

PACKAGED HEAT PUMP

LDT

E-SERIES ROOFTOP UNITS

Dual-Fuel High Efficiency | Intelli-Guide™ 2.0 Controller | **R-454B** | 60Hz

COMMERCIAL

PRODUCT SPECIFICATIONS (EHB)

ALLIED™

Commercial

13 to 20 Tons

Net Cooling Capacity | 156,000 to 228,000 Btuh

Net Heating Capacity | 150,000 to 226,000 Btuh

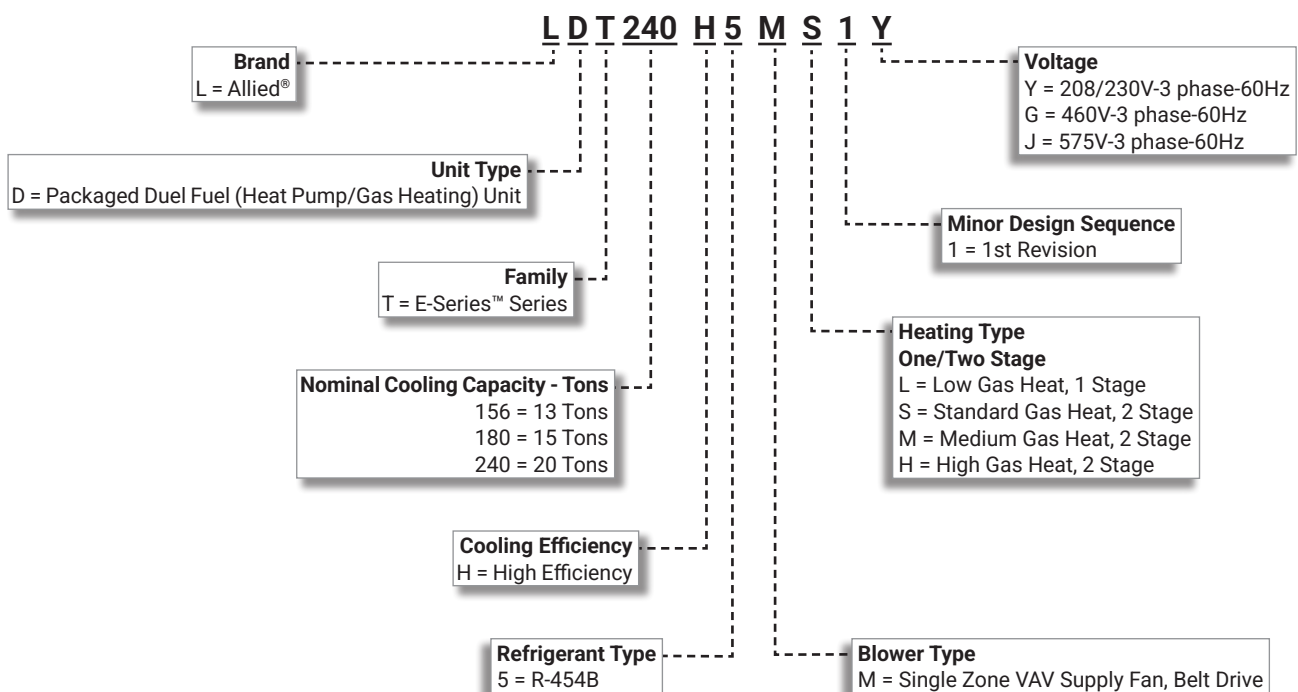
Gas Input Heat Capacity | 85,000 to 480,000 Btuh



ASHRAE
Standard
90.1



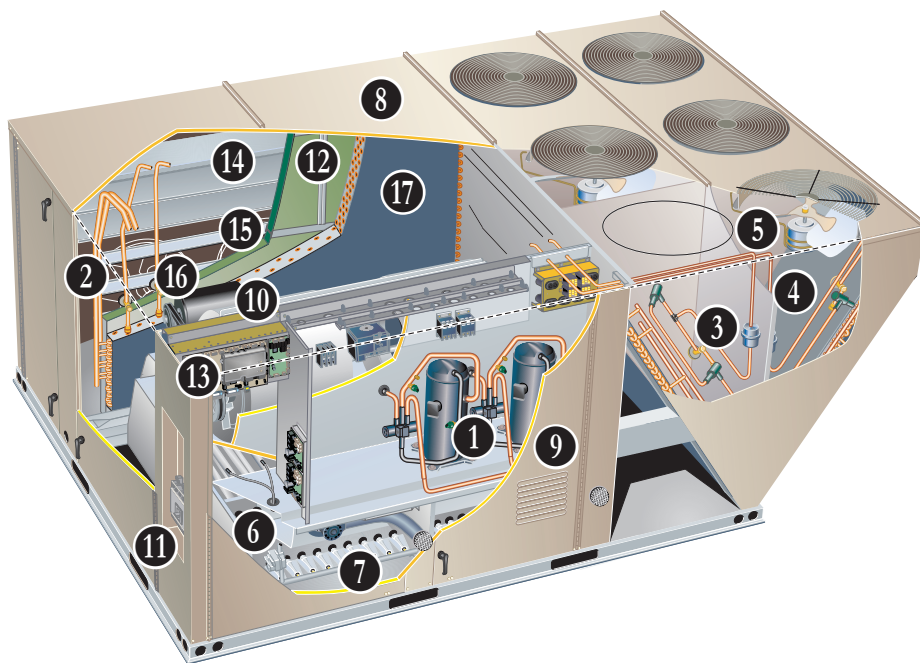
MODEL NUMBER IDENTIFICATION



FEATURE HIGHLIGHTS

E-Series™ rooftop units featuring the Intelli-Guide™ 2.0 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 Allied has to offer.

1. Scroll Compressors
2. Thermal Expansion Valves
3. Filter/Driers
4. Outdoor Coil Copper Tube Construction
5. Outdoor Coil Fan Motors
6. Stainless Steel Heat Exchanger
7. Inshot Burners
8. Heavy Gauge Steel Cabinet
9. Hinged Access Panels
10. Single Zone VAV Supply Fan Blower
11. Disconnect Switch (option)
12. Air Filters
13. Intelli-Guide™ 2.0 Control System
14. Economizer (option)
15. Downflow Barometric Relief Dampers (option)
16. Power Exhaust Fans (option)
17. Dehumidification System (option, not shown)



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APPROVALS AND WARRANTY

APPROVALS

- All models are AHRI Standard 340/360-2023 certified
- ENERGY STAR® certified (certain models), visit www.energystar.gov for a list of qualifying products
- 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 have been sound tested in accordance with test conditions included in AHRI Standard 270 or 370
- ISO 9001 Registered Manufacturing Quality System
- 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 HCAI (formerly OSHPD) OSP and Special Seismic Certification (Number: [OSP-0596](#)), and meet 2021 International Building Code (IBC), 2022 California Building Code (CBC) ASCE 7, and ICC-ES AC156
- 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
- Intelli-Guide™ 2.0 Unit Controller - Limited three years
- Variable Frequency Drive (VFD) (optional) - 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
- Intelli-Guide™ 2.0 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 Compressor System

- System consists of one two-stage scroll 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

2 Thermal Expansion Valves

- Ensures optimal performance throughout the application range

FEATURES AND BENEFITS

COOLING/HEATING SYSTEM (continued)

Reversing Valves

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

3 Filter/Driers

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

High Pressure Switches

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

4 Outdoor Coil

- Copper tube construction
- Enhanced rippled-edge aluminum fins
- Flared shoulder tubing connections
- Silver soldered construction
- Factory leak tested
- Two independent slanted coils for easy cleaning

Indoor Coil

- Copper tube construction
- Enhanced rippled-edge aluminum fins
- Flared shoulder tubing connections
- Silver soldered construction for improved heat transfer
- Factory leak tested
- Cross row circuiting with rifled tubing optimizes both sensible and latent cooling capacity

Antimicrobial Condensate Drain Pan

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

5 Outdoor Coil Fan Motors

- All models have PSC 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

Options/Accessories

Factory or Field Installed

Drain Pan Overflow Switch

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

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

6 Heat Exchanger

- Tubular construction, stainless steel
- Life-cycle tested

7 Aluminized steel inshot burners

- Direct spark ignition
- Electronic flame sensor
- Combustion air inducer
- Redundant automatic gas valves 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

FEATURES AND BENEFITS

HEATING SYSTEM (continued)

Safety Switches

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

One-Stage Gas Heat (156-180 Models)

- Single stage gas valve heating output

Two-Stage Gas Heat (240 Models)

- Two-Stage gas valve adjusts heat for low and high output

NOTE – One-stage Gas Heat is standard with 156-180 models.

Two-stage Gas Heat is standard with 240 models.

Two-stage Gas Heat can be ordered as an option for 156-180 models.

Gas Input Choice - Order one:

- Low Gas Heat - 1 Stage
(156-180 models) - 169,000 Btuh
- Standard Gas Heat - 2 Stage
(all models) - 85,000-260,000 Btuh
- Medium Gas Heat - 2 Stage
(all models) - 117,000-360,000 Btuh
- High Gas Heat - 2 Stage
(180-240 models) - 156,000-480,000 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 Intelli-Guide™ 2.0 Control System.

Options/Accessories

Factory Installed

Two-Stage Gas Heat (156-180 Models)

- Two-Stage gas valve adjusts heat for low and high output

Field Installed

Bottom Gas Piping Kit

- Allows bottom gas entry

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

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

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.

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

FEATURES AND BENEFITS

CABINET (continued)

- 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

Required Selections

Airflow Configuration

- Specify downflow or horizontal

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 - 3,000 hours
- VA Master Construction Specification Division 23 for High Humidity Installations
- CID AA-52474A (GSA)
- 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

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

Field Installed

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

BLOWER

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

Motor

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

Motor Efficiency

- 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 is statically and dynamically balanced
- Ball bearings
- Adjustable pulley (allows speed change)
- Blower assembly slides out of unit for servicing
- Grease fittings furnished
- Single Zone VAV stages the amount of airflow according to compressor stages, heating demand, ventilation demand or smoke alarm
- Single Zone VAV utilizes a Variable Frequency Drive (VFD) to stage the supply 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 Intelli-Guide™ 2.0 Unit Controller
- Unit is shipped from the factory with preset airflow
- If equipped with the bypass control the Single Zone VAV features manual (default) or automatic electronic bypass control of the VFD
- In case of a VFD malfunction, a VFD alarm is generated by the Intelli-Guide™ 2.0 Unit controller
- VFD can be manually bypassed to continue unit operation at full blower speed or the unit controller can be set to automatically switch to full blower speed if a VFD alarm is generated
- VFD has an operational range of -40 to 125°F outdoor air ambient temperature
- Lower operating costs are obtained when the blower is operated on lower speeds

FEATURES AND BENEFITS

BLOWER (continued)

NOTE - Units equipped 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.

Blower Proving Switch (Standard)

- Monitors blower operation, shuts down unit if blower fails

Ordering Information

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

Options/Accessories

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

WireRight™ 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 ensure correct phase at unit start-up
 - If phase is incorrect, the unit will not start and an alarm code reports to the unit controller
- Prevents unit start-up if the unit is the incorrect phase; unit start-ups in the wrong phase could lead to issues such as compressors functioning in reverse
- Monitors power supply voltage to ensure proper voltage
 - If voltage is not correct (over/under voltage conditions) the unit will not start and an alarm code reports to the unit controller

Required Selections

Voltage Choice

- Specify when ordering base unit

Options/Accessories

Factory Installed

Circuit Breakers

- HACR type
- For 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

11 Disconnect Switch

- Accessible outside of unit
- Spring loaded weatherproof cover furnished

GFI Service Outlets (2)

- 115V ground fault circuit interrupter (GFCI) type options:
 - Factory installed, non-powered, field wired
 - Field installed, non-powered, field wired

Field Installed

GFI Weatherproof Cover

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

FEATURES AND BENEFITS

INDOOR AIR QUALITY

12

Air Filters

- Disposable 2 inch MERV 4 filters furnished as standard

Options/Accessories

Factory or Field Installed

High Efficiency Air Filters

- Disposable MERV 8 and MERV 13 (Minimum Efficiency Reporting Value based on ASHRAE 52.2) efficiency 2 inch pleated filters

Field Installed

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Indoor Air Quality (CO₂) Sensors

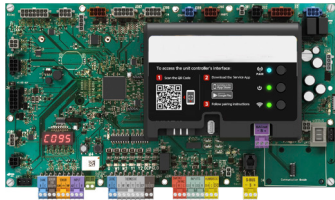
- Monitors CO₂ levels
- Reports to the Intelli-Guide™ 2.0 unit controller which adjusts economizer dampers as needed

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

CONTROL SYSTEM

INTELLI-GUIDE™ 2.0 CONTROL SYSTEM



- 13** The Intelli-Guide™ 2.0 Control System is designed to accelerate equipment install and service. Standard with all E-Series™ rooftop units, control system integrates key technologies that lower installation costs, drive system efficiency, and protect your investments.

The Intelli-Guide™ 2.0 Unit Controller is a microprocessor-based controller that provides flexible control of all unit functions.

Service Mobile 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 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
- WireRight™ 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 Intelli-Guide™ 2.0 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
- Two Defrost Control Methods (demand and timed - heat pumps only)

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)
- 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

NOTE - Intelli-Guide™ 2.0 Control System features vary with the type of rooftop unit in which the control is installed.

CONTROL SYSTEM

INTELLI-GUIDE™ 2.0 CONTROL SYSTEM (continued)

Controls Options

Factory or Field Installed

Dirty Filter Switch

- Senses static pressure increase and issues alarm if necessary

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

OPTIONS / ACCESSORIES

ECONOMIZER

- Economizer operation is set and controlled by the Intelli-Guide™ 2.0 Unit Controller
- Simple plug-in connections from Economizer to unit controller for easy installation
- All E-Series™ 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

14 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
- Downflow or Horizontal with Outdoor Air Hood
- 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.

Differential Sensible Control

- Factory setting
- Uses outdoor air and return air sensors that are furnished with the unit
- The Intelli-Guide™ 2.0 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

OPTIONS / ACCESSORIES

ECONOMIZER (continued)

Factory or Field Installed

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

- 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

Single Enthalpy 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 Intelli-Guide™ 2.0 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 Intelli-Guide™ 2.0 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

15 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

16 Power Exhaust Fans

- Install internal to unit for downflow applications only with Economizer option
- Provides exhaust air pressure relief
- Interlocked to run when supply air blower is operating
- Fans run when outdoor air dampers are 50% open (adjustable)
- Motor is overload protected
- Dual propeller type fans are 20 in. diameter
- Five blades
- Two 1/3 HP motors
- SCCR rated

NOTE - Requires Economizer with furnished Outdoor Air Hood and Downflow Barometric Relief Dampers.

NOTE - All models are equipped with 2-stage power exhaust fans. Power exhaust operates in 1st stage (one fan) up to 70% of supply air blower speed. Both exhaust fans operate in 2nd stage when supply air blower speed is above 70% (adjustable) of full speed.

Field Installed

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

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

Field Installed

- 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 8, 14, 18, and 24 inch heights

Adjustable Pitch Curb

- Fully adjustable pitch curbs (3/4 in. per foot in any direction) provide a level platform for rooftop units allowing flexible installations on roofs with uneven or sloped angles
- Interlocking tabs fasten corners together
- No tools required for assembly
- Hardware is furnished to connect upper curb with lower curb
- Available in 14 inch height

Horizontal

- Meet National Roofing Code requirements
- Converts unit from downflow to horizontal (side) air flow
- Return air is on unit
- Supply air is on curb
- See dimension drawings
- Available in 26, 30, 37, and 41 inch heights

NOTE - Requires Horizontal Return Air Panel Kit.

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

Adaptor Curbs (not shown)

- Curbs are regionally sourced
- Dimensions vary based upon the source

NOTE - Contact your local sales representative for a detailed cut sheet with applicable dimensions.

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

DEHUMIDIFICATION SYSTEM OPTION

17 OVERVIEW

NOTE - Dehumidification System Only Available for Single Zone VAV Supply Fan Models

- Factory installed option designed to control humidity
- Provides dehumidification on demand using ASHRAE 90.1 recommended method for comfort conditioning humidity control
- Unit comes equipped with one row reheat coil, solenoid valve

NOTE - A dehumidification demand from a relative humidity sensor, dehumidistat, a DDC controller or building automation system is required to control humidity.

Controls are not furnished and must be ordered extra.

BENEFITS

- Improves indoor air quality
- Helps prevent damage due to high humidity levels
- Improves comfort levels by reducing space humidity levels

OPERATION

No Dehumidification Demand

- The unit will operate conventionally whenever there is a demand for cooling or heating and no dehumidification demand
- Free cooling is only permitted when there is no demand for dehumidification

Dehumidification Demand Only

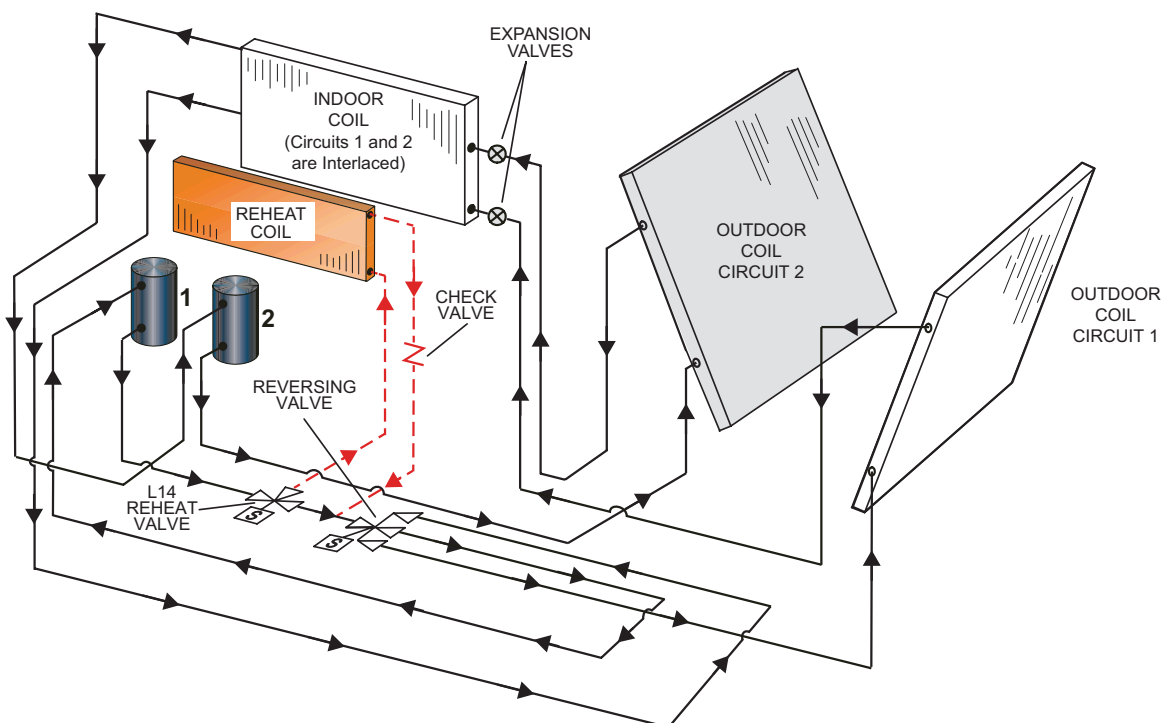
- Reheat operation will initiate on a dehumidification demand and does not require a cooling demand
- Unit will operate in the dehumidification mode until the relative humidity of the conditioned space is below the setpoint
- Reheat coil is sized to provide 67°F to 75°F supply air during reheat operation
- This reduces sensible cooling capacity and extends compressor run time to control humidity when the cooling load is low
- A solenoid valve diverts hot gas from the compressor to the reheat coil
- Cooled and dehumidified air from the evaporator is reheated as it passes through the reheat coil
- De-superheated and partially condensed refrigerant continues to the outdoor condenser coil where condensing is completed
- Unit will continue to operate in this mode until the dehumidification demand is satisfied

Dehumidification and Cooling Demand (Thermostat/Room Sensor Application)

- If both a dehumidification and a full cooling load demand occur, the system will operate in cooling until the cooling demand is satisfied
- Then the system will energize the dehumidification mode

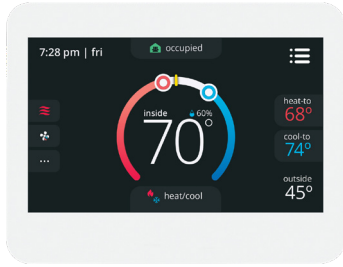
COOLING REFRIGERANT SCHEMATIC

NOTE - Only compressor 1 circuit connected with refrigerant reheat system



OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

CS8500 Commercial 7-Day Programmable Thermostat



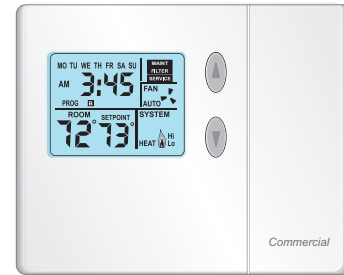
- Fully Communicating Sensor
- Full Color Touchscreen Interface
- Variable Speed System Control (On Compatible Units)
- Up To 4 Heat / 4 Cool
- Built-In Sensors For Temperature, Humidity And Optional CO₂
- Remote Sensor Options For Occupancy, Temperature
- BACnet Capable Options
- 5-2 or 7-Day Scheduling
- 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

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
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

¹ Up to nine of the same type remote temperature sensors can be connected in parallel.

² 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

SEQUENCE OF OPERATION

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, AND 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.

DEHUMIDIFICATION

If a unit with Dehumidification Option receives a call for dehumidification, economizer free cooling is locked out.

Call For Dehumidification, No Y1, Y2 Demand:

Compressor 1 operates at full cooling capacity, supply air blower operates at low cooling speed, and the reheat valve is energized.

Y1 Demand With A Call For Dehumidification:

Compressors 1 and 2 operate at full cooling capacity, supply air blower operates at medium cooling speed, and the reheat valve is energized.

Y2 Demand With A Call For Dehumidification:

Compressors 1 and 2 operate at full cooling capacity, supply air blower operates at high cooling speed, and the reheat valve is de-energized.

SEQUENCE OF OPERATION

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.

SEQUENCE OF OPERATION

DEHUMIDIFICATION

If a unit with Dehumidification Option receives a call for dehumidification, economizer free cooling is locked out.

Call For Dehumidification, No Y1, Y2 Demand:

Compressor 1 operates at full cooling capacity, supply air blower operates at low cooling speed, and the reheat valve is energized.

Y1 Demand With A Call For Dehumidification:

Compressors 1 and 2 operate at full cooling capacity, supply air blower operates at medium cooling speed and the reheat valve is energized.

Y2 Demand With A Call For Dehumidification:

Compressors 1 and 2 operate at full cooling capacity, supply air blower operates at medium cooling speed and the reheat valve is de-energized.

Y3 Demand With A Call For Dehumidification:

Compressors 1 and 2 operate at full cooling capacity, supply air blower operates at high cooling speed, and the reheat valve is de-energized.

DEFROST

Coil Sensors (RT48 - Circuit 1 and RT49 - Circuit 2) and Ambient Sensor (RT17) provides input to the Intelli-Guide™ 2.0 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.

SEQUENCE OF OPERATION

HEATING - TWO-STAGE

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

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.

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.

SEQUENCE OF OPERATION

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

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

Single Zone VAV 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		
			156	180	240
COOLING SYSTEM					
Condensate Drain Trap	PVC	22H54	X	X	X
	Copper	76W27	X	X	X
Drain Pan Overflow Switch		21Z07	OX	OX	OX
HEATING SYSTEM					
Bottom Gas Piping Kit		85M31	X	X	X
Combustion Air Intake Extensions (order two)		89L97	X	X	X
Gas Heat	Two-Stage Gas Heat	Factory	O	O	
Gas Heat Input	Low - 169,000 Btuh	Factory	O	O	
	Standard - 85,000-260,000 Btuh	Factory	O	O	O
	Medium - 117,000-360,000 Btuh	Factory	O	O	O
	High - 156,000-480,000 Btuh	Factory		O	O
LPG/Propane Conversion Kits (Order 2 kits)	Low Heat	14N28	X		
	Two-Stage Standard Heat	14N28	X	X	X
	Two-Stage Medium Heat	14N29	X	X	X
	Two-Stage High Heat	14N30		X	X
Low Temperature Vestibule Heater	208/230V-3ph	22H58	X	X	X
	460V-3ph	22H59	X	X	X
	575V-3ph	13X68	X	X	X
Vertical Vent Extension Kit (Order two kits)		42W16	X	X	X
BLOWER - SUPPLY AIR					
Blower Option	Single Zone VAV (With VFD Bypass Control)	Factory	O	O	
	Single Zone VAV (Without VFD Bypass Control)	Factory	O	O	O
Motors	Belt Drive - 3 HP	Factory	O	O	
	Belt Drive - 5 HP	Factory	O	O	O
	Belt Drive - 7.5 HP	Factory		O	O
	Belt Drive - 10 HP	Factory			O
Drive Kits	Kit #1 535-725 rpm	Factory	O	O	
See Blower Data Tables for usage and selection	Kit #2 710-965 rpm	Factory	O	O	
	Kit #3 685-856 rpm	Factory	O	O	O
	Kit #4 850-1045 rpm	Factory	O	O	O
	Kit #5 945-1185 rpm	Factory	O	O	O
	Kit #6 850-1045 rpm	Factory		O	O
	Kit #7 945-1185 rpm	Factory		O	O
	Kit #8 1045-1285 rpm	Factory		O	O
	Kit #10 1045-1285 rpm	Factory			O
	Kit #11 1135-1365 rpm	Factory			O
	Blower Belt Auto-Tensioner	24B80	X	X	X
	CABINET				
Burglar Bars	(US)	44N20	X	X	X
	(CA)	X2889	X	X	X
Combination Coil/Hail Guards		23U71	OX	OX	OX
Corrosion Protection (outdoor)		Factory	O	O	O

1

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

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

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OPTIONS / ACCESSORIES

Item Description	Order Number	Size			
		156	180	240	
CONTROLS					
Commercial Controls	LonTalk® Module	54W27	OX	OX	OX
	Novar® LSE	Factory	O	O	O
Dirty Filter Switch		53W68	OX	OX	OX
Smoke Detector - Supply or Return (Power board and one sensor)		37G73	OX	OX	OX
Smoke Detector - Supply and Return (Power board and two sensors)		37G74	OX	OX	OX

INDOOR AIR QUALITY

Air Filters					
High Efficiency Air Filters 24 x 24 x 2 (Order 6 per unit)	MERV 8	54W67	OX	OX	OX
	MERV 13	52W40	OX	OX	OX
Replacement Media Filter With Metal Mesh Frame (includes non-pleated filter media)		44N61	X	X	X
Indoor Air Quality (CO₂) Sensors					
Sensor - Wall-mount, off-white plastic cover with LCD display		77N39	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display		87N53	X	X	X
Sensor - Black plastic case, LCD display, rated for plenum mounting		87N52	X	X	X
Sensor - Black plastic case, no display, rated for plenum mounting		87N54	X	X	X
CO ₂ Sensor Duct Mounting Kit - for downflow applications		23Y47	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO ₂ sensors (77N39)		90N43	X	X	X

UVC Germicidal Light Kit

² UVC Light Kit (110/230v-1ph)		21A94	X	X	X
Step-Down Transformers	460V primary, 230V secondary	10H20	X	X	X
	575V primary, 230V secondary	10H21	X	X	X

ELECTRICAL

Voltage 60 Hz	208/230V - 3 phase	Factory	O	O	O
	460V - 3 phase	Factory	O	O	O
	575V - 3 phase	Factory	O	O	O
HACR Circuit Breakers		Factory	O	O	O
³ Short-Circuit Current Rating (SCCR) of 100kA (includes Phase/Voltage Detection)		Factory	O	O	O
Disconnect Switch (see Disconnect Table for usage, page 36)	80 amp	54W88	OX	OX	OX
	150 amp	54W89	OX	OX	OX
GFI Service Outlets	15 amp non-powered, field-wired (208/230V, 460V, 575V)	74M70	X	X	X
	⁴ 20 amp non-powered, field-wired (208/230V, 460V, 575V)	67E01	X	X	X
Weatherproof Cover for GFI		10C89	X	X	X

² Lamps operate on 110-230V single-phase power supply. Step-down transformer may be ordered separately for 460V and 575V units. Alternately, 110V power supply may be used to directly power the UVC ballast(s).

³ Disconnect Switch is furnished and factory installed with High SCCR option.

⁴ 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.

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OPTIONS / ACCESSORIES

Item Description	Order Number	Size		
		156	180	240
ECONOMIZER				
High Performance Economizer (Approved for California Title 24 Building Standards AMCA Class 1A Certified)				
High Performance Economizer (Downflow or Horizontal)	22J18	OX	OX	OX
Includes Economizer Dampers with Outdoor Air Hood				
Downflow Applications - Use furnished Outdoor Air Hood - Order Downflow Barometric Relief Dampers with Exhaust Hood separately				
Horizontal Applications - Use furnished Outdoor Air Hood - Order Horizontal Barometric Relief Dampers with Exhaust Hood separately				
Economizer Controls				
Differential Enthalpy (Not for Title 24)	Order 2 21Z09	OX	OX	OX
Sensible Control	Sensor is Furnished Factory	O	O	O
Single Enthalpy (Not for Title 24)	21Z09	OX	OX	OX
Global Control	Sensor Field Provided Factory	O	O	O
Building Pressure Control	13J77	X	X	X
Outdoor Air CFM Control	13J76	X	X	X
Barometric Relief Dampers With Exhaust Hood				
Downflow Barometric Relief Dampers	54W78	OX	OX	OX
Horizontal Barometric Relief Dampers	16K99	X	X	X
OUTDOOR AIR				
Outdoor Air Dampers With Outdoor Air Hood				
Motorized	22J27	OX	OX	OX
Manual	13U05	X	X	X
5 POWER EXHAUST (DOWNFLOW APPLICATIONS ONLY)				
Standard Static, SCCR Rated	208/230V 22H90	OX	OX	OX
	460V 22H91	OX	OX	OX
	575V 22V34	OX	OX	OX
CONDENSER REHEAT OPTION				
Dehumidification Option	Factory	O	O	O
Humidity Sensor Kit, Remote mounted (required)	17M50	X	X	X
5 Field installed Power Exhaust requires Economizer with Outdoor Air Hood and Downflow Barometric Relief Dampers with Exhaust Hood. Must be ordered separately.				
NOTE - Order Numbers shown are for ordering field installed accessories.				
OX - Configure To Order (Factory Installed) or Field Installed				
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OPTIONS / ACCESSORIES

Item Description	Order Number	Size		
		156	180	240
ROOF CURBS				
Hybrid Roof Curbs, Downflow				
8 in. height	11F58	X	X	X
14 in. height	11F59	X	X	X
18 in. height	11F60	X	X	X
24 in. height	11F61	X	X	X
Adjustable Pitch Curb				
14 in. height	43W26	X	X	X
Standard Roof Curbs, Horizontal - Requires Horizontal Return Air Panel Kit				
26 in. height - slab applications	11T89	X	X	X
37 in. height - rooftop applications	11T96	X	X	X
Insulation Kit For Standard Horizontal Roof Curbs				
For 26 in. Curb	73K32	X	X	X
For 37 in. Curb	73K34	X	X	X
Horizontal Return Air Panel Kit				
Required for Horizontal Applications with Roof Curb	87M00	X	X	X
CEILING DIFFUSERS				
Step-Down - Order one	RTD11-185S	13K63	X	X
	RTD11-275S	13K64		X
Flush - Order one	FD11-185S	13K58	X	X
	FD11-275S	13K59		X
Transitions (Supply and Return) - Order one	C1DIFF33C-1	12X68	X	X
	C1DIFF34C-1	12X70		X

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

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SPECIFICATIONS

Model			LDT156H5M	LDT180H5M	LDT240H5M
Nominal Tonnage			13 Ton	15 Ton	20 Ton
Efficiency Type			High	High	High
Blower Type			Single Zone VAV Supply Fan	Single Zone VAV Supply Fan	Single Zone VAV Supply Fan
Cooling Performance	Gross Cooling Capacity (Btuh)		160,000	182,000	237,000
	¹ Net Cooling Capacity (Btuh)		156,000	176,000	228,000
	¹ AHRI Rated Air Flow (cfm)		4500	5500	7000
	¹ IEER (Btuh/Watt)		15.2	15.3	15.3
	¹ EER (Btuh/Watt)		11.9	10.9	10.9
	Total Unit Power (kW)		13.1	16.1	20.9
Heating Performance	¹ Total High Heat Capacity (Btuh)		150,000	176,000	226,000
	¹ COP		3.4	3.4	3.4
	Total Unit Power (kW)		12.9	15.2	19.5
	¹ Total Low Heat Capacity (Btuh)		86,000	104,000	128,000
	¹ COP		2.1	2.1	2.1
	Total Unit Power (kW)		12.0	14.5	17.8
Gas Heat Available			See page 23		
Sound Rating Number dBA			94	94	94
Refrigerant	Refrigerant Type		R-454B	R-454B	R-454B
	Without Reheat Option	Circuit 1	21 lbs. 0 oz.	23 lbs. 0 oz.	20 lbs. 12 oz.
		Circuit 2	19 lbs. 0 oz.	19 lbs. 8 oz.	19 lbs. 4 oz.
	With Reheat Option	Circuit 1	24 lbs. 0 oz.	24 lbs. 8 oz.	22 lbs. 4 oz.
		Circuit 2	18 lbs. 0 oz.	19 lbs. 0 oz.	21 lbs. 8 oz.
Compressor Type (number)			Two-Stage Scroll (1) Single-Stage Scroll (1)		
Outdoor Coils	Net face area - ft. ² (total)		55.1	55.1	55.1
	Number of rows		2	2	2
	Fins - in.		20	20	20
Outdoor Coil Fans	Motor HP (number and type)		1/3 (6 PSC)	1/3 (6 PSC)	1/3 (6 PSC)
	Rpm		1075	1075	1075
	Watts (total)		2150	2150	2150
	Diameter (Number) - in.		(6) 24	(6) 24	(6) 24
	Blades		3	3	3
	Total Air volume - cfm		16,300	16,300	16,300
Indoor Coils	Net face area - ft. ² (total)		21.4	21.4	21.4
	Tube diameter - in.		3/8	3/8	3/8
	Rows		4	4	4
	Fins - in.		14	14	14
	Condensate drain size (NPT) - in.		(1) 1	(1) 1	(1) 1
	Expansion device type		Balanced Port Thermostatic Expansion Valve		
³ Indoor Blower and Drive Selection	Nominal motor HP		3, 5	3, 5, 7.5	5, 7.5, 10
	Maximum usable motor HP (US)		3.45, 5.75	3.45, 5.75, 8.63	5.75, 8.62, 11.5
	Motor - Drive kit number		3 HP	3 HP	5 HP
			Kit 1 535-725 rpm Kit 2 710-965 rpm	Kit 1 535-725 rpm Kit 2 710-965 rpm	Kit 3 685-856 rpm Kit 4 850-1045 rpm Kit 5 945-1185 rpm
			5 HP	5 HP	7.5 HP
			Kit 3 - 685-856 rpm Kit 4 850-1045 rpm Kit 5 945-1185 rpm	Kit 3 - 685-856 rpm Kit 4 850-1045 rpm Kit 5 945-1185 rpm	Kit 6 850-1045 rpm Kit 7 945-1185 rpm Kit 8 1045-1285 rpm
				7.5 HP	10 HP
				Kit 6 850-1045 rpm Kit 7 945-1185 rpm Kit 8 1045-1285 rpm	Kit 7 945-1185 rpm Kit 10 1045-1285 rpm Kit 11 1135-1330 rpm
	Wheel (Number) diameter x width - in.		(2) 15 x 15 in.	(2) 15 x 15 in.	(2) 15 x 15 in.
Filters	Type of filter		MERV 4, Disposable		
	Number and size - in.		(6) 24 x 24 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 AHRI Certified to AHRI Standard 340/360:

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 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.

NOTE - Motor service factor limit - 1.0.

SPECIFICATIONS - GAS HEAT

Model		LDT156 LDT180	LDT156 LDT180 LDT240		LDT180 LDT240
Heat Input Type		Low	Standard	Medium	High
Gas Heating Performance Two-Stage	Heating Type Character	L	S	M	H
	Input - Btuh First Stage	169,000	169,000	234,000	312,000
	Second Stage	169,000	260,000	360,000	480,000
	Output - Btuh Maximum	135,000	211,000	292,000	389,000
Temperature Rise Range - °F		15-45	15-45	30-60	40-70
Minimum Air Volume - cfm		3000	4500	4500	5125
Thermal Efficiency		80%	81%	81%	81%
Gas Supply Connections		1 in. NPT	1 in. NPT	1 in. NPT	1 in. NPT
Recommended Gas Supply Pressure - in. w.g.	Natural	7	7	7	7
	LPG/Propane	11	11	11	11
Gas Supply Pressure Range	Min./Max. (Natural)	4.7 - 10.5 in. w.g.			
	Min./Max. (LPG)	10.8 - 13.5 in.w.g.			

NOTE - Air volume may modulate below minimum volume if heat input is below maximum.

HIGH ALTITUDE DERAT THIS PAGE INTENTIONALLY LEFT BLANK

NOTE - 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 units must be derated 4% for each 1000 feet above sea level.

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

NOTE - Low Heat Input does not need to be derated.

Refer to the Installation Instructions for more detailed information.

Heat Input Type	Altitude Feet	Gas Manifold Pressure - in. w.g.		Input Rate (Btuh)	
		Natural Gas	LPG/Propane Gas	Minimum	Maximum
Standard	2001 - 4500	1.6 / 3.1	4.4 / 8.9	85,000	239,000
Medium	2001 - 4500	1.6 / 3.1	4.4 / 8.9	117,000	331,000
High	2001 - 4500	1.6 / 3.1	4.4 / 8.9	156,000	442,000

COOLING/HEATING RATINGS

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

13 TON - COOLING LDT156H5M (1 COMPRESSOR - PART LOAD)

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)							
				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	1800	59	1.83	0.73	0.88	1	54.8	2.21	0.74	0.91	1	50.3	2.64	0.76	0.93	1	45.3	3.12	0.78	0.97	1
	2250	62.4	1.8	0.79	0.94	1	58.2	2.18	0.81	0.97	1	53.4	2.62	0.93	1	1	48	3.1	0.86	1	1
	2700	65.2	1.78	0.84	0.99	1	60.8	2.16	0.86	1	1	55.8	2.6	0.89	1	1	51.3	3.07	0.93	1	1
67°F	1800	63.6	1.79	0.55	0.71	0.86	59.5	2.17	0.55	0.72	0.88	54.7	2.6	0.55	0.74	0.9	49.3	3.09	0.55	0.76	0.93
	2250	67.2	1.76	0.58	0.76	0.91	62.7	2.15	0.59	0.77	0.94	57.3	2.58	0.59	0.8	0.98	51.5	3.09	0.6	0.94	1
	2700	69.8	1.74	0.61	0.82	0.97	65.2	2.12	0.62	0.84	1	59.5	2.56	0.63	0.87	1	54.1	3.05	0.66	0.91	1
71°F	1800	68.7	1.75	0.38	0.54	0.69	64.4	2.13	0.37	0.54	0.7	59.1	2.57	0.35	0.54	0.72	53.9	3.05	0.33	0.54	0.74
	2250	72.2	1.72	0.39	0.57	0.74	67.7	2.11	0.38	0.58	0.76	62	2.54	0.37	0.59	0.78	56.8	3.03	0.35	0.6	0.81
	2700	74.9	1.7	0.4	0.6	0.8	70	2.08	0.39	0.61	0.81	64.2	2.52	0.39	0.64	0.86	58.7	3.01	0.37	0.66	0.89

13 TON - COOLING LDT156H5M (2 COMPRESSORS - PART LOAD / FULL LOAD)

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	3000	121.1	6.84	0.67	0.81	0.93	111.5	7.89	0.67	0.83	0.94	101.4	9.05	0.68	0.85	0.96	89.9	10.32	0.69	0.87	0.98
	3750	130.6	6.83	0.73	0.88	0.97	120.2	7.89	0.73	0.9	0.99	109.6	9.04	0.75	0.91	1	98.5	10.32	0.77	0.93	1
	4500	138	6.81	0.78	0.92	1	127.4	7.87	0.79	0.94	1	116.4	9.04	0.81	0.95	1	105.1	10.32	0.84	0.97	1
67°F	3000	131.1	6.82	0.51	0.65	0.78	120.8	7.89	0.5	0.65	0.79	109.8	9.05	0.49	0.66	0.81	98.5	10.32	0.49	0.67	0.84
	3750	140.3	6.81	0.55	0.7	0.85	128.9	7.87	0.54	0.71	0.87	117.7	9.04	0.54	0.73	0.89	105.9	10.33	0.54	0.75	0.91
	4500	146.3	6.79	0.58	0.76	0.9	135.2	7.87	0.58	0.77	0.92	123.8	9.05	0.58	0.79	0.94	111.4	10.34	0.59	0.82	0.95
71°F	3000	141.9	6.8	0.36	0.5	0.63	131	7.87	0.34	0.49	0.63	120	9.04	0.32	0.49	0.64	108.4	10.33	0.32	0.49	0.65
	3750	150.4	6.77	0.38	0.54	0.68	140	7.86	0.36	0.53	0.69	128	9.05	0.35	0.53	0.7	114.7	10.33	0.34	0.54	0.73
	4500	158.1	6.77	0.39	0.57	0.73	145.8	7.85	0.38	0.57	0.75	133.6	9.04	0.37	0.58	0.77	120.1	10.34	0.37	0.59	0.8

13 TON - COOLING LDT156H5M (2 COMPRESSORS - FULL LOAD)

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	4160	159.5	8.48	0.69	0.84	0.97	149.3	9.62	0.7	0.85	0.98	138.1	10.9	0.71	0.87	1	125.1	12.34	0.72	0.91	1
	5200	170.4	8.52	0.75	0.9	1	159.5	9.66	0.76	0.93	1	146.4	10.93	0.77	0.95	1	133.8	12.39	0.8	0.98	1
	6240	178.6	8.55	0.8	0.96	1	165.9	9.68	0.81	0.98	1	155.3	10.97	0.84	0.99	1	143.4	12.44	0.87	1	1
67°F	4160	171.4	8.52	0.53	0.67	0.81	160.2	9.66	0.53	0.68	0.82	147.8	10.94	0.53	0.69	0.84	134.9	12.39	0.53	0.71	0.87
	5200	181.5	8.55	0.57	0.73	0.88	169.1	9.7	0.57	0.74	0.9	157.7	10.98	0.57	0.76	0.92	143.6	12.44	0.58	0.78	0.96
	6240	189	8.58	0.6	0.78	0.94	176.7	9.73	0.61	0.8	0.96	163.4	11	0.61	0.82	0.98	149.9	12.46	0.62	0.85	1
71°F	4160	183.3	8.56	0.38	0.52	0.65	172.4	9.71	0.37	0.53	0.66	160.8	11	0.36	0.53	0.67	146.6	12.44	0.35	0.52	0.69
	5200	193.8	8.59	0.41	0.56	0.71	181.8	9.75	0.39	0.56	0.73	168.8	11.02	0.38	0.57	0.74	154.7	12.48	0.38	0.57	0.75
	6240	200.7	8.63	0.42	0.6	0.76	187.9	9.77	0.41	0.6	0.78	174.7	11.05	0.41	0.61	0.8	160.4	12.51	0.4	0.62	0.83

13 TON - HEATING LDT156H5M

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
4160	194.4	10.58	146.9	9.24	103.1	8.30	70.5	7.55	46.5	6.98
5200	198.6	9.66	149.6	8.61	105.0	7.88	71.9	7.27	47.6	6.80
6240	201.9	9.10	152.1	8.24	106.7	7.61	73.3	7.10	48.9	6.68

COOLING/HEATING RATINGS

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

15 TON - COOLING LDT180H5M (1 COMPRESSOR - PART LOAD)

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)							
				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	2000	65.1	2.22	0.8	0.94	1	60.9	2.64	0.81	0.95	1	56.4	3.09	0.83	0.97	1	51.3	3.6	0.85	0.98	1
	2400	68.3	2.19	0.85	0.97	1	63.9	2.62	0.87	0.98	1	58.8	3.08	0.89	0.99	1	53.9	3.58	0.91	1	1
	2800	70.8	2.18	0.89	0.99	1	66.3	2.6	0.91	1	1	61.1	3.06	0.92	1	1	56.7	3.57	0.94	1	1
67°F	2000	70.1	2.18	0.58	0.77	0.92	65.9	2.61	0.58	0.78	0.94	60.8	3.07	0.58	0.8	0.95	55.9	3.57	0.58	0.82	0.96
	2400	73.2	2.16	0.61	0.82	0.95	68.9	2.59	0.62	0.84	0.97	63.4	3.05	0.62	0.87	0.98	58.4	3.56	0.63	0.89	1
	2800	75.7	2.14	0.64	0.86	0.98	70.1	2.57	0.63	0.89	0.99	65.5	3.04	0.67	0.91	1	60.2	3.55	0.67	0.93	1
71°F	2000	75.5	2.14	0.39	0.57	0.74	70.8	2.57	0.38	0.57	0.76	65.9	3.04	0.37	0.57	0.78	61	3.55	0.34	0.57	0.8
	2400	78.6	2.12	0.4	0.6	0.79	74.1	2.55	0.39	0.6	0.81	68.5	3.02	0.37	0.61	0.85	63.6	3.53	0.36	0.62	0.87
	2800	81	2.1	0.41	0.63	0.84	75.9	2.54	0.4	0.64	0.87	69.6	3.06	0.39	0.63	0.9	65.5	3.52	0.38	0.66	0.92

15 TON - COOLING LDT180H5M (2 COMPRESSORS - PART LOAD / FULL LOAD)

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)							
				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	3300	138.6	8.48	0.66	0.8	0.91	128.4	9.69	0.66	0.81	0.92	118.8	11.02	0.67	0.82	0.93	107.7	12.49	0.67	0.84	0.95
	4000	148	8.49	0.71	0.85	0.95	137.7	9.7	0.71	0.86	0.96	127.1	11.04	0.72	0.88	0.97	116.3	12.53	0.73	0.89	0.99
	4800	155.9	8.5	0.75	0.9	0.98	146.4	9.7	0.76	0.91	0.99	135.8	11.06	0.77	0.92	1	123.7	12.54	0.79	0.94	1
67°F	3300	149.9	8.49	0.51	0.64	0.76	139.5	9.7	0.5	0.64	0.78	128.8	11.05	0.5	0.65	0.79	117.8	12.53	0.49	0.65	0.81
	4000	158.2	8.5	0.53	0.68	0.81	148.4	9.71	0.53	0.69	0.83	137.5	11.06	0.53	0.7	0.85	124.4	12.55	0.53	0.71	0.87
	4800	166.8	8.51	0.57	0.73	0.87	155.5	9.72	0.56	0.74	0.88	143.5	11.06	0.57	0.75	0.9	130.8	12.56	0.58	0.77	0.91
71°F	3300	161.4	8.5	0.37	0.5	0.62	151.7	9.71	0.36	0.49	0.62	139.7	11.06	0.34	0.5	0.63	128	12.55	0.33	0.49	0.63
	4000	171	8.51	0.38	0.52	0.66	159.7	9.72	0.37	0.52	0.67	147.7	11.07	0.37	0.53	0.68	135.7	12.57	0.35	0.53	0.69
	4800	178.7	8.51	0.4	0.55	0.71	167.5	9.74	0.38	0.56	0.72	155.3	11.09	0.38	0.56	0.74	141.7	12.58	0.37	0.57	0.75

15 TON - COOLING LDT180H5M (2 COMPRESSORS - FULL LOAD)

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)							
				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	4800	183.9	10.65	0.71	0.85	0.97	172.4	11.99	0.71	0.86	0.99	160.1	13.48	0.72	0.88	1	146.3	15.12	0.73	0.91	1
	6000	195.4	10.71	0.76	0.91	1	183.3	12.06	0.77	0.93	1	169.9	13.54	0.78	0.96	1	156.7	15.21	0.81	0.98	1
	7200	205	10.77	0.81	0.97	1	192.4	12.12	0.82	0.98	1	179.6	13.62	0.85	1	1	166.8	15.29	0.87	1	1
67°F	4800	196.8	10.72	0.55	0.69	0.81	185.1	12.06	0.55	0.69	0.83	172	13.55	0.54	0.7	0.85	158.7	15.22	0.54	0.71	0.87
	6000	207.8	10.78	0.58	0.74	0.88	195.7	12.14	0.59	0.75	0.9	182.9	13.64	0.59	0.76	0.93	167.4	15.29	0.59	0.79	0.96
	7200	216.7	10.84	0.62	0.79	0.94	204	12.2	0.62	0.8	0.96	189.2	13.68	0.63	0.83	0.98	173.9	15.34	0.64	0.85	1
71°F	4800	211	10.8	0.41	0.54	0.67	199.1	12.17	0.39	0.54	0.67	186	13.65	0.38	0.53	0.68	171.5	15.32	0.37	0.53	0.69
	6000	222.6	10.87	0.42	0.58	0.72	209.9	12.23	0.41	0.58	0.73	194.8	13.72	0.4	0.58	0.74	180.5	15.4	0.39	0.58	0.76
	7200	230.6	10.92	0.44	0.61	0.77	217.4	12.28	0.43	0.61	0.78	202.3	13.78	0.42	0.62	0.8	187.5	15.46	0.41	0.63	0.83

15 TON - HEATING LDT180H5M

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
4800	225.0	13.09	174.0	11.37	127.6	10.18	91.3	9.24	63.3	8.42
6000	229.7	12.03	178.6	10.68	130.8	9.71	94.0	8.91	65.8	8.20
7200	234.3	11.40	182.4	10.26	134.1	9.44	97.0	8.73	68.7	8.08

COOLING/HEATING RATINGS

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

20 TON - COOLING LDT240H5M (1 COMPRESSOR - PART LOAD)

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)							
				Dry Bulb					Dry Bulb					Dry Bulb							
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F					
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	3200	90.3	3.3	0.83	0.98	1	84.6	3.84	0.85	0.99	1	78.4	4.46	0.87	1	1	71.4	5.15	0.9	1	1
	4000	94.8	3.3	0.89	1	1	89.1	3.83	0.93	1	1	82.4	4.44	0.96	1	1	76.4	5.12	0.98	1	1
	4800	98.5	3.29	0.96	1	1	93.2	3.82	0.98	1	1	87.5	4.44	0.99	1	1	80.5	5.11	1	1	1
67°F	3200	96.2	3.29	0.6	0.8	0.98	90.7	3.83	0.6	0.82	0.98	83.8	4.45	0.6	0.85	0.99	77.2	5.12	0.61	0.87	1
	4000	100.6	3.28	0.64	0.87	0.99	94.9	3.82	0.65	0.89	1	87.8	4.43	0.66	0.93	1	80.6	5.11	0.68	0.97	1
	4800	104	3.28	0.68	0.94	1	98	3.81	0.7	0.97	1	90.6	4.42	0.71	0.98	1	83	5.1	0.74	0.99	1
71°F	3200	102.9	3.28	0.38	0.58	0.77	97.3	3.81	0.38	0.58	0.79	90.6	4.42	0.36	0.59	0.82	83.4	5.1	0.36	0.6	0.84
	4000	107.7	3.32	0.4	0.62	0.85	101.5	3.81	0.39	0.64	0.87	94.6	4.41	0.38	0.64	0.9	86.4	5.09	0.38	0.67	0.95
	4800	111.1	3.31	0.42	0.67	0.91	104.5	3.8	0.41	0.68	0.95	97.4	4.4	0.41	0.71	0.98	88.9	5.08	0.41	0.73	0.99

20 TON - COOLING LDT240H5M (2 COMPRESSORS - PART LOAD / FULL LOAD)

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			
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F	
cfm	kBtu/h	kW	75°F	80°F	85°F	kBtu/h	kW	75°F	80°F	85°F	kBtu/h	kW	75°F	80°F	85°F	kBtu/h	kW	75°F	80°F	85°F		
63°F	4800	185.2	11.49	0.69	0.83	0.94	172.2	13.04	0.7	0.84	0.95	157.4	14.76	0.71	0.87	0.96	143.1	16.7	0.72	0.88	0.98	
	6000	197.5	11.54	0.74	0.89	0.98	183.8	13.1	0.76	0.91	0.99	170.8	14.83	0.77	0.92	1	154.4	16.75	0.79	0.94	1	
	7200	209.1	11.58	0.79	0.93	1	194.8	13.15	0.81	0.94	1	179.5	14.86	0.83	0.96	1	164	16.78	0.85	0.98	1	
67°F	4800	198.3	11.54	0.53	0.67	0.8	184.2	13.1	0.53	0.68	0.81	171	14.84	0.53	0.68	0.83	154	16.76	0.52	0.7	0.86	
	6000	211.8	11.6	0.57	0.72	0.86	195.9	13.15	0.57	0.74	0.88	180.4	14.88	0.57	0.75	0.9	163.7	16.8	0.57	0.77	0.91	
	7200	219.7	11.62	0.61	0.78	0.91	204.1	13.2	0.61	0.79	0.93	188.5	14.92	0.61	0.81	0.94	171.4	16.85	0.62	0.83	0.96	
71°F	4800	214.2	11.6	0.39	0.53	0.65	198.6	13.16	0.38	0.52	0.66	183.6	14.89	0.36	0.52	0.67	167.4	16.81	0.34	0.52	0.68	
	6000	225.5	11.65	0.41	0.57	0.71	210.6	13.24	0.4	0.56	0.72	194.9	14.96	0.39	0.56	0.73	177.2	16.87	0.37	0.57	0.75	
	7200	236.1	11.7	0.42	0.6	0.75	219.4	13.28	0.42	0.6	0.77	201.9	15	0.4	0.61	0.79	184.3	16.91	0.39	0.61	0.81	

20 TON - COOLING LDT240H5M (2 COMPRESSORS - FULL LOAD)

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		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
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	6400	235.2	14.15	0.72	0.85	0.97	220	15.79	0.72	0.87	0.98	205.6	17.63	0.73	0.89	1	188.6	19.7	0.74	0.92	1
	8000	249.8	14.3	0.77	0.92	1	233.1	15.94	0.78	0.94	1	217.4	17.77	0.79	0.96	1	201	19.84	0.81	0.98	1
	9600	260.1	14.41	0.81	0.97	1	244	16.06	0.83	0.98	1	228.8	17.9	0.85	0.99	1	213.1	19.98	0.88	1	1
67°F	6400	251.3	14.31	0.55	0.69	0.82	234.7	15.95	0.55	0.7	0.84	219.2	17.79	0.55	0.71	0.86	202.1	19.84	0.54	0.72	0.88
	8000	263.6	14.45	0.59	0.75	0.89	246.6	16.09	0.59	0.76	0.91	232	17.94	0.59	0.77	0.93	213.8	19.98	0.59	0.79	0.96
	9600	274.7	14.57	0.62	0.79	0.94	257.9	16.21	0.63	0.81	0.97	240	18.03	0.63	0.83	0.98	220.8	20.06	0.64	0.86	1
71°F	6400	268.1	14.5	0.41	0.55	0.67	251.8	16.15	0.39	0.54	0.68	236.9	17.99	0.38	0.54	0.69	218.1	20.03	0.37	0.54	0.7
	8000	282.5	14.65	0.42	0.58	0.73	263.9	16.28	0.41	0.59	0.74	247.1	18.11	0.4	0.59	0.76	228.1	20.14	0.39	0.59	0.77
	9600	291.6	14.74	0.43	0.62	0.78	273.4	16.38	0.43	0.62	0.79	256.2	18.21	0.42	0.63	0.81	237.1	20.24	0.42	0.64	0.84

20 TON - HEATING LDT240H5M

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
6400	282.9	16902	217.6	14.88	155.5	13.39	109.6	12.07	71.2	10.74
8000	289.0	15757	220.3	14.09	158.0	12.91	111.2	11.77	73.6	10.56
9600	296.2	15023	227.2	13.64	164.5	12.63	116.5	11.56	78.9	10.47

DEHUMIDIFICATION SYSTEM RATINGS

13 TON - HIGH EFFICIENCY LDT156H5 WITH DEHUMIDIFICATION OPERATING (COMPRESSOR 1 IN REHEAT, COMPRESSOR 2 OFF)

Entering Wet Bulb Tem- perature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						70°F						75°F						80°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						
				70°F	75°F	80°F			70°F	75°F	80°F			70°F	75°F	80°F			70°F	75°F	80°F				
cfm	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F					
63°F	1800	50.23	3.3	0.28	0.46	0.64	43.61	3.43	0.23	0.44	0.64	37.02	3.57	0.16	0.41	0.65	30.49	3.73	0.06	0.36	0.66				
	2250	53.09	3.29	0.3	0.5	0.7	45.76	3.42	0.24	0.48	0.71	38.41	3.57	0.16	0.45	0.73	31.12	3.74	0.05	0.41	0.75				
	2700	55.09	3.29	0.32	0.56	0.75	47.06	3.42	0.26	0.54	0.77	39.14	3.57	0.18	0.52	0.79	30.83	3.74	0.05	0.49	0.81				
67°F	1800	58.86	3.31	0.15	0.31	0.46	52.4	3.44	0.09	0.27	0.44	45.84	3.59	0.02	0.22	0.42	38.99	3.76	-0.08	0.15	0.39				
	2250	62.33	3.3	0.15	0.33	0.5	54.99	3.44	0.08	0.28	0.49	47.24	3.59	0	0.23	0.47	39.76	3.75	-0.12	0.15	0.44				
	2700	64.89	3.3	0.15	0.35	0.56	56.78	3.43	0.07	0.31	0.55	48.41	3.58	-0.02	0.26	0.53	40.31	3.75	-0.16	0.18	0.52				
69°F	1800	63.53	3.32	0.1	0.24	0.38	57.02	3.45	0.04	0.2	0.36	50.4	3.6	-0.04	0.14	0.33	43.83	3.76	-0.14	0.07	0.29				
	2250	67.12	3.31	0.08	0.25	0.42	59.69	3.44	0.02	0.21	0.4	52.09	3.59	-0.07	0.15	0.36	44.61	3.76	-0.19	0.07	0.32				
	2700	69.86	3.3	0.08	0.27	0.46	61.87	3.44	0	0.21	0.43	53.74	3.59	-0.1	0.15	0.4	45.14	3.75	-0.23	0.07	0.37				

NOTE - Total Cooling Capacity is calculated at 75°F Dry Bulb.

13 TON - HIGH EFFICIENCY LDT156H5 WITH DEHUMIDIFICATION (COMPRESSOR 1 IN REHEAT, COMPRESSOR 2 ON)

Entering Wet Bulb Tem- perature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						70°F						75°F						80°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	70°F			75°F	80°F	kBtuh	kW			70°F	75°F	80°F	kBtuh			kW	70°F	75°F	80°F
63°F	4160	125.43	6.17	0.37	0.53	0.68	112.06	6.52	0.34	0.53	0.69	98.76	6.9	0.31	0.52	0.71	85.74	7.3	0.26	0.5	0.72				
	5200	134.37	6.19	0.4	0.59	0.75	119.88	6.56	0.38	0.58	0.76	105.97	6.92	0.34	0.58	0.77	91.3	7.33	0.3	0.57	0.79				
	6240	141.61	6.19	0.43	0.64	0.78	126.28	6.56	0.41	0.64	0.8	110.68	6.94	0.38	0.64	0.81	95.43	7.35	0.33	0.64	0.83				
67°F	4160	142.73	6.2	0.23	0.38	0.53	129.02	6.57	0.19	0.37	0.52	115.16	6.95	0.14	0.34	0.52	101.81	7.34	0.09	0.31	0.51				
	5200	152.31	6.2	0.24	0.42	0.58	137.7	6.56	0.21	0.4	0.58	122.49	6.96	0.15	0.38	0.58	107.64	7.37	0.1	0.35	0.57				
	6240	158.56	6.18	0.26	0.46	0.63	142.77	6.57	0.22	0.44	0.63	127.69	6.97	0.17	0.41	0.63	111.61	7.38	0.11	0.39	0.64				
69°F	4160	151.38	6.21	0.17	0.33	0.46	137.34	6.58	0.13	0.3	0.45	124.21	6.96	0.08	0.27	0.43	110.61	7.37	0.01	0.23	0.42				
	5200	161.13	6.18	0.18	0.35	0.51	146.32	6.57	0.13	0.32	0.5	131.99	6.97	0.07	0.29	0.49	116.84	7.39	0	0.25	0.47				
	6240	168.55	6.19	0.18	0.37	0.55	152.19	6.56	0.13	0.35	0.54	137.06	6.98	0.07	0.32	0.53	121.4	7.4	0.01	0.28	0.52				

NOTE - Total Cooling Capacity is calculated at 75°F Dry Bulb.

15 TON - HIGH EFFICIENCY LDT180H5 WITH DEHUMIDIFICATION OPERATING (COMPRESSOR 1 IN REHEAT, COMPRESSOR 2 OFF)

Entering Wet Bulb Tem- perature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					70°F					75°F					80°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	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	
63°F	2000	48.34	3.73	0.33	0.54	0.76	42.77	3.9	0.26	0.5	0.75	37.19	4.09	0.17	0.46	0.73	31.37	4.29	0.05	0.39	0.72
	2400	51.09	3.8	0.33	0.57	0.81	44.97	3.98	0.26	0.54	0.81	38.83	4.16	0.17	0.49	0.8	32.44	4.36	0.04	0.42	0.8
	2800	53.36	3.86	0.34	0.61	0.86	46.66	4.03	0.27	0.57	0.87	39.96	4.22	0.17	0.53	0.87	32.59	4.42	0.03	0.47	0.89
67°F	2000	57.47	3.84	0.16	0.35	0.52	52.01	4.02	0.09	0.29	0.49	46.53	4.21	0	0.22	0.45	40.85	4.41	-0.13	0.14	0.4
	2400	60.85	3.91	0.15	0.35	0.56	54.8	4.09	0.07	0.3	0.52	48.15	4.28	-0.04	0.23	0.49	41.67	4.48	-0.16	0.14	0.44
	2800	63.32	3.97	0.14	0.36	0.59	56.69	4.15	0.05	0.31	0.56	49.46	4.33	-0.06	0.24	0.52	43.07	4.54	-0.2	0.15	0.48
69°F	2000	62.24	3.9	0.09	0.26	0.43	56.83	4.08	0.02	0.21	0.39	51.43	4.27	-0.07	0.14	0.34	45.24	4.47	-0.18	0.05	0.28
	2400	65.87	3.97	0.07	0.26	0.45	59.87	4.15	-0.01	0.2	0.41	53.13	4.34	-0.11	0.13	0.36	47.24	4.55	-0.24	0.04	0.3
	2800	68.64	4.03	0.05	0.26	0.47	61.52	4.2	-0.04	0.2	0.43	55.13	4.4	-0.15	0.13	0.39	48.14	4.61	-0.28	0.03	0.33

NOTE - Total Cooling Capacity is calculated at 75°F Dry Bulb.

15 TON HIGH EFFICIENCY LDT180H5 WITH DEHUMIDIFICATION OPERATING (COMPRESSOR 1 IN REHEAT, COMPRESSOR 2 ON)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						70°F						75°F						80°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	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F					
63°F	4800	136.39	7.7	0.42	0.6	0.76	125.85	8.16	0.38	0.58	0.76	115.69	8.66	0.34	0.56	0.76	104.93	9.18	0.3	0.54	0.76				
	6000	145.42	7.81	0.45	0.65	0.83	133.78	8.28	0.41	0.64	0.84	122.52	8.8	0.38	0.62	0.84	109.6	9.32	0.34	0.61	0.85				
	7200	151.74	7.9	0.47	0.7	0.9	139.24	8.38	0.44	0.69	0.91	126.65	8.88	0.42	0.68	0.92	114	9.4	0.38	0.68	0.93				
67°F	4800	154	7.84	0.26	0.43	0.58	143.53	8.31	0.22	0.4	0.57	133	8.83	0.17	0.37	0.55	120.98	9.34	0.12	0.33	0.53				
	6000	163.42	7.96	0.27	0.46	0.63	152.15	8.44	0.23	0.43	0.62	139.95	8.93	0.18	0.4	0.61	127.88	9.47	0.13	0.38	0.6				
	7200	170.11	8.04	0.27	0.48	0.69	157.68	8.52	0.23	0.46	0.68	143.94	9.01	0.19	0.45	0.68	131.45	9.56	0.14	0.41	0.67				
69°F	4800	162.78	7.91	0.19	0.35	0.5	152.17	8.4	0.15	0.32	0.48	141.98	8.9	0.1	0.29	0.46	129.77	9.42	0.04	0.25	0.45				
	6000	172.82	8.02	0.19	0.38	0.54	161.45	8.51	0.14	0.34	0.53	148.6	9	0.09	0.31	0.52	136.16	9.55	0.04	0.28	0.5				
	7200	179.69	8.1	0.18	0.39	0.59	167.19	8.59	0.14	0.36	0.58	152.77	9.08	0.09	0.34	0.56	140.39	9.63	0.03	0.3	0.55				

DEHUMIDIFICATION SYSTEM RATINGS

20 TON - HIGH EFFICIENCY LDT240H5 WITH DEHUMIDIFICATION OPERATING (COMPRESSOR 1 IN REHEAT, COMPRESSOR 2 OFF)

Entering Wet Bulb Tem- perature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						70°F						75°F						80°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						
				70°F	75°F	80°F			70°F	75°F	80°F			70°F	75°F	80°F			70°F	75°F	80°F				
cfm	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F					
63°F	3200	70.68	5.66	0.31	0.54	0.75	61.65	5.88	0.29	0.55	0.79	52.69	6.11	0.26	0.56	0.84	43.17	6.36	0.21	0.59	0.91				
	4000	74	5.68	0.33	0.59	0.8	64.27	5.89	0.31	0.6	0.84	54.43	6.12	0.26	0.62	0.9	43.9	6.37	0.21	0.66	0.97				
	4800	76.5	5.69	0.35	0.64	0.84	66.06	5.9	0.32	0.66	0.87	54.87	6.14	0.28	0.69	0.92	44.25	6.39	0.22	0.73	0.97				
67°F	3200	82.29	5.71	0.12	0.32	0.51	73.36	5.91	0.08	0.3	0.53	63.96	6.15	0.02	0.28	0.53	54.75	6.4	-0.05	0.25	0.55				
	4000	85.78	5.72	0.11	0.34	0.57	75.99	5.94	0.06	0.32	0.58	65.76	6.17	-0.01	0.3	0.59	56.13	6.42	-0.1	0.26	0.61				
	4800	88.35	5.74	0.11	0.37	0.62	77.84	5.95	0.05	0.35	0.64	67.14	6.18	-0.03	0.32	0.66	55.88	6.43	-0.14	0.29	0.69				
69°F	3200	88.37	5.73	0.04	0.23	0.42	79.56	5.95	-0.01	0.2	0.41	70.02	6.17	-0.07	0.17	0.4	60.74	6.42	-0.16	0.12	0.4				
	4000	92.14	5.75	0.02	0.24	0.45	82.31	5.96	-0.04	0.21	0.45	72.25	6.19	-0.12	0.17	0.44	62.21	6.44	-0.22	0.12	0.44				
	4800	94.7	5.76	0	0.25	0.5	83.64	5.97	-0.07	0.22	0.5	73.27	6.2	-0.15	0.18	0.5	62.51	6.45	-0.27	0.12	0.5				

NOTE - Total Cooling Capacity is calculated at 75°F Dry Bulb.

20 TON - HIGH EFFICIENCY LDT240H5 WITH DEHUMIDIFICATION OPERATING (COMPRESSOR 1 IN REHEAT, COMPRESSOR 2 ON)

Entering Wet Bulb Temp- erature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						70°F						75°F						80°F					
		Total Cool Cap.	Comp. Motor Input	Sensible To Total			Total Cool Cap.	Comp. Motor Input	Sensible To Total			Total Cool Cap.	Comp. Motor Input	Sensible To Total			Total Cool Cap.	Comp. Motor Input	Sensible To Total						
				Ratio (S/T)					Ratio (S/T)					Ratio (S/T)					Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
cfm	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F	kBtuh	kW	70°F	75°F	80°F					
63°F	6400	180.59	11.19	0.38	0.56	0.72	164.33	11.75	0.35	0.55	0.73	147.82	12.36	0.32	0.53	0.73	131.45	12.98	0.29	0.53	0.74				
	8000	190.37	11.26	0.42	0.62	0.78	173.14	11.83	0.39	0.61	0.78	155.11	12.44	0.36	0.6	0.79	137.95	13.08	0.33	0.6	0.8				
	9600	197.56	11.33	0.45	0.67	0.81	179.91	11.92	0.42	0.66	0.82	161.48	12.53	0.39	0.66	0.82	143.19	13.17	0.36	0.66	0.84				
67°F	6400	202.48	11.3	0.23	0.39	0.56	186.45	11.88	0.19	0.37	0.55	170.51	12.49	0.15	0.34	0.53	153.97	13.13	0.11	0.31	0.52				
	8000	213.96	11.38	0.24	0.43	0.62	196.48	11.98	0.2	0.41	0.61	178.23	12.58	0.16	0.39	0.6	160.19	13.23	0.12	0.37	0.6				
	9600	220.28	11.44	0.25	0.47	0.67	201.23	12.04	0.21	0.45	0.67	182.41	12.65	0.16	0.42	0.66	164.53	13.31	0.12	0.41	0.66				
69°F	6400	214.75	11.36	0.17	0.32	0.48	198.75	11.95	0.13	0.29	0.46	182.05	12.56	0.08	0.26	0.44	166.03	13.21	0.03	0.23	0.43				
	8000	225.6	11.44	0.17	0.35	0.53	207.37	12.03	0.12	0.32	0.52	189.93	12.65	0.07	0.29	0.5	173.33	13.31	0.03	0.26	0.49				
	9600	232.33	11.5	0.17	0.37	0.58	213.69	12.11	0.12	0.35	0.57	194.62	12.73	0.08	0.31	0.55	176.36	13.39	0.02	0.29	0.54				

NOTE - Total Cooling Capacity is calculated at 75°F Dry Bulb.

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 (heat section, duct resistance, diffuser, etc.)

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

See page 33 for wet coil, option/accessory air resistance data, and factory installed drive kit specifications.

Minimum Air Volume Required For Different Gas Heat Sizes:

Low Heat - 3000 cfm | Standard and Medium Heat - 4500 cfm | High Heat - 5125 cfm

Air Volume cfm	TOTAL STATIC PRESSURE - Inches Water Gauge (Pa)																							
	0.20		0.40		0.60		0.80		1.00		1.20		1.40		1.60		1.80		2.00		2.20		2.40	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2750	385	0.30	505	0.50	600	0.70	680	0.90	755	1.10	820	1.30	885	1.50	950	1.70	1005	1.90	1060	2.10	1110	2.30	1160	2.50
3000	395	0.35	515	0.55	610	0.75	685	1.00	760	1.20	825	1.45	885	1.70	950	1.95	1005	2.15	1060	2.35	1110	2.55	1160	2.75
3250	405	0.40	520	0.60	615	0.85	695	1.10	765	1.30	830	1.60	890	1.85	950	2.10	1005	2.30	1060	2.50	1110	2.70	1160	2.90
3500	415	0.45	530	0.70	620	0.95	700	1.20	775	1.45	840	1.70	900	2.00	950	2.25	1005	2.45	1060	2.65	1110	2.85	1160	3.05
3750	425	0.50	540	0.75	630	1.05	710	1.30	780	1.60	845	1.85	905	2.15	950	2.40	1005	2.60	1060	2.80	1110	3.00	1160	3.20
4000	435	0.55	545	0.85	635	1.10	715	1.40	785	1.70	850	2.00	910	2.30	950	2.55	1005	2.75	1060	2.95	1110	3.15	1160	3.35
4250	445	0.60	555	0.90	645	1.25	725	1.55	795	1.85	855	2.15	915	2.45	950	2.70	1005	2.90	1060	3.10	1110	3.35	1160	3.55
4500	455	0.70	565	1.00	655	1.35	730	1.65	800	2.00	865	2.35	925	2.65	950	2.90	1005	3.10	1060	3.30	1110	3.55	1160	3.75
4750	470	0.75	575	1.10	660	1.45	740	1.80	810	2.15	870	2.50	930	2.85	950	3.10	1005	3.30	1060	3.50	1110	3.75	1160	3.95
5000	480	0.85	585	1.25	670	1.60	750	1.95	815	2.30	880	2.70	940	3.05	950	3.30	1005	3.50	1060	3.70	1110	3.95	1160	4.15
5250	495	0.95	595	1.35	680	1.70	755	2.10	825	2.50	890	2.90	945	3.25	1000	3.55	1050	3.75	1100	4.00	1150	4.30	1200	4.60
5500	505	1.05	605	1.45	690	1.85	765	2.25	835	2.65	895	3.05	955	3.45	1010	3.85	1060	4.05	1110	4.40	1160	4.70	1210	5.00
5750	520	1.15	615	1.60	700	2.00	775	2.45	840	2.85	905	3.25	960	3.65	1015	4.05	1065	4.25	1115	4.60	1165	4.90	1215	5.20
6000	530	1.30	630	1.75	710	2.15	785	2.60	850	3.05	910	3.45	970	3.90	1025	4.35	1075	4.70	1120	5.00	1170	5.30	1220	5.60
6250	545	1.40	640	1.90	720	2.35	795	2.80	860	3.25	920	3.70	975	4.15	1030	4.60	1080	5.00	1130	5.40	1180	5.70	1230	6.00
6500	560	1.55	650	2.05	730	2.50	805	3.00	870	3.45	930	3.95	985	4.40	1040	4.85	1090	5.20	1140	5.60	1190	5.90	1240	6.20
6750	570	1.70	665	2.20	745	2.70	815	3.20	880	3.70	940	4.20	995	4.65	1045	5.10	1095	5.50	1145	5.90	1195	6.20	1245	6.50
7000	585	1.85	675	2.35	755	2.90	825	3.40	890	3.95	950	4.45	1005	4.95	1055	5.40	1105	5.80	1155	6.20	1205	6.50	1255	6.80
7250	600	2.00	690	2.60	765	3.10	835	3.65	900	4.15	955	4.65	1015	5.15	1065	5.60	1115	6.00	1165	6.40	1215	6.70	1265	7.00
7500	615	2.20	700	2.75	775	3.30	845	3.85	910	4.45	965	4.95	1020	5.40	1075	5.90	1125	6.30	1175	6.70	1225	7.00	1275	7.30
7750	630	2.40	715	3.00	790	3.55	855	4.10	920	4.70	975	5.25	1030	5.80	1080	6.35	1130	6.70	1180	7.10	1230	7.40	1280	7.70
8000	640	2.55	725	3.20	800	3.80	865	4.35	930	4.95	985	5.50	1040	6.10	1090	6.70	1140	7.10	1190	7.50	1240	7.80	1290	8.10
8250	655	2.80	740	3.40	810	4.00	880	4.65	940	5.25	995	5.85	1050	6.45	1100	7.05	1150	7.45	1200	7.85	1250	8.15	1300	8.45
8500	670	3.00	750	3.65	825	4.30	890	4.90	950	5.55	1005	6.15	1060	6.80	1110	7.40	1160	7.80	1210	8.20	1260	8.50	1310	8.80
8750	685	3.25	765	3.90	835	4.55	900	5.20	960	5.85	1015	6.45	1070	7.15	1120	7.75	1170	8.15	1220	8.55	1270	8.85	1320	9.15
9000	700	3.50	780	4.20	850	4.85	910	5.50	970	6.15	1025	6.80	1080	7.50	1130	8.15	1180	8.55	1230	8.95	1280	9.25	1330	9.55
9250	715	3.75	790	4.45	860	5.15	925	5.85	985	6.55	1040	7.20	1090	7.85	1140	8.55	1190	8.95	1240	9.35	1290	9.65	1340	9.95
9500	730	4.00	805	4.75	875	5.45	935	6.15	995	6.90	1050	7.60	1100	8.25	1150	8.95	1200	9.35	1250	9.75	1300	10.05	1350	10.35
9750	745	4.30	820	5.05	885	5.75	950	6.55	1005	7.20	1060	7.95	1110	8.65	1160	9.40	1210	9.80	1260	10.20	1310	10.50	1360	10.80
10,000	760	4.60	835	5.40	900	6.15	960	6.85	1015	7.60	1070	8.35	1120	9.05	1170	9.80	1220	10.20	1270	10.60	1320	10.90	1370	11.20
10,250	775	4.90	845	5.65	910	6.45	970	7.20	1030	8.00	1080	8.75	1135	9.55	1180	10.25	1235	10.65	1285	11.05	1335	11.35	1385	11.65
10,500	790	5.20	860	6.00	925	6.85	985	7.65	1040	8.40	1095	9.20	1145	10.00	1190	10.70	1240	11.10	1290	11.50	1340	11.80	1390	12.10
10,750	805	5.55	875	6.40	940	7.25	1000	8.05	1055	8.85	1105	9.65	1155	10.45	1200	11.20	1250	11.60	1300	12.00	1350	12.30	1400	12.60
11,000	820	5.90	890	6.80	950	7.60	1010	8.45	1065	9.30	1115	10.05	1165	10.90	1210	11.65	1260	12.05	1310	12.45	1360	12.75	1410	13.05

BLOWER DATA

FACTORY INSTALLED BELT DRIVE KIT SPECIFICATIONS

Nominal HP	Maximum HP	Drive Kit Number	RPM Range
3	3.45	1	535 - 725
3	3.45	2	710 - 965
5	5.75	3	685 - 856
5	5.75	4	850 - 1045
5	5.75	5	945 - 1185
7.5	8.63	6	850 - 1045
7.5	8.63	7	945 - 1185
7.5	8.63	8	1045 - 1285
10	11.50	7	945 - 1185
10	11.50	10	1045 - 1285
10	11.50	11	1135 - 1330

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.

NOTE – Motor service factor limit - 1.0

FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE in. w.g.

Air Volume cfm	Wet Indoor Coil	Reheat Coil	Gas Heat Exchanger			Economizer	Filters		Horizontal Roof Curb
			Low/ Standard Heat	Medium Heat	High Heat		MERV 8	MERV 13	
2750	.02		.02	.04	.05	---	.01	.03	.03
3000	.02		.03	.04	.05	---	.01	.03	.04
3250	.03		.03	.05	.06	---	.01	.04	.04
3500	.03		.03	.05	.06	---	.01	.04	.05
3750	.03		.04	.06	.07	---	.01	.04	.05
4000	.04		.04	.06	.07	---	.01	.04	.06
4250	.04		.04	.06	.08	---	.01	.05	.07
4500	.05		.05	.07	.09	---	.01	.05	.07
4750	.05		.05	.08	.10	---	.02	.05	.08
5000	.05		.05	.09	.11	---	.02	.06	.08
5250	.06		.06	.10	.12	---	.02	.06	.09
5500	.07		.06	.10	.13	---	.02	.06	.10
5750	.07		.06	.11	.14	---	.02	.07	.11
6000	.08		.07	.12	.15	---	.03	.07	.11
6250	.08		.07	.12	.16	.01	.03	.07	.12
6500	.09		.08	.13	.17	.02	.03	.08	.13
6750	.10		.08	.14	.18	.03	.03	.08	.14
7000	.10		.09	.15	.19	.04	.04	.08	.15
7250	.11		.09	.16	.20	.05	.04	.09	.16
7500	.12		.10	.17	.21	.06	.04	.09	.17
8000	.13		.11	.19	.24	.09	.05	.10	.19
8500	.15		.12	.20	.26	.11	.05	.10	.21
9000	.16		.13	.23	.29	.14	.06	.11	.24
9500	.18		.14	.25	.32	.16	.07	.12	.26
10,000	.20		.16	.27	.35	.19	.07	.12	.29
10,500	.22		.17	.30	.38	.22	.08	.13	.31
11,000	.24		.18	.31	.40	.25	.09	.14	.34

BLOWER DATA

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure	Air Volume Exhausted
in. w.g.	cfm
0.00	8630
0.05	8210
0.10	7725
0.15	7110
0.20	6470
0.25	5790
0.30	5060
0.35	4300
0.40	3510
0.45	2690
0.50	1840

CEILING DIFFUSER AIR RESISTANCE - in. w.g.

Air Volume cfm	Step-Down Diffuser						Flush Diffuser	
	RTD11-185S			RTD11-275S			FD11-185S	FD11-275S
	2 Ends Open	1 Side/2 Ends Open	All Ends & Sides Open	2 Ends Open	1 Side/2 Ends Open	All Ends & Sides Open		
5000	.51	.44	.39	---	---	---	.27	---
5200	.56	.48	.42	---	---	---	.30	---
5400	.61	.52	.45	---	---	---	.33	---
5600	.66	.56	.48	---	---	---	.36	---
5800	.71	.59	.51	---	---	---	.39	---
6000	.76	.63	.55	.36	.31	.27	.42	.29
6200	.80	.68	.59	---	---	---	.46	---
6400	.86	.72	.63	---	---	---	.50	---
6500	---	---	---	.42	.36	.31	---	.34
6600	.92	.77	.67	---	---	---	.54	---
6800	.99	.83	.72	---	---	---	.58	---
7000	1.03	.87	.76	.49	.41	.36	.62	.40
7200	1.09	.92	.80	---	---	---	.66	---
7400	1.15	.97	.84	---	---	---	.70	---
7500	---	---	---	.51	.46	.41	---	.45
7600	1.20	1.02	.88	---	---	---	.74	---
8000	---	---	---	.59	.49	.43	---	.50
8500	---	---	---	.69	.58	.50	---	.57
9000	---	---	---	.79	.67	.58	---	.66
9500	---	---	---	.89	.75	.65	---	.74
10,000	---	---	---	1.00	.84	.73	---	.81
10,500	---	---	---	1.10	.92	.80	---	.89
11,000	---	---	---	1.21	1.01	.88	---	.96

CEILING DIFFUSER AIR THROW DATA - ft.

Size	Air Volume cfm	¹ Effective Throw Range - ft.		Size	Air Volume cfm	¹ Effective Throw Range - ft.	
		RTD11-185S Step-Down	FD11-185S Flush			RTD11-275S Step-Down	FD11-275S Flush
156, 180	5600	39 - 49	28 - 37	240	7200	33 - 38	26 - 35
	5800	42 - 51	29 - 38		7400	35 - 40	28 - 37
	6000	44 - 54	40 - 50		7600	36 - 41	29 - 38
	6200	45 - 55	42 - 51		7800	38 - 43	40 - 50
	6400	46 - 55	43 - 52		8000	39 - 44	42 - 51
	6600	47 - 56	45 - 56		8200	41 - 46	43 - 52
					8400	43 - 49	44 - 54
					8600	44 - 50	46 - 57
					8800	47 - 55	48 - 59

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 13 TON

Model		LDT156H5M					
¹ Voltage - 60Hz		208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor 1 (Non-Inverter)	Rated Load Amps	23.2		9.5		7.8	
	Locked Rotor Amps	142		73.1		55	
Compressor 2 (Non-Inverter)	Rated Load Amps	22.4		9.1		7.2	
	Locked Rotor Amps	166.2		74.6		54	
Outdoor Fan Motors	Full Load Amps (6 Non-ECM)	2.4		1.3		1	
	Total	14.4		7.8		6	
Power Exhaust (2) 0.33 HP	Full Load Amps	2.4		1.3		1	
	Total	4.8		2.6		2	
Service Outlet 115V GFI (amps)		15		15		20	
Indoor Blower Motor	HP	3	5	3	5	3	5
	Full Load Amps	10.6	16.7	4.8	7.6	3.9	6.1
² Maximum Overcurrent Protection (MOCP)	Unit Only	90	100	40	45	30	35
	With (2) 0.33 HP Power Exhaust	100	110	45	45	35	35
³ Minimum Circuit Ampacity (MCA)	Unit Only	77	83	34	37	27	30
	With (2) 0.33 HP Power Exhaust	82	88	37	39	29	32

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

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

² HACR type breaker or fuse.

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

⁴ Factory installed circuit breaker not available.

ELECTRICAL DATA 15 TON

Model		LDT180H5M								
¹ Voltage - 60Hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1 (Non-Inverter)	Rated Load Amps	25.2			10.6			8.6		
	Locked Rotor Amps	178.5			79.1			65		
Compressor 2 (Non-Inverter)	Rated Load Amps	27.7			11.5			9		
	Locked Rotor Amps	178.5			103			78		
Outdoor Fan Motors	Full Load Amps (6 Non-ECM)	2.4			1.3			1		
	Total	14.4			7.8			6		
Power Exhaust (2) 0.33 HP	Full Load Amps	2.4			1.3			1		
	Total	4.8			2.6			2		
Service Outlet 115V GFI (amps)		15			15			20		
Indoor Blower Motor	HP	3	5	7.5	3	5	7.5	3	5	7.5
	Full Load Amps	10.6	16.7	24.2	4.8	7.6	11	3.9	6.1	9
² Maximum Overcurrent Protection (MOCP)	Unit Only	110	110	125	45	50	50	35	40	40
	With (2) 0.33 HP Power Exhaust	110	110	125	50	50	50	40	40	45
³ Minimum Circuit Ampacity (MCA)	Unit Only	85	91	99	38	41	44	30	32	35
	With (2) 0.33 HP Power Exhaust	90	96	104	41	43	47	32	34	37

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

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

² HACR type breaker or fuse.

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

⁴ Factory installed circuit breaker not available.

ELECTRICAL DATA

20 TON

Model		LDT240H5M								
¹ Voltage - 60Hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1 (Non-Inverter)	Rated Load Amps	26.5			14			11.5		
	Locked Rotor Amps	255			123			93.7		
Compressor 2 (Non-Inverter)	Rated Load Amps	28.5			13.5			10.7		
	Locked Rotor Amps	255			123			93.7		
Outdoor Fan Motors	Full Load Amps (6 Non-ECM)	2.4			1.3			1		
	Total	14.4			7.8			6		
Power Exhaust (2) 0.33 HP	Full Load Amps	2.4			1.3			1		
	Total	4.8			2.6			2		
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 (MOCP)	Unit Only	110	125	125	60	60	60	45	50	50
	With (2) 0.33 HP Power Exhaust	125	125	125	60	60	60	50	50	50
³ Minimum Circuit Ampacity (MCA)	Unit Only	94	101	108	47	50	53	38	41	43
	With (2) 0.33 HP Power Exhaust	99	106	113	50	53	56	40	43	45

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

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

² HACR type breaker or fuse.

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

⁴ Factory installed circuit breaker not available.

ELECTRICAL ACCESSORIES - DISCONNECTS

13 TON | LDT156H5

Motor HP	3		5		3	5	3	5
Electric Heat Voltage	208	240	208	240	480	480	600	600
Unit Only	54W89	54W89	54W89	54W89	54W88	54W88	54W88	54W88
Unit + Power Exhaust	54W89	54W89	54W89	54W88	54W88	54W88	54W88	54W88

15 TON | LDT180H5

Motor HP	3		5		7.5		3	5	7.5	3	5	7.5
Electric Heat Voltage	208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
Unit Only	54W89	54W89	54W89	54W89	54W89	54W89	54W88	54W88	54W88	54W88	54W88	54W88
Unit + Power Exhaust	54W89	54W89	54W89	54W88	54W88	54W88	54W88	54W88	54W88	54W88	54W88	54W88

20 TON | LDT240H5

Motor HP	5		7.5		10		5	7.5	10	5	7.5	10
Electric Heat Voltage	208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
Unit Only	54W89	54W89	54W89	54W89	54W89	54W89	54W88	54W88	54W88	54W88	54W88	54W88
Unit + Power Exhaust	54W89	54W89	54W89	54W88	54W88	54W88	54W88	54W88	54W88	54W88	54W88	54W88

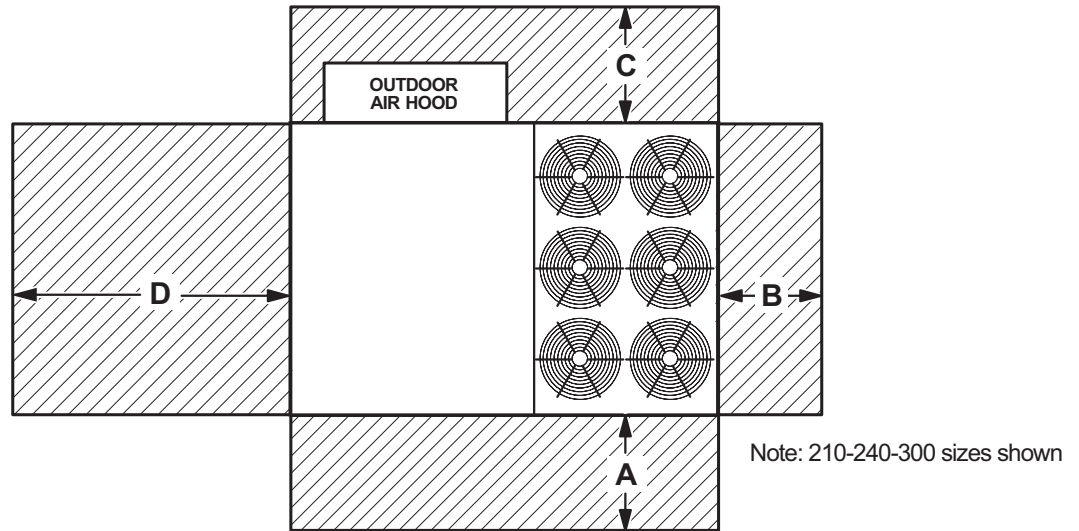
Disconnects - 54W88 - 80A
54W89 - 150A
90W82 - 250A

FIELD WIRING NOTES

- For use with copper wiring only
- Field wiring not furnished
- All wiring must conform to NEC or CEC and local electrical codes
- For specific wiring information, please refer to the installation instructions

INSTALLATION 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	934	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 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	
156, 180, 240	79	84	88	89	85	82	73	94

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

¹ Sound Rating Number according to AHRI Standard 370-2001 (includes pure tone penalty). Sound Rating Number is the overall A-Weighted Sound Power Level, (LWA), dBA (100 Hz to 10,000 Hz).

WEIGHT DATA				UNIT
Size	Net		Shipping	
	lbs.	kg	lbs.	kg
156 Base Unit	2358	1070	2558	1160
156 Max. Unit	2717	1233	2917	1323
180 Base Unit	2386	1082	2586	1173
180 Max. Unit	2744	1245	2944	1335
240 Base Unit	2428	1101	2628	1192
240 Max. Unit	2788	1265	2988	1355

NOTE - Max. Unit is the unit with ALL INTERNAL OPTIONS Installed. (Economizer, Standard Static Power Exhaust Fans, Controls, etc.). Does not include accessories EXTERNAL to unit.

FACTORY / FIELD INSTALLED OPTIONS AND ACCESSORIES - NET WEIGHTS			
Description		lbs.	kg
ECONOMIZER / OUTDOOR AIR / EXHAUST			
Economizer			
Economizer Dampers (with Outdoor Air Hood)		167	76
Barometric Relief Dampers (downflow)		30	14
Barometric Relief Dampers (horizontal)		20	9
Outdoor Air Dampers with Hood (downflow)			
Motorized		39	18
Manual		22	10
Power Exhaust		62	28
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		36	16
ROOF CURBS			
Hybrid Roof Curbs, Downflow			
8 in. height		136	62
14 in. height		169	77
18 in. height		191	87
24 in. height		224	102
Adjustable Pitch Curb, Downflow			
14 in. height		224	102
Horizontal, Standard			
26 in. height		450	204
37 in. height		540	245
CEILING DIFFUSERS			
Step-Down	RTD11-185S	168	76
	RTD11-275S	238	108
Flush	FD11-185S	168	76
	FD11-275S	238	108
Transitions	C1DIFF33C-1	80	36
	C1DIFF34C-1	75	34
DEHUMIDIFICATION SYSTEM			
Dehumidification Option		50	23

DIMENSIONS

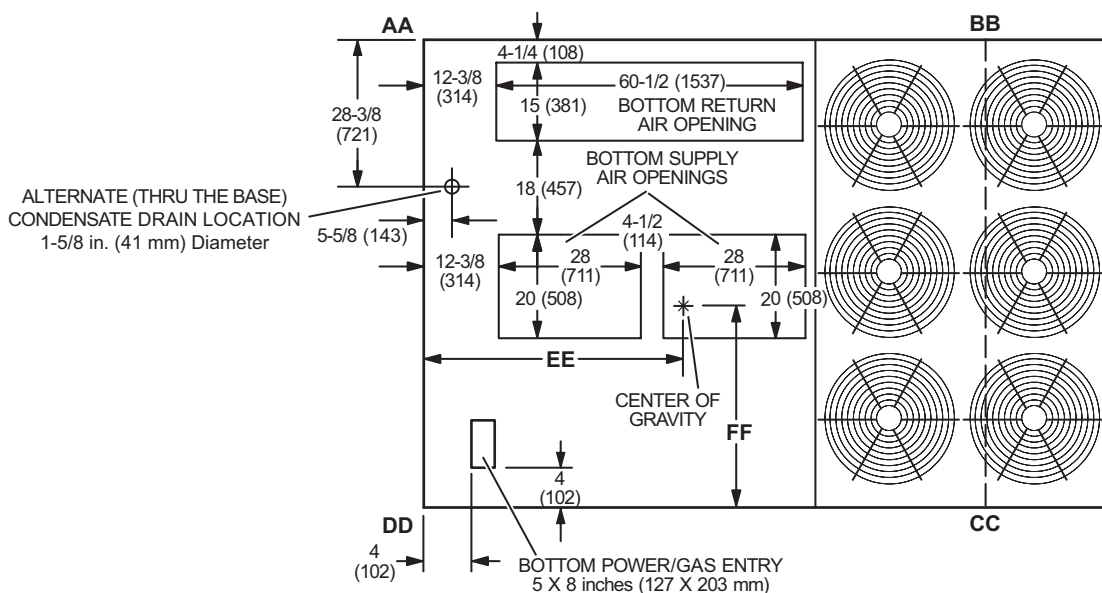
UNIT

CORNER WEIGHTS

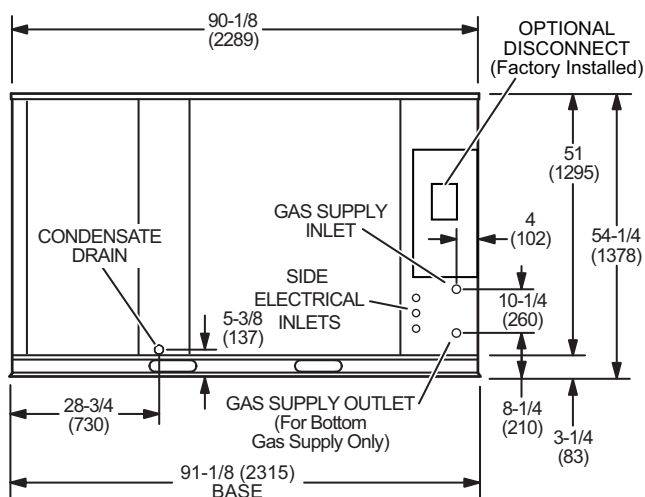
Model	AA		BB		CC		DD		CENTER OF GRAVITY			
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm
LDT156 Base Unit	452	205	506	230	739	336	660	300	57	1446	37	941
LDT156 Max. Unit	574	261	616	280	790	359	737	335	55-3/4	1416	39-7/8	1012
LDT180 Base Unit	453	206	508	231	753	342	672	306	57	1448	36-3/4	933
LDT180 Max. Unit	575	261	617	280	804	365	749	341	55-3/4	1416	39-1/2	1003
LDT240 Base Unit	456	207	509	232	772	351	691	314	56-7/8	1444	36-1/4	921
LDT240 Max. Unit	577	262	619	281	824	375	768	349	55-3/4	1416	39	991

Base Unit - The unit with NO INTERNAL OPTIONS.

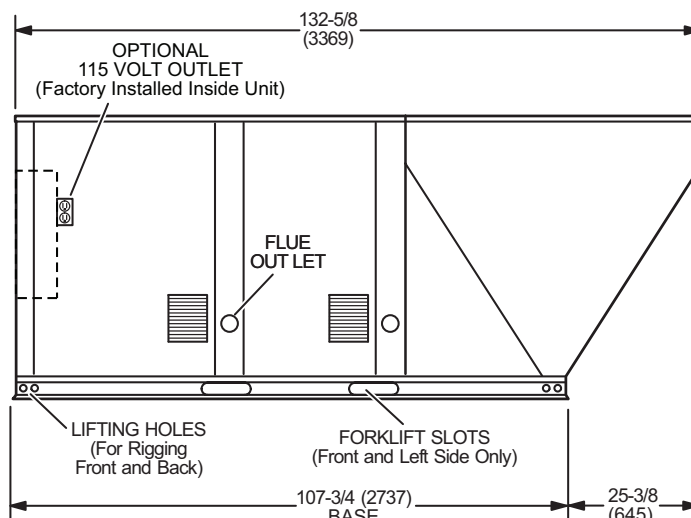
Max. Unit - The unit with ALL INTERNAL OPTIONS Installed. (Economizer, Standard Static Power Exhaust Fans, Controls, etc.). Does not include accessories external to unit.



TOP VIEW

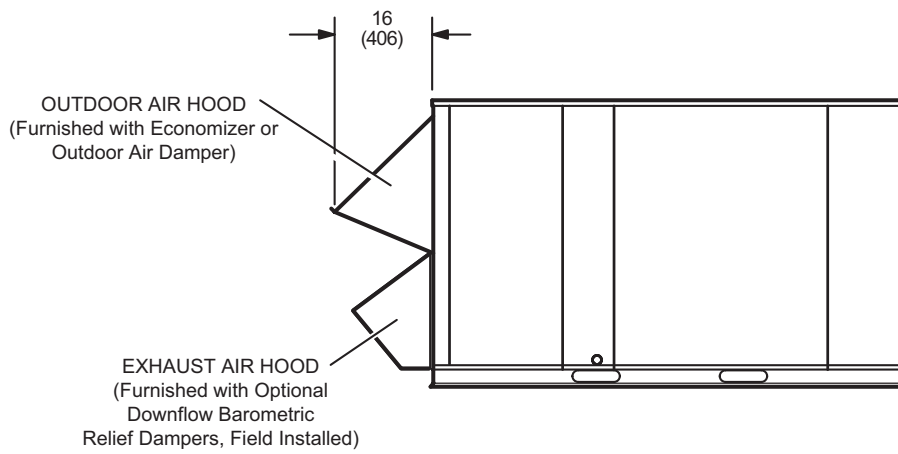


END VIEW



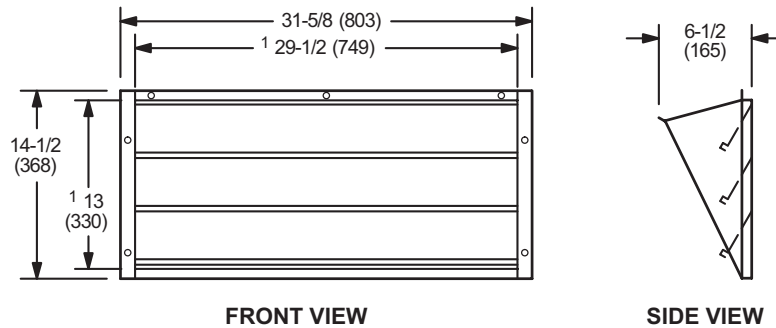
SIDE VIEW

OUTDOOR AIR HOOD DETAIL



OPTIONAL HORIZONTAL BAROMETRIC RELIEF DAMPERS WITH HOOD

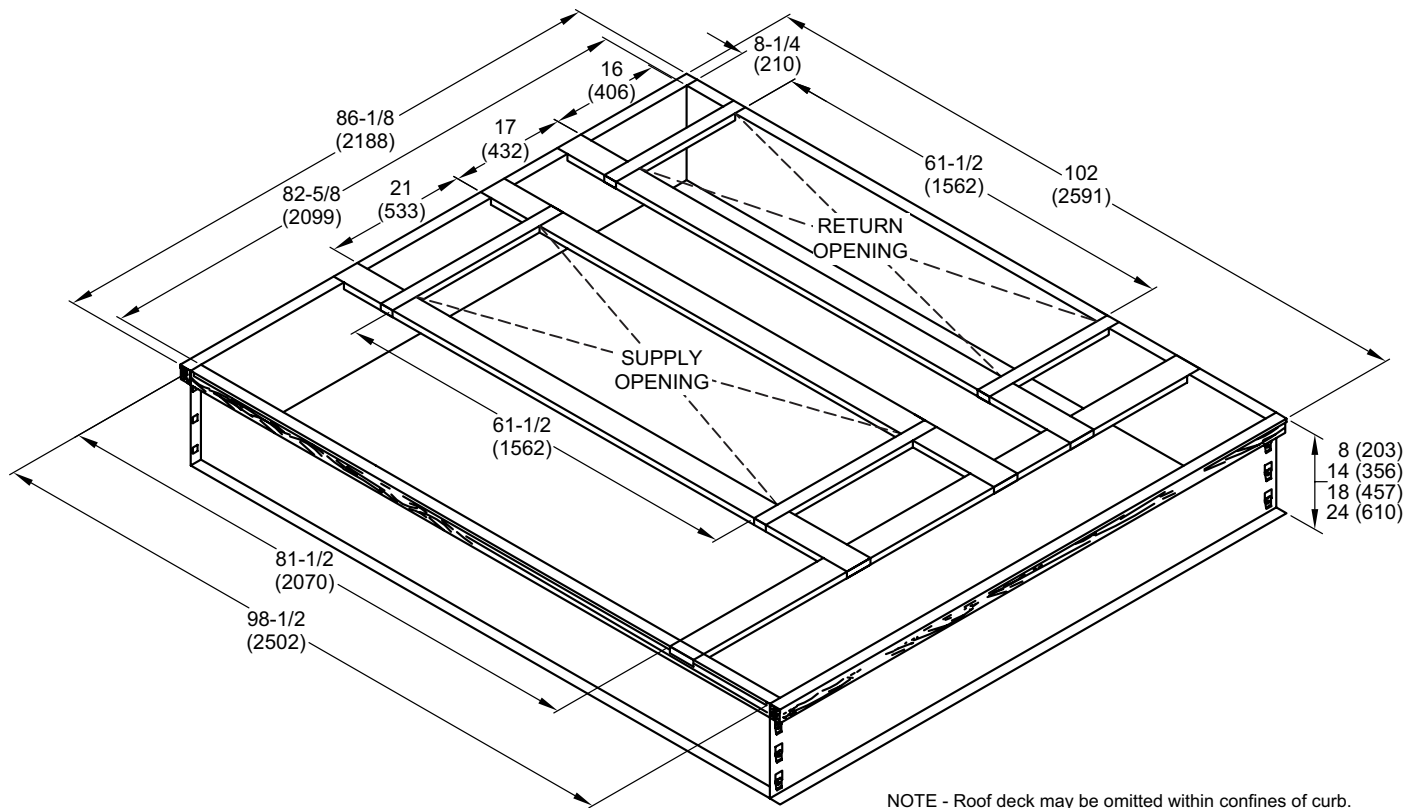
(Field installed in horizontal return air duct adjacent to unit)



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

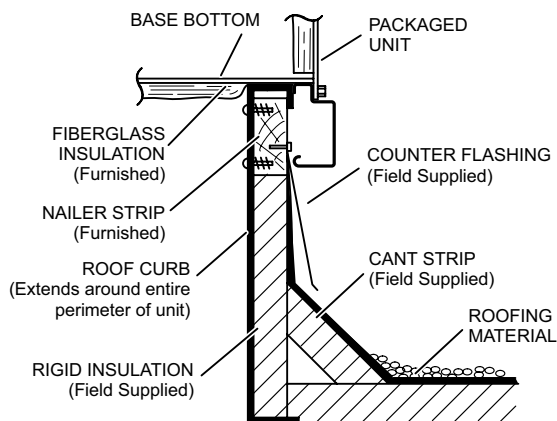
SIDE VIEW

HYBRID ROOF CURBS - DOUBLE DUCT OPENING

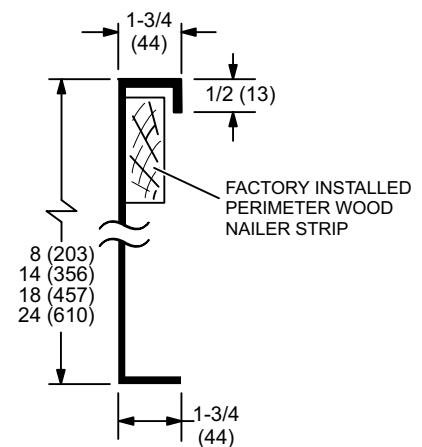


NOTE - Roof deck may be omitted within confines of curb.

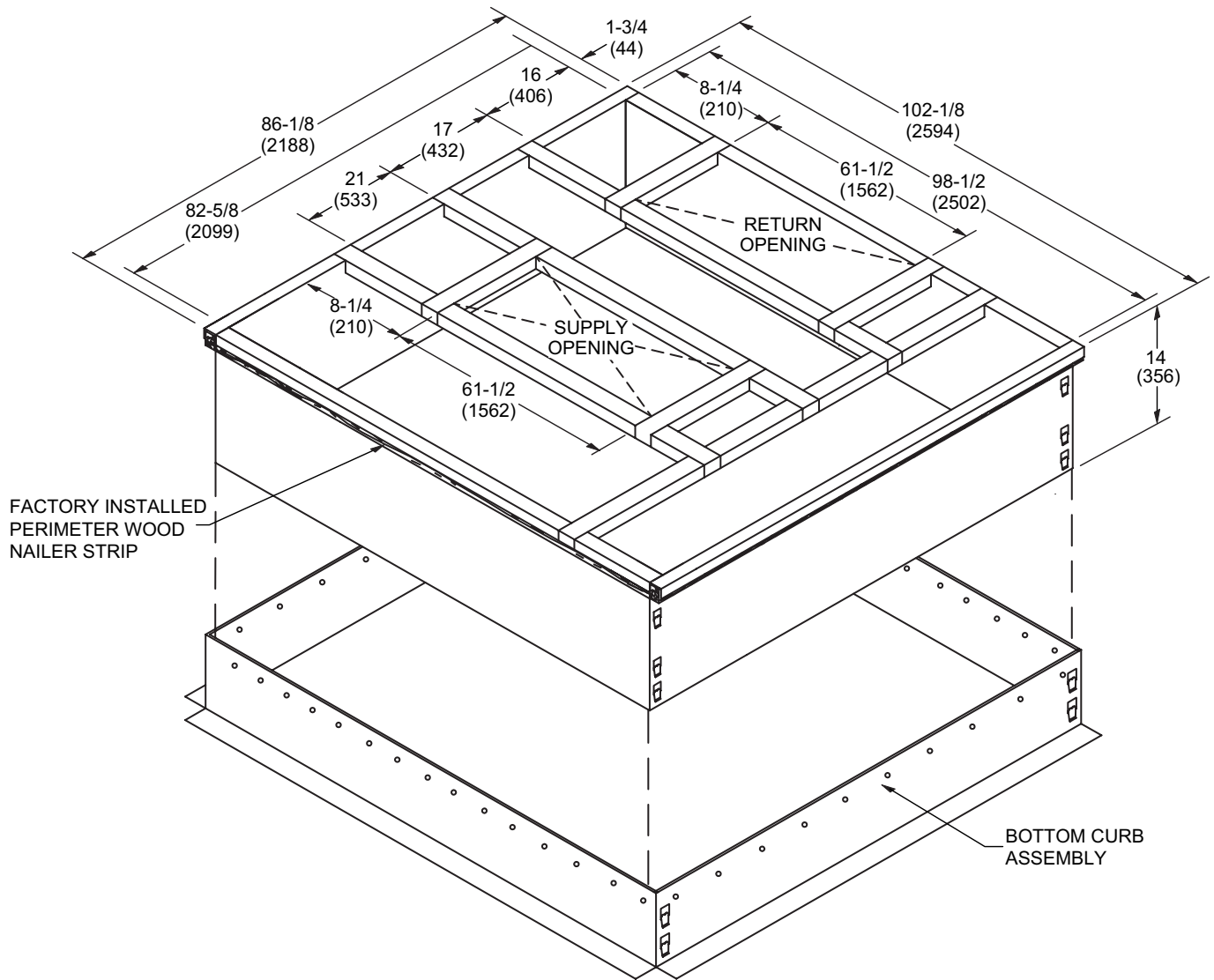
TYPICAL FLASHING DETAIL FOR ROOF CURB



DETAIL ROOF CURB

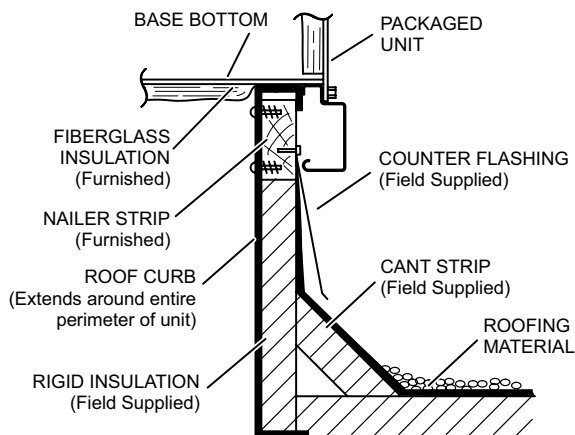


ADJUSTABLE PITCH CURB - DOUBLE DUCT OPENING

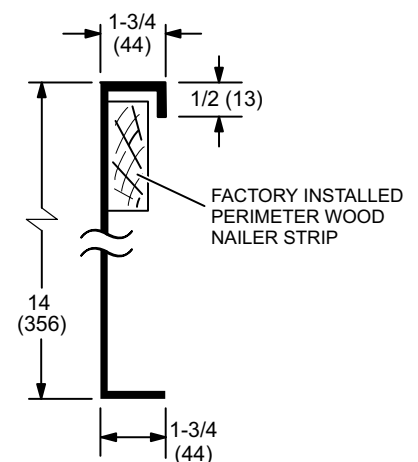


NOTE - Maximum slope pitch is 3/4 in. per 1 foot (19 mm per 305 mm) in any one direction.

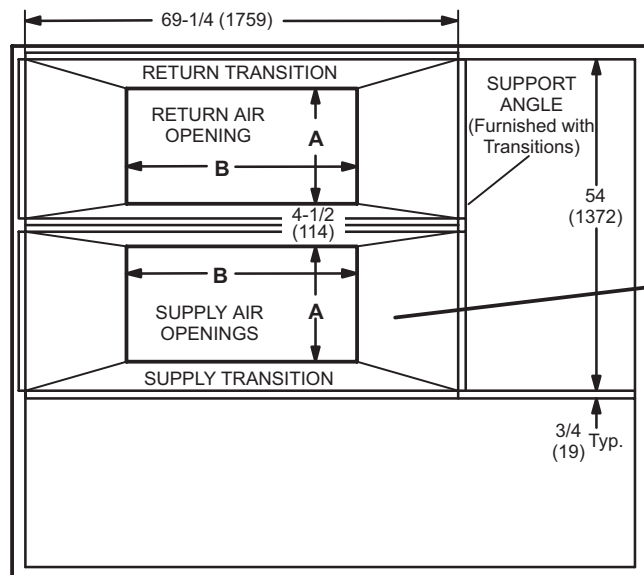
TYPICAL FLASHING DETAIL FOR ROOF CURB



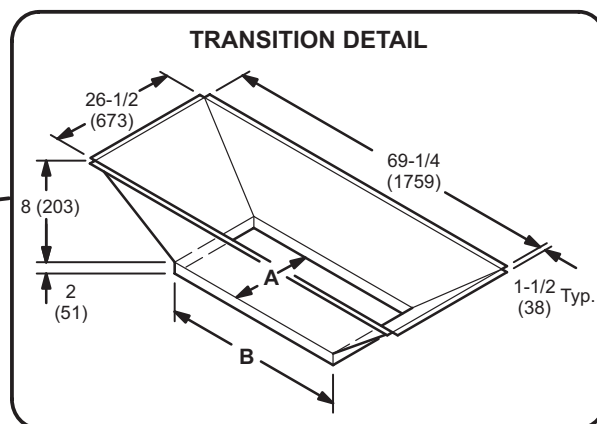
DETAIL ROOF CURB



ROOF CURBS WITH SUPPLY & RETURN AIR TRANSITIONS FOR CEILING DIFFUSERS



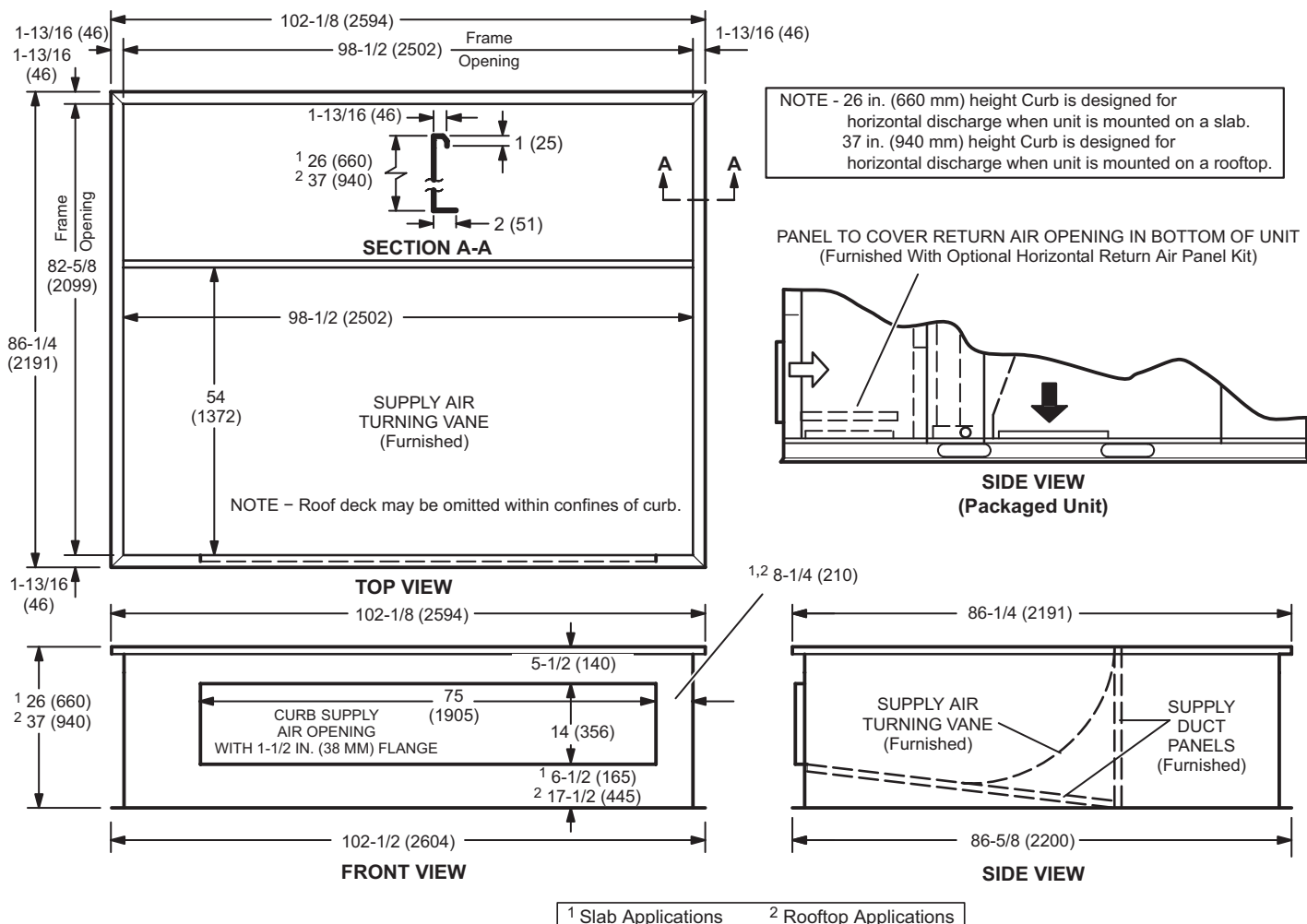
TOP VIEW



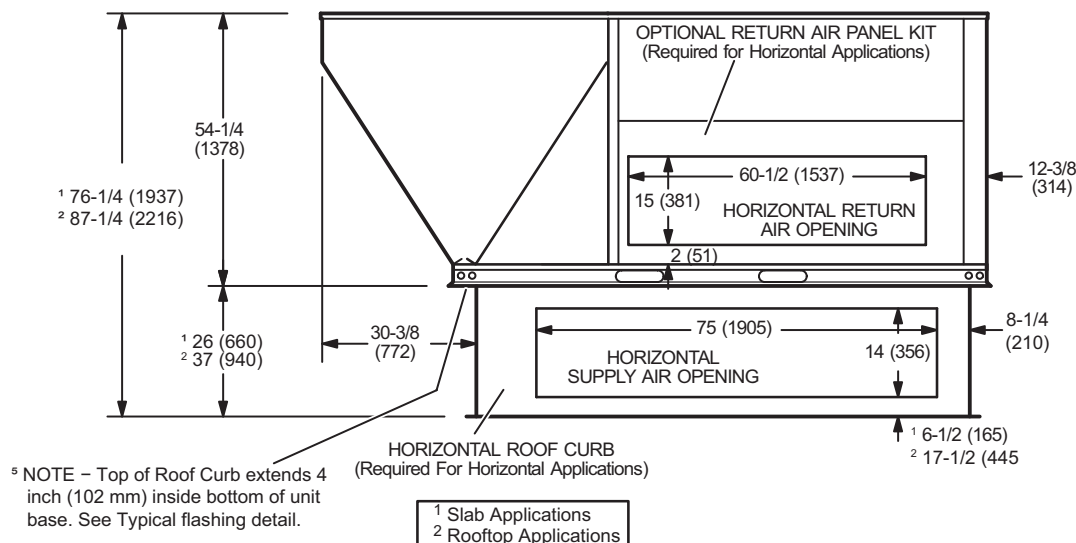
TRANSITION OPENING SIZES

Model Number	A		B	
	inch	mm	inch	mm
C1DIFF33C-1	18	457	36	914
C1DIFF34C-1	24	610	48	1219

HORIZONTAL ROOF CURBS – Requires Optional Horizontal Return Air Panel Kit

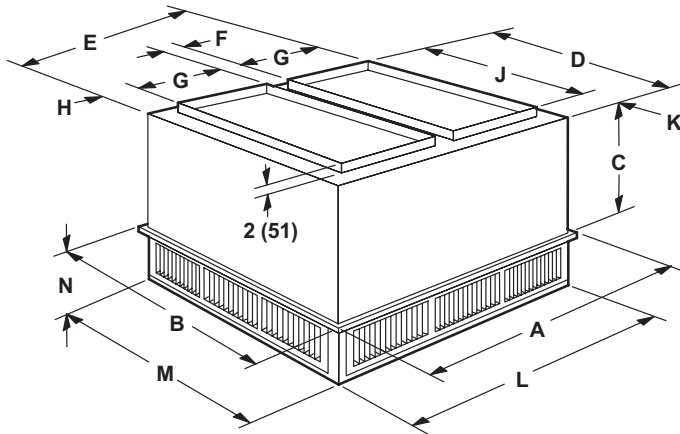


HORIZONTAL SUPPLY AND RETURN AIR OPENINGS WITH HORIZONTAL ROOF CURB

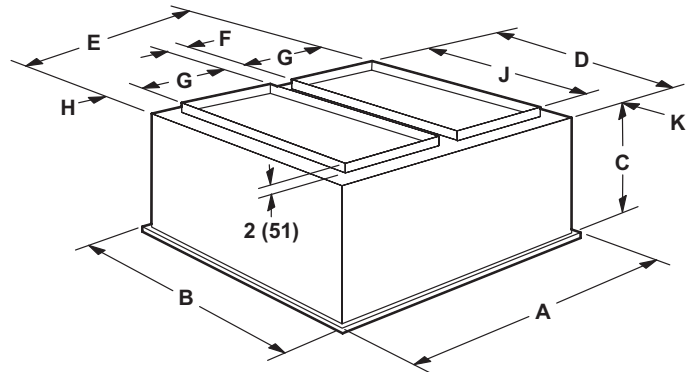


COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



Model		RTD11-185S	RTD11-275S
A	in.	47-5/8	59-5/8
	mm	1210	1514
B	in.	47-5/8	59-5/8
	mm	1210	1514
C	in.	24-5/8	30-5/8
	mm	625	778
D	in.	45-1/2	57-1/2
	mm	1156	1461
E	in.	45-1/2	57-1/2
	mm	1156	1461
F	in.	4-1/2	4-1/2
	mm	114	114
G	in.	18	24
	mm	457	610
H	in.	2-1/2	2-1/2
	mm	64	64
J	in.	36	48
	mm	914	1219
K	in.	4-3/4	4-3/4
	mm	121	121
L	in.	45-1/2	57-1/2
	mm	1156	1461
M	in.	45-1/2	57-1/2
	mm	1156	1461
N	in.	10-1/8	11-1/8
	mm	257	283
Duct Size	in.	18 x 36	24 x 48
	mm	457 x 914	610 x 1219

Model		FD11-185S	FD11-275S
A	in.	47-5/8	59-5/8
	mm	1210	1514
B	in.	47-5/8	59-5/8
	mm	1210	1514
C	in.	29-1/4	35-1/4
	mm	743	895
D	in.	45	57
	mm	1143	1148
E	in.	45	57
	mm	1143	1448
F	in.	4-1/2	4-1/2
	mm	114	114
G	in.	18	24
	mm	457	610
H	in.	2-1/4	2-1/4
	mm	57	57
J	in.	36	48
	mm	914	1219
K	in.	4-1/2	4-1/2
	mm	114	114
Duct Size	in.	18 x 36	24 x 48
	mm	457 x 914	610 x 1219

REVISIONS

Sections	Description of Change
Options / Accessories	Added Dehumidification System option.
Optional Conventional Temperature Control Systems	Removed Sysbus System Cable - Product discontinued.



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