

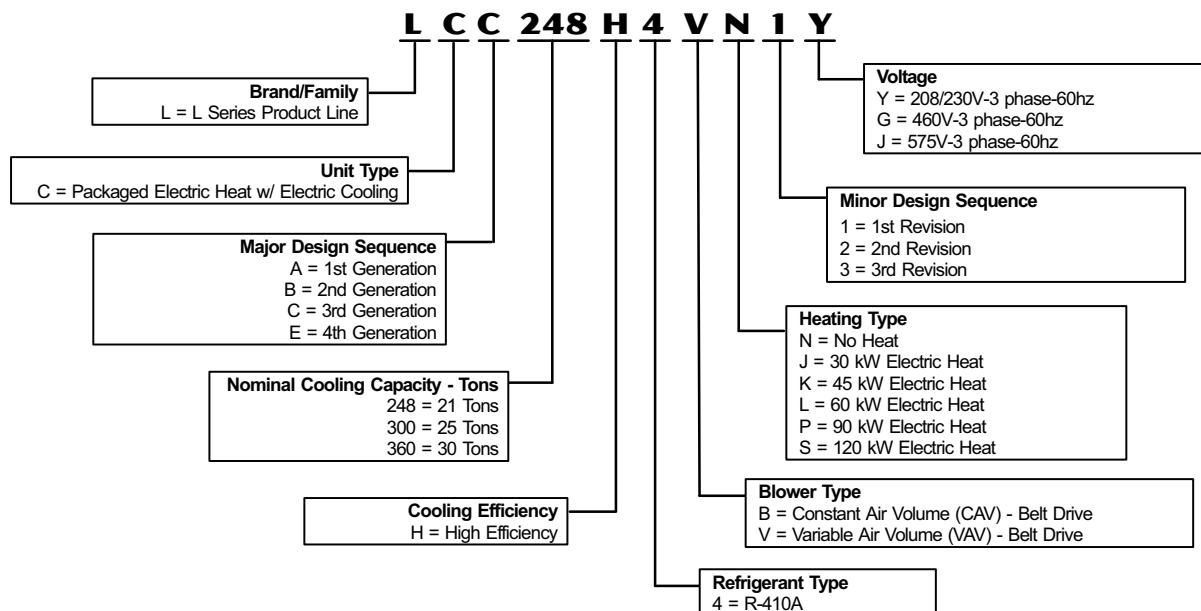
LENNOX**ENGINEERING DATA****LC**
L SERIES® ROOFTOP UNITS
60 HZBulletin No. 210412
February 2011
Supersedes October 2010**ASHRAE 90.1**
COMPLIANT**21, 25, & 30 Tons**
Net Cooling Capacity - 248,000 to 344,000 Btuh
Optional Electric Heat - 30 to 120 kW**MODEL NUMBER IDENTIFICATION**

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FEATURES AND BENEFITS

APPROVALS

ETL and CSA listed.

Heating efficiency ratings verified by CSA.

Components bonded for grounding to meet safety standards for servicing required by UL, CSA and National and Canadian Electrical Codes.

248 models are certified in accordance with the ULE certification program, which is based on ARI Standard 340/360-2004.

300 and 360 models are tested at conditions included in ARI Standard 340/360-2004.

ENERGY STAR® certified units are designed to use less energy, help save money on utility bills, and help protect the environment.

The ENERGY STAR® Partner of the Year Award signifies that Lennox has made outstanding contributions to design energy efficient units that will lower energy bills, while meeting industry standards for comfort and indoor air quality. Lennox was the first HVAC manufacturer to win this award and has been a four-time recipient since 2003. ISO 9001 Registered Manufacturing Quality System.

Dealer Design Award

Lennox has received the Dealer Design Award from an independent panel of dealer-contractors selected by Air Conditioning, Heating & Refrigeration News ("The News") magazine. Their decision is based on "best in categories" of installation, maintenance and service as well as quality and performance.

WARRANTY

Limited five years on compressors.

Limited three years on Integrated Modular Control.

Limited one year all other covered components.

COOLING SYSTEM

Designed to maximize sensible and latent cooling performance at design conditions.

System can operate from 0°F to 125°F without any additional controls.

1 Compressors

Resiliently mounted on rubber grommets for quiet operation.

Scroll compressors on all models for high performance, reliability and quiet operation.

Compressor Crankcase Heaters

Protects against refrigerant migration that can occur during low ambient operation.

2 Thermal Expansion Valves

Assures optimal performance throughout the application range. Removable element head.

3 Filter/Driers

High capacity filter/driers protect the system from dirt and moisture.

4 High Pressure Switches

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

Low Pressure Switches

Protects the compressor from low pressure conditions such as low refrigerant charge, or low/no air flow. Automatic reset

Freezestats

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

5 Coil Construction

Copper tube construction, enhanced rippled-edge aluminum fins, flared shoulder tubing connections, silver soldered construction for improved heat transfer. Factory leak tested.

Evaporator Coil

Cross row circuiting with rifled copper tubing optimizes both sensible and latent cooling capacity. Low fin per inch count minimizes air pressure drop. Constant air volume (CAV) models have face-split evaporator coils. Variable air volume (VAV) models have row-split evaporator coils designed to keep condensate water off of an inactive part of the coil so the condensate will not re-enter the air stream.

Condenser Coil

Angled, slab design helps protect coil from possible contact or hail damage.

Condensate Drain Pan

Drain connection extends outside unit. Painted, galvanized pan with positive slope. Stainless steel drain pan available as a factory installed option.

6 Outdoor Coil Fan Motors

Thermal overload protected, totally enclosed, permanently lubricated ball bearings, shaft up, wire basket mount.

Outdoor Coil Fan

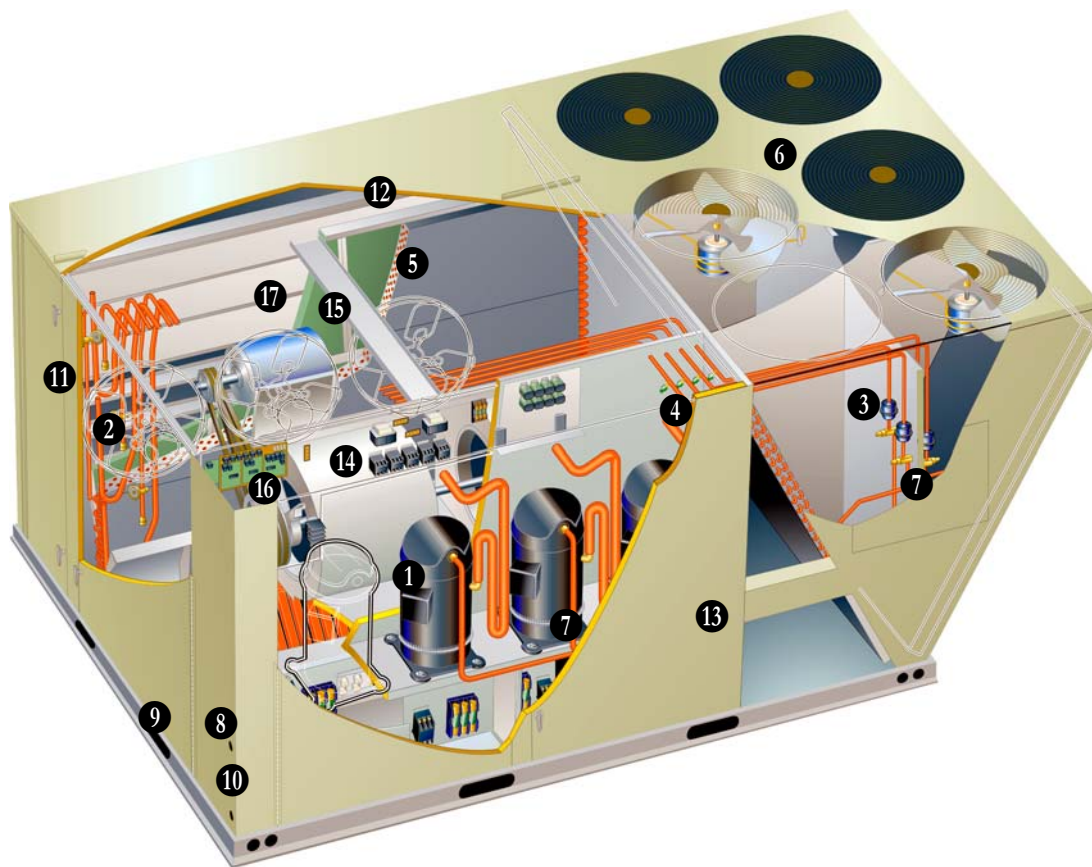
PVC coated fan guard furnished.

REQUIRED SELECTIONS

Cooling Capacity

Specify the nominal cooling capacity of the unit

FEATURES AND BENEFITS



COOLING - CONTINUED

OPTIONS / ACCESSORIES

Factory Installed

Discharge Air Temperature Sensor

Sensor sends information to the IMC to cycle up to 4 stages of heating or cooling to maintain the discharge air setpoints for heating or cooling. Optional for CAV units (single zone or bypass zoning control). Automatically furnished with all Variable Air Volume (VAV) units. Sensor is shipped with the unit for remote field installation in the supply duct.

7 Service Valves

Fully serviceable brass valves installed in discharge & liquid lines.

Stainless Steel Condensate Drain Pan

Factory installed

Factory or Field Installed

Condensate Drain Trap

Field installed only, may be factory enclosed to ship with unit. Available in copper or PVC.

Field Installed

Drain Pan Overflow Switch

Monitors condensate level in drain pan, shuts down unit if drain becomes clogged.

ELECTRICAL

REQUIRED SELECTIONS

Voltage Choice

Specify 208/230V, 460V or 575V 3-phase-60hz when ordering base unit.

OPTIONS/ACCESSORIES

Factory Installed

Circuit Breakers up to 250 Amp

HACR circuit breaker without power distribution lugs. Accessible from outside of unit, spring-loaded weatherproof cover furnished. Main power to the unit is field connected to the circuit breaker which allows all power to be shutoff for service. Circuit breaker is sized to the unit maximum overcurrent protection (MOCP) size.

Phase Monitor

Protects unit against premature equipment failure caused by phase loss, phase reversal, phase unbalance, undervoltage and overvoltage.

Factory or Field Installed

Electric Heat

Helix wound nichrome elements, time delay for element staging, individual element limit controls, wiring harness, may be two-stage controlled. When electric heat is factory installed, all required components are included. The following must be ordered extra when field installed electric heat is used: Unit Fuse Block and Electric Heat Control Module (provides two-stage control of electric heat for 45 kW or more of electric heat).

8 Disconnect Switch up to 250 Amp

Accessible from outside of unit, spring loaded weatherproof cover furnished. Main power to the unit is field connected to the disconnect which allows all power to be shut off for service. See Electrical / Electric Heat Data tables for ordering information, Pages NO TAG-33

GFI Service Outlets (2)

115v ground fault circuit interrupter (GFCI) type, field wired.

CABINET

Construction

9 Heavy-gauge steel panels and full perimeter heavy-gauge galvanized steel base rail provides structural integrity for transportation, handling, and installation.

Base rails have rigging holes. Three sides of the base rail have fork slots. Raised edges around duct and power entry openings in the bottom of the unit provide additional protection against water entering the building.

Air-Flow Choice

Units are available in down-flow (vertical) or horizontal return air flow configuration.

Horizontal air flow requires Horizontal Roof Curb.

Horizontal Return Air Panel Kit is also required if converting a down-flow configured unit to horizontal air flow.

10 Power Entry

Electrical lines can be brought through the unit base or through horizontal access knock-outs.

FEATURES / BENEFITS

CABINET - CONTINUED

11 Exterior Panels

Constructed of heavy-gauge, galvanized steel with a two-layer enamel paint finish.

12 Insulation

All panels adjacent to conditioned air are fully insulated with non-hygroscopic fiberglass insulation.

Unit base is fully insulated. The insulation also serves as an air seal to the roof curb, eliminating the need to add a seal during installation.

13 Access Panels

Hinged access panels are provided for 2 compressor/controls/heating areas, blower access and air filter/economizer access. All panels have seals and quarter-turn latching handles to provide a tight air and water seal.

REQUIRED SELECTIONS

Air Flow Configuration

Specify horizontal or down-flow.

OPTIONS / ACCESSORIES

Factory Installed

Corrosion Protection

Polymeric epoxy coating that is deposited by electrical transport (electrophoresis), using a process known as electrocoat (e-coat). Available for enhanced coil corrosion protection. Factory installed on the condenser coil, evaporator coil, or both.

Field Installed

Coil Guards

Painted, galvanized steel wire guards to protect outdoor coil. Not used with Hail Guards.

Grille Guards

Protects the space between outdoor coils and main cabinet.

Hail Guards

Constructed of heavy gauge steel, painted to match cabinet, helps protect outdoor coils from hail damage. Not used with Coil Guards.

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.

14 BLOWER

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

Motor

Overload protected, equipped with ball bearings.

Belt drive motors are offered 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.

Supply Air Blower

Forward curved blades, blower wheel is statically and dynamically balanced.

Belt drive motors with adjustable pulley for speed change on CAV units.

Blower assembly slides out of unit for servicing.

Grease fittings furnished.

REQUIRED SELECTIONS

Supply Air Blower

Specify Constant Air Volume (CAV) or Variable Air Volume (VAV). Order Standard or High Efficiency Blower motor (See Blower Data Table for specifications).

NOTE - 575V VAV models are only available with high efficiency blower motors.

Order one drive kit, see Drive Kit Specifications Table.

OPTIONS / ACCESSORIES

Factory Installed

Supply Static Transducer

Transducer sends information to the IMC to control VFD blower speed. Automatically furnished with all VAV units. Transducer is shipped with the unit for remote field installation in the supply duct.

Supply VFD Blower Bypass Control

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

Field Installed

Supply Static Limit Switch

Field installed manual reset switch for supply static high pressure limit. Prevents exceeding pressure limit in supply air duct. Optional Mounting Kit includes tubing and adaptors.

INDOOR AIR QUALITY

15 Air Filters

Disposable 2 inch filters furnished as standard.

OPTIONS / ACCESSORIES

Factory or Field Installed

Healthy Climate® High Efficiency Air Filters

Disposable MERV 11 (Minimum Efficiency Reporting Value based on ASHRAE 52.2) efficiency 2 inch pleated filters.

Field Installed

Healthy Climate® High Efficiency Air Filters

Disposable MERV 15 (Minimum Efficiency Reporting Value based on ASHRAE 52.2) efficiency 2 inch pleated filters.

Healthy Climate® UVC Germicidal Lamps

Germicidal lamps emit ultra-violet (UV-C) energy, which has been proven to be effective in reducing microbes such as viruses, bacteria, yeasts, and molds. This process either destroys the organism or controls its ability to reproduce.

UV-C energy greatly reduces the growth and proliferation of mold and other bioaerosols (bacteria and viruses) on illuminated surfaces (particularly coil and drain pan).

Lamps are field installed in the blower/evaporator coil section.

All necessary hardware for installation is included.

Lamps operate on 208/230V power supply. Step-down transformer furnished on models used with 460V and 575V rooftop units.

Magnetic safety interlock terminates power when access panels are removed.

Approved by ETL.

Indoor Air Quality (CO₂) Sensor

Monitors CO₂ levels, reports to IMC board which adjusts economizer dampers as needed.

SERVICEABILITY

Designed to streamline general maintenance and decrease troubleshooting time.

Diagnostics

IMC diagnostic codes pinpoint problems, minimizing troubleshooting time.

Marked & Color-Coded Wiring

All electrical wiring is color-coded and marked to identify which components it is connecting.

Electrical Plugs

Positive connection electrical plugs are used to connect common accessories or maintenance parts for easy removal or installation.

Tool-less, Hinged Access Panels

Large access panels are hinged and have quarter-turn, latching handles for quick and easy access to maintenance areas.

Filter access panels are hinged for easy access to the filters.

Blower Access

Blower assembly slides out of the unit for easy access.

Coil Cleaning

Slab condenser coils allow easier cleaning.

FEATURES / BENEFITS

SERVICEABILITY - CONTINUED

Standard Components

A large number of common maintenance parts are standard throughout the entire range of sizes (3-30 tons), reducing the need to carry a lot of different parts to the job or in inventory.

Compressor Compartment

Compressors are located near the perimeter of the unit for easier access. Compressors are isolated from the condenser air flow allowing system operation checks to be done without changing the air flow across the outdoor coils.

Thermal Expansion Valves

Thermal expansion valves are located near the perimeter of the unit for easier access.

Removable element head allows change out of element and bulb without removing the TXV.

Service Valves (optional)

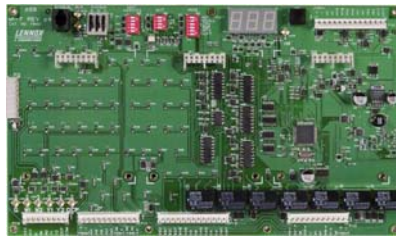
Optional factory installed liquid and discharge service valves allow refrigerant to be isolated to the high side for service work on the low side of the refrigeration system.

Electric Heaters (optional)

Optional electric heaters are accessed through the heating access panel. Heaters can be removed if necessary.

CONTROLS

16 INTELLIGENT UNIT CONTROLLER



The Integrated Modular Control (IMC) is a solid-state microprocessor-based control board that provides flexible control of all unit functions.

All control voltage is provided via a 24V (secondary) transformer with built-in circuit breaker protection.

Built-in functions include:

Blower On/Off Delay - Adjustable time delay between blower on and off.

Blower Air Delivery Options - Three air delivery options; single zone CAV, bypass zoning with bypass dampers, and modulating VAV with VFD.

Built-in Control Parameter Defaults - No programming required for standard CAV models.

Compressor Time-Off Delay - Adjustable time delay between compressor shutoff and start up.

DDC Compatible - Various third party DDC controllers can be factory or field installed. Refer to the Unit Controllers section for details.

Dirty Filter Switch Input - When a Dirty Filter Switch is installed, the IMC will signal when the indoor blower static pressure increases, indicating a dirty filter condition. Switch is optional and can be factory or field installed.

Discharge Air Temperature Control - The IMC will cycle up to 4 stages of heating or cooling to maintain the discharge air setpoints for heating or cooling. Optional for CAV units (single zone or bypass zoning control). Sensor is automatically furnished with all Variable Air Volume (VAV) units. Sensor is shipped with the unit for remote field installation in the supply duct.

Display/Sensor Readout - Displays control parameters, diagnostic codes, and sensor readings. The IMC unit controller displays temperature readings from return air, supply air, and outdoor air sensors that are furnished as standard on all L Series units. IMC will also display readings from optional sensors such as zone sensors, CO₂ sensors or relative humidity sensors.

Economizer Control Choice - The economizer is controlled by an add-on board to the IMC. The economizer control board has several choices for controlling the economizer. See Economizer / Outdoor Air / Exhaust Options.

Fresh Air Tempering - Provides heating and cooling as needed to maintain the supply air temperature within a comfort range, regardless of the thermostat demand. Sensor ships with unit but must be field installed in the supply air duct. Requires change to IMC (ECTO) parameter in the field to activate this mode of operation.

Extensive Unit Diagnostics - The IMC monitors all sensors and functions related to unit operation to provide critical information. The IMC will display detailed diagnostic information with over 90 diagnostic codes to pinpoint any problems and reduce troubleshooting time. All diagnostic codes are listed inside control access panel for easy reference.

Exhaust Fan Control Modes - Fans controlled by fresh air damper position (non-VFD power exhaust) or building static differential pressure transducer.

Permanent Diagnostic Code Storage - Maintains diagnostic codes through a power failure.

Field Changeable Control Parameters - Over 200 different control parameters allow customization of the unit operation by changing delays, cooling stages, deadbands, and setpoints.

Indoor Air Quality Input - The IMC is Demand Control Ventilation ready from the factory (optional field installed CO₂ sensor required). Two modes of operation are available: setpoint and proportional.

1 - Setpoint - Opens the economizer dampers to full position when CO₂ setpoint level is reached.

2 - Proportional - Opens the dampers at the first set point and gradually increases it as the CO₂ level increases until the second setpoint is reached.

Low Ambient Controls - Allows unit cooling operation down to 0°F.

Minimum Compressor Run Time - Ensures proper oil return to the compressor.

Network Capable - The IMC can be daisy chained to other L Series units or L Connection® Network controllers using twisted pair wire.

Night Setback Mode - Adjusts setpoints, closes outdoor air dampers and operates the blower on demand, may be customized for special requirements.

Return Air Temperature Limit Control - Allows the user to override the demands based upon the return air temperature during either heating or cooling operation. Helps protect against abnormal operating conditions in the event of a room sensor or thermostat failure.

Safety Switch Input - Normally-closed digital input allows the IMC to respond to a external safety switch trip (phase protector, low voltage, etc.) shutting down unit operation.

FEATURES AND BENEFITS

CONTROLS - CONTINUED

INTELLIGENT UNIT CONTROLLER CONTINUED

Service Relay Output - Digital output can indicate a critical error has occurred to an external control device. Can also be configured to energize based on relative humidity, indoor air quality, outdoor air temperature or unit operation.

Smoke Alarm Mode - Control board has four choices for responding to a smoke alarm.

1 - Unit Off - unit will turn off.

2 - Positive Pressure - blower is energized, exhaust fan is de energized, and the outdoor air dampers are opened.

3 - Negative Pressure - blower is energized, exhaust fan is energized, and the outdoor air dampers are closed.

4 - Purge - blower is energized, exhaust fan is energized, and the outdoor air dampers are opened.

Staging - 2 heat/2 cool. Capable of up to 4 heat/4 cool with zone sensor or third party DDC control system.

"Strike Three" Protection - Ends cooling or heating operation when any of the following occurs three times (adjustable) within a thermostat cycle: low pressure trip, high pressure trip, heat limit trip, or freeze-stat trip.

Gas Reheat - Control parameter option that allows simultaneous heating and cooling operation on CAV gas units for controlling humidity for process air applications such as supermarkets. Field installed relative humidity sensor or dehumidistat can be used.

On-Demand Dehumidification

Monitors and controls condenser hot gas bypass operation with Humiditrol option. Prioritizes heat and cool demand with dehumidification demand. Reheat demand can be enabled by digital input or a field installed relative humidity sensor can be used. CAV models only.

Thermostat Bounce Delay -

Protects compressor from short cycling when mechanical thermostat is used.

Warm-up Mode Delay - Adjustable time that the economizer dampers are kept in the closed position during morning warm-up.

On-Board User Interface Push

button - DIP switches used with three-digit display readout for field adjustment of control parameters. LED indicators for L Connection Network (transmit and receive) and for each thermostat input.

PC Interface - PC with optional Unit Controller software may be used to field or remotely adjust parameters, read alarms, or display unit status.

VAV Control - Supports variable air volume (VAV) units with variable frequency drive or constant air volume units with bypass zoning control system. Constant air volume bypass zoning control units require add-on control board.

Zone Sensor Operation - Controls zone temperature with up to 4 stages of heating or cooling with optional zone sensor.

OPTIONS / ACCESSORIES

Factory or Field Installed Blower Proving Switch

Monitors blower operation, shuts down unit if blower fails. Factory installed.

Dirty Filter Switch

Senses static pressure increase indicating dirty filter condition.

Fresh Air Tempering

Provides heating and cooling as needed to maintain the supply air temperature within a comfort range, regardless of the thermostat demand. Sensor ships with unit but must be field installed in the supply air duct. Requires change to Integrated Modular Control (IMC) (ECTO) parameter in the field to activate this mode of operation.

Smoke Detector

Photoelectric type, installed in supply air section or return air section or both sections.

Interoperability via BACnet® or LonTalk® Protocols

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

Commercial Control Systems L Connection® Network

Complete building automation control system for single or multi-zone applications. Options include local interface, software for local or remote communication, and hardware for networking other control functions. See L Connection Network Engineering Handbook Bulletin for details.

Aftermarket DDC

Novar® Unit Controller and options.

Thermostats

Control system and thermostat options. Aftermarket unit controller options. See page 36.

OPTIONS / ACCESSORIES

CEILING DIFFUSERS

Field Installed

Ceiling Diffusers (Flush or Step-Down)

Aluminum grilles, large center grille, insulated diffuser box with flanges, hanging rings furnished, interior transition (even air flow), internally sealed (prevents recirculation), 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.

ROOF CURBS

Field Installed

Nailer strip furnished, mates to unit, shipped knocked down.

Clip Curb Full Perimeter Down-Flow

Available in 14 inch, 18 inch and 24 inch heights.

Standard Down-Flow

US National Roofing Contractors Approved, available in 14 inch and 24 inch heights. Standard and full perimeter available.

Horizontal

Converts unit from down-flow to horizontal (side) air flow, return air is on unit, supply air is on curb, see Dimension Drawings. Curbs for rooftop applications meet National Roofing Code requirements. Requires Horizontal Return Air Panel. Available in 26 inch, 30 inch, 37 inch and 41 inch heights. Optional Insulation Kit is available to help prevent sweating.

ECONOMIZER/OUTDOOR AIR/EXHAUST

Factory or Field Installed

17 Economizer

Parallel gear driven action return air and outdoor air dampers, plug-in connections to unit, nylon bearings, neoprene seals, 24-volt fully modulating spring return motor, adjustable minimum damper position, damper assembly slides in unit, outdoor air hood must be ordered separately, optional down-flow barometric relief dampers available, choice of economizer controls. The IMC add-on board for economizer control is included with the economizer. Control board has four choices for controlling the economizer (DIP switch selections).

1 - Differential Sensible Control - Factory setting. Uses the outdoor air and return air sensors that are furnished with the unit. The IMC compares the outdoor air and return air and using setpoints, enables the economizer when the outdoor air temperature is below the configured setpoint and cooler than return air.

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

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.

2 - Global Control - The IMC communicates with a DDC system with one global sensor (enthalpy or sensible) to determine whether outside air is suitable for free cooling on all units connected to the control system. Sensor must be field provided.

3 - Single Enthalpy Control - Outdoor air enthalpy sensor enables economizer if the outdoor enthalpy is less than the setpoint of the board. Factory installed.

4 - Differential Enthalpy Control - Two solid-state enthalpy sensors allow the economizer control board to select between outdoor air or return air, whichever has lower enthalpy. Factory installed.

Outdoor Air CFM Control

Maintains constant outdoor air CFM levels for VAV units featuring variable frequency drives on the supply fan and varying unit airflows. Using information from a velocity sensor located in the units' outdoor air section, the Integrated Modular Controller changes the economizer position to help minimize the effect of supply fan speed changes on outdoor air CFM levels. Setpoint for outdoor air CFM is established by field testing. Requires Integrated Modular Controller hardware version M1-7 and firmware version 5.10 or higher.

NOTE - Not available with Demand Control Ventilation (CO₂Sensor).

Outdoor Air Dampers (Manual or Automatic)

Linked mechanical dampers, 0 to 25% (fixed) outdoor air adjustable, installs in unit, outdoor air hood must be ordered separately. Motorized model features fully modulating spring return damper motor with plug-in connection. Manual model features a slide damper.

Minimum mixed air temperature in heating mode 30°F. Maximum mixed air temperature in cooling mode: 90°F.

Outdoor Air Hood

Required with LAREMD Economizer, LAOAD and LAOADM Outdoor Air Damper Sections, cleanable aluminum mesh fresh air filters furnished.

Down-Flow Barometric Relief Dampers

Allows relief of excess air, aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, bird screen furnished. Dampers are required with Standard Static Power Exhaust Fans. Down-Flow Barometric Relief Damper Hood is available and must be ordered extra.

Field Installed

Down-Flow Barometric Relief Damper Hood

Field installed only. Use with Barometric Relief Dampers.

Horizontal Barometric Relief Dampers

Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, field installed in return air duct, bird screen furnished.

Factory or Field Installed

Standard Static Power Exhaust Fans

Three, 1/3 hp motors with 20 in., five blade propeller-type fans with a total power input of 1125 Watts and a total air volume of 12,800 cfm at 0 in. w.g.

Motor is inherently protected and enclosed for maximum protection from weather, dust and corrosion. Installs internal to unit for down-flow applications only with economizer option, provides exhaust air pressure relief, interlocked to run when return air dampers are closed and supply air blower is operating, fan runs when outdoor air dampers are 50% open (adjustable), motor is overload protected, steel cabinet and hood painted to match unit, requires optional Down-flow Economizer Barometric Relief Dampers.

See Standard Static Power Exhaust Blower Tables.

High Static Power Exhaust Fans

Choice of 50% (two, 2 hp motors) or 100% (three, 2 hp motors) centrifugal-type power exhaust. Overload and sub-fuse protected, equipped with ball bearings. Forward curved blades, blower wheel is statically and dynamically balanced.

Constant volume high static power exhaust fans have adjustable pulleys for speed adjustments and are controlled by damper position.

Variable air volume units (with variable frequency drive) have 100% capacity and can be ordered with an optional VFD bypass. Fans feature solid-state analog pressure transducer control which senses differential pressure between conditioned space and outdoor air to regulate fan speed. See Power Exhaust Blower Tables.

See High Static Power Exhaust Blower Tables.

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

Power Exhaust Control Options:

Damper Position Control

IMC controls exhaust fan based on economizer damper position. For Standard or High Static Power Exhaust (without VFD) Fans only.

Differential Pressure Transducer

Differential pressure transducer compares atmospheric pressure to conditioned space static pressure for controlling exhaust fan. Transducer is factory installed in the power exhaust section. For High Static Power Exhaust (with VFD) fans only.

OPTIONS / ACCESSORIES

Item			Catalog No.	248	300H	360
COOLING SYSTEM						
Condensate Drain Trap	PVC - C1TRAP20AD2	76W26	⊗	⊗	⊗	
	Copper - C1TRAP10AD2	76W27	⊗	⊗	⊗	
Corrosion Protection		Factory	○	○	○	
Drain Pan Overflow Switch		60W18	X	X	X	
Efficiency	High	Factory	○	○	○	
Refrigerant Type	R-410A	Factory	○	○	○	
Service Valves		Factory	○	○	○	
Stainless Steel Condensate Drain Pan		Factory	○	○	○	
BLOWER - SUPPLY AIR						
Constant Air Volume	5 hp Standard Efficiency	Factory	○	○	○	
	7.5 hp Standard Efficiency	Factory	○	○	○	
	10 hp Standard Efficiency	Factory	○	○	○	
Variable Air Volume with Variable Frequency Drive	5 hp Standard Efficiency	Factory	○	○	○	
	7.5 hp Standard Efficiency	Factory	○	○	○	
	10 hp Standard Efficiency	Factory	○	○	○	
	Supply VFD Blower Bypass (VAV units w/VFD only)	Factory	○	○	○	
CABINET						
Coil Guards		43W47	x	x	x	
Grille Guards		86K30	x	x	x	
Hail Guards		43W46	x	x	x	
Horizontal Return Air Panel Kit		38K48	x	x	x	
CONTROLS						
Blower Proving Switch	C0SWCH01AE1-	30K49	⊗	⊗	⊗	
Commercial Controls	L Connection® Building Automation System	- - -	⊗	⊗	⊗	
	Novar® ETM-2051 Unit Controller	71M58	⊗	⊗	⊗	
Dirty Filter Switch	C0SWCH00AE1-	30K48	⊗	⊗	⊗	
Discharge Air Temperature Sensor		Factory	○	○	○	
Fresh Air Tempering	C0SND03AE-1	45L78	⊗	⊗	⊗	
Smoke Detector	Supply - LTASASDK10/36	70K87	⊗	⊗	⊗	
	Return - LTARASDK10/30	70K86	⊗	⊗	⊗	
Supply Static Limit Switch	C0SNSR11AE1	79M80	x	x	x	
	Mounting Kit - C0SNSR12AE1	79M81	x	x	x	
Supply Static Transducer	C0SNSR20AE1	78M19	x	x	x	

NOTE - The catalog and model numbers that appear here are for ordering field installed accessories only.

⊗ - Field Installed or Configure to Order (factory installed)

○ - Configure to Order (Factory Installed)

X - Field Installed.

OPTIONS / ACCESSORIES

Item			Catalog No.	248	300H	360
INDOOR AIR QUALITY						
Air Filters						
Healthy Climate® High Efficiency Air Filters 20 x 20 x 2 - order 12 per unit	MERV 11 - C1FTLR20D-1-	97L88	⊗	⊗	⊗	
	MERV 15 - C1FLTR50D-1-	28W06	x	x	x	
Germicidal Lamps						
Healthy Climate® UVC Germicidal Lamps	208/230V - C1UVCL10D	X7523	x	x	x	
	460V - C1UVCL10D	X7528	x	x	x	
	575V - C1UVCL10D	X7533	x	x	x	
Indoor Air Quality (CO ₂) Sensors						
Wall-Mount - Off-White Plastic Cover With LCD Display	C0SNSR50AE1L	77N39	x	x	x	
Wall-Mount - Off-White Plastic Cover, No Display	C0SNSR50AE1L	87N53	x	x	x	
Black Plastic Case With LCD Display, rated for plenum mounting	C0SNSR50AE1L	87N52	x	x	x	
Wall-Mount - Black Plastic Case, No Display, rated for plenum mounting	C0SNSR50AE1L	87N54	x	x	x	
CO ₂ Sensor Duct Mounting Kit	C0MISC19AE1-	85L43	x	x	x	
Aspiration Box For Duct Mounting Non-Plenum Rated CO2 Sensors (87N53 or 77N39)	C0MISC16AE1-	90N43	x	x	x	
ELECTRIC HEAT						
30 kW	208/230V-3ph - order one each - EHA360-15	EHA360S-15	99J22	⊗	⊗	⊗
			99J23			
	460V-3ph - order one each - EHA360-15	EHA360S-15	99J24	⊗	⊗	⊗
			99J25			
	575V-3ph - order one each - EHA360-15	EHA360S-15	99J26	⊗	⊗	⊗
45 kW	208/230V-3ph - order two each - EHA360-22.5		99J28	⊗	⊗	⊗
			99J29	⊗	⊗	⊗
			99J30	⊗	⊗	⊗
60 kW	208/230V-3ph - order two each - EHA150-30		99J07	⊗	⊗	⊗
			99J08	⊗	⊗	⊗
			99J09	⊗	⊗	⊗
90 kW	208/230V-3ph - order two each - EHA150-45		99J10	⊗	⊗	⊗
			99J11	⊗	⊗	⊗
			99J12	⊗	⊗	⊗
120 kW	208/230V-3ph - order two each - EHA150-60		99J13	⊗	⊗	⊗
			99J14	⊗	⊗	⊗
			99J15	⊗	⊗	⊗
ELECTRIC HEAT ACCESSORIES/OPTIONS - See Electrical / Electric Heat Tables for selection						
LTB2 Terminal Block	175 Amp -	30K75	30K75	⊗	⊗	⊗
	335 Amp -	30K76	30K76	⊗	⊗	⊗
Electric Heat Control Module	208/230V-3ph	15K13	15K13	⊗	⊗	⊗
	460V-3ph	15K92	15K92	⊗	⊗	⊗
	575V-3ph	15K93	15K93	⊗	⊗	⊗
Unit Fuse Block - See Electrical / Electric Heat Tables for selection				⊗	⊗	⊗
ELECTRICAL						
Voltage 60 hz	208/230V - 3 phase	Factory	○	○	○	
	460V - 3 phase	Factory	○	○	○	
	575V - 3 phase	Factory	○	○	○	
HACR Circuit Breakers		Factory	○	○	○	
Disconnect Switch	80A	84M13	⊗	⊗	⊗	
See Electrical / Electric Heat Tables for selection	150A	84M14	⊗	⊗	⊗	
	250A	84M15	⊗	⊗	⊗	
GFI Service Outlets	LTAGFIK10/15	74M70	⊗	⊗	⊗	
Phase Monitor		Factory	○	○	○	

NOTE - The catalog and model numbers that appear here are for ordering field installed accessories only.

⊗ - Field Installed or Configure to Order (factory installed)

○ - Configure to Order (Factory Installed)

X - Field Installed.

OPTIONS / ACCESSORIES

Item			Catalog No.	248	300H	360
ECONOMIZER						
Economizer						
Economizer (Order Hood Separately)		LAREMD30/36	33K72	⊗	⊗	⊗
Economizer Controls						
Differential Enthalpy		C1SNSR07AE	86M32	⊗	⊗	⊗
Single Enthalpy		C1SNSR06AE	86M33	⊗	⊗	⊗
Global, Enthalpy		Sensor Field Provided	Factory	○	○	○
Differential Sensible		Furnished	Factory	○	○	○
Outdoor Air CFM Control		C0SNSR23DE1	98M61	⊗	⊗	⊗
Barometric Relief						
Down-Flow Barometric Relief Dampers (Order Hood Separately)		LAGED30/36	33K77	⊗	⊗	⊗
Hood for Down-Flow LAGED		LAGEH30H/36	88K81	⊗	⊗	⊗
Horizontal Barometric Relief Dampers (Hood Furnished)		LAGEDH30/36	33K78	⊗	⊗	⊗
OUTDOOR AIR						
Outdoor Air Dampers						
Damper Section (down-flow)		LAOADM30/36	33K70	⊗	⊗	⊗
Motorized (Order Hood Separately)						
Damper Section (down-flow) - Manual (Order Hood Separately)		LAOAD30/36	33K69	⊗	⊗	⊗
Outdoor Air Hoods						
Outdoor Air Hood (down-flow)			31W45	⊗	⊗	⊗
Number and size of filters - (5) 16 x 25 x 1 in.						
OUTDOOR AIR						
Power Exhaust Fans (Down-Flow Applications Only)						
Standard		208/230V - LAPEF30/36	33K73	⊗	⊗	⊗
Static		460V - LAPEF30/36	33K74	⊗	⊗	⊗
		575V - LAPEF30/36	33K75	⊗	⊗	⊗
¹ High Static	50%	208/230V - Drive Kit #1 (405-533 rpm) - LAPEB30/36AY	83M83	⊗	⊗	⊗
		208/230V - Drive Kit #2 (531-731 rpm) - LAPEB30/36BY	84M34	⊗	⊗	⊗
		208/230V - Drive Kit #3 (731-932 rpm) - LAPEB30/36CY	84M35	⊗	⊗	⊗
		460V - Drive Kit #1 (405-533 rpm) - LAPEB30/36AG	83M84	⊗	⊗	⊗
		460V - Drive Kit #2 (531-731 rpm) - LAPEB30/36BG	84M36	⊗	⊗	⊗
		460V - Drive Kit #3 (731-932 rpm) - LAPEB30/36CG	84M37	⊗	⊗	⊗
		575V - Drive Kit #1 (405-533 rpm) - LAPEB30/36AJ	83M85	⊗	⊗	⊗
		575V - Drive Kit #2 (531-731 rpm) - LAPEB30/36BJ	84M38	⊗	⊗	⊗
		575V - Drive Kit #3 (731-932 rpm) - LAPEB30/36CJ	84M39	⊗	⊗	⊗
	100%	208/230V - Drive Kit #1 (406-533 rpm) - LAPEB30/36DY	83M86	⊗	⊗	⊗
		208/230V - Drive Kit #2 (531-731 rpm) - LAPEB30/36EY	84M40	⊗	⊗	⊗
		208/230V - Drive Kit #3 (731-932 rpm) - LAPEB30/36FY	84M41	⊗	⊗	⊗
		460V - Drive Kit #1 (406-533 rpm) - LAPEB30/36DG	83M87	⊗	⊗	⊗
		460V - Drive Kit #2 (531-731 rpm) - LAPEB30/36EG	84M42	⊗	⊗	⊗
		460V - Drive Kit #3 (731-932 rpm) - LAPEB30/36FG	84M43	⊗	⊗	⊗
		575V - Drive Kit #1 (406-533 rpm) - LAPEB30/36DJ	83M88	⊗	⊗	⊗
		575V - Drive Kit #2 (531-731 rpm) - LAPEB30/36EJ	84M44	⊗	⊗	⊗
		575V - Drive Kit #3 (731-932 rpm) - LAPEB30/36FJ	84M45	⊗	⊗	⊗
	100% with VFD	208/230V - LAPEV30/36GY	83M89	⊗	⊗	⊗
		460V - LAPEV30/36GG	83M90	⊗	⊗	⊗
		575V - LAPEV30/36GJ	83M91	⊗	⊗	⊗
	100% with VFD and Bypass	208/230V - LAPEV30/36HY	83M92	⊗	⊗	⊗
		460V - LAPEV30/36HG	83M93	⊗	⊗	⊗
		575V - LAPEV30/36HJ	83M94	⊗	⊗	⊗

NOTE - The catalog and model numbers that appear here are for ordering field installed accessories only.

⊗ - Field Installed or Configure to Order (factory installed)

○ - Configure to Order (Factory Installed)

X - Field Installed.

¹ High Static Power Exhaust is field installed but must be ordered at the same time as the rooftop unit so that the unit can be factory configured for this option.

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No.		
			248	300H	360
ROOF CURBS - DOWNFLOW					
Clip Curbs - Full Perimeter					
14 in. height	LARMF30/36S-14	54K58	X	X	X
18 in. height	LARMF30/36S-18	54K59	X	X	X
24 in. height	LARMF30/36S-24	54K60	X	X	X
Standard Curbs					
14 in. height	LARMF18/36-14	16K87	X	X	X
24 in. height	LARMF18/36-24	16K88	X	X	X
Standard Curbs - Full Perimeter					
14 in. height	S6CURB10121-	30W15	X	X	X
24 in. height	S6CURB11121-	30W16	X	X	X
ROOF CURBS - HORIZONTAL (REQUIRES HORIZONTAL AIR PANEL KIT)					
Standard Curbs					
30 in. height - rooftop applications	LARMFH30/36-30	33K79	X	X	X
41 in. height - slab applications	LARMFH30/36-41	38K54	X	X	X
Clip Curbs					
30 in. height - rooftop applications	LARMFH30/36S-30 (Canada Only)	45K71	X	X	X
41 in. height - slab applications	LARMFH30/36S-41 (Canada Only)	45K72	X	X	X
Horizontal Return Air Panel Kit (Required)		38K48	X	X	X
Insulation Kit For Standard Horizontal Curbs					
for LARMFH30/36-30		73K33	X	X	X
for LARMFH30/36-41		73K35	X	X	X
CEILING DIFFUSERS					
Step-Down - Order one	LARTD30/36	35K25	X	X	X
	LARTD30/36S (Canada Only)	45K74	X	X	X
Flush - Order one	LAFD30/36	35K24	X	X	X
	LAFD30/36S (Canada Only)	45K75	X	X	X
Transitions (Supply and Return) - Order one	LASRT30/36	33K80	X	X	X

NOTE - Catalog and model numbers shown are for ordering field installed accessories.

X - Field Installed

SPECIFICATIONS

21 TON

General Data		Nominal Tonnage (kW)	21 Ton LCA248H4B	21 Ton LCA248H4V
		Model No.	High	High
		Efficiency Type	Constant Air Volume (CAV)	Variable Air Volume (VAV)
		Blower Type		
Cooling Performance	Gross Cooling Capacity - Btuh (kW)		257,000 (75.3)	257,000 (75.3)
	¹ Net Cooling Capacity - Btuh (kW)		248,000 (72.6)	248,000 (72.6)
	ARI Rated Air Flow - cfm (L/s)		8,000 (3775)	8,000 (3775)
	Total Unit Power (kW)		21.2	21.2
	¹ EER (Btuh/Watt)		11.7	11.7
	² IEER (Btuh/Watt)		13.3	15.2
	Refrigerant Type		R-410A	R-410A
	Refrigerant Charge Furnished	Circuit 1	13 lbs. 0 oz. (5.90 kg)	13 lbs. 0 oz. (5.90 kg)
		Circuit 2	13 lbs. 0 oz. (5.90 kg)	13 lbs. 0 oz. (5.90 kg)
		Circuit 3	13 lbs. 0 oz. (5.90 kg)	13 lbs. 0 oz. (5.90 kg)
Circuit 4		13 lbs. 0 oz. (5.90 kg)	13 lbs. 0 oz. (5.90 kg)	
Compressor Type (no.)			Scroll (4)	Scroll (4)
Outdoor Coils	Net face area - sq. ft. (m ²) total		70.6 (6.6)	70.6 (6.6)
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)
	Number of rows		2	2
	Fins per inch (m)		20 (787)	20 (787)
Outdoor Coil Fans	Motor horsepower (W)		(6) 1/3 (249)	(6) 1/3 (249)
	Motor rpm		1075	1075
	Total Motor watts		2500	2500
	Diameter - in. (mm)		(6) 24 (610)	(6) 24 (610)
	Number of blades		3	3
	Total Air volume - cfm (L/s)		21,500 (10,145)	21,500 (10,145)
Indoor Coils	Net face area - sq. ft. (m ²) total		33.3 (3.1)	33.3 (3.1)
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)
	Number of rows		3	3
	Fins per inch (m)		14 (551)	14 (551)
	Condensate Drain - number & size		(1) 1 in. NPT coupling	
Expansion device type			Balanced Port Thermostatic Expansion Valve, removeable power head	
³ Indoor Blower and Drive Selection	Nominal motor output		5 hp (3.7 kW) - 7.5 hp (5.6 kW) - 10 hp (7.5 kW)	
	Max. usable motor output (US Only)		5.75 hp (4.3 kW) - 8.63 hp (6.4 kW) - 11.5 hp (8.6 kW)	
	Motor - Drive kit		5 hp kit #1 - 660-810 rpm kit #2 - 770-965 rpm kit #6 - 560-710 rpm 7.5 hp kit #3 - 715-880 rpm kit #4 - 770-965 rpm 10 hp kit #3 - 715-880 rpm kit #5 - 850-1045 rpm	5 hp kit #7 - 965 rpm 7.5 hp kit #8 - 965 rpm 10 hp kit #9 - 1045 rpm
	Blower wheel nominal dia. x width		(2) 18 x 15 in. (457 x 381 mm)	
Filters	Type of filter		Disposable	
	Number and size - in. (mm)		(12) 20 x 20 x 2 (508 x 508 x 51)	
Electrical characteristics			208/230V, 460V or 575V - 60 hertz - 3 phase	

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

¹ Tested at conditions included in with ARI Standard 340/360; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure.

² Integrated Energy Efficiency Ratio tested according to AHRI Standard 340/360.

³ Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

SPECIFICATIONS

25 TON

General Data		Nominal Tonnage (kW)	25 Ton LCC300H4B High Constant Air Volume (CAV)	25 Ton LCC300H4V High Variable Air Volume (VAV)
		Model No.		
		Efficiency Type		
		Blower Type		
Cooling Performance	Gross Cooling Capacity - Btuh (kW)		311,000 (91.1)	311,000 (91.1)
	¹ Net Cooling Capacity - Btuh (kW)		300,000 (87.9)	300,000 (87.9)
	ARI Rated Air Flow - cfm (L/s)		9500 (4484)	9500 (4484)
	Total Unit Power (kW)		27.3	27.3
	¹ EER (Btuh/Watt)		11.0	11.0
	² IEER (Btuh/Watt)		11.6	13.5
	Refrigerant Type		R-410A	R-410A
	Refrigerant Charge Furnished	Circuit 1	13 lbs. 0 oz. (5.9 kg)	13 lbs. 0 oz. (5.9 kg)
		Circuit 2	13 lbs. 0 oz. (5.9 kg)	13 lbs. 0 oz. (5.9 kg)
		Circuit 3	13 lbs. 0 oz. (5.9 kg)	13 lbs. 0 oz. (5.9 kg)
Circuit 4		13 lbs. 0 oz. (5.9 kg)	13 lbs. 0 oz. (5.9 kg)	
Compressor Type (no.)			Scroll (4)	Scroll (4)
Outdoor Coils	Net face area - sq. ft. (m ²) total		70.6 (6.6)	70.6 (6.6)
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)
	Number of rows		2	2
	Fins per inch (m)		20 (787)	20 (787)
Outdoor Coil Fans	Motor horsepower (W)		(6) 1/3 (249)	(6) 1/3 (249)
	Motor rpm		1075	1075
	Total Motor watts		2500	2500
	Diameter - in. (mm)		(6) 24 (610)	(6) 24 (610)
	Number of blades		3	3
	Total Air volume - cfm (L/s)		21,500 (10,145)	21,500 (10,145)
Evaporator Coils	Net face area - sq. ft. (m ²) total		33.3 (3.1)	33.3 (3.1)
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)
	Number of rows		3	3
	Fins per inch (m)		14 (551)	14 (551)
	Condensate Drain - number and size		(1) 1 in. NPT coupling	
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head	
³ Indoor Blower and Drive Selection	Nominal motor output		5 hp (3.7 kW) - 7.5 hp (5.6 kW) - 10 hp (7.5 kW)	
	Max. usable motor output (US Only)		5.75 hp (4.3 kW) - 8.63 hp (6.4 kW) - 11.5 hp (8.6 kW)	
	Motor - Drive kit		5 hp kit #1 - 660 - 810 rpm kit #2 - 770 - 965 rpm kit #6 - 560 - 710 rpm 7.5 hp kit# 3 - 715 - 880 rpm kit# 4 - 770 - 965 rpm 10 hp kit #3 - 715-880 rpm kit #5 - 850 - 1045 rpm	5 hp kit #7 - 965 rpm 7.5 hp kit #8 - 965 rpm 10 hp kit #9 - 1045 rpm
Blower wheel nominal diameter x width			(2) 18 x 15 in. (457 x 381 mm)	
Filters	Type of filter		Disposable	
	Number and size - in. (mm)		(12) 20 x 20 x 2 (508 x 508 x 51)	
Electrical characteristics			208/230V, 460V or 575V - 60 hertz - 3 phase	

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

¹ Tested at conditions included in with ARI Standard 340/360; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure.

² Integrated Energy Efficiency Ratio tested according to AHRI Standard 340/360.

³ Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of CAV motors furnished are shown. For VAV models and in Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

SPECIFICATIONS

30 TON

General Data		30 Ton	
Nominal Tonnage (kW)			
Model No.		LCC360H4B	LCC360H4V
Efficiency Type		High	High
Blower Type		Constant Air Volume (CAV)	Variable Air Volume (VAV)
Cooling Performance	Gross Cooling Capacity - Btuh (kW)	359,000 (105.1)	359,000 (105.1)
	¹ Net Cooling Capacity - Btuh (kW)	344,000 (100.7)	344,000 (100.7)
	ARI Rated Air Flow - cfm (L/s)	10,500 (4955)	10,500 (4955)
	Total Unit Power (kW)	34.1	34.1
	¹ EER (Btuh/Watt)	10.1	10.1
	² IEER (Btuh/Watt)	10.9	12.5
	Refrigerant Type	R-410A	R-410A
Refrigerant Charge Furnished	Circuit 1	13 lbs. 0 oz. (5.90 kg)	13 lbs. 0 oz. (5.90 kg)
	Circuit 2	13 lbs. 0 oz. (5.90 kg)	13 lbs. 0 oz. (5.90 kg)
	Circuit 3	13 lbs. 0 oz. (5.90 kg)	13 lbs. 0 oz. (5.90 kg)
	Circuit 4	13 lbs. 0 oz. (5.90 kg)	13 lbs. 0 oz. (5.90 kg)
Compressor Type (no.)		Scroll (4)	Scroll (4)
Outdoor Coils	Net face area - sq. ft. (m ²) total	70.6 (6.6)	70.6 (6.6)
	Tube diameter - in. (mm)	3/8 (9.5)	3/8 (9.5)
	Number of rows	2	2
	Fins per inch (m)	20 (787)	20 (787)
Outdoor Coil Fans	Motor horsepower (W)	(6) 1/3 (249)	(6) 1/3 (249)
	Motor rpm	1075	1075
	Total Motor watts	2500	2500
	Diameter - in. (mm) - No. of blades	(6) 24 (610) - 3	(6) 24 (610) - 3
	Total Air volume - cfm (L/s)	21,500 (10,145)	21,500 (10,145)
Evaporator Coils	Net face area - sq. ft. (m ²) total	33.3 (3.1)	33.3 (3.1)
	Tube diameter - in. (mm)	3/8 (9.5)	3/8 (9.5)
	Number of rows	3	3
	Fins per inch (m)	14 (551)	14 (551)
	Condensate Drain - number & size	(1) 1 in. NPT coupling	
Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head	
³ Indoor Blower and Drive Selection	Nominal motor output	5 hp (3.7 kW) - 7.5 hp (5.6 kW) - 10 hp (7.5 kW)	
	Max. usable motor output (US Only)	5.75 hp (4.3 kW) - 8.63 hp (6.4 kW) - 11.5 hp (8.6 kW)	
	Motor - Drive kit	5 hp kit #1 - 660 - 810 rpm kit #2 - 770 - 965 rpm kit #6 - 560 - 710 rpm 7.5 hp kit #3 - 715 - 880 rpm kit #4 - 770 - 965 rpm 10 hp kit #3 - 715 - 880 rpm kit #5 - 850 - 1045 rpm	5 hp kit #7 - 965 rpm 7.5 hp kit #8 - 965 rpm 10 hp kit #9 - 1045 rpm
Blower wheel nominal diameter x width		(2) 18 x 15 in. (457 x 381 mm)	
Filters	Type of filter	Disposable	
	Number and size - in. (mm)	(12) 20 x 20 x 2 (508 x 508 x 51)	
Electrical characteristics		208/230V, 460V or 575V - 60 hertz - 3 phase	

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

¹ Tested at conditions included in with ARI Standard 340/360; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure.

² Integrated Energy Efficiency Ratio tested according to AHRI Standard 340/360.

³ Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of CAV motors furnished are shown. On VAV models and 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.

COOLING RATINGS

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

21 TON HIGH EFFICIENCY (R-410A/CAV) TWO COMPRESSORS OPERATING

LCA248H4B

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	6720	3170	128.2	37.6	5.25	.54	.71	.91	123.4	36.2	6.08	.55	.74	.94	118.3	34.7	6.95	.56	.76	.97	112.9	33.1	7.91	.57	.80	1.00
	8400	3965	133.5	39.1	5.29	.59	.82	1.00	128.4	37.6	6.11	.61	.85	1.00	123.0	36.0	6.99	.63	.88	1.00	117.4	34.4	7.97	.66	.92	1.00
	10080	4760	137.6	40.3	5.33	.66	.92	1.00	132.5	38.8	6.15	.69	.95	1.00	127.2	37.3	7.03	.71	.98	1.00	121.7	35.7	7.99	.75	1.00	1.00
67°F (19°C)	6720	3170	136.6	40.0	5.31	.43	.52	.66	131.5	38.5	6.14	.43	.53	.68	126.0	36.9	7.02	.44	.54	.71	120.2	35.2	7.99	.44	.55	.74
	8400	3965	141.5	41.5	5.35	.45	.56	.77	136.0	39.9	6.17	.46	.57	.80	130.1	38.1	7.06	.46	.59	.83	123.9	36.3	8.03	.47	.62	.87
	10080	4760	144.8	42.4	5.38	.47	.63	.87	139.1	40.8	6.21	.48	.65	.91	133.0	39.0	7.09	.49	.68	.94	126.6	37.1	8.05	.50	.72	.98
71°F (22°C)	6720	3170	145.9	42.8	5.39	.33	.41	.50	140.4	41.1	6.22	.33	.42	.51	134.6	39.4	7.11	.33	.42	.52	128.3	37.6	8.07	.33	.43	.53
	8400	3965	150.7	44.2	5.43	.33	.44	.54	144.8	42.4	6.26	.33	.44	.55	138.6	40.6	7.15	.34	.45	.57	132.0	38.7	8.11	.34	.46	.59
	10080	4760	153.9	45.1	5.46	.34	.46	.59	147.8	43.3	6.29	.34	.47	.62	141.3	41.4	7.18	.35	.48	.65	134.4	39.4	8.15	.35	.49	.68

21 TON HIGH EFFICIENCY (R-410A/CAV) ALL COMPRESSORS OPERATING

LCA248H4B

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	6720	3170	247.6	72.6	13.94	.66	.82	.98	236.2	69.2	15.86	.68	.84	1.00	223.6	65.5	18.06	.69	.88	1.00	210.2	61.6	20.50	.71	.92	1.00
	8400	3965	257.2	75.4	14.02	.72	.92	1.00	245.4	71.9	15.98	.74	.94	1.00	232.8	68.2	18.14	.77	.97	1.00	219.8	64.4	20.58	.80	1.00	1.00
	10080	4760	266.0	78.0	14.10	.78	.99	1.00	254.4	74.6	16.02	.81	1.00	1.00	242.4	71.0	18.22	.84	1.00	1.00	229.4	67.2	20.66	.88	1.00	1.00
67°F (19°C)	6720	3170	263.4	77.2	14.08	.52	.64	.78	251.2	73.6	16.02	.53	.65	.80	237.8	69.7	18.18	.53	.67	.83	223.2	65.4	20.62	.55	.69	.87
	8400	3965	272.0	79.7	14.16	.55	.69	.87	259.0	75.9	16.10	.56	.71	.90	244.8	71.7	18.26	.57	.74	.94	229.8	67.3	20.70	.59	.77	.98
	10080	4760	278.2	81.5	14.22	.58	.76	.96	264.6	77.5	16.16	.59	.78	.98	250.0	73.3	18.30	.61	.82	1.00	234.6	68.8	20.74	.63	.86	1.00
71°F (22°C)	6720	3170	281.4	82.5	14.24	.39	.50	.62	268.2	78.6	16.18	.39	.51	.63	253.8	74.4	18.36	.39	.52	.65	238.4	69.9	20.80	.40	.53	.67
	8400	3965	289.8	84.9	14.34	.40	.54	.67	275.6	80.8	16.26	.40	.55	.69	260.8	76.4	18.42	.41	.56	.71	244.4	71.6	20.86	.41	.58	.74
	10080	4760	295.4	86.6	14.40	.41	.57	.73	280.8	82.3	16.34	.42	.58	.76	265.2	77.7	18.48	.42	.60	.79	248.4	72.8	20.90	.43	.62	.83

21 TON HIGH EFFICIENCY (R-410A/VAV) ONE COMPRESSOR OPERATING

LCA248H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	1680	795	50.2	14.7	2.85	.63	.71	.79	48.3	14.2	3.30	.63	.72	.80	46.3	13.6	3.78	.64	.73	.81	44.1	12.9	4.31	.64	.74	.83
	2100	990	53.7	15.7	2.87	.64	.74	.83	51.6	15.1	3.32	.65	.75	.85	49.4	14.5	3.80	.66	.76	.86	46.8	13.7	4.34	.67	.78	.88
	2520	1190	56.3	16.5	2.89	.66	.77	.88	54.0	15.8	3.34	.67	.78	.89	51.5	15.1	3.82	.68	.80	.91	48.8	14.3	4.35	.69	.82	.93
67°F (19°C)	1680	795	53.9	15.8	2.87	.52	.60	.68	52.0	15.2	3.32	.53	.60	.68	49.8	14.6	3.81	.53	.61	.69	47.4	13.9	4.34	.53	.61	.70
	2100	990	57.7	16.9	2.90	.53	.62	.70	55.4	16.2	3.35	.53	.62	.71	53.0	15.5	3.84	.53	.63	.72	50.3	14.7	4.37	.54	.64	.74
	2520	1190	60.4	17.7	2.92	.54	.64	.74	57.9	17.0	3.37	.54	.64	.75	55.2	16.2	3.86	.54	.65	.76	52.3	15.3	4.39	.55	.67	.78
71°F (22°C)	1680	795	58.0	17.0	2.90	.43	.50	.57	55.9	16.4	3.36	.43	.50	.57	53.5	15.7	3.85	.42	.50	.58	51.0	14.9	4.38	.42	.50	.58
	2100	990	61.9	18.1	2.93	.42	.50	.59	59.5	17.4	3.39	.42	.51	.59	56.8	16.6	3.88	.42	.51	.60	53.9	15.8	4.41	.42	.51	.61
	2520	1190	64.7	19.0	2.95	.42	.51	.61	62.0	18.2	3.41	.42	.52	.61	59.1	17.3	3.90	.42	.52	.63	56.0	16.4	4.43	.42	.53	.64

21 TON HIGH EFFICIENCY (R-410A/VAV) TWO COMPRESSORS OPERATING

LCA248H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	3570	1685	128.2	37.6	5.46	.75	.85	.95	123.8	36.3	6.31	.76	.86	.96	119.0	34.9	7.24	.76	.87	.97	113.7	33.3	8.25	.77	.88	.99
	4200	1980	134.7	39.5	5.49	.77	.88	.98	129.8	38.0	6.35	.77	.89	1.00	124.6	36.5	7.27	.78	.90	1.00	118.9	34.8	8.30	.79	.91	1.00
	4830	2280	140.0	41.0	5.52	.78	.90	1.00	134.7	39.5	6.38	.79	.91	1.00	129.0	37.8	7.31	.80	.93	1.00	122.9	36.0	8.33	.81	.95	1.00
67°F (19°C)	3570	1685	137.8	40.4	5.51	.63	.72	.81	133.1	39.0	6.37	.63	.72	.82	128.0	37.5	7.31	.63	.73	.83	122.4	35.9	8.33	.63	.73	.84
	4200	1980	144.8	42.4	5.55	.63	.73	.83	139.5	40.9	6.41	.63	.74	.84	133.9	39.2	7.35	.63	.74	.85	127.8	37.5	8.37	.64	.75	.87
	4830	2280	150.2	44.0	5.58	.63	.75	.86	144.6	42.4	6.45	.64	.76	.87	138.6	40.6	7.38	.64	.76	.89	132.0	38.7	8.39	.65	.78	.91
71°F (22°C)	3570	1685	148.3	43.5	5.57	.51	.59	.68	143.1	41.9	6.45	.51	.60	.68	137.6	40.3	7.38	.50	.60	.69	131.6	38.6	8.40	.50	.60	.70
	4200	1980	155.4	45.5	5.61	.50	.60	.70	149.8	43.9	6.49	.50	.60	.70	143.7	42.1	7.43	.50	.61	.71	137.1	40.2	8.45	.50	.61	.72
	4830	2280	161.1	47.2	5.65	.50	.61	.71	155.0	45.4	6.53	.50	.61	.72	148.4	43.5	7.47	.50	.62	.73	141.4	41.4	8.49	.50	.62	.74

COOLING RATINGS

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

21 TON HIGH EFFICIENCY (R-410A/VAV) THREE COMPRESSORS OPERATING

LCA248H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity	Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity	Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity	Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity	Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb						
	75°F 24°C	80°F 27°C			85°F 29°C	75°F 24°C	80°F 27°C			85°F 29°C	75°F 24°C	80°F 27°C			85°F 29°C	75°F 24°C	80°F 27°C			85°F 29°C						
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	5040	2380	192.6	56.4	8.95	.72	.84	.97	185.5	54.4	10.35	.73	.86	.98	178.0	52.2	11.85	.74	.87	1.00	169.7	49.7	13.52	.75	.89	1.00
	6300	2975	202.3	59.3	9.01	.76	.90	1.00	194.5	57.0	10.42	.77	.92	1.00	186.3	54.6	11.92	.78	.93	1.00	177.5	52.0	13.58	.79	.96	1.00
	7560	3570	209.3	61.3	9.06	.79	.95	1.00	201.1	58.9	10.47	.81	.97	1.00	192.3	56.4	11.99	.82	1.00	1.00	183.1	53.7	13.65	.84	1.00	1.00
67°F (19°C)	5040	2380	206.5	60.5	9.04	.59	.69	.80	199.0	58.3	10.44	.59	.70	.81	190.9	55.9	11.96	.59	.71	.83	182.1	53.4	13.63	.60	.72	.85
	6300	2975	216.3	63.4	9.10	.60	.73	.86	208.1	61.0	10.53	.61	.73	.87	199.3	58.4	12.04	.61	.75	.89	189.7	55.6	13.71	.62	.76	.91
	7560	3570	223.3	65.4	9.16	.62	.76	.91	214.6	62.9	10.58	.63	.77	.93	205.1	60.1	12.10	.63	.79	.95	195.1	57.2	13.76	.65	.81	.98
71°F (22°C)	5040	2380	221.2	64.8	9.15	.46	.56	.66	213.1	62.5	10.56	.46	.56	.67	204.5	59.9	12.08	.46	.57	.68	195.0	57.1	13.76	.46	.58	.69
	6300	2975	231.4	67.8	9.22	.46	.58	.69	222.5	65.2	10.66	.46	.59	.71	213.0	62.4	12.17	.47	.59	.72	202.9	59.5	13.84	.47	.60	.73
	7560	3570	238.4	69.9	9.28	.47	.60	.73	229.1	67.1	10.70	.47	.61	.75	219.1	64.2	12.24	.47	.62	.76	208.4	61.1	13.90	.48	.63	.78

21 TON HIGH EFFICIENCY (R-410A/VAV) FOUR COMPRESSORS OPERATING

LCA248H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C				
63°F (17°C)	6720	3170	246.0	72.1	14.17	.73	.89	1.00	234.6	68.8	16.16	.74	.91	1.00	222.0	65.1	18.37	.76	.94	1.00	208.5	61.1	20.89	.78	.98	1.00
	8400	3965	255.3	74.8	14.26	.78	.97	1.00	243.3	71.3	16.24	.80	1.00	1.00	230.4	67.5	18.47	.82	1.00	1.00	217.0	63.6	20.97	.85	1.00	1.00
	10080	4760	262.9	77.0	14.32	.83	1.00	1.00	251.0	73.6	16.31	.86	1.00	1.00	238.5	69.9	18.52	.89	1.00	1.00	225.2	66.0	21.00	.92	1.00	1.00
67°F (19°C)	6720	3170	262.9	77.0	14.31	.57	.70	.84	250.6	73.4	16.29	.58	.71	.87	237.1	69.5	18.50	.59	.73	.90	222.7	65.3	21.00	.60	.75	.93
	8400	3965	271.7	79.6	14.39	.60	.75	.93	258.6	75.8	16.37	.61	.77	.96	244.7	71.7	18.57	.62	.79	.99	229.2	67.2	21.07	.64	.82	1.00
	10080	4760	277.8	81.4	14.44	.63	.80	1.00	264.3	77.5	16.43	.64	.83	1.00	249.7	73.2	18.63	.65	.86	1.00	234.1	68.6	21.11	.67	.90	1.00
71°F (22°C)	6720	3170	280.9	82.3	14.47	.43	.55	.67	267.9	78.5	16.45	.43	.56	.69	253.7	74.4	18.66	.44	.57	.70	238.2	69.8	21.14	.44	.58	.73
	8400	3965	289.8	84.9	14.54	.44	.58	.72	275.8	80.8	16.53	.44	.59	.74	260.9	76.5	18.73	.45	.61	.76	244.6	71.7	21.23	.46	.62	.79
	10080	4760	295.8	86.7	14.61	.45	.61	.78	281.5	82.5	16.58	.46	.63	.80	265.8	77.9	18.81	.46	.64	.83	249.2	73.0	21.28	.47	.66	.87

25 TON HIGH EFFICIENCY (R-410A/CAV) TWO COMPRESSORS OPERATING

LCC300H4B

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	L/s	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
	63°F (17°C)	8000	3775	149.5	43.8	7.35	.60	.76	.92	144.3	42.3	8.21	.61	.77	.94	138.7	40.6	9.19	.62	.79	.96	132.6	38.9	10.31	.63	.82
10000		4720	155.2	45.5	7.44	.65	.84	1.00	149.8	43.9	8.31	.66	.87	1.00	144.0	42.2	9.29	.68	.89	1.00	137.7	40.4	10.40	.70	.92	1.00
12000		5665	159.8	46.8	7.52	.71	.93	1.00	154.4	45.3	8.39	.73	.95	1.00	148.5	43.5	9.37	.75	.97	1.00	142.2	41.7	10.49	.78	.99	1.00
67°F (19°C)	8000	3775	158.8	46.5	7.50	.48	.58	.71	153.3	44.9	8.38	.48	.59	.73	147.3	43.2	9.36	.49	.60	.75	140.7	41.2	10.47	.49	.61	.77
	10000	4720	164.0	48.1	7.60	.50	.62	.80	158.2	46.4	8.46	.51	.64	.83	151.9	44.5	9.44	.51	.65	.85	145.0	42.5	10.56	.52	.68	.88
	12000	5665	167.7	49.1	7.66	.53	.68	.89	161.7	47.4	8.54	.53	.70	.91	155.2	45.5	9.51	.54	.72	.94	148.1	43.4	10.62	.55	.75	.97
71°F (22°C)	8000	3775	169.1	49.6	7.68	.36	.46	.56	163.3	47.9	8.56	.36	.47	.57	156.9	46.0	9.54	.37	.47	.58	149.9	43.9	10.66	.37	.48	.59
	10000	4720	174.3	51.1	7.78	.37	.49	.60	168.1	49.3	8.65	.37	.49	.62	161.4	47.3	9.64	.37	.50	.63	154.2	45.2	10.74	.38	.51	.65
	12000	5665	177.7	52.1	7.85	.38	.52	.66	171.5	50.3	8.72	.38	.52	.67	164.5	48.2	9.70	.39	.53	.70	157.0	46.0	10.81	.39	.54	.72

25 TON HIGH EFFICIENCY (R-410A/CAV) ALL COMPRESSORS OPERATING

LCC300H4B

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	8000	3775	299.2	87.7	18.72	.70	.84	.97	286.2	83.9	20.99	.71	.86	.99	272.0	79.7	23.56	.72	.88	1.00	256.6	75.2	26.58	.74	.91	1.00
	10000	4720	310.8	91.1	18.92	.75	.92	1.00	297.2	87.1	21.18	.77	.94	1.00	282.4	82.8	23.80	.79	.97	1.00	267.0	78.2	26.80	.82	.99	1.00
	12000	5665	320.4	93.9	19.08	.81	.98	1.00	307.0	90.0	21.34	.83	.99	1.00	292.8	85.8	23.98	.85	1.00	1.00	278.2	81.5	27.02	.88	1.00	1.00
67°F (19°C)	8000	3775	317.8	93.1	19.06	.55	.67	.80	303.6	89.0	21.32	.55	.69	.82	288.6	84.6	23.90	.56	.70	.85	271.8	79.7	26.91	.57	.72	.88
	10000	4720	327.8	96.1	19.22	.58	.73	.88	313.0	91.7	21.50	.59	.74	.91	296.8	87.0	24.10	.60	.77	.93	279.6	81.9	27.08	.61	.79	.96
	12000	5665	335.0	98.2	19.36	.61	.78	.95	319.6	93.7	21.62	.62	.81	.97	303.2	88.9	24.24	.63	.83	.99	285.4	83.6	27.22	.65	.86	1.00
71°F (22°C)	8000	3775	338.6	99.2	19.42	.41	.53	.65	323.6	94.8	21.72	.41	.54	.66	307.6	90.1	24.32	.41	.55	.68	290.2	85.0	27.30	.42	.56	.70
	10000	4720	348.4	102.1	19.62	.42	.56	.70	332.8	97.5	21.87	.42	.57	.72	315.8	92.6	24.49	.43	.59	.74	297.4	87.2	27.49	.43	.60	.77
	12000	5665	355.0	104.0	19.74	.43	.60	.76	339.0	99.4	22.00	.44	.61	.78	321.4	94.2	24.62	.44	.62	.81	302.4	88.6	27.60	.45	.64	.84

COOLING RATINGS

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

25 TON HIGH EFFICIENCY (R-410A/VAV) ONE COMPRESSOR OPERATING

LCC300H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	2000	945	62.4	18.3	3.63	.60	.68	.77	60.4	17.7	4.09	.61	.69	.77	58.3	17.1	4.59	.61	.70	.78	56.0	16.4	5.17	.61	.70	.79
	2500	1180	66.8	19.6	3.70	.62	.71	.80	64.6	18.9	4.15	.62	.72	.82	62.2	18.2	4.66	.63	.73	.83	59.6	17.5	5.24	.63	.74	.84
	3000	1415	70.0	20.5	3.75	.63	.74	.85	67.6	19.8	4.21	.64	.75	.86	65.0	19.0	4.71	.65	.76	.87	62.2	18.2	5.29	.65	.78	.89
67°F (19°C)	2000	945	66.9	19.6	3.71	.50	.57	.65	64.9	19.0	4.16	.50	.58	.65	62.7	18.4	4.67	.50	.58	.66	60.2	17.6	5.26	.50	.58	.66
	2500	1180	71.6	21.0	3.79	.50	.59	.67	69.3	20.3	4.24	.51	.59	.68	66.7	19.5	4.75	.51	.59	.69	63.9	18.7	5.33	.51	.60	.70
	3000	1415	74.9	22.0	3.84	.51	.60	.70	72.4	21.2	4.30	.51	.61	.71	69.6	20.4	4.80	.52	.62	.72	66.6	19.5	5.38	.52	.63	.74
71°F (22°C)	2000	945	71.8	21.0	3.79	.41	.48	.54	69.7	20.4	4.25	.41	.48	.55	67.2	19.7	4.76	.41	.48	.55	64.6	18.9	5.35	.41	.48	.55
	2500	1180	76.6	22.4	3.88	.41	.48	.56	74.2	21.7	4.33	.40	.48	.56	71.5	21.0	4.84	.40	.48	.57	68.6	20.1	5.42	.40	.49	.57
	3000	1415	80.1	23.5	3.94	.40	.49	.58	77.4	22.7	4.39	.40	.49	.58	74.5	21.8	4.90	.40	.50	.59	71.3	20.9	5.48	.40	.50	.60

25 TON HIGH EFFICIENCY (R-410A/VAV) TWO COMPRESSORS OPERATING

LCC300H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	4000	1890	154.5	45.3	7.33	.73	.84	.95	149.5	43.8	8.23	.73	.85	.97	143.8	42.1	9.22	.74	.86	.98	137.8	40.4	10.35	.75	.88	1.00
	5000	2360	163.2	47.8	7.46	.76	.89	1.00	157.7	46.2	8.34	.77	.90	1.00	151.5	44.4	9.34	.78	.92	1.00	145.0	42.5	10.47	.79	.94	1.00
	6000	2830	169.7	49.7	7.55	.79	.94	1.00	163.7	48.0	8.44	.80	.95	1.00	157.4	46.1	9.43	.82	.97	1.00	150.5	44.1	10.57	.83	.99	1.00
67°F (19°C)	4000	1890	165.4	48.5	7.49	.60	.70	.80	160.0	46.9	8.38	.60	.70	.81	154.1	45.2	9.39	.60	.71	.82	147.6	43.3	10.53	.60	.72	.84
	5000	2360	174.2	51.1	7.63	.61	.73	.85	168.2	49.3	8.51	.61	.74	.86	161.8	47.4	9.52	.62	.75	.88	154.6	45.3	10.65	.62	.76	.90
	6000	2830	180.4	52.9	7.72	.62	.76	.90	174.1	51.0	8.61	.63	.77	.92	167.2	49.0	9.60	.64	.79	.93	159.7	46.8	10.74	.65	.80	.95
71°F (22°C)	4000	1890	176.9	51.8	7.69	.47	.57	.66	171.2	50.2	8.58	.47	.57	.67	164.9	48.3	9.58	.47	.58	.68	158.0	46.3	10.72	.47	.58	.69
	5000	2360	186.0	54.5	7.82	.47	.59	.70	179.8	52.7	8.71	.47	.59	.70	172.9	50.7	9.71	.47	.59	.71	165.3	48.4	10.85	.48	.60	.73
	6000	2830	192.3	56.4	7.92	.48	.60	.73	185.7	54.4	8.82	.48	.61	.74	178.4	52.3	9.81	.48	.62	.76	170.5	50.0	10.94	.48	.63	.77

25 TON HIGH EFFICIENCY (R-410A/VAV) THREE COMPRESSORS OPERATING

LCC300H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	6000	2830	240.9	70.6	11.15	.68	.87	.99	232.3	68.1	12.45	.69	.89	1.00	223.3	65.4	13.92	.71	.91	1.00	213.6	62.6	15.59	.72	.94	1.00
	7500	3540	249.4	73.1	11.30	.74	.95	1.00	241.2	70.7	12.60	.76	.96	1.00	232.4	68.1	14.07	.78	.98	1.00	222.9	65.3	15.77	.81	.99	1.00
	9000	4250	257.6	75.5	11.44	.81	.99	1.00	249.4	73.1	12.75	.83	.99	1.00	240.3	70.4	14.24	.85	1.00	1.00	230.5	67.6	15.93	.88	1.00	1.00
67°F (19°C)	6000	2830	254.7	74.6	11.39	.52	.66	.82	245.8	72.0	12.70	.53	.67	.85	235.8	69.1	14.14	.54	.69	.87	225.1	66.0	15.82	.55	.70	.90
	7500	3540	261.1	76.5	11.50	.56	.72	.92	251.7	73.8	12.81	.57	.73	.94	241.4	70.7	14.25	.58	.75	.96	230.2	67.5	15.93	.59	.78	.97
	9000	4250	265.7	77.9	11.59	.59	.78	.97	256.2	75.1	12.89	.60	.80	.98	245.8	72.0	14.35	.61	.83	.99	234.6	68.8	16.01	.63	.86	1.00
71°F (22°C)	6000	2830	270.8	79.4	11.66	.38	.51	.64	261.1	76.5	12.98	.39	.52	.65	250.7	73.5	14.44	.39	.53	.67	239.3	70.1	16.11	.39	.54	.68
	7500	3540	276.9	81.2	11.79	.40	.55	.70	267.0	78.2	13.08	.40	.56	.71	255.9	75.0	14.55	.40	.57	.73	244.3	71.6	16.21	.41	.58	.75
	9000	4250	281.2	82.4	11.88	.41	.58	.76	270.8	79.4	13.16	.42	.59	.78	259.6	76.1	14.62	.42	.61	.81	247.7	72.6	16.29	.43	.62	.84

25 TON HIGH EFFICIENCY (R-410A/VAV) FOUR COMPRESSORS OPERATING

LCC300H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	8000	3775	307.8	90.2	19.13	.70	.95	1.00	295.8	86.7	21.42	.72	.98	1.00	283.2	83.0	24.01	.73	.99	1.00	269.8	79.1	26.97	.76	1.00	1.00
	10000	4720	319.8	93.7	19.38	.76	1.00	1.00	307.6	90.1	21.66	.80	1.00	1.00	294.6	86.3	24.25	.85	1.00	1.00	280.4	82.2	27.24	.88	1.00	1.00
	12000	5665	329.4	96.5	19.57	.87	1.00	1.00	316.9	92.9	21.84	.90	1.00	1.00	303.1	88.8	24.46	.93	1.00	1.00	288.3	84.5	27.44	.97	1.00	1.00
67°F (19°C)	8000	3775	319.3	93.6	19.36	.53	.69	.91	305.8	89.6	21.62	.54	.70	.94	291.1	85.3	24.19	.55	.72	.97	275.4	80.7	27.15	.57	.74	.99
	10000	4720	326.3	95.6	19.50	.57	.74	.99	312.5	91.6	21.76	.58	.76	1.00	297.9	87.3	24.35	.60	.81	1.00	282.5	82.8	27.32	.62	.86	1.00
	12000	5665	332.5	97.4	19.62	.61	.84	1.00	319.0	93.5	21.90	.63	.88	1.00	304.5	89.2	24.50	.64	.91	1.00	289.2	84.8	27.45	.66	.95	1.00
71°F (22°C)	8000	3775	338.5	99.2	19.74	.37	.52	.67	323.9	94.9	22.00	.38	.53	.69	308.2	90.3	24.59	.38	.55	.71	291.2	85.3	27.53	.39	.56	.73
	10000	4720	344.1	100.8	19.85	.39	.57	.73	329.2	96.5	22.12	.39	.58	.75	313.1	91.8	24.70	.40	.60	.77	295.9	86.7	27.67	.41	.62	.83
	12000	5665	348.2	102.0	19.93	.41	.61	.81	332.8	97.5	22.19	.41	.63	.85	316.7	92.8	24.77	.42	.64	.89	299.2	87.7	27.72	.43	.66	.93

COOLING RATINGS

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

30 TON HIGH EFFICIENCY (R-410A/CAV) TWO COMPRESSORS OPERATING

LCC360H4B

Entering Wet Bulb Tempera- ture	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	9300	4390	192.6	56.4	9.52	.60	.75	.91	186.0	54.5	10.60	.61	.77	.93	178.9	52.4	11.82	.61	.79	.95	171.2	50.2	13.22	.62	.81	.98
	11600	5475	199.3	58.4	9.64	.64	.84	.93	192.5	56.4	10.73	.66	.86	.93	185.1	54.2	11.95	.67	.88	.93	177.2	51.9	13.35	.70	.91	.93
	13900	6560	204.6	60.0	9.75	.70	.92	.94	197.7	57.9	10.82	.72	.94	.93	190.3	55.8	12.05	.74	.96	.93	182.4	53.5	13.46	.77	.98	.93
67°F (19°C)	9300	4390	203.7	59.7	9.72	.47	.58	.71	196.6	57.6	10.80	.48	.59	.72	189.1	55.4	12.03	.48	.59	.74	180.8	53.0	13.43	.49	.61	.77
	11600	5475	209.7	61.5	9.83	.50	.62	.80	202.4	59.3	10.91	.50	.63	.82	194.4	57.0	12.15	.51	.65	.84	185.8	54.5	13.55	.52	.67	.87
	13900	6560	213.9	62.7	9.93	.52	.68	.88	206.4	60.5	11.01	.53	.69	.90	198.3	58.1	12.23	.54	.72	.93	189.5	55.5	13.63	.55	.74	.96
71°F (22°C)	9300	4390	215.7	63.2	9.96	.36	.46	.56	208.4	61.1	11.05	.36	.46	.56	200.5	58.8	12.28	.36	.47	.57	191.8	56.2	13.68	.36	.47	.59
	11600	5475	221.7	65.0	10.09	.37	.48	.60	213.9	62.7	11.17	.37	.49	.61	205.6	60.3	12.40	.37	.50	.62	196.5	57.6	13.81	.38	.51	.64
	13900	6560	225.7	66.1	10.18	.38	.51	.65	217.8	63.8	11.26	.38	.52	.67	209.1	61.3	12.49	.38	.53	.69	199.8	58.6	13.90	.39	.54	.72

30 TON HIGH EFFICIENCY (R-410A/CAV) ALL COMPRESSORS OPERATING

LCC360H4B

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	9300	4390	349.8	102.5	23.94	.70	.84	.97	334.6	98.1	26.78	.71	.86	.98	318.6	93.4	30.02	.72	.88	1.00	301.4	88.3	33.74	.74	.91	.94
	11600	5475	361.8	106.0	24.20	.75	.91	.95	346.2	101.5	27.04	.76	.93	.94	329.8	96.7	30.28	.79	.96	.94	312.2	91.5	34.04	.81	.98	.94
	13900	6560	371.8	109.0	24.40	.80	.97	.95	356.4	104.5	27.26	.82	.99	.95	340.2	99.7	30.56	.85	1.00	.94	329.2	96.5	34.56	.87	.94	.94
67°F (19°C)	9300	4390	369.4	108.3	24.36	.55	.67	.80	353.4	103.6	27.20	.55	.69	.82	336.2	98.5	30.46	.56	.70	.85	317.6	93.1	34.22	.57	.72	.87
	11600	5475	380.0	111.4	24.62	.58	.73	.88	363.2	106.4	27.46	.59	.74	.90	345.0	101.1	30.72	.60	.76	.93	325.6	95.4	34.46	.61	.79	.96
	13900	6560	387.4	113.5	24.80	.61	.78	.95	370.4	108.6	27.62	.62	.80	.97	351.8	103.1	30.88	.63	.83	.99	331.8	97.2	34.66	.65	.86	.97
71°F (22°C)	9300	4390	391.8	114.8	24.86	.41	.53	.65	374.8	109.8	27.72	.41	.54	.66	356.6	104.5	31.00	.42	.55	.68	336.8	98.7	34.78	.42	.56	.70
	11600	5475	401.8	117.8	25.10	.42	.56	.71	384.2	112.6	27.98	.42	.57	.72	365.0	107.0	31.26	.43	.59	.74	344.2	100.9	35.02	.43	.60	.77
	13900	6560	408.6	119.7	25.30	.43	.60	.76	390.4	114.4	28.16	.44	.61	.78	370.6	108.6	31.42	.44	.63	.81	349.8	102.5	35.17	.45	.64	.84

30 TON HIGH EFFICIENCY (R-410A/VAV) ONE COMPRESSOR OPERATING

LCC360H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C	75°F 24°C	80°F 27°C				85°F 29°C		
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	2325	1095	70.0	20.5	4.46	.62	.70	.78	67.8	19.9	4.99	.62	.70	.78	65.4	19.2	5.59	.63	.71	.80	62.6	18.3	6.28	.63	.72	.80
	2900	1370	74.5	21.8	4.55	.63	.72	.81	72.0	21.1	5.08	.64	.73	.83	69.3	20.3	5.68	.64	.74	.84	66.3	19.4	6.36	.65	.75	.85
	3475	1640	77.8	22.8	4.62	.65	.75	.85	75.1	22.0	5.15	.66	.76	.87	72.1	21.1	5.74	.66	.77	.88	68.8	20.2	6.42	.67	.79	.90
67°F (19°C)	2325	1095	74.8	21.9	4.55	.52	.59	.66	72.4	21.2	5.09	.52	.59	.67	69.8	20.5	5.69	.52	.60	.67	67.0	19.6	6.38	.52	.60	.68
	2900	1370	79.5	23.3	4.65	.52	.60	.69	76.8	22.5	5.19	.52	.61	.70	73.9	21.7	5.79	.52	.62	.71	70.7	20.7	6.47	.53	.62	.72
	3475	1640	82.8	24.3	4.72	.53	.62	.72	79.9	23.4	5.26	.53	.63	.73	76.8	22.5	5.86	.53	.64	.74	73.3	21.5	6.54	.54	.65	.76
71°F (22°C)	2325	1095	79.9	23.4	4.66	.42	.49	.56	77.4	22.7	5.20	.42	.49	.56	74.6	21.9	5.81	.42	.49	.57	71.6	21.0	6.50	.42	.50	.57
	2900	1370	84.7	24.8	4.77	.42	.50	.58	81.8	24.0	5.30	.42	.50	.58	78.7	23.1	5.91	.42	.50	.59	75.4	22.1	6.60	.42	.50	.59
	3475	1640	88.0	25.8	4.84	.42	.51	.59	85.0	24.9	5.38	.42	.51	.60	81.7	23.9	5.98	.42	.51	.61	78.0	22.9	6.67	.42	.52	.62

30 TON HIGH EFFICIENCY (R-410A/VAV) TWO COMPRESSORS OPERATING

LCC360H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C				75°F 24°C	80°F 27°C	85°F 29°C		
	cfm	L/s	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
63°F (17°C)	4650	2195	186.2	54.6	9.53	.69	.82	.94	179.5	52.6	10.60	.70	.83	.95	172.2	50.5	11.81	.71	.85	.97	164.3	48.2	13.19	.73	.87	.99
	5800	2740	192.8	56.5	9.67	.74	.88	.99	186.0	54.5	10.74	.75	.90	.95	178.3	52.3	11.93	.76	.91	.95	169.9	49.8	13.33	.78	.94	.95
	6950	3280	198.2	58.1	9.77	.78	.94	.96	191.0	56.0	10.84	.79	.95	.96	183.1	53.7	12.05	.81	.97	.96	174.9	51.3	13.43	.83	.99	.95
67°F (19°C)	4650	2195	197.6	57.9	9.75	.55	.67	.79	190.5	55.8	10.82	.56	.68	.80	182.6	53.5	12.04	.56	.69	.82	174.0	51.0	13.43	.57	.70	.84
	5800	2740	203.9	59.8	9.89	.57	.71	.85	196.2	57.5	10.96	.58	.73	.87	188.0	55.1	12.16	.59	.74	.89	179.0	52.5	13.54	.60	.76	.91
	6950	3280	208.2	61.0	9.98	.60	.76	.91	200.3	58.7	11.05	.61	.78	.93	191.7	56.2	12.27	.62	.79	.95	182.4	53.5	13.64	.63	.81	.97
71°F (22°C)	4650	2195	209.6	61.4	10.01	.42	.53	.64	202.1	59.2	11.09	.42	.54	.65	193.8	56.8	12.30	.42	.54	.66	184.8	54.2	13.70	.43	.55	.68
	5800	2740	215.9	63.3	10.15	.43	.56	.69	207.8	60.9	11.23	.43	.57	.70	199.1	58.4	12.44	.43	.58	.72	189.7	55.6	13.82	.44	.59	.74
	6950	3280	220.2	64.5	10.26	.44	.59	.74	211.8	62.1	11.33	.44	.60	.75	202.8	59.4	12.55	.44	.61	.77	193.0	56.6	13.92	.45	.62	.79

COOLING RATINGS

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

30 TON HIGH EFFICIENCY (R-410A/VAV) THREE COMPRESSORS OPERATING

LCC360H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
	cfm	L/s	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C				
63°F (17°C)	6975	3290	276.6	81.1	14.08	.68	.86	.96	266.7	78.2	15.65	.69	.88	.96	256.0	75.0	17.43	.70	.91	.93	244.5	71.7	19.46	.72	.93	.92
	8700	4105	285.5	83.7	14.26	.73	.94	.93	277.5	81.3	15.91	.75	.93	.93	268.0	78.5	17.71	.77	.94	.93	256.5	75.2	19.78	.80	.95	.93
	10425	4920	296.7	87.0	14.51	.80	.95	.94	286.7	84.0	16.11	.82	.96	.93	277.5	81.3	17.95	.84	.93	.93	265.8	77.9	20.02	.87	.92	.93
67°F (19°C)	6975	3290	291.1	85.3	14.37	.52	.66	.82	280.6	82.2	15.95	.53	.67	.84	268.8	78.8	17.73	.54	.68	.87	256.1	75.1	19.75	.55	.70	.90
	8700	4105	297.7	87.2	14.53	.55	.71	.91	286.6	84.0	16.10	.56	.73	.93	274.5	80.4	17.85	.57	.75	.95	261.4	76.6	19.89	.59	.78	.94
	10425	4920	302.5	88.7	14.64	.59	.78	.94	291.2	85.3	16.21	.60	.80	.95	278.9	81.7	17.98	.61	.83	.96	265.8	77.9	20.01	.62	.86	.93
71°F (22°C)	6975	3290	307.8	90.2	14.75	.38	.51	.64	296.5	86.9	16.32	.38	.52	.65	284.2	83.3	18.12	.39	.53	.67	270.7	79.3	20.13	.39	.54	.68
	8700	4105	314.0	92.0	14.90	.39	.55	.70	302.3	88.6	16.46	.40	.56	.71	289.5	84.8	18.23	.40	.57	.73	275.6	80.8	20.27	.41	.58	.75
	10425	4920	318.4	93.3	14.99	.41	.58	.75	306.5	89.8	16.56	.41	.59	.78	293.2	85.9	18.34	.42	.61	.80	279.0	81.8	20.36	.42	.62	.84

30 TON HIGH EFFICIENCY (R-410A/VAV) FOUR COMPRESSORS OPERATING

LCC360H4V

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
																									75°F 24°C	80°F 27°C
	cfm	L/s	kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW				kBtuh	kW		
63°F (17°C)	9300	4390	362.8	106.3	24.23	.70	.93	.87	347.5	101.8	27.06	.72	.96	.87	334.5	98.0	30.41	.74	.85	.86	316.6	92.8	34.15	.77	.84	.85
	11600	5475	379.1	111.1	24.61	.75	.87	.87	363.3	106.5	27.45	.79	.86	.87	346.1	101.4	30.72	.82	.86	.86	327.0	95.8	34.46	.87	.85	.86
	13900	6560	389.2	114.1	24.84	.83	.87	.88	372.7	109.2	27.68	.87	.87	.87	354.4	103.9	30.94	.91	.86	.87	334.6	98.1	34.66	.95	.85	.86
67°F (19°C)	9300	4390	372.6	109.2	24.44	.53	.69	.89	355.1	104.1	27.23	.54	.71	.92	336.3	98.6	30.43	.56	.73	.95	315.6	92.5	34.14	.57	.75	.85
	11600	5475	379.6	111.2	24.63	.57	.74	.88	362.2	106.2	27.43	.59	.76	.87	343.2	100.6	30.64	.60	.82	.86	325.6	95.4	34.40	.62	.85	.86
	13900	6560	386.5	113.3	24.78	.61	.83	.88	371.3	108.8	27.64	.63	.85	.87	352.5	103.3	30.88	.65	.90	.87	332.2	97.4	34.58	.67	.94	.86
71°F (22°C)	9300	4390	392.9	115.1	24.93	.37	.53	.68	374.1	109.6	27.72	.38	.54	.69	354.1	103.8	30.91	.38	.55	.71	332.1	97.3	34.58	.39	.57	.74
	11600	5475	398.5	116.8	25.08	.39	.57	.73	379.3	111.2	27.87	.40	.59	.75	358.9	105.2	31.05	.40	.60	.79	336.4	98.6	34.75	.41	.63	.83
	13900	6560	402.6	118.0	25.19	.41	.61	.81	383.2	112.3	27.98	.41	.63	.83	362.5	106.2	31.17	.42	.65	.88	339.8	99.6	34.86	.43	.67	.93

BLOWER DATA

21, 25, and 30 TON (248H, 300H, and 360H)

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 (electric heat, economizer, etc.)
- 3 - Any field installed accessories air resistance (electric heat, duct resistance, diffuser, etc.)

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

See Page 37-39 for wet coil and option/accessory air resistance data.

See page 36 for factory installed drive kit specifications.

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT: 10,500 cfm (4955 L/s) minimum air

BOLD INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (L/s)	TOTAL STATIC PRESSURE — Inches Water Gauge (Pa)													
	.20 (50) RPM BHP (kW)	.40 (100) RPM BHP (kW)	.60 (150) RPM BHP (kW)	.80 (200) RPM BHP (kW)	1.00 (250) RPM BHP (kW)	1.20 (300) RPM BHP (kW)	1.40 (350) RPM BHP (kW)	1.60 (400) RPM BHP (kW)	1.80 (450) RPM BHP (kW)	2.00 (495) RPM BHP (kW)	2.20 (545) RPM BHP (kW)	2.40 (595) RPM BHP (kW)	2.60 (645) RPM BHP (kW)	
6000 (2830)	---	435 1.20 (0.90)	525 1.45 (1.08)	570 1.60 (1.19)	630 2.00 (1.49)	700 2.35 (1.75)	750 2.80 (2.09)	795 3.15 (2.35)	840 3.40 (2.54)	880 3.80 (2.83)	920 4.20 (3.13)	960 4.65 (3.47)	995 5.10 (3.80)	
6500 (3065)	---	445 1.30 (0.97)	530 1.60 (1.19)	580 1.80 (1.34)	640 2.20 (1.64)	705 2.60 (1.94)	755 3.05 (2.28)	800 3.40 (2.54)	845 3.70 (2.76)	885 4.15 (3.10)	925 4.60 (4.43)	965 5.00 (3.73)	1000 5.45 (4.07)	
7000 (3305)	---	455 1.40 (1.04)	535 1.75 (1.31)	590 2.05 (1.53)	650 2.45 (1.83)	710 2.85 (2.13)	760 3.30 (2.46)	805 3.70 (2.76)	850 4.05 (3.02)	890 4.50 (3.36)	930 4.95 (3.69)	970 5.40 (4.03)	1005 5.85 (4.36)	
7500 (3540)	380 1.05 (0.78)	465 1.50 (1.12)	540 1.90 (1.42)	600 2.30 (1.72)	660 2.70 (2.01)	715 3.15 (2.35)	765 3.60 (2.69)	810 4.00 (2.98)	855 4.45 (3.32)	895 4.90 (3.66)	935 5.35 (3.99)	975 5.85 (4.36)	1010 6.30 (4.70)	
8000 (3775)	390 1.25 (0.93)	475 1.65 (1.23)	545 2.10 (1.57)	610 2.55 (1.90)	665 2.95 (2.20)	720 3.45 (2.57)	770 3.90 (2.91)	815 4.35 (3.25)	860 4.85 (3.62)	900 5.30 (3.95)	940 5.75 (4.29)	980 6.30 (4.70)	1015 6.75 (5.04)	
8500 (4010)	405 1.40 (1.04)	485 1.90 (1.42)	555 2.35 (1.75)	620 2.80 (2.09)	675 3.30 (2.46)	725 3.75 (2.80)	775 4.20 (3.13)	820 4.70 (3.51)	865 5.20 (3.88)	905 5.70 (4.25)	945 6.20 (4.63)	985 6.75 (5.04)	1020 7.25 (5.41)	
9000 (4245)	415 1.60 (1.19)	495 2.10 (1.57)	565 2.60 (1.94)	625 3.10 (2.31)	685 3.60 (2.69)	735 4.10 (3.06)	785 4.60 (3.43)	830 5.10 (3.80)	870 5.60 (4.18)	915 6.15 (4.59)	955 6.70 (5.00)	990 7.20 (5.37)	1025 7.70 (5.74)	
9500 (4485)	430 1.85 (1.38)	505 2.35 (1.75)	575 2.90 (2.16)	635 3.40 (2.54)	690 3.90 (2.91)	745 4.50 (3.36)	790 4.95 (3.69)	835 5.50 (4.10)	880 6.05 (4.51)	920 6.60 (4.92)	960 7.15 (5.33)	995 7.70 (5.74)	1035 8.30 (6.19)	
10,000 (4720)	445 2.10 (1.57)	520 2.65 (1.98)	585 3.20 (2.39)	645 3.75 (2.80)	700 4.30 (3.21)	750 4.85 (3.62)	800 5.40 (4.03)	845 5.95 (4.44)	885 6.50 (4.85)	925 7.05 (5.26)	965 7.65 (5.71)	1000 8.20 (6.12)	1040 8.85 (6.60)	
10,500 4955)	455 2.35 (1.75)	530 2.95 (2.20)	595 3.50 (2.61)	655 4.10 (3.06)	710 4.70 (3.03)	760 5.25 (3.92)	805 5.80 (4.33)	850 6.40 (4.77)	895 7.00 (5.22)	935 7.60 (5.67)	970 8.15 (6.08)	1010 8.80 (6.56)	1045 9.40 (7.01)	
11,000 (5190)	470 2.60 (1.94)	545 3.25 (2.42)	605 3.85 (2.87)	665 4.45 (3.32)	720 5.10 (3.80)	765 5.66 (4.22)	815 6.30 (4.70)	860 6.90 (5.15)	900 7.50 (5.60)	940 8.10 (6.04)	980 8.75 (6.53)	1015 9.35 (6.98)	---	
11,500 (5425)	485 2.95 (2.20)	555 3.60 (2.69)	620 4.25 (3.17)	675 4.85 (3.62)	730 5.55 (4.14)	775 6.10 (4.55)	820 6.70 (5.00)	865 7.40 (5.52)	910 8.05 (6.01)	945 8.65 (6.45)	985 9.30 (6.94)	1020 9.95 (7.42)	---	
12,000 (5665)	500 3.30 (2.46)	570 4.00 (2.98)	630 4.65 (3.47)	685 5.30 (3.95)	740 6.00 (4.48)	785 6.60 (4.92)	830 7.25 (5.41)	875 7.95 (5.93)	915 8.60 (6.42)	955 9.25 (6.90)	995 9.95 (7.42)	1030 10.60 (7.91)	---	
12,500 (5900)	515 3.65 (2.72)	580 4.35 (3.25)	640 5.05 (3.77)	695 5.75 (4.29)	750 6.50 (4.85)	795 7.10 (5.30)	840 7.80 (5.82)	885 8.55 (6.38)	925 9.20 (6.86)	965 9.90 (7.39)	1000 10.55 (7.87)	1035 11.25 (8.39)	---	
13,000 (6135)	530 4.05 (3.02)	595 4.80 (3.58)	655 5.55 (4.14)	710 6.25 (4.66)	760 7.00 (5.22)	805 7.65 (5.71)	850 8.40 (6.27)	890 9.05 (6.75)	930 9.75 (7.27)	970 10.50 (7.83)	1010 11.30 (8.43)	---	---	
13,500 (6370)	545 4.45 (3.32)	610 5.25 (3.92)	665 6.00 (4.48)	720 6.75 (5.04)	770 7.50 (5.60)	815 8.25 (6.15)	860 9.00 (6.71)	900 9.70 (7.24)	940 10.45 (7.80)	980 11.20 (8.36)	---	---	---	
14,000 (6605)	560 4.90 (3.66)	620 5.70 (4.25)	680 6.55 (4.89)	730 7.30 (5.45)	780 8.10 (6.04)	825 8.85 (6.60)	870 9.65 (7.20)	910 10.40 (7.76)	950 11.15 (8.31)	---	---	---	---	
14,500 (6845)	575 5.40 (4.03)	635 6.25 (4.66)	690 7.05 (5.26)	745 7.90 (5.89)	790 8.65 (6.45)	835 9.45 (7.05)	880 10.30 (7.68)	920 11.10 (8.28)	---	---	---	---	---	
15,000 (7080)	590 5.90 (4.40)	650 6.80 (5.07)	705 7.65 (5.71)	755 8.50 (6.340)	800 9.30 (6.94)	845 10.10 (7.53)	890 11.00 (8.21)	---	---	---	---	---	---	

BLOWER DATA

CONSTANT AIR VOLUME (CAV) BELT DRIVE KIT SPECIFICATIONS

Motor Efficiency	Nominal hp	Maximum hp	Nominal kW	Maximum kW	Drive Kit Number	RPM Range
Standard	5 hp	5.75	3.7	4.3	1 2 6	660 - 810 770 - 965 560 - 710
Standard	7.5 hp	8.63	5.6	6.4	3 4	715 - 880 770 - 965
Standard	10 hp	11.5	7.5	8.6	3 5	715 - 880 850 - 1045

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

VARIABLE AIR VOLUME (VAV) DRIVE KIT SPECIFICATIONS

Motor Efficiency	Nominal hp	Nominal kW	Drive Kit Number	Maximum RPM @ 60Hz VFD Output (Fixed Pulley)
Standard	5 hp	3.7	7	965
Standard	7.5 hp	5.6	8	965
Standard	10 hp	7.5	9	1045

NOTE - Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. For VFD applications, nominal motor output is also maximum usable motor output.

BLOWER DATA

Air Volume		Wet Indoor Coil		Electric Heat		Economizer		Horizontal Roof Curb		Filters			
cfm	L/s									MERV 11		MERV 15	
		in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa
6000	2830	0.04	10	0.02	5	0.01	3	0.08	20	0.01	2	0.03	7
6500	3070	0.05	13	0.02	5	0.01	3	0.09	22	0.01	2	0.04	10
7000	3305	0.06	15	0.03	7	0.02	5	0.10	25	0.01	2	0.04	10
7500	3540	0.07	17	0.03	7	0.02	5	0.11	27	0.02	5	0.04	10
8000	3775	0.08	20	0.03	7	0.02	5	0.13	32	0.02	5	0.05	12
8500	4010	0.08	20	0.04	10	0.03	7	0.15	37	0.02	5	0.05	12
9000	4245	0.09	22	0.04	10	0.04	10	0.17	42	0.02	5	0.05	12
9500	4485	0.10	25	0.05	12	0.04	10	0.19	47	0.03	7	0.06	15
10,000	4720	0.11	27	0.05	12	0.05	12	0.21	52	0.03	7	0.06	15
10,500	4955	0.12	30	0.06	15	0.06	15	0.24	60	0.03	7	0.06	15
11,000	5190	0.12	30	0.06	15	0.07	17	0.27	67	0.04	10	0.07	17
11,500	5425	0.13	32	0.07	17	0.08	20	0.30	75	0.04	10	0.07	17
12,000	5665	0.14	35	0.07	17	0.10	25	0.33	82	0.04	10	0.08	20
12,500	5900	0.15	37	0.08	20	0.11	27	0.37	92	0.05	12	0.08	20
13,000	6135	0.16	40	0.08	20	0.13	32	0.40	99	0.05	12	0.08	20
13,500	6370	0.17	42	0.09	22	0.14	35	0.44	109	0.06	15	0.09	22
14,000	6605	0.18	45	0.10	25	0.16	40	0.49	122	0.06	15	0.09	22
14,500	6845	0.19	47	0.10	25	0.18	45	0.53	132	0.06	15	0.10	25
15,000	7080	0.20	50	0.11	27	0.21	52	0.58	144	0.07	17	0.10	25

BLOWER DATA

CEILING DIFFUSER AIR RESISTANCE

Air Volume		Step-Down Diffuser - LARTD30/36						Flush Diffuser - LAFD30/36	
		2 Ends Open		1 Side/2 Ends Open		All Ends & Sides Open		in. w.g.	Pa
cfm	L/s	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa		
7500	3540	.37	92	.31	77	.25	62	.29	72
8000	3775	.42	104	.36	90	.29	72	.34	85
8500	4010	.48	119	.41	102	.34	85	.39	97
9000	4245	.55	137	.47	117	.39	97	.44	109
9500	4485	.62	154	.53	132	.45	112	.51	127
10,000	4720	.70	174	.60	149	.51	127	.57	142
10,500	4955	.78	194	.68	169	.58	144	.65	162
11,000	5190	.87	216	.76	190	.65	162	.72	179
11,500	5425	.97	241	.85	211	.73	182	.81	201
12,000	5665	1.08	269	.94	234	.82	204	.90	223
12,500	5900	1.19	296	1.04	259	.91	226	.99	246
13,000	6135	1.30	323	1.15	286	1.00	249	1.10	274
13,500	6370	1.43	356	1.26	313	1.10	374	1.20	298
14,000	6605	1.56	388	1.38	343	1.20	298	1.31	326
14,500	6845	1.69	420	1.50	373	1.31	326	1.43	356
15,000	7080	1.84	457	1.63	405	1.43	356	1.56	388

CEILING DIFFUSER AIR THROW DATA

Air Volume		¹ Effective Throw Range				Air Volume		¹ Effective Throw Range			
		Step-Down		Flush				Step-Down		Flush	
		cfm	L/s	ft.	m			ft.	m	ft.	m
Diffuser Model		LARTD30/36		LAFD30/36		Diffuser Model		LARTD30/36		LAFD30/36	
9000	4245	40 - 47	12 - 14	29 - 35	8 - 11	11,500	5425	55 - 64	17 - 20	50 - 61	15 - 19
9500	4485	43 - 50	13 - 15	33 - 41	10 - 12	12,000	5665	58 - 67	18 - 20	54 - 66	16 - 20
10,000	4720	46 - 54	14 - 16	37 - 46	11 - 14	12,500	5900	61 - 71	19 - 22	58 - 71	18 - 22
10,500	4955	50 - 58	15 - 18	42 - 51	13 - 15	13,000	6135	64 - 74	20 - 23	62 - 75	19 - 23
11,000	4190	53 - 61	16 - 19	46 - 56	14 - 17	13,500	6370	67 - 77	20 - 23	66 - 79	20 - 24

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. (15 m) per minute. Four sides open.

POWER EXHAUST FANS - STANDARD STATIC OPERATION

Return Duct Negative Static Pressure		Air Volume	
in. w.g.	Pa	cfm	L/s
0	0	12,800	6040
0.05	12	12,200	5760
0.10	25	11,500	5430
0.15	37	10,800	5100
0.20	50	9900	4670
0.25	62	9000	4250
0.30	75	7900	3730
0.35	87	6750	3190
0.40	100	5450	2570
0.45	112	4150	1960
0.50	125	2900	1370

BLOWER DATA

POWER EXHAUST FANS - 50% HIGH STATIC OPERATION

BOLD INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (L/s)	Return Duct Negative Static Pressure - Inches Water Gauge (Pa)																					
	0 (0)		.10 (25)		.20 (50)		.30 (75)		.40 (100)		.50 (125)		.60 (150)		.70 (175)		.80 (200)		.90 (225)		1.0 (250)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
4000 (1890)	335	0.30 (0.22)	380	0.35 (0.26)	430	0.40 (0.30)	475	0.45 (0.34)	520	0.50 (0.37)	570	0.55 (0.41)	615	0.65 (0.48)	665	0.70 (0.52)	710	0.75 (0.56)	755	0.85 (0.63)	---	
4500 (2125)	375	0.40 (0.30)	415	0.45 (0.34)	460	0.55 (0.41)	500	0.60 (0.45)	545	0.65 (0.48)	585	0.70 (0.52)	625	0.80 (0.60)	670	0.85 (0.63)	710	0.95 (0.71)	750	1.00 (0.75)	795	1.10 (0.82)
5000 (2360)	415	0.55 (0.41)	455	0.65 (0.48)	490	0.70 (0.52)	530	0.75 (0.56)	570	0.85 (0.63)	605	0.90 (0.67)	645	1.00 (0.75)	680	1.05 (0.78)	720	1.15 (0.86)	755	1.20 (0.90)	795	1.30 (0.97)
5500 (2595)	460	0.75 (0.56)	495	0.85 (0.63)	525	0.90 (0.67)	560	0.95 (0.71)	595	1.05 (0.78)	630	1.10 (0.82)	665	1.20 (0.90)	700	1.30 (0.97)	735	1.35 (1.01)	765	1.45 (1.08)	800	1.55 (1.16)
6000 (2830)	500	1.00 (0.75)	530	1.05 (0.78)	565	1.15 (0.86)	595	1.20 (0.90)	625	1.30 (0.97)	660	1.40 (1.04)	690	1.45 (1.08)	720	1.55 (1.16)	750	1.65 (1.23)	785	1.70 (1.27)	815	1.80 (1.34)
6500 (3065)	540	1.25 (0.93)	570	1.30 (0.97)	600	1.40 (1.04)	630	1.50 (1.12)	660	1.60 (1.19)	685	1.65 (1.23)	715	1.75 (1.31)	745	1.85 (1.38)	775	1.95 (1.45)	805	2.05 (1.53)	830	2.10 (1.57)
7000 (3305)	585	1.55 (1.16)	610	1.65 (1.23)	635	1.70 (1.27)	665	1.85 (1.38)	690	1.90 (1.42)	720	2.00 (1.49)	745	2.10 (1.57)	770	2.20 (1.64)	800	2.30 (1.72)	825	2.40 (1.79)	855	2.50 (1.87)
7500 (3540)	625	1.90 (1.42)	650	2.00 (1.49)	675	2.10 (1.57)	700	2.20 (1.64)	725	2.30 (1.72)	750	2.40 (1.79)	775	2.50 (1.87)	800	2.60 (1.94)	825	2.70 (2.01)	850	2.80 (2.09)	875	2.90 (2.16)
8000 (3775)	665	2.30 (1.72)	690	2.40 (1.79)	715	2.55 (1.90)	735	2.60 (1.94)	760	2.70 (2.01)	785	2.85 (2.13)	810	2.95 (2.20)	830	3.05 (2.28)	855	3.15 (2.35)	880	3.25 (2.42)	905	3.40 (2.54)
8500 (4010)	710	2.80 (2.09)	730	2.90 (2.16)	755	3.00 (2.24)	775	3.10 (2.31)	795	3.20 (2.39)	820	3.35 (2.50)	840	3.45 (2.57)	865	3.55 (2.65)	885	3.65 (2.72)	910	3.80 (2.83)	930	3.90 (2.91)

POWER EXHAUST FANS - 100% HIGH STATIC OPERATION

BOLD INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (L/s)	Return Duct Negative Static Pressure - Inches Water Gauge (Pa)																					
	0 (0)		.10 (25)		.20 (50)		.30 (75)		.40 (100)		.50 (125)		.60 (150)		.70 (175)		.80 (200)		.90 (225)		1.0 (250)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
8500 (4010)	475	1.30 (0.97)	500	1.30 (0.97)	525	1.40 (1.04)	550	1.50 (1.12)	585	1.60 (1.19)	625	1.75 (1.31)	670	1.90 (1.42)	710	2.10 (1.57)	745	2.30 (1.72)	780	2.50 (1.87)	815	2.70 (2.01)
9000 (4245)	520	1.55 (1.16)	535	1.60 (1.19)	550	1.65 (1.23)	570	1.70 (1.27)	605	1.85 (1.38)	640	1.95 (1.45)	685	2.15 (1.60)	720	2.35 (1.75)	760	2.55 (1.90)	790	2.75 (2.05)	825	3.00 (2.24)
9500 (4485)	550	1.80 (1.34)	560	1.85 (1.38)	575	1.90 (1.42)	600	2.00 (1.49)	620	2.10 (1.57)	655	2.20 (1.64)	695	2.40 (1.79)	735	2.60 (1.94)	770	2.80 (2.09)	800	3.00 (2.24)	835	3.25 (2.42)
10,000 (4720)	575	2.10 (1.57)	590	2.15 (1.60)	605	2.20 (1.64)	620	2.30 (1.72)	645	2.40 (1.79)	675	2.50 (1.87)	710	2.65 (1.98)	745	2.85 (2.13)	780	3.05 (2.28)	815	3.30 (2.46)	845	3.50 (2.61)
10,500 (4955)	605	2.45 (1.83)	615	2.45 (1.83)	625	2.50 (1.87)	645	2.60 (1.94)	670	2.75 (2.05)	690	2.80 (2.09)	725	3.00 (2.24)	755	3.15 (2.35)	790	3.35 (2.50)	825	3.60 (2.69)	855	3.80 (2.83)
11,000 (5190)	630	2.80 (2.09)	645	2.85 (2.13)	660	2.95 (2.20)	675	3.00 (2.24)	685	3.05 (2.28)	715	3.20 (2.39)	740	3.30 (2.46)	770	3.50 (2.61)	805	3.70 (2.76)	835	3.90 (2.91)	870	4.20 (3.13)
11,500 (5425)	665	3.25 (2.42)	675	3.30 (2.46)	680	3.30 (2.46)	695	3.40 (2.54)	715	3.50 (2.61)	735	3.60 (2.69)	755	3.70 (2.76)	785	3.85 (2.87)	815	4.05 (3.02)	850	4.30 (3.21)	880	4.50 (3.36)
12,000 (5665)	685	3.60 (2.69)	700	3.70 (2.76)	710	3.75 (2.80)	725	3.85 (2.87)	740	3.95 (2.95)	755	4.00 (2.98)	780	4.15 (3.10)	805	4.30 (3.21)	830	4.45 (3.32)	860	4.65 (3.47)	890	4.90 (3.66)
12,500 (5900)	720	4.10 (3.06)	730	4.20 (3.13)	740	4.25 (3.17)	750	4.30 (3.21)	765	4.40 (3.28)	780	4.50 (3.36)	800	4.60 (3.43)	820	4.75 (3.54)	845	4.90 (3.66)	875	5.10 (3.80)	905	5.35 (3.99)
13,000 (6135)	745	4.60 (3.43)	750	4.65 (3.47)	765	4.75 (3.54)	780	4.85 (3.62)	790	4.90 (3.66)	805	5.00 (3.73)	820	5.10 (3.80)	840	5.25 (3.92)	865	5.40 (4.03)	890	5.60 (4.18)	915	5.80 (4.33)
13,500 (6370)	775	5.15 (3.84)	785	5.25 (3.92)	795	5.35 (3.99)	805	5.40 (4.03)	815	5.50 (4.10)	830	5.60 (4.18)	845	5.70 (4.25)	865	5.80 (4.33)	880	5.95 (4.44)	905	6.10 (4.55)	930	6.30 (4.70)
14,000 (6605)	805	5.80 (4.33)	810	5.80 (4.33)	820	5.90 (4.40)	830	6.00 (4.48)	845	6.10 (4.55)	855	6.20 (4.63)	870	6.30 (4.70)	885	6.40 (4.77)	905	6.55 (4.89)	925	6.70 (5.00)	945	6.85 (5.11)

HIGH STATIC POWER EXHAUST FANS WITH CONSTANT AIR VOLUME - DRIVE KIT SPECIFICATIONS

Power Exhaust Fan Model No.	Motor HP	Drive Kit Number	RPM Range
LAPEB30/36A (50%)	(2) 2 hp	1	406 - 533
LAPEB30/36B (50%)	(2) 2 hp	2	531 - 731
LAPEB30/36C (50%)	(2) 2 hp	3	731 - 932
LAPEB30/36D (100%)	(3) 2 hp	1	406 - 533
LAPEB30/36E (100%)	(3) 2 hp	2	531 - 731
LAPEB30/36F (100%)	(3) 2 hp	3	731 - 932

NOTE - Using total air volume and system static pressure requirements, determine from blower performance tables rpm and motor output required.

OUTDOOR SOUND DATA

Test Conditions	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts							1 Sound Rating Number (dB)
General Data	Center Frequency - HZ							
	125	250	500	1000	2000	4000	8000	
248, 300H	79	84	88	89	85	82	73	94
360	78	85	90	91	87	82	74	95

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

¹ Sound Rating Number according to ARI Standard 370-2001.

ELECTRIC HEAT CAPACITIES

Volts Input	30 kW			45 kW			60 kW			90 kW			120 kW		
	kW Input	Btuh Output	No. of Steps	kW Input	Btuh Output	No. of Steps	kW Input	Btuh Output	No. of Steps	kW Input	Btuh Output	No. of Steps	kW Input	Btuh Output	No. of Steps
208	22.5	76,800	1	33.8	115,300	2	45.0	153,600	2	67.6	230,700	2	90.2	307,800	2
220	25.2	86,000	1	37.8	129,000	2	50.4	172,000	2	75.6	258,000	2	100.8	344,000	2
230	27.5	93,900	1	41.3	141,000	2	55.1	188,000	2	82.7	282,200	2	110.2	376,100	2
240	30.0	102,400	1	45.0	153,600	2	60.0	204,800	2	90.0	307,100	2	120.0	409,500	2
440	25.2	86,000	1	37.8	129,000	2	50.4	172,000	2	75.6	258,000	2	100.8	344,000	2
460	27.5	93,900	1	41.3	141,000	2	55.1	188,000	2	82.7	282,200	2	110.2	376,100	2
480	30.0	102,400	1	45.0	153,600	2	60.0	204,800	2	90.0	307,100	2	120.0	409,500	2
550	25.2	86,000	1	37.8	129,000	2	50.4	172,000	2	75.6	258,000	2	100.8	344,000	2
575	27.5	93,900	1	41.3	141,000	2	55.1	188,000	2	82.7	282,200	2	110.2	376,100	2
600	30.0	102,400	1	45.0	153,600	2	60.0	204,800	2	90.0	307,100	2	120.0	409,500	2

ELECTRICAL/ELECTRIC HEAT DATA**21 TON****21 TON HIGH EFFICIENCY (R-410A)****LCA248H4****ELECTRICAL DATA**

¹ Voltage - 60hz - 3 phase		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressors (4)	Rated Load Amps (total)	18.1 (72.4)			9 (36)			6.8 (27.2)		
	Locked Rotor Amps (total)	137 (548)			62 (248)			50 (200)		
Outdoor Fan Motors (6) Full Load Amps (total)		2.4 (14.4)			1.3 (7.8)			1 (6)		
Standard PEF (3) .33 HP - Full Load Amps (total)		2.4 (7.2)			1.3 (3.9)			1 (3)		
50% High Static PEF (2) 2 HP - Full Load Amps (total)		7.5 (15.0)			3.4 (6.8)			2.7 (5.4)		
100% High Static PEF (3) 2 HP - Full Load Amps (total)		7.5 (22.5)			3.4 (10.2)			2.7 (8.1)		
Service Outlet 115V GFI (amps)		15			15			15		
Indoor Blower Motor	Horsepower	5	7.5	10	5	7.5	10	5	7.5	10
	Full Load Amps	16.7	24.2	30.8	7.6	11	14	6.1	9	11
² Maximum Overcurrent Protection	Unit Only	125	125	150	60	60	70	45	50	50
	with Standard PEF	125	125	150	60	70	70	50	50	60
	with 50% High Static PEF	125	150	175	70	70	80	50	60	60
	with 100% High Static PEF	125	150	150	70	70	80	50	50	60
³ Minimum Circuit Ampacity	Unit Only	109	116	123	54	58	61	41	44	46
	with Standard PEF	116	123	130	58	61	64	44	47	49
	with 50% High Static PEF	124	131	138	61	64	67	47	50	52
	with 100% High Static PEF	131	139	145	64	68	71	50	52	54

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.**TABLE CONTINUED ON NEXT PAGE**

ELECTRICAL/ELECTRIC HEAT DATA**21 TON****21 TON HIGH EFFICIENCY (R-410A)****LCA248H4****ELECTRIC HEAT DATA**

¹ Voltage - 60hz - 3 phase			208/230V - 3 Ph						460V - 3 Ph			575V - 3 Ph		
Indoor Blower Motor Horsepower			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
² Maximum Overcurrent Protection	Unit+ Electric Heat	30 kW	125	125	125	125	150	150	60	60	70	45	50	50
		45 kW	⁴ 150	175	⁴ 150	175	175	175	80	90	90	70	70	70
		60 kW	⁴ 150	175	175	175	⁴ 175	200	90	90	90	70	70	80
		90 kW	⁴ 225	250	⁴ 225	250	⁴ 250	⁴ 300	125	125	150	100	100	110
		120 kW	⁴ 300	⁴ 350	⁴ 300	⁴ 350	⁴ 300	⁴ 350	175	175	175	125	150	150
	Unit+ Electric Heat and (3) 0.33 HP Power Exhaust	30 kW	125	125	⁴ 125	150	150	150	60	70	70	50	60	60
		45 kW	⁴ 150	175	175	175	⁴ 175	200	90	90	100	70	70	80
		60 kW	175	175	⁴ 175	200	⁴ 175	200	90	100	100	70	80	80
		90 kW	⁴ 225	250	⁴ 250	⁴ 300	⁴ 250	⁴ 300	125	150	150	100	110	110
		120 kW	⁴ 300	⁴ 350	⁴ 300	⁴ 350	⁴ 300	⁴ 350	175	175	175	150	150	150
	Unit+ Electric Heat and (2) 2 HP Power Exhaust	30 kW	⁴ 125	150	150	150	150	150	70	70	80	60	60	60
		45 kW	175	175	⁴ 175	200	⁴ 175	200	90	90	100	70	80	80
		60 kW	⁴ 175	200	⁴ 175	200	⁴ 200	225	100	100	100	80	80	80
		90 kW	⁴ 250	⁴ 300	⁴ 250	⁴ 300	⁴ 250	⁴ 300	150	150	150	110	110	110
		120 kW	⁴ 300	⁴ 350	⁴ 300	⁴ 350	350	⁴ 350	175	175	175	150	150	150
	Unit+ Electric Heat and (3) 2 HP Power Exhaust	30 kW	150	150	150	150	175	175	70	80	80	60	60	60
		45 kW	⁴ 175	200	200	200	⁴ 200	225	90	100	100	80	80	80
		60 kW	⁴ 175	200	⁴ 200	225	⁴ 200	225	100	100	110	80	80	90
		90 kW	⁴ 250	⁴ 300	⁴ 250	⁴ 300	300	⁴ 300	150	150	150	110	110	125
		120 kW	⁴ 300	⁴ 350	350	⁴ 350	⁴ 350	⁴ 400	175	175	175	150	150	150
³ Minimum Circuit Ampacity	Unit+ Electric Heat	30 kW	109	112	116	121	123	129	55	59	63	44	48	50
		45 kW	139	157	148	166	156	174	78	82	86	62	66	68
		60 kW	146	166	156	175	164	183	82	86	90	66	69	72
		90 kW	209	238	218	247	227	256	118	123	126	95	98	101
		120 kW	272	310	281	319	289	328	154	159	162	124	127	130
	Unit+ Electric Heat and (3) 0.33 HP Power Exhaust	30 kW	116	121	123	130	130	138	60	64	68	48	52	54
		45 kW	148	166	157	175	165	183	83	87	91	66	70	72
		60 kW	155	175	165	184	173	192	87	91	95	70	73	76
		90 kW	218	247	227	256	236	265	123	127	131	98	102	105
		120 kW	281	319	290	328	298	337	159	163	167	127	131	133
	Unit+ Electric Heat and (2) 2 HP Power Exhaust	30 kW	124	130	131	140	138	148	64	68	72	51	55	57
		45 kW	157	175	167	185	175	193	86	90	94	69	73	75
		60 kW	165	184	175	194	183	202	91	95	99	73	76	79
		90 kW	228	257	237	266	245	274	127	131	135	101	105	108
		120 kW	290	329	300	338	308	346	163	167	171	130	134	136
	Unit+ Electric Heat and (3) 2 HP Power Exhaust	30 kW	131	140	139	149	145	157	68	72	76	54	58	60
		45 kW	167	185	176	194	184	202	90	95	98	72	76	79
		60 kW	175	194	184	203	192	211	95	99	103	76	80	82
		90 kW	237	266	247	275	255	284	131	135	139	105	108	111
		120 kW	300	338	309	348	317	356	167	171	175	134	137	140

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.**TABLE CONTINUED ON NEXT PAGE**

ELECTRICAL/ELECTRIC HEAT DATA**21 TON****21 TON HIGH EFFICIENCY (R-410A)****LCA248H4****ELECTRICAL ACCESSORIES**

¹ Voltage - 60hz - 3 phase		208/230V			460V			575V		
Indoor Blower Motor Horsepower		5	7.5	10	5	7.5	10	5	7.5	10
⁵ Electric Heat Control Kit		15K13			15K92			15K93		
Disconnect	Unit only	84M14			84M13			84M13		
	With Standard Power Exhaust and Electric Heat	84M14			84M13			84M13		
	0 kW	84M14			84M13			84M13		
	30 kW	84M14			84M13			84M13		
	45 kW	84M15			84M13 84M14			84M13		
	60 kW	84M15			84M14			84M13 84M14		
	90 kW	N/A			84M14			84M14		
	120 kW	N/A			84M15			84M14		
	With 50% High Static Power Exhaust and Electric Heat	84M14			84M13			84M13		
	0 kW	84M14			84M13			84M13		
	30 kW	84M15			84M13			84M13		
	45 kW	84M15			84M13 84M14			84M13		
	60 kW	84M15			84M14			84M13 84M14		
	90 kW	N/A			84M14			84M14		
	120 kW	N/A			84M15			84M14 84M15		
	With 100% High Static Power Exhaust and Electric Heat	84M14			84M13			84M13		
	0 kW	84M14			84M13			84M13		
	30 kW	84M15			84M13			84M13		
	45 kW	84M15			84M14			84M13		
	60 kW	84M15			84M14			84M14		
	90 kW	N/A			84M14 84M15			84M14		
	120 kW	N/A			84M15			84M14 84M15		
Terminal Block	Unit only	30K75			30K75			30K75		
	With Standard Power Exhaust and Electric Heat	30K75			30K75			30K75		
	0 kW	30K75			30K75			30K75		
	30 kW	30K75			30K75			30K75		
	45 kW	30K75 30K76			30K75			30K75		
	60 kW	30K75 30K76			30K75			30K75		
	90 kW	30K76			30K75			30K75		
	120 kW	30K76			30K75			30K75		
	With 50% High Static Power Exhaust and Electric Heat	30K75			30K75			30K75		
	0 kW	30K75			30K75			30K75		
	30 kW	30K75			30K75			30K75		
	45 kW	30K75 30K76			30K75			30K75		
	60 kW	30K76			30K75			30K75		
	90 kW	30K76			30K75			30K75		
	120 kW	30K76			30K75			30K75		
	With 100% High Static Power Exhaust and Electric Heat	30K75			30K75			30K75		
	0 kW	30K75			30K75			30K75		
	30 kW	30K75			30K75			30K75		
	45 kW	30K76			30K75			30K75		
	60 kW	30K76			30K75			30K75		
	90 kW	30K76			30K75			30K75		
	120 kW	30K76			30K75			30K75		
⁶ Unit Fuse Block	Unit only	25K19			25K14			25K11		
	with Standard PEF	25K19			25K14 35K03			25K11 25K13		
	with 50% High Static PEF	25K19 35K01			35K03			25K13 25K14		
	with 100% High Static PEF	35K01			35K03			25K13 25K14		
		35K01			35K03			25K13 25K14		
		35K02			35K03			25K13 25K14		

⁵ Electric Heat Control module provides two-stage control of electric heat. For use with 45 kW or larger electric heat.⁶ Only for use with electric heat.

ELECTRICAL/ELECTRIC HEAT DATA**25 TON****25 TON HIGH EFFICIENCY (R-410A)****LCC300H4****ELECTRICAL DATA**

¹ Voltage - 60hz - 3 phase		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressors (4)	Rated Load Amps (total)	22.4 (89.6)			10.6 (42.4)			7.7 (30.8)		
	Locked Rotor Amps (total)	149 (596)			75 (300)			54 (216)		
Outdoor Fan Motors (6) Full Load Amps (total)		2.4 (14.4)			1.3 (7.8)			1 (6)		
Standard PEF (3) .33 HP - Full Load Amps (total)		2.4 (7.2)			1.3 (3.9)			1 (3)		
50% High Static PEF (2) 2 HP - Full Load Amps (total)		7.5 (15.0)			3.4 (6.8)			2.7 (5.4)		
100% High Static PEF (3) 2 HP - Full Load Amps (total)		7.5 (22.5)			3.4 (10.2)			2.7 (8.1)		
Service Outlet 115V GFI (amps)		15			15			15		
Indoor Blower Motor	Horsepower	5	7.5	10	5	7.5	10	5	7.5	10
	Full Load Amps	16.7	24.2	30.8	7.6	11	14	6.1	9	11
² Maximum Overcurrent Protection	Unit Only	150	150	150	70	70	80	50	50	60
	with Standard PEF	150	150	175	70	70	80	50	60	60
	with 50% High Static PEF	150	150	175	70	80	80	60	60	60
	with 100% High Static PEF	150	175	175	80	80	90	60	60	60
³ Minimum Circuit Ampacity	Unit Only	127	134	141	61	64	67	45	48	50
	with Standard PEF	134	141	148	65	68	71	48	51	53
	with 50% High Static PEF	142	149	156	68	71	74	51	54	56
	with 100% High Static PEF	149	157	163	71	75	78	53	56	58

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.**TABLE CONTINUED ON NEXT PAGE**

ELECTRICAL/ELECTRIC HEAT DATA**25 TON****25 TON HIGH EFFICIENCY (R-410A)****LCC300H4****ELECTRIC HEAT DATA**

¹ Voltage - 60hz - 3 phase			208/230V - 3 Ph						460V - 3 Ph			575V - 3 Ph		
Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	30 kW	150	150	150	150	150	150	70	70	80	50	50	60
		45 kW	⁴ 150	175	⁴ 150	175	175	175	80	90	90	70	70	70
		60 kW	⁴ 150	175	175	175	⁴ 175	200	90	90	90	70	70	80
		90 kW	⁴ 225	250	⁴ 225	250	⁴ 250	⁴ 300	125	125	150	100	100	110
		120 kW	⁴ 300	⁴ 350	⁴ 300	⁴ 350	⁴ 300	⁴ 350	175	175	175	125	150	150
	Unit+ Electric Heat and (3) 0.33 HP Power Exhaust	30 kW	150	150	175	175	175	175	80	80	90	60	60	60
		45 kW	⁴ 175	200	200	200	⁴ 200	225	90	100	100	80	80	80
		60 kW	⁴ 175	200	⁴ 200	225	⁴ 200	225	100	100	110	80	80	90
		90 kW	⁴ 250	⁴ 300	⁴ 250	⁴ 300	300	⁴ 300	150	150	150	110	110	125
		120 kW	⁴ 300	⁴ 350	350	⁴ 350	⁴ 350	⁴ 400	175	175	175	150	150	150
	Unit+ Electric Heat and (2) 2 HP Power Exhaust	30 kW	150	150	150	150	175	175	70	70	80	50	60	60
		45 kW	⁴ 150	175	175	175	⁴ 175	200	90	90	100	70	70	80
		60 kW	175	175	⁴ 175	200	⁴ 175	200	90	100	100	70	80	80
		90 kW	⁴ 225	250	⁴ 250	⁴ 300	⁴ 250	⁴ 300	125	150	150	100	110	110
		120 kW	⁴ 300	⁴ 350	⁴ 300	⁴ 350	⁴ 300	⁴ 350	175	175	175	150	150	150
	Unit+ Electric Heat and (3) 2 HP Power Exhaust	30 kW	150	150	150	150	175	175	70	80	80	60	60	60
		45 kW	175	175	⁴ 175	200	⁴ 175	200	90	90	100	70	80	80
		60 kW	⁴ 175	200	⁴ 175	200	⁴ 200	225	100	100	100	80	80	80
		90 kW	⁴ 250	⁴ 300	⁴ 250	⁴ 300	⁴ 250	⁴ 300	150	150	150	110	110	110
		120 kW	⁴ 300	⁴ 350	⁴ 300	⁴ 350	350	⁴ 350	175	175	175	150	150	150
² Minimum Circuit Ampacity	Unit+ Electric Heat	30 kW	134	134	141	141	148	148	65	68	71	48	52	54
		45 kW	148	166	157	175	165	183	83	87	91	66	70	72
		60 kW	155	175	165	184	173	192	87	91	95	70	73	76
		90 kW	218	247	227	256	236	265	123	127	131	98	102	105
		120 kW	281	319	290	328	298	337	159	163	167	127	131	133
	Unit+ Electric Heat and (3) 0.33 HP Power Exhaust	30 kW	127	127	134	134	141	141	61	64	67	45	48	50
		45 kW	139	157	148	166	156	174	78	82	86	62	66	68
		60 kW	146	166	156	175	164	183	82	86	90	66	69	72
		90 kW	209	238	218	247	227	256	118	123	126	95	98	101
		120 kW	272	310	281	319	289	328	154	159	162	124	127	130
	Unit+ Electric Heat and (2) 2 HP Power Exhaust	30 kW	142	142	149	149	156	156	68	71	74	51	55	57
		45 kW	157	175	167	185	175	193	86	90	94	69	73	75
		60 kW	165	184	175	194	183	202	91	95	99	73	76	79
		90 kW	228	257	237	266	245	274	127	131	135	101	105	108
		120 kW	290	329	300	338	308	346	163	167	171	130	134	136
	Unit+ Electric Heat and (3) 2 HP Power Exhaust	30 kW	149	149	157	157	163	163	71	75	78	54	58	60
		45 kW	167	185	176	194	184	202	90	95	98	72	76	79
		60 kW	175	194	184	203	192	211	95	99	103	76	80	82
		90 kW	237	266	247	275	255	284	131	135	139	105	108	111
		120 kW	300	338	309	348	317	356	167	171	175	134	137	140

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 available⁴ Factory installed circuit breaker not available**TABLE CONTINUED ON NEXT PAGE**

ELECTRICAL/ELECTRIC HEAT DATA**25 TON****25 TON HIGH EFFICIENCY (R-410A)****LCC300H4****ELECTRICAL ACCESSORIES**

1 Voltage - 60hz - 3 phase			208/230V			460V			575V		
Indoor Blower Motor Horsepower			5	7.5	10	5	7.5	10	5	7.5	10
5 Electric Heat Control Kit			15K13			15K92			15K93		
Disconnect	Unit only	84M14	84M15			84M13			84M13		
	With Standard 0 kW	84M14	84M15			84M13			84M13		
	Power Exhaust and 30 kW	84M14	84M15			84M13			84M13		
	Electric Heat 45 kW	84M15			84M13		84M14	84M13			
	60 kW	84M15			84M14		84M13		84M14		
	90 kW	N/A			84M14		84M14		84M14		
	120 kW	N/A			84M15		84M14		84M14		
	With 50% High 0 kW	84M15			84M13		84M14	84M13			
	Static Power 30 kW	84M15			84M13		84M14	84M13			
	Exhaust and 45 kW	84M15			84M13		84M14		84M13		
	Electric Heat 60 kW	84M15			84M14		84M13		84M14		
	90 kW	N/A			84M14		84M14		84M14		
	120 kW	N/A			84M15		84M14		84M15		
	With 100% High 0 kW	84M15			84M13		84M14		84M13		
	Static Power 30 kW	84M15			84M13		84M14		84M13		
	Exhaust and 45 kW	84M15			84M14		84M14		84M13		
	Electric Heat 60 kW	84M15			84M14		84M14		84M14		
	90 kW	N/A	N/A	N/A	84M14		84M15	84M14			
	120 kW	N/A	N/A	N/A	84M15	84M15		84M14		84M15	
	Terminal Block	Unit only	30K75			30K75			30K75		
		With Standard 0 kW	30K75			30K75			30K75		
		Power Exhaust and 30 kW	30K75			30K75			30K75		
		Electric Heat 45 kW	30K75		30K76	30K75			30K75		
		60 kW	30K75	30K76		30K75			30K75		
90 kW		30K76			30K75			30K75			
120 kW		30K76			30K75			30K75			
With 50% High 0 kW		30K75			30K75			30K75			
Static Power 30 kW		30K75			30K75			30K75			
Exhaust and 45 kW		30K75	30K76		30K75			30K75			
Electric Heat 60 kW		30K76			30K75			30K75			
90 kW		30K76			30K75			30K75			
120 kW		30K76			30K75			30K75			
With 100% High 0 kW		30K75			30K75			30K75			
Static Power 30 kW		30K75			30K75			30K75			
Exhaust and 45 kW		30K76			30K75			30K75			
Electric Heat 60 kW		30K76			30K75			30K75			
90 kW		30K76			30K75			30K75			
120 kW		30K76			30K75			30K75			
6 Unit Fuse Block		Unit only	35K01			35K03		56K96	25K13		25K14
		with Standard PEF	35K01		35K02	35K03		56K96	25K13	25K14	
		with 50% High Static PEF	35K01		35K02	35K03	56K96		25K14		
		with 100% High Static PEF	35K01	35K02		56K96		25K15	25K14		

⁵ Electric Heat Control module provides two-stage control of electric heat. For use with 45 kW or larger electric heat.⁶ Only for use with electric heat.

ELECTRICAL/ELECTRIC HEAT DATA**30 TON****30 TON HIGH EFFICIENCY (R-410A)****LCC360H4****ELECTRICAL DATA**

¹ Voltage - 60hz - 3 phase		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressors (4)	Rated Load Amps (total)	25 (100)			12.2 (48.8)			9 (36)		
	Locked Rotor Amps (total)	164 (656)			100 (400)			78 (312)		
Outdoor Fan Motors (6) Full Load Amps (total)		2.4 (14.4)			1.3 (7.8)			1 (6)		
Standard PEF (3) .33 HP - Full Load Amps (total)		2.4 (7.2)			1.3 (3.9)			1 (3)		
50% High Static PEF (2) 2 HP - Full Load Amps (total)		7.5 (15.0)			3.4 (6.8)			2.7 (5.4)		
100% High Static PEF (3) 2 HP - Full Load Amps (total)		7.5 (22.5)			3.4 (10.2)			2.7 (8.1)		
Service Outlet 115V GFI (amps)		15			15			15		
Indoor Blower Motor	Horsepower	5	7.5	10	5	7.5	10	5	7.5	10
	Full Load Amps	16.7	24.2	30.8	7.6	11	14	6.1	9	11
² Maximum Overcurrent Protection	Unit Only	150	150	175	70	80	80	60	60	60
	with Standard PEF	150	175	175	80	80	90	60	60	60
	with 50% High Static PEF	175	175	175	80	80	90	60	60	70
	with 100% High Static PEF	175	175	200	80	90	90	60	70	70
³ Minimum Circuit Ampacity	Unit Only	138	145	152	68	71	74	51	54	56
	with Standard PEF	145	153	159	72	75	78	54	57	59
	with 50% High Static PEF	153	160	167	75	78	81	56	59	61
	with 100% High Static PEF	160	168	174	78	81	84	59	62	64

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.**TABLE CONTINUED ON NEXT PAGE**

ELECTRICAL/ELECTRIC HEAT DATA**30 TON****30 TON HIGH EFFICIENCY (R-410A)****LCC360H4****ELECTRIC HEAT DATA**

¹ Voltage - 60hz - 3 phase			208/230V - 3 Ph						460V - 3 Ph			575V - 3 Ph		
	Electric Heat	Voltage	208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	30 kW	150	150	150	150	175	175	70	80	80	60	60	60
		45 kW	⁴ 150	175	⁴ 150	175	175	175	80	90	90	70	70	70
		60 kW	⁴ 150	175	175	175	⁴ 175	200	90	90	90	70	70	80
		90 kW	⁴ 225	250	⁴ 225	250	⁴ 250	⁴ 300	125	125	150	100	100	110
		120 kW	⁴ 300	⁴ 350	⁴ 300	⁴ 350	⁴ 300	⁴ 350	175	175	175	125	150	150
	Unit+ Electric Heat and (3) 0.33 HP Power Exhaust	30 kW	150	150	175	175	175	175	80	80	90	60	60	60
		45 kW	⁴ 150	175	175	175	⁴ 175	200	90	90	100	70	70	80
		60 kW	175	175	⁴ 175	200	⁴ 175	200	90	100	100	70	80	80
		90 kW	⁴ 225	250	⁴ 250	⁴ 300	⁴ 250	⁴ 300	125	150	150	100	110	110
		120 kW	⁴ 300	⁴ 350	⁴ 300	⁴ 350	⁴ 300	⁴ 350	175	175	175	150	150	150
	Unit+ Electric Heat and (2) 2 HP Power Exhaust	30 kW	175	175	175	175	175	175	80	80	90	60	60	70
		45 kW	175	175	⁴ 175	200	⁴ 175	200	90	90	100	70	80	80
		60 kW	⁴ 175	200	⁴ 175	200	⁴ 200	225	100	100	100	80	80	80
		90 kW	⁴ 250	⁴ 300	⁴ 250	⁴ 300	⁴ 250	⁴ 300	150	150	150	110	110	110
		120 kW	⁴ 300	⁴ 350	⁴ 300	⁴ 350	350	⁴ 350	175	175	175	150	150	150
	Unit+ Electric Heat and (3) 2 HP Power Exhaust	30 kW	175	175	175	175	200	200	80	90	90	60	70	70
		45 kW	⁴ 175	200	200	200	⁴ 200	225	90	100	100	80	80	80
		60 kW	⁴ 175	200	⁴ 200	225	⁴ 200	225	100	100	110	80	80	90
		90 kW	⁴ 250	⁴ 300	⁴ 250	⁴ 300	300	⁴ 300	150	150	150	110	110	125
		120 kW	⁴ 300	⁴ 350	350	⁴ 350	⁴ 350	⁴ 400	175	175	175	150	150	150
³ Minimum Circuit Ampacity	Unit+ Electric Heat	30 kW	138	138	145	145	152	152	68	71	74	51	54	56
		45 kW	139	157	148	166	156	174	78	82	86	62	66	68
		60 kW	146	166	156	175	164	183	82	86	90	66	69	72
		90 kW	209	238	218	247	227	256	118	123	126	95	98	101
		120 kW	272	310	281	319	289	328	154	159	162	124	127	130
	Unit+ Electric Heat and (3) 0.33 HP Power Exhaust	30 kW	145	145	153	153	159	159	72	75	78	54	57	59
		45 kW	148	166	157	175	165	183	83	87	91	66	70	72
		60 kW	155	175	165	184	173	192	87	91	95	70	73	76
		90 kW	218	247	227	256	236	265	123	127	131	98	102	105
		120 kW	281	319	290	328	298	337	159	163	167	127	131	133
	Unit+ Electric Heat and (2) 2 HP Power Exhaust	30 kW	153	153	160	160	167	167	75	78	81	56	59	61
		45 kW	157	175	167	185	175	193	86	90	94	69	73	75
		60 kW	165	184	175	194	183	202	91	95	99	73	76	79
		90 kW	228	257	237	266	245	274	127	131	135	101	105	108
		120 kW	290	329	300	338	308	346	163	167	171	130	134	136
	Unit+ Electric Heat and (3) 2 HP Power Exhaust	30 kW	160	160	168	168	174	174	78	81	84	59	62	64
		45 kW	167	185	176	194	184	202	90	95	98	72	76	79
		60 kW	175	194	184	203	192	211	95	99	103	76	80	82
		90 kW	237	266	247	275	255	284	131	135	139	105	108	111
		120 kW	300	338	309	348	317	356	167	171	175	134	137	140

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.**TABLE CONTINUED ON NEXT PAGE**

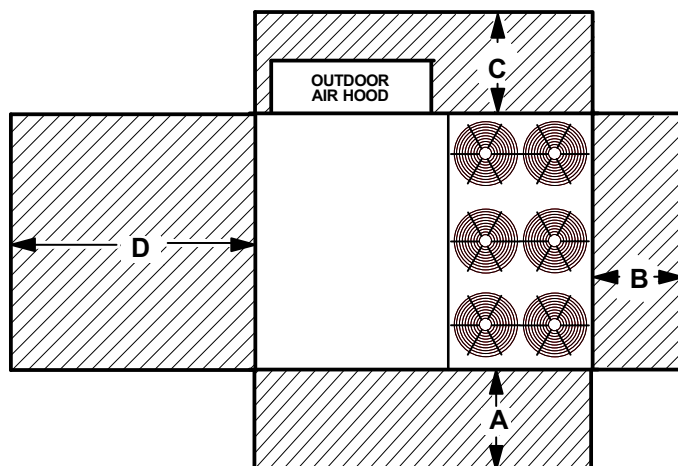
ELECTRICAL/ELECTRIC HEAT DATA**30 TON****30 TON HIGH EFFICIENCY (R-410A)****LCC360H4****ELECTRICAL ACCESSORIES**

Voltage - 60hz - 3 phase			208/230V			460V			575V			
Indoor Blower Motor Horsepower			5	7.5	10	5	7.5	10	5	7.5	10	
⁵ Electric Heat Control Kit			15K13			15K92			15K93			
Disconnect	Unit only		84M15			84M13	84M14		84M13			
	With Standard Power Exhaust and Electric Heat	0 kW	84M15			84M13	84M14		84M13			
		30 kW	84M15			84M13	84M14		84M13			
		45 kW	84M15			84M13	84M14		84M13			
		60 kW	84M15			84M14		84M13	84M14			
		90 kW	N/A			84M14		84M14				
		120 kW	N/A			84M15		84M14				
	With 50% High Static Power Exhaust and Electric Heat	0 kW	84M15			84M14		84M13				
		30 kW	84M15			84M14		84M13				
		45 kW	84M15			84M14		84M13				
		60 kW	84M15			84M14		84M13	84M14			
		90 kW	N/A			84M14	84M14	84M14				
		120 kW	N/A			84M15		84M14	84M15			
	With 100% High Static Power Exhaust and Electric Heat	0 kW	84M15			84M14		84M13				
		30 kW	84M15			84M14		84M13				
		45 kW	84M15			84M14		84M13				
		60 kW	84M15			84M14		84M14				
		90 kW	N/A			84M14	84M15	84M14				
		120 kW	N/A			84M15		84M14	84M15			
	Terminal Block	Unit only		30K75			30K75		30K75			
		With Standard Power Exhaust and Electric Heat	0 kW	30K75			30K75		30K75			
			30 kW	30K75			30K75		30K75			
		45 kW	30K75	30K76		30K75		30K75				
		60 kW	30K75	30K76		30K75		30K75				
		90 kW	30K76			30K75		30K75				
		120 kW	30K76			30K75		30K75				
With 50% High Static Power Exhaust and Electric Heat		0 kW	30K75			30K75		30K75				
		30 kW	30K75			30K75		30K75				
		45 kW	30K75	30K76		30K75		30K75				
		60 kW	30K76			30K75		30K75				
		90 kW	30K76			30K75		30K75				
		120 kW	30K76			30K75		30K75				
With 100% High Static Power Exhaust and Electric Heat		0 kW	30K75			30K75		30K75				
		30 kW	30K75			30K75		30K75				
		45 kW	30K76			30K75		30K75				
		60 kW	30K76			30K75		30K75				
		90 kW	30K76			30K75		30K75				
		120 kW	30K76			30K75		30K75				
⁶ Unit Fuse Block		Unit only	35K01			35K02	35K03	56K96		25K14		
		with Standard PEF	35K01	35K02		56K96		25K15	25K14			
		with 50% High Static PEF	35K02			56K96		25K15	25K14		35K03	
	with 100% High Static PEF	35K02			56K96	25K15		25K14	35K03			

⁵ Electric Heat Control module provides two-stage control of electric heat. For use with 45 kW or larger electric heat.⁶ Only for use with electric heat.

UNIT CLEARANCES - INCHES (MM)

Unit With Economizer



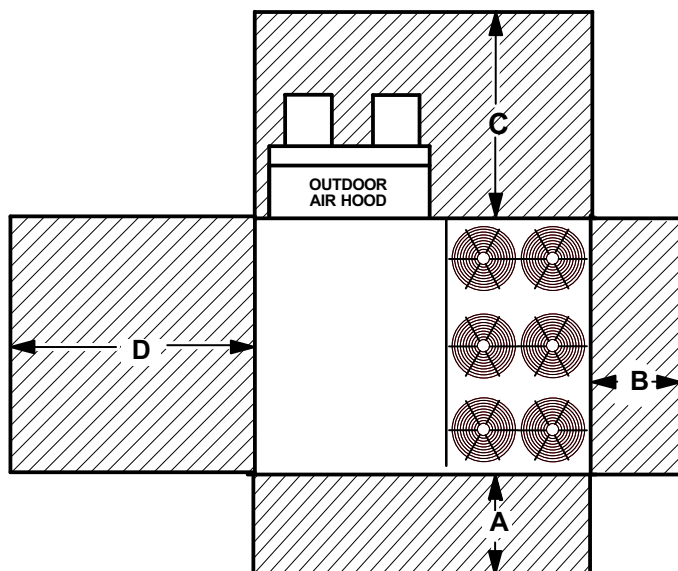
¹ Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	914	66	1676	Unobstructed
Minimum Operation Clearance	45	1143	36	914	36	914	41	1041	

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

¹ Service Clearance - Required for removal of serviceable parts.

Minimum Operation Clearance - Required clearance for proper unit operation.

Unit With High Static Power Exhaust Fans



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

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

¹ Service Clearance - Required for removal of serviceable parts.

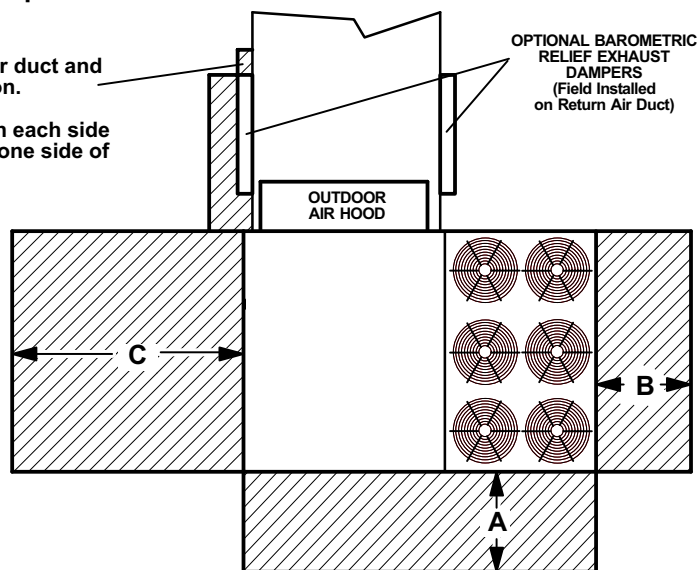
Minimum Operation Clearance - Required clearance for proper unit operation.

UNIT CLEARANCES - INCHES (MM)

Unit With Horizontal Barometric Relief Dampers

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

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



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

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

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

Minimum Operation Clearance - Required clearance for proper unit operation.

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS - FIELD INSTALLED

COMMERCIAL TOUCHSCREEN THERMOSTAT



Intuitive Touchscreen Interface - **Two Stage Heating / Two Stage Cooling Conventional or Heat Pump** - Seven Day Programmable - Four Time Periods/Day - Economizer Output - Title 24 Compliant - ENERGY STAR® Qualified - Backlit Display - Automatic Changeover

C0STAT02AE1L

Sensors For Touchscreen Thermostat

¹ Remote non-adjustable wall mount 20k temperature sensor	C0SNZN01AE1-
¹ Remote non-adjustable wall mount 10k averaging temperature sensor	C0SNZN73AE1-
¹ Remote non-adjustable duct mount temperature sensor	C0SND000AE1-
Outdoor temperature sensor	C0SNSR03AE1-

Accessories For Touchscreen Thermostat

Locking cover (clear)	C0MISC15AE1-
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¹ Remote sensors for C0STAT02AE1L can be applied in the following combinations: (1) C0SNZN01AE1-, (2) C0SNZN73AE1-, (2) C0SNZN01AE1- and (1) C0SNZN73AE1-, (4) C0SNZN01AE1-, (3) C0SNZN01AE1- and (2) C0SNZN73AE1.

DIGITAL NON-PROGRAMMABLE THERMOSTATS



Intuitive Interface - Automatic Changeover - Simple Up and Down Temperature Control

Two-stage heating / cooling conventional systems	C0STAT10AE1L
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Sensor For Digital Non-Programmable Thermostats Above

Remote wall mounted temperature sensor	C0SNZN00AE1-
--	--------------



Intuitive Interface - Automatic Changeover - Backlit Display - Simple Up and Down Temperature Control

One-stage heating / cooling conventional systems	C0STAT12AE1L
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Sensor For Digital Non-Programmable Thermostats Above

Outdoor temperature sensor	C0SNSR04AE1-
--------------------------------------	--------------

Accessories For Digital Non-Programmable Thermostats Above

Optional wall mounting plate	C0MISC17AE1-
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WEIGHT DATA

Model Number	Net		Shipping	
	lbs.	kg	lbs.	kg
All Base Unit	2910	1320	3120	1415
All Max. Unit	3580	1624	3790	1719

OPTIONS / ACCESSORIES

Description		Shipping Weight	
		lbs.	kg
CEILING DIFFUSERS			
Step-Down	LARTD30/36	437	198
Flush	LAFD30/36	414	188
Transitions	LASRT30/36	85	39
ECONOMIZER / OUTDOOR AIR			
Economizer	LAREMD30/36	119	54
Barometric Relief			
Downflow Barometric Relief Dampers	LAGED30/36	45	20
Horizontal Barometric Relief Dampers	LAGEDH30/36	20	9
Outdoor Air Dampers			
Damper Section (downflow)	Motorized - LAOADM30/36	72	33
Damper Section (downflow)	Manual - LAOAD30/36	68	31
Outdoor Air Hood (downflow)	LAOAH30/36	76	34
Power Exhaust			
	Standard Static - LAPEF30/36	99	45
	50% High Static - LAPEB30/36	460	209
	100% High Static with or without VFD - LAPEB30/36 or LAPEV30/36	525	238
ELECTRIC HEAT (TOTAL)			
	30 kW - EHA360 -15 & EHA360S-15	59	27
	45 kW - two each - EHA360-22.5	76	35
	60 kW - two each - EHA150-30	76	35
	90 kW - two each - EHA150-45	84	38
	120 kW - two each - EHA150-60	98	45
PACKAGING			
LTL Packaging (less than truck load)		300	136
ROOF CURBS - CLIP CURB			
Downflow - Full Perimeter			
14 in. height	LARMF30/36S-14	149	68
18 in. height	LARMF30/36S-18	204	93
24 in. height	LARMF30/36S-24	248	112
Horizontal			
30 in. height	LARMFH30/36S-30	456	207
41 in. height	LARMFH30/36S-41	480	218
ROOF CURBS - STANDARD			
Downflow			
14 in. height	LARMF18/36-14	160	73
24 in. height	LARMF18/36-24	220	100
Downflow - Full Perimeter			
14 in. height	S6CURB10121-	180	82
24 in. height	S6CURB11121-	248	112
Horizontal			
30 in. height	LARMFH30/36-30	445	202
41 in. height	LARMFH30/36-41	725	329

Base Unit - The unit with NO INTERNAL OPTIONS.

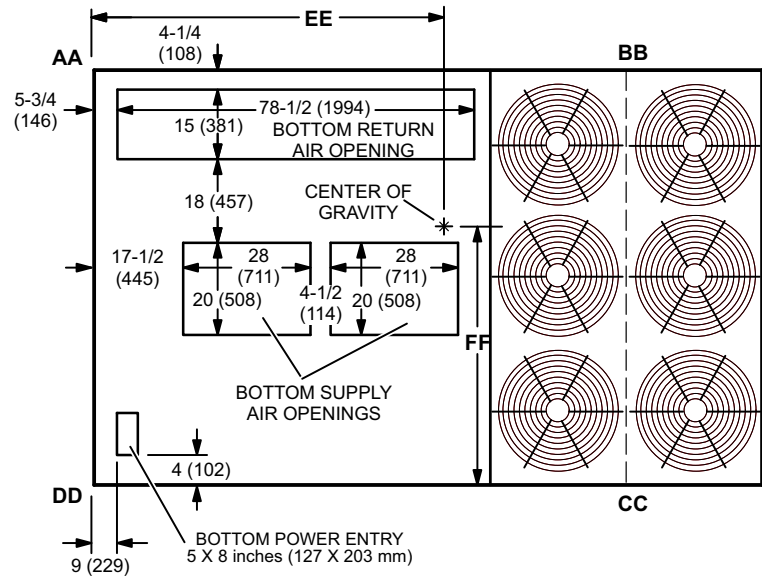
Max. Unit - The unit with ALL INTERNAL OPTIONS Installed. (Economizer, Standard Static Power Exhaust Fans, Controls, etc.). Does not include accessories external to unit or high static power exhaust.

DIMENSIONS - INCHES (MM)

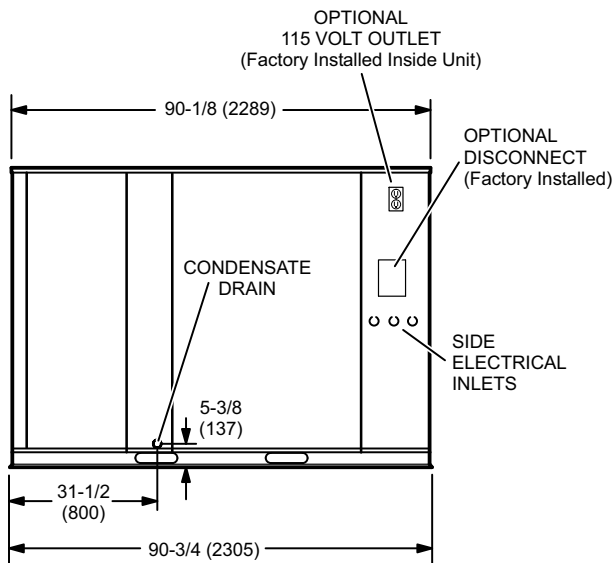
Model Number	CORNER WEIGHTS								CENTER OF GRAVITY			
	AA		BB		CC		DD		EE		FF	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	inch	mm	inch	mm
All - Base Unit	569	258	626	284	899	408	816	370	63-3/8	1610	37-1/4	946
All - Max. Unit	713	323	732	332	929	421	906	411	61-1/4	1556	40-1/8	1019

Base Unit - The unit with low fire heat exchanger NO OPTIONS.

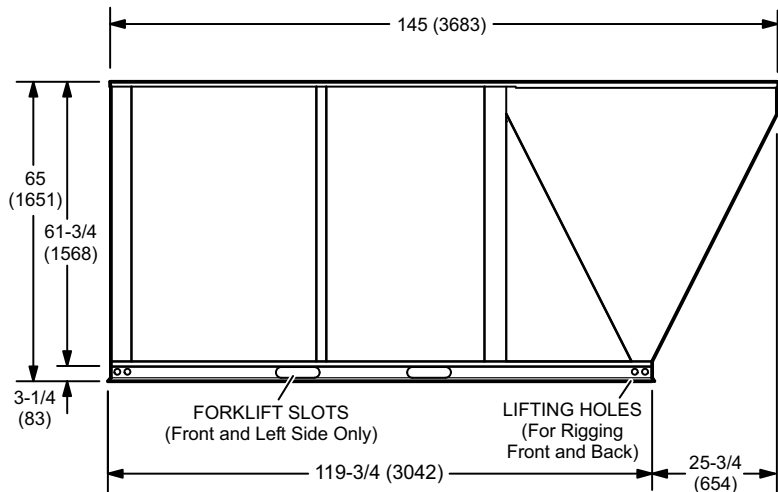
Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, Standard Power Exhaust Fans, Controls)



TOP VIEW



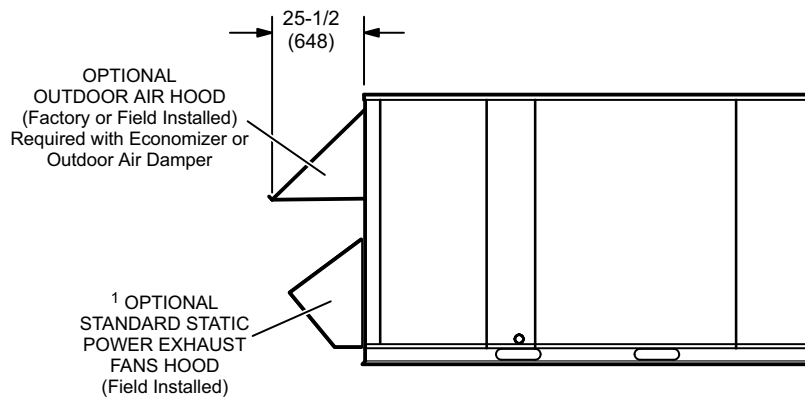
END VIEW



SIDE VIEW

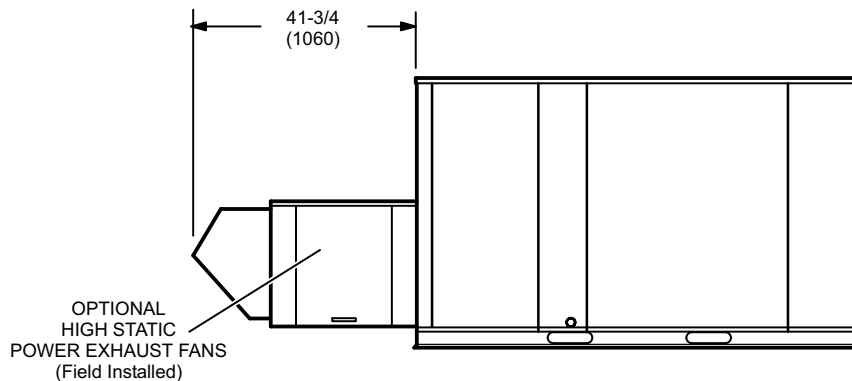
ACCESSORY DIMENSIONS - INCHES (MM)

OPTIONAL OUTDOOR AIR HOOD DETAIL WITH STANDARD STATIC POWER EXHAUST FANS



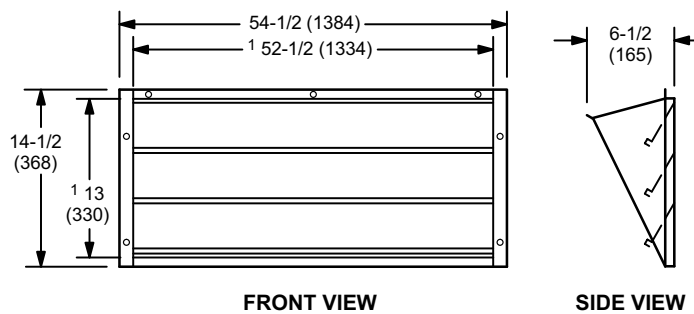
¹ Field Installed in Return Air Duct for Horizontal Applications.

OPTIONAL HIGH STATIC POWER EXHAUST FANS DETAIL



HORIZONTAL BAROMETRIC RELIEF DAMPERS

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



FRONT VIEW

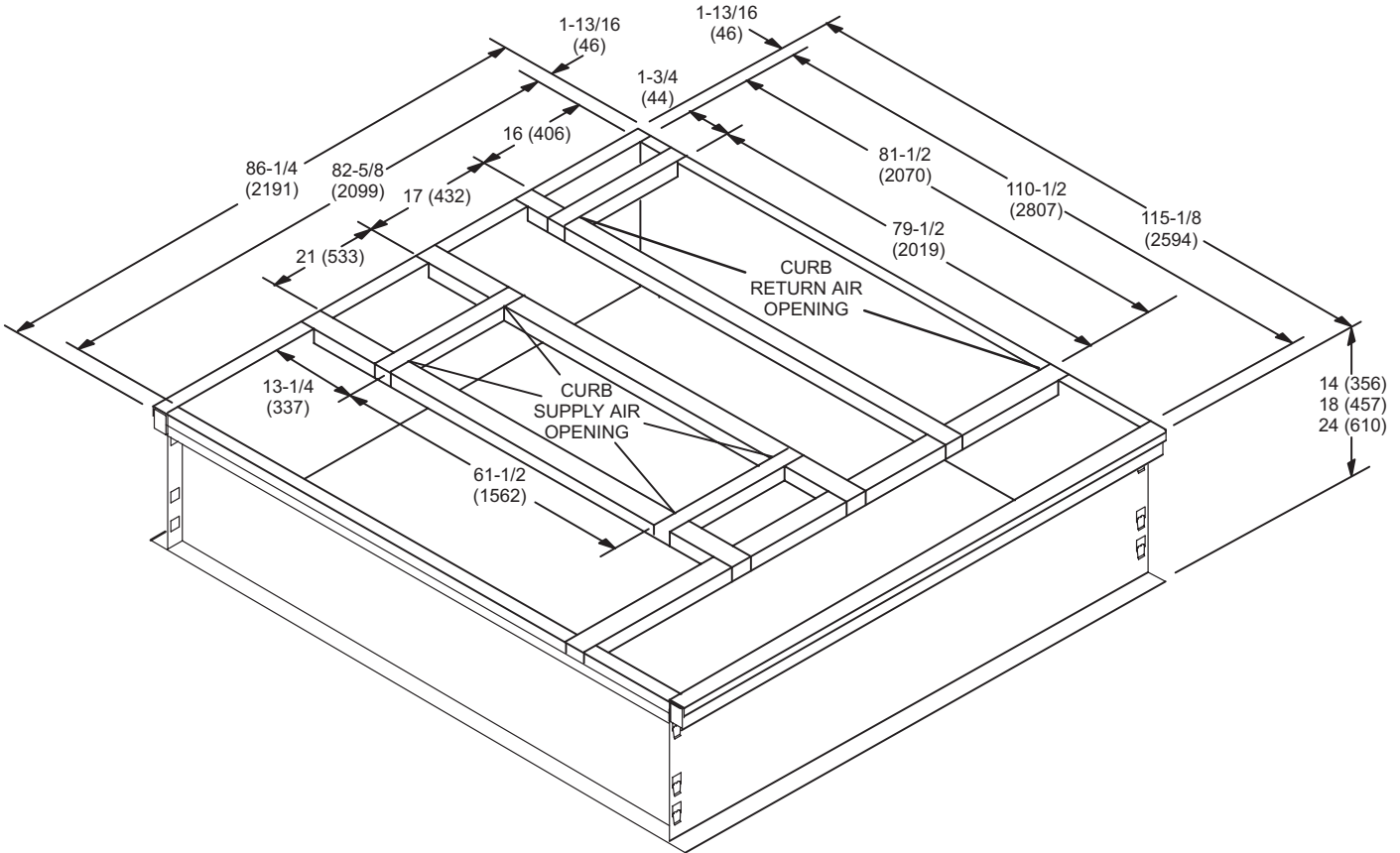
SIDE VIEW

NOTE - Two furnished per order no.

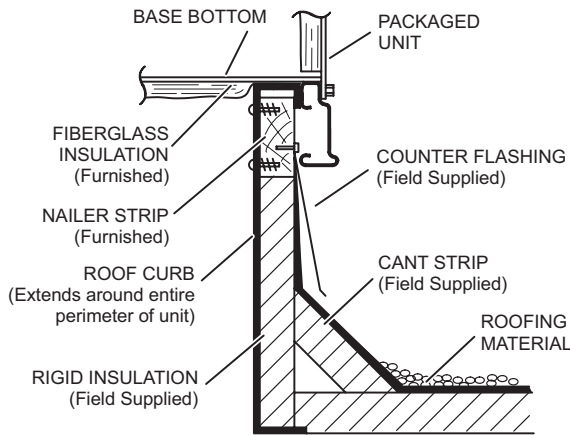
¹ NOTE - Opening size required in return air duct.

ACCESSORY DIMENSIONS - INCHES (MM)

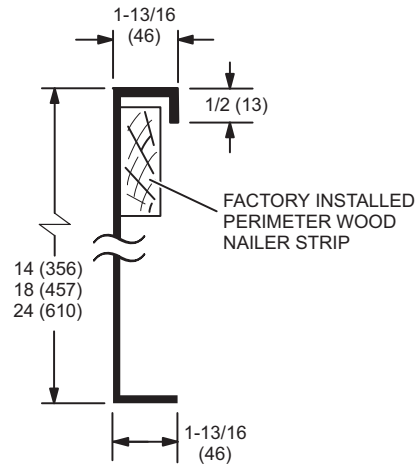
CLIP CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB

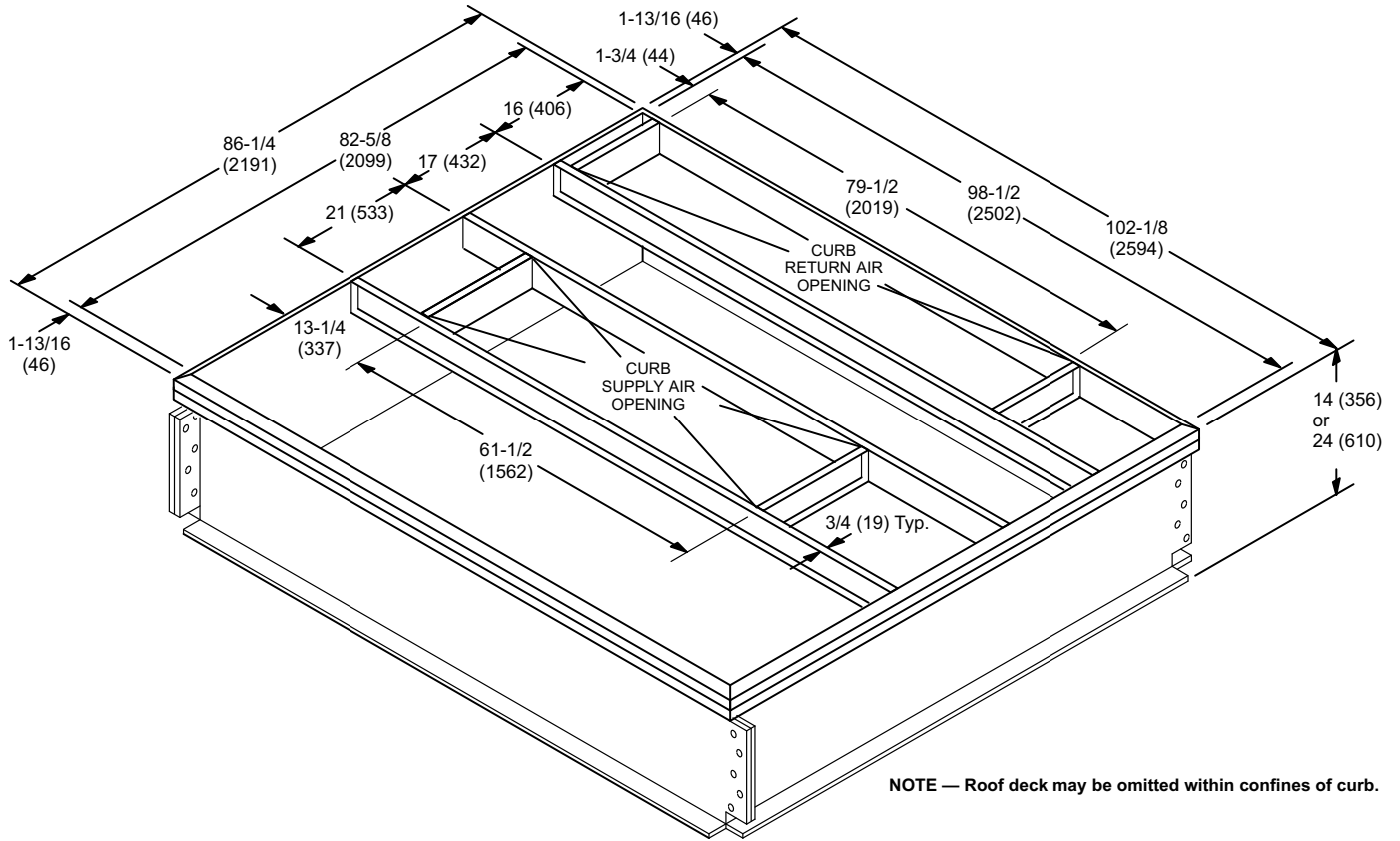


DETAIL ROOF CURB

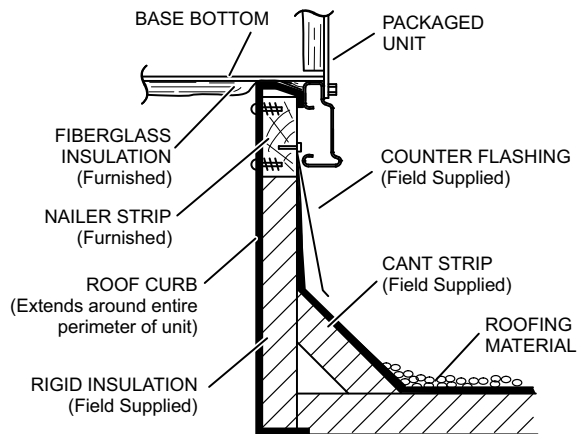


ACCESSORY DIMENSIONS - INCHES (MM)

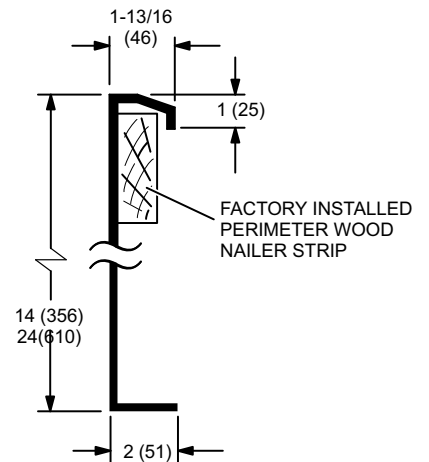
STANDARD ROOF CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB

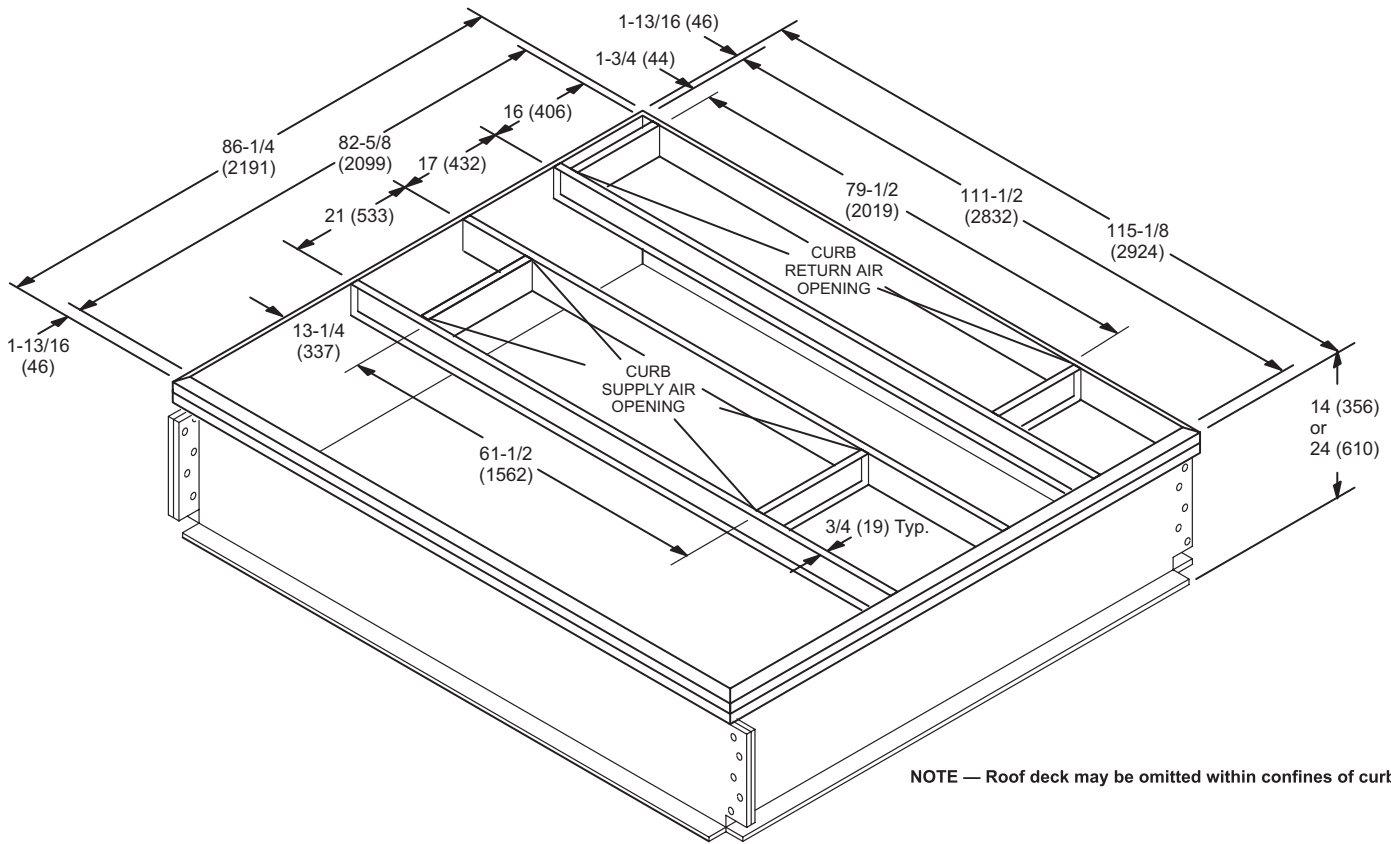


DETAIL ROOF CURB

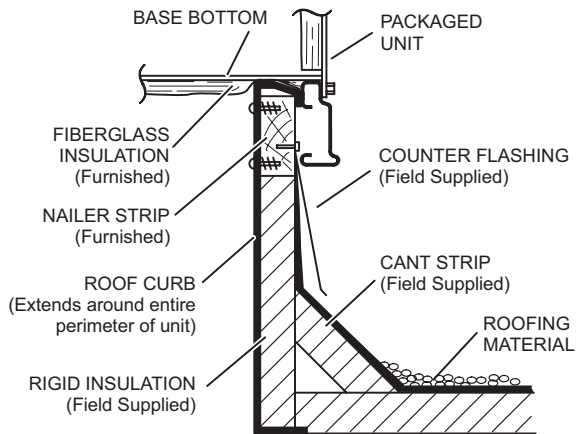


ACCESSORY DIMENSIONS - INCHES (MM)

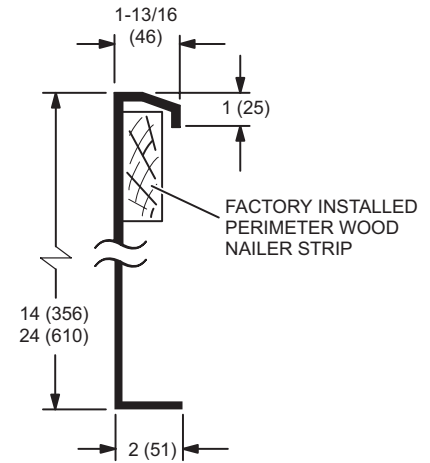
STANDARD ROOF CURBS - FULL PERIMETER - DOUBLE DUCT OPENING



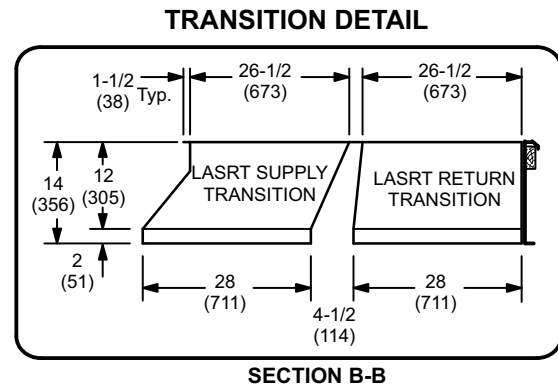
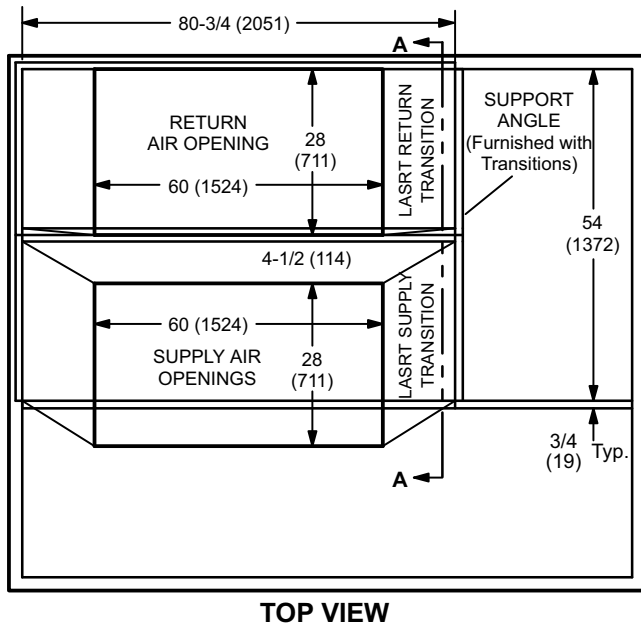
TYPICAL FLASHING DETAIL FOR ROOF CURB



DETAIL ROOF CURB

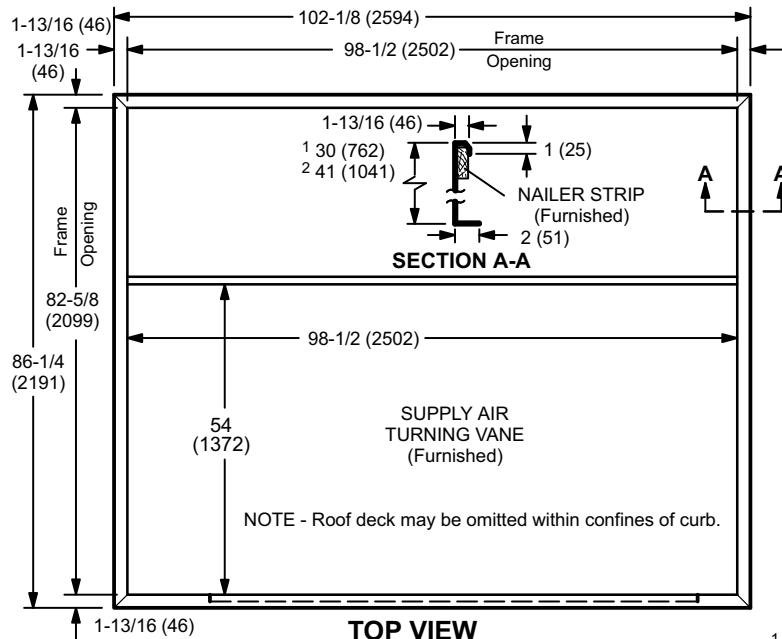


ROOF CURBS WITH SUPPLY & RETURN AIR TRANSITIONS FOR CEILING DIFFUSERS



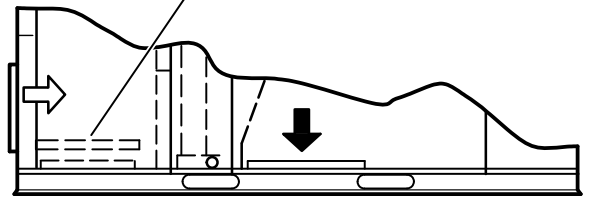
ACCESSORY DIMENSIONS - INCHES (MM)

HORIZONTAL ROOF CURBS - Requires Optional Horizontal Return Air Panel Kit

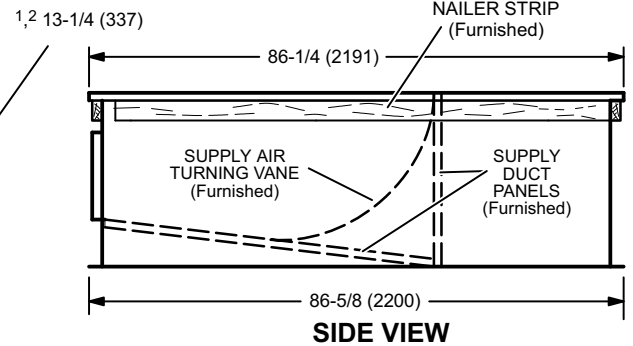
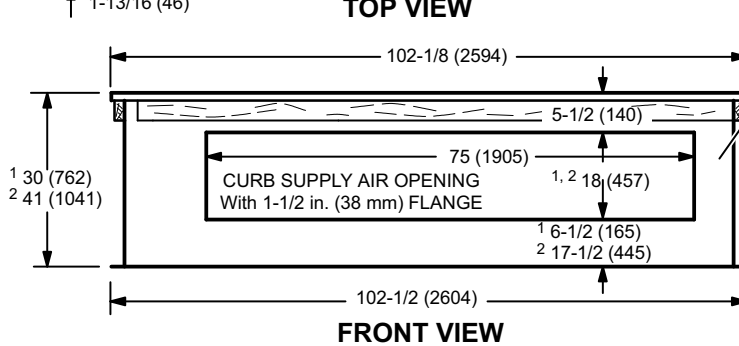


NOTE LARMFH30/36-30 is designed for horizontal discharge when unit is mounted on a slab.
LARMFH30/36-41 is designed for horizontal discharge when unit is mounted on a rooftop.

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

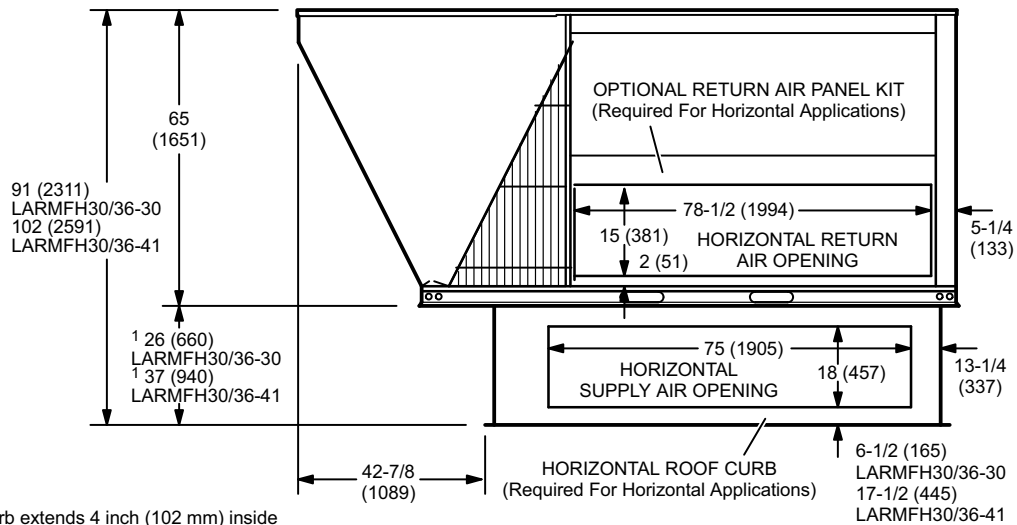


**SIDE VIEW
(PACKAGED UNIT)**



¹ LARMFH30/36-30 ² LARMFH30/36-41

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

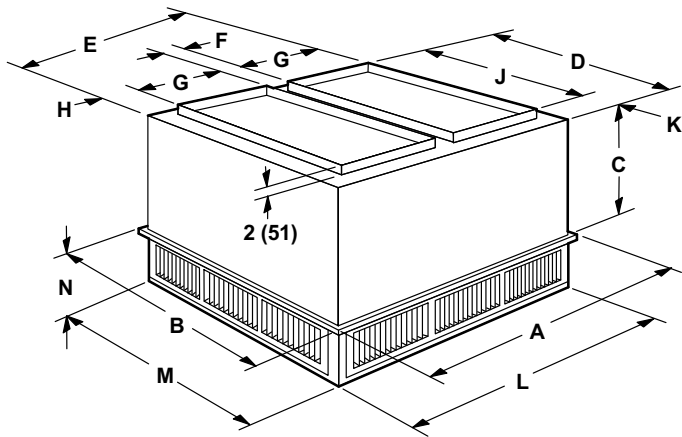


¹ NOTE - Top of Curb extends 4 inch (102 mm) inside bottom of unit base. See Typical Flashing Detail.

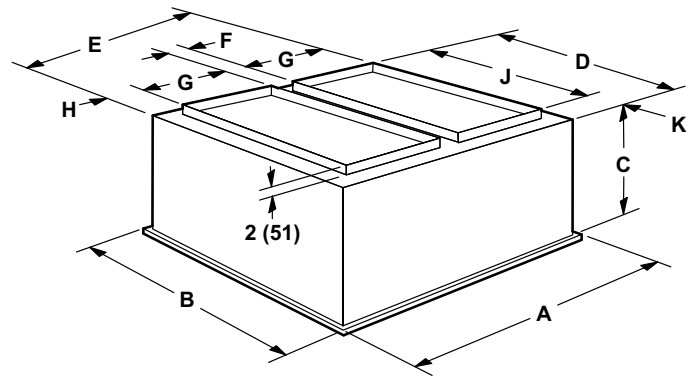
ACCESSORY DIMENSIONS - INCHES (MM)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



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

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

GUIDE SPECIFICATIONS

This specification is for **[Lennox Industries L Series®]** rooftop units. Revise specification section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat™* for other section numbers and titles.

Optional text and text that requires a decision are indicated by **bold brackets []** and proprietary information is indicated by **bold italic brackets []**; delete text that is not needed in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

Specifying Engineer Please Note - These Guide Specifications cover all L Series units (3 thru 30 tons). Please edit to accurately identify the options selected for the job.

SECTION 23 74 33 UNITARY AIR CONDITIONING EQUIPMENT

PART 1 GENERAL

PART 1.01 SUMMARY

- A. Section Includes: Packaged rooftop units and commercial packaged, gas/electric and electric/electric heat pumps.

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI MasterFormat and specifier's practice.

- B. Related Sections:

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section. Retain only those reference standards to be used within the text of this Section. Add and delete as required for specific project.

PART 1.02 REFERENCES

- A. American National Standards Institute (ANSI):
1. ANSI/ASHRAE 15 Safety Standard for Refrigeration Systems.
 2. ANSI/ASHRAE/IESNA 90.1 Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings.
 3. ANSI Z21.47 Gas-Fired Central Furnaces.
- B. Air-Conditioning and Refrigeration Institute (ARI):
1. ARI 210/240 Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
 2. ARI 270 Sound Rating of Outdoor Unitary Equipment.
 3. ARI 340/360 Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment.
 4. ARI 370 Sound Rating of Large Outdoor Refrigerating and Air Conditioning Equipment.
- C. American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE):
1. ASHRAE 52.2 Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size (ANSI approved).
 2. ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality.
- D. U.S. Energy Policy Act of 1992 (EPACT).
- E. U.S. National Appliance Energy Conservation Act (NAECA):
1. NAECA 1988.
- F. National Fire Protection Association (NFPA):
1. NFPA 90A Installation of Air Conditioning and Ventilation Systems.
- G. Underwriters Laboratories, Inc. (UL):
1. UL 1995 Standard for Safety for Heating and Cooling Equipment.

GUIDE SPECIFICATIONS

Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties required to link components of a system together and to interface with other systems.

PART 1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Provide products and systems that have been manufactured, fabricated and installed to following criteria:
 - 1. ANSI/ASHRAE/IESNA 90.1.
 - 2. ANSI Z21.47.
 - 3. UL 1995.
- B. Performance Requirements:
 - 1. Packaged Gas Electric:
 - a. Natural Gas Supply Pressure: 7 in. w.c. (1.7 kPa).

Specifier Note: For belt drive blowers from models LGC036S, LGA036H, LGC042S, LGA042H, LGC048S, LGA048H, LGC060S, LGA060H, LGC072S, LGA072H, LGC090S, LGA090H, LGC102S, LGA102H, LGC120S, LGA120H, LGC150S, LGC156H, LGC180S, LGC180H, LGC210S, LGC210H, LGC240S, LGA240H, LGA248H, LGC300S, LGC300H and LGC360H single phase is not an option.

- b. LPG/Propane Supply Pressure: 11 in. w.c. (2.7 kPa).

Specifier Note: Specify 208/230V or 460V or 575V, 3-phase for L Series units from 6 - 30 ton (21.1 - 105.6 kW). Specify 208/230V, 1-phase, 208/230V, 460V or 575V, 3-phase for L Series units from 3 - 5 ton (10.6 - 17.6 kW).

- 2. Packaged Cooling:

Specifier Note: For belt drive blowers from models LCC036S, LCA036H, LCC042S, LCA042H, LCC048S, LCA048H, LCC060S, LCA060H, LCC072S, LCA072H, LCC090S, LCA090H, LCC102S, LCA102H, LCC120S, LCA120H, LCC150S, LCC156H, LCC180S, LCC180H, LCC210S, LCC210H, LCC240S, LCA240H, LCA248H, LCC300S, LCC300H and LCC360H single phase is not an option.

- b. Electrical Requirements for Belt Drive Blowers: 60 hz, [208/230 V, 3-phase] [460 V, 3-phase] [575 V, 3-phase].

Specifier Note: Available Heat Pump units include LHA090, LHA102, LHA120, LHA150, LHA180 and LHA240 only.

- 3. Packaged Heat Pumps:
 - a. Electrical Requirements: 60 hz, [208/230 V, 3-phase] [460 V, 3-phase] [575 V, 3-phase].
 - 4. ARI Rated Net Cooling Efficiency: To meet or exceed ASHRAE Standard 90.1 at rated airflow not less than 350 cfm/ton.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

PART 1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures.
- B. Product Data: Submit product data for specified products.
- C. Shop Drawings:
 - 1. Submit shop drawings in accordance with Section 01 33 23 - Submittal Procedures.
 - 2. Indicate:
 - a. Equipment, piping and connections, together with valves, strainers, control assemblies, thermostatic controls, auxiliaries and hardware, and recommended ancillaries which are mounted, wired and piped ready for final connection to building system, its size and recommended bypass connections.
 - b. Piping, valves and fittings shipped loose showing final location in assembly.
 - c. Control equipment shipped loose, showing final location in assembly.
 - d. Dimensions, internal and external construction details, recommended method of installation with proposed structural steel support, mounting curb details, sizes and location of mounting bolt holes; include mass distribution drawings showing point loads.
 - e. Detailed composite wiring diagrams for control systems showing factory installed wiring and equipment on packaged equipment or required for controlling devices or ancillaries, accessories and controllers.

GUIDE SPECIFICATIONS

- f. Details of vibration isolation.
 - g. Estimate of sound levels to be expected across individual octave bands in dB.
 - h. Type of refrigerant used.
- D. Quality Assurance:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
 - 3. Manufacturer's Instructions: Manufacturer's installation instructions.

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article herein. Retain or delete as applicable.

- E. Manufacturer's Field Reports: Manufacturer's field reports specified.
- F. Closeout Submittals: Submit the following:
 - 1. Warranty: Warranty documents specified.
 - 2. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance. Include names and addresses of spare part suppliers.
 - 3. Provide brief description of unit, with details of function, operation, control and component service.
 - 4. Commissioning Report: Submit commissioning reports, report forms and schematics in accordance with Section 01 91 00 - Commissioning.

PART 1.05 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
 - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 1 Regulatory Requirements Section. Repetitive statements should be avoided. Current data on building code requirements and product compliance may be obtained from filter manufacturer technical support specialists.

- B. Regulatory Requirements: Provide **[Packaged gas electric] [Packaged cooling] [Packaged heat pump]** that complies with the following requirements:
 - 1. ARI 210/240.
 - 2. ARI 270.
 - 3. ARI 340/360.
 - 4. ASHRAE 52.2.
 - 5. NFPA 90A.
- C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings).

PART 1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Packing, Shipping, Handling and Delivery:
 - 1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
 - 2. Ship, handle and unload units according to manufacturer's instructions.
- D. Storage and Protection:
 - 1. Store materials protected from exposure to harmful weather conditions.
 - 2. Factory shipping covers to remain in place until installation.

PART 1.07 PROJECT CONDITIONS

GUIDE SPECIFICATIONS

- A. Installation Location: **[Confirm design conditions and temperature.]**.

Specifier Note: Coordinate article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty).

PART 1.08 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.

- C. Warranty: Commencing on Date of Installation.
1. Compressors: 5 years (limited).
 2. Integrated Modular Control: 3 years (limited).
 3. Other System Components: 1 year (limited).
 4. Aluminized Heat Exchangers: 10 years (limited).
 5. Stainless Steel Heat Exchangers: 15 years (limited).

PART 2 PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

PART 2.01 ROOFTOP UNITS

- A. Manufacturer: Lennox Industries Inc.
1. Contact: 2100 Lake Park Blvd., Richardson, TX 75080; Telephone: (800) 453-6669; website: www.lennox.com.
- B. Proprietary Products/Systems: Lennox L Series Unitary Air Conditioning Equipment, including the following equipment:
1. Cabinet: Weatherproofing tested and certified to AGA **[Rain test standards]** and soundproofing tested to ARI 270, **[]** dbA at **[]** m (**[]**) ft. free field.
 - a. Heavy gauge steel panels and full perimeter heavy gauge galvanized steel base rails.
 - b. Raised edges around duct and power entry openings in bottom of unit.
 - c. Airflow Configuration: **[Down-flow (vertical) return air] [Horizontal return airflow with Horizontal Roof Mounting Frame] [And Horizontal Return Air Panel Kit (required when converting down-flow configured unit to horizontal airflow)]**.
 - d. Power Entry: Electrical **[And gas]** lines brought through unit base or through horizontal access knockouts.
 - e. Exterior Panels: Constructed of heavy gauge, galvanized steel with 2-layer enamel paint finish.
 - f. Insulation: All panels adjacent to conditioned air fully insulated with non-hygroscopic fiberglass insulation. Unit base fully insulated.
 - g. Base Rail: Full perimeter base rail with rigging holes; 3 sides with fork slots.
 - h. Access Panels: Hinged for compressor/controls/heating areas, blower access and air filter/economizer access; and, sealed with quarter-turn latching handles and tight air and water seal.
 2. Compressor:
 - a. Copeland scroll type, hermetically sealed.
 3. Fans, General: Centrifugal, forward curved impellers, statically and dynamically balanced. **[Multi]** V-belt drive with adjustable variable pitch motor pulley.
 - a. Condenser Fan: Low sound operating, PVC coated fan guard, direct drive propeller type fans to discharge vertically.
 - b. Condenser Fan Motor: Permanently lubricated, permanent split capacitor; totally enclosed from weather, dust and corrosion; permanently lubricated ball bearings; resiliently mounted; overload protected.
 4. Evaporator Coils: Pressure and leak tested to 500 psi (3445 kPa), nonferrous coils with enhanced aluminum fins mechanically bonded to durable copper tubes.
 5. Condenser Coils:
 - a. Pressure and leak tested to 500 psi (3445 kPa), nonferrous coils with enhanced aluminum fins mechanically bonded to durable copper tubes.

GUIDE SPECIFICATIONS

Specifier Note: Specify slab construction for L Series over 6 tons (21.1 kW), excluding heat pumps.

- b. **[Formed construction] [Slab construction].**
- 6. Air Distribution:
 - a. Equipment capable of down-flow (vertical) or side (horizontal) handling of conditioned air.
 - b. Optional Equipment:

Specifier Note: The following kit is required for horizontal air handling for L Series 3 - 12 ton (10.6 - 42.2 kW) models.

- 1) Horizontal conversion kit for horizontal air handling.

Specifier Note: The following kit is required for horizontal air handling for L Series, 13 - 30 ton (45.8 - 105.6 kW) models.

- 2) Horizontal return air panel kit and horizontal roof mounting frame for horizontal air handling.
- 7. Filters: To meet NFPA 90A, air filter requirements **[Type Class 1] [Type Class 2]; [_____] % efficiency, metal framed, [Replaceable media] [Throwaway] [Standard to unit manufacturer].**
 - a. Disposable 2 inch (51 mm).
 - b. Disposable 2 inch (51 mm) pleated MERV 11 rated.
 - c. Disposable 2 inch (51 mm) pleated MERV 15 rated.
- 8. Heat Exchanger: Removable for servicing; stainless steel optional for applications where mixed air temperature below 45 degrees F (7 degrees C); E.T.L./C.S.A. design certified for outdoor installation.
- 9. Gas Heating System:
 - a. Tubular heat exchanger and inshot type gas burners constructed of aluminized steel.
 - b. Direct spark ignition; electronic flame sensor controls; flame rollout switch; limit controls and automatic redundant dual gas valve with staging control and combustion air proving switch on combustion air inducer.

Specifier Note: When LPG/propane is required, specify optional kit.

- c. Able to use LPG/propane **[With optional kit].**
- d. Complete service access provided for controls and wiring.
- 10. Electric Heating System:
 - a. Available for factory or field installation.
 - b. Heating elements of Nichrome bare wire exposed directly to airstream.
- 11. Refrigeration System:
 - a. Self-sealing, discharge, suction and liquid line service gauge ports, freeze-stats, expansion valves and full refrigerant charge.

Specifier Note: R-410A is available on all high efficiency units and on the 6, 12.5 and 25 ton (21.1, 44 and 87.9 kW) standard efficiency models. Variable air volume with R-410A is available on 21, 25 and 30 ton (74, 88 and 105.6 kW) units.

- b. **[R-410A] [Variable air volume] [Variable air volume with R-410A].**
- c. Copper tubing not to touch sharp metal surfaces.
- d. Compressor Circuits: Automatic reset, high pressure switch; automatic reset, low pressure switch; liquid line filter-drier.
- e. Capable of operating down to 0 degrees F (-17 degrees C) without installation of additional controls.
- 12. Supply Air Blower:
 - a. **[Constant air volume with adjustable pulleys] [Variable air volume with fixed pulleys and variable frequency drive] [Variable air volume with fixed pulleys and variable frequency drive with bypass]** with motor/drive combinations and optional drive kits.
 - b. Centrifugal supply air blower with **[Permanently lubricated ball bearings and adjustable belt drive] [Sleeve bearings and multi-speed direct drive motor].**
 - c. Blower assembly **[Slides out of unit] [Is accessible]** for servicing.

Specifier Note: 3 to 6 ton (10.6 - 21.1 kW) blower is fixed.

- d. Blower wheel statically and dynamically balanced.

13. Integrated Modular Control (IMC):
 - a. Solid state control board to operate unit.
 - b. Built-in functions include: Blower on/off delay; built-in control parameter defaults; service relay output; dirty filter switch input; dehumidistat input, economizer control; **[Gas valve delay between stages]; [ETM compatible]; [DDC compatible];** unit diagnosis; diagnostics code storage; indoor air quality input; low ambient controls; minimum run time; night setback mode; smoke alarm mode; low pressure control; thermostat bounce delay; 3-digit display; degrees F or degrees C display, 2-stage heat/4-stage cool thermostat compatible and warm-up mode; **[Electric heat staging with optional 4-stage board].**
14. Gas Heating Controls:
 - a. Remote thermostat[s] as indicated.
 - b. Built-in **[Un]** fused disconnect switch.
 - c. **[Four]** stages of heating control from **[Thermostat with optional four stage board] [DDC with room sensor]**.
 - d. Supply fan to turn on **[40]** seconds after heating demand is received with 8 - 60 second adjustable time delay.
 - e. Supply fan to turn off **[120]** seconds after heating demand has ended with 80 - 300 second adjustable time delay.
 - f. Adjustable delay time of **[30] [Value between 30 - 160]** seconds between low and high fire of 2-stage gas valve system.
 - g. Heat off delay of **[100] [Value between 30 - 300]** seconds after thermostat heating demand has ended.
 - h. To turn off heat and keep supply air fan running if overheat limit occurs.
 - i. Adjustable maximum overheat limit trip count during heating cycle of **[3] [Value between 1 - 15]**, with digital output, limit indicator.
 - j. To report error with each occurrence of overheat limit trip and to identify limit that tripped. Error code stored in nonvolatile memory.
 - k. To shut off gas heat if flame rollout occurs and to report error identifying rollout switch.
 - l. Maximum flame rollout switch trip count of **[3]** during heating cycle, with digital output, limit indicator. Maximum count limit adjustable from 1 - 6 counts.
 - m. To turn off heat if induced airflow is too low and to report error identifying pressure switch.
 - n. Maximum induced airflow pressure switch trip count of **[3]** during heating cycle, with digital output, limit indicator. Maximum count limit adjustable from 1 - 6 counts.
 - o. Error reported if gas valve not energized 2 minutes after heating demand; gas valve identified.
 - p. Maximum ignition failure count of **[3]** with digital output, limit indicator. Maximum count limit adjustable from 1 - 6 counts.
 - q. To shut off gas valve if flame not sensed. Error reported and stored in nonvolatile memory.
 - r. Delay between stages on gas valve.
 - s. To shut off unit if gas valve is energized with no demand for heat. Error reported and stored in nonvolatile memory.
15. Electric Heating Controls:
 - a. Panel board with **[]** stage controller.
 - b. Remote thermostat[s] as indicated.
 - c. Built-in **[Un]** fused disconnect switch.
 - d. Supply Fan: Start before electric elements are energized and continue operating until bonnet temperature reaches minimum setting. Include switch for continuous fan operation.
 - e. Two stages of heating control from **[Thermostat] [DDC]**.
 - f. Supply fan to turn off **[20]** seconds after heating demand has ended. Time delay adjustable from 0 - 300 seconds.
 - g. With delay time of **[12]** seconds between low and high heat stages. Time delay adjustable from 12 - 60 seconds.
 - h. To turn off heat and keep supply air fan running if overheat limit occurs.
 - i. Adjustable maximum overheat limit trip count of **[3]** during heating cycle with digital output, limit indicator. Maximum count limit adjustable from 1 - 15 counts.
 - j. Error reported and identified if overheat limit tripped. Error code stored in nonvolatile memory.
16. Cooling Controls:
 - a. Provide **[Smoke detectors in return] [Smoke detectors in supply]**.

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Specifier Note: Specify b, c or d below.

- b. **[Manual] [Automatic]** outside **[And return]** air dampers for fixed outside air quantity.
- c. Remote controlled outside **[And return]** air dampers with damper operator and means for adjusting outside air quantity.
- d. Motorized outside, return and **[Automatic] [Power exhaust] [Gravity]** relief dampers with spring return damper operator and control package to automatically vary outside air quantity. Outside air and exhaust air dampers, normally closed.
- e. Tight-fitting parallel blade dampers with neoprene or suitable gaskets, synthetic bushings and 1% maximum leakage.
- f. Damper Operation: 24 V, spring return motor with gear train sealed in oil.
- g. Mixed Air Controls: **[Maintain 55 degrees F (13 degrees C)] [Indicated]** mixed air temperature (adjustable).
- h. Up to 2 stages of cooling from **[Thermostat] [External DDC controller]** without need for additional controls.
- i. Up to 3 stages of cooling when used with relay and **[3-stage thermostat] [DDC controller]**.
- j. Up to 4 stages of cooling standard with room sensor.

Specifier Note: Specify article "j" when used with Lennox L Connection Network Building Automation System.

- k. Up to 4 stages of cooling.
- l. To allow blower on delay of up to 60 seconds after cooling demand is received. Default value of zero.
- m. To allow blower off delay of up to 240 seconds after cooling demand has ended. Default value of zero.
- n. Minimum compressor on time of **[240]** seconds on 3-phase units, adjustable between 60 - 510 seconds.
- o. Minimum compressor off time of **[300]** seconds on single-phase units, adjustable from 60 - 510 seconds.
- p. Default maximum high pressure switch trip occurrence during cooling or dehumidification cycle of **[3]**. Trip occurrence limit adjustable from 1 - 8 occurrences. If maximum limit reached, compressor locked out and digital output for service activated.
- q. Default maximum low pressure switch trip occurrence during cooling or dehumidification cycle of **[3]**. Trip occurrence limit adjustable from 1 - 8 occurrences. If maximum limit reached, compressor locked out and digital output for service activated.
- r. Low pressure trip read delay of **[5]** minutes if compressor off time has been less than 4 hours and outdoor temperature is less than 70 degrees F (21 degrees C). Delay adjustable from 0 - 34 minutes. Temperature set point adjustable from 10 degrees F (-12 degrees C) to 100 degrees F (38 degrees C). Compressor off time adjustable from 1 - 6 hours.
- s. Low pressure trip read delay of **[15]** minutes if compressor off time has been 4 hours or greater and outdoor temperature is less than 70 degrees F (21 degrees C). Delay adjustable from 0 - 34 minutes. Temperature set point adjustable from 10 degrees F (-12 degrees C) to 100 degrees F (38 degrees C). Compressor off time adjustable from 1 - 6 hours.
- t. Low pressure trip read delay of **[2]** minutes if compressor off time has been less than 4 hours and outdoor temperature is 70 degrees F (21 degrees C) or greater. Delay adjustable from 0 - 34 minutes.
- u. Temperature set point adjustable from 10 degrees F (-12 degrees C) to 100 degrees F (38 degrees C). Compressor off time adjustable from 1 - 6 hours.
- v. Low pressure trip read delay of **[8]** minutes if compressor off time has been 4 hours or greater and outdoor temperature is 70 degrees F (21 degrees C) or greater. Delay adjustable from 0 - 34 minutes.
- w. Temperature set point adjustable from 10 degrees F (-12 degrees C) to 100 degrees F (38 degrees C). Compressor off time adjustable from 1 - 6 hours.
- x. Each pressure switch trip occurrence (either high or low) to record error in nonvolatile memory and identify compressor circuit.
- y. Low outdoor air temperature compressor lockout set point of 0 degrees F (-18 degrees C) for each compressor circuit. Low outdoor temperature limit set point individually adjustable for each compressor circuit from 80 degrees F (27 degrees C) to -30 degrees F (-34 degrees C).
- z. Maximum allowable evaporator freeze-stat trip occurrence of **[3]** during cooling demand with limit adjustable from 1 - 4 occurrences. Control to shut off compressor each time freeze-stat trip occurs and record error code in nonvolatile memory. If maximum limit reached, compressor locked out and digital output for service activated.
- aa. Condenser Fan Control:
 - 1) On units with multiple condenser fans, **[6]** second time delay between condenser fan shutoff and restart to prevent reverse rotation of fan. Time delay adjustable between 0 - 16 seconds.
 - 2) On units with 4 condenser fans, first stage low outdoor temperature set point of 55 degrees F (13 degrees C) that reduces airflow through condenser by turning off some fans. Set point adjustable between 60 degrees F (16 degrees C) and 10 degrees F (-12 degrees C).

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- 3) On units with 6 condenser fans, second stage low outdoor temperature set point of 40 degrees F (4 degrees C) to reduce airflow through condenser by turning off all fans. Set point adjustable between 60 degrees F (16 degrees C) and 10 degrees F (-12 degrees C).
- 4) On units with 6 condenser fans, condenser fan on delay of **[2]** seconds. Adjustable between 0 - 240 seconds.

Specifier Note: Edit article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.

PART 2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

PART 3 EXECUTION

PART 3.01 MANUFACTURER'S INSTRUCTIONS

Specifier Note: Article below is an addition to the CSI SectionFormat and a supplement to MANU-SPEC. Revise article below to suit project requirements and specifier's practice.

- A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, and product carton installation instructions.

PART 3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

PART 3.03 INSTALLATION

- A. Install **[Packaged rooftop units] [And] [Commercial packaged, gas/electric and electric/electric heat pumps]** in accordance with manufacturer's instructions, on roof curbs **[Provided by manufacturer] [As indicated]**.
- B. Run drain line from cooling coil condensation drain pan to discharge **[Over roof drain]**.

PART 3.04 COMPLETION AND CLEANUP

- A. Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

AFTERMARKET ZONING SYSTEM INTERFACE

Introduction

Lennox' premium rooftop unit (RTU) controller, the Integrated Modular Controller (IMC), along with a variable frequency drive (VFD) option on certain RTUs, increases the ability of premium Lennox RTUs to be applied to a variety of zoning systems. The type of zoning system to be used dictates the type of RTU and the requirements for the zoning control system. The following explains each basic system and how the IMC must interface with an aftermarket zoning control system to meet the requirements of each application.

Lennox units in single zone and constant volume bypass applications may utilize an aftermarket unit controller as supervisory controller for the RTU. The IMC runs in thermostat mode and is primarily useful for diagnostic purposes, allowing the aftermarket controller to directly monitor and control heat/cool staging, the bypass damper, zone dampers, etc. When the IMC is used in thermostat mode, a maximum of two stage heating and three stage cooling are available.

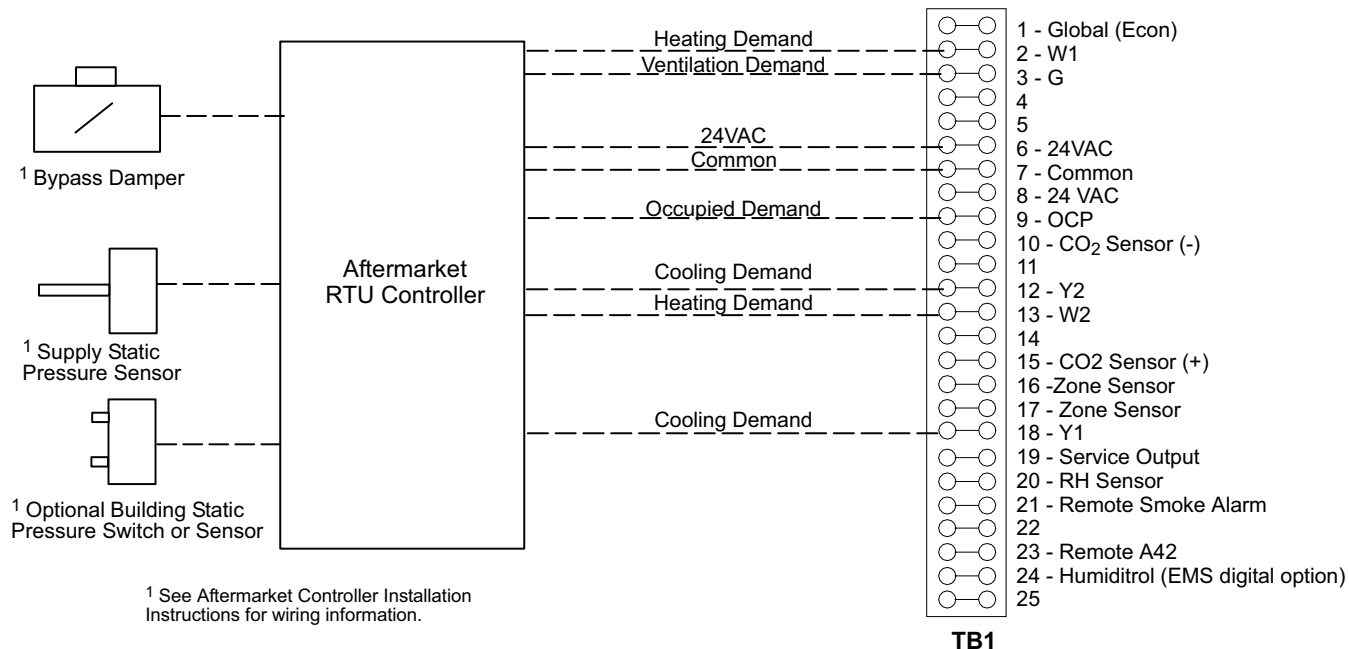
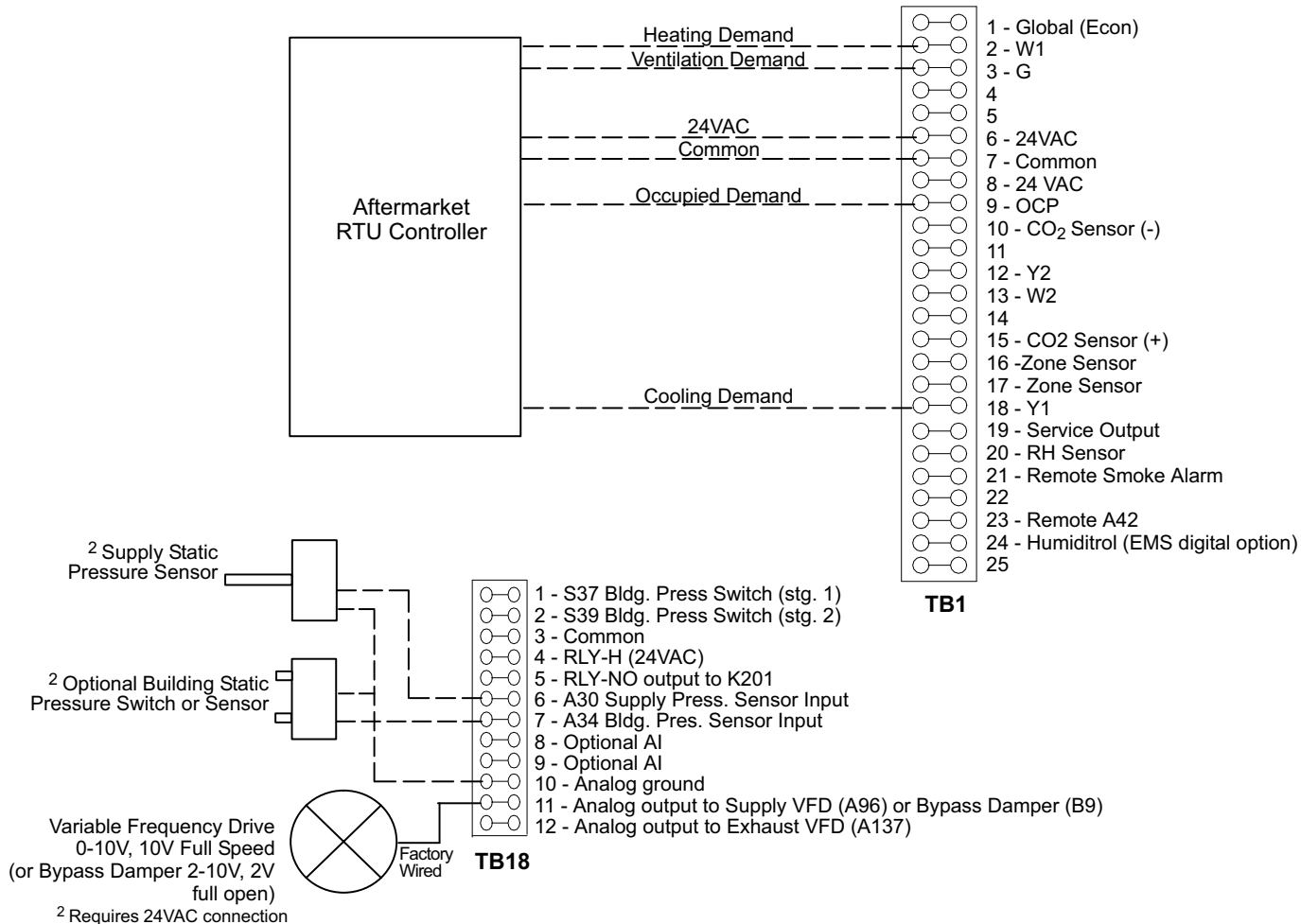
Supervisory control must be provided by the Lennox IMC to minimize complication and standardize control on Lennox VFD-controlled variable air volume (VAV) RTUs. In this configuration, the IMC controls the VFD based on static pressure in the supply duct. It controls the economizer, and stages compressors based on discharge air temperature. The aftermarket controller simply sends calls for cooling or heating based on setpoint and schedule conditions. The IMC also has many options for controlling single-stage, 50% power exhaust fans; two-stage, 100% power exhaust fans; or modulating power exhaust fans.

NOTE - Please refer to the IMC Manual for additional details.

Interface Definition

With an aftermarket control system interface, the IMC requires four digital inputs to control the rooftop unit: G (blower enable), OCP (occupied), Y1 (enables discharge cooling), W1 (enables discharge heating) and Y2 (second stage call for cooling) and W2 (second stage call for heating) should be added in constant volume applications.

These configurations minimize the controls expertise required to create a viable interface. Further, they create a consistent, standardized approach conducive to support and trouble-shooting on a broad basis without the need for substantial knowledge of the IMC, VFD, bypass, or aftermarket controllers or systems.

AFTERMARKET ZONING SYSTEM INTERFACE**Constant Volume Bypass RTU Wiring Summary for units equipped with M1-6 or higher (Aftermarket Supervisory Control)****Variable Air Volume RTU Wiring Summary - for units equipped with M1-7 or higher (IMC Supervisory Control)**

AFTERMARKET ZONING SYSTEM INTERFACE

Sequence of Operation **IMC Supervisory Control**

Operation when IMC blower (G) input is energized

When a G signal is present, the IMC controls the VFD or bypass damper to hold a constant supply duct static pressure based on the input from the IMC pressure sensor, using a PID control loop. For increased flexibility, the IMC has separate, adjustable static pressure setpoints for ventilation, cooling, heating and smoke alarms. These set points reside in the memory of the IMC, have factory default settings, and may be adjusted in the field prior to start-up.

Operation when IMC occupied (OCP) input is energized

When an OCP signal is present, the IMC adjusts the fresh air damper to either a fixed minimum position or allows it to modulate based on a CO₂ sensor. The CO₂ sensor can be wired directly to the IMC, to another controller that can monitor the sensor and pass a signal to the IMC for damper control, or to both the IMC and another device for monitoring through the desired man-machine interface while the IMC maintains damper control. During morning warm-up/cool-down the IMC keeps the fresh air damper closed based on the IMC configuration settings selected. The set points for minimum and maximum damper position setting and CO₂ control reside in the memory of the IMC, have factory default settings, and may be adjusted at start up. They cannot be adjusted using the aftermarket controls system.

Operation when IMC first stage cooling (Y1) input is energized

When a Y1 signal is present the IMC controls up to 4 stages of cooling (depending on RTU configuration) to maintain a cooling discharge air temperature setpoint. These stages include mechanical cooling, or outdoor air for cooling with an economizer. The discharge air temperature setpoint resides in the IMC, has a factory default setting, and may be adjusted at start up. It cannot be adjusted using the aftermarket controls system. The IMC has advanced discharge-air cooling reset options selected at start up based on return air temperature and/or outside air temperature. Outside air reset saves energy by gradually increasing the discharge air set point as outside air temperature decreases. Return air reset reduces potential for overcooling if the zoning system is misapplied, has an abnormal condition, or a dominant zone. The reset gradually increases discharge air temperature as return air temperature decreases.

NOTE - Y2 signal is recommended for constant volume applications.

Operation when IMC first stage heating (W1) input is energized

When a W1 signal is present, the IMC controls up to 4 stages of heating (depending on RTU configuration) to maintain a heating discharge air temperature. The heating discharge air temperature set point resides in the IMC, has a factory default setting, and may be adjusted at start up. It cannot be adjusted using the aftermarket controls system. The IMC has advanced discharge air heating reset options based on return air temperature and/or outside air temperature. Outside air reset saves energy by gradually decreasing the discharge air set point as outside air temperature increases. Return air reset reduces the potential for overheating if the zoning system is misapplied, has an abnormal condition, or a dominant zone. The reset gradually decreases discharge air temperature as return air temperature increases.

NOTE - W2 signal is recommended for constant volume applications.

Power Exhaust Fan Operation

The IMC has many power exhaust fan control options that include single-stage, two-stage and modulating control, depending on how the unit is equipped. Stage control options can be triggered based on fresh air damper positions, pressure switches, or a analog pressure sensor. Modulating control for units with VFD powered exhaust fans are typically modulated to maintain return or building static pressure, but can be staged. Set-points and operation settings for controlling power exhaust fans reside in the IMC, have factory default settings, and may be adjusted at start up. They cannot be adjusted using the aftermarket controls system.

REVISIONS

Sections	Description of Change
Options / Accessories	Added Full Perimeter Roof Curb information



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