

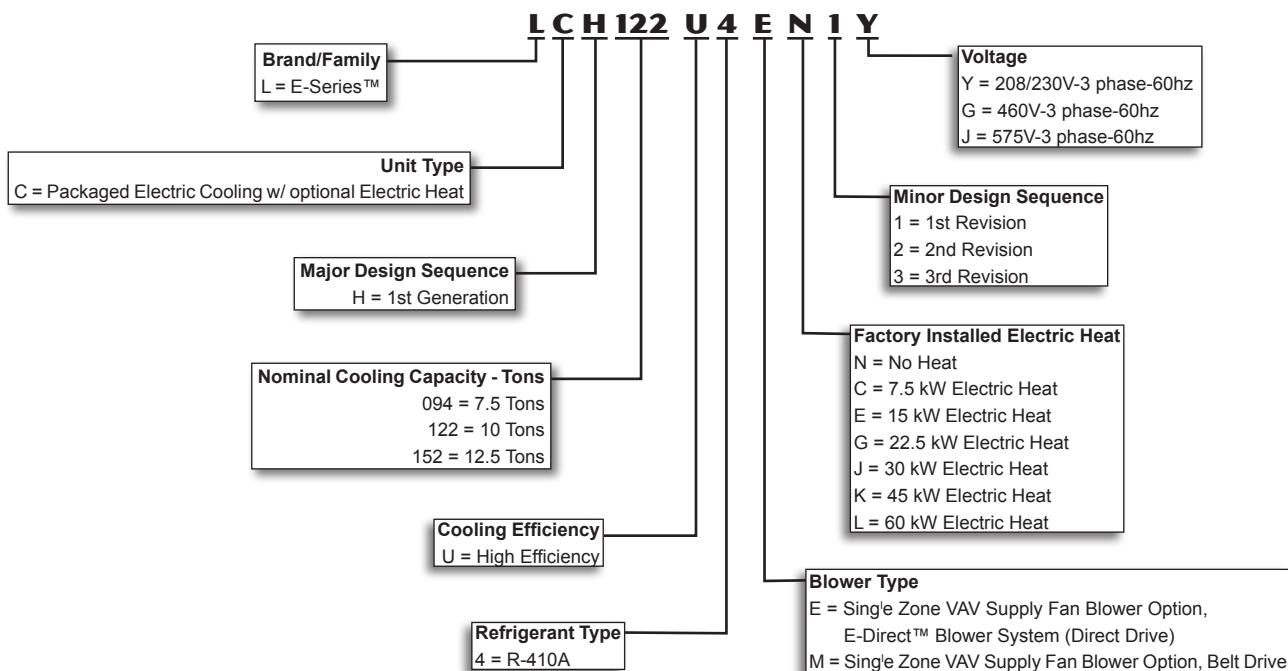


**ASHRAE 90.1
COMPLIANT**

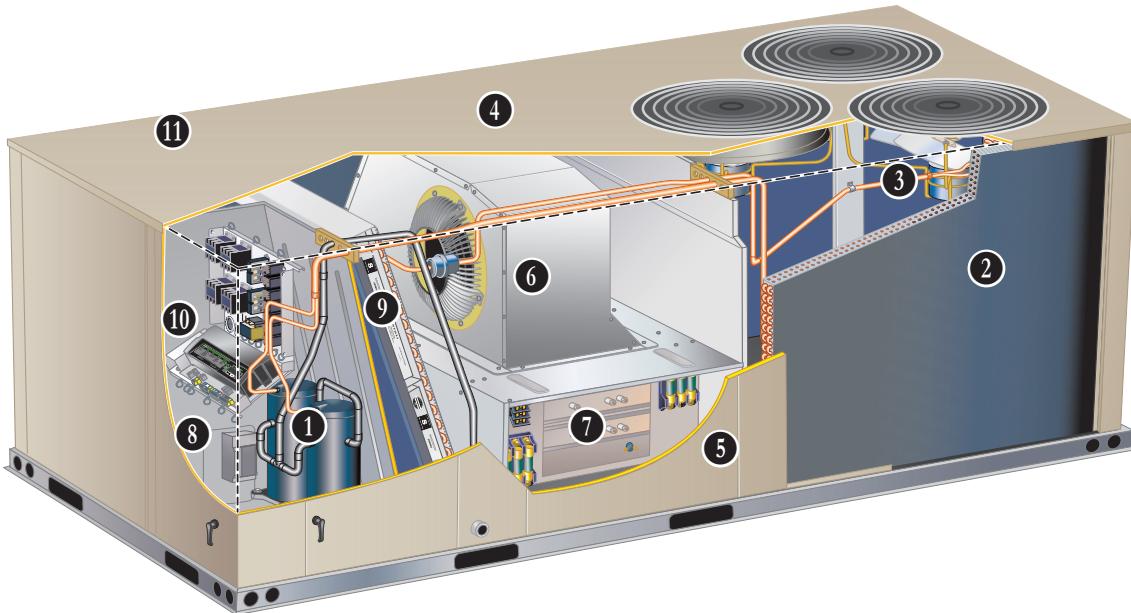


**7.5 to 12.5 Tons
Net Cooling Capacity – 92,000 to 138,000 Btuh
Optional Electric Heat - 7.5 to 60 kW**

MODEL NUMBER IDENTIFICATION



FEATURES AND BENEFITS



Allied's E-Series XE High Efficiency packaged rooftop unit product line was created to save energy with intelligence by offering some of the highest energy efficiency ratings available with a powerful, easy to use unit controller. This makes E-Series XE rooftop units perfect for business owners looking for an HVAC product with the lowest total cost of ownership. E-Series XE rooftop units feature:

- **Hinged Access Panels** - Provide quick access to components and protect panels and roof from damage during servicing.
- **Isolated Compressor Compartment** - Allows performance check during normal compressor operation without disrupting airflow.
- **Corrosion-Resistant Removable, Reversible Drain Pan** - Provides application flexibility, durability and improved serviceability.
- **Dual-Flow Thermal Expansion Valve System** - Provide peak cooling performance across the entire application range.
- **High Efficiency Cooling System With Tandem Scroll Compressors** - **Tandem Scroll Compressors are standard on all units for reliable, long-term operation.** Advanced compressor control system operation for full or part-load conditions.
- **E-Direct™ Blower System (Direct Drive Models)** - High-efficiency, variable-speed ECM motor combined with an aerodynamically optimized impeller for quiet operation.
- **Single Zone VAV Supply Fan Blower** - Allows multi-staged air delivery.
- **Auto-Tensioner for Blower Belt (Belt Drive Models)** - Factory option ensures blower is delivering the proper airflow for comfort, while maximizing efficiency and belt life.
- **MERV 13 Filters** - Available as factory or field option, provide an enhanced level of indoor air quality, and can help the building qualify for additional LEED credits.
- **Foil-Faced Insulation** - Insulation on all internal surfaces that have contact with airflow helps minimize airborne fibers and improve IAQ.
- **Common Components** - Many maintenance items are standard throughout the entire product line, reducing the need to carry different parts to the job or maintain in inventory.

Intelli-Guide™ Control System

Standard on every E-Series XE rooftop unit, the Intelli-Guide™ unit controller is the center of the Intelli-Guide™ Control System. The intuitive user interface makes setup, troubleshooting and service easier than ever. Each unit tracks the runtime of every major component and records the date and time when service or maintenance is performed.



WireRight™ System

The WireRight™ system simplifies field sensor or thermostat installation through advanced connectors that are keyed and color-coded to help prevent miswiring. Not only is the wire coloring scheme standardized across all models, each connection is intuitively labeled to make troubleshooting and servicing quick and easy.

FEATURES AND BENEFITS

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APPROVALS

AHRI Certified to AHRI Standard 340/360-2007.
ETL listed.
Efficiency ratings are certified by CSA.
Components are bonded for grounding to meet safety standards for servicing required by UL, ULC and National and Canadian Electrical Codes.
All models are ASHRAE 90.1-2010 energy efficiency compliant and meet or exceed requirements of Section 6.8.
All models meet California Code of Regulations, Title 24 and ASHRAE 90.1-2010 Section 6.4.3.10 requirements for staged airflow.
ENERGY STAR® certified units are designed to use less energy, help save money on utility bills, and help protect the environment.
ISO 9001 Registered Manufacturing Quality System.

WARRANTY

Limited five years on compressors.
Limited three years on Intelli-Guide™ unit controller.
Limited five years on Optional High Performance Economizers.
Limited one year all other covered components.

COOLING SYSTEM

Designed to maximize sensible and latent cooling performance at design conditions.
System can operate from 40°F to 125°F without any additional controls.

R-410A Refrigerant

Non-chlorine based, ozone friendly, R-410A.

1 Tandem Scroll Compressors

Scroll compressors on all models for high performance, reliability and quiet operation.
Advanced cooling system design features tandem compressors arranged in one single circuit system operate together or independently depending on load requirements.

Compressors utilize the maximum area of the coils for maximum heat transfer.

Advanced algorithms in the Intelli-Guide™ Control System manage compressor run-times to even the load between the system when running at part-load conditions.

Slide-out compressor tray allows easy access for servicing.

Compressors and tray are resiliently mounted on rubber grommets for quiet operation.

Compressor Crankcase Heaters

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

Dual-Flow Thermal Expansion Valve System

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

Dual valve assembly with flow control.

Filter/Drier

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

High Pressure Switches

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

Low Pressure Switch

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

FreezeStat

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

2 Condenser Coil

Copper tube construction, enhanced rippled-edge aluminum fins, flared shoulder tubing connections, silver soldered construction.

Evaporator Coil

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

Cross row circuiting with rifled copper tubing optimizes both sensible and latent cooling capacity.

FEATURES AND BENEFITS

COOLING SYSTEM (continued)

Condensate Drain Pan

Plastic pan, sloped to meet drainage requirements per ASHRAE 62.1.

Side or bottom drain connections.

Reversible to allow connection at back of unit.

3 Variable-Speed ECM Outdoor Coil Fan Motors

Fan speed is directly controlled by the Intelli-Guide™ unit controller.

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

Outdoor Coil Fans

PVC coated fan guard furnished.

Required Selections

Cooling Capacity

Specify nominal cooling capacity of the unit

Options/Accessories

Factory or Field Installed

Condensate Drain Trap

Available in copper or PVC.

Field installed only, may be factory ordered to ship with unit.

Drain Pan Overflow Switch

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

CABINET

4 Construction

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 forklift slots.

Raised edges around duct and power entry openings in the bottom of the unit provide additional protection against water entering the building.

Airflow Choice

Units are shipped in downflow (vertical) configuration, can be field converted to horizontal airflow with optional Horizontal Discharge Kit.

Duct Flanges

Provided for horizontal duct attachment.

Power Entry

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

Exterior Panels

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

Insulation

All panels adjacent to conditioned air are fully insulated with non-hygrosopic 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.

5 Hinged Access Panels

Hinged tool-less access panels are provided for the filter section, blower/heating section and compressor/controls section.

All hinged panels have seals and quarter-turn latching handles to provide a tight air and water seal.

Required Selections

Airflow Configuration

Specify downflow or horizontal.

Options/Accessories

Factory Installed

Corrosion Protection

A completely flexible immersed coating with an electrodeposited dry film process. (AST ElectroFin E-Coat) Meets Mil Spec MIL-P-53084, ASTM B117 Standard Method Salt Spray Testing.

Indoor Corrosion Protection:

- Coated coil
- Painted blower housing
- Painted base

Outdoor Corrosion Protection:

- Coated coil
- Painted base

Field Installed

Combination Coil/Hail Guards

Heavy gauge steel frame painted to match cabinet with expanded metal mesh to protect the outdoor coil from damage.

Horizontal Discharge Kit

Consists of duct covers to block off downflow supply and return air openings for horizontal applications.

Also includes return air duct flanges for end return air when economizer is used in horizontal applications.

NOTE - When configuring unit for horizontal application with economizer, a separate Horizontal Barometric Relief Damper with Hood must be ordered separately for installation in the return air duct.

FEATURES AND BENEFITS

6 BLOWER

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

E-Direct™ Blower System

High-efficiency, variable-speed ECM (electronically commutated) motor with an aerodynamically optimized impeller with backward curved blades mounted directly onto the rotor.



Design combines the motor and electronics into one unit, eliminating the need for a variable-frequency drive.

Maintains the ability to ramp up or down the blower to meet comfort needs.

Blower assembly slides out of unit for servicing.



Air inlet grill reduces indoor sound levels without affecting air performance.

Belt Drive Blower System

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

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

Forward curved blades, double inlet, blower wheel is statically and dynamically balanced. Equipped with ball bearings and adjustable pulley (allows speed change during commissioning).

Blower assembly slides out of unit for servicing.

Required Selections

Select E-Direct™ or Belt Drive Option with Single Zone VAV Supply Fan Blower

Single Zone VAV Supply Fan blower stages the amount of airflow according to compressor stages, heating demand, ventilation demand or smoke alarm.

NOTE - Part load airflow in cooling mode should not be set below 160 cfm/nominal full load ton to reduce the risk of evaporator coil freeze-up.

Belt Drive Single Zone VAV option utilizes a Variable Frequency Drive (VFD) to stage the supply blower airflow. The VFD alters the frequency and voltage of the power supply to the blower to control blower speed.

The amount of airflow for each stage can be set according to a parameter in the Intelli-Guide™ unit controller. Unit is shipped from the factory with preset airflow.

The Single Zone VAV belt drive supply air blower option can be ordered with or without an Electronic Bypass Control. If equipped with the bypass control the Single Zone VAV features manual (default) or automatic electronic bypass control of the VFD. In case of a VFD malfunction, a VFD alarm is generated by the Intelli-Guide™ unit controller. The VFD can be manually bypassed to continue unit operation at full blower speed. Or the unit controller can be set to automatically switch to full blower speed if a VFD alarm is generated.

The VFD has an operational range of 0 to 125°F outdoor air ambient temperature.

Lower operating costs are obtained when the blower is operated on lower speeds.

Ordering Information

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

Options/Accessories

Factory Installed

Blower Belt Auto-Tensioner

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

FEATURES AND BENEFITS

ELECTRICAL

WireRight™ System

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

Electrical Plugs

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

Phase/Voltage Detection

Phase detection monitors power supply to assure phase is correct at unit start-up. If phase is incorrect, the unit will not start and an alarm code is reported to the unit controller. Protects unit from being started with incorrect phasing which could lead to issues such as compressors running backwards.

Voltage detection monitors power supply voltage to assure proper voltage. If voltage is not correct (over/under voltage conditions) the unit will not start and an alarm code is reported to the unit controller.

Required Selections

Voltage Choice

Specify when ordering base unit.

Options/Accessories

Factory Installed

Circuit Breakers

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

SCR (Silicon Controlled Rectifier) Electric Heat Control

The SCR Electric Heat Control modulates small, precise increments of power to the electric heat load eliminating temperature fluctuations associated with mechanical controls.

Almost instantaneous operation with no moving parts.

Zero-Cross (fast cycling) feature improves electric heater life with less contraction and expansion of the heating elements.

The SCR operates when there is no call for heat from the building control system or thermostat. SCR air tempering is controlled by a secondary thermostat and remote duct sensor (ordered separately). A call for heat overrides the SCR and modulates the SCR to 100% heat output. A call for cooling overrides the SCR.

NOTE - The SCR option is not available with 45 kW and 60 kW electric heat (208/230V) models.

NOTE - Blower Proving Switch is required and must be ordered separately for factory installation. See Controls in the Options/Accessories table.

NOTE - Available for use with conventional thermostat controls or Novar® control systems only.

Factory or Field Installed

Disconnect Switch

Accessible from outside of unit, spring loaded weatherproof cover furnished.

7 Electric Heat

Helix wound nichrome elements, individual element limit controls, wiring harness. Unit fuse block is furnished as standard. See Options / Accessories tables for ordering information.

8 GFI Service Outlets (2)

115V ground fault circuit interrupter (GFCI) type, non-powered, field-wired.

Field Installed

GFI Weatherproof Cover

Single-gang cover.

Heavy-duty UV-resistant polycarbonate case construction.

Hinged base cover with gasket.

INDOOR AIR QUALITY

9 Air Filters

Disposable 2-inch filters furnished as standard.

Options/Accessories

Factory or Field Installed

High Efficiency Air Filters

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

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 must be field supplied when used with 460V and 575V rooftop units.

Magnetic safety interlock terminates power when access panels are removed.

Approved by ETL

Field Installed

Replacement Filter Media Kit With Frame

Replaces existing pleated filter media. Includes washable metal mesh screen and metal frame with clip for holding replaceable non-pleated filter.

Indoor Air Quality (CO₂) Sensors

Monitors CO₂ levels, reports to the Intelli-Guide™ unit controller which adjusts economizer dampers as needed.

INTELLI-GUIDE™ CONTROL SYSTEM

10 INTELLI-GUIDE™ UNIT CONTROLLER



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

Features:

LCD Display - Easy to read menu with buttons for menu navigation. during setup and diagnostics. 4 lines x 20 character display.

Menu LEDs - Four LEDs (*Data, Setup, Service, Settings*) aid in menu navigation.

Main Menu and Help Buttons - Quick navigation to home screen and built-in help functions.

Scroll, Value Adjustment Select and Save Buttons

Simplified Setup Procedure - SETUP menu insures proper installation and setup of the rooftop unit.

Profile Setup - Copy key settings between units with the same configuration greatly reducing setup time.

USB Port - Allows a technician to download and transfer unit information to help verify service was performed.



USB drive will also allow updating software on the Intelli-Guide™ Control System to obtain enhanced functionality without the need to change components.

Unit Controller Software

Unit Self-Test - Unit Controller can perform a rooftop unit self-test to verify individual critical component and system performance. Included is an economizer test function that helps assure the economizer is operating correctly.

Time Clock with Run-time Information

Built-In Functions Include:

Adjustable Blower On/Off Delay

Built-in Control Parameter Defaults

Compressor Time-Off Delay

DDC Compatible

Dirty Filter Switch Input

Discharge Air Temperature Control

Display/Sensor Readout

Economizer Control Options -

See Economizer / Outdoor Air / Exhaust Options.

Fresh Air Tempering

Extensive Unit Diagnostics -

Over 100 diagnostic and status messages in English.

Exhaust Fan Control Modes - Fresh air damper position.

Permanent Diagnostic Code Storage

Field Adjustable Control

Parameters - Over 200 different control settings.

Indoor Air Quality Input -

Demand Control Ventilation ready

Low Ambient Controls - Cooling operation down to 40°F.

Gas Valve Time Delay Between First and Second Stage

Minimum Compressor Run Time

Network Capable - Can be daisy chained to other units or controls.

Night Setback Mode

Return Air Temperature Limit Control

Safety Switch Input - Allows Controller to respond to a external safety switch trip.

Service Relay Output

Smoke Alarm Mode - Four choices (unit off, positive pressure, negative pressure, purge).

Staging - Up to 2 heat/2 cool (standard Intelli-Guide™ unit controller thermostat input). Up to 3 cool with additional relay. Up to 4 cool with room sensor or network operation.

“Strike Three” Protection

Gas Reheat Control -

Simultaneous heating and cooling operation for controlling humidity for process air applications such as supermarkets.

Thermostat Bounce Delay

Warm Up Mode Delay

LED Indicators

PC Interface - Connect to the Intelli-Guide™ unit controller from a PC with the Allied Unit Controller Software.

Room Sensor Operation - Controls temperature.

Options / Accessories

Factory or Field Installed

Blower Proving Switch

Monitors blower operation, shuts down unit if blower fails.

Dirty Filter Switch

Senses static pressure increase indicating dirty filter condition.

Controls Options

Factory or Field Installed

Fresh Air Tempering

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

General Purpose Control Kit

Plug-in control provides additional analog and digital inputs/outputs for field installed options.

Smoke Detector

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

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.

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

OPTIONS / ACCESSORIES

Controls Options (continued)

Aftermarket DDC

Novar® ETM Modules and options.

Thermostats

Control system and thermostat options. Aftermarket unit controller options.

Field Installed

Humidity Sensor Kit

Humidity sensor required with Supermarket reheat field selectable option.

11 ECONOMIZER OPTIONS

Standard and High Performance Models available.

Economizer operation is set and controlled by the Intelli-Guide™ unit controller.

Simple plug-in connections from economizer to unit controller for easy installation.

All E-Series XE rooftop units are equipped with factory installed CEC Title 24 approved sensors for outside, return and discharge air temperature monitoring.

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

Factory or Field Installed

Economizer (Standard and High Performance Common Features)

Downflow or Horizontal with Outdoor Air Hood.

Outdoor Air Hood is included when economizer is factory installed and is furnished with economizer when ordered for field installation.

Downflow Barometric Relief Dampers with Exhaust Hood is also furnished.

Standard Economizer Features (Not for Title 24)

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.

NOTE: The Free Cooling default setting for outdoor air temperature sensor is 55°F.

High Performance Economizer Features

Approved for California Title 24 building standards.

ASHRAE 90.1-2010 compliant.

Parallel gear-driven action, high torque 24-volt fully-modulating spring return damper motor, return air and outdoor air dampers, plug-in connections to unit, stainless steel bearings, enhanced neoprene blade edge seals and flexible stainless steel jamb seals to minimize air leakage.

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

NOTE - The Free Cooling setpoint for Title 24 applications must be set based on the Climate Zone where the system is installed. See Section 140.4 "Prescriptive Requirements for Space Conditioning Systems" of the California Energy Commission's 2013 Building Energy Efficiency Standards.

Refer to Installation Instructions for complete setup information.

Differential Sensible Control

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

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

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

In Single Sensible Control mode, the economizer is enabled when outdoor air temperature falls below the configured setpoint.

Global Control

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

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

Economizer Control Options

Factory or Field Installed

Single Enthalpy Temperature Control (Not for Title 24)

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

Differential Enthalpy Control (Not for Title 24)

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

OPTIONS / ACCESSORIES

ECONOMIZER OPTIONS (continued)

Economizer Control Options

Field Installed

Outdoor Air CFM Control

Maintains constant outdoor air volume levels on the supply air fan and varying unit airflows. Using information from a velocity sensor located in the rooftop unit outdoor air section, the Intelli-Guide™ unit controller changes the economizer position to help minimize the effect of supply fan speed changes on outdoor air volume levels. Setpoint for outdoor air volume is established by field testing.

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

Building Pressure Control

Maintains constant building pressure level.

Using information from a differential pressure between the outdoor air and the building air, the Intelli-Guide™ unit controller changes the economizer position to help maintain a constant building pressure.

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

EXHAUST OPTIONS

Factory or Field Installed

Power Exhaust Fans

Installs internal to unit for downflow applications only with Economizer option. Provides exhaust air pressure relief. Interlocked to run when supply air blower is operating, fans run when outdoor air dampers are 50% open (adjustable), motor is overload protected. Requires Economizer and Downflow Barometric Relief Dampers. Fan is 20 in. diameter with 5 blades (K1PWRE10B) WITH 1/3 hp motor.

Field Installed

Horizontal Low Profile

Barometric Relief Dampers

For use when unit is configured for horizontal applications requiring an economizer.

Allows relief of excess air. Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle.

Field installed in return air duct.

Bird screen and exhaust hood furnished.

Requires Horizontal Discharge Kit.

OUTDOOR AIR OPTIONS

Factory or Field Installed

Outdoor Air Damper - Downflow or Horizontal With Air Hood

Linked mechanical dampers, 0 to 25% (fixed) outdoor air adjustable, installs in unit. Includes outdoor air hood.

Automatic model features fully modulating spring return damper motor with plug-in connection.

Manual model features a slide damper.

Maximum mixed air temperature in cooling mode: 100°F.

ROOF CURBS

Nailer strip furnished, mates to unit, US National Roofing Contractors Approved, shipped knocked down.

Hybrid Roof Curbs, Downflow

Roof curb can be assembled using interlocking tabs to fasten corners together. No tools required.

Curb can also be fastened together with furnished hardware.

Available in 8, 14, 18, and 24 inch heights.

Adjustable Pitch Curb

Fully adjustable pitch curbs (3/4 in. per foot in any direction) provide a level platform for rooftop units allowing flexible installations on roofs with uneven or sloped angles.

Uses interlocking tabs to fasten corners together. No tools required.

Hardware is furnished to connect upper curb with lower curb.

Available in 14 inch height.

CEILING DIFFUSERS

Ceiling Diffusers (Flush or Step-Down)

Diffuser face and grilles with white powder coat finish, insulated (UL listed duct liner), diffuser box with collars for duct connection, fixed blades (flush diffusers) and double deflection blades (step-down diffusers), provisions for suspending, internally sealed (prevents recirculation), removable return air grille, adapts to T-bar ceiling grids or plaster ceilings.

Transitions (Supply and Return)

Used with diffusers, installs in roof curb, galvanized steel construction, flanges furnished for duct connection to diffusers, fully insulated.

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No		
			094	122	152
COOLING SYSTEM					
Condensate Drain Trap	PVC - C1TRAP20AD2	76W26	OX	OX	OX
	Copper - C1TRAP10AD2	76W27	OX	OX	OX
Corrosion Protection		Factory	O	O	O
Drain Pan Overflow Switch	E1SNSR71AD1	68W88	OX	OX	OX
Refrigerant Type		R-410A	O	O	O
BLOWER - SUPPLY AIR					
Blower	E-Direct™ (Direct Drive) Single Zone VAV Supply Fan supply air blower	Factory	O	O	O
	Belt Drive Single Zone VAV Supply Fan supply air blower (With VFD Bypass Control)	Factory	O	O	O
	Belt Drive Single Zone VAV Supply Fan supply air blower (Without VFD Bypass Control)	Factory	O	O	O
Motors - Single Zone VAV Supply Fan	E-Direct™ (direct drive) ECM 3.75 hp	Factory	O	O	O
	Belt Drive (standard efficiency) - 2 hp	Factory	O	O	O
	Belt Drive (standard efficiency) - 3 hp	Factory	O	O	O
	Belt Drive (standard efficiency) - 5 hp	Factory	O	O	O
Drive Kits	Kit #1 590-890 rpm	Factory	O	O	O
See Blower Data Tables for selection	Kit #2 800-1105 rpm	Factory	O	O	O
	Kit #3 795-1195 rpm	Factory	O	O	O
	Kit #4 730-970 rpm	Factory	O	O	O
	Kit #5 940-1200 rpm	Factory	O	O	O
	Kit #6 1015-1300 rpm	Factory	O	O	O
	Kit #7 730-970 rpm	Factory	O	O	O
	Kit #8 940-1200 rpm	Factory	O	O	O
	Kit #9 1015-1300 rpm	Factory	O	O	O
	Kit #10 900-1135 rpm	Factory	O	O	O
	Kit #11 1040-1315 rpm	Factory	O	O	O
	Kit #12 1125-1425 rpm	Factory	O	O	O
	Blower Belt Auto-Tensioner	Factory	O	O	O
CABINET					
Combination Coil/Hail Guards	E1GARD51BP1	13T06	X	X	X
Horizontal Discharge Kit	K1HECK00B-1	51W25	X	X	X

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

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

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No		
			094	122	152
CONTROLS					
Blower Proving Switch		C1SNSR35FF1	53W65	OX	OX
Commercial Controls	Intelli-Guide™ Control System - BACnet® Module - IC0CTRL60AE1L		59W51	OX	OX
	Intelli-Guide™ Control System - LonTalk® Module - C0CTRL65FF1		54W27	OX	OX
	Novar® ETM-2051 - E0CTRL30B1		64W73	OX	OX
	Novar® LSM	Factory	O	O	O
Dirty Filter Switch	E1SNSR55B-1		53W67	OX	OX
Fresh Air Tempering	C1SNSR75AD1		58W63	OX	OX
General Purpose Control Kit	E1GPBK30C1		13J78	X	X
Smoke Detector - Supply or Return (Power board and one sensor)	C1SNSR44B-2		11K76	OX	OX
Smoke Detector - Supply and Return (Power board and two sensors)	C1SNSR43B-2		11K80	OX	OX
INDOOR AIR QUALITY					
Air Filters					
High Efficiency Air Filters 20 x 25 x 2 (Order 4 per unit)	MERV 8 - C1FLTR15B-1		50W61	OX	OX
	MERV 13 - C1FLTR40B-1		52W41	OX	OX
Replacement Media Filter With Metal Mesh Frame (includes non-pleated filter media)	C1FLTR30B-1-		Y3063	X	X
Indoor Air Quality (CO₂) Sensors					
Sensor - Wall-mount, off-white plastic cover with LCD display	C0SNSR50AE1L		77N39	X	X
Sensor - Wall-mount, off-white plastic cover, no display	C0SNSR52AE1L		87N53	X	X
Sensor - Black plastic case with LCD display, rated for plenum mounting	C0SNSR51AE1L		87N52	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting	C0MISC19AE1		87N54	X	X
CO ₂ Sensor Duct Mounting Kit - for downflow applications	C0MISC19AE1-		85L43	X	X
Aspiration Box - for duct mounting non-plenum rated CO ₂ sensors (87N53 or 77N39)	C0MISC16AE1-		90N43	X	X
UVC Germicidal Lamps					
1 UVC Light Kit (208/230v-1ph)	C1UVCL10B-1		54W62	OX	OX
ELECTRICAL					
Voltage 60 hz	208/230V - 3 phase	Factory	O	O	O
	460V - 3 phase	Factory	O	O	O
	575V - 3 phase	Factory	O	O	O
HACR Circuit Breakers					
Disconnect Switch - See Electrical/Electric Heat tables for selection	80 amp - C1DISC080B-1		54W56	OX	OX
	150 amp - C1DISC150B-1		54W57	OX	OX
GFI Service Outlets	15 amp non-powered, field-wired (208/230V, 460V only) LTAGFIK10/15		74M70	OX	OX
	20 amp non-powered, field-wired (575V only) C1GFCI20FF1		67E01	OX	OX
Weatherproof Cover for GFI	C1GFCI99FF1		10C89	X	X

¹ Lamps operate on 110-230V single-phase power supply. Step-down transformer may be ordered separately for 460V and 575V units. Alternately, 110V power supply may be used to directly power the UVC ballast(s)

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

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

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No		
			094	122	152
ELECTRIC HEAT - DIRECT DRIVE UNITS					
7.5 kW	208/230V-3ph - E1EH0075BP1Y	10U96	OX		
	460V-3ph - E1EH0075BP1G	10U97	OX		
	575V-3ph - E1EH0075BP1J	11J19	OX		
15 kW	208/230V-3ph - E1EH0150BP1Y	10U99	OX	OX	OX
	460V-3ph - E1EH0150BP1G	10X01	OX	OX	OX
	575V-3ph - E1EH0150BP1J	10X02	OX	OX	OX
22.5 kW	208/230V-3ph - E1EH0225BP1Y	10X03	OX	OX	OX
	460V-3ph - E1EH0225BP1G	10X04	OX	OX	OX
	575V-3ph - E1EH0225BP1J	10X05	OX	OX	OX
30 kW	208/230V-3ph - E1EH0300BP1Y	10X06	OX	OX	OX
	460V-3ph - E1EH0300BP1G	10X07	OX	OX	OX
	575V-3ph - E1EH0300BP1J	10X08	OX	OX	OX
45 kW	208/230V-3ph - E1EH0450BP1Y	10X09	OX	OX	OX
	460V-3ph - E1EH0450BP1G	10X11	OX	OX	OX
	575V-3ph - E1EH0450BP1J	10X12	OX	OX	OX
60 kW	208/230V-3ph - E1EH0600BP1Y	10X13		OX	OX
	460V-3ph - E1EH0600BP1G	10X14		OX	OX
	575V-3ph - E1EH0600BP1J	10X15		OX	OX
ELECTRIC HEAT - BELT DRIVE UNITS					
7.5 kW	208/230V-3ph - C1EH0075B-1Y	56W38	OX		
	460V-3ph - C1EH0075B-1G	56W39	OX		
	575V-3ph - C1EH0075B-1J	56W40	OX		
15 kW	208/230V-3ph - C1EH0015B-1Y	56W41	OX	OX	OX
	460V-3ph - C1EH0150B-1G	56W42	OX	OX	OX
	575V-3ph - C1EH0150B-1J	56W43	OX	OX	OX
22.5 kW	208/230V-3ph - C1EH0225B-1Y	56W44	OX	OX	OX
	460V-3ph - C1EH0225B-1G	56W45	OX	OX	OX
	575V-3ph - C1EH0225B-1J	56W46	OX	OX	OX
30 kW	208/230V-3ph - C1EH0300B-1Y	56W47	OX	OX	OX
	460V-3ph - C1EH0300B-1G	56W48	OX	OX	OX
	575V-3ph - C1EH0300B-1J	56W49	OX	OX	OX
45 kW	208/230V-3ph - C1EH0450B-1Y	56W50	OX	OX	OX
	460V-3ph - C1EH0450B-1G	56W51	OX	OX	OX
	575V-3ph - C1EH0450B-1J	56W52	OX	OX	OX
60 kW	208/230V-3ph - C1EH0600B-1Y	55W02		OX	OX
	460V-3ph - C1EH0600B-1G	55W03		OX	OX
	575V-3ph - C1EH0600B-1J	55W04		OX	OX
SCR (Silicon Controlled Rectifier) Electric Heat Control		Factory	O	O	O
Thermostat (required)		45N59	X	X	X
Duct Sensor (required)		45N60	X	X	X

NOTE - The SCR option is not available with 45 kW and 60 kW electric heat (208/230V) models.

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

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OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No		
			094	122	152
ECONOMIZER					
Standard Economizer (Not for Title 24)					
Standard Economizer Downflow or Horizontal - Includes Outdoor Air Hood and Downflow Barometric Relief Dampers with Exhaust Hood Order Horizontal Barometric Relief Dampers separately	E1ECON15B-1	55W05	OX	OX	OX
High Performance Economizer (Approved for California Title 24 Building Standards)					
High Performance Economizer Downflow or Horizontal - Includes Outdoor Air Hood and Downflow Barometric Relief Dampers with Exhaust Hood Order Horizontal Barometric Relief Dampers separately	E1ECON17B-1	10U59	OX	OX	OX
Economizer Controls					
Differential Enthalpy (Not for Title 24)	Order 2 - C1SNSR64FF1	53W64	OX	OX	OX
Sensible Control	Sensor is Furnished	Factory	O	O	O
Single Enthalpy (Not for Title 24)	C1SNSR64FF1	53W64	OX	OX	OX
Global Control	Sensor Field Provided	Factory	O	O	O
Building Pressure Control	E1GPBK20C1	13J77	X	X	X
Outdoor Air CFM Control	E1GPBK10C1	13J76	X	X	X
Horizontal Barometric Relief Dampers					
Horizontal Low Profile Barometric Relief Dampers With Exhaust Hood	LAGEDH03/15	53K04	X	X	X
OUTDOOR AIR					
Outdoor Air Dampers					
Motorized Dampers (Hood furnished)	C1DAMP20B-1	14G28	OX	OX	OX
Manual Dampers (Hood furnished)	C1DAMP10B-2	14G29	OX	OX	OX
POWER EXHAUST					
Standard Static	208/230V-3ph - K1PWRE10B-1Y	53W44	OX	OX	OX
	460V-3ph - K1PWRE10B-1G	53W45	OX	OX	OX
	575V-3ph - K1PWRE10B-1J	53W46	OX	OX	OX

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

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

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X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No		
			094	122	152
ROOF CURBS					
Hybrid Roof Curbs, Downflow					
8 in. height	C1CURB70B-1	11F54	X	X	X
14 in. height	C1CURB71B-1	11F55	X	X	X
18 in. height	C1CURB72B-1	11F56	X	X	X
24 in. height	C1CURB73B-1	11F57	X	X	X
Adjustable Pitch Curb					
14 in. height	C1CURB55B-1	54W50	X	X	X
CEILING DIFFUSERS					
Step-Down - Order one	RTD11-95S	13K61	X		
	RTD11-135S	13K62		X	
	RTD11-185S	13K63			X
Flush - Order one	FD11-95S	13K56	X		
	FD11-135S	13K57		X	
	FD11-185S	13K58			X
Transitions (Supply and Return) - Order one	C1DIFF30B-1	12X65	X		
	C1DIFF31B-1	12X66		X	
	C1DIFF32B-1	12X67			X

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

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

O = Configure To Order (Factory Installed)

X = Field Installed

SEQUENCE OF OPERATION

HEATING MODE

NOTE - Heating Mode Is The Same For All Control Options.

W1 Demand:

Electric heat energized (stage 1 on units with 2-stage) and supply air blower operates at heating speed.

W2 Demand:

Electric heat energized (stage 2 on units with 2-stage) and supply air blower operates at heating speed.

MODULATING OUTDOOR AIR DAMPER

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

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

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

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

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

THERMOSTAT MODE

The thermostat mode has specific sequence-of-operation scenarios for Allied's LGH E-Series XE High Efficiency product line. The standard thermostat mode will typically allow 2 stages of heating and cooling operation. Units with a globally-controlled economizer option can have 2 stages of mechanical cooling and free cooling economizer operation. The Single Zone VAV Supply Fan blower will also allow up to 5 different supply blower CFM values: 2 CFM values for cooling mode, 1 CFM value for heating mode, 1 CFM value for ventilation, and an extra speed for when one of the smoke alarm options is used. When using the factory default, the smoke alarm mode will turn off the blower. It is important to note that the unit controller merely passes along the instructions to provide heating, cooling, or other unit operations.

SEQUENCE OF OPERATION

THERMOSTAT MODE - SINGLE ZONE VAV SUPPLY FAN

OPERATION WITH 2-STAGE THERMOSTAT

Supply Air Blower CFM

Unit has following supply air blower CFM settings:

- Heating CFM
- High Cooling CFM
- Low Cooling CFM
- Ventilation CFM
- Blower Speed
- Smoke Speed (Used only in smoke removal option - not covered here)

Unit Features An Economizer And Outdoor Air Is Suitable

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

Cooling - Thermostat Mode (Y1, Y2)

Y1 Demand:

All compressors are off, supply air blower is on low cooling CFM to minimize blower power consumption, economizer modulates (minimum to maximum open position) to maintain parameter 159 setting (supply air temperature).

Y2 Demand:

All compressors are off, supply air blower is on high cooling CFM providing higher cooling capacity, and economizer modulates to maintain parameter 159 setting (supply air temperature).

Parameter 164 dictates when compressor 1 is energized while supply air blower stays on high cooling CFM providing maximum cooling capacity. After compressor is energized the economizer stays at maximum open.

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

Y1 Demand:

One compressor operates and supply air blower operates at low cooling CFM.

Y2 Demand:

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

SEQUENCE OF OPERATION

THERMOSTAT MODE - SINGLE ZONE VAV SUPPLY FAN (CONTINUED)

OPERATION WITH 3-STAGE THERMOSTAT

Supply Air Blower CFM

Unit has following supply air blower CFM settings:

- Heating CFM
- High Cooling CFM
- Low Cooling CFM
- Ventilation CFM
- Blower Speed
- Smoke Speed (Used only in smoke removal option - not covered here)

Unit Features An Economizer And Outdoor Air Is Suitable

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

Cooling - Thermostat or Zone Sensor Mode (Y1, Y2, Y3)

Y1 Demand:

All compressors are off, supply air blower is on low cooling CFM to minimize blower power consumption, economizer modulates (minimum to maximum open position) to maintain Parameter 159 setting (supply air temperature).

Y2 Demand:

All compressors are off, supply air blower is on high cooling CFM providing higher cooling capacity, and economizer modulates to maintain Parameter 159 setting (supply air temperature).

Parameter 164 dictates when one compressor is energized while supply air blower stays on high cooling CFM providing maximum cooling capacity. After compressors are energized the economizer stays at maximum open.

Y3 Demand:

Both compressors are energized and the supply air blower stays on high cooling CFM.

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

Y1 Demand:

One compressor operates and the supply air blower operates at low cooling CFM.

Y2 or Y3 Demand:

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

SEQUENCE OF OPERATION

ZONE SENSOR MODE

When in zone sensor mode, the unit can modulate four stages of cooling or two stages of heating operation. In this case, the unit controller will control all unit staging operations. While in zone sensor mode, multi-stage air volume applications can use up to 4 different supply blower CFM values for cooling. Zone sensor mode takes full advantage of the unit controller's features, increasing staging and control capabilities. To operate correctly, the unit must receive information from a temperature sensor. It may also receive setpoint information from a network device. Based on this information, the unit controller will either turn on or off various cooling and heating stages to maintain comfort control.

In zone sensor mode, it is possible to operate the unit without a network device. In this case the unit controller will control the zone temperature based on the backup occupied and unoccupied setpoints stored in the unit controller. The unit controller decides which setpoints to use based on the status of the occupied input. For example, if the unit is in occupied mode, the unit controller will use the occupied backup setpoints and if the unit is not in unoccupied mode the unit controller will use the unoccupied backup setpoints. In this scenario the unit controller not only records diagnostic information and makes sure the unit maintains safe operation limits,. It also controls all staging and unit operations.

ZONE SENSOR MODE HEATING

For heating, the unit controller monitors space temperature from the zone sensor. Based on this information and the setpoints sent to the unit controller from the Allied or third-party network device, the unit controller turns on or off the heating stages to maintain the desired temperature setpoint.

The LGH E-Series XE High Efficiency product line features up to four independent heat stages in larger equipment. The exact percent of heating capacity used will vary depending on the size of the unit and the heating capacity. Regardless of how many stages are present, the unit controller will seek to provide the right amount of heat to satisfy the demand.

The sequence of operation for increasing and decreasing heating stages is best shown by the staging chart. As you can see from the chart, the unit will activate the heating stages if the space temperature drops to certain temperatures. If the temperature continues to drop, the unit will continue to add heating stages until the unit reaches full heating capacity. Notice that the example heating setpoint is 70°F with a 1° deadband. Also notice that the stage-up timer is 15 minutes. The unit controller will call for the next heating stage if the space temperature has been in the stage-up timer deadband region for 15 continuous minutes. The stage-up timer deadband region is the range between the temperature at which the current heating stage was called, and the temperature at which the next heating stage would be called. Heating stages will deactivate immediately after the space temperature has been satisfied. These are all default setpoints and can be changed to customize the unit to the specific application.

It is important to note that units with multi-stage air volume supply blowers operate at the selected heating speed for all stages of heating. The supply blower speed will not change as heat stages increase or decrease because there is only one heating supply blower speed setpoint.

ZONE SENSOR MODE COOLING

For cooling, the unit controller monitors space temperature from the zone sensor. Based on this information and the setpoints sent to the unit controller from an optional Allied or third-party network device, the unit controller turns on or off cooling stages to maintain the desired temperature setpoint.

The LGH E-Series XE High Efficiency product line features up to four independent cooling stages in larger equipment. Regardless of how many stages are available, the unit controller will seek to provide the right amount of cooling to satisfy the demand. This helps provide great comfort control and to minimize energy consumption. The sequence of operation for increasing and decreasing cooling stages is best shown by the staging chart. As you can see from the chart, the unit will activate cooling stages if the space temperature rises above certain setpoints. If the temperature continues to rise, the unit will continue to add cooling stages until the unit reaches full cooling capacity. Notice that the example cooling setpoint is 75°F with a 1° deadband. Notice that the stage-up timer is 15 minutes. The unit controller will call for the next cooling stage if the space temperature has been in the stage-up timer deadband region for 15 continuous minutes. The stage-up timer deadband region is the range between the temperature at which the current cooling stage was called, and the temperature at which the next cooling stage would be called. Cooling mode has a stage-down delay default that keeps the next lower stage on for 15 minutes after a higher stage has ended. This feature is to make sure the unit doesn't prematurely shut off a cooling stage. These are all default setpoints and can be changed to customize the unit to the specific application.

SEQUENCE OF OPERATION

ZONE SENSOR MODE (continued)

ZONE SENSOR MODE COOLING WITH/WITHOUT ECONOMIZER

If the outdoor air is suitable and the unit features an economizer, instead of using mechanical cooling to meet the first cooling demand, the unit controller will try to meet the demand by opening the economizer and using outdoor air. The economizer damper will modulate to maintain Parameter 159 setting (supply air temperature) to meet the cooling demand.

If mechanical cooling is locked out because of low ambient outside air temperature, then mechanical cooling will not come on and the unit will attempt to satisfy any demand by modulating the economizer's damper position to maintain Parameter 159 setting (supply air temperature). The setpoints at which mechanical cooling locks out and the economizer maintains supply air temperature are adjustable.

If mechanical cooling is not locked out and if the unit is able to satisfy the room temperature requirements using outdoor air, then the unit will close the economizer to the minimum setpoint and cease cooling operation. If the unit is unable to satisfy the room temperature requirements using outdoor air, then the unit will react to a second cooling demand, which will trigger the first stage of mechanical cooling and bring the economizer to the full open position. The unit will continue turning on stages of mechanical cooling until the unit has satisfied the space temperature setpoint. Because the unit can provide up to 4 stages of cooling, and the economizer now qualifies as the first stage of cooling, the unit controller will group the remaining two compressors in a four compressor unit together in the event that two compressors are already energized. This means that to address the fourth stage cooling demand the unit will increase the mechanical cooling from two compressors energized to all compressors energized.

See table for unit operation without an economizer.

ZONE SENSOR MODE COOLING

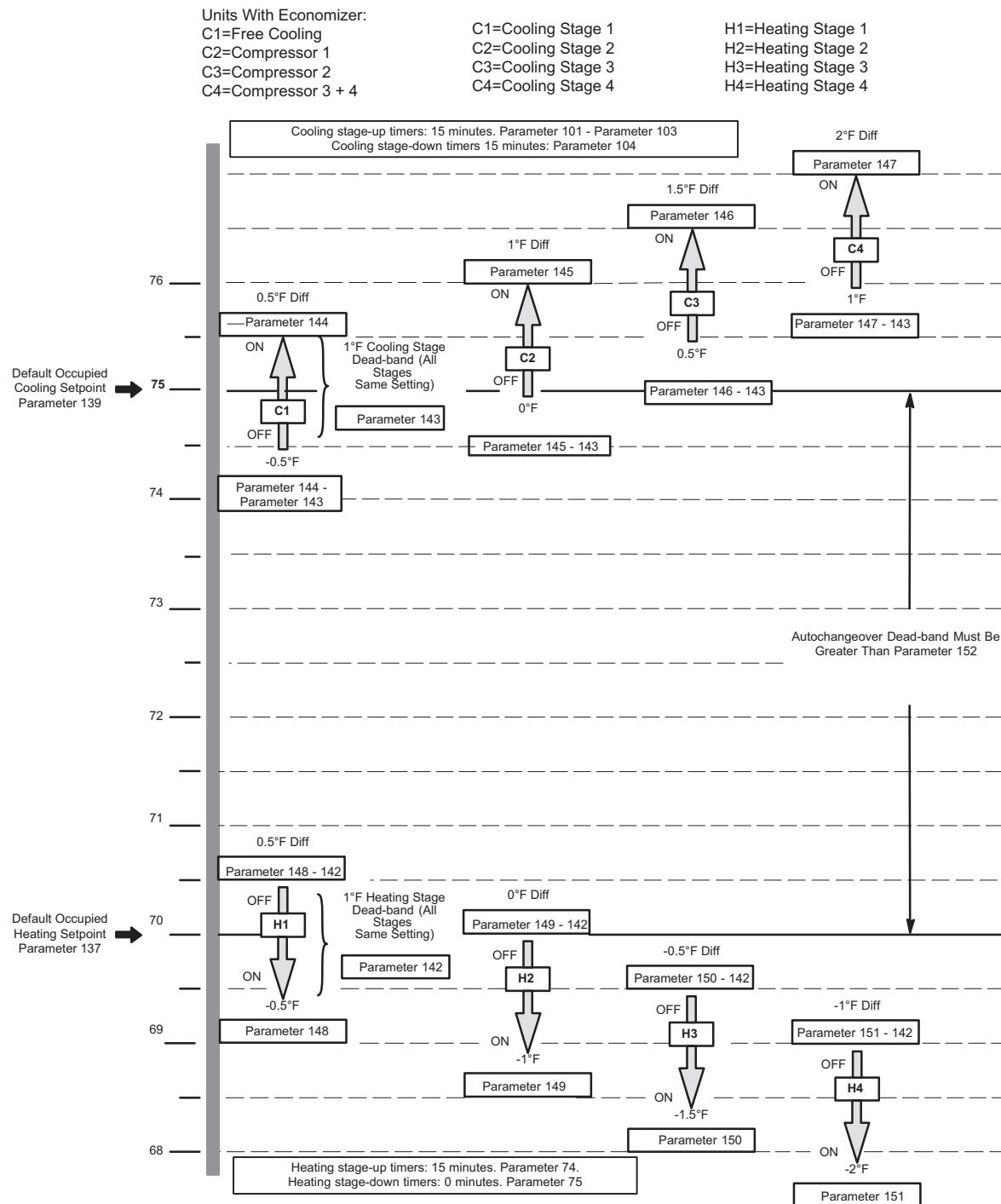
Cooling Demand	Unit with Economizer	Unit Without Economizer or Outdoor Air is Unsuitable
One	Economizer	One Compressor
Two	Economizer + One Compressor	Two Compressors
Three	Economizer + Two Compressors	Three Compressors
Four	Economizer + All Compressors	All Compressors

SEQUENCE OF OPERATION

ZONE SENSOR MODE (continued)

ROOM SENSOR STAGES FOR GAS / ELECTRIC UNITS

Default Values Shown



SEQUENCE OF OPERATION

ZONE SENSOR MODE - SINGLE ZONE VAV SUPPLY FAN

Supply Air Blower CFM

Unit has following supply air blower CFM settings:

- Heating CFM
- High Cooling CFM
- Low Cooling CFM
- Ventilation CFM
- Blower Speed
- Smoke Speed (Used only in smoke removal option - not covered here)

Unit Features An Economizer And Outdoor Air Is Suitable

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

Y1 Demand:

All compressors are off, supply air blower is on low cooling CFM to minimize blower power consumption, economizer modulates (minimum to maximum open position) to maintain Parameter 159 setting (supply air temperature).

Y2 Demand:

All compressors are off, supply air blower is on high cooling CFM providing higher cooling capacity, economizer modulates (minimum to maximum open position) to maintain Parameter 159 setting (supply air temperature).

Parameter 164 dictates when compressor 1 is energized while supply air blower stays on high cooling CFM providing maximum cooling capacity. After compressors are energized the economizer stays at maximum open.

Y3 Demand:

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

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

Y1 Demand:

One compressor operates and supply air blower operates at low cooling CFM.

Y2 Demand:

One compressor operates and supply air blower operates at medium cooling CFM.

Y3 Demand:

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

SPECIFICATIONS - E-DIRECT™ (DIRECT DRIVE) MODELS

General Data	Nominal Tonnage	7.5 Ton	10 Ton	12.5 Ton
	Model Number	LCH094U4E	LCH122U4E	LCH152U4E
	Efficiency Type	High	High	High
	Blower Type	Single Zone VAV E-Direct™ Direct Drive	Single Zone VAV E-Direct™ Direct Drive	Single Zone VAV E-Direct™ Direct Drive
Cooling Performance	Gross Cooling Capacity - Btuh	93,700	119,000	141,900
	¹ Net Cooling Capacity - Btuh	92,000	116,000	138,000
	AHRI Rated Air Flow - cfm	2800	3600	4000
	Total Unit Power - kW	6.6	8.8	11.2
	¹ EER (Btuh/Watt)	13.9	13.1	12.3
	² IEER (Btuh/Watt)	21.5	20.0	18.9
	Refrigerant Type	R-410A	R-410A	R-410A
Refrigerant Charge	Circuit 1	29 lbs. 0 oz.	29 lbs. 0 oz.	29 lbs. 0 oz.
Electric Heat Available - See page 12		7.5, 15, 22.5, 30, 45 kW	15, 22.5, 30, 45, 60 kW	
Compressor Type (number)		Tandem Scroll (2)	Tandem Scroll (2)	Tandem Scroll (2)
Outdoor Coils	Net face area (total) - sq. ft.	40.8	40.8	40.8
	Number of rows	2	2	2
	Fins per inch	20	20	20
Outdoor Coil Fans	Motor - (No.) hp	(3) 1/3 ECM	(3) 1/3 ECM	(3) 1/3 ECM
	Motor rpm	520 - 900	640 - 900	640 - 900
	Total Motor watts	160 - 650	280 - 650	280 - 650
	Diameter - (No.) in.	(3) 24	(3) 24	(3) 24
	Number of blades	3	3	3
	Total Air volume - cfm	5160 - 10,250	7100 - 10,250	7100 - 10,250
Indoor Coil	Net face area (total) - sq. ft.	13.54	13.54	13.54
	Tube diameter - in.	3/8	3/8	3/8
	Number of rows	4	4	4
	Fins per inch	14	14	14
	Drain connection - Number and size	(1) 1 in. NPT coupling		
Indoor Blower	Expansion device type	Dual-Flow Thermal Expansion Valve System Dual with Flow Control Balance port, removable head		
	Nominal motor output	3.75 HP (ECM)	3.75 HP (ECM)	3.75 HP (ECM)
	Blower wheel nominal diameter x width - in.	(1) 22 x 9	(1) 22 x 9	(1) 22 x 9
Filters	Type of filter	Disposable		
	Number and size - in.	(4) 20 x 25 x 2		
Electrical characteristics		208/230V or 460V - 60 hertz - 3 phase		

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

¹ AHRI Certified to AHRI Standard 340/360; 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

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

SPECIFICATIONS - BELT DRIVE MODELS

General Data	Nominal Tonnage Model Number Efficiency Type Blower Type	7.5 Ton	10 Ton	12.5 Ton
		LCH094U4M	LCH122U4M	LCH152U4M
		High	High	High
		Single Zone VAV Supply Fan Belt Drive	Single Zone VAV Supply Fan Belt Drive	Single Zone VAV Supply Fan Belt Drive
Cooling Performance	Gross Cooling Capacity - Btuh	93,700	119,000	141,900
	¹ Net Cooling Capacity - Btuh	92,000	116,000	136,000
	AHRI Rated Air Flow - cfm	2800	3600	4000
	Total Unit Power - kW	6.9	8.8	11.3
	¹ EER (Btuh/Watt)	13.4	12.6	12.0
	² IEER (Btuh/Watt)	20.7	19.2	18.1
	Refrigerant Type	R-410A	R-410A	R-410A
	Refrigerant Charge	Circuit 1	29 lbs. 0 oz.	29 lbs. 0 oz.
Electric Heat Available - See page 12		7.5, 15, 22.5, 30, 45 kW	15, 22.5, 30, 45, 60 kW	
Compressor Type (number)		Tandem Scroll (2)	Tandem Scroll (2)	Tandem Scroll (2)
Outdoor Coils	Net face area (total) - sq. ft.	40.8	40.8	40.8
	Number of rows	2	2	2
	Fins per inch	20	20	20
Outdoor Coil Fans	Motor - (No.) hp	(3) 1/3 ECM	(3) 1/3 ECM	(3) 1/3 ECM
	Motor rpm	520 - 900	640 - 900	640 - 900
	Total Motor watts	160 - 650	280 - 650	280 - 650
	Diameter - (No.) in.	(3) 24	(3) 24	(3) 24
	Number of blades	3	3	3
	Total Air volume - cfm	5160 - 10,250	7100 - 10,250	7100 - 10,250
Indoor Coil	Net face area (total) - sq. ft.	13.54	13.54	13.54
	Tube diameter - in.	3/8	3/8	3/8
	Number of rows	4	4	4
	Fins per inch	14	14	14
	Drain connection - Number and size	(1) 1 in. NPT coupling		
		Expansion device type		
		Dual-Flow Thermal Expansion Valve System Dual with Flow Control Balance port, removable head		
³ Indoor Blower and Drive Selection	Nominal motor output	2 hp, 3 hp, 5 hp		
	Motor - Drive kit number	2 hp Kit 1 590-890 rpm (std. and high efficiency) Kit 2 800-1105 rpm (std. and high efficiency) Kit 3 795-1195 rpm (std. and high efficiency)		
		3 hp Kit 4 730-970 rpm (std. efficiency) Kit 5 940-1200 rpm (std. efficiency) Kit 6 1015-1300 rpm (std. efficiency) Kit 7 730-970 rpm (high efficiency) Kit 8 940-1200 rpm (high efficiency) Kit 9 1015-1300 rpm (high efficiency)		
		5 hp Kit 10 900-1135 rpm (std. efficiency) Kit 11 1040-1315 rpm (std. efficiency) Kit 12 1125-1425 rpm (std. efficiency)		
	Blower wheel nominal diameter x width - in.	(1) 15 X 15	(1) 15 X 15	(1) 15 X 15
	Type of filter	Disposable		
	Number and size - in.	(4) 20 x 25 x 2		
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 AHRI Certified to AHRI Standard 340/360; 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

² Integrated Energy Efficiency Ratio certified and 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.

RATINGS

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

7.5 TON LCH094U4E AND LCH094U4M (1ST STAGE)

Entering Wet Bulb Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						75°F						85°F						95°F					
		Total Cool Cap. Input	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
63°F	1680	56.2	1.85	0.69	0.87	1	52.2	2.11	0.7	0.9	1	47.9	2.39	0.7	0.93	1	43.5	2.71	0.71	0.96	1				
	2100	59.6	1.85	0.75	0.99	1	55.8	2.11	0.76	1	1	51.8	2.39	0.78	1	1	47.6	2.7	0.81	1	1				
	2520	63.5	1.85	0.83	1	1	59.4	2.11	0.86	1	1	55.2	2.39	0.9	1	1	50.8	2.7	0.94	1	1				
67°F	1680	60.5	1.85	0.54	0.68	0.82	56.2	2.11	0.54	0.68	0.85	51.8	2.39	0.52	0.69	0.88	47.4	2.7	0.52	0.69	0.9				
	2100	63.9	1.85	0.57	0.73	0.93	59.3	2.11	0.57	0.74	0.99	54.7	2.39	0.57	0.76	1	49.8	2.7	0.58	0.78	1				
	2520	66.2	1.85	0.61	0.8	1	61.5	2.11	0.62	0.83	1	56.6	2.39	0.63	0.86	1	51.7	2.7	0.63	0.92	1				
71°F	1680	65.1	1.85	0.4	0.53	0.66	60.7	2.11	0.39	0.53	0.66	56	2.39	0.37	0.52	0.67	51.3	2.7	0.34	0.52	0.67				
	2100	68.5	1.85	0.39	0.57	0.71	63.7	2.11	0.42	0.57	0.73	58.9	2.39	0.39	0.57	0.74	53.6	2.7	0.4	0.58	0.76				
	2520	70.7	1.85	0.42	0.61	0.77	65.7	2.11	0.43	0.62	0.8	60.7	2.38	0.43	0.62	0.83	55.6	2.69	0.42	0.63	0.88				

7.5 TON LCH094U4E AND LCH094U4M (2ND STAGE)

Entering Wet Bulb Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		85°F						95°F						105°F						115°F					
		Total Cool Cap. Input	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
63°F	2400	89.7	4.87	0.62	0.78	0.97	83.6	5.51	0.62	0.8	1	77.3	6.25	0.63	0.82	1	70.5	7.12	0.65	0.87	1				
	3000	95.4	4.88	0.67	0.89	1	88.9	5.51	0.69	0.92	1	82.1	6.25	0.71	0.97	1	75	7.11	0.73	1	1				
	3600	99.8	4.88	0.74	0.98	1	93.3	5.52	0.76	1	1	87	6.25	0.79	1	1	80.3	7.1	0.82	1	1				
67°F	2400	96.5	4.88	0.48	0.6	0.74	90.2	5.52	0.48	0.6	0.76	83.3	6.25	0.48	0.62	0.78	76.2	7.11	0.48	0.63	0.82				
	3000	102	4.88	0.52	0.65	0.83	95.1	5.51	0.52	0.66	0.87	88	6.25	0.52	0.68	0.91	80.1	7.1	0.52	0.7	0.96				
	3600	105.9	4.89	0.55	0.72	0.94	98.5	5.52	0.55	0.74	0.98	91.4	6.24	0.56	0.76	1	83.5	7.1	0.57	0.8	1				
71°F	2400	103.2	4.88	0.36	0.47	0.58	96.7	5.52	0.35	0.47	0.58	89.5	6.25	0.34	0.47	0.6	82	7.1	0.33	0.47	0.61				
	3000	108.9	4.89	0.38	0.51	0.63	101.8	5.52	0.37	0.51	0.64	94.1	6.24	0.36	0.51	0.66	86.1	7.09	0.35	0.52	0.68				
	3600	113	4.89	0.39	0.54	0.69	105.4	5.52	0.38	0.54	0.71	97.6	6.24	0.38	0.55	0.73	89.3	7.09	0.37	0.56	0.78				

10 TON LCH122U4E AND LCH122U4M (1ST STAGE)

Entering Wet Bulb Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						75°F						85°F						95°F					
		Total Cool Cap. Input	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
63°F	2240	72	2.44	0.67	0.86	1	67.7	2.82	0.68	0.9	1	63.2	3.21	0.68	0.94	1	58.4	3.65	0.68	0.98	1				
	2800	75.9	2.46	0.73	1	1	72	2.84	0.74	1	1	67.7	3.24	0.76	1	1	63.3	3.68	0.8	1	1				
	3360	80.4	2.48	0.81	1	1	76.1	2.86	0.85	1	1	71.5	3.26	0.9	1	1	66.8	3.7	0.95	1	1				
67°F	2240	76.7	2.46	0.53	0.65	0.8	72.1	2.84	0.53	0.66	0.83	67.4	3.23	0.52	0.67	0.88	62.4	3.67	0.52	0.68	0.92				
	2800	80.6	2.48	0.56	0.71	0.96	75.6	2.85	0.56	0.72	0.99	70.7	3.25	0.56	0.74	1	65.4	3.69	0.56	0.76	1				
	3360	83.1	2.49	0.59	0.78	1	78.2	2.87	0.6	0.81	1	72.9	3.27	0.62	0.86	1	67.6	3.71	0.62	0.92	1				
71°F	2240	82.1	2.48	0.39	0.52	0.63	77.5	2.86	0.39	0.52	0.64	72.4	3.26	0.38	0.52	0.66	67.2	3.7	0.35	0.52	0.67				
	2800	85.8	2.5	0.41	0.55	0.69	80.7	2.88	0.4	0.56	0.71	75.5	3.28	0.4	0.56	0.72	70	3.72	0.38	0.56	0.74				
	3360	88.4	2.51	0.42	0.59	0.75	83.1	2.89	0.42	0.6	0.78	77.5	3.29	0.42	0.61	0.82	71.9	3.73	0.42	0.62	0.88				

10 TON LCH122U4E AND LCH122U4M (2ND STAGE)

Entering Wet Bulb Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																	
		85°F						95°F						105°F					

RATINGS

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

12.5 TON LCH152U4E AND LCH152U4M (1ST STAGE)

Entering Wet Bulb Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						75°F						85°F						95°F					
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
63°F	2560	83.9	3.05	0.68	0.85	1	78.6	3.47	0.69	0.88	1	73.2	3.93	0.7	0.92	1	67.5	4.44	0.71	0.96	1				
	3200	88.5	3.07	0.74	0.98	1	83.2	3.5	0.75	1	1	78.2	3.96	0.77	1	1	72.8	4.47	0.79	1	1				
	3840	93.5	3.09	0.81	1	1	88.4	3.53	0.83	1	1	82.9	3.99	0.88	1	1	76.9	4.5	0.92	1	1				
67°F	2560	89.7	3.07	0.53	0.66	0.8	84.1	3.5	0.53	0.67	0.81	78.4	3.96	0.53	0.68	0.86	72.4	4.47	0.53	0.69	0.9				
	3200	94	3.1	0.57	0.72	0.94	88.2	3.53	0.57	0.73	0.97	82.1	3.99	0.57	0.75	1	75.8	4.49	0.58	0.77	1				
	3840	97.4	3.11	0.6	0.78	1	91.2	3.54	0.6	0.81	1	85	4	0.61	0.84	1	78.6	4.51	0.63	0.89	1				
71°F	2560	95.9	3.1	0.4	0.52	0.64	90.1	3.54	0.39	0.53	0.65	84.1	4	0.38	0.53	0.66	78	4.51	0.37	0.53	0.67				
	3200	100.4	3.13	0.42	0.56	0.7	94.3	3.56	0.41	0.57	0.72	88	4.03	0.4	0.56	0.73	81.4	4.53	0.4	0.57	0.75				
	3840	103.6	3.15	0.43	0.6	0.76	97.3	3.58	0.43	0.6	0.78	90.8	4.04	0.42	0.61	0.81	83.8	4.55	0.42	0.62	0.86				

12.5 TON LCH152U4E AND LCH152U4M (2ND STAGE)

Entering Wet Bulb Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		85°F						95°F						105°F						115°F					
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
63°F	3800	139.9	8.27	0.67	0.83	0.99	131.4	9.34	0.68	0.85	1	122.4	10.57	0.69	0.88	1	112.8	11.98	0.71	0.91	1				
	4400	144.9	8.33	0.71	0.89	1	136.3	9.39	0.72	0.91	1	126.9	10.61	0.74	0.95	1	117.3	12.03	0.76	0.98	1				
	5000	149.3	8.36	0.74	0.94	1	140	9.42	0.76	0.97	1	130.8	10.64	0.78	1	1	121.3	12.05	0.81	1	1				
67°F	3800	149.1	8.35	0.53	0.65	0.79	140.3	9.42	0.53	0.66	0.81	130.9	10.65	0.53	0.67	0.84	120.9	12.05	0.53	0.69	0.87				
	4400	154.1	8.41	0.55	0.68	0.85	145.2	9.47	0.55	0.69	0.87	135.3	10.69	0.55	0.71	0.9	125	12.09	0.56	0.74	0.95				
	5000	158.3	8.45	0.57	0.72	0.9	148.8	9.51	0.57	0.74	0.94	138.8	10.72	0.58	0.76	0.97	128	12.12	0.59	0.79	1				
71°F	3800	158.6	8.45	0.39	0.51	0.63	149.3	9.51	0.39	0.52	0.64	139.1	10.71	0.38	0.52	0.65	128.7	12.13	0.38	0.52	0.67				
	4400	163.5	8.5	0.4	0.54	0.66	153.8	9.56	0.4	0.54	0.67	143.7	10.77	0.4	0.54	0.69	133	12.18	0.39	0.55	0.71				
	5000	167.6	8.54	0.41	0.56	0.7	157.7	9.6	0.41	0.56	0.71	147.7	10.82	0.41	0.57	0.74	136.3	12.2	0.4	0.58	0.76				

BLOWER DATA - E-DIRECT™ (DIRECT DRIVE) - ALL MODELS

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY (NO HEAT SECTION) WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

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

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

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 2.0 in. w.g.)

094 Models - 7.5 kW - 1750 cfm

All Models - 15 kW, 22.5 kW, 30 kW, 45 kW - 2750 cfm

122 and 152 Models - 60 kW - 3500 cfm

Total Air Volume cfm	Total Static Pressure - in. w.g.													
	0.2		0.4		0.6		0.8		1.0		1.2		1.4	
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts
1750	711	188	771	279	836	366	905	453	975	544	1044	640	1109	737
2000	752	242	812	332	876	420	944	510	1011	606	1075	709	1138	812
2250	799	300	860	389	923	479	988	575	1052	678	1113	787	1171	896
2500	853	362	914	453	976	548	1038	650	1097	761	1154	877	1209	990
2750	914	434	974	529	1033	629	1091	739	1146	858	1199	979	1250	1098
3000	980	513	1037	614	1092	720	1146	837	1198	961	1247	1088	1295	1215
3250	1048	598	1101	705	1153	819	1203	941	1251	1071	1298	1206	1343	1343
3500	1116	693	1166	809	1214	931	1261	1060	1307	1198	1351	1341	1395	1489
3750	1185	806	1232	931	1277	1063	1322	1201	1365	1348	1407	1499	1448	1657
4000	1254	937	1299	1072	1341	1214	1383	1363	1424	1518	1464	1679	1503	1844
4250	1324	1089	1366	1234	1406	1386	1445	1545	1484	1708	1522	1876	1559	2046
4500	1395	1262	1433	1417	1471	1579	1508	1745	1544	1913	1581	2084	1616	2256
4750	1465	1455	1501	1619	1536	1787	1571	1957	1606	2128	1641	2299	1675	2470
5000	1534	1666	1568	1834	1602	2004	1635	2174	1668	2345	1701	2514	1735	2682
5250	1603	1887	1635	2055	1667	2224	1699	2392	1731	2559	1763	2724	---	---
5500	1671	2110	1702	2275	1733	2441	1764	2605	---	---	---	---	---	---
5750	1738	2325	1768	2488	---	---	---	---	---	---	---	---	---	---
Total Air Volume cfm	Total Static Pressure - in. w.g.													
	1.6		1.8		2.0		2.2		2.4		2.6			
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts		
1750	1172	833	1231	932	1287	1039	1340	1156	1391	1283	1442	1426		
2000	1197	913	1253	1019	1306	1135	1357	1261	1407	1398	1457	1547		
2250	1227	1003	1280	1117	1330	1242	1379	1378	1428	1525	1477	1680		
2500	1261	1103	1311	1226	1360	1361	1407	1507	1454	1663	1501	1826		
2750	1299	1219	1347	1350	1394	1494	1440	1649	1485	1813	1530	1982		
3000	1342	1346	1388	1487	1432	1640	1476	1803	1520	1973	1563	2146		
3250	1388	1485	1432	1638	1475	1800	1517	1969	1558	2143	1600	2319		
3500	1437	1643	1479	1805	1519	1975	1560	2148	1600	2325	1640	2502		
3750	1489	1821	1528	1990	1567	2164	1605	2340	1645	2517	1685	2693		
4000	1541	2014	1579	2187	1616	2364	1654	2540	1693	2715	1732	2887		
4250	1596	2218	1632	2393	1668	2569	1705	2742	1743	2913	---	---		
4500	1652	2429	1687	2603	1722	2775	1759	2944	---	---	---	---		
4750	1709	2641	1743	2811	1778	2979	---	---	---	---	---	---		
5000	1768	2850	---	---	---	---	---	---	---	---	---	---		
5250	---	---	---	---	---	---	---	---	---	---	---	---		
5500	---	---	---	---	---	---	---	---	---	---	---	---		
5750	---	---	---	---	---	---	---	---	---	---	---	---		

BLOWER DATA - BELT DRIVE - 7.5 TON

094 BELT DRIVE BLOWER - BASE UNIT

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY (NO HEAT SECTION) WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

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

Then determine from blower table blower motor output required.

See page 29 for blower motors and drives.

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

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 2.0 in. w.g.)

7.5 kW, 15 kW, 22.5 kW, 30 kW and 45 kW - 2800 cfm

Total Air Volume cfm	Total Static Pressure - in. w.g.																									
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1750	481	0.21	549	0.4	618	0.57	688	0.7	758	0.82	824	0.93	885	1.08	941	1.23	991	1.39	1038	1.54	1082	1.68	1124	1.82	1166	1.95
2000	493	0.29	561	0.47	629	0.64	700	0.77	768	0.9	832	1.02	892	1.17	946	1.33	995	1.49	1041	1.66	1085	1.81	1126	1.97	1167	2.12
2250	507	0.37	574	0.56	643	0.72	712	0.86	779	0.99	842	1.13	900	1.28	953	1.44	1001	1.61	1045	1.78	1088	1.95	1128	2.12	1168	2.3
2500	521	0.46	588	0.64	657	0.81	727	0.95	792	1.09	853	1.24	909	1.4	960	1.57	1007	1.74	1050	1.93	1091	2.11	1130	2.29	1170	2.48
2750	537	0.56	604	0.74	674	0.91	743	1.06	806	1.21	865	1.36	920	1.53	969	1.71	1014	1.89	1055	2.08	1095	2.27	1133	2.47	1172	2.66
3000	554	0.67	622	0.86	692	1.02	760	1.18	822	1.34	878	1.5	931	1.68	979	1.86	1021	2.06	1061	2.26	1099	2.46	1136	2.65	1174	2.85
3250	572	0.78	641	0.98	712	1.15	778	1.32	838	1.49	892	1.66	943	1.84	989	2.03	1030	2.24	1068	2.45	1105	2.65	1141	2.85	1178	3.06
3500	592	0.9	663	1.12	733	1.3	798	1.47	855	1.65	907	1.83	956	2.02	1000	2.22	1039	2.44	1076	2.65	1111	2.86	1146	3.07	1183	3.27
3750	614	1.04	687	1.28	756	1.47	818	1.65	872	1.83	923	2.02	970	2.22	1011	2.43	1049	2.65	1084	2.87	1118	3.09	1152	3.29	1189	3.51
4000	639	1.22	713	1.48	780	1.66	838	1.83	890	2.02	939	2.22	984	2.44	1023	2.66	1059	2.89	1093	3.11	1126	3.33	1160	3.54	1197	3.77
4250	667	1.43	741	1.69	805	1.86	859	2.02	909	2.22	956	2.45	998	2.68	1036	2.92	1070	3.15	1103	3.37	1135	3.59	1169	3.81	1207	4.05

BLOWER DATA - BELT DRIVE - 10 AND 12.5 TON

122 AND 152 BELT DRIVE BLOWER - BASE UNIT

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY (NO HEAT SECTION) WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

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

Then determine from blower table blower motor output required.

See page 29 for blower motors and drives.

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

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 2.0 in. w.g.)

15 kW, 22.5 kW, 30 kW and 45 kW - 2800 cfm

60 kW - 4000 cfm

Total Air Volume cfm	Total Static Pressure - in. w.g.																									
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2000	497	0.25	558	0.44	624	0.6	694	0.74	764	0.85	830	0.99	889	1.16	943	1.34	994	1.52	1045	1.71	1096	1.89	1146	2.08	1197	2.27
2250	511	0.34	573	0.52	638	0.68	708	0.82	776	0.94	839	1.09	896	1.26	948	1.45	998	1.64	1048	1.83	1098	2.01	1149	2.2	1200	2.4
2500	527	0.44	589	0.62	654	0.78	723	0.91	789	1.05	850	1.21	904	1.39	955	1.58	1003	1.77	1052	1.96	1101	2.14	1152	2.33	1203	2.53
2750	545	0.55	606	0.72	672	0.88	740	1.03	804	1.17	861	1.34	914	1.53	962	1.72	1010	1.92	1057	2.10	1105	2.29	1154	2.47	1206	2.68
3000	564	0.66	626	0.84	692	1.01	759	1.16	819	1.32	874	1.49	924	1.68	971	1.88	1017	2.08	1063	2.26	1110	2.44	1158	2.63	1208	2.83
3250	585	0.79	648	0.98	714	1.14	778	1.31	836	1.48	887	1.66	935	1.86	981	2.06	1026	2.26	1071	2.45	1117	2.63	1163	2.80	1213	3.00
3500	607	0.93	672	1.13	737	1.31	798	1.48	852	1.66	901	1.85	948	2.05	993	2.26	1037	2.46	1081	2.65	1125	2.83	1171	3.01	1221	3.21
3750	632	1.10	698	1.31	762	1.50	819	1.67	869	1.86	915	2.05	961	2.25	1005	2.47	1049	2.68	1092	2.88	1136	3.05	1181	3.24	1231	3.45
4000	660	1.30	726	1.52	787	1.70	838	1.87	885	2.06	930	2.26	974	2.48	1018	2.71	1062	2.93	1105	3.12	1149	3.30	1194	3.49	1245	3.72
4250	691	1.53	755	1.75	810	1.91	857	2.07	901	2.27	945	2.50	990	2.74	1034	2.98	1077	3.20	1120	3.39	1163	3.58	1210	3.79	1262	4.03
4500	724	1.78	783	1.98	831	2.12	874	2.28	917	2.50	962	2.75	1006	3.02	1051	3.27	1094	3.49	1137	3.70	1181	3.89	1228	4.11	1281	4.38
4750	757	2.05	809	2.20	851	2.33	891	2.51	935	2.76	980	3.05	1025	3.33	1070	3.59	1113	3.82	1156	4.03	1201	4.24	1249	4.47	1303	4.75
5000	787	2.31	831	2.43	870	2.57	910	2.78	954	3.06	1000	3.38	1046	3.68	1091	3.95	1135	4.19	1178	4.40	1224	4.62	1272	4.86	1325	5.13
5250	814	2.55	852	2.66	889	2.83	930	3.09	975	3.41	1023	3.76	1070	4.08	1115	4.35	1159	4.59	1203	4.81	1248	5.03	1297	5.27	1350	5.53
5500	835	2.78	871	2.91	909	3.13	952	3.44	999	3.81	1049	4.18	1096	4.51	1142	4.79	1186	5.03	1229	5.24	1275	5.46	1324	5.69	---	---
5750	854	3.01	890	3.19	930	3.48	977	3.86	1027	4.27	1078	4.66	1126	4.99	1171	5.26	1214	5.49	1258	5.70	---	---	---	---	---	---
6000	871	3.26	910	3.53	955	3.90	1006	4.34	1060	4.80	1111	5.19	1158	5.51	---	---	---	---	---	---	---	---	---	---	---	---
6250	890	3.57	934	3.94	985	4.41	1041	4.91	1096	5.38	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	

BLOWER DATA

FACTORY INSTALLED BELT DRIVE KIT SPECIFICATIONS

Motor Efficiency	Nominal hp	Drive Kit Number	RPM Range
Standard & High	2	1	590 - 890
Standard & High	2	2	800 - 1105
Standard & High	2	3	795 - 1195
Standard	3	4	730 - 970
Standard	3	5	940 - 1200
Standard	3	6	1015 - 1300
High	3	7	730 - 970
High	3	8	940 - 1200
High	3	9	1015 - 1300
Standard	5	10	900 - 1135
Standard	5	11	1040 - 1315
Standard	5	12	1125 - 1425

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. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure in. w.g.	Air Volume Exhausted	
	cfm	
0	3175	
0.05	2955	
0.10	2685	
0.15	2410	
0.20	2165	
0.25	1920	
0.30	1420	
0.35	1200	

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

Air Volume cfm	Wet Indoor Coil		Electric Heat	Economizer	Filters	
	094	122, 152			MERV 8	MERV 13
1750	0.04	0.04	0.03	0.05	0.01	0.03
2000	0.05	0.05	0.03	0.06	0.01	0.03
2250	0.06	0.06	0.04	0.08	0.01	0.04
2500	0.07	0.07	0.04	0.11	0.01	0.05
2750	0.08	0.08	0.05	0.12	0.02	0.05
3000	0.10	0.09	0.06	0.13	0.02	0.06
3250	0.11	0.10	0.06	0.15	0.02	0.06
3500	0.12	0.11	0.09	0.15	0.03	0.07
3750	0.14	0.13	0.09	0.15	0.03	0.08
4000	0.15	0.14	0.09	0.19	0.04	0.08
4250	0.17	0.15	0.13	0.19	0.04	0.09
4500	0.19	0.17	0.14	0.22	0.04	0.09
4750	0.20	0.18	0.17	0.25	0.05	0.10
5000	0.22	0.20	0.20	0.29	0.06	0.10
5250	0.24	0.22	0.22	0.32	0.06	0.11
5500	0.25	0.23	0.25	0.34	0.07	0.12
5750	0.27	0.25	0.31	0.45	0.07	0.12
6000	0.29	0.27	0.33	0.52	0.08	0.13

BLOWER DATA

CEILING DIFFUSERS AIR RESISTANCE - in. w.g.

Unit Size	RTD11S Step-Down Diffuser				FD11S Flush Diffuser
	Air Volume cfm	2 Ends Open	1 Side, 2 Ends Open	All Ends & Sides Open	
094 Models	2400	0.21	0.18	0.15	0.14
	2600	0.24	0.21	0.18	0.17
	2800	0.27	0.24	0.21	0.20
	3000	0.32	0.29	0.25	0.25
	3200	0.41	0.37	0.32	0.31
	3400	0.50	0.45	0.39	0.37
	3600	0.61	0.54	0.48	0.44
	3800	0.73	0.63	0.57	0.51
122 Models	3600	0.36	0.28	0.23	0.15
	3800	0.40	0.32	0.26	0.18
	4000	0.44	0.36	0.29	0.21
	4200	0.49	0.40	0.33	0.24
	4400	0.54	0.44	0.37	0.27
	4600	0.60	0.49	0.42	0.31
	4800	0.65	0.53	0.46	0.35
	5000	0.69	0.58	0.50	0.39
	5200	0.75	0.62	0.54	0.43
	4200	0.22	0.19	0.16	0.10
152 Models	4400	0.28	0.24	0.20	0.12
	4600	0.34	0.29	0.24	0.15
	4800	0.40	0.34	0.29	0.19
	5000	0.46	0.39	0.34	0.23
	5200	0.52	0.44	0.39	0.27
	5400	0.58	0.49	0.43	0.31
	5600	0.64	0.54	0.47	0.35
	5800	0.70	0.59	0.51	0.39

CEILING DIFFUSER AIR THROW DATA

Model No.	Air Volume	¹ Effective Throw Range	
		RTD11S Step-Down	FD11S Flush
	cfm	ft.	ft.
094 Models	2600	24 - 29	19 - 24
	2800	25 - 30	20 - 28
	3000	27 - 33	21 - 29
	3200	28 - 35	22 - 29
	3400	30 - 37	22 - 30
122 Models	3600	25 - 33	22 - 29
	3800	27 - 35	22 - 30
	4000	29 - 37	24 - 33
	4200	32 - 40	26 - 35
	4400	34 - 42	28 - 37
152 Models	5600	39 - 49	28 - 37
	5800	42 - 51	29 - 38
	6000	44 - 54	40 - 50
	6200	45 - 55	42 - 51
	6400	46 - 55	43 - 52
	6600	47 - 56	45 - 56

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

ELECTRICAL/ELECTRIC HEAT DATA
7.5 TON
LCH094U4E
E-DIRECT™ (DIRECT DRIVE)

¹ Voltage - 60hz		208/230V - 3 Ph	460V - 3 Ph	575V - 3 Ph
Compressor 1	Rated Load Amps	13.1	6.1	4.4
	Locked Rotor Amps	83.1	41	33
Compressor 2	Rated Load Amps	13.1	6.1	4.4
	Locked Rotor Amps	83.1	41	33
Outdoor Fan Motors (3) (total)	Full Load Amps	2.8	1.4	1.1
		(8.4)	(4.2)	(3.3)
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	Horsepower	3.75	3.75	3.75
	Full Load Amps	8.8	4.3	3.4
² Maximum Overcurrent Protection	Unit Only	60	30	20
	With (1) 0.33 HP Power Exhaust	60	30	20
³ Minimum Circuit Ampacity	Unit Only	51	25	19
	With (1) 0.33 HP Power Exhaust	53	26	20

ELECTRIC HEAT DATA

Electric Heat Voltage		208V	240V	480V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	7.5 kW	60	30	20
		15 kW	60	30	25
		22.5 kW	⁴ 70	40	35
		30 kW	⁴ 90	60	45
		45 kW	150	80	60
³ Minimum Circuit Ampacity	Unit+ Electric Heat	7.5 kW	51	25	19
		15 kW	51	28	24
		22.5 kW	70	40	33
		30 kW	90	51	42
		45 kW	129	74	60
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	60	30	20
		15 kW	60	30	25
		22.5 kW	⁴ 80	45	35
		30 kW	⁴ 100	60	45
		45 kW	150	80	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	53	26	20
		15 kW	54	30	25
		22.5 kW	73	41	34
		30 kW	93	53	43
		45 kW	132	75	61

ELECTRICAL ACCESSORIES

Disconnect	7.5 kW	54W56	54W56	54W56	54W56
	15 kW	54W56	54W56	54W56	54W56
	22.5 kW	54W56	54W56	54W56	54W56
	30 kW	54W57	54W57	54W56	54W56
	45 kW	54W57	54W57	54W56	54W56

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

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

² HACR type breaker or fuse.

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

⁴ Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA
10 TON
E-DIRECT™ (DIRECT DRIVE)
LCH122U4E

1 Voltage - 60hz		208/230V - 3 Ph	460V - 3 Ph	575V - 3 Ph
Compressor 1	Rated Load Amps	16	7.8	5.7
	Locked Rotor Amps	110	52	38.9
Compressor 2	Rated Load Amps	16	7.8	5.7
	Locked Rotor Amps	110	52	38.9
Outdoor Fan Motors (3)	Full Load Amps	2.8	1.4	1.1
	(total)	(8.4)	(4.2)	(3.3)
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	Horsepower	3.75	3.75	3.75
	Full Load Amps	8.8	4.3	3.4
2 Maximum Overcurrent Protection	Unit Only	70	35	25
	With (1) 0.33 HP Power Exhaust	70	35	25
3 Minimum Circuit Ampacity	Unit Only	58	29	22
	With (1) 0.33 HP Power Exhaust	60	30	23

ELECTRIC HEAT DATA

Electric Heat Voltage		208V	240V	480V	600V
2 Maximum Overcurrent Protection	Unit+ Electric Heat	15 kW	70	70	35
		22.5 kW	⁴ 70	80	40
		30 kW	⁴ 90	110	60
		45 kW	150	150	80
		60 kW	⁴ 150	175	80
3 Minimum Circuit Ampacity	Unit+ Electric Heat	15 kW	58	58	29
		22.5 kW	70	79	40
		30 kW	90	102	51
		45 kW	129	147	74
		60 kW	137	156	78
2 Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	15 kW	70	70	35
		22.5 kW	⁴ 80	90	45
		30 kW	⁴ 100	110	60
		45 kW	150	150	80
		60 kW	⁴ 150	175	80
3 Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	15 kW	60	60	30
		22.5 kW	73	82	41
		30 kW	93	105	53
		45 kW	132	150	75
		60 kW	140	159	80

ELECTRICAL ACCESSORIES

Disconnect	15 kW	54W56	54W56	54W56	54W56
	22.5 kW	54W56	54W56	54W56	54W56
	30 kW	54W57	54W57	54W56	54W56
	45 kW	54W57	54W57	54W56	54W56
	60 kW	N/A	N/A	54W57	54W56

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

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

² HACR type breaker or fuse.

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

⁴ Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA
12.5 TON
LCH152U4E
E-DIRECT™ (DIRECT DRIVE)

¹ Voltage - 60hz		208/230V - 3 Ph	460V - 3 Ph	575V - 3 Ph
Compressor 1	Rated Load Amps	19.6	8.2	6.6
	Locked Rotor Amps	136	66.1	55.3
Compressor 2	Rated Load Amps	19.6	8.2	6.6
	Locked Rotor Amps	136	66.1	55.3
Outdoor Fan Motors (3) (total)	Full Load Amps	2.8	1.4	1.1
		(8.4)	(4.2)	(3.3)
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4	1.3	1
Service Outlet 115V GFI (amps)		15	15	20
Indoor Blower Motor	Horsepower	3.75	3.75	3.75
	Full Load Amps	8.8	4.3	3.4
² Maximum Overcurrent Protection	Unit Only	80	35	30
	With (1) 0.33 HP Power Exhaust	80	35	30
³ Minimum Circuit Ampacity	Unit Only	66	30	24
	With (1) 0.33 HP Power Exhaust	68	31	25

ELECTRIC HEAT DATA

Electric Heat Voltage		208V	240V	480V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	15 kW	80	35	30
		22.5 kW	80	40	35
		30 kW	⁴ 90	60	45
		45 kW	150	80	60
		60 kW	⁴ 150	80	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat	15 kW	66	30	24
		22.5 kW	70	40	33
		30 kW	90	51	42
		45 kW	129	74	60
		60 kW	137	78	64
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	15 kW	80	35	30
		22.5 kW	⁴ 80	45	35
		30 kW	⁴ 100	60	45
		45 kW	150	80	70
		60 kW	⁴ 150	80	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	15 kW	68	31	25
		22.5 kW	73	41	34
		30 kW	93	53	43
		45 kW	132	75	61
		60 kW	140	80	65

ELECTRICAL ACCESSORIES

Disconnect	15 kW	54W56	54W56	54W56	54W56
	22.5 kW	54W56	54W56	54W56	54W56
	30 kW	54W57	54W57	54W56	54W56
	45 kW	54W57	54W57	54W56	54W56
	60 kW	N/A	N/A	54W57	54W56

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

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

² HACR type breaker or fuse.

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

⁴ Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA
7.5 TON
BELT DRIVE
LCH094U4M

1 Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	13.1			6.1			4.4		
	Locked Rotor Amps	83.1			41			33		
Compressor 2	Rated Load Amps	13.1			6.1			4.4		
	Locked Rotor Amps	83.1			41			33		
Outdoor Fan	Full Load Amps	2.8			1.4			1.1		
Motors (3)	(total)	(8.4)			(4.2)			(3.3)		
Power Exhaust	Full Load Amps	2.4			1.3			1		
Service Outlet 115V GFI (amps)		15			15			20		
Indoor Blower Motor	Horsepower	2	3	5	2	3	5	2	3	5
	Full Load Amps	7.5	10.6	16.7	3.4	4.8	7.6	2.7	3.9	6.1
2 Maximum Overcurrent Protection	Unit Only	60	60	70	25	30	35	20	20	25
	With (1) 0.33 HP Power Exhaust	60	60	70	30	30	35	20	20	25
3 Minimum Circuit Ampacity	Unit Only	50	53	60	24	25	28	18	19	22
	With (1) 0.33 HP Power Exhaust	52	55	62	25	27	30	19	20	23

ELECTRIC HEAT DATA

Electric Heat Voltage		208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V	
2 Maximum Overcurrent Protection	Unit+ Electric Heat	7.5 kW	60	60	60	60	70	70	25	30	35	20	20	25
		15 kW	60	60	60	60	70	70	30	30	35	25	25	30
		22.5 kW	⁴ 70	80	⁴ 80	90	⁴ 80	90	40	40	45	35	35	35
		30 kW	⁴ 90	100	⁴ 100	110	⁴ 100	125	50	60	60	40	45	45
		45 kW	150	150	150	150	⁴ 150	175	80	80	80	60	60	70
3 Minimum Circuit Ampacity	Unit+ Electric Heat	7.5 kW	50	50	53	53	60	60	24	25	28	18	19	22
		15 kW	50	55	53	59	60	66	27	29	33	22	23	26
		22.5 kW	69	78	72	81	80	89	39	40	44	31	32	35
		30 kW	88	100	92	104	100	112	50	52	55	40	41	44
		45 kW	127	145	131	149	139	157	72	74	78	58	60	62
2 Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	60	60	60	60	70	70	30	30	35	20	20	25
		15 kW	60	60	⁴ 60	70	70	70	30	35	35	25	25	30
		22.5 kW	⁴ 80	90	⁴ 80	90	⁴ 90	100	40	45	45	35	35	40
		30 kW	⁴ 100	110	⁴ 100	110	⁴ 110	125	60	60	60	45	45	45
		45 kW	150	150	⁴ 150	175	⁴ 150	175	80	80	80	60	70	70
3 Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	7.5 kW	52	52	55	55	62	62	25	27	30	19	20	23
		15 kW	52	58	56	62	63	69	29	31	34	23	25	27
		22.5 kW	72	81	75	84	83	92	40	42	45	32	34	36
		30 kW	91	103	95	107	103	115	51	53	57	41	43	45
		45 kW	130	148	134	152	142	160	74	76	79	59	61	64

ELECTRICAL ACCESSORIES

Disconnect	7.5 kW	54W56											
	15 kW	54W56											
	22.5 kW	54W56											
	30 kW	54W57	54W56	54W56	54W56	54W56	54W56						
	45 kW	54W57	54W56	54W56	54W56	54W56	54W56						

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

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

² HACR type breaker or fuse.

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

⁴ Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA
10 TON
BELT DRIVE
LCH122U4M

¹ Voltage - 60hz		208/230V - 3 Ph				460V - 3 Ph			575V - 3 Ph			
Compressor 1	Rated Load Amps	16.5				7.2			5.5			
	Locked Rotor Amps	110				52			38.9			
Compressor 2	Rated Load Amps	16				7.8			5.7			
	Locked Rotor Amps	110				52			38.9			
Outdoor Fan Motors (3)	Full Load Amps (total)	2.8 (8.4)				1.4 (4.2)			1.1 (3.3)			
Power Exhaust (1) 0.33 HP	Full Load Amps	2.4				1.3			1			
Service Outlet 115V GFI (amps)		15				15			20			
Indoor Blower Motor	Horsepower	2	3		5		2	3	5	2	3	5
	Full Load Amps	7.5	10.6		16.7		3.4	4.8	7.6	2.7	3.9	6.1
² Maximum Overcurrent Protection	Unit Only	70	70		80		30	35	35	25	25	25
	With (1) 0.33 HP Power Exhaust	70	70		80		35	35	35	25	25	30
³ Minimum Circuit Ampacity	Unit Only	57	60		66		27	29	31	21	22	24
	With (1) 0.33 HP Power Exhaust	59	62		69		28	30	33	22	23	25

ELECTRIC HEAT DATA

Electric Heat Voltage		208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V	
² Maximum Overcurrent Protection	Unit+ Electric Heat	15 kW	70	70	70	70	80	80	30	35	35	25	25	30
		22.5 kW	⁴ 70	80	⁴ 80	90	⁴ 80	90	40	40	45	35	35	35
		30 kW	⁴ 90	100	⁴ 100	110	⁴ 100	125	50	60	60	40	45	45
		45 kW	150	150	150	150	⁴ 150	175	80	80	80	60	60	70
		60 kW	⁴ 150	175	⁴ 150	175	⁴ 150	175	80	80	90	70	70	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat	15 kW	57	57	60	60	66	66	27	29	33	22	23	26
		22.5 kW	69	78	72	81	80	89	39	40	44	31	32	35
		30 kW	88	100	92	104	100	112	50	52	55	40	41	44
		45 kW	127	145	131	149	139	157	72	74	78	58	60	62
		60 kW	135	154	139	158	146	166	77	79	82	62	63	66
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	15 kW	70	70	70	70	80	80	35	35	35	25	25	30
		22.5 kW	⁴ 80	90	⁴ 80	90	⁴ 90	100	40	45	45	35	35	40
		30 kW	⁴ 100	110	⁴ 100	110	⁴ 110	125	60	60	60	45	45	45
		45 kW	150	150	⁴ 150	175	⁴ 150	175	80	80	80	60	70	70
		60 kW	⁴ 150	175	⁴ 150	175	⁴ 150	175	80	80	90	70	70	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	15 kW	59	59	62	62	69	69	29	31	34	23	25	27
		22.5 kW	72	81	75	84	83	92	40	42	45	32	34	36
		30 kW	91	103	95	107	103	115	51	53	57	41	43	45
		45 kW	130	148	134	152	142	160	74	76	79	59	61	64
		60 kW	138	157	142	161	149	169	79	80	84	63	64	67

ELECTRICAL ACCESSORIES

Disconnect	15 kW	54W56											
	22.5 kW	54W56	54W56	54W56	54W56	54W57	54W57	54W56	54W56	54W56	54W56	54W56	54W56
	30 kW	54W57	54W57	54W57	54W57	54W57	54W57	54W56	54W56	54W56	54W56	54W56	54W56
	45 kW	54W57	54W57	54W57	54W57	54W57	54W57	54W56	54W56	54W56	54W56	54W56	54W56
	60 kW	N/A	N/A	N/A	N/A	N/A	N/A	54W57	54W57	54W57	54W56	54W56	54W56

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

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

² HACR type breaker or fuse.

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

⁴ Factory installed circuit breaker not available.

⁵ Disconnect must be field furnished.

ELECTRICAL/ELECTRIC HEAT DATA
12.5 TON
BELT DRIVE
LCH152U4M

¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	19.6			8.2			6.6		
	Locked Rotor Amps	136			66.1			55.3		
Compressor 2	Rated Load Amps	19.6			8.2			6.6		
	Locked Rotor Amps	136			66.1			55.3		
Outdoor Fan Motors (3)	Full Load Amps (total)	2.8 (8.4)			1.4 (4.2)			1.1 (3.3)		
	Full Load Amps	2.4			1.3			1		
Service Outlet 115V GFI (amps)		15			15			20		
Indoor Blower Motor	Horsepower	2	3	5	2	3	5	2	3	5
	Full Load Amps	7.5	10.6	16.7	3.4	4.8	7.6	2.7	3.9	6.1
² Maximum Overcurrent Protection	Unit Only	80	80	90	35	35	40	25	30	30
	With (1) 0.33 HP Power Exhaust	80	80	90	35	35	40	25	30	30
³ Minimum Circuit Ampacity	Unit Only	64	67	74	29	30	33	23	24	26
	With (1) 0.33 HP Power Exhaust	67	70	76	30	31	34	24	25	27

ELECTRIC HEAT DATA

Electric Heat Voltage		208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	15 kW	80	80	80	90	90	35	35	40	25	30	30
		22.5 kW	80	80	⁴ 80	90	90	40	40	45	35	35	35
		30 kW	⁴ 90	100	⁴ 100	110	⁴ 100	125	50	60	60	40	45
		45 kW	150	150	150	⁴ 150	175	80	80	80	60	60	70
		60 kW	⁴ 150	175	⁴ 150	175	⁴ 150	175	80	80	90	70	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat	15 kW	64	64	67	67	74	29	30	33	23	24	26
		22.5 kW	69	78	72	81	80	89	39	40	44	31	32
		30 kW	88	100	92	104	100	112	50	52	55	40	41
		45 kW	127	145	131	149	139	157	72	74	78	58	60
		60 kW	135	154	139	158	146	166	77	79	82	62	63
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	15 kW	80	80	80	80	90	90	35	35	40	25	30
		22.5 kW	⁴ 80	90	⁴ 80	90	⁴ 90	100	40	45	45	35	35
		30 kW	⁴ 100	110	⁴ 100	110	⁴ 110	125	60	60	60	45	45
		45 kW	150	150	⁴ 150	175	⁴ 150	175	80	80	80	60	70
		60 kW	⁴ 150	175	⁴ 150	175	⁴ 150	175	80	80	90	70	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	15 kW	67	67	70	70	76	76	30	31	34	24	25
		22.5 kW	72	81	75	84	83	92	40	42	45	32	34
		30 kW	91	103	95	107	103	115	51	53	57	41	43
		45 kW	130	148	134	152	142	160	74	76	79	59	61
		60 kW	138	157	142	161	149	169	79	80	84	63	64

ELECTRICAL ACCESSORIES

Disconnect	15 kW	54W56											
	22.5 kW	54W56	54W56	54W56	54W56	54W57	54W57	54W56	54W56	54W56	54W56	54W56	54W56
	30 kW	54W57	54W57	54W57	54W57	54W57	54W57	54W56	54W56	54W56	54W56	54W56	54W56
	45 kW	54W57	54W57	54W57	54W57	54W57	54W57	54W56	54W56	54W56	54W56	54W56	54W56
	60 kW	N/A	N/A	N/A	N/A	N/A	N/A	54W57	54W57	54W57	54W57	54W56	54W56

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

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

² HACR type breaker or fuse.

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

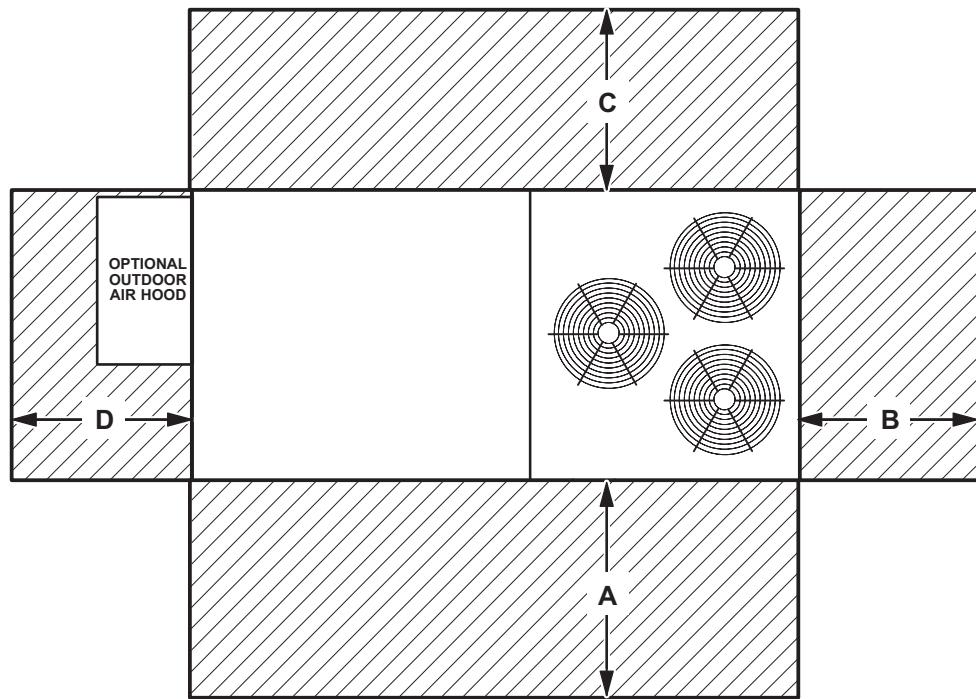
⁴ Factory installed circuit breaker not available.

⁵ Disconnect must be field furnished.

ELECTRIC HEAT CAPACITIES

Volts Input	7.5 kW			15 kW			22.5 kW			30 kW			45 kW			60 kW		
	kW Input	Btuh Output	No. of Stages															
208	5.6	19,100	1	11.3	38,600	1	16.9	57,700	2	22.5	76,800	2	33.8	115,300	2	45.0	153,600	2
220	6.3	21,500	1	12.6	43,000	1	18.9	64,500	2	25.2	86,000	2	37.8	129,000	2	50.4	172,000	2
230	6.9	23,600	1	13.8	47,100	1	20.7	70,700	2	27.5	93,900	2	41.3	141,000	2	55.1	188,000	2
240	7.5	25,600	1	15.0	51,200	1	22.5	76,800	2	30.0	102,400	2	45.0	153,600	2	60.0	204,800	2
440	6.9	21,500	1	12.6	43,000	1	18.9	64,500	2	25.2	86,000	2	37.8	129,000	2	50.4	172,000	2
460	6.9	23,600	1	13.8	47,100	1	20.7	70,700	2	27.5	93,900	2	41.3	141,000	2	55.1	188,000	2
480	7.5	25,600	1	15.0	51,200	1	22.5	76,800	2	30.0	102,400	2	45.0	153,600	2	60.0	204,800	2
550	6.3	21,500	1	12.6	43,000	1	18.9	64,500	2	25.2	86,000	2	37.8	129,000	2	50.4	172,000	2
575	6.9	23,600	1	13.8	47,100	1	20.7	70,700	2	27.5	93,900	2	41.3	141,000	2	55.1	188,000	2
600	7.5	25,600	1	15.0	51,200	1	22.5	76,800	2	30.0	102,400	2	45.0	153,600	2	60.0	204,800	2

UNIT CLEARANCES - INCHES (MM)



¹ Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	934	60	1524	Unobstructed
Minimum Operation Clearance	36	914	36	914	36	914	36	914	

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.

OUTDOOR SOUND DATA

Unit Model	Octave Band Linear Sound Power Levels dB, re 10 ⁻¹² Watts - Center Frequency - Hz							¹ Sound Rating Number (SRN) (dBA)
	125	250	500	1000	2000	4000	8000	
All Models	85	81	80	76	70	65	62	81

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

^¹ Sound Rating Number according to ARI Standard 270-95 or ARI Standard 370-2001 (includes pure tone penalty). "SRN" is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

WEIGHT DATA

Model Number	Net		Shipping	
	Ibs.	kg	Ibs.	kg
094U4E Base Unit	1212	550	1297	588
094U4E Max. Unit	1369	621	1454	660
122U4E Base Unit	1222	598	1307	636
122U4E Max. Unit	1386	554	1471	667
152U4E Base Unit	1232	559	1317	597
152U4E Max. Unit	1396	633	1481	672
094U4M Base Unit	1212	550	1297	588
094U4M Max. Unit	1369	621	1454	660
122U4M Base Unit	1222	598	1307	636
122U4M Max. Unit	1386	554	1471	667
152U4M Base Unit	1232	559	1317	597
152U4M Max. Unit	1396	633	1481	672

WEIGHT DATA - OPTIONS / ACCESSORIES

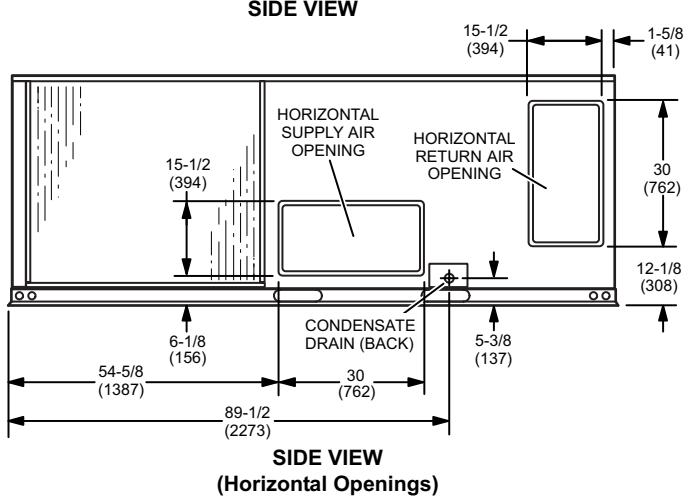
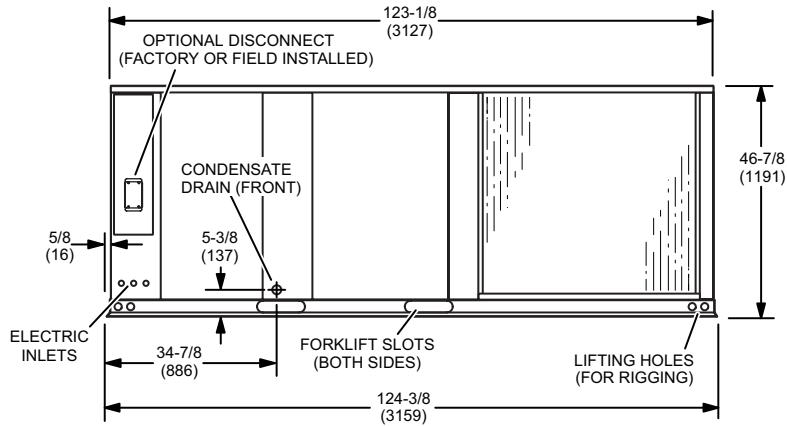
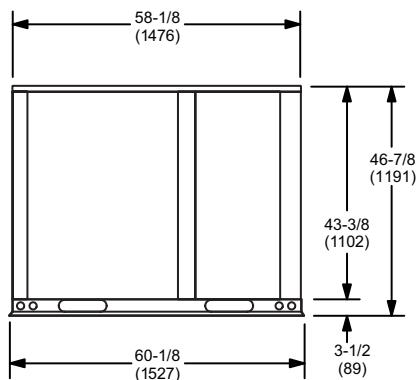
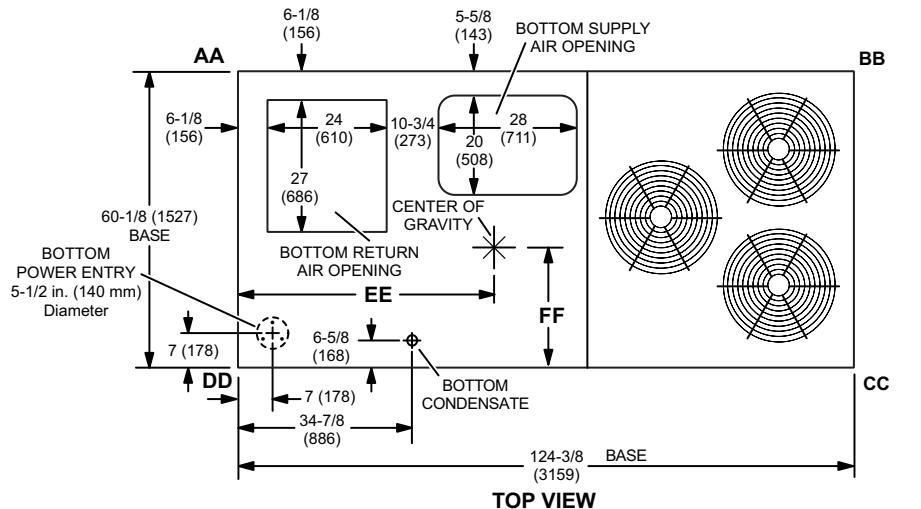
Description	Shipping Weight	
	lbs.	kg
ECONOMIZER / OUTDOOR AIR / EXHAUST		
Economizer		
Economizer Dampers	60	27
Outdoor Air Hood (downflow)	23	10
Barometric Relief Dampers (downflow)	8	4
Barometric Relief Dampers (low profile horizontal)	20	9
Outdoor Air Dampers		
Outdoor Air Damper Section - Automatic	51	23
Outdoor Air Damper Section - Manual	39	18
Power Exhaust		
	31	14
ELECTRIC HEAT		
7.5 kW	50	23
15 kW	50	23
22.5 kW	57	26
30 kW	57	26
45 kW	59	27
60 kW	68	31
ROOF CURBS		
Hybrid Roof Curbs, Downflow		
8 in. height	60	27
14 in. height	85	39
18 in. height	100	45
24 in. height	125	57
Adjustable Pitch Curb, Downflow		
14 in. height	191	82
CEILING DIFFUSERS		
Step-Down		
RTD11-95S	118	54
RTD11-135S	135	61
RTD11-185S	168	76
Flush		
FD11-95S	118	54
FD11-135S	135	61
FD11-185S	168	76
Transitions		
C1DIFF30B-1	30	14
C1DIFF31B-1	32	15
C1DIFF32B-1	36	16
PACKAGING		
LTL Packaging (less than truck load)	105	48

DIMENSIONS - INCHES (MM)

Model No.	CORNER WEIGHTS										CENTER OF GRAVITY													
	AA		BB		CC		DD		EE		FF													
	Base	Max.	Base	Max.	Base	Max.	Base	Max.	Base	Max.	in.	mm	in.	mm	in.	mm	in.	mm						
094	296	134	353	160	214	97	247	112	294	133	317	144	407	185	453	205	52.25	1327	51.25	1302	25.25	641	26.25	667
122	299	136	357	162	216	98	250	113	297	135	321	146	411	186	459	208	52.25	1327	51.25	1302	25.25	641	26.25	667
152	301	137	359	163	218	99	251	114	299	136	323	147	414	188	462	210	52.25	1327	51.25	1302	25.25	641	26.25	667

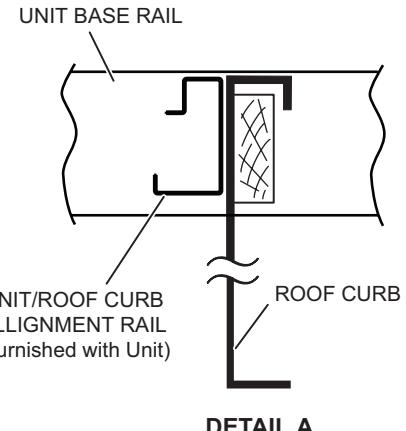
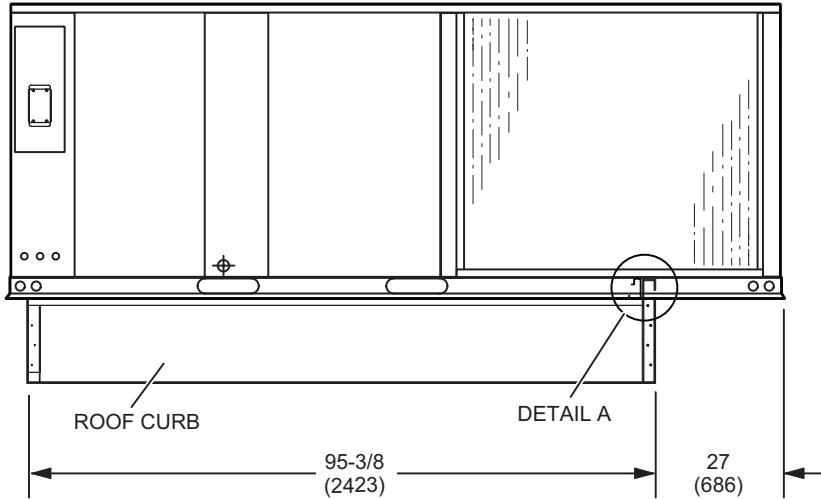
Base Unit - The unit with NO INTERNAL OPTIONS.

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 - ACCESSORIES - INCHES (MM)

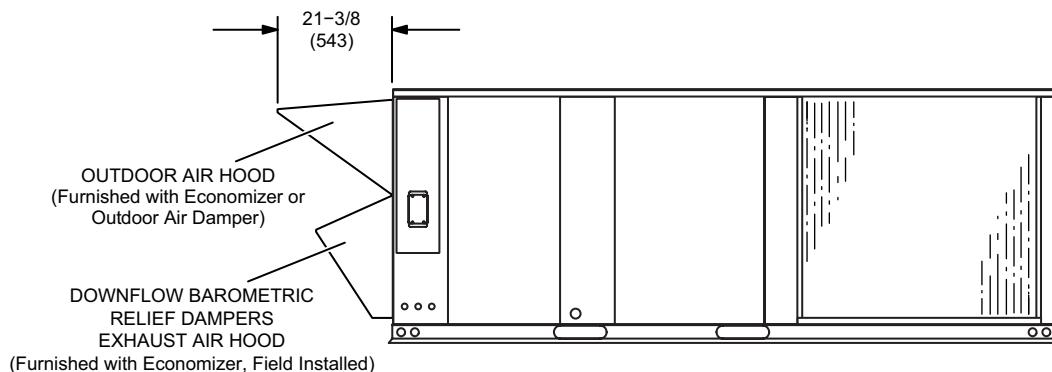
UNIT ON CURB LOCATION



NOTE - Unit cannot be installed on a full perimeter curb!

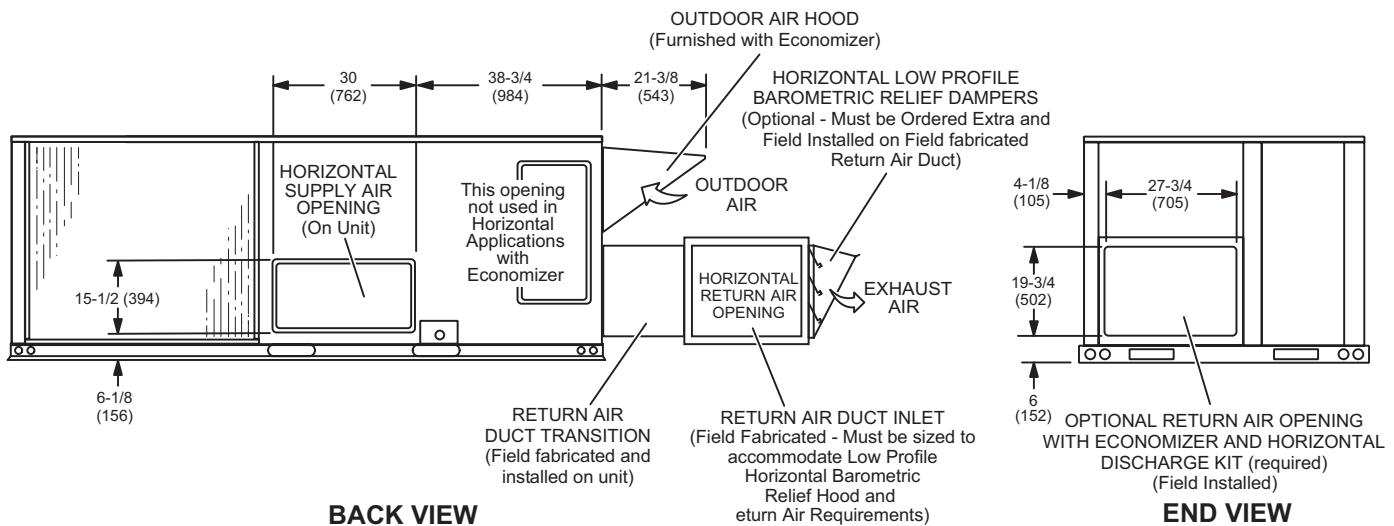
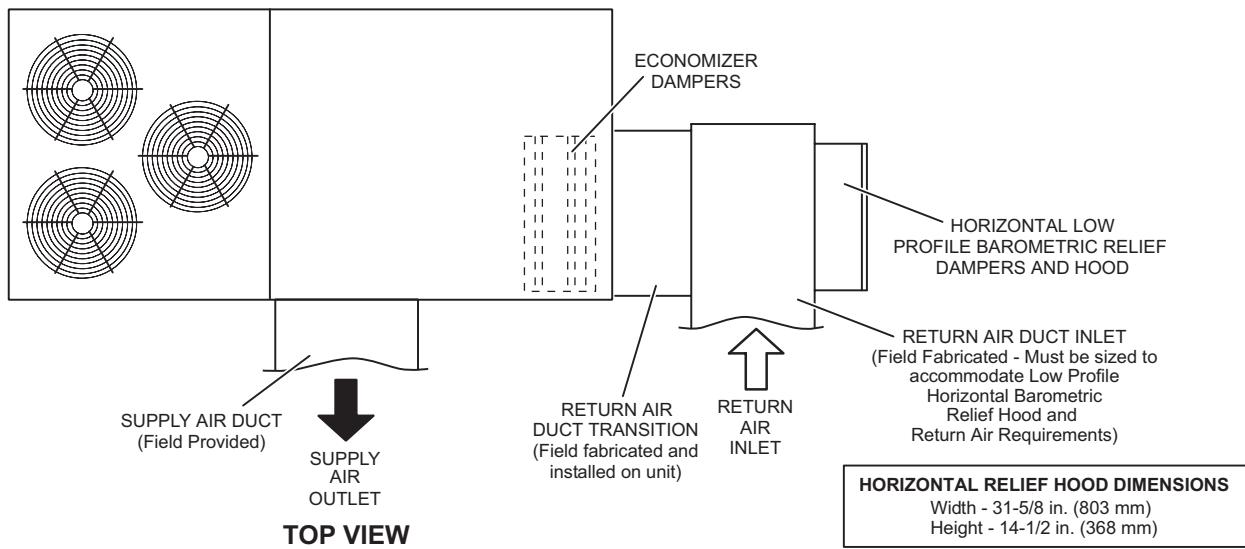
SIDE VIEW

OUTDOOR AIR HOOD DETAIL



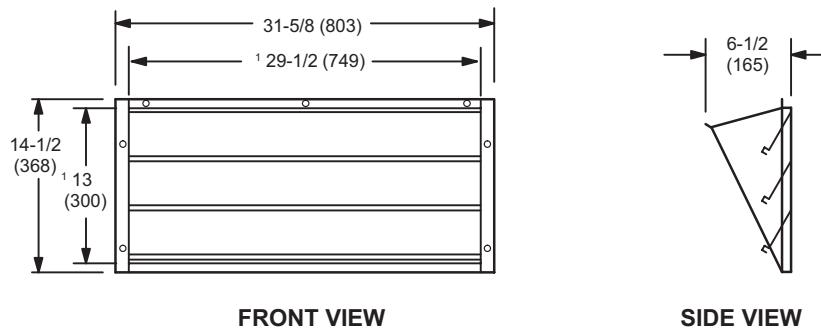
DIMENSIONS - ACCESSORIES - INCHES (MM)

OPTIONAL HORIZONTAL ECONOMIZER APPLICATION (with Optional Low Profile Horizontal Barometric Relief Dampers and Horizontal Discharge Kit)



NOTE - Return Air Duct and Transition must be supported.

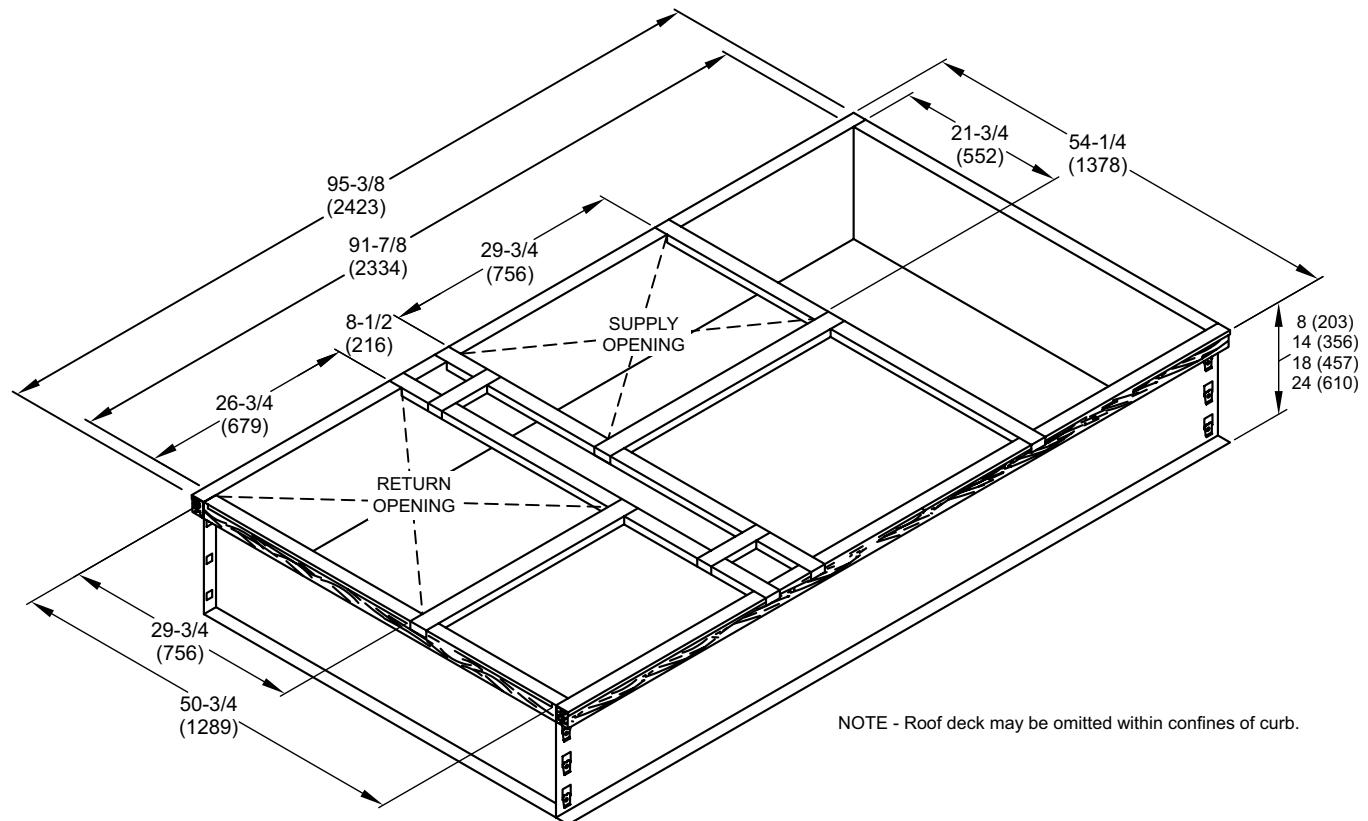
HORIZONTAL LOW PROFILE BAROMETRIC RELIEF DAMPERS (Field installed in horizontal return air duct adjacent to unit)



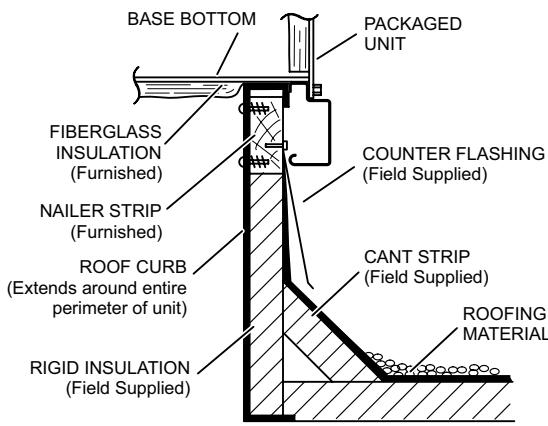
¹ NOTE - Opening size required in return air duct.

DIMENSIONS - ACCESSORIES - INCHES (MM)

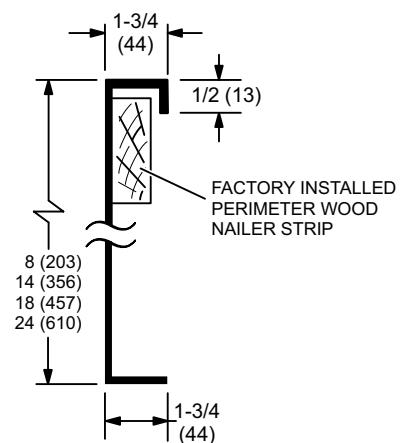
HYBRID ROOF CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB

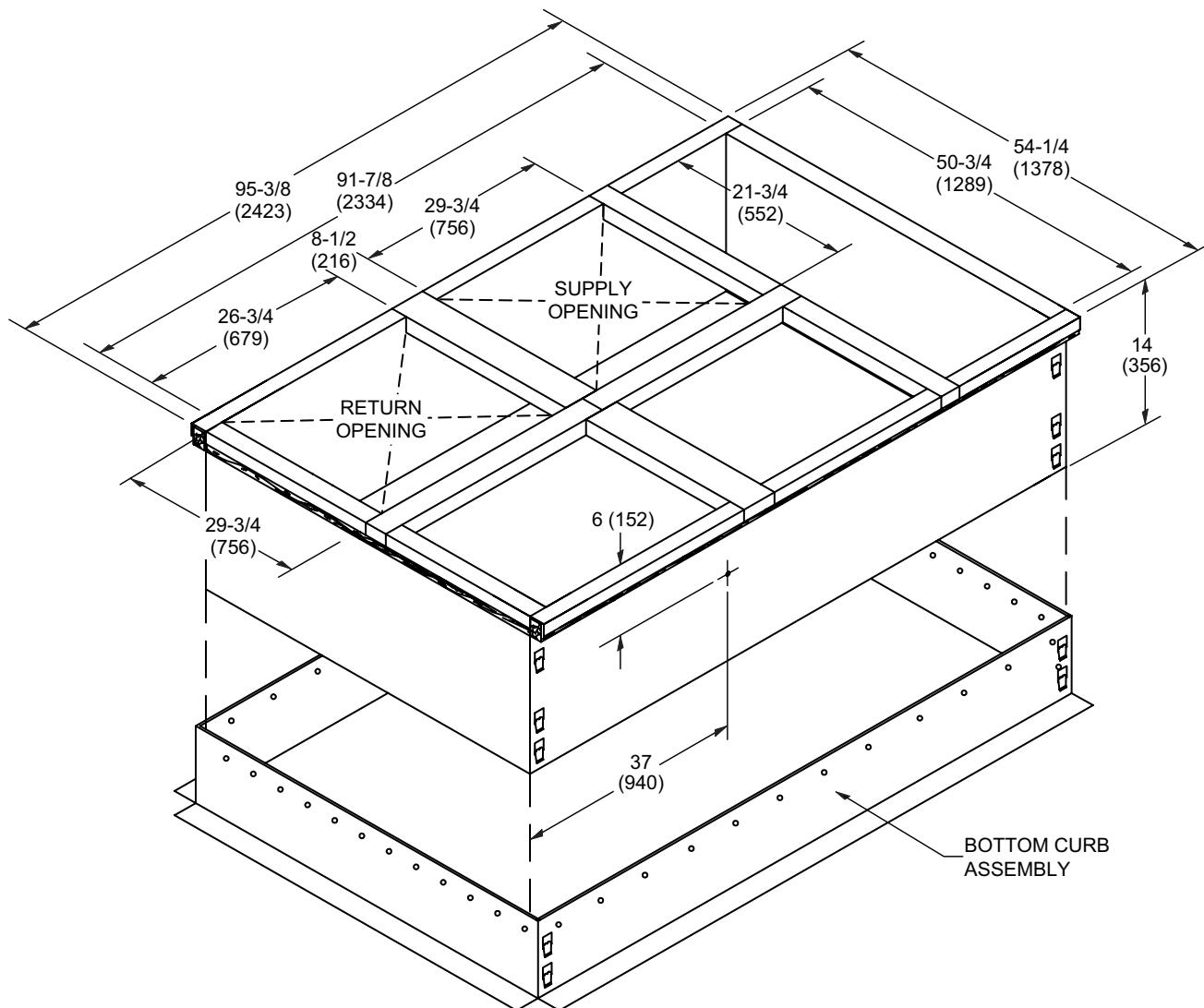


DETAIL ROOF CURB

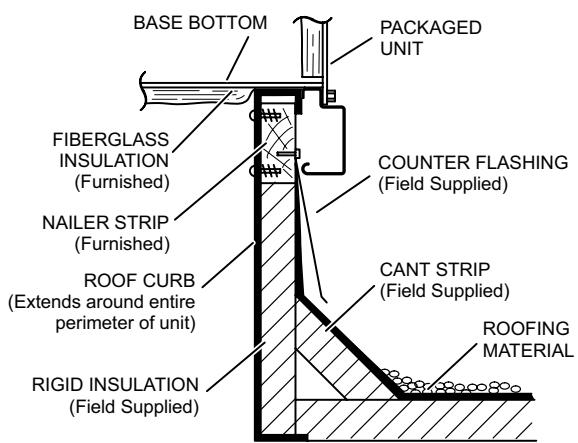


DIMENSIONS - ACCESSORIES - INCHES (MM)

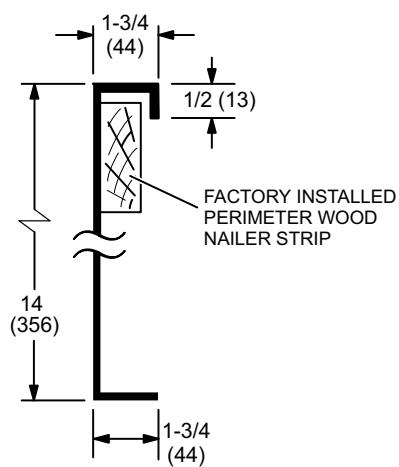
ADJUSTABLE PITCH CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB

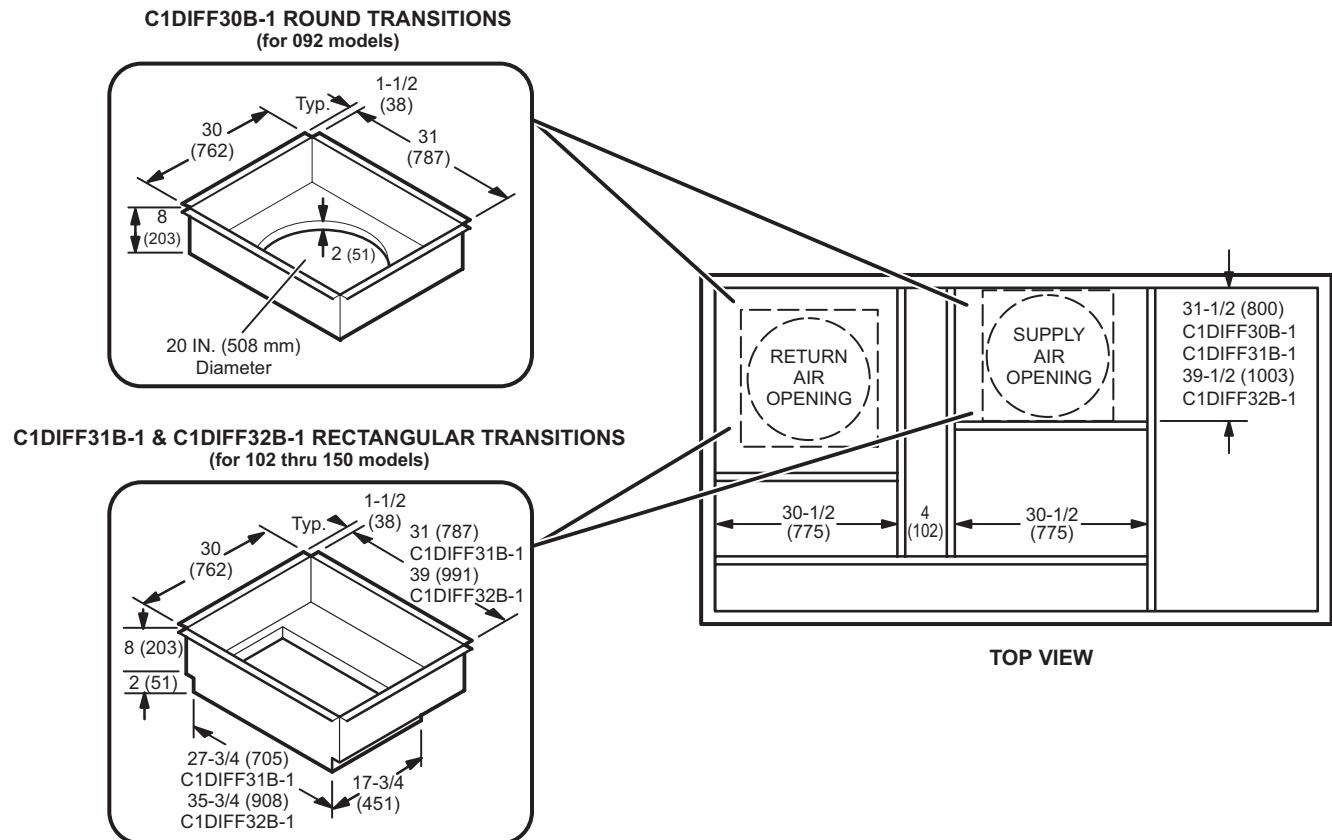


DETAIL ROOF CURB



DIMENSIONS - ACCESSORIES - INCHES (MM)

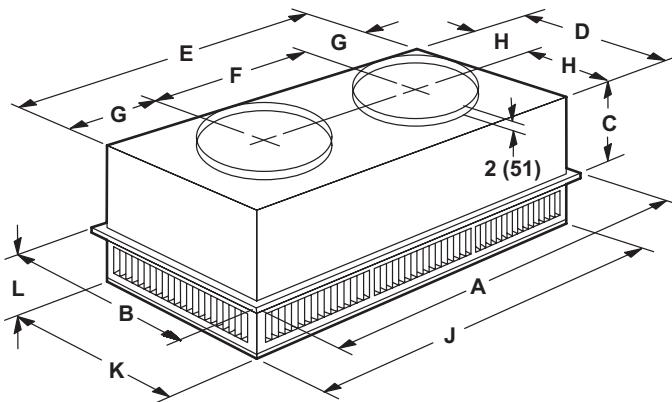
ROOF CURBS WITH SUPPLY & RETURN AIR TRANSITIONS FOR CEILING DIFFUSERS



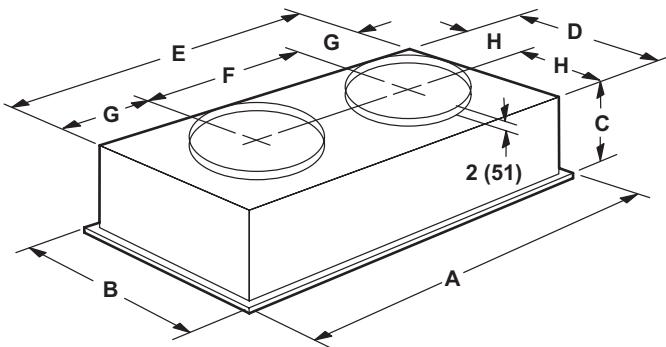
DIMENSIONS - ACCESSORIES - INCHES (MM)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



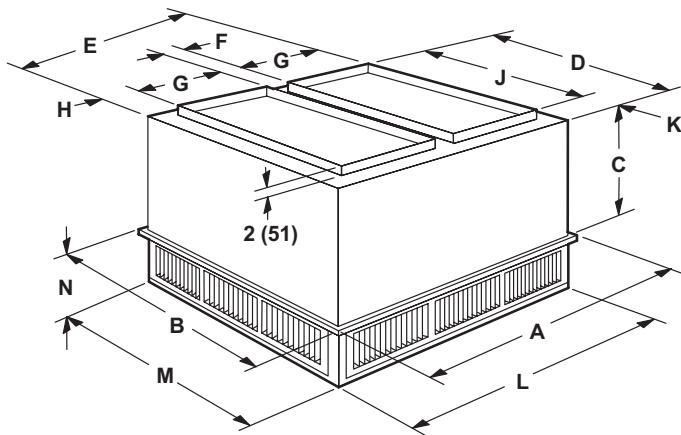
Model Number		RTD11-95S	
A	in.	47-5/8	
	mm	1159	
B	in.	29-5/8	
	mm	752	
C	in.	14-3/8	
	mm	365	
D	in.	27-1/2	
	mm	699	
E	in.	45-1/2	
	mm	1158	
F	in.	22-1/2	
	mm	572	
G	in.	11-1/2	
	mm	292	
H	in.	13-3/4	
	mm	349	
J	in.	45-1/2	
	mm	1156	
K	in.	27-1/2	
	mm	699	
L	in.	8-1/8	
	mm	206	
Duct Size	in.	20 round	
	mm	508 round	

Model Number		FD11-95S	
A	in.	47-5/8	
	mm	1159	
B	in.	29-5/8	
	mm	752	
C	in.	16-5/8	
	mm	422	
D	in.	27	
	mm	686	
E	in.	45	
	mm	1143	
F	in.	22-1/2	
	mm	572	
G	in.	11-1/4	
	mm	286	
H	in.	13-1/2	
	mm	343	
Duct Size	in.	20 round	
	mm	508 round	

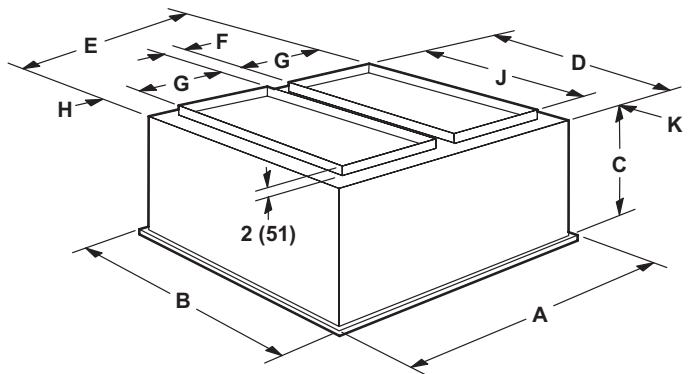
DIMENSIONS - ACCESSORIES - INCHES (MM)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



Model Number	RTD11-135S	RTD11-185S
A	in. 47-5/8 mm 1210	47-5/8 1210
B	in. 35-5/8 mm 905	47-5/8 1210
C	in. 20-5/8 mm 524	24-5/8 625
D	in. 33-1/2 mm 851	45-1/2 1156
E	in. 45-1/2 mm 1156	45-1/2 1156
F	in. 4-1/2 mm 114	4-1/2 114
G	in. 18 mm 457	18 457
H	in. 2-1/2 mm 64	2-1/2 64
J	in. 28 mm 711	36 914
K	in. 2-3/4 mm 70	4-3/4 121
L	in. 45-1/2 mm 1156	45-1/2 1156
M	in. 33-1/2 mm 851	45-1/2 1156
N	in. 9-1/8 mm 232	10-1/8 257
Duct Size	in. 18 x 28 mm 457 x 711	18 x 36 457 x 914

Model Number	FD11-135S	FD11-185S
A	in. 47-5/8 mm 1210	47-5/8 1210
B	in. 35-5/8 mm 905	47-5/8 1210
C	in. 23-1/4 mm 591	29-1/4 743
D	in. 33 mm 838	45 1143
E	in. 45 mm 1143	45 1143
F	in. 4-1/2 mm 114	4-1/2 114
G	in. 18 mm 457	18 457
H	in. 2-1/4 mm 57	2-1/4 57
J	in. 28 mm 711	36 914
K	in. 2-1/2 mm 64	4-1/2 114
Duct Size	in. 18 x 28 mm 457 x 711	18 x 36 457 x 914

REVISIONS

Section	Description
Dimensions	Added reference that unit cannot be installed on a full perimeter curb.



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Contact us at 1-800-448-5872

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

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