

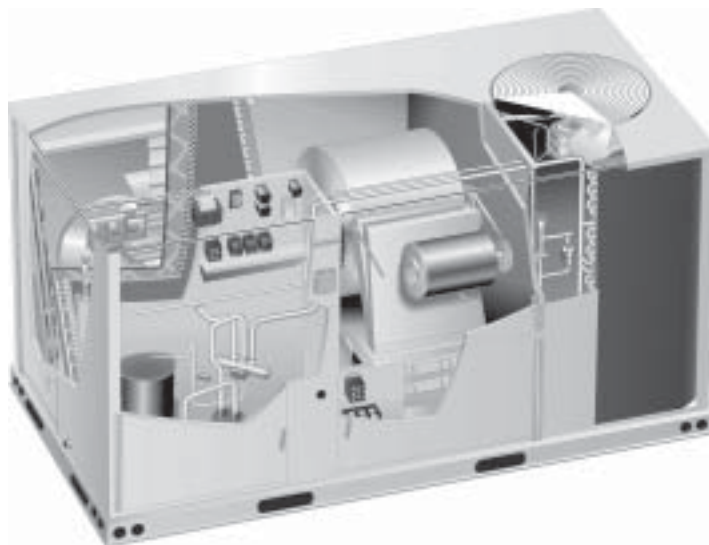
Model 088

7 1/2 Tons Cooling Cap.

83,000-180,000 Btuh Heating Cap.

86,000 Heat Pump Heating Cap.

**19,100 to 153,600 Btuh Optional
Electric Heating Capacity**



FEATURES

- ◆ Down flow or horizontal supply and return air configuration
- ◆ 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
- ◆ ARI Standard 210/240-94 certified
- ◆ Bottom power entry for electric and gas
- ◆ Heavy gauge galvanized steel cabinet, fully insulated, powdered enamel paint finish, hinged access panels, electrical inlets in cabinet base and electric heat end panel, easy access control area with factory installed controls, low voltage terminal strip, unit lifting holes in full perimeter base rail
- ◆ Coil constructed of ripple-edged enhanced aluminum fins on copper tubing, 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
- ◆ Compressor crankcase heater
- ◆ Reciprocating type compressors, resiliently mounted on rubber grommets (LGA/LCA models)
- ◆ Copeland Compliant Scroll compressor for high efficiency, resiliently mounted on rubber grommets (LHA model)
- ◆ Integrated Modular Control (IMC) - solid state board contains all controls and control relays to operate unit with unit diagnostics
- ◆ Tubular constructed, aluminized steel heat exchanger life cycle tested (LGA models)
- ◆ Heating system includes 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 (LGA models)
- ◆ Outdoor coil fan - PVC coated fan guard furnished
- ◆ Outdoor coil fan motor overload protected, permanently lubricated, equipped with ball bearings, shaft up, wire basket mount
- ◆ Disposable 2" pleated filters furnished
- ◆ Refrigeration system consists of compressors, 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 (LHA model), defrost control (LHA model), full refrigerant charge, crankcase heater, freezestat (prevent coil freeze-up during low ambient operation or loss of air), and accumulator
- ◆ 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
- ◆ Supply air motor overload protected, equipped with ball bearings
- ◆ 70VA transformer with built-in circuit breaker
- ◆ 1 Year warranty on parts
- ◆ 5 Year warranty on compressor
- ◆ 10 Year warranty on heat exchanger

Model Number Guide

	L	H	-	A	-	088	-	S	-	1	Y	
Unit Type												Voltage
L = Commercial Package Unit												Y = 208/230v-3 phase-60hz
H = Heat Pump												G = 460v-3 phase-60hz
G = Cooling w/Gas Heat												J = 575v-3 phase-60hz
C = Cooling Only (w/opt Electric Heat)												Minor Revision Number
Major Design Sequence												Heat Type (S or H)
Cooling Capacity Tons (kW)												Cooling Efficiency
088 = 7.5 (26.4)												S = Standard Efficiency

Required Options - Items Must be Ordered and Factory Installed

Air Flow Configuration - specify horizontal or down-flow when ordering base unit
Supply Air Motor - (See Blower Data Table for specifications)
Drive Kit - Order one (see Drive Kit Specifications Table)
Voltage - specify when ordering base unit
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

Optional Accessories - Items Must be Ordered and Factory Installed

Item	LCA/LGA/LHA088
Disconnect Switch - Accessible from outside of unit, spring loaded weatherproof cover furnished	Factory
Service Outlets (2) - 115v ground fault circuit interrupter (GFCI) type	Factory

¹ Not available for LCA model with field installed 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 - Field Installed

Item		LCA/LGA088	LHA088
Blower Proving Switch - Monitors blower operation, shuts down unit if blower fails		18L89	
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) (17L79)	
Down-Flow Gravity Exhaust Dampers Hood - Net Weight		24L15 - 25 lbs. (11 kg)	
Economizer - Opposing gear driven recirculated air and outdoor air dampers, plug-in connections to units, nylon bearings, neoprene seals, 24 volt fully modulating spring return motor, adjustable minimum damper position, damper assembly slides in unit. NOTE - outdoor air hood must be ordered separately (see below), optional down-flow gravity exhaust dampers available (see above), choice of economizer controls (see below) - Net Weight		LAREMD08/10 - 43 lbs. (20 kg) (17L54)	
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	
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	
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) (53K04)	
Outdoor Air Damper Section - Linked mechanical dampers, 0 to 25% (fixed) outdoor air adjustable, installs in unit for down-flow applications NOTE: 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) (17L55)	
	Manual	LAOAD10/15 - 26 lbs. (12 kg) (66K69)	
Outdoor Air Hood - Required with LAREMD08/10 Economizer, LAOAD10/15 and LAOADM08/10 Outdoor Air Damper Sections, two cleanable aluminum mesh 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) (17L52)	
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) 208/230v (17L48) - 460v (17L49) - 575v (17L50)	
	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	
Electric Heat - 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		See Electric Heat Data Tables	
Electric Heat Fuse Block - Required with Electric Heat. Mounting screws furnished (LCA/LHA Models)		See Optional Electric Heat Accessories Table	
Electric Heat LTB2 Terminal Block - Required with electric heat			
Smoke Detector - Photoelectric type, installed in supply air section or return air section or both sections		16M24 - Supply 16M23 - Return	

¹Field installs in return air duct. Two dampers furnished per order no.

Optional Accessories

Item		LCA/LGA088	LHA088
Aspiration Box - for duct mounting of Indoor Air Quality Sensor		90N43	
Indoor Air Quality (CO2) Sensor - Monitors CO2 levels, reports to Integrated Modular Control (IMC) board which adjusts economizer dampers as needed		87N53	
Coil Guards - Galvanized steel wire guards to protect outdoor coil. Not used with Hail Guards		24L55	
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) (29G04)	
	Flush - fixed blade louvers	FD11-95 - 75 lbs. (34 kg) (29G08)	
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) (24L14)	
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) (17L53)	
	24 inch (610 mm) height	LARMF08/10-24 - 162 lbs. (74 kg) (19L05)	
Hail Guards - Constructed of heavy gauge steel, painted to match cabinet, helps protect outdoor coils from hail damage. Not used with Coil Guards		24L54	
LPG/Propane Kits (LGA Model Only)		41L54	----

Specifications - LCA/LGA Model

Model No.		LCA/LGA088	
Cooling Ratings	Gross Cooling Capacity - Btuh (kW)	94,000 (27.5)	
	¹ Net Cooling Capacity - Btuh (kW)	88,000 (25.8)	
	Total Unit Power (kW)	9.77	
	¹ EER (Btuh/Watt)	9	
	⁴ Integrated Part Load Value (Btuh/Watt)	9.2	
² Sound Rating Number (db)		86	
Refrigerant Charge Furnished (HCFC-22)	Circuit 1	8 lbs. 0 oz. (3.63 kg)	
	Circuit 2	8 lbs. 0 oz. (3.63 kg)	
Two Stage Heating Capacity (Natural or LPG/Propane Gas at Sea Level)	Heat Input Type	Standard (S)	High (h)
	Input (low) - Btuh (kW)	83,000 (24.3)	119,000 (34.9)
	Output (low) - Btuh (kW)	66,000 (19.3)	95,000 (27.8)
	Input (high) - Btuh (kW)	125,000 (36.6)	180,000 (52.8)
	Output (high) - Btuh (kW)	100,000 (29.3)	144,000 (42.2)
	A.G.A./C.G.A. Thermal Efficiency	80.00%	
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) 845-1130 (3) 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) 845-1130 (3) 1015-1300
Evaporator 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
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
Filter (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 hz - 3 ph	

¹Rated 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

²Sound Rating Number rated in accordance with test conditions included in ARI Standard 270.

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

⁴Integrated Part Load Value rated at 80°F (27°C) outdoor air temperature.

Specifications - LHA Model

Model No.			LHA088S
Cooling Ratings	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
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
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 Motors & 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) 845-1130 (3) 1015-1300
	3 hp (2.2 kW) ³ Motor & Drives	Nominal motor output - hp (kW)	3 (2.2)
		Max. usable motor output - hp (kW)	3.45 (2.6)
		Voltage & phase	208/230v, 460v or 575v-3ph
		(Drive Kit #) RPM range	(1) 845-1130 (3) 1015-1300
	Indoor Coil	Net face area - sq. ft. (m ²)	
Tube diameter - in. (mm) & No. of rows		3/8 (9.5) - 3	
Fins per inch (m)		14 (551)	
Drain connections 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 (457x 508 x 51)
Electrical characteristics			208/230v, 460v or 575v - 60 hz - 3 ph

¹ Rated in accordance with ARI Standard 210/240 and certified to ARI

Cooling Ratings - 95° (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 are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

Weight Data

Model No.	Description	Weight	
		lbs.	kg
Net Weight			
LCA088S	Net weight (base unit)	1065	483
LGA088S	Net weight (base unit)	1125	510
LHA088S	Net weight (base unit)	980	445
Shipping Weights			
LCA088S	Base unit	1140	501
LHA088S	Base unit	1055	478
LGA088S	Base unit with low fire heat exchanger	1200	544
LGA088S	Base unit with high fire heat exchanger (add to base)	30	14

Optional Electric Heat Accessories

Unit Model No.		LCA088S	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
		208/230 - 3 hp (2.2 kW)	56K93	56K96
		460v - 3 hp (2.2 kW)	25K08	25K10
		575v - 3 hp (2.2 kW)	56K52	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
		208/230 - 3 hp (2.2 kW)	56K93	56K95
		460v - 3 hp (2.2 kW)	56K52	25K09
		575v - 3 hp (2.2 kW)	56K52	56K52

LTB2 ELECTRIC HEAT TERMINAL BLOCK

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

(Required for Units **without** Disconnect/Circuit Breaker but **with** Single Point Power Source)

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 - All 460v and 575v unit voltages use LTB2-175 (30K75) Terminal Block.**

Electrical Data - LCA/LGA Models

Model No.			LCA/LGA088S					
Line voltage data - 60 hz - 3 phase			208/230v		460v		575v	
Compressors (2)	Rated load amps each (total)		12.2 (24.4)		7.1 (14.1)		5.8 (11.5)	
	Locked rotor amps each (total)		90 (180)		46 (92)		37 (74)	
Outdoor Fan Motor	Full load amps		3.0		1.5		1.2	
	Locked rotor amps		6.0		3.0		2.9	
Indoor Blower Motor	Motor Output	hp	2	3	2	3	2	3
		kW	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
	Locked rotor amps		46.9	66.0	20.4	26.8	16.2	23.4
Rec. max. fuse size (amps)	With Exhaust Fan		50.0	50.0	25.0	30.0	20.0	20.0
	Less Exhaust Fan		50.0	50.0	25.0	25.0	20.0	20.0
*Minimum Circuit Ampacity	With Exhaust Fan		41.0	44.0	23.0	24.0	18.0	20.0
	Less Exhaust Fan		38.0	42.0	21.0	23.0	17.0	19.0
Optional Power Exhaust Fan	(No.) Horsepower (W)		(1) 1/3 (249)					
	Full load amps		2.4		1.3		1.0	
	Locked rotor amps		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)

Electrical Data - LHA Model

Model No.			LHA088S					
Line voltage data - 60 hz - 3 phase			208/230v		460v		575v	
Compressor (1)	Rated load amps		28.8		14.7		10.8	
	Locked rotor amps		195		95		80	
Outdoor Fan Motor	Full load amps		3		1.5		1.2	
	Locked rotor amps		6		3		2.9	
Indoor Blower Motor	Motor Output	hp	2	3	2	3	2	3
		kW	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
	Locked rotor amps		46.9	66	20.4	26.8	16.2	23.4
Rec. max. fuse size (amps)	With Exhaust Fan		70	80	35	40	25	30
	Less Exhaust Fan		70	70	35	35	25	25
*Minimum Circuit Ampacity	With Exhaust Fan		49	53	25	27	19	20
	Less Exhaust Fan		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	
	Locked rotor amps		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).

Optional Electric Heat Data - LHA Model

(Requires unit fuse block and terminal block)

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		
		1	575	6.9	23,600	28	29
		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	51,200		
		1	440	12.6	43,000	48	49
		1	460	13.8	47,100		
		1	480	15	51,200		
		1	550	12.6	43,000		
		1	575	13.8	47,100	37	39
		1	600	15	51,200		
22.5 kW	EHA100-22.5 208/230v (32L95) 460v (32L96) 575v (32L97) 38 lbs. (17 kg)	1/2	208	16.9	57,700	108	112
		1/2	220	18.9	64,500	117	121
		1/2	230	20.7	70,700		
		1/2	240	22.5	76,800		
		1/2	440	18.9	64,500	59	61
		1/2	460	20.7	70,700		
		1/2	480	22.5	76,800		
		1/2	550	18.9	64,500		
		1/2	575	20.7	70,700	47	48
		1/2	600	22.5	76,800		
30 kW	EHA100-30 208/230v (16L14) 460v (16L15) 575v (16L16) 38 lbs. (17 kg)	1/2	208	22.5	76,800	128	131
		1/2	220	25.2	86,000	140	143
		1/2	230	27.5	93,900		
		1/2	240	30	102,400		
		1/2	440	25.2	86,000	70	72
		1/2	460	27.5	93,900		
		1/2	480	30	102,400		
		1/2	550	25.2	86,000		
		1/2	575	27.5	93,900	55	56
		1/2	600	30	102,400		
45 kW	EHA100-45 208/230v (16L17) 460v (16L18) 575v (16L19) 42 lbs. (19 kg)	1/2	208	33.8	115,300	167	170
		1/2	220	37.8	129,000	185	188
		1/2	230	41.3	141,000		
		1/2	240	45	153,600		
		1/2	440	37.8	129,000	93	94
		1/2	460	41.3	141,000		
		1/2	480	45	153,600		
		1/2	550	37.8	129,000		
		1/2	575	41.3	141,000	73	74
		1/2	600	45	153,600		

*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)

1May be used with two stage control.

NOTE - Fuse block must be ordered extra. Fuse block must be installed in unit with field installed heaters. Also requires LTB2 Terminal Block.

Optional Electric Heat Data - LCA Model

(Requires unit fuse block and terminal block)

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		
		1	575	6.9	23,600	18	20
		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)	1 ²	208	16.9	57,700	71	75
		1 ²	220	18.9	64,500	73	77
		1 ²	230	20.7	70,700		
		1 ²	240	22.5	76,800		
		1 ²	440	18.9	64,500	82	86
		1 ²	460	20.7	70,700		
		1 ²	480	22.5	76,800		
		1 ²	550	18.9	64,500	41	43
		1 ²	575	20.7	70,700		
		1 ²	600	22.5	76,800		

*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)

¹May be used with two stage control.

NOTE - Fuse block must be ordered extra. Fuse block must be installed in unit with field installed heaters. Also requires LTB2 Terminal Block.

Optional Electric Heat Data - LCA Model

(Requires unit fuse block and terminal block)

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)
30 kW	EHA100-30 208/230v (16L14) 460v (16L15) 575v (16L16) 38 lbs. (17 kg)	1 ²	208	22.5	76,800	91	95
		1 ²	220	25.2	86,000	103	107
		1 ²	230	27.5	93,900		
		1 ²	240	30.0	102,400		
		1 ²	440	25.2	86,000	51	53
		1 ²	460	27.5	93,900		
		1 ²	480	30.0	102,400		
		1 ²	550	25.2	86,000	41	43
		1 ²	575	27.5	93,900		
		1 ²	600	30.0	102,400		
45 kW	EHA100-45 208/230v (16L17) 460v (16L18) 575v (16L19) 42 lbs. (19 kg)	1 ²	208	33.8	115,300	130	134
		1 ²	220	37.8	129,000	148	152
		1 ²	230	41.3	141,000		
		1 ²	240	45.0	153,600		
		1 ²	440	37.8	129,000	74	76
		1 ²	460	41.3	141,000		
		1 ²	480	45.0	153,600		
		1 ²	550	37.8	129,000	59	61
		1 ²	575	41.3	141,000		
		1 ²	600	45.0	153,600		

*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)

¹May be used with two stage control.

NOTE - Fuse block must be ordered extra. Fuse block must be installed in unit with field installed heaters. Also requires LTB2 Terminal Block.

Cooling Ratings

LCA/LGA088 - One Compressor Operating

Enter- ing Wet Bulb Temp.	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)					
	cfm	L/s	Total Cooling Capacity		Comp. Motor kW Input	Sensible to Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor kW Input	Sensible to Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor kW Input	Sensible to Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor kW Input	Sensible to Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb						Dry Bulb		
			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/LGA088 - All Compressors Operating

Enter- ing Wet Bulb Temp.	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)					
	cfm	L/s	Total Cooling Capacity		Comp. Motor kW Input	Sensible to Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor kW Input	Sensible to Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor kW Input	Sensible to Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor kW Input	Sensible to Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb						Dry Bulb		
			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

Cooling Ratings

Full Load Cooling Capacity - LHA Model

Enter- ing Wet Bulb Temp.	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)					
	cfm	L/s	Total Cooling Capacity		Comp. Motor kW	Sensible to Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor kW	Sensible to Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor kW	Sensible to Total Ratio (S/T)			Total Cooling Capacity		Comp. Motor kW	Sensible to Total Ratio (S/T)		
						Dry Bulb						Dry Bulb						Dry Bulb						Dry Bulb		
			kBtu/h	kW	Input	75°F 24°C	80°F 27°C	85°F 29°C	kBtu/h	kW	Input	75°F 24°C	80°F 27°C	85°F 29°C	kBtu/h	kW	Input	75°F 24°C	80°F 27°C	85°F 29°C	kBtu/h	kW	Input	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

Heating Capacity - LHA Model

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	Total Heating Capacity		Comp. Motor kW	Total Heating Capacity		Comp. Motor kW	Total Heating Capacity		Comp. Motor kW	Total Heating Capacity		Comp. Motor kW
cfm	L/s	kBtuh	kW	Input	kBtuh	kW	Input	kBtuh	kW	Input	kBtuh	kW	Input	kBtuh	kW	Input
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

Heating Performance - LHA Model

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

FOR ALL UNITS ADD: **Bold Italics indicate field furnished drive*

1 - Wet indoor coil air resistance of selected unit

2 - Any factory installed options air resistance (heat section)

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

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

See page 11 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 requires 3000 cfm (1415 L/s) minimum air with electric heat in horizontal applications.

LCA/LHA requires 2600 cfm (1225 L/s) minimum air with electric heat in downflow applications.

Air Volume cfm (L/s)	Total Static Pressure - Inches Water Gauge (Pa)																			
	.20 (50)		.40 (100)		.60 (150)		.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	.40 (.30)	725	.55 (.41)	820	.70 (.52)	905	.90 (.67)	990	1.10 (.82)	1065	1.30 (.97)	1140	1.55 (1.16)	1215	1.85 (1.38)	1285	2.20 (1.64)	1350	2.50 (1.87)
2200 (1040)	670	.50 (.37)	760	.65 (.48)	850	.80 (.60)	930	1.00 (.75)	1010	1.20 (.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	.65 (.48)	800	.80 (.60)	880	.95 (.71)	960	1.15 (.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	.80 (.60)	840	.95 (.71)	915	1.10 (.82)	990	1.30 (.97)	1060	1.50 (1.12)	1125	1.75 (1.31)	1195	2.0 (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 (.86)	955	1.30 (.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	1.95 (1.45)	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	2.3	1.5	1.7	845 - 1130	---	**1015 - 1300	---
3 Standard	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 Armstrong 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.

**Base unit.

Field/Factory Installed Accessory Air Resistance

Air Volume		Total Resistance - Inches water gauge (Pa)				
cfm	L/s	Wet Indoor Coil	Gas Heat Exchange (LGA Models)		Electric Heat	Economizer
			Low Fire	High Fire		
2000	945	.06 (15)	.05 (12)	.08 (20)	.13	.03 (7)
2200	1040	.07 (17)	.08 (20)	.13 (32)	.15	.04 (10)
2400	1135	.09 (22)	.10 (25)	.16 (40)	.16	.05 (12)
2600	1230	.10 (25)	.14 (35)	.23 (57)	.17	.05 (12)
2800	1325	.11 (27)	.15 (37)	.25 (62)	.18	.06 (15)
3000	1420	.12 (30)	.19 (47)	.32 (80)	.20	.06 (15)
3200	1510	.14 (35)	.23 (57)	.39 (97)	.24	.07 (17)
3400	1605	.15 (37)	.26 (65)	.43 (107)	.26	.08 (20)
3600	1700	.17 (42)	.30 (75)	.50 (124)	.30	.09 (22)
3800	1795	.18 (45)	.32 (80)	.53 (132)	.33	.10 (25)
4000	1890	.29 (47)	.36 (90)	.60 (149)	.35	.11 (27)

Ceiling Diffuser Air Resistance

Unit Size	Air Volume		Total Resistance - Inches water gauge (Pa)			
	cfm	L/s	RTD11 Step-Down Diffuser			FD11 Flush Diffuser
			2 Ends Open	1 Side 2 Ends Open	All Ends & Sides Open	
088	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
.05	12	3970	1875
.10	25	3750	1770
.15	37	3520	1660
.20	50	3300	1560
.25	62	3080	1455
.30	75	2860	1350
.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	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

General - Furnish and install single package air to air DX mechanical cooling 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 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.

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.

Cooling System - The coils shall be nonferrous construction with aluminum fins mechanically bonded to durable copper tubes. Coils shall be pressure leak tested. Compressor shall be resiliently mounted, have overload protection and crankcase heater(s). The refrigeration system shall have discharge suction and liquid line service gauge ports, high pressure and low pressure switch(es) driers, defrost control(LHA), freezestats, check and expansion valve(LHA), reversing valve (LHA), accumulator (LHA) and full refrigerant charge. 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 Model) - 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. Units shall be available 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.

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 provided.

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

Supply Air Blowers - 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.

Outdoor Coil Fan - Direct drive propeller type outdoor coil fan shall discharge vertically and be direct driven by a 1/2 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 shall be furnished.

Optional Accessories

Additive Electric Heaters (LCA/LHA Models) - Electric heaters shall be available for 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.

Ceiling Diffusers - Furnish and install a (flush or stepdown) optional combination ceiling supply and return air diffuser. Supply and return transitions shall be available, for field installation in the roof mounting frame, to provide duct connections to the diffuser.

Coil Guards - Furnish and install galvanized steel coil guards.

Dirty Filter Switch - Furnish and install pressure switch that indicates dirty filter.

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 (IMC) shall consist of adjustable minimum positioner, enthalpy setpoint and DIP switches for setting type of control log 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 field installation.

Gravity Exhaust Dampers - Pressure operated dampers shall be available for 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.

Indoor Air Quality Sensor - Furnish and field install sensor to monitor CO2 levels, relays information to Integrated Module Control (IMC) which adjusts economizer dampers proportionately to the pollutant level.

Guide Specifications

Disconnect - Furnish and factory install unit disconnect switch.

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

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 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 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 air. Flashing shall be the responsibility of the roofing contractor. Frame shall be approved by U.S. National Roofing Contractors Association.

Smoke Detectors - Furnish and field 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 - LCA Model - inches (mm)

Shown with Optional Economizer Dampers, Power Exhaust Fans, Convenience Outlet, Unit Disconnect
Corner Weights - lbs. (kg)

Model No.	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

Base Unit - The standard unit with NO OPTIONS.

Max. Unit - The standard unit with ALL OPTIONS installed.

(Economizer, Power Exhaust Fans, High Input Heating & Controls)

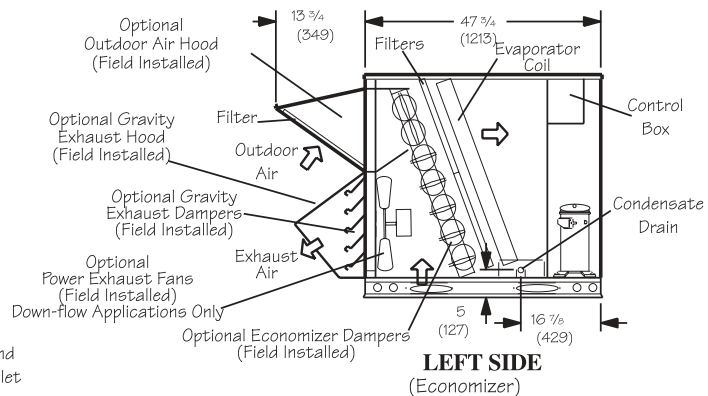
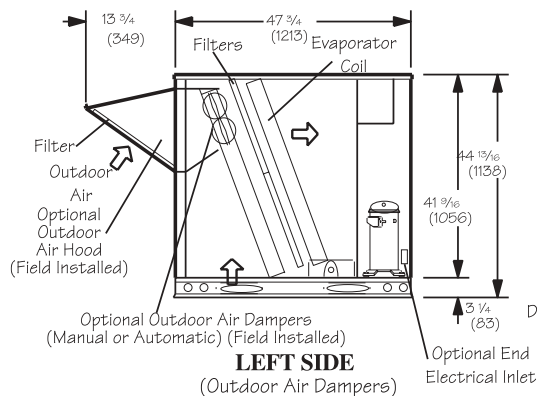
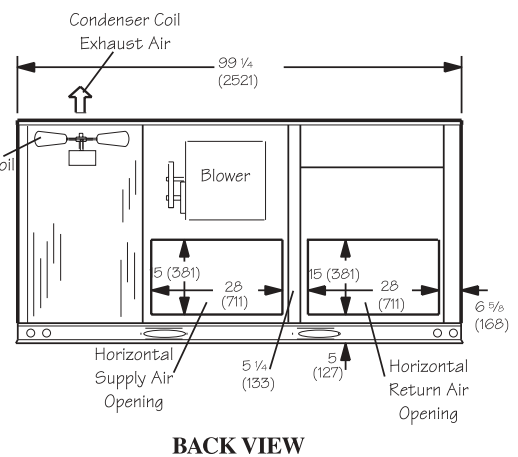
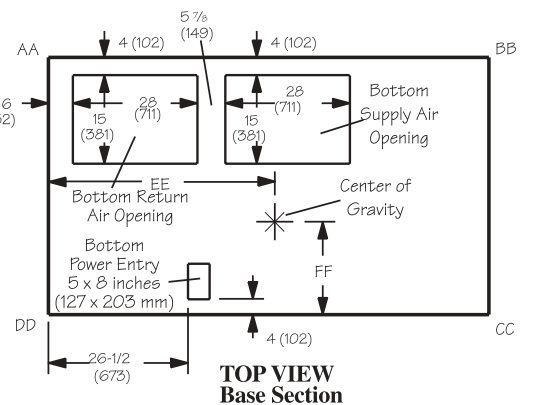
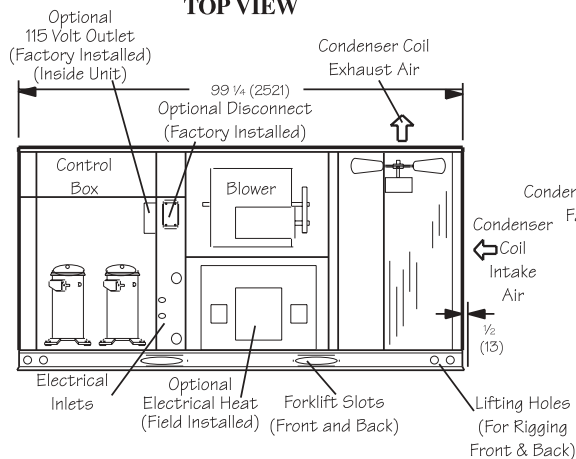
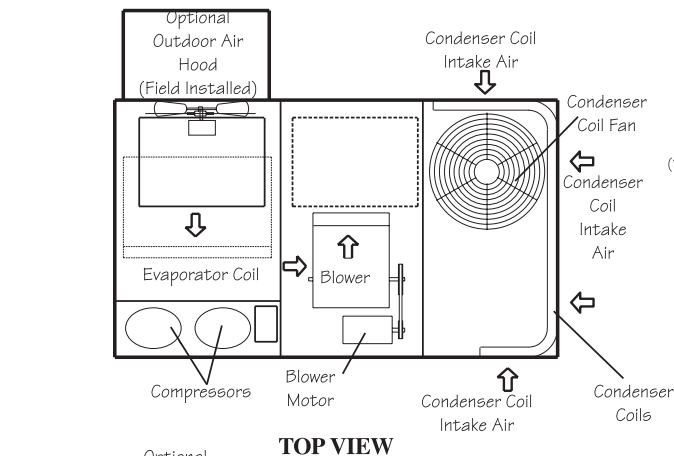
Center of Gravity - inches (mm)

Model No.	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

Base Unit - The standard unit with NO OPTIONS.

Max. Unit - The standard unit with ALL OPTIONS installed.

(Economizer, Power Exhaust Fans, High Input Heating & Controls)



Dimensions - LGA Model - inches (mm)

Shown with Optional Economizer Dampers, Power Exhaust Fans, Convenience Outlet, Unit Disconnect
Corner Weights - lbs. (kg)

Model No.	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

Base Unit - The standard unit with NO OPTIONS.

Max. Unit - The standard unit with ALL OPTIONS installed.

(Economizer, Power Exhaust Fans, High Input Heating & Controls)

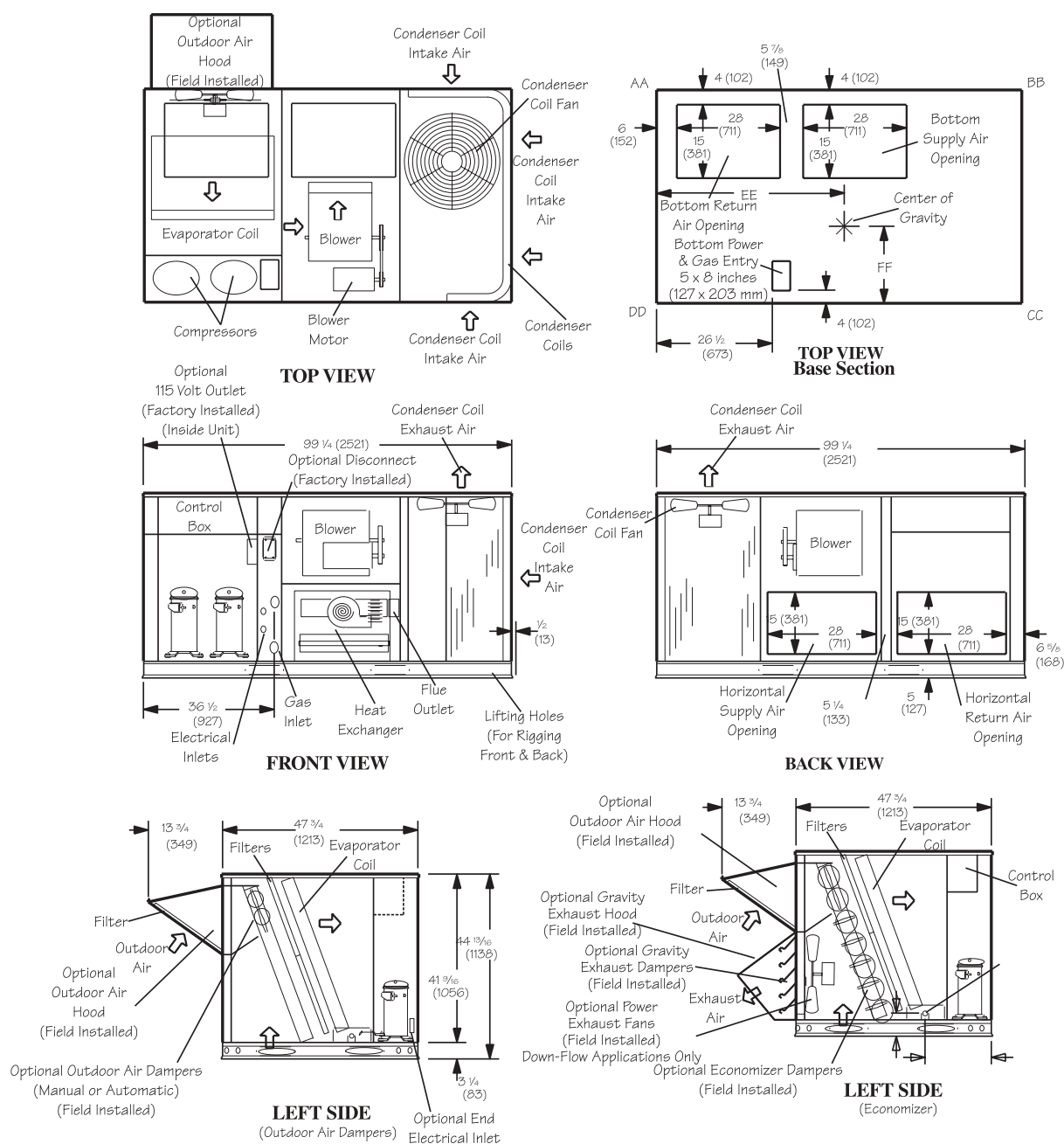
Center of Gravity - inches (mm)

Model No.	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

Base Unit - The standard unit with NO OPTIONS.

Max. Unit - The standard unit with ALL OPTIONS installed.

(Economizer, Power Exhaust Fans, High Input Heating & Controls)



Dimensions - LHA Model - inches (mm)

Shown with Optional Economizer Dampers, Power Exhaust Fans, Convenience Outlet, Unit Disconnect
Center of Gravity - inches (mm)

Model No.	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.

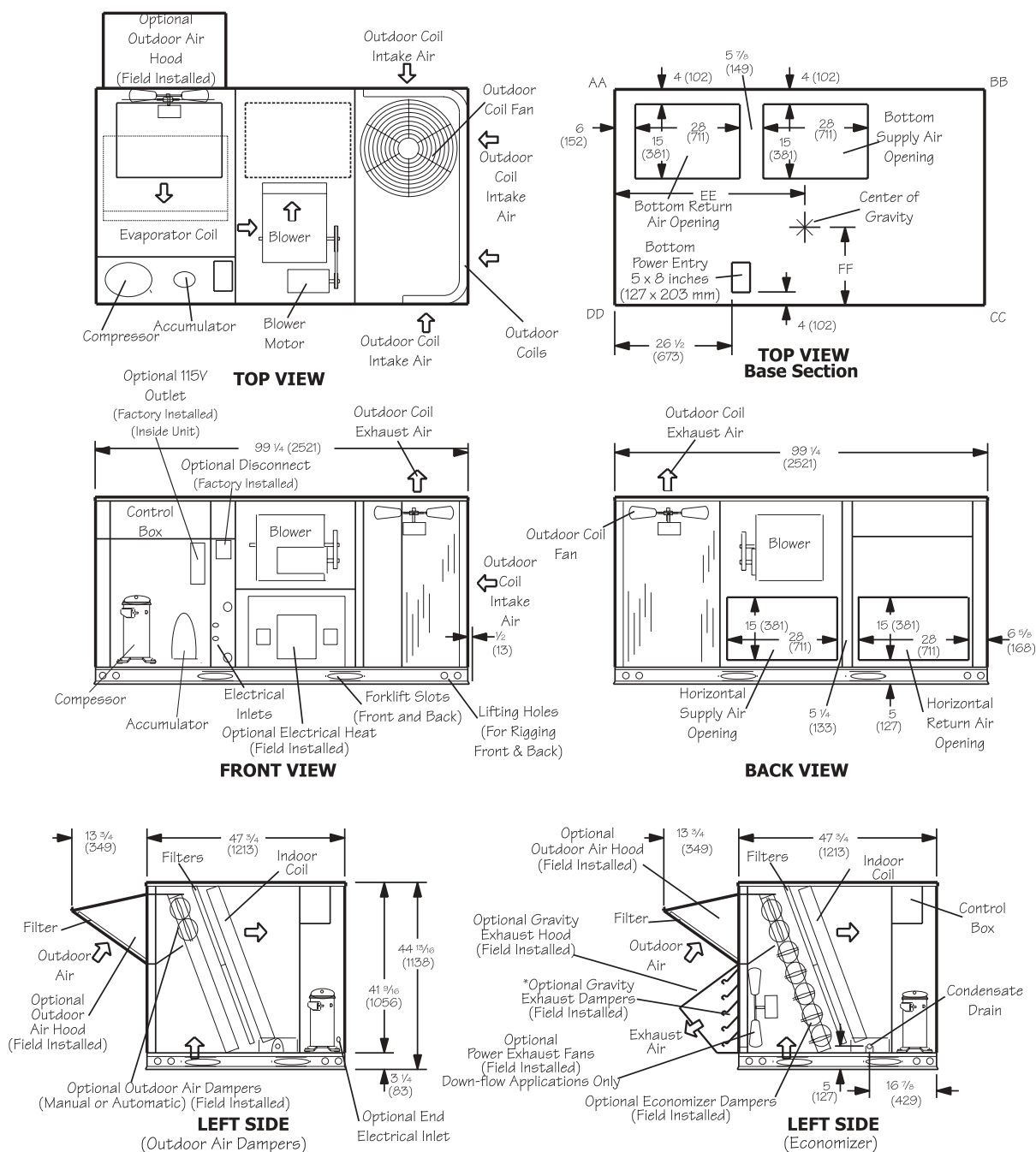
(Economizer, Power Exhaust Fans, High Input Heating & Controls)

Model No.	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.

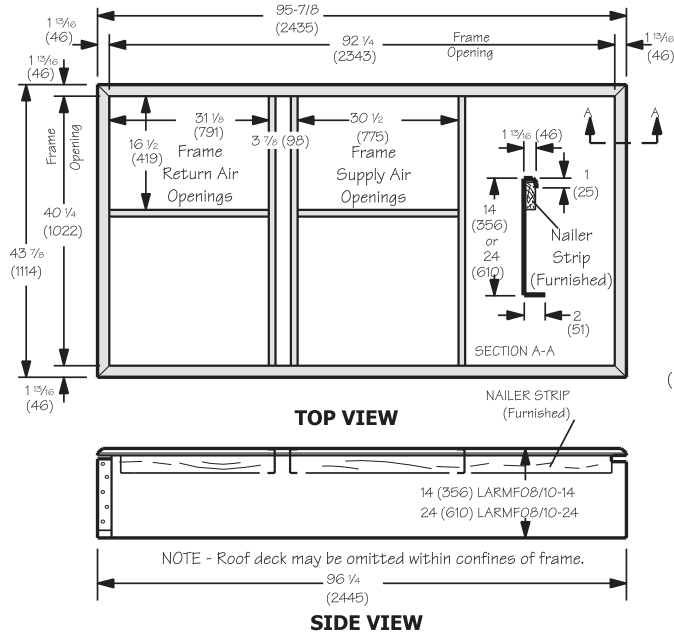
Max. Unit - The standard unit with ALL OPTIONS installed.

(Economizer, Power Exhaust Fans, High Input Heating & Controls)

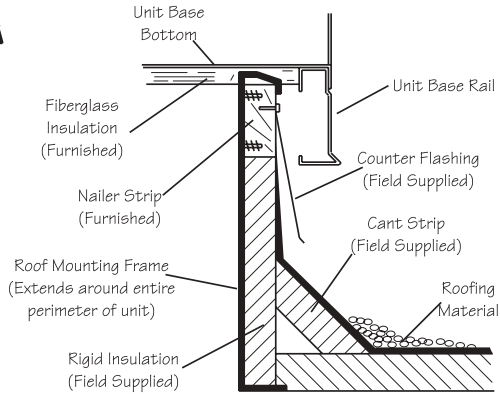


Accessory Dimensions - inches (mm)

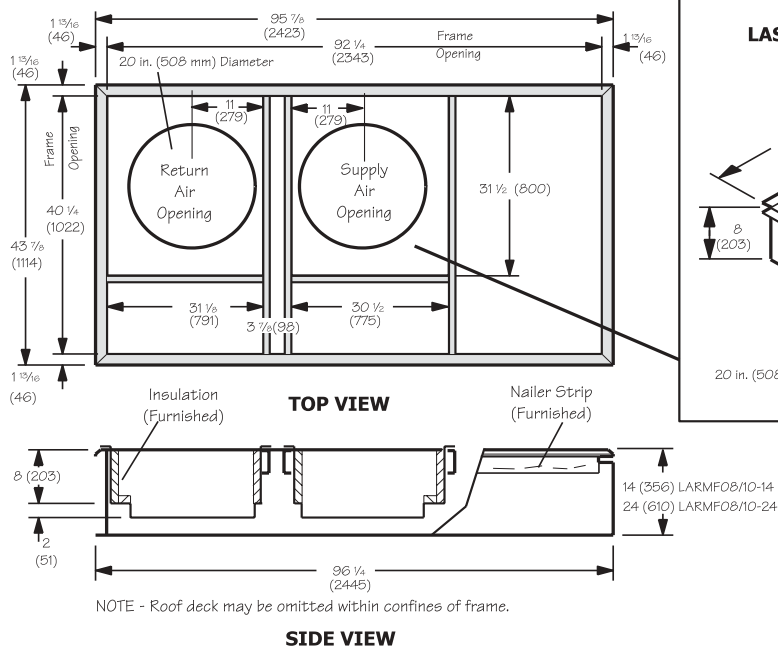
LARMF08/10 - Roof Mounting Frame (Double Duct Opening)



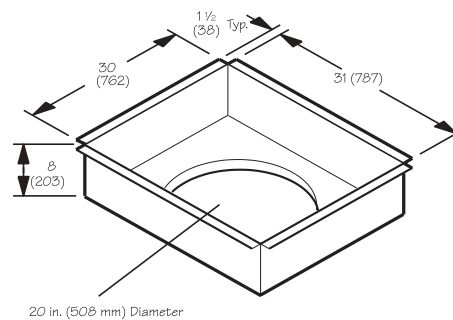
TYPICAL FLASHING DETAIL



LARMF08/10 - Roof Mounting Frame with LASRT08/10 Transition



LASRT08/10 TRANSITION DETAIL



Roof Mounting Frame Specifications

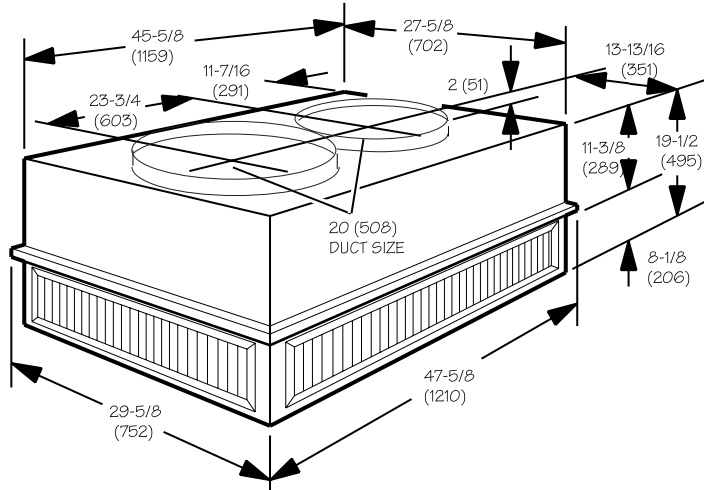
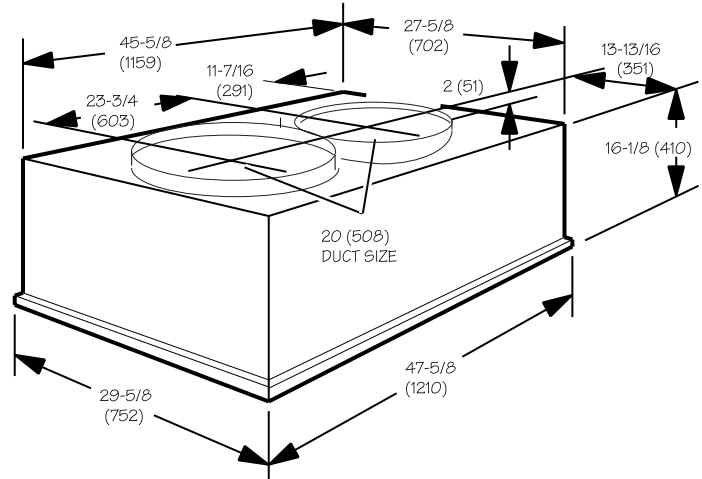
Roof mounting frame is rigid enough to be spanned over its entire length or cantilevered if supported on both sides of center of gravity.

Roof Mounting Frame	LARMF08/10-14	LARMF08/10-24
*Moment of Inertia (I) (in. ⁴) (cm ⁴)	39 (1634)	160 (6639)
*Section modulus 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)
Desian strength (psi) (kPa)	20,000 (137,900)	

*Includes both sides of frame.

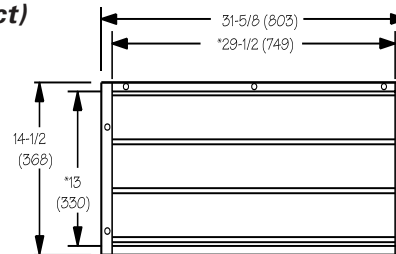
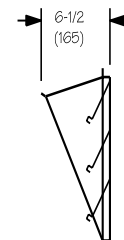
Accessory Dimensions - inches (mm)

Combination Ceiling Supply and Return Diffusers

RTD11-95 STEP-DOWN CEILING DIFFUSER

FD11-95 FLUSH CEILING DIFFUSER


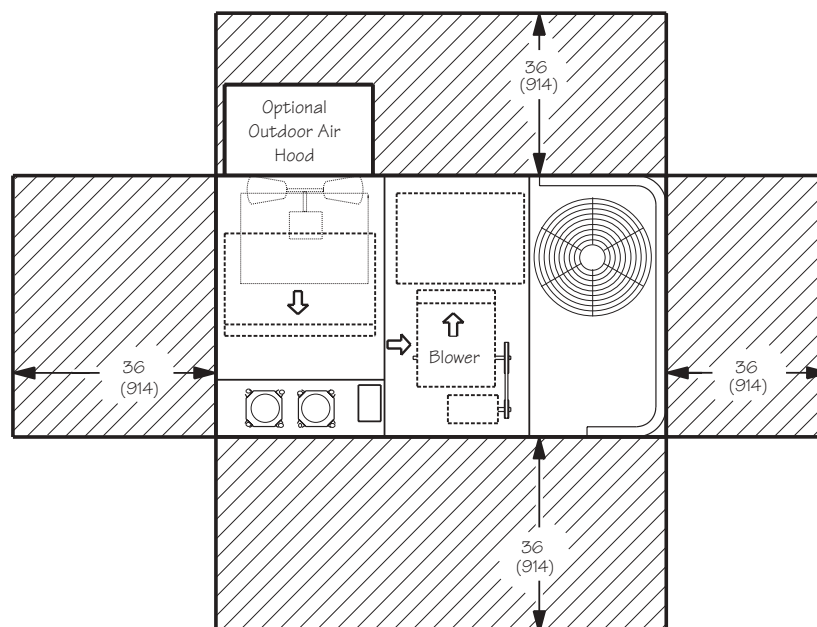
LAGEDH03/15 Horizontal Gravity Exhaust Dampers

(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

All specifications are subject to change
without notice.



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