

PACKAGED HEAT PUMP

LDT

ENLIGHT ROOFTOP UNITS

Dual-Fuel High Efficiency | Lennox® CORE Controller | **R-454B** | 60Hz

**COMMERCIAL
PRODUCT SPECIFICATIONS (EHB)**



25 Tons

Net Cooling Capacity - 274,000 Btuh

Net Heating Capacity - 270,000 Btuh

Gas Input Heat Capacity - 260,000 to 480,000 Btuh

ENLIGHT



SMARTWIRE™ SYSTEM



MODEL NUMBER IDENTIFICATION

L D T 302 H 5 M S 1 Y

Brand
L = Lennox®

Voltage
Y = 208/230V-3 phase-60hz
G = 460V-3 phase-60hz
J = 575V-3 phase-60hz

Unit Type
D = Packaged Dual-Fuel (Heat Pump/Gas Heating) Unit

Minor Design Sequence
1 = 1st Revision
2 = 2nd Revision
3 = 3rd Revision

Family
T = Enlight Series

Heating Type
S = Standard Gas Heat, 2 Stage
M = Medium Gas Heat, 2 Stage
H = High Gas Heat, 2 Stage

Nominal Cooling Capacity - Tons
302 = 25 Tons

Blower Type
M = MSAV® Multi-Stage Air Volume, Belt Drive

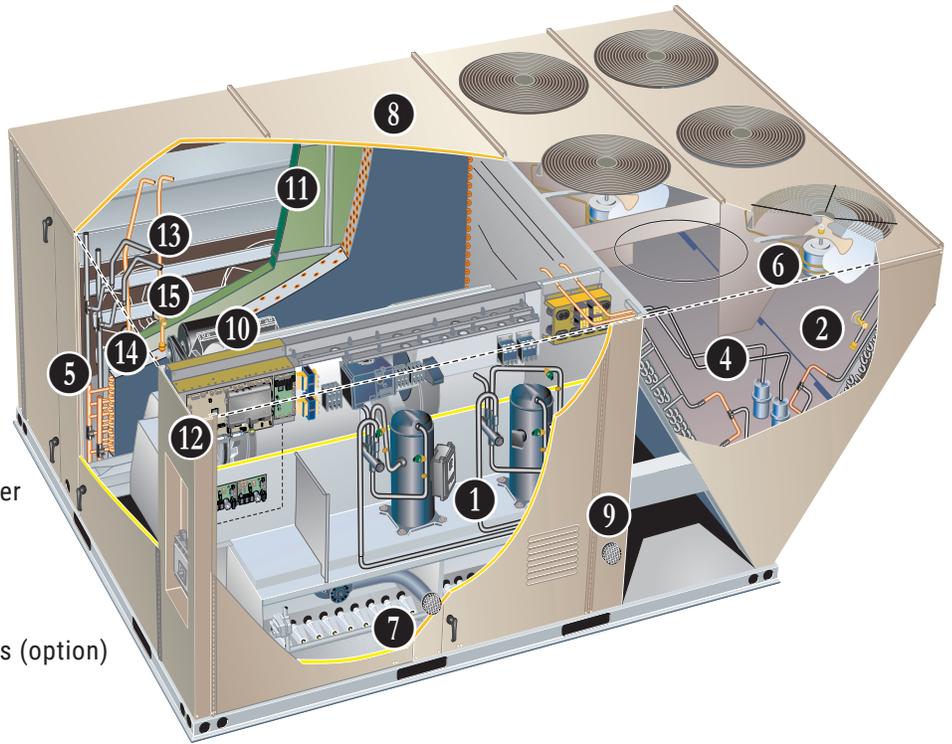
Cooling Efficiency
H = High Efficiency

Refrigerant Type
5 = R-454B

FEATURE HIGHLIGHTS

Enlight rooftop units featuring the Lennox® CORE Control System create a bright future through a highly energy-efficient and environmentally sustainable design. Comprehensive configurations meet a wide range of applications, making it the most flexible product line Lennox has to offer.

1. Scroll Compressors
2. Copper Tube Outdoor Coil
3. Thermal Expansion Valves
4. Filters/Driers
5. Reversing Valve
6. Outdoor Coil Fan Motors
7. Heat Exchanger/Inshot Burners
8. Heavy Gauge Steel Cabinet
9. Hinged Access Panels
10. MSAV® Multi-Stage Air Volume Blower
11. Air Filters
12. Lennox® CORE Control System
13. Economizer (option)
14. Downflow Barometric Relief Dampers (option)
15. Power Exhaust (option)



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APPROVALS AND WARRANTY

APPROVALS

- All models tested at conditions included in AHRI Standard 340/360-2022
- ETL and CSA listed
- All models are ASHRAE 90.1-2025 compliant
- All models meet DOE 2023 energy efficiency standards
- All models are listed to UL 60335-1 and UL 60335-2-40 and meet the Refrigerant Detection and Dissipation Requirements
- Components are bonded for grounding to meet safety standards for servicing required by ETL, NEC and CEC
- All models meet California Code of Regulations, Title 24 and ASHRAE 90.1-2025 Section 6.4.3.10 requirements for staged airflow
- All models have been sound tested in accordance with test conditions included in AHRI Standard 270 or 370
- ISO 9001 Registered Manufacturing Quality System
- All models have FSA approval and are compliant with standard ASCE 7-22 (ASD) and the Florida Building Code Eighth Edition (2023)
- Units are charged with virgin refrigerant to comply with NYCRR Part 494
- All models are fully charged and run tested to verify unit operation and functionality

WARRANTY

- Stainless Steel Heat Exchanger - Limited fifteen years
- Compressors - Limited five years
- Lennox® CORE Unit Controller - Limited three years
- Variable-Frequency Drive (VFD) - Limited five years
- High Performance Economizers (optional) - Limited five years
- All other covered components - Limited one year

FEATURES AND BENEFITS

DUAL-FUEL OPERATION

(Heating Mode)

- Operates the heat pump for 1st stage heating
 - If 1st stage heat settings are not met, 2nd stage activates gas heating (secondary heat source)
- Mechanical heat pump operation automatically terminates on gas heat start-up
- Lennox® CORE Control System automatically changes blower speeds between heat pump heating and gas heating
- Blower operates in high speed during 1st stage (heat pump) operation and terminates during changeover to gas heat operation
- Blower starts when heat exchanger is warm, and runs in high speed during 2nd stage (gas heat) operation
 - If continuous blower operation is available on the thermostat, a change in blower speed automatically occurs during heat pump to gas heat changeover.

COOLING/HEATING SYSTEM

- Designed to maximize sensible and latent cooling and heating performance at design conditions
- Mechanical cooling operates from 0°F to 125°F
- Mechanical heating operates down to 35°F ambient (default dual fuel balance point) adjustable 10°F to 65°F
- Mechanical heating operates at ambient temperatures above 10°F
- Gas heating operates from 35°F down to -40°F (default dual fuel balance point) adjustable 10°F to 65°F

NOTE - Optional Low Temperature Vestibule Heater extends gas heat operation down to -60°F.

R-454B Refrigerant

- Low GWP (Global Warming Potential)
- Zero ODP (Ozone Depletion Potential)
- Low Toxicity/Lower Flammability - A2L
- Unit is factory pre-charged

1 Scroll Compressors

- System consists of one two-stage compressor and one single-stage scroll compressor
- Resiliently mounted on rubber grommets for quiet operation

Compressor Crankcase Heaters

- Protects against refrigerant migration that can occur during low ambient operation or during extended off cycles

2 Coil Construction

- Copper tube construction
- Enhanced rippled-edge aluminum fins
- Flared shoulder tubing connections
- Silver soldered construction
- Factory leak tested

Evaporator Coil

- Copper tube construction
- Enhanced rippled-edge aluminum fins
- Flared shoulder tubing connections
- Silver soldered construction
- Factory leak tested
- Cross-row circuiting with rifled tubing

3 Thermal Expansion Valves

- Ensures optimal performance throughout the application range

4 Filter/Driers

- High capacity filter/drier protects the system from dirt and moisture

5 Reversing Valve

- 4-way interchange reversing valve rapidly changes the direction of refrigerant flow resulting in quick changeover from cooling to heating and vice versa

High Pressure Switches

Protects the compressor from overload conditions such as dirty condenser coils, blocked refrigerant flow or loss of outdoor fan operation

Low Pressure Switches

- Protects the compressors from low pressure conditions such as low refrigerant charge or low/no airflow

Indoor Coil Freeze Protection

- Protects the indoor coil from damaging ice build-up due to conditions such as low/no airflow, or low refrigerant charge

Antimicrobial Condensate Drain Pan

- Composite pan, sloped to meet drainage requirements per ASHRAE 62.1
- Antimicrobial additive prevents growth of mold and mildew, which improves indoor air quality and reduces drain line blockage
- Side drain connections

NOTE - Stainless steel drain pan available as a factory installed option.

6 Outdoor Coil Fan Motors

- Thermal overload protected
 - Totally enclosed
 - Permanently lubricated ball bearings
 - Shaft up
 - Wire basket mount
- #### Outdoor Coil Fans
- PVC coated fan guard furnished

Required Selections

Cooling Capacity

- Specify nominal cooling capacity

FEATURES AND BENEFITS

COOLING/HEATING SYSTEM (Continued)

Options/Accessories

Factory or Field Installed

Drain Pan Overflow Switch

- Monitors condensate level in drain pan
- Shuts down unit if drain becomes clogged

Stainless Steel Drain Pan

- Non-corrosive drain pan

Field Installed

Condensate Drain Trap

- Available in copper or PVC

LOW GWP REFRIGERANT DETECTION SYSTEM (RDS)

- Complies with UL 60335-2-40 approved standard
- Required for all systems using R-454B refrigerant
- Factory installed on all units
- Consists of a refrigerant detection sensor(s) and a mitigation control
- Ensures safe operation for systems equipped with R-454B refrigerant
- Sensor(s) monitors indoor coil area for R-454B refrigerant
- If R-454B refrigerant is detected the refrigerant detection system will prevent compressor and heating operation until R-454B refrigerant is no longer detected
- Refrigeration detection system energizes blower if any R-454B refrigerant is detected to mitigate any concentrations of refrigerant from the unit and the system

HEATING SYSTEM

7 Heat Exchanger

- Tubular construction, stainless steel
- Life-cycle tested
- Aluminized steel inshot burners
- Direct spark ignition
- Electronic flame sensor
- Combustion air inducer
- Redundant automatic dual stage gas valve with manual shut-off

Electronic Pilot Ignition

- Electronic spark igniter provides positive direct ignition of burners on each operating cycle
- Permits main gas valve to stay open only when the burners are proven to be lit
- If loss of flame occurs, gas valve closes, shutting off the gas to the burners
- LED indicates status and aids in troubleshooting
- Factory installed in the control section

Limit Controls

- Redundant limit controls with fixed temperature setting
- Protects heat exchanger and other components from overheating

Safety Switches

- Flame roll-out switch
- Flame sensor
- Combustion air inducer proving switch
- Protects system operation

Required Selections

Gas Input Choice - Order one:

- Standard Gas Heat, 2 Stage (169,000/260,000 Btuh)
- Medium Gas Heat, 2 Stage (234,000/360,000 Btuh)
- High Gas Heat, 2 Stage (312,000/480,000 Btuh)

NOTE – Two-stage heat models can be operated with four stages of gas heating when controlled in either zone sensor, Discharge Air Control, or fresh air tempering mode on the Lennox® CORE unit controller (available when using the CS8500 thermostat or when connected to Building Automation Systems using BACnet, LonTalk, or S-Bus protocols). See Gas Heating Specifications table.

Options/Accessories

Field Installed

Low Temperature Vestibule Heater

- Electric heater automatically controls minimum temperature in gas burner compartment when temperature is below -40°F
- CSA certified to allow operation of unit down to -60°F

Combustion Air Intake Extensions

- Recommended for use with existing flue extension kits in areas where high snow areas can block intake air
- Order two kits

LPG/Propane Kits

- Conversion kit to field change over units from Natural Gas to LPG/Propane
- Order two kits

Vertical Vent Extension Kit

- Use to exhaust flue gases vertically above unit
- Required when unit vent is too close to fresh air intakes per building codes
- Also prevents ice formation on intake louvers
- Kit contains vent transition, vent tee, drain cap and installation hardware
- Order two kits.

NOTE - Straight vent pipes (4 in. B-Vent) and caps are not furnished and must be field supplied. Refer to kit instructions for additional information

FEATURES AND BENEFITS

CABINET

8 Construction

- Heavy-gauge steel panels
- Full perimeter heavy-gauge galvanized steel base rail
- Base rails have rigging holes
- Three sides of the base rail have forklift slots
- Raised edges around duct and power entry openings in the bottom of the unit for water protection

Airflow Choice

- Units are shipped in downflow (vertical) return air flow configuration

NOTE - Units can be field converted to horizontal air flow with optional Horizontal Return Air Panel Kit and Horizontal Roof Curb.

Power/Gas Entry

- Electrical and gas lines can be routed through the unit base or through horizontal access knock-outs

Exterior Panels

- Constructed of heavy-gauge, galvanized steel
- Textured pre-paint with polyurethane finish
- Cyclic salt fog and UV exposure up to 1,680 hours per ASTM D5894

Insulation

- Fully insulated with non-hygroscopic fiberglass insulation (conditioned areas)
- Unit base is fully insulated
- Base insulation serves as an air seal to the roof curb, eliminating the need to add a seal during installation

9 Hinged Access Panels

- Filter section
- Blower section
- Heating section
- Compressor/controls section
- Panel seals and quarter-turn latching handles provide a tight air and water seal

Options/Accessories

Factory Installed

Corrosion Protection

- Completely flexible immersed coating
- Electrodeposited dry film process (AST ElectroFin E-Coat)
- ASTM B117 / DIN 53167 Salt Spray - 15,000+ hours
- ASTM G85 Annex A3 SWAAT Modified Salt Spray - 3000 hours
- VA Master Construction Specification Division 23 for High Humidity Installations
- CID AA-52474A (GSA)
- Indoor Corrosion Protection:
 - Coated coil
 - Painted blower housing
 - Painted base
- Outdoor Corrosion Protection:
 - Coated coil
 - Painted outdoor base

Factory or Field Installed

Combination Coil/Hail Guards

- Heavy gauge steel frame
- Painted to match cabinet
- Expanded metal mesh protects outdoor coil

Field Installed

Horizontal Return Air Panel Kit

- Required for horizontal applications with Horizontal Roof Curb
- Contains panel with return air opening for field replacement of existing unit panel and panel to cover bottom return air opening in unit
- See dimension drawings.

Burglar Bars

- Heavy gauge galvanized frame
- Fully welded
- 3/4 in. bar meets ASTM specification
- Frame meets ASTM A446, A525, A526 and A527 specification
- Burglar bars designed to fit ductwork

FEATURES AND BENEFITS

BLOWER

- A wide selection of supply air blower options are available to meet a variety of airflow requirements

Motor

- Overload protected
- Ball bearings
- Belt drive motors are offered on all models and are available in several different sizes to maximize air performance

NOTE - All blower motors 5 hp and above meet minimum energy efficiency standards in accordance with the Energy Independence and Security Act (EISA) of 2007

10 Supply Air Blower

- Forward curved blades
- Double inlet
- Blower wheel statically and dynamically balanced
- Ball bearings
- Adjustable pulley (allows speed change)
- Blower assembly slides out of unit for servicing
- Grease fittings furnished

Blower Proving Switch

- Monitors blower operation, shuts down unit if blower fails

MSAV® Multi-Stage Air Volume

- MSAV® Multi-Stage Air Volume stages the amount of airflow according to compressor stages, heating demand, ventilation demand or smoke alarm
 - Utilizes a Variable Frequency Drive (VFD) to stage the supply air blower airflow
 - VFD alters the frequency and voltage of the power supply to the blower to control blower speed
- The amount of airflow for each stage can be set according to a parameter in the Lennox® CORE Unit Controller
 - Unit is shipped from the factory with preset airflows
 - If equipped with the optional Bypass Control the MSAV® Multi-Stage Air Volume features automatic electronic bypass control of the VFD
 - In case of a VFD malfunction, a VFD alarm is generated by the Lennox® CORE Unit controller
 - Unit controller will automatically switch to full blower speed if a VFD alarm is generated

NOTE - Units equipped with a Variable Frequency Drive (VFD) are designed to operate on balanced, three-phase power. Operating units on unbalanced three-phase power will reduce the reliability of all electrical components in the unit. Unbalanced power is a result of the power delivery system supplied by the local utility company. Factory-installed inverters are sized to drive blower motors with an equivalent current rating using balanced three-phase power. If unbalanced three-phase power is supplied; the installer must replace the existing factory-installed inverter with an inverter that has a higher current rating to allow for the imbalance. Refer to the installation instructions for additional information and replacement information.

Ordering Information

- Specify motor horsepower and drive kit number when base unit is ordered

Options/Accessories

Factory Installed

Supply VFD Blower Bypass Control

- Allows unit to operate as a constant air volume (CAV) unit in case of variable frequency drive (VFD) failure

NOTE - Supply VFD Blower Bypass Control is not available with High Static Power Exhaust.

Field Installed

Blower Belt Auto-Tensioner

- Provides proper tension to belt drive blower belt without the need for regular adjustments
- Maintains airflow and proper performance

ELECTRICAL

SmartWire™ System

- Keyed and color-coded wiring connectors prevent miswiring
- Wire coloring scheme is standardized across all models
- Each connection is intuitively labeled to make troubleshooting and servicing quick and easy

Electrical Plugs

- Positive connection electrical plugs connect common accessories or maintenance parts for easy removal or installation

Phase/Voltage Detection

- Monitors power supply to assure phase is correct at unit start-up
- If phase is incorrect, the unit will not start and an alarm code is reported to the unit controller
- Protects unit from being started with incorrect phasing which could lead to issues such as compressors running backwards
- Voltage detection monitors power supply voltage to assure proper voltage
- If voltage is not correct (over/under voltage conditions) the unit will not start and an alarm code is reported to the unit controller

FEATURES AND BENEFITS

ELECTRICAL (continued)

Required Selections

Voltage Choice

- Specify when ordering base unit

Options/Accessories

Factory Installed

Circuit Breakers

- HACR type
- Overload and short circuit protection
- Factory wired and mounted in the power entry panel
- Current sensitive and temperature activated
- Manual reset

Short-Circuit Current Rating (SCCR)

- Higher short-circuit protection up to 100kA

NOTE - Disconnect Switch is furnished and factory installed with High SCCR option

Factory or Field Installed

Disconnect Switch

- Accessible outside of unit
- Spring loaded weatherproof cover furnished

GFI Service Outlets (2)

- 115V ground fault circuit interrupter (GFCI) type
- Available non-powered, field-wired or factory-wired and powered

Field Installed

GFI Weatherproof Cover

- Single-gang cover
- Heavy-duty UV-resistant polycarbonate case construction
- Hinged base cover with gasket

INDOOR AIR QUALITY

11 Air Filters

- Disposable 2 inch MERV 4 filters furnished as standard

Options/Accessories

Factory or Field Installed

Healthy Climate® High Efficiency Air Filters

- Disposable MERV 8 or MERV 13 (Minimum Efficiency Reporting Value based on ASHRAE 52.2) efficiency 2-inch pleated filters
- Replacement Filter Media Kit With Frame
- Replaces existing pleated filter media
- Includes washable metal mesh screen and metal frame with clip for holding replaceable non-pleated filter

Field Installed

Healthy Climate® High Efficiency MERV 16 Air Filters

- Disposable MERV 16 (Minimum Efficiency Reporting Value based on ASHRAE 52.2) efficiency 2-inch pleated filters

Indoor Air Quality (CO₂) Sensors

- Monitors CO₂ levels
- Reports to the Lennox® CORE Control, which adjusts economizer dampers as needed

CONTROL SYSTEM

LENNOX® CORE CONTROL SYSTEM



- 12 The Lennox® CORE Control System is designed to accelerate equipment install and service. Standard with all Enlight rooftop units, control system integrates key technologies that lower installation costs, drive system efficiency, and protect your investments.

The Lennox® CORE Unit Controller is a microprocessor-based controller that provides flexible control of all unit functions.

CORE Mobile Service App

- Guided Setup with progress indicators, detailed help, and exportable summaries to manage simple, trouble-free setup, reducing commissioning times
- Enhanced Test Functionality provides real-time sensor readings, trending, and reports that enable easy troubleshooting
- Ability to set and configure parameters of the CORE Control System to manage sequence of operation
- Economizer test function ensures economizer is operating correctly



Additional Features:

- Built-In 7-Segment Display shows Unit Status and active alarms for easy troubleshooting
- Buttons for test and clearing delays
- SmartWire™ System with keyed and removable screw terminals ensure correct field wiring
- Built-in BACnet MS/TP and IP allow open integration to building management systems.
- Two-port Ethernet Switch enables daisy chaining for BACnet IP and automatic firmware updates

NOTE - Unit Internet Connection required.

- Profile setup copies key settings between units with the same configuration to reduce setup time
- USB port allows a technician to download and transfer unit information to help verify service was performed
- USB software updates on the Lennox® CORE Unit Controller enhance functionality without the need to change components
- Unit Controller Software

Configurable Built-In Functions

- Discharge Air Cooling Control
- Up to three distinct Cooling Airflows in Thermostat Mode
- Programmable independent heating, ventilation and cooling blower speeds

- Discharge Air Heating Control
- Economizer Control Options (See Economizer / Exhaust Air / Outdoor Air sections)
- Exhaust Fan Control Modes for fresh air damper position
- Configurable Morning Warm-up
- Night Setback Mode
- Fresh Air Tempering for Improved Ventilation
- Demand Control Ventilation
- Low Ambient Controls for operation down to 0°F
- Humiditrol® Operation
- Enhanced Dehumidification (Latent Demand Control without hot gas reheat)

Component Protection / Unit Safeguards:

- Compressor Time-Off Delay
- Adjustable Blower On/Off Delay
- Return Air Temperature Limit Control
- Safety Switch Input allows Controller to respond to a external safety switch trip
- Service Relay Output
- Thermostat Bounce Delay
- Smoke Alarm Mode has four choices (unit off, positive pressure, negative pressure, purge)
- "Strike Three" Protection
- Gas Valve Time Delay Between First and Second Stage
- Minimum Compressor Run Time

Control Methods / Interfaces:

- DDC and 24V Thermostat
- BACnet MS/TP and IP
- LONTalk (Factory and Field Option)
- Lennox S-BUS
- Zone Temperature Sensor Input
- Dehumidistat and Humidity Sensor Inputs
- Indoor Air Quality Inputs (2)
- Built-in Control Parameter Defaults
- Permanent Diagnostic Code Storage
- Field Adjustable Control Parameters (Over 200 settings)
- Multiple Configurable Digital Inputs
- LED Indicators
- PC Interface connects the Lennox® CORE Unit Controller to a PC with the Lennox Unit Controller Software

NOTE - Lennox® CORE Control System features vary with the type of rooftop unit in which the control is installed.

CONTROL SYSTEM

LENNOX® CORE CONTROL SYSTEM (continued)

Controls Options

Factory or Field Installed

Dirty Filter Switch

- Senses static pressure increase and issues alarm if necessary

Fresh Air Tempering

- Used in applications with high outside air requirements
- Controller energizes the first stage heat as needed to maintain a minimum supply air temperature for comfort, regardless of the thermostat demand
- When ordered as a factory option, sensor ships with the unit for field installation

Smoke Detector

- Photoelectric type
- Installed in supply air section, return air section or both sections
- Available with power board and single sensor (supply or return) or power board and two sensors (supply and return)
- Power board located in unit control compartment

Commercial Control Systems

Interoperability via BACnet® or LonTalk® Protocols

- Communication compatible with third-party automation systems that support the BACnet Application Specific Controller device profile, LonMark® Space Comfort Controller functional profile, or LonMark Discharge Air Controller functional profile

Field Installed

Thermostats and Room Sensors

- Control system and thermostat options, see page 14

OPTIONS / ACCESSORIES

ECONOMIZER

- Economizer operation is set and controlled by the Lennox® CORE unit controller
- Simple plug-in connections from economizer to unit controller for easy installation
- All Enlight rooftop units are equipped with factory installed CEC Title 24 approved sensors for outside, return and discharge air temperature monitoring

NOTE - Optional sensors may be used instead of unit sensors to determine whether outdoor air is suitable for free cooling. See Options/Accessories table.

Factory or Field Installed

13 High Performance Economizer

- Approved for California Title 24 building standards
- Low leakage dampers are Air Movement and Control Association International (AMCA) Class 1A Certified - Maximum 3 CFM per sq. ft. leakage at 1 in. w.g.
- ASHRAE 90.1 and IECC compliant
- Outdoor Air Hood with mist elimination is included when economizer is factory installed and is furnished with economizer when ordered for field installation

NOTE - Downflow or horizontal economizer applications require optional Downflow or Horizontal Barometric Relief Dampers with Exhaust Hood.

- Linked damper action
- High torque 24-volt fully-modulating spring return damper motor
- Return air and outdoor air dampers
- Plug-in connections to unit

NOTE - High Performance Economizers are not approved for use with enthalpy controls in Title 24 applications.

NOTE - The Free Cooling setpoint for Title 24 applications must be set based on the Climate Zone where the system is installed. See Section 140.4 "Prescriptive Requirements for Space Conditioning Systems" of the California Energy Commission's 2022 Building Energy Efficiency Standards.

NOTE - Refer to Installation Instructions for complete setup information.

OPTIONS / ACCESSORIES

ECONOMIZER (continued)

Differential Sensible Control

- Factory setting
- Uses outdoor air and return air sensors that are furnished with the unit
- The Lennox® CORE unit controller compares outdoor air temperature with return air
- When the outdoor air is below the configured setpoint and cooler than return air, the controller activates the economizer

NOTE - Differential Sensible Control can be configured in the field to provide Offset Differential Sensible Control or Single Sensible Control.

NOTE - In Offset Differential Sensible Control mode, the economizer is enabled if the temperature differential (offset) between outdoor air and return air reaches the configured setpoint. In Single Sensible Control mode, the economizer is enabled when outdoor air temperature falls below the configured setpoint.

Global Control

- The unit controller communicates with a DDC system with one global sensor (enthalpy or sensible)
- Determines whether outside air is suitable for free cooling on all units connected to the control system
- Sensor must be field provided

NOTE - Global control with enthalpy is not approved for Title 24 applications.

Factory or Field Installed

Single Enthalpy Temperature Control (Not for Title 24)

- Outdoor air enthalpy sensor enables Economizer if the outdoor enthalpy is less than the setpoint of the control

Differential Enthalpy Control (Not for Title 24)

- Order two Single Enthalpy Controls
- One is field installed in the return air section
- One is installed in the outdoor air section
- Allows the economizer control to select between outdoor air or return air, whichever has lower enthalpy

Field Installed

Outdoor Air CFM Control

- Maintains constant outdoor air volume levels on the supply air fan and varying unit airflows
- Velocity sensor located in the rooftop unit outdoor air section, the Lennox® CORE unit controller changes the Economizer position to help minimize the effect of supply fan speed changes on outdoor air volume levels
- Setpoint for outdoor air volume is established by field testing

NOTE - Not available with Demand Control Ventilation (CO₂ Sensor) or Building Pressure Control.

Building Pressure Control

- Maintains constant building pressure level
- Includes a static pressure transducer and outdoor static pressure assembly

Using differential pressure information between the outdoor air and the building air, the Lennox® CORE unit controller changes the Economizer position to help maintain a constant building pressure

NOTE - Not available with Demand Control Ventilation (CO₂ Sensor) or Outdoor Air CFM Control.

EXHAUST

Factory or Field Installed

14 Downflow Barometric Relief Dampers

- Allow relief of excess air
- Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle
- Exhaust hood is factory installed when dampers are factory installed with economizer
- Exhaust hood is furnished with dampers when ordered for field installation
- Bird screen furnished

Horizontal Barometric Relief Dampers

- For use when unit is configured for horizontal applications requiring an economizer
- Allows relief of excess air
- Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle
- Field installed in return air duct
- Bird screen and hood furnished

NOTE - Horizontal Economizer Conversion kit is available for field installation.

EXHAUST (continued)

Factory or Field Installed

- 15** **Standard Static Power Exhaust**
- Fans install internal to unit for downflow applications only with economizer option
 - Provides exhaust air pressure relief
 - Interlocked to run when return air dampers are closed and supply air blower is operating
 - Fans run based on air damper position (adjustable)
 - Three 1/3 HP motors
 - 20 in. diameter propeller-type fans
 - Five blades
 - Total power input of 1125 Watts
 - Total air volume of 12,800 cfm at 0 in. w.g.
 - Motor is inherently protected
 - Totally enclosed
 - Steel cabinet and hood painted to match unit

NOTE - Requires optional Downflow Economizer Barometric Relief Dampers. Also see Standard Static Power Exhaust Blower Tables.

Field Installed

High Static Power Exhaust

- Centrifugal-type power exhaust blowers
- Overload and sub-fuse protected
- Ball bearings
- Forward curved blades
- Blower wheel is statically and dynamically balanced
- Adjustable pulleys for speed adjustments

NOTE - High Static Power Exhaust (with VFD) features a solid-state analog pressure transducer control which senses differential pressure between conditioned space and outdoor air to regulate exhaust blower speed. Also see High Static Power Exhaust Blower Tables.

NOTE - High Static Power Exhaust is field installed but must be ordered at the same time as the rooftop unit so the unit can be factory configured for this option.

Control Choices

Damper Position Control

- For Standard Static Power Exhaust without VFD
- Lennox® CORE unit controller controls the power exhaust based on economizer damper position

Field Installed

Differential Pressure Transducer Control

- For Standard Static Power Exhaust or High Static Power Exhaust with VFD
- Lennox® CORE unit controller controls the power exhaust system based on a 0-10VDC signal from a differential pressure transducer, which compares atmospheric pressure to conditioned space static pressure

OPTIONS / ACCESSORIES

OUTDOOR AIR

Factory or Field Installed

Motorized Outdoor Air Dampers

- Linked mechanical dampers
- Fully modulating spring return damper motor with plug-in connection
- 0 to 25% (fixed) outdoor air adjustable
- Installs in unit
- Outdoor air hood with bird screen included

NOTE - Outdoor Air Hood is shipped separately in the unit with factory installed dampers for field installation.

Field Installed

Manual Outdoor Air Damper

- Adjustable slide damper
- Installed in unit
- Outdoor air hood with bird screen included

ROOF CURBS

- Nailer strip furnished (downflow only)
- Mates to unit
- US National Roofing Contractors Approved
- Shipped knocked down

Downflow

Hybrid Roof Curbs

- Interlocking tabs fasten corners together
- No tools required for assembly
- Can also be fastened together with furnished hardware
- Available in 14, 18, and 24 inch heights

Horizontal

- Converts unit from downflow to horizontal (side) air flow
- Return air is on unit
- Supply air is on curb
- Available in 37 inch and 41 inch heights.
- See dimension drawings

NOTE - Requires Horizontal Return Air Panel Kit.

NOTE - Optional Insulation Kit is available to help prevent sweating.

CEILING DIFFUSERS

Field Installed

Ceiling Diffusers

(Flush or Step-Down)

- White powder coat finish on diffuser face and grilles
- Insulated UL listed duct liner
- Diffuser box has collars for duct connection
- Step-down diffusers have double deflection blades
- Flush diffusers have fixed blades
- Provisions for suspending
- Internally sealed to prevent recirculation
- Removable return air grille
- Adapts to T-bar ceiling grids or plaster ceilings

Transitions (Supply and Return)

- Used with diffusers
- Installs in roof curb
- Galvanized steel construction
- Flanges furnished for duct connection to diffusers
- Fully insulated

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

CS8500 Commercial 7-Day Programmable Thermostat



- Fully Communicating Sensor
- Full Color Touchscreen Interface
- Variable Speed System Control (On Compatible Units)
- Up To 4 Heat / 4 Cool
- Built-In Sensors For Temperature, Humidity And Optional CO₂
- Remote Sensor Options For Occupancy, Temperature
- BACnet Capable Options
- 5-2 or 7-Day Scheduling
- Smooth Setback Recovery
- Heat/Cool Auto-Changeover
- Four-Wire Installation
- FDD, ASHRAE, IECC Compliant

CS7500 Commercial 7-Day Programmable Thermostat



- Premium Universal Thermostat
- Full Color Touchscreen Interface
- Up To 4 Heat / 3 Cool
- Built-In Sensors For Temperature and Humidity
- Remote Sensors Options For Temperature, Discharge Air, Outdoor Air
- 5-2 or 7-Day Scheduling
- Smooth Setback Recovery
- Heat/Cool Auto-Changeover
- FDD, ASHRAE, IECC Compliant

CS3000 Commercial 5-2 Day Programmable Thermostat



- Conventional Multi-Stage Thermostat
- Intuitive Display
- Push-Button Operation
- Up To 2 Heat / 2 Cool
- Built-In Temperature Sensor
- Remote Temperature Sensing
- Up to 5-2 Day Scheduling
- Smooth Setback Recovery
- Heat/Cool Auto-changeover

Wired Temperature/Humidity Room Sensor (Non-Communicating)



- Terminal blocks for wiring connections
- Five-wire sensor connection
- Off-white plastic enclosure
- Non-adjustable
- Relative humidity range: 0 -100%
- +/- 3% Accuracy

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

Description	Order Number
CS8500 Commercial 7 Day Programmable Thermostat	
CS8500 7-Day Thermostat	No CO ₂ Sensing 24K55
	With CO ₂ Sensing 24K53
Sensors/Accessories	¹ Remote non-adjustable wall-mount 10k 47W37
	¹ Remote non-adjustable wall-mount 11k 94L61
Sysbus Network Cable (Yellow) for CS8500 and LCS-5030 Wired Room Sensor	
Twisted pair 100% shielded communication cable, Red and Black	500 ft. box 27M19
22 AWG, yellow jacket, rated at 75°C, 300V, Plenum rated	1000 ft. box 94L63
Insulation - Low smoke PVC, NEC, CMP	2500 ft. roll 68M25
CS7500 Commercial 7-Day Programmable Thermostat	
CS7500 7-Day Thermostat	24K41
Sensors/Accessories	² Remote non-adjustable wall-mount 20k 47W36
	² Remote non-adjustable wall-mount 10k 47W37
	Remote non-adjustable discharge air (duct mount) 19L22
	Outdoor temperature sensor X2658
CS3000 Commercial 5-2 Day Programmable Thermostat	
CS3000 5-2 Day Thermostat	11Y05
Sensors/Accessories	Remote non-adjustable wall mount 10k averaging 47W37
	Thermostat wall mounting plate X2659
Universal Thermostat Guard with Lock (clear)	
	Inside Dimensions (H x W x D) 5-7/8 x 8-3/8 x 3 in. 39P21
Temperature/Humidity Room Sensor	
A335MT13AE1 Wired Temperature/Humidity Room Sensor (Non-Communicating)	21W06

Up to nine of the same type remote temperature sensors can be connected in parallel.

Remote wall-mount sensors can be applied in any of the following combinations:

One Sensor - (1) 47W36, Two Sensors - (2) 47W37, Three Sensors - (2) 47W36 and (1) 47W37
 Four Sensors - (4) 47W36, Five Sensors - (3) 47W36 and (2) 47W37

Objective: Outline the unit functions as a result of room thermostat or zone sensor demands.

Given: When economizer is present, it will function as an integral part of the unit cooling system. When not present, unit will function as if economizer is present but outdoor ambient is high and sensed as not suitable.

UNIT OPERATION WITH 2-STAGE THERMOSTAT (2 COOL AND 2 HEAT STAGES, Y1, Y2, W1, W2)

SUPPLY AIR BLOWER SPEED

Unit has following supply air blower speed setting:

- Ventilation speed
- Cooling Speed - Low
- Cooling Speed - High
- Heating speed
- Smoke speed (Used only in smoke removal option - not discussed)

COOLING

¹ Unit Features An Economizer And Outdoor Air Is Suitable

Thermostat Mode (Y1, Y2)

Y1 Demand:

All compressors are off, supply air blower is on low cooling speed to minimize blower power consumption, economizer modulates (minimum to maximum open position) to maintain 55°F supply air temperature (default unit controller setting).

Y2 Demand:

All compressors are off, supply air blower is on high cooling speed providing higher cooling capacity, and economizer modulates to maintain 55°F supply air temperature. If economizer stays at maximum open for 3 minutes, compressor 1 is energized while supply air blower stays on high cooling speed providing maximum cooling capacity.

¹ Outdoor air suitability is determined by the energy state of outdoor ambient (enthalpy or sensible) and its ability to achieve the desired free cooling effects. Outdoor air suitability can also be determined by a third party controller and provided to the rooftop unit via a network connection.

Unit Does Not Feature An Economizer Or Outdoor Air Is Not Suitable

Thermostat Mode (Y1, Y2)

Y1 Demand:

Compressor 1 operates, and supply air blower operates at low cooling speed.

Y2 Demand:

All compressors operate and supply air blower operates at high cooling speed.

UNIT OPERATION WITH 3-STAGE THERMOSTAT OR ZONE SENSOR (3 COOL AND 2 HEAT STAGES, Y1, Y2, Y3 AND W1, W2)**SUPPLY AIR BLOWER SPEED**

Unit has following supply air blower speed setting:

- Ventilation speed
- Cooling Speed - Low
- Cooling Speed - Medium
- Cooling Speed - High
- Heating speed
- Smoke speed (Used only in smoke removal option - not discussed)

COOLING**¹ Unit Features An Economizer And Outdoor Air Is Suitable****Thermostat or Zone Sensor Mode (Y1, Y2, Y3)****Y1 Demand:**

All compressors are off, supply air blower is on low cooling speed to minimize blower power consumption, economizer modulates (minimum to maximum open position) to maintain 55°F supply air temperature (default unit controller setting).

Y2 Demand:

All compressors are off, supply air blower is on high cooling speed providing higher cooling capacity, and economizer modulates to maintain 55°F supply air temperature. If economizer stays at maximum open for 3 minutes, compressor 1 is energized while supply air blower stays on high cooling speed providing maximum cooling capacity. After compressors are energized the economizer stays at maximum open.

Y3 Demand:

Compressors 1 and 2 are energized while supply air blower stays on high cooling speed.

¹ Outdoor air suitability is determined by the energy state of outdoor ambient (enthalpy or sensible) and its ability to achieve the desired free cooling effects. Outdoor air suitability can also be determined by a third party controller and provided to the rooftop unit via a network connection.

Unit Does Not Feature An Economizer or Outdoor Air Is Not Suitable**Thermostat or Zone Sensor Mode (Y1, Y2, Y3)****Y1 Demand:**

Compressor 1 operates at part load and supply air blower operates at low cooling speed.

Y2 Demand:

Compressor 1 operates at part load with compressor 2 ON, and supply air blower operates at medium cooling speed.

Y3 Demand:

All compressors operate and supply air blower operates at high cooling speed.

UNIT OPERATION WITH ZONE SENSOR (4 COOL AND 2 HEAT STAGES, Y1, Y2, Y3, Y4 AND W1, W2)**SUPPLY AIR BLOWER SPEED**

Unit has following supply air blower speed setting:

- Ventilation speed
- Cooling speed - Low
- Cooling speed - Medium-Low
- Cooling speed - Medium-High
- Cooling speed - High
- Heating speed
- Smoke speed (Used only in smoke removal option - not discussed)

COOLING**¹ Unit Features An Economizer And Outdoor Air Is Suitable****Y1 Demand:**

All compressors are off, supply air blower is on low cooling speed to minimize blower power consumption, economizer modulates (minimum to maximum open position) to maintain 55°F supply air temperature (default unit controller setting).

Y2 Demand:

All compressors are off, supply air blower is on high cooling speed providing higher cooling capacity, and economizer modulates to maintain 55°F supply air temperature.

If economizer stays at maximum open for 3 minutes, compressor 1 is energized while supply air blower stays on high cooling speed. After compressor 1 is energized the economizer stays at maximum open.

Y3 Demand:

Compressor 1 and 2 are energized while supply air blower is on high cooling speed providing even higher cooling capacity.

Y4 Demand:

All compressors are energized while supply air blower is on high cooling speed providing maximum cooling capacity.

¹ Outdoor air suitability is determined by the energy state of outdoor ambient (enthalpy or sensible) and its ability to achieve the desired free cooling effects. Outdoor air suitability can also be determined by a third party controller and provided to the RTU via a network connection.

Unit Does Not Feature An Economizer Or Outdoor Air Is Not Suitable**Y1 Demand:**

Compressor 1 operates at part load and supply air blower operates at low cooling speed.

Y2 Demand:

Compressors 2 operates and supply air blower operates at medium-low cooling speed.

Y3 Demand:

Compressor 1 operates at part load with compressor 2 ON and supply air blower operates at medium-high cooling speed.

Y4 Demand:

All compressors operate and supply air blower operates at high cooling speed.

DEFROST

Coil Sensors (RT48 - Circuit 1 and RT49 - Circuit 2) and Ambient Sensor (RT17) provides input to the Lennox® CORE Unit Controller to initiate a defrost cycle if needed.

Coil sensors are located on a return bend for each circuit on the front of the outdoor coil.

Ambient sensor is located on the inside of the corner mullion on the back of the outdoor coil section.

If a coil sensor measures a temperature below 35°F during mechanical heating mode, defrost logic is enabled. The system will constantly monitor coil and ambient temperatures and will initiate a defrost cycle if the controller determines that the target temperature difference between the coil and ambient temperature has been satisfied, or when the accumulated run time with coil temperature below 35°F reaches 6 hours.

Defrost will not be activated on more than one circuit at the time.

If the ambient sensor fails, or the circuit is in uncalibrated state, the controller will switch to time/temperature defrost operation.

Gas heating is not energized during a defrost cycle.

HEATING

NOTE – THERMOSTAT MODE HAS TWO STAGES OF HEATING. ROOM SENSOR MODE HAS UP TO THREE STAGES OF HEATING.

3-Stage Thermostat or Zone Sensor - Outdoor Air Temperature is more than the Balance Point**W1/H1 Demand:**

A first-stage heating demand (W1/H1) will energize all compressors (mechanical heating), the outdoor fans, and supply air blower operates at the heating speed.

W2/H2 Demand:

A second-stage heating demand (W2/H2) will de-energize the compressors (mechanical heating) and Low Gas Heat will be energized. The supply air blower operates at the heating speed.

H3 Demand:

A third-stage heating demand (H3) will de-energize Mechanical Heating and High Gas Heat will be energized. The supply air blower operates at the heating speed.

NOTE – L1 and L2 reversing valves are de-energized in the heating mode.

NOTE – Balance Point (default is 35°F). User adjustable from 10°F to 76°F.

3-Stage Thermostat or Zone Sensor - Outdoor Air Temperature is less than the Balance Point**W1 Demand:**

A first-stage heating demand (W1/H1) will energize Low Gas Heat and the supply air blower operates at the heating speed.

W2 Demand:

A second-stage heating demand (W2/H2) will energize High Gas Heat and the supply air blower operates at the heating speed.

NOTE – L1 and L2 reversing valves are de-energized in the heating mode.

NOTE – Balance Point (default is 35°F). User adjustable from 10°F to 76°F.

NOTE - If the Outdoor Air Temperature is less than the Balance Point, the controller will lock out Mechanical Heating and will enable gas heat only.

ACCESSORIES**Modulating Outdoor Air Damper**

The minimum damper position for “occupied low blower” and “occupied high blower” is adjusted during unit setup to provide minimum fresh air requirements per ASHRAE 62.1 at the corresponding supply air blower speeds.

When supply air blower is off or the unit is in unoccupied mode, the outdoor air damper is closed.

When unit is in occupied mode and supply air blower is operating at a speed below the “midpoint” blower speed, the outdoor air damper is at minimum “low blower” position.

When unit is in occupied mode and supply air blower is operating at a speed equal to or above the “midpoint” blower speed, the outdoor air damper is at minimum “high blower” position.

NOTE - The “midpoint” blower speed is an average of the minimum and maximum blower speed (minimum speed + maximum speed divided by 2).

Power Exhaust Operation

NOTE - POWER EXHAUST OPERATION IS THE SAME FOR ALL CONTROL OPTIONS

MSAV® models are equipped with 2-stage power exhaust fans. Power exhaust fans operate when economizer outdoor air dampers are 50% open (adjustable). Power exhaust operates in 1st stage (one fan) up to 70% of supply air blower speed. 2nd stage power exhaust fans (both fans) operate when supply air blower speed is above 70% (adjustable) of full speed.

OPTIONS / ACCESSORIES

Item Description	Order Number	Size	
		302	
COOLING SYSTEM			
Condensate Drain Trap	PVC	22H54	X
	Copper	76W27	X
Drain Pan Overflow Switch		21Z07	OX
Stainless Steel Condensate Drain Pan		83W42	OX
GAS HEAT			
Combustion Air Intake Extensions (Order 2 Kits)		89L97	X
Gas Heat Input	Standard - 260 kBtuh input	Factory	O
	Medium - 360 kBtuh input	Factory	O
	High - 480 kBtuh input	Factory	O
LPG/Propane Conversion Kits (Order 2 Kits)	Standard Heat	14N28	X
	Medium Heat	14N29	X
	High Heat	14N30	X
Low Temperature Vestibule Heater	208/230V-3ph	22H58	X
	460V-3ph	22H59	X
	575V-3ph	22V43	X
Vertical Vent Extension		42W16	X
BLOWER - SUPPLY AIR			
Motors	Belt Drive (standard efficiency) - 5 hp	Factory	O
	Belt Drive (standard efficiency) - 7.5 hp	Factory	O
	Belt Drive (standard efficiency) - 10 hp	Factory	O
	Automatic VFD Bypass Option (MSAV® Models Only)	Factory	O
Drive Kits See Blower Data Tables for usage and selection	Kit #1 740-895 rpm	Factory	O
	Kit #2 870-1045 rpm	Factory	O
	Kit #3 715-880 rpm	Factory	O
	Kit #4 770-965 rpm	Factory	O
	Kit #5 660-810 rpm	Factory	O
	Kit #6 770-965 rpm	Factory	O
	Kit #7 570-720 rpm	Factory	O
	Kit #8 480-630 rpm	Factory	O
	Kit #9 410-535 rpm	Factory	O
Blower Belt Auto-Tensioner	38C61	X	
CABINET			
Burglar Bars		Y1036	X
Combination Coil/Hail Guards		13T16	OX
Corrosion Protection		Factory	O
Horizontal Return Air Panel Kit		38K48	X

¹ 1 MSAV® Multi-Stage Air Volume Bypass not available with High Static Powered Exhaust Option.

NOTE - Order numbers shown are for ordering field installed accessories.

OX - Configure To Order (Factory Installed) or Field Installed

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Order Number	Size	
		302	
CONTROLS			
Commercial Controls	LonTalk® Module	54W27	OX
	Novar® LSE	Factory	O
Fresh Air Tempering		21Z08	OX
Smoke Detector - Supply or Return (Power board and one sensor)		37G73	OX
Smoke Detector - Supply and Return (Power board and two sensors)		37G74	OX
INDOOR AIR QUALITY			
Air Filters			
Healthy Climate® High Efficiency Air Filters 20 x 20 x 2 - order 12 per unit	MERV 8	54W21	OX
	MERV 13	52W39	OX
	MERV 16	21U40	X
Replaceable Media Filter with Metal Mesh Frame (includes Non-Pleated Filter Media) 20 x 20 x 2- order 12 per unit		44N60	X
Indoor Air Quality (CO₂) Sensors			
Sensor - Wall-mount, off-white plastic cover with LCD display		77N39	X
Sensor - Wall-mount, off-white plastic cover, no display		87N53	X
Sensor - Black plastic case, LCD display, rated for plenum mounting		87N52	X
Sensor - Black plastic case, no display, rated for plenum mounting		87N54	X
CO ₂ Sensor Duct Mounting Kit - for downflow applications		23Y47	X
Aspiration Box - for duct mounting non-plenum rated CO ₂ sensors (77N39)		90N43	X
ELECTRICAL			
Voltage 60 hz	208/230V - 3 phase	Factory	O
	460V - 3 phase	Factory	O
	575V - 3 phase	Factory	O
¹ Short-Circuit Current Rating (SCCR) of 100kA (includes Phase/Voltage Detection)		Factory	O
HACR Circuit Breakers		Factory	O
² Disconnect Switch - See Electrical Data Tables on page 32 for selection	80 amp	54W88	OX
	150 amp	54W89	OX
	250 amp	90W82	OX
GFI Service Outlets	15 amp non-powered, field-wired (208/230V, 460V only)	74M70	OX
	^{3, 4} 15 amp factory-wired and powered (208/230V, 460V)	Factory	O
	⁵ 20 amp non-powered, field-wired (208/230V, 460V, 575V)	67E01	OX
	⁵ 20 amp non-powered, field-wired (575V)	Factory	O
Weatherproof Cover for GFI		10C89	X

² SCCR option is not available if the MOCP of the configured unit is greater than 200A.

³ Disconnect Switch is furnished and factory installed with SCCR option

⁴ If a factory installed disconnect switch is ordered with a factory installed GFI, the default disconnect size is 150 amps.

⁵ Unit powered GFI Service Outlets are not available with SCCR option.

Disconnect Switch or Circuit Breaker is required with unit powered GFI Service Outlets.

⁶ Canada requires a minimum 20 amp circuit. Select 20 amp, non-powered, field wired GFI.

NOTE - Order numbers shown are for ordering field installed accessories.

OX - Configure To Order (Factory Installed) or Field Installed

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Order Number	Size
		302
ECONOMIZER		
High Performance Economizer (Approved for California Title 24 Building Standards / AMCA Class 1A Certified)		
High Performance Economizer Downflow or Horizontal Applications - Includes Outdoor Air Hood, order Downflow or Horizontal Barometric Relief Dampers separately.	18X87	OX
Economizer Controls		
Differential Enthalpy (Not for Title 24)	Order 2 21Z09	OX
Sensible Control	Sensor is Furnished Factory	O
Single Enthalpy (Not for Title 24)	21Z09	OX
Global	Sensor Field Provided Factory	O
Building Pressure Control	13J77	X
Differential Sensible	Sensor is Furnished Factory	O
Outdoor Air CFM Control	13J76	OX
Barometric Relief Dampers With Exhaust Hood		
Downflow Barometric Relief Dampers	76W17	OX
Horizontal Barometric Relief Dampers	33K78	OX
OUTDOOR AIR		
Outdoor Air Dampers With Outdoor Air Hood		
Motorized	18X89	OX
Manual	18X88	X
POWER EXHAUST		
Standard Static, SCCR Rated	208/230V 74W21	OX
	460V 74W22	OX
	575V 74W23	OX
High Static with VFD 2 hp (731 - 932 rpm)	208/230V 83M89	X
	460V 83M90	X
	575V 83M91	X
Power Exhaust Control		
Pressure Transducer Control	13J77	X

NOTE - Order numbers shown are for ordering field installed accessories.

OX - Configure To Order (Factory Installed) or Field Installed

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Order Number	Size	
		302	
ROOF CURBS			
Hybrid Roof Curbs, Downflow			
14 in. height	11F62	X	
18 in. height	11F63	X	
24 in. height	11F64	X	
Standard Roof Curbs, Horizontal - Requires Horizontal Return Air Panel Kit			
30 in. height - slab applications	11T90	X	
41 in. height - rooftop applications	11T97	X	
Horizontal Return Air Panel Kit			
Required for Horizontal Applications with Roof Curb	38K48	X	
Insulation Kit For Standard Horizontal Roof Curbs			
For 30 in. Curb	73K33	X	
For 41 in. Curb	73K35	X	
CEILING DIFFUSERS			
Step-Down - Order one	LARTD30/36S	45K74	X
Flush - Order one	LAFD30/36S	45K75	X
Transitions (Supply and Return) - Order one	LASRT30/36	33K80	X

NOTE - Order numbers shown are for ordering field installed accessories.

OX - Configure To Order (Factory Installed) or Field Installed

O = Configure To Order (Factory Installed)

X = Field Installed

SPECIFICATIONS		LDT302H5M
Model		LDT302H5M
Nominal Tonnage		25 Ton
Efficiency Type		High
Blower Type		MSAV® Multi-Stage Air Volume
Cooling Performance	Gross Cooling Capacity - Btuh	285,000
	¹ Net Cooling Capacity (Btuh)	274,000
	¹ AHRI Rated Air Flow (cfm)	8500
	Total Unit Power - kW	26.6
	¹ IEER (Btuh/Watt)	14.6
	¹ EER (Btuh/Watt)	10.3
Heating Performance	¹ Total High Heat Capacity - Btuh	270,000
	¹ C.O.P.	3.3
	Total Unit Power - kW	24.3
	¹ Total Low Heat Capacity - Btuh	154,000
	¹ C.O.P.	2.1
	Total Unit Power - kW	22.0
Sound Rating Number	dBa	95
Refrigerant Charge	Refrigerant Type	R-454B
	Circuit 1	29 lbs. 0 oz.
	Circuit 2	28 lbs. 0 oz.
Gas Heating Options Available		See page 26
Compressor Type (number)		Two-Stage Scroll (1), Single-Stage Scroll (1)
Outdoor Coils	Net face area - ft. ² (total)	68.3
	Number of rows	2
	Fins - in.	14
Outdoor Coil Fans	Motor HP (number and type)	1/2 (6 PSC)
	Rpm	1075
	Watts (total)	3000
	Diameter (Number) - in.	(6) 24
	Blades	3
	Total Air volume - cfm	21,500
Indoor Coils	Net face area - ft. ² (total)	31.40
	Tube diameter - in.	3/8
	Rows	4
	Fins - in.	14
	Condensate drain size (NPT) - in.	(1) 1 in.
	Expansion device type	Balanced Port Thermostatic Expansion Valve
³ Indoor Blower and Kit Selection	Nominal motor HP	5, 7.5, 10
	Maximum usable motor output (US Only)	5.75, 8.63, 11.5
	Motor - Drive kit number	5 HP
		Kit 5 660-810 rpm
		Kit 6 770-965 rpm
		Kit 7 570-720 rpm
		Kit 8 480-630 rpm
		Kit 9 410-535 rpm
		7.5 HP
		Kit 3 715-880 rpm
	Kit 4 770-965 rpm	
	10 HP	
	Kit 1 740-895 rpm	
	Kit 2 870-1045 rpm	
	Wheel (Number) diameter x width - in.	(2) 18 x 15
Filters	Type of filter	Fiberglass, disposable
	Number and size - in.	(12) 20 x 20 x 2
Line voltage data (Volts-Phase-Hz)		208/230-3-60
		460-3-60
		575-3-60

NOTE - Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

¹ 1 Tested at conditions included in with AHRI Standard 340/360; 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

Cooling Ratings - 95°F outdoor air temperature and 80°F db/67°F wb entering indoor coil air.

High Temperature Heating Ratings - 47°F db/43°F wb outdoor air temperature and 70°F entering indoor coil air.

Low Temperature Heating Ratings - 17°F db/15°F wb outdoor air temperature and 70°F entering indoor coil air.

² 2 Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

SPECIFICATIONS - GAS HEAT

Model			LDT302		
Heat Input Type			Standard (S)	Medium (M)	High (H)
Number of Gas Heat Stages			2	2	2
Gas Heating Performance (Two-Stage)	Input - Btuh	First Stage	169,000	234,000	312,000
		Second Stage	260,000	360,000	480,000
	Output - Btuh	First Stage	---	---	---
		Second Stage	211,000	292,000	389,000
1 Gas Heating Performance (Four-Stage)	Input - Btuh	First Stage	85,000	117,000	156,000
		Second Stage	169,000	234,000	312,000
		Third Stage	214,000	297,000	396,000
		Fourth Stage	260,000	360,000	480,000
	Output - Btuh	First Stage	---	---	---
		Second Stage	---	---	---
		Third Stage	---	---	---
		Fourth Stage	211,000	292,000	389,000
Temperature Rise Range - °F			15 - 45	30 - 60	40 - 70
Thermal Efficiency			81%	81%	81%
Gas Supply Connections			1 in. npt	1 in. npt	1 in. npt
Recommended Gas Supply Pressure - in. w.g.	Natural		7	7	7
	LPG/Propane		11	11	11

¹ 1 Four-Stage Gas Heating is field configured.

HIGH ALTITUDE DERATE

Units may be installed at altitudes up to 2000 feet above sea level without any modification.

At altitudes above 2000 feet, units must be derated to match gas manifold pressures shown in table below.

At altitudes above 4500 feet unit must be derated 2% for each 1000 feet above sea level.

NOTE – This is the only permissible derate for these units.

TWO-STAGE

Gas Heat Type (Two-Stage)	Altitude - ft.	Gas Manifold Pressure - in. w.g.		Input Rate Natural Gas or LPG/Propane - Btuh	
		Natural Gas	LPG/Propane Gas	First Stage	Second Stage
Standard (S)	2001 - 4500	3.4	9.6	169,000	249,000
Medium (M)	2001 - 4500	3.4	9.6	234,000	345,000
High (H)	2001 - 4500	3.4	9.6	312,000	460,000

FOUR-STAGE

1 Gas Heat Type (Four-Stage)	Altitude - ft.	Gas Manifold Pressure - in. w.g.		Input Rate Natural Gas or LPG/Propane - Btuh			
		Natural Gas	LPG/Propane Gas	First Stage	Second Stage	Third Stage	Fourth Stage
Standard (S)	2001 - 4500	3.4	9.6	84,000	169,000	209,000	249,000
Medium (M)	2001 - 4500	3.4	9.6	117,000	234,000	289,000	345,000
High (H)	2001 - 4500	3.4	9.6	156,000	312,000	386,000	460,000

¹ 1 Four-Stage Gas Heating is field configured.

RATINGS

NOTE – For Temperatures and Capacities not shown in tables, see bulletin – Cooling Unit Rating Table Correction Factor Data in Miscellaneous Engineering Data section.

25 TON HIGH EFFICIENCY LDT302H5M (1 COMPRESSOR - PART LOAD) - MSAV® MULTI-STAGE AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	4000	125.4	5.27	0.79	0.95	1	118.5	6.11	0.81	0.96	1	109.6	7.09	0.82	0.98	1	101.1	8.21	0.85	1	1
	5000	131.9	5.27	0.86	0.99	1	124	6.1	0.88	1	1	116.3	7.07	0.9	1	1	108.4	8.19	0.93	1	1
	6000	137	5.28	0.92	1	1	130.2	6.1	0.93	1	1	122.6	7.06	0.95	1	1	114.2	8.17	0.98	1	1
67°F	4000	133.2	5.27	0.59	0.76	0.92	126.1	6.1	0.59	0.77	0.94	117.3	7.07	0.6	0.8	0.95	108.4	8.19	0.61	0.82	0.98
	5000	138.7	5.28	0.63	0.83	0.97	131.1	6.1	0.64	0.85	0.99	122.6	7.06	0.65	0.88	1	113.1	8.17	0.66	0.91	1
	6000	143.1	5.29	0.67	0.89	1	135	6.11	0.68	0.92	1	126.3	7.06	0.7	0.94	1	116.7	8.17	0.72	0.96	1
71°F	4000	142.3	5.29	0.4	0.57	0.73	134.6	6.1	0.4	0.58	0.74	126.3	7.06	0.39	0.58	0.76	117	8.17	0.39	0.59	0.79
	5000	147.4	5.3	0.41	0.61	0.8	139.8	6.11	0.41	0.62	0.82	130.6	7.06	0.41	0.63	0.85	120.8	8.17	0.41	0.65	0.88
	6000	151.1	5.32	0.43	0.65	0.87	143	6.12	0.43	0.67	0.9	133.9	7.06	0.43	0.69	0.92	124.2	8.16	0.43	0.71	0.95

25 TON HIGH EFFICIENCY LDT302H5M (2 COMPRESSORS - PART LOAD / FULL LOAD) - MSAV® MULTI-STAGE AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	6000	225.2	14.18	0.71	0.85	0.99	208.5	16.2	0.72	0.87	1	191.7	18.44	0.73	0.9	1	173.9	20.9	0.75	0.94	1
	8000	241.7	14.22	0.78	0.96	1	224.7	16.24	0.8	0.98	1	207.7	18.48	0.83	1	1	191.1	20.95	0.86	1	1
	10000	257.3	14.26	0.86	1	1	241.3	16.29	0.89	1	1	224.6	18.54	0.92	1	1	207	21.01	0.95	1	1
67°F	6000	243.5	14.23	0.55	0.68	0.82	225.4	16.24	0.55	0.69	0.84	207.4	18.49	0.55	0.71	0.86	188.7	20.96	0.55	0.73	0.89
	8000	258.8	14.27	0.59	0.76	0.92	240.8	16.3	0.6	0.78	0.95	221.8	18.55	0.61	0.8	0.98	201.6	21	0.62	0.83	1
	10000	270.6	14.31	0.64	0.84	1	251.1	16.34	0.65	0.86	1	231	18.57	0.67	0.9	1	209.8	21.03	0.69	0.93	1
71°F	6000	260	14.26	0.41	0.53	0.66	242.8	16.3	0.4	0.53	0.67	224.7	18.55	0.39	0.54	0.68	203.3	21.01	0.38	0.54	0.7
	8000	278.3	14.34	0.43	0.58	0.74	259.4	16.36	0.42	0.59	0.76	238.3	18.6	0.42	0.6	0.78	218.2	21.06	0.41	0.61	0.81
	10000	288	14.39	0.45	0.63	0.82	269.4	16.41	0.45	0.65	0.84	247.2	18.64	0.45	0.66	0.87	225.9	21.1	0.45	0.68	0.91

25 TON HIGH EFFICIENCY LDT302H5M (2 COMPRESSORS - FULL LOAD) - MSAV® MULTI-STAGE AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	8000	278.2	17.98	0.74	0.89	1	259.6	20.16	0.75	0.91	1	241.4	22.56	0.76	0.93	1	222.2	25.17	0.78	0.96	1
	10000	292.3	18.14	0.8	0.96	1	273.3	20.33	0.81	0.98	1	255.9	22.77	0.84	1	1	237.7	25.4	0.87	1	1
	12000	305.3	18.28	0.86	1	1	287.8	20.52	0.88	1	1	270.4	22.94	0.91	1	1	251.7	25.61	0.94	1	1
67°F	8000	296.5	18.19	0.57	0.71	0.85	278.2	20.39	0.57	0.73	0.87	259.9	22.81	0.58	0.74	0.9	239.3	25.43	0.58	0.76	0.93
	10000	311.7	18.36	0.61	0.78	0.94	291	20.56	0.62	0.79	0.96	270.5	22.95	0.63	0.82	0.98	249.7	25.59	0.63	0.84	1
	12000	320.3	18.46	0.65	0.84	0.99	300.4	20.67	0.66	0.86	1	278.1	23.06	0.67	0.89	1	256.5	25.68	0.69	0.92	1
71°F	8000	316.7	18.41	0.42	0.56	0.69	297.8	20.63	0.42	0.56	0.7	278.2	23.05	0.41	0.57	0.72	256.3	25.67	0.4	0.57	0.74
	10000	331	18.59	0.44	0.6	0.75	310.2	20.8	0.44	0.61	0.77	289.7	23.21	0.43	0.62	0.79	267.7	25.83	0.43	0.63	0.82
	12000	341.5	18.71	0.46	0.64	0.82	320.5	20.94	0.46	0.65	0.84	298.2	23.33	0.46	0.66	0.87	274.8	25.91	0.45	0.68	0.9

25 TON - HEATING LDT302H5M

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
8000	362	19	265.4	17.11	185.9	15.2	121.2	13.7	79	11.93
10000	367.4	17.55	269.2	16.09	186.4	14.5	122.8	13.5	79.2	11.82
12000	370.6	16.63	270.1	15.46	187.2	14.16	122.9	13.42	79.3	11.8

BLOWER DATA

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL & AIR FILTERS IN PLACE FOR ALL UNITS ADD:

- 1 - Wet indoor coil air resistance of selected unit.
- 2 - Any factory installed options air resistance (heat section, economizer, etc.)
- 3 - Any field installed accessories air resistance (duct resistance, diffuser, etc.)

Then determine from blower table blower motor output and drive required.

See page 29 for wet coil and option/accessory air resistance data.

See page 29 for factory installed drive kit specifications.

Air Volume cfm	TOTAL STATIC PRESSURE - In. w.g.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	0.20		0.40		0.60		0.80		1.00		1.20		1.40		1.60		1.80		2.00		2.20		2.40		2.60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4000	372	0.26	433	0.65	497	0.99	565	1.27	630	1.54	687	1.79	738	2.04	784	2.30	824	2.56	861	2.82	897	3.10	932	3.40	968	3.68	1004	3.96	1040	4.24	1076	4.52	1112	4.80	1148	5.08	1184	5.36	1220	5.64	1256	5.92	1292	6.20	1328	6.48	1364	6.76	1400	7.04	1436	7.32	1472	7.60	1508	7.88	1544	8.16	1580	8.44	1616	8.72	1652	9.00	1688	9.28	1724	9.56	1760	9.84	1796	10.12	1832	10.40	1868	10.68	1904	10.96	1940	11.24	1976	11.52	2012	11.80	2048	12.08	2084	12.36	2072	12.64	2108	12.92	2144	13.20	2180	13.48	2216	13.76	2252	14.04	2288	14.32	2324	14.60	2360	14.88	2396	15.16	2432	15.44	2468	15.72	2504	16.00	2540	16.28	2576	16.56	2592	16.84	2628	17.12	2664	17.40	2680	17.68	2716	17.96	2752	18.24	2788	18.52	2824	18.80	2860	19.08	2896	19.36	2932	19.64	2968	19.92	3004	20.20	3040	20.48	3076	20.76	3112	21.04	3148	21.32	3184	21.60	3220	21.88	3256	22.16	3292	22.44	3328	22.72	3364	23.00	3400	23.28	3436	23.56	3472	23.84	3508	24.12	3544	24.40	3580	24.68	3616	24.96	3652	25.24	3688	25.52	3724	25.80	3760	26.08	3796	26.36	3832	26.64	3868	26.92	3904	27.20	3940	27.48	3976	27.76	4012	28.04	4048	28.32	4084	28.60	4120	28.88	4156	29.16	4192	29.44	4228	29.72	4264	30.00	4300	30.28	4336	30.56	4372	30.84	4408	31.12	4444	31.40	4480	31.68	4516	31.96	4552	32.24	4588	32.52	4624	32.80	4660	33.08	4696	33.36	4732	33.64	4768	33.92	4804	34.20	4840	34.48	4876	34.76	4912	35.04	4948	35.32	4984	35.60	5020	35.88	5056	36.16	5092	36.44	5128	36.72	5164	37.00	5200	37.28	5236	37.56	5272	37.84	5308	38.12	5344	38.40	5380	38.68	5416	38.96	5452	39.24	5488	39.52	5524	39.80	5560	40.08	5596	40.36	5632	40.64	5668	40.92	5704	41.20	5740	41.48	5776	41.76	5812	42.04	5848	42.32	5884	42.60	5920	42.88	5956	43.16	5992	43.44	6028	43.72	6064	44.00	6100	44.28	6136	44.56	6172	44.84	6208	45.12	6244	45.40	6280	45.68	6316	45.96	6352	46.24	6388	46.52	6424	46.80	6460	47.08	6496	47.36	6532	47.64	6568	47.92	6604	48.20	6640	48.48	6676	48.76	6712	49.04	6748	49.32	6784	49.60	6820	49.88	6856	50.16	6892	50.44	6928	50.72	6964	51.00	7000	51.28	7036	51.56	7072	51.84	7108	52.12	7144	52.40	7180	52.68	7216	52.96	7252	53.24	7288	53.52	7324	53.80	7360	54.08	7396	54.36	7432	54.64	7468	54.92	7504	55.20	7540	55.48	7576	55.76	7612	56.04	7648	56.32	7684	56.60	7720	56.88	7756	57.16	7792	57.44	7828	57.72	7864	58.00	7900	58.28	7936	58.56	7972	58.84	8008	59.12	8044	59.40	8080	59.68	8116	59.96	8152	60.24	8188	60.52	8224	60.80	8260	61.08	8296	61.36	8332	61.64	8368	61.92	8404	62.20	8440	62.48	8476	62.76	8512	63.04	8548	63.32	8584	63.60	8620	63.88	8656	64.16	8692	64.44	8728	64.72	8764	65.00	8800	65.28	8836	65.56	8872	65.84	8908	66.12	8944	66.40	8980	66.68	9016	66.96	9052	67.24	9088	67.52	9124	67.80	9160	68.08	9196	68.36	9232	68.64	9268	68.92	9304	69.20	9340	69.48	9376	69.76	9412	70.04	9448	70.32	9484	70.60	9520	70.88	9556	71.16	9592	71.44	9628	71.72	9664	72.00	9700	72.28	9736	72.56	9772	72.84	9808	73.12	9844	73.40	9880	73.68	9916	73.96	9952	74.24	9988	74.52	10024	74.80	10060	75.08	10096	75.36	10132	75.64	10168	75.92	10204	76.20	10240	76.48	10276	76.76	10312	77.04	10348	77.32	10384	77.60	10420	77.88	10456	78.16	10492	78.44	10528	78.72	10564	79.00	10600	79.28	10636	79.56	10672	79.84	10708	80.12	10744	80.40	10780	80.68	10816	80.96	10852	81.24	10888	81.52	10924	81.80	10960	82.08	10996	82.36	11032	82.64	11068	82.92	11104	83.20	11140	83.48	11176	83.76	11212	84.04	11248	84.32	11284	84.60	11320	84.88	11356	85.16	11392	85.44	11428	85.72	11464	86.00	11500	86.28	11536	86.56	11572	86.84	11608	87.12	11644	87.40	11680	87.68	11716	87.96	11752	88.24	11788	88.52	11824	88.80	11860	89.08	11896	89.36	11932	89.64	11968	89.92	12004	90.20	12040	90.48	12076	90.76	12112	91.04	12148	91.32	12184	91.60	12220	91.88	12256	92.16	12292	92.44	12328	92.72	12364	93.00	12400	93.28	12436	93.56	12472	93.84	12508	94.12	12544	94.40	12580	94.68	12616	94.96	12652	95.24	12688	95.52	12724	95.80	12760	96.08	12796	96.36	12832	96.64	12868	96.92	12904	97.20	12940	97.48	12976	97.76	13012	98.04	13048	98.32	13084	98.60	13120	98.88	13156	99.16	13192	99.44	13228	99.72	13264	100.00	13300	100.28	13336	100.56	13372	100.84	13408	101.12	13444	101.40	13480	101.68	13516	101.96	13552	102.24	13588	102.52	13624	102.80	13660	103.08	13696	103.36	13732	103.64	13768	103.92	13804	104.20	13840	104.48	13876	104.76	13912	105.04	13948	105.32	13984	105.60	14020	105.88	14056	106.16	14092	106.44	14128	106.72	14164	107.00	14200	107.28	14236	107.56	14272	107.84	14308	108.12	14344	108.40	14380	108.68	14416	108.96	14452	109.24	14488	109.52	14524	109.80	14560	110.08	14596	110.36	14632	110.64	14668	110.92	14704	111.20	14740	111.48	14776	111.76	14812	112.04	14848	112.32	14884	112.60	14920	112.88	14956	113.16	14992	113.44	15028	113.72	15064	114.00	15100	114.28	15136	114.56	15172	114.84	15208	115.12	15244	115.40	15280	115.68	15316	115.96	15352	116.24	15388	116.52	15424	116.80	15460	117.08	15496	117.36	15532	117.64	15568	117.92	15604	118.20	15640	118.48	15676	118.76	15712	119.04	15748	119.32	15784	119.60	15820	119.88	15856	120.16	15892	120.44	15928	120.72	15964	121.00	16000	121.28	16036	121.56	16072	121.84	16108	122.12	16144	122.40	16180	122.68	16216	122.96	16252	123.24	16288	123.52	16324	123.80	16360	124.08	16396	124.36	16432	124.64	16468	124.92	16504	125.20	16540	125.48	16576	125.76	16612	126.04	16648	126.32	16684	126.60	16720	126.88	16756	127.16	16792	127.44	16828	127.72	16864	128.00	16900	128.28	16936	128.56	16972	128.84	17008	129.12	17044	129.40	17080	129.68	17116	129.96	17152	130.24	17188	130.52	17224	130.80	17260	131.08	17296	131.36	17332	131.64	17368	131.92	17404	132.20	17440	132.48	17476	132.76	17512	133.04	17548	133.32	17584	133.60	17620	133.88	17656	134.16	17692	134.44	17728	134.72	17764	135.00	17800	135.28	17836	135.56	17872	135.84	17908	136.12	17944	136.40	17980	136.68	18016	136.96	18052	137.24	18088	137.52	18124	137.80	18160	138.08	18196	138.36	18232	138.64	18268	138.92	18304	139.20	18340	139.48	18376	139.76	18412	140.04	18448	140.32	18484	140.60	18520	140.88	18556	141.16	18592	141.44	18628	141.72	18664	142.00	18700	142.28	18736	142.56	18772	142.84	18808	143.12	18844	143.40	18880	143.68	18916	143.96	18952	144.24	18988	144.52	19024	144.80	19060	145.08	19096	145.36	19132	145.64	19168	145.92	19204	146.20	19240	146.48	19276	146.76	19312	147.04	19348	147.32	19384	147.60	19420	147.88	19456	148.16	19492	148.44	19528	148.72	19564	149.00	19600	149.28	19636	149.56	19672	149.84	19708	150.12	19744	150.40	19780	150.68	19816	150.96	19852	151.24	19888	151.52	19924	151.80	19960	152.08	20000	152.36	20040	152.64	20080	152.92	20120	153.20	20160	153.48	20200	153.76	20240	154.04	20280	154.32	20320	154.60	20360	154.88	20400	155.16	20440	155.44	20480	155.72	20520	156.00	20560	156.28	20600	156.56	20640	156.84	20680	157.12	20720	157.40	20760	157.68	20800	157.96	20840	158.24	20880	158.52	20920	158.80	20960	159.08	21000	159.36	21040	159.64	21080	159.92	21120	160.20	21160	160.48	21200	160.76	21240	161.04	21280	161.32	21320	161.60	21360	161.88	21400	162.16	21440	162.44	21480	162.72	215

BLOWER DATA

DRIVE KIT SPECIFICATIONS

Motor Efficiency	Nominal hp	Maximum hp	Drive Kit Number	RPM Range
Standard	5	5.75	5	660 - 810
Standard	5	5.75	6	770 - 965
Standard	5	5.75	7	570 - 720
Standard	5	5.75	8	480 - 630
Standard	5	5.75	9	410 - 535
Standard	7.5	8.63	3	715 - 880
Standard	7.5	8.63	4	770 - 965
Standard	10	11.50	1	740 - 895
Standard	10	11.50	2	870 - 1045

NOTE - Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

For VFD applications, nominal motor output is also maximum usable motor output.

FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE

Air Volume cfm	Wet Indoor Coil in. w.g.	Reheat Coil in. w.g.	Gas Heat Exchanger			Economizer in. w.g.	Filters			Horizontal Roof Curb in. w.g.
			Standard Heat	Medium Heat	High Heat		MERV 8	MERV 13	MERV 16	
			in. w.g.	in. w.g.	in. w.g.		in. w.g.	in. w.g.	in. w.g.	
4000	0.04	0.04	0.08	0.08	0.11	0.00	0.00	0.00	0.06	0.04
4500	0.04	0.04	0.09	0.10	0.13	0.00	0.00	0.00	0.07	0.05
5000	0.05	0.04	0.10	0.12	0.15	0.00	0.00	0.00	0.08	0.06
5500	0.06	0.06	0.11	0.14	0.17	0.01	0.00	0.01	0.09	0.07
6000	0.07	0.06	0.12	0.16	0.19	0.01	0.00	0.02	0.10	0.08
6500	0.08	0.08	0.13	0.18	0.21	0.01	0.01	0.02	0.11	0.09
7000	0.09	0.08	0.14	0.20	0.24	0.02	0.01	0.03	0.12	0.10
7500	0.10	0.10	0.15	0.21	0.25	0.02	0.01	0.04	0.13	0.11
8000	0.11	0.10	0.17	0.24	0.28	0.02	0.01	0.04	0.14	0.13
8500	0.12	0.10	0.20	0.27	0.31	0.03	0.01	0.04	0.15	0.15
9000	0.13	0.12	0.22	0.29	0.34	0.04	0.01	0.04	0.16	0.17
9500	0.14	0.14	0.24	0.32	0.38	0.04	0.02	0.06	0.17	0.19
10,000	0.15	0.16	0.27	0.36	0.42	0.05	0.02	0.06	0.18	0.21
10,500	0.16	0.17	0.30	0.40	0.46	0.06	0.02	0.06	0.19	0.24
11,000	0.18	0.18	0.33	0.43	0.50	0.07	0.02	0.07	0.20	0.27
11,500	0.19	0.19	0.37	0.48	0.55	0.08	0.02	0.08	0.22	0.30
12,000	0.20	0.20	0.40	0.52	0.60	0.10	0.02	0.08	0.23	0.33
12,500	0.21	0.22	0.44	0.57	0.65	0.11	0.03	0.10	0.24	0.37

BLOWER DATA

POWER EXHAUST PERFORMANCE - STANDARD STATIC

Return Duct Negative Static Pressure	Air Volume Exhausted
in. w.g.	cfm
0.00	12,800
0.05	12,200
0.10	11,500
0.15	10,800
0.20	9900
0.25	9000
0.30	7900
0.35	6750
0.40	5450
0.45	4150
0.50	2900

POWER EXHAUST - HIGH STATIC

Air Volume cfm	Return Duct Negative Static Pressure - In. w.g.																					
	0		0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80		0.90		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8500	487	0.43	501	0.44	521	0.46	548	0.49	584	0.53	625	0.58	667	0.64	708	0.70	746	0.75	783	0.81	818	0.87
9000	515	0.51	528	0.52	547	0.54	570	0.57	601	0.61	638	0.66	678	0.71	717	0.77	755	0.83	791	0.90	826	0.96
9500	544	0.60	556	0.61	573	0.63	594	0.66	620	0.69	652	0.74	689	0.80	727	0.86	765	0.93	800	0.99	834	1.05
10,000	572	0.70	584	0.71	599	0.73	618	0.76	641	0.79	669	0.83	702	0.89	738	0.95	774	1.02	810	1.09	843	1.15
10,500	601	0.81	612	0.82	626	0.84	643	0.87	663	0.90	688	0.94	718	0.99	750	1.05	785	1.12	819	1.19	853	1.27
11,000	629	0.93	640	0.95	653	0.97	668	0.99	687	1.02	709	1.06	735	1.11	764	1.16	796	1.23	830	1.31	862	1.38
11,500	658	1.06	668	1.08	680	1.10	694	1.12	711	1.15	731	1.19	754	1.24	780	1.29	810	1.36	841	1.43	872	1.50
12,000	686	1.21	696	1.22	707	1.24	721	1.27	736	1.30	754	1.34	774	1.38	798	1.43	825	1.49	853	1.56	883	1.64

BLOWER DATA

CEILING DIFFUSER AIR RESISTANCE - in. w.g.

Air Volume cfm	Step-Down Diffuser			Flush Diffuser
	LARTD30/36S			LAFD30/36S
	2 Ends Open	1 Side/2 Ends Open	All Ends & Sides Open	
7500	0.37	0.31	0.25	0.29
8000	0.42	0.36	0.29	0.34
8500	0.48	0.41	0.34	0.39
9000	0.55	0.47	0.39	0.44
9500	0.62	0.53	0.45	0.51
10,000	0.70	0.60	0.51	0.57
10,500	0.78	0.68	0.58	0.65
11,000	0.87	0.76	0.65	0.72
11,500	0.97	0.85	0.73	0.81
12,000	1.08	0.94	0.82	0.9

CEILING DIFFUSER AIR THROW DATA - ft.

Air Volume cfm	¹ Effective Throw Range - ft.	
	Step-Down	Flush
9000	40 - 47	29 - 35
9500	43 - 50	33 - 41
10,000	46 - 54	37 - 46
10,500	50 - 58	42 - 51
11,000	53 - 61	46 - 56
11,500	55 - 64	50 - 61
12,000	58 - 67	54 - 66

¹ 1 Throw is the horizontal or vertical distance an airstream travels on leaving the outlet or diffuser before the maximum velocity is reduced to 50 ft. per minute. Four sides open.

ELECTRICAL DATA

25 TON

Model No.		LDT302H5M								
¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	46.5			21.2			16.9		
	Locked Rotor Amps	335.5			141			109		
Compressor 2	Rated Load Amps	31.8			15			11.9		
	Locked Rotor Amps	255			123			93.7		
Outdoor Fan Motors (6)	Full Load Amps (6 Non-ECM)	3			1.5			1.2		
	Total	18			9			7.2		
Standard Power Exhaust (3) 0.33 HP	Full Load Amps	2.4			1.3			1		
	Total	7.2			3.9			3		
High Static Power Exhaust (3) 2 HP	Full Load Amps	7.5			3.4			2.7		
	Total	22.5			10.2			8.1		
Service Outlet 115V GFI (amps)		15			15			20		
Indoor Blower Motor	HP	5	7.5	10	5	7.5	10	5	7.5	10
	Full Load Amps	16.7	24.2	30.8	7.6	11	14	6.1	9	11
² Maximum Overcurrent Protection	Unit Only	150	175	175	70	80	80	60	60	60
	With (3) 0.33 HP Standard Power Exhaust	175	175	175	80	80	80	60	60	70
	With High Static Power Exhaust (3) 2 HP	175	⁴ 200	⁴ 200	80	90	90	70	70	70
³ Minimum Circuit Ampacity	Unit Only	125	133	139	59	62	65	47	50	52
	With (3) 0.33 HP Standard Power Exhaust	132	140	146	62	66	69	50	53	55
	With High Static Power Exhaust (3) 2 HP	148	155	162	69	72	75	55	58	60

ELECTRICAL ACCESSORIES

Disconnect	Unit Only	54W89	54W89	90W82	54W88	54W88	54W88	54W88	54W88	54W88
	Unit + Standard Power Exhaust (3) 0.33 HP	54W89	90W82	90W82	54W88	54W88	54W88	54W88	54W88	54W88
	Unit + High Static Power Exhaust (3) 2 HP	90W82	90W82	90W82	54W88	54W89	54W89	54W88	54W88	54W88
Terminal Block		30K75								

Disconnects - **54W88** - 80A
54W89 - 150A
90W82 - 250A

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

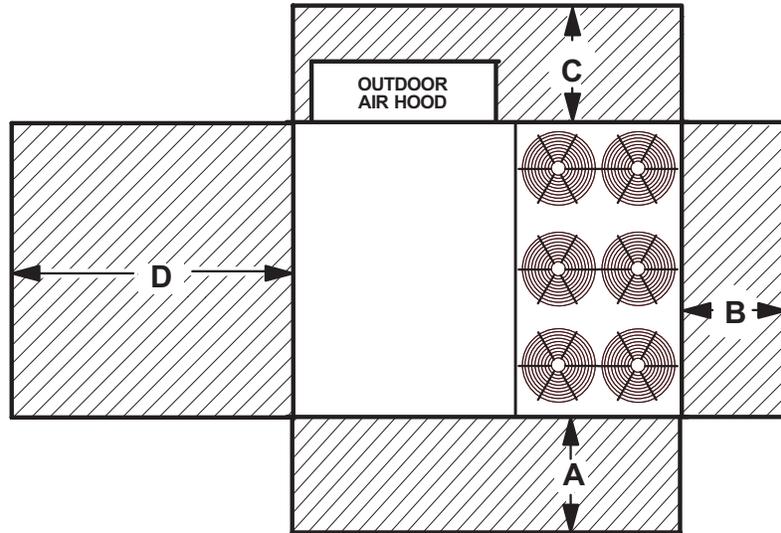
¹ 1 Extremes of operating range are plus and minus 10% of line voltage.

² 2 HACR type breaker or fuse.

³ 3 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

UNIT CLEARANCES

Unit With Economizer

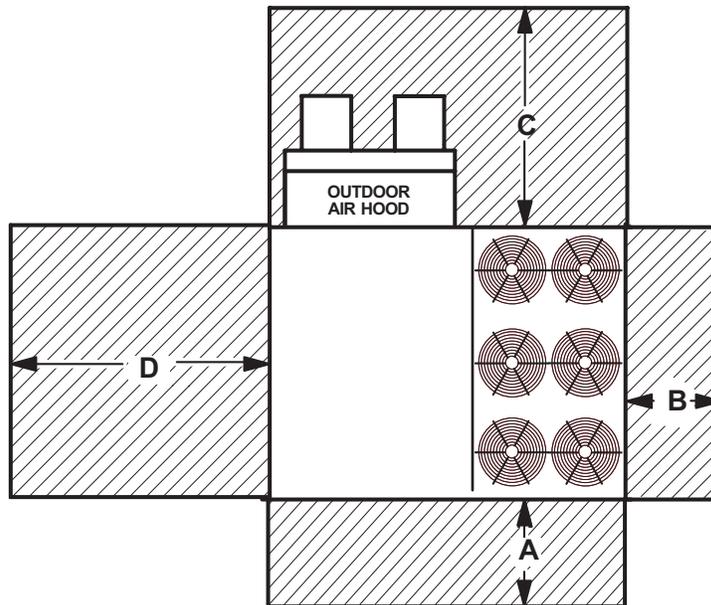


1 Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	914	66	1676	Unobstructed
Clearance to Combustibles	36	914	1	25	1	25	1	25	
Minimum Operation Clearance	45	1143	36	914	36	914	41	1041	

NOTE - Entire perimeter of unit base requires support when elevated above the mounting surface.

- ¹ 1 Service Clearance - Required for removal of serviceable parts.
- Clearance to Combustibles - Required clearance to combustible material.
- Minimum Operation Clearance - Required clearance for proper unit operation.

Unit With High Static Power Exhaust Fans



1 Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	80	2032	66	1676	Unobstructed
Clearance to Combustibles	36	914	1	25	1	25	1	25	
Minimum Operation Clearance	45	1143	36	914	80	2032	41	1041	

NOTE - Entire perimeter of unit base requires support when elevated above the mounting surface.

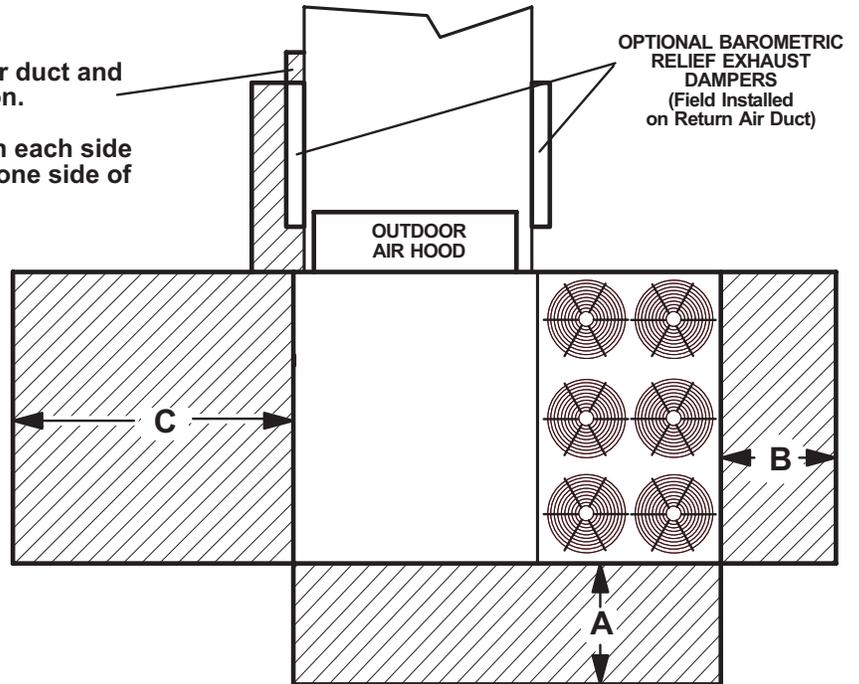
- ¹ 1 Service Clearance - Required for removal of serviceable parts.
- Clearance to Combustibles - Required clearance to combustible material.
- Minimum Operation Clearance - Required clearance for proper unit operation.

UNIT CLEARANCES

Unit With Horizontal Barometric Relief Dampers

NOTE Allow adequate clearance for duct and barometric relief damper installation.

NOTE Dampers may be installed on each side of return air duct or end to end on one side of return air duct.



¹ Unit Clearance	A		B		C		Top Clearance
	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	66	1676	Unobstructed
Clearance to Combustibles	36	914	1	25	1	25	
Minimum Operation Clearance	45	1143	36	914	41	1041	

NOTE - Entire perimeter of unit base requires support when elevated above the mounting surface.

¹ **Service Clearance** - Required for removal of serviceable parts.

Clearance to Combustibles - Required clearance to combustible material.

Minimum Operation Clearance - Required clearance for proper unit operation.

OUTDOOR SOUND DATA

Size	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts - Center Frequency - Hz							¹ Sound Rating Number (dBA)
	125	250	500	1000	2000	4000	8000	
302	84	85	90	90	85	80	72	95

Note - The octave sound power data does not include tonal corrections.

¹ **Sound Rating Number** according to ARI Standard 370-2001 (includes pure tone penalty).

The Sound Rating Number is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz)

WEIGHT DATA

Size	Net		Shipping	
	lbs.	kg	lbs.	kg
300 Base Unit	3107	1435	3317	1505
300 Max. Unit	3585	1626	3795	1721
360 Base Unit	3107	1435	3317	1505
360 Max. Unit	3585	1626	3795	1721

FACTORY / FIELD INSTALLED OPTIONS AND ACCESSORIES - NET WEIGHTS

Description	lbs.	kg
ECONOMIZER / OUTDOOR AIR / EXHAUST		
Economizer	138	63
Barometric Relief		
Downflow Barometric Relief Dampers	45	20
Horizontal Barometric Relief Dampers	20	9
Outdoor Air Dampers		
Damper Section (downflow) Motorized	72	33
Damper Section (downflow) Manual	68	31
Outdoor Air Hood (downflow)	76	34
Power Exhaust		
Standard Static	99	45
High Static with or without VFD	525	238
GAS HEAT EXCHANGER (NET WEIGHT)		
Medium Heat (adder over standard heat)	18	8
High Heat (adder over standard heat)	64	29
COMBINATION COIL/HAIL GUARDS		
All models	63	29
ROOF CURBS		
Hybrid Roof Curbs, Downflow		
14 in. height	205	93
18 in. height	235	107
24 in. height	270	123
Standard Curbs, Horizontal		
30 in. height	495	225
41 in. height	575	261
Insulation Kit for Horizontal Curbs		
30 in. height	45	21
41 in. height	55	25
CEILING DIFFUSERS		
Step-Down LARTD30/36S	625	283
Flush LAFD30/36S	625	283
Transitions LASRT30/36	85	39

DIMENSIONS

UNIT

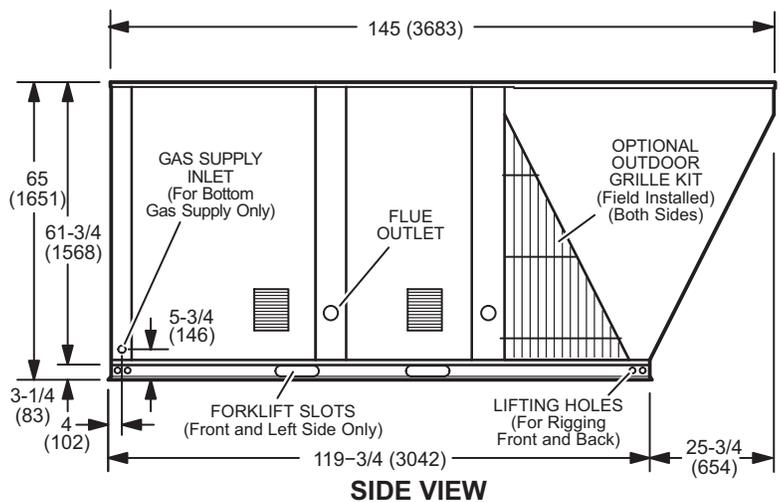
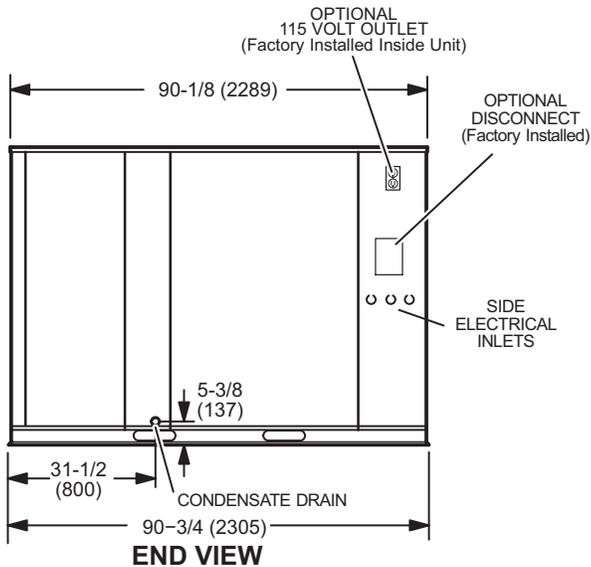
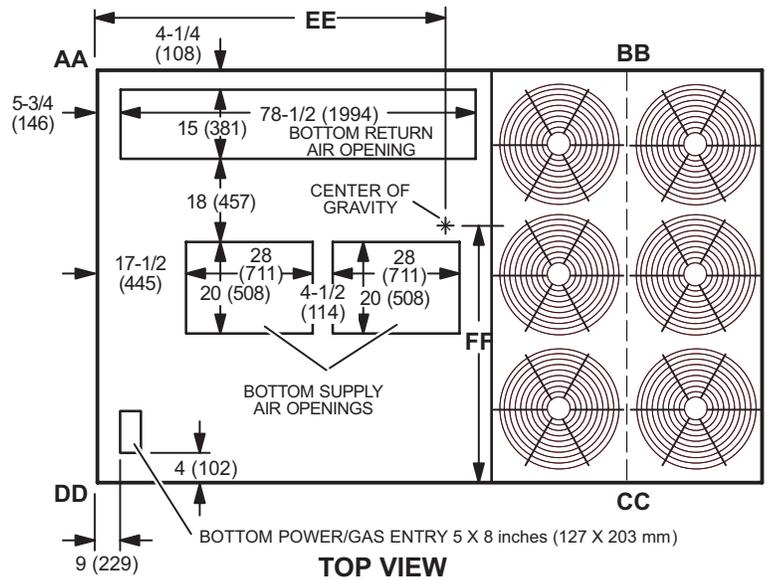
CORNER WEIGHTS

CENTER OF GRAVITY

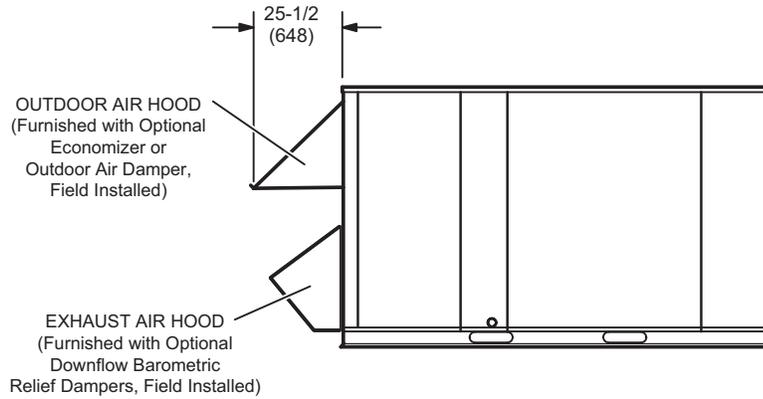
Model No.	AA		BB		CC		DD		EE		FF	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm
LDT302 Base Unit	632	287	635	288	912	414	928	421	60	1524	37	940
LDT302 Max. Unit	709	322	712	323	1023	464	1041	472	60	1524	37	940

Base Unit - The unit with NO INTERNAL OPTIONS.

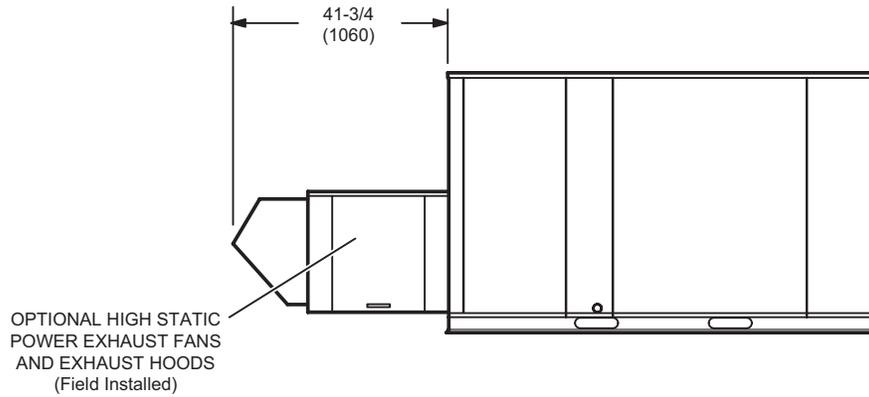
Max. Unit - The unit with ALL INTERNAL OPTIONS Installed. (Economizer, Standard Static Power Exhaust, Controls, etc.). Does not include accessories external to unit or high static power exhaust.



OUTDOOR AIR HOOD DETAIL

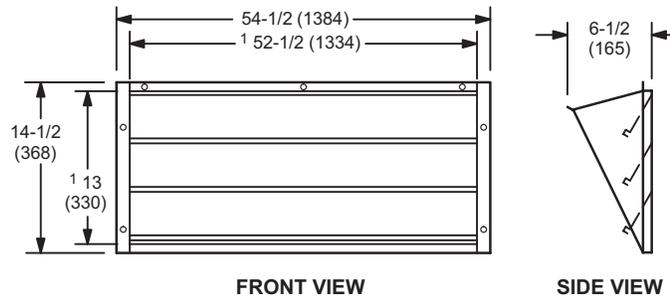


OPTIONAL HIGH STATIC POWER EXHAUST FANS DETAIL



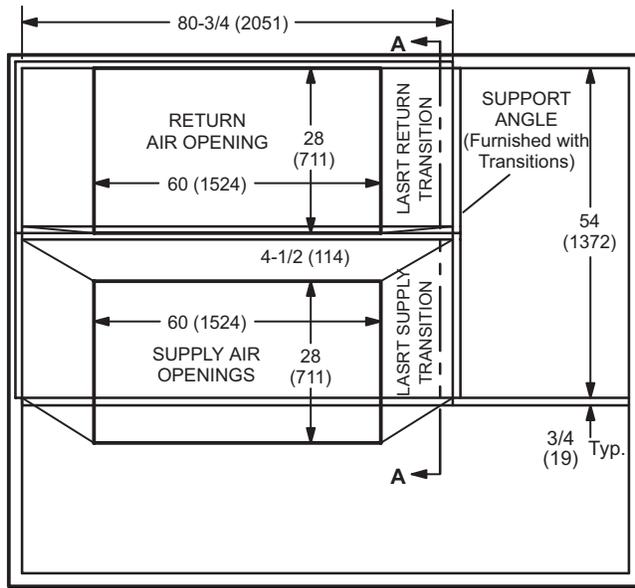
OPTIONAL HORIZONTAL BAROMETRIC RELIEF DAMPERS WITH HOOD

(Field installed in horizontal return air duct adjacent to unit)

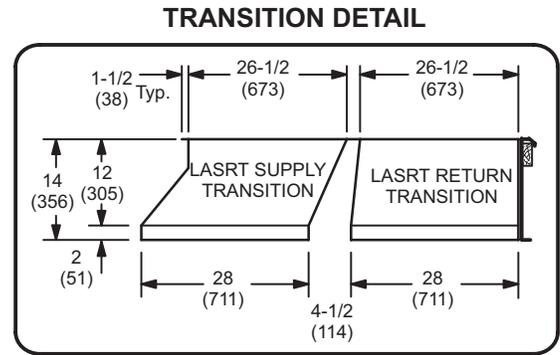


NOTE - Two furnished per order no.
¹ NOTE - Opening size required in return air duct.

ROOF CURBS WITH SUPPLY & RETURN AIR TRANSITIONS FOR CEILING DIFFUSERS



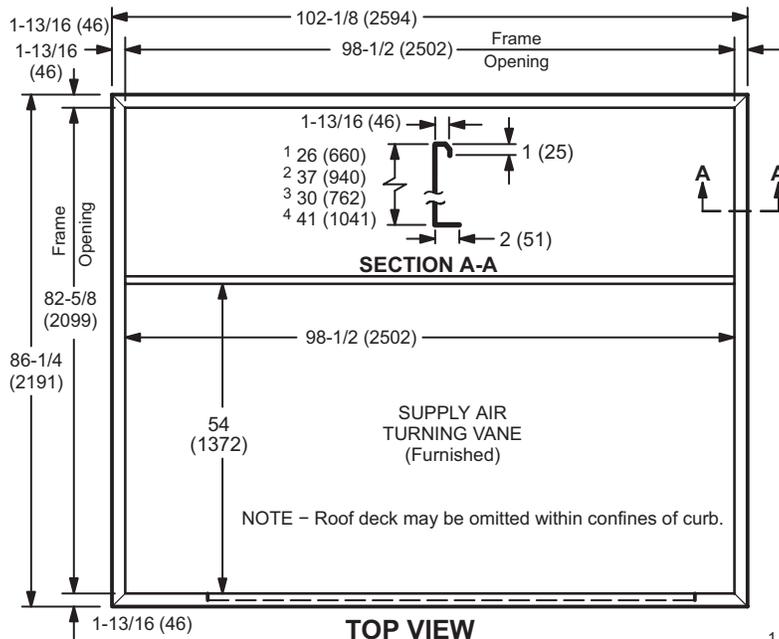
TOP VIEW



SECTION B-B

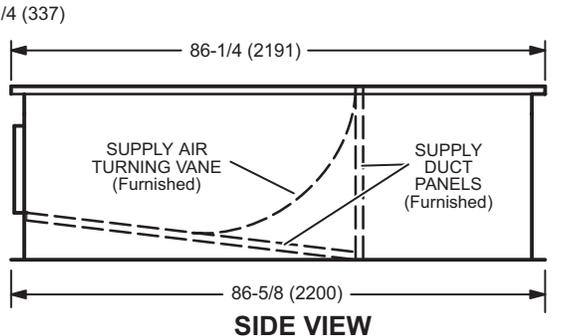
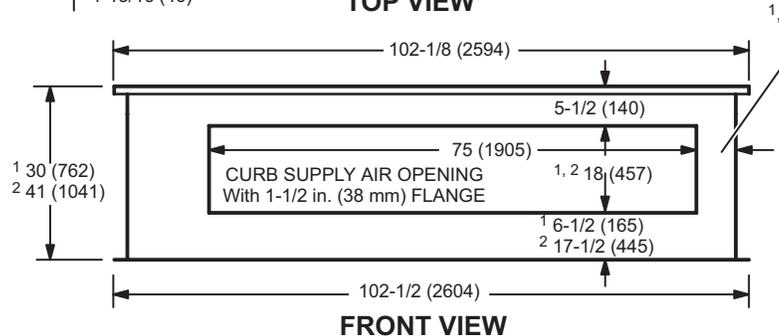
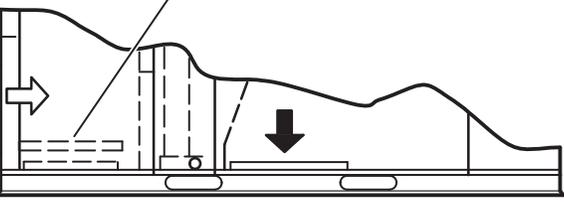
DIMENSIONS - ACCESSORIES

HORIZONTAL ROOF CURBS – Requires Optional Horizontal Return Air Panel Kit



NOTE - 30 in. (762 mm) height Curb is designed for horizontal discharge when unit is mounted on a slab.
41 in. (1041 mm) height Curb is designed for horizontal discharge when unit is mounted on a rooftop.

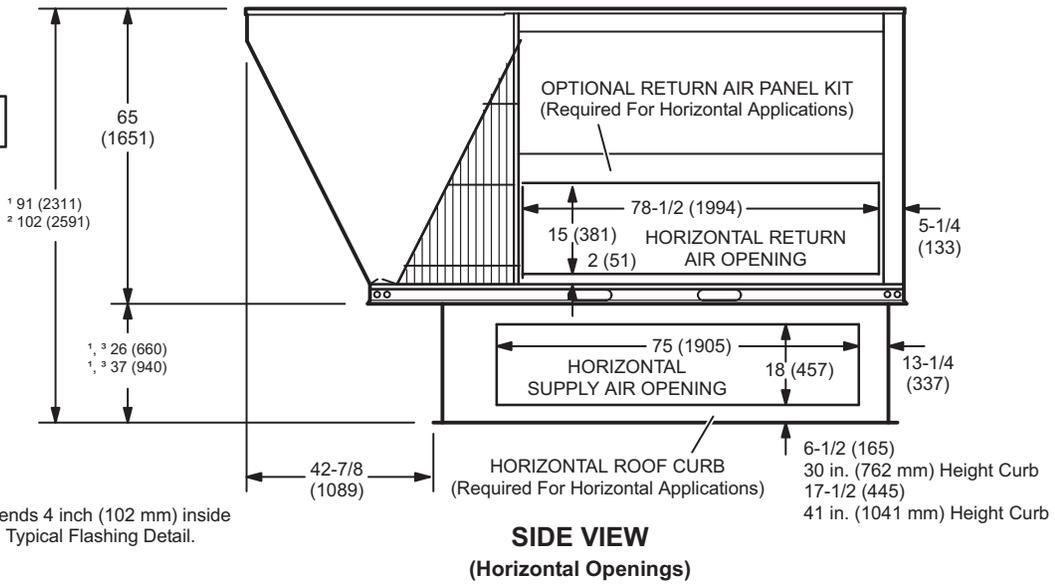
PANEL TO COVER RETURN AIR OPENING IN BOTTOM OF UNIT (Furnished With Optional Horizontal Return Air Panel Kit)



1 Slab Applications 2 Rooftop Applications

HORIZONTAL SUPPLY AND RETURN AIR OPENINGS ROOFTOP UNIT WITH HORIZONTAL ROOF CURB

1 Slab Applications
2 Rooftop Applications

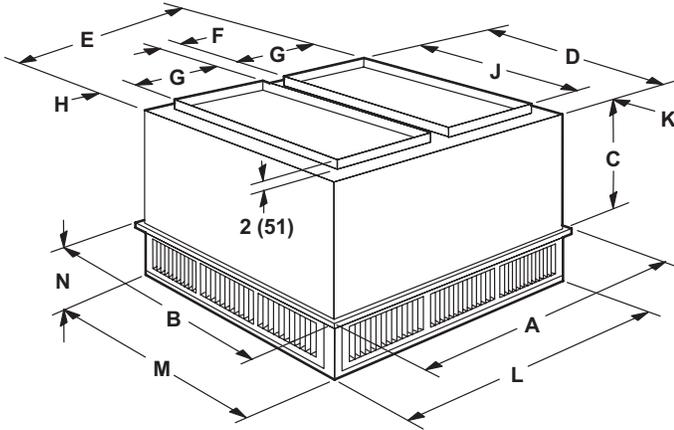


3 NOTE - Top of Curb extends 4 inch (102 mm) inside bottom of unit base. See Typical Flashing Detail.

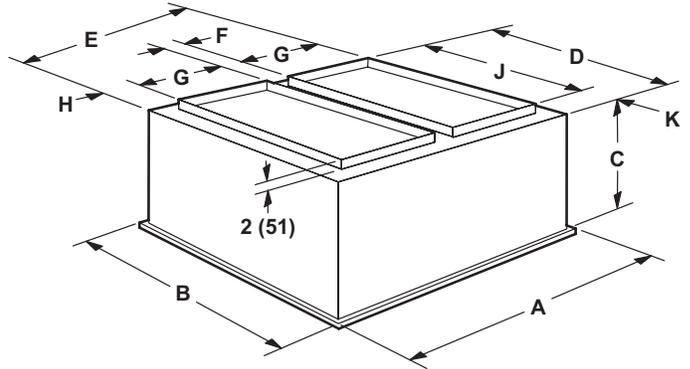
DIMENSIONS - ACCESSORIES

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



Model		LARTD30/36S
A	in.	65-5/8
	mm	1667
B	in.	65-5/8
	mm	1667
C	in.	40-1/2
	mm	1029
D	in.	63-1/2
	mm	1613
E	in.	63-1/2
	mm	1613
F	in.	4-1/2
	mm	114
G	in.	28
	mm	711
H	in.	1-1/2
	mm	38
J	in.	60
	mm	1524
K	in.	1-3/4
	mm	44
L	in.	63-1/2
	mm	1613
M	in.	63-1/2
	mm	1613
N	in.	12-1/8
	mm	308
Duct Size	in.	28 x 60
	mm	711 x 1524

Model		LAFD30/36S
A	in.	65-5/8
	mm	1667
B	in.	65-5/8
	mm	1667
C	in.	40
	mm	1016
D	in.	63-1/2
	mm	1613
E	in.	63-1/2
	mm	1613
F	in.	4-1/4
	mm	108
G	in.	28
	mm	711
H	in.	1-5/8
	mm	32
J	in.	60
	mm	1524
K	in.	1-3/4
	mm	44
Duct Size	in.	28 x 60
	mm	711 x 1524

REVISIONS

Sections	Description of Change
Options / Accessories	Updated CO ₂ Sensor Catalog Numbers.



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Contact us at 1-800-4-LENNOX

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