

**156H, 180, 210, 240 and 300S MODELS**

(See Bulletin #210087 for LCA/LGA300H High Efficiency Unit Data)

**“LCA” PACKAGED COOLING & ELECTRIC HEAT**

**“LGA” PACKAGED COOLING & GAS HEAT**

**“LHA” PACKAGED HEAT PUMP**

**LCA/LGA/LHA**

LCA/LGA  
13, 15, 17.5, 20 and 25 Ton

(46, 53, 62, 70 and 88 kW)

LHA

15 and 20 Ton  
(53 and 70 kW)

Bulletin #210081

February 1999

Supersedes

April 1997

\*Net Cooling Capacity - 150,000 to 284,000 Btuh (44.0 to 83.2 kW)  
Gas Input Heating Capacity - 260,000 to 470,000 Btuh (76.2 to 137.7 kW)  
\*Heat Pump Heating Capacity - 188,000 to 220,000 Btuh (55.1 to 64.5 kW)  
Optional Electric Heat - 15 to 90 kW  
\*ARI Certified Ratings



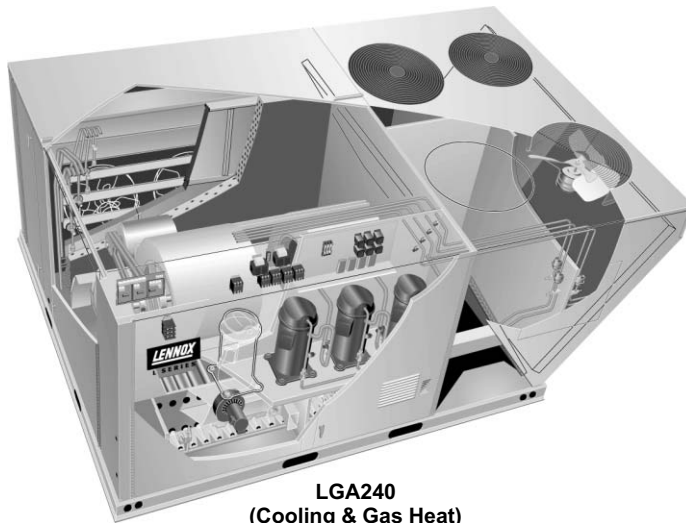
**NOTE - ELECTRONIC  
VERSION ONLY**



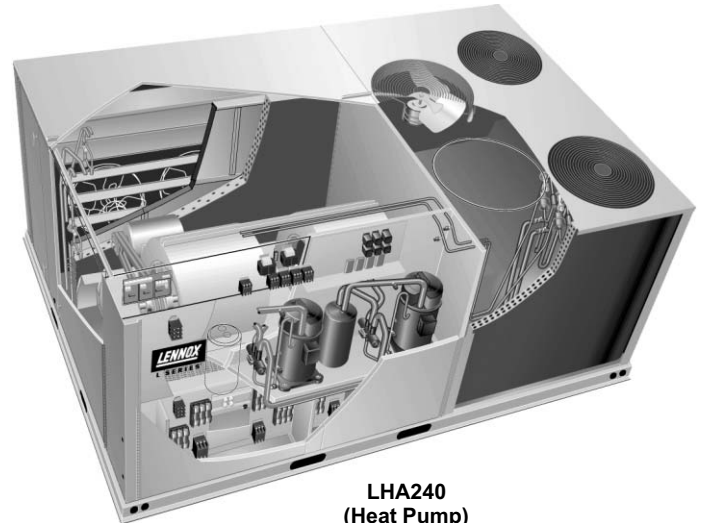
**LCA240  
(Cooling & Electric Heat)**



VERIFIED  
ENERGY  
PERFORMANCE



**LGA240  
(Cooling & Gas Heat)**



**LHA240  
(Heat Pump)**

**Table of Contents**

Features	Page 2-3	Electrical Data - LCA/LGA300S, LHA180/240	Page 19
Factory Installed Only Options	Page 4	Optional Electric Heat Accessories	Page 20
Factory or Field Installed Accessories	Page 4-5	Electric Heat Data - LCA156H & 180	Page 21
Field Installed Only Accessories	Page 5	Electric Heat Data - LCA210 & 240	Page 22
Temperature Control Systems	Page 6-8	Electric Heat Data - LCA300S	Page 23
Temperature Control Selection Flowcharts	Page 9-10	Electric Heat Data - LHA180 & 240	Page 24
Field Wiring	Page 11	Cooling Ratings - LCA/LGA Models	Page 25-28
High Altitude Derate — LGA Models	Page 11	Cooling & Heating Ratings - LHA Models	Page 29-30
Specifications - LCA/LGA156H & 180	Page 12	Blower Data	Page 31-33
Specifications - LCA/LGA210	Page 13	Guide Specifications	Page 34
Specifications - LCA/LGA240 & 300S	Page 14	Dimensions - LCA Models	Page 35
Specifications - LHA180 & 240	Page 15	Dimensions - LGA Models	Page 36
Weight Data	Page 16	Dimensions - LHA Models	Page 37
Model Number Identification	Page 16	Dimensions - Accessories	Page 38-40
Electrical Data - LCA/LGA156H/180	Page 17	Installation Clearances	Page 40
Electrical Data - LCA/LGA210/240	Page 18		

## FEATURES

Item	LCA/LGA 156H	LCA/LGA/LHA 180	LCA/LGA 210	LCA/LGA/LHA 240	LCA/LGA 300S
<b>Air Flow Choice</b> — Bottom (down-flow) or ☐ horizontal (side) supply and return air	Standard				
<b>Bottom Power Entry</b> — For electrical and gas lines	Standard				
<b>Cabinet</b> — Heavy gauge galvanized steel, fully insulated, powdered enamel paint finish, large removeable access panels, electrical inlets in cabinet base and electric heat end panel (LCA/LHA only), easy access control area with factory installed controls, low voltage terminal strip, unit lifting holes in base rail	Standard				
<b>Cabinet Access Panels (Hinged)</b> — 2 compressor/controls/heating area access panels, 1 blower access panel and 1 air filter/economizer access panel hinged with tool-less access handles, gaskets on all edges for tight seal, filter and blower access panels have steel panel inner liner with insulation sandwiched in-between	Standard				
<b>Coil Construction</b> — Copper tube construction, ripple-edged enhanced aluminum fins, flared shoulder tubing connections, silver soldered construction, factory tested, evaporator coil face split with separate circuits, indoor coil drain connection extends outside of unit cabinet	Standard				
<b>Compressor Crankcase Heaters</b>	Standard				
<b>Filters</b> — Disposable 2 inch (51 mm) pleated commercial grade	Standard				
<b>Filter Access</b> — Hinged filter door with tool-less access handles	Standard				
<b>Integrated Modular Control (IMC)</b> — Solid-state board contains all controls and control relays to operate unit Built-in Functions Include: <ul style="list-style-type: none"> <li>- <b>Blower On/Off Delay</b></li> <li>- <b>Built-in Control Parameter Defaults</b>, ensure proper unit operation when power is restored after power failure</li> <li>- <b>Service Relay Output</b></li> <li>- <b>Defrost Control</b></li> <li>- <b>Dehumidification Control</b> - monitors humidity levels, will allow both heating and cooling to operate at the same time, as needed, required optional field installed Dehumidistat</li> <li>- <b>Dirty Filter Switch Input</b></li> <li>- <b>Economizer Control</b>, four modes of operation (outdoor enthalpy, differential enthalpy, temperature and global)</li> <li>- <b>Electric Heat Staging</b>, regulates electric heat during building warm-up</li> <li>- <b>ETM Compatible</b>, various modules (see factory or field installed accessories)</li> <li>- <b>Extensive Unit Diagnostics</b>, (80 diagnostic codes)</li> <li>- <b>Permanent Diagnostic Code Storage</b></li> <li>- <b>Field Changeable Control Parameters</b>, (65 different parameters)</li> <li>- <b>Gas Valve Delay Between First and Second Stage</b></li> <li>- <b>Indoor Air Quality Input</b>, monitors CO<sub>2</sub> levels, adjusts economizer dampers as needed (four modes of operation), requires optional field installed Indoor Air Quality (CO<sub>2</sub>) Sensor</li> <li>- <b>Low Ambient Controls</b> — Allows unit cooling operation down to 0°F (-17.8°C)</li> <li>- <b>Minimum Run Time</b></li> <li>- <b>Night Setback Mode</b>, adjusts setpoint, closes outdoor air dampers and operates blower on demand, may be customized for special requirements</li> <li>- <b>Return Air Temperature Limit Control</b></li> <li>- <b>Smoke Alarm Mode</b>, (four modes of operation)</li> <li>- <b>“Strike Three” Low Pressure Control</b>, protects system from low suction pressure while eliminating nuisance faults</li> <li>- <b>Thermostat Bounce Delay</b></li> <li>- <b>Three Digit Display</b>, (Displays: outdoor temperature, supply air temperature, return air temperature, economizer damper position, Indoor Air Quality, control parameters)</li> <li>- <b>Two Stage Heat/Three Stage Cool Thermostat Compatible</b></li> <li>- <b>Warm-up Mode</b>, (four modes of operation)</li> </ul>	Standard				
<b>Outdoor Coil Fans</b> — PVC coated fan guards furnished	Standard				
<b>Outdoor Coil Fan Motors</b> — Overload protected, permanently lubricated, equipped with ball bearings, shaft up, wire basket mount	Standard				
<b>Supply Air Blower</b> — Belt drive, forward curved blades with double inlet, blower wheel statically and dynamically balanced, ball bearings, grease fittings furnished, adjustable pulley (allows speed change), blower assembly slides out of unit for servicing	Standard				
<b>Supply Air Motor (Standard Efficiency)</b> — Overload protected, equipped with ball bearings	Standard				
<b>Transformer</b> — 70VA Transformer with built-in circuit breaker	Standard				

☐ With optional Horizontal Roof Mounting Frame and Horizontal Return Air Panel Kit.

## FEATURES - LCA MODELS

Item	LCA156H	LCA180	LCA210	LCA240	LCA300S
<b>Approvals</b> — E.T.L. and C.G.A. listed, efficiency rating verified by C.,S.A., components bonded for grounding to meet safety standards for servicing required by U.L., C.S.A. and National and Canadian Electrical Codes, developed in accordance with ISO 9002 quality standards	Standard				
<b>ARI Ratings</b> — Ratings in accordance with ARI Standard 340/360-93 and certified to ARI	Standard				----
<b>Compressors</b> — Reciprocating type, resiliently mounted on rubber grommets.	----	"S" Models			----
<b>Compressors</b> — Copeland® Compliant Scroll™ type, resiliently mounted on rubber grommets.	"H" Models				"S" Models
<b>Outdoor Coil Construction</b> — Slab type, angled design of coil (33°) inherently protects it from possible hail damage	Standard				
<b>Refrigeration System</b> — Consists of: compressors, condenser coils and direct drive fans, evaporator coil and belt drive blowers, expansion valves, high capacity driers, high pressure switches, low pressure switches, full refrigerant charge, crankcase heaters, freezestats (prevent coil freeze-up during low ambient operation or loss of air), independent refrigerant circuits (allows staging)	Standard				
<b>Warranty</b> — Limited five years compressors, limited one year all other, components see limited warranty certificate included with unit for details	Standard				

## FEATURES - LGA MODELS

Item	LGA156H	LGA180	LGA210	LGA240	LGA300S
<b>Approvals</b> — E.T.L./C.G.A. certified as combination heating/cooling unit for outdoor installation, efficiency rating verified by C.,S.A., bonded for grounding to meet safety standards for servicing required by E.T.L./C.G.A. and National and Canadian Electrical Codes, developed in accordance with ISO 9002 quality standards	Standard				
<b>ARI Ratings</b> — Ratings in accordance with ARI Standard 340/360-93 and certified to ARI	Standard				----
<b>Compressors</b> — Reciprocating type, resiliently mounted on rubber grommets.	----	"S" Models			----
<b>Compressors</b> — Copeland® Compliant Scroll™ type, resiliently mounted on rubber grommets.	"H" Models				"S" Models
<b>Fan and Limit Controls</b> — Factory installed, 90 second fan "on" time delay, dual limit controls (primary and secondary) with fixed temperature setting	Standard				
<b>Heat Exchanger</b> — Tubular construction, aluminized steel, life cycle tested	Standard				
<b>Heating System</b> — Aluminized steel inshot burners, direct spark ignition, electronic flame sensor, redundant automatic dual gas valve with manual shut-off, induced draft blower, flame rollout switch	Standard				
<b>Outdoor Coil Construction</b> — Slab type, angled design of coil (33°) inherently protects it from possible hail damage	Standard				
<b>Refrigeration System</b> — Consists of: compressors, condenser coils and direct drive fans, evaporator coil and belt drive blowers, expansion valves, high capacity driers, high pressure switches, low pressure switches, full refrigerant charge, crankcase heaters, freezestats (prevent coil freeze-up during low ambient operation or loss of air), independent refrigerant circuits (allows staging)	Standard				
<b>Warranty</b> — Limited ten years heat exchanger, limited five years compressors, one year all other components, see limited warranty certificate included with unit for details	Standard				

## FEATURES - LHA MODELS

Item	LHA180	LHA240
<b>Approvals</b> — E.T.L. and C.G.A. listed, efficiency rating verified by C.,S.A., components bonded for grounding to meet safety standards for servicing required by U.L., C.S.A. and National and Canadian Electrical Codes, developed in accordance with ISO 9002 quality standards	Standard	
<b>ARI Ratings</b> — Ratings in accordance with ARI Standard 340/360-93 and certified to ARI	Standard	
<b>Compressors</b> — Advanced reciprocating type, resiliently mounted on rubber grommets.	"H" Models	
<b>Defrost Control</b> — Furnished on Integrated Modular Control, defrost control provides a defrost cycle, if needed, every 30 or 60 or 90 minutes (adjustable) of compressor "on" time at outdoor coil temperature below 32°F (0°C). Pressure switch mounted on outdoor coil vapor line terminates defrost cycle.	Standard	
<b>Outdoor Coil Construction</b> — Formed	Standard	
<b>Refrigeration System</b> — Consists of: compressors, outdoor coils and direct drive fans, indoor coil and belt drive blowers, check and expansion valves (indoor and outdoor), high capacity driers, high pressure switches, low pressure switches, reversing valves, defrost control, full refrigerant charge, crankcase heaters, freezestats (prevent coil freeze-up during low ambient operation or loss of air), independent refrigerant circuits (allows staging)	Standard	
<b>Warranty</b> — Limited five years compressors, limited one year all other components, see limited warranty certificate included with unit for details	Standard	

## REQUIRED OPTIONS - ITEMS MUST BE ORDERED AND FACTORY INSTALLED

<b>Air Flow Configuration</b> — specify horizontal or down-flow when ordering base unit
<b>Drive Kit</b> — Order one, see Drive Kit Specifications Table
<b>Gas Input (LGA Models) — Order one:</b>
169,000/260,000 Btuh (49.5/76.2 kW) low/high fire - Standard Heat Gas Input
305,000/470,000 Btuh (89.4/137.7 kW) low/high fire - High Heat Gas Input (not available for LGA156H)
<b>Supply Air Motor</b> — Order one (See Blower Data Table for specifications):
<b>Standard Efficiency</b>
<b>High Efficiency</b> — Overload protected, equipped with ball bearings
<b>Voltage</b> — specify when ordering base unit

## OPTIONAL ACCESSORIES

### FACTORY INSTALLED ONLY

Item	LCA/ LGA156H	LCA/LGA/ LHA180	LCA/ LGA210	LCA/LGA/ LHA240	LCA/ LGA300S
<b>Cold Weather Kit</b> — (Canada Only) Electric heater automatically controls minimum temperature in gas burner compartment when temperature is below -40°F (-40°C). C.G.A. certified to allow operation of unit down to -60°F (-50°C) LGA Models Only					Factory
<b>Corrosion Protection</b> — Phenolic epoxy coating, applied to condenser coils (with painted base section) and evaporator coils (with painted evaporator base section and painted blower housings), factory applied to either section or both sections					Factory
② <b>Disconnect Switch</b> — Accessible from outside of unit, spring loaded weatherproof cover furnished					Factory
① <b>Stainless Steel Heat Exchanger (LGA Models)</b>					Factory
<b>Service Outlets (2)</b> — 115v ground fault circuit interrupter (GFCI) type					Factory
③ <b>Service Valves</b> - Fully serviceable brass valves installed in discharge and liquid lines					Factory

### FACTORY OR FIELD INSTALLED

Item	LCA/ LGA156H	LCA/LGA/ LHA180	LCA/ LGA210	LCA/LGA/ LHA240	LCA/ LGA300S
<b>Blower Proving Switch</b> — Monitors blower operation, shuts down unit if blower fails					18L89
<b>Condensate Drain Trap</b> - field installed only, may be factory enclosed to ship with unit		PVC			37K70
		Copper			48K14
<b>Control Systems</b> — See pages 6 - 11 for complete listing.					See pages 6-11
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition					30K48
<b>Down-Flow Gravity Exhaust Dampers</b> — Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, bird screen furnished - Net Weight					LAGED18/24 - 30 lbs. (14 kg)
<b>Economizer</b> — Opposing gear driven recirculated air and outdoor air dampers, plug-in connections to unit, nylon bearings, neoprene seals, 24 volt fully modulating spring return motor, adjustable minimum damper position, damper assembly slides in unit, outdoor air hood must be ordered separately (see below), optional down-flow gravity exhaust dampers available (see below), choice of economizer controls (see below)					LAREMD18/24 - 180 lbs. (82 kg)
<b>Economizer Control Choice</b> — <b>Sensible Control</b> — Furnished on IMC board in unit, uses outdoor air sensor furnished with unit to measure outdoor air temperature and control damper position ( <b>Furnished</b> )  <b>Global Control</b> — Furnished on IMC board in unit, used with Direct Digital Control (DDC) systems, uses global air sensor to control damper position, determines when to use outdoor air for cooling or set damper at minimum position ( <b>Furnished</b> )  <b>Outdoor Enthalpy Control</b> — Adjustable enthalpy sensor, senses outdoor air enthalpy for economizer control, 0 to 100% outdoor air  <b>Differential Enthalpy Control</b> — Two solid-state enthalpy sensors allow selection between outdoor air and return air (whichever has lowest enthalpy)					(16K96) Outdoor (16K97) Differential
<b>Electric Heat (EHA)</b> — helix wound nichrome elements, time delay for element staging, individual element limit controls (45, 60, 90 and 120 kW), may be two-stage controlled, wiring harness furnished, requires Electric Heat Control Module, Fuse Block and Terminal Block (LCA Models Only)					See Electric Heat Data Tables Pages 21-24
<b>Electric Heat Control Module</b> — Required with 45, 60 and 90 kW electric heaters, provides control of second stage heating					LCA Models Only See Optional Electric Heat Accessories Table Page 20
<b>Electric Heat Fuse Block</b> — Required with electric Heat, mounting screws furnished					
<b>Electric Heat LTB2 Terminal Block</b> — Required with electric heat					
<b>Hood for Down-Flow Gravity Exhaust Dampers</b>					LAGEH18/30S
<b>Outdoor Air Damper Section</b> - mechanical dampers, 0 to 25% outdoor air, installs in unit cabinet, outdoor air hood must be ordered separately (see below) - Net Weight					LAOADM18/24 - 155 lbs. (70 kg)
					LAOAD18/24 - 150 lbs. (68 kg)

① Required if mixed air temperature is between 30 and 45° (-1 and 7°C).

② Not available with 90 kW electric heat.

③ Not available for LHA models.

Continued on Next Page ►

## OPTIONAL ACCESSORIES

### FACTORY OR FIELD INSTALLED (CONTINUED)

Item	LCA/ LGA156H	LCA/LGA/ LHA180	LCA/ LGA210	LCA/LGA/ LHA240	LCA/LGA300S
<b>Outdoor Air Hood</b> — Required with LAREMD18/24 Economizer, LAOAD18/24 and LAOADM18/24 Outdoor Air Damper Sections, three cleanable aluminum mesh fresh air filters furnished- Net Weight	LAOAH18/24 - 60 lbs. (27 kg.) filter size: (3) 16 x 25 X 1 in. (406 x 635 x 25 mm)				
<b>Power Exhaust Fan</b> — Installs external to unit for down-flow applications only with economizer option, provides exhaust air pressure relief, interlocked to run when return air dampers are closed and supply air blower is operating, fan runs when outdoor air dampers are 50% open (adjustable), motor is overload protected, steel cabinet and hood painted to match unit	Model Number - Net Weight		LAPEF18/24 - 140 lbs. (64 kg)		
	Dia. - in. (mm) No. Blades		(2) 20 (508) - 5		
	Total air volume - cfm (L/s)		8630 (4070) @ 0 in. wg (0 PA)		
	Motor Horsepower (W)		(2) 1/3 (249)		
	Total Watts Input		750		
<b>Smoke Detector</b> — Photoelectric type, installed in supply air section or return air section or both sections	Supply		70K87		
	Return		70K86		

### FIELD INSTALLED ONLY

Item	LCA/ LGA156H	LCA/LGA/ LHA180	LCA/ LGA210	LCA/LGA/ LHA240	LCA/LGA300S
<b>Aspiration box</b> — for duct mounting of Indoor Air Quality Sensor	47N18				
<b>Coil Guards</b> - Galvanized steel wire guards to protect outdoor coil. Not used with Hail Guards.	88K52				
<b>Dehumidistat</b> - Monitors humidity levels, reports to the IMC board which allows the heating and cooling to run simultaneously as needed.	65F86				
<b>Diffusers</b> - Aluminum grilles, large center grille, insulated diffuser box with flanges, hanging rings furnished, interior transition (even air flow), internally sealed (prevents recirculation), adapts to T-bar ceiling grids or plaster ceilings- Net Weight	<b>Step-Down</b> - double deflection louvers		RTD11-185 392 lbs. (178 kg)	RTD11-275 - 403 lbs. (183 kg)	
	<b>Flush</b> - fixed blade louvers		FD11-185 289 lbs. (135 kg)	FD11-275 - 363 lbs. (165 kg)	
<b>Grille Guards</b> — Protects the space between outdoor coils and main cabinet.	72K78				
<b>Hail Guards</b> — Constructed of heavy gauge steel, painted to match cabinet, helps protect outdoor coils from hail damage. Not used with Coil Guards.	88K25 - LCA/LGA Models 88K28 - LHA Models				
<b>Horizontal Gravity Exhaust Dampers</b> — Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, field installed in return air duct, bird screen furnished- Net Weight	LAGEDH18/24 - 20 lbs. (9 kg)				
<b>Horizontal Return Air Panel Kit</b> — Required for horizontal applications with horizontal roof mounting frame, contains panel with return air opening for field replacement of existing unit panel and panel to cover bottom return air opening in unit, see dimension drawings	38K47				
<b>IMC Software and PC Interface Kit</b>	86K84				
<b>IMC Software and Manual Only</b>	32K22				
<b>PC Interface Kit Only</b>	28K56				
<b>Indoor Air Quality (CO<sub>2</sub>) Sensor</b> — Monitors CO <sub>2</sub> levels, reports to Integrated Modular Control (IMC) board which adjusts economizer dampers as needed	93J69				
<b>Insulation Kit</b> - helps prevent sweating on horizontal roof mounting frames	26 inch (660 mm) frames		73K32		
	30 inch (762 mm) frames		----		73K33
	37 inch (940 mm) frames		73K34		
	41 inch (1041 mm) frames		----		73K35
<b>LPG/Propane Kits</b>	41L15 (2 kits required)				
<b>Roof Mounting Frame</b> — Nailer strip furnished, mates to unit, U.S. National Roofing Contractors Approved, shipped knocked down - Net Weight	14 inch (356 mm) height		LARMF18/36-14 - 160 lbs. (73 kg)		
	24 inch (610 mm) height		LARMF18/36-24 - 220 lbs. (100 kg)		
<b>Roof Mounting Frame (Horizontal)</b> — Nailer strip furnished, mates to unit, converts unit from down-flow to horizontal (side) air flow, shipped knocked down, return air is on unit, supply air is on frame, see dimension drawings. Frames for rooftop applications meet National Roofing Code requirements. Requires Horizontal Return Air Panel, see above- Net Weight	26 in. (660 mm) height (for slab applications)		☐ LARMFH18/24-26 - 420 lbs. (191 kg)		
	30 in. (762 mm) height (for slab applications)		----		☐ LARMFH 30/36-30 445 lbs. (202 kg)
	37 in. (940 mm) height (for rooftop applications)		☐ LARMFH18/24-37 - 580 lbs. (263 kg)		
	41 in. (1041 mm) height (for rooftop applications)		----		☐ LARMFH 30/36-41 725 lbs. (329 kg)
<b>Transitions (Supply and Return)</b> — Used with diffusers, installs in roof mounting frame, galvanized steel construction, flanges furnished for duct connection, fully insulated	LASRT18 80 lbs. (36 kg)		LASRT21/24 - 75 lbs. (34 kg)		
<b>Vertical Vent Extension Kit</b> - to exhaust flue gases vertically above unit (LGA Models Only)	LB-94710A (40L80)				

☐ Either LARMFH30/36-30(-41) or LARMFH18/24-26(-37) roof mounting frames may be used for the 300S models, however, the smaller frames (LARMF18/24) will increase static pressure.

## OPTIONAL DDC TEMPERATURE CONTROL SYSTEMS (FACTORY OR FIELD INSTALLED)

System and Component Description	Field Installed Catalog No.
<b>AMERICAN AUTOMATRIX KIT</b>	
<b>Control module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness</b> — Stand alone control of all heating cooling and economizer functions, various operations modes (including: occupied, unoccupied), 8 universal inputs, momentary override, indoor air quality control, alarm monitoring of: sensors, airflow, economizer, dirty filter, heating/cooling operation, cooling limit.	<b>59K22</b>
<b>Sensor</b> — Room temperature	<b>49K84</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>
<b>ANDOVER INFINITY KIT</b>	
<b>Control Module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness</b> — Network communication (RS-485, 2 or 4 wire, 300, 1200 or 9600 baud selectable), 2 stage cool/ 2 stage heat, zone temperature monitoring, discharge temperature monitoring, dirty filter monitoring, LED's for system monitoring, 5 SPDT outputs, battery backup, Blower Proving Switch monitors blower operation and locks out unit in case of blower failure, Return Air Sensor provides input to module to determine heating or cooling operation and number of stages required, Discharge Air Sensor monitors leaving air temperature during unit operation	<b>16K27</b>
<b>Sensor</b> — Room temperature	<b>78H42</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>
<b>CPC 810-3060 KIT</b>	
<b>Control Module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness</b> — Network communications (RS-485, shielded pair twisted wire), 8 analog/digital inputs, 8 form-C relay outputs, 2 analog outputs, 24 VAC, output connections (2 stage heat/2 stage cool, 2 auxiliary outputs (user defined), economizer, fan), input connections (space temperature, discharge and return air temperature, 2 compressor monitoring, 2 aux. inputs (user defined), local override (1 to 240 minutes), Blower Proving Switch monitors blower operation and locks out unit in case of blower failure, Return Air Sensor provides input to module to determine heating or cooling operation and number of stages required, Discharge Air Sensor monitors leaving air temperature during unit operation	<b>48K88</b>
<b>Sensor</b> — Room temperature	<b>48J43</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>
<b>CSI MR88R KIT</b>	
<b>Control Module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness</b> — Small point count controller, supports free-form modular DDC programming, intelligent I/STAT for independent local analog or digital control, local override and setpoint adjustment, 4 local or global points, integral start/stop schedule, standalone operation, universal inputs (thermistor, voltage, current, contact), 8 relay or low voltage triac outputs, analog outputs, 7 signal inputs plus power, ISTAT port, MR LAN port (RS-485, shielded pair twisted wire), self test diagnostics with LED readout, input point parameters (normal and narrow range, indoor and outdoor temperature range, individual calibration)	<b>28K58</b>
<b>Sensor</b> — Room temperature sensor with microprocessor data communications and power, alphanumeric LCD display for modes selected, mode selection push buttons for (Function, Call, Service, Change and Select), password protection for Service mode, up to 4 global point assignment with red LED's to indicate (Set Temp., Fan Speed, Room and Outside)	<b>I/STAT (Field Furnished)</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>
<b>HONEYWELL EXCEL 10 KIT</b>	
<b>Control Module (W7750A)/Blower Proving Switch/Return Air Sensor/Wiring Harness</b> — Standalone control (staged or modulating) of all heating, cooling, mixed air, system fan and economizer functions, up to four stages of heating/cooling combinations, for single zone applications, 6 relay outputs, 2 digital inputs, 1 resistive analog input, network communications, LonMark compliant, configuration options include: supply fan type of air handler, occupancy sensor, window sensor, wall module option, dirty filter monitor, indoor air quality override and smoke control. modes of operation include: occupied, standby, unoccupied, bypass occupied, override modes, start-up and wait, cooling, heating, emergency heat, off mode, disabled mode, smoke emergency, freeze protect, manual position, fan only and disabled. Blower Proving Switch monitors blower operation and locks out unit in case of blower failure, Return Air Sensor provides input to module to determine heating or cooling operation and number of stages required.	<b>20L39</b>
<b>Sensor</b> — Room temperature, with setpoint knob	<b>19L21</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>
<b>HONEYWELL W7620 KIT</b>	
<b>Control Module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness</b> — Local and remote monitoring and alarming (smoke alarms, dirty filter, freezestat, heating and cooling failures, run time accumulation for overrides, zone high/low temperature alarms, fan failure alarm, space humidity), heating and cooling control, economizer control, up to 4 stages with minimum on/off times, auxiliary heat for heat pump control, intelligent recovery, humidity and indoor air quality control, four relay outputs, network communications (RS-485, shielded pair twisted wire), space temperature inputs, room or return air temperature control, precise proportional plus integral (P+I) control, control loops provide accurate unit control without temperature droop, Blower Proving Switch monitors blower operation and locks out unit in case of blower failure, Return Air Sensor provides input to module to determine heating or cooling operation and number of stages required, Discharge Air Sensor monitors leaving air temperature during unit operation	<b>28K59</b>
<b>Sensor</b> — Room temperature, platinum RTD (Resistive Temperature Device)	<b>T7660 (Field Furnished)</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>
<b>JOHNSON FACILITATOR FA-UNT KIT</b>	
<b>Control Module/Blower Proving Switch/Wiring Harness</b> — Standalone control of all heating, cooling and economizer functions, various operation modes (including: occupied, unoccupied, warm-up, standby), network communications, 6 analog inputs, 4 binary inputs, momentary override, zone lighting control, advanced unit diagnostics, indoor air quality control, outdoor air temperature and humidity monitoring, alarm monitoring of: sensors, airflow, economizer, dirty filter, heating/cooling operation, cooling limit, Blower Proving Switch monitors blower operation and locks out unit in case of blower failure, Control module for use in single zone applications.	<b>86K65</b>
<b>Sensor</b> — Room temperature, phone jack style wiring, quick-mount design, latching door mechanism, setpoint adjustment (warmer/cooler), optional override button, nickel sensors, options for choosing setpoint, indication mounting and wiring type, plug for handheld commissioning tool ( <b>60K36</b> ).	<b>60K12</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>

☐ Field installs in return air duct. Two dampers furnished per order no.

## OPTIONAL DDC TEMPERATURE CONTROL SYSTEMS (FACTORY OR FIELD INSTALLED)

System and Component Description	Field Installed Catalog No.
<b>JOHNSON METASYS UNT KIT</b>	
<b>Control Module/Blower Proving Switch/Wiring Harness</b> — Standalone control of all heating, cooling and economizer functions, various operation modes (including: occupied, unoccupied, warm-up, standby), network communications, 6 analog inputs, 4 binary inputs, momentary override, zone lighting control, advanced unit diagnostics, indoor air quality control, outdoor air temperature and humidity monitoring, alarm monitoring of: sensors, airflow, economizer, dirty filter, heating /cooling operation, cooling limit, Blower Proving Switch monitors blower operation and locks out unit in case of blower failure, Control module may be used in multi-zone applications (i.e. L-Zone).	<b>34K84</b>
<b>Commissioning Tool</b> — Hand-held interface tool, monitor and adjust 36 analog and binary points, password protected, carrying case.	<b>60K37</b>
<b>Sensor</b> — Room temperature, phone jack style wiring, quick-mount design, latching door mechanism, setpoint adjustment (warmer/cooler), optional override button, nickel sensors, options for choosing setpoint, indication, mounting and wiring type, plug for handheld commissioning tool ( <b>60K36</b> ).	<b>60K12</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>
<b>NOVAR ETM-2050 KIT</b>	
<b>Electronic Thermostat Module (ETM)/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness</b> — Module monitors unit operation from different sensors installed in unit, has outputs for 2 stage heat/2 stage cool, automatic or continuous blower operation, economizer damper operation and night setback, features: day/occupied mode with low enthalpy (outdoor air damper open), high enthalpy (outdoor air damper closed) or night/unoccupied mode (outdoor air damper closed), network communication (RS-485, shielded pair twisted wire), local override (1 to 255 minutes), watchdog function, fail-safe operation, ETM allows units to be "daisy chained" together (up to 31 units) to be operated from one central location with an "executive" type control processor (onsite or offsite), built-in time delays, built-in unit operating defaults, diagnostic LED's indicate various operating functions, surge suppression protects ETM against lightning or voltage spikes, Blower Proving Switch monitors blower operation and locks out unit in case of blower failure, Return Air Sensor provides input to ETM module to determine heating or cooling operation and number of stages required, Discharge Air Sensor monitors leaving air temperature during unit operation	<b>48K87</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>
<b>Room Temperature Sensor</b> — Provides input to ETM module to determine heating or cooling operation and number of stages required (ordered separately)	<b>97H53</b>
<b>Night Setback Override Switch</b> — Allows momentary override of night setback during unoccupied mode	Field Furnished
<b>NOVAR ETM-2051 KIT</b>	
<b>Electronic Thermostat Module (ETM)/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness</b> — Module monitors unit operation from different sensors installed in unit and monitors unit diagnostic codes of the IMC. The ETM has outputs for 2 stage heat/2 stage cool, 7 relay outputs: fan Cool 1, Cool 2, Heat 1, Heat 2, Economizer, Night Mode, automatic or continuous blower operation, economizer damper operation and night setback, features: day/occupied mode with low enthalpy (outdoor air damper open), high enthalpy (outdoor air damper closed) or night/unoccupied mode (outdoor air damper closed), network communication (RS-485, shielded pair twisted wire), local override (1 to 255 minutes), watchdog function, fail-safe operation, ETM allows units to be "daisy chained" together (up to 31 units) to be operated from one central location with an "executive" type control processor (onsite or offsite), built-in time delays, built-in unit operating defaults, diagnostic LED's indicate various operating functions, surge suppression protects ETM against lightning or voltage spikes, Blower Proving Switch monitors blower operation and locks out unit in case of blower failure, Return Air Sensor provides input to ETM module to determine heating or cooling operation and number of stages required, Discharge Air Sensor monitors leaving air temperature during unit operation	<b>69K67</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>
<b>Room Temperature Sensor with Built-in Night Setback Override Button</b> — Provides input to ETM module to determine heating or cooling operation and number of stages required (ordered separately). Override button allows momentary override of night setback during unoccupied mode.	<b>67K61</b>
<b>NOVAR CUSTOM CONTROLLER KIT</b>	
<b>Control Module/Blower Proving Switch/Discharge Air Sensor/Room Air Sensor/Wiring Harness</b> — User definable comfort setpoint, on/off and time of day control, cycle II ventilation control	<b>48K89</b>
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	<b>30K48</b>

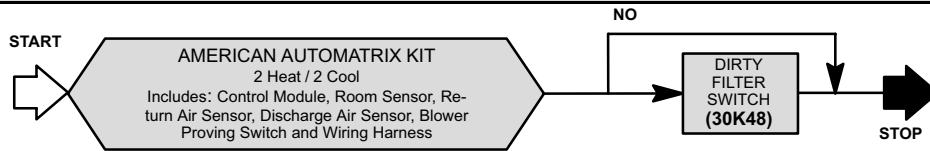
## OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS (FIELD INSTALLED)

System and Component Description	Catalog No.
<b>ELECTRO-MECHANICAL THERMOSTAT</b>	
<b>Thermostat</b> — Two stage heat & two stage cool with dual temperature levers, subbase choice	13F06
<b>Subbase</b> — Manual system switch (Off-Heat-Auto-Cool), fan switch (Auto-On)	13F17
<b>Subbase</b> — Non-switching	13F16
<b>Night Setback Operation</b> — Order components below	—
<b>Heating Thermostat</b> — Single stage heat	13F12
<b>Subbase</b> — Non-switching	13F16
<b>Time Clock</b> — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	See Price Book for Selection
<b>Time Clock</b> — 24 hour night setback operation, 15 minute increments, battery back-up	See Price Book for Selection
<b>Blower Proving Switch</b> — Monitors blower operation, locks out unit in case of blower failure	30K49
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	30K48
<b>ELECTRONIC THERMOSTAT</b>	
<b>Electronic Thermostat</b> — Any two stage heat/ two stage cool electronic thermostat may be used.	See Price Book for Selection
<b>Time Clock</b> — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	See Price Book for Selection
<b>Time Clock</b> — 24 hour night setback operation, 15 minute increments, battery back-up	See Price Book for Selection
<b>Blower Proving Switch</b> — Monitors blower operation, locks out unit in case of blower failure	30K49
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	30K48
<b>HONEYWELL T7300 THERMOSTAT</b>	
<b>Thermostat</b> — Programmable, internal or optional remote temperature sensing (sensor required), touch sensitive keyboard, automatic switching, °F or °C readout, no anticipator, droop/no droop selection, indicator LED's, hour/day programming, override capabilities, time and operational mode readout, stage status indicators, battery back-up, subbase choice	37L54
<b>Subbase</b> — Selectable staging up to two stage heat & two stage cool, manual system switch (Heat-Off-Auto-Cool), fan switch (Auto-On), indicator LED's, auxiliary relay output for economizer operation	37L55
<b>Sensor</b> — Room temperature	58C92
<b>Sensor</b> — Room temperature with 3 hour override and setpoint adjustment	86G67
<b>Sensor</b> — Return air temperature	27C40
<b>Blower Proving Switch</b> — Monitors blower operation, locks out unit in case of blower failure	30K49
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	30K48
<b>OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS (FACTORY OR FIELD INSTALLED)</b>	
<b>HONEYWELL W973 KIT</b>	
<b>Logic Panel/Discharge Air Sensor/Wiring Harness</b> — Panel controls operation of economizer and stages of heating and cooling in response to signals from thermostat, balances conditioned space thermostat demand against system output, system output measured by discharge air sensor (furnished), combined demand and output signals determine economizer damper position and number of cooling or heating stages required, logic panel may be installed in unit or remotely located	28K60
<b>Thermostat</b> — Dual setpoint, separate heating-cooling levers, locking setpoints, integral sensor	25C52
<b>Subbase</b> — Switching with system selector switch (Heat-Auto-Off-Cool), fan switch (Auto-On)	58C93 (for LCA/LGA)
<b>Subbase</b> — Switching with system selector switch (Cool-Auto-Heat-Emergency Heat), fan switch (Auto-On)	58C94 (for LHA)
<b>Transmitter</b> — Dual setpoint, separate heating-cooling levers, locking setpoints, requires subbase with room temperature sensor or return air temperature sensor	25C51
<b>Subbase</b> — Switching with system selector switch (Heat-Auto-Off-Cool), fan switch (Auto-On)	58C93
<b>Sensor</b> — Room temperature	58C92
<b>Sensor</b> — Return air temperature	27C40
<b>Time Clock</b> — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	See Price Book for Selection
<b>Time Clock</b> — 24 hour night setback operation, 15 minute increments, battery back-up	See Price Book for Selection
<b>Blower Proving Switch</b> — Monitors blower operation, locks out unit in case of blower failure	30K49
<b>Dirty Filter Switch</b> — Senses static pressure increase indicating a dirty filter condition	30K48

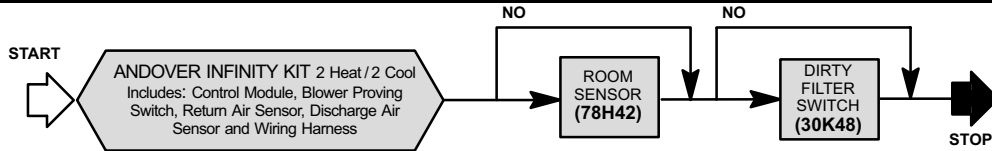


# DDC COMMERCIAL TEMPERATURE CONTROL SELECTION FLOWCHARTS

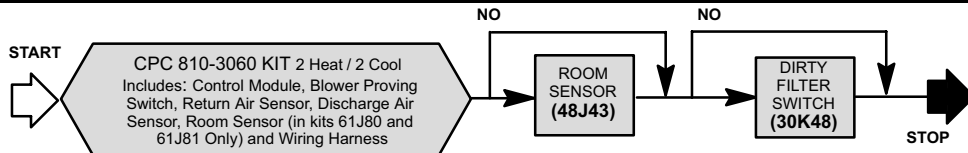
## AMERICAN AUTOMATRIX



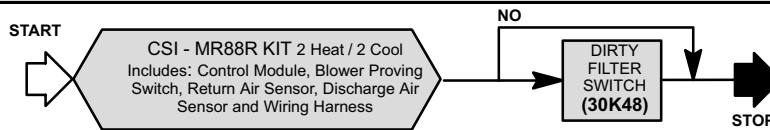
## ANDOVER INFINITY



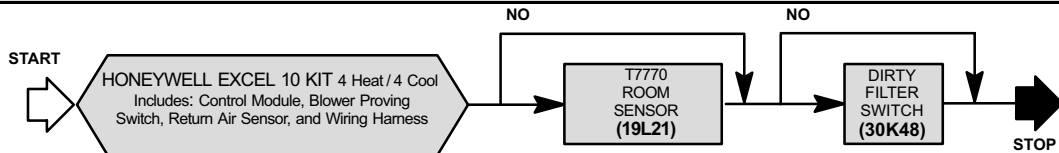
## CPC 810-3060



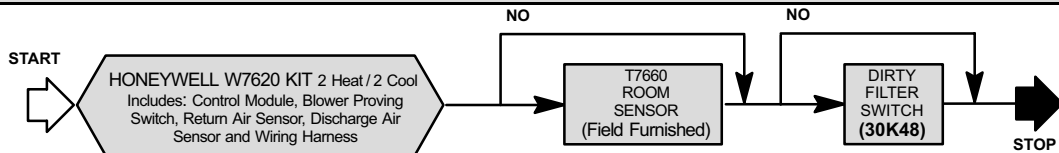
## CSI - MR88R



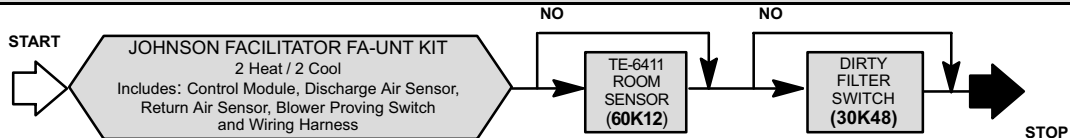
## HONEYWELL EXCEL 10



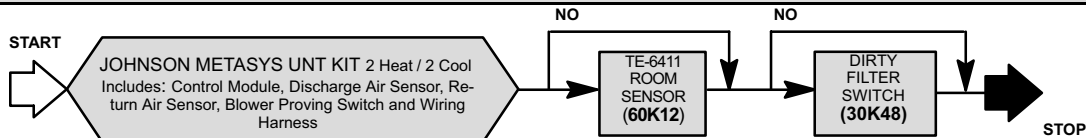
## HONEYWELL W7620



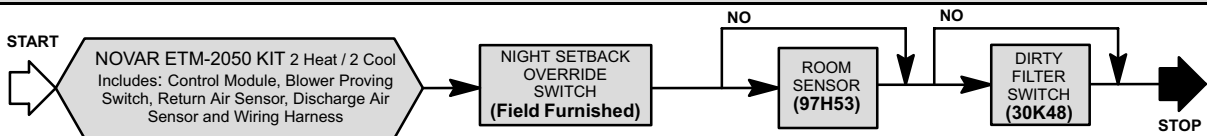
## JOHNSON FACILITATOR FA-UNT



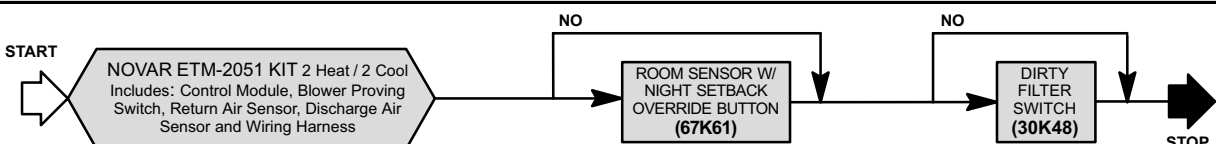
## JOHNSON METASYS UNT



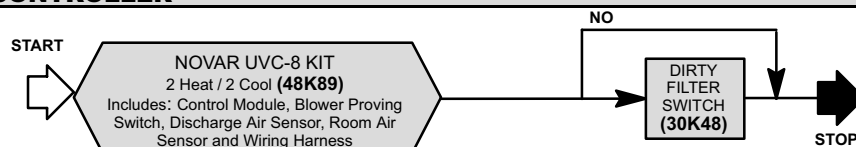
## NOVAR ETM-2050



## NOVAR ETM-2051

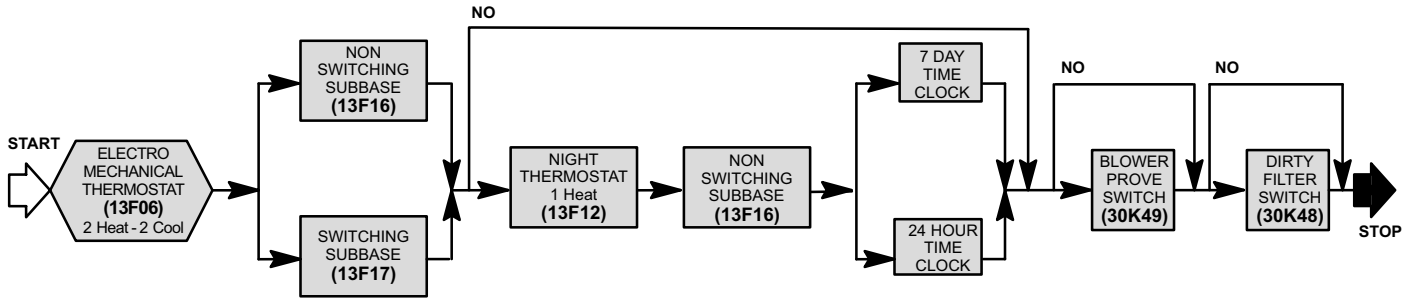


## NOVAR CUSTOM CONTROLLER

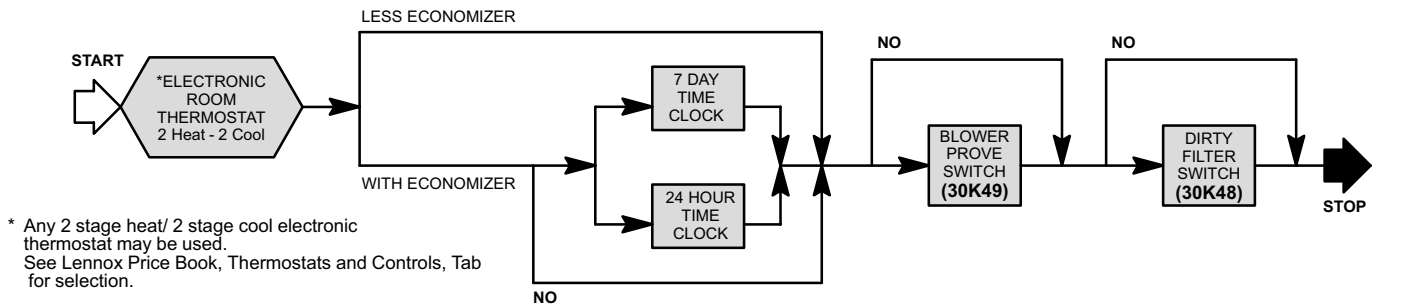


# CONVENTIONAL COMMERCIAL TEMPERATURE CONTROL SELECTION FLOWCHARTS

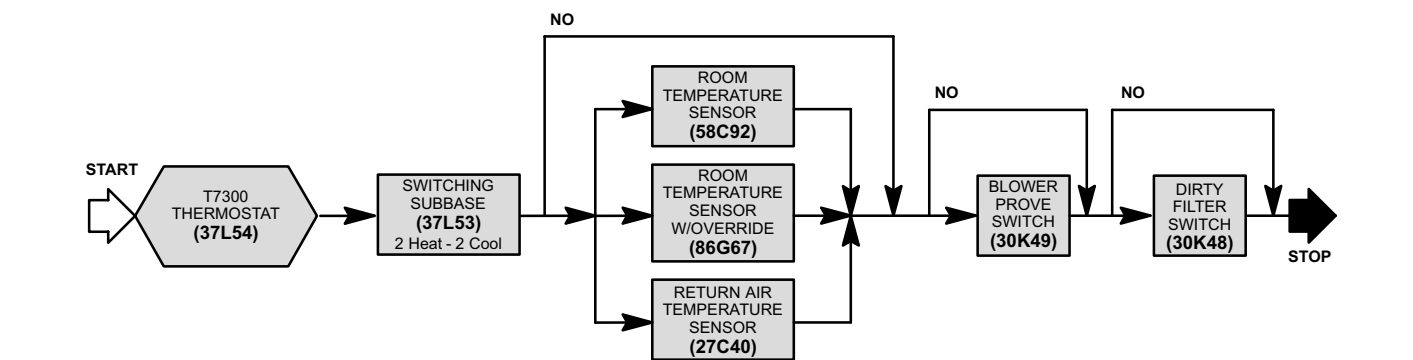
## ELECTRO-MECHANICAL THERMOSTAT



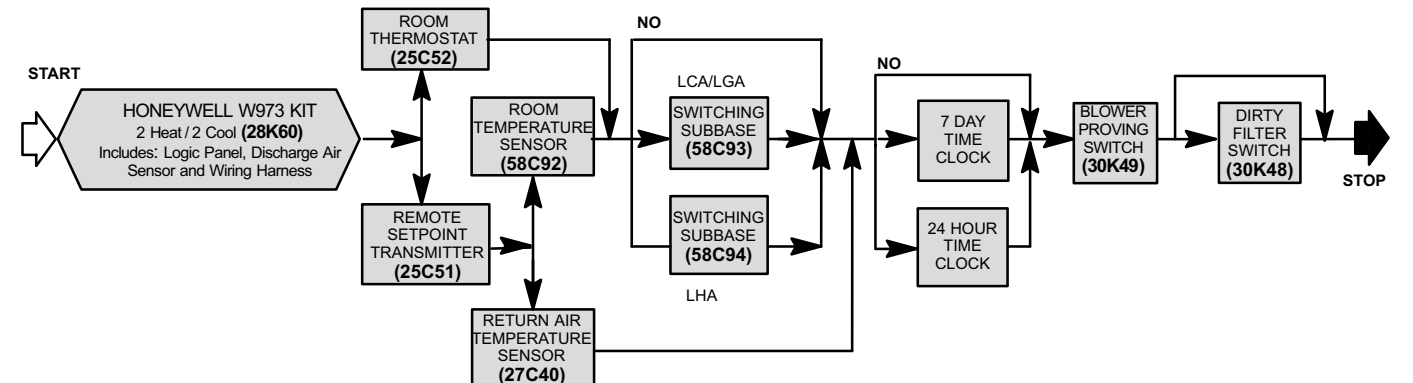
## ELECTRONIC THERMOSTAT



## HONEYWELL T7300 THERMOSTAT



## HONEYWELL W973 THERMOSTAT



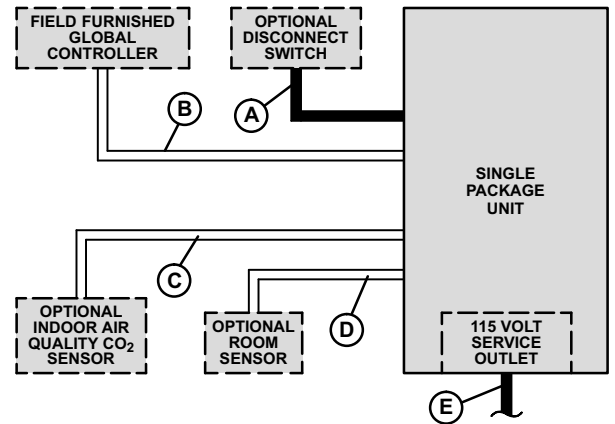
# FIELD WIRING

## ALL DDC CONTROL SYSTEMS

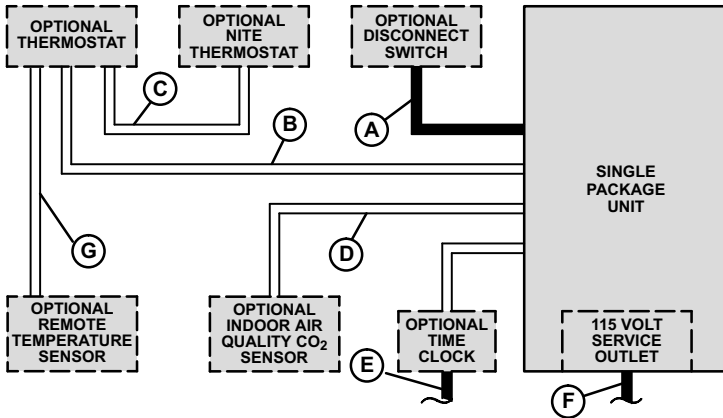
- A — Two or Three wire power (See Electrical Data Table)
- B — RS-485 shielded pair twisted wire
- C — Four wire low voltage
- D — Two wire low voltage (Andover Infinity, CPC 810-3060 and Novar ETM-2050)  
Three wire low voltage (CSI MR88R)  
Four wire low voltage (Johnson Metasys, Honeywell W7620)  
Four wire low voltage (Novar Custom Controller) + 2 wire low voltage (Novar UVC-8 Sensor)  
Seven wire low voltage (Honeywell Excel 10)
- E — Two wire power (115 volt)

— Field wiring not furnished —

NOTE — All wiring must conform to NEC or CEC and local electrical codes.



## ELECTRO-MECHANICAL, ELECTRONIC OR HONEYWELL T7300 THERMOSTAT CONTROL SYSTEM



- A — Two or Three wire power (See Electrical Data Table)
- B — Six wire low voltage (Electro-Mechanical)  
Seven wire low voltage (Electronic)  
Nine wire low voltage (Honeywell T7300)  
Ten wire low voltage (Honeywell T7300 with Service LED)
- C — Two wire low voltage (Electro-Mechanical Only)
- D — Four wire low voltage (All Systems)
- E — Two wire power
- F — Two wire power (115 volt)
- G — Two wire low voltage  
— Seven wire low voltage (T7300 Room Sensor with override)

— Field wiring not furnished —

NOTE — All wiring must conform to NEC or CEC and local electrical codes.

## HONEYWELL W973 CONTROL SYSTEM

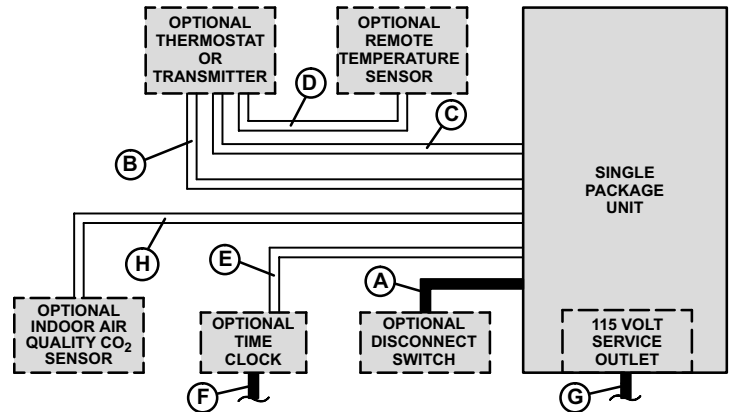
- A — Two or Three wire power (See Electrical Data Table)
- B — Seven wire low voltage — DC only  
Seven wire low voltage — DC only — with switching subbase
- C — Two wire low voltage — AC only — with switching subbase
- D — Two wire low voltage — DC only
- E — Two wire low voltage — AC only
- F — Two wire power
- G — Two wire power (115 volt)
- H — Four wire low voltage — DC only

AC — Alternating current  
DC — Direct current

NOTE — Run separate harness for AC and DC.  
AC voltage interferes with DC signals.

— Field wiring not furnished —

NOTE — All wiring must conform to NEC or CEC and local electrical codes.



## HIGH ALTITUDE DERATE (LGA MODELS)

Units may be installed at altitudes up to 2000 feet (610 m) above sea level without any modification. At altitudes above 2000 feet (610 m), units must be derated to match gas manifold pressures shown in table below.

NOTE — This is the only permissible derate for these units

Altitude - ft. (m)	Gas Manifold Pressure - in. w.g. (kPa)
2001 - 3000 (610 - 915)	3.6 (0.90)
3001 - 4000 (915 - 1220)	3.5 (0.87)
4001 - 5000 (1220 - 1525)	3.4 (0.85)
5001 - 6000 (1525 - 1830)	3.3 (0.82)
6001 - 7000 (1830 - 2135)	3.2 (0.80)
7001 - 8000 (2135 - 2440)	3.1 (0.77)

# SPECIFICATIONS - LCA/LGA156H AND 180

Model No.		LCA/LGA156H	LCA/LGA180S	LCA/LGA180H			
<b>Efficiency Type</b>		<b>High (H)</b>	<b>Standard (S)</b>	<b>High (H)</b>			
Cooling Ratings	Gross Cooling Capacity - Btuh (kW)	155,000 (45.4)	186,000 (54.5)	188,000 (55.1)			
	★Net Cooling Capacity - Btuh (kW)	150,000 (44.0)	180,000 (52.7)	182,000 (53.3)			
	Total Unit Power (kW)	13.0	19.6	15.8			
	★EER (Btuh/Watt)	11.5	9.2	11.5			
	★Integrated Part Load Value (Btuh/Watt)	12.6	10.5	13.3			
Refrigerant Charge Furnished (HCFC-22)		Circuit 1	11 lbs. 0 oz. (4.99 kg)	9 lbs. 0 oz. (4.08 kg)	11 lbs. 0 oz. (4.99 kg)		
		Circuit 2	11 lbs.. 0 oz. (4.99 kg)	9 lbs. 0 oz. (4.08 kg)	11 lbs. 0 oz. (4.99 kg)		
		Circuit 3	11 lbs. 0 oz. (4.99 kg)	9 lbs. 0 oz. (4.08 kg)	11 lbs. 0 oz. (4.99 kg)		
Two Stage Heating Capacity (Natural or LPG/Propane Gas (at Sea Level))	<b>Model No.</b>		<b>LGA156</b>		<b>LGA180</b>		
	<b>Heat Input Type</b>		<b>Low (L)</b>	<b>Standard (S)</b>	<b>Low (L)</b>	<b>Standard (S)</b>	<b>High (H)</b>
	Input (low) — Btuh (kW)		169,000 (49.5)	169,000 (49.5)	169,000 (49.5)	169,000 (49.5)	305,000 (89.4)
	Output (low) — Btuh (kW)		135,000 (39.6)	135,000 (39.6)	135,000 (39.6)	135,000 (39.6)	244,000 (71.5)
	Input (High) — Btuh (kW)		----	260,000 (76.2)	----	260,000 (76.2)	470,000 (137.7)
	Output (High) — Btuh (kW)		----	208,000 (60.9)	----	208,000 (60.9)	376,000 (110.2)
A.G.A./C.G.A. Thermal Efficiency		80.0%					
Gas Supply Connections npt — in. -Natural I or LPG/Propane		1					
Recommended Gas Supply Pressure - wc. in. (kPa)		Natural		7 (1.7)			
		LPG/Propane		11 (2.7)			
Evaporator Blower and Drive Selection	Blower wheel nominal dia. x width — in. (mm)		(2) 15 x 15 (381 x 381)				
	2 hp (1.5 kW) Motor & Drive	Nominal motor output - hp (kW)	2 (1.5)		----		
		Max. usable motor output - hp (kW)	2.30 (1.7)		----		
		Voltage & phase	208/230v, 460v 575v-3ph		----		
		(Drive kit #) RPM range	(A) 535-725		----		
	3 hp (2.2 kW) Motor & Drives	Nominal motor output - hp (kW)	3 (2.2)		----		
		Max. usable motor output - hp (kW)	3.45 (2.6)		----		
		Voltage & phase	208/230v, 460v or 575v-3ph		----		
		(Drive kit #) RPM range	(A) 535-725 or (1 or 2) 685 — 865		----		
	5 hp (3.7 kW) Motor & Drives	Nominal motor horsepower (kW)	5 (3.7)		----		
		Max. usable motor output - hp (kW)	5.75 (4.3)		----		
		Voltage & phase	208/230v, 460v or 575v-3ph		----		
		(Drive kit #) RPM range	(2) 685 - 865, (3) 850 - 1045 or (4) 945 - 1185		----		
	7.5 hp (5.6 kW) Motor & Drive	Nominal motor output - hp (kW)	----		7.5 (5.6)		
		Max. usable motor output - hp (kW)	----		8.63 (6.4)		
Voltage & phase		----		208/230v, 460v or 575v-3ph			
(Drive kit #) RPM range		----		(5) 945 — 1185			
Evaporator Coil	Net face area — sq. ft. (m <sup>2</sup> )		22.3 (2.07) total				
	Tube diameter — in. (mm) & No. of rows		3/8 (9.5) — 3				
	Fins per inch (m)		14 (551)				
	Drain connection no. & size — in. (mm) fpt		(1) 1 (25.4)				
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head				
Condenser Coil	Net face area — sq. ft. (m <sup>2</sup> )		56.5 (5.25) total				
	Tube diameter — in. (mm) & No. of rows		3/8 (9.5) — 1 (standard efficiency) / 3/8 (9.5) — 2 (high efficiency)				
	Fins per inch (m)		20 (787) standard & 16 (630) high				
Condenser Fans	Diameter — in. (mm) & No. of blades		(4) 24 (610) — 3				
	Total Air volume — cfm (L/s)		15,850 (7480) standard efficiency — 15,700 (7410) high efficiency				
	Motor horsepower (W)		(4) 1/3 (249)				
	Motor rpm		1075				
	Total Motor watts		1370 standard efficiency — 1380 high efficiency				
Filters (furnished)	Type of filter		Disposable, commercial grade, pleated				
	No. and size — in. (mm)		(6) 24 x 24 x 2 (610 x 610 x 51)				
Electrical characteristics		208/230v, 460v or 575v — 60 hertz — 3 phase					

□ 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 by Lennox are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

★ Rated in accordance with ARI Standard 340/360 and certified to ARI; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure. Integrated Part Load Value tested at 80°F (27°C) outdoor air temperature.

NOTE — ARI capacity is net and includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

# SPECIFICATIONS - LCA/LGA210 SIZE

Model No.		LCA/LGA210S	LCA/LGA210H		
Efficiency Type		Standard (S)	High (H)		
Cooling Ratings	Gross Cooling Capacity - Btuh (kW)	212,000 (62.1)	218,000 (63.9)		
	★Net Cooling Capacity - Btuh (kW)	204,000 (59.8)	210,000 (61.5)		
	Total Unit Power (kW)	22.7	18.8		
	★EER (Btuh/Watt)	9.0	11.2		
	★Integrated Part Load Value (Btuh/Watt)	10.0	12.3		
Refrigerant Charge Furnished (HCFC-22)		Circuit 1	7 lbs. 8 oz. (3.4 kg)	11 lbs. 0 oz. (4.99 kg)	
		Circuit 2	7 lbs. 8 oz. (3.4 kg)	11 lbs. 0 oz. (4.99 kg)	
		Circuit 3	7 lbs. 8 oz. (3.4 kg)	11 lbs. 0 oz. (4.99 kg)	
		Circuit 4	7 lbs. 8 oz. (3.4 kg)	11 lbs. 0 oz. (4.99 kg)	
Two Stage Heating Capacity (Natural or LPG/Propane Gas (at Sea Level))	Model No.		LGA210		
	Heat Input Type		Low (L)	Standard (S)	High (H)
	Input (low) — Btuh (kW)		169,000 (49.5)	169,000 (49.5)	305,000 (89.4)
	Output (low) — Btuh (kW)		135,000 (39.6)	135,000 (39.6)	244,000 (71.5)
	Input (High) — Btuh (kW)		----	260,000 (76.2)	470,000 (137.7)
	Output (High) — Btuh (kW)		----	208,000 (60.9)	376,000 (110.2)
A.G.A./C.G.A. Thermal Efficiency		80.0%			
Gas Supply Connections npt — in. -Natural I or LPG/Propane		1			
Recommended Gas Supply Pressure - wc. in. (kPa)		Natural			7 (1.7)
		LPG/Propane			11 (2.7)
Evaporator Blower and Drive Selection	Blower wheel nominal dia. x width — in. (mm)		(2) 15 x 15 (381 x 381)		
	3 hp (2.2 kW) Ⓜ Motor & Drives	Nominal motor output - hp (kW)	3 (2.2)		
		Max. usable motor output - hp (kW)	3.45 (2.6)		
		Voltage & phase	208/230v, 460v or 575v-3ph		
		(Drive kit #) RPM range	(A) 535-725 or (1 or 2) 685 — 865		
	5 hp (3.7 kW) Ⓜ Motor & Drives	Nominal motor horsepower (kW)	5 (3.7)		
		Max. usable motor output - hp (kW)	5.75 (4.3)		
		Voltage & phase	208/230v, 460v or 575v-3ph		
		(Drive kit #) RPM range	(2) 685 - 865, (3) 850 - 1045 or (4) 945 - 1185		
	7.5 hp (5.6 kW) Ⓜ Motor & Drive	Nominal motor output - hp (kW)	7.5 (5.6)		
Max. usable motor output - hp (kW)		8.63 (6.4)			
Voltage & phase		208/230v, 460v or 575v-3ph			
(Drive kit #) RPM range		(5) 945 — 1185			
Evaporator Coil	Net face area — sq. ft. (m <sup>2</sup> )		22.3 (2.07) total		
	Tube diameter — in. (mm) & No. of rows		3/8 (9.5) — 3 (standard efficiency) / 3/8 (9.5) — 4 (high efficiency)		
	Fins per inch (m)		14 (551)		
	Drain connection no. & size — in. (mm) fpt		(1) 1 (25.4)		
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head		
Condenser Coil	Net face area — sq. ft. (m <sup>2</sup> )		56.5 (5.25) total		
	Tube diameter — in. (mm) & No. of rows		3/8 (9.5) — 1 (standard efficiency) / 3/8 (9.5) — 2 (high efficiency)		
	Fins per inch (m)		20 (787) standard & 16 (630) high		
Condenser Fans	Diameter — in. (mm) & No. of blades		(4) 24 (610) — 3		
	Total Air volume — cfm (L/s)		15,850 (7480) standard efficiency — 15,700 (7410) high efficiency		
	Motor horsepower (W)		(4) 1/3 (249)		
	Motor rpm		1075		
	Total Motor watts		1370 standard efficiency — 1380 high efficiency		
Filters (furnished)	Type of filter		Disposable, commercial grade, pleated		
	No. and size — in. (mm)		(6) 24 x 24 x 2 (610 x 610 x 51)		
Electrical characteristics		208/230v, 460v or 575v — 60 hertz — 3 phase			

Ⓜ 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 by Lennox are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

★ Rated in accordance with ARI Standard 340/360 and certified to ARI; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure. Integrated Part Load Value tested at 80°F (27°C) outdoor air temperature.

NOTE — ARI capacity is net and includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

# SPECIFICATIONS - LCA/LGA240 AND 300S

Model No.		LCA/LGA240S	LCA/LGA240H	LCA/LGA300S	
Cooling Ratings	<b>Efficiency Type</b>	<b>Standard (S)</b>	<b>High (H)</b>	<b>Standard (S)</b>	
	Gross Cooling Capacity — Btuh (kW)	248,000 (72.7)	252,000 (73.8)	301,600 (88.4)	
	★Net Cooling Capacity — Btuh (kW)	238,000 (69.7)	242,000 (70.9)	□284,000 (83.3)	
	Total Unit Power (kW)	26.4	22.0	31.5	
	★EER (Btuh/Watt)	9.0	11.0	□9.0	
	★Integrated Part Load Value (Btuh/Watt)	10.0	11.8	□9.5	
Refrigerant Charge Furnished (HCFC-22)	Circuit 1	10 lbs. 0 oz. (4.54 kg)	11 lbs. 4 oz. (5.10 kg)	11 lbs. 4 oz. (5.10 kg)	
	Circuit 2	10 lbs. 0 oz. (4.54 kg)	11 lbs. 4 oz. (5.10 kg)	11 lbs. 4 oz. (5.10 kg)	
	Circuit 3	10 lbs. 0 oz. (4.54 kg)	11 lbs. 4 oz. (5.10 kg)	11 lbs. 4 oz. (5.10 kg)	
	Circuit 4	10 lbs. 0 oz. (4.54 kg)	11 lbs. 4 oz. (5.10 kg)	11 lbs. 4 oz. (5.10 kg)	
Two Stage Heating Capacity (Natural or LPG/Propane Gas) (at sea level)	<b>Model No.</b>	<b>LGA240</b>		<b>LGA300</b>	
	<b>Heat Input Type</b>	<b>Standard (S)</b>	<b>High (H)</b>	<b>Standard (S)</b>	<b>High (H)</b>
	Input (low) — Btuh (kW)	169,000 (49.5)	305,000 (89.4)	169,000 (49.5)	305,000 (89.4)
	Output (low) — Btuh (kW)	135,000 (39.6)	244,000 (71.5)	135,000 (39.6)	244,000 (71.5)
	Input (High) — Btuh (kW)	260,000 (76.2)	470,000 (137.7)	260,000 (76.2)	470,000 (137.7)
	Output (High) — Btuh (kW)	208,000 (60.9)	376,000 (110.2)	208,000 (60.9)	376,000 (110.2)
	A.G.A./C.G.A. Thermal Efficiency	80.0%			
Gas Supply Connections npt — in.	Natural	1			
	LPG/Propane	1			
Recommended Gas Supply Pressure — wc. in. (kPa)	Natural	7 (1.7)			
	LPG/Propane	11 (2.7)			
Evaporator Blower and Drive Selection	Blower wheel nominal dia. x width — in. (mm)		(2) 15 x 15 (381 x 381)		
	3 hp (2.2 kW) □ Motor & Drives	Nominal motor output — hp (kW)	3 (2.2)		----
		Max. usable motor output — hp (kW)	3.45 (2.6)		----
		Voltage & phase	208/230v, 460v or 575v-3ph		----
		(Drive kit #) RPM range	(1 or 2) 685 — 865		----
	5 hp (3.7 kW) □ Motor & Drives	Nominal motor output — hp (kW)	5 (3.7)		----
		Max. usable motor output — hp (kW)	5.75 (4.3)		----
		Voltage & phase	208/230v, 460v or 575v-3ph		----
		(Drive kit #) RPM range	(2) 685 - 865, (3) 850 - 1045 or (4) 945 - 1185		----
	7.5 hp (5.6 kW) □ Motor & Drive	Nominal motor horsepower (kW)	7.5 (5.6)		----
Max. usable motor output — hp (kW)		8.63 (6.4)		----	
Voltage & phase		208/230v, 460v or 575v-3ph		----	
(Drive kit #) RPM range		(5) 945 — 1185		----	
Evaporator Coil	Net face area — sq. ft. (m <sup>2</sup> )		22.3 (2.07) total		
	Tube diameter — in. (mm) & No. of rows		3/8 (9.5) — 3 (Standard Efficiency) 3/8 (9.5) — 4 (High Efficiency)		3/8 (9.5) — 4
	Fins per inch (m)		14 (551)		
	Drain connection no. & size — in. (mm) fpt		(1) 1 (25.4)		
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head		
Condenser Coil	Net face area — sq. ft. (m <sup>2</sup> )		56.5 (5.25) total		
	Tube diameter — in. (mm) & No. of rows		3/8 (9.5) — 2		
	Fins per inch (m)		20 (787)		
Condenser Fans	Diameter — in. (mm) & No. of blades		(4) 24 (610) — 3		
	Total Air volume — cfm (L/s)		15,450 (7290)		16,000 (7550)
	Motor horsepower (W)		(4) 1/3 (249)		(4) 1/2 (373)
	Motor rpm		1075		
	Total Motor watts		1395		1800
Filters (furnished)	Type of filter		Disposable, commercial grade, pleated		
	No. and size — in. (mm)		(6) 24 x 24 x 2 (610 x 610 x 51)		
Electrical characteristics		208/230v, 460v or 575v — 60 hertz — 3 phase			

□ 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 by Lennox are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

★ Rated in accordance with ARI Standard 340/360 and certified to ARI; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure. Integrated Part Load Value tested at 80°F (27°C) outdoor air temperature.

□ Tested at conditions included in ARI Standard 340/360.

NOTE — ARI capacity is net and includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

# SPECIFICATIONS - LHA180 AND 240

Model No.		LHA180H	LHA240H	
Cooling Ratings	<b>Efficiency Type</b>	<b>High (H)</b>	<b>High (H)</b>	
	Gross Cooling Capacity — Btuh (kW)	185,000 (54.2)	233,000 (68.3)	
	★Net Cooling Capacity — Btuh (kW)	180,000 (52.7)	226,000 (66.2)	
	Total Unit Power (kW)	18.0	21.5	
	★EER (Btuh/Watt)	10.0	10.5	
	★Integrated Part Load Value (Btuh/Watt)	11.2	11.5	
High Temperature Heating Ratings	*Total Heating Capacity — Btuh (kW)	188,000 (55.1)	220,000 (64.5)	
	*Total Unit Power (kW)	16.7	20.2	
	*C.O.P.	3.3	3.2	
Low Temperature Heating Ratings	*Total Heating Capacity — Btuh (kW)	108,000 (31.6)	118,000 (34.6)	
	*Total Unit Power (kW)	13.2	15.0	
	*C.O.P.	2.4	2.3	
Refrigerant Charge Furnished (HCFC-22)	Circuit 1	24 lbs. 8 oz. (11.11 kg)	26 lbs. 0 oz. (11.79 kg)	
	Circuit 2	24 lbs. 8 oz. (11.11 kg)	26 lbs. 0 oz. (11.79 kg)	
Indoor Coil Blower and Drive Selection	Blower wheel nominal dia. x width — in. (mm)		(2) 15 x 15 (381 x 381)	
	3 hp (2.2 kW) ☐ Motor & Drives	Nominal motor output — hp (kW)	3 (2.2)	
		Max. usable motor output — hp (kW)	3.45 (2.6)	
		Voltage & phase	208/230v, 460v or 575v-3ph	
		(Drive kit #) RPM range	(1 or 2) 685 — 865	
	5 hp (3.7 kW) ☐ Motor & Drives	Nominal motor horsepower (kW)	5 (3.7)	
		Max. usable motor output — hp (kW)	5.75 (4.3)	
		Voltage & phase	208/230v, 460v or 575v-3ph	
		(Drive kit #) RPM range	(2) 685 - 865, (3) 850 - 1045 or (4) 945 - 1185	
	7.5 hp (5.6 kW) ☐ Motor & Drive	Nominal motor horsepower (kW)	7.5 (5.6)	
		Max. usable motor output — hp (kW)	8.63 (6.4)	
		Voltage & phase	208/230v, 460v or 575v-3ph	
(Drive kit #) RPM range		(5) 945 — 1185		
Indoor Coil	Net face area — sq. ft. (m <sup>2</sup> )		22.3 (2.07)	
	Tube diameter — in. (mm) & No. of rows		3/8 (9.5) — 3      3/8 (9.5) — 4	
	Fins per inch (m)		14 (551)	
	Drain connection no. & size — in. (mm) fpt		(1) 1 (25.4)	
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head	
Outdoor Coil	Net face area — sq. ft. (m <sup>2</sup> )		57.0 (5.30)	
	Tube diameter — in. (mm) & No. of rows		3/8 (9.5) — 2	
	Fins per inch (m)		20 (787)	
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head	
Outdoor Fans	Diameter — in. (mm) & No. of blades		(4) 24 (610) — 3	
	Total Air volume — cfm (L/s)		15,450 (7290)	
	Motor horsepower (W)		(4) 1/3 (249)	
	Motor rpm		1075	
	Total Motor watts		1395	
Filters (furnished)	Type of filter		Disposable, commercial grade, pleated	
	No. and size — in. (mm)		(6) 24 x 24 x 2 (610 x 610 x 51)	
Electrical characteristics		208/230v, 460v or 575v — 60 hertz — 3 phase		

★Rated in accordance with ARI Standard 340/360 and certified to ARI. Integrated Part Load Value tested at 80°F (27°C) outdoor air temperature.

**Cooling Ratings**— 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering indoor coil air.

**High Temperature Heating Ratings**— 47°F (8°C) db/43°F (6°C) wb outdoor air temperature and 70°F (21°C) entering indoor coil air.

**Low Temperature Heating Ratings**— 17°F (-8°C) db/15°F (-9°C) wb outdoor air temperature and 70°F (21°C) entering indoor coil air.

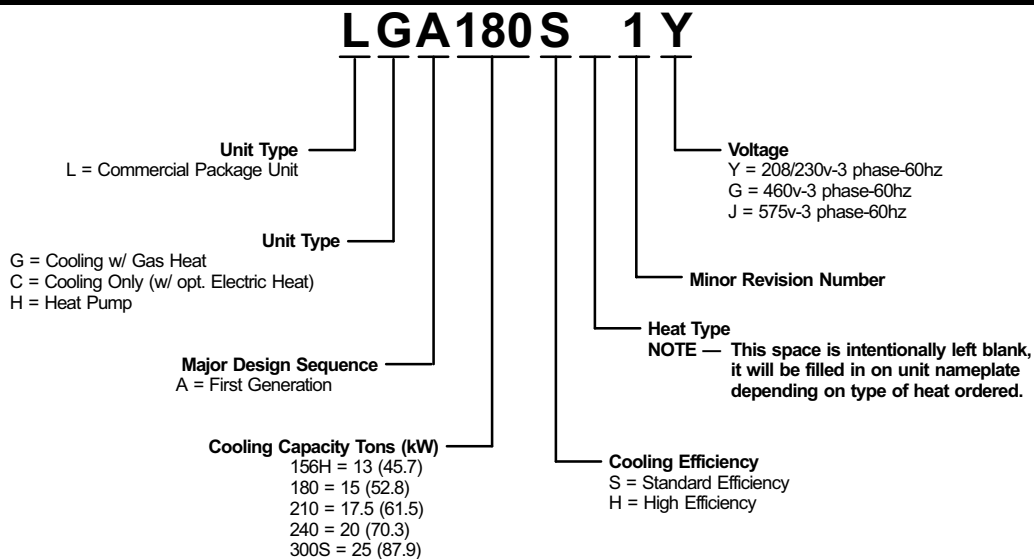
NOTE — ARI capacity is net and includes indoor blower motor heat deduction. Gross capacity does not include indoor blower motor heat deduction.

☐ 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 by Lennox are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

## WEIGHT DATA

Model No.	Description	Weight	
		lbs.	kg
<b>Net Weights</b>			
LCA180S	Net weight (Base unit)	2200	1000
LCA210S	Net weight (Base unit)	2285	1035
LCA240S	Net weight (Base unit)	2415	1095
LCA156H	Net weight (Base unit)	2300	1045
LCA180H	Net weight (Base unit)	2300	1045
LCA210H	Net weight (Base unit)	2430	1100
LCA240H & 300S	Net weight (Base unit)	2480	1125
LGA180S	Net weight (Base unit with low fire heat exchanger)	2255	1025
LGA210S	Net weight (Base unit with low fire heat exchanger)	2340	1060
LGA240S	Net weight (Base unit with low fire heat exchanger)	2470	1120
LGA156H	Net weight (Base unit with low fire heat exchanger)	2355	1070
LGA180H	Net weight (Base unit with low fire heat exchanger)	2355	1070
LGA210H	Net weight (Base unit with low fire heat exchanger)	2485	1125
LGA240H & 300S	Net weight (Base unit with low fire heat exchanger)	2535	1150
LHA180H	Net weight (Base unit)	2355	1070
LHA240H	Net weight (Base unit)	2400	1090
<b>Shipping Weights (Add Factory Installed Options Weights To Base Unit Weights For Total Shipping Weight)</b>			
LCA180S	Base unit	2400	1089
LCA210S	Base unit	2485	1127
LCA240S	Base unit	2615	1186
LCA156H	Base unit	2500	1135
LCA180H	Base unit	2500	1135
LCA210H	Base unit	2620	1188
LCA240H & 300S	Base unit	2680	1216
LHA180H	Base unit	2570	1166
LHA240H	Base unit	2615	1186
LCA/LHA Models Only	Electric Heat (add to Base unit)	See Electric Heat Rating Tables	
LGA180S	Base unit with low fire heat exchanger	2455	1114
LGA210S	Base unit with low fire heat exchanger	2540	1152
LGA240S	Base unit with low fire heat exchanger	2670	1211
LGA156H	Base unit with low fire heat exchanger	2555	1159
LGA180H	Base unit with low fire heat exchanger	2555	1159
LGA210H	Base unit with low fire heat exchanger	2685	1218
LGA240H & 300S	Base unit with low fire heat exchanger	2735	1241
LGA Models Only	High Fire Heat Exchanger (add to Base unit)	30	14
All Models	Economizer (add to Base unit)	73	33
	Outdoor Air Damper (add to Base unit)	45	20
	Power Exhaust (add to Base unit)	62	19
	LTL Packaging (less than truck load) (add to Base unit)	280	127

## MODEL NUMBER IDENTIFICATION





## ELECTRICAL DATA - LCA/LGA156H

Model No.		LCA/LGA156H									
Line voltage data — 60 Hz — 3 phase		208/230v			460v			575v			
Unit Efficiency		High (H)			High (H)			High (H)			
Compressors (3)	Rated load amps each (total)	13.5 (40.5)			7.4 (22.2)			5.8 (17.4)			
	Locked rotor amps each (total)	99 (297)			49.5 (148.5)			40 (120)			
Condenser Fan Motors (4)	Full load amps each (total)	2.4 (9.6)			1.3 (5.2)			1.0 (4.0)			
	Locked rotor amps each (total)	4.7 (18.8)			2.3 (9.6)			1.9 (7.6)			
Evaporator Blower Motor	Motor Output	hp	2	3	5	2	3	5	2	3	5
		kW	1.5	2.2	3.7	1.5	2.2	3.7	1.5	2.2	3.7
	Full load amps	7.5	10.6	16.7	3.4	4.8	7.6	2.7	3.9	6.1	
	Locked rotor amps	46.9	66	105	20.4	26.8	45.6	16.2	23.4	36.6	
Recommended maximum fuse size (amps)	With Exhaust Fans	70	80	80	40	40	45	30	30	35	
	Less Exhaust Fans	70	70	80	40	40	40	30	30	30	
†Minimum Circuit Ampacity	With Exhaust Fans	66	69	75	36	37	40	28	29	31	
	Less Exhaust Fans	61	65	71	33	35	37	26	27	29	
Optional Power Exhaust Fans	(No.) Horsepower (W)	(2) 1/3 (249)									
	Full load amps (total)	4.8			2.6			2.0			
	Locked rotor amps (total)	9.4			4.8			3.8			
Service Outlet (2) 115 volt GFCI (amp rating)		15			15			15			

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

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

NOTE — Where current does not exceed 100 amps, HACR type circuit breaker may be used in place of fuse (U.S. only).

## ELECTRICAL DATA - LCA/LGA180

Model No.		LCA/LGA180																		
Line voltage data — 60 Hz — 3 phase		208/230v						460v						575v						
Unit Efficiency		Standard (S)			High (H)			Standard (S)			High (H)			Standard (S)			High (H)			
Compressors (3)	Rated load amps each (total)	16.7 (50.1)			17.3 (51.9)			8.6 (25.8)			9.0 (27.0)			6.0 (18.0)			7.1 (21.3)			
	Locked rotor amps each (total)	110.0 (330.0)			123.0 (369.0)			55.0 (165.0)			62.0 (186.0)			44.0 (132.0)			50.0 (150.0)			
Condenser Fan Motors (4)	Full load amps each (total)	2.4 (9.6)						1.3 (5.2)						1.3 (5.2)						
	Locked rotor amps each (total)	4.7 (18.8)						2.3 (9.6)						1.9 (7.6)						
Evaporator Blower Motor	Motor Output	hp	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5
		kW	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6
	Full load amps	10.6	16.7	24.2	10.6	16.7	24.2	4.8	7.6	11.0	4.8	7.6	11.0	3.9	6.1	9.0	3.9	6.1	9.0	
	Locked rotor amps	66	105	152	66	105	152	26.8	45.6	66	26.8	45.6	66	23.4	36.6	54	23.4	36.6	54	
Recommended maximum fuse size (amps)	With Exhaust Fans	90	100	110	90	100	110	45	50	50	45	50	50	35	35	40	35	40	40	
	Less Exhaust Fans	90	90	110	90	100	110	45	45	50	45	50	50	30	35	40	35	40	45	
†Minimum Circuit Ampacity	With Exhaust Fans	79	85	95	81	87	96	40	43	47	41	44	48	29	32	35	33	35	39	
	Less Exhaust Fans	74	81	90	76	83	92	38	41	45	39	42	46	27	30	33	31	33	37	
Optional Power Exhaust Fans	(No.) Horsepower (W)	(2) 1/3 (249)																		
	Full load amps (total)	4.8						2.6						2.0						
	Locked rotor amps (total)	9.4						4.8						3.8						
Service Outlet (2) 115 volt GFCI (amp rating)		15																		

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

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

NOTE — Where current does not exceed 100 amps, HACR type circuit breaker may be used in place of fuse (U.S. only).

### ELECTRICAL DATA - LCA/LGA210

Model No.			LCA/LGA210																	
Line voltage data — 60 Hz — 3 phase			208/230v						460v						575v					
Unit Efficiency			Standard (S)			High (H)			Standard (S)			High (H)			Standard (S)			High (H)		
Compressors (4)	Rated load amps each (total)		14.0 (56.0)			13.5 (54.0)			7.0 (28.0)			7.4 (29.6)			5.8 (23.2)			5.8 (23.2)		
	Locked rotor amps each (total)		92.0 (368.0)			120.0 (480.0)			46.0 (184.0)			49.5 (198.0)			44.0 (176.0)			40.0 (160.0)		
Condenser Fan Motors (4)	Full load amps each (total)		2.4 (9.6)						1.3 (5.2)						1.0 (4.0)					
	Locked rotor amps each (total)		4.7 (18.8)						2.3 (9.6)						1.9 (7.6)					
Evaporator Blower Motor	Motor Output	hp	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5
		kW	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6
	Full load amps	10.6	16.7	24.2	10.6	16.7	24.2	4.8	7.6	11.0	4.8	7.6	11.0	3.9	6.1	9.0	3.9	6.1	9.0	
	Locked rotor amps	66	105	152	66	105	152	26.8	45.6	66	26.8	45.6	66	23.4	36.6	54	23.4	36.6	54	
Recommended maximum fuse size (amps)	With Exhaust Fans		90	100	125	90	100	110	50	50	60	50	50	60	40	40	50	40	40	45
	Less Exhaust Fans		90	100	110	90	100	110	45	50	60	45	50	60	35	40	45	35	40	45
†Minimum Circuit Ampacity	With Exhaust Fans		85	91	101	82	89	98	45	48	52	44	47	51	35	38	41	35	37	40
	Less Exhaust Fans		80	87	96	78	84	94	43	46	50	41	44	49	33	35	39	33	35	38
Optional Power Exhaust Fans	(No.) Horsepower (W)		(2) 1/3 (249)																	
	Full load amps (total)		4.8						2.6						2.0					
	Locked rotor amps (total)		9.4						4.8						3.8					
Service Outlet (2) 115 volt GFCI (amp rating)			15																	

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

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

NOTE — Where current does not exceed 100 amps, HACR type circuit breaker may be used in place of fuse (U.S. only).

### ELECTRICAL DATA - LCA/LGA240

Model No.			LCA/LGA240																	
Line voltage data — 60 Hz — 3 phase			208/230v						460v						575v					
Unit Efficiency			Standard (S)			High (H)			Standard (S)			High (H)			Standard (S)			High (H)		
Compressors (4)	Rated load amps each (total)		16.7 (66.8)			17.3 (69.2)			8.6 (34.4)			9.0 (36.0)			6.0 (24.0)			7.1 (28.4)		
	Locked rotor amps each (total)		110.0 (440.0)			123.0 (492.0)			55.0 (220.0)			62.0 (248.0)			44.0 (176.0)			50.0 (200.0)		
Condenser Fan Motors (4)	Full load amps (total)		2.4 (9.6)						1.3 (5.2)						1.0 (4.0)					
	Locked rotor amps (total)		4.7 (18.8)						2.3 (9.6)						1.9 (7.6)					
Evaporator Blower Motor	Motor Output	hp	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5
		kW	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6
	Full load amps	10.6	16.7	24.2	10.6	16.7	24.2	4.8	7.6	11.0	4.8	7.6	11.0	3.9	6.1	9.0	3.9	6.1	9.0	
	Locked rotor amps	66	105	152	66	105	152	26.8	45.6	66	26.8	45.6	66	23.4	36.6	54	23.4	36.6	54	
Recommended maximum fuse size (amps)	With Exhaust Fans		110	110	125	110	110	125	50	60	60	50	60	60	40	40	50	45	45	50
	Less Exhaust Fans		100	110	125	110	110	125	50	50	60	50	60	60	35	40	45	45	45	50
†Minimum Circuit Ampacity	With Exhaust Fans		96	102	111	98	104	114	49	52	56	50	53	57	35	38	41	40	42	46
	Less Exhaust Fans		91	97	107	94	100	109	47	49	53	48	51	55	33	36	39	38	40	44
Optional Power Exhaust Fans	(No.) Horsepower (W)		(2) 1/3 (249)																	
	Full load amps (total)		4.8						2.6						2.0					
	Locked rotor amps (total)		9.4						4.8						3.8					
Service Outlet (2) 115 volt GFCI (amp rating)			15																	

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

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

NOTE — Where current does not exceed 100 amps, HACR type circuit breaker may be used in place of fuse (U.S. only).

### ELECTRICAL DATA - LCA/LGA300S

Model No.		LCA/LGA300S						
Line voltage data — 60 Hz — 3 phase		208/230v		460v		575v		
Unit Efficiency		Standard (S)						
Compressors (4)	Rated load amps each (total)	18.6 (74.4)		9.0 (36.0)		7.4 (29.6)		
	Locked rotor amps each (total)	156 (624)		70 (280)		54 (216)		
Condenser Fan Motors (4)	Full load amps each (total)	3.0 (12.0)		1.5 (6.0)		1.2 (4.8)		
	Locked rotor amps each (total)	6.0 (24.0)		3.0 (12.0)		2.9 (11.6)		
Evaporator Blower Motor	Motor Output	hp	5	7.5	5	7.5	5	7.5
		kW	3.7	5.6	3.7	5.6	3.7	5.6
	Full load amps	16.7	24.2	7.6	11.0	6.1	9.0	
	Locked rotor amps	105	152	45.6	66	36.6	54	
Recommended maximum fuse size (amps)	With Exhaust Fans	125	125	60	60	50	50	
	Less Exhaust Fans	125	125	60	60	45	50	
†Minimum Circuit Ampacity	With Exhaust Fans	113	122	55	59	45	48	
	Less Exhaust Fans	108	117	52	56	43	46	
Optional Power Exhaust Fans	(No.) Horsepower (W)	(2) 1/3 (249)						
	Full load amps (total)	4.8		2.6		2.0		
	Locked rotor amps (total)	9.4		4.8		3.8		
Service Outlet (2) 115 volt GFCI (amp rating)		15						

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

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

NOTE — Where current does not exceed 100 amps, HACR type circuit breaker may be used in place of fuse (U.S. only).

### ELECTRICAL DATA - LHA180/240

Model No.		LHA180H									LHA240H									
Line voltage data — 60 Hz — 3 phase		208/230v			460v			575v			208/230v			460v			575v			
Unit Efficiency		High (H)									High (H)									
Compressors (2)	Rated load amps each (total)	23.9 (47.8)			10.6 (21.2)			8.7 (17.4)			27.6 (55.2)			11.6 (23.2)			10.4 (20.8)			
	Locked rotor amps each (total)	185.0 (370.0)			89.0 (178.0)			78.4 (156.8)			205.0 (410.0)			104.0 (208.0)			78.4 (156.8)			
Outdoor Coil Fan Motors (4)	Full load amps each (total)	2.4 (9.6)			1.3 (5.2)			1.0 (4.0)			2.4 (9.6)			1.3 (5.2)			1.0 (4.0)			
	Locked rotor amps each (total)	4.7 (18.8)			2.3 (9.6)			1.9 (7.6)			4.7 (18.8)			2.3 (9.6)			1.9 (7.6)			
Indoor Coil Blower Motor	Motor Output	hp	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5	3	5	7.5
		kW	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6	2.2	3.7	5.6
	Full load amps	10.6	16.7	24.2	4.8	7.6	11.0	3.9	6.1	9.0	10.6	16.7	24.2	4.8	7.6	11.0	3.9	6.1	9.0	
	Locked rotor amps	66	105	152	26.8	45.6	66	23.4	26.6	54	66	105	152	26.8	45.6	66	23.4	36.6	54	
Rec. max. fuse size (amps)	With Exhaust Fans	100	100	110	45	45	50	35	40	40	110	110	125	50	50	50	40	45	45	
	Less Exhaust Fans	90	100	110	40	45	50	35	35	40	110	110	110	45	50	50	40	40	45	
†Minimum Circuit Ampacity	With Exhaust Fans	79	85	92	36	39	42	29	32	35	87	93	101	38	41	45	33	36	38	
	Less Exhaust Fans	74	80	88	34	37	40	27	30	33	82	88	96	36	39	42	31	34	36	
Optional Power Exhaust Fans	(No.) Horsepower (W)	(2) 1/3 (249)																		
	Full load amps (total)	4.8			2.6			2.0			4.8			2.6			2.0			
	Locked rotor amps (total)	9.4			4.8			3.8			9.4			4.8			3.8			
Service Outlet (2) 115 volt GFCI (amp rating)		15			15			15			15			15			15			

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

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

NOTE — Where current does not exceed 100 amps, HACR type circuit breaker may be used in place of fuse (U.S. only).

# OPTIONAL ELECTRIC HEAT ACCESSORIES (LCA/LHA MODELS)

## ELECTRIC HEAT CONTROL MODULE AND UNIT FUSE BLOCKS

Unit Model No.			LCA156H	LCA180S	LCA180H	LCA210S	LCA210H	LCA240S	LCA240H	LCA300S	LHA180H	LHA240H				
Electric Heat	Model No.		EHA (see Electric Heat Data tables for additional information)													
	kW Input Range	15	X	X	X	X	X	X	X	X	X	X	X			
		30	X	X	X	X	X	X	X	X	X	X	X			
		45	X	X	X	X	X	X	X	X	X	X	X			
		60	X	X	X	X	X	X	X	X	X	X	X			
90	----	----	----	X	X	X	X	X	X	----	X					
Electric Heat Control Module (45/60/90 kW)			15K13 (208/230v), 15K92 (460v), 15K93 (575v)													
Unit Fuse Block (3 phase)	With Power Exhaust Fans	208/230v - 2 hp (1.5 kW)		56K95			----									
		460v - 2 hp (1.5 kW)		25K10			----									
		575v - 2 hp (1.5 kW)		25K08			----									
		208/230v - 3 hp (2.2 kW)		56K96			25K15			25K18		----		25K17	25K18	
		460v - 3 hp (2.2 kW)		25K10		25K11	25K13					----		25K11	25K13	
		575v - 3 hp (2.2 kW)		25K08		25K09	25K10			25K11		----		25K09	25K10	
		208/230v - 5 hp (3.7 kW)		56K96		25K17		25K18	25K17	25K18		25K19		25K17	25K18	
		460v - 5 hp (3.7 kW)		25K11		25K13			25K14		25K13		25K14		25K11	25K13
		575v - 5 hp (3.7 kW)		25K09			25K10			25K11		25K13		25K10	25K11	
		208/230v - 7.5 hp (5.6 kW)		----			25K18		25K19	25K18	25K19		25K18		25K19	
		460v - 7.5 hp (5.6 kW)		----			25K13			25K14			25K13			
		575v - 7.5 hp (5.6 kW)		----			25K10	25K11	25K13	25K11	25K13		25K10		25K14	
		Unit Fuse Block (3 phase)	Without Power Exhaust Fans	208/230v - 2 hp (1.5 kW)		56K95			----							
460v - 2 hp (1.5 kW)				25K10			----									
575v - 2 hp (1.5 kW)				25K08			----									
208/230v - 3 hp (2.2 kW)				56K95			25K15			25K17	25K18	----		25K15	25K18	
460v - 3 hp (2.2 kW)				25K10			25K11			25K13		----		25K10	25K11	
575v - 3 hp (2.2 kW)				25K08		25K08	25K09			25K11		----		25K09	25K10	
208/230v - 5 hp (3.7 kW)				56K96		25K15		25K17		25K18		25K19		25K17	25K18	
460v - 5 hp (3.7 kW)				25K10		25K11	25K13			25K14		25K13		25K11	25K13	
575v - 5 hp (3.7 kW)				25K08		25K09	25K10			25K11		25K13		25K09	25K10	
208/230v - 7.5 hp (5.6 kW)				----			25K18			25K19		25K18				
460v - 7.5 hp (5.6 kW)				----			25K13		25K14			25K13				
575v - 7.5 hp (5.6 kW)				----			25K10	25K11			25K13		25K10		25K11	

### LTB2 ELECTRIC HEAT TERMINAL BLOCK

LTB2-175 (30K75) 175 amps, LTB2-335 (30K76) 335 amps

(Required For Units Without Disconnect/Circuit Breaker But With Single Point Power Source)

Unit Model No.			LCA156H	LCA180S	LCA180H	LCA210S	LCA210H	LCA240S	LCA240H	LCA300S	LHA180H	LHA240H		
LTB2 Terminal Block (3 phase)	15 kW *208/230v 3ph	2 hp (1.5 kW)		----										
		3 hp (2.2 kW)		30K75			30K75			----		30K75		
		5 hp (3.7 kW)								30K75				
		7.5 hp (5.6 kW)		----										
	30 kW *208/230v 3ph	2 hp (1.5 kW)		----										
		3 hp (2.2 kW)		30K75			30K75			----		30K75		30K76
		5 hp (3.7 kW)								30K75				
		7.5 hp (5.6 kW)		----										
	45 kW *208/230v 3ph	2 hp (1.5 kW)		----										
		3 hp (2.2 kW)		30K75			30K75			----		30K76		
		5 hp (3.7 kW)								30K75				30K76
		7.5 hp (5.6 kW)		----										
	60 kW *208/230v 3ph	2 hp (1.5 kW)		----										
		3 hp (2.2 kW)		30K75			30K75			----		30K76		30K76
		5 hp (3.7 kW)								30K76				
		7.5 hp (5.6 kW)		----			30K76			----		30K76		
	90 kW *208/230v 3ph		----			30K76				30K76			30K76	
	5 hp (3.7 kW)		----						30K76		----			
	7.5 hp (5.6 kW)		----			30K76			30K76		30K76			

NOTE — Terminal Block is factory installed in units with factory installed electric heat without disconnect/circuit breaker but with single point power source.

\*NOTE — ALL 460V AND 575V UNIT VOLTAGES USE LTB2-175 (30K75) TERMINAL BLOCK.

**OPTIONAL ELECTRIC HEAT DATA (LCA MODELS)**  
 (Requires Unit Fuse Block, Terminal Block and  Heater Control Module)

LCA156H SIZE								LCA180 SIZE									
kW Size	Electric Heat Model No. (see footnote) & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit, Power Exhaust Fans and Electric Heat Minimum Circuit Ampacity			kW Size	Electric Heat Model No. (see footnote) & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit, Power Exhaust Fans and Electric Heat Minimum Circuit Ampacity		
						2 hp (1.5kW)	3 hp (2.2kW)	5 hp (3.7kW)							3 hp (2.2kW)	5 hp (3.7kW)	7.5 hp (5.6kW)
15 kW	†(1) EHA240-7.5 208/230v (99J16) 460v (99J18) 575v (99J20) and †(1) EHA240S-7.5 208/230v (99J17) 460v (99J19) 575v (99J21) 59 lbs. (27 kg) (total weight)	1	208	11.3	38,600	66	69	75	15 kW	†(1) EHA240-7.5 208/230v (99J16) 460v (99J18) 575v (99J20) and †(1) EHA240S-7.5 208/230v (99J17) 460v (99J19) 575v (99J21) 59 lbs. (27 kg) (total weight)	1	208	11.3	38,600	81	87	97
			220	12.6	43,000							220	12.6	43,000			
			230	13.8	47,100	66	69	75				230	13.8	47,100	81	87	96
			240	15.0	51,200							240	15.0	51,200			
			440	12.6	43,000							440	12.6	43,000			
			460	13.8	47,100	36	37	40				460	13.8	47,100	41	44	48
			480	15.0	51,200							480	15.0	51,200			
			550	12.6	43,000							550	12.6	43,000			
			575	13.8	47,100	28	29	31				575	13.8	47,100	33	35	39
30 kW	†(1) EHA156-15 208/230v (86K55) 460v (86K56) 575v (86K57) and †(1) EHA156S-15 208/230v (86K58) 460v (86K59) 575v (86K60) 59 lbs. (27 kg) (total weight)	1	208	22.5	76,800	94	98	106	30 kW	†(1) EHA360-15 208/230v (99J22) 460v (99J24) 575v (99J26) and †(1) EHA360S-15 208/230v (99J23) 460v (99J25) 575v (99J27) 59 lbs. (27 kg) (total weight)	1	208	22.5	76,800	96	104	113
			220	25.2	86,000							220	25.2	86,000			
			230	27.5	93,900	106	110	118				230	27.5	93,900	108	116	125
			240	30.0	102,400							240	30.0	102,400			
			440	25.2	86,000							440	25.2	86,000			
			460	27.5	93,900	53	55	58				460	27.5	93,900	53	57	61
			480	30.0	102,400							480	30.0	102,400			
			550	25.2	86,000							550	25.2	86,000			
			575	27.5	93,900	42	44	47				575	27.5	93,900	43	46	49
45 kW	‡(2) EHA156-22.5 208/230v (86K10) 460v (86K11) 575v (86K12) 76 lbs. (35 kg) (total weight)	□2	208	33.8	115,300	133	137	145	45 kW	‡(2) EHA360-22.5 208/230v (99J28) 460v (99J29) 575v (99J30) 76 lbs. (35 kg) (total weight)	□2	208	33.8	115,300	135	143	152
			220	37.8	129,000							220	37.8	129,000			
			230	41.3	141,000	151	155	163				230	41.3	141,000	153	161	170
			240	45.0	153,600							240	45.0	153,600			
			440	37.8	129,000							440	37.8	129,000			
			460	41.3	141,000	76	77	81				460	41.3	141,000	76	79	84
			480	45.0	153,600							480	45.0	153,600			
			550	37.8	129,000							550	37.8	129,000			
			575	41.3	141,000	61	62	65				575	41.3	141,000	61	64	68
60 kW	‡(2) EHA156-30 208/230v (86K13) 460v (86K14) 575v (86K15) 76 lbs. (35 kg) (total weight)	□2	208	45.0	153,600	141	145	153	60 kW	‡(2) EHA150-30 208/230v (99J07) 460v (99J08) 575v (99J09) 76 lbs. (35 kg) (total weight)	□2	208	45.0	153,600	143	151	160
			220	50.4	172,000							220	50.4	172,000			
			230	55.1	188,000	160	164	172				230	55.1	188,000	162	170	179
			240	60.0	204,800							240	60.0	204,800			
			440	50.4	172,000							440	50.4	172,000			
			460	55.1	188,000	80	82	85				460	55.1	188,000	80	84	88
			480	60.0	204,800							480	60.0	204,800			
			550	50.4	172,000							550	50.4	172,000			
			575	55.1	188,000	64	66	68				575	55.1	188,000	65	67	71
600	60.0	204,800				600	60.0	204,800									

†NOTE - For field installed electric heat, order (1) of each heater shown to make up heater size required.

‡NOTE - For field installed electric heat, order (2) of same heater shown to make up heater size required.

†Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

□ May be used with two stage control.

NOTE — Fuse block must be ordered extra. Factory installed heaters will have the fuse block factory installed. Fuse block must be installed in field installed heaters. Also requires LTB2 Terminal Block. See Optional Electric Heat Accessories tables.

‡ Electric Heat Control Module required on 45, 60 & 90 kW sizes only (module furnished with factory installed electric heaters). See Optional Electric Heat Accessories tables.

# OPTIONAL ELECTRIC HEAT DATA (LCA MODELS)

(Requires Unit Fuse Block, Terminal Block and  Heater Control Module)

LCA210 SIZE								LCA240 SIZE									
kW Size	Electric Heat Model No. (see footnote) & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit, Power Exhaust Fans and Electric Heat Minimum Circuit Ampacity			kW Size	Electric Heat Model No. (see footnote) & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit, Power Exhaust Fans and Electric Heat Minimum Circuit Ampacity		
						3 hp (2.2kW)	5 hp (3.7kW)	7.5 hp (5.6kW)							3 hp (2.2kW)	5 hp (3.7kW)	7.5 hp (5.6kW)
15 kW	†(1) EHA240-7.5 208/230v (99J16) 460v (99J18) 575v (99J20) and †(1) EHA240S-7.5 208/230v (99J17) 460v (99J19) 575v (99J21) 59 lbs. (27 kg) (total weight)	1	208	11.3	38,600	87	94	103	15 kW	†(1) EHA240-7.5 208/230v (99J16) 460v (99J18) 575v (99J20) and †(1) EHA240S-7.5 208/230v (99J17) 460v (99J19) 575v (99J21) 59 lbs. (27 kg) (total weight)	1	208	11.3	38,600	99	105	114
			220	12.6	43,000							220	12.6	43,000			
			230	13.8	47,100	85	91	101				230	13.8	47,100	98	104	114
			240	15.0	51,200							240	15.0	51,200			
			440	12.6	43,000							440	12.6	43,000			
			460	13.8	47,100	45	48	52				460	13.8	47,100	50	53	57
			480	15.0	51,200							480	15.0	51,200			
			550	12.6	43,000							550	12.6	43,000			
			575	13.8	47,100	35	38	41				575	13.8	47,100	40	42	46
600	15.0	51,200				600	15.0	51,200									
30 kW	†(1) EHA360-15 208/230v (99J22) 460v (99J24) 575v (99J26) and †(1) EHA360S-15 208/230v (99J23) 460v (99J25) 575v (99J27) 59 lbs. (27 kg) (total weight)	1	208	22.5	76,800	96	104	113	30 kW	†(1) EHA360-15 208/230v (99J22) 460v (99J24) 575v (99J26) and †(1) EHA360S-15 208/230v (99J23) 460v (99J25) 575v (99J27) 59 lbs. (27 kg) (total weight)	1	208	22.5	76,800	99	105	114
			220	25.2	86,000							220	25.2	86,000			
			230	27.5	93,900	108	116	125				230	27.5	93,900	108	116	125
			240	30.0	102,400							240	30.0	102,400			
			440	25.2	86,000							440	25.2	86,000	53	57	61
			460	27.5	93,900	53	57	61				460	27.5	93,900	53	57	61
			480	30.0	102,400							480	30.0	102,400			
			550	25.2	86,000							550	25.2	86,000	43	46	49
			575	27.5	93,900	43	46	49				575	27.5	93,900	43	46	49
600	30.0	102,400				600	30.0	102,400									
45 kW	¥(2) EHA360-22.5 208/230v (99J28) 460v (99J29) 575v (99J30) 76 lbs. (35 kg) (total weight)	<input checked="" type="checkbox"/>	208	33.8	115,300	135	143	152	45 kW	¥(2) EHA360-22.5 208/230v (99J28) 460v (99J29) 575v (99J30) 76 lbs. (35 kg) (total weight)	<input checked="" type="checkbox"/>	208	33.8	115,300	135	143	152
			220	37.8	129,000							220	37.8	129,000			
			230	41.3	141,000	153	161	170				230	41.3	141,000	153	161	170
			240	45.0	153,600							240	45.0	153,600			
			440	37.8	129,000							440	37.8	129,000			
			460	41.3	141,000	76	79	84				460	41.3	141,000	76	79	84
			480	45.0	153,600							480	45.0	153,600			
			550	37.8	129,000							550	37.8	129,000			
			575	41.3	141,000	61	64	68				575	41.3	141,000	61	64	68
600	45.0	153,600				600	45.0	153,600									
60 kW	¥(2) EHA150-30 208/230v (99J07) 460v (99J08) 575v (99J09) 76 lbs. (35 kg) (total weight)	<input checked="" type="checkbox"/>	208	45.0	153,600	143	151	160	60 kW	¥(2) EHA150-30 208/230v (99J07) 460v (99J08) 575v (99J09) 76 lbs. (35 kg) (total weight)	<input checked="" type="checkbox"/>	208	45.0	153,600	143	151	160
			220	50.4	172,000							220	50.4	172,000			
			230	55.1	188,000	162	170	179				230	55.1	188,000	162	170	179
			240	60.0	204,800							240	60.0	204,800			
			440	50.4	172,000							440	50.4	172,000			
			460	55.1	188,000	80	84	88				460	55.1	188,000	80	84	88
			480	60.0	204,800							480	60.0	204,800			
			550	50.4	172,000							550	50.4	172,000			
			575	55.1	188,000	65	67	71				575	55.1	188,000	65	67	71
600	60.0	204,800				600	60.0	204,800									
90 kW	¥(2) EHA360-45 208/230v (99J31) 460v (99J32) 575v (99J33) 84 lbs. (38 kg) (total weight)	<input checked="" type="checkbox"/>	208	67.6	230,700	206	213	223	90 kW	¥(2) EHA360-45 208/230v (99J31) 460v (99J32) 575v (99J33) 84 lbs. (38 kg) (total weight)	<input checked="" type="checkbox"/>	208	67.6	230,700	206	213	223
			220	75.6	258,000							220	75.6	258,000			
			230	82.7	282,200	234	242	251				230	82.7	282,200	234	242	251
			240	90.0	307,100							240	90.0	307,100			
			440	75.6	258,000							440	75.6	258,000			
			460	82.7	282,200	116	120	124				460	82.7	282,200	116	120	124
			480	90.0	307,100							480	90.0	307,100			
			550	75.6	258,000							550	75.6	258,000			
			575	82.7	282,200	93	96	100				575	82.7	282,200	93	96	100
600	90.0	307,100				600	90.0	307,100									

†NOTE - For field installed electric heat, order (1) of each heater shown to make up heater size required.  
 ¥NOTE - For field installed electric heat, order (2) of same heater shown to make up heater size required.  
 †Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).  
 May be used with two stage control.  
 NOTE — Fuse block must be ordered extra. Factory installed heaters will have the fuse block factory installed. Fuse block must be installed in field installed heaters. Also requires LTB2 Terminal Block. See Optional Electric Heat Accessories tables.  
 Electric Heat Control Module required on 45, 60 & 90 kW sizes only (module furnished with factory installed electric heaters). See Optional Electric Heat Accessories tables.

**OPTIONAL ELECTRIC HEAT DATA (LCA MODELS)**  
**(Requires Unit Fuse Block, Terminal Block and 2 Heater Control Module)**

LCA300S SIZE										
kW Size	Electric Heat Model No. (see footnote) & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit, Power Exhaust Fans and Electric Heat Minimum Circuit Ampacity				
						5 hp (3.7kW)	7.5 hp (5.6kW)			
15 kW	†(1) EHA240-7.5 208/230v (99J16) 460v (99J18) 575v (99J20) and †(1) EHA240S-7.5 208/230v (99J17) 460v (99J19) 575v (99J21) 59 lbs. (27 kg) (total weight)	1	208	11.3	38,600	115	124			
			220	12.6	43,000	113	122			
			230	13.8	47,100					
			240	15.0	51,200					
						440	12.6	43,000	55	59
						460	13.8	47,100		
						480	15.0	51,200		
						550	12.6	43,000	45	48
						575	13.8	47,100		
			600	15.0	51,200					
30 kW	†(1) EHA360-15 208/230v (99J22) 460v (99J24) 575v (99J26) and †(1) EHA360S-15 208/230v (99J23) 460v (99J25) 575v (99J27) 59 lbs. (27 kg) (total weight)	1	208	22.5	76,800	120	130			
			220	25.2	86,000	118	127			
			230	27.5	93,900					
			240	30.0	102,400					
						440	25.2	86,000	58	63
						460	27.5	93,900		
						480	30.0	102,400		
						550	25.2	86,000	47	50
						575	27.5	93,900		
			600	30.0	102,400					
45 kW	‡(2) EHA360-22.5 208/230v (99J28) 460v (99J29) 575v (99J30) 76 lbs. (35 kg) (total weight)	2	208	33.8	115,300	165	175			
			220	37.8	129,000	163	172			
			230	41.3	141,000					
			240	45.0	153,600					
						440	37.8	129,000	81	85
						460	41.3	141,000		
						480	45.0	153,600		
						550	37.8	129,000	65	68
						575	41.3	141,000		
			600	45.0	153,600					
60 kW	‡(2) EHA150-30 208/230v (99J07) 460v (99J08) 575v (99J09) 76 lbs. (35 kg) (total weight)	2	208	45.0	153,600	174	184			
			220	50.4	172,000	172	181			
			230	55.1	188,000					
			240	60.0	204,800					
						440	50.4	172,000	85	90
						460	55.1	188,000		
						480	60.0	204,800		
						550	50.4	172,000	68	72
						575	55.1	188,000		
			600	60.0	204,800					
90 kW	‡(2) EHA360-45 208/230v (99J31) 460v (99J32) 575v (99J33) 84 lbs. (38 kg) (total weight)	2	208	67.6	230,700	246	256			
			220	75.6	258,000	244	253			
			230	82.7	282,200					
			240	90.0	307,100					
						440	75.6	258,000	122	126
						460	82.7	282,200		
						480	90.0	307,100		
						550	75.6	258,000	97	101
						575	82.7	282,200		
			600	90.0	307,100					

†NOTE - For field installed electric heat, order (1) of each heater shown to make up heater size required.

‡NOTE - For field installed electric heat, order (2) of same heater shown to make up heater size required.

†Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

1 May be used with two stage control.

NOTE — Fuse block must be ordered extra. Factory installed heaters will have the fuse block factory installed. Fuse block must be installed in field installed heaters. Also requires LTB2 Terminal Block. See Optional Electric Heat Accessories tables.

2 Electric Heat Control Module required on 45, 60 & 90 kW sizes only (module furnished with factory installed electric heaters). See Optional Electric Heat Accessories tables.

# OPTIONAL ELECTRIC HEAT DATA (LHA MODELS)

(Requires Unit Fuse Block, Terminal Block and  Heater Control Module)

LHA180 SIZE								LHA240 SIZE									
kW Size	Electric Heat Model No. (see footnote) & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit Power Exhaust Fans and Electric Heat Minimum Circuit Ampacity			kW Size	Electric Heat Model No. (see footnote) & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit Power Exhaust Fans and Electric Heat Minimum Circuit Ampacity		
						3 hp (2.2kW)	5 hp (3.7kW)	7.5 hp (5.6kW)							3 hp (2.2kW)	5 hp (3.7kW)	7.5 hp (5.6kW)
15 kW	†(1) EHA240-7.5 208/230v (99J16) 460v (99J18) 575v (99J20) and †(1) EHA240S-7.5 208/230v (99J17) 460v (99J19) 575v (99J21) 59 lbs. (27 kg) (total weight)	1	208	11.3	38,600	118	124	131	15 kW	†(1) EHA240-7.5 208/230v (99J16) 460v (99J18) 575v (99J20) and †(1) EHA240S-7.5 208/230v (99J17) 460v (99J19) 575v (99J21) 59 lbs. (27 kg) (total weight)	1	208	11.3	38,600	128	134	141
			220	12.6	43,000							220	12.6	43,000			
			230	13.8	47,100	124	130	137				230	13.8	47,100	132	138	146
			240	15.0	51,200							240	15.0	51,200			
			440	12.6	43,000							440	12.6	43,000			
			460	13.8	47,100	59	61	65				460	13.8	47,100	61	64	67
			480	15.0	51,200							480	15.0	51,200			
			550	12.6	43,000							550	12.6	43,000			
			575	13.8	47,100	47	50	53				575	13.8	47,100	51	54	56
			600	15.0	51,200							600	15.0	51,200			
30 kW	†(1) EHA360-15 208/230v (99J22) 460v (99J24) 575v (99J26) and †(1) EHA360S-15 208/230v (99J23) 460v (99J25) 575v (99J27) 59 lbs. (27 kg) (total weight)	1	208	22.5	76,800	157	163	171	30 kW	†(1) EHA360-15 208/230v (99J22) 460v (99J24) 575v (99J26) and †(1) EHA360S-15 208/230v (99J23) 460v (99J25) 575v (99J27) 59 lbs. (27 kg) (total weight)	1	208	22.5	76,800	167	173	180
			220	25.2	86,000							220	25.2	86,000			
			230	27.5	93,900	169	175	183				230	27.5	93,900	177	183	191
			240	30.0	102,400							240	30.0	102,400			
			440	25.2	86,000							440	25.2	86,000			
			460	27.5	93,900	81	84	87				460	27.5	93,900	83	86	90
			480	30.0	102,400							480	30.0	102,400			
			550	25.2	86,000							550	25.2	86,000			
			575	27.5	93,900	65	68	71				575	27.5	93,900	69	72	74
			600	30.0	102,400							600	30.0	102,400			
45 kW	¥(2) EHA360-22.5 208/230v (99J28) 460v (99J29) 575v (99J30) 76 lbs. (35 kg) (total weight)	†12	208	33.8	115,300	196	202	210	45 kW	¥(2) EHA360-22.5 208/230v (99J28) 460v (99J29) 575v (99J30) 76 lbs. (35 kg) (total weight)	†12	208	33.8	115,300	206	212	219
			220	37.8	129,000							220	37.8	129,000			
			230	41.3	141,000	214	220	228				230	41.3	141,000	222	228	236
			240	45.0	153,600							240	45.0	153,600			
			440	37.8	129,000							440	37.8	129,000			
			460	41.3	141,000	104	107	110				460	41.3	141,000	106	109	112
			480	45.0	153,600							480	45.0	153,600			
			550	37.8	129,000							550	37.8	129,000			
			575	41.3	141,000	84	86	89				575	41.3	141,000	88	90	93
			600	45.0	153,600							600	45.0	153,600			
60 kW	¥(2) EHA150-30 208/230v (99J07) 460v (99J08) 575v (99J09) 76 lbs. (35 kg) (total weight)	†12	208	45.0	153,600	204	210	218	60 kW	¥(2) EHA150-30 208/230v (99J07) 460v (99J08) 575v (99J09) 76 lbs. (35 kg) (total weight)	†12	208	45.0	153,600	214	220	227
			220	50.4	172,000							220	50.4	172,000			
			230	55.1	188,000	223	229	237				230	55.1	188,000	231	237	245
			240	60.0	204,800							240	60.0	204,800			
			440	50.4	172,000							440	50.4	172,000			
			460	55.1	188,000	104	107	110				460	55.1	188,000	111	113	117
			480	60.0	204,800							480	60.0	204,800			
			550	37.8	129,000							550	37.8	129,000			
			575	41.3	141,000	84	86	89				575	41.3	141,000	88	90	93
			600	45.0	153,600							600	45.0	153,600			
90 kW	¥(2) EHA360-45 208/230v (99J31) 460v (99J32) 575v (99J33) 84 lbs. (38 kg) (total weight)	†12	208	67.6	230,700	276	283	290	90 kW	¥(2) EHA360-45 208/230v (99J31) 460v (99J32) 575v (99J33) 84 lbs. (38 kg) (total weight)	†12	208	67.6	230,700	276	283	290
			220	75.6	258,000							220	75.6	258,000			
			230	82.7	282,200	304	310	317				230	82.7	282,200	304	310	317
			240	90.0	307,100							240	90.0	307,100			
			440	50.4	172,000							440	50.4	172,000			
			460	55.1	188,000	108	111	115				460	55.1	188,000	111	113	117
			480	60.0	204,800							480	60.0	204,800			
			550	37.8	129,000							550	37.8	129,000			
			575	41.3	141,000	87	89	92				575	41.3	141,000	91	93	96
			600	45.0	153,600							600	45.0	153,600			

†NOTE - For field installed electric heat, order (1) of each heater shown to make up heater size required.

¥NOTE - For field installed electric heat, order (2) of same heater shown to make up heater size required.

†Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

†12 May be used with two stage control.

NOTE — Fuse block must be ordered extra. Factory installed heaters will have the fuse block factory installed. Fuse block must be installed in field installed heaters. Also requires LT2 Terminal Block. See Optional Electric Heat Accessories tables.

†12 Electric Heat Control Module required on 45, 60 & 90 kW sizes only (module furnished with factory installed electric heaters). See Optional Electric Heat Accessories tables.











# COOLING AND HEATING RATINGS - LHA MODELS

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

## LHA180H - HIGH EFFICIENCY - COOLING CAPACITY - ONE COMPRESSOR OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb						Dry Bulb		
cfm	L/s	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	4800	2265	91.3	26.8	5.59	.64	.78	.91	87.9	25.8	6.17	.65	.79	.92	84.5	24.8	6.76	.66	.81	.94	80.8	23.7	7.37	.67	.83	.96
	6000	2830	95.4	28.0	5.62	.69	.84	.98	91.8	26.9	6.22	.70	.86	.99	88.1	25.8	6.83	.71	.88	1.00	84.3	24.7	7.48	.73	.90	1.00
	7200	3400	98.5	28.9	5.65	.73	.90	1.00	94.9	27.8	6.26	.75	.92	1.00	91.1	26.7	6.89	.77	.94	1.00	87.2	25.6	7.55	.79	.97	1.00
67°F (19°C)	4800	2265	97.9	28.7	5.64	.51	.62	.73	94.4	27.7	6.25	.52	.63	.75	90.6	26.6	6.88	.52	.64	.77	86.6	25.4	7.54	.53	.65	.78
	6000	2830	101.8	29.8	5.67	.53	.66	.80	97.9	28.7	6.29	.54	.67	.82	93.9	27.5	6.94	.55	.68	.84	89.7	26.3	7.61	.55	.70	.86
	7200	3400	104.5	30.6	5.68	.56	.70	.87	100.5	29.5	6.32	.56	.72	.89	96.3	28.2	6.98	.57	.74	.91	91.9	26.9	7.68	.58	.76	.93
71°F (22°C)	4800	2265	105.0	30.8	5.69	.39	.49	.59	101.2	29.7	6.33	.40	.50	.60	97.2	28.5	7.00	.40	.50	.61	93.0	27.3	7.70	.40	.51	.62
	6000	2830	109.0	31.9	5.71	.40	.52	.63	104.9	30.7	6.37	.40	.52	.64	100.6	29.5	7.06	.40	.53	.66	96.0	28.1	7.79	.41	.54	.67
	7200	3400	111.7	32.7	5.73	.41	.54	.68	107.4	31.5	6.40	.41	.55	.69	102.9	30.2	7.10	.41	.56	.71	98.1	28.8	7.84	.42	.57	.73

## LHA180H - HIGH EFFICIENCY - COOLING CAPACITY - ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb						Dry Bulb		
cfm	L/s	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW	75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	4800	2265	175.2	51.3	13.25	.69	.82	.95	167.6	49.1	14.45	.70	.84	.97	159.7	46.8	15.73	.71	.86	.99	151.5	44.4	17.07	.73	.88	1.00
	6000	2830	182.7	53.5	13.39	.73	.89	1.00	174.8	51.2	14.66	.75	.91	1.00	166.6	48.8	15.95	.77	.93	1.00	158.0	46.3	17.36	.79	.96	1.00
	7200	3400	188.8	55.3	13.50	.78	.95	1.00	180.8	53.0	14.80	.80	.97	1.00	172.5	50.6	16.17	.82	.99	1.00	164.2	48.1	17.64	.85	1.00	1.00
67°F (19°C)	4800	2265	187.9	55.1	13.48	.54	.66	.78	179.6	52.6	14.77	.55	.67	.80	171.0	50.1	16.12	.55	.68	.82	161.9	47.4	17.55	.56	.70	.85
	6000	2830	194.7	57.1	13.60	.57	.71	.85	186.0	54.5	14.92	.57	.72	.87	176.8	51.8	16.33	.58	.74	.90	167.3	49.0	17.79	.60	.76	.93
	7200	3400	199.6	58.5	13.68	.59	.76	.92	190.5	55.8	15.05	.60	.78	.94	181.1	53.1	16.47	.62	.80	.96	171.2	50.2	17.97	.63	.82	.99
71°F (22°C)	4800	2265	201.5	59.1	13.72	.41	.52	.63	192.8	56.5	15.09	.41	.53	.64	183.5	53.8	16.56	.41	.54	.66	173.7	50.9	18.09	.42	.55	.68
	6000	2830	208.5	61.1	13.84	.42	.55	.68	199.0	58.3	15.26	.42	.56	.70	189.2	55.4	16.75	.42	.57	.71	179.0	52.5	18.32	.43	.58	.74
	7200	3400	213.3	62.5	13.92	.43	.58	.73	203.4	59.6	15.36	.43	.59	.75	193.2	56.6	16.87	.44	.60	.77	182.4	53.5	18.50	.44	.62	.80

## LHA180H - HIGH EFFICIENCY - HEATING CAPACITY

Indoor Coil Air Volume 70°F db (21°C db)	Air Temperature Entering Outdoor Coil																			
	65°F (18°C)				45°F (7°C)				25°F (-4°C)				5°F (-15°C)				-15°F (-28°C)			
	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input		
																			kW	Btuh
L/s	cfm	kW	Btuh	kW	Btuh	kW	Btuh	kW	Btuh	kW	Btuh	kW	Btuh	kW	Btuh	kW	Btuh			
2265	4800	68.9	235,000	15,800	52.4	178,800	13,435	35.9	122,400	11,045	23.9	81,500	8865	11.9	40,600	6635				
2830	6000	69.5	237,000	15,900	53.0	180,800	13,535	36.5	124,400	11,145	24.5	83,500	8965	12.5	42,600	6735				
3400	7200	70.0	239,000	16,000	53.6	182,800	13,635	37.0	126,400	11,245	25.1	85,500	9065	13.1	44,600	6835				

NOTE — Heating capacities include the effect of defrost cycles in the temperature range where they occur.

## LHA180H - HEATING PERFORMANCE

at 6000 cfm (2830 L/s) Indoor Coil Air Volume

*Outdoor Temperature		Compressor Motor Watts Input	Total Output	
°F	°C		Btuh	kW
65	18	15,900	237,000	69.5
60	16	15,315	223,400	65.5
55	13	14,735	209,800	61.5
50	10	14,150	196,200	57.5
47	8	13,800	188,000	55.1
45	7	13,535	180,800	53.0
40	4	12,865	162,900	47.7
35	2	12,200	145,000	42.5
30	-1	11,670	134,700	39.5
25	-4	11,145	124,400	36.5
20	-7	10,615	114,200	33.5
17	-8	10,300	108,000	31.7
15	-9	10,075	103,900	30.4
10	-12	9,520	93,700	27.5
5	-15	8,965	83,500	24.5
0	-18	8,405	73,300	21.5
-5	-21	7,850	63,000	18.5
-10	-23	7,295	52,800	15.5
-15	-26	6,735	42,600	12.5
-20	-29	6,180	32,400	9.5

\*Outdoor temperature at 70% relative humidity. Indoor temperature at 70°F(21°C).

# COOLING AND HEATING RATINGS - LHA MODELS

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

## LHA240H - HIGH EFFICIENCY - COOLING CAPACITY - ONE COMPRESSOR OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)		
			kBTuh	kW		Dry Bulb			kBTuh	kW		Dry Bulb			kBTuh	kW		Dry Bulb			kBTuh	kW		Dry Bulb		
					75°F 24°C	80°F 27°C	85°F 29°C	75°F 24°C			80°F 27°C	85°F 29°C	75°F 24°C	80°F 27°C			85°F 29°C	75°F 24°C	80°F 27°C	85°F 29°C						
63°F (17°C)	6000	2830	116.9	34.3	6.60	.64	.78	.93	112.5	33.0	7.28	.65	.80	.95	107.9	31.6	7.98	.66	.82	.97	103.1	30.2	8.72	.67	.84	.99
	7500	3540	122.0	35.8	6.65	.69	.86	1.00	117.4	34.4	7.36	.70	.88	1.00	112.6	33.0	8.09	.72	.91	1.00	107.6	31.5	8.85	.74	.93	1.00
	9000	4250	126.1	37.0	6.69	.74	.94	1.00	121.4	35.6	7.41	.76	.96	1.00	116.5	34.1	8.17	.78	.98	1.00	111.6	32.7	8.96	.81	1.00	1.00
67°F (19°C)	6000	2830	125.0	36.6	6.68	.51	.62	.74	120.3	35.3	7.40	.51	.62	.76	115.3	33.8	8.14	.52	.64	.78	110.1	32.3	8.93	.52	.65	.80
	7500	3540	129.7	38.0	6.72	.53	.66	.82	124.6	36.5	7.46	.54	.67	.84	119.3	35.0	8.23	.55	.69	.87	113.8	33.4	9.03	.55	.71	.89
	9000	4250	133.0	39.0	6.75	.56	.72	.90	127.8	37.5	7.51	.57	.73	.92	122.3	35.8	8.29	.58	.76	.95	116.5	34.1	9.12	.59	.78	.97
71°F (22°C)	6000	2830	134.0	39.3	6.76	.39	.49	.59	128.9	37.8	7.52	.39	.49	.60	123.5	36.2	8.32	.39	.50	.61	117.9	34.6	9.14	.39	.51	.62
	7500	3540	138.6	40.6	6.80	.39	.51	.64	133.2	39.0	7.58	.39	.52	.65	127.4	37.3	8.40	.40	.53	.66	121.5	35.6	9.25	.40	.54	.68
	9000	4250	141.7	41.5	6.83	.40	.54	.69	136.1	39.9	7.63	.41	.55	.71	130.1	38.1	8.46	.41	.56	.73	123.9	36.3	9.33	.41	.58	.75

## LHA240H - HIGH EFFICIENCY - COOLING CAPACITY - ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T)		
			kBTuh	kW		Dry Bulb			kBTuh	kW		Dry Bulb			kBTuh	kW		Dry Bulb			kBTuh	kW		Dry Bulb		
					75°F 24°C	80°F 27°C	85°F 29°C	75°F 24°C			80°F 27°C	85°F 29°C	75°F 24°C	80°F 27°C			85°F 29°C	75°F 24°C	80°F 27°C	85°F 29°C						
63°F (17°C)	6000	2830	223.7	65.6	15.80	.69	.84	.97	213.7	62.6	17.27	.71	.86	.99	203.5	59.6	18.78	.72	.88	1.00	192.8	56.5	20.38	.74	.91	1.00
	7500	3540	233.4	68.4	16.02	.75	.92	1.00	223.1	65.4	17.52	.77	.94	1.00	212.3	62.2	19.12	.79	.97	1.00	201.3	59.0	20.83	.81	.99	1.00
	9000	4250	241.5	70.8	16.18	.81	.98	1.00	231.3	67.8	17.75	.83	1.00	1.00	221.2	64.8	19.42	.85	1.00	1.00	210.2	61.6	21.25	.88	1.00	1.00
67°F (19°C)	6000	2830	239.0	70.0	16.12	.54	.67	.80	228.2	66.9	17.68	.55	.68	.82	216.8	63.5	19.29	.56	.70	.84	205.0	60.1	20.99	.57	.71	.87
	7500	3540	247.4	72.5	16.30	.57	.72	.88	235.9	69.1	17.88	.58	.74	.91	223.9	65.6	19.56	.60	.76	.93	211.4	62.0	21.31	.61	.79	.96
	9000	4250	253.5	74.3	16.42	.60	.78	.95	241.5	70.8	18.06	.62	.80	.98	229.1	67.1	19.76	.63	.83	1.00	216.0	63.3	21.56	.65	.86	1.00
71°F (22°C)	6000	2830	256.1	75.1	16.47	.41	.53	.64	244.4	71.6	18.10	.41	.53	.66	232.2	68.1	19.86	.41	.54	.67	219.3	64.3	21.70	.42	.55	.69
	7500	3540	264.1	77.4	16.63	.42	.56	.70	251.9	73.8	18.32	.42	.57	.71	238.8	70.0	20.11	.43	.58	.73	225.1	66.0	21.99	.43	.60	.76
	9000	4250	269.7	79.0	16.75	.43	.59	.75	256.9	75.3	18.47	.44	.61	.78	243.2	71.3	20.28	.44	.62	.80	229.1	67.1	22.19	.45	.64	.84

## LHA240H - HIGH EFFICIENCY - HEATING CAPACITY

Indoor Coil Air Volume 70°F db (21°C db)	Air Temperature Entering Outdoor Coil																			
	65°F (18°C)				45°F (7°C)				25°F (-4°C)				5°F (-15°C)				-15°F (-28°C)			
	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input	Total Heating Capacity		Comp. Motor Watts Input		
	kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh			
2830	6000	81.5	278,200	18815	60.9	207,800	15465	39.8	135,900	12065	23.9	81,400	9265	12.4	42,200	7055				
3540	7500	82.4	281,200	18995	61.8	210,800	15645	40.7	138,900	12245	24.7	84,400	9445	13.2	45,200	7235				
4250	9000	83.1	283,700	19125	62.5	213,300	15775	41.4	141,400	12375	25.5	86,900	9675	14.0	47,700	7365				

NOTE — Heating capacities include the effect of defrost cycles in the temperature range where they occur.

## LHA240H - HEATING PERFORMANCE at 7500 cfm (3540 L/s) Indoor Coil Air Volume

*Outdoor Temperature		Compressor Motor Watts Input	Total Output	
°F	°C		Btuh	kW
65	18	18995	281,200	82.4
60	16	18180	264,200	77.4
55	13	17360	247,200	72.4
50	10	16540	230,200	67.5
47	8	16050	220,000	64.5
45	7	15645	210,800	61.8
40	4	14640	187,900	55.1
35	2	13630	165,000	48.4
30	-1	12940	151,900	44.5
25	-4	12245	138,900	40.7
20	-7	11555	125,800	36.9
17	-8	11140	118,000	34.6
15	-9	10815	111,200	32.6
10	-12	9995	94,200	27.6
5	-15	9445	84,400	24.7
0	-18	8890	74,600	21.9
-5	-21	8340	64,800	19.0
-10	-23	7785	55,000	16.1
-15	-26	7235	45,200	13.2
-20	-29	6685	35,400	10.4

\*Outdoor temperature at 70% relative humidity. Indoor temperature at 70°F(21°C).



# BELT BLOWER DATA SUPPLEMENT (L SERIES 156H - 300S) - SEPTEMBER 1999

## FACTORY INSTALLED BELT DRIVE KIT SPECIFICATIONS

Blower Motor Outputs				RPM Range								
Nominal hp	Maximum hp	Nominal kW	Maximum kW	Drive A	Drive 1	Drive 2	Drive 3	Drive 4	Drive 5	Drive 6	Drive 7	Drive 8
2	2.3	1.5	1.7	535-725	----	----	----	----	----	----	----	----
3 Standard efficiency	3.45	2.2	2.6	535-725	685-865	----	----	----	----	----	----	----
3 High efficiency	3.45	2.2	2.6	----	----	685-865	----	----	----	----	----	----
5	5.75	3.7	4.3	----	----	685-865	850-1045	945-1185	----	----	----	----
7.5	8.63	5.6	6.4	----	----	----	----	----	945-1185	1045-1285	850-1045	----
10	11.5	7.5	8.6	----	----	----	----	----	----	1045-1285	----	1135-1365

\*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 by Lennox are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

## FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE

Air Volume		Total Resistance - inches water gauge (Pa)							
		Wet Indoor Coil		Gas Heat Exchanger (LGA Models)		Electric Heat (LCA/LHA Models)	Economizer	LARMFH18/24 Horizontal Roof Mounting Frame (156H/180/210/240 models)	LARMFH30/36 Horizontal Roof Mounting Frame (for 300S Only)
cfm	L/s	156H 180S/180H 210S/240S (3 row)	210H 240H 300S (4 row)	Standard Heat	High Heat				
4000	1890	.02 (5)	.04 (10)	.01 (2)	.02 (5)	----	----	.06 (15)	----
4250	2005	.02 (5)	.04 (10)	.01 (2)	.03 (7)	----	----	.07 (17)	----
4500	2125	.02 (5)	.05 (12)	.01 (2)	.04 (10)	----	----	.07 (17)	.02 (5)
4750	2240	.02 (5)	.05 (12)	.02 (5)	.05 (12)	----	----	.08 (20)	.03 (7)
5000	2360	.02 (5)	.05 (12)	.02 (5)	.06 (15)	----	----	.08 (20)	.03 (7)
5250	2475	.02 (5)	.06 (15)	.02 (5)	.07 (17)	----	----	.09 (22)	.04 (10)
5500	2595	.02 (5)	.07 (17)	.02 (5)	.08 (20)	----	----	.10 (25)	.04 (10)
5750	2715	.07 (7)	.07 (17)	.02 (5)	.09 (22)	----	----	.11 (27)	.05 (12)
6000	2830	.03 (7)	.08 (20)	.02 (5)	.11 (27)	.01 (2)	----	.11 (27)	.06 (15)
6250	2950	.03 (7)	.08 (20)	.02 (5)	.12 (30)	.01 (2)	.01 (2)	.12 (30)	.07 (17)
6500	3065	.03 (7)	.09 (22)	.03 (7)	.14 (35)	.01 (2)	.02 (5)	.13 (32)	.08 (20)
6750	3185	.04 (10)	.10 (25)	.03 (7)	.15 (37)	.01 (2)	.03 (7)	.14 (35)	.08 (20)
7000	3305	.04 (10)	.10 (25)	.04 (10)	.16 (40)	.01 (2)	.04 (10)	.15 (37)	.09 (22)
7250	3420	.04 (10)	.11 (27)	.04 (10)	.18 (45)	.01 (2)	.05 (12)	.16 (40)	.10 (25)
7500	3540	.05 (12)	.12 (30)	.04 (10)	.19 (47)	.01 (2)	.06 (15)	.17 (42)	.11 (27)
7750	3655	.05 (12)	.12 (30)	.04 (10)	.21 (52)	.01 (2)	.07 (17)	.18 (45)	.12 (30)
8000	3775	.05 (12)	.13 (32)	.05 (12)	.23 (57)	.02 (5)	.09 (22)	.19 (47)	.13 (32)
8250	3895	.06 (15)	.14 (35)	.06 (15)	.26 (65)	.02 (5)	.10 (25)	.20 (50)	.14 (35)
8500	4010	.06 (15)	.15 (37)	.07 (17)	.27 (67)	.02 (5)	.11 (27)	.21 (52)	.15 (37)
8750	4130	.06 (15)	.16 (40)	.07 (17)	.29 (72)	.03 (7)	.12 (30)	.22 (55)	.16 (40)
9000	4245	.07 (17)	.16 (40)	.08 (20)	.31 (77)	.04 (10)	.14 (35)	.24 (60)	.17 (42)
9250	4365	.07 (17)	.17 (42)	.09 (22)	.33 (82)	.04 (10)	.16 (40)	.25 (62)	.18 (45)
9500	4485	.08 (20)	.18 (45)	.10 (25)	.34 (85)	.05 (12)	.16 (40)	.26 (65)	.19 (47)
9750	4600	.08 (20)	.19 (47)	.11 (27)	.37 (92)	.06 (15)	.18 (45)	.27 (67)	.20 (50)
10,000	4720	.08 (20)	.20 (50)	.12 (30)	.39 (97)	.06 (15)	.19 (47)	.29 (72)	.21 (52)
10,250	4840	.09 (22)	.21 (52)	.13 (32)	.41 (102)	.07 (17)	.21 (52)	.30 (75)	.23 (57)
10,500	4955	.09 (22)	.22 (55)	.14 (35)	.44 (109)	.09 (22)	.22 (55)	.31 (77)	.24 (60)
10,750	5075	.10 (25)	.23 (57)	.16 (40)	.46 (114)	.09 (22)	.24 (60)	.33 (82)	.26 (65)
11,000	5190	.11 (27)	.24 (60)	.18 (45)	.49 (122)	.11 (27)	.25 (62)	.34 (85)	.27 (67)



# BLOWER DATA

## CEILING DIFFUSER AIR RESISTANCE

Unit Size	Air Volume		Total Resistance - inches water gauge (Pa)			
			RTD11 Step-Down Diffuser			FD11 Flush Diffuser
	cfm	L/s	2 Ends Open	1 Side 2 Ends Open	All Ends & Sides Open	
156H & 180 Models	5000	2360	.51 (127)	.44 (109)	.39 (97)	.27 (67)
	5200	2455	.56 (139)	.48 (119)	.42 (1040)	.30 (75)
	5400	2550	.61 (152)	.52 (129)	.45 (112)	.33 (82)
	5600	2645	.66 (164)	.56 (139)	.48 (119)	.36 (90)
	5800	2735	.71 (177)	.59 (147)	.51 (127)	.39 (97)
	6000	2830	.76 (189)	.63 (157)	.55 (137)	.42 (104)
	6200	2925	.80 (199)	.68 (169)	.59 (147)	.46 (114)
	6400	3020	.86 (214)	.72 (179)	.63 (157)	.50 (124)
	6600	3115	.92 (229)	.77 (191)	.67 (167)	.54 (134)
	6800	3210	.99 (246)	.83 (206)	.72 (174)	.58 (144)
	7000	3305	1.03 (256)	.87 (216)	.76 (189)	.62 (154)
	7200	3400	1.09 (271)	.92 (229)	.80 (199)	.66 (164)
	7400	3490	1.15 (286)	.97 (241)	.84 (209)	.70 (174)
	7600	3585	1.20 (301)	1.02 (254)	.88 (219)	.74 (184)
210, 240 & 300S Models	6000	2830	.36 (90)	.31 (77)	.27 (67)	.29 (72)
	6500	3065	.42 (104)	.36 (90)	.31 (77)	.34 (85)
	7000	3305	.49 (122)	.41 (102)	.36 (90)	.40 (99)
	7500	3540	.51 (127)	.46 (114)	.41 (102)	.45 (112)
	8000	3775	.59 (147)	.49 (122)	.43 (107)	.50 (124)
	8500	4010	.69 (172)	.58 (144)	.50 (124)	.57 (142)
	9000	4245	.79 (196)	.67 (167)	.58 (144)	.66 (164)
	9500	4485	.89 (221)	.75 (186)	.65 (162)	.74 (184)
	10,000	4720	1.00 (249)	.84 (209)	.73 (182)	.81 (201)
	10,500	4955	1.10 (273)	.92 (229)	.80 (199)	.89 (221)
11,000	5190	1.21 (301)	1.01 (251)	.88 (219)	.96 (239)	

POWER EXHAUST FANS PERFORMANCE			
Return Air System Static Pressure		Air Volume Exhausted	
in. w.g.	Pa	cfm	L/s
0	0	8630	4070
0.05	12	8210	3875
0.10	25	7725	3645
0.15	37	7110	3355
0.20	50	6470	3055
0.25	62	5790	2730
0.30	75	5060	2390
0.35	87	4300	2030
0.40	100	3510	1655
0.45	112	2690	1270
0.50	125	1840	870

CEILING DIFFUSER AIR THROW DATA						
Model No.	Air Volume		*Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	cfm	L/s	ft.	m	ft.	m
156H Models 180 Models	5250	2475	42-54	13-16	44-49	13-15
	6000	2830	45 - 55	14 - 17	48 - 55	15 - 17
	6750	3190	47 - 56	14 - 17	50 - 58	15 - 18
	7500	3540	49 - 58	15 - 18	55 - 66	17 - 20
210 Models 240 Models 300S Models	8000	3775	39 - 44	12 - 13	53 - 62	16 - 19
	9000	4245	47 - 56	14 - 17	55 - 64	17 - 20
	10,000	4720	49 - 58	15 - 18	57 - 67	17 - 20
	11,000	5190	54 - 65	17 - 21	59 - 70	18 - 22

\*Throw is the horizontal or vertical distance an airstream travels on leaving the outlet or diffuser before the maximum velocity is reduced to 50 ft. (15 m) per minute. Four sides open.

## GUIDE SPECIFICATIONS — ALL MODELS

Prepared for the guidance of architects, consulting engineers and mechanical contractors.

**General** — Furnish and install a single package air to air DX mechanical cooling system, cooling and gas fired heating system or heat pump system, complete with automatic controls. The single package unit shall be a standard product of a firm regularly engaged in the manufacture of heating-cooling equipment. The manufacturer shall have parts and service available throughout the U.S. and Canada.

The installed weight shall not be more than \_\_\_\_\_ lbs. (kg). Entire unit shall have a width of not more than \_\_\_\_\_ inches (mm), a depth of not more than \_\_\_\_\_ inches (mm) and an overall height of not more than \_\_\_\_\_ inches (mm). The equipment shall be shipped completely factory assembled, pre-charged, piped and wired internally ready for field connections. In addition, manufacturer shall test operate system at the factory before shipment.

**Air Distribution** — Equipment shall be capable of bottom (down-flow) or side (horizontal) handling of conditioned air. Horizontal air shall require optional horizontal conversion kit. All air distribution ducts shall be fiberglass or \_\_\_\_\_ ga. galvanized steel insulated with \_\_\_\_\_ inch (mm) thick lb./ft.<sup>3</sup> (kg/m<sup>3</sup>) density fiberglass or equivalent.

**Approvals** — All electrical components shall have E.T.L. and C.G.A. Listing. All wiring shall be in compliance with NEC and CEC.

**Equipment Warranty** — Heat Exchangers shall have a limited warranty for a full ten years (LGA Models). Compressors have a limited warranty for a full five years. All other components have a limited warranty for one year. Refer to the Lennox Equipment Limited Warranty certificate included with the unit for details.

**Cooling System** — The total certified cooling capacity shall not be less than \_\_\_\_\_ Btuh (kW) with an indoor coil air volume of \_\_\_\_\_ cfm (L/s), an entering wet bulb air temperature of \_\_\_\_\_ °F (°C), an entering dry bulb air temperature of \_\_\_\_\_ °F (°C) and an outdoor coil entering temperature of \_\_\_\_\_ °F (°C). The compressor power input shall not exceed \_\_\_\_\_ kW at these conditions.

The coils shall be non-ferrous construction with aluminum fins mechanically bonded to durable copper tubes. Coils shall be pressure leak tested. Coil face area shall be not less than \_\_\_\_\_ sq. ft. (m<sup>2</sup>) (indoor coil) and \_\_\_\_\_ sq. ft. (m<sup>2</sup>) (outdoor coil). Outdoor coils shall be slab coil construction (LCA/LGA models) and formed coil construction (LHA models).

Compressors shall be resiliently mounted, have overload protection and crankcase heaters. The refrigeration system shall have discharge suction and liquid line gauge ports, high pressure switches, low pressure switches, driers, freestatz, defrost control (LHA), check and expansion valves (LHA), reversing valves (LHA), accumulators (LHA) and full refrigerant charge. Optional service valves shall be available (LCA/LGA only). All models shall have low ambient operation down to 0°F (-17.7°C). All models shall be rated in accordance with ARI Standards 340/360-93.

**Heating System (LGA Models)** — The heating capacity output shall be \_\_\_\_\_ Btuh (kW) with a gas input of \_\_\_\_\_ Btuh (kW).

Tubular heat exchanger and inshot type gas burners shall be constructed of aluminized steel. Controls shall consist of direct spark ignition, electronic flame sensor controls, flame rollout switch, limit controls and automatic redundant dual gas valve with staging control and combustion air proving switch on induced draft blower. Unit shall be available for use with LPG/propane as an option. Heat exchanger shall be removable for servicing. Complete service access shall be provided for controls and wiring. Shall be E.T.L./C.G.A. design certified for outdoor installation. Optional stainless steel heat exchanger shall be available for applications where mixed air temperature is between 30 and 45°F (-1 and 7°C).

**Heating System (LHA Models)** — The total certified heating capacity shall not be less than \_\_\_\_\_ Btuh (kW) with an indoor coil air volume of \_\_\_\_\_ cfm (L/s), an entering dry bulb temperature of \_\_\_\_\_ °F (°C) and an outdoor coil entering air temperature of \_\_\_\_\_ °F (°C). The total compressor power input shall not exceed \_\_\_\_\_ kW at the above conditions.

**Cabinet** — Shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal. Cabinet panels where conditioned air is handled shall be fully insulated to prevent sweating and minimize sound. Openings shall be provided for power connection entry. Indoor coil condensate drain extended outside cabinet shall be provided. Lifting holes shall be provided for rigging. Bottom power and gas (LGA) entry shall be furnished.

**Service Access** — Cabinet panels shall be hinged with tool-less access for compressor/heating/controls, blower and air filter/economizer compartments.

**Supply Air Blower** — Centrifugal supply air blower shall have ball bearings and adjustable belt drive. Blower assembly shall slide out of unit for servicing. Motor mount base shall permit ease of motor changeover and belt tension adjustment. Blower wheel shall be statically and dynamically balanced. Blower shall be capable of delivering \_\_\_\_\_ cfm (L/s) at an external static pressure of \_\_\_\_\_ inches water gauge (Pa) requiring \_\_\_\_\_ bhp (W) and \_\_\_\_\_ rpm.

**Integrated Modular Control (IMC)** — Solid state control board shall be provided to operate unit. Built-in functions shall include: blower on/off delay, built-in control parameter defaults, service relay output, dirty filter switch input, dehumidistat input, economizer control, electric heat staging, ETM compatible, unit diagnosis, diagnostics code storage, gas valve delay between stages, indoor air quality input, low ambient controls, minimum run time, night setback mode, smoke alarm mode, low pressure control, thermostat bounce delay, three digit display, °F or °C display, 2 stage heat/3 stage cool thermostat compatible and warm up mode.

**Outdoor Coil Fans** — Direct drive propeller type outdoor coil fans shall discharge vertically and be direct driven by a \_\_\_\_\_ hp (W) motor. Fan motor shall have ball bearings and be permanently lubricated and inherently protected. Fans shall have a safety guard.

**Air Filters** — Disposable 2 inch (51 mm) thick pleated filters furnished shall have not less than \_\_\_\_\_ sq. ft. (m<sup>2</sup>) of free area.

## OPTIONAL ACCESSORIES

**Additive Electric Heaters (LCA/LHA Models)** — The certified total heating capacity output shall be \_\_\_\_\_ Btuh with \_\_\_\_\_ kW input at \_\_\_\_\_ volts power supply.

Electric heaters shall be available for factory or field installation. Heating elements shall be nichrome bare wire exposed directly to the air stream. Time delays shall bring the elements on and off in sequence with a time delay between each element. Limit controls shall provide overload and short circuit protection.

**Blower Proving Switch** — Furnish and factory install air pressure switch to monitor blower operation.

**Ceiling Diffusers** — Furnish and install a (flush or stepdown) optional combination ceiling supply and return air diffuser. It shall be capable of not less than \_\_\_\_\_ ft. (m) radius of effective throw. Supply and return transitions shall be available, for field installation in the roof mounting frame, to provide duct connection to the diffuser.

**Coil Guards** — Furnish and install galvanized steel coil guards.

**Control Systems** — Shall provide a selection of control systems to automatically operate the mechanical equipment through the heating or cooling and ventilating cycles as required.

**Corrosion Protection** — Furnish and factory apply phenolic epoxy coating to either or both of the following: Outdoor coils with painted outdoor base section. Indoor coil with painted indoor base section and painted blower housings.

**Dehumidistat** — Furnish and install dehumidistat, relays information to Integrated Modular Control.

**Dirty Filter Switch** — Furnish and install pressure switch that indicates dirty filter, relays information to Integrated Modular Control.

**Disconnect** — Furnish and factory install unit disconnect switch.

**Economizer Section** — Furnish and install economizer complete with recirculated air dampers, outside air dampers and controls. Low leakage dampers shall ride in nylon bearings. The economizer section shall provide for the introduction of outdoor air for minimum ventilation and free cooling. Integrated economizer control shall allow compressors to cycle for additional cooling, as needed. Damper actuator shall be opposing gear driven, 24 volt, fully modulating design. Plug-in control board (on unit IMC board) shall consist of adjustable minimum positioner, enthalpy setpoint and DIP switches for setting type of control logic used. Economizer control options shall consist of sensible temperature, global, outdoor enthalpy and differential enthalpy (outdoor and return air). Optional outdoor air hood (required) with filters shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal. Economizer shall be available for factory or field installation.

**Gravity Exhaust Dampers** — Pressure operated dampers shall be available for factory or field installation. Extruded aluminum dampers shall prevent blow-back and outdoor air infiltration during off cycle. Optional hood shall be available.

**Grille Guards** — Furnish and install heavy gauge guards, shall protect the space between the outdoor coils and the main unit.

**Hail Guards** — Furnish and install heavy gauge, painted steel hail guards.

**High Efficiency Blower Motor** — Furnish and factory install high efficiency blower motor.

**Horizontal Conversion Kit** — Shall be available for all models to provide duct covers to block off unit down-flow supply air opening, horizontal return air opening panel (on unit) is moved to block off down-flow return air opening for horizontal applications.

**Horizontal Gravity Exhaust Dampers** — Pressure operated dampers shall be available for field installation in the return air duct. Extruded aluminum dampers shall prevent blow-back and outdoor air infiltration during off cycle.

**Indoor Air Quality Sensor** — Furnish and field install sensor to monitor CO<sub>2</sub> levels, relays information to Integrated Module Control which adjusts economizer dampers proportionately to the pollutant level.

**Outdoor Air Damper Section** — Optional outdoor dampers shall be available to provide outdoor air requirements of up to 25%. Models shall be available for manual or automatic operation. Dampers shall be opposing gear driven design. Motorized damper section shall install internal to the unit. Optional outdoor air hood (required) with filters shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal. Dampers shall be available for factory or field installation.

**Power Exhaust Fan** — Shall be available for all models with economizer (down-flow applications only). Direct drive propeller type fan shall exhaust air through optional gravity exhaust damper (required). Motor shall be overload protected. Fan shall be factory or field installed between economizer and gravity exhaust dampers.

**Roof Mounting Frame** — Furnish and install a steel roof mounting frame for bottom discharge and return air duct connection. It shall mate to the bottom perimeter of the equipment. When flashed into the roof it shall make a unit mounting curb and provide weatherproof duct connection and entry into the conditioned area. Height of frame shall be \_\_\_\_\_ inches (mm). Flashing shall be the responsibility of the roofing contractor. Frame shall be approved by U.S. National Roofing Contractors Association.

**Service Outlets** — Furnish and factory install dual 115 volt, 15 amp GFCI type service outlets. Wiring shall be field provided.

**Service Valves (LCA/LGA)** — Furnish and factory install fully serviceable brass service valves in discharge and liquid lines. Shall allow refrigerant pump down to high side of system for servicing of low side.

**Smoke Detectors** — Furnish and factory install photoelectric type smoke detector in either or both return air section and supply air section.

**Terminal Block (LCA/LHA Models)** — Shall be required for units without disconnect switch but with single point power supply and electric heat.

**Unit Fuse Block (LCA/LHA Models)** — Shall be required for units with single point power supply and electric heat.

# DIMENSIONS - INCHES (MM) - LCA MODELS

Shown With Optional Economizer Dampers, Power Exhaust Fans, Convenience Outlet, Unit Disconnect

## CORNER WEIGHTS - lbs. (kg)

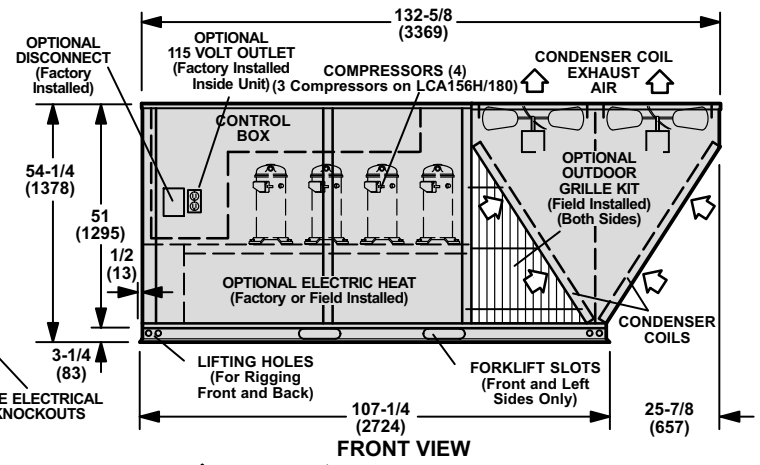
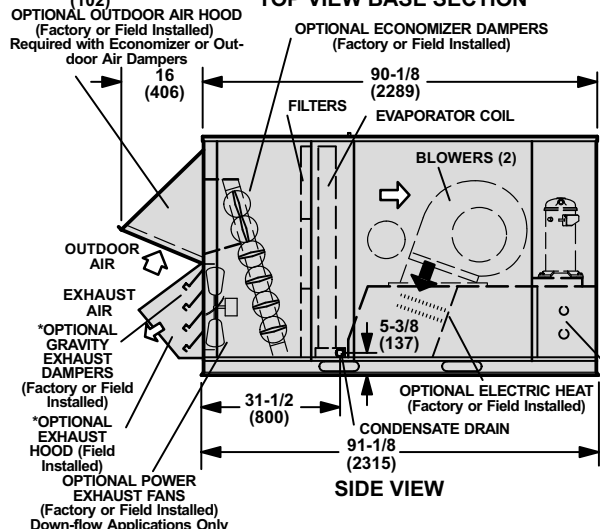
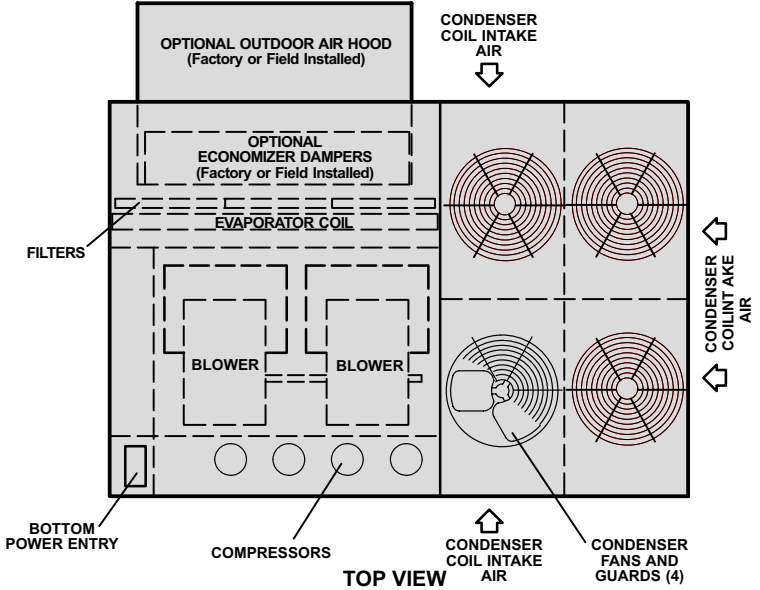
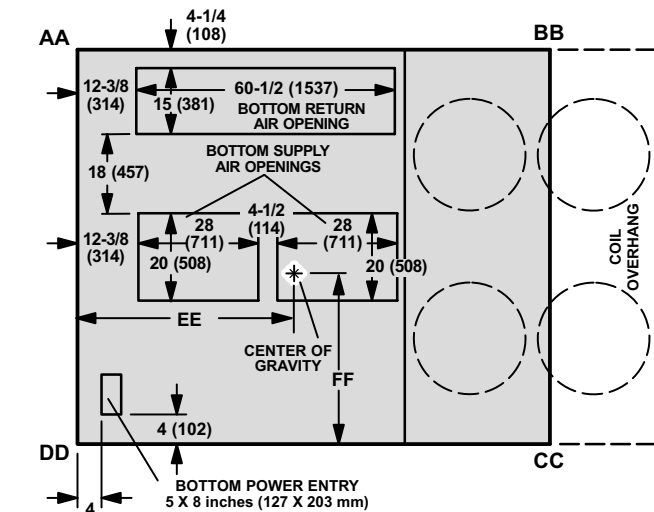
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LCA156H/180 Base Unit	450	204	460	209	620	281	600	272
LCA156H/180 Max. Unit	570	259	580	263	680	308	660	299
LCA210 Base Unit	470	213	460	209	640	290	650	295
LCA210 Max. Unit	600	272	590	268	700	318	730	331
LCA240/300S Base Unit	480	218	510	231	700	318	660	299
LCA240/300S Max. Unit	600	272	600	272	730	331	740	336

Base Unit — The standard unit with NO OPTIONS.  
 Max. Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, Controls)

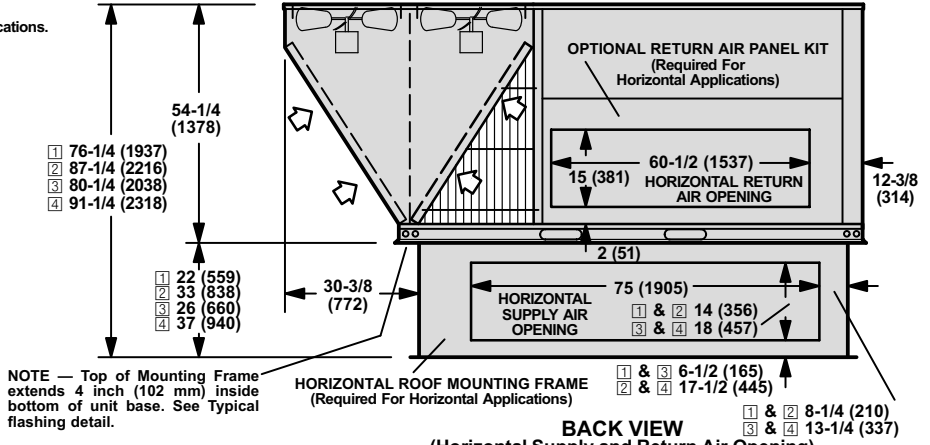
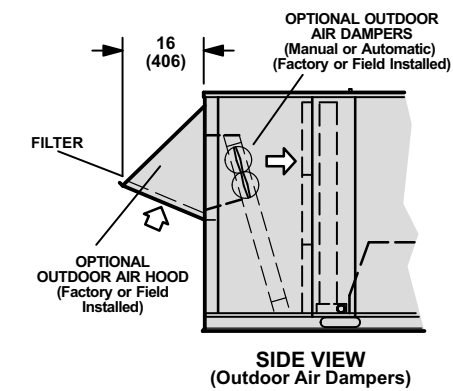
## CENTER OF GRAVITY - inches (mm)

Model Number	EE		FF	
	inch	mm	inch	mm
LCA156H/180 Base Unit	54-1/2	1384	38-1/2	978
LCA156H/180 Max. Unit	54-1/2	1384	42	1067
LCA210 Base Unit	53	1346	38	965
LCA210 Max. Unit	53	1346	41-1/2	1054
LCA240/300S Base Unit	55-1/2	1410	38	965
LCA240/300S Max. Unit	53-1/2	1359	41	1041

Base Unit — The standard unit with NO OPTIONS.  
 Max. Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, Controls)



\*NOTE — Field Installed in Return Air Duct for Horizontal Applications.



- 1 LARMFH18/24-26
- 2 LARMFH18/24-37
- 3 LARMFH30/36-30 (used with 300S Models Only)
- 4 LARMFH30/36-40 (used with 300S Models Only)

# DIMENSIONS - INCHES (MM) - LGA MODELS

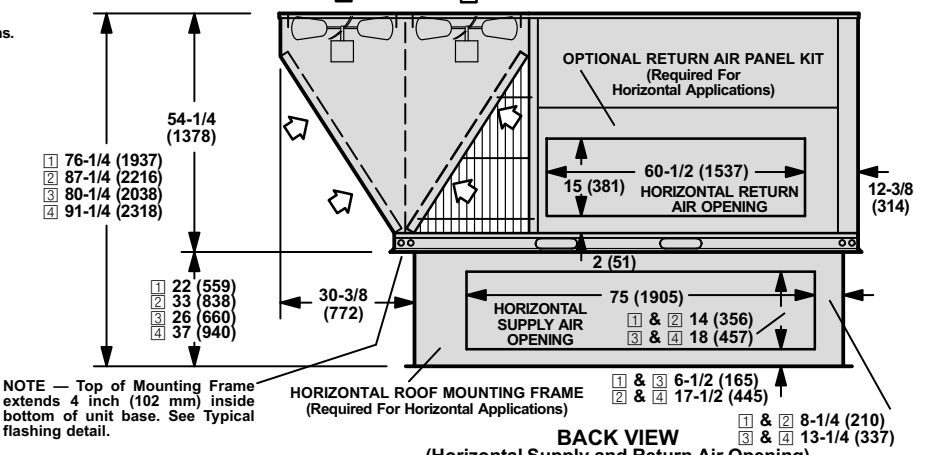
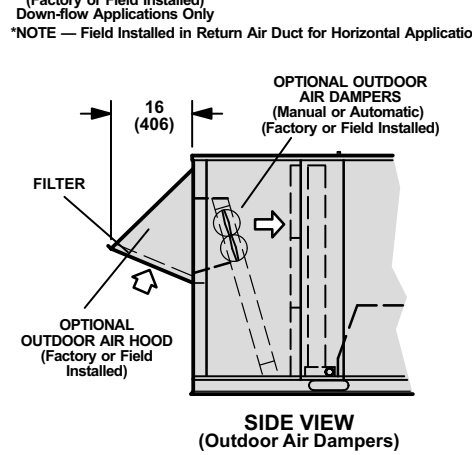
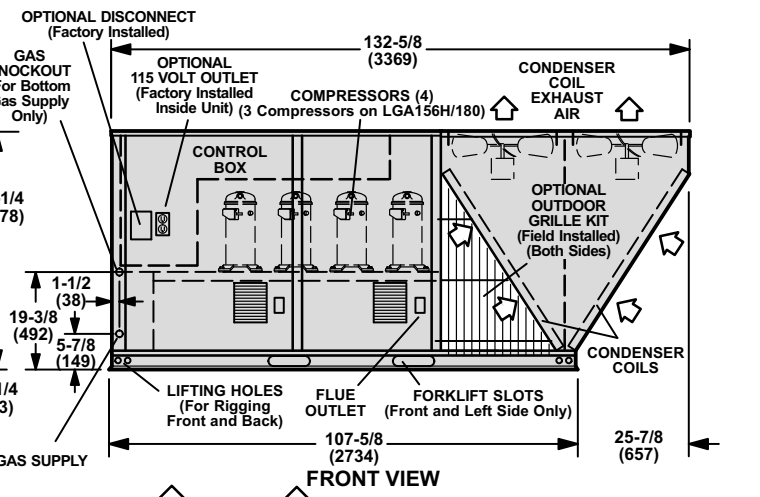
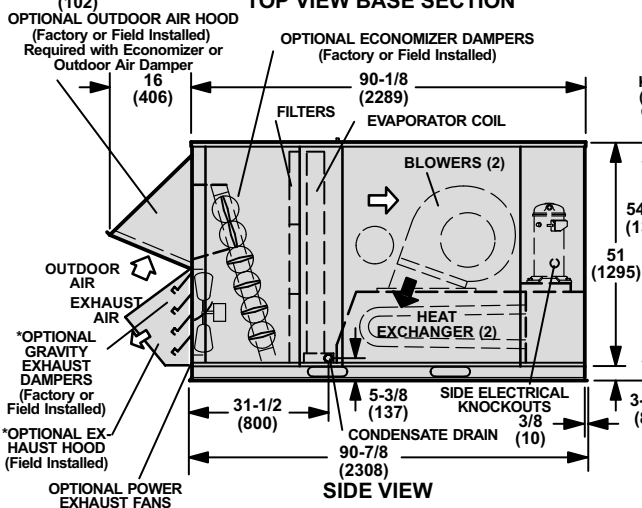
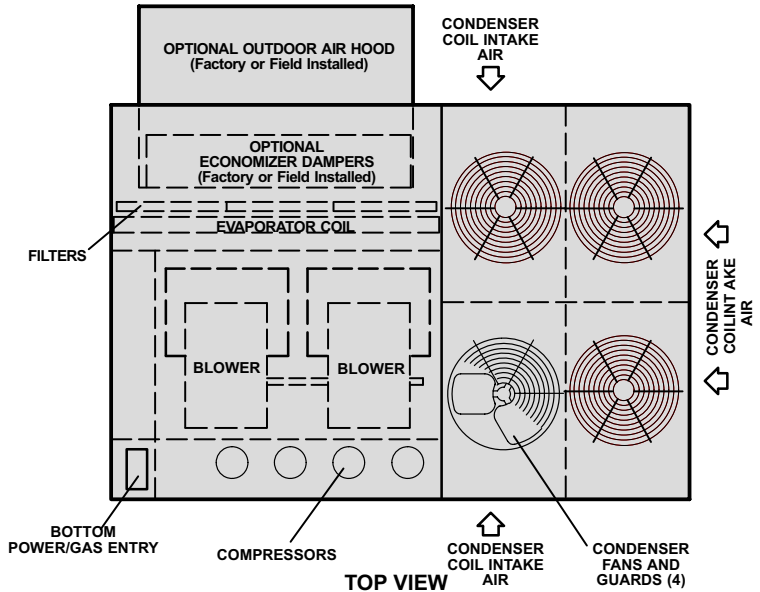
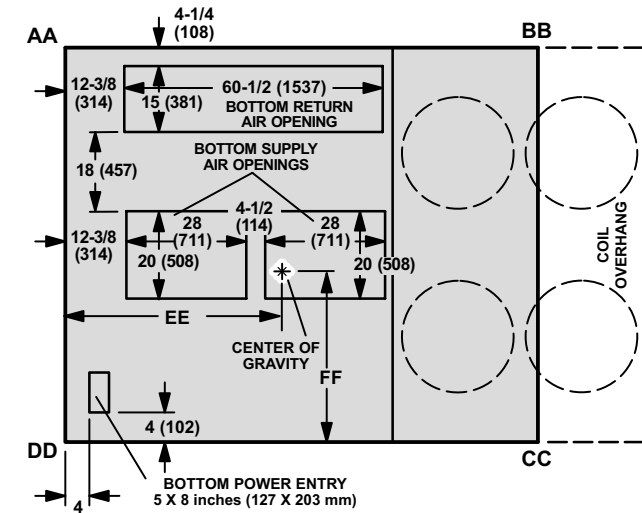
Shown With Optional Economizer Dampers, Power Exhaust Fans, Convenience Outlets, Unit Disconnect

Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LGA156H/180 Base Unit	470	213	470	213	650	295	650	295
LGA156H/180 Max. Unit	580	263	590	268	700	318	690	313
LGA210 Base Unit	480	218	460	209	680	308	710	322
LGA210 Max. Unit	610	277	590	268	730	331	750	304
LGA240/300S Base Unit	490	222	520	236	740	336	710	322
LGA240/300S Max. Unit	610	277	610	277	750	304	770	349

Base Unit — The standard unit with NO OPTIONS.  
 Max. Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, High Input Heating, Controls)

Model Number	EE		FF	
	inch	mm	inch	mm
LGA156H/180 Base Unit	50	1270	38-1/2	978
LGA156H/180 Max. Unit	54	1372	41-1/2	1054
LGA210 Base Unit	52-1/2	1334	37	940
LGA210 Max. Unit	52-1/2	1334	41	1041
LGA240/300S Base Unit	54-1/2	1384	37-1/2	953
LGA240/300S Max. Unit	53	1346	40-1/2	1029

Base Unit — The standard unit with NO OPTIONS.  
 Max. Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, High Input Heating, Controls)



NOTE — Top of Mounting Frame extends 4 inch (102 mm) inside bottom of unit base. See Typical flashing detail.

- 1 LARMFH18/24-26
- 2 LARMFH18/24-37
- 3 LARMFH30/36-30 (used with 300S Models Only)
- 4 LARMFH30/36-40 (used with 300S Models Only)

# DIMENSIONS - INCHES (MM) - LHA MODELS

Shown With Optional Economizer Dampers, Power Exhaust Fans, Convenience Outlets, Unit Disconnect

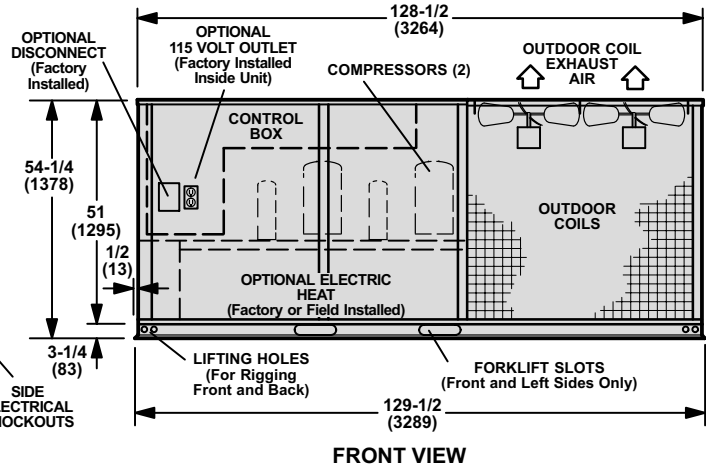
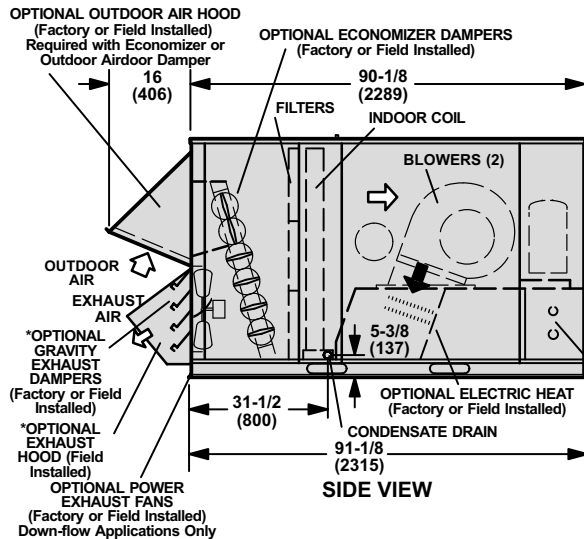
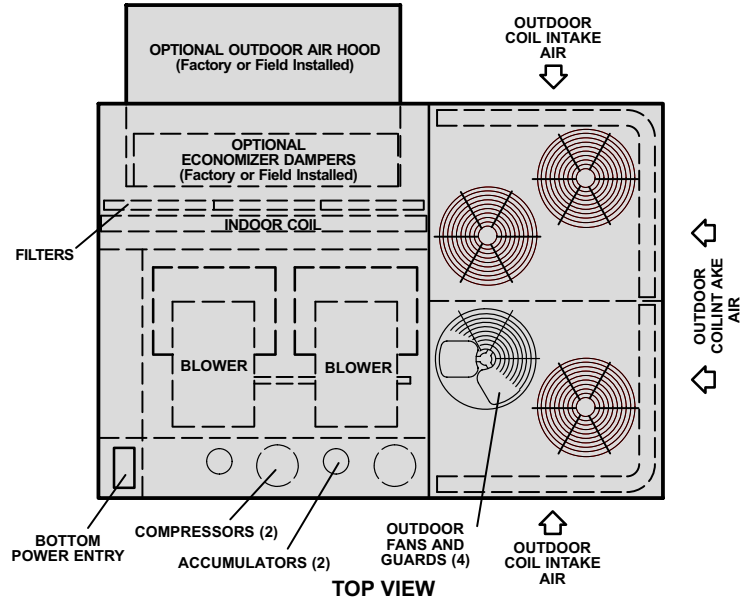
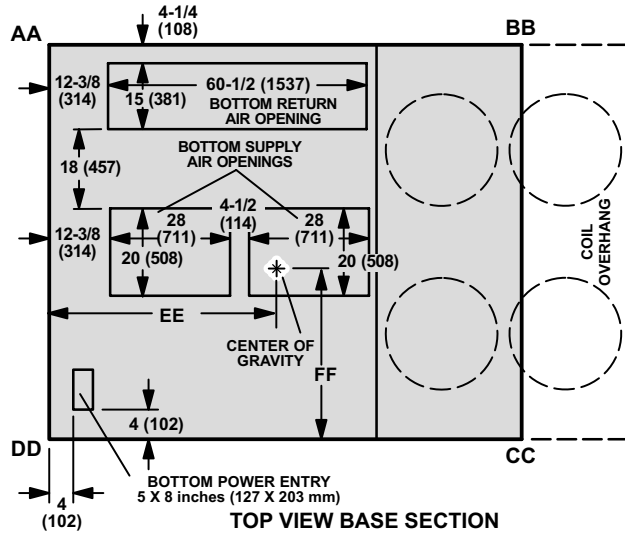
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LHA180 Base Unit	550	249	440	200	580	263	720	327
LHA180 Max. Unit	670	304	510	231	590	268	790	358
LHA240 Base Unit	570	259	460	209	580	263	730	331
LHA240 Max. Unit	690	313	520	236	600	272	790	358

Base Unit — The standard unit with NO OPTIONS.  
 Max. Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, Controls)

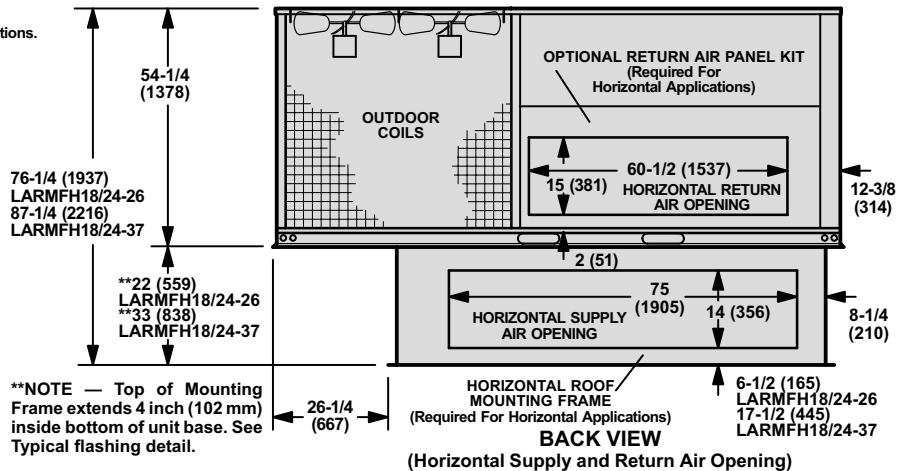
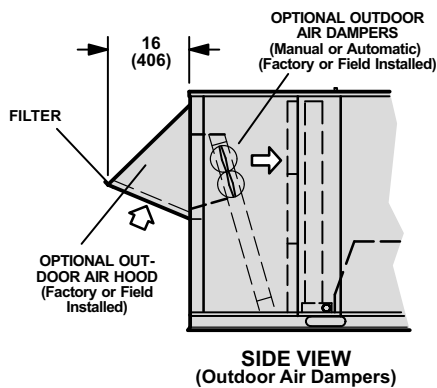
Model Number	EE		FF	
	inch	mm	inch	mm
LHA180 Base Unit	58	1473	39-1/2	1003
LHA180 Max. Unit	56	1422	42	1067
LHA240 Base Unit	57-1/2	1461	40	1016
LHA240 Max. Unit	55-1/2	1410	42-1/2	1080

Base Unit — The standard unit with NO OPTIONS.  
 Max. Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, Controls)

10



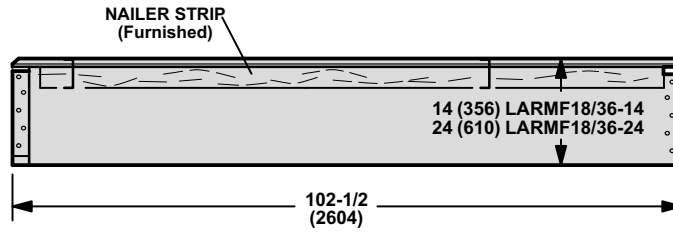
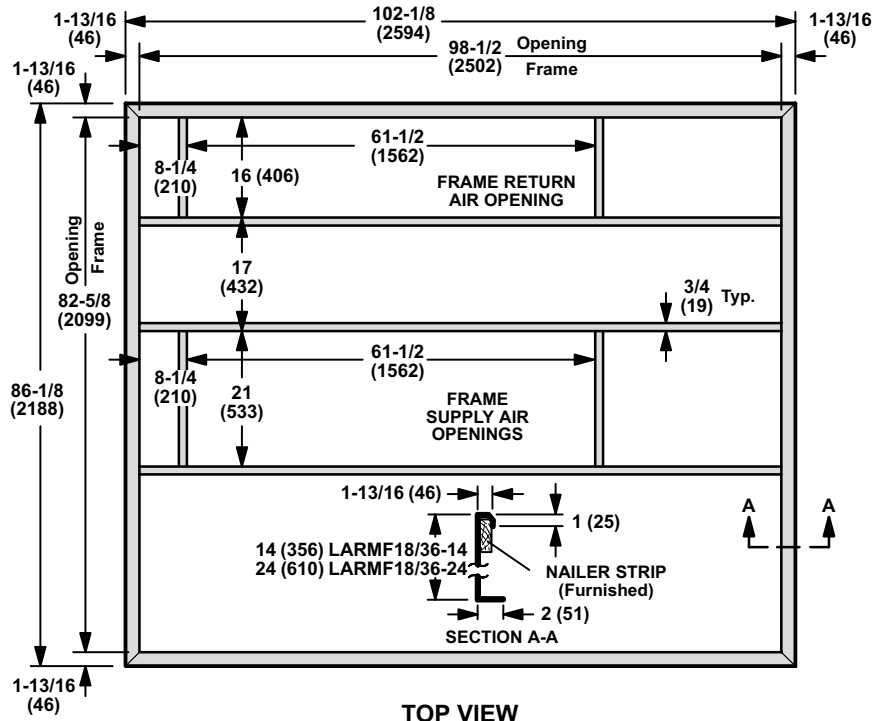
\*NOTE — Field Installed in Return Air Duct for Horizontal Applications.



\*\*NOTE — Top of Mounting Frame extends 4 inch (102 mm) inside bottom of unit base. See Typical flashing detail.

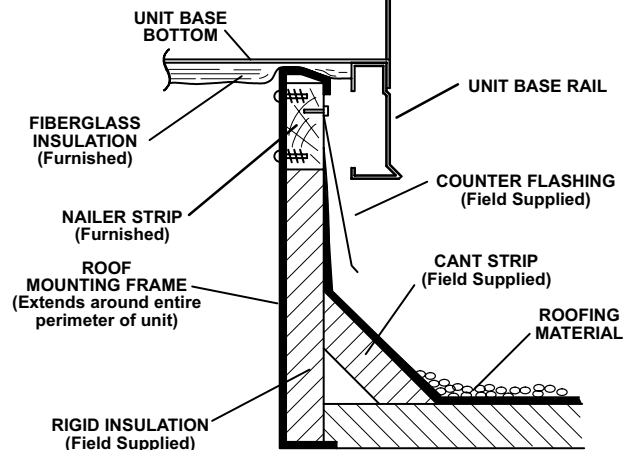
# ACCESSORY DIMENSIONS - INCHES (MM)

## LARMF18/36-14 AND LARMF18/36-24 ROOF MOUNTING FRAMES With Double Duct Opening



NOTE — Roof deck may be omitted within confines of frame.

### TYPICAL FLASHING DETAIL FOR LARMF18/36 ROOF MOUNTING FRAMES



### ROOF MOUNTING FRAME SPECIFICATIONS

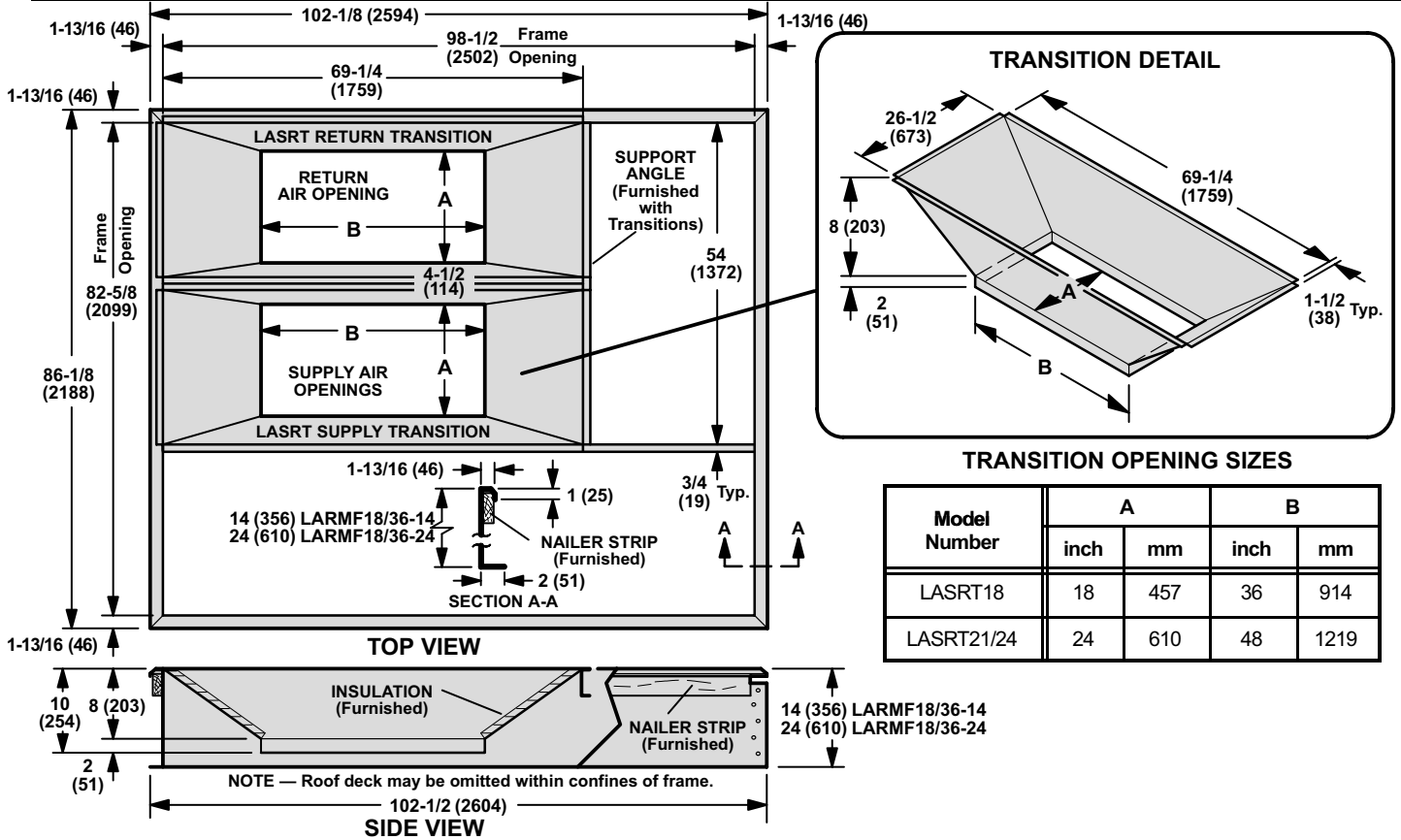
Roof Mounting frame is rigid enough to be spanned over its entire length or cantilevered if supported on both sides of center of gravity.

Roof Mounting Frame	LARMF18/36-14	LARMF18/36-24
*Moment of inertia (I) (in. <sup>4</sup> ) (cm <sup>4</sup> )	39 (1634)	160 (6639)
*Section modulus $\frac{I}{C}$ (in. <sup>3</sup> ) (cm <sup>3</sup> )	5.5 (90)	13.1 (512)
Frame weight. (lb/ft) (kg/m) of length	5.5 (8.2)	8.5 (12.7)
Design strength (psi) (kPa)	20,000 (137,900)	

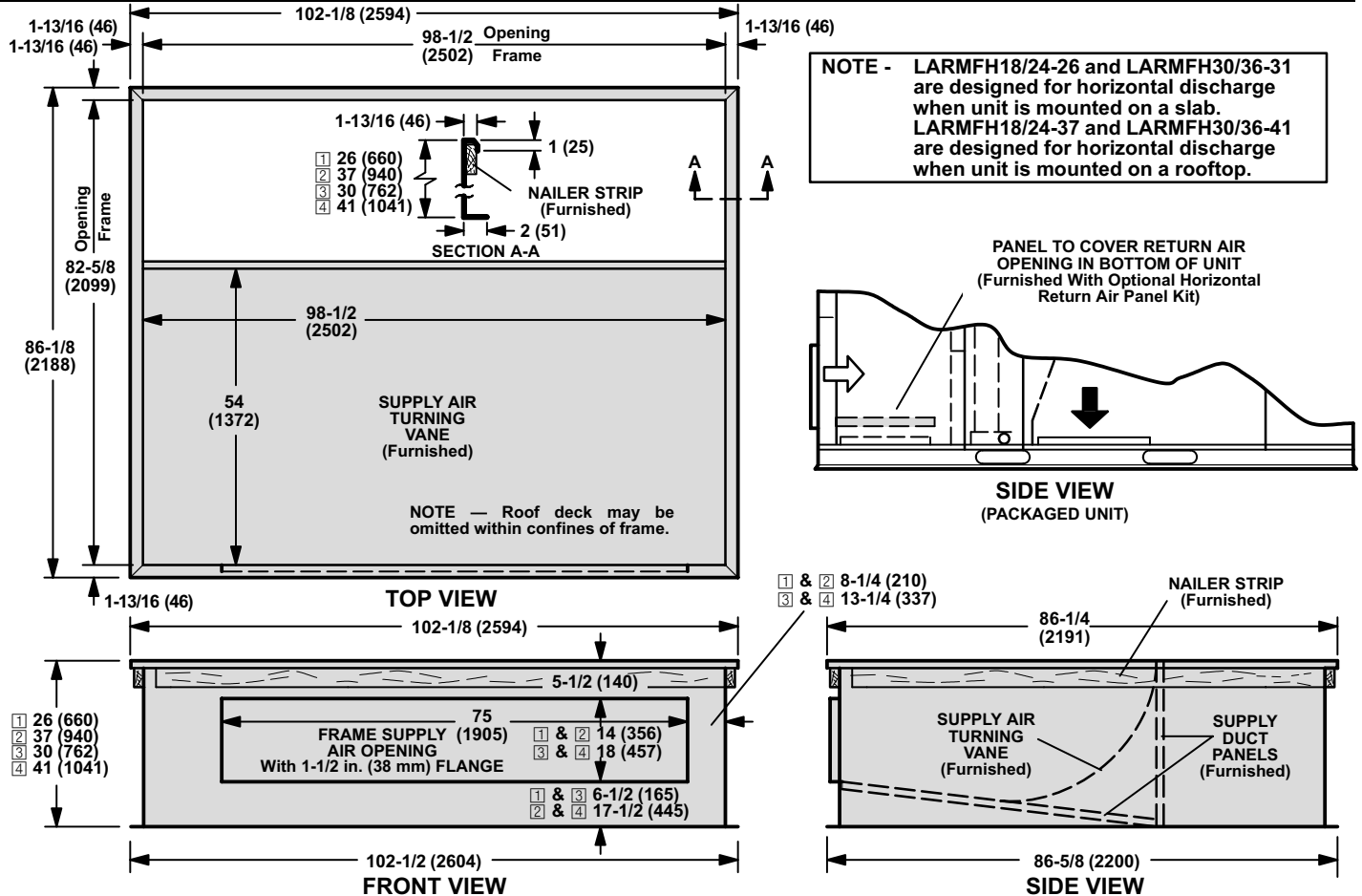
\*Includes both sides of frame.

## ACCESSORY DIMENSIONS - INCHES (MM)

### LARMF18/36-14 AND LARMF18/36-24 ROOF MOUNTING FRAMES With LASRT Supply & Return Air Transitions For FD11 & RTD11 Ceiling Diffusers

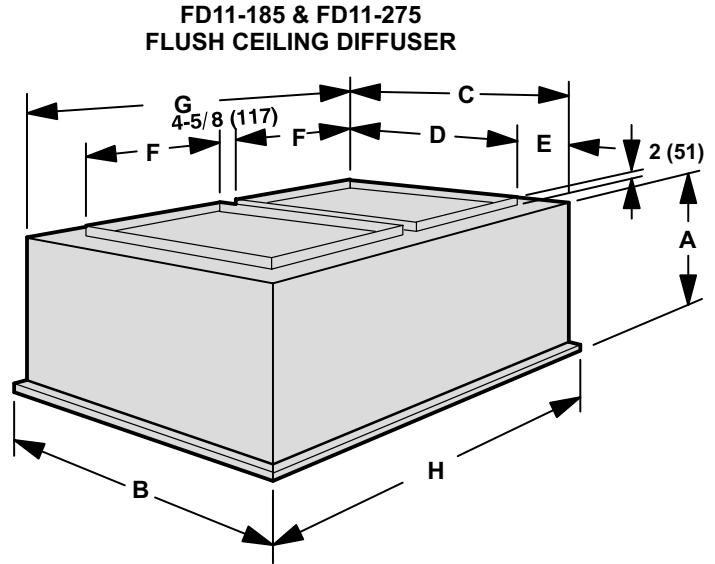
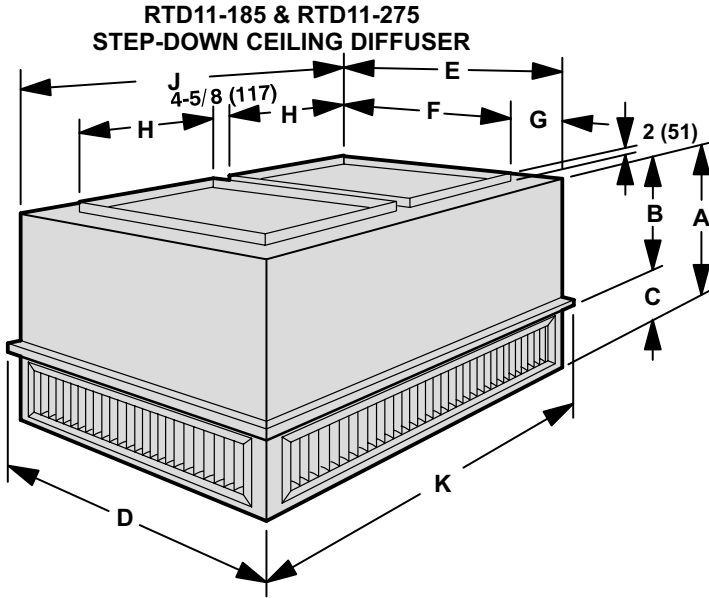


### LARMFH18/24 & LARMFH30/36 ROOF MOUNTING FRAMES - Requires Optional Horizontal Return Air Panel Kit



1 LARMFH18/24-26 2 LARMFH18/24-37 3 LARMFH30/36-30 (used with 300S Models Only) 4 LARMFH30/36-40 (used with 300S Models Only)

**ACCESSORY DIMENSIONS - INCHES (MM)**  
**COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS**



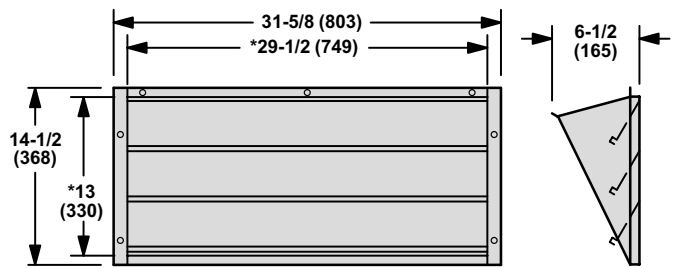
Model Number	A		B		C		D		E	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
RTD11-185	34	864	23-7/8	606	10-1/8	257	47-5/8	1210	45-5/8	1159
RTD11-275	40	1016	28-7/8	725	11-1/8	283	59-5/8	1514	57-7/8	1470

Model Number	A		B		C		D	
	in.	mm	in.	mm	in.	mm	in.	mm
FD11-185	30-1/8	613	47-5/8	1210	45-5/8	1159	36	914
FD11-275	36-1/8	918	59-5/8	1514	57-5/8	1464	48	1219

Model Number	F		G		H		J		K	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
RTD11-185	36	914	4-13/16	122	18	457	45-5/8	1159	47-5/8	1210
RTD11-275	48	1219	4-13/16	122	24	610	57-5/8	1464	59-5/8	1521

Model Number	E		F		G		H	
	in.	mm	in.	mm	in.	mm	in.	mm
FD11-185	4-13/16	122	18	457	45-5/8	1159	47-5/8	1210
FD11-275	4-13/16	122	24	610	57-5/8	1464	59-5/8	1521

**LAGEDH18/24  
HORIZONTAL GRAVITY EXHAUST DAMPERS**  
 Field Installed In Return Air Duct (two furnished per order no.)

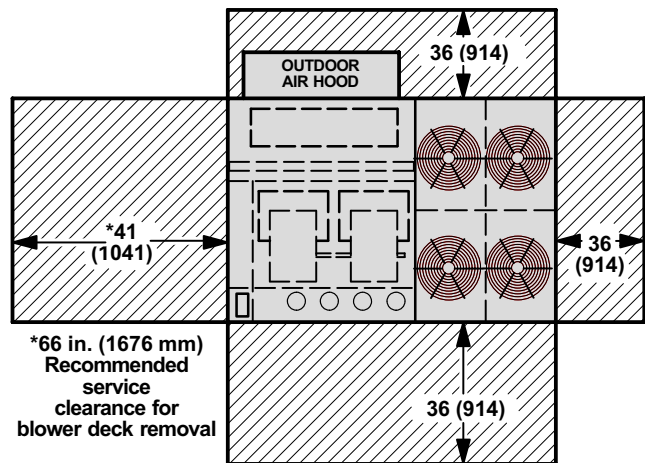


**FRONT VIEW**

**SIDE VIEW**

\*NOTE — Opening size required in return air duct.

**INSTALLATION CLEARANCES - IN. (MM)**



**NOTE — Top Clearance Unobstructed.**  
**NOTE — Entire perimeter of unit base requires support when elevated above mounting surface.**