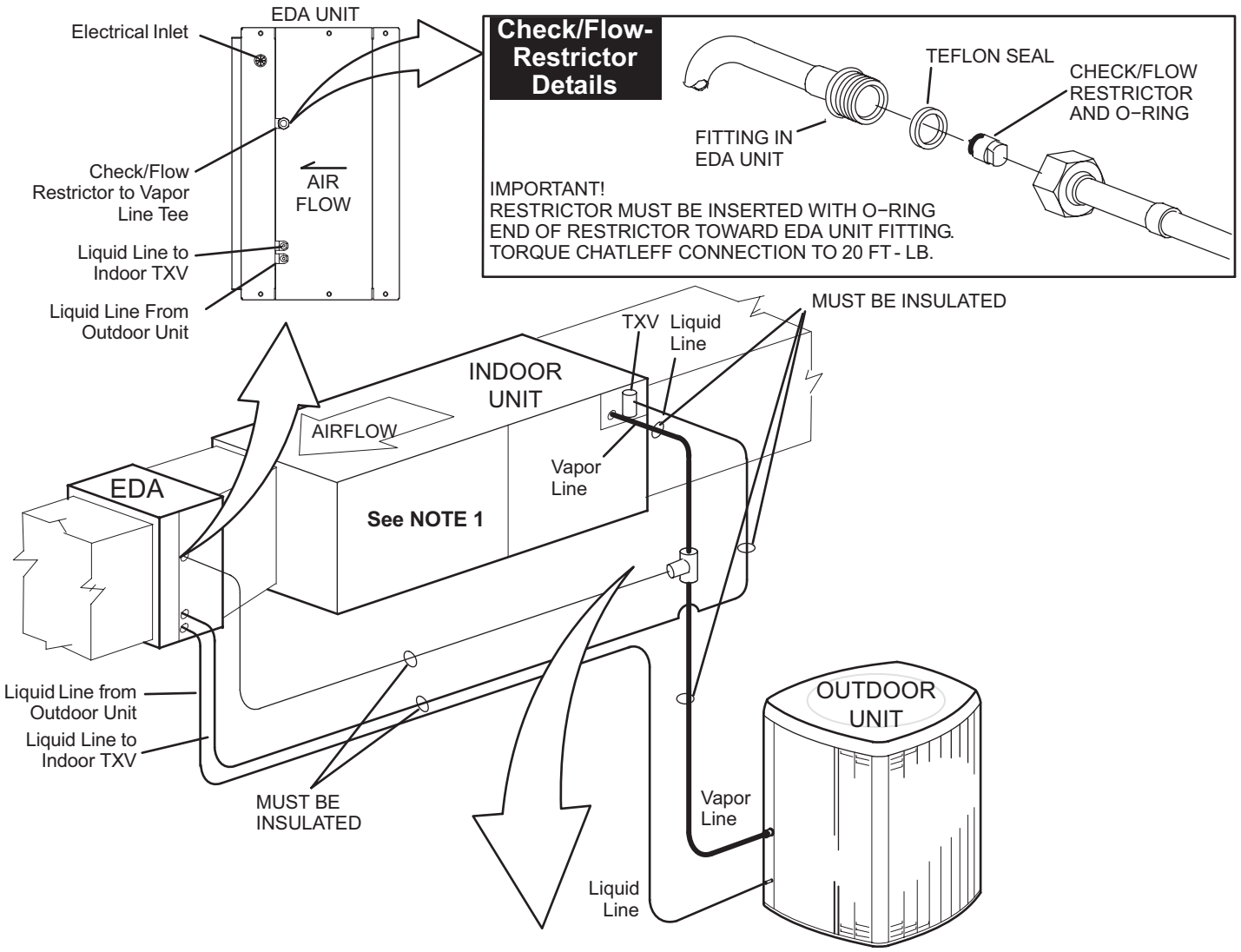
Model	A		B		C		D		E	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
EDA-024BK	17-1/2	445	12-1/4	311	16-1/8	422	1-3/8	35	3	76
EDA-036CK	21	533	12-1/4	311	19-5/8	498	3-1/8	79	3-1/4	83
EDA-060DK	24-1/2	622	14	356	23-1/8	587	4-7/8	124	4-3/4	121

EDA INSTALLATION CLEARANCES

Both Sides and Back of Cabinet	12 inches (305 mm)
Service / Maintenance	36 inches (914 mm)

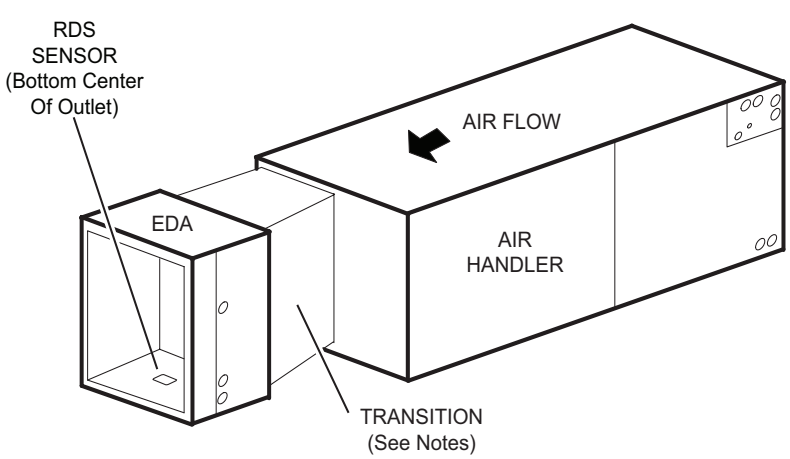
TYPICAL INSTALLATION

Typical Installation (Horizontal Air Handler shown)

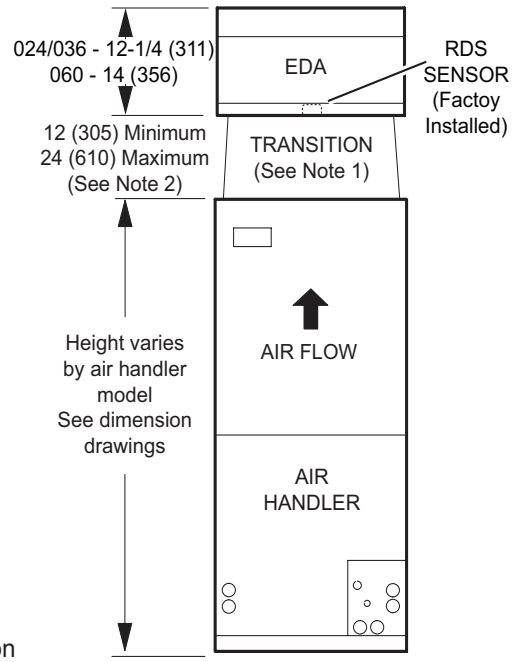


NOTE 1 − Maximum distance between EDA unit and Air Handler is 48 in. (1219 mm) due to the length of the RDS wiring harness (81 inches (2057 mm).

TYPICAL INSTALLATION CONFIGURATIONS



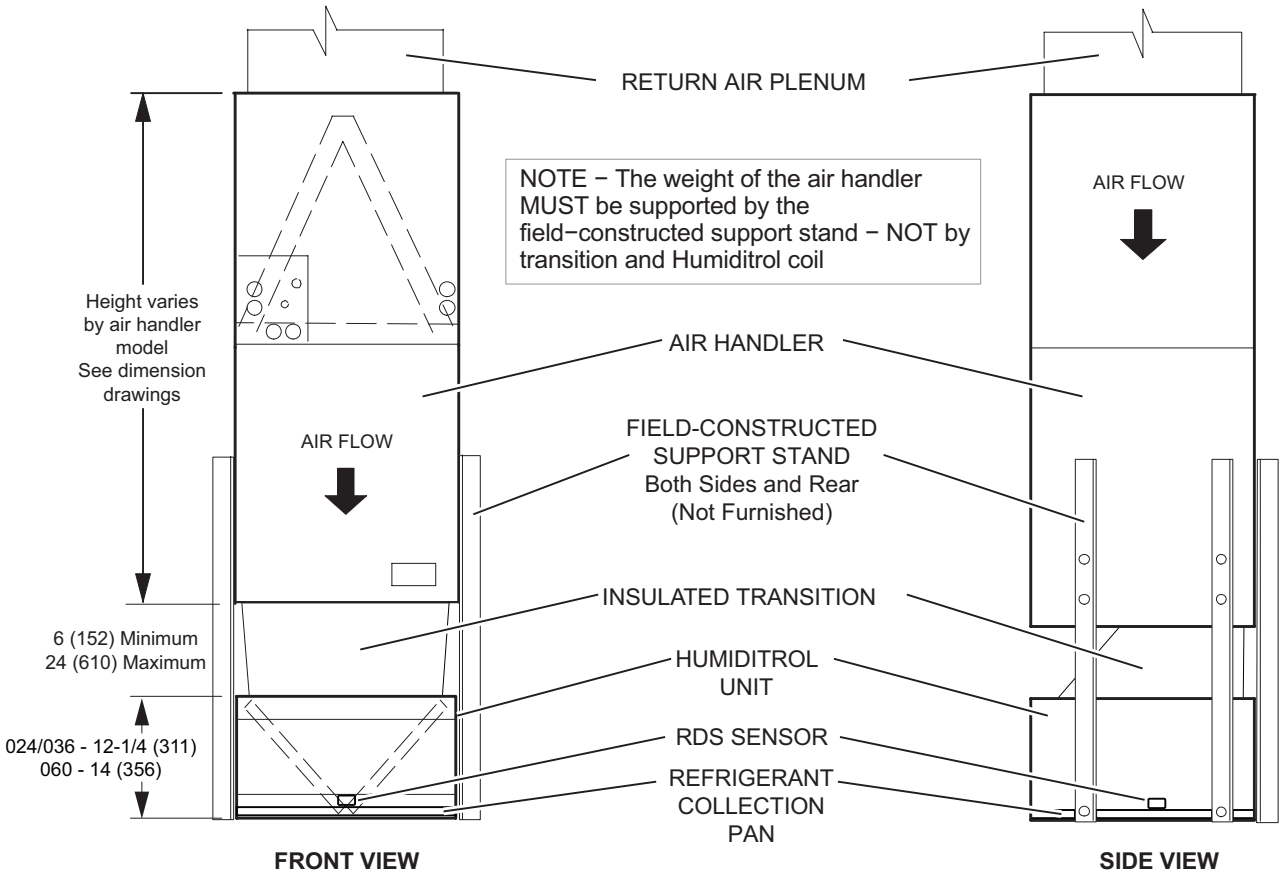
HORIZONTAL POSITION



UPFLOW POSITION

NOTES:

1. Transition is required for all air handlers; dimension width and depth is dependent upon the air handler and the Humiditrol model used.
   Alternate installation position information - Humiditrol coil is not position sensitive as long as the correct air flow direction through the dehumidification coil is maintained.
   Access panel must be installed in the transition duct or supply air duct from the EDA (depending on the application) for service access to the RDS Sensor.
2. When more distance is needed, a maximum of 48 in. (1219 mm) between the air handler and EDA, the RDS harness can be routed out through the knockout in the bottom panel.



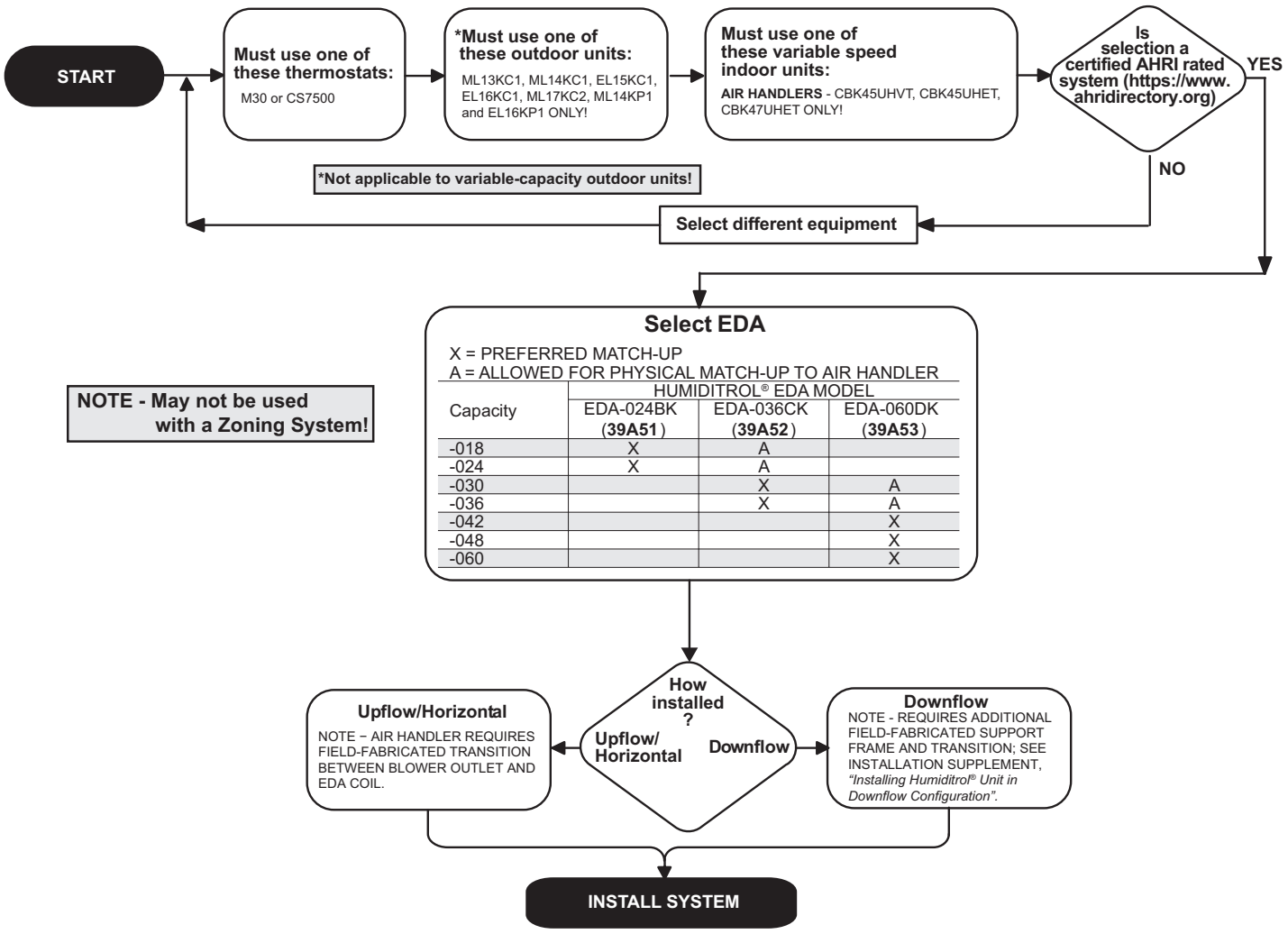
FRONT VIEW **SIDE VIEW**

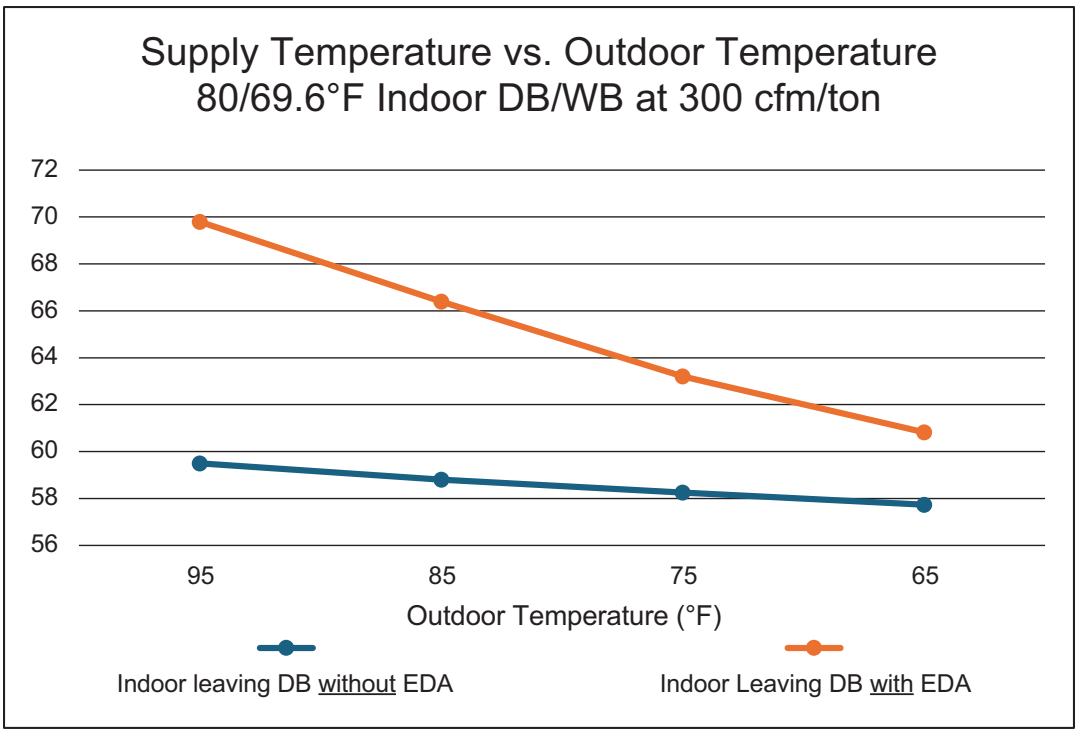
DOWNFLOW POSITION

NOTE:

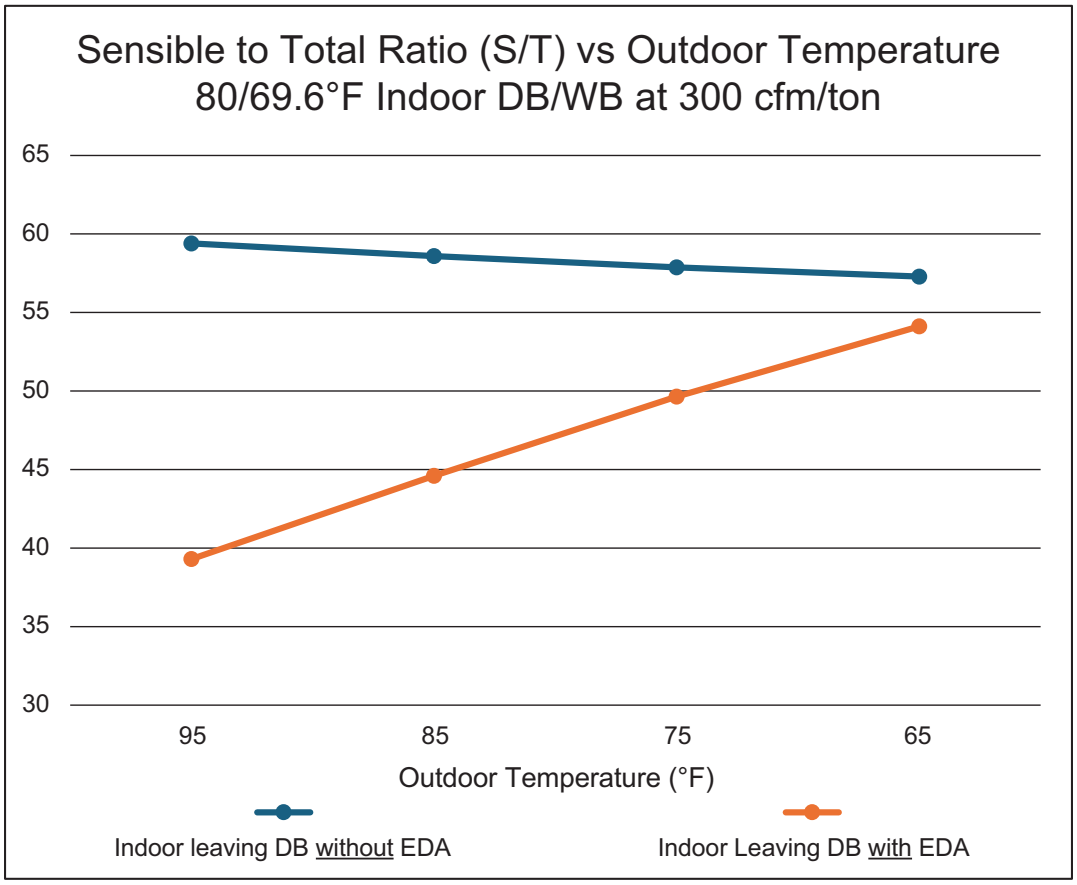
1. Access panel must be installed in the transition duct or supply air duct from the EDA (depending on the application) for service access to the RDS Sensor.

SYSTEM DECISION TREE





NOTE- Data varies ± 3% for all unit matches.



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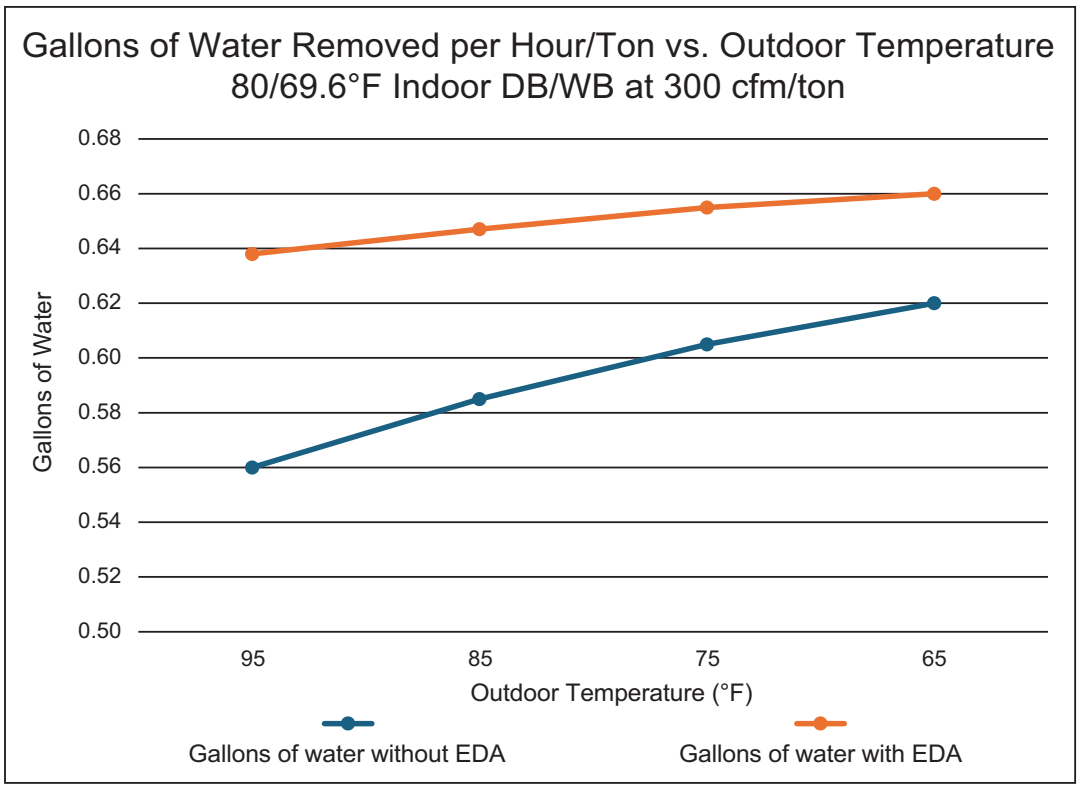
PERFORMANCE



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Visit us at www.Lennox.com
For the latest technical information, www.LennoxCommercial.com
Contact us at 1-800-4-LENNOX

NOTE - Due to Lennox' ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability.
Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury.
Installation and service must be performed by a qualified installer and servicing agency.