LENNOX®

ENGINEERING DATA

PACKAGED L SERIES

LCA/LGA/LHA

088 and 100 MODELS
"LCA" PACKAGED COOLING & ELECTRIC HEAT
"LGA" PACKAGED COOLING & GAS HEAT
"LHA" PACKAGED HEAT PUMP

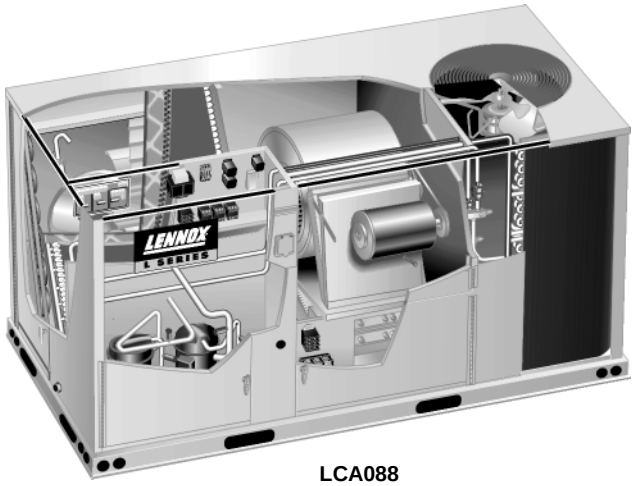
LCA/LGA - 7.5 & 8.5 Ton (26.4 & 29.9 kW)
LHA - 7.5 Ton (26.4 kW)

Bulletin #210225
February 1999
Supersedes May 1998

***Net Cooling Capacity - 85,000 to 94,000 Btuh (24.9 to 27.5 kW)**
Gas Input Heating Capacity - 83,000 to 180,000 Btuh (24.3 to 52.8 kW)
***Heat Pump Heating Capacity - 86,000 Btuh (25.2 kW)**
Optional Electric Heat - 7.5 to 45 kW
***ARI Certified Ratings**

ETL LISTED

CANADIAN GAS ASSOCIATION APPROVED

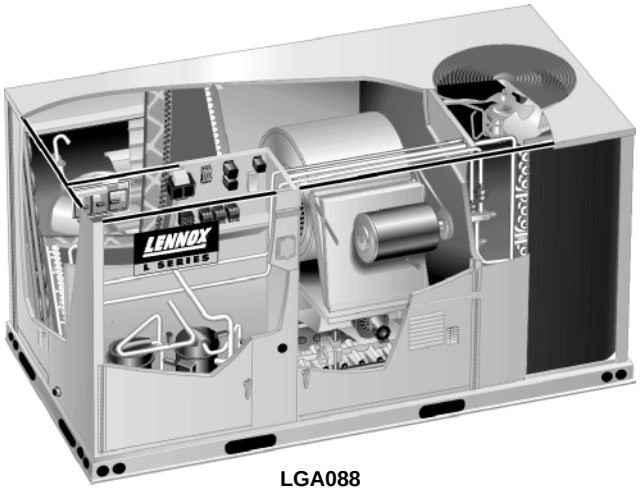


LCA088
(Cooling & Electric Heat)

MANUFACTURER CERTIFIED TO ARI AS COMPLYING WITH ARI STANDARD 360 EQUIPMENT

MANUFACTURER CERTIFIED TO ARI AS COMPLYING WITH ARI STANDARD 365 EQUIPMENT

CSA VERIFIED ENERGY PERFORMANCE



LGA088
(Cooling & Gas Heat)

LHA088
(Heat Pump)

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NOTE — Due to Lennox' ongoing committment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incuring liability.

FEATURES - ALL MODELS

Item	LCA/LGA088	LCA/LGA100	LHA088
Air Flow Choice — Bottom (down-flow) or *horizontal (side) supply and return air	Standard	Standard	Standard
Bottom Power Entry — For electrical and gas lines	Standard	Standard	Standard
Cabinet — 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	Standard	Standard
Cabinet Access Panels (Hinged) — 1 compressor/controls access panel, 1 heating area access panel, 1 blower access panel and 1 air filter/economizer access panel hinged with tool-less access handles, gaskets on all edges for tight seal, blower access panel has steel panel inner liner with insulation sandwiched in-between and air filter/economizer access panel is insulated with fiberglass insulation.	Standard	Standard	Standard
Coil Construction — 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	Standard	Standard
Compressor Crankcase Heater(s) - two on LCA/LGA models and one on LHA models	Standard	Standard	Standard
Filters — Disposable 2 inch (51 mm) pleated commercial grade	Standard	Standard	Standard
Filter Access — Hinged filter door with tool-less access handles	Standard	Standard	Standard
Integrated Modular Control (IMC) — Solid-state board contains all controls and control relays to operate unit Built-in Functions Include**:** - **Blower On/Off Delay** - **Built-in Control Parameter Defaults,** ensure proper unit operation when power is restored after power failure - **Service Relay Output** - **Defrost Control** - **Dehumidification Control -** monitors humidity levels, will allow both heating and cooling to operate at the same time, as needed, required optional filed installed Dehumidistat - **Dirty Filter Switch Input** - **Economizer Control,** four modes of operation (outdoor enthalpy, differential enthalpy, temperature and global) - **Electric Heat Staging,** regulates electric heat during building warm-up - **ETM Compatible,** various modules (see factory or field installed accessories) - **Extensive Unit Diagnostics,** (80 diagnostic codes) - **Permanent Diagnostic Code Storage** - **Field Changeable Control Parameters,** (65 different parameters) - **Gas Valve Delay Between First and Second Stage** - **Indoor Air Quality Input,** monitors CO_2 levels, adjusts economizer dampers as needed (four modes of operation), requires optional field installed Indoor Air Quality (CO_2) Sensor - **Low Ambient Controls** — Allows unit cooling operation down to 0°F (-17.8°C) - **Minimum Run Time** - **Night Setback Mode,** adjusts setpoint, closes outdoor air dampers and operates blower on demand, may be customized for special requirements - **Return Air Temperature Limit Control** - **Smoke Alarm Mode,** (four modes of operation) - **"Strike Three" Low Pressure Control**, protects system from low suction pressure while eliminating nuisance faults - **Thermostat Bounce Delay** - **Three Digit Display,** (Displays: outdoor temperature, supply air temperature, return air temperature, economizer damper position, Indoor Air Quality, control parameters - **Two Stage Heat/Three Stage Cool Thermostat Compatible** - **Warm-up Mode,** (four modes of operation)	Standard	Standard	Standard
Outdoor Coil Fan — PVC coated fan guard furnished	Standard	Standard	Standard
Outdoor Coil Fan Motor — Overload protected, permanently lubricated, equipped with ball bearings, shaft up, wire basket mount	Standard	Standard	Standard
Supply Air Blower — Belt drive, forward curved blades, blower wheel statically and dynamically balanced, ball bearings, adjustable pulley (allows speed change), blower assembly slides out of unit for servicing	Standard	Standard	Standard
Supply Air Motor (Standard Efficiency) — Overload protected, equipped with ball bearings	Standard	Standard	Standard
Transformer — 70VA transformer with built-in circuit breaker	Standard	Standard	Standard

*Requires Optional Horizontal Conversion Kit.

FEATURES - LCA MODELS

Item	LCA088	LCA100
Approvals — 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	Standard	Standard
ARI Ratings — Ratings in accordance with ARI Standard 210/240-94 and certified to ARI	Standard	Standard
Compressors — Reciprocating type, resiliently mounted on rubber grommets	"S" Models	Not Available
Compressors — Copeland® Compliant Scroll™ for high efficiency, resiliently mounted on rubber grommets	"H" Models	"S" Models
Outdoor Coil Construction — Formed type	Standard	Standard
Refrigeration System — 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), low ambient switches, independent refrigerant circuits (allows staging)	Standard	Standard
Warranty — Limited five years compressors, limited one year all other components, see limited warranty certificate included with unit for details	Standard	Standard

FEATURES - LGA MODELS

Item	LGA088	LGA100
Approvals — 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	Standard	Standard
ARI Ratings — Ratings in accordance with ARI Standard 210/240-94 and certified to ARI	Standard	Standard
Compressors — Reciprocating type, resiliently mounted on rubber grommets	"S" Models	Not Available
Compressors — Copeland® Compliant Scroll™ for high efficiency, resiliently mounted on rubber grommets	"H" Models	"S" Models
Fan and Limit Controls — Factory installed, 90 second fan "on" time delay, dual limit controls (primary and secondary) with fixed temperature setting	Standard	Standard
Heat Exchanger — Tubular construction, aluminized steel, life cycle tested	Standard	Standard
Outdoor Coil Construction — Formed type	Standard	Standard
Heating System — 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	Standard
Refrigeration System — Consists of: compressors, condenser coil 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	Standard
Warranty — Limited ten years heat exchanger, limited five years compressors, one year all other components, see limited warranty certificate included with unit for details	Standard	Standard

FEATURES - LHA MODELS

Item	LHA088S
Approvals — 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	Standard
ARI Ratings — Ratings in accordance with ARI Standard 210/240-94 and certified to ARI	Standard
Compressors — Copeland® Compliant Scroll™ for high efficiency, resiliently mounted on rubber grommets	Standard
Defrost Control — 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
Outdoor Coil Construction — Formed type	Standard
Refrigeration System — Consists of: compressor, outdoor coil and direct drive fan, indoor coil and belt drive blower, check and expansion valves (indoor and outdoor), high capacity drier, high pressure switch, low pressure switch, reversing valve, defrost control, full refrigerant charge, crankcase heater, freezestat (prevent coil freeze-up during low ambient operation or loss of air), and accumulator.	Standard
Warranty — 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

Air Flow Configuration — specify horizontal or down-flow when ordering base unit

Supply Air Motor — Order one (See Blower Data Table for specifications):

Standard Efficiency

High Efficiency — Overload protected, equipped with ball bearings

Drive Kit — Order one, see Drive Kit Specifications Table

Gas Input (LGA Models Only) — Order one:

83,000/125,000 Btuh (24.3/36.6 kW) (low/high fire) Standard Heat Gas Input

119,000/180,000 Btuh (34.8/52.7 kW) (low/high fire) High Heat Gas Input

Voltage — specify when ordering base unit

OPTIONAL ACCESSORIES

FACTORY INSTALLED ONLY

Item	LCA/LGA088	LCA/LGA100	LHA088
Cold Weather Kit — (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		- - - -
Condensate Traps — PVC or copper condensate trap, factory installed in unit	Factory		
Corrosion Protection — 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		
[1] **Stainless Steel Heat Exchanger (LGA Models)**	Factory		N/A
[2] **Disconnect Switch—** Accessible from outside of unit, spring loaded weatherproof cover furnished	Factory		
Service Outlets (2) — 115v ground fault circuit interrupter (GFCI) type	Factory		
Service Valves — Fully serviceable brass valves installed in discharge and liquid lines	Factory		NA

FACTORY OR FIELD INSTALLED

Item		LCA/LGA088	LCA/LGA100	LHA088
Blower Proving Switch — Monitors blower operation, shuts down unit if blower fails		**18L89**		
Condensate Drain Trap - field installed only, may be factory enclosed to ship with unit	PVC	**37K70**		
	Copper	**48K14**		
Control Systems — See pages 5-10 for complete listing.		See pages 5-10		
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition		**30K48**		
Down-Flow Gravity Exhaust Dampers — Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, bird screen furnished - Net Weight. **NOTE -** See below for damper hood.		LAGED08/10 - 8 lbs. (4 kg)		
Down-Flow Gravity Exhaust Dampers Hood (Field Installed Only) - Net Weight		**24L15** - 25 lbs. (11 kg)		
Economizer — 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) - Net Weight		LAREMD08/10 - 43 lbs. (20 kg)		
Economizer Control Choice — **Sensible Control —** Furnished on IMC board in unit, uses outdoor air sensor furnished with unit to measure outdoor air temperature and control damper position **(Furnished)** **Global Control —** 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 **(Furnished)** **Outdoor Enthalpy Control —** Adjustable enthalpy sensor, senses outdoor air enthalpy for economizer control, 0 to 100% outdoor air **Differential Enthalpy Control —** Two solid-state enthalpy sensors allow selection between outdoor air and return air (whichever has lowest enthalpy)		**(16K96)** Outdoor **(16K97)** Differential		
Electric Heat — Factory or field installed, helix wound nichrome elements, time delay for element staging, individual element limit controls, wiring harness, may be two-stage controlled, requires Fuse Block and Terminal Block (LHA/LCA Models)		See Electric Heat Data Tables Pages 16-17		
Electric Heat Fuse Block — Required with Electric Heat. Mounting screws furnished (LCA/LHA Models)		See Optional Electric Heat Accessories Table (LCA/LHA Models), Page13		
Electric Heat LTB2 Terminal Block — Required with electric heat				
Outdoor Air Damper Section — Linked mechanical dampers, 0 to 25% (fixed) outdoor air adjustable, installs in unit for down-flow applications, outdoor air hood must be ordered separately (see below) - Net Weight	**Automatic** — fully modulating spring return damper motor with plug in connection	LAOADM08/10 - 28 lbs. (13 kg)		
	Manual	LAOAD10/15 - 26 lbs. (12 kg)		
Outdoor Air Hood — Required with LAREMD08/10 Economizer, LAOAD10/15 and LAOADM08/10 Outdoor Air Damper Sections, two cleanable aluminum mesh fresh air filters furnished - Net Weight		LAOAH08/10 - 11 lbs. (5 kg) Filter size: 16 x 20 x 1 in. (406 x 508 x 25 mm)		
Power Exhaust Fan — Installs in 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, requires optional down-flow gravity exhaust dampers (see above)	Model Number - Net Weight	LAPEF08/10 - 28 lbs. (13 kg)		
	Diameter - in. (mm) Number of Blades	20 (508) - 5		
	Total air volume - cfm (L/s)	4200 (1980) @ 0 in. .wg. (0 Pa)		
	Motor Horsepower (W)	1/3 (249)		
	Total Watts Input	300		
Smoke Detector — Photoelectric type, installed in supply air section or return air section or both sections		**70K87 -** Supply **70K86** - Return		

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

[2] Not available for LCA models with field installed electric heat, LCA 208/230v models with 30 kW or 45kW electric heat, LHA 208/230v models with 15 kW, 30 kW or 45 kW electric heat or for LHA 460v models with 45 kW electric heat.

OPTIONAL ACCESSORIES - CONTINUED

FIELD INSTALLED ONLY

Item		LCA/LGA088	LCA/LGA100	LHA088
Aspiration box — for duct mounting of Indoor Air Quality Sensor		**47N18**		
Coil Guards — Galvanized steel wire guards to protect outdoor coil. Not used with Hail Guards		**24L55**		
Dehumidistat - Monitors humidity levels, reports to the IMC board which allows the heating and cooling to run simultaneously as needed		**65F86**		
Diffusers - 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	**Step-Down -** double deflection louvers	RTD11-95 - 88 lbs. (40 kg)		
	Flush - fixed blade louvers	FD11-95 - 75 lbs. (34 kg)		
Downflow Roof Mounting Frame — Nailer strip furnished, mates to unit, U.S. National Roofing Contractors Approved, shipped knocked down - Net Weight	14 inch (356 mm) height	LARMF08/10-14 - 118 lbs. (54 kg)		
	24 inch (610 mm) height	LARMF08/10-24 - 162 lbs. (74 kg)		
Hail Guards — Constructed of heavy gauge steel, painted to match cabinet, helps protect outdoor coils from hail damage. Not used with Coil Guards		**24L54**		
Horizontal Conversion Kit — Two piece duct cover in kit blocks 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		**17L25**		
[1] **Horizontal Gravity Exhaust Dampers —** Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, field installed in return air duct, bird screen and hood furnished - Net Weight		LAGEDH03/15 - 30 lbs. (14 kg)		
Indoor Air Quality (CO_2) Sensor — Monitors CO_2 levels, reports to Integrated Modular Control (IMC) board which adjusts economizer dampers as needed		**93J69**		
IMC Software and PC Interface Kit		**86K84**		
IMC Software and Manual Only		**32K22**		
PC Interface Kit Only		**28K56**		
LPG/Propane Kits (LGA Models Only)		**41L54**		- - - -
Transitions (Supply and Return) — Used with diffusers, installs in roof mounting frame, galvanized steel construction, flanges furnished for duct connection, fully insulated - Net Weight		LASRT08/10 - 30 lbs. (14 kg)		

OPTIONAL DDC TEMPERATURE CONTROL SYSTEMS (FACTORY OR FIELD INSTALLED)

System and Component Description	Field Installed Catalog No.
AMERICAN AUTOMATRIX KIT	
Control module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness — 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.	**59K22**
Sensor — Room temperature	**49K84**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
ANDOVER INFINITY KIT	
Control Module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness — 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	**16K27**
Sensor — Room temperature	**78H42**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
CPC 810-3060 KIT	
Control Module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness — 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	**48K88**
Sensor — Room temperature	**48J43**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
CSI MR88R KIT	
Control Module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness — 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)	**28K58**
Sensor — 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)	**I/STAT (Field Furnished)**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**

[1] 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.
HONEYWELL EXCEL 10 KIT	
Control Module (W7750A)/Blower Proving Switch/Return Air Sensor/Wiring Harness — 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.	**20L39**
Sensor — Room temperature, with setpoint knob	**19L21**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
HONEYWELL W7620 KIT	
Control Module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness — 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	**28K59**
Sensor — Room temperature, platinum RTD (Resistive Temperature Device)	**T7660 (Field Furnished)**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
JOHNSON FACILITATOR FA-UNT KIT	
Control Module/Blower Proving Switch/Wiring Harness —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.	**86K65**
Sensor — 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 (**60K36**).	**60K12**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
JOHNSON METASYS UNT KIT	
Control Module/Blower Proving Switch/Wiring Harness —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).	**34K84**
Commissioning Tool — Hand-held interface tool, monitor and adjust 36 analog and binary points, password protected, carrying case.	**60K37**
Sensor — 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 (**60K36**).	**60K12**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
NOVAR ETM-2050 KIT	
Electronic Thermostat Module (ETM)/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/ Wiring Harness — 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	**48K87**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
Room Temperature Sensor — Provides input to ETM module to determine heating or cooling operation and number of stages required (ordered separately)	**97H53**
Night Setback Override Switch — Allows momentary override of night setback during unoccupied mode	Field Furnished

OPTIONAL DDC TEMPERATURE CONTROL SYSTEMS (FACTORY OR FIELD INSTALLED)

System and Component Description	Field Installed Catalog No.
NOVAR ETM-2051 KIT	
Electronic Thermostat Module (ETM)/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/ Wiring Harness — 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	**69K67**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
Room Temperature Sensor with Built-in Night Setback Override Button — 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.	**67K61**
NOVAR CUSTOM CONTROLLER KIT	
Control Module/Blower Proving Switch/Discharge Air Sensor/Room Air Sensor/Wiring Harness — User definable comfort setpoint, on/off and time of day control, cycle II ventilation control	**48K89**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS (FIELD INSTALLED)

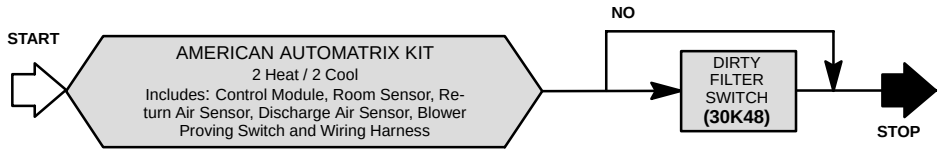
System and Component Description	Catalog No.
ELECTRO-MECHANICAL THERMOSTAT	
Thermostat — Two stage heat & two stage cool with dual temperature levers, subbase choice	**13F06**
Subbase — Manual system switch (Off-Heat-Auto-Cool), fan switch (Auto-On)	**13F17**
Subbase — Non-switching	**13F16**
Night Setback Operation — Order components below	—
Heating Thermostat — Single stage heat	**13F12**
Subbase — Non-switching	**13F16**
Time Clock — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	**See Price Book for Selection**
Time Clock — 24 hour night setback operation, 15 minute increments, battery back-up	**See Price Book for Selection**
Blower Proving Switch — Monitors blower operation, locks out unit in case of blower failure	**30K49**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
ELECTRONIC THERMOSTAT	
Electronic Thermostat — Any two stage heat/ two stage cool electronic thermostat may be used.	**See Price Book for Selection**
Time Clock — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	**See Price Book for Selection**
Time Clock — 24 hour night setback operation, 15 minute increments, battery back-up	**See Price Book for Selection**
Blower Proving Switch — Monitors blower operation, locks out unit in case of blower failure	**30K49**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
HONEYWELL T7300 THERMOSTAT	
Thermostat — 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**
Subbase — 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	**37L53**
Sensor — Room temperature	**58C92**
Sensor — Room temperature with 3 hour override and setpoint adjustment	**86G67**
Sensor — Return air temperature	**27C40**
Blower Proving Switch — Monitors blower operation, locks out unit in case of blower failure	**30K49**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS (FIELD INSTALLED)

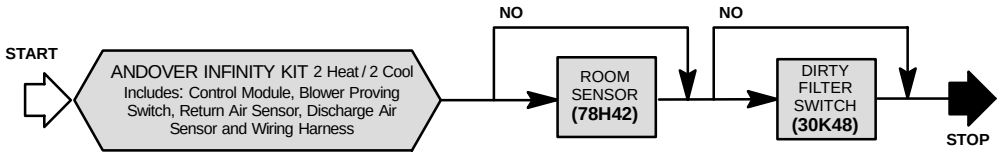
System and Component Description	Field Installed Catalog No.
HONEYWELL W973 KIT	
Logic Panel/Discharge Air Sensor/Wiring Harness — Panel controls operation of economizer and stages of heating and cooling in response to signals from thermostat, balances conditioned space thermostat demand against system 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**
Thermostat — Dual setpoint, separate heating-cooling levers, locking setpoints, integral sensor	**25C52**
Subbase — Switching with system selector switch (Heat-Auto-Off-Cool), fan switch (Auto-On)	**58C93** (for LCA/LGA)
Subbase — Switching with system selector switch (Cool-Auto-Heat-Emergency Heat), fan switch (Auto-On)	**58C94** (for LHA)
Transmitter — Dual setpoint, separate heating-cooling levers, locking setpoints, requires subbase with room temperature sensor or return air temperature sensor	**25C51**
Subbase — Switching with system selector switch (Heat-Auto-Off-Cool), fan switch (Auto-On)	**58C93**
Sensor — Room temperature	**58C92**
Sensor — Return air temperature	**27C40**
Time Clock — 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	**See Price Book for Selection**
Time Clock — 24 hour night setback operation, 15 minute increments, battery back-up	**See Price Book for Selection**
Blower Proving Switch — Monitors blower operation, locks out unit in case of blower failure	**30K49**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**

DDC COMMERCIAL TEMPERATURE CONTROL SELECTION FLOWCHARTS

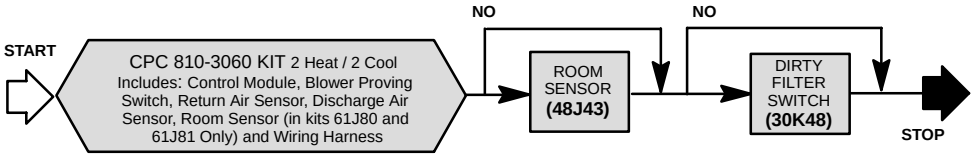
AMERICAN AUTOMATRIX



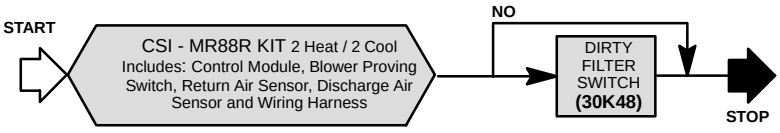
ANDOVER INFINITY



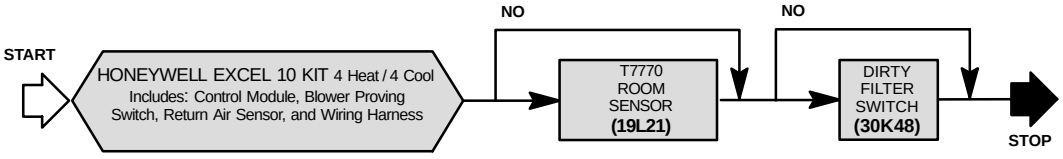
CPC 810-3060



CSI - MR88R



HONEYWELL EXCEL 10



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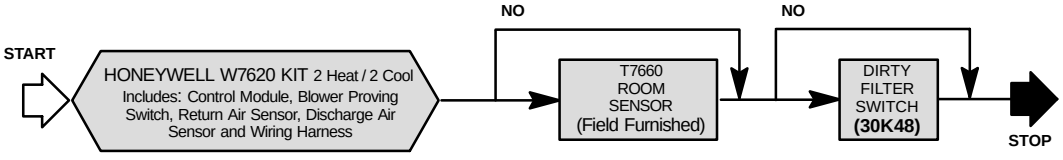
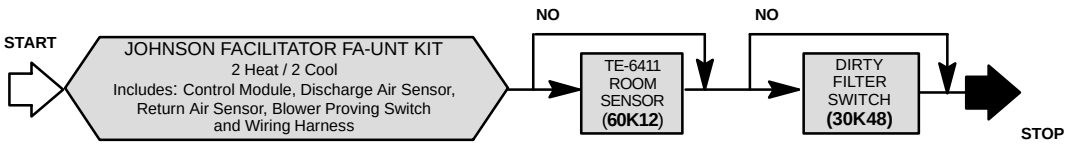
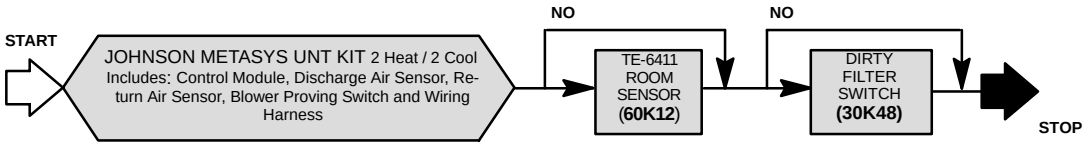


DDC COMMERCIAL TEMPERATURE CONTROL SELECTION FLOWCHARTS

JOHNSON FACILITATOR FA-UNT



JOHNSON METASYS UNT



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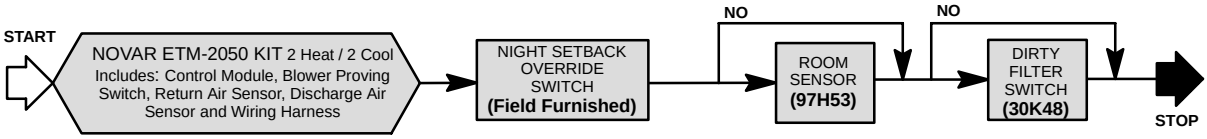

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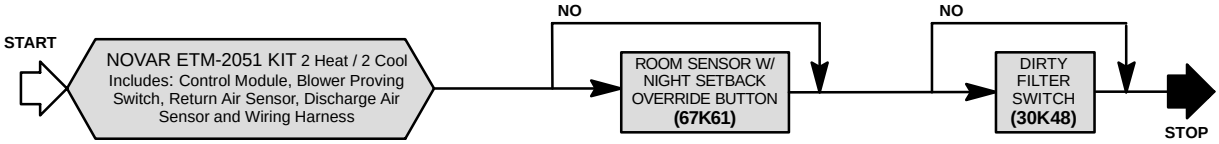
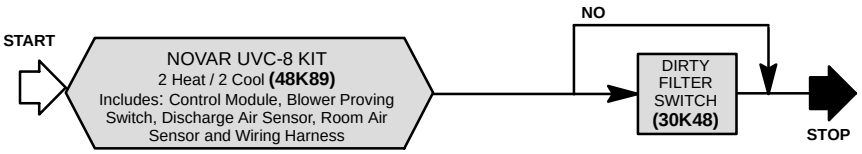
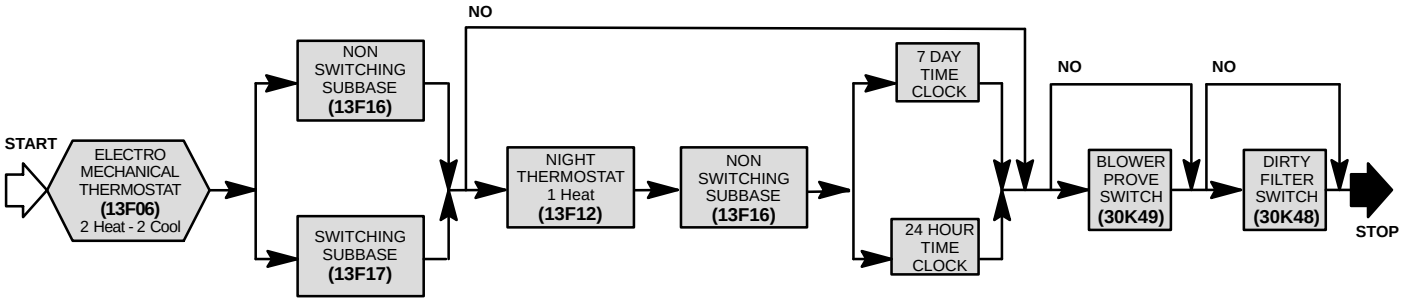


NOVAR CUSTOM CONTROLLER

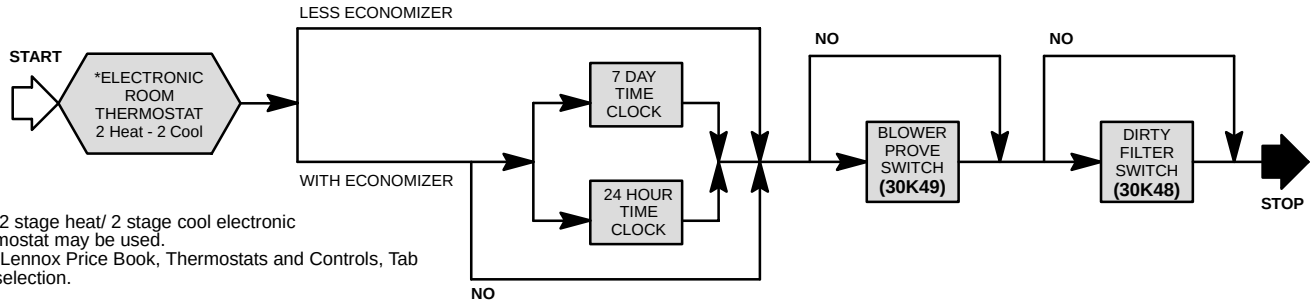


CONVENTIONAL COMMERCIAL TEMPERATURE CONTROL SELECTION FLOWCHARTS

ELECTRO-MECHANICAL THERMOSTAT



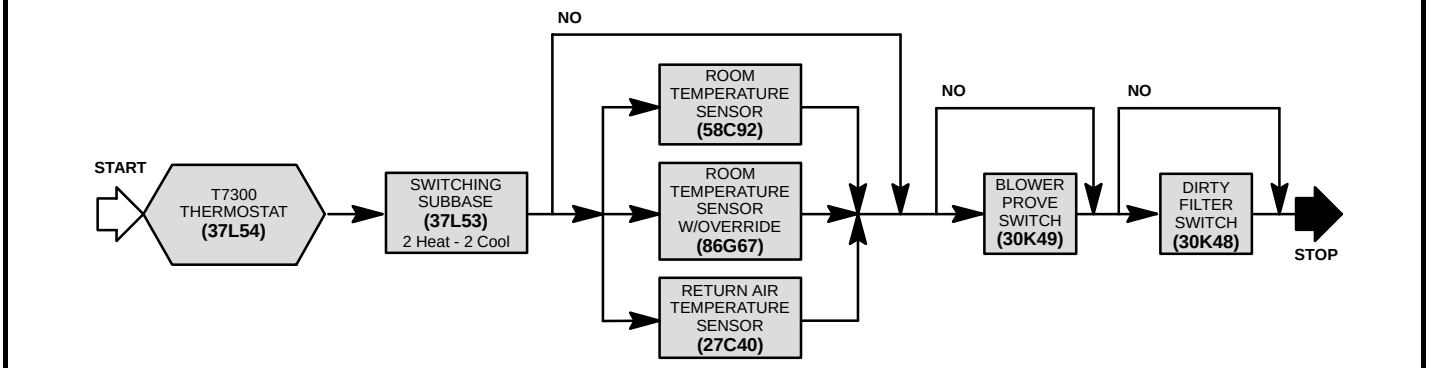
ELECTRONIC THERMOSTAT



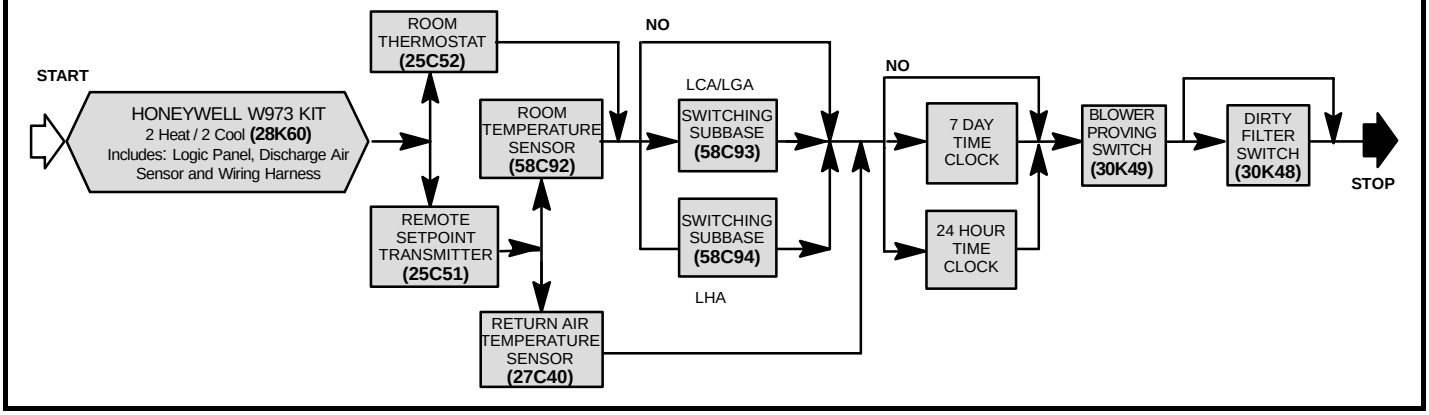
* Any 2 stage heat/ 2 stage cool electronic thermostat may be used.
See Lennox Price Book, Thermostats and Controls, Tab for selection.

CONVENTIONAL COMMERCIAL TEMPERATURE CONTROL SELECTION FLOWCHARTS

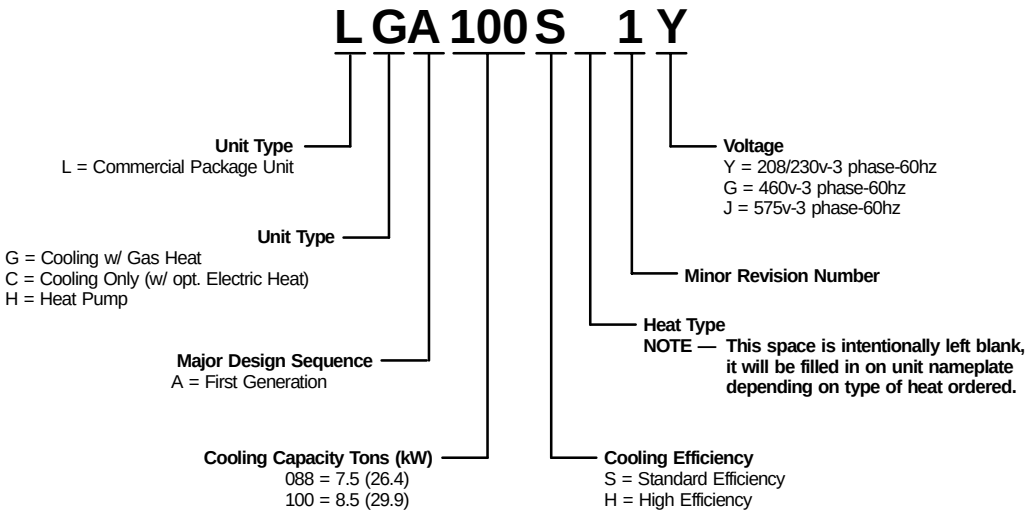
HONEYWELL T7300 THERMOSTAT



HONEYWELL W973 THERMOSTAT



MODEL NUMBER IDENTIFICATION



SPECIFICATIONS - LCA/LGA MODELS

Model No.			LCA/LGA088		LCA/LGA100	
Cooling Ratings	Efficiency type		**Standard (S)**	**High (H)**	**Standard (S)**	
	Gross Cooling Capacity — Btuh (kW)		94,000 (27.5)	90,000 (26.4)	100,000 (29.3)	
	[1] Net Cooling Capacity — Btuh (kW)		88,000 (25.8)	85,000 (24.9)	94,000 (27.5)	
	Total Unit Power (kW)		9.77	8.33	10.44	
	[1] EER (Btuh/Watt)		9.0	10.2	9.0	
	[4] Integrated Part Load Value (Btuh/Watt)		9.2	10.4	9.0	
[2] Sound Rating Number (db)			86			
Refrigerant Charge Furnished (HCFC-22)	Circuit 1		8 lbs. 0 oz. (3.63 kg)	8 lbs. 8 oz. (3.86 kg)	8 lbs. 8 oz. (3.86 kg)	
	Circuit 2		8 lbs. 0 oz. (3.63 kg)	8 lbs. 8 oz. (3.86 kg)	8 lbs. 8 oz. (3.86 kg)	
Two Stage Heating Capacity (Natural or LPG/Propane Gas (at Sea Level)	Heat Input Type		**Standard (S)**	**High (H)**	**Standard (S)**	**High (H)**
	Input (low) — Btuh (kW)		83,000 (24.3)	119,000 (34.9)	83,000 (24.3)	119,000 (34.9)
	Output (low) — Btuh (kW)		66,000 (19.3)	95,000 (27.8)	66,000 (19.3)	95,000 (27.8)
	Input (High) — Btuh (kW)		125,000 (36.6)	180,000 (52.8)	125,000 (36.6)	180,000 (52.8)
	Output (High) — Btuh (kW)		100,000 (29.3)	144,000 (42.2)	100,000 (29.3)	144,000 (42.2)
	A.G.A./C.G.A. Thermal Efficiency		80.0%			
Gas Supply Connections npt — in. - Natural or LPG/Propane			3/4			
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)		(1) 12 x 12 (305 x 305)			
	2 hp (1.5 kW) [3] Motor & Drives	Nominal motor output — hp (kW)	2 (1.5)			
		Max. usable motor output — hp (kW)	2.30 (1.7)			
		Voltage & phase	208/230v, 460v or 575v-3ph			
		(Drive kit #) RPM range	(1 or 2) 845-1130 (3 or 4) 1015-1300			
	3 hp (2.2 kW) [3] Motor & Drives	Nominal motor horsepower (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) 845-1130 (3 or 4) 1015-1300			
Evaporator Coil	Net face area — sq. ft. (m^2)		9.72 (0.90)			
	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^2)		23.78 (2.21)			
	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		(1) — 24 (610) - 3			
	Total Air volume — cfm (L/s)		5300 (2501)			
	Motor horsepower (W)		1/2 (373)			
	Motor rpm		1075			
	Total Motor watts		550			
Filters (furnished)	Type of filter		Disposable Commercial Grade Pleated			
	No. and size — in. (mm)		(4) 18 x 20 x 2 (457 x 508 x 51)			
Electrical characteristics			208/230v, 460v or 575v — 60 hertz — 3 phase			

[1] Rated in accordance with ARI Standard 210/240 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.
NOTE — Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.
[2] Sound Rating Number rated in accordance with test conditions included in ARI Standard 270.
[3] Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished 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.
[4] Integrated Part Load Value rated at 80°F (27°C) outdoor air temperature.

SPECIFICATIONS – LHA MODEL

Model No.			LHA088S
Cooling Ratings	Efficiency Type		**Standard (S)**
	Gross Cooling Capacity — Btuh (kW)		91,000 (26.7)
	[1] Net Cooling Capacity — Btuh (kW)		86,000 (25.2)
	Total Unit Power (kW)		9.6
	[1] EER (Btuh/Watt)		9
High Temperature Heating Ratings	[1] Total Heating Capacity — Btuh (kW)		86,000 (25.2)
	Total Unit Power (kW)		8.4
	[1] C.O.P.		3.0
Low Temperature Heating Ratings	[1] Total Heating Capacity — Btuh (kW)		48,000 (14.1)
	Total Unit Power (kW)		7.03
	[1] C.O.P.		2.0
[2] Sound Rating Number (db)			86
Refrigerant Charge Furnished (HCFC-22)			17 lbs. 0 oz. (7.71 kg)
Indoor Blower and Drive Selection	Blower wheel nominal dia. x width — in. (mm)		12 x 12 (305 x 305)
	2 hp (1.5 kW) [3] Motor & Drives	Nominal motor output — hp (kW)	2 (1.5)
		Max. usable motor output — hp (kW)	2.30 (1.7)
		Voltage & phase	208/230v, 460v or 575v-3ph
		(Drive Kit #) RPM range	(1 or 2) 845-1130 (3 or 4) 1015-1300
	3 hp (2.2 kW) [3] Motor & Drives	Nominal motor horsepower (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) 845-1130 (3 or 4) 1015-1300
Indoor Coil	Net face area — sq. ft. (m^2)		9.72 (.90)
	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
Outdoor Coil	Net face area — sq. ft. (m^2)		23.78 (2.21)
	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		24 (610) - 3
	Total Air volume — cfm (L/s)		5300 (2501)
	Motor horsepower (W)		1/2 (373)
	Motor rpm		1075
	Total Motor watts		550
Filters (furnished)	Type of filter		Disposable Commercial Grade Pleated
	No. and size — in. (mm)		(4) 18 x 20 x 2 (457 x 508 x 51)
Electrical characteristics			208/230v, 460v or 575v — 60 hertz — 3 phase

[1] Rated in accordance with ARI Standard 210/240 and certified to ARI.
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.
[2] Sound Rating Number rated in accordance with test conditions included in ARI Standard 270.
[3] Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished 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 – ALL MODELS

Model No.	Description	Weight	
		lbs.	kg
Net Weights			
LCA088S	Net weight (Base unit)	1065	483
LCA088H	Net weight (Base unit)	1065	483
LCA100S	Net weight (Base unit)	1105	502
LGA088S	Net weight (Base unit with low fire heat exchanger)	1125	510
LGA100S	Net weight (Base unit with low fire heat exchanger)	1165	528
LGA088H	Net weight (Base unit with low fire heat exchanger)	1125	510
LHA088S	Net weight (Base unit)	980	445
Shipping Weights (Add Factory Installed Options Weights To Base Unit Weights For Total Shipping Weight)			
LCA088S	Base unit	1140	501
LCA088H	Base unit	1140	501
LCA100S	Base unit	1180	535
LHA088S	Base unit	1055	478
LCA/LHA Models Only	Electric Heat (add to Base unit)	See Electric Heat Rating Tables	
LGA088S	Base unit with low fire heat exchanger	1200	544
LGA088H	Base unit with low fire heat exchanger	1200	544
LGA100S	Base unit with low fire heat exchanger	1240	562
LGA Models Only	High Fire Heat Exchanger (add to Base unit)	30	14
All Models	Economizer (add to Base unit)	66	30
	Outdoor Air Damper (add to Base unit)	40	18
	Power Exhaust (add to Base unit)	28	13
	LTL Packaging (less than truck load) (add to Base unit)	95	43

OPTIONAL ELECTRIC HEAT ACCESSORIES – LCA/LHA MODELS

UNIT FUSE BLOCKS WITH ELECTRIC HEAT

Unit Model No.			LCA088S	LCA088H	LCA100S	LHA088S
Electric Heat		Model No.	EHA (see Electric Heat Data tables for additional information)			
		kW Input Range	7.5 - 15 - 22.5 - 30 - 45			
Unit Fuse Block (3 phase)	**With** Power Exhaust Fans	208/230v - 2 hp (1.5 kW)	**56K93**			**56K95**
		460v - 2 hp (1.5 kW)	**56K52**			**25K09**
		575v - 2 hp (1.5 kW)	**56K51**			**56K52**
		208/230v - 3 hp (2.2 kW)	**56K93**			**56K96**
		460v - 3 hp (2.2 kW)	**25K08**	**56K52**		**25K10**
		575v - 3 hp (2.2 kW)	**56K52**	**56K51**		**25K08**
	Without Power Exhaust Fans	208/230v - 2 hp (1.5 kW)	**56K93**			**56K95**
		460v - 2 hp (1.5 kW)	**56K52**			**25K09**
		575v - 2 hp (1.5 kW)	**56K51**			**56K52**
		208/230v - 3 hp (2.2 kW)	**56K93**			**56K95**
		460v - 3 hp (2.2 kW)	**56K52**			**25K09**
		575v - 3 hp (2.2 kW)	**56K52**	**56K51**		**56K52**

LTB2 ELECTRIC HEAT TERMINAL BLOCK
LTB2-175 (30K75) 175 amps, **LTB2-335 (30K76)** 335 amps
(Required For Units <u>Without</u> Disconnect/Circuit Breaker But <u>With</u> Single Point Power Source)

LTB2 Terminal Block (3 phase)	7.5 kW *208/230v-3ph	2 hp (1.5 kW)	**30K75**
		3 hp (2.2 kW)	
	15 kW *208/230v-3ph	2 hp (1.5 kW)	**30K75**
		3 hp (2.2 kW)	
	22.5 kW *208/230v-3ph	2 hp (1.5 kW)	**30K75**
		3 hp (2.2 kW)	
	30 kW *208/230v-3ph	2 hp (1.5 kW)	**30K75**
		3 hp (2.2 kW)	
	45 kW *208/230v-3ph	2 hp (1.5 kW)	**30K75** / **30K76**
		3 hp (2.2 kW)	

NOTE — Terminal Block is factory installed in units with factory installed electric heat <u>without</u> disconnect/circuit breaker but <u>with</u> single point power source.
***NOTE — ALL 460V AND 575V UNIT VOLTAGES USE LTB2-175 (30K75) TERMINAL BLOCK.**

ELECTRICAL DATA – LCA/LGA088

Model No.			LCA/LGA088											
Line voltage data — 60 Hz — 3 phase			208/230v				460v				575v			
Efficiency type			Standard (S)		High (H)		Standard (S)		High (H)		Standard (S)		High (H)	
Compressors (2)	Rated load amps each (total)		12.2 (24.4)		12.4 (24.9)		7.1 (14.1)		6.4 (12.8)		5.8 (11.5)		5.0 (10)	
	Locked rotor amps each (total)		90 (180)		88 (176)		46 (92)		44 (88)		37 (74)		34 (68)	
Outdoor Fan Motor	Full load amps		3.0		3.0		1.5		1.5		1.2		1.2	
	Locked rotor amps		6.0		6.0		3.0		3.0		2.9		2.9	
Indoor Blower Motor	Motor Output	hp	2	3	2	3	2	3	2	3	2	3	2	3
		kW	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2
	Full load amps		7.5	10.6	7.5	10.6	3.4	4.8	3.4	4.8	2.7	3.9	2.7	3.9
	Locked rotor amps		46.9	66	46.9	66	20.4	26.8	20.4	26.8	16.2	23.4	16.2	23.4
Rec. max. fuse size (amps)	With Exhaust Fan		50	50	50	50	25	30	25	25	20	20	20	20
	Less Exhaust Fan		50	50	50	50	25	25	25	25	20	20	20	20
*Minimum Circuit Ampacity	With Exhaust Fan		41	44	41	44	23	24	21	23	18	20	17	18
	Less Exhaust Fan		38	42	39	42	21	23	20	21	17	19	16	17
Optional Power Exhaust Fan	(No.) Horsepower (W)		(1) 1/3 (249)											
	Full load amps		2.4		2.4		1.3		1.3		1.0		1.0	
	Locked rotor amps		4.7		4.7		2.4		2.4		1.9		1.9	
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/LGA100S & LHA088S

Model No.			LCA/LGA100S						LHA088S					
Line voltage data — 60 Hz — 3 phase			208/230v		460v		575v		208/230v		460v		575v	
Efficiency Type			Standard (S)											
Compressors (2 - LCA/LGA) (1 - LHA)	Rated load amps each (total)		13.5 (26.9)		6.7 (13.3)		5.0 (10)		28.8		14.7		10.8	
	Locked rotor amps each (total)		115 (230)		47.5 (95)		37.5 (75)		195		95		80	
Outdoor Fan Motor	Full load amps		3.0		1.5		1.2		3.0		1.5		1.2	
	Locked rotor amps		6.0		3.0		2.9		6.0		3.0		2.9	
Indoor Blower Motor	Motor Output	hp	2	3	2	3	2	3	2	3	2	3	2	3
		kW	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2
	Full load amps		7.5	10.6	3.4	4.8	2.7	3.9	7.5	10.6	3.4	4.8	2.7	3.9
	Locked rotor amps		46.9	66	20.4	26.8	16.2	23.4	46.9	66	20.4	26.8	16.2	23.4
Rec. max. fuse size (amps)	With Exhaust Fan		50	50	25	25	20	20	70	80	35	40	25	30
	Less Exhaust Fan		50	50	25	25	20	20	70	70	35	35	25	25
*Minimum Circuit Ampacity	With Exhaust Fan		44	47	22	23	17	18	49	53	25	27	19	20
	Less Exhaust Fan		41	44	20	22	16	17	47	50	24	25	18	19
Optional Power Exhaust Fan	(No.) Horsepower (W)		(1) 1/3 (249)											
	Full load amps		2.4		1.3		1.0		2.4		1.3		1.0	
	Locked rotor amps		4.7		2.4		1.9		4.7		2.4		1.9	
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).

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)

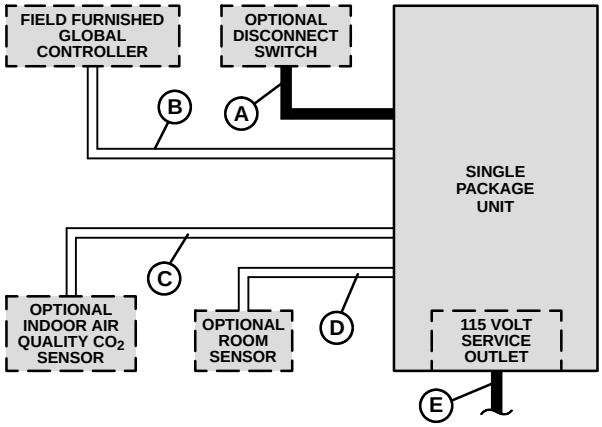
FIELD WIRING

ALL DDC CONTROL SYSTEMS

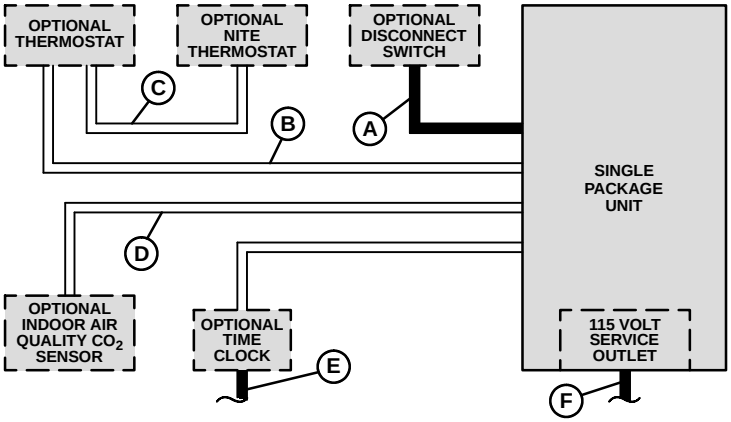
A — Three wire power (See Electrical Data Table)
B — RS-485 shielded pair twisted wire
C — Four wire low voltage
D — Two wire low voltage (Andover Infinity, CPC 810-3060 and Novar ETM-2050)
Three wire low voltage (CSI MR88R)
Four wire low voltage (Johnson Metasys, Honeywell W7620)
Four wire low voltage (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 — 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)

— Field wiring not furnished —

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

HONEYWELL W973 CONTROL SYSTEM

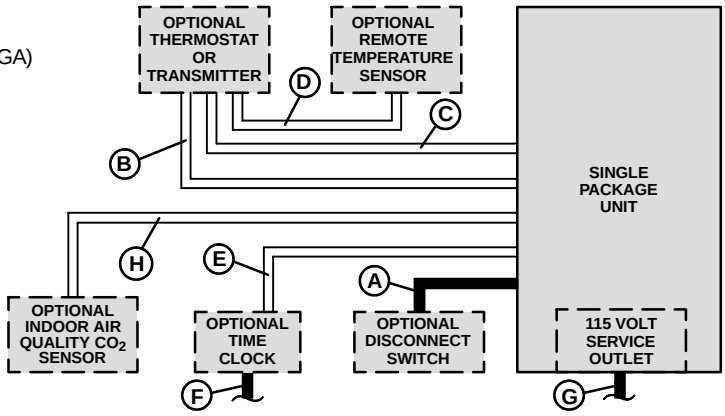
A — Three wire power (See Electrical Data Table)
B — Seven wire low voltage — DC only
Seven wire low voltage — DC only — with switching subbase (LCA/LGA)
Eight wire low voltage — DC only — with switching subbase (LHA)
C — Two wire low voltage — AC only — with switching subbase
D — Two wire low voltage — 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.



OPTIONAL ELECTRIC HEAT DATA (REQUIRES UNIT FUSE BLOCK AND TERMINAL BLOCK)

LCA088S

kW Size Required	Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit (with Power Exhaust Fan) & Electric Heat Minimum Circuit Ampacity	
						2 hp (1.5 kW)	3 hp (2.2 kW)
7.5 kW	EHA100-7.5 208/230v **(16L08)** 460v **(16L09)** 575v **(16L10)** 31 lbs. (14 kg)	1	208	5.6	19,100	41	44
		1	220	6.3	21,500		
		1	230	6.9	23,600		
		1	240	7.5	25,600		
		1	440	6.9	21,500	23	24
		1	460	6.9	23,600		
		1	480	7.5	25,600		
		1	550	6.3	21,500	18	20
		1	575	6.9	23,600		
		1	600	7.5	25,600		
15 kW	EHA100-15 208/230v **(16L11)** 460v **(16L12)** 575v **(16L13)** 31 lbs. (14 kg)	1	208	11.3	38,600	52	56
		1	220	12.6	43,000	58	62
		1	230	13.8	47,100		
		1	240	15.0	51,200		
		1	440	12.6	43,000	29	31
		1	460	13.8	47,100		
		1	480	15.0	51,200		
		1	550	12.6	43,000	23	25
		1	575	13.8	47,100		
		1	600	15.0	51,200		
22.5 kW	EHA100-22.5 208/230v **(32L95)** 460v **(32L96)** 575v **(32L97)** 38 lbs. (17 kg)	‡2	208	16.9	57,700	71	75
		‡2	220	18.9	64,500	73	77
		‡2	230	20.7	70,700		
		‡2	240	22.5	76,800		
		‡2	440	18.9	64,500	82	86
		‡2	460	20.7	70,700		
		‡2	480	22.5	76,800		
		‡2	550	18.9	64,500	41	43
		‡2	575	20.7	70,700		
		‡2	600	22.5	76,800	33	34
30 kW	EHA100-30 208/230v **(16L14)** 460v **(16L15)** 575v **(16L16)** 38 lbs. (17 kg)	‡2	208	22.5	76,800	91	95
		‡2	220	25.2	86,000	103	107
		‡2	230	27.5	93,900		
		‡2	240	30.0	102,400		
		‡2	440	25.2	86,000	51	53
		‡2	460	27.5	93,900		
		‡2	480	30.0	102,400		
		‡2	550	25.2	86,000	41	43
		‡2	575	27.5	93,900		
		‡2	600	30.0	102,400		
45 kW	EHA100-45 208/230v **(16L17)** 460v **(16L18)** 575v **(16L19)** 42 lbs. (19 kg)	‡2	208	33.8	115,300	130	134
		‡2	220	37.8	129,000	148	152
		‡2	230	41.3	141,000		
		‡2	240	45.0	153,600		
		‡2	440	37.8	129,000	74	76
		‡2	460	41.3	141,000		
		‡2	480	45.0	153,600		
		‡2	550	37.8	129,000	59	61
		‡2	575	41.3	141,000		
		‡2	600	45.0	153,600		

NOTE - (H) indicates high efficiency units. (S) indicates standard efficiency units.
†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 unit with field installed heaters. Also requires LTB2 Terminal Block.

LCA088H

kW Size Required	Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit (with Power Exhaust Fan) & Electric Heat Minimum Circuit Ampacity	
						2 hp (1.5 kW)	3 hp (2.2 kW)
7.5 kW	EHA100-7.5 208/230v **(16L08)** 460v **(16L09)** 575v **(16L10)** 31 lbs. (14 kg)	1	208	5.6	19,100	41	44
		1	220	6.3	21,500		
		1	230	6.9	23,600		
		1	240	7.5	25,600		
		1	440	6.9	21,500	21	23
		1	460	6.9	23,600		
		1	480	7.5	25,600		
		1	550	6.3	21,500	17	18
		1	575	6.9	23,600		
		1	600	7.5	25,600		
15 kW	EHA100-15 208/230v **(16L11)** 460v **(16L12)** 575v **(16L13)** 31 lbs. (14 kg)	1	208	11.3	38,600	52	56
		1	220	12.6	43,000	58	62
		1	230	13.8	47,100		
		1	240	15.0	51,200		
		1	440	12.6	43,000	29	31
		1	460	13.8	47,100		
		1	480	15.0	51,200		
		1	550	12.6	43,000	23	25
		1	575	13.8	47,100		
		1	600	15.0	51,200		
22.5 kW	EHA100-22.5 208/230v **(32L95)** 460v **(32L96)** 575v **(32L97)** 38 lbs. (17 kg)	‡2	208	16.9	57,700	71	75
		‡2	220	18.9	64,500	73	77
		‡2	230	20.7	70,700		
		‡2	240	22.5	76,800		
		‡2	440	18.9	64,500	82	86
		‡2	460	20.7	70,700		
		‡2	480	22.5	76,800		
		‡2	550	18.9	64,500	41	43
		‡2	575	20.7	70,700		
		‡2	600	22.5	76,800	33	34
30 kW	EHA100-30 208/230v **(16L14)** 460v **(16L15)** 575v **(16L16)** 38 lbs. (17 kg)	‡2	208	22.5	76,800	91	95
		‡2	220	25.2	86,000	103	107
		‡2	230	27.5	93,900		
		‡2	240	30.0	102,400		
		‡2	440	25.2	86,000	51	53
		‡2	460	27.5	93,900		
		‡2	480	30.0	102,400		
		‡2	550	25.2	86,000	41	43
		‡2	575	27.5	93,900		
		‡2	600	30.0	102,400		
45 kW	EHA100-45 208/230v **(16L17)** 460v **(16L18)** 575v **(16L19)** 42 lbs. (19 kg)	‡2	208	33.8	115,300	130	134
		‡2	220	37.8	129,000	148	152
		‡2	230	41.3	141,000		
		‡2	240	45.0	153,600		
		‡2	440	37.8	129,000	74	76
		‡2	460	41.3	141,000		
		‡2	480	45.0	153,600		
		‡2	550	37.8	129,000	59	61
		‡2	575	41.3	141,000		
		‡2	600	45.0	153,600		

NOTE - (H) indicates high efficiency units. (S) indicates standard efficiency units.
†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 unit with field installed heaters. Also requires LTB2 Terminal Block.

OPTIONAL ELECTRIC HEAT DATA (REQUIRES UNIT FUSE BLOCK AND TERMINAL BLOCK)

LCA100S

kW Size Required	Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit (with Power Exhaust Fan) & Electric Heat Minimum Circuit Ampacity	
						2 hp (1.5 kW)	3 hp (2.2 kW)
7.5 kW	EHA100-7.5 208/230v **(16L08)** 460v **(16L09)** 575v **(16L10)** 31 lbs. (14 kg)	1	208	5.6	19,100	44	47
		1	220	6.3	21,500		
		1	230	6.9	23,600		
		1	240	7.5	25,600		
		1	440	6.9	21,500	22	23
		1	460	6.9	23,600		
		1	480	7.5	25,600		
		1	550	6.3	21,500	17	18
		1	575	6.9	23,600		
		1	600	7.5	25,600		
15 kW	EHA100-15 208/230v **(16L11)** 460v **(16L12)** 575v **(16L13)** 31 lbs. (14 kg)	1	208	11.3	38,600	52	56
		1	220	12.6	43,000	58	62
		1	230	13.8	47,100		
		1	240	15.0	51,200		
		1	440	12.6	43,000	29	31
		1	460	13.8	47,100		
		1	480	15.0	51,200		
		1	550	12.6	43,000	23	25
		1	575	13.8	47,100		
		1	600	15.0	51,200		
22.5 kW	EHA100-22.5 208/230v **(32L95)** 460v **(32L96)** 575v **(32L97)** 38 lbs. (17 kg)	‡2	208	16.9	57,700	71	75
		‡2	220	18.9	64,500	73	77
		‡2	230	20.7	70,700		
		‡2	240	22.5	76,800		
		‡2	440	18.9	64,500	82	86
		‡2	460	20.7	70,700		
		‡2	480	22.5	76,800		
		‡2	550	18.9	64,500	41	43
		‡2	575	20.7	70,700		
		‡2	600	22.5	76,800	33	34
30 kW	EHA100-30 208/230v **(16L14)** 460v **(16L15)** 575v **(16L16)** 38 lbs. (17 kg)	‡2	208	22.5	76,800	91	95
		‡2	220	25.2	86,000	103	107
		‡2	230	27.5	93,900		
		‡2	240	30.0	102,400		
		‡2	440	25.2	86,000	51	53
		‡2	460	27.5	93,900		
		‡2	480	30.0	102,400		
		‡2	550	25.2	86,000	41	43
		‡2	575	27.5	93,900		
		‡2	600	30.0	102,400		
45 kW	EHA100-45 208/230v **(16L17)** 460v **(16L18)** 575v **(16L19)** 42 lbs. (19 kg)	‡2	208	33.8	115,300	130	134
		‡2	220	37.8	129,000	148	152
		‡2	230	41.3	141,000		
		‡2	240	45.0	153,600		
		‡2	440	37.8	129,000	74	76
		‡2	460	41.3	141,000		
		‡2	480	45.0	153,600		
		‡2	550	37.8	129,000	59	61
		‡2	575	41.3	141,000		
		‡2	600	45.0	153,600		

NOTE - (H) indicates high efficiency units. (S) indicates standard efficiency units.
†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 unit with field installed heaters. Also requires LTB2 Terminal Block.

LHA088S

kW Size Required	Electric Heat Model No. & Net Weight	No. of Steps	Volts Input	kW Input	Btuh Output	†Total Unit (with Power Exhaust Fan) & Electric Heat Minimum Circuit Ampacity	
						2 hp (1.5 kW)	3 hp (2.2 kW)
7.5 kW	EHA100-7.5 208/230v **(16L08)** 460v **(16L09)** 575v **(16L10)** 31 lbs. (14 kg)	1	208	5.6	19,100	72	75
		1	220	6.3	21,500		
		1	230	6.9	23,600		
		1	240	7.5	25,600		
		1	440	6.9	21,500	36	38
		1	460	6.9	23,600		
		1	480	7.5	25,600		
		1	550	6.3	21,500	28	29
		1	575	6.9	23,600		
		1	600	7.5	25,600		
15 kW	EHA100-15 208/230v **(16L11)** 460v **(16L12)** 575v **(16L13)** 31 lbs. (14 kg)	1	208	11.3	38,600	95	98
		1	220	12.6	43,000		
		1	230	13.8	47,100		
		1	240	15.0	51,200		
		1	440	12.6	43,000	48	49
		1	460	13.8	47,100		
		1	480	15.0	51,200		
		1	550	12.6	43,000	37	39
		1	575	13.8	47,100		
		1	600	15.0	51,200		
22.5 kW	EHA100-22.5 208/230v **(32L95)** 460v **(32L96)** 575v **(32L97)** 38 lbs. (17 kg)	‡2	208	16.9	57,700	108	112
		‡2	220	18.9	64,500	117	121
		‡2	230	20.7	70,700		
		‡2	240	22.5	76,800		
		‡2	440	18.9	64,500	59	61
		‡2	460	20.7	70,700		
		‡2	480	22.5	76,800		
		‡2	550	18.9	64,500	47	48
		‡2	575	20.7	70,700		
		‡2	600	22.5	76,800		
30 kW	EHA100-30 208/230v **(16L14)** 460v **(16L15)** 575v **(16L16)** 38 lbs. (17 kg)	‡2	208	22.5	76,800	128	131
		‡2	220	25.2	86,000	140	143
		‡2	230	27.5	93,900		
		‡2	240	30.0	102,400		
		‡2	440	25.2	86,000	70	72
		‡2	460	27.5	93,900		
		‡2	480	30.0	102,400		
		‡2	550	25.2	86,000	55	56
		‡2	575	27.5	93,900		
		‡2	600	30.0	102,400		
45 kW	EHA100-45 208/230v **(16L17)** 460v **(16L18)** 575v **(16L19)** 42 lbs. (19 kg)	‡2	208	33.8	115,300	167	170
		‡2	220	37.8	129,000	185	188
		‡2	230	41.3	141,000		
		‡2	240	45.0	153,600		
		‡2	440	37.8	129,000	93	94
		‡2	460	41.3	141,000		
		‡2	480	45.0	153,600		
		‡2	550	37.8	129,000	73	74
		‡2	575	41.3	141,000		
		‡2	600	45.0	153,600		

NOTE - (H) indicates high efficiency units. (S) indicates standard efficiency units.
†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 unit with field installed heaters. Also requires LTB2 Terminal Block.

COOLING RATINGS - LCA/LGA MODELS

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

LCA/LGA 088S - STANDARD EFFICIENCY - 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) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	L/s	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	2400	1135	49.5	14.5	2.98	.63	.75	.88	47.2	13.8	3.29	.63	.77	.91	44.9	13.2	3.59	.64	.79	.93	42.6	12.5	3.90	.66	.81	.96
	3000	1415	51.8	15.2	2.99	.66	.82	.97	49.4	14.5	3.32	.68	.84	.99	47.0	13.8	3.64	.70	.87	1.00	44.5	13.0	3.96	.71	.90	1.00
	3600	1700	53.6	15.7	3.00	.71	.89	1.00	51.1	15.0	3.34	.73	.91	1.00	48.6	14.2	3.68	.75	.94	1.00	46.1	13.5	4.01	.78	.97	1.00
67°F (19°C)	2400	1135	53.1	15.6	3.00	.50	.60	.71	50.7	14.9	3.34	.50	.61	.73	48.3	14.2	3.67	.51	.62	.75	45.8	13.4	4.00	.52	.63	.77
	3000	1415	55.4	16.2	3.01	.52	.64	.78	52.8	15.5	3.36	.53	.65	.80	50.2	14.7	3.71	.53	.67	.82	47.6	14.0	4.05	.54	.68	.85
	3600	1700	57.0	16.7	3.02	.54	.68	.85	54.3	15.9	3.38	.55	.70	.87	51.6	15.1	3.74	.56	.72	.90	48.8	14.3	4.08	.57	.75	.93
71°F (22°C)	2400	1135	56.9	16.7	3.01	.39	.48	.57	54.4	15.9	3.38	.39	.49	.58	51.9	15.2	3.74	.39	.49	.59	49.2	14.4	4.10	.39	.50	.61
	3000	1415	59.3	17.4	3.02	.39	.50	.61	56.6	16.6	3.40	.39	.51	.62	53.8	15.8	3.77	.40	.52	.64	51.0	14.9	4.14	.40	.53	.65
	3600	1700	61.0	17.9	3.03	.40	.52	.65	58.1	17.0	3.41	.40	.54	.67	55.2	16.2	3.80	.41	.55	.70	52.3	15.3	4.17	.41	.56	.72

LCA/LGA 088S - STANDARD EFFICIENCY - 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) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	L/s	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	2400	1135	88.6	26.0	7.15	.67	.80	.93	84.1	24.6	7.75	.68	.82	.96	79.6	23.3	8.33	.70	.85	.99	74.9	22.0	8.88	.71	.88	1.00
	3000	1415	92.7	27.2	7.25	.71	.87	1.00	87.9	25.8	7.88	.73	.90	1.00	83.1	24.4	8.48	.76	.93	1.00	78.3	22.9	9.06	.78	.96	1.00
	3600	1700	95.9	28.1	7.32	.77	.94	1.00	91.0	26.7	7.97	.79	.97	1.00	86.3	25.3	8.61	.82	.99	1.00	81.7	23.9	9.23	.85	1.00	1.00
67°F (19°C)	2400	1135	95.3	27.9	7.30	.53	.64	.76	90.5	26.5	7.95	.54	.65	.78	85.5	25.1	8.57	.54	.67	.80	80.5	23.6	9.17	.55	.69	.83
	3000	1415	99.1	29.0	7.39	.55	.69	.83	94.0	27.5	8.06	.56	.70	.86	88.8	26.0	8.71	.57	.73	.89	83.5	24.5	9.32	.59	.75	.92
	3600	1700	101.9	29.9	7.45	.58	.74	.91	96.5	28.3	8.12	.59	.76	.93	91.1	26.7	8.79	.61	.79	.97	85.5	25.1	9.42	.62	.82	.99
71°F (22°C)	2400	1135	102.4	30.0	7.45	.40	.51	.61	97.2	28.5	8.15	.41	.52	.63	92.1	27.0	8.83	.41	.52	.64	86.7	25.4	9.48	.41	.54	.66
	3000	1415	106.3	31.2	7.52	.41	.54	.66	100.8	29.5	8.24	.41	.55	.68	95.3	27.9	8.95	.42	.56	.70	89.7	26.3	9.62	.42	.57	.72
	3600	1700	109.0	31.9	7.57	.42	.57	.71	103.3	30.3	8.31	.43	.58	.73	97.5	28.6	9.02	.43	.59	.76	91.6	26.8	9.71	.44	.61	.79

LCA/LGA 088H - HIGH EFFICIENCY - 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) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	L/s	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	2400	1135	43.9	12.9	2.31	.63	.77	.93	42.5	12.5	2.61	.64	.79	.95	41.1	12.0	2.94	.65	.80	.97	39.6	11.6	3.32	.66	.82	.99
	3000	1415	45.7	13.4	2.33	.68	.86	1.00	44.3	13.0	2.62	.69	.88	1.00	42.7	12.5	2.96	.70	.90	1.00	41.1	12.0	3.34	.72	.92	1.00
	3600	1700	47.1	13.8	2.34	.74	.94	1.00	45.7	13.4	2.64	.75	.96	1.00	44.1	12.9	2.97	.77	.98	1.00	42.6	12.5	3.35	.79	1.00	1.00
67°F (19°C)	2400	1135	46.9	13.7	2.34	.50	.61	.73	45.4	13.3	2.63	.50	.61	.74	43.8	12.8	2.97	.51	.62	.76	42.2	12.4	3.35	.51	.63	.78
	3000	1415	48.6	14.2	2.36	.52	.65	.82	47.0	13.8	2.65	.53	.66	.84	45.4	13.3	2.98	.53	.68	.86	43.7	12.8	3.36	.54	.69	.88
	3600	1700	49.8	14.6	2.37	.55	.71	.90	48.2	14.1	2.66	.56	.72	.92	46.5	13.6	3.00	.56	.74	.94	44.7	13.1	3.37	.57	.76	.97
71°F (22°C)	2400	1135	50.0	14.7	2.37	.38	.48	.58	48.5	14.2	2.66	.38	.49	.59	46.9	13.7	3.00	.38	.49	.60	45.1	13.2	3.38	.38	.50	.61
	3000	1415	51.8	15.2	2.39	.39	.51	.63	50.1	14.7	2.68	.39	.51	.64	48.4	14.2	3.01	.39	.52	.65	46.5	13.6	3.39	.39	.53	.66
	3600	1700	52.9	15.5	2.40	.40	.54	.68	51.2	15.0	2.69	.40	.54	.70	49.4	14.5	3.02	.40	.55	.72	47.5	13.9	3.40	.41	.56	.74

LCA/LGA 088H - HIGH EFFICIENCY - 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) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	L/s	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	2400	1135	84.2	24.7	6.05	.71	.87	1.00	81.1	23.8	6.83	.73	.88	1.00	77.6	22.7	7.72	.74	.91	1.00	74.1	21.7	8.71	.76	.93	1.00
	3000	1415	87.5	25.6	6.09	.77	.95	1.00	84.2	24.7	6.88	.79	.98	1.00	80.9	23.7	7.75	.81	1.00	1.00	77.2	22.6	8.75	.83	1.00	1.00
	3600	1700	90.4	26.5	6.12	.83	1.00	1.00	87.2	25.6	6.90	.85	1.00	1.00	84.0	24.6	7.78	.87	1.00	1.00	80.6	23.6	8.79	.90	1.00	1.00
67°F (19°C)	2400	1135	89.8	26.3	6.11	.56	.69	.83	86.4	25.3	6.90	.57	.70	.84	82.9	24.3	7.78	.58	.71	.86	79.1	23.2	8.77	.58	.73	.89
	3000	1415	93.0	27.3	6.14	.59	.75	.92	89.4	26.2	6.92	.60	.76	.94	85.6	25.1	7.81	.61	.78	.96	81.6	23.9	8.81	.62	.80	.99
	3600	1700	95.2	27.9	6.17	.63	.81	1.00	91.5	26.8	6.94	.64	.83	1.00	87.6	25.7	7.84	.65	.85	1.00	83.5	24.5	8.84	.66	.88	1.00
71°F (22°C)	2400	1135	96.0	28.1	6.18	.42	.54	.66	92.4	27.1	6.96	.43	.55	.67	88.6	26.0	7.84	.43	.56	.69	84.6	24.8	8.85	.43	.57	.70
	3000	1415	99.1	29.0	6.20	.43	.58	.72	95.2	27.9	6.98	.44	.59	.73	91.3	26.8	7.88	.44	.60	.75	87.0	25.5	8.88	.45	.61	.77
	3600	1700	101.1	29.6	6.22	.45	.61	.78	97.2	28.5	7.01	.45	.62	.80	93.1	27.3	7.90	.46	.64	.82	88.7	26.0	8.91	.46	.65	.85

COOLING RATINGS - LCA/LGA MODELS

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

LCA/LGA 100S - STANDARD EFFICIENCY - 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) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	L/s	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	2720	1285	52.4	15.4	2.92	.66	.79	.92	49.7	14.6	3.23	.66	.80	.94	46.9	13.7	3.60	.66	.81	.96	44.0	12.9	4.01	.66	.82	.97
	3400	1605	54.5	16.0	2.97	.70	.86	1.00	51.7	15.2	3.29	.71	.88	1.00	48.8	14.3	3.65	.71	.89	1.00	45.8	13.4	4.06	.72	.91	1.00
	4080	1925	56.1	16.4	3.01	.75	.93	1.00	53.3	15.6	3.33	.76	.95	1.00	50.4	14.8	3.69	.77	.97	1.00	47.3	13.9	4.11	.79	.99	1.00
67°F (19°C)	2720	1285	55.8	16.4	3.00	.53	.63	.75	53.0	15.5	3.32	.52	.63	.76	50.1	14.7	3.68	.52	.63	.77	47.0	13.8	4.10	.51	.64	.78
	3400	1605	57.8	16.9	3.05	.55	.67	.82	54.9	16.1	3.37	.55	.68	.84	51.8	15.2	3.73	.54	.69	.85	48.6	14.2	4.15	.54	.70	.87
	4080	1925	59.1	17.3	3.09	.57	.73	.90	56.2	16.5	3.41	.57	.74	.91	53.1	15.6	3.77	.57	.75	.93	49.8	14.6	4.19	.57	.76	.96
71°F (22°C)	2720	1285	59.4	17.4	3.10	.41	.51	.61	56.5	16.6	3.41	.40	.50	.61	53.5	15.7	3.78	.39	.50	.61	50.3	14.7	4.21	.38	.50	.61
	3400	1605	61.4	18.0	3.15	.41	.53	.65	58.4	17.1	3.47	.41	.53	.66	55.2	16.2	3.84	.40	.53	.66	51.9	15.2	4.26	.39	.53	.67
	4080	1925	62.7	18.4	3.19	.42	.56	.70	59.6	17.5	3.51	.42	.56	.71	56.3	16.5	3.87	.41	.56	.72	53.0	15.5	4.30	.40	.57	.74

LCA/LGA100S - STANDARD EFFICIENCY - 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) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	L/s	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	2720	1285	94.6	27.7	7.20	.68	.82	.96	91.0	26.7	8.02	.69	.83	.98	87.3	25.6	8.95	.70	.85	.99	83.4	24.4	9.98	.71	.88	1.00
	3400	1605	98.3	28.8	7.31	.73	.90	1.00	94.6	27.7	8.13	.74	.92	1.00	90.6	26.6	9.07	.76	.94	1.00	86.7	25.4	10.11	.78	.97	1.00
	4080	1925	101.3	29.7	7.39	.79	.97	1.00	97.6	28.6	8.23	.80	.99	1.00	93.9	27.5	9.16	.82	1.00	1.00	90.2	26.4	10.22	.85	1.00	1.00
67°F (19°C)	2720	1285	100.8	29.5	7.37	.54	.65	.78	97.0	28.4	8.21	.54	.66	.80	92.9	27.2	9.14	.55	.68	.82	88.8	26.0	10.18	.55	.69	.84
	3400	1605	104.3	30.6	7.47	.56	.70	.86	100.3	29.4	8.31	.57	.72	.88	96.0	28.1	9.25	.58	.73	.91	91.6	26.8	10.29	.59	.76	.93
	4080	1925	106.7	31.3	7.55	.59	.76	.94	102.5	30.0	8.39	.60	.78	.96	98.1	28.8	9.33	.61	.80	.98	93.5	27.4	10.38	.63	.83	1.00
71°F (22°C)	2720	1285	107.6	31.5	7.57	.40	.52	.63	103.4	30.3	8.42	.41	.52	.64	99.2	29.1	9.37	.41	.53	.65	94.9	27.8	10.42	.41	.54	.66
	3400	1605	111.0	32.5	7.68	.41	.55	.68	106.7	31.3	8.53	.42	.56	.70	102.1	29.9	9.47	.42	.57	.71	97.6	28.6	10.54	.42	.58	.73
	4080	1925	113.3	33.2	7.75	.43	.58	.74	108.8	31.9	8.60	.43	.59	.76	104.1	30.5	9.55	.43	.60	.78	99.3	29.1	10.62	.44	.62	.80

COOLING 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.

LHA088S FULL LOAD COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																					
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	L/s	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	2400	1135	87.7	25.7	6.80	.70	.84	.96	83.3	24.4	7.63	.71	.85	.97	78.7	23.1	8.55	.72	.86	.98	74.0	21.7	9.53	.72	.88	1.00
	3000	1415	91.1	26.7	6.86	.75	.90	1.00	86.5	25.4	7.68	.76	.92	1.00	81.8	24.0	8.60	.77	.94	1.00	76.9	22.5	9.61	.79	.95	1.00
	3600	1700	93.8	27.5	6.90	.80	.96	1.00	89.2	26.1	7.74	.81	.97	1.00	84.4	24.7	8.66	.83	.99	1.00	79.6	23.3	9.67	.85	1.00	1.00
67°F (19°C)	2400	1135	93.3	27.3	6.89	.55	.68	.80	88.6	26.0	7.72	.55	.68	.81	83.7	24.5	8.65	.55	.69	.83	78.7	23.1	9.66	.55	.70	.85
	3000	1415	96.3	28.2	6.95	.58	.73	.87	91.4	26.8	7.78	.58	.74	.89	86.4	25.3	8.69	.59	.75	.91	81.1	23.8	9.71	.59	.76	.93
	3600	1700	98.4	28.8	6.99	.61	.78	.93	93.4	27.4	7.82	.61	.79	.95	88.3	25.9	8.74	.62	.81	.97	82.8	24.3	9.77	.63	.83	.99
71°F (22°C)	2400	1135	99.4	29.1	7.00	.42	.53	.65	94.5	27.7	7.84	.41	.53	.66	89.4	26.2	8.76	.40	.53	.67	84.1	24.6	9.79	.40	.54	.68
	3000	1415	102.4	30.0	7.05	.43	.57	.70	97.2	28.5	7.90	.42	.57	.71	91.9	26.9	8.83	.42	.57	.73	86.4	25.3	9.85	.41	.58	.74
	3600	1700	104.4	30.6	7.10	.44	.60	.76	99.1	29.0	7.93	.43	.60	.77	93.7	27.5	8.87	.43	.61	.79	88.0	25.8	9.90	.43	.62	.80

LHA088S - 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 (-26°C)		
		Total Heating Capacity		Comp. Motor kW Input	Total Heating Capacity		Comp. Motor kW Input	Total Heating Capacity		Comp. Motor kW Input	Total Heating Capacity		Comp. Motor kW Input	Total Heating Capacity		Comp. Motor kW Input
cfm	L/s	kBtuh	kW		kBtuh	kW		kBtuh	kW		kBtuh	kW		kBtuh	kW	
2400	1135	101.2	29.7	7.55	75.6	22.2	6.89	49.5	14.5	6.18	29.1	8.5	5.53	12.0	3.5	4.19
3000	1415	108.2	31.7	7.05	82.6	24.2	6.39	56.5	16.6	5.68	36.1	10.6	5.03	19.0	5.6	3.69
3600	1700	113.2	33.2	6.55	87.6	25.7	5.89	61.5	18.0	5.18	41.1	12.0	4.53	24.0	7.0	3.19

LHA088S - HEATING PERFORMANCE at 3000 cfm (1415 L/s) Indoor Coil Air Volume

*Outdoor Temperature		Compressor Motor kW Input	Total Output	
°F	°C		kBtuh	kW
65	18	7.05	108.2	31.7
60	16	6.90	102.0	29.9
55	13	6.75	95.9	28.1
50	10	6.59	89.7	26.3
47	8	6.50	86.0	25.2
45	7	6.39	82.6	24.2
40	4	6.09	74.2	21.7
35	2	5.80	65.8	19.3
30	-1	5.74	61.1	17.9
25	-4	5.68	56.5	16.6

*Outdoor Temperature		Compressor Motor kW Input	Total Output	
°F	°C		kBtuh	kW
20	-7	5.62	51.8	15.2
17	-8	5.58	49.0	14.4
15	-9	5.52	46.5	13.6
10	-12	5.37	40.4	11.8
5	-15	5.03	36.1	10.6
0	-18	4.70	31.8	9.3
-5	-21	4.36	27.5	8.1
-10	-23	4.02	23.3	6.8
-15	-26	3.69	19.0	5.6
-20	-29	3.35	14.7	4.3

BLOWER DATA - BASE UNIT

BLOWER TABLE INCLUDES RESISTANCE FOR LCA088 BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

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

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

See Page 21 for wet coil and option/accessory air resistance data and blower motors and drives.

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT

LCA/LHA models require 3000 cfm (1415 L/s) minimum air with electric heat in horizontal applications
LCA/LHA models require 2600 cfm (1225 L/s) minimum air with electric heat in downflow applications

BOLD ITALICS INDICATE FIELD FURNISHED DRIVE.

Air Volume cfm (L/s)	Total Static Pressure - Inches Water Gauge (Pa)																	
	0.20 (50)		0.40 (100)		0.60 (150)		0.80 (200)		1.00 (250)		1.20 (300)		1.40 (350)		1.60 (400)		1.80 (450)		2.00 (495)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
2000 (945)	***625***	***0.40 (.30)***	***725***	***0.55 (0.41)***	***820***	***0.70 (0.52)***	905	0.90 (0.67)	990	1.10 (0.82)	1065	1.30 (0.97)	1140	1.55 (1.16)	1215	1.85 (1.38)	1285	2.20 (1.64)	***1350***	***2.50 (1.87)***
2200 (1040)	***670***	***0.50 (.37)***	***760***	***0.65 (0.48)***	850	0.80 (0.60)	930	1.00 (0.75)	1010	1.20 (0.90)	1085	1.45 (1.08)	1155	1.70 (1.27)	1225	1.95 (1.45)	1290	2.25 (1.68)	***1355***	***2.60 (1.94)***
2400 (1135)	***715***	***0.65 (.48)***	***800***	***0.80 (0.60)***	880	0.95 (0.71)	960	1.15 (0.86)	1030	1.35 (1.01)	1105	1.60 (1.19)	1170	1.80 (1.34)	1240	2.10 (1.57)	***1305***	***2.40 (1.79)***	***1365***	***2.70 (2.01)***
2600 (1230)	***760***	***0.80 (.60)***	***840***	***0.95 (0.71)***	915	1.10 (0.82)	990	1.30 (0.97)	1060	1.50 (1.12)	1125	1.75 (1.31)	1195	2.00 (1.49)	1255	2.25 (1.68)	***1320***	***2.55 (1.90)***	***1380***	***2.85 (2.13)***
2800 (1325)	***805***	***1.00 (.75)***	880	1.15 (0.86)	955	1.30 (0.97)	1020	1.50 (1.12)	1090	1.70 (1.27)	1155	1.95 (1.45)	1215	2.20 (1.64)	1280	2.45 (1.83)	***1335***	***2.70 (2.01)***	***1395***	***3.05 (2.28)***
3000 (1420)	855	1.20 (.90)	925	1.35 (1.01)	990	1.50 (1.12)	1055	1.70 (1.27)	1120	1.95 (1.45)	1185	2.15 (1.60)	1245	2.40 (1.79)	1300	2.65 (1.98)	***1360***	***2.95 (2.20)***	***1415***	***3.25 (2.42)***
3200 (1510)	900	1.40 (1.04)	965	1.60 (1.19)	1030	1.75 (1.31)	1095	2.00 (1.49)	1155	2.20 (1.64)	1215	2.45 (1.83)	1270	2.65 (1.98)	***1330***	***2.95 (2.20)***	***1385***	***3.25 (2.42)***	***1435***	***3.50 (2.61)***
3400 (1605)	950	1.70 (1.27)	1010	1.85 (1.38)	1075	2.05 (1.53)	1130	2.25 (1.68)	1190	2.50 (1.87)	1245	2.70 (2.01)	1300	2.95 (2.20)	***1355***	***3.25 (2.42)***	***1410***	***3.50 (2.61)***	***1460***	***3.80 (2.83)***
3600 (1700)	995	1.95 (1.45)	1055	2.15 (1.60)	1115	2.35 (1.75)	1170	2.55 (1.90)	1225	2.80 (2.09)	1280	3.05 (2.28)	***1335***	***3.30 (2.46)***	***1385***	***3.55 (2.65)***	***1440***	***3.85 (2.87)***	***1490***	***4.15 (3.10)***
3800 (1795)	1045	2.30 (1.72)	1100	2.45 (1.83)	1160	2.70 (2.01)	1210	2.90 (2.16)	1265	3.15 (2.35)	***1320***	***3.40 (2.54)***	***1370***	***3.65 (2.72)***	***1420***	***3.95 (2.95)***	***1470***	***4.25 (3.17)***	***1515***	***4.50 (3.36)***
4000 (1890)	1095	2.65 (1.98)	1150	2.85 (2.13)	1200	3.05 (2.28)	1255	3.30 (2.46)	***1305***	***3.55 (2.65)***	***1355***	***3.80 (2.83)***	***1405***	***4.05 (3.02)***	***1450***	***4.30 (3.21)***	***1500***	***4.60 (3.43)***	***1545***	***4.90 (3.66)***

FACTORY INSTALLED DRIVE KIT SPECIFICATIONS

Motor Outputs				RPM Range			
Nominal hp	Maximum hp	Nominal kW	Maximum kW	Drive 1	Drive 2	Drive 3	Drive 4
2 Standard	2.30	1.5	1.7	845 - 1130	- - - -	1015 - 1300	- - - -
2 High Efficiency	2.30	1.5	1.7	845 - 1130	- - - -	1015 - 1300	- - - -
3 Standard	3.45	2.2	2.6	845 - 1130	- - - -	1015 - 1300	- - - -
3 High Efficiency	3.45	2.2	2.6	- - - -	845 - 1130	- - - -	1015 - 1300

*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.

BLOWER DATA - ALL MODELS

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
cfm	L/s		Low Fire	High Fire		
2000	945	0.06 (15)	0.05 (12)	0.08 (20)	0.13	0.03 (7)
2200	140	0.07 (17)	0.08 (20)	0.13 (32)	0.15	0.04 (10)
2400	1135	0.09 (22)	0.10 (25)	0.16 (40)	0.16	0.05 (12)
2600	1230	0.10 (25)	0.14 (35)	0.23 (57)	0.17	0.05 (12)
2800	1325	0.11 (27)	0.15 (37)	0.25 (62)	0.18	0.06 (15)
3000	1420	0.12 (30)	0.19 (47)	0.32 (80)	0.20	0.06 (15)
3200	1510	0.14 (35)	0.23 (57)	0.39 (97)	0.24	0.07 (17)
3400	1605	0.15 (37)	0.26 (65)	0.43 (107)	0.26	0.08 (20)
3600	1700	0.17 (42)	0.30 (75)	0.50 (124)	0.30	0.09 (22)
3800	1795	0.18 (45)	0.32 (80)	0.53 (132)	0.33	0.10 (25)
4000	1890	0.19 (47)	0.36 (90)	0.60 (149)	0.35	0.11 (27)

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	
088 & 100 Models	2400	1185	.21 (52)	.18 (.45)	.15 (37)	.14 (35)
	2600	1225	.24 (60)	.21 (52)	.18 (45)	.17 (42)
	2800	1320	.27 (67)	.24 (60)	.21 (52)	.20 (50)
	3000	1415	.32 (80)	.29 (72)	.25 (62)	.25 (62)
	3200	1510	.41 (102)	.37 (92)	.32 (80)	.31 (77)
	3400	1605	.50 (124)	.45 (112)	.39 (97)	.37 (92)
	3600	1700	.61 (152)	.54 (134)	.48 (119)	.44 (109)
	3800	1795	.73 (182)	.63 (157)	.57 (142)	.51 (127)

POWER EXHAUST FANS PERFORMANCE

Return Air System Static Pressure		Air Volume Exhausted	
in. w.g.	Pa	cfm	L/s
0	0	4200	1980
0.05	12	3970	1875
0.10	25	3750	1770
0.15	37	3520	1660
0.20	50	3300	1560
0.25	62	3080	1455
0.30	75	2860	1350
0.35	87	2640	1245

CEILING DIFFUSER AIR THROW DATA

Model No.	Air Volume		*Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	cfm	L/s	ft.	m	ft.	m
088 & 100 Models	3000	1415	27 - 33	8 - 10	25 - 30	8 - 9
	3375	1595	30 - 37	9 - 11	28 - 34	9 - 10
	3750	1770	34 - 41	10 - 12	31 - 38	9 - 12

*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, precharged, 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.^{3} (kg/m^3) 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^2) (indoor coil) and sq. ft. (m^2) (outdoor coil). Outdoor coils shall be slab coil construction. Compressor(s) shall be resiliently mounted, have overload protection and crankcase heater(s). The refrigeration system shall have discharge suction and liquid line gauge ports, high pressure switch(es), low pressure switch(es), drier(s), freezestat, defrost control (LHA), check and expansion valve (LHA), reversing valve (LHA), accumulator (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 Standard 210/240-94 (LCA/LGA) and ARI Standard 240-96 (LHA).

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 application with mixed air temperature 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 Fan *— Direct drive propeller type outdoor coil fan 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. Fan shall have a safety guard.*

Air Filters *— Disposable 2 inch (51 mm) thick pleated filters furnished shall have not less than sq. ft. (m^2) 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.*

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

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.*

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

Indoor Air Quality Sensor *— Furnish and field install sensor to monitor CO_2 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)

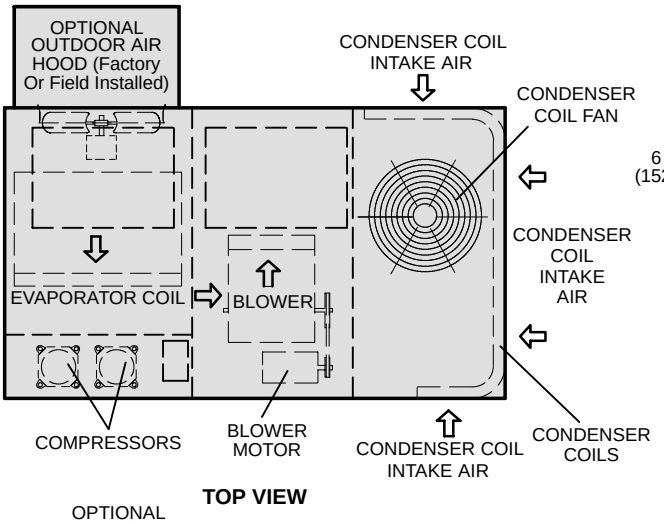
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LCA088 Base Unit	286	130	232	105	242	110	305	138
LCA088 Max. Unit	329	149	258	117	267	121	327	148
LCA100 Base Unit	298	135	238	108	249	113	320	145
LCA100 Max. Unit	340	154	264	120	274	124	363	165

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

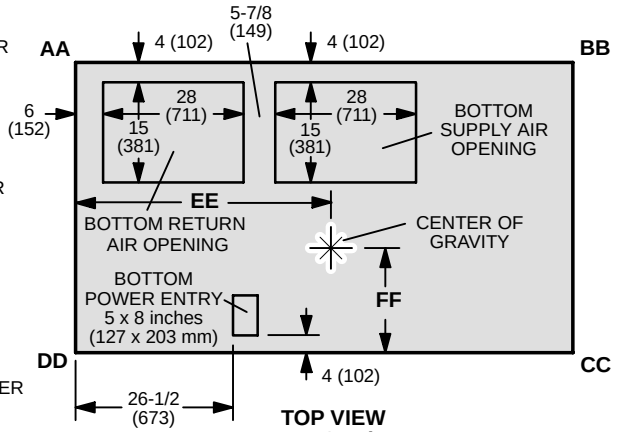
CENTER OF GRAVITY — inches (mm)

Model Number	EE		FF	
	inch	mm	inch	mm
LCA088 Base Unit	43-1/2	1105	21-1/2	546
LCA088 Max. Unit	42-1/2	1080	22	559
LCA100 Base Unit	43	1092	21	533
LCA100 Max. Unit	42	1067	21-1/2	546

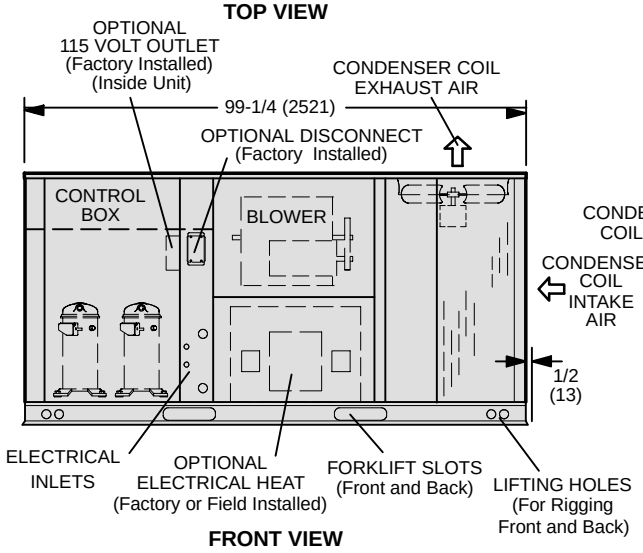
Base Unit — The standard unit with NO OPTIONS.
Max. Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, High Input Heating and Controls)



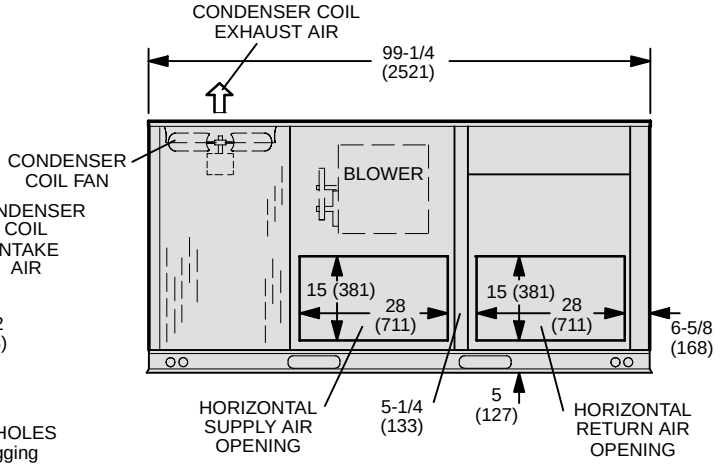
TOP VIEW



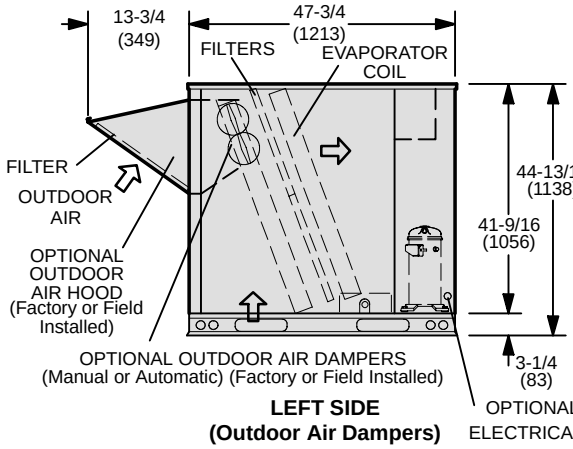
TOP VIEW
Base Section



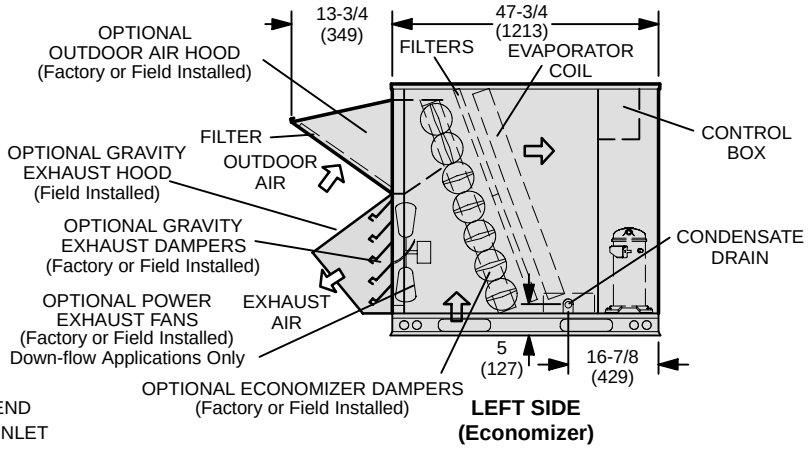
FRONT VIEW



BACK VIEW



LEFT SIDE
(Outdoor Air Dampers)



LEFT SIDE
(Economizer)

DIMENSIONS - INCHES (MM) - LGA MODELS

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

CORNER WEIGHTS — lbs. (kg)

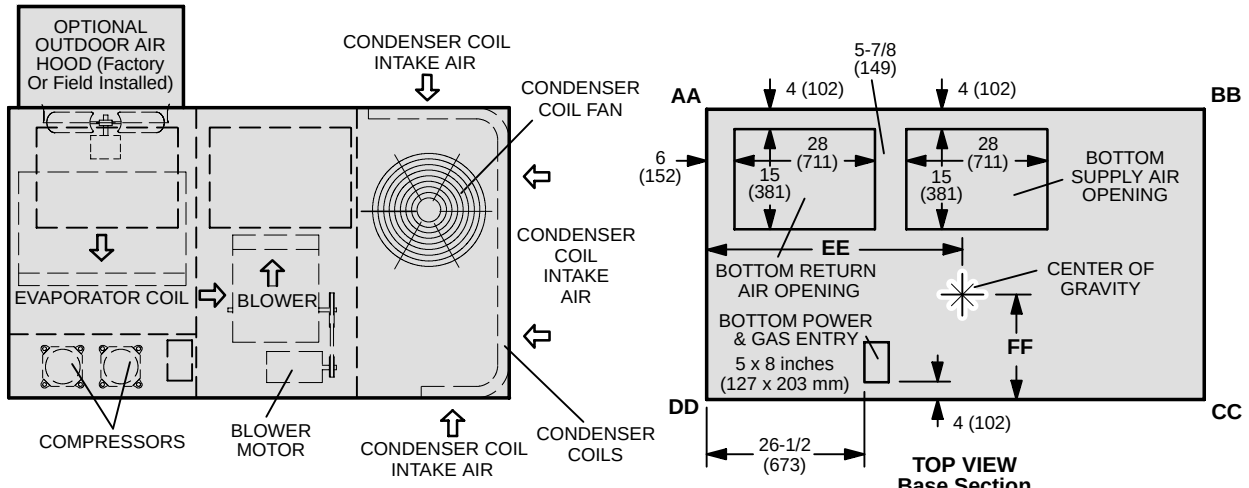
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LGA088 Base Unit	303	137	245	111	255	116	322	146
LGA088 Max. Unit	356	161	279	127	288	131	375	170
LGA100 Base Unit	314	142	251	114	263	119	337	153
LGA100 Max. Unit	367	166	285	129	295	134	392	178

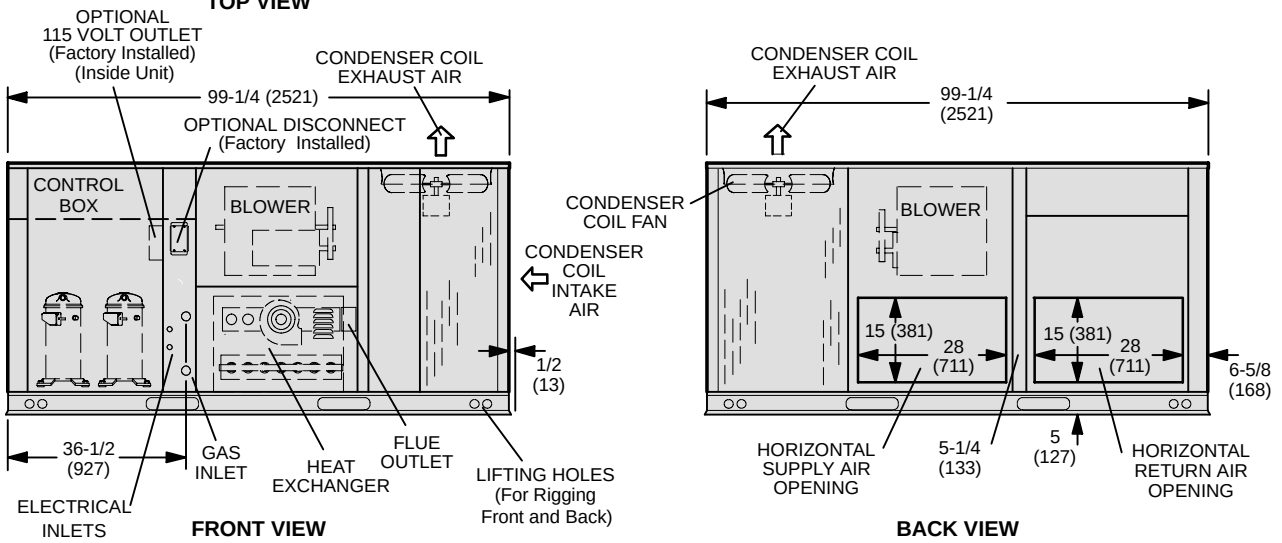
Base Unit — The standard unit with NO OPTIONS.
Max. Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, High Input Heating and Controls)

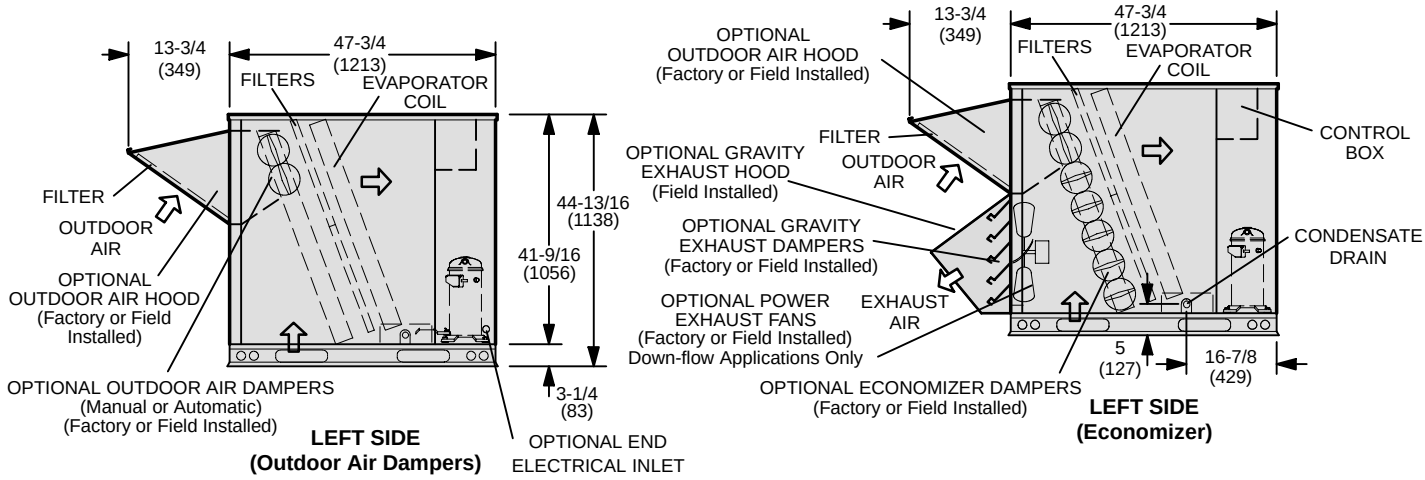
CENTER OF GRAVITY — inches (mm)

Model Number	EE		FF	
	inch	mm	inch	mm
LGA088 Base Unit	43-1/2	1105	21-1/2	546
LGA088 Max. Unit	42-1/2	1080	22	559
LGA100 Base Unit	43	1092	21	533
LGA100 Max. Unit	42	1067	21-1/2	546

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







DIMENSIONS - INCHES (MM) - LHA MODEL

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

CORNER WEIGHTS — lbs. (kg)

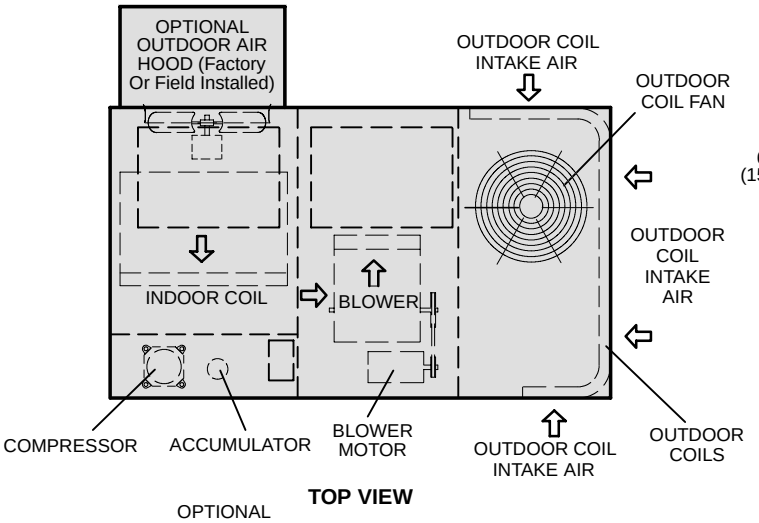
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LHA088 Base Unit	264	120	214	97	222	101	280	127
LHA088 Max. Unit	306	139	240	109	248	112	322	146

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

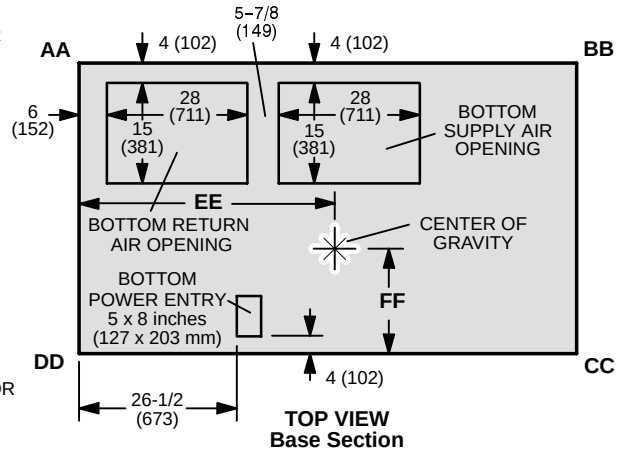
CENTER OF GRAVITY — inches (mm)

Model Number	EE		FF	
	inch	mm	inch	mm
LHA088 Base Unit	43-1/2	1105	21-1/2	546
LHA088 Max. Unit	42-1/2	1080	22	559

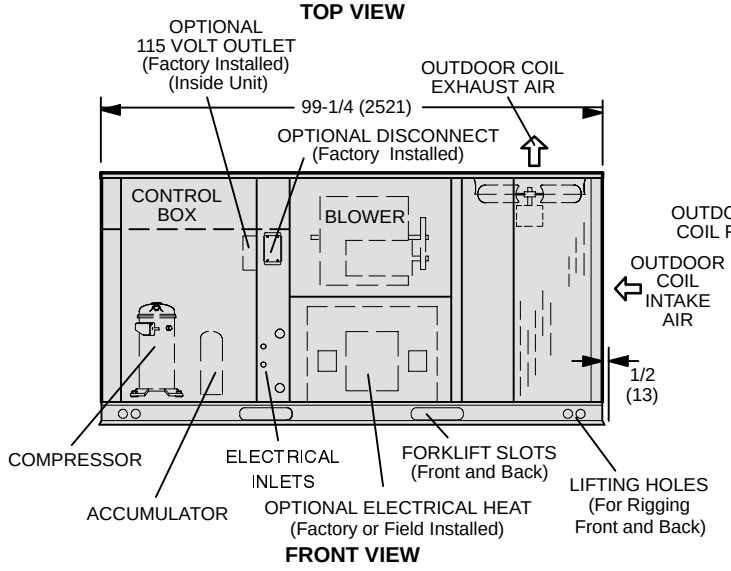
Base Unit — The standard unit with NO OPTIONS.
Max. Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, High Input Heating and Controls)



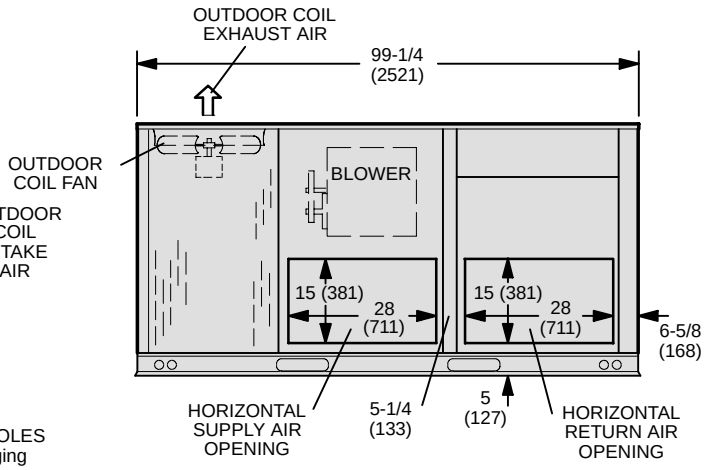
TOP VIEW



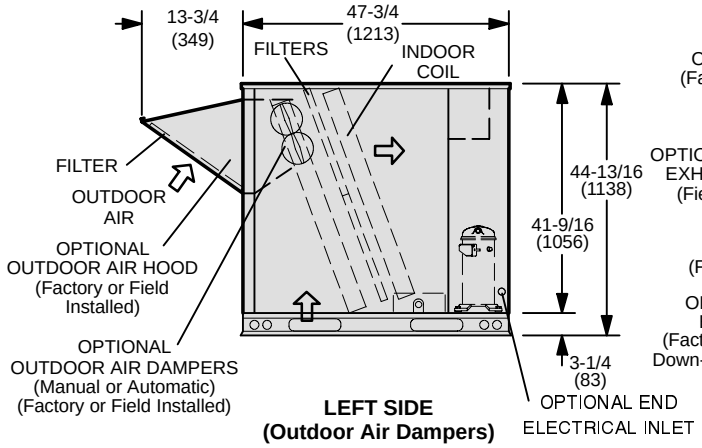
TOP VIEW
Base Section



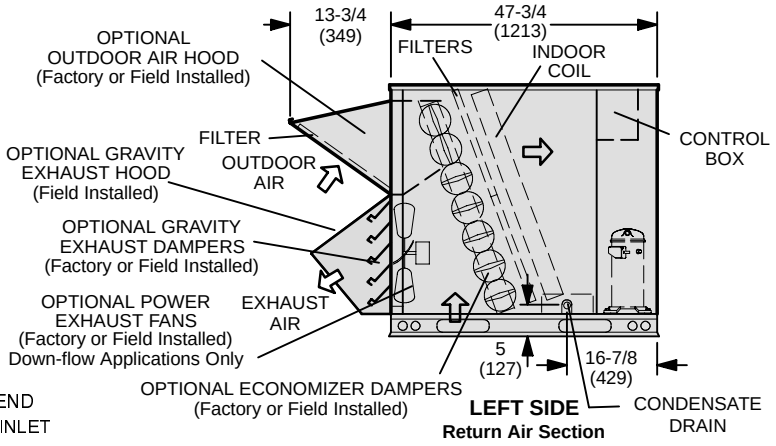
FRONT VIEW



BACK VIEW



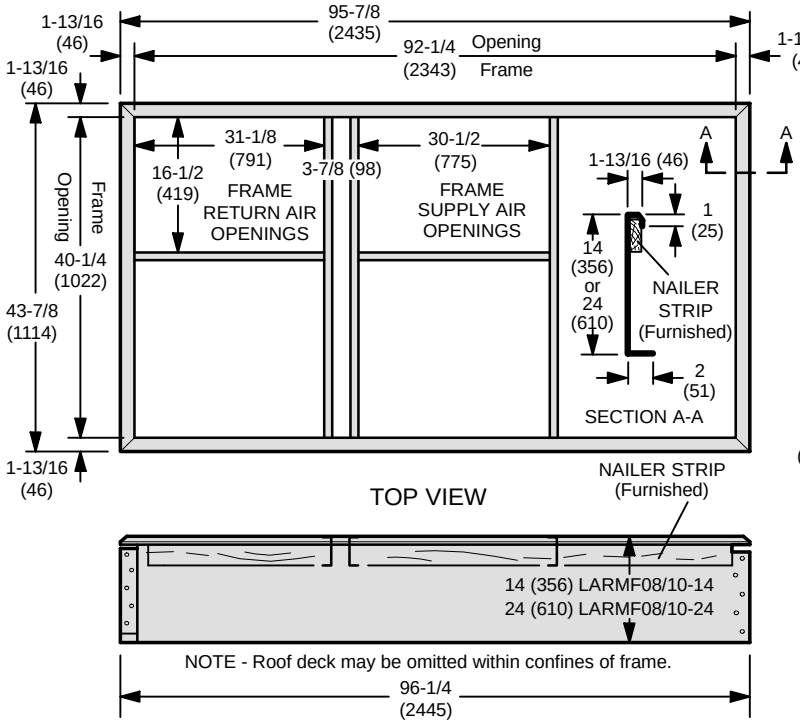
LEFT SIDE
(Outdoor Air Dampers)



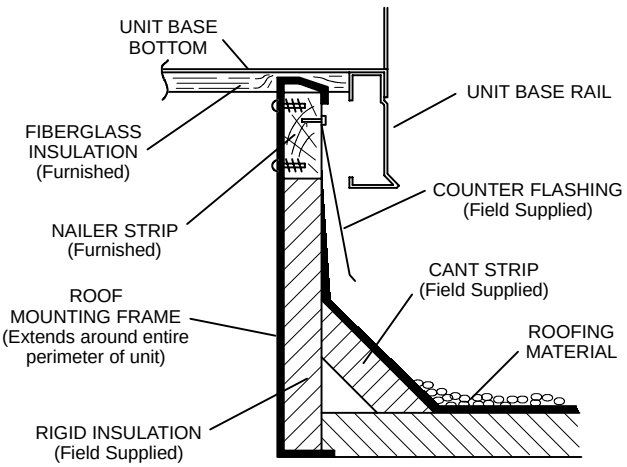
LEFT SIDE
Return Air Section

ACCESSORY DIMENSIONS - INCHES (MM)

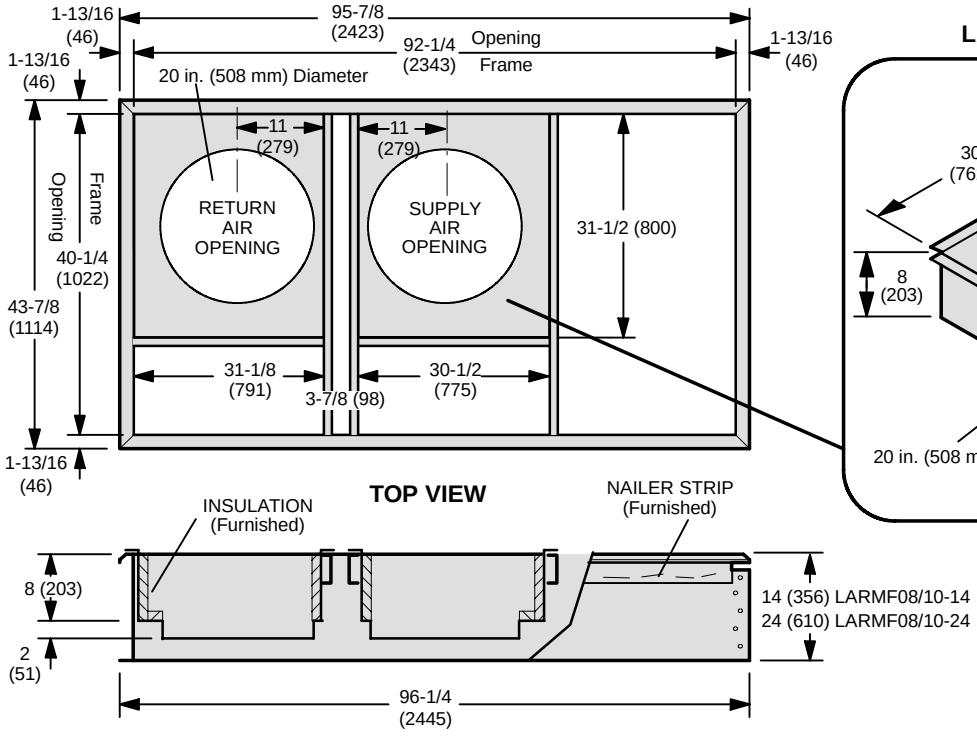
LARMF08/10 - ROOF MOUNTING FRAME (Double Duct Opening)



TYPICAL FLASHING DETAIL



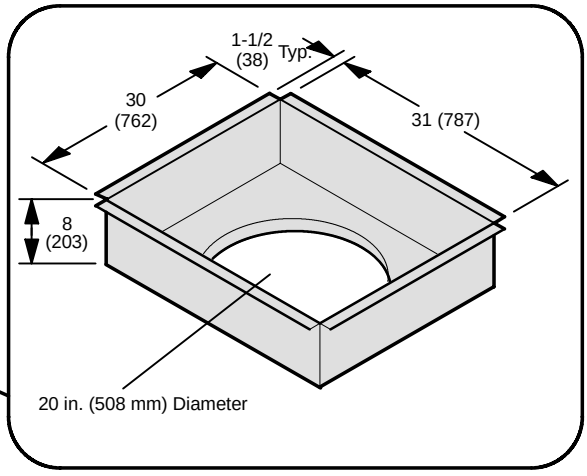
LARMF08/10 - ROOF MOUNTING FRAME with LASRT08/10 TRANSITION



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

SIDE VIEW

LASRT08/10 TRANSITION DETAIL



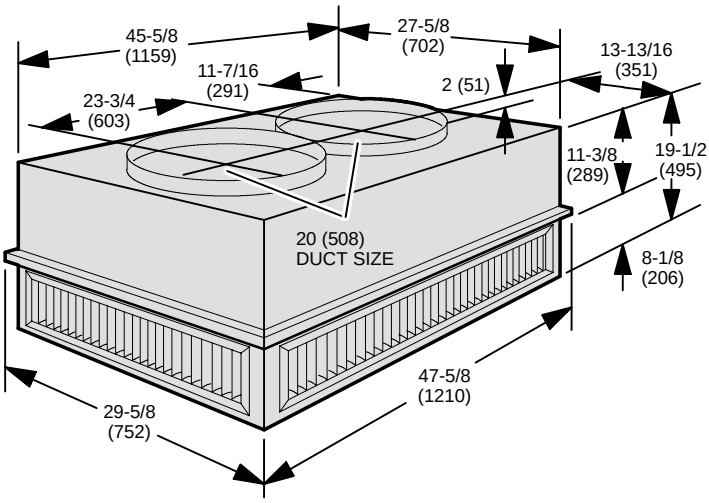
ROOF MOUNTING FRAME Specifications		
Roof mounting frame is rigid enough to be spanned over its entire length or cantilevered if supported on both sides of center of gravity		
Roof Mounting Frame	**LARMF08/10-14**	**LARMF08/10-24**
*Moment of Inertia (I) (in.^{4}) (cm^4)	39 (1634)	160 (6639)
*Section modulus $\frac{I}{C}$ (in.^{3}) (cm^3)	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.

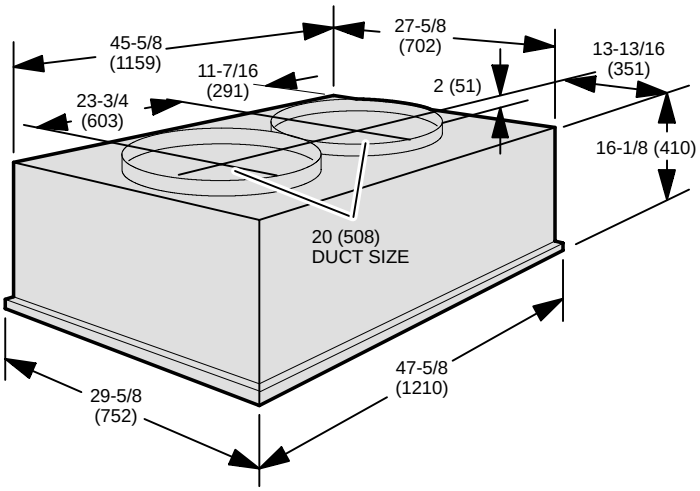
ACCESSORY DIMENSIONS - INCHES (MM)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

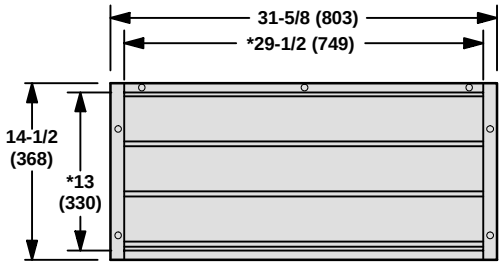
RTD11-95 STEP-DOWN CEILING DIFFUSER



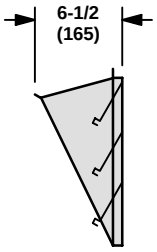
FD11-95 FLUSH CEILING DIFFUSER



LAGEDH03/15 HORIZONTAL GRAVITY EXHAUST DAMPERS - (Field installed in return air duct)



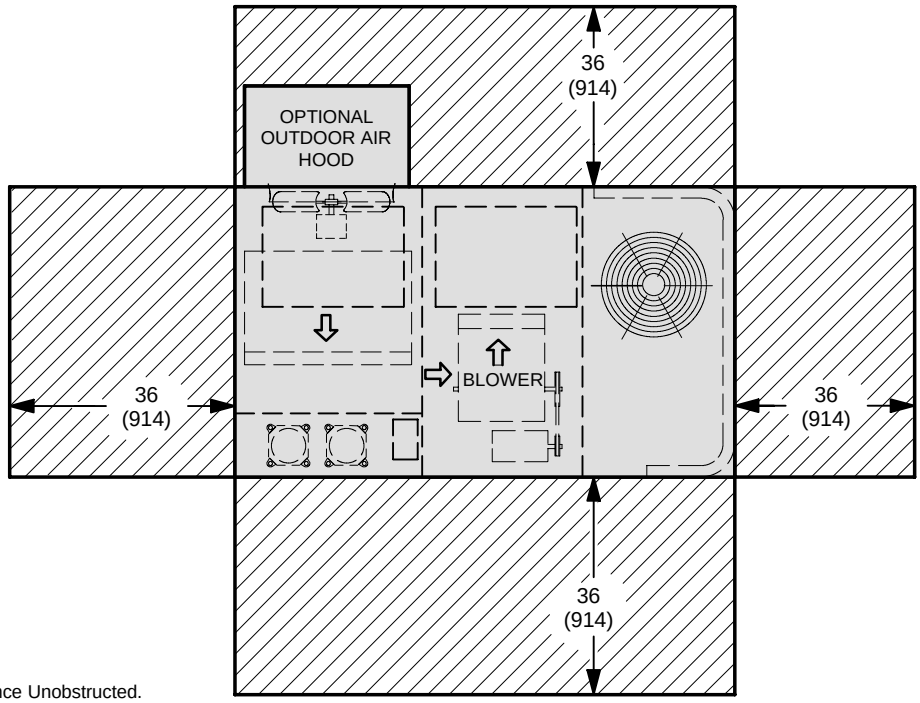
FRONT VIEW



SIDE VIEW

*NOTE - Opening size required in return air duct.

INSTALLATION CLEARANCES - INCHES (MM)



NOTE - Top Clearance Unobstructed.

NOTE - Entire perimeter of unit base require support when elevated above mounting surface. Minimum Clearance To Combustible Materials