PACKAGED GAS / ELECTRIC

LGH

E-Series XE™ Ultra-High Efficiency Rooftop Units

60 HZ

Bulletin No. LGH-094-152 (07/2019)

ALLIED Commercial

PRODUCT SPECIFICATIONS

ASHRAE 90.1 COMPLIANT

ENERGY STAR

7.5 to 12.5 Tons
Net Cooling Capacity – 92,000 to 138,000 Btuh
Gas Input Heat Capacity – 130,000 to 240,000 Btuh

MODEL NUMBER IDENTIFICATION

L G H 122 U 4 E M 1 Y

Brand/Family
L= E Series™

Unit Type
G = Packaged Gas Heat w/ Electric Cooling

Major Design Sequence
H = 1st Generation

Nominal Cooling Capacity - Tons
094 = 7.5 Tons
122 = 10 Tons
152 = 12.5 Tons

Cooling Efficiency
U = High Efficiency

Refrigerant Type
4 = R-410A

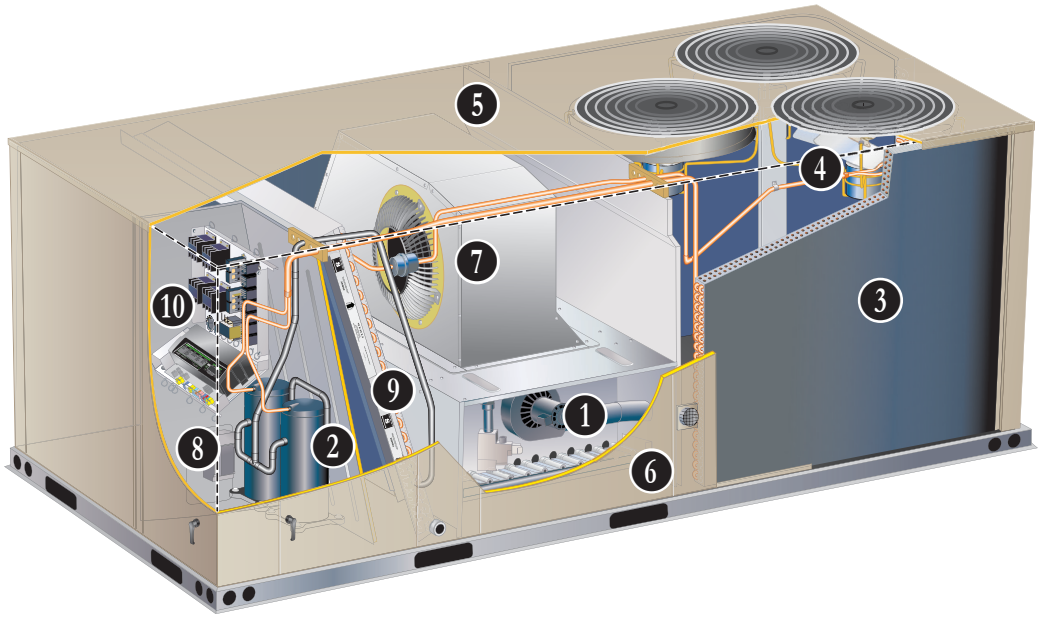
Blower Type
E = Single Zone VAV Supply Fan Option, E-Direct™ Blower System (Direct Drive)
M = Single Zone VAV Supply Fan Option, Belt Drive

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

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

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

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™ Single Zone VAV Supply Fan - High-efficiency, variable-speed ECM motor combined with an aerodynamically optimized impeller for quiet operation.
- **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.

CONTENTS

Blower Data - Belt Drive 27
Blower Data - Direct Drive 26
Dimensions - Accessories. 41
Dimensions - Unit 40
Electrical Data. 31
Features And Benefits 2
High Altitude Derate 23
Model Number Identification 1
Options / Accessories 11
Outdoor Sound Data 38
Intelli-Guide™ Control System 8
Ratings 24
Sequence Of Operation 14
Specifications - Belt Drive Models 22
Specifications - Direct Drive Models 21
Specifications - Gas Heat 23
Unit Clearances 35
Weight Data 38

APPROVALS

AHRI Certified to AHRI Standard 340/360.

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 ten years aluminized heat exchanger, limited fifteen years optional stainless steel heat exchanger.

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.

HEATING SYSTEM

1 Aluminized steel inshot burners, direct spark ignition, electronic flame sensor, combustion air inducer, redundant automatic dual stage gas valve with manual shut-off.

Heat Exchanger
Tubular construction, aluminized steel, life cycle tested.

Optional Stainless Steel Heat Exchanger is required if mixed air temperature is below 45°F.

Electronic Pilot Ignition
Electronic spark igniter provides positive direct ignition of burners on each operating cycle. The system permits main gas valve to stay open only when the burners are proven to be lit. Should a loss of flame occur, the gas valve closes, shutting off the gas to the burners. Ignition module has LED to indicate status and aid in troubleshooting.

Watchguard circuit on module automatically resets ignition controls after one hour of continuous thermostat demand after unit lockout, eliminating nuisance service calls.

Ignition control is factory installed in the gas heating compartment.

Limit Controls
Factory installed, redundant limit controls with fixed temperature setting. Heat limit controls protect heat exchanger and other components from overheating.

Safety Switches
Flame roll-out switch, flame sensor and combustion air inducer proving switch protect system operation.

Required Selections

Gas Input Choice - Order one:
Standard Gas Heat, 2 Stage (84,500/130,000 Btuh)

Medium Gas Heat, 2 Stage (117,000/180,000 Btuh)

High Gas Heat, 2 Stage (156,000/240,000 Btuh)

Options/Accessories

Factory Installed

Stainless Steel Heat Exchanger
Required if mixed air temperature is below 45°F.

Factory or Field Installed

Bottom Gas Piping Kit
Allows bottom gas entry.

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

HEATING SYSTEM (continued)

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

Field Installed

Combustion Air Intake Extensions
Recommended for use with existing flue extension kits in areas where high snow areas can block intake air.

LPG/Propane Kits
Conversion kit to field change over units from Natural Gas to LPG/ Propane.

Vertical Vent Extension Kit
Use to exhaust flue gases vertically above unit. Required when unit vent is too close to fresh air intakes per building codes. The vent kit also prevents ice formation on intake louvers.

Kit contains vent transition, vent tee, drain cap and installation hardware.

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

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.

2 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 heads.

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.

3 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.

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.

4 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.

COOLING SYSTEM (continued)

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

5 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/Gas Entry
Electrical and gas 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-hygroscopic fiberglass insulation.

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

6 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 or Field Installed

Return Air Adaptor Plate
For same size LC/LG/LH and TC/TG/TH unit replacement.

Installs on return air opening in unit to match return air opening on existing roof curbs. Also see Accessory Air Resistance table.

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.

7 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).

Blower assembly slides out of unit for servicing.

Required Selections

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

Single Zone VAV supply air 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 Single Zone VAV 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.

Short-Circuit Current Rating (SCCR)
Higher short circuit protection up to 100kA.

Factory or Field Installed

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

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.

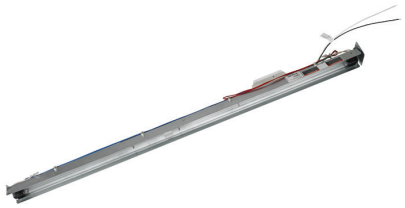
Options/Accessories

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.

Field Installed

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

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 (CO_2) Sensors
Monitors CO_2 levels, reports to the Intelli-Guide™ unit controller which adjusts economizer dampers as needed.

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.

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.

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.

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

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.

Controls Options (continued)

Commercial Control Systems

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.

ECONOMIZER OPTIONS

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

High Performance Economizer
Approved for California Title 24 building standards.

Low leakage dampers are Air Movement and Control Association International (AMCA) Class 1A Certified - Maximum 3 CFM per sq. ft. leakage at 1 in. w.g.

ASHRAE 90.1-2010 compliant.

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.

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 Allied 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.

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.

ECONOMIZER OPTIONS (continued)

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 (CO_2 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 (CO_2 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
HEATING SYSTEM					
Bottom Gas Piping Kit	C1GPKT01B-01	**54W95**	OX	OX	OX
Combustion Air Intake Extensions	T1EXTN10AN1	**19W51**	X	X	X
Gas Heat Input	130,000 Btuh	Factory	O	O	O
	180,000 Btuh	Factory	O	O	O
	240,000 Btuh	Factory	O	O	O
Low Temperature Vestibule Heater	208/230V-3ph - C1LTVH10B-2Y	**13X63**	OX	OX	OX
	460V - C1LTVH10B-2G	**13X64**	OX	OX	OX
	575V - C1LTVH10B-2J	**13X65**	OX	OX	OX
LPG/Propane Conversion Kits	Standard Heat - C1PROP23BS1	**14N22**	X	X	X
	Medium Heat - C1PROP22BS1	**14N23**	X	X	X
	High Heat - C1PROP21BS1	**14N25**	X	X	X
Stainless Steel Heat Exchanger		Factory	O	O	O
Vertical Vent Extension Kit	C1EXTN2021	**42W16**	X	X	X
BLOWER - SUPPLY AIR					
Blower	E-Direct™ (Direct Drive) Single Zone VAV supply air blower	Factory	O	O	O
	Belt Drive Single Zone VAV supply air blower (With VFD Bypass Control)	Factory	O	O	O
	Belt Drive Single Zone VAV supply air blower (Without VFD Bypass Control)	Factory	O	O	O
Motors - Single Zone VAV supply air	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

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
CABINET					
Combination Coil/Hail Guards	E1GARD51BP1	**13T06**	X	X	X
Horizontal Discharge Kit	K1HECK00B-1	**51W25**	X	X	X
Return Air Adaptor Plate (for LC/LG and TC/TG/TH unit replacement)	C1CONV10B-1	**54W96**	OX	OX	OX
CONTROLS					
Blower Proving Switch	C1SNSR35FF1	**53W65**	OX	OX	OX
Commercial Controls					
Intelli-Guide™ Control System - BACnet® Module - C0CTRL60AE1L		**59W51**	OX	OX	OX
Intelli-Guide™ Control System - LonTalk® Module - C0CTRL65FF1		**54W27**	OX	OX	OX
Novar® ETM-2051 - E0CTRL30B1		**64W73**	OX	OX	OX
Novar® LSM		Factory	O	O	O
Dirty Filter Switch	E1SNSR55B-1	**53W67**	OX	OX	OX
Fresh Air Tempering	C1SNSR75AD1	**58W63**	OX	OX	OX
General Purpose Control Kit	E1GPBK30C1	**13J78**	X	X	X
Smoke Detector - Supply or Return (Power board and one sensor)	C1SNSR44B-2	**11K76**	OX	OX	OX
Smoke Detector - Supply and Return (Power board and two sensors)	C1SNSR43B-2	**11K80**	OX	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	OX
	MERV 13 - C1FLTR40B-1	**52W41**	OX	OX	OX
Replacement Media Filter With Metal Mesh Frame (includes non-pleated filter media)	C1FLTR30B-1-	**Y3063**	X	X	X
Indoor Air Quality (CO_2) Sensors					
Sensor - Wall-mount, off-white plastic cover with LCD display	C0SNSR50AE1L	**77N39**	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display	C0SNSR52AE1L	**87N53**	X	X	X
Sensor - Black plastic case with LCD display, rated for plenum mounting	C0SNSR51AE1L	**87N52**	X	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting	C0MISC19AE1	**87N54**	X	X	X
CO_2 Sensor Duct Mounting Kit - for downflow applications	C0MISC19AE1-	**85L43**	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO_2 sensors (**87N53** or **77N39**)	C0MISC16AE1-	**90N43**	X	X	X
UVC Germicidal Lamps					
[1] UVC Light Kit (208/230v-1ph)	C1UVCL10B-1	**54W62**	X	X	X
ELECTRICAL					
Voltage 60 hz	208/230V - 3 phase	Factory	O	O	O
	460V - 3 phase	Factory	O	O	O
	575V - 3 phase	Factory	O	O	O
HACR Circuit Breakers		Factory	O	O	O
Short-Circuit Current Rating (SCCR) of 100kA		Factory	O	O	O
Disconnect Switch	80 amp - C1DISC080B-1	**54W56**	OX	OX	OX
	150 amp - C1DISC150B-1	**54W57**	OX	OX	OX
GFI Service Outlets	15 amp non-powered, field-wired (208/230V, 460V only) LTAGFIK10/15	**74M70**	OX	OX	OX
	20 amp non-powered, field-wired (575V only) C1GFCI20FF1	**67E01**	OX	OX	OX
Weatherproof Cover for GFI	C1GFCI99FF1	**10C89**	X	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
ECONOMIZER					
High Performance Economizer (Approved for California Title 24 Building Standards / AMCA Class 1A Certified)					
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-2	**17U08**	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
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, Downflow					
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 can be set to 2 stage in thermostat mode or at 4 stage in room sensor mode control options.

2 STAGE OPERATION:

W1 Demand:

Both gas valves are open on Low Fire (stage 1 on units with 2-stage gas valves) and supply air blower operates at heating speed.

W2 Demand:

Both gas valves are open on High Fire (stage 2 on units with 2-stage gas valves) and supply air blower operates at heating speed.

4 STAGE OPERATION:

W1 Demand:

Left heat exchanger gas valve is open on Low Fire (stage 1 on units with 4-stage gas valves) and supply air blower operates at heating speed.

W2 Demand:

Both gas valves are open on Low Fire (stage 2 on units with 4-stage gas valves) and supply air blower operates at heating speed.

W3 Demand:

Left heat exchanger gas valve will open on High Fire and the right heat exchanger will remain open on Low Fire (stage 3 on units with 4-stage gas valves) and supply air blower operates at heating speed.

W4 Demand:

Both gas valves are open on High Fire (stage 4 on units with 4-stage gas valves) 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 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 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

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.

THERMOSTAT MODE - SINGLE ZONE VAV (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 Lennox or third-party network device, the unit controller turns on or off the heating stages to maintain the desired temperature setpoint.

The LGH 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 on page 37. 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 Lennox or third-party network device, the unit controller turns on or off cooling stages to maintain the desired temperature setpoint.

The LGH 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 on page 37. 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.

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

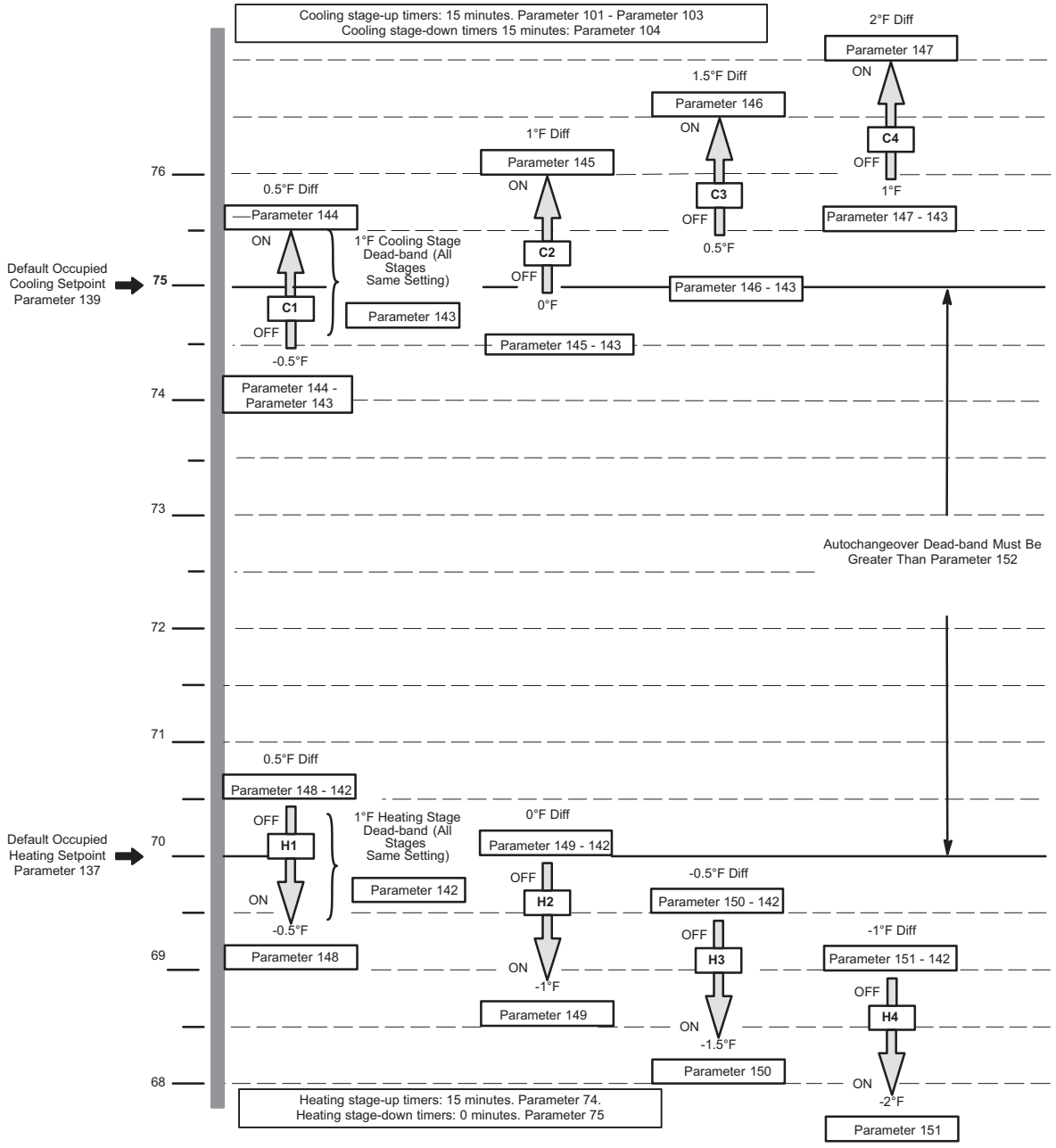
ZONE SENSOR MODE (continued)

ROOM SENSOR STAGES
Default Values Shown

Units With Economizer:
C1=Free Cooling
C2=Compressor 1
C3=Compressor 2
C4=Compressor 3 + 4

C1=Cooling Stage 1
C2=Cooling Stage 2
C3=Cooling Stage 3
C4=Cooling Stage 4

H1=Heating Stage 1
H2=Heating Stage 2
H3=Heating Stage 3
H4=Heating Stage 4



SEQUENCE OF OPERATION

ZONE SENSOR MODE - SINGLE ZONE VAV

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	**LGH094U4E**	**LGH122U4E**	**LGH152U4E**
		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
AHRI Reference No.			N/A	N/A	N/A
Refrigerant Charge		Refrigerant Type	R-410A	R-410A	R-410A
		Circuit 1	29 lbs. 0 oz.	29 lbs. 0 oz.	29 lbs. 0 oz.
Gas Heating Options Available - See page 23			Standard (2 Stage), Medium (2 Stage), High (2 Stage)		
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		
Indoor Blower		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, 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.

SPECIFICATIONS - BELT DRIVE MODELS

General Data		Nominal Tonnage	7.5 Ton	10 Ton	12.5 Ton
		Model Number	LGH094U4M	LGH122U4M	LGH152U4M
		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	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
AHRI Reference No.			N/A	N/A	N/A
Refrigerant Charge		Refrigerant Type	R-410A	R-410A	R-410A
		Circuit 1	29 lbs. 0 oz.	29 lbs. 0 oz.	29 lbs. 0 oz.
Gas Heating Options Available - See page 23			Standard (2 Stage), Medium (2 Stage), High (2 Stage)		
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
Filters		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. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

SPECIFICATIONS - GAS HEAT

		Heat Input Type	**Standard**	**Medium**	**High**
		Number of Gas Heat Stages	**2**	**2**	**2**
Gas Heating Performance	Input - Btuh	First Stage	84,500	117,000	156,000
		Second Stage	130,000	180,000	240,000
	Output - Btuh	Second Stage	104,000	144,000	192,000
	Temperature Rise Range - °F		15 - 45	30 - 60	40 - 70
	Thermal Efficiency		80%	80%	80%
	Gas Supply Connections		3/4 in. npt	3/4 in. npt	3/4 in. npt.
Recommended Gas Supply Pressure - in. w.g.		Natural	7 in. w.c.	7 in. w.c.	7 in. w.c.
		LPG/Propane	11 in. w.c.	11 in. w.c.	11 in. w.c.

HIGH ALTITUDE DERATE

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

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

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

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

Gas Heat Type	**Altitude Feet**	**Gas Manifold Pressure in. w.g.**		**Input Rate - Btuh (Natural Gas or LPG/Propane)**	
		Natural Gas	**LPG/Propane Gas**	**First Stage**	**Second Stage**
Standard	2001-4500	3.4	9.6	84,500	124,000
Medium	2001-4500	3.4	9.6	117,000	172,000
High	2001-4500	3.4	9.6	156,000	230,000

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 LGH094U4E AND LGH094U4M (1ST STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	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 LGH094U4E AND LGH094U4M (2ND STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	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 LGH122U4E AND LGH122U4M (1ST STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	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 LGH122U4E AND LGH122U4M (2ND STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	3200	115.6	6.41	0.65	0.81	0.99	108.7	7.28	0.66	0.84	1	101.6	8.26	0.67	0.86	1	93.7	9.39	0.68	0.91	1
	4000	121.9	6.46	0.7	0.91	1	114.5	7.32	0.72	0.95	1	107	8.31	0.74	0.98	1	99.1	9.43	0.77	1	1
	4800	126.7	6.5	0.77	1	1	119.8	7.37	0.8	1	1	112.3	8.35	0.82	1	1	104.9	9.48	0.87	1	1
67°F	3200	123.2	6.47	0.51	0.63	0.77	115.9	7.33	0.51	0.64	0.79	108.3	8.31	0.51	0.65	0.82	100.2	9.45	0.52	0.67	0.86
	4000	129.3	6.52	0.54	0.68	0.86	121.4	7.38	0.55	0.69	0.9	113.7	8.35	0.55	0.72	0.94	105	9.48	0.56	0.75	0.99
	4800	133.9	6.56	0.57	0.75	0.97	125.8	7.42	0.58	0.77	0.99	117.2	8.39	0.59	0.8	1	108.2	9.51	0.6	0.84	1
71°F	3200	131	6.53	0.38	0.49	0.61	123.6	7.4	0.38	0.5	0.62	115.4	8.37	0.37	0.5	0.63	106.7	9.49	0.37	0.51	0.65
	4000	136.8	6.58	0.4	0.53	0.66	128.9	7.44	0.39	0.54	0.67	120.4	8.42	0.39	0.54	0.69	111.7	9.54	0.39	0.55	0.72
	4800	141.6	6.63	0.41	0.57	0.72	133.3	7.49	0.41	0.57	0.74	124.4	8.46	0.41	0.58	0.77	115	9.57	0.4	0.59	0.81

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 LGH152U4E AND LGH152U4M (1ST STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	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 LGH152U4E AND LGH152U4M (2ND STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	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.

MAXIMUM STATIC PRESSURE WITH GAS HEAT - 2.0 in. w.g.

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.

MAXIMUM STATIC PRESSURE WITH GAS HEAT - 2.0 in. w.g.

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.

MAXIMUM STATIC PRESSURE WITH GAS HEAT - 2.0 in. w.g.

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	Air Volume Exhausted
in. w.g.	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		Gas Heat Exchanger			Economizer	Filters		Return Air Adaptor Plate
	094	122, 152	Standard Heat	Medium Heat	High Heat		MERV 8	MERV 13	
1750	0.04	0.04	0.06	0.02	0.02	0.05	0.01	0.03	0.00
2000	0.05	0.05	0.07	0.05	0.06	0.06	0.01	0.03	0.00
2250	0.06	0.06	0.07	0.07	0.08	0.08	0.01	0.04	0.00
2500	0.07	0.07	0.09	0.10	0.11	0.11	0.01	0.05	0.00
2750	0.08	0.08	0.09	0.11	0.12	0.12	0.02	0.05	0.00
3000	0.10	0.09	0.11	0.12	0.13	0.13	0.02	0.06	0.02
3250	0.11	0.10	0.12	0.15	0.16	0.15	0.02	0.06	0.02
3500	0.12	0.11	0.12	0.16	0.17	0.15	0.03	0.07	0.04
3750	0.14	0.13	0.14	0.19	0.20	0.15	0.03	0.08	0.07
4000	0.15	0.14	0.14	0.21	0.22	0.19	0.04	0.08	0.09
4250	0.17	0.15	0.14	0.24	0.28	0.19	0.04	0.09	0.11
4500	0.19	0.17	0.15	0.26	0.32	0.22	0.04	0.09	0.12
4750	0.20	0.18	0.16	0.29	0.37	0.25	0.05	0.10	0.16
5000	0.22	0.20	0.16	0.34	0.43	0.29	0.06	0.10	0.18
5250	0.24	0.22	0.16	0.37	0.47	0.32	0.06	0.11	0.19
5500	0.25	0.23	0.18	0.44	0.54	0.34	0.07	0.12	0.22
5750	0.27	0.25	0.19	0.49	0.59	0.45	0.07	0.12	0.25
6000	0.29	0.27	0.20	0.54	0.64	0.52	0.08	0.13	0.27

BLOWER DATA

CEILING DIFFUSERS AIR RESISTANCE - in. w.g.

Unit Size	RTD11 Step-Down Diffuser				FD11 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
152 Models	4200	0.22	0.19	0.16	0.10
	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	
		RTD11 Step-Down	FD11 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 DATA — 7.5 TON

E-DIRECT™ (DIRECT DRIVE) — **LGH094U4E**

[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)	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	3.75	3.75	3.75
	Full Load Amps	8.8	4.3	3.4
[2] Maximum Overcurrent Protection	Unit Only	50	25	20
	With (1) 0.33 HP Power Exhaust	60	25	20
[3] Minimum Circuit Ampacity	Unit Only	47	23	17
	With (1) 0.33 HP Power Exhaust	50	24	18

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.

ELECTRICAL DATA — 10 TON

E-DIRECT™ (DIRECT DRIVE) — **LGH122U4E**

[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 (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	3.75	3.75	3.75
	Full Load Amps	8.8	4.3	3.4
[2] Maximum Overcurrent Protection	Unit Only	60	30	25
	With (1) 0.33 HP Power Exhaust	70	35	25
[3] Minimum Circuit Ampacity	Unit Only	54	27	20
	With (1) 0.33 HP Power Exhaust	56	28	21

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.

ELECTRICAL DATA — 12.5 TON

E-DIRECT™ (DIRECT DRIVE) — LGH152U4E

[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)
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	25
	With (1) 0.33 HP Power Exhaust	80	35	25
[3] Minimum Circuit Ampacity	Unit Only	62	27	22
	With (1) 0.33 HP Power Exhaust	64	29	23

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.

ELECTRICAL DATA — 7.5 TON

BELT DRIVE — **LGH094U4M**

[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)	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	50	60	70	25	25	30	20	20	25
	With (1) 0.33 HP Power Exhaust	60	60	70	25	30	30	20	20	25
[3] Minimum Circuit Ampacity	Unit Only	46	49	56	22	23	26	16	18	20
	With (1) 0.33 HP Power Exhaust	48	51	58	23	25	28	17	19	21

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

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

[2] HACR type breaker or fuse.

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

[4] Factory installed circuit breaker not available.

ELECTRICAL DATA — 10 TON

BELT DRIVE — **LGH122U4M**

[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	60	70	70	30	30	35	20	25	25
	With (1) 0.33 HP Power Exhaust	70	70	80	30	35	35	25	25	25
[3] Minimum Circuit Ampacity	Unit Only	53	56	62	25	26	29	19	20	23
	With (1) 0.33 HP Power Exhaust	55	59	65	26	28	31	20	21	24

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 DATA — 12.5 TON

BELT DRIVE — **LGH152U4M**

[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)		
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	80	80	30	35	35	25	25	30
	With (1) 0.33 HP Power Exhaust	80	80	90	35	35	35	25	25	30
[3] Minimum Circuit Ampacity	Unit Only	60	64	70	27	28	31	21	23	25
	With (1) 0.33 HP Power Exhaust	63	66	72	28	29	32	22	24	26

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.

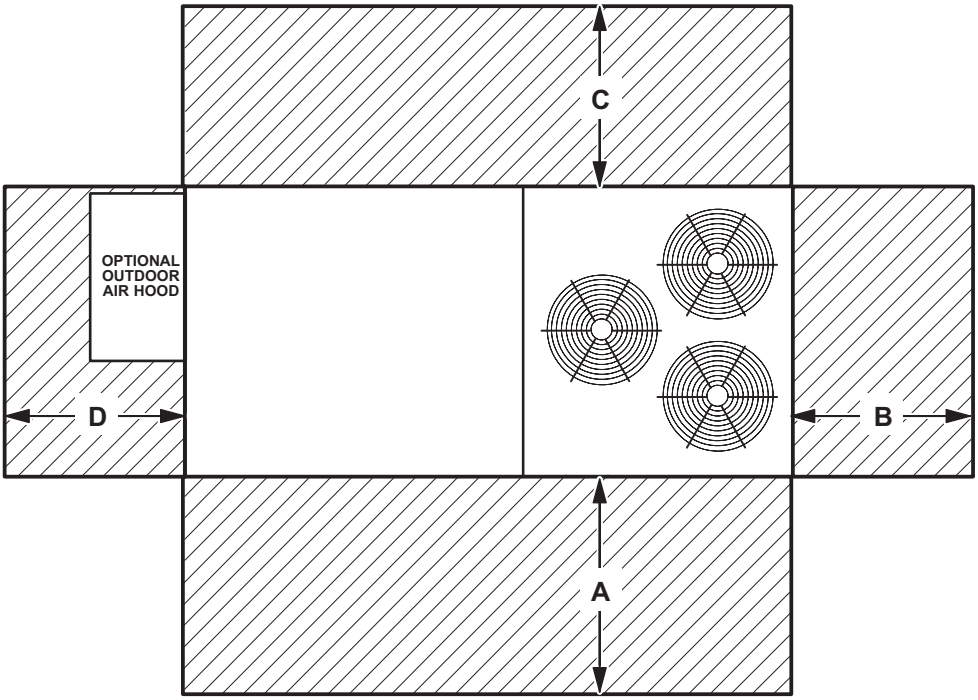
[2] HACR type breaker or fuse.

[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.

UNIT CLEARANCES



[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
Clearance to Combustibles	36	914	1	25	1	25	1	25	
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.
Clearance to Combustibles - Required clearance to combustible material.
Minimum Operation Clearance - Required clearance for proper unit operation.

THIS PAGE INTENTIONALLY LEFT BLANK

THIS PAGE INTENTIONALLY LEFT BLANK

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	
	lbs.	kg	lbs.	kg
094U4E Base Unit	1260	572	1345	610
094U4E Max. Unit	1411	640	1496	679
122U4E Base Unit	1270	576	1355	615
122U4E Max. Unit	1421	645	1506	683
152U4E Base Unit	1280	581	1365	619
152U4E Max. Unit	1431	649	1516	688
094U4M Base Unit	1260	572	1345	610
094U4M Max. Unit	1411	640	1496	679
122U4M Base Unit	1270	576	1355	615
122U4M Max. Unit	1421	645	1506	683
152U4M Base Unit	1280	581	1365	619
152U4M Max. Unit	1431	649	1516	688

WEIGHT DATA - OPTIONS / ACCESSORIES

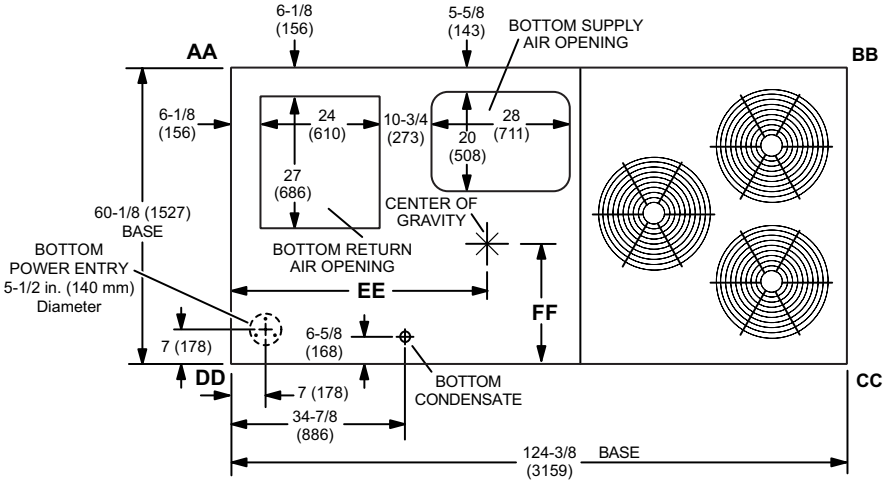
Description	Shipping Weight	
	lbs.	kg
ECONOMIZER / OUTDOOR AIR / EXHAUST		
Economizer		
Economizer Dampers	60	27
Outdoor Air Hood (downflow)	23	10
Barometric Relief Dampers (downflow)	8	4
Barometric Relief Dampers (low profile horizontal)	20	9
Outdoor Air Dampers		
Outdoor Air Damper Section - Automatic	51	23
Outdoor Air Damper Section - Manual	39	18
Power Exhaust	31	14
GAS HEAT EXCHANGER (NET WEIGHT)		
Medium Heat (adder over standard heat)	9	5
High Heat (adder over standard heat)	32	15
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 - UNIT

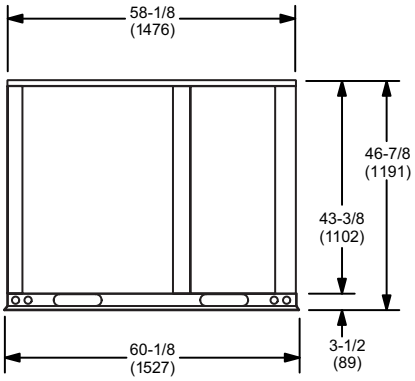
Model No.	CORNER WEIGHTS																CENTER OF GRAVITY							
	AA				BB				CC				DD				EE				FF			
	Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm	in.	mm	in.	mm
094	308	140	363	165	223	101	254	115	306	139	327	148	423	192	467	212	52.25	1327	51.25	1302	25.25	641	26.25	667
122	310	141	366	166	224	102	256	116	309	140	329	149	427	194	470	213	52.25	1327	51.25	1302	25.25	641	26.25	667
152	313	142	369	167	226	103	258	117	311	141	331	150	430	195	474	215	52.25	1327	51.25	1302	25.25	641	26.25	667

Base Unit - The unit with NO INTERNAL OPTIONS.

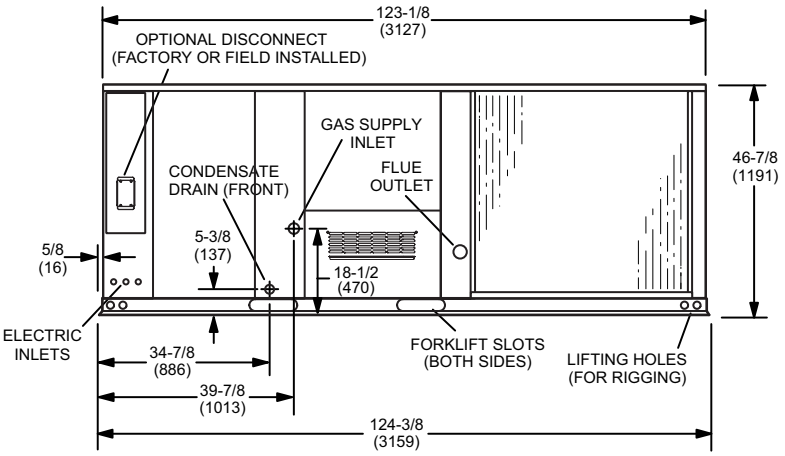
Max. Unit - The unit with ALL INTERNAL OPTIONS Installed. (Economizer, Standard Static Power Exhaust Fans, Controls, etc.). Does not include accessories external to unit or high static power exhaust.



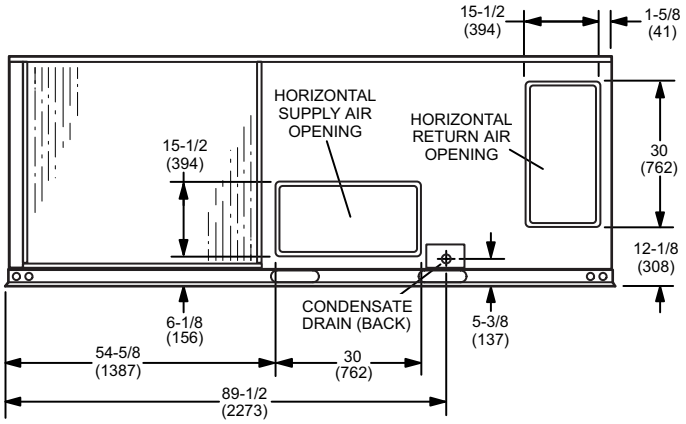
TOP VIEW



END VIEW

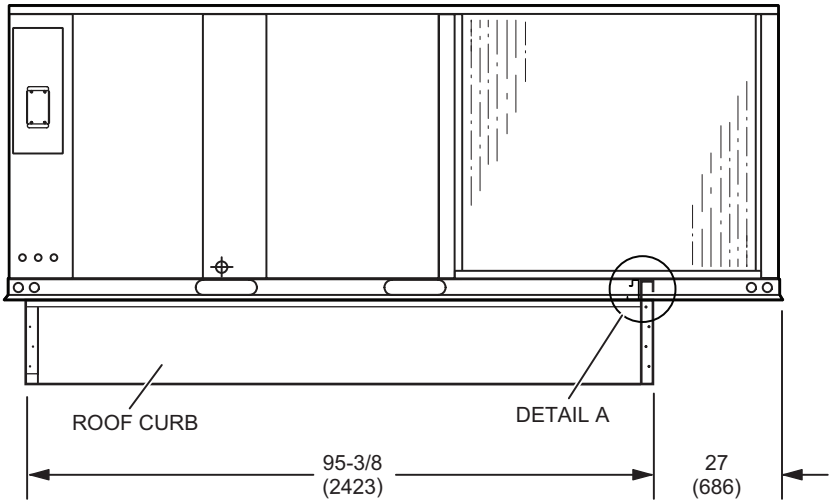


SIDE VIEW

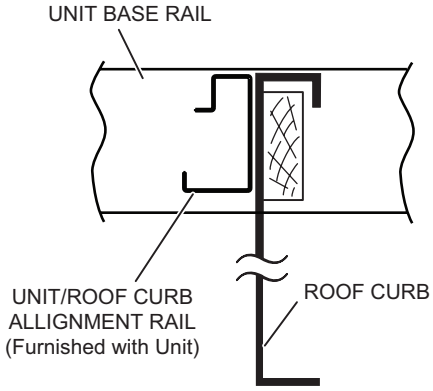


SIDE VIEW
(Horizontal Openings)

UNIT ON CURB LOCATION



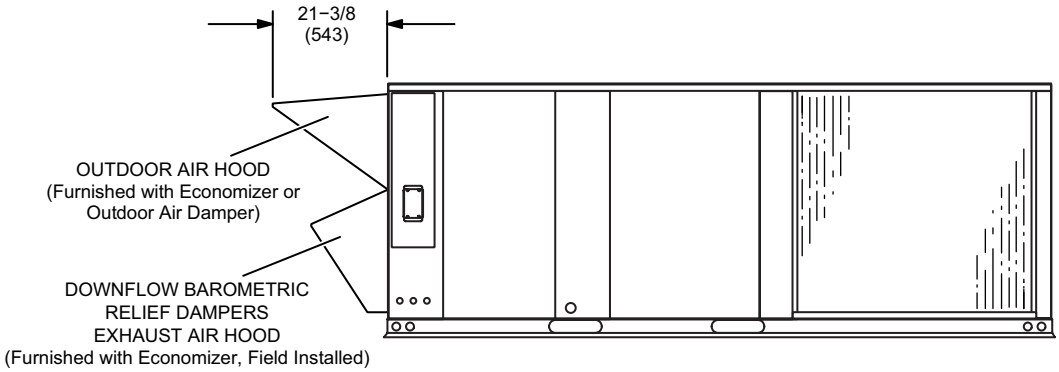
SIDE VIEW



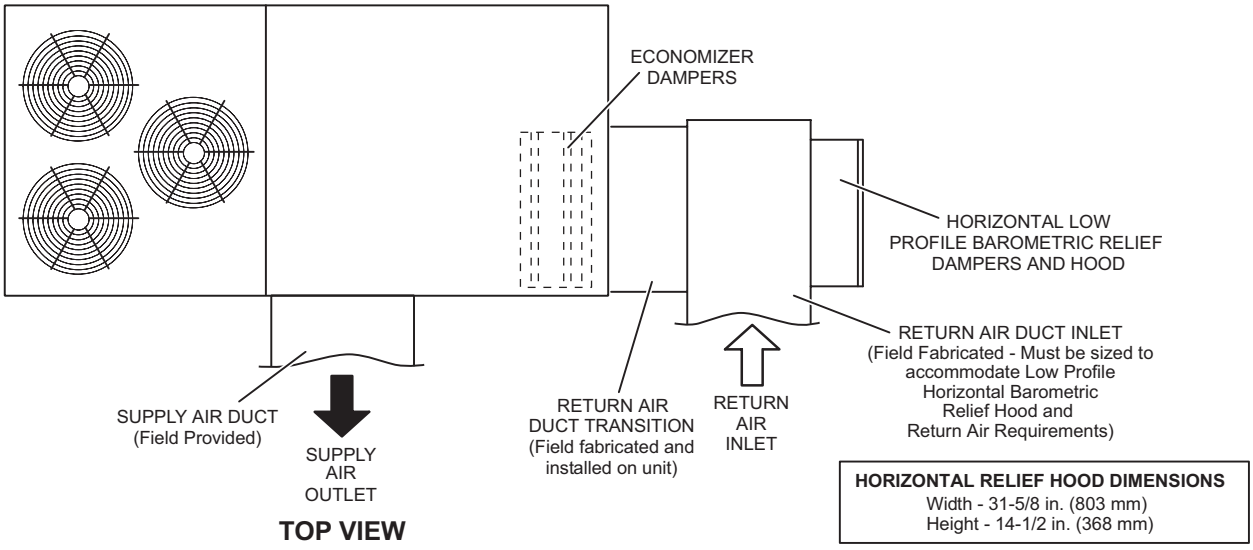
DETAIL A

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

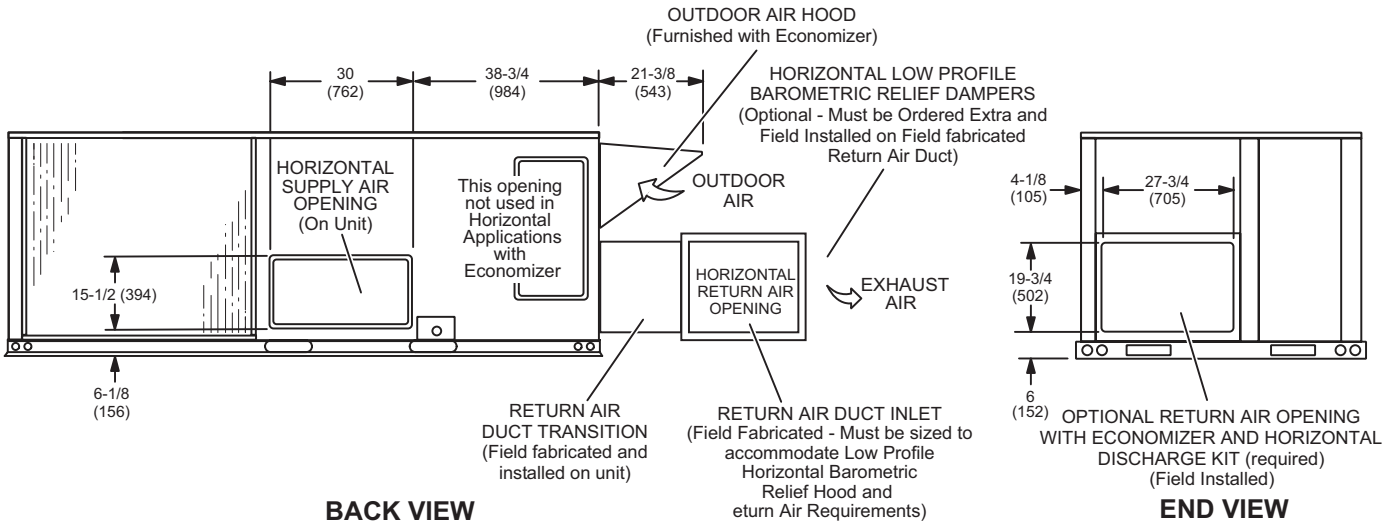
OUTDOOR AIR HOOD DETAIL



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



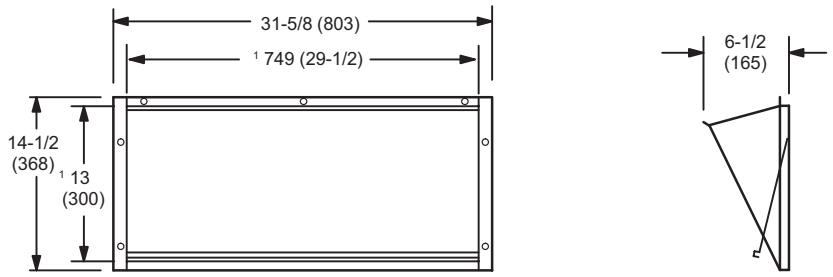
TOP VIEW



BACK VIEW **END VIEW**

NOTE - Return Air Duct and Transition must be supported.

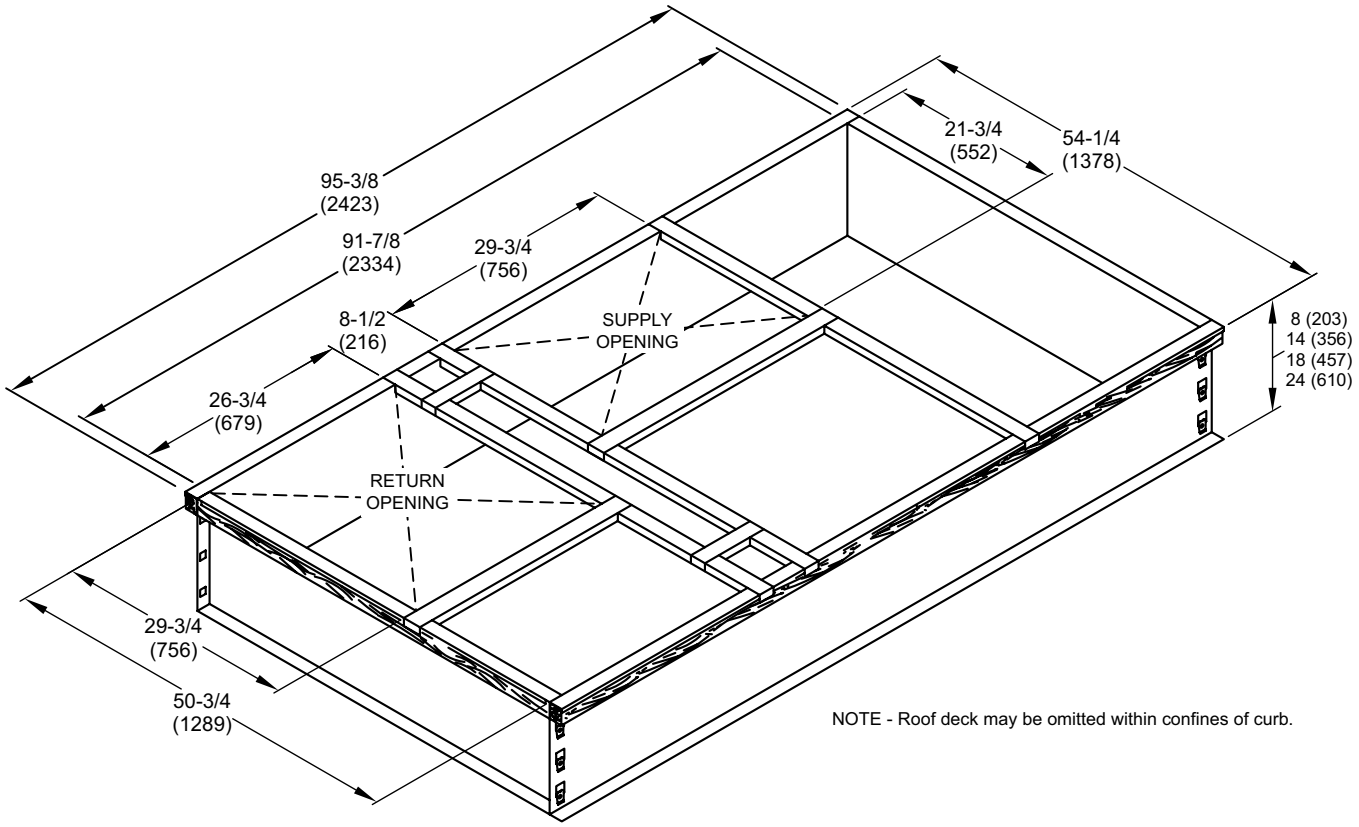
HORIZONTAL LOW PROFILE BAROMETRIC RELIEF DAMPERS
(Field installed in horizontal return air duct adjacent to unit)



FRONT VIEW **SIDE VIEW**

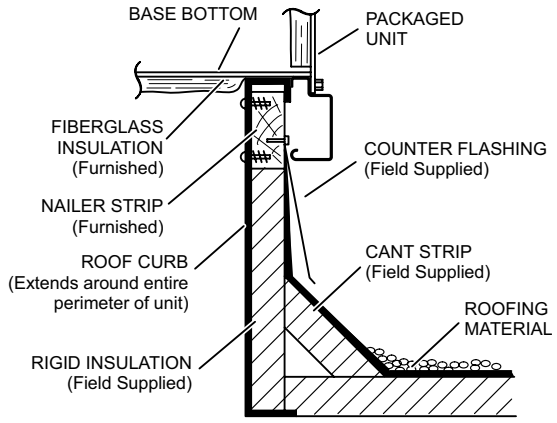
[1] NOTE - Opening size required in return air duct.

HYBRID ROOF CURBS - DOUBLE DUCT OPENING

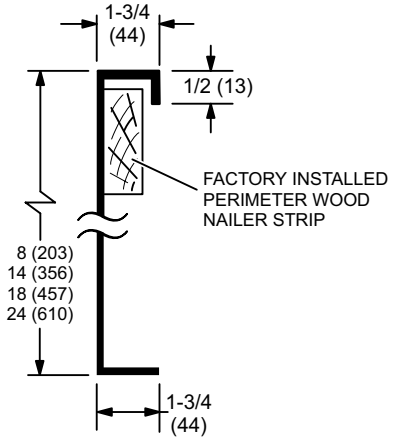


NOTE - Roof deck may be omitted within confines of curb.

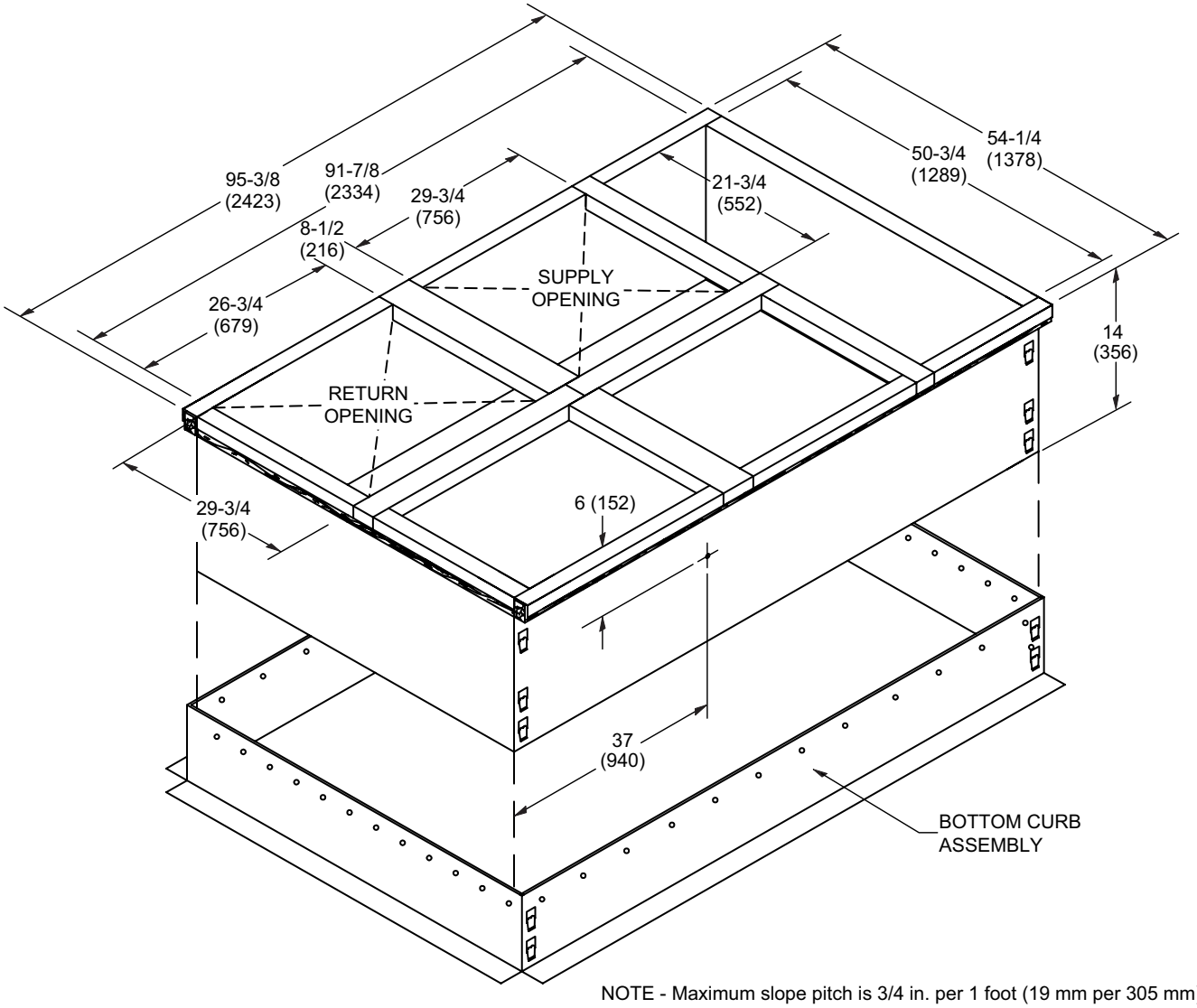
TYPICAL FLASHING DETAIL FOR ROOF CURB



DETAIL ROOF CURB

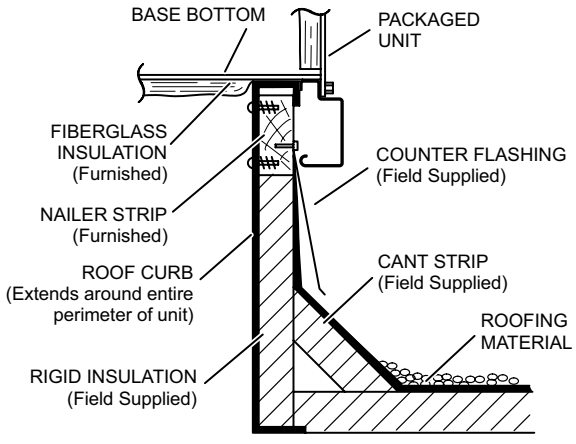


ADJUSTABLE PITCH CURBS - DOUBLE DUCT OPENING

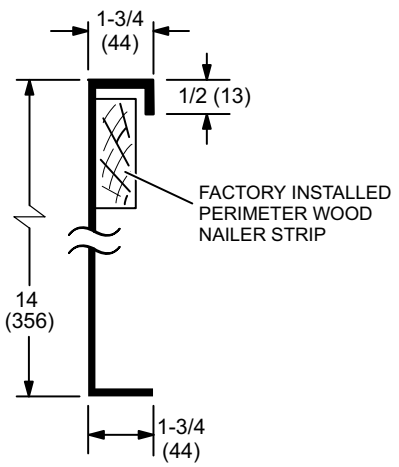


NOTE - Maximum slope pitch is 3/4 in. per 1 foot (19 mm per 305 mm) in any one direction.

TYPICAL FLASHING DETAIL FOR ROOF CURB

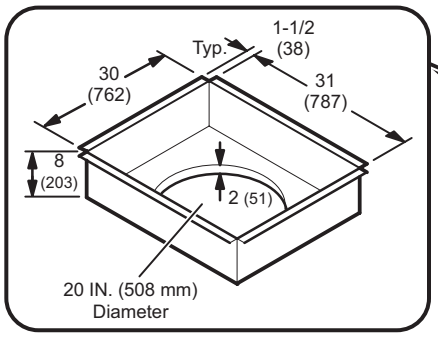


DETAIL ROOF CURB

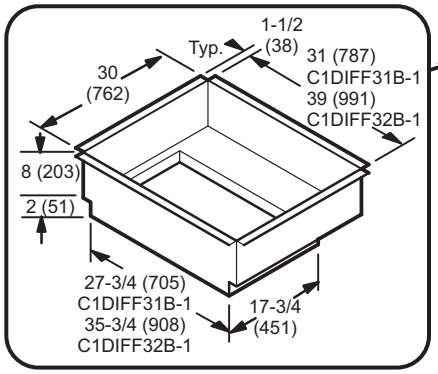


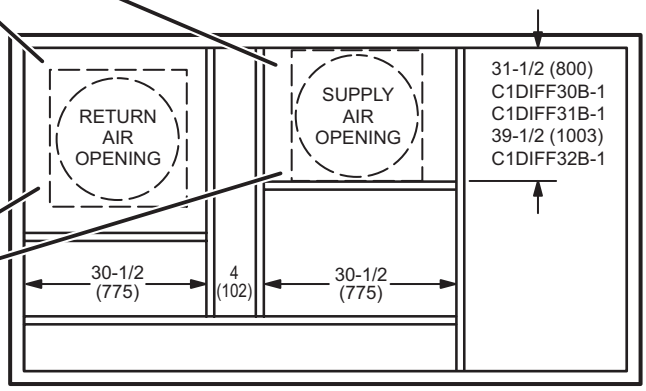
ROOF CURBS WITH SUPPLY & RETURN AIR TRANSITIONS FOR CEILING DIFFUSERS

C1DIFF30B-1 ROUND TRANSITIONS
(for 092 models)



C1DIFF31B-1 & C1DIFF32B-1 RECTANGULAR TRANSITIONS
(for 102 thru 150 models)

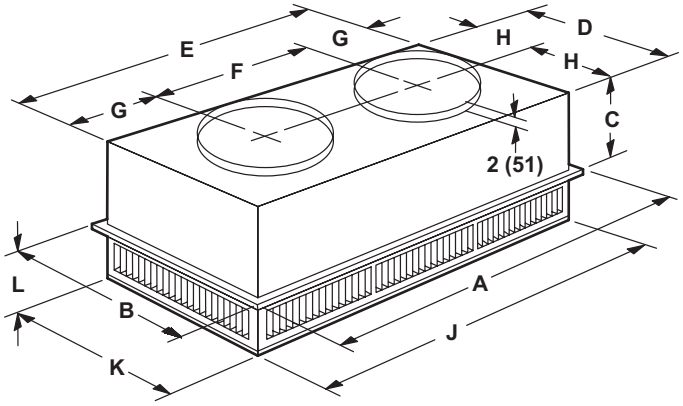




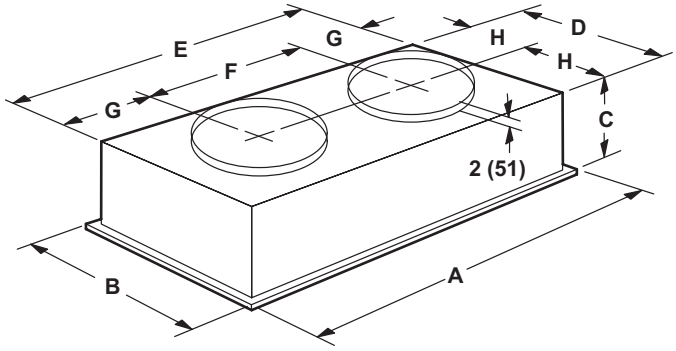
TOP VIEW

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER

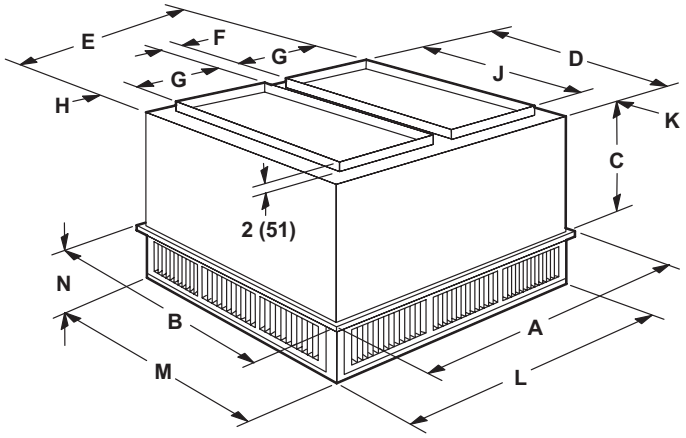


Model Number		RTD11-95S
A	in.	47-5/8
	mm	1159
B	in.	29-5/8
	mm	752
C	in.	14-3/8
	mm	365
D	in.	27-1/2
	mm	699
E	in.	45-1/2
	mm	1158
F	in.	22-1/2
	mm	572
G	in.	11-1/2
	mm	292
H	in.	13-3/4
	mm	349
J	in.	45-1/2
	mm	1156
K	in.	27-1/2
	mm	699
L	in.	8-1/8
	mm	206
Duct Size	in.	20 round
	mm	508 round

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

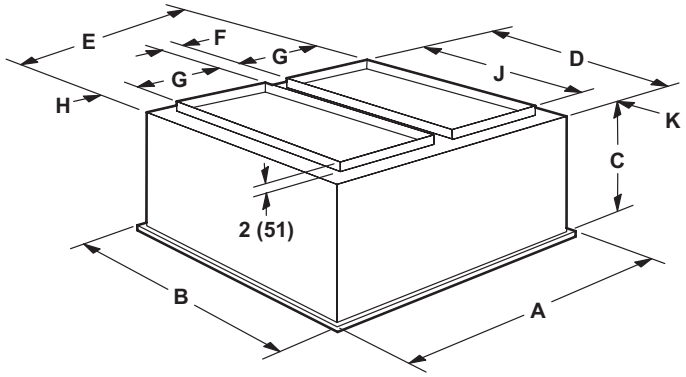
COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



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

FLUSH CEILING DIFFUSER



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

REVISIONS

Section	Description
Options/Accessories	Removed Standard Efficiency Economizer. Updated High Efficiency Economizer model and catalog number.

AHRI CERTIFIED™ www.ahridirectory.org
Unitary Large AC
AHRI Standard 340/360
Certification applies only when the complete system is listed with AHRI.

HRAI MEMBER COMPANY

C ETL LISTED US
Intertek

C CSA® US

ALLIED™ Commercial

Visit us at www.allied-commercial.com

For the latest technical information, visit us at www.allied-commercial.com

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.

©2019 Allied Air Enterprises LLC, a Lennox International Inc. Company